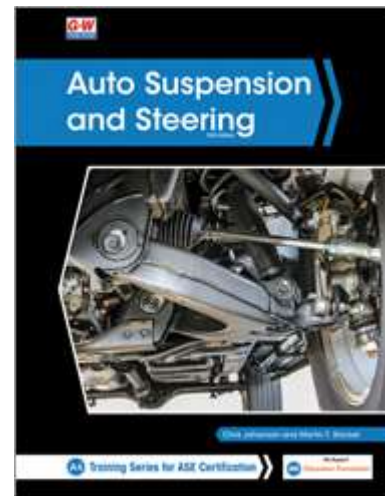


**Correlation of  
Auto Suspension and Steering, Johanson and Stockel  
(Goodheart-Willcox Publisher ©2021)  
to the  
2022 ASE Education Foundation Master Automobile Service Technology (MAST) Task  
List**

The following chart correlates the *Auto Suspension and Steering* textbook and shop manual (©2021) to the 2022 ASE Education Foundation Master Automobile Service Technology (MAST) Task List.

The correlation below lists the ASE Education Foundation Master Automobile Service Technology Tasks, priority levels, corresponding page numbers from the *Auto Suspension and Steering* textbook, and corresponding job numbers from the *Auto Suspension and Steering Shop Manual*.

For more information on the ASE Education Foundation standards, please visit [www.aseeducationfoundation.org](http://www.aseeducationfoundation.org).



## SUSPENSION AND STEERING

For every task in Suspension and Steering, the following safety requirement must be strictly enforced:

- Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

| Task Number and Description                                                                                                                                                                                                    | Priority | G-W Content                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------|
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                                                                                                             |          |                                                                           |
| <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      | Textbook: pgs. 54–55, 71, 177, 252–253, 390–394<br>Shop Manual: Jobs 2, 3 |

| <b>Task Number and Description</b>                                                                                                     | <b>Priority</b> | <b>G-W Content</b>                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Identify suspension and steering system components and configurations.                                                              | P-1             | Textbook: pgs. 4-21, 59-74, 77-91, 119-135, 159-191, 243-259, 299-313, 344-359                                                                               |
| 3. Retrieve and record DTCs, OBD monitor status, and freeze frame data; clear codes and data when directed.                            | P-1             | Textbook: pgs. 47-48, 319-322, 435-443<br>Shop Manual: Jobs 4, 11                                                                                            |
| 4. Disable and enable supplemental restraint system (SRS); verify indicator lamp operation.                                            | P-1             | Textbook: pg. 199–200, 203<br>Shop Manual: Jobs 5, 13                                                                                                        |
| 5. Identify and interpret suspension and steering system concerns; determine needed action.                                            | P-1             | Textbook: pg. 96–102, 140–142, 196–199, 218–225, 266–272, 318–326, 335–337, 390–399<br>Shop Manual: Jobs 4, 7, 8, 10, 11, 12, 14, 18, 20, 26, 27, 28, 29, 32 |
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                     |                 |                                                                                                                                                              |
| <b>B. Steering Systems</b>                                                                                                             |                 |                                                                                                                                                              |
| 1. Inspect rack and pinion steering gear tie rod ends (sockets) and bellows boots; repair or replace as needed.                        | P-1             | Textbook: pg. 197-199<br>Shop Manual: Jobs 7, 8, 15                                                                                                          |
| 2. Inspect power steering fluid level and condition.                                                                                   | P-2             | Textbook: pg. 218-219<br>Shop Manual: Jobs 9, 18                                                                                                             |
| 3. Drain and replace power steering system fluid; use proper fluid type per manufacturer specification.                                | P-2             | Textbook: pg. 218, 239–240<br>Shop Manual: Job 19                                                                                                            |
| 4. Inspect for power steering fluid leakage; determine needed action.                                                                  | P-2             | Textbook: pg. 220-222<br>Shop Manual: Job 18                                                                                                                 |
| 5. Remove, inspect, replace, and/or adjust power steering pump drive belt.                                                             | P-2             | Textbook: pg. 219–220<br>Shop Manual: Jobs 18, 19                                                                                                            |
| 6. Inspect, remove, and/or replace power steering hoses and fittings.                                                                  | P-2             | Textbook: pg. 227–228<br>Shop Manual: Jobs 8, 19                                                                                                             |
| 7. Inspect, remove, and/or replace pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper. | P-2             | Textbook: pg. 198, 206–208<br>Shop Manual: Jobs 8, 17                                                                                                        |
| 8. Inspect, replace, and/or adjust tie rod ends (sockets), tie rod sleeves, and clamps (non-rack and pinion).                          | P-2             | Textbook: pg. 197, 203–207<br>Shop Manual: Jobs 8, 17                                                                                                        |
| 9. Inspect and test electric power steering system; determine needed action.                                                           | P-1             | Textbook: pg. 225, 318–324, 335–339<br>Shop Manual: Jobs 4, 11, 20                                                                                           |
| 10. Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring).                            | P-1             | Textbook: pg. 199–201<br>Shop Manual: Jobs 5, 13                                                                                                             |
| 11. Diagnose steering column noises, looseness, and binding concerns (including tilt/telescoping mechanisms); determine needed action. | P-2             | Textbook: pg. 196–197, 199–203<br>Shop Manual: Jobs 8, 12                                                                                                    |

| <b>Task Number and Description</b>                                                                                                                             | <b>Priority</b> | <b>G-W Content</b>                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------|
| 12. Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine needed action.  | P-3             | Textbook: pg. 218–225<br>Shop Manual: Jobs 8, 18                                 |
| 13. Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine needed action.      | P-1             | Textbook: pg. 218–225<br>Shop Manual: Jobs 8, 18                                 |
| 14. Inspect steering shaft universal joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; determine needed action. | P-2             | Textbook: pg. 196–197, 202–203<br>Shop Manual: Jobs 8, 12, 13                    |
| 15. Remove and replace rack and pinion steering gear; inspect mounting bushings and brackets.                                                                  | P-2             | Textbook: pg. 208–211<br>Shop Manual: Job 15                                     |
| 16. Remove and reinstall power steering pump.                                                                                                                  | P-2             | Textbook: pg. 228<br>Shop Manual: Job 19                                         |
| 17. Remove and reinstall press fit power steering pump pulley; check pulley and belt alignment.                                                                | P-2             | Textbook: pg. 226–227<br>Shop Manual: Jobs 18, 19                                |
| 18. Test power steering system pressure; determine needed action.                                                                                              | P-3             | Textbook: pg. 223–225<br>Shop Manual: Job 18                                     |
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                                             |                 |                                                                                  |
| <b>C. Suspension Systems</b>                                                                                                                                   |                 |                                                                                  |
| 1. Inspect, remove, and/or replace upper and/or lower control arms, bushings, and shafts.                                                                      | P-2             | Textbook: pg. 67-69, 98–99, 109–111, 140–141, 145–148<br>Shop Manual: Jobs 8, 22 |
| 2. Inspect and replace rebound/jounce bumpers.                                                                                                                 | P-2             | Textbook: pg. 97–99, 145–148<br>Shop Manual: Jobs 8, 22                          |
| 3. Inspect, remove, and/or replace track bar, strut rods/radius arms, and related mounts and bushings.                                                         | P-2             | Textbook: pg. 96–98, 111-112, 140–141, 145–147<br>Shop Manual: Jobs 8, 21        |
| 4. Inspect, remove, and/or replace upper and/or lower ball joints (with or without wear indicators).                                                           | P-2             | Textbook: pg. 98-99, 106–109, 140, 148<br>Shop Manual: Jobs 8, 14, 22            |
| 5. Inspect, remove, and/or replace suspension system coil springs and spring insulators.                                                                       | P-2             | Textbook: pg. 96-97, 100, 109–110, 12-113, 140, 149<br>Shop Manual: Jobs 8, 23   |
| 6. Inspect, remove, and/or replace torsion bars and mounts                                                                                                     | P-3             | Textbook: pg. 96, 113-114, 140, 149<br>Shop Manual: Jobs 8, 24                   |
| 7. Inspect, remove, and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.                                                         | P-2             | Textbook: pg. 96, 111–112, 140, 145–148<br>Shop Manual: Jobs 8, 21               |
| 8. Inspect, remove, and/or replace strut assembly, strut coil spring, insulators, and upper strut bearing mount.                                               | P-2             | Textbook: pg. 96, 102–106, 140–141, 143–145, Shop Manual: Jobs 8, 26             |

| <b>Task Number and Description</b>                                                                                                                                                                   | <b>Priority</b> | <b>G-W Content</b>                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------|
| 9. Inspect, remove, and/or replace components of suspension systems (Coil, Leaf, and Torsion).                                                                                                       | P-1             | Textbook: pg. 96-116, 140-155<br>Shop Manual: Jobs 21, 22, 23, 24, 25, 26, 27 |
| 10. Inspect, remove, and/or replace components of electronically controlled suspension systems.                                                                                                      | P-1             | Textbook: pg. 320-335<br>Shop Manual: Job 4                                   |
| 11. Inspect, remove, and/or replace steering knuckle assemblies.                                                                                                                                     | P-2             | Textbook: pg. 69-70, 106-109, 114-116<br>Shop Manual: Jobs 8, 14              |
| 12. Diagnose suspension system noises, body sway, and uneven ride height concerns; determine needed action                                                                                           | P-1             | Textbook: pg. 96-102, 140-143<br>Shop Manual: Jobs 8, 26, 27, 28              |
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                                                                                   |                 |                                                                               |
| <b>D. Related Suspension and Steering Service.</b>                                                                                                                                                   |                 |                                                                               |
| 1. Inspect, remove, and/or replace shock absorbers; inspect mounts and bushings.                                                                                                                     | P-2             | Textbook: pg. 96, 102-106, 140-145, 154-155, 334<br>Shop Manual: Jobs 8, 27   |
| 2. Inspect, service, and/or replace front and rear wheel bearings.                                                                                                                                   | P-1             | Textbook: pg. 269-270, 281-290<br>Shop Manual: Jobs 7, 10                     |
| 3. Describe the function of electronically controlled suspension and steering control system and components, (i.e., active suspension and stability control).                                        | P-2             | Textbook: pg. 18-21, 309-313<br>Shop Manual: Jobs 4, 8, 11, 20                |
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                                                                                   |                 |                                                                               |
| <b>E. Wheel Alignment</b>                                                                                                                                                                            |                 |                                                                               |
| 1. Perform pre-alignment inspection; measure vehicle ride height; determine needed action.                                                                                                           | P-1             | Textbook: pg. 96-102, 269-272, 365-369<br>Shop Manual: Job 28                 |
| 2. Describe four-wheel alignment angles (camber, caster, and toe) and effects on vehicle handling\tire wear.                                                                                         | P-1             | Textbook: pg. 344-352                                                         |
| 3. Prepare vehicle for wheel alignment on alignment machine; perform four-wheel alignment by checking and adjusting front caster, front and rear camber, and toe as required; center steering wheel. | P-1             | Textbook: pg. 362-386<br>Shop Manual: Job 28                                  |
| 4. Check toe-out-on-turns (turning radius); determine needed action.                                                                                                                                 | P-2             | Textbook: pg. 350, 372<br>Shop Manual: Job 28                                 |
| 5. Check steering axis inclination (SAI) and included angle; determine needed action.                                                                                                                | P-2             | Textbook: pg. 349-350, 372<br>Shop Manual: Job 28                             |
| 6. Check rear wheel thrust angle; determine needed action.                                                                                                                                           | P-1             | Textbook: pg. 352, 362, 374-376<br>Shop Manual: Job 28                        |
| 7. Check for front wheel setback; determine needed action.                                                                                                                                           | P-2             | Textbook: pg. 350<br>Shop Manual: Job 28                                      |

| <b>Task Number and Description</b>                                                                                                                                                                               | <b>Priority</b> | <b>G-W Content</b>                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------|
| 8. Identify front and/or rear cradle (subframe) misalignment; determine needed action.                                                                                                                           | P-2             | Textbook: pg. 367, 385–386<br>Shop Manual: Job 28                       |
| 9. Reset steering angle sensor.                                                                                                                                                                                  | P-1             | Textbook: pg. 324, 330, 384–385<br>Shop Manual: Job 28                  |
| 10. Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine needed action.                                                          | P-1             | Textbook: pg. 344–354, 365–385<br>Shop Manual: Job 28                   |
| <b>IV. SUSPENSION AND STEERING</b>                                                                                                                                                                               |                 |                                                                         |
| <b>F. Wheels and Tires</b>                                                                                                                                                                                       |                 |                                                                         |
| 1. Inspect tire condition/age; identify tire wear patterns; check for correct tire size, application (service-class, load, and speed ratings), and air pressure as listed on the tire information placard/label. | P-1             | Textbook: pg. 256–260, 271–272, 290–291, 367–368<br>Shop Manual: Job 29 |
| 2. Rotate tires according to manufacturer's recommendation including vehicles equipped with tire pressure monitoring systems (TPMS).                                                                             | P-1             | Textbook: pg. 290, 295–296<br>Shop Manual: Job 31                       |
| 3. Dismount, inspect, and remount tire on wheel (with/without TPMS); balance wheel and tire assembly.                                                                                                            | P-1             | Textbook: pg. 272, 290–291, 293–296<br>Shop Manual: Job 30              |
| 4. Inspect tire and wheel assembly for air loss; determine needed action.                                                                                                                                        | P-1             | Textbook: pg. 258, 271–272, 291–292, 367<br>Shop Manual: Job 29         |
| 5. Repair tire following tire manufacturer approved procedure.                                                                                                                                                   | P-1             | Textbook: pg. 292–293<br>Shop Manual: Job 30                            |
| 6. Identify indirect and direct tire pressure monitoring system (TPMS); calibrate/relearn system; verify operation of instrument panel lamps.                                                                    | P-1             | Textbook: pg. 259–260, 293–296,<br>Shop Manual: Job 31                  |
| 7. Demonstrate knowledge of steps required to remove and replace sensors (per OEM/sensor manufacturer) in a tire pressure monitoring system (TPMS).                                                              | P-1             | Textbook: pg. 259–260, 295–296<br>Shop Manual: Job 32                   |
| 8. Perform Road Force balance/match mounting.                                                                                                                                                                    | P-1             | —                                                                       |
| 9. Diagnose wheel/tire vibration, shimmy, and noise; determine needed action.                                                                                                                                    | P-1             | Textbook: pg. 270–271, 367–368, 394–399<br>Shop Manual: Jobs 29, 31     |
| 10. Measure wheel, tire, axle flange, and hub runout; determine needed action.                                                                                                                                   | P-2             | Textbook: pg. 269–270, 272<br>Shop Manual: Job 29                       |
| 11. Diagnose tire pull problems; determine needed action.                                                                                                                                                        | P-1             | Textbook: pg. 271–272, 353, 367<br>Shop Manual: Jobs 28, 29             |