CATALYTIC HEATERS

OVERVIEW
Catalytic heaters have been used in industrial applications since they were first introduced several decades ago. Using natural gas or propane, they produce flameless heat with most of the heat generated as radiant, infrared energy. Since the maximum operating temperature is relatively low (always below 900° F), catalytic heaters are ideally suited for use in many hazardous environments. Since 1982, Catalytic Heater Company has produced CATCO catalytic heaters for wide variety of industrial applications. Some of these applications include:

**Space Heating:**
Catalytic heaters produce very efficient infrared heat for such locations as personnel work areas, hazardous classified areas and equipment storage areas.

**Oven and Process Operations:**
Catalytic heaters provide an excellent source of radiant heat for paint curing, powder coating, drying, and other process applications.

**Natural Gas Regulation and Measurement:**
Catalytic heaters are used to prevent freezing and hydrate formation, problems common in regulation and measurement equipment when gas pressures fluctuate. In these applications catalytic heaters are usually mounted to direct radiant heat directly at the problem area. There are CATCO enclosures available to mount heaters onto any valve or regulator.

**Gas Pre-heating:**
Heat exchanger units incorporating catalytic heaters may be used to pre-heat a gas stream, preventing freezing and hydrate formation downstream.

**ADVANTAGES OF CATALYTIC HEAT**
Catalytic heaters have many advantages over other types of heating. The heat produced is in the form of radiant energy and may be directed to the object requiring heat. Only the object is heated and not the surrounding air.

**Simplicity and Durability**
Catalytic heaters have no moving parts to wear out. The catalyst is not consumed during the heating process. Heaters will continue to operate indefinitely, with no maintenance, as long as clean fuel is supplied.

**Safety**
The surface temperature of the catalytic heater is approximately 700° F, much lower than an open flame (approximately 1300° F, the ignition temperature of natural gas). CATCO Catalytic heaters are approved by Factory Mutual and the Canadian Gas Association for operation in hazardous environments. They are a proven, safe substitute for indirect heating applications such as steam tracing and convection heating.
Ease of Installation
Installation is limited to connecting to a suitable gas supply. Heaters may be started using either DC or AC power, making them ideal heating sources for remote locations where electrical power is limited or not available. For natural gas fired heaters, fuel gas is usually readily available on site.

PRINCIPLES OF OPERATION
Best protection in hazardous areas where heat is required without flame
Simply stated, catalytic heating is brought about by using a catalyst to promote the reaction of combustible gasses with oxygen or air, at a much slower rate, to produce heat without flame. When the temperature of the catalyst pad is elevated to 250 F° the combustible gas will burn at a temperature in the range of 600 - 800 F° (Table 1). This is far below the 1200 - 1300 F° ignition point of natural gas. The result is a flameless heat that can be safely put to use in areas where hazards due to explosive vapors may exist. A catalytic heater can operate efficiently on low cost natural gas, propane or butane.

Catalytic heaters produce radiant heat which can be focused on a particular area or object. Radiant heat, like light, is electromagnetic wave energy and travels in straight lines at 186,000 miles per second. Like light energy it can cast shadows, be transmitted, absorbed or reflected by matter, and be focused or dispersed by lenses or prisms of the proper material.

The intensity of heat energy varies with the square of the distance as does light. It will travel any distance without loss as long as it does not contact matter which absorbs it.

The absorption of radiant energy by various materials is a specific property of each material. Thus, each molecular substance has an infrared absorption spectrum that is a fingerprint of that substance. Since the absorption of radiant heat is highly selective, there are opportunities for a wide variety of applications in industry.

In addition, the infrared energy emitted by catalytic heaters is in the lower end of the spectrum which means that nearly all of the energy produced is in the form of usable heat (Table 2). Because of these characteristics, catalytic heaters are highly effective when heating specific objects such as valves and regulators.

While other forms of heat often waste energy by heating the surrounding air and other objects in the vicinity, catalytic heaters heat only the objects they are directed at. Obviously, this provides greater efficiency, allowing smaller heaters to be used, lowering initial cost and fuel consumption.
Available Models

Model 8 RD & 12 RD heaters

Model 1224 heater

Typical Catalytic Heater

<table>
<thead>
<tr>
<th>Model</th>
<th>8RD</th>
<th>12RD</th>
<th>66</th>
<th>88</th>
<th>612</th>
<th>1012</th>
<th>624</th>
<th>1212</th>
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<td>8X8</td>
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<tr>
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<td>12000</td>
<td>18000</td>
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<td>30000</td>
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<td>Gas Consumption Cu Ft/hr</td>
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<td>N/A</td>
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<td></td>
<td>C</td>
<td>3\SI{1/2}</td>
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<td>3\SI{1/2}</td>
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<td>3\SI{1/2}</td>
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<tr>
<td></td>
<td>D</td>
<td>6\SI{1/2}</td>
<td>10</td>
<td>4\SI{1/2}</td>
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<td>N/A</td>
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**CATCO PARTS AND ACCESSORIES FOR CATALYTIC HEATERS**

- Temperature Controls
- Regulators
- Manifolds for Dual Heater Enclosures
- Filter Drips
- Reflectors
- Face Grilles
- Mounting Brackets
- Explosion Proof Junction Boxes
- Electrical Power Cables (Pigtails)

**CATCO REMANUFACTURING SERVICES FOR CATALYTIC HEATERS**

Catalytic heaters of any brand are remanufactured to like-new condition and tested to original performance standards.

**CATCO FLAMELESS GAS PRE-HEATERS**

Gas pre-heaters heat a stream of gas to desired temperature before it moves downstream to pressure regulation, fuel gas supply, pneumatic supply, or instrumentation equipment.

**CATCO ENCLOSURES FOR CATALYTIC HEATERS**

CATCO manufactures heavy duty enclosures for mounting catalytic heaters onto regulators, valves, pipes, etc. Enclosures are available from stock or can be custom made in a variety of metals to fit any application.

**CATCO PRECISION SHEET METAL MANUFACTURING**

Custom sheet metal manufacturing is available for short and medium runs. Materials up to 14 gauge stainless steel and 10 gauge steel and 1/4” aluminum can be used to manufacture in tolerances to .015”.

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### Catalytic Heater Company Model Identification

<table>
<thead>
<tr>
<th>STD</th>
<th>1212</th>
<th>S</th>
<th>1</th>
<th>G</th>
</tr>
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<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>G = Natural gas fuel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L = LPG fuel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 = 12V starting element</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 = 120V starting element</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 = 240V starting element</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S = Stainless steel case</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C = Cold rolled painted steel case</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dimension (width X length) or diameter in inches</td>
</tr>
</tbody>
</table>

STD = Standard heater
SFT = Same as Standard but includes thermocouple, and safety valve.
CGA = Same as Standard but includes thermocouple, safety valve, and low pressure regulator.
GENERAL DESCRIPTION

CATCO provides various parts and accessories for use with catalytic heaters. All parts and accessories are designed to enhance the effectiveness and, in some cases, the safe operation of catalytic heaters.

Definitions and Explanations

- **Wall Brackets** are used to mount a heater directly to a wall or bulkhead.
- **Pigtails** are used to make heater startups easier by having a “built in” power cable. 12 volt pigtails are equipped with battery clamp ends, while 120 volt pigtails are equipped with a standard 3 prong male wall plug.
- **Thermostats** automatically reduce heater output by 50% when the desired temperature is reached. Heater size must be specified.
- **Thermocouples** operate in conjunction with the safety valves. If the heater stops operating, the thermocouple allows the safety valve to close.
- **Turndown Valves** allow for manual reduction of heater output by 50%. Heater size must be specified.
- **Safety Valves** shut off the gas supply to the heater, should the heaters stop operating.
- **Dual Heater Manifolds** allow for enclosure packages with two heaters to be plumbed into one regulator.

Availability

Most parts and accessories are kept in stock and can usually be shipped same or next day.
## Accessories

### WALL BRACKETS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>10-005</td>
<td>For 66, 88, 1012 Heaters, Pair</td>
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<tr>
<td>10-010</td>
<td>For 1212, 624, 1224 Heaters, Pair</td>
</tr>
<tr>
<td>10-011</td>
<td>For 1230, 1246 Heaters, Pair</td>
</tr>
<tr>
<td>10-015</td>
<td>For 1836, 1848, 1560 Heaters, Pair</td>
</tr>
<tr>
<td>10-017</td>
<td>For 2448, 2460 Heaters, Pair</td>
</tr>
</tbody>
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### ELECTRICAL ACCESSORIES

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<tr>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>20-005</td>
<td>Explosion Proof Junction Box, Single 1/2” NPT Outlet</td>
</tr>
<tr>
<td>20-006</td>
<td>Explosion Proof Junction Box, Dual 1/2” NPT Outlet</td>
</tr>
<tr>
<td>20-010</td>
<td>Explosion Proof Junction Box, Single 3/4” NPT Outlet</td>
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<tr>
<td>20-020</td>
<td>16’ Pigtail, 14-2 Cord, for Standard Junction Box, 12V Heater</td>
</tr>
<tr>
<td>20-021</td>
<td>16’ Pigtail, 14-2 Cord, for Explosion Proof Junction Box, 12V Heater</td>
</tr>
<tr>
<td>20-022</td>
<td>16’ Pigtail, 14-2 Cord, for Standard Junction Box, 120V Heater</td>
</tr>
<tr>
<td>20-023</td>
<td>16’ Pigtail, 14-2 Cord, for Explosion Proof Junction Box, 120V Heater</td>
</tr>
<tr>
<td>20-027</td>
<td>16’ Pigtail, 8-3 Cord, for Explosion Proof Junction Box, 12/120V Heater</td>
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### REGULATORS AND MANIFOLDS

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<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-005</td>
<td>Fisher 912/194, 250 psi inlet, 4.5” WC out, 1/4” NPT Connection</td>
</tr>
<tr>
<td>50-010</td>
<td>Fisher 912/194, 250 psi inlet, 11” WC out, 1/4” NPT Connection</td>
</tr>
<tr>
<td>50-015</td>
<td>Fisher 532, 250 psi inlet, 4.5” WC out, 1/2” NPT Connection</td>
</tr>
<tr>
<td>50-016</td>
<td>Fisher 532, 250 psi inlet, 11” WC out, 1/2” NPT Connection</td>
</tr>
<tr>
<td>50-025</td>
<td>Fisher 67, 250 psi inlet, 1/4” NPT Connection</td>
</tr>
<tr>
<td>50-030</td>
<td>Fisher 67 AFR, 250 psi inlet, 1/4” NPT Connection</td>
</tr>
<tr>
<td>50-035</td>
<td>MECO Type P, 6000 psi inlet, 1/4” NPT Connection</td>
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<tr>
<td>50-040</td>
<td>Fisher 1301F, 6000 psi inlet, 1/4” NPT Connection</td>
</tr>
<tr>
<td>55-010ST</td>
<td>Dual Heater Manifold, Steel Fittings, With Fisher 912/194 Regulator</td>
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<tr>
<td>55-010SS</td>
<td>Dual Heater Manifold, SS Fittings, With Fisher 912/194 Regulator</td>
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### VALVES AND THERMOSTATS

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<tr>
<td>30-006</td>
<td>Safety Valve (Replacement Part)</td>
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<tr>
<td>30-010</td>
<td>Thermocouple (Replacement Part)</td>
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<tr>
<td>30-030</td>
<td>Turndown Valve, 1/4” NPT Connection (specify heater size)</td>
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<tr>
<td>30-035</td>
<td>Ball Valve, Bronze, 1/4” NPT Connection</td>
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<tr>
<td>30-035SS</td>
<td>Ball Valve, Stainless Steel, 1/4” NPT Connection</td>
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<tr>
<td>30-050</td>
<td>Check Valve, Brass, 50 psi (relief valve)</td>
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<tr>
<td>30-050SS</td>
<td>Relief Valve, SS, NUPRO, 50 psi</td>
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<td>40-005</td>
<td>Thermostat, Honeywell, 1/4” NPT, 60-100 F° (specify heater size)</td>
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<tr>
<td>40-010</td>
<td>Thermostat, Honeywell, 1/2” NPT, 60-100 F° (specify heater size)</td>
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<tr>
<td>40-020</td>
<td>Thermostat, Honeywell, 1” NPT, 60-100 F° (specify heater size)</td>
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<tr>
<td>40-030</td>
<td>Thermostat, Robertshaw, 1/4” NPT, 60-250 F° (specify heater size)</td>
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### FACE GRILLES AND REFLECTORS

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<td>60-001</td>
<td>Face Grille, 624 Heater</td>
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<td>60-004</td>
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<td>60-005</td>
<td>Face Grille, 1248 Heater</td>
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<td>60-006</td>
<td>Face Grille, 2448 Heater</td>
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<td>60-007</td>
<td>Face Grille, 1836 Heater</td>
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<td>60-008</td>
<td>60-009 Face Grille, 612 Heater</td>
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<td>Reflector, 2460 Heater</td>
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SLANT SIDE ENCLOSURES For Fisher 620/630 Series Regulators

ENCLOSURES FOR FISHER 620/630 SERIES REGULATORS

Fisher 620 and 630 series regulators are common to many field applications. Often used in sensitive or critical applications, freeze protection is usually a high priority. Catco manufactures a number of slant side enclosures specifically designed for Fisher 620 and 630 series regulators.

Safety

Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800 °F (degrees Fahrenheit), much lower than an open flame (approximately 1300 °F). They are a safe source of heat in areas where there are potential fire hazards from combustible gases or liquids. They require no electrical connections, except at startup, eliminating frayed wires and short circuits.

Simplicity

Catalytic heaters contain no moving parts and, once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

ADVANTAGES OF CATALYTIC HEAT

Efficiency

Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

• The spring case or diaphragm area can be damaged by high temperatures and should be located outside the area where heat is being concentrated. Location outside the enclosure area also makes it readily accessible for servicing and adjustment.

• The body length is short and must be located high in the enclosure area. CATCO SLANT SIDE enclosure packages place the heaters underneath and close to the regulator body for maximum heat transfer.

DESIGN CONSIDERATIONS

Design of the Fisher 620/630 series regulators requires special consideration when applying catalytic heat:
Available Models

FEATURES
- Hinge and drawlatch design makes installation simple
- Sturdy (18 gauge) construction in stainless or painted steel
- Slant side construction focuses heaters on regulator body where heat is needed

<table>
<thead>
<tr>
<th>Enclosure No.</th>
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<th>Dimensions (inches)</th>
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<td>624</td>
<td>6000</td>
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INSTRUMENT GAS HEATER, Model 2600

INSTRUMENT GAS HEATER

The CATCO Model 2600 instrument gas heater is an ideal solution for problems arising from freezing in pilot actuated regulators, instrument supply gas and related applications.

ADVANTAGES OF INSTRUMENT GAS HEATERS

• Instrument gas heaters contain no moving parts due to their compact design.

• Simple installation even in existing facilities – connections consist of two 1/4” NPT couplings. The model 2600 comes with brackets and pipe clamps for mounting on a 2 inch pipe riser.

• The Model 2600 incorporates a CATCO 88 Catalytic Heater. Units can be ordered with FM or CGA approved heaters for hazardous locations.

ADVANTAGES OF CATALYTIC HEAT

Efficiency

Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

Safety

Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800 F° (degrees Fahrenheit), much lower than an open flame (approximately 1300 F°). They are a safe source of heat in areas where there is the potential of fire from combustible gasses or liquids. They require no electrical connections, except at startup, eliminating frayed wires and short circuits.

Simplicity

Catalytic heaters contain no moving parts and, once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.
Instrument Gas Heater Model 2600

STANDARD EQUIPMENT
- Stainless steel case (insulated)
- 2667 BTU Catalytic Heater
- Heat exchange tube with 1/4” NPT bulkhead fittings (tubing rated to 3000 psi)
- Low pressure regulator prepiped to heater
- Available with plated steel or stainless steel fittings

OPTIONAL EQUIPMENT
- High pressure regulator (6000 psi)
- Dual heat exchange tubes
- Preheat tube for fuel gas
- Thermostatic controls

Supply to the preheat tube in/out connection is facilitated with rigid hex head 1/4” NPT female, bulkhead outlets located on the side of the heater. A dual preheat tube is optional.

The low pressure regulator for the catalytic heater fuel gas and pre-piping is standard.

Brackets are provided for an optional high pressure, 6000 psi regulator, if required.

The catalytic heater utilizes either natural gas or LPG fuel and may be started with either a 12 volt or 120 volt electrical source. Pressure rating of the preheat tube is 3000 psi.

<table>
<thead>
<tr>
<th>Dimensions in inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>2600</td>
</tr>
</tbody>
</table>
GENERAL DESCRIPTION
The model 70-040 provides preheated instrument gas for applications such as motor valves and pilot operated regulators, where freezing can develop. In the 70-040, high pressure gas is heated as it passes sequentially through a Kimray 2000 psi drip pot, a Meco high pressure regulator and a Fisher 67 supply gas regulator.

ADVANTAGES OF CATALYTIC HEAT

Efficiency
Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

Safety
Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800 °F, much lower than an open flame (approximately 1300 °F). They are a safe source of heat in areas where there are potential fire hazards from combustible gasses or liquids. They require no electrical connections except at startups, eliminating frayed wires and short circuits.

Simplicity
Catalytic heaters contain no moving parts and, once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

and a Fisher 67 supply gas regulator. The drip pot and the high pressure Meco regulator are enclosed in a stainless steel case and are heated by a 1500 btu catalytic heater. The package includes a Fisher 912 regulator to provide fuel gas for the catalytic heater.

Typical configuration in use of the 70-040 Heater Regulator Drip Package
Available Models

70-040 Heater Regulator Drip Package

In a Hurry?

Normaually, CATCO ships stock enclosure packages next day, and custom designs within a week.

CATCO enclosure packages are designed for easy installation with a minimum of tools required. In most cases installation is simply a matter of snapping the enclosure package around the appliance or pipe and supplying gas to the heater; screws and loose parts are kept to a minimum. Unless otherwise requested by the user, all parts are shipped with the enclosure package so that the unit is complete and ready to install when received in the field.

The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LPG.

FEATURES

- Unit is shipped fully assembled and ready to install
- Built ready to clamp to any 2” or smaller pipe
- Drip pot drain extends through the bottom for easy service

OPTIONS

- Fisher 1310 Regulator (instead of Meco Regulator)
- Explosion proof junction box
- Manual turndown valve to regulate heater output
- Thermostatic control to regulate heater output
- FM approved heater for Class I, Div. II areas
- CGA approved heater for Class I, Div. I & II areas
- Stainless steel fittings

<table>
<thead>
<tr>
<th>Dimensions (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
</tr>
<tr>
<td>70-040</td>
</tr>
</tbody>
</table>
Heater Enclosure Packages For Motor Valves

General Description
A freeze-up in a motor valve can cause the shutdown of an entire facility, and downtime costs can be prohibitive. A catalytic heater package is often a reliable, economical solution to motor valve freezing.

Safety
Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800°F, much lower than an open flame (approximately 1300°F). They are a safe source of heat in areas where there are potential fire hazards from combustible gasses or liquids. Catalytic heaters require no electrical connections except at startups, eliminating frayed wires and short circuits.

Advantages of Catalytic Heat

Efficiency
Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

Simplicity
Catalytic heaters contain no moving parts. Once energized, they will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

Design Considerations
Motor valves require special considerations when applying catalytic heat:
- Heat sensitive components of the motor valve are located outside of the enclosure.
- Upper components of the motor valve are easily accessible for service.
Available Models

Custom made enclosures are available for many motor valve applications not depicted below.

Model 70-010

In a Hurry?

Normally, CATCO ships stock enclosure packages next day, and custom designs within a week.

CATCO enclosure packages are designed for easy installation with a minimum of tools required. In most cases installation is simply a matter of snapping the enclosure package around the appliance or pipe and supplying gas to the heater; screws and loose parts are kept to a minimum. Unless otherwise requested by the user, all parts are shipped with the enclosure package so that the unit is complete and ready to install when received in the field.

The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LPG.

FEATURES

- Available in painted carbon steel or stainless steel
- Enclosures accept one or two heaters
- 70-010 comes in two halves and is adaptable to many applications
- 70-035 and 70-050 are equipped with piano hinges and suitcase style latches. Install in seconds without tools.

Model 70-035

Model 70-050

Model No. | Application | Heater Size | BTU | No. Used | Dimensions (inches) |
---|---|---|---|---|---|
70-010 | 2” Motor Valve Generic | 1212 | 6,000-12,000 | one or two | 13.00 17.00 13.00 12.50 |
70-035 | 2” Kimray motor/metering valve fits other makes | 1012 | 5,000-10,000 | one or two | 11.50 13.50 12.00 13.50 |
70-050 | 1” Motor Valve | 88 | 2,700-5,400 | one or two | 8.00 12.00 10.50 8.60 |
**GENERAL DESCRIPTION**

The formation of ice in orifice plates may result in erratic and false gas measurements. CATCO heater enclosure packages for orifice fittings are designed to heat the orifice fitting and the plate sufficiently to prevent icing and the dropout of liquids.

**Safety**

Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800 °F, much lower than an open flame (approximately 1300 °F). They are a safe source of heat in areas where there are potential fire hazards from combustible gasses or liquids. They require no electrical connections except at startup, eliminating frayed wires and short circuits.

**ADVANTAGES OF CATALYTIC HEAT**

**Efficiency**

Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

**Simplicity**

Catalytic heaters contain no moving parts, and once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

**DESIGN CONSIDERATIONS – ENCLOSURE DESIGNS FOR ORIFICE FITTINGS**

Design of orifice fitting and orifice plate require special consideration when applying catalytic heat:

- Service of the orifice fitting does not require removal of the enclosure.
- When practical, the enclosure is made to accommodate one or two heaters as conditions require.
Available Models

Custom made enclosures are available for many other orifice fitting applications not depicted below.

<table>
<thead>
<tr>
<th>Model 70-030 (for 2”) Model 70-038 (for 4”)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="End View" /> <img src="image2" alt="Side View" /></td>
</tr>
</tbody>
</table>

**In a Hurry?**

Normally, CATCO ships stock enclosure packages next day, and custom designs within a week.

CATCO enclosure packages are designed for easy installation with a minimum of tools required. In most cases installation is simply a matter of snapping the enclosure package around the appliance or pipe and supplying gas to the heater; screws and loose parts are kept to a minimum. Unless otherwise requested by the user, all parts are shipped with the enclosure package so that the unit is complete and ready to install when received in the field.

The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LPG.

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**FEATURES**

- Sturdy (18 gauge) construction in stainless or painted steel
- Designed for quick and simple installation
- Some models accommodate the option of a second heater

**OPTIONS**

- Pre-wired pigtails for convenient startups
- Explosion proof junction box
- Regulator manifold for dual heater packages
- Thermostatic controls for regulating heater output
- FM approved heaters for Class I, Div. II areas
- CGA approved heaters for Class I, Div. I & II areas

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### Heaters

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Application</th>
<th>Heater Size</th>
<th>BTU</th>
<th>No. Used</th>
<th>Dimensions (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-030</td>
<td>2” Orifice Flange</td>
<td>1012</td>
<td>5,000</td>
<td>one</td>
<td>14.75 16.75 13.75 13.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-or- 10,000</td>
<td>-or- two</td>
<td></td>
</tr>
<tr>
<td>70-038</td>
<td>4” Orifice Flange</td>
<td>1012</td>
<td>5,000</td>
<td>one</td>
<td>14.75 16.75 13.75 13.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-or- 10,000</td>
<td>-or- two</td>
<td></td>
</tr>
<tr>
<td>70-060</td>
<td>2” Orifice Flange</td>
<td>1012</td>
<td>5,000</td>
<td>one</td>
<td>14.50 16.50 11.00 12.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Heater Enclosure Packages for Pipelines

## General Description

Pipeline Heater Enclosure Packages are used for applying heat to a gas pipeline, generally to control freezing on a regulator, valve or other device from the heater package, located downstream.

### Advantages of Catalytic Heat

#### Efficiency

Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

#### Safety

Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800°F, much lower than an open flame (approximately 1300°F). They are a safe source of heat in areas where there are potential fire hazards from combustible gasses or liquids. They require no electrical connections except at startups, eliminating frayed wires and short circuits.

#### Simplicity

Catalytic heaters contain no moving parts and, once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

## Design Considerations

Although less efficient than enclosure packages that apply heat directly, pipeline packs are often used to heat gas upstream of valve or regulator. Common applications include situations where the appliance is obstructed in some way, or where the unit must be frequently adjusted or serviced.

- Design of pipeline heater package accommodates all standard pipe sizes through 6".

- Adapter end plates permit the same enclosure package to be used on different sizes of pipelines, thereby reducing inventory requirements for heater enclosure packages.

![Typical pipeline heater enclosure package.](image-url)
Available Models

**Features**

- Designed to clamp directly around a pipeline
- Incorporates either one or two Model 624, 6000Btu/hr catalytic heaters
- Field installation quick and easy: Suitcase style latches attach or detach the package in seconds
- The long, narrow configuration of the heaters used permits the radiant heat to be focused directly on the pipeline, rather than upon the surrounding area
- Available in all standard pipe sizes through 6”

**Options**

- Explosion proof junction box
- Regulator manifold for dual heater packages
- Thermostatic controls for regulating heater output
- FM approved heaters for Class I, Div. II areas
- CGA approved heaters for Class I, Div. I & II areas

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**In a Hurry?**

Normally, CATCO ships stock enclosure packages next day, and custom designs within a week.

CATCO enclosure packages are designed for easy installation with a minimum of tools required. In most cases installation is simply a matter of snapping the enclosure package around the appliance or pipe and supplying gas to the heater; screws and loose parts are kept to a minimum. Unless otherwise requested by the user, all parts are shipped with the enclosure package so that the unit is complete and ready to install when received in the field.

The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LFG.

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**Model 70-045**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Heater Size</th>
<th>BTU</th>
<th>No. Used</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-045 (1”-3”)</td>
<td>624</td>
<td>6,000 -or- 12,000</td>
<td>one -or- two</td>
<td>24.50</td>
<td>6.75</td>
<td>11</td>
<td>15.00</td>
</tr>
<tr>
<td>70-045 (4”-6”)</td>
<td>624</td>
<td>6,000 -or- 12,000</td>
<td>one -or- two</td>
<td>24.50</td>
<td>8.75</td>
<td>13.00</td>
<td>17.00</td>
</tr>
</tbody>
</table>
GENERAL DESCRIPTION

When subjected to less than ideal conditions (freezing temperatures, wet gas, hydrate formation), rotary meters can fail to operate properly. Application of heat can prevent such factors from interfering with accurate and reliable rotary meter function.

ADVANTAGES OF CATALYTIC HEAT

Efficiency
Catalytic heaters generate radiant (infrared) energy which can be directed on a particular object or target. Energy is not wasted on heating other objects or the air surrounding them.

Safety
Using the principle of catalytic combustion, catalytic heaters operate at a surface temperature of 600-800°F, much lower than an open flame (approximately 1300°F). They are a safe source of heat in areas where there are potential fire hazards from combustible gases or liquids. They require no electrical connections, except at startups, eliminating frayed wires and short circuits.

Simplicity
Catalytic heaters contain no moving parts and, once energized, will function indefinitely as long as adequate supplies of air and clean fuel are provided. These factors make catalytic heaters ideal for remote applications.

DESIGN CONSIDERATIONS

• Reading of the rotary meter does not require removal of the enclosure
• Installation is quick and easy, requiring a minimal amount of tools
• Easy access is provided for rotary meter service
Available Models

Custom made enclosures are available for many other rotary meter applications not depicted below.

Typical Rotary Heater Enclosure Package

\[\text{Side View} \quad \text{End View} \quad \text{Top View}\]

In a Hurry?

Normally, CATCO ships stock enclosure packages next day, and custom designs within a week.

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The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LPG.

FEATURES

- Hinge and latch construction
- Simple installation
- Versatile, fits numerous brands and sizes
- Packages are available in painted carbon steel or stainless steel

OPTIONS

- Explosion proof junction box
- Thermostatic controls for regulating heater output
- FM approved heaters for Class I, Div. II areas
- CGA approved heaters for Class I, Div. I & II areas

In a Hurry?

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The catalytic heaters used in enclosure packages may be supplied with either 12 or 120 volt preheat systems and can be fueled with either natural gas or LPG.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Typical Application</th>
<th>Heater Size</th>
<th>BTU</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-051</td>
<td>Roots 8C, 11C</td>
<td>66</td>
<td>1,500</td>
<td>10.00</td>
<td>13.00</td>
<td>9.00</td>
<td>10.00</td>
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<tr>
<td>70-053</td>
<td>Roots 1.5C, 2C, 3C</td>
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<td>1,500</td>
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<td>14.00</td>
<td>10.00</td>
<td>12.50</td>
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<tr>
<td>70-055</td>
<td>Roots 5M</td>
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<td>70-058</td>
<td>Roots 11M</td>
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<td>13.00</td>
<td>16.00</td>
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</table>

Dimensions (inches)