6/10B/72
11 March 2011

Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation

Certificate of Approval

No 6/10B/72

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in respect of the

Mettler Toledo Model 7260 Train Weighing-in-motion Weighing Instrument

submitted by Mettler Toledo Limited
220 Turner Street
Port Melbourne VIC 3207

has been cancelled in respect of new instruments as from 1 April 2011.

Signed by a person authorised by the Chief Metrologist to exercise his powers under Regulation 60 of the *National Measurement Regulations 1999*.

6/10B/72
6 July 2003

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Certificate of Approval

No 6/10B/72

Issued under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the

Mettler Toledo Model 7260 Train Weighing-in-motion Weighing Instrument

submitted by Mettler Toledo Ltd
220 Turner Street
Port Melbourne VIC 3207.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

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CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 June 2008, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 6/10B/72 and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the Commission and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with the Commission's Document NSC P 106.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

This approval shall NOT be used in conjunction with General Certificate No 6B/0.

Special: (Variants 2 and 3)

The submittor shall notify the Commission in writing of each instrument purporting to comply with variants 2 or 3 prior to it being submitted to a trade measurement authority/ licensed certifier for initial verification/certification.

Trade measurement authorities/licensed certifiers should not verify/certify any instrument purporting to comply with variants 2 or 3 until advised in writing by the Commission.

DESCRIPTIVE ADVICE

Pattern: approved 29 May 2003

- A Mettler Toledo model 7260 weighing-in-motion weighing instrument.

Variants: approved 29 May 2003

1. With Mettler Toledo model MTX load cells.
2. With an axle weighing platform.
3. With various components of the pattern replaced by certain other components.

Technical Schedule No 6/10B/72 describes the pattern and variants 1 to 3.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 6/10B/72 dated 6 July 2003
Technical Schedule No 6/10B/72 dated 6 July 2003 (incl. Test Procedure)
Figures 1 to 4 dated 6 July 2003

Signed by a person authorised under Regulation 60 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

TECHNICAL SCHEDULE No 6/10B/72

Pattern: Mettler Toledo Model 7260 Train Weighing-in-motion Weighing Instrument

Submittor: Mettler Toledo Ltd
220 Turner Street
Port Melbourne VIC 3207

1. Description of Pattern

A Mettler Toledo model 7260 weighing instrument for the determination of bogie axle masses, and hence the mass of each wagon and the total mass of a train, when weighed in motion. The instrument is approved for classes 0.5, 1 or 2 wagon weighing and classes 0.2, 0.5, 1 or 2 train weighing, with a maximum wagon weight of up to 120 t, a minimum wagon weight of at least 11 t, and a scale interval of at least 50 kg, over a speed range of 0.5 to 9 km/h.

1.1 Weighing Platform

The weighing platform (steel deck) supports a short section of rail track on four load cells (Figure 1) to weigh each bogie. The platform is fitted with stays to restrict both longitudinal and transverse movement.

1.2 Load Cells

Four Mettler Toledo model 0760 load cells of 45 000 kg maximum capacity are used and mounted as shown in Figure 1. The load cells are also described in the documentation of NSC approval No S252A.

1.3 Indicator/Controller

A Mettler Toledo model JagXtreme indicator (Figure 2) is used. This indicator is also described in the documentation of NSC approval No S339.

Systems shall be constructed to be within the approved parameters of the JagXtreme indicator (NSC No S339) and the load cells used (calculations such as those included in NSC General Certificate 6B/0 shall be carried out to determine this).

The JagXtreme indicator supplies weight data to the Mettler Toledo model 9411E controller (Figure 2). The controller uses weight data from the JagXtreme indicator, together with signals from track switches, and information from automatic vehicle identification systems (tag readers), to group axle weight data and determine wagon weights, total train weights and to determine unweighed vehicles (e.g. locomotives).

The model 9411E controller is connected to a printer for the output of measurement reports. In addition the controller may be connected to a computer system that may provide for remote downloading of train weighing results and entry of data such as train identification. The computer system may also be connected to a printer for the output of measurement reports.

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Following a weighing sequence the system returns to a 'ready to weigh' state (indicated by a light signal e.g. a green light) after a set period (which may vary between installations) in which no track switch, identification tag or weight information is received.

When a weighing sequence is commenced (track switch activation occurs), the instrument is zeroed automatically prior to weighing beginning.

1.4 Printout

The wagon identification, sequence number, speed, individual wagon mass and total train mass are printed.

For incorrectly weighed wagons (e.g. outside approved speed range, above maximum wagon weight or below minimum wagon weight) wagon identification details are printed together with a weighing status code "WtCd", however the wagon mass is not printed. The printout shall include a legend indicating the meaning of the weighing status codes.

Other information may also be printed but locomotive masses will not be printed.

As the total train weight printed excludes any incorrectly weighed wagons, the total shall be printed with a message "TOTAL (Excluding any incorrectly weighed wagons)".

The following is a sample printout format:

Weight Status Codes (WtCd): 1-Correctly Weighed, …..

CAR NUMBER	TRN SEQ	SPD	Units	WEIGHT	Units	WtCd	DIR	DATE	TIME
AUSB00013B	061-004	6.1	km/h	56300	kg	1	B	12.12.02	11:28
….									
AUSB00013B	061-012	5.7	km/h	48200	kg	1	B	12.12.02	11:30

TOTAL (Excluding any incorrectly weighed wagons) = 352600 kg

1.5 Track Switches

Up to eight track switches (Figure 3) are installed and operated by the wheels of the rail vehicles. The operating sequence provides the 9411E controller with logic signals to initiate the system, identify and distinguish locomotives from wagons, monitor train speed, make speed information available to the train driver, and determine train roll-back. Information regarding weighing status may be supplied to the train driver by means such as light signals.

1.6 Roll Back detection

The 9411E controller will stop registering weights when a roll back of rail wagons occurs. This is indicated by light signals, and it is necessary to reverse the train completely off the weighbridge, wait for the system to reinitialise, and then re-weigh the train.

1.7 Specifications

In-situ performance of the instrument will depend on site conditions and train configuration. It may therefore be necessary following in-situ testing (and in the light of results obtained) to restrict the range of operation in ways such as:

- Limiting the maximum or minimum wagon weights.
- Limiting the allowable speed range(s).
- A combination of both the above.

Such restrictions shall be marked on the nameplate of the instrument and where operation occurs outside the acceptable range(s), weight values should not be shown and an error message should appear (similar to the current overspeed arrangement).

Instruments may have differing specifications as described above, but shall be within the limits shown below:

Accuracy class train weighing	0.2, 0.5, 1 or 2
Accuracy class wagon weighing	0.5, 1 or 2
Maximum capacity	60 t per bogie
Minimum capacity	5.5 t per bogie
Scale interval	50 kg or 100 kg
Maximum wagon weight	Number of bogies x 60 t (or less)
Minimum wagon weight	Number of wheels x 5.5 t (or more)
Maximum operating speed	9 km/h or less
Minimum operating speed	0.5 km/h or more

1.8 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

1.9 Sealing Provision

Provision is made for the calibration adjustments in the JagXtreme indicator to be sealed by using destructible adhesive labels or lead and wire type seals to prevent access to within the body of the JagXtreme indicator (see NSC approval No S339 for details).

In addition, a switch on the 9411E controller main board (board TSM-300) can be set to prevent access to important setup/configuration settings. Access to this switch is prevented by sealing a bracket on the upper right corner of the rear of the 9411E controller case (Figure 4).

1.10 Descriptive Markings

Instruments bear the following basic markings at each location having a weight indication or printing device (the values given are provided as an example only):

Manufacturer's name or mark	…..
Importer's name or mark	…..
Model designation	…..
Serial number of the instrument	…..
Pattern approval mark	NSC No 6/10B/72
Accuracy class	
Train weighing	0.2
Wagon weighing	1
Maximum capacity	Max (bogie) = 32 t
Minimum capacity	Min (bogie) = 5.5 t
Scale interval	d = 50 kg
Maximum wagon weight	Number of bogies x 32 t
Minimum wagon weight	Number of bogies x 5.5 t
Maximum operating speed	v max = 9 km/h
Minimum operating speed	v min = 0.5 km/h
Maximum number of wagons per train (*)	n max .....

(*) If less than 60 wagons

The markings shall reflect details for which the particular installation has been verified. The maximum and minimum wagon weights and the maximum and minimum operating speeds may vary from those shown in the specifications (clause 1.7) but shall be within the limits specified there. For example, the maximum wagon weight will be related to the heaviest reference wagon used; the Commission should be consulted for guidelines regarding this.

Note 1: It is acceptable for more complex sets of markings to be provided. This may be necessary where (for example) it was necessary following in-situ testing to restrict operation to one speed range for wagon weighing and another speed range for train weighing. Such arrangements shall be clearly set out in the markings provided.

Note 2: Where an installation is only to be used with wagons of a particular configuration (e.g. all with 8 wheels) the maximum and minimum wagon weight values may be expressed as a value rather than the formula shown in the example.

2. Description of Variants

2.1 Variant 1

Using Mettler Toledo model MTX load cells of 45 000 kg maximum capacity (accuracy class C3 or C4) instead of the model 0760 load cells. The load cells are mounted as shown in Figure 1 and are also described in the documentation of NSC approval No S381.

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2.2 Variant 2

With an alternative axle weighing platform which determines the wagon mass and the total train mass by the weighing of individual axles.

NOTE: Agreement in writing to the particular axle weighing platform design shall be obtained from the National Standards Commission. Refer to the Special Conditions of Approval.

2.3 Variant 3

With various components of the pattern as listed below replaced by certain other compatible components.

NOTE: Agreement in writing to the substitution of components shall be obtained from the National Standards Commission. Refer to the Special Conditions of Approval.

- With alternative bogie or axle weighing platforms.
- With alternative Commission-approved load cells.
- With alternative track switches.

TEST PROCEDURE

Instruments shall be tested in accordance with any relevant tests specified in the Uniform Test Procedures, but with the maximum permissible errors for weighing-in-motion and the dynamic test procedure modified as follows:

1. Maximum Permissible Errors

The maximum permissible errors for weighing-in-motion shall be:

Wagon Weighing (Accuracy class 0.5, 1 or 2)

The maximum permissible error for dynamic weighing of a coupled wagon during initial verification/certification:

(a) ±N% of the wagon weight, rounded to the nearest scale interval;

(b) ±N%, rounded to the nearest scale interval, of the weight of a single wagon equal to 35% of the maximum wagon weight as inscribed on the descriptive markings; or

(c) ± one scale interval,

whichever is the greatest, where

N = 0.25 for accuracy class 0.5;

N = 0.50 for accuracy class 1; and

N = 1.00 for accuracy class 2.

Errors of not more than 10% of the weighing results, taken from one or more passes of the test train, may exceed the maximum permissible error but shall not exceed two times that value.

Train Weighing (Accuracy class 0.2, 0.5, 1 or 2)

The maximum permissible error for dynamic weighing of a train of coupled wagons during initial verification/certification shall be:

(a) ±T% of the total train weight, rounded to the nearest scale interval;

(b) ±T%, rounded to the nearest scale interval, of the weight of a single wagon equal to 35% of the maximum wagon weight as inscribed on the descriptive markings, times the number of wagons in the train but not exceeding 10 wagons; or

(c) ± one scale interval for each wagon in the train, but not exceeding 10 scale intervals,

whichever is the greatest, where

T = 0.10 for accuracy class 0.2;

T = 0.25 for accuracy class 0.5;

T = 0.50 for accuracy class 1; and

T = 1.00 for accuracy class 2.

In-service Errors

The maximum permissible errors applicable in-service are twice the values for initial verification/certification.

2. Dynamic Test Procedure

The dynamic test procedure and the number of test wagons in the test train are detailed below.

Test Train

The types and number of wagons shall be in accordance with the normal operation of the instrument provided that the number does not exceed 60.

The test train shall be made up of test wagons and normal operational wagons. The wagons shall be loaded to represent the loads weighed by the weighing instrument. If the loads vary, then wagons full, partially filled, and empty shall be used as applicable.

Number of Test Wagons

Each test train shall have not less than five and not normally more than 15 test wagons in accordance with the table below.

If the number of test wagons is less than the total number of wagons in a test train, the test wagons shall be distributed evenly throughout the train.

Total number of wagons in test train (n)	Minimum number of test wagons
n < 10	n
10 < n < 30	10
30 < n	15

3. Performance Requirements

The test train shall be weighed repeatedly to yield not less than 60 wagon weights or their equivalent in total train weight. Every weight indication and printout shall comply with the maximum permissible errors.

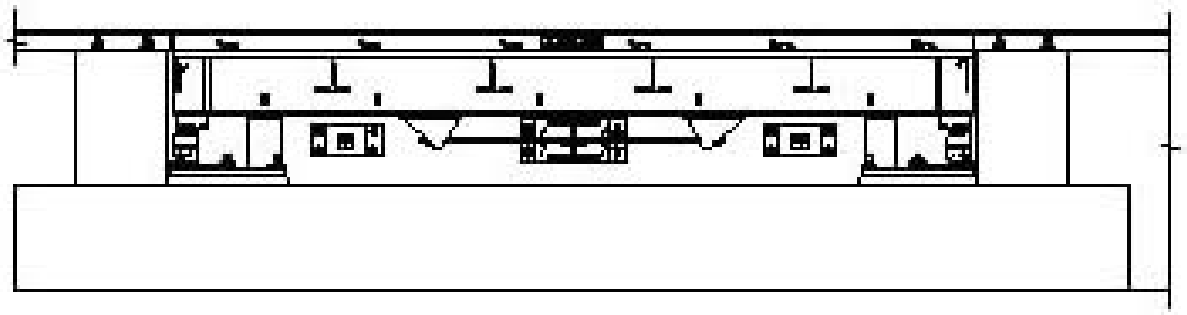
If applicable, repeat the tests for other speeds, other directions of travel, or other entry or exit tracks to or from the weighing instrument.

4. Other Tests

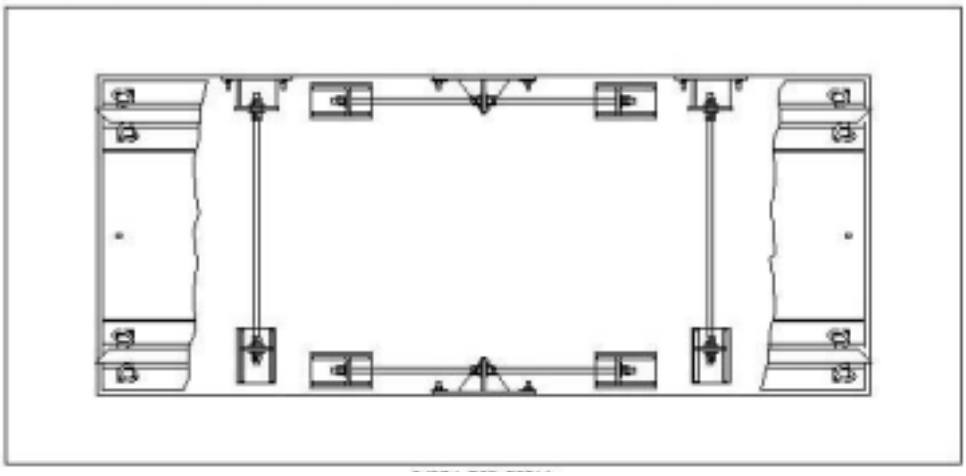
Carry out tests to check the correct operation of the instrument (including printed record) for:

- over or under speed;
- over weight;
- roll back; and
- calculations (totals).

FIGURE 6/10B/72 – 1



Side Elevation



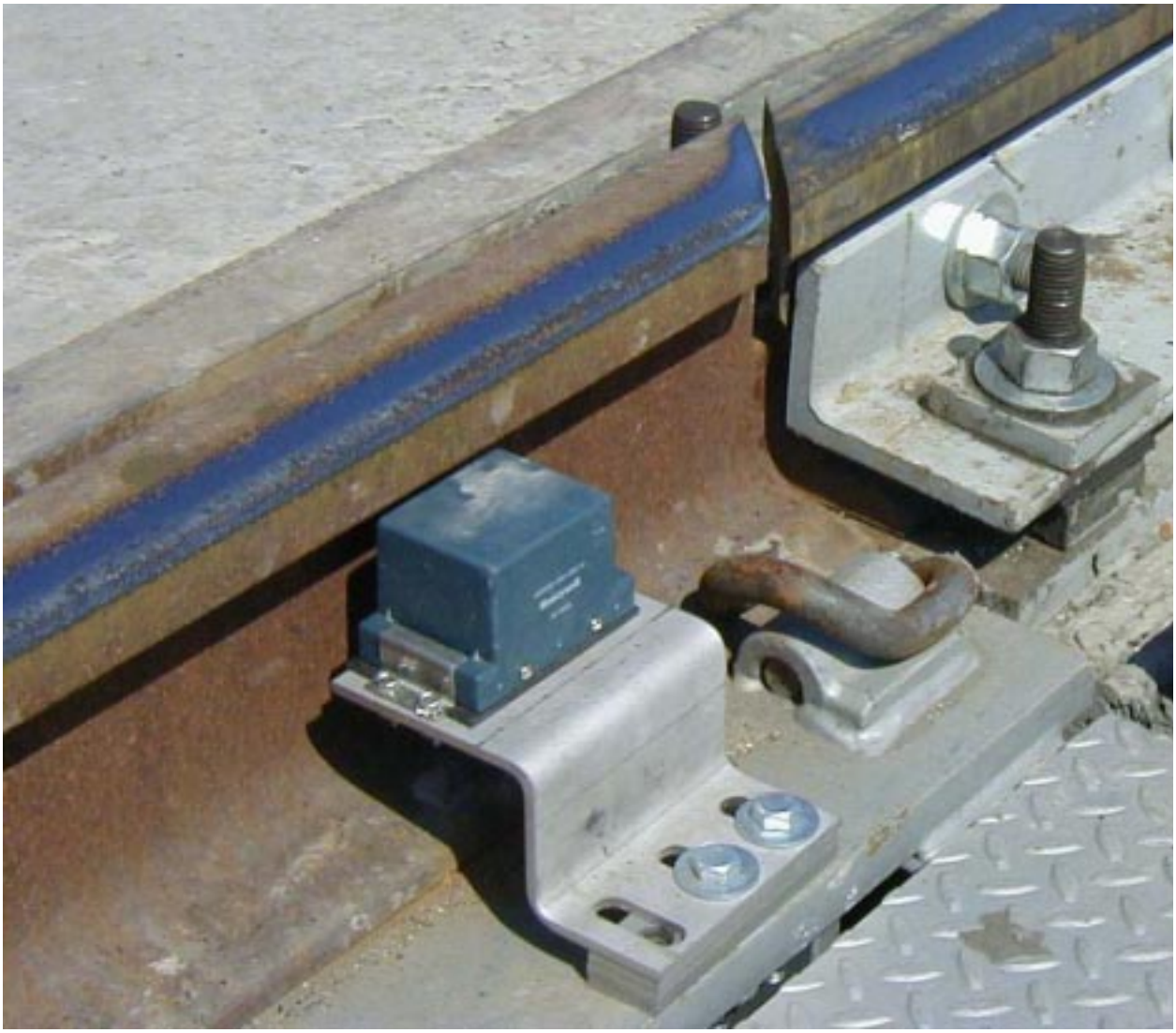
Plan – Showing Stays

Mettler Toledo Model 7260 – Weighing Platform

6/10B/72
6 July 2003

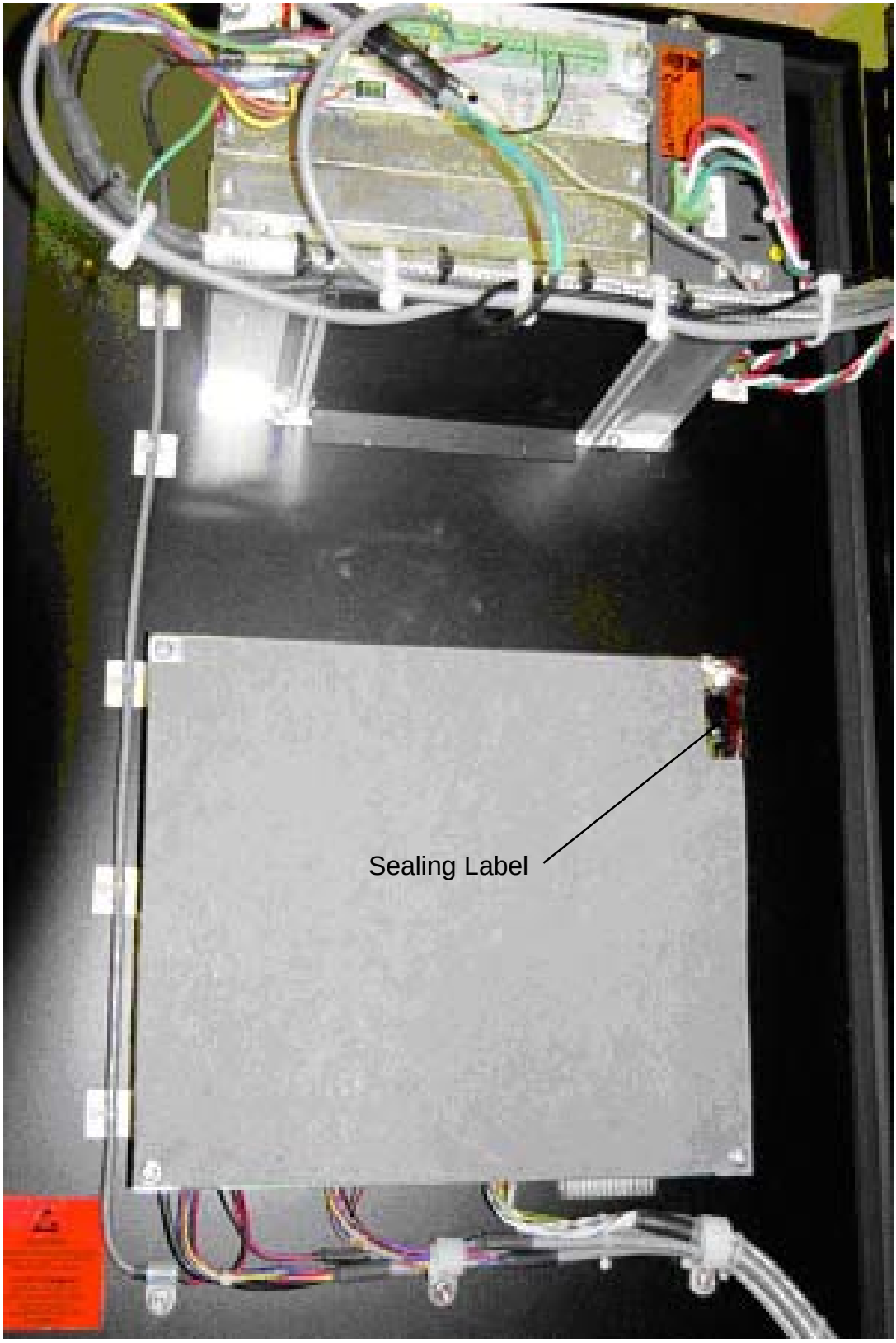
Mettler Toledo Model JagXtreme Indicator (top) and
Model 9411E Controller (bottom)

FIGURE 6/10B/72 – 3



Typical Track Switch

FIGURE 6/10B/72 – 4



Sealing of Bracket Over Calibration Switches