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Vehicle Inspections

Presented by
Frontier Supply Chain Solutions Inc.

INSPECTION PRACTICES

Best Practices

BEST PRACTICES

Rick's safety manager has told him that the key to a good inspection is to develop a step-by-step process he can repeat every time. When you and Rick have a repeatable process, your inspections will take less time and you will be less likely to leave anything out.

Remember to do the following:

- Start at the same place each time, and
- Use an inspection checklist or diagram to help you.

When you begin the inspection, do the following:

- Evaluate your fitness to drive
- Have your inspection tools ready
- Find a safe place to conduct the inspection
- Use your hands

Make sure that you chock your wheels, and have everything you need.

Important! Wear a safety vest so that others can see you!

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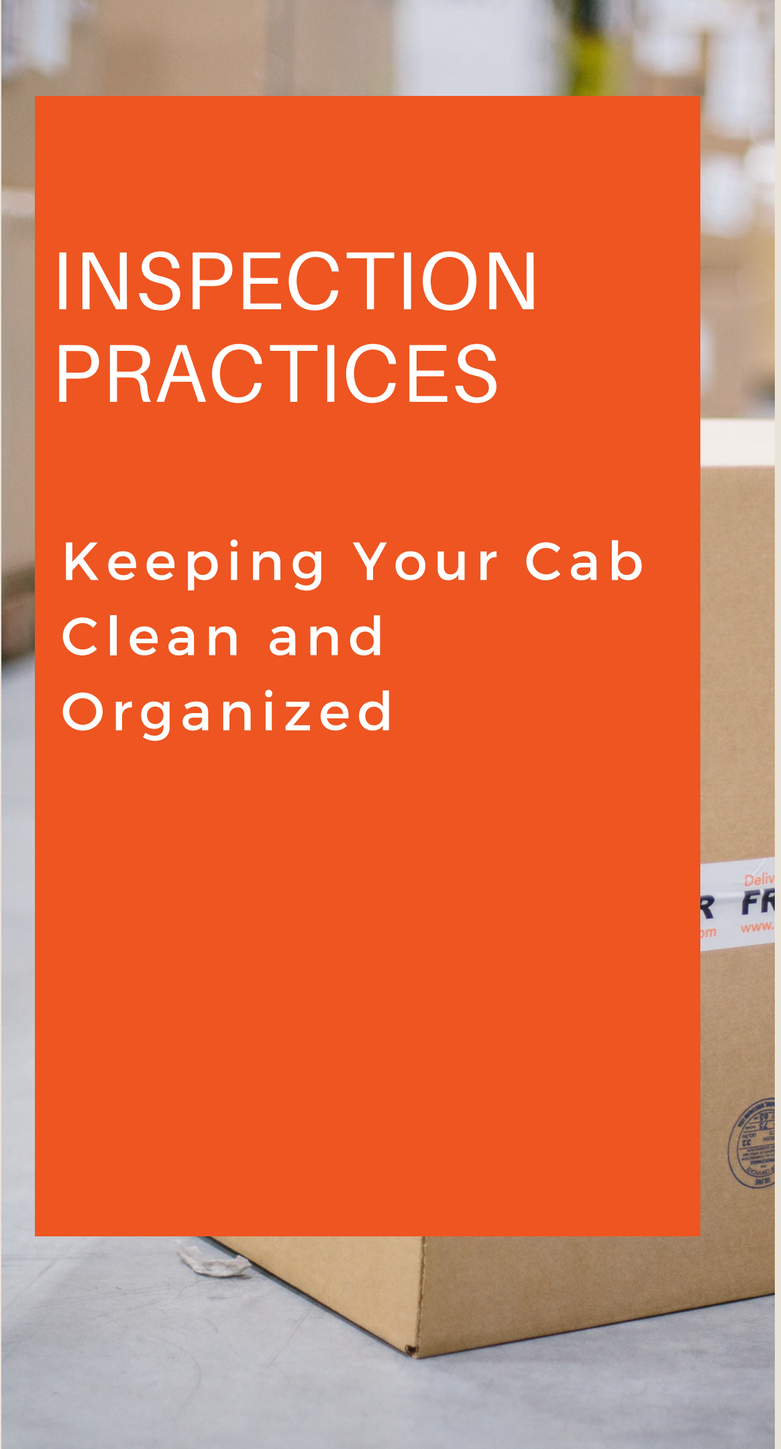

INSPECTION PRACTICES

Keeping Your Cab Clean and Organized

KEEPING YOUR CAB CLEAN AND ORGANIZED

Some inspection officials are more likely to pull you in for a full inspection when your vehicle is dirty, or when they can see piles of "dash trash" through your windshield.

A dirty cab can be an indicator of neglect in other places. Having clutter in your cab can also be dangerous as garbage can get stuck under pedals and other mechanical devices. Loose objects also have the potential to become dangerous projectiles in the event of an accident.

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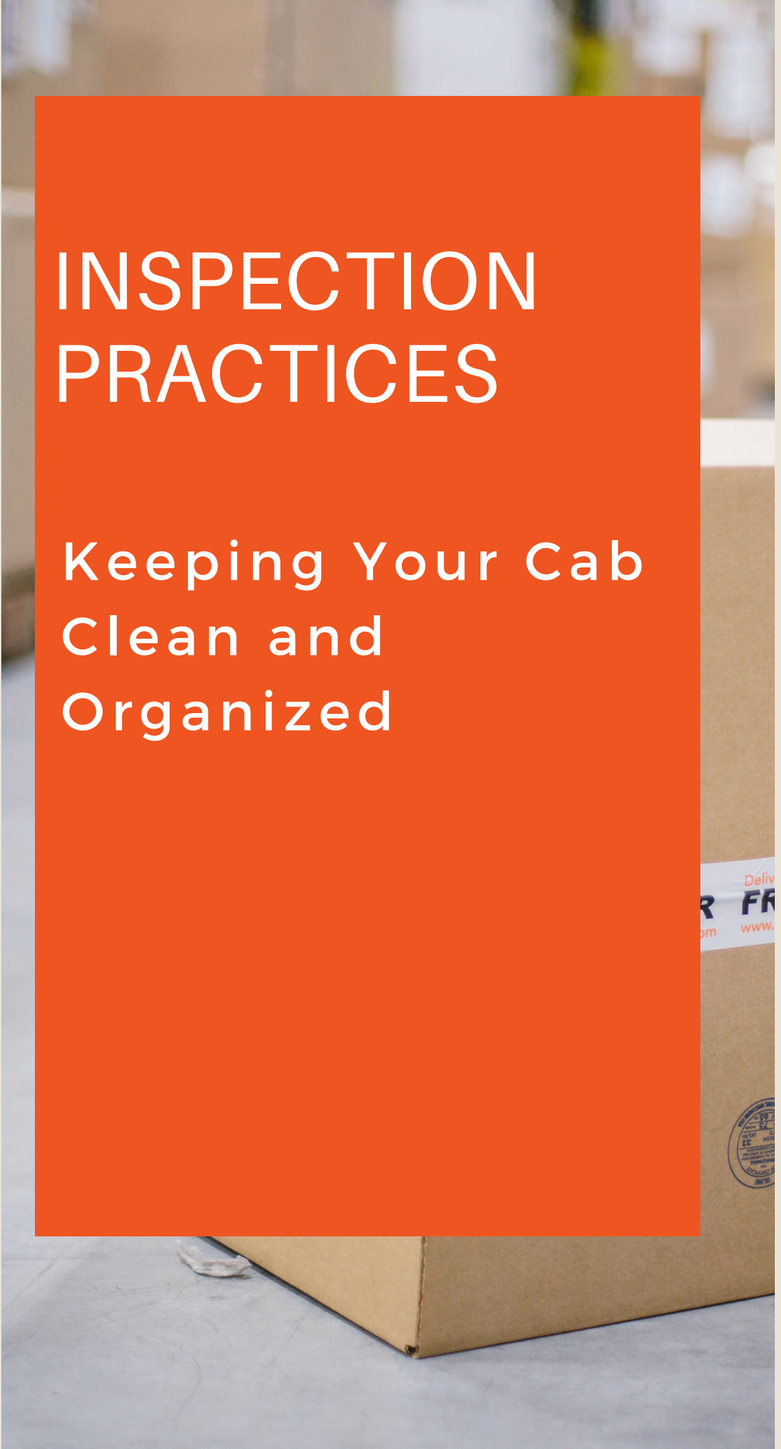

INSPECTION PRACTICES

Keeping Your Cab Clean and Organized

KEEPING YOUR CAB CLEAN AND ORGANIZED

Keeping your cab clean and organized also makes it easier to see defects, to locate paperwork, and helps prevent buildup of mold, bacteria or pollen which can be detrimental to your health.

Some tips for better organization include:

- Limit the "stuff" you have in your area. Get rid of anything you don't need.
- Find a place for everything. Purchase a truck organizer to help you, or utilize the areas you have in your cab.
- Keep receptacles for waste in your cab and empty them regularly.
- Keep wet or disinfectant wipes handy! They are a quick, convenient way to wipe down surfaces in your vehicle.

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WHAT TO LOOK FOR

You and Rick must be able to detect whether a system is in danger of failure or malfunction and the gravity of any defect.

The following are examples of the vehicle parts and systems that need to be inspected:

- Fluids, hoses and belts
- Cooling system
- Battery
- Brakes
- Lights and Reflectors
- Tires
- Wheels and Rims
- Steering
- Suspension
- Exhaust
- Cargo securement

For some of these items, only a visual inspection is required. In some cases, the inspection also requires measurement and testing. This topic will take you through how to test and identify problems with items that have high rates of violation as well as those that need additional testing.

DURING A ROADSIDE INSPECTION

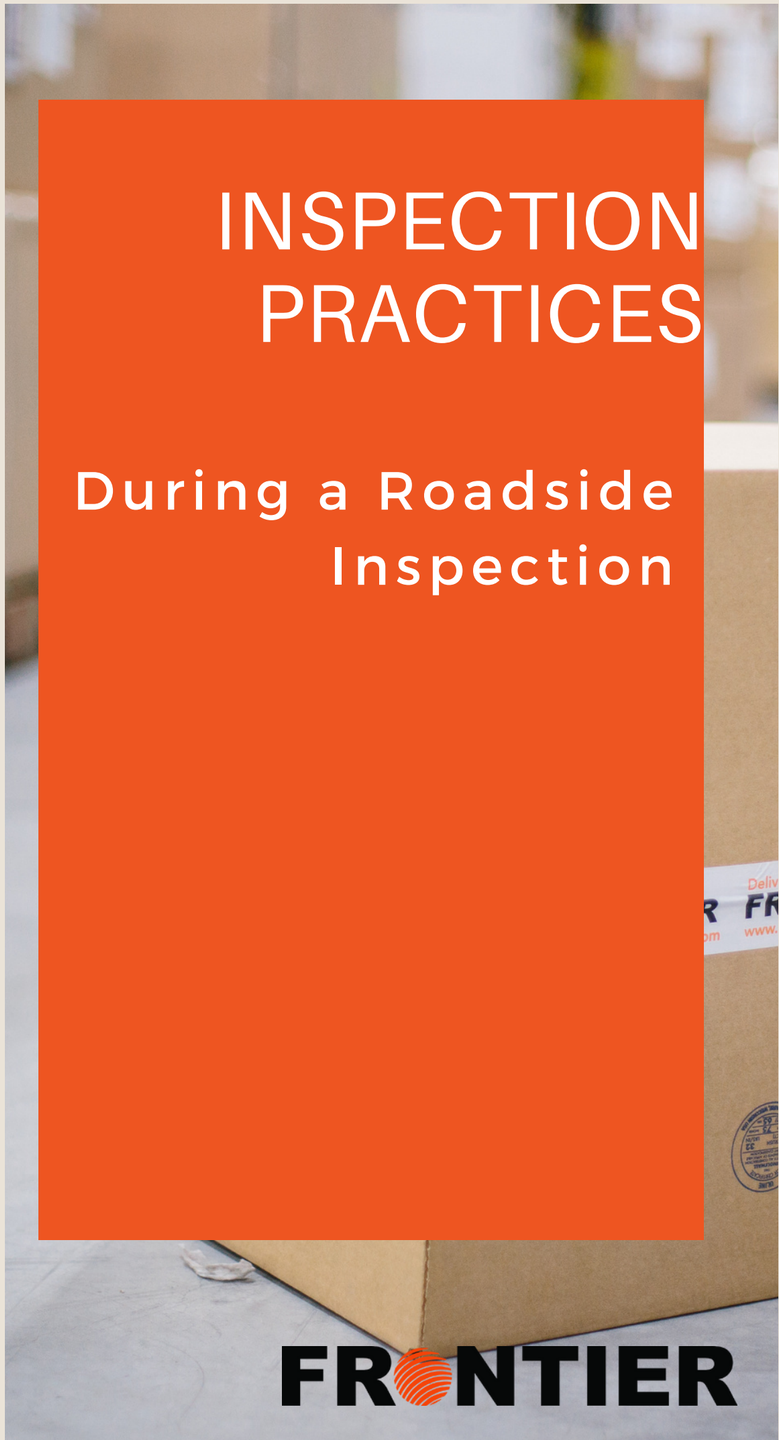
Approximately 4 million commercial motor vehicle inspections are conducted every year in Canada and the United States, using CVSA's inspection procedure known as the North American Standard Inspection Program.

When you and Rick pass a roadside inspection, you receive a CVSA decal, which means that during a Level I or Level V inspection, no defects were found in any Critical Vehicle Inspection Items.

The enforcement officer will place a decal on your windshield that indicates the year and quarter in which you passed the inspection

There are 2 levels of inspectons:

- Level I
- Level V



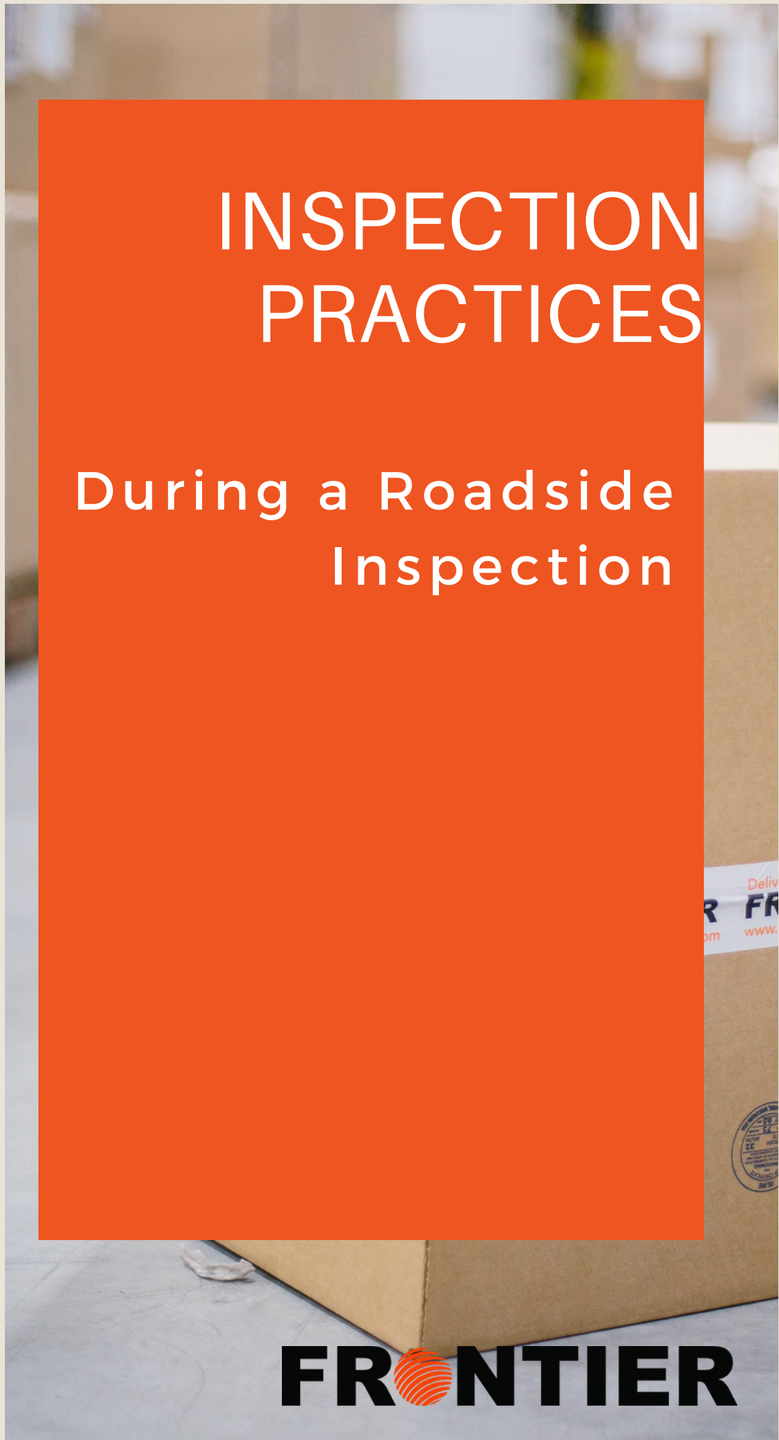
DURING A ROADSIDE INSPECTION

- Level I is a Standard Vehicle Inspection, and includes your documentation (CDL, logbook, etc.) as well as a complete vehicle inspection.
- Level V is a Vehicle-Only Inspection, and includes only the vehicle components of a Level I inspection. The driver does not have to be present.

During a roadside inspection, remember that you are a professional. Have all pertinent documents ready to provide to the inspector, be dressed appropriately, and your cab should be clean. Be courteous and avoid rude, disrespectful behaviour.

Make sure that you answer all questions as honestly as you can. These may include questions about your destination, how long you've been on the road, and where you started from.

If you have a concern, do not debate or disagree with the enforcement officer. Document the experience, including the time and location, and discuss it with your supervisor.



INSPECTION PRACTICES

BLT: Brakes, Lights and Tires

BLT: BRAKES, LIGHTS AND TIRES

Why are brakes, lights and tires so important? They are very hardworking components of your vehicle, and need regular attention and maintenance. They are also easy problems to spot during a roadside inspection. All three of these components made it into the top 5 violations in 2016 as shown in the chart below:

Violation Description	**% of Total Violations**
Operating Vehicle Not Having the Required Operable **Lamps**	14% (8% out-of-service)
Clamp/Roto-Chamber Type **Brake**(s) Out of Adjustment	5% (.02% out-of-service)
Tire-Other Tread Depth Less Than 2/32 Of Inch	4% (8.5% out-of-service)

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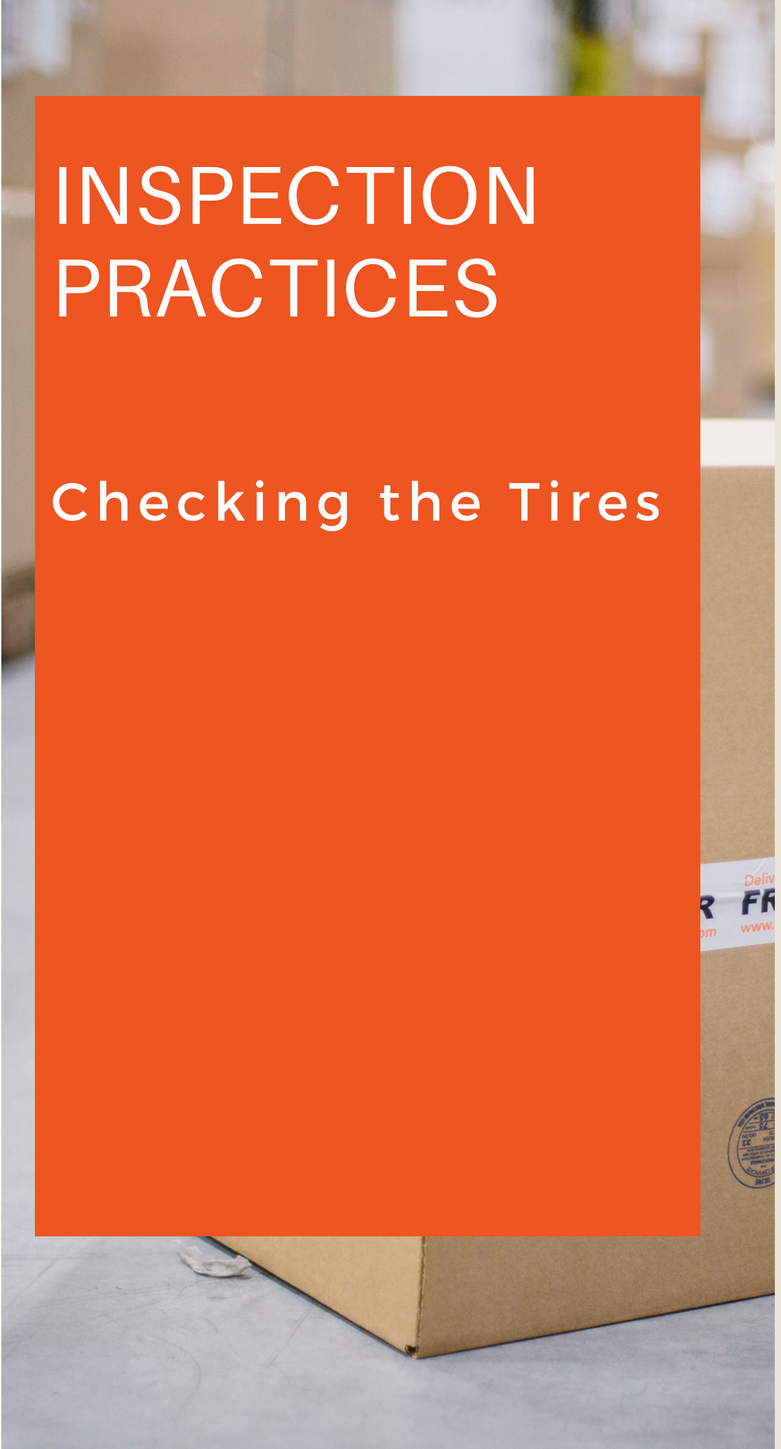

INSPECTION PRACTICES

Checking the Tires

CHECKING THE TIRES

Tires are one of the most common vehicle-related factors for large trucks in fatal crashes, according to the FMCSA. This isn't a surprise, since the tires on your vehicle take a lot of abuse and they aren't designed to last forever. Checking and maintaining them properly is key to keeping you, Rick and other drivers around you safe.

ICD stands for the three main things you and Rick can check for when inspecting each tire on your tractor and trailer:

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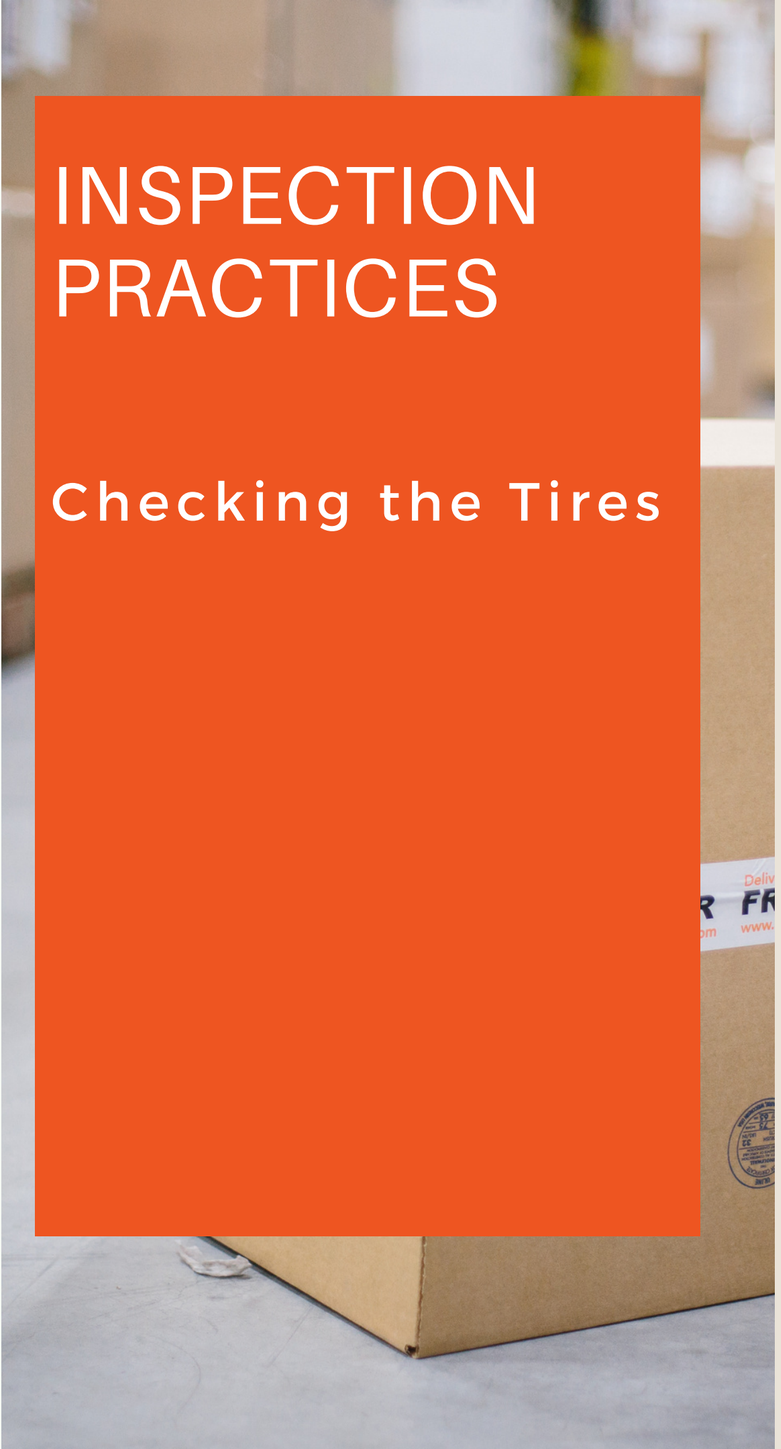

INSPECTION PRACTICES

Checking the Tires

CHECKING THE TIRES

- Inflation: Make sure you know the correct pressure for your tires! According to the ATA Technology and Maintenance Council, the life of a tire that is consistently 20% underinflated is reduced by 30%. 40% underinflation reduces tire life by 50%.

- Condition: There should be no cuts, rips or tears. Dual tires should never be touching each other or any other component.

- Depth: The major grooves on each steer tire should be 3 millimeters (4/32 inch) and 1.5 millimeters (2/32 inch) on any other tire. Take note of the depth of the other grooves as well. Use a tread depth gauge or use the coin method.

Also take note of distortion, uneven edges or dips in the tread, which may indicate wheel alignment problems or bent suspension parts.

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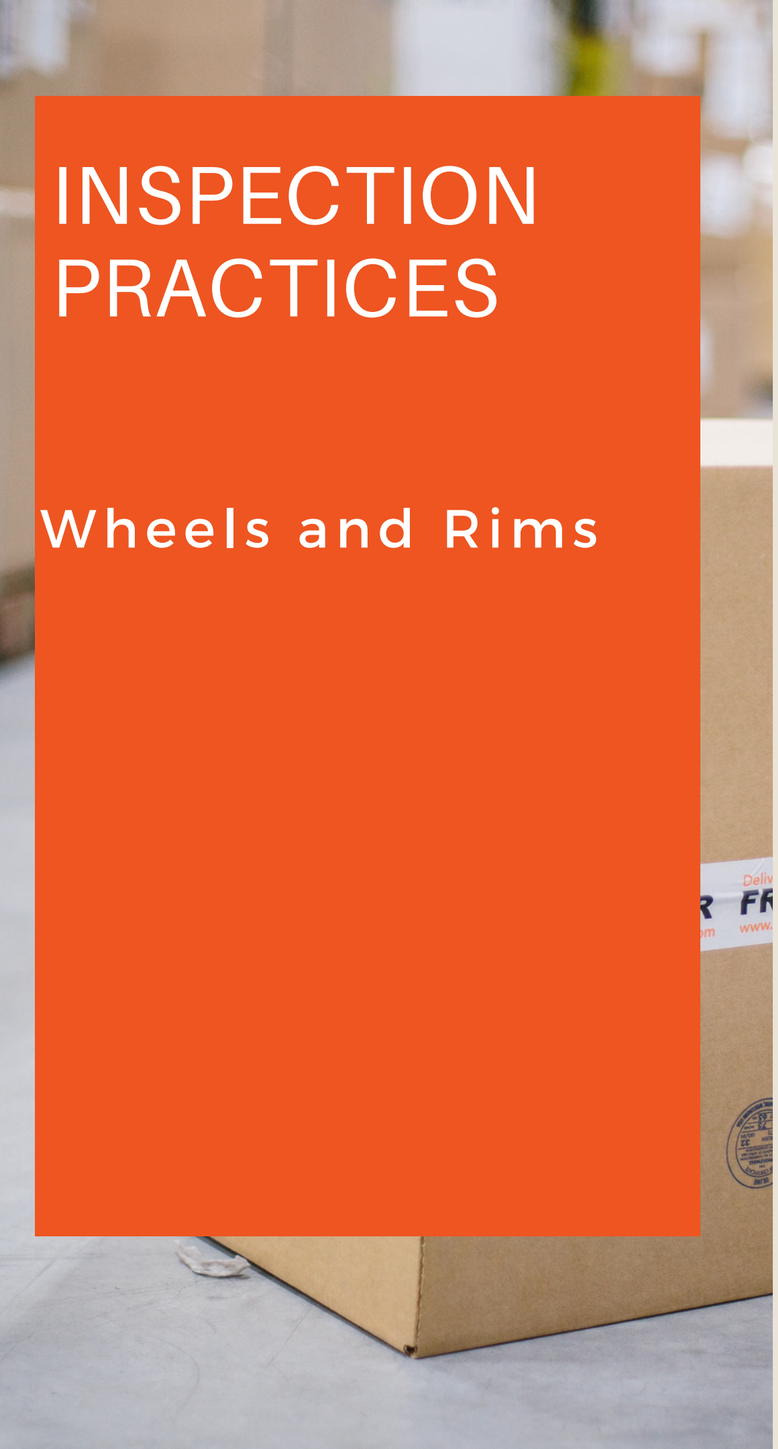

INSPECTION PRACTICES

Wheels and Rims

WHEELS AND RIMS

Wheel failure is an especially dangerous. It can occur suddenly due to failed bearings and ineffective fasteners, rims or hubs. When wheels fly off a vehicle, motorists around your vehicle can be severely injured or killed.

When you inspect your wheels, check the following:

- Lug nuts
- Cracks, rust or damage
- Missing parts
- Signs of leaking
- Signs of welding

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Lights and Reflectors

LIGHTS AND REFLECTORS

Lights are another commonly cited violation, mainly because inspectors can easily see whether a light is functioning. Different jurisdictions in North America have slightly different rules for when lights must be used, but in general there are two rules to follow:

- Turn on your lights when you are using your windshield wipers and in adverse conditions
- Keep your lights on 1/2 hour before sunset to 1/2 hour after sunrise.

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INSPECTION PRACTICES

Lights and Reflectors

LIGHTS AND REFLECTORS

Missing, damaged, inoperative or defective lamps can cost you 6 points under CSA, so make sure that you check all of the following every time you conduct an inspection:

- Low beam headlamps
- High beam headlamps
- Turning lights
- Four-way flashers (hazard lights)
- Brake lamps
- Reflective material

During your inspection, turn on all the lamps to ensure they are functioning normally. Make sure that nothing is blocking any of the lamps on your vehicle. As you complete your walkaround, clean all the glass, lights and reflectors as you go. It's a good idea to have some spares if a light has burned out.

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INSPECTION PRACTICES

Emergency Equipment

EMERGENCY EQUIPMENT

You are required to carry emergency equipment with you on your vehicle. When you are transporting placarded hazardous materials, you must also carry emergency response information, such as the Emergency Response Guidebook.

You must carry a properly filled and mounted fire extinguisher on your vehicle. The nozzle should be clear and the tip of the ring pin in place. The needle on the pressure gauge should be in the green area. Check the expiration date of the extinguisher.

For vehicles carrying placarded hazardous materials: The extinguisher must be rated 10 B:C (at a minimum).
For all other vehicles: The extinguisher must be a single 5 B:C extinguisher, or two 4 B:C extinguishers.

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INSPECTION PRACTICES

Emergency Equipment

EMERGENCY EQUIPMENT

Note: At the very least, fire extinguishers must be inspected monthly, and the inspection recorded on the extinguisher's tag or in a file. Extinguishers should be maintained on an annual basis by a certified person. Hydrostatic testing and internal inspections are also required on a less regular basis.

You must also have either 3 emergency reflective triangles or 6 fuses/3 liquid-burning flares. It is also helpful to carry:

- Spare electrical fuses when the vehicle does not have circuit breakers
- An accident notification kit and emergency numbers

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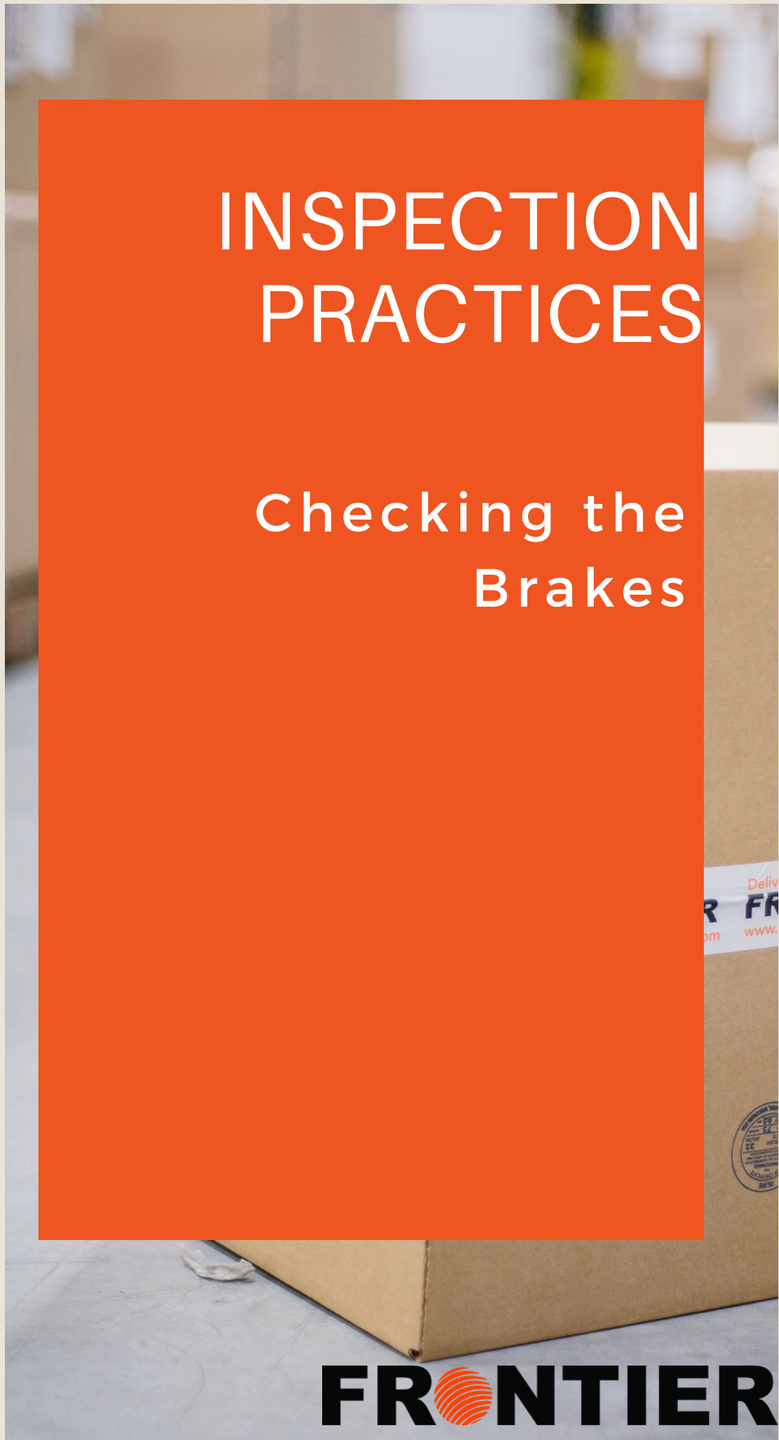
CHECKING THE BRAKES

When conducting an inspection, an inspector will put your vehicle out of service when the number of defective brakes is equal to or greater than 20% of the service brakes on the vehicle. If your truck has 8 brakes and even one is found to be defective, you may be placed out-of-service, so check all your brakes every time you head out.

Inspect your brakes for damage during your walkaround inspection and for proper function during your in-cab brake tests. When inspecting the brakes at the rear of the vehicle, get underneath and use a flashlight. When you have air brakes, always listen for audible air leaks.

As you walk around your vehicle during the inspection, visually check each brake and for the following:

- Condition: Look for damaged, missing, rusted or worn brake drums, hoses and shoes. Brake shoes should be evenly adjusted.
- Thickness of the brake lining: The brake lining shouldn't be less than 0.635 cm (1/4 inch).
- Brake adjustment: Measure each brake's pushrod stroke or slack to make sure that it is within the pushrod stroke limit.



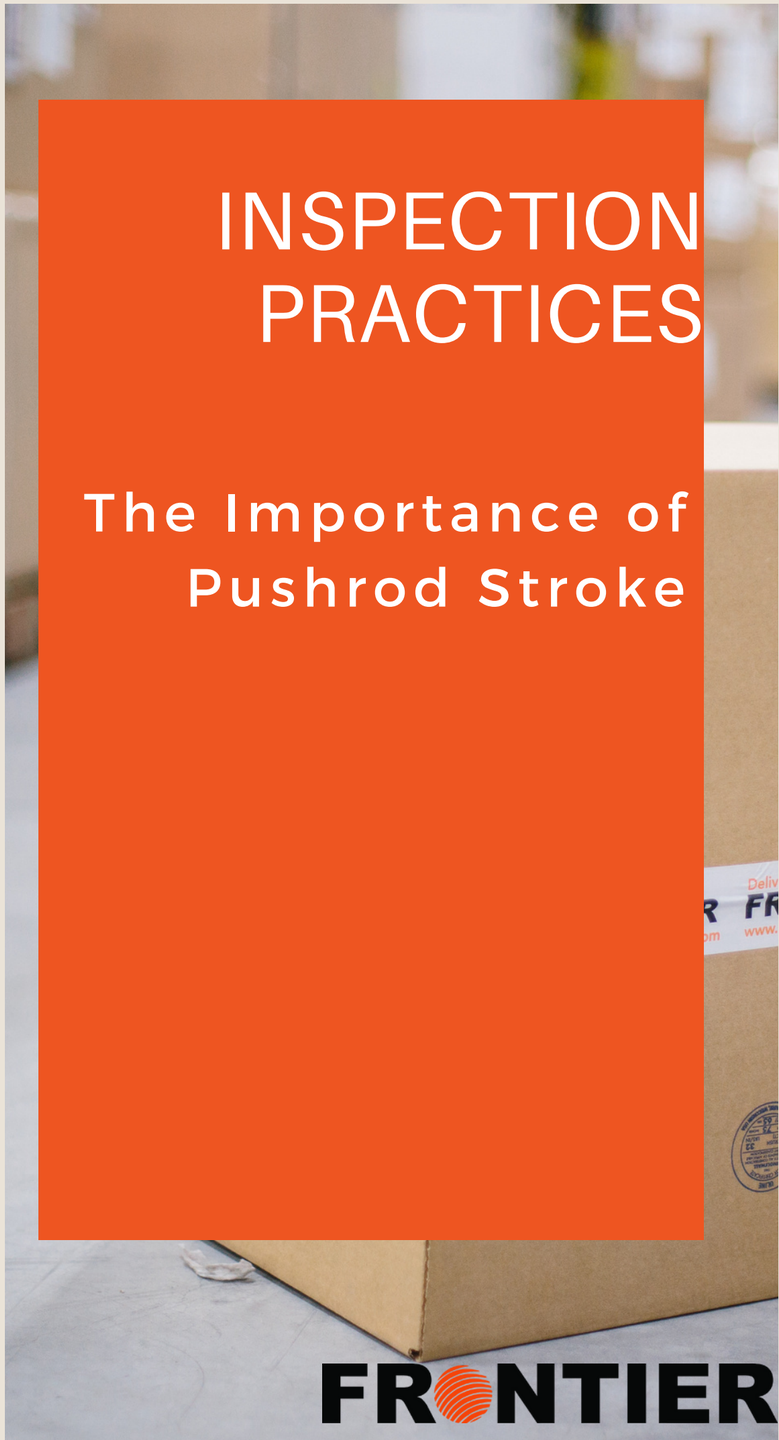
THE IMPORTANCE OF PUSHROD STROKE

Measuring pushrod stroke, also known as travel or slack, is important to know as a driver, as poorly adjusted brakes is the second most common violation, as well as the most common cause of brake failure.

First, you must know the size of your vehicle's brake chambers and whether they are standard (short) or long stroke chambers. Each size and type has a different stroke limit as you can see in the chart. A type 30 long stroke chamber will have a 64 mm (2 1/2 inch) stroke limit, while a type 24 standard chamber will only have 51 mm (1 3/4 inch) - more than half an inch difference!

There are different methods of checking each brake's pushrod stroke:

- •Electronic brake stroke indicators: Displays mounted on the instrument panel show when stroke is under, at, or over the limit. Brake adjustment must still be inspected even when you are using these.
- Mechanical brake stroke indicators: When the brake is applied at 90 to 100 psi, a visual indicator mounted onto the brake linkage will tell you when the brake is out of adjustment.
- Measuring tape: When you do not have other visual indicators, you can use measuring tape to determine your pushrod stroke.



HOW TO MEASURE PUSHROD STROKE

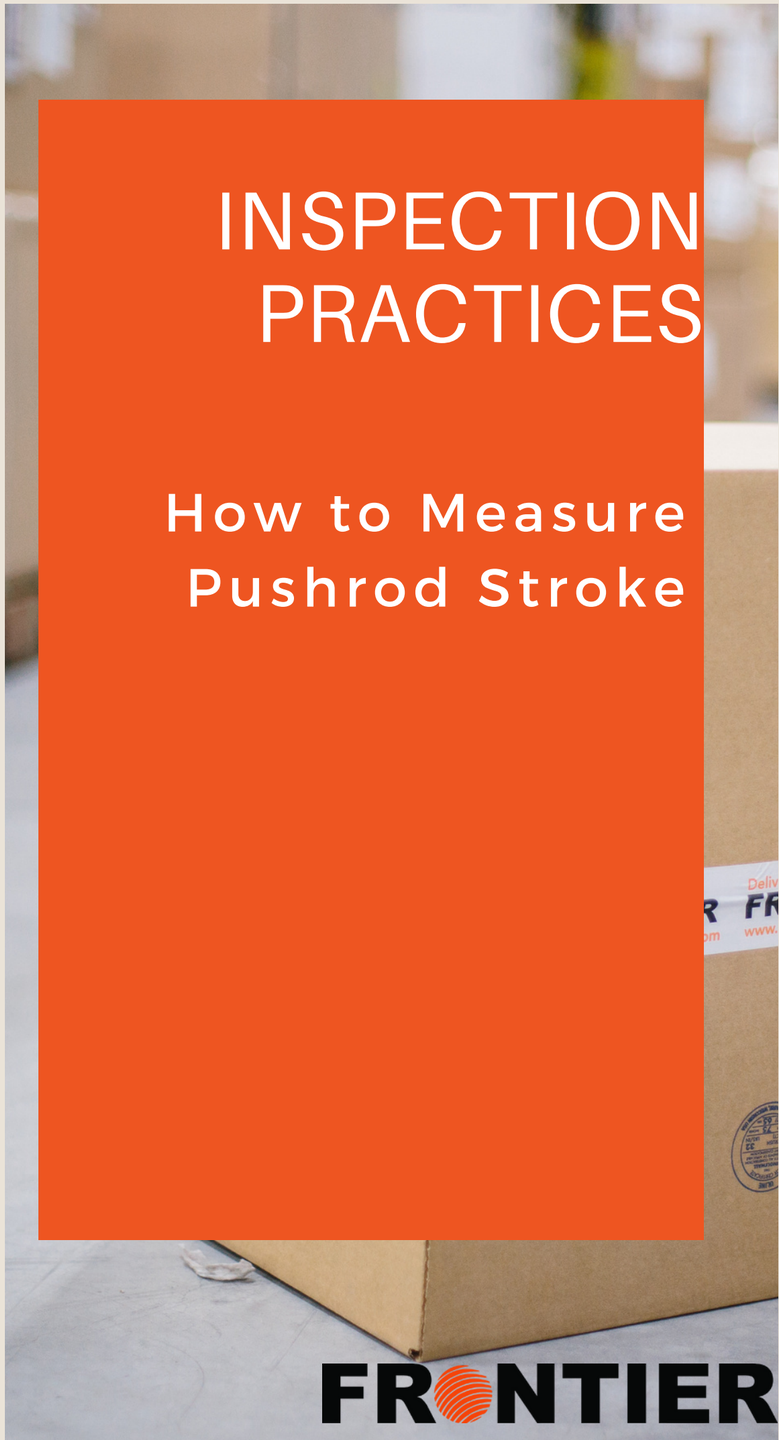
To properly determine your pushrod stroke, you must look at the difference between how far the pushrod travels when the brakes are released and when they are applied. This means that you will have to look at each brake twice.

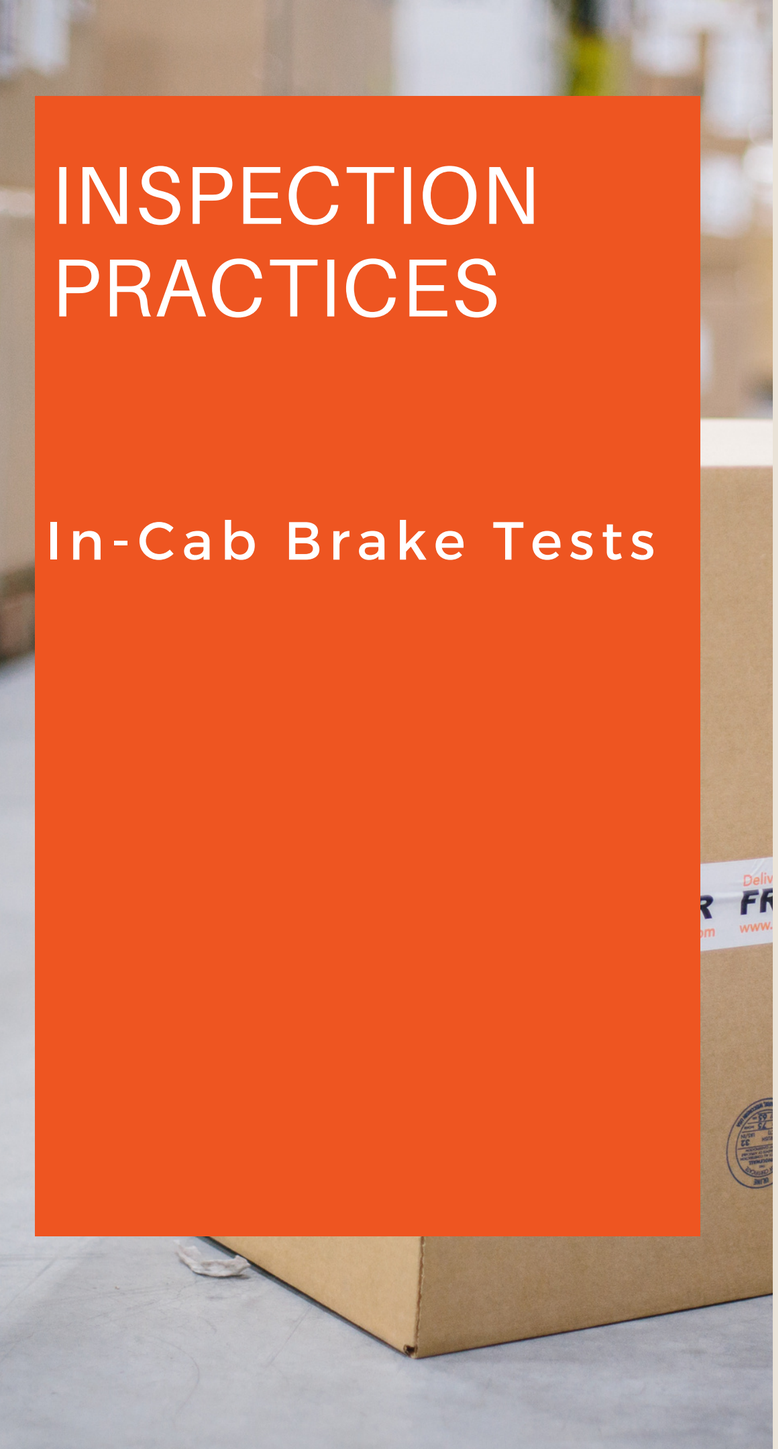
Remember to always check the stroke at the correct pressure of 90-100 psi (621-690 kPa) and follow these steps:

1. Measure the stroke or slack when the brakes are released. Do this as you complete your first inspection of the rest of your vehicle.
   - If you are using visual indicators, the red post will be to one side.
   - If you do not have visual indicators, place a mark on the pushrod at the base of the chamber.

2. Use your brake tool to apply the service brakes.

3. Apply the brakes as the last step of your inspection, and check each brake again.
   - Mechanical indicators should be positioned between the two posts.
   - If you do not have indicators, measure the distance between the mark you made in step 1 and the base of the chamber.





INSPECTION PRACTICES

In-Cab Brake Tests

IN-CAB BRAKE TESTS

When your vehicle has air brakes, your last inspection task is to perform the in-cab air brake tests. Make sure that you have already visually inspected each brake for any damage or missing parts, listened for audible air leaks, and measured the pushrod stroke of each brake.

To test your brakes, make sure that you have removed the chocks from the vehicle. Then check the following:

- Service brakes
- Parking brake
- Air compressor governor settings
- Air pressure buildup rate
- Low air warning system

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INSPECTION PRACTICES

Topic 1 Review

TOPIC TWO REVIEW

Rick knows that there are certain best practices to follow during an inspection, such as making sure he has all his tools and finding a safe and level place to complete the inspection. He knows he should use his hands to feel for defects such as abrasions, cuts and bulges throughout the inspection as well.

Rick also understands that the most common infractions that result from roadside inspections are those around brakes, lights and tires and so he has reviewed how he should be inspecting these components on his vehicle.

When he looks at his tires, he remembers the acronym ICD: inflation, condition and depth. He knows his tires will lose 2-3 psi per week and he must check them on a regular basis. He also knows that it is very important to look carefully at the fasteners on his wheels and to check for leaking or signs of rust.

Rick had not previously known how to check his air brakes properly. His safety manager has shown him how to measure his pushrod stroke, and he checks that as well as his general brake condition, looking for any loose or missing parts, as well as the thickness of his brake lining.

Lastly, because Rick's truck is equipped with air brakes, he has reviewed the in-cab brake tests that he should be doing before he heads out. First, he tests the service and parking brakes with a tug test. He then checks his governor, his air pressure build-up rate and low air pressure warning system to make sure he and the drivers around him will be safe on the road.

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