

Field Inspection Manual	Part: 3-STP	Section: 3	Page: 1 of 12
Non Automatic Weighing Devices	Issued: 2011-04-01	Revision Number: 3	

STP-3 MARKING

REFERENCE

Sections 49 to 54 of the *Specifications Relating to Non-automatic Weighing Devices (1998)*.

[Bulletin M-24](#)

GENERAL

Complete weighing devices and major components (indicating elements and load receiving/weighing elements) of devices tested separately must be marked with certain information in the manner required by the *Specifications Relating to Non-automatic Weighing Devices (1998)*.

EVALUATION

In general, the completeness, appropriateness and permanence of the markings on complete weighing devices (price computing scales, bench scales, etc.) or major components (weight indicators and smaller weighing elements) are evaluated for compliance to specific criteria by the Approval Services Laboratory (ASL). However certain device types and major components are evaluated and tested in the field only (vehicle scales, hopper scales, etc.). In these cases, inspectors must ensure that the marking is complete, legible, located as required, permanent and permanently affixed to the major component. Markings shall be of a height reasonably appropriate to the size of the device. The height of characters should be at least 2 mm.

COMPLETE DEVICES IN THE SAME HOUSING OR COMPOSED OF NON DETACHABLE MAJOR COMPONENTS

Complete devices in the same housing or made of non detachable major components are only required to bear one series of markings.

COMPLETE DEVICES COMPOSED OF DETACHABLE COMPONENTS OR MAJOR COMPONENTS APPROVED SEPARATELY

Major components of complete devices must be marked individually if they can be separated and interfaced (mixed/matched) to other major components to form a device. Major components submitted for approval evaluation individually are tested separately and are also required to be marked individually.

Max, e AND d , IF DIFFERENT FROM **e**, ADJACENT TO THE WEIGHT DISPLAY

Section 52 of the *Specifications Relating to Non-automatic Weighing Devices (1998)* requires that **Max**, **e** and **d**, if different from **e**, be marked near the weight display of the device. On devices such as vehicle scales, **Max** and **e** are only known and marked on the indicating element (near the weight display) when the indicating element is matched to the weighing element. When such devices are initially inspected, the inspector therefore ensures that **Max** and **e** are marked as required.

ACCESSORIES

Remote (secondary) weight displays, slave modules such as printers, keyboards, cash registers and other similar modules that are used in conjunction with approved devices are not required to be marked if they perform no significant metrological functions.

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EXTRACTS FROM THE APPROVAL EVALUATION MANUAL - NON AUTOMATIC WEIGHING DEVICES

Hereafter are the detailed marking requirements as extracted from the *Approval Evaluation Manual - Non Automatic Weighing Devices*. This extract is provided to ensure uniform and consistent application of the marking requirements in the field. Note that the numbering of the following sections correspond to the numbering used in the *Approval Evaluation Manual - Non Automatic Weighing Devices*.

3.1 - MARKING - COMPLETE DEVICES

This section applies to complete devices in the same housing or complete devices made of major detachable components interfaced together and not intended to be separated and used in conjunction with other individually approved major components to form different devices. For such devices, only one series of information is required.

The device must be marked with:

3.1.1 - the name or trademark of the manufacturer or applicant.

3.1.2 - a model designation that positively identifies the device type or design.

3.1.3 - a distinctive serial number. The serial number must be prefaced by words, an abbreviation or a symbol that clearly identifies the number as the serial number.

3.1.4 - the appropriate Measurement Canada approval number. The approval number must be prefaced with words or an abbreviation that positively identifies the number as the Canadian approval number.

Acceptable Solutions

Canadian Approval AM-4145
or MC AM- 4145
or CND W&M AM-4145
or AM-4145

3.1.5 - the accuracy class. The numerals I, II, III, III HD or IIII are the markings required to indicate the accuracy class. The numeral within an ellipse or a figure approximating an ellipse is the proper way to indicate the accuracy class. The word "Class" followed by the numeral is also acceptable.

3.1.6 - the maximum capacity **Max** that the device can weigh.

3.1.7 - the value of the verification scale interval **e**.

3.1.8 - the value of the actual scale interval **d**, if different from **e**. On Class III, III HD and IIII devices, multi-interval and multiple range devices, **d** must equal **e**.

NOTE:

1. **Max**, **e** and **d**, if different from **e**, must be marked near the weight display.

2. If a device has a separate display for customers, **Max**, **e** and **d**, if different from **e**, must be marked near both the operator and the customer weight displays.

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3. **Max**, **e** and **d**, if different from **e**, must be marked for all units of measurement that can be displayed (i.e. pounds and kilograms).

Examples:

preferred	alternate	
Max 10 kg / 20 lb	10 kg x 5 g	10 kg (20 lb) x 5 g (0.01 lb)
e = 0.005 kg / 0.01 lb	20 lb x 0.01 lb	

4. The markings of **Max**, **e** and **d**, if different from **e**, near the weight display must reflect actual device operation. For instance, a device that is capable of being configured for either single or multiple range operation must be marked to reflect the configuration selected.

3.1.9 - the operating temperature range if different than -10°C to +40°C.
for Class I devices, the temperature range must be at least 5°C;
for Class II devices, at least 15°C;
for Class III, III HD and IIII devices, at least 30°C.

Note: Multiple range and multi-interval devices must be marked with the weight ranges and the corresponding scale intervals. Devices with more than one class designation must be marked with each class designation in clear association with **Max**, **e** and **d**, if different from **e**, and the temperature range, if they are different for each class.

Note: Markings for **e** and/or **d** must be in the same units as those for **Max**. For the purposes of this marking requirement, if **Max** is stated in kilograms, **e/d** may be in either grams or kilograms (preferred). If **Max** is stated in grams, then **e/d** must be in grams also.

Acceptable solutions

1 - Multi-interval device

preferred	alternate
Max 3 / 6 kg (6 / 15 lb)	0-3 kg (0-6 lb) x 1 g (0.002 lb)
e = 1 / 2 g (0.002 / 0.005 lb)	3-6 kg (6-15 lb) x 2 g (0.005 lb)

2 - Device with more than one weighing range

W_1	W_2
Max 3 kg (6 lb)	6 kg (15 lb)
e = 1 g (0.002 lb)	2 g (0.005 lb)

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3 - Device with weighing ranges in different accuracy classes and restricted temperature ranges

W_1	W_2
II	III
Max 3 kg	15 kg
e = 0.1 g	e = 10 g
d = 0.01 g	d = e
10°C / 30°C	0°C / 35°C

3.1.10 - the verification marks. The device must have an area, either on the marking plate itself or on the device adjacent to the marking plate, suitable for the application of the verification marks. The surface of this area must be at least 1.3 x 2.5 cm (½" x 1").

3.2 - MARKING - INDICATING ELEMENTS

This section applies to indicating elements that are evaluated and tested separately. Such indicating elements are either submitted for approval evaluation separately or are major detachable components of a complete device and are intended to be used in conjunction with approved and compatible weighing elements to form different devices.

The indicating element must be marked with:

3.2.1 - the name or trademark of the manufacturer or applicant.

3.2.2 - a model designation that positively identifies the device type or design.

3.2.3 - a distinctive serial number. The serial number must be prefaced by words, an abbreviation or a symbol that clearly identifies the number as the serial number.

3.2.4 - the appropriate Measurement Canada approval number. The approval number must be prefaced with words or an abbreviation that positively identifies the number as the Canadian approval number. See acceptable solutions in section 3.1.4.

3.2.5 - the accuracy class. The numerals I, II, III, III HD or IIII are the markings required to indicate the accuracy class. The numeral within an ellipse or a figure approximating an ellipse is the proper way to indicate the accuracy class. The word "Class" followed by the numeral is also acceptable.

3.2.6 - the maximum number of scale intervals n_{max} . If the indicating element is approved for two accuracy classes and has a different maximum number of scale intervals for each accuracy class, both maxima must be marked in clear association to the accuracy class designation.

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Acceptable Solutions

Class III / III HD
 n_{max} 3000 / 8000

or

III	III HD
n_{max} 3000	8000

or

III	n_{max} 3000
III HD	n_{max} 8000

3.2.7 - the maximum capacity **Max**, the value of the verification scale interval **e** and the value of the actual scale interval **d**, if different from **e**, must be marked on the indicator near the weight display when it is interfaced with a weighing element to form a device. This marking reflects the limitation of the complete weighing device. See the notes and examples below sections 3.1.8 and 3.1.9.

NOTE : For multiple range devices, multi-interval devices and indicators with more than one accuracy class designation, see the note below section 3.1.9.

3.2.8 - the operating temperature range, if different than -10°C to +40°C.
for Class I indicators, the temperature range must be at least 5°C;
for Class II indicators, at least 15°C;
for Class III, III HD and IIII indicators, at least 30°C.

3.2.9 - the verification marks. The indicator must have an area, either on the marking plate itself or on the indicator adjacent to the marking plate, suitable for the application of the verification marks. The surface of this area must be at least 1.3 x 2.5 cm (½" x 1").

3.3 - MARKING - SOFTWARE

3.3.1 - For software that is evaluated separate from hardware, the identifying information (manufacturer name, model number and approval number) must be visible on the video display terminal or printable when called up from the menu, or be continually displayed. For further information regarding the approval evaluation of software, consult the Terms and Conditions for the Approval of Metrological Software on the Measurement Canada Web site.

3.4 - MARKING - LOAD RECEIVING/WEIGHING ELEMENTS

This section applies to weighing elements that are evaluated and tested separately. Such weighing elements are either submitted to approval evaluation separately or are major detachable components of a complete device and are intended to be used in conjunction with approved and compatible indicating elements to form different devices.

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The weighing element must be marked with:

3.4.1 - the name or trademark of the manufacturer or applicant.

3.4.2 - a model designation that positively identifies the device type or design.

3.4.3 - a distinctive serial number. The serial number must be prefaced by words, an abbreviation or a symbol that clearly identifies the number as the serial number.

3.4.4 - the appropriate Measurement Canada approval number. The approval number must be prefaced with words or an abbreviation that positively identifies the number as the Canadian approval number. See acceptable solutions in section 3.1.4.

3.4.5 - the accuracy class. The numerals I, II, III, III HD or IIII are the markings required to indicate the accuracy class. The numeral within an ellipse or a figure approximating an ellipse is the proper way to indicate the accuracy class. The word "Class" followed by the numeral is also acceptable.

3.4.6 - the maximum capacity **Max** that the weighing element can weigh.

3.4.7 - the value of the minimum verification scale interval e_{min} for which the weighing element complies with the requirements and can be set.

3.4.8 - the maximum number of scale intervals n_{max} for which the weighing element complies with the requirements and can be set.

3.4.9 - the operating temperature range, if different than -10°C to +40°C.
for Class I weighing elements, the temperature range must be at least 5°C;
for Class II weighing elements, at least 15°C;
for Class III, III HD and IIII weighing elements, at least 30°C.

3.5 - MARKING - LOAD CELLS

Load cells which are required to be approved by the Notice of Approval (NOA) for the Load Receiving and Weighing element must be suitably marked in order to allow complete identification of the load cell and its approved parameters. The following table identifies which markings are required and where the markings may be located. Markings listed in the MC column are applicable to these load cells. Other load cells do not require marking at this time.

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Required Load Cell Markings				
Item	Markings	NTEP / Pub 14	OIML / R60	MC
1	Manufacturer Name or Trademark	1 (G-S.1)	1	1
2	Manufacturer Model	1 (G-S.1)	1	1
3	Serial Number	1 (G-S.1)	1	1
4	Year of Manufacture	N/A	2	3
5	Certificate Number	1(G-S.1)	2	2
6	Accuracy Class OIML or NTEP	2	1	2
7	Temperature Limits (if other than -10 °C to 40 °C)	2	2	2
8	Number of Divisions (nMax)	2	2	2
9	Single/Multiple Cell designation	2	N/A	N/A
10	Direction of Loading (if not obvious)	2	2	2
11	Minimum Deadload (E_{min})	2	2	2
12	Load Cell Capacity (E_{max})	2	1	2
13	Load Cell Safe Limit (E_{lim})	2	2	2
14	Minimum Number of Verification Interval (V_{min})	2	2	2
15	Humidity Classification	N/A	2	3
16	Electrical Characteristics (mv/V, impedance, etc.)	N/A	2	3
17	Apportionment Factor (p_{LC})	N/A	2	3
18	Relative $V_{min} = "Y"$	N/A	3	3
19	Relative DR = "Z"	N/A	3	3

Applicable to strain gauge load cells only.

Digital cells will report number of counts at E_{max} for cell rated output (mv/V)

Key

- 1 - Required to be marked on Cell
- 2 - Required to be available (optional on cell or accompanying documentation)
- 3 - Optional Information
- N/A - Not Applicable

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Reference

G-S.1 US National Institute for Standards & Technology (NIST) Handbook 44, General Code, S.1
 Pub 14 US National Type Evaluation Program (NTEP), Publication 14
 R60 International Organization of Legal Metrology, OIML R60

3.6 - MARKING - READABILITY, LOCATION AND PERMANENCE

3.6.1 - The required information must be complete, legible, accessible and durable. If necessary for clarity, there must be defining words or authorized symbols associated with the numbers (i.e. model numbers, temperature range, etc.). See the list of acceptable defining words and symbols in Appendix A. The height of capital letters must be at least 2 mm.

3.6.2 - The required information must be appropriately located. Markings may be on either a marking plate affixed to a permanent part of the device, on the device itself, or both. Information that identifies the device (manufacturer name or trademark, model, serial and approval numbers) should be grouped together. **Max**, **e** and **d** (if different from **e**) must be marked near the weight display(s). See the note below sections 3.1.8 and 3.1.9 for additional information.

3.6.3 - The marking must be visible without having to remove a permanent part of the device or having to move or lift the device. Markings must be available with minimum effort and be accessible without disassembly requiring the use of special tools or equipment.

Acceptable Locations

(1) Markings (and/or the marking plate) may be located on the top, sides or front of the device. Markings may be located beneath the platter and fastened to the scale structure if the platter is easily removable (small devices such as computing scales and bench scales).

(2) Weighing elements. The required information must be on a surface that is an integral part of the chassis. If the information is on a label or a plate, it must be permanently attached to the device. A plate may be riveted or welded but not affixed with bolts or screws.

(3) Weighing elements of large scales. Identification information for the weighing elements of vehicle, axle load, floor, livestock, railroad track and large hopper or tank scales must be located near the point where the signal leaves the weighing element (this would be the transverse lever on a mechanical scale and on, or near, the junction box on an electronic scale). In the case of built-in weighing elements (flush mounted), the required information can be placed on the scale chassis and be accessible by the removal of a cover plate.

Non Acceptable Locations

- (1) Under the scale
- (2) Inside a cabinet
- (3) On the back of the device or indicating element if it is difficult to move and is likely to be located near a wall
- (4) Marking plate affixed to the platter

3.6.4 - If **Max**, **e** and **d**, if different from **e**, are displayed electronically, such as on a video display terminal, then they must be adjacent to the weight display and continuously displayed when the system is in the weighing mode.

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3.6.5 - The lettering must be permanent. This requirement also applies to words and symbols for measurement units near the weight display and to words and symbols that identify or indicate the status of metrologically significant annunciators.

3.6.6 - Plates or other materials (decals, labels or badges) on which the required information is marked must be made of durable material and permanently affixed to the device so that they cannot be easily removed and affixed to another device.

3.7 - MARKING - SPECIAL APPLICATIONS

Certain device types are designed for specific applications. Such devices may incorporate features, perform certain functions or operate in a particular fashion that would not be acceptable for all applications. Since these devices may not meet all the usual requirements, their use is restricted to the specific applications for which they were designed. The device restriction must therefore be permanently and clearly marked adjacent to both the operator and customer weight displays.

Some examples:

Weight Classifiers - Digital weight classifiers round weight values up to the next scale interval. They are designed to classify packages within price ranges for shipping, courier or postal applications. Weight classifiers would therefore not be appropriate for use in grocery store applications. Their use is restricted and they must be marked with the following: "*Weight Classification Only*" or "*Weight Classifier*" or "*Postal Scale*".

Industrial Devices - Certain devices are designed for industrial applications. They do not incorporate features that are normally required for devices used in direct sales to consumers. For instance, they may not have a display for consumers; the tare feature may not comply with the requirements for devices used in direct sale applications, etc. These devices, if they resemble devices intended to be used in direct sale applications, must be marked as follows to indicate that they are designed for industrial use only: "*Not for Use in Direct Sales*" or similar language.

Devices in Auxiliary Housings - There are situations where the device owner deems it necessary to place an approved indicating element inside an auxiliary housing. As this can lead to concerns for the inspector and device user, the following requirements must be met. The indicating element must retain its primary serial number plate and original case. All initial inspection markings must be on this primary plate which must remain attached to the device. If the interior of the auxiliary housing is not readily accessible (quick release latches or less than 4 easily removed bolts), then the device information must be duplicated on a second identification plate attached to the exterior of the auxiliary housing. No initial inspection marks are to be made on this second plate. The auxiliary housing must have provisions for application of a "lead and wire" or other mechanical seal (not adhesive paper). In all cases, it will be up to the inspector to satisfy themselves that the device inside the enclosure is the same as the device identified on the external duplicate identification plate. If any question remains, the inspector may request that the auxiliary housing be opened in order to examine the actual indicating element.

Precious Metals/ Gemstones - Certain devices are designed and inspected for use in trade transactions for precious metals or gemstones. These devices generally require different test equipment and may have other restrictions or requirements not generally applicable to other trade devices. These devices must be marked as per the Notice of Approval (NoA). Scales which weigh in troy ounces must also be marked "*Troy Ounces may only be used to weigh Precious Metals*" and scales which weigh in carats, must be marked "*Carats may only be used to weigh Gemstones*" or similar language.

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3.8 - MARKING - OPERATIONAL CONTROLS, INDICATIONS AND FEATURES

The marking of operational controls such as keys, push buttons and switches that are strictly for operator use is not required by Measurement Canada. Keys that are visible only to the scale operator need only be marked to the extent that a trained operator can understand the function of each key. It is however recommended that internationally recognized words and symbols be used.

Annunciators that are metrologically significant must be marked with words or acceptable symbols. The following are some examples of metrologically significant annunciators: centre of zero, net, gross and tare weight indications, identification of the weighing element in use on a non-summing multi-deck weighing system, the range selected on a manual multiple range device, etc.

LG - 1.01 - PERMANENCE OF THE LETTERING (approval testing)

PURPOSE

This test is aimed at evaluating the permanence of the information to be marked on the device, or a major detachable element evaluated separately, in order to determine if it will withstand wear and cleaning. Markings are subjected to the following tests to simulate accelerated wear. The markings are then compared to a typical set of markings exhibiting various degrees of wear, graded from excessive unacceptable wear (1) to minimal effect (7).

APPLICATION

This test is to be applied to all mandatory markings including the manufacturer's name, the model and serial numbers, **Max**, **e** and **d**, the unit of measurement associated with weight indications (kg, lb), to other words or symbols associated with metrologically significant annunciators, etc.

TEST PROCEDURE

Attempts are made to remove the marked information, whether on a badge (plate) or on the device itself, using the following means:

A. Rub over one letter of the marking twenty (20) times using an ink eraser in the same manner and with the same force as one would normally exert while erasing an inscription written with a ballpoint pen.

NOTE: For consistency of application, the laboratories use Eberhard Faber ink eraser type # 101.

B. Clean (rub 20 times) with the following cleansers which are presumed to be readily available:

- 1 - Cleansing liquid and a damp cloth
- 2 - "Soft" household cleansing powder and a damp cloth
- 3 - Window cleansing fluids and a damp cloth

NOTE: For consistency of application, the laboratories use 409[®], Bon Ami[®] and Windex[®] brands of products for the tests in parts B.1, B.2 and B.3 respectively.

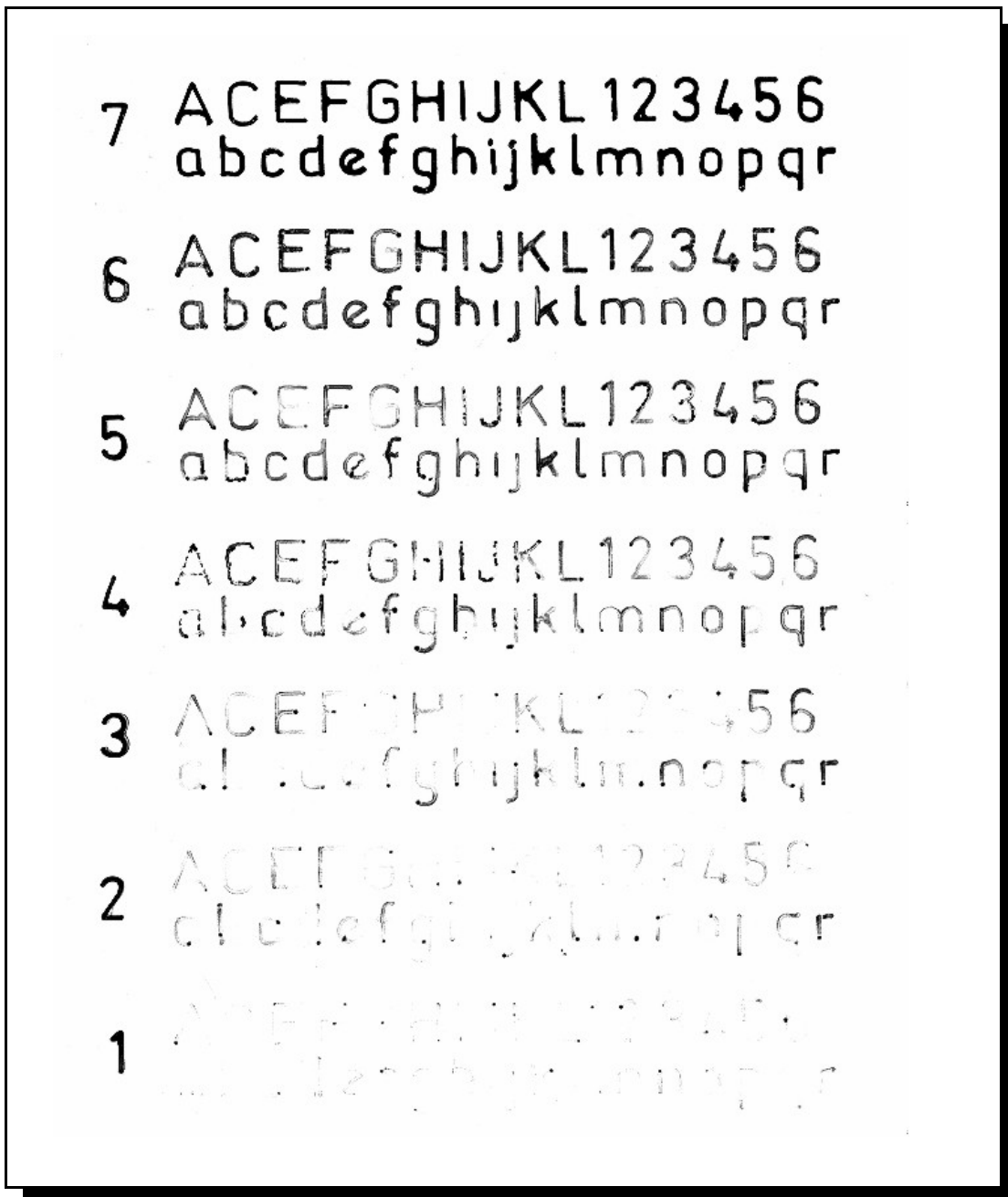
INTERPRETATION OF RESULTS:

The information marked on the label is deemed to be permanent if, after the test, the label receives a grading of four (4) or higher (see the sample below).

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SAMPLES VARIOUS DEGREES OF WEAR



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LG - 3.02 - PLATE, DECAL - PERMANENCE OF INSTALLATION AND DURABILITY OF THE MATERIAL

PURPOSE

To determine whether the label bearing identification markings (manufacturer's name, model and serial numbers, approval number, initial inspection marks or label) is permanently affixed to the device.

TEST PROCEDURE

An attempt is made to remove the specimen label(s) from the device by pulling it off or by prying off a metal badge that is only attached using adhesive. Any means of removal are allowed while a deliberate effort to conceal the removal is made.

INTERPRETATION OF RESULTS

An identification label is deemed to be permanently affixed to the device if it cannot be removed from the device and installed on another device without exhibiting readily observable signs of tampering. Acceptable indications of tampering are the destruction of the badge by tearing, permanent or extensive wrinkling, or the repeated exposure of the word "VOID" upon removal of the badge.

NOTES :

1. A plate that is riveted to the device is deemed to be permanently fastened if the part of the device to which it is attached is not readily removable.
2. For information such as lb/kg, motion annunciator, centre of zero annunciator, tare/net annunciator, Max, **e** and **d**, (if **d** is different from **e**), near the weight display, etc. (other than the identification markings: manufacturer's name, model, serial and approval numbers), a sticker that is sturdy and will not detach when subjected to the normal conditions of use of the device (heat, cold, humidity, cleaning) is acceptable. It does not have to be of the self-destructive type.

REVISION

- Rev.3 (January 2011)
-updated marking requirements for Load Cells
- Rev.2 (January 2010)
-marking requirements for Load Cells
- Rev.1 (Jan 2008)
- correct references to **e** and **d** as necessary.
 - correct reference to *Terms and Conditions for Metrological Software* in section 3.3.1
 - correct references to *Approval Evaluation Manual - Non Automatic Weighing Devices*.
 - remove reference "to the Public" from Direct Sales markings section 3.7
 - clarify multi-deck marking requirements in section 3.8
 - marking height is no longer a recommendation.
 - correct miscellaneous spelling errors and ensure consistent formatting.
 - clarify same units marking requirements for **Max** and **e/d**.
 - added marking requirement for Precious Metals & Precious Stones devices.
 - added auxiliary housing requirements.
 - correct references to *Specifications Relating to Non-automatic Weighing Devices (1998)*.
 - specify the minimum height of characters used for marking.