



XS0500-MHP-R2

*05-07 Mustang
HI-PO SPEC*

4.0 SOHC X-CHARGER

INSTALLATION MANUAL

**THIS SUPERCHARGER KIT IS NOT EXEMPTED FOR USE IN CALIFORNIA
AND OTHER STATES WITH CALIFORNIA EMISSIONS STANDARDS**

1



INTRODUCTION

Identify Supercharger (S/C) kit parts & hardware and read this manual completely before starting.

Left side is the driver's side.

This engine uses metric fasteners.

We have done this installation many times and this is the most efficient way to do it in the least amount of time. Follow these directions **EXACTLY** for a professional quality installation.

This kit is very straight forward and easy to install, but if there is some part of the manual that you don't understand, or if you have any other questions or comments, please call our Tech Line at 707-254-7025 Monday thru Thursday 10AM till 4PM Pacific for expert, experienced, friendly assistance.

FUEL IN TANK MUST BE PREMIUM GRADE

PARTS LIST

key no	description	quan	part no	application
01	supercharger assembly MP90 GEN4	1	MP	
02	discharge manifold, cast aluminum	1	XS5556-01	
03	discharge manifold lid, .25 aluminum	1	XS0500-02	
04	coil bracket	1	XS0500-08	
05	inlet adapter, cast aluminum	1	XS0500-03	
06	inlet extension	1	XS0500-07	
07	idler plate, .375 aluminum	1	XS5556-04	
08	nose support, .250 aluminum	1	XS0500-05	
09	bracket, idler plate	1	XS5556-06	
10	spacer, aluminum,short 1.0 dia X .90	1	XS5556-13	
11	long 1.0 dia x 1.2	2	XS5556-14	
12	pulley 1.0 dia x .320	2	XS5556-15	
13	alternator 125 alum	1	XS5556-07R	
14	bolt, 7/16-20 special shoulder	2	FS45907	
15	10mm 1.5 x 130mm hex head	2	MX91280A663	idler plate to right head
16	10mm 1.5 x 120mm hex head	1	MX91280A661	idler plate to left head
17	8mm x 20 flange head	4	BB8X20FH	(2) idler plate to bracket / (2) nose support to idler bracket
18	washer, 10mm flat	3	BB10FW	idler bracket bolts
19	lock	3	BB10LW	idler bracket bolts
20	gasket, supercharger discharge	1	XS0500-10	
21	discharge manifold lid	1	XS0500-11	
22	supercharger inlet	1	XS0500-12	
23	thottle body	2	XS0500-13	
24	discharge flange	6	XS0500-14	
25	locktite	1	PM27100	
26	tiewrap	8	DC9627	
27	, heavy duty	1	DC9639	
28	hose, 7/32 vac x 13	1	GY65112*13	by-pass valve
29	wire, grey w/ red x 7.5 18 ga	1	XS0500-31	
30	orange x 20.5 18 ga	1	XS0500-32	
31	blue x 20.5 18 ga	1	XS0500-33	
32	red x 20 18 ga	1	XS0500-34	
33	wire armor, 1/2 x 5	1	DC786*5	
34	3/8 x 10	1	DC1784*10	
35	3/8 x 13	1	DC1784*13	
36	3/8 x 15	1	DC1784*15	
37	3/8 x 21	1	DC1784*21	
38	3/8 x 29	1	DC1784*29	
39	bracket, plug wire, coil	1	XS0500-41	
40	, inlet	1	XS0500-42	
41	plug, pipe 1/2 NPT with special coating	8	SWE46418	
42	bolt, 8mm 1.25 socket head x 25	5	MS67221242	
43	x 20	6	MS67221200	
44	countersunk head x 20	1	MK92125A214	
45	6mm 1.0 flange head x 20	19	MS77551141	(12) dis manifold / (3) coil bracket / (4) inlet extension
46	x 16	7	MS77551133	discharge manifold
47	stud, 6mm	1	GN08226-61610	lid to discharge manifold
48	nut, 6mm low crown lock nut	1	BB6LCLN	
49	washer, flat 5/16 AN	5	MK98017A690	
50	fitting, 3/8 NPT x 5/8 tube special	1	XS0500-68	
51	1/4 NPT x 3/8 tube 90 deg	3	PC4501-06-04	
52	1/4 NPT x 1/4 tube 90 deg	1	PC4501-04-04	
53	clamp, #06 mini	1	DC2363	
54	injectors, 39 lb	6	GF2R3Z-9F593-BA	
55	spacer, fuel rail	4	XS5556-50	
56	extension, fuel rail	2	XS5556-51	
57	bracket, fuel line	1	XS5556-53	
58	o-ring	4	GFF0PZ-9229-A	
59	bolt, 8mm 1.25 flange head x 25	4	BB8X25FH	
60	screw, 5.8mm phillips head SS x 25	4	MK92000A330	
61	washer, 5mm flat SS	4	MK93475A240	
62	lock	4	MK92148A170	
63	sensor, ACT	1	MCDY-754	
64	harness, ACT	1	XS0500-35	26"
65	adapter, EGR	1	XS0500-16	
66	gasket, EGR	1	GFE6AZ-9D476-B	
67	bolt, 8mm x 20 socket head	1	MS67221200	
68	c/s socket head	1	MK92125A214	
69	washer, 5/16 AN	1	MK98017A690	

subkit MIP

subkit MW

subkit MHHP

subkit MINJ

subkit MACT

subkit MEGR

subkit MR	70	insulator, hose	1	MK9142K34		
	71	cover, thermostat	1	GFF7TZ-8594-A		
subkit M5	72	hose, 5/16 x 38	1	GY64995*38	05 ONLY	
	73	32	1	GY64995*32	05 ONLY	
subkit MAB	74	tiewrap	6	DC9627	05 ONLY	
	75	bracket, airbox grommet, large hole	1	XS0500-44		
	75S	small hole	1	XS0500-44S		
	76	stay, front	1	XS0500-45		
	77	rear	1	XS0500-43		
	78	pins, airbox	2	XS5556-58R		
	79	bolt, 6mm 1.0 flange head x 12	6	MS775511*		
	80	nut, 6mm 1.0 flange head	4			
	81	fitting, plastic 90 deg 3/8 x 3/8 NPT	1	MK5463K503		
	82	clamp, hose #8 mini	1	DA91008		
shipped separately	83	tiewrap	1	DC9627		
	84	airfilter	1	KNRC5040		
	85	hose, inlet	1	GFXL2Z-9B659-CA		
	86	airbox	1	XS0500-40		
	87	tube, EGR	1	XS0500-20		
	88	pulley, idler	2	FS7145972		
	89	hose, radiator	1	GY52430		
	90	drivebelt, 6 rib / 105.5 length	1	GY4061055		
	91	spark plugs	6	NGK7060		
	92	hose, breather	1	GY63824	2.5 x 20	
	93	computer reprogrammer	1	SCT Xcalibrator2		
	94	reprogrammer cable	1	"		
	subkit MIHP	95	sticker, X-CHARGER diecut	2	ZD5556-25	
		96	drivebelt routing	1	ZD5556-22	
		97	octane warning	1	ZD5556-24	
		98	instructions	1	XS0500-MCHP	

SPECIAL TOOLS REQUIRED:

- Torx T20 socket or bit
- Torx T30 socket or bit
- E8 inverted Torx socket
- 1 1/16 crowfoot wrench
- 1 1/16 wrench
- 15mm deep socket
- 10mm swivel socket/ 1/4 drive
- 6MM hex key with short leg
- heat gun

RECOMMENDED SUPPLIES:

- teflon paste thread sealer (Permatex 80632)
- silicon sealer (Permatex Ultra Black 598B)
- trim adhesive (3M 08031)
- electrical tape (Scotch Super 33+)
- silicone spray

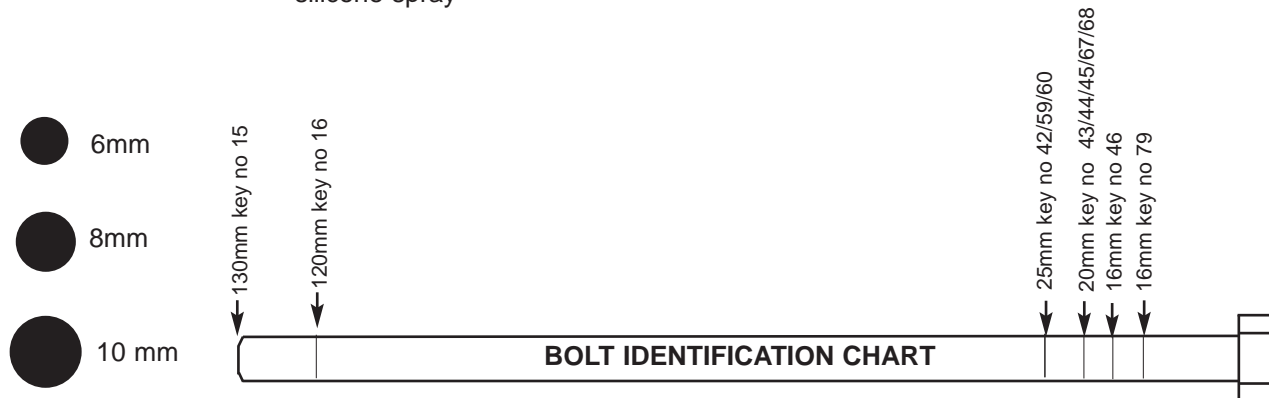




Figure PA inlet adapter key no 05



Figure PB inlet extension key no 06



Figure PC discharge manifold key no 02



Figure PD discharge manifold lid key no 03



Figure PE nose support key no 08



Figure PF idler plate key no 07



Figure PG coil bracket key no 04



Figure PH spacers



Figure PI EGR adapter key no 65



Figure PJ EGR tube key no 87



Figure PK thermostat cover key no 71



Figure PL fuel rail extension key no 56



Figure PM breather hose key no 92



Figure PN ACT harness / sensor



Figure PO gaskets



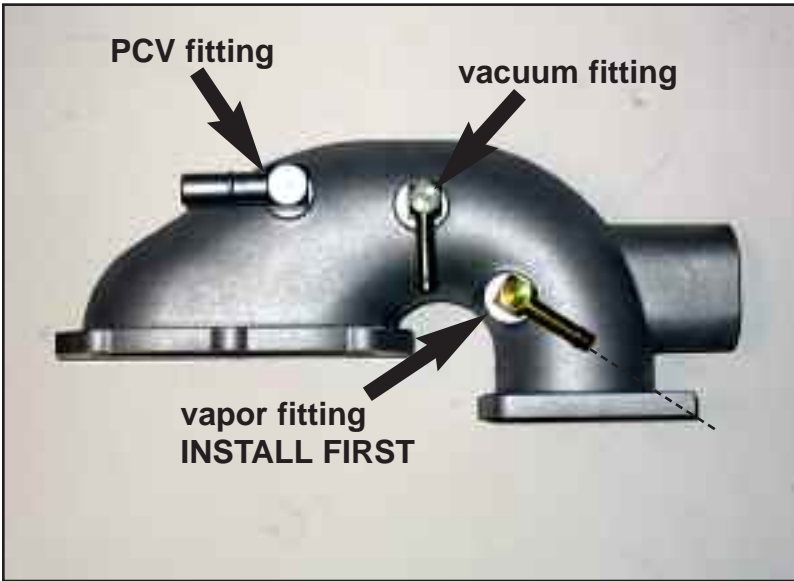
Figure PP fittings



Figure PQ airbox grommet bracket



Figure PR plug wire brackets



1. Locate the **Inlet Adapter** (key no 05).

CAUTION:
**THIS PART MUST BE THOROUGHLY
 CLEANED WITH SOAP AND WATER
 BEFORE ASSEMBLY**

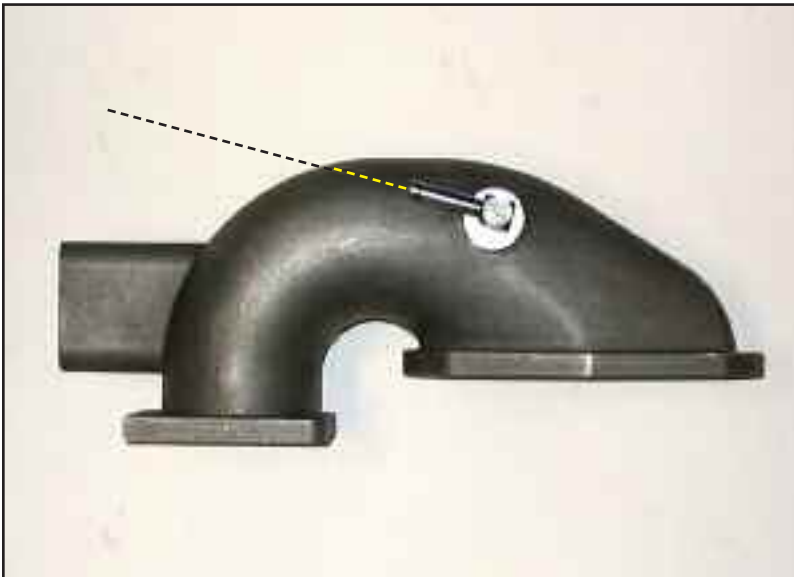
Install the **1/4 NPT X 3/8 Vapor Fitting** (key no 51) **FIRST**.

Install the **1/4 NPT X 3/8 Vacuum Source Fitting** (key no 51).

Install the **PCV Special Fitting** (key no 50).

Use teflon tape or paste on the pipe threads and align as indicated in Figure SA.

Figure SA install inlet adapter fittings



2. Turn the Inlet Adapter over and install **1/4 NPT X 3/8 Barb Fitting** (key no 51) aligned as shown.

Figure SB bottom side fitting



3. Install the Inlet Adapter onto the supercharger assembly with **Supercharger Inlet Gasket** (key no 22).

Use (6) **8mm X 20 Socket Head Bolts** (key no 43) with an **5/16 AN Washer** (key no 49) under each bolt head except at the Plug Wire Bracket.

Install **Inlet Plug Wire Bracket** (key no 40) under the left upper bolt as shown. Start all the bolts first, then tighten in stages.

CAUTION:
**DO NOT PICK THE ASSEMBLY UP
 BY THE BY-PASS VALVE**

Figure SC install inlet adapter

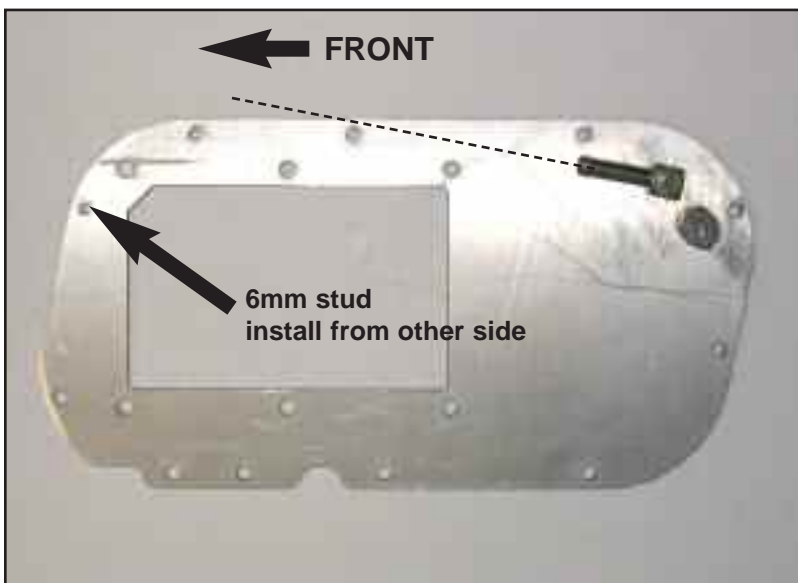


Figure SD install sender and fitting



Figure SE captured bolt



Figure SF install discharge manifold lid

4. Locate **Discharge Manifold Lid** (key no 03).

Install **1/4 NPT X 1/4 Barb Fitting** (key no 52) with nipple aligned as shown. Use teflon tape or paste on threads. Install this fitting **FIRST**.

Install **ACT Sensor** (key no 63). Sensor has sealer preinstalled.

Turn the Discharge Lid over and install **6mm Stud** (key no 47) into the right front threaded hole with the shorter threaded end into hole. Use **Red Locktite** (key no 25) on threads.

CAUTION:
USE CARE NOT TO DAMAGE THE ACT SENSOR WHEN HANDLING THE DISCHARGE MANIFOLD LID / SUPERCHARGER ASSEMBLY

5. Turn the Supercharger Assembly upside down and place the Discharge Manifold Lid with **Supercharger Discharge Gasket** (key no 20) between the parts. The gasket must be indexed to the Discharge Lid cutout. One corner is angled. See Figure SF-1 below. Apply a thin coat of Silicone Sealer to both sides of the Supercharger Discharge Gasket.

Before bolting the Supercharger unit to the Discharge Manifold Lid, place a **6mm x 16 Flange Head Bolt** (key no 46) into the left front hole in the Discharge Lid. See Figure SE. Wrap tape around the exposed threads to keep the captured bolt from falling out when the assembly is turned over.

Apply Red Locktite on the threads of the bolts, install (5) **8mm X 25 Socket Head Bolts** (key no 42) and (1) **8mm x 20 Countersunk Head Bolt** (key no 44).

Use 5mm and 6mm allen sockets.

Tighten the bolts from the center outwards. Torque bolts to 20 ft/lbs.

Inspect for excess sealer that may have been squeezed out into the S/C discharge port. Remove excess sealer if required.

Remove tape from captured bolt.



Figure SG install EGR adapter

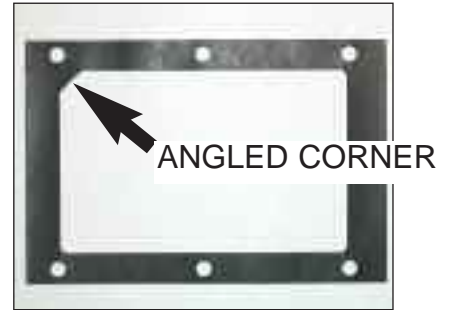


Figure SF-1 discharge gasket

6. Install the **EGR Adapter** (key no 65) with **EGR Gasket** (key no 66) between the parts and secure with **8mm Countersunk Socket Head Bolt x 20** (key no 68) and one **8mm Socket Head Bolt x 20** (key no 67) with a **5/16 AN Washer** (key no 69) under the head as shown with the countersunk bolt towards the supercharger nose.

7. Install by-pass motor **Vacuum Hose 7/32 X 13** (key no 28).

CAUTION:
DO NOT PICK THE ASSEMBLY UP BY
THE BY-PASS VALVE



Figure SH connect vacuum hose

DISASSEMBLY



Figure A remove fuel pump relay

1. Remove fuel pump relay. Position #21.

Start the engine and allow it to idle until engine dies.

After the engine stalls, crank the engine for 5 seconds to make sure the fuel pressure has been relieved.



Figure B disconnect battery

2. Disconnect negative battery cable. Use a 8MM wrench.

Reinstall fuel pump relay.

3. Drain coolant. Radiator drain plug is on the right side of the radiator. Use a 19 mm wrench.

The Mustang uses long life coolant. Save coolant for reinstallation later.

After coolant has drained out, retighten drain plug. Do not overtighten.

4. Disconnect MAF sensor connector. Pull red tab out, then squeeze connector to disconnect.

Disconnect breather tube. Push green tab to release.



Figure C drain coolant

Remove air inlet hose. Use 8mm nut driver on clamps.

Remove the single 10mm head bolt retaining the airbox. Remove the airbox.

The retaining bolt will be reused.

Using a T20 Torx tool remove the MAF sensor element screws and sensor.

The Sensor and screws will be reused.

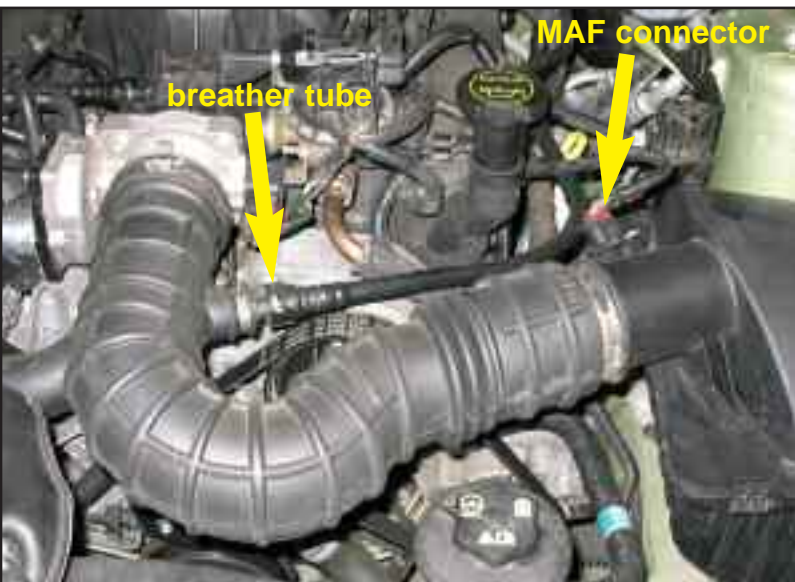


Figure D remove inlet hose



Figure C-1 electrical connector



Figure D-1 hose connector

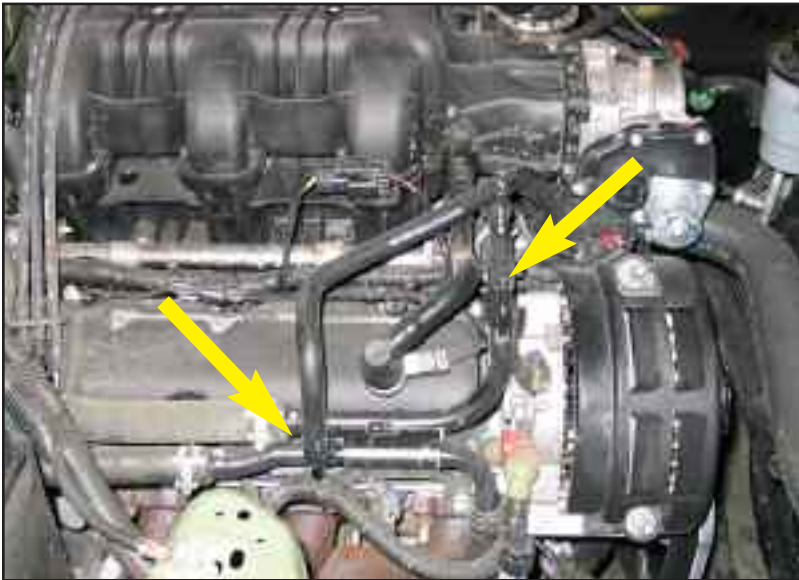


Figure E disconnect throttle heater hoses

05 ONLY

5. Disconnect throttle body heater hoses. Leave hoses connected to throttle body. They will be removed later.

Clamps will be reused.

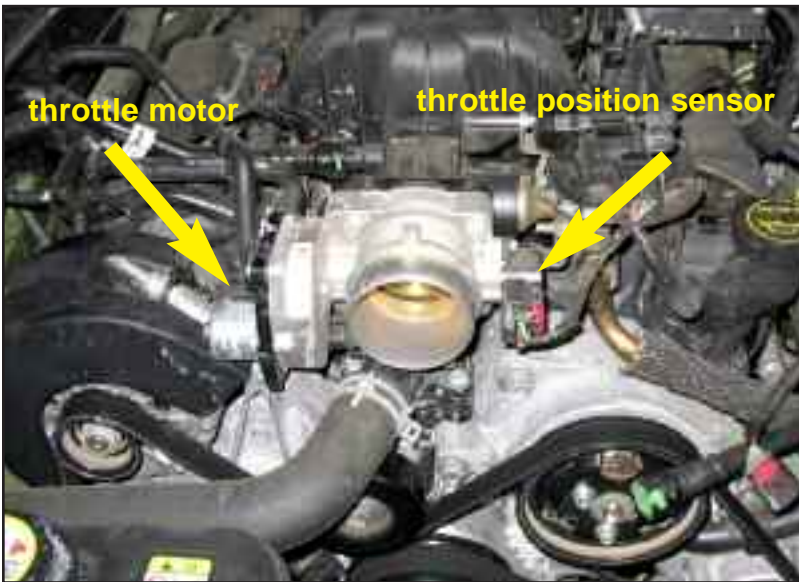


Figure F remove throttle body

6. Disconnect throttle body electrical connectors for the throttle motor and position sensor. Pull the red tabs, then squeeze connectors to remove.

Remove the throttle body. Use 8mm socket. Save the bolts, they will be reused.

05 ONLY

Remove heater hoses from the throttle body. They will not be reused.

Remove the spring clamps from the hoses, they will be reused.



Figure G remove PCV tube

7. Remove the PCV tube. Push green tab on connector to release.



Figure H knock sensor connector

8. Pry knock sensor connector from intake manifold. Do not disconnect.



Figure I remove breather hose

9. Remove breather tube. Pull green tab to release connector at valve cover.

PRESS BLACK TAB



Figure J-1 EGR connector

10. Disconnect EGR electrical connector. Squeeze connector to release.

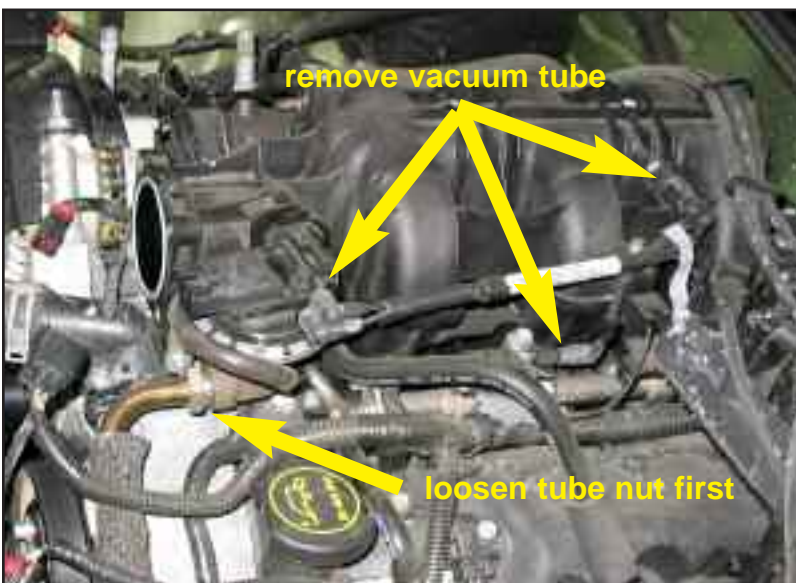


Figure J remove EGR valve

Remove vacuum tube from EGR valve, fuel regulator and vacuum source.

Loosen large tube nut at EGR valve. Use 1 1/16 wrench.

Remove EGR bolts. Use 10mm socket. Remove EGR Valve. The EGR valve, bolts and gasket will be reused.

Remove EGR supply tube from the exhaust manifold. Use a 1 1/16 wrench. A crowfoot wrench is very helpful on the manifold end.

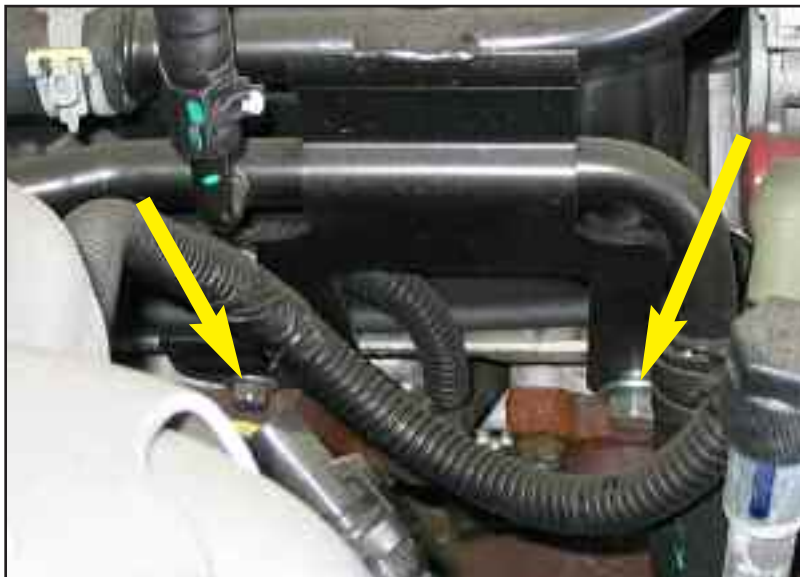


Figure K loosen heater hose bracket



Figure L remove plug wires



Figure M disconnect coil

11. The #1 spark plug wire is trapped by the heater hose bracket.

Loosen two bracket bolts so that the bracket can be pulled away from the valve cover and the spark-plug boot pulled clear. Use 10mm wrench or socket and 15mm wrench or socket.

Free the plug wire.

Retighten the bolts.

CAUTION:
DON'T BE ROUGH WITH THE PLUG WIRES, THEY ARE FRAGILE

NOTE:
PLUG WIRES AND COIL PLUG WIRE CONNECTIONS ARE NUMBERED

12. Remove spark plug wires. Pry wire separators from intake manifold and coil bracket. Use needle nose pliers to pull the retainers from the valve cover studs.

The plug wires will be reused, but on the opposite sides. The wire retainers and separators will be reused.



Figure M-1 coil connector

13. Disconnect coil harness. Pry CAREFULLY on plastic retainer and pull connector loose. Plastic retainer breaks easily - do not over bend.

Remove four coil screws. Use 7mm socket.

Remove coil.

Do not disconnect the capacitor.



Figure N remove coil bracket



Figure O remove vapor and booster hoses



Figure P low budget special tool

14. Remove two coil bracket bolts from intake manifold. Use 8mm socket. These bolts will not be reused.

Remove bracket bolts from head. Use 10mm wrench or socket and 15mm wrench or socket. These bolts will not be reused.

Remove coil bracket. It will not be reused.



Figure O-1 brake booster connector



Figure O-2 vapor hose connector

15. Disconnect brake booster hose.

Disconnect vapor hose. Depress white ring to release.

16. Low budget special tool.

Use a torx 30 bit with 5/16 hex, 5/16 1/4 drive socket and 6" 1/4 extension. Tape the tool together so they won't fall apart when the tool is pulled from the manifold access holes.

The bolts can be left in the manifold holes and removed with the manifold.

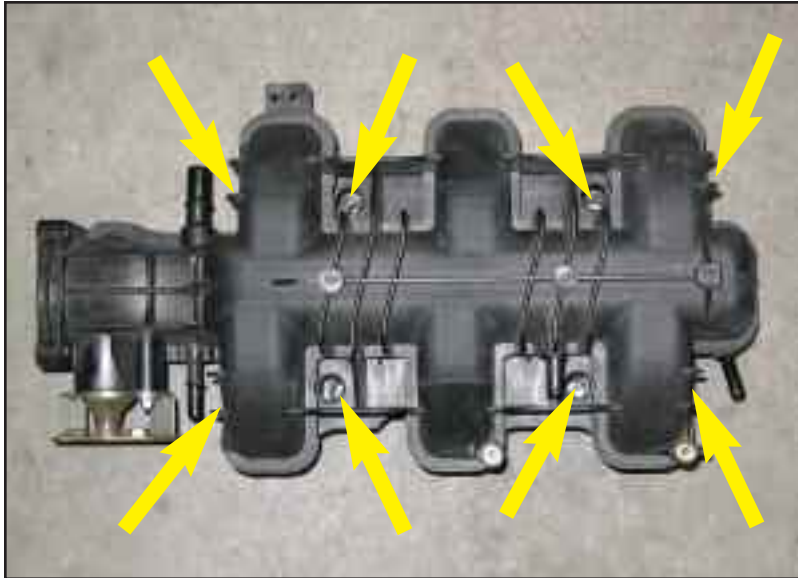


Figure Q intake manifold bolts

17. If compressed air is available blow dirt, etc from around base of intake manifold.

Remove (8) intake manifold bolts. Use #30 torx tool or low budget special tool as shown in Figure P.

Remove intake manifold.



Figure R tape intake ports

18. Clean intake port flanges.

Tape intake ports.



Figure S remove thermostat cover and upper rad hose

19. Remove upper radiator hose.

Remove thermostat cover. Use 8mm socket.

Save the bolts and clamps, they will be reused.



Figure T remove thermostat cover dowels

20. Remove thermostat housing dowels.

Squeeze the split side of the dowel with pliers and pull each dowel out.



Figure U Remove drivebelt

21. Remove drivebelt.

Use a 3/8 flex handle or 3/8 long handle ratchet.

Engage the 3/8 square into the square in the tensioner and turn counterclockwise.



Figure V remove alternator cover

05 ONLY

22. Remove alternator cover.

Use a 15mm deep socket on the nuts. Do not reinstall nuts at this time.



Figure W modify alternator cover

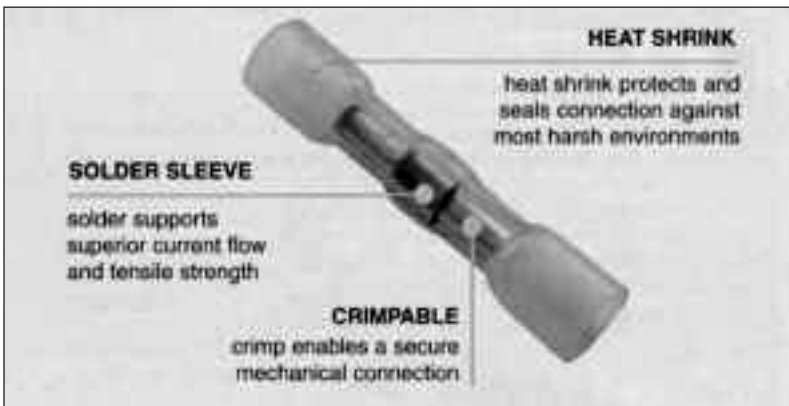
05 ONLY

23. Modify the alternator cover by cutting off 3/8 inch as shown.

Dress cut with file or belt sander.

MODIFY WIRING HARNESS

INSTALLING ULTIMATE CRIMP CONNECTORS



The butt connectors supplied with the extension wires are the most up to date technology and make a very trouble free connection when properly installed.

NOTE:
**INSTALLATION REQUIRES
A HEAT GUN**

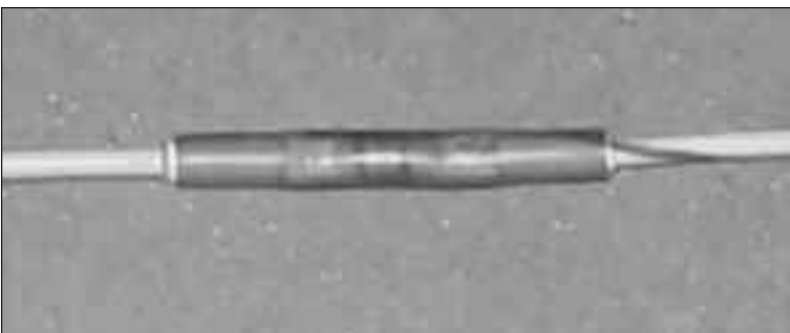
1. Strip 3/8 insulation from wire.

Make sure the wire is properly seated and crimp the connector using a crimping tool of the correct size for insulated connector.

CAUTION:
**DO NOT CUT
CONNECTOR INSULATION**

2. Apply heat evenly with a heat gun around the length of the tubing (including the crimp area) from the center out until the tubing fully shrinks and the adhesive flows out the ends.

Continue distributing the heat until solder melts and gets shiny.



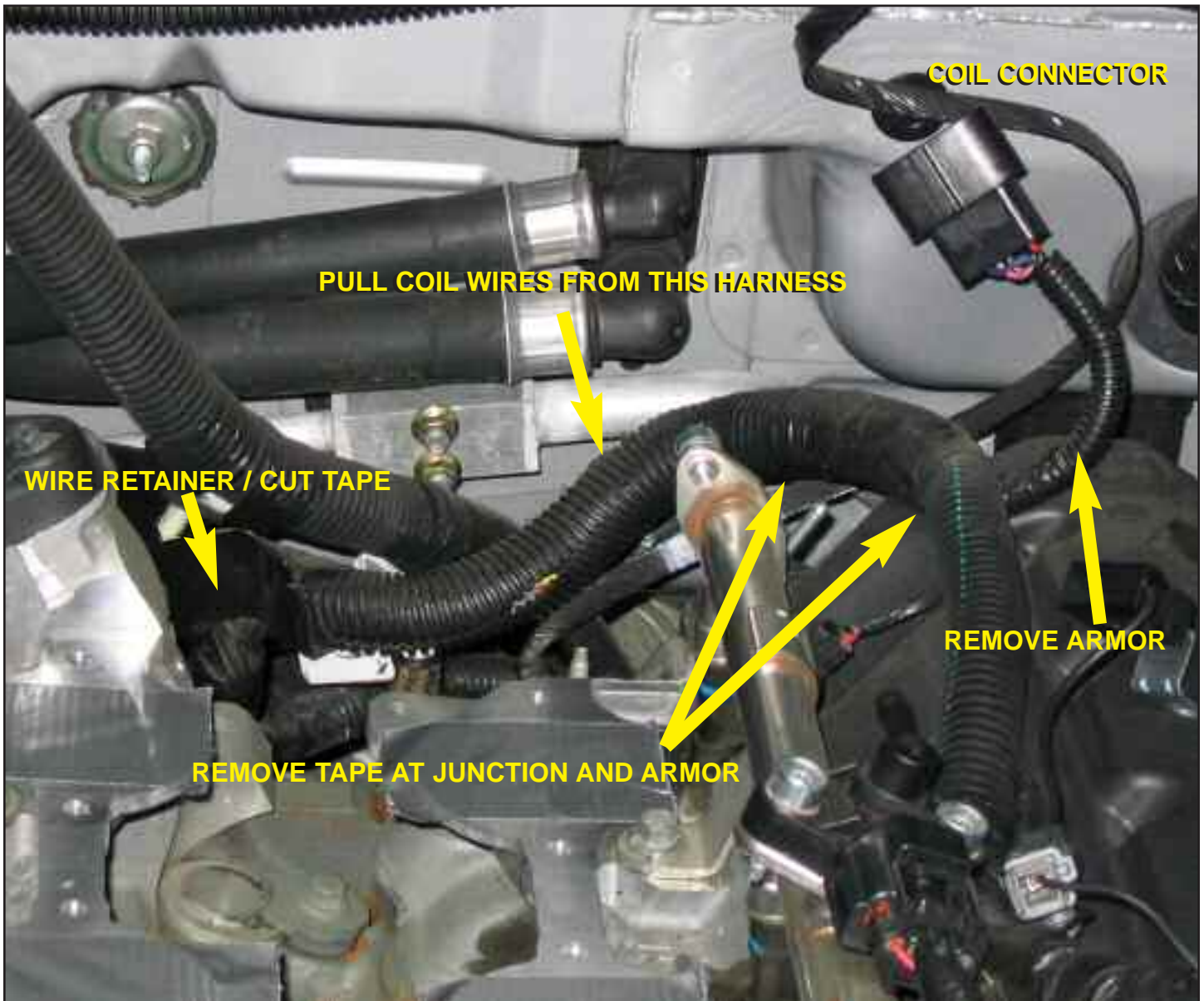


Figure HA modify coil harness

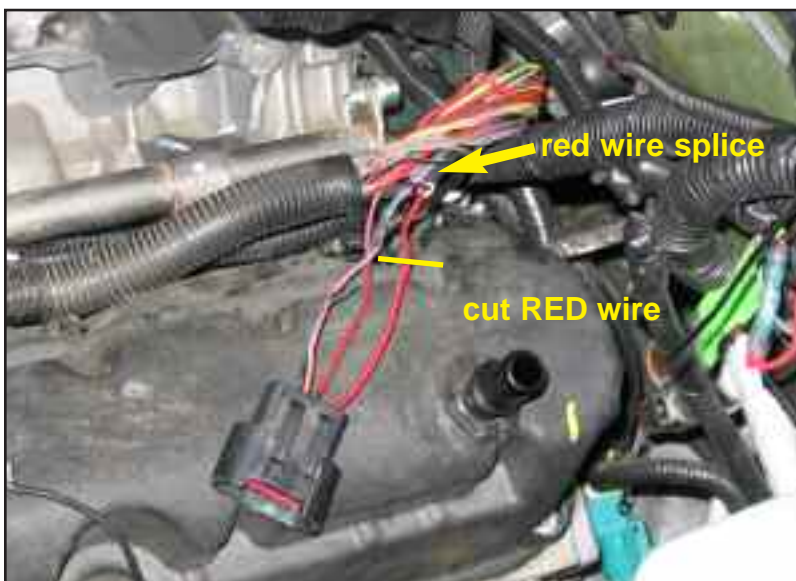


Figure HB expose coil wires

1. Remove the wire armor at the coil harness.
Pull coil wires from harness.
Locate RED wire (NOT RED WITH WHITE).
Locate red wire splice in main harness.
Cut the red wire between the harness splice and the coil connector.



Figure HC pull coil wires from harness

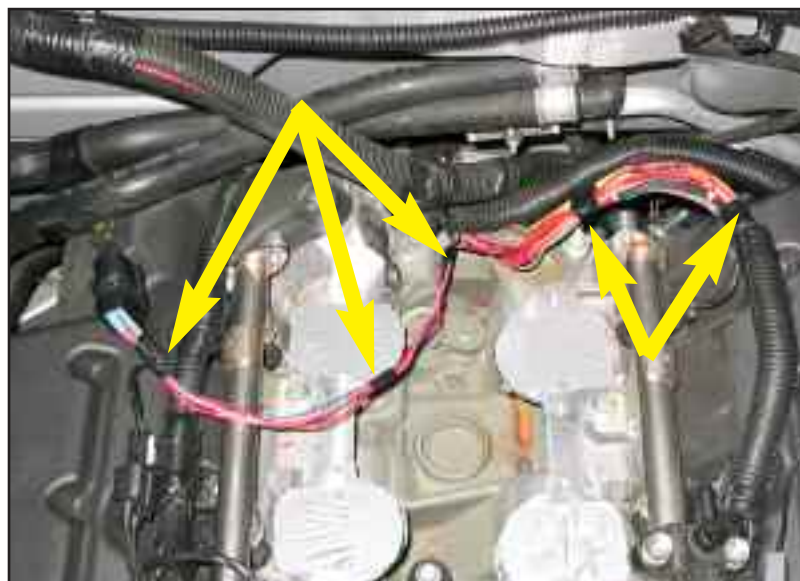


Figure HD tape coil harness

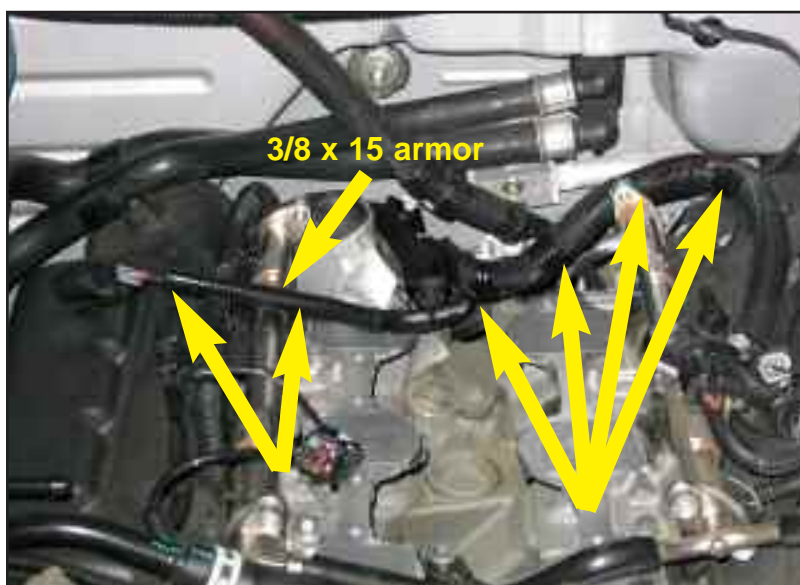


Figure HE tape coil harness

2. Carefully cut the tape from the harness junctions and from the armor as shown in Figure HA.

Pull the wire armor off the wires, but do not remove the armor. Cut the tape that holds the wire bundle together inside the armor.

Pull four coil primary wires from harness back to the v shape harness retainer at the back of the block. Wires will be about 15" from v shaped bracket to the end of the coil connector.

Splice the **Red Extension Wire x 20** (key no 32) to loose ends of cut red wire as shown above.

3. Tape the wires together at harness junctions and in several places on the coil wires and on the main harness where tape was cut off above.

Reinstall main harness wire armor.

4. Install new **3/8 Wire Armor x 15** (key no 36) over coil wires.

Retape wire armor at the junctions and in several places along the armor.

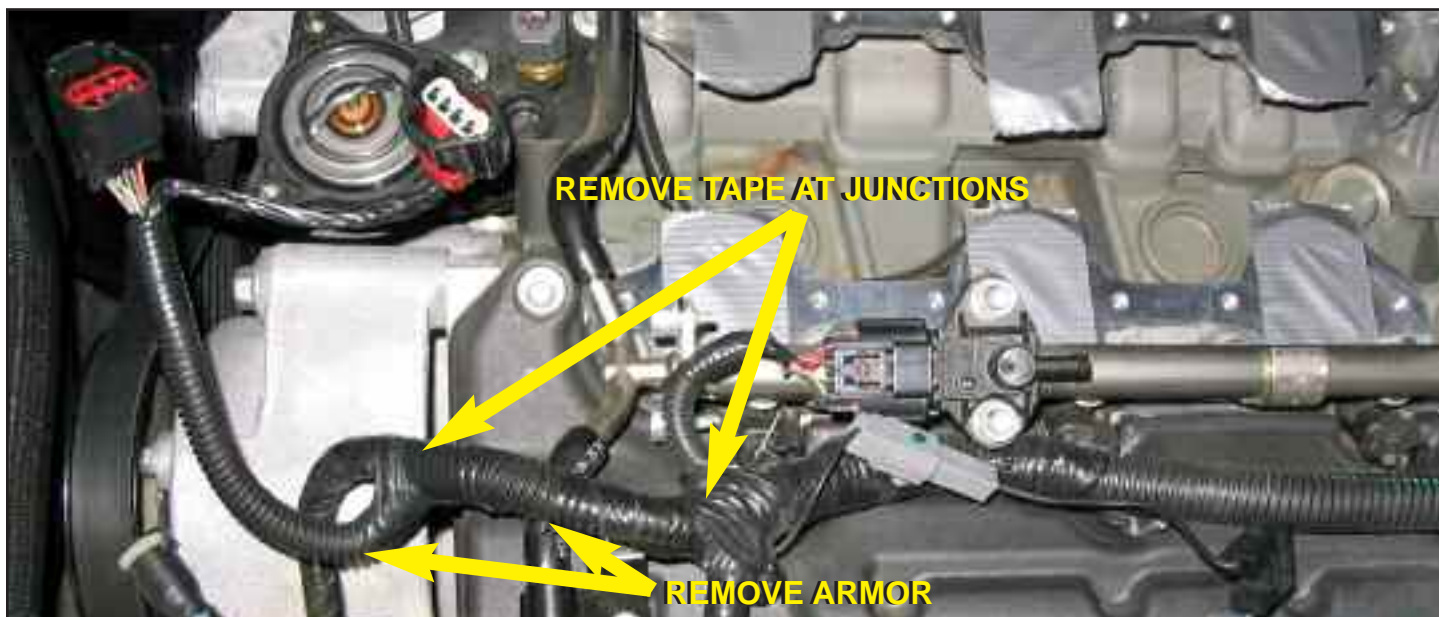


Figure HF throttle body / EGR harness

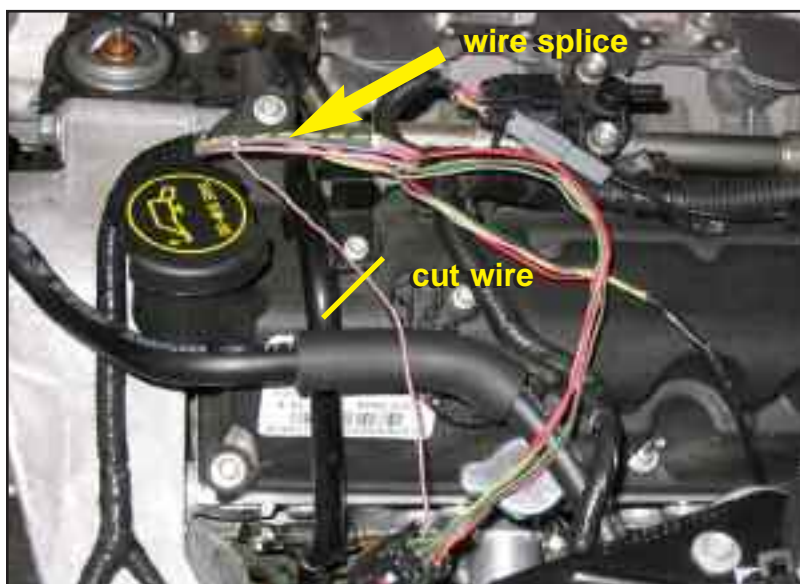


Figure HG cut TB wire

5. Locate grey with red stripe junction. Separate grey with red stripe wire and cut as shown. The grey/red wire to be extended is shorter than the others.

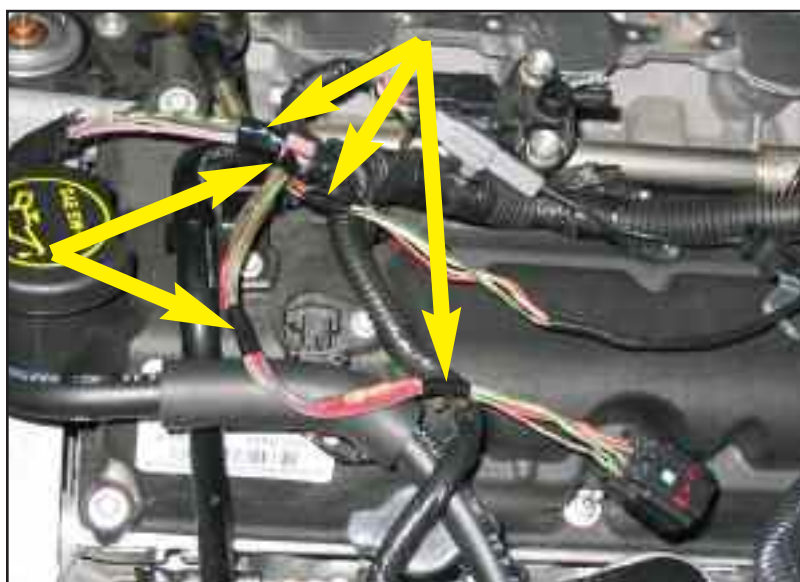


Figure HH tape EGR/TB wires

6. Extend cut grey w/ red wire with **Grey / Red Extension Wire x 7.5** (key no 29).

Tape the wires together as shown.

7. Locate:

- (1) **1/2 Wire Armor x 5 inches**
(key no 33)
- (1) **3/8 Wire Armor x 10 inches**
(key no 34)
- (1) **3/8 Wire Armor x 13 inches**
(key no 35)

Install Wire Armor as shown.

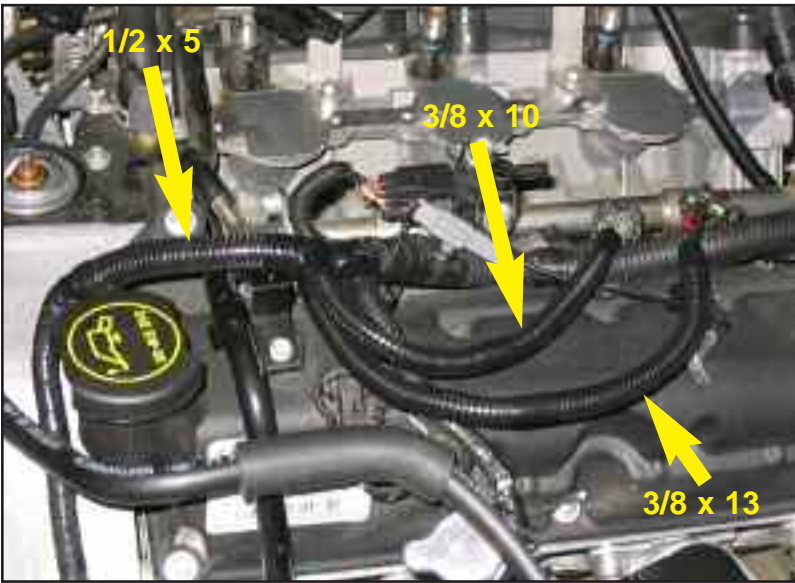


Figure HI wire armor installed

8. Tape junction, centers and ends of armor.

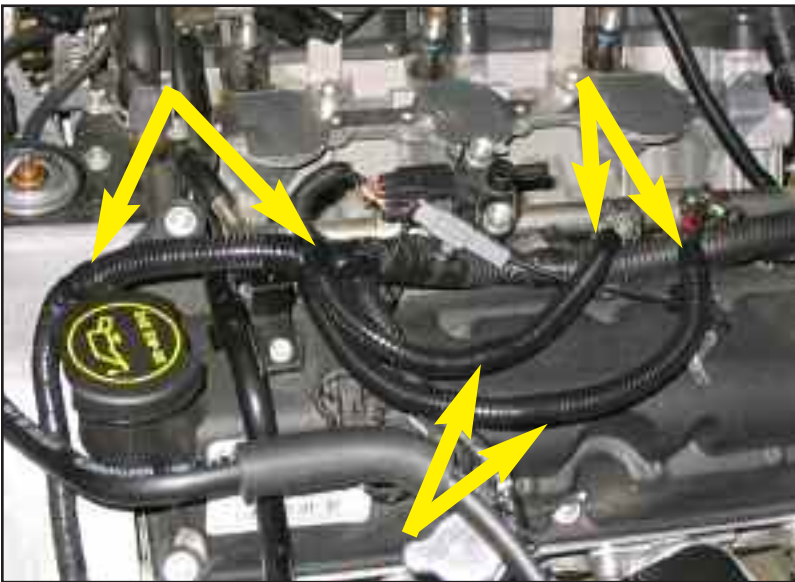


Figure HJ install wire armor

9. Remove tape from the MAF harness from the end of the armor to the junction with the Cam Position Sensor wires.

Pull grey and grey w/ red wires from the harness.

Cut grey and grey w/ red wires 4 inches from the end of the connector.

Pull the grey and grey w/red wires out of the armor up to the Cam Position Sensor harness junction.



Figure HK cut MAF harness

10. Connect the new **ACT Sensor Harness** (key no 64) to the cut ends of the ACT wires. These wires do not need to indexed (color coded).



Figure HL cut ACT wires



Figure HM tape ACT harness

11. Route the ACT harness toward the rear of the engine and install **3/8 Wire Armor x 29** (key no 38).

Push cut grey and grey wred wire stubs into the existing stock wire armor.

Tape the ends, junction and several places on the armor.



Figure HN harness tiewraps

12. Cut tape from the end on the Throttle Position Sensor harness.

Pull the TPS wires from the armor.

Stagger cut the wires approximately 1.5 inches apart.

Connect **Orange Extension Wire x 20** (key no 30) to the orange w/ white wire ends between the harness and the cut off connector.

Connect the **Blue Extension Wire x 20** (key no 31) to the blue w/ yellow wires.

13. Tape the Throttle Actuator wires together in several places.



Figure HO tape Throttle Actuator wires

14. Push Throttle Actuator wires back into the original armor.

Install **3/8 Wire Armor x 21** (key no 37) over the Throttle Actuator wires from the end of the stock armor.

Tape the armor together in several places.



Figure HP install Throttle Actuator wire armour

15. Route the Throttle Actuator harness along the front of the engine and under the left side harness.

Route the TPS harness under the right side engine harness toward the center.

Route the ACT harness rearward and along the firewall.

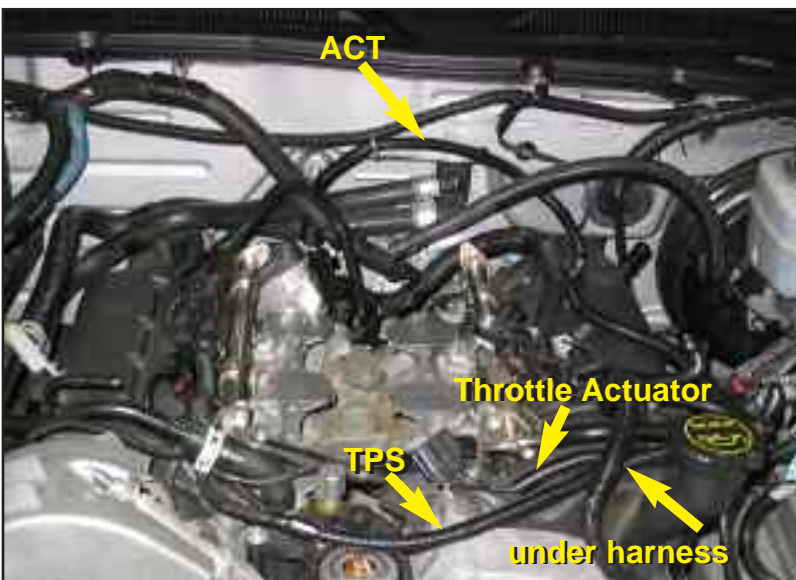


Figure WQ route Throttle Actuator harness

16. Install (4) **Tiewraps** (key no 26) on the left side harness:

1. TPS harness to the Throttle Actuator harness
2. ACT harness to the EGR harness
3. ACT to engine right side harness
4. Throttle Actuator harness to MAF harness and TPS harness

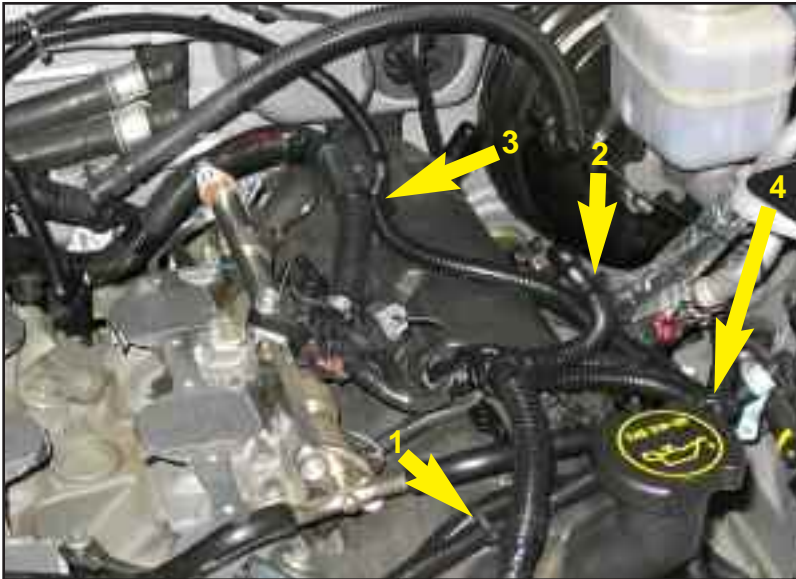


Figure WR four tiewraps on the left side

17. Install (3) **Tiewraps** (key no 26) on the right side harness:

5. ACT harness to firewall harness
6. Coil harness to main harness
7. Knock Sensor connector to engine harness

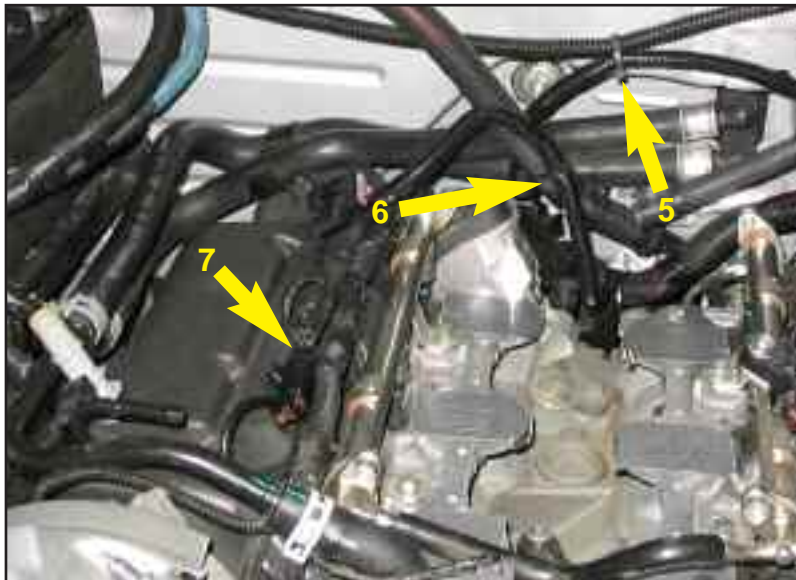


Figure WS three tiewraps on the right side

PREPARE PCV TUBE

1. Locate the stock PCV Tube.

Evenly heat the end of the tube with heat gun until the 90 fitting can be pulled from the tube.



Figure BA remove PCV valve fitting

2. Measure from the very end of the tube fitting 8 1/8 inches along the top radius of the tube as shown.

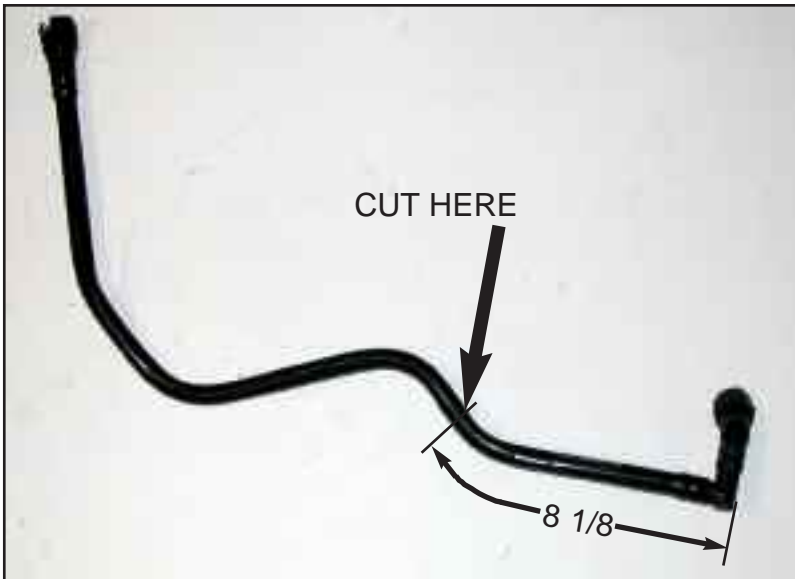


Figure BB cut off stock breather tube

3. Heat the cut end of the former breather hose and insert the fitting. Concentrate the heat on the end of the tube. Do not overheat.

This is the new PCV Tube.



Figure BC complete new PCV tube

REPLACE FUEL INJECTORS

1. Use a 7mm socket to remove the fuel line bracket bolt.

Remove bracket, it will not be reused. Save bolt.



Figure IA remove fuel line bracket



Figure IB loosen fuel crossover bolts

2. Loosen two Torx 30 head bolts from the fuel rail crossover on each side.

Remove the driver's side crossover bolts.

Pull left side crossover fitting from the fuel rail.

The crossover bolts will not be reused.

CAUTION:
HAVE A RAG HANDY TO SOAK UP FUEL DRAINING OUT OF THE RAILS



Figure IC fuel rail bolts

3. Remove (4) fuel rail bolts. Use a 10mm socket.

Pull fuel rail rails off injectors.



Figure ID disconnect right fuel rail

4. Remove fuel right side crossover bolts and disconnect fuel rail from the crossover.

Bolts will not be reused.



Figure IE injector orientation

5. Note orientation of injectors.

Remove injectors from the head.

Disconnect injector connectors by squeezing on the tab on the connector side.



Figure IE-1 injector connector



Figure IF injectors and seats

6. Clean dirt and grit from the injector seats. If any of the seats came out with the injectors, remove seat from old injector and reinstall in head.

If any of the seats are damaged, they must be replaced. See your local friendly Ford dealer.

Install new **39 lb Injectors** (key no 54) into heads.

Lube o-rings with silicone spray.

Orientate fuel injectors, then connect injector electrical connectors.



Figure IG reroute fuel line

7. Reroute fuel supply hose over the wiring harness.



Figure IG-1 fuel rail extension



Figure IH install fuel rail extensions

8. Install new **O-rings** (key no 58) onto the **Fuel Rail Extensions** (key no 56).

Install new **O-rings** (key no 58) onto fuel crossover.

Lube O-rings with silicone spray to ease installation.

Insert Fuel Rail Extensions into fuel crossover pipe nipples.

Insert the Extensions into the Fuel Rails and secure them to the fuel rails with four **5mm.8 x 25 Phillips Head Screws** (key no 60), **5mm Flat Washers** (key no 61) and **5mm Lock Washers** (key no 62).



Figure II install fuel rails and spacers

9. Reinstall the Fuel Rails onto the injectors. Lube o-rings with silicone spray.

Engage injectors into rail, then push rail down onto all three injectors at the same time.

Place **Fuel Rail Spacers** (key no 55) between the rail brackets and the heads and secure with **8mm x 25 Flange Head Bolts** (key no 59).



Figure IJ install fuel hose bracket

10. Install new **Fuel Line Bracket** (key no 57) using original 7mm head bolt.



Figure DA install alternator spacer and bracket

1. Remove alternator nuts and bolt. Use 15mm deep socket on the nuts and 13mm socket on the bolt.

DO NOT DISCONNECT ALTERNATOR WIRING

Pull alternator clear of studs.

Install **Idler Plate Bracket** (key no 09) over upper single stud orientated as shown in Figure DA.

Install **Alternator Spacer** (key no 13) over stud on the lower, 2 bolt side.

Reinstall stock nuts and bolt. Do not tighten alternator bolt or nuts at this time.

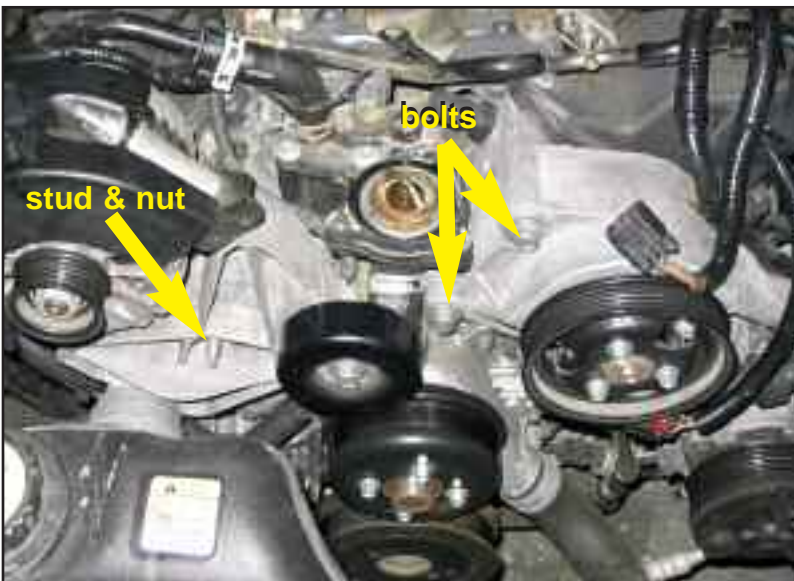


Figure DB remove idler pulley and front bolts

2. Remove the stock idler pulley. Socket size 15mm.

Remove one nut from the alternator bracket as shown. Use 15mm deep socket.

Remove stud with #E8 inverted torx socket. Nut and stud will not be reused.

Remove two power steering bolts from left side accessory bracket. Use 15mm socket.

These bolts will not be reused.

NOTE:
SOME ENGINES HAVE A BOLT RATHER THAN THE STUD AND NUT AS SHOWN.

3. Locate **Idler Plate** (key no 07)

- (1) **Short Spacer** (key no 10)
- (2) **Long Spacer** (key no 11)
- (2) **12mm X 130 Bolt** (key no 15)
- (1) **12mm x 120 Bolt** (key no 16)
- (3) **12mm Flat Washer** (key no 18)
- (3) **12mm Lock Washer** (key no 19)
- (2) **8mm x 20 Flange Head Bolt** (key no 17)

Bolts, with lock washers under the head and flat washers under the lock washers, are installed thru Idler Bracket and thru Spacers, thru the factory brackets and into the cylinder heads.

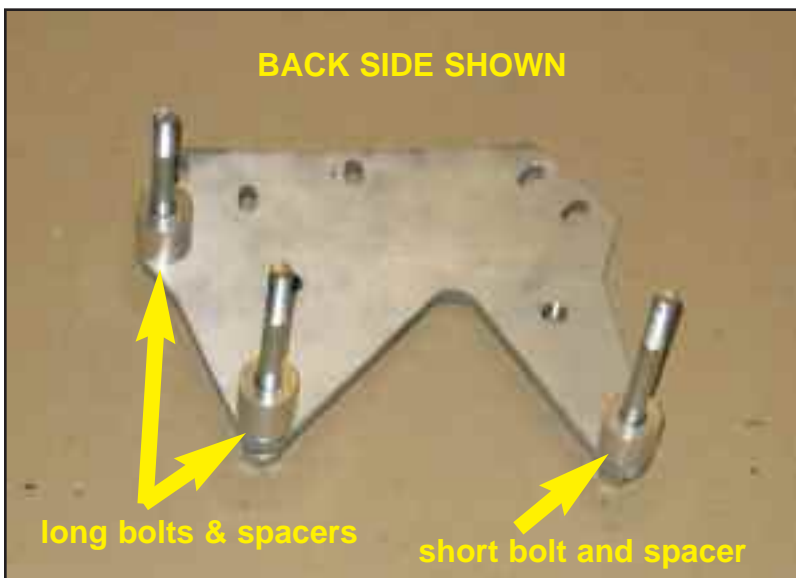


Figure DC idler plate with bolts and spacers



Figure DD install idler plate

4. Install bolts, washers and spacers into Idler Plate. Then place the Idler Plate into position and the bolts into the engine brackets. Finger tighten bolts.

Intall (2) **8mm x 20 Flange Head Bolts** (key no 17) thru the Idler Bracket into the Idler Plate Bracket previously installed. Finger tighten bolts.

Tighten the 10mm Bolts evenly, in stages, untill tight. Use 17mm socket.

Tighten bracket bolts. 13mm socket.

Tighten alternator bolt and nuts.

Reinstall alternator cover, if originally equipped.



Figure DE install idler pulleys

5. Install **Special Shoulder Bolts** (key no 14) thru **Idler Pulleys** (key no 88).

Install **Pulley Spacers** (key no 12) on to Idler Bolts on the backside of the pulley.

Install Idler Pulleys and tighten with a 3/4 socket.



Figure DE-1 idler pulley spacer

ASSEMBLY



Figure AA install thermostat cover

1. Install new **Thermostat Cover** (key no 71) using original bolts.

Secure TPS harness to the Fuel Crossover Tube with (1) **Tiewrap** (key no 26).



Figure AB position heater hoses

2. Rotate heater hoses and tuck them behind valve cover to easy coil installation.



Figure AC coil and bracket

3. Bolt coil to **Coil Bracket** (key no 04) with original bolts.

Install **Coil Spark Plug Wire Bracket** (key no 39) as shown.

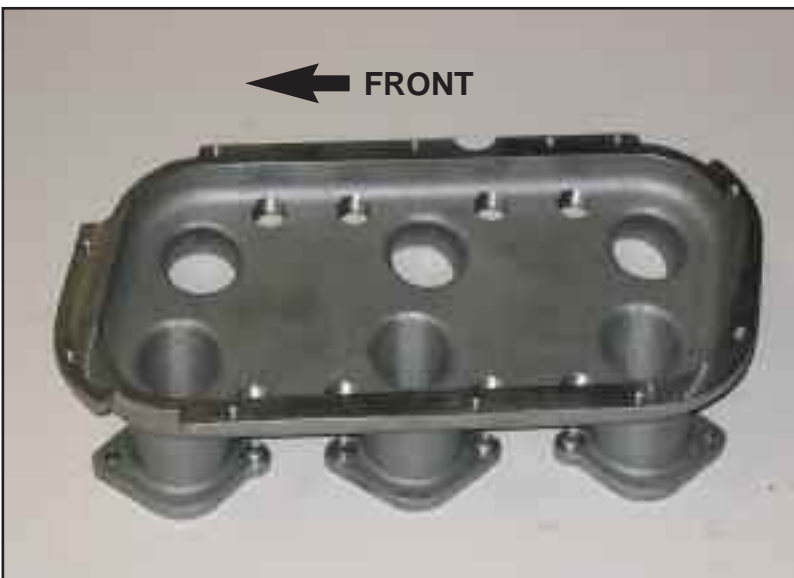


Figure AD discharge manifold

4. Locate the **Discharge Manifold** (key no 02).

CAUTION:
**THIS PART MUST BE THOROUGHLY
 CLEANED WITH SOAP AND WATER
 BEFORE ASSEMBLY.**

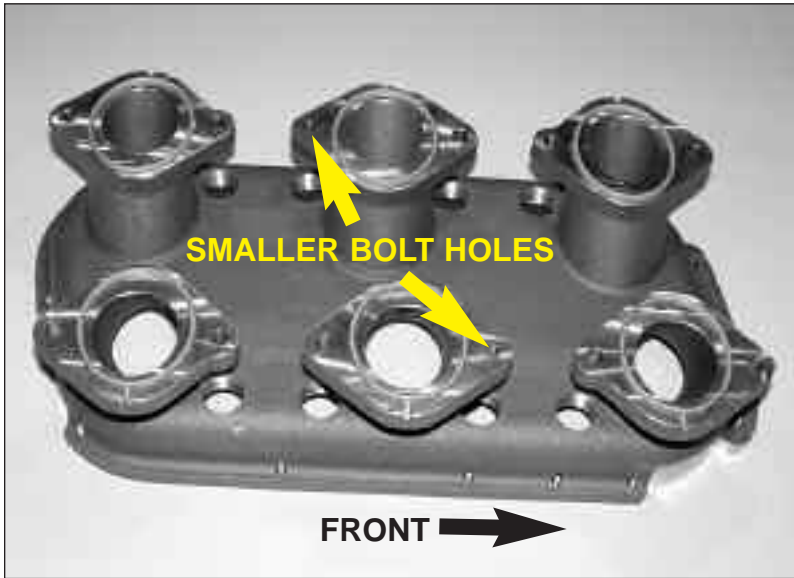


Figure AE discharge manifold



Figure AF install discharge manifold

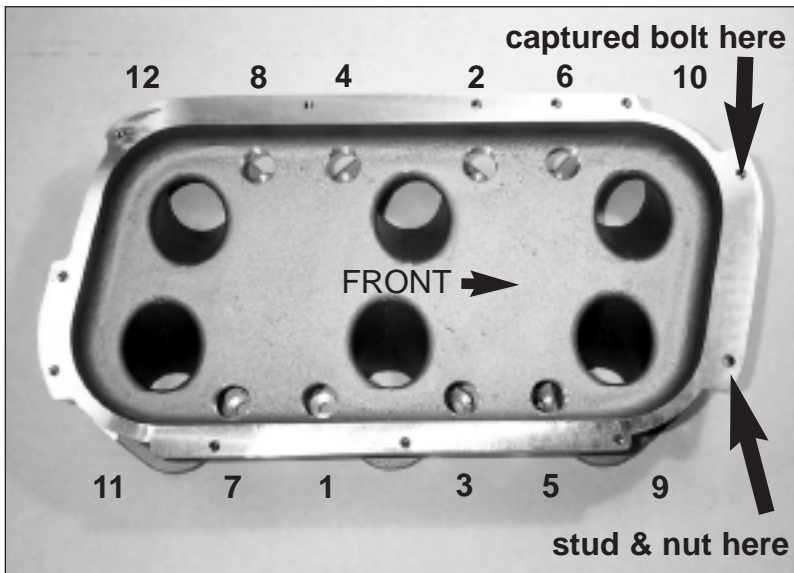


Figure AG Manifold torque pattern

5. Turn the **Discharge Manifold** (key no 02) upside down and glue (6) **Discharge Manifold Gaskets** (key no 24) to the Discharge Manifold.

The must be glued on with more rounded edge toward the inside.



Figure AE-1 discharge gasket

6. Remove tape from the intake ports. Clean port flanges.

Insert (12) **6mm x 20 Flange Head Bolts** (key no 45) into holes on the Discharge Manifold flanges.

Place the Discharge Manifold into place with the bolts in their holes.

NOTE:

THE CENTER RIGHT AND LEFT PORT FLANGES HAVE ONE FLANGE HOLE DRILLED SMALLER THAN THE OTHERS. INSTALL THESE BOLTS FIRST TO LOCATE THE MANIFOLD.

Tighten bolts as shown in Figure AG below.

Torque bolts to 10-12 lf/lbs.

7. Install (8) **Special Manifold Plugs** (key no 41). These plugs have a factory installed sealer/anti-seize. No other sealer is required. When tight they will be approximately flush with manifold floor.

Clean out any scraps from the sealer.



Figure AH apply sealer to discharge lid

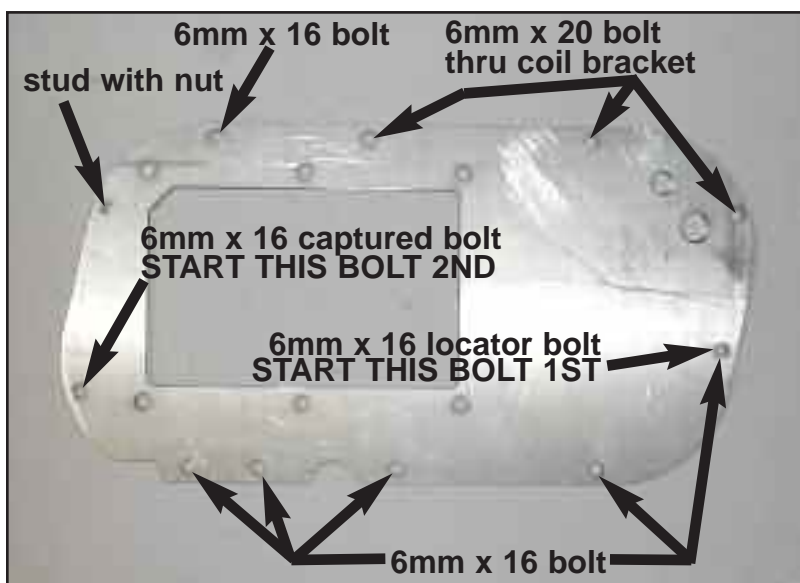


Figure AI lid bolt locations



Figure AJ remove plug wire retainers

8. Turn the Supercharger assembly upside down and apply silicone sealer to the right front in the area of the countersunk bolt as shown.

Glue **Discharge Manifold Lid Gasket** (key no 21) to Discharge Lid with weatherstrip or trim adhesive.

9. Check to be sure that there are no hoses or wires that could be pinched when the S/C Assembly is installed. Locate the coil harness.

Hold the Supercharger Assembly by the nose and PCV Fitting and, working over the left fender, carefully place the assembly on the Discharge Manifold. Use the stud in the right front to locate.

REFER TO FIGURE AI FOR BOLT LOCATIONS

Start, but do not tighten, (1) **6mm x 16 Flange Head Bolt** (key no 46) into the rear locator hole. This will align the rest of the bolt holes.

Start the left front 6mm x 16 (captured) Bolt second.

Then finger tighten those bolts and (5) **6mm x 16 Flange Head Bolts** (key no 46) and one **6mm Low Crown Locknut** (key no 48) from the underside.

Install the **Coil Bracket** (key no 04) with (3) **6mm x 20 Flange Head Bolts x 20** (key no 44).

After all the bolts are installed finger tight, tighten the bolts and nut evenly.

NOTE:

POSITION ASSEMBLY BY INSERTING 6MM STUD INTO THE RIGHT FRONT DISCHARGE MANIFOLD HOLE.

10. Regap new **Spark Plugs** (key no 91) to .035". Install new Spark Plugs.

Locate the stock Spark Plug Wires.

Remove plug wire retainers. Ply the catch open with a screwdriver.

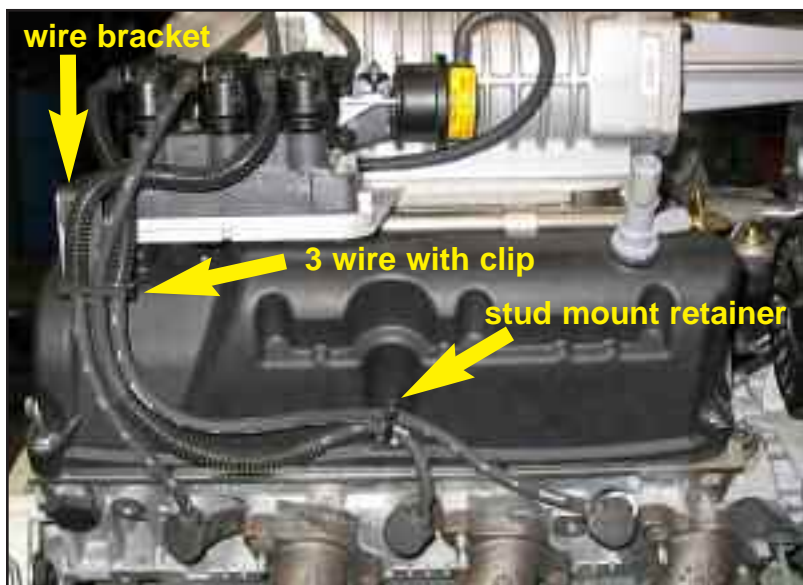


Figure AK install retainers right side

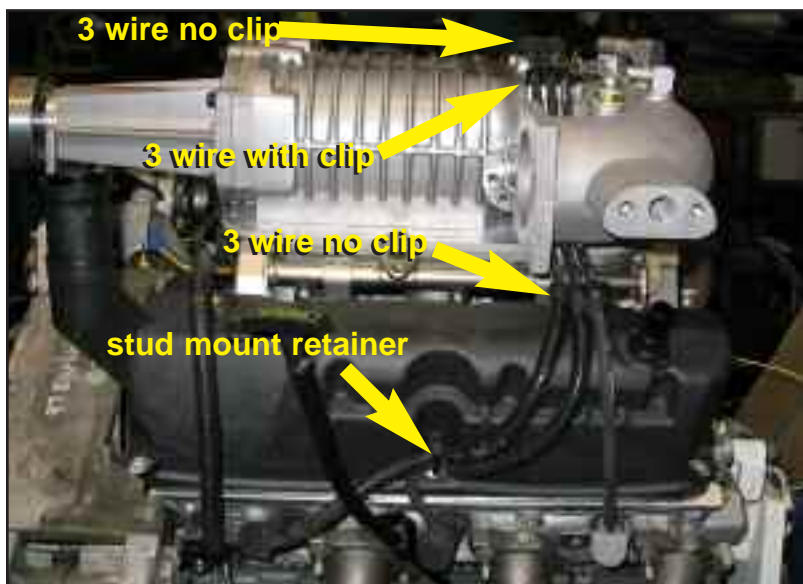


Figure AL install wire retainers left side

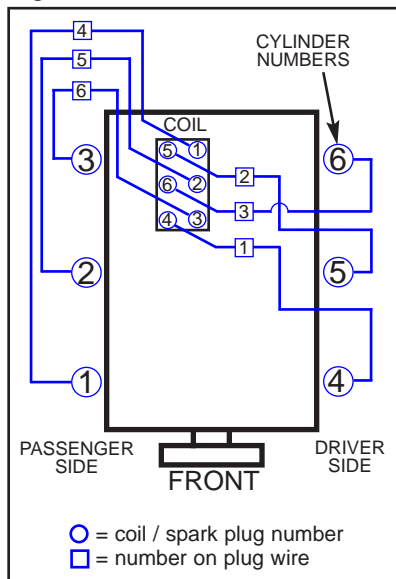


Figure AM cylinder numbers

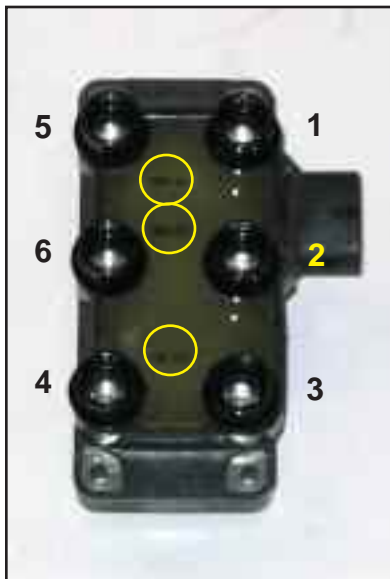


Figure AN coil numbers

11. Install passenger side plug wire retainers.

Install one retainer with mounting clip into the Plug Wire Bracket on the coil with the long end toward the front.

Install one stud mount retainer on the center valve cover stud .

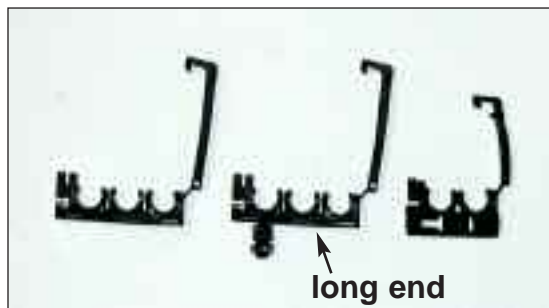


Figure AK-1 plug wire retainers

12. Install driver's side plug wires retainers.

Install one retainer with mounting clip into the Plug Wire Bracket on the Inlet Adapter with the long end toward the front.

One plain 3 wire clip goes near the coil (see Figure AO).

One plain 3 wire retainer goes on top of the valve cover.

One two wire stud type retainer goes on the center valve cover stud.

13. Install Plug Wires.

THE PLUG WIRES ARE NOT REINSTALLED IN THEIR ORIGINAL POSITIONS.

Connect the wires as follows:

ORIGINAL WIRE NUMBER:	NOW CONNECTS TO CYLINDER NUMBER:
1	4
2	5
3	6
4	1
5	2
6	3

Plug wire routing at the coil is shown in Figure AO below.



Figure AO plug wires at coil

14. Plug in coil primary wiring connector.

Plug in ACT Sensor.

Note Plug Wire routing and separator location (figure AO).



Figure AP EGR and tube

15. Remove the insulator from the stock EGR Tube. Compress the woven fabric to expand the size enough to let the insulator clear the fitting.

Cut the insulator to 14.5 inches.

Install the shortened insulator onto the the **EGR Tube** (key no 87).

Install EGR valve with the original bolts and gasket. Leave the EGR bolts finger tight and start the EGR tube threads on bolt ends. With the EGR tube in place, tighten the EGR bolts.

Use a 1 1/16 crowfoot wrench to tighten the fittings. Antisieze on the threads will ease the next removal.



Figure AQ vacuum source tube

16. Plug in EGR electrical connector.

Connect Vacuum Source Tube.

Free capacitor connector from the harness and pull to side. Do not disconnect the capacitor.



Figure AR vapor hose installed

17. Pull the vapor hose snap-on connector from the end of the vapor hose.

Install the vapor hose. Secure with an **06 Mini Clamp** (key no 53).



Figure AR remove hose connector



Figure AS brake booster hose

18. Orientate the Brake Booster Hose Clamp with the open end toward the rear as shown.

Install this hose onto the fitting on the bottom of the Inlet Adapter. Lube the hose with silicone spray and pull hose on from the passenger side.



Figure AT inlet extension

19. Install **Inlet Adapter Extension** (key no 06) with (4) **6mm x 20 Flange Head Bolts** (key no 45) and **Throttle Body Gasket** (key no 23) between the parts.



Figure AU coil resistor

20. Install Throttle Body with original bolts and **Throttle Body Gasket** (key no 23).

Remove Throttle Body motor bolt with #20 Torx bit and secure Coil Resistor as shown.



Figure AV throttle body electrical connections

21. Plug in Throttle Actuator connector.

Plug in Throttle Position Sensor connector.



Figure AW throttle body heater hoses (05 ONLY)

05 ONLY

22. Install **5/16 Hose x 38** (key no 72) and **5/16 Hose x 32** (key no 73) as shown.

Reuse original spring clamps.

Secure Throttle Body heater hoses together with (6) **Tiewraps** (key no 74) at even intervals for a neat appearance.

23. Install **Radiator Hose Insulator** (key no 70). Compress the material to expand size.

Install **Upper Radiator Hose** (key no 89). Use original clamps.



Figure AX radiator hose tiewrap

24. Use (1) **Heavy Duty Tiewrap** (key no 27) to secure the Radiator Hose to the heater hose tube behind alternator.

Reinstall coolant.

Pressure test cooling system.



Figure AY install nose support

25. Install **Nose Support** (key no 08) with (2) **8mm 1.25 x 20 Flange Head Bolts** (key no 17).

Use a small pry bar to seat the support against the machined end of the supercharge snout.

CAUTION:
DO NOT FORCE THE NOSE SUPPORT AGAINST THE SUPERCHARGER. USE JUST ENOUGH PRESSURE SO THAT SUPPORT FULLY CONTACTS THE S/C NOSE.

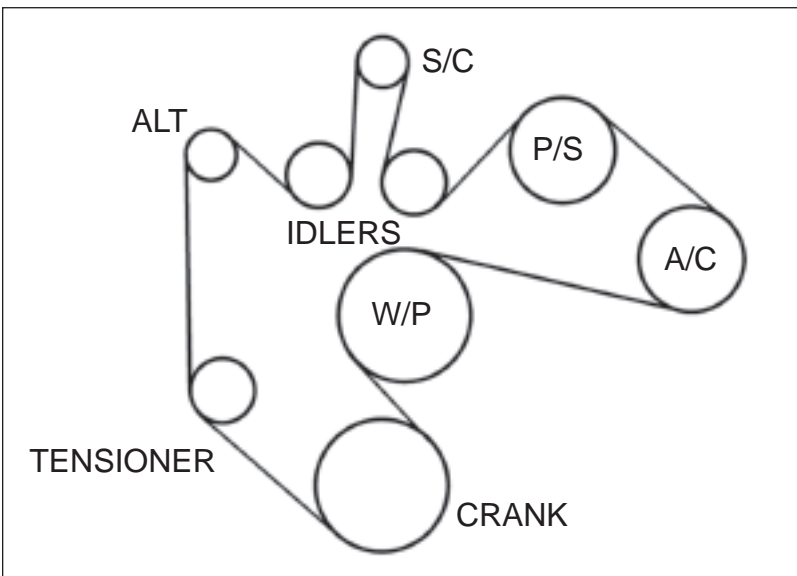


Figure AZ install drivebelt

26. Install **Drivebelt** (key no 90).



Figure ABA PCV tube installed

27. Install the modified PCV Tube.

INSTALL HI-PO AIRBOX

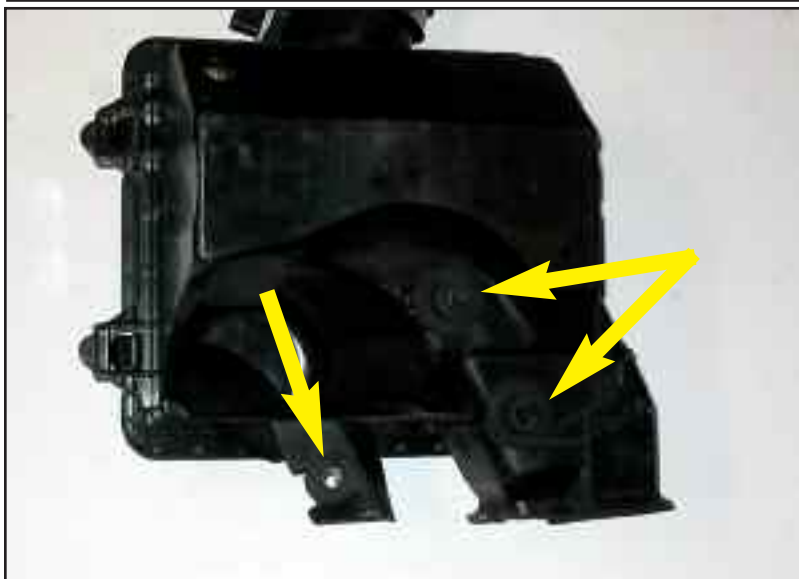


Figure ABC install breather hose

1. Remove rubber grommet and insulators from the bottom of the stock airbox



Figure ABB airbox bushings

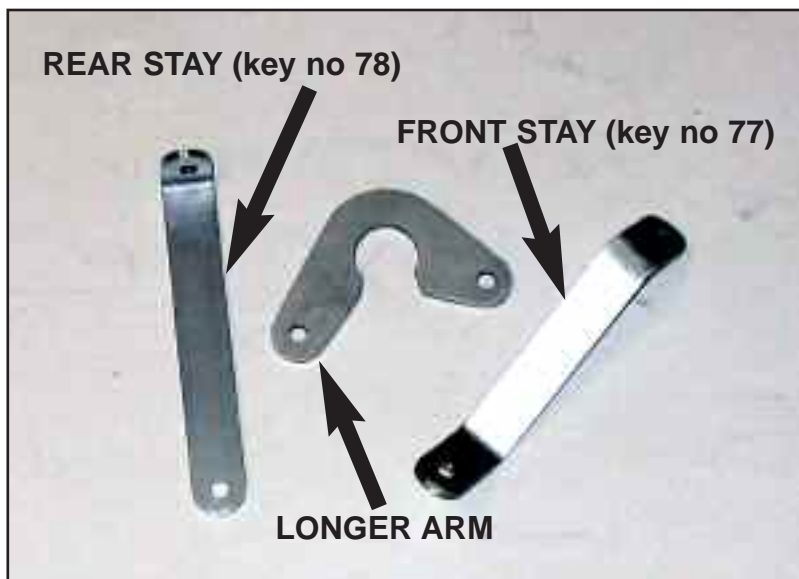


Figure ABD airbox brackets

2. Locate:
Airbox Grommet Bracket (key no 75)
Airbox Grommet Bracket (key no 75S)
Airbox Front Stay (key no 76)
Airbox Rear Stay (key no 77)

NOTE:
SOME STOCK AIRBOXES USE A SMALLER RETAINING GROMMET.

SELECT THE LARGE HOLE OR SMALL HOLE GROMMET BRACKET BASED ON THE SIZE OF YOUR STOCK GROMMET.

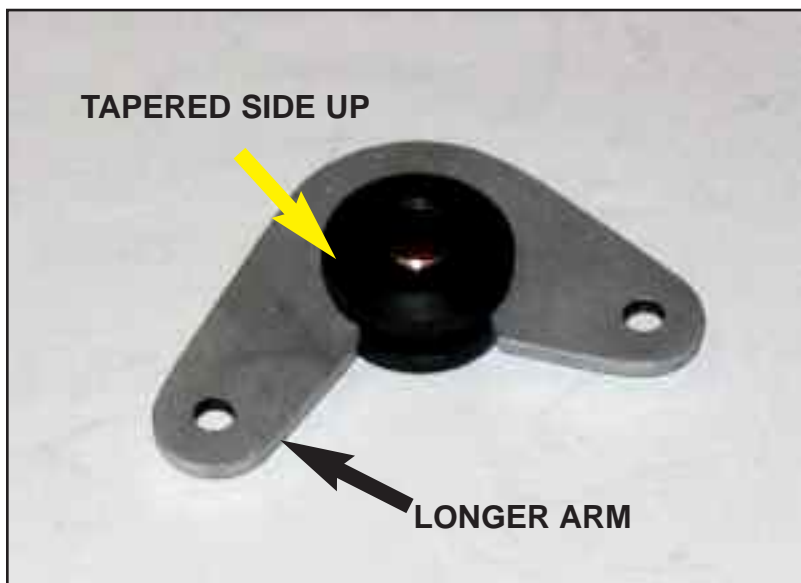


Figure ABE grommet bracket

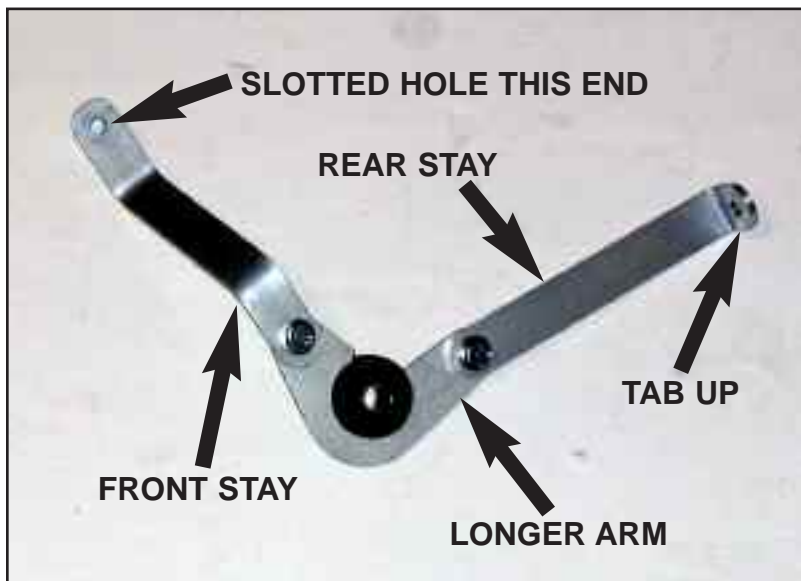


Figure ABF assemble airbox retainer



Figure ABH install airbox pins

3. Insert the retainer grommet into the **Grommet Bracket** (key no 75 or 75S) with the tapered side up as shown.

4. Assemble Airbox retainer as shown with (2) **6mm x 12 Flange head Bolts** (key no 79) and (2) **6mm Flangehead Nuts** (key no 80).

Do not tighten bolts.



Figure ABG retainer parts

5. Install **Airbox Pins** (key no 78) with (2) **6mm x 12 Flangehead Bolts** (key no 79) onto the **Airbox** (key no 86) as shown.

Tighten bolts.



Figure ABI install airbox retainer

6. Install Airbox Retainer Assembly onto Airbox as shown with (2) **6mm x 12 Flange head Bolts** (key no 79) and (2) **6mm Flangehead Nuts** (key no 80).

Do not tighten bolts.



Figure ABJ install airbox insulators

7. Install Airbox Insulators onto the Airbox Pins with the tapered side out.



Figure ABL install MAF sensor

8. Install Mass Air Sensor with the "flow" arrow pointed away from the airbox into Airbox MAF tube with original screws. Use T20 tool.

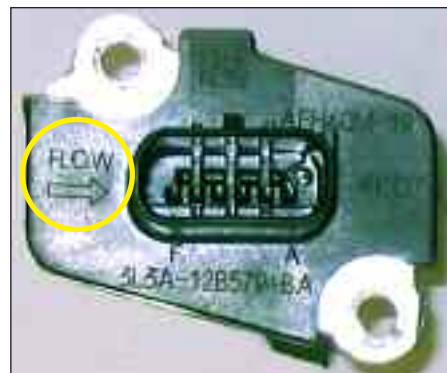


Figure ABK flow arrow



Figure ABM install airbox

9. Install Airbox assembly with insulators in the holes in inner fender.

Position box with even clearance to inner fender along the rear baffle. Install original airbox retainer bolt and tighten.

Tighten the other four Airbox bolts.

Plug harness into the MAF sensor.



Figure ABN cut off hose clamp retainers

10. Prep **Air Inlet Hose** (key no 85).

Remove the attached hose clamp from the longer end of the Inlet Hose.

Using a sharp utility knife or razor blade, cut the hose retainer off flush with the OD of the hose.

Hose clamp will be reused.

Insert **Breather Hose Fitting** (key no 81) into the Inlet Hose hole.



Figure ABO cut clamp retainer from this end



Figure ABP install inlet hose

11. Install the short end of the hose on the Airbox tube.

Lube the hose ID with silicone spray. Pull the hose on until it touches the MAF Sensor boss and is positioned squarely on the Airbox tube.

Position the original throttle body end clamp for access to the screw head and install long end of the hose onto the throttle body.

Tighten clamps.

12. Lube the ID of the hose end and install **Breather Hose** (key no 92) with the short end on the Valve Cover fitting. Push hose on until it is over the bead on the VC fitting and all the way down on the fitting.

Connect the long end of the hose to the fitting on the Inlet Hose and secure with **#8 Mini Clamp** (key no 82).

Secure the Breather Hose to to the Coil Resistor with **Tiewrap** (key no 83) for neat appearance.

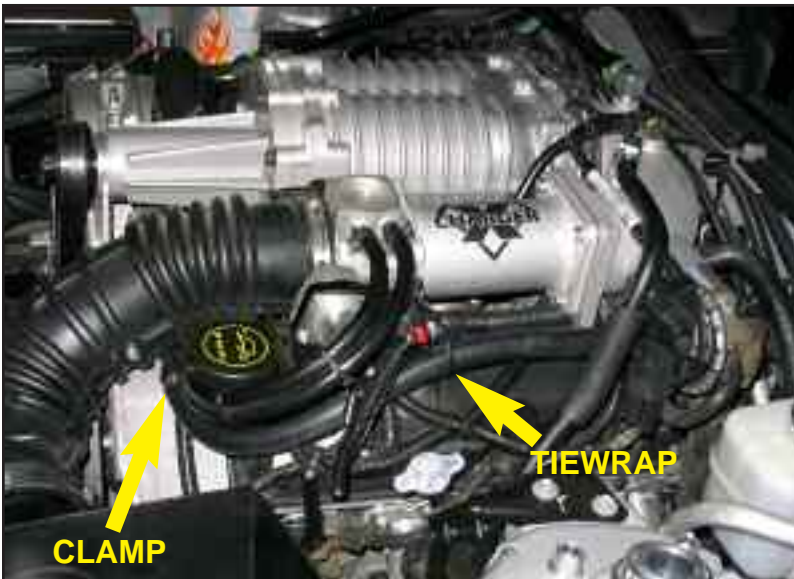


Figure ABQ install breather hose

13. Install **Air Filter** (key no 84).

Seat the Air Filter on the MAF tube at a slight angle as shown and secure with included clamp.



Figure ABR install air filter

FINISHING TOUCHES

1. Reinstall Battery negative terminal.



Figure ABS installation complete



2. Connect optional Boost Gauge here with 3/8 x 3/8 x 1/8 plastic fitting and 2 inches of 3/8 vacuum tube. Fitting and Boost Gauge are not included with kit.

Figure ABT connect boost gauge



3. Install **Belt Routing Sticker** (key no 96).

Figure ABU belt routing sticker



4. Install **Octane Warning Sticker** (key no 97).

Figure ABV fuel warning sticker



Figure ABW OBD2 port

5. Install tune.

With ignition off, connect Xcalibrator cable to OBDII port.



Figure ABX Xcalibrator

6. Select X-CHARGER tune.

Follow instructions on Xcalibrator display.

When the refresh tuning is done, turn the Ignition off and disconnect the Xcalibrator cable.

The stock tune has been saved in the Xcalibrator.



Figure ABY road test

7. Enjoy the power and response of your new X-CHARGER.

THIS SUPERCHARGER KIT IS NOT EXEMPTED FOR USE IN CALIFORNIA AND OTHER STATES WITH CALIFORNIA EMISSIONS STANDARDS

TO AVOID ENGINE DAMAGE, IF YOU NOTICE ANY PINGING UNDER LOAD, BACK OFF AND DRIVE CONSERVATIVELY ENOUGH TO AVOID BOOST UNTIL PROBLEM CAN BE DIAGNOSED AND REPAIRED.

**USE MINIMUM
91 OCTANE FUEL**

SUPERCHARGER AND BY-PASS VALVE LIMITED WARRANTY

Magnuson Products

1 YEAR LIMITED WARRANTY

Eaton Supercharger Division

Magnuson Products warrants and will repair or replace, at their option and after inspection in their facility, any new item produced by **Eaton** or **Magnuson** found defective by means of material and/or workmanship for a period of one year from invoice date. This limited warranty does not cover products which fail because of accident, alteration, misuse, neglect, racing, improper installation, abuse, or when used in applications for which they were not designed or approved. Removal, installation, transportation, labor, inconvenience, damage of other components, personal damage or injury and any injury or liability to other persons or property are not covered under this warranty. **Magnuson Products, Z Doctor or Explorer Express** shall not be liable for any and all consequential damages occasioned by the use of this supercharger or by breach of any written or implied warranty pertaining to this sale in excess of the original purchase price.

Model # M90 Serial # _____ Date purchased _____

If you should experience any problems or have technical questions about your X-CHARGER contact Explorer Express at 707-254-7025



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X-SPEC Performance Parts
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part no XS0500-MHP-R2