

Safety Measurement System: Vehicle Maintenance BASICS



The Federal Motor Carrier Safety Administration’s (FMCSA) Safety Measurement System (SMS) contains 7 Behavior Analysis and Safety Improvement Categories (BASICS). The Vehicle Maintenance BASIC addresses vehicle maintenance and cargo securement, covering violations of regulations found primarily in Parts 392, 393 and 396 of the Federal Motor Carrier Safety Regulations (FMCSR). **This publication is specific to the vehicle maintenance portion of this BASIC.**

The SMS assesses the Vehicle Maintenance BASIC using relevant violations recorded during roadside inspections to calculate a measure for individual motor carriers. Violations are severity- and time-weighted.

These measures are used to generate percentile ranks that reflect each carrier’s driver safety posture relative to carriers with similar numbers of relevant inspections.

Vehicle Maintenance percentiles above 80% (75% for hazmat and 65% for passenger carriers) generate an alert and may prompt interventions by the FMCSA. **Organizations can keep their percentile low by ensuring that controls are in place to reduce relevant violations, particularly those with a high severity weight.** There are 220 relevant violations for this BASIC. The following are summarized examples of the violations with a severity weighting of four (4) or more.

Group	Examples of violations	Severity weight
Vehicle jumping OOS	<ul style="list-style-type: none"> Operating an out-of-service vehicle 	10
Tires	<ul style="list-style-type: none"> Flat, fabric exposed or audible air leak Tire tread and/or sidewall separation Tire-ply or belt material exposed or cut Tire-bus regrooved/recap on front wheel Tire front tread depth less than 4/32 and others 2/32 	8
Suspension	<ul style="list-style-type: none"> Suspension issues, including leaf springs, coil springs, torsion bar, air suspension, etc. 	7
Lighting	<ul style="list-style-type: none"> Inoperative/defective lighting, tail lamps or turn signals. Noncompliant or improper lamps. Lighting obscured/covered. 	6
Steering mechanism	<ul style="list-style-type: none"> Steering mechanism issues 	6
Brakes	<ul style="list-style-type: none"> Brake defects, improper of adjustment, air pressure issues, insufficient drum/rotor/lining/pad thickness, etc 	4
Inspection reports	<ul style="list-style-type: none"> Driver failing to conduct a pre-trip inspection No or inadequate driver vehicle inspection report (DVIR) No reviewing driver’s signature on DVIR Failure to correct defects found in inspections No periodic (annual) inspection 	4

¹A severity weight ranging from 1 to 10 (10 being most severe) is assigned to each violation. Out-of-service violations are given an additional 2-point weight. A time weight of 3 (0-6 mo.), 2 (6-12 mo.) or 1 (12-24 mo.) is also assessed based on how long ago the violation occurred. The severity weight is multiplied by its time weight. The FMCSA may periodically adjust the violations used and severity weights.

Best practices for keeping your Vehicle Maintenance BASIC low

Do not exist Need improvement Are adequate

New driver hiring:

1. Driver Information Resource records (DIRs) are pulled on prospective drivers to identify past maintenance violations.
2. Driver hiring standards and driver policies stipulate an acceptable number of violations on DIRs.

Written vehicle inspection and maintenance policy:

1. The policy exists and has been reviewed by management within the past year.
2. The policy is reviewed by each driver during new hire orientation and at least annually thereafter.
3. The policy includes requirements for pre- and post-trip inspections, maintaining vehicles, reporting vehicle issues, reporting violations, etc., and prohibits operating equipment that has been placed out of service (OOS) until the cited repairs have been made.

Driver training and awareness:

1. New hire orientation and periodic refresher training includes training on the North American Standard Inspection Procedure (NASIP) or other equivalent inspection process. Training is provided on brake inspection and adjustment, if applicable.
2. Drivers are educated about the impact that violations have on their careers, and drivers have been encouraged to obtain a DIR on themselves and have been instructed on how to obtain their DIR.

Daily vehicle inspections:

1. The driver completes a pre-trip inspection. While documentation isn't required, it's a best practice. The driver ensures that items noted on previous daily vehicle inspection records (DVIRs) are corrected (driver signature required).
2. Drivers complete required DVIRs. Issues identified are immediately reported and repair procedures are set forth.
3. DVIRs are audited to ensure that they're being completed properly and they're being signed by the "next" driver, acknowledging that repairs have been made.
4. A procedure is in place to ensure that equipment out for several days receives an inspection by maintenance personnel upon return.
5. There's a designated "inspection-friendly" inspection site in a yard or building to facilitate thorough inspections. There's also adequate lighting for inspections in non-daylight hours; and a dry, smooth surface to prevent the driver from getting wet or muddy and that allows for the use of creepers. Mirrors are set up to allow drivers to test lights and turn signals from the cab.

Service/Repairs/Equipment:

	Do not exist	Need improvement	Are adequate
1. Each piece of equipment is on a specific service and inspection interval. All inspections and services are documented.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. There are individual service/inspection files on each piece of equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. A process is in place to ensure issues identified in inspection reports are prioritized and repairs are made before equipment is placed in service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. "Approved" repair shops are identified along frequent routes to facilitate quick repairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Tags or other procedures are in place to ensure that OOS equipment is not placed in service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. A complete NASIP is carried out before placing equipment back in service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. A periodic (annual) inspection is completed by a qualified individual, and documentation is kept with the vehicle.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. A service record is obtained on permanently leased equipment every 30 days.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Permanently leased equipment is required to be thoroughly inspected by an approved shop prior to being placed in service and annually thereafter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. A tracking system is in place to ensure that equipment does not go past required service/inspection intervals, annual inspections, 30-day leased equipment report, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Vehicles are equipped with spare light bulbs and fuses so lighting problems can be fixed immediately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Maintenance personnel:

1. Are qualified and certified where applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are knowledgeable regarding service requirements and inspection and repair procedures for specific equipment being worked on.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are knowledgeable regarding FMCSRs on vehicle inspection and maintenance (393, 396).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Accountability:

1. A formal corrective action program is in place to address drivers who receive violations or obtain an unacceptable number of violations. An incentive program is in place to reward drivers for violation-free inspections.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Permanently leased-on operators are monetarily charged for violations and incentives are in place for clean inspections. Terms are stipulated in the lease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Management reviews the FMCSA portal on at least a weekly basis to identify drivers who have received roadside inspection violations. A procedure is in place to ensure that equipment violations are fixed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. A process is in place to identify drivers who are not doing an adequate job of vehicle inspections—FMCSA inspectors, maintenance personnel or other drivers are finding equipment problems that should have been identified in pre-trip inspections or DVIRs. Retraining and other corrective action is taken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. A process is in place to identify shop personnel who are not doing an adequate job of vehicle inspections and repairs—equipment issues have been found or violations received on equipment recently released from the control of the shop. Retraining and other corrective action is taken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Shop/maintenance managers are held accountable for poor Vehicle Maintenance SMS scores to the degree that they are responsible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Driver Information Resource record (DIR)

Through the FMCSA's Pre-Employment Screening Program (PSP), prospective employers can obtain Driver Information Resource (DIR) records on drivers with the driver's consent, and drivers can obtain their own DIR (\$10). A DIR contains 5 years of crash data and 3 years of roadside inspection data on a driver.

A driver's past violation history may be a good indication of how likely he or she will be to have violations in the future. Organizations should establish guidelines for the acceptability of drivers with poor DIR histories. As with any hiring procedure, the use of DIRs should be reviewed by legal counsel.

Drivers with poor DIRs may have difficulty finding jobs. Organizations are encouraged to educate drivers about DIRs. Drivers who are aware of the impact that violations have on their driving careers may do a better job of staying in compliance with FMCSRs, which is beneficial to your organization.

For more information on DIRs, visit FMCSA's Pre-Employment Screening Program at [psp.fmcsa.dot.gov](https://www.fmcscsp.gov).



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