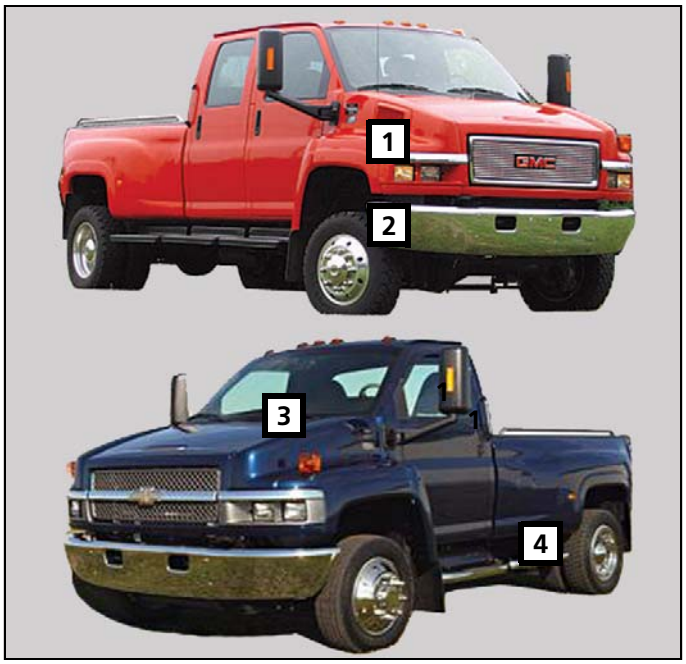
Blue*Heat* Coolant Heater

Webasto
Feel the drive

Thermo Top



GMC TopKick & Chevrolet Kodiak

6.6L Diesel
Beginning Model Year: 2006

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

Be sure to check **WWW.techwebasto.com** for the latest addition of this manual.

Legend

1 Fuse Holder, Relays and Resistor Assembly - Under vehicle control modules
2 Blue*Heat* Coolant Heater, Exhaust Tube, and Combustion Air Intake Silencer - Right framerail
3 Timer Control - Instrument panel
4 Fuel Pump - Rear crossmember

Special Tools

– Hose Clamping pliers
– Torque Wrench

Table of Contents

Warning

- *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 or by improper installation.*
- *Improper installation or installation by untrained personnel voids all warranties on this product.*

If there are any questions regarding the installation or maintenance of this product, please contact technical support at **1-800-555-4518**.

Parts List

Quantity	Part	Part Number
1	Heater Kit	5000515C
1	Installation Kit	5001119A

Vehicle Information

Manufacturer	Model	Year	Engine Type
General Motors	TopKick/Kodiak	Beginning 2006	6.6L Diesel

Foreword

This installation requires special expertise from a Webasto training course to install a Webasto Thermo Top heater, 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 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" for Thermo Top heaters must be followed.

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


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

– Remove right splashshield.
– Disconnect negative terminal of vehicle battery(s).
– Protect vehicle fenders, panels and interior with covers

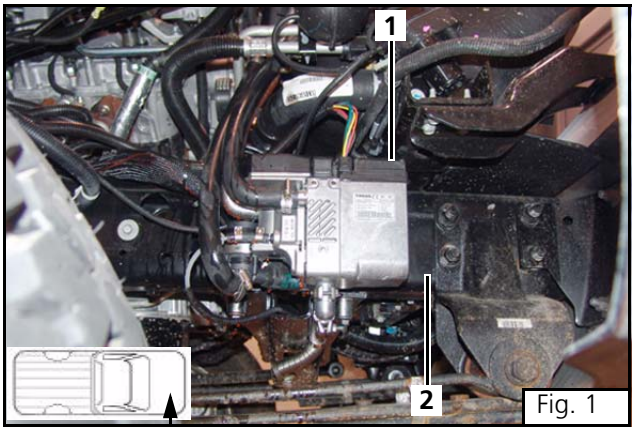


Fig. 1

Heater Installation Site

ATTENTION
The Webasto Auxiliary Coolant Heater is installed on right framerail where shown in Figure 1.

– (1) Webasto Auxiliary Coolant Heater (Installed)
– (2) Right framerail

Electrical - Overview

ATTENTION

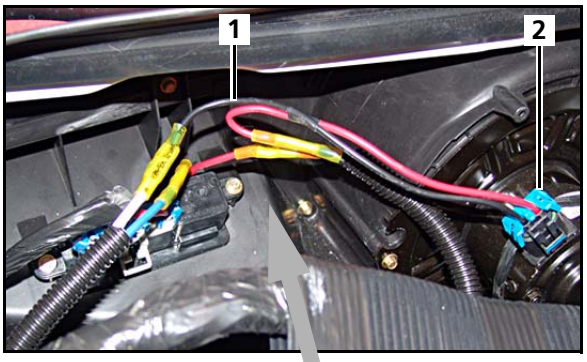
The routing of cables and wires are done in accordance to the general valid rules of engineering. If not described differently, securing of wiring and cables is done with cable ties to the vehicle's own wires and cable harnesses.

ATTENTION

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

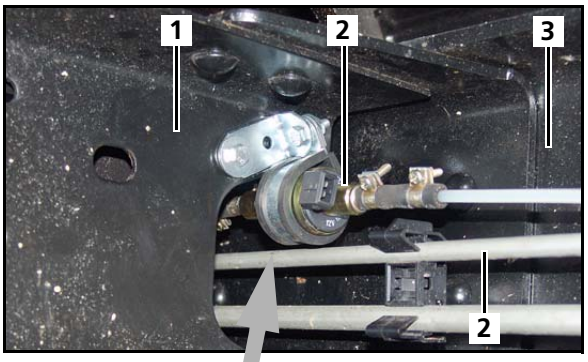
Blower Connection

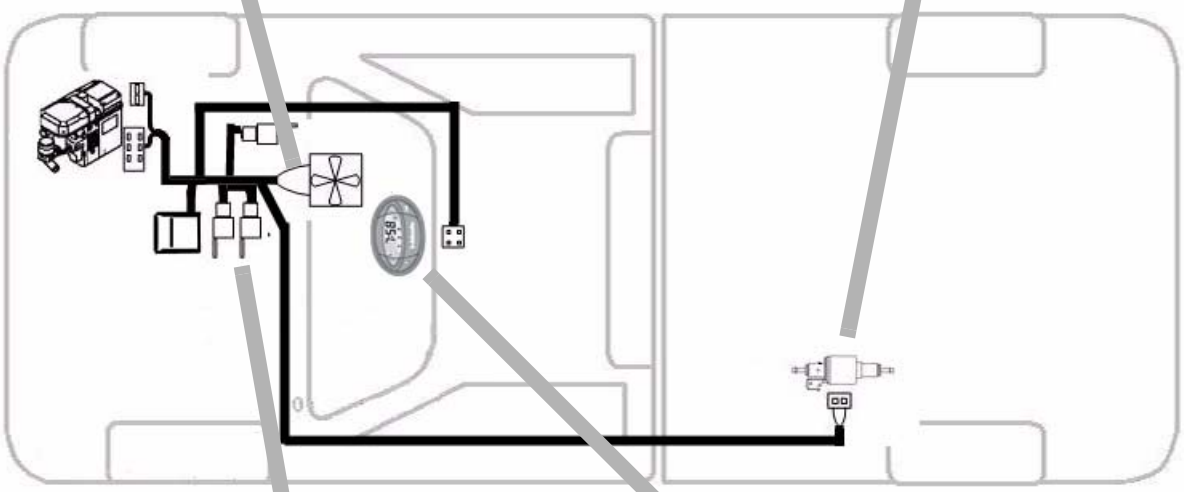
– (1) Blower harness integration point
– (2) Blower motor connector

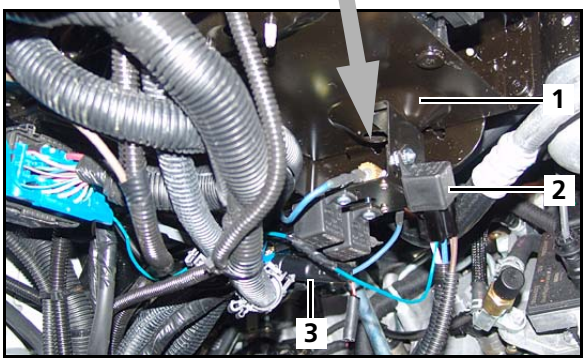


Fuel Metering Pump Location

– (1) Rear crossmember (forward of fuel tank)
– (2) Fuel metering pump
– (3) Left framerail







Heater Harness Relay and Fuse Holder

– (1) Vehicle control module tray
– (2) Heater harness relays and resistor
– (3) Fuse holder

Digital Timer (Sample Location)

– (1) Front dash panel
– (2) Digital Timer

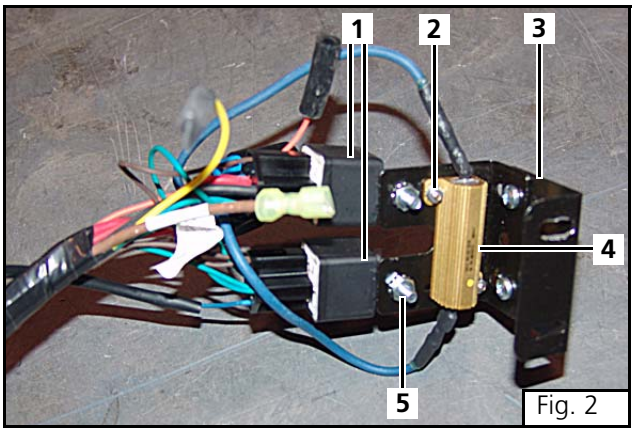


Fig. 2

Electrical Harness Installation

ATTENTION

Cut wire tie holding negative-side blower harness (with relay K3) from main harness and set aside.

Mount heater electrical components on mounting bracket as shown in Figure 2.

– (1) Relays K1 and K2
– (2) Screw M3x10, Nut M3 (2 ea.)
– (3) Electrical Mounting Brackets (2ea.)
– (4) Resistor
– (5) Pan Head Screw 10-32x5/8", Nut 10-32 (4ea.)

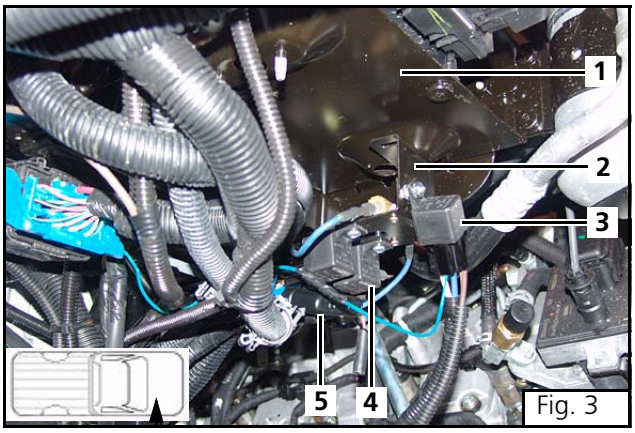


Fig. 3

Secure the electrical mounting bracket to the existing stud coming from the bottom of the control module tray.

Install relay K3 on the electrical mounting bracket.

Route the blower control wires over to the blower motor. Secure wires with cable ties.

– (1) Control module tray
– (2) Electrical mounting bracket
– (3) Relay K3 (blower negative wires)
– (4) Relays and resistor
– (5) Fuse holder

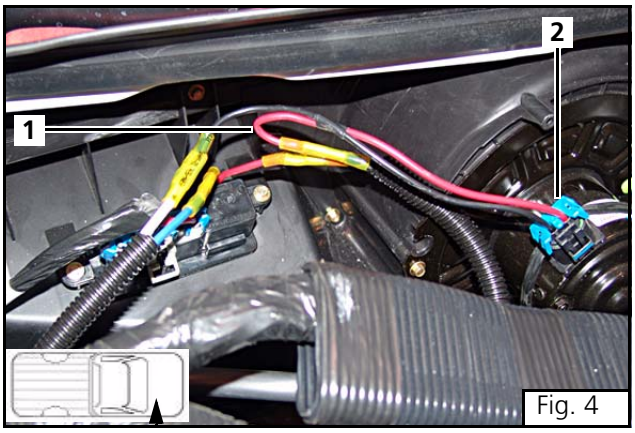


Fig. 4

Integration into the Blower System

ATTENTION

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

Use a heat gun or similar tool to shrink the connectors at each splice.

Identify the power side of blower motor connector with the ignition and blower switches in the On position.

Cut the wires going to the blower motor approximately 4 inches from the connector end.

Follow the instructions and diagram on the next page to make the blower connections.

– (1) Blower motor harness connections
– (2) Blower motor connector

ATTENTION
Secure blower control wiring to vehicle structures with nylon cable ties. (Image not available)

Figure 5 shows the mounting location of relay K3 and the splice location for the green wires.

– (1) Green wire splice
– (2) Relay K3

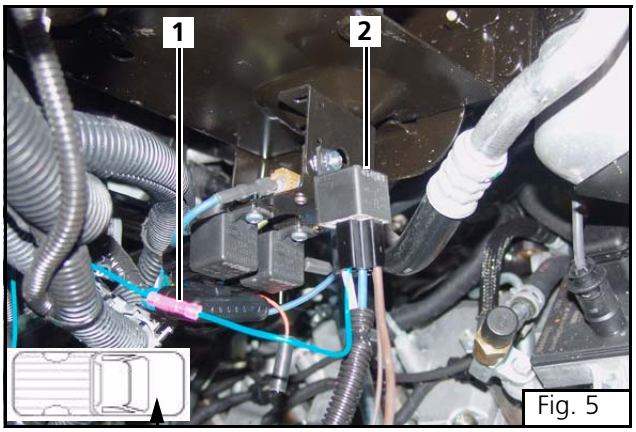


Fig. 5

3-Relay HVAC Harness Connections

ATTENTION
It is permissible to cut excess length from Webasto HVAC wiring harnesses to fit the application.

Cut motor wires where indicated by "**X**"

– (1) Chassis ground
– (2) Splice green wire to green wire
– (3) Strip and crimp red wire to (RED) controller side blower positive wire
– (4) Strip and crimp black wire to (RED) motor side blower positive wire
– (5) Strip and crimp white wire to (BLK) motor side blower negative wire
– (6) Strip and crimp blue wire to (BLK) controller side blower negative wire

CAUTION
Check your wiring! Ensure that all connections have been done in accordance with the wiring diagram shown (Fig. 6). Sensitive electronic controls can be damaged if wired incorrectly!

ATTENTION
Complete heater harness schematics are included on page 21 and 22 of this manual.

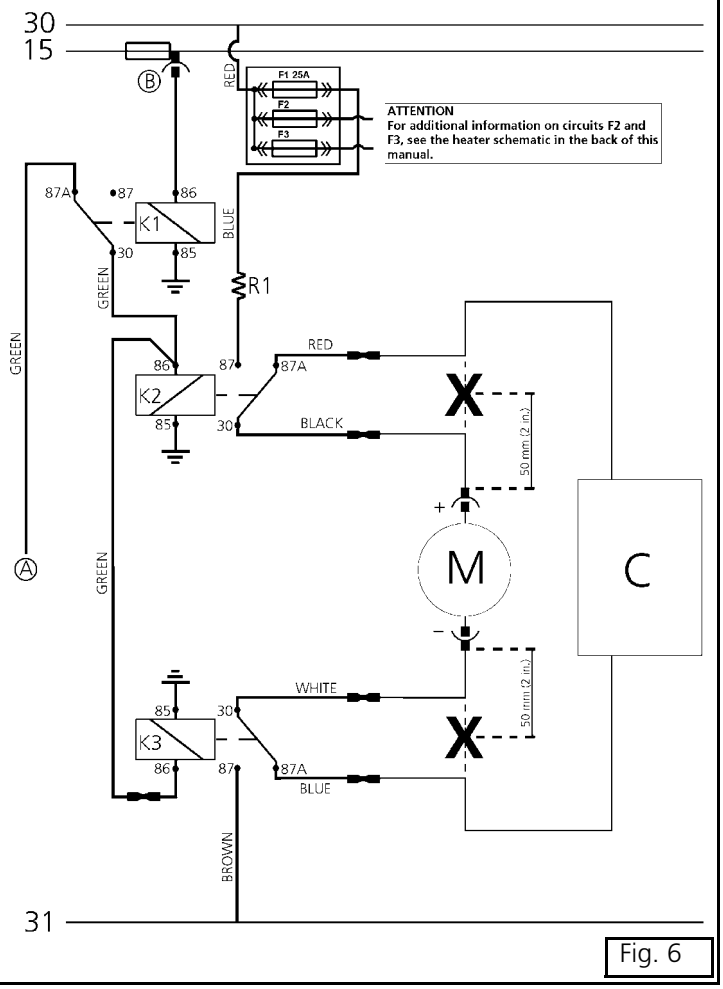


Fig. 6

Legend for Figure 14

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 (1 ohm) - Blower Speed Control
30	Battery Positive (Constant Power)
15	Ignition (Switched Power)
31	Battery Negative (Chassis Ground)

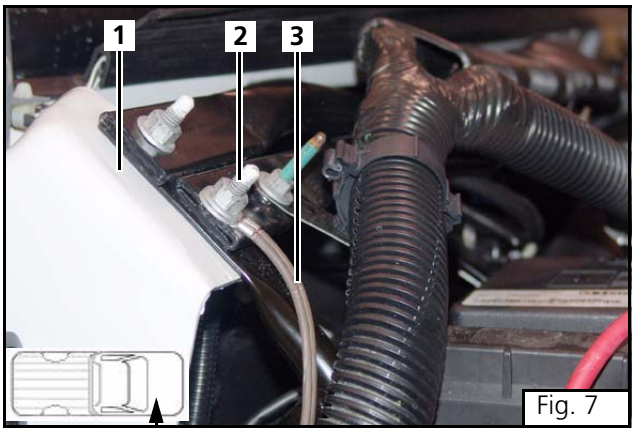


Fig. 7

Install terminal end on relay K3 ground wire and install on vehicle where shown in Figure 7.

– (1) Front cowl (right side)
– (2) Existing vehicle stud
– (3) Relay K3 ground

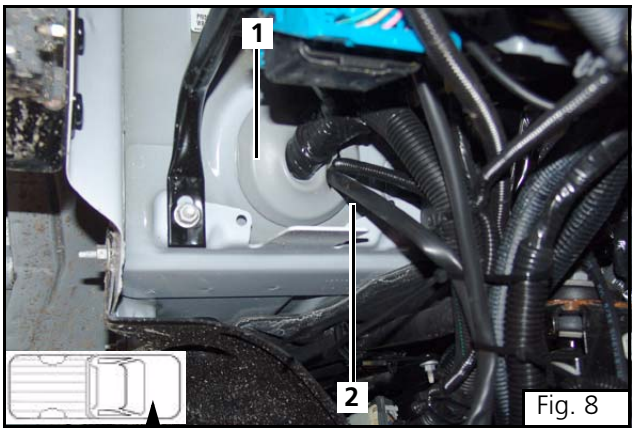


Fig. 8

Timer Installation

Route timer harness through bulkhead grommet on right side of vehicle.

– (1) Bulkhead grommet
– (2) Timer harness

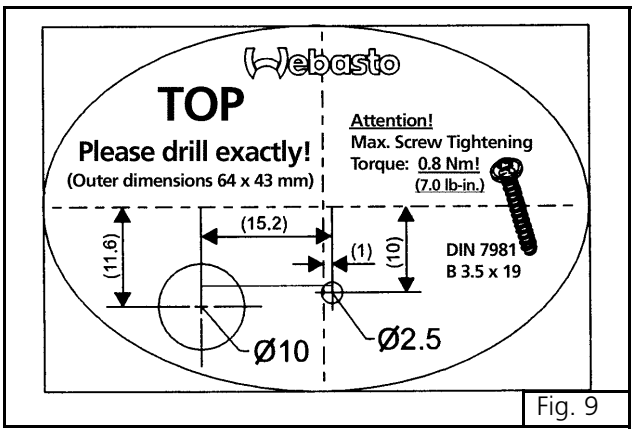


Fig. 9

CAUTION

Check behind panels for obstructions before drilling holes.

ATTENTION

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

Affix supplied template to panel. Drill 10 mm (25/64 in.) and 2.5 mm (3/32 in.) holes where indicated on template. Figure 9 shows a translated sample of the template supplied.

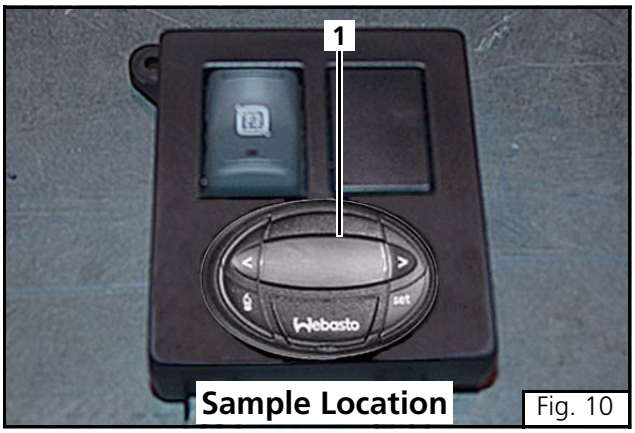


Fig. 10

Route timer harness over to mounting location and connect to back of timer. Do not overtighten mounting screw. Maximum torque is 0.8 Nm (7.0 lb-in.).

Install timer with screw provided and snap cover into place.

– (1) Timer

Heater Preparation / Installation

Prepare heater mounting location by removing vehicle splashshield (4x4 models only) from right front framerail.

– (1) Vehicle splashshield

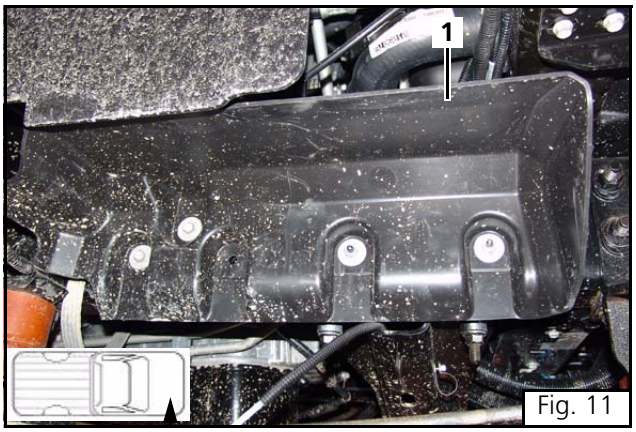


Fig. 11

ATTENTION
Observe torque specifications.

Install mounting bracket on heater with 3 EJOT screws. Tighten EJOT screws to 10 Nm (88.5 lb.-in.).

– (1) Heater mounting bracket
– (2) EJOT screws

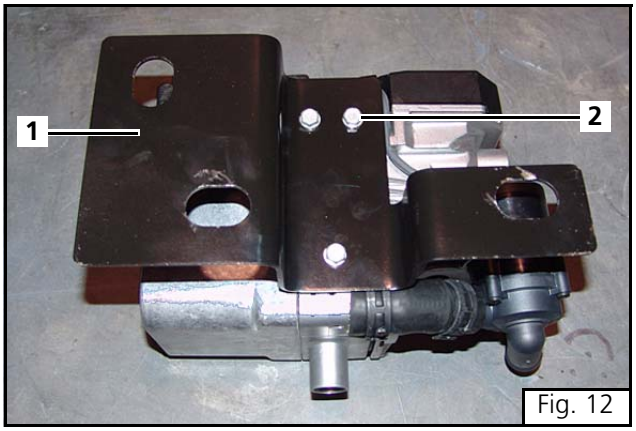


Fig. 12

ATTENTION
Three M16 bolts and flangenuts are provided in the kit for mounting the heater to the framerail on two wheel drive vehicles. Use two of the existing vehicle bolts and nuts for 4x4 models.

Install heater on right framerail with two existing bolts and nuts and one new bolt and flangenut.

– (1) Webasto heater
– (2) M16 bolt and flangenut
– (3) Right framerail
– (4) Existing hardware

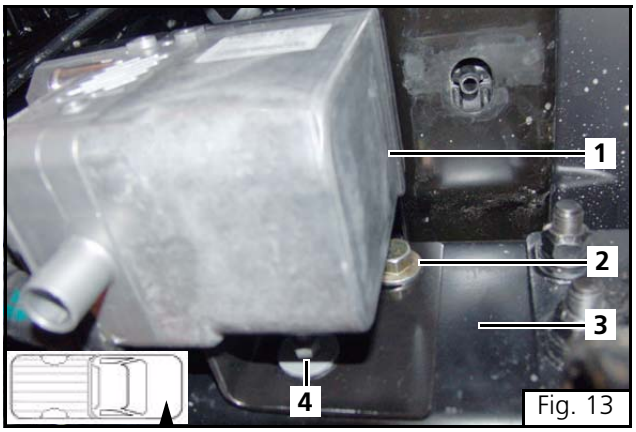


Fig. 13

Webasto heater shown installed on right framerail.

– (1) Right framerail
– (2) Webasto heater

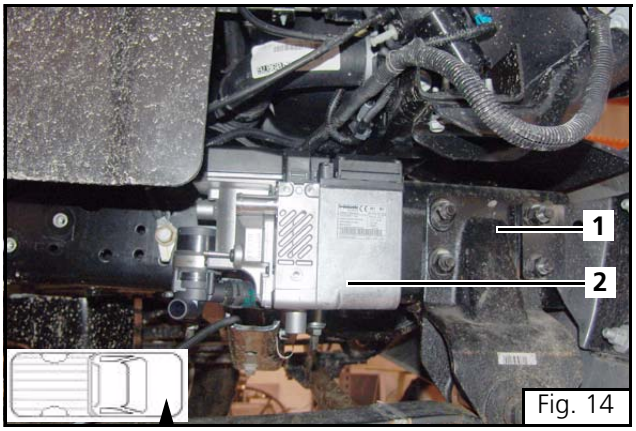


Fig. 14

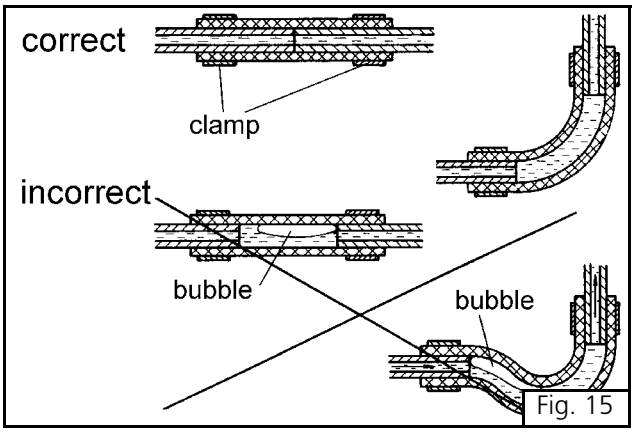


Fig. 15

Integration into the Fuel System

ATTENTION

Ensure the fuel lines are fully seated within the fuel line couplers and any 90 degree bends are not buckled. Refer to Figure 15.

Always cut Mecanyl fuel line with a sharp razor knife or razor edged cutter. Using side cutters, scissors or similar tools will cause a restriction inside the fuel line.

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

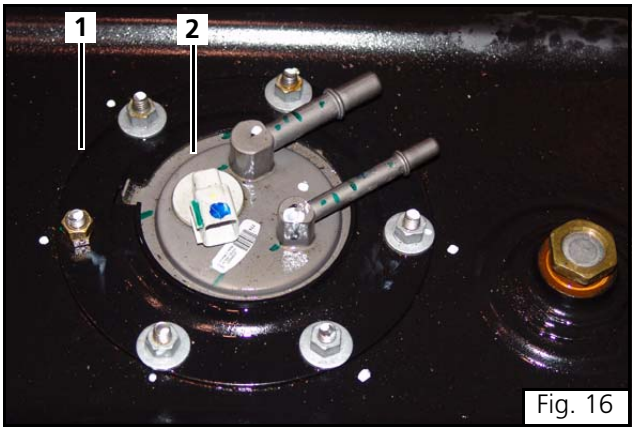


Fig. 16

Fuel Pickup Tube (standpipe) Installation

Lower vehicle fuel tank in order to access fuel sending unit.

Remove fuel sending unit from fuel tank per manufactures instructions.

– (1) Fuel tank
– (2) Fuel sending unit

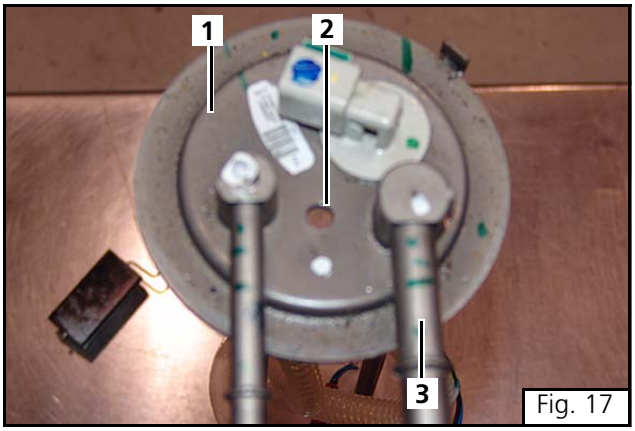


Fig. 17

Drill a 8.5 mm (21/64 in.) hole in fuel sending unit where shown in Figure 17. Deburr hole after drilling.

– (1) Fuel sending unit
– (2) 8.5 mm (21/64 in.) hole location

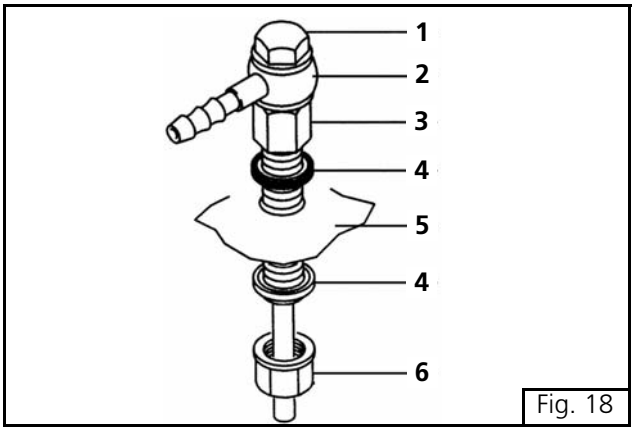


Fig. 18

ATTENTION

Note standpipe configuration for installation into sending unit.

– (1) Banjo bolt
– (2) Banjo fitting - 90 degree
– (3) Standpipe
– (4) Sealing washer
– (5) Fuel tank or sender plate
– (6) Locknut

ATTENTION

Ensure standpipe is cut approximately 1 inch above the bottom of the fuel tank when installed. Cut to fit (approximately 394mm or 15.5 inches) as necessary.

Ensure standpipe does not interfere with the float movement.

Tighten banjo bolt to 9 +/- 0.5 Nm (80 +/- 4.4 lb in.).

– (1) Banjo fitting
– (2) Fuel sending unit
– (3) Float
– (4) Standpipe tube

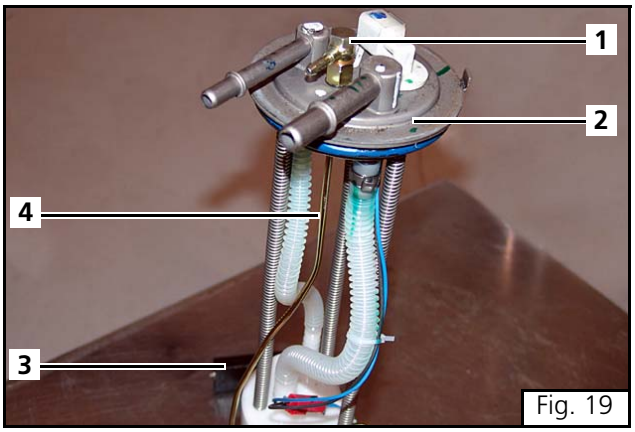


Fig. 19

Fuel Line Connection at Fuel Sender

Install fuel line coupler on standpipe and tighten clamp.

Insert end of fuel line (1 meter section) into fuel line coupler and tighten clamp.

– (1) Heater fuel line
– (2) Fuel line clamp
– (3) Fuel line coupler
– (4) Standpipe

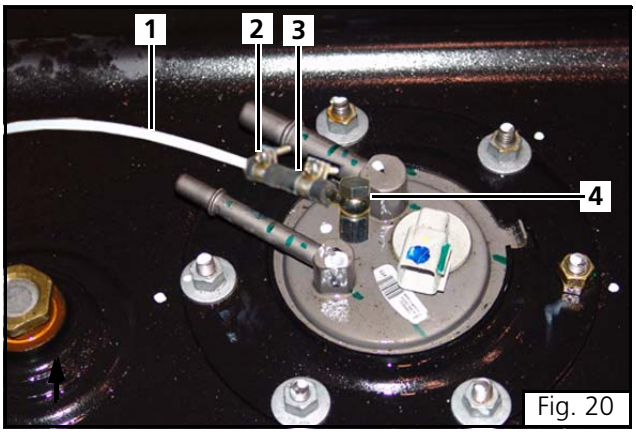


Fig. 20

Secure heater fuel line to vehicle fuel line with cable ties.

Install vehicle fuel tank in accordance with manufactures service instructions.

– (1) Heater fuel line
– (2) Cable tie
– (3) Vehicle fuel line

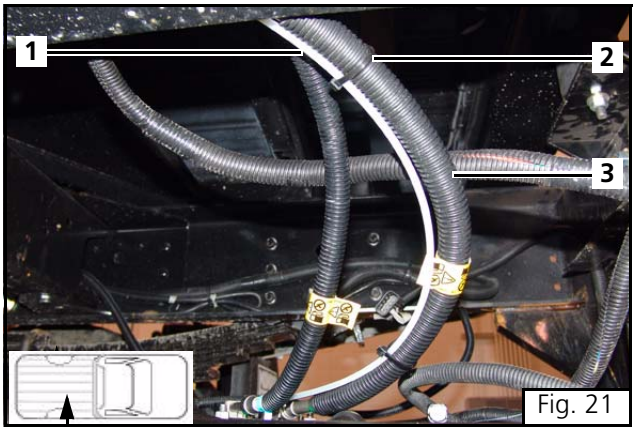


Fig. 21

Fuel Pump Installation

ATTENTION

Always cut Mecanyl fuel line with a sharp razor knife or razor edged cutter.

Install fuel pump p-clamp on vehicle crossmember with L- bracket. Do not tighten p-clamp.

Route heater fuel line to inlet side of fuel pump (cut to length) and connect using fuel line coupler and clamps.

– (1) Vehicle crossmember (forward of fuel tank)
– (2) L-bracket, p-clamp, and two M6 bolts and nuts
– (3) Fuel line coupler and two clamps
– (4) Inlet side of fuel pump
– (5) Heater fuel line

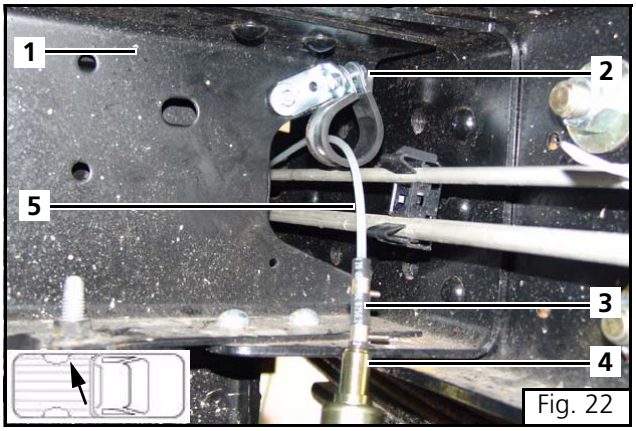


Fig. 22

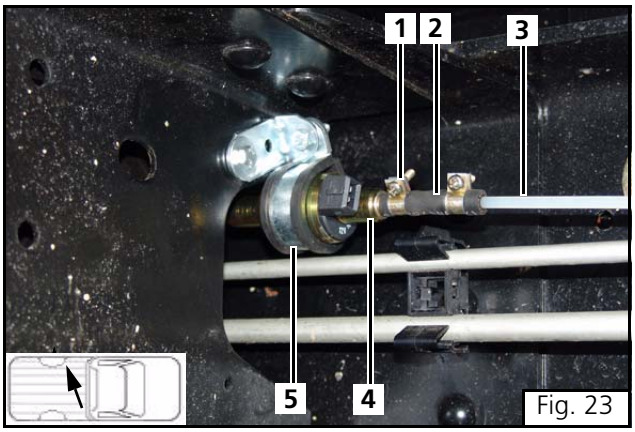


Fig. 23

Connect fuel line to fuel pump outlet with fuel coupler and two clamps.

Install fuel pump in p-clamp and tighten clamp.

– (1) Fuel line clamp
– (2) Fuel line coupler
– (3) Heater fuel line
– (4) Outlet side of fuel pump
– (5) P-clamp, M6 bolt and nut

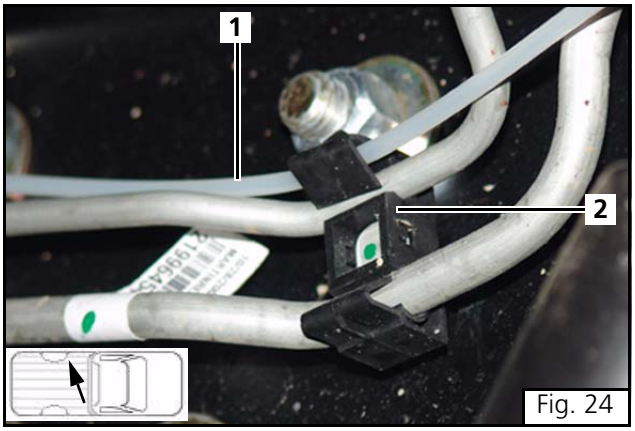


Fig. 24

Fuel Line Routing to Heater

Use existing fuel line clips and cable ties to secure fuel line to vehicle.

– (1Heater fuel line
– (2Vehicle fuel line clips

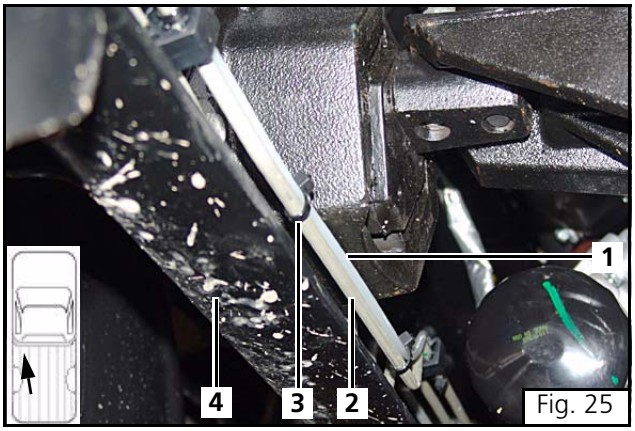


Fig. 25

Route fuel line along left frame rail toward the front of the vehicle. Secure fuel line with cable ties.

– (1) Heater fuel line
– (2) Vehicle fuel line
– (3) Cable tie
– (4) Left frame rail

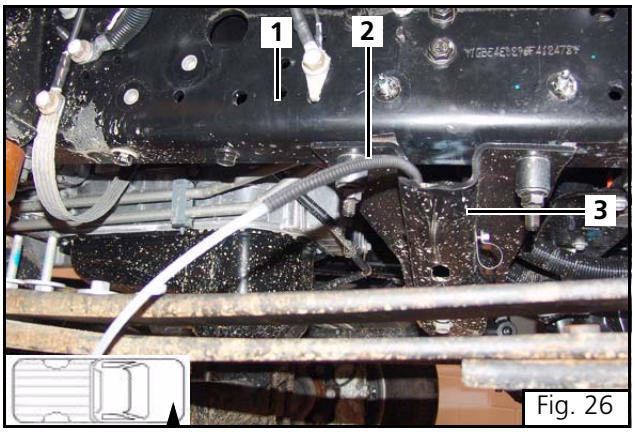


Fig. 26

Route heater fuel line inside front crossmember to the right side of the vehicle.

– (1) Right framerail (heater mounting location)
– (2) Heater fuel line (covered with protective loom)
– (3) Vehicle crossmember

ATTENTION

Always cut Mecanyl fuel line with a sharp razor knife or razor edged cutter.

Cut fuel line to length and connect to heater inlet nipple with fuel line coupler and two clamps.

Connect heater control harness at this time.

– (1) Heater control harness
– (2) Fuel line clamp
– (3) Fuel line coupler
– (4) Heater fuel line

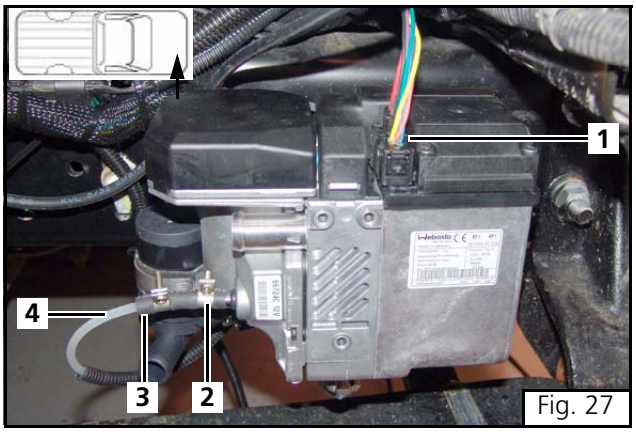


Fig. 27

Fuel Pump Harness Installation

Route fuel pump electrical harness to fuel pump following heater fuel line previously installed.

Secure fuel pump electrical harness to vehicle with cable ties.

– (1) Heater fuel line
– (2) Cable tie
– (3) Fuel pump electrical harness

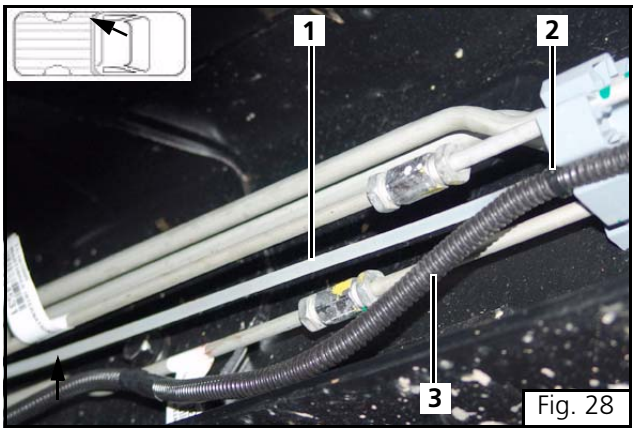


Fig. 28

Install fuel pump electrical harness connector per the instructions provided in the kit.

Plug harness connector into fuel pump.

– (1) Fuel pump electrical connector
– (2) Fuel pump harness
– (3) Fuel pump

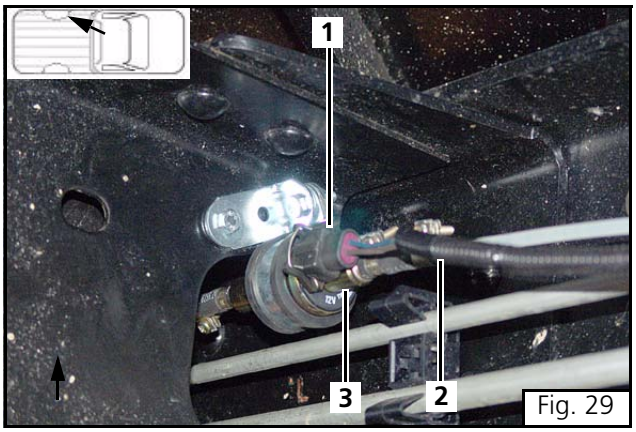


Fig. 29

Integration into the Coolant System

ATTENTION

- Torque hose clamps to 2.0 - 2.5 Nm (18 - 22 lb-in.)
- Avoid sharp bends and kinks when installing coolant hoses.
- Position hose clamps in such a way to avoid cutting or damaging adjacent components.
- Clamp vehicle coolant hose with hose clamping pliers prior to cutting to prevent coolant spillage.

The coolant heater integration into the vehicle heater circuit is done in an "INLINE" fashion. Refer to Figure 30.

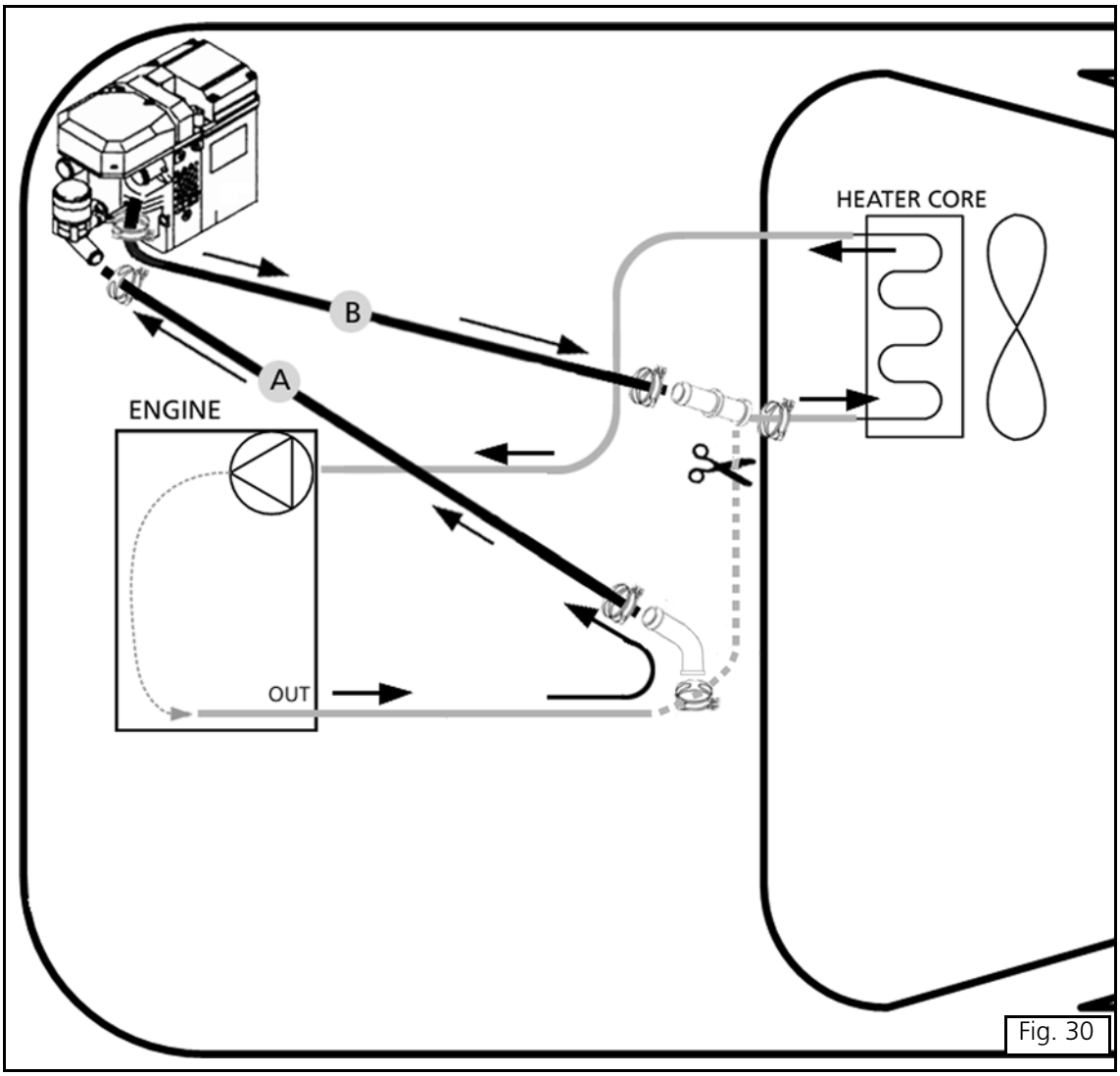


Fig. 30

Preparing the Coolant Hoses

Cut the heater coolant hoses as shown in Figure 31. Trim hoses to fit during installation.

The coolant hose going to the webasto heater should be approximately 330 mm (13 inches).

The coolant hose on the outlet side of the heater should be approximately 229 mm (9 inches).

– (1) 90° end connects to heater inlet (water pump)
– (2) Connects to coolant hose coming from the engine
– (3) Connects to heater core inlet hose
– (4) 90° end connects to heater outlet

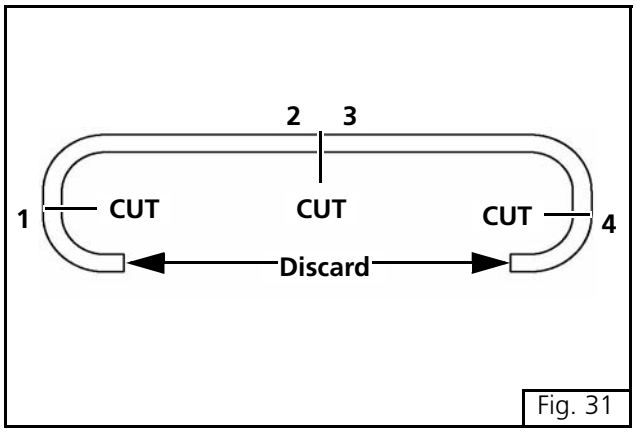


Fig. 31

Coolant Hose Connections at the Heater

Connect the 90° end of the coolant hoses to the heater inlet (water pump) and heater outlet.

– (1) Heater inlet hose
– (2) Heater outlet hose

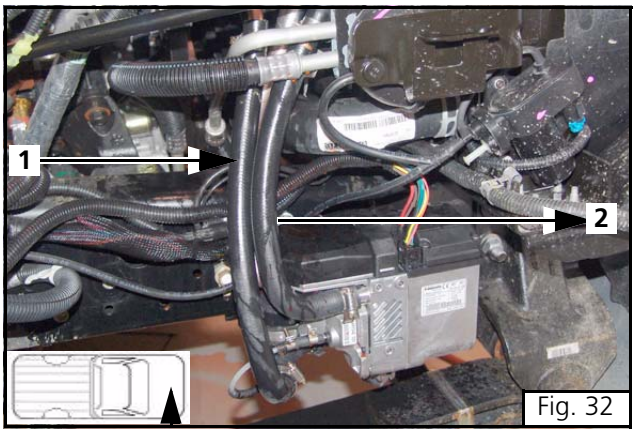


Fig. 32

Coolant Hose Connections at the Engine

Use hose clamping pliers to prevent coolant loss when cutting hose.

Cut the coolant hose going to the heater core.

Connect coolant hose coming from engine to Webasto heater inlet hose with 90° adapter and two hose clamps.

Connect coolant hose coming from Webasto heater outlet to coolant hose going to the heater core with straight adapter and two clamps.

– (1) Coolant hose coming from engine
– (2) Hose clamp (4 ea.)
– (3) 90° coolant hose adapter
– (4) Coolant hose going to the heater core
– (5) Coolant hose coming from the Webasto heater outlet
– (6) Coolant hose going to the Webasto heater inlet

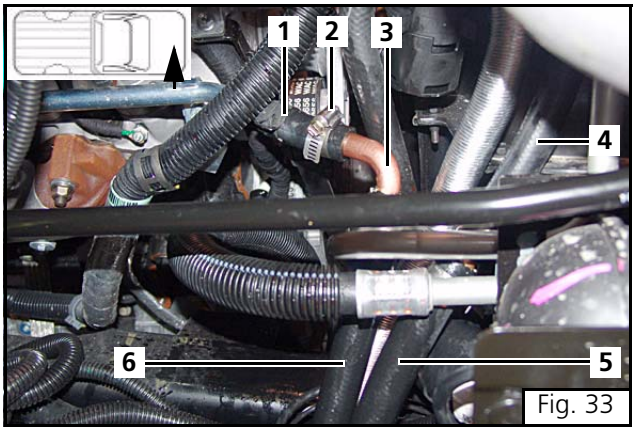


Fig. 33

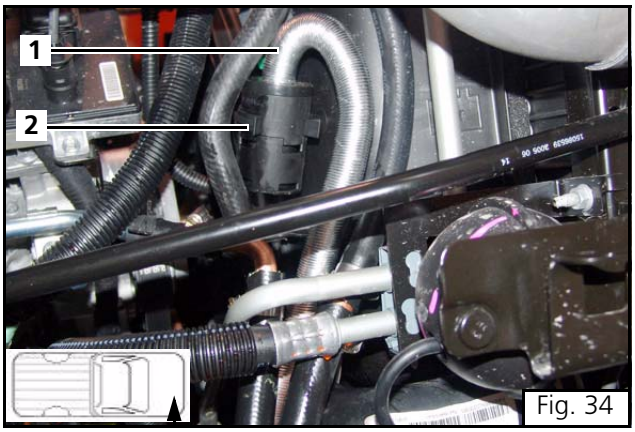


Fig. 34

Combustion Air Intake Installation

Install the combustion air intake tube on the heater with narrow band clamp.

Screw the air intake silencer into the combustion air intake tube.

ATTENTION
Ensure air intake silencer is pointed down and toward the rear of the vehicle.

Mount the air intake silencer to the vehicle with clamp provided. See Figure 34 for location.

– (1) Combustion air intake tube
– (2) Air intake silencer

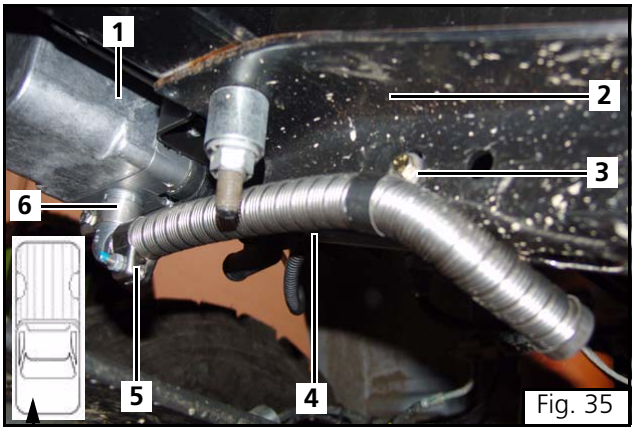


Fig. 35

Exhaust Tube Installation

ATTENTION
Keep exhaust tube away from heat sensitive vehicle components.

Point exhaust tube down and toward the rear of the vehicle.

Cut exhaust tube to approximately 305 mm (12 inches).

Install 90° exhaust elbow on heater with exhaust clamp.

Install exhaust tube on 90° elbow with exhaust clamp.

Secure exhaust tube to vehicle with p-clamp, M6 bolt and nut.

– (1) Webasto heater
– (2) Front crossmember
– (3) P-clamp, M6 bolt and nut
– (4) Exhaust tube
– (5) Exhaust clamp
– (6) Exhaust clamp, 90° exhaust elbow

Fuse Tap Connection - Relay K-1

CAUTION

Tap into the "fused" output side of the selected fuse. Fuse must remain hot with the ignition in the "ON" position only.

Route blue fuse tap wire from relay K-1, to the underhood fuse/relay center.

– (1) Underhood fuse/relay center
– (2) Fuse tap

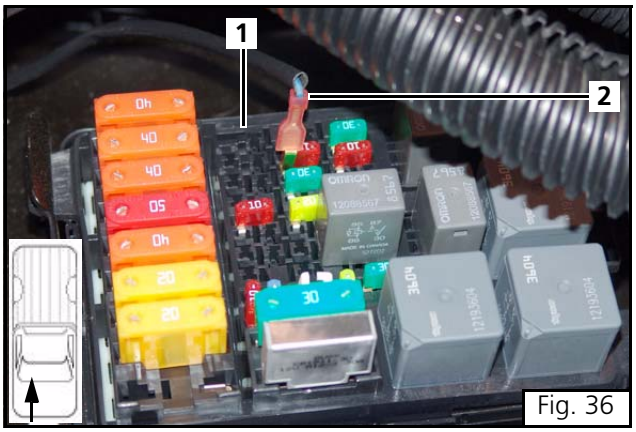


Fig. 36

Heater Power Connection

Secure heater power wire to positive terminal.

– (1) Underhood fuse/relay center
– (2) Heater power wire
– (3) Positive terminal

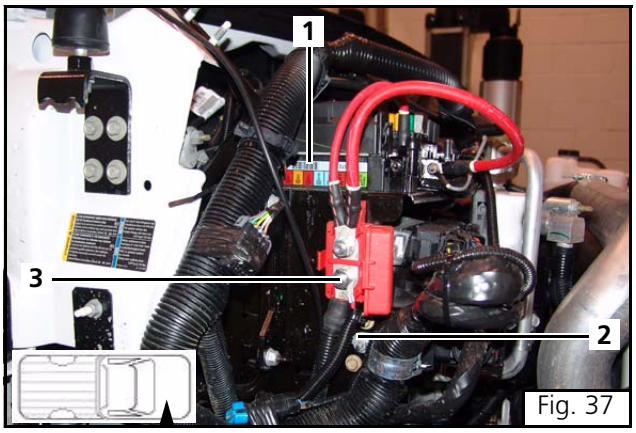


Fig. 37

Heater Ground Connection

Secure heater ground wire to known good ground.

– (1) Front bulkhead area
– (2) Existing stud
– (3) Heater ground wire

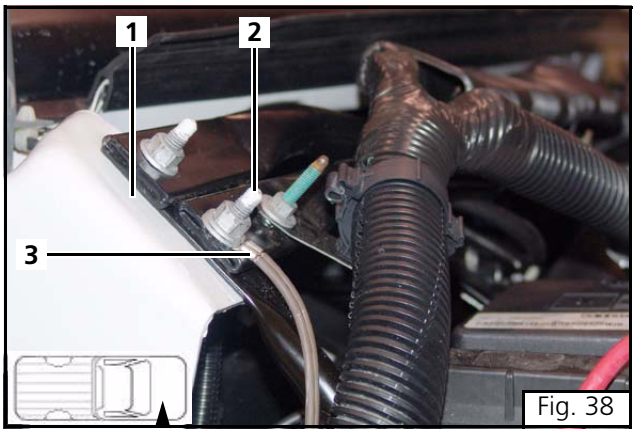


Fig. 38

Final Inspection Initial Start-up and Concluding Work

Connect battery ground terminal

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), fan speed between low and maximum, 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.

Concluding Work

- – 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.
- – Install all vehicle parts, panels and components removed during heater installation.

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:

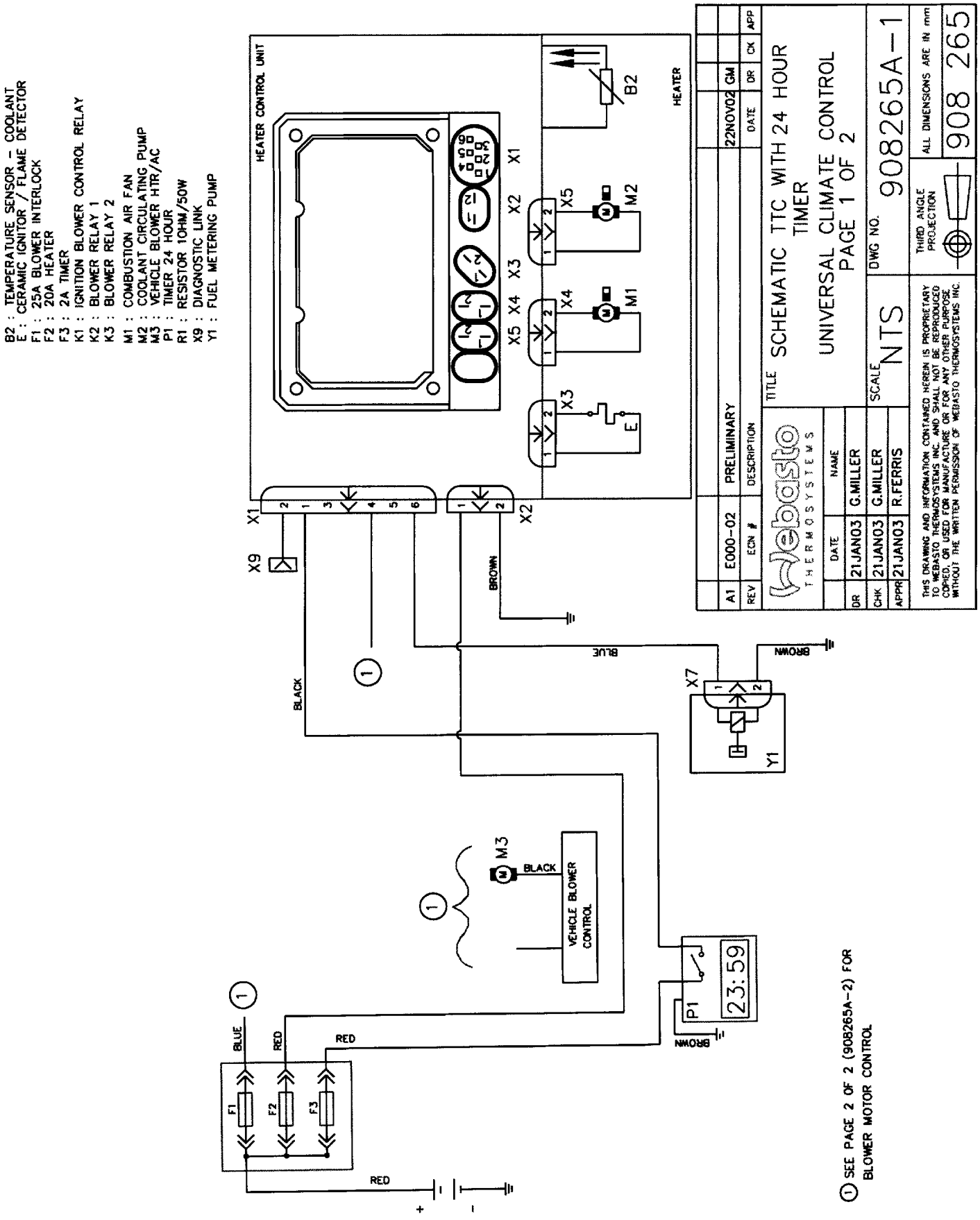
1 Ensure timer or switch is in the "OFF" position. Turn timer or switch to the "On" position. Remove main fuse F2 (20 Amp), reinsert after 5 seconds.
2 Cycle timer or switch off and then back on once more. Remove fuse F2 once again and reinsert after 5 seconds. Heater should attempt to start after inserting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

ATTENTION

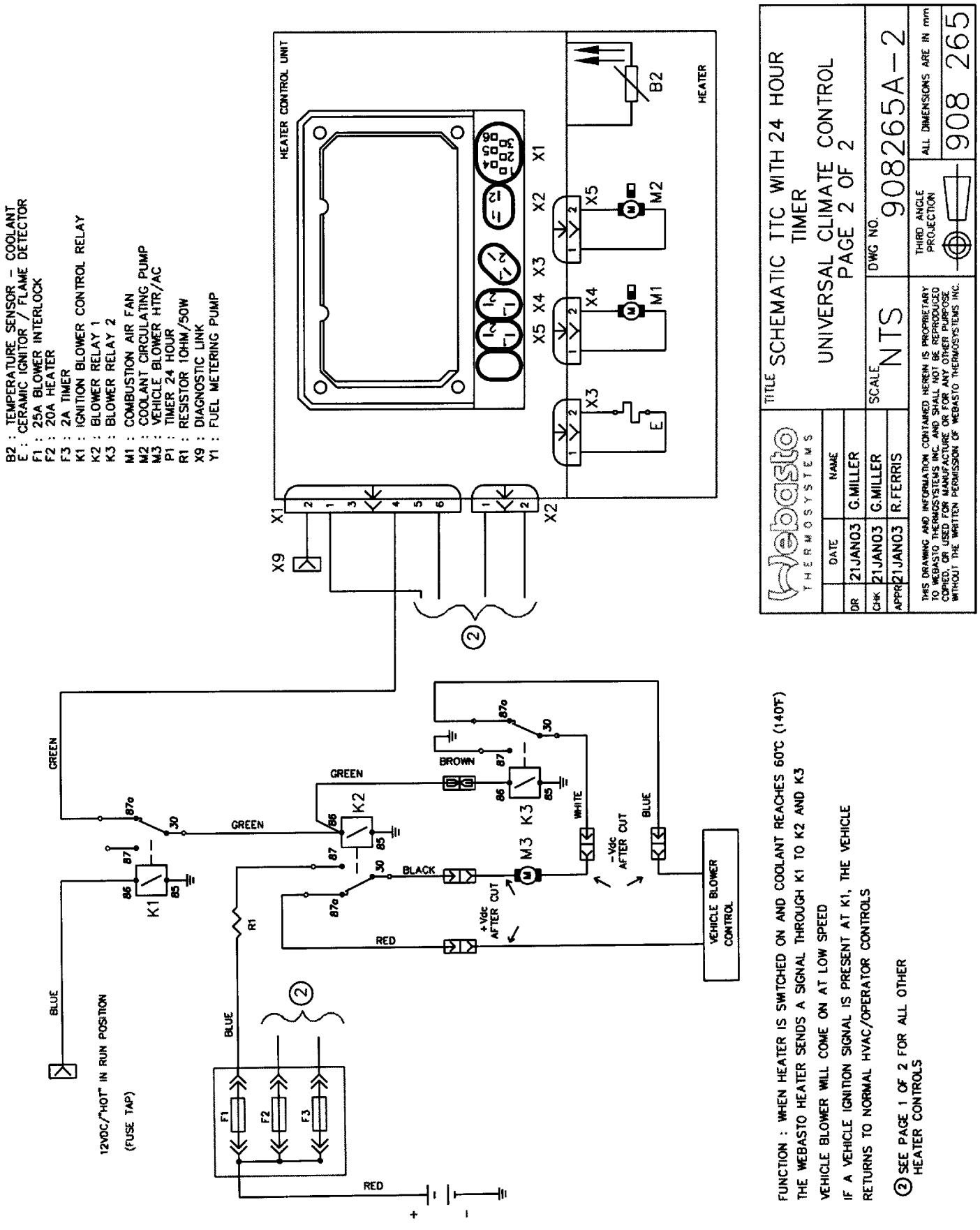
– The engine coolant must be below 86 °F (30 °C) before the Webasto heater will attempt to start.
– Should the heater fail to start or operate correctly, contact your Webasto technical representative at:

1-800-555-4518
www.techwebasto.com

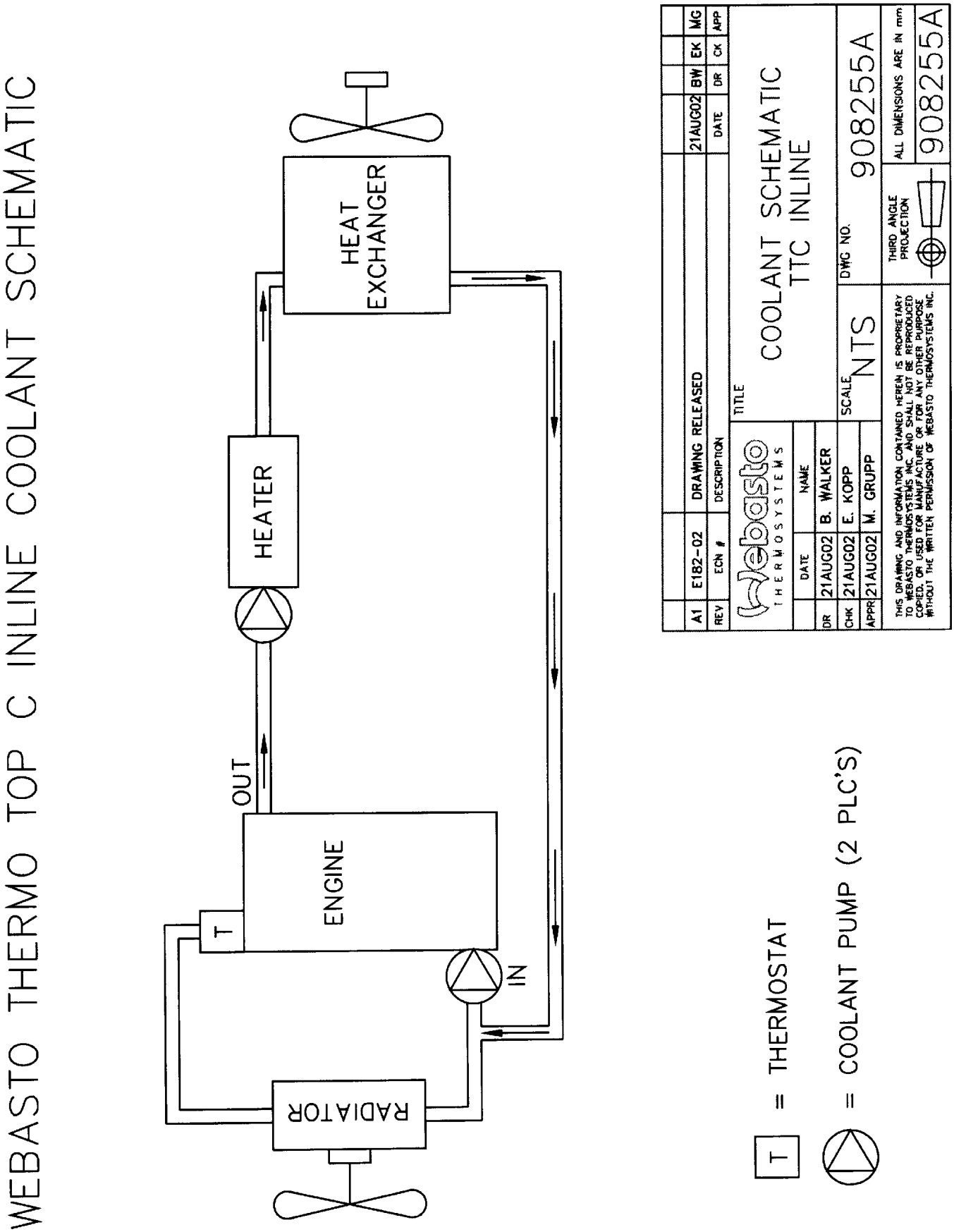
Electrical Harness Schematic - Sheet 1 of 2



Electrical Harness Schematic - Sheet 2 of 2



Inline Cooling Schematic



GM TopKick/Kodiak

Notes:

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