



**INSTALLATION MANUAL
HEATER KIT
(77700-V4314, VC4314)
KUBOTA RTV500 and RTV520**

CALIFORNIA PROPOSITION 65



WARNING:

Cancer and reproductive harm - www.P65Warnings.ca.gov



CAUTION

To avoid personal injury:

- Make sure engine is completely cooled down before beginning installation of heater. Hot engine coolant can cause severe burns.
- Wear hand and eye protection due to possible contact with hot fluid and/or steam.

BEFORE INSTALLING HEATER

- Read all instructions and safety instructions in this manual.
- Refer to your machine's operator's manual and safety instructions on your machine's safety decals.
- Wear appropriate personal protective equipment (PPE) when performing work.
- Disconnect negative (-) terminal on battery before performing work.
- Hang a "**DO NOT OPERATE**" tag in operator station.

Estimated assembly time: 2-3 hours

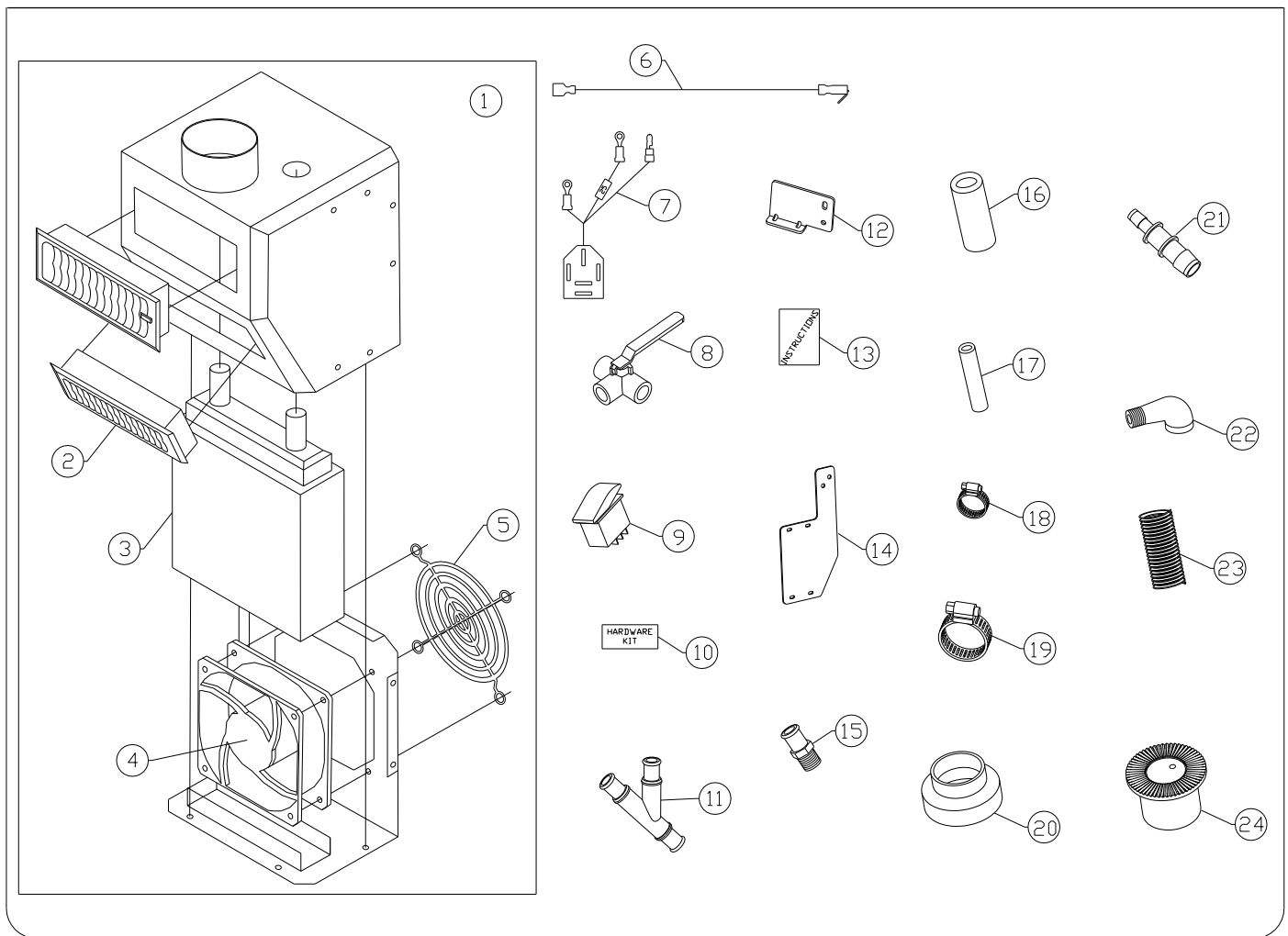
■ AVAILABLE REPLACEMENT PARTS (see images on next page)

Ref. No.	Part No.	Part Name	QTY	REMARKS
1	77700-02452	20,000 BTU Heater unit only - with Top Hose Ports	1	Code No.: V4214P1A-500 (contains one heater)
2	70000-01167	Vent/Louver Rectangle	2	Code No.: 9HR-L (contains 2 units)
3	N.S.S.	Heater Replacement Core	1	Code No.: N.S.S. (not sold separately)
4	70000-01165	Heater Replacement Fan/Motor	1	Code No.: 9PH20-2 (contains one unit)
5	70000-01166	Fan Guard	1	Code No.: 9PH20-4 (contains one guard)
6	77700-01067	Wire Harness (94" long)	1	Code No.: K500-HTRWH1 (contains one harness)
7	77700-01079	Wire Harness with Relay and 25A Fuse	1	Code No.: K500-WASLWH3 (contains one harness)
8	77700-01068	3-Way Diverter Valve	1	Code No.: KB5-VLV (contains one valve)
9	77700-01069	Rocker Switch (hi-low-off)	1	Code No.: 9HR0048 (contains one switch)
10	77700-01071	RTV500 Heater Hardware Kit	1	Code No.: KU500HTR-HWK (contains one kit)
11	77700-01092	5/8" Y-Fitting	1	Code No.: 9PIBP-D (contains one fitting)
12	77700-01070	Diverter Valve Bracket (custom)	1	Code No.: SM-KB5DIVBRKT (contains one bracket)
13	77700-01072	Installation Instructions, RTV500 Heater Kit	1	Code No.: V4314P1 (contains one manual)
14	77700-01087	Heater Bracket (custom)	1	Code No.: SM-KB5HTRBRKT (contains one bracket)
15	70000-01027	3/8" NPT Nipple	1	Code No.: 9HR0045 (contains 3 units)
16	O.L.	5/8" Heater Hose (19 feet long)	1	Code No.: 9HR0061 (obtain locally)
17	O.L.	3/8" Heater Hose (6 inches long)	1	Code No.: 9PIBP-C (obtain locally)
18	O.L.	#6 Hose Clamp (5/8")	2	Code No.: 9HR0060-5/8 (obtain locally)
19	70000-01032	#12 Hose Clamp (1")	10	Code No.: 9HR0060-1.0 (contains 10 units)
20	77700-01088	2.5" to 2.0" Reducer	1	Code No.: 9HR0069 (contains one reducer)
21	77700-01089	5/8" to 3/8" Reducer	2	Code No.: 9PIBP-B (contains 2 reducers)
22	77700-01093	3/8" NPT Iron Pipe Street Elbow	1	Code No.: 9HR0049 (contains one elbow)
23	77700-01090	2" EPE Heater Vent Hose (16 inches long)	1	Code No.: OHC-13 (contains one 16" long hose)
24	77700-01091	2" Round Vent	1	Code No.: 1HAP1D (contains one vent)

N.S.S. = Not Sold Separately

O.L. = Obtain Locally

■ AVAILABLE REPLACEMENT PARTS (see p/n's on previous page)



CAUTION

To avoid personal injury:

- Park the machine on a firm and level surface.
- Apply the parking brake.
- Stop the engine and remove the key from the machine.
- Disconnect negative (-) terminal on battery before performing work.

■ ASSEMBLY PROCEDURE

NOTE:

- **All assembly procedures listed within this manual are generally representative of the machine model for which the manual is written.** Your machine may be configured differently, but the outline for the procedure should still be followed. For further support for any issues not covered within the pages of this manual, please contact your local Kubota representative.

1. VEHICLE PREP

1.1 Temporarily remove the bench seat by pivoting the seat up 90 degrees and removing the clips shown in figure 1.1. Save clips for re-installation in step 7.9.

1.2 Using a 14mm socket, remove the seat belts (four pieces). Fig. 1.2 shows the seat belts removed.

1.3 Using a 5mm Allen wrench, remove the plastic seat support (five bolts). See figure 1.2. Note: the emergency brake lever will need to be pulled all the way up for ease of removal.

1.4 Remove and discard 11 plastic pine tree clips from the floormat of the driver's side to just beyond halfway (3/4 of the floormat will need to be folded over). Figure 1.4 shows the floormat pulled back. Note: new plastic pine tree clips are supplied. Note: if a cab is already installed, the driver's side floorboard must be temporarily removed to free up the rubber floormat.

1.5 Remove the steel floor panel (two bolts). See figure 1.5.

1.6 Unlatch the hood and prop it open.

1.7 Raise the dump bed. Per fig. 1.7, partially remove the rubber guard by disengaging the rubber flap on the passenger's side from the threaded rod. Remove the two bolts shown and pivot the rubber guard 90 degrees and rest it on the driver's side rear tire.

1.8 Drain coolant from the system.



Fig. 1.1 (retaining clips for seat)

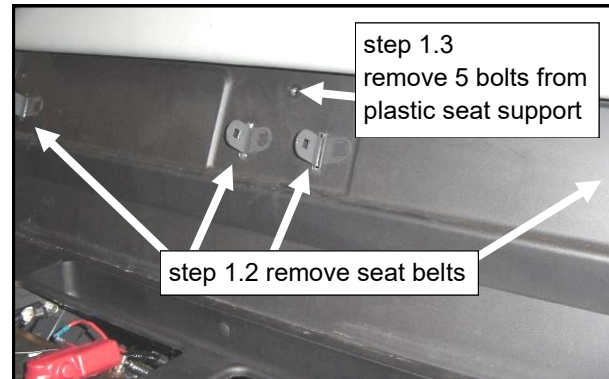


Fig. 1.2 (view from driver's side of vehicle)



Fig. 1.4 (view from driver's side of vehicle)

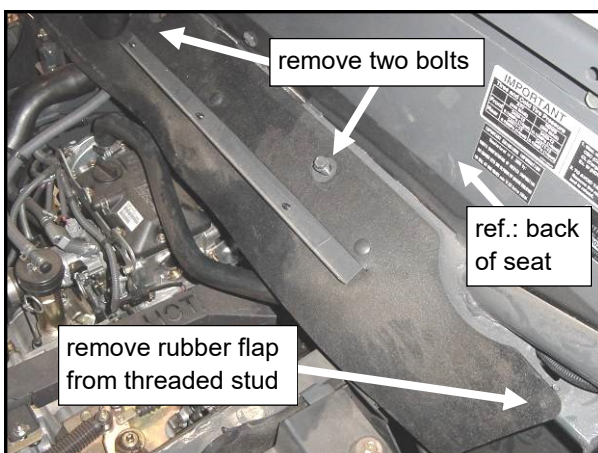


Fig. 1.7 (view from rear of passenger's side)

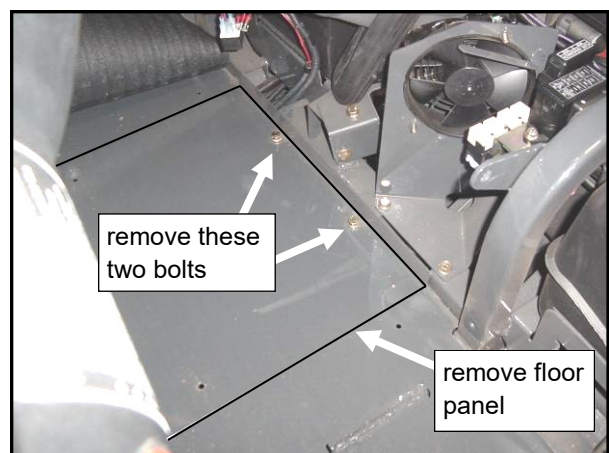


Fig. 1.5 (view from driver's side of vehicle)

2. MOUNT HEATING UNIT

2.1 Per fig. 2.1, attach the supplied plastic reducer to the top of the heater box by snapping it in place.

2.2 Per fig. 2.2, attach the supplied bracket to the heating unit as shown using four original equipment bolts from the side of the heater.

2.3 Per fig. 2.3, position the heater assembly to the vehicle where shown under the dash on the driver's side.

2.4 Per fig. 2.4, attach the heater bracket assembly to the vehicle where shown under the dash on the driver's side. Line up the two hole bolt pattern and install two 5/16-18 x 1" long hex head bolts and locknuts. Attach the ring terminal on the black heater wire to one of these bolts as shown.

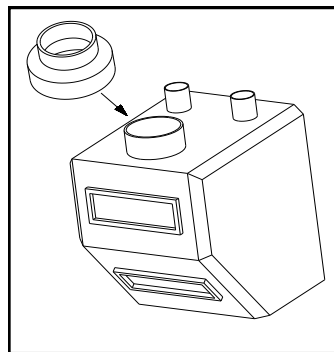


Fig. 2.1 (attach plastic reducer)

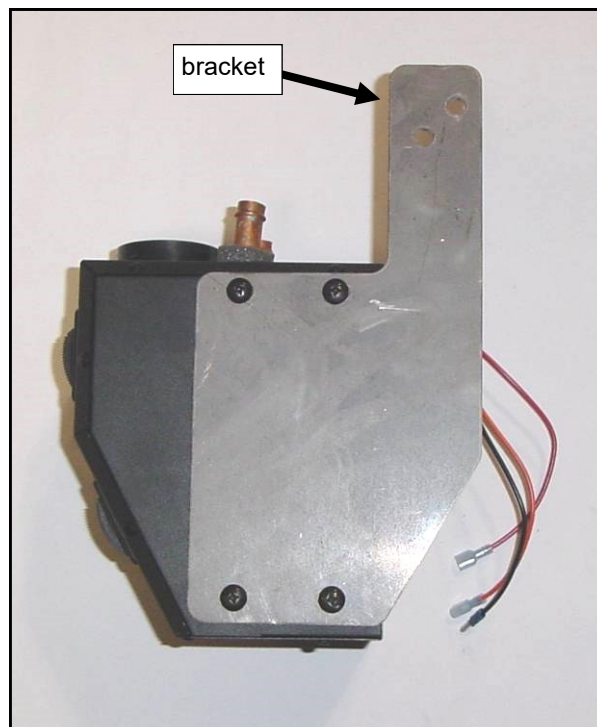


Fig. 2.2 (heater bracket)

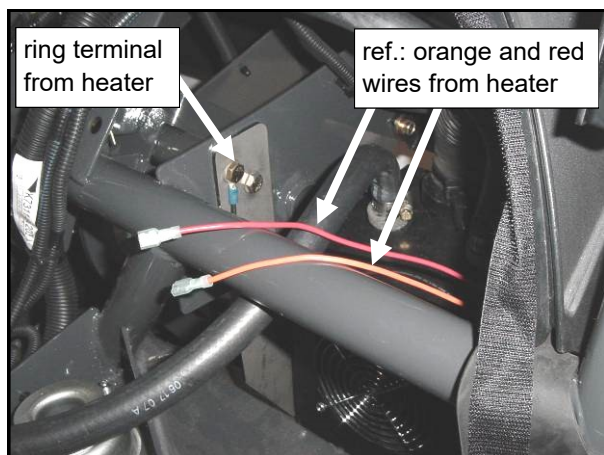


Fig. 2.4 (view from front of driver's side)



Fig. 2.3 (view from driver's side of vehicle)

3. HEATER HOSES

NOTE: page 9 has a full page flow diagram for clarification.

3.1 Cut the supplied heater hose into three lengths as follows: three pieces at 35" long, one piece at 52" long, and one piece at 72" long. Per fig. 3.1, run the two longest hoses (52" and 72") in the floor channel as shown from under the hood to the thermostat housing shown in figure 3.2.

3.2 Fig. 3.2 shows the driver's side of the engine compartment. Per fig. 3.2, disconnect the short 3/8" diameter by-pass hose where indicated in the photo, then rotate the hose where indicated. To disconnect, pinch and slide the clamp down and pull hose off. To rotate the hose towards the front of the vehicle, pinch and slide the clamp up. Rotate the hose and re-clamp in place.

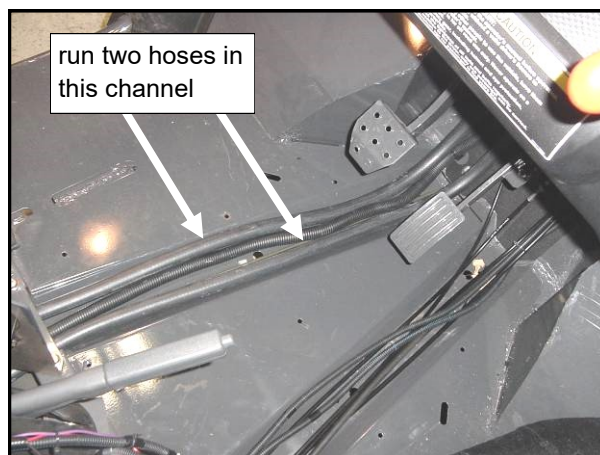


Fig. 3.1 (view from passenger's side of vehicle)

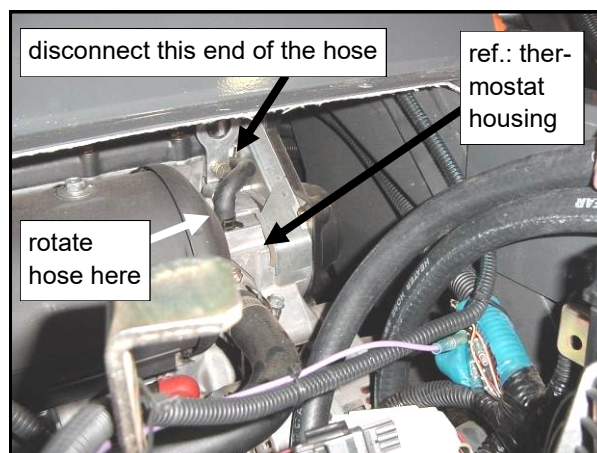


Fig. 3.2 (view from front of vehicle)

3. HEATER HOSES (cont'd.)

3.3 Per figures 3.3 and 3.3.1, connect the longer of the two 5/8" diameter hoses (72") to the small 3/8" diameter original hose using the supplied reducer, a small hose clamp, and a large hose clamp. See the flow diagram on page 9. Connect the 52" long 5/8" diameter hose to the newly supplied 6" long 3/8" diameter hose using the supplied reducer, a small hose clamp, and a large hose clamp. Connect the free end of the 3/8" diameter hose to the port the by-pass hose was removed from.

3.4 Per fig. 3.4, assemble the supplied 90 degree elbow (qty.: one) and three hose nipples as shown. Use Teflon tape on the threads.

3.5 Per fig. 3.5, orient the diverter valve bracket so the bent flange with the two slots is forward and down. Attach the diverter valve to the bracket using two #8-32 x 3/8" long bolts. Use caution to avoid damaging the threads in the diverter valve. Begin the bolt engagement by hand to avoid potential cross threading.

3.6 Fig. 3.6 shows the passenger's side underneath the hood. Attach the bracket assembly to the frame of the vehicle as shown in figure 3.6 using two 1/4-20 x 3/4" long bolts and locknuts. For model RTV520, the top hole location indicated in Fig. 3.6 needs to be drilled out. Use a 9/32" drill bit thru this dash support. Double check that nothing on the bottom side will be damaged when the drill bit breaks thru the sheet metal.

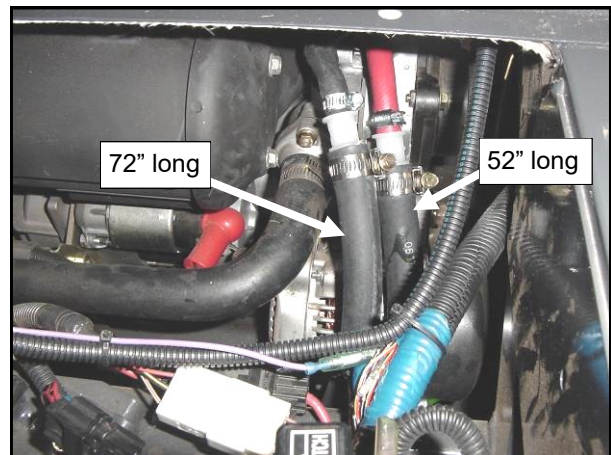


Fig. 3.3 (view from front of driver's side)

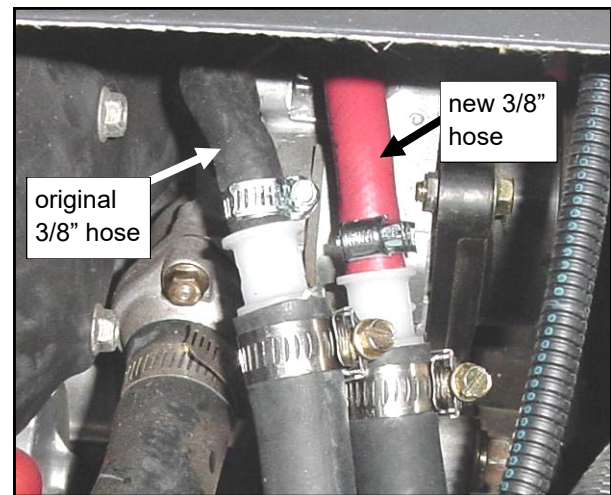


Fig. 3.3.1 (enlarged view of fig. 3.3)

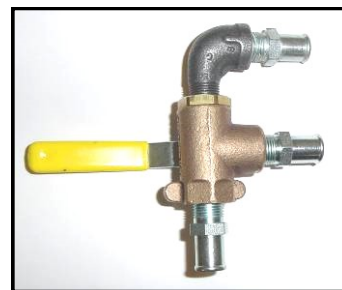


Fig. 3.4 (diverter valve assembly)

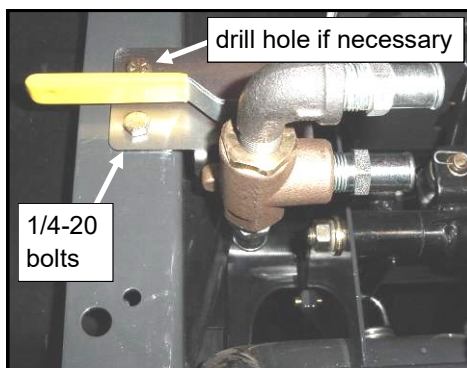


Fig. 3.6 (view from front of vehicle)

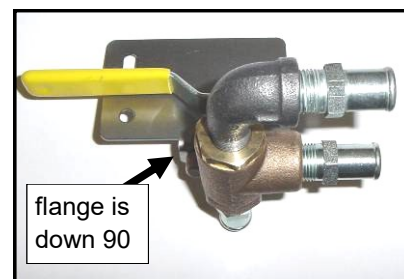


Fig. 3.5 (diverter valve and bracket assembly)

3. HEATER HOSES (cont'd.)

Note: these photos show the area underneath the hood.

3.7 Connect the end of the 72" long hose to the middle port of the diverter valve (as shown in fig. 3.7). See the flow diagram on the next page. Use a supplied hose clamp.

3.8 Connect the supplied "Y" fitting to the end of the 52" long hose as shown in fig. 3.8. See the flow diagram on the next page. Use a supplied hose clamp.

3.9 On the remaining ends of the "Y" fitting, connect two pieces of 35" long hose. See fig. 3.9. One hose goes to the heater and the other hose goes to the bottom port on the diverter valve. See the flow diagram on the next page. Use the supplied hose clamps. Note: it does not matter which side of the heater each hose is connected to.

3.10 The last 35" long piece of hose connects the top port of the diverter valve to the heater. See fig. 3.10 and the flow chart on the next page. Use the supplied hose clamps.

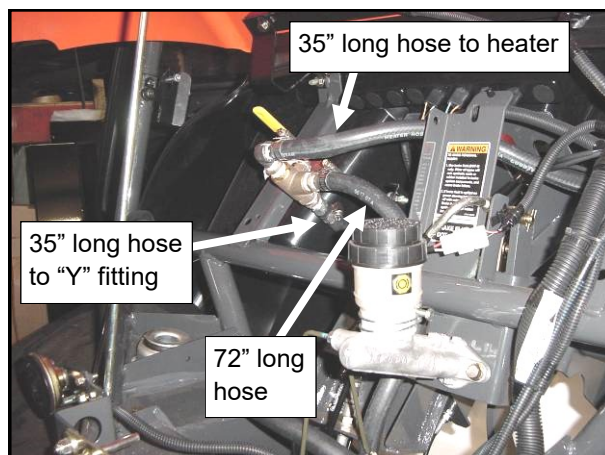


Fig. 3.7 (view from front of vehicle)

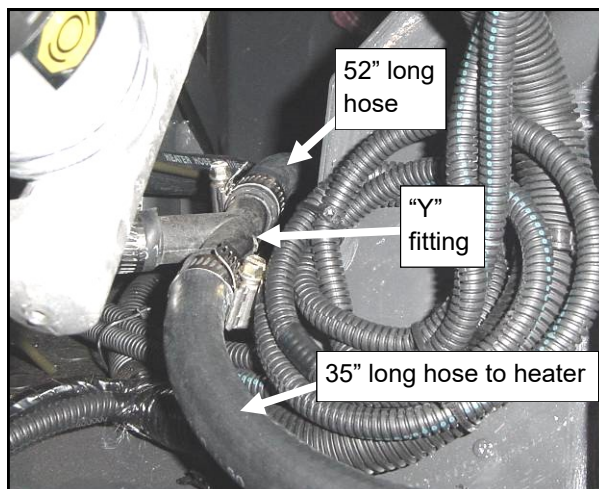


Fig. 3.8 (view from front of vehicle)

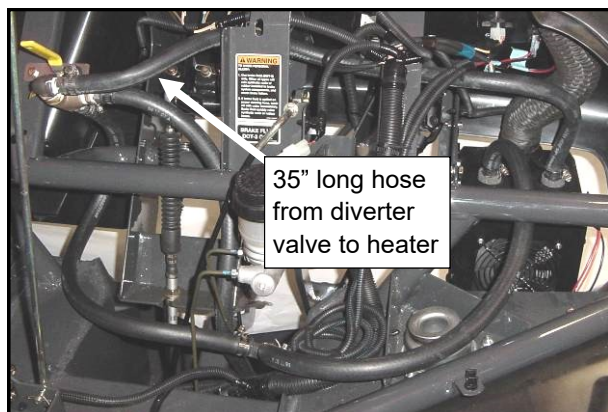


Fig. 3.10 (view from front of vehicle)

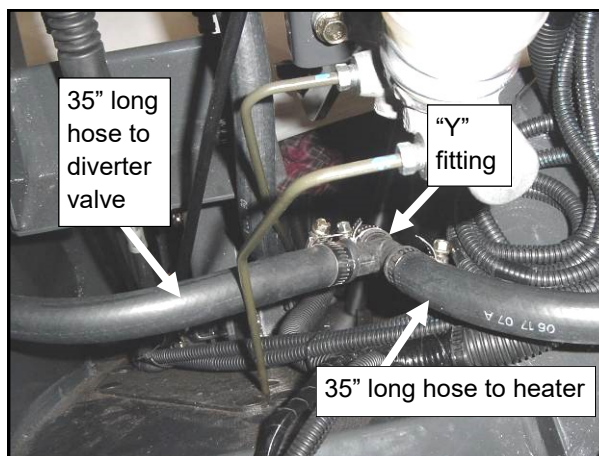


Fig. 3.9 (view from front of vehicle)

FLOW DIAGRAM

3/8" diameter hose (6" long)
(original equipment hose)
(ref.: pressure line) (color: black)

5/8" to 3/8" reducer

3/8" diameter hose (6" long)
(new) (supplied in kit)
(ref.: return line) (color: red)

5/8" to 3/8" reducer

5/8" diameter hose (52" long)

5/8" "Y" fitting

RTV 500
Heating
Unit

5/8" diameter hose (72" long)

5/8" diameter hoses (each 35" long)

5/8" diameter hose (35" long)

diverter valve

REF.: FRONT OF VEHICLE

FLOW DIAGRAM

4. INSTALL VENT

4.1 Per figures 4.1, 4.1.1, and 4.1.2, drill a 2-1/16" hole through the driver's side dash as shown. Per fig. 4.1, place the round vent upside down on the **flattest** part of the cowl and with a pencil, trace around the diameter leaving a guide line for drilling. Center of hole to be 2" forward from ridge "A" and 1-1/2" towards the driver's side of line "B" (see fig. 4.1.2 for clarification of line "B"). Note: white lines drawn on the photo represent where to measure from. Caution: before drilling, check underneath plastic cowl to be sure there is clearance for the hole saw. Note: if only a 2" hole saw is available, use a standard hand file to remove more material in four places for the vent retaining tabs (see fig. 4.1.3). Test fit the round vent frequently before removing too much material. Ref.: approximately 1/32" per side.

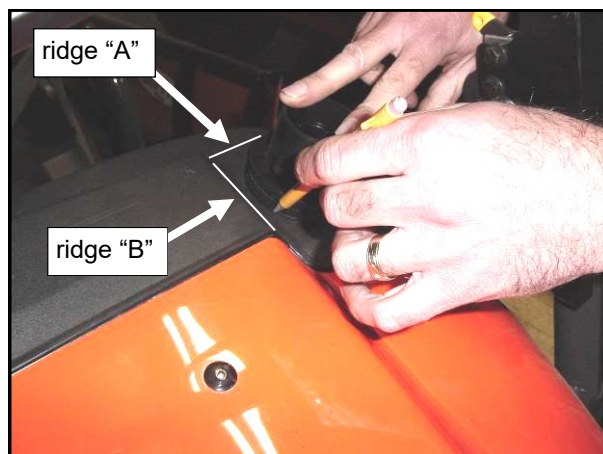


Fig. 4.1 (view from front center of vehicle)

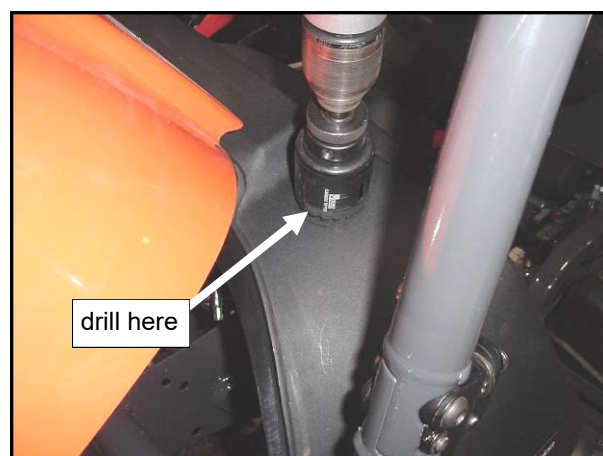


Fig. 4.1.1 (view from front of driver's side)

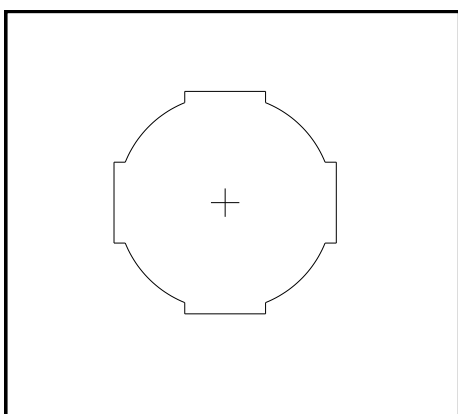


Fig. 4.1.3 (file four places if necessary)

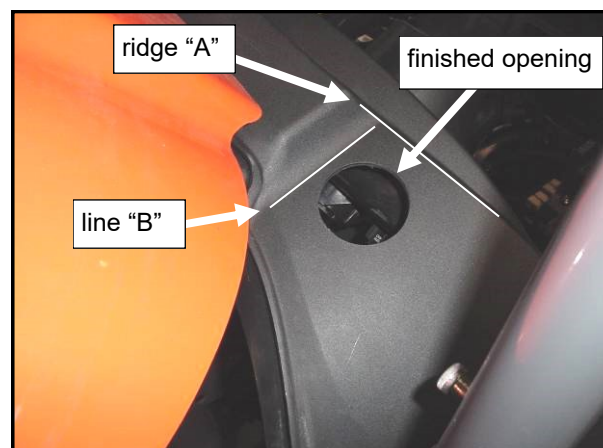


Fig. 4.1.2 (view from front of driver's side)

4. INSTALL VENT (cont'd.)

4.2 Per fig. 4.2, install the round vent as shown. Note: if the hole is too tight, use a standard hand file and remove more material in four specific places across from each other according to the pattern of engagement tabs on the round vent.

4.3 Per fig. 4.3, use the supplied 16" long piece of 2" diameter vent hose to connect the under side of the round vent to the top of the heating unit. Use one cable tie at each end to secure it in place.

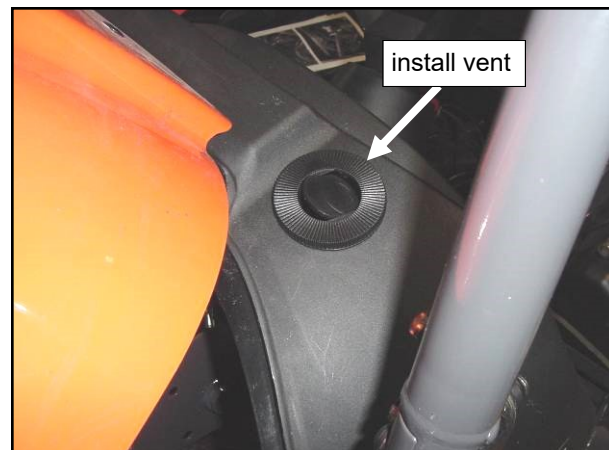


Fig. 4.2 (view from front of driver's side)

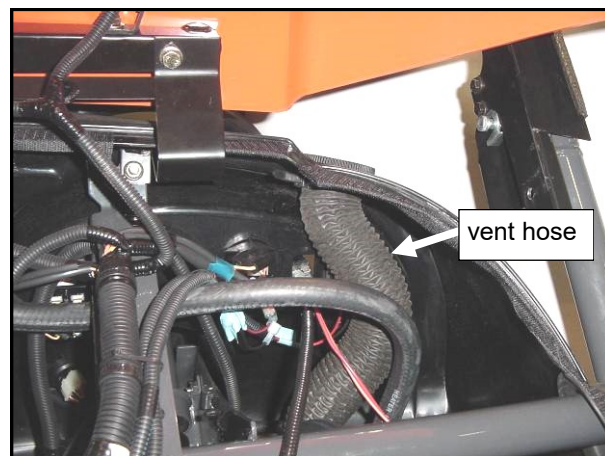


Fig. 4.3 (view from front of vehicle)

5. WIRE HARNESS AND SWITCH

Note: page 15 has a full page wiring diagram for clarification.

5.1 Per fig. 5.1, orient the wire so that the piggy-back terminal is near the battery and the female push-on connector is up behind the dash on the driver's side where the switch will be mounted. From under the hood, run the piggy-back end of the wire harness down by the foot pedals, into the channel in the floor alongside the heater hoses, and leave the wire near the battery for connection to a relay in step 7.4.

5.2 Per fig. 5.2, remove and discard one of the rectangular blanks in the dash as shown. If both rectangular blanks are occupied with toggle switches from other accessories, one toggle switch can be relocated in the dash by drilling a 1/2" hole and re-installing it there. Before drilling, make sure there is clearance on the back side of the dash. Feed the two heater wires through the rectangular opening first (one orange and one red). Connect the red heater wire to the top right side of the switch (terminal 8). Connect the orange heater wire to the lower right side of the switch (terminal 3).

5.3 Per fig. 5.3, feed the end of the newly installed long wire harness through the rectangular opening and connect to the middle right side of the switch.

5.4 Per fig. 5.4, push the rectangular switch into the rectangular opening in the dash until it is fully engaged.

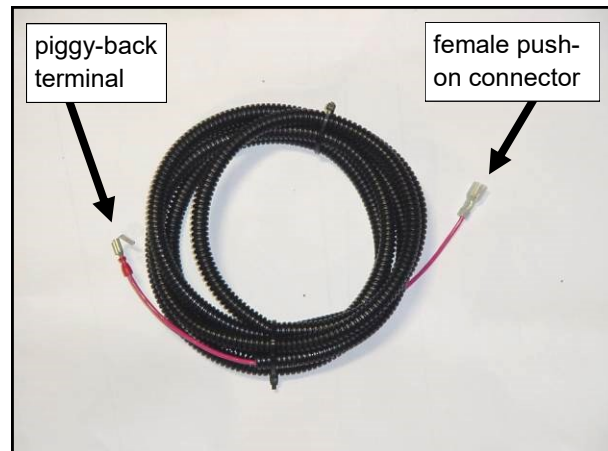


Fig. 5.1 (wire harness 1 of 2) (for switch)



Fig. 5.2 (view from driver's side)

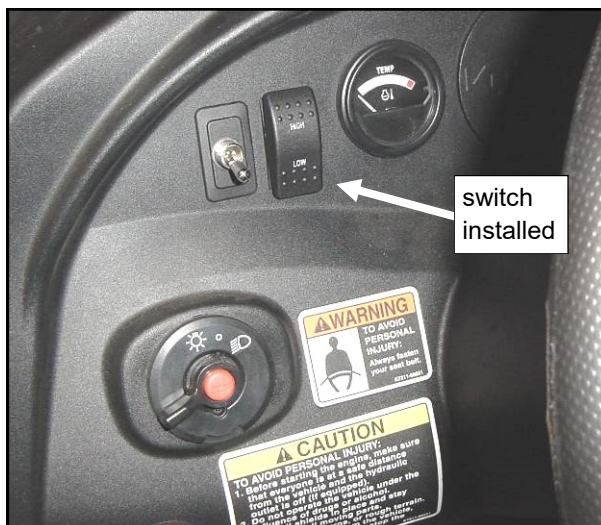


Fig. 5.4 (view from rear of driver's side)



Fig. 5.3 (view from driver's side)

6. REINSTALL FLOOR

6.1 Reinstall the floor plate by engaging the two front hold-down tabs and the two original equipment bolts removed in step 1.5. Use caution to avoid damaging the factory installed weldnuts. Begin the bolt engagement by hand to avoid or correct potential cross threading.

6.2 Lay the rubber floor mat back down and install the eleven (11) new plastic pine tree clips.

6.3 Reinstall the plastic seat support using the five (5) original equipment bolts removed in step 1.3. Use caution to avoid damaging the factory installed weldnuts. Begin the bolt engagement by hand to avoid or correct potential cross threading.

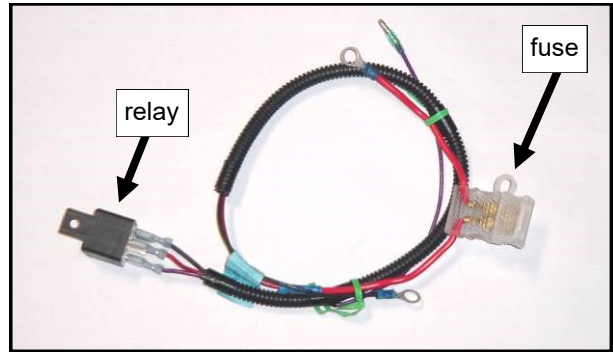


Fig. 7.1 (wire harness 2 of 2)

7. RELAY AND FUSE

7.1 Per fig. 7.1, install the final wire harness. Note: if installing more than one accessory, you will only need to install one of these wire harnesses which has the relay and fuse. Discard these specific additional wire harnesses that are supplied with each separate accessory kit.

7.2 Per fig. 7.2, mount the relay to the inside front wall of the plastic seat support in the battery compartment area as shown. Orient the relay so the prongs are pointing up.

7.3 Per figures 7.2 and 7.3, determine where to drill a 7/32" diameter hole. Use the supplied #10-32 x 5/8" long bolt and locknut. The locknut is to be on the inside towards the battery.

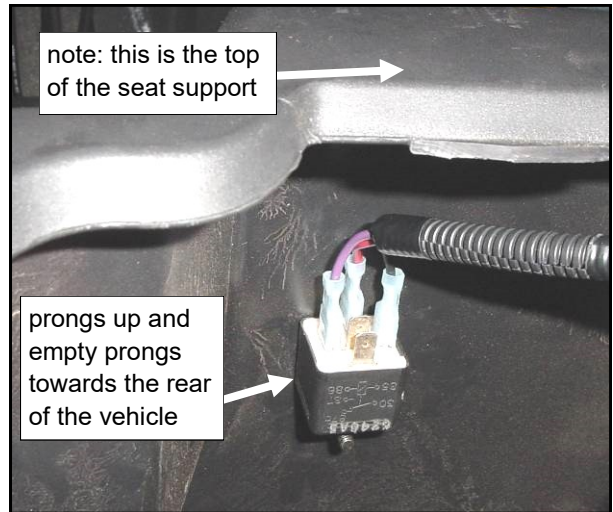


Fig. 7.2 (view from rear of vehicle)



Fig. 7.3 (view from driver's side)

7. RELAY AND FUSE (cont'd.)

7.4 Per fig. 7.4, connect the piggy-back terminal on the end of the switch harness (the harness that runs under the floor mat) to the rear-most available prong. If the prong is already occupied by another accessory, connect to the piggy-back terminal that is already in place. Orient the wire so the bent male push-on connector points to the rear of the vehicle (this will make connection easier if adding on additional accessories now or in the future). Note: if there are multiple piggy-back connections, one wrap of electrical tape around the terminals will secure them in place. See figure 7.4.1.

7.5 Neaten up the wires in the battery area and tie them off to safe locations using the supplied cable ties. Connect the ring terminal on the thin black wire from harness 2 (with relay and fuse) to the bolt on the negative wire clamp. Connect the ring terminal on the red wire to the bolt on the positive wire clamp.

7.6 Per fig. 7.6, carefully cut through the blue tape to expose two female bullet connectors. Connect the new purple wire with the male bullet terminal to the female bullet connector on the red/green wire found under the blue tape (these are key-controlled wires).

7.7 Turn the key to the "on" position. Test the rocker switch. If the switch works, button everything up. Cable tie any loose wires and/or hoses at desired locations.

7.8 Re-install the seat belts. Retighten the bolts to Kubota factory specifications to ensure original equipment safety standards.

7.9 Re-install the seat with the clips removed in step 1.1.

7.10 If removed, re-install the cab floorboard on the driver's side.

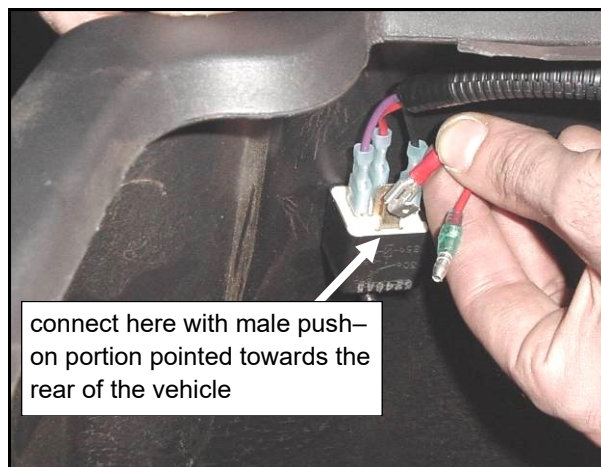


Fig. 7.4 (view from rear of vehicle)

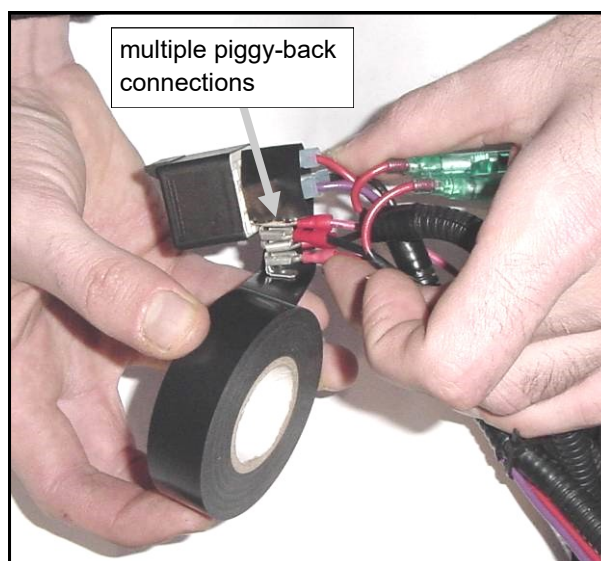


Fig. 7.4.1 (wrap with tape)

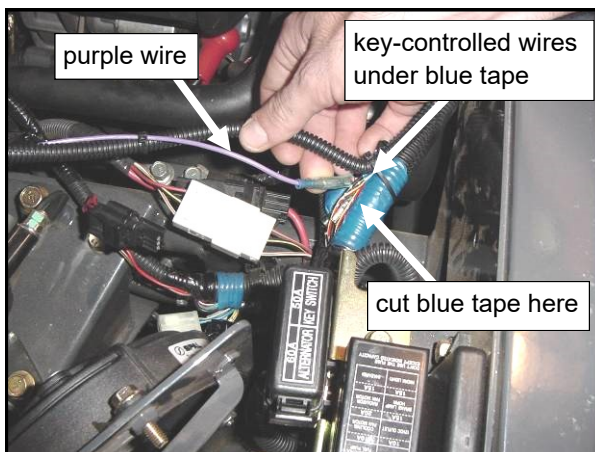
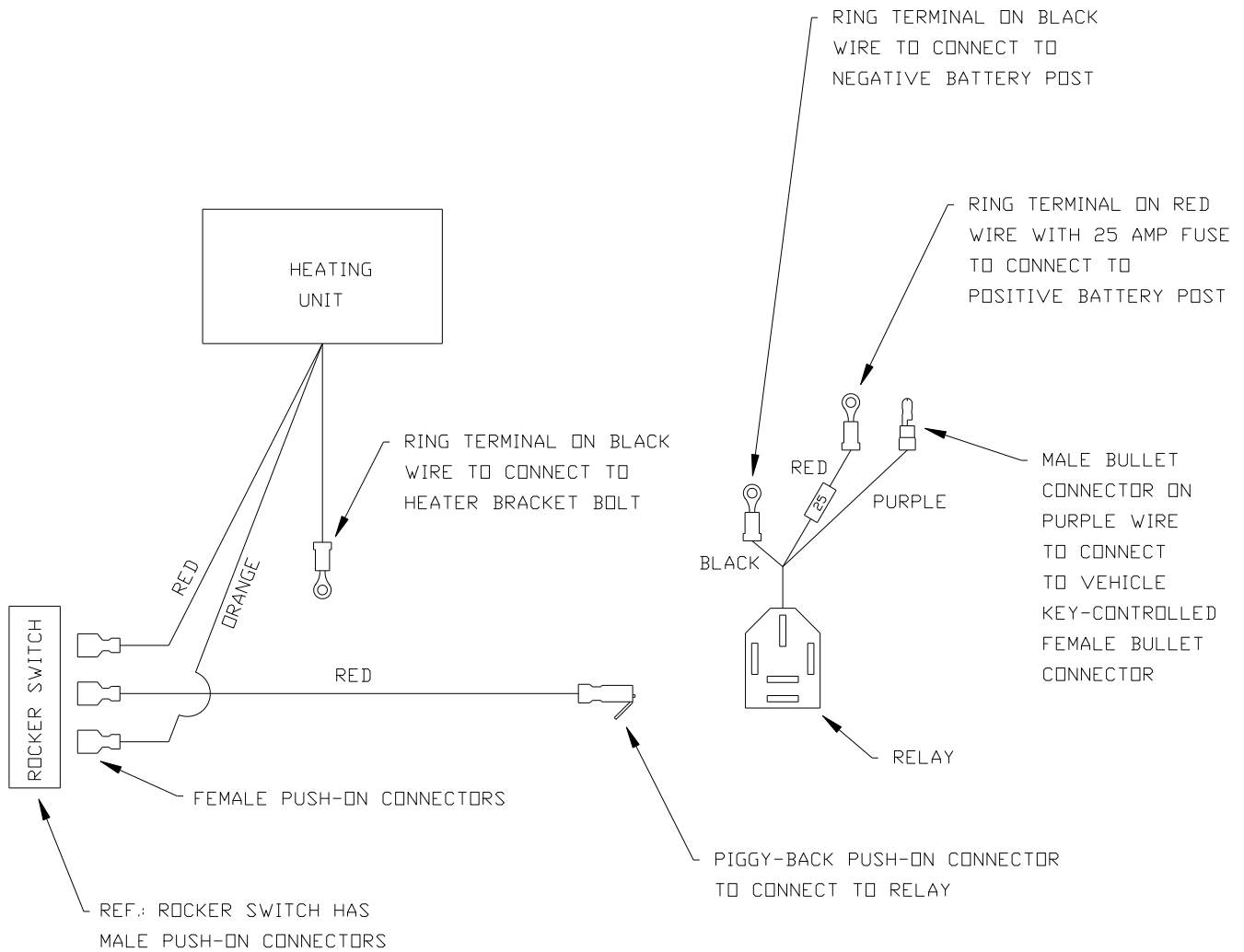


Fig. 7.6 (key-controlled wire)

WIRING DIAGRAM



WIRING DIAGRAM



CAUTION

To avoid personal injury:

- Wear hand and eye protection due to possible contact with hot fluid and/or steam.

8. RE-FILL COOLANT

8.1 Refill cooling system. Start engine and check system for leaks. Run the engine at full throttle with the heater on, the diverter valve handle down as shown in fig. 8.1, and the radiator cap off. Allow engine to warm up until thermostat opens (the upper radiator hose will get hot). The heater and heater hoses should already be warm at this point. If one of the heater hoses is cooler than the other, then there is still air trapped in the heater. In this case, put the radiator cap back on and temporarily place clamp on left radiator hose to force coolant through the heater. Remove clamp once hoses reach the same temperature. Allow engine to cool, remove radiator cap and top off the radiator. Note: with the handle in the up position, the diverter valve quickly converts the heater into a summertime blower by preventing hot coolant from flowing to the heater core.

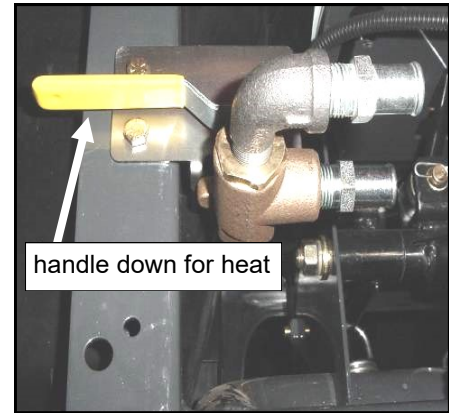


Fig. 8.1 (view from front of vehicle)