6/10B/47
20/6/88

NATIONAL STANDARDS COMMISSION

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 6/10B/47

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

Railweight Model CT4000 Weighing-in-motion Weighing Instrument

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

CONDITIONS OF APPROVAL

General:

This approval is subject to review on or after 1/12/88.
This approval expires in respect of new instruments on 1/12/89.

Instruments purporting to comply with this approval shall be marked NSC No 6/10B/47.

The approval may be withdrawn if instruments are constructed other than as described in the drawings and specifications lodged with the Commission.

Special:

The use of BLH load cells is limited to the sites nominated in the Technical Schedule dated 29/11/83. These load cells may be replaced by the HBM load cells also described in that Technical Schedule at the discretion of the submittor.

Signed

Executive Director

Descriptive Advice

Pattern: approved 28/10/83

- Railweight model CT4000 weighing-in-motion weighing instrument.

Technical Schedule No 6/10B/47 describes the pattern.

Variant: approved 1/6/87

1. With a Dactron model DA100 indicator.

Technical Schedule No 6/10B/47 Variation No 1 describes variant 1.

..../2

Filing Advice

Certificate of Approval No 6/10B/47 dated 29/11/83, is superseded by this Certificate and may be destroyed.

The documentation for this approval now comprises:

Certificate of Approval No 6/10B/47 dated 20/6/88
Technical Schedule No 6/10B/47 dated 29/11/83
Technical Schedule No 6/10B/47 Variation No 1 dated 20/6/88
Test Procedure No 6/10B/47 dated 29/11/83
Figures 1 to 6 dated 29/11/83
Figures 7 and 8 dated 20/6/88

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 6/108/47

Pattern: Railweight Model CT4000 Weighing-in-motion Weighing Instrument

Submittor: Evans Deakin Industries Limited
12 Boundary Street
SOUTH BRISBANE QLD 4101.

1. Description of Pattern

A Railweight model CT4000 weighing instrument for the determination of individual wagon masses and total train masses, 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 stayed longitudinally and transversely.

The platform may be either of steel with internal stays (Figure 2) or a concrete filled steel frame with external stays (Figure 3).

1.2 Load Cells (Refer Table 1)

1.2.1 Approved Sites

The platform is supported on four HBM C3H2 30 t load cells, except at the following sites which are presently fitted with BLH type C2P1 22.7 t load cells.

(a) Norwich Park Mine, Queensland.

(b) Gregory Mine, Queensland.

(c) Campsie, New South Wales.

(d) Parkes, New South Wales.

Note: The load cells used at these sites may be replaced by the HBM cells described herein, at the convenience of the submittor.

1.2.2 Method of Mounting

Mounting is to be in accordance with the manufacturer's instructions and as shown in Figure 4.

1.2.3 Marking

The following is the minimum data required to be marked on the load cells:

Manufacturer's name or mark
Model number
Serial number
Maximum capacity
NSC approval number (if approved separately)

1.2.4 Specifications

TABLE 1

Type	HBM C3H2	BLH C2P1
Maximum capacity	30 t	22.7 t
Maximum number of verification scale intervals	2500	1500
Minimum dead load	1 t	1 t
Minimum value of verification scale interval	0.15 t	0.1 t
Input impedance (nominal)	350 Ω	350 Ω
Supply voltage (DC or AC)	10 or 15 V	10 or 15 V
Output rating (nominal)	2 mV/V	2 mV/V
Cable length (±0.1 m)	3 m	3 m
Number of leads	6	4

1.3 Headwork

The Railweight model CT4000 indicator (Figure 5) suitable for use with up to 2500e is used in a free standing cabinet containing the electronic equipment rack, a constant voltage transformer and a relay panel (if required for speed signals).

The electronic equipment rack is fitted with indicators and switches to facilitate local operation and testing of the instrument.

(a) Digital display, in normal operation will display each wagon mass when computed by the instrument. In the static test mode, the display will continuously indicate the instrument's computation of the mass on the weighing platform.

(b) Front panel indicators, show the status of the power supply, the printer control, and whether the system is calibrated or uncalibrated. The indicators on the control panel show the status of the mode switches.

(c) Mode switches, are configured to suit the requirements of the site. They may be used to select:

- Direction
- Tare or gross weighing
- Local or remote operation
- Automatic or manual operation
- Manual operation of the calibration and the train total weight function.

(d) Diagnostic panel, located behind the locked control panel, includes test and indication facilities.

1.4 Printer

An Extel model AH-11R free standing unit is located adjacent to, or remote from, the headwork. The printer will provide a printed record of the system having been automatically calibrated (set to zero), the wagon sequence number, the individual wagon mass, the total train mass and also record any overspeeding. Additional information may be printed but locomotive masses will not be printed.

1.5 Remote Control Unit

This will incorporate 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 re-set, 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 (refer para. 1.7).

1.6 Auxiliary or Peripheral Equipment

Keyboards, additional printers, communication interfaces, etc may be connected to the instrument subject to the conditions of General Certificate No S1/0.

1.7 Track Switches (Figure 6)

These are operated by the wheel flanges of the rail vehicles. The sequence of operation provides logic signals which initiate and calibrate the system, prevent the locomotive mass from being printed, enable the instrument to determine the type and position 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:

Manufacturer's name or mark	
Model number	
Serial number	
Accuracy class	(III)
NSC approval number	NSC No 6/10B/47
Maximum capacity	Max .....
Minimum capacity	Min .....
Verification scale interval	e = ...
Scale interval	d = ...
	(or e = d = ... if of the same value)
Maximum axle load	
Maximum train speed	
Maximum number of wagons in train	
Type of wagon (number of axles)	

TEST PROCEDURE No 6/10B/47

Tests should be conducted in accordance with Document 113 for testing of weighing-in-motion systems.

The maximum permissible errors are specified in Document 117, design rules for weighing-in-motion systems.

29/11/83

TECHNICAL SCHEDULE No 6/10B/47

VARIATION No 1

Pattern: Railweight Model CT4000 Weighing-in-motion Weighing Instrument.

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

1. Description of Variant 1

With the Dactron model DA100 train weighing indicator replacing the Railweight model CT4000 indicator.

1.1 Indicator

The Dactron DA100 indicator (Figure 7) is suitable for use with up to 1500 verification scale intervals and is connected to a basework as described for the pattern and track switches either as described for the pattern (Figure 6), or as shown in Figure 8. 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 DA100 indicator has the following controls:

(a) START WEIGH: Sets the instrument into the mode in which a weighing can begin.

(b) LOCAL/REMOTE: 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).

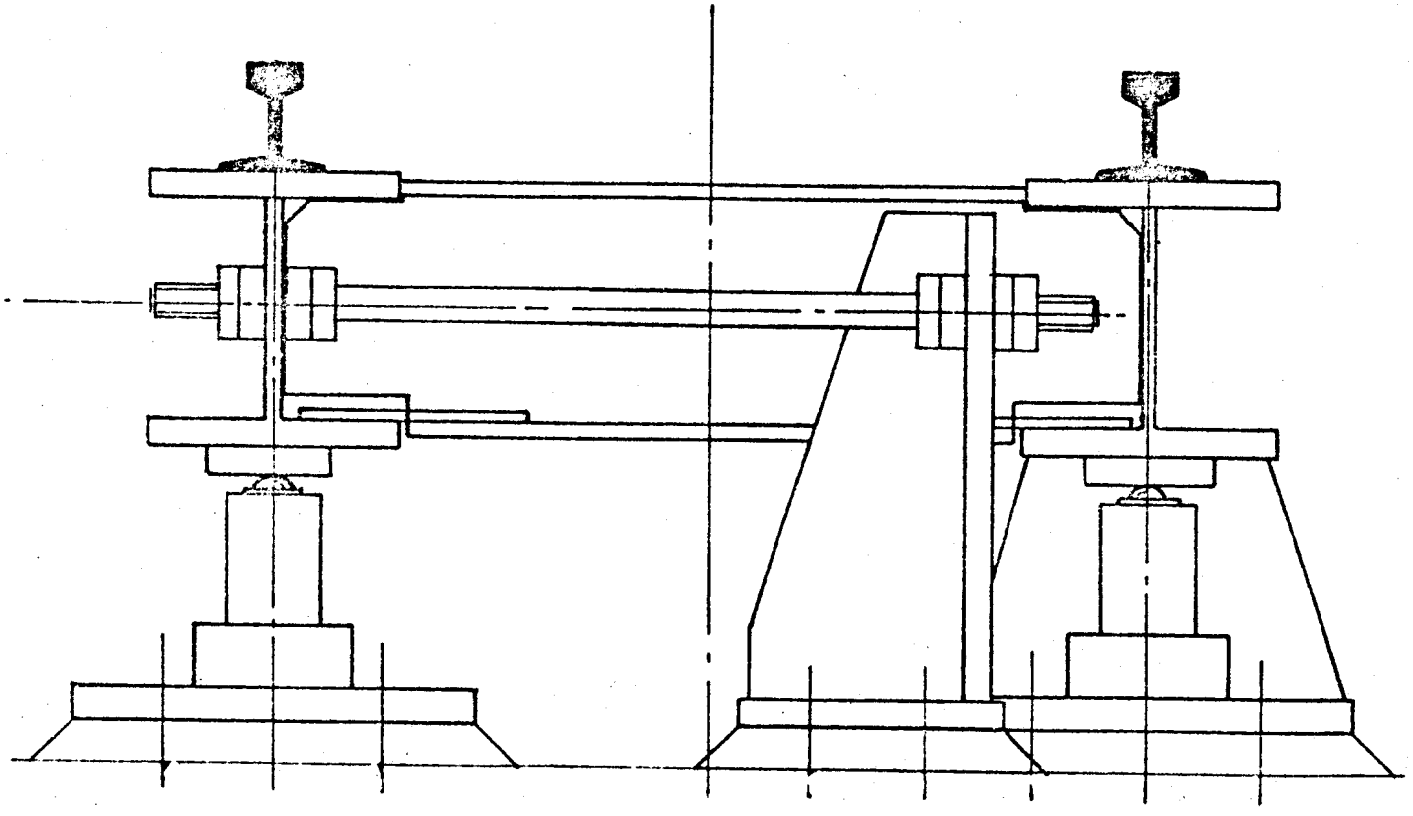
(d) DISPLAY TEST: Performs a test of the instrument display.

(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.

1.2 Printer

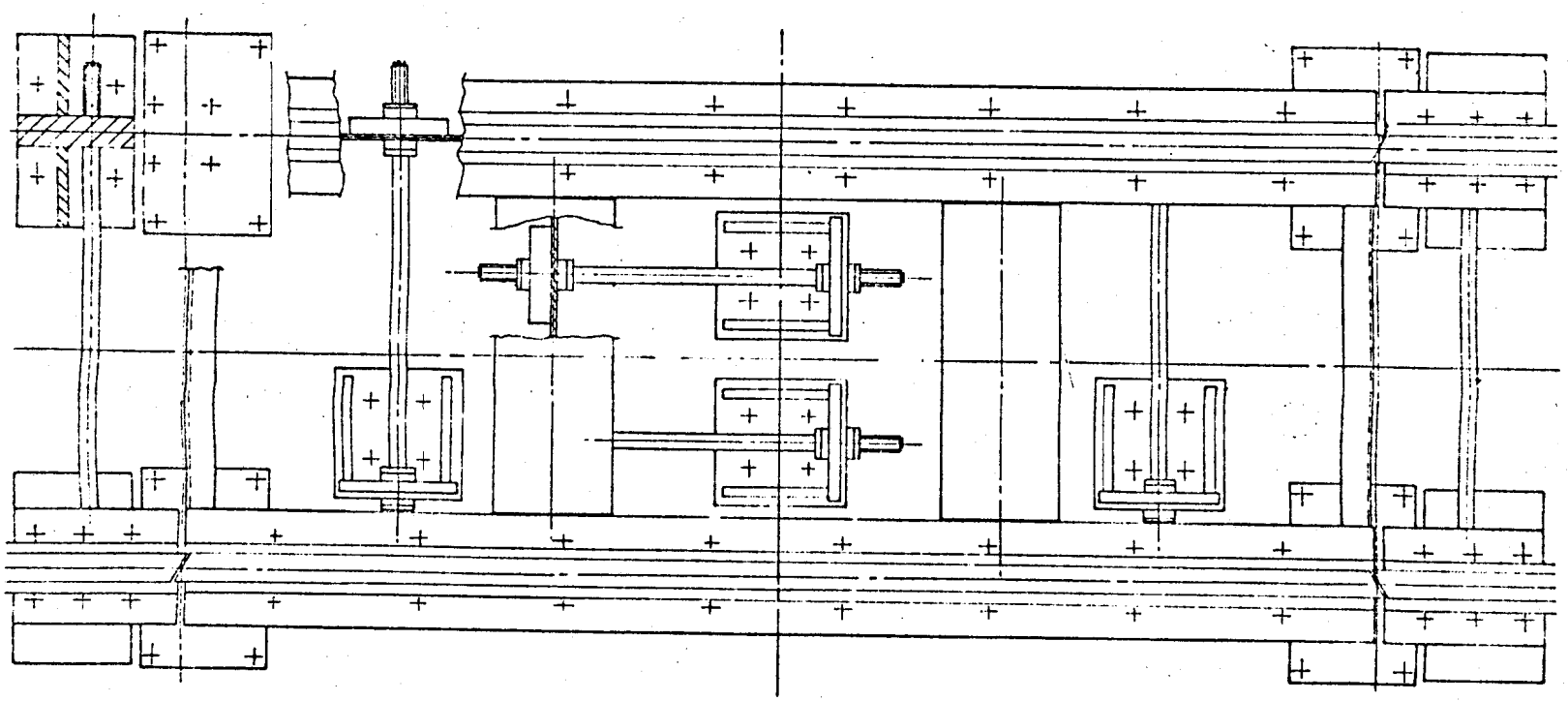
The printer will print "CALIBRATED: YES" to indicate that the system had been set to zero before commencement of weighing. The wagon sequence number, individual wagon mass and total train mass will also be printed, as will any overspeeding or other error messages. Additional information may also be printed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

FIGURE 6/10B/47 - 1

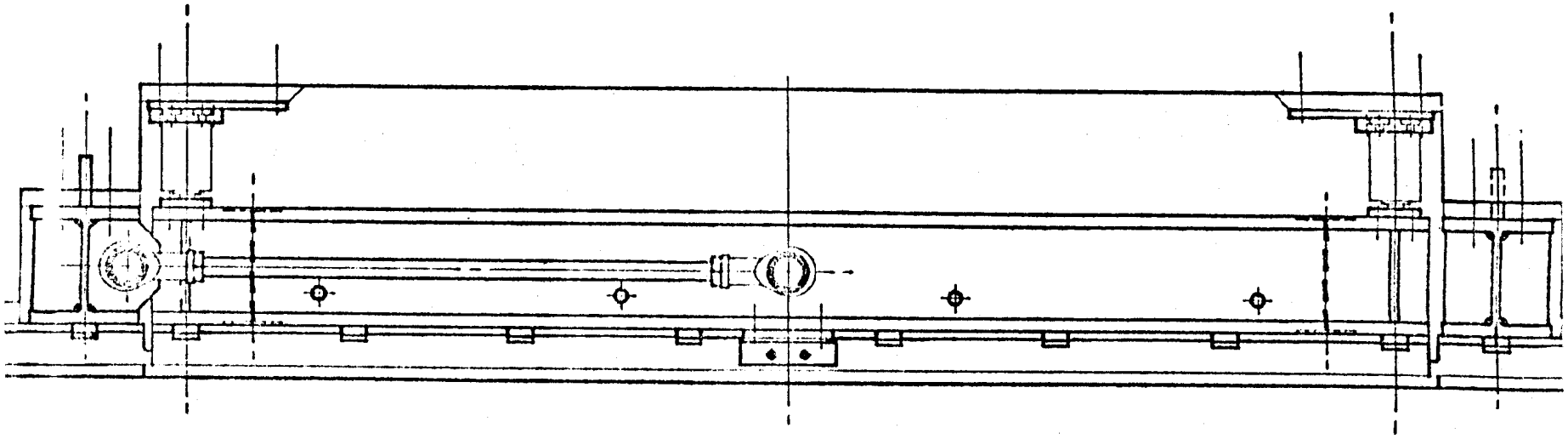


CT4000 Weighing Platform Showing Load Cells

FIGURE 6/10B/47 - 2

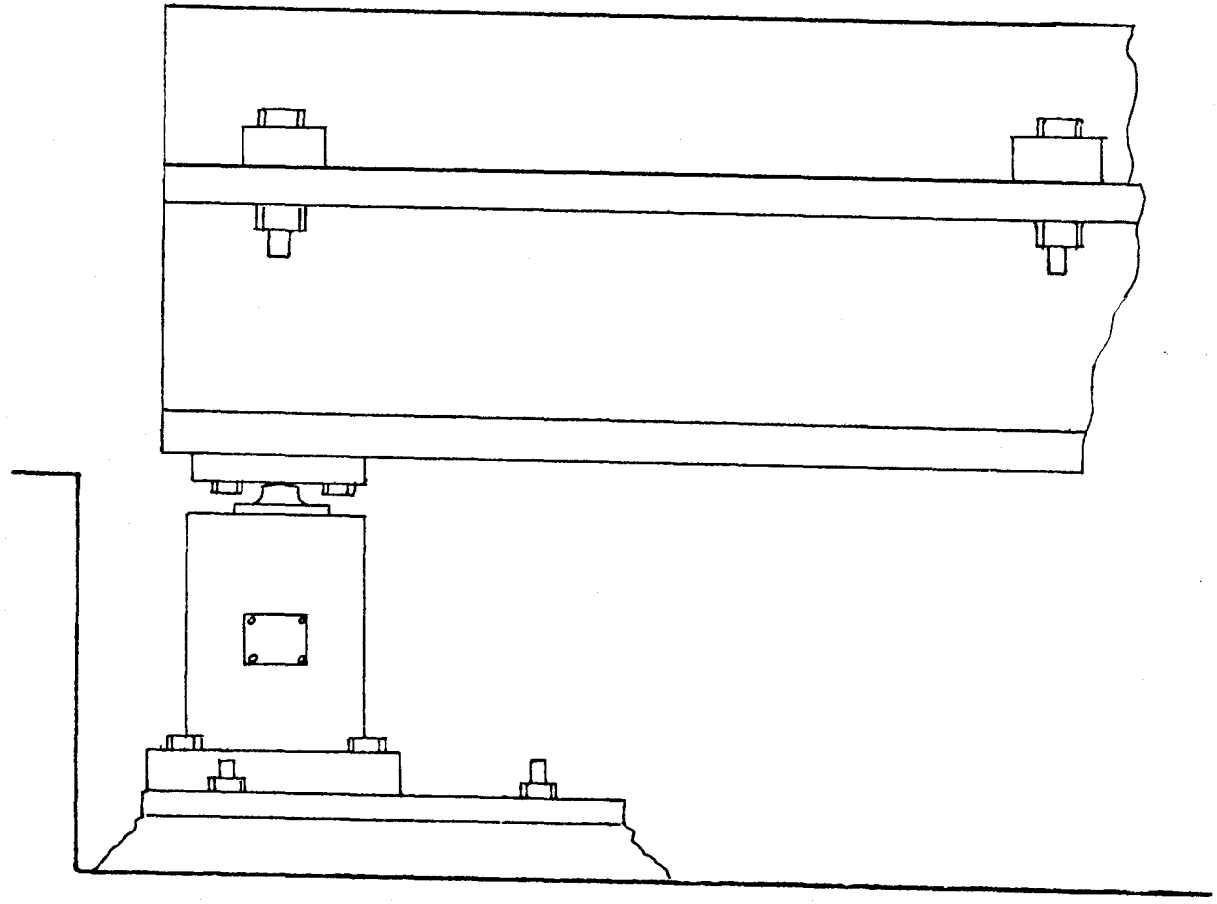


Platform With Internal Stays



Platform With External Stays

FIGURE 6/10B/47 - 4



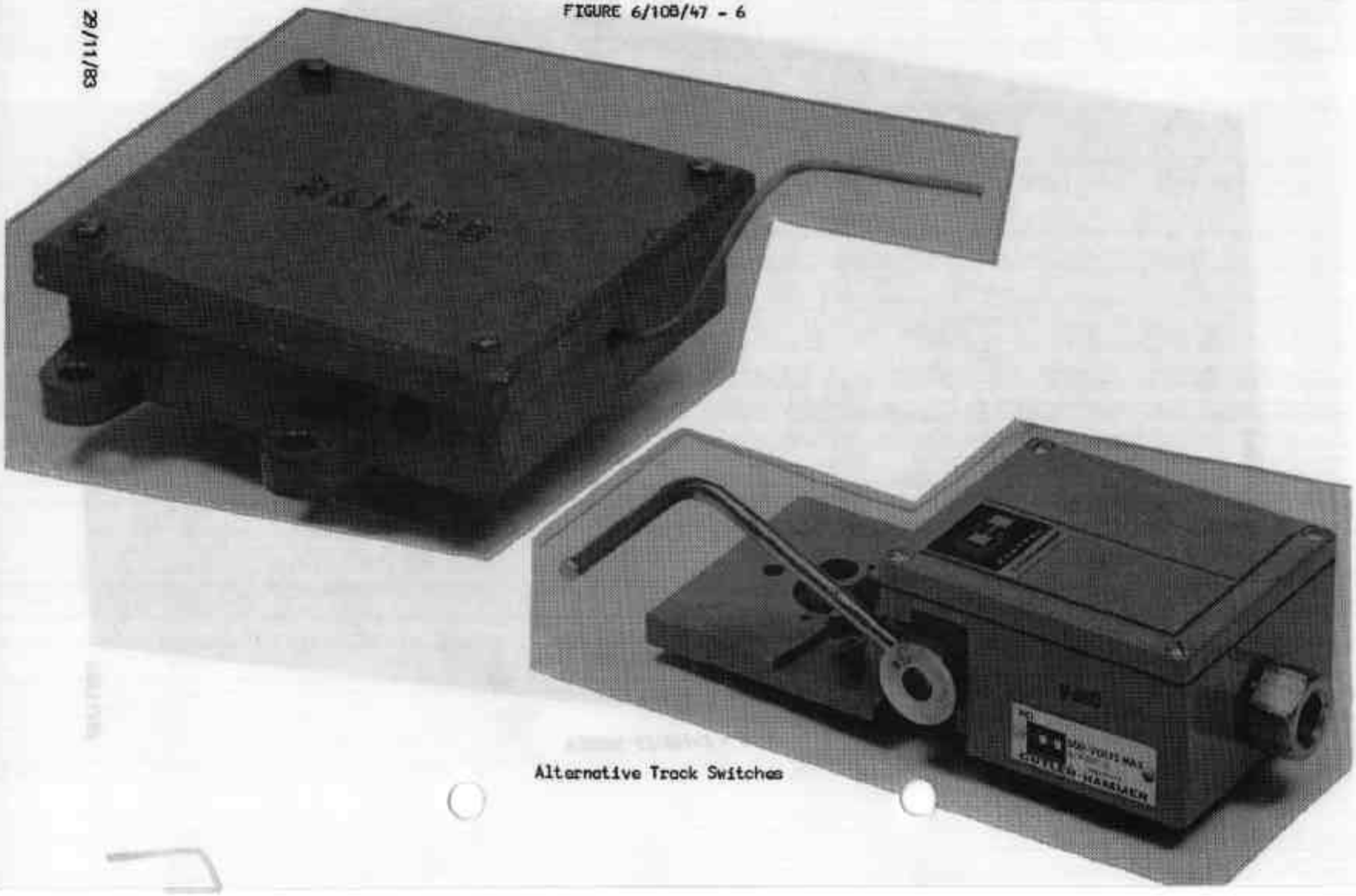
Load Cell Mounting

FIGURE 6/108/47 - 5

28/11/83

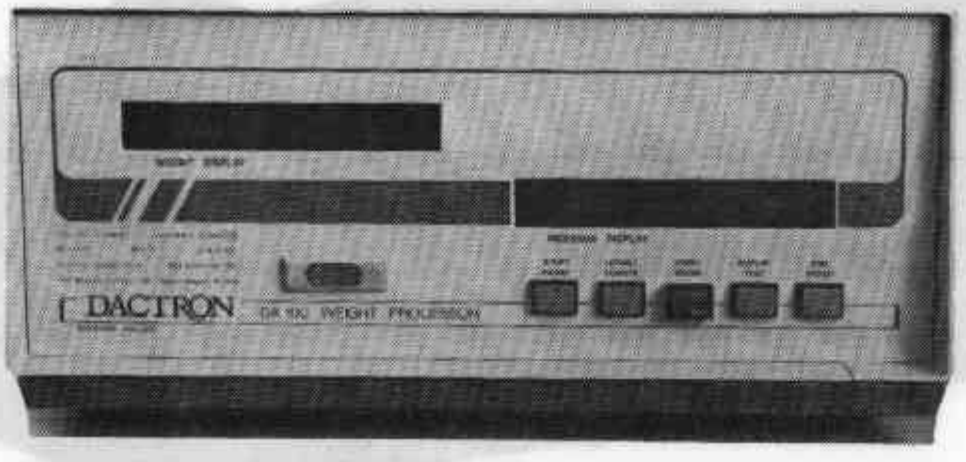
Model CT4000 Indicator

FIGURE 6/10B/47 - 6



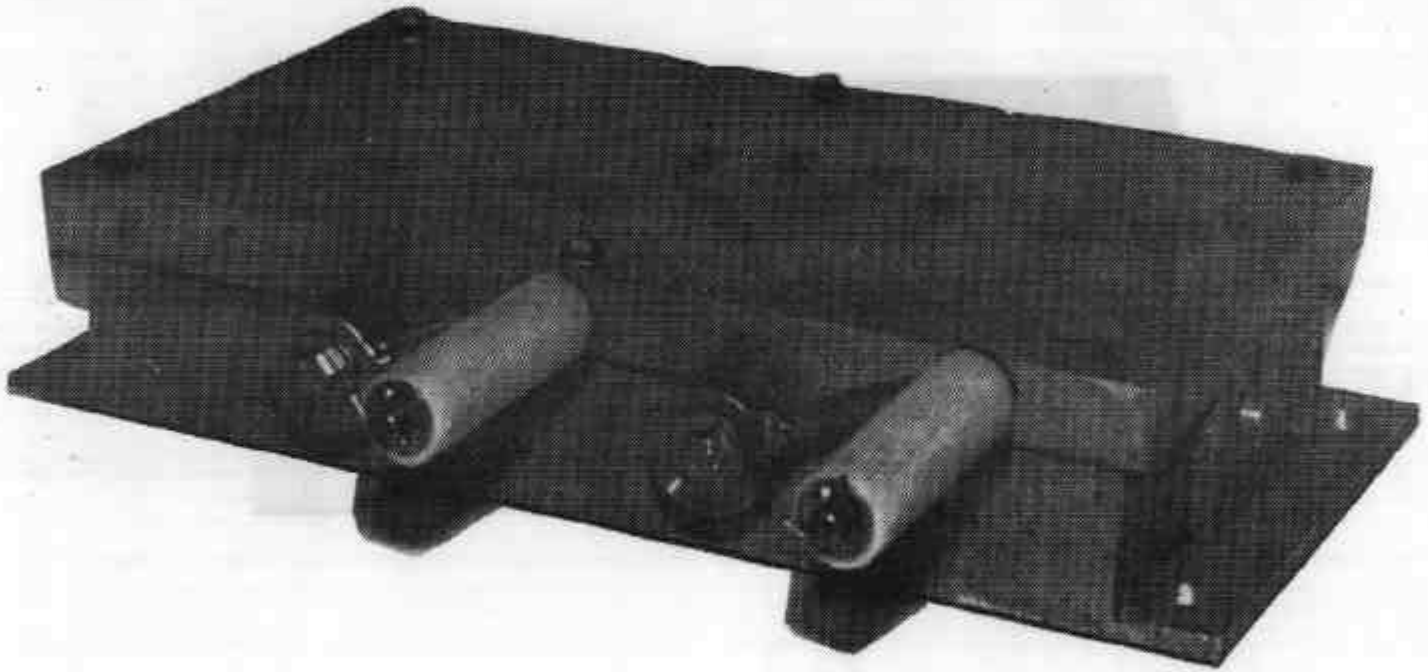
Alternative Track Switches

FIGURE 6/108/47 - 7



Dactron DA100 Indicator

FIGURE 6/108/47 - 8



Alternative Track Switch