STANDARD OPERATING PROCEDURE

Tire Change and Rotation SOP

Document no.	SOP-AUT-003
Revision	1.0
Owner	Shop Manager
Effective date	September 15, 2026
Review cycle	Every 12 months

1. Purpose

To make sure tires are rotated in the correct pattern, lug nuts are torqued to specification, and tread wear or damage is caught before it becomes a safety issue.

2. Scope

Applies to routine tire rotation and tire replacement on passenger vehicles and light trucks. Full wheel alignment is covered by a separate service.

Definitions

Rotation pattern	The manufacturer-recommended order for moving tires between positions, which varies by drivetrain and tire type.
Tread depth	The measured depth of a tire's tread grooves, used to judge remaining tire life and safety.
Star pattern	A crisscross tightening sequence for lug nuts that seats the wheel evenly.

3. Responsibilities

Technician	Performs the rotation or tire change, inspects tread and brakes, and torques lug nuts to specification.
Service Advisor	Communicates tire wear findings and any replacement recommendation to the customer.
Shop Manager	Confirms torque spec accuracy and resolves any comeback related to wheel or lug issues.

RACI matrix

Activity	Technician	Service Advisor	Shop Manager
Confirm rotation pattern and torque spec	R/A	C	I
Inspect tread depth and tire condition	R/A	I	I
Rotate or replace tires	R/A	-	I
Torque lug nuts to specification	R/A	-	I
Communicate findings to the	C	R/A	I

Activity	Technician	Service Advisor	Shop Manager
customer			

R = Responsible, A = Accountable, C = Consulted, I = Informed

4. Materials and PPE

Materials, tools and systems

- Shop management system with rotation pattern and torque specs
- Torque wrench
- Tire tread depth gauge
- Tire pressure gauge and inflation equipment
- Impact wrench for wheel removal

Personal protective equipment

- Safety glasses
- Gloves

5. Procedure

Step	Task	Owner	Done
5.1	**Confirm the rotation pattern** Look up the manufacturer's recommended rotation pattern for the vehicle's drivetrain and tire type in the shop management system.	Technician	☐
5.2	**Confirm lug nut torque specification** Check the manufacturer's torque specification for the wheel's lug nuts before removing any wheel.	Technician	☐
5.3	**Raise the vehicle on the lift** Raise the vehicle on the lift at the manufacturer's designated lift points, following the shop's vehicle lift safety procedure.	Technician	☐
5.4	**Remove the wheels** Loosen and remove the lug nuts, then remove each wheel and set it aside in its noted position.	Technician	☐
5.5	**Inspect tread depth and wear pattern** Measure tread depth at several points on each tire and check for uneven wear, cracking or embedded debris. **Checkpoint:** Tread depth is measured and recorded for every tire before deciding to rotate or recommend replacement.	Technician	☐
5.6	**Visually inspect brakes with wheels off** With the wheels removed, visually check brake pad thickness, rotor condition and look for any fluid leak.	Technician	☐
5.7	**Rotate or replace tires** Move each tire to its position in the rotation pattern, or mount new tires if replacement was approved by the customer.	Technician	☐
5.8	**Set tires to specified pressure** Inflate each tire to the pressure listed on the vehicle's door jamb placard, not the number molded on the tire's sidewall.	Technician	☐

Step	Task	Owner	Done
5.9	**Hand-tighten lug nuts in a star pattern** Reinstall lug nuts and hand-tighten them in a star pattern to seat the wheel evenly before final torquing.	Technician	☐
5.10	**Lower the vehicle** Lower the vehicle until the tires just touch the ground before final torquing, following the lift's operating procedure.	Technician	☐
5.11	**Torque lug nuts to specification** Fully lower the vehicle and torque each lug nut to the manufacturer's specification using a torque wrench in a star pattern. **Warning:** Never rely on an impact wrench alone for final tightness; always confirm with a calibrated torque wrench.	Technician	☐
5.12	**Recheck torque after a short drive** Recommend the customer return, or check in-house, for a lug nut torque recheck after the first 50 to 100 miles on newly mounted wheels. **Checkpoint:** Lug nut retorque is recommended or performed after the manufacturer's break-in mileage for newly mounted wheels.	Technician	☐
5.13	**Record findings and recommendations** Record tread depth, pressure set and any brake or tire recommendation in the shop management system for the service advisor.	Technician	☐
5.14	**Road test the vehicle** Take the vehicle for a short road test to check for vibration, pulling or noise before returning it to the customer.	Technician	☐

6. Quality checks

- Tread depth is measured and recorded for every tire on every rotation.
- Lug nuts are torqued to specification with a calibrated torque wrench, not just an impact wrench.
- Tire pressure matches the vehicle's door jamb placard, not the tire sidewall.
- A retorque recheck is recommended for any newly mounted wheel.

7. Records

- Tread depth and inspection log
- Rotation pattern and torque spec reference
- Customer recommendation notes
- Retorque recheck reminder

8. KPIs

- Average time per tire rotation
- Comeback rate for loose or noisy wheels
- Percentage of services with tread depth recorded
- Tire replacement recommendation acceptance rate

9. Common mistakes

- Skipping the torque wrench step and leaving lug nuts at impact wrench tightness only.
- Inflating tires to the pressure on the sidewall instead of the door jamb placard.
- Not recording tread depth, missing an early warning sign of uneven wear.
- Forgetting to recommend a retorque recheck after mounting new wheels.

10. Revision history

Revision	Date	Description	Reviewed by
1.0	September 15, 2026	Initial release	Ilia Pirozhenko

Approval

Prepared by	Approved by	Date

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