

## National Standards Commission

12 Lyonpark Road, North Ryde NSW

### Cancellation Certificate of Approval No 6/14D/11A

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

Ramsey Model 10-14-4 Belt Weighing Instrument

submitted by Ramsey Technology  
20 Box Road  
Taren Point NSW 2229

has been cancelled in respect of new instruments as from 1 October 2000.

Instruments which were verified/certified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

## National Standards Commission



### Certificate of Approval

**No 6/14D/11A**

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

Ramsey Model 10-14-4 Belt Weighing Instrument

submitted by Ramsey Technology  
20 Box Road  
Taren Point NSW 2229.

**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 becomes subject to review on 1 January 1997, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 6/14D/11A and only by persons authorised by the submittor.

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

It is the submitter'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 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 Variants 4 and 9**

The submitter shall advise the Commission in writing of the proposed location and specifications of each instrument prior to it being verified/certified.

Instruments shall not be verified/certified until the person intending to carry out the verification/certification has been advised in writing by the Commission of the suitability of the instrument.

**Special: For Variant 5**

The approval of variant 5 expired in respect of new instruments on 31 December 1994.

This variant is limited to two instruments having serial numbers 10342/4A and 10342/4B located at the Mt Piper power station, Portland NSW.

DESCRIPTIVE ADVICE

**Pattern:** approved 9 December 1991

- A Ramsey model 10-14-4 class 1 belt conveyor weighing instrument.

**Variants:** approved 9 December 1991

1. A model 10-17-2 instrument.
2. A model 10-14AVE instrument.

**Variant:** approved 9 December 1991 – cancelled 17 June 1994

3. With various maximum and minimum flow rates, with weighframes of various capacities.

Technical Schedule No 6/14D/11A describes the pattern and variants 1 to 3.

**Variants:** approved 17 June 1994

4. With certain Revere BSP-A3-\*-30P5 series load cells.

**Variants:** approved 8 September 1994 – expired 31 December 1994

5. With Revere TSP 500 load cells.

Technical Schedule No 6/14D/11A Variation No 1 describes variants 4 and 5.

**Variants:** approved 11 September 1995

6. With a Ramsey model MIDI 44:201 digitiser/totaliser.

Technical Schedule No 6/14D/11A Variation No 2 describes variant 6.

**Variants:** approved 18 June 1997

7. With a Ramsey Micro-tech 2000 model 2101 integrator.

8. The pattern and variants as class 2 belt conveyor weighing instruments.

9. The pattern and variants with various maximum and minimum flow rates, with weighframes of various capacities.

Technical Schedule No 6/14D/11A Variation No 3 describes variants 7 to 9.

#### FILING ADVICE

Certificate of Approval No 6/14D/11A dated 16 July 1996 is superseded by this Certificate and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 6/14D/11A dated 30 September 1997

Technical Schedule No 6/14D/11A dated 24 January 1991 (incl. Test Procedure)

Technical Schedule No 6/14D/11A Variation No 1 dated 20 December 1994 (incl. Table 1 & Calculations)

Technical Schedule No 6/14D/11A Variation No 2 dated 16 July 1996

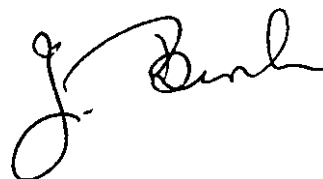
Technical Schedule No 6/14D/11A Variation No 1 dated 30 September 1997

Figures 1 to 4 dated 24 January 1991

Figure 5 dated 16 July 1996

Figure 6 dated 30 September 1997

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.





## National Standards Commission

### TECHNICAL SCHEDULE No 6/14D/11A

**Pattern:** Ramsey Model 10-14-4 Belt Conveyor Weighing Instrument.

**Submittor:** Ramsey Engineering  
20 Box Road  
Taren Point NSW 2229.

#### 1. Description of Pattern

The pattern is a Ramsey model 10-14-4 class I belt conveyor weigher of 1000 t/h maximum flow rate, approved for use over a flow rate range of 40% to 100% of maximum flow rate.

The instrument is approved with a maximum weigh length of 4.6 m and a maximum belt speed of  $3.6 \text{ m.s}^{-1}$ .

The instrument may be fitted with output sockets for the connection of auxiliary and/or peripheral equipment.

Means shall be provided to ensure that the conveyor cannot move in the reverse direction.

##### 1.1 Basework (Figure 1)

The model 10-14 weighframe has no less than 3 idler rollers mounted on a frame which is suspended from two beams which span the conveyor stringers. Four HBM model Z3H2 load cells of 200 kg capacity mounted in tension, connect the support beams to the floating weigh frame, which is stabilised by four tie rods.

##### 1.2 Belt Speed Sensor

A Ramsey model 60-12 digital speed sensor is used.

##### 1.3 Computing and Totalising Unit

A Ramsey model 10-201 digitiser/integrator is used (Figure 2).

##### 1.4 Verification/Certification Provision

Provision is made for a verification/certification mark to be applied.

## 1.5 Marking

Instruments shall be clearly and permanently marked on one or more permanently attached nameplates with the following information:

Manufacturer's name or mark	
Model number	
Serial number	
Accuracy class	
NSC approval number	NSC No 6/14D/11A
Maximum flow rate	Q max.....
Minimum totalised load	Min .....
Maximum capacity of the weighing unit	Max.....
Scale interval of the totaliser	d = .....
Belt speed	V = .....
Weigh length	L = .....

## 2. Description of Variants

### 2.1 Variant 1

A model 10-17-2 instrument with a model 10-17 weighframe with a weigh length of up to 4 m (Figure 3). Two idler rollers are mounted on a frame which has a fulcrum at one end consisting of two rubber bushes and is supported between the idlers by two HBM model Z3H2 load cells of 100 kg capacity.

### 2.2 Variant 2

A model 10-14AVE instrument which uses a model 10-14AVE weighframe (Figure 4). The weighframe is a 4-point suspended unit supporting between 3 and 20 idler rollers. The 4-point suspension comprises 4 Yamato model US3-500-C2 load cells of 500 kg maximum capacity (as described in NSC approval No S165).

### 2.3 Variant 3

With various maximum and minimum flow rates, using weighframes and Commission-approved load cells of various capacities.

The maximum flow rate may be up to 1500 t/h, and the minimum flow rate shall be not less than 20% of the maximum flow rate.

## TEST PROCEDURE

Instruments should be tested in conjunction with any relevant tests specified in the Inspector's Handbook.

### **Maximum Permissible Errors at Verification/Certification**

The maximum permissible error for class 1 belt conveyor weighing instruments is  $\pm 0.5\%$ .



## National Standards Commission

TECHNICAL SCHEDULE No 6/14D/11A

VARIATION No 1

**Pattern:** Ramsey Model 10-14-4 Belt Conveyor Weighing Instrument.

**Submittor:** Ramsey Technology  
20 Box Road  
Taren Point NSW 2229.

### 1. Description of Variants

#### 1.1 Variant 4

The model 10-14-4 or 10-14AVE instruments now with Revere BSP-A3-\*-30P5 series load cells of models and capacities as listed in Table 1. The load cells are also described in the documentation of NSC approval No S290.

Included in this Technical Schedule is a set of calculations which should be used to determine the suitability of the load cells in a particular belt conveyor weighing instrument.

(Refer to the Special Conditions of Approval in Certificate of Approval No 6/14D/11A dated 20 December 1994.)

#### 1.2 Variant 5

Two model 10-14-4 instruments now with Revere model TSP 500 load cells of 227 kg capacity. The load cells are also described in the documentation of NSC approval No S180. (Note that approval No S180 has been cancelled, however the load cells may be used in the two instruments covered by this variant.)

This variant is limited to two instruments of serial numbers 10342/4A and 10342/4B located at the Mt Piper power station, Portland, NSW. (Refer to the Special Conditions of Approval in Certificate of Approval No 6/14D/11A.)

### NOTE TO VERIFIERS/CERTIFIERS

The approval of variant 3, described in Technical Schedule 6/14D/11A dated 24 January 1992, has now been cancelled.



TABLE 1

Reverse BSP-A3-\* -30P5 series load cells of the models listed below where \* is replaced by the characters listed:

NOTE: All the figures in the table are in kilograms.

Model BSP-A3-* -30P5; for * read:	-250-	-500-	-1K-	-2.5K-
Maximum capacity - max (L)	120	227	450	1134
Minimum value of verification scale interval - $v_{min}$	0.031	0.035	0.091	0.15
Maximum number of verification scale intervals - $n_{max}$	1500	500	1000	2000

All installations fitted with the load cells listed in Table 1 shall comply with the calculations set out below.

CALCULATIONS

1. Load cell - number of scale intervals

$$\begin{aligned} \text{Class 1: } n_{max} &\geq 1000 \\ \text{Class 2: } n_{max} &\geq 500 \end{aligned}$$

2. Load cell - capacity

$$\text{Max (L)} \geq \frac{\text{Max (C)} + \text{DL}}{N \times R}$$

3. Temperature effect on the minimum load of the load cell

$$v_{min} \leq \frac{0.0007 \text{ Min (C)}}{\sqrt{N \times R}} \text{ for class 1}$$

$$v_{min} \leq \frac{0.0014 \text{ Min (C)}}{\sqrt{N \times R}} \text{ for class 2}$$

where:

Max (L) = Maximum capacity of load cell

Max (C) = Maximum capacity of belt conveyor weigher

$$= \frac{Q_{\max} \times L}{V}$$

Min (C) = Minimum capacity of belt conveyor weigher

$$= \frac{\text{Max (C)} \times Q_{\min}}{Q_{\max}}$$

DL = Dead load of weighframe

N = Number of load cells supporting weighframe

R = Lever ratio (if applicable)

L = Weigh length

V = Belt speed

Q<sub>max</sub> = Maximum flow rate

Q<sub>min</sub> = Minimum flow rate

v<sub>min</sub> = Minimum value of the verification scale interval for the load cell

n<sub>max</sub> = Maximum number of verification scale intervals for the load cell



6/14D/11A  
16 July 1996

## National Standards Commission

TECHNICAL SCHEDULE No 6/14D/11A

VARIATION No 2

**Pattern:** Ramsey Model 10-14-4 Belt Conveyor Weighing Instrument.

**Submitter:** Ramsey Technology  
20 Box Road  
Taren Point NSW 2229.

### 1. Description of Variant 6

With a Ramsey model MIDI 44:201 digitiser/integrator (Figure 5) as the computing and totalising unit.

TECHNICAL SCHEDULE No 6/14D/11A  
VARIATION No 3

**Pattern:** Ramsey Model 10-14-4 Belt Weighing Instrument.  
**Submittor:** Ramsey Technology  
20 Box Road  
Taren Point NSW 2229.

## **1. Description of Variants**

### **1.1 Variant 7**

With a Ramsey Micro-tech 2000 model 2101 integrator (Figure 6) as the computing and totalising unit.

#### **1.1.1 Non-resettable totaliser**

The instrument is provided with an additional remote indicator which is able to display the accumulated total during a power failure.

#### **1.1.2 Sealing**

Access to the calibration facilities of the integrator is secured by a password, and evidence of alteration of the calibration is provided by an audit trail.

##### **(i) Password**

The following procedure can be used to ensure that password protection has been enabled:

- (a) Select Main Menu 3.
- (b) Select the PROT option.
- (c) Select NONE.
- (d) The integrator should display "PROTECTION LEVEL PROTECTED – PASSWORD ENTER"; this indicates that a password is required to access the calibration feature.
- (e) Press the MENU key to return to the main menus.

##### **(ii) Evidence of calibration alteration (Audit Trail)**

The audit trail records each change to the calibration and set-up parameters of the instrument, including the old and new values (indicated by O and N). Access to the audit trail may be obtained by the following procedure:

- (a) Select Main Menu 6 (press the Menu key until this appears).
- (b) Select Audit Trail.
- (c) Press the downarrow key twice and wait for the audit trail to appear.

- (d) The integrator should display "TRAIL EVENT No ###". This number is incremented whenever calibration or set-up parameters are changed.

The TRAIL EVENT No shown should be recorded onto the calibration/verification label to indicate the value when calibration/verification was carried out.

The TRAIL EVENT No recorded on the calibration/verification label, and that indicated in step (d) above should be the same. Any discrepancy indicates that calibration data has been altered.

Earlier events in the audit trail may be examined by continuing to press the downarrow key, and the instrument may be returned to the normal operational mode by pressing the RUN key.

## 1.2 Variant 8

The pattern and variants as class 2 belt conveyor weighing instruments.

### **Maximum Permissible Errors at Verification/Certification**

The maximum permissible error for class 2 belt conveyor weighing instruments is  $\pm 1.0\%$ .

## 1.3 Variant 9

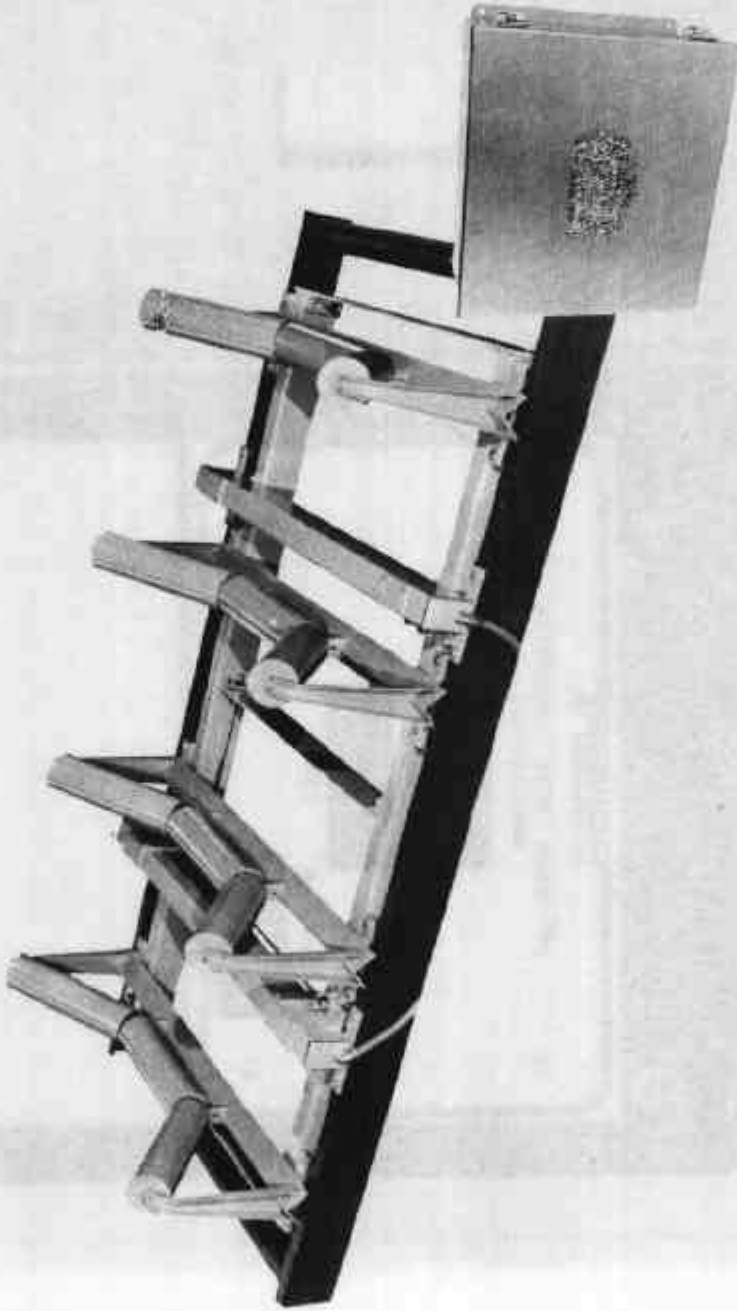
The pattern or variants with various maximum and minimum flow rates, with weighframes of various capacities using Commission-approved beam-type load cells of various capacities.

The instruments may be of various weigh lengths, and with various belt speeds.

The minimum flow rate shall be not less than 20% of the maximum flow rate.

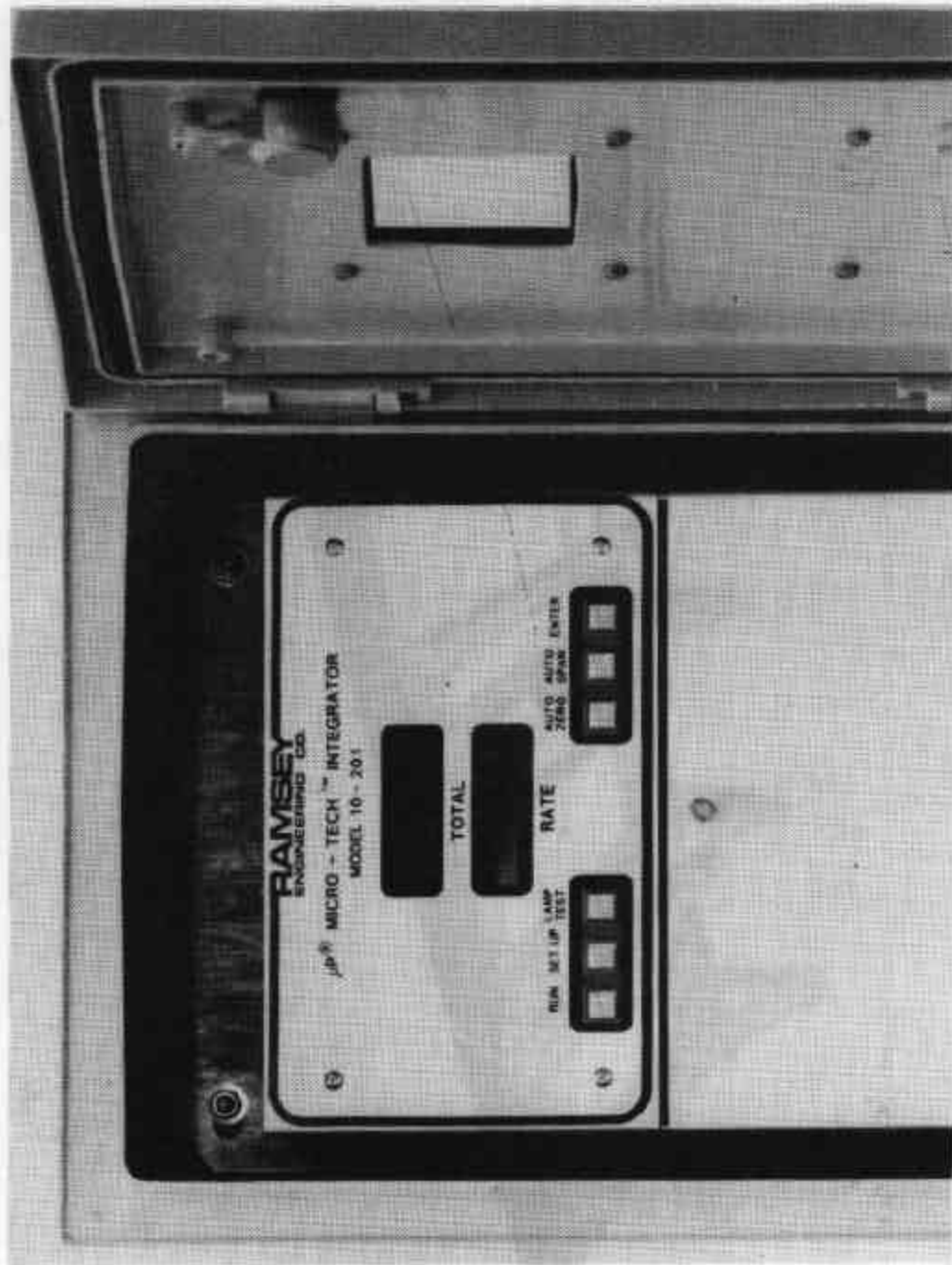
Included in Technical Schedule No 6/14D/14A Variation No 1 dated 20 December 1994 is a set of calculations which should be used to determine the suitability of the load cells in a particular belt conveyor weighing instrument. Refer to the Special Conditions of Approval.

FIGURE 6/14D/11A - 1



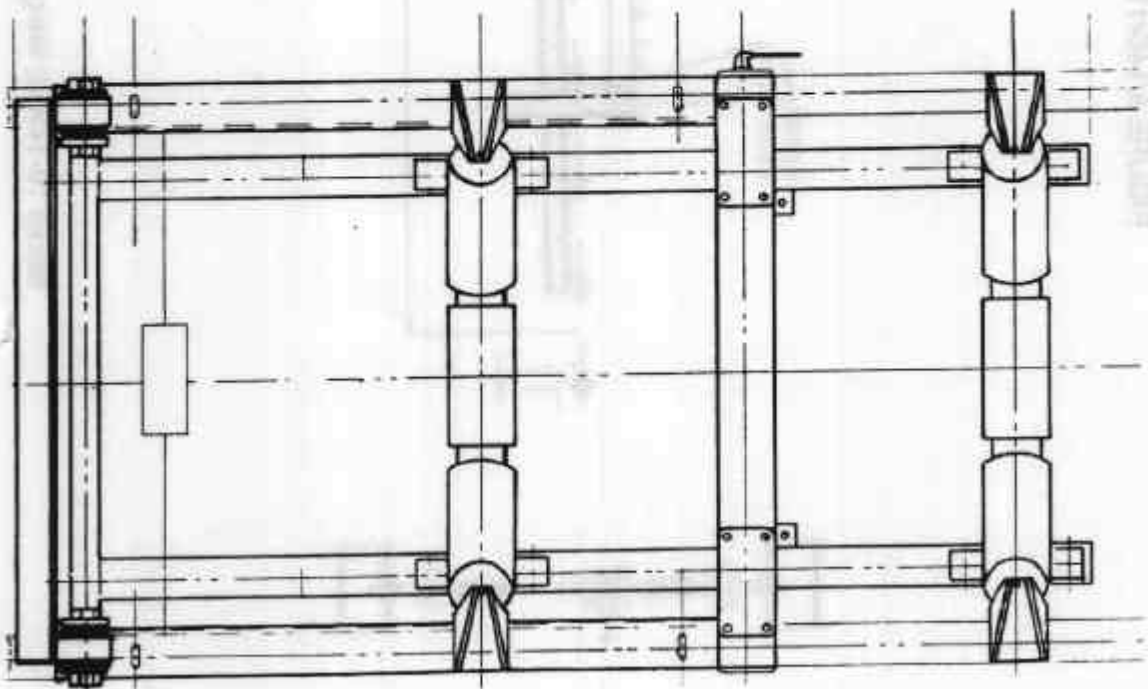
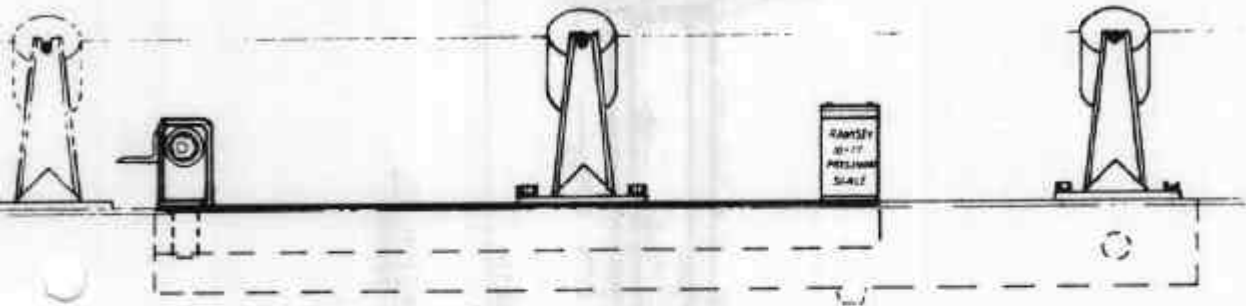
Ramsey Model 10-14 Belt Conveyor Weighframe

FIGURE 6/14D/11A - 2



Model 10-201 Digitiser/Integrator

FIGURE 6/14D/11A - 3

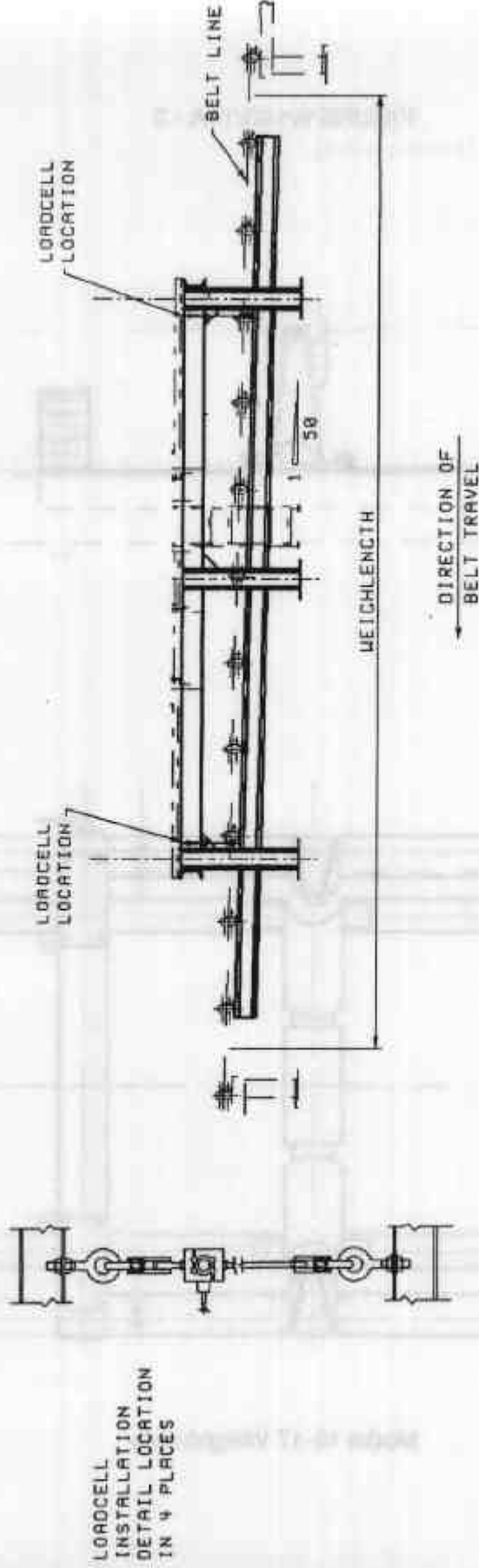


Model 10-17 Weighframe



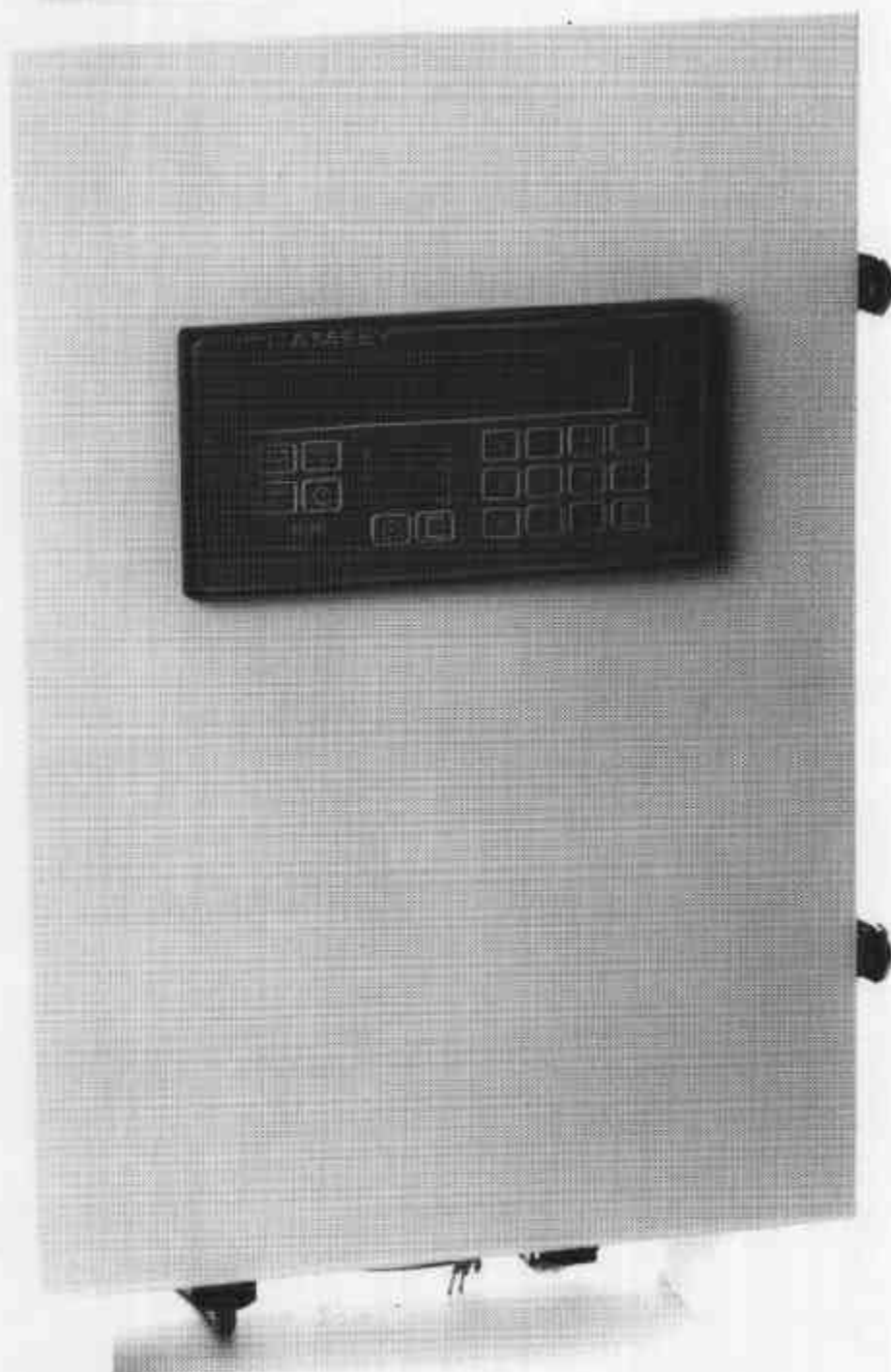
6/14D/11A  
24/1/82

FIGURE 6/14D/11A - 4



Model 10-14AVE Weighframe

FIGURE 6/14D/11A - 5



Ramsey Model MIDI 44:201 Digitiser/Integrator

FIGURE 6/14D/11A - 6



Ramsey Micro-tech 2000 Model 2101 Integrator