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### 1. Introduction

#### 1.1 About this Installation Supplement

This installation supplement provides specific information, operating directions and installation instructions pertaining to the Air Top 3500 / 5000 exterior cargo kit and additional installation hardware not covered in the general installation / operation manual included with the Webasto heater.

The information within this supplement is to be used in conjunction with the general installation / operation manual included with the Webasto heater.

#### 1.2 Important Safety Information Concerning Installation and Operation

This manual is intended to support authorized Webasto trained distributors, dealers and personnel in the installation and operation of the Air Top 3500 and Air Top 5000 air heater cargo kit.

Webasto Product North America, Inc. does not recommend the installation and servicing of Webasto products by untrained, unauthorized personnel or end-users.

Installations and servicing of Webasto products by untrained, unauthorized personnel and end-users will release Webasto Product north america, Inc. and Webasto authorized distributors, dealers and personnel from responsibility for damage to Webasto product or collateral property damage and personal injury.

Any use, operation, installation, modification or application of the product not described in Webasto manuals, or subjecting the product to extreme or unusual conditions beyond the limits of specified performance characteristics is misuse of the product.

Failure to comply with all installation instructions is a misuse of Webasto product. The same applies for repairs without using genuine Webasto service parts. This will void the heaters "Official Marks of Conformity."

#### 1.3 Meaning of Warning, Caution, and Attention Headings

Warning, Caution and Attention headings in this manual have the following meaning:

##### **WARNING**

*This heading is used to highlight that non-compliance with instructions or procedures may result in serious injuries or death to personnel.*

##### **CAUTION**

*This heading is used to highlight that non-compliance with instructions or procedures may cause damage to equipment or injury to personnel.*

##### **ATTENTION!**

*This heading is used to highlight and draw specific attention to important information.*

### 1.4 General Kit Description

Heater with:

- mounting platform
- enclosure and lid
- temperature control
- air inlet screen
- mounting hardware

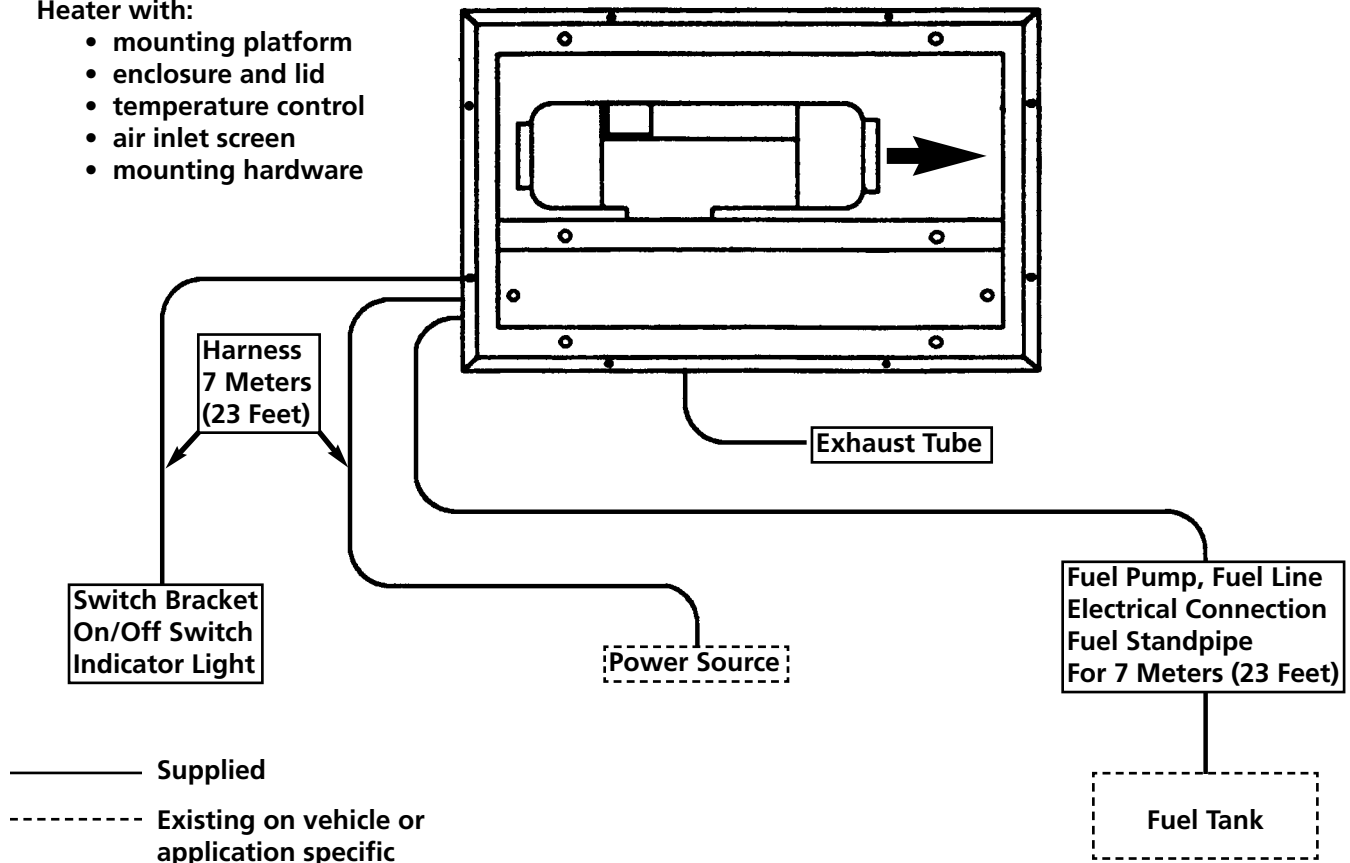


Fig. 1: General Overview

### 1.5 Application

Air Top Exterior Installation Kits are well suited for transit heating or storage heating of temperature sensitive products and offer substantial benefits and savings compared to competitive propane, reefer units or small engines posed as heaters. Webasto Product N.A., Inc. provides a genuine air heater to protect products from the extremes of winter.

The Webasto Air Top exterior Cargo Installation Kits are independent auxiliary or supplemental heating systems designed to protect temperature sensitive / valuable products from freezing. Applications include van bodies, straight trucks, trailers, beverage containers as well as several specialty vehicle applications (gasoline / diesel in 12 and 24 volt units available).

### 1.6 Selecting the Correct Webasto Cargo Air Heater Kit for Freeze Protection

Insulation quality and quantity, the storage area dimensions and the geographical region in which the vehicle operates play an important role in determining the correct cargo heating kit. Refer to the following table for heater per application suggestions.

<b>Air Top 2000</b>	3,100 to 7,000 Btu/h	1,024 cubic feet	to 16 ft container
<b>Air Top 3500</b>	5,100 to 12,000 Btu/h	1,536 cubic feet	to 24 ft container
<b>Air Top 5000</b>	5,100 to 19,000 Btu/h	2,432 cubic feet	to 38 ft container
<b>HL 90</b>	22,00 or 31,000 Btu/h	3,392 cubic feet	to 53 ft container

For cargo applications where temperatures above 16 °C (60 °F) are desired, it is necessary to move up to the next model heater than the model suggested in the table.

#### ATTENTION!

*Properly insulated containers not only ensure satisfactory operation of the selected heater but will reduce fuel and power consumption cost, particularly for storage applications.*

## 2. Operating the Exterior Cargo Kit

#### ⚠ WARNING

*Due to the risk of carbon monoxide poisoning causing death or serious injury to personnel, the heater must not be operated in enclosed areas, such as garages or workshops, without an exhaust venting system, not even if the start-up is activated by the timer or remote start device.*

*At filling stations and fuel depots the heater must be switched off as there is a potential danger of explosions.*

*Where flammable fumes or dust may build up (e.g. in the vicinity of fuel, coal, wood, cereal grain deposits or similar situations) the heater must be switched off to prevent explosions.*

### 2.1 Switching Heater On

The heater is switched On and Off by means of a weather proof toggle switch.



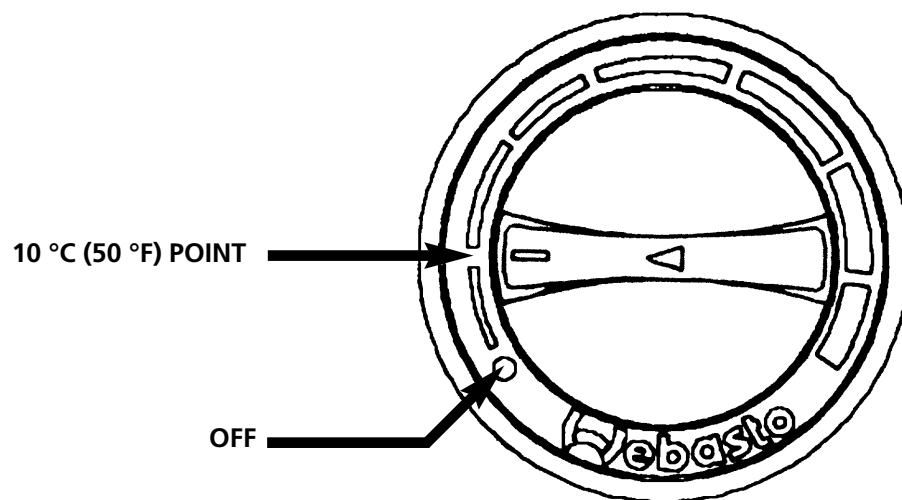
Fig. 2: Weather Proof Toggle Switch

### 2.1.1 Operational Characteristics - Toggle Switch

Using the toggle switch to activate the heater, a built in green light on the toggle switch acts as an operation indicator by illuminating. The indicator light also provides a diagnostic blink code in the event of a system or heater malfunction.

### 2.2 Temperature Setting

The heater is shipped with the temperature control preset to 10 °C (50 °F) as indicated by the arrow in illustration.



NOTE: Actual temperature sensing is done internally by a sensor located inside the heater in the flow path of the returning air of the cargo container. For applications where fresh air is mixed with the returning air, an external sensor kit must be purchased and installed.

External Sensor Kit: P/N 90821A

Fig. 3: Control Dial

### 2.2.1 Operation Characteristics - Temperature Dial

The temperature setting dial is located on the heater platform. The dial indicator light has been disabled as the operation indicator light is incorporated into the on/off switch shown in figure 2. The control dial has been preset to provide freeze protection temperatures for the area being heated. The control dial can be adjusted for warmer operation.

Control Dial Range: +10 °C to +45 °C (+50 °F to +113 °F).

#### ⚠ CAUTION

The switch circuit of the Air Top heaters is of control/low voltage. Any modification to this circuit must be approved by Webasto Product North America, Inc.

#### ATTENTION!

When the interior temperature is above the temperature setting the heater will be in a stand-by mode until temperature drops below set point.

### 3. Technical Data

#### 3.1 Technical Specifications

Heater		Air Top 3500	Air Top 5000
Heat Output kW (Btu/hr)	From:	1.5 (5,100)	1.5 (5,100)
	To:	3.5 (12,000)	5.0 (17,100)
	Boost:	Not Applicable	5.5 (19,000)
Weight - Fully Assembled		8.8 kg (19.4 lb.)	8.8 kg (19.4 lb.)
Fuel Consumption (Diesel)	From:	0.17 l/h (0.04 gal/h)	0.17 l/h (0.04 gal/h)
	To:	0.42 l/h (0.11 gal/h)	0.42 l/h (0.11 gal/h)
	Boost:	Not Applicable	0.66 l/h (0.17 gal/h)
Power consumption		12 to 36 Watts (Control Range)	20 to 90 Watts (Control Range)
Hot Air Flow (Unrestricted)	From:	54 m <sup>3</sup> /h (32 cfm)	54 m <sup>3</sup> /h (32 cfm)
	To:	139 m <sup>3</sup> /h (82 cfm)	218 m <sup>3</sup> /h (128 cfm)

#### 3.2 Dimensional Drawing

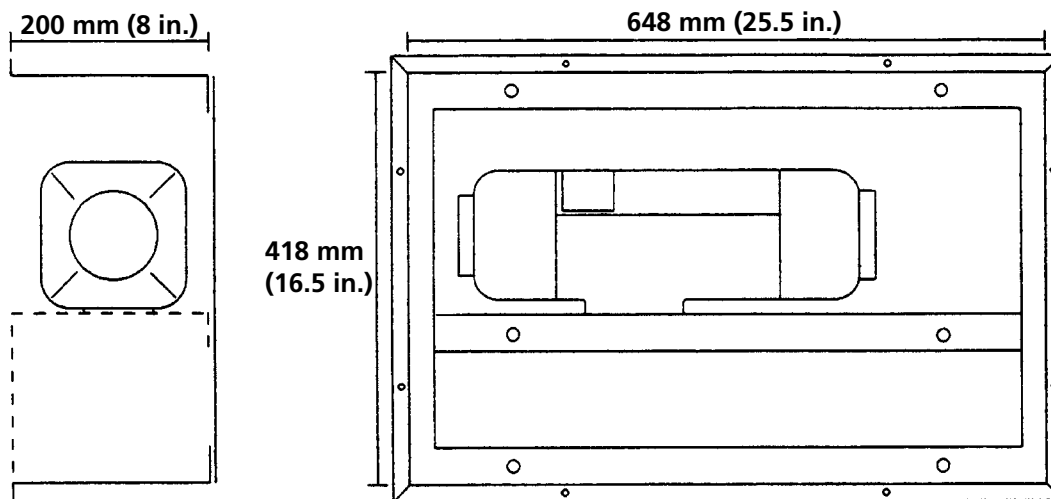


Fig. 4: Platform with Enclosure Outline

**ATTENTION!**

*This installation supplement provides specific information, operating directions and installation instructions pertaining to the Air Top 3500 / 5000 exterior cargo kit and additional installation hardware not covered in the general installation / operation manual included with the Webasto heater.*

*The information within this supplement is to be used in conjunction with the general installation / operation manual included with the Webasto heater.*

### 4. Installation

#### 4.1 General

All Installations must be performed by Webasto trained personnel or inspected by an approved Webasto distributor. Technical assistance may be obtained by calling your Webasto distributor or by contacting Webasto technical representatives at 1-800 555-4518 in the USA or 1-800-667-8900 in Canada. We would like to hear from anyone with an unusual application of the cargo kit. Suggestions for improvements to the cargo kit or this supplement are welcomed.

#### ⚠ CAUTION

*The contents of the heater kit provides for a side wall mount only. If the heater is mounted to the inside front wall of the container, additional consideration for the exhaust routing must be taken into account.*

#### 4.2 Location

Heater mounting locations vary with the variety of vehicles being heated. Consider the complete installation before mounting heater. With proper planning, unnecessary wire or fuel line lengths can be avoided. The positioning of the heater/air outlet is determined by the area requiring heat. In some instances ducting of the heater air inlet or outlet will be necessary to assure adequate heat distribution.

#### 4.3 Mounting Heater Platform and Warm Air Ducting

##### 4.3.1 Preparing for Mounting

Select and drill 2 horizontal mounting holes 1/2 inch (12 mm) located on the back wall of platform to temporarily mount the platform (figure 5). Mark the remaining hole locations for drilling including the 100 mm (4 in.) holes for the heater air return and warm air outlet ducting through the container wall (see figure 6). Drill remaining six 1/2 inch holes and the two holes required for the return air inlet and heated air outlet.

#### ⚠ CAUTION

*Ensure the platform location does not permit trailer doors to interfere with the heater exhaust outlet.*

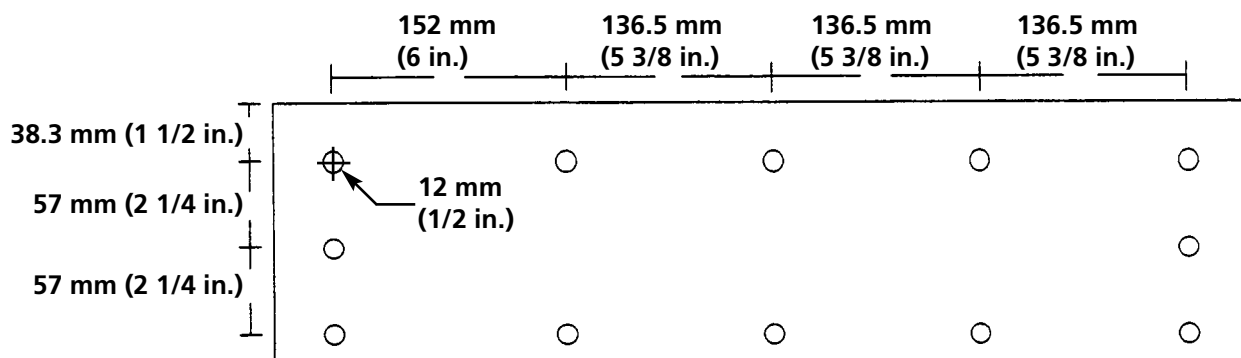


Fig. 5: Mounting Hole Positions

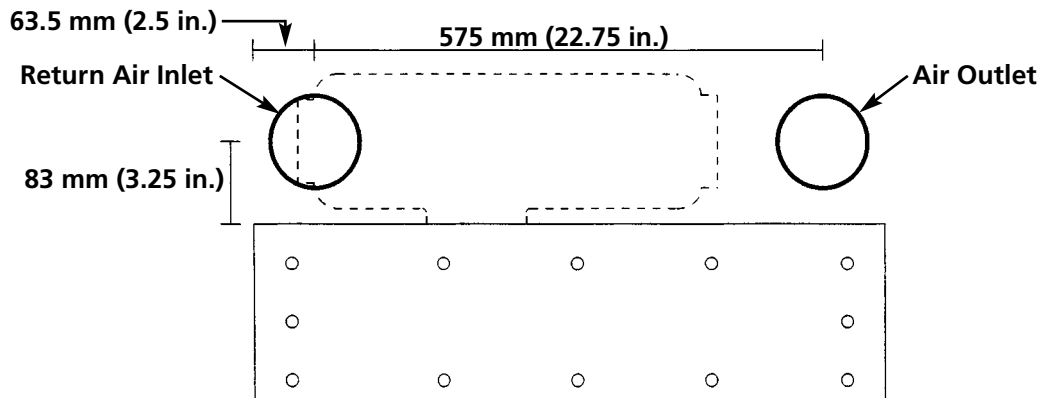


Fig. 6: Air Inlet / Outlet Positioning

### 4.3.2 Mounting the Platform with Heater

The 3/8 nuts provided are self-locking ensuring security of platform to wall.

Tighten bolts to a minimum of 89 lb. in / 7.4 lb. ft. (10Nm)

Install the return air inlet screen to the inside of the container wall. Install the air outlet diffuser, ducting and the two clamps provided to the heater outlet.

NOTE: The heater can be ducted into the container with multiple inlets and outlets for increased air distribution. However, the first inlet and outlet must be located within the first 1.8 m (6 ft.) of the heater and have a minimum ducting diameter of 55 mm (2 in.).

### 4.3.3 Mounting the Enclosure

The enclosure is positioned over the heater and platform with the access door on to ensure correct alignment of the complete assembly. The two center horizontal mounting holes will line up with the heater platform when correctly placed. Eight self-tapping screws are provided for mounting.

### 4.4 Exhaust System

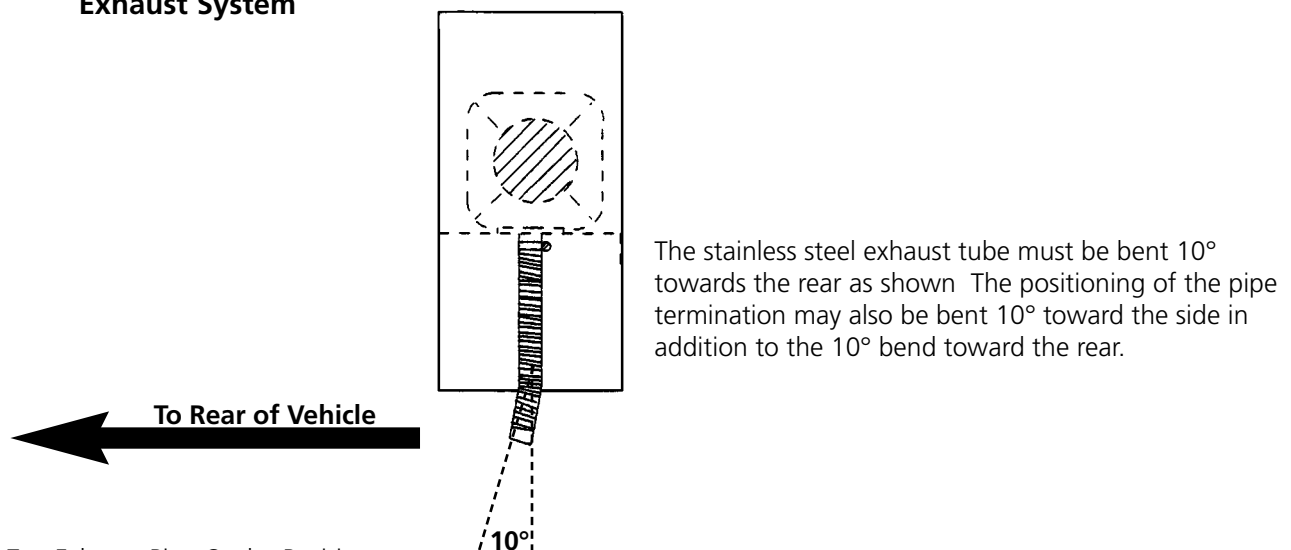


Fig. 7: Exhaust Pipe Outlet Position

### 4.5 Fuel System

#### 4.5.1 General Information

The fuel system parameters must be adhered to. Correct fuel delivery to heater is essential for proper, trouble-free operation. Review the fuel system section of the general installation / operation manual included with the heater kit for further reference to fuel system parameters and connections.

For cold weather operation, winter grade fuel must be used. In addition, additives in the fuel are permitted to avoid gelling. Fuel drying (water inhibiting) additives are permitted. However, over concentration of any fuel additive may damage fuel pump or burner unit resulting in malfunctions.

The heater kit provides fuel line and wiring to complete up to 7 meters (23 feet).

**⚠ CAUTION**

*The fuel line supplied with the heater kit must be used otherwise unsatisfactory operation of the heater will occur.*

**⚠ CAUTION**

*The supplied metering fuel metering pump must be used. Use of any other fuel pump is prohibited.*

**⚠ CAUTION**

*Fuel lines must be secured every 300 mm (12 in.) and kept away from hot exhaust and moving parts (drive shaft, wheels, etc.).*

**⚠ CAUTION**

*For cold weather operation, winter grade fuel must be used. In addition, additives in the fuel are permitted to avoid gelling. Fuel drying (water inhibiting) additives are permitted. However, over concentration of any fuel additive may damage fuel pump or burner unit resulting in malfunctions.*

#### 4.5.2 Fuel System Parameters

Review the fuel system section of the general installation / operation manual included with the heater kit for further reference to fuel system parameters and connections.

The following table is a quick reference to the parameters found in the general installation / operation manual.

Supply length to fuel pump.	Lengths up to 2 meters (6' 6"). This includes the fuel pick up tube and any additional delivery height.
Suction height to fuel pump.	Up to 1 meter (3' 3"). This also includes the fuel standpipe tube.
Delivery to heater.	Lengths up to 6 meters (19' 6"). This includes delivery height to heater.
Delivery height.	Up to 3 meters (9' 9").

