

Subject:

Solenoid operation

Unit:

VW DSG 02E

Vehicle Applications:

2004-up New Beetle,
New Jetta, Golf GTI

Essential Reading:

- Rebuilder
- Shop Owner
- Center Manager
- Diagnostician
- R & R

Author:

Wayne Colonna, ATSG
Transmission Digest
Technical Editor



Volkswagen's Direct-Shift Gearbox Part 3

Although the DSG 02E transmission contains 11 solenoids, they could be placed into three categories: gear actuator, pressure control and TCC. This article covers the first group and part of the second, and next month's article will cover the rest of the second group and the third.

A typical-style conductor plate is used for the solenoid circuitry and is secured to the valve-body Mechatronic assembly with four # 20 Torx-head shoulder bolts that could be easily misused as solenoid attaching bolts (see figures 1 and 2). Once the conductor plate is removed all 11 solenoids come into view (see Figure 3). If you save past issues of *Transmission Digest* you will find in last month's issue on page 43 in Figure 8 a layout that will quickly identify each of these solenoids. I suggest reading it again if you have it, as it will enhance this article greatly.

N88, N89, N90 and N91 make up the first group, the gear-actuator solenoids. They are on/off solenoids that measure 7 to 9 ohms and provide one of two gears, depending upon the position of the multiplexer valve in the valve body. You must be careful when removing a gear actuator solenoid, as there is a directional ball seat, a 6mm-diameter checkball, a

text continues page 20

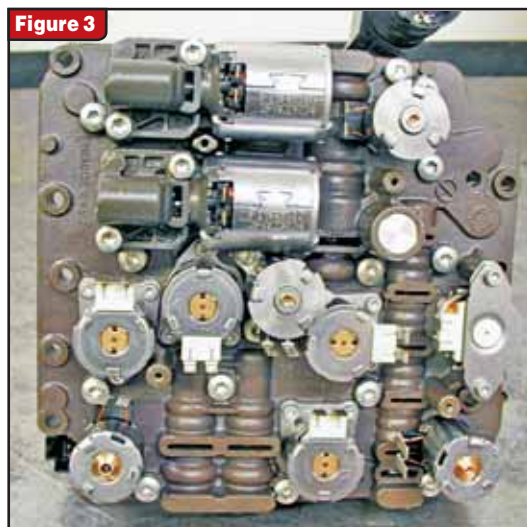
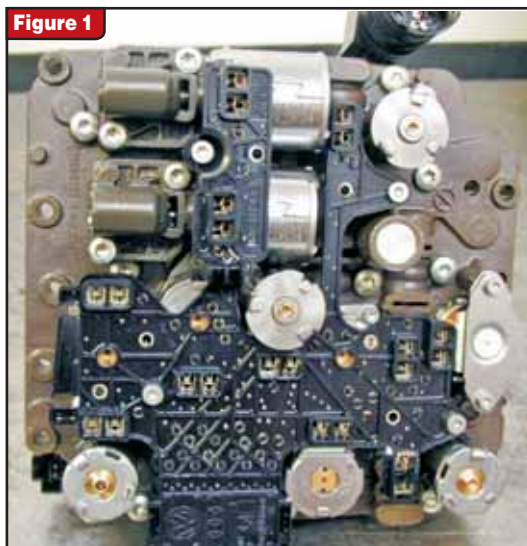
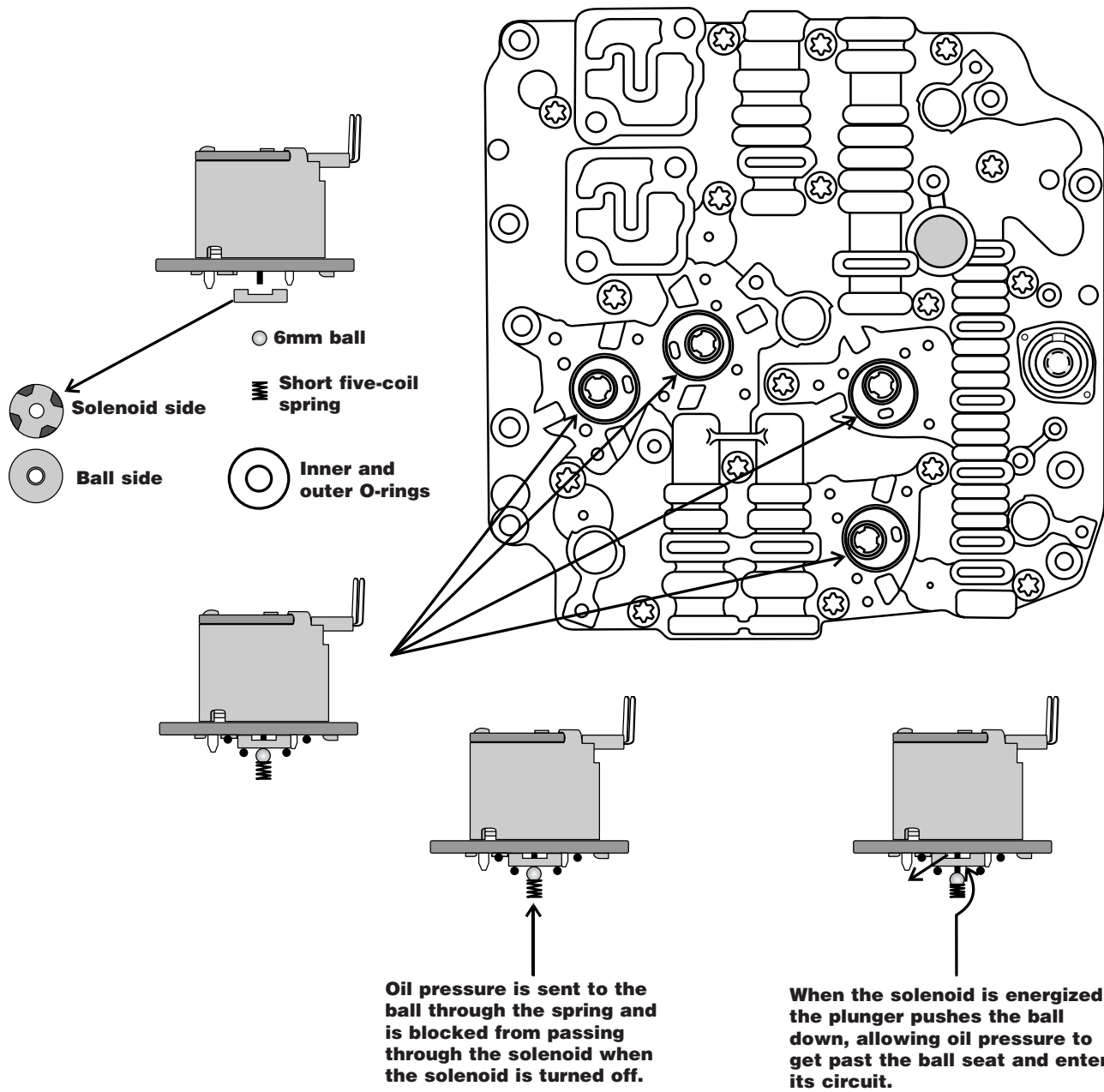


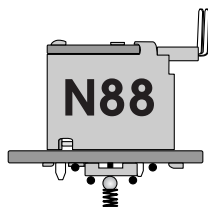
Figure 4

Under each of the gear-actuator solenoids 1, 2, 3 and 4 there are two O-rings, a 6mm ball, a short five-coil spring (6.25mm in length, 5.05mm in diameter) and a ball seat. The spring goes into the valve-body pocket first, followed by the ball and two O-rings. The ball seat is directionally sensitive. The slotted side faces the solenoid and the tapered seat faces the ball.

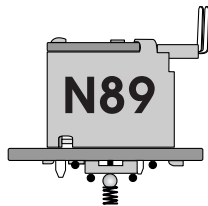


Copyright © 2007 ATSG

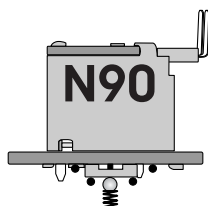
Figure 5



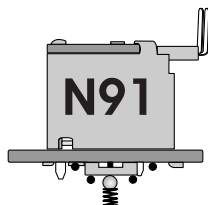
The # 1 gear-actuator solenoid N88 is an on/off solenoid that measures about 7 to 9 ohms. When the solenoid is off, pressure is prevented from reaching 1st- and 5th-gear actuators.



The # 2 gear-actuator solenoid N89 is an on/off solenoid that measures about 7 to 9 ohms. When the solenoid is off, pressure is prevented from reaching 3rd-gear and neutral actuators.



The # 3 gear-actuator solenoid N90 is an on/off solenoid that measures about 7 to 9 ohms. When the solenoid is off, pressure is prevented from reaching 2nd- and 6th-gear actuators.



The # 4 gear-actuator solenoid N91 is an on/off solenoid that measures about 7 to 9 ohms. When the solenoid is off, pressure is prevented from reaching 4th- and reverse-gear actuators.

When a solenoid fails, the operation of its associated gear actuator and relevant section of the gear-box will cease. The vehicle may be allowed to have either 2nd gear only or 1st and 3rd gears only.

Copyright © 2007 ATSG

Figure 6



Figure 7

