

Technical Supplement

The JF506E, Part 1

The Japanese Automatic Transmission Co. (JATCO) said, "You show us your engine and car body and we will make a five-speed transmission to fit it. And BAM! There was the JF506E in the Mazda MPV and 6; Volkswagen Jetta, Golf and GTI; Jaguar; and Land Rover Freelander (see Figure 1).

JATCO even let vehicle manufacturers tweak the computer to

do things with the transmission in their cars that it will not do in those of other automakers.

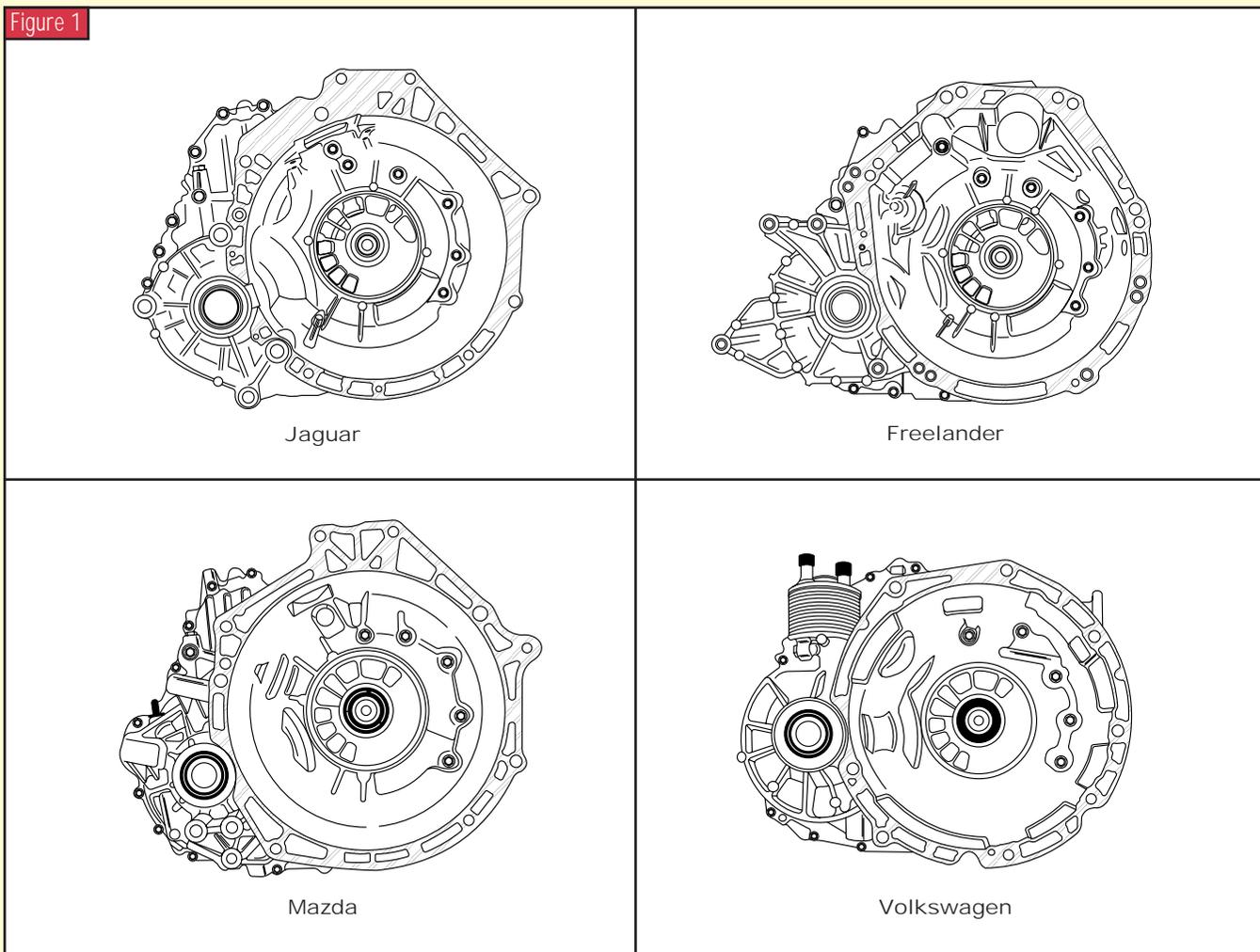
Mazda wanted to be so different that it even has slightly different solenoid operation and configuration.

Each of these manufacturers has different harness connectors, making it a bit difficult to figure out how to do resistance checks externally. But with this supple-

ment, you have all four models with solenoid-pin identification and specification in one place to make this task a bit easier.

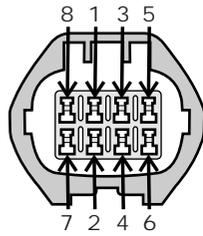
For electrical checks on Mazda vehicles, refer to figures 2 through 5. For electrical checks on the Land Rover Freelander, refer to figures 6 and 7. Refer to figures 8 and 9 for Volkswagen and figures 10 through 13 for Jaguar X-type.

Figure 1

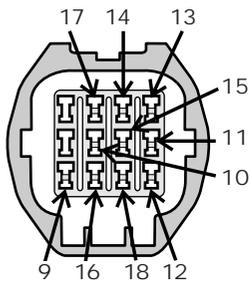


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Figure 2 Transmission Connector ID
2004 Mazda 6 3.0L (AJ)



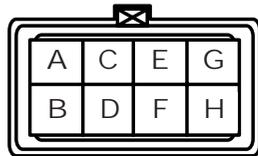
| | | |
|-----------------------------------------------|-----------------------------------------|-------------------|
| External Transmission Harness Connector H2-06 | 1 & 2 = Turbine-shaft speed sensor | (513 to 627 ohms) |
| | 3 & 4 = Intermediate-shaft speed sensor | (513 to 627 ohms) |
| | 5 & 6 = Output-shaft speed sensor | (513 to 627 ohms) |
| | 7 & 8 = Temperature sensor | (Refer to page 9) |



| | | |
|-----------------------------------------------|------------------------------------|-------------------|
| External Transmission Harness Connector H2-03 | 9 & 10 = Neutral shift solenoid | (14 to 18 ohms) |
| | 9 & 11 = TCC solenoid | (12 to 13.2 ohms) |
| | 9 & 12 = 2/4-brake solenoid | (2.6 to 3.2 ohms) |
| | 9 & 13 = High-clutch solenoid | (2.6 to 3.2 ohms) |
| | 9 & 14 = Shift solenoid C | (14 to 18 ohms) |
| | 9 & 15 = Reduction timing solenoid | (14 to 18 ohms) |
| | 9 & 16 = Shift solenoid B | (14 to 18 ohms) |
| | 9 & 17 = Shift solenoid A | (14 to 18 ohms) |
| | 9 & 18 = Pressure-control solenoid | (2.6 to 3.2 ohms) |

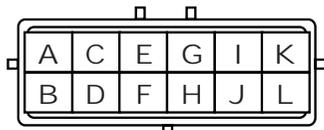
Transmission Connector ID

2004 Mazda MPV (3.0L)



External Connector 2

| | |
|-----------------------------------------|-------------------|
| E & F = Turbine Shaft Speed Sensor | (513 to 627 ohms) |
| C & D = Intermediate Shaft Speed Sensor | (513 to 627 ohms) |
| A & B = Output Shaft Speed Sensor | (513 to 627 ohms) |
| G & H = Temperature Sensor | (Refer to page 9) |

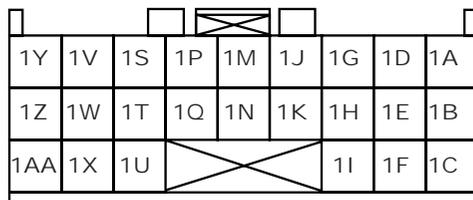


External Connector 1

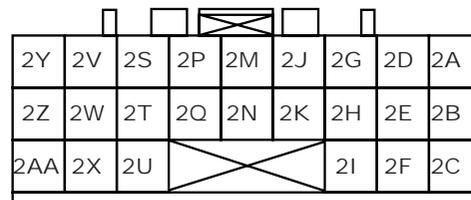
| | |
|-----------------------------------|-------------------|
| J & A = 2/4-brake solenoid | (2.6 to 3.2 ohms) |
| J & B = TCC solenoid | (12 to 13.2 ohms) |
| J & C = High-clutch solenoid | (2.6 to 3.2 ohms) |
| J & D = Pressure-control solenoid | (2.6 to 3.2 ohms) |
| J & E = Reduction timing solenoid | (14 to 18 ohms) |
| J & F = Shift solenoid C | (14 to 18 ohms) |
| J & G = Shift solenoid B | (14 to 18 ohms) |
| J & H = Neutral shift solenoid | (14 to 18 ohms) |
| J & I = Shift solenoid A | (14 to 18 ohms) |

Figure 3 TCM Terminal ID
View of Wire-Harness Connector

2004 Mazda 3.0L (AJ)



2004 Mazda MPV 3.0L



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Figure 4 Transmission to TCM Wiring Schematic (Partial)
2004 Mazda 6 3.0L (AJ)

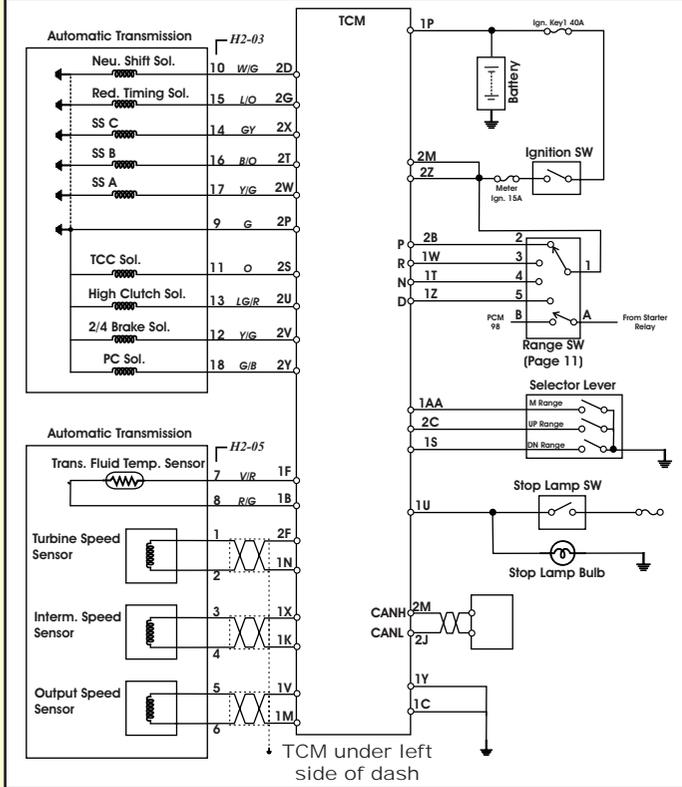
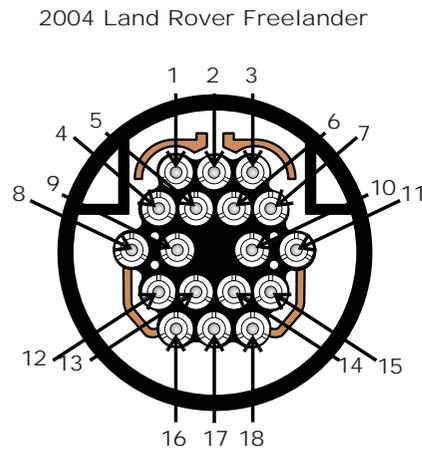
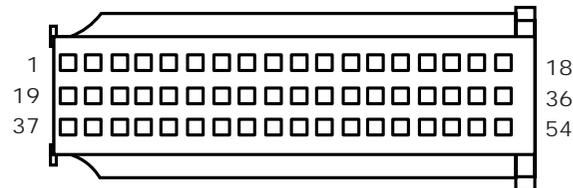


Figure 6 Transmission and TCM Connector ID



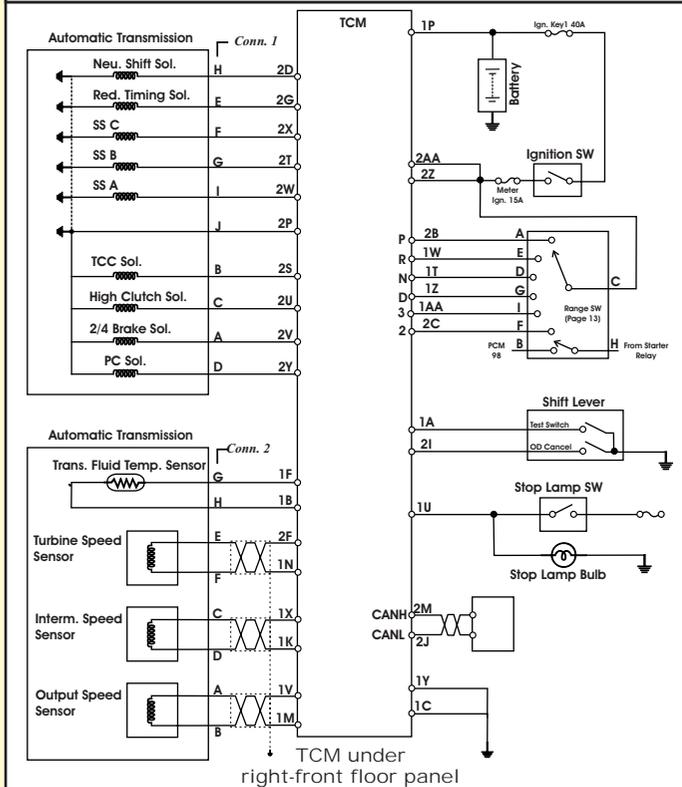
External transmission harness connector CO243

| | |
|-----------------------------------------|-------------------|
| 1 & 2 = Turbine-shaft speed sensor | (513 to 627 ohms) |
| 3 & 4 = Intermediate-shaft speed sensor | (513 to 627 ohms) |
| 5 & 6 = Output-shaft speed sensor | (513 to 627 ohms) |
| 7 & 8 = Temperature sensor | (Refer to page 9) |
| 18 & 9 = Shift solenoid A | (14 to 18 ohms) |
| 18 & 10 = Shift solenoid B | (14 to 18 ohms) |
| 18 & 11 = Shift solenoid C | (14 to 18 ohms) |
| 18 & 12 = Low-clutch timing solenoid | (14 to 18 ohms) |
| 18 & 13 = 2/4 timing solenoid | (14 to 18 ohms) |
| 18 & 14 = Reduction-timing solenoid | (14 to 18 ohms) |
| 18 & 15 = Pressure-control solenoid | (2.6 to 3.2 ohms) |
| 18 & 16 = 2/4 duty solenoid | (2.6 to 3.2 ohms) |
| 18 & 17 = TCC solenoid | (12 to 13.2 ohms) |



TCM harness connector CO932

Figure 5 Transmission to TCM Wiring Schematic (Partial)
2004 Mazda MPV 3.0L (AJ)



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Figure 7 Transmission-to-TCM Wiring Schematic (Partial)

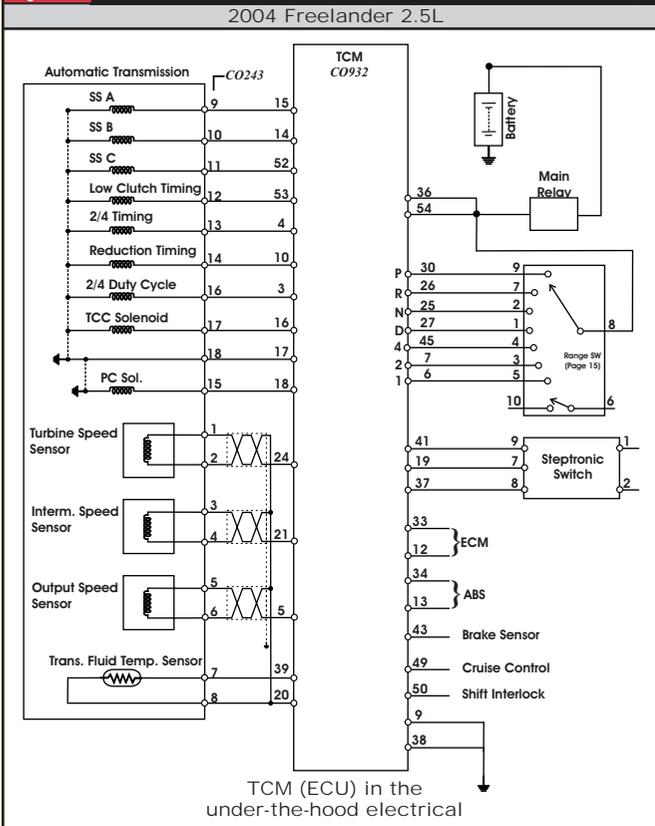


Figure 9 Transmission-to-TCM Wiring Schematic (Partial)

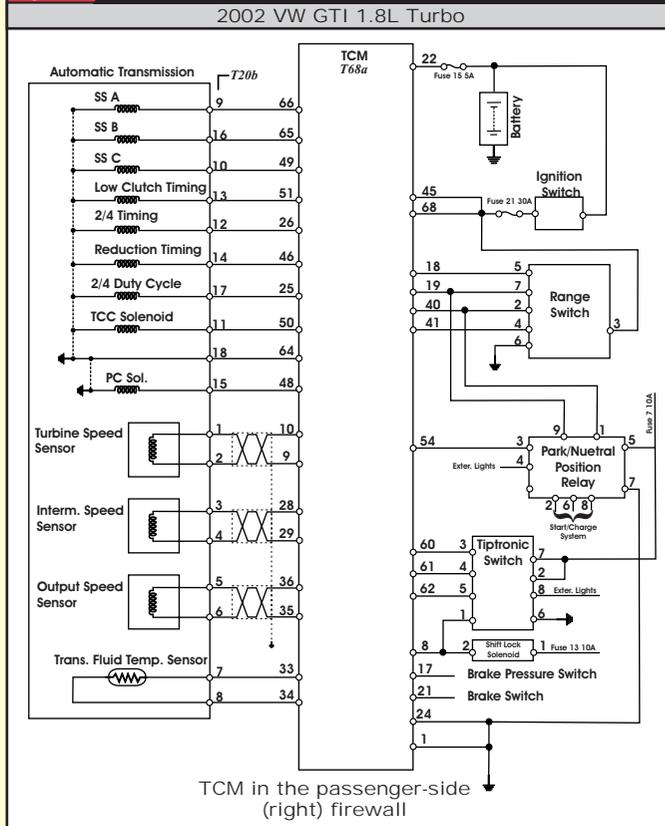
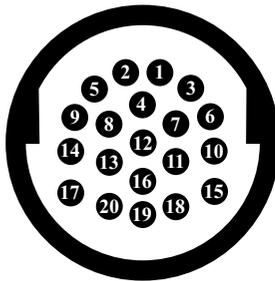


Figure 8 Transmission and TCM Connector ID

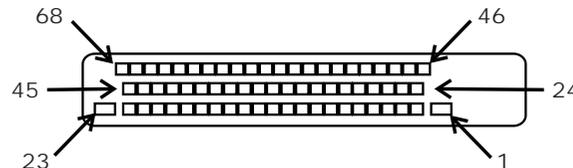
2002 VW GTI 1.8L Turbo



External transmission harness connector T20b (ZF-style case connector; no pigtail lead like the others)

| | |
|----------------------------------------------|-------------------|
| 1 & 2 = G182 Turbine-shaft speed sensor | (400 to 600 ohms) |
| 3 & 4 = G265 Intermediate-shaft speed sensor | (400 to 600 ohms) |
| 5 & 6 = G68 Output-shaft speed sensor | (400 to 600 ohms) |
| 7 & 8 = G93 temperature sensor | (Refer to page 9) |
| 18 & 9 = N88-SV 1 shift solenoid A | (9 to 24 ohms) |
| 18 & 10 = N92-SV5 Shift solenoid C | (9 to 24 ohms) |
| 18 & 11 = N91-SV4 TCC solenoid | (9 to 24 ohms) |
| 18 & 12 = N282-SV9 2/4 Timing Solenoid | (9 to 24 ohms) |
| 18 & 13 = N90-SV3 low-clutch timing solenoid | (9 to 24 ohms) |
| 18 & 14 = N281-SV8 Reduction-timing solenoid | (9 to 24 ohms) |
| 18 & 15 = N93-SV6 pressure-control solenoid | (1 to 5 ohms) |
| 18 & 16 = N89 SV-2 shift solenoid B | (9 to 24 ohms) |
| 18 & 17 = N283-SV10 2/4 duty solenoid | (1 to 5 ohms) |

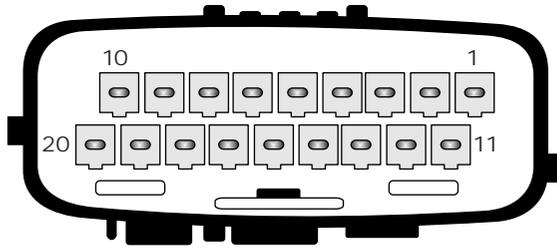
TCM (J217) Harness connector T68a



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Figure 10

2004 Jaguar X Type Transmission Harness Connector JB155



Refer to pages 23 and 24 for wiring diagrams and 25 for TCM-connector ID

| | |
|-----------------------------------------|-------------------|
| 1 & 2 = Turbine-shaft speed sensor | (513 to 627 ohms) |
| 3 & 4 = Intermediate-shaft speed sensor | (513 to 627 ohms) |
| 5 & 6 = Output-shaft speed sensor | (513 to 627 ohms) |
| 7 & 8 = Temperature sensor | (Refer to page 9) |
| 18 & 9 = Shift Solenoid A | (14 to 18 ohms) |
| 18 & 10 = Shift Solenoid B | (14 to 18 ohms) |
| 18 & 11 = Shift Solenoid C | (14 to 18 ohms) |
| 18 & 12 = Low Clutch Timing Solenoid | (14 to 18 ohms) |
| 18 & 13 = 2/4 Timing Solenoid | (14 to 18 ohms) |
| 18 & 14 = Reduction Timing Solenoid | (14 to 18 ohms) |
| 18 & 15 = Pressure-control solenoid | (2.6 to 3.2 ohms) |
| 18 & 16 = 2/4 duty solenoid | (2.6 to 3.2 ohms) |
| 18 & 17 = TCC solenoid | (12 to 13.2 ohms) |

Figure 11

Transmission-to-TCM Wiring Schematic (Partial)

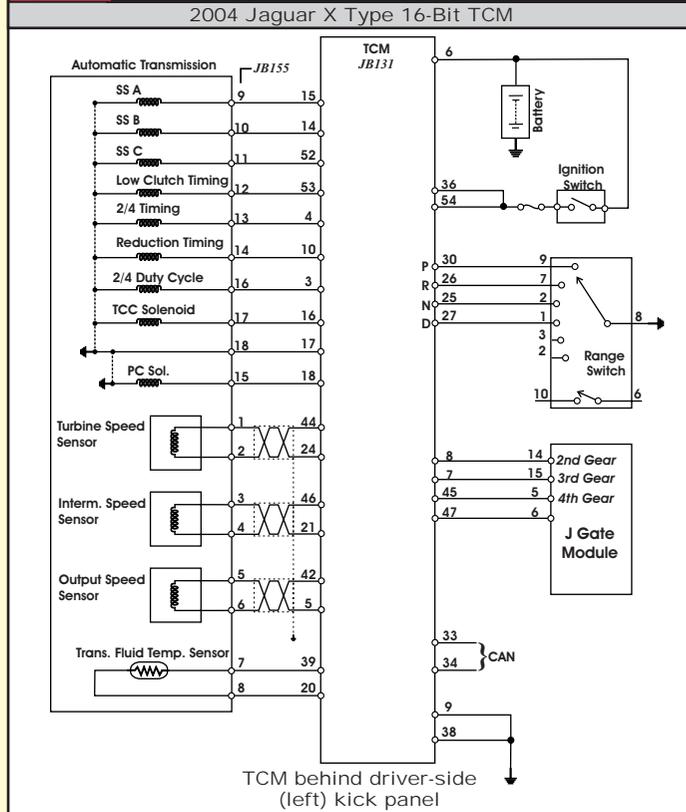
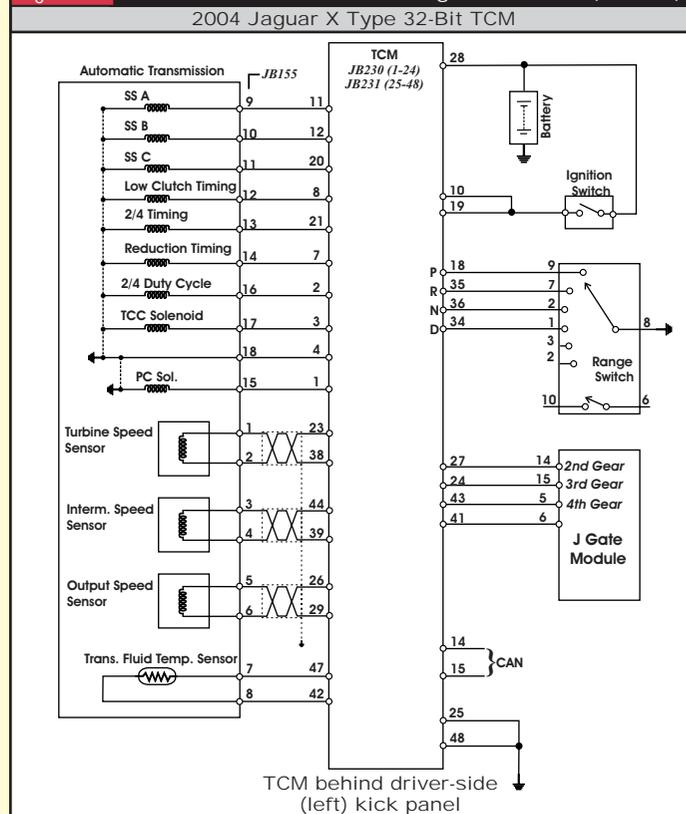


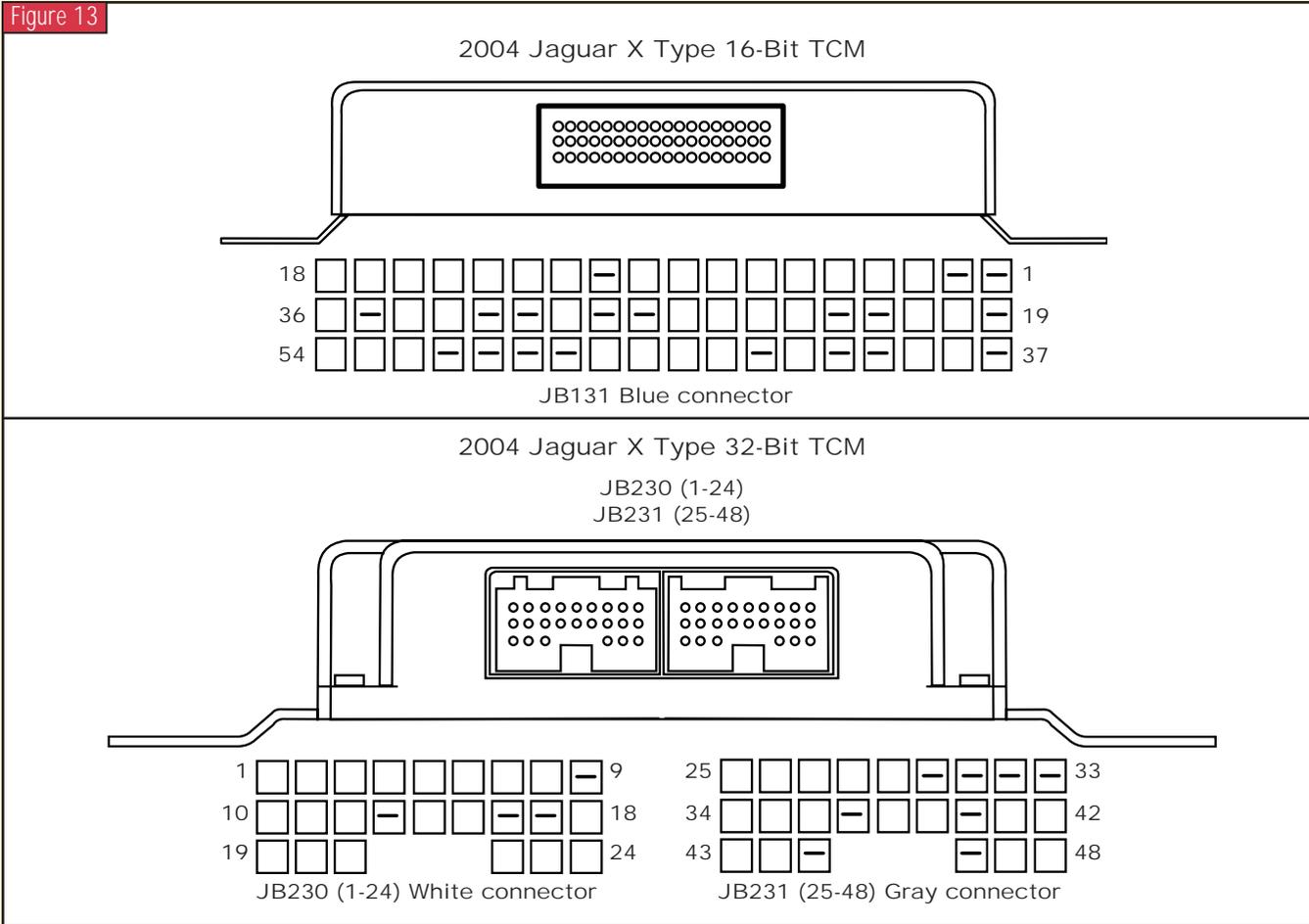
Figure 12

Transmission-to-TCM Wiring Schematic (Partial)



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Figure 13



Comprehensive Component Monitor Transmission Drive Cycle

The Comprehensive Component Monitor Transmission Drive Cycle will check all transmission components.

1. Engine and transmission at normal operating temperature, ignition OFF; ensure that SPORT mode is NOT selected.
2. With gear select in P and the ignition ON, check gearshift interlock by attempting to move the selector without pressing the brake pedal. Verify P-state illumination.
3. Press and hold the brake pedal. Move the gear select to R. Verify R-state illumination.
4. Set the parking brake. Press and hold the brake pedal. Attempt to start the engine. The engine should not start.
5. Move the gear select to N. Verify N-state illumination. Start the engine.
6. With the hand brake set and the brake pedal pressed, move the gear select to the remaining positions in the J gate (D, 4, 3, 2) for five seconds. Verify the state illumination in each position.
7. Move the gear select switch back to 4. Verify 4-state illumination.
8. Move the gear select switch back to D. Verify D-state illumination.
9. Move the gear select switch back to N. Verify N-state illumination.
10. Select R, release the brake and drive the vehicle in reverse for a short distance, and stop the vehicle.
11. Select 2 and drive the vehicle up to 40 mph (65 km/h) and hold for a minimum of 5 seconds.
12. Select 3 and hold 40 mph (65 km/h) for a minimum of 5 seconds.
13. Select 4 and hold 40 mph (65 km/h) for a minimum of 5 seconds.
14. Select D and accelerate to a minimum speed of 50 mph (80 km/h). Hold 50-80 mph (80-129 km/h) for a minimum of 1 mile (1.7 kilometers).
15. Stop the vehicle; do NOT shut off the engine. Check for diagnostic codes.

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