



ACURA MDX BYFA 5 SPEED TRANSMISSION

P1744 - SHIFT VALVE E STUCK ON

COMPLAINT: A 2007 Acura MDX 3.7L V6 using a BYFA 5 speed automatic transmission comes in to the shop with DTC P1744 stored in memory. The definition of this code is as follows: Problem in Shift Control System; Shift Valve E Stuck ON. Many manufacturers refer to shift solenoids as a shift valve. Given the definition of it being "Stuck On", the tech goes to locate shift solenoid E for inspection and no such solenoid is found.

CAUSE: Shift Solenoid A (a normally vented solenoid) and B (a normally applied solenoid) operate a valve in the valve body called, "Shift Valve E" (figure 1). When both solenoids are off, the valve strokes open by shift solenoid B pressure. When both solenoids turn on, shift valve E closes by both spring pressure shift solenoid A pressure.

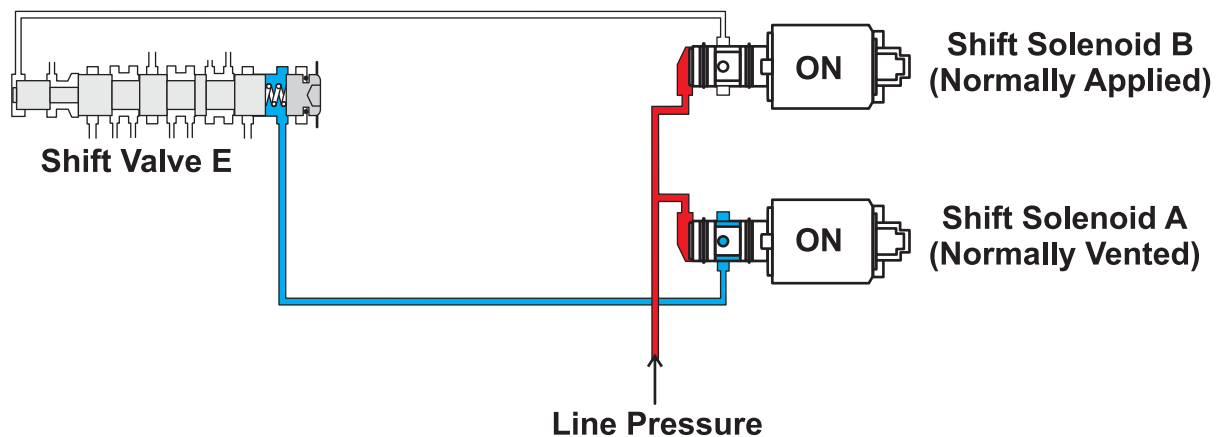
Shift Valve E needs to stay in the closed position for 1st, 2nd and 3rd gear. Shift Solenoid A assists the spring in keeping the valve closed in 2nd and 3rd gear. Shift solenoid B strokes the valve in 4th and 5th gear. If the valve does not stroke, 5th gear will be un-attainable. If the valve is stuck in the stroked position, the vehicle will take off in 5th gear instead of 1st. 3rd gear is affected also should this valve be stuck in the stroked position.

CORRECTION: The most common cause producing this code is a stuck shift valve E located in the secondary valve body next to the manual valve (figure 2). Sometimes Shift Solenoid Valve B mechanically fails (figure 3). When this solenoid is OFF, it applies pressure to its respective valves. Shift Valve E is one of them. When this solenoid turns ON, it blocks pressure from stroking its valves. Shift Solenoid Valve A works opposite. In fact, Shift Solenoid Valves B and C are Normally Applied Solenoids while Shift Solenoid Valves A and D are Normally Vented Solenoids.

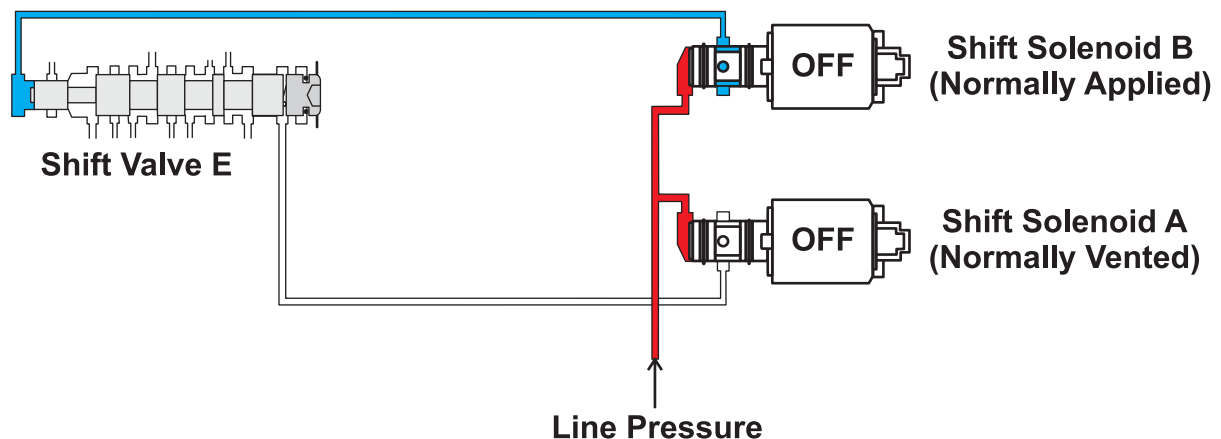
The Yellow wire connector goes to shift solenoid valve A.
The Green wire connector goes to shift solenoid valve C.
The Red wire connector goes to shift solenoid valve B.
The Orange wire connector goes to shift solenoid valve D.

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Shift valve E is to remain closed for 1st, 2nd and 3rd gears. Shift solenoid A turns on in 2nd and 3rd gear to assist spring tension in keeping the valve closed. Note: Shift Solenoid A is a normally vented solenoid which when energized will supply pressure to its respective circuit. Shift solenoid B is a normally applied circuit operating in the opposite manner as shift solenoid A. When it turns on, it will prevent pressure from entering into its respective circuit.



Shift valve E needs to be stroked open for 4th and 5th gears. For this to occur, both solenoids turn off. Since shift solenoid A is a normally vented solenoid, pressure is blocked from entering it respective circuit. With shift solenoid B being a normally applied circuit, pressure is allowed to enter into its respective circuit. Solenoid B pressure is able to overcome shift valve E's spring tension forcing the valve to stroke open.

Figure 1

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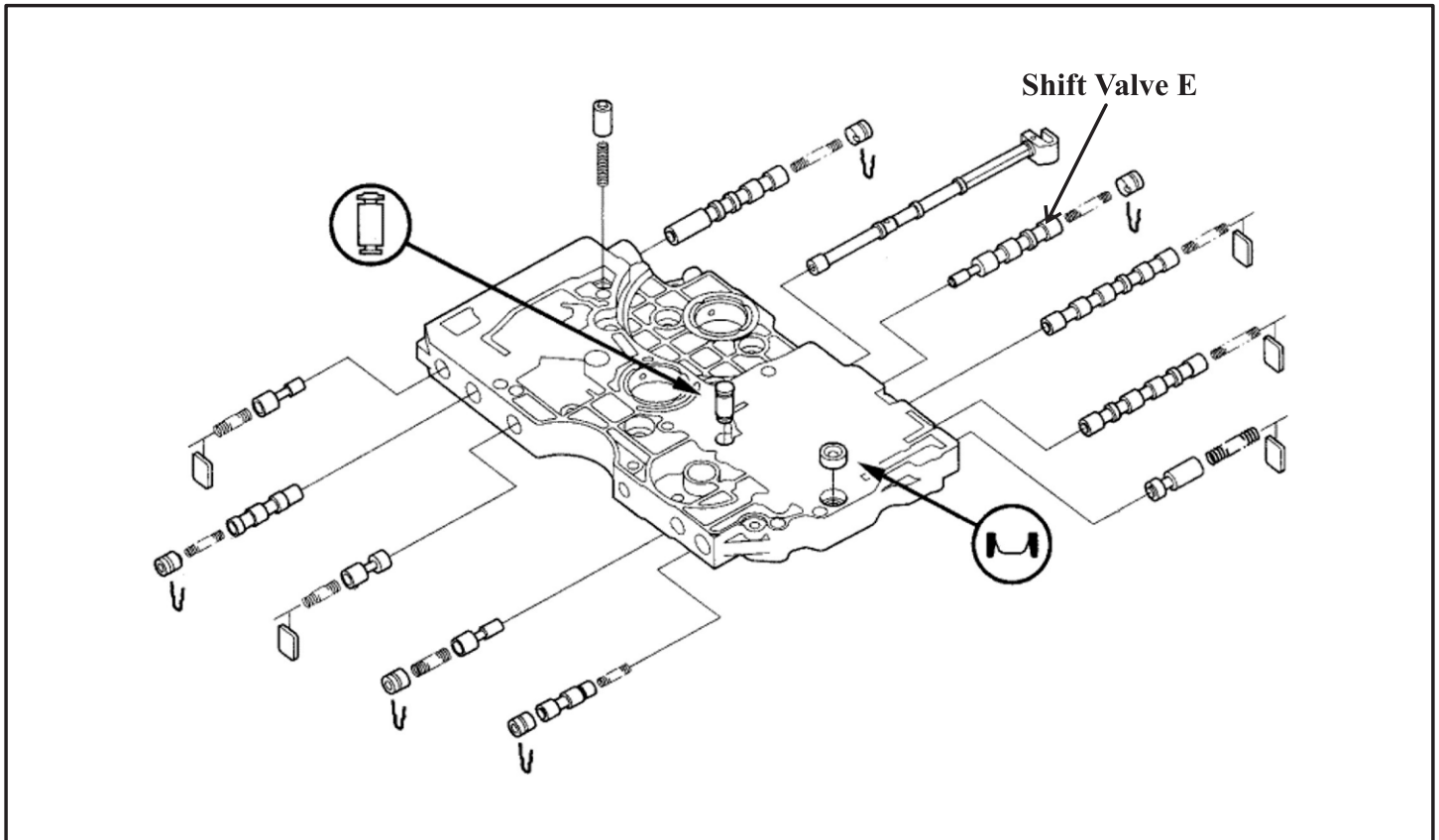


Figure 2

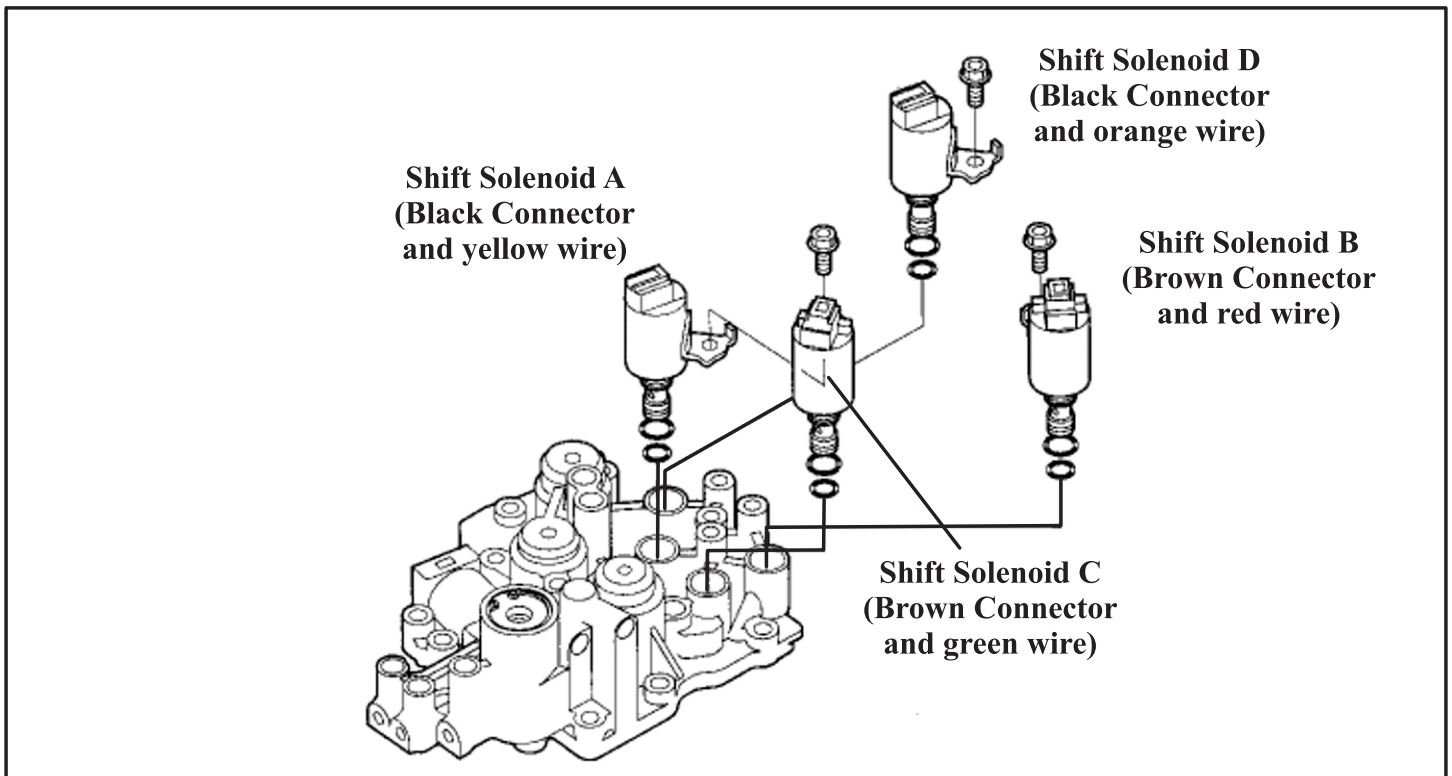


Figure 3