'81-'91 GM R & V Series

Squaremax Cooling System Installation Instructions

Revision 00 (10/18/19)

Package Contents

- *(1) '81-'91 Squaremax Radiator*
- *(1) '81-'91 Squaremax Intercooler*
- *(1) D/S Radiator Drill Fixture*
- *(1) P/S Radiator Drill Fixture*
- *(2) Intercooler Drill Fixtures*
- *(6) Radiator/Intercooler Isolators*
- *(1) Radiator Top Clamp*
- *(2) 10-32 S/S Button Head Allen Screws*
- *(2) ½"-13 x 5" Hex Flange Bolts*
- *(2) ½" HD Washers*
- *(2) ½"-13 Hex Flange Nuts*

Optional Items

- *Dual Electric Fan Shroud*
- *16" Spal Puller 10 Blade Electric Fan*
- *175-195 Degree Harness Kit*
- *Mechanical Engine Driven Fan Shroud*
- *Squaremax Air Conditioning Condenser*
- *Allison 1000 Series Transmission Cooler*

Tools Required

1. ¼" spot weld drill bit
2. ¼" stub drill bit
3. 1 3/8" maximum diameter step drill bit
4. 3/8"-1/2" corded or cordless drill
5. Sawzall
6. Sawzall metal cutting blades
7. Air compressor & air hose
8. Air nozzle
9. ¼" straight die grinder
10. ¼" 90 degree die grinder
11. ¼" cut-off wheel mandrel
12. ¼" abrasive cut-off wheels
13. 1" sanding drum arbor
14. 1" 60 grit sanding drum
15. 2" disc sander mandrel
16. 2" 60 grit sanding discs
17. 2" red Scotch-Brite pads
18. Silver Sharpie
19. Safety glasses

Core Support Modifications

1. Using a silver Sharpie mark all of the spot welds that are holding the vertical support bracing on the rear side of the core support just inward of the headlight assemblies.

2. Using the ¼" spot weld drill bit and drill motor, drill each spot weld until weld is removed. If you are not familiar with a spot weld drill, they do not drill a through hole. This makes this process much easier with a better end result.

3. Once all of the spot welds are removed, use a flat narrow chisel and carefully pry the vertical support bracing flanges to loosen them from the core support. Remove the vertical support flanges and discard. Using the ¼" 90 degree die grinder and 60 grit sanding disc sand all spot welds and burrs flush. If you would like you can smooth out the grinding marks using the 2" Scotch-Brite discs, they work fantastic!

4. *Next, locate the D/S radiator drill fixture and one of the intercooler drill fixtures. You will notice two arrows pointing to the upper right hand corner of the D/S radiator drill fixture. The intercooler drill fixture is not side specific.*

5. *Place the D/S radiator drill fixture on the D/S lower flange of the core support and clamp using two Vice Grip Clamps. Then place the intercooler drill fixture and clamp using two Vice Grip Clamps as well (see photo below).*

6. Center punch and drill a ¼" pilot hole through the ¼" diameter hole in the D/S radiator drill fixture and intercooler drill fixture.
7. Next, using your drill motor and the 1 3/8" step drill bit open up both of the hole diameters to 1 3/8"
8. Lastly using the ¼" straight die grinder, 1" drum sanding arbor and 1" 60 grit sanding drum, open the 1 3/8" diameter hole diameter to match the maximum diameter of the D/S radiator drill fixture and intercooler drill fixture. You may need to break out the half-moon slits prior to beginning the sanding process. It makes it much easier to see while sanding.
9. After completing the previous step, deburr any sharp edges to alleviate any injuries during the final assembly process.
10. Next, locate the P/S radiator drill fixture and the other intercooler drill fixture. You will notice two arrows pointing to the upper right hand corner of the P/S radiator drill fixture. The intercooler drill fixture is not side specific.
11. Place the P/S radiator drill fixture on the P/S lower flange of the core support and clamp using two Vice Grip Clamps. Then place the intercooler drill fixture and clamp using two Vice Grip Clamps as well (see photos below).
12. Center punch and drill a ¼" pilot hole through the ¼" diameter hole in the P/S radiator drill fixture and intercooler drill fixture.
13. Next, using your drill motor and the 1 3/8" step drill bit open up both hole diameters to 1 3/8"
14. Lastly using the ¼" straight die grinder, 1" drum sanding arbor and 1" 60 grit sanding drum, open the 1 3/8" diameter hole diameter to match the maximum diameter of the P/S radiator drill fixture and intercooler drill fixture. You may need to break out the half-moon slits prior to beginning the sanding process. It makes it much easier to see while sanding.
15. After completing the previous step, deburr any sharp edges to alleviate any injuries during the final assembly process.
16. Now that the core support has been modified you can clean the modified core support and all surrounding areas with a wax & grease remover. If you are planning on powder coating the core support you may do so at this time.
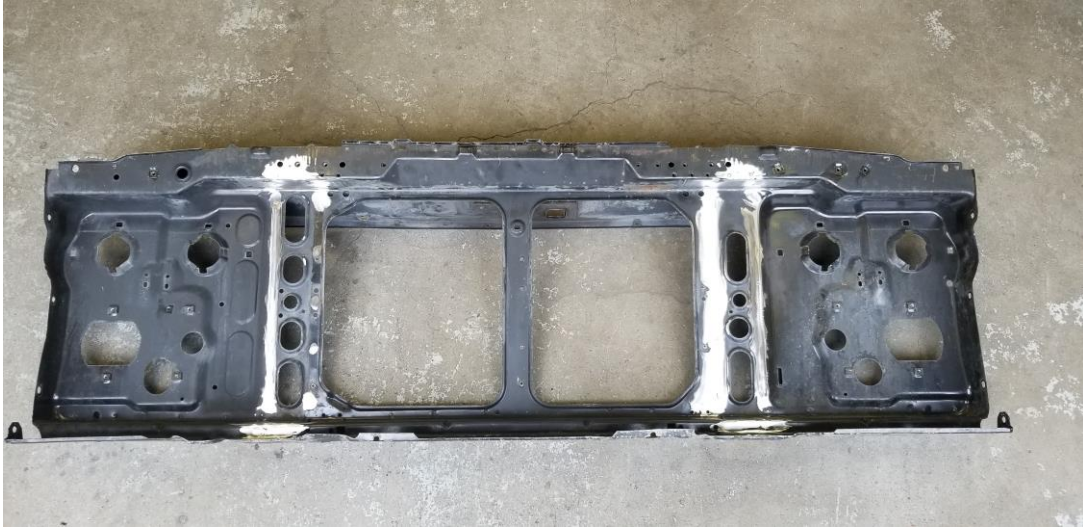
17. Prime & paint bare metal surfaces.
18. Install the four (4) radiator/intercooler isolators into the 1 3/8" holes you drilled in the lower radiator support flange.
19. Set up a suitable work surface and cover with a moving blanket and lay the core support face down.
20. Install the entire Squaremax Cooling System Package into the core support by lining up the four (4) mounting bosses located on the bottom of the intercooler and radiator combined and placing them into the center of the radiator/intercooler isolators. Please note that the Squaremax Cooling System weighs in at over 90 lbs so it's a good idea to have someone help you install the Squaremax Cooling System to prevent damage to the core and/or finish during the installation process.
21. Install the last two (2) radiator/intercooler isolators upside down onto the two (2) upper mounting bosses on the radiator (see last photo).
22. Next install the radiator top clamp over the two (2) upper mounting bosses on the radiator and slowly tilting it downward into position. Fasten using the four (4) OEM 5/16"-18 body bolts and torque to manufactures specifications.
23. Lastly install the two (2) 10-32 Button Head Allen screws through the two horizontal slots located in the top flange of the core support and thread them into the two (2) bosses that are tack welded to the downward facing flange on the radiator top clamp. DO NOT OVERTIGHTEN!
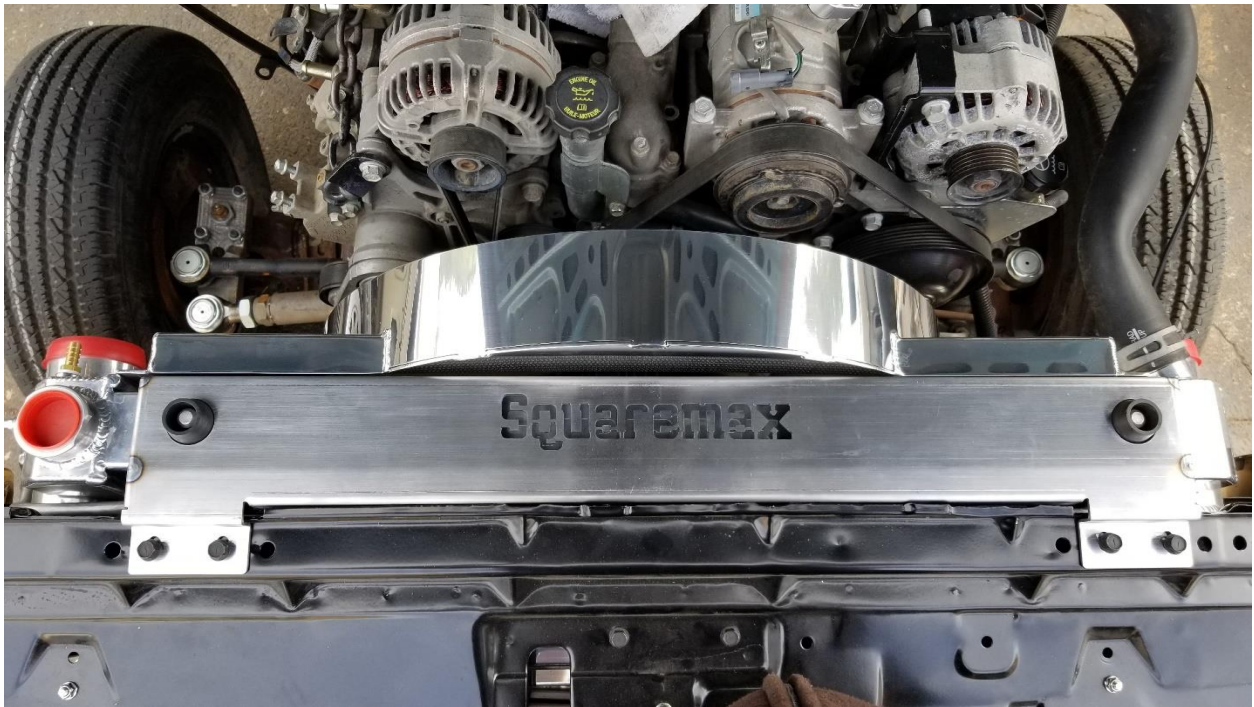
Radiator Hoses

1. If you are using a '01-'04 LB7 or '05 LLY Duramax Diesel engine then you will use the OEM upper hose, lower hose and coolant tank assembly from that same application.
2. If you are using a '06-'07 LBZ or '08-'10 LMM Duramax Diesel engine then you will use the OEM upper hose, lower hose and coolant tank assembly from that same application. The upper radiator hose is a direct fit, however the '01-'05 LB7 or LLY upper radiator hose can be used if you have one. The lower radiator hose will need to be slightly modified by cutting off the plastic coupler that connects the hose to the radiator. Use the edge of the plastic coupler as a guide and carefully cut it off. Once the coupler is removed the hose is the correct size and will fit the '01-'04 LB7 or '05 LLY radiator. You will need a stainless steel worm drive clamp to secure the hose to the lower radiator output.
3. If you are using a '11-'16 LML Duramax Diesel engine then you will use the OEM upper hose, lower hose and coolant tank assembly from that same application. The upper radiator hose is a direct fit. The lower radiator hose will need to be slightly modified by cutting off the plastic coupler that connects the hose to the radiator. Use the edge of the plastic coupler as a guide and carefully cut it off. Once the coupler is removed the hose is the correct size and will fit the '01-'04 LB7 or '05 LLY radiator. You will need

a stainless steel worm drive clamp to secure the hose to the lower radiator output.

Coming Soon!

We are designing charge tubes for this application that will be a bolt-in affair. Once these products are completed we will load them on to our online store and will be available for purchase.   If you have any further questions, please visit the Contact Us Page on our website and schedule a telephone consultation. Thank you again for your business and support from the staff of Precision Fabrication Plus, Inc.!