TOYOTA RACING DEVELOPMENT

TRD 3.4-liter V6 Supercharger Kit Installation Instructions

1996 - 2002 4Runner
1997 - 1998 T100
1997 - 2004 Tacoma
2000 - 2003 Tundra

Supercharger Kit Part Number: PTR29-89020

IMPORTANT WARRANTY INFORMATION

Dealers – Technicians:
Failure to completely and properly fill out and mail in your customer's Warranty Registration Card may result in possible reduction or complete denial of future warranty claims.

Customer installed units:
Failure to completely and properly fill out and mail in your Warranty Registration Card may result in possible reduction or complete denial of future warranty claims.

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Installation Instructions for 3.4-liter V6 Supercharger Kit

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Section 1: Installation Preparation

Kit Contents

Qty	Description	Connection or Installation Location
1	**Supercharger / Manifold Assembly**	Main Assembly – Bolts directly to Factory Manifold
1	**Supercharger Belt**	Replaces Factory Alternator Belt
1	**Assembly, Dynamic Tensioner**	
1	**Assembly, Tensioner Plate and Pulley**	Installed on front of engine
1	**Dynamic Tensioner Plate**	Installed on front of engine
1	**Assembly, Tensioner Plate Installation Hardware**	
1	Bolt, 10 X 1.25 X 73mm Flat Head	Bolt hole A
1	Bolt, 10 X 1.25 X 130mm Flat Head	Bolt hole B
1	Washer, 10mm Flat Bolt	Hole C
1	Wiring Loom Relocation Bracket	Installed on front of engine
1	Dipstick Relocation Bracket	Installed on front of engine
1	6 X 1.0 X 12mm Bolt, Flange Head	Dipstick Relocation Bracket
1	**Kit, Literature**	
1	3.4L Installation Manual, Rev 8/10/08	
1	Gasket, 3.4 S/C	Between Factory Throttle Body and TRD Supercharger
1	EO Sticker	Place underneath Hood
1	**Warranty Card**	**Fill out and return to TRD**
1	Warranty Certificate	Place in glove compartment
1	Mirror Hanger, S/C Noise Warning	Makes customer aware of Roots-type supercharger whine
2	Sticker, TRD Logo	Place as desired on external surfaces of vehicle
3	Decal, Supercharger	Place as desired
1	Template for cutting Front Cover	Use to modify Factory Timing Belt Cover
1	Belt Routing Sticker	Under Hood
2	Premium Fuel; Sticker	Place 1 on or near fuel gauge and 1 inside of fuel filler door
3	Set, TRD S/C Emblems	Place as desired
1	**Hose, Connector and Hardware Kit**	
1	1/8” Vacuum Plug	2001 and newer Tacoma only w/Drive by wire throttle body
1	3/8” Vacuum Plug	Intake Silencer Plug
1	Vacuum Hose – ½” X 34” long	Connects Air Tube to Cam cover
1	Vacuum Hose – 1/8” X 14” long	Connects Vacuum Throttle opener to Intake Manifold
1	Wide Band Spring Clamp, Red	Secures Breather Hose at the 12mm Valve Cover Barb
4	Zip Tie, 3/16” X 7”	Retains Evaporative Canister Hose to Throttle Cable
1	Vacuum Adaptor Tee- 4WD only	See Hose Routing Schematic Figure B
1	Valve, IAC Check	Installed near IAC Valve
1	Spacer, Manifold Support Bracket	Installed between manifold & factory support bracket, driver side
1	Bolt, 8 X 1.25 X 35mm Flange Head	Secure factory support bracket thru spacer to S/C Manifold
1	Bolt, 8 X 1.25 X 170mm Flange Head	Installed thru top of S/C to Factory Manifold
1	Bracket, Accelerator & Transmission Cable	Used on all models except 4WD M/T Tacoma
1	Bracket, Accelerator Cable	Used on 4WD M/T Tacoma only
1	Bracket, Throttle Cable	2001 & newer 4Runner only w/Drive by Wire Throttle Body
2	Bolt, 6 X 1.0 X 12mm Flange Head	Used to attach Throttle Cable Brackets to S/C Manifold

Tools Recommended

Basic Tools
Basic Metric Socket, Allen & Wrenches
Pencil & Paper for drawing schematics of Cable Routing
½” Masking tape for labeling hardware, parts, etc.
2” wide masking tape for covering intake manifold
A clean Work Bench
A Parts Tray
Rags and or Shop Towels

Safety Tools
Safety goggles

Special Tools
LocTite® P/N 243
14mm Angles Flat Ratchet, Power Steering Adjuster bolt
Scribe for marking Timing Belt Cover
Coping saw for cutting Timing Belt Cover
Toyota Repair Manual (1-800-622-2033)

Section 2: Removal Procedure

A. Preparation for Removal of Stock Intake Manifold

- Before you begin, TRD recommends that you thoroughly clean the engine and engine compartment. If you don't, grease buildup on parts could become dislodged during the procedure and fall into the engine.
- Make sure the engine has cooled fully before you begin.
- To helpyou later, we suggest you draw diagrams of your engine's cable routing before you disconnectanything. You can do the same for the vacuum hoses; however, some of the vacuum connections on your stock manifold may not be the same as those on the supercharger. To ensure the proper hose connections, refer to the diagrams in the back of this manual.
- The TRD supercharger kit has been designed to reuse most of the stock nuts and bolts. Therefore, as you remove them, keep them with their components or label them for location. This will assure a faster, easier installation.

B. Removal of Stock Intake Manifold (figure 1)

1. Disconnect the battery ground cable.
2. With tape or a permanent marker, mark the **forward** edge of the power steering and the air conditioning compressor drive belts **(figure 2)**. This will ensure that the belts will be returned to their original positions and that they will rotate in the same direction. If you reverse the direction of rotation, it may cause the belts to fray.

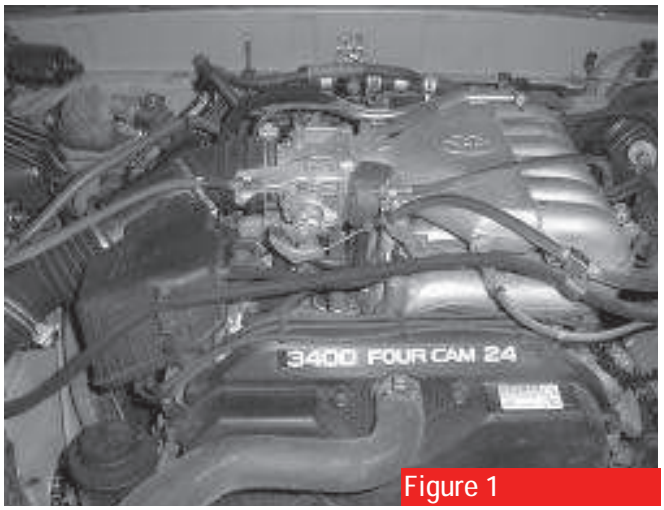


Figure 1

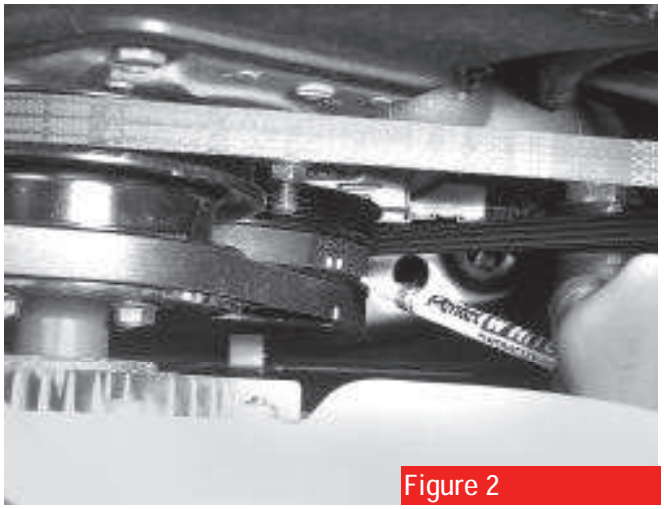


Figure 2

3. If equipped, remove the gravel guard from beneath the radiator **(figure 3)**. This will give you access to the A/C belt adjuster.

TIP: The gravel guard consists of two pieces but it's much easier to install if you remove it as a one-piece assembly.

4. Loosen the pinch nut in the center of the A/C compressor belt pulley and loosen the adjuster bolt enough to loosen the belt **(see arrow, figure 4)**.

5. Using the angled flat ratchet, loosen the pinch nut and adjuster bolt for the power steering pump.

6. Remove the two belts.

7. Loosen the alternator pivot bolt (top), pinch nut and adjusting bolt and remove the alternator belt. During the installation procedure, it will be replaced with a belt supplied with the supercharger.

8. Loosen the air intake tube clamps at the throttle body and disconnect the Mass Air Flow Sensor plug.

CAUTION: The air sensor ***(see pointer, figure 5)*** *is fragile so be careful when working around it.*

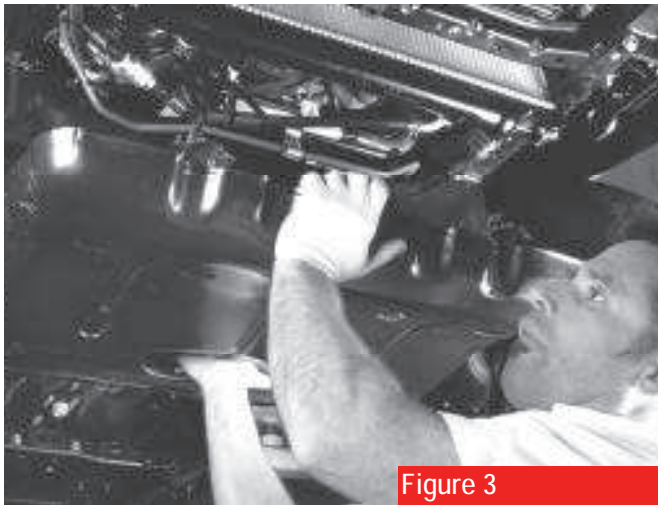


Figure 3

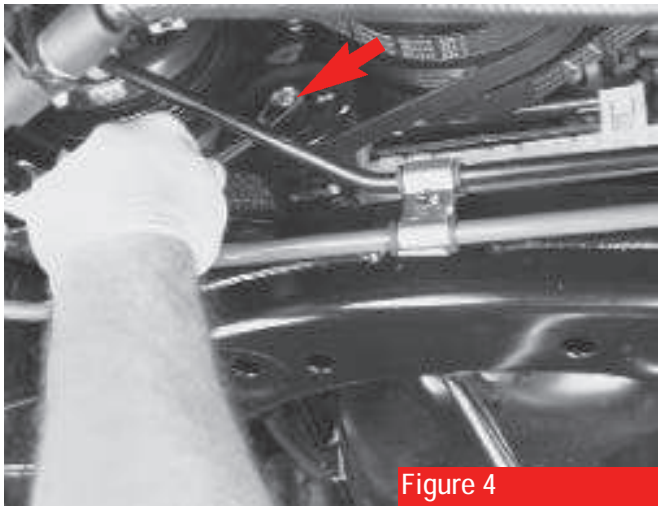


Figure 4

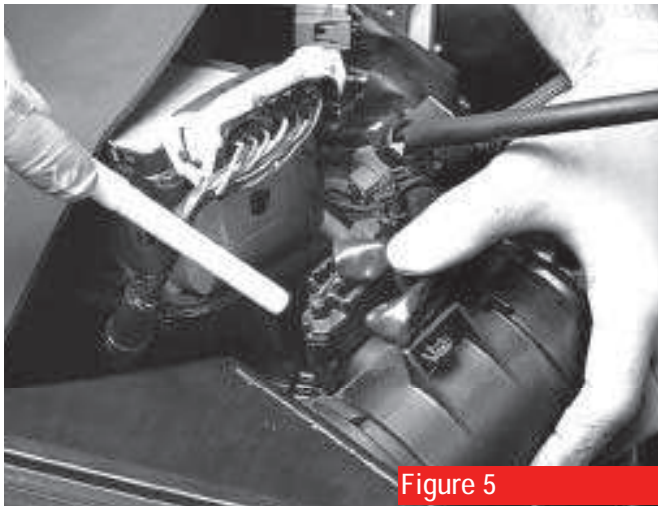
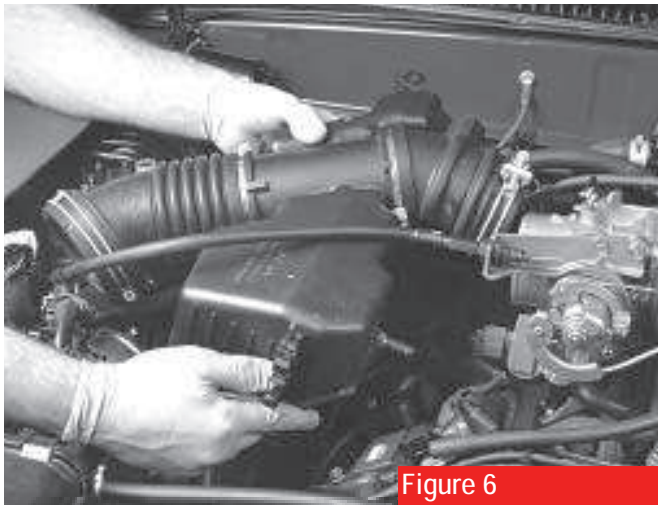


Figure 5

9. Remove any connections from the air intake tube and remove the tube **(figure 6)**.

10. Some trucks are equipped with one or two Vacuum Switched Valve (VSV) assemblies. To locate yours, consult the appropriate diagrams on **pages 20 through 23**. If the valve is mounted on the rear of the engine, it should be relocated to the firewall with the bracket supplied.

11. Note the tension and adjustment of the throttle cable and the transmission throttle-pressure (kickdown) cable (if equipped with an automatic transmission). You will need to re-create these adjustments during the assembly procedure. To help you remember, look for the small metal bead (the stake stopper, automatic transmission only) on the kickdown cable **(see arrow, figure 7)**. If the cable is properly adjusted, the bead should be flush with the end of the cable's rubber sheath **(see arrow, figure 8)**.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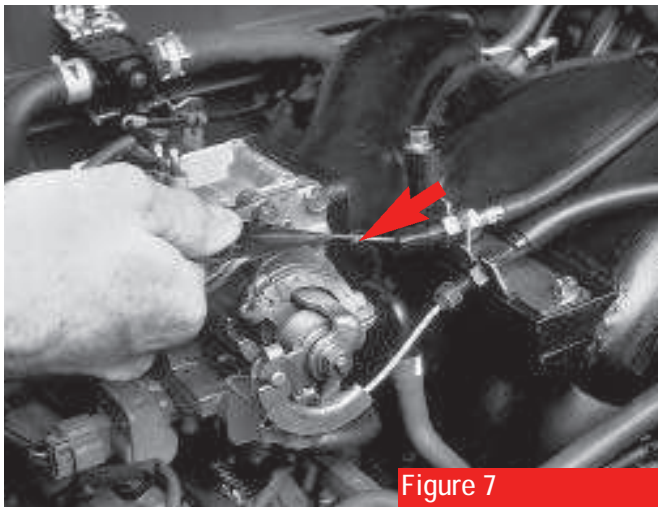
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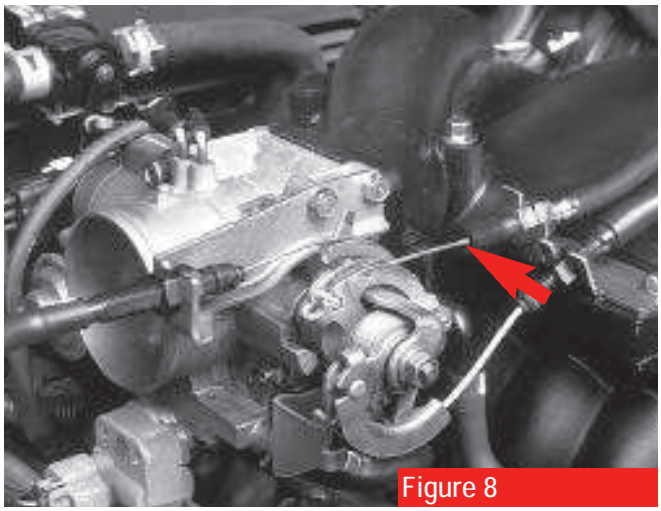
Figure 8

TIP: If your vehicle is equipped with cruise control, do not remove the cruise cable from the throttle body. If you do, you will have to readjust it later.

12. Loosen but **don't remove** the cable nuts **(figure 9)**. Slide the cables from their brackets and remove the cable ends from the throttle-body levers.

13. Unplug the throttle-position sensor connector (A) and the IAC (Idle Air Control) valve connector (B) **(see arrows, figure 10 and diagram on page 23)**.

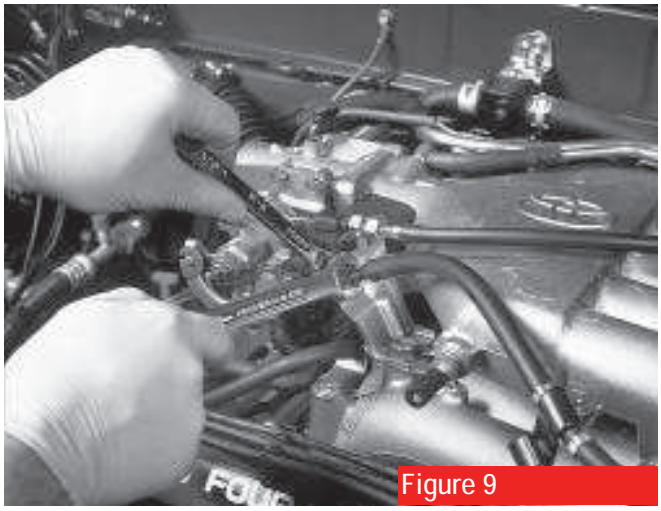
Figure 9

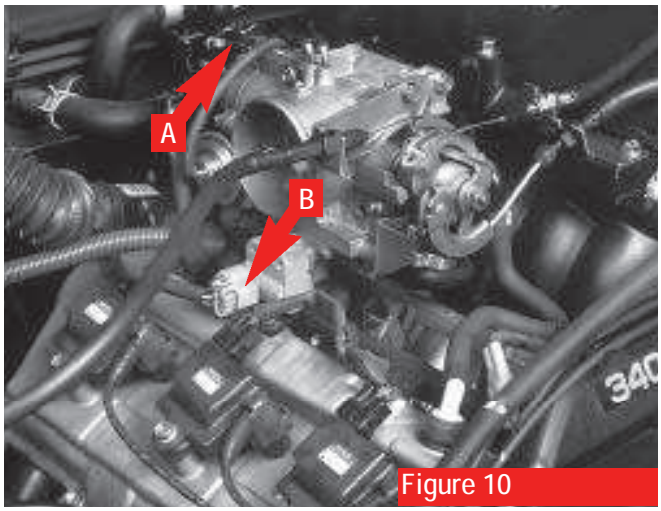

Figure 10

14. Remove vacuum lines from the throttle body but **don't remove the two coolant hoses (figure 11)**.

TIP: The coolant hoses have clamps ***(see arrows, figure 12),*** *the vacuum hoses do not.*

15. Remove the throttlebody **with** attached coolant hoses and cruise control cable (if equipped) and set to the passenger's side **(figure 12)**.

16. At the driver's side of the engine, remove the diagnostic plug from its mounting bracket **(upper arrow, figure 13)** and set it aside. Remove the boltand bracketthat holdsthediagnostic connectortothestock manifold and save for reassembly. Remove the ground wire and move it to one side **(lower arrow, figure 13)**.

17. Remove the vacuum hoses for the power brake, PCV and EVAP from their tubes on the upper manifold.

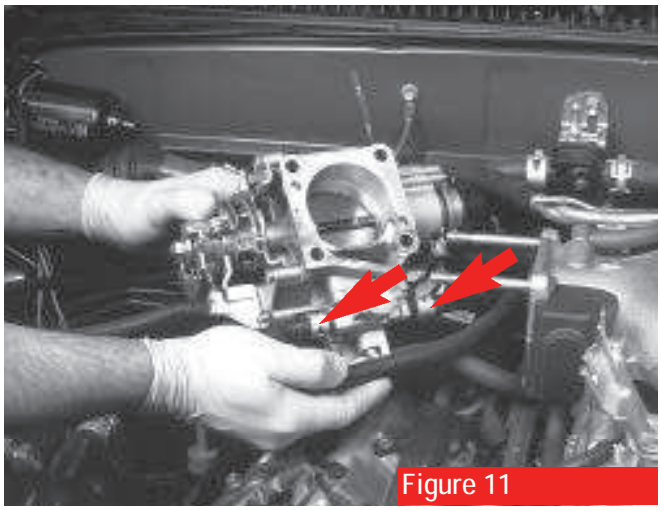
Figure 11

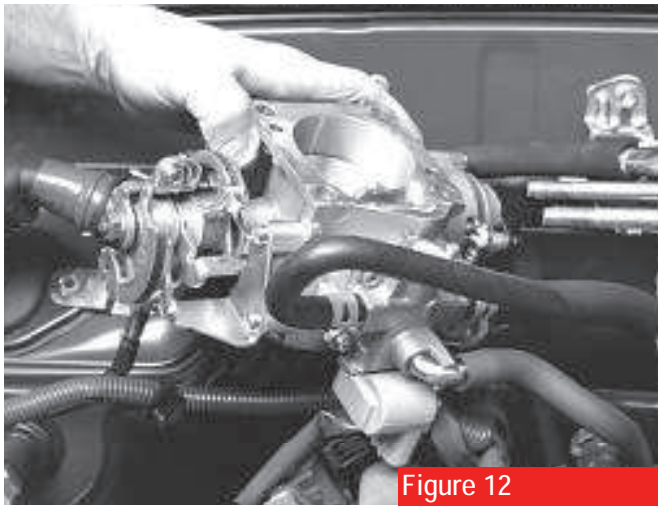
Figure 12

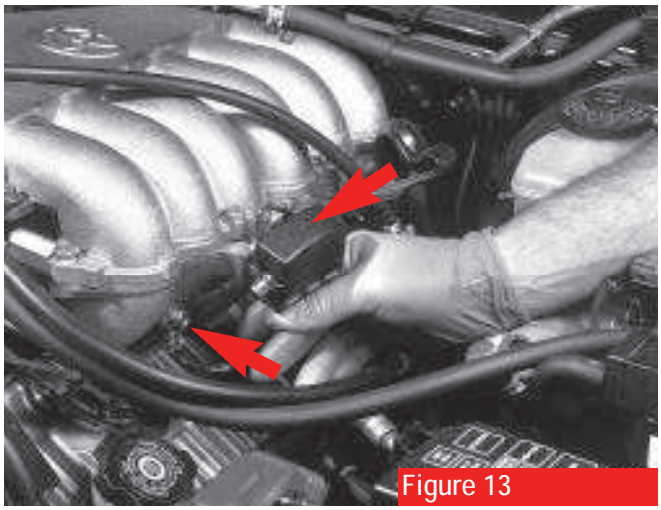
Figure 13

18. A pre-2000 Tacoma or T-100 may be equipped with an EGR valve. To be sure, look for this tube **(see arrow, figure 14)** on the drver's-side exhaust manifold. Remove the valve according to the prcedure on page 14.

19. Remove the bolt holding the manifold to the intake chamber stay **(see arrow, figure 30)**. Save the bolt.

20. Remove the nuts and bolts from the upper half of the intake manifold and set it aside **(figure 15)**.

21. Remove the 2 bolts and disconnect the fuel-return line bracket **(but don't disconnect the fuel hose)** from the driver's side of the lower manifold and remove the bolt from the wire-loom bracket.

22. Remove the bolts and nuts from the lower manifold.

TIP: The nuts at the far ends of the manifold will be reused during installation. To avoid losing them, pick them up with a magnet.

23. Remove the lower manifold **(figure 16)** and save the factory nuts, washers and two short bolts, as they will be reused.

24. Inspect the gasket. If it is in good shape, reuse it; if not, replace it with a new one (part# 17176-62040).

NOTE: The gasket between the surge tank and the manifold (figure 15) is interchangeable for use as the supercharger's intake manifold gasket (see section B – 2, page 11).

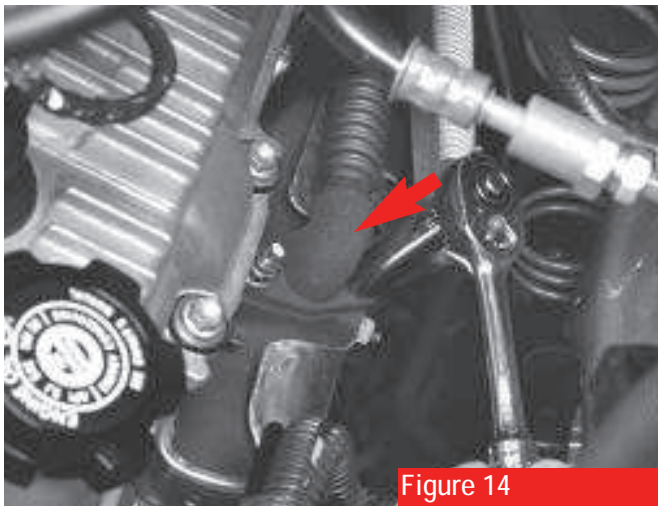
Figure 14

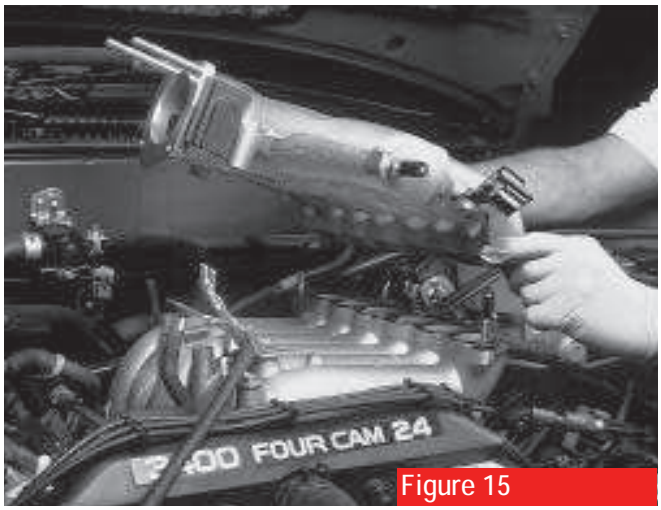

Figure 15

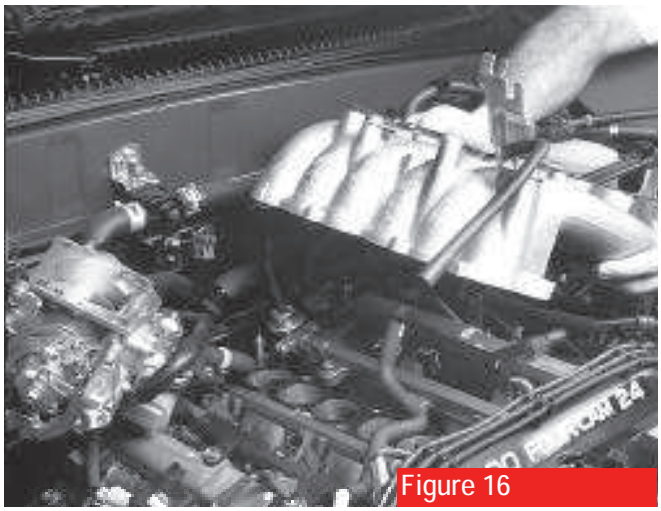
Figure 16

25. Tape over or cover the engine manifold ports to keep out debris **(figure 17)**.

26. Using the template supplied and a scribe or marker, mark the top of the timing belt cover around the template **(figure 18)**.

27. Move any wires out of the way and with a coping saw blade or flexible saw, cut along the scribe mark **(figure 19)** and discard the cut-out piece. This cutaway will provide the clearance for the drive housing of the supercharger.

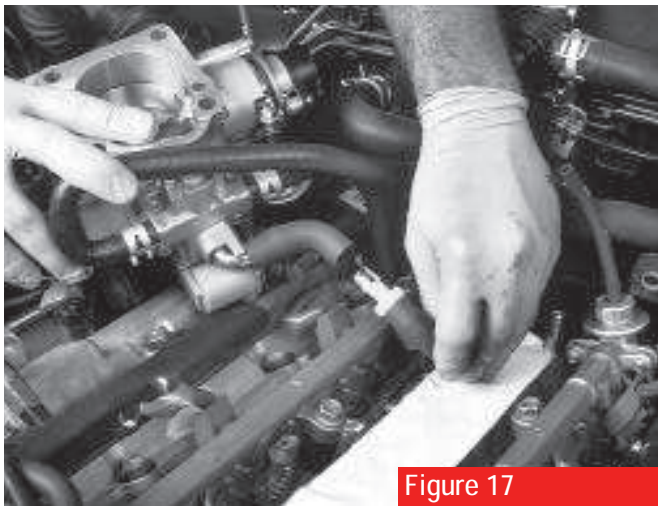
Figure 17

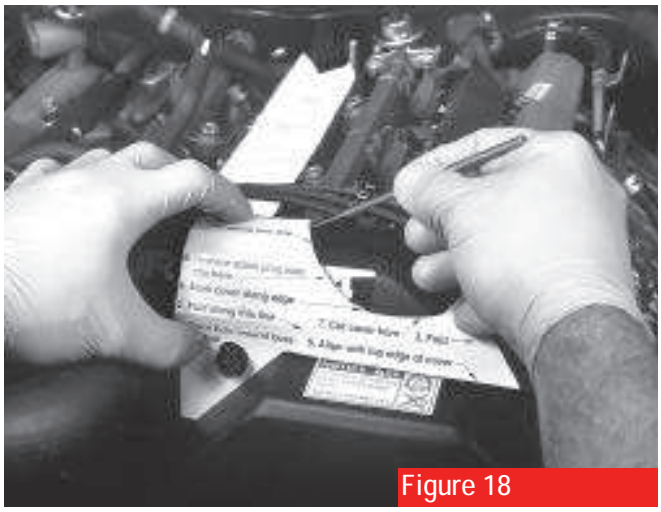
Figure 18

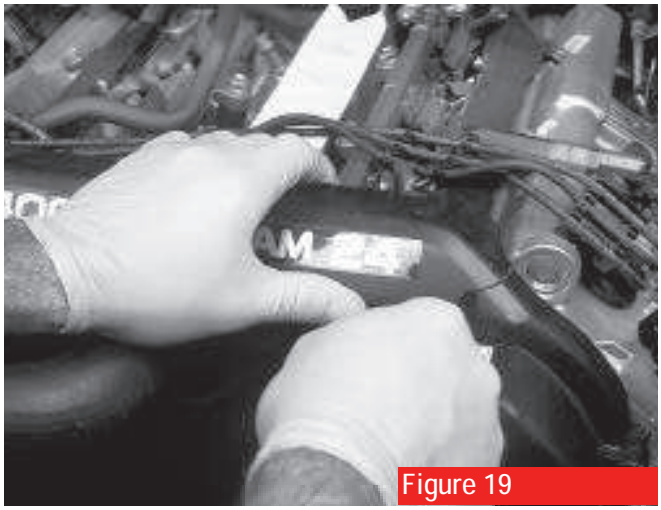
Figure 19

28. Attach the plastic wire looms to the cut edge of the front cover **(figure 20)**. The ignition wires will go beneath the supercharger drive housing.

Section 3: Installation Procedure

A. Installation of TRD Dynamic Belt Tensioner Assembly

1. Remove dipstick and dipstick tube.

2. Unclip the wire loom from the factory bracket and install the TRD-supplied wire loom relocation bracket **(see arrow, figure 21)**. Use the existing nut on the water pump housing's upper stud. Torque to factory specifications and clip the wire loom to the back of the TRD bracket.

3. Install the belt tensioner plate using the TRD flat head bolt (10 x 1.25 x 73mm) in Location A **(figure 22)**, do not fully tighten yet.

NOTE: If the vehicle has been in use, the holes (Arrows A & B in figure 22) may need to be cleaned out (i.e. tap).

4. Using the TRDsupplied bolt (10 x 1.25 x 130) **(figure 22)**, align the lower belt tensioner mounting bolt hole to Location B.

NOTE: TRD recommends the use of a thread locking liquid (such as Loctite 262) on the 10 x 1.25 x 73mm & 10 x 1.25 x 130mm bolts in Locations A & B.

5. Torque the bolt in Location A to 25 ft./lbs.

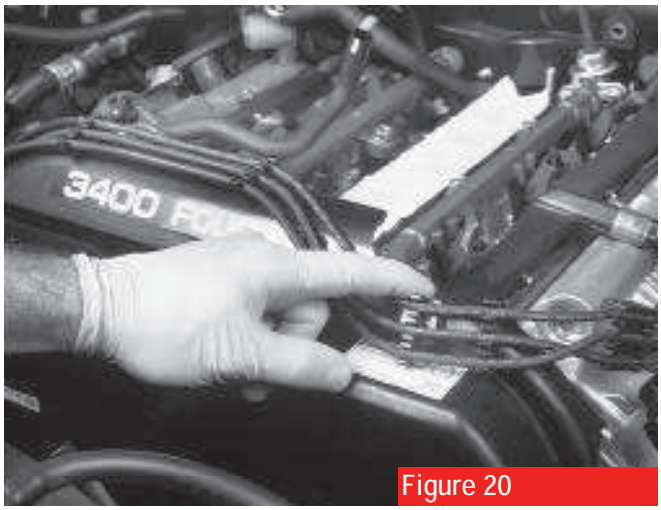

Figure 20

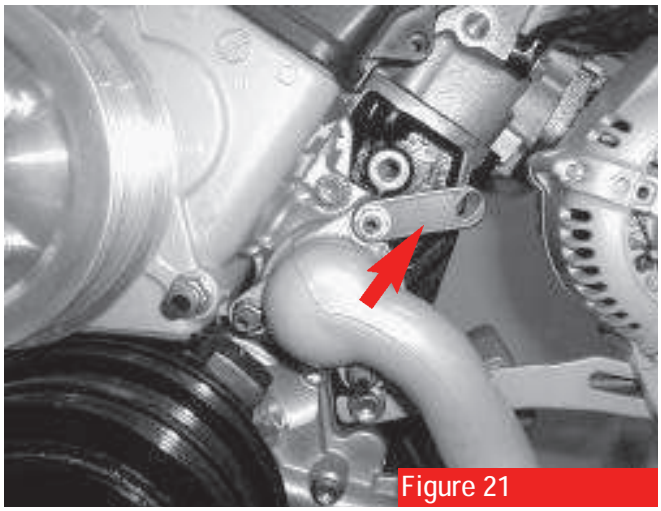
Figure 21

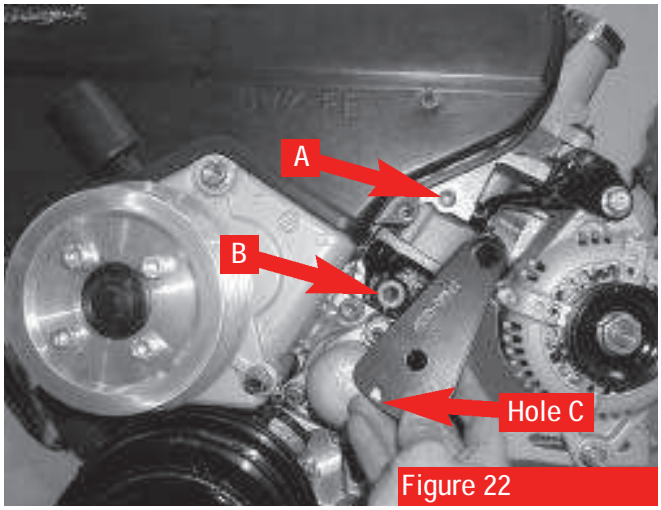

Figure 22

6. Remove the bolt in Location B. Set the alternator to mid-point adjustment on the adjustable bracket **(see figure 23)**. Torque the pivot bolt (top) and pinch nut (arrow) to factory specification.

7. Place the dynamic tensioner onto the mounting plate with the belt behind the pulley **(figure 24)**.

NOTE: Align the stud on backside of tensioner to small hole "C" in belt tensioner plate (figure 22).

8. Install the hex head bolt (removed in Step 5) through the tensioner into the mounting plate and torque to 40 ft./lbs.

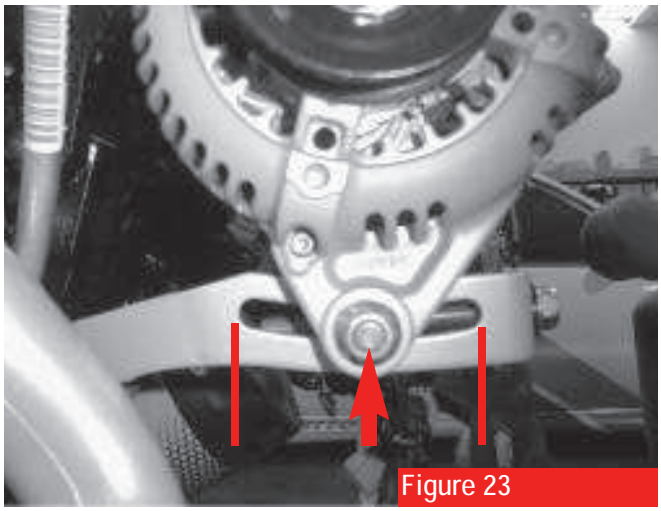

Figure 23

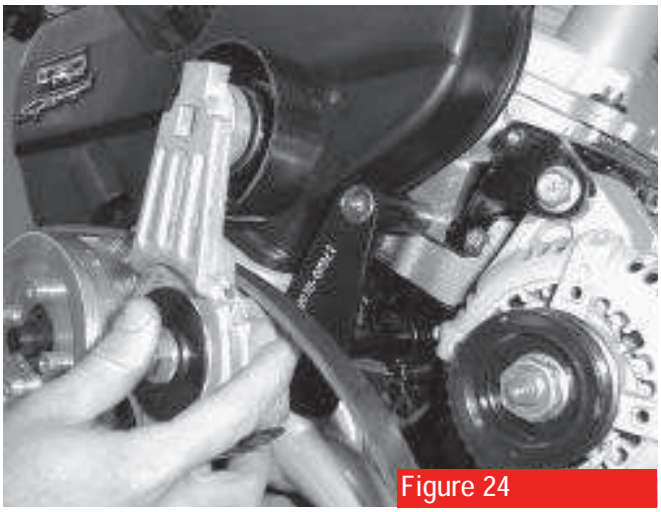

Figure 24

B. Installation of TRD Supercharger and Manifold Assembly

1. (**Skip this step for 2001 and newer 4Runner)** Cut the hose leading to the IAC valve connector at the location shown, and insert the kit's one-way valve into the straight part of the hose. The black end of the valve **(see arrow, figure 25 and diagram on page 23)** is closest to the throttle body.

   IMPORTANT: The IAC hose and the coolant hoses are similar in size. Don't cut the wrong one. The coolant hoses have clamps, the IAC hose does not.

2. Remove the tape from the intake manifold and reinstall the stock gasket.

3. Lower the supercharger and manifold into place making sure there areno hoses orwires in theway. The ignition wires should be routed beneath the supercharger's drive housing **(see arrow, figure 26)**.

4. When the assembly sits flat on the engine, put the stock manifold brace (driver's side) bolt and TRD spacer in first **(see arrow, figure 27)** and then install the stock nuts on the studs at each end of the manifold and hand tighten. `Use M8x35mm Bolt`

5. Install the TRD-supplied long manifold bolt (8 x 1.25 x 170mm) through the supercharger to the stock manifold followed by the two stock bolts. Alternating from one side to the other, torque the bolts and two nuts to the specs provided in the Toyota Repair Manual.

NOTE: In step #1 above, the valve in your kit may not have a black end. You can determine the flow direction by gently blowing thru it. The valve needs to be installed so that the flow goes into the engine.

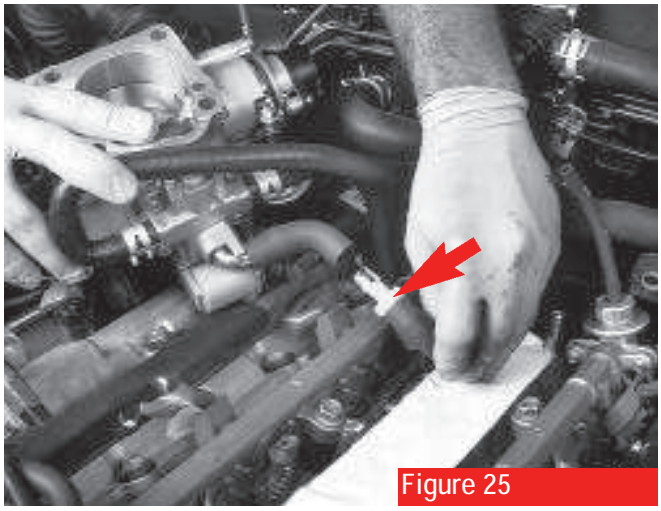
Figure 25

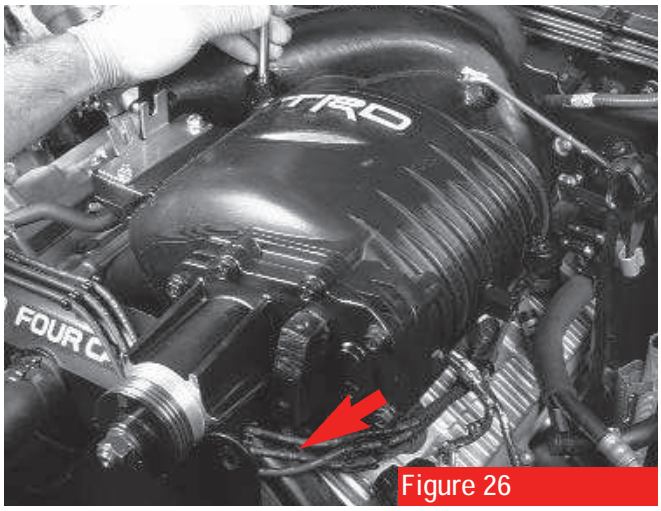

Figure 26

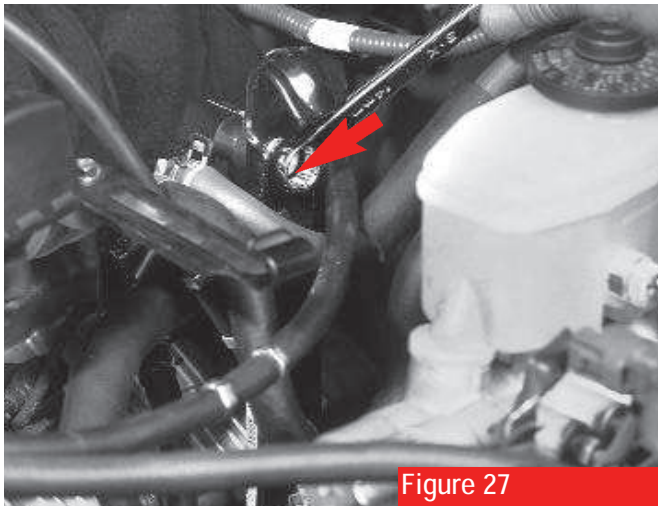
Figure 27

6. Place the drive belt over the water pump pulley, the crankshaft pulley and the alternator pulley **(figure 28)**. Make sure the belt is on the correct sides of and properly seated in the grooves of each pulley.

7. To assist in belt installation, using a 3/8" long handle ratchet **(figure 29)**, pull down in direction of **arrow** to provide slack on belt.

8. Install the power steering and A/C belts according to the marks you made before removal **(see section 2, figure 2, page 2)**.

9. Install the TRD-supplied dipstick relocation bracket **(see arrow, figure 30)** utilizing the factory bolt. Reinstall the factory dipstick and attach it to new bracket using the TRD-supplied bolt (6mm x 1.0 x 12mm) . Torque both bolts to 10 ft./lbs.

NOTE: Be sure to maintain proper dipstick tube seal at oil pan. Check rubber grommet at end of dipstick tube for engagement.

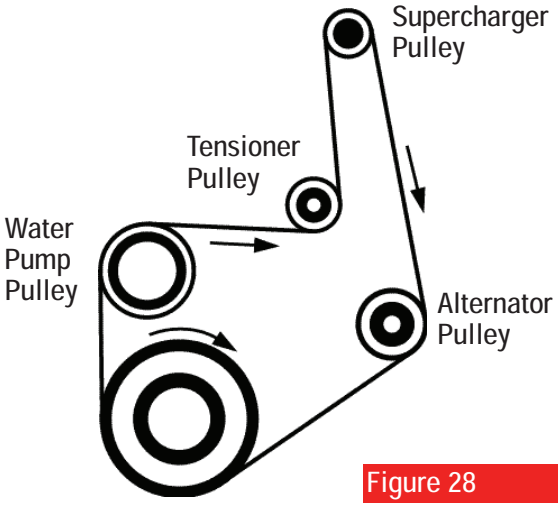

Figure 28

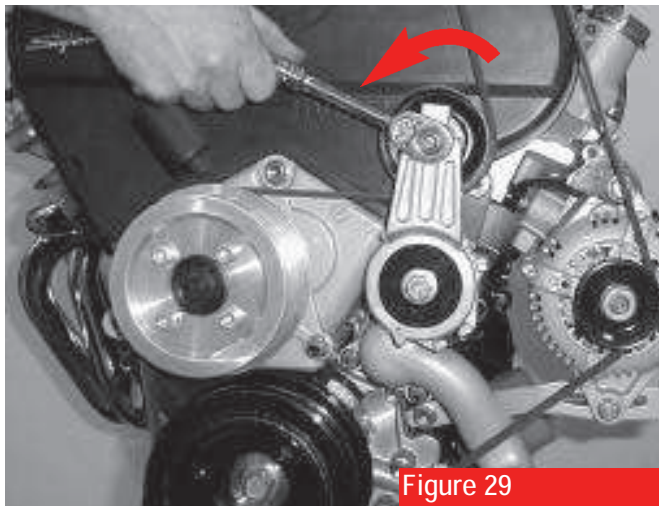
Figure 29

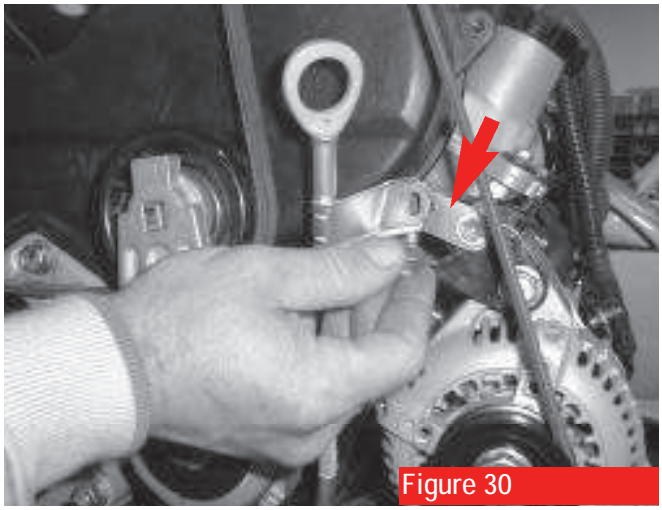
Figure 30