

SOUTH DAKOTA
OFFICE OF WEIGHTS AND MEASURES

Regulations for Hopper-type Scale Installations

Commercial hopper-type scales used in the buying and/or selling of products must comply with *South Dakota Codified Law 37-22-3* as well as all applicable requirements of the National Institute of Standards and Technology (NIST) *Handbook (HB) 44 (2020) Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*.

South Dakota requires traceability to a National Type Evaluation Program (NTEP) certificate of conformance for all weighing and measuring devices and components where testing criteria exists. Hopper scales used in commerce must have NTEP traceable indicators, load cells and/or lever systems.

In accordance with NIST *HB 44 UR.2.3 Protection from Environmental Factors*. Hopper-type scales must be protected from environmental factors such as wind, weather and Radio Frequency Interference (RFI). This includes but is not limited to constructing appropriate buildings to allow safe access for inspections and testing while ensuring protection from environmental factors.

Testing means must be of such construction as to allow for safe and reasonably expedient testing of the hopper scale (see table below). Substitution/Strain load test to actual used capacity of the scale using the required test standards plus available product is required to legally place the scale in service by a South Dakota Registered Service Agency as well as for state certification.

Devices in U.S. Customary Units		
Device Capacity (lb)	Minimums (in terms of device capacity)	
	Test Weights (greater of)	Test Loads²
0 to 300 lb	100 %	
301 to 3 000 lb	25 % or 300 lb	75 %
3001 to 40 000 lb	12.5 % or 1 000 lb	50 %
40 001 lb+	12.5 % or 10 000 lb	25 % ³

2) The term “test load” means the sum of the combination of field standard test weights and any other applied load used in the conduct of a test using substitution test methods. Not more than three substations shall be used during substitution testing, after which the tolerances for strain load tests shall be applied to each set of test loads.

3) The scale shall be tested from zero to at least 12.5 % of scale capacity using known test weights and then to at least 25 % of scale capacity using either a substitution or strain load test that utilizes known test weights of at least 12.5 % of scale capacity. Whenever practical, a strain load test should be conducted to the used capacity of the scale. When a strain load test is conducted, the tolerances apply only to the test weights or substitution test loads.

If the safe and expedient means stated would not allow for the stacking and/or hanging of individual 50-pound test weights for hopper scales with capacities over 1,000 pounds. The use of the 1,000-pound cube-type test weights currently in use by service agencies and state inspectors is required.

For safety reasons, the preferred means is to provide sufficiently engineered "brackets or lifting arms" from which the service agencies or state inspectors chain hoists could be attached. This would require the lifting of the test standards only enough to clear the floor. The testing means provided must be permanently attached to the scale. Consideration for user access is important and may require that the testing means be able to fold or swing out of the way. Cables will not be accepted.

Again, for the safety of those involved in testing, the safe-load rating of the testing means must be clearly and permanently marked on the device. The location and placement of the hopper scale must allow for ready access with the needed testing equipment. A minimum of three feet of clearance between the hopper and any walls or auxiliary equipment must always be maintained. Exemptions to this clearance requirement will only be granted if another means of safe, effective and reasonably expedient testing is provided (using the 1,000-pound test weights).

The hopper structure, when serving as the weigh bridge, must be properly marked in accordance with the requirements of Handbook 44 with the Manufacturer, Model, Serial Number, Accuracy class, Capacity, $n(\max)$, and $e(\min)$. These markings must be of a permanent nature and readily observable after installation. The hopper scale will not be certified without these required markings.

The initial "Placed-in-Service" report submitted by a registered service agency to this office will allow for the immediate commercial use of the hopper scale provided the installation meets all the above stated requirements. State testing will follow 30 days after inspection or when feasible.

Summary:

The requirements for hopper scale installations (including the re-installation of a used hopper scale) must:

1. Meet Handbook 44 and SDCL requirements, including all marking requirements.
2. Have NTEP traceable indicators, load cells, and lever systems.
3. Be fully protected from environmental factors.
4. Test weights of the appropriate amount as identified in the table on page 1 must be used when testing a device
5. Build up test to maximum used capacity is required.
6. A minimum of three feet of clearance around the hopper for access.

If you have questions regarding these regulations, please feel free to contact us at 605-773-3697 or email us at dpswm@state.sd.us .