Item SCL-20.12

Single Draft WIM Vehicle Scales
Frequently Asked Questions

General

Q: What is a single draft weigh-in-motion (SD-WIM) vehicle scale?
A: Today's commercial vehicle scales require the vehicle to completely fit on the scale and stop before providing the weight. A SD-WIM scale also requires the vehicle to completely fit on the scale, but the weighing is performed as the vehicle continues to travel across the scale without stopping, thus taking less time to weigh the vehicle.

Q: What is item SCL-20.12?
A: This is the proposed changes to Handbook 44 that provides the specifications, tolerances, and test procedures required to place a SD-WIM scale into service as a commercial vehicle scale.

Q: Why is item SCL-20.12 considered ready for Voting status?
A: Reasons include:

- ***METTLER TOLEDO's device has been demonstrated to NCWM representatives, NIST, and several state regulators and test data has been provided.***
- ***All the aspects of the requirements for HB44 were developed in cooperation with regulators, NIST, NCWM, NTEP, and industry.***
- ***The specifications and tolerances follow the same structure and level of detail provided by other similar HB44 code.***
- ***NTEP procedures and EPO procedures are not included in consideration for voting status for Handbook 44 changes. These will be developed in the near future.***

Specifications

Q: What changes are needed in HB44 to permit Weigh-in-Motion vehicle scales?
A: By making WIM vehicle scales a subset of static vehicle scales, all markings, specifications, tolerances, and static tests apply. The only changes needed are those additional markings, specifications, and tests required for weighing-in-motion. Note that the tolerances are the same for vehicle weighing-in-motion.

Q: Can a vehicle longer than the scale be weighed-in-motion?
A: No, just as a vehicle must be weighed in a single draft today, all axles of the vehicle must be on the scale load receiving element simultaneously during the weigh-in-motion process. This requirement has been added to the code in the specifications section.

Markings

Q: Why is the data acquisition time (DAT) not listed as a marking requirement?
A: The DAT will be listed in the CC, so it is not needed as a marking requirement. This is the same way DAT is listed for Automatic Weighing Systems.

Q: What will be marked for unidirectional vs. bidirectional scales?
A: If a scale is unidirectional, it will need a mark to specify that restriction. It is up to the manufacturer on how to clearly mark, but some options could be an arrow to specify the direction of travel, marking the word "unidirectional", or marking it as the inbound or outbound scale. If a scale is bidirectional, no direction marking restriction is required. This is what was recommended by the SMA.

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Test Procedures

Q: Why are there not more details on how to test a reference scale?
A: Handbook 44 establishes the requirements for testing, not how to test the scales. The proposed code changes in regards to the reference scale are in line with the amount of detail provided for reference scale requirements in the Dynamic Monorail Systems code and the Belt-Conveyor Systems code. An EPO will be created with help from NIST to describe in greater detail how to qualify a reference scale.

Q: Why are there no test procedures listed to check the fault conditions?
A: Fault condition detection will be part of the NTEP test procedure and performed during NTEP testing. Fault conditions are not required to be tested in the field. However, an inspector may always check fault conditions with additional tests. If a fault condition is indicated (i.e. exceeding the maximum speed), no weight will be provided. If the system provides a weight and no fault condition is indicated, then the weight must be accurate.

Q: What are various options for choosing reference vehicles?
A: Due to the difficulty of loading trucks other than a heavy duty test truck, it is optional but recommended to use a customer's normal vehicle type to test the scale. Some valid options for testing include: a) a heavy duty test truck in a loaded and empty condition, b) a heavy duty test truck and a customer vehicle loaded, c) the customer's vehicle type loaded and unloaded, and d) the heavy duty test truck loaded and empty and the field standard weight cart loaded.

Q: How will an inspector measure the speed of the vehicle?
A: The speed of the vehicle is an operating parameter of the SD-WIM Scale. The SD-WIM scale must report a fault and not indicate a weight value if the vehicle speed is outside the speed range specified by the manufacturer. If the system reports a weight without a fault, then that weight must to be accurate regardless of the speed within the speed range. If the speed is outside the speed range, a fault occurs and no weight is reported. In this way the inspector doesn't need to measure the vehicle's speed.

- ***Speed range fault detection will be part of the NTEP test procedure and will be performed during the NTEP test.***
- ***If desired, an inspector can estimate the speed of the vehicle by timing the vehicle over the known length of the scale and making a simple calculation.***

Q: Will the inspector need to test the data acquisition time (DAT)?
A: The DAT will be tested by NTEP, so the DAT will not need to be tested when the SDWIM is placed into service.

Other

Q: Why are there no changes in the approach requirements?
A: The existing approach requirements for static vehicle scales are sufficient for SD-WIM scales because the weighment occurs over the period of time that all the vehicle axles are fully on the load receiving element of the scale.