

2017 ASE Correlation Chart

Manual Drivetrains and Axles (A3)

MLR- Maintenance & Light Repair

AST- Auto Service Technology (Includes MLR)

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

| | Task | Priority | MLR | AST | MAST | Text Page # | Task Page # |
|--|---|----------|-----|-----|------|-------------|--------------------------|
| A. General: Drive Train Diagnosis | | | | | | | |
| 1. | Identify and interpret drive train concerns; determine needed action. | P-1 | | ✓ | ✓ | 1574-1576 | 390 |
| 2. | Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. | P-1 | ✓ | ✓ | ✓ | 127-133 | 24; 25; 27; 30; 387; 398 |
| 3. | Check fluid condition; check for leaks; determine needed action. | P-1 | ✓ | ✓ | ✓ | 154; 1597 | 386 |
| 4. | Drain and refill manual transmission/transaxle and final drive unit; use proper fluid type per manufacturer specification. | P-1 | ✓ | ✓ | ✓ | 154, 1597 | 387 |
| B. Clutch Diagnosis and Repair | | | | | | | |
| 1. | Diagnose clutch noise, binding, slippage, pulsation, and chatter; determine needed action. | P-1 | | ✓ | ✓ | 1574 | 378 |
| 2. | Inspect clutch pedal linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs; perform needed action. | P-1 | | ✓ | ✓ | 1575-1576 | 379 |

| | Task | Priority | MLR | AST | MAST | Text Page # | Task Page # |
|---|--|-----------------|------------|------------|-------------|--------------------|--------------------|
| 3. | Inspect and/or replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing/ linkage, and pilot bearing/bushing (as applicable). | P-1 | | ✓ | ✓ | 1574 | 380 |
| 4. | Bleed clutch hydraulic system. | P-1 | | ✓ | ✓ | 1576 | 381 |
| 5. | Check and adjust clutch master cylinder fluid level; check for leaks; use proper fluid type per manufacturer specification. | P-1 | ✓ | ✓ | ✓ | 1576-1577 | 382 |
| 6. | Inspect flywheel and ring gear for wear, cracks, discoloration; determine needed action. | P-1 | | ✓ | ✓ | 1570; 1574 | 383 |
| 7. | Measure flywheel runout and crankshaft end play; determine needed action. | P-2 | | ✓ | ✓ | 1570 | 384 |
| 8. | Describe the operation and service of a system that uses a dual mass flywheel. | P-3 | | | ✓ | 1570 | 385 |
| C. Transmission/Transaxle Diagnosis and Repair | | | | | | | |
| 1. | Inspect, adjust, lubricate and/or replace shift linkages, brackets, bushings, cables, pivots, and levers. | P-2 | | ✓ | ✓ | 1593; 1595 | 388 |
| 2. | Describe the operational characteristics of an electronically-controlled manual transmission/transaxle. | P-2 | ✓ | ✓ | ✓ | 1689-1690 | 389 |
| 3. | Diagnose noise concerns through the application of transmission/transaxle powerflow principles. | P-2 | | | ✓ | 1584-1596 | 390 |
| 4. | Diagnose hard shifting and jumping out of gear concerns; determine needed action. | P-2 | | | ✓ | 1595 | 391 |
| 5. | Diagnose transaxle final drive assembly noise and vibration concerns; determine needed action. | P-3 | | | ✓ | 1593-1595 | 392 |
| 6. | Disassemble, inspect clean, and reassemble internal transmission/transaxle components. | P-2 | | | ✓ | 1594-1595 | 393 |

| | Task | Priority | MLR | AST | MAST | Text Page # | Task Page # |
|---|---|----------|------------|-----|------|--------------------|-------------|
| D. Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair (Front, Rear, All wheel drive, 4-wheel drive) | | | | | | | |
| 1. | Diagnose universal joint noise and vibration concerns; determine needed action. | P-2 | | ✓ | ✓ | 1614-1616 | 394 |
| 2. | Diagnose universal joint noise and vibration concerns; perform needed action. | P-2 | | ✓ | ✓ | 1614-1616 | 394 |
| 3. | Inspect, remove, and/or replace bearings, hubs, and seals. | P-1 | ✓ (P-2) | ✓ | ✓ | 1619-1623 | 306 |
| 4. | Inspect, service, and/or replace shafts, yokes, boots, and universal/CV joints. | P-1 | ✓ (P-2) | ✓ | ✓ | 1619-1623 | 396 |
| 5. | Check shaft balance and phasing; measure shaft runout; measure and adjust driveline angles. | P-2 | | ✓ | ✓ | 1669-1671 | 394; 419 |
| E. Drive Axle Diagnosis and Repair | | | | | | | |
| E.1 Ring and Pinion Gears and Differential Case Assembly | | | | | | | |
| 1. | Clean and inspect differential case; check for leaks; inspect housing vent. | P-1 | ✓ | ✓ | ✓ | 1618; 1635-1636 | 398; 400 |
| 2. | Check and adjust differential case fluid level; use proper fluid type per manufacturer specification. | P-1 | ✓ | ✓ | ✓ | 1642-1643 | 398 |
| 3. | Drain and refill differential case; use proper fluid type per manufacturer specification. | P-1 | ✓ | ✓ | ✓ | 1642-1643 | 398 |
| 4. | Diagnose noise and vibration concerns; determine needed action. | P-2 | | | ✓ | 1665-1671 | 399 |
| 5. | Inspect and replace companion flange and/or pinion seal; measure companion flange runout. | P-2 | | ✓ | ✓ | 1633-1634 | 401 |
| 6. | Inspect ring gear and measure runout; determine needed action. | P-3 | | | ✓ | 1635-1637 | 402 |

| | | | | | | | |
|--------------------------------------|---|-----------------|------------|------------|-------------|--------------------|--------------------|
| 7. | Remove, inspect, reinstall and/or replace drive pinion and ring gear, spacers, sleeves, and bearings. | P-3 | | | ✓ | 1634-1643 | 403 |
| 8. | Measure and adjust drive pinion depth. | P-3 | | | ✓ | 1636-1641 | 404 |
| 9. | Measure and adjust drive pinion bearing preload. | P-3 | | | ✓ | 1639 | 405 |
| 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 | | | ✓ | 1641 | 406 |
| 11. | Check ring and pinion tooth contact patterns; perform needed action. | P-3 | | | ✓ | 1636-1638 | 407 |
| 12. | Disassemble, inspect, measure, adjust and/or replace differential pinion gears (spiders), shaft, side gears, side bearings, thrust washers, and case. | P-3 | | | ✓ | 1641-1642 | 408 |
| 13. | Reassemble and reinstall differential case assembly; measure runout; determine needed action. | P-3 | | | ✓ | 1641-1642 | 409 |
| E.2 Limited Slip Differential | | | | | | | |
| 1. | Diagnose noise, slippage, and chatter concerns; determine needed action. | | | | ✓ | 1630-1633 | 410 |
| 2. | Measure rotating torque; determine needed action. | P-3 | | | ✓ | 1639-1640 | 411 |
| | Task | Priority | MLR | AST | MAST | Text Page # | Task Page # |
| E.3 Drive Axles | | | | | | | |
| 1. | Inspect and replace drive axle wheel studs. | P-1 | ✓ (P-2) | ✓ | ✓ | 1176; 1272 | 397 |
| 2. | Remove and replace drive axle shafts. | P-1 | | ✓ | ✓ | 1619 | 395 |
| 3. | Inspect and replace drive axle shaft seals, bearings, and retainers. | P-2 | | ✓ | ✓ | 1619-1625 | 395 |

| | | | | | | | |
|---|--|-----|------------|---|---|-----------------|-----|
| 4. | Measure drive axle flange runout and shaft end play; determine needed action. | P-2 | | ✓ | ✓ | 1667-1668 | 395 |
| 5. | Diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns; determine needed action. | P-2 | | | ✓ | 1619; 1671-1673 | 412 |
| F. Four-Wheel Drive/All-Wheel Drive Component Diagnosis and Repair | | | | | | | |
| 1. | Inspect, adjust, and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets. | P-3 | | ✓ | ✓ | 1650-1653 | 412 |
| 2. | Inspect locking hubs; determine needed action. | P-3 | ✓ | ✓ | ✓ | 1646 | 413 |
| 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) | ✓ | ✓ | 1653-1654 | 414 |
| 4. | Identify concerns related to variations in tire circumference and/or final drive ratios. | P-2 | | ✓ | ✓ | 1646-1647 | 415 |
| 5. | Diagnose noise, vibration, and unusual steering concerns; determine needed action. | P-3 | | | ✓ | 1662-1673 | 415 |
| 6. | Diagnose, test, adjust, and replace electrical/electronic components of four-wheel drive systems. | P-3 | | | ✓ | 1648-1654 | 417 |
| 7. | Disassemble, service, and reassemble transfer case and components. | P-2 | | | ✓ | 1657-1660 | 418 |