

2012 - Mazda6 - Transmission/ Transaxle

MECHANICAL SYSTEM TEST [FS5A-EL]

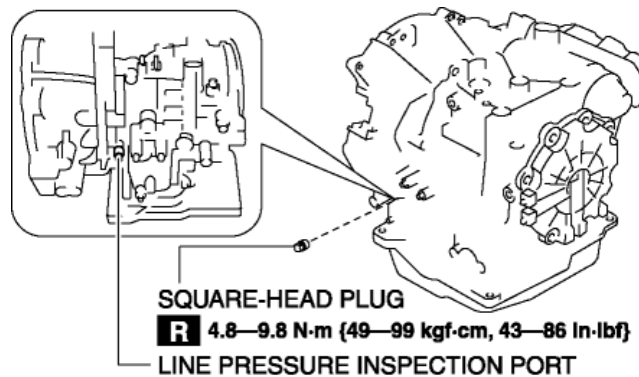
Mechanical System Test Preparation

1. Engage the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant. (See [ENGINE COOLANT LEVEL INSPECTION \[MZR 2.5\]](#).)
3. Inspect the engine oil. (See [ENGINE OIL LEVEL INSPECTION \[MZR 2.5\]](#).)
4. Inspect the ATF. (See [AUTOMATIC TRANSAXLE FLUID \(ATF\) INSPECTION \[FS5A-EL\]](#).)
5. Inspect the idle speed. (See [ENGINE TUNE-UP \[MZR 2.5\]](#).)
6. Inspect the ignition timing. (See [ENGINE TUNE-UP \[MZR 2.5\]](#).)
7. Verify that no DTCs recorded. (See [ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION \[FS5A-EL\]](#).)

Line Pressure Test

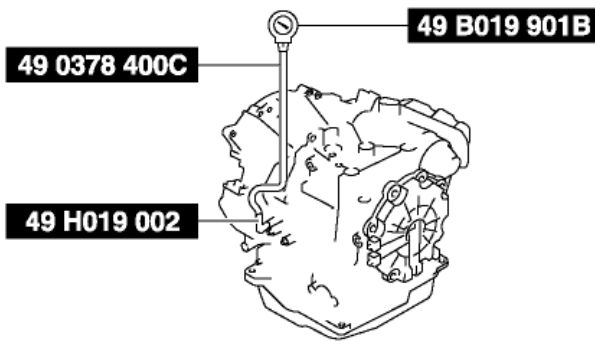
NOTE:

- Use a suitable oil pressure gauge that corresponds to the line pressure because the maximum scale value differs depending on the oil pressure gauge.
1. Remove the aerodynamic under cover NO.2. (See [AERODYNAMIC UNDER COVER NO.2 REMOVAL/ INSTALLATION](#).)
 2. Perform the "Mechanical System Test Preparation". (See [Mechanical System Test Preparation](#).)
 3. Perform the line pressure test with the engine idle at D position.
 - a. Remove the square-head plug from the line pressure inspection port.

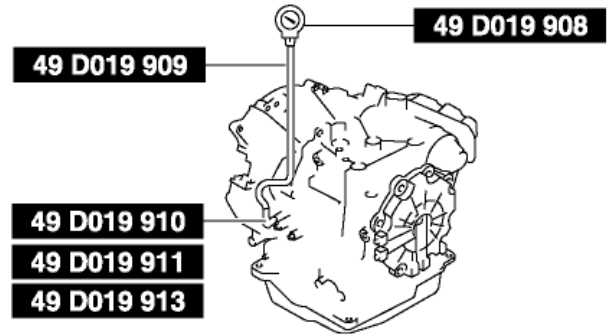


WARNING:

- Removing the square-head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square-head plug, allow the ATF to cool.
- b. Connect the SSTs as following:
 - When using the oil pressure gauge set (49 0378 400C), connect the SSTs (49 H019 002, 49 0378 400C, 49 B019 901B) to the line pressure inspection port as shown in the figure.
 - When using the oil pressure gauge set (49 D019 9A2), connect the SSTs (49 D019 910, 49 D019 911, 49 D019 913, 49 D019 909, 49 D019 908) to the line pressure inspection port as shown in the figure.

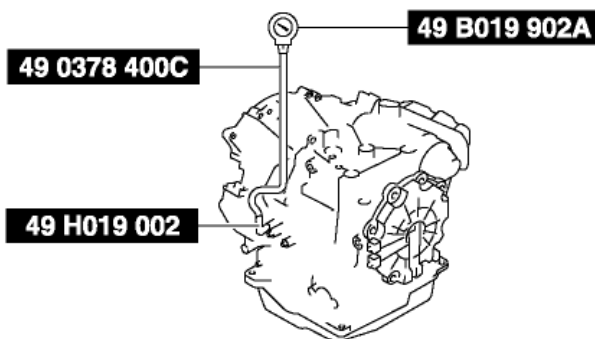
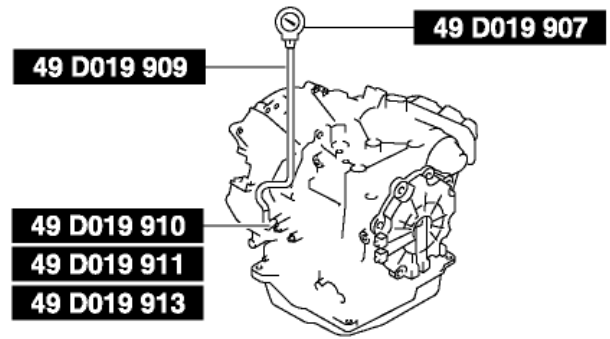
USING OIL PRESSURE GAUGE SET (49 0378 400C)

- **49 0378 400C**
 - 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
 - 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}
- **49 D019 9A2**
 - 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
 - 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

USING OIL PRESSURE GAUGE SET (49 D019 9A2)

- c. Start the engine.
 - d. Warm-up the transaxle until the ATF temperature reaches 60—70 °C { 140—158 °F } .
 - e. Shift the selector lever to D position.
 - f. Read the line pressure with the engine idle.
4. Perform the line pressure test at the engine idle at each position in the same manner.
 5. Stop the engine.
 6. Perform the line pressure test with the engine stall at D position.
 - a. Replace the oil pressure gauge as following:

- When using the oil pressure gauge set (49 0378 400C) , replace the SST (49 B019 901B) with SST (49 B019 902A) .
- When using the oil pressure gauge set (49 D019 9A2) , replace the SST (49 D019 908) with SST (49 D019 907) .

USING OIL PRESSURE GAUGE SET (49 0378 400C)**USING OIL PRESSURE GAUGE SET (49 D019 9A2)**

- **49 0378 400C**
 - 49 B019 901B (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
 - 49 B019 902A (HIGH Pressure Gauge): 0—2,500 kPa {0.00—25.49 kgf/cm², 0.0—362.5 psi}
- **49 D019 9A2**
 - 49 D019 908 (LOW Pressure Gauge): 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
 - 49 D019 907 (HIGH Pressure Gauge): 0—3,000 kPa {0.00—30.59 kgf/cm², 0.0—435.1 psi}

- b. Start the engine.
- c. Firmly depress the brake pedal with the left foot.
- d. Shift the selector lever to D position.

CAUTION:

- If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (5)—(6) within 5 s.

- e. Gradually depress the accelerator pedal with the right foot.
- f. When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
- g. Shift the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.

7. Perform the line pressure test with the engine stall at each position in the same manner.

- If there is any malfunction, inspect the following “Possible Cause” according to the condition.

Condition		Possible cause
Low pressure	In R, D, M (1GR, 2GR) positions	• Worn oil pump • Oil leakage from oil pump, control valve body, and/or transaxle case • Pressure regulator valve sticking • Pressure control solenoid A malfunction
	In D, M (1GR, 2GR) positions	• Oil leakage from forward clutch hydraulic circuit
	In M (2GR) position	• Oil leakage from 2-4 brake band hydraulic circuit
	In R, M (1GR) positions	• Oil leakage from low and reverse brake hydraulic circuit
	In R position	• Oil leakage from reverse clutch hydraulic circuit
High pressure	In R, D, M (1GR, 2GR) positions	• Pressure regulator valve stuck • Pressure control solenoid A malfunction

Line Pressure

Test Condition		Specification (kPa {kgf/cm ² , psi})
Idle	R position	490—710 {5.00—7.23, 71.1—102.0}
	D, M (1GR, 2GR) positions	330—470 {3.37—4.79, 47.9—68.1}
Stall	R position	1,850—2,120 {18.87—21.61, 268.4—307.4}
	D, M (1GR, 2GR) positions	1,200—1,320 {12.24—13.46, 174.1—191.4}

8. Stop the engine.

9. Remove the SSTs.

WARNING:

- Removing the SSTs when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the SSTs, allow the ATF to cool.

10. Install a new square-head plug in the inspection port.

NOTE:

- Do not reuse the square-head plug because it is coated.

Tightening torque

- 4.8—9.8 N·m {49—99 kgf·cm, 43—86 in·lbf}

11. Install the aerodynamic under cover NO.2. (See [AERODYNAMIC UNDER COVER NO.2 REMOVAL/ INSTALLATION.](#))

Stall Test

1. Perform the “Mechanical System Test Preparation”. (See [Mechanical System Test Preparation.](#))
2. Start the engine.
3. Perform the stall test at D position.

- a. Firmly depress the brake pedal with the left foot.
- b. Shift the selector lever to D position.

CAUTION:

- If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (3)—(4) within 5 s.

- c. Gently depress the accelerator pedal with the right foot.
 - d. When the engine speed no longer increases, quickly read the speed and release the accelerator pedal with the right foot.
 - e. Shift the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.
4. Perform the stall test at each position in the same manner.
 - If there is any malfunction, inspect the following “Possible Cause” according to the condition.

Condition		Possible cause	
Above specification	In R, D, M positions	Insufficient line pressure	• Worn oil pump • Oil leakage from oil pump, control valve body, and/or transaxle case • Pressure regulator valve sticking • Converter relief valve sticking • Pressure control solenoid A malfunction
	In D, M (1GR, 2GR) positions		• Forward clutch slipping
	In D position		• One-way clutch No.1 malfunction
	In D, M (2GR) positions		• 2-4 brake band slipping • One-way clutch No.1 malfunction
	In D, M (1GR) positions		• Low and reverse brake slipping • One-way clutch No.1 malfunction
	In R position		• Perform “Road Test” to determine whether problem is in reverse clutch or low and reverse brake ▪ Engine braking felt in M position (1GR): Reverse clutch is defective ▪ Engine braking not felt in M position (1GR): Low and reverse brake is defective
Below specification			• Engine lack of power • One-way clutch damage in torque converter

Stall Speed

Test condition	Specification (rpm)

R position	2,400—3,000
D position	
M position	

Time Lag Test

1. Perform the "Mechanical System Test Preparation". (See [Mechanical System Test Preparation](#).)
2. Start the engine.
3. Perform the time lag test when shifting the selector lever from N position to D position.
 - a. Shift the selector lever from N position to D position while the brake pedal is depressed.
 - b. Measure the time it takes from shifting until shock is felt when shifting the selector lever from N position to D position.
4. Perform the time lag test when shifting the selector lever from N position to R position in the same manner.
 - If there is any malfunction, inspect the following "Possible Cause" according to the condition.

Condition		Possible cause
From N position to D position	More than specification	• Low line pressure • Oil leakage from forward clutch hydraulic circuit • Forward clutch slipping • Shift solenoid A malfunction
	Less than specification	• High line pressure • Shift solenoid A malfunction • Forward accumulator malfunction
From N position to R position	More than specification	• Low line pressure • Low and reverse brake slipping • Reverse clutch slipping
	Less than specification	• High line pressure • Servo apply accumulator malfunction • Shift solenoid B malfunction

Time Lag

Test condition	Specification (s)
From N position to D position	0.4—0.7
From N position to R position	

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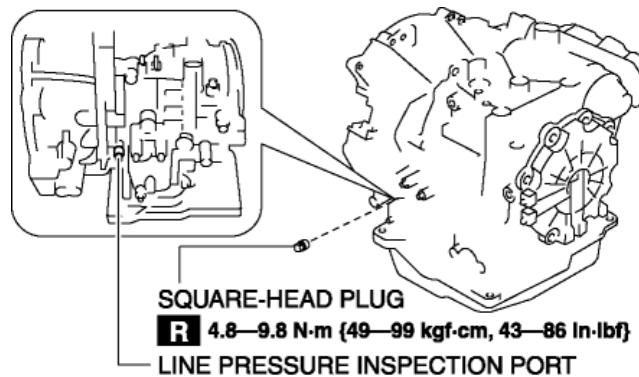
Mechanical System Test Preparation

1. Engage the parking brake and use wheel chocks at the front and rear of the wheels.
2. Inspect the engine coolant. (See [ENGINE COOLANT LEVEL INSPECTION \[MZR 2.5\]](#).)
3. Inspect the engine oil. (See [ENGINE OIL LEVEL INSPECTION \[MZR 2.5\]](#).)
4. Inspect the ATF. (See [AUTOMATIC TRANSAXLE FLUID \(ATF\) INSPECTION \[FS5A-EL\]](#).)
5. Inspect the idle speed. (See [ENGINE TUNE-UP \[MZR 2.5\]](#).)
6. Inspect the ignition timing. (See [ENGINE TUNE-UP \[MZR 2.5\]](#).)
7. Verify that no DTCs recorded. (See [ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION \[FS5A-EL\]](#).)

Line Pressure Test

NOTE:

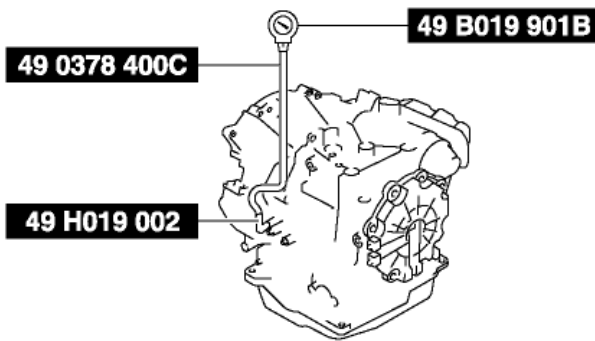
- Use a suitable oil pressure gauge that corresponds to the line pressure because the maximum scale value differs depending on the oil pressure gauge.
1. Remove the aerodynamic under cover NO.2. (See [AERODYNAMIC UNDER COVER NO.2 REMOVAL/ INSTALLATION](#).)
 2. Perform the "Mechanical System Test Preparation". (See [Mechanical System Test Preparation](#).)
 3. Perform the line pressure test with the engine idle at D position.
 - a. Remove the square-head plug from the line pressure inspection port.



WARNING:

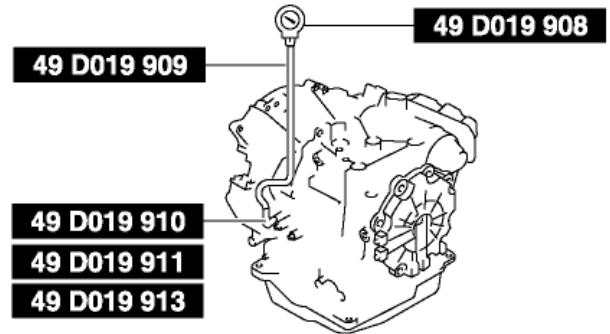
- Removing the square-head plug when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the square-head plug, allow the ATF to cool.
- b. Connect the SSTs as following:
 - When using the oil pressure gauge set (49 0378 400C), connect the SSTs (49 H019 002, 49 0378 400C, 49 B019 901B) to the line pressure inspection port as shown in the figure.
 - When using the oil pressure gauge set (49 D019 9A2), connect the SSTs (49 D019 910, 49 D019 911, 49 D019 913, 49 D019 909, 49 D019 908) to the line pressure inspection port as shown in the figure.

USING OIL PRESSURE GAUGE SET (49 0378 400C)



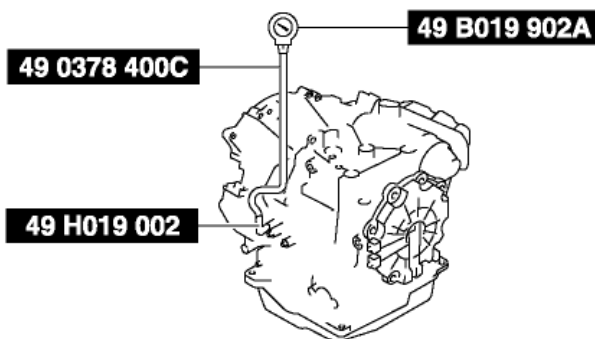
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 - **49 D019 908 (LOW Pressure Gauge):** 0—1,000 kPa {0.00—10.19 kgf/cm², 0.0—145.0 psi}
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USING OIL PRESSURE GAUGE SET (49 D019 9A2)



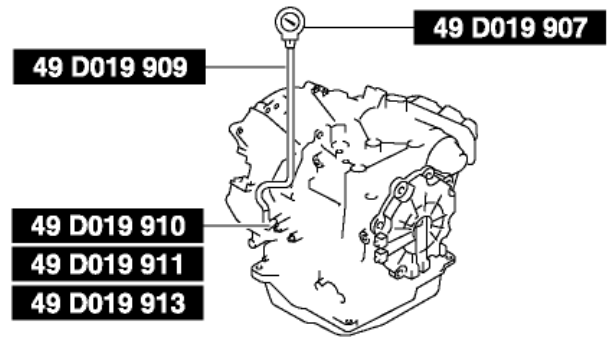
- c. Start the engine.
 - d. Warm-up the transaxle until the ATF temperature reaches 60—70 °C { 140—158 °F } .
 - e. Shift the selector lever to D position.
 - f. Read the line pressure with the engine idle.
4. Perform the line pressure test at the engine idle at each position in the same manner.
 5. Stop the engine.
 6. Perform the line pressure test with the engine stall at D position.
 - a. Replace the oil pressure gauge as following:
 - When using the oil pressure gauge set (49 0378 400C) , replace the SST (49 B019 901B) with SST (49 B019 902A) .
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USING OIL PRESSURE GAUGE SET (49 0378 400C)



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USING OIL PRESSURE GAUGE SET (49 D019 9A2)



- b. Start the engine.
- c. Firmly depress the brake pedal with the left foot.
- d. Shift the selector lever to D position.

CAUTION:

- If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (5)—(6) within 5 s.

- e. Gradually depress the accelerator pedal with the right foot.
- f. When the engine speed no longer increases, quickly read the line pressure and release the accelerator pedal.
- g. Shift the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.

7. Perform the line pressure test with the engine stall at each position in the same manner.

- If there is any malfunction, inspect the following “Possible Cause” according to the condition.

Condition		Possible cause
Low pressure	In R, D, M (1GR, 2GR) positions	• Worn oil pump • Oil leakage from oil pump, control valve body, and/or transaxle case • Pressure regulator valve sticking • Pressure control solenoid A malfunction
	In D, M (1GR, 2GR) positions	• Oil leakage from forward clutch hydraulic circuit
	In M (2GR) position	• Oil leakage from 2-4 brake band hydraulic circuit
	In R, M (1GR) positions	• Oil leakage from low and reverse brake hydraulic circuit
	In R position	• Oil leakage from reverse clutch hydraulic circuit
High pressure	In R, D, M (1GR, 2GR) positions	• Pressure regulator valve stuck • Pressure control solenoid A malfunction

Line Pressure

Test Condition		Specification (kPa {kgf/cm ² , psi})
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8. Stop the engine.

9. Remove the SSTs.

WARNING:

- Removing the SSTs when the ATF is hot can be dangerous. Hot ATF can come out of the opening and badly burn you. Before removing the SSTs, allow the ATF to cool.

10. Install a new square-head plug in the inspection port.

NOTE:

- Do not reuse the square-head plug because it is coated.

Tightening torque

- 4.8—9.8 N·m {49—99 kgf·cm, 43—86 in·lbf}

11. Install the aerodynamic under cover NO.2. (See [AERODYNAMIC UNDER COVER NO.2 REMOVAL/ INSTALLATION.](#))

Stall Test

1. Perform the “Mechanical System Test Preparation”. (See [Mechanical System Test Preparation.](#))
2. Start the engine.
3. Perform the stall test at D position.

- a. Firmly depress the brake pedal with the left foot.
- b. Shift the selector lever to D position.

CAUTION:

- If the accelerator pedal is pressed for longer than 5 s while the brake pedal is pressed, the transaxle could be damaged. Therefore, perform Steps (3)—(4) within 5 s.

- c. Gently depress the accelerator pedal with the right foot.
 - d. When the engine speed no longer increases, quickly read the speed and release the accelerator pedal with the right foot.
 - e. Shift the selector lever to N position and let the engine idle for 1 min or more to cool the ATF.
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	In D, M (1GR, 2GR) positions		• Forward clutch slipping
	In D position		• One-way clutch No.1 malfunction
	In D, M (2GR) positions		• 2-4 brake band slipping • One-way clutch No.1 malfunction
	In D, M (1GR) positions		• Low and reverse brake slipping • One-way clutch No.1 malfunction
	In R position		• Perform “Road Test” to determine whether problem is in reverse clutch or low and reverse brake ▪ Engine braking felt in M position (1GR): Reverse clutch is defective ▪ Engine braking not felt in M position (1GR): Low and reverse brake is defective
Below specification			• Engine lack of power • One-way clutch damage in torque converter

Stall Speed

Test condition	Specification (rpm)

R position	2,400—3,000
D position	
M position	

Time Lag Test

1. Perform the "Mechanical System Test Preparation". (See [Mechanical System Test Preparation](#).)
2. Start the engine.
3. Perform the time lag test when shifting the selector lever from N position to D position.
 - a. Shift the selector lever from N position to D position while the brake pedal is depressed.
 - b. Measure the time it takes from shifting until shock is felt when shifting the selector lever from N position to D position.
4. Perform the time lag test when shifting the selector lever from N position to R position in the same manner.
 - If there is any malfunction, inspect the following "Possible Cause" according to the condition.

Condition		Possible cause
From N position to D position	More than specification	• Low line pressure • Oil leakage from forward clutch hydraulic circuit • Forward clutch slipping • Shift solenoid A malfunction
	Less than specification	• High line pressure • Shift solenoid A malfunction • Forward accumulator malfunction
From N position to R position	More than specification	• Low line pressure • Low and reverse brake slipping • Reverse clutch slipping
	Less than specification	• High line pressure • Servo apply accumulator malfunction • Shift solenoid B malfunction

Time Lag

Test condition	Specification (s)
From N position to D position	0.4—0.7
From N position to R position	