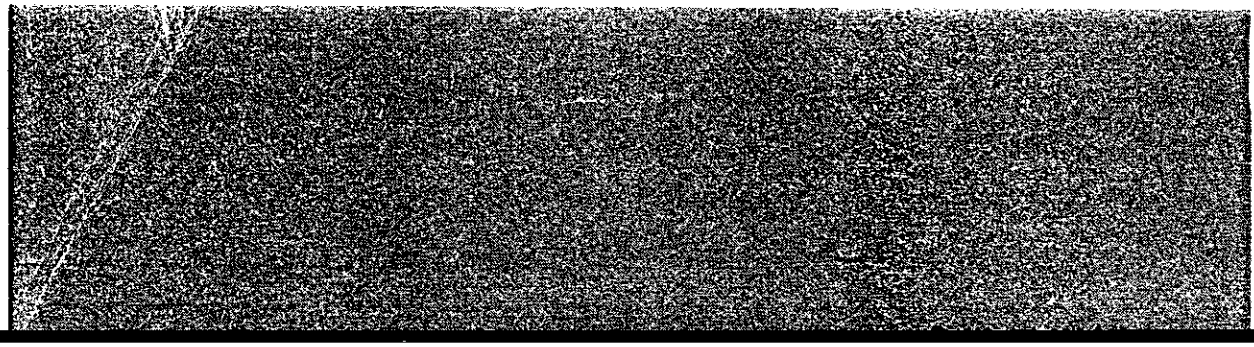
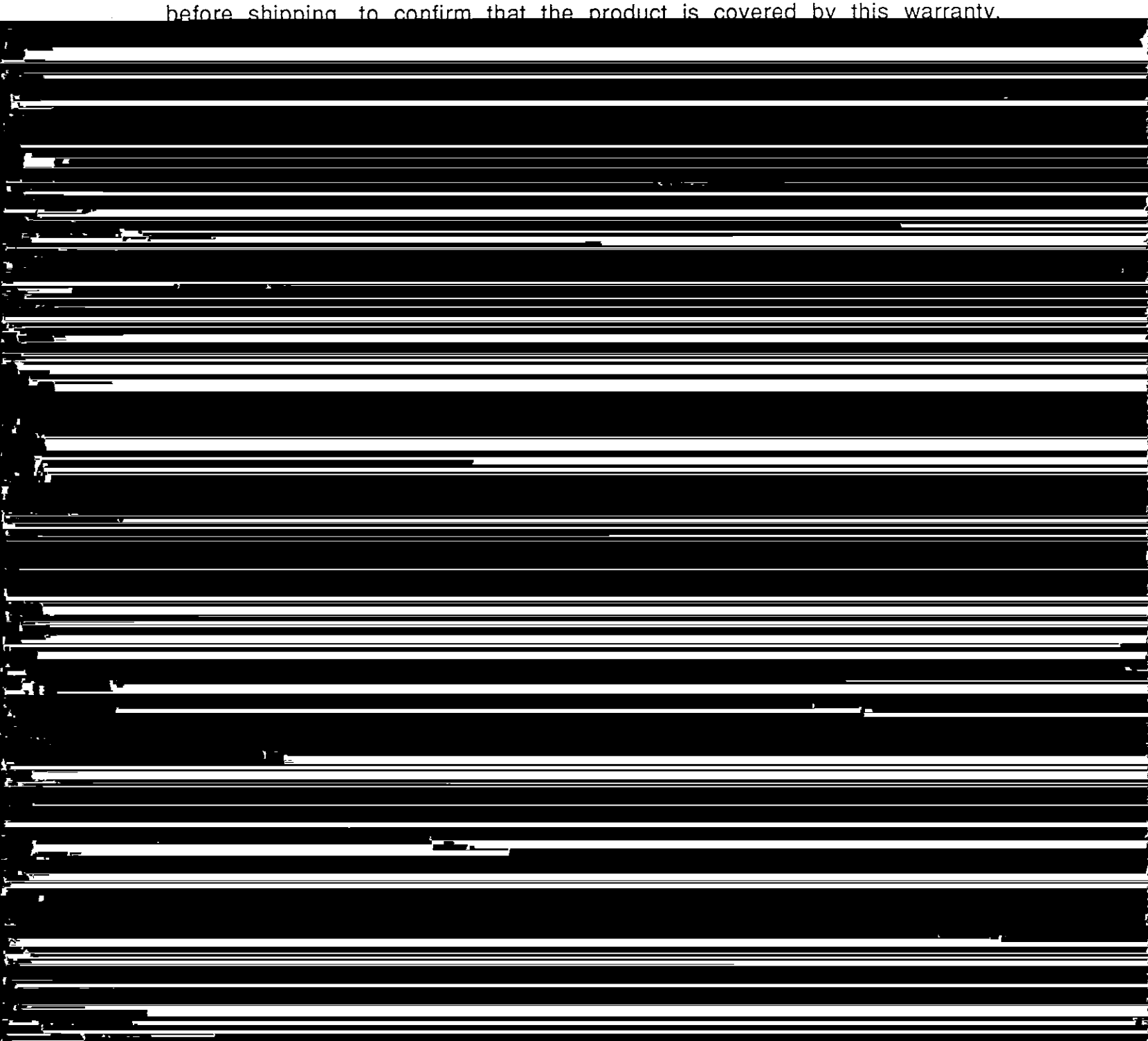


Contents

WARRANTY

Warranty rights vary from country to country but it is the general intention of A&D Co., Ltd., to offer customers a one year warranty on this product from the day it is purchased. In some countries consumer protection legislation states that your dealer is responsible for offering a warranty and under these circumstances please refer to your local dealer.

In the U.S.A. the product (if defective) should be returned, freight prepaid by the customer, to A&D Engineering Inc. in California and in Europe the product can be returned freight prepaid to A&D Instruments GmbH in Frankfurt, West Germany. Elsewhere the product can be returned to A&D Co., Ltd. in Japan. In any event please contact your nearest A&D office, before shipping to confirm that the product is covered by this warranty.



1. Introduction

1.1 Preface:

The AD-8117 COMPACT PRINTER is designed to receive data from A&D's optional RS-232C or CURRENT LOOP interface. AD-8117 is especially designed to be used with A&D's battery powered Weighing Indicators like AD-4321B, Platform Scales like FV or Electronic Balances like FX and EK. The printer provides statistical calculations as well as printing normal weight, percentage or counting data. The AD-8117A varient can be used as a simple printer with other kinds of equipment.

1.2 Features:

* Portability, these printers can be used anywhere with power supplied by 4 Penlight/LR6/R6/AA/UM-3 type batteries.

* Compatible not only with RS-232C but also Current Loop interfaces.

* Long (50m/54 yards) recording paper as standard.

* Battery life (20°C/68°F): 20,000 lines can be printed continuously with one set of alkaline batteries.

* AC/DC adaptor is available as Option-02

* AD-8117 provides statistical calculations including standard deviation.

1.3 Description/Parts List:

*Compact printer	1
*Interface cable (for RS-232C/1m)	1
*Recording paper (50m/54 yards)	1
*Recording paper spool shaft	1
*Recording paper cover	1
*Batteries	4
*Plug for remote print switch	1
*Instruction Manual	1

Options:

*OP-01 Adaptor cable (50cm/20") RS-232C to Current Loop
*OP-02 AC/DC adaptor (100, 120, 220 or 240V AC to 9V DC)

Accessories (Sold Separately):

*Recording Paper (WP:PP128) 50m/54 yards (6 rolls = 1 set)
*Foot switch (SW:128)

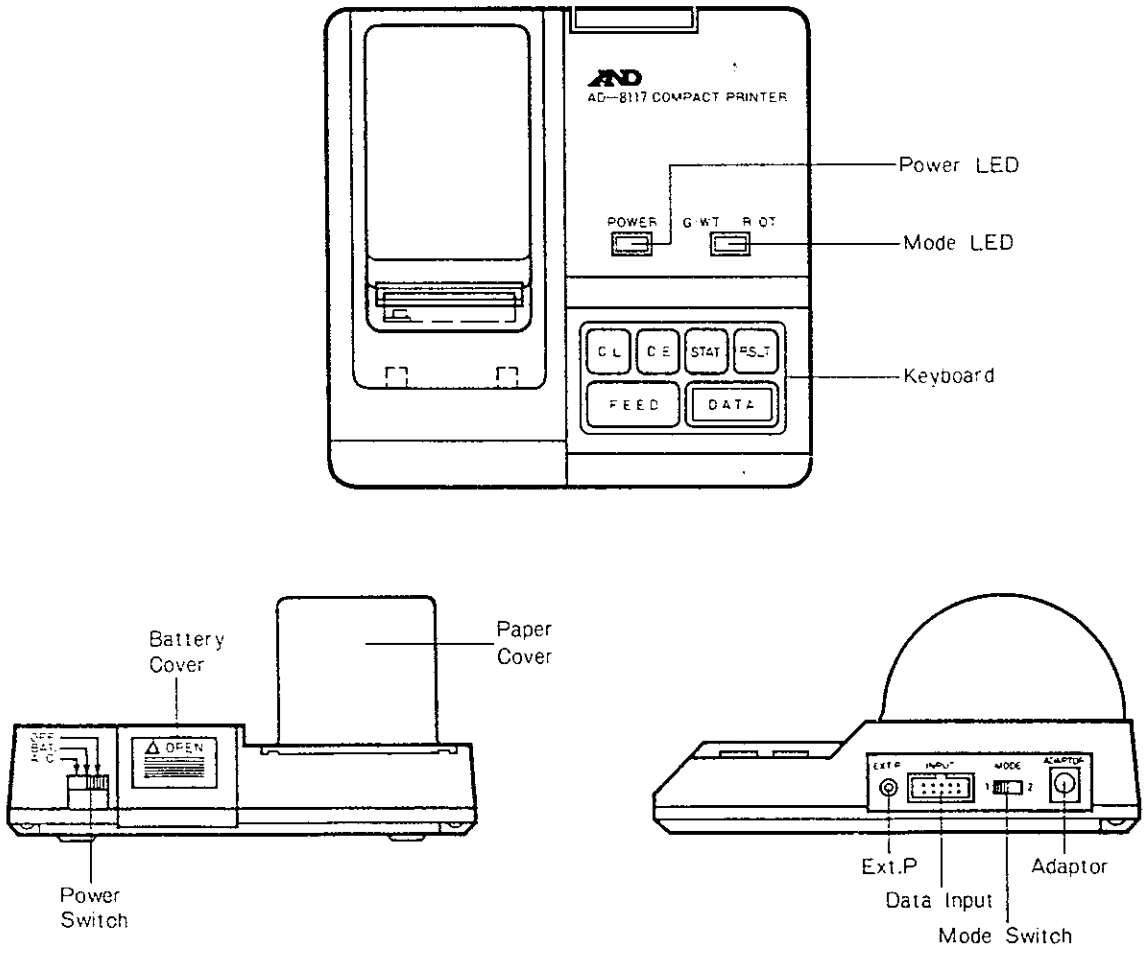


Fig.1

2. Operation

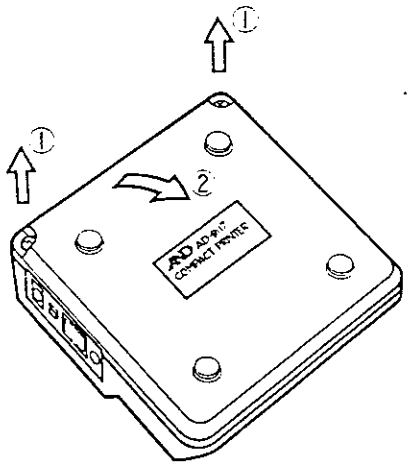
2.1 PREPARATION

2.1.1. Selection of input method:

AD-8117(A) is set up as an RS-232C printer when it is shipped from the factory. Therefore, unless you wish to use it as a Current Loop printer, you won't need to change the input method.

Note: Before opening the case remove the AC/DC adaptor plug and all of the batteries.

1) Remove the two screws in lower half of the case. (Fig.2)
2) Raise the rear end of the lower half of the case. (Fig.2)
3) Remove the lower half of the case as shown in Fig.2.
4) To change the input method (RS-232C or CL), slide the switch in the front left hand corner, as seen from below, of the PCB. (Fig.3)
5) Re-attach the lower half of the case. (Fig.4)
6) Replace the two screws.



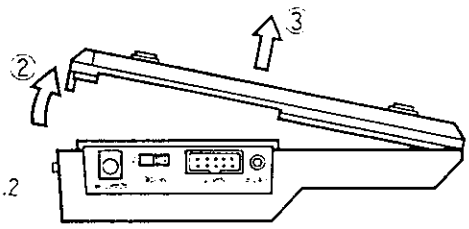


Fig.2

Fig.3

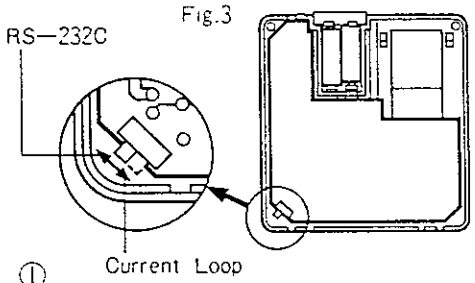
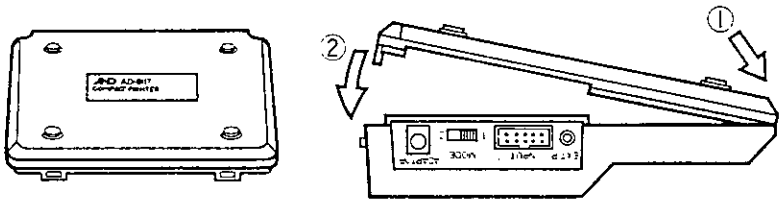


Fig.4



2.1.2. Connection:

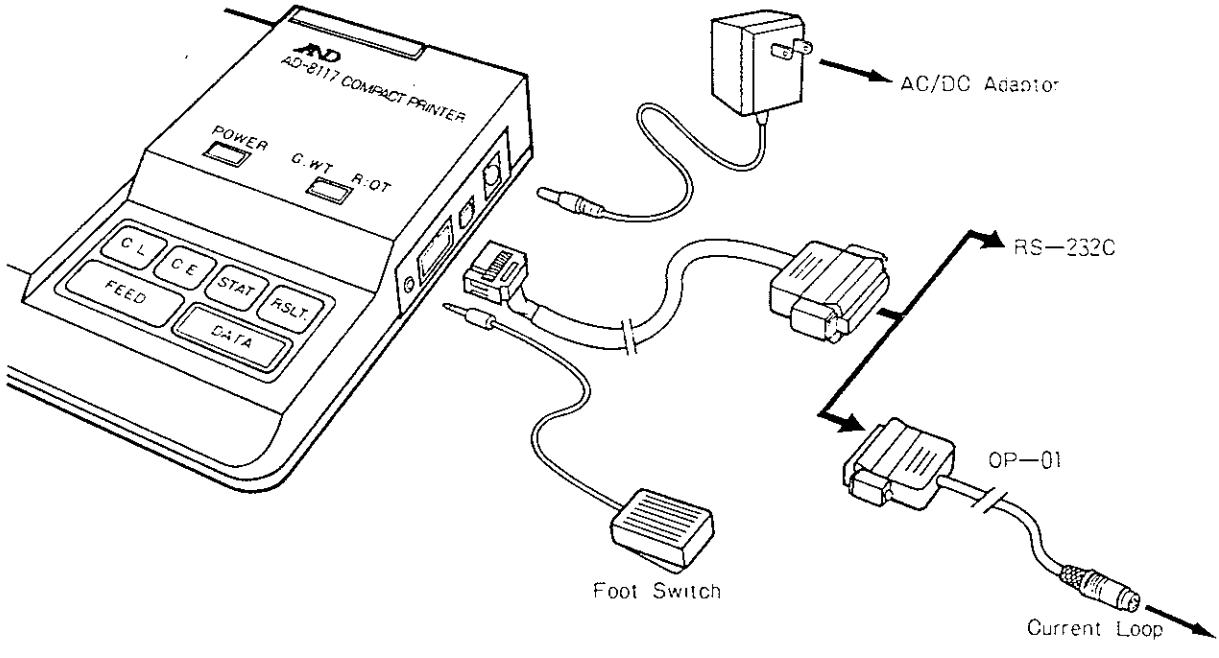
Before connecting any data cables, check that AD-8117(A) is turned off.

1) Connection to Weighing Instruments.
For data supply from an RS-232C interface, plug the 25 pin connector into the output connector of the Weighing Instrument and plug the smaller connector into the printer as shown in Fig.5. For data supply by Current Loop, use the OP-01 adaptor cable and connect it to the Weighing Instrument after setting the internal printer switch to Current Loop.

Set the data transmission speed of the Weighing Instrument to 2,400 baud.

2) Connecting the optional AC/DC adaptor
Connect the AC/DC adaptor to AD-8117(A) as shown in Fig.5.

3) Connecting the optional Foot switch (SW:128)
For data acquisition by pressing the foot switch, connect the foot switch to "EXT P" (External Print) on the AD-8117(A) as shown in Fig. 5.



2.1.3. Selecting the power source:

In AD-8117(A), power supply is available from either an optional AC/DC adaptor or 4 Penlight/LR6/R6/AA/UM-3 batteries.
Power can be supplied only from the power source which is specified by the power switch, even if both AC/DC adaptor and batteries are provided.

1) Power supply from 4 Penlight/LR6/R6/AA/UM-3 batteries
Insert the four Penlight batteries following steps from Fig.6 to Fig.8. Setting the power switch to BAT. will supply power to AD-8117(A).

1. Open the battery box. (Fig.6)
2. Insert the four Penlight batteries observing + and - polarity.
3. Close the battery box. (Fig.8)

Note 1: Remove the batteries when not using the AD-8117(A) for a long period of time in case the batteries leak.
Note 2: Low battery power indication

Power source LED		Status of batteries
When not printing	When printing	
ON	ON	Enough Power
ON	OFF	Batteries nearly exhausted
OFF	OFF	Replace batteries

How to replace batteries without clearing the data in AD-8117.
(This is convenient during statistical calculations.)
1) Keep the power switch of AD-8117 set to BAT., and plug the optional AC/DC adaptor in.
2) Set the power switch to AC, and then replace the batteries.
3) Set the power switch to BAT. again, and unplug the AC/DC adaptor.

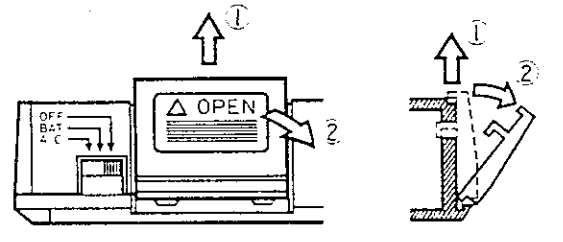


Fig.6

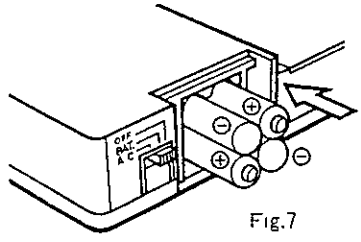


Fig.7

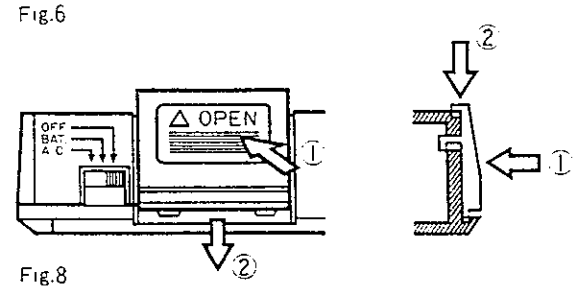


Fig.8

2.1.4. Installing the recording paper:

1) Push the paper cover in the direction 1 and remove it in the direction 2.
2) Cut the paper cleanly at right angles to the edge.
3) Insert the paper into the paper input slot and push it in as far as it will go. While pushing the paper, keep pressing the "FEED" key until the paper emerges through the paper outlet. Insert the paper spool shaft through the paper spool, and put the paper roll on the stand.
4) Insert the end of the paper into the paper cutter slot in the cover, after that, replace the cover following steps 1, 2, 3. *NOTE: Only use thermal paper designed for this printer (WP:PP128). Alternative paper will probably jam the printer. Do not operate the printer without any paper.

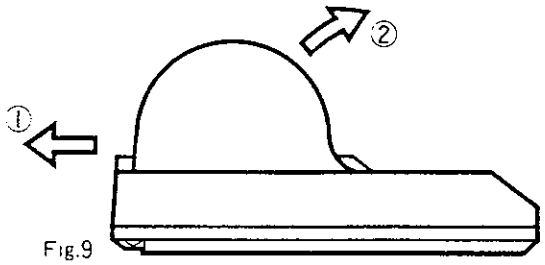


Fig.9

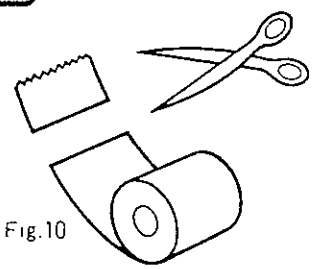


Fig.10

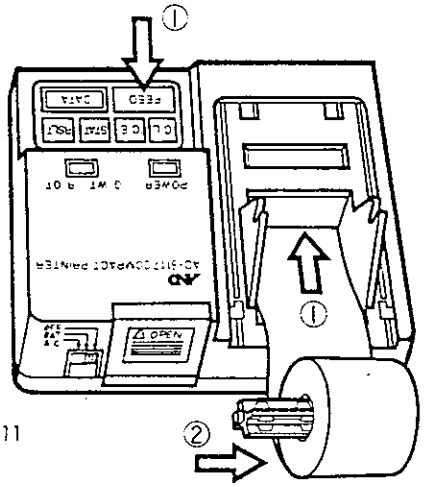


Fig.11

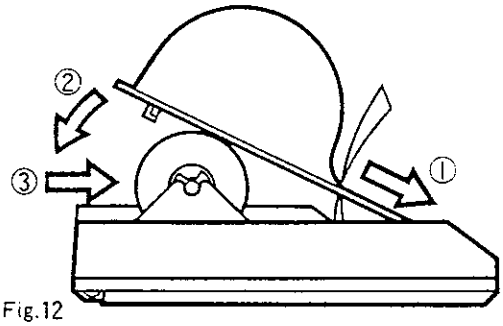


Fig.12

2.2. AD-8117

Printing information in your Weighing Instrument manual may concern AD-8116. Don't worry because AD-8116 and AD-8117 are fully compatible.

2.2.1. Mode Switch:

1) **MODE 1**: Printer will print all data which is transmitted from weighing instruments. Select keyboard print control in the Weighing Instrument and print via the "PRINT" key or select auto-print once per weighing event when the data is stable.

2) **MODE 2**: Printer will print just after the AD-8117 "DATA" switch (or external foot/hand switch connected to EXT.P.) is pressed. "STREAM MODE" should be set in A&D Weighing Instruments.

Note: The printer will only print properly when the Weighing Instrument is stable. If the data is unstable or over-range, AD-8117 will print "*".

2.2.2. Description of the keys:

1) **CL** (Clear key)
   Clears all the statistical data in memory.

2) **CE** (Clear Entry key)
   If an input error is made, CE cancels the last entry and prints *CANCEL

3) **STAT** (Statistical data selection key)
   Switch between Weight data (Green LED) or Quantity/Counting data (Red LED) for statistical calculations.

4) **RSLT** (Statistical calculation RESULT print key)
   Prints the result of the statistical calculation. Press twice to print out all the data.

5) **FEED** (Paper Feed key)
   Feeds the paper!

6) **DATA** (DATA input/PRINT key in MODE 1/2)
   MODE 2 : Print the data and input the data for statistical calculations.
   MODE 1 : DATA key has no effect in MODE 1.

2.2.3. Print Abbreviations:

WT : Weight data
NT : Net weight data
GS : Gross weight data
TR : Tare weight data
UW : Unit weight data
QT : Quantity/Counting data
AQ : Accumulated quantity
* : Unstable/In motion or over-range

```
WT    +123.456  g
NT    +6432.15 kg
GS    +9876.50  t
TR     +200.55  g
UW     +15.283 mg
QT      +20000 PC
AQ    +6543210 PC
       *
*C ERROR
```

*C ERROR : Communication Error
(Communication Error is printed if the baud rate, data format or cable connection is bad and the "DATA" key is pressed.)

Measurement unit abbreviations:

g	: gram	GN	: grain
kg	: kilogram	mm	: momme
PC	: Parts Count	TL	: tael
%	: Percentage	t	: tonne/ton
oz	: ounce (avoir)	t	: tael/tola
lb	: pound (avoir)	dwt	: pennyweight
ct	: carat	ozt	: troy ounce

```
WT      +3.9  g
QT       +14 PC
WT    +116.80  %
WT     +0.490 oz
WT    +0.0305 lb
WT      +69.5 ct
WT      +8.9dwt
WT    +0.445ozt
WT      +214 GN
WT     +3.70 mm
WT     +0.445 TL
```

2.2.4. Statistical Calculations:

AD-8117 can print the following abbreviations for statistical calculations.

N : Number of data (999 samples Max.)
TOTAL : Accumulated data total
MAX : Maximum data
MIN : Minimum data
$\bar{X}$: Average data
σ : Standard deviation
R : Range

$$\sigma = \sqrt{\frac{N \cdot \Sigma (Xi)^2 - (\Sigma Xi)^2}{N (N-1)}}$$

Operation of the Statistics Function

1) Press **CL** clear key and, if data was in the memory, the printer will print *CLEAR, otherwise it will not print anything.

2) Press **STAT** key to select the (Red/Green LED indicates the type of calculation)

   When the LED is green : Weight data input mode
   When the LED is red : Quantity/Counting data input mode
   When no LED on : No statistical calc.

3) Input data for printing
   Sample value will be printed along with an automatically incrementing sequential reference number.

4) If an error is made the entry may be deleted by pressing the "CE" key ---- *CANCEL will be printed.

5) If the position of the decimal point changes or if there is a change in the weight unit (e.g. lb, oz, ozt, g, kg, t, dwt, ct, mm, TL, GN, %, PC etc.) such data will be rejected from statistical calculations.

6) To obtain a statistical result for all the data entered since the last CLEAR, press RESULT key. Press once for a print-out of number and total:

7) Press twice for a print-out all the statistical information --- MAX, MIN, Data average and Standard deviation etc.

8) To continue input the next data entry.

9) The maximum number of data entries possible is 999. If 1,000 data entries are made the printer will automatically make a full print-out of all the statistical information for the preceding 999 entries, clear it's memory and then start again by printing the 1,000th entry as entry number one.

```
*CLEAR
No.001
WT   +178.632  g
WT    +22.481 kg
No.002
WT   +178.668  g
No.003
WT   +178.654  g
WT  +178.6537  g
```

```
No.004
WT   +178.596  g
*CANCEL
No.004
WT   +178.640  g
No.005
WT   +178.599  g
N            5
TOTAL
      893.193  g
No.006
WT   +178.623  g
No.007
WT   +178.647  g
N            7
TOTAL
     1250.463  g
MAX   178.668  g
MIN   178.599  g
x̄     178.638  g
σ      0.0224  g
R       0.069  g
```

```
No.997
WT   +247.619  g
No.998
WT   +247.461  g
No.999
WT   +247.330  g
N          999
TOTAL
   247633.824  g
MAX   248.900  g
MIN   247.131  g
x̄     247.882  g
σ      0.5143  g
R       1.769  g
No.001
WT   +247.198  g
No.002
WT   +247.633  g
```

A&D Company, Limited
Shintaiso Bldg., No. 5-1052, 10-7 Dogenzaka 2-Chome, Shibuya-ku, Tokyo 150 Japan
Telephone: (03) 476-4741 Fax: (03) 462-1903 Telex: 02422816 AANDD J

A&D ENGINEERING, INC.
1555 McCandless Drive, Milpitas, CA. 95035 U.S.A.
Telephone: (408) 263-5333 Fax: (408) 263-0119 Telex: 346949 AANDD SNJ

A&D INSTRUMENTS GmbH
Lyoner Straße 36, D-6000 Frankfurt/Main 71, West Germany
Telephone: (069) 666-7006 Fax: (069) 666-6831 Telex: 417 0586 ANDI D