

Hemet High School

NATEF SUSPENSION AND STEERING CHECKLIST

Name _____ Date _____ Period _____

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.

A-4 SUSPENSION AND STEERING

Signature	Date	Evaluation	A. General Suspension and Steering Systems Diagnosis <u>Evaluation Matrix:</u> 1 = Exposure/Observation 2 = Assisted in Performing 3 = Capable, Needs Practice 4 = Performed Satisfactorily 5 = Demonstrated Mastery
			1. Identify and interpret suspension and steering concern; determine necessary action. P-1
			2. Research applicable vehicle and service information, such as suspension and steering system operation, vehicle service history, service precautions, and technical service bulletins. P-1
			3. Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibration decals). P-1
			B. Steering Systems Diagnosis and Repair
			1. Disable and enable supplemental restraint system (SRS). P-1
			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. P-2
			4. Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action. P-3
			5. Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, and fluid leakage concerns; determine necessary action. P-3
			6. Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action. P-2

A-4 SUSPENSION AND STEERING CONTINUED

Signature	Date	Evaluation	B. Steering Systems Diagnosis and Repair Continued
			7. Adjust manual or power non-rack and pinion worm bearing preload and sector lash. P-3
			8. Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets. P-1
			9. Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. P-1
			10. Inspect power steering fluid levels and condition. P-1
			11. Flush, fill, and bleed power steering system. P-2
			12. Diagnose power steering fluid leakage; determine necessary action. P-2
			13. Remove, inspect, replace, and adjust power steering pump belt. P-1
			14. Remove and reinstall power steering pump. P-3
			15. Remove and reinstall power steering pump pulley; check pulley and belt alignment. P-3
			16. Inspect and replace power steering hoses and fittings. P-2
			17. Inspect and replace pitman arm, relay (center-link/intermediate) rod, idler arm and mountings, and steering linkage damper. P-2
			18. Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps. P-1
			19. Test and diagnose components of electronically controlled steering systems using a scan tool; determine necessary action. P-3

A-4 SUSPENSION AND STEERING CONTINUED

Signature	Date	Evaluation	C. Suspension Systems Diagnosis and Repair
			1. Front Suspension
			1. Diagnose short and long arm suspension system noises, body sway, and uneven riding height concerns; determine necessary action. P-1
			2. Diagnose strut suspension system noises, body sway, and uneven riding height concerns; determine necessary action. P-1
			3. Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers. P-3
			4. Remove, inspect and install strut rods (compression/tension) and bushings. P-2
			5. Remove, inspect, and install upper and/or lower ball joints. P-2
			6. Remove, inspect, and install steering knuckle assemblies. P-2
			7. Remove, inspect, and install short and long arm suspension system coil springs and spring insulators. P-2
			8. Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts. P-3
			9. Remove, inspect, and install stabilizer bar bushings, brackets, and links. P-2
			10. Remove, inspect, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount. P-1
			11. Lubricate suspension and steering systems. P-2
			2. Rear Suspension
			1. Remove, inspect, and install coil springs and spring insulators. P-2
			2. Remove, inspect, and install transverse links, control arms, bushings, and mounts. P-2
			3. Remove, inspect, and install leaf springs, leaf spring insulators (silencers), shackles,

			brackets, bushings, and mounts. P-3
			4. Remove, inspect, and install strut cartridge or assembly, strut coil spring, and insulators (silencers). P-2

A-4 SUSPENSION AND STEERING CONTINUED

Signature	Date	Evaluation	C. Suspension Systems Diagnosis and Repair Continued
			3. Miscellaneous Service
			1. Inspect, remove, and replace shock absorbers. P-1
			2. Remove, inspect, and service or replace front and rear wheel bearings. P-1
			3. Test and diagnose components of electronically controlled suspension systems using a scan tool; determine necessary action. P-3
			D. Wheel Alignment Diagnosis, Adjustment, and Repair
			1. Differentiate between steering and suspension concerns using principles of steering geometry (caster, camber, toe, etc). P-1
			2. Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action. P-1
			3. Perform pre-alignment inspection; perform necessary action. P-1
			4. Measure vehicle riding height; determine necessary action. P-1
			5. Check and adjust front and rear wheel camber; perform necessary action. P-1
			6. Check and adjust caster; perform necessary action. P-1
			7. Check and adjust front wheel toe; adjust as needed. P-1
			8. Center steering wheel. P-1
			9. Check toe-out-on-turns (turning radius); determine necessary action. P-2
			10. Check SAI (steering axis inclination) and included angle; determine necessary action. P-2

			11. Check and adjust rear wheel toe. P-2
			12. Check rear wheel thrust angle; determine necessary action. P-2
			13. Check for front wheel setback; determine necessary action. P-2
			14. Check front cradle (sub-frame) alignment; determine necessary action. P-3

A-4 SUSPENSION AND STEERING CONTINUED

Signature	Date	Evaluation	E. Wheel and Tire Diagnosis and Repair
			1. Diagnose tire wear patterns; determine necessary action. P-1
			2. Inspect tires; check and adjust air pressure. P-1
			3. Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action. P-2
			4. Rotate tires according to manufacturer's recommendations. P-1
			5. Measure wheel, tire, axle, and hub runout; determine necessary action. P-2
			6. Diagnose tire pull (lead) problem; determine necessary action. P-2
			7. Balance wheel and tire assembly (static and dynamic). P-1
			8. Dismount, inspect, repair, and remount tire on wheel. P-2
			9. Reinstall wheel; torque lug nuts. P-1
			10. Inspect and repair tire. P-2
			11. Inspect, diagnose, and calibrate tire pressure monitoring system. P-2

I. Suspension and Steering Task Priority Breakdown

P-1 = 28 _____ No. Completed (95% - 26 Required for NATEF)
P-2 = 26 _____ No. Completed (80% - 21 Required for NATEF)
P-3 = 11 _____ No. Completed (50% - 6 Required for NATEF)

Instructor's Sign Off: _____