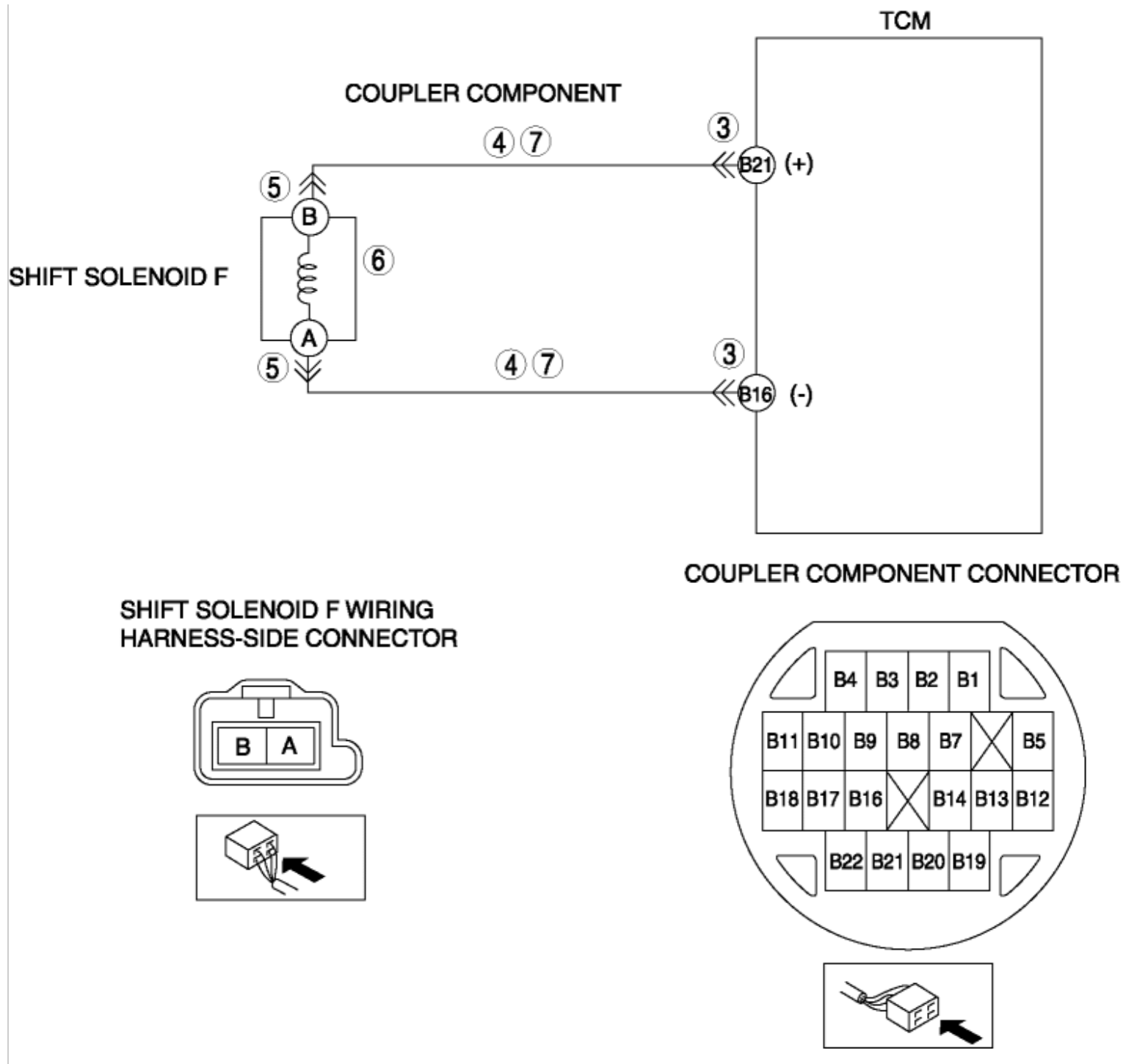


2012 - Mazda6 - Transmission/ Transaxle

DTC P0998:00 [AY6A-EL]

DTC P0998:00	Shift solenoid F circuit low
DETECTION CONDITION	• Conditions: TCM communication normal • Circumstances: Shift solenoid F system disconnection or short circuit to GND detected • Time period: Determined after 5 consecutive times lasting 0.1 or more seconds Diagnostic support note: • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
FAIL-SAFE FUNCTION	• Emergency mode 1
POSSIBLE CAUSE	• Coupler component connector or terminal malfunction • Short to GND in wiring harness between shift solenoid F terminal B and TCM terminal B21 • Short to GND in wiring harness between shift solenoid F terminal A and TCM terminal B16 • Open circuit between shift solenoid F terminal B and TCM terminal B21 • Open circuit between shift solenoid F terminal A and TCM terminal B16 • Shift solenoid F connector or terminal malfunction • Solenoid valve malfunction ▪ Shift solenoid F • TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA been recorded on the repair order?	YesGo to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis according

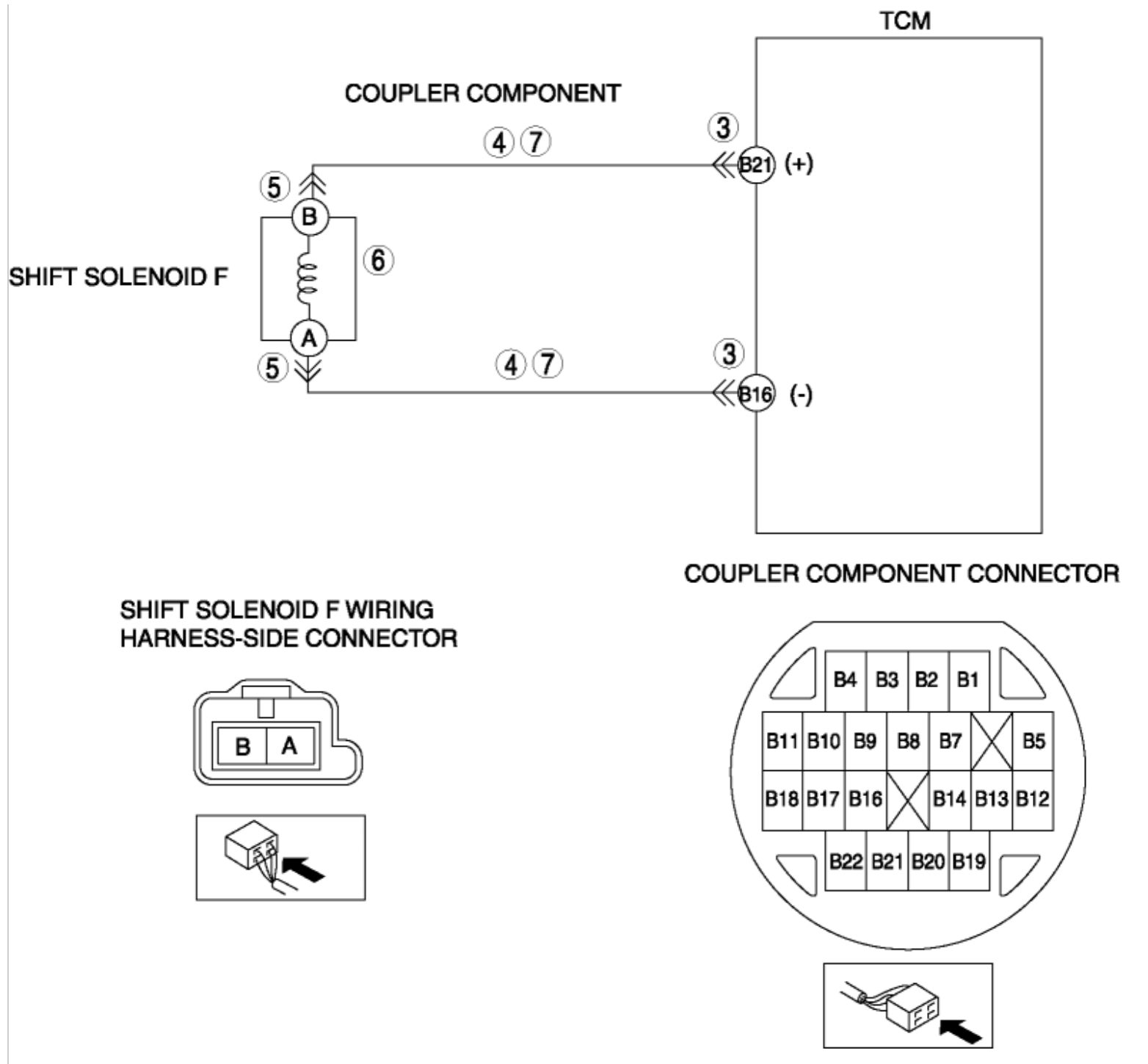
	• Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION • Switch the ignition OFF (LOCK). • Remove the TCM. (See TCM REMOVAL/ INSTALLATION [AY6A-EL].) • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 8. No Go to the next step.
4	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO GND • Switch the ignition OFF (LOCK). • Inspect for continuity between the following circuits: ▪ Coupler component terminal B21 (wiring harness-side) and body GND ▪ Coupler component terminal B16 (wiring harness-side) and body GND • Is there continuity?	Yes Repair or replace the wiring harness for a possible short to GND, then go to Step 8. No Go to the next step.
5	INSPECT SHIFT SOLENOID F CONNECTOR FOR POOR CONNECTION • Switch the ignition OFF (LOCK). • Disconnect the shift solenoid F connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 8. No Go to the next step.
6	INSPECT SHIFT SOLENOID F • Inspect the shift solenoid F. (See SHIFT SOLENOID F INSPECTION [AY6A-EL].) • Is there any malfunction?	Yes Replace the control valve body, then go to Step 8. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [AY6A-EL].) No Go to the next step.
	INSPECT SHIFT SOLENOID F CIRCUIT FOR OPEN	

7	CIRCUIT • Switch the ignition OFF (LOCK). • Inspect for continuity between the following circuits: ▪ Shift solenoid F terminal B (wiring harness-side) and coupler component terminal B21 (wiring harness-side) ▪ Shift solenoid F terminal A (wiring harness-side) and coupler component terminal B16 (wiring harness-side) • Is there continuity?	YesGo to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: ◦ Start the engine. ◦ Warm up the engine and transaxle. ◦ Drive the vehicle in D position and make sure that the gears shift smoothly from 1GR to 6GR. • Is the same DTC present?	YesReplace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [AY6A-EL] .)
		NoGo to the next step.
9	VERIFY NO DTCs ARE PRESENT • Perform the “Reading DTCs Procedure”. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [AY6A-EL] .) • Are any DTCs present?	YesGo to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [AY6A-EL] .)
		NoDTC troubleshooting completed.

2012 - Mazda6 - Transmission/ Transaxle

DTC P0998:00 [AY6A-EL]

DTC P0998:00	Shift solenoid F circuit low
DETECTION CONDITION	• Conditions: TCM communication normal • Circumstances: Shift solenoid F system disconnection or short circuit to GND detected • Time period: Determined after 5 consecutive times lasting 0.1 or more seconds Diagnostic support note: • The MIL illuminates if the TCM detects the above malfunction condition during the first drive cycle. • The AT warning light illuminates. • PENDING CODE is not available. • FREEZE FRAME DATA is available. • The DTC is stored in the TCM memory.
FAIL-SAFE FUNCTION	• Emergency mode 1
POSSIBLE CAUSE	• Coupler component connector or terminal malfunction • Short to GND in wiring harness between shift solenoid F terminal B and TCM terminal B21 • Short to GND in wiring harness between shift solenoid F terminal A and TCM terminal B16 • Open circuit between shift solenoid F terminal B and TCM terminal B21 • Open circuit between shift solenoid F terminal A and TCM terminal B16 • Shift solenoid F connector or terminal malfunction • Solenoid valve malfunction ▪ Shift solenoid F • TCM malfunction



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED Has the FREEZE FRAME DATA been recorded on the repair order?	YesGo to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	YesPerform repair or diagnosis according

	• Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT COUPLER COMPONENT CONNECTOR FOR POOR CONNECTION • Switch the ignition OFF (LOCK). • Remove the TCM. (See TCM REMOVAL/ INSTALLATION [AY6A-EL].) • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 8. No Go to the next step.
4	INSPECT SHIFT SOLENOID F CIRCUIT FOR SHORT TO GND • Switch the ignition OFF (LOCK). • Inspect for continuity between the following circuits: ▪ Coupler component terminal B21 (wiring harness-side) and body GND ▪ Coupler component terminal B16 (wiring harness-side) and body GND • Is there continuity?	Yes Repair or replace the wiring harness for a possible short to GND, then go to Step 8. No Go to the next step.
5	INSPECT SHIFT SOLENOID F CONNECTOR FOR POOR CONNECTION • Switch the ignition OFF (LOCK). • Disconnect the shift solenoid F connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes Repair or replace the terminal, then go to Step 8. No Go to the next step.
6	INSPECT SHIFT SOLENOID F • Inspect the shift solenoid F. (See SHIFT SOLENOID F INSPECTION [AY6A-EL].) • Is there any malfunction?	Yes Replace the control valve body, then go to Step 8. (See CONTROL VALVE BODY REMOVAL/ INSTALLATION [AY6A-EL].) No Go to the next step.
	INSPECT SHIFT SOLENOID F CIRCUIT FOR OPEN	

7	CIRCUIT • Switch the ignition OFF (LOCK). • Inspect for continuity between the following circuits: ▪ Shift solenoid F terminal B (wiring harness-side) and coupler component terminal B21 (wiring harness-side) ▪ Shift solenoid F terminal A (wiring harness-side) and coupler component terminal B16 (wiring harness-side) • Is there continuity?	YesGo to the next step.
8	VERIFY DTC TROUBLESHOOTING COMPLETED • Make sure to reconnect all the disconnected connectors. • Clear the DTC using the M-MDS. • Perform the following procedure to ensure that the DTC has been resolved: ◦ Start the engine. ◦ Warm up the engine and transaxle. ◦ Drive the vehicle in D position and make sure that the gears shift smoothly from 1GR to 6GR. • Is the same DTC present?	YesReplace the TCM, then go to the next step. (See TCM REMOVAL/ INSTALLATION [AY6A-EL] .)
		NoGo to the next step.
9	VERIFY NO DTCs ARE PRESENT • Perform the “Reading DTCs Procedure”. (See ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION [AY6A-EL] .) • Are any DTCs present?	YesGo to the applicable DTC inspection. (See ON-BOARD DIAGNOSTIC SYSTEM DTC TABLE [AY6A-EL] .)
		NoDTC troubleshooting completed.