



# SERVICE NEWS

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## SERVICING CORVAIR ENGINE VALVES AND VALVE GUIDES

### RECOMMENDED EXHAUST VALVES

The extremely durable exhaust valve and key units utilized for the Turbocharged Corvair engine are now also recommended for replacement use in cases where unsatisfactory valve life is experienced on any of the other Corvair engines (80, 84, 98, and 102 hp) installed in 1960-63 model year cars of the 500-700-900 (Monza) series.

#### *1960-63 Corvair 500-700-900 Series Recommended Exhaust Valve and Key Units*

3826492	Std. Size
3826493	.003" Oversize
3826494	.010" Oversize

Stellite exhaust valves with rotators, as used in engines of the 1963 Corvair "95" vehicles, are now available for replacement use on 1961-62 Corvair "95" vehicles. Use of the stellite exhaust valves and rotators in these past model engines should provide a considerable increase in valve life.

#### *1961-63 Corvair "95" Series Recommended Exhaust Valves*

3829105	Std. Size
3829106	.003" Oversize
3829107	.010" Oversize
3829108	.020" Oversize
3817362	*Exhaust Valve Rotator

\*Rotators must be used with the above valves on all Corvair "95" engines—discard the valve spring cap used on 1961 and early 1962 engines.\*

### CHECKING VALVE STEM-TO-GUIDE CLEARANCE

Excessive valve stem clearance in guide bore can cause a decrease in engine power, increased oil consumption, rough idling and noisy valves. Insufficient clearance can cause valve seizure or noisy and irregular valve action, resulting in engine vibration and power loss.

Intake valve stem-to-guide bore clearance should be .001" to .0027" when a new valve is used in either a new guide or in a worn guide that has just been reamed. Valve clearance in a worn guide must be within .001" to .004" to permit use of the guide without re-reaming. The exhaust valve stem clearance should be .0015" to .0032" (new) and .002" to .005" (worn).

The amount of valve stem-to-guide clearance that exists at any location can be accurately determined by the following method:

Clamp a dial indicator on one side of the cylinder head rocker cover gasket rail, locating the indicator so that movement of the valve stem from side to side (crosswise to the head) will cause a direct movement of the indicator stem. The indicator stem must contact the side of the valve stem just above the cylinder guide. With the valve head dropped about 1/16" off the valve seat; move the stem of the valve from side to side, using light pressure to obtain a clearance reading. If clearance exceeds the limits stated above it will be necessary to utilize one of the corrective procedures described in the following paragraphs.

## CORRECTING EXCESSIVE VALVE STEM-TO-GUIDE CLEARANCE

If results of the valve stem-to-guide clearance check outlined above indicate that a guide is worn to the extent that a new valve with standard diameter stem cannot be utilized in that guide; the technician should then select, from the two service procedures listed below, the method that he will use to obtain proper valve to guide clearance.

### a. Installation of Oversize Valves—

Oversize valves can be utilized to obtain proper valve to guide clearance in all cases except when the guide is either cracked, or is worn to the extent that reaming will not clean-up the guide bore to permit use of the largest oversize valve available.

### b. Replacement of Valve Guides—

Replacement valve guides that are useable at either inlet or exhaust valve locations are now available for all Corvair engines except the Turbocharged version. The installation of a service valve guide will allow use at that location of a valve with standard diameter stem. Even cylinder heads that would normally have been scrapped due to cracked or excessively worn valve guides can now be salvaged by installing the replacement valve guide where necessary. New special tools required for valve guide replacement are now available; their usage is explained in the valve guide replacement procedure detailed later in this article.

## INSTALLATION OF OVERSIZE VALVES

Exhaust valves recommended for replacement use are listed on page 1 of this issue. Intake valves available with: standard diameter, .003" and .010" oversize stems, are listed in the Chevrolet Parts Catalog.

1. Remove and disassemble cylinder head as outlined on pages 6A-20 and 6A-33 of the 1961 Corvair Shop Manual.
2. Select from the reamers listed below, the smallest diameter oversize reamer that will provide proper finish of the guide bore.  
Reamer J-5830-1 use for .003" oversize valve  
Reamer J-5830-4 use for .010" oversize valve  
Reamer J-5830-5 use for .020" oversize valve

*NOTE: Reamers listed above are included in Hand Reamer Set J-5830-02, which was introduced in 1961. All special tools specified in this article are now available from the Kent-Moore Organization.*

3. Ream bore of valve guide, starting at the combustion chamber side and flushing with cutting oil to avoid scoring. Do not force or withdraw reamer during reaming operation. Reamer should pass completely through bore

and be removed at the valve spring side of the cylinder head. Wipe refinished bore to remove cutting oil and chips; inspect bore.

4. Inspect valve seat insert and reface as necessary to obtain correct seat angle and concentricity with guide bore.
5. Select and use valve in same nominal oversize as that of reamer last used in refinishing the guide bore.
6. Inspect and assemble cylinder head as outlined on page 4 of this issue under the heading, "Assembly of Cylinder Head."

## VALVE GUIDE REPLACEMENT

Replacement valve guides for all Corvair engines, except the turbocharged engine, are now available in O.D. oversizes of .002" (replacement standard), .010" and .020". The service guides are bored to permit use of valves with standard diameter stems.

After removing and disassembling the cylinder heads, as described on pages 6A-20 and 6A-33 of the 1961 Corvair Shop Manual, carefully inspect all installed valve guides. Guides showing cracks, or that are otherwise damaged or worn beyond utilization with service oversize valves, should be replaced as follows:

### Valve Guide Removal

Remove worn guides using the J-21280 Remover and a hammer (2 lb. minimum). Drive valve guide from the spring seat side (Fig. 1) so that the guide will exit on the combustion chamber side of the cylinder head.

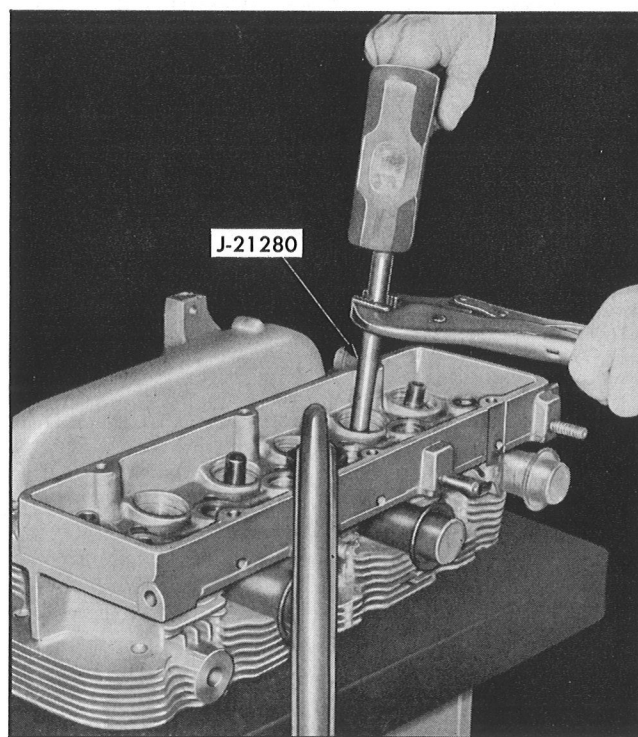


Fig. 1—Removing Corvair Engine Valve Guide

**Selection of Replacement Valve Guides**

Wipe out valve guide bore in cylinder head and closely inspect for scoring or damage during guide removal. Use the following method to select the replacement valve guide required for each location:

- a. If guide bore in cylinder head appears smooth and free from scoring, select Part No. 3840811 standard size replacement guide.
- b. If some damage in bore is evident, ream bore with .010" oversize J-21282 Hand Reamer starting at the combustion chamber side and flushing with cutting oil to avoid scoring (Fig. 2). Do not force or remove reamer during ream-

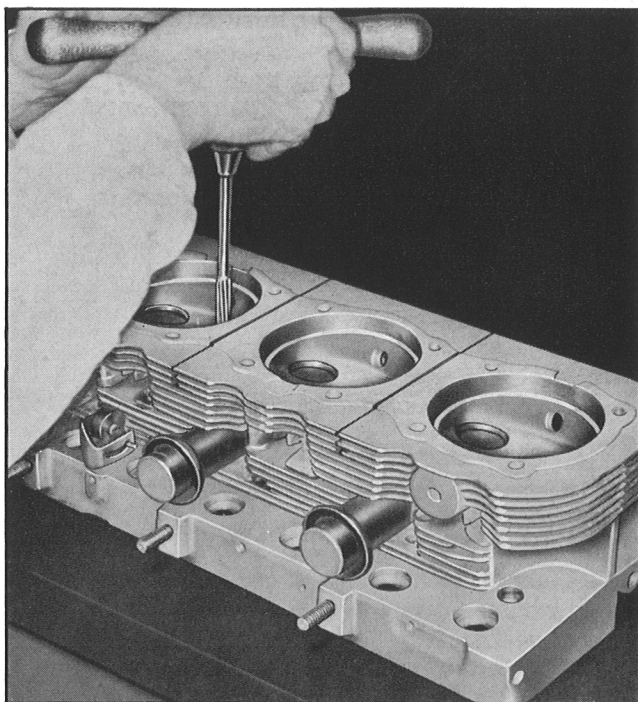


Fig. 2—Reaming Cylinder Head Valve Guide Bore

ing operation and pass reamer completely through bore and remove from valve spring side. Wipe ream finished bore to remove cutting oil and chips; inspect bore. Finish bore diameter should now be .524" - .525". If bore is smooth and free of scoring after reaming, select Part No. 3840812 (.010" O.D. oversize) valve guide.

- c. If reaming with the .010" oversize reamer did not clean the guide bore in the cylinder head, use the .020" oversize J-21283 Hand Reamer and select Part No. 3840813 (.020" O.D. oversize) valve guide. Wipe valve guide bore to remove cutting oil and chips. Finished bore diameter should now be .534" - .535".

**Valve Guide Installation**

1. Coat outside diameter of the selected valve guide with oil; then using Guide Installer

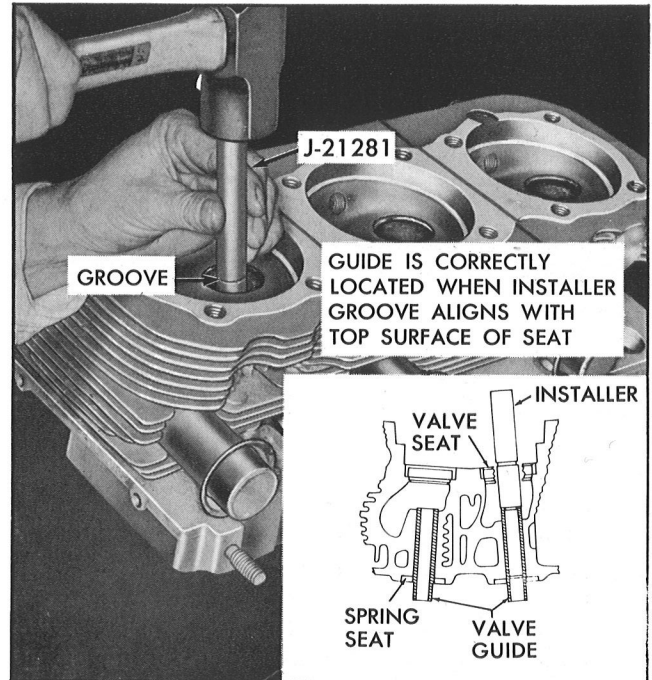


Fig. 3—Installing New Valve Guide

J-21281 and a hammer, start guide, tapered end first, into bore from combustion chamber side of the cylinder head. Final installed height should be approximately 1" from the top surface of the valve seat insert to the end of the guide. Correct height can be determined by aligning the groove on the installer—flush with top surface of the valve seat insert, as shown in Figure 3.

2. Liberally oil valve stem bore and ream through from the combustion chamber side, using Hand Reamer J-21318.

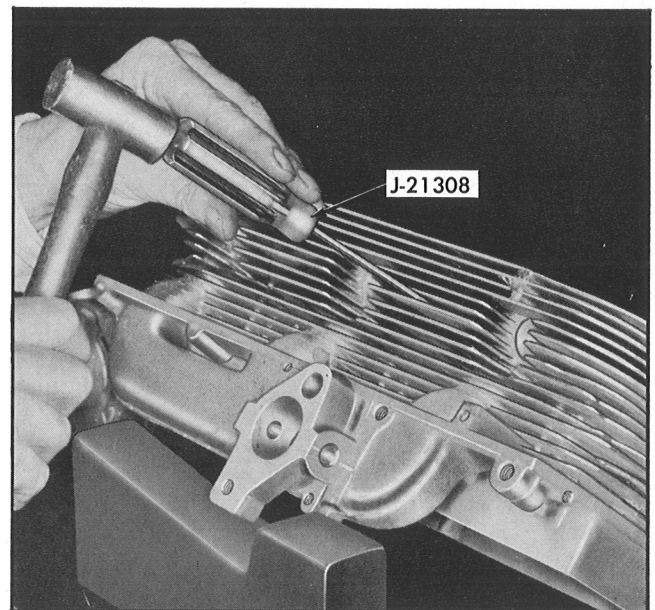


Fig. 4—Cleaning Air Passages Between Fins



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and be removed at the valve spring side of the cylinder head. Wipe refinished bore to remove cutting oil and chips; inspect bore.

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### Valve Guide Removal

Remove worn guides using the J-21280 Remover and a hammer (2 lb. minimum). Drive valve guide from the spring seat side (Fig. 1) so that the guide will exit on the combustion chamber side of the cylinder head.

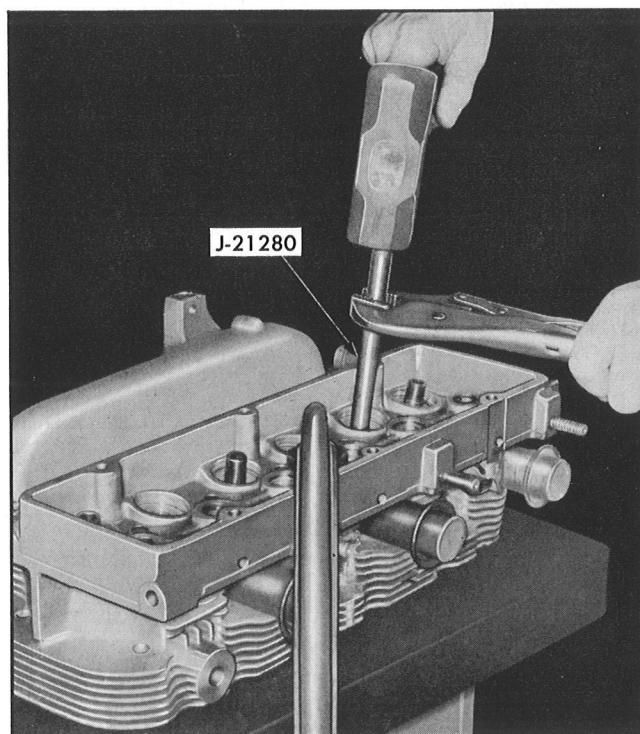


Fig. 1—Removing Corvair Engine Valve Guide



## Corvair Universal Service Engines Available

Two universal service engines are now available as replacement for 1960 thru 1963 Corvair engines. Engine Assembly Part No. 3830951 provides replacement for all manual transmission high-performance engines, except the turbocharged engine. Engine assembly 3830953 is serviced as replacement for all Powerglide or manual transmission equipped base engines, including the Monza Powerglide engine and all Corvair "95" engines.

The 3830953 "Standard" engine assembly is internally complete from rocker cover to rocker cover and from crankshaft pulley to the clutch housing mounting surface. The 3830951 "High-Performance" engine assembly includes the above plus a distributor, clutch housing, flywheel and clutch assembly. All other external parts must, at time of engine installation, either be transferred from the engine being replaced, or be procured separately if the condition of the in-service part does not permit its further use.

Due to the broad service application these two replacement engines have in vehicles of different model years and body styles, it is felt that engine replacement will be accomplished more readily if the technician follows a step by step service procedure similar to that provided below. It should be noted that in the suggested procedure for build-up of the new engine, the oil pressure switch is being located at the oil filter adapter. This will necessitate a rework of the wiring harness on many past model vehicles. If the replacement engine is being installed in an air-conditioned vehicle, it will be necessary to transfer the oil filter mount adapter and install new adapter gaskets, before attaching a new filter canister.

### DISASSEMBLY OF ENGINE BEING REPLACED

PROCEDURE	VEHICLE MODEL YEAR		PROCEDURE	VEHICLE MODEL YEAR	
	1960	1961-62-63		1960	1961-62-63
1. Remove Powertrain Unit per appropriate Shop Manual. (Drain engine oil.)	X	X	15. Remove Upper Shroud retaining screws (including Oil Cooler Access Cover) and remove upper shroud.	X	X
2. Remove Transaxle from Engine per Shop Manual, then mount Engine in Rebuild Stand. (Remove Exhaust Pipe and Muffler Assy.)	X	X	16. Remove Engine Front Shield.	X	X
3. Remove Air Cleaner Air Tubes at Carburetors.	X		17. Remove Engine Side Shields and Muffler Shield.	X	X
4. Remove Air Cleaner Assemblies, and Supports. (Including Positive Crankcase Ventilation Valve and Hose, if so equipped.)		X	18. Remove Rear Center Shield, Seal and Seal Retainer.	X	X
5. Disconnect Choke Heat Tube, Vacuum Hose, Modifier Link, and Fast Idle Link then remove Air Horn and Support Assembly.	X		19. Remove Engine Rear Mount Bracket.	X	X
6. Disconnect Accelerator Rod Dust Boot at front shield, Fuel Lines at Carburetor and Spark Advance Hose at right Carburetor.	X	X	20. Remove L. H. and R. H. Lower Shroud and Ducts as assemblies.	X	X
7. On 1962-63 Vehicles Only—Disconnect Choke Control Rods at Choke Lever.		X	21. Remove R. H. Exhaust Manifold.	X	
8. Remove hold down nuts at each Carburetor and remove Carburetors and Cross-Shaft as an assembly (1961 includes choke cables).	X	X	22. Remove Oil Pressure Switch.	X	X
9. Remove Blower Belt and Idler Pulley.	X	X	23. Remove Temperature Sending Switch (oil temp. 1960—head temp. '61-63)	X	X
10. Remove Fuel Pump with Fuel Lines. Remove Pump Push Rod.	X	X	24. Remove Engine Blower and Pulley.	X	X
11. Remove Generator and Support Bracket Assembly including Ground Strap.	X	X	25. Remove Crankcase Vent Tube (either positive ventilation or road draft).	X	X
12. Remove Vacuum Balance Tube, Engine Oil Dipstick and Dipstick Boot.	X	X	26. On 1962-63 Vehicles Only. Remove upper and lower choke control rods, but do not remove the Choke Thermostatic Coil.		X
13. Disconnect cables at Spark Plugs and ignition wires at Coil, then remove Distributor Assembly with wires attached. Remove Ignition Coil.	X	X	27. Remove Engine Skid Plate.	X	X
14. Disconnect Cooling Air Thermostat Rod at control lever, then remove Cooling Air Throttling Valve and Bracket Assembly.	X		28. Remove engine from overhaul stand.	X	X
			<b>THE FOLLOWING STEPS APPLY TO ONLY THE "STANDARD" (3830953) ENGINE.</b>		
			29. Remove Engine Clutch Assembly (manual trans. vehicles).	X	X
			30. Remove Flywheel or Converter Flex Plate.	X	X
			31. Remove Clutch Housing, then replace Crankshaft Seal in housing.	X	X

### UNCRATE NEW ENGINE AND CHECK FOR THE FOLLOWING PARTS:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>(a) Sedan type Oil Filler Tube.</li> <li>(b) Sedan type Oil Dipstick Tube.</li> <li>(c) Fuel pump to carburetor line Nipple.</li> <li>(d) 3/8—1 1/2 Bolt required for generator attachment on 1960-61.</li> </ul> | <ul style="list-style-type: none"> <li>(e) Vacuum Balance Tube Hoses (2).</li> <li>(f) Plug for oil filler hole.</li> <li>(g) Plug for dipstick tube hole.</li> <li>(h) Plug for oil temperature hole.</li> <li>(i) Oil filler Tube Seal Ring (Corvair "95" &amp; Station Wagon)</li> </ul> |
|--|---|

## ASSEMBLY AND INSTALLATION OF CORVAIR UNIVERSAL REPLACEMENT ENGINES

**NOTE: Start at step 7 when assembling the 3830591 "Hi-Performance" Engine.  
Steps 1 thru 6 pertain to only the 3830953 Standard Engine.**

PROCEDURE	VEHICLE MODEL YEAR		PROCEDURE	VEHICLE MODEL YEAR	
	1960	1961-62-63		1960	1961-62-63
1. Remove Oil Pan from new engine.	X	X	21. Install Ignition Coil.	X	X
2. Install Clutch Housing using a new Crankshaft Seal and Housing-to-Block Gasket.	X	X	22. <b>High-Performance Engine only</b> —Install ignition secondary wires to plugs and coil using old distributor as a guide, then connect distributor to coil primary wire.	X	X
3. Install Flywheel or Converter Flex Plate and indicate flywheel and housing runout.	X	X	23. <b>Standard Engine only</b> —Remove No. 1 spark plug to determine TDC at crank pulley, then install distributor and coil; connect primary and secondary wiring after reinstalling spark plug.	X	X
4. Install Clutch Assembly (manual trans.)	X	X	24. Install Vacuum Balance Tube using new short rubber hoses at ends.	X	X
5. On Powerglide vehicles, remove Clutch Shaft Pilot Bearing for clearance to converter pilot area.	X	X	25. <b>On all except Corvair "95" and Station Wagon</b> —Install Oil Dipstick Boot and new Dipstick.	X	X
6. Install Oil Pan using new gasket.	X	X	26. As an assembly, install Generator with its Support Bracket (use new mounting bolt furnished for 1960-61 vehicles).	X	X
7. Mount new engine in Assembly Stand.	X	X	27. Install Carburetors and Cross-Shaft, as an assembly.	X	X
8. Remove R. H. Exhaust Manifold from the new engine and install the manifold from old engine.	X		28. Install Fuel Pump Push Rod after checking Parts Catalog to insure that it is the proper Rod for the Pump being used. Install Fuel Pump, then install fuel lines to carburetors. (The new Nipple furnished will be required to avoid filler tube interference with the fuel line on 1960-61 vehicles.)	X	X
9. Install temperature switch from old engine or obtain new Cylinder Head Temperature Switch and install. (Plug oil temp. hole if using head temp. switch in its place on 1960 models.)	X	X	29. Install Blower Belt Idler Pulley and Belt, then adjust tension using tension gauge.	X	X
10. <b>On all vehicles except Corvair "95" and Station Wagon.</b> Install Oil Filler Tube Plug in lower opening (use Seal) and install furnished Oil Dipstick Tube and Filler Tube (sedan type). <b>On Corvair "95" and Station Wagon.</b> Install Oil Filler Tube Plug (no Seal) in oil filter adapter opening, also insert Plug in oil dipstick tube opening.	X	X	30. <b>On 1962-63 Vehicles Only</b> —Adjust Choke control Rods and connect at Carburetor Choke Valve Lever.		X
11. <b>On 1962-63 Vehicles Only.</b> Install upper and lower Control Rods from choke coil (choke coil is furnished on engine and should also be left on 1960-61 vehicles to provide shroud sealing).		X	31. Connect Vacuum Advance Hose at R. H. carburetor and Accelerator Rod at cross-shaft, then install Accelerator Rod Dust Boot at front shields.	X	X
12. Install engine Skid Plate Assembly and Engine rear mount bracket.	X	X	32. Install Air Horn and Support Assembly then connect Choke Heat Tube, Vacuum Hose, Modifier Link and Fast Idle Link.	X	
13. Install Engine Blower and Blower Pulley Assembly then install Crankcase Vent Tube (P.C.V. or road draft type).	X	X	33. Install Air Cleaner and air tubes.	X	
14. Install Oil Pressure Switch in oil filter adapter—all models (where necessary, rework wiring harness as shown on page 6A-7 of the 1962-63 Corvair Shop Manual).	X	X	34. Install Air Cleaner Supports, and Air Cleaner Assemblies, then install P.C.V. Valve and hoses, if used.		X
15. Install lower L. H. and R. H. Shrouds and Duct assemblies with Thermostats.	X	X	35. Install Exhaust Pipes and Muffler Assembly. Install a new Oil Filter Cannister.	X	X
Note: On 1960-61 vehicles, if interference is encountered on assembly of a shroud or duct it may be necessary to slightly rework the sheet metal in the area of interference.			36. Remove engine from rebuild stand and install on jack stand with proper adapter.	X	X
16. Install Rear Center Shield, Seal and Seal Retainer.	X	X	37. Install Transaxle unit per Shop Manual appropriate outline (This includes Starter Motor assembly and solenoid wires).	X	X
17. Install Muffler Shield and Engine Side Shield (leave screws loose).	X	X	38. Install Powertrain in vehicle per appropriate Shop Manual outline.	X	X
18. Install Engine Front Shield (screws loose).	X	X	39. <b>On Corvair "95" and Station Wagon</b> —Install Oil Filler Tube with Seal. Install Oil Dipstick.		X
19. Install Upper Shroud then tighten all sheet metal screws.	X	X	40. Perform necessary tune-up procedures and engine performance checks (timing—carburetor synchronization and valve lash if needed).	X	X
20. Install Cooling Air Throttling Valve and Bracket Assembly and connect and adjust Thermostat Control Rod.	X				

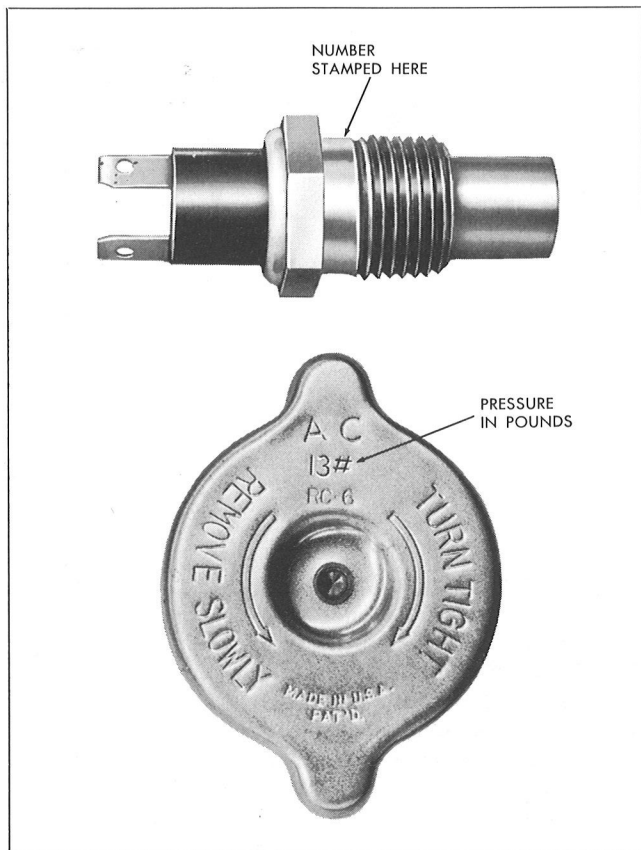


Fig. 2—Radiator Cap & Sending Unit

Some vehicles have been assembled with incorrect radiator caps, some with incorrect heat indicator switches, and some with both cap and switch incorrect.

On vehicles equipped with the 13 lb. cap and the heat indicator switch intended for use with the 7 lb. cap (part No. 6400211 stamped "AC11513226M" in area between threads and hex shown in Figure 2) it is possible for the "hot" signal to come on when the engine temperature is actually normal.

In cases of overheating complaints, both the cap and switch should be checked to determine whether one or both are wrong. The radiator caps have the working pressure stamped on top as shown in Figure 2. The 1193561 heat indicator switch should be used with the 13 lb. cap and may be identified by numbers "561" which are stamped in the area between threads and hex shown in Figure 2.

## Idle Control for Air Conditioned Corvair and Chevy II

The Corvair and Chevy II Air Conditioning Systems include a solenoid controlled, vacuum actuated idle control assembly (Fig. 3) which automatically compensates the engine idle speed when

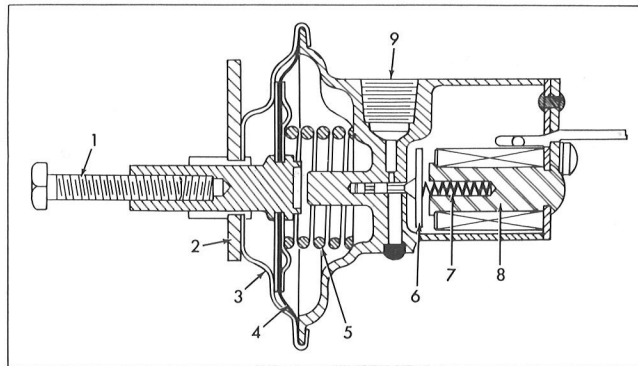


Fig. 3—Cross Section of Idle Control Unit

- |  |                        |
|--|------------------------|
| 1. Adjusting Bolt-Control Rod Assembly | 5. Actuating Spring    |
| 2. Mounting Bracket                    | 6. Valve Assembly      |
| 3. Diaphragm Housing                   | 7. Valve Return Spring |
| 4. Diaphragm                           | 8. Solenoid            |
|  | 9. Vacuum Inlet        |

the air conditioning system compressor is engaged.

When the air conditioning compressor is not operating, engine vacuum draws an internal diaphragm and the attached control rod-adjusting bolt assembly away from the carburetor throttle against tension of the activating coil spring; thus allowing the engine to idle in the normal manner.

When the compressor is operating, the solenoid in the idle control is energized, moving the valve assembly to divert the vacuum from the diaphragm to atmosphere. This allows the actuating coil spring to expand and move the control rod-adjusting bolt assembly out of the control body to contact and advance the throttle.

### Adjustment

Figure 4 illustrates the installation of the idle control on both Corvair and Chevy II vehicles. Adjustment is made as follows:

1. With Air Conditioning unit not operating and idle speed correctly adjusted as outlined in the appropriate Shop Manual, turn the idle speed control adjustment bolt to obtain approximately .01" clearance between the bolt head and the throttle tang as shown in Figure 4.
2. Start engine and turn air conditioner on when engine temperature is normalized.
3. Turn adjustment bolt in appropriate direction to obtain the idle speed listed in the Shop Manual.
4. Switch air conditioner on and off several times and check operation of the control; re-adjust if necessary.

### Service

Parts are available for complete servicing of the idle control unit. Figure 5 illustrates an exploded view of the unit. The coil and lead assembly, valve return spring, coil retaining screws and lock washers are available in kit form only. The diaphragm assembly and throttle adjusting screw are



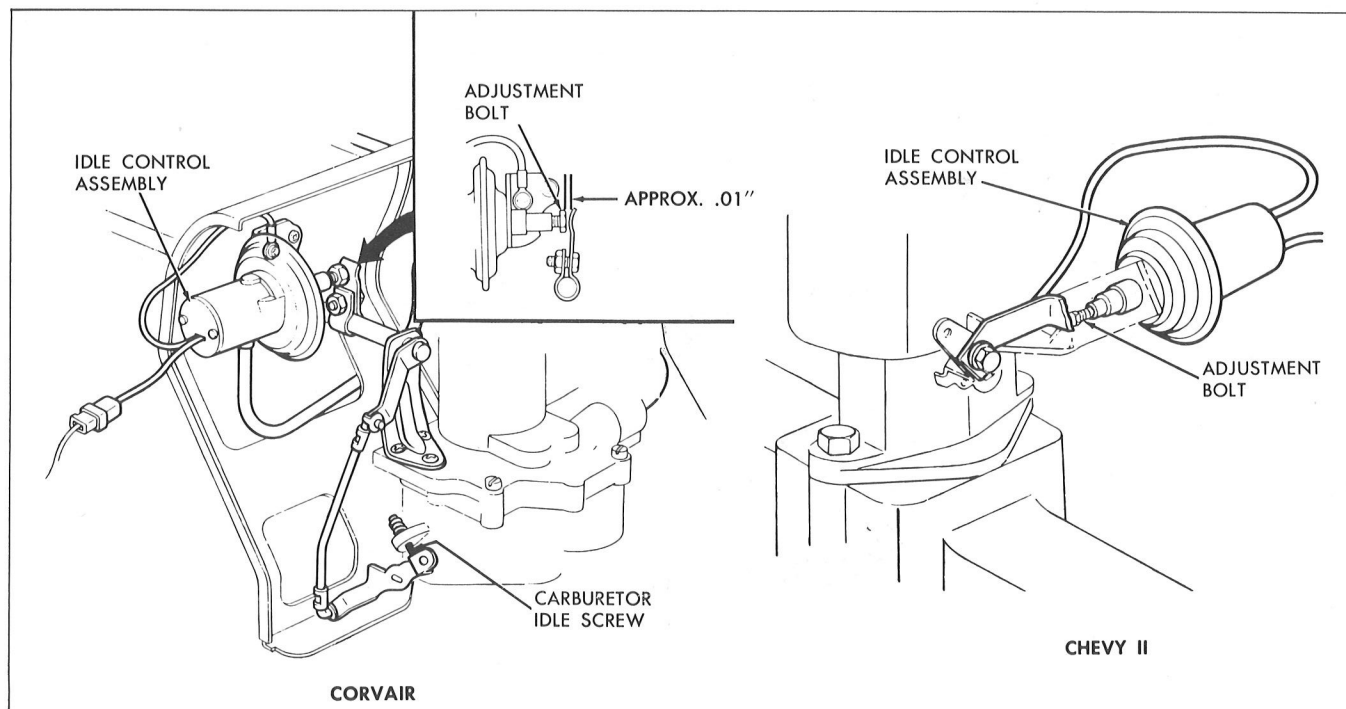


Fig. 4—Installation of Idle Control Unit

serviced individually. The control unit must be re-adjusted as explained previously whenever it is removed for service and reinstalled.

## Failure of Steering Knuckle Control Arm Ball Joint Seals

The ball joint seals used on the upper ball joint on Passenger Car, Corvette and Corvaire 95 and on upper and lower ball joint on Chevy II and Corvaire incorporate a "valve" (Fig. 6) which releases excess grease during lubrication, thereby eliminating the rupture or "ballooning" of the seal sometimes caused by excessive lubrication pressure.

Several reports have been received of this valve being inoperative, due to hardened grease and/or undersize relief valve hole. This results in failure of ball joint seal when ball joint is lubricated and ultimate failure of ball joint if the vehicle is operated with the seal damaged.

It is suggested, therefore, that the valve openings in seals be checked before lubricating and opened, if necessary, with any blunt implement of approximately 1/16 inch diameter (welding rod, nail with point ground off, etc.).

## "Rust" in Cooling System

Recent complaints of the appearance of "rust" in the radiator reservoir of new vehicles have been traced to a sealing compound used at assembly plants. Early in the life of the vehicle this compound floats about in the cooling system, lodging

in areas where leaks most often occur, such as hose junctions, mating surfaces of castings, etc. Until this dark brown material coats these areas, it may have at first glance the look of rust or oil; but it is absolutely harmless and will dissipate eventually.

## 1962 and 1963 Chevrolet and Chevy II Power Brake Air Cleaner Servicing

Both the 1962 and 1963 Chevrolet and Chevy II Shop Manuals state that it is necessary to clean the power brake air cleaner element twice yearly. A recent restudy of these units reveals that this practice is not required.

Removal and cleaning of the element should be performed, however, whenever the power brake unit is removed from the vehicle for service. The element may be cleaned by washing it out in petroleum spirits, kerosene, or stoddard solvent and allowing it to dry thoroughly before re-installing.

## Correct Torque of Chevy II Connecting Rod Cap Retaining Nuts

The 1962 Chevy II Shop Manual incorrectly states on Page 6-42, operation No. 5, that the cap retaining nuts should be torqued to 35-45 ft. lbs. The correct torque is 30-35 ft. lbs. on both four and six cylinder engines.

to restore the original 70 lb. strand tension.

Frequent re-tensioning of the blower belt, as it accrues mileage, will result in the service life of the belt being materially reduced. If inspection reveals that a used belt is running excessively loose, readjust the belt to obtain a 50 lb. strand tension reading (equivalent to approximately 1/2" belt deflection).

The part number 3780981 Corvair Engine Blower Belt serviced by Chevrolet is the only belt now known which will meet Chevrolet Engineering specifications for this application. Corvair owners should be informed that if in an emergency it is necessary to install a different belt, it would be advisable to replace that belt with part number 3780981, as soon as convenient.

## Corvair Heater Hose Causes Electrical Short

In some instances on Corvair vehicles the battery positive cable and the heater hose may rub against each other causing wear-thru of the cable terminal insulation and the heater hose wrapping. This condition causes the battery terminal and the metal wire structure of the hose to come into contact and create an electrical short.

To correct this condition or prevent its occurrence, install the battery positive cable so that its terminal leaves the solenoid at a five o'clock position instead of the nine o'clock position. Also, the protective sleeve on the heater hose should be centrally positioned over the solenoid terminals, as shown in Figure 4.

Whenever reports of battery discharge or a malfunction in the electrical system are being checked, the above should be investigated. In fact,

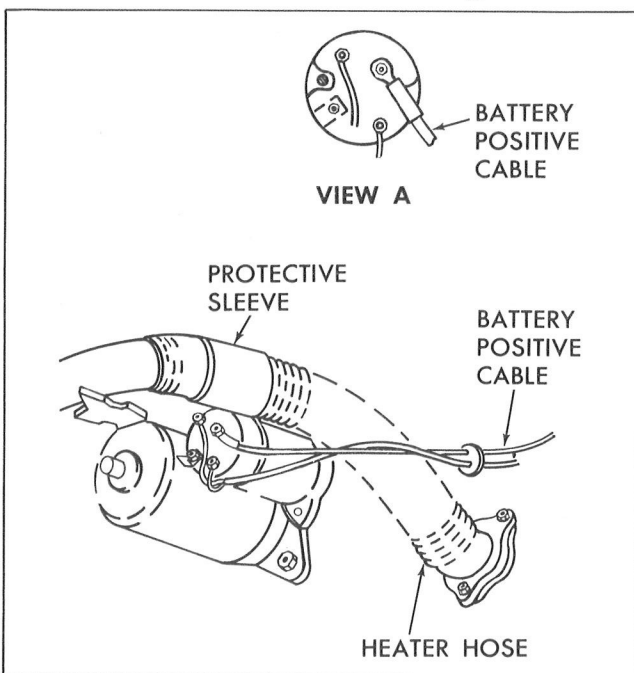


Fig. 4—Corvair Battery Cable and Heater Hose Routing

if any vehicle is being serviced on a hoist, as for lubrication, the vehicle should be inspected for cable and hose interference.

## Ignition Coil Replacement

Recent experiences make it necessary to again emphasize the necessity of changing the coil tower protective boot whenever an ignition coil is being replaced.

Quite often a coil will fail or begin to fail as a result of arc-over or carbon tracking caused by a loose cable connection at the secondary terminal, sometimes reported as "cracking." If this has occurred the inside of the boot will have picked up the carbon track. If this same boot is re-used with a new coil, premature failure of the replacement coil is almost a certainty.

All Delco-Remy replacement coils are now serviced in a unit that also contains a replacement boot. The new boot should definitely be installed as an aid in reducing repeat failures.

## Servicing Diode Rectified Charging Circuits

When performing any tests or adjustments on Delcotron equipped charging circuits, there are certain precautions that must be observed in order to avoid serious damage to the electrical equipment. The prime cause of damage to electrical components, occurring during installation and test, will be eliminated if the technician has a good knowledge of the circuitry and need never resort to the dangerous trial-and-error method of determining the correct connections required.

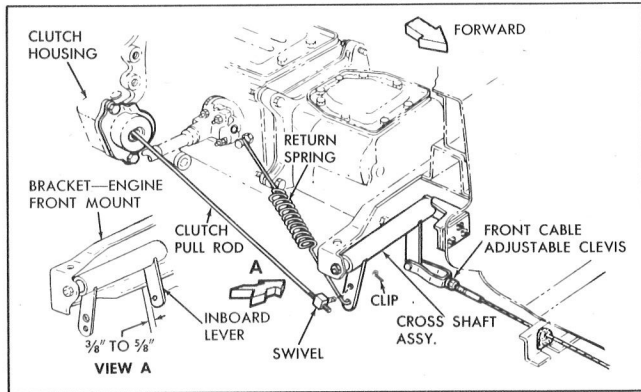
Before working on any portion of an automotive electrical system, always disconnect the battery ground strap. If in doubt on the electrical circuitry utilized in the vehicle, or service procedures that should be employed, refer to the appropriate Shop Manual.

Never operate the Delcotron on an open circuit because under this condition the high voltage that will build up within the unit might damage the diodes. Do not attempt to polarize the Delcotron since it is not necessary and can actually cause damage.

The positive and negative battery cable must always be connected to the correct terminals so that battery polarity will match that of the generator. If the polarities are not the same, a dead short will result, instantly burning out the diodes in the Delcotron and possibly damaging the wiring.

A booster battery or battery charger must be connected in parallel with the installed battery, so that negative terminals are coupled together and the positive terminals of each are linked together. This hook-up is the same as for previous model generators, but with the diode rectified generator, the consequences of reversed jumper cables are much more serious.

# CORVAIR TRANSMISSION and CLUTCH LINKAGE ADJUSTMENT



## CLUTCH ADJUSTMENT

On 1960-63 Corvaire passenger cars equipped with either 3- or 4-speed transmissions, the clutch linkage should be adjusted to permit  $\frac{3}{4}$ " to  $1\frac{1}{8}$ " free-travel of the clutch pedal before the clutch release bearing is brought into contact with the diaphragm spring. If clutch pedal free-travel

measured at the pedal pad, while the pedal is depressed by hand, is not within the  $\frac{3}{4}$ " to  $1\frac{1}{8}$ " range; adjust clutch linkage as follows:

1. Disengage clutch pull rod from cross shaft.
2. Adjust length of front control cable, at the cross-shaft clevis, to obtain  $\frac{3}{8}$ " to  $\frac{5}{8}$ " spacing between the rear edge of the cross-shaft inboard lever and the lower edge of the engine front mounting bracket. (View A)

**NOTE:** While performing the above adjustment exert approximately 5 lbs. tension on the cable to assure that the cable seats in its pulleys.

3. With the clutch pull rod held forward to remove slack at clutch fork, align rod swivel with upper hole in cross-shaft lever then back-off swivel three complete turns and install pull rod assembly in upper hole of lever.

**NOTE:** On some early 1963 model vehicles, if a pull rod lever having a total of three holes is encountered, the pull rod should be installed in the center hole. The upper hole in the 3-hole lever is never used—later production levers reverted to a total of two holes.

## ASSEMBLY AND ADJUSTMENT OF 1963 MANUAL TRANSMISSION SHIFT LINKAGE

If transmission shift difficulties are experienced, such as those that might be caused by linkage bind or the operator's gearshift control lever being mispositioned, the linkage should be inspected and readjusted as necessary. Whenever the transmission linkage has been disassembled for any reason, adjustment of the linkage should be checked on reassembly.

Perform transmission shift linkage adjustment to obtain proper positioning of the operator's gearshift control lever, as follows:

1. Move the vehicle front seat to its full-forward position.
2. Shift the transmission into the gear range used for checking control lever positioning. See illustration.

3. To remove any lash from the system, push rearward lightly on the long shifter tube located in the tunnel.
4. Using a scale, check positioning of the gearshift control lever relative to front edge of seat or centerline of lever housing (refer to illustration for proper dimension).
5. If linkage readjustment is required, loosen the coupling clamp on the rear of the shifter tube and readjust rod length to obtain the correct control lever setting.
6. Retighten coupling clamp and test-shift transmission in all gear ranges.

