

sonnax

Technical Bulletin

Different strokes for different VOLKS

In some ways, stroking a valve is the principal step used to shift from one gear to the next. You have components to apply and/or release. You stroke a valve to fill a clutch and maybe stroke a valve to dump another. Of course, it's a little more complicated than that. One pressure and one fill rate won't work for all conditions without slips or harshness, under varying load and throttle. How, when and which valve gets stroked and how the apply pressure is controlled is handled differently by brands A or B or, in this case, V.

Pressure control and accumulators are traditionally used in combination to provide enough pressure to apply and hold a component but prevent an objectionably harsh or potentially damaging apply. Most of you are pretty comfortable with the older TV or more modern Electronic Pressure Control Systems and a range of accumulator designs found on the more familiar domestic units. You know the symptoms high or low pressure will cause to the overall shift feel and to component life. You know the effects accumulator problems can have on a particular gear change. You read the signs and proceed to inspect the area that could be creating the problem.

The VW AG4 family of transmissions uses a different approach than

what you may be used to, but if you look at the system and apply many of the basics you already understand, you can still diagnose and repair problems. Break the problems down to symptoms directing you where to look as you would on other units. Just think about what is the same and what is different.

Individual Gear Changes

What's the same: A shift valve, apply valve or actuator valve is stroked to apply or release a component.

What's different: Regulator valves are used in place of accumulators to control the fill rate or apply rate of a component.

Pressure Control – Valves

What's the same: A main pressure regulator valve serves the traditional PR function. If no other influence is put on it, it will establish a baseline pressure.

What's different: A boost regulator valve (also called a pressure regulator control valve) replaces the traditional boost valve. Most traditional boost valves are in the same bore as the PR and are actually bias valves, meaning they actually push to create an effect on the PR valve and boost the pressure. The difference

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here is that the boost regulator valve lives in its own bore, applying hydraulic pressure to influence the main PR valve. Another noticeable difference here is that the spring load setting on the boost regulator valve can be adjusted.

Pressure Control – Solenoids

What's the same: A PWM pressure control solenoid (N93 or EV6) is used to control the boost regulator valve, similar to the EPC or PCS used in many modern systems. The solenoid is always on while the engine is running and is used to lower or limit boost pressure. Turning the solenoid off results in maximum line pressure.

What's different: Another solenoid (N92 or EV5) is used to control shift feel. This solenoid is momentarily turned on at the time of the shift, triggering the regulator valves for the individual clutches to briefly orifice off and reduce line pressure, duplicating an accumulator function.

Controlling Pressure to the Solenoids

What's the same: A solenoid regulator valve is used to limit feed oil pressure to the solenoids, similar to the AFL valve function in some units.

What's different: Although AFL problems can create a variety of issues, wrong gear starts or solenoid codes are often the primary complaint. Solenoid regulator valve issues can cause late shifts or loss of gear and wrong gear starts, but here, no line rise or low line may often be the primary complaint.

What you should know about diagnosing and repairing VW AG4 units

What's the same: Pressure control is critical, and wear and leak issues are common.

What's different: Main regulator, boost regulator and solenoid regulator valve functions are highly interrelated.

- Similar symptoms may be caused by different valves.
- One valve can make the others perform poorly or appear to be at fault.
- Problems in more than one area are not uncommon. Always inspect them all.

What's new: Parts and tooling are now available that will allow you to fix these critical areas and repair these valve bodies. See the product information details in the rest of the Technical Bulletin.

