Manual Transmission - Y4A|Y4M

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Description and Operation

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. DESCRIPTION AND OPERATION
4.

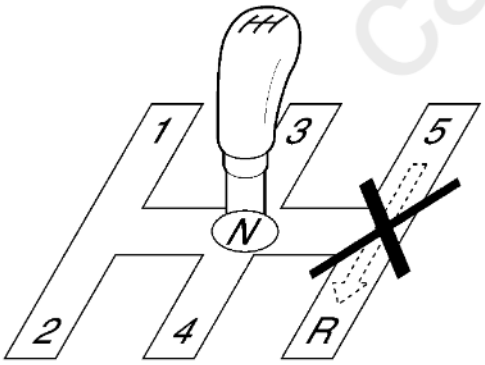
Transmission System Description and Operation

This 5-speed transmission assembly adopts the synchronized mesh type of 5 forward speed. The reverse speed gear is driven by sliding idle gear without synchronizer.

Reverse Gear Mis-Shift Preventing Mechanism

5th and reverse gear cam prevents the gear from directly being shifted from 5th to reverse when shifting to reverse from 5th. So, when shifting to reverse, be sure to shift to reverse from neutral position.

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In case of shifting to 5th gear, shift and select shaft rotates to right that shift and select lever arm fixes on the groove of 5th and reverse gear shift cam.

When shifting to reverse from 5th gear, shifting to reverse is impossible because 5th and reverse gear shift cam fixes on cam stopper case.

When shifting to reverse from neutral position between 5th and reverse, gear shift and select lever arm rotates to left and shifting is possible.

Differential

The differential is integrated with transmission case and installed on chassis together with the engine. It changes the direction of power and increase torque. The reduction gear is installed parallel to a counter shaft and is a helical gear type. The differential gear is a bevel gear type and is integrated with a reduction gear.

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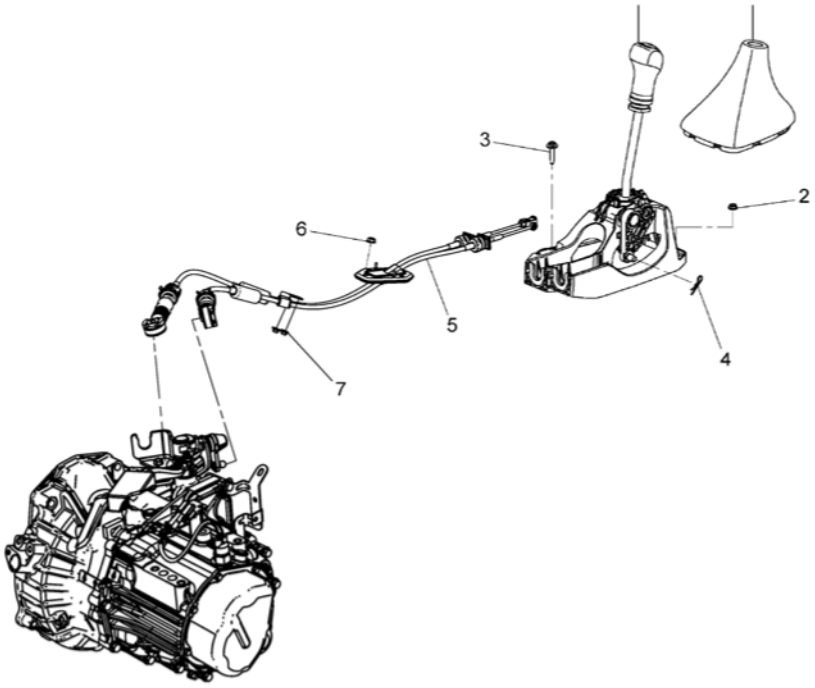
Component Locator

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. COMPONENT LOCATOR
4.

Manual Transmission Component Views

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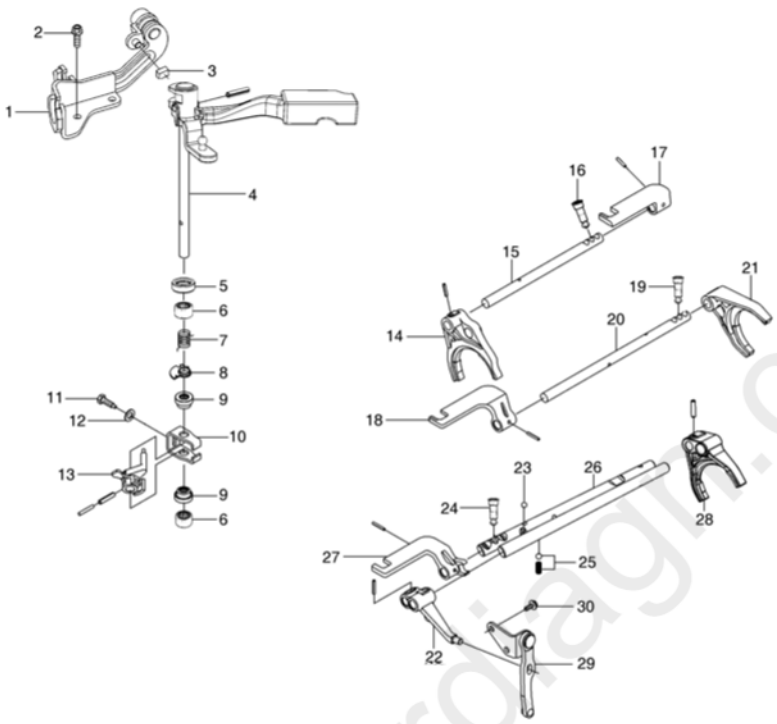


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- (1) Transmission Control
- (2) Nut
- (3) Bolt
- (4) Pin
- (5) Shift Lever and Selector Lever Cable
- (6) Nut
- (7) Nut

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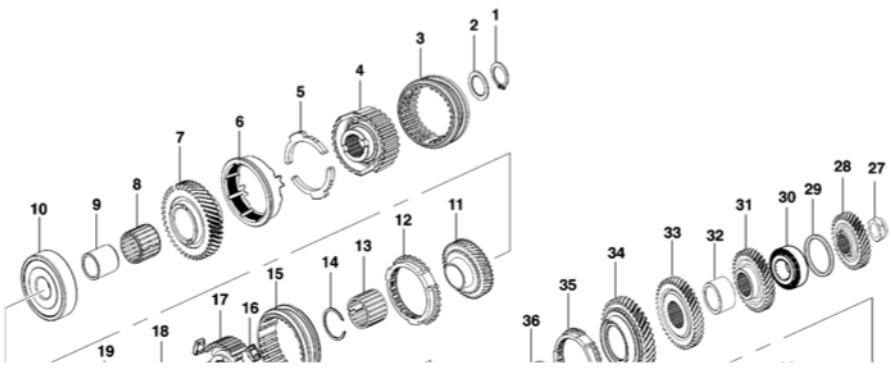


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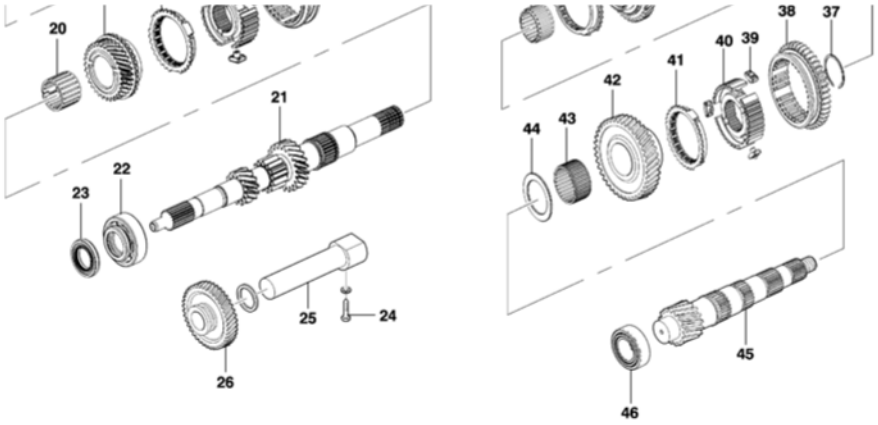
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- (1) Selector and Shift Lever Cable Bracket
- (2) Bolt
- (3) Selector Lever Bushing
- (4) Shift Control Lever Shaft
- (5) Shift Control Shaft Seal
- (6) Shift Control Shaft Bearing
- (7) Shift Shaft Detent Cam Spring
- (8) 5th-Reverse Inhibitor Cam
- (9) Shift Control Shaft Detent Spring
- (10) Shift Interlock Plate
- (11) Bolt
- (12) Gasket
- (13) Shift Control Lever
- (14) Low-Speed Gear Shift Fork
- (15) Low-Speed Gear Shift Shaft
- (16) Low-Speed Shift Shaft Detent
- (17) Low-Speed Shift Yoke
- (18) High-Speed Shift Yoke
- (19) High-Speed Shift Shaft Detent
- (20) High-Speed Shift Shaft
- (21) High-Speed Shift Fork
- (22) Reverse Shift Arm
- (23) 5th-Reverse Shift Ball
- (24) 5th-Reverse Shift Shaft Detent
- (25) Reverse Shift Shaft Guide Spring/Ball
- (26) 5th-Reverse Shift Shaft
- (27) 5th-Reverse Shift Yoke
- (28) 5th Shift Fork
- (29) Reverse Shift Lever
- (30) Bolt

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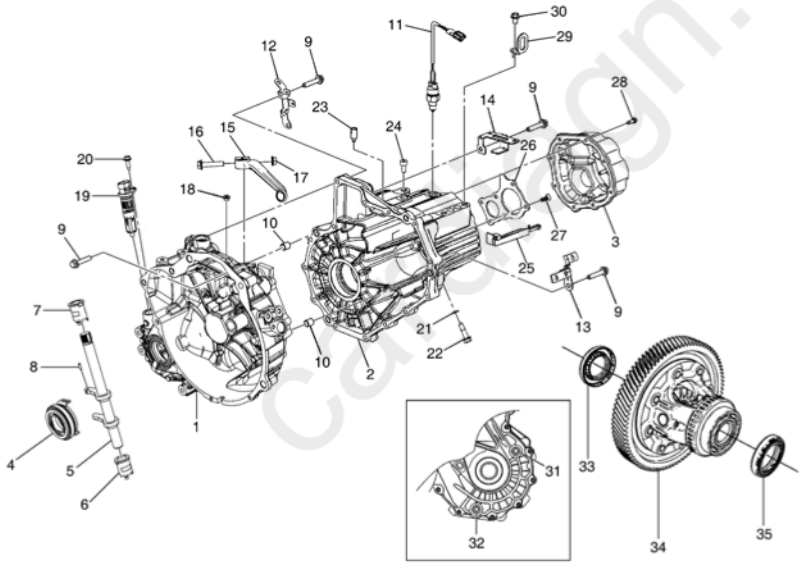


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- (1) Input Shaft Circlip
- (2) 5th Gear Synchronizer Hub Plate
- (3) 5th Gear Synchronizer Sleeve
- (4) 5th Gear Synchronizer Hub
- (5) 5th Gear/Reverse Synchronizer Lever
- (6) 5th Gear Synchronizer Ring
- (7) Input Shaft 5th Gear
- (8) Input Shaft 5th Gear Bearing
- (9) Input Shaft 5th Gear Spacer
- (10) Input Shaft Bearing â€“ Left
- (11) Input Shaft 4th Gear
- (12) 4th Gear Synchronizer Ring
- (13) Input Shaft 4th Gear Bearing
- (14) 3rd-4th Gear Synchronizer Circlip
- (15) 3rd-4th Gear Synchronizer Sleeve
- (16) 3rd-4th Gear Synchronizer Key Unit
- (17) 3rd-4th Gear Synchronizer Hub
- (18) 3rd Gear Synchronizer Ring
- (19) Input Shaft 3rd Gear
- (20) Input Shaft 3rd Gear Bearing
- (21) Input Shaft
- (22) Input Shaft Bearing â€“ Right
- (23) Input Shaft Oil Seal
- (24) Reverse Gear Shaft Bolt
- (25) Reverse Gear Shaft
- (26) Reverse Idle Gear
- (27) Countershaft Nut
- (28) Countershaft 5th Gear
- (29) Countershaft Bearing Shim
- (30) Countershaft Bearing â€“ Left
- (31) Countershaft 4th Gear
- (32) Countershaft 3rd-4th Gear Spacer
- (33) Countershaft 3rd Gear
- (34) Countershaft 2nd Gear
- (35) 2nd Gear Synchronizer Ring
- (36) Countershaft 2nd Gear Bearing
- (37) 1st-2nd Gear Synchronizer Circlip
- (38) 1st-2nd Gear Synchronizer Sleeve
- (39) 1st-2nd Gear Synchronizer Key Unit
- (40) 1st-2nd Gear Synchronizer Hub
- (41) 1st Gear Synchronizer Ring
- (42) Countershaft 1st Gear
- (43) Countershaft 1st Gear Bearing
- (44) Countershaft 1st Gear Spacer
- (45) Countershaft
- (46) Countershaft Bearing â€“ Right

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- (1) Transmission Case â€“ Right
- (2) Transmission Case â€“ Left
- (3) Transmission Side Cover
- (4) Clutch Release Bearing
- (5) Clutch Fork Shaft
- (6) Clutch Fork Shaft Bushing
- (7) Clutch Fork Shaft Bushing
- (8) Clutch Release Bearing Pin
- (9) Transmission Case Bolt
- (10) Transmission Case Dowel Pin
- (11) Backup Lamp Switch
- (12) Engine Wiring Harness Bracket
- (13) Oxygen Sensor Connector Bracket
- (14) Engine Wiring Harness Bracket
- (15) Clutch Pedal Arm
- (16) Clutch Pedal Arm Bolt
- (17) Clutch Pedal Arm Nut
- (18) Transmission Vent Hole Plug
- (19) Vehicle Speed Sensor Assembly
- (20) Vehicle Speed Sensor Assembly Bolt
- (21) Gasket
- (22) Reverse Idle Gear Shaft Bolt
- (23) Transmission Vent Hole Plug
- (24) Fluid Baffle Bolt
- (25) Oil Gutter
- (26) Left Case Plate
- (27) Left Case Plate Screw
- (28) Transmission Side Cover Bolt
- (29) Transmission Lifting Eye
- (30) Transmission Lifting Eye Bolt
- (31) Oil Fill Plug
- (32) Oil Drain Plug
- (33) Differential Oil Seal â€“ Left
- (34) Front Differential
- (35) Differential Oil Seal â€“ Right

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Diagnostic Information and Procedures

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC P0501 (LKY with MFM and FX3)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0501

Vehicle Speed Sensor Performance

Circuit/System Description

Vehicle speed information is provided to the engine control module by the vehicle speed sensor (VSS). The VSS consists of a magneto-resistive sensor mounted to the transmission case which interfaces with a rotor pressed onto the transmission output shaft. The magneto-resistive sensor contains a permanent magnet and a semiconductor plate to which ignition voltage is applied. As the output shaft spins, the rotor directs the field of the permanent magnet either toward or away from the plate. The VSS produces a frequency signal that is proportional to vehicle speed. The ECM converts the VSS signal to vehicle speed, displayed on the scan tool in kilometers per hour or miles per hour. The VSS also sends signal to some modules such as instrument panel cluster, radio, HVAC control module, or telematics communication interface control module if equipped.

Conditions for Running the DTC

- The engine speed is greater than 2â€‰496â€‰RPM.
- The mass air flow is greater than 179.75â€‰mg/stroke.
- The engine coolant temperature is greater than 70Â°C (158Â°F).
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

The ECM detects that the vehicle speed parameter is 0â€‰km/h (0â€‰MPH) for 25â€‰s.

Action Taken When the DTC Sets

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Conditions for Clearing the DTC

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Reference Information

Schematic Reference

Manual Transmission Schematics

Connector End View Reference

Master Electrical Component List

Electrical Information Reference

- Circuit Testing
- Connector Repairs

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Operate the vehicle while observing the scan tool Output Speed Sensor parameter. It should vary with the vehicle speed and match the speedometer indicator.
2.
   - **If the vehicle speed does not match with the speedometer indicator**
   - Refer to Circuit/System Testing.
3.
   - **If the vehicle speed does match the speedometer indicator**
4. Operate the vehicle within the conditions for running the DTC to verify the DTC does not set. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records.
5. Verify the DTC does not set.
6.
   - **If the DTC sets**
   - Refer to Circuit/System Testing.
7.
   - **If the DTC does not set**
8. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B115â€‰Vehicle Speed Sensor.
2. Test for less than 10â€‰â„¦ between the ground circuit terminalâ€‰A and ground.
3.
   - **If 10â€‰â„¦ or greater**
4.
   1. Test for less than 2â€‰â„¦ in the ground circuit end to end.
   2.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, repair the open/high resistance in the ground connection.
5.
   - **If less than 10â€‰â„¦**
6. Verify a test lamp illuminates between the B+ voltage circuit terminalâ€‰C and ground.
7.

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- **If the test lamp does not illuminate and the circuit fuse is good**

8.

1. Test for less than 2â€‰â„¦ in the B+ voltage circuit end to end.
2.
   - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
   - If less than 2â€‰â„¦, verify the fuse is not open and there is voltage at the fuse.

9.

- **If the test lamp does not illuminate and the circuit fuse is open**

10.

1. Test for infinite resistance between the B+ voltage circuit and ground.
2.
   - If less than infinite resistance, repair the short to ground on the circuit.
   - If infinite resistance, test all components connected to the B+ voltage circuit and replace as necessary.

11.

- **If the test lamp illuminates**

12. Note**:**

    You may need to disconnect all the modules that share the signal circuit in order to isolate the condition.

13. Ignition OFF, test for infinite resistance between the signal circuit terminalâ€‰B and ground.

14.

- **If less than infinite resistance**
- Repair the short to ground on the circuit.

15.

- **If infinite resistance**

16. Ignition OFF, disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
17. Test for less than 2â€‰â„¦ between the signal circuit terminalâ€‰B and terminalâ€‰68 X2 on the K20â€‰Engine Control Module harness connector.

18.

- If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
- If less than 2â€‰â„¦, replace the K20â€‰Engine Control module.

19. Ignition ON, test for less than 1â€‰V between the signal circuit terminalâ€‰B and ground.

20.

- If 1â€‰V or greater, repair the short to voltage on the circuit.

21.

- If less than 1â€‰V

22. Replace the B115â€‰Vehicle Speed Sensor.

Repair Instructions

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Perform the Diagnostic Repair Verification after completing the repair.

- Control Module References for ECM replacement, programming and setup.
- Vehicle Speed Sensor Replacement

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC P0501 (LMU and LC5 with MYX)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0501

Vehicle Speed Sensor Performance

Circuit/System Description

Vehicle speed information is provided to the engine control module by the vehicle speed sensor (VSS). The VSS consists of a magneto-resistive sensor mounted to the transmission case which interfaces with a rotor pressed onto the transmission output shaft. The magneto-resistive sensor contains a permanent magnet and a semiconductor plate to which ignition voltage is applied. As the output shaft spins, the rotor directs the field of the permanent magnet either toward or away from the plate. The VSS produces a frequency signal that is proportional to vehicle speed. The ECM converts the VSS signal to vehicle speed, displayed on the scan tool in kilometers per hour or miles per hour. The VSS also sends signal to some modules such as instrument panel cluster, radio, HVAC control module, or telematics communication interface control module if equipped.

Conditions for Running the DTC

- The engine speed is greater than 2â€‰496â€‰RPM.
- The mass air flow is greater than 179.75â€‰mg/stroke.
- The engine coolant temperature is greater than 70Â°C (158Â°F).
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

The ECM detects that the vehicle speed parameter is 0â€‰km/h (0â€‰MPH) for 25â€‰s.

Action Taken When the DTC Sets

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Conditions for Clearing the DTC

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Reference Information

Schematic Reference

Manual Transmission Schematics

Connector End View Reference

Master Electrical Component List

Electrical Information Reference

- Circuit Testing
- Connector Repairs

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Operate the vehicle while observing the scan tool Output Speed Sensor parameter. It should vary with the vehicle speed and match the speedometer indicator.
2.
   - **If the vehicle speed does not match with the speedometer indicator**
   - Refer to Circuit/System Testing.
3.
   - **If the vehicle speed does match the speedometer indicator**
4. Operate the vehicle within the conditions for running the DTC to verify the DTC does not set. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records.
5. Verify the DTC does not set.
6.
   - **If the DTC sets**
   - Refer to Circuit/System Testing.
7.
   - **If the DTC does not set**
8. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B115â€‰Vehicle Speed Sensor.
2. Test for less than 10â€‰â„¦ between the ground circuit terminalâ€‰A and ground.
3.
   - **If 10â€‰â„¦ or greater**
4.
   1. Test for less than 2â€‰â„¦ in the ground circuit end to end.
   2.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, repair the open/high resistance in the ground connection.
5.
   - **If less than 10â€‰â„¦**
6. Verify a test lamp illuminates between the B+ voltage circuit terminalâ€‰C and ground.
7.

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- **If the test lamp does not illuminate and the circuit fuse is good**

8.

1. Test for less than 2â€‰â„¦ in the B+ voltage circuit end to end.
2.
   - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
   - If less than 2â€‰â„¦, verify the fuse is not open and there is voltage at the fuse.

9.

- **If the test lamp does not illuminate and the circuit fuse is open**

10.

1. Test for infinite resistance between the B+ voltage circuit and ground.
2.
   - If less than infinite resistance, repair the short to ground on the circuit.
   - If infinite resistance, test all components connected to the B+ voltage circuit and replace as necessary.

11.

- **If the test lamp illuminates**

12. Note**:**

    You may need to disconnect all the modules that share the signal circuit in order to isolate the condition.

13. Ignition OFF, test for infinite resistance between the signal circuit terminalâ€‰B and ground.

14.

- **If less than infinite resistance**
- Repair the short to ground on the circuit.

15.

- **If infinite resistance**

16. Ignition OFF, disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
17. Test for less than 2â€‰â„¦ between the signal circuit terminalâ€‰B and terminalâ€‰40 X2 on the K20â€‰Engine Control Module harness connector.

18.

- If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
- If less than 2â€‰â„¦, replace the K20â€‰Engine Control module.

19. Ignition ON, test for less than 1â€‰V between the signal circuit terminalâ€‰B and ground.

20.

- If 1â€‰V or greater, repair the short to voltage on the circuit.

21.

- If less than 1â€‰V

22. Replace the B115â€‰Vehicle Speed Sensor.

Repair Instructions

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Perform the Diagnostic Repair Verification after completing the repair.

- Control Module References for ECM replacement, programming and setup.
- Vehicle Speed Sensor Replacement

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC P0501 (LEB with MXC)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0501

Vehicle Speed Sensor Performance

Circuit/System Description

The vehicle speed sensorâ€‰(VSS) is a 3â€‰wire sensor. The engine control moduleâ€‰(ECM) provides a 5â€‰volt reference circuit, low reference circuit and a signal circuit to the VSS. The VSS is a Hall Effect type sensor that produces a square wave output signal to the ECM. As vehicle speed increases, the output frequency of the VSS signal increases. The ECM converts the square wave output signal into km/h (MPH). The ECM supplies the VSS signal to other control modules on the vehicle through the serial data communications line.

Conditions for Running the DTC

- The engine speed is greater than 2â€‰496â€‰RPM.
- The mass air flow is greater than 179.75â€‰mg/stroke.
- The engine coolant temperature is greater than 70Â°C (158Â°F).
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

The ECM detects that the vehicle speed parameter is 0â€‰km/h (0â€‰MPH) for 25â€‰s.

Action Taken When the DTC Sets

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Conditions for Clearing the DTC

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Reference Information

Schematic Reference

Manual Transmission Schematics

Connector End View Reference

Master Electrical Component List

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections

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- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Operate the vehicle while observing the scan tool Output Speed Sensor parameter. It should vary with the vehicle speed and match the speedometer indicator.
2.
   - **If the vehicle speed does not match with the speedometer indicator**
   - Refer to Circuit/System Testing.
3.
   - **If the vehicle speed does match the speedometer indicator**
4. Operate the vehicle within the conditions for running the DTC to verify the DTC does not set. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records.
5. Verify the DTC does not set.
6.
   - **If the DTC sets**
   - Refer to Circuit/System Testing.
7.
   - **If the DTC does not set**
8. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the B115â€‰Transmission Output Shaft Speed Sensor harness connector.
2. Test for less than 5â€‰â„¦ between the low reference circuit terminalâ€‰A and ground.
3.
   - **If 5â€‰â„¦ or greater**
4.
   1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
   2. Test for less than 2â€‰â„¦ in the circuit end to end.
   3.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, replace the K20â€‰Engine Control Module.
5.
   - **If less than 5â€‰â„¦**
6. Ignition ON.
7. Test for 4.8â€“5.2â€‰V between the 5â€‰V reference circuit terminalâ€‰C and ground.

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8.

- **If less than 4.8â€‰V**

9.

1. Test for infinite resistance between the 5â€‰V reference circuit and ground.
2.
   - If less than infinite resistance, repair the short to ground on the circuit.
3.
   - If infinite resistance
4.
   1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
   2. Test for less than 2â€‰â„¦ in the 5â€‰V reference circuit end to end.
5.
   - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
   - If less than 2â€‰â„¦, replace the K20â€‰Engine Control Module.

10.

- **If greater than 5.2â€‰V**

11.

1. Disconnect the X2â€‰â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for less than 0.3â€‰V between the 5â€‰V reference circuit terminalâ€‰25â€‰X2 and ground.
3.
   - If 0.3â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 0.3â€‰V, replace the K20â€‰Engine Control Module.

12.

- **If between 4.8â€“5.2â€‰V**

13. Ignition OFF.
14. Test for less than 1â€‰V between the signal circuit terminalâ€‰B and ground.
15.

- **If 1â€‰V or greater**

16.

1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for less then 0.3â€‰V between the signal circuit terminalâ€‰40â€‰X2 and ground.
3.
   - If 0.3â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 0.3â€‰V, replace the K20â€‰Engine Control Module.

17.

- **If less than 1â€‰V**

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18. Ignition OFF, disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
19. Test for less than 2â€‰â„¦ between the signal circuit terminalâ€‰40â€‰X2 at the K20â€‰Engine Control Module and the signal circuit terminalâ€‰B at the B115â€‰Transmission Output Shaft Speed Sensor.
20.
    - **If 2â€‰â„¦ or greater**
    - Repair the open/high resistance in the circuit.
21.
    - **If less than 2â€‰â„¦**
22. Test for infinite resistance between the signal circuit terminalâ€‰B and ground at the B115â€‰Transmission Output Shaft Speed Sensor.
23.
    - **If less than infinite resistance**
    - Repair the short to ground on the circuit.
24.
    - **If infinite resistance**
25. Replace the B115â€‰Transmission Output Shaft Speed Sensor.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Control Module References for ECM replacement, programming and setup.
- Vehicle Speed Sensor Replacement

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. DIAGNOSTIC INFORMATION AND PROCEDURES
4.

DTC P0501 (LKY with MFM without FX3)

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0501

Vehicle Speed Sensor Performance

Circuit/System Description

The vehicle speed sensorâ€‰(VSS) is a 3â€‰wire sensor. The engine control moduleâ€‰(ECM) provides a 5â€‰volt reference circuit, low reference circuit and a signal circuit to the VSS. The VSS is a Hall Effect type sensor that produces a square wave output signal to the ECM. As vehicle speed increases, the output frequency of the VSS signal increases. The ECM converts the square wave output signal into km/h (MPH). The ECM supplies the VSS signal to other control modules on the vehicle through the serial data communications line.

Conditions for Running the DTC

- The engine speed is greater than 2â€‰496â€‰RPM.
- The mass air flow is greater than 179.75â€‰mg/stroke.
- The engine coolant temperature is greater than 70Â°C (158Â°F).
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

The ECM detects that the vehicle speed parameter is 0â€‰km/h (0â€‰MPH) for 25â€‰s.

Action Taken When the DTC Sets

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Conditions for Clearing the DTC

DTCâ€‰P0501 is a Typeâ€‰B DTC.

Reference Information

Schematic Reference

Manual Transmission Schematics

Connector End View Reference

Master Electrical Component List

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections

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- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Operate the vehicle while observing the scan tool Output Speed Sensor parameter. It should vary with the vehicle speed and match the speedometer indicator.
2.
   - **If the vehicle speed does not match with the speedometer indicator**
   - Refer to Circuit/System Testing.
3.
   - **If the vehicle speed does match the speedometer indicator**
4. Operate the vehicle within the conditions for running the DTC to verify the DTC does not set. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records.
5. Verify the DTC does not set.
6.
   - **If the DTC sets**
   - Refer to Circuit/System Testing.
7.
   - **If the DTC does not set**
8. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the B115â€‰Transmission Output Shaft Speed Sensor harness connector.
2. Test for less than 5â€‰â„¦ between the low reference circuit terminalâ€‰A and ground.
3.
   - **If 5â€‰â„¦ or greater**
4.
   1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
   2. Test for less than 2â€‰â„¦ in the circuit end to end.
   3.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, replace the K20â€‰Engine Control Module.
5.
   - **If less than 5â€‰â„¦**
6. Ignition ON.
7. Test for 4.8â€“5.2â€‰V between the 5â€‰V reference circuit terminalâ€‰C and ground.

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8.

- **If less than 4.8â€‰V**

9.

1. Test for infinite resistance between the 5â€‰V reference circuit and ground.
2.
   - If less than infinite resistance, repair the short to ground on the circuit.
3.
   - If infinite resistance
4.
   1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
   2. Test for less than 2â€‰â„¦ in the 5â€‰V reference circuit end to end.
5.
   - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
   - If less than 2â€‰â„¦, replace the K20â€‰Engine Control Module.

10.

- **If greater than 5.2â€‰V**

11.

1. Disconnect the X2â€‰â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for less than 0.3â€‰V between the 5â€‰V reference circuit terminalâ€‰61 and ground.
3.
   - If 0.3â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 0.3â€‰V, replace the K20â€‰Engine Control Module.

12.

- **If between 4.8â€“5.2â€‰V**

13. Ignition OFF.
14. Test for less than 1â€‰V between the signal circuit terminalâ€‰B and ground.
15.

- **If 1â€‰V or greater**

16.

1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for less then 0.3â€‰V between the signal circuit terminalâ€‰51â€‰X2 and ground.
3.
   - If 0.3â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 0.3â€‰V, replace the K20â€‰Engine Control Module.

17.

- **If less than 1â€‰V**

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18. Ignition OFF, disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
19. Test for less than 2â€‰â„¦ between the signal circuit terminalâ€‰51â€‰X2 at the K20â€‰Engine Control Module and the signal circuit terminalâ€‰B at the B115â€‰Transmission Output Shaft Speed Sensor.
20.
    - **If 2â€‰â„¦ or greater**
    - Repair the open/high resistance in the circuit.
21.
    - **If less than 2â€‰â„¦**
22. Test for infinite resistance between the signal circuit terminalâ€‰B and ground at the B115â€‰Transmission Output Shaft Speed Sensor.
23.
    - **If less than infinite resistance**
    - Repair the short to ground on the circuit.
24.
    - **If infinite resistance**
25. Replace the B115â€‰Transmission Output Shaft Speed Sensor.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Control Module References for ECM replacement, programming and setup.
- Vehicle Speed Sensor Replacement

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DTC P080A

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: Diagnostic System Check - Vehicle
- Review the description of Strategy Based Diagnosis: Strategy Based Diagnosis
- An overview of each diagnostic category can be found here: Diagnostic Procedure Instructions

DTC Descriptor

Clutch Pedal Position (CPP) Not Learned

Circuit/System Description

If the learned position is not stored in the control module K20 DTC P080Ats.

Conditions for Running the DTC

Ignition = On

Frequency the DTC runs = Continuously - After the running conditions are met

Conditions for Setting the DTC

Clutch Pedal Position = Not Learned

Actions Taken When the DTC Sets

DTCs listed in the DTC Descriptor Category = Type C> DTC

Engine Cranking = Disabled

Conditions for Clearing the DTC

DTCs listed in the DTC Descriptor Category = Type C> DTC

Reference Information

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References

Circuit/System Verification

1. Ignition >> On / Vehicle >> In Service Mode
2. Perform the scan tool learn/reset function: Clutch Pedal Position Learn
3. Verify the DTC does not set.
4.
    - **If the DTC sets**
    - Replace the component: K20 Engine Control Module
5.

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- **If the DTC does not set**

6. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: Diagnostic Repair Verification

For control module replacement, programming, and setup refer to: Control Module References

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2. MANUAL TRANSMISSION - Y4A/Y4M
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DTC P0830

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptor

DTC P0830

Clutch Pedal Position (CPP) Sensor Performance

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Operating Conditions: Ignition ON, clutch pedal must transition between the Active and Inactive positions.				
Clutch Start Switch Signal	P0830	P0830	P0830	â€”

Circuit/System Description

The clutch start switch is a normally open switch. When the ignition is ON, and the clutch pedal is depressed, the clutch start switch will close, supplying B+ on the clutch start switch signal circuit to the engine control module. When the clutch pedal is released, the clutch start switch opens, resulting in zero voltage on the clutch start switch signal circuit. The ECM continuously monitors the voltage on the clutch start switch circuit.

Conditions for Running the DTC

No vehicle speed sensor DTCs P0502 or P0503.

Conditions for Setting the DTC

The ECM detects a short to B+ on the clutch pedal switch circuit when the clutch pedal is released.

Action Taken When the DTC Sets

- DTCâ€‰P0830 is a Typeâ€‰C DTC.
- The ECM disables cruise control.

Conditions for Clearing the DTC

DTCâ€‰P0830 is a Typeâ€‰C DTC.

Diagnostic Aids

The battery must be fully charged. Refer to Battery Inspection/Test.

Reference Information

Schematic Reference

Manual Transmission Schematics

Connector End View Reference

Master Electrical Component List

Description and Operation

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Transmission System Description and Operation

Electrical Information Reference

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

K20 Engine Control Module: Scan Tool Information for scan tool information

Circuit/System Verification

1. Start the engine, with the clutch pedal depressed. The engine should start and run.
2.
   - **If the engine does not start**
   - Refer to Circuit/System Testing.
3.
   - **If the engine starts**
4. Operate the vehicle within the conditions for running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.
5.
   - **If the DTC resets**
   - Refer to Circuit/System Testing.
6.
   - **If the DTC does not reset**
7. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the clutch start switch harness connector, ignition ON.
2. Verify that a test lamp illuminates between the B25â€‰Clutch Pedal Position Switch ignition circuit terminalâ€‰1 and ground.
3.
   - **If the test lamp does not illuminate and the circuit fuse is good**
4.
   1. Ignition OFF.
   2. Test for less than 2â€‰â„¦ in the ignition circuit end to end.
   3.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.
      - If less than 2â€‰â„¦, verify the fuse is OK and there is voltage at the fuse.

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5.

- **If the test lamp does not illuminate and the circuit fuse is open**

6.

1. Ignition OFF.
2. Test for infinite resistance between the ignition circuit and ground.
3.
   - If less than infinite resistance, repair the short to ground on the circuit.
   - If infinite resistance, test all components connected to the fuse and replace as necessary.

7.

- **If the test lamp illuminates**

8. Test for less than 1â€‰V between the B25â€‰Clutch Pedal Position Switch ignition circuit terminalâ€‰2 and ground.

9.

- **If 1â€‰V or greater**

10.

1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for less than 0.3â€‰V between the signal circuit terminalâ€‰55â€‰X2 and ground.
3.
   - If 0.3â€‰V or greater, repair the short to voltage on the circuit.
   - If less than 0.3â€‰V, replace the K20â€‰Engine Control Module.

11.

- **If less than 0.3â€‰V**

12. Test for infinite resistance between the signal circuit terminalâ€‰2 and ground.

13.

- **If less than infinite resistance**

14.

1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
2. Test for infinite resistance between the signal circuit terminalâ€‰55â€‰X2 and ground.
3.
   - If less than infinite resistance
   - Repair the short to ground on the circuit.
   - If infinite resistance
4.
   1. Disconnect the X2â€‰harness connector at the K20â€‰Engine Control Module.
   2. Test for less than 2â€‰â„¦ in the signal circuit end to end.
   3.
      - If 2â€‰â„¦ or greater, repair the open/high resistance in the circuit.

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        - If less than 2â€‰â„¦, replace the K20â€‰Engine Control Module.

15.

    - **If infinite resistance**

16. Replace the B25â€‰Clutch Pedal Position Switch.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair.

- Clutch Pedal Position Sensor Replacement
- Control Module References

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Symptoms - Manual Transmission

Symptom List

In order to troubleshoot problems, refer to the troubleshooting procedures in the following list.

- Transmission Shifts Hard
- Transmission Gear Clash When Shifting Gears
- Transmission Noisy
- Transmission Jumps Out of Gear
- Transmission Fluid Leak Diagnosis

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1. **TRANSMISSION**
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Transmission Shifts Hard

Possible Cause	Action
Worn synchronizer ring	Replace the synchronizer ring.
Worn synchronizer sleeve or gear	Replace the sleeve or gear.
Bent or deformed shift shaft	Replace the shift shaft.
Excessive free travel of all gears in axial direction	Replace the gear.
Worn bearings on input shaft or counter shaft	Replace the bearing.
Distorted or broken clutch disc	Replace the clutch disc.
Damaged pressure plate	Replace the pressure plate.

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Transmission Gear Clash When Shifting Gears

Cause	Actions
Bent or distorted shift shaft or shift fork	Replace the shift shaft or shift fork.

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Transmission Noisy

Many noises that appear to come from the transmission may actually originate with other sources such as the tires, road surfaces, wheel bearings, or the engine and exhaust system.

Identify the cause of any noise before attempting to repair the clutch, the transmission, or their related linkages.

To verify suspected transmission noises:

1. Select a smooth, level asphalt road to reduce tire and resonant body noise.
2. Drive the vehicle far enough to warm up all the lubricants thoroughly.
3. Record the speed and the gear range of the transmission when the noise occurs.
4. Check for noises with the vehicle stopped, but with the engine running.
5. Determine if the noise occurs while the vehicle operates in the following:
6.
    - Driveâ€"Under a light acceleration or a heavy pull.
    - Floatâ€"Maintaining a constant speed with a light throttle on a level road.
    - Coastâ€"With the transmission in gear and the throttle partly or fully closed.
    - All of the above

Checking Bearing Noise

Differential Side Bearing Noise

Differential side bearing noise and wheel bearing noise can be confused easily. Since side bearings are pre-loaded, a differential side bearing noise should not diminish much when the differential/transmission is run with the wheels off the ground.

Wheel Bearing Noise

Wheel bearings produce a rough growl or grating sound that will continue when the vehicle is coasting and the transmission is in NEUTRAL. Since wheel bearings are not pre-loaded, a wheel bearing noise should diminish considerably when the wheels are off the ground.

Checks	Actions
Insufficient Lubricant	Supply the lubricant.
Worn Input Shaft Gear	Replace the gear.
Worn Bearings on the Input Shaft Gears	Replace the bearing.
Worn Clutch Release Bearing	Replace the clutch release bearing.
Worn Bearings on the Input Shaft or Counter Shaft	Replace the bearing.
Worn Input Shaft or Counter Shaft Gear	Replace the gear.
Worn or Damaged Synchronizer Ring	Replace the synchronizer ring.
Worn or Damaged Synchronizer Sleeve	Replace the synchronizer sleeve.
Worn Differential Gear or Bearing	Replace the gear or bearing.
Worn or Damaged Synchronizer Ring in the selected GearRange	Replace the synchronizer ring.
Worn or Damaged Gear in the selected Gear Range	Replace the gear.
Worn or Damaged Bearing in the selected Gear Range	Replace the bearing.

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Transmission Jumps Out of Gear

Checks	Actions
Worn Shift Fork	Replace the shift fork.
Worn Synchronizer Sleeve or Gear	Replace the sleeve or gear.
Worn Bearings on Input Shaft or Counter Shaft	Replace the bearing.
Excessive Back-Lash of Gear	Adjust the back-lash of gear.

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Transmission Fluid Leak Diagnosis

Checks	Actions
Damaged Gasket, Oil Seal or O-ring	Replace the gasket, oil seal or O-ring.
Worn or Damaged Gear in the Selected Gear Range	Replace the gear.
Worn or Damaged Bearing in the Selected Gear Range	Replace the synchronizer ring and related components.

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Specifications

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Fastener Specifications

Single Use Non-Threaded Fasteners/Components

Application
Note: All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.
1st-2nd Gear Shift Fork Pin
1st-2nd Gear Shift Yoke Pin
3rd-4th Gear Shift Fork Pin
3rd-4th Gear Shift Yoke Pin
5th Gear Shift Fork Pin
5th Gear Shift Yoke Pin
Input Shaft Circlip
Input Shaft Oil Seal
Left Front Wheel Drive Shaft Oil Seal
Reverse Gear Shift Arm pin
Right Front Wheel Drive Shaft Oil Seal
Shift Control Lever Inner and Outer Pin
Shift Control Shaft Seal
Shift Shaft Detent

Single Use Threaded Fastener/Component Tightening Specifications

Application	Specification
	Metric (English)
Note: All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.	
Countershaft 5th Gear Nut	70â€‰N-m (52â€‰lbâ€‰ft)
Left Case Plate Screw	9â€‰N-m (80â€‰lbâ€‰in)
Oil Drain Plug	25â€‰N-m (18â€‰lbâ€‰ft)
Oil Fill Plug	25â€‰N-m (18â€‰lbâ€‰ft)

Reusable Threaded Fastener Tightening Specifications

Application	Specification
	Metric (English)
Note: All fasteners listed in this table can be reused after removal.	
Backup Light Switch	17â€‰N-m (13â€‰lbâ€‰ft)
Clutch Housing Lower Plate Bolt	10â€‰N-m (89â€‰lbâ€‰in)
Left Case Bolt	19â€‰N-m (14â€‰lbâ€‰ft)
Reverse Gear Shift Lever Bolt	23â€‰N-m (17â€‰lbâ€‰ft)
Reverse Idle Gear Shaft Bolt	33â€‰N-m (24â€‰lbâ€‰ft)
Right Case Bolt	19â€‰N-m (14â€‰lbâ€‰ft)
Selector and Shift Lever Cable Bracket Bolt	23â€‰N-m (17â€‰lbâ€‰ft)
Shift Interlock Bolt	23â€‰N-m (17â€‰lbâ€‰ft)
Shift Lever and Selector Lever Cable Grommet Nut	6â€‰N-m (53â€‰lbâ€‰in)
Shift Lever and Selector Lever Cable Underbody Bracket Nut	6â€‰N-m (53â€‰lbâ€‰in)
Side Cover Bolt	10â€‰N-m (89â€‰lbâ€‰in)
Transmission Control Bolt and Nut	6â€‰N-m (53â€‰lbâ€‰in)
Transmission Lower Bolt	61â€‰N-m (45â€‰lbâ€‰ft)
Transmission Lower Nut	61â€‰N-m (45â€‰lbâ€‰ft)
Transmission Mount Body Bolt â€“ Left Side	50â€‰N-m (37â€‰lbâ€‰ft)

Application	Specification
	Metric (English)
Transmission Mount Bolt â€“ Left Side	95â€‰N-m (70â€‰lbâ€‰ft)
Transmission Mount Bracket Bolt â€“ Left Side	
• First Pass:	50â€‰N-mâ€‰ (37â€‰lbâ€‰ft)
• Final Pass:	Plus 30â€“45â€‰degrees
Transmission Mount Bracket Bolt â€“ Rear Side	60â€‰N-m (44â€‰lbâ€‰ft)
Transmission Mount Frame Bolt â€“ Rear Side	100â€‰N-m (74â€‰lbâ€‰ft)
Transmission Mount Nut â€“ Left Side	95â€‰N-m (70â€‰lbâ€‰ft)
Transmission Upper Bolt	61â€‰N-m (45â€‰lbâ€‰ft)
Vehicle Speed Sensor Bolt	9â€‰N-m (80â€‰lbâ€‰in)

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Approximate Fluid Capacities

Application	Specification	
	Metric	**English**
Transmission Fluid Capacity		
• Y4M HD	2.1â€‰liters	2.21â€‰quarts
• Y4M SHD	2.0â€‰liters	2.11â€‰quarts

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Manual Transmission Specifications

General Specifications

Application	Specification			
Transmission Type	Y4M HD			
Transmission RPO Code	MFM	MYX		
Engine Type	1.2L DOHC	1.2L DOHC		
Final Drive RPO Code	FX2	FWL	FYB	FX2
1stâ€‰Gear Ratio	3.538	3.636	3.636	3.636
2ndâ€‰Gear Ratio	1.864	1.952	2.050	1.952
3rdâ€‰Gear Ratio	1.242	1.242	1.242	1.242
4thâ€‰Gear Ratio	0.974	0.974	0.974	0.974
5thâ€‰Gear Ratio	0.780	0.780	0.780	0.780
Reverse Gear Ratio	3.385	3.385	3.385	3.385
Final Drive Ratio	3.905	4.444	4.211	3.905
Oil Capacity	2.1â€‰â€‰Liters (2.21â€‰quarts)			
Oil Grade	XGP SAE 75W85W			
Manufacturer	GMK			
Service Specifications				
• Distance between the Synchronizer Sleeve and the Shift Fork â€“ Limit	1.0â€‰mm (0.039â€‰in)			
• Distance between the Synchronizer Sleeve and the Shift Fork â€“ Standard	0.2â€“0.6â€‰mm (0.008â€“0.024â€‰in)			
• Thickness of the Shift Fork End for the Low-Speed â€“ 1-2 Gear â€“ Shift Fork â€“ Limit	8.56â€‰mm (0.337â€‰in)			
• Thickness of the Shift Fork End for the Low-Speed â€“ 1-2 Gear â€“ Shift Fork â€“ Standard	8.7â€‰mm (0.343â€‰in)			
• Thickness of the Shift Fork End for the High-Speed â€“ 3-4 Gear â€“ Shift Fork â€“ Limit	7.66â€‰mm (0.302â€‰in)			
• Thickness of the Shift Fork End for the High-Speed â€“ 3-4 Gear â€“ Shift Fork â€“ Standard	7.8â€‰mm (0.307â€‰in)			
• Shift Fork End for the 5 Gear Shift Fork â€“ Limit	7.66â€‰mm (0.302â€‰in)			
• Shift Fork End for the 5 Gear Shift Fork â€“ Standard	7.8â€‰mm (0.307â€‰in)			

Distance Between the Transmission Case Surface and the Bearing Outer Race

Measurement	Shim Thickness
0.33â€“0.37â€‰mm (0.0130â€“0.0146â€‰in)	0.55â€‰mm (0.0217â€‰in)
0.38â€“0.42â€‰mm (0.0147â€“0.0165â€‰in)	0.60â€‰mm (0.0236â€‰in)
0.43â€“0.47â€‰mm (0.0169â€“0.0185â€‰in)	0.65â€‰mm (0.0256â€‰in)
0.48â€“0.52â€‰mm (0.0189â€“0.0205â€‰in)	0.70â€‰mm (0.0276â€‰in)
0.53â€“0.57â€‰mm (0.0209â€“0.0224â€‰in)	0.75â€‰mm (0.0295â€‰in)
0.58â€“0.62â€‰mm (0.0228â€“0.0244â€‰in)	0.80â€‰mm (0.0315â€‰in)
0.63â€“0.67â€‰mm (0.0248â€“0.0264â€‰in)	0.85â€‰mm (0.0335â€‰in)
0.68â€“0.72â€‰mm (0.0268â€“0.0283â€‰in)	0.90â€‰mm (0.0354â€‰in)
0.73â€“0.77â€‰mm (0.0287â€“0.0303â€‰in)	0.95 mm (0.0374 in)
0.78â€“0.82â€‰mm (0.0307â€“0.0323â€‰in)	1.00â€‰mm (0.0394â€‰in)
0.83â€“0.87â€‰mm (0.0327â€“0.0343â€‰in)	1.05â€‰mm (0.0413â€‰in)
0.88â€“0.92â€‰mm (0.0346â€“0.0362â€‰in)	1.10â€‰mm (0.0433â€‰in)
0.93â€“0.97â€‰mm (0.0366â€“0.0382â€‰in)	1.15â€‰mm (0.0453â€‰in)
0.98â€“1.02â€‰mm (0.0386â€“0.0402â€‰in)	1.20â€‰mm (0.0472â€‰in)

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Measurement	Shim Thickness
1.03â€“1.07â€‰mm (0.0406â€“0.0421â€‰in)	1.25â€‰mm (0.0492â€‰in)

Related Part Information

Part Name	Catalog Name	Part Code
Manual Transmission	TRANSMISSION PKG,MAN	0099Y
Manual Transmission	TRANSMISSION,MAN	0100A
Manual Transmission	TRANSMISSION,MAN	0100B
Manual Transmission	TRANSMISSION,MAN (ACDELCO)	0100C
Manual Transmission	TRANSMISSION,MAN(SERV PARTIAL)	0100D
Manual Transmission	TRANSAXLE,MAN	0429Y
Manual Transmission	TRANSAXLE,MAN	0429Z
Manual Transmission	TRANSAXLE,MAN(2.66 RATIO)	0430A
Manual Transmission	TRANSAXLE,MAN(2.80 RATIO)	0432A
Manual Transmission	TRANSAXLE,MAN(2.96 RATIO)	0433A
Manual Transmission	TRANSAXLE,MAN(2.97 RATIO)	0434A
Manual Transmission	TRANSAXLE,MAN (3.044 RATIO)	0434H
Manual Transmission	TRANSAXLE,MAN (3.095 RATIO)	0434M
Manual Transmission	TRANSAXLE,MAN (3.09 RATIO)	0434N
Manual Transmission	TRANSAXLE,MAN (3.10 RATIO)	0434P
Manual Transmission	TRANSAXLE,MAN (3.11 RATIO)	0434Q
Manual Transmission	TRANSAXLE,MAN(3.19 RATIO)	0435A
Manual Transmission	TRANSAXLE,MAN (3.261 RATIO)	0438A
Manual Transmission	TRANSAXLE,MAN (3.31 RATIO)	0444A
Manual Transmission	TRANSAXLE,MAN(3.32 RATIO)	0445A
Manual Transmission	TRANSAXLE,MAN	0450A
Manual Transmission	TRANSAXLE,MAN(3.35 RATIO)	0451A
Manual Transmission	TRANSAXLE,MAN (3.42 RATIO)	0457A
Manual Transmission	TRANSAXLE,MAN (3.421 RATIO)	0457H
Manual Transmission	TRANSAXLE,MAN(3.43 RATIO)	0458A
Manual Transmission	TRANSAXLE,MAN(3.45 RATIO)	0460A
Manual Transmission	TRANSAXLE,MAN(3.47 RATIO)	0462A
Manual Transmission	TRANSAXLE,MAN(3.54 RATIO)	0463A
Manual Transmission	TRANSAXLE,MAN(3.55 RATIO)	0464A
Manual Transmission	TRANSAXLE,MAN(3.57 RATIO)	0465A
Manual Transmission	TRANSAXLE,MAN(3.58 RATIO)	0466A
Manual Transmission	TRANSAXLE,MAN (3.59 RATIO)	0466B
Manual Transmission	TRANSAXLE,MAN(3.61 RATIO)	0470A
Manual Transmission	TRANSAXLE,MAN (3.611 RATIO)	0470H
Manual Transmission	TRANSAXLE,MAN(3.63 RATIO)	0473A
Manual Transmission	TRANSAXLE,MAN(3.65 RATIO)	0475A
Manual Transmission	TRANSAXLE,MAN(3.67 RATIO)	0477A
Manual Transmission	TRANSAXLE,MAN(3.72 RATIO)	0477F
Manual Transmission	TRANSAXLE,MAN(3.73 RATIO)	0477G
Manual Transmission	TRANSAXLE,MAN(3.74 RATIO)	0477H
Manual Transmission	TRANSAXLE,MAN (3.76 RATIO)	0477J
Manual Transmission	TRANSAXLE,MAN(3.77 RATIO)	0477K
Manual Transmission	TRANSAXLE,MAN (3.824 RATIO)	0479L
Manual Transmission	TRANSAXLE,MAN(3.82 RATIO)	0479Z
Manual Transmission	TRANSAXLE,MAN(3.83 RATIO)	0480A
Manual Transmission	TRANSAXLE,MAN(3.84 RATIO)	0480B
Manual Transmission	TRANSAXLE,MAN (3.89 RATIO)	0480G
Manual Transmission	TRANSAXLE,MAN(3.91 RATIO)	0484A

Partdiagram.com

Part Name	Catalog Name	Part Code
Manual Transmission	TRANSAXLE,MAN(3.92 RATIO)	0485A
Manual Transmission	TRANSAXLE,MAN (3.93 RATIO)	0486A
Manual Transmission	TRANSAXLE,MAN(3.94 RATIO)	0487A
Manual Transmission	TRANSAXLE,MAN(3.95 RATIO)	0487B
Manual Transmission	TRANSAXLE,MAN(4.05 RATIO)	0487Z
Manual Transmission	TRANSAXLE,MAN(4.06 RATIO)	0488A
Manual Transmission	TRANSAXLE,MAN (4.063 RATIO)	0488G
Manual Transmission	TRANSAXLE,MAN(4.10 RATIO)	0490A
Manual Transmission	TRANSAXLE,MAN (4.105 RATIO)	0490B
Manual Transmission	TRANSAXLE,MAN(4.11 RATIO)	0491A
Manual Transmission	TRANSAXLE,MAN(4.12 RATIO)	0492A
Manual Transmission	TRANSAXLE,MAN (4.13 RATIO)	0492B
Manual Transmission	TRANSAXLE,MAN(4.17 RATIO)	0492X
Manual Transmission	TRANSAXLE,MAN(4.18 RATIO)	0493A
Manual Transmission	TRANSAXLE,MAN(4.19 RATIO)	0493C
Manual Transmission	TRANSAXLE,MAN (4.20 RATIO)	0493D
Manual Transmission	TRANSAXLE,MAN (4.22 RATIO)	0493F
Manual Transmission	TRANSAXLE,MAN (4.235 RATIO)	0493G
Manual Transmission	TRANSAXLE,MAN (4.26 RATIO)	0493J
Manual Transmission	TRANSAXLE,MAN (4.263 RATIO)	0493K
Manual Transmission	TRANSAXLE,MAN (4.27 RATIO)	0493L
Manual Transmission	TRANSAXLE,MAN(4.29 RATIO)	0494A
Manual Transmission	TRANSAXLE,MAN(4.31 RATIO)	0494C
Manual Transmission	TRANSAXLE,MAN (4.33 RATIO)	0494E
Manual Transmission	TRANSAXLE,MAN (4.357 RATIO)	0494F
Manual Transmission	TRANSAXLE,MAN(4.39 RATIO)	0494G
Manual Transmission	TRANSAXLE,MANUAL (4.41 RATIO)	0494J
Manual Transmission	TRANSAXLE,MAN (4.444 RATIO)	0494K
Manual Transmission	TRANSAXLE,MAN (4.45 RATIO)	0494N
Manual Transmission	TRANSAXLE,MAN (4.47 RATIO)	0494P
Manual Transmission	TRANSAXLE,MAN (4.625 RATIO)	0494Q
Manual Transmission	TRANSAXLE,MAN(4.53 RATIO)	0495A
Manual Transmission	TRANSAXLE,MAN (4.56 RATIO)	0495D
Manual Transmission	TRANSAXLE,MAN (4.64 RATIO)	0495G
Manual Transmission	TRANSAXLE,MAN (4.78 RATIO)	0496A
Manual Transmission	TRANSAXLE,MAN(4.87 RATIO)	0497A
Manual Transmission	TRANSMISSION KIT,MAN(W/BRG,WA & BALL KIT)	X0005
Manual Transmission	TRANSMISSION KIT,MAN(SERVICE OVERHAUL)	X0009
Manual Transmission	TRANSMISSION PKG,MAN	SJ338

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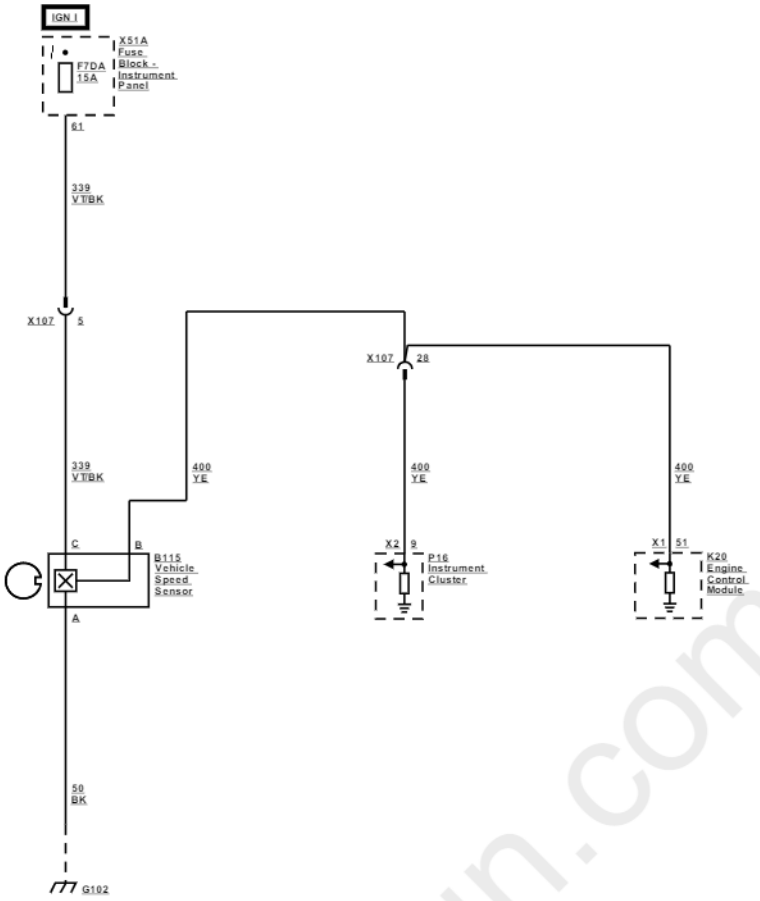
Schematic and Routing Diagrams

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Manual Transmission Schematics

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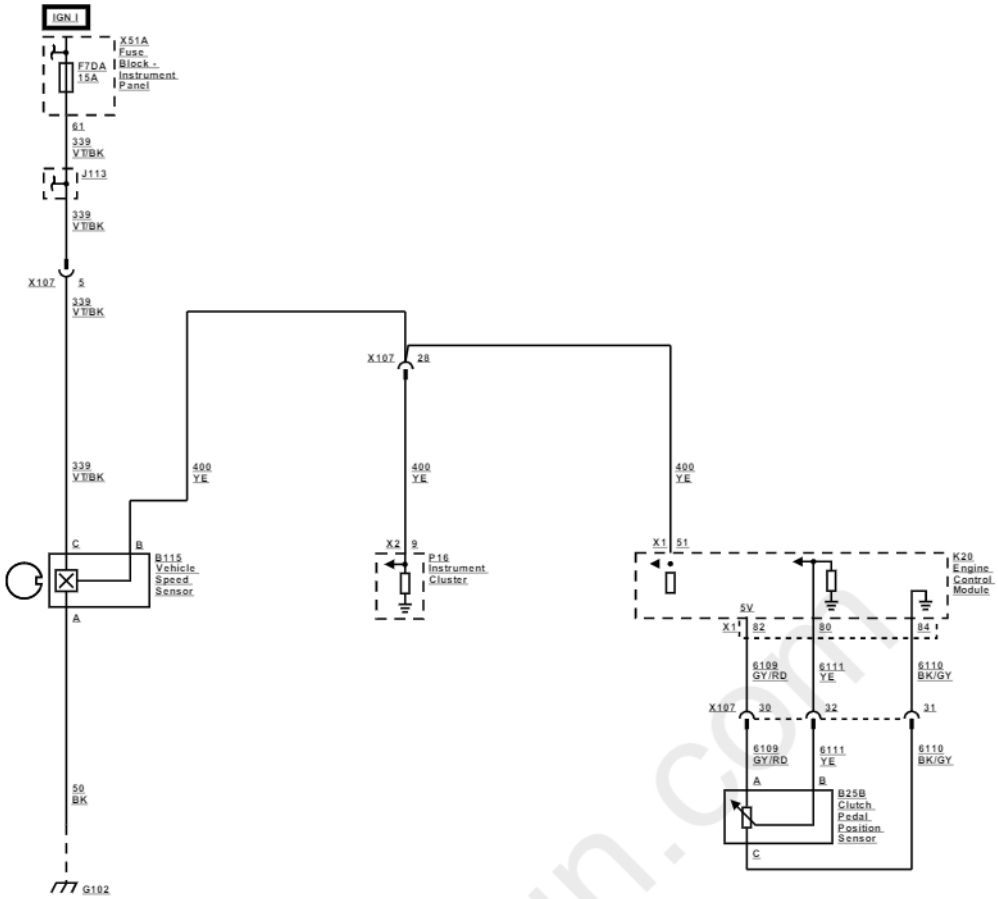
Manual Transmission (MFM)



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Manual Transmission (MYX)



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Special Tools and Equipment

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Special Tools

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Repair Instructions - On Vehicle

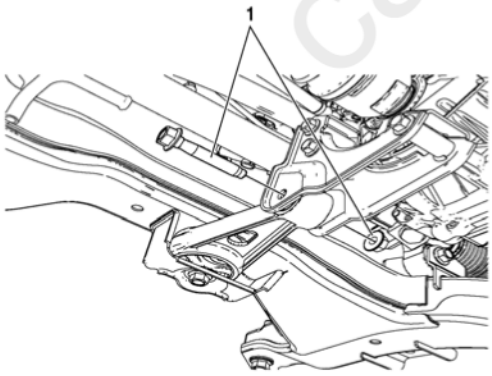
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Rear Mount Bracket Replacement

Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
3. Using a suitable jack stand, support the rear of the powertrain.

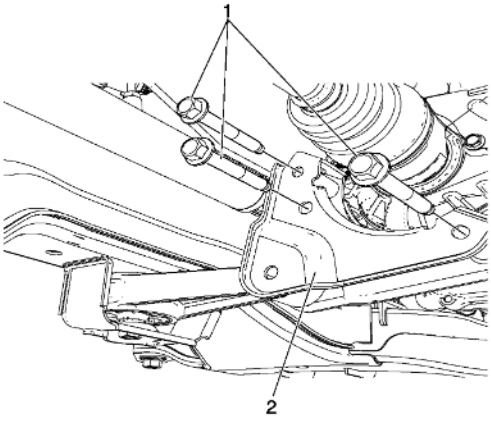


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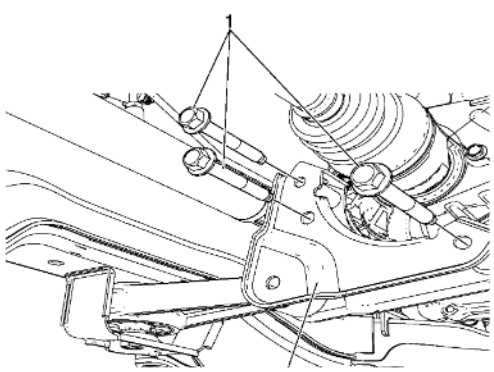
5. Remove the transmission bracket mount to mount through bolt and nutâ€‰(1).

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6. Click here for full size
7. Remove the transmission mount bracket boltsâ€‰(1).
8. Remove the transmission mount bracketâ€‰(2).

Installation Procedure



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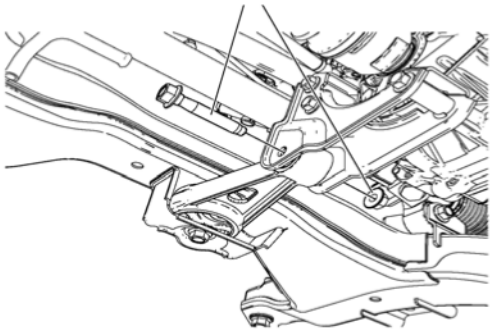


1. Click here for full size
2. Install the transmission mount bracketâ€‰(2).
3. Caution:

   Refer to Fastener Caution.
4. Install the transmission mount bracket bolts (1), and tighten to 60â€‰N-m (44â€‰lbâ€‰ft).

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5. Click here for full size
6. Install the transmission bracket mount to mount through bolt and nut (1) and tighten to 80â€‰ N-m (59â€‰ lbâ€‰ft).
7. Remove the jack stand.
8. Install the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
9. Lower the vehicle.

Related Part Information

Part Name	Catalog Name	Part Code
Transmission Rear Mount Bracket	BRACKET,TRANS RR MT	2292A
Transmission Rear Mount Bracket	BRACKET,TRANS RR MT	2292B
Transmission Rear Mount Frame Side Bracket	BRACKET,TRANS RR MT FRM SI	2297B
Transmission Rear Mount Bracket	BRACKET,TRANSAXLE RR MT	2402B

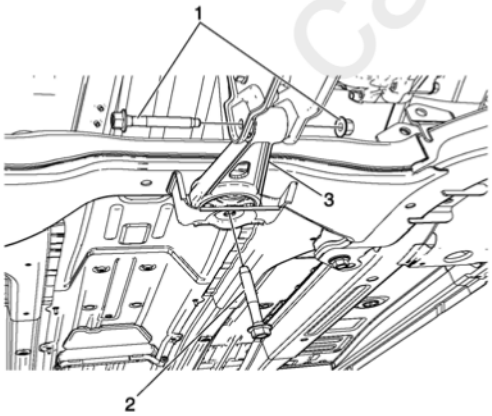
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Rear Mount Replacement

Removal Procedure

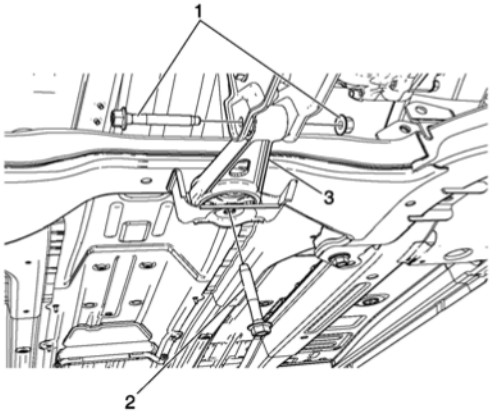
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
3. Using a suitable jack stand, support the rear of the powertrain.



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4. Click here for full size
5. Remove the transmission bracket mount to mount through bolt and nutâ€‰(1).
6. Remove the transmission mount to frame boltâ€‰(2).
7. Remove the transmission mountâ€‰(3).

Installation Procedure



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1. Click here for full size
2. Install the transmission mountâ€‰(3).
3. Caution:

   Refer to Fastener Caution.
4. Install the transmission mount to frame boltâ€‰(2) and tighten to 100â€‰N-m (74â€‰ lbâ€‰ft).
5. Install the transmission bracket mount to mount through bolt and nutâ€‰(1) and tighten to 80â€‰ N-m (59â€‰lbâ€‰ft).
6. Remove the jack stand.
7. Install the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
8. Lower the vehicle.

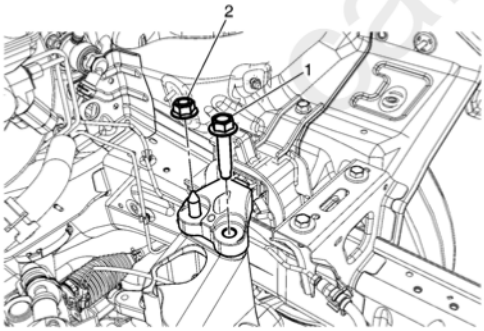
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Mount Replacement - Left Side

Removal Procedure

1. Remove the battery tray. Refer to Battery Tray Replacement.
2. Install the engine support fixture. Refer to Engine Support Fixture.

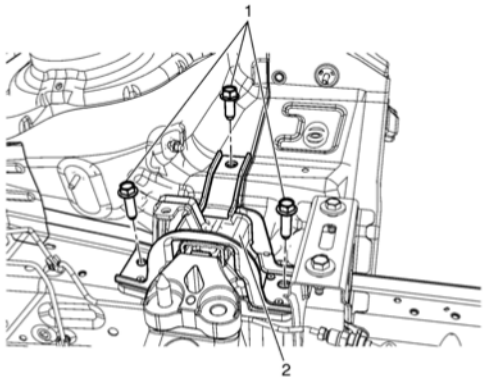


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3.
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4. Remove the left transmission mount boltâ€‰(1) and nutâ€‰(2) from the transmission mount bracket.

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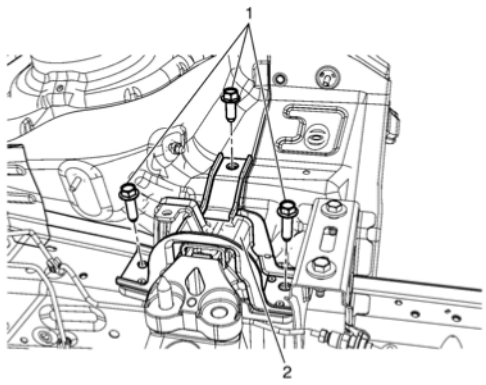


5.
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6. Remove the left transmission mount to body boltsâ€‰(1).
7. Remove the transmission mountâ€‰(2) from the vehicle.

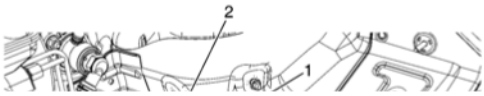
Installation Procedure

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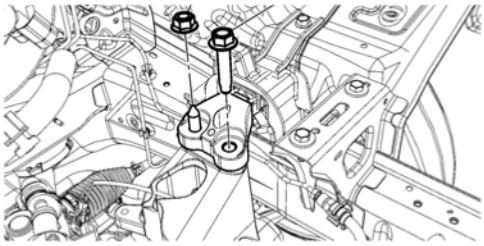


1. Click here for full size
2. Install the transmission mountâ€‰(2) to the vehicle.
3. Caution:

   Refer to Fastener Caution.
4. Install the transmission mount to body boltsâ€‰(1) and tighten to 50â€‰N-m (37â€‰lbâ€‰ft).



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5. Click here for full size
6. Install the left transmission mount boltâ€‰(1) and nutâ€‰(2) to transmission mount bracket and tighten to 95â€‰N-m (70â€‰lbâ€‰ft).
7. Remove the engine support fixture. Refer to Engine Support Fixture.
8. Install the battery tray. Refer to Battery Tray Replacement.

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Mount Replacement - Left Side (with CH-49290)

Special Tools

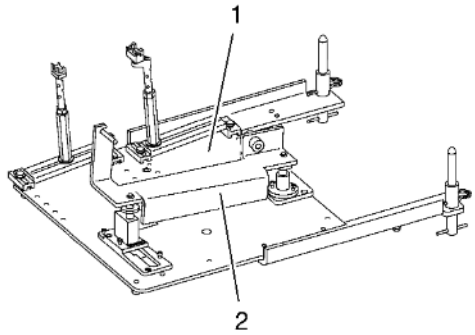
- *CH-904* Base Frame
- *CH-49290* Engine Support Tool

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the battery tray. Refer to Battery Tray Replacement.

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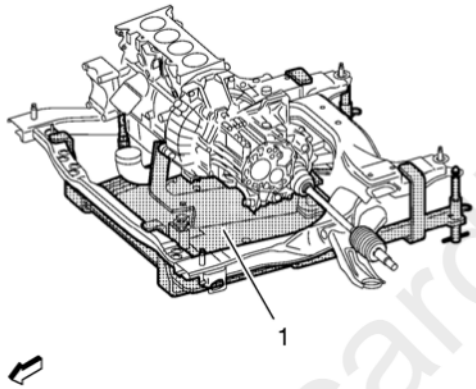
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2. [Click here for full size]
3. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

4. Assemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

5. Install the torque supportâ€‰(2) to the engine.
6. Support the *CH-904* base frame on a jack.
7. Support the *CH-49290* support tool on the *CH-904* base frame.



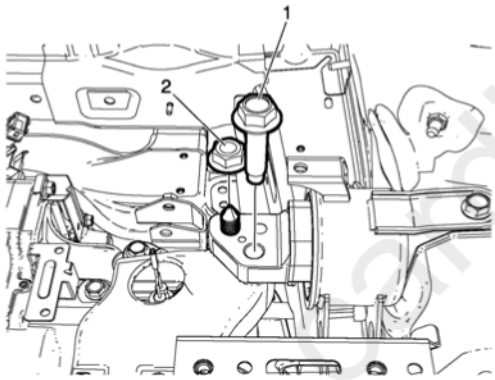
8. Click here for full size

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9. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

10. Install the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.



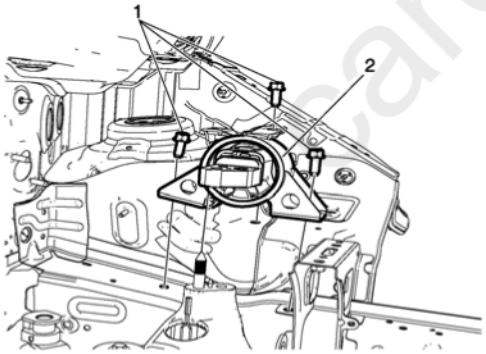
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11.
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12. Remove the left transmission mount boltâ€‰(1) from the transmission mount bracket.

13. Remove the left transmission mount nutâ€‰(2) from the transmission mount bracket.

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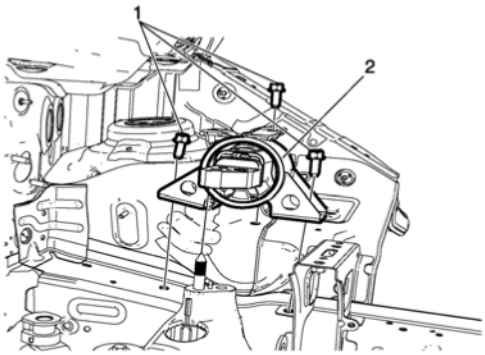


14.
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15. Remove the left transmission mount to body boltsâ€‰(1).
16. Remove the transmission mountâ€‰(2) from the vehicle.

Installation Procedure

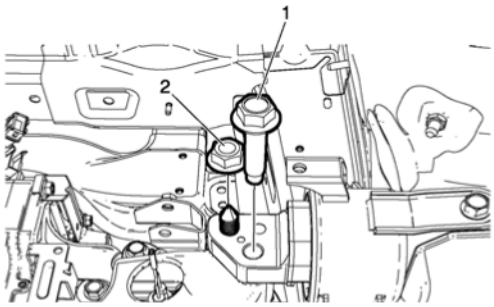
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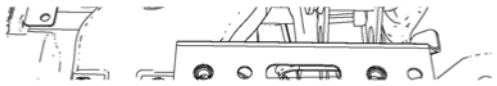


1. Click here for full size
2. Install the transmission mountâ€‰(2) to the vehicle.
3. Caution:

   Refer to Fastener Caution.
4. Install the transmission mount to body boltsâ€‰(1) and tighten to 50â€‰N-mâ€‰(37â€‰lbâ€‰ft).

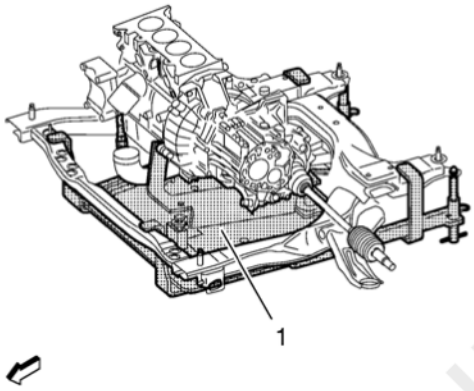
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5. Click here for full size
6. Install the left transmission mount nutâ€‰(2) onto the transmission mount bracket and tighten to 95N-m (70 lb ft).
7. Install the left transmission mount boltâ€‰(1) onto the transmission mount bracket and tighten to 95N-m (70 lb ft).

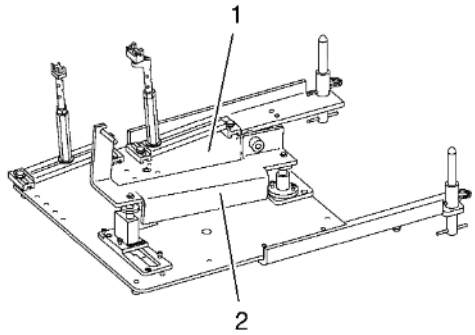
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8. [Click here for full size]

9. Remove the *CH-49290* support toolâ€‰(1).
10. Remove the *CH-49290* support tool from the *CH-904* base frame.
11. Remove the *CH-904* base frame from the jack.

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12. Click here for full size
13. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

14. Disassemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

15. Remove the torque supportâ€‰(2) from the engine.
16. Install the battery tray. Refer to Battery Tray Replacement.

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Mount Replacement - Left Side (with CH-49290)

Special Tools

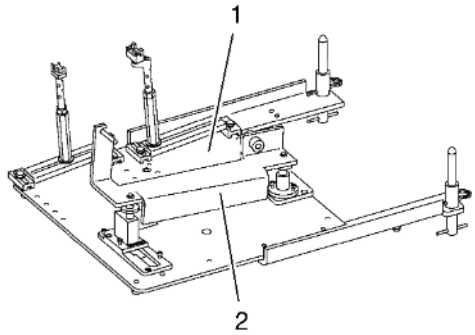
- *CH-904* Base Frame
- *CH-49290* Engine Support Tool

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the battery tray. Refer to Battery Tray Replacement.

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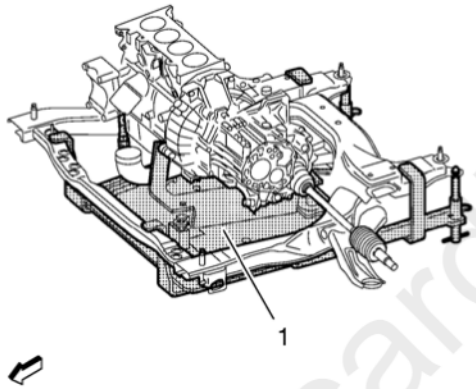
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2. [Click here for full size]
3. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

4. Assemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

5. Install the torque supportâ€‰(2) to the engine.
6. Support the *CH-904* base frame on a jack.
7. Support the *CH-49290* support tool on the *CH-904* base frame.



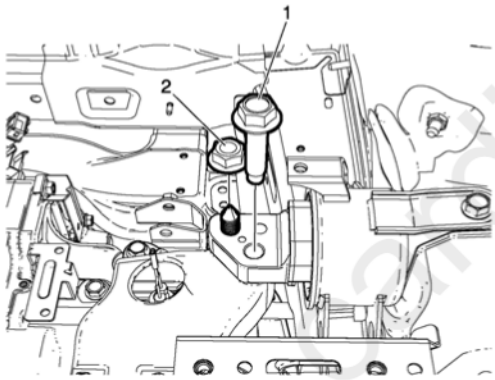
8. Click here for full size

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9. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

10. Install the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.



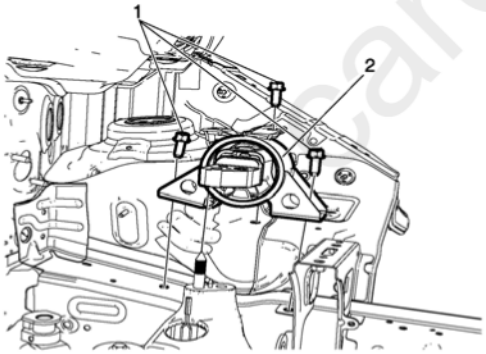
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11.
Click here for full size

12. Remove the left transmission mount boltâ€‰(1) from the transmission mount bracket.

13. Remove the left transmission mount nutâ€‰(2) from the transmission mount bracket.

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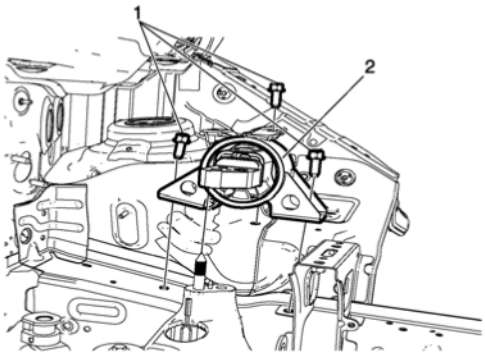


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15. Remove the left transmission mount to body boltsâ€‰(1).
16. Remove the transmission mountâ€‰(2) from the vehicle.

Installation Procedure

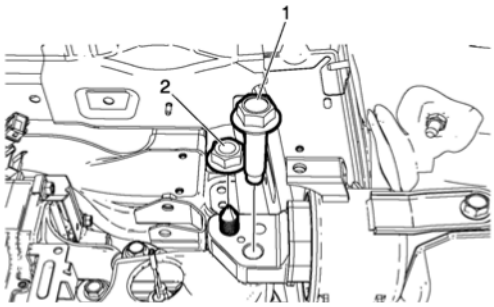
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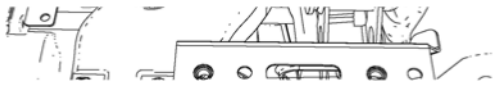


1. Click here for full size
2. Install the transmission mountâ€‰(2) to the vehicle.
3. Caution:

   Refer to Fastener Caution.
4. Install the transmission mount to body boltsâ€‰(1) and tighten to 50â€‰N-mâ€‰(37â€‰lbâ€‰ft).

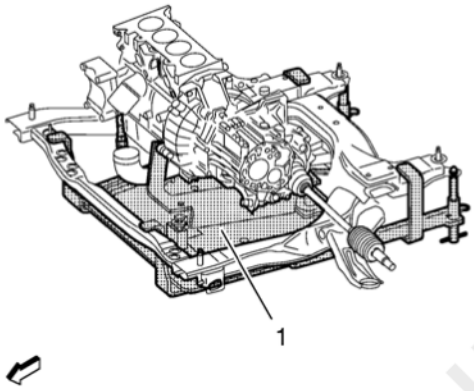
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5. Click here for full size
6. Install the left transmission mount nutâ€‰(2) onto the transmission mount bracket and tighten to 95N-m (70 lb ft).
7. Install the left transmission mount boltâ€‰(1) onto the transmission mount bracket and tighten to 95N-m (70 lb ft).

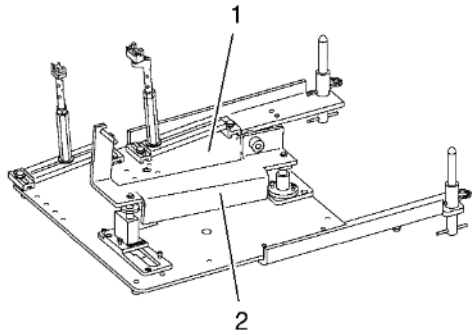
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8. [Click here for full size]

9. Remove the *CH-49290* support toolâ€‰(1).
10. Remove the *CH-49290* support tool from the *CH-904* base frame.
11. Remove the *CH-904* base frame from the jack.

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12. Click here for full size
13. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

14. Disassemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

15. Remove the torque supportâ€‰(2) from the engine.
16. Install the battery tray. Refer to Battery Tray Replacement.

Related Part Information

Part Name	Catalog Name	Part Code
Automatic Transmission	TRANSMISSION,AUTO	0050A
Automatic Transmission	TRANSMISSION,AUTO (SERVICE)	0050B
Automatic Transmission	TRANSMISSION,AUTO (ACDELCO)	0050C
Automatic Transmission	TRANSMISSION,AUTO	0050D
Automatic Transmission	TRANSMISSION,AUTO(SERV)	0050E
Automatic Transmission	TRANSMISSION,AUTO(FOR RPR)	0050F
Automatic Transmission	TRANSMISSION,AUTO (W/O PROP SHF)	0050G
Manual Transmission	TRANSMISSION PKG,MAN	0099Y
Manual Transmission	TRANSMISSION,MAN	0100A
Manual Transmission	TRANSMISSION,MAN	0100B
Manual Transmission	TRANSMISSION,MAN (ACDELCO)	0100C
Manual Transmission	TRANSMISSION,MAN(SERV PARTIAL)	0100D
Automatic Transmission	TRANSAXLE,AUTO (SERVICE)	0326A
Automatic Transmission	TRANSAXLE,AUTO (ACDELCO)	0326B
Automatic Transmission	TRANSAXLE,AUTO	0326C
Automatic Transmission	TRANSAXLE,AUTO	0326D
Automatic Transmission	TRANSAXLE,AUTO(VAR RATIO)	0326G
Automatic Transmission	TRANSMISSION,AUTO (ELEK RATIO SELECT)	0326H
Automatic Transmission	TRANSAXLE,AUTO(1.99 RATIO)	0327A
Automatic Transmission	TRANSAXLE,AUTO(2.14 RATIO)	0330A
Automatic Transmission	TRANSAXLE,AUTO (2.16 RATIO)	0330C
Automatic Transmission	TRANSAXLE,AUTO (2.23 RATIO)	0332A
Automatic Transmission	TRANSAXLE,AUTO (2.29 RATIO)	0332G
Automatic Transmission	TRANSAXLE,AUTO(2.39 RATIO)	0335A
Automatic Transmission	TRANSAXLE,AUTO (2.40 RATIO)	0336A
Automatic Transmission	TRANSAXLE,AUTO(2.44 RATIO)	0340A
Automatic Transmission	TRANSAXLE,AUTO(2.50 RATIO)	0345A
Automatic Transmission	TRANSAXLE,AUTO(2.53 RATIO)	0350A
Automatic Transmission	TRANSAXLE,AUTO(2.55 RATIO)	0352A
Automatic Transmission	TRANSAXLE,AUTO (2.56 RATIO)	0352B
Automatic Transmission	TRANSAXLE,AUTO(2.57 RATIO)	0352C
Automatic Transmission	TRANSAXLE,AUTO (2.60 RATIO)	0360A
Automatic Transmission	TRANSAXLE,AUTO (2.64 RATIO)	0364A
Automatic Transmission	TRANSAXLE,AUTO(2.66 RATIO)	0365A
Automatic Transmission	TRANSAXLE,AUTO (2.67 RATIO)	0366A
Automatic Transmission	TRANSAXLE,AUTO(2.70 RATIO)	0372A
Automatic Transmission	TRANSAXLE,AUTO(2.72 RATIO)	0374A
Automatic Transmission	TRANSAXLE,AUTO(2.73 RATIO)	0375A
Automatic Transmission	TRANSAXLE,AUTO (2.76 RATIO)	0378A
Automatic Transmission	TRANSAXLE,AUTO (2.77 RATIO)	0379A
Automatic Transmission	TRANSAXLE,AUTO(2.78 RATIO)	0380A
Automatic Transmission	TRANSAXLE,AUTO (2.20 RATIO)	0387A
Automatic Transmission	TRANSAXLE,AUTO (2.42 RATIO)	0388A
Automatic Transmission	TRANSAXLE,AUTO(2.81 RATIO)	0394A
Automatic Transmission	TRANSAXLE,AUTO(2.82 RATIO)	0395A
Automatic Transmission	TRANSAXLE,AUTO(2.84 RATIO)	0400A
Automatic Transmission	TRANSAXLE,AUTO(2.86 RATIO)	0400C
Automatic Transmission	TRANSAXLE,AUTO (2.89 RATIO)	0400F

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Part Name	Catalog Name	Part Code
Automatic Transmission	TRANSAXLE,AUTO(2.93 RATIO)	0404S
Automatic Transmission	TRANSAXLE,AUTO(2.95 RATIO)	0404U
Automatic Transmission	TRANSAXLE,AUTO(2.96 RATIO)	0404V
Automatic Transmission	TRANSAXLE,AUTO(2.97 RATIO)	0405A
Automatic Transmission	TRANSAXLE,AUTO(3.00 RATIO)	0406A
Automatic Transmission	TRANSAXLE,AUTO (3.02 RATIO)	0406C
Automatic Transmission	TRANSAXLE,AUTO(3.05 RATIO)	0406G
Automatic Transmission	TRANSAXLE,AUTO(3.06 RATIO)	0408A
Automatic Transmission	TRANSAXLE,AUTO (3.09 RATIO)	0408D
Automatic Transmission	TRANSAXLE,AUTO (3.091 RATIO)	0408E
Automatic Transmission	TRANSAXLE,AUTO(3.11 RATIO)	0408L
Automatic Transmission	TRANSAXLE,AUTO (3.14 RATIO)	0408R
Automatic Transmission	TRANSAXLE,AUTO(3.15 RATIO)	0408S
Automatic Transmission	TRANSAXLE,AUTO (3.16 RATIO)	0408T
Automatic Transmission	TRANSAXLE,AUTO (3.17 RATIO)	0408U
Automatic Transmission	TRANSAXLE,AUTO(3.18 RATIO)	0410A
Automatic Transmission	TRANSAXLE,AUTO(3.19 RATIO)	0411A
Automatic Transmission	TRANSAXLE,AUTO (3.20 RATIO)	0412A
Automatic Transmission	TRANSAXLE,AUTO(3.21 RATIO)	0413A
Automatic Transmission	TRANSAXLE,AUTO (3.23 RATIO)	0415A
Automatic Transmission	TRANSAXLE,AUTO (3.24 RATIO)	0415B
Automatic Transmission	TRANSAXLE,AUTO(3.29 RATIO)	0418A
Automatic Transmission	TRANSAXLE,AUTO(3.33 RATIO)	0425A
Automatic Transmission	TRANSAXLE,AUTO(3.33 RATIO W/TRFER CASE)	0425B
Automatic Transmission	TRANSAXLE,AUTO (3.34 RATIO)	0425C
Automatic Transmission	TRANSAXLE,AUTO (3.37 RATIO)	0425D
Automatic Transmission	TRANSAXLE,AUTO(3.39 RATIO)	0426A
Automatic Transmission	TRANSAXLE,AUTO(3.41 RATIO)	0426Y
Automatic Transmission	TRANSAXLE,AUTO(3.42 RATIO)	0426Z
Automatic Transmission	TRANSAXLE,AUTO(3.43 RATIO)	0427A
Automatic Transmission	TRANSAXLE,AUTO(3.48 RATIO)	0427D
Automatic Transmission	TRANSAXLE,AUTO(3.53 RATIO)	0427F
Automatic Transmission	TRANSAXLE,AUTO(3.57 RATIO)	0427G
Automatic Transmission	TRANSAXLE,AUTO(3.59 RATIO)	0427H
Automatic Transmission	TRANSAXLE,AUTO(3.63 RATIO)	0427Q
Automatic Transmission	TRANSAXLE,AUTO(3.68 RATIO)	0427S
Automatic Transmission	TRANSAXLE,AUTO(3.69 RATIO)	0427U
Automatic Transmission	TRANSAXLE,AUTO(3.71 RATIO)	0427V
Automatic Transmission	TRANSAXLE,AUTO (3.72 RATIO)	0427W
Automatic Transmission	TRANSAXLE,AUTO(3.73 RATIO)	0428A
Automatic Transmission	TRANSAXLE,AUTO(3.82 RATIO)	0429A
Automatic Transmission	TRANSAXLE,AUTO (3.824 RATIO)	0429G
Automatic Transmission	TRANSAXLE,AUTO (3.87 RATIO)	0429H
Automatic Transmission	TRANSAXLE,AUTO(3.91 RATIO)	0429K
Automatic Transmission	TRANSAXLE,AUTO(3.92 RATIO)	0429L
Automatic Transmission	TRANSAXLE,AUTO (3.94 RATIO)	0429N
Manual Transmission	TRANSAXLE,MAN	0429Y
Manual Transmission	TRANSAXLE,MAN	0429Z
Manual Transmission	TRANSAXLE,MAN(2.66 RATIO)	0430A
Manual Transmission	TRANSAXLE,MAN(2.80 RATIO)	0432A
Manual Transmission	TRANSAXLE,MAN(2.96 RATIO)	0433A
Manual Transmission	TRANSAXLE,MAN(2.97 RATIO)	0434A
Manual Transmission	TRANSAXLE,MAN (3.044 RATIO)	0434H

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Part Name	Catalog Name	Part Code
Manual Transmission	TRANSAXLE,MAN (3.095 RATIO)	0434M
Manual Transmission	TRANSAXLE,MAN (3.09 RATIO)	0434N
Manual Transmission	TRANSAXLE,MAN (3.10 RATIO)	0434P
Manual Transmission	TRANSAXLE,MAN (3.11 RATIO)	0434Q
Manual Transmission	TRANSAXLE,MAN(3.19 RATIO)	0435A
Manual Transmission	TRANSAXLE,MAN (3.261 RATIO)	0438A
Manual Transmission	TRANSAXLE,MAN (3.31 RATIO)	0444A
Manual Transmission	TRANSAXLE,MAN(3.32 RATIO)	0445A
Manual Transmission	TRANSAXLE,MAN	0450A
Manual Transmission	TRANSAXLE,MAN(3.35 RATIO)	0451A
Manual Transmission	TRANSAXLE,MAN (3.42 RATIO)	0457A
Manual Transmission	TRANSAXLE,MAN (3.421 RATIO)	0457H
Manual Transmission	TRANSAXLE,MAN(3.43 RATIO)	0458A
Manual Transmission	TRANSAXLE,MAN(3.45 RATIO)	0460A
Manual Transmission	TRANSAXLE,MAN(3.47 RATIO)	0462A
Manual Transmission	TRANSAXLE,MAN(3.54 RATIO)	0463A
Manual Transmission	TRANSAXLE,MAN(3.55 RATIO)	0464A
Manual Transmission	TRANSAXLE,MAN(3.57 RATIO)	0465A
Manual Transmission	TRANSAXLE,MAN(3.58 RATIO)	0466A
Manual Transmission	TRANSAXLE,MAN (3.59 RATIO)	0466B
Manual Transmission	TRANSAXLE,MAN(3.61 RATIO)	0470A
Manual Transmission	TRANSAXLE,MAN (3.611 RATIO)	0470H
Manual Transmission	TRANSAXLE,MAN(3.63 RATIO)	0473A
Manual Transmission	TRANSAXLE,MAN(3.65 RATIO)	0475A
Manual Transmission	TRANSAXLE,MAN(3.67 RATIO)	0477A
Manual Transmission	TRANSAXLE,MAN(3.72 RATIO)	0477F
Manual Transmission	TRANSAXLE,MAN(3.73 RATIO)	0477G
Manual Transmission	TRANSAXLE,MAN(3.74 RATIO)	0477H
Manual Transmission	TRANSAXLE,MAN (3.76 RATIO)	0477J
Manual Transmission	TRANSAXLE,MAN(3.77 RATIO)	0477K
Manual Transmission	TRANSAXLE,MAN (3.824 RATIO)	0479L
Manual Transmission	TRANSAXLE,MAN(3.82 RATIO)	0479Z
Manual Transmission	TRANSAXLE,MAN(3.83 RATIO)	0480A
Manual Transmission	TRANSAXLE,MAN(3.84 RATIO)	0480B
Manual Transmission	TRANSAXLE,MAN (3.89 RATIO)	0480G
Manual Transmission	TRANSAXLE,MAN(3.91 RATIO)	0484A
Manual Transmission	TRANSAXLE,MAN(3.92 RATIO)	0485A
Manual Transmission	TRANSAXLE,MAN (3.93 RATIO)	0486A
Manual Transmission	TRANSAXLE,MAN(3.94 RATIO)	0487A
Manual Transmission	TRANSAXLE,MAN(3.95 RATIO)	0487B
Manual Transmission	TRANSAXLE,MAN(4.05 RATIO)	0487Z
Manual Transmission	TRANSAXLE,MAN(4.06 RATIO)	0488A
Manual Transmission	TRANSAXLE,MAN (4.063 RATIO)	0488G
Manual Transmission	TRANSAXLE,MAN(4.10 RATIO)	0490A
Manual Transmission	TRANSAXLE,MAN (4.105 RATIO)	0490B
Manual Transmission	TRANSAXLE,MAN(4.11 RATIO)	0491A
Manual Transmission	TRANSAXLE,MAN(4.12 RATIO)	0492A
Manual Transmission	TRANSAXLE,MAN (4.13 RATIO)	0492B
Manual Transmission	TRANSAXLE,MAN(4.17 RATIO)	0492X
Manual Transmission	TRANSAXLE,MAN(4.18 RATIO)	0493A
Manual Transmission	TRANSAXLE,MAN(4.19 RATIO)	0493C
Manual Transmission	TRANSAXLE,MAN (4.20 RATIO)	0493D

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Part Name	Catalog Name	Part Code
Manual Transmission	TRANSAXLE,MAN (4.22 RATIO)	0493F
Manual Transmission	TRANSAXLE,MAN (4.235 RATIO)	0493G
Manual Transmission	TRANSAXLE,MAN (4.26 RATIO)	0493J
Manual Transmission	TRANSAXLE,MAN (4.263 RATIO)	0493K
Manual Transmission	TRANSAXLE,MAN (4.27 RATIO)	0493L
Manual Transmission	TRANSAXLE,MAN(4.29 RATIO)	0494A
Manual Transmission	TRANSAXLE,MAN(4.31 RATIO)	0494C
Manual Transmission	TRANSAXLE,MAN (4.33 RATIO)	0494E
Manual Transmission	TRANSAXLE,MAN (4.357 RATIO)	0494F
Manual Transmission	TRANSAXLE,MAN(4.39 RATIO)	0494G
Manual Transmission	TRANSAXLE,MANUAL (4.41 RATIO)	0494J
Manual Transmission	TRANSAXLE,MAN (4.444 RATIO)	0494K
Manual Transmission	TRANSAXLE,MAN (4.45 RATIO)	0494N
Manual Transmission	TRANSAXLE,MAN (4.47 RATIO)	0494P
Manual Transmission	TRANSAXLE,MAN (4.625 RATIO)	0494Q
Manual Transmission	TRANSAXLE,MAN(4.53 RATIO)	0495A
Manual Transmission	TRANSAXLE,MAN (4.56 RATIO)	0495D
Manual Transmission	TRANSAXLE,MAN (4.64 RATIO)	0495G
Manual Transmission	TRANSAXLE,MAN (4.78 RATIO)	0496A
Manual Transmission	TRANSAXLE,MAN(4.87 RATIO)	0497A
Automatic Transmission	TRANSAXLE,AUTO(4.05 RATIO)	2070A
Automatic Transmission	TRANSAXLE,AUTO(4.06 RATIO)	2071A
Automatic Transmission	TRANSAXLE,AUTO (4.063 RATIO)	2071J
Automatic Transmission	TRANSAXLE,AUTO (4.10 RATIO)	2071T
Automatic Transmission	TRANSAXLE,AUTO (4.11 RATIO)	2072A
Automatic Transmission	TRANSAXLE,AUTO (4.16 RATIO)	2072F
Automatic Transmission	TRANSAXLE,AUTO(4.24 RATIO)	2078A
Automatic Transmission	TRANSAXLE,AUTO (4.27 RATIO)	2079A
Automatic Transmission	TRANSAXLE,AUTO (4.28 RATIO)	2080A
Automatic Transmission	TRANSAXLE,AUTO (4.35 RATIO)	2081A
Automatic Transmission	TRANSAXLE,AUTO (4.357 RATIO)	2082A
Automatic Transmission	TRANSAXLE,AUTO (4.52 RATIO)	2084A
Automatic Transmission	TRANSAXLE,AUTO(4.53 RATIO)	2085A
Automatic Transmission	TRANSAXLE,AUTO (4.56 RATIO)	2085C
Automatic Transmission	TRANSAXLE,AUTO (4.709 RATIO)	2087A
Automatic Transmission	TRANSAXLE,AUTO(4.89 RATIO)	2095A
Automatic Transmission	TRANSAXLE,AUTO(4.94 RATIO)	2100A
Automatic Transmission	TRANSAXLE,AUTO(5.35 RATIO)	2145A
Automatic Transmission	TRANSAXLE,AUTO (5.36 RATIO)	2146A
Automatic Transmission	TRANSAXLE,AUTO(5.38 RATIO)	2150A
Automatic Transmission	TRANSAXLE,AUTO(5.90 RATIO)	2175A
Manual Transmission	TRANSMISSION KIT,MAN(W/BRG,WA & BALL KIT)	X0005
Manual Transmission	TRANSMISSION KIT,MAN(SERVICE OVERHAUL)	X0009
Automatic Transmission	TRANSMISSION KIT,AUTO(SERV OVERHAUL W/PLT,GSKT,SEAL)	X0020
Automatic Transmission	TRANSMISSION KIT,AUTO	X0023
Automatic Transmission	TRANSAXLE KIT,AUTO (SERV OVERHAUL W/ PLT, GSKT, SEAL)	X0026
Automatic Transmission	TRANSMISSION KIT,AUTO (SERV OVERHAUL W/GSKT,SEAL,RET)	X0029
Manual Transmission	TRANSMISSION PKG,MAN	SJ338
Automatic Transmission	TRANSMISSION PKG,AUTO	SJ339
Transmission	TRANSMISSION,	SS138

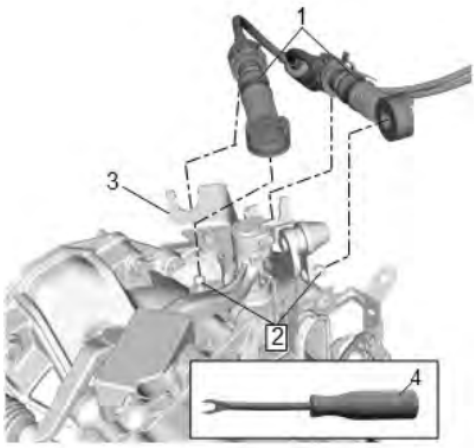
partsvagn.com

1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Manual Transmission Shift Lever and Selector Lever Cable Replacement

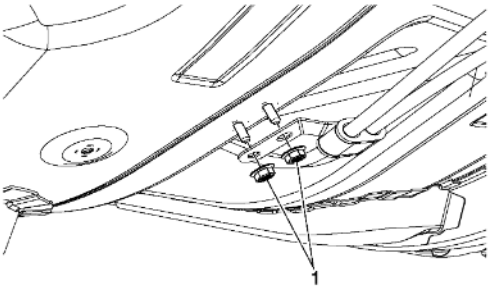
Removal Procedure

1. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement.
2. Remove the battery tray. Refer to Battery Tray Replacement.



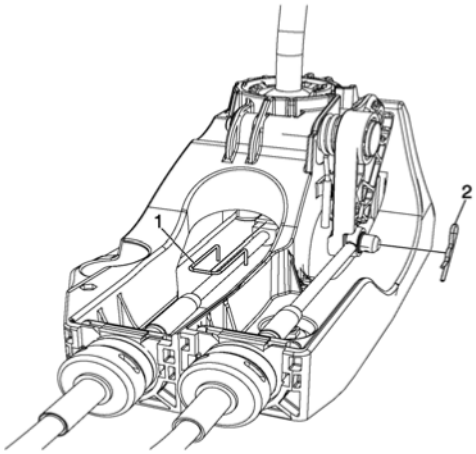
3. Click here for full size
4. Remove the shift lever and selector lever cable (1) from the transmission control lever ball pin (2), using a commercial trim pad remover (4).
5. Remove the shift lever and selector lever cable (1) from the cable bracketâ€‰(3) by pressing 2 tabs of orange clips.
6. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.

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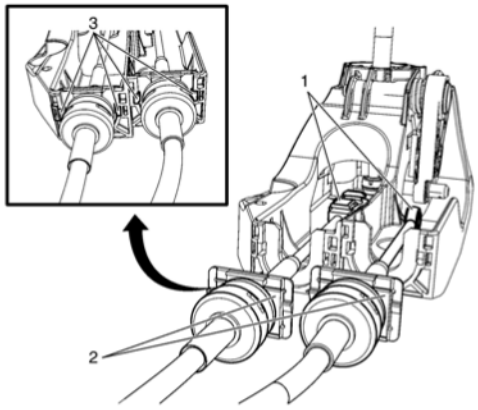
7. Click here for full size
8. Remove the shift lever and selector lever cable bracket nutsâ€‰(1) from the underbody.
9. Lower the vehicle.
10. Remove the front floor console. Refer to Front Floor Console Replacement.

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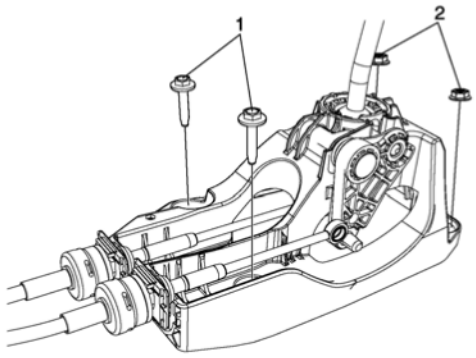
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11. Click here for full size
12. Remove the shift lever and selector lever cable U-clipâ€‰(1).
13. Remove the shift lever and selector lever cable pinâ€‰(2).



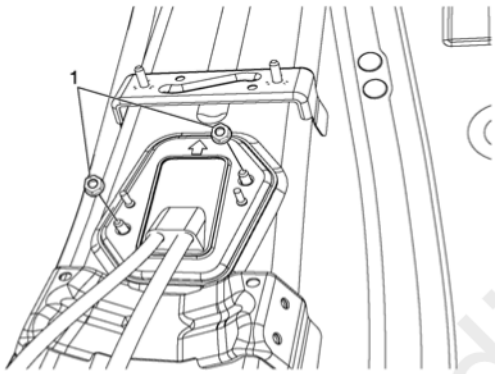
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14. Click here for full size
15. Disconnect the shift lever and selector lever cable endsâ€‰(1).
16. Push the cable socket tabsâ€‰(3) in order to release the shift lever and selector lever cable.
17. Remove the shift lever and selector lever cable socketâ€‰(2) from the transmission control housing.



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18. Click here for full size
19. Remove the transmission control boltsâ€‰(1) and nutsâ€‰(2).
20. Remove the transmission control.



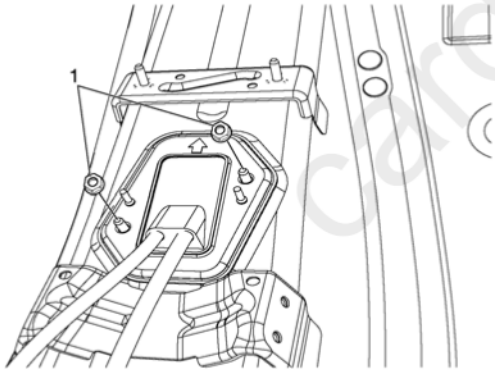
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22. Remove the shift lever and selector lever cable grommet nutsâ€‰(1).
23. Remove the shift lever and selector lever cable from the vehicle.

Installation Procedure

1. Install the shift lever and selector lever cables to the vehicle.

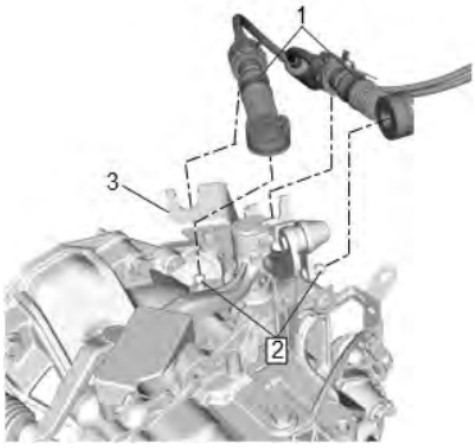


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2. Click here for full size
3. Caution:

   Refer to Fastener Caution.

4. Install the shift lever and selector lever cable grommet nutâ€‰(1), and tighten to 6â€‰N-m (53â€‰lbâ€‰in).



5. Click here for full size
6. Note:

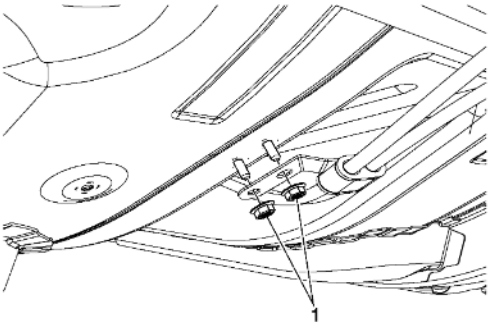
   After install, lift up the cable socket by hand to confirm if they are fully installed.

7. Install the shift lever and selector lever cable (1) to the cable bracket (3).
8. Note:

   After install, lift up the cable end by hand to confirm if they are fully installed

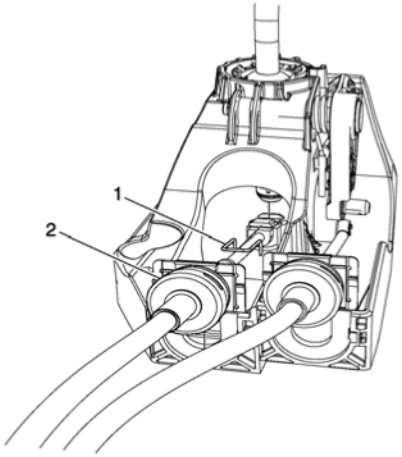
9. Install the shift lever and selector lever cable (1) to the transmission control lever ball pin (2).
10. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.

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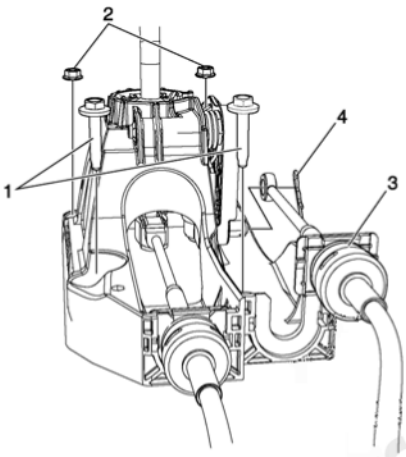
11. Click here for full size
12. Install the shift lever and selector lever cable bracket nutsâ€‰(1) to the underbody and tighten to 6â€‰N-m (53â€‰lbâ€‰in).
13. Lower the vehicle.



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14. Click here for full size
15. Position the transmission control in the vehicle.
16. Connect the shift lever cable end.
17. Install the shift lever cable U-clipâ€‰(1).
18. Note:

    After install, lift up the socket (2) by hand to confirm if it is fully installed.
19. Install the shift lever cable socketâ€‰(2) to the transmission control housing.



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20.

Click here for full size

21. Install the transmission control boltsâ€‰(1) and nutsâ€‰(2) and tighten to 6â€‰N-m (53â€‰lbâ€‰in)
22. Note**:**

    After install, lift up the socket (3) by hand to confirm if it is fully installed.
23. Install the selector lever cable socketâ€‰(3) to the transmission control housing.
24. Connect the selector lever cable end.
25. Install the selector lever cable pinâ€‰(4).
26. Install the front floor console. Refer to Front Floor Console Replacement.
27. Install the battery tray. Refer to Battery Tray Replacement.
28. Install the air cleaner. Refer to Air Cleaner Assembly Replacement.

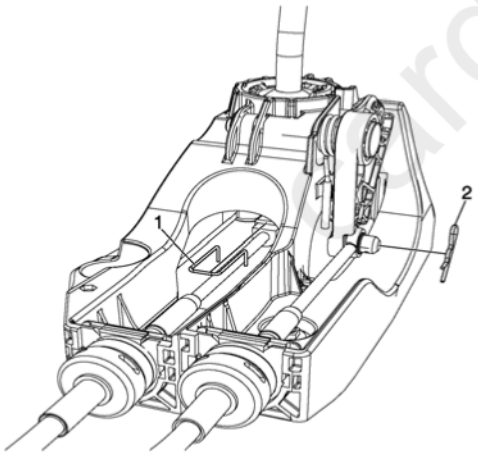
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Control Replacement

Removal Procedure

1. Remove the front floor console. Refer to Front Floor Console Replacement.



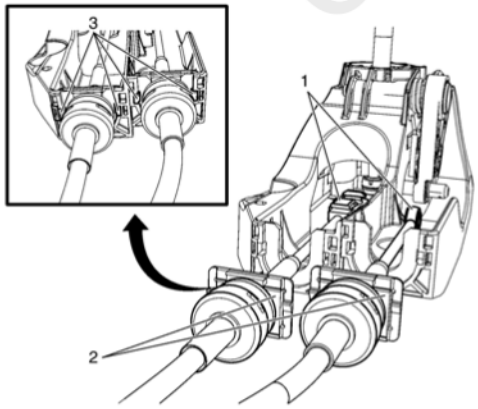
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2.
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3. Remove the shift lever and selector lever cable U-clipâ€‰(1).

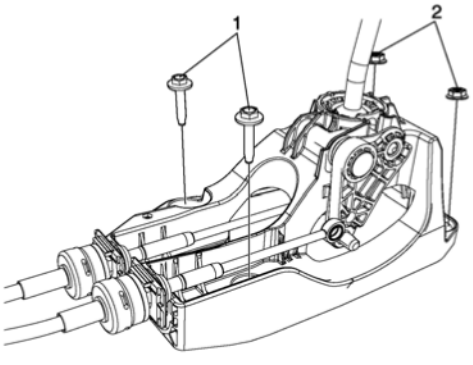
4. Remove the shift lever and selector lever cable pinâ€‰(2).

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5. Click here for full size
6. Disconnect the shift lever and selector lever cable endsâ€‰(1).
7. Push the cable socket tabsâ€‰(3) in order to release the shift lever and selector lever cable.
8. Remove the shift lever and selector lever cable socketâ€‰(2) from the transmission control housing.

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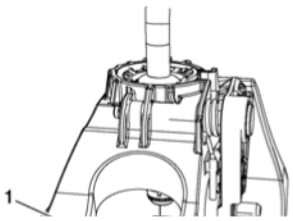


9. Click here for full size

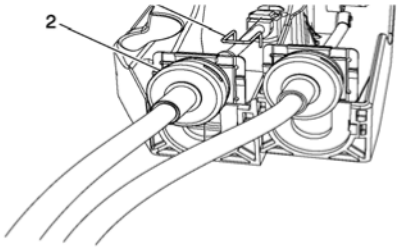
10. Remove the transmission control boltsâ€‰(1) and nutsâ€‰(2).

11. Remove the transmission control from the vehicle.

Installation Procedure

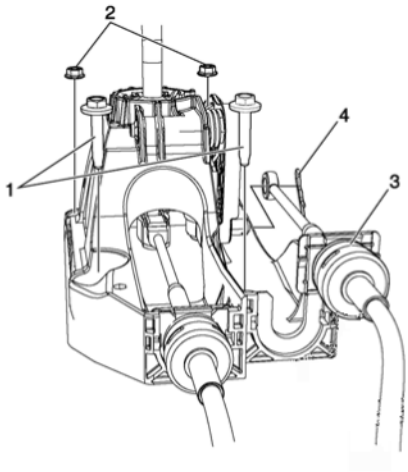


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1. Click here for full size
2. Position the transmission control in the vehicle.
3. Connect the shift lever cable end.
4. Install the shift lever cable U-clipâ€‰(1).
5. Install the shift lever cable socketâ€‰(2) to the transmission control housing.

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6. Click here for full size
7. Caution:

   Refer to Fastener Caution.

8. Install the transmission control boltsâ€‰(1) and nutsâ€‰(2), and tighten to 6â€‰N-m (53â€‰lbâ€‰in).
9. Install the selector lever cable socketâ€‰(3) to the transmission control housing.
10. Connect the selector lever cable end.
11. Install the selector lever cable pinâ€‰(4).
12. Install the front floor console. Refer to Front Floor Console Replacement.

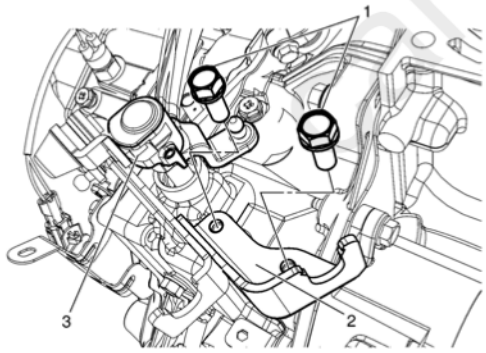
1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Selector and Shift Lever Cable Bracket Replacement

Removal Procedure

1. Remove the shift lever and selector lever cable from the shift control housing and cable bracket. Refer to Manual Transmission Shift Lever and Selector Lever Cable Replacement.

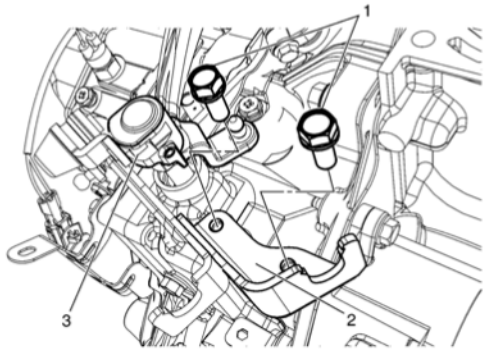
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2. Click here for full size
3. Remove the selector and shift lever cable bracket boltsâ€‰(1) from the transmission.
4. Remove the selector and shift lever cable bracketâ€‰â€‰(2) and bushingâ€‰â€‰(3) from the transmission.

Installation Procedure

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1. Click here for full size
2. Install the selector and shift lever cable bracketâ€‰(2) and bushingâ€‰(3) to the transmission.
3. Caution:

   Refer to Fastener Caution.
4. Install the selector and shift lever cable bracket boltsâ€‰(1) to the transmission and tighten to 23â€‰N-m (17â€‰lbâ€‰ft).
5. Install the shift lever and selector lever cable to the shift control housing and cable bracket. Refer to Manual Transmission Shift Lever and Selector Lever Cable Replacement.

Related Part Information

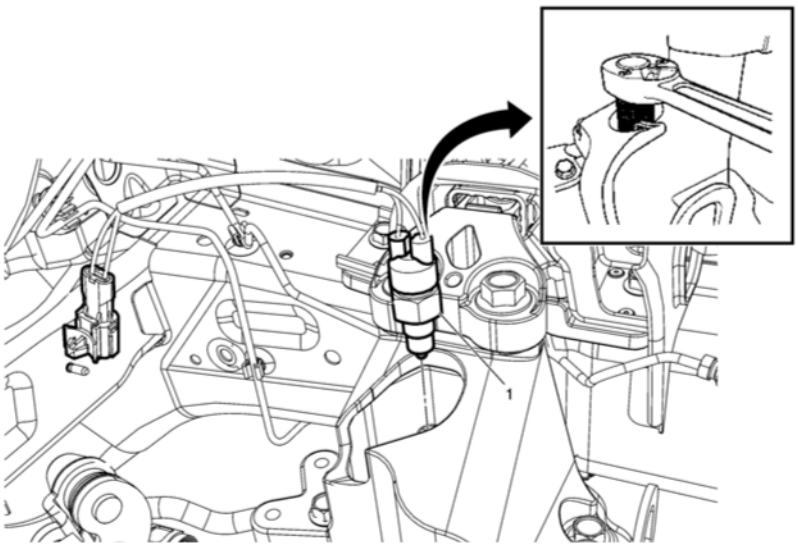
Part Name	Catalog Name	Part Code
Manual Transmission Selector and Shift Lever Cable Bracket	BRACKET,M/TRNS SEL & SHFT LVR CBL	3649A
Manual Transmission Selector and Shift Lever Cable Bracket	BRACKET,M/TRNS SEL & SHFT LVR CBL	3650A

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Backup Lamp Switch Replacement

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Callout	Component Name
Preliminary Procedures Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement.	

Callout	Component Name
1	Backup Lamp Switch Caution: Refer to Component Fastener Tightening Caution. Procedure Disconnect the electrical connector. Tighten 17 N-m (13 lb ft) Special Tools *DT-50182* Backup Lamp Switch Remover/Installer For equivalent regional tools, refer to Special Tools

Related Part Information

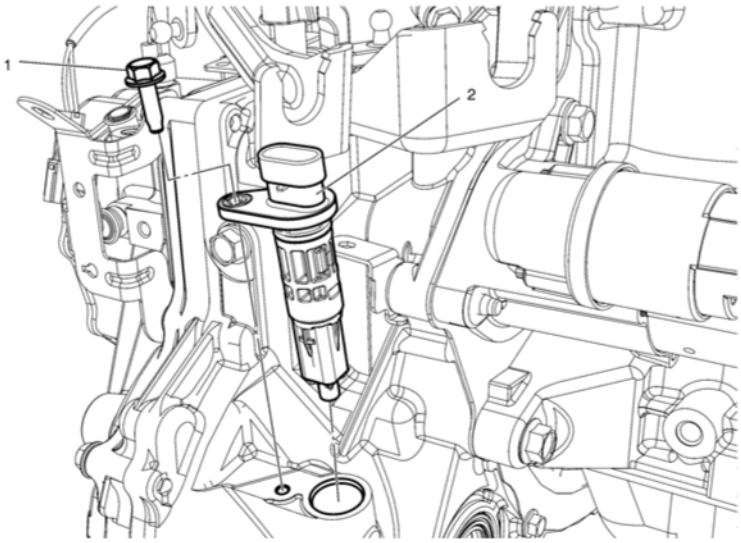
Part Name	Catalog Name	Part Code
Backup Lamp Switch	SWITCH KIT,B/U LP	2548A
Backup Lamp Switch	SWITCH,B/U LP	2550A

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Vehicle Speed Sensor Replacement

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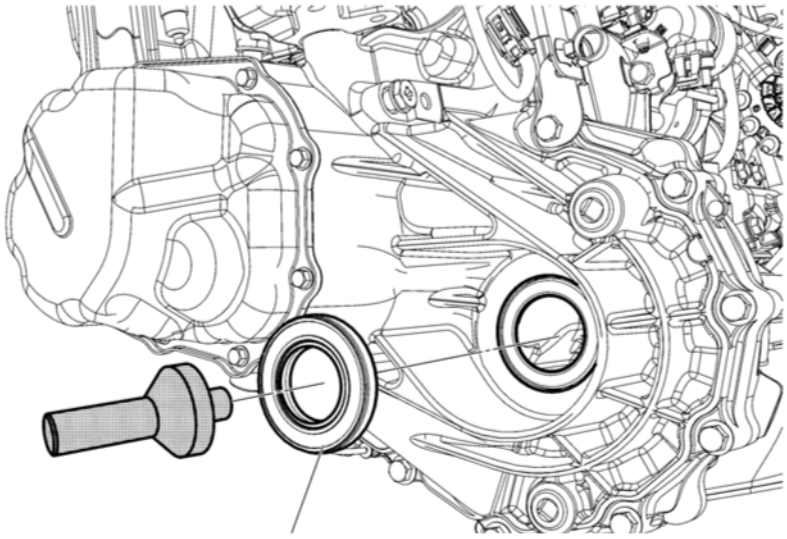
Click here for full size

Callout	Component Name
Preliminary Procedure Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.	
1	Vehicle Speed Sensor Mount Bolt (Qty:â€‰1) Caution: Refer to Fastener Caution. Procedure Disconnect the electrical connector. Tighten 9â€‰N-m (80â€‰lbâ€‰in)
2	Vehicle Speed Sensor Assembly

1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Front Wheel Drive Shaft Seal Replacement - Left Side

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Callout	Component Name
	Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the front wheel drive shaft from the transmission. Refer to Front Wheel Drive Shaft Replacement.

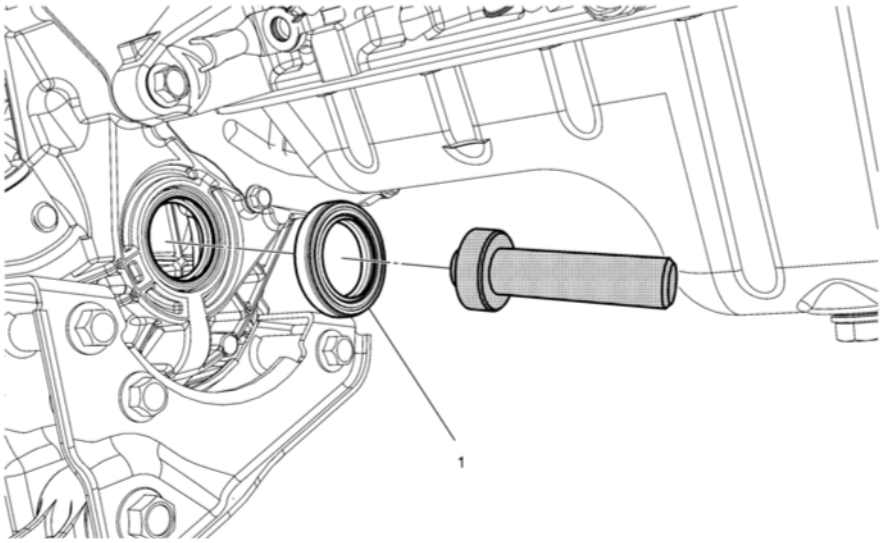
Callout	Component Name
1	Left Front Wheel Drive Shaft Oil Seal Procedure 1. Remove the left wheel drive shaft oil seal using the *DT-7004* slide hammer and the *DT-586* universal seal remover. 2. Coat NEW left front wheel drive shaft oil seal with transmission fluid. 3. Install the NEW left front wheel drive shaft oil seal using the *DT-50181* oil seal installer and hammer. Tip Do not reuse the wheel drive shaft oil seal. Special Tools • *DT-586* Universal Seal Remover • *DT-7004* Slide Hammer • *DT-50181* Oil Seal Installer For equivalent regional tools, refer to Special Tools.

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Front Wheel Drive Shaft Seal Replacement - Right Side

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Callout	Component Name
	Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the front wheel drive shaft from the transmission. Refer to Front Wheel Drive Shaft Replacement.

Callout	Component Name
1	Right Front Wheel Drive Shaft Oil Seal Procedure 1. Remove the right wheel drive shaft oil seal using the *DT-7004* slide hammer with the *DT-586* universal seal remover. 2. Coat the NEW right front wheel drive shaft oil seal with transmission fluid. 3. Install the NEW right front wheel drive shaft oil seal using the *DT-49088* oil seal installer and hammer. Tip Do NOT reuse the front wheel drive shaft oil seal. Special Tools • *DT-586* Universal Seal Remover • *DT-7004* Slide Hammer • *DT-49088* Oil Seal Installer For equivalent regional tools, refer to Special Tools .

Related Part Information

Part Name	Catalog Name	Part Code
Front Wheel Drive Shaft Seal	SEAL,FRT WHL DRV SHF	X0031
Front Wheel Drive Shaft Oil Seal	SEAL,FRT WHL DRV SHF OIL	X0045
Front Wheel Drive Shaft Seal	SEAL,FRT WHL DRV SHF	X0232
Front Wheel Drive Shaft Seal	SEAL KIT,FRT WHL DRV SHF	X0233
Front Wheel Drive Shaft Oil Seal	SEAL,FRT WHL DRV SHF OIL	X0316

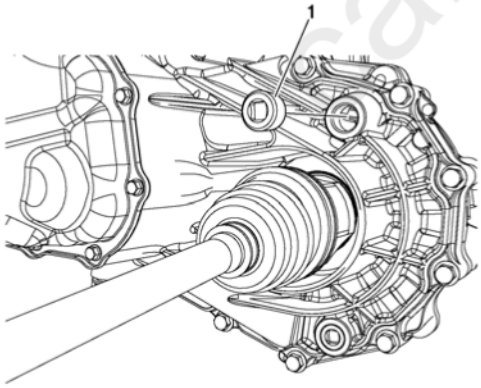
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Fluid Level Inspection

Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.



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3. Click here for full size
4. Warning:

   Refer to Checking Hot Transmission Fluid through Drain Plug Hole Warning.

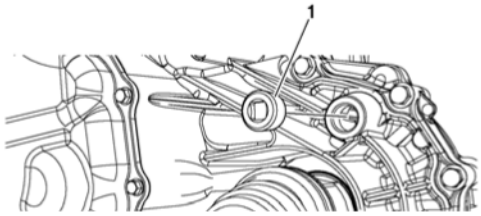
5. Clean away all dirt and debris from the transmission case plug area.
6. Note:

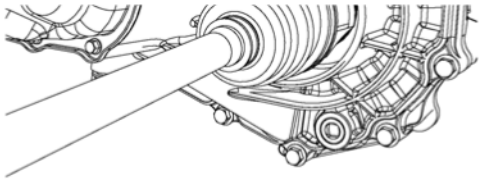
   It is not necessary to check the fluid level unless oil discoloration occurs or leakage is suspected. Make sure to check the fluid level with the engine stopped. Check if the vehicle is level.

7. Remove and discard the transmission case oil fill plug (1) and check the oil level. The fluid level should be up to the bottom edge of the fluid plug hole.
8. If the level is low, add manual transmission fluid through the fill plug hole until the fluid begins to run out.

Installation Procedure

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1. Click here for full size
2. Caution**:**

   Refer to Component Fastener Tightening Caution.
3. Install the NEW transmission case oil fill plugâ€‰(1) and tighten to 25â€‰N-m(18â€‰lbâ€‰ft).
4. Install the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
5. Lower the vehicle.

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Fluid Drain and Fill

Removal Procedure

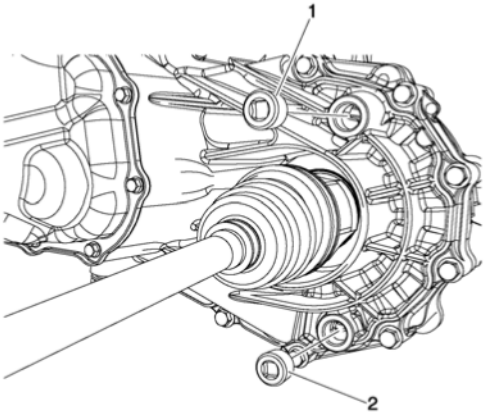
1. Warning**:**

   The transmission fluid is hot. Caution must be taken to prevent personal injury when the transmission fluid drains from the transmission.

2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.

3. Remove the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.

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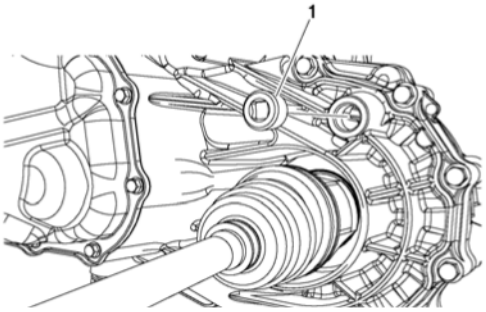


4.
Click here for full size

5. Clean away all dirt and debris from the transmission case plug area.
6. Remove and discard the transmission case oil drain plugâ€‰(2).
7. Drain transmission fluid into a suitable container.
8. Remove and discard the transmission case oil fill plugâ€‰(1).

Installation Procedure

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1. Click here for full size
2. Caution:

   Refer to Component Fastener Tightening Caution.

3. Install the NEW transmission case oil drain plugâ€‰(2) and tighten to 25â€‰N-m (18â€‰lbâ€‰ft).
4. Add transmission fluid until it seeps out of the fluid level check plug hole.
5. Install the NEW transmission case oil fill plugâ€‰(1) and tighten to 25â€‰N-m (18â€‰lbâ€‰ft).
6. Install the drivetrain and front suspension frame skid plate, if equipped. Refer to Drivetrain and Front Suspension Frame Skid Plate Replacement.
7. Lower the vehicle.

Related Part Information

Part Name	Catalog Name	Part Code
Automatic Transmission Fluid	FLUID,A/TRNS (CONSOLIDATED USAGE)	1500A
Automatic Transmission Fluid	FLUID,A/TRNS	0050A
Automatic Transmission Fluid	FLUID,A/TRNS	X0187
Manual Transmission Fluid	FLUID,M/TRANS	SS005
Automatic Transmission Fluid	FLUID,A/TRANS	SS013

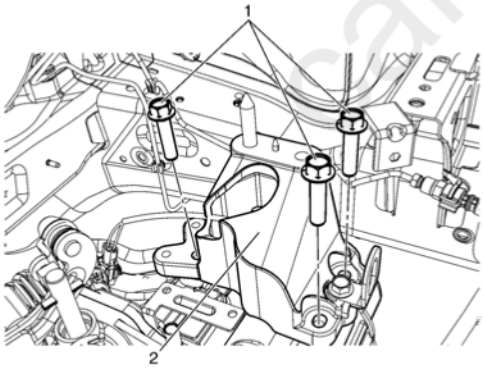
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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Mount Bracket Replacement - Left Side

Removal Procedure

1. Remove the left transmission mount. Refer to Transmission Mount Replacement - Left Side.
2. Remove the power brake booster pump bracket from left transmission mount bracket. Refer to Power Brake Booster Pump Replacement.

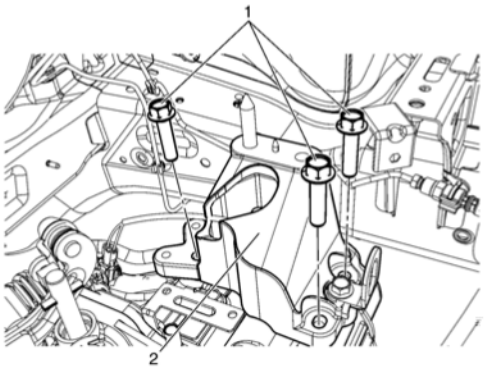


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3. Click here for full size
4. Disconnect the backup lamp switch connector.
5. Remove the left transmission mount bracket boltsâ€‰(1).
6. Remove the left transmission mount bracketâ€‰(2).

Installation Procedure

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1. Click here for full size
2. Install the left transmission mount bracketâ€‰(2).
3. Caution:

   Refer to Fastener Caution.
4. Install the left transmission mount bracket boltsâ€‰(1) and tighten to 50â€‰N-mâ€‰ (37â€‰lbâ€‰ft) + 30 to 45â€‰degrees.
5. Connect the backup lamp switch connector.
6. Install the power brake booster pump bracket to left transmission mount bracket. Refer to Power Brake Booster Pump Replacement.
7. Install the left transmission mount. Refer to Transmission Mount Replacement - Left Side.

Related Part Information

Part Name	Catalog Name	Part Code
Transmission Mount Bracket	BRACKET KIT,TRANS MT	2848A
Transmission Mount Bracket	BRACKET,TRANS MT	2850A
Transmission Mount Bracket	BRACKET,TRANS MT	2900A
Transmission Mount Bracket	BRACKET,TRANSAXLE MT	0562B

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - ON VEHICLE
4.

Transmission Mount Bracket Replacement - Left Side (with CH-49290)

Special Tools

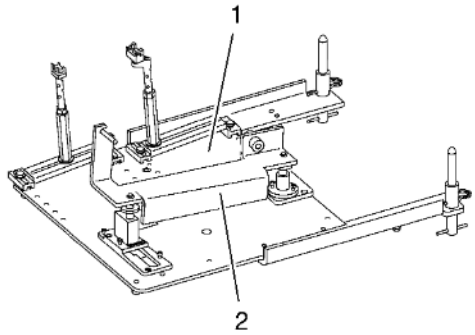
- *CH-904* Base Frame
- *CH-49290* Engine Support Tool

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the battery tray. Refer to Battery Tray Replacement.
2. Disconnect the backup light switch connector.

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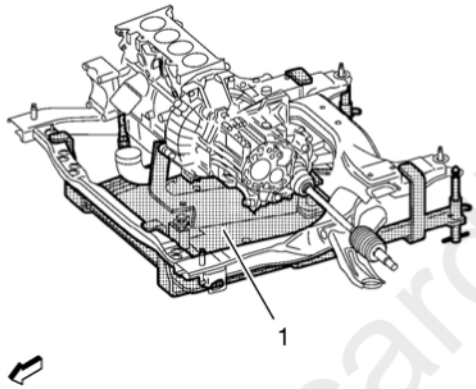
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3. [Click here for full size]
4. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

5. Assemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

6. Install the torque supportâ€‰(2) to the engine.
7. Support the *CH-904* base frame on a jack.
8. Support the *CH-49290* support tool on the *CH-904* base frame.



9.
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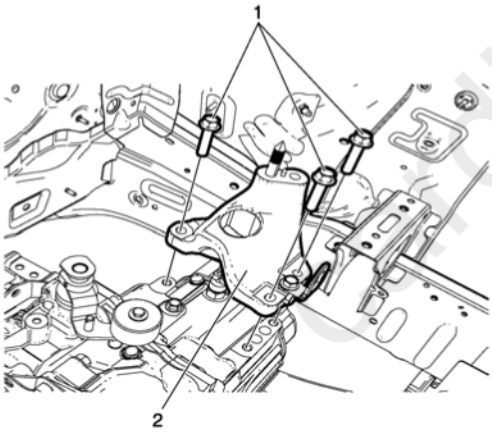
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10. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

11. Install the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

12. Remove the transmission mount. Refer to Transmission Mount Replacement - Left Side.

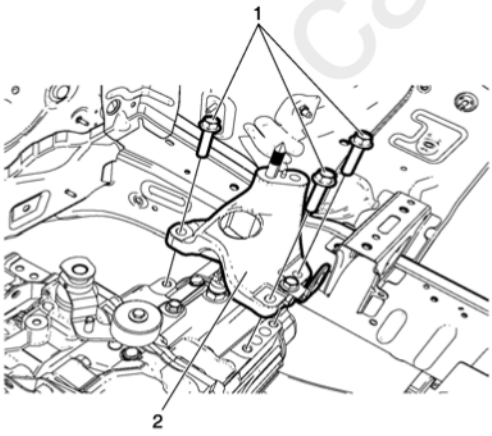


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13.
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14. Remove the left transmission mount bracket boltâ€‰(1).
15. Remove the left transmission mount bracketâ€‰(2).

Installation Procedure



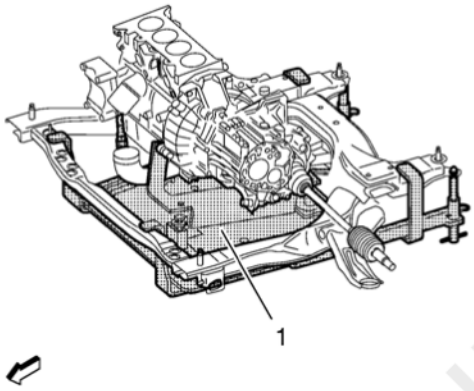
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1. Click here for full size
2. Install the left transmission mount bracketâ€‰(2).
3. Caution:

   Refer to Fastener Caution.
4. Caution:

   Refer to Torque-to-Yield Fastener Caution.
5. Install the left transmission mount bracket boltsâ€‰(1), and tighten in two passes:
6.
    1. First Pass: 50N-m (37 lb ft)
    2. Final Pass: 30-45insp;degrees
7. Install the transmission mount. Refer to Transmission Mount Replacement - Left Side.

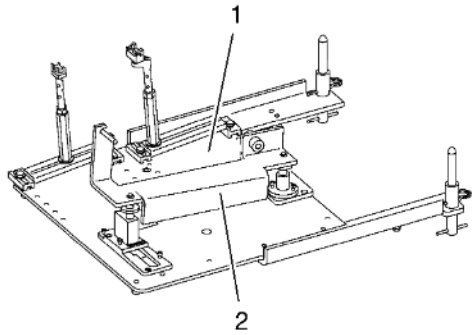
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8. [Click here for full size]

9. Remove the *CH-49290* support toolâ€‰(1).
10. Remove the *CH-49290* support tool from the *CH-904* base frame.
11. Remove the *CH-904* base frame from the jack.

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12. Click here for full size
13. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

14. Disassemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

15. Remove the torque supportâ€‰(2) from the engine.
16. Install the left transmission mount. Refer to Transmission Mount Replacement - Left Side.
17. Connect the backup light switch connector.
18. Install the battery tray. Refer to Battery Tray Replacement.

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Repair Instructions - Off Vehicle

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1. Transmission
2. Manual Transmission - Y4A/Y4M
3. Repair Instructions - On Vehicle
4.

Transmission Mount Bracket Replacement - Left Side (with CH-49290)

Special Tools

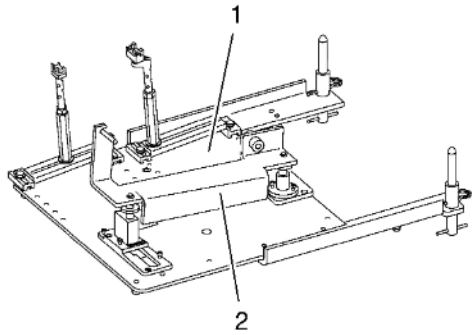
- *CH-904* Base Frame
- *CH-49290* Engine Support Tool

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Remove the battery tray. Refer to Battery Tray Replacement.
2. Disconnect the backup light switch connector.

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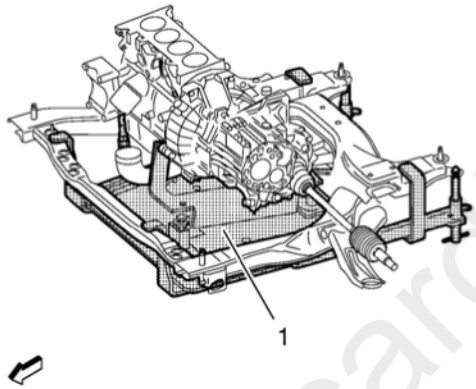
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3. [Click here for full size]
4. Note:

   The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

5. Assemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

6. Install the torque supportâ€‰(2) to the engine.
7. Support the *CH-904* base frame on a jack.
8. Support the *CH-49290* support tool on the *CH-904* base frame.



9.
Click here for full size

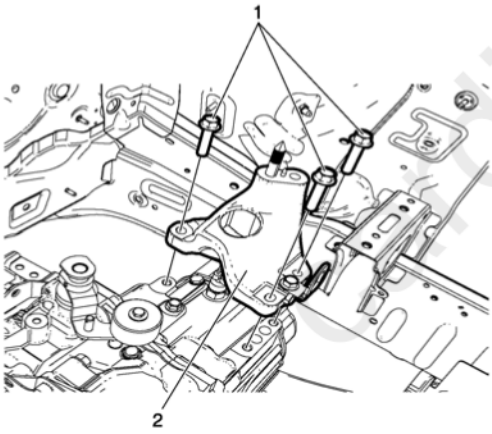
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10. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

11. Install the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

12. Remove the transmission mount. Refer to Transmission Mount Replacement - Left Side.

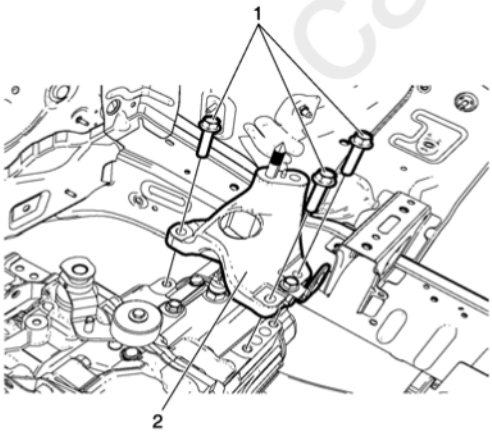


Diagn.com

13.
Click here for full size

14. Remove the left transmission mount bracket boltâ€‰(1).
15. Remove the left transmission mount bracketâ€‰(2).

Installation Procedure



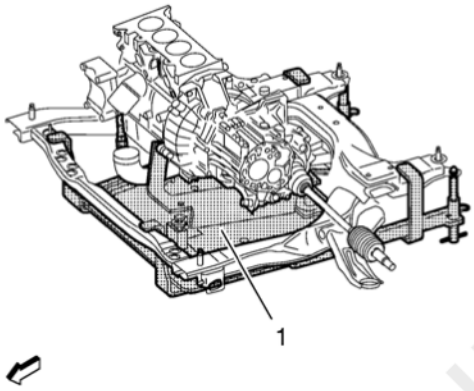
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1. Click here for full size
2. Install the left transmission mount bracketâ€‰(2).
3. Caution:

   Refer to Fastener Caution.
4. Caution:

   Refer to Torque-to-Yield Fastener Caution.
5. Install the left transmission mount bracket boltsâ€‰(1), and tighten in two passes:
6.
    1. First Pass: 50N-m (37 lb ft)
    2. Final Pass: 30-45insp;degrees
7. Install the transmission mount. Refer to Transmission Mount Replacement - Left Side.

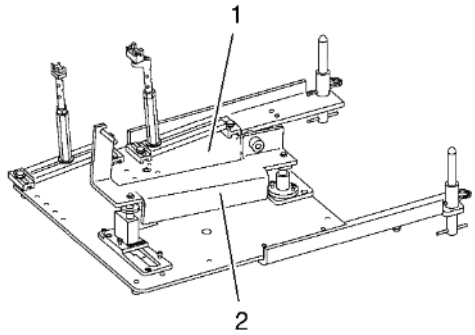
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8. [Click here for full size]

9. Remove the *CH-49290* support toolâ€‰(1).
10. Remove the *CH-49290* support tool from the *CH-904* base frame.
11. Remove the *CH-904* base frame from the jack.

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12. Click here for full size
13. Note:

    The manual that is supplied with the special tool, is also available online. Go to https://gmtoolsandequipment.com.

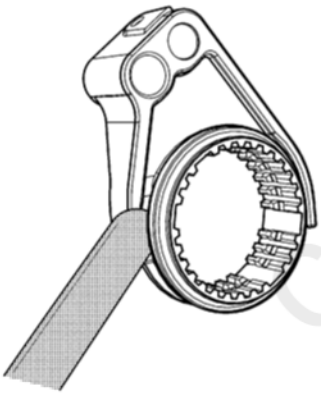
14. Disassemble the *CH-49290* support toolâ€‰(1) according to the details provided in the installation manual.

15. Remove the torque supportâ€‰(2) from the engine.
16. Install the left transmission mount. Refer to Transmission Mount Replacement - Left Side.
17. Connect the backup light switch connector.
18. Install the battery tray. Refer to Battery Tray Replacement.

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Synchronizers Cleaning and Inspection



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Click here for full size

Measure the distance between the synchronizer sleeve and the shift fork. If the distance is over the limit, replace the shift fork.

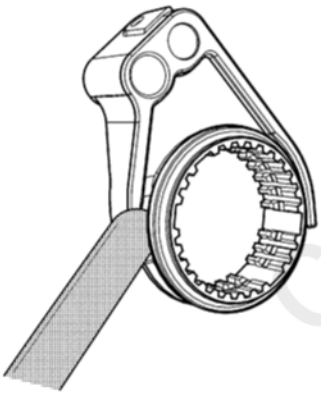
Specification

- The standard distance between the synchronizer sleeve and the shift fork is 0.2â€“0.6â€‰mm (0.008â€“0.024â€‰in).
- The allowable distance limit between the synchronizer sleeve and the shift fork is 1.0â€‰mm (0.039â€‰in).

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Synchronizers Cleaning and Inspection



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Click here for full size

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

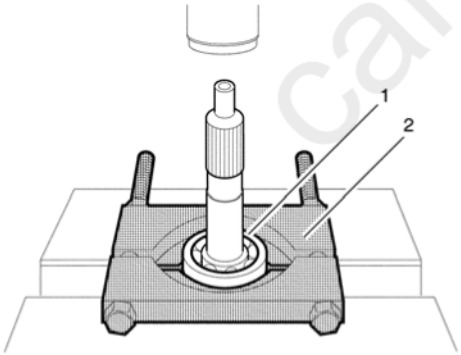
Input Shaft Disassemble

Special Tools

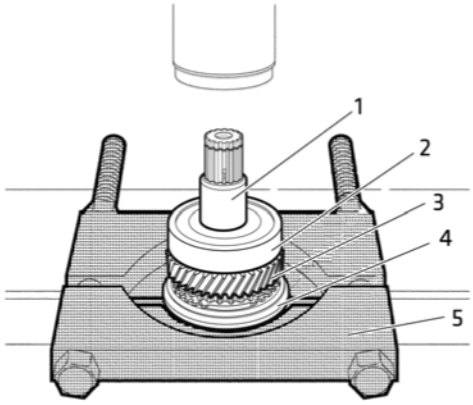
DT-46494 Gear, Bearing Remover

For equivalent regional tools, refer to Special Tools.

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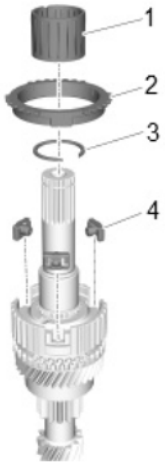


1. Click here for full size
2. Remove the gear unit. Refer to Transmission Disassemble.
3. Position the bearing to the *DT-46494* gear, bearing removerâ€‰(2) to the right bearing.
4. Remove the input shaft right bearingâ€‰(1) using a press.



5. Click here for full size
6. Note:

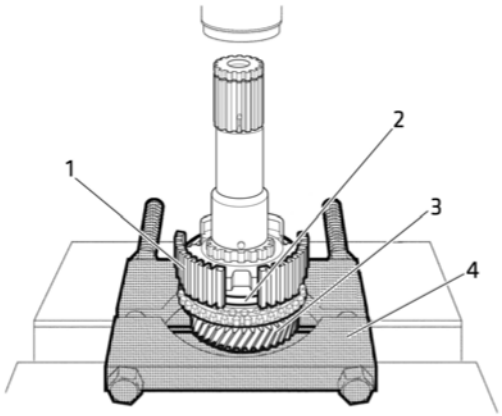
   The 3rd-4th gear synchronizer sleeve position should be engaged in 4th gear.
7. Position the 3rd-4th gear synchronizer sleeveâ€‰(4) to the *DT-46494* gear, bearing removerâ€‰(5).
8. Remove the 5th gear spacerâ€‰(1), left bearingâ€‰(2), 4th gearâ€‰(3) and the 3rd-4th gear synchronizer sleeveâ€‰(4) with the press.



9. Click here for full size
10. Remove the 4th gear bearingâ€‰(1).
11. Remove the 4th gear synchronizer ringâ€‰(2).
12. Remove the 3rd-4th synchronizer circlipâ€‰(3).

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13. Remove the 3 key unitsâ€‰(4).



14. Click here for full size

15. Position the 3rd gearâ€‰(3) to the *DT-46494* gear, bearing removerâ€‰(4).

16. Remove the 3rd-4th synchronizer hubâ€‰(1), 3rd gear synchronizer ringâ€‰(2) and 3rd gearâ€‰(3) with the press.

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17.
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18. Remove the input shaft 3rd gear bearingâ€‰(1).

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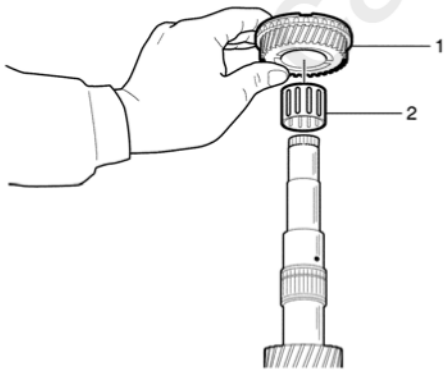
1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Input Shaft Assemble

Special Tools

- *DT-46496* Gear, Bearing Installer
- *DT-49080* Gear, Bearing Installer

For equivalent regional tools, refer to Special Tools.



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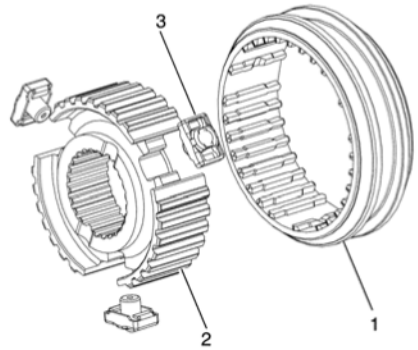
1. Click here for full size
2. Note**:**

   Coat all of the inner parts the gear, the bearing, and the oil seal with gear fluid.

3. Install the 3rd gear bearingâ€‰(2).

4. Install the 3rd gear and synchronizer ringâ€‰(1).

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5.

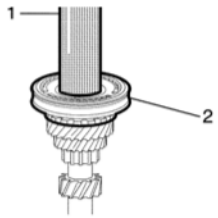
Click here for full size

6. Install the 3rd-4th synchronizer hubâ€‰(2) to the sleeveâ€‰(1).
7. Note**:**

   Make sure that the key units is properly seated into the key groove of sleeve and hub.
8. Install the key unitsâ€‰(3) into the key groove of the hub and sleeve.

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9. [Click here for full size]
10. Note:
    - Position the longer flange of hub toward the third gear and match the key groove of hub to the synchronizer ring lug.
    - When installing gear, bearing and hub assembly, install them slowly using the DT-46496 gear, bearing installerâ€‰(1) and a hammer. If overpressed, the gear teeth may be damaged
11. Insert the 3rd-4th hub assemblyâ€‰(2) into the input shaft .
12. Install the 3rd-4th hub assembly using the *DT-46496* gear, bearing installerâ€‰(1) and hammer.

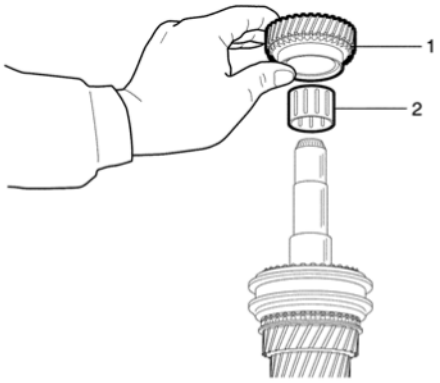
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13. Click here for full size
14. Install the 3rd-4th synchronizer circlipâ€‰(2).
15. Note**:**

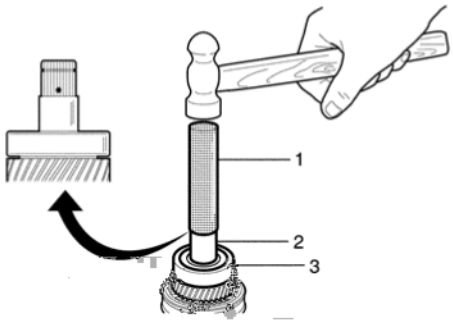
    Match the synchronizer ring lug to the key groove of hub.
16. Install the 4th synchronizer ringâ€‰(1).



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17. Click here for full size

18. Install the input shaft 4th gear bearingâ€‰(2) and 4th gearâ€‰(1).

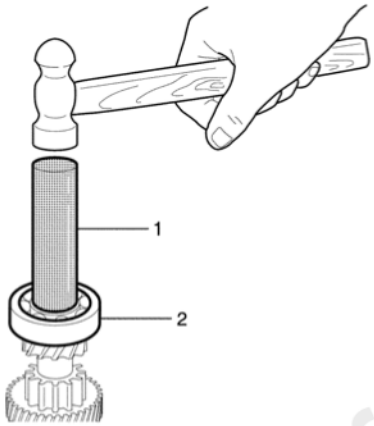


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19. Click here for full size

20. Install the input shaft left side bearingâ€‰(3) using the *DT-49080* gear, bearing installerâ€‰(1), and hammer.

21. Install the 5th gear spacerâ€‰(2) using the *DT-49080* gear, bearing installer (1), and hammer.



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23. Install the input shaft right bearingâ€‰(2) to the input shaft using the *DT-49080* gear, bearing installerâ€‰(1), and hammer.
24. Install the gear unit. Refer to Transmission Assemble.

Related Part Information

Part Name	Catalog Name	Part Code
Input Shaft	SHAFT,INPUT	X0023
Input Shaft	SHAFT,INPUT	X0124
Input Shaft	SHAFT KIT,INPUT	X0560
Input Shaft	SHAFT,INPUT (FORG)	X0579
Input Shaft	SHAFT,INPUT (W/BRG & GR)	X0639
Input Shaft	SHAFT,INPUT (MCHG)	X0717
Input Shaft	SHAFT,INPUT	X0148
Input Shaft	SHAFT,INPUT	X0470
Input Shaft	SHAFT,INPUT(FORG)	X0715
Input Shaft	SHAFT,INPUT(CSTG)	X0984
Input Shaft	SHAFT,INPUT (W/INPUT CARR)	X1493
Input Shaft	SHAFT,INPUT (BLANK)	X2500
Input Shaft	SHAFT,INPUT (W/ FWD CLU HSG)	X2502
Input Shaft	SHAFT,INPUT (MCHG)	X2503

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

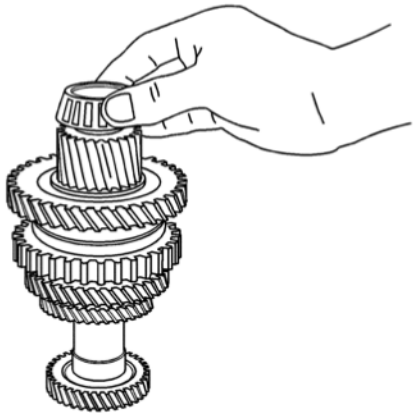
Counter Gear Shaft Disassemble

Special Tools

DT-46494 Gear, Bearing Remover

For equivalent regional tools, refer to Special Tools.

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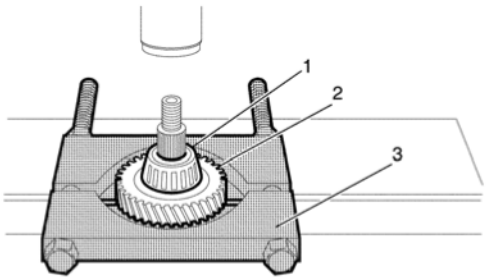


1. Click here for full size

2. Remove the gear unit. Refer to Transmission Disassemble.

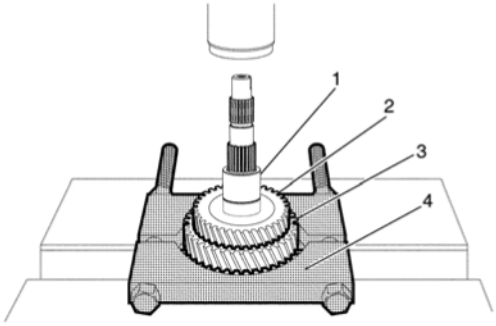
3. Remove the counter shaft right side bearing.

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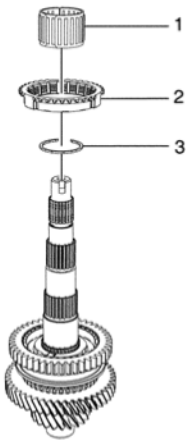
4. Click here for full size
5. Position the 4th gear to the *DT-46494* gear, bearing removerâ€‰(3).
6. Remove the counter shaft left bearingâ€‰(1) and 4th gearâ€‰(2) using a press.

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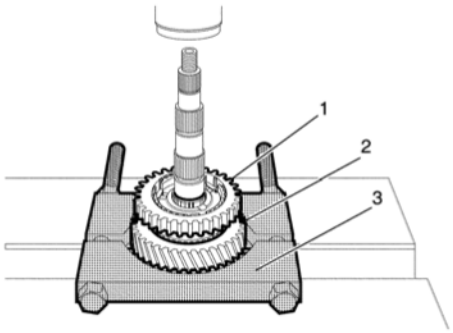
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7. Click here for full size
8. Remove the counter shaft 3rd-4th gear spacerâ€‰(1).
9. Position the 2nd gear to the *DT-46494* gear, bearing removerâ€‰(4) .
10. Remove the 3rd gearâ€‰(2) and 2nd gearâ€‰(3) with the press.



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11. Click here for full size
12. Remove the counter shaft 2nd gear bearingâ€‰(1).
13. Remove the 2nd gear synchronizer ringâ€‰(2).
14. Remove the 1st-2nd gear synchronizer circlipâ€‰(3).

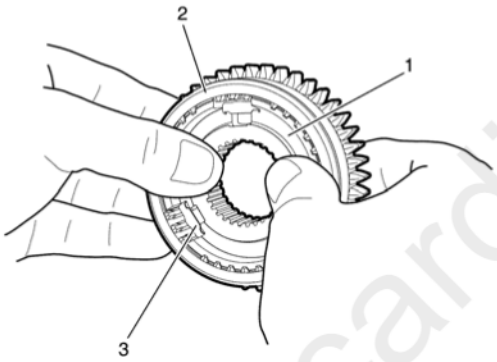


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15. Click here for full size

16. Position the 1st gear to the *DT-46494* gear, bearing removerâ€‰(3) .

17. Remove the 1st-2nd gear synchronizer hub assemblyâ€‰(1), 1st gear synchronizer ring and 1st gearâ€‰(2) with the press.
18. Remove the 1st gear synchronizer ring from the 1st gear.

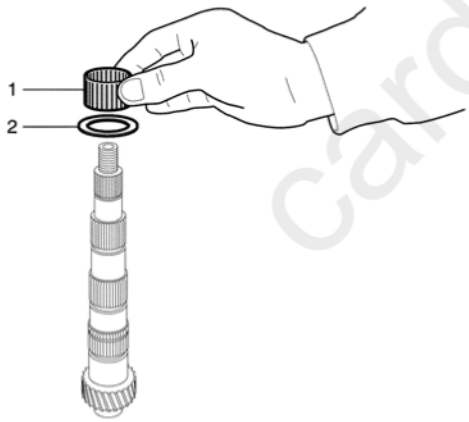


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19. Click here for full size

20. Push the hubâ€‰(1) from the 1st-2nd gear synchronizer hub assembly.

21. Disassemble the synchronizer sleeveâ€‰(2) and key unitsâ€‰(3).



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22. Click here for full size

23. Remove the counter shaft 1st gear bearingâ€‰(1) and the 1st gear spacerâ€‰(2).

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1. **TRANSMISSION**
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

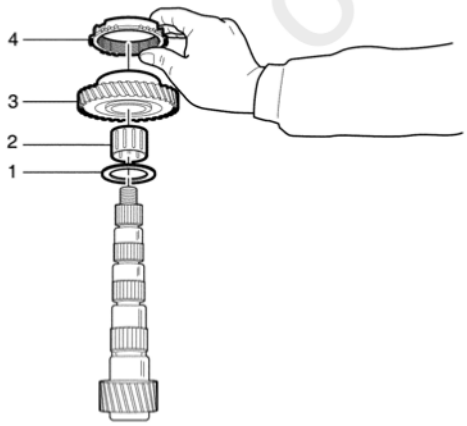
Counter Gear Shaft Assemble

Special Tools

- *DT-49079* Gear, Bearing Installer
- *DT-49080* Gear, Bearing Installer
- *DT-49081* Gear, Bearing Installer

For equivalent regional tools, refer to Special Tools .

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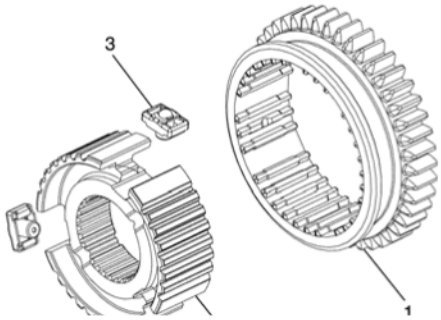


1. Click here for full size
2. Note**:**

   Coat the inner parts of the gear, the bearing and the oil seal with gear fluid.

3. Install the 1st gear spacerâ€‰(1).
4. Install the 1st gear bearingâ€‰(2).
5. Install the 1st gearâ€‰(3).
6. Install the 1st gear synchronizer ringâ€‰(4).

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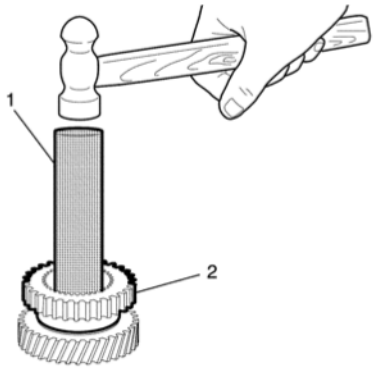


7. Click here for full size
8. Note**:**

   Make sure that the key units is properly seated into the key groove of sleeve and hub.

9. Install the hubâ€‰(2) to the 1st-2nd gear synchronizer sleeveâ€‰(1).
10. Install the key unitsâ€‰(3) into the key groove of the hub and sleeve.

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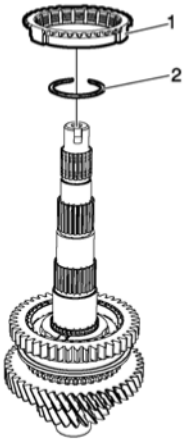


11. [Click here for full size]
12. Note**:**

    Match the key groove of hub to the 1st gear synchronizer ring lug.

13. Install the 1st-2nd gear synchronizer hub assemblyâ€‰(2) into the counter shaft using the *DT-49081* gear, bearing installerâ€‰(1), and hammer.

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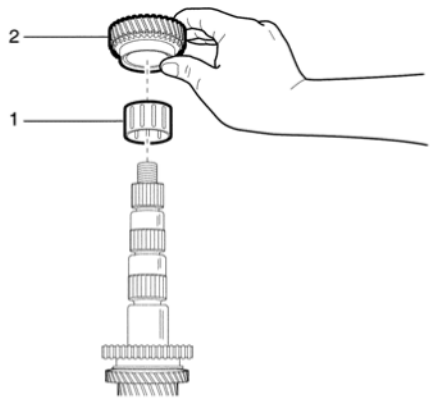
14. Click here for full size

15. Install the 1st-2nd gear synchronizer circlip (2).

16. Note:

    Match the 2nd synchronizer ring lug to the key groove of hub.

17. Install the 2nd synchronizer ringâ€‰(1).

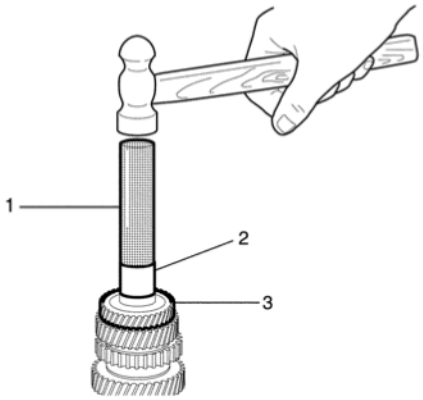


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18. Click here for full size

19. Install the 2nd gear bearingâ€‰(1).

20. Install the 2nd gearâ€‰(2).

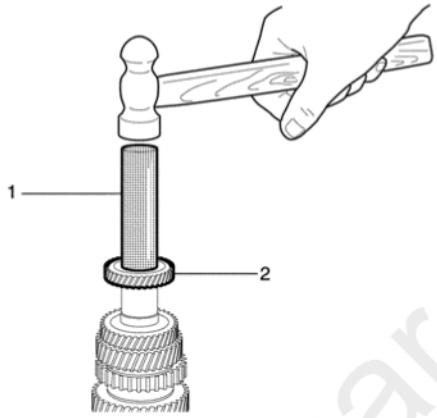


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21. Click here for full size

22. Insert the 3rd gear and the 3rd-4th gear spacer into the counter shaft.

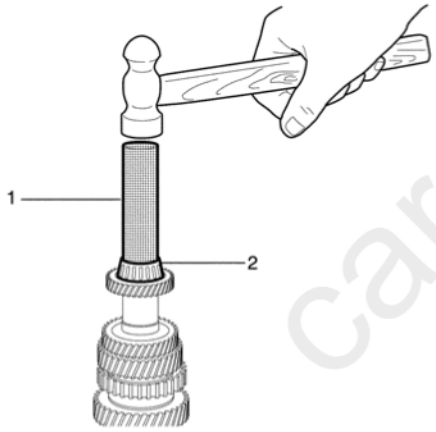
23. Install the 3rd-4th gear spacerâ€‰(2) and the 3rd gearâ€‰(3) using the *DT-49079* gear, bearing installerâ€‰(1) and a hammer.



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24.
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25. Install the 4th gearâ€‰(2) to the counter shaft using the *DT-49080* gear, bearing installerâ€‰(1) and a hammer.



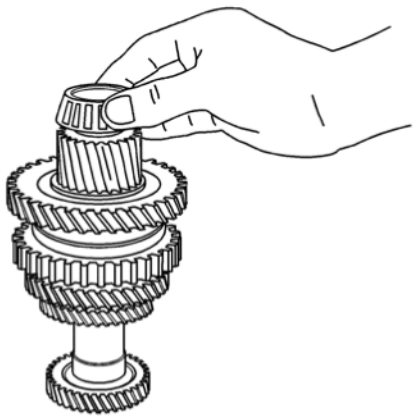
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26.

Click here for full size

27. Install the left side bearingâ€‰(2) onto the countershaft using the *DT-49080* gear, bearing installer(1) and hammer.

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28. Click here for full size

29. Install the countershaft right side bearing.

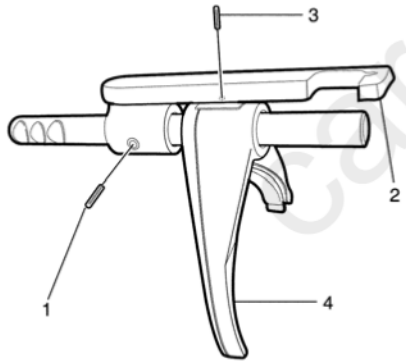
30. Install the gear unit. Refer to Transmission Assemble.

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Shift Shaft and Fork Assemblies Disassemble

1st-2nd Gear Shift Shaft Disassemble



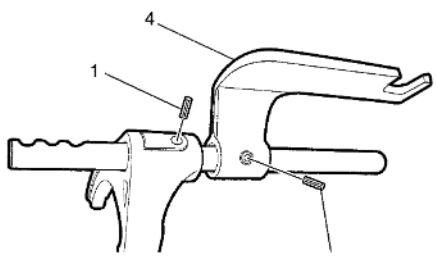
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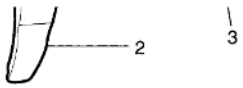
1. Click here for full size
2. Remove the gear unit. Refer to Transmission Disassemble.
3. Remove the 1st-2nd gear shift shaft assembly from the gear unit.
4. Fix the shift shaft assembly into a vise with a protector.
5. Note:

   Mark the place and direction of the shift fork and yoke before removing them. This will aid the reassembly
6. Remove the 1st-2nd gear shift yoke pinâ€‰(1) using a pin punch and a hammer.
7. Remove the 1st-2nd gear shift yokeâ€‰(2).
8. Remove the 1st-2nd gear shift fork pinâ€‰(3) using a pin punch and a hammer.
9. Remove the 1st-2nd gear shift forkâ€‰(4).

3rd-4th Gear Shift Shaft Disassemble

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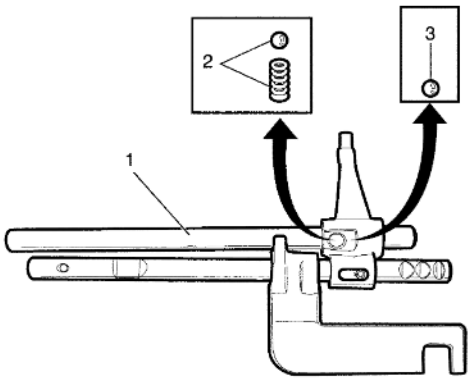




1. Click here for full size
2. Remove the gear unit. Refer to Transmission Disassemble.
3. Remove the 3rd-4th gear shift shaft assembly from the gear unit.
4. Fix the 3rd-4th gear shift shaft assembly into a vise with a protector.
5. Remove the 3rd-4th gear shift fork pinâ€‰(1) using a pin punch and a hammer.
6. Remove the 3rd-4th gear shift forkâ€‰(2).
7. Remove the 3rd-4th gear shift yoke pinâ€‰(3) using a pin punch and a hammer.
8. Remove the 3rd-4th gear shift yokeâ€‰(4).

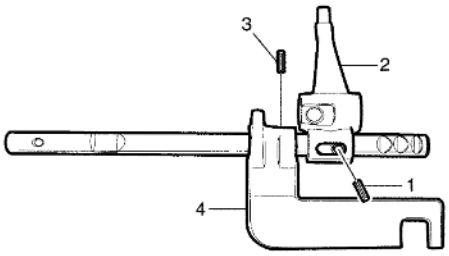
5th Reverse Gear Shift Shaft Disassemble

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1. Click here for full size
2. Remove the gear unit. Refer to Transmission Disassemble.
3. Remove the 5th-reverse gear shift shaft assembly from the gear unit.
4. Remove the shift shaft not installed with yoke by pushingâ€‰(1).
5. Remove the 5th-reverse gear ballâ€‰(3) and the reverse shift guide ball and springâ€‰(2) from the reverse shift arm.
6. Fix the shift shaft assembly into a vise with a protector.



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7. Click here for full size

8. Remove the reverse gear shift arm pinâ€‰(1) using a pin punch and hammer.

9. Remove the reverse gear shift armâ€‰(2).

10. Remove the 5th gear shift yoke pinâ€‰(3) using a pin punch and a hammer.

11. Remove the 5th gear shift yokeâ€‰(4).

Related Part Information

Part Name	Catalog Name	Part Code
3rd and 4th and 5th and Reverse Shift Fork	FORK,3RD & 4TH & 5TH & REV SHFT	SD125
3rd and Overdrive Shift Fork	FORK,3RD & O/D SHFT	SS288
Low and Reverse Shift Fork	FORK,LOW & REV SHFT	SS292
Shift Fork	FORK,SHFT	SS317
Transmission Reduction Gear Shift Fork	FORK,TRANS RDCN GR SHFT(DEEP RDCN)	SZ087
Transmission Shift Fork	FORK,TRANS SHFT	SZ205
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0001
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0005
Reverse Shift Fork	FORK,REV SHFT	X0028
5th Shift Fork	FORK,5TH SHFT	X0035
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0051
3rd and 4th Shift Shaft	SHAFT,3RD & 4TH SHFT	X0052
5th Shift Shaft	SHAFT,5TH SHFT	X0053
Reverse Shift Shaft	SHAFT,REV SHFT	X0054
1st and Reverse Shift Fork	FORK,1ST & REV SHFT	X0071
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT	X0072
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0075
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0076
Shift Shaft	SHAFT,SHFT	X0094
Reverse Shift Shaft	SHAFT,REV SHFT	X0118
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0156
5th and Reverse Shift Shaft	SHAFT,5TH & REV SHFT	X0157
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0272
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0275
5th Shift Fork	FORK,5TH SHFT	X0276
Reverse Shift Fork	FORK,REV SHFT	X0294
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT	X0307
4th and 5th Shift Shaft	SHAFT,4TH & 5TH SHFT	X0308
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0315
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0321
6th and 7th Shift Fork	FORK,6TH & 7TH SHFT	X0332
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0333
Reverse Shift Fork	FORK,REV SHFT(W/SHFT SHF)	X0383
1st and Reverse Shift Fork	FORK,1ST & REV SHFT(W/SHFT SHF)	X0384
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT(W/SHFT SHF)	X0385
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT(W/SHFT SHF)	X0386
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT(W/SHFT SHF)	X0387
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT(W/SHFT SHF)	X0388
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT(W/SHFT SHF)	X0389
High and Low Range Shift Fork	FORK,HIGH & LOW RANGE SHFT	X0390
Intermediate Range Shift Fork	FORK,INTER RANGE SHFT	X0391
Range Shift Shaft	SHAFT KIT,RANGE SHFT(W/O RING)	X0459
High and Low Range Shift Shaft	SHAFT,HIGH & LOW RANGE SHFT	X0460
Lateral Shift Shaft	SHAFT,LATERAL SHFT	X0461
6th and 7th Shift Shaft	SHAFT,6TH & 7TH SHFT	X0465
5th and 6th and Reverse Shift Shaft	SHAFT,5TH & 6TH & REV SHFT	X0551
1st and 2nd and 3rd and 4th Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH SHFT	X0552

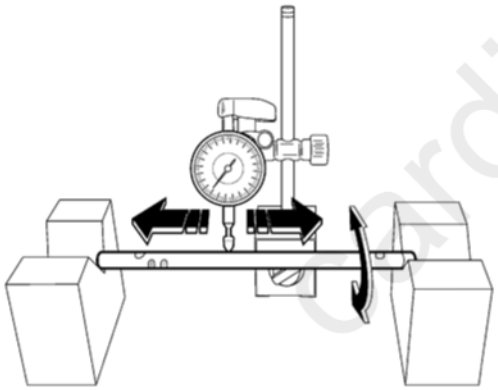
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Part Name	Catalog Name	Part Code
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0595
6th and 7th Shift Shaft	SHAFT KIT,6TH & 7TH SHFT	X0626
Reverse Shift Fork	FORK,REV SHFT (CSTG)	X0709
1st and 2nd and 3rd and 4th and 5th and 6th and Reverse Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH & 5TH & 6TH & REV SHFT	X0710
3rd and 4th and Reverse Shift Shaft	SHAFT,3RD & 4TH & REV SHFT	X0711
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0712
Shaft Shift Shaft	SHAFT KIT,SHF SHFT	X0713
Shift Shaft	SHAFT,SHFT (W/FORK & LVR)	X0715
6th Shift Shaft	SHAFT,6TH SHFT	X0731
6th Shift Fork	FORK,6TH SHFT	X0732
5th and 6th Shift Shaft	SHAFT,5TH & 6TH SHFT	X0747
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0783
3rd and Reverse Shift Shaft	SHAFT,3RD & REV SHFT	X0802
5th and 6th and Reverse Shift Fork	FORK,5TH & 6TH & REV SHFT	X0806
1st and 2nd and 5th and 6th Shift Fork	FORK,1ST & 2ND & 5TH & 6TH SHFT (W/ SHFT SHF)	X0817
3rd and 4th and Reverse Shift Fork	FORK,3RD & 4TH & REV SHFT (W/ SHFT SHF)	X0818
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT (CSTG)	X0825
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT (CSTG)	X0826
5th Shift Fork	FORK,5TH SHFT (W/ BRKT)	X0872
Reverse Shift Fork	FORK,REV SHFT	X1949

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Shift Shaft and Fork Assemblies Cleaning and Inspection



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1. Click here for full size
2. Inspect for bent, deformed or damaged shift shaft.
3. Replace the shift shaft if necessary

Related Part Information

Part Name	Catalog Name	Part Code
3rd and 4th and 5th and Reverse Shift Fork	FORK,3RD & 4TH & 5TH & REV SHFT	SD125
3rd and Overdrive Shift Fork	FORK,3RD & O/D SHFT	SS288
Low and Reverse Shift Fork	FORK,LOW & REV SHFT	SS292
Shift Fork	FORK,SHFT	SS317
Transmission Reduction Gear Shift Fork	FORK,TRANS RDCN GR SHFT(DEEP RDCN)	SZ087
Transmission Shift Fork	FORK,TRANS SHFT	SZ205
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0001
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0005
Reverse Shift Fork	FORK,REV SHFT	X0028
5th Shift Fork	FORK,5TH SHFT	X0035
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0051
3rd and 4th Shift Shaft	SHAFT,3RD & 4TH SHFT	X0052
5th Shift Shaft	SHAFT,5TH SHFT	X0053
Reverse Shift Shaft	SHAFT,REV SHFT	X0054
1st and Reverse Shift Fork	FORK,1ST & REV SHFT	X0071
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT	X0072
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0075
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0076
Shift Shaft	SHAFT,SHFT	X0094
Reverse Shift Shaft	SHAFT,REV SHFT	X0118
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0156
5th and Reverse Shift Shaft	SHAFT,5TH & REV SHFT	X0157
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0272
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0275
5th Shift Fork	FORK,5TH SHFT	X0276
Reverse Shift Fork	FORK,REV SHFT	X0294
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT	X0307
4th and 5th Shift Shaft	SHAFT,4TH & 5TH SHFT	X0308
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0315
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0321
6th and 7th Shift Fork	FORK,6TH & 7TH SHFT	X0332
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0333
Reverse Shift Fork	FORK,REV SHFT(W/SHFT SHF)	X0383
1st and Reverse Shift Fork	FORK,1ST & REV SHFT(W/SHFT SHF)	X0384
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT(W/SHFT SHF)	X0385
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT(W/SHFT SHF)	X0386
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT(W/SHFT SHF)	X0387
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT(W/SHFT SHF)	X0388
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT(W/SHFT SHF)	X0389

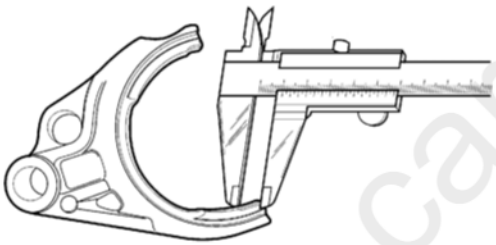
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Part Name	Catalog Name	Part Code
High and Low Range Shift Fork	FORK,HIGH & LOW RANGE SHFT	X0390
Intermediate Range Shift Fork	FORK,INTER RANGE SHFT	X0391
Range Shift Shaft	SHAFT KIT,RANGE SHFT(W/O RING)	X0459
High and Low Range Shift Shaft	SHAFT,HIGH & LOW RANGE SHFT	X0460
Lateral Shift Shaft	SHAFT,LATERAL SHFT	X0461
6th and 7th Shift Shaft	SHAFT,6TH & 7TH SHFT	X0465
5th and 6th and Reverse Shift Shaft	SHAFT,5TH & 6TH & REV SHFT	X0551
1st and 2nd and 3rd and 4th Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH SHFT	X0552
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0595
6th and 7th Shift Shaft	SHAFT KIT,6TH & 7TH SHFT	X0626
Reverse Shift Fork	FORK,REV SHFT (CSTG)	X0709
1st and 2nd and 3rd and 4th and 5th and 6th and Reverse Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH & 5TH & 6TH & REV SHFT	X0710
3rd and 4th and Reverse Shift Shaft	SHAFT,3RD & 4TH & REV SHFT	X0711
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0712
Shaft Shift Shaft	SHAFT KIT,SHF SHFT	X0713
Shift Shaft	SHAFT,SHFT (W/FORK & LVR)	X0715
6th Shift Shaft	SHAFT,6TH SHFT	X0731
6th Shift Fork	FORK,6TH SHFT	X0732
5th and 6th Shift Shaft	SHAFT,5TH & 6TH SHFT	X0747
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0783
3rd and Reverse Shift Shaft	SHAFT,3RD & REV SHFT	X0802
5th and 6th and Reverse Shift Fork	FORK,5TH & 6TH & REV SHFT	X0806
1st and 2nd and 5th and 6th Shift Fork	FORK,1ST & 2ND & 5TH & 6TH SHFT (W/ SHFT SHF)	X0817
3rd and 4th and Reverse Shift Fork	FORK,3RD & 4TH & REV SHFT (W/ SHFT SHF)	X0818
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT (CSTG)	X0825
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT (CSTG)	X0826
5th Shift Fork	FORK,5TH SHFT (W/ BRKT)	X0872
Reverse Shift Fork	FORK,REV SHFT	X1949

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Shift Fork Cleaning and Inspection



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Measure the end thickness of shift fork and replace if necessary.

Specifications

- The standard shift fork end thickness for the low speed shift fork is 8.7â€‰mm (0.343â€‰in).
- The shift fork end thickness limit for the low speed shift fork is 8.56â€‰mm (0.337â€‰in).
- The standard shift fork end thickness for the high speed shift fork is 7.8â€‰mm (0.307â€‰in).
- The shift fork end thickness limit for the high speed shift fork is 7.66â€‰mm (0.302â€‰in).
- The standard shift fork end thickness for the fifth gear shift fork is 7.8â€‰mm (0.307â€‰in).
- The shift fork end thickness limit for the fifth gear shift fork is 7.66â€‰mm (0.302â€‰in).

Related Part Information

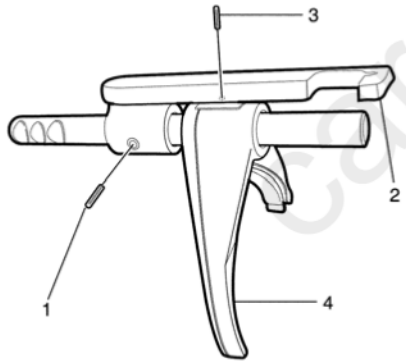
Part Name	Catalog Name	Part Code
Shift Fork	FORK,SHFT	SS317

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1. TRANSMISSION
2. MANUAL TRANSMISSION - Y4A/Y4M
3. REPAIR INSTRUCTIONS - OFF VEHICLE
4.

Shift Shaft and Fork Assemblies Assemble

1st-2nd Gear Shift Shaft Assembly

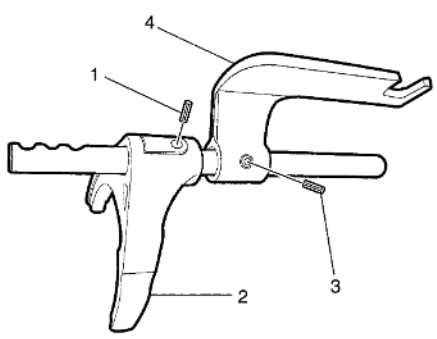


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1. Click here for full size
2. Place the shift shaft into a vise with a protector.
3. Install the 1st-2nd gear shift forkâ€‰(4).
4. Install the new 1st-2nd gear shift fork pinâ€‰(3) using a pin punch and a hammer.
5. Install the 1st-2nd gear shift yokeâ€‰(2).
6. Install the new 1st-2nd gear shift yoke pinâ€‰(1) using a pin punch and a hammer.
7. Install the 1st-2nd gear shift shaft assembly into the gear unit.
8. Install the gear unit. Refer to Transmission Assemble.

3rd-4th Gear Shift Shaft Assembly

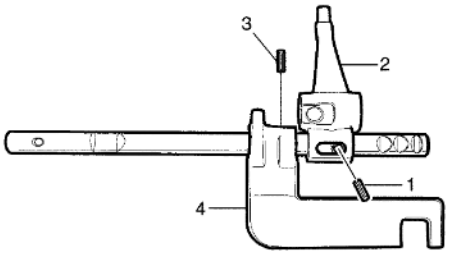
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1. Click here for full size
2. Place the shift shaft into a vise with a protector.
3. Install the 3rd-4th gear shift yokeâ€‰(4).
4. Install the new 3rd-4th gear shift yoke pinâ€‰(3) using a pin punch and a hammer.
5. Install the 3rd-4th gear shift forkâ€‰(2).
6. Install the new 3rd-4th gear shift fork pinâ€‰(1) using a pin punch and a hammer.
7. Install the 3rd-4th gear shift shaft assembly into the gear unit.
8. Install the gear unit. Refer to Transmission Assemble.

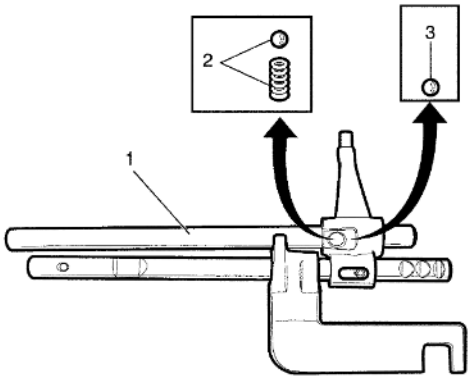
5th Reverse Gear Shift Shaft Assembly

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1. Click here for full size
2. Place the shift shaft into a vise with a protector.
3. Install the 5th gear shift yokeâ€‰(4).
4. Install the new 5th gear shift yoke pinâ€‰(3) using a pin punch and a hammer.
5. Install the reverse gear shift armâ€‰(2).
6. Install the new reverse gear shift arm pinâ€‰(1) using a pin punch and a hammer.



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7. Click here for full size
8. Install the reverse shift guide ball and springâ€‰(2).
9. Install the 5th-reverse gear ballâ€‰(3).
10. Install the shift shaft by pushingâ€‰(1).
11. Install 5th-reverse gear shift shaft assembly into the gear unit.

12. Install the gear unit. Refer to Transmission Disassemble.

Related Part Information

Part Name	Catalog Name	Part Code
3rd and 4th and 5th and Reverse Shift Fork	FORK,3RD & 4TH & 5TH & REV SHFT	SD125
3rd and Overdrive Shift Fork	FORK,3RD & O/D SHFT	SS288
Low and Reverse Shift Fork	FORK,LOW & REV SHFT	SS292
Shift Fork	FORK,SHFT	SS317
Transmission Reduction Gear Shift Fork	FORK,TRANS RDCN GR SHFT(DEEP RDCN)	SZ087
Transmission Shift Fork	FORK,TRANS SHFT	SZ205
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0001
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0005
Reverse Shift Fork	FORK,REV SHFT	X0028
5th Shift Fork	FORK,5TH SHFT	X0035
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0051
3rd and 4th Shift Shaft	SHAFT,3RD & 4TH SHFT	X0052
5th Shift Shaft	SHAFT,5TH SHFT	X0053
Reverse Shift Shaft	SHAFT,REV SHFT	X0054
1st and Reverse Shift Fork	FORK,1ST & REV SHFT	X0071
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT	X0072
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0075
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0076
Shift Shaft	SHAFT,SHFT	X0094
Reverse Shift Shaft	SHAFT,REV SHFT	X0118
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0156
5th and Reverse Shift Shaft	SHAFT,5TH & REV SHFT	X0157
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT	X0272
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT	X0275
5th Shift Fork	FORK,5TH SHFT	X0276
Reverse Shift Fork	FORK,REV SHFT	X0294
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT	X0307
4th and 5th Shift Shaft	SHAFT,4TH & 5TH SHFT	X0308
2nd and 3rd Shift Shaft	SHAFT,2ND & 3RD SHFT	X0315
1st and Reverse Shift Shaft	SHAFT,1ST & REV SHFT	X0321
6th and 7th Shift Fork	FORK,6TH & 7TH SHFT	X0332
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0333
Reverse Shift Fork	FORK,REV SHFT(W/SHFT SHF)	X0383
1st and Reverse Shift Fork	FORK,1ST & REV SHFT(W/SHFT SHF)	X0384
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT(W/SHFT SHF)	X0385
2nd and 3rd Shift Fork	FORK,2ND & 3RD SHFT(W/SHFT SHF)	X0386
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT(W/SHFT SHF)	X0387
4th and 5th Shift Fork	FORK,4TH & 5TH SHFT(W/SHFT SHF)	X0388
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT(W/SHFT SHF)	X0389
High and Low Range Shift Fork	FORK,HIGH & LOW RANGE SHFT	X0390
Intermediate Range Shift Fork	FORK,INTER RANGE SHFT	X0391
Range Shift Shaft	SHAFT KIT,RANGE SHFT(W/O RING)	X0459
High and Low Range Shift Shaft	SHAFT,HIGH & LOW RANGE SHFT	X0460
Lateral Shift Shaft	SHAFT,LATERAL SHFT	X0461
6th and 7th Shift Shaft	SHAFT,6TH & 7TH SHFT	X0465
5th and 6th and Reverse Shift Shaft	SHAFT,5TH & 6TH & REV SHFT	X0551
1st and 2nd and 3rd and 4th Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH SHFT	X0552
5th and Reverse Shift Fork	FORK,5TH & REV SHFT	X0595

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Part Name	Catalog Name	Part Code
6th and 7th Shift Shaft	SHAFT KIT,6TH & 7TH SHFT	X0626
Reverse Shift Fork	FORK,REV SHFT (CSTG)	X0709
1st and 2nd and 3rd and 4th and 5th and 6th and Reverse Shift Shaft	SHAFT,1ST & 2ND & 3RD & 4TH & 5TH & 6TH & REV SHFT	X0710
3rd and 4th and Reverse Shift Shaft	SHAFT,3RD & 4TH & REV SHFT	X0711
1st and 2nd Shift Shaft	SHAFT,1ST & 2ND SHFT	X0712
Shaft Shift Shaft	SHAFT KIT,SHF SHFT	X0713
Shift Shaft	SHAFT,SHFT (W/FORK & LVR)	X0715
6th Shift Shaft	SHAFT,6TH SHFT	X0731
6th Shift Fork	FORK,6TH SHFT	X0732
5th and 6th Shift Shaft	SHAFT,5TH & 6TH SHFT	X0747
5th and 6th Shift Fork	FORK,5TH & 6TH SHFT	X0783
3rd and Reverse Shift Shaft	SHAFT,3RD & REV SHFT	X0802
5th and 6th and Reverse Shift Fork	FORK,5TH & 6TH & REV SHFT	X0806
1st and 2nd and 5th and 6th Shift Fork	FORK,1ST & 2ND & 5TH & 6TH SHFT (W/ SHFT SHF)	X0817
3rd and 4th and Reverse Shift Fork	FORK,3RD & 4TH & REV SHFT (W/ SHFT SHF)	X0818
1st and 2nd Shift Fork	FORK,1ST & 2ND SHFT (CSTG)	X0825
3rd and 4th Shift Fork	FORK,3RD & 4TH SHFT (CSTG)	X0826
5th Shift Fork	FORK,5TH SHFT (W/ BRKT)	X0872
Reverse Shift Fork	FORK,REV SHFT	X1949

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