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### Catco

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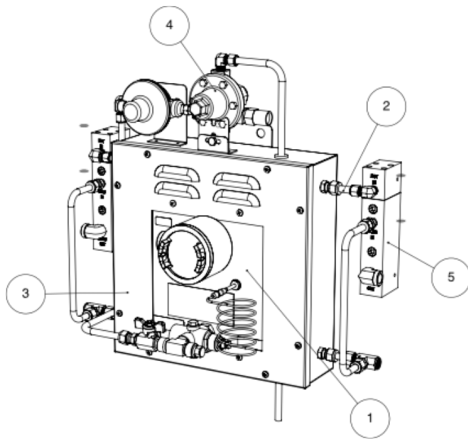
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## Product Overview

Catco Instrument Gas Heaters use a catalytic heater to direct infrared heat at a stainless steel heat exchange tube inside an enclosure. The infrared heat warms the tube, which in turn warms the gas, air, or other fluid that is flowing through it.

The Catco Instrument Gas Heater is commonly used to preheat instrument gas or instrument air streams for pilot operated regulators, valves, and other equipment.

There are five main components of an Instrument Gas Heater::



1. **Catalytic Heater.** This is the heat source for the unit. It brings fuel and oxygen together in the presence of a heated catalyst to produce infrared heat but no flame.
2. **Heat Exchange Tubing.** One or two serpentine stainless steel tubes run through the body of the enclosure and pass in front of the catalytic heater. The radiant heat from the catalytic heater is absorbed by the tubing which in turn heats the gas, air, or other fluid flowing through it.
3. **Enclosure.** The insulated stainless steel enclosure protects the catalytic heater from the weather and directs the infrared heat on the heat exchange tubing.
4. **Fuel Gas Manifold.** The fuel supply for the catalytic heater is managed and regulated through an integrated manifold. This reduces fuel pressure to the proper level for optimal heater performance.
5. **Temperature Control.** The temperature of the gas flowing through the heat exchange tubing can be controlled in two ways. Directly, via the Steady Heat Controller™ (shown above) or indirectly with a thermostat that modulates the heater output.

## Installation & Operation

### Installation & Mounting

Instrument Gas Heaters mount onto a pipe using U-bolts and brackets that are integrated into the enclosure. Make sure the unit is in a fixed position so that it can't be tipped over, dislocated, or otherwise compromised.

*Consult the complete Installation, Operation, and Maintenance manual for catalytic infrared heaters for complete instructions.*

### 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.

## Configuration & Accessory Guide

### Single or Dual Heat Exchange

#### Single

The unit has only one heat exchange tube and can therefore only heat one stream. The common choice for a single piece of equipment, or when designs require that two pieces of equipment each have their own independent heated stream for redundancy purposes.

#### Dual

The unit has two heat exchange tubes so it can provide two independent warm streams. A common choice for two pieces of equipment installed near one another such as many worker/monitor setups for pilot operated regulators.

### Temperature Control

#### Steady Heat Controller

The Catco Steady Heat Controller controls the temperature of the process stream directly by mixing a hot and cold stream together. The proportion of hot and cold are automatically adjusted to achieve an outlet temperature of 130-140° F which is a safe temperature for most applications.

#### Thermostat

A thermostat uses a temperature probe and valve to control the outlet temperature indirectly. When the temperature of the gas, air, or other fluid reaches the thermostat's set point, the fuel input to the heater is reduced. With lower heat input into the heat exchange tubing, the temperature will decrease.

#### Turndown Valve

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

### Fuel Gas Accessories

#### Low pressure regulators

A 912 style regulator cuts pressure down to heater inlet pressure. *All Instrument Gas Heaters include a low pressure regulator.*

#### High pressure regulators with relief valve

For high inlet pressures or when it's preferred to reduce pressure in two stages. Catco offers the following standard options for high pressure regulators. When Instrument Gas Heaters are equipped with a high pressure regulator, a 150 psi type H120 relief valve of the same material is added. *For special requirements, contact Catco for a custom configuration.*

#### Gauges

Catco offers water column gauges to monitor heater inlet pressure. This is particularly useful for installation and troubleshooting.

#### Filters

The fuel filter eliminates moisture from the fuel supply improving heater longevity and performance. *The 30-091 filter is standard with Catco Instrument Gas Heaters*

### Accessory Product Specs

Equipment Type	Catco Part Number	Description
Thermostat	40-037	3/8" NPT; set point range 32-230° F; specify BTU rating of heater when ordering
Turndown Valve	30-030	Specify BTU rating when ordering
Low Pressure Regulator	50-005	Zinc; 1/4" NPT; max inlet 250 psig, outlet 3-7 inches wc
High Pressure Regulator	50-035	Brass; 1/4" NPT; max inlet 5500 psig, outlet range 0-75 psig; three outlets
	50-040	Brass; 1/4" NPT; max inlet 5500 psig, outlet range 0-75 psig; two outlets
	50-037	Stainless steel; 1/4" NPT; max inlet 5500 psig, outlet range 0-225 psig; three outlets
	50-036	Brass; 1/4" NPT; max inlet 5500 psig, max outlet 550 psig; two outlets; T-handle
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
Filter	30-090	Fuel gas filter assembly; max inlet 150 psig; clear acrylic bowl
	30-091	Fuel gas filter assembly; max inlet 500 psig; aluminum bowl

## Starting Cables

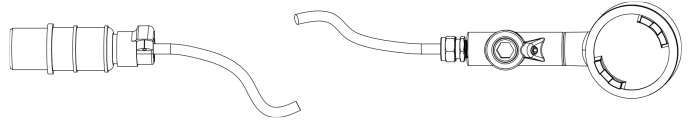
### Standard

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.

Catco Part Number	Description
20-020	Starting cable for 12V heaters, 16' length, 12 ga wire, connection for plain junction box, battery clips on opposite end
20-021	Starting cable for 12V heaters, 16' length, 12 ga wire, pull proof connection for 1/2" conduit hub, battery clips on opposite end
20-023	Starting cable for 120V heaters, 16' length, 12 ga wire, connection for plain junction box, 3-prong male plug on opposite end
20-030	Starting cable for 12V heaters, 30' length, 12 ga wire, connection for plain junction box, battery clips on opposite end
20-031	Starting cable for 12V heaters, 30' length, 12 ga wire, pull proof connection for 1/2" conduit hub, battery clips on opposite end

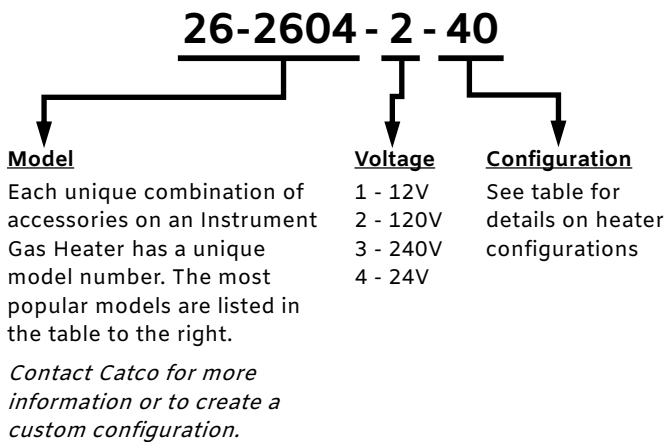
### Explosion-Proof Sealed Connections

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 at the factory.



Catco Part Number	Description
20-026	Starting cable for 12V heaters, 2' length, 12 ga wire, installed to explosion-proof junction box with sealed explosion-proof fitting, explosion-proof male connector
20-032	Starting cable for 120V heaters, 2' length, 12 ga wire, installed to explosion-proof junction box with sealed explosion-proof fitting, explosion-proof male connector

## Part Number Key



### Accessories on most popular models

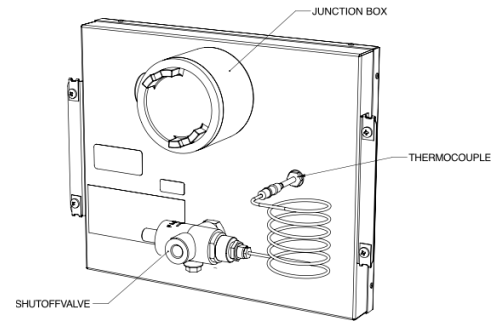
Model	Heat Exchange Coil		High Pressure Regulator w/ Relief Valve		Temperature Control	
	Single	Dual	Brass	SS	SHC <sup>1</sup>	T'stat
26-2617		•	•		•	
26-2703		•				•
26-2615	•		•		•	
26-2603		•	•			•
26-2601	•		•			•
26-5003		•	•			•

1 - Catco Steady Heat Controller

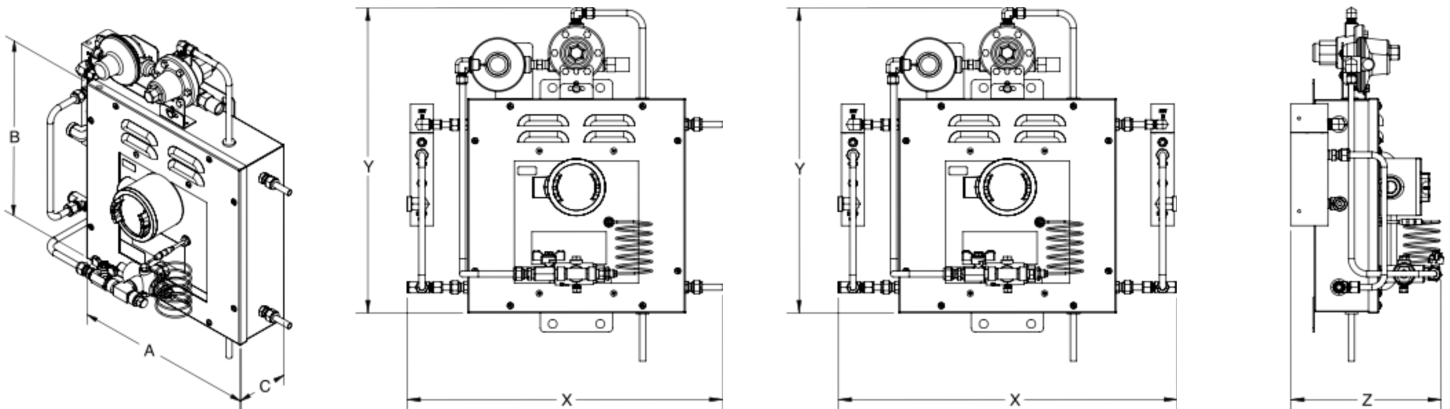
### Heater Configurations

Instrument Gas Heaters are available with heaters of the following configurations:

Configuration	Hazardous Location Listing	Junction Box		Shutoff Valve and Thermocouple
		Plain	EP	
-10		•		
-20			•	
-30	FM, Class I Division 2 Group D T2A	•		•
-40	FM, Class I Division 1 Group D T2A		•	•
-50	CSA, Class I Division 1 Group D T2C		•	•



### Dimensions & Operating Specs



Series	Rating, BTU/hr (kW)	Fuel Consumption, SCFH (m3/hr)	Starting Amps, A				Dimensions, Inches (mm)					
			12 V	24 V	120 V	240 V	A	B	C	X	Y	Z
2600	2667 (0.782)	2.7 (0.08)	6.7	4.2	0.6	0.4	13.14 (334)	13.14 (334)	3.97 (101)	Single - 19.05 (484)	18.74 (476)	9.10 (231)
										Dual - 20.48 (520)		
5000	5000 (1.465)	5.0 (0.14)	8.3	4.2	0.8	0.4	15.64 (397)	15.64 (397)	3.97 (101)	Single - 21.95 (558)	21.32 (542)	11.60 (295)
										Dual - 23.30 (592)		