NATEF Hands-On Competency Checklist

A4—Suspension and Steering

Student Name:
Date:
Instructor:

Suggested Level of Competency Ratings:

5  Mastered competency. Able to perform all elements of task successfully and independently without supervision.

4  Satisfactory performance of task. Acceptable performance of all elements of task with mastery of some elements.

3  Capable of performing task adequately, but some elements need improvement.

2  Satisfactory performance of some elements of task and unsatisfactory performance of some elements of task.

1  Unsatisfactory performance of task.

Steering Systems Diagnosis and Repair

Disable and enable supplemental restraint system (SRS).

Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring).

Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action

Adjust non-rack-and-pinion worm bearing preload and sector lash

Remove and replace rack-and-pinion steering gear; inspect mounting bushings and brackets

Inspect and replace rack-and-pinion steering gear inner tie rod ends (sockets) and bellows boots

Determine proper power steering fluid type; inspect fluid level and condition

Flush, fill, and bleed power steering system.

Remove, inspect, replace, and adjust power steering pump belt

Remove and reinstall power steering pump.

Remove and reinstall press fit power steering pump pulley; check pulley and belt alignment

Inspect and replace power steering hoses and fittings

Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper.
Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps

Test and diagnose components of electronically controlled steering systems using a scan tool; determine necessary action.

Inspect and test electric power assist steering

Identify hybrid vehicle power steering system electrical circuits, service and safety precautions

**Suspension Systems Diagnosis and Repair**

Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers

Remove, inspect, and install strut rods and bushings

Remove, inspect, and install upper and/or lower ball joints

Remove, inspect, and install steering knuckle assemblies

Remove, inspect, and install short and long arm suspension system coil springs and spring insulators

Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts

Remove, inspect, and install stabilizer bar bushings, brackets, and links

Remove, inspect, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount.

Remove, inspect, and install leaf springs, leaf spring insulators (silencers), shackles, brackets, bushings, and mounts.

**Related Suspension and Steering Service**

Inspect, remove, and replace shock absorbers.

Remove, inspect, and service or replace front and rear wheel bearings

Test and diagnose components of electronically controlled suspension systems using a scan tool; determine necessary action.

Diagnose, inspect, adjust, repair or replace components of electronically controlled steering systems (including sensors, switches, and actuators); initialize system as required.

Lubricate suspension and steering systems.

**Wheel Alignment Diagnosis, Adjustment, and Repair**

Perform pre-alignment inspection and measure vehicle ride height; perform necessary action.

Prepare vehicle for wheel alignment on the alignment machine; perform four-wheel alignment by checking and adjusting front and rear wheel caster, camber; and toe as required; center steering wheel.
Check toe-out-on-turns (turning radius); determine necessary action

Check SAI (steering axis inclination) and included angle; determine necessary action.

Check rear wheel thrust angle; determine necessary action

Check for front wheel setback; determine necessary action

Check front and/or rear cradle (subframe) alignment; determine necessary action

**Wheel and Tire Diagnosis and Repair**

Inspect tire condition; identify tire wear patterns; check and adjust air pressure; determine necessary action

Rotate tires according to manufacturer’s recommendations.

Measure wheel, tire, axle flange, and hub runout; determine necessary action

Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic).

Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.

Reinstall wheel; torque lug nuts.

Inspect tire and wheel assembly for air loss; perform necessary action

Repair tire using internal patch.

Inspect, diagnose, and calibrate tire pressure monitoring system.