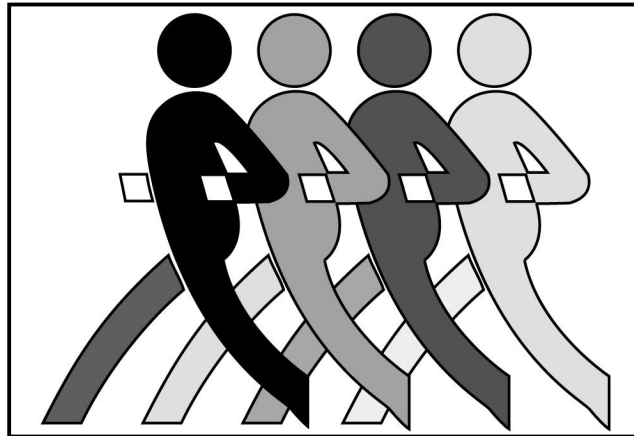# Instruction Manual

Hydroweight Software
Windows Version

Manual No. X17070
For Cat No. 17061 &17062

Abridged Web Site Version

Specifications subject to change without notice

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#17070webMNL.vp

Last Update 12/05

Contents

GENERAL INFORMATION

The water in the tank must be treated with chlorine and checked for proper ph level. We suggest you purchase appropriate chemicals and a test kit from your local swimming pool supply house. You may also wish to buy a pool ladder for easy access to the tank.

You will also need a weighing scale, a thermometer to measure water temperature and a method to measure Residual Volume (RV) or a spirometer to measure Vital Capacity for the estimation of RV.

See also model 17400 Residual Volume Measurement System available from VacuMed.

Warning

Body Fat Measurement System

The Body Fat Measurement System is a hardware and software package designed to allow the user to automate the collection of hydrostatic measurements. Hardware included in this package may include a single transducer, digital weighing indicator, and an RS-232C computer interface.

2. INSTALLATION

Hang the transducer from the support arm using the hardware supplied. The transducer cable should be secured to the supports using the plastic wire ties supplied in the package. The digital indicator must be placed in a location where it **can not** fall, or be accidentally dragged, into the hydrostatic tank. The indicator should be plugged into a properly grounded outlet with a ground fault interrupter. It is mandatory that you have an electrical expert assist you in this step of the process.
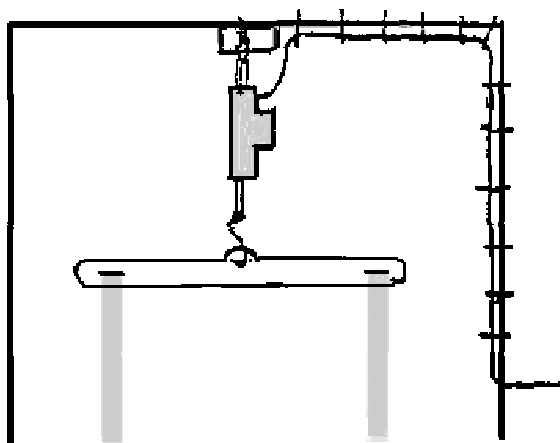
> **Note:** *We cannot, and will not, give you advise about the electrical connection, read the warning on the previous page again!*

3. CALIBRATION

> **Note:** *The transducer and indicator have been calibrated prior to shipment. Do not make any adjustments. The indicator will show an initial negative weight. This is normal, because you must always use the supplied weight belt. The system will not TARE while there is a negative reading.*

It is easy to check the calibration by hanging objects of known weight on the transducer. For example, hang the supplied weight belt or any 2-3kg weight from the transducer and press the TARE button (left). The indicator should now indicate zero weight. Now add an object of known weight on the transducer and read the weight. If the calibration is not within acceptable limits the system must be pre-calibrated. Directions for this procedure are contained in the Instruction Manual of the indicator (pgs 12-14). It is important to note that calibration must be done with a weight close to the maximum capacity of the transducer (50kg).

4. SOFTWARE INSTALLATION

The software supplied with this package is contained on a CD labeled TurboFit "Hydro-Weight".

Install the software to your hard disk, to do so insert software into your CD drive and type:

     D: setup.exe   (Enter)
     (or find setup.exe on the CD)
     Continue as prompted.

The next step in installing the system is to determine if your computer system has an available serial port. If your computer does not presently have an available serial port, you must install one or purchase a USB to Serial Adapter. Your local computer store can help you. If your computer has a serial port and it is not being used by another device, then it may be used for this system. The standard software supplied with this package is designed to read from the connected/active communication port.

In TurboFit, click on **Setup**, then **User Header** to enter the name of your laboratory to be printed on report.

5. RUNNING THE SOFTWARE

1. Click on the **TurboFit** icon

2. Click on **Calibration** to enter ambient temperature, pressure and humidity.

2. Go direct to **Quit to Test** or click **Hydro-Weight** on Main Menu.

4. Click on **New** to enter information for a new subject and **Save**,
   or **Previous** to recall a previously tested subject.

5. If using Load Cell Indicator 17070, check **Use Comm Port**.

6. Enter known **Residual Volume**, or click on **Estimated Residual Volume***
   and enter Vital Capacity so that software will calculate residual volume.

7. Enter **Water Temperature**

8. Click **Continue**

6. PREPARE THE SUBJECT

Warning: *Every test subject with long hair must wear a hair net to prevent their hair from being sucked into the pump.*
Do not use a rubber cap that might trap air under the cap.

You are now ready to conduct a hydrostatic weighing session. Have the subject enter the tank and stand to the side or front of the weighing chair. Have the subject place the weight belt on the chair. Practice with the subject expelling all the air from their lungs. To expel air, it is suggested that the subject be directed to begin to slowly exhale air prior to submerging and as they get to the end of their expiration they submerge and continue to complete exhalation. Direct the subject to move slowly in the tank to reduce the dynamic effects of moving water. If you notice a great deal of variability in your measures, try using more weight on the subject. (If weight is added you must proceed through all the steps, e.g. a new TARE, prior to data collection). This is a learned skill so it may take some practice. A large error may be introduced into your measurement unless the water in the tank remains calm when you are taking a tare or net weight.

7. TARE WEIGHT PROCEDURE

Place the weight belt in the chair. When the subject is ready, have him/her slowly expel their air and submerge their head while not sitting in the chair. The total body should be submerged and no part of the subject should be leaning on the weighing chair. Add additional weights to the weight belt if the weighing indicator shows a negative weight.

When all the subject's air is released and the is water quiet, press the TARE button on the indicator or on the hand held remote control. This procedure zeros the weight of the chair and weight belt. The tare LED on the indicator

should light, the weight should now indicate "0.0" and the arrow should now point to NET. It is important to note that a tare weight will not be entered unless the motion indicator is not lit on the indicator and the weight placed on the chair is sufficient to record a positive weight on the indicator.

The motion indicator arrow comes on when the surface water is so disturbed that the indicator can not get an accurate weight. If you encounter a problem and desire to take a second tare weight, place the indicator in the standby mode, then with the TARE button depressed press OPERATE. This will clear the old tare weight. When this procedure is completed press RETURN on the keyboard to advance to the next step.

8. UNDERWATER WEIGHING

The subject can now place the weight belt around their waist and get into the chair. No part of their body should be touching the sides or bottom of the tank.

You are now ready to collect data. Have the subject slowly empty his/her lungs and lean forward and submerge. Do this slowly so the water is not disturbed. When the bubbles stop press the PRINT button on the indicator or the right button on the hand held remote control. The computer will beep when the data is received and will briefly display the data. This beep is the signal for the test subject to surface.

Software Procedure

1. Follow Subject Testing Prompts

2. Each time PRINT is pressed a new trial (H2O Weight) is recorded.

3. Check "Select to Average" boxes to average trials you select.

4. Click **RESULTS** to see %Body Fat for trial(s) checked.

5. Click **SAVE** to save trials.

6. Click **REPORT** for Print Preview

7. If desired, click into bottom of page to add comments

8. Click **PRINT** to print report

9. For manual entry of underwater weight click into the **H2O Weight** field, enter the underwater weight and hit **ENTER**.

In this example, the user wants to average the results of tests 1, 2 and 4, so he checks the boxes of tests 1, 2 and 4, then clicks **Save**.

You can view the result immediately by clicking Results, then get a printed record by clicking Report.

9. Printing

To print a report from a previously tested subject, click on the **Review** button, select the file and click **Open**.

Note that you can add comments prior to printing by clicking into the **Comments** section at the bottom of the page.

Hydro weight files are saved as *.hdwt files.

VacuMed (Version 5.05 / 12-06-05)
4538 Westinghouse Street
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Body Fat Measurement Report

ID(M/F)	1234567	BMI	28.41
Sex	Male	BSA	2.08 (m2)
First Name	Bee		
Last Name	Fat	File Name	FatBee3.hdwt
D.O.B (Age)	1 August 1909(96)		
Weight	90 Kg (200 Lbs)		
Height	178 cm (70 Inches)	Date Printed	12/06/2005

Test Conditions

Date	12/06/2005	Time	19:30:12
Temperature	24.0 °C	Water Temp	30 °C
Baro Pressure	756	Residual Volume	0.95 (measured)
Humidity	55 %		

Results

PERCENT BODY FAT	35.48 %
FAT WEIGHT	70.25 Lbs (31.61 Kg)
LEAN BODY WEIGHT	127.75 Lbs (57.49 Kg)
DESIRABLE WEIGHT	150.30 Lbs (67.63 Kg)
NEEDED WT LOSS	47.70 Lbs (21.47 Kg)

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BODY FAT NORMS

CLASSIFICATION	MALES	FEMALES
ESSENTIAL FAT	2.0 - 4.0%	10.0 - 12.0%
VERY LEAN	6.0 - 8.0%	14.0 - 16.0%
LEAN	10 - 13.0%	17.0 - 20.0%
AVERAGE	14.0 - 1.0%	21.0 - 24.0%
ABOVE NORMAL FAT	1.0 - 24.0%	25.0 - 29.0%
OBESE	25.0% +	30.0% +

Comments

Bee's goal is to lose 10 pounds