



Be careful



Environment: +10℃—+40℃



Waterproof



Up not more than 4 floors

IPX4 Splash proof

Add: 4/F, Block 210, 2nd Industrial Area of  
Nanyou, Xiangnan Rd., Nanshan Dist.,  
Shenzhen, P.R.China 518052

Tel: 0755-26411423/26416184

Fax: 0755-26495167/26411423

Web: [www.szbestman.com](http://www.szbestman.com)

Email: bestm@public.szptt.net.cn

*BF-500D/500D+*

Doppler FHR Detector

## OPERATION MANUAL

(2.1 edition)



BESTMAN INSTRUMENT CO., LTD

Thank you for purchasing our Doppler FHR Detector.

To ensure correct use of your Doppler, please read the manual thoroughly before use. Keep the manual handy for quick future reference. Thanks.



Declaration of Conformity

"The product complies with the requirements of the MDD 93/42/EEC"

BESTMAN INSTRUMENT CO., LTD



.....  
In order to protect your right for repair service, please take a few moments to fill out the warranty card below:

### Warranty Card

Product		
Model		
SN :		
Date of purchase		
Warranty period		
Customer	Name	
	Tel.	
	Fax	
	Add.	
Information source	<input type="checkbox"/> Internet <input type="checkbox"/> Exhibitions <input type="checkbox"/> Magazines <input type="checkbox"/> Recommended salesperson by <input type="checkbox"/> others	
Comments		



**Solution:**

- a. Determine optimum position and after about 5-10 second, to get the accurate FHR; turn off the unit and turn on again;
- b. Ensure proper connection fully.
- c. The unit must be relocated away from the interference source;
- d. Contact the agent to repair.

*Bestman reserves the right to change the contents of this manual without notice. Considerable care was taken in preparing this manual. If, however, you have any questions about any part of the manual, or note mistakes or inaccuracies, please contact us at the address listed on the back cover.*

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**EC-Representative:**

Company name: Retail-therapy.com Limited  
Add: 2 Hillside Cottages, Harley Lane  
Heathfield, East Sussex  
TN21, 8AQ ,UK  
Tel: 01435 862291 Fax: 01435 860723

## 1、 Introduction:

1. *BF-500D/500D+* Doppler Fetal Heart Rate (FHR) Detectors apply the ultrasonic Doppler principle to detect the fetal heart beat. The units are compact, lightweight, easy to operate with stable performance and high dependability.
2. *BF-500D+* has dormancy information LCD display / alarm / self-detect function
  - If left unused more than 1 minute, it will switch to dormancy mode to save power.
  - The blue backlight LCD display makes it possible that the FHR can be seen clearly irrespective of the light is bright or dark, meanwhile not affecting the detection of heart beat.
  - All information can be displayed on the LCD, including the charging mode/residual power indication/volume indication/ Warning of abnormal FHR indication.
  - Self-detect mode to ensure that the unit is working normally.
3. *BF-500D* can hear the FHR, no display function

- a. Recharge the unit;
- b. Ensure sufficient gel. is used between the probe and abdomen wall;
- c. Gentle press on the patient to ensure sound connection of the probe and make patient relax;
- d. Find a better position;
- e. Contact the agent to replace the probe.

*7、 Malfunction: Digital is not stable while 500D+ is working.*

### Possible cause:

- a. When dragging the probe on the abdomen wall to collect the FHR, there is a faulty signal leading to the wrong display;
- b. The probe cable connection to the unit is faulty ;
- c. There is an interference source in the local vicinity within 10 m (e.g. high frequency electronic equipment, cell/mobile phone or cordless phones are working);
- d. The Doppler is damaged.

## Solution:

- Recharge the unit;
- Ensure sufficient gel. is used between the probe and abdomen
- Use gentle pressure on the **abdomen** to ensure sound connection of the probe;
- Contact the agent to buy new probe.

*6. Malfunction: Sensitivity is not sufficient; too low sound to noisy to hear the FHR.*



## Possible cause:

- The rechargeable battery is going to use out.
- No sufficient coupling gel;
- Too much pressure is being applied to the pregnant woman's abdomen and muscles are not relaxed causing loud noise and interference
- The probe is not located in the optimum position;
- Sensitivity of probe declined.

## Solution:

- This Doppler has Ni-MH rechargeable battery inside, which can be used repeatedly after recharging. The gallus can make it convenient to carry.
- Normative collocation: unit, charger, gallus and operation manual.
- Optional accessories: earphone and gl .

## II 、 Specification:

- Standard: EN61266:1995
- Safety Classification: BF  /Class II  /Internal power
- Overall sensitivity:  $\geq 90$  dB (see Annex I )
- Target velocity and display range : 60–210bpm. (Beat Per Minute)
- Alarm range: <100bpm or >160bpm (BF-500D+)  
(Please see a doctor once the FHR is abnormal)
- Output power :  $\leq 10\text{Mw}/\text{cm}^2$
- EMC testing data (See annex II )
- Working frequency :  $2.0\text{ MHz} \pm 10\%$
- Spatial-peak temp-peak acoustic pressure: $\leq 0.1\text{ MPa}$ .
- Effective area of transducer: $6.0 \pm 0.5\text{ cm}^2$

- ☛ Adapter input voltage: 230V AC
- ☛ Adapter input consumer(recharging) :  $\leq 5VA$
- ☛ Adapter output voltage (no load ) :  $DC12V \pm 1V$
- ☛ Battery : 9V Ni-MH batteries
- ☛ Audio output power :  $\leq 1.8 W$
- ☛ Coupling medium impedance:  $1.5-1.6 (10^5g/cm^2.s)$
- ☛ Doppler frequency: 0-3.0 KHz
- ☛ Working time (after recharged):  
BF-500D+  $\geq 2$ hours; BF-500D  $\geq 3$ hours
- ☛ Environment temperature :  $+10^{\circ}C \sim +40^{\circ}C$

### III、Function:

This Doppler can be used to detect the Fetal Heart Rate (FHR) from twelve weeks of pregnancy.

### IV、Equipment components: (fig. 1)

1. The gap for fixing the gallus
2. Number and symbol on LCD display window

#### Number:

The 5 beats average FHR value will display on this window.

- ☛ *BF-500D+ with FHR display window*
- ☛ *BF-500D without FHR display window*

*4. Malfunction: Turn on the power switch, working indicator becomes bright; but there's no sound while touching the surface of probe.*

#### Possible cause:

- a. Volume controller is adjusted too low to hear any sound;
- b. The rechargeable battery is nearly used out, faulty circuit;
- c. Probe is damaged;

#### Solution:

- a. release the volume controller;
- b. Charge the unit for 8 to 12 hours;
- c. Return the unit to the supplier for repair

*5. Malfunction: uncomfortable noise is heard when using it to detect FHR.*

#### Possible cause:

- a. The rechargeable battery is near depletion of power.
- b. Not enough coupling Gel. between the probe and abdomen
- c. Noise occurs when dragging the probe on the abdomen
- d. Probe is damaged.

- a. Check AC power socket by qualified electrician;
  - b. Make sure the connection between adapter and the unit is correct
  - c. Contact the agent.
3. *Malfunction: working indicator is bright while the unit works normally; but when charging the indicator is not bright, can not be charged and several days later, the unit can not work any more.*

## Possible cause:

- a. No power available or adapter is damaged;
- b. Adapter cannot work normally or bad connection;
- c. Circuit of the adapter is damaged or charging indicator not available;

## Solution:

- a. Repair the power socket by qualified electrician;
- b. Contact the agent to repair it;
- c. Contact the agent to buy adapter or battery.

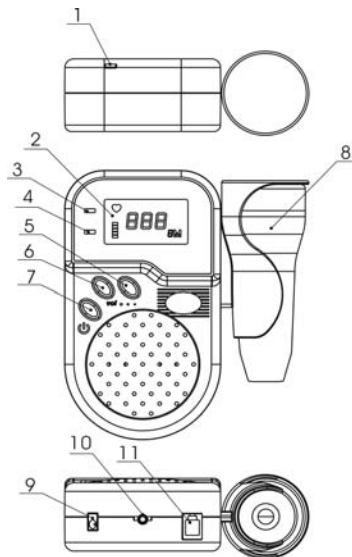


fig. 1. (Front view)

Symbol:



Power indicator or charge indicator



Warning of abnormal FHR

During the range of 60–99 bpm or 161–210 bpm, the alarm indicator will appear.



FHR beat display

**VOL**

Volume indicator

888

5 beats average of FHR display.

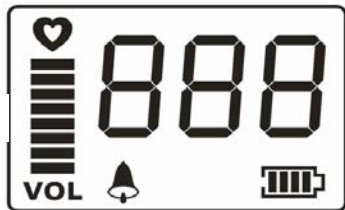


fig. 2 (LCD window)

## IX Trouble Shooting

*1. Malfunction : While the unit is working normally, working indicator fails to light up/ no sound.*

Possible cause:

- The rechargeable battery is going to use out.
- Battery is damaged;
- The unit is damaged.

Solution:

- Recharge the unit;
- Contact the agent to change battery;
- Contact the agent to repair.

**2. Malfunction:** Connect the adapter and turn on the power switch, working indicator is not bright as well as charging indicator.

Possible cause :

- No AC power available;
- Adapter and unit are not properly connected;
- The adapter is damaged.

Solution:



The unit is backed by a one-year limited warranty. During the warranty period, which starts from the date of purchase, the defective parts will be repaired free of charge. (not including the probe and optional earphone), Please note that you will be charged for the cost of shipping the unit from service office to your residence.

**3. *yearly safe check:***

- the following safety check should be performed at least every 24 months by a qualified person who has adequate training, knowledge, and practical experience to perform these tests.
- inspect the safety relevant labels for legibility.
- verify the device functions properly as described in the instructions for use.
- Inspect the unit and accessories for mechanical and functional damage, the data should be recorded in the operating manual. If the device can not work normally, it has to be repaired.

**3. Charge indicator:**

Indicate the current intensity of the rechargeable battery. The indicator is red when charging, and become green when the battery is full charged.

**4. Working indicator:**

The light is bright when turned on and becomes dark as it runs out of power.

**5. Volume decrease button:** volume will decrease if you press the button.

**6. Volume increase button:** volume will increase if you press this button.

**7. Power switch:**

Turn on by pressing down this button and press again to turn off.

**8. Probe**

**9. Charger jack:**

Connect the battery with the adapter.

**10. Earphone jack:**

**11. Probe jack:**

Connect the main frame with the probe

## V. How to use this Doppler:

### 1. Take down / fix up the probe:

The correct way of taking out the probe from the jack is:

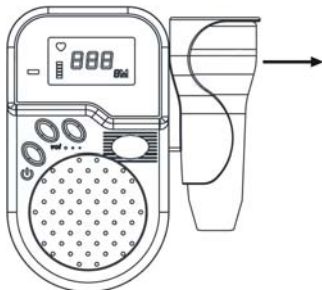


fig.3(Rear view)

Hold the unit with left hand, then take out the probe with the right hand from the probe jack (fig3). The installation of the probe is reversed.

- *Charging time should be between 8-12 hours, except first charging between 12-16 hours. (more than 12 hours),*
- *Turn off the unit after use to prolong the lifetime of the rechargeable battery.*
- *Use only the specified AC adapters and batteries (supplied) for the unit. Others may pose the risk of fire, electric shock or injury.*
- *Please use probe carefully as the probe damaged by customers is not covered under the free warranty.*

## VIII Shelf-life and Warranty

### 1. Shelf-life

Precise electronic components are the main parts of the Doppler; the host machine shelf-life is 3 years, except probe and battery and earphone (option).

### 2. Warranty:

will light normally. About 8–12 hours is needed to bring the unit to full charge again.

*Notice: For the first time charging should be more than 12–16 hours.*

3. Preservation method:

Prevent Doppler from reaching any liquid and do not immerse the unit and probe in any liquid or water.

*Notice: If the Doppler outer shell is dirty after use, please use the neuter cleanser to clean it, strictly prohibit to use any other organic materials to clean the unit including industry alcohol.*

## VII Attention

- **CAUTION** : Before using, take the probe off and then turn on the Doppler. After use, first turn off the Doppler and then put probe back. Otherwise, there will be noise because of the reflection of ultrasound.
- Do not use telephone or cordless telephone within 10 meters while the unit is working otherwise it cannot work normally.

2. Turn on/off

Turn on the switch, the working indicator should be bright and the Doppler will start to work; the Doppler will stop working when the indicator becomes dark.

3. Look for the best detecting position:

Make sure the surface of the probe is in complete contact with the skin and plenty of gel. Adjust the volume controller to your desired level.

*Notice:* Also you can use earphones to detect the FHR, you will need to connect the earphone well first, and then search for the best position.

*Attention:*

- After use, please turn off the unit, wipe the coupling gel on the probe and fix the probe back to the probe jack.

- ☛ *When the working indicator becomes dark or the sound is quiet, the DOPPLER needs to be recharged immediately.*
- ☛ *Do not drag the probe along the abdomen otherwise it will cause interference noise.*

#### 4. Volume controller adjust method:

Press volume increase once, the volume will increase one level; similarly, press down the decrease button, the volume will decrease one time. The volume will stay at the same level until the unit is turned off.

#### 5. Affirm the fetal heart:

*BF-500D+:* once the heartbeat has been located do not read the FHR Display immediately.

The FHR data will be displayed automatically and will change as the baby's heart rate changes.

*BF-500D :* After the fetal heart sound has been heard, you can get the FHR by counting

FHR, first for 15 seconds and times by 4 (the time and the method of count depend on the doctor)


#### 6. The cleanliness and disinfection after using:

Turn off the unit after use and clean the gel off the probe, put the probe back to the jack to protect it.

*Notice: 75% alcohol can be used to clean and disinfect the surface of the probe.*

## VI. How to maintain the unit

### 1. Low battery power:

*BF-500D+:* When battery power is low, the sensitivity will decline, the working indicator, "" will go dark and FHR on the LCD will glint or not be digitally displayed.

*BF-500D:* Working indicator light will go dark and eventually fade out; the sensitivity will decline, the FHR will be not clearly heard.

### 2. Charging method:

Connect the AC adapter to the main power supply and follow by connecting the Doppler unit. The charging indicator LCD