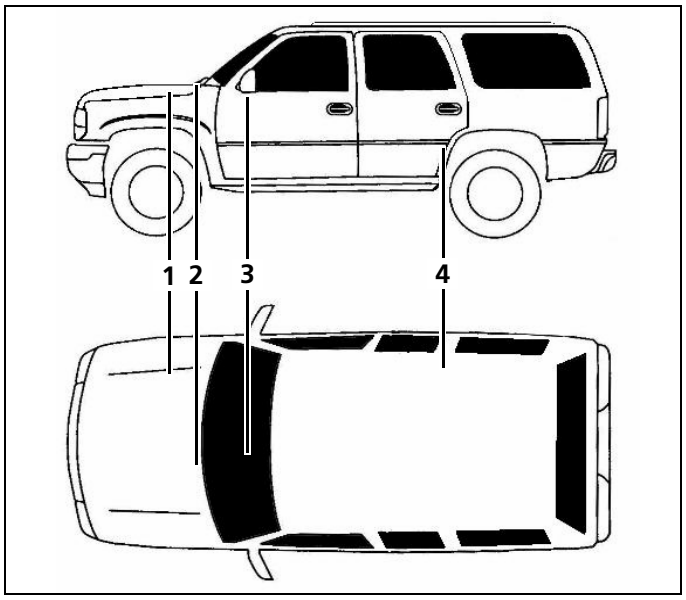
Blue*Heat* *Coolant Heater*

Webasto
Feel the drive

Thermo Top C



Ford Explorer XLT
2002–2003 4.6 Liter V8 Gasoline

Mercury Mountaineer
2002–2003 4.6 Liter V8 Gasoline

Lincoln Aviator
2003 4.6 Liter V8 Gasoline

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

Legend
1 Blue*Heat* Coolant Heater, Exhaust Muffler, and Combustion Air Intake Silencer
2 Fuse Holder, Relays and Resistor Assembly
3 Timer Control
4 Fuel Pump

Special Tools
– Hose Clamping pliers
– Torque Wrench (1/4" Drive)

Table of Contents

DOC P/N 5000620B KIT P/N 5000422B Printed in USA Webasto Product North America, Inc.

– 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 a 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	5000516A
1	Installation Kit	5000422B

Vehicle Information

Manufacturer	Model	Year	Engine Type
Ford Mercury Lincoln	Explorer XLT Mountaineer Aviator	2002 – 2003 2002 – 2003 2003	4.6 Liter V8 4.6 Liter V8 4.6 Liter V8

Foreword

This installation requires special expertise from a Webasto training course to install a Webasto Thermo Top C/Z, 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 C/Z and Blue*Heat* 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" Thermo Top C/Z must be followed. Acknowledged engineering conventions must be observed for the installation work.

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.

ATTENTION

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

Symbol Identification

Symbols that define sections in manual


Mechanical Preparation


Fuel


Electrical


Exhaust


Coolant


Combustion Air Intake

General Symbol Descriptions

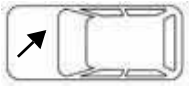

Warning


Refer to Webasto or Manufacturer Manual


Caution


Attention


Flammable or Combustible


Line of Sight/Item 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 reasons of safety due to the weight of fuel and the tank, it is recommended that there be no more than 1/4 tank or less of fuel present. If fuel quantity is greater than 1/4 of capacity, make provisions to reduce quantity of fuel.

– Disconnect negative terminal of vehicle battery(s).
– Remove air cleaner, air cleaner housing and air cleaner mounting tray.
– Remove speed control unit and bracket for auxiliary heater installation.
– Remove instrument panel fascia for timer mounting. Refer to vehicle manufacturers instructions for fascia removal.
– Protect vehicle fenders, panels and interior with covers.

Heater Installation Site

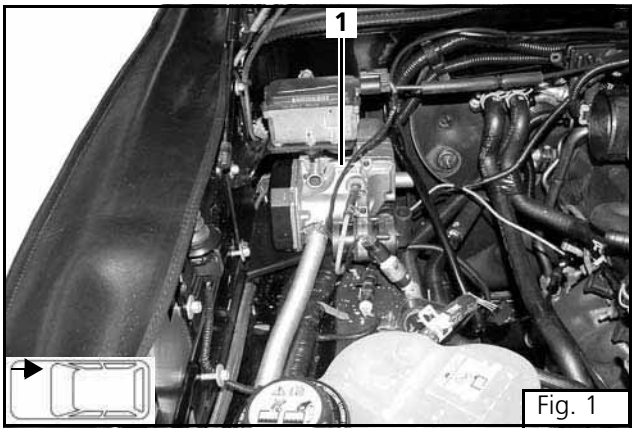


Fig. 1

– (1) Webasto Auxiliary Coolant Heater (Installed)

ATTENTION
The Webasto auxiliary coolant heater is to be installed on the right hand side of the engine compartment next to the bulkhead (under the speed control module if equipped) as shown.

Installation

Electrical - Overview

ATTENTION

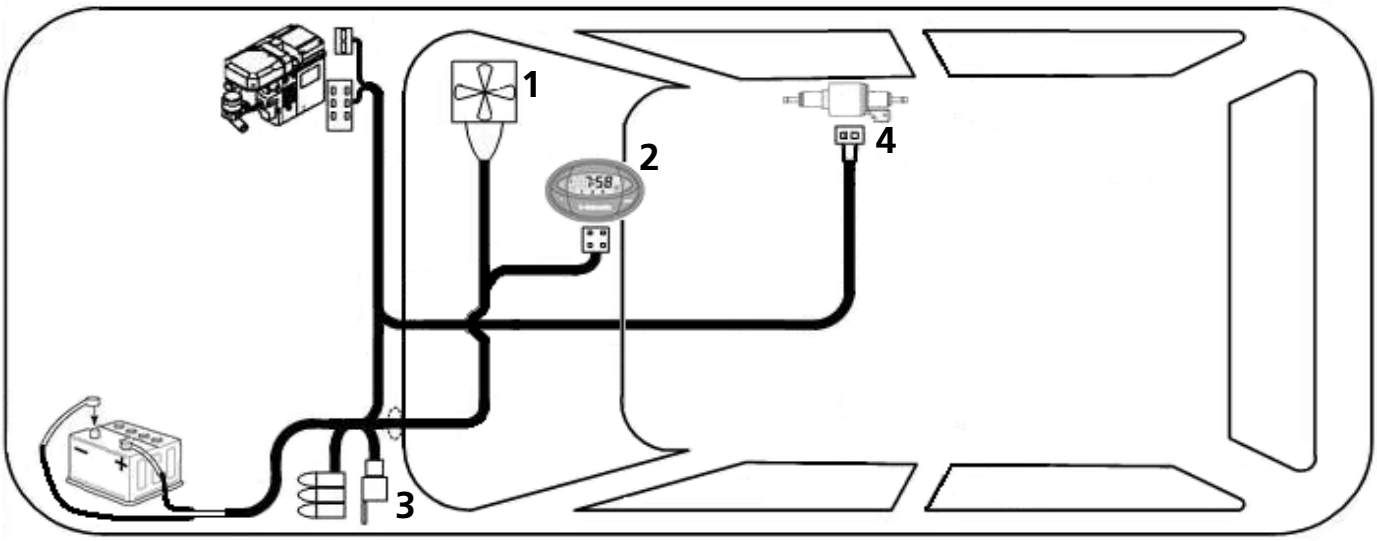
Any reference to timer control location is a recommendation only. Please consult with the customer before mounting.

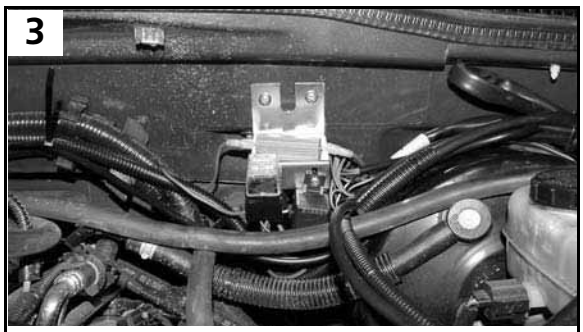
Vehicle HVAC Blower Motor

Location: Foot-well Area - Passenger Side

Timer Control

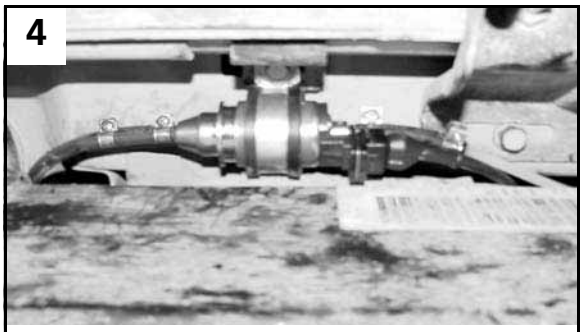
Location: Vehicle Interior - Center Console





Location: Left Side of Bulkhead

Webasto Fuse Block & Relays



Location: Right Frame Rail Conveniently Positioned

Webasto Heater Fuel Pump

Electrical Harness

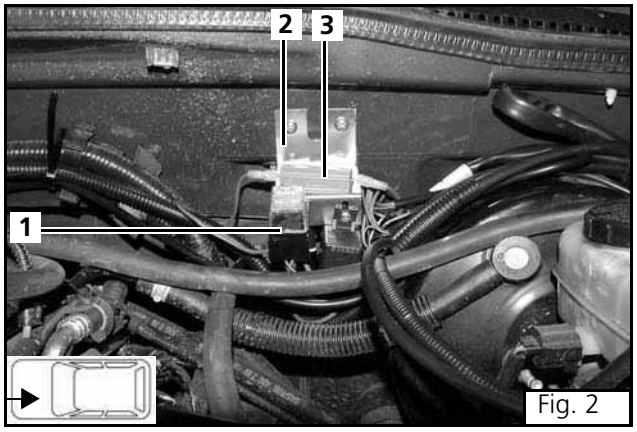


Fig. 2

ATTENTION

Attach fuse block, resistor, relay K1 and K2 to the mounting bracket prior to installing. Bend bracket to shape where required. Refer to Figure 2. Mount the fuse block bracket to left side of bulkhead next to brake booster as shown.

– (1) Webasto Fuse Block
– (2) Mounting Bracket
– (3) Resistor

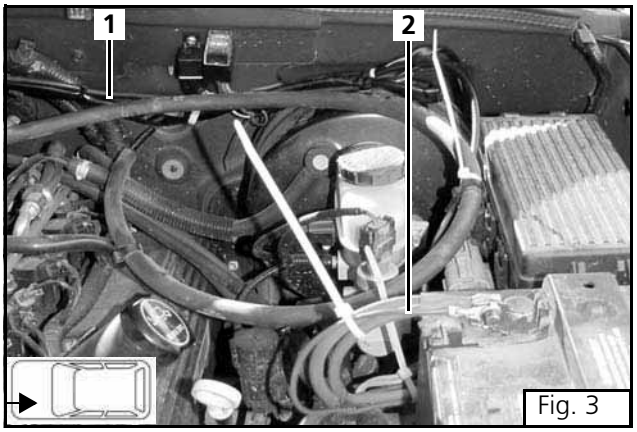


Fig. 3

ATTENTION

*Route heater and fuel pump harnesses along bulkhead to the heater location on right side of vehicle. Run the main power and ground leads to battery along vehicle components as shown. Do **NOT** connect power lead to battery at this time. Connect ground lead to a suitable ground point or stud on vehicle. Secure leads with nylon wire ties.*

– (1) Heater and Fuel Pump Harness
– (2) Webasto Harness Power Lead

Fuse Tap Connection - Relay K-1

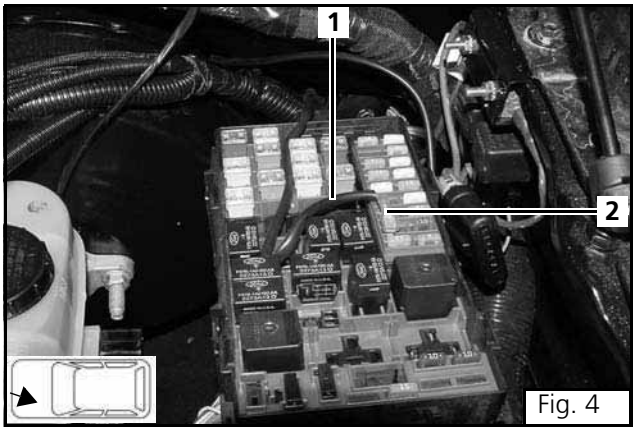


Fig. 4

ATTENTION

Route blue fuse tap wire from relay K-1 to the under hood fuse panel.

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

– (1) Fuse tap wire
– (2) Fuse tap

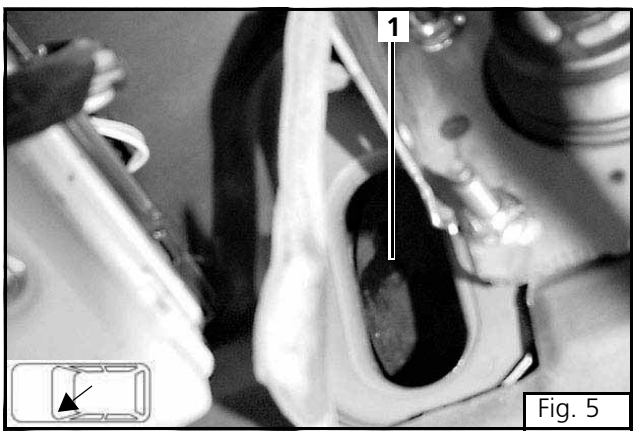


Fig. 5

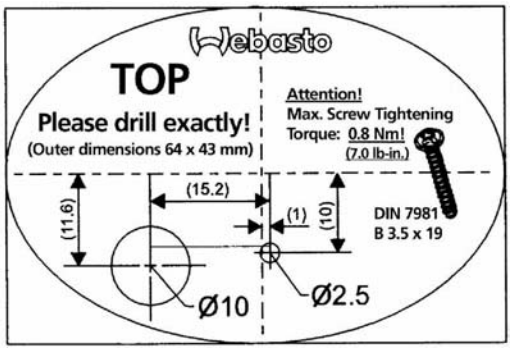
ATTENTION

Locate unused knockout under the left side of instrument panel. Cut or drill a hole through the knockout to accommodate the blower and timer harnesses. Route the harnesses through the hole and secure with nylon wire ties. Seal hole with silicone sealant or equivalent.

***Note:** This knock-out access only applies to automatic transmission equipped vehicles.*

– (1) Bukhead Knockout

Timer Installation



TEMPLATE NOT TO SCALE

Fig. 6

CAUTION
Check behind panels for obstructions before drilling holes.

ATTENTION
Before installing the timer, please confirm the installation location with the customer.

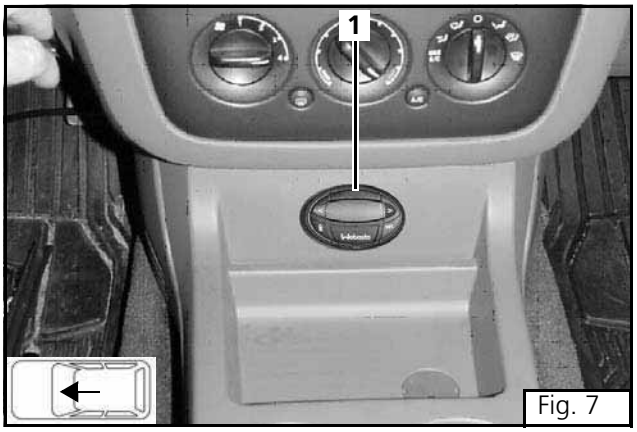


Fig. 7

– (1) Timer - Sample location only

Integration into the Blower System

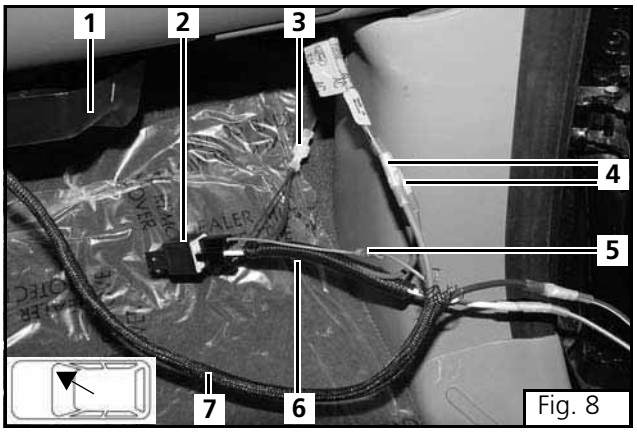


Fig. 8

ATTENTION
Remove right lower kick panel to access blower motor. Route Blower harness over to blower area. Mount negative-side blower harness and relay in vicinity of HVAC blower. Wire according to schematic in Figure 9.

– (1) HVAC Blower Motor
– (2) K-3 Relay
– (3) Brown Ground Wire
– (4) Positive and Negative Blower Control Wires
– (5) Green Wire Between Main Harness and Auxiliary Harness
– (6) Auxiliary Blower Control Harness
– (7) Main Blower Control Harness

3-Relay HVAC Harness Connections

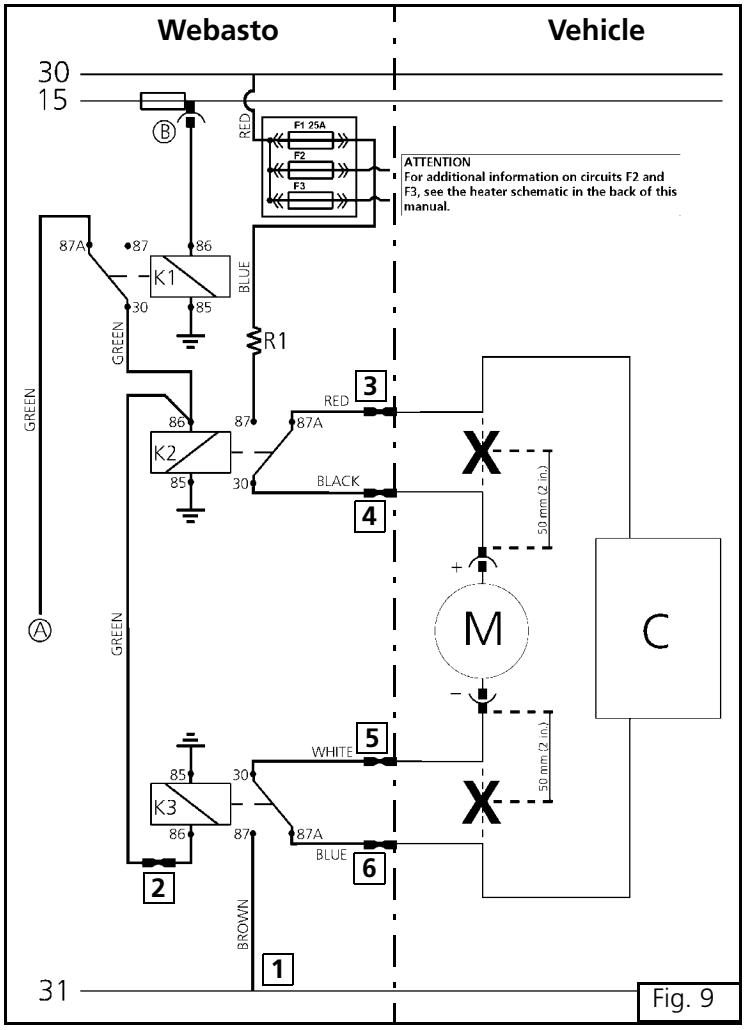


Fig. 9

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

CAUTION

Check your wiring! Ensure that all connections have been done in accordance with the wiring diagram shown (Figure 9). 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)

Legend for Figure 9

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)

Heater Installation

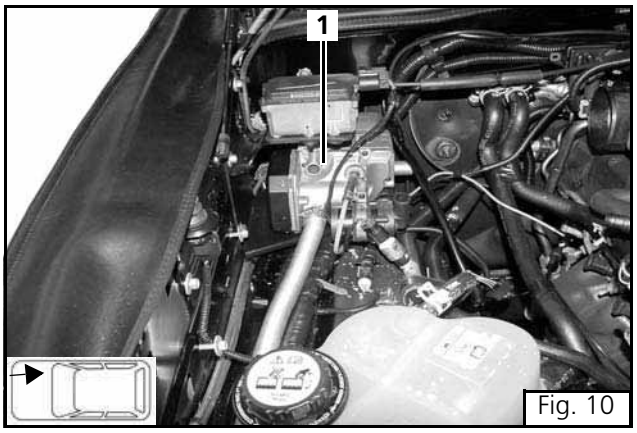


Fig. 10

ATTENTION
The Webasto auxiliary coolant heater is installed on the right hand side of the engine compartment at the rear of the inner fender area as shown in Figure 10.

– (1) Webasto Auxiliary Coolant Heater

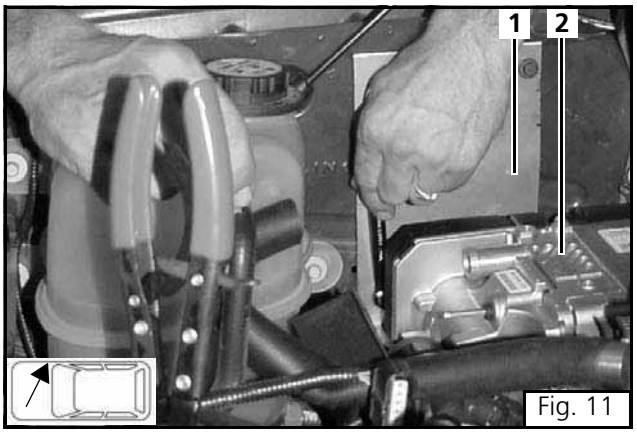


Fig. 11

ATTENTION
Use three self-tapping EJOT screws to secure heater to heater bracket. Torque screws to 10 Nm. Place heater into position (right rear inner fender). Align top holes of mounting bracket with original speed control mounting bracket holes. Finger tighten top bolts for later speed control unit install.

Connect Heater Harness at this time.

– (1) Heater Mounting Bracket
– (2) Webasto Auxiliary Coolant Heater

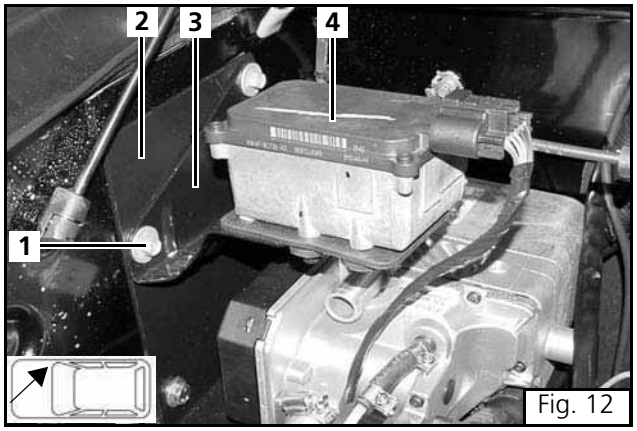


Fig. 12

ATTENTION
Install speed control unit and secure all mounting bolts.

– (1) Heater and Speed Control Mounting Bolts
– (2) Heater Bracket
– (3) Speed Control Bracket
– (4) Speed Control Unit

Combustion Air Intake

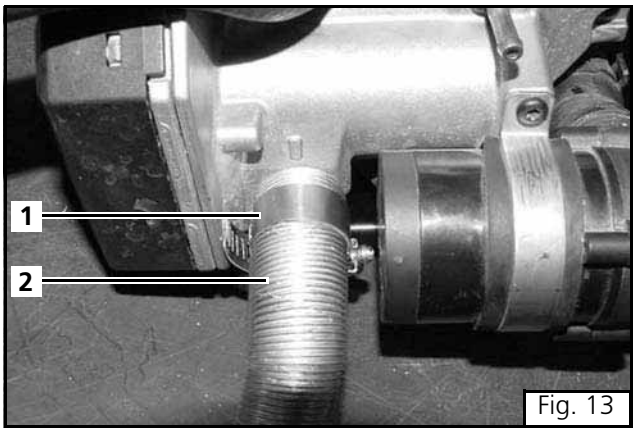


Fig. 13

ATTENTION
Secure Combustion Air Intake Tube to the air intake port of the heater and secure with the narrow band hose clamp.

– (1) Narrow Band Hose Clamp
– (2) Combustion Air Intake Tube

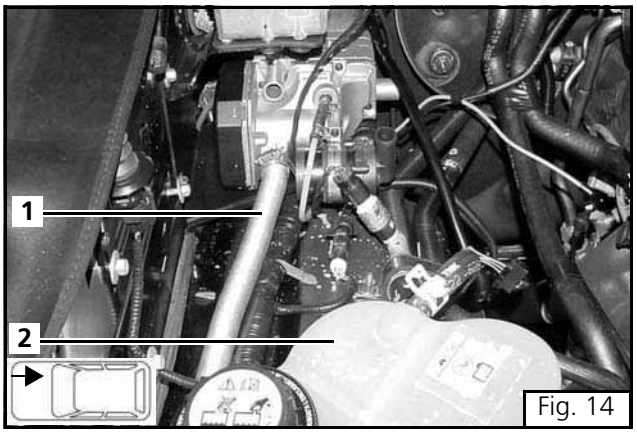


Fig. 14

ATTENTION
Route combustion air intake tube under coolant recovery tank and air filter box to the right front corner of the inner fender.

– (1) *Combustion Air Intake Tube*
– (2) Vehicle Coolant Recovery Tank

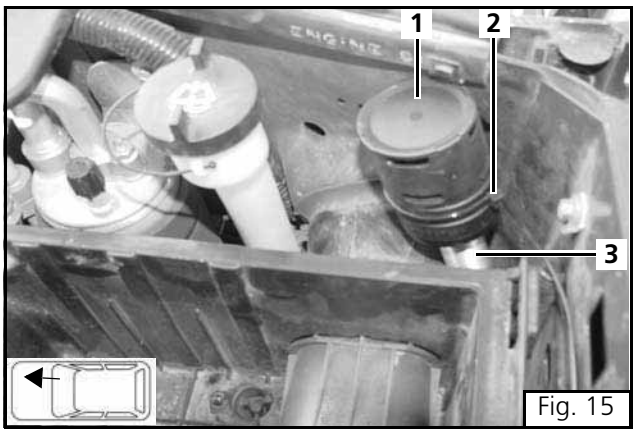


Fig. 15

ATTENTION
Thread combustion air inlet silencer into the combustion air intake tube. Secure silencer with to fender using existing holes and nylon wire ties.

– (1) Combustion Air Intake Silencer
– (2) Nylon Wire Tie
– (3) Combustion Air Intake Tube

Exhaust System Installation

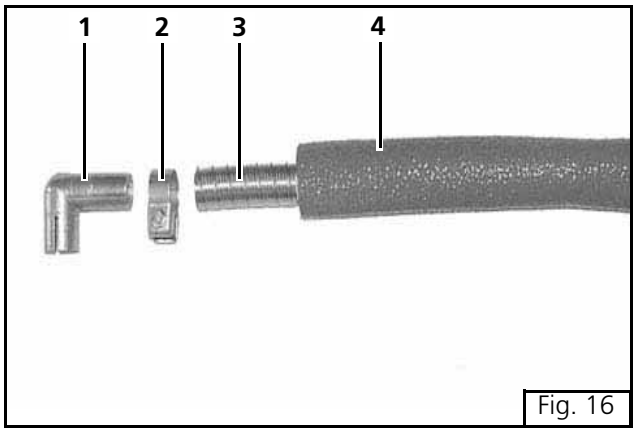


Fig. 16

ATTENTION
Pre-assemble the exhaust tube and 90 degree elbow. Torque clamp to 5.0 - 5.5 Nm (44.0 - 48.5 lb-in.).

– (1) 90 Degree Exhaust Adapter
– (2) Exhaust Clamp
– (3) Exhaust Tube
– (4) Heat Insulating Sleeve

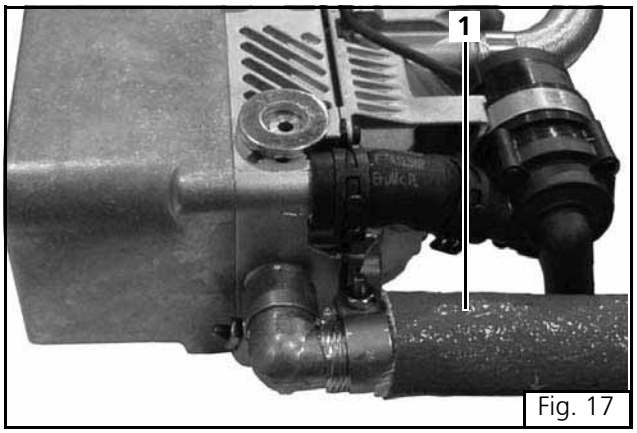


Fig. 17

ATTENTION
Route exhaust tube under the heater towards the bottom of vehicle on the inner side of the frame. Keep exhaust away from heat sensitive vehicle components.

– (1) Heat Insulating Sleeve

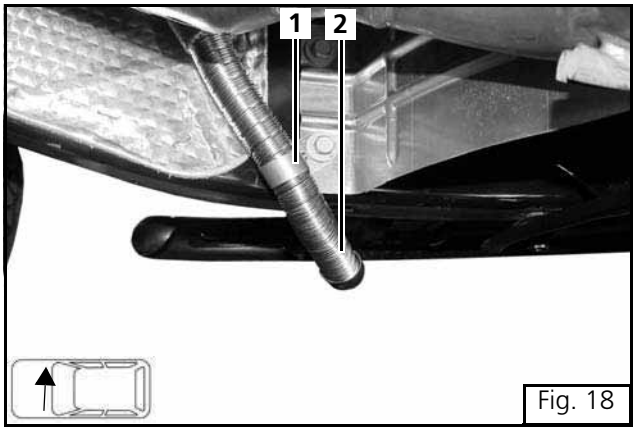


Fig. 18

ATTENTION
Ensure end of exhaust tube is directed downward.

– P-Clamp
– End of Exhaust Tube (Tailpipe)

Integration into the Coolant System

ATTENTION

Figure 19 displays the integration of the Webasto Coolant Heater into the vehicles cooling system. Use the supplied hose couplers and hose clamps to connect hoses. Ensure correct flow through the system.

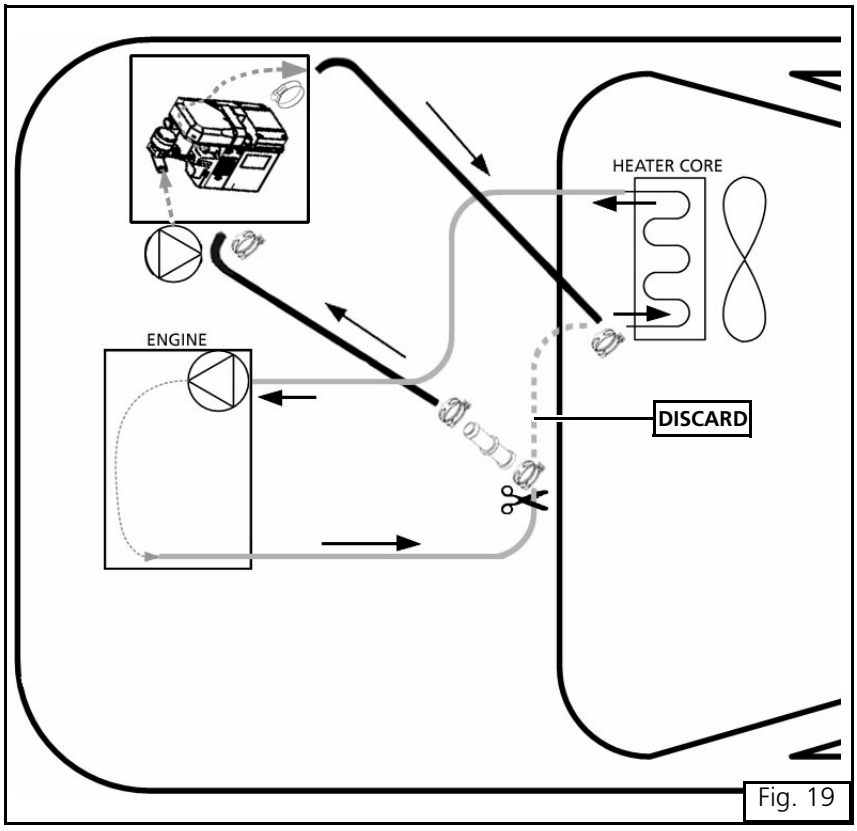


Fig. 19

ATTENTION

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

NOTE:

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

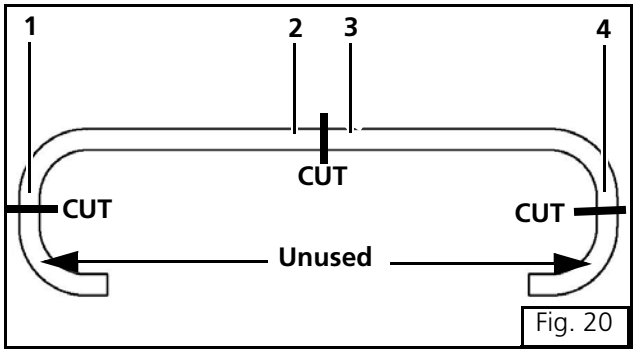


Fig. 20

ATTENTION

Cut supplied coolant hose as shown for the integration into vehicles cooling system.

– (1) Connect to Outlet Side of Webasto Heater.
– (2) Connect to Heater Core Inlet Nipple.
– (3) Connect to Engine Side of Cut Hose.
– (4) Connect to Inlet Side of Webasto Heater.

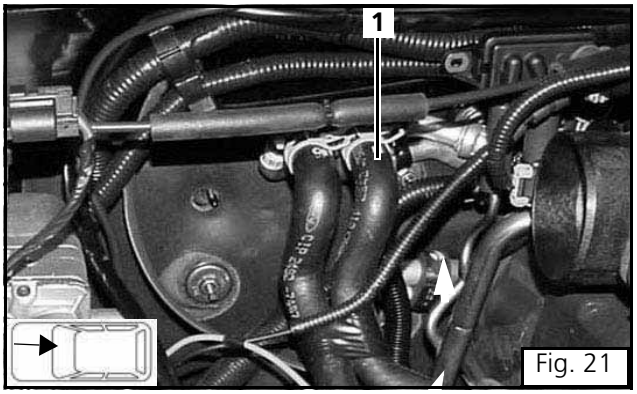


Fig. 21

ATTENTION

Use hose coupler to connect webasto hose to engine side of supply hose. Cut hoses to fit as necessary.Connect hose from heater outlet directly to heater core inlet nipple. Secure coolant hoses to available components with nylon cable ties. Keep hoses away from hot exhaust and turbo components.

– (1) Heater Core Supply Hose

Integration into the Fuel System

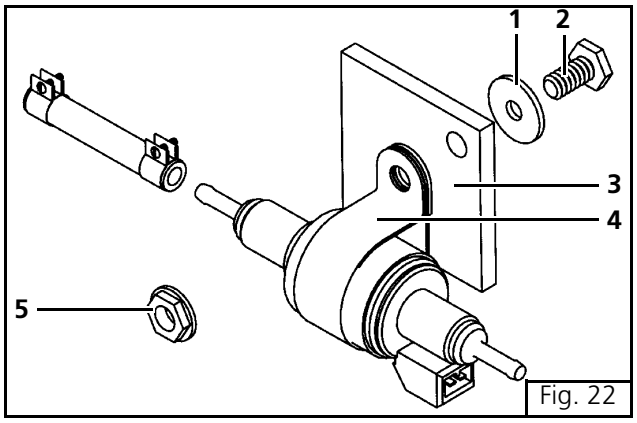


Fig. 22

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.

Torque all fuel line clamps to 1.0 - 1.4 Nm. (8.8 - 12.4 lb-in.).

– (1) Washer - M6
– (2) Cap screw - M6x20
– (3) Vehicle frame rail (Right)
– (4) P-Clamp (Fuel pump retaining)
– (5) Flanged nut - M6

Fuel Pump Installation

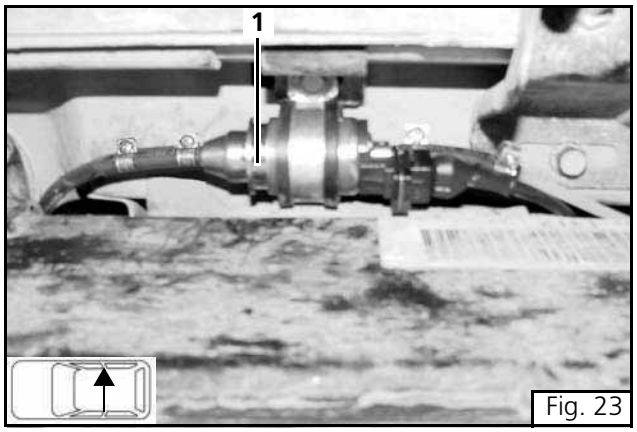


Fig. 23

ATTENTION

Pre-assemble two rubber fuel line connectors with hose clamps and install on both sides of fuel pump. Leave outermost clamps loose for fuel line installation.

Mount fuel pump with a provided P-clamp and existing vehicle bolt/nut along the right side frame rail area in a convenient location.

– (1) Fuel pump - installed

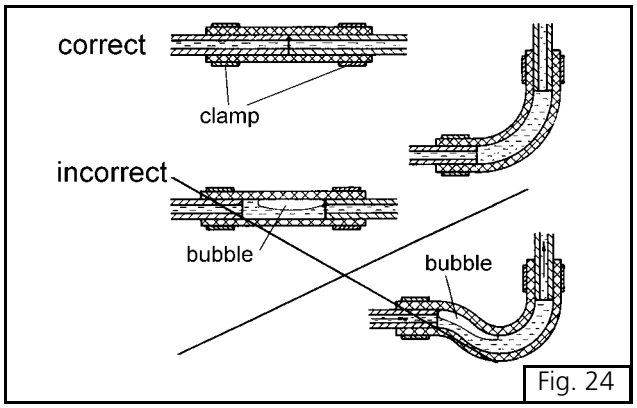


Fig. 24

ATTENTION

Observe Figure 24 for connecting fuel line correctly.

Fuel Line Routing

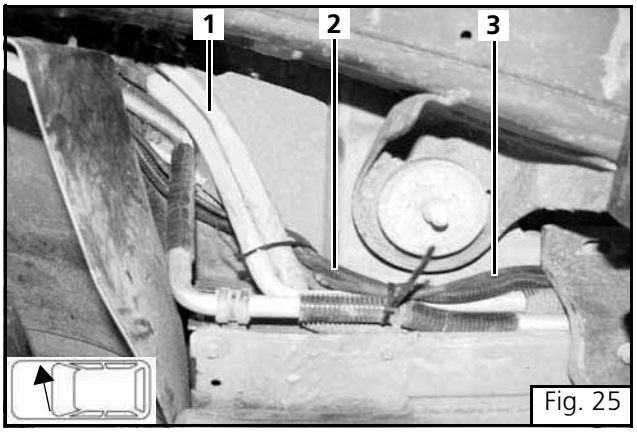


Fig. 25

ATTENTION

From underside of the vehicle, route the fuel line and fuel pump electrical harness rearward along the existing vehicle fuel lines. Avoid areas where fuel line can be damaged by sharp surfaces or hot components.

– (1) Existing Vehicle Fuel Lines
– (2) Mecanyl fuel line (Heater)
– (3) Fuel Pump Harness

Standpipe Installation

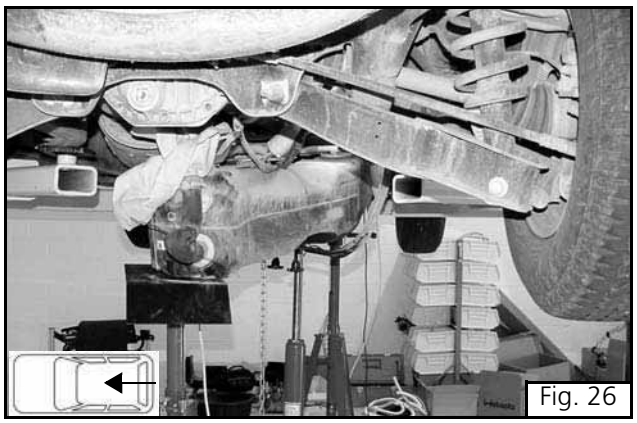


Fig. 26

CAUTION

For reasons of safety due to the weight of fuel and the tank, it is recommended that 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.

ATTENTION

Remove fuel tank according to the vehicle manufacturers servicing procedures.

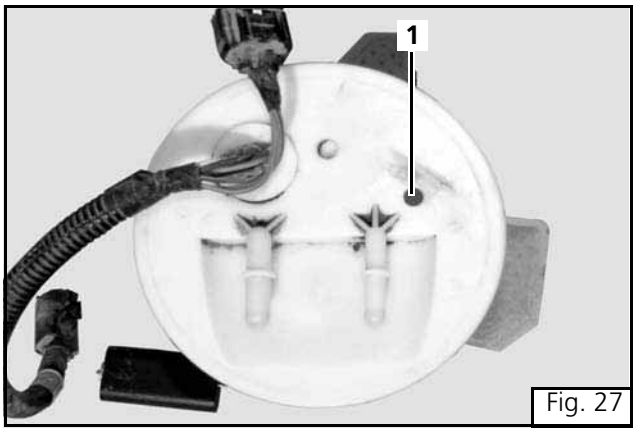


Fig. 27

ATTENTION

Drill Hole 8.5 mm (21/64 in.) in Diameter. De-burr hole after drilling.

– (1) Drilled Hole Location.

Standpipe with 90 Degree Banjo Fitting

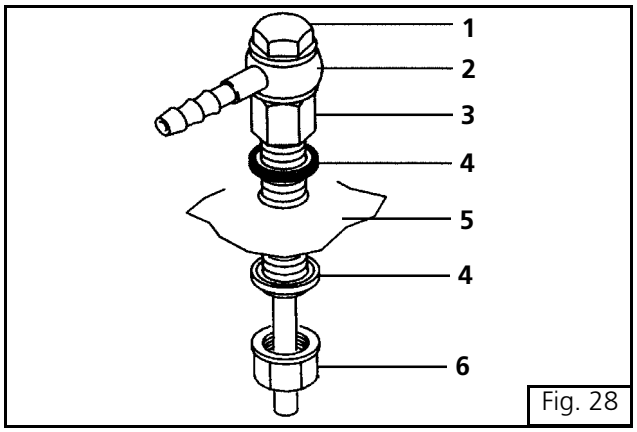


Fig. 28

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

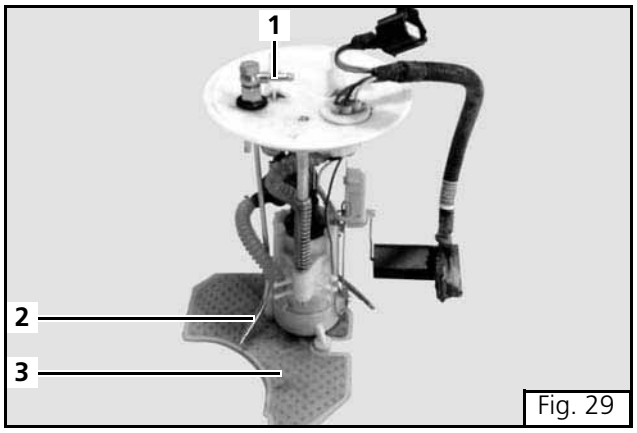


Fig. 29

ATTENTION

Cut fuel standpipe tube 6.5 mm (1/4 in.) above sender unit strainer. Standpipe outlet must point towards passenger side of vehicle when sender is installed. Bend end of standpipe tube outward as shown. Refer to Figure 28 for standpipe component sequence. Tighten lock-nut to 9.0 - 9.5 Nm (80 - 84 lb-in.).

– (1) Banjo Fitting
– (2) Standpipe Tube
– (3) Sender Unit Strainer

Re-install sender unit according to the vehicle manufacturers servicing procedures. Connect Mecanyl fuel line to standpipe prior to fuel tank installation. Route Mecanyl fuel line to the fuel pump and make the connection to fuel pump inlet. Secure fuel line to vehicle where possible with nylon wire ties.

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 heater components and electrical connections with an anti-corrosive wax coating.

Power Connection

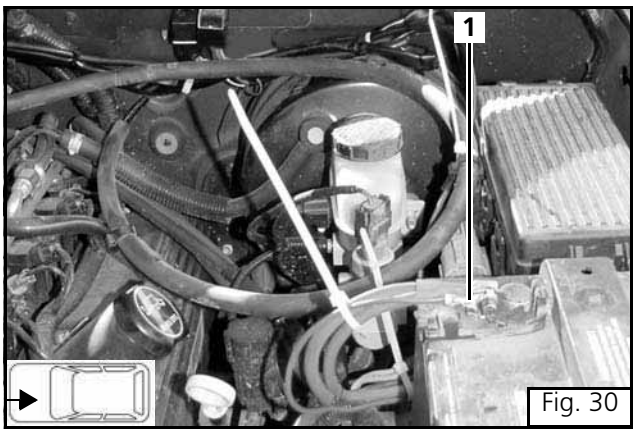


Fig. 30

ATTENTION
Connect red power lead to positive battery stud. Connect ground lead to a suitable ground point or stud on vehicle. Reconnect battery ground cable.

– (1) Webasto power lead (Red Wire)

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 Blue*Heat* 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:

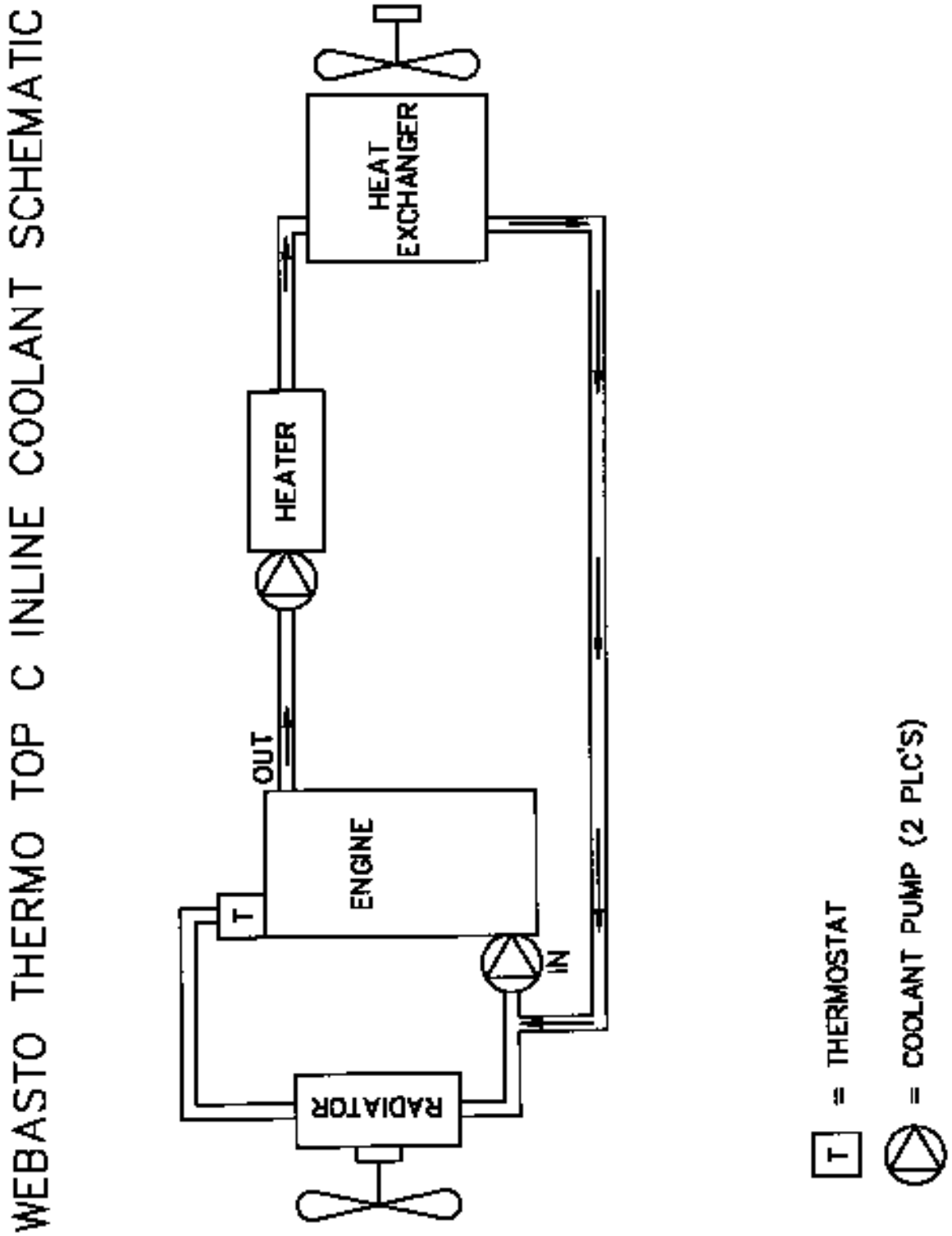
1. Ensure timer or switch is in the "OFF" position. Turn timer or switch to the "On" position. Remove main fuse F2 (20 Amp), reinsert after 5 seconds.
2. Cycle timer or switch off and then back on once more. Remove fuse F2 once again and reinsert after 5 seconds. Heater should attempt to start after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

ATTENTION

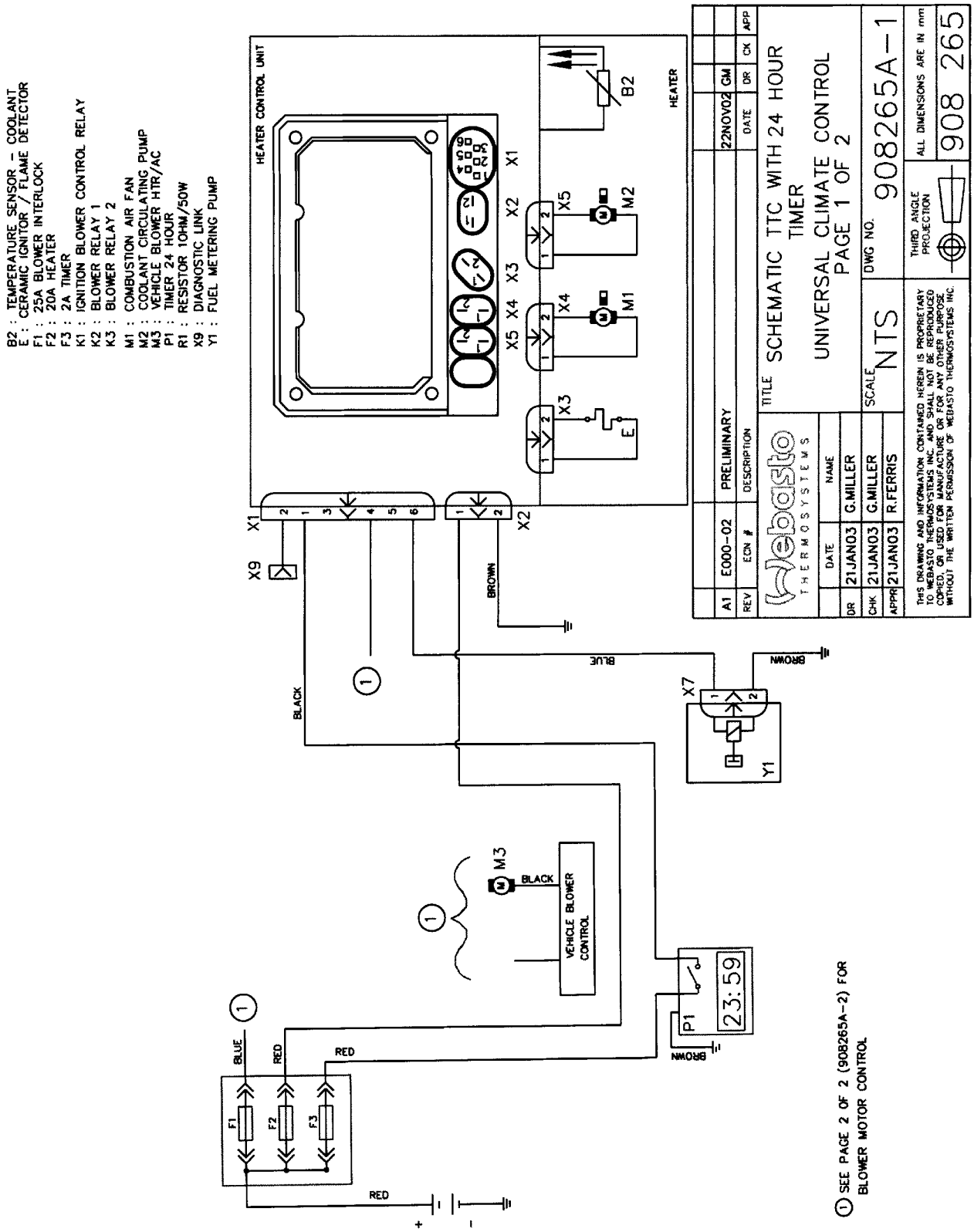
– Coolant temperature must be below the lower threshold before heater will attempt to start.
– The engine coolant must be below 86 °F (30 °C) before the Webasto heater will attempt to start.
– Should the heater fail to start or operate correctly, call your Webasto technical representative at:

1-800-555-4518

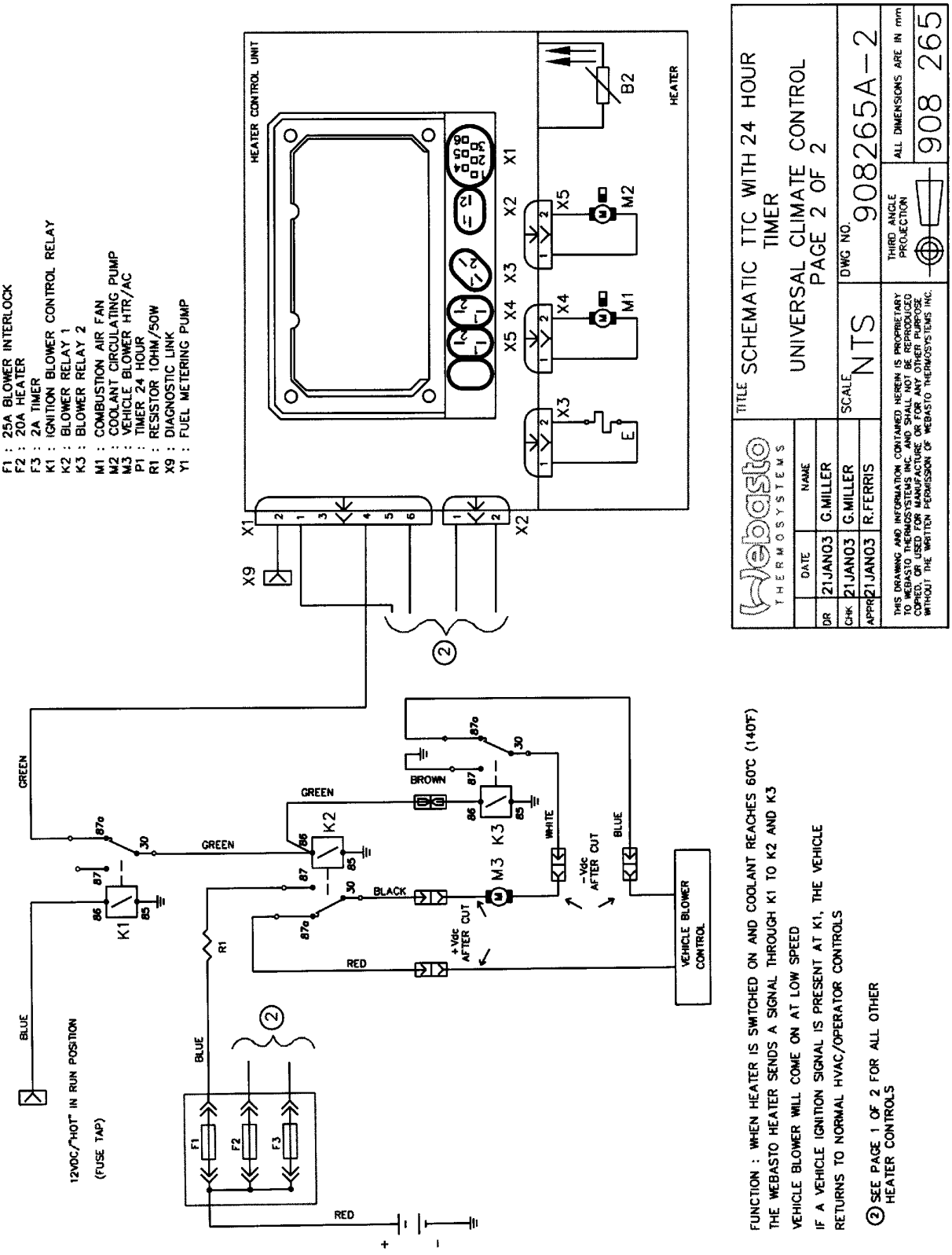
Heater Plumbing Schematic - Inline Method



Wiring Schematic Part 1 - Heater Control



Wiring Schematic Part 2 - Blower Control



NOTES:

Webasto

Feel the drive

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