

## **Certificate of Approval**

## No 6/10B/47A

#### Issued under Regulation 9 of the National Measurement (Patterns of Instruments) Regulations

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

Chronos Richardson Model Railwight 8200 Weighing-in-motion Weighing Instrument

submitted by Evans Deakin Industries Limited 12 Boundary Street South Brisbane QLD 4101.

This Certificate is issued upon completion of a review of NSC approval No 6/10B/47.

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

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6/10B/47A

#### Certificate of Approval No 6/10B/47A

#### CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/1/96. This approval expires in respect of new instruments on 1/1/97.

Instruments purporting to comply with this approval shall be marked NSC No 6/10B/47A 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 drawings and specifications 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 106.

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

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

#### DESCRIPTIVE ADVICE

Pattern: approved 7/12/90

A Chronos Richardson model Railweight 8200 weighing-in-motion weighing instrument.

Variant: approved 7/12/90

1. With an alternative weighing platform.

Technical Schedule No 6/10B/47A describes the pattern and variant 1.

#### FILING ADVICE

The documentation for this approval comprises.

Certificate of Approval No 6/10B/47A dated 13/5/91 Technical Schedule No 6/10B/47A dated 13/5/91 (incl. Test Procedure) Figures 1 to 8 dated 13/5/91



# **Certificate of Approval**

## No 6/10B/47A

#### Issued under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations

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

Chronos Richardson Model Railweight 8200 Weighing-in-motion Weighing Instrument

submitted by Evans Deakin Industries Limited 12 Boundary Street South Brisbane QLD 4101.

**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.

## CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 January 1996. This approval expires in respect of new instruments on 1 January 1997.

Instruments purporting to comply with this approval shall be marked NSC No 6/10B/47A and only by persons authorised by the submittor.

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#### Certificate of Approval No 6/10B/47A

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

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the drawings and specifications 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 106.

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

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

#### Special: (for Variant 2)

The submittor shall notify the Commission in writing of each instrument purporting to comply with Variant 2 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 Variant 2 until advised in writing by the Commission of the suitability of the instrument.

#### DESCRIPTIVE ADVICE

Pattern: approved 7 December 1990

A Chronos Richardson model Railweight 8200 weighing-in-motion weighing instrument.

Variant: approved 7 December 1990

1. With an alternative weighing platform.

Technical Schedule No 6/10B/47A describes the pattern and variant 1.

Variant: approved 11 November 1994

2. With various components of the pattern replaced by certain other components.

Technical Schedule No 6/10B/54 Variation No 1 describes variant 2.

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#### FILING ADVICE

Certificate of Approval No 6/10B/47A dated 13 May 1991 is superseded by this Certificate and may be destroyed.

The documentation for this approval now comprises.

Certificate of Approval No 6/10B/47A dated 24 May 1995 Technical Schedule No 6/10B/47A dated 13 May 1991 (incl. Test Procedure) Technical Schedule No 6/10B/47A Variation No 1 dated 24 May 1995 Figures 1 to 8 dated 13 May 1991

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

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TECHNICAL SCHEDULE No 6/10B/47A

- Pattern: Chronos Richardson Model Railweight 8200 Weighing-in-motion Weighing Instrument
- Submittor: Evans Deakin Industries Limited 12 Boundary Street South Brisbane QLD 4101.

## 1. Description of Pattern

A Chronos Richardson model Railweight 8200 weighing instrument for the determination of individual axle masses, and hence the total mass of a train, when weighed in motion.

## 1.1 Weighing Platform

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

## 1.2 Load Cells

Four HBM model C3H2 load cells of 24 t maximum capacity are used and mounted as shown in Figure 2.

## 1.3 Indicator

A Chronos Richardson model Railweight 8200 indicator or a Dactron model DA 100 indicator (Figure 2) is used and is suitable for use with up to 1500 verification scale intervals. In addition, the indicator may be connected to speed signals, a printer, and a remote display/control unit (which may also be connected to a printer and keyboard for entry of data such as train identification).

The Railweight 8200 indicator has the following controls:

- (a) START WEIGH: Sets the instrument into the mode in which a weighing can begin.
- (b) LOCAL/REMOTE: (optional) Sets the indicator so that it is either operated by the controls on its panel, or those on the remote display/control unit.
- (c) TARE/GROSS: Used to select whether the weighing to be carried out is of the empty train (TARE or T), or the full train (GROSS or G).

Technical Schedule No 6/10B/47A

- (d) DISPLAY TEST: Performs a test of the instrument display.
- (e) END WEIGH: Sets the instrument to inhibit further weighing. When pressed following a weighing operation, the total train mass is printed; further operations will print duplicate weight bills.

The Railweight 8200 utilises a dynamic offset facility for low and high mass wagons in dynamic (in-motion) weighing mode only. This facility operates in a manner similar to a programmable 2 point linearisation facility.

TABLE 1

Type: Chronos Richardson Maximum number of verification scale intervals Minimum sensitivity Excitation voltage Minimum load impedance Maximum excitation current Railweight 8200 1 500

3.575 x 10<sup>-3</sup> mV/scale interval 11 or 14 V 58.3 ohms 189 mA

## 1.4 Printer

The printer will print "CALIBRATED: YES" to indicate that the system had been set to zero before commencement of weighing. The wagon sequence number, individual bogie mass, individual wagon mass and total train mass will also be printed, as will any overspeeding or other error messages. Additional information may also be printed but locomotive masses will not be printed.

## 1.5 Remote Control Unit

This incorporates a control to calibrate the system prior to commencement of weighing, and a control to cause the total train mass to be printed and the system to be reset, at the completion of weighing. These controls may be in the form of switches, or by an automatic control initiated by the arrival and departure of the train.

#### 1.6 Track Switches

A variety of track switches may be used (Figures 3 and 4) and these are operated by the wheel flanges of the rail vehicles. The operating sequence provides logic signals which initiate and calibrate the system, prevent the locomotive mass from being printed, enable the instrument to determine the type and positon of the wagon being weighed, detect any reversal of train movement, and monitor the speed of the wagons during weighing.

## 1.8 Markings

Instruments are marked with the following data, on one or more permanently attached nameplates:

Manufacturer's name or mark Serial number NSC approval - instrument NSC No 6/10B/47A numbers NSC No S - load cells Accuracy class  $\square$ Maximum capacity Max..... Minimum capacity Min ..... Verification scale interval e = d = ..... \* Maximum axle or bogie capacity ..... Speed range ..... km/h

\* Repeated adjacent to each reading face, if not already in that vicinity.

## 2. Description of Variant 1

With an alternative weighing platform (Figures 5 and 6) which determines the total train mass by weighing of individual bogies. The platform may be either an all steel construction with internal stays (Figure 7) or a concrete-filled steel frame with external stays (Figure 8).

## TEST PROCEDURE

Instruments shall be tested in accordance with any relevant tests specified in the Inspector's Handbook.

## Maximum Permissible Errors

After the instrument has been adjusted to zero at no load, the maximum permissible dynamic errors, at any speed within the specified range, shall not be greater than the following:

- (a) Total train mass:  $\pm 5$  t or  $\pm 0.2\%$  of the total train mass, whichever is the larger.
- (b) Wagon mass:  $\pm 1$  t or  $\pm 1.0\%$  of the wagon mass, whichever is the larger.

## Dynamic Repeatability Errors

The difference between any two indications obtained with respect to the same load under the same conditions shall not be greater than the absolute value of the maximum permissible dynamic errors above.



TECHNICAL SCHEDULE No 6/10B/47A

VARIATION No 1

Pattern: Chronos Richardson Model Railweight 8200 Weighing-in-motion Weighing Instrument

Submitteor: Evans Deakin Industries Limited 12 Boundary Street South Brisbane QLD 4101.

#### 1. Description of Variant 2

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.

## NOTIFICATION OF CHANGE

In Technical Schedule No 6/10B/47A dated 13 May 1991, clause **1**. Description of **Pattern** should be amended by adding the following:

"The instrument is approved for use over a speed range of 0.5 to 4.5 km/h."



Railweigh 8200 (Axle) Weighing Instrument

6/10B/47A 13/5/91



Dactron DA190 Indic tor (also known as Chronos Richardson & .ghline)



6/10B/47A 13/5/91

Alternative Track Switch



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Variant I (Bogie) Weighing Platform



Variant 1 Load Cell Mounting

FIGURE 6/10B/47A - 7



Variant I Platform With Internal Stays



Vuriant I Platform With External Stays

FIGURE 6/10B/47A - 8