

Appendix A to Part 679

Performance and Technical Requirements for Scales Used to Weigh Catch At Sea in the Groundfish Fisheries off Alaska

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5. Definitions

1. Introduction

(a) This appendix to part 679 contains the performance and technical requirements for scales to be approved by NMFS for use to weigh, at sea, catch from the groundfish fisheries off Alaska. The performance and technical requirements in this document have not been reviewed or endorsed by the National Conference on Weights and Measures. Regulations implementing the requirements of this appendix and additional requirements for and with respect to scales used to weigh catch at sea are found at 50 CFR 679.28(b).

(b) Revisions, amendments, or additions to this appendix may be made after notice and opportunity for public comments. Send requests for revisions, amendments, or additions to the Sustainable Fisheries Division, Alaska Region, NMFS, P.O. Box 21668, Juneau, AK 99802.

(c) Types of scales covered by appendix

This appendix contains performance and technical requirements for belt, automatic hopper, platform, and hanging scales.

(d) Testing and Approval of Scales Used to Weigh Catch at Sea

Scales used to weigh catch at sea are required to comply with four categories of performance and technical requirements:

- (1) Type evaluation;
- (2) initial inspection after installation while the vessel is tied up at a dock and is not under power at sea;
- (3) annual reinspection while the vessel is tied up at a dock and is not under power at sea; and
- (4) daily at-sea tests of the scale's accuracy.

This appendix contains only the performance and technical requirements for type evaluation and initial and annual reinspections by an authorized scale inspector.

2. Belt Scales

2.1 Applicability.

The requirements in this section apply to a scale or scale system that employs a conveyor belt in contact with a weighing element to determine the weight of a bulk commodity being conveyed across the scale.

2.2 Performance Requirements

2.2.1 Maximum Permissible Errors. For laboratory tests of a scale and initial inspections and annual reinspections of an installed scale when the vessel is tied up at a dock and is not under power at sea, the following maximum permissible errors (MPEs) are specified:

2.2.1.1 Laboratory Tests. See annex A to this appendix A for procedures for disturbance tests and influence factors.

a. Disturbances. ± 0.18 percent of the weight of the load totalized.

b. Influence Factors. ± 0.25 percent of the weight of the load totalized.

c. Temperature Effect at Zero Flow Rate. The difference between the values obtained at zero flow rate taken at temperatures that differ by $10^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ must not be greater than 0.035 percent of the weight of the load totalized at the maximum flow-rate for the time of the test.

2.2.1.2 Zero Load Tests. For zero load tests conducted in a laboratory or on a scale installed on a vessel and conducted when the vessel is tied up at a dock and not under power at sea, ± 0.1 percent of the value of the minimum totalized load or 1 scale division (d), whichever is greater.

2.2.1.3 Material Tests. For material tests conducted in a laboratory or on a scale installed on a vessel and conducted when the vessel is tied up at a dock and not under power at sea, ± 1.0 percent of the known weight of the test material.

2.2.2 Minimum Flow Rate (Q_{min}). The minimum flow rate must be specified by the manufacturer and must not be greater than 35 percent of the rated capacity of the scale in kilograms per hour (kg/hr) or metric tons per hour (mt/hr).

2.2.3 Minimum Totalized Load (Σ_{min}). The minimum totalized load must not be less than the greater of--

- a. Two percent of the load totalized in 1 hour at the maximum flow rate;
- b. The load obtained at the maximum flow rate in 1 revolution of the belt; or
- c. A load equal to 800 scale divisions (d).

2.2.4 Influence Quantities. The following requirements apply to influence factor tests conducted in the laboratory.

2.2.4.1 Temperature. A belt scale must comply with the performance and technical requirements at a range of temperatures from -10° C to +40° C. However, for special applications the temperature range may be different, but the range must not be less than 30° C and must be so specified on the scale's descriptive markings.

2.2.4.2 Power Supply. A belt scale must comply with the performance and technical requirements when operated within a range of -15 percent to +10 percent of the power supply specified on the scale's descriptive markings.

2.3 Technical Requirements.

2.3.1 Indicators and Printers.

2.3.1.1 General. A belt scale must be equipped with an indicator capable of displaying both the weight of fish in each haul or set and the cumulative weight of all fish or other material weighed on the scale between annual inspections ("the cumulative weight"), a rate of flow indicator, and a printer. The indications and printed representations must be clear, definite, accurate, and

easily read under all conditions of normal operation of the belt scale.

2.3.1.2 Values Defined. If indications or printed representations are intended to have specific values, these must be defined by a sufficient number of figures, words, or symbols, uniformly placed with reference to the indications or printed representations and as close as practicable to the indications or printed representations but not so positioned as to interfere with the accuracy of reading.

2.3.1.3 Units. The weight of each haul or set must be indicated in kilograms, and the cumulative weight must be indicated in either kilograms or metric tons and decimal subdivisions.

2.3.1.4 Value of the Scale Division. The value of the scale division (d) expressed in a unit of weight must be equal to 1, 2, or 5, or a decimal multiple or sub-multiple of 1, 2, or 5.

2.3.1.5 Range of Indication. The range of the weight indications and printed values for each haul or set must be from 0 kg to 999,999 kg and for the cumulative weight must be from 0 to 99,999 metric tons.

2.3.1.6 Resettable and Non-resettable Values. The means to indicate the weight of fish in each haul or set must be resettable to zero. The means to indicate the cumulative weight must not be resettable to zero without breaking a security means and must be reset only upon direction of NMFS or an authorized scale inspector.

2.3.1.7 Rate of Flow Indicator. Permanent means must be provided to produce an audio or visual signal when the rate of flow is less than the minimum flow rate or greater than 98 percent of the maximum flow rate.

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2.3.1.8 Printed Information. The information printed must include--

- a. For catch weight:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The haul or set number;
 - iv. The total weight of catch in each haul or set;
 - v. The total cumulative weight of all fish or other material weighed on the scale; and
 - vi. The date and time the information is printed.
- b. For the audit trail:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The date and time (to the nearest minute) that the adjustment was made;
 - iv. The name or type of adjustment being made; and
 - v. The initial and final values of the parameter being changed.

2.3.1.9 Permanence of Markings. All required indications, markings, and instructions must be distinct and easily readable and must be of such character that they will not tend to become obliterated or illegible.

2.3.1.10 Power Loss. In the event of a power failure, means must be provided to retain in a memory the weight of fish in each haul or set for which a printed record has not yet been made, the cumulative weight, and the information on the audit trail.

2.3.1.11 Adjustable Components. An adjustable component that when adjusted affects the performance or accuracy of the scale must be held securely in position and must not be capable of adjustment without breaking a security means unless a record of the adjustment is made on the audit trail described in 2.3.1.12.

2.3.1.12 Audit Trail. An audit trail in the form of an event logger must be provided to document changes made using adjustable components. The following

information must be provided in an electronic form that cannot be changed or erased by the scale operator, can be printed at any time, and can be cleared by the scale manufacturer's representative upon direction by NMFS or by an authorized scale inspector:

- a. The date and time (to the nearest minute) of the change;
- b. The name or type of adjustment being made;
- c. The initial and final values of the parameter being changed.

2.3.1.13 Adjustments to Scale Weights. The indicators and printer must be designed so that the scale operator cannot change or adjust the indicated and printed weight values.

2.3.2 Weighing Elements.

2.3.2.1 Speed Measurement. A belt scale must be equipped with means to accurately sense the belt travel and/or speed whether the belt is loaded or empty.

2.3.2.2 Conveyer Belt. The weight per unit length of the conveyer belt must be practically constant. Belt joints must be such that there are no significant effects on the weighing results.

2.3.2.3 Overload Protection. The load receiver must be equipped with means so that an overload of 150 percent or more of the capacity does not affect the metrological characteristics of the scale.

2.3.2.4 Speed Control. The speed of the belt must not vary by more than 5 percent of the nominal speed.

2.3.2.5 Adjustable Components. An adjustable component that can affect the performance of the belt scale must be held securely in position and must not be capable of adjustment without breaking a security means.

2.3.2.6 Motion Compensation. A belt scale must be equipped with automatic means to compensate for the motion of a vessel at sea so that the weight values indicated are within the MPEs. Such means shall be a reference load cell and a reference mass weight or other equally effective means. When equivalent means are utilized, the manufacturer must provide NMFS with information demonstrating that the scale can weigh accurately at sea.

2.3.3 Installation Conditions. A belt scale must be rigidly installed in a level condition.

2.3.4 Marking. A belt scale must be marked with the--

- a. Name, initials, or trademark of the manufacturer or distributor;
- b. Model designation;
- c. Non-repetitive serial number;
- d. Maximum flow rate (Q_{max});
- e. Minimum flow rate (Q_{min});
- f. Minimum totalized load (Σ_{min});
- g. Value of a scale division (d);
- h. Belt speed;
- i. Weigh length;
- j. Maximum capacity (Max);
- k. Temperature range (if applicable); and
- l. Mains voltage.

2.3.4.1 Presentation. The markings must be reasonably permanent and of such size, shape, and clarity to provide easy reading in normal conditions of use. They must be grouped together in a place visible to the operator.

2.4 Tests.

2.4.1 Minimum Test Load. The minimum test load must be the greater of--

- a. 2 percent of the load totalized in 1 hour at the maximum flow rate;
- b. The load obtained at maximum flow rate in one revolution of the belt;

- c. A load equal to 800 scale divisions.

2.4.2 Laboratory Tests.

2.4.2.1 Influence Quantity and Disturbance Tests. Tests must be conducted according to annex A and the results of these tests must be within the values specified in section 2.2.1.1.

2.4.2.2 Zero-Load Tests. A zero-load test must be conducted for a time equal to that required to deliver the minimum totalized load (Σ_{min}). At least two zero-load tests must be conducted prior to a material test. The results of these tests must be within the values specified in section 2.2.1.2.

2.4.2.3 Material Tests. At least one material test must be conducted with the weight of the material or simulated material equal to or greater than the minimum test load. The results of these tests must be within the values specified in section 2.2.1.3.

2.4.3 Annual Inspections.

2.4.3.1 Zero-Load Tests. A zero-load test must be conducted for a time equal to that required to deliver the minimum totalized load (Σ_{min}). At least one zero-load test must be conducted prior to each material test. The results of this test must be within the values specified in section 2.2.1.2.

2.4.3.2 Material Tests. At least one material or simulated material test must be conducted with the weight of the material or simulated material equal to or greater than the minimum test load. The results of these tests must be within the values specified in section 2.2.1.3.

3. Automatic Hopper Scales

3.1 Applicability.

The requirements in this section apply to a scale or scale system that is designed for automatic

weighing of a bulk commodity in predetermined amounts.

3.2 Performance Requirements.

3.2.1 Maximum Permissible Errors. For laboratory tests of a scale and initial inspection and annual reinspections of an installed scale when the vessel is tied up at a dock and is not under power at sea, the following MPEs are specified:

3.2.1.1 Laboratory Tests. See annex A to appendix A for procedures for disturbance test and influence factors.

a. Disturbances. Significant fault (sf) (± 1 scale division).

b. Influence Factors. ± 0.1 percent of test load.

3.2.1.2 Increasing and Decreasing Load Tests. For increasing and decreasing load tests conducted in a laboratory or on a scale installed on a vessel tied up at a dock and not under power at sea, ± 1.0 percent of the test load.

3.2.2 Minimum Weighment (Σ min). The minimum weighment must not be less than 20 percent of the weighing capacity, or a load equal to 100 scale intervals (d), except for the final weighment of a lot.

3.2.3 Minimum Totalized Load (Lot). The minimum totalized load must not be less than 4 weighments.

3.2.4 Influence Quantities. The following requirements apply to influence factor tests conducted in the laboratory:

3.2.4.1 Temperature. A hopper scale must comply with the metrological and technical requirements at temperatures from -10° C to $+40^{\circ}$ C. However, for special applications the temperature range may be different, but the range must not be less than 30° C and must be so specified on the scale's descriptive markings.

3.2.4.1.1 Operating Temperature. A hopper scale must not display or print any usable weight values until the operating temperature necessary for accurate weighing and a stable zero-balance condition have been attained.

3.2.4.2 Power Supply. A hopper scale must comply with the performance and technical requirements when operated within -15 percent to +10 percent of the power supply specified on the scale's descriptive markings.

3.3 Technical Requirements.

3.3.1 Indicators and Printers.

3.3.1.1 General.

a. A hopper scale must be equipped with an indicator and printer that indicates and prints the weight of each load and a no-load reference value; and a printer that prints the total weight of fish in each haul or set and the total cumulative weight of all fish and other material weighed on the scale between annual inspections ("the cumulative weight"). The indications and printed information must be clear, definite, accurate, and easily read under all conditions of normal operation of the hopper scale.

b. A no-load reference value may be a positive or negative value in terms of scale divisions or zero. When the no-load reference value is zero, the scale must return to a zero indication (within ± 0.5 scale division) when the load receptor (hopper) is empty following the discharge of all loads, without the intervention of either automatic or manual means.

3.3.1.2 Values Defined. If indications or printed representations are intended to have specific values, these must be defined by a sufficient number of figures, words, or symbols, uniformly placed with reference to the indications or printed representations and as close as practicable to the indications or printed representations but not so positioned as to interfere with the accuracy of reading.

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3.3.1.3 Units. The weight of each haul or set must be indicated in kilograms, and the cumulative weight must be indicated in either kilograms or metric tons and decimal subdivisions.

3.3.1.4 Value of the Scale Division. The value of the scale division (d) expressed in a unit of weight must be equal to 1, 2, or 5, or a decimal multiple or sub-multiple of 1, 2, or 5.

3.3.1.5 Weighing Sequence. For hopper scales used to receive (weigh in), the no-load reference value must be determined and printed only at the beginning of each weighing cycle. For hopper scales used to deliver (weigh out), the no-load reference value must be determined and printed only after the gross-load weight value for each weighing cycle has been indicated and printed.

3.3.1.6 Printing Sequence. Provision must be made so that all weight values are indicated until the completion of the printing of the indicated values.

3.3.1.7 Printed Information. The information printed must include--

- a. For catch weight:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The haul or set number;
 - iv. The total weight of catch in each haul or set;
 - v. The total cumulative weight of all fish or other material weighed on the scale; and
 - vi. The date and time the information is printed.

- b. For the audit trail:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The date and time (to the nearest minute) of the change;
 - iv. The name or type of adjustment being made; and

v. The initial and final values of the parameter being changed.

3.3.1.8 Permanence of Markings. All required indications, markings, and instructions must be distinct and easily readable and must be of such character that they will not tend to become obliterated or illegible.

3.3.1.9 Range of Indication. The range of the weight indications and printed values for each haul or set must be from 0 kg to 999,999 kg and for the cumulative weight must be from 0 to 99,999 metric tons.

3.3.1.10 Non-resettable Values. The cumulative weight must not be resettable to zero without breaking a security means and must be reset only upon direction by NMFS or by an authorized scale inspector.

3.3.1.11 Power Loss. In the event of a power failure, means must be provided to retain in a memory the weight of fish in each haul or set for which a printed record has not yet been made, the cumulative weight, and the information on the audit trail described in 3.3.1.13.

3.3.1.12 Adjustable Components. An adjustable component that, when adjusted, affects the performance or accuracy of the scale must not be capable of adjustment without breaking a security means, unless a record of the adjustment is made on the audit trail described in 3.3.1.13.

3.3.1.13 Audit Trail. An audit trail in the form of an event logger must be provided to document changes made using adjustable components. The following information must be provided in an electronic form that cannot be changed or erased by the scale operator, can be printed at any time, and can be cleared by the scale manufacturer's representative

upon direction of NMFS or by an authorized scale inspector:

- a. The date and time (to the nearest minute) of the change;
- b. The name or type of adjustment being made;
- c. The initial and final values of the parameter being changed.

3.3.1.14 Zero-Load Adjustment. A hopper scale must be equipped with a manual or semi-automatic means that can be used to adjust the zero-load balance or no-load reference value.

3.3.1.14.1 Manual. A manual means must be operable or accessible only by a tool outside of, or entirely separate from, this mechanism or enclosed in a cabinet.

3.3.1.14.2 Semi-automatic. A semi-automatic means must be operable only when the indication is stable within ± 1 scale division and cannot be operated during a weighing cycle (operation).

3.3.1.15 Damping Means. A hopper scale must be equipped with effective automatic means to bring the indications quickly to a readable stable equilibrium. Effective automatic means must also be provided to permit the recording of weight values only when the indication is stable within plus or minus one scale division.

3.3.1.16 Adjustments to Scale Weights. The indicators and printer must be designed so that the scale operator cannot change or adjust the indicated and printed weight values.

3.3.2 Interlocks and Gate Control. A hopper scale must have operating interlocks so that--

- a. Product cannot be weighed if the printer is disconnected or subject to a power loss;
- b. The printer cannot print a weight if either of the gates leading to or from the weigh hopper is open;

c. The low paper sensor of the printer is activated;

d. The system will operate only in the sequence intended; and

e. If the overflow sensor is activated, this condition is indicated to the operator and is printed.

3.3.3 Overflow Sensor. The weigh hopper must be equipped with an overflow sensor that will cause the feed gate to close, activate an alarm, and stop the weighing operation until the overflow condition has been corrected.

3.3.4 Weighing Elements.

3.3.4.1 Overload Protection. The weigh hopper must be equipped with means so that an overload of 150 percent or more of the capacity of the hopper does not affect the metrological characteristics of the scale.

3.3.4.2 Adjustable Components. An adjustable component that can affect the performance of the hopper scale must be held securely in position and must not be capable of adjustment without breaking a security means.

3.3.4.3 Motion Compensation. A hopper scale must be equipped with automatic means to compensate for the motion of a vessel at sea so that the weight values indicated are within the MPEs. Such means shall be a reference load cell and a reference mass weight or other equally effective means. When equivalent means are utilized, the manufacturer must provide NMFS with information demonstrating that the scale can weigh accurately at sea.

3.3.5 Installation Conditions. A hopper scale must be rigidly installed in a level condition.

3.3.6 Marking. A hopper scale must be marked with the following:

- a. Name, initials, or trademark of the manufacturer or distributor;
- b. Model designation;
- c. Non-repetitive serial number;
- d. Maximum capacity (Max);
- e. Minimum capacity (min);
- f. Minimum totalized load (Σ min);
- g. Minimum weight;
- h. Value of the scale division (d);
- i. Temperature range (if applicable); and
- j. Mains voltage.

3.3.6.1 Presentation. Descriptive markings must be reasonably permanent and grouped together in a place visible to the operator.

3.4 Tests.

3.4.1 Standards. The error of the standards used must not exceed 25 percent of the MPE to be applied.

3.4.2 Laboratory Tests.

3.4.2.1 Influence Quantity and Disturbance Tests.

Tests must be conducted according to annex A and the results of these tests must be within the values specified in section 3.2.1.1.

3.4.2.2 Performance Tests. Performance tests must be conducted as follows:

- a. Increasing load test. At least five increasing load tests must be conducted with test loads at the minimum load, at a load near capacity, and at 2 or more critical points in between; and
- b. Decreasing load test. A decreasing load test must be conducted with a test load approximately equal to one-half capacity when removing the test loads of an increasing load test.

3.4.3 Annual Scale Inspections.

At least two increasing load tests and two decreasing load tests must be conducted as specified in 3.4.2.2. Additionally, tests must be conducted with test loads

approximately equal to the weight of loads at which the scale is normally used.

4. Platform Scales and Hanging Scales

4.1 Applicability.

The requirements in this section apply to platform and hanging scales used to weigh total catch. Platform scales used only as observer sampling scales or to determine the known weight of fish for a material test of another scale are not required to have a printer under sections 4.3.1 and 4.3.1.5 or an audit trail under section 4.3.1.8.

4.2 Performance Requirements.

4.2.1 Maximum Permissible Errors. For laboratory tests of a scale and initial inspection and annual reinspections of an installed scale while the vessel is tied up at a dock and is not under power at sea, the following MPEs are specified:

4.2.1.1 Laboratory Tests. See annex A to this appendix A for procedures for disturbance tests and influence factors.

a. Disturbances. Significant fault (± 1 scale division); and

b. Influence Factors. See Table 1 in section 4.2.1.2

4.2.1.2 Increasing and Decreasing Load and Shift Tests. Increasing and decreasing load and shift tests conducted in a laboratory or on a scale installed on a vessel while the vessel is tied up at a dock and is not under power at sea, see Table 1, as follows:

Table 1. Influence Factors

Test load in scale divisions (d)		Maximum permissible error (d)
Class III ¹	Class IIII	
$0 < m^2 \leq 500$	$0 < m \leq 50$	0.5
$500 < m \leq 2000$	$50 < m \leq 200$	1.0
$2000 < m$	$200 < m$	1.5

¹ Scale accuracy classes are defined in section 4.2.2, Table 2.

² Mass or weight of the test load in scale divisions.

4.2.2 Accuracy Classes. Scales are divided into two accuracy classes, class III and class IIII. The accuracy class of a scale is designated by the manufacturer. The design of each accuracy class with respect to number of scale divisions (n) and the value of the scale division (d) is specified according to table 2:

Table 2. Accuracy Classes

Accuracy class	Value of scale division (d)	Number of scale divisions (n)	
		Minimum	Maximum
III	5 g or greater	500	10,000
IIII	5 g or greater	100	1,000

4.2.3 Minimum Load: For a Class III scale, 20d; for a Class IIII scale, 10d.

4.2.4 Influence Quantities. The following requirements apply to influence factor tests conducted in the laboratory.

4.2.4.1 Temperature. A scale must comply with the performance and technical requirements at temperatures from -10° C to +40° C. However, for special applications the temperature range may be different, but the range must not be less than 30° C and must be so specified on the descriptive markings.

4.2.4.1.1 Operating Temperature. A scale must not display or print any usable weight values until the operating temperature necessary for accurate weighing and a stable zero-balance condition have been attained.

4.2.4.2 Power Supply. A scale must comply with the performance and technical requirements when operated within -15 percent to +10 percent of the power supply specified on the scale's descriptive markings.

4.3 Technical Requirements.

4.3.1 Indicators and Printers.

4.3.1.1 General. A scale must be equipped with an indicator and a printer. The indications and printed information must be clear, definite, accurate, and easily read under all conditions of normal operation of the scale.

4.3.1.2 Values Defined. If indications or printed representations are intended to have specific values, these must be defined by a sufficient number of figures, words, or symbols, uniformly placed with reference to the indications or printed representations and as close as practicable to the indications or printed representations but not so positioned as to interfere with the accuracy of reading.

4.3.1.3 Units. The weight units indicated must be in terms of kilograms and decimal subdivisions.

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4.3.1.4 Value of the Scale Division. The value of the scale division (d) expressed in a unit of weight must be equal to 1, 2, or 5, or a decimal multiple or sub-multiple of 1, 2, or 5.

4.3.1.5 Printed Information. The information printed must include--

- a. For catch weight:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The haul or set number;
 - iv. Net weight of the fish.

- b. For the audit trail:
 - i. The vessel name;
 - ii. The Federal fisheries or processor permit number of the vessel;
 - iii. The date and time (to the nearest minute) of the change;
 - iv. The name or type of adjustment being made; and
 - v. The initial and final values of the parameter being changed.

4.3.1.6 Permanence of Markings. All required indications, markings, and instructions must be distinct and easily readable and must be of such character that they will not tend to become obliterated or illegible.

4.3.1.7 Power Loss. In the event of a power failure, means must be provided to retain in a memory the weight of the last weighing if it is a non-repeatable weighing.

4.3.1.8 Adjustable Components.

- a. An adjustable component that, when adjusted, affects the performance or accuracy of the scale must be held securely in position and must not be capable of adjustment without breaking a security means.
- b. An audit trail in the form of an event logger must be provided to document changes made using adjustable components. The following information must be provided in an electronic form that cannot be changed or

erased by the scale operator, can be printed at any time, and can be cleared by the scale manufacturer's representative upon direction of NMFS or an authorized scale inspector:

- i. The date and time (to the nearest minute) of the change;
- ii. The name or type of adjustment being made;
- iii. The initial and final values of the parameter being changed.

4.3.1.9 Zero-Load Adjustment. A scale must be equipped with a manual or semi-automatic means that can be used to adjust the zero-load balance or no-load reference value.

4.3.1.9.1 Manual. A manual means must be operable or accessible only by a tool outside of or entirely separate from this mechanism or enclosed in a cabinet.

4.3.1.9.2 Semi-automatic. A semi-automatic means must meet the provisions of 4.3.1.8 or must be operable only when the indication is stable within ± 1 scale division and cannot be operated during a weighing cycle (operation).

4.3.1.10 Damping Means. A scale must be equipped with effective automatic means to bring the indications quickly to a readable stable equilibrium. Effective automatic means must also be provided to permit the recording of weight values only when the indication is stable within plus or minus one scale division.

4.3.2 Weighing Elements.

4.3.2.1 Overload Protection. The scale must be so designed that an overload of 150 percent or more of the capacity does not affect the meteorological characteristics of the scale.

4.3.2.2 Adjustable Components. An adjustable component that can affect the performance of the

scale must be held securely in position and must not be capable of adjustment without breaking a security means.

4.3.2.3 Motion Compensation. A platform scale must be equipped with automatic means to compensate for the motion of a vessel at sea so that the weight values indicated are within the MPEs. Such means shall be a reference load cell and a reference mass weight or other equally effective means. When equivalent means are utilized, the manufacturer must provide NMFS with information demonstrating that the scale can weigh accurately at sea.

4.3.3 Installation Conditions. A platform scale must be rigidly installed in a level condition. When in use, a hanging scale must be freely suspended from a fixed support or a crane.

4.3.4 Marking. A scale must be marked with the following:

- a. Name, initials, or trademark of the manufacturer or distributor;
- b. Model designation;
- c. Non-repetitive serial number;
- d. Accuracy class (III or IIII);
- e. Maximum capacity (Max);
- f. Minimum capacity (min);
- g. Value of a scale division (d);
- h. Temperature range (if applicable); and
- i. Mains voltage.

4.3.4.1 Presentation. Descriptive markings must be reasonably permanent and grouped together in a place visible to the operator.

4.4 Tests.

4.4.1 Standards. The error of the standards used must not exceed 25 percent of the MPE applied.

4.4.2 Laboratory Tests.

4.4.2.1 Influence Quantities and Disturbance Tests. Tests must be conducted according to annex A to this

appendix A, and the results of these tests must be within the values specified in section 4.2.1.1.

4.4.2.2 Performance Tests. Performance tests must be conducted as follows:

a. Increasing load test. At least five increasing load tests must be conducted with test loads at the minimum load, at a load near capacity, and at 2 or more critical points in between.

b. Shift test (platform scales only). A shift test must be conducted during the increasing load test at one-third capacity test load centered in each quadrant of the platform.

c. Decreasing load test. A decreasing load test must be conducted with a test load approximately equal to one-half capacity when removing the test loads of an increasing load test.

4.4.3 Annual Scale Inspections.

At least two increasing load tests, shift tests, and decreasing load tests must be conducted as specified in 4.4.2.2. Additionally tests must be conducted with test loads approximately equal to the weight of loads at which the scale is normally used. The results of all tests must be as specified in Table 1 in section 4.2.1.2.

5. Definitions

Adjustable component - Any component that, when adjusted, affects the performance or accuracy of the scale, e.g., span adjustment or automatic zero-setting means. Manual or semi-automatic zero-setting means are not considered adjustable components.

Audit trail - An electronic count and/or information record of the changes to the values of the calibration or configuration parameters of a scale.

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Automatic hopper scale - A hopper scale adapted to the automatic weighing of a bulk commodity (fish) in predetermined amounts. Capacities vary from 20 kg to 50 mt. It is generally equipped with a control panel, with functions to be set by an operator, including the start of an automatic operation. (See definition of hopper scale).

Belt scale - A scale that employs a conveyor belt in contact with a weighing element to determine the weight of a bulk commodity being conveyed. It is generally a part of a system consisting of an input conveyor, the flow scale, and an output conveyor. The conveyor belt may be constructed of various materials, including vulcanized rubber, canvas, and plastic. The capacity is generally specified in terms of the amount of weight that can be determined in a specified time, and can vary from, for example, 1 ton per hour to 100 or more tons per hour. An operator generally directs the flow of product onto the input conveyor.

Calibration mode - A means by which the span of a scale can be adjusted by placing a known "test weight" on the scale and manually operating a key on a key board.

Disturbances - An influence that may occur during the use of a scale but is not within the rated operating conditions of the scale.

Event logger - A form of audit trail containing a series of records where each record contains the identification of the parameter that was changed, the time and date when the parameter was changed, and the new value of the parameter.

Final weighment - The last partial load weighed on a hopper scale that is part of the weight of many loads.

Hanging scale - A scale that is designed to weigh a load that is freely suspended from an overhead crane or it may be permanently installed in an overhead position. The load receiver may be a part of the scale such as a pan

suspended on chains, or simply a hook that is used to "pick-up" the container of the commodity to be weighed. The technology employed may be mechanical, electro-mechanical, or electronic. The loads can be applied either manually or by such means as a crane.

Hopper scale - A scale designed for weighing individual loads of a bulk commodity (fish). The load receiver is a cylindrical or rectangular container mounted on a weighing element. The weighing element may be mechanical levers, a combination of levers and a load cell, or all load cells. The capacity can vary from less than 20 kg to greater than 50 mt. The loads are applied from a bulk source by such means as a conveyor or storage hopper. Each step of the weighing process, that is the loading and unloading of the weigh hopper, is controlled by an operator.

Indicator - That part of a scale that indicates the quantity that is being weighed.

Influence factor - A value of an influence quantity, e.g., 10°, that specifies the limits of the rated operating conditions of the scale.

Influence quantity - A quantity that is not the subject of the measurement but which influences the measurement obtained within the rated operating conditions of the scale.

Influence quantity and disturbance tests - Tests conducted in a laboratory to determine the capability of the scale under test to perform correctly in the environmental influences in which they are used and when subjected to certain disturbances that may occur during the use of the scale.

Initial verification - The first evaluation (inspection and test) of a production model of a weighing instrument that has been type evaluated to determine that the production model is consistent

with the model that had been submitted for type evaluation.

Known weight test - A test in which the load applied is a test weight with a known value simulating the weight of the material that is usually weighed.

Load receiver - That part of the scale in which the quantity is placed when being weighed.

Material test - A test using a material that is the same or similar to the material that is usually weighed, the weight of which has been determined by a scale other than the scale under test.

Maximum flow-rate - The maximum flow-rate of material specified by the manufacturer at which a belt scale can perform correctly.

Minimum flow-rate - The minimum flow-rate specified by the manufacturer at which a belt scale can perform correctly.

Minimum load - The smallest weight load that can be determined by the scale that is considered to be metrologically acceptable.

Minimum totalized load - The smallest weight load that can be determined by a belt scale that is considered to be metrologically acceptable.

Minimum weight - The smallest weight that can be determined by a hopper scale that is considered to be metrologically acceptable.

Motion compensation - The means used to compensate for the motion of the vessel at sea.

No-load reference value - A weight value obtained by a hopper scale when the load receiver (hopper) is empty of the product that was or is to be weighed.

Non-repeatable weighing - A process where the product after being weighed is disposed of in such a manner that it cannot be retrieved to be reweighed.

Number of scale divisions (n) - The number of scale divisions of a scale in normal operation. It is the quotient of the scale capacity divided by the value of the scale division. $n = \text{Max}/d$

Performance requirements - A part of the regulations or standards that applies to the weighing performance of a scale, e.g., MPEs.

Performance test - A test conducted to determine that the scale is performing within the MPE applicable.

Periodic verification - A verification of a weighing instrument at an interval that is specified by regulation or administrative ruling.

Platform scale - A scale by the nature of its physical size, arrangement of parts, and relatively small capacity (generally 220 kg or less) that is adapted for use on a bench or counter or on the floor. A platform scale can be self contained, that is, the indicator and load receiver and weighing elements are all comprised of a single unit, or the indicator can be connected by cable to a separate load receiver and weighing element. The technology used may be mechanical, electro-mechanical, or electronic. Loads are applied manually.

Rated capacity - The maximum flow-rate in terms of weight per unit time specified by the manufacturer at which a belt scale can perform correctly.

Scale division (d) - The smallest digital subdivision in units of mass that is indicated by the weighing instrument in normal operation.

Sealing - A method used to prevent the adjustment of certain operational characteristics or to indicate that adjustments have been made to those operational characteristics.

Security seals or means - A physical seal such as a lead and wire seal that must be broken in order to change the operating or performance characteristics of the scale, or a number generated by the scale whenever a change is made to an adjustable component. The number must be sequential and it must not be possible for the scale operator to alter it. The number must be displayed whenever the scale is turned on.

Significant fault - An error greater than the value specified for a particular scale. For a belt scale: A fault greater than 0.18 percent of the weight value equal to the minimum totalized load. For all other scales: 1 scale division (d). A significant fault does not include faults that result from simultaneous and mutually independent causes in the belt scale; faults that imply the impossibility of performing any measurement; transitory faults that are momentary variations in the indications that cannot be interpreted, memorized, or transmitted as a measurement result; faults so serious that they will inevitably be noticed by those interested in the measurement.

Simulated material test - A test in which the load applied is test material simulating the weight of the material that is usually weighed.

Simulated test - A test in which the weight indications are developed by means other than weight, e.g., a load cell simulator.

Stationary installation - An installation of a scale in a facility on land or a vessel that is tied-up to a dock or in dry dock.

Subsequent verification - Any evaluation of a weighing instrument following the initial verification.

Suitability for use - A judgement that must be made that certain scales by nature of their design are appropriate for given weighing applications.

Technical requirements - A part of the regulations or standards that applies to the operational functions and characteristics of a scale, e.g., capacity, scale division, tare.

Testing laboratory - A facility for conducting type evaluation examinations of a scale that can establish its competency and proficiency by such means as ISO Guide 25, ISO 9000, EN 45011, NVLAP, NTEP).

Type evaluation - A process for evaluating the compliance of a weighing instrument with the appropriate standard or regulation.

User requirements - A part of the regulations or standards that applies to the operator/owner of the scale.

Weighment - A single complete weighing operation.