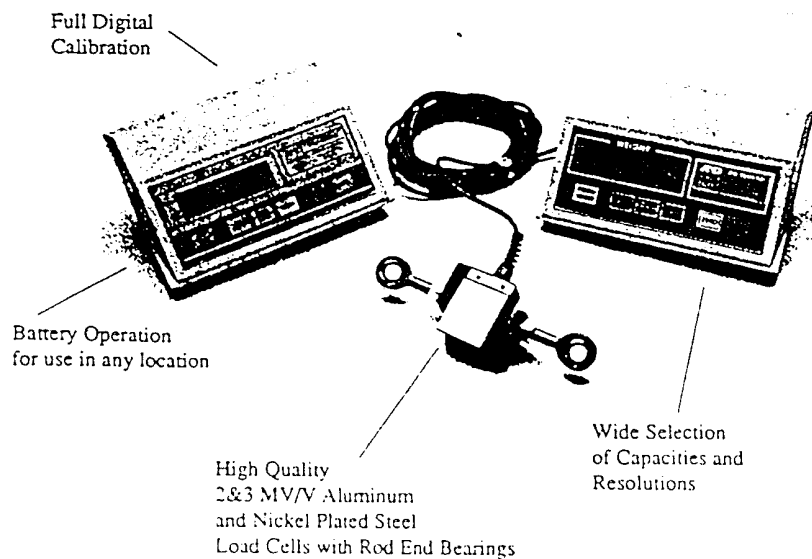# FV-D, FVWP-D, FW-D

Mechanical Scale Conversion

FV, FVWP and FW Mechanical Scale Conversion

Product Description

The FV/FW Digital Weight Indicators have been in use for years on the FV/FW portable scales. These indicators have proven to be reliable and efficient and are being used by thousands of companies. Now, the FV and FW indicators can be used to convert mechanical scales into electronic scales that have the same features as the FV and FW portable scales. These features include Full Digital Calibration, Comparator Functions and selectable weighing modes which include kg, lb, oz, counting, percentage weighing and even interface to an A&D 8121 printer.. This conversion allows your customers to gain all of the benefits of a fully electronic scale with a small investment.

Mechanical scale converstion is accomplished by selecting either the FV or FW indicator and connecting it to the proper A&D load cell. Standard eye bolts are connected to each end of the A&D load cell and the load cell assembly is placed in line with the connecting rod that connects the mechanical scale platform to the mechanical scale indicator. The mechanical scale indicator is removed and replaced with either the FV or FW indicator. Determine the mechanical advantage that the original mechanical scale had. For instance, 100 kgs placed on the mechanical scale base exerts 10 kgs of force on the connecting rod. This is a 10:1 ratio. The FV or FW indicators should be calibrated according to this mechanical advantage.

Components Required to Complete the Mechanical Scale Conversion

Full Digital Calibration

Battery Operation for use in any location

High Quality 2&3 MV/V Aluminum and Nickel Plated Steel Load Cells with Rod End Bearings

Wide Selection of Capacities and Resolutions

Mechanical Scale Conversion Table
using
A&D Load Cells & Indicators

FV

DESIRED INDICATOR CAPACITY	MECHANICAL ADVANTAGE RATIO				
	1:1	10:1	20:1	50:1	100:1
150 KG X 0.05 KG	LC-1122 L300	LC-1220 L050	N/A	N/A	N/A
300 KG X 0.1 KG	LC-1320 L750	LC-1220 L100	LC-1220 L050	N/A	N/A
600 KG X 0.2 KG	LC-1320 KL002	LC-1220 L200	LC-120 L100	LC-1220 L050	N/A
1,500 KG X 0.5 KG	LC-1320 KL005	LC-1122 L300	LC-1220 L200	LC-1220 L200	LC-1220 L050

FW

DESIRED INDICATOR CAPACITY	MECHANICAL ADVANTAGE RATIO				
	1:1	10:1	20:1	50:1	100:1
100 KG X 0.01 KG	LC-1122 L200	LC-1220 L050	N/A	N/A	N/A
150 KG X 0.02 KG	LC-1320 L300	LC-1220 L050	N/A	N/A	N/A
300 KG X 0.05 KG	LC-1320 L750	LC-1220 L100	LC-120 L1050	N/A	N/A
600 KG X 0.1 KG	LC-1320 KL002	LC-1220 L200	LC-1220 L100	LC-1220 L050	N/A
1,200 KG x0.2 KG	LC-1320 KL005	LC-1320 L500	LC-1220 L200	LC-1220 L100	LC-1220 L050

Note: For higher capacities please contact factory

FEATURES & BENEFITS
FV SERIES
MECHANICAL SCALE CONVERSION

FEATURES	BENEFITS
Rugged Construction	Exceptional durability. Low maintenance costs.
Built in Comparator Function	Display notifies user of Hi, Lo, Go Status.
Battery Operation Standard, AC Adapter Optional	Provides total mobility for use in any location with approximately 200 hours battery life.
Full Digital Calibration	Simplifies calibration by eliminating repetitive loading and unloading calibration weights when setting zero and span.
Parts Counting Function	Saves time and extra steps for inventory control.
RFI Shielding of A/D Converter	Provides reliability in high interference areas.
Optional AD-8951 comparator Lights	Can be used in simple automatic filling systems.
Optional RS-232C & Comparator Buzzer/Relay Board	Audible buzzer can be set to sound when using comparator.

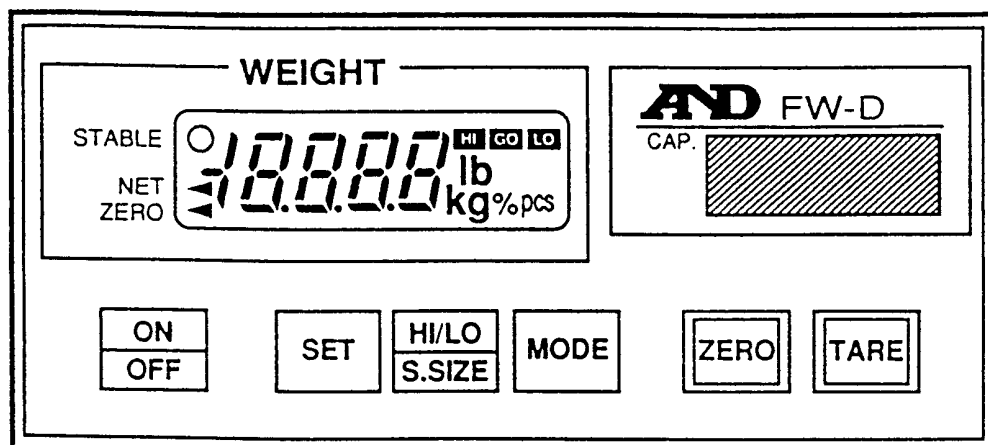# FEATURES & BENEFITS
FW SERIES
MECHANICAL SCALE CONVERSION

FEATURES	BENEFITS
Rugged Construction	Provides years of service with minimal downtime..
High Resolution of up to 1/10,000	Meets most demanding applications.
Battery Operation Standard, AC Adapter Optional	Provides total mobility for use in any location with approximately 200 hours battery life.
Optional RS-232C & comparator Buzzer/Relay Board	Audible buzzer can be set to sound when using comparator.
Built-in comparator Function	Display notifies user of Hi, Lo, Go Status
Full Digital Calibration	Simplifies calibration by eliminating repetitive loading and unloading calibration weights when setting zero and span.
Piece Counting and Percentage Function	Saves time and extra steps for check weighing applications.
Optional AD-8951 Comparator Lights	Gives visible display of Over/Under status of goods being weighed.

Understanding
the Display

```
┌─────────────────────── WEIGHT ───────────────────────┐  ┌────────────────────┐
│         STABLE  ○  ┌────────────┐ HI GO LO          │  │  AND  FW-D         │
│          NET    ◄  │ 18.8.8.8  │ lb                 │  │  CAP. ▨▨▨▨▨▨▨▨▨▨   │
│         ZERO    ◄  └────────────┘ kg %pcs           │  │       ▨▨▨▨▨▨▨▨▨▨   │
└──────────────────────────────────────────────────────┘  └────────────────────┘

    ┌───────┐    ┌─────┐ ┌───────┐ ┌──────┐     ┌──────┐ ┌──────┐
    │  ON   │    │ SET │ │ HI/LO │ │ MODE │     │ ZERO │ │ TARE │
    │ OFF   │    │     │ │ S.SIZE│ │      │     │      │ │      │
    └───────┘    └─────┘ └───────┘ └──────┘     └──────┘ └──────┘
```

The FV-D, FVWP-D & FW-D indicators have a sharp, 17mm high LCD display. You can make sure that all the display segments are working properly by pressing the **ON/OFF** key.

┌───────┐
│ ON   │ [⬛ display image]   *The ON/OFF Key*
│ OFF   │
└───────┘

After pressing the **ON/OFF** key, you will see all segments appear for a couple of seconds. (*Note: In some countries "lb", "oz" "%" or "pcs" will not be available*)

❑ Starting at the left end of the display you will see a circular stability indicator, a minus weight display symbol, a triangular NET indicator and ZERO indicator. Next you can see the main display "18.8.8.8".

❑ On the upper right you will see the abbreviations 'HI", "GO", "LO" for the comparator. Below those are displayed "lb", "kg", "oz", "%" or "pcs".

❑ After a few moments the circular stability indicator, zero indicator, main display (reading zero) and a unit ("lb", "kg", "oz", "%" or "pcs") will remain.

❑ The scale will switch off automatically if the display remains at zero for three minutes, but this function can be deactivated.

❑ Also, "Lb" will be displayed on the main display if the power in the batteries is too low for reliable weighing and "E" ("lb", "kg", "oz", "%" or "pcs") will be displayed if the scale is overloaded.

SET		*The SET Key*

To the right of the **ON/OFF** key is the **SET** key. The **SET** key has three different uses:

1) In the Weighing Mode, it is pressed to activate or deactivate the comparator function (If the comparator has been deactivated, it will not be possible to access the high and low setpoint values with the **MODE** (or **UNITS**) key).

2) In the Counting Mode ("pcs"), it is pressed to register the unit weight of the sample (5, 10, 20, 50 or 100 pieces) in non-volatile memory.

HI/LO S.SIZE		*The HI/LO-S.SIZE Key*

Next to the **SET** key is the **HI/LO-S.SIZE** key, it has two different uses:

1) In the Comparator Mode, it is used to input setpoint values in conjunction with the **SET** key.

2) In the Counting Mode the sample size is normally 5, but by pressing **HI/LO-S.SIZE** you may select a sample size of 10, 20, 50 or 100 pieces.

MODE		*The MODE (or UNITS) Key*

Next, this key may be labeled **MODE** or **UNITS** depending on the model and location. It also has two different functions:

1) The **MODE** (or **UNITS**) key can be used to change as below. *Note: HI and LO are displayed only when the Comparator function is on (they are for setting the high/low setpoint limits when the scale is acting as a check weigher).*

FV → lb → oz → kg → pcs → HI → LO

FW → lb → kg → pcs → % → HI → LO
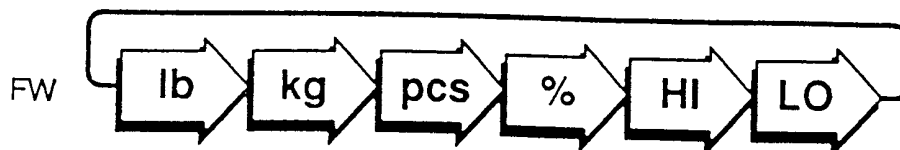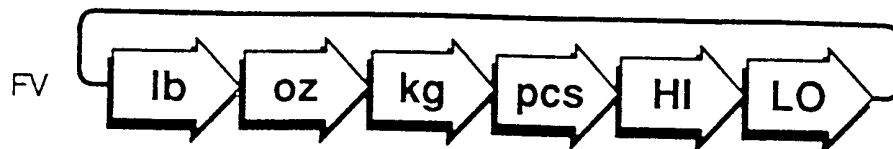
2) When the Comparator function is on (HI and LO setpoints are entered) the **MODE** (or **UNITS**) key can be used to set the values of therse settings.

The ZERO Key

The **ZERO** key returns the scale to the center of zero when the weighing pan is empty, and should not be confused with the **TARE** key which re-zero's the display and places the scale in NET mode.

When the display shows a small deviation from zero and the weighing pan is empty (and the tare function is not being used), then press the **ZERO** key to return the display to "0.00". If there is a large deviation from zero, than there may be something else wrong, like the weighing pan touching something.

If "---" is displayed when the power is turned on, or if the **ZERO** key will not set the display to zero, then you should carry out ZERO CALIBRATION (see page21)

The TARE Key

The **TARE** key re-ZERO'S the display up to the maximum capacity of the scale, places the scale in NET mode, and should not be confused with The **ZERO** key which returns the scale to the center of zero when the weighing pan is empty. The TARE weight (container weight) subtracts from the range of the scale.

Load Cell
Connection

▼ Specifications

1) Load Cell Excitation   5V±10%

2) Load Cell Drivability   FV-D/FVWP-D : up to 2 Load Cells (350Ω)

                              FW-D   : up to 4 Load Cells (350Ω)

3) Input Signal range*

SIGNAL	FV-D/FVWP-D	FW-D
Zero Input Voltage ≥	1mV	0.5mV
Full Input Voltage ≤	12.5mV	12.5mV
Input Sensitivity ≥	1.2μV/D	0.4μV/D

D = "Min.Division" or "scale interval"

* the formulas for ascertaining zero input voltage, full input voltage and input sensitivity may be found on page11.

4) Temperature Coefficient   Zero: ±(0.3μV+0.0008% of dead load)/°C (typ.)

                                      Span: ±0.0008%/°C of reading (typ.)

5) Non-linearity   FV-D/FVWP-D : 0.03% of full scale

                              FW-D   : 0.01% of full scale

6) Input Impedance   10MΩ

7) A/D Conversion Method   Integration Type

8) A/D Conversion Rate   Approx. 4times/second

9) Power Requirements   DC9V ('C' size batteries X 6) or AC adaptor (OPtion)

                              AC100~120V type or AC200~240V type 50/60Hz

10) Operating Temperature   -5°C~40°C

In order to be sure that a load cell will work with a given indicator, the formulas listed below should be worked using the specifications of the load cell in question.

A = Load cell capacity
B = Rated output of the load cell
C = Max. capacity of the platform
D = Minimum division
E = Exitation voltage
F = Dead load (Zero Offset)

SIGNAL	FV-D/FVWP-D	FW-D
Zero Input Voltage ≥	1mV	0.5mV
Full Input Voltage ≤	12.5mV	12.5mV
Input Sensitivity ≥	1.2μV/D	0.4μV/D

D = "Min.Division" or "scale interval"

FORMURAS

Zero Input Voltage: $B \times E \times (F/A)$
Full Input Voltage: $B \times E \times (C + F) / A$
Input Sensitivity: $B \times E \times 1000 \times (C/A) \times (D/C)$

EXAMPLES

A = 100Kg
B = 2mV/V
C = 60Kg
D = 0.02Kg
E = 5V
F = 20Kg

Solving for zero input voltage:

2(mV/V) x 5 (V) x { 20 (Kg) / 100 (Kg) } = 2mV
As 2mV is greater than the 1mV specification given in the Input Signal Range table above, the zero input voltage is O.K.

Solving for full input voltage:

2(mV/V) x 5 (V) x { 60 (Kg) + 20 (Kg) } / 100 (Kg) = 8mV
As 8mV is smaller than the 12.5mV specification given in the Input Signal Range table above, the full input voltage is O.K.

Solving for input sensitivity:

2 (mV/V) x 5 (V) x 1000 x { 60(Kg) / 100 (Kg) } x { 0.02(Kg) / 60(Kg) } = 1.2 [insert sign for micro] V As 2μV is larger than the 1.2μV given in the Input Signal table above, the input sensitivity is O.K.
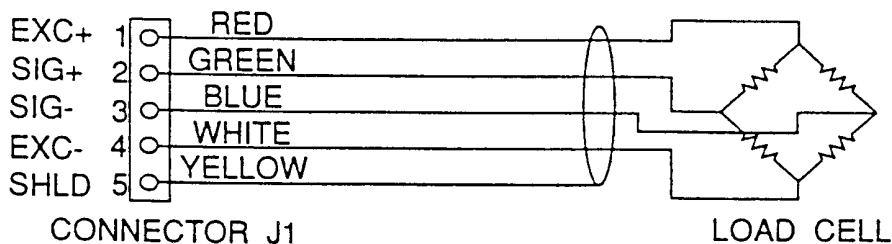
⬇ Load Cell Connection

❑ Use a four wire cable with shield as a load cell cable.

❑ The analog output from the load cell and RS-232C signals are sensitive to electrical noise. Do not place these cables together as it could result in cross-talk interference. Please also keep them away from AC power cables.
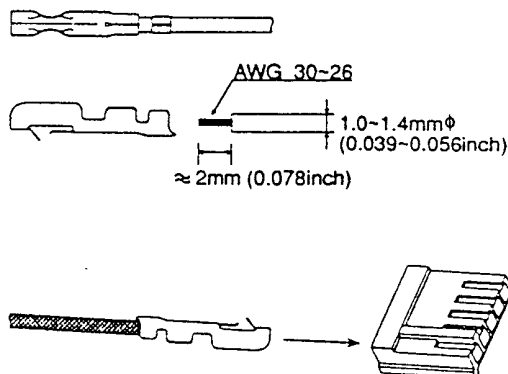
⬇ Load Cell Cable Connection


```
EXC+  1   RED
SIG+  2   GREEN
SIG-  3   BLUE
EXC-  4   WHITE
SHLD  5   YELLOW
```

CONNECTOR J1   LOAD CELL

Load Cell Connections

Pin No.	Signal	
1	Positive Excitation Voltage	(EXC+)
2	Positive Signal Voltage	(SIG+)
3	Negative Signal Voltage	(SIG-)
4	Negative Excitation Voltage	(EXC-)
5	Shield	(SHLD)

Attach pin contacts to each wire carefully, and insert the pin contacts to the receptacle housing. Please be sure to connect the correct signals.

AWG 30~26

1.0~1.4mmφ
(0.039~0.056inch)

≈ 2mm (0.078inch)

## Connecting the Load Cell Cable to the Display Pod

1 Remove the lock screw and open the Display Pod by pressing the two latch clips and lifting.

2 Thread the load cell cable through the rubber blanking plug or the bottom of the Display Pod, and lay the cable in its guide channel.

3 Connect the load cell cable to the connector of the Display Pod, and attach the sealing plate.

Load Cell connector

Load Cell connector

Sealing Plate

Lock Screw

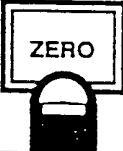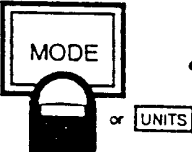Guide Channel
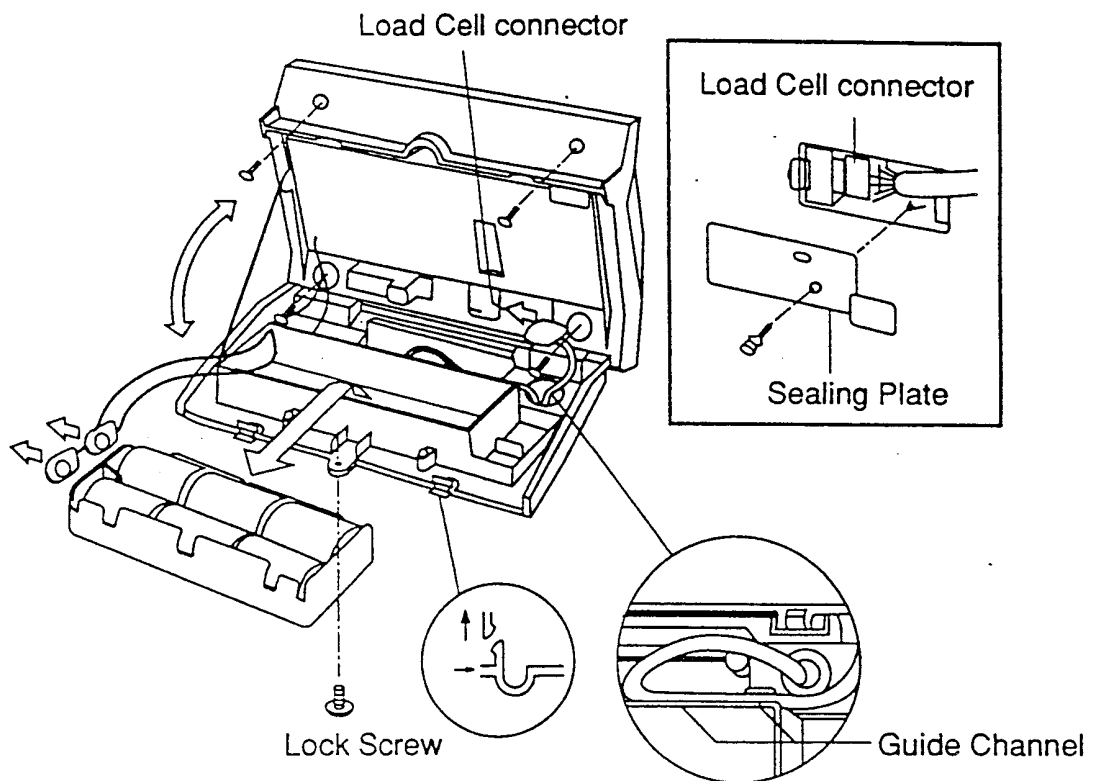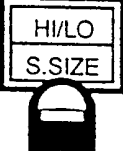
Function Parameter Settings

Function Parameter Settings

This section describes the selection of capacity and some functions. Be sure to set the capacity (F4) and the weight unit (F3) according to the specifications of the platform used. If necessary, set the other function parameters as well.

Function Parameter Settings Procedure

Note: The use of each key as you move through this procedure is listed below.

ZERO	• The ZERO key enters settings into memory. "F0", "F1", "F5" and "F6" are entered individually, "F2" - "F4" are entered together. • At the end of the "F" cycle ("F6 x") it is used to enter, then move to "END", the completion of the cycle.
MODE or UNITS	• Use the MODE or UNITS key to view settings, move through the settings, and escape a setting if you have made a mistake. • You cannot enter settings with the MODE or UNITS key, it will only move you through the settings with no change.
HI/LO S.SIZE	• Once in the "F" group, use this key to move incrementally through the settings available in each group, ie: F1 0 → F1 1 → F1 0

1. With the Scale OFF, remove the calibration plate - Slide CAL switch ON.
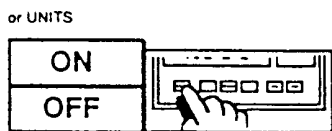
CAL Switch Port.

CAL Switch
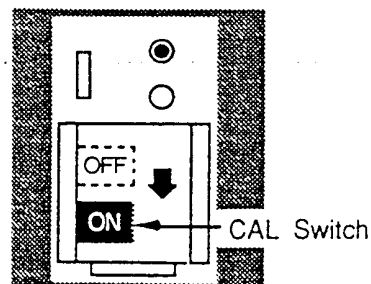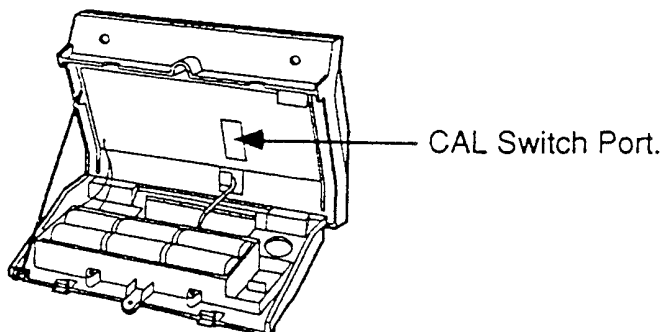
2 | MODE ▭▭ ZERO | ▶ Press and hold the [MODE] or [UNITS] and [IZERO] keys.

---

3 | or UNITS / ON / OFF | ▶ While holding the [MODE] or [UNITS] and [IZERO] keys, press the [ON/OFF] keys.

⬚ "F0 1" or "F0 0" will be displayed.

$$F0 \quad 1$$

---

4 | HI/LO / S.SIZE | ▶ Use the [HI/LO | S.SIZE] key to move among the settings, stopping at the setting desired.

---

5 | ZERO | ▶ Press the [IZERO] key to enter the setting.

⬚ "F1 @" (@=0,1 or 2) will be displayed.

$$F1 \quad 0$$

---

6 | HI/LO / S.SIZE | ▶ Use the [HI/LO | S.SIZE] key to move among the settings, stopping at the setting desired.

---

7 | ZERO | ▶ Press the [IZERO] key to enter the setting.

⬚ "F2 @" (@=0, 1 or 2) will be displayed.

$$F2 \quad 0$$

---

8 | HI/LO / S.SIZE | ▶ Use the [HI/LO | S.SIZE] key to move amoung the settings, stopping at the setting desired.

Note: "F2 @" through "F4 @" are entered in as a block, in other words you will need to make any change in "F2 @" through "F4 @" - and then when you press [IZERO] key, they will all be entered. If there is no change in a "F" group, then press [MODE] or [UNITS] key to move you without change.

9	MODE	▶ Press the MODE or UNITS key to move to F3.	F3 0
		○ "F3 @" (@=0,1,2,3 or 4) will be displayed.	

10	or UNITS HI/LO S.SIZE	▶ Use the HI/LO | S.SIZE key to move among the settings, stopping at the setting desired.	

11	MODE	▶ Press the MODE or UNITS key to move to F4.	F4 0
		○ "F4 @" (@=0,1,2,3 etc.) will be displayed	

12	HI/LO S.SIZE	▶ Use the HI/LO | S.SIZE key to move among the settings, stopping at the setting desired.	

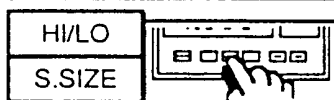|			
13	ZERO	▶ Press the ZERO key to enter the settings (F2 thru F4).	F5 0
		○ "F5 @" (@=0,1 or 2 will be displayed.	

NOTE: FV-D and FVWP-D will show "F6 @". Go to page 16.

14. | HI/LO / S.SIZE | ▶ Use the [HI/LO | S.SIZE] key to move among the settings, stopping at the setting desired.

15. | ZERO | ▶ Press the [|ZERO|] key to enter the setting.

`F6 0`

○ "F6 @" (@=0, 1, 2 or 3) will be displayed.

16. | HI/LO / S.SIZE | ▶ Use the [HI/LO | S.SIZE] key to move among the settings, stopping at the setting desired.

●

17. | ZERO | ▶ Press the [|ZERO|] key to enter the setting.

`End`

○ "END" will be displayed.

NOTE: You may also go back to the beggining of the cycle "F0 @" by pressing [MODE] or [UNITS] key, and not [|ZERO|] key.

18. Slide CAL switch OFF.

············End of function parameter settings procedure.

●

$F0$ @	Automatic power off function - this turns the main display OFF after three minutes. It only works if the display shows zero ("0.00kg" etc.).
$F0\ 0$	Function disabled
$F0\ 1$	Function enabled

$F1$ @	Counting / % / comparator function - enable / disable. ("%" is for FW-D only.)	

SETTING	FV-D, FVWP-D	FW-D
$F1\ 0$	Counting / comparator function enabled	Counting / % / comparator function enabled
$F1\ 1$	counting function disabled	Counting / % / function disabled
$F1\ 2$	Not available	Counting / % / comparator function disabled

$F2$ @	Zero band - this function decides the zero band where the ZERO key can return the scale to the center of zero when the display shows a small deviation from zero.
$F2\ 0$	Approx. 10% of maximum capacity
$F2\ 1$	Approx. 5% of maximum capacity
$F2\ 2$	Approx. 2% of maximum capacity

$F3$ @	F3 permits the display of "lb" and "oz.", and sets the TARE and ZERO conditions.	

SETTING	TARE & ZERO	WEIGHT UNIT
$F3\ 0$	TARE does not work when zero is displayed.	kg
$F3\ 1$	TARE does not work when zero is displayed.	lb, oz., kg
$F3\ 2$	If the display is not at the center of zero, TARE will work - even the display shows zero.	kg
$F3\ 3$	Same with F3=2 as for the TARE. After TARE, the ZERO and NET indicatiors will switch on simultaneously. While TARE is entered, ZERO does not work.	kg
$F3\ 4$	TARE does not work when zero is displayed. While TARE is entered, ZERO does not work	kg

NOTE: "oz." is for FV-D/FVWP-D only.

F3=0: Most countries, F3=1:USA, F3=2:New Zealand, F3=3:Australia

$F4$ @	F4 sets the maximum capacity and the minimum division of the scale.

See "CAPACITY & MINIMUM DIVISION" (page 3).

$F\ 5$	@	F5 sets the communication mode of the optional RS-232C interface of the FW-D. FV-D and FVWP-D do not have these settings.
	$F\ 5\ 0$	STREAM mode
	$F\ 5\ 1$	COMMAND mode, terminator of the command is \<CR\>+\<LF\>.
	$F\ 5\ 2$	COMMAND mode, terminator of the command is \<CR\>.

NOTE: FV-D and FVWP-D have the STREAM mode only. (see page41)

$F\ 6$	@		F6 sets the comparator mode enviroment.	
	SETTING	Comparator function is ON or OFF when scale is powered ON	Comparator Buzzer and Relay Output
	$F\ 6\ 0$	OFF	Always
	$F\ 6\ 1$	OFF	Prohibited Near Zero
	$F\ 6\ 2$	ON	Always
	$F\ 6\ 3$	ON	Prohibited Near Zero

NOTE: Near Zero = -4 to +4 weight display divisions.

Calibration

Calibration

The FV/FVWP/FW-D indicators use a caliblation system called "FDC™" for Full Digital Calibration. This means that zero point and maximum capacity points are entered digitally through the keyboard making the calibration method very easy to remember. The indicators can be calibrated using "lb" (pound avoirdupois) or "kg"(kilogram). Calibration weights at maximum capacity or at 2/3 of maximum capacity can be used. Maximum capacity calibration is preferred to reduce the risk of span errors at weights above 2/3 of the full scale point.

Calibration Mass Required

In the calibration procedure, you will select the calibration weight from "CAL 1", "CAL 2", "CAL 3" or "CAL 4".

① FV-D/FVWP-D

FUNCTION PARAMETER F4=	CAPACITY kg/lb	CALIBRATION WEIGHT kg		CALIBRATION WEIGHT lb	
		CAL 1	CAL 2	CAL 1	CAL 2
0	31kg/60 lb	30kg	20kg	60lb	40lb
1	60kg/120 lb	60kg	40kg	120lb	80lb
2	150kg/300 lb	150kg	100kg	300lb	200lb
3	70kg/120 lb	60kg	40kg	120lb	80lb
4	310kg/600 lb	300kg	200kg	600lb	400lb
5	600kg/1200 lb	600kg	400kg	1200lb	800lb
6	1500kg/3000 lb	1500kg	1000kg	3000lb	2000lb
(Blank)	700kg/1200 lb	600kg	400kg	1200lb	800lb
L	3.1kg/6 lb	3kg	2kg	6lb	4lb
n	6kg/12 lb	6kg	4kg	12lb	8lb
A	15kg/30 lb	15kg	10kg	30lb	20lb
b	7kg/12 lb	6kg	4kg	12lb	8lb

② FW-D

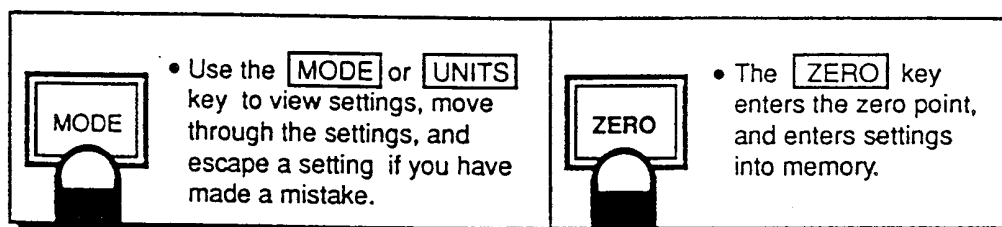| FUNCTION PARAMETER F4=	CAPACITY kg/lb	CALIBRATION WEIGHT kg		CALIBRATION WEIGHT lb	
		CAL 1	CAL 2	CAL 1	CAL 2
0	30kg/60 lb	30kg	20kg	60lb	40lb
1	60kg/120 lb	60kg	40kg	120lb	80lb
2	150kg/300 lb	150kg	100kg	300lb	200lb
3	15kg/30 lb	15kg	10kg	30lb	20lb
4	100kg/199.98 lb	100kg	60kg	200lb	150lb
5	10kg/19.998 lb	10kg	6kg	20lb	15lb
6	300kg/600 lb	300kg	200kg	600lb	400lb
7	600kg/1200 lb	600kg	400kg	1200lb	800lb
8	1200kg/3000 lb	1200kg	800kg	3000lb	2000lb
9	31kg/60 lb	30kg	20kg	60lb	40lb
A	60kg/120 lb	60kg	40kg	120lb	80lb
b	150kg/300 lb	150kg	100kg	300lb	200lb
C	31kg/60 lb	30kg	20kg	60lb	40lb
d	300kg/600 lb	300kg	200kg	600lb	400lb
E	600kg/1200 lb	600kg	400kg	1200lb	800lb
F	1200kg/3000 lb	1200kg	800kg	3000lb	2000lb

1. Warm up the scale for at least 10 minutes before making adjustments. You must be careful of the auto-off function, which turns off the display after 3 minutes. This can be avoided by:

- Placing an object on the weighing pan,
- Setting the Tare function so the display shows a negative number after the container weight is set and the container removed,
- Disable the auto-off function.

2. With the display ON, remove the calibration plate - Slide **CAL** switch ON ⇓.

DISPLAY: You will now see a display of "9.798" or "9.*XXX*" (*X* denothing any other three numbers already set into memory). This is the value of "g", or gravity.
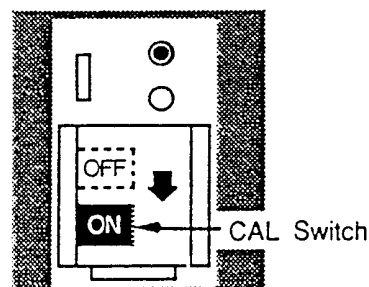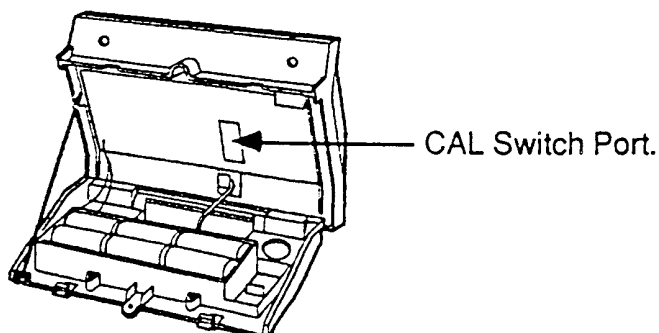

MODE	• Use the MODE or UNITS key to view settings, move through the settings, and escape a setting if you have made a mistake.
ZERO	• The ZERO key enters the zero point, and enters settings into memory.

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1. Press the MODE or UNITS key.

DISPLAY: You should now see a display of "CAL 0", with the circular "O" stability indicator on, if not, please turn off the scale and restart at the beginning of this section.

2. Press the ZERO key to enter the zero point.

CAL Switch Port.

OFF

ON ─── CAL Switch

DISPLAY: You will now see a display of "CAL 1".

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3. Select the desired "CAL 1" , "CAL 2", "CAL 3" or "CAL 4" by pressing the [MODE] or [UNITS] key to move the display.

Table B.   Calibration Capacity Settings

CAL 1	Means span calibration at maximum capacity in kilograms
CAL 2	Means span calibration at 2/3 of maximum capacity in kilograms
CAL 3	Means span calibration at maximum capacity in pounds
CAL 4	Means span calibration at 2/3 of maximum capacity in pounds

4. Place the correct calibration weight on the weighing pan.

5. After the circular stability indicator comes on, press the [IZERO] key to enter the setting.

NOTE: If "-CAL E" is displayed when you press the [IZERO] key, the scale cannot enter the maximum capacity (or $2/3$) value because the calibration mass is under-weight (minus Calibration Error). Check everything is correctly set.

DISPLAY: "End" will be displayed.

⚠ If you are going to set the value of gravity ("g") for a customer at a different geographical location (see the GRAVITY COMPENSATION FUNCTION section), please go to Step 2., SETTING THE VALUE OF "g" section.

6. Slide the calibration switch OFF while "END" is displayed, and turn off the scale ☒

Attention   *Before customer delivery:*

In areas where the scale is registered for commercial use, the calibration port cover and the load cell connector cover must be sealed (which extends to deny access to one of the screws which holds the top of the display pod on). Also, the end-user will not be permitted to remove the top of the display pod as he could thereby switch on the calibration switch. Thus, the comparator buzzer dip-switch settings on the optional RS-232C output board must also be set by the dealer/authorities. The scale must be shipped to the end-user fully assembled for commercial use.