



Australian Government

**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Notification of Change

Supplementary Certificate of Approval No S451

Change No 2

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

The following changes are made to the approval documentation for the

A & D Model AD-4406 Digital Indicator

submitted by A & D Mercury Pty Ltd
 (now A & D Australasia Pty Ltd)
 32 Dew Street
 Thebarton SA 5031.

- A. In Supplementary Certificate of Approval No S451 dated 2 February 2005;
1. The Condition of Approval referring to the review of the approval should be amended to read:
- “This approval becomes subject to review on 1 February **2015**, and then every 5 years thereafter.”
2. The FILING ADVICE should be amended by adding the following:
- “Notification of Change No 1 dated 7 April 2005
 Notification of Change No 2 dated 1 February 2010”
- B. In Supplementary Certificate of Approval No S451 and its Technical Schedule both dated 2 February 2005, the references to the name of the submitter should be amended to read:
- “**A & D Australasia Pty Ltd**”
- C. In Technical Schedule No S451 dated 2 February 2005, clause **1.10 Markings and Notices** should be amended to read, in part:
- “Name or mark of manufacturer’s agent **A & D Australasia Pty Ltd**”

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

A handwritten signature in black ink, appearing to be 'M. J. ...', written over a horizontal line.



Australian Government
**National Measurement
Institute**

12 Lyonpark Road, North Ryde NSW 2113

Supplementary Certificate of Approval
No S451

Issued by the Chief Metrologist 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

A & D Model AD-4406 Digital Indicator

submitted by A & D Mercury Pty Ltd
32 Dew Street
Thebarton SA 5031.



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 February 2010, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S451' and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S451' in addition to the approval number of the instrument.



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 National Measurement Institute (NMI) 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 document NMI P 106.

The National Measurement Institute 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.

DESCRIPTIVE ADVICE

Pattern: approved 27 January 2005

- An A & D model AD-4406 digital indicator.

Variant: approved 27 January 2005

1. Models AD-4405 and AD-4407 digital indicators.

Technical Schedule No S451 describes the pattern and variant 1.

FILING ADVICE

The documentation for this approval comprises:

- Supplementary Certificate of Approval No S451 dated 2 February 2005
- Technical Schedule No S451 dated 2 February 2005 (incl. Table 1 and Test Procedure)
- Figures 1 to 6 dated 2 February 2005

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



TECHNICAL SCHEDULE No S451

Pattern: A & D Model AD-4406 Digital Indicator

Submittor: A & D Mercury Pty Ltd
32 Dew Street
Thebarton SA 5031

1. Description of Pattern

An A & D model AD-4406 digital mass indicator (Table 1 and Figure 1) which may be configured to form part of:

- A weighing instrument with a single weighing range of up to 4000 verification scale intervals; or
- A multi-interval weighing instrument with two partial weighing ranges (each with its own verification scale interval) in which case it is approved for use with up to 4000 verification scale intervals per partial weighing range.

The instrument has a liquid crystal display (LCD) including provision for display of the weight value and for alphanumeric information/menus.

Instruments operate with A & D version r 200 software. Software identification information is displayed immediately following start-up.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

This approval does not include the use of the indicator as an automatic weighing instrument, unless specifically mentioned in a certificate of approval for such an instrument.

TABLE 1 – Specifications

Maximum number of verification scale intervals	4000 or 4000 per range
Minimum sensitivity	2 μ V/scale interval
Excitation voltage	5 V DC
Maximum excitation current	57.5 mA

1.1 Zero

Zero may be automatically corrected to within $\pm 0.25e$ whenever the instrument comes to rest within $0.5e$ of zero (in the case of multi-interval configurations e in this sentence refers to e_j).

The instrument has a semi-automatic zero-setting device (to set the instrument to within $\pm 0.25e$ of zero) with a nominal range of not more than 4% of the maximum capacity of the instrument.

The instrument has an initial zero-setting device with a nominal range of not more than 20% of the maximum capacity of the instrument.

1.2 Tare

A semi-automatic subtractive tare device that has a capacity of up to the maximum capacity may be fitted. A non-automatic keyboard-entered subtractive pre-set taring device that has a capacity of up to the lower verification interval range of the instrument may also be fitted.

1.3 Display Check

A display check is initiated whenever power is applied.

1.4 Power Supply

Power supply may be either:

- 7-10 V DC supplied by an AC/DC mains adaptor or other DC power source; or
- batteries – typically 6 x C cell (alkaline, NiMH or NiCad).

Note: The AC/DC mains adaptor supplied was an A & D model MKD-0800300SAR power supply (input 240 V, 50 Hz, 55 mA, and output 8 V DC, 300 mA) – the submitter should be consulted regarding the acceptability of alternative power supply units.

1.5 Linearisation Facility

Instruments are fitted with a linearisation correction facility having up to three programmable correction points.

1.6 Additional Facilities

The indicator has additional features, including facilities for accumulation of weight values, set points, and the facility for delivering a batch of a product. However, this approval does not include the use of the indicator as an automatic weighing instrument. Indication other than the indications of measured mass (i.e. gross, tare, net) displayed either on the indicator or on an auxiliary or peripheral device, are not for trade use

1.7 Interfaces

The indicator may be fitted with one or more of the following interfaces:

- RS-232C;
- RS-422/RS-485;
- Relay output;
- Control input; and
- Analogue output.

1.8 Sealing Provision

Provision is made for the access to the calibration adjustments to be sealed as shown in Figure 2.

1.9 Verification/Certification Provision

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

1.10 Markings and Notices

Instruments carry the following markings:

Manufacturer's mark, or name written in full	A & D Company Ltd, Japan
Name or mark of manufacturer's agent	A & D Mercury Pty Ltd
Indication of accuracy class	Ⓜ
Maximum capacity	Max kg #1
Minimum capacity	Min kg #1
Verification scale interval	e = kg #1
Maximum subtractive tare	T = - kg #2
Serial number of the instrument
Pattern approval mark for the indicator	NMI S451
Pattern approval mark for other components #3

#1 These markings are also shown near the display of the result if they are not already located there.

#2 This marking is required if *T* is not equal to *Max*.

#3 May be located separately from the other markings.

In addition, instruments not greater than 100 kg capacity shall carry a notice stating NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC, or similar wording.

For multi-interval instruments the markings shall be as above, with the exception of the following (examples are for instruments with two partial ranges):

Maximum capacity	Max/..... kg #1
Verification scale interval	e =/..... kg #1

2. Description of Variant 1

The model AD-4405 and model AD-4407 indicators (Figures 3 and 4) which share the major designs and functionalities described for the pattern, however they are in different housings and have a larger keypad.

Both models are powered by 240 AC mains supply only.

The model AD-4405 has an inbuilt printer for print out of weight values.

The model AD-4407 has a stainless steel housing but does not have an inbuilt printer.

Provision is made for the access to the calibration adjustments to be sealed as shown in Figures 5 and 6.

TEST PROCEDURE

Instruments should be tested in conjunction with any tests specified in the approval documentation for the instrument to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the Uniform Test Procedures.

Maximum Permissible Errors at Verification/Certification

For single range instruments, the maximum permissible errors for increasing and decreasing loads on initial verification/certification for loads, m , expressed in verification scale intervals, e , are:

- $\pm 0.5e$ for loads $0 \leq m \leq 500$;
- $\pm 1.0e$ for loads $500 < m \leq 2\,000$; and
- $\pm 1.5e$ for loads $2\,000 < m \leq 10\,000$.

For multi-interval instruments with verification scale intervals e_1, e_2, \dots , apply e_1 for zero adjustment, and for maximum permissible errors apply e_1, e_2, \dots , as applicable for the load.

1. For checking the software versions:

The pattern, model AD-4406, press and hold [F1] + [F2], then press [Net/B/G].

Variant 1, models AD-4405 and AD-4407, press and hold [Net/B/G] + [on/off] keys, then press [Net/B/G] key.

2. For the variant 1, models AD-4405 and AD-4407, the option of pressing ZERO key with TARE key, instead of CAL switch to access the calibration parameter shall be disabled.



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**National Measurement
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12 Lyonpark Road, North Ryde NSW 2113

Notification of Change
Supplementary Certificate of Approval No S451
Change No 1

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

The following changes are made to the approval documentation for the

A & D Model AD-4406 Digital Indicator

submitted by A & D Mercury Pty Ltd
32 Dew Street
Thebarton SA 5031.

In Technical Schedule No S451 dated 2 February 2005;

1. TABLE 1 should be amended as shown below:

“Minimum sensitivity	0.5 μV/scale interval
Maximum excitation current	57.5 mA (models AD-4405 & AD-4406) 115 mA (model AD-4407)”
2. Clause 2. **Description of Variant 1** should be amended by adding the following to the 1st paragraph:

“Specifications are given in Table 1.”

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

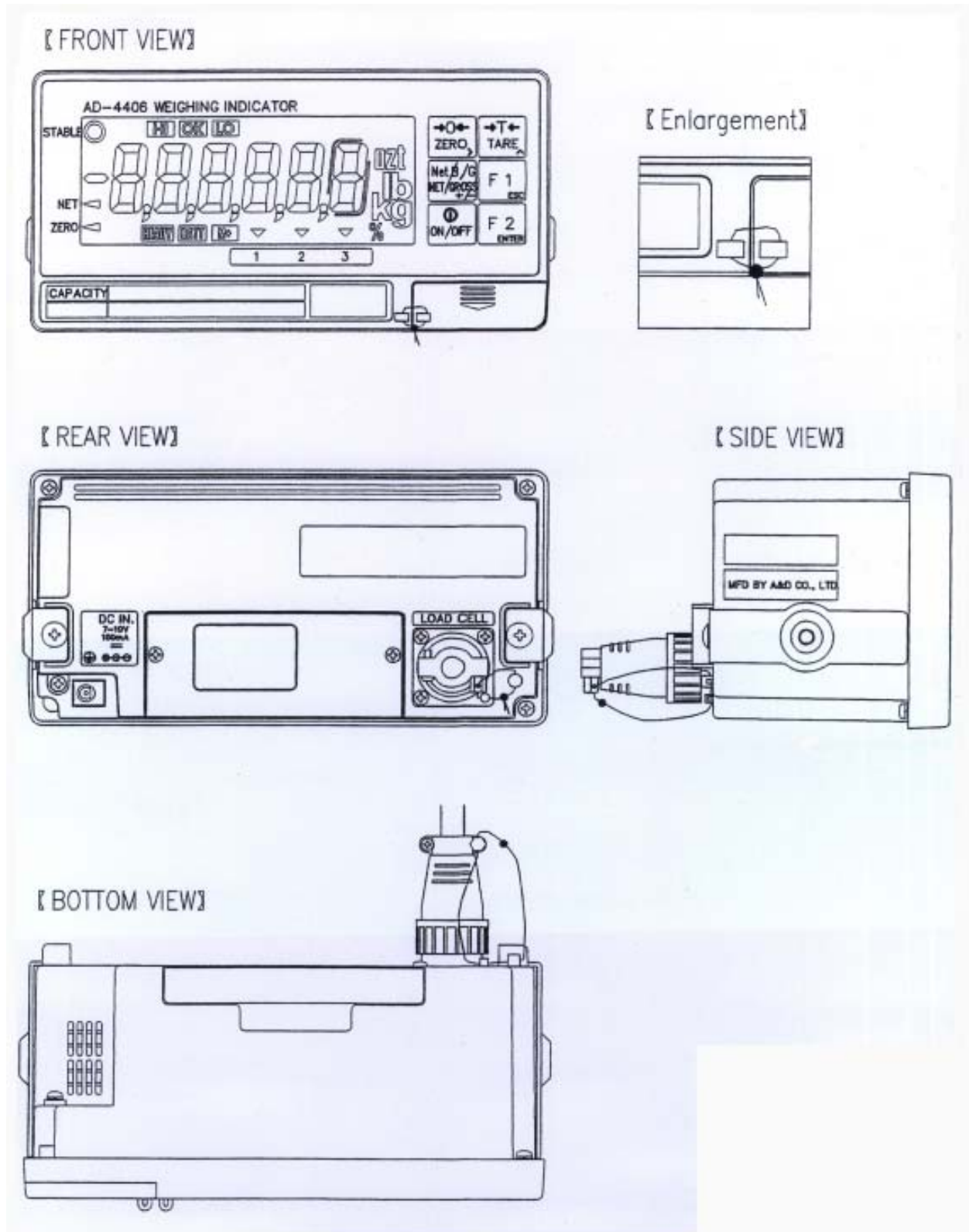
A handwritten signature in black ink, appearing to be 'J. G. T.', is located in the bottom right corner of the page.

FIGURE S451 – 1



A & D Model AD-4406 Digital Indicator

FIGURE S451 – 2



Typical Sealing of A & D Model AD-4406 Digital Indicator

FIGURE S451 – 3



A & D Model AD-4405 Digital Indicator

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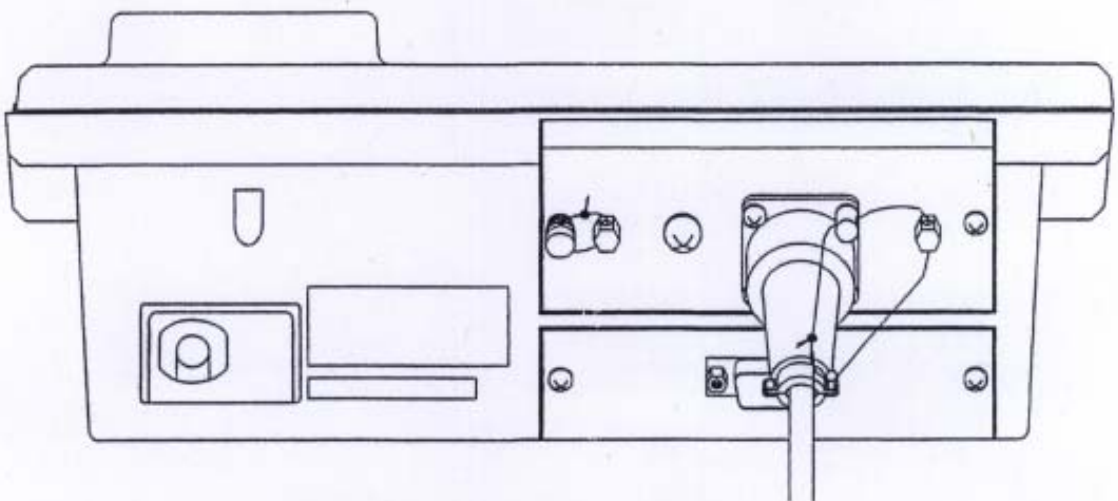
FIGURE S451 – 4



A & D Model AD-4407 Digital Indicator

FIGURE S451 – 5

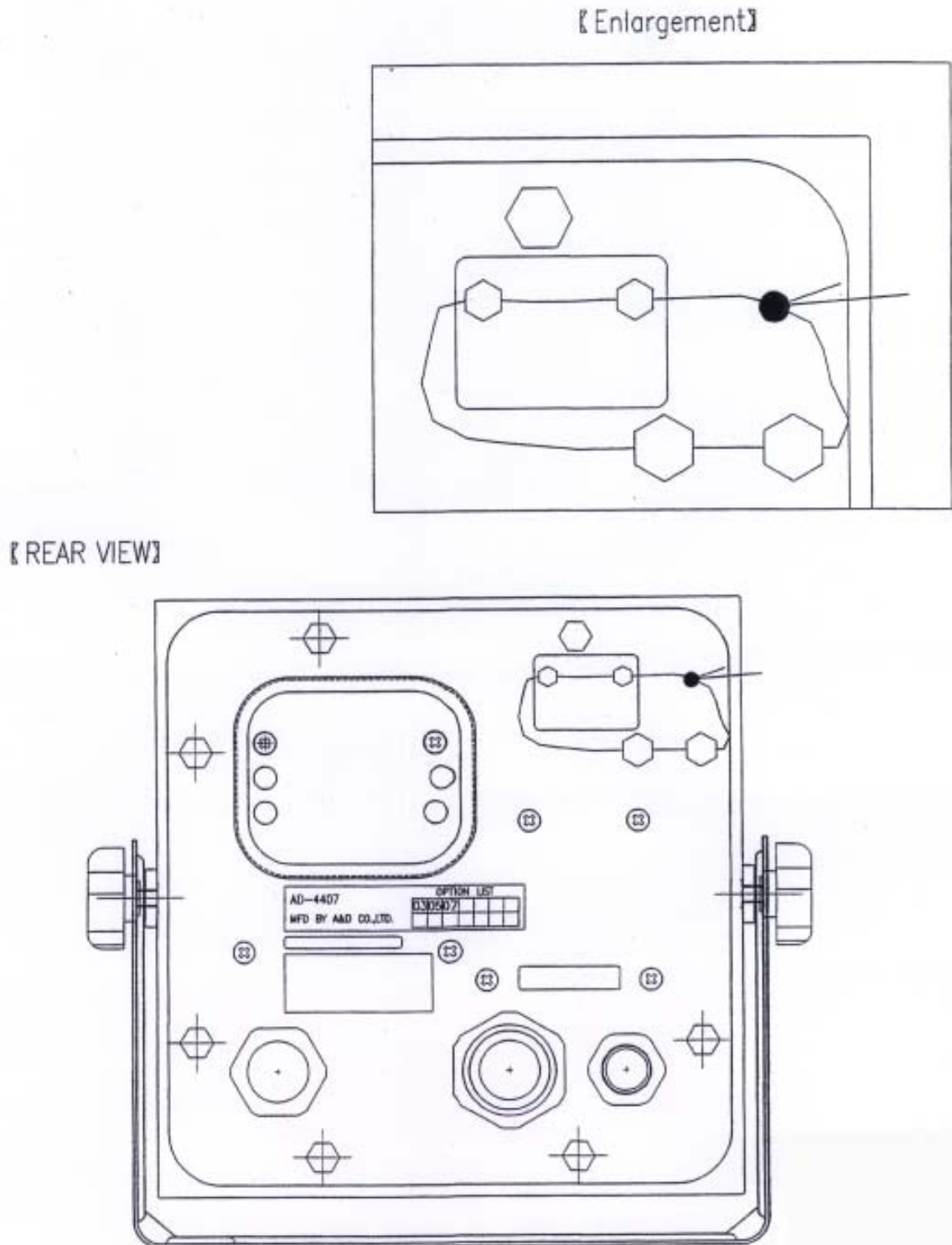
{ REAR VIEW }



Typical Sealing of A & D Model AD-4405 Digital Indicator

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FIGURE S451 – 6



Typical Sealing of A & D Model AD-4407 Digital Indicator