

AUDI/PASSAT 096-097 SLIPPING, HARSH SHIFTS, ERRATIC SHIFTS

COMPLAINT: A Volkswagen Audi or Passat equipped with the 096-097 transaxle may exhibit a harsh or soft shift condition, erratic shifts, and/or flared or slipping shifts.

CAUSE: The cause may be, solenoids that are partially clogged with debris, or solenoids that are open, and not closing properly. Refer to Figure 3 for solenoid application and function.

CORRECTION: ATSG has found that cleaning the solenoids is very effective in correcting the common complaints listed above. The following procedure is recommended during every rebuild.

- (1) Unplug the solenoid harness from the solenoids, remove the bolts retaining the control valve assembly to the transaxle and place the valve body on a clean work surface. Remove the bolts from the solenoid retaining brackets, and remove only one solenoid (See Figure 1). Leave the remaining solenoids in their respective bores and clean one solenoid at a time, as this will help eliminate the possibility of mixing valves and springs in the wrong bores.
- (2) Place the solenoid on work area with the end that goes into the valve body facing down. Using a small screwdriver or scribe, carefully pry the triangular shaped brass retainer out of the solenoid bore (See Figure 2).

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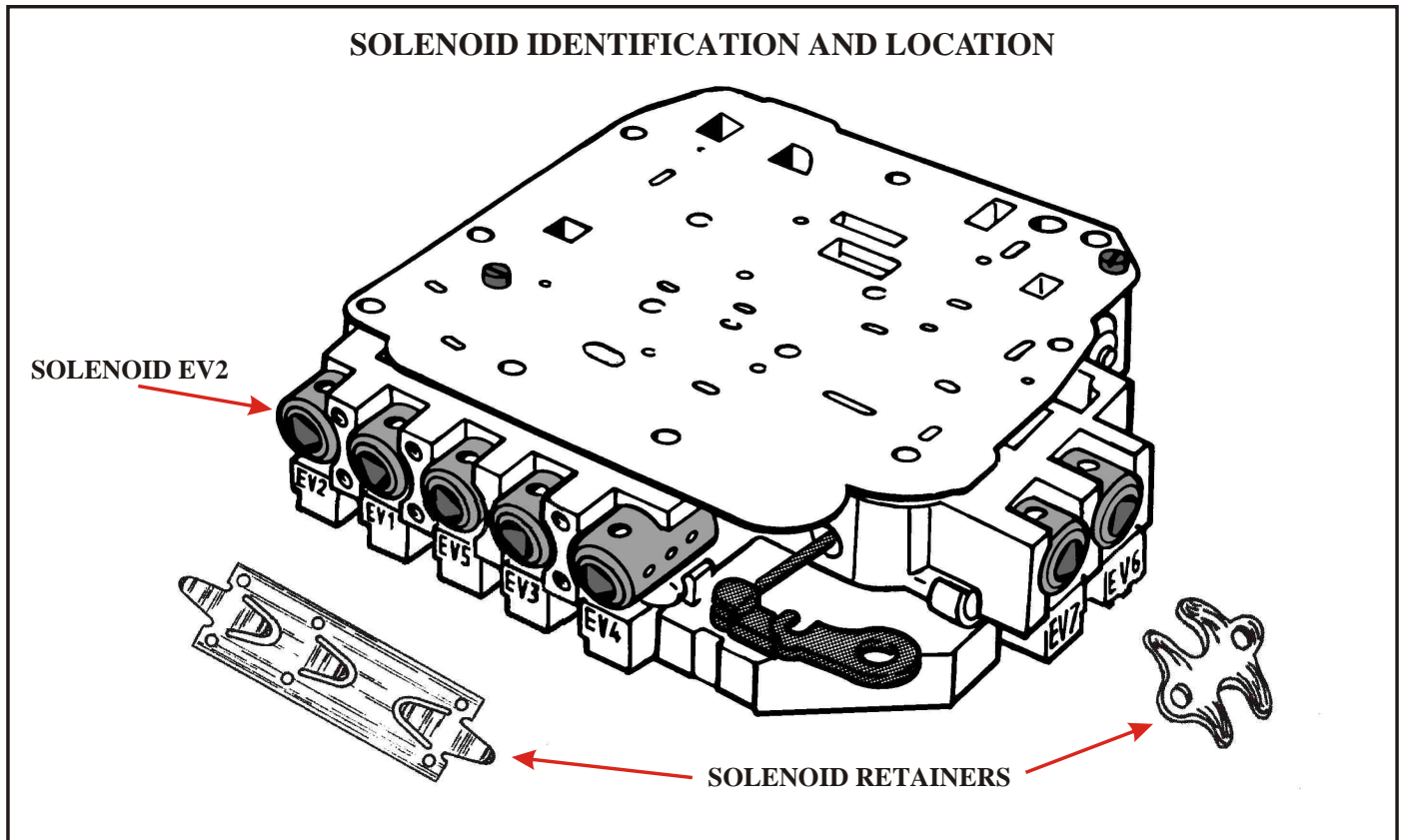


Figure 1

CORRECTION: (Continued)

- (3) Remove the large .280" diameter ball from the solenoid (See Figure 2). Inspect the solenoid ball carefully. The ball should be completely smooth, with no pitted areas and no visible flat spots. Clean all debris as necessary.
- (4) Inspect the inside diameter of the solenoid bore for damage or scoring from the ball valve. Polish the inside bore with Scotch-brite®, as shown in Figure 2. If the solenoid bore cannot be polished smooth, the solenoid should be discarded.
- (5) Inspect the ball seat in the bottom of the solenoid bore for embedded debris and/or damage. If the seat is in good condition, place a steel .250" diameter ball onto the seat, with the solenoid resting *on* a vise, not in the jaws. Using a drift punch and a small hammer, lightly tap the steel checkball several times to "renew" the seat in the solenoid, allowing the ball valve to have a better seal.
- (6) Remove the steel checkball and re-install the .280" diameter, copper colored ball valve back into the solenoid bore. Gently press the triangular shaped brass retainer into the solenoid, and gently stake in place (See Figure 2).
- (7) Repeat the above steps for each solenoid as necessary. Refer to Figure 3 for each solenoids application and description of its particular function. Refer to Figure 1 for solenoid identification and its location in the valve body.

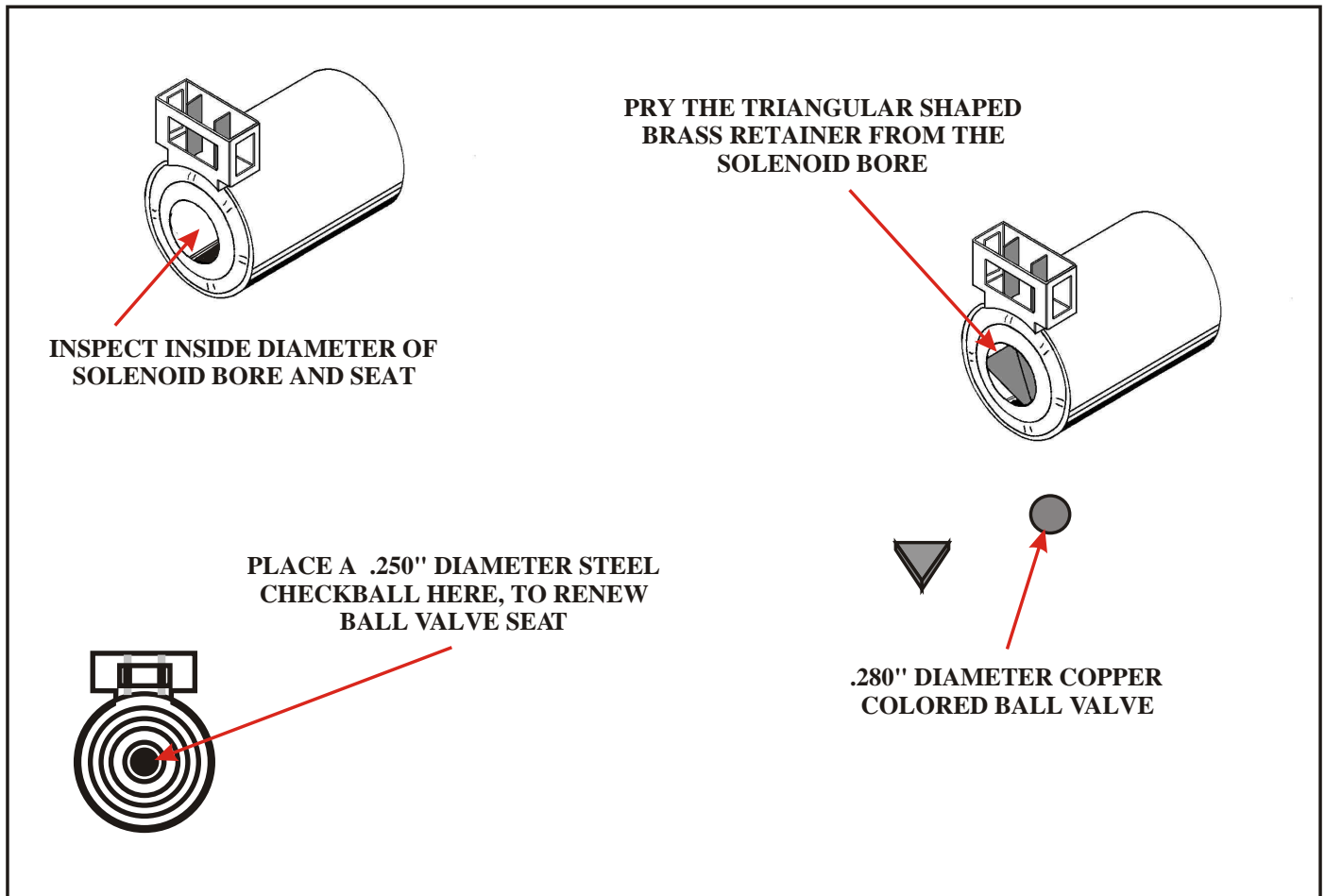


Figure 2

AUDI/PASSAT APPLICATION AND SOLENOID CHART

RANGE	GEAR	Internal Transaxle Components						Transaxle Solenoids						
		B1 CLUT	LOW ROLLR	K3 CLUT	K1 CLUT	K2 CLUT	B2 CLUT	EV1	EV2	EV3	EV4	EV5	EV6	EV7
P	PRK													EPC
R	REV	ON				ON						ON-B	EPC	
N	NEU												EPC	
D4	1ST		HOLD		ON						ON	ON-B	EPC	
	2ND				ON		ON		ON		ON	ON-B	EPC	
	3RD-H				ON	ON						ON-B	EPC	
	3RD-M			ON	ON	ON				ON			EPC	ON-B
	4TH			ON			ON	ON	ON	ON	ON		EPC	ON-B
D3	1ST		HOLD		ON						ON	ON-B	EPC	
	2ND				ON		ON		ON		ON	ON-B	EPC	
	3RD-H				ON	ON						ON-B	EPC	
	3RD-M			ON	ON	ON				ON			EPC	ON-B
D2	1ST		HOLD		ON						ON	ON-B	EPC	
	2ND				ON		ON				ON	ON-B	EPC	
L	1ST	ON	HOLD		ON							ON-B	EPC	

RANGE	GEAR	DESCRIPTION OF SOLENOID FUNCTIONS
P	PRK	<i>No solenoids are energized in Park.</i>
R	REV	<i>Solenoid EV5 is energized briefly to cushion the garage shift to reverse.</i>
N	NEU	<i>No solenoids are energized in Neutral.</i>
D4	1ST	<i>Solenoid EV4 is energized to exhaust pressure in the K2 clutch. Solenoid EV5 is energized briefly to cushion the garage shift to drive forward.</i>
	2ND	<i>Solenoid EV2 is energized to apply the B2 clutch. Solenoid EV4 is energized to exhaust pressure in the K2 clutch. Solenoid EV5 is energized briefly to cushion the 1-2 shift.</i>
	3RD-H	<i>Solenoid EV5 is energized briefly to cushion the 2-3 (Hydraulic) shift.</i>
	3RD-M	<i>Solenoid EV3 is energized to apply the K3 clutch. Solenoid EV7 is energized briefly to cushion the shift to Mechanical 3rd gear.</i>
	4TH	<i>Solenoid EV1 is energized to exhaust pressure in the K1 clutch. Solenoid EV2 is energized to apply the B2 clutch. Solenoid EV3 is energized to apply the K3 clutch. Solenoid EV4 is energized to exhaust pressure in the K2 clutch. Solenoid EV7 is energized briefly to cushion the shift from Mechanical 3rd gear to 4th.</i>
IN ADDITION		<i>Solenoid EV7 is energized briefly to cushion all coast and forced downshifts.</i>

Figure 3