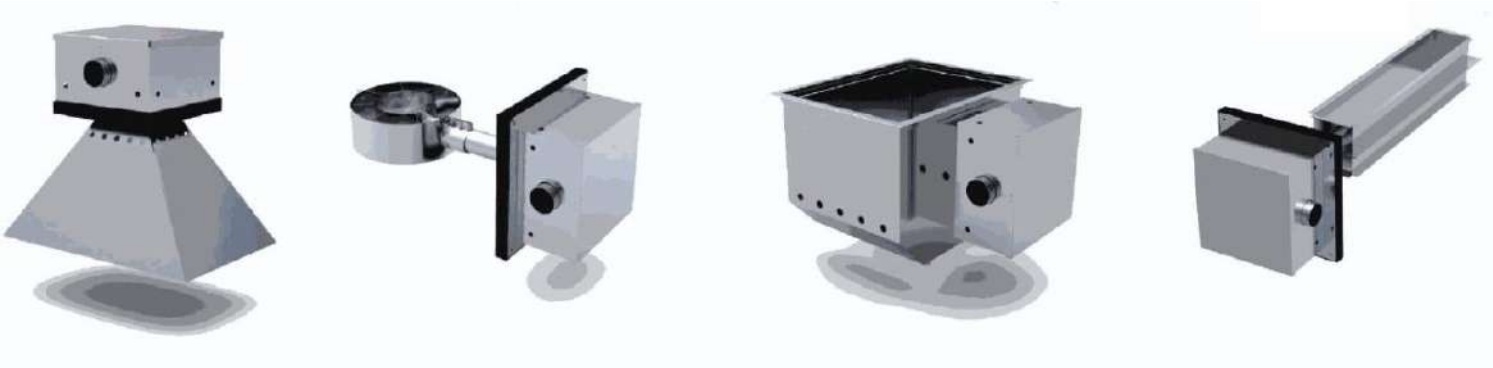
CANAM pipe & supply

Conveyor Belt Heaters



Guaranteed to be 100% effective in eliminating freezing problems associated with conveyor belts when specified, installed and operated per manufacturer's recommendations. This patented system is available for virtually any size belt running at any speed.

The Conveyor Belt Heater

In an effort to replace uncontrolled open flames, ineffective electric heaters while eliminating the environmental hazards, complications and the expense of antifreeze applications our Conveyor Belt Heater was developed. These automated systems for removing frost, ice and moisture from the conveyor belts have been operating consistently throughout mining, quarrying and power generation facilities.

Features

- Set it and forget it operation
- Large fuel capacities allow the heater to run for weeks or months without refueling (depending on tank size selected)
- The most economical method of eliminating frost and ice on conveyor belts GUARANTEED
- Adjustable heat output, applies the right amount of heat exactly where it is needed
- Not affected by dust, rain, snow or corrosive atmosphere
- Lifetime stainless steel construction
- MSHA No. o1o1o4 (enclosed)

Benefits

- Totally eliminate downtime due to frost and ice on conveyor belts, drive rolls, idler rolls, calm shell gates, belt scrapers and more. Stop damage to rip detection sensor loops.
- Eliminate labor costs associated with personnel monitoring belt operations during serve weather
- Significant cost savings and none of the environmental issues associated with using antifreeze
- Guaranteed to provide around the clock elimination of frost and ice build-up, unlike hit and miss antifreeze systems
- Eliminate the need to enclose conveyors, saving tens of even hundreds of thousands of dollars in construction costs

Principals of Frost and Ice On Conveyor Belts

Frost, ice and moisture accumulation on conveyor belts that inevitably gets transferred to rolls can occur for different reasons, even on the same conveyor belt on the same day. Naturally occurring frost tends to accumulate slowly and can be prevented by continuously applying a small amount of heat to the moving belt anytime this frost formation is likely to occur, usually after the sun sets and during nighttime hours. When snow, rain, freezing rain, sleet, moisture from the material being conveyed or a combination of any of these adheres to the belt surface, considerably more heat may be required to remove or prevent ice build-up. The process of melting the ice also evaporates all or most of the moisture and dries the belt in most cases, which prevents ice build-up on rolls. Determining the exact cause of the ice dictates how much heat will be required to do the job and when it is best or most economical to allow the conveyor belt to run continuously with the heater operating. It is possible to remove any amount of ice instantly if enough heat is applied over enough distance or length of belt surface regardless of belt size or speed. However, this instant melting of heavy ice accumulation may not be the most desirable or economical. A careful evaluation of your operating conditions by our experienced personnel can be used to determine the right system for your operation.

Standard and Custom Designs

We offer several standard models to choose from, these units will work for most situations. We also design custom heating systems for applications such as chute and screen freezing and mine ventilation air or other situations that are not suitable for conventional heating equipment.

Standard Models

Model A

Model B

Model C

Model D

Durable

The patented conveyor belt heaters are constructed from grade 304 and grade 309 stainless steel. They are sealed dust tight and not affected by the weather including rain, snow, ice or moisture. They are designed to operate in dusty, dirty conditions by utilizing a remote air filtering system that can be located 40 feet or more from the installed unit.

Safe

The safe operation of these heating systems is the most important concern. These units are designed to stop operating any time that the belt even begins to slow down. UL and CSA approved burners and controls used in commercial/ residential heating systems assures a safe operating system. The open design does not collect spillage from the underside of the belt and the heaters do not retain heat after they stop. MSHA has tested and endorsed the use of these systems. (Report enclosed)

Economical

Economical operation is the hallmark of Thermo-Tech'" conveyor belt heaters. They will totally eliminate downtime due to frost and ice build-up or accumulation when they are properly specified installed and operated. This claim is backed by our 100% Satisfaction Guarantee. A typical 56 inch belt running at 500 ft per minute that is experiencing material slide back can be treated with this system using approx. 2 1 /2 gallons of diesel fuel or 3 3/4 gallons of propane per hour. Larger belts require more, smaller belts require less.

Initial acquisition cost and minimal fuel consumption is typically a fraction of lost revenues due to down time or labor and consumable costs incurred using alternate methods of de-icing.

Dependable

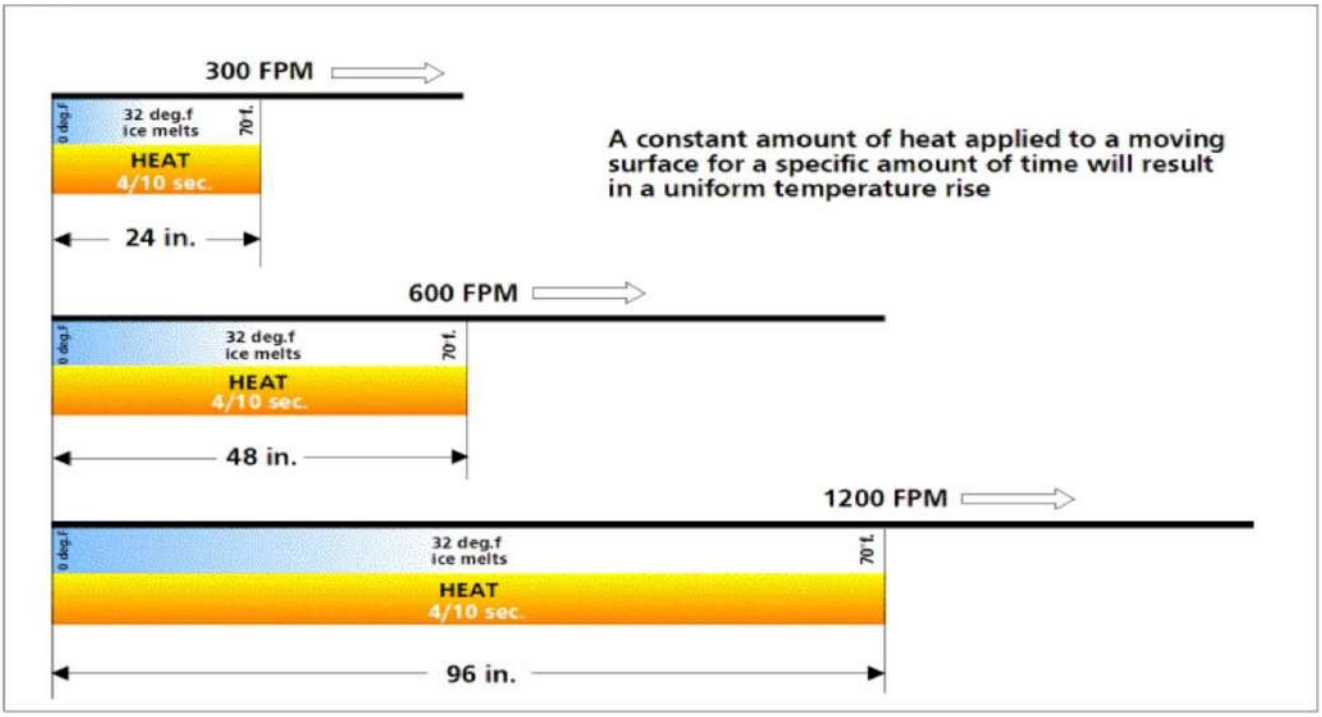
These systems typically will operate throughout the winter without any maintenance. The use of stainless steel in the construction and burners and controls used in time tested home / commercial furnaces, as well as components used in jet aircraft engines make for a lasting and dependable system.

Direct combustion conveyor belt de-icng

Ice and frost can be removed from conveyor belts very efficiently by applying a direct flame to the moving belt surface. This concept is comparable to passing your finger through a candle flame. You do not feel the heat of the flame because your finger moves quickly. This concept, on a larger scale, will deice and or dry a conveyor belt very safely as long as the equipment is of a fail-safe design, shutting down instantly when the belt movement ceases and located so that escaping heat does not come in contact with anything that may be damaged, and does not retain enough heat after shut down that would be damaging to the belt.

The use of a direct flame to remove frost and ice from conveyor belts has been around as long as conveyor belts have been used in mining in cold climates. Until the invention of our belt heater flame application was typically delivered by a salamander, propane weed burner or some type of o pen container for holding diesel fuel or kerosene placed under the belt that required constant monitoring by a person. These systems can be dangerous and numerous belt fires have occurred as a result of insufficient monitoring. The Thermo- Tech belt heater design utilizes a fail-safe shut down system and components that are UL/CSA certified. MSHA allows the use of these heaters on conveyor belts located above ground. The MSHA investigative report MRS No. 010104 Date May 2, 1994 details installation parameters that must be must be strictly adhered to.

The principle of applying a direct flame works on small, slow-moving belts as well as the largest belt moving at the fastest speed. This formula is applying the heat over a long enough distance on the moving belt surface to melt the ice or evaporate any moisture present. For example, a belt moving at 300 fee t per minute requires the heat be applied over a distance of about 24 inches to melt ice under typical conditions. A belt traveling at 1200 feet per minute requires the heat be applied over a distance of 96 inches to achieve the same result as shown in the illustrations below. The maximum flame temperature is around 1700 deg F/ 927deg.C, yet there are absolutely no adverse effects on the conveyor belt from this very brief application of heat.



The Conveyor Belt Heater Return on Investment

Downtime expenses due to freezing problems with conveyor belt systems can be significant. The Initial Investment cost for our de-icing system is not more than a few days of actual labor costs for some operations, let alone lost production costs. The operating costs per hour for the systems are minimal compared to the downtime that they eliminate, as shown in the chart below. Conveyor belt deicing systems that are properly sized and operated will completely eliminate downtime due to ice problems with conveyor belts. Some customers report that they these systems have paid for themselves many times over in one winter.

Operating Costs
Diesel Fuel vs. Propane

Fuel Oil = 140,000 BTU Per Gallon — Price $ 3.57 gallon
Propane = 93,000 BTU Per Gallon — Price $ 2.25 gallon

	BTU	Fuel Oil		Propane	
		GPH	$/hr.	GPH	$/hr.
Normal Range for heating drive rolls and snub rolls, clam shell and sliding gates Deicing belts up to 36” at 350 FPM	42,000	0.30	$ 1.07	0.45	$ 1.01
	56,000	0.40	$ 1.42	0.60	$ 1.35
	70,000	0.50	$ 1.78	0.75	$ 1.68
	84,000	0.60	$ 2.14	0.90	$ 2.02
	98,000	0.70	$ 2.49	1.05	$ 2.36
	112,000	0.80	$ 2.85	1.20	$ 2.70
	126,000	0.90	$ 3.21	1.35	$ 3.03
	140,000	1.00	$ 3.57	1.50	$ 3.37
Deicing belts up to 42” and up to 450 FPM	154,000	1.10	$ 3.92	1.66	$ 3.73
	175,000	1.25	$ 4.46	1.88	$ 4.23
	210,000	1.50	$ 5.35	2.26	$ 5.08
	245,000	1.75	$ 6.24	2.63	$ 5.91
	280,000	2.00	$ 7.14	3.01	$ 6.77
Deicing belts from 42” to 56” up to 500 FPM	315,000	2.25	$ 8.03	3.39	$ 7.62
	350,000	2.50	$ 8.92	3.76	$ 8.46
	385,000	2.74	$ 9.81	4.14	$ 9.31
	420,000	3.00	$ 10.71	4.62	$ 10.17
Deicing belts from 60” to 84” up to 600 FPM	455,000	3.25	$ 11.60	4.89	$ 11.00
	490,000	3.50	$ 12.49	5.27	$ 11.85
	525,000	3.75	$ 13.38	5.65	$ 12.71
	560,000	4.00	$ 14.28	6.02	$ 13.54
Deicing belts from 60” to 84” up to 800 FPM	630,000	4.50	$ 16.06	6.77	$ 15.23
	700,000	5.00	$ 17.85	7.53	$ 16.94
	770,000	5.50	$ 19.63	8.28	$ 18.63
	840,000	6.00	$ 21.42	9.08	$ 20.43
Deicing belts from 60” to 84” up to 1100 FPM	910,000	6.50	$ 23.20	9.78	$ 22.00
	980,000	7.00	$ 24.99	10.53	$ 23.69
	1,050,000	7.50	$ 26.77	11.29	$ 25.40

Eliminating Ice on Rolls, Pulleys and Ilders

Frost, ice and material build up on drive rolls, bend pulleys and idlers is easily eliminated with the right amount of heat applied in the right place. The combustion chamber is placed as close to the drive roll or bend pulley as possible, which heats and dries the belt as well as the roll. Ice build-up on bottom idlers is often eliminated when a heater is installed to prevent material slide back or a unit can be installed underneath the belt immediately after the material is discharged which will dry the belt and prevent ice from accumulating on the idlers.

Heater Selection

Selecting the proper heater requires a very close look at the actual condition causing the freezing problem. An experienced Thermo-Tech applications specialist with in-depth knowledge of the heating system's capabilities can specify the proper size and model of heater to correct the problem.

Added Benefits

Often a heater that is installed to correct one specific problem will eliminate other problems. For instance, a heater placed adjacent to a bend pulley will almost always eliminate ice on the next pulley as well as the return idlers after that and in many cases, this application of heat will also dry the belt enough to prevent material slide back. Deicing a conveyor belt to prevent material slide back can greatly reduce or even eliminate problems with belt scrapers. Eliminating ice on a drive roll to prevent drive roll slippage can also eliminate the need for increased belt tension, meaning less belt wear and less horsepower requirements.

Model D

Preventing Material Slide Back

Frost and ice that accumulates on conveyor belts and can be eliminated with a sufficient amount of heat applied in the right place, no matter how severe the accumulation or how low the temperature drops. Small conveyors require a small amount of heat and large conveyors require much more heat.

Heater Location

The location for the heater depends on available space and size and speed of the belt. When installing a heater to prevent material slide back it is best to place the heater as close to the material pickup point as possible.

Model A

De-icing at Start-up

On start-up heavy accumulations of frost or ice can be removed using a moderate amount of heat by running the belt with the heater on through several revolutions before loading any material onto it. This is the most economical method of de-icing versus applying a large enough amount of heat to remove a heavy accumulation instantly.

Model C

Continuous Operation

Continuous operation of the heater will prevent ice build-up regardless of the length of the belt or time in operation. If the moisture that is freezing to the belt is coming from the material being conveyed, it may take considerably more heat than preventing natural frost or ice from accumulating. Heaters are sized accordingly and they feature wide range of adjustment on the heat output to compensate for unforeseen and varying conditions.

Model B

Complete System

There are several standard models of the belt heaters. The available space, belt width and speed and specific icing problem determine the size and style of the system. Basically, the heater consists of a sealed burner unit that is attached to a combustion chamber suspended above or below the belt. The necessary air for combustion is drawn through a flexible tube attached to a remote mounted air filter. The operation of the unit is controlled by a motion sensor and thermostatic control. The Model B unit shown below can be used to eliminate ice or dry virtually any size belt traveling at any speed. The Model A shown is for belts up to 48"@ 450 FPM

Point Heaters / Remote Applications

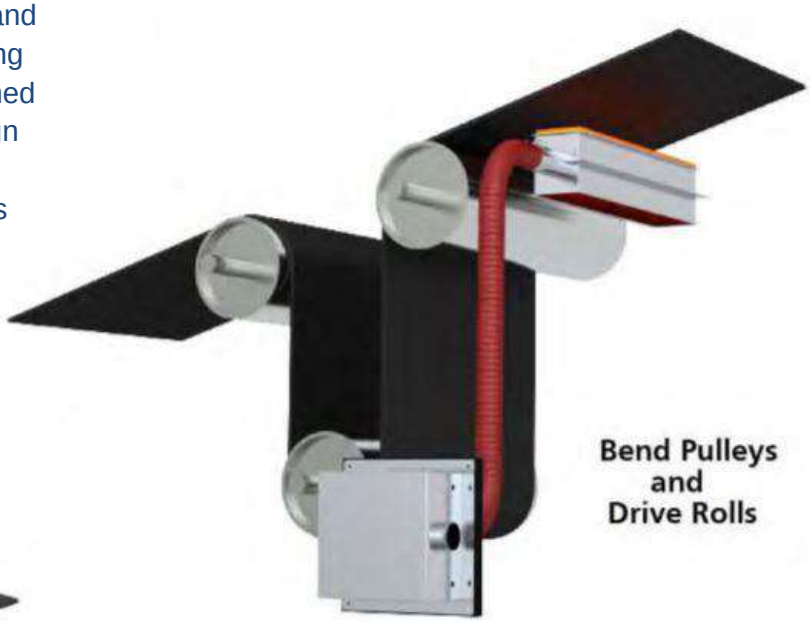
If inaccessibility or space restrictions are an issue, the remote option allows combustion chambers to be placed 40 ft. or more from the burner unit. These systems are adaptable to a wide range of applications beyond conveyor belts.

Heat Where You Need It

Scrapers and Inaccessible Areas

Clam Shell and Sliding Gates

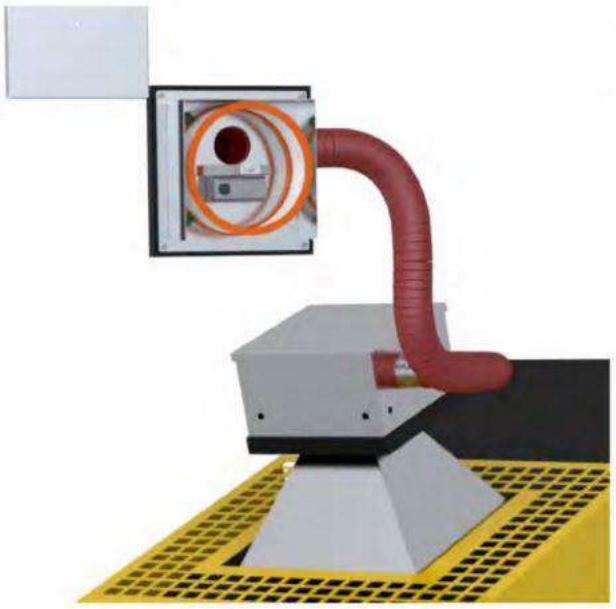
The flexible tube carries combustion air, fuel and necessary electrical wiring. This tube can swing freely when the combustion chamber is attached to a clam shell or sliding gate. The open design of the combustion chamber is not affected by water running through it like some installations on clam shells and slide gates.



Bend Pulleys and Drive Rolls

Conveyor Belts

Conveyor belt heaters have been perfected over a period of twenty-five years. These systems are designed to operate in dusty, dirty and wet locations. They are not affected by carry back falling from the belt or water running through them. (They must not be allowed to get buried in spillage, however).



Remote Air Filtering

All heaters are equipped with a remote air filtering system that will allow it to operate in extremely dusty conditions. The burner unit is sealed dust tight and the air filter is connected to the burner enclosure with a 4" diameter flexible hose. The system comes equipped with 11 ft. of hose. Additional hose can be connected to locate the air filter 40 ft. or more from the heater if necessary.

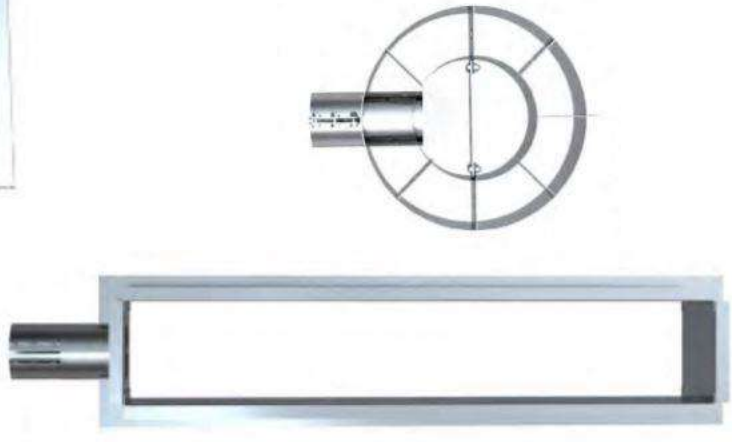
Time Tested Components

The UL and CSA approved gun burners used in the conveyor belt heaters have been around for over fifty years and have a life expectancy of at least twenty-years. The stainless steel used for the construction will last indefinitely. The special stainless used for the replaceable liners in the combustion chambers typically lasts five years.

Stainless Steel Construction

Open Design

Heaters that are installed under the belt feature an open design that prevents spillage from accumulating. The stainless steel that these units are constructed from will not retain enough heat after shut down to affect the belt.



Automatic Operation

Conveyor belt heaters are designed to operate totally automatically. A motion sensing device and thermostat control the operation of the heater. When the temperature falls below freezing and the belt is in operation the unit starts and runs. If the temperature raises above freezing or the belt stops the heater ceases operation. Refueling intervals depends on the tank size selected (typically several days or weeks supply). Routine air and fuel filter changes is the only maintenance that is typically required.

Instant Shutdown

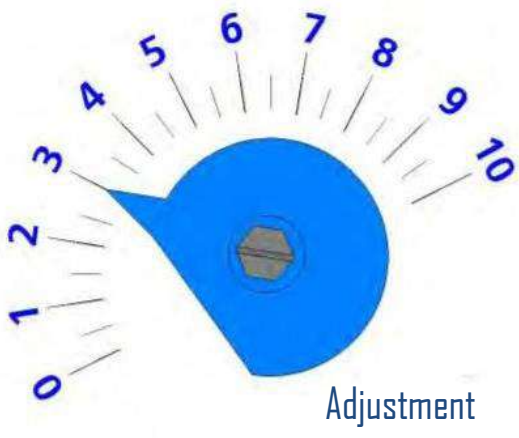
Heater operation is controlled by a motion sensing device that stops the heater even if the belt begins to slow down. A target is welded to the end of an idler or tail roll, a sensor then detects the rotation of the roll allowing the heater to operate. If there is no rotation the heater stops.

Thermostat Controlled

The thermostat is located inside of the air filter housing which protects it from the elements and prevents unauthorized operation. The thermostat is set to the desired operating temperature, then if the belt is running and the temperature drops to the setting the heater will come on. If the temperature rises above the setting the heater stops.

Adjustable Heat Output

Heat output is adjustable from 35,000 - 400,000 BTUs on small models and 100,000 - 800,000 BTUs on larger units. Custom designs feature 1,000,000 plus BTUs as required.

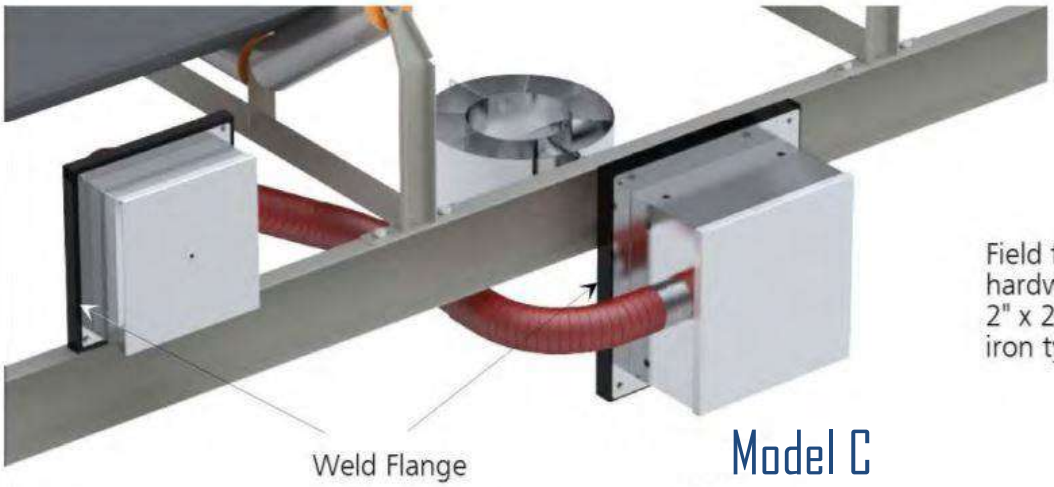


Unlimited Fuel Supply

The size of the fuel tank selected determines the time between refueling. Typically a tank is used that will supply the heater with fuel for several days or weeks. Existing tanks can be utilized in many instances.

Installation

Heaters and air filters have mounting flanges that can be welded or bolted to the existing structure or attached with field fabricated brackets. Specialized personnel are not required for most installations. Basic welding and electrical connections can be accomplished by most onsite maintenance personnel. We also offer turnkey installations.



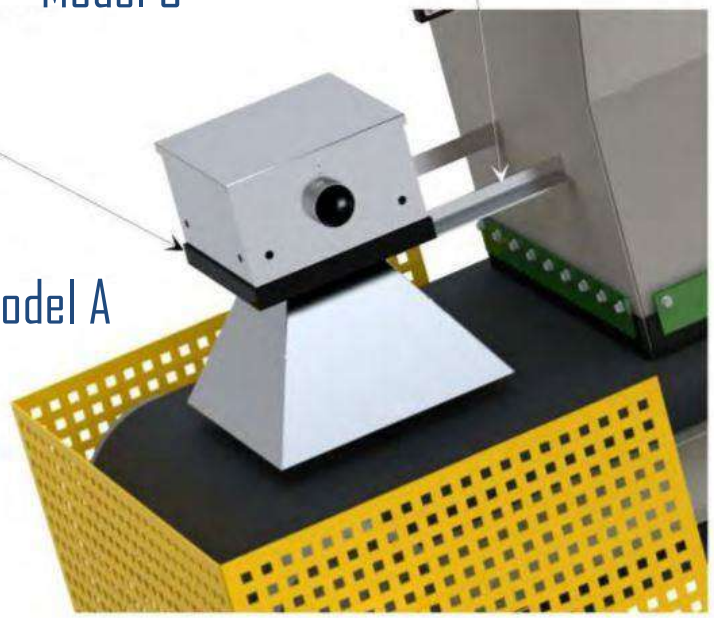
Field fabricated mounting hardware made from 2" x 2" x 1/4" angle iron typical

Weld Flange

Model C

Air filter and heater welded directly to the conveyor structure

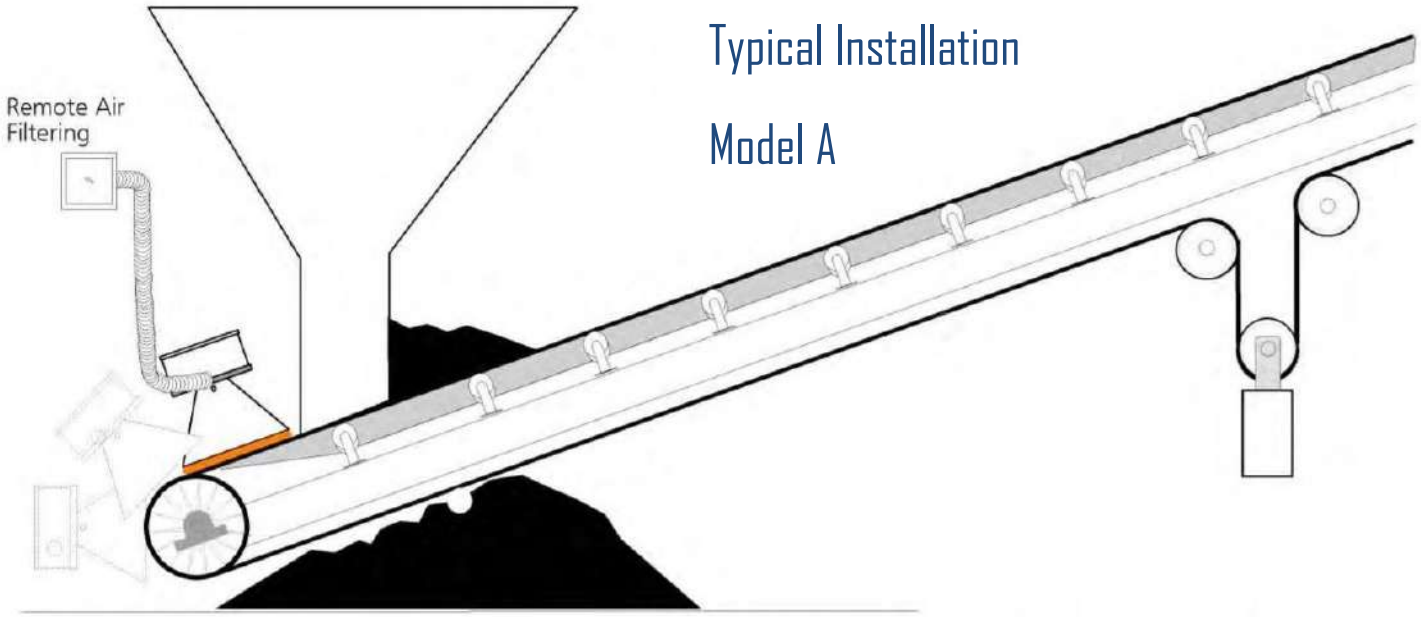
Model A



Model A suspended above tail section on conveyor belt

Model B suspended below belt using 2" x 2" x 1/4 "angle iron welded to 8" channel structure

Material Slide back Model A



Typical Installation

Model A

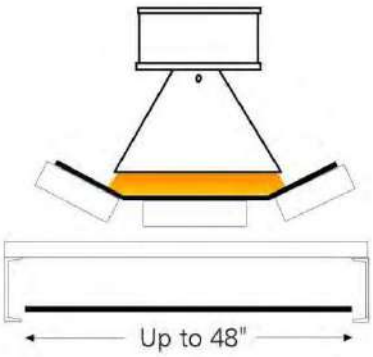
The Model A Heater to eliminate material slide back is for use on belts up to 48" wide and 450 fpm. It can be installed in various positions as illustrated. This model is preferred when space permits. The advantage of using the Model A heater is that it is not subject to spillage that accumulates under the belt. In addition, the material is dumped onto the belt immediately after being deiced, thus requiring less heat and fuel consumption. Available in standard (shown) or remote model.

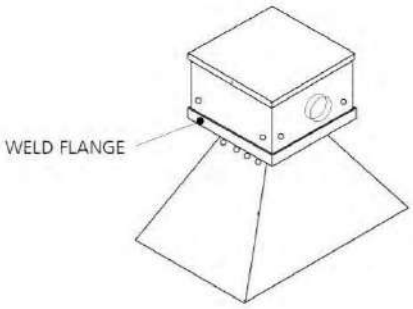
Specifications

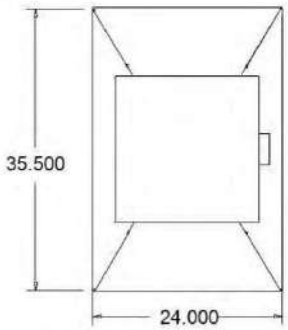
Stainless Steel Construction
Remote Air Filtering
Fuel Oil, Propane or Natural Gas

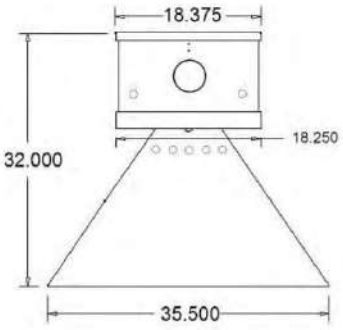
Model A Standard
For belts up to 42" @ 350FPM
50,000 - 125,000 BTU

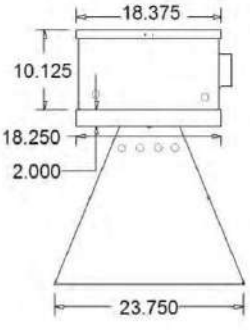
Model A High Output
For belts up to 48" @ 450 FPM
50,000 - 250,000 BTU







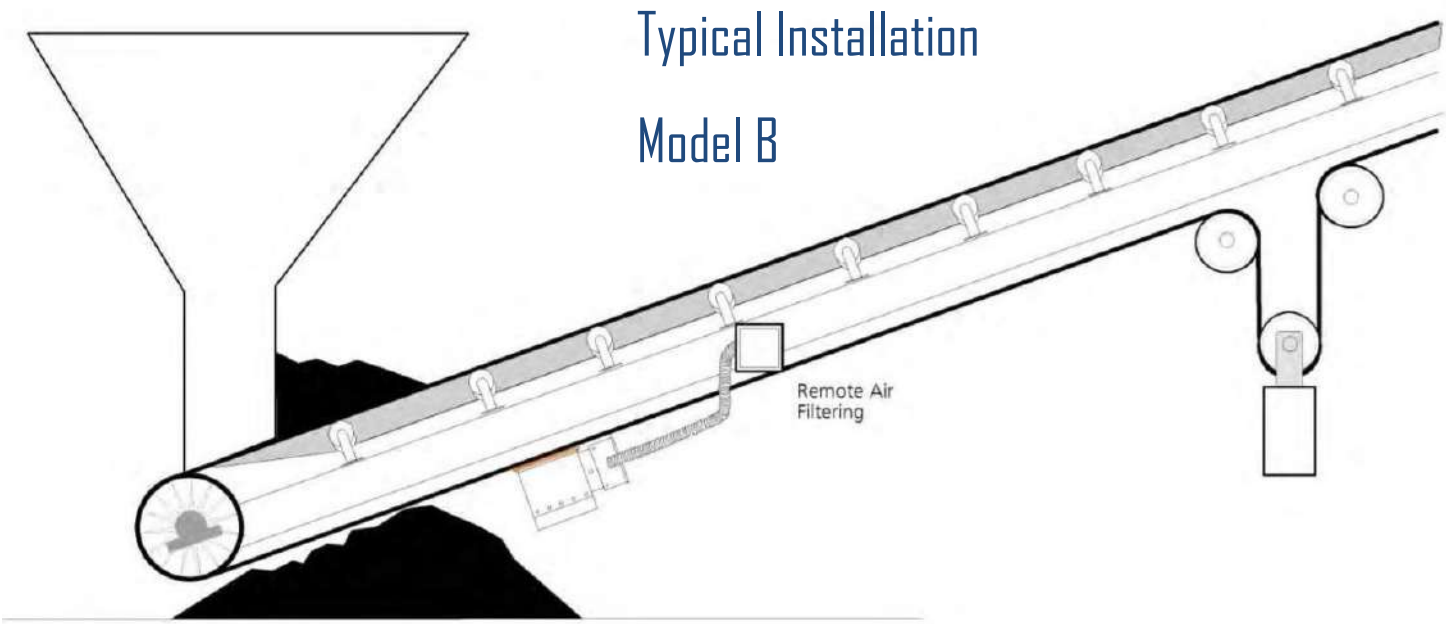




Material Slide Back Model B

Typical Installation

Model B



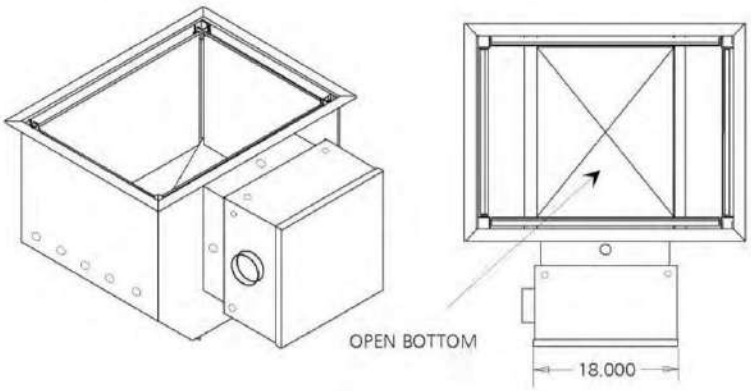
The Model B Heater to eliminate material slide back is available in different sizes for virtually any size belt running at any speed. This heater is installed under the belt as close to the material pickup point as possible. Considerations when selecting this model are: space available and spillage that may accumulate under the belt that may affect the operation of the heater and material being slung off of idler rolls. Available in standard (shown) or remote models.

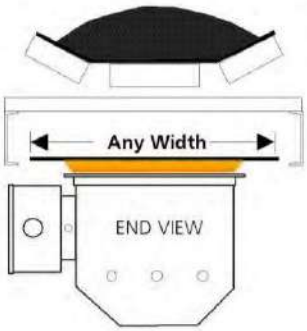
Specifications

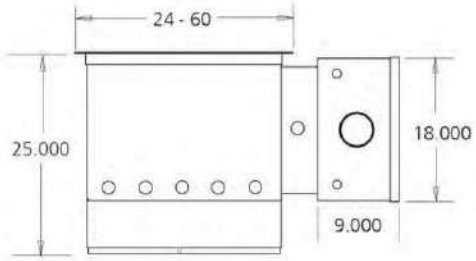
Stainless Steel Construction
Remote Air Filtering
Fuel Oil, Propane or Natural Gas

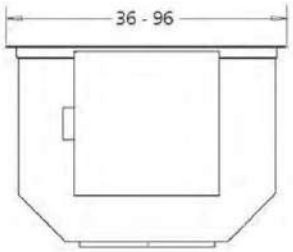
Model B Standard
Belts Up To 600 FPM
200,000 - 400,000 BTU

Model B High Output
Belts over 600 FPM
400,000 - 800,000 + BTU





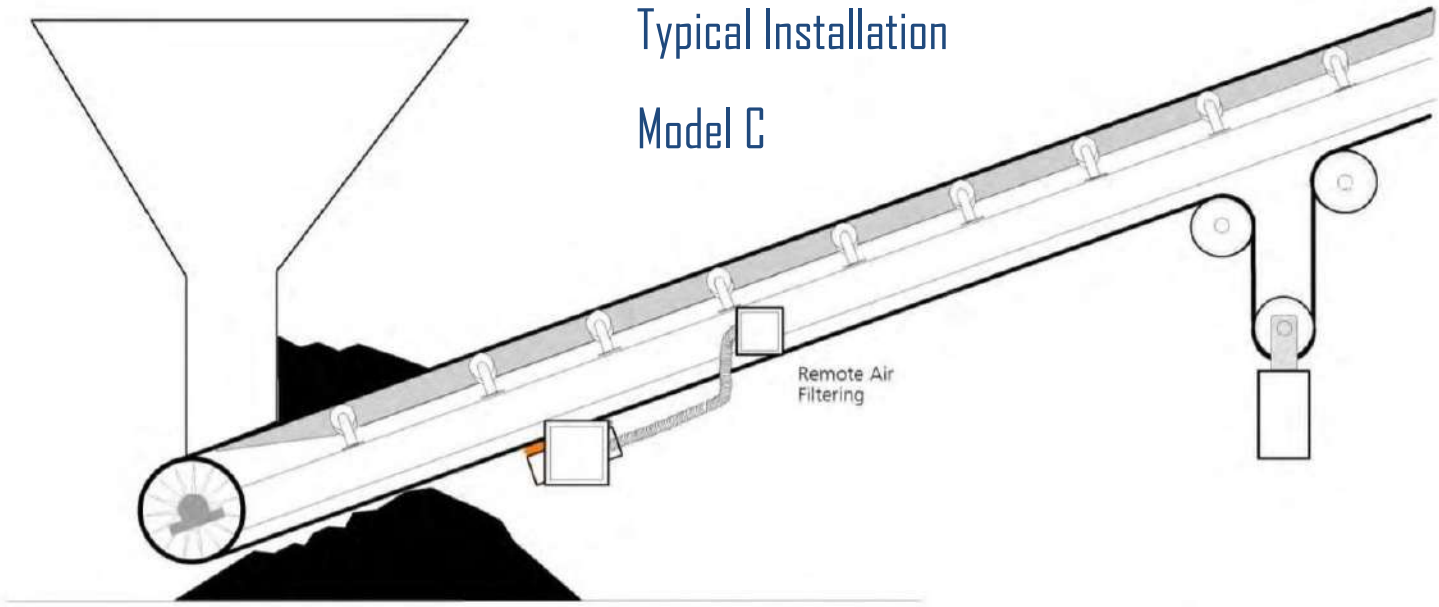




Material Slide Back Model C

Typical Installation

Model C



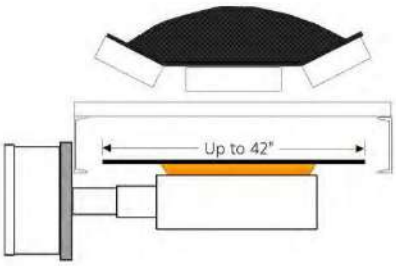
The Model C Heater to eliminate material slide back is for installation on belts up to 350 FPM and up to 42" in width. This heater is installed under the belt as close to the material pickup point as possible. Considerations when selecting this model are spillage that may accumulate under the belt that may affect the operation of the heater, material being slung off of idler roll that may get into the combustion chamber and the enclosure blocking the catwalk. Available in standard (shown) or remote models.

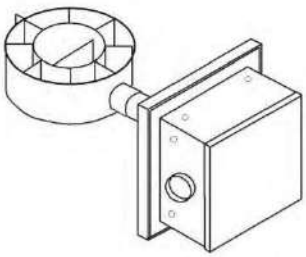
Specifications

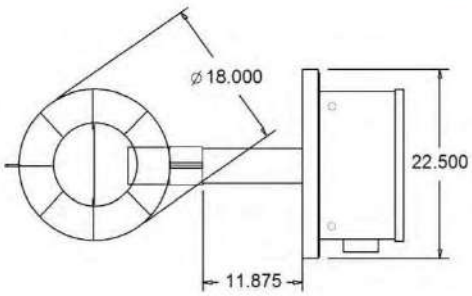
Stainless Steel Construction
Remote Air Filtering
Fuel Oil, Propane or Natural Gas

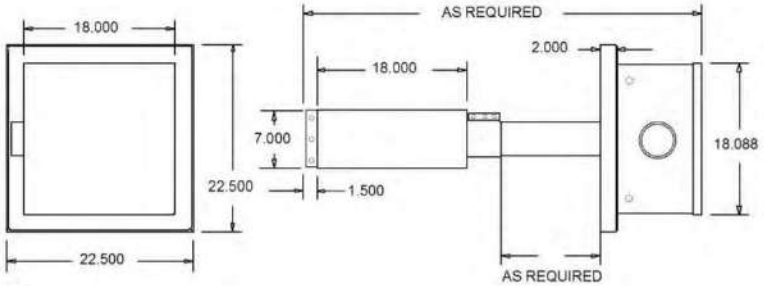
Model C

Belts up to 42" @375 FPM
35,000-125,000 BTU





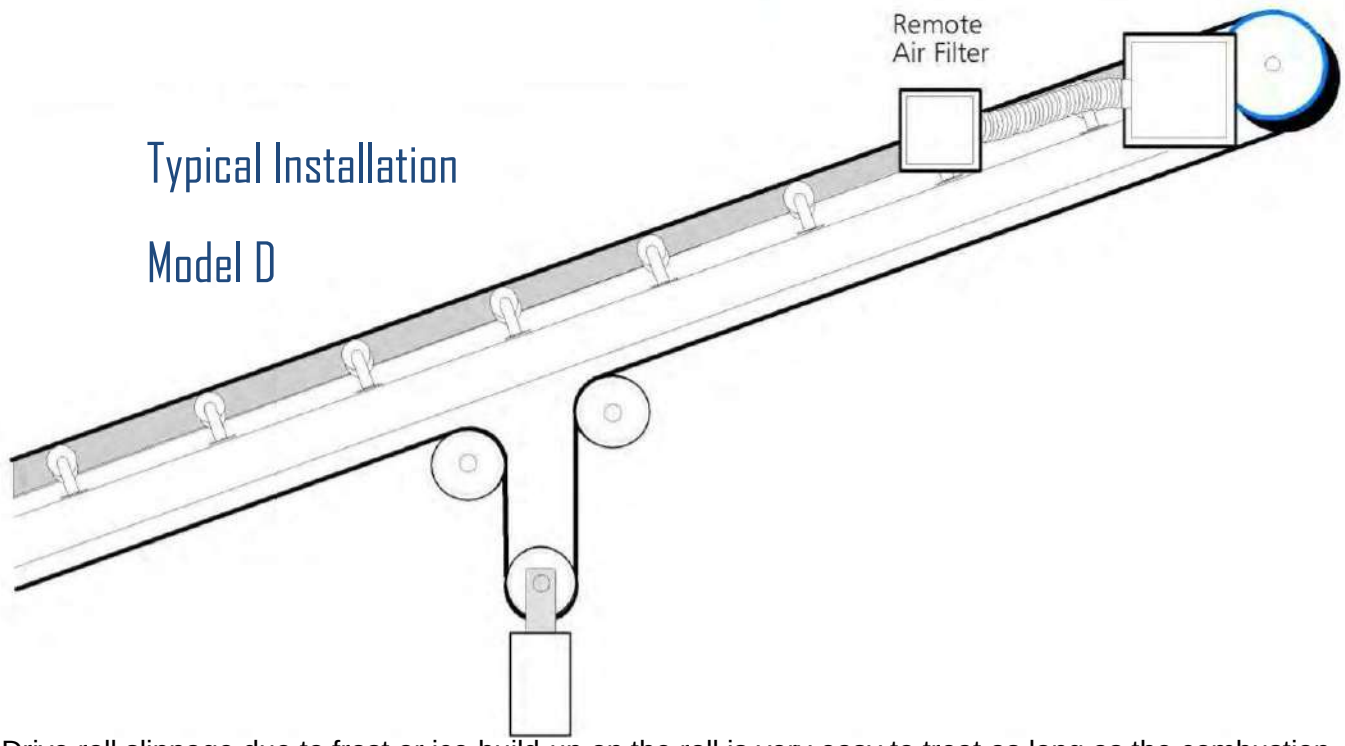




Drive Roll Slippage Model D

Typical Installation

Model D



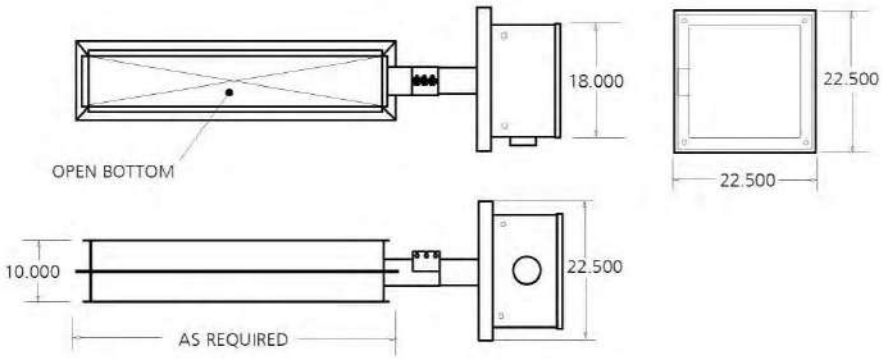
Drive roll slippage due to frost or ice build-up on the roll is very easy to treat as long as the combustion chamber can be located close to the drive roll. The combustion chamber is sandwiched between the belt adjacent to the drive roll. In the event that the roll is in an enclosure that contains dust (which could be a fire or explosion hazard), the heater will need to be placed outside of the building. This will require more heat and a larger combustion chamber. Available in standard (shown) or remote models.

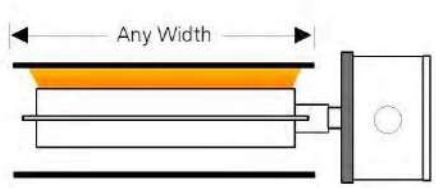
Specifications

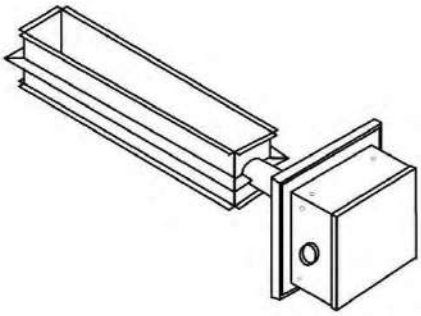
Stainless Steel Construction
Remote Air Filtering
Fuel Oil, Propane or Natural Gas

Model D

Any width belt at any speed
35,000 - 400,000 BTU



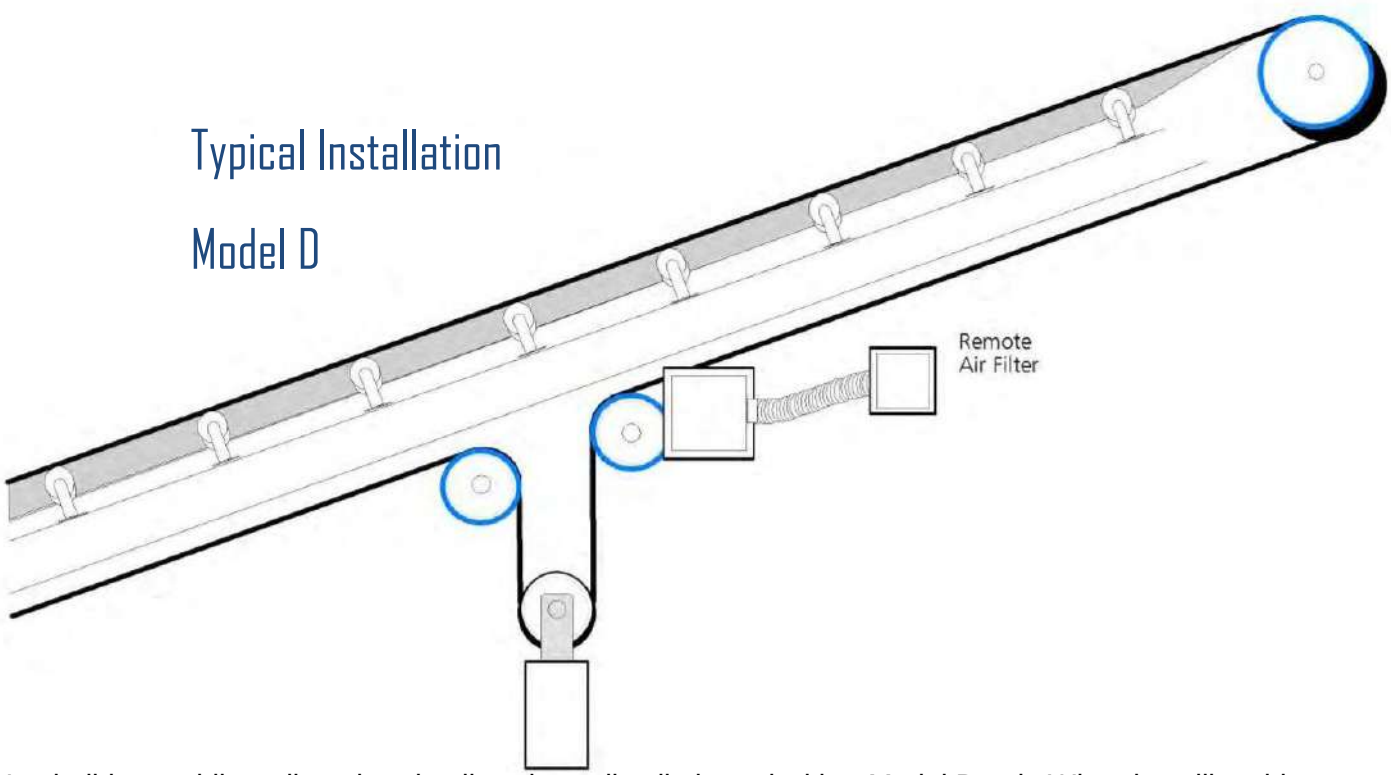




Ice Build-up on Idlers Model D

Typical Installation

Model D



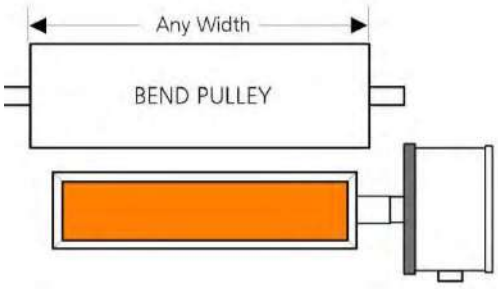
Ice buildup on idler rolls or bend pulleys is easily eliminated with a Model D unit. When installing this model, the combustion chamber is located as close to the roll on the as possible. This setup will prevent ice buildup on both the upper and lower rolls and in some instances will dry the belt enough to prevent material slide back. Available in standard (shown) or remote models.

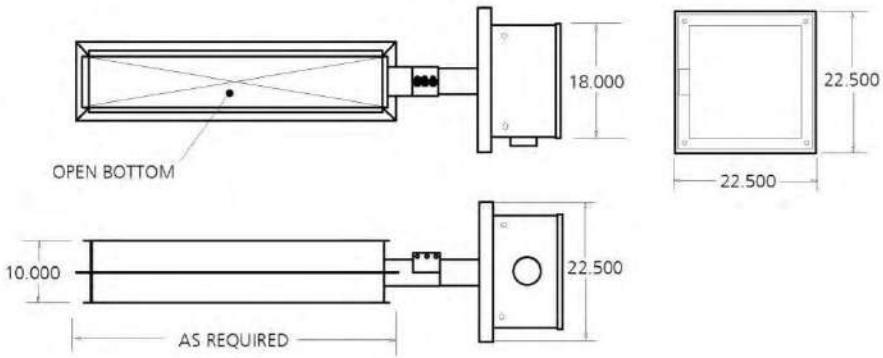
Specifications

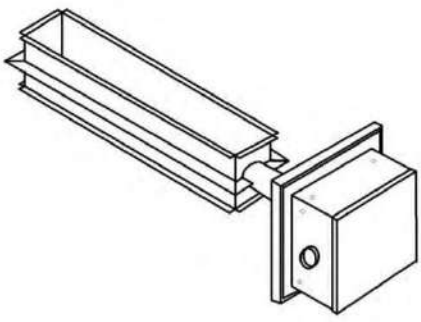
Stainless Steel Construction
Remote Air Filtering
Fuel Oil, Propane or Natural Gas

Model D

Any width belt at any speed
35,000 - 400,000 BTU







Ordering Information

Standard and remote models are depicted on the following pages. Any of these units can be altered to suit your requirements. References to belt speed and width are guidelines to help determine the proper heater and BTU requirements. Conditions can vary significantly due to exposure to wind and temperature extremes. A careful evaluation by Thermo-Tech personnel is the best way to determine the model for your application. Direct fired heaters cannot be installed on belts that go underground. For those applications, the Model MBH indirect fired heater must be used. The best practice is to interlock the heater with the power to the belt drive. This, in addition to the motion sensor provided with the heater, provides a double redundant heater shut down. If it is not practical to power the heater from the belt drive power source, dual motion sensors are provided with the heater.

Model A Standard
Belt Width 42 @ 350 FPM

PN A1250F Fuel Oil Fired
35,000 – 125,000 BTU Adjustable Fuel Consumption .25 - .89 GPH

PN A1250G Propane or Natural Gas
BTU 50,000 - 125,000 Adjustable
Propane .54 - 1.34 GPH
Natural Gas 50 - 125 CU FT HR

Model A High Output
Belt Width up to 48" @ 450 FPM

PN A2250F Fuel Oil Fired
BTU 35,000 - 200,000 Adjustable
Fuel Consumption .25 - .1.40 GPH

PN A2250G Propane or Natural Gas
BTU 50,000 - 200,000 Adjustable
Propane .54 - 2.15 GPH
Natural Gas 50 -200 CU FT HR

Model B Standard
Belt Width up to 60" @ 600 FPM

PN B1400F Fuel Oil Fired
35,000 - 400,000 BTU Adjustable
Fuel Consumption .35 - 2.86 GPH

PN B1400G Propane or Natural Gas
200,000 - 400,000 BTU Adjustable
Propane 2.15 - 4.30 GPH
Natural Gas 35 - 400 CU FT HR

Ordering Information

Model B High Output
Belt Width up to 84" @ 1100 FPM

PN B2800F Fuel Oil Fired
BTU 70,000 - 800,000 Adjustable
Fuel Consumption .54 - 5.71 GPH

PN B2800G Propane or Natural Gas
BTU 400,000 - 800,000 Adjustable
Propane 4.3 - 8.6 GPH
Natural Gas 400 - 800 CU FT HR

Model C Standard
Belt Width up to 42" Speed up to 375 FPM

PN C1125F Fuel Oil Fired
BTU 35,000 - 125,000 Adjustable
Fuel Consumption .25 - .89 GPH

PN C1125G Propane or Natural Gas
BTU 50,000 - 125,000 Adjustable
Propane .54 - 1.34 GPH
Natural Gas 50 - 125 CU FT HR

Model D Standard
Belt Width up to 60" @ 800 FPM

PN D1400F Fuel Oil Fired
35,000 - 4000,000 BTU Adjustable
Fuel Consumption .35 - 2.86 GPH

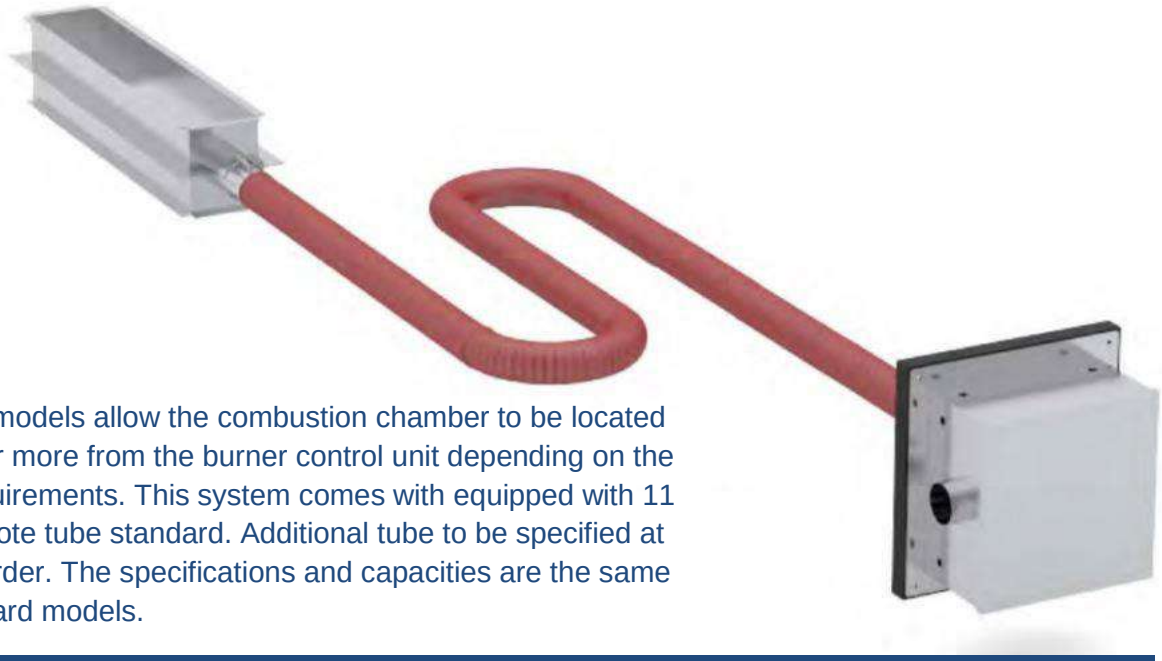
PN D1400G Propane or Natural Gas
50,000 - 400,000 BTU Adjustable
Propane .54 - 4.30 GPH
Natural Gas 50 - 400 CU FT HR

Model MBH
Use where indirect combustion is required

PN MBH1400F Fuel Oil Fired
35,000 - 400,000 BTU Adjustable Fuel Consumption .35 - 2.86 GPH

PN MBH1400G Propane or Natural Gas
50,000 - 400,000 BTU Adjustable
Propane .54- 4.30 GPH
Natural Gas 50 - 400 CU FT HR

Remote Applications



Remote models allow the combustion chamber to be located 40 feet or more from the burner control unit depending on the BTU requirements. This system comes with equipped with 11 ft. of remote tube standard. Additional tube to be specified at time of order. The specifications and capacities are the same as standard models.

Model A Standard

Belt Width up to 42"@350 FPM

PN AR1250F Fuel Oil Fired

BTU 35,000 - 125,000 Adjustable
Fue Consumption .25 - .89 GPH

PM AR1250G Propane or Natural Gas

BTU 50,000 - 125,000 Adjustable
Propane .54 - 1.34 GPH
Natural Gas 50 - 125 CU FT HR

Model A High Output

Belt Width up to 48" @ 450 FPM

PN AR2250F Fuel Oil Fired

BTU 35,000 - 200,000 Adjustable Fuel
Consumption .25 - .1 .40 GPH

PN AR2250G Propane or Natural Gas

BTU 50,000 - 200,000 Adjustable
Propane .54 - 2.15 GPH
Natural Gas 50 - 200 CU FT HR

Remote Applications

Model B Remote Standard
Belt Width up to 60" @ 600 FPM

PN BR140F Fuel Oil Fired
35,000 - 400,000 BTU Adjustable Fuel
Consumption .35 - 2.86 GPH

PN BR1400G Propane or Natural Gas
200,000 - 400,000 BTU Adjustable
Propane 2.15 - 4.30 GPH
Natural Gas 200 - 400 CU FT HR

Model B Remote High Output
Belt Width up to 84" Speed over 600 FPM

PN BR2800F Fuel Oil Fired
BTU 70,000 - 800,000 Adjustable Fuel
Consumption .54- 5.71 GPH

PN BR2800G Propane or Natural Gas
BTU 400,000 - 800,000 Adjustable
Propane 4.3 - 8.6 GPH
Natural Gas 400 - 800 CU FT HR

Model C Remote
Belt Width up to 42" @ 375 FPM

PN CR1125F Fuel Oil Fired
BTU 35,000 - 125,000 Adjustable
Fuel Consumption .25 - .89 GPH

PN BR2800G Propane & Natural Gas
BTU 50,000 - 125,000 Adjustable
Propane .54 - 1.34 GPH
Natural Gas 50 - 125 CU FT HR

Model D Remote
Belt Width up to 60" @ 800 FPM

PN DR1400F Fuel Oil Fired
35,000 - 400,000 BTU Adjustable Fuel
Consumption .35 • 2.86 GPH

PN DR1400G Propane & Natural Gas
50,000 · 400,000 BTU Adjustable
Propane .54 • 4.30 GPH
Natural Gas 50 - 400 CU FT HR

Fuel Requirements, Diesel

Oil-fired belt heaters are most commonly operated on the same fuel that is used in heavy equipment operating at subfreezing temperatures. #2 diesel fuel diluted with 25-30% kerosene is the norm. These units will also operate on straight kerosene which is somewhat more expensive and produces less heat than winter blended diesel fuel. If the fuel tank is filled with diesel fuel that is used during the summer season, it must be diluted with kerosene as described above to prevent it from congealing when the temperatures drop below freezing. In many instances existing tanks that are used for fueling heavy equipment can be utilized, eliminating the need to purchase a fuel tank.

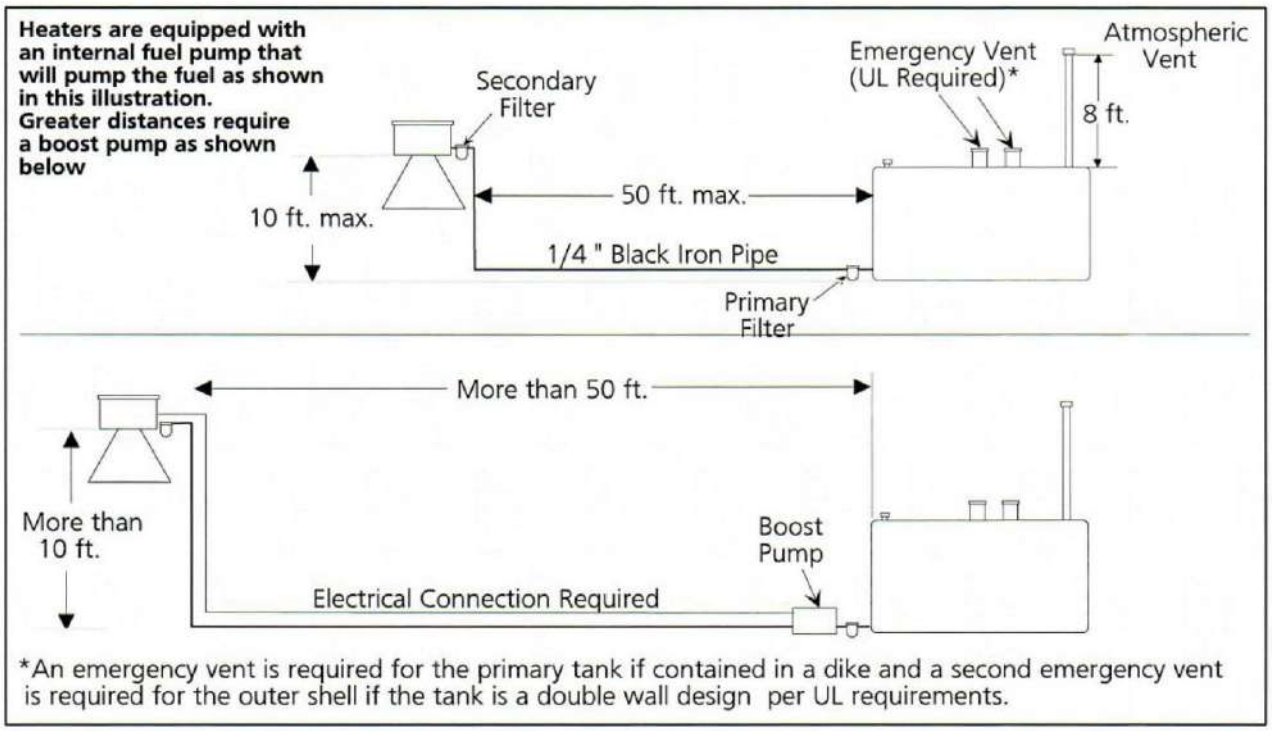
Tank Sizing, Location and Specifications

Tank sizing is based on the fuel consumption of the heater and the frequency of refilling that is available or desirable. Belt heaters have an adjustable firing rate/fuel consumption rate that is specific to the belt on which it is installed. This rate varies from 1/2 gallon per hour to as much as 5 gallons per hour. A typical 48" belt traveling at 450 ft. per min. requires 1 3/4 gallons per hour. To size the tank, multiply the gallons per hour that the heater is set to operate at by the hours operated per week and determine the weekly or monthly requirements and thus the most convenient tank size.

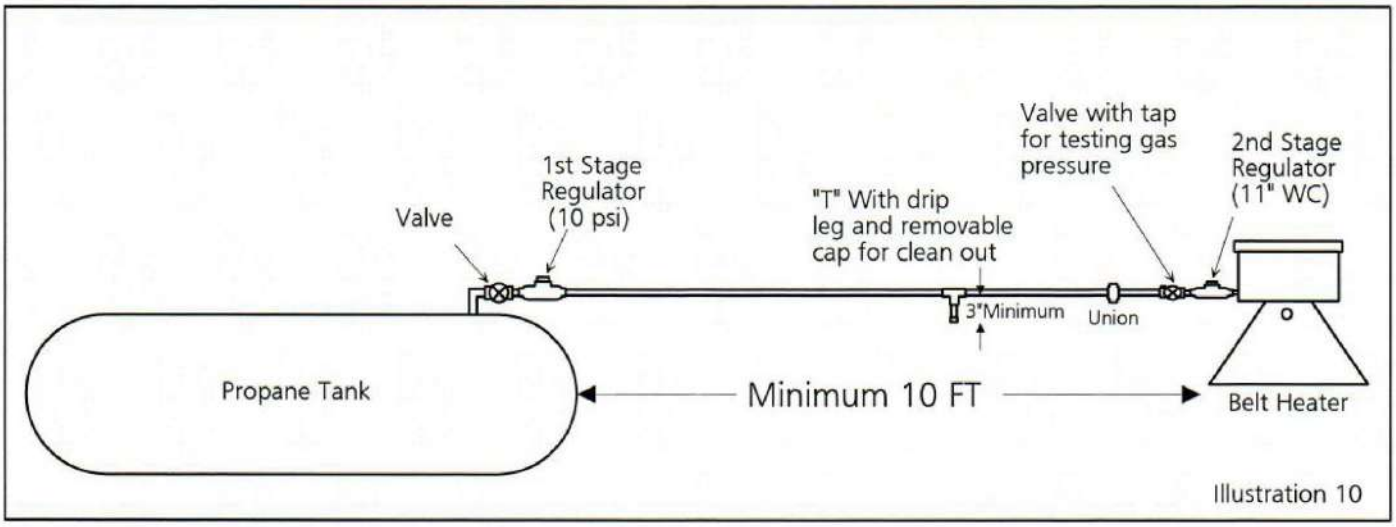
Locate the tank at least 25 feet from the heater and at least 50 ft. from any underground mine opening. Locate the tank in an area that is free from possible contact with moving equipment or provide protection for it if it must be located in a traveled area. The heater is equipped with an internally mounted fuel pump that is capable of lifting the fuel up to 10 feet. If the bottom of the tank is more than 10 feet below the heater or more than 50 feet from the heater, a boost pump will be required.

Tank specifications must meet MSHA, NFPA, UL and local code specifications. These typically require a diked or double wall design and must be vented per UL specifications. Local codes may vary. Contact your local fuel supplier to obtain specific information for your particular area. We can supply tanks to meet your requirements or determine the proper tank for your installation.

The best fuel line for this application is 1/4" black iron. Install a filter at the tank in addition to the filter supplied with the heater.



Gas Supply Pipe Sizing and Pressure Requirements



Natural or Propane gas pressure to the heater must not exceed 14" WC

Natural gas installations require a low pressure regulator 2nd stage (11" WC) at the heater.

Propane installations requiring long runs of pipe or multiple heaters operating from one tank are best suited to using a high pressure, 1st stage (1 O psi) regulator at the tank and then reducing the pressure at the heater with a low pressure, 2nd stage (11" WC) regulator at the heater.

Installations where the heater is close to the tank are best suited to installing the low pressure regulator (2nd stage) at the tank, thus eliminating the high pressure regulator.

Table A. Pipe Sizing Data Natural Gas

Maximum deliver capacity of pipes of different diameters and lengths in cubic feet of gas per hour for an initial pressure of 2.0 PSI and a gas of .06 specific gravity. 1000 BTU per cu.ft.

Total Equivalent Length of Pipe (feet)

Length ft.	10	50	100	150	200
Pipe Size					
½”	1503	673	462	372	318
¾”	3041	1360	934	751	642
1”	5561	2487	1708	1373	1174
1-1/4”	11415	5105	3508	2817	2413
Cu ft per hr x 1000 = BTU hr					

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