



# Brake System Safety Standards for Freight

Subpart C – Inspection & Testing  
Module 3

## Module Objectives

- Recognize training requirements for personnel engaged in the application of Part 232
- Identify Class I, II and transfer brake test requirements using appropriate job aid

## Subpart C

- Scope – 232.201
- Training requirements –232.203
- Class I brake tests - initial terminal inspection – 232.205
- Class IA brake tests - 1,000-mile inspection – 232.207
- Class II brake tests - intermediate inspection – 232.209
- Class III brake tests - trainline continuity inspection –232.211
- Extended haul trains – 232.213
- Transfer train brake tests – 232.215
- Train brake tests conducted using yard air –232.217
- Double heading and helper service – 232.219

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## Training requirements New

Each railroad and contractor shall adopt and comply with a training, qualification, and designation program for its employees that perform brake system inspections, tests, or maintenance (ITM).

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## Training requirements

### Training & testing details

The training program requires that each task related to ITM be identified along with the necessary level of skills, knowledge and proficiency required by the employee to perform each task.

The following elements shall be included in the program that relate to all identified tasks:

- Classroom and “hands-on” training curriculum to impart relevant information including applicable Federal regulations.
- Successfully completion of training curriculum.
- Pass a written or oral exam.
- Demonstrate "hands-on" proficiency to the satisfaction of the supervisor or instructor.

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## Training requirements

### Existing employees

An employee hired and working prior to 6/1/01 will be considered as meeting all or part of the training and testing requirements provided:

- The employee receives training and testing on applicable Federal regulations relating to the tasks for which he/she is responsible.
- The railroad or contractor determines that training, testing and efficiency testing previously received by the employee meets part or all of the requirements discussed in the previous slide and such training or testing can be documented.
- The employee passes an oral, written, or practical, "hands-on" test to ensure the employee possesses the required skills and knowledge meeting the requirements discussed in the previous slide and the test is documented.

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## Training requirements Existing employees continued

In cases where a railroad or contractor certifies a group of employees as having previously received training and testing and no records of such training are available, the following requirements shall apply:

- A certification document containing a brief description of the training provided and the approximate date(s) on which the training was provided shall be placed in the employee's training records.
- The employee shall be given a diagnostic oral, written or “hands-on” test covering the training previously received at the time he/she receives first periodic refresher training.

## Initial Training Overview - Options

**Option 1** - Railroads can consider all employees new and provide him/her a complete training curriculum that addresses the skills and knowledge needed to properly perform all assigned tasks. This curriculum shall include written or oral examination, as well as a “hands-on” demonstration to ensure that the employee has the skills and knowledge to perform the assigned tasks in compliance with Part 232, to the satisfaction of the supervisor or training officer.

## Initial Training Overview - Options

**Option 2** - Railroads can rely on existing training records to determine the level of training and the amount of additional training needed to ensure the employee possess the required skills and knowledge to properly perform all tasks in connection with assigned duties.

## Initial Training Overview - Options

**Option 3** - Employees can *test out* meaning the railroad develops and administers a written, verbal or “hands-on” test that assesses current skills and knowledge necessary to perform tasks which the employee will be responsible for performing under Part 232. This option allows railroads to tailor initial training requirements to cover only those areas that the employee may have demonstrated deficient skill in applying.

## Initial Training Overview - Options

**Option 4** *Group certification* - Railroads may use this option to certify a group of employees where no records are available. Under this option, the railroad must satisfy the following conditions:

- ✓ A certification is placed in the employee's training records.
- ✓ The certification contains a brief description of the training provided and the approximate date(s) on which the training was provided, and
- ✓ Any employee determined to be trained under this option shall be given a diagnostic oral, written, or "hands-on" test covering the training previously relied upon when the employee receives his or her first periodic refresher training.

## Training requirements Supervisory oversight

Supervisors are required to exercise oversight to ensure that all the identified tasks are performed in accordance with the railroad's written procedures and the specific Federal regulatory requirements.

## Training requirements

### Refresher training

Periodic refresher training is required at intervals not to exceed three years and shall contain the following elements;

- Classroom.
- “Hands-on”.
- Testing, oral or written.

**Exception:** Employees that have completed their initial training (discussed in the previous slides) prior to 4/1/04, shall not be required to complete their first periodic refresher training until four years after the completion of their initial training, and every three years thereafter. Observation and evaluation of actual performance of duties may be used to meet the "hands-on" portion of this requirement, provided that such testing is documented.

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## Training requirements

### Additional training requirements

- Railroads also required to train on new brake systems prior to its introduction to revenue service.
- Railroads that are required to equip its trains with a two-way end-of-train telemetry devices, and each contractor that maintains such devices shall adopt and comply with a training program which specifically addresses the testing, operation, and maintenance of two-way end-of-train devices for employees who are responsible for the testing, operation, and maintenance of the devices.
- Railroads that operate trains under conditions where the setting of retaining valves are required shall adopt and comply a training program which specifically addresses the proper use of retainers for employees who are responsible for using or setting retainers.

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## Training requirements Records

A railroad or contractor shall maintain adequate records to demonstrate the current qualification status of all of its personnel assigned to inspect, test, or maintain a train brake system.

## Training requirements Records - Details

Records can be maintained electronically or in writing, but shall be furnished to FRA upon request and shall contain the following information:

- The name of the employee and dates that each training course was completed.
- The content of each training course successfully completed.
- The employee's scores on each test taken to demonstrate proficiency.
- A description of the employee's "hands-on" performance applying the skills and knowledge the employee needs to possess in order to perform the tasks required by Part 232 of which the employee will be responsible for performing and the basis for finding that the skills and knowledge were successfully demonstrated.
- The tasks required to be performed under this part which the employee is deemed qualified to perform.
- Name of the person(s) determining that the employee has successfully completed the training necessary to be considered qualified to perform all applicable tasks.
- The date that the employee's status as qualified to perform all applicable tasks expires due to the need for refresher training.

# Training requirements Validation

A railroad or contractor shall adopt and comply with a plan to periodically assess the effectiveness of its training program. One method of validation and assessment could be through the use of efficiency tests or periodic review of employee performance.

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## QMI vs. QP

- For the purposes of Part 232, a Qualified Mechanical Inspector (QMI) is the only individual that is permitted to perform Class I brake tests on an Extended Haul trains.
- In addition, QMI shall be a person **whose primary responsibility** includes work generally consistent with the definition previously discussed, i.e., maintenance , repair, troubleshooting, inspection, etc.
- A Qualified Person (QP), is permitted to perform every brake test under Part 232 except on Extended Haul trains.
- Both QMI and QP are required to meet “Training requirements” previously discussed.
- A QMI or QP can make the determinations necessary for moving a car for repair under §232.15.

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## Class I brake test – initial terminal inspection Significant changes from the former regs.

### Requires:

- Person performing test to be trained in accordance with previous discussion “Training requirements.”
- Another Class I brake test on unit or cycle trains traveling 3,000 miles.
- Charging the train at the pressure at which the train will be operated and the pressure at the rear shall be within 15 psi of the pressure at which the train will be operated, but not less than 75 psi at the rear.
- An inspection (viewing), of brake components on both sides of train sometime during the brake test.
- Brakes to remain applied on all cars until release of the brake is initiated by controlling locomotive.
- A written or electronic record of the Class I brake test to be retained in the cab of the controlling locomotive until train reaches its destination. Train operator must also note results of release portion of inspection on this record in cases where a roll-by inspection of the release portion of the test is employed.

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## Class I brake test – initial terminal inspection Significant changes - continued

### Permits:

- Adding and removing only a single car or single block of cars.
- Adding a previously tested block of cars to a train received at interchange without retest.
- The removal of defective cars without retest.
- Using ETD (front unit display) to ascertain brake pipe pressure on rear car.
- AFM in lieu of traditional leakage test.
- Waiting 45 to 60 seconds after cutting-out maintaining feature (if equipped), to determine brake pipe leakage.
- Retest of car(s) that fail to apply during test provided brakes apply and hold for a period of not less than three minutes during retest.
- Roll-by inspection during release portion of test provided qualified person doing roll-by inspection communicates results of inspection and train speed does not exceed 10 MPH.

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## Class I brake test – initial terminal inspection Significant changes - continued

- Explicit language requiring retest if train off air for more than four hours.
- Explicit language requiring 100 percent operative brakes in train.

## Class I Brake Test – Adding cars

Except as provided in §232.209, a Class I brake test required on each **car or solid block** of cars added to train at the location added unless:

- Car or solid block added are comprised of cars from one train and previously received a Class I brake test and have remained continuously and consecutively coupled with the train line remaining connected, except for the setting out of defective equipment since being removed from its previous train, and have not been off air for more than four hours; or
- The solid block of cars is comprised of cars from one train, but were separated into multiple blocks due to space or track constraints. Under this scenario cars must have previously received a Class I brake test, have not been off air for more than four hours, have remained continuously and consecutively coupled with the train line remaining connected, except for the setting out of defective equipment, and added to the train in the same relative order as when removed from the previous train.

Class II brake test – intermediate inspection  
Significant changes from the former regs.

Requires:

- Person performing test to be trained in accordance with previous discussion “Training requirements.”
- Brakes to remain applied on all cars until release of the brake is initiated by controlling locomotive.

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Class II brake test – intermediate inspection  
Significant changes - continued

Permits:

- AFM in lieu of traditional leakage test.
- Waiting 45 to 60 seconds after cutting-out maintaining feature (if equipped), to determine brake pipe leakage.
- Retest of car(s) that fail to apply during test provided brakes apply and hold for a period of not less than three minutes during retest.
- Roll-by inspection during release portion of test provided qualified person doing roll-by inspection communicates results of inspection and train speed does not exceed 10 MPH.

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## Class III brake test - trainline continuity inspection

### New

This test contains elements from the former intermediate brake test (§232.13(c)(1)).

This test requires:

- The person performing test to be trained in accordance with previous discussion “Training requirements.”
- A set and release on the rear car when locomotive(s) or car(s) are removed from the train or when adding a car or solid block of cars from one previous train that has previously received a Class I brake test and that has not been off air for more than four hours.
- Confirmation of restoration of air on rear when brake pipe continuity is interrupted.

## Transfer train brake tests

### Significant changes from the former regs.

Requires:

- Person performing test to be trained in accordance with previous discussion “Training requirements.”
- Brakes to remain applied on all cars until release of the brake is initiated by controlling locomotive.
- **Accurate gauge or end-of-train device at the rear of the train.**
- Permits retest of car(s) that fail to apply during test provided brakes apply and hold for a period of not less than three minutes during retest.
- Clarifies issue pertaining to cars picked-up enroute.

## Train brake tests conducted using yard air Significant changes from the former regs.

- Requires:
  - Railroad to adopt and comply with written procedures to avoid overcharging of train brake systems.
  - Minimum yard air pressure of 60 psi at the end of the consist or block of cars opposite the yard test device and within 15 psi of the regulator valve setting on yard test device.
  - Leakage test or air flow test on train once locomotives are attached if yard air pressure is less than 80 psi.
  - Mechanical and electronic yard air test gauges to be calibrated every 92 days and annually respectively.
  - Yard air test gauges to be accurate within  $\pm 3$  psi.
- Permits the connection of yard air to the train at any location in the train provided railroad complies with its own written rules to prevent overcharging.

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## End of Module 3

- Discussion using matrices

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