Transmission Control Modules

Applications

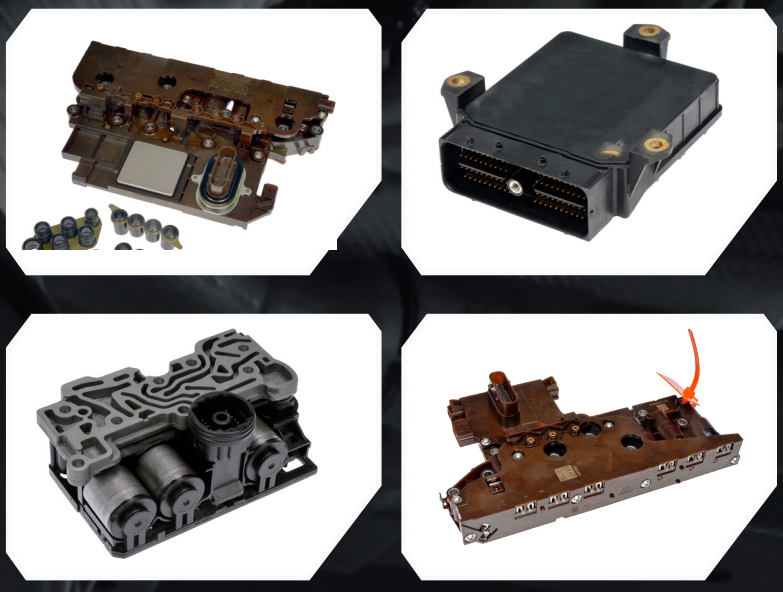
Programming and Installation

DTC Definitions and Solenoid Functions

Troubleshooting and Diagnostics

GM, FORD, NISSAN

TCM/TEHCM SERVICE GUIDE



DORMAN®

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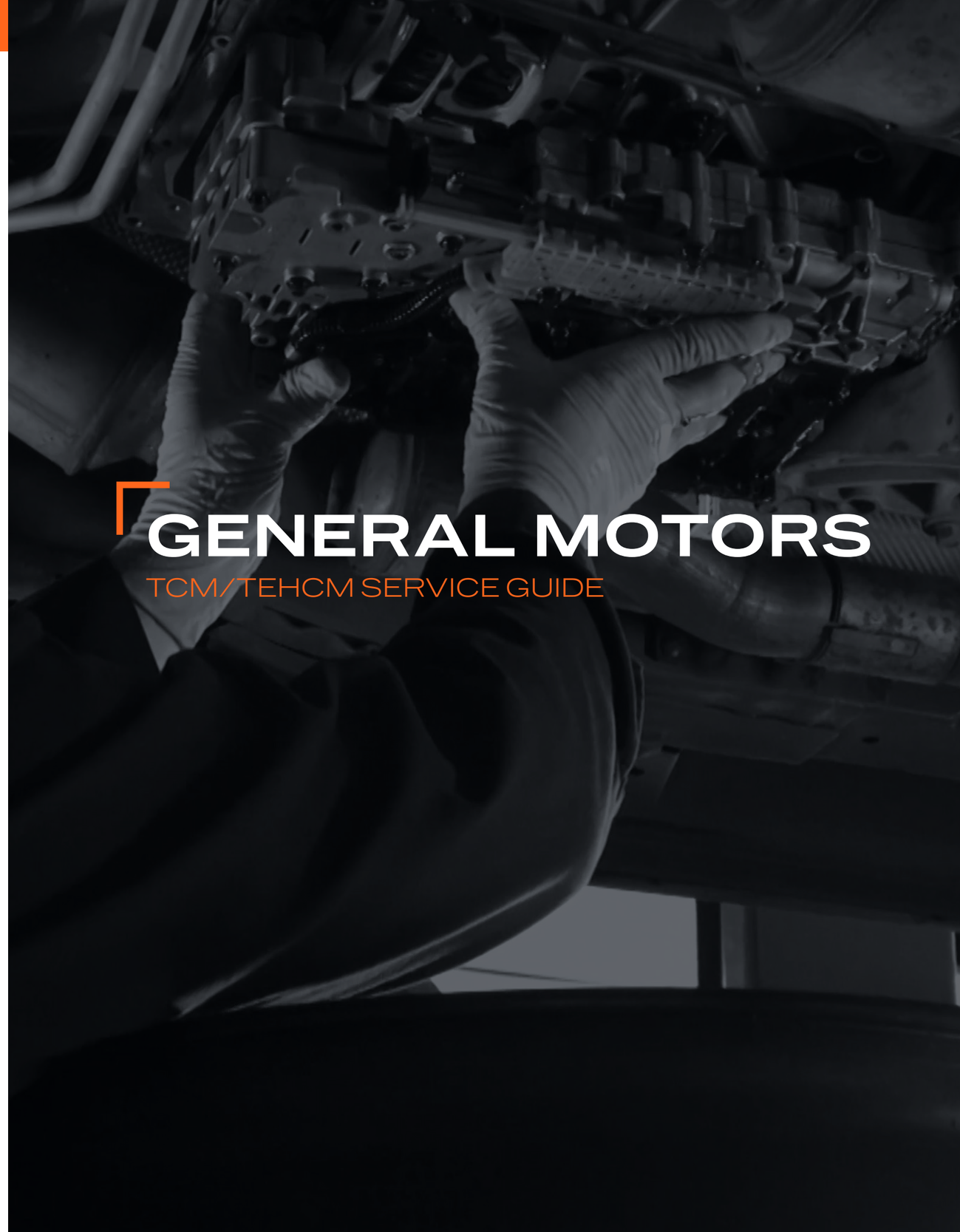
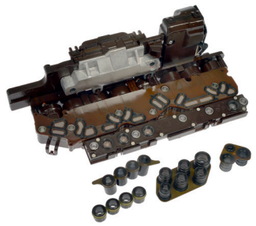
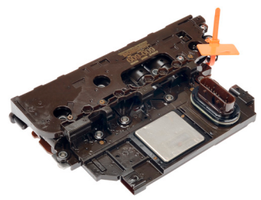


Application Coverage, Internal Unit

Dorman SKU #	Year Range and Transmission Fitment	Application Notes
609-000	07-09 Saturn Outlook 6T75, 07-09 Saturn Aura 6T70, 07-09 Pontiac G6 6T70, 07-09 GMC Acadia 6T75, 08-10 Saturn Vue 6T70, 08-09 Pontiac Torrent 6T70, 08-09 Chevy Malibu 6T70, 08-09 Chevy Equinox 6T70, 08-09 Buick Enclave 6T75, 09 Chevy Traverse 6T75	
609-002	(10-11 GMC 1500, Yukon, XL, Chevrolet 1500,Tahoe, Suburban, Escalade, ESV, EXT, Corvette 6L80) (10-11 GMC Savana, Chevy Express 6L90) 11-13 Chevy Caprice 6L80, 11 Cadillac STS 6L50, CTS 6L45,6L80,6L90, 10-11 Camaro	
609-003	Cadillac 08-10, Chevrolet 07-13, GMC 07-13, Hummer 08-09, Pontiac 08-09 (6L80, 6L90) (Confirm OE number and Broadcast codes prior to ordering)	
609-004	06-07 Chevy Corvette, 06-07 Cadillac XLR,STS, 07 Cadillac SRX, Escalade, Escalade ESV, EXT (6-speed automatic)	
609-005	12-13 GMC Terrain 6T45, 12-13 Chevy Sonic 6T40, 12-13 Malibu 6T40, 12-13 Equinox 6T45, 12-13 Cruze 6T40, 12-13 Captiva 6T45, 12-13 Buick Verano 6speed, 12-13 Regal 6speed, 15-16 Regal 6speed 12-13 Lacrosse 6T40, 13 Encore 6-speed,	
609-006	Cadillac 12-15, Chevrolet 11-20, GMC 11-20 Isuzu 12-16 (6L80, 6L90) (Confirm OE number and Broadcast codes prior to ordering)	See GM broadcasting code and OE identification information on page 5.
609-007	08-10 Chevy Malibu-09 Saturn Aura-09-10 Pontiac G6 (6T40)	
609-008	10 Saturn Outlook 6T75, 10-12 GMC Terrain 6T70, 10-12 GMC Acadia 6T75, 10-12 Chevy Traverse 6T75, 10-12 Chevy Malibu 6T70, 10-12 Chevy Equinox 6T70, 10-12 Cadillac SRX 6T70, 10-13 Buick Lacrosse 6T70, 10-12 Buick Enclave 6T75, 12-13 Chevy Impala 6T70, 14-16 Chevy "Limited 6T70	
609-009	Buick Enclave 2013, Cadillac SRX 2013, Cadillac XTS 2013, Chevrolet Traverse 2013, GMC Acadia 2013	
609-015	Buick 14-17, Chevrolet 14-18, GMC 14-17 6T30-6T40	
609-016	Chevrolet Equinox 2010, GMC Terrain 2010	
609-017	Chevrolet Cruze 2011	
609-018	Buick 2011, Chevrolet 2011, GMC 2011	
609-019	Chevrolet Captiva Sport 2012, Chevrolet Cruze 2012, Chevrolet Sonic 2012	

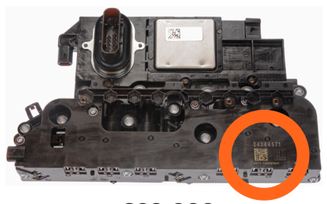
Application Coverage, External Unit



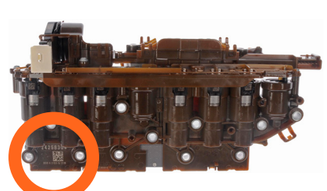
Dorman SKU #	Year Range and Transmission Fitment	Application Notes
609-200	External Module Chevrolet 06-08, GMC 06-08 Allison 1000	
609-211	External Module Chevrolet 09-15, GMC 09-15 Allison 1000	
599-120	External Module General Motors 05-13, Isuzu 06-08 4-speed	

GM BROADCAST CODE/OE IDENTIFICATION:

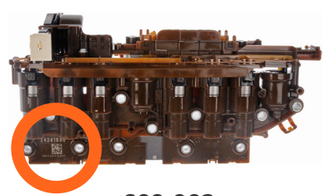
OE NUMBER LOCATION ON DORMAN TRANSMISSION CONTROL MODULES:



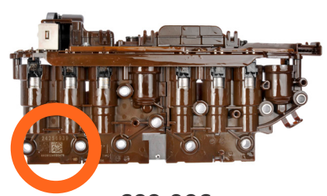
609-000



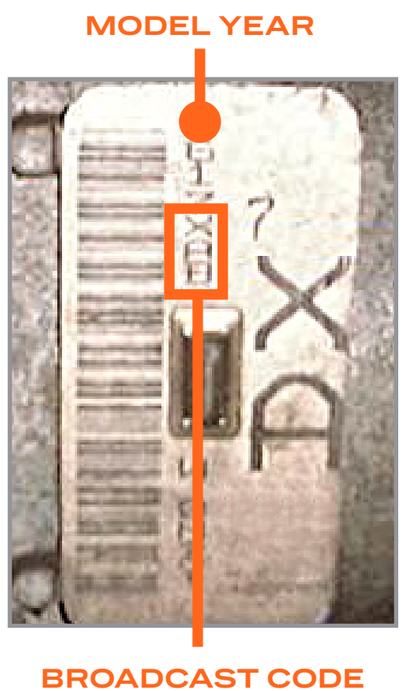
609-002



609-003



609-006



GM 6L80: TECH TIPS

609-016/609-017/609-018/609-018/609-003/609-006

1. In some instances, a vehicle may exhibit delayed engagement, or even a harsh thud or clunk when shifted into reverse. If the transmission has not been serviced prior to this occurring, the cause could be related to the crankshaft. We recommend checking to ensure that end play is within factory specifications of .0015"/.0086".

2. After a rebuild the 2-6 clutch might engage harshly, fail to down-shift from third to second gear or even overheat, which can lead to a burned and failed clutch. To help prevent these potential concerns check the following:
   A. The 2-6 clutch plate could have been installed backwards. Be sure to visually check that the inside fingers face the piston.
   B. The 2-6 clutch bushing can separate from the clutch housing if not sealed in place with a thread locking product.
   C. Be sure to pre-load the stator clockwise prior to the final torquing of the pump.
   D. Pay special attention to the orifice that snaps into the housing. Failure to fully attach this orifice will result in excessive temperatures and clutch damage.

3. If the vehicle has reached normal operating temperature after a rebuild and still exhibiting delayed engagement in forward, reverse or both, the TCM case could be warped. GM has recognized this concern and responded with updated slide and rotor kits. The measurement should never exceed past .002" across the rotor or .0015" across the slide.

GM 6L80: Shift Solenoid Control Function

GM Gen 1 6L80 control valve command function	Shift control solenoid (1) command status	Shift control solenoid (2) command status	Clutch pressure control (5) 1-2-3-4-5 clutch	Clutch pressure control (4) 2-6-clutch	Clutch pressure control (2) 3-5-reverse clutch	Clutch Pressure Control (3) 4-5-6-low reverse clutch	TCC pressure control solenoid conv clutch	Line pressure control solenoid function	Applied gear ratio
PARK	ON	ON	OFF	OFF	ON	OFF	OFF	ON	NA
REVERSE	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	3.06
NEUTRAL	ON	ON	OFF	OFF	ON	OFF	OFF	ON	NA
Applied 1st	ON	ON	ON	OFF	ON	ON	OFF	ON	4.03 Direct
Applied 2nd	OFF	ON	ON	ON	ON	ON	ON	ON	2.36 Direct
Applied 3rd	OFF	ON	ON	OFF	OFF	ON	ON	ON	1.53 Direct
Applied 4th	OFF	ON	ON	OFF	ON	OFF	ON	ON	1.15 Direct
Applied 5th	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	0.85 OD
Applied 6th	OFF	ON	OFF	ON	ON	OFF	ON	ON	0.67 OD

GM 6L80: Diagnostic Trouble Codes

Code	Reference
P0218	Trans fluid temp exceeds 270 degrees
P0562	Voltage in system found to be low < 11v
P0563	Voltage in system found to be high >18v
P0601	Read only memory found in TCM
P0602	Not programmed trans module
P0603	Memory reset long term
P0604	Random access memory
P0634	Over temperature TCM
P0667	Temperature sensor perf. Tcm
P0668	Temperature sensor circuit low voltage
P0669	Temperature sensor circuit high voltage
P0703	Circuit brake pedal switch invalid signal
P0711	Trans fluid temp sensor performance
P0712	Trans fluid temp sensor low voltage
P0713	Trans fluid temp sensor high voltage
P0716	Trans input speed sensor performance
P0717	Trans input speed sensor low voltage
P0719	Circuit brake pedal switch voltage low
P0722	Trans output speed sensor low voltage
P0723	Trans output speed sensor intermittent
P0724	Circuit brake pedal switch high voltage
P0729	6th gear incorrect ratio
P0731	1st gear incorrect ratio
P0732	2nd gear incorrect ratio
P0733	3rd gear incorrect ratio
P0734	4th gear incorrect ratio
P0735	5th gear incorrect ratio
P0736	Reverse gear incorrect ratio
P0741	TCC clutch system stuck off
P0742	TCC clutch system stuck on
P0751	Shift solenoid (1) valve stuck off
P0752	Shift solenoid (1) valve stuck on
P0776	Solenoid (2) CPS stuck off
P0777	Solenoid (2) CPS stuck on
P0796	Solenoid (3) CPS stuck off
P0797	Solenoid (3) CPS stuck on
P0815	Switch circuit on upshift error
P0816	Switch circuit on downshift error
P0826	Switch circuit up/downshift error
P0842	Trans fluid pressure switch (1) low voltage
P0843	Trans fluid pressure switch (1) high voltage
P0851	Park-neutral switch low voltage
P0852	Park-neutral switch high voltage

GM 6L80: Diagnostic Trouble Codes

Code	Reference
P0872	Trans fluid pressure switch (3) low voltage
P0873	Trans fluid pressure switch (3) high voltage
P0877	Trans fluid pressure switch (4) low voltage
P0878	Trans fluid pressure switch (4) high voltage
P0961	System perf. Line pressure control solenoid
P0962	Line pressure control solenoid low voltage
P0963	Line pressure control solenoid high voltage
P0965	Solenoid (2) CPS system perf.
P0966	Solenoid (2) CPS low voltage
P0967	Solenoid (2) CPS high voltage
P0969	Solenoid (3) CPS system perf.
P0970	Solenoid (3) CPS low voltage
P0971	Solenoid (3) CPS high voltage
P0973	Shift solenoid (1) low voltage
P0974	Shift solenoid (1) high voltage
P0976	Shift solenoid (2) low voltage
P0977	Shift solenoid (2) high voltage
P0989	Trans fluid pressure switch (5) low voltage
P0990	Trans fluid pressure switch (5) high voltage
P1621	Long-term memory perf.
P1684	Temp sensor performance while power up
P1685	Temp sensor perf. while power up low voltage
P1686	Temp sensor perf. while power up high voltage
P1751	Valve 1 shift perf. select valve 2
P1825	Invalid range found mode switch
P1831	Driver 2# controls function of line pressure
P1832	Driver 2# controls function of line pressure
P1876	Up/down shift switch out of range drive 3
P1915	Mode switch starting in incorrect range
P2534	Ignition starter switch low voltage
P2714	Solenoid (4) CPS stuck off
P2715	Solenoid (4) CPS stuck on
P2719	Solenoid (4) CPS perf
P2720	Solenoid (4) CPS low voltage
P2721	Solenoid (4) CPS high voltage
P2723	Solenoid (5) CPS stuck off
P2724	Solenoid (5) CPS stuck on
P2728	Solenoid (5) CPS perf.
P2729	Solenoid (5) CPS low voltage
P2730	Solenoid (5) CPS high voltage
P2762	Torque convertor clutch solenoid perf.
P2763	Torque convertor clutch solenoid high voltage
P2764	Torque convertor clutch solenoid low voltage

GM 6T30, 40, 45, 50: TECH TIPS

6609-005/609-007/609-015 609-016/609-017/609-018/609-019

1. In some cases a P2723 will occur with a loss of the output speed sensor. This is typically caused by the wire lead being pinched by the channel case. Be sure to route the signal wire as intended.
2. A "TCC slip", or TCC not being applied condition and a P0741 may also be present. It is good practice to vacuum test the stator and clutch assembly. Typically, your reading with a vacuum gauge should be no less than 15" at the stator bushing. If necessary, you can use a high temperature sealer on the stator bushing during installation.
3. "1-2-3-4 clutch not applying" also may set additional trouble codes for solenoid engagement and clutch slipping. This can be caused in the field during a rebuild by installing the snap ring backwards on the 1-2-3-4 unit. The indented side of the snap ring should always face up while being seated into the drum.
4. Gen 1, gen 2 and gen 3 transmission components such as clutch housings are not interchangeable. Their respective fluid passages are different, their inner and outer sealing surfaces. Be sure to use correct gen specific components during installation.

GM 6T30, 6T40, 6T45, 6T50: Shift Solenoid Control Function

Selection GM Gen 1 6T30-6T40 6T45-6T50 control valve command function	Shift control solenoid Command Status On-OFF	Clutch pressure control (5) 1-2-3-4-Clutch	Clutch pressure control (4) 2-6-Clutch	Clutch pressure control (2) 3-5-Reverse clutch	Clutch pressure Control (3) 4-5-6-Low reverse	Applied gear ratio
Park	ON	OFF	OFF	ON	OFF	N/A
Reverse	ON	OFF	OFF	OFF	OFF	2.94 direct
Neutral	ON	OFF	OFF	ON	OFF	N/A
1st auto stop (if equipped)	OFF	ON	OFF	ON	OFF	4.58 direct
Applied 1st	OFF	ON	OFF	ON	ON	4.58 direct
Applied 2nd	OFF	ON	ON	ON	ON	2.96 direct
Applied 3rd	OFF	ON	OFF	OFF	ON	1.91 direct
Applied 4th	OFF	ON	OFF	ON	OFF	1.44 direct
Applied 5th	OFF	OFF	OFF	OFF	OFF	1.00 direct
Applied 6th	OFF	OFF	ON	ON	OFF	0.74 OD

GM 6T30, 40, 45, 50: Diagnostic Trouble Codes

Code	Reference
P057B	Pedal position sensor brake perf
P057C	Pedal position sensor brake low voltage
P057D	Pedal position sensor brake high voltage
P0601	Read only memory perf.
P0603	Memory reset (long term)
P0604	Random access memory perf.
P062F	Memory perf (long term)
P0634	Over temperature TCM
P0658	Control circuit (1) low voltage
P0659	Control circuit (1) high voltage
P0667	Temperature sensor perf.
P0668	Temp. Sensor low voltage
P0669	Temp. Sensor high voltage
P06AC	Power up temp sensor perf.
P06AD	Power up temp sensor perf. low voltage
P06AE	Power up temp sensor perf. high voltage
P0711	Trans fluid temp sensor perf.
P0712	Trans fluid temp sensor low voltage
P0713	Trans fluid temp sensor high voltage
P0716	Input speed sensor perf.
P0717	Input speed sensor no signal present
P07BF	Input speed sensor low voltage
P07C0	Input speed sensor high voltage
P0722	Output speed sensor no signal present
P0723	Output speed sensor intermittent
P077C	Output speed sensor low voltage
P077D	Output speed sensor high voltage
P0741	System torque convertor clutch solenoid stuck off
P0742	System torque convertor clutch solenoid stuck on
P0751	Shift solenoid (1) perf. stuck off
P0752	Shift solenoid (1) perf. stuck on
P0776	Solenoid (2) cpc stuck off
P0777	Solenoid (2) cpc stuck on
P0796	Solenoid (3) cpc stuck off
P0797	Solenoid (3) cpc stuck on
P0815	Switch circuit error while up shift
P0816	Switch circuit error while down shift
P0826	Switch circuit error up shift/down shift
P0842	Trans fluid pressure switch (1) low voltage
P0843	Trans fluid pressure switch (1) high voltage
P0850	Pnp switch circuit concern
P0851	Cicuit low voltage pnp switch

GM 6T30, 40, 45, 50: Diagnostic Trouble Codes

Code	Reference
P0852	Circuit high voltage PNP switch
P0872	Trans fluid pressure switch (3) low voltage
P0873	Trans fluid pressure switch (3) high voltage
P0877	Trans fluid pressure switch (4) low voltage
P0878	Trans fluid pressure switch 4 high voltage
P0961	Line pressure control solenoid perf.
P0962	Line pressure control solenoid low voltage
P0963	Line pressure control solenoid high voltage
P0965	Solenoid (2) cpc perf.
P0966	Solenoid (2) cpc low voltage
P0967	Solenoid (2) cpc high voltage
P0969	Solenoid (3) cpc perf.
P0970	Solenoid (3) cpc low voltage
P0971	Solenoid (3) cpc high voltage
P0973	Shift solenoid (1) low voltage
P0974	Shift solenoid (1) high voltage
P0989	Trans fluid pressure switch (5) low voltage
P0990	Trans fluid pressure switch (5) high voltage
P1761	Up/down shift counter signal incorrect
P182E	Mode switch range invalid
P1915	Mode switch not showing prndl during start
P1876	Up/down shift low voltage enabled
P2714	Solenoid (4) cpc stuck off
P2715	Solenoid (4) cpc stuck on
P2719	Solenoid (4) cpc perf.
P2720	Solenoid (4) cpc low voltage
P2721	Solenoid (4) cpc high voltage
P2723	Solenoid (5) cpc stuck off
P2724	Solenoid (5) cpc stuck on
P2728	Solenoid (5) cpc perf.
P2729	Solenoid (5) cpc low voltage
P2730	Solenoid (5) cpc high voltage
P2762	Torque convertor clutch solenoid perf
P2763	Torque convertor clutch solenoid high voltage
P2764	Torque convertor clutch solenoid low voltage

GM 6T70/6T75: TECH TIPS

609-000/609-008/609-009

1. Gen 1, Gen 2 and Gen 3 components are not compatible. The TEHCMs are not interchangeable because the gen 2 unit has no provision for pressure switches, and the main valve body uses different passage ways for shift control.

2. During a rebuild, be sure to use correct generation parts, as installing a 1-2-3-4 clutch piston from a different generation transmision can cause delayed engagement and harsh slipping. Pistons are actually different heights (0.63" gen 1, vs 0.78" gen 2) This can sometimes be incorrectly attributed to a TEHCM problem.

3. During installation on the new TECHM, pay close attention to the length of the bolts used to secure the module. These 42 mm and 55 mm bolts are position-specific. If these bolts are switched during installation, the longer bolts will penetrate the TEHCM case resulting in pressure codes, delayed engagement and poor performance.

4. In some cases, engine DTCs such as a P0300 series code can reflect transmission slip concerns. In most cases this can be traced back to a failing oil control valve on the cylinder head.

5. When a vehicle is having transmission and driveability issues, the transmission may not be at fault. It is very important to read and scan all modules of the vehicle. Be sure to have a full 12 V charge and a battery charger on the vehicle during these procedures. A drop as little as 0.2 V can result in communication concerns and false readings.

GM 6T70, 6T75: Shift Solenoid Control Function

GM Gen 1 6T70-6T75 control valve command function	Shift control solenoid (1) command status ON-OFF	Shift control solenoid (2) command status ON-OFF	Clutch pressure control (5) 1-2-3-4-clutch	Clutch pressure control (4) 2-6-clutch	Clutch pressure control (2) 3-5-reverse clutch	Clutch pressure control (3) 4-5-6-low re-verse clutch	Applied gear ratio
Park	ON	ON	OFF	OFF	OFF	ON	NA
Reverse	ON	OFF	OFF	OFF	ON	ON	2.88 direct
Neutral	ON	ON	OFF	OFF	OFF	ON	NA
1st auto stop (if equipped)	ON	ON	ON	OFF	OFF	ON	4.48 direct
Applied 1st	OFF	ON	ON	OFF	OFF	OFF	4.48 direct
Applied 2nd	OFF	ON	ON	ON	OFF	OFF	2.87 direct
Applied 3rd	OFF	ON	ON	OFF	ON	OFF	1.84 direct
Applied 4th	OFF	ON	ON	OFF	OFF	ON	1.41 direct
Applied 5th	OFF	ON	OFF	OFF	ON	ON	1.00 direct
Applied 6th	OFF	ON	OFF	ON	OFF	ON	0.74 OD

GM 6T70 / 6T75: Diagnostic Trouble Codes

Code	Reference
P0218	Trans fluid temp exceeds 270 degrees
P0562	Voltage in system found to be low < 11V
P0563	Voltage in system found to be high >18V
P0601	Read only memory found in TCM
P0602	Not programmed trans module
P0603	Memory reset long term
P0604	Random access memory
P0634	Over temperature TCM
P0667	Temperature sensor perf. TCM
P0668	Temperature sensor circuit low voltage
P0669	Temperature sensor circuit high voltage
P0703	Circuit brake pedal switch invalid signal
P0711	Trans fluid temp sensor perf.
P0712	Trans fluid temp sensor low voltage
P0713	Trans fluid temp sensor high voltage
P0716	Trans input speed sensor performance
P0717	Trans input speed sensor low voltage
P0719	Circuit brake pedal switch voltage low
P0722	Trans output speed sensor low voltage
P0723	Trans output speed sensor intermittent
P0724	Circuit brake pedal switch high voltage
P0729	6th gear incorrect ratio
P0731	1st gear incorrect ratio
P0732	2nd gear incorrect ratio
P0733	3rd gear incorrect ratio
P0734	4th gear incorrect ratio
P0735	5th gear incorrect ratio
P0736	Reverse gear incorrect ratio
P0741	Tcc clutch system stuck off
P0742	Tcc clutch system stuck on
P0751	Shift solenoid (1) valve stuck off
P0752	Shift solenoid (1) valve stuck on
P0756	Shift solenoid (1) valve stuck off
P0776	Solenoid (2) CPC stuck off
P0777	Solenoid (2) CPC stuck on
P0796	Solenoid (3) CPC stuck off
P0797	Solenoid (3) CPC stuck on
P0815	Switch circuit on upshift error
P0816	Switch circuit on downshift error
P0826	Switch circuit up/downshift error
P0842	Trans fluid pressure switch (1) low voltage
P0843	Trans fluid pressure switch (1) high voltage
P0851	Park-neutral switch low voltage
P0852	Park-neutral switch high voltage

GM 6T70 / 6T75: Diagnostic Trouble Codes

Code	Reference
P0872	Trans fluid pressure switch (3) low voltage
P0873	Trans fluid pressure switch (3) high voltage
P0877	Trans fluid pressure switch (4) low voltage
P0878	Trans fluid pressure switch (4) high voltage
P0961	System perf. Line pressure control solenoid
P0962	Line pressure control solenoid low voltage
P0963	Line pressure control solenoid high voltage
P0965	Solenoid (2) CPC system perf.
P0966	Solenoid (2) CPC low voltage
P0967	Solenoid (2) CPC high voltage
P0969	Solenoid (3) CPC system perf.
P0970	Solenoid (3) CPC low voltage
P0971	Solenoid (3) CPC high voltage
P0973	Shift solenoid (1) low voltage
P0974	Shift solenoid (1) high voltage
P0976	Shift solenoid (2) low voltage
P0977	Shift solenoid (2) high voltage
P0989	Trans fluid pressure switch (5) low voltage
P0990	Trans fluid pressure switch (5) high voltage
P1621	Long-term memory perf.
P1684	Temp sensor performance while power up
P1685	Temp sensor perf. while power up low voltage
P1686	Temp sensor perf. while power up high voltage
P1751	Valve 1 shift perf. select valve 2
P1825	Invalid range found mode switch
P1831	Driver 2# controls function of line pressure
P1832	Driver 2# controls function of line pressure
P1876	Up/down shift switch out of range drive 3
P1915	Mode switch starting in incorrect range
P2534	Ignition starter switch low voltage
P2714	Solenoid (4) CPC stuck off
P2715	Solenoid (4) CPC stuck on
P2719	Solenoid (4) CPC perf
P2720	Solenoid (4) CPC low voltage
P2721	Solenoid (4) CPC high voltage
P2723	Solenoid (5) CPC stuck off
P2724	Solenoid (5) CPC stuck on
P2728	Solenoid (5) CPC perf.
P2729	Solenoid (5) CPC low voltage
P2730	Solenoid (5) CPC high voltage
P2762	Torque convertor clutch solenoid perf.
P2763	Torque convertor clutch solenoid high voltage
P2764	Torque convertor clutch solenoid low voltage

GM TEHCM TROUBLESHOOTING: SOLENOID PERFORMANCE CONCERNS

A pressure solenoid stuck in either an "on" or "off" position, can sometimes indicate a potentially failed or malfunctioning TEHCM. However, there may be multiple components and underlying issues that can contribute to these conditions.

A faulty or failed brake light bulb due to incorrect voltage has been known to create shifting and communication concerns. A voltage drop of 0.6 V is enough to cause this issue.

If you are diagnosing a TEHCM showing DTC's for performance and drivability that are not circuit-related, performing a clean cycle is a proven method of corrective action and a great way to establish a baseline to address the issue.

Please see the "shift solenoid control function" section in this guide that corresponds to your transmission and application for proper solenoid readout and command status.

1. Begin by checking the fluid level specifications per the factory service manual for the transmission case and service if necessary.
2. Insert your factory scan tool and select "clean valve body". On certain scan tools this may be shown as "service clean function". This will send a 12 V signal command to all solenoids to self-flush by opening and pulsing on and off rapidly and clear any debris in the solenoid. IIf a Clean Cycle is not available, you can power the individual solenoid on and off manually via a solenoid command status test.
3. After this procedure is complete, road test the vehicle and reevaluate codes. If codes persist perform a line pressure test as follows:

Line pressure test procedure:

It is crucial that this detailed procedure be followed accurately. Please note that line pressure must be within five PSI of the pressure value shown in your factory service manual. If pressure varies greater than the specified PSI, the concern will likely be originating inside the case.

1. Insert a scan tool and start the engine. Inspect the transmission for proper level of the case fluid.
2. Using your scan tool scan the vehicle for DTCs. Inspect the manual linkage for accurate engagement. You can now turn the engine off.
3. Remove the test hole plug and insert your factory equivalent pressure gauge. You can now access the line pressure control solenoid through your factory scan tool.
4. For an accurate reading, the following procedure should be performed at least 3 times so uniform results can be read and to avoid costly down time and misdiagnosis.
   A. Start the vehicle engine and using the scan tool, increase/decrease line pressure by increments of 15 PSI. During this time, the tool will automatically command the increment values.
   B. Compare the pressure readings of the scan tool to the gauge inserted in the service port. If the pressure is varying more than five PSI, the issue is internal .

GM TEHCM TROUBLESHOOTING: SOLENOID PERFORMANCE CONCERNS -INTERNAL

A pressure solenoid stuck in either an "on" or "off" position off can sometimes indicate a potentially failed or malfunctioning TEHCM. However, there may be multiple components and underlying issues that can contribute to these conditions.

If you are diagnosing a TEHCM showing DTCs for performance and drivability that are not circuit-related, performing a clean cycle is a proven method of corrective action and a great way to establish a baseline to address the issue.

Please see the "shift solenoid control function" section in this guide that corresponds to your transmission and application for proper solenoid readout and command status.

Clean cycle procedure:

1. Begin by checking the front pump housing for loose bolts that can potentially back out of the housing and damage the oil filter and outer seals.
2. The line pressure valve can also become stuck or slow to respond.
3. Check the torque converter seal and front gear support. Inspect for damage on the flat fluid passage gasket and be sure the fluid tube is not damaged.
4. Inspect the upper and lower valve body. Sticking and faulty pressure regulator valves (upper valve body) or a leaking main gasket or separator plate(upper/lower valve body) can all contribute to pressure concerns which can lead to TCM valve issues.
5. Check the TCM for torn or damaged seals. Replace and repair components as necessary.

GM TEHCM SERVICE PROGRAMMING:

Prior to programming the newly remanufactured unit, there are a few important steps required to ensure a successful programming cycle.

1. **VERY IMPORTANT!** When using Dormanproducts.com to search by application you may notice that some applications will list more than one TEHCM for the same transmission model. Though both units would physically fit in the case and bolt to the valve body, the internal circuitry and programmer structure will differ. To prevent communication concerns, there are multiple tools to help you through the selection process:
   A. Review the OE part number cross-reference of original unit.
   B. Check the matching transmission broadcast code of the GM case (see GM broadcast code/OE identification in this guide).
   C. VIN verification: if listing is still unclear, please contact the Dorman Techline (800-868-5777) with your VIN for assistance.
2. Once you have determined you have the correct TEHCM, prior to installing the unit, check the mating pins on the TEHCM and vehicle side connector for bent or damaged pins. This quick tip can help communication issues.
3. Be sure to have a full 12 V charge and a battery charger on the vehicle during these procedures. A drop as little as 0.2 V can result in communication concerns and false readings.

   If you notice the voltage dropping on the vehicle, check the system for aftermarket accessories. Alarms, radio and performance programmers can all cause these types of concerns and should be removed or disabled during the programming sequence of a new module.
4. When using an AC Delco-based subscription service be sure to load the most updated software into the unit. When using the drop-down bar this will typically be displayed as the newest service part number in the listing.

If programming or communication concerns arise during installation, please contact the Dorman Techline (866-933-2911).

If using a RAP KIT by Drew-Tech, please see the Dorman Rap Kit procedure in service manual.

DORMAN REMOTE ASSIST PROGRAMMING / BY DREW-TECH

STEP 1: Please call Drew Technologies Customer Service at 844-REFLASH (844-733-5274) to schedule the programming session. This may take several hours depending on workload and demand. Please be sure to attach jumper cables from the vehicles 12 V battery to the corresponding positive and negative ports on the side of the RAP tool.

STEP 2: When contacted, plug the 110 V service plug into a power outlet and plug the OBD-II adapter into the diagnostic service port.

STEP 3: From this point Drew Technologies will flash the module with the newest available software.

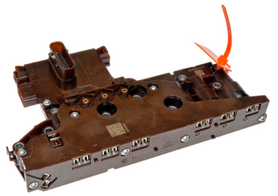
This flash is guaranteed by Dorman Products. If communication issues arise or trouble codes are present, please first check connection points on the TEHCM and vehicle harness. Bent, missing or even corroded pins can cause communication errors while programming the module. If problem persist, contact the Dorman Products Techline at 866-933-2911.

FORD MOTOR CO.

TCM/TEHCM SERVICE GUIDE

Application Coverage, Ford Motor Company





Dorman SKU #	Year Range and Transmission Fitment	Application Notes	Notes
609-021	04-05 Aviator 04-10 Explorer-Mountaineer 04-05 Thunderbird 04-06 LS 04-05 Aviator 05-10 Mustang 07-10 Explorer Sport Trac	5R55S	Programming not required
609-022	02-03 Explorer 02-03 Mountaineer 03 Aviator 03 Thunderbird 03 LS	5R55W, 5R55S	Programming not required
609-024	09-10 Explorer-Mountaineer-Sport Trac 09-11 Expedition-Navigator 2010 F150	6R60, 6R80	Must flash per factory service procedure
609-035	11-12 Explorer, 08-12 Taurus, 08-09 Taurus X, 08-09 Sable, 07-14 Edge, 16 Edge, 09-18 Flex, 17-18 Fusion, MKS 10-18, MKT 10-18, MKX 07-12, 18 Continental, 13-18 MKZ, 13-18 Police Interceptor, Sedan, SUV	6F50, 6F55	Must flash per factory service procedure
609-231	11-18 Fiesta, 12-18 Focus	DPS6	Must flash per factory service procedure and follow adaptive relearn
609-232	11-18 Fiesta, 12-18 Focus	DPS6	Must flash per factory service procedure and follow adaptive relearn

FORD MOTOR COMPANY DPS6: RELEARNING GUIDE

609-231/609-232

DPS6 Adaptive relearn procedure — requires ford IDS or compatible scan tool

1. Program the adaptive shift relearn.
2. Relearn the shift drum
3. The transmission range sensors can now be relearned
4. Perform clutch adapt cycle 1, and then clutch adapt cycle 2.
5. Once the above has been completed, the application will require a full drive cycle. This typically takes 20-50 miles or until monitors have been reset.
6. Tech Note: For complete installation instructions and orque specifications please refer to: https://static.dormanproducts.com/document/609-030_is.pdf
7. Failure to complete this procedure correctly can result in DTCs, no start, no movement, loss of power and/or engagement (see DPS6 troubleshooting).

FORD MOTOR COMPANY DPS6: PRELIMINARY TROUBLESHOOTING

609-231/609-232

Before deciding that an OE or aftermarket TCM is faulty, verify the concern through preliminary testing. Voltage drops in the 12V system can cause several issues. Check the battery and alternator.

A faulty or failed brake light bulb due to incorrect voltage has been known to create shifting and communication concerns. A voltage drop of 0.6 V is enough to cause this issue.

although the 2011-2015 Ford Focus and Ford Fiesta share the same transmission module, their respective software does vary slightly as does the diagnosis procedure. In some cases it will indeed be unavoidable to replace the module, while others the application may only need a factory re-flash followed by the adaptive relearn previously discussed.

FORD MOTOR COMPANY DPS6: REPLACING VS REPROGRAMMING

609-231/609-232

In some cases reprogramming of the software will be all that is necessary in correcting certain concerns such as a no start or lack of engagement. Note that trouble codes may or not be present in the application. This will NOT apply to Ford Focus models built after 11/6/15 up to 3/9/16.)

Ford Fiesta 10/27/2015 and earlier, and Ford Focus 11/5/2015 and earlier:

1. Verify area of concern if issue is intermittent, (loss of power, no start, loss of PRNDL, parking proximity sensors erratic)
2. If no codes are present, attempt to re-flash and reprogram unit and run through ford adaptive relearn procedure.
3. If codes U0100,U0101 or U1013 persist, please replace the TCM.

Ford Fiesta 10/28/2015 and newer:

1. Check system for DTC trouble codes (U0100, U0101, U1013 may be present)
2. Attempt to re-flash/reprogram with newest software available.
3. Run through Ford adaptive relearn procedure.

Ford Motor Co. 6F50, 6F55: Shift Solenoid Control Function

Ford Motor Co. 6f50-55 control valve command function	Shift control solenoid (1) command status on-off	Clutch pressure control (5) 1-2-3-4-clutch	Clutch pressure control (4) 2-6-clutch	Clutch pressure control (2) 3-5-reverse clutch	Clutch pressure control (3) 4-5-6-low reverse clutch	Applied gear ratio
Park	ON	OFF	OFF	OFF	ON	NA
Reverse	ON	OFF	OFF	ON	ON	2.88 direct
Neutral	ON	OFF	OFF	OFF	ON	NA
1st auto stop (if equipped)	ON	ON	OFF	OFF	ON	4.48 direct
Applied 1st	OFF	ON	OFF	OFF	OFF	4.48 direct
Applied 2nd	OFF	ON	ON	OFF	OFF	2.87 direct
Applied 3rd	OFF	ON	OFF	ON	OFF	1.84 direct
Applied 4th	OFF	ON	OFF	OFF	ON	1.41 direct
Applied 5th	OFF	OFF	OFF	ON	ON	1.00 direct
Applied 6th	OFF	OFF	ON	OFF	ON	0.74 OD

Ford Motor Co. 6F50/6F55: Diagnostic Trouble Codes	
Code	**Reference**
P0700	TCM mil illumination requested
P0703	Circuit brake pedal switch invalid signal
P0705	Trans range switch circuit
P0711	Trans fluid temp sensor perf.
P0712	Trans fluid temp sensor low voltage
P0713	Trans fluid temp sensor high voltage
P0716	Trans input speed sensor performance
P0717	Trans input speed sensor low voltage
P0722	Trans output speed sensor low voltage
P0723	Trans output speed sensor intermittent
P0741	TCC clutch system stuck off
P0742	TCC clutch system stuck on
P0751	Shift solenoid (1) valve stuck off
P0752	Shift solenoid (1) valve stuck on
P0756	Shift solenoid (1) valve stuck off
P0757	2/3 Solenoid valve perf. Loss of 3rd/4th gear
P0776	Solenoid (2) cpc stuck off
P0777	Solenoid (2) cpc stuck on
P0787	Down shift timing solenoid circuit voltage low
P0788	Down shift timing solenoid circuit voltage high
P0796	Solenoid (3) cpc stuck off
P0797	Solenoid (3) cpc stuck on
P0815	Switch circuit on upshift error
P0816	Switch circuit on downshift error
P0826	Switch circuit up/downshift error
P0842	Trans fluid pressure switch (1) low voltage
P0843	Trans fluid pressure switch (1) high voltage
P0850	Park-neutral switch circuit concern
P0851	Park-neutral switch low voltage
P0852	Park-neutral switch high voltage
P0856	TCS inhibited see: c0242
P0872	Trans fluid pressure switch (3) low voltage
P0873	Trans fluid pressure switch (3) high voltage
P0877	Trans fluid pressure switch (4) low voltage
P0878	Trans fluid pressure switch (4) high voltage
P0961	System perf. line pressure control solenoid
P0962	Line pressure control solenoid low voltage
P0963	Line pressure control solenoid high voltage
P0965	Solenoid (2) cpc system perf.
P0966	Solenoid (2) cpc low voltage
P0967	Solenoid (2) cpc high voltage

Ford Motor Co. 6F50/6F55: Diagnostic Trouble Codes	
Code	**Reference**
P0969	Solenoid (3) cpc system perf.
P0970	Solenoid (3) cpc low voltage
P0971	Solenoid (3) cpc high voltage
P0973	Shift solenoid (1) low voltage
P0974	Shift solenoid (1) high voltage
P0976	Shift solenoid (2) low voltage
P0977	Shift solenoid (2) high voltage
P0989	Trans fluid pressure switch (5) low voltage
P0990	Trans fluid pressure switch (5) high voltage
P1684	Temp sensor performance while power up
P1685	Temp sensor perf. while power up low voltage
P1686	Temp sensor perf. while power up high voltage
P1751	Valve 1 shift perf. select valve 2
P1808	Trans fluid pressure switch stuck off
P1809	Trans fluid solenoid switch stuck on
p1810	Trans fluid pressure switch circuit
p1811	Maximum adapt and long shift pattern
P1816	Trans fluid pressure switch show p/n while drive
P1818	Trans fluid pressure switch show drive while p/n
P1825	Invalid range found mode switch
P1831	Driver 2# controls function of line pressure
P1832	Driver 2# controls function of line pressure
P1876	Up/down shift switch out of range drive 3
P2544	Trans torque request circuit concern
P2610	Timer perf: ignition control module off
P2714	Solenoid (4) CPC stuck off
P2715	Solenoid (4) CPC stuck on
P2719	Solenoid (4) CPC perf
P2720	Solenoid (4) CPC low voltage
P2721	Solenoid (4) CPC high voltage
P2723	Solenoid (5) CPC stuck off
P2724	Solenoid (5) CPC stuck on
P2728	Solenoid (5) CPC perf.
P2729	Solenoid (5) CPC low voltage
P2730	Solenoid (5) CPC high voltage
P2762	Torque convertor clutch solenoid perf.
P2763	Torque convertor clutch solenoid high voltage
P2764	Torque convertor clutch solenoid low voltage
P2796	Aux trans. fluid pump relay control circuit

Application Coverage, Nissan		
Dorman SKU #	**Updated Applications Year Make Model Drive Type Transmission**	**Programming Notes**
609-250	2005 Nissan Frontier 4WD 4.0L RE505A Trans 2005 Nissan Pathfinder 4WD 4.0L RE505A Trans	Programming not required
609-251	2005 Nissan Frontier 2WD 4.0L RE505A Trans 2005 Nissan Xterra 2WD 4.0L RE505A Trans	Programming not required
609-252	2006 Nissan Pathfinder 4WD 4.0L RE505A Trans 2006 Nissan Xterra 4WD 4.0L RE505A Trans	Programming not required
609-253	2006 Nissan Frontier 2WD 4.0L RE505A Trans 2005 - 2007 Nissan Pathfinder 2WD 4.0L RE505A Trans 2006 - 2007 Nissan Xterra 2WD 4.0L RE505A Trans	Programming not required
609-254	2007 - 2008 Nissan Frontier 4WD 4.0L RE505A Trans 2007 - 2008 Nissan Xterra 4WD 4.0L RE505A Trans	Programming not required
609-255	2007 Nissan Frontier 2WD 4.0L RE505A Trans	Programming not required
609-256	2008 Nissan Pathfinder 4WD 4.0L RE505A Trans	Programming not required
609-257	2008 Nissan Pathfinder 2WD 4.0L RE505A Trans	Programming not required

NISSAN TCM RE505A: INSTALLATION GUIDE

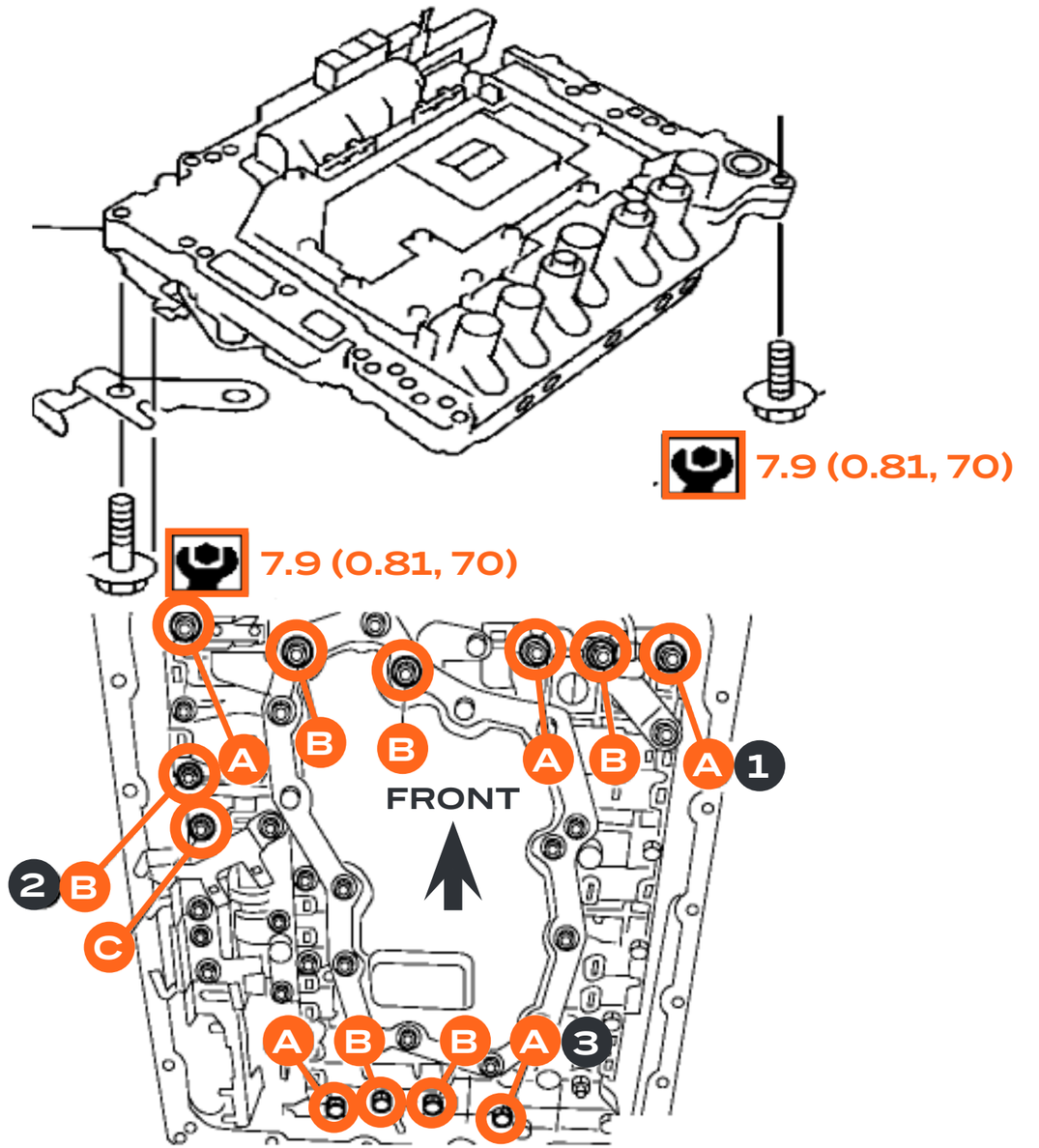
Installation Tips:

1. When removing the factory fluid temperature sensor, be sure to turn the alignment clips prior to tugging on the wire lead. Failure to do so can result in damage to the connector.

2. When removing the mounting bolts for the TCM to the main body, please note the different lengths of the bolts.
   - 42mm Quantity (5) see chart
   - 55mm Quantity (6) see chart
   - 40mm Quantity (1) see chart

Be sure to plug in the factory speed sensor prior to raising the new assembly. Failure to do so can result in drivability concerns, missing or lost gears and erratic shifting patterns.

TORQUE SPECIFICATIONS/BOLT LOCATION:



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