



2255 AGATE CT. SIMI VALLEY CA. 93065  
Tel: (805) 581-0333 / Fax: (805) 584-1913



**“Keeping You Cool Under Pressure”**

## **Installation Instruction for '93-'94 GM 6.5L Turbo Diesel Series 3500 - 2 Wheel Drive Pickup and Series 1500, 2500, 3500 – 2 Wheel Drive Suburban Intercooler System (Part No. 2-435)**

### **TOOLS REQUIRED:**

- 1.) Normal complement of mechanic's hand tools
- 2.) Electric drill
- 3.)  $\frac{1}{2}$ " and  $\frac{7}{16}$ " diameter drill bits
- 4.) Jack and jack stands
- 5.) Permatex red silicone

### **INSTALLATION:**

- 1.) Remove the following:
  - a. Brace from compressor housing to intake manifold
  - b. Plastic cover over intake manifold
  - c. Oil breather tube
  - d. Intake manifold extension casting
  - e. Convoluted air duct from air cleaner to turbo inlet
  - f. Turbo compressor housing

Remove six 8mm bolts, retaining plates and wastegate on the backside of the compressor housing. Leave wastegate rod connected to the lever arm. Tap off the compressor housing, making certain it comes off straight and does not get cocked. The compressor housing is factory-assembled with three-bond sealant so it will be hard to break free.

**CAUTION:** There is only 0.020 clearance between the housing and the impeller and if it gets cocked and angled coming off, it can bend and damage the compressor wheel.

- 2.) Remove Intake Manifold Extension and Install Modified Shortened Unit with New Gasket  
On 1994 models, remove M.A.P. sensor and  $\frac{3}{8}$ " NPT threaded sensor and install in new part. On 1993 models, plug the  $\frac{3}{8}$ " hole with the pipe plug provided and drill the other sensor hole  $\frac{7}{16}$ " diameter and tap  $\frac{1}{2}$ " NPT and plug with pipe plug provided.
- 3.) Re-install Compressor Housing  
Clean all adhesive from the groove in the back side and also on the mating plate. Apply a thin film of Permatex Red Silicone and re-install on the turbo, rotating about 120% from the original position, or to about 7:00 o'clock position. Exact position is determined by the new brace, which goes under the three top bolts and replaces the three small tabs. Once alignment is correct, re-attach the wastegate and use existing tabs under remaining bolts, tighten all bolts and retain the brace with  $\frac{5}{16}$ -18 X 1" bolt and special, heat resistant lock nut provided.



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**CAUTION:** Make sure the compressor housing goes straight on and is not cocked. After it is tight, spin the turbo to be sure it is free.

#### 4.) Relocate Battery Cable

On the right side, on top of the frame, the battery cable is retained on the inside edge of the frame with a clip and bolt. Remove it and push the cable outbound as far as possible to make space for the intercooler tubes. Drill a   ” hole and install 5/16 X 1” hex, washer-head, self-tapping bolt provided.

#### 5.) Installation of Intercooler

If your vehicle is equipped with two hooks bolted to the front bottom of the frame, remove the bolts and hooks and place the 1/8” thick intercooler mounting plates under the hooks and bolt back into position. Leave one side loose at this time. Hold the intercooler assembly into position with the angle bracket sitting on top of the plates. Loosen one piece, swing it clear and slide the intercooler up and swing the plate back. Check the position and alignment of the   ” diameter holes and tighten plate into position. If your truck has no hooks, mount the plates with bolts (7/16-14 X 1”), lock nuts and flat washers and   ” thick steel backup plates provided.

#### 6.) Bolting Intercooler Assembly to Mounting Plates

Four   -20 X   ” bolts, lock nuts and washers (for the bottom) are provided. Install and tighten them and then back off    turn.

**CAUTION:** Be sure to back off    turn, as this will provide some compliance for frame deflection to eliminate the possibility of pulling the intercooler apart.

#### 7.) Installation of Intercooler Tubes

Install existing 2   ” diameter hose and clamps on the turbocharger and insert the #1 tube from the top side. Push through the space between the frame and the engine. Install 2   ” hump hoses on the intercooler and stick tube into the left hand connection on the intercooler. Install #2 tube from top side next to #1 tube. To get this tube to go down through between the frame, engine and vacuum pump, temporarily remove the #1 tube from the hump hose and swing it upward. Tube #2 can then be attached to the right hand connection on the intercooler. Reattach #1 tube. Insert #3 tube from the top side and connect it to the manifold extension on top and #2 tube on the bottom with the 2   ” hoses and clamps provided. Position as required for best clearance and tighten all hose clamps.

**CAUTION:** Special constant tension hose clamps are provided, the same as the 2 existing factory clamps. As noted later, the crankcase ventilation system discharges oil vapor into the turbo and intercooler. The oil tends to permeate between the hose and tubes. It is therefore absolutely essential that the special clamps provided be used and torque to approximately 75 inches / lbs. to prevent the tubes from blowing out of the oil slicked hose. Also, be sure the clamp is positioned behind the bead on the end of the tube. (75 inches / lbs. is about as much torque as you can apply with a medium to large screwdriver or nut runner.)

**Note:** After two weeks of operation re-tighten all clamps



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### 8.) Battery

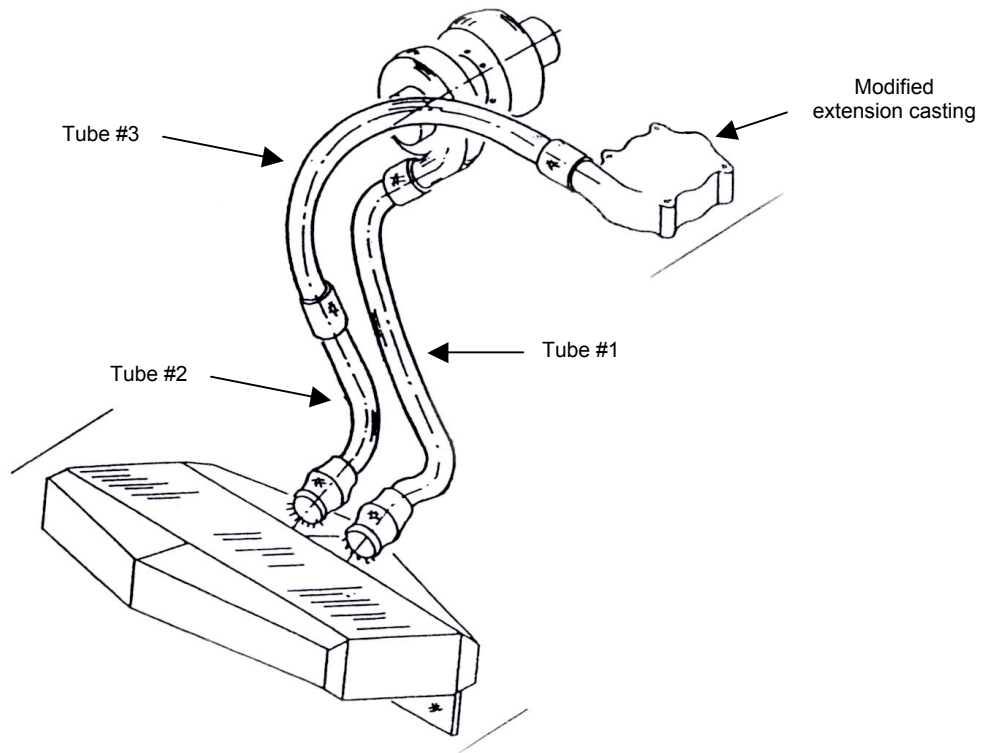
Retain battery cable and coolant recovery tank hose, using wire ties provided. Tie the battery cable so it does not rub on or interface with the #3 tube and check and tie the coolant hose if necessary.

### 9.) Manifold Cover

Re-install the plastic cover on the manifold, convoluted inlet hose and attach existing oil tube to the brace plate using  $\frac{1}{2}$ -20 X  $\frac{1}{2}$  bolts and three washers as spacers between the bracket and brace plate. Before installing, bend front of tube slightly to allow connection to the existing convoluted hose.

### 10.) Installation of Rubber Flap

Attach flap to the back side of the aluminum bracket, using 1" X 1/16" flat bar as a backing plate. Bolt up with five  $\frac{1}{2}$ -20 X  $\frac{1}{2}$  bolts and lock nuts provided. On standard height 3500 series vehicles, clearance between the road and the bottom of the flap is about 11". This length gives maximum airflow through the intercooler. If, for some reason, you want additional clearance, the flap can be trimmed 1" or 2" off the bottom, but the intercooler will be about 15% less effective.



General layout showing the relationship of the intercooler to the turbocharger and routing of tubes