

Automotive Service Technician Program

Competency Profile - Suspension and Steering-A4

Student Information

Last Name
First Name
Telephone

Directions: Evaluate the student according to the rating scale to indicate the degree of competency. The rating for each competency should indicate employability readiness, rather than the grades given in class.

2012 NATEF Standards for Automotive Service Technology

Student Rating Scale:

- 1 = NO EXPOSURE - no experience or knowledge in this area
- 2 = KNOWLEDGE - can recall, explain, or has been exposed to this information
- 3 = LIMITED SKILLED - requires instruction and close supervision
- 4 = MODERATELY SKILLED - can perform job completely with limited supervision
- 5 = SKILLED - can work independently with no supervision

Score <i>A. General: Suspension and Steering Systems</i>	Date Completed
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	1. Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. P1	
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B. Steering Systems Diagnosis and Repair

	1. Disable and enable supplemental restraint system (SRS). P1	
	2. Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring). P-1	
	3. Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action. P2	
	4. Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine necessary action. P2	
	5. Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and noise concerns; determine necessary action. P2	
	6. Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action. P2	
	7. Remove and replace rack and pinion steering gear; inspect mounting bushings and brackets. P2	
	8. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots; replace as needed. P2	
	9. Determine proper power steering fluid type; inspect fluid level and condition. P1	
	10. Flush, fill, and bleed power steering system. P2	
	11. Inspect for power steering fluid leakage; determine necessary action. P1	
	12. Remove, inspect, replace, and adjust power steering pump drive belt. P1	
	13. Remove and reinstall power steering pump. P2	
	14. Remove and reinstall press fit power steering pump pulley; check pulley and belt alignment. P2	
	15. Inspect and replace power steering hoses and fittings. P2	
	16. Replace power steering pump filter(s). P1	
	17. Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper. P2	
	18. Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps. P1	
	19. Identify hybrid vehicle power steering system electrical circuits and safety precautions. P2	

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C. Suspension Systems Diagnosis and Repair

1.	Diagnose short and long arm suspension system noises, body sway, and uneven ride height concerns; determine necessary action. P1	
2.	Diagnose strut suspension system noises, body sway, and uneven ride height concerns; determine necessary action. P1	
3.	Inspect, remove and install upper and lower control arms, bushings, shafts, and rebound bumpers. P3	
4.	Inspect, remove and install strut rods and bushings. P3	
5.	Inspect, remove and install upper and/or lower ball joints (with or without wear indicators). P2	
6.	Inspect, remove and install steering knuckle assemblies. P3	
7.	Inspect, remove and install short and long arm suspension system coil springs and spring insulators. P3	
8.	Inspect, remove and install torsion bars and mounts. P3	
9.	Inspect, remove and install front stabilizer bar (sway bar) bushings, brackets, and links. P3	
10.	Inspect, remove and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount. P3	
11.	Inspect, remove and install track bar, strut rods/radius arms, and related mounts and bushings. P3	
12.	Inspect rear suspension system leaf spring(s), bushings, center pins/bolts, and mounts. P1	
13.	Inspect electric power-assisted steering. P3	

D. Related Suspension and Steering Service

1.	Inspect, remove, and replace shock absorbers; inspect mounts and bushings. P1	
2.	Remove, inspect, and service or replace front and rear wheel bearings. P1	
3.	Describe the function of the power steering pressure switch. P3	

E. Wheel Alignment Diagnosis, Adjustment, and Repair

1.	Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action. P1	
2.	Perform prealignment inspection and measure vehicle ride height; perform necessary action. P1	
3.	Prepare vehicle for wheel alignment on alignment machine; perform four-wheel alignment by checking and adjusting front and rear wheel caster, camber; and toe as required; center steering wheel. P1	
4.	Check toe-out-on-turns (turning radius); determine necessary action. P2	
5.	Check SAI (steering axis inclination) and included angle; determine necessary action. P2	
6.	Check rear wheel thrust angle; determine necessary action. P1	
7.	Check for front wheel setback; determine necessary action. P2	
8.	Check front and/or rear cradle (subframe) alignment; determine necessary action. P3	

F. Wheels and Tires Diagnosis and Repair

1.	Inspect tire condition; identify tire wear patterns; check for correct tire size and application (load and speed ratings) and adjust air pressure; determine necessary action. P1	
2.	Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action. P2	
3.	Rotate tires according to manufacturer's recommendations. P1	
4.	Measure wheel, tire, axle flange, and hub runout; determine necessary action. P2	
5.	Diagnose tire pull problems; determine necessary action. P2	

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	6. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic). P1	
	7. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor. P2	
	8. Inspect tire and wheel assembly for air loss; perform necessary action. P1	
	9. Repair tire using internal patch. P1	
	10. Identify and test tire pressure monitoring system (indirect and direct) for operation; verify operation of instrument panel lamps. P1	
	11. Demonstrate knowledge of steps required to remove and replace sensors in a tire pressure monitoring system. P1	