

1953 Corvette: Service News: Powerglide Transmission

Subject: Powerglide Transmission

Model and Year: 1953 Corvette

Source: Chevrolet Service News

Page Number: Page 1

Date: February 1953 - Volume 25, Issue Number 2

Valve Body

Changes have recently been made in the 1953 Powerglide transmission valve body assembly to eliminate a metallic rapping noise which occurs on some early transmissions immediately after starting the engine. This noise is caused by the pressure regulator valve pulsating back and forth and will continue, if the shift lever is left in neutral position, until the converter fills with oil. The condition is not detrimental to the operation of the transmission and in some cases will hardly be noticed or will be of short duration.

Shortly after the start of 1953 production, a change was made to incorporate a two-piece pressure regulator valve in the valve body assembly. The new valve provides an internal plunger which serves to dampen and oil cushion the assembly preventing excessive pulsation. Transmission with the suffix "M27D" added to the serial number will have valve body assemblies with the two-piece pressure regulator valve.

At a slightly later date, the converter pressure regulator valve and transmission valve body were revised so that the valve now seals the oil in the converter and aids in preventing drain down when the engine is stopped and left standing. Previously the valve provided a restricted opening up to a converter pressure of 43-58 psi, at which time the valve opened fully. The new valve is similar in its operation except that it seals the oil in the convert up to a pressure of approximately 10 psi, at which time it opens slightly to provide the restricted opening. The diameter of the restricted opening is .010" smaller in the new valve body.

Service Parts

Main pressure regulator valves and valve bodies are not interchangeable due to increased diameter at the lands of the new pressure regulator valve. The converter pressure regulator valves, with their respective springs are interchangeable between valve bodies, however, unless the new converter pressure regulator valve and spring is used in combination with the new valve body, the advantage of sealing will be lost.

Parts

At the Start
of 1953 Prod.

New Parts

Valve Body Assembly	3702337	3703238
Pressure Regulator Valve	3702808	*3705486
Converter Pressure Regulator Valve	3702058	3703243
Converter Pressure Regulator Valve Spring	3702059	3703242

* This is a pressure regulator valve unit which includes valve and plunger.

Pressure Regulator Valve - Operation

The new pressure regulator valve differs in operation from the valve described in the Powerglide Manual in the following manner.

The pressure regulator valve has a small orifice through which oil, under mainline pressure, flows into a chamber inside the valve and above the plunger. As pressure increases, the plunger and pressure regulator valve tend to expand or separate and this force, aided by the force due to differences in the diameters of the first and second lands of the valve, move the pressure regulator valve against the spring as shown in Figure 1. The pressure regulator valve moves to open the converter feed and continues to move back and forth to regulate front or rear pump pressure as the case may be.

The internal plunger will remain in the position shown in Figure 1.

In automatic drive range, as governor oil pressure increases, it will aid in regulating mainline pressure for governor oil pressure will be acting on the lower outer surface of the pressure regulator valve tending to move the regulator valve against the pressure regulator valve springs. Since governor oil pressure is usually less than to approximately the equal of mainline pressure, the plunger will remain in the position shown in Figure 1.

Low and Drive Valve Body

Cleanliness and care are all important when working on the low and drive valve body. The parts in this unit are held to extremely close tolerances and the lands on the valves and in the valve body are purposely machined sharp to prevent dirt getting under or wedging between the valve and valve body. Under no circumstances should crocus cloth or emery cloth be used to polish or round off these sharp edges. In instances where there are small nicks or burrs on the lands of the valves, a fine stone may be used if it is held flat on the end of the land or on the land while the valve is turned. Care should be exercised so as not to create or form flat spots on the valve land.

When assembling the low and drive valve body, the throttle valve control outer lever assembly should be placed on the inner lever shaft so that the long part of outer lever clamp is toward the outside. This places the head of the clamp-to-lever attaching bolt to the outside and keeps the edges of the splines machined in the clamp from contacting the seal. The correct position can easily be seen in Figure 149 of the 1950-53 Powerglide Repair Manual.

Front Pump

The following 1953 Powerglide parts have recently been released for service:

Front Pump Body Oil Seal, Part No. 3702068

Front Pump Cover (Stator Support) Part No. 3702735

Piston Fit

A change in piston fit tolerances on aluminum pistons in the 235 cu. in. Powerglide Engine, has necessitated revisions in the piston fitting procedure as outlined in the January, 1953 Service News. The following new procedure should be adhered to closely when fitting aluminum pistons.

The proper fit of the piston is gauged by the pull required to remove a .0015" feeler ribbon placed between the piston and cylinder wall. This provides an accurate and uniform means for piston fitting, however, certain precautions must be observed. The piston and cylinder wall must be perfectly clean, smooth and dry; ridges, rough spots or other irregularities must be removed as they would provide false scale readings. The piston rings should be removed. The piston pin should be left in for ease of handling. Ideal temperature for piston fit will approximate room temperature of 70 ° F.

The lower ends of the feeler ribbon should be rounded and any frayed edges honed to prevent possible scratching of the piston and cylinder wall and incorrect scale readings. Feeler ribbons that are rusted or wrinkled are unfit for use.

1. Invert the piston, skit end up, and place the .0015" by 1/2" wide feeler ribbon, part of

Piston Fitting Gauge and Scale Tool, J-5513, on the side of the piston 90 ° from the piston pin holes.

2. Insert the feeler ribbon and inverted piston into the cylinder bore so that the center of the piston pin is flush with the top surface of the cylinder block. Keep the feeler ribbon straight up and down and keep the piston pin parallel with the crankshaft axis.
3. Pull the feeler gauge straight up and out, noting at the same time the scale reading which should be between 7 and 18 pounds (fig. 2).
4. If the scale reading is greater than the maximum allowable pull, try another piston or lightly hone the cylinder bore to obtain the proper fit.
5. Should the scale reading be less than the minimum allowable pull, try another piston, or if standard size, try a standard high limit piston. If proper fit cannot be obtained, it will be necessary to rebore the cylinder to the next oversized piston.
6. Mark each piston after fitting to correspond with the cylinder to which it has been fitted. This will assure proper installation.

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