

## 2022 ASE Correlation Chart

### Manual Drivetrains and Axles (A3)

**MLR-** Maintenance & Light Repair

**AST-** Auto Service Technology

**MAST-** Master Auto Service Technology

	Task	MLR	AST	MAST	Text Page #	Task Page #
<b>A. General</b>						
1.	Research vehicle service information such as fluid type, vehicle service history, service precautions, technical service bulletins, and recalls including vehicles equipped with advanced driver assistance systems (ADAS).	P-1	P-1	P-1	2-4; 120-122; 228-230	3, 4, 21, 45,
2.	Identify manual drive train and axles components and configurations.	P-1	P-1	P-1	59-67; 106-107; 125-127; 211-218	8, 18, 19, 32
3.	Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed.	P-1	P-1	P-1	276-279	57
4.	Check fluid condition; check for leaks; determine needed action.	P-2 Check only	P-1	P-1	120-122; 228-230; 306	20, 64
5.	Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification.	P-1	P-1	P-1	120-122	21
6.	Diagnose drive train concerns; determine needed action.		P-1	P-1	86-96; 133-138; 227-233; 305-310; 321-327	11, 26, 27, 33, 59, 66

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

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<b>3.</b>	Diagnose noise concerns through the application of transmission/transaxle powerflow principles.			P-2	136-138	26
<b>4.</b>	Diagnose hard shifting and jumping out of gear concerns; determine needed action.			P-2	135-137	24
<b>5.</b>	Diagnose transaxle final drive assembly noise and vibration concerns; determine needed action.			P-2	143-145; 148	26
<b>6.</b>	Disassemble, inspect clean, and reassemble internal transmission/transaxle components.			P-3	141-151; 155-160	23
<b>D. Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joints (Front, Rear, All wheel drive, 4-wheel drive)</b>						
<b>1.</b>	Inspect, remove, and/or replace bearings, hubs, and seals.	P-2	P-1	P-1	181-182	29, 30
<b>2.</b>	Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints.	P-2	P-1	P-1	175-178; 180-184	28
<b>3.</b>	Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification.		P-2	P-2	306-307	64
<b>4.</b>	Diagnose constant-velocity (CV) joint noise and vibration concerns; determine needed action.		P-1	P-1	180-181	27
<b>5.</b>	Diagnose universal joint noise and vibration concerns; determine needed action.		P-1	P-1	175-177	27
<b>6.</b>	Check shaft balance and phasing; measure shaft runout; measure and adjust driveline angles; determine needed action.		P-2	P-2	179-180; 329-332	28

	Task	MLR	AST	MAST	Text Page #	Task Page #
<b>E. Differential and Drive Axle</b>						
<b>E.1 Ring and Pinion Gears and Differential Case Assembly</b>						
1.	Inspect differential housing; check for leaks; inspect housing vent.	P-1	P-1	P-1	229; 312	33-34
2.	Check and adjust differential case fluid level; use proper fluid type per manufacturer specification.	P-1	P-1	P-1	229	34
3.	Drain and refill differential case; use proper fluid type per manufacturer specification.	P-1	P-1	P-1	229; 251	34
4.	Inspect and replace companion flange and/or pinion seal; measure companion flange runout.		P-2	P-2	236-238	35
5.	Demonstrate knowledge of drive pinion and ring gear service and set up including depth, preload, backlash and gear tooth contact. (AST only)		P-2		237-250	36, 38, 39, 40, 41
5.	Inspect ring gear and measure runout; determine needed action. (MAST only)			P-2	239	36
6.	Diagnose noise and vibration concerns; determine needed action.			P-2	230; 321-333	33, 66
7.	Remove, inspect, reinstall and/or replace drive pinion and ring gear, spacers, sleeves, and bearings.			P-2	240-250	37, 43
8.	Measure and adjust drive pinion depth.			P-2	241-242	38
9.	Measure and adjust drive pinion bearing preload.			P-2	243-244	39

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<b>10.</b>	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-2	245-250	40
<b>11.</b>	Check ring and pinion tooth contact patterns; perform needed action.			P-2	245-246	41
<b>12.</b>	Disassemble, inspect, measure, adjust and/or replace differential pinion gears (spiders), shaft, side gears, side bearings, thrust washers, and case.			P-2	240-241	42
<b>13.</b>	Reassemble and reinstall differential case assembly; measure runout; determine needed action.			P-2	241-250	43
<b>E.2 Drive Axles</b>						
<b>1.</b>	Inspect and replace drive axle wheel studs.	P-2	P-2	P-2	233-234	30
<b>2.</b>	Remove and replace drive axle shafts.		P-1	P-1	233-236	29
<b>3.</b>	Inspect and replace drive axle shaft seals, bearings, and retainers.		P-2	P-2	201- 204; 233-236	29
<b>4.</b>	Measure drive axle flange runout and shaft end play; determine needed action.		P-2	P2	231-232	29
<b>5.</b>	Diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns; determine needed action.			P-2	229-231	29
<b>E.3 Limited Slip Differential</b>						
<b>1.</b>	Diagnose noise, slippage, and chatter concerns; determine needed action.			P-3	220; 223; 250	44

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<b>2.</b>	Measure rotating torque; determine needed action.			P-3	232-233	46
<b>F. Four-Wheel Drive/All-Wheel Drive</b>						
<b>1.</b>	Identify concerns related to variations in tire circumference and/or final drive ratios.	P-3	P-2	P-1	305-306	66
<b>2.</b>	Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets.		P-2	P-2	283-284; 289-299; 299-313	59-60
<b>3.</b>	Inspect axle locking mechanisms; determine needed action(s).		P-3	P-3	284-285; 312-313	63
<b>4.</b>	Check for leaks at drive assembly and transfer case seals; check vents; check fluid level; use proper fluid type per manufacturer specification.		P-2	P-2	312	64
<b>5.</b>	Diagnose noise, vibration, and unusual steering concerns; determine needed action.			P-2	306-307; 321-333	66
<b>6.</b>	Diagnose, test, adjust, and replace electrical/electronic components of four-wheel drive systems.			P-2	307-311	65
<b>7.</b>	Disassemble, service, and reassemble transfer case and components.			P-3	314-318	62