

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-231
Relating to Exemptions Under Section 27156
of the Vehicle Code

WHIPPLE INDUSTRIES
SUPERCHARGER KIT NUMBER WI-TEC-72

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the add-on supercharger kit WI-TEC-72, manufactured by Whipple Industries of 3292 1/2 N. Weber, Fresno, CA 93722, has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1989-1991 model-year Chevrolet and GMC 1/2 ton and 3/4 ton light-duty trucks with a 350 CID (5.0L/5.7L) fuel injection engine.

This Executive Order is valid provided that installation instructions for this supercharger kit will not recommend tuning the vehicle to specifications different from those submitted by Whipple Industries.

Changes made to the design or operating conditions of the supercharger kit, as exempt by the Air Resources Board, which adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this supercharger kit using any identification other than that shown in this Executive Order or marketing of this supercharger kit for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of the supercharger kit shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of this supercharger kit may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on results from emissions tests conducted in accordance with Cold-Start CVS-75 Federal Test Procedure. However, the ARB finds that reasonable grounds exist to believe that use of the supercharger kit may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedures. Accordingly, the ARB reserves the right to conduct additional emission tests, in the future, as such tests are

developed, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the super-charger kit adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the supercharger kit will affect the durability of the emission control system, Whipple Industries shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations section 2222 et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE WHIPPLE ENGINEERING SUPERCHARGER KIT WI-TEC-72.

No claim of any kind, such as "Approved by the Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

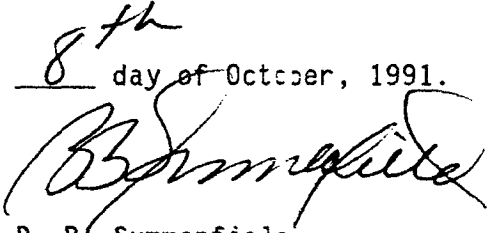
Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

Section 43644 of the Health and Safety Code provides as follows:

"43644, (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order may result in its rescission or submission to the Attorney General of California for such action as he deems advisable.

Executed at El Monte, California, this 8th day of October, 1991.


R. B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF WHIPPLE INDUSTRIES SUPERCHARGER KIT MODEL WI-TEC-72
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

October 1991

State of California
AIR RESOURCES BOARD

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CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division
State of California
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(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Whipple Industries of 3292 1/2 N. Weber, Fresno, CA. 93722 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Supercharger Kit WI-TEC-72. The supercharger kit is designed for installation on 1989-91 Chevrolet and GMC 1/2 ton and 3/4 ton light-duty trucks powered by a 305/350 CID (5.0L/5.7L) fuel-injected engine.

Based on the results from exhaust emission test data performed at an independent laboratory on a 1990 GMC Sierra pick-up truck, and from the confirmatory tests performed by the ARB, the staff concludes that Whipple Industries' supercharger kit WI-TEC-72 will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

The staff recommends that Whipple Industries be granted an exemption as requested and that Executive Order D-231 be issued.

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I. INTRODUCTION

Whipple Industries of 3292 1/2 N. Weber, Fresno, CA. 93722 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code for the Supercharger Kit WI-TEC-72. The supercharger kit is designed for installation on 1989-91 Chevrolet and GMC 1/2 ton and 3/4 ton light-duty trucks powered by a 305/350 CID (5.0L/5.7L) fuel-injected engine.

Whipple Industries has submitted emissions test data conducted on a 1990 GMC Sierra pick-up truck at California Environmental Engineering (CEE), Anaheim, California. Confirmatory tests were conducted on the same vehicle at the Air Resources Board's (ARB) Haagen-Smit laboratory in El Monte, California.

II. CONCLUSIONS

Based on the results from comparative exhaust emission tests performed at CEE on a 1990 GMC Sierra pick-up truck, and the confirmatory test performed by the ARB on the same vehicle, the staff concludes that Whipple Industries supercharger kit WI-TEC-72 will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Whipple Industries be granted an exemption for their add-on supercharger kit WI-TEC-72 for installation on 1989-1991 model-year Chevrolet and GMC 1/2 ton and 3/4 ton light-duty trucks powered by a fuel-injected 305/350 CID (5.0L/5.7L) engine. The staff also recommends that Executive Order D-231 be issued.

IV. SUPERCHARGER KIT DESCRIPTION

The Whipple Industries supercharger kit WI-TEC-72 is designed for installation on 1989-91 Chevrolet and GMC vehicles powered by a 305/350 CID (5.0L/5.7L) fuel-injected engine. The kit operates in conjunction with the original equipment manufacturer (OEM) computer controlled electronic port fuel injection and the emission control system already certified with the stock engine.

The purpose of supercharging an engine is to increase its volumetric efficiency by forcing more air into the engine than it consumes in the normally aspirated, non-supercharged condition. This is accomplished by the addition of a positive displacement Sprintex screw rotor compressor (blower). Rotation of the crankshaft causes rotation of the compressor at a predetermined rate. This predetermined drive rate controls the maximum boost level available to the engine and controls the increase in volumetric flow rate required. The drive ratio of 3:1 is obtained by the standard serpentine drive belt system used on the engine. The compressor used is a screw type compressor. The air/fuel mixture is allowed to enter the inlet end of the unit through the throttle body. The amount of flow is controlled by the throttle plate, the same as OEM. The mixture is trapped between segments of the rotors and then compressed during rotation until the outlet port opens and the higher-pressure air/fuel mixture exits to the engine inlet manifold. No lubrication of the compression chamber is required. Maximum positive manifold pressure or boost is limited to 5 psi by the blower scroll housing and the impeller design. No wastegate or other active boost limiting device is used.

To provide additional fuel to maintain the proper air/fuel ratio during boost conditions, the pressure regulator cover in the factory throttle body is replaced with a new housing. A vacuum switch and solenoid are also provided with the kit. This modification will provide the extra fuel needed under boost conditions only. A complete air cleaner system is also provided with the supercharger kit. The air cleaner is equipped with the original factory type heated air intake valve and necessary ducting from the exhaust manifold. A recalibrated prom (re-matches volumetric efficiency) to meet emissions standards is also provided with the supercharger kit. The purpose of the prom/chip is to improve engine performance by determining the proper fuel delivery and spark timing under both closed and open loop conditions. During closed loop operations the manifold pressure, coolant temperature and RPM's are measured to determine the correct fuel delivery. Fuel delivery is increased during acceleration at partial and wide open throttle to optimize power output for premium fuel. The spark timing is retarded up to 5 degrees to prevent detonation under high boost (wide open throttle) conditions. The throttle body fuel injection is mounted sideways on the blower to allow for the hood clearance for the blower. All other emission controls are left intact.

V. DISCUSSION

A 1990 California certified GMC Sierra pickup truck with a 5.7 liter (350 CID) fuel-injected gasoline engine and automatic transmission was used for emissions testing. The test program consisted of one FTP CVS-75 (cold start) test on the vehicle in the modified configuration (tested against the standard). A confirmatory test was performed at the ARB following the same test sequence. The results of the exhaust emissions tests performed at CEE and the ARB are shown in Table 1 and 2 respectively.

Table 1

CVS-75 TEST RESULTS

(California Environmental Engineering)

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Emission standards	0.50	9.00	1.0
Supercharger Kit	0.32	2.63	0.64

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Table 2

CVS-75 TEST RESULTS

(ARB Laboratory)

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Emissions Standards	0.50	9.00	1.0
Supercharger Kit	0.37	4.22	0.74

The CVS-75 emissions test results at CEE and confirmatory testing at the ARB indicate that HC, CO and NOx emissions of the vehicle with the WI-TEC-72 supercharger kit installed are well below the emissions standards. This demonstrates that the installation of Whipple Industries WI-TEC-72 supercharger kit on specified vehicles will not adversely affect the exhaust emissions.

Whipple Industries submitted all the required information and fulfilled the requirements for exemption.

APPENDIX

APPENDIX A

**BLOWER INSTALLATION - KIT# WI-TEC-72
1989 CHEVROLET/GMC LIGHT TRUCK**

Step by Step Procedure

Warning! The most important precaution you must take with the Sprintex Supercharger is cleanliness. This supercharger is a close tolerance, high quality compressor that can not be subjected to dirt or any type of foreign material. Foreign material entering the compressor will automatically void the warranty. Do not remove protective seals on supercharger prior to installation.

The following tools are required to complete the installation; Metric socket set, Standard socket set, Large channel locks, accurate fuel pressure guage, screwdrivers, torque head sockets, 1/2 breaker bar.

It should be noted at this time that in order to get maximum performance and economy from your Supercharger kit you must first check your fuel system for adequate fuel delivery. Drain old gas if not 92 octane.

1. Your first step is to install a fuel pressure guage in your fuel line using special fitting supplied with kit. This fitting is installed at the fuel filter located on the left side frame rail under the driver seat.

a. Remove air cleaner and vent tube adapter. Raise front of truck (use jack stands for safety) and install special fuel pressure fitting. Remove upper and lower fuel line clamps in order to gain some extra length of hose. After you tighten the special fitting in the fuel filter you will need to loosen the opposite end of the filter and rotate the filter so as to have access to the 1/8 pipe plug hole. Re-tighten filter; you can now screw your fuel pressure guage fittings in at this location.

b. With guage installed, start you engine and check pressure, it should have between 11 1/2 & 12 1/2 lbs. Make sure you check for fuel leaks. Make all pressure checks with guage in upright position. If pressure does not fall within specs, try a second guage, if reading is still incorrect then contact Whipple Industries for further instructions, otherwise proceed to the next step.

2. It is now time to modify throttle body (pressure regulator) to supply necessary fuel delivery under boost. You must first remove 8 torque head screws on top of throttle body to access pressure regulator. Remove regulator and gently hold in a bench vice.

3. Remove 4 torque head screws and replace factory regulator cover with supplied aluminum housing. There is a heavy spring inside this cover, so remove carefully.

4. Reassemble with new cover & spring taking care not to damage gasket. Re-install modified regulator to throttle body. Start engine to be sure you are still maintaining the proper fuel pressure. Check the throttle body for leaks.

5. After pressure checks have been made, remove pressure guage and install 1/8 pipe plug in aluminum fitting. Plug is supplied with kit. Seal plug with teflon sealer.
6. Disconnect battery and drain water at lower radiator hose.
7. Remove air silencer (two 5/16 bolts) and plastic fender adapter.
8. Reinstall fender plastic but rotate 180 degrees from original position.
9. Release tension on fan belt & remove belt.
10. It is necessary to remove upper half of the fan shroud, (#10 metric socket-7 bolts in all.)
11. Disconnect vacuum lines from throttle body. (TB)
12. Carefully remove air cleaner gasket, unplug injector wires & unplug wires to the Idle air control (IAC) valve & Throttle position switch. (TPS)
13. Use 3/4 & 5/8 tubing wrench to remove fuel lines from TB - retighten fittings in throttle body.
14. Disconnect accelerator cable, transmission cable, cruise control cable, (if used) and remove Throttle body. (3 bolts-1/2 " socket.)
15. Remove belt tensioner.
16. Remove thermostat housing and thermostat.
17. Replace old housing with new one provided with kit and re-install with new gasket.
18. Reattach ground strap to the closest intake manifold stud instead of the thermostat housing.
19. Position new tensioner & bolt on air conditioner bracket and mark bracket for drilling (see attached drawing) Drill 3/8 hole to a depth equal to the thickness of the bracket.
20. Attach tensioner & new bolt (12x90 mm cap screw) to modified bracket.
21. Reinstall upper fan shroud.
22. Un-bolt coil from manifold-lay to one side.
23. Remove cables from throttle bracket, remove throttle bracket & reinstall bolts to manifold.

24. Reroute transmission cable to the opposite side of transmission dip stick tube. This provides some extra length of cable necessary for throttle bracket relocation.

25. You will also need to remove lower fuel line clamps, if you have not already done so, in order to reroute fuel lines to the throttle body.

26. Install coil bracket supplied with kit and reinstall coil on new bracket. Use same coil bracket holes and bolts with long side of bracket towards front of engine.

27. Install new upper radiator hose. (You will need to cut approximately 2" off the 90° end.) This end goes towards thermostat housing. Take precautions to keep any part of engine from wearing a hole in radiator hose.

28. It is necessary to bend engine lifting bracket towards valve cover for clearance or remove completely if so desired.

29. Install supercharger adapter and new gasket to factory manifold. Torque bolts to 22-24 ft.lbs. Install O-Ring in manifold base. Install new vacuum hose (7/32 x 10") from MAP sensor to vacuum port on adapter. Use larger brass hose nipple and install in adapter with teflon sealer.

30. Install preassembled blower to manifold adapter with 5/16 bolts. Be sure to pull down bolts a little at a time so that the plate is pulled down evenly to avoid distortion or binding of the adapter top plate. Remember to remove protective seal on blower before installation.

31. Install fuel lines to throttle before re-installing throttle body to blower, be sure vacuum hose (5/32 x 60) is installed on aluminum pressure regulator housing and pushed all the way on. This vac hose should be installed with T B off of supercharger. Then plug "F" port on throttle body.

32. Install blower drive support bracket and 3/8 x 3 1/2 round aluminum spacer plate to the original tensioner bracket with a 5/16 x 1 1/2 bolt using hole at approximately 12 o'clock position on the original tensioner bracket. Spacer goes on first. Then use the original tensioner bolt to install new idler and aluminum (1 3/8 O. D.) spacer to the blower extension housing support bracket. Do not force any bolts. Alignment is critical. Now tighten allen bolt on blower extension housing support.

33. Install smooth faced idler and (1 1/2 O. D.) spacer with 45.4 mm bolt to alternator side of extension housing support. You will need the assistance of a friend to install this idler and new belt. Have assistant release all pressure from tensioner using 1/2 drive breaker bar. This makes installation of belt and idler much easier. Tighten idler bolt and then let tensioner slowly apply pressure to belt. Make sure belt is in grooves of all pulleys, check carefully.

34. Tighten support from thermostat housing to idler bracket last so as to avoid any binding. (Make sure all previously installed bolts are tight first.)
35. Install new throttle bracket supplied with kit to T.B. adapter with 2 1/4" bolts. (Attach all cables to bracket before installing) Gently bend power brake tube towards valve cover in order to get necessary clearance for throttle bracket.
36. Re-attach all cables to throttle body.
37. Trace and remove the injector wires attached to the 2 injectors on throttle body from the wiring harness. Pull wires from loom until you have enough slack to reach the relocated throttle body.
38. Bend MAP sensor bracket down towards valve cover in order to get clearance for new air cleaner.
39. Install vacuum hose 5/32 x 24" from EGR solenoid to "J" port on throttle body.
40. Install vacuum hose 7/32 x 15" from vacuum canister to "A" port on throttle body.
41. Install vacuum hose 3/8 x 15" from PVC valve to "C" port on throttle body. Route all hoses and wiring neatly to suite your own personal taste.
42. Install air cleaner stud and gasket to throttle body.
43. Install original air cleaner adapter and 90 degree cover to throttle body and tighten with original wing nut.
44. It will be necessary to bend transmission dip stick tube towards right fender to get adequate clearance for new air cleaner assembly.
45. Reinstall valve cover vent to factory air cleaner adapter (turn grommet in valve cover 1/4 turn for ease of installation).
46. Install original flexible air cleaner hose to supplied 90 degree cover with a 4" hose clamps (#64) supplied with kit.
47. Install 4" x 6" long aluminum tubing to flex hose.
48. Install new air cleaner bracket to the original location on fender. Be sure to install support plate on the under side of fender with two 5/16 x 7/8 bolts.
49. Use air cleaner clamp to mount preassembled air cleaner housing to new fender bracket. Install 90 degree 4" rubber elbow from air cleaner housing to 4" x 6" aluminum tube with two 4" hose clamps.

50. Install oil reservoir and bracket to front right side of supercharger and add approx. 10 oz. of oil. Lip on reservoir should be in the slot on gold clamp. Oil level should be even with bottom of gold clamp. (see illustration)

51. Next step is to install the fuel boost control system. Mount control solenoid valve and vacuum switch away from heat (under cruise control unit seems to work well.)

52. You can splice into the pink wire on your cruise control. This will supply the voltage needed to activate the fuel boost control system. Use the enclosed schematic to complete the wiring of the fuel boost system. A diagram of the necessary additional vacuum lines is also attached.

53. Install new computer chip supplied with your kit to the computer of your vehicle. Re-connect battery. Battery should be disconnected any time you change computer prompts for at least 20 second in order to clear computer memory.

54. Turn ignition switch on and off at least 3 times and check for fuel leaks at throttle body fittings.

55. You can now add anti-freeze and start engine. It may be necessary to add additional anti-freeze as the engine begins to warm up. Recheck water level and install radiator cap. Air pockets in radiator will show a false water level. Check timing and set to factory specifications. This completes the installation of your Supercharger Kit.

Caution: If after installation of Supercharger kit you experience pinging or detonation you should immediately contact Whipple Industries for advice on how to effectively solve the problem. 92 Octane gasoline is mandatory!!

Warranty

Whipple Industries hereby represents and warrants that all Supercharger kits sold to original purchaser shall be free from defects in material and workmanship for a period of 6 months from the date the parts are shipped. Warranty provisions are void if any attempt is made to dismantle or modify the supercharger.

Maintenance and Service

It is recommended that the following items be inspected and serviced at the normal engine service intervals;

- a. Check supercharger oil level-add as necessary.
- b. Check belt condition-replace if necessary.
- c. Clean and re-oil K & N air filter. Replace if necessary. See enclosed K & N brochure.
- d. Change oil in supercharger every 12000 miles

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**BLOWER INSTALLATION INSTRUCTIONS
1990-91 CHEVROLET/GMC LIGHT TRUCK
KIT # WI-TEC-72**

Step by Step Procedure

Warning! The most important precaution you must take with the Sprintex Supercharger is cleanliness. This supercharger is a close tolerance, high quality compressor that can not be subjected to dirt or any type of foreign material. Foreign material entering the compressor will automatically void the warranty. Do not remove protective seals on supercharger prior to installation.

The following tools are required to complete the installation; Metric socket set, Standard socket set, Large channel locks, accurate fuel pressure guage, screwdrivers, torx head sockets.

It should be noted at this time that in order to get maximum performance and economy from your Supercharger kit you must first check your fuel system for adequate fuel delivery.

1. Your first step is to install a fuel pressure guage in your fuel line using special fitting supplied with kit. This fitting is installed at the fuel filter located on the left side frame rail under the driver seat.

a. Remove air cleaner and vent tube adapter. Raise front of truck (use jack stands for safety) and install new flexible fuel lines and special fuel pressure fitting. Flex lines are required on all models with hard fuel lines. They are installed between fuel filter and throttle body. After you tighten the special fitting in the fuel filter you will need to loosen the opposite end of the filter and rotate the filter so as to have access to the 1/8 pipe plug hole. Re-tighten filter; you can now screw your fuel pressure guage fittings in at this location.

b. With guage installed, start you engine and check pressure, it should have between 11 1/2 & 12 1/2 lbs. Make sure you check for fuel leaks. Make all pressure checks with guage in upright position. If pressure does not fall within specs, try a second guage, if reading is still incorrect then contact Whipple Industries for further instructions, otherwise proceed to the next step.

2. It is now time to modify throttle body (pressure regulator) to supply necessary fuel delivery under boost. You must first remove 8 torx head screws on top of throttle body to access pressure regulator. Remove regulator and gently hold in a bench vice.

a. Remove 4 torx head screws and replace factory regulator cover (there is a heavy spring inside this cover, remove carefully) with supplied aluminum housing.

b. Reassemble cover, & spring taking care not to damage gasket. Re-install modified regulator to throttle body. Start engine to be sure you are still maintaining the proper fuel pressure. Check the throttle body for leaks.

c. After pressure checks have been made, remove pressure gauge and plug special aluminum fitting with 1/8 pipe plug supplied with kit. Seal plug with teflon sealer.

3. Disconnect battery and drain water at lower radiator hose.

4. Remove air silencer (two 5/16 bolts) and plastic fender adapter.

5. Reinstall fender plastic but rotate 180 degrees from original position.

6. Release tension on fan belt & remove belt.

7. Disconnect vacuum lines from throttle body. (TB)

8. Carefully remove air cleaner gasket, unplug injector wires & unplug wires to the Idle air control (IAC) valve & Throttle position switch. (TPS)

9. Use 3/4 & 5/8 tubing wrench to remove fuel lines from TB - retighten fittings in throttle body.

10. Disconnect accelerator cable, transmission cable, cruise control cable, (if used) and remove Throttle body. (3 bolts-1/2 " socket.)

11. Remove belt tensioner.

12. Remove thermostat housing and thermostat.

13. Replace old housing with new one provided with kit and re-install thermostat.

14. Reattach ground strap to the closest intake manifold stud instead of the thermostat housing.

15. Attach tensioner & new bolt (12x90 mm cap screw) to lower corner of air conditioner bracket. Rotate tensioner with large channel lock pliers until spring tang locks in upside down V groove on air conditioner bracket. While keeping tension on tensioner tighten 12 mm bolt securely.

16. Un-bolt coil from manifold-lay to one side.

17. Remove cables from throttle bracket, remove throttle bracket & reinstall bolts to manifold.

18. Reroute transmission cable to the opposite side of transmission dip stick tube. This provides some extra length of cable necessary for throttle bracket relocation.

19. You will also need to remove lower fuel line clamps in order to reroute fuel lines to the throttle body.

20. Install coil bracket supplied with kit and reinstall coil on new bracket. Use same coil bracket holes and bolts with long side of bracket towards front of engine.

21. Install new upper radiator hose. (You will need to cut approximately 2" off the 90° end.) This end goes towards thermostat housing. Take precautions to keep any part of engine from wearing a hole in radiator hose. It is necessary to bend engine lifting bracket towards valve for clearance or remove completely if so desired.

22. Install supercharger adapter and new gasket to factory manifold. Torque bolts to 22-24 ft.lbs. Install O-Ring in manifold base. Install new vacuum hose (7/32 x 10") from MAP sensor to vacuum port on adapter. Use larger brass hose nipple and install in adapter with teflon sealer.

23. Install preassembled blower to manifold adapter with 5/16 bolts. Be sure to pull down bolts a little at a time so that the plate is pulled down evenly to avoid distortion or binding of the adapter top plate. Remember to remove protective seal on blower before installation.

24. Re-install throttle body to blower, be sure vacuum hose (5/32 x 60) is installed on aluminum pressure regulator housing and pushed all the way on. This vac hose should be installed with T B off of supercharger. Then plug "F" port on throttle body.

25. Install blower drive support bracket and $3/8 \times 3 \frac{1}{2}$ round aluminum spacer plate to the original tensioner bracket using hole at approximately 12 o'clock position on the original tensioner bracket. (10x75 mm cap screw and nut; do not use a washer under head of bolt) Spacer goes on first. Then use 12x90 bolt to install new idler and aluminum ($1 \frac{3}{8}$ O. D.) spacer to the blower extension housing support bracket. (Use bolt provided with kit. Do not force any bolts. Alignment is critical. Now tighten allen bolt on blower extension housing support.

26. Install smooth faced idler and ($1 \frac{1}{2}$ O. D.) spacer with 45.4 mm bolt to alternator side of extension housing support. You will need the assistance of a friend to install this idler and new belt. Have assistant release all pressure from tensioner using $1/2$ drive breaker bar. This makes installation of belt and idler much easier. Tighten idler bolt and then let tensioner slowly apply pressure to belt. Make sure belt is in grooves of all pulleys, check carefully.

27. Tighten support from thermostat housing to idler bracket last so as to avoid any binding. (Make sure all previously installed bolts are tight first.)

28. Install new throttle bracket supplied with kit to T.B. adapter with $2 \frac{1}{4}$ " bolts. (Attach all cables to bracket before installing) Gently bend power brake tube towards valve cover in order to get necessary clearance for throttle bracket.

29. Re-attach all cables to throttle body.

30. Trace and remove the injector wires attached to the 2 injectors on throttle body from the wiring harness. Pull wires from loom until you have enough slack to reach the relocated throttle body.

31. Bend MAP sensor bracket down towards valve cover in order to get clearance for new air cleaner.

32. Install vacuum hose $5/32 \times 24$ " from EGR solenoid to "J" port on throttle body.

33. Install vacuum hose $7/32 \times 15$ " from vacuum canister to "A" port on throttle body.

34. Install vacuum hose $3/8 \times 15$ " from PVC valve to "C" port on throttle body. Route all hoses and wiring neatly to suite your own personal taste.

35. Install air cleaner stud and gasket to throttle body.

36. Install original air cleaner adapter and 90 degree cover to throttle body and tighten with original wing nut.

a. It will be necessary to bend transmission dip stick tube towards right fender to get adequate clearance for new air cleaner assembly.

37. Reinstall valve cover vent to factory air cleaner adapter (turn grommet in valve cover 1/4 turn for ease of installation).

38. Install original flexible air cleaner hose to supplied 90 degree cover with a 4" hose clamps (#64) supplied with kit.

39. Install 4" x 6" long aluminum tubing to flex hose.

40. Install new air cleaner bracket to the original location on fender. Be sure to install support plate on the under side of fender with two 5/16 x 7/8 bolts.

41. Use air cleaner clamp to mount preassembled air cleaner housing to new fender bracket. Install 90 degree 4" rubber elbow from air cleaner housing to 4" x 6" aluminum tube with two 4" hose clamps.

42. Install oil reservoir and bracket to front right side of supercharger and add approx. 10 oz. of oil. Lip on reservoir should be in the slot on gold clamp. Oil level should be even with bottom of gold clamp. (see illustration)

43. Next step is to install the fuel boost control system. Mount control solenoid valve and vacuum switch away from heat (under cruise control unit seems to work well.)

44. You can splice into the pink wire on your cruise control. This will supply the voltage needed to activate the fuel boost control system. Use the enclosed schematic to complete the wiring of the fuel boost system. A diagram of the necessary additional vacuum lines is also attached.

45. Install new computer chip supplied with your kit to the computer of your vehicle. Re-connect battery. Battery should be disconnected any time you change computer prompts for at least 20 seconds in order to clear computer memory.

46. Turn ignition switch on and off at least 3 times and check for fuel leaks at throttle body fittings.

46 You can now add anti-freeze and start engine. It may be necessary to add additional anti-freeze as the engine begins to warm up. Recheck water level and install radiator cap. Air pockets in radiator will show a false water level. Check timing and set to factory specifications. This completes the installation of your Supercharger Kit.

Warranty

Whipple Industries hereby represents and warrants that all Supercharger kits sold to original purchaser shall be free from defects in material and workmanship for a period of 6 months from the date the parts are shipped. Warranty provisions are void if any attempt is made to dismantle or modify the supercharger.

Maintenance and Service

It is recommended that the following items be inspected and serviced at the normal engine service intervals;

- a. Check supercharger oil level-add as necessary.
- b. Check belt condition-replace if necessary.
- c. Clean and re-oil K & N air filter. Replace if necessary. See enclosed K & N brochure.
- d. Change oil in supercharger every 12000 miles

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89 TO 91 CHEV/GMC PICKUP PARTS LIST
KIT# WI-TEC-72

1	S-102 COMPRESSOR
1	REAR MANIFOLD
1	LOWER MANIFOLD
1	LOWER MANIFOLD COVER
1	BLOWER STABILIZER BRACKET-1 (1990-91)
1	BLOWER STABILIZER BRACKET-2 (1989)
1	THROTTLE BRACKET
1	BELT TENSIONER
1	IDLER
1	BELT
1	5" FRONT DRIVE ASSEMBLY
1	2 1/2" DRIVE PULLEY
1	THROTTLE BODY COVER
1	THERMOSTAT HOUSING
1	THERMOSTAT HOUSING GASKET
2	THROTTLE BODY BASE GASKET
1	SET FUEL LINES (1990-91)
1	QT. GEAR OIL
1	COIL BRKT
1	OILER BRKT
1	AIR FILTER SUPPORT BRKT
1	AIR FILTER SUPPORT BRKT (REINFORCEMENT)
1	AIR FILTER ASSEMBLY
1	4" 90 DEGREE HOSE
4	4" HOSE CLAMPS
1	7" AIR FILTER CLAMP
1	TOP RADIATOR HOSE
1	MANIFOLD O RING
1	PRESSURE REGULATOR SOLENOID
1	VACUUM PRESSURE SWITCH
1	FUEL PRESSURE REGULATOR COVER
1	.015 PRESS. REG. SHIMS
3	.030 PRESS. REG. SHIMS
1	COMPUTER PROM # WI-TEC-CTE001
1	OIL CANISTER
1	4" X 6" TUBE
1	FRONT STABILIZER SPACER
1	IDLER SPACER (LARGE OD)
1	IDLER SPACER (SMALL OD)
1	IDLER PULLEY
1	SMALL PARTS KIT (SEE ATTACHED)

89 TO 91 CHEV/GMC PICKUP SMALL PARTS KIT

QUAN	DESCRIPTION
4	5/16 NC NUTS
1	5/16 NC LOCK NUTS (1989)
1	1/4 NC NUT
1	1/4 NC LOCK NUT
3	1/8 PIPE PLUG
1	1/4 X 1 1/4 NC ALLEN SCREW
2	5/16 X 1 NC ALLEN SCREW
3	1/4 X 1/2 NC CAP SCREW
1	1/4 X 1 NC CAP SCREW
2	5/16 AN WASHERS (1989)
1	7/16 AN WASHER (1990)
1	1/2 AN WASHER
1	5/16 X 3/4 CS TORQUE HEAD SCREW
4	5/16 X 7/8 NC CAP SCREW
2	5/16 FLAT WASHERS
4	5/16 LOCK WASHERS
3	1/4 LOCK WASHERS
1	VAC CAP
1	5/32 VAC TEE
1	5/32 X 1/8 PIPE FITTING
1	7/32 X 1/8 PIPE FITTING
1	5/16 X 1 1/2 NC CAP SCREW (1989)
1	3/8 X 2 NC CAP SCREW
1	# 10 SHEET METAL SCREW
1	SCOTCH LOCK
3	SMALL TIES
3	LARGE TIES
1	10 MM NUT (1990-91)
1	10 X 75 MM CAP SCREW (1990-91)
1	12 X 75 MM CAP SCREW
1	12 X 90 MM CAP SCREW
1	FUEL PRESSURE CHECK FITTING
20"	5/32 HOSE - EGR
60"	5/32 HOSE - PRESSURE CONTROL
12"	7/32 HOSE - MAP SENSOR
12"	7/32 HOSE - OIL CANISTER
15"	3/8 HOSE - PVC
6"	# 14 RED WIRE
2	FEMALE WIRE ENDS
1	# 10 WIRE END