



# Establishing preventive maintenance and inspection procedures

To help reduce preventable accidents, carriers and drivers should carefully follow a predetermined maintenance, inspection, and recordkeeping plan. This helps prevent accidents caused by worn, failed, or incorrectly adjusted components.

Develop a basic routine for preventive maintenance and periodic inspections including detailed checklists that carefully evaluate each key component in commercial motor vehicle safety.

## Basic routine carrier checklist:

- Develop a recordkeeping system to track maintenance, repairs, and inspections for every piece of equipment
- Schedule periodic inspection and maintenance activities
- Develop a method to determine component wear and a replacement/repair schedule
- Pay special attention to components—such as brakes, steering, couplers, tires and wheels, and suspension—which have a direct impact on vehicle control
- Develop guidelines on taking vehicles/equipment out of service for necessary repairs
- Develop a way to gauge the effectiveness of your preventive maintenance procedures
- Ensure your vehicles pass the Federal Motor Carrier Safety Administration (FMCSA) minimum periodic inspection standards
- Train drivers to recognize, detect, and report maintenance and repair needs
- Make a provision for checking the condition of components that cannot be easily detected by drivers



- Ensure mechanics and maintenance supervisors are adequately trained

If your vehicles constantly require repair, it could indicate inadequate maintenance and inspection—a situation that could contribute to accidents.

## Basic routine driver checklist:

- Check vehicle carefully, pre-trip and post-trip
- Complete pre-trip and post-trip written inspection reports
- Ensure the annual vehicle inspection report or decal is in or on the vehicle





## DRIVER INSPECTION REPORTS

Creating inspection reports is a key component in commercial motor vehicle safety. Since the driver is ultimately responsible for making sure that the vehicle being driven is in safe operating condition, he or she should use safety inspection procedures and reports. The driver should inspect the vehicle to detect vehicle deficiencies and report them to maintenance for repairs. Note that drivers can't detect some vehicle deficiencies during preventive maintenance and inspection procedures.

### Carrier checklist:

- Establish FMCSA-compliant inspection and reporting procedures for drivers
- Train drivers to inspect safety-critical components and determine condition
- Equip drivers with inspection aids and the necessary report forms
- Ensure maintenance personnel are responsive to driver-reported deficiencies
- Implement company-established standards for placing vehicles out of service
- Encourage drivers not to drive when they discover a deficiency that should cause the vehicle to be placed out of service

### Driver checklist:

- Carefully inspect the vehicle and report its condition
- Don't drive a vehicle you've determined isn't in safe working condition—it's against federal and state laws
- During a trip, monitor vehicle component conditions that may affect the safety of the vehicle
- If something appears wrong with the vehicle, stop in a safe location, inspect the vehicle, and don't continue unless it's safe to do so

## BRAKE PERFORMANCE

Catastrophic brake failure, such as sudden air loss, may lead to losing control and the inability to recover. Progressive brake deterioration, without corresponding adjustment, may appear harmless during normal driving, but may lead to an accident during emergency braking applications.

### Carrier checklist:

- Practice preventive maintenance procedures to detect and repair worn or defective brake system components
- Establish out-of-service standards for monitoring brake system components most likely to deteriorate progressively—such as air leaks, brake shoe wear, drum wear, and bearing seal leakage
- Train drivers to detect deteriorated conditions during their inspections
- Train mechanics and maintenance supervisors how to maintain braking systems
- Have an inspection lane for checking brake adjustment

### Driver checklist:

- Ensure your brakes are properly adjusted
- Test your brakes before each trip
- Check low air warning devices for proper functioning
- Learn how to determine if the air system is operating satisfactorily
- Stop and check brake adjustment during a trip, especially before entering severe downgrades



## TIRE INFLATION AND CONDITION

Improper tire pressure can lead to deterioration and eventual catastrophic tire failure. A worn or damaged tire may fail as a blowout and result in losing control of the vehicle. The principal indicators of deterioration are tread wear, tread and sidewall damage, and air leakage.

### Carrier checklist:

- Ensure drivers and maintenance personnel follow the tire manufacturers' specifications for tire inflation and loading
- Make tire inflation guidelines available to drivers
- Train and properly equip drivers to check tire inflation, and to know the consequences of improper tire inflation, especially for recapped tires
- Be sure the company standard follows the minimum tread depth standards, as specified by the FMCSA
- Ensure standards for tire replacement, and train drivers and maintenance staff to recognize it during inspections

### Maintenance checklist:

- Check tires regularly to ensure they meet the minimum DOT tread depth requirement— $4/32''$  for steer tires and  $2/32''$  for all other tires
- Don't mount mismatched sizes, or pair tires in duals with significantly different wear
- Don't mix tire styles on the same axle
- Follow company standards for out-of-service conditions

### Driver checklist:

- Monitor tire inflation during extended trips
- Don't operate tires with inflation pressures other than those specified by the manufacturer
- Check tires during vehicle inspections to make sure their condition is within company-established criteria
- Monitor tires for road damage such as tread or sidewall separation, cuts or gouges, flat spots or uneven wear, leaks, and flat tires at duals

## WHEEL RETENTION AND DETERIORATION

Incorrectly assembled or damaged wheel components can result in wheel assembly collapse and loss of control.

- Train maintenance personnel to identify worn or deteriorated wheel and rim components and take them out of service
- Establish company standards for identifying out-of-service wheel conditions requiring replacement
- Ensure the company standard follows the minimum periodic inspection standards specified by the FMCSA
- Train drivers to detect deteriorated component conditions during their inspections

### Maintenance checklist:

- Use established company or industry guidelines to determine whether components should be returned to service
- Attempt to determine cause of damage or deterioration, which may help identify improper use or maintenance procedures that should be corrected

### Driver checklist:

- Look for cracks in wheels and rims when inspecting wheels
- Watch for rust around wheel nuts, and check for tightness, especially after a recent tire change
- Identify and replace any missing wheel components

## STEERING SYSTEM PERFORMANCE

The steering system can fail or it can deteriorate progressively. Progressively increasing steering wheel play will make it harder for the driver to steer and is a principal indicator of deteriorating steering system components. Steering wheel play can be monitored at the driver inspection level.

### Carrier checklist:

Train drivers to recognize excessive steering wheel play.

- Establish out-of-service criterion against which steering wheel play may be checked
- Ensure steering system component deterioration is checked during preventive maintenance and inspection procedures

### Driver checklist:

- During pre-trip inspections, check for excessive steering wheel play
- Follow established company guidelines for taking a vehicle out of service based on steering wheel play
- Write up steering deficiencies on your vehicle inspection report

## TRAILER COUPLING

Improper coupling, inadequate equipment, or damaged equipment can cause trailer separation.

### Carrier checklist:

- Equip towing vehicles and trailers with properly rated ball hitches, pintle hooks, fifth wheels, etc.
- Ensure appropriate safety devices, such as chains and breakaway brakes, are available
- Maintain safety devices and coupling equipment properly on the power unit and trailer
- Train drivers how to properly use coupling equipment

### Driver checklist:

- Check to see that coupling components are in good condition on both trailer and truck
- Adjust coupler if necessary
- Ensure electric and air lines are properly connected



## VEHICLE LIGHTING AND VISIBILITY

Reduce risks by helping other drivers see your vehicle. Due to their length and lower maneuverability, trucks and tractor-trailer combinations may be struck by other vehicles simply because the other driver doesn't see them in time.

### Carrier checklist:

- Install and maintain proper lighting devices and reflectors
- Ensure all reflective tape is clean, in place, in good condition, and free from defects
- Use proper visibility devices when carrying unusual loads that project from the rear or sides of the truck
- Select paint colors that will enhance visibility

### Driver checklist:

- Make sure all lights and reflectors are operable and clean
- Use extra care when making turns, crossing traffic lanes, or crossing intersections during poor visibility conditions
- Use extra care when pulling low-profile trailers, such as empty flatbed tractors, an empty container chassis, construction equipment trailers, or pole trailers

## CARGO INSPECTION

Heavy, high, and offset cargo loads can precipitate rollovers during emergency steering maneuvers or under other difficult driving conditions. That's why it's important the truck and trailer are inspected and maintained in acceptable condition and the cargo is properly evaluated and transported.

### Carrier checklist:

- Make sure the vehicle and axle weights are within legal limits
- Make sure that tire ratings and inflations are compatible with the load and driving conditions
- Ensure suspension and coupling ratings are appropriate for the load
- Know the vehicle weight rating and secure any required permits for oversize/overweight loads
- Know the vehicle height and plan route to avoid low bridges, weight restricted roads, or other impediments

### Driver checklist:

- Place heaviest cargo on the bottom
- Check to see that heavy articles are not offset to one side of the trailer
- Determine payload characteristics when picking up a sealed trailer
- Double-check bracing and tie downs when picking up unusual cargo
- Make sure the cargo has been properly secured
- Use reduced speeds particularly during turns, braking, and adverse weather conditions
- Go slower than curve speed signs indicate
- Check that tie downs and bracing remain secure throughout the trip, and that the cargo doesn't shift during transport

Much of the information in this article comes from the Federal Highway Administration and Federal Motor Carrier Safety Administration (FMCSA). For more information on a range of issues affecting motor carrier safety and security, including information on preventive maintenance, visit the FMCSA website: [fmcsa.dot.gov](http://fmcsa.dot.gov).

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