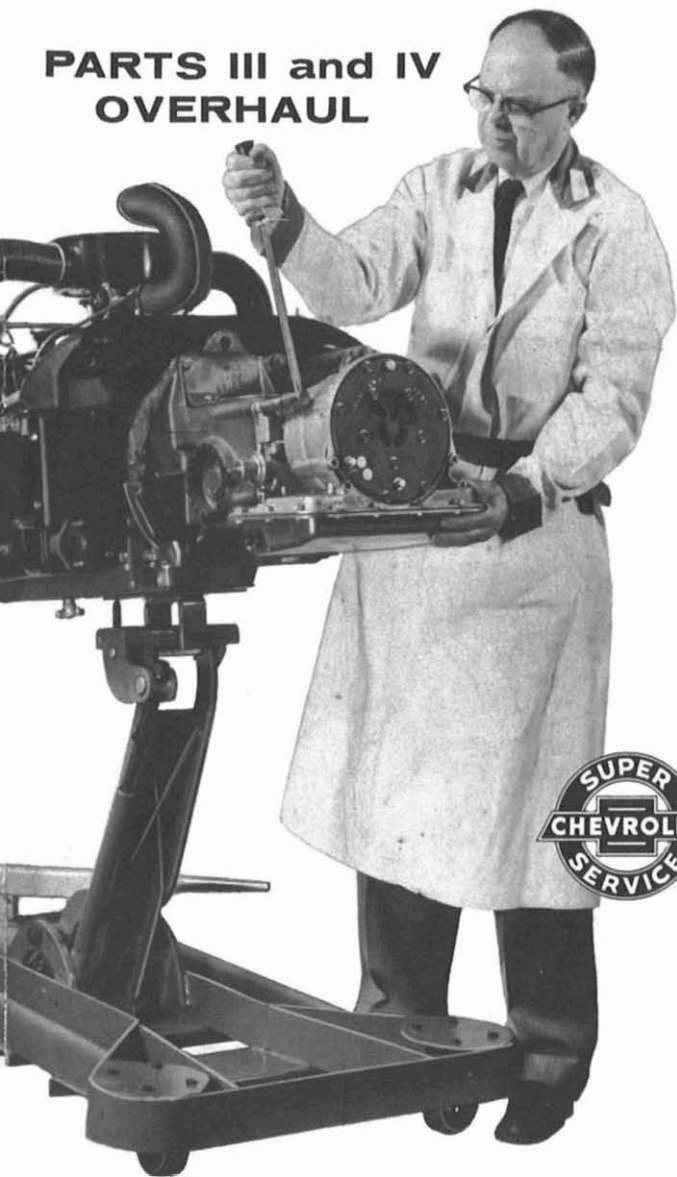


SERVICING THE CORVAIR powerglide TRANSMISSION

**PARTS III and IV
OVERHAUL**



FOREWORD

This booklet contains a complete review of the discussional slidefilms, Servicing the Corvair Powerglide Transmission (Part III and Part IV, Overhaul Procedures). Keep at least one copy of this booklet in the Service Department file of Technical Information.

TABLE OF CONTENTS

PART III

	Page
DISASSEMBLY OF TRANSMISSION ON POWER TRAIN	2
REAR OIL PUMP AND REVERSE PISTON OVERHAUL	5
INSPECTION AND REASSEMBLY OF TRANSMISSION	10
Reverse Clutch Pack	10
Turbine Shaft	11
Ring Gear	11
Planetary Gearset	12
Drive Clutch Drum Assembly	12
Low Band and Linkage	15
Front Pump	16
Determining Proper Selective Thrust Washer for Transmission End Play	16
Low Band Adjustment	18
Governor and Vacuum Modulator	18

PART IV

VALVE BODY AND LOW SERVO OVERHAUL	20
SERVICING THE CONVERTER	30
Removing Power Train from Engine	30
Removing Converter and Inspection	31
Converter Bushing	32
Converter Hub Seal	32
Replacing Unit	33



Servicing the Corvair Powerglide, Part III

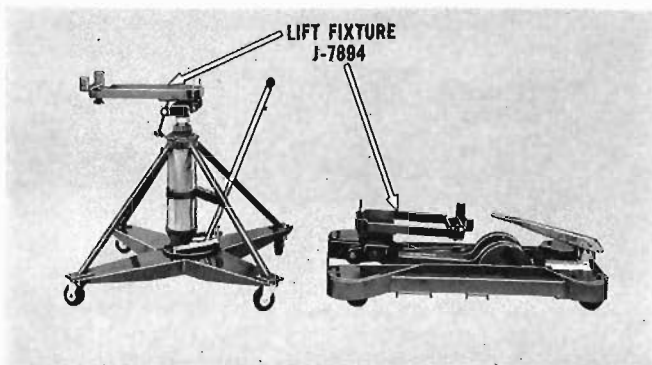
- Disassembly of Transmission
- Rear Oil Pump and Reverse Piston
- Inspection and Reassembly of Transmission

See Part IV for:

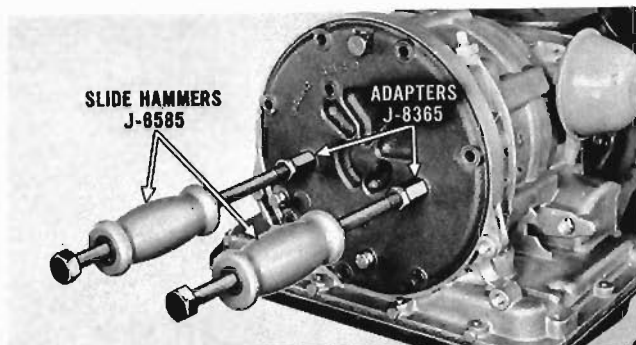
- Valve Body and Low Servo Overhaul
- Servicing the Converter

Your review book contains a complete reprint of Part III and Part IV together.

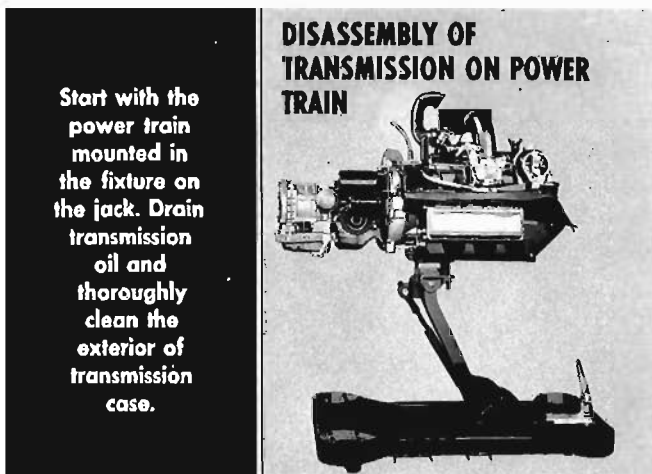
This film is designed to give you a practical method of overhaul without removing the transmission from the power train. Ninety per cent of the service operations can be performed using this method. We will also cover overhauling the rear oil pump and reverse piston assembly on the bench.



Lift Fixture J-7894 adapts either a low-type or pedestal-type transmission jack for holding the power train during overhaul procedures.

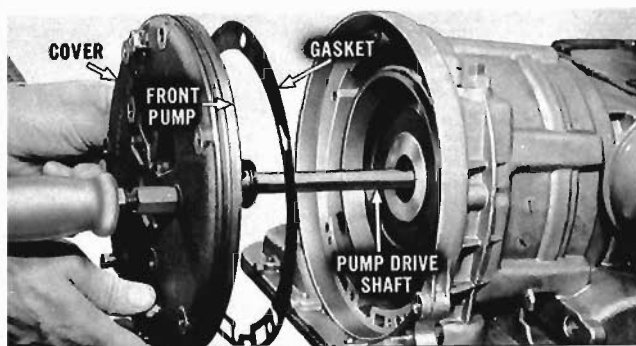


Remove the 12 bolts in front pump cover and install Slide Hammers J-6585 with Adapters J-8365 as shown. Tap lightly with slide hammers to loosen seal between pump cover and case.

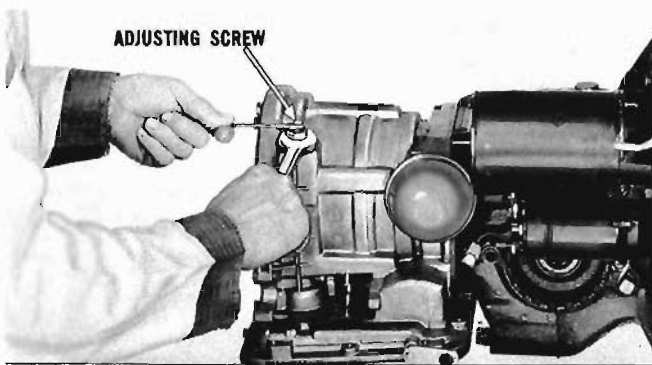


Start with the power train mounted in the fixture on the jack. Drain transmission oil and thoroughly clean the exterior of transmission case.

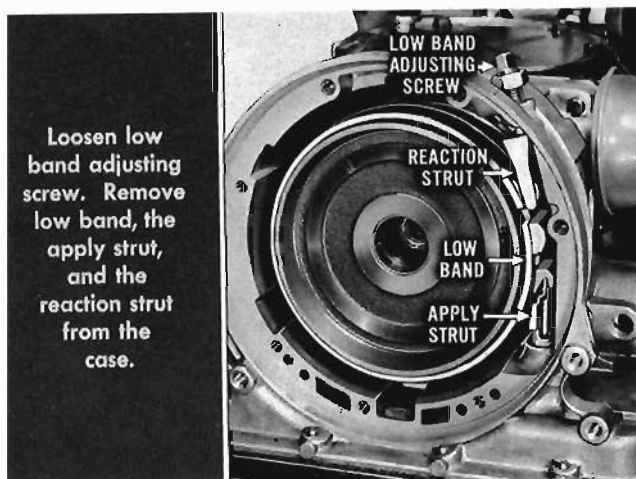
DISASSEMBLY OF TRANSMISSION ON POWER TRAIN



Remove front pump, pump cover and gasket from transmission by carefully pulling toward you to avoid damaging bushings while pulling pump drive shaft through transmission.



Before disassembly, tighten low band adjusting screw firmly to prevent drive clutch drum assembly from falling out when front pump is removed.

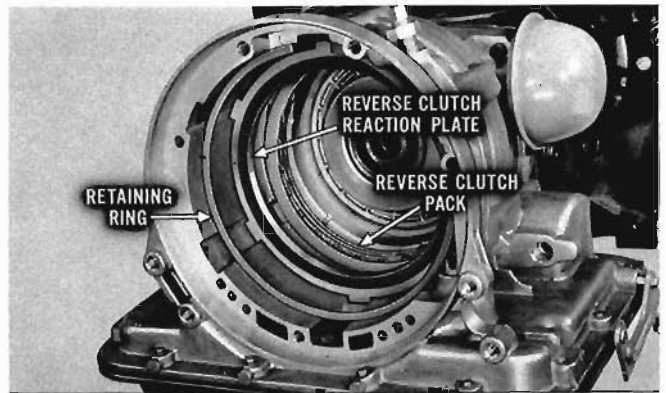


Loosen low band adjusting screw. Remove low band, the apply strut, and the reaction strut from the case.

Remove the drive clutch drum by pulling straight out.

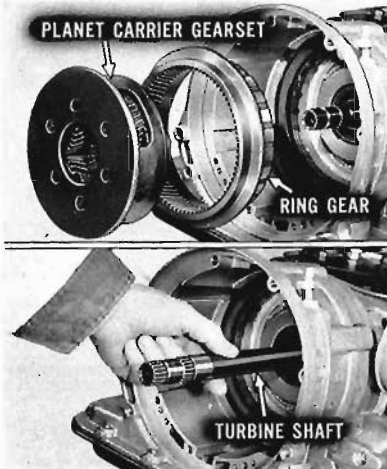


REVERSE CLUTCH REACTION PLATE
REVERSE CLUTCH PACK
RETAINING RING



Pry out the retaining ring, and remove reverse clutch reaction plate and reverse clutch pack.

PLANET CARRIER GEARSET



RING GEAR

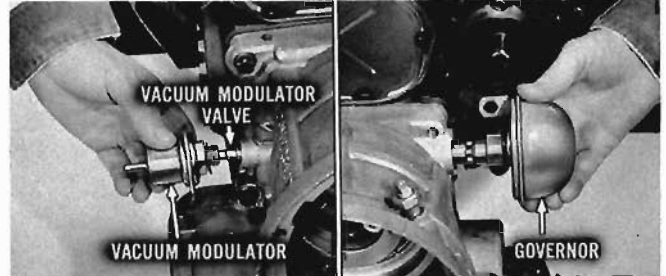
TURBINE SHAFT

To avoid damaging converter and pinion shaft bushings when removing turbine shaft, remove planet carrier gearset and ring gear first. Then carefully pull turbine shaft from transmission.

VACUUM MODULATOR VALVE

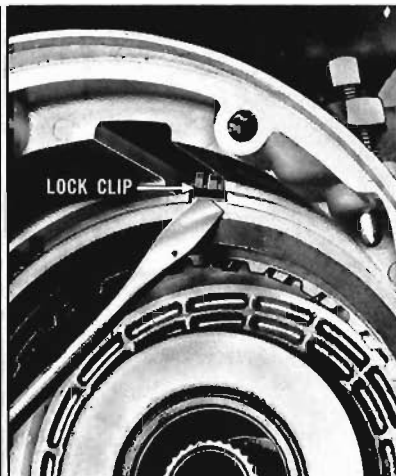
VACUUM MODULATOR

GOVERNOR



Remove vacuum modulator by turning with water pump pliers or thin open end wrench on hex portion only. Pull vacuum modulator valve out of case. Take out governor mounting bolt and remove governor. This is the extent to which power transmission components can be removed from case with unit mounted to power train.

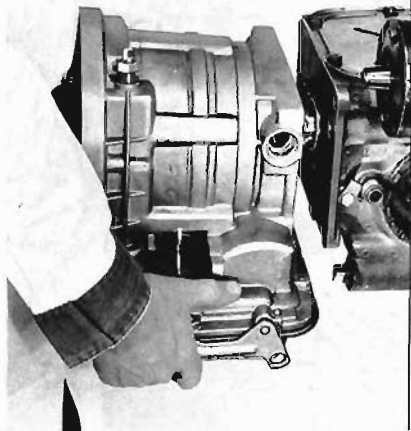
To remove reverse clutch plate retaining ring, insert tip of screw driver under lip of the lock clip as shown. Pry lower edge of clip up and toward front of case until it pops free. Discard clip.



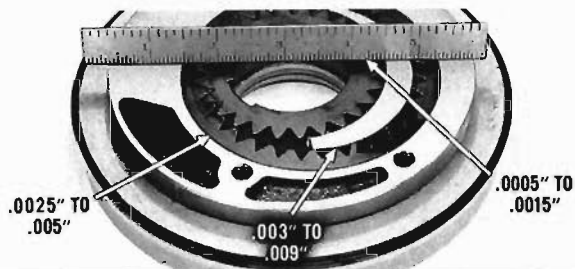
LOCK CLIP

REAR OIL PUMP AND REVERSE PISTON OVERHAUL

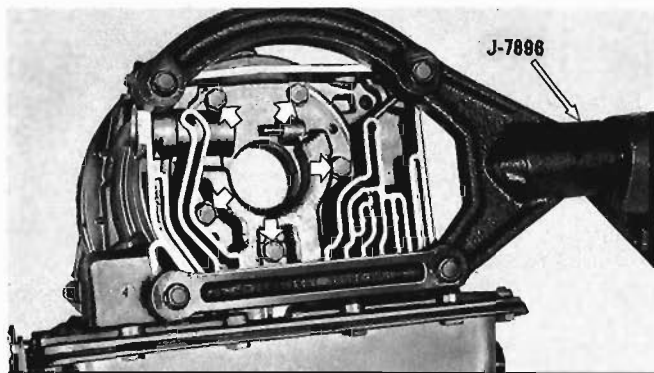
If initial diagnosis indicated trouble in the rear oil pump or reverse piston, or should extensive cleaning (on the basis of our disassembly procedures) be required, continue as follows:



Support the transmission and take out the three remaining mounting bolts. Carefully remove transmission from the differential carrier to avoid damaging pinion shaft splines and rear oil pump bushing.

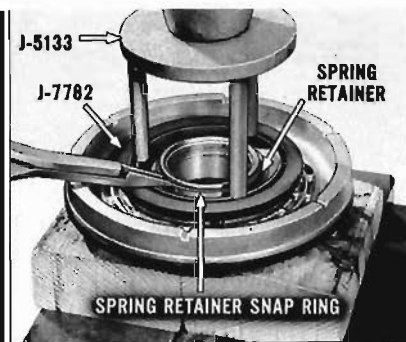


Check for pump gear wear by measuring end clearance between the end of the gears and a straightedge placed across the face of the pump as shown. Allowable clearance is .0005" to .0015". Using feeler gauge, check for .003" to .009" clearance between teeth of driven gear and crescent, and .0025" to .005" between edge of driven gear and pump body.

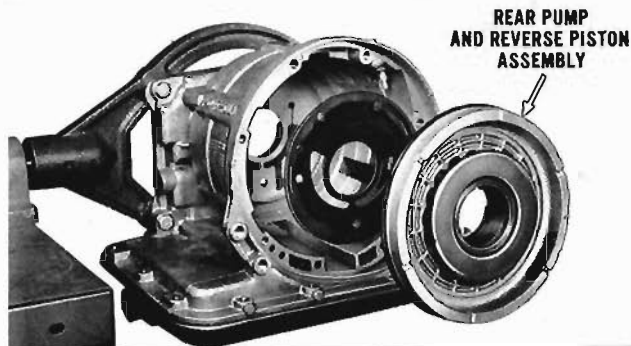


Mount the transmission case in Holding Fixture J-7896. Remove rear oil pump and reverse piston assembly by removing the five bolts holding the assembly to the case.

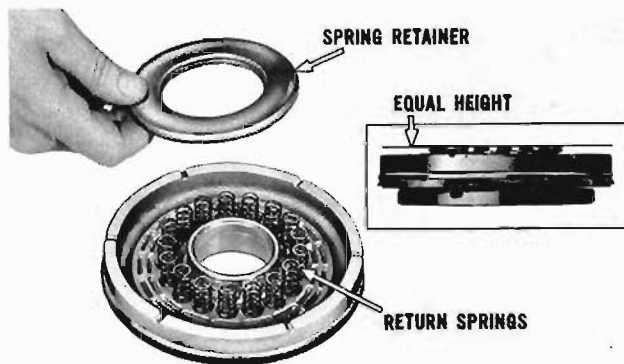
To separate the reverse piston from the oil pump, first remove pump gears to prevent damaging them. Then, place pump body face down on a block of wood on press bed. Carefully center Spring



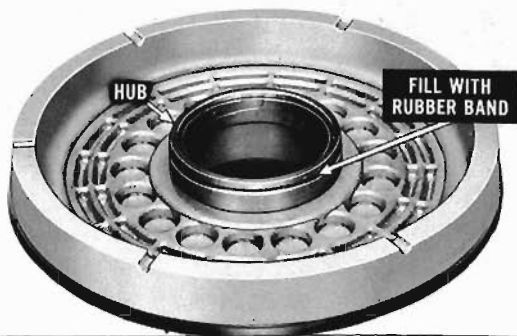
Compressors J-5133 and J-7782 over the spring retainer to prevent retainer hanging in snap ring groove when snap ring is removed. Compress piston return springs and remove retainer snap ring.



Reach into front of case and remove the rear oil pump assembly and rear pump wear plate. Clean parts in solvent and blow out oil passages in transmission case.



Lift off spring retainer. Carefully inspect the 17 return springs for equal height. When reassembling, replace any collapsed springs.

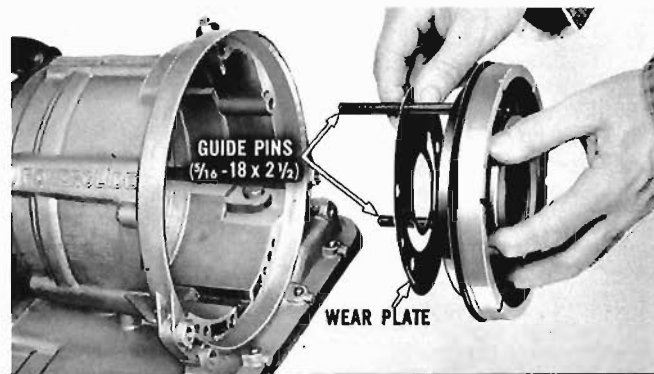
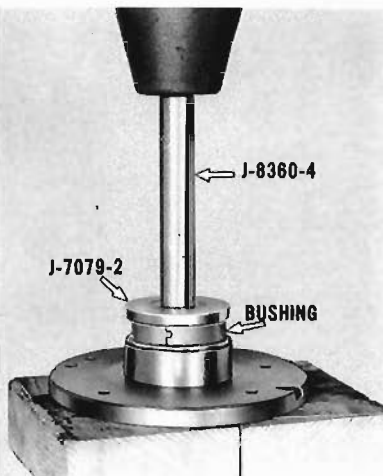


Remove piston return springs. To prevent piston inner seal from hanging up on the pump hub during piston removal, fill snap ring groove with rubber band. Push hub through piston.

Install the 17 piston return springs, the spring retainer and retainer snap ring using the press and special spring compressors used in disassembly. **CAUTION:** Make sure spring compressors are carefully centered on spring retainer to prevent retainer hanging in snap ring groove while compressing springs.



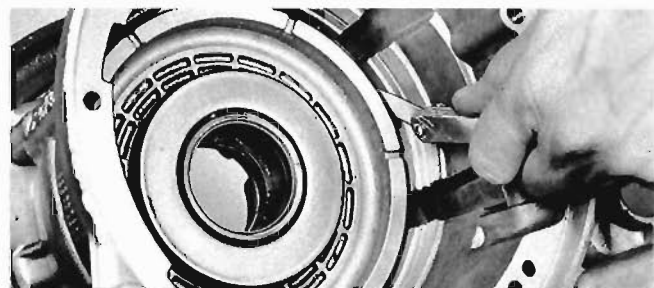
If rear oil pump bushing is scored or badly worn, carefully remove with chisel. Place pump body face down on wooden block on press bed. Press new bushing into place using Bushing Installer J-8360-4 and Handle J-7079-2.



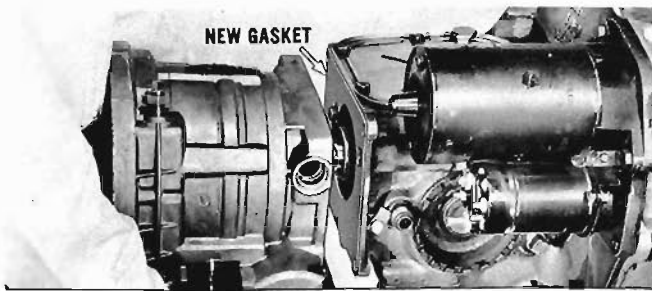
Use thin coating of petroleum jelly on gears and install in pump body. Install guide pins. Place wear plate over guide pins and position on pump body.



Liberally coat new inner and outer seals with automatic transmission fluid and install on reverse piston. Make sure lip of outer seal faces toward pump body. Remove rubber band from pump hub groove and install piston on pump body.

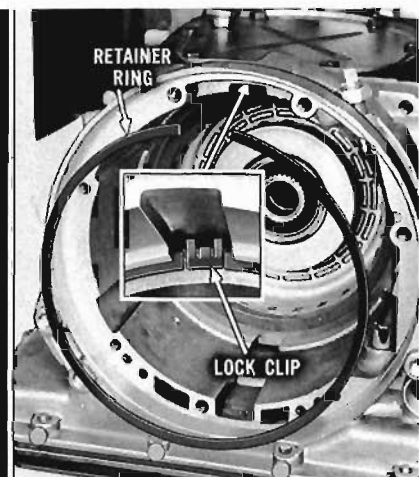


Start assembly in case using a .010-.015 feeler gauge around lip of outer seal to start seal into bore. Make sure assembly is fully bottomed. Remove guide pins and install attaching bolts. Torque 9 to 11 foot-pounds. Temporarily engage drive lugs of planet gearset in pump drive gear and rotate to make sure gears are free.



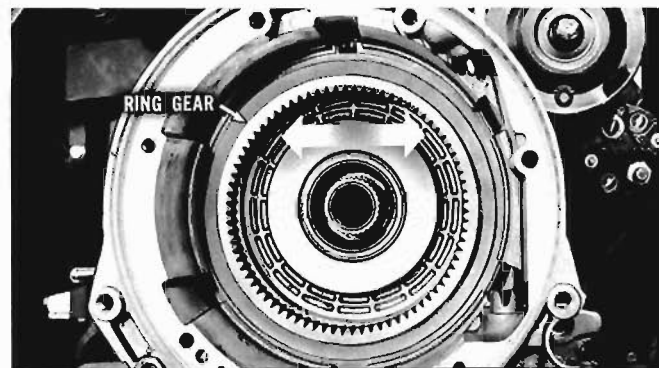
Make sure rear of transmission case is thoroughly cleaned. Use petroleum jelly to hold new gasket in position on front face of differential carrier. Carefully hold transmission in position until mounting bolts are well started. Torque bolts to 24 to 32 foot-pounds.

Install clutch plate retainer ring with gap at the top of case. Install new retainer ring lock clip on thick reaction plate between open ends of retainer ring.

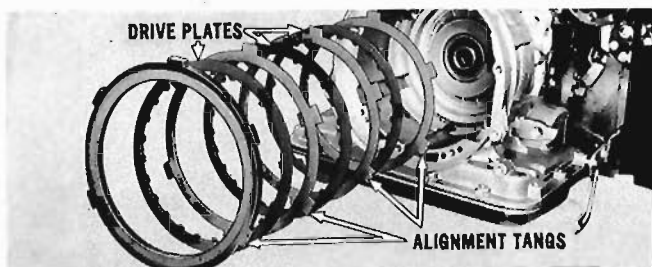


INSPECTION AND REASSEMBLY OF TRANSMISSION ON POWER TRAIN

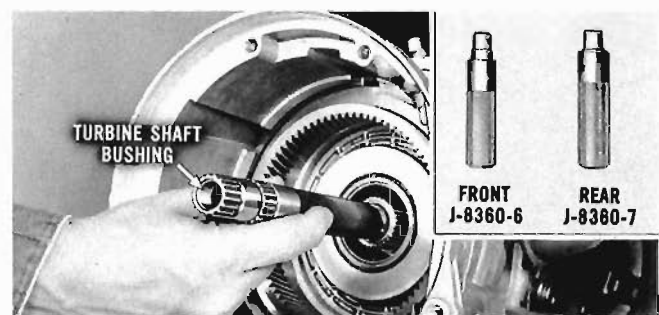
Thoroughly clean all parts to be inspected. Before installing each part in the transmission lubricate thoroughly with automatic transmission fluid.



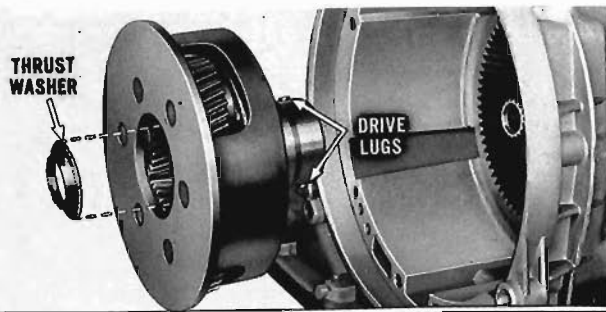
Inspect ring gear and replace if teeth are chipped or worn. Center ring gear over clutch pack and "jiggle" from side to side until fully engaged in clutch discs.



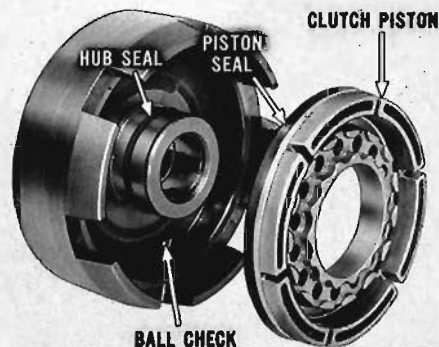
Inspect reverse clutch pack, replacing scored or burned drive plates. Make sure facing on thick reaction plate is in good condition. With power train tilted back for easy installation, install clutch pack starting with steel plate and alternating. Thick reaction plate goes last. Notched tangs and marked tang on thick reaction plate go in the 4 o'clock position in the case.



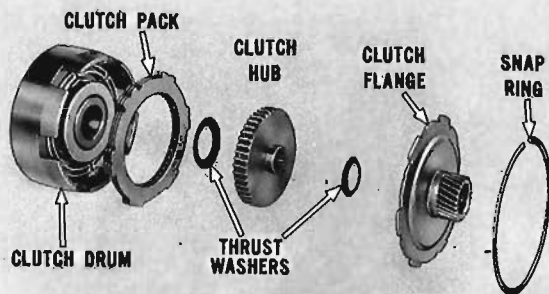
Inspect turbine shaft splines and bushings at both ends of shaft. If splines are damaged, replace shaft. If bushings are damaged, replace as per Page 6E-20 of Corvair Shop Manual using special tools shown. Install turbine shaft making sure all splines are engaged and shaft is fully seated.



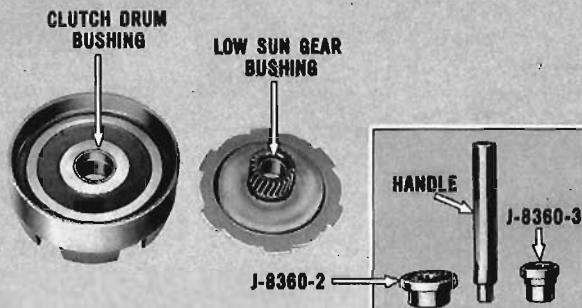
Check the low sun gear thrust washer and replace if badly worn. If planet gears or carrier are damaged, the planet carrier must be replaced as a complete unit. If unit is in good condition, install in ring gear, making sure both drive lugs engage grooves in rear oil pump drive gear.



Separate piston from clutch drum. Discard seals. Make certain ball check valve is free to rattle. If loose enough to fall out, replace drum. Do not restake ball.

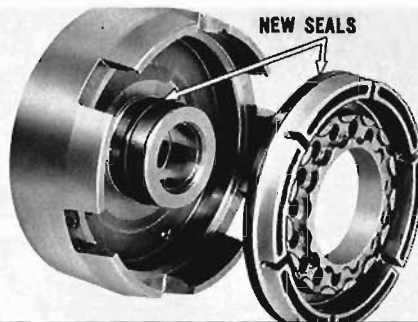
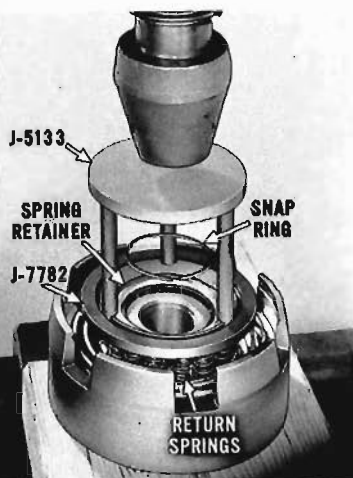


DRIVE CLUTCH ASSEMBLY: Remove snap ring. Lift out flange and sun gear, clutch flange thrust washer, clutch hub, clutch hub thrust washer and clutch pack from the clutch drum.

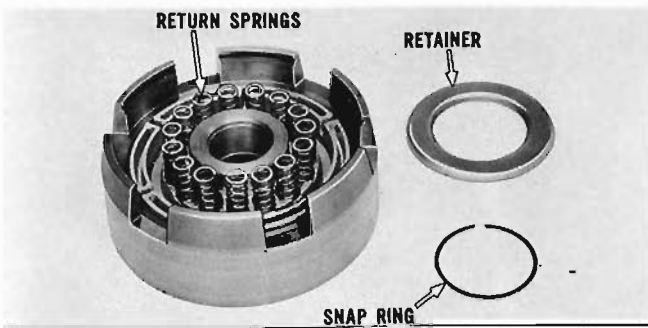


Check clutch drum bushing and low sun gear bushing for nicks or severe scoring. If necessary to replace, refer to Page 6E-19 in the Corvair Shop Manual using the special tools shown.

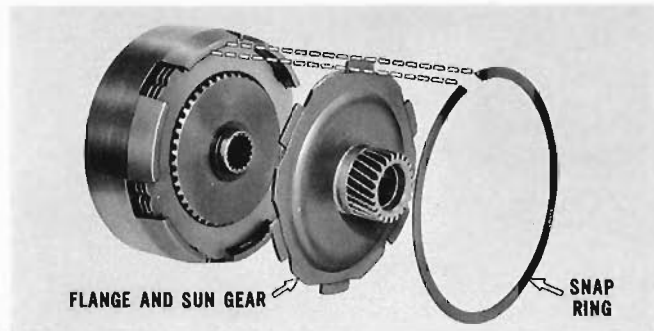
Place clutch drum on a block of wood on press bed. Disassemble in a manner similar to what was shown under Rear Oil Pump and Reverse Piston Overhaul. Make sure ring compressor is centered over spring retainer to prevent retainer hanging in snap ring groove during removal. Remove snap ring, spring retainer and the 15 return springs.



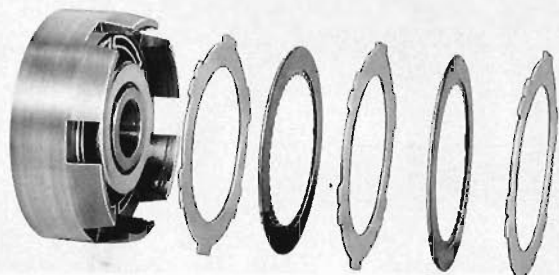
Install new seal on clutch drum hub. Install new seal on piston with lip facing toward clutch drum. Lubricate with automatic transmission fluid. Install clutch piston in drum with twisting motion being careful not to cut or roll seals out of their grooves.



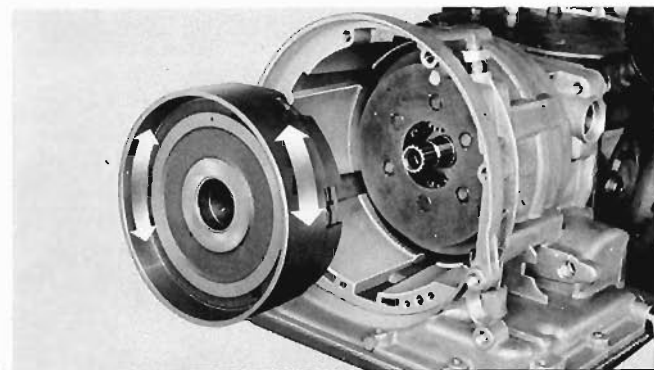
Check the 15 return springs for uniform height. Replace springs as necessary. Then place clutch drum in press and reassemble return springs, retainer, and snap ring, being careful not to catch retainer in snap ring groove when compressing springs.



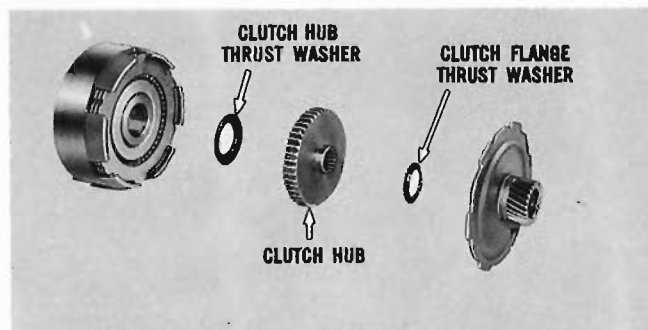
Check low sun gear teeth for chips, nicks or wear. Replace sun gear and flange if necessary. Flange should fit snugly into clutch drum. Replace snap ring so gap is centered between slots in drum as shown.



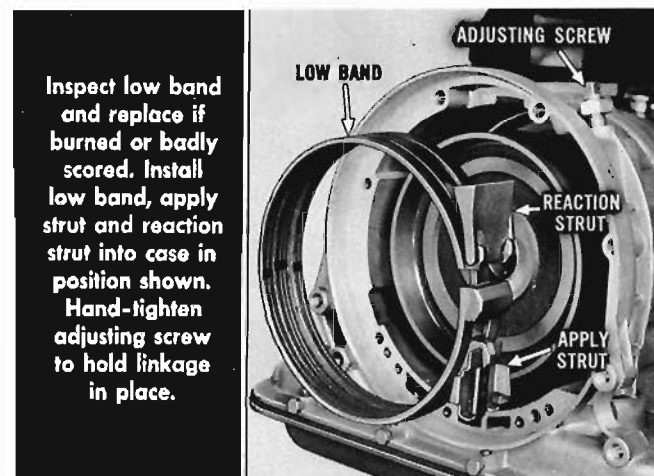
Thoroughly inspect clutch plates and replace those that are badly scored or burned. Steel plates should fit freely in clutch drum and faced plates should fit freely over clutch hub. Lubricate with transmission fluid and install in the order shown, starting with a steel plate and alternating.



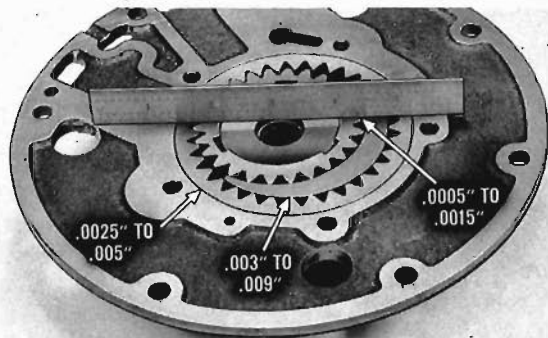
Carefully install clutch drum assembly in case. Rotate to fully engage low sun gear with planet carrier and turbine shaft splines with clutch hub.



Inspect clutch hub thrust washer and clutch flange thrust washer and replace if worn. Check clutch hub splines for chips or wear. Reassemble in the order shown, "jiggling" the clutch hub to engage with clutch discs.



Inspect low band and replace if burned or badly scored. Install low band, apply strut and reaction strut into case in position shown. Hand-tighten adjusting screw to hold linkage in place.



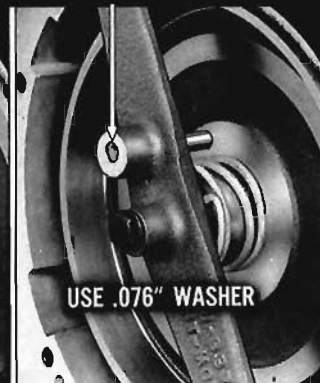
Remove front pump gears and inspect for wear. Check clearances at points shown. If over the allowable limits, pump assembly should be replaced.

**PLUNGER FLUSH
OR ABOVE FLUSH**



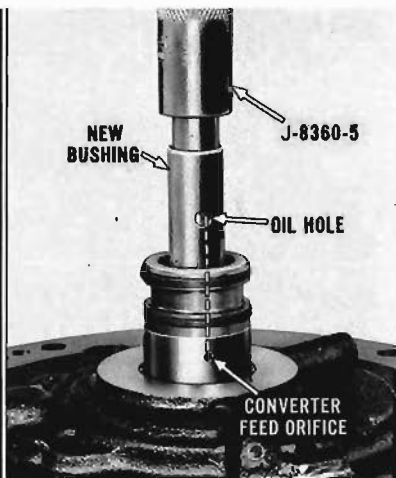
USE .050" WASHER

**PLUNGER
BELOW FLUSH**

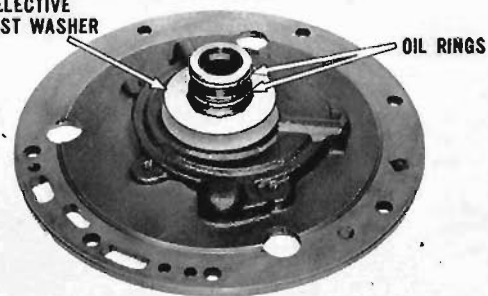


USE .076" WASHER

If front pump bushing is badly scored, press out of pump housing with new bushing and Tool J-8360-5. CAUTION: Make sure oil hole in bushing is aligned with converter feed orifice in pump hub.

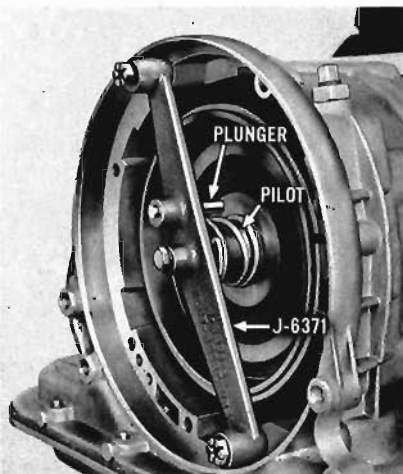


SELECTIVE
THRUST WASHER

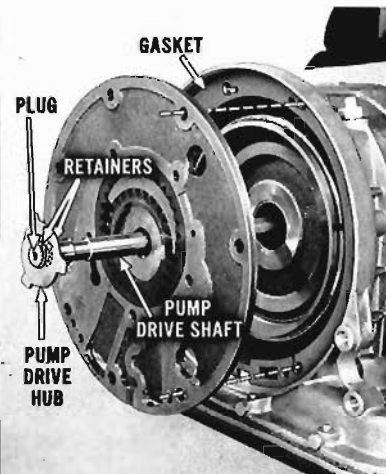


Place selective thrust washer on front pump hub. Cast iron oil rings should be replaced on high mileage cars (over 15,000 miles). Otherwise, check for broken rings and replace if necessary.

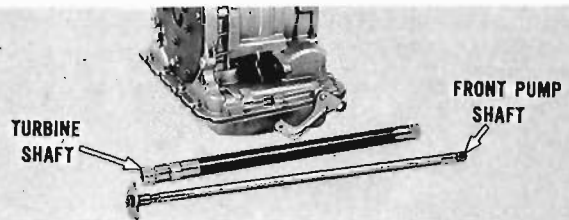
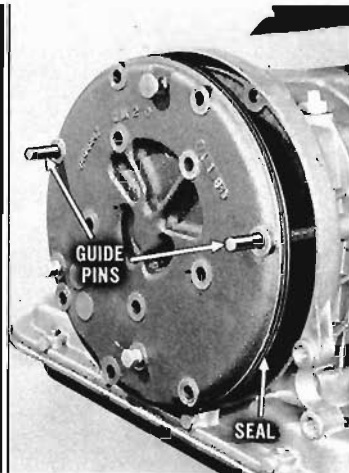
Before installing pump it will be necessary to select the correct thrust washer to maintain proper transmission end play. Insert pilot of Gauge J-6371 in clutch drum. Bolt gauge to case. Make sure plunger is bottomed.



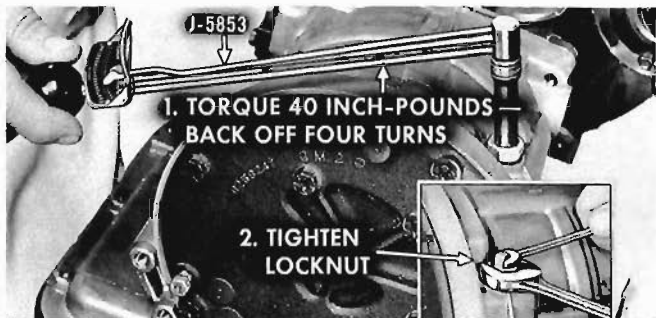
Install new gasket and front pump body to case, making sure holes in front pump body and gasket align with holes in case. Inspect pump drive shaft for stripped splines, sprung Tru-Arc retainers or loose end plug. Insert shaft in transmission and engage pump drive hub with pump drive gear.



Use new seal on front pump cover. Place cover in position with same guide pins used earlier to position rear oil pump. Coat bolts with a non-hardening sealer and torque outer bolts alternately and evenly 18 to 20 foot-pounds. Then tighten inner bolts to same torque.



If a complete transmission is being replaced, transmission assemblies from parts stock are shipped less front pump drive shaft and turbine shaft and it will be necessary to install these. Remove front pump cover and insert new pump drive shaft, then replace cover. Install new turbine shaft through rear of transmission making sure splines on turbine shaft fully engage splines in planet carrier and the input sun gear.



ADJUST LOW BAND: 1. Tighten adjusting screw 40 inch-pounds, making certain locknut does not interfere with torque reading. Then back off adjusting screw exactly four turns. 2. Hold adjusting nut stationary while tightening locknut.



Check vacuum modulator and valve and governor as detailed in Part II, Trouble Shooting and On-the-Car Diagnosis. Use petroleum jelly to hold new gasket centered on vacuum modulator. Install in case, applying tightening pressure only on the hex portion to avoid damaging cover which would cause a vacuum leak. Use new "O" ring seal on governor and install governor in case, torquing attaching bolt 24 to 32 foot-pounds.

END OF PART III Servicing the Corvaire Powerglide

See Part IV for:

- Valve Body and Low Servo Overhaul
- Servicing the Converter

Servicing the CORVAIR POWERGLIDE TRANSMISSION



PART IV

OVERHAUL

COPYRIGHT 1960 CHEVROLET MOTOR DIVISION GENERAL MOTORS CORPORATION

Part III of Servicing the Corvair Powerglide covered:

- Disassembly of Transmission
- Rear Oil Pump and Reverse Piston
- Inspection and Reassembly of Transmission

In this film we will see:

- Valve Body and Low Servo Overhaul
- Servicing the Converter

Part III showed a method of overhaul leaving transmission attached to the power train. This same method will be used to show the procedures for overhauling the valve body and low servo.

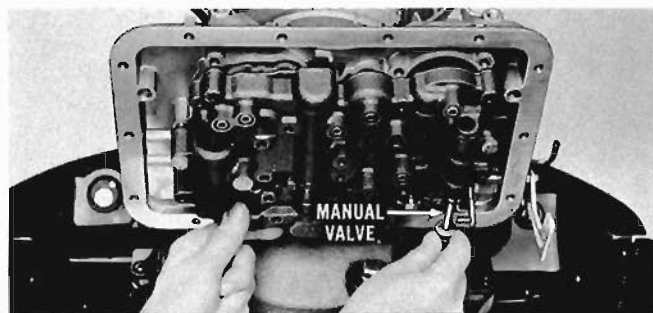
VALVE BODY AND LOW SERVO OVERHAUL

The valve body and low servo, when serviced independently of overhaul procedures, would normally be done in the vehicle (Part II, Trouble Shooting and On-the-Car Adjustments).

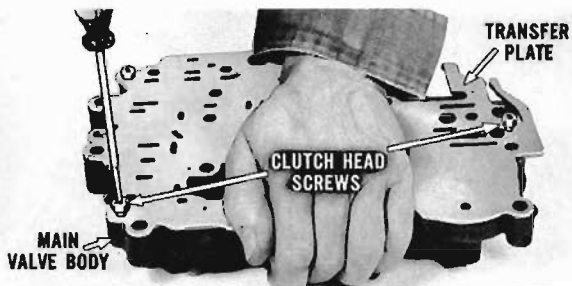
For the Power Train Method of overhaul, we will show removing the valve body with the power train mounted on the jack.



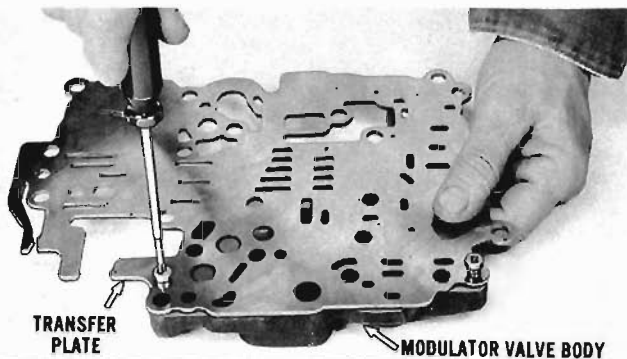
Tilt and raise power train for working convenience. Remove oil pan, gasket, and oil pickup assembly. To remove valve body and manual valve, take out all valve body retaining bolts except the two bolts shown.



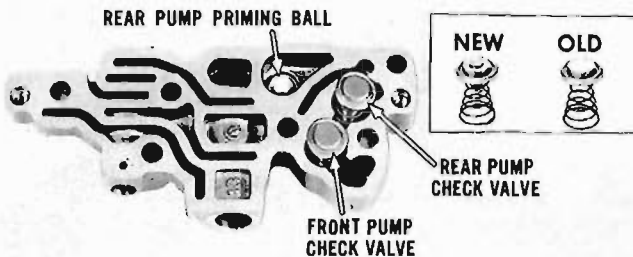
To prevent the manual valve from dropping out and possible damage, loosen the two remaining bolts slowly and evenly until manual valve is disengaged from the linkage. Pull out manual valve. Take out the two bolts and remove valve body.



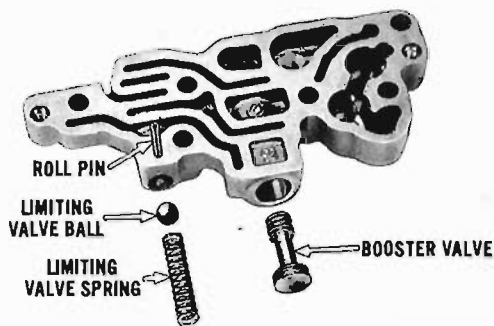
Place the valve body on bench with transfer plate facing upward. Separate the transfer plate from main valve body by removing two clutch head screws. Remove transfer plate to main valve body gasket from main valve body. CAUTION: Hold main valve body as shown during removal because it is under spring tension.



Remove the two remaining clutch head screws holding transfer plate to modulator valve body. **NOTE:** There is no gasket between modulator valve body and transfer plate.



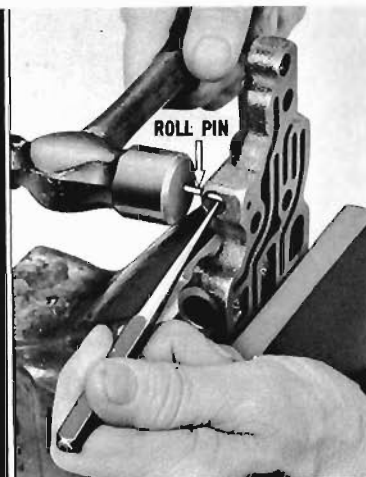
Remove rear oil pump priming ball and inspect for nicks or damage. Remove front and rear pump check valves and springs. Discard early design REAR pump check valve and replace with new type which has spring-loaded poppet valve in cap (Part 3783780).



Tap modulator valve body lightly with a soft hammer to dislodge hydraulic booster valve. Drive out roll pin with pin punch and remove line pressure limiting valve spring and ball.

Clean modulator valve body thoroughly in **CLEAN** solvent and blow out all passages. Inspect bores for nicks or pockets of dirt that could cause valves to "hang." Replace valve body if badly scored or otherwise damaged.

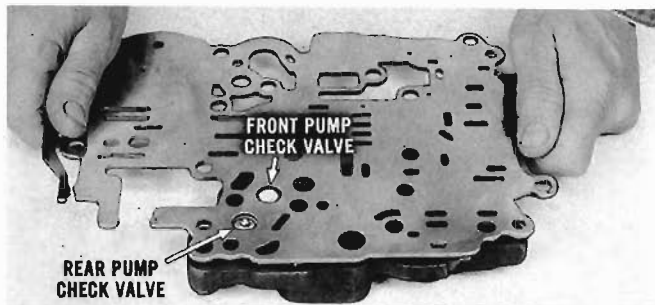
Inspect line pressure limiting valve spring and ball. If in good condition, replace in bore. Clamp modulator valve body in soft vise jaws and drive roll pin through while depressing spring with small punch. **CAUTION: DO NOT DRIVE ROLL PIN ABOVE FLUSH WITH MACHINED FACE OF VALVE BODY.**



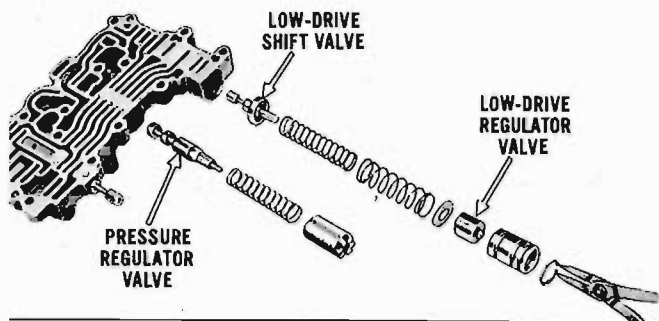
Place hydraulic booster valve in its bore and check for hanging due to burrs or nicks. To remove small burrs or nicks on booster valve (or any valves in hydraulic circuits) observe these important precautions:

1. All valve lands must remain sharp and square — never chamfer.
2. Use hard finishing stone such as a hard Arkansas to dress valves. Place stone on bench and rub valve on stone.
3. Rotate valve as it is moved across the stone surface.

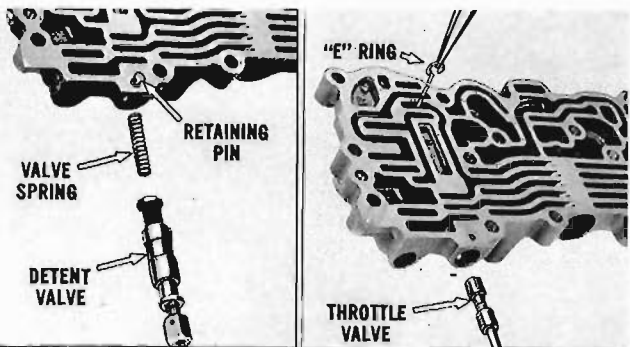
Dress booster valve as needed and replace in modulator valve body.



Carefully place transfer plate in position directly over modulator valve body. Make sure front and rear pump check valves are upright and properly seated in transfer plate to avoid damaging check valve springs. Install attaching screws and torque 38 to 50 inch-pounds (3 to 4 foot-pounds).

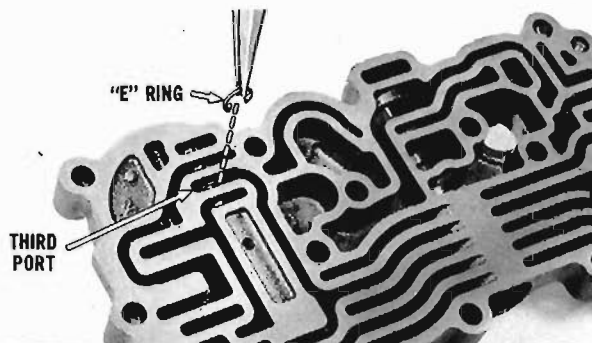


From main valve body, pull out pressure regulator valve, the valve spring and retainer. Use Tru-Arc pliers to remove retainer ring holding low-drive regulator valve and low-drive shift valve in valve body. Remove valve assemblies.



Pry out retaining pin and remove detent valve assembly and spring. Then use needle nose pliers and remove "E" ring holding throttle valve in body. Remove valve.

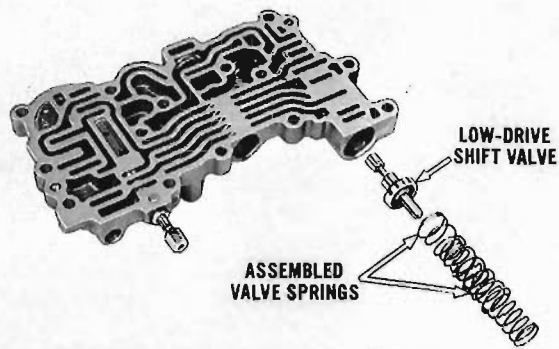
Thoroughly clean main valve body in CLEAN solvent making sure all passages are free from dirt buildup. Clean all valves, including manual valve, and check for nicks or burrs. "Dress" valves or replace if needed. Place valves in bores in valve body and check for fit and smooth action. Replace any valve springs that are distorted or show evidence of extreme heat which would take the temper out of the springs.



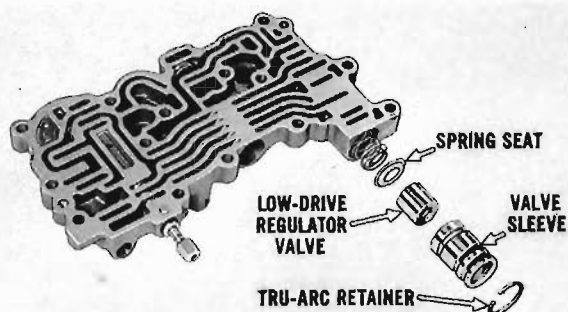
Begin reassembly by placing throttle valve in its bore and locking in place with "E" ring retainer in third port as shown. NOTE: Throttle valve must be FULLY seated in its bore to prevent being locked out of position.

Place throttle valve spring and detent valve assembly in bore. Depress valve fully and drive retainer pin in to hold in position.

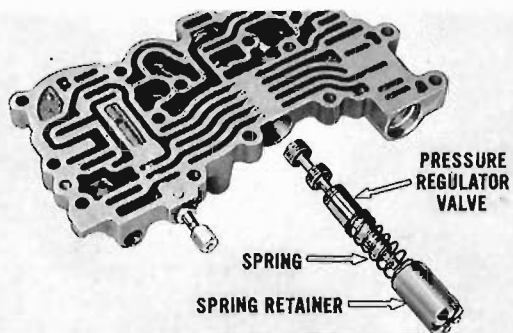




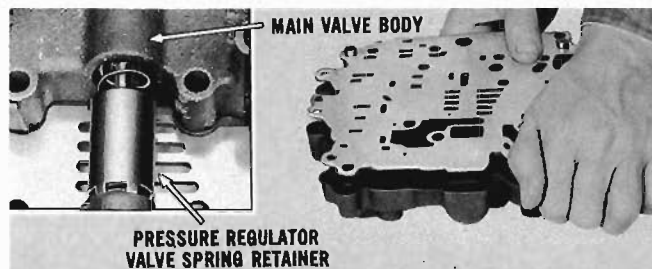
Install low-drive shift valve in its bore, valve end first. Assemble low-drive inner and outer valve springs and place in bore.



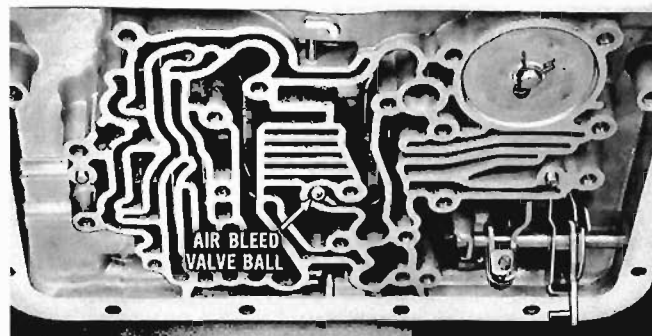
Insert low-drive regulator valve in low-drive regulator valve sleeve. Place spring seat over end of sleeve and insert assembly in bore. Compress springs and install Tru-Arc retainer ring to hold in valve body.



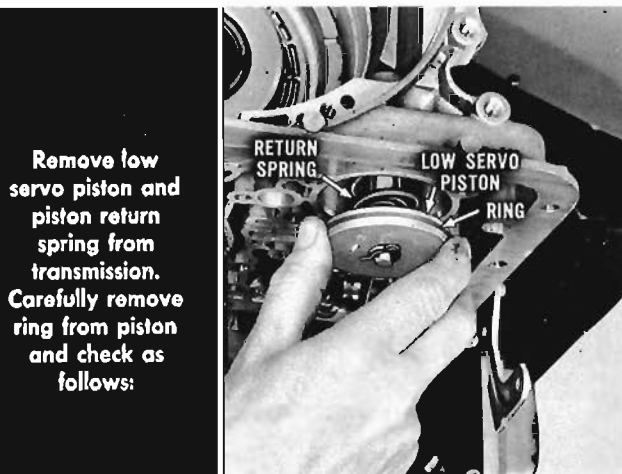
Place pressure regulator valve in its bore, valve end first. Assemble pressure regulator valve spring and spring retainer and insert in bore. Manual valve will be replaced as valve body is mounted on transmission case.



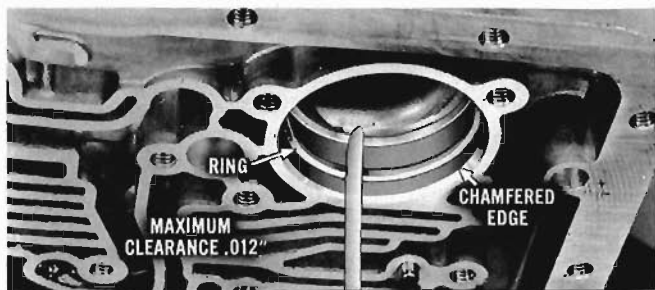
Install a new gasket on main valve body and hold in place with petroleum jelly. Start pressure regulator valve spring retainer into main valve body. Carefully draw main valve body in position as shown being careful not to damage gasket. Install clutch head screws and torque 38 to 50 inch-pounds (3 to 4 foot-pounds).



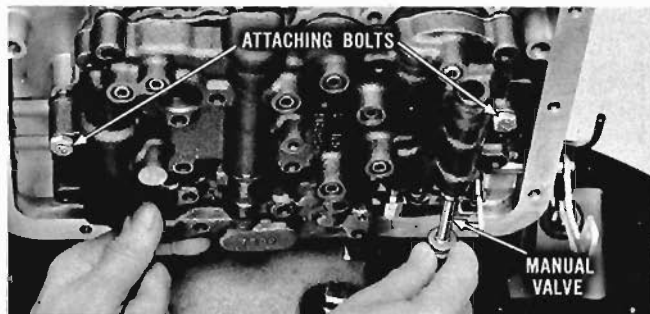
Before replacing valve body on transmission case, inspect front pump air bleed ball making sure it is free to move up and down. Use clean solvent to remove dirt and other foreign matter from all oil passages. Dry with compressed air.



Remove low servo piston and piston return spring from transmission. Carefully remove ring from piston and check as follows:



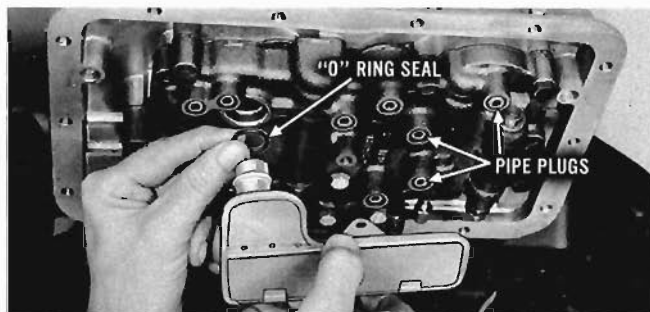
Position piston ring in bore as shown. Make sure ring is parallel with top edge of chamfer to match angle of the bore. Measure ring gap. Maximum allowable clearance is .012". If gap exceeds this measurement, use new ring. Install ring on piston and replace piston and return spring in case.



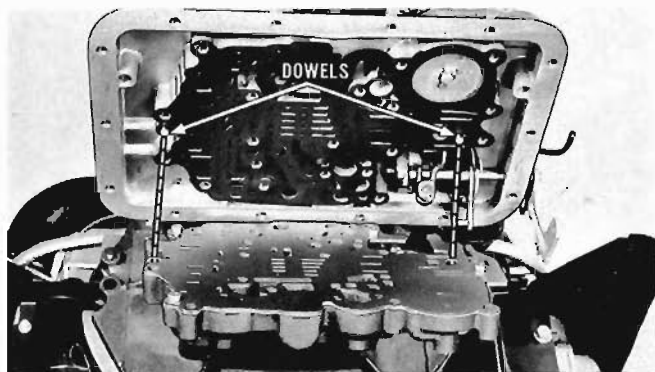
Start the two extreme attaching bolts in case. Install manual valve in valve body and engage valve in linkage. Tighten the two bolts. Then install the remaining attaching bolts and torque 9 to 11 foot-pounds.



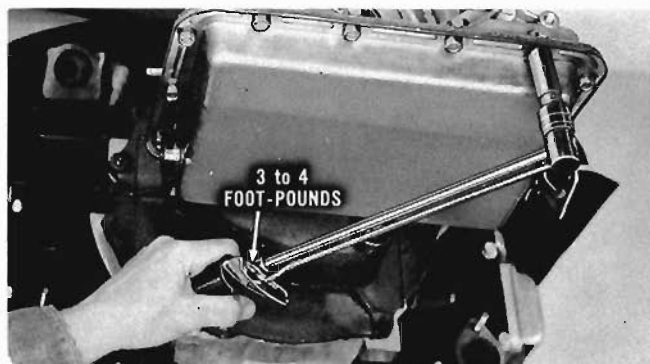
If visual inspection of case shows oil leaking past the "O" ring seal on the throttle shaft, replace seal as shown in Part II, Trouble Shooting and On-the-Car Adjustment. We are now ready to replace the valve body on the transmission case.



Make sure oil pickup screen is free from dirt. Place a new "O" ring seal in valve body and press pickup tube snugly in place. Install attaching bolt. If new valve body is installed, the 8 pipe plugs must be transferred from old valve body.



Use a new valve body gasket. Hold in place with petroleum jelly. Locate so dowel holes in valve body align with dowels in case.

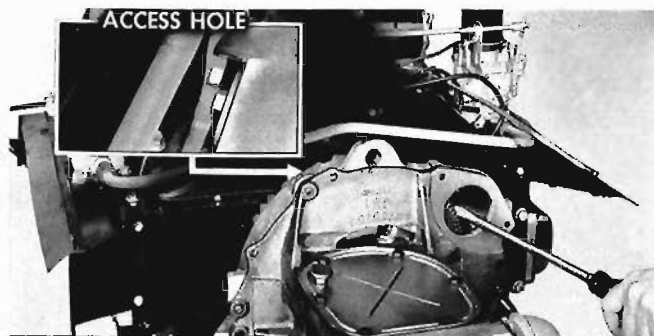
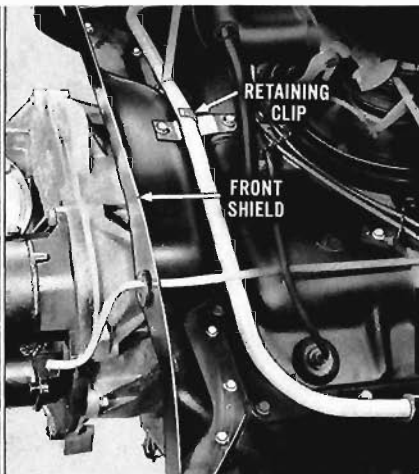


Place a new gasket on transmission case and position oil pan. Install the 14 attaching bolts and tighten to 3 to 4 foot-pounds. This completes valve body and low servo overhaul.

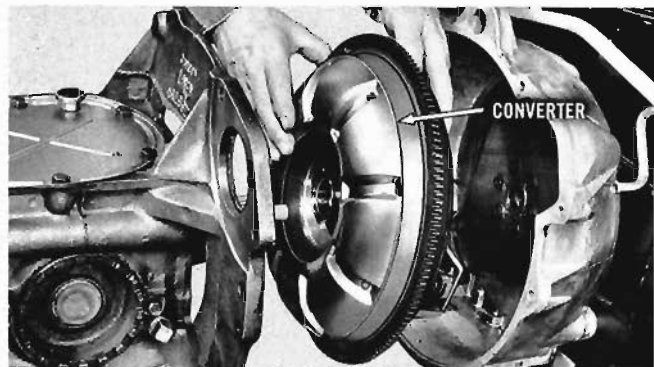
CONVERTER

To service or replace Corvair Powerglide converter requires removing the Transaxle from the converter housing as a unit. This preserves internal shaft alignment in transmission and differential carrier. With power train mounted on jack and transmission drained, proceed as follows:

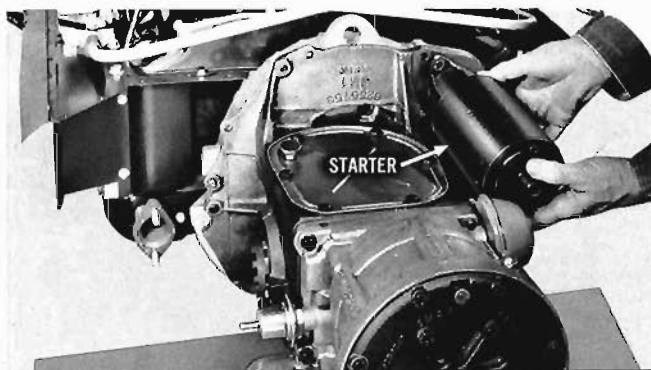
Disconnect vacuum balance tube retaining clip. Remove eight screws holding engine front shield and pull shield over fuel lines and accelerator rod.



Remove three converter-to-engine attaching bolts through access hole in converter housing. To do this, rotate attaching bolts within reach by prying against starter ring gear through starter hole.

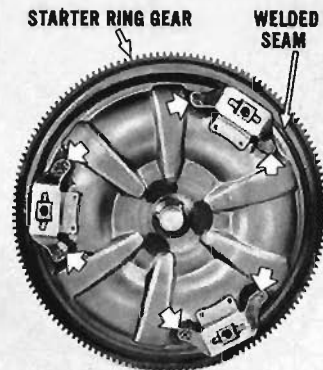


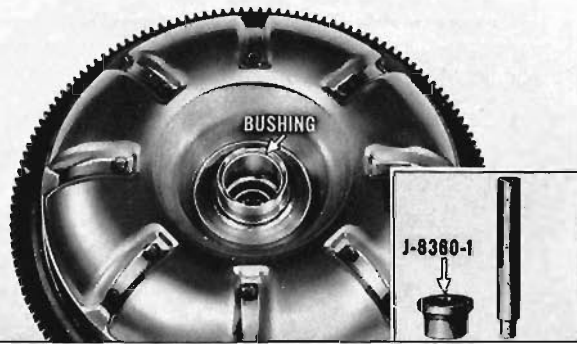
Remove Transaxle mounting bolts and carefully pull Transaxle straight away from engine to prevent converter from falling. Then remove converter.



Lower power train until bottom of Transaxle just rests on a steady support, sturdy enough to support weight of Transaxle. Remove starter.

Check starter ring gear for worn or broken teeth. If damaged, converter must be replaced. Check all welded seams and welds at mounting lugs and ring gear. Replace converter if welds are broken, or if it is leaking.

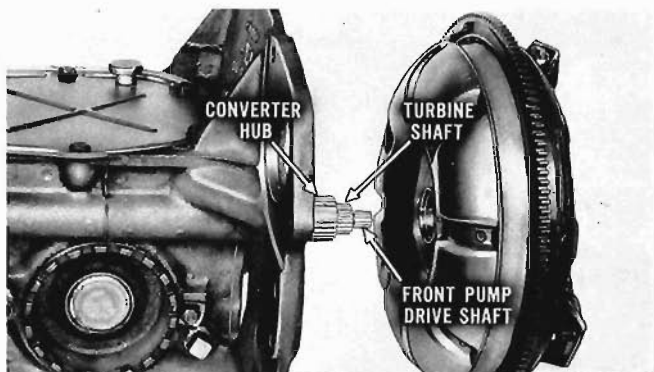




Inspect converter hub bushing. If badly scored, carefully collapse old bushing with an awl. Use the special tools shown to press new bushing into position.



Check converter hub seal for leaks. If necessary to replace, pry out old seal with a punch. Coat outer edge of new seal with a non-hardening type sealer. Use Tool J-8340 to drive seal into position. Converter can now be installed on converter hub.



Carefully install converter on converter hub. Make sure turbine shaft and front pump drive shaft splines are fully engaged.

Install Guide Pins (J-3361-10) in converter housing. Push Transaxle to engine and remove guide pins. Install mounting bolts and torque 24 to 32 foot-pounds. Rotate converter to align mounting lugs with bolt holes in engine flex plate. Install first attaching bolt through access hole. Pry on ring gear with screw driver to rotate assembly and install remaining two bolts.

