

The Corvair Powerglide

This will begin a series on the Powerglide which may help with service, diagnosis and repair. Most folks will not be interested in major overhaul so the main focus will be on service and diagnosis of problems that can be avoided or fixed with out complete overhaul.

If you scan the SAE papers on the Corvair Powerglide you will find a lot of interesting information on durability testing (among a myriad of other things). They refer to “the capacity for owner abuse” more than once and mention such things as a 15,000 mile 7-11% uphill grade test and requiring the units to survive “100 wide open throttle low to reverse shifts on dry pavement”. For those who can comprehend our country’s annual budget numbers: by the time the Corvair was outfitted with the Powerglide, there were 6,800,000 units on the road with service mileage of over two hundred thirty-five billion miles. About the only thing not mentioned was the possibility of someone driving the cars for over fifty years!

There are basically two designs the 61-63 and the 64-69. The ‘60’s had a different shifter cable attachment and there was also a special Powerglide valve body & governor for the 140. FC vehicles had an additional valve and ports for cooler lines. The big difference between the two year groups is a change in line pressures to handle the horsepower increase. You can interchange the complete units throughout the years **as long as you check the running clearance** when assembling to the differential (this clearance must be checked with any change). Easy to do with out the fancy tools by looking at what the shop manual is telling you to do. The reason: The ring and pinion match is adjusted in the differential by shimming the pinion shaft back and forth. Each is different, hence the need to check the running clearance between the transmission and differential. One other item; the 67-69 throttle valve lever will not clear the early suspension; it would need to be changed if you were putting that model in a 60-64.

The 140 transmission had a different governor with modified weights that changed the up and down shift point, and the valve body had a smaller low-drive regulator valve to make an earlier downshift. The 140 valve body I recently worked on had orange paint on the casting above the bore for the pressure regulator and an “H” stamped on the outer end of the low-drive regulator valve sleeve as a means of identification. The 140 governor had a paint mark (pink?) also but I do not have one that I know for certain was original.

A great tune up for your Powerglide consists of changing ALL of the fluid and performing the three available adjustments. Draining the pan gets you about 1 $\frac{3}{4}$ quarts, drain the converter by drilling and tapping for a brass 1/8th pipe plug just rear of the ring gear (about 3 1/2 quarts), and finally pull the pan and remove the pickup: another pint or so. I like to use Amsoil synthetic fluid due to the high temperature tolerance. Finally, the addition of a quart of TransX to soften the piston lip seals. This additive will stave off rebuilding in many situations where 50 year old seals are brittle.

Push or roll starting? Corvairs have two pumps; this allows the car to be push started at approximately 20 MPH. I have started them just from rolling down a hill. Leave the

car in neutral, key on, get to 20 MPH and drop in gear. The rear pump driven by the differential provides everything you need.

Towing? Once again the rear pump will handle it. As long as you get above 20 MPH and the fluid level is correct, the entire transmission will be lubricated properly. Whether driving the car normally or towing, the front pump is not used after you reach 20+, because the rear pump has taken over all of the hydraulic functions. No need for the engine to be running on short trips but there is no cooling air available for the converter with the engine off, so check the unit by hand or with an infra red if you are towing in hot weather for long distances. You could run the engine on fast idle for a few minutes if necessary.

Adjustments

Low Band: With the car up on stands, adjust the low band. You have to do it blind, so practice on a spare transmission and you can easily estimate the 40 inch pound requirement by feel. The instructions for this adjustment are on page 7-53 ('65 manual), paragraph 16, but include the following: you need a short $\frac{3}{4}$ inch box end to remove the lock nut and then clean any dirt off of the adjusting screw threads. Use a 5/16 open end wrench to tighten the screw – about as snug as you can get it with the small wrench. Back off the screw 4 full turns and reinstall the locknut, holding the screw to keep it from turning.

The low band operates like a brake shoe in reverse; it locks the clutch drum in low gear and releases it when shifting to high gear. If very far out of adjustment, you could have a slip as you start from a stop or a flare on the up shift because the band releases too soon. Under normal conditions the low band wears very little and usually does not require periodic adjustment.

Manual Valve Adjustment: You would want to check this adjustment after changing a shifter cable or if you notice the engagement of drive or reverse does not exactly match the detent of the dashboard shifter. Another possible sign of needed adjustment would be a car that tries to creep in neutral.

Adjust the manual valve position with the pan off. This valve affects the fluid flow to the various functions and since it is controlled by the shifter cable it will affect all shifting if out of adjustment by very much. The J tool is not necessary, just follow the instructions on page 7-31 & 32 of the '65 manual and look at the cutaway picture of the adjustment. You can look in the end of the valve bore and see the relationship of the valve head to the passageway. (Fig. 7E-3). You will note that the visible head of the valve is about $\frac{1}{32}$ " to the rear of the bore opening.

Throttle Valve Lever: The last adjustment is the relationship of the throttle valve lever on the side of the transmission. This will determine (along with other components) the timing of up and down shifts. The farther clockwise you rotate the lever by adjusting the swivels, the longer the transmission will stay in low gear at the same accelerator pedal angle.

Consult the shop manual or the CORSA Tech Guide for complete adjustment procedures, but be aware that worn out accelerator rod bushings, a loose pivot under the rear seat or a throttle valve lever with a loose lever-to-shaft fit can cause erratic shift points.

There are numerous examples of Powerglide throttle valves levers being broken off by mechanics and welded back on – but not at the exact same angle. This situation can make you think the transmission itself has a problem, so inspect the attachment point for signs of repair if you are having difficulty getting your shift point adjusted properly.

As a final check, be sure that both the lower and upper accelerator rods are adjusted so that with full transmission detent you have wide open carburetors.

Next month: diagnosis.