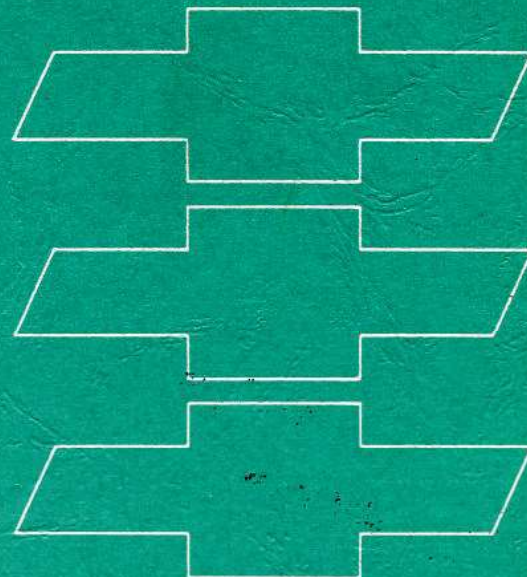
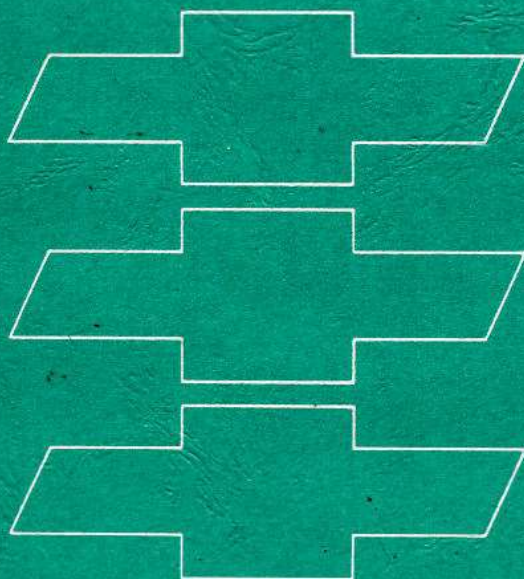


**1965**



**CORVAIR**



**CHASSIS  
SHOP  
MANUAL**



# 1965 CHEVROLET CORVAIR CHASSIS SHOP MANUAL

## FOREWORD

This manual is designed to provide complete information on the maintenance and repair of various units, except the Body, of the 1965 Chevrolet Corvair Passenger Vehicles. Service information for 1965 body items for these vehicles is contained in the 1965 Body Service Manual. For service information on the 1965 Corvair Greenbrier refer to the 1961 Corvair Shop Manual and the 1964 Corvair Shop Manual Supplement.

An effort has been made to produce a manual that will serve as a ready reference book for the experienced service man and also cover step by step procedure for the guidance of the less experienced man.

The Section Index on this page enables the user to quickly locate any desired section. At the beginning of each section, a Table of Contents gives the page number on which major subjects begin. An Index is placed at the beginning of each major subject within the section.

Summaries of Special Tools, when required, are found at the end of major sections, while Specifications covering vehicle components are presented at the rear of the manual.

This manual should be kept in a handy place for ready reference. If properly used, it will enable the technician to better serve the owners of Chevrolet Corvair vehicles.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

## CHEVROLET MOTOR DIVISION

General Motors Corporation  
DETROIT, MICHIGAN

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6M	ENGINE FUEL
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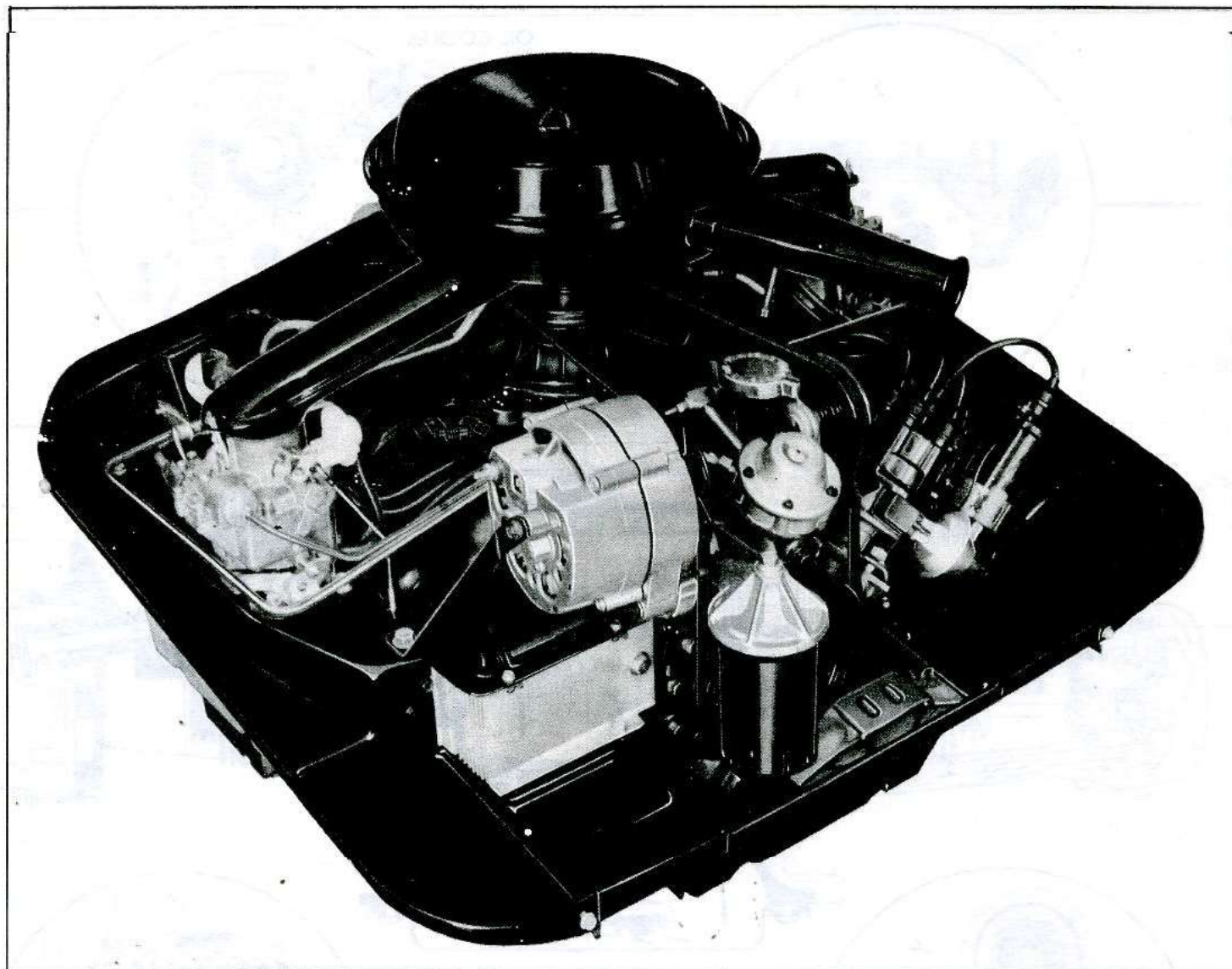


Fig. 18—Corvair Engine

through drilled passages to the camshaft and crankshaft journals. The main oil gallery also feeds the hydraulic valve lifters, which through hollow push rods feed the individually mounted rocker arms (fig. 19).

Engine cleanliness is very important, oil leaks, exhaust leaks or foreign material within the engine shrouding may result in objectionable fumes within the passenger compartment.

## COMPONENT REPLACEMENT AND ADJUSTMENTS

### ENGINE SEAL AND SHIELDS

#### Seal and Retainer (Fig. 20)

##### Removal

1. Remove spare tire, then remove air cleaner assembly.
2. Remove retainer to body attaching screws.
3. Disconnect seal from engine shields by pushing groove of seal off shield flange.
4. Remove seal and retainer assembly.

##### Installation

1. Lubricate groove of seal with liquid soap or silicone and place seal and retainer assembly in position over engine shields.

2. While guiding groove of seal on shield flange, (with one hand), press seal in place using a block of wood or a hammer handle.
3. Install all retainer attaching screws finger tight, then tighten screws securely.

#### Front Shield (Fig. 21)

##### Removal

1. Disconnect battery positive cable.
2. Remove spare tire, then remove air cleaner assembly.
3. Remove vacuum balance tube.
4. Disconnect heater hose at upper shroud.



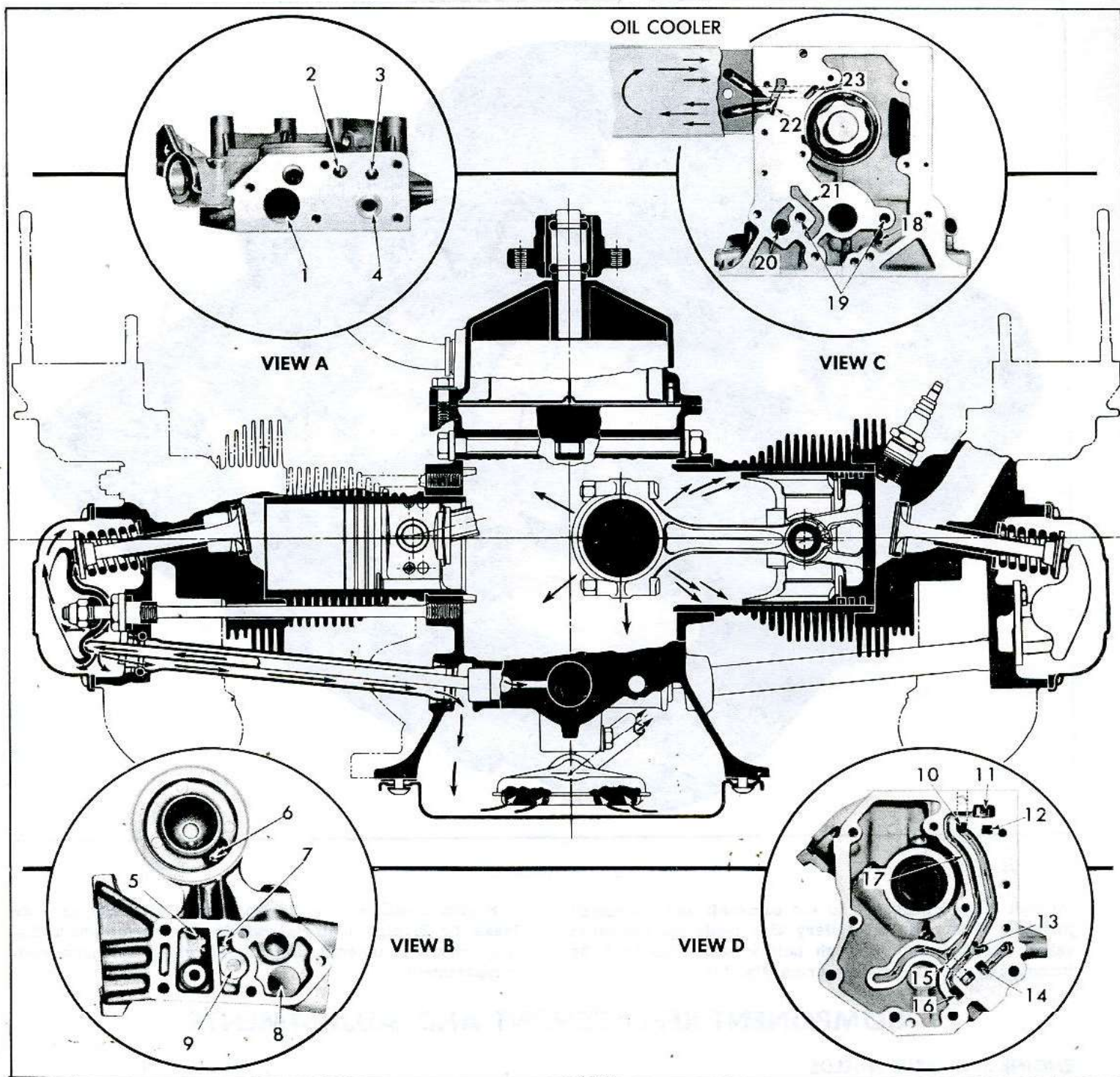


Fig. 19—Engine Lubrication

View A Top face of engine rear housing

View B Bottom face of oil filter and Delcotron adapter

View C Rear of engine crankcase

View D Front face of engine rear housing

NOTE: • Face of oil filter and Delcotron adapter shown in View "B" mounts to top face of engine rear housing shown in View "A."  
 • Front face of engine rear housing shown in View "D" mounts to rear face of engine crankcase shown in View "C."

1. Oil Filler Inlet
2. To Oil Filter
3. To Oil Cooler
4. Oil Cooler By-Pass Valve
5. Oil Filter Outlet
6. Oil Filter Element Inlet
7. Oil Filter Inlet

8. Oil Filler Inlet
9. Oil Filter By-Pass Valve
10. To Oil Filter
11. Oil Cooler By-Pass Valve Exit
12. To Oil Cooler from the Oil Filter

13. Oil Pressure Regulator Entrance
14. Oil Pump Inlet
15. Oil Passage to Main Oil Gallery Left Side
16. Oil Pump Outlet
17. Oil from Oil Cooler

18. Entrance to Crankcase Sump
19. Main Oil Galleries
20. Oil Pump Suction
21. Oil Pump Outlet Cavity
22. Oil Cooler Inlet
23. Oil from Cooler to Main Galleries



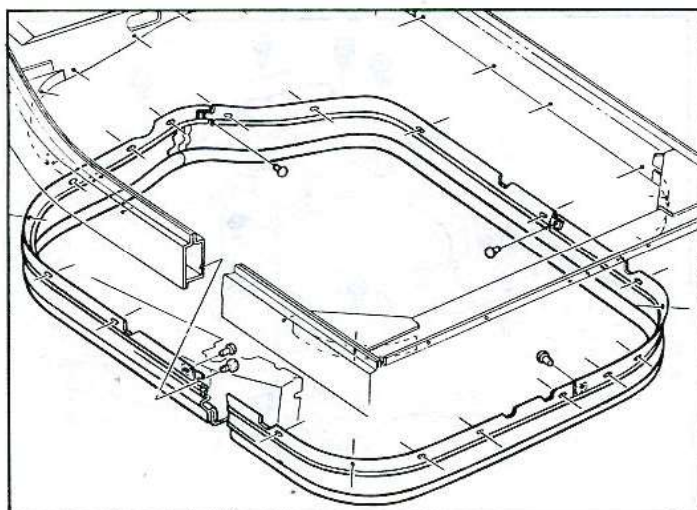


Fig. 20—Engine Seal and Retainer

5. Remove grommet for Powerglide dip stick tube (if so equipped).
6. Disconnect seal from flange of front shield.
7. Remove grommet (for starter wiring and fuel line) from front shield.
8. Disconnect starter wiring (engine side).
9. From the underside of vehicle: disconnect accelerator rod at transmission bellcrank and disconnect fuel line at flexhose (plug fuel line from fuel tank), then disconnect axle dip stick tube at differential carrier.
10. Disconnect accelerator rod at carburetor cross shaft, then remove rod and bellows from front shield.
11. Disconnect grommet from front shield and remove axle dip stick tube assembly.
12. Disconnect fuel line at fuel pump, then remove fuel line from front shield.
13. Remove bolts attaching front shield, then remove front shield.

#### Installation

1. Install front shield by guiding shield over starter wiring and Powerglide dip stick tube (if so equipped).
2. Install all bolts attaching front shield finger tight, then tighten bolts securely.
3. Install fuel line through front shield, then connect fuel line at fuel pump.
4. Install accelerator rod through front shield, then connect bellows to front shield and connect accelerator rod at carburetor cross shaft.
5. Install axle dip stick tube assembly through front shield and connect grommet in front shield.
6. Connect starter wiring.
7. Install grommet (for starter wiring and fuel line) in front shield.
8. Lubricate groove of seal with liquid soap or silicone, then while guiding groove of seal onto shield flange (with one hand), press seal in place with a block of wood or a hammer handle.
9. Install grommet for Powerglide dip stick tube (if so equipped).
10. Connect heater hose at upper shroud.
11. Install vacuum balance tube.
12. From the underside of vehicle: connect fuel line at flexhose, connect accelerator rod at transmission

bellcrank and connect axle dip stick tube at differential carrier.

13. Connect battery positive cable.
14. Install air cleaner assembly, then install spare tire.

#### Left Shield (Fig. 21)

##### Removal

1. Remove bolts attaching left side of upper shroud and left shield to cylinder head.
2. Remove bolts attaching left shield to left exhaust duct.
3. Remove bolt attaching left shield and oil cooler to cylinder head.
4. Remove bolts attaching left shield to front shield and (if so equipped) remove screw from ground strap.
5. Disconnect seal from flange of left shield.
6. Remove left shield, by pulling from under upper shroud, front shield and oil cooler flange.

##### Installation

1. Place left shield in position under upper shroud, front shield and oil cooler flange.
2. Install all bolts attaching left shield finger tight, then tighten bolts securely.
3. Lubricate groove of seal with liquid soap or silicone, then while guiding groove of seal onto shield flange (with one hand), press seal in place with a block of wood or a hammer handle.
4. Connect ground strap (if so equipped).

#### Right Shield (Fig. 21)

##### Removal

1. Remove spare tire then, remove bolts attaching right side of upper shroud and right shield to cylinder head.
2. Remove bolts attaching right shield to right exhaust duct.
3. Remove ignition coil and bracket.
4. Remove bolts attaching right shield to front shield and (if so equipped) remove screw from ground strap.
5. Disconnect seal from flange of right shield.

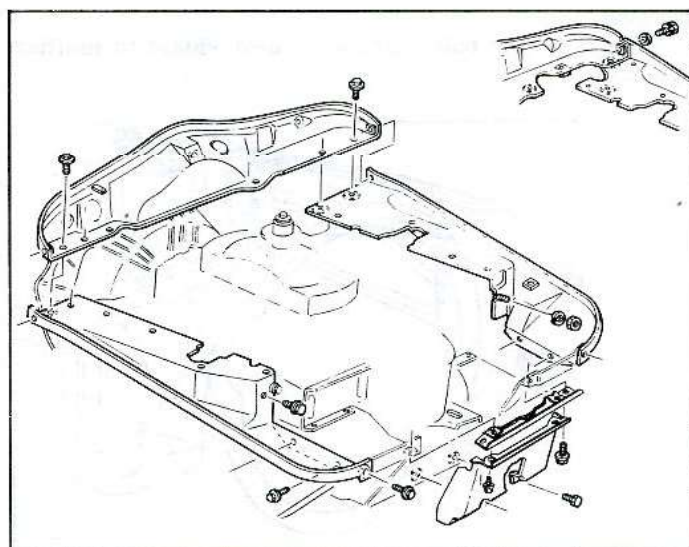


Fig. 21—Engine Shields



6. Remove bolt attaching muffler bracket to right shield.
7. Remove muffler.
8. Remove right shield by pulling from under upper shroud and front shield.

**Installation**

1. Place right shield in position under upper shroud and front shield.
2. Install all bolts attaching right shield finger tight, then tighten bolts securely.
3. Lubricate groove of seal with liquid soap or silicone, then while guiding groove of seal onto shield flange (with one hand), press seal in place with a block of wood or a hammer handle.
4. Connect ground strap (if so equipped).
5. Install ignition coil and bracket, then install spare tire.

**Rear Center Shield (Fig. 21)**

**NOTE:** The rear center shield is two pieces. The engine seal is connected to the upper half, which need not be removed under normal conditions.

**Removal and Installation (Lower Half)**

1. Remove bolts attaching rear center shield to skid plate and exhaust ducts.
2. Remove rear center shield.
3. Place rear center shield in position with attaching bolts fingertight, then tighten bolts securely.

**Removal and Installation (Upper Half)**

1. Remove lower half as outlined.
2. Disconnect seal from flange of rear center shield.
3. Remove bolts and remove upper half.
4. Install upper half and tighten securely.
5. Install lower half as outlined.
6. Lubricate groove of seal with liquid soap or silicone, then while guiding groove of seal onto shield flange (with one hand) press seal in place with a block of wood or a hammer handle.

**Muffler Heat Shield (Fig. 22)****Removal**

1. Remove two bolts attaching heat shield to muffler hanger.

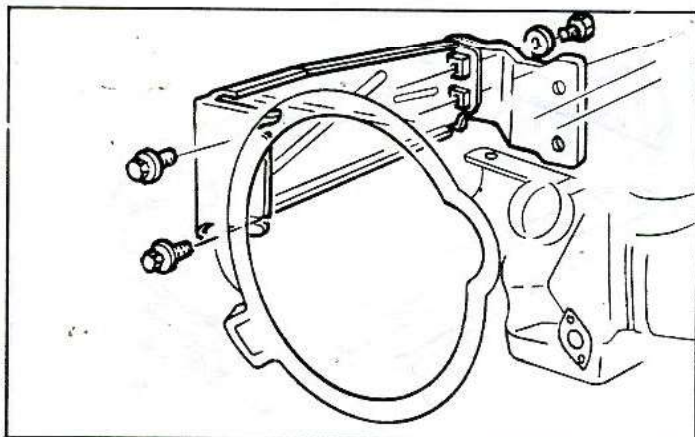


Fig. 22—Muffler Heat Shield

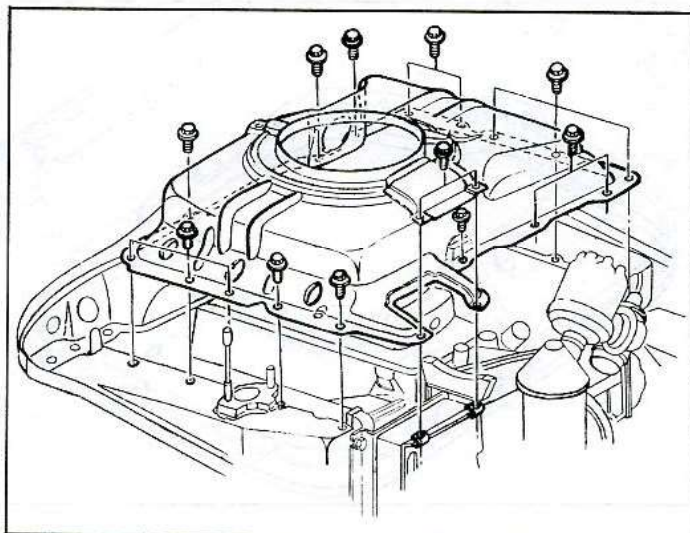


Fig. 23—Upper Shroud

2. Loosen two bolts attaching rear of heat shield and right rear shroud to cylinder head.
3. Remove heat shield.

**Installation**

1. Install heat shield in position under head of two bolts in rear of cylinder head.
2. Install bolts attaching heat shield to muffler hanger and tighten securely.
3. Tighten two bolts attaching rear of heat shield and right rear shroud to cylinder head.

**ENGINE COOLING COMPONENTS****Upper Shroud (Fig. 23)****Removal**

1. Remove spare tire then remove air cleaner assembly.
2. Disconnect fuel lines at fuel pump and carburetors, then remove fuel lines to carburetors.
3. Disconnect vacuum advance hose at right carburetor.
4. Disconnect accelerator rod at carburetor cross shaft and disconnect choke control rods at choke levers then remove upper choke control rods.
5. Remove carburetors with cross shaft and linkage attached.
6. Remove blower belt.
7. Disconnect crankcase ventilation tube at upper shroud, then disconnect vacuum balance tube at bracket and cylinder heads.
8. Remove vacuum balance tube and crankcase ventilation tube and hoses as an assembly.
9. Remove Delcotron with bracket attached.
10. Disconnect heater hose at upper shroud.
11. Remove oil cooler access hole cover and oil dip stick.
12. Remove distributor cap, then remove spark plug wires and distributor cap as an assembly.
13. Remove bolts attaching upper shroud, then remove shroud by raising front of shroud and rotating clockwise to clear oil filter and Delcotron adapter.



**Installation**

1. Place upper shroud in position and install all attaching bolts finger tight then rotate blower checking clearance while tightening bolts securely.
2. Install oil cooler access hole cover and oil dip stick, then install spark plug wires and distributor cap assembly.
3. Connect heater hose at upper shroud.
4. Install Delcotron and Delcotron bracket.
5. Install vacuum balance tube and crankcase ventilation tube and hoses.
6. Install blower belt and adjust as outlined.
7. Install carburetors and cross shaft then connect vacuum advance hose at right carburetor.
8. Install, adjust and connect upper choke control rods, then adjust and connect accelerator rod as outlined in Engine Tune-Up.
9. Install and connect fuel lines.
10. Install air cleaner assembly, then install spare tire.

**Lower Shrouds and Thermostats (Fig. 24)****Removal**

1. Remove bolts attaching lower shroud to crankcase, cylinder head, front shroud and exhaust duct.
2. Drop lower shroud until swivel on thermostat rod can be disconnected from exhaust duct damper.
3. Disconnect swivel and remove lower shroud and thermostat assembly.

**Thermostat Replacement**

**NOTE:** In the event of a failed thermostat bellows, the exhaust duct damper will remain in the open position allowing a maximum air flow over the engine to prevent overheating.

1. Remove lower shroud as outlined.
2. Using an open end wrench, on the flat provided, hold thermostat and remove thermostat actuating rod and swivel assembly.
3. Remove nut attaching thermostat to bracket, then remove thermostat.
4. Install new thermostat and tighten securely.
5. Install thermostat actuating rod and swivel assembly and tighten securely.

**CAUTION:** To prevent damage to the thermostat bellows while tightening actuating rod, hold flat on thermostat with an open end wrench.

**Thermostat Adjustment**

1. Install lower shroud assembly with two bolts (one to crankcase and one to cylinder head).
2. Hold exhaust duct damper in the fully open position and pull the thermostat actuating rod out the maximum travel (thermostat against bracket stop).
3. Adjust the swivel until it just enters the hole provided in the exhaust duct damper.
4. Remove lower shroud assembly and connect retaining clip, then install lower shroud as outlined.

**Installation**

1. Connect swivel to exhaust duct damper then install all lower shroud attaching bolts and tighten securely.
2. Check adjustment verifying that thermostat bottoms at bracket before damper hits stop.

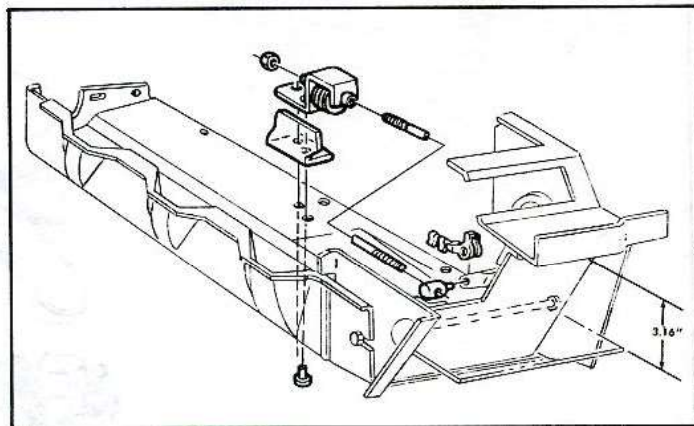


Fig. 24—Lower Shroud and Thermostat

**Front Shrouds (Fig. 25)****Removal**

1. Remove lower shroud as outlined.
2. Remove exhaust manifold as outlined.
3. Disconnect heater hose at elbow on front shroud.
4. Remove bolts attaching front shroud to cylinder head and upper shroud, then remove front shroud and heater elbow as an assembly.

**NOTE:** On left front shroud, one attaching bolt (to cylinder head) is reached through heater elbow.

**Installation**

1. Install front shroud and tighten securely.
2. Connect heater hose.
3. Install exhaust manifold as outlined.
4. Install lower shroud as outlined.

**Exhaust Ducts (Fig. 25)****Removal**

1. Disconnect seal from flange of exhaust duct and rear center shield.
2. Remove ignition coil and bracket (for right exhaust duct).
3. Remove grille, then, remove rear center shield as outlined.
4. Remove lower shroud as outlined.
5. Remove exhaust duct attaching bolts, then remove exhaust duct.

**Installation**

1. Install exhaust duct with all bolts finger tight, then tighten bolts securely.
2. Install lower shroud as outlined.
3. Install rear center shield as outlined, then, install grille.
4. Lubricate groove of seal with liquid soap or silicone, then while guiding groove of seal onto rear center shield and exhaust duct flange (with one hand), press seal in place with a block of wood or a hammer handle.
5. Install ignition coil and bracket (if removed).

**Rear Shrouds (Fig. 25)****Removal**

1. Remove oil cooler (for left rear shroud) or remove ignition coil and bracket (for right rear shroud).



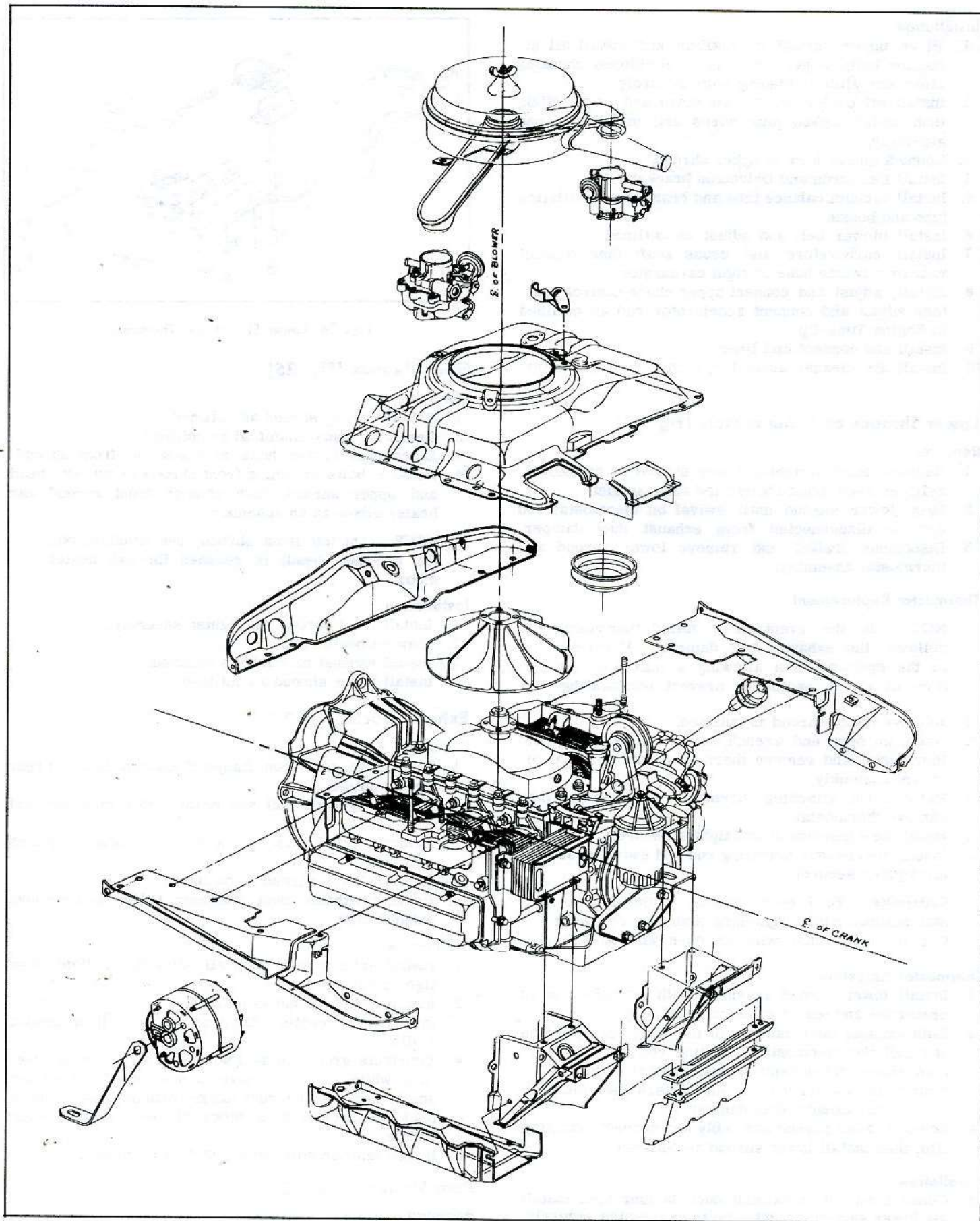


Fig. 25—Engine Sheet Metal—Exploded View



2. Remove lower shroud as outlined.
3. Remove exhaust duct as outlined.

**NOTE:** For right rear shroud it is necessary to disconnect the wiring at the cylinder head temperature and oil pressure sending units, then disconnect at harness quick-disconnect so harness may be removed with shroud.

4. Disconnect bolts attaching upper shroud to rear shroud, then remove rear shroud.

#### Installation

1. Install rear shroud, then install exhaust duct and lower shroud as outlined.
2. Install oil cooler and/or ignition coil and bracket.

### Blower Belt, Idler Pulley and Belt Guides (Fig. 26)

#### Removal

1. Loosen nut and bolt at idler pulley and remove blower belt.
2. If necessary, remove bolt and remove idler pulley and rear belt guide as a unit.
3. If necessary, remove bolts attaching upper belt guide and remove upper guide.

#### Installation and Adjustment

1. If removed, install upper guide leaving bolts finger tight.
2. If removed, install rear guide and idler pulley as a unit and leave bolt and nut finger tight.
3. Install blower belt over pulleys (Delcotron pulley last).
4. Adjust blower belt as follows:

Place a 1/16" shim between belt and rear guide then using a bar and a strand tension gauge adjust blower belt to 55 lb.  $\pm$  5 lb. (used belt), 75 lbs.  $\pm$  5 lb. (new belt) and tighten bolt and nut securely.

Remove shim from between blower belt and rear guide then using shim as a gauge adjust upper guide and tighten securely.

#### Blower

#### Removal

1. Remove upper shroud as outlined.
2. Remove bolts from blower pulley, then remove blower pulley and blower from blower bearing hub.

**NOTE:** For blower bearing replacement refer to Crankcase Cover.

#### Installation

1. Install blower and blower pulley on blower bearing hub, then install bolts and torque to specifications.
2. Install upper shroud as outlined.

### EXHAUST MANIFOLDS

#### Removal

1. Remove lower shroud as outlined.
2. Remove nuts at exhaust manifold flange (retaining exhaust pipe).
3. Bend french locks, then remove nuts, locks and clamps.
4. Using a soft hammer tap exhaust manifold off exhaust port sleeves then remove and discard all packings.

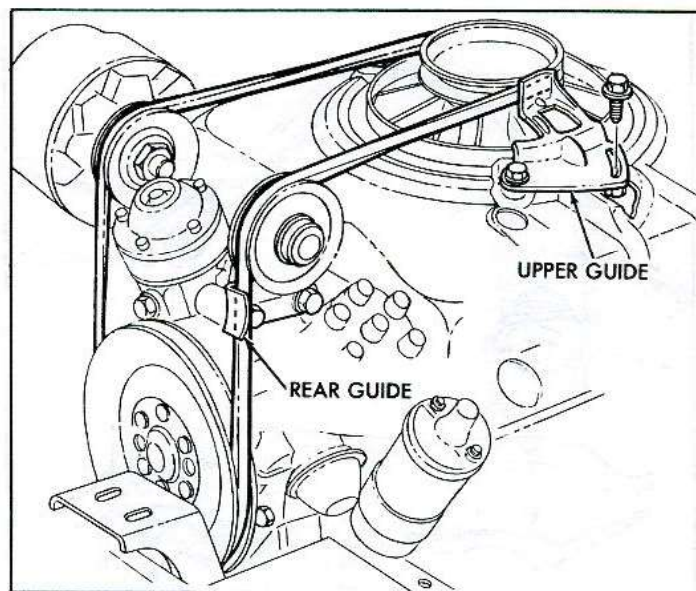


Fig. 26—Blower Belt and Guides

#### Installation

1. Using new packings install exhaust manifold over exhaust port sleeves, then install clamps, locks and nuts.
2. Tighten manifold clamp nuts a little at a time until specified torque is reached. Tap manifold in place over exhaust port sleeves with a soft hammer while tightening nuts.
3. Bend french locks, then install lower shrouds.
4. Using a new packing, connect exhaust pipe to exhaust manifold.

### ENGINE MOUNTS

**NOTE:** Front and rear engine mounts are of the non-adjustable type. Because of this, service is seldom required. Broken or deteriorated mounts should be replaced immediately because of the added strain on other mounts and other drive line components.

#### Front Mounts (Fig. 27)

#### Replacement

1. On engines equipped with synchromesh transmission; remove clutch lever ball stud from front mount bracket, then disconnect shift rod coupling from transmission shift rod.  
On engines equipped with Powerglide transmission, disconnect control cable.
2. Place engine lift, with Tool J-7894 attached, under engine.
3. Remove cotter key and nut from each engine front mount.
4. Lower engine enough to release weight from front mounts.
5. Disconnect emergency brake return spring from front mount bracket.
6. Remove bolts attaching front mount bracket to transmission.

**NOTE:** On synchromesh equipped vehicles be careful not to drop the spacer on the one 7/16" bolt.



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