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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.

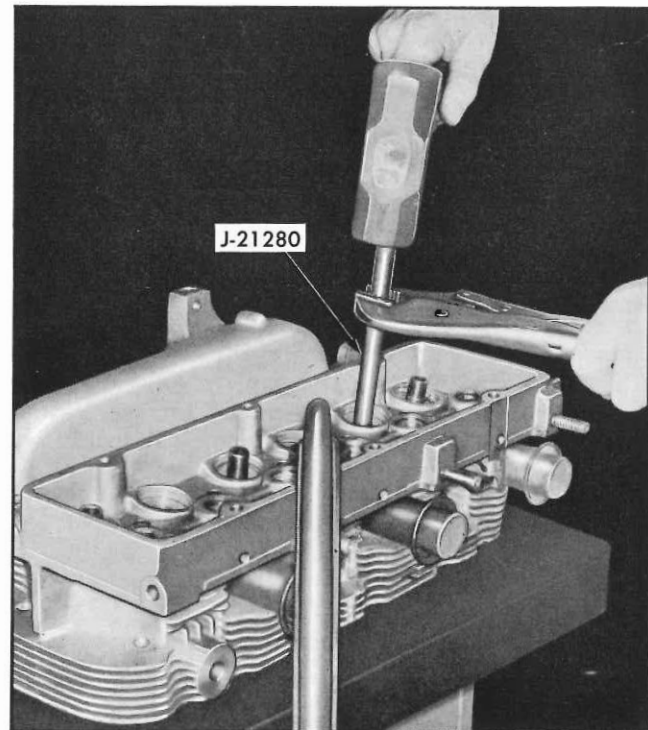


Fig. 1—Removing Corvair Engine Valve Guide

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 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

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

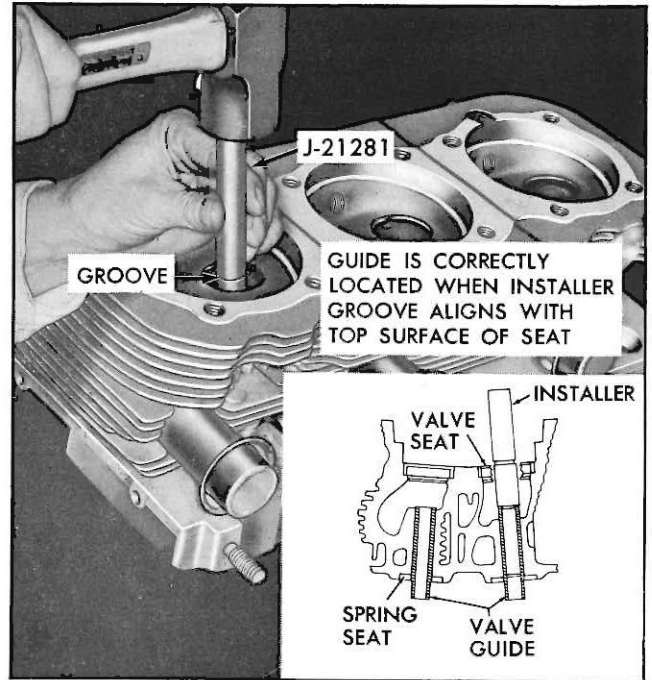


Fig. 3—Installing New Valve Guide

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.

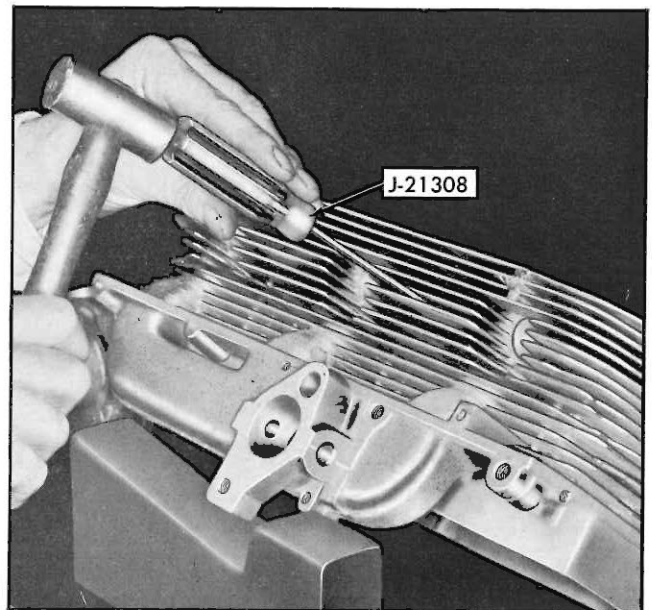


Fig. 4—Cleaning Air Passages Between Fins

3. Recondition valve seat as necessary to obtain correct seat angle, width, and concentricity with guide bore (refer to page 6A-35 of the 1961 Corvair Shop Manual).
4. Select and use valves with standard diameter stem at locations where new guides were installed.

Assembly of Cylinder Head

1. Inspect the cylinder head for restrictions in the air circulating passages formed by the cooling fins. Casting flash or a build-up of other foreign material that could decrease cooling efficiency can be easily removed from the air passages using the J-21308 Fin Cleaning Tool (Fig. 4).
2. Complete assembly of the cylinder head as outlined on page 6A-36 of the 1961 Corvair Shop Manual, except final torque all valve rocker studs and cylinder head stud nuts to 35 ft. lbs. on all engines. The 27-33 ft. lb. torque formerly recommended for these locations has been found to be insufficient in many instances.

Corvair Carrier Seal Usage

All Corvair differential carriers built for use with Powerglide transmission since October 1962

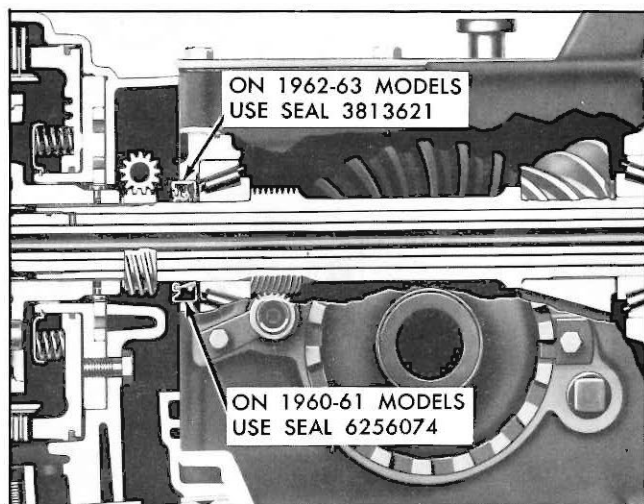


Fig. 5—Pinion Shaft Front Bearing Seal

utilize a double lip seal (Part No. 3813621) as the drive pinion shaft front bearing seal (Fig. 5). A single lip seal (Part No. 6256074) was formerly used at this location. The 3813621 double lip seal is now available for service and is recommended for use on 1962-63 models. Replacement usage of the single lip seal, Part No. 6256074, should be restricted to the 1960-61 model vehicles.

To provide improved sealing it is now recommended that pinion front bearing seals, whether of the single or double lip type, be positioned at installation so that the sealing lip having the garter spring will be located adjacent to the bearing. Seal Installer J-8340 will protect the seal from

distortion during installation and provide correct seal depth in the carrier bore when grounded on the carrier housing.

In cases where low mileage failure of the Powerglide clutch plates has occurred, the drive pinion shaft front bearing seal should always be inspected for leakage of rear axle lubricant into the transmission.

Powerglide — No Upshift

In instances where an Aluminum Powerglide will not upshift, this condition may be due to malfunction of the valve body or governor. To save time in locating the trouble, the governor operation should be checked first. This can be done by placing the vehicle on a hoist, disconnecting the vacuum modulator line, and connecting a pressure gauge to the low servo apply pressure tap. With a governor that is functioning properly; the gauge indicated pressure should drop from approximately 130-135 psi to a reading of 115-120 psi, as the technician gradually increases engine speed from a speedometer indicated 10 mph to a speed of 50 mph.

If the governor passes the above operational check, the reason for the transmission not upshifting is probably due to trouble within the main valve body.

Chevy II Lower Control Arm and Strut Rod Installation

The correct installation torque for the front suspension lower control arm pivot bolt nut on 1962-63 Chevy II vehicles is 55-70 ft. lbs. On pages 3-14 of the 1962 Chevy II Shop Manual, step 1 under the heading "Lower Control Arm—Installation" incorrectly states that the pivot bolt nut should be tightened to 90-120 ft. lbs.

Torque specifications for installation of the lower control arm strut rod attaching parts on 1962-63 Chevy II vehicles are shown in Figure 6.

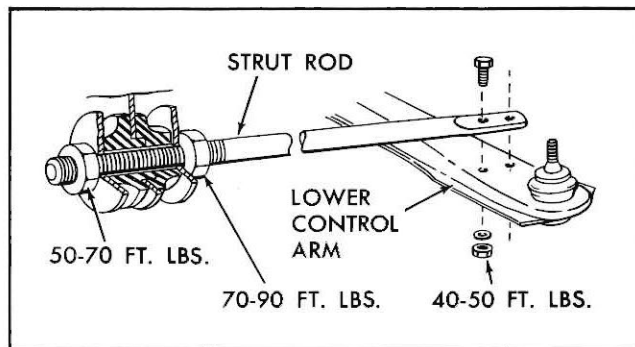


Fig. 6—Chevy II Strut Rod Attachment

Strut rod attaching parts installation torques shown on pages 3-16 and 14-1 of the 1962 Chevy II Shop Manual and on page 14-1 of the 1963 Chevy II Shop Manual Supplement should be revised to conform with torques specified in Figure 6 of this issue.