sonnax®

REMANUFACTURED VALVE BODIES

Tech & Install Tips

6T30/40/45/50 (Gen. 2), 6T31/35/41/46/51 (Gen. 3 6T40) Remanufactured Valve Body

Part No.
GM6T40-2-3

- Remanufactured Valve Body
- Normally High Solenoids (3) Teal
- Normally Low Solenoids (3) Yellow

WARNING: GM Gen. 1 valve bodies cannot be interchanged with Gen. 2 (6T30/40/45/50) or Gen. 3 (6T31/35/41/46/51) valve bodies. Reference the Sonnax identification guide to verify the correct valve body is installed.

Valve Body Installation Tips

This remanufactured valve body comes with 3 new normally low, and 3 new normally high solenoids that are to be installed into the TEHCM when the transmission is being repaired (**Figures 1** & **2**).

New Solenoids **Figure 1**

3 Normally High with Teal Cap

3 Normally Low Yellow Cap

6T40 (Gen. 2 & 3) Solenoid Locations **Figure 2**

1. Line PCS
2. 2-6 PCS
3. 3-5-Reverse PCS
4. Shift Solenoid
5. TCC PCS
6. 1-2-3-4 PCS
7. L/R 4-5-6 PCS

- Pressure Control Solenoid (PCS) 3-5 ohms at 70ºF
- Shift Solenoid 16-20 ohms at 70ºF

1. Solenoid Installation Into the TEHCM

a. Remove three 15 torx screws from the cover plate (**Figure 3**). Remove cover plate and save for reuse. Gently pry up the terminal portion out of the solenoids and set the TEHCM aside.

b. Once the TEHCM section is removed, then the solenoid body can be disassembled. Remove the horseshoe shaped retainers and install the Sonnax solenoids in the locations shown (**Figure 4** & **5**).

NOTE: A small amount of assembly grease can ease the installation of the solenoid O-rings.

c. Remove the on/off solenoid. Then clean and check the OHM value and function. Then reinstall it (**Figure 5**).

d. After all the new solenoids are installed into the TEHCM, carefully reassemble the TEHCM section onto the solenoid body, being careful to align the terminals back into the solenoid terminal (**Figure 3**).

CAUTION: The solenoid terminals can be bent easily. Be careful not to damage or bend them.

TEHCM Disassembly **Figure 3**

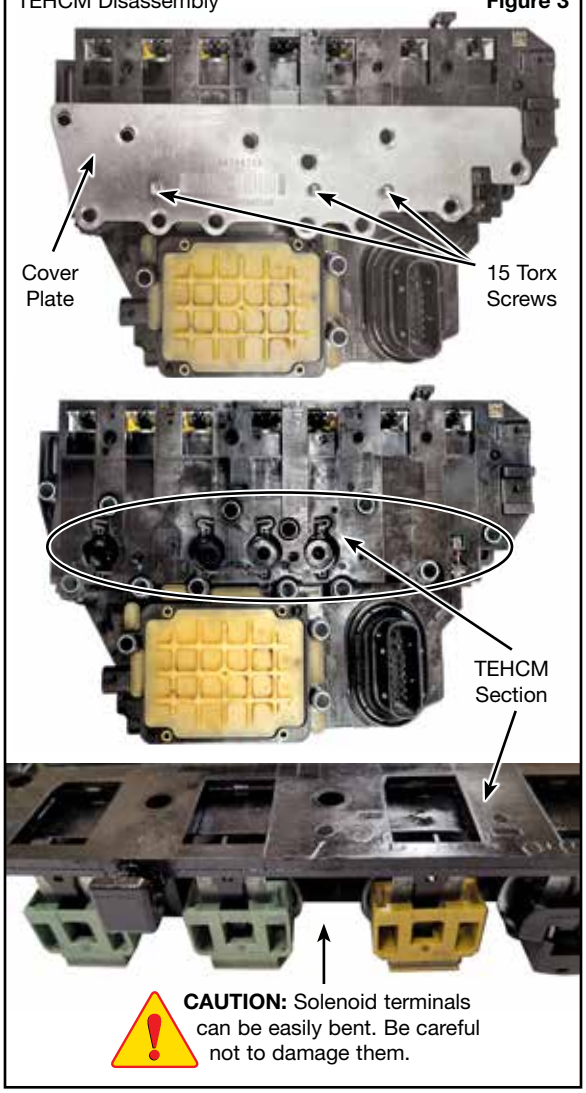
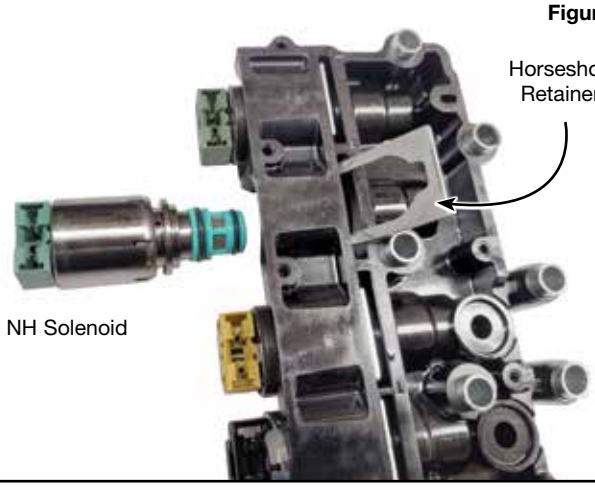
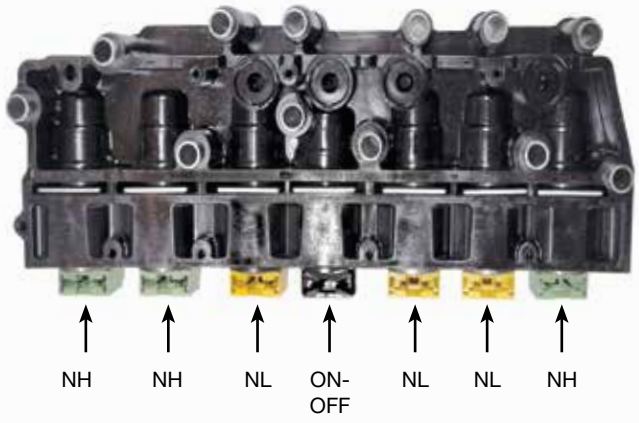


Figure 4



Solenoid Locations in TEHCM **Figure 5**



2. Valve Body & TEHCM Installation

a. Install Sonnax valve body-to-case separator plate gaskets included onto the separator plate from the transmission you are working on and install the plate and gaskets onto the transmission case (**Figure 6**).

b. Install control valve body assembly into case and secure with (2) 53mm and (9) 60mm bolts until finger-tight (**Figure 7**).

c. Tighten to 97 in-lb of torque in the indicated sequence (**Figure 8**).

d. Install control solenoid (w/body and TCM) valve assembly to control valve body assembly with (12) 30mm and (3) 40.5mm bolts until finger-tight (**Figure 9**).

e. Tighten (12) 30mm bolts to 106 in-lb of torque in the indicated sequence (**Figure 10**).

f. Tighten the (3) 40.5mm bolts to 71 in-lb torque in the indicated sequence (**Figure 10**).

g. Reconnect the input speed sensor, output speed sensor and shift position switch connectors (**Figure 9**).

Figure 6

Valve Body-to-Case Separator Plate Gaskets

Figure 7

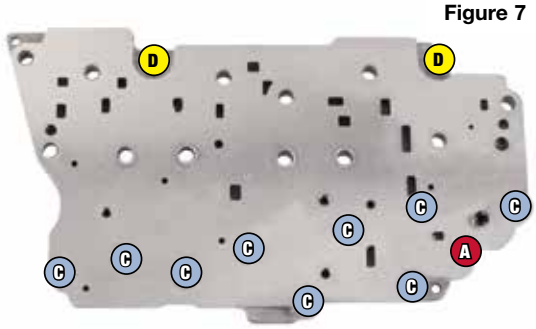


Figure 8

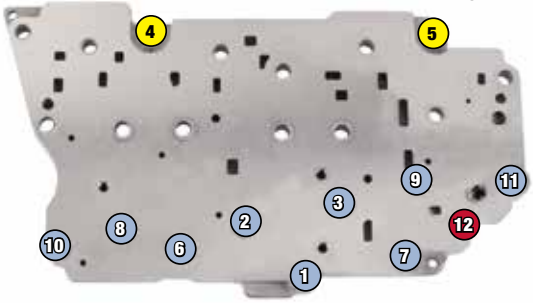


Figure 9

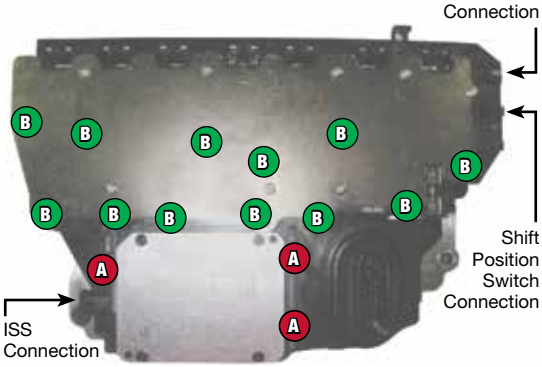


Figure 10

Removal Bolts

Figure 11

Bolt Color Code		Bolt Length	Quantity	Torque Specification
A	Red	40.5mm	4	71 in-lb
B	Green	30mm	12	106 in-lb
C	Blue	60mm	9	97 in-lb
D	Yellow	53mm	2	97 in-lb

3. Fluid Fill and Road Test

a. Fill the transmission to factory spec with OE compatible ATF.

b. Let engine run to help warm transmission fluid to 185°.

c. Install capable scan tool to reset transmission adaptives.

d. Road test vehicle performing 10-15 upshift and downshift cycles through all five speeds.

NOTE: Downshift clunks, a slight bind on the 3-4 upshift, and a 2-3 flare can be common during the relearn. This condition will typically resolve itself within the 10-15 shift cycles.

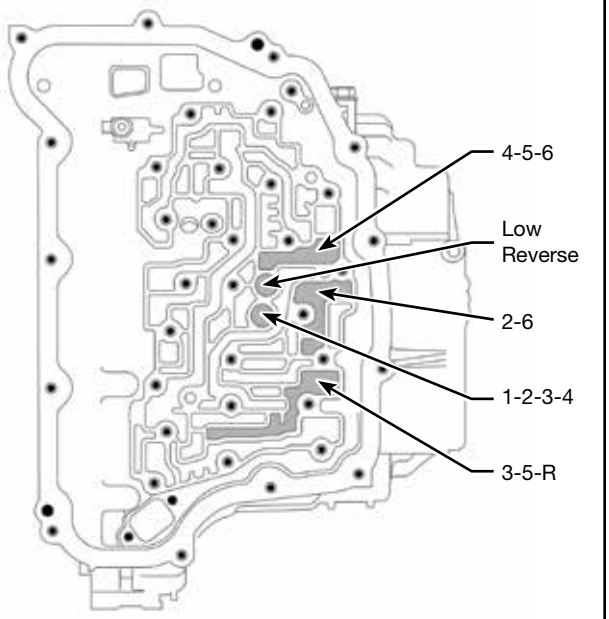
Transmission Diagnostic Tips

This Sonnax remanufactured valve body has been through a rigorous inspection and rebuild process, then a comprehensive, functional hydraulic and electronic test to ensure it meets OE performance and quality. It is designed to eliminate many pressure-, shift- and converter-related complaints, but will not correct complaints that stem from other areas of the transmission.

The following are common areas of failure or root causes for symptoms that could be attributed to valve body issues that should also be examined or addressed during your transmission build.

In addition, see air test locations (**Figure 12**) to verify internal integrity and the component application chart (**Figure 13**) for troubleshooting drivability issues.

6T40 - Air Test Locations **Figure 12**



Common Failure Areas

1. Torque converter slip codes can be attributed to worn stator bushings and should be checked and replaced.
2. A 2-3 flare can be attributed to clearance problems in the 3-5-R clutch assembly.

Solenoid & Clutch Apply Chart

Figure 13

Range/Gear		Shift Solenoid	1-2-3-4 CL PC Sol N.H.	2-6 CL PC Sol N.L.	3-5-Rev. CL PC Sol N.L.	Low/Rev. 4-5-6 CL PC Sol N.H.	4-5-6 Clutch	3-5-Reverse Clutch	2-6 Clutch	Low/Rev. CL (OWC)	Low/Rev. Clutch	1-2-3-4 Clutch
Park		On	On	Off	Off	Off					Applied*	
Reverse		On	On	Off	On	Off		Applied			Applied	
Neutral		On	On	Off	Off	Off					Applied*	
Drive	1st Braking	On	Off	Off	Off	Off				Holding†	Applied	Applied
	1st	Off	Off	Off	Off	On				Holding		Applied
	2nd	Off	Off	On	Off	On			Applied			Applied
	3rd	Off	Off	Off	On	On		Applied				Applied
	4th	Off	Off	Off	Off	Off	Applied					Applied
	5th	Off	On	Off	On	Off	Applied	Applied				
	6th	Off	On	On	Off	Off	Applied		Applied			

NOTE: For shift solenoids, "ON" = solenoid energized (pressurized), "OFF" = solenoid de-energized (no pressure). For pressure control (PC) solenoids, "ON" = pressurized, "OFF" = no pressure. *Applied with no load. †Holding but ineffective.