

## 2017 ASE Correlation Chart

**MLR-** Maintenance & Light Repair

**AST-** Auto Service Technology (Includes MLR)

**MAST-** Master Auto Service Technology (Includes MLR and AST)

### MANUAL DRIVE TRAIN AND AXLES (A3)

	Task	Priority	MLR	AST	MAST	Text Page #	Task Page #
<b>A. General: Drive Train Diagnosis</b>							
1.	Identify and interpret drive train concerns; determine needed action.	P-1		✓	✓	86–96; 133–138; 227–233; 305–310; 321–327	11, 26, 27, 33
2.	Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.	P-1	✓	✓	✓	2–4; 120–122; 228–230	3, 4, 21, 45, 59
3.	Check fluid condition; check for leaks; determine needed action.	P-1	✓	✓	✓	120–122; 228–230	20, 64
4.	Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification.	P-1	✓	✓	✓	120–122	21

<b>B. Clutch Diagnosis and Repair</b>							
<b>1.</b>	<b>Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine needed action.</b>	<b>P-1</b>		<b>✓</b>	<b>✓</b>	<b>86–89</b>	<b>11</b>
<b>2.</b>	<b>Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; perform needed action.</b>	<b>P-1</b>		<b>✓</b>	<b>✓</b>	<b>79–80; 86</b>	<b>12</b>
	<b>Task</b>	<b>Priority</b>	<b>MLR</b>	<b>AST</b>	<b>MAST</b>	<b>Text Page #</b>	<b>Task Page #</b>
<b>3.</b>	<b>Inspect and/or replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing/ linkage, and pilot bearing/bushing (as applicable).</b>	<b>P-1</b>		<b>✓</b>	<b>✓</b>	<b>89–102</b>	<b>14</b>
<b>4.</b>	<b>Bleed clutch hydraulic system.</b>	<b>P-1</b>		<b>✓</b>	<b>✓</b>	<b>95–96</b>	<b>15</b>
<b>5.</b>	<b>Check and adjust clutch master cylinder fluid level; check for leaks; use proper fluid type per manufacturer specification.</b>	<b>P-1</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>87–88</b>	<b>13</b>
<b>6.</b>	<b>Inspect flywheel and ring gear for wear, cracks, discoloration; determine needed action.</b>	<b>P-1</b>		<b>✓</b>	<b>✓</b>	<b>90–91</b>	<b>16</b>
<b>7.</b>	<b>Measure flywheel runout and crankshaft end play; determine needed action.</b>	<b>P-2</b>		<b>✓</b>	<b>✓</b>	<b>91–92</b>	<b>17</b>
<b>8.</b>	<b>Describe the operation and service of a system that uses a dual mass flywheel.</b>	<b>P-3</b>			<b>✓</b>	<b>77-78</b>	<b>16</b>
<b>C. Transmission/Transaxle Diagnosis and Repair</b>							
<b>1.</b>	<b>Inspect, adjust, lubricate and/or replace shift linkages, brackets, bushings, cables, pivots, and levers.</b>	<b>P-2</b>		<b>✓</b>	<b>✓</b>	<b>115–117; 134</b>	<b>25</b>
<b>2.</b>	<b>Describe the operational characteristics of an electronically-controlled manual transmission/transaxle.</b>	<b>P-2</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>60</b>	<b>9</b>
<b>3.</b>	<b>Diagnose noise concerns through the application of transmission/transaxle powerflow principles.</b>	<b>P-2</b>			<b>✓</b>	<b>136–138</b>	<b>24</b>

4.	Diagnose hard shifting and jumping out of gear concerns; determine needed action.	P-2			✓	135– 137	24
5.	Diagnose transaxle final drive assembly noise and vibration concerns; determine needed action.	P-3			✓	143– 145; 148	26
6.	Disassemble, inspect clean, and reassemble internal transmission/transaxle components.	P-2			✓	141– 151; 155– 160	23
	<b>Task</b>	<b>Priority</b>	<b>MLR</b>	<b>AST</b>	<b>MAST</b>	<b>Text Page #</b>	<b>Task Page #</b>
<b>D. Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair (Front, Rear, All wheel drive, 4-wheel drive)</b>							
1.	Diagnose universal joint noise and vibration concerns; determine needed action.	P-2		✓	✓	175	27
2.	Diagnose universal joint noise and vibration concerns; perform needed action.	P-2		✓	✓	175– 177	27
3.	Inspect, remove, and/or replace bearings, hubs, and seals.	P-1	✓ (P-2)	✓	✓	181– 182	28
4.	Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints.	P-1	✓ (P-2)	✓	✓	181– 185	28
5.	Check shaft balance and phasing; measure shaft runout; measure and adjust driveline angles.	P-2		✓	✓	179– 180; 329– 332	28
<b>E. Drive Axle Diagnosis and Repair</b>							
<b>E.1 Ring and Pinion Gears and Differential Case Assembly</b>							
1.	Clean and inspect differential case; check for leaks; inspect housing vent.	P-1	✓	✓	✓	229; 312	33, 34
2.	Check and adjust differential case fluid level; use proper fluid type per manufacturer specification.	P-1	✓	✓	✓	229	34
3.	Drain and refill differential case; use proper fluid type per manufacturer specification.	P-1	✓	✓	✓	229; 251	34
4.	Diagnose noise and vibration concerns; determine needed action.	P-2			✓	321– 333	60

5.	Inspect and replace companion flange and/or pinion seal; measure companion flange runout.	P-2		✓	✓	236– 238	35
6.	Inspect ring gear and measure runout; determine needed action.	P-3			✓	239– 240	36
7.	Remove, inspect, reinstall and/or replace drive pinion and ring gear, spacers, sleeves, and bearings.	P-3			✓	240– 250	37
8.	Measure and adjust drive pinion depth.	P-3			✓	241– 244	38
9.	Measure and adjust drive pinion bearing preload.	P-3			✓	243– 244	39
10.	Measure and adjust side bearing preload and ring and pinion gear total backlash and backlash variation on a differential carrier assembly (threaded cup or shim types).	P-3			✓	245– 250	40
11.	Check ring and pinion tooth contact patterns; perform needed action.	P-3			✓	245– 246	41
12.	Disassemble, inspect, measure, adjust and/or replace differential pinion gears (spiders), shaft, side gears, side bearings, thrust washers, and case.	P-3			✓	241– 242	42
13.	Reassemble and reinstall differential case assembly; measure runout; determine needed action.	P-3			✓	245– 247	43
<b>E.2 Limited Slip Differential</b>							
1.	Diagnose noise, slippage, and chatter concerns; determine needed action.				✓	220; 223; 250	44
2.	Measure rotating torque; determine needed action.	P-3			✓	232– 233	46

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<b>E.3 Drive Axles</b>							
1.	Inspect and replace drive axle wheel studs.	P-1	✓ (P-2)	✓	✓	233– 234	30
2.	Remove and replace drive axle shafts.	P-1		✓	✓	233– 236	29
3.	Inspect and replace drive axle shaft seals, bearings, and retainers.	P-2		✓	✓	233– 236	29
4.	Measure drive axle flange runout and shaft end play; determine needed action.	P-2		✓	✓	231– 232	29
5.	Diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns; determine needed action.	P-2			✓	229– 231	29
<b>F. Four-Wheel Drive/All-Wheel Drive Component Diagnosis and Repair</b>							
1.	Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets.	P-3		✓	✓	283– 284; 289; 299– 302; 299– 313	59, 60
2.	Inspect locking hubs; determine needed action.	P-3	✓	✓	✓	284– 285; 312– 313	63
3.	Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification.	P-3	✓ (P-2)	✓	✓	312	64
4.	Identify concerns related to variations in tire circumference and/or final drive ratios.	P-2		✓	✓	305– 306	66
5.	Diagnose noise, vibration, and unusual steering concerns; determine needed action.	P-3			✓	306– 307; 321– 333	66

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6.	Diagnose, test, adjust, and replace electrical/electronic components of four-wheel drive systems.	P-3			✓	307– 311	65
7.	Disassemble, service, and reassemble transfer case and components.	P-2			✓	314– 318	62