USER'S MANUAL

FUTREX⁷ - 52/XL

Advanced Body Composition Analyzer

(Percent Body Fat)

FUTREX, INC.
130 Western Maryland Parkway
Hagerstown, MD 21740

Version 1.0

Table of Contents

This manual provides all the information needed to operate the FUTREX-52/XL

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The FUTREX-52/XL intended use is for estimating percent body fat in males and females ages eighteen years and older.

1

1

1

Figure 1.0 - Main Body Back Panel
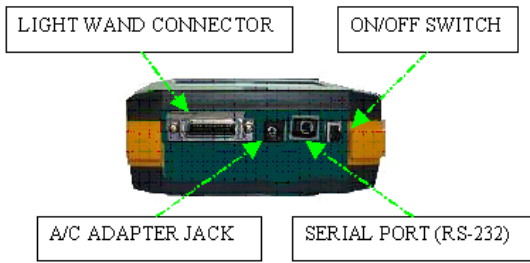
Figure 2.0 - Optical Standard

LIGHT WAND CONNECTOR

ON/OFF SWITCH

A/C ADAPTER JACK

SERIAL PORT (RS-232)
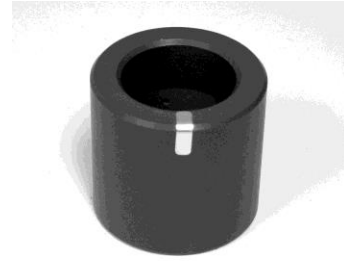
**Figure 1.1 -
Main Body Interface**

Figure 3.0 - Light Wand

F-52/F-62 KEYPAD NOTICE

USE PAD OF FINGER ONLY TO
PRESS KEYPAD BUTTON

LCD DISPLAY

2

Professional
Body Composition Analyzer
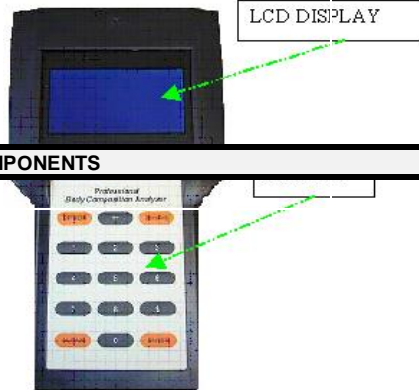
Figure 4.0 - Smart Label Printer (SLP) –Optional   **Figure 4.1 - SLP Paper Installation**
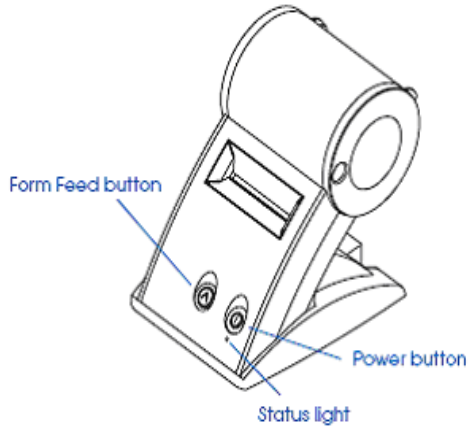
Form Feed button

Power button

Status light

A/C ADAPTER

SERIAL PORT CONNECTOR
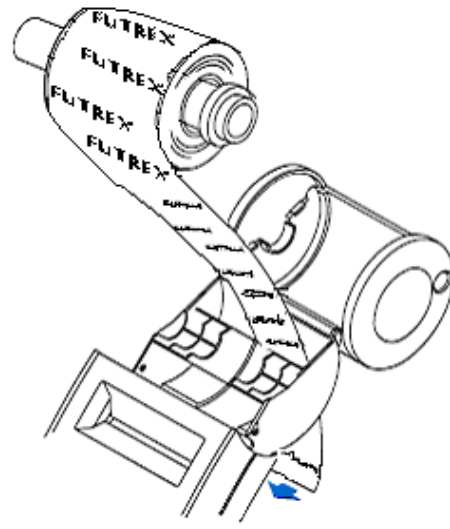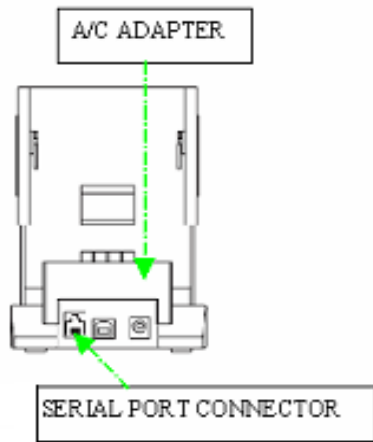
AC Adapter

3

3

Figure 4.2 – SLP Connections – DLP AC Adapter

Figure 4.3

PREPARATION

1. <u>Connecting Power</u>
   Ensure the FUTREX-52/XL is powered using the FUTREX-52/XL A/C adapter (Instrument is not battery operated).

2. <u>Connecting the Light Wand</u>
   Ensure the Light Wand [Figure 3.0] Connector is attached to the Main Body [Figure 1.0] Light Wand Connector.

NOTE: Futrex recommends always leaving the Light Wand attached to the Main Body. This will avoid possible damage to the connector.

3. Connecting the Smart Label Printer (SLP)-Optional

Connect the Futrex RJ14-RS232 cable to the SLP serial port [Figure 4.2] and the other end of the cable to the FUTREX-52/XL main body serial port [Figure 1.0].

Connect the SLP A/C adapter [Figure 4.3] to the back of the SLP [Figure 4.2] and to a power outlet.

Ensure that Futrex paper is installed in the SLP [Figure 4.1].   Turn the SLP on by pressing the SLP power button ⓛ [Figure 4.0]. The SLP status light should be green indicating that the SLP is ready.

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BODY FAT MEASURING PROCEDURE

1.   Turn the power ON/OFF SWITCH on. The display will read and scroll down "© 2006 Futrex, Inc.", followed by the software identification number; then "Press the ENTER KEY to begin a reading"; and finally the date and time is displayed at the bottom of the screen.

Light Wand

Optical Standard

Light Wand

Light Shield

Light Wand Must Protrude 1/8"

Note: Press and hold the CLEAR key to skip introduction greeting.

2. **Press the ENTER key to proceed with the body fat reading. The display will read "Press ZeroAdj key" along with zero adjusting instructions.**

3. **Place the light wand into the optical standard.**
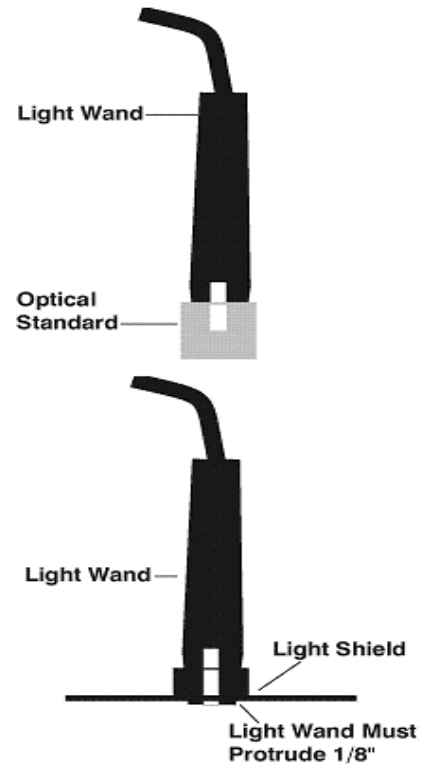   It is important to line the silver stripe on the Optical Standard with the silver stripe on the Light Wand. These alignment marks ensure that the Optical Standard is read exactly the same each time.

4. **Press the ZeroAdj key. The display will flash "Reading…". Once the zero adjustment has been completed, the display will read "Enter Sex:" and "1=MALE   2=FEMALE".**

    Remove the Light Wand from the Optical Standard. Then install the Light Shield on the Light Wand (allow the Light Wand to protrude from the edge of the shield by about 1/8 inch (approximately 3mm)). Line up the silver stripe on the Light Wand with the silver stripe on the Light Shield.

NOTE: The Light Shield is provided to avoid external light from interfering with the estimations of percent body fat. Therefore, this shield must _always_ be used when making a measurement.

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5. **Enter User's Sex.**   **Press KEY 1 for MALE or KEY 2 for FEMALE gender.**

6. **Enter User's Birth Date:**   **Enter two digits for the month and press the ENTER key**
                                    Enter two digits for the day and press the ENTER key
                                    Enter four digits for the year and press the ENTER key

Note: The above order will change based on date format (Refer to page 15 to set date format). The minimum age that can be measured is eighteen years.

7.   <u>Enter User's Height</u> **in inches or centimeters (Refer to page 14 to set unit in either English or Metric units). Use keyboard numbers to enter the height, then press the ENTER key.**

<u>NOTE</u>: **The FUTREX-52/XL cannot be used on individuals whose height is less than 50 in. (125 cm) or taller than 90 in. (225 cm).**

8.   <u>Enter User's Weight</u> **in lbs or kgs. (Refer to page 14 to switch between English or Metric units). Use keyboard numbers to enter the weight, then press the ENTER key. <u>NOTE</u>: The FUTREX-52/XL cannot measure individuals weighing less than 50 lbs (25 kgs.) or more than 500 lbs (225 kgs.).**

9.   **Enter F.I.T. Value**

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The following procedure provides a quantitative method to determine a subjects' Physical Activity Rating.

A person's F.I.T. value is a function of 3 parameters:
- **Exercise Frequency – How often the exercise is performed**
- **Exercise Intensity – How much energy is expended during exercise**
- **Exercise Time – How many minutes the exercise is performed during each session**

The F.I.T. value is calculated by multiplying all three parameters: F.I.T. = Frequency x Intensity x Time

The F.I.T. values help to account for the long term effects of physical activity.

When entering the F.I.T. values, you should consider what the individual's average Frequency, Intensity, and Time have been over the past six months.

For example, if an individual has not been particularly active for a short period of time (i.e. several weeks), but had been previously training for competitive athletics, you should take that previous training regimen into account for the F.I.T. values. Conversely, if an individual has been training hard for a short period of time (i.e. several weeks), but was much less active previously, you should take the previous light activity into account for the F.I.T. values.

9A)   **Enter Frequency Value. Press ENTER**

FREQUENCY	**5**	**Daily or almost daily (6 or 7 times per week)**
	4	**3 to 5 times per week**
	3	**1 or 2 times per week**
	2	**A few times per month**
	1	**Less than once per month**

<div align="center">8</div>

9B)   **Enter Intensity Value. Press ENTER**

INTENSITY	**5**	**Aerobic activities that result in sustained heavy breathing and perspiration (e.g. high impact aerobics, running, speed swimming, distance cycling).**
	4	**Intermittent aerobic activities that result in sustained heavy breathing and perspiration (e.g. tennis, racquet-ball, and squash).**
	3	**Moderate aerobic activity (e.g. normal bike riding, jogging, and low impact aerobics)**

2	Moderate aerobic activity (e.g. recreational volleyball, and moderate speed walking)
1	Light aerobic activity (e.g. normal walking, and golfing).

9C)   Enter Time Value. Press ENTER

TIME	4	Over 30 minutes
	3	20-30 minutes
	2	10-20 minutes
	1	Under 10 minutes

Note: You may customize how the FUTREX-52/XL asks the F.I.T. questions. See page 16 for details

The display will then say "READY TO READ."

10.   Place the Light Wand in the center of the bicep of dominant arm (the arm you write with). Press firmly; use enough force to leave a slight ring on the arm when the Light Wand is removed. Pages 12-13 describe the procedure for locating the exact measurement point.

NOTE: It is important to:
- **Aim the silver stripe on the Light Wand directly toward the shoulder.**
- **Keep the arm relaxed (do not permit the subject to flex his/her muscles). A relaxed biceps can be achieved by having the subject seated while resting his arm (elbow bent) on a table. The hand should be open with the palm facing up.**
- **Use the Light Shield to block the external light. Avoid measurements under strong lights (e.g. direct sunlight).**

Press the Measurement Button on the Light Wand. The display will flash "Reading..." When the measurement has been completed, the display will read "Remove & Replace and press the button the Light Wand or press the ENTER key".

CAUTION: **Do not** move the Light Wand while the word "Reading" is displayed.

Remove the Light Wand and then replace it on the same location on the biceps for a second measurement. Press the Measurement Button or the ENTER key. The display will again flash "Reading..."

The FUTREX-52/XL will display the following results:

- Percent Body Fat; Fat and Lean Weight; Body Water (in percentage and liters); and Body Mass Index

The FUTREX-52/XL SLP printer (Optional) will print the following results:

- Company's   Information (up to 66 characters); Date and Time; Age; Sex; Height; Weight; Percent Body Fat; Fat and Lean Weight; Body Water (in percentage and liters); and Body Mass Index

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NOTE: Refer to page 17 to turn the SLP printer off or on. The printer setting should be turned off, when the SLP is not being used.

If additional people are to be measured, follow on screen instructions to proceed. When all measurements are finished, turn Power Switch to OFF

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LOCATING THE BICEPS MEASURING SITE

Prior to conducting the actual body composition analysis, you should locate the proper measurement site at the biceps of the dominant arm.

1   Hold arm straight out, with the elbow locked, and the palm of the hand facing up towards the ceiling.
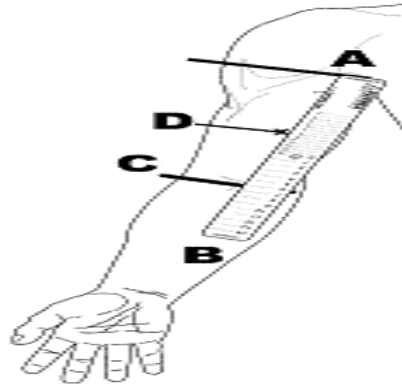
2   Using the Biceps Locator, find the "halfway point" between the armpit and the inside of the elbow, where the elbow bends (i.e. the acromion). Place the end marked "To Underarm" at the point marked "A." The end marked "To Elbow" should extend past the bending point of the elbow towards point marked "B" in Illustration.

3   Once the Biceps locator is in place as described in step 2, identify the number on the Biceps Locator that crosses the point "C" on the arm. Point "C" is the place where the elbow bends.

4   Locate the corresponding number identified by point "D" in Illustration (e.g. if the number at point "C" is "6," then find the corresponding "6" at point "D.") This is the midpoint, or the "belly" of the biceps.

5   It is recommended that you mark this spot by placing a small line just to the inside or outside of the spot with a highlighter or washable marker.

SYSTEM OPTIONS

System options allow English or Metric units, date and time, F.I.T. value customization, company's information, printer status, beeper status, and bias to be set to the user's preference.

Entering and navigating the SYSTEM OPTIONS menu:

1)   Turn power ON/OFF SWITCH to ON position. The display will show and stroll "© 2006 Futrex, Inc."

2)   Press the OPTION key to display "SYSTEM OPTIONS 1 of 3"

3)   Press KEY 4 to switch to display "SYSTEM OPTIONS 2 of 3", repeat to display "SYSTEM OPTIONS 3 of 3"

4)   Press KEY 4 to return to display "SYSTEM OPTIONS 1 of 3"

5)   Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to set the English and Metric units

Access "SYSTEM OPTIONS 1 of 3" (see SYSTEM OPTIONS Steps 1 and 2)

Press KEY 1 to enter the ENG/MET menu

Press KEY 1 to switch between English and Metric standards (current status will be displayed)

Press the CLEAR key to exit the ENG/MET menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

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How to set the date

Access "SYSTEM OPTIONS 1 of 3" (see SYSTEM OPTIONS Steps 1 and 2)

Press KEY 2 to enter the DATE/TIME menu

Press KEY 1 to set the date

Press KEY 1 to change the date format (current format will be displayed) or KEY 2 to change the date

Follow on-screen instructions when changing the date (current date will be displayed)

Note: setting the year below 2006 will give an invalid message

Press the CLEAR key to exit the DATE/TIME menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to set the time

Access "SYSTEM OPTIONS 1 of 3" (see SYSTEM OPTIONS Steps 1 and 2)

Press KEY 2 to enter the DATE/TIME menu

Press KEY 2 to set the time (current time will be displayed)

Press KEY 1 to increment the hour or KEY 2 to increment the minute

Note: Hour cycles from 1 to 12 AM and PM and the minute cycles from 00 to 59.
The seconds will reset to zero after the time is adjusted. Press the ENTER key to save and exit the DATE/TIME menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to customize the F.I.T. values

Access "SYSTEM OPTIONS 1 of 3" (see SYSTEM OPTIONS Steps 1 and 2)

Press KEY 3 to enter the SHOW FIT menu

Note: The system will display the current F.I.T. setting. There are three settings used to customize the F.I.T. questions
        1)   **USE FIT QST (System prompts for Frequency, Intensity, and Time values)**
        2)   **ONE EX. QST (System prompts only for one question i.e. Light, Moderate, or Heavy)**
        3)   **USE PRE-SET (F.I.T. values are pre-set by the operator)**

Press KEY 1 to change the current F.I.T. setting (on-screen instructions are provided).

Press the CLEAR key to exit the SHOW FIT menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to enter Company's Information (Only for Use with Optional SLP Printer)

Access "SYSTEM OPTIONS 2 of 3" (see SYSTEM OPTIONS Steps 1, 2, and 3)

Press KEY 1 to enter the SET CO. INFO. menu

Press KEY 1, 2, or 3 to edit company's information lines 1, 2, or 3 accordingly (current information will be displayed).

Follow on-screen instructions to enter and save company information.

Note: A maximum of 54 characters (18 characters on 3 lines) can be entered.

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Press the CLEAR key to exit the SET CO. INFO. menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to turn the printer off

Access "SYSTEM OPTIONS 2 of 3" (see SYSTEM OPTIONS Steps 1, 2, and 3)

Press KEY 2 to enter the PRINTER ON/OFF menu

Press KEY 1 to switch the printer on and off (current status will be displayed)

Press the CLEAR key to exit the PRINTER ON/OFF menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

How to turn the beeper off

Access "SYSTEM OPTIONS 2 of 3" (see SYSTEM OPTIONS Steps 1, 2, and 3)

Press KEY 3 to enter the BEEPER ON/OFF menu

Press KEY 1 to switch the beeper on and off (current status will be displayed)

Press the CLEAR key to exit the BEEPER ON/OFF menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

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How to adjust the bias

Access "SYSTEM OPTIONS 3 of 3" (see SYSTEM OPTIONS Steps 1, 2, and 3)

Press KEY 1 to enter the SET BIAS ADJ. menu

Press KEY 1 to set the fat bias or KEY 2 to set the water bias

Press KEY 1 to adjust the bias (current bias will be displayed)

Follow the on-screen instructions to set and save the bias

Note: The bias can be adjusted from -10.0 to 10.0

Press the CLEAR key to exit the SET BIAS ADJ. menu

Press the CLEAR key to exit the SYSTEM OPTIONS menu

GENERAL SPECIFICATIONS

1) **MEASUREMENT**

! **Measuring Principle:** **Near Infrared Interactance Technique based on technology from the United States Department of Agriculture.**

! **Measuring Range:** **3% to 45%**

2) **AGE LIMITS** **Eighteen years and older**

3) **POWER SOURCE:** **A/C adapter**

4) **DIMENSIONS:** **Main Body - 4.7 x 9.5 x 2.2 inches**
Light Wand - 2.3 (dia.) x 0.8 (length) inches

5) **WEIGHT:** **2 lbs. (total) (1 kg.)**

6)	ACCESSORIES:	Optical Standard	x1
		Printer Paper (rolls)**	x5
		Users Manual	x1
		Light Shield	x1
		Biceps Locator	x1
		A/C Adapter	x1
		Carrying Case	x1
		Serial Cable for SLP**	x1
		Smart Label Printer**	x1

**Optional

7) ACCURACY OF THE DEVICE

Futrex instruments are as accurate as the Hydrostatic Weighing, which is universally considered to be the "Gold Standard in Body Composition Analysis.

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PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
1) Bad Repeatability	a) Inconsistent measurement technique.	a) Make sure you are applying enough pressure between the Light Wand and the Subject's arm. b) The silver stripe on the Light Wand must be aligned with the silver stripe on the Optical Standard when Zero Adjusting. c) The silver stripe on the Light Wand must point toward the subject's shoulder. d) Use the Light Shield to block the external light. <u>Always</u> avoid measurements under strong light (e.g. direct sunlight) because errors may occur.
2) Unusually high body fat readings (40% - 50%)	a) Too much light present during the reading.	a) Do not lift the Light Wand from the Subject's biceps until "Remove and Replace" appears on the

		display during the first estimation or the printer starts printing after the second estimation. b) Use the Light Shield to block the external light. Always avoid measurements under strong light (e.g. direct sunlight) because errors may occur.