

Ranger *Wave*



WPS-104 Heater

**Installation
Instructions**

For 2007 vehicles see page 15

WPS 104 HEATER SYSTEM INSTALLATION INSTRUCTIONS

If this is a complete installation of top, windshield and heater system, for ease of installation, it is recommended that the heater be installed first.

1. Remove the left and right side kick panels. This will require drilling out 2 rivets on each side panel. (Series 11 only.)

Note: To save several steps on the future installation of our WPS door system complete the following. Remove the 2, per side, 3/8 X 3/4 inch bolts going from behind the kick panel into the front wheel well, replace them with the 3/8 X 1 1/4 inch SS Button Head Cap Screws, provided in the kit. This is where the bottom of our door hinge bracket will attach to the frame.

See page 12 for tips for "04 & "05" Vehicle

Drill out 2 7/8" inch hole in plastic between air breathers

Use the protector springs where these hoses go through new hole

Run 3/4 hose from bottom of heater core through this hole.

Unhook the top radiator hose.

Use the 3/4 inch nipple to tie this hose to the one coming from the bottom of the heater core.

Run the other 3/4 hose direct from the top of heater core to the top radiator connection.

At the same time drill an extra hole in one breather that will now have to be turned sideways to accommodate the heater blower assembly. See additional 04-05 installation guide.

This way you will not have to remove center floor board.

Make sure there are no kinks in the hoses.

2. Raise the hood and remove both air filter inlets.

3. Behind the air inlets, locate the square steel channel cross frame. Most items behind the dash are mounted to this frame. Locate the two brackets that the shifting lever and the differential locking lever are attached to. (On the 6X6, there is only the shifting lever.) The brackets are just to the passenger's side (right) of the steering rod mounting bracket.

The space between the shifter bracket and locking bracket is approximately 3 inches; this is where the windshield defroster unit will be mounted. **REF. PHOTO # 1**



PHOTO 1

SERIES 11 MACHINES: Location of the opening for the defroster. **REF. PHOTO # 2 TO AID LOCATION**

Place masking tape over the dash area to the right of the driver's side hood hinge.

Using the right side of the driver's hood hinge, measure over to the right 7 13/16 inches and place a mark on the masking tape. This will become the center line for the defroster cover. The defroster cover is 7" long; mark a center point at 3 1/2 inches.

If the windshield is not installed, use the front edge of the dash as a straight reference line. Take a square and mark a center line on the masking tape at the 7 13/16 inch mark.

If the windshield is installed, use the back side of the windshield frame as a straight reference line. Take a square and mark a center line on the masking tape at the 7 13/16 inch mark.

Place the defroster grate cover on the ledge, centering it on the 7 13/16 line. Align the cover with the front edge of the ledge; it needs to be close to the edge without overhanging. The end of the cover closest to the steering column should be just at the beginning of the radius going up from the ledge. Using the two holes in the cover, mark them on the masking tape. Remove the cover; there should be 3 3/16 inch between the center line and each of the two cover holes just marked.

Draw a line connecting the centers of the two holes marked from the cover. Measure in from the center of each hole 11/16 inch and place a mark on the center line.

Note: To insure the proper location for the defroster opening, complete the following: At the intersection of the two center lines, drill a 1/8 inch hole through the dash. Using a long drill bit or a straight rod or wire, insert it through the hole, making sure it is hanging straight down. Under the hood, make sure the rod is centered between the shifter bracket and the differential lock bracket. Refer to item #3 as this is a critical location. If it is not centered between the brackets, adjust as necessary. You do have about 1/4 inch on either side to work with. What we are looking for here is a major misalignment. If it is good, go to the next step. REF. PHOTO # 1, SPACE IS LIMITED.

Using a 7/8 inch hole saw or spade bit, drill through the dash panel, centered on the mark just made. After both holes are drilled, remove the material between the holes, maintaining the 7/8 inch width.

SERIES 10 MACHINES: Location of the opening for the defroster. REF. PHOTO # 2 TO AID LOCATION.

Series 10 machines do not have the step down shelf on the dash

Place masking tape over the dash area to the right of the driver's side hood hinge.

Using the right side of the driver's hood hinge, measure over to the right, 7 5/8 inches and place a mark on the masking tape. This will become the center line for the defroster cover.

The defroster cover is 7 inches long; mark a centering point, on the edges, at 3 1/2 inches.

If the windshield is not installed, use the front edge of the dash as a straight reference line. Take a square and mark a center line on the masking tape at the 7 5/8 inch mark.



Photo 2

If the windshield is installed, use the back side of the windshield frame as a straight reference line. Take a square and mark a center line on the masking tape at the 7 5/8 inch mark.

Place the defroster grate cover on the ledge, centering it on the 7 5/8 inch line. Align the cover parallel with the front edge radius of the dash; it needs to be close to the edge without overhanging. Using the two holes in the cover, mark them on the masking tape. Remove the cover; there should be 3 3/16 inch between the center line and each of the two cover holes just marked.

Draw a line connecting the centers of the two holes marked from the cover. Measure in from the center of each hole 11/16 inch and place a mark on the center line.

Note: To insure the proper location for the defroster opening complete the following: At the intersection of the two center lines, drill a 1/8 inch hole through the dash. Using a long drill bit or a straight rod or wire, insert it through the hole, making sure it is hanging straight down. Under the hood, make sure the rod is centered between the shifter bracket and the differential lock bracket. Refer to item #3 as this is a critical location. If it is not centered between the brackets, adjust as necessary. You do have about 1/4 inch on either side to work with. What we are looking for here is a major misalignment. If it is good, go to the next step.

REF. PHOTO # 1 SPACE IS LIMITED

Using a 7/8" hole saw or spade bit, drill through the dash panel, centered on the mark just made. After both holes are drilled, remove the material between the holes, maintaining the 7/8 inch width.

4. After the slot has been cut out, attach the short piece of 2" air duct to the defroster and secure with a cable tie, then mount the defroster and the grate cover to the dash panel.

5. Locate the position for the kick panel outlets using the template provided. Use a 2-1/16 inch hole saw to make the openings. The outlet you are installing has a 2 inch dia. OD. Push the outlets through the panel; it will lock in place. Install screws in flange to keep the outlet from rotating. **REF. PHOTO # 3**



Photo 3

6. Cut the longer piece of 2" air duct into 2 equal lengths. Attach the air duct to the two side panel outlets and secure with cable ties. The heater core attaches to the square steel channel cross frame just to the right of the parking break mechanism. **REF. PHOTO # 4**



Photo 4

Route the driver's side air duct behind the dash panel, under the small storage box. Secure with a cable tie to the lower square tube cross frame.

Route the passenger's side air duct up and over the top of the glove box. Remove the cup holder and push the air duct behind, up against the dash panel. Snap the cup holder back in place; this will secure the air duct in place.

Note: Series 10 machines will route the passenger's side air duct along the upper cross frame and secure with cable ties

Attach the short air duct to the defroster and secure with a cable tie; route it over the parking brake attachment bracket.

7. Remove the center floor pan.

8. Cut the heater hose provided in the kit into 2 sections, one being 4 ½ feet and the other 5 ½ feet.

Under the hood, between the brake master cylinder and the left side air intake, you will see where the steering control rod, shifter linkage, and a wire bundle pass between the outer floor panel and inner floor board panel. This is where the 2 heater hoses will pass. Push both hoses through into the center floor board cavity, about even with the two factory splices. 9. On the heater core, attach the two flat mounting plates.

Make sure the flanges are facing away from the heater box.

Rest the core on the lower cross frame and attach the three air ducts to the heater box. Put the defroster on the center outlet. Secure using cable ties provided in kit. It is easier at this point than doing it after the heater box has been attached.

10. With the two steel straps, carriage bolts and Nyloc nuts, attach the heater box to the upper square tube cross frame, with the air outlets facing the dash panel. Bring the carriage bolts up through the slots in the flanges, then through the straps. Do not tighten.

11. Position the heater box along the upper cross frame. It does not set square with the cross frame. The passenger's side will have about 1" of the box exposed forward of the tube; the driver's side, about 1-3/4 inches. **REF. PHOTO #5**



PHOTO 5

THE MAIN CONCERN IS TO ASSURE NOTHING IS RUBBING OR INTERFERING WITH ANY CONTROLS OR CABLES.

NOTE: On "05" models place the side mounting bracket with ears facing "in" toward center of Heater.

12. Remove the heater hose hold down clamp in the center floor area. Using vice grips or any suitable clamping device, close off only the heater hose, closest to the driver's side (left), on both sides of the splice connector. **REF. PHOTO # 6**

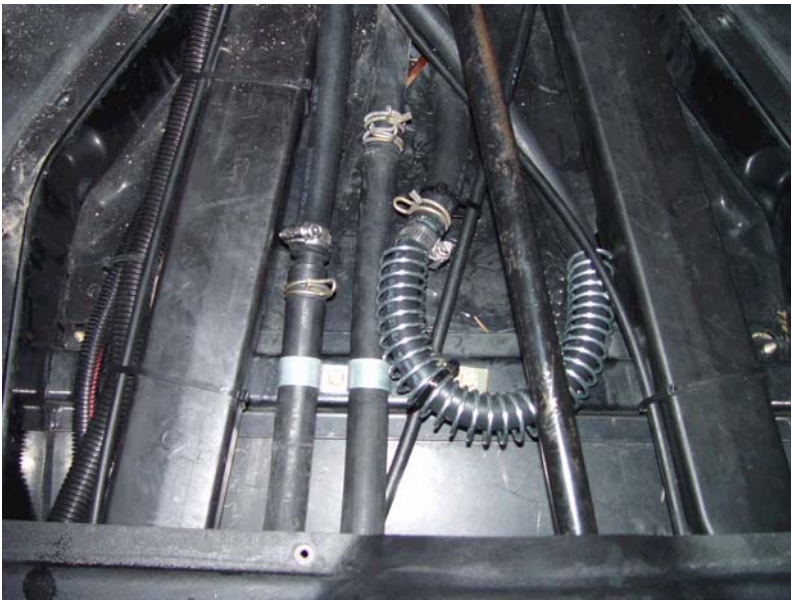


Photo 6

Take apart the clamped heater hose connection. Connect the hose coming from the engine to the shorter of the two hoses you installed from the heater core; tighten clamps. **REF. PHOTO # 6**

On the longer hose coming from the heater core, install one piece of the wire spring guard. The wire spring guard is used to support the hose when you make the 180 deg bend. Using the 3/4 inch splice connector, from the kit, install one end into the open factory heater hose coming from the radiator and the other end into the shorter hose coming from the heater core. Position the wire spring guard on the hose so it covers the radius of the bend. Tighten clamps. Position the 180 deg. Loop under the drive shaft and secure it with cable ties to keep it in place. **REF. PHOTO # 6**

13. Remove the clamps from the heater hose. Position all of the hoses so they are not rubbing, making sure nothing is up against the front drive shaft. Replace the factory heater hose clamp. Using plastic cable ties, secure all of the hoses to the structure around the left side air intake tube. **REF. PHOTO # 6**

14. The two remaining wire spring guard will be placed over the heater hoses where it makes a sharp bend back to the core.
15. At the heater core, the **SHORTER** heater hose loops around the parking brake cable housing and behind where the driver's side air box will sit; it attaches to the **BOTTOM FITTING** on the core. Trim length to fit. Place the wire spring guard over the heater hose and attach to the bottom fitting, making sure you do not collapse the hose by making too sharp of a bend. Tighten the hose clamp.

REF. PHOTO # 5

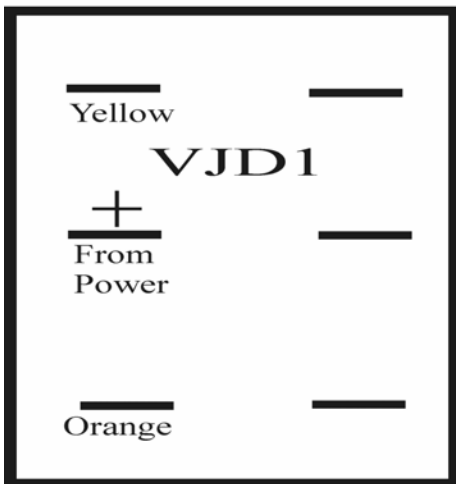
16. Loop the **LONGER** hose between the throttle cable and brake master cylinder, following the same path as the lower hose. Trim length to fit. Place the wire spring guard, over the heater hose and connect to the **UPPER FITTING**, making sure you do not collapse the hose by making too sharp of a bend. Do not tighten clamp as this will be where you bleed air out of the coolant system.

REF. PHOTO # 5

ELECTRICAL:

17. If you have installed the **WPS106, FRONT ACCESSORY FUSE PANEL**, your power supply and ground will be made from this panel. Install the rocker switch in one of the unused slots on the dash panel. Cut the wires to length and install spade connectors. Place the wires in the spiral protection shield. Follow the diagram as to the proper location of each Wire to the back of the switch.

Back of Switch



Red from heater is Medium and won't be used.
Black from heater is Ground

Note: The Red wire coming from the heater blower motor is not used in this installation. It can be capped.

18. If the **WPS106 is not installed**, complete the following: It is recommended that an in-line fuse holder, with at least a 10 amp fuse, be used for this installation

From the Hour Meter, unplug the Pink wire (Power), plug a piggy back connector into the Hour Meter with the Pink wire, then a jumper wire to the +12 connection on the back of the rocker switch. This will be your 12 volt power while the engine is running. If the engine is not running, there will not be power to the blower motor.

The Black wire (Ground) from the blower motor will connect to the extra spade connection on the cigarette lighter Ground Line. If there is no extra connector, use any suitable ground connection.

Note: Series 10 machines will have to use a suitable ground connection.

Coolant system bleeding:

Top off the radiator and make sure there is coolant in the overflow reservoir.

Run the engine until the thermostat opens. Loosen the **Top** hose on the heater core; this will be your air bleed. You will lose some fluid but you will be able to remove the air from the system.

Check the coolant level in the reservoir often and add if needed.

The efficiency of the heater and cooling system depends on all the air being out of the system. It is recommended that the coolant level be checked often during the first few hours of operation. If need be, bleed the system again

After that, everything will be ready to go. **REF. PHOTO #7**

PRICES AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITH OUT PRIOR NOTICE.

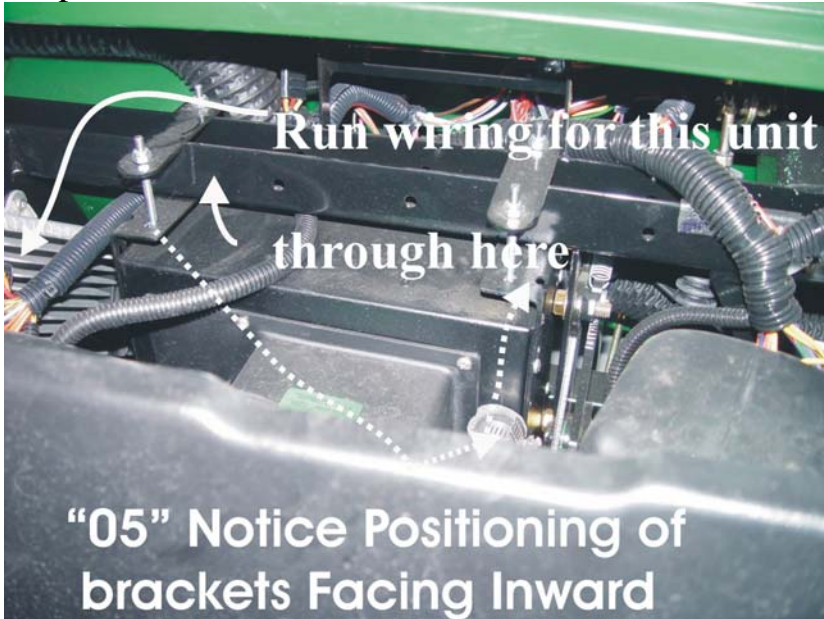


Photo 7

Updates
For
Installation
Of
WPS-104
04-06
Vehicle

WPS-104 in "05" Vehicles

When installing in the "05" Vehicle the heater mounting brackets must be installed as shown in the picture below.



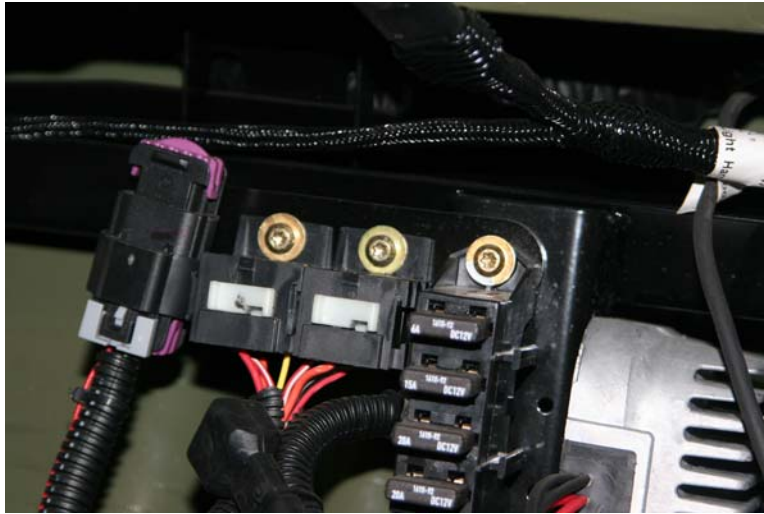
Remove the storage basket that is located under the hood. Remove the air intakes to give yourself some elbow room.

Located between the air intakes if you reach up from the under side you will feel an opening in the steel of the plastic covered area. Cut out this area between the air intakes (2 7/8" hole saw works good) this will give you an area to run the heater hoses.

Remove the upper radiator hose and use a coupler to bring the hose up to the lower core connection on the heater. Route a hose from the upper core on the heater down to the radiator. Be sure to use the hose protectors where you go through the hole between the air intakes.

When you put the air breathers back in place, you will have to turn the passenger side breather sideways due to space the heater takes up. When you put the storage basket back in place you will block the air coming into the breather. Therefore it is advisable to drill a new hole in the end of the breather as shown in picture below.





The metal brackets included in this heater kit are for Relocating the relays in the 2007 models.

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