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## **STP-7 INSTALLATION AND LOCATION OF THE DEVICE**

### **REFERENCE**

Section 33 of the *Weights and Measures Regulations*, sections 55 to 60, 63 & 64 of the *Specifications Relating to Non-automatic Weighing Devices (1998)*.

Devices must be installed to allow for the accurate measurement of commodities and so that they remain stable and accurate over time under normal conditions of use. Operators and customers, if applicable, must be able to read the device indications and must be able to observe the load receiving element during weighing operations. Devices must be located and installed so that the necessary standards and testing material can be brought to the devices, and can be inspected and sealed. In most cases, the suitability of installation and location will be determined when the initial inspection is performed.

### **MANUFACTURERS INSTRUCTIONS**

In the *Specifications*, there are only a few broad requirements pertaining to the installation of weighing devices. There exist numerous device designs, capacities and types for all kinds of applications on the market. The minimum installation requirements for a particular device type depend upon its design, construction and intended use. Establishing those minimum requirements is, to a certain extent, part of the design process. We rely on device manufacturers to provide, when necessary, specific instructions for the installation and use of the devices they build.

Section 55 of the *Specifications Relating to Non-automatic Weighing Devices (1998)* provides the necessary authority to require that devices are installed in accordance with manufacturers instructions, plans, blue prints, etc.

### **INSTALLATION PARAMETERS IN NOTICES OF APPROVAL (NoA)**

When necessary, the NoA may also provide minimum requirements or restrictions for installation and use of devices.

### **SUPPORTS AND FOUNDATIONS (COMPUTING, COUNTER, BENCH AND PLATFORM SCALES)**

The table, bench or counter that supports the scale must be stable and strong enough to withstand loads without noticeable movement and the supporting surface must be relatively leveled, so as to ensure accurate measurement. If binding may be considered problematic (e.g. device is installed in a counter well, etc.), the device shall be securely fastened to the counter or otherwise restrained from moving from it's intended location through the use of retainers, etc.

### **SUPPORTS AND FOUNDATIONS (STEELYARD SCALES, WALL MOUNTED)**

Mounting and holding means of wall or post mounted steelyard scales must be such to minimize deflections that could affect the accuracy of measurement under load. Holding brackets must be installed plumb, so that when the device is pivoted around the bracket while under load, measurement accuracy is not affected. If the holding system does not appear adequate, inspectors may perform the following tests:

- Set the device to zero, and change its position. The zero reference should not shift (the beam moves up or down). This test can be done with the device loaded. Ensure that the weight indication does not change.

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### **SUPPORTS AND FOUNDATIONS (HOPPER & TANK SCALES)**

Foundations must be of such strength to prevent deflections and vibrations that would adversely affect measurement.

Test weight lifting mechanisms (automatic or semi-automatic), if any, must be installed and must operate in a way that prevents inadvertent measurement errors. For instance, the lifting mechanism must be installed with safeguards or interlocks that prevent weighings (trade transactions) unless the mechanism is in its off position and that the test weights are in free position. Provision must be made to allow for applying test weights during testing of the device. Test weight hooks, pans, platforms, etc. must be securely attached to the device and able to safely withstand the intended test load.

### **SUPPORTS AND FOUNDATIONS (VEHICLE SCALES AND RAILWAY SCALES)**

#### **Generalities:**

##### **Temporary Installation**

Vehicle Scales installations are generally categorized as either Permanent or Temporary. Temporary installations are not desirable due to their less than ideal installations. Nevertheless, it is recognized that there may be legitimate need for temporary installations in some cases. Temporary installations of self contained **Portable Vehicle Scales** are subject to the following requirements:

Temporary Installations of Portable Vehicle Scales will not generally be permitted at permanent business locations. If a company is conducting their primary business from the location, then a permanent installation will be required. Written requests for short term (less than 1 year) temporary installations will only be considered at permanent business locations if the company can demonstrate a legitimate need, such as to fulfill a short term contract, etc. Legitimate temporary installation applications include road construction, temporary gravel pits, short term logging contracts or similar applications.

Portable Vehicle Scales installed in a temporary manner may remain at a single location for no more than one year. If the device is to remain beyond this time period, it must be permanently installed and meet all of the installation and performance criteria. If a Temporary Installation is required beyond this time frame, extensions must be requested in writing, from the nearest Measurement Canada Office. Extension may be granted beyond one year if the owner is able to demonstrate a legitimate need and agrees to provide evidence of annual recalibration using certified test standards.

A temporary installation must be kept level and must be able to withstand loads up to the device capacity without movement or deflections. This requirement is applicable at all times while the device in use. If ground/weather conditions preclude meeting this requirement, the device must not be used (i.e. during Spring Break Up, excess movement due to frost, etc.). Shims and other means of height adjustment shall be made of any suitable material that resists compression at least as well as the main support structure (e.g. steel plate), and shall fill the entire void area under the lever stands or load cell bases to ensure that the scale remains stable and level under normal conditions of use of the scale.

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### Permanent Installation

A permanent installation must be supported by a foundation or a pit the base of which is below the frost-line (information to be obtained from the local Building Code) or that rests on stable substrata such as bedrock. A floating slab of reinforced construction (concrete) may also be appropriate when the scale components are kept aligned and level. Shims and any other means of heights or level adjustment shall be clean, smooth and made entirely of steel or other material of equivalent strength, and if not grouted, shall fill the entire void under the lever stands or load cell bases to ensure that the scale remains stable and level under normal conditions of use of the scale. When a void remains under the lever stands or load cell bases, the lever stands or load cell bases must be grouted. Grout must fill the entire void under the lever stands or load cell bases.

For Vehicle Scale systems installed in the winter months, it may not always be feasible to provide either permanent foundations or approaches due to ground frost. In these cases, the Regional Gravimetric Specialist or appropriate District Manager must be contacted for permission to delay these two requirements until spring thaw. This permission will only be granted if the ground frost provides an adequate and stable support for the scale and approaches. In addition, the Specialist or District Manager may require a written letter of intent to meet these two conditions as soon as the ground has thawed sufficiently. In no case shall the system continue to be used, after the ground has thawed, until the appropriate modifications have been completed.

### **Access to Understructure of Vehicle and Railroad Scales**

Understructure of weighing elements of vehicle and railroad scales must be easily accessible to permit the visual examination of the main components (load cells, levers, junction boxes). Where a pit is required for the installation of a scale, that pit must be provided with an entrance that allows inspection of the area beneath the weighbridge. **Inspectors should note that access to confined spaces is a potentially dangerous practice and company policy must be followed.** See also Measurement Canada - Health & Safety Programs, Confined Spaces document.

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## **STP-7 INSTALLATION AND LOCATION OF THE DEVICE**

### **Approach and Exit Ramps of Vehicle Scales]**

Sections 63 and 64 of the *Specifications Relating to Non-automatic Weighing Devices (1998)* provides the minimum requirements for approach and exit ramps of vehicle scales.

NAWDS section 63.1(c) and section 64, require approach and exit ramps to be smooth, level and in the same plane as the weighbridge. A ramp shall be deemed to be level if the slope is no greater than 2% (2 cm/m) longitudinally. Any crowning of the approach must be flared to meet the weighbridge smoothly and may not exceed 2% slope. This is to allow for adequate drainage and to account for slight variations in the ramp. The slope shall be measured over a minimum length of 1.0 metre.

A vehicle scale need not have both an entry and exit ramp where installation particulars allow for only a single ramp. Appropriate conditions of construction apply to all available ramps.

Loading of a vehicle scale shall not normally be permitted across the side of the scale. In the case of a flush mount built in scale, appropriate barriers may be required, depending on installations specifics, to prevent improper loading of the scale.

### **VISIBILITY OF INDICATING ELEMENTS**

Devices that are used in "direct sale" applications, must be positioned so that the indications may be easily read by the customer.

### **Computing Scales and POS Systems in Retail Stores, and Other Similar Applications**

Computing scales are not required, under the specifications, to have an integrated customer's display. If the device can be positioned so that both the operator and customer can easily read the indications, the requirement is met. If it can not be accomplished, a secondary indicating element that duplicates the primary indications must be provided. In the case of a POS scale, the secondary indicating element need not be approved if it is fully compatible with the scale, is properly marked and has no internal metrological functions. Providing a button to access an external zero activating means is not considered a metrological function.

### **Vehicle Scales**

Measurement Canada Bulletin M-24 provides additional requirements for secondary indicators for vehicle scale installations.

### **VISIBILITY OF THE WEIGHING ELEMENT**

In "direct sale" applications, customers must be able to observe the weighing element of the device from the indicator's reading position.

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Operators must be able to observe the weighing element from the indicator's reading position. If this is impossible, means such as a camera must be provided so that the operator can observe the weighing element. The purpose of this requirement is to ensure that the operator will be able to detect any activities around or on the load receiving element liable to cause erroneous measurement. For instance, the operator must be able to observe the weighing element of a vehicle scale to ensure that, during the weighing process, the vehicle is entirely supported by the scale deck, that the driver remains in or out the vehicle, that no one is walking across the weighing element, etc. This requirement does not apply to installations where the load receiving element is not liable to be disturbed or the material to be weighed altered during the weighing process.

### **ACCESS AND MEANS TO APPLY STANDARDS**

All scales including livestock, vehicle and vehicle/railroad combination scales must be located and installed so that test weights in sufficient numbers and material for strain tests can be brought to the device for inspection purposes.

Hopper and tank scales must be provided with the appropriate accessories (i.e. suspending equipment, hooks, etc.) to allow for the safe application of the required amount of test standards necessary for the inspection.

### **REVISION**

Rev. 3

- added clarification of 'level' requirements for vehicle scale ramps.

Rev. 2 (2008-01-01)

- added requirements for Temporary Installation of Portable Vehicle Scales.
- clarified grout/shim requirements for vehicle scale installations.
- clarified approach requirements for vehicle scale installations.
- added confined space entry criteria for entering scale pits.
- removal of obsolete terminology ('contractor scale').
- clarified wording & intent in several sections.
- added secondary indicator criteria for POS as per GSC 2006-04(f).
- expanded requirement for access to scale and necessary rigging for application of standards.
- removal of 'to the public' from direct sales references.
- added securing of counter scales when appropriate.
- added weight receiving requirements for tank/hopper scales.

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#### **STP-7 INSTALLATION AND LOCATION OF THE DEVICE**

- correct references to *Specifications Relating to Non-automatic Weighing Devices (1998)*.

Rev. 1

- added section for Winter Installation (approaches / foundation).