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2012 - Mazda6 - Transmission/ Transaxle

ROAD TEST [AY6A-EL]

WARNING:

- When performing a road test, be aware of other vehicles, people, impediments, etc. to avoid an accident.

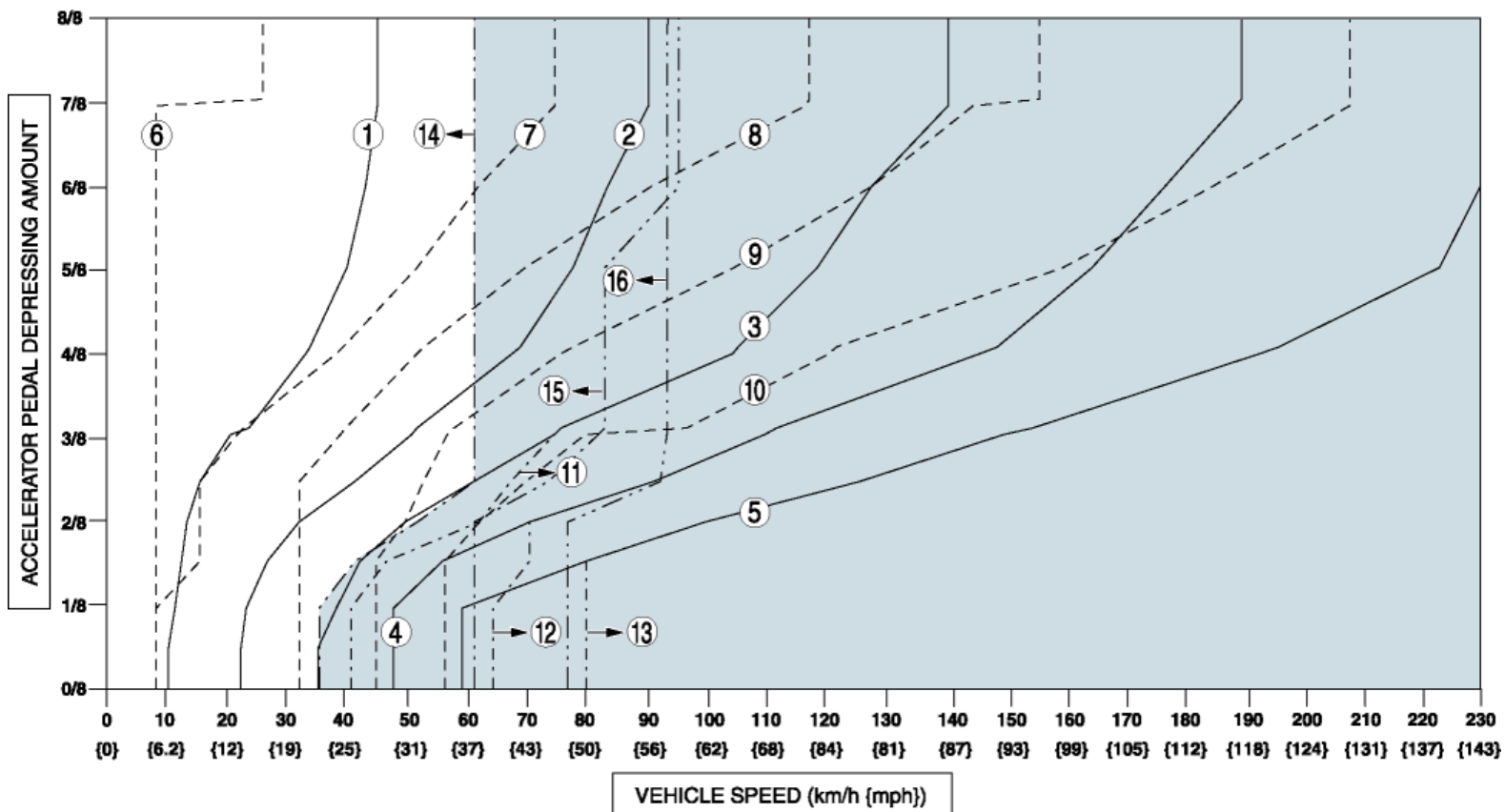
NOTE:

- When the legal speed limit must be exceeded, use a chassis dynamometer.

Road Test Preparation

1. Inspect the engine coolant. (See [ENGINE COOLANT LEVEL INSPECTION \[MZI 3.7 V6\]](#).)
2. Inspect the engine oil. (See [ENGINE OIL LEVEL INSPECTION \[MZI 3.7 V6\]](#).)
3. Inspect the ATF. (See [AUTOMATIC TRANSAXLE FLUID \(ATF\) INSPECTION \[AY6A-EL\]](#).)
4. Inspect the idle speed. (See [ENGINE TUNE-UP \[MZI 3.7 V6\]](#).)
5. Inspect the ignition timing. (See [ENGINE TUNE-UP \[MZI 3.7 V6\]](#).)
6. Verify that no DTCs recorded. (See [ON-BOARD DIAGNOSTIC SYSTEM DTC INSPECTION \[AY6A-EL\]](#).)

Shift Diagram (Normal Mode at D Position)



D Position Test

1. Perform the "Road Test Preparation". (See [Road Test Preparation](#).)
 2. Warm up the transaxle.
 3. Shift the D position.
 4. Inspect the shift point for the D position in normal mode.
 - If there is any malfunction, refer to the symptom troubleshooting and verify the malfunction symptom.
- a. Verify that the gears shift from 1GR to 2GR, 2GR to 3GR, 3GR to 4GR, 4GR to 5GR and 5GR to 6GR after depressing the accelerator pedal. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - b. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after releasing the accelerator pedal while driving in 6GR. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - c. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after kickdown while driving in 6GR, 5GR, 4GR, 3GR, and 2GR. In addition, verify that the vehicle speed for kickdown corresponds to the shift point.
 - d. Verify that engine braking does not operate after releasing the accelerator pedal while driving in 1GR. In addition, verify that the engine braking operates while driving in 2GR, 3GR, 4GR, 5GR and 6GR.
 - e. Verify that the TCC operation range corresponds to the shift diagram.
 - f. Verify that the shift shock is very minimal, shifting is smooth and timely, and there is no abnormal noise or transaxle slip.

Shift point

Position/Mode		Accelerator pedal depressing amount	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
D	NORMAL	8/8	D ₁ →D ₂	45—50 {28—31}	4,900—5,500
			D ₂ →D ₃	89—96 {56—59}	5,600—6,050
			D ₃ →D ₄	138—147 {86—91}	5,700—6,050
			TCC ON (D ₄)	138—147 {86—91}	4,250—4,500
			D ₄ →D ₅	187—197 {116—122}	5,750—6,000
			TCC ON (D ₅)	187—197 {116—122}	4,300—4,450
			D ₅ →D ₆	227—237 {141—146}	5,200—5,400
			TCC ON (D ₆)	227—237 {141—146}	4,150—4,300
		4/8	D ₁ →D ₂	26—36 {17—22}	2,850—3,950
			D ₂ →D ₃	56—73 {35—45}	3,500—4,600
			D ₃ →D ₄	81—108 {51—66}	3,350—4,450
			TCC ON (D ₄)	84—111 {53—68}	2,550—3,400
			D ₄ →D ₅	122—153 {76—94}	3,750—4,650
			TCC ON (D ₅)	122—153 {76—94}	2,800—3,450
			D ₅ →D ₆	169—204 {105—126}	3,850—4,650
			TCC ON (D ₆)	169—204 {105—126}	3,100—3,700
		0/8	D ₆ →D ₅	54—59 {34—36}	1,000—1,050
			D ₅ →D ₄	42—48 {27—29}	1,000—1,050
			D ₄ →D ₃	30—35 {19—21}	900—1,050
			D ₃ →D ₂	6—11 {4—6}	250—450
			D ₂ →D ₁	6—11 {4—6}	350—700
			D ₃ →D ₁	6—11 {4—6}	250—450
		Kickdown (8/8)	D ₆ →D ₅	204—213 {127—132}	3,700—3,850
			D ₅ →D ₄	151—161 {94—99}	3,450—3,650
			D ₄ →D ₃	113—122 {71—75}	3,450—3,750
			D ₃ →D ₂	71—79 {45—48}	2,950—3,250

D	AAS	8/8	D ₂ →D ₁	23—29 {15—17}	1,450—1,800
			D ₁ →D ₂	45—50 {28—31}	4,900—5,500
			D ₂ →D ₃	89—96 {56—59}	5,600—6,050
			D ₃ →D ₄	138—147 {86—91}	5,700—6,050
			TCC ON (D ₄)	91—100 {57—62}	2,800—3,050
			D ₄ →D ₅	187—197 {116—122}	5,750—6,000
			TCC ON (D ₅)	122—131 {76—81}	2,800—3,000
			D ₅ →D ₆	227—237 {141—146}	5,200—5,400
			TCC ON (D ₆)	158—167 {98—103}	2,900—3,000
		4/8	D ₁ →D ₂	28—37 {18—22}	3,050—4,100
			D ₂ →D ₃	56—73 {35—45}	3,500—4,600
			D ₃ →D ₄	87—113 {54—70}	3,600—4,650
			TCC ON (D ₄)	85—102 {53—63}	2,600—3,100
			D ₄ →D ₅	137—172 {85—106}	4,200—5,250
			TCC ON (D ₅)	116—133 {72—82}	2,650—3,000
			D ₅ →D ₆	221—239 {138—148}	5,050—5,400
			TCC ON (D ₆)	152—169 {95—104}	2,750—3,050
		0/8	D ₆ →D ₅	101—107 {63—66}	1,850—1,900
			D ₅ →D ₄	49—55 {31—34}	1,150—1,250
			D ₄ →D ₃	30—35 {19—21}	900—1,050
			D ₃ →D ₂	8—13 {5—8}	350—550
			D ₂ →D ₁	8—13 {5—8}	500—850
			D ₃ →D ₁	8—13 {5—8}	350—550
		Kickdown (8/8)	D ₆ →D ₅	204—213 {127—132}	3,700—3,850
			D ₅ →D ₄	161—170 {100—105}	3,700—3,850
			D ₄ →D ₃	120—129 {75—79}	3,700—3,950
			D ₃ →D ₂	78—85 {49—52}	3,200—3,500
			D ₂ →D ₁	29—34 {18—21}	1,800—2,150

M Position Test

1. Perform the "Road Test Preparation". (See [Road Test Preparation](#).)
2. Warm up the transaxle.
3. Shift the M position.
4. Inspect the shift point for the M position.
 - If there is any malfunction, refer to symptom troubleshooting and verify the malfunction symptom.
 - a. Perform the shift operation while driving and verify that the gears can be shifted.
 - b. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after releasing the accelerator pedal while driving in 5GR. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - c. Verify that the engine braking operates in all gears after releasing the accelerator pedal while driving.
 - d. Verify that the vehicle speed corresponds to the shift point during TCC.
 - e. Verify that the shift shock is small, shifting is smooth and timely, and there is no abnormal noise or transaxle slip.

Shift point

Position/mode	Accelerator pedal depressing amount	Shift	Vehicle speed (km/h {mph})	Turbine rotation speed (rpm)
M	8/8	TCC ON (M ₄)	60—69 {38—42}	1,850—2,100
		TCC ON (M ₅)	81—90 {51—55}	1,850—2,050
		TCC ON (M ₆)	100—109 {62—67}	1,850—1,950
	4/8	TCC ON (M ₄)	54—71 {34—44}	1,650—2,200
		TCC ON (M ₅)	75—92 {47—57}	1,700—2,050
		TCC ON (M ₆)	94—111 {59—68}	1,700—2,000
	0/8	M ₆ →M ₅	51—56 {32—34}	950—1,000
		M ₅ →M ₄	38—43 {24—26}	900—950
		M ₄ →M ₃	26—31 {17—19}	800—950
		M ₃ →M ₂	5—10 {4—6}	200—400
		M ₂ →M ₁	5—10 {4—6}	300—650
		M ₃ →M ₁	5—10 {4—6}	200—400

5. Inspect 2GR fixed mode.
 - a. Shift the selector lever to + and 2GR while the vehicle is stopped or the vehicle speed is **15 km/ h { 9.3 mph }** or less.
 - b. Verify that the gear ratio is fixed in 2GR.
 - c. Verify that the engine braking operates after releasing the accelerator pedal while driving.
 - d. Perform the shift operation while driving and verify that the gears can be shifted.

P Position Test

1. Shift the selector lever to P position on a gentle slope.
2. Release the brake and verify that the vehicle does not roll.
 - If the vehicle rolls, inspect the parking mechanism in the transaxle.

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- When performing a road test, be aware of other vehicles, people, impediments, etc. to avoid an accident.

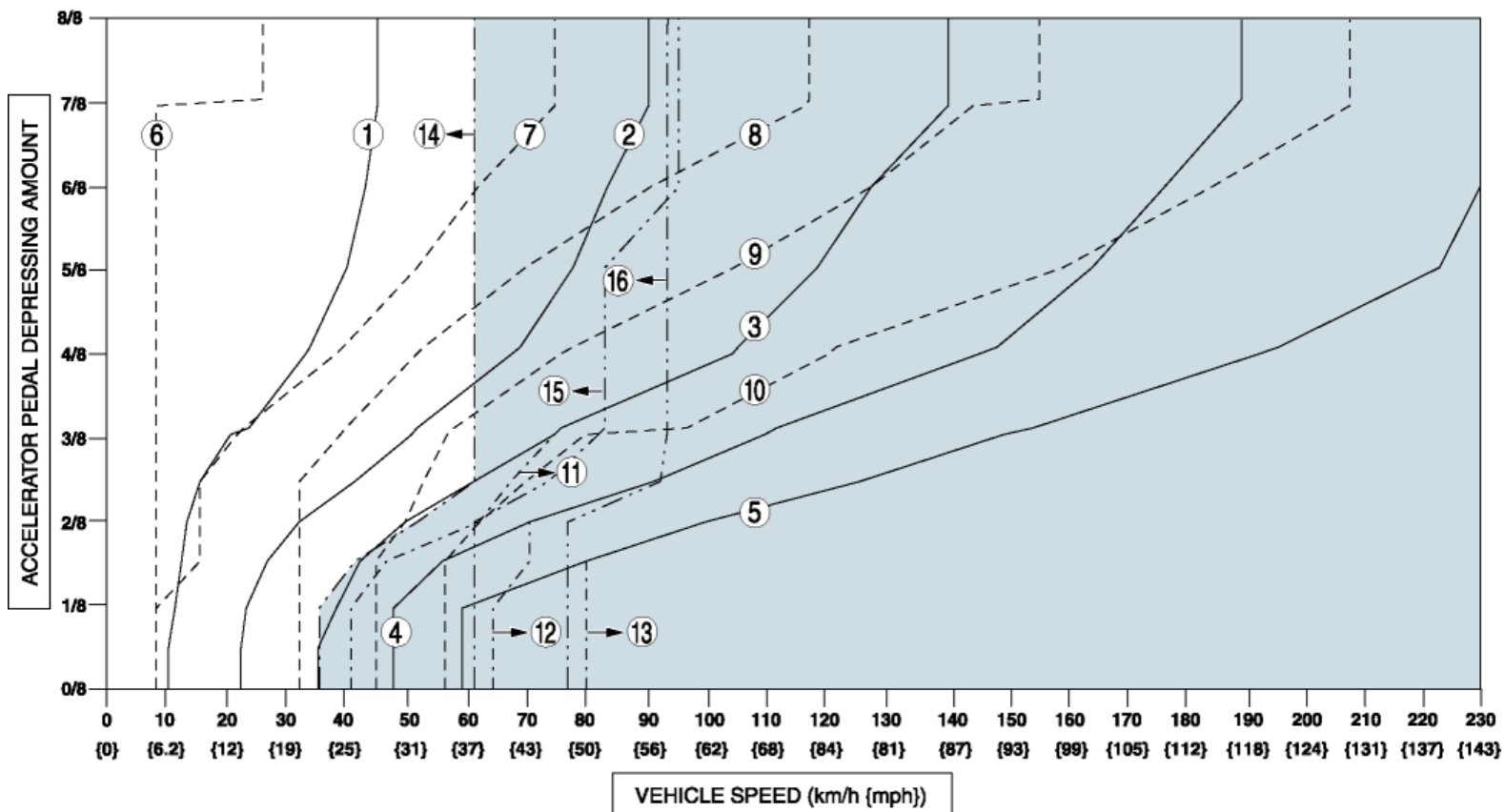
NOTE:

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Road Test Preparation

1. Inspect the engine coolant. (See [ENGINE COOLANT LEVEL INSPECTION \[MZI 3.7 V6\]](#).)
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1. Perform the "Road Test Preparation". (See [Road Test Preparation](#).)
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 - If there is any malfunction, refer to the symptom troubleshooting and verify the malfunction symptom.
- a. Verify that the gears shift from 1GR to 2GR, 2GR to 3GR, 3GR to 4GR, 4GR to 5GR and 5GR to 6GR after depressing the accelerator pedal. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - b. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after releasing the accelerator pedal while driving in 6GR. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - c. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after kickdown while driving in 6GR, 5GR, 4GR, 3GR, and 2GR. In addition, verify that the vehicle speed for kickdown corresponds to the shift point.
 - d. Verify that engine braking does not operate after releasing the accelerator pedal while driving in 1GR. In addition, verify that the engine braking operates while driving in 2GR, 3GR, 4GR, 5GR and 6GR.
 - e. Verify that the TCC operation range corresponds to the shift diagram.
 - f. Verify that the shift shock is very minimal, shifting is smooth and timely, and there is no abnormal noise or transaxle slip.

Shift point

Position/Mode		Accelerator pedal depressing amount	Shift	Vehicle speed (km/h {mph})	Turbine speed (rpm)
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			D ₂ →D ₃	89—96 {56—59}	5,600—6,050
			D ₃ →D ₄	138—147 {86—91}	5,700—6,050
			TCC ON (D ₄)	138—147 {86—91}	4,250—4,500
			D ₄ →D ₅	187—197 {116—122}	5,750—6,000
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			D ₅ →D ₄	151—161 {94—99}	3,450—3,650
			D ₄ →D ₃	113—122 {71—75}	3,450—3,750
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 - b. Verify that the gears shift from 6GR to 5GR, 5GR to 4GR, 4GR to 3GR, 3GR to 2GR, and 2GR to 1GR after releasing the accelerator pedal while driving in 5GR. In addition, verify that the vehicle speed corresponds to the shift point when shifting.
 - c. Verify that the engine braking operates in all gears after releasing the accelerator pedal while driving.
 - d. Verify that the vehicle speed corresponds to the shift point during TCC.
 - e. Verify that the shift shock is small, shifting is smooth and timely, and there is no abnormal noise or transaxle slip.

Shift point

Position/mode	Accelerator pedal depressing amount	Shift	Vehicle speed (km/h {mph})	Turbine rotation speed (rpm)
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		TCC ON (M ₅)	75—92 {47—57}	1,700—2,050
		TCC ON (M ₆)	94—111 {59—68}	1,700—2,000
	0/8	M ₆ →M ₅	51—56 {32—34}	950—1,000
		M ₅ →M ₄	38—43 {24—26}	900—950
		M ₄ →M ₃	26—31 {17—19}	800—950
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5. Inspect 2GR fixed mode.
 - a. Shift the selector lever to + and 2GR while the vehicle is stopped or the vehicle speed is **15 km/ h { 9.3 mph }** or less.
 - b. Verify that the gear ratio is fixed in 2GR.
 - c. Verify that the engine braking operates after releasing the accelerator pedal while driving.
 - d. Perform the shift operation while driving and verify that the gears can be shifted.

P Position Test

1. Shift the selector lever to P position on a gentle slope.
2. Release the brake and verify that the vehicle does not roll.
 - If the vehicle rolls, inspect the parking mechanism in the transaxle.

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