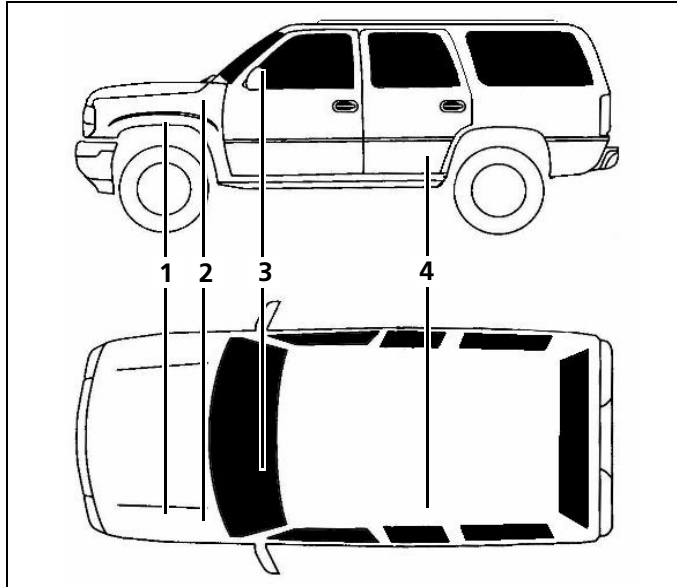


Thermo Top



Ford Excursion
2000 (7.3 Liter Diesel)

Ford F-250 SD / F-350 SD
1999 – 2000 (7.3 Liter Diesel)

Special instructions for these models
Part locations may differ slightly dependent on the vehicle model.

Legend

- 1 BlueHeat Coolant Heater, Exhaust Muffler, and Combustion Air Intake Silencer
- 2 Fuse Holder and Resistor
- 3 Timer Control
- 4 Fuel Pump

Special Tools

- Hose Clamping pliers
- Torque Wrench (1/4' Drive)

Table of Contents

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- Improper installation or repair of Webasto heating and cooling systems can cause fire or the leakage of deadly carbon monoxide leading to serious injury or death.
- Installation and repair of Webasto heating and cooling systems requires special Webasto training, technical information, special tools and special equipment.
- NEVER attempt to install or repair Webasto heating or cooling system unless you have successfully completed the factory training course and have the technical skills, technical information, tools and equipment required to properly complete the necessary procedures.
- ALWAYS carefully follow Webasto installation and repair instructions and heed all WARNINGS.
- Webasto rejects any liability for problems and damage caused by the system being installed by untrained personnel.

Parts List

Quantity	Part	Part Number
1	Heater Kit	5000515C
1	Installation Kit	5000600B

Vehicle Information

Manufacturer	Model	Year	Engine Type
Ford	Excursion	2000	7.3 Liter Diesel
Ford	F-250 / F-350	1999 – 2000	7.3 Liter Diesel

Foreword

This installation requires special expertise from a Webasto training course to install a Webasto Thermo Top heaters, which means that it may only be installed by a specially trained workshop or dealership. Webasto cannot accept any liability for faults and damage caused by the system being installed by untrained personnel.

Scope and Purpose

These non-binding installation instructions are intended to support authorized Webasto trained distributors, dealers and personnel in the installation of the Thermo Top BlueHeat Coolant Heaters.

These non-binding installation instructions apply to the vehicles listed on the front cover of this installation document unless technical modifications on the vehicle influence the installation, excluding all liability claims. Depending on the version and equipment in the vehicle, changes may be required to the installation work set out in these installation instructions. In any event, however, the directives in the “installation manual” and “operating manual” must be followed. Acknowledged engineering conventions must be observed for the installation work.

ATTENTION

All relevant state and provincial licensing regulations if any, governing the installation and use of auxiliary heating devices must be observed!



CAUTION

Location of heater, installation of coolant lines, fuel system and components, wiring and control devices are important for proper operation. Failure to comply with the installation instructions provided may result in poor operation or damage to heater and vehicle components.



Symbol Identification

Symbols that define sections in manual



Mechanical Preparation



Fuel



Electrical



Exhaust



Coolant



Combustion Air Intake

General Symbol Descriptions



Warning



Refer to Webasto or Manufacturer Manual



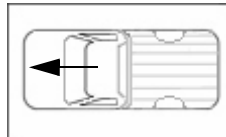
Caution



Attention



Flammable or Combustible



Part Location on Vehicle

General References

- Bare body parts, for example around drilled holes, must be treated with anti-corrosive coating.
- Secure hoses, cables and wiring harnesses with cable ties and fit protective hoses around them at chafing points.
- Fit edge protectors (opened fuel hose) to sharp edges.

Preparation

Heater Kit

- Verify and identify all contents of kit.

Vehicle

- Verify fuel content in tank.

CAUTION

*For safety reasons due to weight of fuel and tank, it is recommended there be no more than 1/4 tank of fuel present.
If fuel quantity is greater than 1/4 of capacity, make provisions to reduce quantity of fuel.*

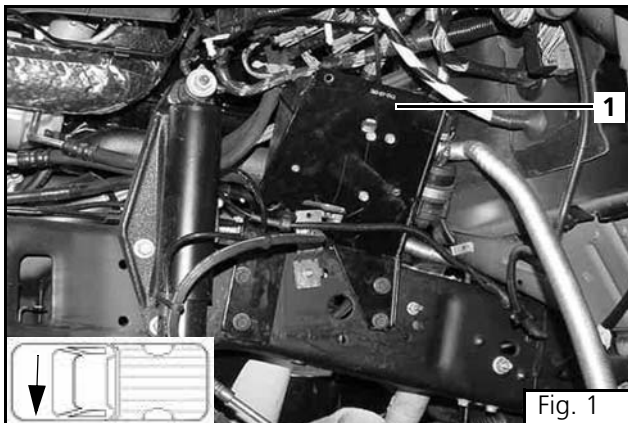


Heater Installation Site

- (1) Webasto Auxiliary Coolant Heater and Bracket

ATTENTION

The Webasto Auxiliary Coolant Heater is to be installed on the left-hand side of the engine compartment mounted to the frame rail just rear of the vehicle shock assembly. (Inner wheel-well must be removed for illustration purposes).





Installation

Electrical - Overview

ATTENTION

The timer control location is a recommendation only. Please consult with the customer before mounting.



Vehicle HVAC Blower Motor

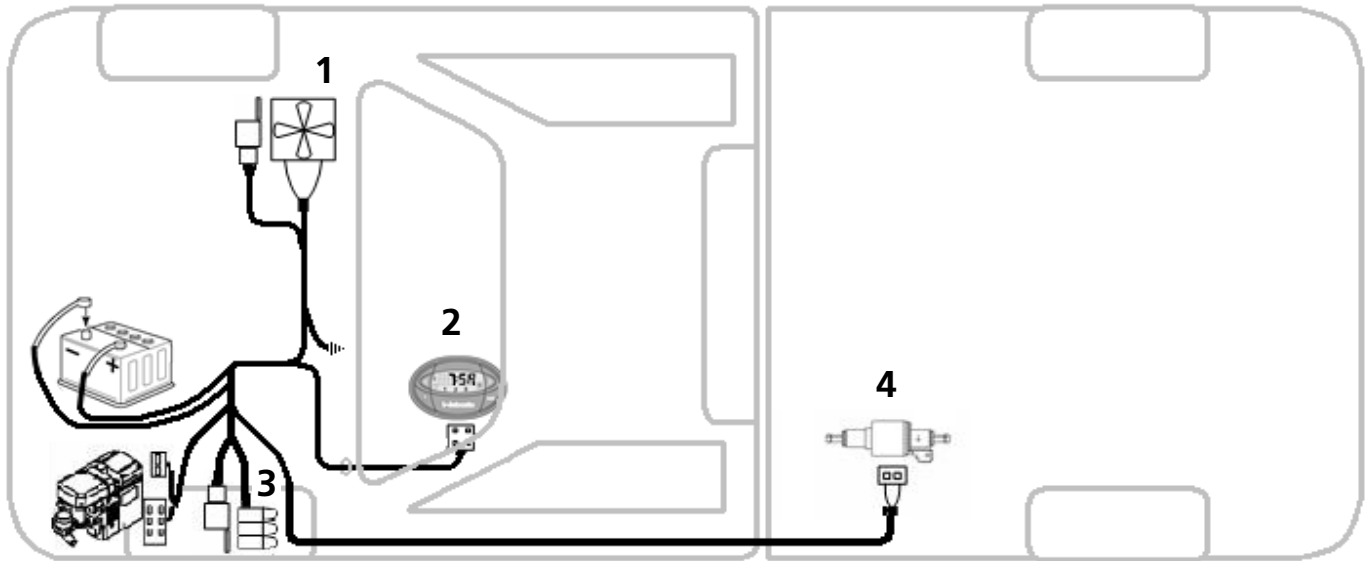


(Location) Right front side of Bulkhead

Timer Control Location

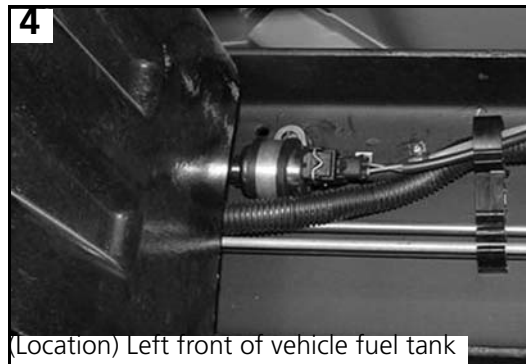


(Location) Instrument Panel



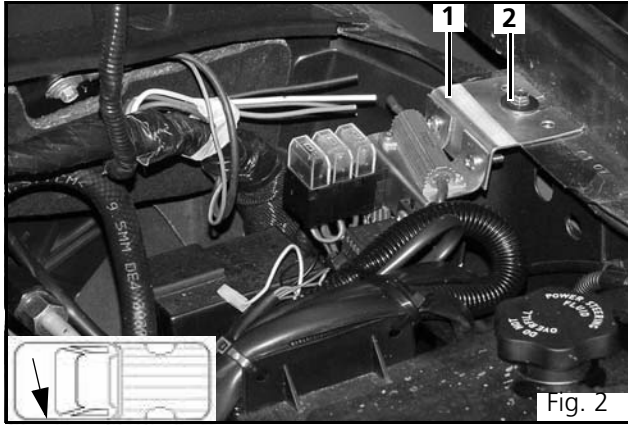
(Location) Underhood on Left Inner fender

Webasto Fuse Block and Relay



(Location) Left front of vehicle fuel tank

Webasto Heater Fuel Pump



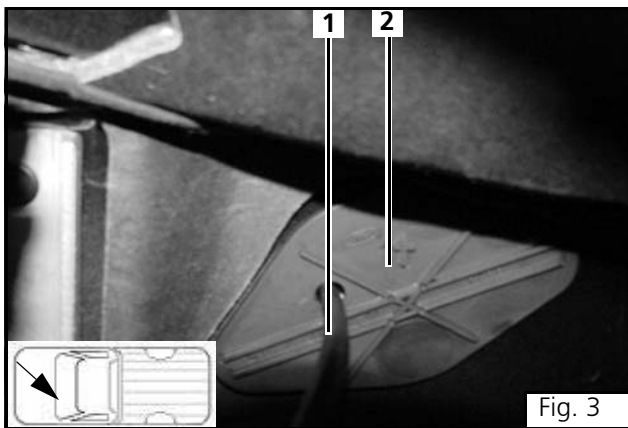
Electrical Harness

ATTENTION

Fuse block, resistor, relay K1 and K2 attached to left inner fender near bulkhead.

Connect brown ground wire to a suitable ground point or stud on vehicle.

- (1) Webasto Fuse Block Bracket
- (2) Driver Side Fender Retainer Bolt

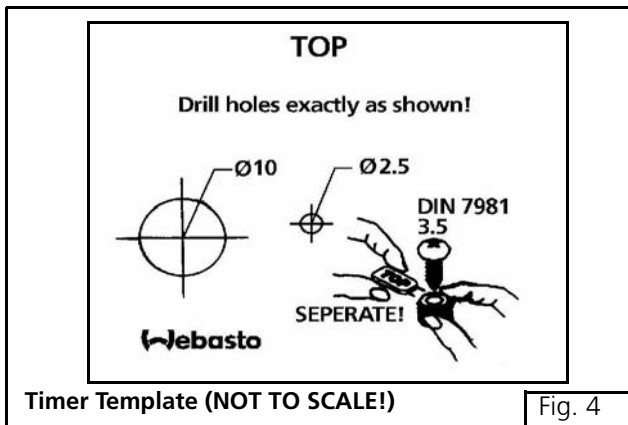


ATTENTION

Knock-out access for timer harness applies only to automatic transmission equipped vehicles. Standard transmission equipped vehicles will require access elsewhere.

Drill 9.5 mm (3/8 in.) hole in bulkhead knock-out. Run timer harness and fuse tap wire (Blue) from relay K1 through hole.

- (1) Bulkhead Knock-Out
- (2) Timer Harness



CAUTION

Before drilling into any panels, ensure there are no hidden components behind the panel that may be damaged or interfere with the timer installation!

ATTENTION

Before installing the timer, please confirm the installation site with your customer.

- Bore 10 mm (25/64 in.) and 2.5 mm (3/32 in.) holes as shown on template.



ATTENTION

Ensure foam cushion is installed between timer control and instrument panel.

Tighten screw to 0.8 Nm (7.0 lb.-in.). DO NOT OVER TIGHTEN!

- (1) Webasto Timer Controller (Model 1530)

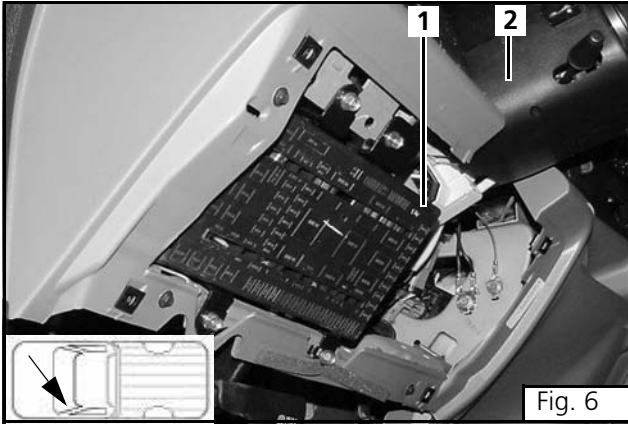


EXAMPLE ONLY!

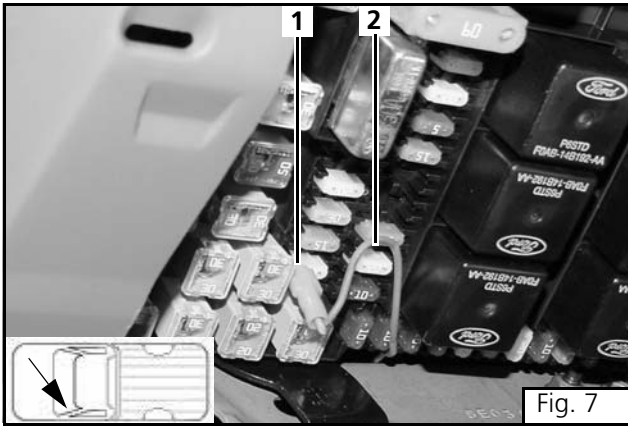
Fig. 5



Fuse Tap Connection - Relay K1



- (1) Fuse Panel
- (2) Steering Column



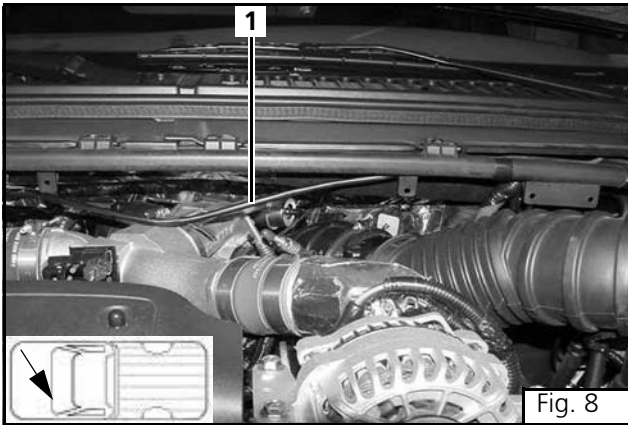
ATTENTION

Using the supplied fuse tap connector, tap into the "Fused" side of a "Ignition ON" fuse as shown.

- (1) Selected Fuse
- (2) Fuse Tap Wire (Blue)



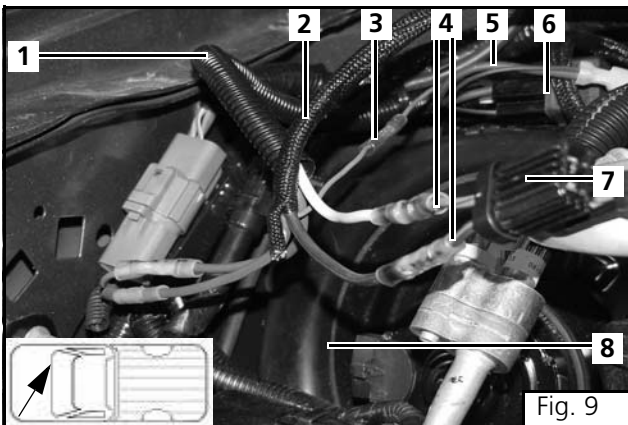
Integration into the Blower System



ATTENTION

It is permissible to cut excess length from blower control wiring harnesses.

- (1) Main HVAC Blower Control Harness



ATTENTION

For additional information on integrating the Webasto heater harness into the vehicles HVAC system, refer to the wiring diagram in Fig. 10.

- (1) Auxiliary Blower Control Harness
- (2) Main Blower Harness
- (3) Green Wire from Main Blower Harness to Green Wire Pigtail at K3 Relay
- (4) Positive and Negative Blower Control Wires
- (5) Brown Ground Wire
- (6) K3 Relay
- (7) Blower Motor Connector
- (8) HVAC Blower Motor





3-Relay HVAC Harness Connections

HVAC Blower wiring connections:

- (1) Chassis ground
- (2) Splice green wire to green wire
- (3) Cut, strip and crimp
- (4) Cut, strip and crimp
- (5) Cut, strip and crimp
- (6) Cut, strip and crimp

ATTENTION

Check your wiring! Ensure that all connections have been done in accordance with the wiring diagram shown (Fig. 10). Sensitive electronic controls can be damaged if wired incorrectly!

ATTENTION

Secure HVAC blower control wiring to vehicle structures with nylon wire ties (Image not available)

ATTENTION

Complete wiring schematics are available in the back of this manual.

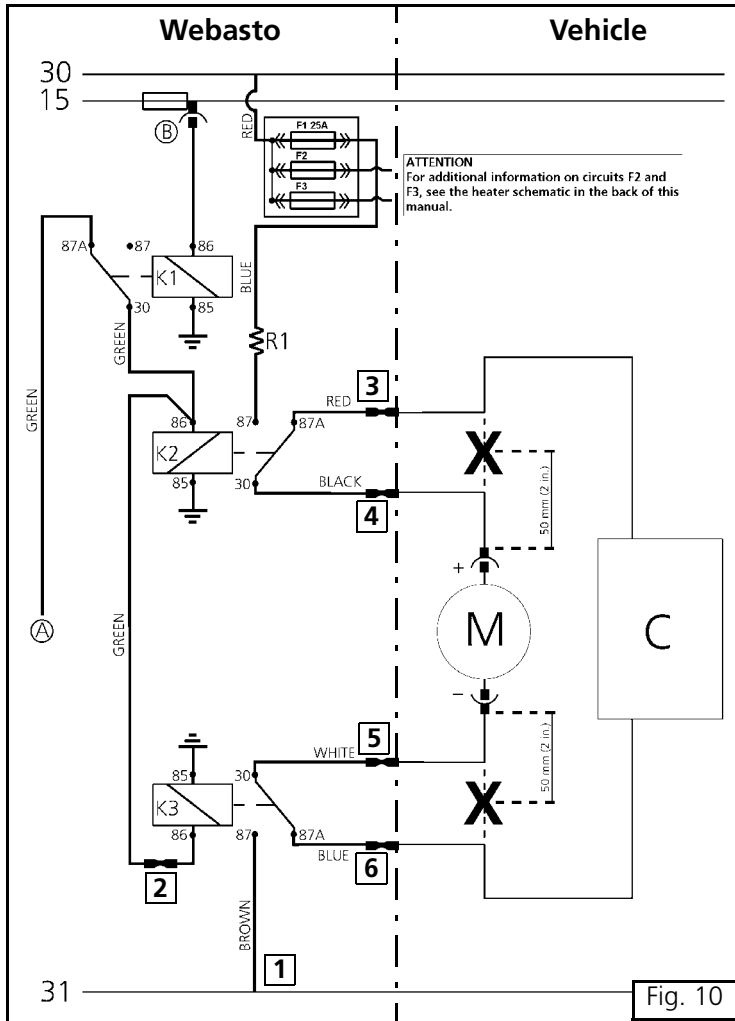


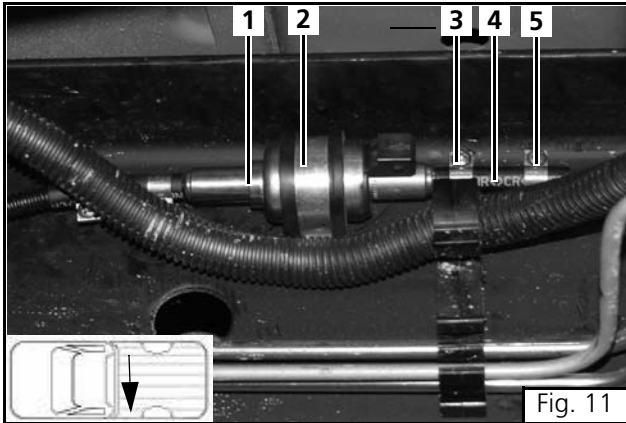
Fig. 10

Legend for Figure 10

- A From Webasto Heater X1
- B 12 VDC Ignition 'On' Fuse Tap
- C HVAC Control Module
- M HVAC Blower Motor
- X Cut wire at 50 mm (2 in.) from motor
- F1 Fuse - Blower Circuit 25 Amp.
- K1 Relay - Ignition 'On' Interrupt
- K2 Relay - Positive Side of Blower Motor Circuit
- K3 Relay - Negative Side of Blower Motor Circuit
- R1 Resistor - Blower Speed Control
- 30 Battery Positive (Constant Power)
- 15 Ignition (Switched Power)
- 31 Battery Negative (Chassis Ground)



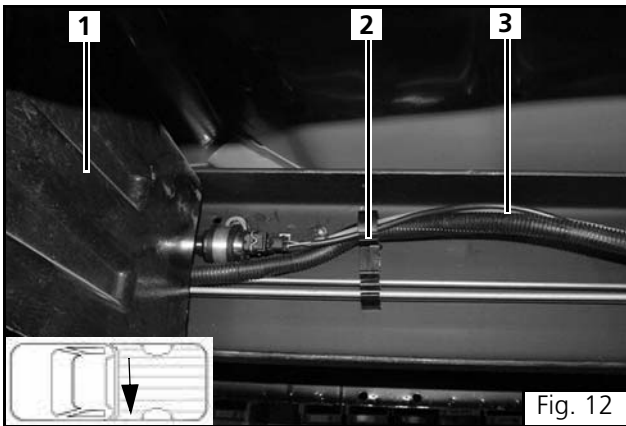
Integration into Fuel System



ATTENTION

Mount fuel pump to frame rail using existing holes just forward of the vehicle fuel tank. Ensure the electrical receptacle on fuel pump is pointed towards the front of the vehicle. Secure inner hose clamps while leaving outer clamps loose for later fuel line installation.

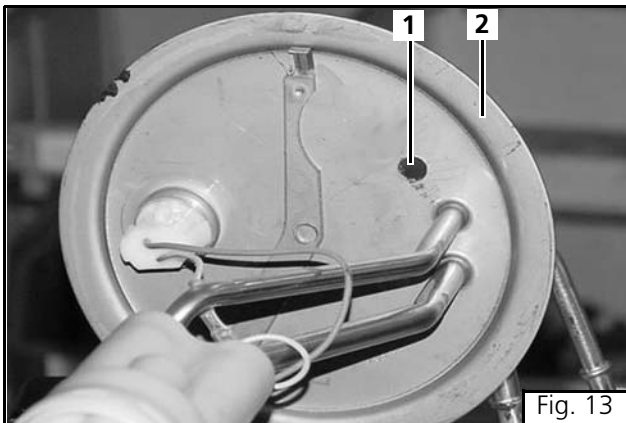
- (1) Webasto Fuel Pump
- (2) P-Clamp Retainer
- (3) Inboard Hose Clamp
- (4) Fuel Line Connector
- (5) Outboard Hose Clamp



ATTENTION

Route fuel pump harness down towards fuel pump using OEM brake line clamps to secure harness.

- (1) Vehicle Fuel Tank
- (2) OEM Brake Line Clamp
- (3) Webasto Fuel Pump Harness



CAUTION

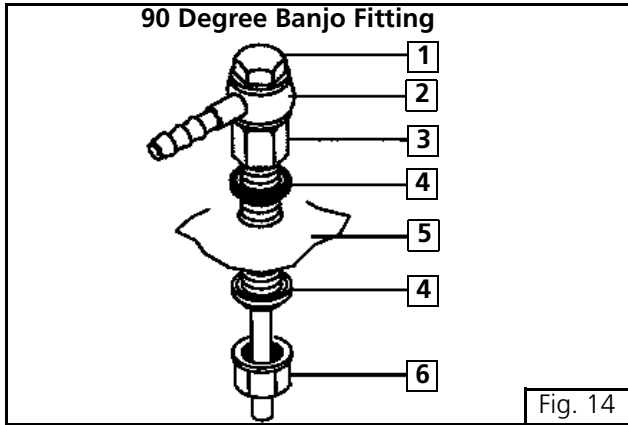
Full to partially filled fuel tanks are heavy and awkward to handle. In the event the fuel tank must be removed to gain access to the sender unit, ensure tank is near empty. To prevent accidents and potential injury to personnel, make sure tank is well supported prior to removing mounting hardware.

ATTENTION

Drill an 8.5 mm (21/64 in.) hole through the fuel sending unit as shown.

- (1) Hole Drilled for Webasto Standpipe
- (2) Vehicle Sending Unit



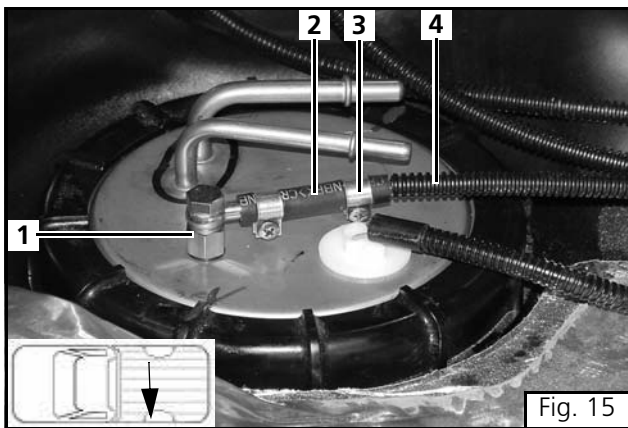


ATTENTION

Cut standpipe to length and bend if necessary to clear any fuel sender components.

Maintain a 1 in. clearance from the bottom of the fuel tank.

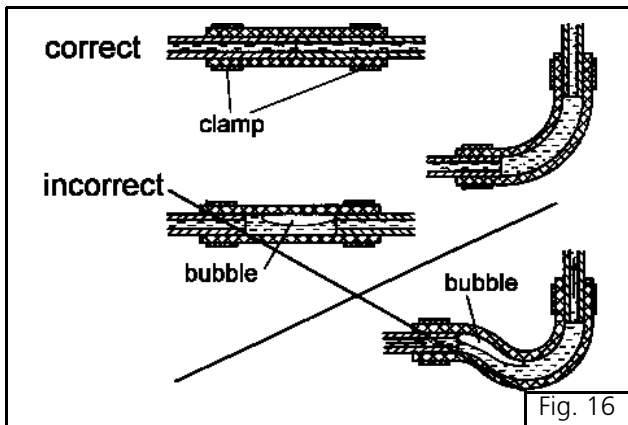
- (1) Banjo Bolt
- (2) Banjo Fitting - 90 Degree
- (3) Standpipe
- (4) Sealing Washer
- (5) Fuel Tank or Sender Plate
- (6) Lock Nut



ATTENTION

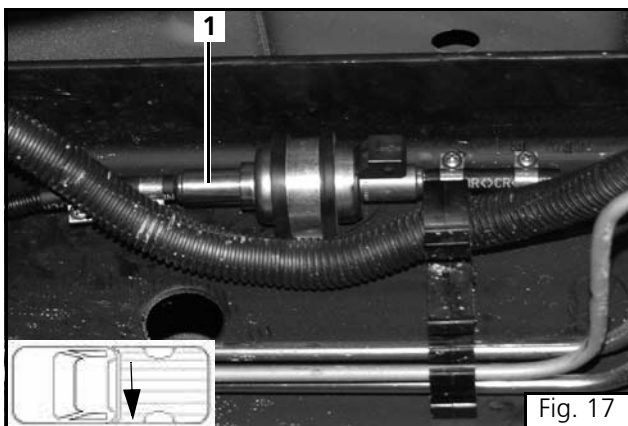
Banjo outlet should run in the same direction as the vehicle fuel outlet pipes. It may be necessary to reposition banjo fitting outlet. If Banjo Bolt is loosened, re-tighten to 9 ± 0.5 Nm. (80 ± 4.4 lb.-in.).

- (1) 90 Degree Banjo Fitting
- (2) Fuel Line Connector
- (3) Hose Clamp
- (4) Webasto Fuel Line



ATTENTION

Ensure the fuel lines are fully seated within the line connectors and any 90 degree bends are not buckled. Refer to fig. 16.



ATTENTION

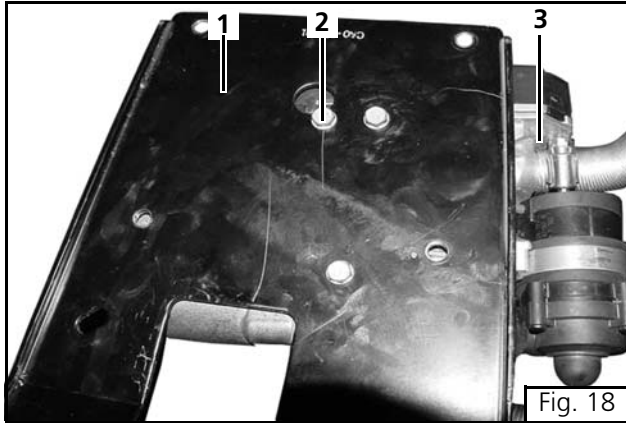
Always cut fuel line with a sharp razor knife or razor. DO NOT cut with side cutters, scissors or similar tools as doing so will cause a restriction inside the fuel line.

- (1) Inlet Side of Fuel Pump





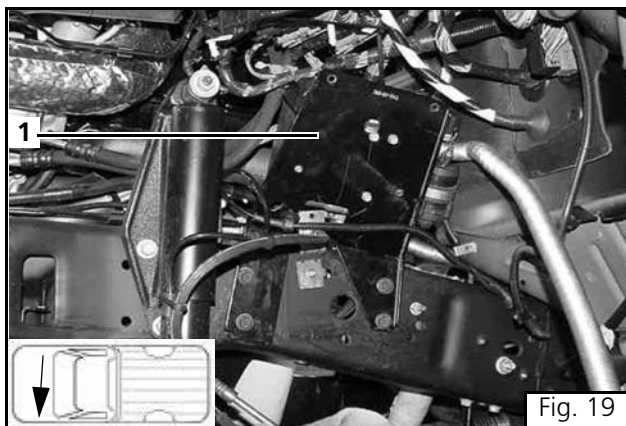
Heater Preparation and Installation



ATTENTION

Mount Webasto heater unit to the mounting bracket with the EJOT screws provided as shown in figure 18. Tighten screws to 10 Nm (88 lb.-in.).

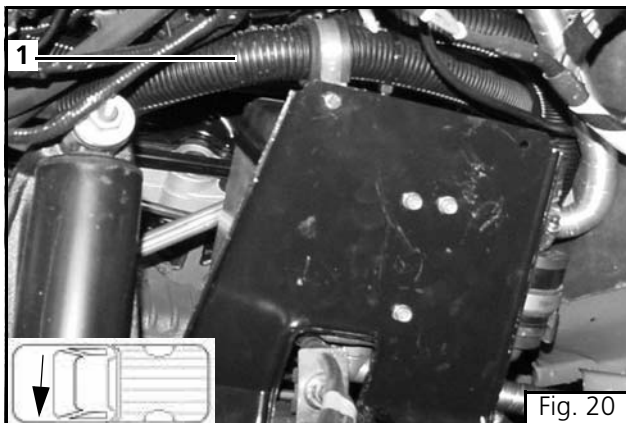
- (1) Heater Bracket
- (2) EJOT Screw
- (3) Webasto Heater



ATTENTION

Access heater mounting location by removing the drivers side inner fender well.

- (1) Webasto Heater Bracket and Heater mounted to Frame Rail.



ATTENTION

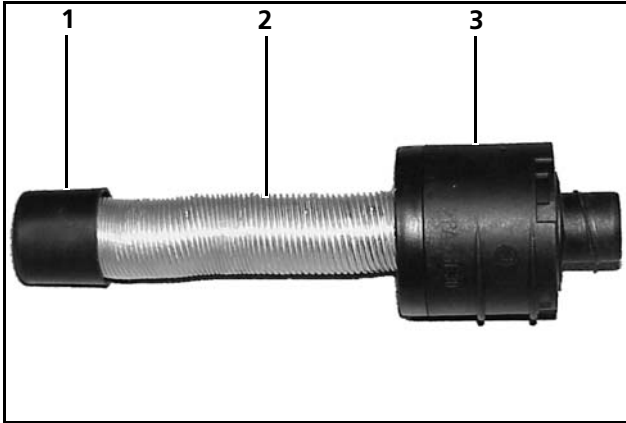
Relocation of some vehicle wiring harnesses above the left inner fender-well may be required to allow room for the heater and bracket.

- (1) Vehicle Harness Re-location.

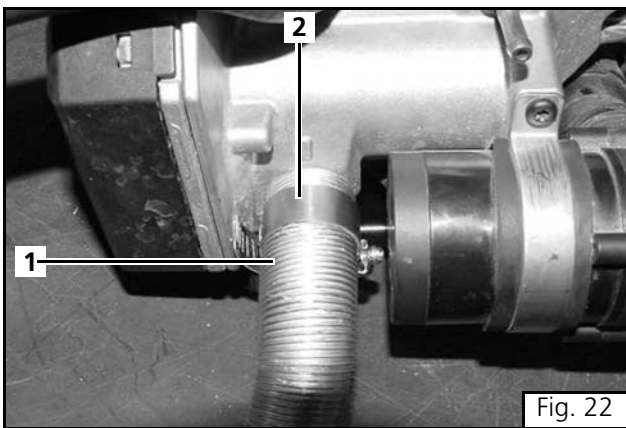




Combustion Air Intake and Silencer

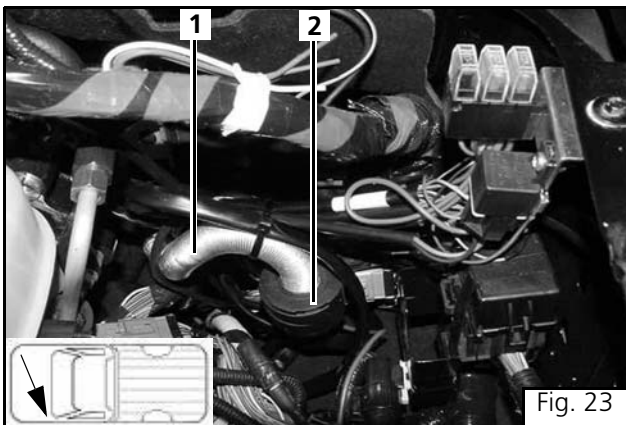


- (1) Combustion Intake Tube End
- (2) Combustion Air Intake Tube
- (3) Air Intake Silencer



- (1) Combustion Air Intake Tube
- (2) Intake Tube Hose Clamp

Fig. 22

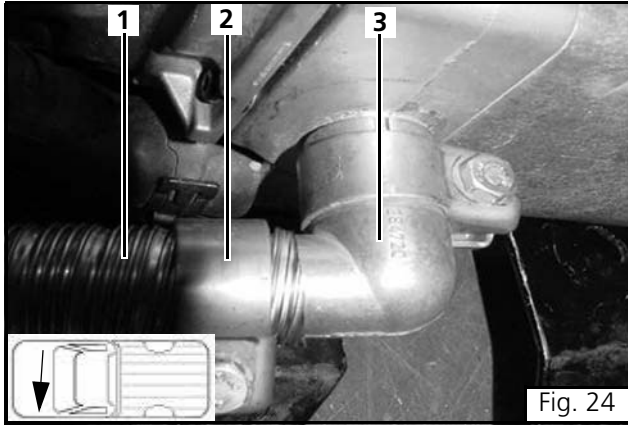


- (1) Combustion Air Intake Tube
- (2) Air Intake Silencer

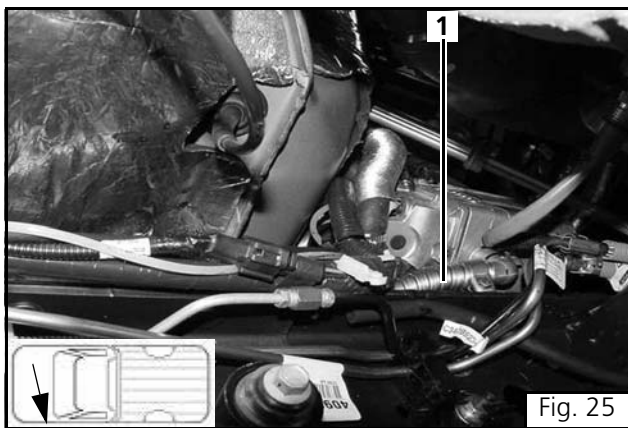
Fig. 23



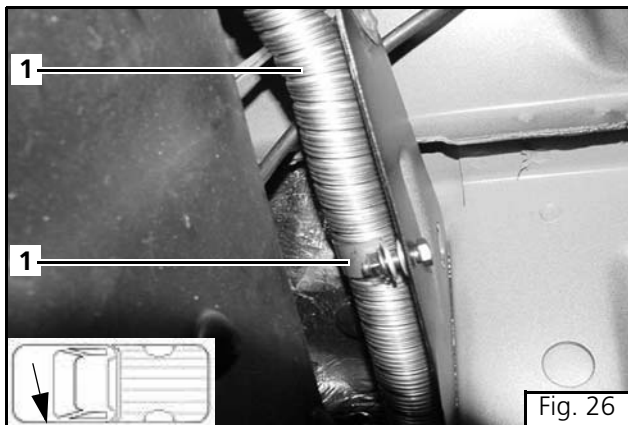
Exhaust Routing and Installation



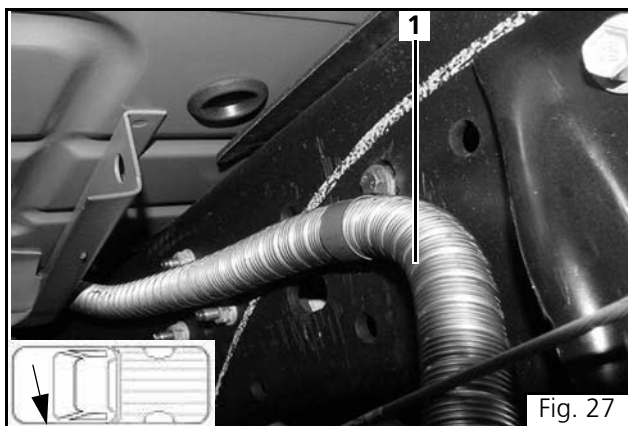
- (1) Exhaust Pipe
- (2) Securing Clamp
- (3) 90 Degree Exhaust Fitting



- (1) Top View of Exhaust Tube Routing



- (1) Exhaust Tube
- (2) Exhaust Securing Clamp



ATTENTION

Ensure the heat insulators are properly positioned and that the tail pipe is positioned downward.





Integration into Coolant System

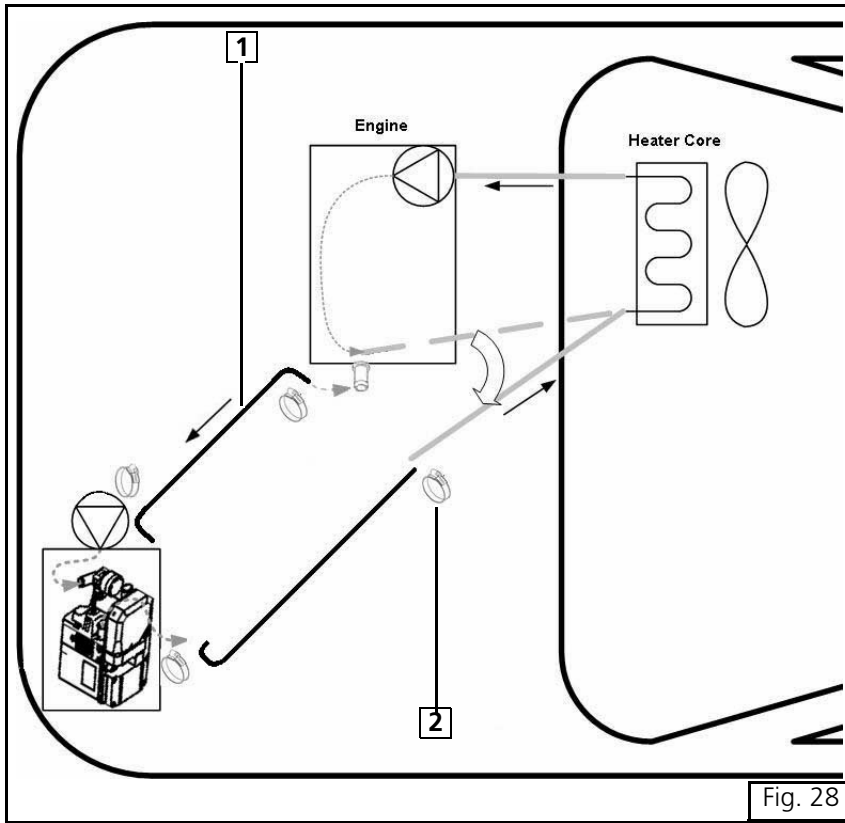


Fig. 28

ATTENTION

Fig. 28 displays the integration of the Webasto Coolant Heater into the vehicles cooling system.

ATTENTION

Torque all hose clamps to 2.0 - 2.5 Nm (18 - 22 lb.-in.).

- (1) Webasto Coolant Hose
- (2) Hose Clamp

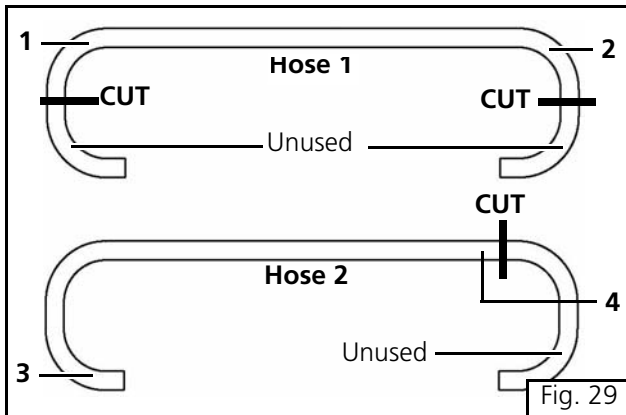


Fig. 29

ATTENTION

Cut provided coolant hoses according to fig. 29.

Hose 1

- (1) Connect to coolant pump inlet. Also refer to fig 30.
- (2) Connect to engine side of heater core. (trim to length)

Hose 2

- (3) Connect to heater outlet. Also refer to fig. 31.
- (4) Connect to vehicles heater core. (trim to length)



Fig. 30

- (1) Webasto Coolant Pump Inlet Hose

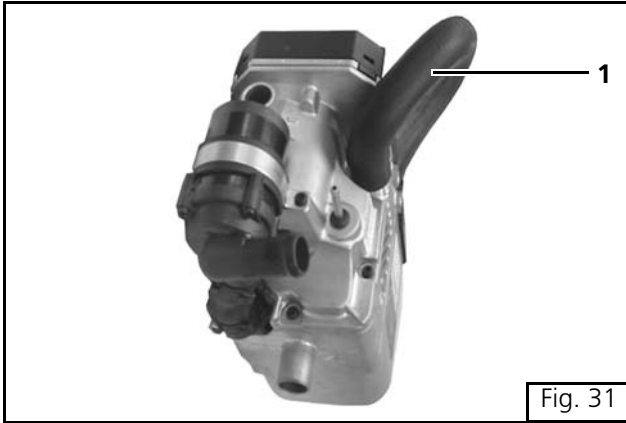


Fig. 31

ATTENTION

Secure coolant lines to available components with nylon wire ties. Keep lines away from hot exhaust and turbo components.

- (1) Webasto Heater Outlet Hose

NOTE:

Also see the plumbing schematic in the back of this manual for a general outline of the coolant circuit arrangement.





Concluding Work

- Install all vehicle parts, panels and components removed during heater installation.
- Check that all hose lines, hose clamps, pipe clips and electrical connections are secure.
- Secure all loose lines and cables with nylon cable ties.
- Spray the heater components and electrical connections with an anti-corrosive wax coating.

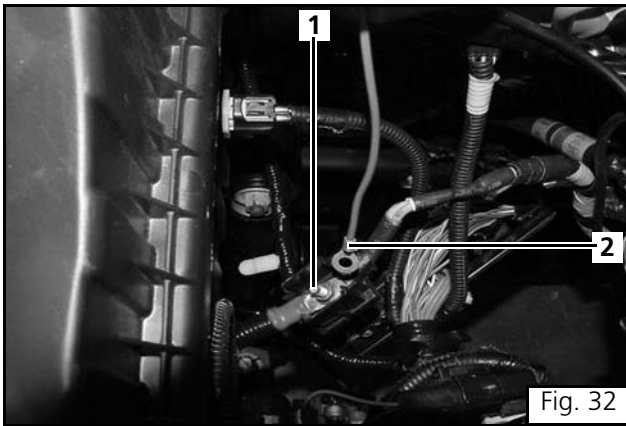
Power Connection

ATTENTION

Connect red power lead to existing power stud underhood near air box. Reconnect battery ground cable.



- (1) Vehicle Power Stud
- (2) Webasto Power Lead





Final Inspection and Initial Start-up

Final Inspection

Inspect installation for:

- Loose fasteners.
- Exhaust system routing and clamp tightness.
- Combustion air intake tube routing and clamp tightness.
- Loose coolant line clamps.
- Pinched coolant lines.
- Routing of coolant lines and coolant lines securely tied and protected against chafing and related damage.
- Loose fuel line clamps.
- Routing of fuel lines and fuel lines securely tied and protected against chafing and related damage.
- Loose wiring connections and battery connections.
- routing of wiring harness and wiring harness securely tied and protected against chafing and related damage.
- Check operation of vehicle heater fan with Webasto heater OFF.

Initial Start-up

1. Top off cooling system with coolant per engine/vehicle manufacturers recommendations.
2. Set interior heater control to maximum heat position (hot) and switch off air conditioning system.
3. Start the vehicle engine and run on fast idle for 5 minutes to purge any remaining air from the Webasto heater and coolant system. While the engine is running check:
 - Hose connections for leaks.
 - Coolant level in expansion tank. (Add coolant as needed)
4. Switch off the engine.

ATTENTION

More than one start-up attempt of the heater may be required to purge air from fuel system before heater will start. Cycle heater Off and On after each failed start attempt until heater starts successfully. After 3 consecutive unsuccessful start attempts, the webasto control unit enters into Heater lockout. See Heater Lockout section for reset instructions.



5. Switch on the Webasto heater by means of the instant heat button on timer and check:
 - Timer panel and instant heat indicator illuminates.
 - Circulating pump in operation.
 - Initiation of start-up sequence.
 - Successful start-up and operation.
6. Allow heater to run for 20 minutes or until coolant is heated to temperature. Re-tighten all hose clamps.

ATTENTION

Engine coolant temperature gauge may read lower than actual Webasto heater output temperature. This is due to the location of the temperature gauge sensor on engine.





Heater Lockout Reset Procedure

The BlueHeat is designed with a lockout safety feature built into the control unit. After 3 consecutive unsuccessful startup attempts, the heater will lock itself out from any further start attempts. The heater may also enter the lockout mode after experiencing an overheat condition.

Reset Heater "Lockout" mode by performing the following procedure:

1. Ensure timer or switch is in the "OFF" position. Turn timer or switch to the "On" position. Remove main fuse F2 (20 Amp), reinsert after 5 seconds.
2. Cycle timer or switch off and then back on once more. Remove fuse F2 once again and reinsert after 5 seconds. Heater should attempt to start after inserting fuse.

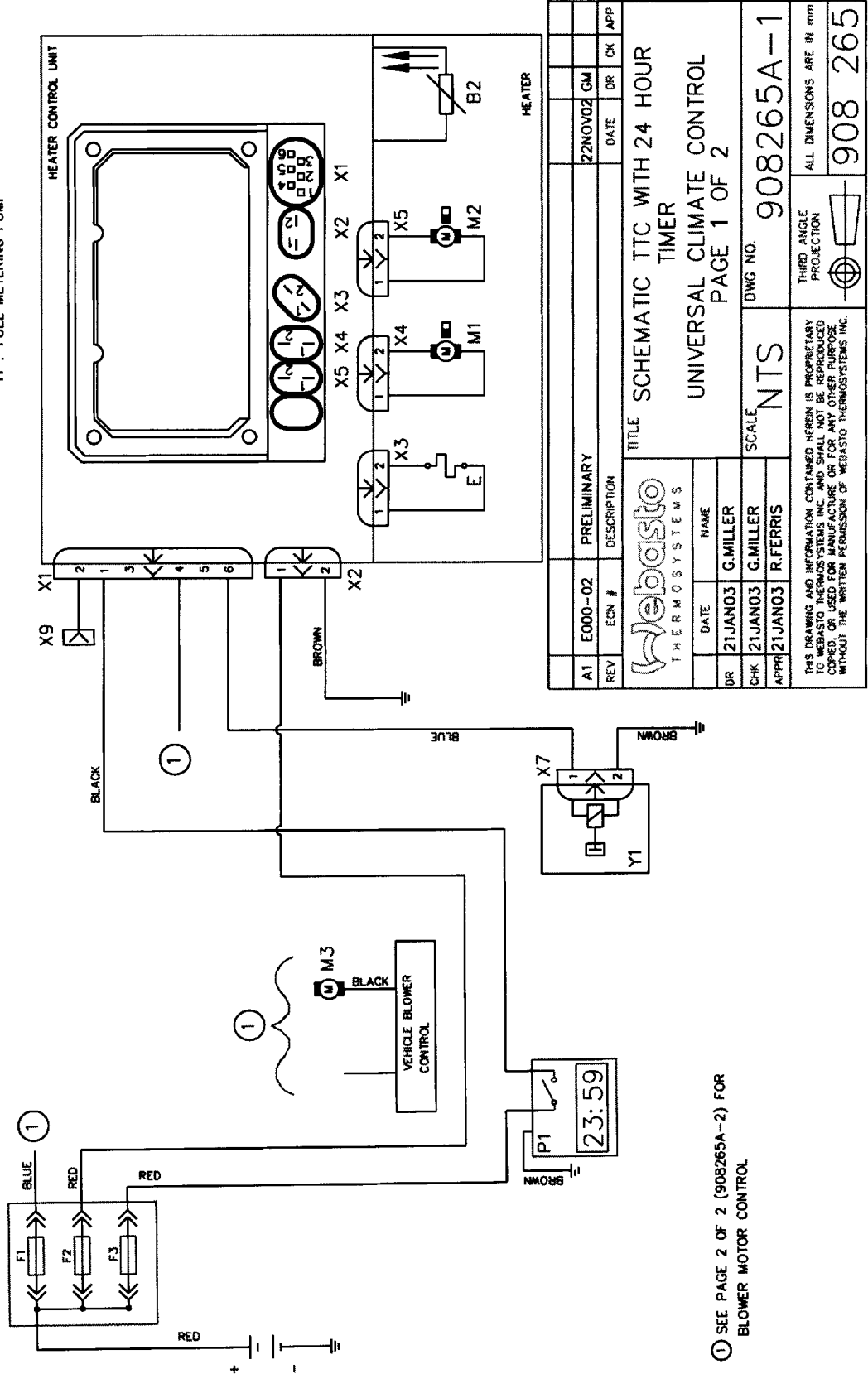
ATTENTION

- Coolant temperature must be below the lower threshold before heater will attempt to start.
- The engine coolant must reach 86 °F (30 °C) before the Webasto heater will attempt to start vehicles blower fan.
- Should the heater fail to start or operate correctly, call your Webasto technical representative at:
1-800-555-4518



Electrical Harness Schematic - Part 1, Heater Control

- B2 : TEMPERATURE SENSOR - COOLANT
- E : CERAMIC IGNITOR / FLAME DETECTOR
- F1 : 25A BLOWER INTERLOCK
- F2 : 20A HEATER
- F3 : 2A TIMER
- K1 : IGNITION BLOWER CONTROL RELAY
- K2 : BLOWER RELAY 1
- K3 : BLOWER RELAY 2
- M1 : COMBUSTION AIR FAN
- M2 : COOLANT CIRCULATING PUMP
- M3 : VEHICLE BLOWER HTR/AC
- P1 : TIMER 24 HOUR
- R1 : RESISTOR 10HM/50W
- X9 : DIAGNOSTIC LINK
- Y1 : FUEL METERING PUMP



① SEE PAGE 2 OF 2 (908265A-2) FOR BLOWER MOTOR CONTROL

REV	ECN #	DESCRIPTION	DATE	DR	CK	APP
A1	E000-02	PRELIMINARY				
			22NOV02	GM		

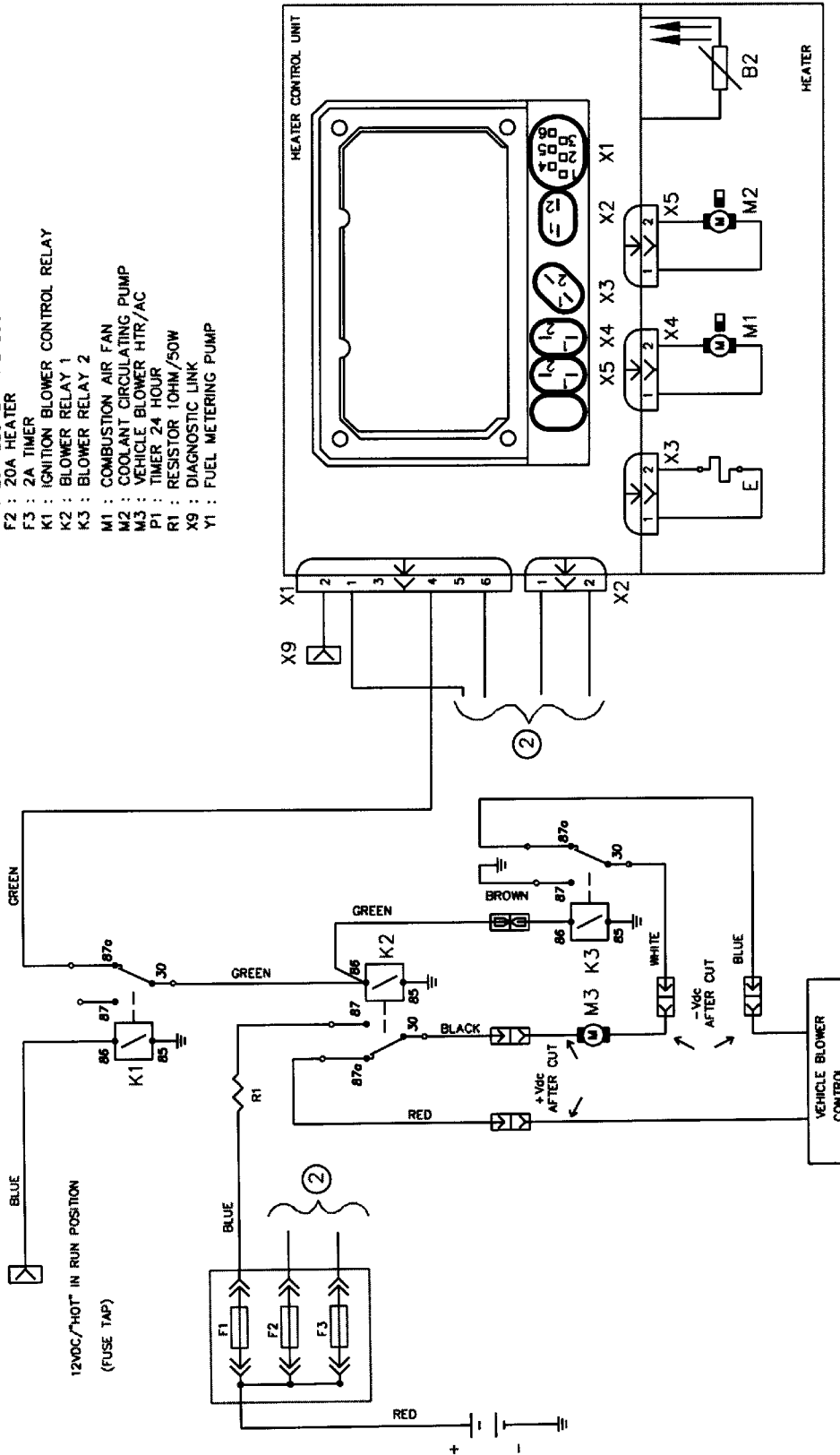
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DR	DATE	NAME	
CHK	DATE	NAME	
APPR	DATE	NAME	

SCALE	DWG NO.	THIRD ANGLE PROJECTION
NTS	908265A-1	

THIS DRAWING AND INFORMATION CONTAINED HEREIN IS PROPRIETARY TO WEBASTO THERMOSYSTEMS INC. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF WEBASTO THERMOSYSTEMS INC.		ALL DIMENSIONS ARE IN mm 908 265
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Electrical Harness Schematic - Part 2, HVAC Blower Control

- B2 : TEMPERATURE SENSOR - COOLANT
- E : CERAMIC IGNITOR / FLAME DETECTOR
- F1 : 25A BLOWER INTERLOCK
- F2 : 20A HEATER
- F3 : 2A TIMER
- K1 : IGNITION BLOWER CONTROL RELAY
- K2 : BLOWER RELAY 1
- K3 : BLOWER RELAY 2
- M1 : COMBUSTION AIR FAN
- M2 : COOLANT CIRCULATING PUMP
- M3 : VEHICLE BLOWER HTR/AC
- P1 : TIMER 24 HOUR
- R1 : RESISTOR 1OHM/50W
- X9 : DIAGNOSTIC LINK
- Y1 : FUEL METERING PUMP



		TITLE SCHEMATIC TTC WITH 24 HOUR TIMER UNIVERSAL CLIMATE CONTROL PAGE 2 OF 2	
DR	21JAN03	NAME	G.MILLER
CHK	21JAN03	SCALE	NTS
APP	21JAN03	DWG NO.	908265A-2
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ALL DIMENSIONS ARE IN mm			908 265

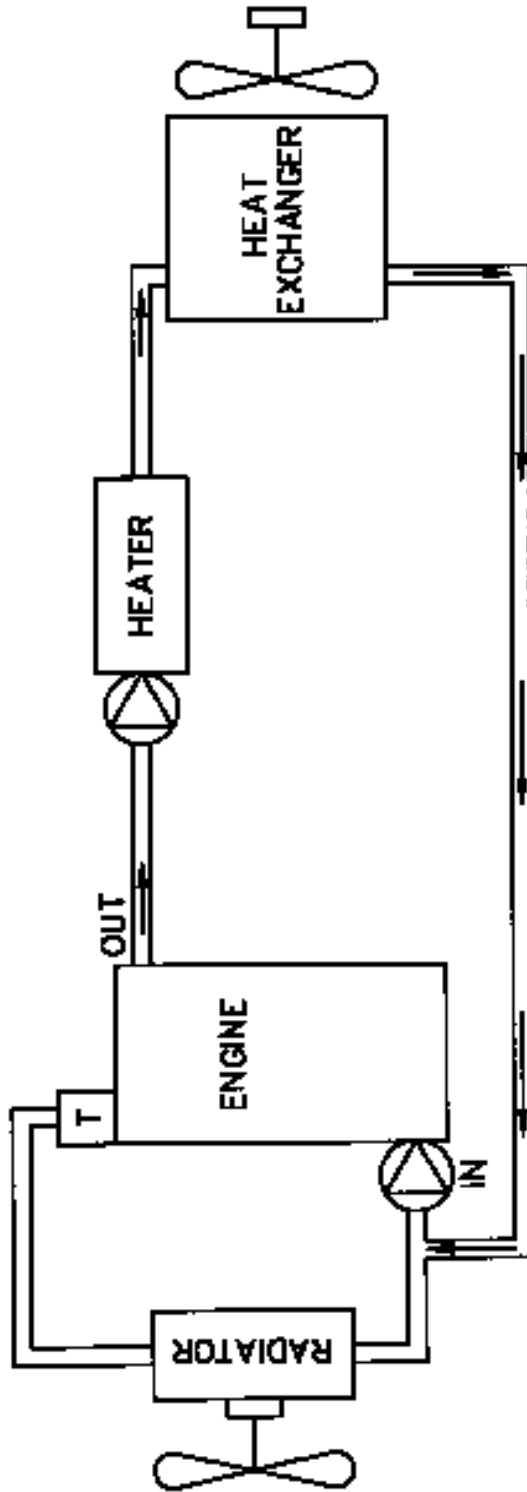
FUNCTION : WHEN HEATER IS SWITCHED ON AND COOLANT REACHES 60°C (140°F) THE WEBASTO HEATER SENDS A SIGNAL THROUGH K1 TO K2 AND K3 VEHICLE BLOWER WILL COME ON AT LOW SPEED IF A VEHICLE IGNITION SIGNAL IS PRESENT AT K1, THE VEHICLE RETURNS TO NORMAL HVAC/OPERATOR CONTROLS

② SEE PAGE 1 OF 2 FOR ALL OTHER HEATER CONTROLS




Heater Plumbing Schematic - Inline Method

WEBASTO THERMO TOP C INLINE COOLANT SCHEMATIC



T = THERMOSTAT

 = COOLANT PUMP (2 PLC'S)

NOTES:

QS-9000



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