

SCHEDULE 2

Regulation 37

TESTING

PART I

GENERAL

1. Subject to the provisions of paragraph 17 on eccentric load testing and any special arrangements required to comply with regulation 7, test loads shall be distributed over the central areas of load and weight receptors.

2.—(1) Subject to the provisions of paragraph 16 on tilt testing, machines fitted with level indicating devices shall only be tested when the devices indicate that the machines have been set to their reference positions.

(2) Movable machines or machines having movable load or weight receptors—

(a) shall, if freestanding, subject to subparagraph (1) and the provisions of paragraph 16(d) and (e) on tilt testing, be supported during testing on a level plane and, if practicable, have their load and/or weight bearing surfaces set level; and

(b) shall, if designed to be suspended in use, be suspended during testing.

3. When taking test readings from digital weight indicators or printers, other than the readings required for comparison testing by paragraph 10 and the readings required for discrimination testing by paragraph 14, the inspector shall eliminate any rounding error either by using the change points between consecutive indicated or printed digits or by using test facilities on the device under test which increase the resolution of the weight indication or printout.

4. In the case of a machine having an automatic zero tracking device or devices, these devices shall be effectively disabled during testing, by adopting a non-zero indication or printout as zero-for-the purposes of testing, so that the test results are not materially affected by the action of any of the automatic zero tracking devices.

5. In the case of a machine of an approved pattern which, in the published particulars thereof, is described as having a weighing mode in which, with the load receptor empty—

(a) the machine cannot be balanced, or

(b) an indicating, printing or tare device cannot be set to zero,

then nothing in the provisions of Parts II and III shall require such balancing or setting, or prevent the machine from being fully tested.

6. When testing any machine, the inspector shall first ascertain—

(a) its accuracy classification, the verification scale intervals and weighing ranges of all the indicating, printing and tare devices, in accordance with the provisions of Schedule 1;

(b) the number of its weighing modes;

(c) for each of the indicating, printing and tare devices, the value of test load at which the prescribed limits of error change in value, in accordance with the provisions of Schedule 3; and

(d) the maximum loads of all the weight and load receptors and combinations of load receptors.

7. Where feasible, the inspector may combine tests or carry out several tests concurrently.

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PART II

ACCURACY TESTING

Weight indicating and weight printing devices

- (a) (a) Subject to paragraph 5, the inspector shall first balance the machine with the load and weight receptors empty and all the tare, weight indicating and printing devices set to zero.
- (b) For each weighing mode of the machine, each of the weight indicating and printing devices which are operable in that mode shall be tested for accuracy unless, in the inspector's opinion, a lesser number of tests on any device is sufficient to establish or re-establish its fitness for use. During accuracy testing each device shall be tested at least once with increasing and decreasing loads unless it is described in the published particulars of the approved pattern as not to be so tested.
- (c) For each weight reading the error must not exceed the appropriate prescribed limit of error.

PART III

OTHER TESTING

Interpretation

9. In this Part "absolute value" means the range of the limit of error from the maximum plus to the maximum minus allowed.

Comparison testing

- (a) (a) Machines having a weighing mode in which it is possible to obtain more than one determination of any test load by means of more than one tare, weight indicating or printing devices shall, for each such weighing mode, be tested as described in subparagraphs (b) and (c).
- (b) Testing shall be carried out for at least three different values of test load.
- (c) The inspector shall compare each reading with all the other readings of the same test load, the other readings being obtained from different weight indicating, printing and tare devices. The difference between any two of these readings must not exceed—
 - (i) zero, where the two readings are obtained from two digital devices having the same scale interval;
 - (ii) the larger of the scale intervals, where the two readings are obtained from digital devices having different scale intervals;
 - (iii) the smaller of the absolute values of the appropriate prescribed limits of error where the two readings are obtained from two analogue devices; or
 - (iv) either the absolute value of the appropriate prescribed limits of error of the analogue device or the scale interval of the digital device whichever is the greater, where one of the two readings is obtained from an analogue device and the other is obtained from a digital device.

Alternative load balancing arrangement testing

- (a) (a) Machines having a weighing mode in which it is possible to obtain more than one determination of a single load by means of alternative load balancing arrangements shall, for each such weighing mode, be tested as described in subparagraphs (b) and (c).
- (b) If feasible, testing of each alternative load balancing arrangement shall be carried out for at least three different values of test load.
- (c) For each test load the inspector shall compare the two readings obtained from the alternative load balancing arrangements. The difference between these readings must not exceed the absolute value (or the smaller of the absolute values) of the appropriate prescribed limits of error for the load applied.

Repeatability testing

- (a) (a) Repeatability testing shall be carried out as appropriate to the machine under test, with the test load being removed and then re-deposited as nearly as practicable in the same position.
- (b) The readings for each test load shall be compared. The difference between the highest and the lowest of them must not exceed half the absolute value of the appropriate prescribed limits of error for the load applied. All readings must also fall within the prescribed limits of error.
- (c) Additional repeatability testing may be carried out on machines having other weight indicating or printing devices associated with the load receptor under test.

Price-to-pay testing

- (a) (a) By checking with several different weights and unit prices, the inspector shall satisfy himself that the machine computes the price-to-pay correctly.
- (b) In the case of a machine with digital indication or printing of price-to-pay, the price computation shall be deemed to be correct if the difference between any indicated or printed price-to-pay and the product of its associated unit price and indicated or printed weight is not greater than half the value of the smallest monetary unit.

Discrimination testing

- (a) (a) Discrimination testing shall not be carried out on accelerating machines.
- (b) Subject to sub-paragraph (a), discrimination testing shall be carried out with the machine loaded to the approved minimum load and maximum capacity, or as near as practicable thereto, using each load and weight receptor, or combination of receptors, separately with the associated indicating or printing device which has the smallest prescribed limit of error for the value of load used in the testing.
- (c) For non-self indicating machines, while balanced to give an indication of the load as at sub-paragraph (b), an additional load equal to 0.4 times the absolute value of the prescribed limit of error added gently to the loaded receptor shall always produce—
 - (i) an appreciable movement of the beam, in the case of a simple equal-arm beam;
 - (ii) a rise or fall to the limits of the range of movement of the beam or indicating element, in the case of a machine which is not a simple equal-arm beam.
- (d) For self or semi-self indicating machines, while loaded as at sub-paragraph (b), the additional load placed gently on the loaded receptor shall—

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- (i) in the case of analogue indication or printing be equivalent to the absolute value of the prescribed limit of error for the load on the receptor and shall always cause a permanent displacement of the indicating element corresponding to at least 0.7 times its value;
- (ii) in the case of a digital indication or printing, be equivalent to 1.4 times the digital scale interval and shall always cause an increase in the reading of the initial indication.

Level indicator testing

- (a) (a) The sensitivity of the level indicating devices shall be such that, in the case of Class I and Class II machines, for a longitudinal or transverse tilt not exceeding 2 parts in 1000, the moving part of the indicator is displaced by at least 2 mm.
- (b) In the case of Class III and Class IIII machines, when a machine is tilted longitudinally or transversely until the moving part of the indicator shows a displacement of at least 2 mm, the zero load reading of the associated indicating or printing device does not change by more than two verification scale intervals.
- (c) In the case of Class II, Class III and Class IIII machines additionally, for all loads, the variation between the indicated or printed results obtained in the reference position and the tilted position shall not exceed the value of the prescribed limit of error for the test load, the machine having been adjusted to zero or balanced in the no-load condition for both the reference and tilted positions.

Tilt testing

- (a) (a) Tilt testing shall not be carried out on any machines which are permanently installed, freely suspended or Class I machines provided with adjustable levelling devices and one or more level indicating devices.
- (b) Machines subject to tilt testing which are submitted with a view to being passed for the first time as fit for use for trade shall be tested as described in subparagraphs (c) to (e). An inspector may, at his discretion, carry out tilt testing at other times on machines which are subject to such testing.
- (c) The machines shall be tested using each load and weight receptor, where feasible, in association with the indicating or printing device which has the smallest verification scale interval of these devices capable of registering the maximum capacity.
- (d) Subject to paragraph 5, for a Class III or Class IIII machine, having first been adjusted to zero or balanced at no-load in its untilted reference position with all the tare, weight indicating and printing devices set to zero, the indication shall not vary by more than two verification scale intervals when tilted longitudinally and transversely to—
 - (i) 2 parts in 1000; or
 - (ii) 50 parts in 1000, for a machine without any level indicating devices.
- (e) Subject to paragraph 5, for a Class II, Class III or Class IIII machine, having first been adjusted to zero or balanced at no-load with all the tare, weight indicating and printing devices set to zero when tilted longitudinally or transversely to—
 - (i) 1 part in 1000 for a Class II machine;
 - (ii) 2 parts in 1000 for a Class III or Class IIII machine;
 - (iii) 50 parts in 1000 for a machine without any level indicating devices,

the indication shall not vary by more than one verification scale interval when the maximum load is applied.

Eccentric load testing

- (a) (a) Machines shall be subjected to eccentric load testing using each load and weight receptor, or combination of receptors, separately in association with the indicating or printing device which has the smallest prescribed limits of error for the value of load used in the testing.
- (b) Subject to paragraph 5, the inspector shall first balance the machine with the load and weight receptors empty and all the tare, weight indicating and printing devices set to zero.
- (c) The receptor shall then be loaded as specified in paragraph 18. The weight reading shall be noted for each specified position of the test load. For each weight reading the error must not exceed the appropriate prescribed limit of error.
- (a) (a) Subject to sub-paragraph (b)—
 - (i) in the case of a load receptor having four or fewer supports, a test load equal to one-third of the maximum load shall be applied in turn to each of the four quarter segments of the load receptor, each quarter segment being as nearly as is practicable equal to one quarter in area of the receptor; or
 - (ii) in the case of a load receptor having more than four supports, a test load which is equal to the fraction $1/(n-1)$ of the maximum load shall be applied to each support over an area of $1/n$ of the surface area of the load receptor (where 'n' is the number of supports):

Provided that, if the load receptor has a pair of supports which are so close together that it is not practicable to proceed in this manner, a test load which is equal to $2/(n - 1)$ of the maximum load (where 'n' is the number of supports) shall be applied to twice that area equally spaced about the axis connecting the pair of supports; or
 - (iii) in the case of a machine which falls within head (i) or (ii) but which has a load receptor in the form of a tank or hopper where the off-centre loading is minimal, a test load which is equal to one-tenth of the maximum load shall be applied to each point of support of the load receptor.
- (b) In the case of a machine used for weighing vehicles of any description, a test load which is as nearly as practicable equal to, but in the event does not exceed, four-fifths of the maximum load shall also be applied at both ends and in the middle of the load receptor in all directions of movement of the vehicle on the load receptor.

Locking or relieving gear testing

- (a) (a) Load and weight receptors which have associated locking or relieving devices shall, when supporting one-half of their maximum load, be eased into and out of lock or relief. This action must not cause the machine, in its unlocked or unrelieved position, to give any indication or printout which is in error by more than the appropriate prescribed limit of error.
- (b) Such devices must not be able to be placed in intermediate positions.

Backbalance testing

- (a) (a) Backbalance testing shall be carried out only on accelerating machines.

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- (b) In backbalance testing the maximum load shall first be placed on the load receptor and the machine balanced so that the beam or indicating element only just maintains its horizontal position on its stop or carrier. The beam or indicating element shall then be moved to its position of greatest displacement from the horizontal position, after which the load on the load receptor shall be reduced by the minimum amount which is required to restore the beam or indicating element to its horizontal position.
- (c) The minimum amount which is required to be removed from the load receptor must not exceed three times the verification scale interval of the machine.