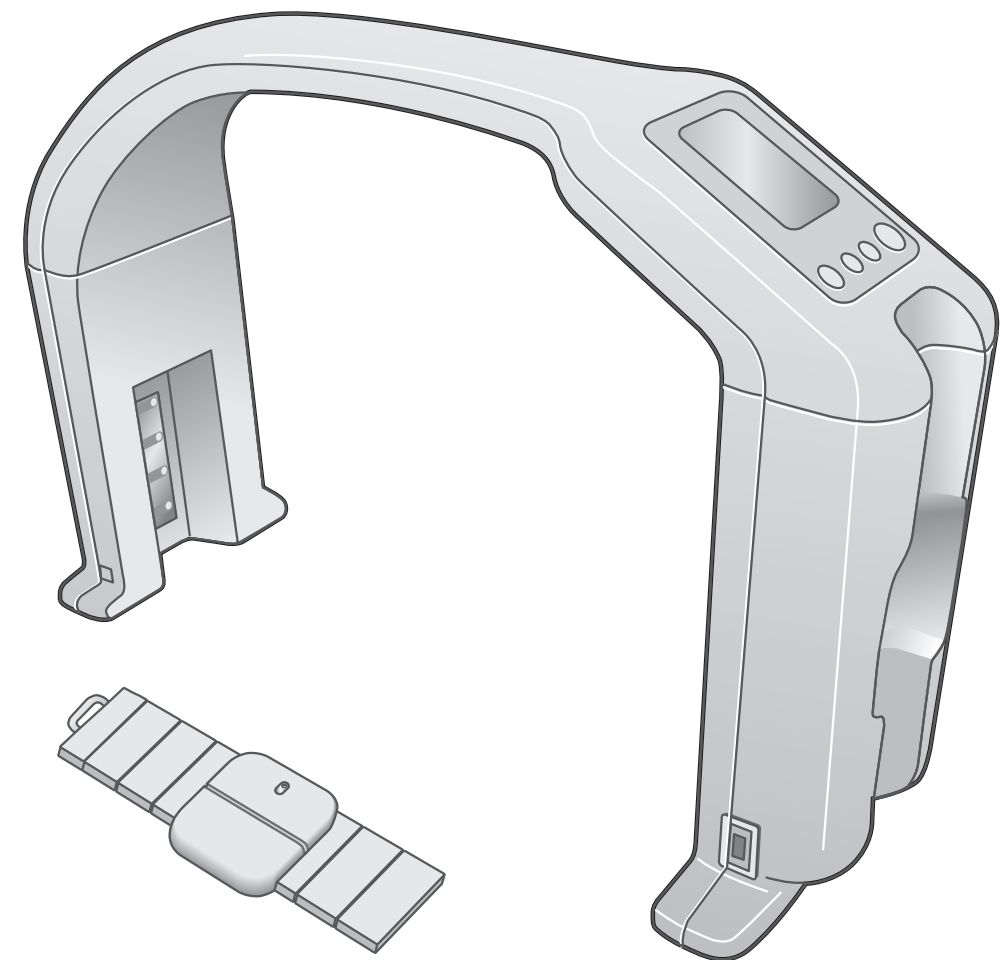


Abdominal Fat Analyser AB-140
Instruction Manual
ViScan



This device features radio interference suppression in compliance with EC Regulation 2004/108/EC

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Thank you for purchasing the AB-140 Abdominal Fat Analyser.

N.B.

Misuse of this device may result in a serious accident.
Please ensure that you read this Instruction Manual
thoroughly prior to use and store it in a convenient
location for easy reference.

Analyses can now be made of people for whom it was previously impossible.

The AB-140 makes use of the abdominal Bioelectrical Impedance Analysis (BIA) method to directly measure the abdomen of a subject in the supine position. With this method, the previously difficult task of managing the health of people who are unable to stand or are otherwise disabled becomes possible.

The AB-140 also has the latest reactance technology functions, which allows analyses to reflect cellular changes in the abdominal cavity and individual differences.

The AB-140 is recommended for use in the following fields.

- To manage the health and encourage the education of people for whom analysis has previously been impossible, such as the disabled and the obese.
- To determine the effectiveness of rehabilitation and sports training.
- To determine the effectiveness of dietetic and exercise treatment.



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Prior to Use

How to Use

As Needed

For Your Safety

always adhere to the following

The following outlines precautionary measures to be taken to avoid injury to the users of this device and others, and to prevent damage to property. Please familiarise yourself with the contents to ensure the safe operation of this equipment.

Warning Ignoring instructions highlighted with this mark could result in death or severe injury.

Caution Ignoring instructions highlighted with this mark could result in injury or damage to property.



This mark indicates actions that are prohibited.



This mark indicates instructions that must always be adhered to.

Warning

This device must not be used on subjects with pacemakers or other mechanical implants.

This device passes a weak electrical current through the body which could interfere with and cause the malfunction of electrical medical implants, resulting in serious repercussions.

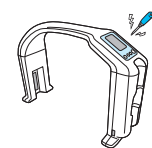


This device must not be used on women who are pregnant or may be pregnant as the foetus may be affected.



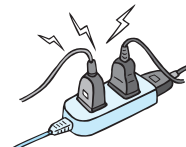
Do not dismantle or modify.

There is a risk of electrocution or injury. Nor can precise analysis be guaranteed.



Do not use double adapters.

May result in fire.



Do not interpret analysis results yourself (including evaluating measurements and formulating exercise programmes based on results, etc.).

Weight loss and exercise based on self-analysis could be detrimental to your health. Always follow the advice of a qualified professional.



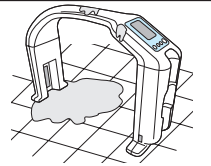
Do not shine the laser beam directly into the eyes.

Damage to eyesight may occur.

Caution

Take care near water.

To avoid damage, do not use this device near water or other places where it may get wet.



To avoid injury, do not insert fingers into gaps and holes.

Avoid impacts on the display.

The acrylic screen may split and cause injury.

Quickly remove moisture from the display screen to avoid, deformity, colour change, staining and fading.



Prohibited

Wipe over the impedance meter electrodes with disinfectant (alcohol, etc.) prior to measuring.

This is to avoid the transmission of disease when the meter is placed on the abdomen.

Use only the dedicated AC adapter and cord.

The use of other adapters/cords may result in damage or fire.

Continually monitor both the subject and the equipment for anomalies.

Should an anomaly with the subject or the equipment be discovered, take appropriate action, such as stopping the equipment, while ensuring the safety of the subject.

Ensure disabled persons do not attempt to use the equipment by themselves.

A companion must perform the measurements.

Do not expose items sensitive to magnetic forces to the equipment.

Exposing items that may be affected by the magnetic force of the magnet on the impedance meter (floppy disks, USB memory sticks, etc.) may result in corruption of data.

Avoid using on subjects with allergies to metals.

Allergic reactions may be caused by the stainless steel used in the electrodes of this device.



Always...

For Accurate Measurements



Prohibited

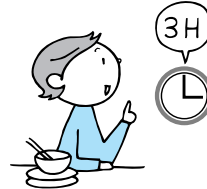
Avoid measuring after hard exercise.

May result in measurement errors. Please take measurements after sufficient rest.



Avoid measuring after over-eating or over-drinking, and when severely dehydrated.

May result in measurement errors. For greater accuracy, avoid using directly after waking up. Use at the same time on each occasion, at least three hours after eating.



Use the device under the same conditions and in the same position as much as possible to track changes.

Readings are greatly affected by the level of hydration and position of the body. Please use at the same time each day, under the same conditions and in the same body position.



Avoid measuring in locations of greatly differing temperature.

May result in measurement errors. When the equipment has been moved to a location $\pm 20^{\circ}\text{C}$, allow to stand for at least 2 hours before using.



Avoid using near equipment that emits electromagnetic waves.

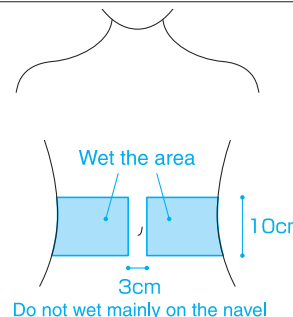
May interfere with some equipment, such as lighting (inverter fluorescent lights), medical devices (microwave therapy equipment) and communications equipment (mobile phones), and malfunction. Confirm prior to use.



Always...

Wet the area of the abdomen to which the electrodes are to be attached and ensure correct positioning.

To wet, lightly wipe the area with moistened cotton wool or a damp cloth. Due to the influence of the state of the skin and body hair, etc., abnormally high readings and measurement errors may occur if the device is used without wetting the area.

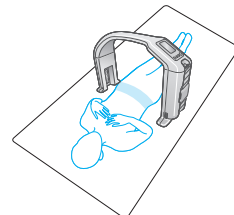


Use in a stable location.

Errors in measurements may occur when the device is used in an unstable location.

Use an examination table, thin mat or other suitably firm surface when measuring.

The use of soft surfaces or thick mats may result in measurement errors due to the abdominal area sinking into the surface with resulting changes in form.



Maintaining Precision

The AB-140 is a precision crafted device. Please adhere to the following to ensure continued good working order.

[Setting Up]

- Do not place in direct sunlight, near heaters or the air stream from air-conditioners.
- Do not place in locations of extreme temperature fluctuations.
- Do not place in highly humid or damp places.
- Do not expose to strong vibrations.
- Do not place in locations where chemicals are stored or gas may be present.

[Handling]

- Never wash down with water.
- Do not expose to strong shocks or vibrations.
- Do not remove the AC cord from sockets by pulling on the cord.
- When the device is not to be used for extended periods, turn the power off and remove the AC cord from the socket.

[Storage]

- Do not store where the device will be exposed to strong vibrations.
- Do not store in humid or dusty locations.
- Do not store in locations where the temperature is outside stated parameters.
- When the device has not been used for extended periods, please ensure the device is operating normally and safely prior to recommencing use.

[Care]

- Never use hot water or substances such as benzene or solvents.
To clean, use a cloth moistened with water or a household detergent. Then wipe over with a soft, dry cloth.

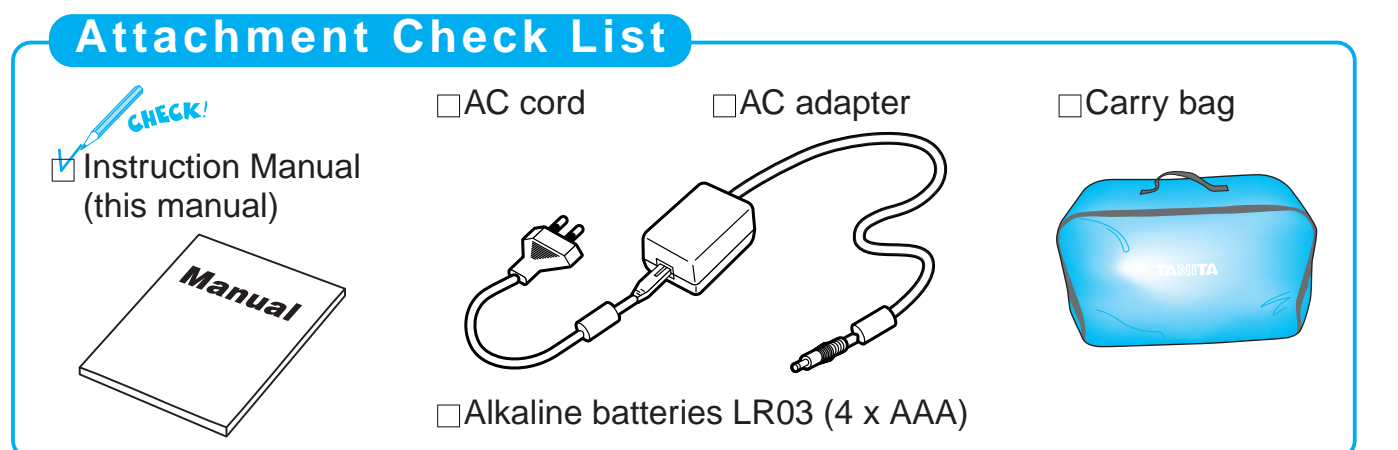
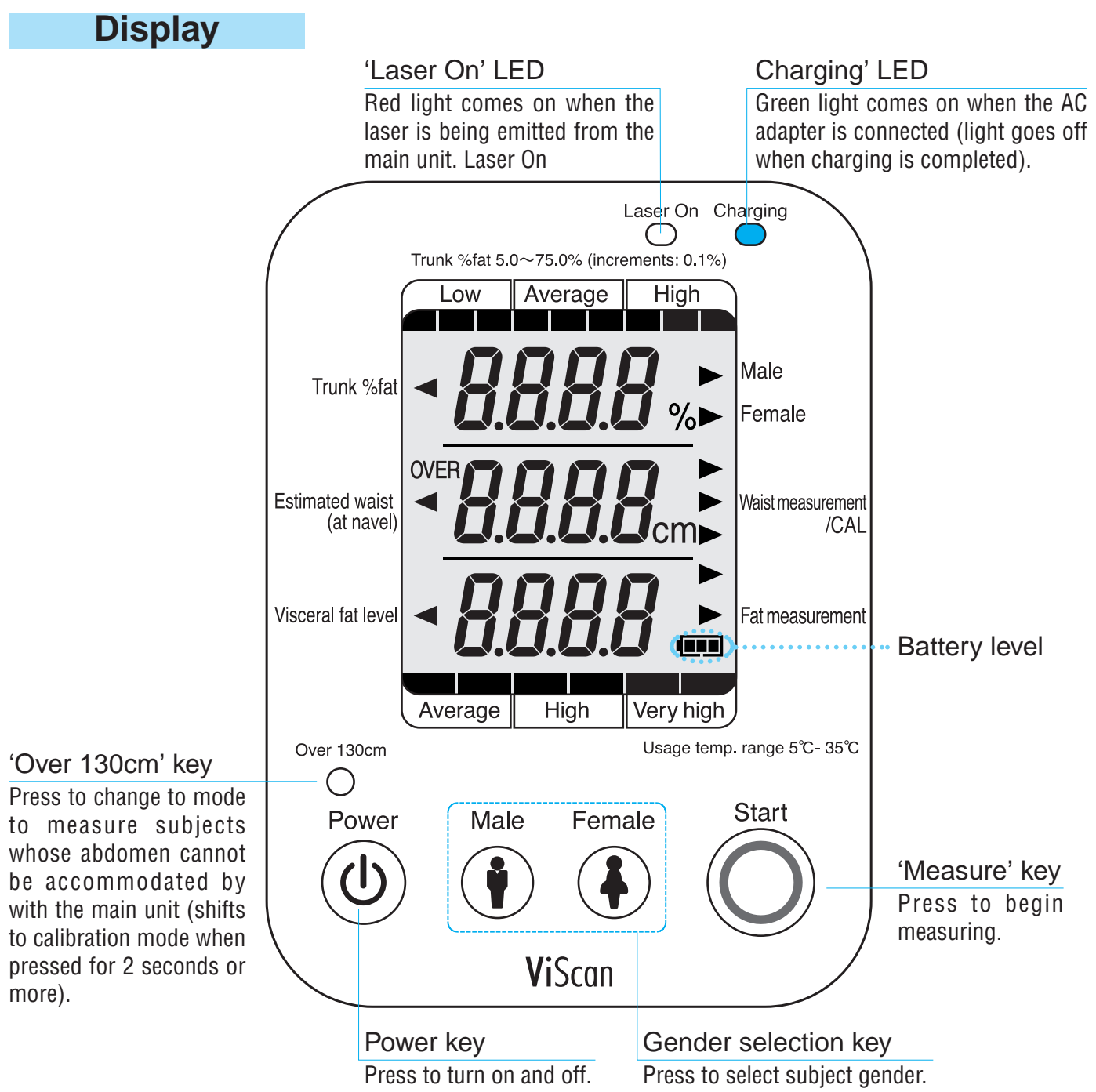
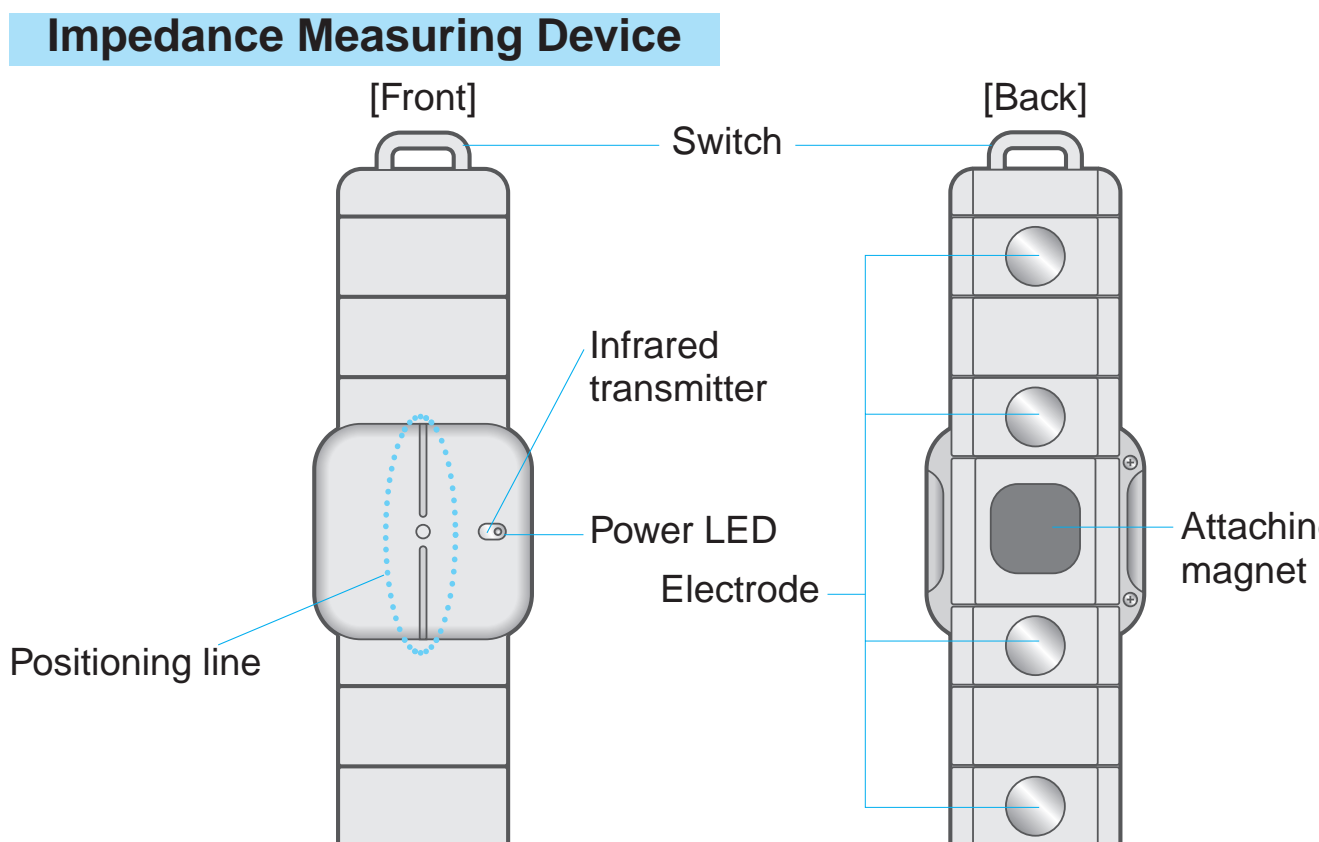
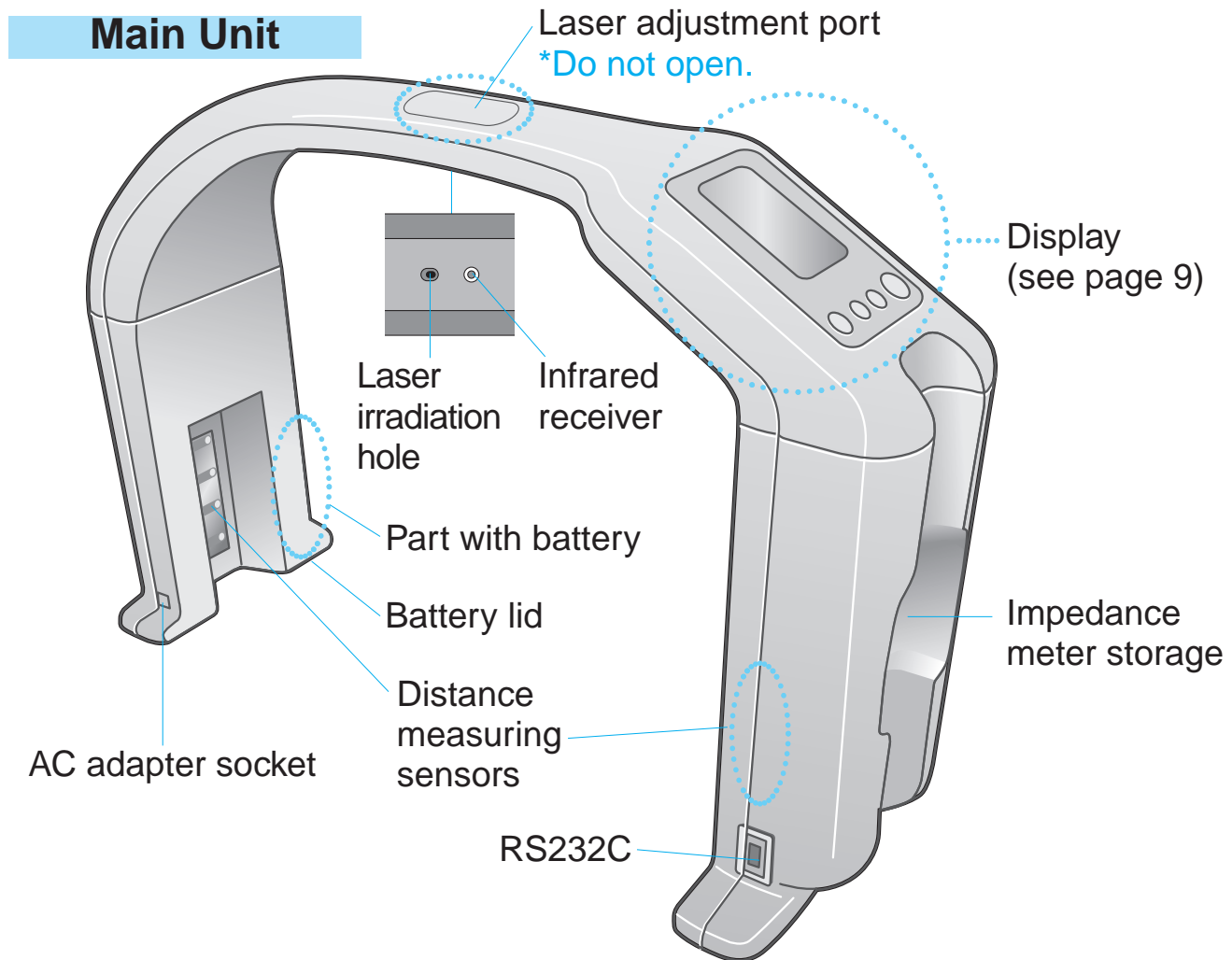


Always...

Parts and Attachments

Prior to Use

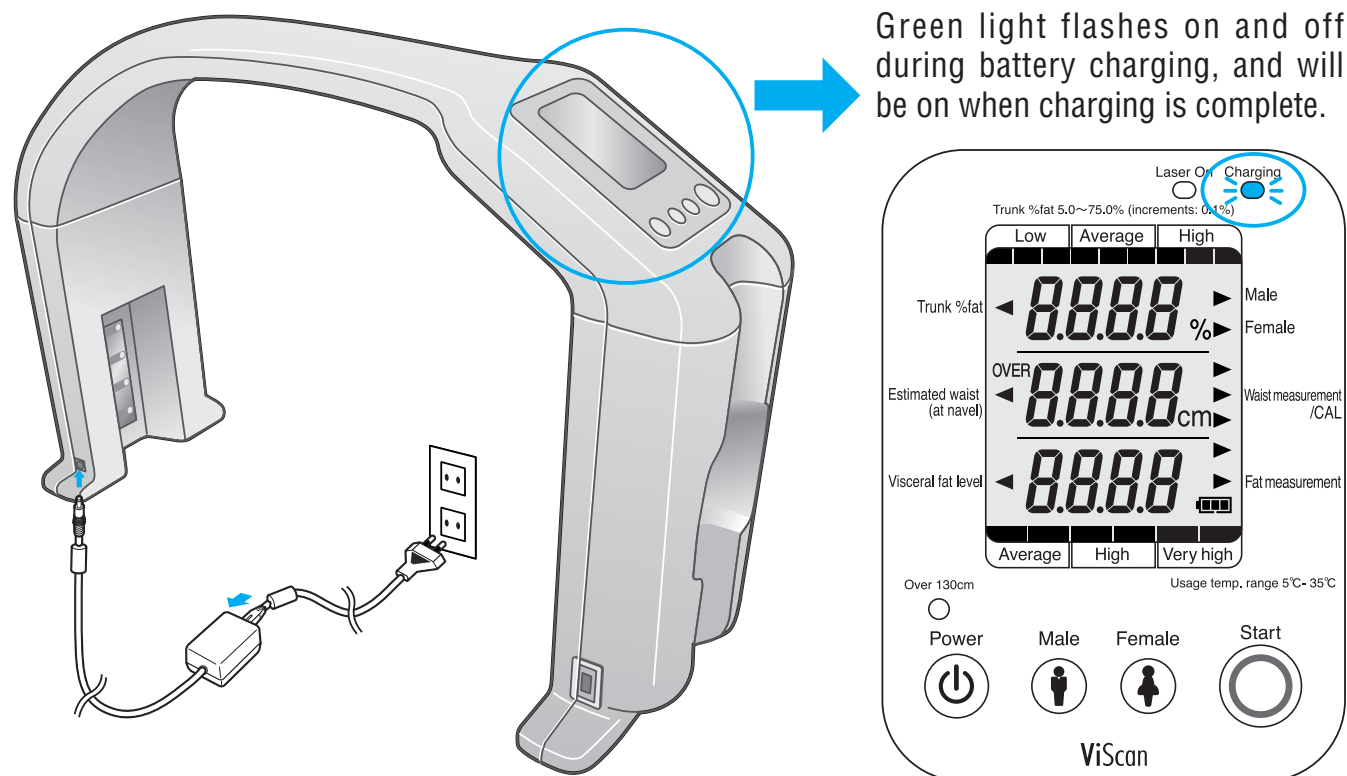
Prior to Use



Before You Start

Charging the Battery (main unit)

1. Insert the AC adapter jack into the AC adapter connection on the main unit.
2. Plug the AC adapter into the power point.
 - The battery will fully charge in approximately 2 hours.
 - A fully charged battery will last for approximately 1000 measurements (although this may differ according to how measurements are conducted).
 - The remaining battery level is displayed in 'Battery Level' when the unit is turned on (see page 9). Recharge when the battery level gets low.
3. Remove the AC adapter from the main unit when charging is complete.



⚠ Caution

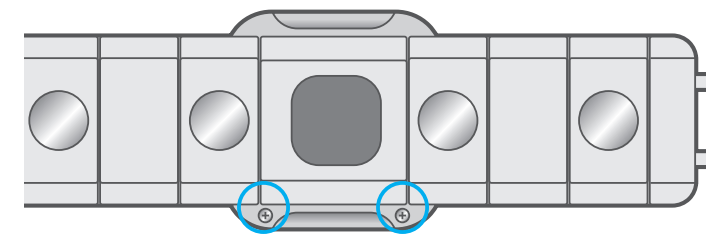
- Always use the dedicated AC adapter and AC cord. Use of other adapters may result in damage or fire.

Please...

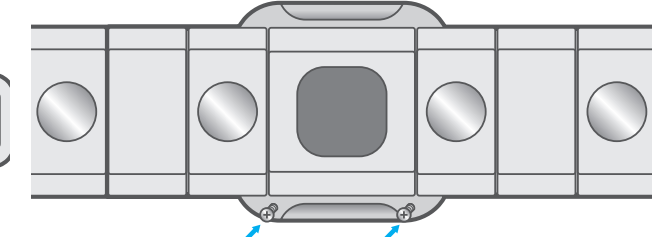
- Charge the battery immediately after purchase.
- The main unit cannot measure during charging.
- Remove the AC adapter from the main unit when:
 - taking measurements
 - moving the main unit
 - charging is complete

Inserting Batteries (Impedance Meter)

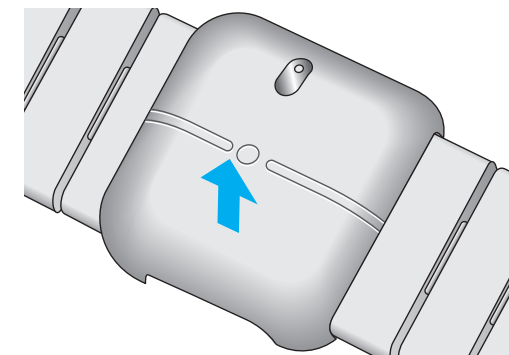
1. Turn over



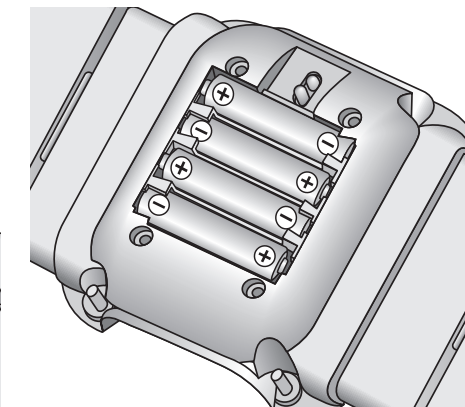
2. Loosen screws



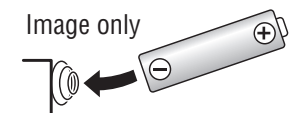
3. Turn over to front side and remove the cover



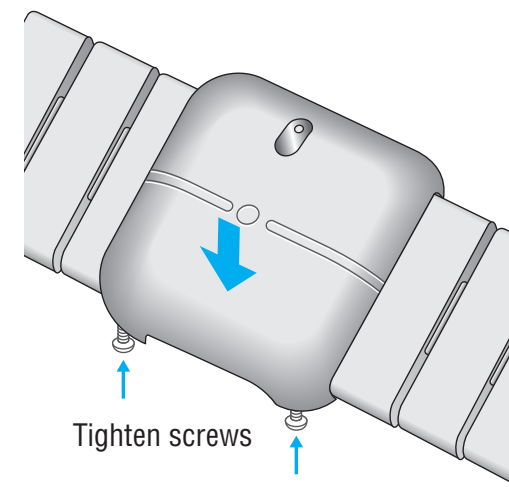
4. Insert batteries



- *Please use LR03 alkaline batteries
- *Insert batteries so that the flat surface of the minus pole touches the tip of the spring.

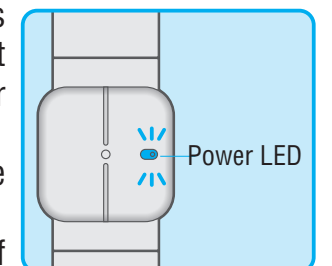


5. Close cover



Replacing Batteries

- Please replace all four batteries should the green 'Power' LED not come on when the impedance meter is removed from the main unit. Note: Do not use rechargeable batteries. Note: Never use a combination of alkaline and manganese batteries. Note: The batteries that come with the unit were inserted at the time of leaving the manufacturing plant. As such, they may have a limited life.
- The life of the batteries is approximately two years (using the unit five times/day). Note: This may differ according to measuring methods used.
- Disposing of used batteries. Please dispose of used batteries in accordance with the regulations of your local governing body.



⚠ Warning

- Inserting batteries incorrectly may result in overheating of the impedance meter. Do not use the impedance meter when it has overheated.

Positioning the Unit Correctly

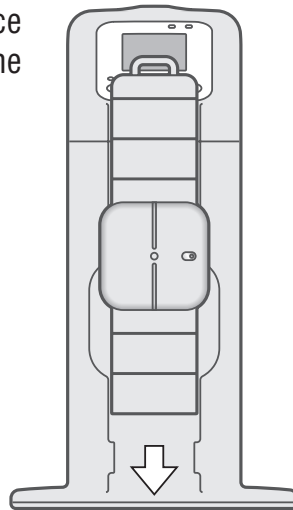
Use on a flat, stable surface.

- Do not place in direct sunlight, near heaters or the air stream from air-conditioners.
- Do not place in locations of extreme temperature fluctuations.
- Do not place in highly humid or damp places.

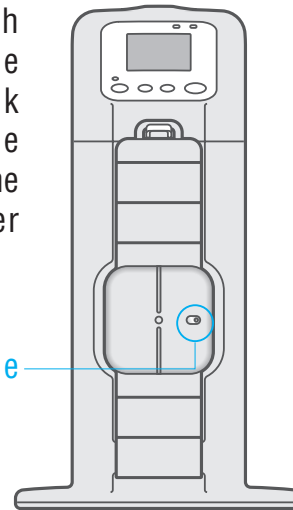
For Your Reference

- Store the impedance meter in the main unit when not in use.

1. Slide the impedance meter down from the top.



2. Hang the switch hanger on the main unit hook (ensure that the Power LED on the impedance meter is off).



Check that the Power LED is off.

Please...

- Do not expose the impedance meter to strong impacts when it is stored in the main unit as it may fall off.

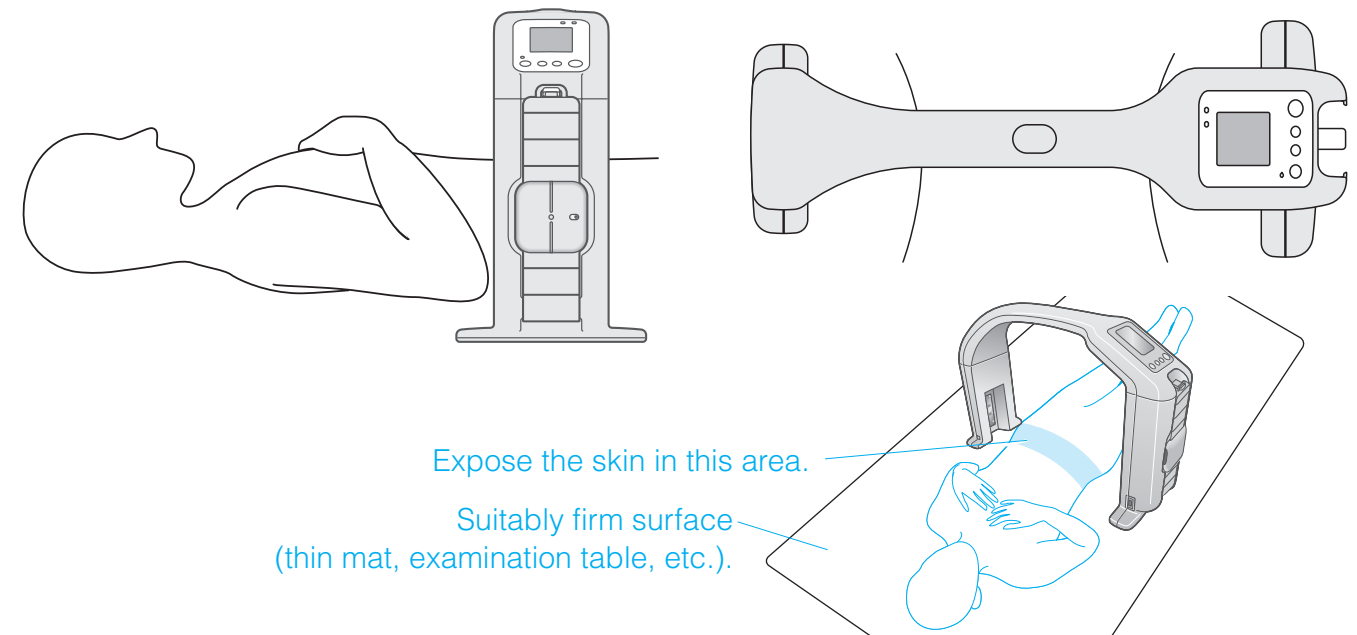
1 Have the subject lie down facing up on a thin mat or examination table.

2 Expose the navel area.

3 Position the main unit over the abdominal area of the supine subject.

*If the patient is clothed, completely expose the skin on abdomen and sides for an area of 10cm centred on the navel.

*The display of the main unit may be on either the left or right side of the subject.

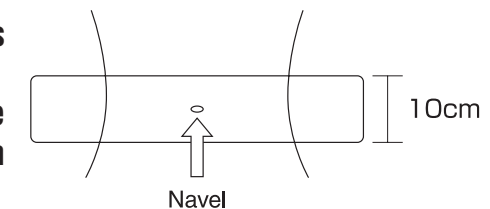


Expose the skin in this area.

Suitably firm surface (thin mat, examination table, etc.).

Please...

- Ensure the subject's hands are placed on their chest as shown in the diagram above.
- As the distance sensor measures the breadth of the abdomen, ensure that no clothes or elbows impinge on the 10cm area centred on the navel.
- Do not allow the distance sensors to come into contact with the abdomen. Refer to page 21, Waist Circumferences Over 130cm, when contact is unavoidable due to a large waist, or when the main unit cannot accommodate the size of the abdomen.
- Pillows may cause measurement errors. Avoid using them as much as possible.



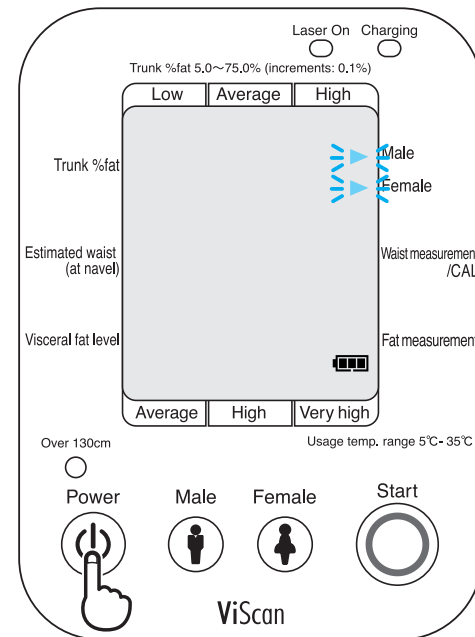
The setting up phase is now complete.

*Blue print in display illustrations indicates parts that illuminate or flash.

4 Press on the main unit to turn on.

The initial screen is displayed.

*The main unit will turn itself off if not used for a period of approximately 2 minutes.



*Blue print in display illustrations indicates parts that illuminate or flash.

5 Select gender

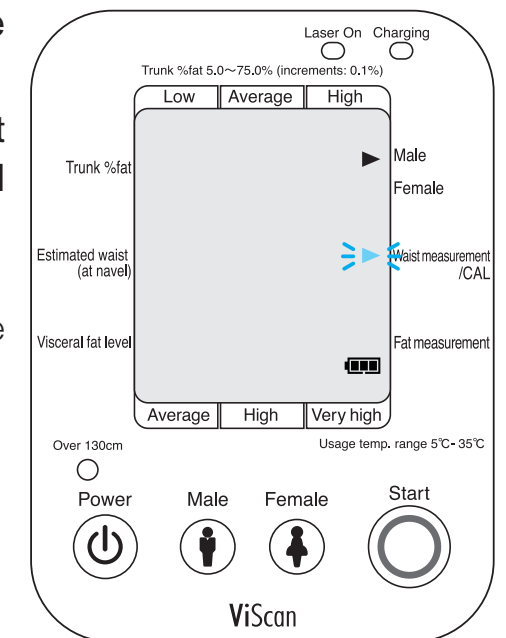
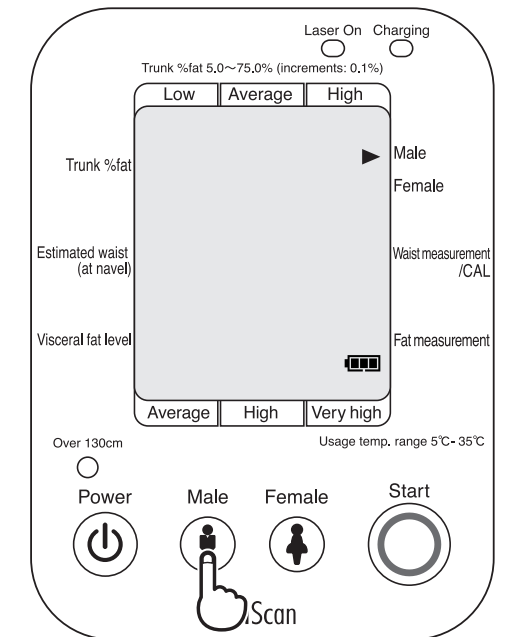
1. Press  or 

*On this screen  has been selected.

2. Once the gender has been selected, the screen will change as shown.

At this time, the red Laser On LED will light up, and the laser in the main unit will operate.

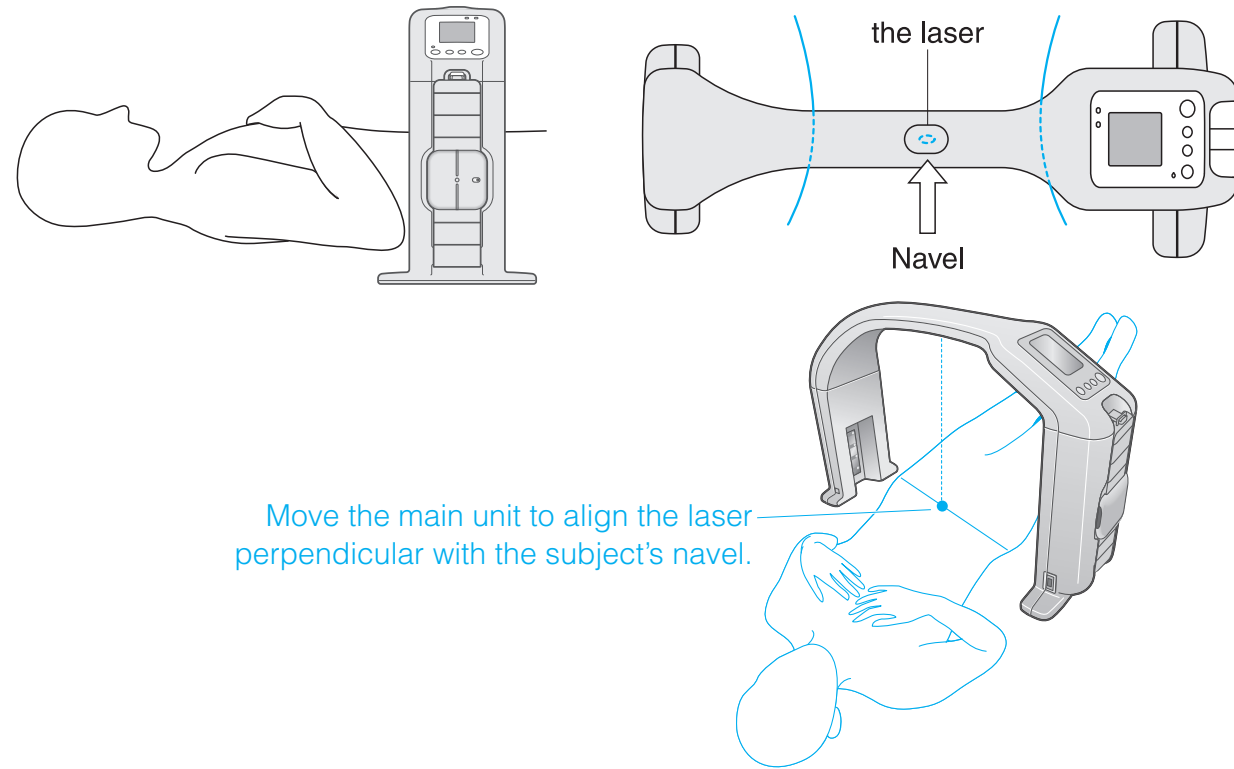
*To change the gender selection, turn the power off then re-select.



*Blue print in display illustrations indicates parts that illuminate or flash.

6 Preparations for waist measurement

Align the laser with the position of the subject's navel.



Warning

- Do not direct the laser directly towards the eyes as this may cause damage to eyesight.

Please...

- Have the subject breathe normally while measurements are being taken.
- Do not allow the distance sensors to come into contact with the abdomen. Refer to page 21, Waist Circumferences Over 130cm, when contact is unavoidable due to a large waist, or when the main unit cannot accommodate the size of the abdomen.

*Blue print in display illustrations indicates parts that illuminate or flash.

7 Commencing waist measurement

Press the 'Start' key.

- 0000 indicates that measurement is in progress ('measuring'). (The zeros will disappear consecutively.)

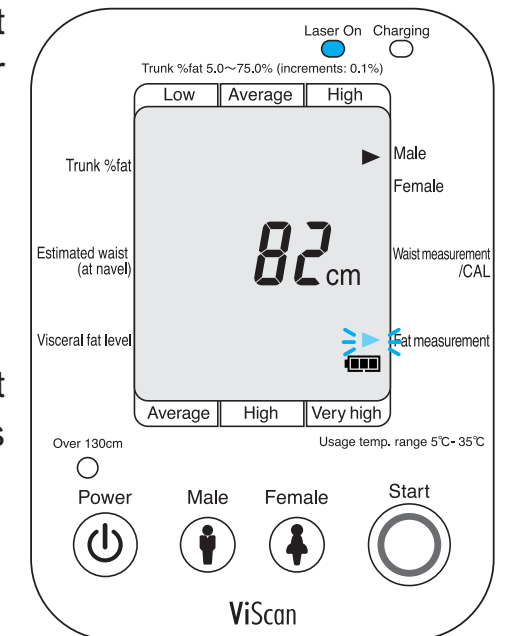
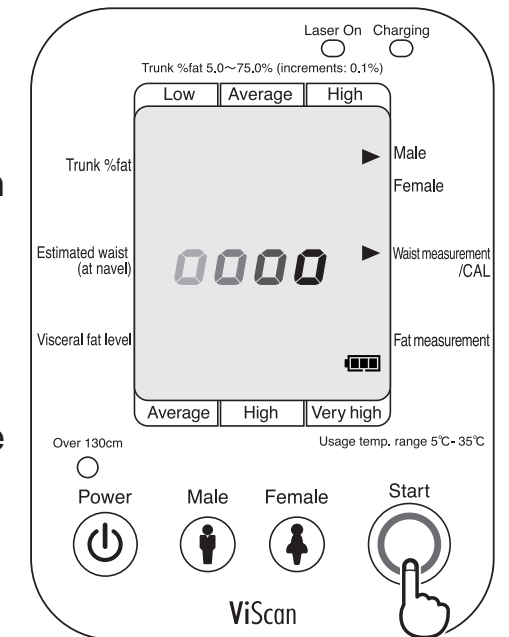
Upon completion of waist measuring, the screen will change as shown.

- The device will progress to fat measurement mode (the main unit laser will once again begin to operate).

For Your Reference

- Do not move the main unit or the subject until measuring has been completed.

The estimated waist measurement (abdominal circumference) at the navel is displayed.



*Blue print in display illustrations indicates parts that illuminate or flash.

8 Preparing to take fat measurements

1. Wet the area of the abdomen to which electrodes will be attached.

Please...

- To wet, wipe lightly with moistened cotton wool or other cloth.

2. Place the impedance meter across the navel of the subject with the electrodes facing down.

*The impedance meter can be oriented in either direction.

Please...

- Check that the green Power LED is illuminated when positioning the impedance meter.

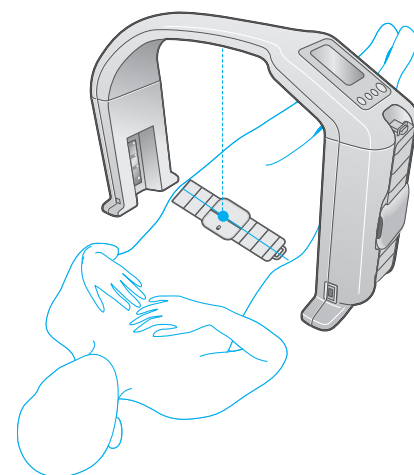
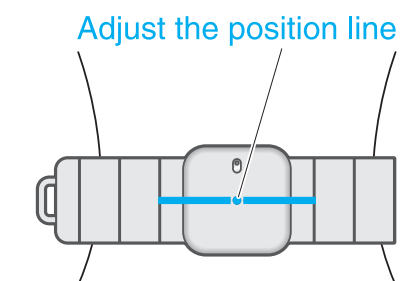
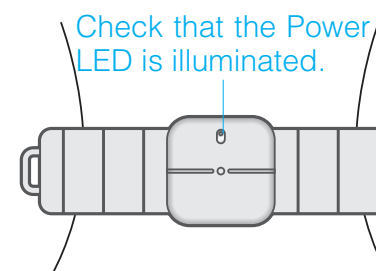
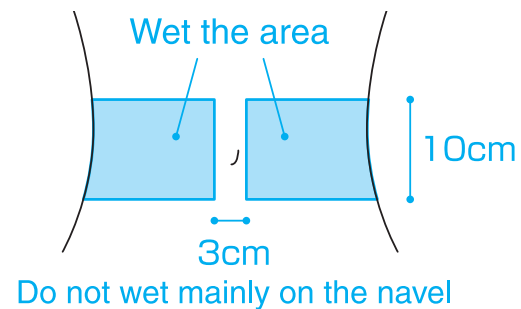
*The impedance meter Power LED will automatically turn off when more than approximately 10 minutes passes between the LED coming on and the impedance meter being placed on the abdomen.

3. The impedance meter detects the subject's body and a buzzer will sound (beep).

4. Align the positioning line on the impedance meter with the laser to adjust the position.

Warning

- Do not direct the laser directly towards the eyes as this may cause damage to eyesight.



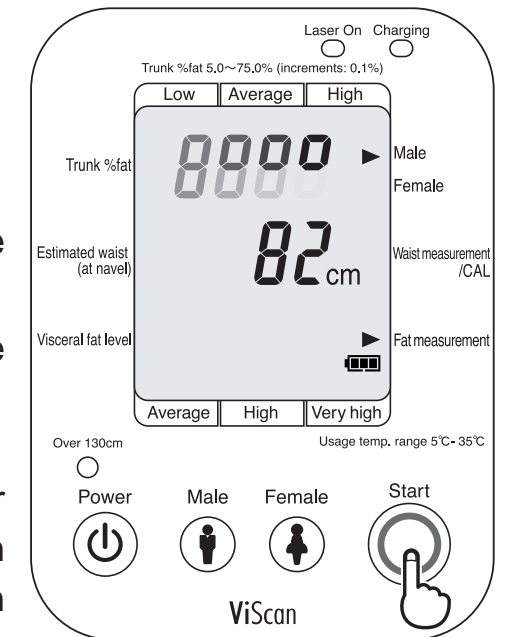
9 Commencing fat measurement

Press the 'Start' key.

1. Trunk % fat is displayed as **00.00**.
(The **00.00** moves as shown in the diagram at right.)

2. The impedance meter buzzer sounds twice when measurements are complete (beep, beep).

Please do not move the impedance meter or main unit until results have been displayed (the impedance meter and main unit transfer data).



Please...

- Do not connect together two or more units as this may cause malfunctions.
- Have the subject breathe normally during measuring.

For Your Reference

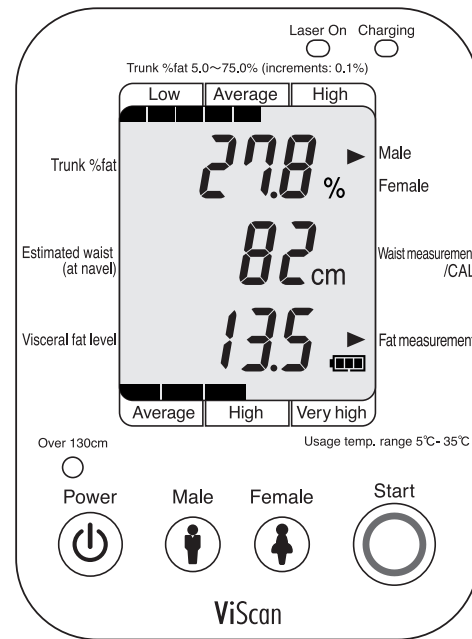
- Infrared communication may not be possible when:
 - the unit is set up outdoors or in direct sunlight
 - clothing or other items come between the main unit and the impedance meter
 - lighting is positioned close by
 - remote controllers for televisions, etc., are used near the impedance meter or main unit
 - the batteries have expired

10 Display of results

The trunk % fat percentage and visceral fat levels are displayed on the upper and lower bar, respectively.

*The main unit buzzer will sound twice when the results have been displayed (beep, beep).

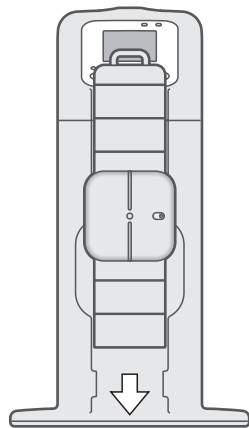
*Refer to pages 32 and 33 for how to read results.



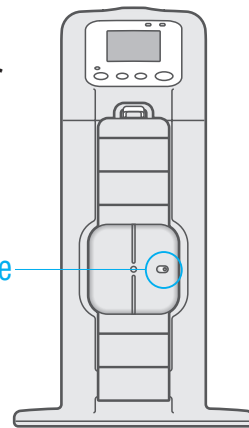
11 Storing the impedance meter

Always store the impedance meter in the main unit upon completion of measuring (the impedance meter transfer mode will end and the meter will return to a state ready for use).

1. Slide the impedance meter down from the top.



2. Hang the switch hanger on the main unit hook



Check that the Power LED is off

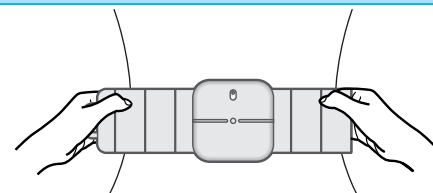
12 End measuring

Press the key on the main unit to turn off.

*If the main unit power is not turned off, it will automatically turn off after results have been displayed for approximately two minutes.

For Your Reference

■ Take care not to catch the body hair or skin of the subject when moving the impedance meter on the abdomen. Use both hands on either side of the impedance meter, as shown in the diagram.



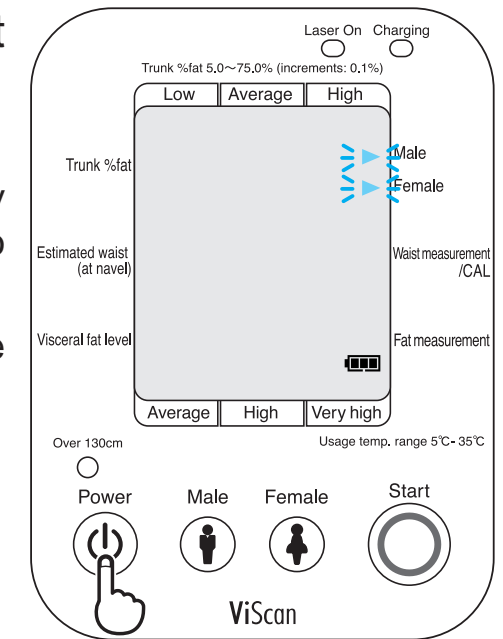
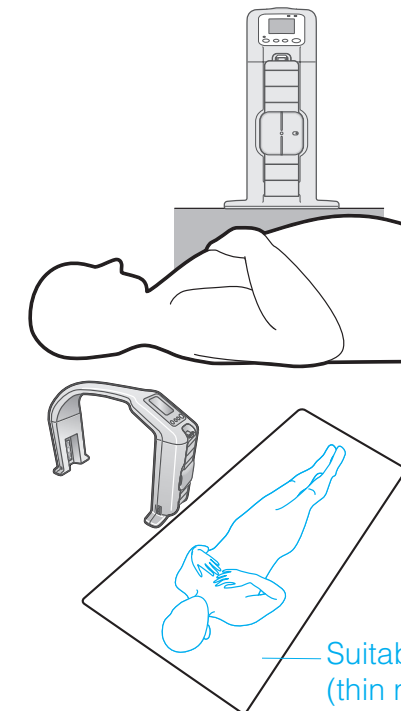
*Blue print in display illustrations indicates parts that illuminate or flash.

1 Press the key on the main unit to turn on.

The initial screen is displayed.

This mode allows measurements to be easily taken when the waist of subject is too big to be accommodated by the main unit.

Place the main unit close to the supine subject as shown in the diagram below.



*The main unit will switch off automatically after two minutes in the absence of any operation.

Please...

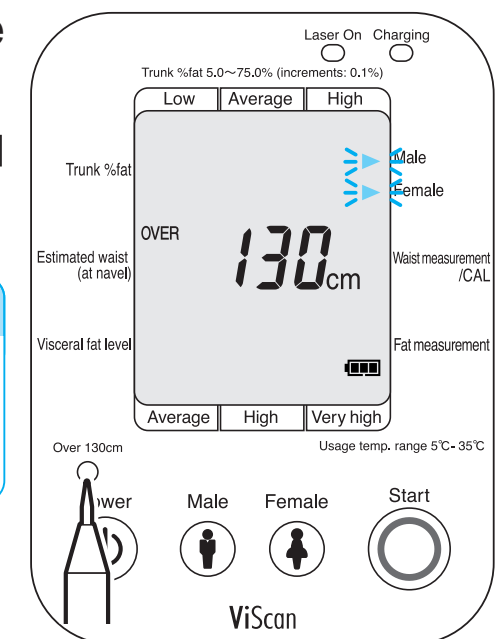
■ Pillows can cause errors in measurements. Avoid using as much as possible.

2 Press the OVER 130cm key to change the mode.

*At right is the screen when the [over 130cm] mode is selected.

For Your Reference



■ Please use the tip of a pen or other fine instrument to press the OVER 130cm key (taking care not to damage the unit).



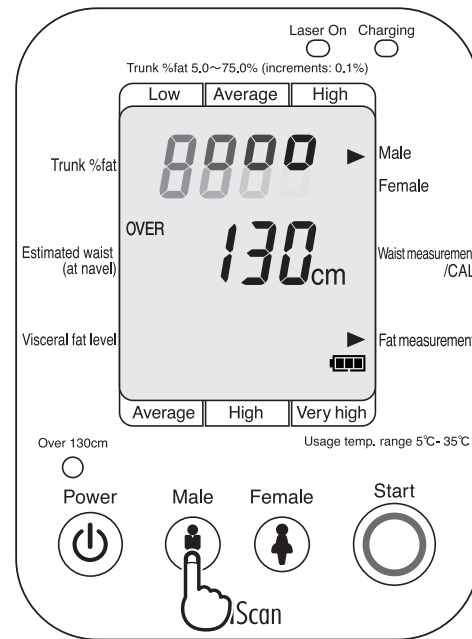
3 Select gender

Select either the  or  key.

*On this screen the  key has been selected.

The trunk % fat percentage display appears as . (The  moves as shown in the diagram at right)

*To change to gender selection, turn the unit off then on again before making a new selection.

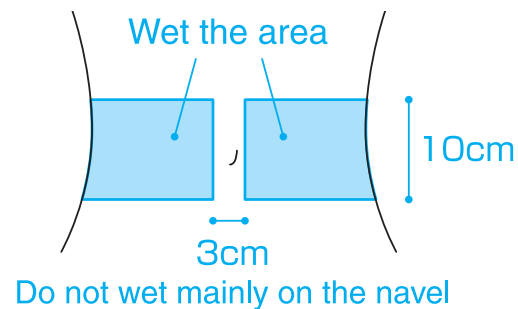


4 Commencing fat measurements

1. Wet the area of the abdomen to which the electrodes are to be attached.

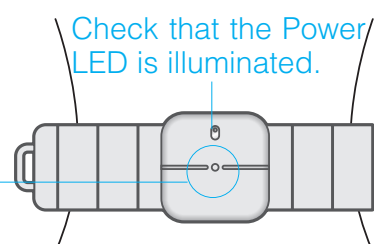
Please...

- To wet, wipe lightly with moistened cotton wool or a damp cloth.



2. Place the impedance meter across the navel of the subject.

*The impedance meter can be oriented in either direction. Position the meter so that this point is roughly above the navel.



Please...

- Check that the green Power LED is on when positioning the impedance meter on the subject.
- * Once the impedance meter Power LED has come on, it will automatically switch off after approximately 10 minutes should the impedance meter not be placed on the abdomen.

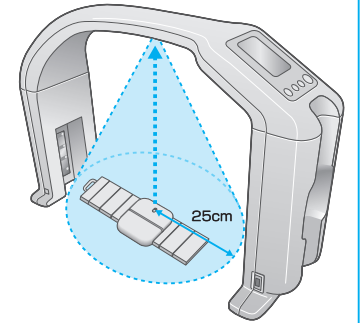
3. The impedance meter detects the subject's body and a buzzer will sound (beep).
 4. The buzzer will sound twice when measuring is completed (beep, beep).

5 Place the impedance meter directly under the main unit. Data communication will commence.

For Your Reference

■ Infrared communication may not be possible when:

- the unit is set up outdoors or in direct sunlight
 - clothing or other items come between the main unit and the impedance meter
 - lighting is positioned close by
 - remote controllers for televisions, etc., are used near the impedance meter or the main unit
 - the batteries have expired
 - the impedance meter is outside the infrared ray communication range (see diagram at right)
- * the communication distance is changed due to the effect of lighting appliances.



Please...

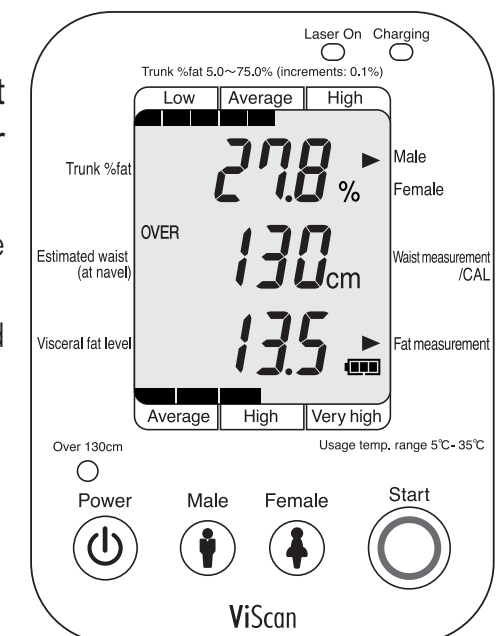
- Do not use two or more main units in conjunction as this could cause malfunctions.

6 Display of measuring results

The trunk % fat percentage and visceral fat level are displayed (on the upper and lower bar, respectively).

*The main unit buzzer will sound twice when the display is complete (beep, beep).

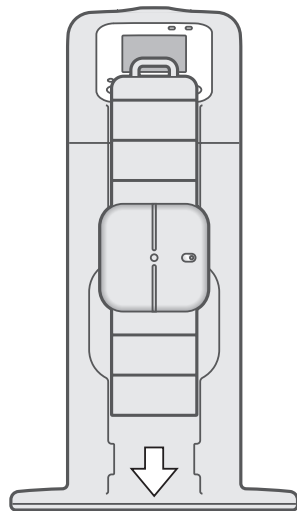
*Please refer to pages 32 and 33 for how to read results.



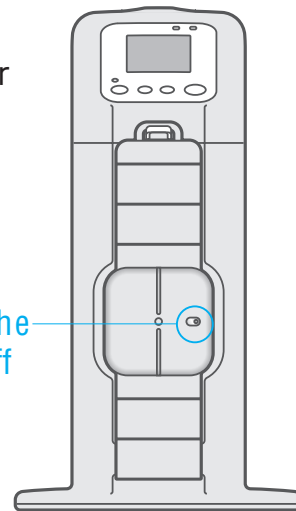
7 Storing the impedance meter

Always store the impedance meter in the main unit upon completion of measuring (the impedance meter transfer mode will end and the impedance meter will return to a state ready for use).

1. Slide the impedance meter down from the top.



2. Hang the switch hanger on the main unit hook



Check that the Power LED is off

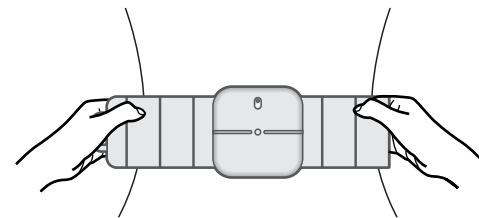
8 End measuring

Press the  key on the main unit to turn off.

*If the main unit power is not turned off, it will automatically turn off after the results have been displayed for approximately two minutes.

For Your Reference

■ Take care not to catch the body hair or skin of the subject when moving the impedance meter on the abdomen. Use both hands on either side of the impedance meter, as shown in the diagram.



■ Specifications

Communication standard	EIA RS-232C compatible
Communication method	Asynchronous transaction
Signal speed	9600 bps
Data bit length	8 bits
Parity	None
Stop bit	1 bit
Flow control	None
Terminator	CR+LF

For Your Reference

■ A RS232C connector, D-sub 9 pin (female), is supplied as standard with the main unit.

■ Cables are not supplied and need to be purchased separately.

RS232C: straight D-sub 9 pin (male) – D-sub 9 pin (female)
*Max. 3m

■ Data

Because data is output immediately following measurement regardless of the status of the receiving side (personal computer, etc.) it is necessary to ensure that the receiving side is always in receiving mode prior to conducting measurements.

(1) Output data format

Measurement data is output in the following format.

- Data segments are divided by commas (,).
- Terminators (the end of data) are CR (ASCII code 0DH), LF (ASCII code 0AH).

Model No.	Gender	Trunk % fat	Estimated Waist	Visceral fat level	Check Sum
MO XXXXXX	GE 1 or 2	FT XX.X	WC XXX.X	IF XX.X	CS XX

(2) Output Data Items

Item	Header	Format	Content	Output Order	
				Standard	Over 130cm
Control data	{0	Fixed at 16	1-5 byte variable length	1	1
Control data	~0	Fixed at 1	1-5 byte variable length	2	2
Control data	~1	Fixed at 1	1-5 byte variable length	3	3
Control data	~2	Fixed at 1	1-5 byte variable length	4	4
Model number	MO	"AB-140"	8 byte fixed length	5	5
Gender	GE	1 or 2	1 byte fixed length (1: Male, 2: Female)	6	6
Trunk % fat	FT	XX.X	3-4 byte variable length, 1 decimal place (unit: %)	7	7
Waist circumference	WC	XXX.X	4-5 byte variable length, 1 decimal place (unit: cm)	8	X
Visceral fat level	IF	XX.X	3-4 byte variable length, 1 decimal place	9	8
Check sum	CS	XX	2 byte fixed length	10	9

Calibration

Calibrate the unit when it has been dropped or otherwise subject to a strong impact.


Accurate measurements are not possible if the distance between the opposing distance sensors on the main unit has changed due to a strong impact. This can be addressed by calibrating the unit, thus allowing accurate measurements to be taken again.

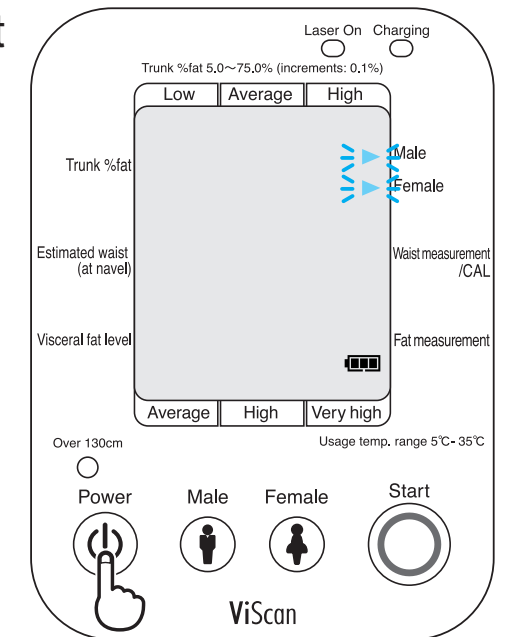
To Calibrate Correctly


- Calibrate on a flat, stable surface.
- Ensure no objects are between the distance sensors.
- Calibrate at a temperature of 15-25°C.




*Blue print in display illustrations indicates parts that illuminate or flash.

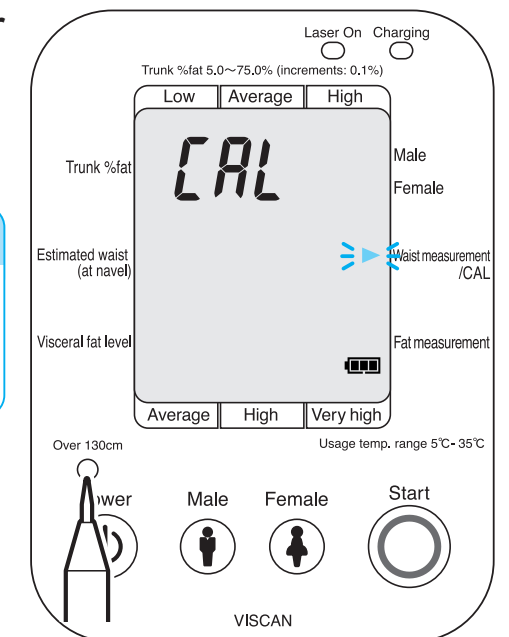
- 1 Press the  key on the main unit to turn on.
The initial screen is displayed.



- 2 Press and hold the  OVER 130cm key for about 2 seconds.
[CAL] is displayed.

For Your Reference

■  OVER 130cm Please use the tip of a pen or other fine instrument to press the [over 130cm] (taking care not to damage the unit).



How to Use


How to Use

3 Commencing calibration

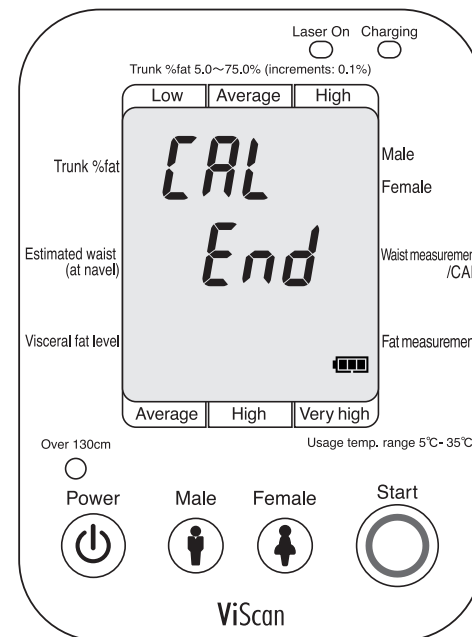
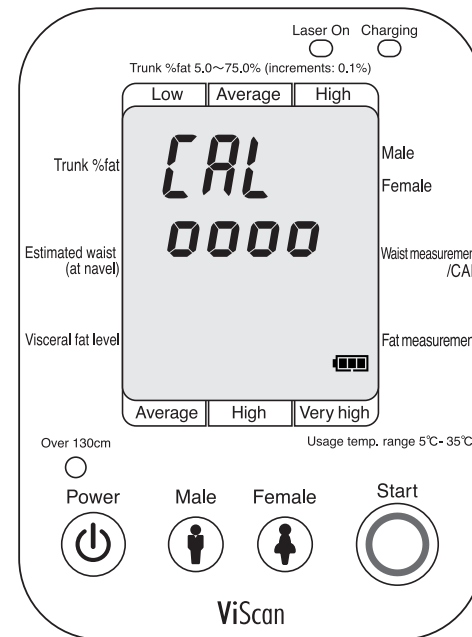
1. Press 

 indicates 'calibrating'.

Caution

■ Never switch off the power while  is displayed indicating the unit is calibrating.

2. Calibration is complete. The unit will automatically turn off after approximately 5 seconds.



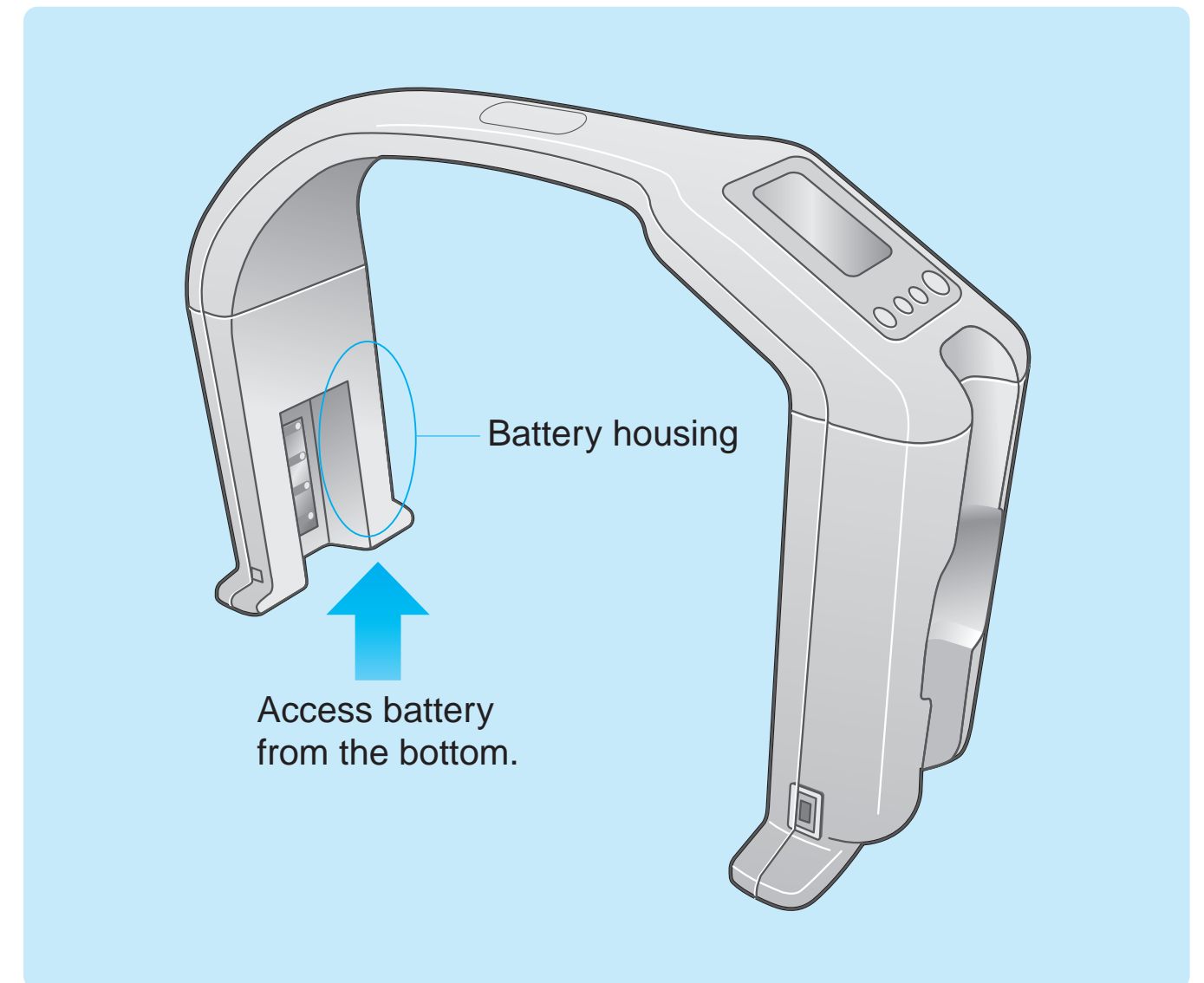
Changing the Main Unit Battery

The battery in the main unit is a consumable item. The battery must be replaced when the charge soon runs out even after lengthy recharging.

* Remaining battery life is indicated by the battery level mark (see Page 9).

Please...

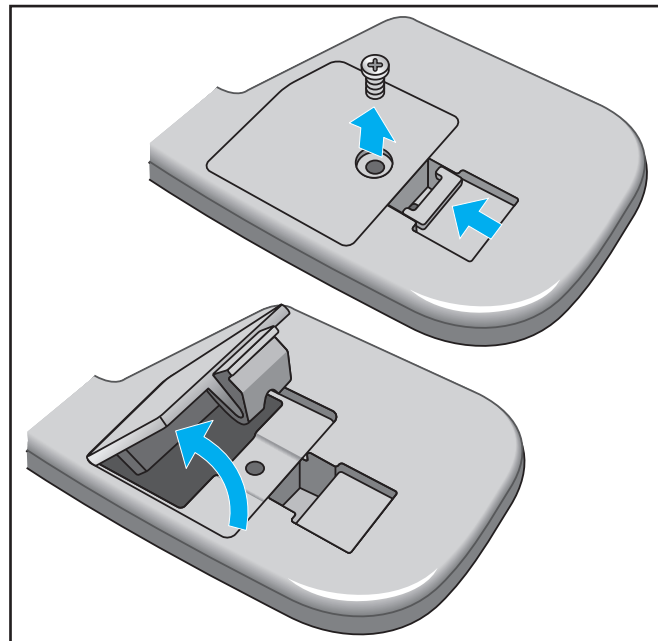
■ A new battery needs to be purchased when replacing. Please contact a Sales Office for a new battery. See the last page for contact details.



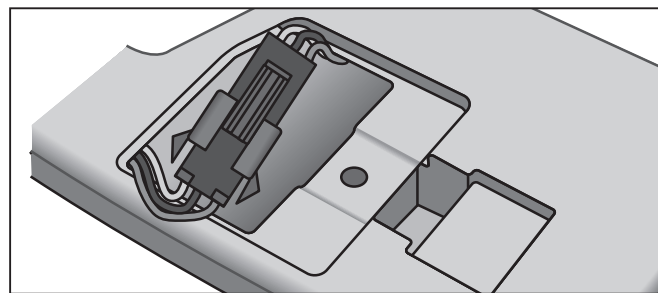
How to Use

How to Use

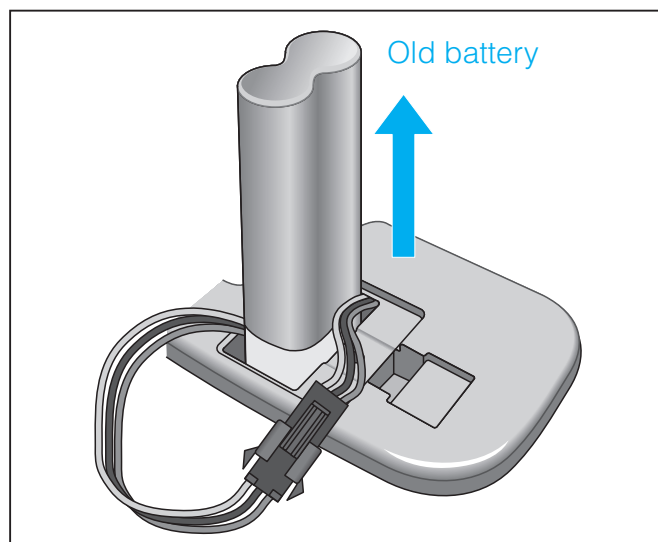
Changing the Main Unit Battery cont'd



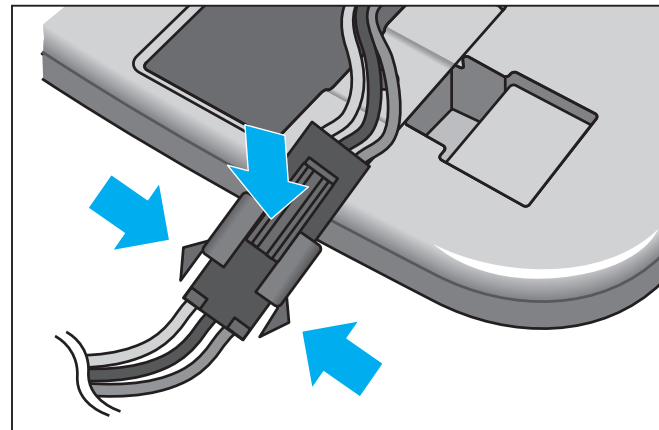
1. Remove the single screw from the bottom of the battery housing and push up the lid.



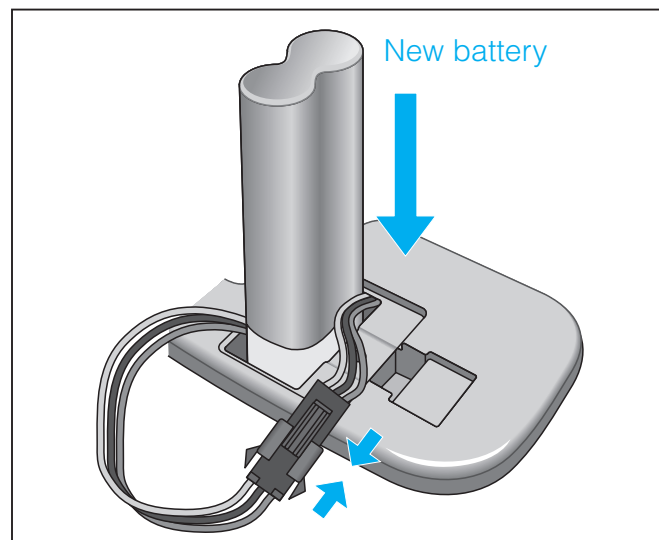
2. Draw out the connector.



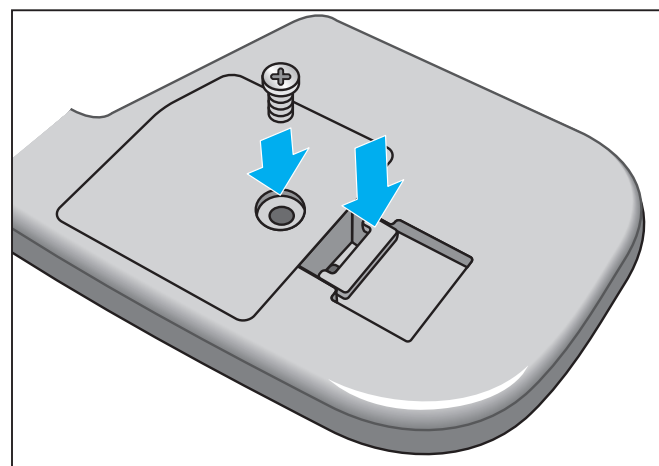
3. Remove the battery.



4. Remove the connector by pressing on the three places indicated by the arrows.



5. Connect the connector of the new battery to the main unit and insert.



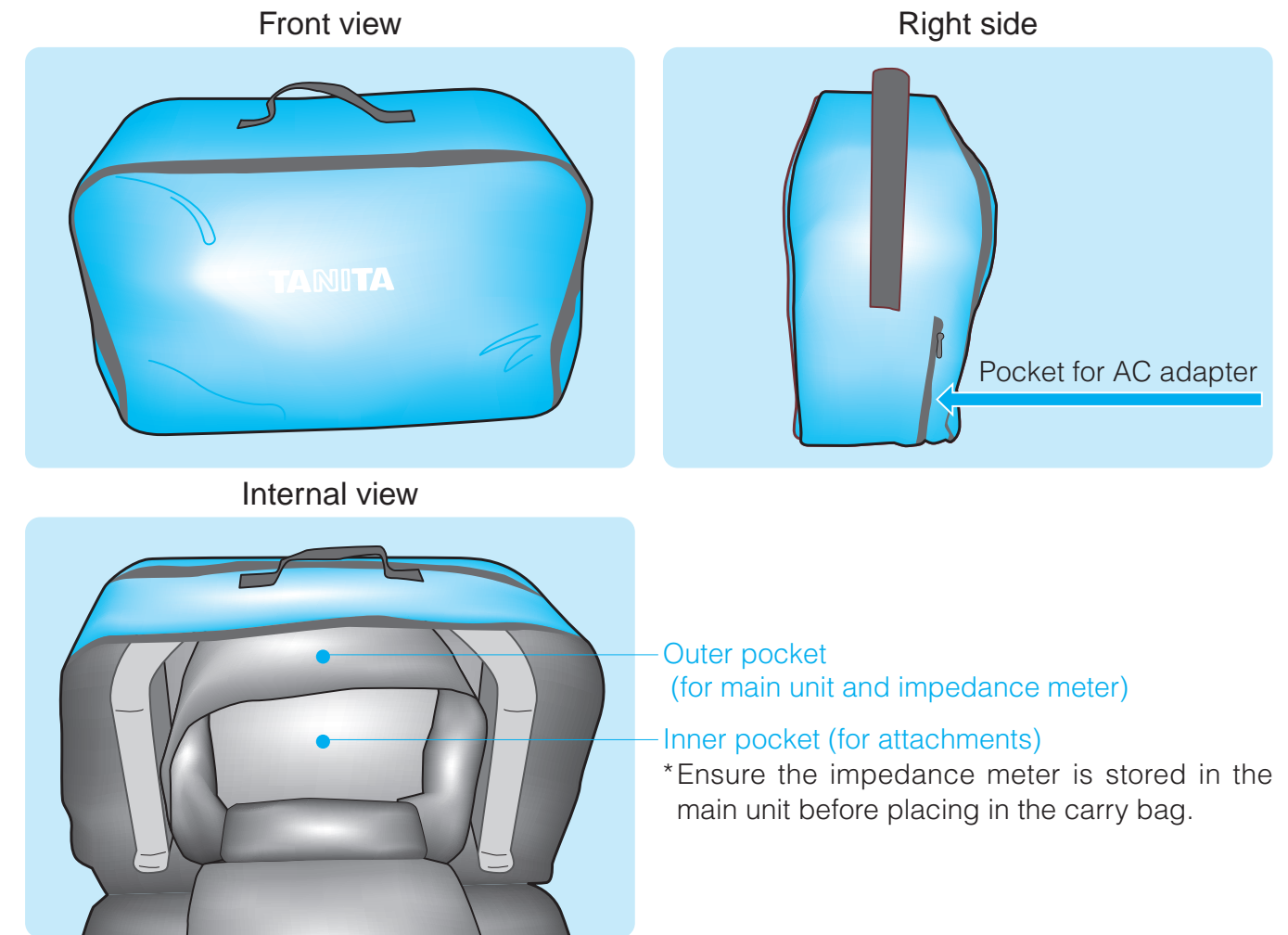
6. Close the lid and tighten the screw..

Please...

- Dispose of used batteries in accordance with the regulations of your local governing body.

Transporting the Unit

Please use the carry bag when transporting the unit. The carry bag can accommodate the main unit, impedance meter and AC adapter.



Please...

- Ensure the carry bag is carried in an upright position (with the bottom of the bag facing down).
- Ensure the equipment is not exposed to any strong impact as this may cause damage.
- Take care not to drop the equipment when removing from the carry bag as this may cause damage.

Reading Results

Subject: 18 years and over (use as reference values for subjects under 18 years)

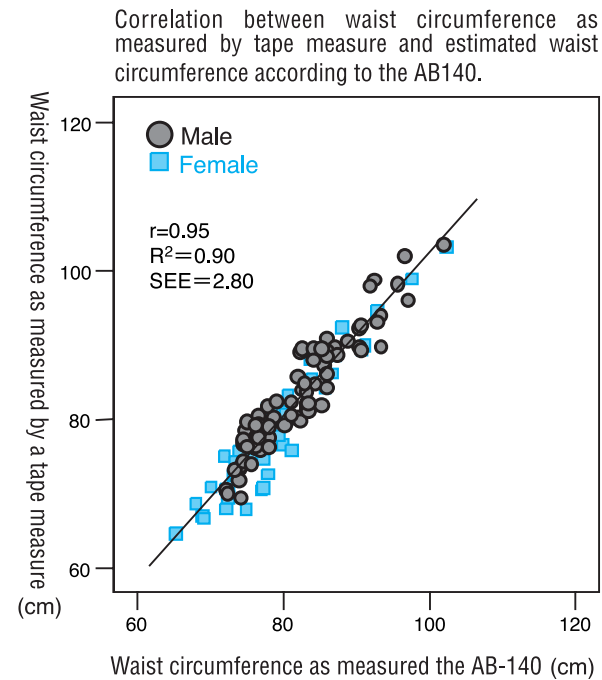
Estimated waist circumference

Reliability of estimated waist circumference measurement

The AB-140 uses the high correlation between waist circumference at the navel as measured using a tape measure (abdominal circumference) and the breadth of the abdomen to calculate the waist circumference. The regression equation is formulated based on data from approximately 600 Japanese subjects of a variety of physiques from infants to athletes, healthy adults and people with spinal injuries, etc.

The estimated waist circumference measurement achieves high levels of repeatability and excellent reliability by utilising a positioning laser and multiple non-contact sensors.

* The estimated waist circumference is a value for the waist circumference at the navel (abdominal circumference). This unit can be used to track changes in subjects for whom measuring waist circumference has previously been difficult.



* This scatter graph is based on 120 healthy males and females.

Visceral fat levels

Standards for visceral fat levels

Visceral fat levels are best used to track changes over the long term for effective health management.

Visceral Fat	1.0 – 6.0	6.5 – 12.5	13.0 – 15.0	15.5 – 17.5	18.0 – 20.0	20.5 and more
Bar number	1	2	3	4	5	6
Determination	Average		High		Very High	
Interpretation	No need for concern at present. Continue with a balanced diet and an appropriate amount of exercise.		Ensure that an appropriate amount of exercise is done and calorie intake is limited to reduce weight to an appropriate level.		Weight loss is required through actively engaging in exercise and food restrictions. Please see a medical practitioner for a medical diagnosis.	

* Medical opinion states that when the actual value is more than 130cm² according to X-ray and CT imaging there is a high probability of resultant life-style related disease. A level of 13.0 with this unit generally correlates to an Visceral fat area of 130cm².

Visceral fat levels measured by this unit.

- It is possible for subjects with low trunk % fat percentages to have high visceral fat levels.
- Please see a medical practitioner for a medical diagnosis.

Trunk % fat percentage

What is the trunk % fat percentage?

True obesity is determined not by weight but by trunk % fat percentage. Not only is body fat a source of energy for activity, it also maintains body temperature, protects the body from external impact, provides moisture for our skin, creates a smooth body line and ensures normal hormone activity, among other functions. An excessively high percentage of body fat, however, causes hypertension, hyperlipidemia, diabetes and other life-style related conditions.

There is said to be a particularly strong link between life-style related conditions and body fat in the trunk (trunk % fat ratio). This unit analyses data based on dual energy x-ray absorptiometry (DXA) which reveals the composition of individual body segments, and determines the trunk % fat percentage using this analysis as a benchmark. See below for trunk % fat ratio determinations.

* The 'central body' referred to here consists of the head, neck, chest, abdomen and lower back.

Trunk % fat determination

[Females]

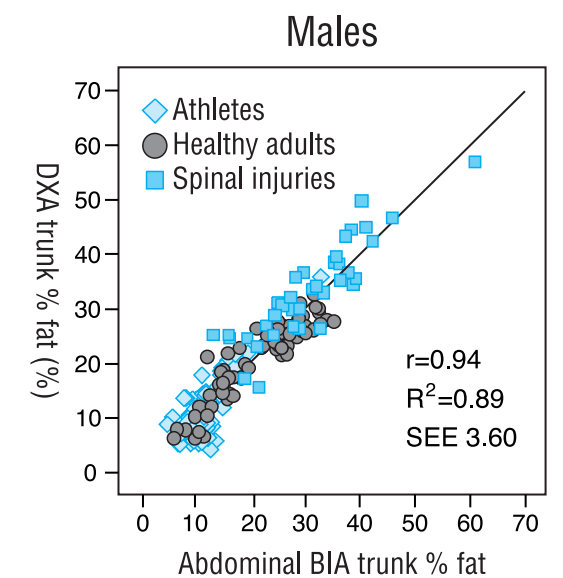
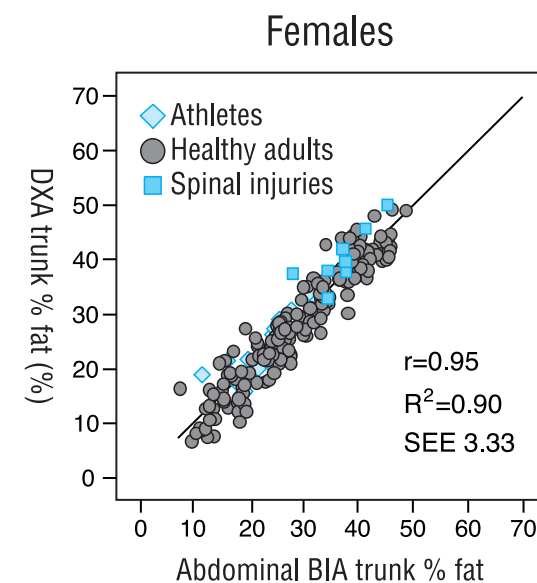
Trunk % fat (%)	Standard Deviation	Bar Number	Determination
<14.2	up to -2SD	2	Low
14.2 ≤ - <24.3	-2SD - -1SD	3	
24.3 ≤ - <29.4	-1SD - -1/2SD	4	
29.4 ≤ - <39.5	-1/2SD - +1/2SD	5	Average
39.5 ≤ - <44.5	+1/2SD - +1SD	6	
44.5 ≤ - <54.6	+1SD - +2SD	7	High
54.6 ≤ - <64.7	+2SD - +3SD	8	
64.7 ≤	+3SD or more	9	

[Males]

Trunk % fat (%)	Standard Deviation	Bar Number	Determination
<7.3	up to -3SD	1	Low
7.3 ≤ - <13.5	-3SD - -2SD	2	
13.5 ≤ - <19.7	-2SD - -1SD	3	
19.7 ≤ - <22.8	-1SD - -1/2SD	4	Average
22.8 ≤ - <29.0	-1/2SD - +1/2SD	5	
29.0 ≤ - <32.1	+1/2SD - +1SD	6	High
32.1 ≤ - <38.3	+1SD - +2SD	7	
38.3 ≤ - <44.5	+2SD - +3SD	8	
44.5 ≤	+3SD or more	9	

* Categories are determined according to average values of adult population samples and standard deviations.

Correlation between DXA trunk % fat percentage and abdominal BIA trunk % fat percentage



Please try the following prior to arranging repairs.

	Problem	Try This
Measuring	Impedance meter error. Buzzer does not sound, or $\frac{Err}{1-1}$ or $\frac{Err}{1-1}$ is displayed.	<ul style="list-style-type: none"> • Store the impedance meter in the main unit to reset the impedance meter status. • Ensure the abdomen is sufficiently wet (shave abdominal hair if thick). • Check remaining impedance meter battery level (ensure Power LED is on).
	Impedance meter Power LED does not come on.	<ul style="list-style-type: none"> • Move the impedance meter switch hanger. • Replace batteries.
	Communication error. $\frac{Err}{1-4}$ is displayed after the buzzer sounds.	<ul style="list-style-type: none"> • Place the impedance meter directly underneath the main unit. • Do not move the equipment during data communication. • Ensure that the infrared ray transmitter and receiver are clean. To clean, wipe with a soft cloth. • Ensure that nothing is covering the infrared transmitter and receiver during transmission.
	The waist circumference displayed is too large or too small.	<ul style="list-style-type: none"> • Ensure that no clothes or other obstacles are within a 10cm area centred on the navel when measuring. • Ensure that the abdomen is not in contact with the distance sensors during waist measuring. • Ensure that the distance sensors are clear of dirt or moisture. Remove any dirt or moisture with a soft, dry cloth. • Calibrate.
	$\frac{Err}{2-1}$ or $\frac{Err}{2-2}$ is displayed after waist measurement is completed.	<ul style="list-style-type: none"> • Check the waist size of the subject. • Calibrate. • Ensure the subject does not move while measuring the waist.
	$\frac{Err}{3-1}$ or $\frac{Err}{3-2}$ is displayed after calibration.	<ul style="list-style-type: none"> • Ensure no obstacles are between the distance sensors when calibrating. • Re-calibrate.
Display	Lo is displayed.	<ul style="list-style-type: none"> • There is insufficient charge left in the main unit battery. Recharge immediately.
	Nothing is displayed when the power is turned on.	
	The Charging LED does not light up even when charging has commenced.	<ul style="list-style-type: none"> • Check the AC adapter connection.

Model	AB-140	
Impedance Meter	Measuring method	4 electrode format
	Measuring frequency	6.25kHz, 50kHz
	Measuring current	500 μ A
	Electrode material	Stainless steel
	Measuring site	Abdomen (at navel)
	Measuring range	5 – 100 Ω
	Power source	DC 6V/4 LR03 alkaline batteries (included)
Main Unit	Measuring method	Near infrared reflectance
	Measuring range	20 – 48cm (correlates to estimated waist circumference of 50 – 130cm)
	Battery	Nickel-hydrogen rechargeable batteries; output DC 7.2V, 1mAh
	Power source	AC adapter Input: 100 – 240V Output: 12V, 2A Plug: centre minus
Laser (for positioning)	Light emitter	Visible light semiconductor laser
	Laser wavelength	Wavelength: 650 nm (red light)
	Laser output	Max. 1mW
	Beam size	At a distance of 200mm: minimum line length 200mm; light width max. 2mm Point \pm 5mm from the centre (point is approx. \varnothing 1.5).
	Classification	Class 2M
Display	Estimated waist circumference	50 -130cm (increment: 1cm)
	Trunk % fat	Increment: 0.1% (5.0 – 75%)
	Visceral fat level	1.0 – 59.0 levels (increment: 0.5 level)
	Trunk % fat determination	Low – high (with bar indicator)
	Visceral fat level determination	6 levels from average – excessive (with bar indicator)
Settings	Male / Female	
Total Weight	Main unit: approx 2.6kg; Impedance meter: approx. 0.5kg	
External interface	RS232C output (D sub 9 pin connector, female)	
Usage temp. range	-5 – +35°C	
Temperature range for storage	-10 – + 50°C	