

2021 EDITION

# Fastrax<sup>TM</sup>

ENGINEERED SNOW CLEARING PRODUCTS FOR RAIL APPLICATIONS



WORLD LEADER IN INDUSTRIAL PROCESS HEATING SOLUTIONS

a degree above | [www.Thermon.com](http://www.Thermon.com)

# Content

<b>SwitchBlade® Heaters</b>	<b>4</b>
Running/Stock Rail Heating (all switches*) - FSR Series .....	5
Moving Rail Heating (all switches*) - FSE Series .....	5
Spring Rail Frog Heating - FSB Series .....	6
Spring Rail Frog Heating (Retrofit) - FSBR Series .....	6
Movable Point Frog Heating (Frog Wing Rail and Frog Point Plate) No. 20 and 24 Switches - SMR Series (Retrofit) .....	7
<b>Round Tubular Rail Heaters</b>	<b>8</b>
<b>Crib Heaters</b>	<b>10</b>
<b>Ballast Heaters</b>	<b>11</b>
<b>Trip Stop Heaters</b>	<b>12</b>
<b>Platform Heaters</b>	<b>13</b>
<b>Track &amp; Switch Heating Packages</b>	<b>14</b>
Running/Stock Rail and Moving Rail Heating Package .....	14
Spring Rail Frog Heating Package .....	15
Movable Point Frog Heating Package .....	16
Scanner & Dragging Equipment Detection Heating Packages .....	17
<b>AC Control Panels</b>	<b>18</b>
<b>DC Control Panels</b>	<b>19</b>
<b>Electric Hot Air Blowers</b>	<b>20</b>
<b>Duct Packages for Electric Blowers</b>	<b>22</b>
<b>Accessories</b>	<b>23</b>
<b>HELLFIRE Gas Fired Blower</b>	<b>24</b>
<b>Gas Fired Blower Ductwork</b>	<b>26</b>
<b>HELLFIRE Accessories</b>	<b>27</b>
<b>Energy Management System with ArcticSense</b>	<b>28</b>
<b>Horizontal Air Curtains</b>	<b>29</b>
<b>Air Curtain Ductwork</b>	<b>31</b>
<b>Horizontal Air Curtains for Hot Box Detectors</b>	<b>34</b>
<b>OK Series Radiant Heaters</b>	<b>36</b>
OKB .....	36
OKH .....	37

# Locations

As a leader in heating and filtration solutions, Thermon is committed to ongoing research, product development and above all, excellence in customer service.

With facilities across North America, Thermon manufactures five of the top brands in industrial heating in addition to a comprehensive line of engineered industrial filtration products including:

**Cata-Dyne™**

Explosion-Proof Gas Catalytic Heaters

**Ruffneck™**

Heaters for the Harshest Environments

**Caloritech™**

Engineered Electric Heat

**3L Filters™**

Engineered Filtration Systems

**Norseman™**

Electric Explosion-Proof Heaters

**Fastrax™**

Track and Switch Heaters

Fastrax™ is a leading manufacturer of complete engineered railway switch and track heating systems for freight railroads and transits. We provide the most efficient products designed for low maintenance and long life in harsh track side conditions. We also custom design and manufacture systems and energy saving automated control packages to provide our customers with complete heating solutions for rail industry applications.

Visit [www.thermon.com/products/specialty-products/transportation](http://www.thermon.com/products/specialty-products/transportation)

We invite you to visit [www.thermon.com](http://www.thermon.com) to view the broad range of innovative industrial heating products manufactured by Thermon.



# SwitchBlade® Heaters

The patented Fastrax™ SwitchBlade® heater is a high efficiency, direct contact conduction rail heater. It resides within the recess web area of a rail to keep railway switch components, including throw rods and train trip stops, free of ice and snow.

The heater's stainless steel heavy duty construction resists corrosion and offers protection and durability in rugged railroad environments. It is designed to withstand heavy shock and vibration caused by train vehicles moving in extreme weather. Its flat profile provides maximum heat transfer and is considered the most efficient switch heater on the market.



## Features

- Patented multiple core heater element
- Fastrax™ patented spring clamp technology allows for expansion and contraction of the heater without binding or losing contact with the rail
- 26' premium grade marine power cable lead is resistant to chemicals and severe weather
- Standard lengths ranging from 3' to 26'
- Available in AC or DC voltages, from 120V to 750V

## Benefits

- Easy to install, no drilling required
- Flat profile design prevents damage from reinforced and low clearance switches
- Lower operating temperatures extend the life span of the heater
- Custom lengths and wattages available

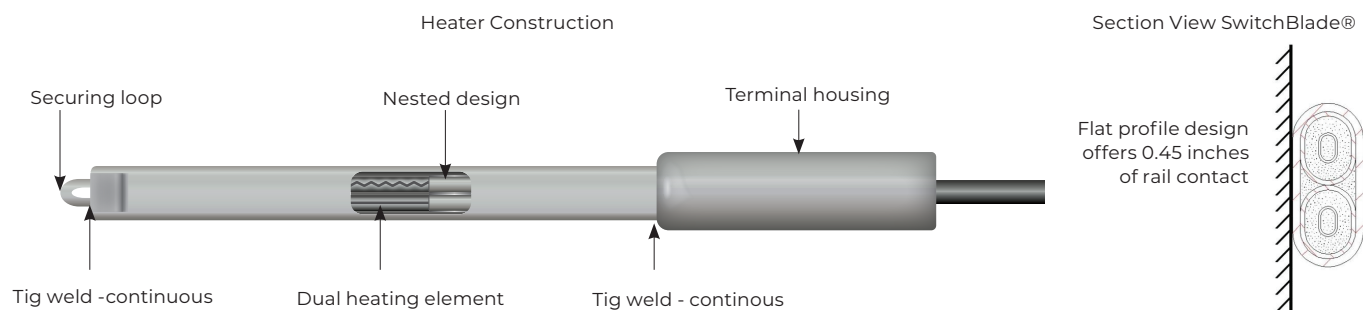


Figure 1

## Model Coding

Model Series	Application Type	Watts/ft	Voltage	Overall Heater Length (ft)	No Clamps
F – Fastrax™ SwitchBlade®	SR – Stock/Running Rail Heating	3 – 300	12 – 120V	3, 8, 12, 16, 20, 26	SA
	SE – Moving Rail Heating	4 – 400	24 – 240V		
	SBS – Spring Rail Frog Heating		48 – 480V		
	SBR – Spring Rail Frog Heating Retrofits		60 – 600V		
	SM – Movable Point Frog Heating		75 – 750V		
	SMR – Movable Point Frog Heating Retrofits				
	SB – No Clamps				

# Applications

## Running/Stock Rail Heating (all switches\*) - FSR Series

The SwitchBlade® heater is positioned field side, on the web of the running or stock rail ensuring direct heat distribution along the switch length of the rail, as referenced in Figure 2. \*Size No. 20 and 24 switches have one extra heater on each rail.

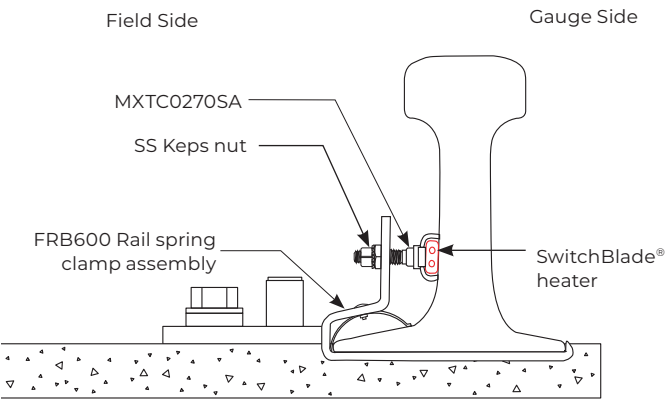


Figure 2 – SwitchBlade® Positioning



Table 1 – SwitchBlade® Running or Stock Rail Heater Selection Guide

Overall Length	Heated Length	Total Wattage	240V AC Model No.	480V AC Model No.	600V AC Model No.	600V DC Model No.	750V DC Model No.	FRB600 Clamp
8'	7' 2"	2200	FSR32408	FSR34808	FSR36008	FSR36008DC	FSR37508DC	5
12'	11' 2"	3400	FSR32412	FSR34812	FSR36012	FSR36012DC	FSR37512DC	7
16'	15' 2"	4600	FSR32416	FSR34816	FSR36016	FSR36016DC	FSR37516DC	9
20'	19' 2"	5800	FSR32420	FSR34820	FSR36020	FSR36020DC	FSR37520DC	11
26'	25' 2"	7600	FSR32426	FSR34826	FSR36026	FSR36026DC	FSR37526DC	14

**Note:** Custom lengths and wattages available.

## Moving Rail Heating (all switches\*) - FSE Series

The SwitchBlade® heater is positioned on the gauge side, on the web of the moving rail (switching rail), to prevent ice build-up by ensuring direct heat distribution along the critical section of the moving rail. For switches of a different design or where clearance is not available, contact Fastrax™ office for instructions on how to install the SwitchBlade® heater on the moving rail. \*Size No. 20 and 24 switches have one extra heater on each rail.

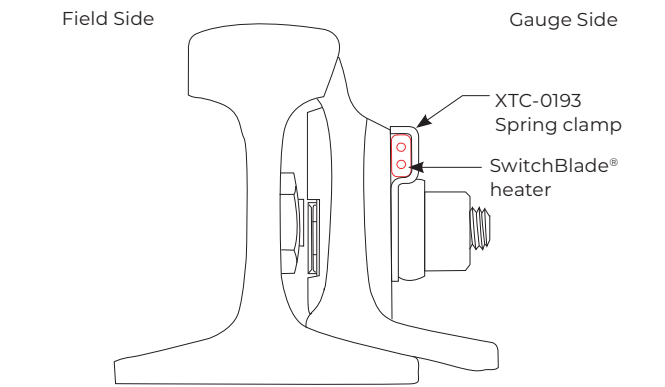


Figure 3 – SwitchBlade® Positioning



Figure 4

Table 2 – SwitchBlade® Moving Rail Heater Selection Guide

Overall Length	Heated Length	Total Wattage	240 V AC Model No.	480V AC Model No.	600V AC Model No.
8'	7' 2"	2200	FSE32408	FSE34808	FSE36008

**Note:** Custom lengths and wattages available.

# Applications (cont'd)

## Spring Rail Frog Heating - FSB Series

Many new style spring frogs have a rectangular channel manufactured into the base of the frog casting.

The channel is designed to extend from the frog heel to the toe and is open on each end. The SwitchBlade® heater is installed in the milled slot in the base of the spring rail frog.

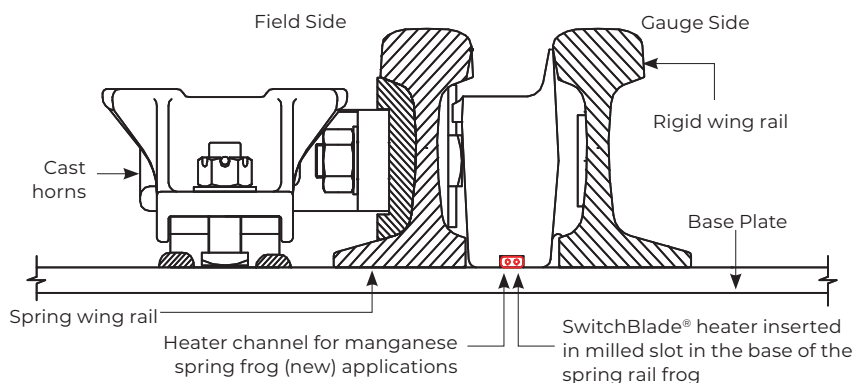


Figure 5 – SwitchBlade® Positioning



Figure 6

Table 3 – SwitchBlade® Spring Frog Selection Guide

Overall Length	Heated Length	Total Wattage	240V AC Model No.	480V AC Model No.	600V AC Model No.
8'	7'2"	2200	FSB32408SA	FSB34808SA	FSB36008SA
12'	11'2"	3400	FSB32412SA	FSB34812SA	FSB36012SA
16'	15'2"	4600	FSB32416SA	FSB34816SA	FSB36016SA
20'	19'2"	5800	FSB32420SA	FSB34820SA	FSB36020SA

**Note:** Custom lengths and wattages available.

## Spring Rail Frog Heating (Retrofit) - FSB Series

Older style spring frogs do not typically have a channel built in for the heater. In this case a SwitchBlade® heater retrofit is required (Type FSB). Most will have clearance under the horn bolt plates for the SwitchBlade® heater.

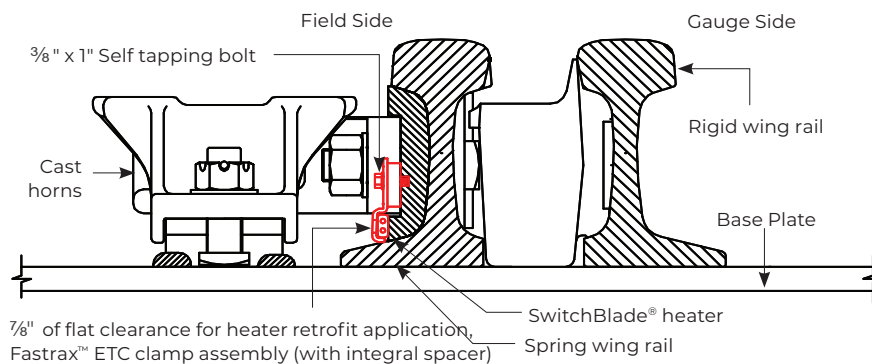


Figure 7 – SwitchBlade® Positioning

Table 4 – SwitchBlade® Spring Frog Retrofit Selection Guide

Overall Length	Heated Length	Total Wattage	240V AC Model No.	480V AC Model No.	600V AC Model No.	XTC0173SPACER
8'	7'2"	2200	FSBR32408	FSBR34808	FSBR36008	4
12'	11'2"	3400	FSBR32412	FSBR34812	FSBR36012	6
16'	15'2"	4600	FSBR32416	FSBR34816	FSBR36016	8
20'	19'2"	5800	FSBR32420	FSBR34820	FSBR36020	10

**Note:** Custom lengths and wattages available.

Movable Point Frog Heating (Frog Wing Rail and Frog Point Plate)  
No. 20 and 24 Switches - SMR Series (Retrofit)

Depending on location requirements, the SwitchBlade® heater is positioned within the slots of the wing rail braces to allow the heater to slide onto the top of the wing rail base. SwitchBlade® heaters may also be necessary in the four channels welded onto the bottom of the base plate just below the point area. If the frog is of a different design a retrofit may be required, contact factory for more information on Type SMR.

Table 5 – SwitchBlade® Movable Point Frog Heater Selection Guide

Rail Heater Type	Overall Length	Heated Length	Total Wattage	240V AC Model No.	480V AC Model No.
Frog Wing Rail Heater	12'	11'2"	3400	FSB32412SA	FSB34812SA
Frog Point Plate Heater	2'9"	2'1"	750	FSB42403SA	FSB44803SA

Note: Custom lengths and wattages available.



Figure 8 – Movable Point Frog Retrofit

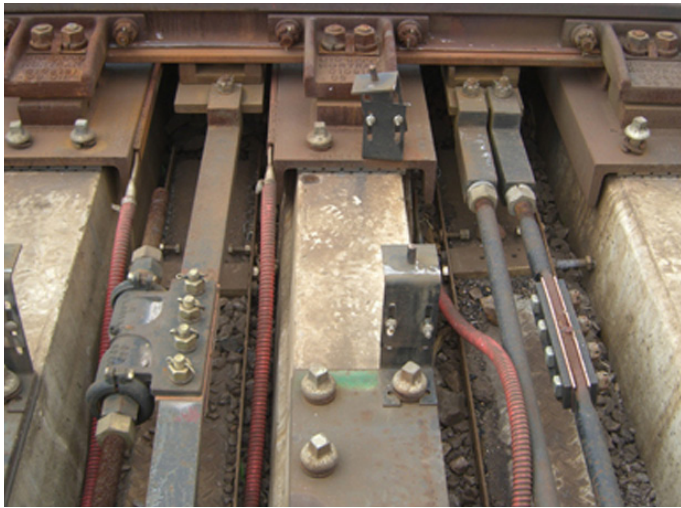
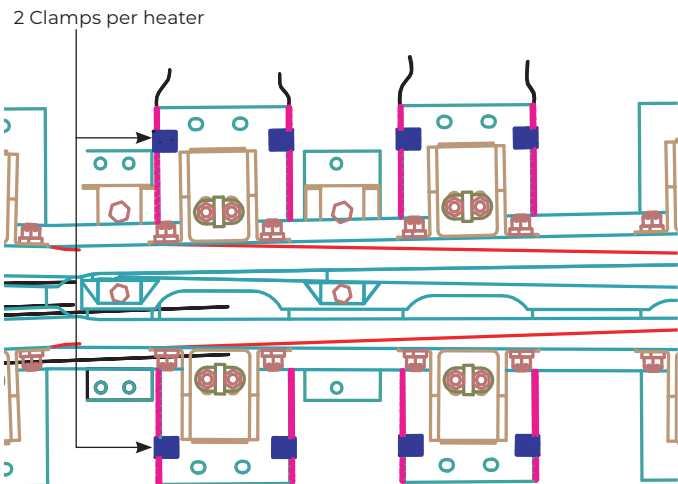


Figure 9



Note: To apply retrofit heaters to obsolete plate style movable point frog, contact Fastrax™.

Figure 10

# Round Tubular Rail Heaters

The Fastrax™ electric round tubular rail heater is ideal for older switch installations that do not have the relief available for flat profile heaters. It resides within the recess web area of a rail to keep railway switch components free of ice and snow.

The heavy duty stainless steel construction resists corrosion and offers protection and durability in rugged environments. The heater is designed to withstand heavy shock and vibration found in rail traffic, and is suitable for use in extreme weather conditions.

The wire inside of the heating element is made of high grade resistance alloy and provides the source of heat. The resistance wire is surround by highly compacted magnesium oxide insulation, which provides excellent electrical and thermal properties.

Thermon has internal capabilities dedicated to the production of the highest quality tubular heating elements. We use only the best commercially available materials and we use design parameters proven to maximize element life expectancy.

## Features

- Electrically isolated sheath
- Fastrax™ patented spring clamp technology allows for expansion and contraction of the heater without binding or losing contact with the rail
- 26' premium grade marine power cable lead is resistant to chemicals and severe weather
- Standard lengths ranging from 12' to 36'
- Available in AC or DC voltages, from 208V to 750V

## Benefits

- Easy to install, no drilling required
- Excellent internal electrical insulation and heat conduction
- Compatible with most rail lines
- Capabilities to develop any type of round heater required in the rail industry
- Annealed specifically for easy application around railroad obstructions
- Watt density matches the SwitchBlade® heater output
- Custom lengths and wattages available



## Model Coding

FHR	3	24	12	DC
Model Series	Watts/ft	Voltage	Overall Heater Length (ft)	Voltage Type
F – Fastrax™	3 – 300	20 – 208V	12, 16, 22,	AC, DC
Round Tubular	4 – 400	24 – 240V	30, 36	
Rail Heater	5 – 500	48 – 480V		
		60 – 600V		
		75 – 750V		

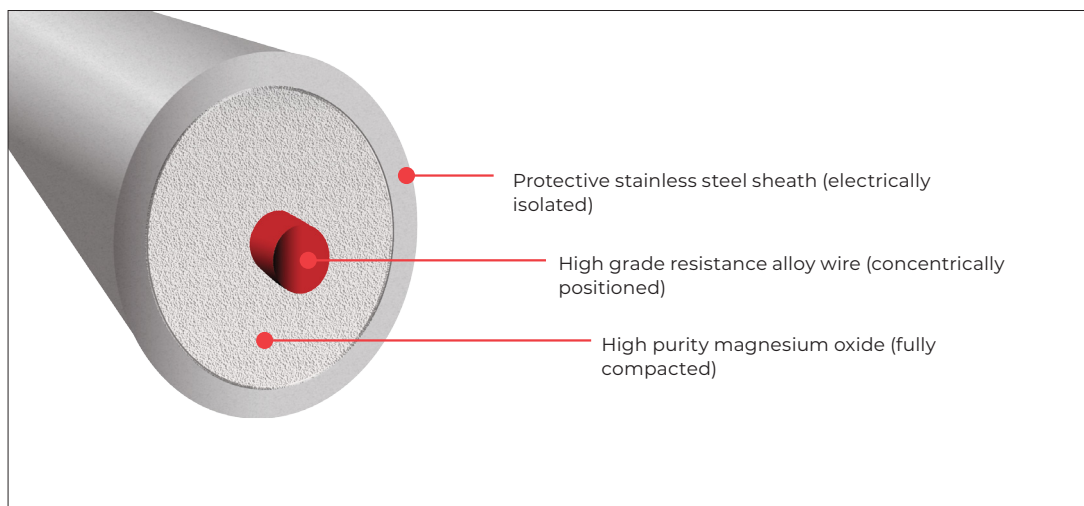


Figure 11 – Round tubular rail heater cross-section

Table 6 – Round Tubular Rail Heater Selection Guide

Overall Length	Heater Length	Voltage	Watts/Ft	Total kW	Part Number
12'	10'-8"	208	300	3.2	FHR32012
16'	14'-8"	208	300	5.0	FHR32016
22'	20'-8"	208	300	6.2	FHR32022
30'	28'-8"	208	300	8.6	FHR32030
36'	34'-8"	208	300	9.6	FHR32036
12'	10'-8"	208	400	4.4	FHR42012
16'	14'-8"	208	400	6.6	FHR42016
22'	20'-8"	208	400	8.2	FHR42022
30'	28'-8"	208	400	12.0	FHR42030
12'	10'-8"	208	500	5.2	FHR52012
16'	14'-8"	208	500	8.2	FHR52016
22'	20'-8"	208	500	10.2	FHR52022
12'	10'-8"	240	300	3.2	FHR32412
16'	14'-8"	240	300	5.0	FHR32416
22'	20'-8"	240	300	6.2	FHR32422
30'	28'-8"	240	300	8.6	FHR32430
12'	10'-8"	240	400	4.4	FHR42412
16'	14'-8"	240	400	6.6	FHR42416
22'	20'-8"	240	400	8.2	FHR42422
30'	28'-8"	240	400	12.0	FHR42430
36'	34'-8"	240	400	14.0	FHR42436
12'	10'-8"	240	500	5.2	FHR52412
16'	14'-8"	240	500	8.2	FHR52416
22'	20'-8"	240	500	10.2	FHR52422
30'	28'-8"	240	500	14.2	FHR52430
36'	34'-8"	240	500	17.2	FHR52436
12'	10'-8"	480	300	3.2	FHR34812
16'	14'-8"	480	300	5.0	FHR34816

Overall Length	Heater Length	Voltage	Watts/Ft	Total kW	Part Number
22'	20'-8"	480	300	6.2	FHR34822
30'	28'-8"	480	300	8.6	FHR34830
36'	34'-8"	480	300	9.6	FHR34836
12'	10'-8"	480	400	4.4	FHR44812
16'	14'-8"	480	400	6.6	FHR44816
22'	20'-8"	480	400	8.2	FHR44822
30'	28'-8"	480	400	12.0	FHR44830
36'	34'-8"	480	400	14.0	FHR44836
12'	10'-8"	480	500	5.2	FHR54812
16'	14'-8"	480	500	8.2	FHR54816
22'	20'-8"	480	500	10.2	FHR54822
30'	28'-8"	480	500	14.2	FHR54830
36'	34'-8"	480	500	17.2	FHR54836
12'	10'-8"	600	300	3.2	FHR36012
16'	14'-8"	600	300	5.0	FHR36016
22'	20'-8"	600	300	6.2	FHR36022
30'	28'-8"	600	300	8.6	FHR36030
36'	34'-8"	600	300	9.6	FHR36036
12'	10'-8"	600	400	4.4	FHR46012
16'	14'-8"	600	400	6.6	FHR46016
22'	20'-8"	600	400	8.2	FHR46022
30'	28'-8"	600	400	12.0	FHR46030
36'	34'-8"	600	400	14.0	FHR46036
12'	10'-8"	600	500	5.2	FHR56012
16'	14'-8"	600	500	8.2	FHR56016
22'	20'-8"	600	500	10.2	FHR56022
30'	28'-8"	600	500	14.2	FHR56030
36'	34'-8"	600	500	17.2	FHR56036

Note: 30' and 36' lengths require a splice.

# Crib Heaters

Crib heaters eliminate ice and snow from tie cribs with switch and gage rods, dragging equipment detectors, and bearing or wheel scanners, to ensure unobstructed free operation and allow maintenance access during winter.

Exclusive jack bolt technology ensures secure fit, eliminating movement and potential switch fouling.

## Features

- Model lengths range from 4' to 8'8"
- Standard wattages range from 600 W to 1350 W
- 100 W/ft and 200 W/ft also available
- Available in AC or DC voltages, from 120V to 750V
- Utilizes the patented, energy saving SwitchBlade® heater
- Rugged heavy gauge corrosion resistant aluminium construction
- 26 ft outdoor, low temperature rated chemical resistant, marine grade power cable

## Benefits

- Compatible with all ties including standard, hollow metal, cement and composite
- Low profile
- Will not interfere with standard or in-tie switch operations
- Jack bolt clamps are designed for easy removal and reinstallation
- Custom lengths and wattages available

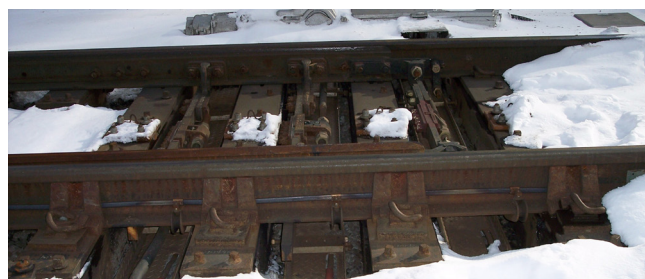
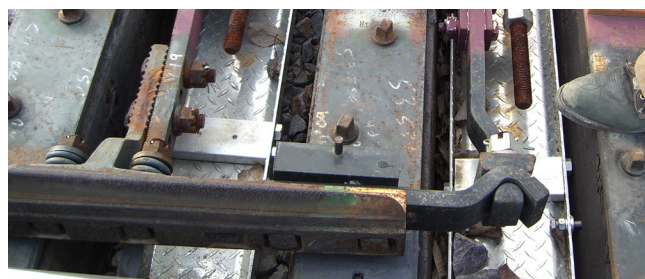


Table 7 – Crib Heater Selection Guide

Overall Length (ft)	Overall Width (in)	Thickness (in)	Total Wattage	Watts/Foot	240V AC Model No.	480V AC Model No.	600V AC Model No.
4'	8	2	600	150	FCH152404	FCH154804	FCH156004
5'			750	150	FCH152405	FCH154805	FCH156005
7'			1,350	200	FCH22407	FCH24807	FCH26007
8' 8"			1,350	150	FCH152409	FCH154809	FCH156009

Note: Custom lengths and wattages available.

## Model Coding

F	CH	15	24	07	DC
Model Series	Application Type	Watts/ft	Voltage	Overall Heater Length (ft)	Voltage Type
F – Fastrax™	CH – Crib Heater	10 – 100	12 – 120V	03 - 3	AC, DC
		15 – 150	24 – 240V	05 - 5	
		2 – 200	48 – 480V	07 - 7	
			60 – 600V	09 - 8.8	
			75 – 750V		

# Ballast Heaters

Ballast heaters eliminate ice and snow in the crib area at the critical switch point allowing for easy maintenance of switch rods and smoother switch operation.

## Features

- Utilizes the patented, energy saving SwitchBlade® heater
- Over 30% more efficient than traditional round element heaters
- Heavy gauge aluminum construction resists corrosion and offers protection and durability in rugged railroad environments
- 26 ft premium grade marine power cable lead is resistant to chemicals and severe weather
- Model lengths range from 4 feet to 8 feet 8 inches
- Standard wattages range from 600 W to 1350 W
- 100 W/ft and 200 W/ft also available
- Available in AC or DC voltages, from 120V to 750V

## Benefits

- Compatible with all ties including standard, hollow metal, and composite
- Low profile
- Will not interfere with standard or in-tie switch operations
- Custom lengths and wattages available



Table 8 – Ballast Heater Selection Guide

Overall Length (ft)	Overall Width (in)	Thickness (in)	Total Wattage	Watts/Foot	240V AC Model No.	480V AC Model No.	600V AC Model No.
4'	6	1	600	150	FBH152404	FBH154804	FBH156004
5'			750	150	FBH152405	FBH154805	FBH156005
7'			1,350	200	FBH22407	FBH24807	FBH26007
8' 8"			1,350	150	FBH152409	FBH154809	FBH156009

**Note:** Custom lengths and wattages available.

## Model Coding

F	BH	15	24	7	DC
Model Series	Application Type	Watts/ft	Voltage	Overall Heater Length (ft)	Voltage Type
F – Fastrax™	BH – Ballast Heater	10 – 100 15 – 150 2 – 200	12 – 120V 24 – 240V 48 – 480V 60 – 600V 75 – 750V	04 - 4 05 - 5 07 - 7 09 - 8.8	AC, DC

# Trip Stop Heaters

Fastrax™ trip stop heaters eliminate ice and snow in the trip stop area at the critical switch point providing reliable switch operation. Exclusive jack bolt technology ensures secure fit, eliminating movement and potential switch fouling.

## Features

- Heavy gauge cast aluminum construction resists corrosion and offers protection and durability in rugged railroad environments
- Cast aluminum construction provides even heat distribution across the entire heating surface
- Low watt density epoxy end sealed heating element provides long life and reliability
- Weatherproof junction box for protection of wiring connections long life and reliability
- Standard model length is 28"
- Standard wattages range from 300 W to 600 W
- Available in 150 W/ft, 225 W/ft and 300 W/ft designs.
- Available in AC or DC voltages, from 120V to 750V.



## Benefits

- Compatible with all ties including standard, hollow metal, cement and composite
- Low profile design will not interfere with switch operations
- Jack bolt clamps are designed for easy removal and reinstallation
- Custom lengths and wattages available

Table 9 – Trip Stop Heater Selection Guide

Overall Length (in)	Overall Width (in)	Thickness (in)	Total Wattage	Watts/Foot	V AC Model Number		
					240	480	600
28	8	1	300	150	FTSH1524028	FTSH1548028	FCH1560028
			450	225	FTSH2224028	FCH2248028	FCH2260028
			600	300	FTSH324028	FCH348028	FCH360028

## Model Coding

F	TSH	15	240	28	DC
Model Series		Watts/ft	Voltage	Overall Heater Length (in)	Voltage Type
F – Fastrax™		15 – 150	120 – 120V	28	AC, DC
	Application Type	22 – 225	240 – 240V		
	TSH – Trip Stop Heater	30 – 300	480 – 480V		
			600 – 600V		
			750 – 750V		

# Platform Heaters

Platform heaters prevent the accumulation of ice and snow in the rail gauge walkways for equipment access, creating a safer environment and eliminating the need for snow removal chemicals.



## Features

- Heavy gauge aluminum construction resists corrosion and offers protection and durability in rugged railroad environments
- Total wattage range from 1 kW to 2 kW
- Available in AC or DC voltages, from 120V to 750V
- Custom configurations and wattages available

## Benefits

- Creates a safer environment for personnel access
- Eliminates the need for snow removal chemicals

## Options with the use of Fastrax™ Control Panel

- State-of-the-art automatic snow sensing control
- Built-in limits for safety and equipment protection



Table 10 – Platform Heater Selection Guide

Overall Length (in)	Overall Width (in)	Thickness (in)	Total Wattage	240V AC Model No.	480V AC Model No.
48	48	3	1600	FPA1240448R	FPA1480448R
60	24		1000	FPA1240524R	FPA1480524R
60	30		1400	FPA1240530R	FPA1480530R
60	36		1500	FPA1240536	FPA1480536
60	48		2000	FPA1240548	FPA1480548

## Model Coding

<b>F</b>	<b>PA</b>	<b>1</b>	<b>24</b>	<b>4</b>	<b>48</b>	<b>R</b>	<b>DC</b>
Model Series	Application Type	Watts/ft	Voltage	Overall Heater Length (in)	Overall Heater Width (in)	Options	Voltage Type
F – Fastrax™	PA – Platform Heater	1 – 100	12 – 120V 24 – 240V 48 – 480V 60 – 600V 75 – 750V	4 – 48 6 – 60	24, 30, 36, 48	R – Walkway height 2 1/2" T – High temperature limit*	AC, DC

\*Fastrax™ control panel is required with this option.

# Track & Switch Heating Packages

Fastrax™ heating packages are available for a variety of common track and switch heating applications including running or stock rails, moving rails, spring rail frogs, movable point frogs, scanner and dragging equipment detection.

## Running/Stock Rail and Moving Rail Heating Package

The running/stock rail and moving rail heating packages include Fastrax™ patented SwitchBlade® heaters, crib heaters and junction boxes, all controlled from the Fastrax™ stand-alone control panel. Custom packages are available for non-standard applications.

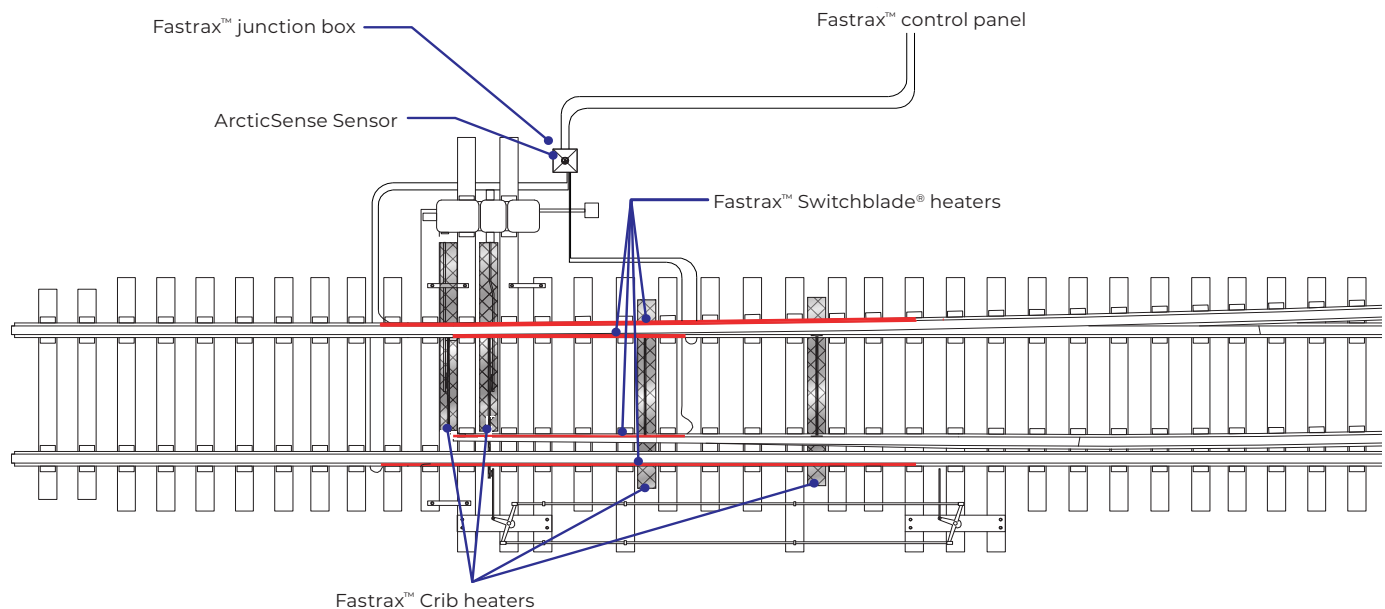


Figure 12 – Typical Running/Stock Rail Heating Layout - Equipment Detail, No. 14, 15 or 16 Standard Switch Size (All Tie Styles)

Table 11 – Running/Stock Rail and Moving Rail Heating Package Components

Quantity	Model Type	Product Description
1	GCP22135200	Fastrax™ Stand Alone or Extension Controls up to 5 crib heaters, 2 SwitchBlade® heaters (16' to 26') and 2 SwitchBlade® heaters (8'), 35 kW maximum capacity. Includes FASIA aerial snow sensor. Enclosure size: 36"H x 30"W x 10"D.
2	FSR32416	Fastrax™ SwitchBlade® Heaters 300 watts per foot of active heater length (4,600 total watts), 240V, 15'2" active length (16' overall length).
	FSR32420	Fastrax™ SwitchBlade® Heaters 300 watts per foot of active heater length (5,800 total watts), 240V, 19'2" active length (20' overall length).
	FSR32426	Fastrax™ SwitchBlade® Heaters 300 watts per foot of active heater length (7,600 total watts), 240V, 25'2" active length (26' overall length).
	FSE32408*	Fastrax™ SwitchBlade® Heaters 300 watts per foot of active heater length (2,200 total watts), 240V, 7'2" active length (8' overall length).
4	FCH152409	Fastrax™ Crib Heaters 150 watts per foot of platform length (1,350 total watts), 240V, 8'8" length. Includes four jack-bolt clamps.
1	FJA200SU	Fastrax™ Junction Box
1	FJAM200SUP*	Fastrax™ Junction Box with Ground Snow Sensor Includes Fastrax™ Ground Snow Sensor and FJAS24F support post assembly.

\*Optional Equipment

Fastrax™

Spring Rail Frog Heating Package

The spring rail frog heating package includes Fastrax™ patented SwitchBlade® heaters and junction box, all controlled from the Fastrax™ stand-alone control panel. Custom packages are available for nonstandard applications.

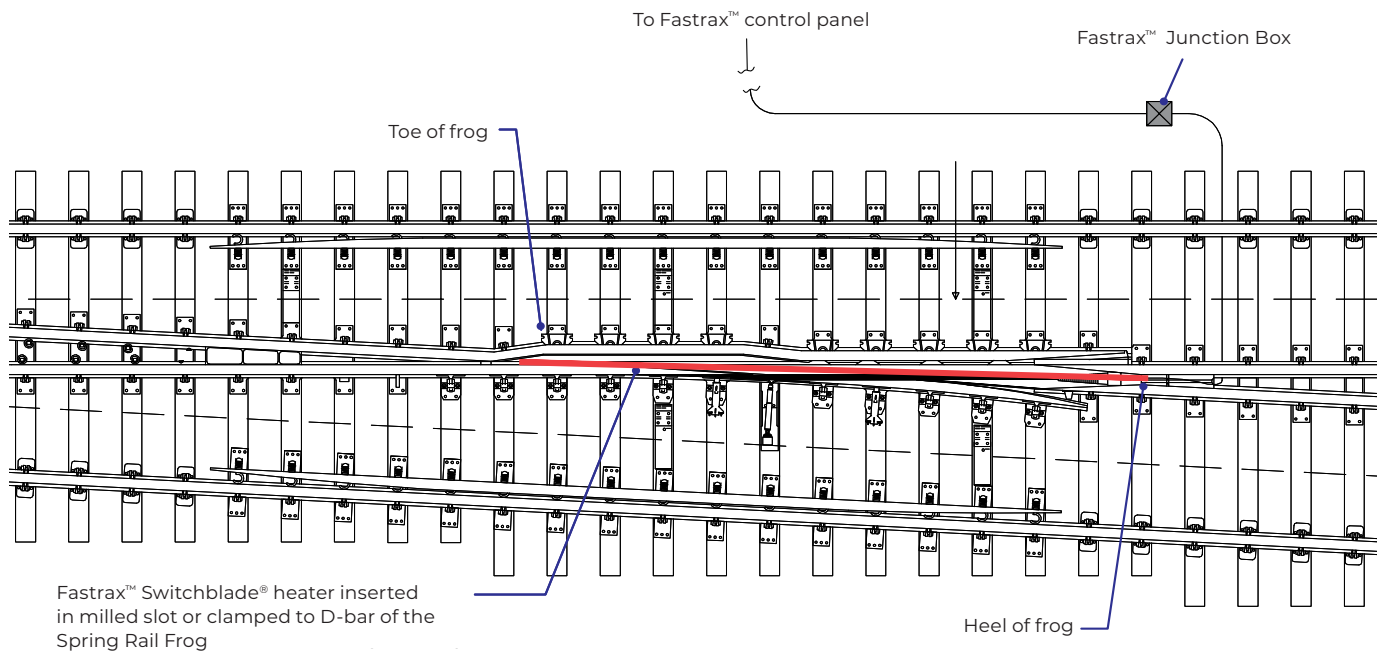


Figure 13 – Typical Spring Rail Frog Heating Layout - Equipment Detail, All Standard Sizes (All Tie Styles)

Table 12 – Spring Rail Frog Heating Package Components

Quantity	Model No.	Product Description
1	GSFC1-2110100	Fastrax™ Stand Alone Spring Rail Frog Panel Control heaters for No. 9, 10 or 11 Spring Frog. 10 kW maximum capacity, 100 amp, 240V, 1 phase disconnect. Enclosure size: 24" H x 24" W x 10" D.
	FSB32408SA or [FSBR32408 (retrofit)]	Fastrax™ SwitchBlade® Heater 300 watts per foot of active heater length (2,200 total watts), 240V. 8' overall length. For No. 9, 10 or 11 switch.
	FSB32412SA* or [FSBR32412 (retrofit)]	Fastrax™ SwitchBlade® Heater 300 watts per foot of active heater length (3,400 watts total), 240V. 12' overall length. For No. 14, 15 or 16 switch.
	FSB32416SA* or [FSBR32416 (retrofit)]	Fastrax™ SwitchBlade® Heater 300 watts per foot of active heater length (4,600 watts total), 240V. 16' overall length. For No. 20 or 24 switch.
	FJAM200SUP	Fastrax™ Junction Box with Ground Snow Sensor Includes Fastrax™ Ground Snow Sensor and FJAS24F support post assembly.

\*Optional Equipment

### Movable Point Frog Heating Package

The movable point frog (swing nose frog) heating package includes Fastrax™ patented SwitchBlade® heaters, crib heaters and junction box, all controlled from the Fastrax™ stand alone control panel. Custom packages are available for nonstandard applications.

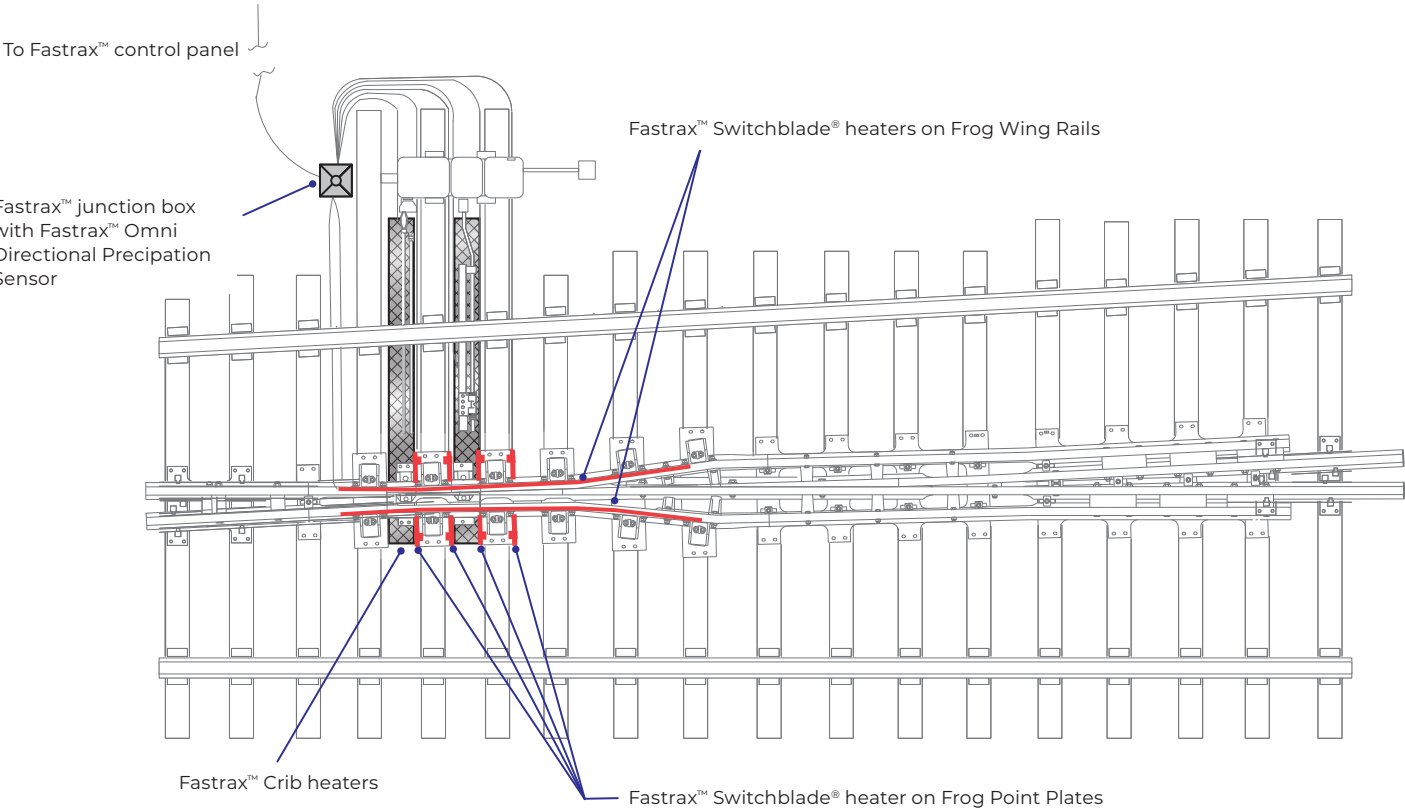


Figure 14 – Typical Movable Point Frog Layout - Equipment Detail, No. 20 / 24 Standard Size (All Tie Styles)

Table 13 – Movable Point Frog Heating Package Components

Single Track Quantity	Model Type	Product Description
1	GMPC1-2115100	Fastrax™ Stand Alone Movable Point Frog Control Panel Controls up to 2 crib heaters, 4 SwitchBlade® heaters (point plate heating) and 2 SwitchBlade® heaters (wing rail heating), 15 kW maximum capacity. Includes FASIA snow sensor. Enclosure size: 36"H x 30"W x 10"D.
4	FSB42403SA	Fastrax™ SwitchBlade® Heaters 400 watts per foot of active heater length (750 total watts), 240V, 2'1" active length (2'9" overall length).
2	FSB32412SA	Fastrax™ SwitchBlade® Heaters 300 watts per foot of active heater length (3,400 total watts), 240V, 11'3" active length (12' overall length).
2	FCH152409	Fastrax™ Crib Heaters 150 watts per foot of platform length (1,350 total watts), 240V, 8'8" length. Includes four jack-bolt clamps.
1	FJAM200SUP	Fastrax™ Junction Box with Ground Snow Sensor Includes Fastrax™ Ground Snow Sensor and FJAS24F support post assembly.

## Scanner & Dragging Equipment Detection Heating Packages

Fastrax™ Scanner & Dragging Equipment Detector (DED) Heating package is constructed with a state-of-the-art automatic snow sensing control and durable junction box with an optional ground snow sensor. This heating package keeps the scanner crib environment and DED clear of ice and snow. Custom packages are available for non-standard applications.

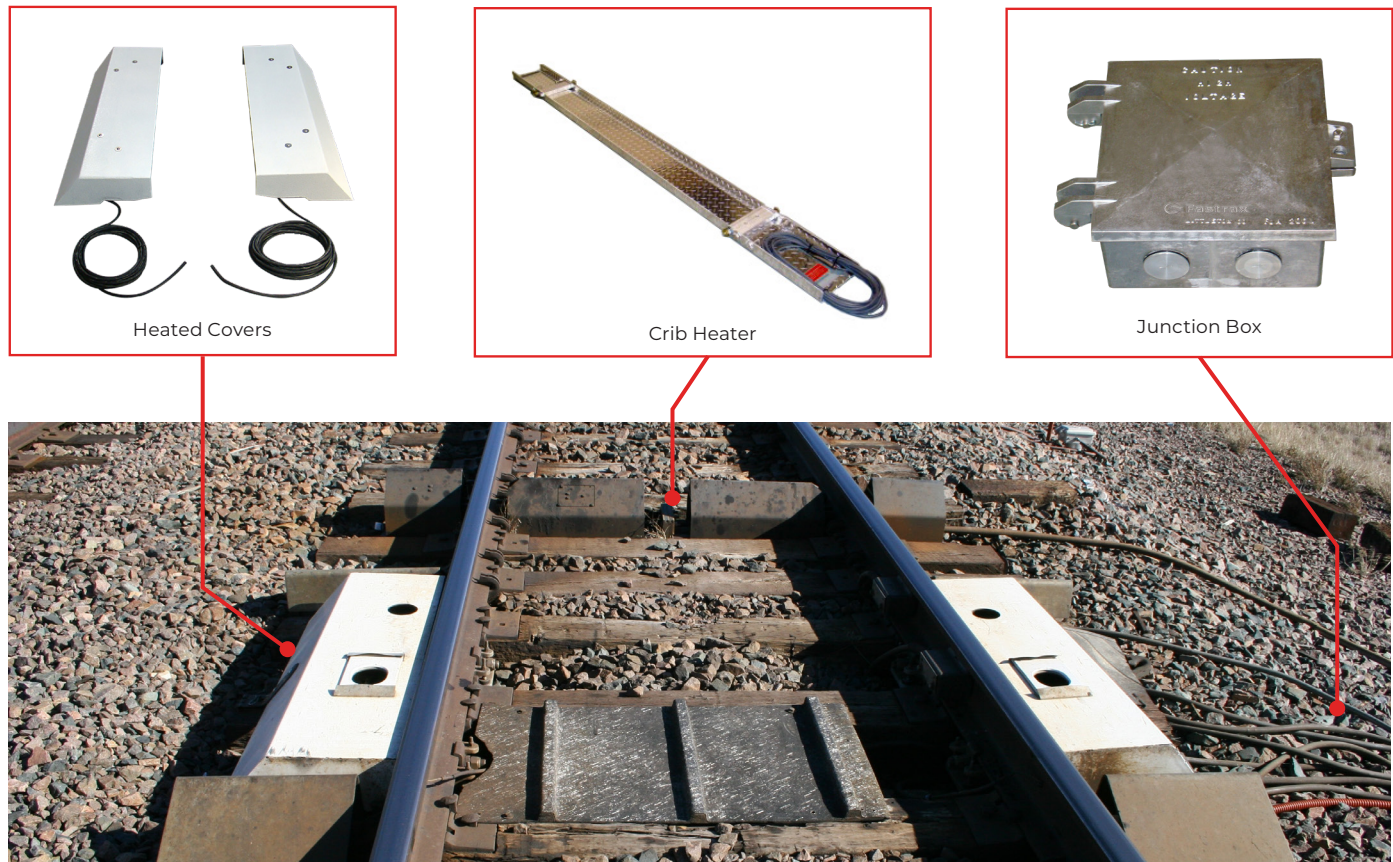


Figure 15

Table 14 – Scanner and Dragging Equipment Detection Heating Package Components

Double Track Quantity	Single Track Quantity	Model No.	Product Description
1	1	GSC2210940	Fastrax™ Stand Alone Scanner Control Panel Controls up to 2 crib heaters and 4 heated covers. 9 kW maximum capacity, (2) 40 amp, 240V terminals provided for line feed. Includes FAS1A aerial snow sensor and support mast. Enclosure size: 20"H x 16"W x 6"D. For indoor installation only.
2	1	FCH152409	Fastrax™ Crib Heater 150 watts per foot of platform length (1,350 total watts), 240V. 8'8" length. Includes (4) jack bolt clamps.
4	2	FSH4244W	Fastrax™ Heated Cover (for Axel Bearing Scanner) 750 watts, 240 volts, 1-phase includes mounting hardware. 4' length. White in color with anti-slip surface.
1	0	FJA200Y	Fastrax™ Scanner Junction Box Optional FGSP1A Ground Snow Sensor.
1	1	FJA200YP	Fastrax™ Scanner Junction Box with optional FGSP1A Ground Snow Sensor.
1	1	FA041 (Single Track) or FA042 (Double Track)	Fastrax™ Installation Accessory Kit Includes insulated connector blocks, liquid tight extra flexible protective conduit, flexible conduit connectors, stainless steel hose clamps, test and tool accessories.

# AC Control Panels

Fastrax™ alternating current (AC) control panels provide an integrated solution for electric rail heating of any switch layout or configuration.

Each control panel incorporates leading technology to ensure efficient and economical operation and is pre-wired and tested for ease of installation and servicing.



## Features

- Ground fault protection
- Individual heater circuit breaker protection
- Mounted safety/service disconnect on deadfront
- Terminal connections for field wiring
- ArcticSense snow sensing
- Internal panel heater
- Heavy duty stainless steel panel, piano hinge and three point latch
- Tamper proof, safe “dead-front” design
- Manual buttons and annunciation lights
- UL approved electrical components
- NEMA 4X construction for increased safety and protection against water penetration
- Available from 120V to 600V

## Benefits

- Energy saving circuitry
- Full automatic control
- Proven long-life components
- Clear labelling and annunciation, basic electrical schematic affixed to panel
- Three point latch accepts standard railroad padlocks
- Convenient localized wiring connections with clear field wiring identification

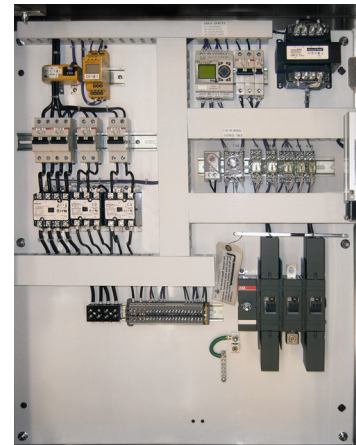


Figure 16 - One Switch Design

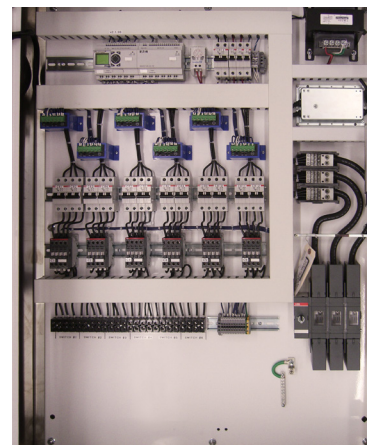


Figure 17 - Six Switch Design

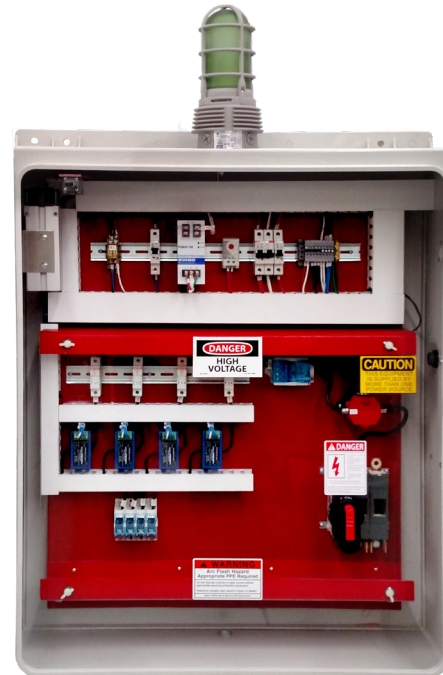
## Model Coding

<b>G</b>	<b>CP</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>48</b>	<b>100</b>
Model Series	Application Type	Total Heaters 2, 4, 6	Voltage 05 - 120V 1 - 208V 2 - 240V 4 - 480V 6 - 600V	Phase 1 - 1 Ph 3 - 3 Ph	Kilowatts 24, 32, 35, 48	Disconnect Amps 100, 175, 200
CP – Mainline Control Panel SC – Scanner & DED Control Panel SFC – Spring Frog Control Panel MPC – Movable Point Frog Control Panel YP - Yard Panel						

# DC Control Panels

Fastrax™ direct current (DC) control panels provide an integrated electric rail heating solution for any switch layout or configuration in rail systems using DC power. DC control panels allow the use of available DC power for switch heating applications, replacing the need for electrical infrastructure required to supply AC power feeds.

Each control panel incorporates leading technology to ensure efficient and economical operation and is pre-wired and tested for ease of installation, operation, and servicing.



## Features

- Controls up to 10 circuits or switches
- ArcticSense snow sensing
- Adjustable or indefinite run time
- NEMA 4 fiberglass enclosure
- Hermetically sealed contactors
- 1000 V DC rated components
- Load breaking disconnect switch
- Isolated high voltage section
- GPO-3 nonconductive backpan
- Dispatch control and indication
- Custom designs and layouts available

## Benefits

- Replaces the need for costly AC power feeds for rail and switch heating applications
- Arc free contactor switching
- Finger safe components prevent accidental contact
- Fully automatic, manual, and dispatch control
- Clear labelling and annunciation, basic electrical schematic affixed to panel
- Hall effect current sensors provide air gap between low voltage and high voltage
- Designs available specifically for 3rd rail power sources

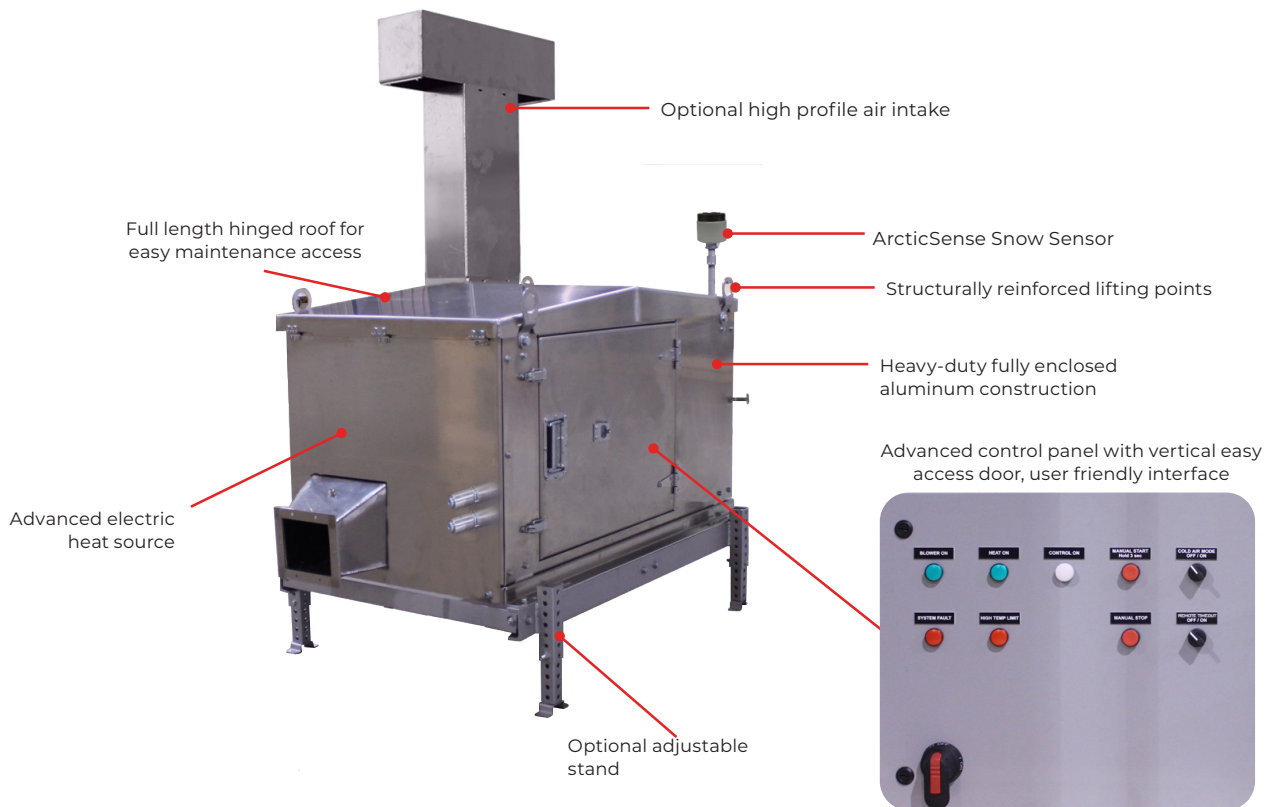
## Model Coding

D	CP	2	6	48	200
Model Series	Application Type	Total Circuits	Voltage	Kilowatts	Disconnect Amps
D – Direct Current	CP – Control Panel	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	6 – 600V 7 – 750V	24, 32, 35, 48	100, 175, 200

# Electric Hot Air Blowers

The Fastrax™ FEB Electric Hot Air Blower switch heater prevents or removes ice and snow build up in the switch point area by delivering high velocity heated air to nozzles located at the switch point.

The Fastrax™ FEB is assembled in a heavy-duty fully enclosed housing with easily accessible internal components. These components include a high velocity blower, rugged heating module and advanced electronic controls. The Fastrax™ FEB comes standard with Fastrax™ FEDP Duct Package and Fastrax™ automatic aerial and ground snow sensing equipment.



## Model Coding

<b>FEB</b>	<b>20</b>	<b>208</b>	<b>1</b>	<b>L</b>	<b>A</b>	<b>01</b>
<b>Model Series</b>	<b>Kilowatts</b>	<b>AC Voltage</b>	<b>Phase</b>	<b>Profile</b>	<b>Enclosure Material</b>	<b>Special Construction</b>
FEB – Fastrax® Electric Hot Air Blower	20, 40, 60	208, 240, 480, 600	1 3	L – Standard H – High	A – Aluminum (Standard)	(if required)

Reminder: This nomenclature illustration is intended to explain how a product part number is derived. Not all voltage and/or wattage combinations are available.  
\* Please contact factory for more information.

## Features

- Standard 20 kW, 40 kW and 60 kW units
- Custom configurations and wattages to suit any track heating application
- Fully enclosed all aluminum construction
- ArcticSense sensors for automatic operation
- Rugged industrial modular electric heater design
- Automated fan shutdown delay for overheat protection
- Multi-stage energy saving operation (independent hot/cold operation)
- NEMA 4 electric enclosure for moisture protection in outdoor applications
- Automatic primary and manual secondary temperature protection
- Easy installation and maintenance
- Quiet operation, noise levels are below 80 dB (lower than AREMA standard)
- Optional remote operation with user selectable timeout function
- Optional low or high profile air intakes, custom heights available
- Advanced electronic controls
  - User-friendly control system
  - Programmable smart relay
  - Manual override button
  - Fault light

## Optional Hybrid System Integral control for Fastrax™ SwitchBlade® and/or Crib Heaters

- Two standard systems:
  - 240V, 2 ph, 20 kW FEB: two 1.35 kW Fastrax™ Crib Heaters, and two 4.6 kW Fastrax™ SwitchBlade® Heaters
  - 480V, 3 ph, 20 kW or 40 kW FEB: three 1.35 kW Crib Heaters, and two 7.6 kW Fastrax™ SwitchBlade® Heaters

## Fastrax™ FEB Selection Guide and Electrical Data

Heater Wattage (kW)	Model (60 Hz)	Voltage	Phase	Full Load Amps	Air Temp. Rise	
					°F	°C
20	FEB202081	208	1	117	117	65
	FEB202083	208	3	69		
	FEB202401	240	1	102		
	FEB202403	240	3	60		
	FEB204801	480	1	51		
	FEB204803	480	3	30		
	FEB206003	600	3	24		
40	FEB404803	480	3	57	121	67
	FEB406003	600	3	45		
60	FEB604803	480	3	81	131	73
	FEB606003	600	3	65		

## Fastrax™ FEB Specifications

Heater Wattage (kW)		20	40	60
Nozzle Velocity	mph	>200		
	km/hr	>320		
Horizontal Throw	ft	>75		
	m	>23		
Motor Power	HP	3	7.5	7.5
	kW	2.2	5.6	5.6
Motor Speed	RPM	3450		
Net Weight*	lbs	432	565	599
	kg	196	256	272
Shipping Weight*	lbs	610	760	799
	kg	277	345	362

\*Standard unit construction.



Figure 18 – FEB-204803

# Duct Packages for Electric Blowers

Fastrax™ FEDP Duct Package for electric blowers consist of an electrically isolated hollow main duct with high velocity point nozzle outlets and elevated flexible transition ductwork to effectively deliver air from Fastrax™ electric blowers to the switch points.

Located in the second crib in front of the switch points, the heat output from Fastrax™ electric blowers are ducted below the rails to the discharge nozzles mounted within the switch. High velocity streams of air (in excess of 200 mph) are directed at the switch points to keep the switch mechanism clear of ice and snow.

## Features

- Heavy-duty aluminum construction
- Hollow tie positioned under track
- Ducting and nozzle connections are electrically isolated
- High velocity discharge nozzles

## Parts List

Duct Size	Part #	
	6" W x 5" H	8" W x 7" H
Main Tie Duct	12972	12984
60" Flexible Duct	12971	13031
72" Flexible Duct	12991	13032
Discharge Nozzles (Qty 2)	12973	12985
Insulation Kit	12983	12986

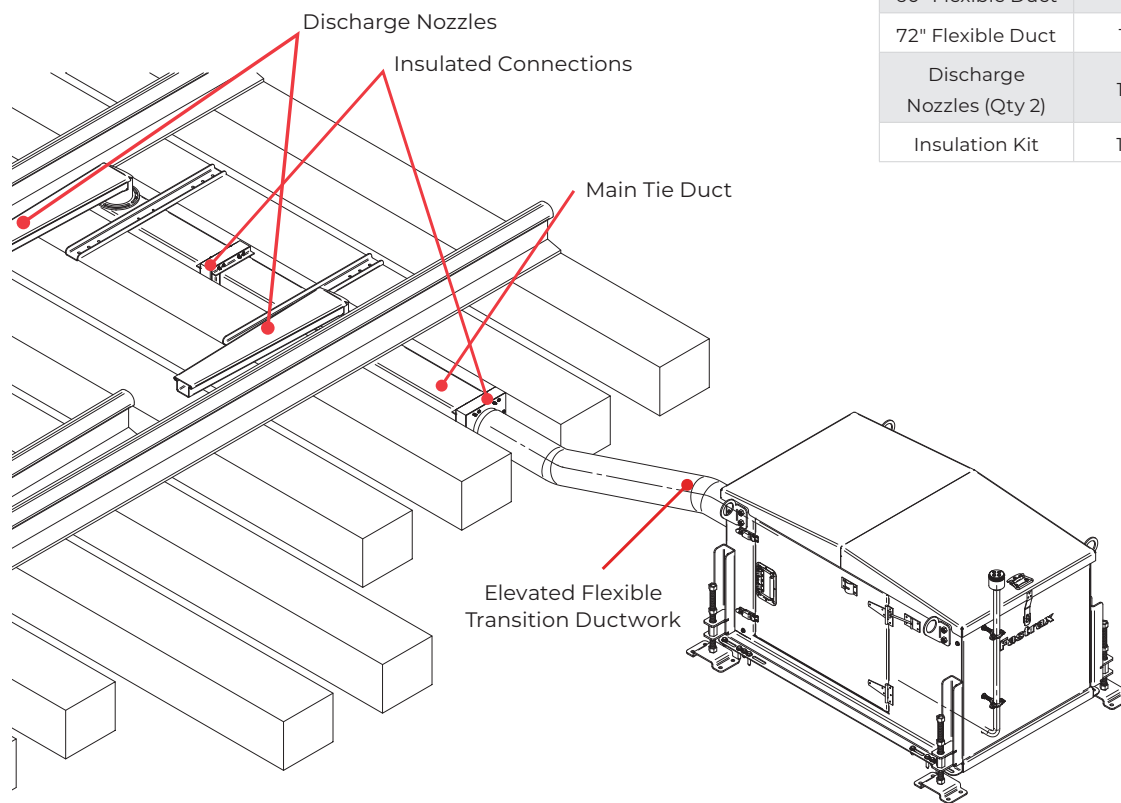


Figure 19 – Duct Package Assembly

## Model Coding

FEDP	-	1	1
Model Series		Tie Duct Size	Flexible Duct Length
FEDP – Fastrax™ Duct Package for Electric Blowers		1 - 6" W x 5" H 2 - 8" W x 7" H	1 - 60" 2 - 72" C- Custom

Reminder: This nomenclature illustration is intended to explain how a product part number is derived.

# Accessories

## Heated Covers

Fastrax™ heated covers are designed to protect axle bearing scanners and wheel sensing scanners from extreme weather conditions while keeping them clear of ice and snow.

### Features and Benefits

- Custom configurations available
- Available in AC or DC voltages, from 240V to 750V



## Snow Sensors:

Thermon's ArcticSense is specifically designed to detect precipitation in the form of snow, sleet and rain from any angle of incidence, making it ideal for detecting both falling and drifting snow in high winds.

- Increased sensitivity detects the slightest snowfall.
- Compact, solid construction makes it extremely rugged and suitable for harsh railroad environment.
- Easy integration to existing Fastrax™ snow clearing products.



## Rail Base Spring Clamps:

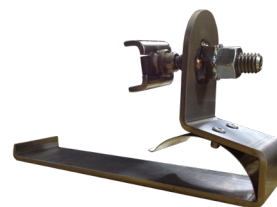
Fastrax™ rail base spring clamps are designed with exclusive patented spring clamp technology allowing for expansion and contraction of Fastrax™ heaters.

### Features

- Stainless steel construction
- Available for both 6" and 5 1/2" rail base

### Benefits

- Dramatically extends heater life
- Easy to install and remove by hand
- No drilling required



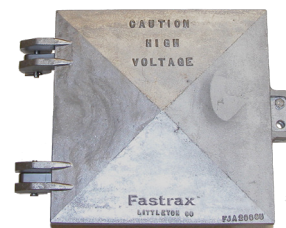
## Installation Kits:

Fastrax™ installation kits include the components necessary for testing and energizing Fastrax™ track and switch heating packages. Typical kits include: entrance glands, insulated connector blocks, liquid tight extra flexible protective conduit, flexible conduit connectors, stainless steel hose clamps, wire markers, test and tool accessories.



## Junction Boxes

Fastrax™ junction boxes are an integral part of a circuit protection system, locating electric switch heaters and other component wiring into one location for easy termination.



### Features and Benefits

- Durable heavy cast aluminum construction
- Measures 12" L x 12" W x 6" H
- Enclosure cover is tapered for drainage with flanged edges and a watertight seal for complete weather-proofing
- Each enclosure cover is cast with model series and 'Caution High Voltage' warning
- Pre-drilled and tapped for conduit or direct burial feeder cables and heater cable leads
- Installed breather drain
- Corrosion protected stand included
- Available automatic snow sensor installed in cover (FJAM200SUP Model)

# HELLFIRE Gas Fired Blower

Fastrax™ HELLFIRE 400, HELLFIRE 900 and HELLFIRE 905 series gas fired blowers consist of a blower, combustion chamber, and ducting system that delivers heated air and combustion by-products to the switch mechanism. The blower is an electrically powered centrifugal fan. Air from the blower enters the combustion chamber and is used for combustion and make up air. The heated air exits the combustion chamber and is ducted below the rails to the point nozzles and track duct nozzles mounted within the switch. The air temperature is thermostatically regulated for maximum snow clearing performance without burning ties or excessive softening of the frozen ballast. Recommended for clearing ice and snow from switches with no longer than 40 feet of moving rail from heel to point of switch.

Fastrax™ HELLFIRE blowers can be used for both single and multiple switch applications.

No.	Label
1	Track duct
2	Track duct elbow
3	Rail mounting spring clip and pad
4	Ballast retainer
5	Thermostat box
6	ArcticSense sensor
7	Burner
8	Regulator vents
9	Condensation vent
10	Gas manifold
11	Control cabinet lid
12	Air intake hood

No.	Label
13	Ambient Temperature Sensor
14	Air intake extension
15	Identification tag
16	Mode selector switch
17	Electrical control access panel
18	Air intake plenum
19	Leveling leg
20	Control panel
21	Motor/Impeller/Base
22	Combustion chamber access panel
23	Transition duct
24	Sensor duct

No.	Label
25	Square to round adapter
26	Flex duct
27	Track duct deflector
28	Insulated tie duct
29	Rail thermostat
30	Point nozzle
31	Track duct mounting bracket
32	Energy Management System Module

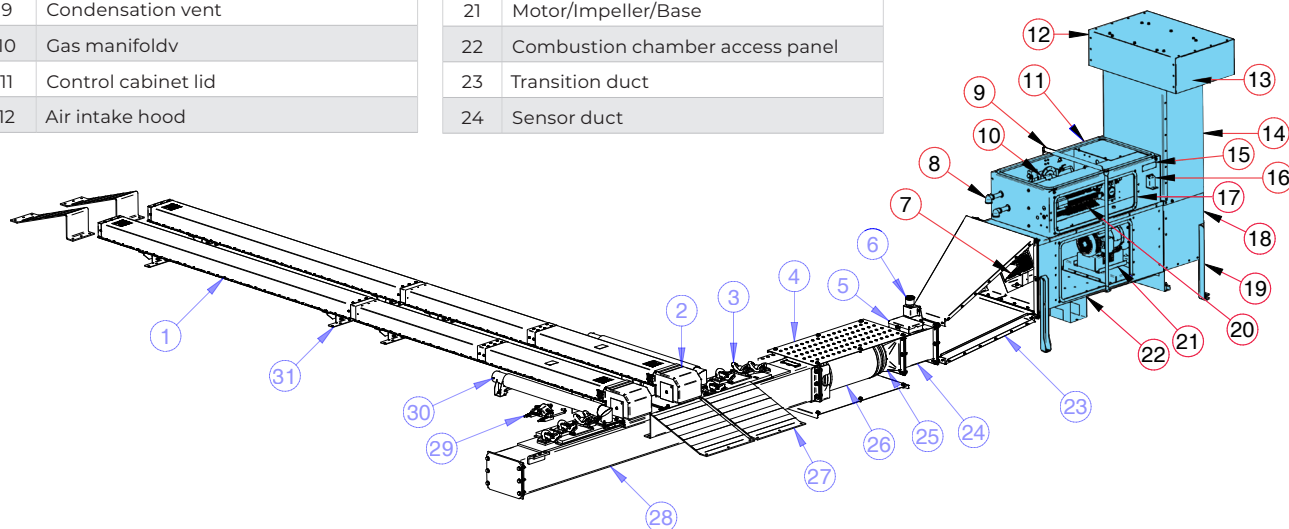


Figure 20 – HELLFIRE 900, 2014, Heater Diagram

## Model Coding

FHF	-	900	3	1	-	L	B	A	-	EMS	-	DG	
		Gas Input		Phase		Intake		Control Access		Energy Management System		Accessories	
		400 - 400,000 BTU/hr		1 - 1 Ph**		H - High		A - Bolt On		EMS - Snow & Rail Thermostat		D - Dirt Trap	
		900 - 900,000 BTU/hr		3 - 3 Ph		L - Low		Q - Quick Release		S - Snow Detection		F - 48" Gas Hose	
		905 - 900,000 BTU/hr				N - Narrow Low				T - Rail Thermostat		G - 72" Dirt Trap	
		with 5 Hp motor										L - Locking Bar	
Model Series		Voltage				Leveling Legs						M - Motor Current Kit	
FHF - Fastrax®		1 - 240V				B - Bolt On						R - Second Stage Gas Regulator*	
HELLFIRE		2 - 208V				S - Screw Type						B1 - Bungalow with levelling legs	
		3 - 460V				X - No Leveling Legs						B2 - Bungalow with corner mounting plates	
		4 - 575V										C - Motor Soft Starter****	
												P - Powered run indication	

\*HELLFIRE 400 Series Only

\*\*240V - only available option for 1 Phase.

\*\*\*Option available for bunaglow only

\*\*\*\*240V HELLFIRE 905 only

\*\*\*\*\*Soft Starter only available for Hellfire 905. 240V. 1 Phase

\*HELLFIRE 400 Series Only

\*\*240V - only available option for 1 Phase.

\*\*\*Option available for bungalow only

\*\*\*\*240V HELLFIRE 905 only

\*\*\*\*\*Soft Starter only available for Hellfire 905, 240V, 1 Phase

Table 15 – Gas Firing Specifications

Series	Fuel	Propane	Natural Gas
HELLFIRE 400	Input Rating BTU/hr (kW)	200,000 - 400,000 (58 - 117)	
	Manifold Pressure " WC (kPa)	1.3 - 5.0 (0.32 - 1.23)	2.3 - 11.0 (0.56 - 2.69)
	Inlet Pressure " WC (kPa)	7 - 14 (1.72 - 3.45)	12 - 14 (2.95 - 3.45)
HELLFIRE 900	Input Rating BTU/hr (kW)	204,000 - 900,000 (60 - 264)	230,000 - 900,000 (67 - 264)
	Manifold Pressure " WC (kPa)	2.5 - 9.0 (0.62 - 2.24)	3.5 - 16.0 (0.87 - 3.99)
	Inlet Pressure psig (kPa)	5 - 20 (34 - 138)	
HELLFIRE 905	Input rating, BTU/hr (KW)	204,000-900,000 (60 - 264)	230,000 - 900,000 (67 - 264)
	Manifold pressure, inches of water (kPa)	5.0 - 11.5 (1.25 - 2.86)	6.0 - 18.0 (1.49 - 4.48)
	Supply pressure, psig <sup>1,2</sup> (kPa)	5-20 (34 - 138)	

Table 16 – Electrical Specifications

Series	Voltage	Phase	Running Amps <sup>123</sup>	Frequency (Hz)
HELLFIRE 400	240	1	7.5	60
	208	3	7.3	
	460	3	3.6	
	575	3	3.0	
HELLFIRE 900	240	1	12.5	
	208	3	10.3	
	460	3	4.8	
	575	3	3.9	
HELLFIRE 905	240	1	27	
	208	3	15.2	
	460	3	7	
	575	3	5.6	

## Construction

- 14 gauge galvanized steel blower, intake and duct work
- Stainless steel combustion chamber and transition duct
- CSA certified, stainless steel proprietary burner design
- Burner defroster kit feature keeps igniter and flame rod clear of frost and condensation
- Direct drive centrifugal fan
- Match balanced motor and impeller set to less than 0.2 ips pk-pk
- Tested to AREMA 11.5.1 Environmental Recommended Requirements
- NEMA 3R enclosure

## Controls

- Direct spark ignition system (HELLFIRE 400), continuous pilot burner system (HELLFIRE 900/905)
- Thermostatically limited track duct nozzle outlet temperature of 380°F (193°C) maximum.
- Programmable delay 'ON' timer, 0 - 99 seconds, allows staggered start up of a series of heaters
- Magnetic motor contactor
- Thermal overload protection
- Network compatible controller, allows operation with Remote Control & Monitoring System (RCMS), multiple heater connection on one RS-485 communication line and incorporates aggressive retry and diagnostics
- Energy Management System (EMS) module provides local control and weather information to centralized EMS RCMS
- Soft Start option to eliminate motor inrush currents (Hellfire 905, 240V, 1 Phase only)

## Gas Conversion

- Heaters are factory set for use with propane gas, with easy field conversion to natural gas

## HELLFIRE 400 Gas Supply

- Recommended supply gas pressure, 12 - 14" WC, with all connected loads operating
- Inlet gas fitting is 3/4" NPT female

## HELLFIRE 900 and 905 Gas Supply

- Allowable nominal supply pressure is 5 - 20 psi
- Recommended supply gas pressure is 5 psi
- Inlet gas fitting is 1" NPT female
- Terminal Block Wire Sizes:
  - Power, #14 to #2 AWG copper
  - Control, 1/4" AAR terminal posts

## Safety Features

- Air pressure (flow) switch: Ignition is disabled until adequate air pressure is developed
- High temperature limit: In the event of thermostat failure and nozzle temperatures exceeding 420°F (216°C), the heater is shut off to avoid tie damage. Heater operation is restored by manual reset
- Loss of flame: The Ignition Module closes the gas valve if after the trial for ignition period of 6 seconds (HELLFIRE 400) and 10 seconds (HELLFIRE 900) no flame is sensed, or if flame detection is lost for more than 1 second during normal operation
- The heater is designed and approved for use as a commercial heater (gas) – railway switch, class 2902 05 in accordance with ANSI Z83.7 / CSA 2.14



Figure 21 – HELLFIRE 400, 2014, Low Intake Shown

# Gas Fired Blower Ductwork

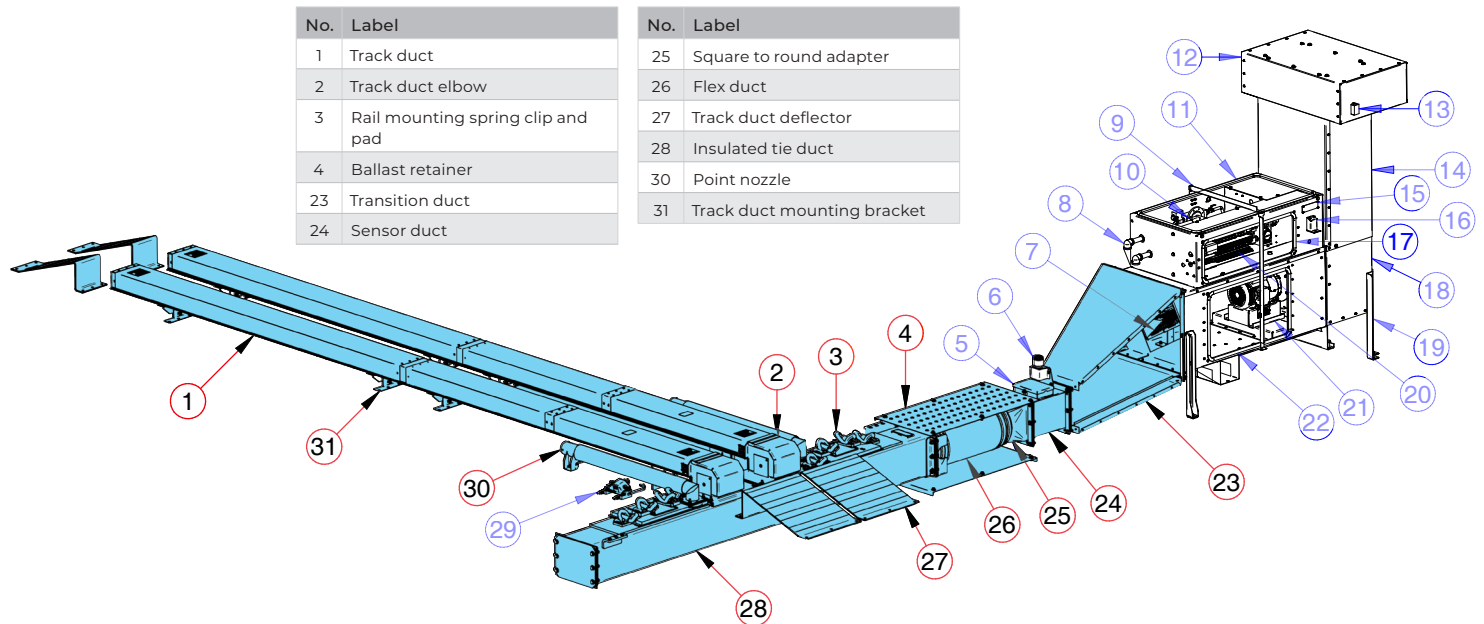


Figure 22 – Ductwork Diagram, refer to HELLFIRE Gas Fired Blower Section for Heater options

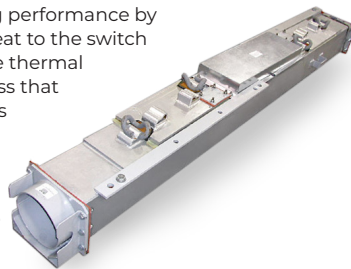
## Tie Duct Assembly (shown above)

### Insulated Tie Duct

The tie duct is a hollow, thermally and electrically insulated structural tie capable of carrying rail loads and efficiently delivering hot or cold air to the duct system of either a gas fired blower or horizontal air curtain. It forms an integral part of our duct systems that can remain in place during automated tamping. Tie ducts not thermally insulated are also available.

### Features

- Hollow structural tie
- Stress analyzed design
- Exceeds the AAR 3000V dielectric requirement for insulated track fittings, with redundant double electrical insulation
- Improves the switch clearing performance by delivering up to 18% more heat to the switch points. At the same time, the thermal insulation minimizes heat loss that causes soft ballast conditions and associated switch point pumping
- For installations that require crossing a mainline track, tie ducts with the appropriate 1:40, 1:30 or 1:20 cants are available with either Pandrol or Safelok rail anchors



### Flex Duct & Ballast Retainer

The flex duct is encased in an anti-slip ballast retainer. It connects the tie duct to the transition duct. The flex hose and ballast retainer are available in multiple lengths to suit most rail heating applications.

## Cross Duct & Tie Duct - Track Duct Assembly

### Transition Duct

The transition duct connects the heater to the duct assembly.

### Point Nozzles

The point nozzles direct air at the switch points to clear snow and ice from between the points and the stock rail.

### Track Duct

The track duct distributes air over the entire length of the switch from point to heel. By opening appropriate pre-slit vents, air is directed at the tieplates or gage rods. Track ducts are available in multiple lengths to suit most rail heating applications. Both wood tie and concrete tie track duct configurations available.

### Sensor Duct

The sensor duct is located between the flex duct and transition duct and is equipped with mounting holes for the precipitation sensor, cycling, high limit thermostats, and thermostat box.

### Switch Rod Crib Heaters (not shown)

Switch Rod Crib Heater is a galvanized steel perforated tube which directs heat within cribs with switch throw or indicating rods to keep them clear of ice and snow. Switch rod crib heater installs to the bottom of the track duct.

## Cross Duct Assembly

### Cross Duct

The cross duct is a 9" x 9" hollow duct made of 11 gauge HDG steel.

# HELLFIRE Accessories

## Dirt Trap

The robust dirt trap meets CSA B149.1 - Natural gas and propane installation code to filter particles of debris from the gas supply before entering the heater. The dirt trap allows for gas line purging, dirt and water inspection, and avoids damage to critical gas manifold components.



## Motor Current Kit

Motor current kit allows for remote monitoring of the motor operation and diagnostics.



## Locking Bar

The locking bar is attached to the front of the heater as a added safety guard against panel tampering and vandalism and allows one pad lock to secure all three access panels.



## Flexible Gas Hose

The CSA certified flexible gas hose completes the piping connection between the gas riser and heater supply inlet, providing vibration isolation and strain relief. The flex hose is available in two sizes - 48" and 72".



## Second Stage Gas Regulator

The second stage gas regulator is used to lower the supply line gas pressure from 2 - 20 psi to the HELLFIRE 400, required inlet pressure of 14" wc.



## Leveling Legs Kit

Leveling legs allow for mounting height adjustment of the heater once installed or after a track lift and ballast tamping.

Two kits available:

- BOLT ON: Bolt on have 1/2" increments and require a jack to lift the heater.
- SCREW TYPE: Screw type raise the heater using a wrench, no jack required.



## Burner Defroster Kit

The burner defroster prevents the build up of frost due to condensation while the heater is idle. This is a standard feature of the 2014 model. Retrofit kits are available for older model heaters.



HF400



HF900 / 905

## Motor Soft Starter

The motor soft starter is an optional component that reduces the inrush and startup amperage to not exceed the full load running amperage under most start up conditions. (Hellfire 905, 240V, 1 phase only)

## Powered Run Indication

Powered run indication is available for those installations that require a 24V DC feedback signal to communicate heater operational status.

# Energy Management System with ArcticSense

Fastrax™ Energy Management System (EMS) is designed to turn gas fired blowers on when there is freezing rain or snow detected by monitoring site conditions such as precipitation, ambient air temperature and rail temperature. Fastrax™ EMS components include a circuit board, ambient air temperature sensor, and optional precipitation sensor and/or rail thermostat.

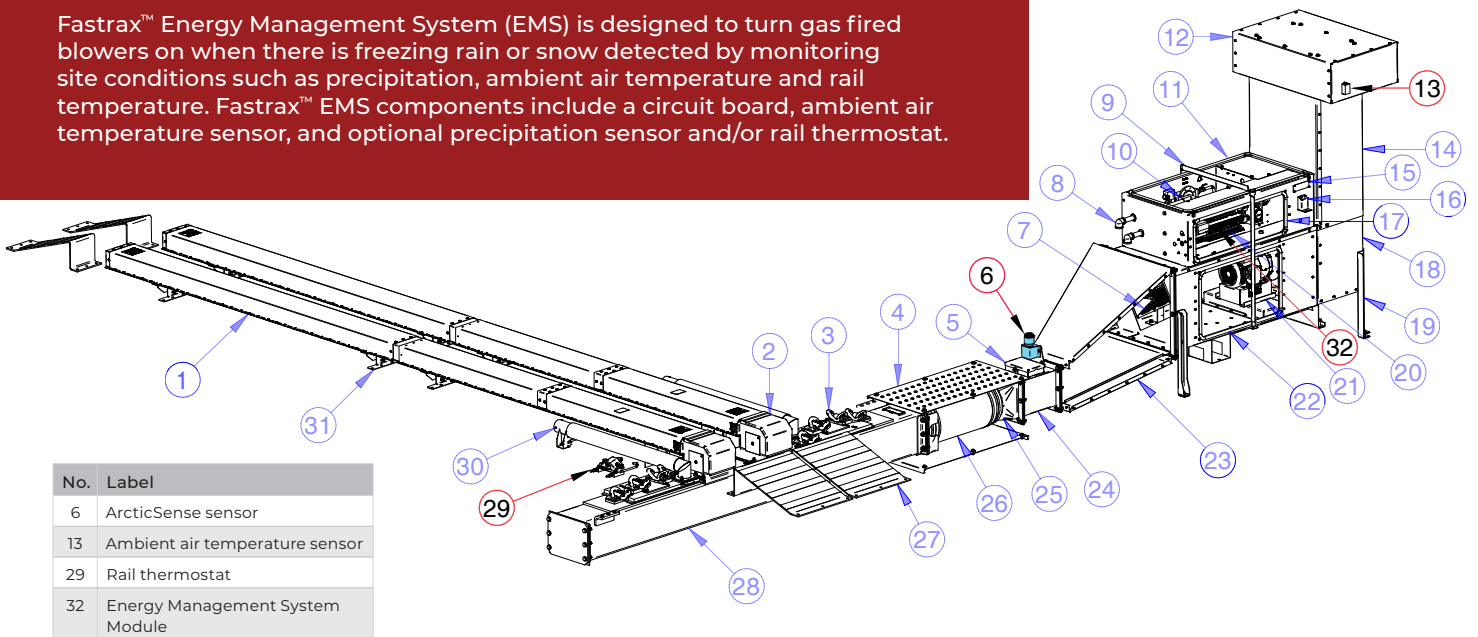


Figure 25 – Energy Management System Diagram

## Three EMS types:

### 1. HELLFIRE Energy Management System

HELLFIRE heaters are designed to accept all the EMS components, a circuit board<sup>1</sup>, a plug in precipitation sensor, ambient air temperature sensor and rail thermostat. No extra enclosure or wiring required, simply plug them into the control board.

<sup>1</sup>The EMS have different circuit boards for HELLFIRE 2005 and HELLFIRE 2014 and therefore are not compatible with one another.

### 2. Single Heater Energy Management System

The Single Heater EMS automates the control of a single heater, typically at an end of a siding.

The Single Heater EMS includes an aggressive retry function that attempts three retries before reporting an alarm in the event of a heater failure. This EMS system is typically used on the Mark 6 and other manufacturers heaters.

### 3. Multi Heater Energy Management System

The Multi Heater EMS is recommended for the automatic control of 2 to 6 heaters, or 2 to 10 heaters, typically at a double crossover. The Multi Heater EMS is installed in the signal bungalow to provide a single control point for all heaters and use of existing control wiring.

The Multi Heater EMS includes a switch warming function, daily heartbeat heater trial, manual run timer, RTC timer, stagger start timer and test cycle. The switch warming function turns the switch heaters on briefly after extended periods to remove any blown snow accumulation or fallen ice in the switch. The heartbeat function helps avoid train delays by testing the heaters for 5 minutes daily, reporting any failures before a snowstorm.

### Rail Thermostat

The rail thermostat for HELLFIRE blowers optimizes fuel consumption. It functions independently of the Energy Management System module, cycling the heater off when the rail temperatures rises above 49°F (4°C) then back on again once the temperature drops below 38°F (3°C).



### ArcticSense Snow Detection

Arctic Sense Snow Detection is a combination of ambient temperature and precipitation sensing. Snow or ice landing on the ArcticSense sensor melts and the water is detected. The combination of the snow/rain temperature set point, moisture sensitivity set point, and delay ON and OFF time turn the switch heater ON or OFF automatically, as required.



Figure 23 – Precipitation Sensor



Figure 24 – Ambient Temperature Sensor

# Horizontal Air Curtains

Fastrax™ HAC Series Horizontal Air Curtains produce a high velocity curtain of ambient air to prevent the accumulation of ice and snow from entering switches. These cold air snow clearing devices consist of a compact blower unit and ducting system that delivers airflow to the switch mechanism. The blower unit is an electrically powered centrifugal fan equipped with a low velocity air intake. The blower output is ducted below the rails to nozzles mounted within the railway switch. From the two nozzles, 120 - 140 mph high velocity air streams are directed towards the point of the switch.

Fastrax™ QHAC Series Quiet Horizontal Air Curtains are designed for use in residential areas, with reduced sound pressure levels below 60 dbA at 50 feet.



Figure 26 – QHAC Quiet Horizontal Air Curtain



Figure 27 – Standard HAC Horizontal Air Curtain

## Model Coding

HAC	-	3	1	-	5	H	2	-	DT
		Voltage	Frequency		Power		Track Options		Accessories
		1 - 240V*	1 - 1 Ph		5 - 5HP - up to #14 switch		1 - One track		D - Delay Start Timer
		2 - 208V	3 - 3 Ph		7.5 - 7.5HP - up to #20 switch		2 - Multiple tracks**		T - Temperature Switch
		3 - 460V							
		4 - 575V							
Model Series		Profile							
HAC – Fastrax® Horizontal Air Curtain		H - High Profile							
QHAC – Fastrax® Quiet Horizontal Air Curtain		L - Extra Low Profile							

\*240V - only available option for 1 Phase.

\*\* Option 2 requires 7.5 hp

## Features

- Standard HAC series horizontal air curtains
- Quiet (low noise) QHAC series horizontal air curtains

### Recommended Use

- 5 HP HACs on switches up to #14
- 7.5 HP HACs on switches up to #20

### Power

HP	Volts	Phase	HAC FL Amps
5	208	3	13.2
	240	1	21.0
	460	3	6.0
	575	3	5.1
7.5	208	3	21.0
	240	1	33.0
	460	3	9.5
	575	3	7.9

**Note:** Actual current draw varies with temperature, altitude and voltage.

### Controls

- Weather-tight all stainless steel control box with clasp for padlock
- Remote/Auto/Manual selector switch
- Motor starting contactor with overload protection

### Air Output

- 5 HP 2500 cfm, 7.5 HP 3000 cfm

### Sound Pressure Level

- Standard HAC series - 65 dBA at 50 feet
- Quiet (low noise) QHAC series - 60 dBA at 50 feet

### Construction

- Galvanized steel for maximum corrosion protection
- Match balanced impeller and motor for long vibration free life
- Centrifugal fan, direct drive
- Fan balanced to less than 0.15 ips pk to pk

### Air Intake Profile

- High profile air intake for areas with excessive snowfall
- Extra low profile air intake to provide minimum obstruction for areas with space limitations

### Nozzles

- Rotating nozzles and adjustable vane to direct air where needed
- Peak air speeds of over 140 MPH, highest rated switch protection available
- Electrically isolated from crossducts
- Extension ducts available

## Accessories

### Temperature Switch

- Automatic startup in low temperatures to maximize snow clearing
- Conserves energy and run time by only running when temperature is below set point



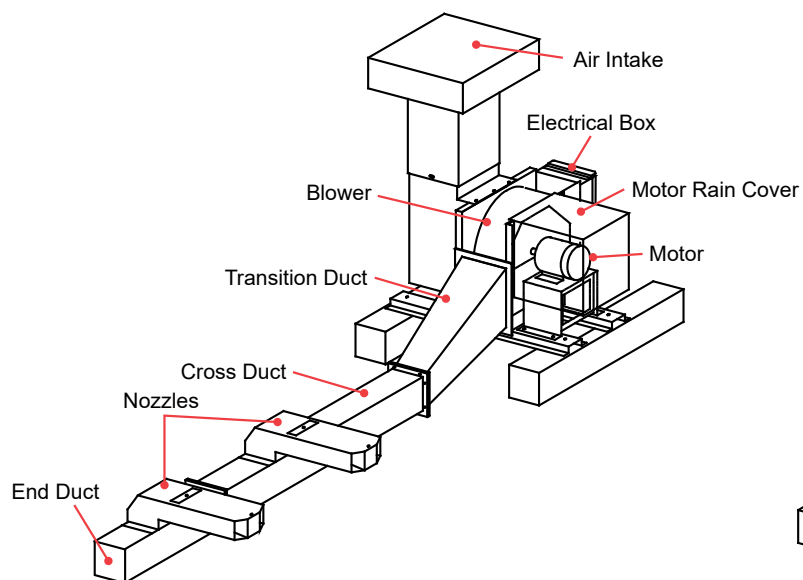
### Delay Start Timer

- Staggers starting time for minimizing inrush current for multi-unit installations

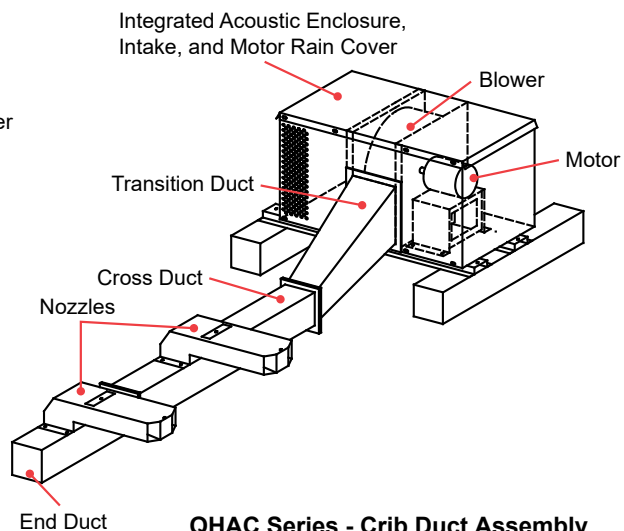


Control Option	Part No.
Delay Start Timer	18420
Temperature Switch	18425

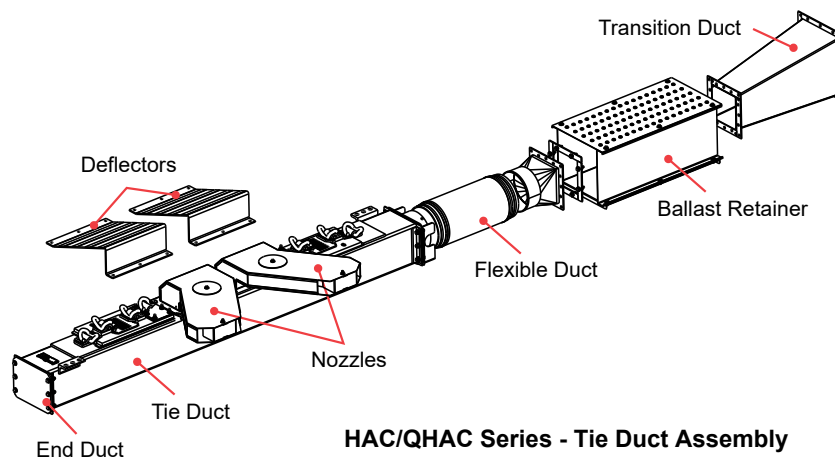
# Air Curtain Ductwork



**HAC Series - Crib Duct Assembly**



**QHAC Series - Crib Duct Assembly**



**HAC/QHAC Series - Tie Duct Assembly**

# Crib Duct Systems

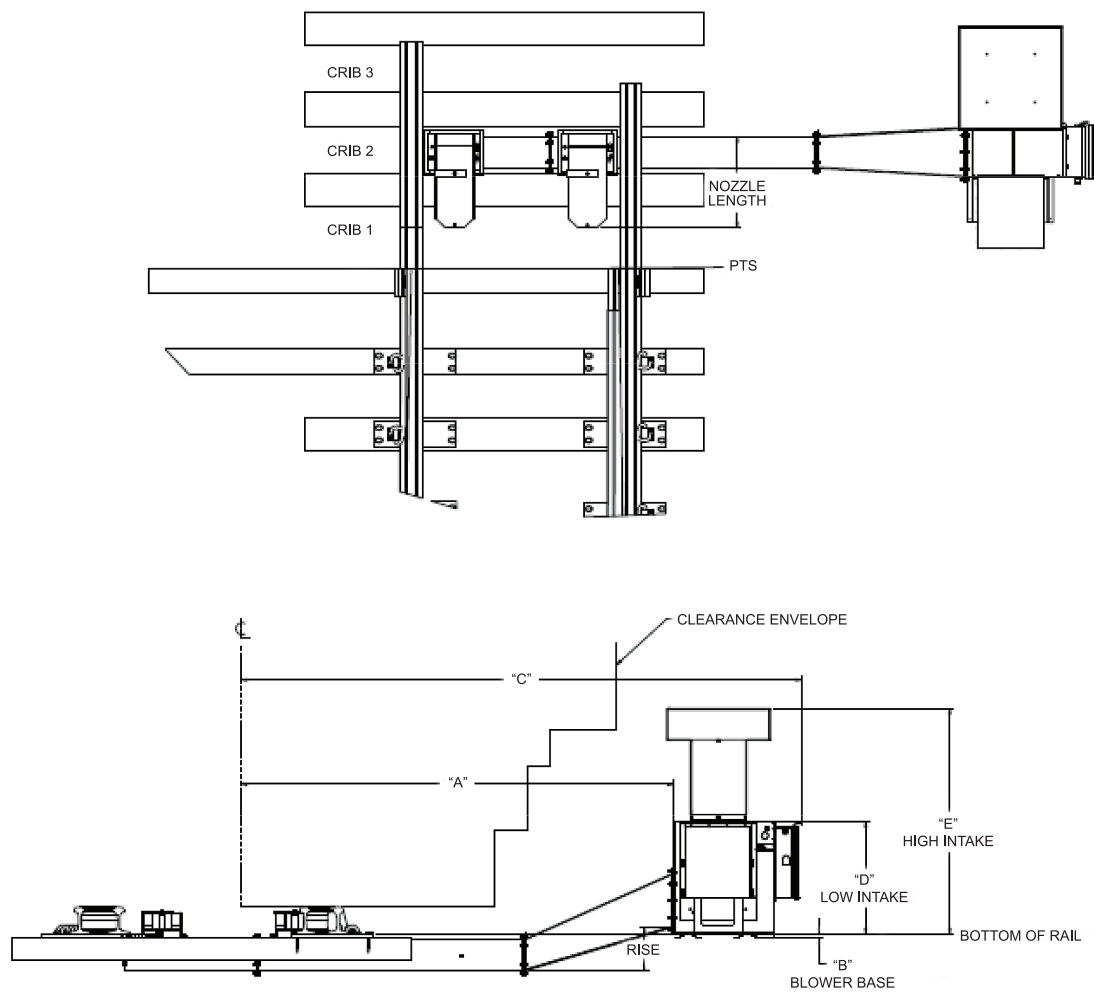


Table 17 – Crib Duct Systems

Crib Duct Systems							
Nominal Clearance/Rise	Dimensions (in.)					Nozzle Length	
	A	B	C	D	E	25 in.*	40 in.**
120 in / 12 in	120.5	1.4	155.1	30.3	60.9	15122	15125
90 in / 6 in	90.3	7.2	124.8	24.6	55.3	15121	15124
72 in / 0 in	72.5	13.1	107.1	18.6	49.3	15120	15123

\*Systems with 25 in. nozzles are intended for installation in the second crib, or 40 in. nozzles in the third crib ahead of the switch points.  
 \*\*40 in. nozzles are recommended for use with quiet systems for maximum noise reduction.

# Tie Duct Systems

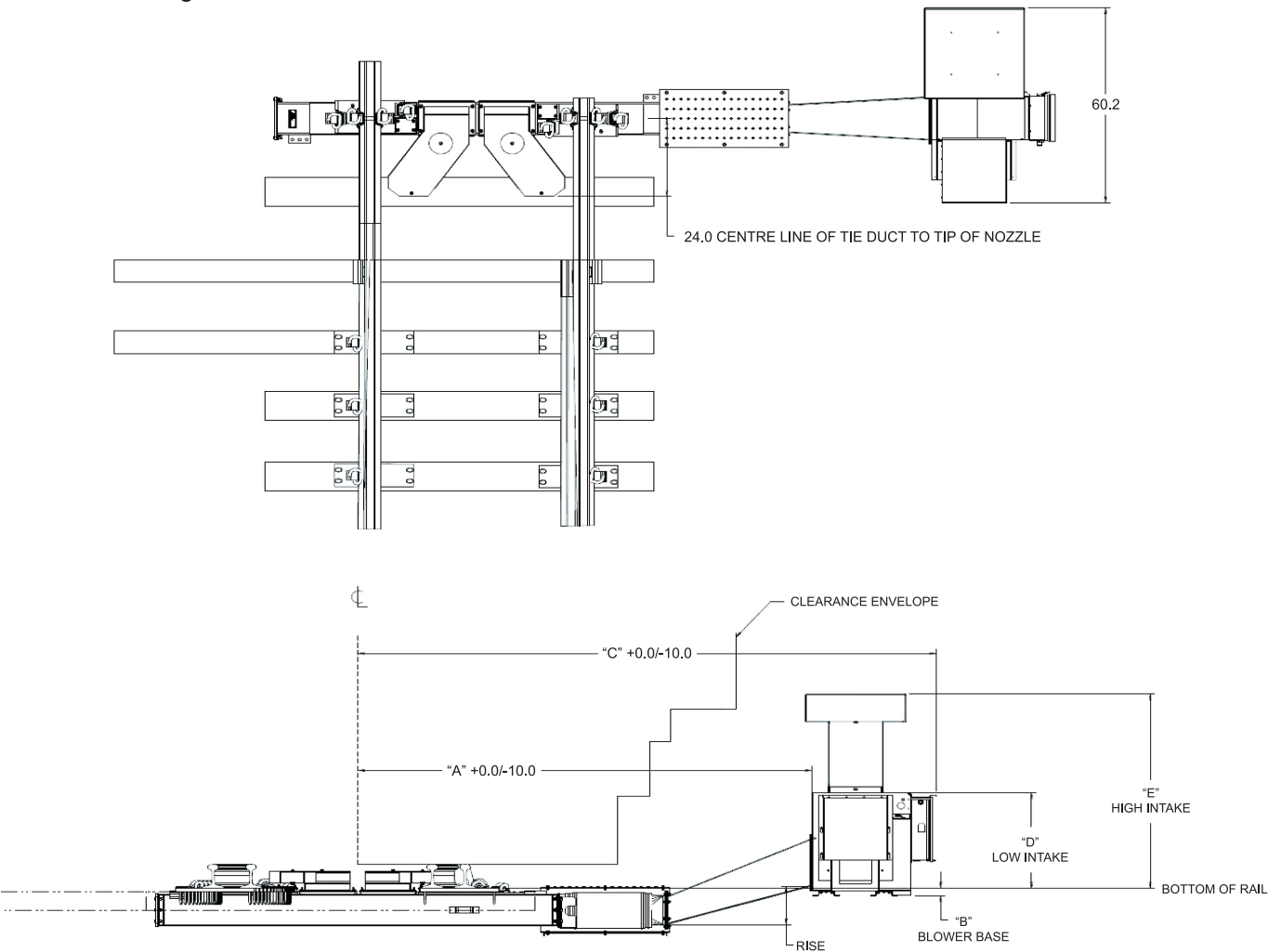


Table 18 – Tie Duct Systems

Tie Duct Systems							
Nominal Clearance/Rise	Dimensions (in.)					Rail Base Width	
	A	B	C	D	E	6 in.	5.5 in.
126" /12"	126.2	2.4	160.7	29.5	60.0	14320	14323
116" / 6"	115.7	8.1	150.2	23.7	54.2	14321	14324
116" / 0"	115.7	14.1	150.2	17.8	48.3	14322	14325

# Horizontal Air Curtains for Hot Box Detectors

Fastrax™ HAC/HBD Series Horizontal Air Curtains for Hot Box Detectors ensure reliable operation of hot bearing detectors all winter long. The scanner line of sight is kept clear by covering the scanner with a high velocity curtain of ambient temperature air to prevent the accumulation of snow and freezing rain. When left to run continuously, the HAC takes advantage of a phenomenon called sublimation, providing additional clearing capability by evaporating ice from frost build-up.

Fastrax™ HAC/HBD is intended for use with detectors mounted straddling a tie and can be modified for crib mounting. The HAC/HBD snow clearing device consists of a compact electrically powered centrifugal blower equipped with a low velocity intake, ducting and two nozzles. The air from the blower is ducted below the rails, exits the rail mounted nozzles at approximately 100 mph, and is directed over the hot box detector.



Figure 28 – HAC/HBD



Figure 29 – Complete HAC/HBD package

## Model Coding

HAC/HBD	-	1	1	-	1 5	-	DT
Model Series		Voltage	Frequency		Power		Accessories
HAC/HBD – Fastrax™		1 - 240V	1 - 1 Ph		15 – 1.5 HP		D - Delay Start Timer
Horizontal Air Curtain							T - Temperature Switch
for Hot Box Detectors							

# Features

## Compatibility

- Servo and Southern Technologies detectors

## Performance

- 1.5 HP HAC delivers peak nozzle velocity of 100 mph

## Construction

- 14 gauge cold rolled steel, including nozzles
- Durable epoxy powder coated blower, intake, and duct work
- Direct drive centrifugal blower
- Stainless steel electrical box
- Match balanced motor and impeller sets, to less than 0.2 ips peak to peak

## Size & Operating Voltage

- 1.5 HP, 240V AC, 8 amp, 1 phase

## Controls

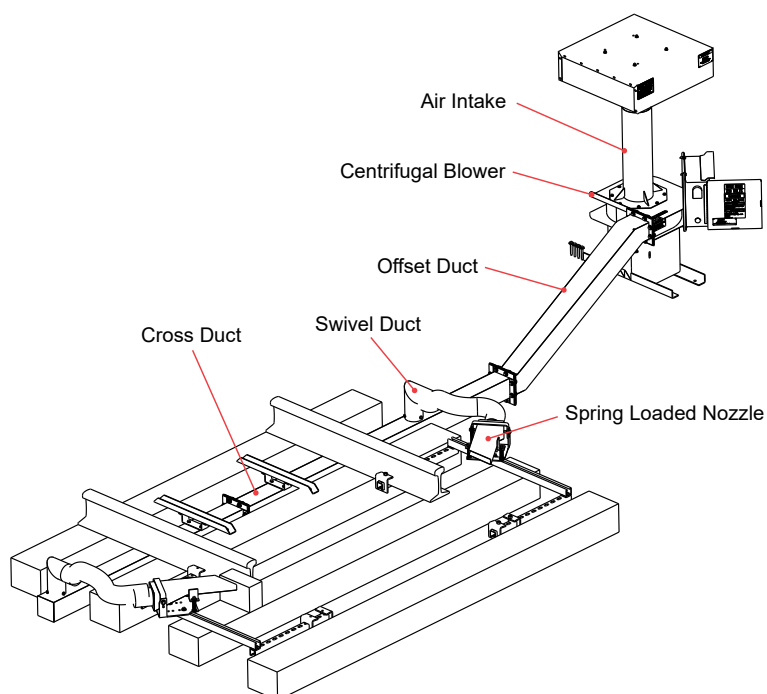
- Weather-tight NEMA 3R electrical enclosure
- REMOTE/AUTO/MANUAL modes
- Magnetic motor starter complete with thermal overload protection

## Terminal Block Wire Size

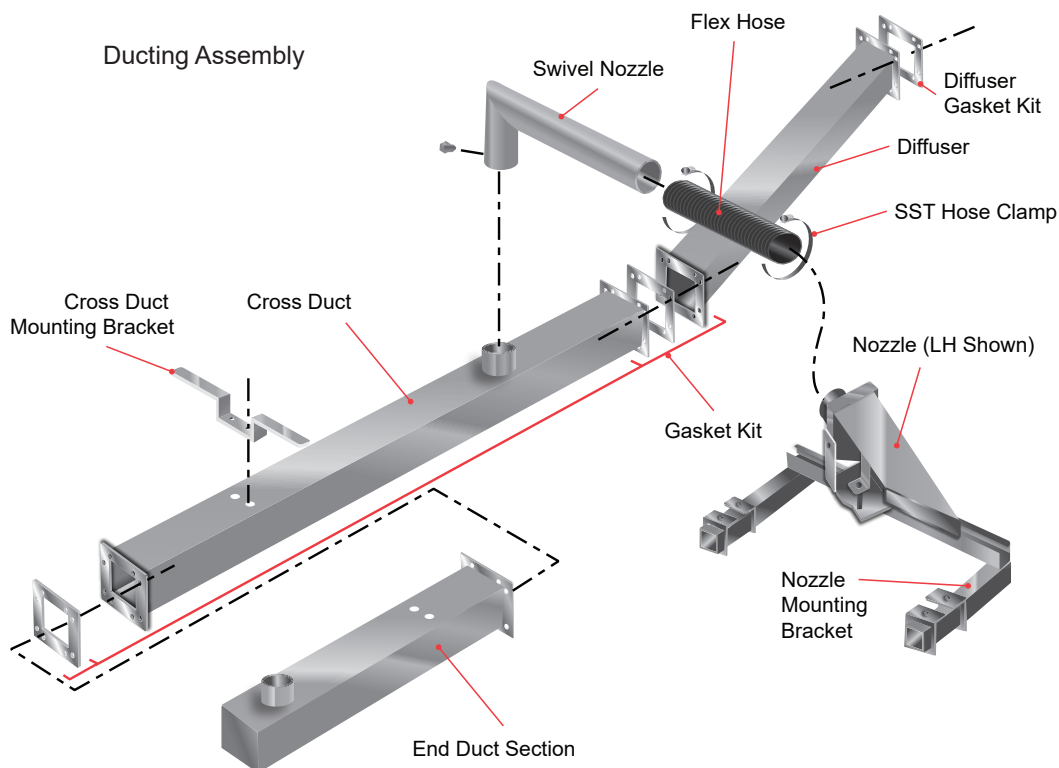
- #12 to #4 AWG copper

## Electrical Isolation

- Ducting, nozzle connections and unistruts are electrically isolated to eliminate the possibility of short circuiting rails
- Connections are designed and tested to withstand a maximum of



1500V AC for 3 seconds



# OK Series Radiant Heaters

Thermon radiant heaters are the obvious choice for comfort, space and spot heating of passenger platforms, shelters, vestibules and other critical areas. Available in a wide variety of fixtures with a choice of metal sheathed or quartz tube heating elements Thermon has a design to suit your needs.



## Features

- Available with Incoloy or quartz tube elements.
- Designed and built in accordance with CSA Std. C22.2 No. 46 and cUL Std. 2021
- Extruded aluminum reflector.
- Eye bolt included for chain mounting
- Integral wiring trough simplifies heater wiring
- Factory supplied 1 / 2" conduit entry
- Moisture resistant option
- Protective wire guards available.

## Benefits

- Wide variety of voltages available
- Tilting option standard
- Rapid response
- Weather resistant
- Heat objects, not air
- Spot heating

## OKB



Table 19 – Incoloy Element 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.95	120, 208, 240	31.5	800	20	508	OKB299C6	5.1	2.3
1.5		43.5	1105	32	813	OKB411C6	6.8	3.7
1.9		49.5	1257	38	965	OKB471C6	8.0	3.6
2.0	208, 240, 480, 600	43.5	1105	32	813	OKB412C6	7.2	3.3
2.3		49.5	1257	38	965	OKB472C6	8.1	3.7
3.0		61.5	1562	50	1270	OKB593C6	9.9	4.5
3.8		73.5	1867	62	1575	OKB713C6	11.7	5.3

**Note:** Proper ground fault protection shall be provided to prevent personnel injury or property damage.

Table 20 – Quartz Tube 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.8	120, 208, 240	27.5	699	16	406	OKB258T6	4.9	2.2
1.6		43.5	1105	32	813	OKB411T6	7.1	3.2
2.5	208, 240, 480, 600	61.5	1562	50	1270	OKB592T6	9.7	4.4
3.1		73.5	1867	62	1575	OKB713T6	11.3	5.1

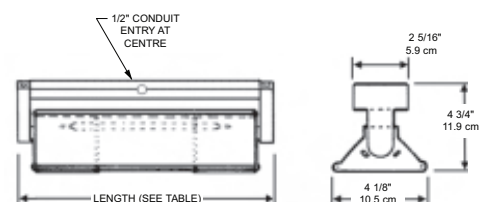


Figure 30



OKH

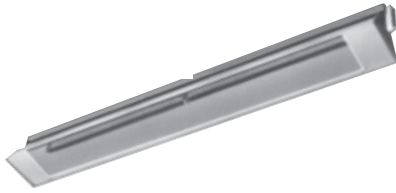


Table 21 – Incoloy Element 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.95	120, 280, 240	31.5	800	20	508	OKH299C4	7.7	3.5
1.5		43.5	1105	32	813	OKH411C4	10.2	4.6
1.9		49.5	1257	38	965	OKH471C4	11.9	5.4
2.0	120, 240, 480, 600	43.5	1105	32	813	OKH412C4	10.6	4.8
2.3		49.5	1257	38	965	OKH472C4	11.9	5.4
3.0		61.5	1562	50	1270	OKH593C4	14.6	6.6
3.8		73.5	1867	62	1575	OKH713C4	17.3	7.9

Quartz Tube 45° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
0.8	120, 208, 240	27.5	699	16	406	OKH258T4	7.2	3.3
1.6		43.5	1105	32	813	OKH411T4	10.6	4.8
2.5	208, 240, 480	61.5	1563	50	1270	OKH592T4	14.3	6.5
3.1		73.5	1867	62	1575	OKH713T4	16.8	7.6

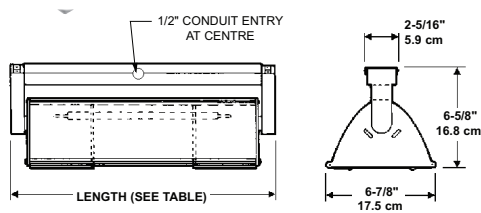
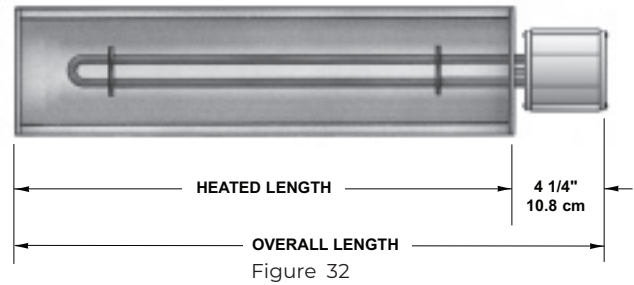


Figure 31

## OKH - Incoloy Element with Moisture Resistant Terminal Housing

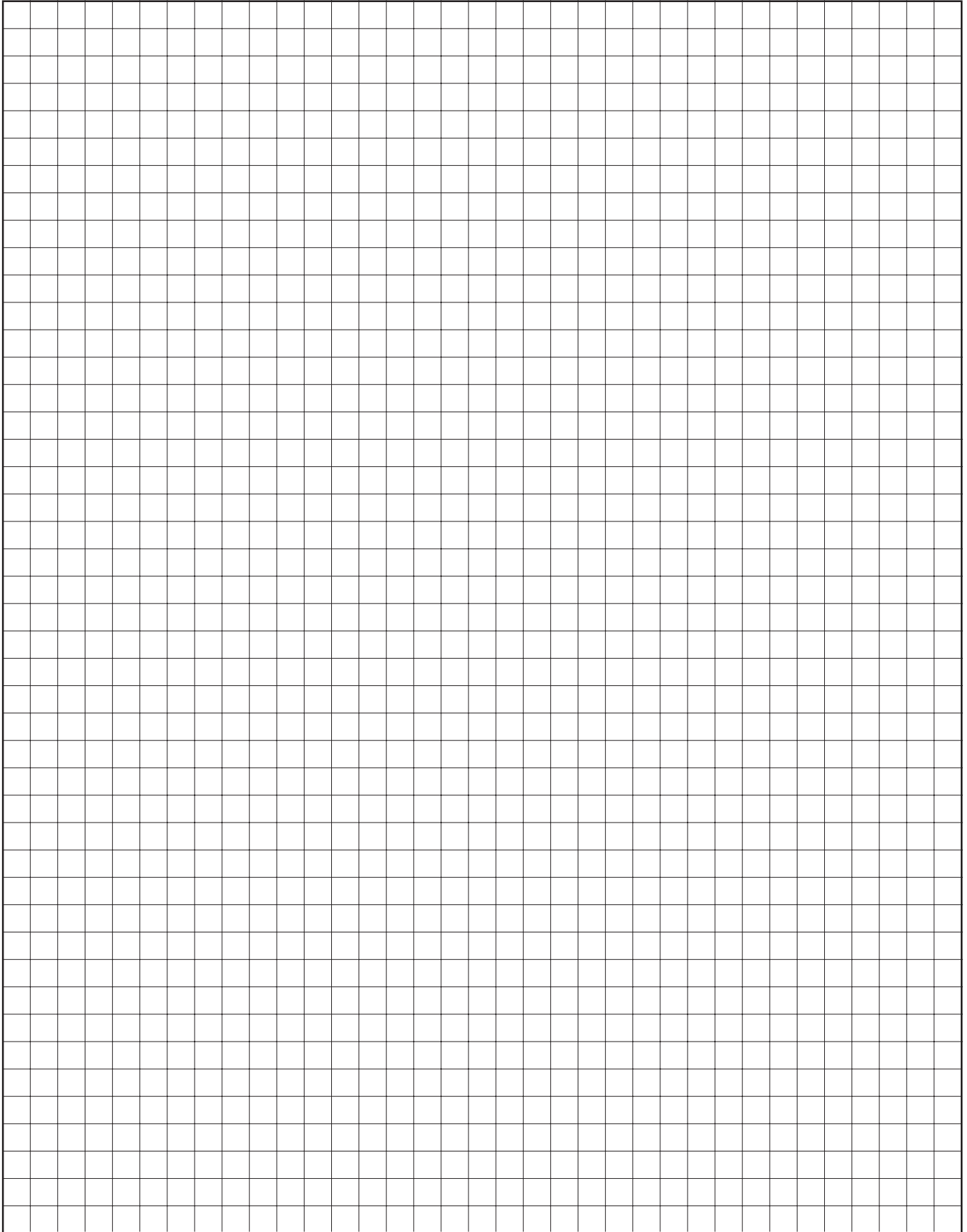


**Note:** This model does not have the tilting fixture. Sliding mounting pads with hooks are provided.

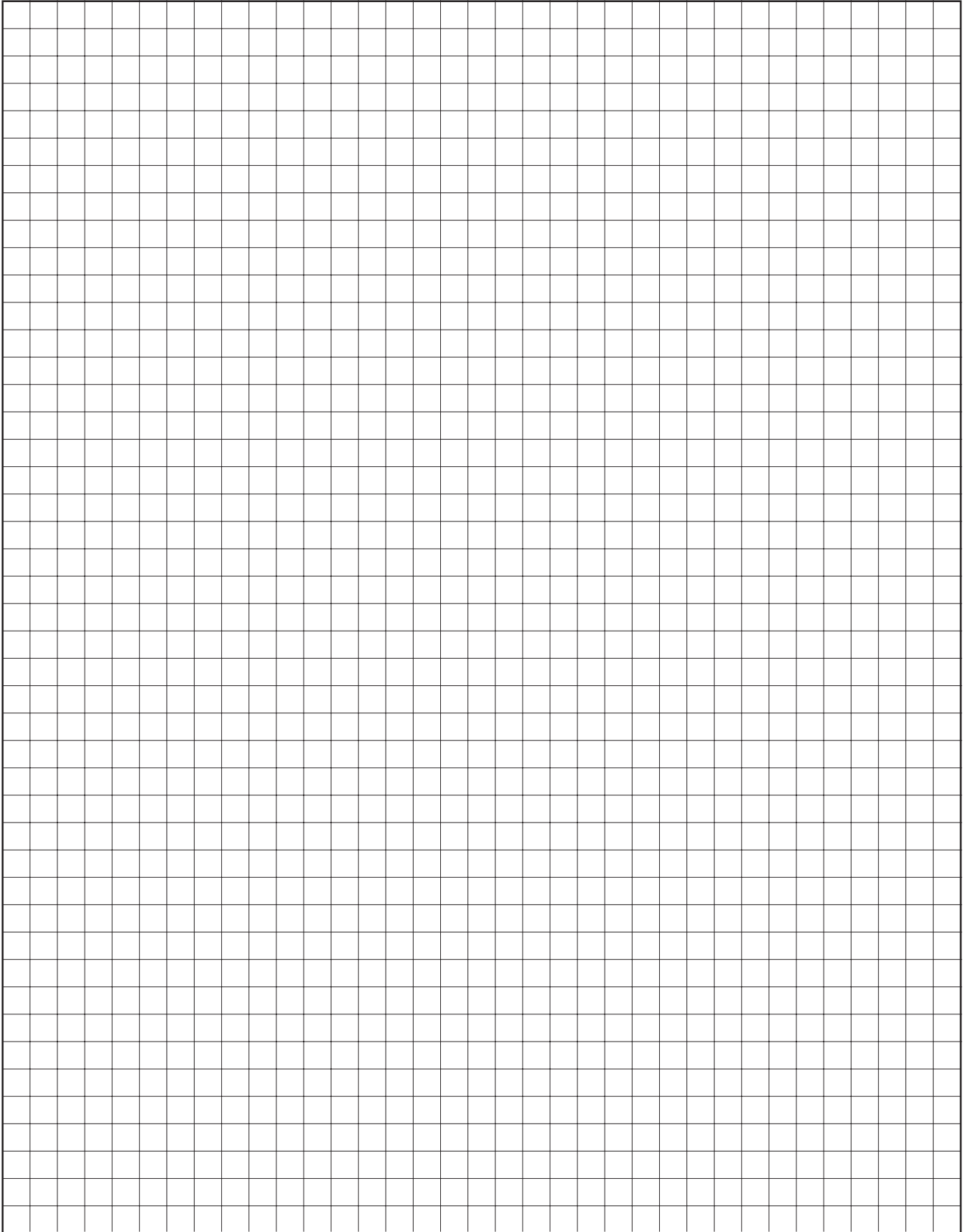
Table 22 – Moisture Resistant 60° Spread

kW	Standard Voltages	Overall Length		Heated Length		Catalog No.	Shipping Weight	
		in	mm	in	mm		lbs	kg
1.6	208, 240, 480, 600	23.25	590	19	483	OKH191H6R	6.3	2.9
2.1		29.25	742	25	635	OKH252H6R	7.4	3.4
3.0		38.25	971	34	864	OKH343H6R	9.0	4.1
4.2		51.25	1301	47	1194	OKH474H6R	11.3	5.1
5.3		63.25	1606	59	1499	OKH595H6R	13.5	6.1
6.5		75.25	1911	71	1803	OKH716H6R	15.6	7.1

## NOTES



## NOTES





# Fastrax<sup>TM</sup>

**ENGINEERED SNOW CLEARING PRODUCTS FOR RAIL APPLICATIONS**



Thermon Transportation Solutions Made for You  
Visit [www.thermon.com](http://www.thermon.com) to contact a Thermon representative near you.

**HEAD OFFICE:** 7171 SOUTHWEST PKWY | BUILDING 300 SUITE 200 | AUSTIN, TX | 78735 | UNITED STATES

**FASTRAX:** 1500 W CAMPUS DR | LITTLETON, CO | 80120 | UNITED STATES



Printed in Canada M80000-003.REV.7