



**Air Heater**

# **Air Top 2000 D (Diesel) Air Top 2000 B (Gasoline)**

**Operating Instructions  
Installation Instructions  
Service Parts Listing**

In the vicinity of the Air Top 2000 air heater, a temperature of 185 °F (85 °C) must not be exceeded under any circumstances (e.g. during body paint work). A violation of this temperature limit may cause permanent damage to the electronics.

Extracting combustion air from the vehicle interior is not permissible under any circumstance.

Exhaust pipes must be routed so that exhaust fumes will not penetrate into the vehicle's interior. Condensation accumulation in the exhaust line must be directly drained. A condensation drain hole is to be provided if required.

**Do not route exhaust pipes and components within 50 mm (2 inches) of flammable materials such as polyurethane or similar foam insulation, styrene sheet insulation, fuel tanks and containers, glycol reservoirs, coolant lines, wood and paper products, carpet, tires, electrical wiring, brake and air lines or any materials deemed to be flammable or heat sensitive.**

Do not terminate exhaust above flammable materials such as polyurethane or similar foam, insulation, styrene sheet insulation, fuel tanks and containers, glycol reservoirs, coolant lines, wood and paper products, carpet, tires, electrical wiring, brake and air lines or any materials deemed to be flammable or heat sensitive.

The function of any parts vital for vehicle operation must not be impaired.

Electrical lines, switch gear, and control gear of the heater must be located in the vehicle so that their proper function cannot be impaired under normal operating conditions.

The operational state of the heater, i.e. an indication "on" or "off", must be clearly visible to the operator. The Air Top 2000 Air heater may only be operated within the specified operating voltage range designated by type.

The fuel specified by the vehicle manufacturer for use in the engine is suitable fuel for use in the Air Top 2000 air heater.

- Air Top 2000D - Diesel 1, Diesel 2, Arctic grade, Kerosene and certain military spec. fuels.
- Air Top 2000B - Gasoline (all grades).

**For the routing of fuel lines, the following important regulations must be adhered to:**

1. Fuel lines are to be installed in such a way that they remain unaffected by torsional stresses created by vehicle movement. They must be protected against mechanical damage.
2. Fuel lines must be securely fastened to the vehicle every 30 cm. (12 inches) or less along the total length from heater to fuel tank.
3. Fuel-carrying parts are to be protected against excessive heat and are to be installed so that any dripping or evaporating fuel can neither accumulate nor be ignited by hot components or electrical equipment.
4. Fuel supply must not be by means of gravity or pressurization of the fuel tank.
5. The fuel tank must either be equipped with a vent cap or be ventilated in another way (ventilation line).

## 2. General Description

### 2.1 General Description

World class technology with ease of installation, maintenance and operation has made the Air Top 2000 heater a popular choice among fleets, drivers and technicians.

The Webasto Air Top 2000 is the most economical solution to provide comfortable "engine-off" heat.

Built for efficiency, the Webasto Air Top 2000 can produce heat for up to 20 hours on a single gallon of fuel. Smart technology regulates heat output, saving battery and fuel consumption. All of this saves money and adds to overall driver comfort.



Fig. 2-1: Webasto Air Top 2000 Air Heater

**The Webasto Air Top 2000 can be used for:**

1. Cab or Sleeper Heating - the Air Top 2000 will increase driver comfort in cold weather while eliminating unnecessary idling for heat. Fuel consumption, annoying noise and environmental pollution are dramatically decreased.
  2. Cargo Heating - the Air Top 2000 can be used as an independent heating system to protect temperature sensitive cargo from freezing. Air heaters also provide a dry environment for tool and equipment compartments.
  3. Watercraft Heating - the Air Top 2000 (Diesel only) is ideal for heating small watercraft.
- Webasto Product North America, Inc. can provide you with information concerning watercraft installations, and a selection of Marine dealers to serve your needs. Call 1-800-555-4518 for assistance.

### 3. Functional Description

#### ⚠ WARNING

Due to the risk of carbon monoxide poisoning causing death or serious injury, the heater must never be operated in closed spaces such as garages and workshops without adequate exhaust extraction.

#### ⚠ WARNING

Due to the risk of fire or explosion causing death or serious injury to personnel, the heater must be switched off while refueling and at fueling stations.

#### ⚠ WARNING

Due to the risk of explosion causing death or serious injury to personnel, the heater must never be operated in areas where explosive materials, fumes or dusts may be present.

#### 3.1 Operating the Air Top 2000 with Self Diagnostic Control Unit

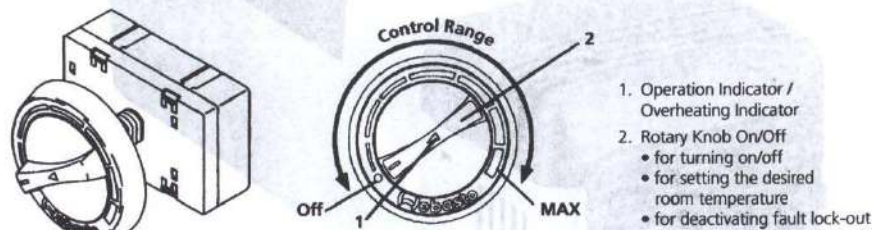


Fig. 3-1: Heater Control Element

##### 3.1.1 Heater Control Element

The heater control element is used to switch the heater on and off, set the desired room temperature [intake temperature between 10 °C and 45 °C (50 °F and 113 °F)] and to reset the heater after a malfunction with error lockout.

The integrated green LED indicator is used as

- operating indicator light (LED is continuously illuminated)
- malfunction code/overheat indicator (LED flashes)

For more information concerning malfunction and flash codes, see section 6.2 Troubleshooting.



**3.1.2 Switch-On**

The heater control element (fig.3-1) is used to switch the heater on and off, as well as setting the desired temperature. The control element acts as a thermostat, similar to a dimmer switch. The built in light indicates heater operation status by illuminating while the heater is on. The indicator light also functions as a diagnostic indicator (flash code) in the event of a system interruption (see section 6.2 Troubleshooting).

**ATTENTION!**

*Should the temperature of the intake air be above the selected, rated temperature, only the motor of the combustion and heating air fan will operate (control idle). Start operation will be initiated with a heating air temperature below the rated temperature.*

Once the heater control element has been turned on, the light on the control element will illuminate, and the ceramic igniter (glow pin) is activated. The fan motor briefly spins at high speed, then slows down. After approximately 20 seconds, the fuel metering pump starts delivering fuel. After another 25 seconds, once combustion is established the fan speed starts to vary gradually. If within 2 minutes there is no stable combustion, the heater will purge for 30 seconds and then repeat the start up sequence. If the heater fails to start after the second attempt, it will enter into an "operation lockout" mode and shut itself down (see section 3.1.5 Switch-Off upon Malfunction).

**3.1.3 Heating Operation**

The heater will heat to the desired temperature setting and attempt to maintain it. For more heat, simply rotate the heater control element dial clockwise and counterclockwise to decrease heat level. A temperature sensor located inside the heater works in conjunction with the control element to deliver the desired amount of heat. Once the desired temperature has been reached, heat output is maintained automatically by increasing or reducing fan speed and fuel delivery.

**ATTENTION!**

*New settings on the control element are executed by the control unit/heater with a time delay.*

**3.1.4 Switch-Off**

Switching the heater off extinguishes the operation indicator of the control element.

If no fuel has been delivered or if the air heater is in control idle, the air heater is deactivated immediately without run-down.

If the fuel metering pump is operating, it will be immediately stopped at switch-off. Fan speed remains constant and then decreases within 30 seconds to approx. 60% of full speed. After the flame has extinguished, the fan speed rises to maximum speed for 60 seconds and run down for 120 seconds is initiated.

Run-down is at approx. 60% of full speed and is deactivated automatically.

**ATTENTION!**

*Re-activation of the heater during run-down is permitted. Run-down will be completed first with a subsequent restart.*

### 3.1.5 Switch-Off upon Malfunction

The control unit recognizes malfunctions of individual air heater components and malfunctions in the start sequence and in normal operation.

The air heater is deactivated and enters the error lockout mode under the following conditions:

- flame sensor resistance out of tolerance
- temperature sensor resistance out of tolerance
- glow pin/glow pin trigger defective
- fan speed too low, short circuit or open circuit
- error in metering pump electrical circuit or of overheat protection (in start phase only)
- low voltage below 10 Volt and in excess of 20 seconds for 12 Volt heaters
- low voltage below 20 Volt and in excess of 20 seconds for 24 Volt heaters
- control unit defective

In case of overheating there will be no fuel supply. A run-down like after manual switch-off will be performed. After run-down the control unit is in the error lockout mode. Overheating is indicated by the operation indicator flashing.

For error unlock, the air heater has to be switched off momentarily (at least 2 seconds) and to be switched on again.

For more information concerning malfunction and flash codes, see section 6.2 Troubleshooting.

### 3.2 7-Day Digital Timer Model 1531 with 3 Time-Settings and Temperature Selector

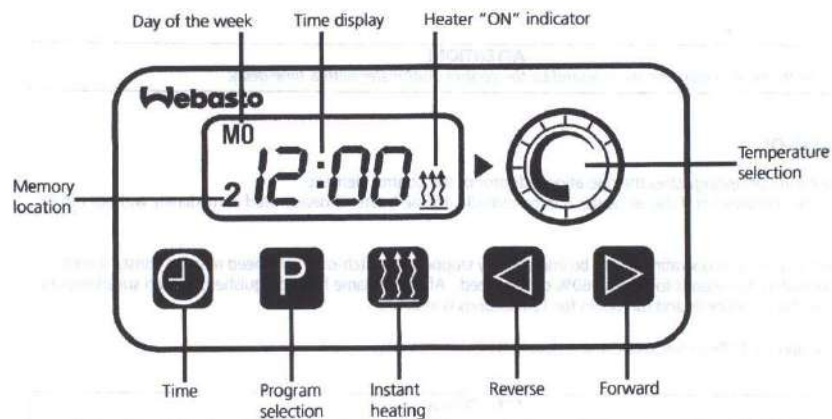


Fig. 3-2: 7-Day Digital Timer Model 1531 with Temperature Selection for Air Top 2000/3500/5000 Air Heaters Only.

## 4. Technical Data

### 4.1 General Information

Unless tolerances are shown within the technical data table, a tolerance of  $\pm 10\%$  applies at an ambient temperature of  $+20\text{ }^{\circ}\text{C}$  ( $+68\text{ }^{\circ}\text{F}$ ) and at the rated voltage and conditions.

#### Electrical Components:

Control unit, motor, fuel metering pump, light bulb in the digital timer and pencil-type glow pin are designed either for 12-volt or 24-volt operation.

The digital timer, temperature limiter and flame detector are voltage-independent components.

#### Fuel for AT 2000 B (Gasoline):

The fuel specified by the vehicle manufacturer is suitable as fuel for the heater.

#### Fuel for AT 2000 D (Diesel/Heating Oil/Kerosene):

The Diesel fuel specified by the vehicle manufacturer is suitable as fuel for the heater. Any negative effect caused by additives is not known. When the fuel for the heater is drawn from the vehicle's fuel tank, the vehicle manufacturer's specifications concerning additives are to be observed. Any addition of waste oil is not permitted.

When changing to cold-resistant fuels, the heater must be operated for approx. 15 minutes to ensure that the fuel metering pump is filled with the new fuel.

Heater	Operation	AT 2000 B	AT 2000 D
Mark of approval		~S 277	~S270
Type		air heater with vaporizing type burner	
Heat output	control range	1.1 – 2.0 kW (4100 – 7000 Btu)	0.9 – 2.0 kW (3100 – 7000 Btu)
Fuel		Gasoline	Diesel/Heating Oil/Kerosene
Fuel consumption	control range	0.16 .. 0.27 l/h (.04 .. .07 gal/h)	0.12 .. 0.24 l/h (.03 .. .06 gal/h)
Rated voltage		12 volts	12 volts      24 volts
Operating voltage range		10 ... 15 volts	10 ... 15 volts      20 ... 30 volts
Normal power consumption	control range	9 .. 22 W	
Permissible ambient temperature:			
Heater: - operation		-40°... +40 °C (-40°... +104 °F)	
- storage		-40°... +85 °C (-40°... +185 °F)	
Metering pump - operation		-40°... +20 °C (-40°... +68 °F)	
- storage		-40°... +85 °C (-40°... +185 °F)	
Heater control - operation		-40°... +75 °C (-40°... +167 °F)	
- storage		-40°... +85 °C (-40°... +185 °F)	
Combustion air intake temperature	min./max.	-40°... +20 °C (-40°... +68 °F)	
Setting range for interior temperature	control range	+10 ... + 40 °C (+50°... +104 °F)	
Flow rate of unrestricted heating air	min./max.	70 m³/h (40 cfm) to 110 m³/h (65 cfm)	
CO2 content in exhaust gas (permissible operating range)	max.	9.5 ... 10.5	9.5 ... 12.0
Dimensions of heater		length 322 mm (12-11/16 in.) width 130 mm (5-1/8 in.) height 122 mm (4-13/16 in.)	
Weight of heater		2.6 kg (5.73 lb.)	

Table 4-1: Technical Data - Air Top 2000







**General**

The 7-day digital "Combination" timer enables you to preset the start of the heater operation up to 7 days in advance. It is possible to program 3 different starting times, only one of which can be activated. The combination timer has a temperature controller. The combination timer can only be used on Air Top 2000/3500/5000 air heaters which allow the temperature to be preselected.

When the ignition is switched on, the timer displays the current time and the day of the week. When the heater is switched on, the display and the buttons are illuminated.

After the power supply has been connected, all symbols on the display will flash. The current time and weekday must be set.

**Operation**

The timer can be operated in that all flashing symbols can be adjusted by means of the  and  buttons. If the buttons are not pressed within 5 seconds, the time displayed will be stored. If the  and  buttons are pressed for more than 2 seconds, the fast time-setting mode is activated. If the ignition is switched off while the heater is operating in the continuous mode, the remaining operating time of 15 minutes is displayed and the heater continues to operate for this period of time.

**Air Top 2000/3500/5000**

On heaters equipped with a fault diagnosis system (Air Top 2000/3500/5000), a number, i.e. the error code, may be flashing on the display. For more information concerning malfunction and error codes, see section 6.2 Troubleshooting.






















Switching the heater on	Manually: by pressing the  button (continuous heating mode). Automatically: by programming the heater starting time.
Switching the heater off	Manually: by pressing the  button. Automatically: after the programmed operating time has elapsed. With the heater running: by programming the remaining operating time.
Setting the time and day of the week	Press the  button for more than 2 seconds - time of the day is flashing - and set the clock using the  or  buttons. Wait 5 seconds. Time of day is now stored. Day of week is flashing - adjust the day of week using the  or  buttons. Wait 5 seconds. Day of week is now stored.
Viewing the time	Briefly press  button. Display of current time and weekday appears for 5 seconds.
Programming heater starting time	Press  button - the memory location number is flashing - using the  or  buttons set start of heater operating time. Wait 5 seconds. Starting time is now stored. Day of the week is flashing - set the day of the week using the  or  buttons. Wait 5 seconds. Day of week is now stored. By repeatedly pressing the  button, memory locations 2 and 3 can be programmed or the time display mode can be reached.
Recalling/canceling preset times	Repeatedly press the  button until the desired memory location is displayed. To cancel the preset time, press the  button several times until the time of day is displayed instead of the memory location.
Programming duration of operating time	The heater must be switched off. Press the  button for 3 seconds - operating time is flashing - and set the desired operating time (10 to 120 minutes) using the  or  buttons.
Setting the remaining operating time	Heater must be in operation to set remaining operation time. Set the remaining operating time (1 to 120 minutes) using the  and  buttons. The remaining operating time refers to the time the heater still continues to remain in operation. It can only be changed while the heater is in operation and the ignition switched off.

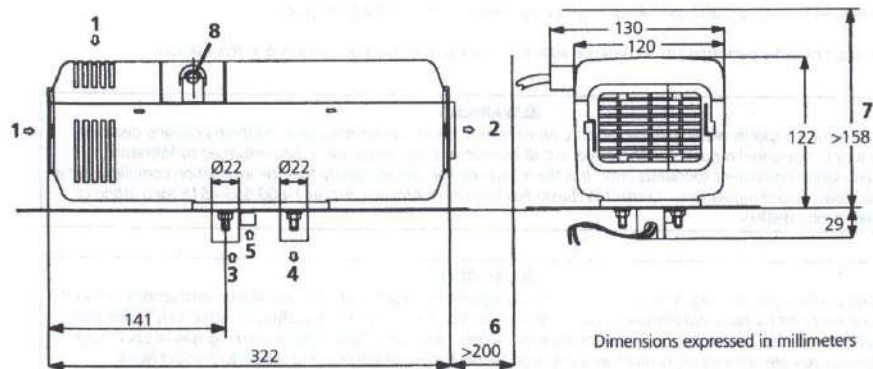
Table 3-1: 7-Day Digital Timer Model 1531 Setting Instructions.



## 4.2 Dimensions

## 4.2.1 Air Top 2000

The mounting dimensions as well as the space required for the performance of servicing work are shown in figure 4-1.



- |                        |   |
|------------------------|---|
| 1 Heating air inlet    | 5 Fuel inlet  |
| 2 Heating air outlet   | 6 Min. space required for heating air outlet (7.9 in.)  |
| 3 Combustion air inlet | 7 Min. space required for removal of heater (6.25 in.)  |
| 4 Exhaust gas outlet   | 8 Electrical cable outlet (optionally on right or left) |

Fig. 4-1: Dimensions - Air Top 2000

The specified horizontal and axial angles of inclination must not be exceeded (see figure 4-2).

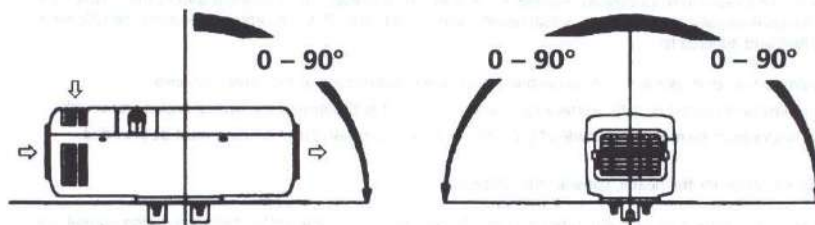


Fig. 4-2: Permissible Installation Positions for Diesel-Operated Heaters - Air Top 2000

**ATTENTION!**

*Webasto recommends installing gasoline-operated heaters so that the exhaust gas outlet points vertically down. Other installation positions may cause increased wear to the burner.*

## 5. Installation

### 5.1 General Information

This manual will guide you through the installation procedures necessary to ensure successful, reliable operation of the Air Top 2000 heater for years to come.

Carefully read all instructions and special notations before beginning the installation process.

The installation must be performed in accordance with the installation instructions provided in this manual.

#### ⚠ WARNING

*Due to the confined spaces within marine vehicles, an increased risk of carbon monoxide poisoning causing death or serious injury to personnel is possible. Therefore, installations in marine vessels are to be performed by Webasto authorized marine equipment specialists only. It is the marine dealer's responsibility that the installation complies with all applicable Coast Guard regulations. Contact Webasto Product North America, Inc. at 1-800-555-4518 for a listing of authorized marine dealers.*

#### ⚠ CAUTION

*The different vehicle-specific installation conditions should be taken into account. The installation instructions within this manual are intended for basic installations in common over-the-road vehicles. The installation instructions within this manual are intended to be used as general installation guidelines only. For information concerning special applications or applications you are not sure of, contact an authorized Webasto dealer/distributor or Webasto Product North America, Inc. directly at 1-800-555-4518 (USA) or 1-800-667-8900 (Canada).*

### 5.2 Installation Location

The heater should be installed in the vehicle's interior (with the exception of buses, see section 1 Introduction). If the heater is installed in an installation housing, such housing must be of a Webasto-approved design.

When installed in the vehicle's interior, the lead-through openings for combustion air inlet, exhaust gas outlet and fuel line must be splash-water protected. For this purpose, the special gasket supplied with the heater must be used. The gasket must be renewed prior to each re-installation.

The heater should be located in or as close as possible to the area being heated. On truck installations, this is typically in the center under-bunk storage area although, actual heater location can vary. This is acceptable provided the following criteria is observed and adhered to:

1. Exhaust, combustion air intake and fuel connections must be located outside of the vehicle's interior.
2. The heater must be mounted on a flat surface to provide an air-tight seal between the heater, gasket and vehicle.
3. Where the heater must be mounted outside of the vehicle's interior, a splash proof housing must be provided.

When selecting a location for the heater, consider the following:

1. Sufficient space for heating air inlet and outlet ducting. Preferably, where it cannot be damaged during normal use.
2. Combustion air and exhaust location, specifically, clearance around subfloor cross-members and structures, heat sensitive components and impediments to proper routing of tubes.
3. Fuel line connections and routing.
4. Control / power harness routing.
5. Access to the heater for seasonal maintenance and servicing (see figure 4-1).

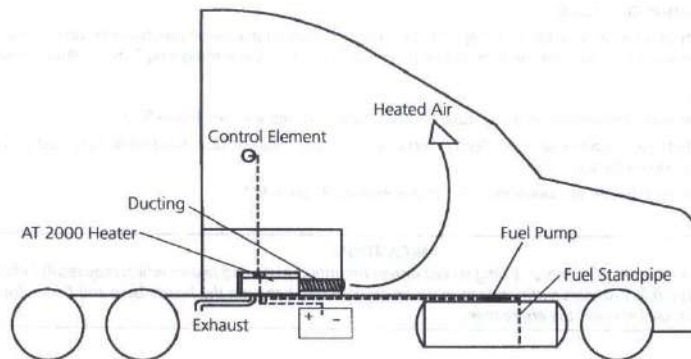


Fig. 5-1: Component Location - General

### 5.2.1 Mounting the Air Top 2000 Sleeper Kit with Universal Mounting Plate

A mounting template has been included with the heater kit for installations in the sleeper area of the vehicle. The template details all required hole locations and clearances for ducting (see figure 5-2). Also, check for clearance around subfloor cross-members, structures and heat sensitive components before proceeding with installation.

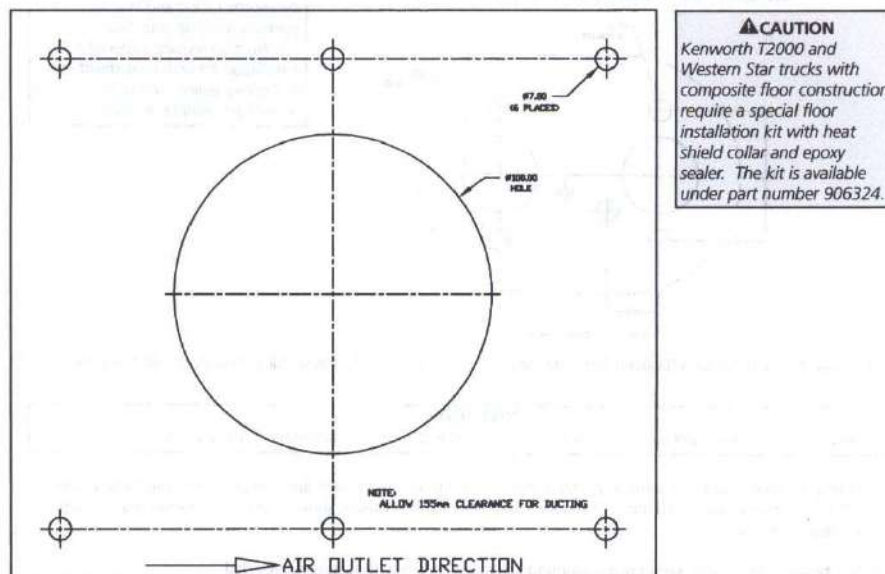


Fig. 5-2: Example of Installation (Drilling) Template for Universal Mounting Plate - Not to Scale

**Sleeper Kit Installation Continued**

After selecting the heater location, temporarily tape the provided template in place and center punch hole locations for drilling. With a hole saw or jig saw, cut the 100 mm (4 in.) center hole. Drill the 6 remaining 7 mm (1/4 in.) mounting holes.

1. Assemble heater with combustion air intake tube, exhaust tube and fuel line (see figure 5-4).
2. Center assembled heater over large hole. Feed combustion air tube, exhaust tube, fuel line and the fuel pump electrical harness down through hole.
3. Secure the assembled heater in place with nuts, bolts and washers provided.

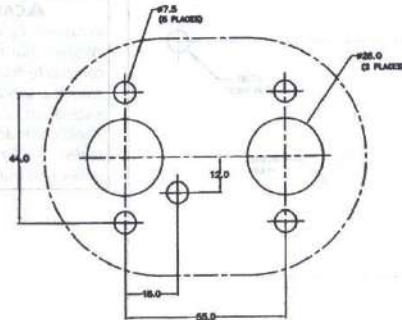
**CAUTION**

Do not over-tighten mounting fasteners! Doing so will distort mounting plate and heater which may result in fan motor failure. Tighten mounting fasteners sufficiently to make an air-tight seal between the heater base and floor. Ensure that the heater base with gasket cover the entire hole.

**5.2.2 Mounting the Air Top 2000 Basic Kit**

A mounting template has been included with the heater kit for installations where the use of the universal mounting plate is not practical. The template details all required hole diameters and location (see figure 5-3). Before using this installation method, ensure that the floor area where heater is to be placed is flat within 1 mm tolerance overall. Also, check for clearance around subfloor cross-members, structures and heat sensitive components before proceeding with installation.

NOTE:  
 -FLOOR MUST BE FLAT WITHIN 1mm IN VICINITY OF GASKET  
 -USE TEMPLATE ONLY IF UNIVERSAL MOUNTING PLATE IS NOT UTILIZED

**CAUTION**

Kenworth T2000 and Western Star trucks with composite floor construction require a special floor installation kit with heat shield collar and epoxy sealer. The kit is available under part number 906324.

Fig. 5-3: Example of Installation (Drilling) Template for Installations Without Universal Mounting Plate - Not to Scale.

**ATTENTION!**

Plan, measure and cut holes carefully! Precision is extremely important in this mounting configuration.

After selecting the heater location, temporarily tape the provided template in place and center punch hole locations for drilling. With a hole saw, cut the 29 mm (1.14 in.) and 28 mm (1.1 in.) holes as shown. Drill the 5 remaining 7.5 mm (0.295 in.) mounting holes.

1. Position heater with rubber gasket over mounting holes and secure with fasteners provided.
2. Install combustion air tube, exhaust tube and fuel line from underside of vehicle (see figure 5-4).



## 5.2.3 Installation Diagram - Air Top 2000

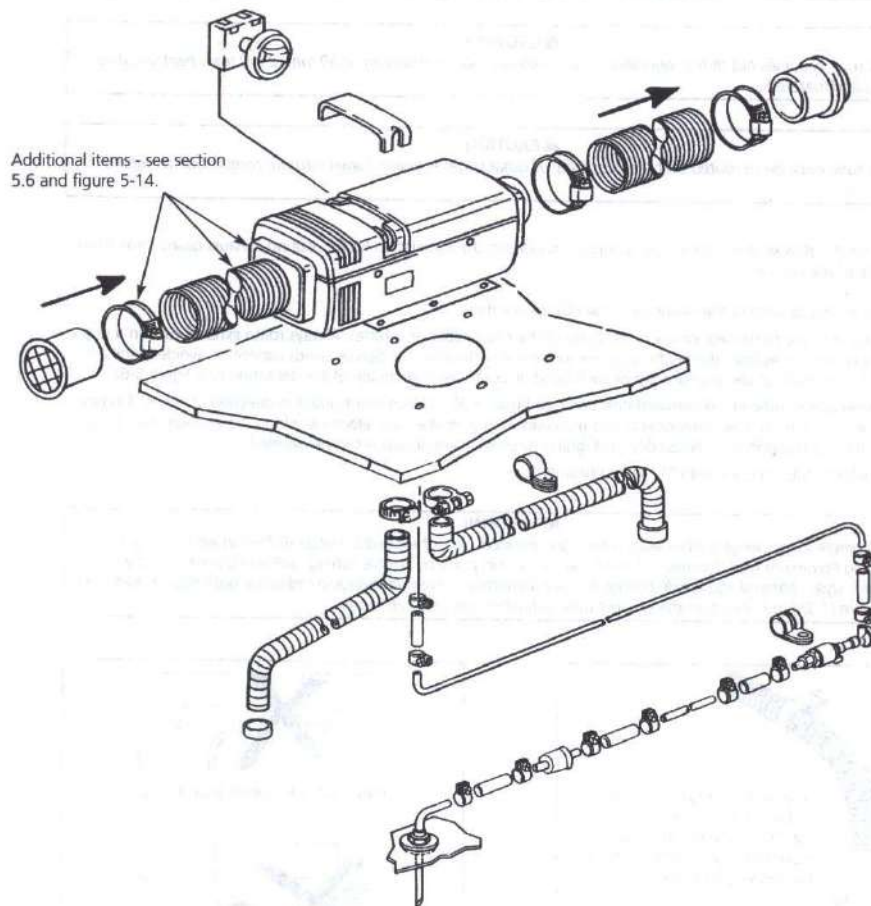


Fig. 5-4: Installation Diagram Showing Component Break-down - Air Top 2000

## 5.3 Exhaust System

**⚠ WARNING**

Due to the risk of carbon monoxide poisoning causing death or serious injury to personnel, the exhaust tube must be so routed that the possibility of exhaust gases entering the sleeping/passenger area is avoided.

**⚠ CAUTION**

The exhaust tube becomes hot during operation. Keep exhaust tube a minimum of 50 mm (2 in.) from heat sensitive components and materials.

**⚠ CAUTION**

The exhaust tube must be so routed that the possibility of exhaust gases being drawn into the combustion air intake tube is avoided.

One meter (39 in.) of flexible metal exhaust tubing is provided in the installation kit for routing exhaust gases away from the underside of the vehicle.

1. Secure the exhaust tube to the heater with the clamp provided.
2. Route exhaust tube to the side or rear outer edge of the cab sleeper or vehicle. Always route exhaust tube in a slight downward pitch away from the heater to allow condensation to drain. If dips or bends cannot be avoided, drill a 5 mm (3/16 in.) hole at the lowest point of each bend or dip to allow drainage of condensation (see figure 5-6).
3. Bend outlet end of tube in a downward direction (see figure 5-5). Do not point outlet in direction of travel. Do not direct towards heat sensitive components and materials such as brake lines, electrical wiring, hoses, tires, etc. Locate exhaust tube outlet where the possibility of clogging by snow, mud or debris can be avoided.
4. Secure exhaust tube in place with "P" clamp provided.

**ATTENTION!**

Installations where longer lengths of exhaust tubing are required, do not exceed 2 meters (6 feet) in length. Rigid exhaust tubing (minimum wall thickness - 1 mm) may be used in place of flexible tubing. All bends are to be of a smooth radius style. Mitered and welded bends are not permitted. Minimum bending radius for both flexible and rigid tubes is 45 mm (1-3/4 in.). Bends in the exhaust tubing must not exceed 270° total.

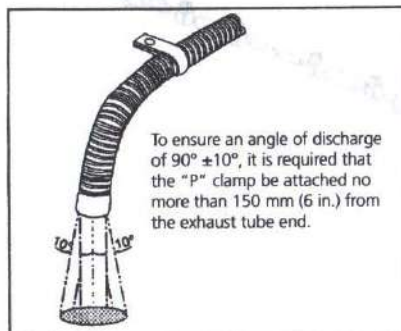


Fig. 5-5: Exhaust Tube Outlet Position

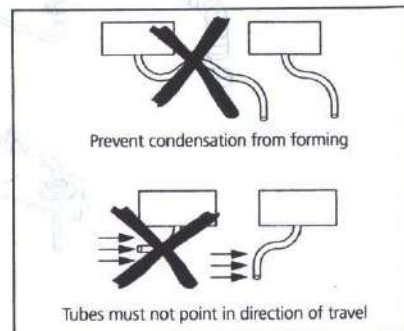


Fig. 5-6: Combustion Air/Exhaust Tube Routing

### 5.4 Combustion Air System

#### ⚠ WARNING

Due to the risk of carbon monoxide poisoning causing death or serious injury to personnel, never draw combustion air from inside of the cab, sleeper area or passenger area of any vehicle where personnel are likely to be present. Drawing combustion air from inside of the cab, sleeper area or passenger area of any vehicle can create a negative interior pressure which may allow exhaust gases in the immediate area outside the vehicle to seep in, gradually displacing oxygen with poisonous carbon monoxide.

One half meter (19.5 in.) of flexible combustion air intake tubing is provided in the installation kit for routing combustion air into the heater.

1. Secure the combustion air intake tube to the heater with the gear clamp provided.
2. Route the combustion tube to an area under the vehicle cab or sleeper where it is protected from splash water and not likely to be clogged by snow, mud or debris. Always route intake tube in a slight downward pitch away from the heater to allow moisture to drain. If dips or bends cannot be avoided, drill a 5 mm (3/16 in.) hole at the lowest point of each bend or dip to allow drainage of moisture (see figure 5-6).
3. Bend inlet end of tube in a downward direction (see figure 5-6). Do not point into the direction of travel.
4. Secure combustion air intake tube to the understructure of the vehicle cab or sleeper with nylon wire ties where possible.

#### ⚠ ATTENTION!

Installations where longer lengths of combustion air tubing are required, do not exceed 2 meters (6 feet) in length. Minimum bending radius is 45 mm (1-3/4 in.). Bends in the combustion air intake tubing must not exceed 270° total.

### 5.5 Fuel System

#### 5.5.1 General Information

The fuel metering pump, fuel line and fuel standpipe together are integral to the heating systems reliability and performance. Install in accordance with the instructions detailed within this section.

#### 5.5.2 Fuel System Limits

NOTE: The fuel pump must not be mounted lower than 500 mm (20 in.) below the top of the fuel tank.

Maximum suction height (A) = 1 m (39 in.)  
 Maximum suction length (A + B) = 2 m (78 in.)  
 Maximum delivery length (C + D) = 6 m (234 in.)  
 Maximum delivery height (D) = 3 m (117 in.)

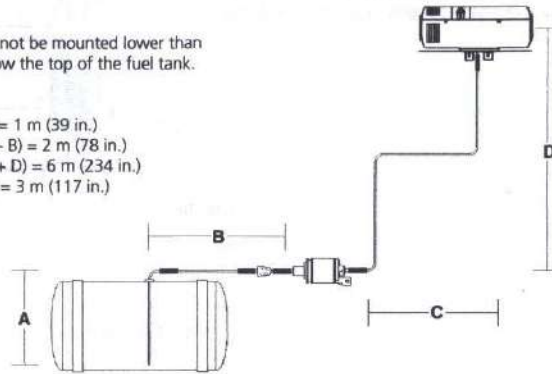


Fig. 5-7: Fuel System Limits

## 5.5.3 Fuel Standpipe

**⚠ WARNING**

Due to the risk of fire or explosion causing death or serious injury to personnel, extreme care must be exercised when working with gasoline fueled vehicles. Gasoline tanks must never be drilled until first emptied and properly purged of all remaining gasoline and fumes.

Fuel is drawn from the vehicle's fuel tank through the use of a standpipe provided in the heater installation kit.

The fuel standpipe can be used on fuel tanks with a spare threaded port. If a spare threaded port is not available, a 25 mm (1 in.) hole can be punched or drilled into the fuel tank or spare fuel level sending unit plate and the universal tank-boss installed as shown in figure 5-8.

The fuel standpipe should be kept 50 mm (2 in.) off the bottom of the fuel tank to prevent drawing sediment and water into the heaters fuel system.

**Fuel Standpipe Installation:**

1. Cut fuel standpipe to length, approx. 50 mm (2 in.) off bottom of fuel tank. Angle the cut to prevent clogging. Remove burrs from cut end. Apply thread sealant to threaded fittings to prevent fuel leaks.
2. Install fuel standpipe using one of the following methods
  - use 1/4 or 1/2 spare port on top of fuel tank (if available) and install standpipe
- OR
- drill or punch a 25 mm (1 in.) hole in a clear area on top of the fuel tank or spare fuel level sending unit plate.
- assemble tank-boss and fuel standpipe to form single unit.
- install standpipe by angling unit in so that one ear of the tank-boss hooks under the edge of the hole. Repeat with the other ear in the same fashion.
3. Center in hole and clamp in place by tightening the nut down until the gasket begins to squeeze out slightly.

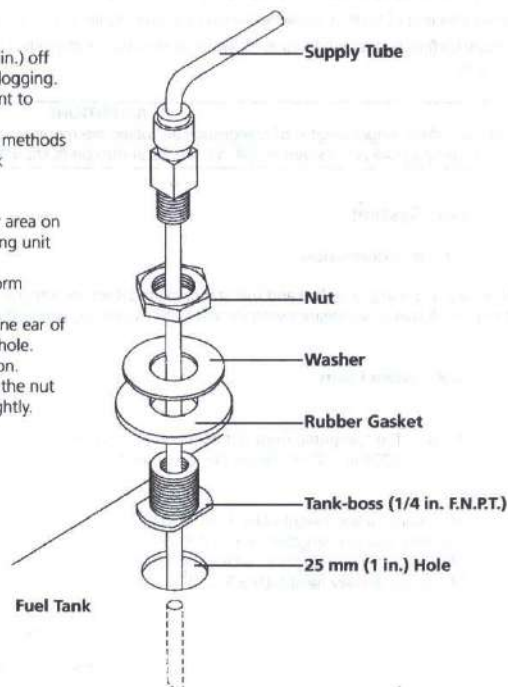


Fig. 5-8: Fuel Standpipe



## 5.5.4 Fuel Metering Pump

The fuel metering pump forms a combined delivery/metering and shutoff system and is subject to certain installation criteria (see figures 5-7, 5-9 and 5-10).

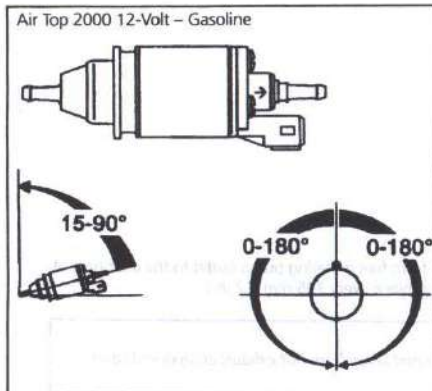


Fig. 5-9: Metering Pump DP 2  
Installation Position and Mounting

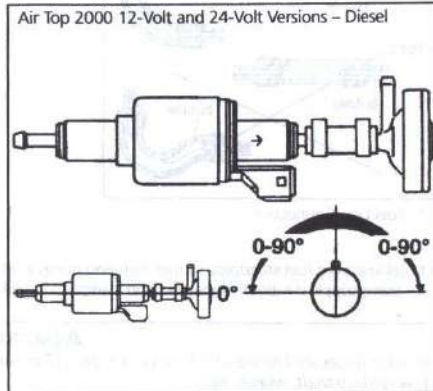


Fig. 5-10: Metering Pump DP 30  
Installation Position and Mounting

It is recommended that the metering pump be installed in a cool location. The permissible ambient temperature must not exceed a temperature of + 20 °C (68 °F) at any time during operation.

Mount fuel pump within 1 m (39 in.) of the heater for electrical harness connection. If it is not possible to mount the pump within this distance, an optional extension harness is available under part number 905781A.

Metering pump and fuel lines must not be mounted within the radiation range of hot vehicle parts. If necessary, a heat shield should be installed.

The metering pump is to be attached by a vibration-damping suspension device (rubber isolated clamp). The installation position is restricted as shown in figures 5-9 and 5-10 in order to ensure proper self-bleeding of the system.

To minimize the occurrence of corrosion, only genuine Webasto parts are to be used for the plug connection between the metering pump and the metering pump cable harness.

## 5.5.5 Fuel Line

Fuel line, couplers and clamps are provided in the installation kit and MUST be used.

**ATTENTION!**

*When cutting fuel line to length, ALWAYS use a sharp razor knife or blade. Never cut fuel line with side cutters or similar tools as they will crimp the line closed.*

The Air Top 2000 heater uses fuel line that meets specific criteria for proper function and reliable operation. The inside diameter of this fuel line is 2.0 mm (0.08 in.) and must never be substituted with fuel line of a larger inside diameter. Doing so will adversely affect the heaters performance and reliability.

Fuel line connections must be made using the couplers and clamps provided and as shown in figure 5-11.

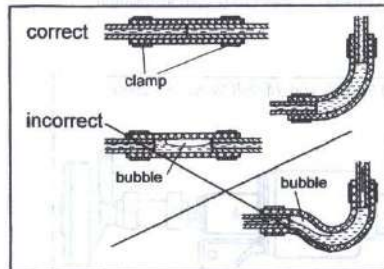


Fig. 5-11: Fuel Line Connection

Connect fuel line from fuel standpipe to fuel metering pump inlet and from fuel metering pump outlet to the inlet port of the heater using supplied rubber connectors and clamps. Tie fuel line in place every 305 mm (12 in.).

**CAUTION**

Fuel lines must be secured to the vehicle every 305 mm (12 in.) and routed away from hot exhaust components and moving parts (drive shaft, wheels, etc.).

**ATTENTION!**

A fuel line and fuel metering pump harness kit is available for extending the fuel system in the case of cab-over vehicles. Order P/N 905555.

#### 5.5.6 Fuel Filter

A fuel filter may be supplied with your heater depending on kit model and application.

If the heater kit being installed does not include a fuel filter and dirt in the fuel cannot be avoided or is expected, an optional filter is available from Webasto. Order genuine Webasto fuel filter P/N 487171. The filter should preferably be installed in a vertical position, where this is not possible, it may also be installed horizontally (see figure 5-12). The fuel filter can be installed anywhere accessible between the fuel standpipe and the fuel metering pump inlet (direction of flow to be observed).

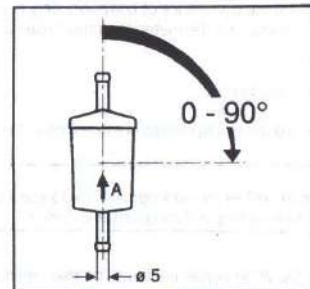


Fig. 5-12: Fuel Filter Position

Fuel filters should be replaced at least annually and in the case of dirty fuel, more often. Always replace with a genuine Webasto fuel filter P/N 487171.

## 5.6 Heating Air System (Ducting)

**⚠WARNING**

Due to the risk of fire or explosion causing death or serious injury to personnel, Webasto air heaters are not to be used for heating combustible, flammable and hazardous materials.

**⚠WARNING**

Never use materials that are not approved for heat ducting systems such as PVC or similar materials as toxic off-gassing from these materials can occur.

**⚠CAUTION**

Due to the high heat output of the Air Top 2000, it is not permissible to integrate the heater into the vehicle's air ducting system. Doing so will result in melting damage to the vehicle's air ducting system.

**⚠CAUTION**

In vehicles designed for the transportation of passengers, the air outlet openings must be arranged in such a way that they cannot be obstructed by passengers.

**⚠CAUTION**

The heater outlet air temperature can reach 130 °C (266 °F). Do not point outlet towards heat sensitive material or personnel. Keep outlet at least 305 mm (12 in.) away from heat sensitive materials and personnel.

## 5.6.1 General Information

The Air Top 2000 Sleeper Heating Kit comes with 1 m (39 in.) of ducting meeting the specified requirements, an outlet fitting and a return air grille.

NOTE: Additional ducting components are available through Webasto distributors and dealers. A listing of optional ducting components can be found in section 7 "Accessories/Service Parts" of this installation manual.

## 5.6.2 Heat Regulation

A temperature sensor is installed in the heater on the heating air intake side which, in conjunction with the heater control element and dependent upon the intake temperature and position of the set-point transmitter, operates the heater within the appropriate heat output range. Heat output is so adjusted that after a quick reaching of the preset interior temperature the same will be maintained at the preset value.

## 5.6.3 Ducting

The maximum length of ducting to be used on the heater must not exceed 4570 mm (15 feet) intake and outlet combined with no more than 270° of total bends. The minimum inside diameter of heating air ducting is 60 mm (2.6 in.). Exceeding these limitations will cause air flow restrictions. The overheat temperature limiter is likely to respond under such conditions.

Proper arrangement of the heating air outlet and return air inlet is necessary for optimum heating operation and consistent temperatures with little or no temperature fluctuation. The heater inlet air should be drawn (re-circulated) from the same compartment being heated.

Figures 5-13 and 5-14 illustrates two ducting variations where the heater has been installed in the center under-bunk compartment and ducted to the front (kick) bunk board. Observe distances between inlet and outlet of each variation.

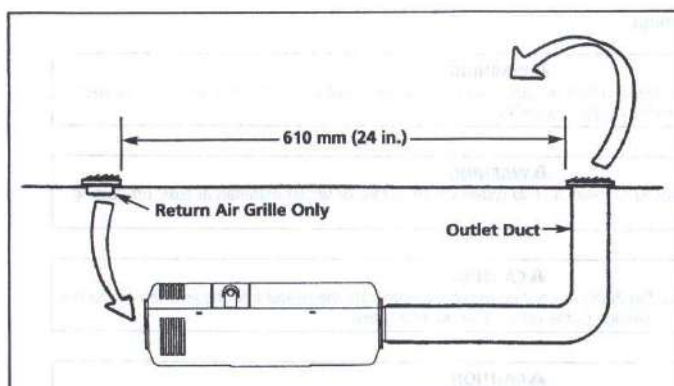


Fig. 5-13: Heater Ducting Method A - Return Air Grille Only

**Ducting Method A:**

This is the typical arrangement used in most cases. Return (recirculated) air to the heater flows freely through the return air grille and finds its way to the heater inlet. The return air grille and heated air outlet nozzle must be kept a minimum of 610 mm (24 in.) apart.

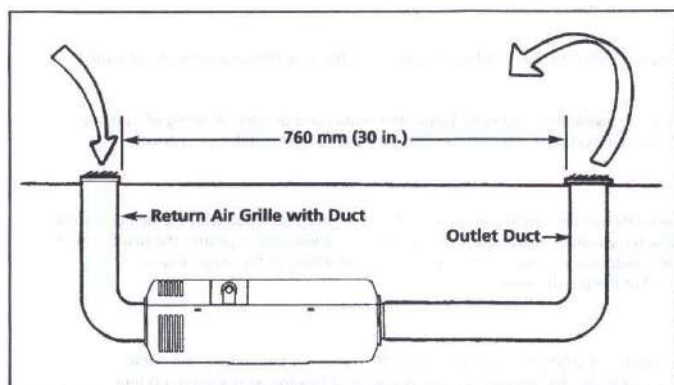


Fig. 5-14: Heater Ducting Method B - Return Air Grille with Duct

**Ducting Method B:**

Return (recirculated) air to the heater is ducted directly to the heater inlet. This is preferred where the temperature in the heater compartment remains too cold to permit proper heat regulation. The return air grille and heated air outlet nozzle must be kept a minimum of 760 mm (30 in.) apart.

**NOTE:** Additional ducting components are available through Webasto distributors and dealers. A listing of optional ducting components can be found in section 7 "Accessories/Service Parts" of this installation manual.



For ducting the return air inlet of the heater as in method B, the inlet grille of the heater must be removed to allow installation of the inlet ducting.

To remove the inlet grille, lift the two tabs away from the housing and slide off in either direction (see figure 5-15). Replace grille with items P/N 29848F and P/N 31290B, the ducting can then be installed directly to the heater inlet.

To reinstall the grille (where ducting is not required), position over the opening slightly off to one side, press down on the center of the grille and slide into place.

**NOTE:** Additional ducting components are available through Webasto distributors and dealers. A listing of optional ducting components can be found in section 7 "Accessories/Service Parts" of this installation manual.

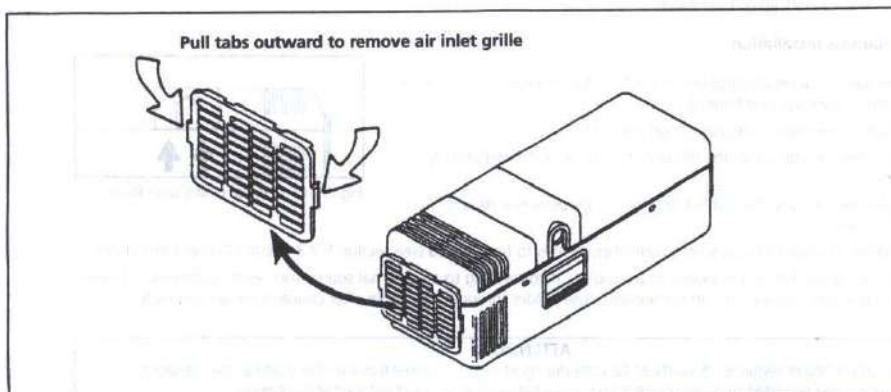


Fig. 5-15: Inlet Grille Removal

#### Outlet Ducting:

Whenever the heater is installed within a compartment such as the center under-bunk compartment of a typical sleeper unit, the heater outlet must be ducted to the exterior of the under-bunk compartment using the ducting and nozzle supplied. All ducting must be secured at connections and joints.

#### 5.6.4 Remote Temperature Sensor (Optional)

A remote external temperature sensor kit (includes updated control unit) is available from Webasto under part number 9005008A. The remote sensor allows temperature monitoring from a remote location other than the heaters inlet. This is beneficial where the heater is located in an area where cold air influx does not allow consistent temperature measurement at the heater inlet.

The internal temperature sensor and control unit must be removed prior to the installation of the external sensor kit.

#### Installation:

The external temperature sensor must be mounted in the vehicle cab at mid-height on surfaces as vertical as possible.

The temperature sensor must not be located directly in the hot air stream (vehicle's or heaters heating air).

The temperature sensor must not be mounted in the vicinity of heat sources (e.g. vehicle's heating system).

The temperature sensor must not be exposed to direct sun radiation (e.g. on the dashboard).

The temperature sensor must not be mounted behind curtains or the like.

## 5.7 Electrical Connections

### 5.7.1 General Information

Electrical connections are to be made according to the applicable wiring diagram (see figure 5-22 and 5-23).

The Air Top 2000 heater consumes very little power, however, it does require 75 watts of current during the start cycle. The main power harness to the heater must be connected to an adequate power source such as directly to the batteries or the main power feed to the sleeper.

Do not connect the main power harness to cigar lighters, auxiliary power feeds for radios and C.B.'s or into the cab/sleeper light wiring as these circuits are not capable of sustaining a 75 watt load. Doing so will result in poor start-up characteristics or no start-up of the heater.

### 5.7.2 Harness Installation

1. Remove harness access/control unit cover from top of heater with a small flat blade screwdriver (see figure 5-16).
2. Plug 8 pin connector into receptacle on control unit.
3. Route harness out on either the left or right side of heater depending on installation.
4. Reinstall cover. Ensure that rubber grommet is properly seated and cover snaps in place.
5. Route control harness to area where control element is to be installed (see section 5.7.3 Control Element Installation).
6. Route main power harness to power source point. If connecting to an external source such as the batteries, a 25 mm (1 in.) hole will be required to run harness and fuse holder through. Seal hole after connections are completed.

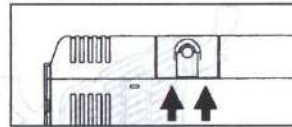


Fig. 5-16: Control Unit Cover Removal

#### ATTENTION!

*The Air Top 2000 heater requires 75 watts at 12 volts during start-up. Connection may be made at the sleeper power source or fuse panel provided that the connection can sustain a 10 amp. load without voltage drop.*

7. Connect red wire of power harness with fuse holder attached to power source or battery positive post. Do not insert fuse in holder at this time.
8. Connect brown wire of power harness to a suitable ground or battery negative post.
9. Secure wires and fuse holder to adjacent wires or structure with nylon wire ties.

### 5.7.3 Control Element Installation

Locate the control element in an area where it can be easily reached by the user during heater operation. For installations in the sleeper, the control element is typically located on the sleeper control panel provided there is sufficient space on and behind the panel.

#### ATTENTION!

*Since the control element is not affected by temperature, it can be mounted virtually anywhere suitable within the sleeper or compartment to be heated as long as it can be easily reached by the user during heater operation.*

Mount the control element as illustrated in figures 5-17 and 5-18. Observe dimensions in figure 5-20.

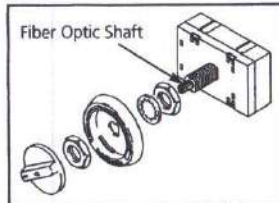


Fig. 5-17: Control Element

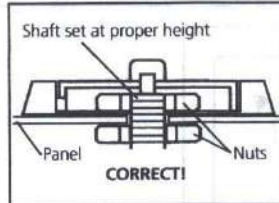


Fig. 5-18: Control Element Knob Correctly Installed

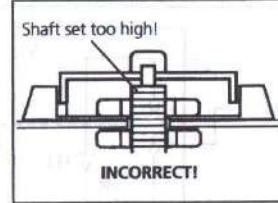


Fig. 5-19: Control Element Knob Incorrectly Installed

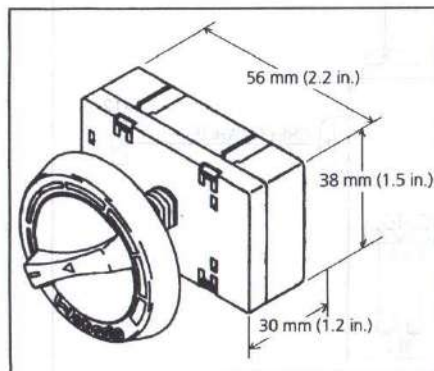


Fig. 5-20: Control Element Dimensions

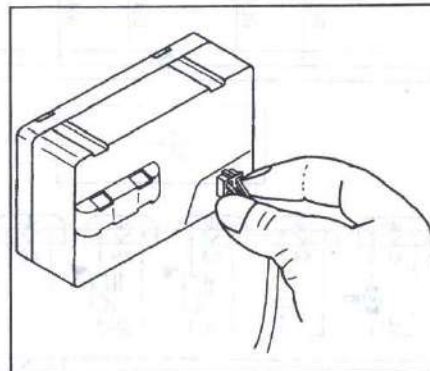


Fig. 5-21: Control Element Harness Plug

The heater control harness must be plugged into the back of the control element as illustrated in figure 5-21.

Allow enough slack in the harness so that it is not stretched taut. Do not pull on wires!

#### 5.7.4 Fuel Metering Pump Harness

Connect the fuel metering pump harness (located on the underside of the heater) to the fuel pump. Harness connector will "click" into place when properly inserted.

On cab-over vehicles, an extension harness may be required. The extension harness connects between the heater harness and the fuel metering pump.

#### ATTENTION!

A Fuel line and fuel metering pump harness kit is available for extending the fuel system in the case of cab-over vehicles. Order P/N 905555.

## 5.7.5 Circuit Diagram - Air Top 2000 Diagnostic 12 and 24 Volt

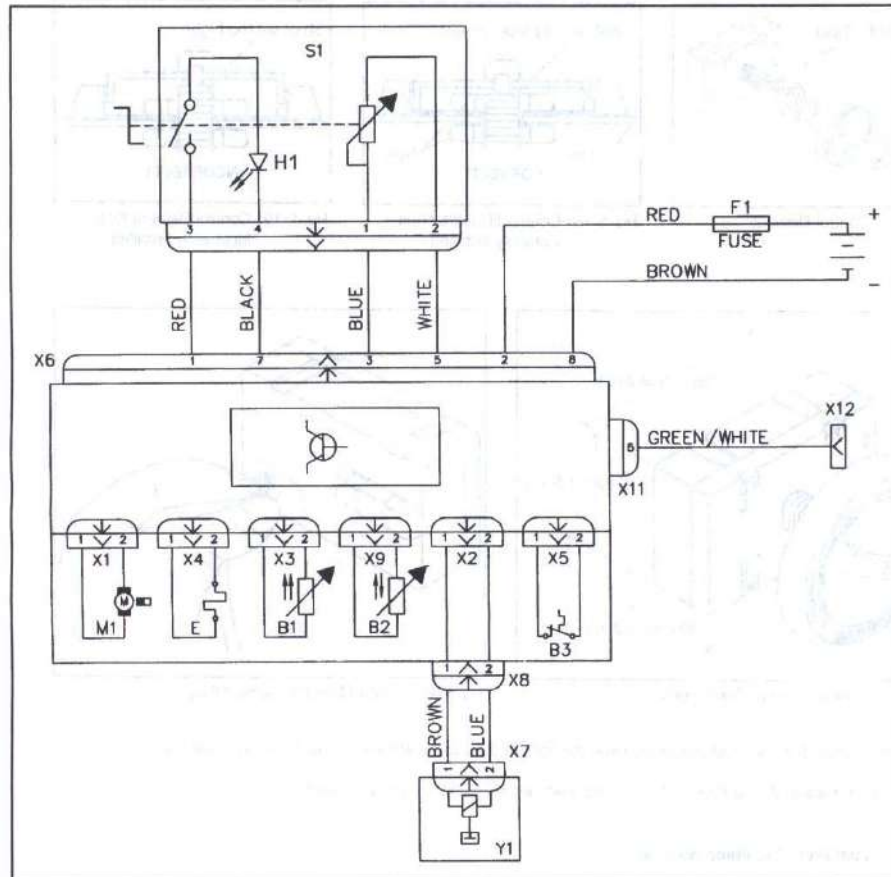


Fig. 5-22: Circuit Diagram - Air Top 2000 Diagnostic

A1	Air Top 2000	M	Motor	X7	Connector 2-Pin (Fuel Pump)
A2	Control Unit	S1	Control Element	X8	Connector 2-Pin (Fuel Pump)
B1	Flame Sensor	X1	Connector 2-Pin (Motor)	X9	Connector 2-Pin (Temp. Sensor)
B2	Air Temperature Sensor	X2	Connector 2-Pin (Fuel Pump)	X10	Connector 8-Pin
B3	Temperature Limiter	X3	Connector 2-Pin (Flame Sensor)	X11	Connector 4-Pin
E	Glow Pin	X4	Connector 2-Pin (Glow Pin)	X12	Diagnostic Link
F1	Fuse - 24V 10A or 12V 15A	X5	Connector 2-Pin (Temp. Limiter)	Y1	Fuel Metering Pump
H1	Indicator Light (in item S1)	X6	Connector 8-Pin (Main Harness)		



### 5.7.6 Circuit Diagram - Air Top 2000 Diagnostic with Roll/Load Protection Module (Freightliner and Western Star Factory Installations)

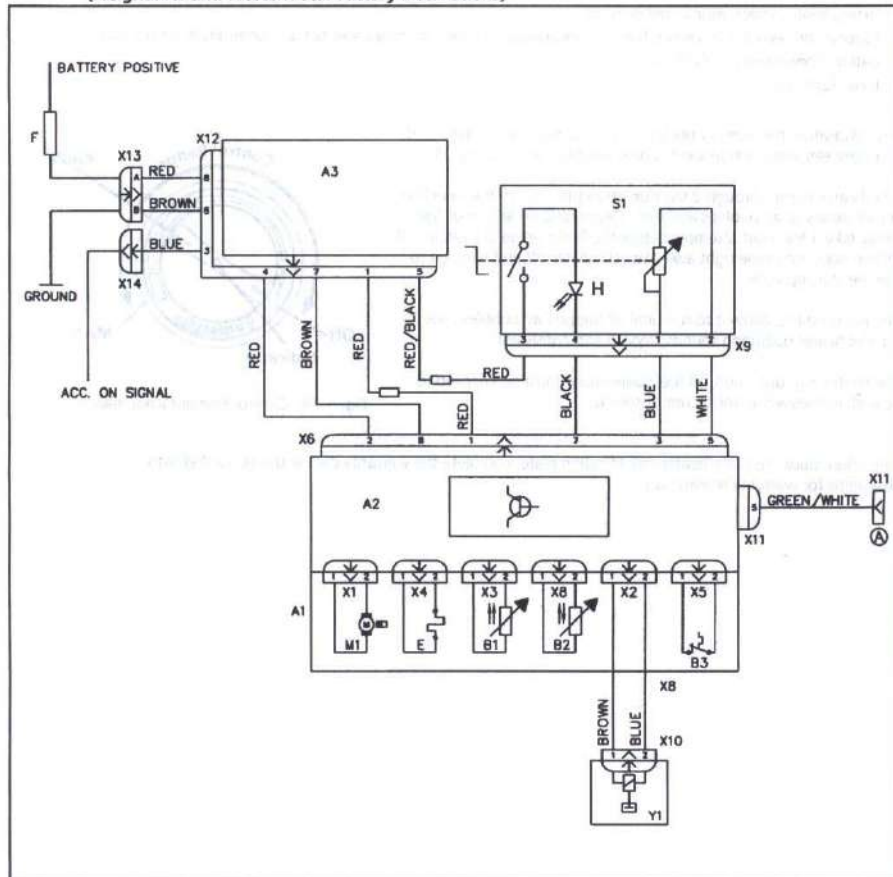


Fig. 5-23: Circuit Diagram - Air Top 2000 Diagnostic with Roll/Load Protection Module (Freightliner and Western Star)

A1	Air Top 2000	M	Motor	X8	Connector 2-Pin
A2	Control Unit	S1	Control Element	X9	Connector 4-Pin
A3	Roll/Load Protection	X1	Connector 2-Pin (Motor)	X10	Connector 2-Pin
B1	Flame Sensor	X2	Connector 2-Pin (Fuel Pump)	X11	Connector 1-Pin
B2	Air Temperature Sensor	X3	Connector 2-Pin (Flame Sensor)	X12	Connector 12-Pin
B3	Temperature Limiter	X4	Connector 2-Pin (Glow Pin)	X13	Connector 2-Pin
E	Glow Pin	X5	Connector 2-Pin (Temp. Limiter)	X14	Connector 1-Pin
F	Fuse - 24V 10A or 12V 15A	X6	Connector 8-Pin	Y1	Fuel Metering Pump
H	Indicator Light (in item S1)	X7	Connector 6-Pin	Ⓐ	Diagnostic Download Link

### 5.8 Initial Start Up

Before starting heater, check your installation for:

- routing and securing of wiring, fuel line, exhaust/combustion air tubes and hot air outlet/return air ducting.
- battery connections and polarity.
- loose fasteners.

Once the installation has been inspected, insert the main power fuse and set the control element knob to the full heat position (see figure 5-24).

Allow the heater to run through 2 start-up attempts. Watch the clear fuel line for indications of air bubbles and fuel. Depending on length of fuel line, it may take a few start attempts before the fuel reaches the heater. If the fuel line does not prime right away, switch heater off and back on to reinitiate the start-up cycle.

Once the heater starts, allow it to run until all trapped air bubbles have escaped and heater operation sounds smooth and consistent.

After the heater is in operation, all fuel connections must be checked for leakage and all lines/wiring for secure fastening.

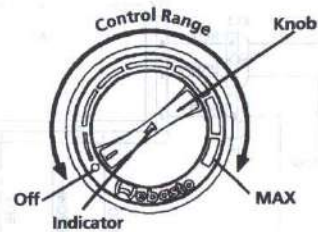


Fig. 5-24: Control Element Knob Range

Using the information from the heater identification plate, complete the warranty card and send to Webasto Thermosystems for warranty registration.

## 6. Maintenance/Troubleshooting

### ⚠ WARNING

*Although simple maintenance procedures can be performed by the owner, any operational problems, major repairs due to damage, subsequent installations or alterations must be performed by a properly trained Webasto specialist.*

### ⚠ CAUTIONS

*Always use genuine Webasto service and replacement parts to ensure trouble-free operation of the heater.*

### 6.1 Heater Maintenance

The Webasto Air Top 2000 heater is designed for minimal maintenance. Under normal circumstances it should be inspected for proper function at least once annually, preferably, just prior to the heating season.

To ensure trouble-free operation, the following should be part of an annual and periodical inspection:

1. Operate the heater a minimum of 10 minutes every month to keep fresh fuel in the system and the fuel pump lubricated.
2. Keep the heating air outlet and ducting clear of obstructions. Inspect outlet ducting for damage and repair as necessary.
3. Keep the heater inlet grille clear of obstructions. If the heater is equipped with ducting, inspect for damage and repair as necessary.
4. Inspect the combustion air tube and exhaust tube for obstructions and damage. Check to ensure they are securely attached to the heater and vehicle. Repair damaged items where necessary.
5. Inspect the fuel system and all connections for leaks. Tighten clamps if loose. Ensure fuel line is well secured to the vehicle. Replace fuel filter if equipped.

### 6.2 Troubleshooting

Troubleshooting requires profound knowledge about structure and theory of operation of the heater components and should only be performed by authorized Webasto trained specialists.

For the purpose of this manual, only those items as they pertain to installation will be covered under troubleshooting. For malfunctional problems beyond the scope of this manual, please call Webasto Product North America, Inc. directly at 1-800-555-4518 (USA) or 1-800-667-8900 (Canada).

In the event of a heater malfunction, first check the following two items to eliminate them as cause for trouble:

- A. Power Supply
  - Fuse blown?
  - Power at fuse?
- B. Fuel Supply
  - Fuel in tank?
  - Clean, unrestricted fuel supply?

#### 6.2.1 Heater Shuts Off Automatically

The heater will automatically shut off if a malfunction occurs. To clear a malfunction, turn control element knob to off, wait 2 seconds and turn on once again to reset the heaters control unit. Should the heater fail to start or continues to malfunction, consult your Webasto specialist.

**6.2.2 Heater Emits Black Smoke from Exhaust**

Check the combustion air intake tube and exhaust tube for obstructions or damage. Clear obstructions as necessary or replace damaged tubes. Should condition persist, consult your Webasto specialist.

**6.2.3 Self-Diagnostic System (Reading Flash Codes)**

A flash code will be generated on the indicator light of the control element or a code will be entered on the face of the optional 7-day timer. These codes indicate a malfunction and subsequent operational interruption. There are ten codes available depending on the nature of the malfunction (see table 6-1).

In order to make a correct analysis, it is necessary to understand the flash code event. The flash code pertains to the control element (switch) only. The flash code is only visible during the after-run (cool-down) period of operation (an optional timer will hold the last code in memory until corrected, see "F" codes in parentheses on table 6-1).

During the flash code event, you will see five quick flashes followed by a slower sequence of flashes from one flash to ten flashes. The slower sequence of flashes is the actual malfunction code. The five quick flashes are only an indication that a malfunction has been detected and that the code will be displayed. Count only the slower sequence of flashes to obtain the current malfunction code.

For example (5 = one flash):

Event code 4X (F 04): 5 5 5 5 5 ... 4 ... 4 ... 4 ... 4

The fast/slow sequence will be repeated until the heater completes the after-run (cool-down) cycle after which, the code will be stored in the control unit memory.

**ATTENTION!**

*Specialized diagnostic equipment is required to read malfunction codes stored in the control unit memory. Consult your Webasto specialist for details.*

**ATTENTION!**

*After any correction of a malfunction, a functional test has to be performed with the heater installed in the vehicle.*

**ATTENTION!**

*Ambient air temperature must be below the set point on the control element knob before heater will start operation.*



## 6.2.4 Diagnostic Code Table

Symptom	Probable Cause	Check and Correct
<b>No Function</b>	Electrical wiring, fuses  Control unit	Fuses Battery connections Power at red wire and ground at heater brown wire Consult your authorized Webasto Specialist
<b>1X Flash (F 01)</b> No combustion achieved after start and repeat start	Fuel system  Combustion air Burner	Fuel level - No fuel - Fuel system not primed Type of fuel being used Plugged fuel filter - replace Fuel line connections and clamps (air bubbles in fuel lines) Air intake or exhaust - restricted or plugged Consult your authorized Webasto specialist
<b>2X Flashes (F 02)</b> Flame-out during operation	Fuel supply (shortage)  Burner	Restriction in fuel system Plugged fuel filter - replace Fuel line connections and clamps (air bubbles in fuel lines) Type of fuel being used Consult your authorized Webasto Specialist
<b>3X Flashes (F 03)</b> Low voltage for more than 20 seconds	Electrical system	Load test batteries Corrosion at connections Loose connections
<b>4X Flashes (F 04)</b> Flame sensor permanently hot		Consult your authorized Webasto Specialist
<b>5X Flashes (F 05)</b> Flame sensor		Consult your authorized Webasto Specialist
<b>6X Flashes (F 06)</b> Temperature sensor		Consult your authorized Webasto Specialist
<b>7X Flashes (F 07)</b> Fuel metering pump		Consult your authorized Webasto Specialist
<b>8X Flashes (F 08)</b> Combustion air fan		Consult your authorized Webasto Specialist
<b>9X Flashes (F 09)</b> Ceramic igniter (glow pin)		Consult your authorized Webasto Specialist
<b>10X Flashes (F 10)</b> Temperature limiter	Overheat condition	Motor/fan obstruction, heating air flow blocked, ducting damaged or temperature limiter faulty. Repair problem, switch heater off and back on.

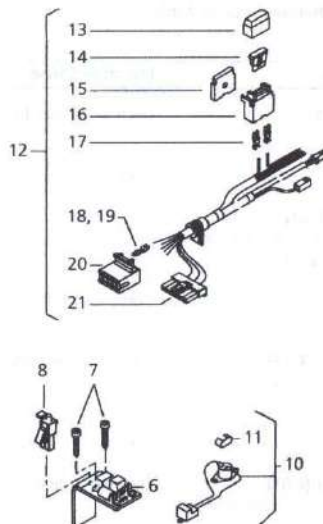
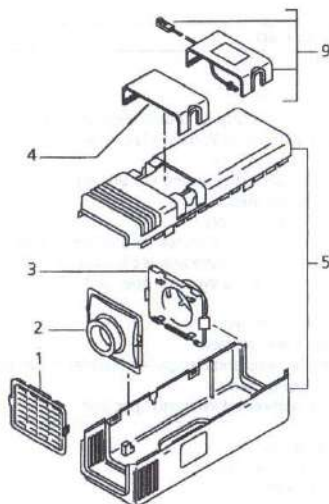
Table 6-1: Diagnostic Codes - Air Top 2000 Diagnostic

**ATTENTION!**

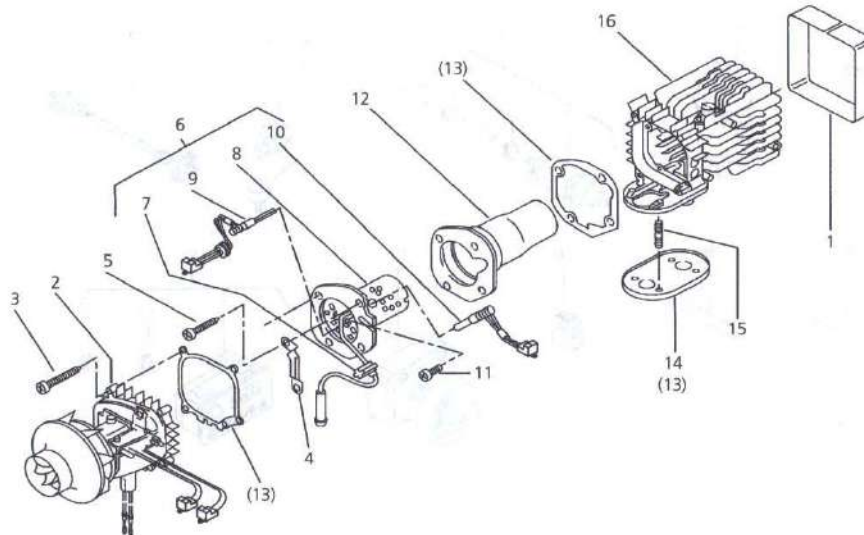
Specialized diagnostic equipment is required to read malfunction codes stored in the control unit memory. Consult your Webasto specialist for details.

**ATTENTION!**

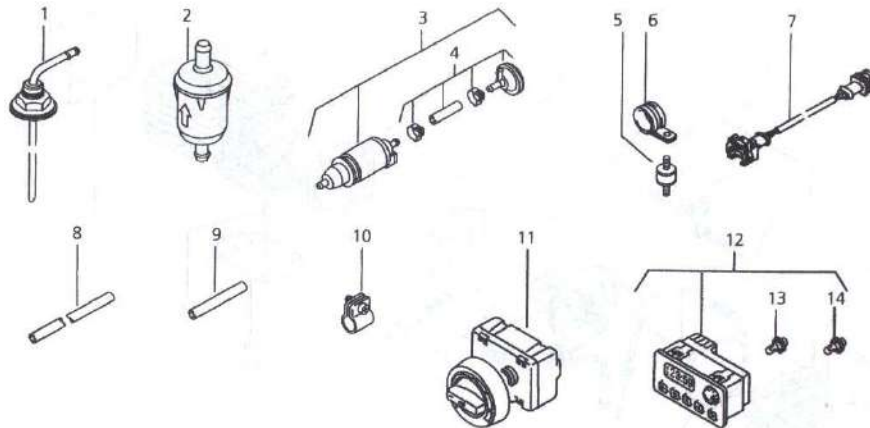
After any correction of a malfunction, a functional test has to be performed with the heater installed in the vehicle.



ITEM	DESCRIPTION	PART NO.
1	Air Inlet/Outlet Grille	29716B
2	Air Inlet Ring (with duct attachment provision)	29717C
3	Air Outlet (with duct attachment provision)	29848F
4	Cover - Control Unit	29718A
5	Heater Housing	82282A
6	Control Unit SG 1574 - 12 Volt Gasoline	87462B
6	Control Unit SG 1574 - 12 Volt Diesel	87461A
6	Control Unit SG 1574 - 24 Volt Diesel	87453B
7	Self-Tapping Screw	84788A
8	Temperature Sensor	88665A
9	Temperature Sensor - External (includes updated control unit)	9005008A
10	Temperature Limiter - Overheat Protection	82305B
11	Lock Washer - 2 Required	474703
12	Wiring Harness	5000149A
13	Cover - Fuse Holder	28267A
14	Fuse - Flat SAE 15 Amp. for 12 Volt Heaters	24981A
14	Fuse - Flat SAE 10 Amp. for 24 Volt Heaters	905610
15	Mounting Plate - Fuse Holder	28271A
16	Fuse Holder	28264A
17	Flat Spring Contact - 2 Required	28272A
18	Flat Spring Contact - 2 Required	30619A
19	Flat Spring Contact - 6 Required	30620A
20	Plug Connector 8-Pole	30570A
21	Plug Connector 6-Pole	86497A
No Fig.	Diagnostic Adapter Kit - Required for Connection to PC Diagnostic Kit (Not Shown)	5000009A

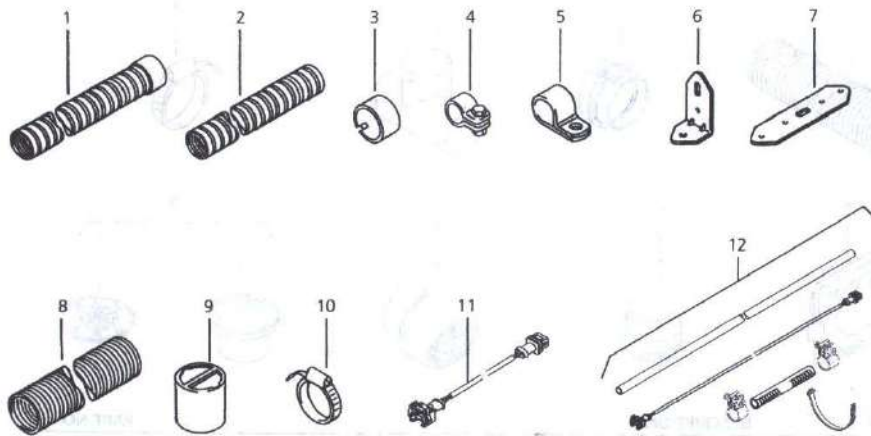


ITEM	DESCRIPTION	PART NO.
1	Sound Deadening Mat	34473B
2	Fan Drive Assembly - 12 Volt	9004639A
2	Fan Drive Assembly - 24 Volt	82812C
3	Self-tapping Screw - 5 required	37592A
4	Wire Guide Plate	34517B
5	Self-tapping Screw - 4 required	86887B
6	Burner Insert - 12 Volt Diesel with Flame Detector and Glow Pin	65787A
6	Burner Insert - 24 Volt Diesel with Flame Detector and Glow Pin	65788A
6	Burner Insert - 12 Volt Gasoline with Flame Detector and Glow Pin	84881A
7	Rubber Grommet	29845C
8	Burner Insert - Diesel without Flame Detector and Glow Pin	65786A
8	Burner Insert - Gasoline without Flame Detector and Glow Pin	84883A
9	Flame Detector	82306A
10	Glow Pin (Ceramic Igniter) - 12 Volt	84906A
10	Glow Pin (Ceramic Igniter) - 24 Volt	82307A
11	Self-tapping Screw	448982
12	Burner Tube	82284A
13	Gasket Set	82302A
14	Mounting Gasket (Included in gasket set P/N 82302A)	29620A
15	Stud - 4 required	30606A
16	Heat Exchanger	30605C
No Fig.	Workshop Manual	907403



ITEM	DESCRIPTION	PART NO.
1	Universal Fuel Standpipe	903200A
2	Fuel Filter	487171
3	Fuel Pump - 12 Volt Diesel (DP 30)	86115A
3	Fuel Pump - 24 Volt Diesel (DP 30)	86116A
3	Fuel Pump - 12 Volt Gasoline / Diesel (DP 2) Heavy Duty with Pulse Damper	82786B
4	Pulse Damper - Fuel Pumps	478814
5	Rubber Isolation Mount	462543
6	Clamp - Fuel Pump Mounting	21499A
7	Extension Harness - Fuel Pump - 500 mm (20 in.)	905777A
7	Extension Harness - Fuel Pump - 4.5 m (15 ft.)	905781A
8	Fuel Line - Per Meter	483931
9	Coupler - Fuel Line	484032
10	Clamp - Fuel Line/Coupler	330027
11	Control Element (Rheostat)	82819B
12	7-Day Digital Timer Model 1531 - 12 Volt	88206A
12	7-Day Digital Timer Model 1531 - 24 Volt	88205A
13	Replacement Light Bulb for Timer Model 1531 - 12 Volt	90807A
14	Replacement Light Bulb for Timer Model 1531 - 24 Volt	90808A
No Fig. Workshop Manual		907403

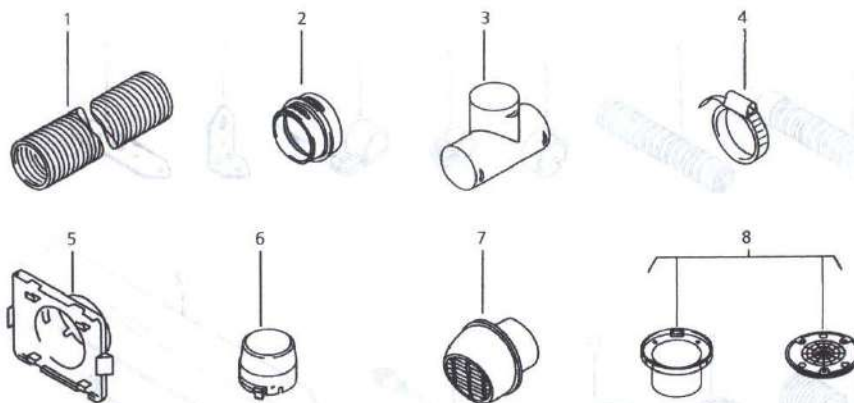




ITEM	DESCRIPTION	PART NO.
1	Stainless Steel Exhaust Tube with End Cap - 22 mm x 1 m (39 in.) Length	50900126A
2	Stainless Steel Exhaust Tubing - 22 mm Dia. x 5 m (16 ft.) Length	5000322A
2	Stainless Steel Exhaust Tubing - 22 mm Dia. x 10 m (32 ft.) Length	5000323A
2	Stainless Steel Exhaust Tubing - 22 mm Dia. x 20 m (65 ft.) Length	50337390A
3	Stainless Steel End Cap (Trim Ring) - Terminates exhaust tube outlet	24048A
4	Exhaust Clamp - Secures exhaust tube to heater exhaust outlet	20965A
5	Pipe Clip - Secures exhaust/combustion air tube to the vehicle	405256
6	Multi-Purpose Angle Bracket - Use for securing components to vehicle	242780
7	Multi-Purpose Flat Bracket - Use for securing components to vehicle	242888
8	Flexible Plastic Combustion Air Inlet Tubing - 22 mm x 500 mm (20 in.) Length	900522
8	Flexible Plastic Combustion Air Inlet Tubing - 22 mm x 1 m (39 in.) Length	5000332A
8	Flexible Plastic Combustion Air Inlet Tubing - 22 mm x 2 m (6.5 ft.) Length	5000333A
8	Flexible Plastic Combustion Air Inlet Tubing - 22 mm x 6 m (20 ft.) Length	50466115A
8	Flexible Plastic Combustion Air Inlet Tubing - 22 mm x 10 m (32 ft.) Length	5000334A
9	Protection Cap for Combustion Air Tube - Plastic	295168
10	Gear Clamp - Secures combustion air inlet tubing to heater combustion air inlet	901097
11	Fuel Pump Extension Harness - Extends harness length up to 5 meters (16 feet).	905781A
12	Fuel Pump Extension Kit - Extends fuel system up to 5.5 meters (18 feet). For cab-over truck installations requiring longer fuel system runs. Kit contains extension harness, fuel line, fuel line connector, two fuel line clamps and cable tie.	905555
No Fig.	Composite Floor Installation Kit (Not shown)	907627

**NOTE:**

Kenworth T2000 and Western Star trucks with composite floor construction requires special floor installation kit available under part number 907627.



ITEM	DESCRIPTION	PART NO.
1	Warm Air Inlet/Outlet Ducting - 60 mm x 500 mm Length	5000258A
1	Warm Air Inlet/Outlet Ducting - 60 mm x 1 m Length	900497A
1	Warm Air Inlet/Outlet Ducting - 60 mm x 2 m Length	5000316A
1	Warm Air Inlet/Outlet Ducting - 60 mm x 5 m Length	5000317A
1	Warm Air Inlet/Outlet Ducting - 60 mm x 10 m Length	5000318A
1	Warm Air Inlet/Outlet Ducting - 60 mm x 25 m Length	50398497A
2	Straight Reducer - 60 mm to 55 mm Use to connect the "New Standard" 60 mm heaters and ducting to older 55 mm ducting systems. Useful when updating older Webasto heater systems to the new Air Top 2000. Avoids replacing existing 55 mm ducts and inlet/outlet nozzles.	29852A
3	Junction Fitting - 60 mm Use to run two outlets from one heater.	86643A
4	Gear Clamp - 50 to 70 mm Use for air ducting connections	466352
5	Inlet Nozzle - 60 mm Replaces the heaters return air (inlet) grille with an adapter to allow connection of 60 mm ducting where positive air-recirculation is desired. Useful in areas where cold, un-circulated air hampers the heaters ability to maintain consistent interior heat levels. Use in conjunction with air inlet adapter P/N 31290B.	29848F
6	Air Inlet Adapter Used in conjunction with inlet nozzle P/N 29848F to take up space between nozzle and heater inlet venturi. Must be used in conjunction with air inlet ducting whenever heater is installed within a sealed installation housing.	31290B
7	Air Outlet Nozzle (360° Directional, 60 mm Diameter). Provides visually pleasing, directionally adjustable warm air distribution point. Commonly used in conjunction with 60 mm ducting to route warm air from heater to external front lower side of sleeper bed when heater is installed within the under-bunk storage area of the vehicle sleeper. Also suitable for similarly enclosed areas.	398551
8	Outlet/Inlet Grille (60 mm Diameter). Commonly used as a return air port when heater is installed within the under-bunk storage area of the vehicle sleeper. Can be ducted directly to the heater inlet using 60 mm ducting and items P/N 29848F and P/N 31290B.	87389A