

ACADEMY / STUDY BOOK

Tire Inspection & TPMS Fundamentals

Inspect tire condition, document pressure and tread findings, and distinguish pressure correction from TPMS system service.



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How to use this book

Read the lessons, work each example, then complete the practice questions before checking the answer explanations. Write your evidence and next step in the exercises. Training examples are not vehicle service specifications.

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Before you begin

Basic tire identification; equipment operation and inflation procedures require supervised training.

Learning objectives

- Record tire condition by position rather than using one general label.
- Interpret cold-pressure and tread measurements against applicable guidance.
- Distinguish a low-pressure condition from a TPMS system fault.
- Plan fitment, service, relearn and verification requirements.

Course contents

Identify each tire and inspect before service

Measure pressure and tread meaningfully

Separate pressure correction from TPMS diagnosis

Plan service and verify the handoff

Worked shop cases / Practical worksheet / Practice assessment / Answer explanations / Further study

Identify each tire and inspect before service

Record vehicle identity and the approved fitment, then inspect what is installed at each position. Note size, relevant ratings, visible damage, wear and any special directional, asymmetric, run-flat or staggered requirements. A single tire's condition does not represent all four, and a spare may have different operating instructions.

Inspect accessible tread, sidewalls, bead-area concerns and wheel condition using the approved safe method. Cuts, bulges, exposed reinforcement or evidence of severe damage require appropriate evaluation; do not describe a visibly damaged tire as safe merely because it holds air. Likewise, a puncture's reparability cannot be judged only from the outside without the required inspection and manufacturer criteria.

Record tire identification and age-related information where relevant under the applicable guidance, but do not invent one universal replacement age for every product and use. Condition, history, manufacturer recommendations and application all matter. Ask about impacts, underinflation, previous repairs and recurring pressure loss.

Position record

Instead of "tires okay," create LF, RF, LR and RR entries with size, pressure condition, tread readings and observed damage. Add the spare where applicable. Mark inaccessible areas not inspected rather than assuming a pass.

Keep the vehicle safe for inspection. Tire mounting, demounting and inflation can involve serious hazards and belong with trained personnel, appropriate equipment and exact procedures.

Read the installed configuration before judging it

Record size, service description and position for every tire, including relevant spare information. A size marking and a load/speed description answer different questions. Matching nominal size alone does not establish full suitability for the vehicle, wheel or use. Staggered, directional and other application-specific arrangements can affect rotation and replacement decisions.

Inspect the accessible tread, sidewall, bead-area context and wheel condition through the appropriate method. Cuts, bulges, exposed material, abnormal wear and signs of operation while underinflated need specific evaluation; a generic "tire worn" note is insufficient. An object in the tread does not establish that a repair is permitted. The full condition, location and applicable tire guidance matter.

Use history without substituting it for inspection

Ask about impacts, repeated pressure loss, previous repairs and use conditions. A recent purchase date does not prove that the tire is undamaged, and visible tread does not answer every age or structural-condition question. Record the relevant identification and consult the applicable manufacturer guidance. Do not invent one universal age or repair rule for every tire and application.

Create a position-specific tire record

Identify each tire by vehicle position before combining readings. Record size and application requirements, visible condition, pressure state and tread observations. A vehicle may have position-specific fitment, so one sidewall is not proof of the required arrangement at all four wheels. Verify fitment from the appropriate vehicle information, not solely from what arrived on the car.

Separate a visible condition from a causal diagnosis. Inner-edge wear may direct geometry and component checks, but the pattern alone is not a unique diagnosis. A tire may also have damage that changes its serviceability independently of its average tread depth. Document inaccessible or uninspected areas instead of implying a complete inspection from one photograph.



- 1 Record each tire separately
- 2 Measure several positions around the tire
- 3 Keep the lowest reading and its location
- 4 A wear pattern is a clue, not a diagnosis
- 5 Inspect damage and verify the vehicle pressure specification

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Preserve the location of every finding The conceptual tread view emphasizes position-specific inner, center and outer readings. Use the applicable inspection criteria for actual tire service decisions. Concept illustration; use the vehicle-specific procedure for service.

Try it before reading the answer

Why is “all tires average 6/32 inch” insufficient if one shoulder measures 2/32 inch?

Worked answer and reasoning

The average hides the local low reading and its position. Record the individual values and evaluate the affected tire against applicable criteria, damage findings and cause investigation; the mean cannot substitute for the relevant minimum.

Measure pressure and tread meaningfully

Use the applicable vehicle placard and approved fitment guidance for recommended pressure. A tire sidewall maximum is not automatically that recommendation. Record whether the tire is cold or warm and follow the guidance for a valid comparison. Do not automatically bleed a warm tire down to a cold target simply because the measured pressure is higher.

Use a suitable gauge in good condition. A recurring loss after adjustment needs investigation; repeated inflation without finding the cause is not a completed repair. Inspect the valve, wheel, tire and relevant interfaces through the approved process. Document the measured condition and action, not only the final number.

Tread should be measured at defined locations across and around the tire as appropriate. Inner, center and outer readings can reveal patterns that one center reading hides. Uneven wear can involve pressure, alignment, looseness, damping or other conditions. The pattern directs investigation but does not uniquely identify a failed part.

Fictional tread worksheet, same unit at each point

Position	Inner	Center	Outer
LF	3	6	6
RF	6	6	6

The LF inner area is lower than its other measured areas. That is a documented pattern, not proof of one specific alignment angle or joint fault. Compare actual readings with applicable service and legal criteria for the jurisdiction and use.

Measure pressure in a defined state

Use the vehicle's applicable cold-pressure guidance for the approved fitment, not the sidewall maximum as a routine target. Record whether the tires meet the required temperature/use condition for that comparison. A warm pressure reading cannot be interpreted as though the tire had been cold without the appropriate guidance. Do not casually bleed a warm tire to a cold target and call the result complete.

Use a suitable gauge and record each position. If one tire repeatedly loses pressure after correction, the loss remains an unresolved finding. Pressure correction is not a leak diagnosis. Describe the amount and history, then follow the authorized inspection process. Compare the actual measurement with the reference and the conditions under which both apply.

Map tread instead of averaging away a problem

Measure at the required locations and document inner, center and outer areas where applicable. For a fictional tire, readings of 2, 6 and 6 mm do not describe a uniformly 4.7 mm tire. The low location and pattern matter. Units must stay consistent; do not compare millimeters with fractional inches without conversion. Wear patterns guide investigation but do not uniquely identify alignment, pressure or suspension causes.



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Preserve the lowest reading and its location; an average can hide uneven wear.

Use the right pressure reference and units

Use the vehicle's applicable tire-pressure information and test conditions. The tire sidewall is not a substitute for the vehicle's recommended inflation reference. Record whether readings are cold or warm and avoid treating unlike conditions as a direct before-and-after comparison. TPMS does not replace routine pressure checks or physically add air to the tire.

For the fictional tread record below, keep the lowest measurement at each tire visible. The left-front inner measurement differs markedly from its center and outer values. The next action is not automatically "alignment only" or "sensor replacement." Inspect the tire's condition, verify fitment and pressure information, and investigate appropriate mechanical and geometry factors.

Fictional tread worksheet-in 32nds of an inch

Position	Inner	Center	Outer
Left front	3	6	6
Right front	6	6	5
Left rear	7	7	7
Right rear	7	6	7

Try it before reading the answer

What is the lowest reading for each tire? Which recorded position most clearly needs investigation for uneven wear?

Worked answer and reasoning

The minima are LF 3/32, RF 5/32, LR 7/32 and RR 6/32 inch. The left front shows the largest inner-to-outer difference. This is evidence for inspection, not proof of a unique cause or a universal serviceability ruling.

Separate pressure correction from TPMS diagnosis

TPMS is a warning system, not a replacement for regular tire maintenance. Some systems use sensors that report pressure; others infer a condition from wheel behavior. Identify the actual system before diagnosing, programming or relearning it. Do not assume every vehicle displays individual pressures or uses the same sensor process.

Read the owner's and service information to interpret the warning pattern. A low-pressure indication and a system malfunction indication can require different actions. Measure actual pressures and inspect condition rather than replacing a sensor solely because a lamp is on. Correcting pressure may not resolve a separate sensor, configuration or communication issue.

After tire or sensor work, confirm the required programming, ID learning, position learning or initialization for that application. Programming a compatible sensor and registering it to the vehicle are not necessarily the same step. Verify part compatibility, tool capability and the required procedure before declaring a new sensor defective.

Two different problems

One vehicle has a physically low tire with a leak. Another has correct measured pressures but a documented TPMS malfunction indication. The first needs pressure-loss inspection and correction; the second needs the system-specific diagnostic path. Both still require condition checks and verification.

Do not disable or conceal warnings as a substitute for repair. Record what was checked, what was corrected and what remains unresolved. A cleared display alone is not a complete test record.

TPMS and the tire condition are related but different

A tire-pressure monitoring system warns about conditions according to its design; it is not a substitute for a physical pressure and condition inspection. Identify whether the vehicle uses direct pressure-sensing devices, an indirect approach or another applicable arrangement. Required initialization, relearn and diagnostic procedures differ. Replacing a sensor is not a universal response to every warning.

Compare actual tire pressures, the observed warning behavior, available system information and relevant service history. A lamp that remains after pressure correction may require a defined drive/relearn process or diagnosis, depending on the vehicle. A lamp that turns off does not prove there is no leak or structural damage. Keep those conclusions separate.

Verify identity and completion

During authorized sensor-related service, follow the appropriate component, seal/hardware, programming and relearn requirements. Record the relevant result rather than merely noting that a tool was connected. Incorrect position association can mislead later diagnosis. Do not reset a system solely to hide a condition that has not been corrected or explained.

Distinguish pressure loss from monitoring faults

A low-pressure condition and a monitoring-system fault are distinct questions. Measure the physical pressure and inspect the tire as appropriate, then evaluate monitoring operation using vehicle information. Some systems use pressure sensors; others infer changes through other vehicle inputs. Do not assume every warning requires a replacement wheel sensor.

If pressure falls again after correction, investigate the physical loss. Clearing an indicator does not seal a leak. If pressure is correct but a malfunction indication remains, follow the system-specific diagnostic and relearn procedure rather than repeatedly adding air. Record the actual state of each concern so a customer is not told that pressure correction necessarily repaired the monitoring system.

Two related checks

- Physical state Measure pressure and inspect condition
- Loss source Investigate recurring loss
- System state Identify the monitoring arrangement
- Verification Confirm pressure and required system operation

Try it before reading the answer

The tire loses pressure overnight and a monitoring fault is also present. Does replacing a sensor alone resolve both concerns?

Worked answer and reasoning

Not without evidence. Identify and correct the physical loss through the appropriate process, and diagnose the monitoring fault separately. A sensor can be part of a leaking assembly in some cases, but that must be established rather than assumed.

Plan service and verify the handoff

Build the service plan from actual findings: tire repairability evaluation, replacement fitment, valve or sensor requirements, mounting/balancing, wheel procedures and any justified geometry investigation. Use the applicable vehicle and tire manufacturer requirements, including matching rules where relevant. Do not assume one replacement strategy is suitable for all drivetrains.

Complete required work through trained personnel using suitable equipment. Record final pressure and reference, wheel security procedure, orientation and TPMS status. Rotation patterns depend on the installed fitment and design; a staggered or directional setup may not follow a generic pattern. A torque value or relearn method from memory is not universal.

Verify that any originally reported leak or warning has been addressed using the appropriate method and conditions. If the warning persists or the leak has not been located, state that rather than reporting complete success. A new tire does not automatically repair a damaged wheel or a separate monitoring fault.

Delivery explanation

“The pressure-loss source was identified and corrected under the approved procedure. Final pressure and the required TPMS checks are recorded. The uneven wear finding remains a separate recommendation for inspection.” This distinguishes completed service from remaining evidence.

Explain routine pressure and condition checks, applicable rotation and maintenance guidance, and any actual follow-up requirement. Keep the customer's authorized choices and declined work in the record. This course certifies knowledge of inspection and TPMS fundamentals, not practical tire-machine competence.

Turn the inspection into a position-specific plan

List each tire's condition, relevant measurement, applicable reference and proposed action. If replacement is needed, confirm fitment and matching requirements for the actual application. If rotation is appropriate, use the permitted pattern for the vehicle and tire arrangement. A universal cross pattern can conflict with directional or staggered configurations.

For any suspected puncture, follow the tire manufacturer's permitted inspection and repair process with properly trained personnel. Do not treat the visible object size alone as permission to repair. The condition resulting from pressure loss and the complete inspection are part of the decision. Explain limits rather than promising that every flat can be patched.

Close the handoff

Verify the authorized work, pressure settings, wheel/fastener procedure and required monitoring-system completion. Record remaining damage or loss concerns and the next action. Give the customer appropriate maintenance information and explain warning behavior using the vehicle guidance. A neat printout is useful only when it accurately records what was inspected and completed.

Finish with recorded checks, not a cleared lamp

The service record should identify the performed work, fitment, pressure, required wheel-fastener procedure, monitoring relearn or initialization where applicable, and verification outcome. A cleared lamp alone is not proof of correct tire condition or system operation. Preserve any remaining diagnostic concern and explain what the customer should do if the warning returns.

A useful handoff includes pressure-check expectations and relevant maintenance information for the installed application. Avoid universal rotation advice when the fitment or vehicle procedure imposes restrictions. Explain alignment, balancing and tire-pressure correction as different services. Their effects can overlap in a customer's description, but each requires its own evidence and scope.

Tire service delivery

- Fitment Confirm approved position-specific arrangement
- Assembly Complete applicable wheel and system procedures
- Verify Pressure, condition and monitoring result
- Explain Maintenance and any unresolved concern

Try it before reading the answer

After pressure correction, the lamp clears but the tire loses pressure again. What should the next record say?

Worked answer and reasoning

Record the recurring physical loss and investigate its source. The earlier lamp change was not proof the leak was repaired. Keep the pressure measurement, timing and monitoring behavior distinct.

Work the shop cases

The average hides the shoulder

A fictional tire has tread readings of 2, 6 and 6 mm at the named inner, center and outer locations. The worksheet reports only “4.7 mm average, satisfactory.” The vehicle also has a history of a pull. No applicable condition limit or further inspection is recorded.

Correct the record, identify what can and cannot be concluded, and propose the next evidence-based step.

Your evidence, decision and next step:

Compare with the model answer

Record all three locations and retain the 2 mm low reading and uneven pattern. The average conceals that condition. Compare each relevant finding with applicable requirements and inspect the tire as a whole. The pattern and pull justify further investigation but do not uniquely prove an alignment component fault. Confirm pressure, fitment and other relevant conditions before a repair recommendation. Do not invent a legal or manufacturer threshold absent from the supplied case.

A warning returns after pressure correction

A low tire is adjusted and the warning goes out after the prescribed process. Two days later the same tire is low again. The customer requests a new TPMS sensor because “the light keeps coming back.”

Explain why the request is not yet a diagnosis and write a plan separating physical tire pressure from monitoring-system function.

Your evidence, decision and next step:

Compare with the model answer

The repeated measured pressure loss is a physical finding that needs the appropriate leak/condition investigation. The warning may be responding to that actual condition; its recurrence does not by itself identify a failed sensor. Record measured pressure, time/history, position and warning behavior. Follow the authorized tire inspection and, if evidence supports it, the separate system diagnostic procedure. Verify the corrected condition and any required relearn rather than resetting the warning as the entire repair.

Apply it to a job

Complete a four-position tire inspection table with cold/warm status and inner/center/outer tread readings. Compare two fictional cases: an actual low tire and a TPMS malfunction with correct pressure. Write separate diagnostic plans. Create a delivery checklist that distinguishes pressure correction, leak verification, relearn and unresolved wear causes.

Concern / scenario

Observation, measurement and reference

Interpretation and next action

Unknowns and who needs to review

Verification and handoff

Check your understanding

- Read fitment and service-description information by position.
- Use the correct pressure reference and measurement conditions.
- Preserve low tread readings instead of relying on averages.
- Separate actual pressure loss from TPMS diagnosis.
- Write an accurate service and verification handoff.

Practice assessment

Ungraded practice, separate from the final assessment. Answers and reasoning follow in the next section.

1. A tire has a visible bulge but holds pressure. What is the right interpretation?

- A. Holding pressure does not clear the damage concern.
- B. It is automatically serviceable.
- C. Only tread depth matters.
- D. TPMS will decide repairability.

2. One center tread measurement is normal. What may remain unknown?

- A. The tire's suitability for rotation without further checks
- B. Inner/outer wear and other locations
- C. Whether a normal center reading rules out shoulder wear
- D. Whether all four tires have equal tread depth

3. Correct pressures are measured but the system indicates a malfunction. What next?

- A. Keep adding air.
- B. Assume every sensor is failed.
- C. Follow the TPMS-specific diagnostic procedure.
- D. Hide the indicator.

4. A new sensor is programmed but not learned where required. Is the service complete?

- A. Yes because it is new.
- B. Yes if it fits the wheel.
- C. Only the invoice matters.
- D. No; complete the applicable vehicle-learning and verification steps.

5. Tread readings are 7, 6 and 7 in 32nds. Which minimum should be retained?

- A. 6/32 inch
- B. 6.67/32 inch
- C. 7/32 inch
- D. 20/32 inch

6. One tire size was copied to all wheel positions on a staggered-fitment vehicle. What is needed?

- A. Use the larger size everywhere
- B. Verify and record the correct fitment by position
- C. Use the smaller size everywhere
- D. Assume the current tires establish the approved arrangement

7. Which statement distinguishes two concerns?

- A. Every warning proves a sensor failure
- B. Every cleared lamp proves the leak is repaired
- C. Pressure loss needs physical investigation; monitoring malfunction needs system diagnosis
- D. All monitoring systems use identical components

8. What is incomplete about recording only “TPMS reset”?

- A. It proves all tires are serviceable
- B. It proves no leak exists
- C. It replaces fitment verification
- D. It omits relevant pressure, condition and required operation checks

Answer explanations

1. Holding pressure does not clear the damage concern.

Physical damage requires proper evaluation; air retention and monitoring do not establish structural condition.

Review: Identify each tire and inspect before service

2. Inner/outer wear and other locations

One location cannot characterize the entire tire.

Review: Measure pressure and tread meaningfully

3. Follow the TPMS-specific diagnostic procedure.

Pressure condition and system operation are separate issues requiring appropriate diagnosis.

Review: Separate pressure correction from TPMS diagnosis

4. No; complete the applicable vehicle-learning and verification steps.

Sensor configuration and vehicle registration may be distinct requirements.

Review: Plan service and verify the handoff

5. 6/32 inch

The minimum is the lowest sample, not the mean or sum.

Review: Measure pressure and tread meaningfully

6. Verify and record the correct fitment by position

Position-specific requirements must be checked.

Review: Identify each tire and inspect before service

7. Pressure loss needs physical investigation; monitoring malfunction needs system diagnosis

Keep physical pressure and monitoring operation separate in the evidence.

Review: Separate pressure correction from TPMS diagnosis

8. It omits relevant pressure, condition and required operation checks

A reset action alone does not document the complete service outcome.

Review: Plan service and verify the handoff

Further study

Use current vehicle and equipment information for actual service. These resources support further learning; lessons and questions in this book are original.

NHTSA TireWise

<https://www.nhtsa.gov/vehicle-safety/tires>

Michelin tire ratings

<https://www.michelinman.com/auto/auto-tips-and-advice/tires-101/tire-load-rating-speed-rating>

Tire and TPMS guidance - NHTSA

<https://www.nhtsa.gov/vehicle-safety/tires>