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# Preface

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## Statement

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## Manufacturer's warranty

Shenzhen Well.D Medical Electronics Co., Ltd. assumes the responsibility for equipment security, reliability and performance only under the preconditions that the disassembly, assembly and maintenance of the equipment are all performed by its assigned professional and the equipment is used strictly in compliance with the operation manual.

Shenzhen Well.D Medical Electronics Co., Ltd. ensures a guarantee period within a year and a half since the delivery day and promises there is no problem with the new equipment in material and technology. Within the guarantee period, Shenzhen Well.D Medical Electronics Co., Ltd. will maintain the equipment and replace the parts of non-man-made damages free of charge. But will not repair or replace the equipment surface if it is damaged.

This guarantee is only available for failures occurred when the equipment is operated in compliance with the operation manual. And the guaranteed equipment can only be used in the prescribed range given in manual.

This guarantee excludes losses or damages caused by external reasons such as thunder struck, earthquake, theft, unsuitable use or abuse and refitting the equipment.

Shenzhen Well.D Medical Electronics Co., Ltd. shall not be responsible for damages caused by other devices or arbitrary connection to other devices.

Shenzhen Well.D Medical Electronics Co., Ltd. shall not be responsible for losses, damages or injuries caused by delayed service request.

When there is problem with the products, please contact Shenzhen Well.D Medical Electronics Co., Ltd. and explain the equipment model, serial number, date of purchase and the problem.

**Note:**

**The equipment is use only for veterinary.**

## Matters need Attention

To ensure operational safety and long-term stable equipment performance, please read this operation manual closely and understand the equipment functions, operation and maintenance at all points before operating the equipment, especially contents of "Warning", "Caution" and "Note".

Maloperation or inobservance of the instructions given by manufacturer or its agents may result in equipment damage or personal injury.

The following convention works through this manual to lay special emphasis on some information.

"Warning": Stands for neglect of it will cause severe personal injury, death or realized property loss.

"Caution": Stands for neglect of it will cause slight personal injury or property damage.

"Note": to remind user of installation, operation or maintenance information. These information is very significant but with no risk. Any warning against dangers shall not be contained in NOTE.

## Safety labels

### Equipment labels explanation:

	Note! Refer to accompanying documents
	Turn-on general supply
	Disconnect general supply
	Signal input
	Signal output
IPX7	Protection against dripping water
	Class II equipment

**Packing and transportation labels explanation:**

	Handle carefully
	Temperature limit
	Upward
	Piling layer limit
	Keep dry
	Protect against heat

**Whole set labels**

Refer to Appendix A for equipment labels.

**Equipment safety classification:**

- According to the degree of safety of application in the presence of a **FLAMMABLE ANAESTHETIC MIXTURE WITH AIR or WITH OXYGEN OR NITROUS OXIDE:**  
WED-3000V is not suitable for use in the presence of a **FLAMMABLE ANAESTHETIC MIXTURE WITH AIR or WITH OXYGEN OR NITROUS OXIDE.**
- According to the mode of operation:  
WED-3000V is in **CONTINUOUS OPERATION.**
- According to the degree of protection against harmful ingress of water:  
The main unit of WED-3000V is **ORDINARY EQUIPMENT**; the probe is **DRIP-PROOF EQUIPMENT.**
- According to the type of protection against electric shock:  
WED-3000V is **CLASS II EQUIPMENT** powered by external adapter.
- According to the degree of protection against electric shock:  
WED-3000V is **TYPE B EQUIPMENT.**

**General tips for equipment operation**◆ **In operation**

1. Heat radiation holes are strictly prohibited to be covered.
2. After closedown, do not switch on the equipment within 2 - 3 minutes.
3. On scanning, if any abnormal case is found, stop scanning immediately and shut down the equipment.
4. The patient is prohibited to touch any non-applied part of the equipment.
5. When operating, do not press the keyboard panel too much, otherwise the equipment might be damaged.

#### ◆ After operation

1. Power off the equipment.
2. Pull out the plug from power supply socket instead of pulling the cable.
3. Clean off the couplant on the probe with soft medical sterilized cotton ball.
4. Put the probe into the special case.

## General Safety Message

Safety of the operator and patients and reliability of the equipment are taken into consideration during designing and producing, the following safety precaution must be implemented:

1. The equipment shall be operated by qualified operating staff or under their instructions.
2. Do not open the equipment and change the parameters without permission. If necessary, please turn to for Shenzhen Well.D Medical Electronics Co., Ltd. or its authorized agent for service.
3. The equipment has already been regulated into its optimal performance. Do not adjust any preset  
Preface  
switch unless operate as per instructions in the manual.
4. If there is equipment failure, please shut down the equipment at once and contact for Shenzhen Well.D Medical Electronics Co., Ltd. or their authorized agent.
5. If it is needed to connect the equipment with other company's' electronic or mechanical devices, please contact Shenzhen Well. D Medical Electronics Co., Ltd. before connection.
6. Equipment operation, storage and transportation environment

Environmental requirements on normal operation:

- a) Environment temperature range: +10°C ~ +40°C
- b) Relative humidity range: 30% ~ 75%
- c) Atmosphere pressure range: 70KPa ~ 106Kpa

Environment requirements on equipment storage and transportation:

- a) Environment temperature range: - 20°C ~ +55°C
- b) Relative humidity range: 10% ~ 100%
- c) Atmosphere pressure range: 50KPa ~ 106Kpa

7. Do not hit the fragile TFT-LCD display. If it cracks, deal carefully with it in case the liquid crystal gets into eyes or mouths.
8. Must not hit the inner chargeable Li-ion battery nor throw it into fire in case it trigger an explosion; Do not short circuit the battery output electrodes in case the battery be damaged; and please use the original binding charger to charge the battery. More over, because used battery will cause environment pollution, please handle the battery correctly for recovery processing.
9. Must not disassemble the power supply adapter. If failures happen, it should be handled by the professional; the charging output can only be used for charging the battery of the equipment, any improper use on other battery may cause explosion, fire and other unexpected hazards.
10. Must not short circuit the output of the adapter, a long term short circuit shall result in adapter damage.
11. Please use standard power cord as the input line of the network power supply for the adapter to reduce risk.
12. Shenzhen Well.D Medical Electronics Co., Ltd. shall not take any responsibility for any risk resulted from unauthorized re-fitment by the users.
13. To disconnect the equipment from the power supply network by unplug the adapter from the power supply network.
14. Refer to appendix B and C for sound output parameters.

## **Contraindication:**

It is suggested not to probe the part with wound or acute inflammation to avoid cross infection.

# Chapter One Summary

## 1.1 Brief Introduction

This equipment is high resolution linear/convex ultrasound scanning diagnostic equipment. It adopts micro-computer control and digital scan converter (DSC), digital beam-forming (DBF), real time dynamic aperture (RDA), real time dynamic receiving apodization, real time Dynamic receiving focusing (DRF), Digital frequency Scan (DFS), 8 segments TGC, frame correlation technologies to endue its image with clarity, stability and high resolution.

There are five display modes: B, B+B, B+M, M and 4B; And 256 gray scale.

The system can process real time image display, freeze, save, load, up and down flip, left and right flip, capacity cine loop; Multi-level scanning depth, dynamic range, frame correlation factor regulation and focus number, focus position, etc.

Date, clock display; name, sex, age, hospital annotation; Distance, circumference, area, volume and heart rate measurement; EDD Measurement for equine, bovine, sheep, dog and cat. It offers 12 body marks. And Multiple-choice probes for the clinic diagnosis demands.

Combined power supply mode of AC adapter and built-in chargeable battery, 3 battery charging modes and the low power consumption and advanced power management technology promise more lasting battery operation.

6.4 inches TFT-LCD display and field programmable gate array (FPGA) and surface mounted technology (SMT) make this equipment compact and light in weight.

PAL-D video output offers connection to external video image printer and large-screen display and other equipments. High speed USB port provides real time image transfer to the PC.

Jet molding enclosure with hand-held structure.

Jet molding enclosure with hand-held structure.

The equipment consists of main unit, probe and adapter. Standard configuration is LV2-2/6.5MHz Rectal probe, Optional probes: C2-6/40R/3.5MHz convex probe、 C2-7/20R/5.0MHz micro-convex probe 、 L2-5/7.5MHz HF linear probe、 EC2-2/13R/6.5MHz endo-vaginal probe、 EL2-5/7.5MHz Rectal probe。

## 1.2 Range of application

Suitable for diagnosis on horses, cows, sheep, pigs, cats and dogs and other animals.

## 1.3 Voluntary standards

The equipment conforms to the relevant requirements of JJG 639-98 “Medical Ultrasonic Diagnostic Equipment Ultrasound Source Inspection Regulations”, GB10152-1997 “B-mode Ultrasonic Diagnostic Equipment”, GB9706.1-1995 “Medical Electrical Equipment Part One General Safety Requirements” and GB9706.9-1997 “Medical Electrical Equipment: Particular Requirements for the Safety of Ultrasonic Medical Diagnostic and Monitoring Equipment”. The equipment falls into C level B ultrasonic diagnostic equipment and according to degree of protection against electric shock, it falls into Class II Type B.

The environment test of the equipment conforms to the requirements of climate environment test II, mechanical environment test II of GB/T14710-93 “Environmental Requirements and Test Methods for Medical Electrical Equipment”.

## 1.4 Technical Specificatio

MODEL		WED-3000V			
Probe		LV2-2/6.5MHz Rectal、 L2-5/7.5MHz HF linear、 EL2-5/7.5MHz Rectal probe	C2-6/40R/3.5MHz convex probe	C2-7/20R/5.0MHz micro-convex probe	EC2-2/13R/6.5MHz endo-vaginal probe
Detect Depth(mm)		≥80	≥160	≥80	≥60
Resolution (mm)	Lateral	≤1 (Depth≤60)	≤2 (Depth≤80) ≤3 (80<Depth≤130)	≤3 (Depth≤60)	≤1 (Depth≤40)
	Axial	≤1 (Depth≤80)	≤2 (Depth≤80) ≤3 (80<Depth≤130)	≤1 (Depth≤60)	≤1 (Depth≤40)
Blind zone(mm)		≤3	≤5	≤8	≤7
Geometric position precision	Horizontal	≤5	≤15	≤15	≤10
	Vertical	≤5	≤10	≤10	≤5
Monitor size		6.4 inch			
Display mode		B、B+B、B+M、M、4B			
Image gray scale		256 scale			
Cine loop		516 pcs			
Image storage		128 pcs			
Scan depth		40mm~220mm			
Dynamic range		100dB~130dB			
Image flip		Up/down, left/right			
Focus position		Adjustable			
Measurement		Distance, circumference, area, volume, heart rate. GA, EDD			
Notation		Date, time, name, sex, age, hospital name、 Full screen words edit.			
output report		1 type			
USB port		High speed USB 2.0 (device)			
power consumption (MAX)		45VA			

## 1.5 Electric principle block diagram

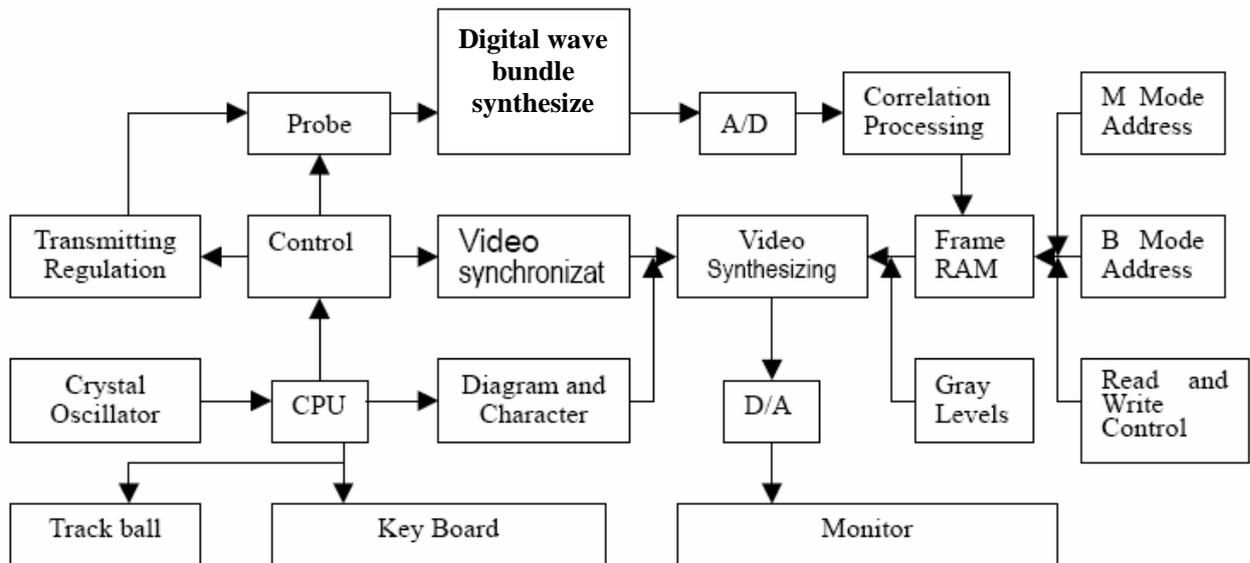


Figure 1-1. Power Supply Principle Diagram

## 1.6 Equipment constituent

### 1.6.1 Standard configurations

- ◆ Main unit (containing a piece of HYLB-523 battery)
- ◆ LV2-2/6.5MHz Rectal probe
- ◆ SP-2 power adapter
- ◆ Adapter power supply cord
- ◆ Manual
- ◆ Charging adaptive line
- ◆ trackball

### 1.6.2 Optional pieces

- ◆ C2-6/40R/3.5MHz convex probe
- ◆ C2-7/20R/5.0MHz micro-convex probe
- ◆ L2-5/7.5MHz HF linear probe
- ◆ EL2-5/7.5MHz rectal probe
- ◆ EC2-2/13R/6.5MHz endo-vaginal probe
- ◆ Printer--- Sony UP-895MD
- ◆ Auto-charger
- ◆ HYLB-523 battery

#### **Warning:**

Please use the spare parts specified above. The manufacturer shall not bear the responsibility of safety problem, unexpected EMC performance drop caused by arbitrary adoption of non-specified spare parts.

## 1.7 Appearance

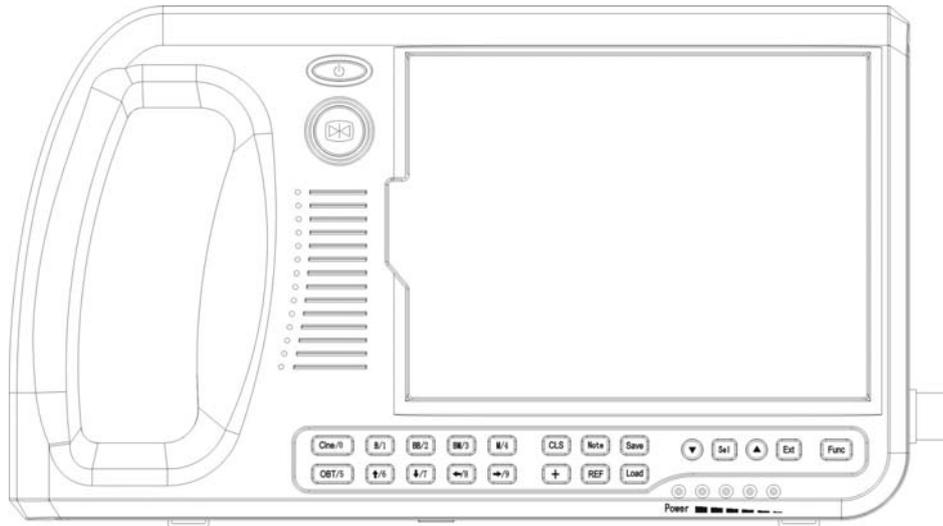


Figure 1-2. Front sketch

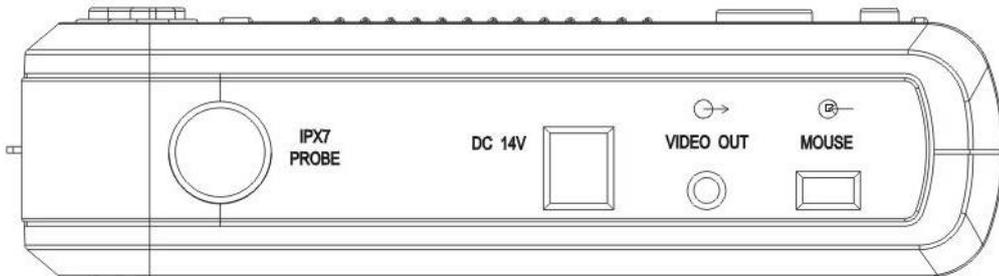


Figure 1-3. Side interfaces sketch

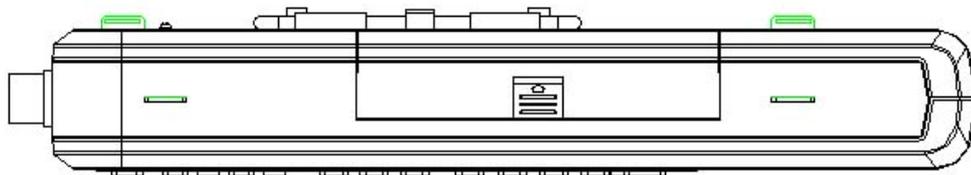


Figure 1-4. Bottom knobs sketch

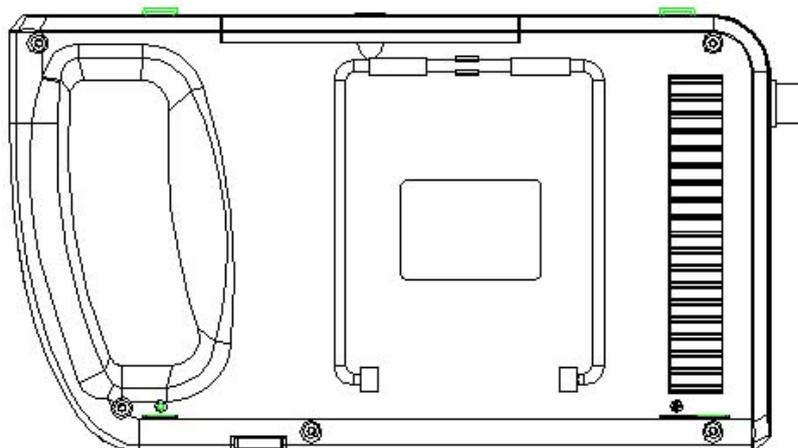


Figure 1-5. Back sketch

**Warning:**

When working in an intensive electromagnetic environment beyond its pre-stated one, WED-3000V's image may be interfered thus influence the diagnose. At this time, stop the device and reuse it until the electromagnetic interference is removed.

**Warning:**

When WED-3000V works with other devices in reduplication or in close parallel, unforeseen EMC problem may appear;  
If they have to work closely, observe all the devices and verify if they are influenced by unexpected EM coupling.

# Chapter Two Installation

## 2.1 Operation environmental requirements

- a) Environment temperature range: +10°C~+40°C
- b) Relative humidity range: 30%~75%
- c) Atmosphere pressure range: 70KPa~106Kpa

Avoid strenuous vibration during operation; Keep away from equipments with high electric field, high magnetic field and high voltage; avoid strong sunlight on the display; Keep the equipment well-ventilated, damp proof and dustproof.

## 2.2 Unpacking inspection

Check according to the "packing list" after uncasing and make sure that there is no shipping damage, and then install the equipment according to requirements and methods described in "Installation".

**Warning:**  
**If breakage is found with the equipment on uncasing, must not use it for the sake of safety.**

## 2.3 Installation

### 2.3.1 Installing and disassembling battery

Install battery: Set the battery into the battery slot and move the battery release key on its side to top till the battery is inserted completely and then release the key (refer to figure 2-1).

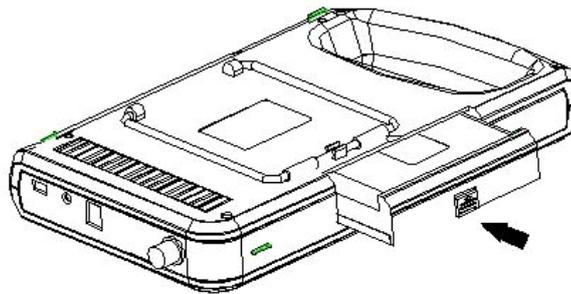


Figure 2-1. Install battery sketch

Disassemble battery: It is the reverse process of installation (refer to figure 2-2).

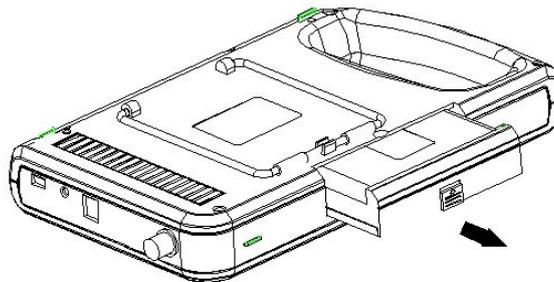


Figure 2-2. Disassemble battery sketch

### 2.3.2 Installing and disassembling probes

#### Install probes:

The probe jack lies in the bottom of the right side of the equipment. Adjust the probe plug mark position and insert it, turn the plug lock sleeve counter-clockwise. There is only one plug jack which is also compatible for those optional probes (refer to figure 2-3).

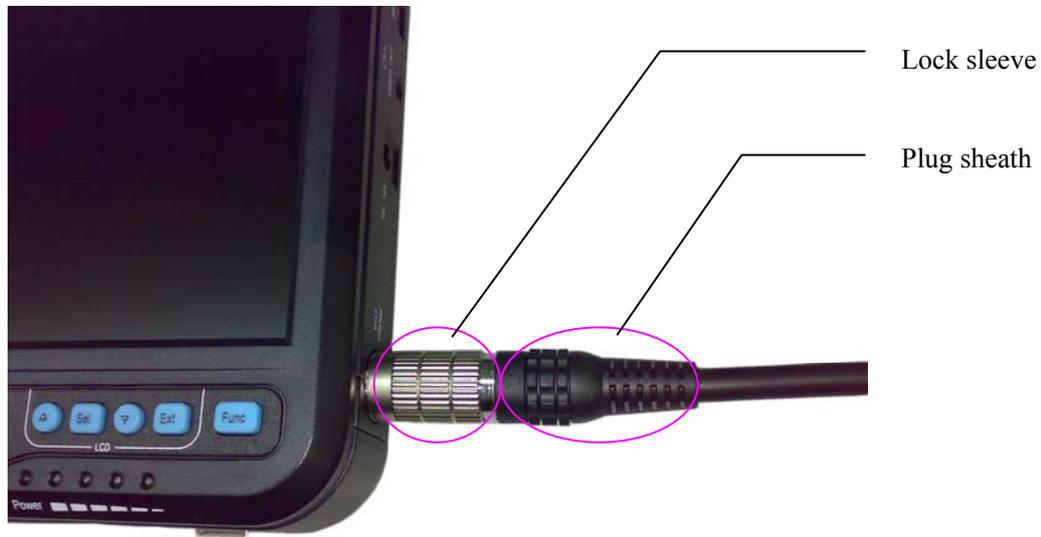


Figure 2-3. Probe connection sketch

#### Disassemble probes:

It is the reverse process of installation.

#### Warning:

**Installation and disassembly of the probe must comply with the operation instructions, must not twiddle the sheath around the plug (refer to figure 2-3).**

#### Warning:

**Do not by all means unplug or plug the probe connector at state of log on in case the probe and main unit be damaged.  
2000 times of efficient connection and disconnection of the probes are guaranteed. Once the probe is connected with the main unit, do not unplug nor plug it at discretion in case poor contact happen.**

#### Warning:

**The probe should be protected from falling off or crashing and the manufacturer assumes no responsibility for the kind of hazard.**

**Warning:**

**Must not touch the contact pin in the probe connector.**

**Warning:**

**Please handle the equipment carefully.**

## 2.4 Power Supply

The equipment provides two automatic switch-over modes to supply power: adapter and built-in battery.

### 2.4.1 Power supply with adapter

1. Check the input power cord plug of the adapter to see if it matches the EPS outlet.
2. Check the EPS to see if it is in the specified range and the power cord to see if it is connected well.
3. Check the adaptor to see if it works well: Plug the power cord into the AC input outlet, switch on the power switch of the outlet, if the DC output indicating light turns on green, it works well.
4. Shut the power switch of the outlet.
5. Insert the DC output plug of the adapter into the DC14V/3A outlet in the rear of the equipment, switch on the outlet.
6. Press the power switch, the main unit is power on and the power indicator light turns on, that means the adapter operate well.

### 2.4.2 Battery Operation

1. Install the battery correctly on the main unit.
2. Switch on the power switch on the left side of the equipment. When the main unit is power on, the power indicator will turn on.
3. The equipment can start operation.

**Note:**

**At power off state, there is still certain power consumption with the main unit. If the main unit can not be turned on when pressing down the switch, that is to say the battery is running up and needs charging.**

**Note:**

**When the main unit charging/volume indicator light is flashing, that is the battery is running up and it should be charged as soon as possible.**

**Warning:**

**It is prohibited to use any other power supply except the standard adapter as the external power supply for the main unit.**

## 2.5 Battery charging

There are 3 ways to charge the battery.

### 2.5.1 Charging through main unit

1. Install the battery correctly into the main unit.
2. Insert the plug of "output DC14V/3A" of the adapter into the "DC14V/3A" interface on the rear.
3. Connect power cord of "Input AC100 - 240V, 50/60Hz" of the adapter to the AC. EPS.
4. Whenever the main unit is power on or off, the "Charging/Volume" indicator light turns on gradually, it means the battery is charged through adapter; when the four lights turn on together, it means the battery is fully charged(refer to figure 2-4).



Figure 2-4. charging through main unit

***Tip: To prolong the battery operation time, please finish charging when the indicator lights show that the battery is full.***

### 2.5.2 Charging through adaptive line

1. Take out the battery from the main unit or take out the spare battery.
2. Connect the round end of the adaptive line to the "Charging DC12.6V/1A" terminal of the adapter, and the flat end to the charging terminal of the battery.

3. Connect power cord of " Input AC100 - 240V, 50/60Hz " of the adapter to the AC EPS.
4. When the "Charging" indicator light on the adapter turns into red, the battery is in charging; when the "Charging" indicator light turns into green, the battery is fully charged. (Refer to figure 2-5).



Figure 2-5. Charging through adaptive line

### 2.5.3 Charging through auto-charger

1. Take out the battery from the main unit or take out the spare battery.
2. Connect the flat end marked with an arrow of the auto-charger to the charging terminal of the battery.
3. Plug the other end of the auto-charger into the cigar lighter socket.
4. When the "Charging" indicator light on the adapter turns into red, the battery is in charging; when the "Charging" indicator light turns into green, the battery is fully charged. (Refer to figure 2-6).



Figure 2-6. charging through auto-charger

**Tips:**

1. **The input voltage of the auto-charger is DC9~14V/1.5A.**
2. **The output voltage of the auto-charger is DC12.6V/1A.**
3. **The operations and storage environment are the same as those of the main unit.**

# Chapter Three Keyboard and mouse

## 3.1 Screen display

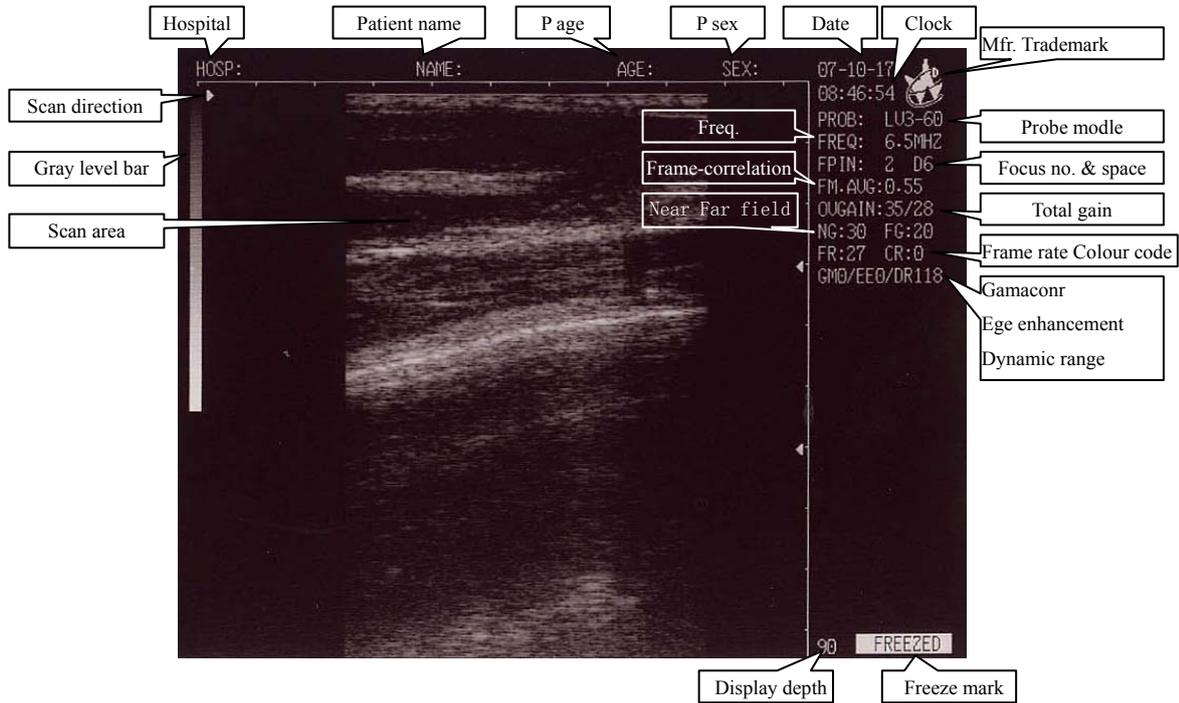


Figure 3-1. Screen display

## 3.2 Keyboard function

Keyboard of WED-3000V (refer to figure 3-2)

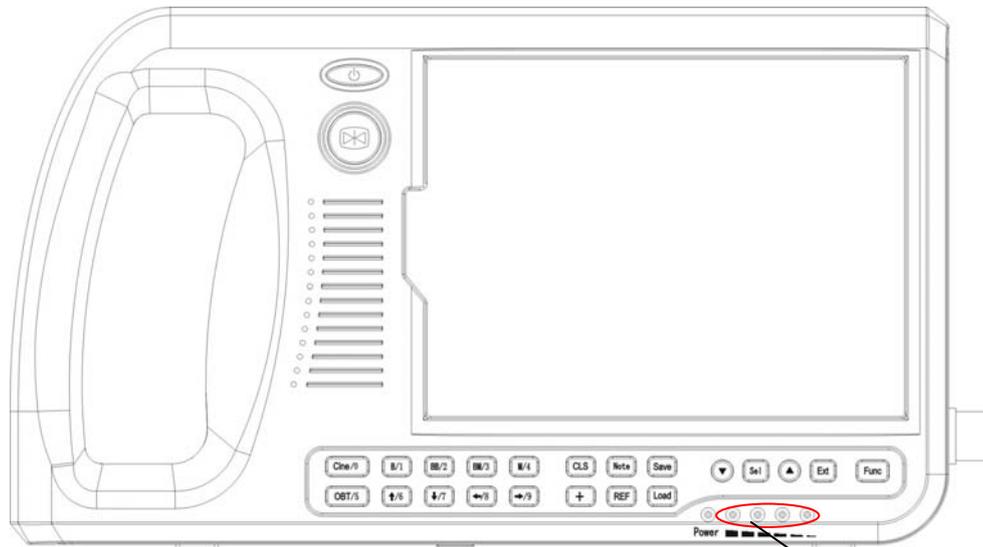


Figure 3-2. Operating panel sketch map

Charging/Volume indicator lights



**Power On/Off key**

Press this key to switch on and off the device. And restart the device when system is “dead” (no reaction on pressing any key) due to incorrect operation.



### Image freeze

Press this key to freeze image return to real time image.

**Tips: “FREEZED” displays at the right bottom indicates the state of image.**



~



### Multi-function keys

#### Using as character keys:

- To select sub-menu in menu.
- To input age, time numbers at annotation.(Refer to chapter four in detail)
-  ~  key To input name, hospital letters or space at annotation. (Refer to chapter four in

detail)

#### Using as function keys:



### Cine loop key

At freeze state, press to enter cine loop playback mode, refer to 4.9 for details.



### B and 4B mode key

At real time or freeze state, press to enter B mode (default single B mode at switch-on)

Press again and then with  and  to enter 4B mode. One is real time image and the rest are “frozen”

images; Press  or  to shift between real time and freeze among these four images.

Press  repeatedly to switch among B and 4B mode.



### BB mode key

At real time or freeze state, press this key to enter BB mode. And there will be two images displayed on the screen. One of them is a "Freezed" image and the other is a "real-time" image; Repress this key can make the two images switch between the states of "Frozen" or "real-time".



### B mode and M mode display key

At real time or freeze state, press this key to enter B/M mode. . B mode and M mode images will be displayed simultaneously on the screen (“BM” or “B+M” for short). B mode real time image is on the left and M mode real time image is on the right.

On the B mode image, there is a vertical line formed by equidistant dots, which is named sampling line. Press



key to move the sampling line left and press  key to move the sampling line right. (Tips: the

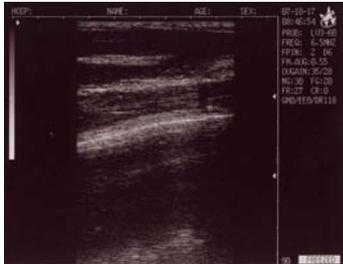
sampling line can also be moved by controlling the tracking ball)



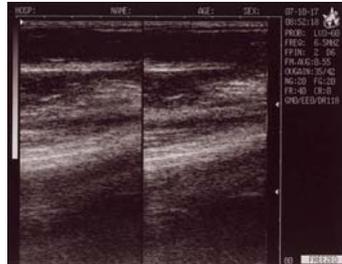
**M display mode key**

At real time or freeze state, press this key to enter M mode, screen displays one M mode image.

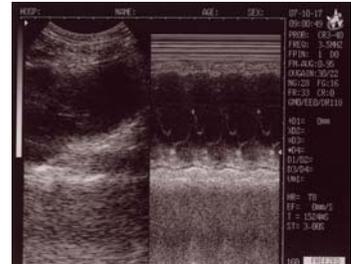
**Tips: To enter M mode, enter B/M mode first.**



Single B mode



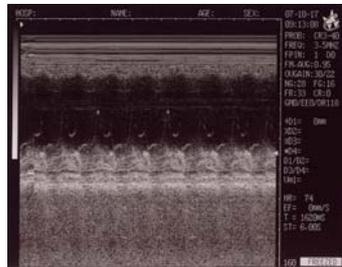
BB mode



B Mmode



4Bmode



M mode

Figure 3-3. five display modes



**Obstetrics table menu key**

AT B or BB mode, press this key to call out the obstetrics menu on the right screen. Choose the number for corresponding operation. Refer to 4.12 for details.



**Direction key**

Used to move cursor during measuring. At realtime“B”and “BM”mode , keys are used to change the scanning depth.

Press key to increase the depth and press key to reduce the depth. Current depth displays at the right bottom of the screen (as figure 3-1 shows). Press , keys to move sampling line left and right at BM mode.

The penetration depth range of each probe is given below:

Porbe model	LV3-60/6.5MHz rectal probe	CR3-40/40R/3.5MHz Convex probe	LH3-40/7.5MHz HF linear or rectal probe	CR3-20/20R/5.0MHz Micro-convex probe	CR3-13/13R/6.5MHz Endocativity porbe
Depth range (mm)	60~130	80~220	40~90	80~150	50~120

**Screen clear key**

Clear off the measured results, body marks and text displayed on the screen (Some current operation must be finished first otherwise it may not clear the screen).

**Annotation Menu key**

Press this key to display the annotation menu. Choose the number to enter sub-menu and refer to 4.4 for details. Press  to exit this menu.

**Image saving**

AT B mode, Press this key to save images, refer to 4.10 for details.

**Distance measurement mark**

At real time or freeze state, press to display measuring cursor, refer to 4.6 for details.

**Measurement assistance key**

To carry out distance, circumference, area and histogram measurement together with , ,  and direction keys, refer to 4.5, 4.6 for details.

**Image recall key**

At real time or freeze state, press to recall saved images. Refer to 4.11 for detailed operation

**Image parameters adjusting key**

At real time or freeze state, to change image parameters, such as frequency, frame rate, gamma correction, edge enhancement, dynamic range, total gain, near and far field gain, etc. refer to 4.3 for details.

**Exit key**

Press this key to exit the annotation or function menu or their sub-menu. Refer to the following chapters for details.

**Function menu key**

Press to display function menu. Choose the number to enter the corresponding sub-menu. Refer to 4.5 for details and press  to quit.

## 3.3 Mouse

As a complementary method of keyboard operation, mouse will improve the measurement work efficiency. A

3-key mouse is adopted here and each key can fulfill a certain functions:

**Left key:**

- At real time of freeze state, press this key to enter distance measurement and display a cursor on the screen.
- To end the distance measurement.

**Middle key:**

- At real time of freeze state, press this key equals to  key in function.

**Right key:**

- To confirm the start and end point of a distance measurement.
- To confirm the start position and fulfill circumference and area measurement with freehand measuring method
- At circumference and area measurement, press this key equals to  key in function.

# Chapter Four Operation

## 4.1 Start the device

Press  key to switch on the device, the power indicator on the panel turns on, and the start interface shows, press any key (except  Key) to enter the state of scanning. Adjust the near field gain, far field gain and overall gain to acquire a satisfying visual effect (refer to 4.3 Image parameters settings for gain control).

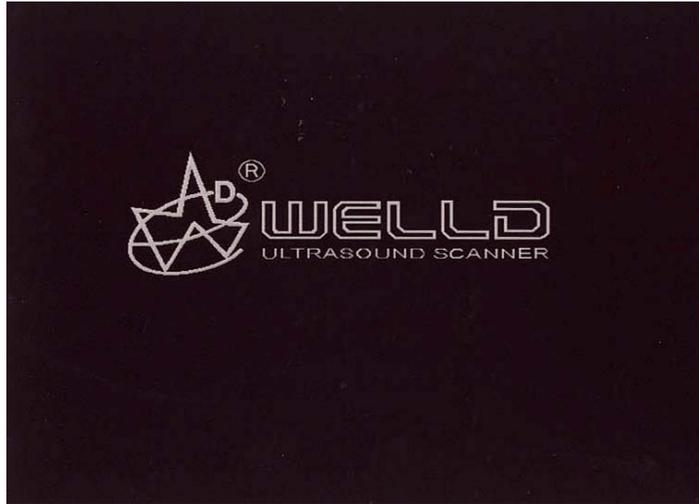


Figure 4-1. Start interface

**Tips: Please adjust the viewing angles properly since this factor is related to LCD display effect.**

## 4.2 Diagnosis

Apply an amount of medical ultrasound coupling gel to the diagnostic part of patient body and then press the acoustical window of the probe on the part closely. The cross-section acoustic image of tissues will be displayed on the screen, move the probe properly to locate the optimum position for the investigation depth; Meanwhile, adjust the overall gain, near field gain, far field gain properly to acquire an optimal cross-section acoustic image of the diagnostic part.

### Attention

1. When pressing the probe on patient body, do not overexert in case that the probe be broken or the patient feel discomfort.
2. It is necessary to use a probe suitable for the diagnostic part and a correct frequency for diagnoses.

## 4.3 Image parameters settings

Image parameters setting includes frequency, frame rate, gamma correction, edge enhancement, dynamic

range, overall gain, near and far field gain.  stands for select. Press it to lighten up one item and press ,  to set the parameters and display the result on the up right screen. Press  continuously to lighten up the needed parameters.

### 4.3.1 Frequency settings

Work frequencies of each probe are:

LV3-60 — 5.0MHz、6.5MHz、7.5MHz (LV3-60/6.5MHz rectal probe)

CR3-40 — 2.5MHz、3.5MHz、5.0MHz (CR3-40/40R/3.5MHz convex probe)

CR3-20 — 4.5MHz、5.0MHz、5.5MHz (CR3-20/20R/5.0MHz convex probe)

CR3-13 — 5.5MHz、6.5MHz、7.5MHz (CR3-13/13R/6.5MHz endocavity probe)

LH3-40 — 6.5MHz、7.5MHz、8.5MHz (LH3-40/7.5MHz high frequency linear or rectal probe)

### 4.3.2 Frame correlation settings

At B, BB, BM mode, enter real time scanning and press  to lighten up the item Frame correlation on the up right screen and press  or  to set the index. There are 8 indexes such as 0.25、0.35、0.45、0.55、0.65、0.75、0.85、0.95.

### 4.3.3 Gamma correction

Press  to lighten up GM on up right screen. There are GM0, GM1, GM2, GM3 4 levels for your choice, press  or  to select the needed one circularly.

**Tips: This is for video out and external video device (such as video printer). So default setting is suggested.**

### 4.3.4 Edge enhancement settings

Press  to lighten up EE on up right screen. There are 9 levels from EE0 to EE8 for adjustment. Press  or  to select.

**Tips: Edge enhancement is only accessible at real time. It is recommended to set the device at its default state during operation.**

### 4.3.5 Dynamic range settings

At real time (non 4B mode), press  key to lighten up DR up right the screen and press ,  keys to adjust the dynamic range. The range is from 100dB to 130dB, a default value is suggested.

### 4.3.6 Total gain control settings

At real time (non 4B mode), press  to lighten up "Overall Gain" up right the screen and press ,

 to adjust. The value displays on right screen in two segments, there are 4 levels on left: 25, 30, 35, 40 and 0-62 on right. Every press on  key will increase the right side value by 2. Every press on  key will reduce the right side value by 2. When the right side value arrives 62, value on left will shift to another level automatically. The total gain setting range is 0-248.

### 4.3.7 Near/far field settings

At real time state (non 4B mode), press  to lighten up “Near” or “Far” up right the screen and press ,  to adjust the near or far field value within the range of 0-30.

**Tips: Adjust STC value properly when using different probes on diagnoses to acquire the best sonography.**

## 4.4 Annotation

At real time or freeze state, press  key to display annotation menu (as given below). With this menu, name, age, sex, annotation, time, hospital, language, screen clear, standby and other functions can be processed.

- |             |
|-------------|
| 0. NAME     |
| 1. AGE      |
| 2. SEX      |
| 3. COMMENT  |
| 4. TIME     |
| 5. HOSP     |
| 6. LANGUAGE |
| 7. CLEAR    |
| 8. LCD-OFF  |

● Press  to select “0.NAME” and put in patient name in the dialog box:

PLEASE ENTER NAME: █
-------------------------

0-A 1-B 2-C 3-D 4-E 5-F

Below the dialog box, there are 26 letters and space, press ,  to page up and down to find the needed character. And press the corresponding number key of each character (0-5) to display this character on the cursor. The maximum number is 15 characters, press  to delete the unwanted one. After input, press  to confirm and exit and if want give up, press  key directly.

- Press  to select "1.AGE" to call out the following dialogue box for patient age, the maximum input number is 3 bits.

PLEASE ENTER AGE:  
█

After input, press  to exit and if need to quit without inputting, press  key directly.

- Press  to select "2.SEX" and put in patient sex in the below dialog box:

PLEASE ENTER SEX:  
1. MALE 2. FEMALE

Press  to select "1. MALE" and press  to select "2. FEMALE".

- Press  key and select "3. Comment" to comment the image. The cursor will display on screen and 10 regular Chinese comment characters and 26 letter and space will display at lower screen. Press  and  to display the rest characters. Move the cursor by moving the trackball or direction keys to comment any part in the image. Press the corresponding number (  ~  ) to display the related characters. Press  to delete the unwanted. When finish, press  to confirm and exit or press  to give up input.

- Press  and select "4. Time" to change the system clock and date in the following format:

YY-MM-DD  
  
HH-MM-SS

For instance, the date and time is 2006-9-22 and 9:35:30, the input number should be

YY-MM-DD  
060922  
HH-MM-SS  
093530

When finish, press  to confirm and exit or press  to give up input.

- Press  and select "5.HOSP" to put in hospital name in the following dialog box:

PLEASE ENTER HOSP:



0-A 1-B 2-C 3-D 4-E 5-F

Please refer to name input in the input method of hospital names with maximum 18 characters.

- Press  to select "6.LANGUAGE" to select system language. The language selection box is given below:

PLEASE ENTER LANGUAGE:

1. CHINESE 2. ENGLISH

Press number key  to select Chinese and  to select English.

- Press  and select "7.CLEAR" to clear measurement marks, comments, results and name, age, sex in images; And clear off all the information and measurement results except hospital and comments.

- Press  and select "8.LCD-off" to set the screen saver in the following dialog box.

PLEASE ENTER LCD-OFF TIME: 00



The current standby time shows in the first line and input the wanted time after the cursor (two digit), for example: 06. Press  to confirm and exit. And press any key to return to normal state. The maximum screen saver time is 30 minutes, system default value will be 30 minutes if the input number is bigger than 30.

Press  to give up input.

**Tips: When input 0. NAME, 3.COMMENT, 5. HOSP, numbers can not be used. Press  key to exit comment menu.**

## 4.5 Function Introduction

At real time or freeze state, press  key to display function menu (as given below). In this menu, probe, focus number, image flip, color code, report, histogram, storage clearance, area and volume measurement, video out format conversion can be set.

- |               |
|---------------|
| 0. PROBE      |
| 1. FPIN       |
| 2. UP-DOWN    |
| 3. LEFT-RIGHT |
| 4. COLOR      |
| 5. REPORT     |
| 6. HISTOGRAM  |
| 7. ERASE      |
| 8. AREA-VOLM  |
| 9. PALD-NTSC  |

### 4.5.1 Probe settings

There are 4 probes are available with this device. The current probe type displays on the upper right screen and the probe type and models are listed below:

LV3-60: LV2-2/6.5MHz rectal probe

CR3-40: C2-6/40R/3.5MHz convex probe

CR3-20: C2-7/20R/5.0MHz convex probe

CR3-13: EC2-2/13R/6.5MHz endo vaginal probe

LH3-40: L2-5/7.5 MHz high frequency linear or rectal probe

- At real time or freeze state, press  key to display function menu.
- Press  key and select 0. Probe to change probes and start scanning.
- Repeat the above mentioned steps to set different probes.

System will keep the current probe type as default when system shut down for next reboot.

### 4.5.2 Focus number settings

- At real time state (B mode), press  key to display function menu on the screen.
- Press  and select 1. Focus Number to set the number of focus. (Tips: “Focus Number” item mon screen right is lighten up and press  to move focus up and press  to move fous down.)
- The maximum focus nubur is two. Repeat the above mentioned steps to set focus position of one fous or two focus curcularly.

### 4.5.3 Image up/down flip

- Press  key to display function menu.
- Press  to upend the image.
- Repeat the above steps to flip image up and down.



Figure 4-2. Image up and down flip

#### 4.5.4 Image left/right flip

- Press  key to display function menu.
- Press  to change scan direction of the probe.
- Repeat the above steps to flip image left and right.

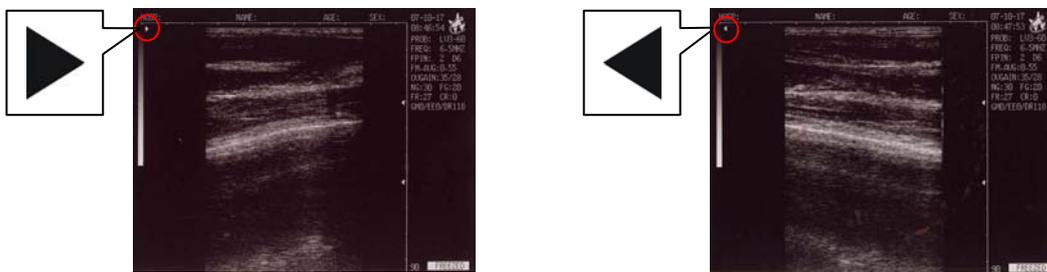


Figure 4-3. Image left and right flip

Probe scan direction sign (in the red circle) is the left and right flip sign. The default scan direction is given as the left image shows.

#### 4.5.5 Color code settings

Built-in color code processor with 4 color-code image. The color code display on the screen right and the relation is given below:

- CR: 0---black and white
- CR: 1---red
- CR: 2---Brown
- CR: 3---Blue

- Press  key to display function menu.
- Press  key and select 4. Color Code to select the wanted color.
- Repeat the above steps and set the four color codes circularly.

#### 4.5.6 Report page

System saves the current patient information, diagnostic comments, measurement and hospital, date, time, etc automatically in the report and produce report page as per different measurement such as distance, circumference, area, volume and so on.

- At B, BB, BM, M or 4B mode, finish patient comment, diagnosis, focus distance, circumference, area

and/or volume measurement and keep the image frozen.

- Press  key to display function menu.
- Press  key and select 5.Report to switch to report page as given bellow:

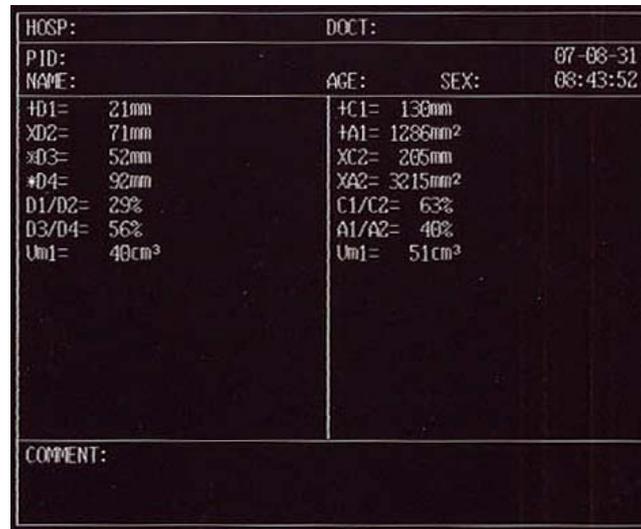


Figure 4-4. Report page

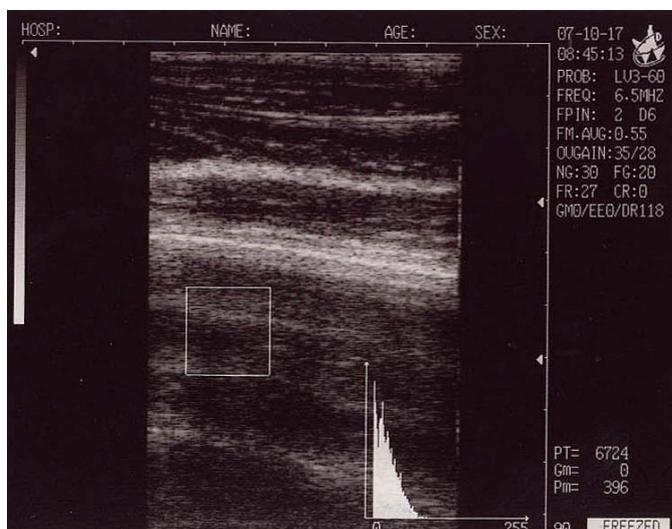
- Press  key to exit report page.

**Tips:** At report page, press  key and add comments. But other information can not be changed.

#### 4.5.7 Histogram statistics

- Freeze the image, press  key to display function menu.
- Press  key and select 6.Histogram, the sampling window displays in the image, move the sampling

window to any image area with direction keys or the mouse and press  key or right click on the mouse to finish the statistics. The result will display on screen right as the following figure shows:



Horizontal ordinate indicates gray scale degree, vertical ordinate indicates number.

PT indicates total quantity of pixel dots in the rectangular window.

Gm indicates the corresponding gray scale of the curve at the vertical peak.

Pm indicate the quantity of pixel dots at Gm gray scale.

From the above figure, in the rectangular area, the total number of pixel dots is 6724. At gray scale 0, there are 396 dots, the most image pixel dots.

Figure 4-5. Histogram statistics

● During statistics, press  or  key to enlarge or reduce the sampling window and press  to exit.

#### 4.5.8 Erase image storage

● Press  key to display function menu.

● Press  key and select 7. Erase to clear off the image storage as the following dialog box reminds:

ERASE ALL STORAGE?  
1. YES 2. NO

Press  key to confirm the delete of all the images. Meanwhile, a process reminder ERASING... appears on the up left screen. At this time, system stays at freeze and do not start any other program unless the reminder disappears and the storage is cleared off.

Press  key to exit.

**Tips: Do not start any other operation when the storage erasing is in process (system reminds “ERASING...” to avoid system damage.**

#### 4.5.9 Circumference, area and volume measurement

There are two ways to measure circumference, area.

● Press freeze key and  key to display function menu.

● Press  and select 8. Area-volume to call forth the flowing dialog box:

PLEASE ENTER :  
1.FREEHAND 2.ELLIPSE

Option 1 is freehand measurement, option 2 is ellipse measurement.

##### a. Freehand measurement operation:

##### Keyboard operation

1. Press  key to select freehand measurement and cursor displays on the screen. Move the cursor to the expected start point of the measurement with direction keys.

2. Press  and move it along the edge of the expected area to the end with direction keys.

3. Press  key and finish the circumference and area measurement.

If need to on measuring circumference and area, press  key and  key and repeat step 2-3. You

can measure 2 groups data at most and the measurement results display on screen right as the flowing picture shows:



Figure 4-6. Circumferences, area measurements (Freehand)

C1 and A1 are the circumference and area of the first data;

C2 and A2 are the circumference and area of the second data;

C1/C2 is the ratio of the two circumferences;

A1/A2 is the ratio of the two areas.

**Tips: Measure circumference and area with keyboard is not as convenient as the following mouse operation.**

#### Operation via mouse

1、 Press  key to select freehand, and the cursor appears on the screen, move the cursor with mouse to the start point of this measurement.

2、 Press “Right” key and move the cursor along the edge of the expected area to the end with mouse.

3、 Press “Right” key again to accomplish the measurement.

If need to on measuring circumference and area, press  key and  key and repeat step 2-3. You can measure 2 group’s data at most and the result will be displayed on screen right as figure 4-6 shows.

After measurement, press “middle” key to clear the screen.

#### b. Ellipse measurement:

##### keyboard operation

Press  key to select Ellipse measurement, an ellipse mark appears on the image. It can be moved and changed at size, angle with direction keys and press  to switch between the three functions of directipon

keys.

1、 Move the measurement mark to any image display area with direction keys.

2、 Press **REF** key and then direction keys to change the measured area size. Press **↑/6** key and **↓/7** key to reduce or enlarge the area in vertical direction; press **←/8** key and **→/9** key to reduce or enlarge the area in horizontal direction.

3、 Press **REF** key and then **←/8** and **→/9** key to adjust area angle. Press **←/8** to rotate the measuring area counter clockwise. Press **→/9** key to rotate clockwise.

4、 Press **REF** key again; direction key can be used to move the measured area.

5、 When the position, size and angle are confirmed, press **Ext** key to finish the measurement.

If go on measuring circumference/area, press **Func** key and **←/8** key and repeat step 1-5. The maximum number is two groups of data and the measurement result will display on screen right as the following figure shows:

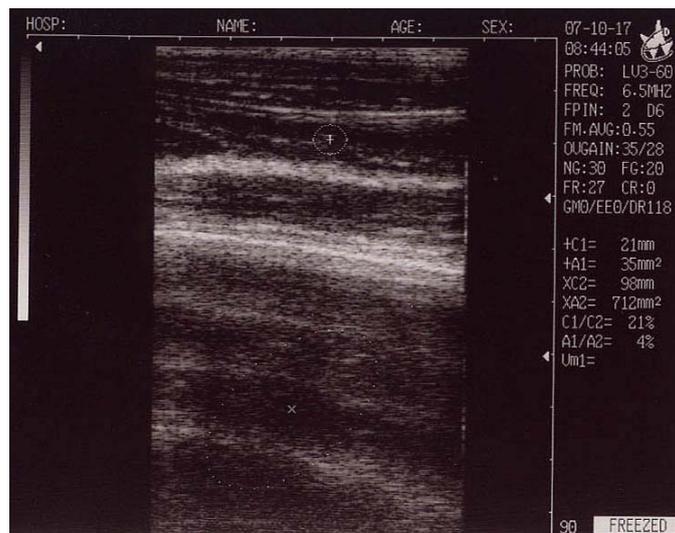


Figure 4-7. Circumference, area measurement (Ellips)

C1 and A1 are the circumference and area of the first data;

C2 and A2 are the circumference and area of the second data;

C1/C2 is the ratio of the two circumferences;

A1/A2 is the ratio of the two areas.

**Operation via mouse**

Press **BB/2** key to select Ellipse measurement, an ellipse mark appears on the image. It can be moved and changed at size, angle with moving the mouse and press “Right” key to switch between the three functions of the

mouse.

- 1、 Move the measurement mark to any image display area with the mouse.
- 2、 Press “right” key to change the measured area size. Move mouse left and right to reduce or enlarge the area in horizontal direction; move mouse up and down to reduce or enlarge the area in vertical direction.
- 3、 Press “right” key and move mouse left and right to rotate the measuring area counter-clockwise or clockwise.
- 4、 Press “right” key again; mouse function switches to move the measured area.
- 5、 When the position, size and angle are confirmed, press  key to finish the measurement.

If go on measuring circumference/area, press  key and  key and repeat step 1-5. The maximum number is two groups of data and the measurement result will be displayed on screen right as figure 4-7 shows.

After the measurement, press “middle” key to clear the screen.

Volume measurement refer to 4.7

#### 4.5.10 Video our format transfer

There are two video out format: PALD and NTSC.

- Press  key to display function menu.
- Press  key and select 9.PALD-NTSC to change the output format of video as the following dialog

box shows:

PLEASE ENTER VIDEO:  
1.PALD 2.NTSC

Press  key to select PALD and  key to select NTSC.

## 4.6 Distance measurement

### Keyboard operation

1. At freeze state, press  key to display measuring cursor.
2. Move the cursor to the start point of the measurement with direction keys.
3. Press  key to confirm the start point.
4. Press the direction keys to call out another cursor and move this cursor to the end point of measurement and press  key to finish the measurement. (Tips: click on  continuously will shift the cursor between the start and end point).

If need go on with the measurement, repeat step 1-4. Maximumly 4 groups of data can ge achieved and the

measurement result will display on the screen right as the following figure shows:

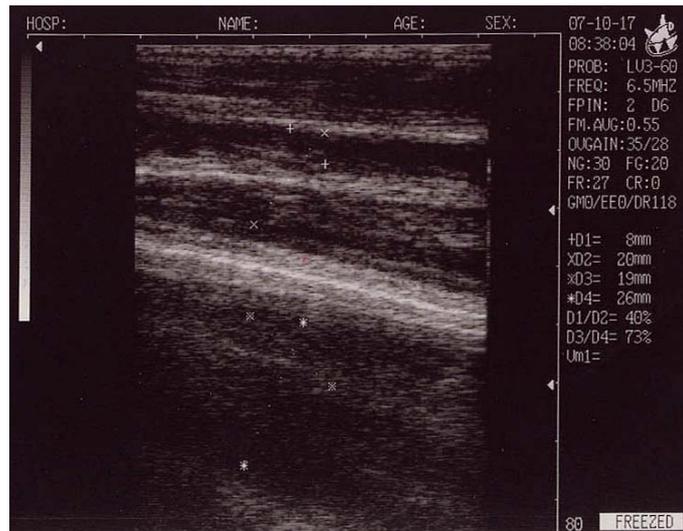


Figure 4-8. Distance measurement

The four data groups are D1,D2, D3, D4

D1/D2 is the ratio of D1, D2.

D3/D4 is the ratio of D3, D4.

#### Operation via mouse

1. Click on mouse “left” key to display cursor.
2. Move the cursor to the start point of measurement with the mouse.
3. Right click on the mouse to confirm the start point of measurement.
4. Move the mouse to call out another cursor (end point) and move this cursor to the end point of measurement and click mouse “left” key to finish the measurement. (Note: right click on the mouse continuously will shift the cursor between the start and end point).

If need go on with the measurement, Maximumly 4 groups of data can ge achieved and the measurement result will display on the screen right as figure 4-8 shows.

When finish, press “middle” key to clear the screen.

## 4.7 Volume measurement

There are two methods here for volume measurement.

1. Use 3-axile method to get 3 groups of distance and then caalculate the volume.

First, get the three distances and press  key to acquir the volume value.

If there are less than three groups distance value, there is no valume value even press  key; If four distance are measured and then press  key, the displayed volume value will be the result of the first three distance.

Operation steps: (eg. Kidney)

1. Acquirethe horizontal and vertial cross section of kidney and freeze the images.

2. Measure the long and short axiles length of the horizontal cross section.
3. Measure the diameter of the vertical cross section.
4. Press  key to finish the measurement. And the volumn value display on screen right behind “Vm1”

as given below:



Figure 4-9. Volume measurement (3-axile)

## 2. Use Ellipse method to get 3 circumferences and area and then caiculate the volume.

Operation steps: (eg. Kidney)

1. Acquirethe horizontal and vertial cross section of kidney and freeze the images.
2. Measure the circumference and area of both the two cross-section.
3. Press  key to finish the measurement, system calculate the volumn automatically and display it on

screen right behind “Vm1” as given below:



Figure 4-10. Volume measurement (ellipse)

## 4.8 Heart rate measurement (only under “B/M” mode and “M” mode)

1. At B/M mode, move the tracking ball and change the sampling line position to acquire the best cardiac waveform first, freeze the image
2. Measure the distance between two adjacent wave peaks, there will be 4 groups value acquired, they are HR (heart rate, unit: times/min), EF (inclination, unit: mm/s), time T (unit:ms), refresh rate ST (unit:s) as shown in the following figure.

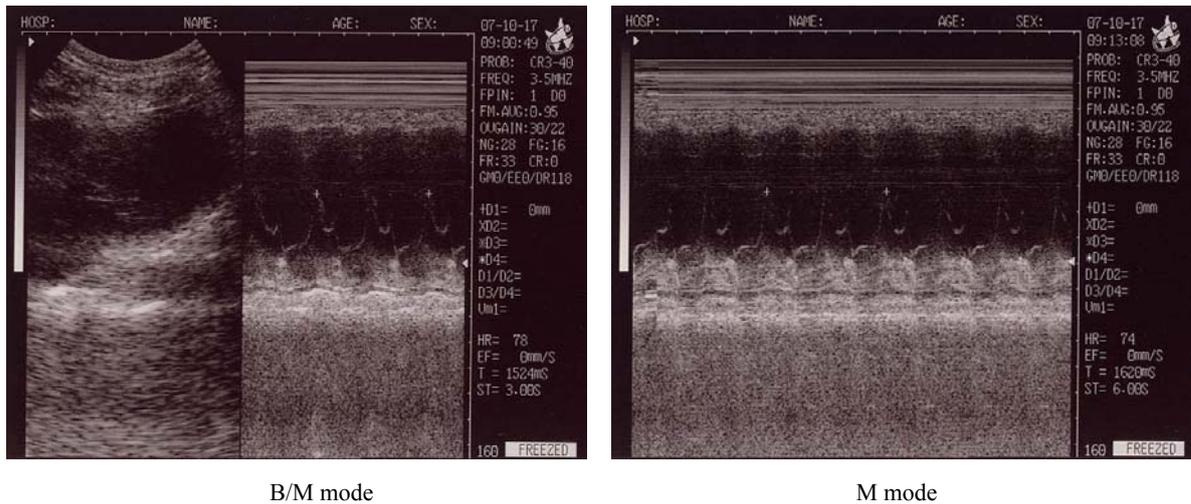


Figure 4-11. Heart rate measurement

## 4.9 Cineloop playback

There is 516 images cineloop playback or single frame review function.

Start the system and enter real time state, first capture images for cineloop about 30 seconds.

- Freez the image, press  key to start playback.
- During playback, press ,  keys to enter manual play mode. Press  key to go to the next image and press  key to go back the previous image.
- . When playing at “B/B, B” mode, cineloop can be played in different windows when switching between “B/B” or “B” .

- Press  key to exit cineloop playback.

## 4.10 Image saving

128 images permanent storage even power off.

- When a satisfying image is acquired, press  key to save it. On the upper left area of the image, image series number will show such as “SAVING .....05”. When the saving process finishes, this series number

disappear. When image is saved, system enters freeze state automatically and press  key to return to real time state.

●Totally 128 images can be stored.A number will be given in the order of time automatically, for example:

01-20 are occupied, press  key,the the currently saved image will be numbered 21;When the storage is full ( with 128 images0, press  key, the following dialog bos appears:

STORAGE IS FULL.ERASE NO.01 ?

1. YES    2. NO

It asks if you want to replace image numbered 01; press  o save the current to replace the old one.

Press  key to give up.

Press **2.No** to give up saving image. When process image saving again, system will remind you if you want to replace image numbered 02 ans so on.

#### **Tips:**

**When the storage is full. If one stored image is reviewed and when you plan to save some image, system will remind if you want to delete that stored iamge and save the current one.**

## 4.11 Image review

At real time or freeze state, press  key to display the following dialog box:

PLEASE ENTER STORAGE NO.:

█

System reminds to putin stored image no, for example 01, after input, press  key (if a mistaken happen, press  key to delete chractors one by one and re-input), then the first image is reviewed and a number **01/128** displays at the screen bottom. 01 means it is the first image and 128 means the total amount of stored images. Press  or  keyto review the rest images one by one.

Press  to return to real time state and if need to call out other images, repeat the above steps.

## 4.12 OB calculation

The device is capble of measurement on GA of equine, bovine, sheep, swine,cat and dog, and so on.The GA (GW) can be acquired after measuring GS, BL, HL, SL, USD, HD, BD, CRL etc., among them, the EDD of cat and dog will be given.

**Operation process:**

Freeze the image, press  key to display equine, bovine, swine, sheep OB menu; Press  key to display cat and dof OB menu, press  key twice to switch between this two menus as the following figure shows:

0. EQUINE: GSD	0. CAT: HD
1. BOVINE: BL	1. CAT: BD
2. BOVINE: SL	2. DOG: GSD
3. BOVINE: HL	3. DOG: CRL
4. SWINE: HL	4. DOG: HD
5. SHEEP: USD	5. DOG: BD

Input the number and select the related OB menu and acquire the distance as per distance measurement method. The corresponding GA result displays behind "G·A=" on screen right, and the EDD displays behind "EDD=" as given below in details:

● **EQUINE-GSD: Calculate the gestation age according to horse GS**

Examination steps on equine:

1. Clear off the egesta in rectum.
2. Feel the pregnancy with hand and give a primary estimation and confirm the examining organ with ultrasound.
3. Hold the probe closely and put it into rectum and ensure that your hand can feel the coming change inside recta. Keep hand closing to the back and between the probe and recta wall.
4. The inner construction of equine displays on the screen, bladder lies in the portrait cross place and the behind is uterine horns and body. From the horizontal view, uterine horns are in shape of round usually. Move the probe around to acquire a better observation on the joint of uterine horns and body, and then switch the probe to uterine horns as the following figure shows:

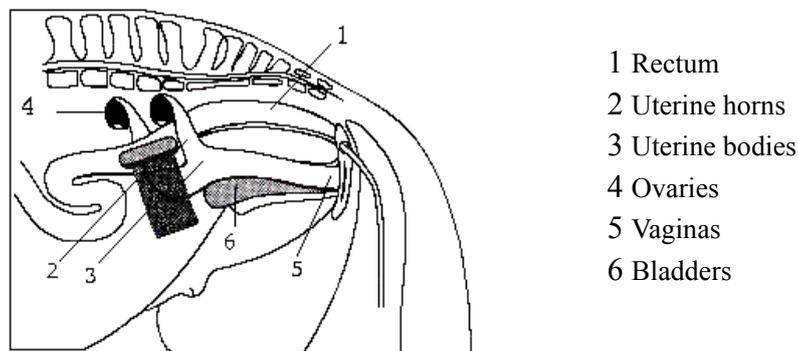


Figure 4-12. Probe position for uterine and ovaries examination

5. The measurement method of GS diameter is given below and measurement can be done horizontally or vertically.

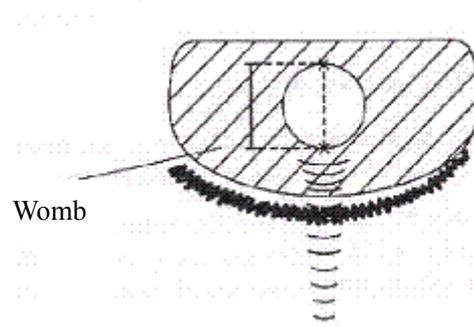


Figure 4-13. Equine GA measurement

6. Confirm the distance value as per distance measurement methods and the corresponding data display behind "G·A". With this measurement to set up a chart to find the growth curves to estimate embryo size and GA. Here GA refers to the duration from the copulation instead of impregnation.

● **BOVINE-BL: Calculate the gestation age according to bovine BL**

Examination steps on bovine:

1. Clear off the egesta in rectum.
2. Feel the pregnancy with hand and give a primary estimation and confirm the examining organ with ultrasound.
3. Hold the probe closely and put it into rectum and ensure that your hand can feel the coming change inside recta. Keep hand closing to the back and between the probe and recta wall.
4. The inner construction of bovine displays on the screen, bladder lies in the portrait cross place and the behind is uterine horns and body. From the horizontal view, uterine horns are in shape of round usually. Move the probe around to acquire a better observation on the joint of uterine horns and body, and then switch the probe to uterine horns as the following figure shows:

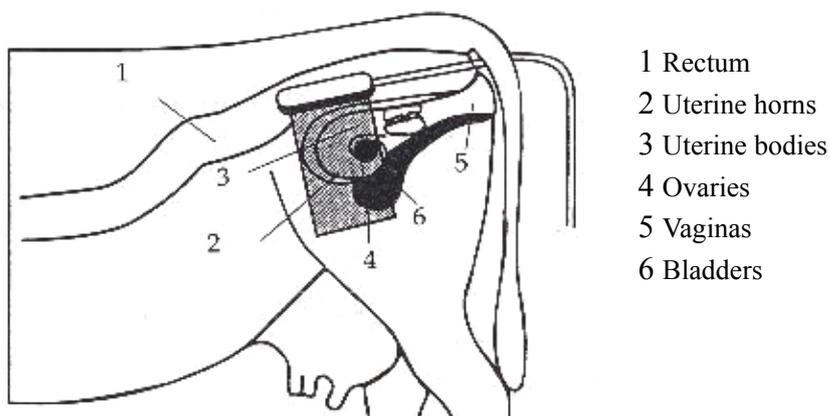
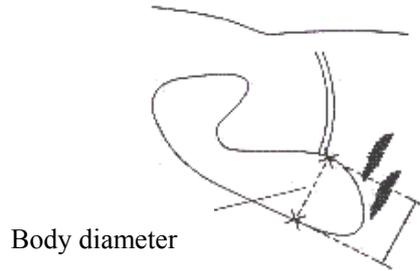


Figure 4-14. Probe position for uterine and ovaries examination

5. To measure the fetus body diameter, select a vertical section first, that is a section from two side to the neck, chest and abdomen. Body diameter can be acquired when the GA is between 60 to 150 days.

The measurement method of ody diameter is given below:



Body diameter

Figure 4-15. BL measurement

6. Confrim the distance value as per distance measurement methods and the corresponding data display behind “G·A”.

● **BOVINE-SL: Calculate the gestation age according to bovine SL**

1. Keep the cow standing.
2. Put the probe against the abdomen side center, shift it a little bit left or right and hold it closely against the skin. Clean the abdomen skin if there is mud to ensure a clear display of the abdominal pelvic structure.
3. The maximum vertical axile of the stomachi should be displayed on the screen. With the time going on, futus stomachi long axile increases regularly. The measuremenet method is given below:

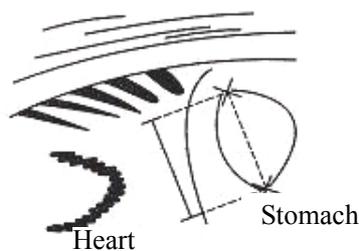


Figure 4-16. Bovine stomachi measurement

4. Confrim the distance value as per distance measurement methods and the corresponding data display behind “G·A”.

● **BOVINE-HL: Calculate the gestation age according to bovine HL**

1. Keep the cow standing.
2. Put the probe against the abdomen side center, shift it a little bit left or right and hold it closely against the skin. Clean the abdomen skin if there is mud to ensure a clear display of the abdominal pelvic structure.
3. The maximum vertical axile of the heart should be displayed on the screen. With the time going on, futus heart long axile increases regularly. The measuremenet method is given below:

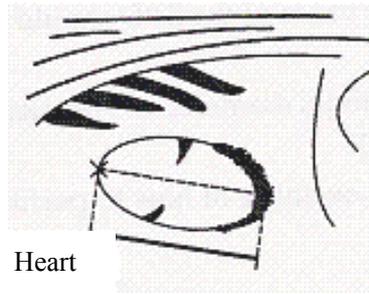


Figure 4-17. Buvine heart measurement

4. Confirm the distance value as per distance measurement methods and the corresponding data display behind "G·A".

● **SWINE-HL: Calculate the gestation age according to bovine HL**

Check routine on pigs:

1. Make the cow in a state of stand.
2. Put the probe, a little bit left or right of the centre, on the ventral abdominal wall closely along the side of teats and skull to rear leg. If there is mud on this part, clean with water first in case the abdominal pelvic structure could not be displayed accurately.

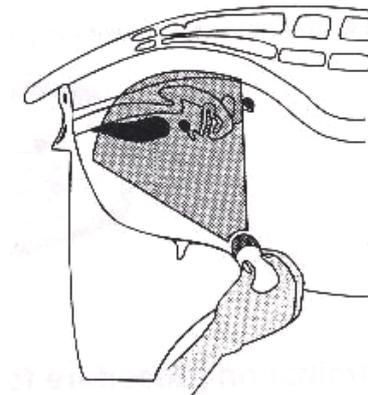


Figure 4-18. Swine GA measurement

3. To measure the heart macro-axis, screen should display the maximal longitudinal axis of heart. With the growth of gestation age, the fetal heart macro-axis increases regularly. Measuring method is given in the following figure:

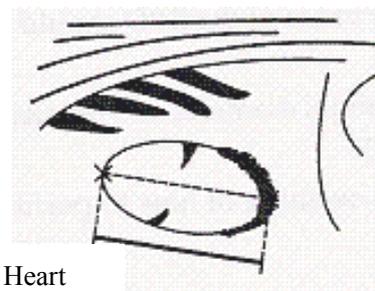


Figure 4-19. Swine Heart measurement

4. Measure selected parameter distance according to distance measurement method, the corresponding gestation age data will automatically show behind "G·A".

### ● SHEEP-USD: Estimate gestation age according to hilum-spine length of sheep

There are two methods to exam pregnant sheep:

Use convex or linear probe to check abdomen and endo-rectal probe to rectum. These two methods are the same useful. It is proofed as cording to some publication that these two methods are the same effective in pregnancy examination.

- Rectum exmanination is more exact than abdomen examination within first 35 days pregnancy;
- The two methods are the same effective between 35 to 70 days pregnancy;
- After 70 days pregnancy, abdomen examination is better because it is more practical when the uterine becomes large.

Abdomen check:

1. Abdomen examination can be done when the sheep is standing or lying or seating. Put the probe against the appointed abdomen center where there is no fur.
2. Clean the abdomen skin if there is mud to ensure a clear display of the abdominal pelvic structure.
3. Measure the length of USD.
4. Confrim the distance value as per distance measurement methods and the corresponding data display behind “G·A”.

### ● CAT-HD: Calculate the gestation age according to cat HD

Head diameter refers to the maximum inner skull diameter from the side of abdomen to back. This value can be acquired within 8 month pregnancy.

The HDmeasurement is given below:



Figure 4-20. Cat HD measurement

### ●CAT-BD: Calculate the gestation age according to cat BD

After fetal head formed, binary top diameter measurement becomes a routine in ultrasonic examination.The measuring method is:

1. Fetal head axial plane scanning, look for BPD measuring standard plane from top to bottom.
2. According to distance measurement method to measure distance of selected parameters, the corresponding gestation age data will automatically show behind "G·A".

● **DOG-GSD: Calculate the gestation age according to dog gestation saccus diameter**

The method is the same as that of equine.

● **DOG-CRL: Calculate the gestation age according to dog CRL**

The method is the same as that of cow.

● **DOG-HD: Calculate the gestation age according to dog HD**

The method is the same as that of cat.

● **DOG-BD: Calculate the gestation age according to BD**

The method is the same as that of cat.

**Tips:** After display the OB menu, press  key to exit.

**Note**

At OB measurement, when the distance is less than the following value, the GA of this animal will not display. Refer to the following table for detailed data:

EQUINE	D1<6mm
BOVINE - BL	D1<8mm
BOVINE - SL	D1<1mm
BOVINE - HL	D1<3mm
SHEEP	D1<15mm
SWINE	D1<31mm
CAT - HD	D1<15mm
CAT - BD	D1<17mm
DOG - GSD	D1<1mm
DOG - CRL	D1<1mm
DOG - HD	D1<14mm
DOG - BD	D1<16mm

## 4.13 Image print

Connect the VIDEO IN port of the printer with the VIDEO OUT port of the device and then operate as per the operation manual of the printer.

## 4.14 Image upload to computer

Connect the device and the computer with USB cable.

The highspeed USB2.0 port can transfer the image to computer at a high speed.

The attached CD includes USB driver, image preview program VIDCAP and the second developing SDK file.

After install the USB program, open VIDCAP.EXE, and finish the related settings as the manual states then images can be viewed.

With the SDK file, you can go on for extended develop on the program.

## 4.15 Shut down

Press  key to shut down the device.

**Tips: At off state, there is a certain standby consumption of power. If the device is not in use for a long time, please take the battery out from the main unit.**

### Note

**It is strictly prohibited to plug or unplug the power cord of the adapter when the device is power-on; After switch off the device, please wait for 2 -3 minutes before restart lest it be damaged.**

# Chapter Five Transportation and Storage

## 5.1 Environment requirements on transportation and storage

Environment temperature range:  $-20^{\circ}\text{C} \sim +55^{\circ}\text{C}$

Relative humidity range:  $10\% \sim 100\%$

Atmosphere pressure range:  $50\text{KPa} \sim 106\text{KPa}$

## 5.2 Transportation

Signs on the packing box conform to 《Iconograph and sign of packing, storage and transportation》(GB191-2000). Simple shockproof establishment is fitted within the box, which apply to aviation, railway, and highway or steamship transportation. Keep dry, inversion and collision.

## 5.3 Storage

- The equipment should be taken out from the packing when storage time exceeds six months, power on it for four hours, and then pack it correctly and keep it in a warehouse. The equipment must not be piled, and do not place it closely against the floor, walls or roof.
- Keep it well ventilated, do not expose it to strong sunlight or caustic gases.

# Chapter Six Check and Maintenance

## 6.1 Check

The power cord of the equipment and probe cable should be checked regularly and if there is breakage, they should not be used and be replaced.

## 6.2 Service life

Bases on the manufacturer's design, production related files, this model's use life is six years. The Product's material will gradually aging, if the product continually use over the designed use life, it may bring the problem of the performance reduced and fault rate raise.

**Note:**

**The Discard the equipment according to local law.  
Do not discard it mixing with other household garbage.**

**Warning:**

**The manufacturer shall not assume the responsibility of risks caused by using the equipment beyond its service life.**

## 6.3 Main unit maintenance

1. Operation environment should accord with "2.1 Operation environment requirements" .
2. If equipment enclosure needs cleaning, shutdown the equipment first and then wipe with alcohol sponges. When clean the interior, shutdown equipment first, open the enclosure and clean with a blower.
3. It is not proper to turn on and off the equipment frequently. Re-start the equipment two or three minutes later after shutdown.
4. Pack the equipment according to the instructions on the packing. When the equipment does not work for a long time, store it properly in the warehouse. The storage environment should accord with "5.1 Environment Requirements on Transportation and Storage ".

## 6.4 Probe maintenance

Probe is an expensive and frangible part. Never hit it or drop it on floor. When diagnoses pauses, put the probe in its case and press  key to keep it in a state of "Frozen".

See to use medical ultrasound coupling gel during diagnosis. Degree of protection against harmful ingress of water is IPX7, LV2-2/7.5MHz probe is designed to be completely watertight. For the other probes, water should not

immerge over the probe acoustic window (refer to figure 6-1, 6-2, 6-3, 6-4, 6-5). Regularly check the probe enclosure to ensure it is good incase liquid ingressio spoil the inner components.



Figure 6-1. C2-6/40R/3.5MHz Convex probe protection against water ingress sketch map

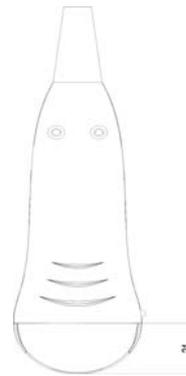


Figure 6-2. C2-7/20R/5.0MHz Convex probe protection against water ingress sketch map

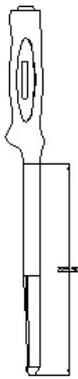


Figure 6-3. EL2-5/7.5MHz Recta probe protection against water ingress sketch map



Figure 6-4. EC2-2/13R/6.5MHz endo-vaginal probe protection against water ingress sketch map

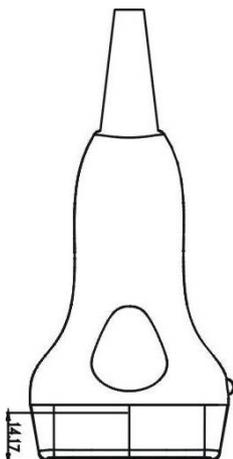


Figure 6-5. L2-5/7.5MHz HF linear probe protection against water ingress sketch map

Probe and host machine once tie, be request not to take down at will, for fear probe pin and socket's contract badness.

**Note:**  
**Do not press the probe on patient body too long in case the patient feel uncomfortable.**

## 6.5 Cleansing

1. When the enclosure need cleaning, wipe it with soft dry cloths and then wipe gently with sponge dipped with 75% medical alcohol .
2. When the interior parts need cleaning, power off equipment first and then open the enclosure and vacuum it.

**Warning:**  
**Power off the equipment first and then clean the equipment and probe to avoid accidents**

**Note:**

1. Please refer to the user manual for usage of detergent.
2. Be careful with cleaning the display. Since display is easily to be scratched and spoiled, wipe with soft dry cloths.
3. Please do not clean inner base.
4. Never put equipment into liquid.
5. Don't leave residual detergent on equipment enclosure.
6. Though most detergent won't react with enclosure, it's suggested that detergent should not be used discretionarily in case of spoiling the enclosure surface.

**Warning:**

- Must not use extender, ethylene oxide or any other organic solvent which tend to deface the probe's protective foil.**
- Must not dip the probe into any type of liquid or detergent.**
- Keep equipment or probe from any type of liquid's infiltration.**
- Must not clean equipment or probe by airing or heating.**

## 6.6 Correct usage of probe

In order to prolong probe's service life and obtain optimum performance, follow these instructions:

1. Periodic inspection on probe cable, socket and acoustic window.

2. Shutdown the equipment first and then connect or disconnect the probe.
3. Do not drop probe or flint body, and never hit the probe acoustic window, otherwise probe should be damaged.
4. Please put the probe in its case when it is in free.
5. Never heat the probe.
6. Never bend or pull probe cable, otherwise the internal connection should be broken.
7. Use couplant only on probe header and clean probe after use.
8. Inspect probe acoustical window, enclosure and cable seriously after probe cleaning. Never use the probe again if any crack or breakage is found.
9. Most probes can not be disinfected, so when it is necessary, please adopt aseptic probe cover.
10. It is suggested to adopt aseptic probe cover and aseptic couplant when using every intracavity probes but do not open the cover or couplant pack until inspection starts.

**Warning:**

**Lattices contained in probe cover may cause someone allergic reaction.**

**Warning:**

**WED-3000V can't work with high frequency surgical equipments to protect app segments from damage.**

## 6.7 Battery information

1. The equipment is fitted with rechargeable li-ion battery.
2. For optimum efficiency, the new battery must be charged and discharged (regular service, not enforced discharging) two or three rounds completely.
3. The battery can be charged and discharged for hundred times, but it will be worn-out. When the work time shortens apparently, please replace it with a new one.
4. Be sure to use electricity charger appointed by Shenzhen Well.D Medical Electronics CO., Ltd. (i.e. AC adapter) to charge the battery. Do not connect the battery to the electricity charger (AC adapter) when charging is not needed. Do not connect the battery to the electricity charger (AC adapter) longer than 10 hours; otherwise the battery life may shorten. The fully charged battery will discharge by itself if it is long-time out of use.
5. Extreme environment temperature (overcooling or overheating) will influence battery charging effect. Must not charge the battery near the ignition source or under extreme hot condition! Do not use or store battery near

source of heat (such as fire or heater)! If find the battery is leaking or smelling, move the battery away from the naked flame immediately.

6. Don't go on using non-serviceable battery and electricity charger (AC adapter).
7. Don't try demounting battery.
8. Don't short circuit the battery.
9. Do not throw the battery into the fire or heat it, otherwise it would trigger an explosion.
10. Do not souse or wet the battery.
11. Do not incorrectly connect the positive and negative polarity.
12. Do not directly connect the battery to wall outlet or car-lit socket.
13. Must not short circuit the positive and negative polarity of the battery with led or other metal objects. Must not transport nor store the battery with necklace, hair pin or other metal objects.
14. Must not pierce battery shell with nail or other sharp objects, must not hammer nor step on the battery.
15. Must not hit, cast the battery and avoid mechanical shock on it.
16. Must not bead the battery terminals.
17. Must not decompound the battery in any way.
18. Must not place the battery in microwave oven or pressure vessels.
19. Must not combine the battery with primary battery (such as dry battery) or battery with different capacity, models and types.
20. Do not use the battery if it is smelling, heating, straining, discolored or with other abnormal phenomena and remove it from the current consumer or electricity charger immediately and stop using it any longer.
21. Do deal carefully with the discarded battery according to local related waste handling regulations.

# Chapter Seven Simple Trouble Shooting

## 7.1 Check

1. Check if the power supply is ok or not, main unit power cable is connected well or not. When the supply voltage surpasses the equipment specified voltage range (AC100V-240V, 50Hz/60Hz), must not switch on the equipment.
2. Check if the probe and main unit are connected well or not.
3. Check power cable and probe lines regularly and replace the damaged or broken one if found.

## 7.2 Simple trouble shooting

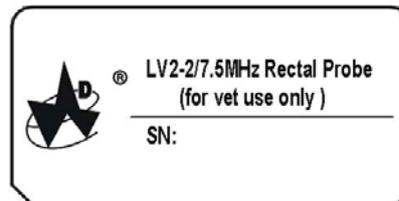
S.N	Simple failure	Solutions
1	When power on, PS indicator light does not turn on and no display on screen.	<ol style="list-style-type: none"> <li>1. Check if 14V of adapter works well;</li> <li>2. Check if battery needs charging.</li> </ol>
2	Noisy display of image	<ol style="list-style-type: none"> <li>1. Check if 14V output of the adapter is stable;</li> <li>2. Check if there is electric or magnetic field interference around the equipment;</li> <li>3. Check if the probe plug and jack are connected properly.</li> </ol>
3	Unclear display of image	<ol style="list-style-type: none"> <li>1. Adjust STC (Overall, near field, far field gain);</li> <li>2. Clear the screen optical filter.</li> </ol>

# Appendix A

## 1.WED-3000V equipment nameplate diagram:

B Mode Ultrasound System	
MODEL	WED-3000V
POWER	DC14V
POWER CONSUMPTION	39W
SAFETY TYPE	Class II Type B
MANUFACTURING DATE	
S/N	
MANUFACTURER: WELLD MEDICAL ELECTRONICS CO.,LTD.	

## 2.WED-3000V equipment main probe nameplate diagram:



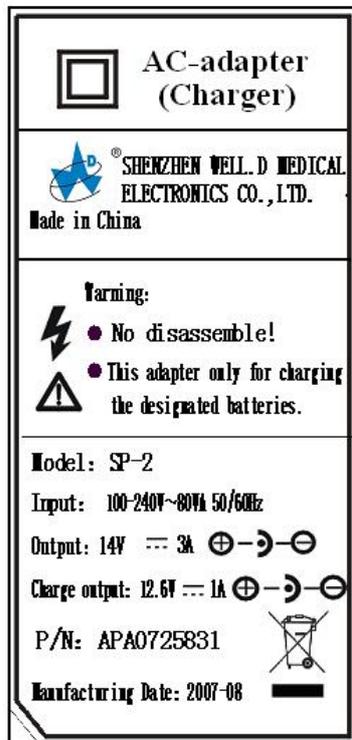
## 3. WED-3000V equipment optional probe nameplate diagram:



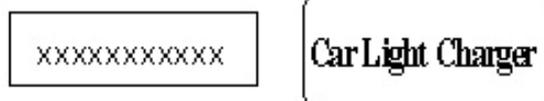
**4. WED-3000V battery nameplate diagram:**



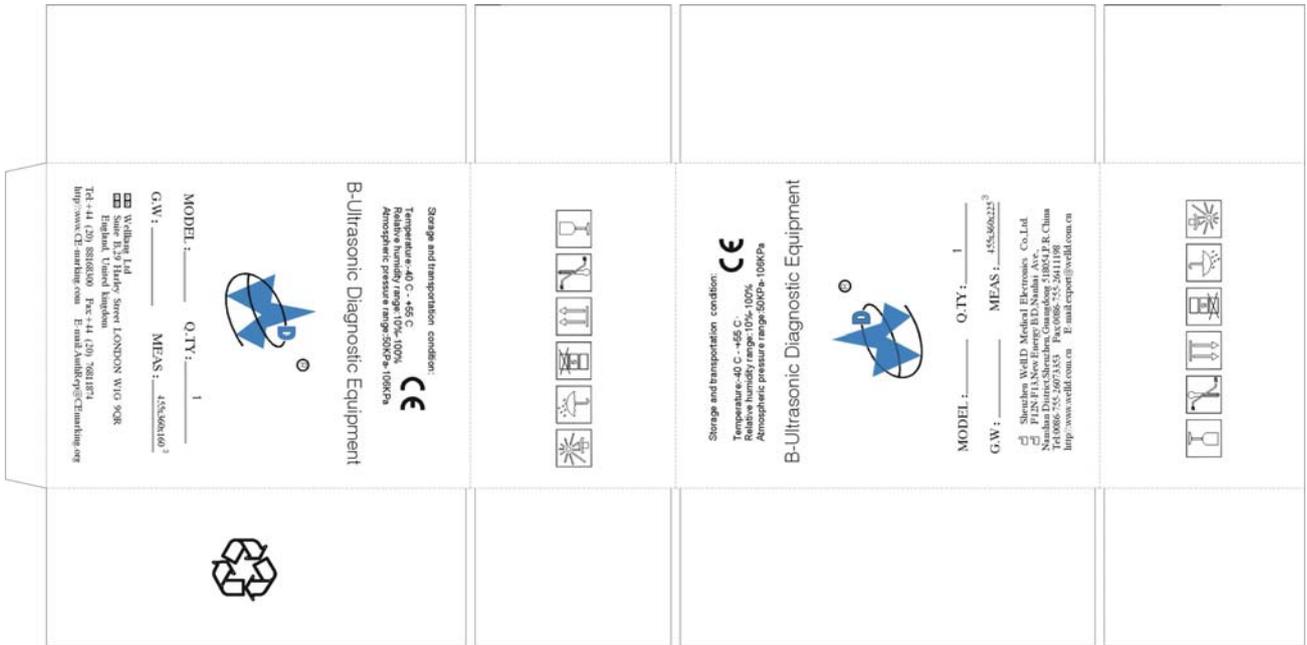
**5. WED-3000V adapter nameplate diagram:**



**6. Auto-charger nameplate diagram:**



### 7.WED-3000V packing diagram:



Modification on the above information may not be further notified.

# Appendix B Sound Output Specifications Table

TABLE: Summary of the acoustic quantities CR3-20 B-Mode

Test Mode: B-MODE

Transducer Type: CR3-20/20R/5.0MHz

Transducer No. : CP0540100

No.	Test Item	Requirements and Clauses	Results	Verdict	Remarks
1	Maximum power(mW)	Maximum temporal-average power output. IEC 1157 4.2.2a)	3.9	—	Test frequency: 5.0MHz
2	P-(MPa)	Peak-negative acoustic pressure. IEC 1157 4.2.2b)	0.77	—	
3	lob(mW/cm <sup>2</sup> )	Output beam intensity. IEC 1157 4.2.2c)	0.89	—	
4	Ispta(mW/cm <sup>2</sup> )	Soatial-peak temporal average derived intensity. IEC 1157 4.2.2d)	2.30	—	
5	System settings	Ultrasound instrument console settings. IEC 1157 4.2.2e)	F3 * 1.0	—	
6	Lp(mm)	Distance form the transducer output face to the point of maximum pulse-pressure-squared integral. IEC 1157 4.2.2f)	25	—	
7	Wpb6(mm)	-6dB pulse-width. IEC 1157 4.2.2g)	(II):1.99 ⊥ :3.31	—	
8	prr(KHz)	Pulse repetition rate. IEC 1157 4.2.2h)	33.33	—	
9	srr(Hz)	Scan repetition rate. IEC 1157 4.2.2h)	Not applicable	—	
10	Output beam dimensions(cm <sup>2</sup> )	Dimensions parallel (II) and perpendicular( ) to the reference direction ⊥ shall be specified. For scanning modes, these shall refer to the central scan line only. In many cases, especially contact systems, these dimensions may be taken as the geometrical dimensions of the ultrasonic transducer or ultrasonic transducer element group. IEC 1157 4.2.2i)	4.37	—	
11	fawf(MHz)	Arithmetic-mean acoustic-working frequency. IEC 1157 4.2.2j)	3.87	—	
12	APF	Acoustic power-up fraction. IEC 1157 4.2.2k)	0%	—	
13	Power-up mode	In system in which the user defines the power-up mode, this shall be stated as either "user defined" or "not applicable" (n/a). IEC 1157 4.2.2l)	B-Mode Freeze	—	
14	AIF	Acoustic initialization fraction. IEC 1157 4.2.2m)	100%	—	
15	Initialization mode	If appropriate. in systems in which the user defined the initialization mode, this shall be stated as either "user defined " or "not applicable "(n/a) IEC 1157 4.2.2n)	B-Mode	—	
16	Accoustic output freeze	If the system has acoustic output freeze then this shall be stated as "yes", otherwise it shall be stated as "no". IEC 1157 4.2.2o)	Yes	—	

**TABLE: Summary of the acoustic quantities CR3-20 M-Mode**

Test Mode:M-MODE		Transducer Type:C1-10/20R/5.0MHz		Transducer No. :CP0540100	
No.	Test Item	Requirements and Clauses	Results	Verdict	Remarks
1	Maximum power(mW)	Maximum temporal-average power output. IEC 1157 4.2.2a)	0.070	___	Test frequency: 5.0MHz
2	P-(MPa)	Peak-negative acoustic pressure. IEC 1157 4.2.2b)	0.71	___	
3	lob(mW/cm <sup>2</sup> )	Output beam intensity. IEC 1157 4.2.2c)	0.039	___	
4	I <sub>spta</sub> (mW/cm <sup>2</sup> )	Soatial-peak temporal average derived intensity. IEC 1157 4.2.2d)	1.26	___	
5	System settings	Ultrasound instrument console settings. IEC 1157 4.2.2e)	F3 * 1.0	___	
6	Lp(mm)	Distance form the transducer output face to the point of maximum pulse-pressure-squared integral. IEC 1157 4.2.2f)	25	___	
7	W <sub>pb6</sub> (mm)	-6dB pulse-width. IEC 1157 4.2.2g)	(II):3.30 ⊥ :2.91	___	
8	prr(KHz)	Pulse repetition rate. IEC 1157 4.2.2h)	0.148	___	
9	srr(Hz)	Scan repetition rate. IEC 1157 4.2.2h)	Not applicable	___	
10	Output beam dimensions(cm <sup>2</sup> )	Dimensions parallel (II) and perpendicular( ) to the reference direction shall be specified. For scanning modes, these shall refer to the central scan line only. In many cases, especially contact systems, these dimensions may be taken as the geometrical dimensions of the ultrasonic transducer or ultrasonic transducer element group. IEC 1157 4.2.2i)	1.79	___	
11	f <sub>awf</sub> (MHz)	Arithmetic-mean acoustic-working frequency. IEC 1157 4.2.2j)	4.22	___	
12	APF	Acoustic power-up fraction. IEC 1157 4.2.2k)	0%	___	
13	Power-up mode	In system in which the user defines the power-up mode, this shall be stated as either "user defined" or "not applicable" (n/a). IEC 1157 4.2.2l)	B-Mode Freeze	___	
14	AIF	Acoustic initialization fraction. IEC 1157 4.2.2m)	108.45%	___	
15	Initialization mode	If appropriate. in systems in which the user defined the initialization mode,this shall be stated as either "user defined " or "not applicable "(n/a) IEC 1157 4.2.2n)	B-Mode	___	
16	Accoustic output freeze	If the system has acoustic output freeze then this shall be stated as "yes", otherwise it shall be stated as "no". IEC 1157 4.2.2o)	Yes	___	

**TABLE: Summary of the acoustic quantities CR3-40 B-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{\text{aprt}} \leq 1 \text{ cm}^2$	$A_{\text{aprt}} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.50	0.061			0.061		
Acoustic working frequency (MHz)	2.91	2.91			2.91		
Output power (mw)							
Bounded output Power (mw)		4.42			4.42		
Attenuated output Power (mw)							
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.046						
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.031						
Peak-rarefactional acoustic pressure (MPa)	1.03						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.85						
-1 2dB output beam area (cm <sup>2</sup> )							
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)							
Depth at max. attenuated pulse-intensity integral (cm)	5.55						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-40 M-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			Aaprt $\leq$ 1cm <sup>2</sup>	Aaprt $>$ 1cm <sup>2</sup>			
<b>Maximum index value</b>	0.29			0.0027		0.0058	
Acoustic working frequency (MHz)	3.34			3.34		3.34	
Output power (mw)				0.29		0.29	
Bounded output Power (mw)							
Attenuated output Power (mw)				0.20		0.20	
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )				2.39		2.39	
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )				0.45		0.45	
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.021					0.021	
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.0049					0.0049	
Peak-rarefactional acoustic pressure (MPa)	0.84						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.50						
-1 2dB output beam area (cm <sup>2</sup> )				1.33			
Equivalent aperture diameter (cm)				1.30			
Depth for TIS (cm)				1.96			
Depth for TIB (cm)						1.70	
Depth at max. attenuated pulse-intensity integral (cm)	5.55						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-40 (B+M)-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			Aaprt $\leq$ 1cm <sup>2</sup>	Aaprt $>$ 1cm <sup>2</sup>			
<b>Maximum index value</b>	0.50	0.061		0.061			
Acoustic working frequency (MHz)	2.91	2.91		3.34	2.91	3.34	
Output power (mw)				0.29		0.29	
Bounded output Power (mw)		4.42			4.42		
Attenuated output Power (mw)				0.20		0.20	
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )				2.39		2.39	
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )				0.45		0.45	
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.046					0.021	
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.031					0.0049	
Peak-rarefactional acoustic pressure (MPa)	1.03						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.85						
-1 2dB output beam area (cm <sup>2</sup> )				1.33			
Equivalent aperture diameter (cm)				1.30			
Depth for TIS (cm)				1.96			
Depth for TIB (cm)						1.70	
Depth at max. attenuated pulse-intensity integral (cm)	5.55						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-20 B-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.35	0.019			0.019		
Acoustic working frequency (MHz)	3.88	3.88			3.88		
Output power (mw)							
Bounded output Power (mw)		1.05			1.05		
Attenuated output Power (mw)							
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.0095						
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.0077						
Peak-rarefactional acoustic pressure (MPa)	0.77						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.69						
-1 2dB output beam area (cm <sup>2</sup> )							
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)							
Depth at max. attenuated pulse-intensity integral (cm)	3.05						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-20 M-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.24		0.0014			0.0030	
Acoustic working frequency (MHz)	4.23		4.23			4.23	
Output power (mw)			0.071			0.071	
Bounded output Power (mw)							
Attenuated output Power (mw)						0.05	
Spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						1.27	
Attenuated spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						0.52	
Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0085					0.0085	
Attenuated Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0040					0.0040	
Peak-rarefactional acoustic pressure (MPa)	0.69						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.47						
-1 2dB output beam area ( $\text{cm}^2$ )			0.22				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.30	
Depth at max. attenuated pulse-intensity integral (cm)	2.30						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-20 (B+M)-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{cm}^2$	$A_{aprt} > 1 \text{cm}^2$			
<b>Maximum index value</b>	0.35	0.021			0.022		
Acoustic working frequency (MHz)	3.88	3.88	4.23		3.88	4.23	
Output power (mw)			0.071			0.071	
Bounded output Power (mw)		1.05			1.05		
Attenuated output Power (mw)						0.05	
Spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						1.27	
Attenuated spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						0.52	
Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0095					0.0085	
Attenuated Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0077					0.0040	
Peak-rarefactional acoustic pressure (MPa)	0.77						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.69						
-1 2dB output beam area ( $\text{cm}^2$ )			0.22				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.30	
Depth at max. attenuated pulse-intensity integral (cm)	3.05						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-13 B-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.49	0.021			0.021		
Acoustic working frequency (MHz)	4.36	4.36			4.36		
Output power (mw)							
Bounded output Power (mw)		1.00			1.00		
Attenuated output Power (mw)							
Spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )							
Attenuated spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )							
Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0097						
Attenuated Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0079						
Peak-rarefactional acoustic pressure (MPa)	1.08						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.98						
-1 2dB output beam area ( $\text{cm}^2$ )							
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)							
Depth at max. attenuated pulse-intensity integral (cm)	2.40						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-13 M-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.24		0.0012			0.0015	
Acoustic working frequency (MHz)	4.62		4.62			4.62	
Output power (mw)			0.056			0.056	
Bounded output Power (mw)							
Attenuated output Power (mw)						0.026	
Spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						0.48	
Attenuated spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						0.22	
Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0029					0.0029	
Attenuated Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.0014					0.0014	
Peak-rarefactional acoustic pressure (MPa)	0.70						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.48						
-1 2dB output beam area ( $\text{cm}^2$ )			0.15				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.35	
Depth at max. attenuated pulse-intensity integral (cm)	2.35						
Supplementary information:							

**TABLE: Summary of the acoustic quantities CR3-13 (B+M)-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			Aaprt $\leq$ 1cm <sup>2</sup>	Aaprt $>$ 1cm <sup>2</sup>			
<b>Maximum index value</b>	0.49	0.022			0.022		
Acoustic working frequency (MHz)	4.36	4.36	4.62		4.36	4.62	
Output power (mw)			0.056			0.056	
Bounded output Power (mw)		1.00			1.00		
Attenuated output Power (mw)						0.026	
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )						0.48	
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )						0.22	
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.0097					0.0029	
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.0079					0.0014	
Peak-rarefactional acoustic pressure (MPa)	1.08						
Attenuated peak-rarefactional acoustic pressure (MPa)	0.98						
-1 2dB output beam area (cm <sup>2</sup> )			0.15				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.35	
Depth at max. attenuated pulse-intensity integral (cm)	2.40						
Supplementary information:							

**TABLE: Summary of the acoustic quantities LH3-40 B-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.83	0.135			0.135		
Acoustic working frequency (MHz)	5.53	5.53			5.53		
Output power (mw)							
Bounded output Power (mw)		5.12			5.12		
Attenuated output Power (mw)							
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )							
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.16						
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.059						
Peak-rarefactional acoustic pressure (MPa)	2.72						
Attenuated peak-rarefactional acoustic pressure (MPa)	1.66						
-1 2dB output beam area (cm <sup>2</sup> )							
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)							
Depth at max. attenuated pulse-intensity integral (cm)	2.60						
Supplementary information:							

**TABLE: Summary of the acoustic quantities LH3-40 M-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{cm}^2$	$A_{aprt} > 1 \text{cm}^2$			
<b>Maximum index value</b>	0.98		0.0014			0.0052	
Acoustic working frequency (MHz)	5.37		5.37			5.37	
Output power (mw)			0.060			0.060	
Bounded output Power (mw)							
Attenuated output Power (mw)						0.021	
Spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )						31.34	
Attenuated spatial-peak temporal-average intensity(mw/cm <sup>2</sup> )						11.95	
Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.19					0.19	
Attenuated Pulse-pressure squared integral(mj/cm <sup>2</sup> )	0.074					0.074	
Peak-rarefactional acoustic pressure (MPa)	2.83						
Attenuated peak-rarefactional acoustic pressure (MPa)	1.97						
-1 2dB output beam area (cm <sup>2</sup> )			0.61				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.40	
Depth at max. attenuated pulse-intensity integral (cm)	2.55						
Supplementary information:							

**TABLE: Summary of the acoustic quantities LH3-40 (B+M)-Mode**

Index	MI	TIS	TIS	TIS	TIB	TIB	TIC
Mode	—	Scanning	Non-scanning	Non-scanning	Scanning	Non-scanning	—
			$A_{aprt} \leq 1 \text{ cm}^2$	$A_{aprt} > 1 \text{ cm}^2$			
<b>Maximum index value</b>	0.98	0.136		0.140			
Acoustic working frequency (MHz)	5.37	5.53	5.37		5.53	5.37	
Output power (mw)			0.060			0.060	
Bounded output Power (mw)		5.12			5.12		
Attenuated output Power (mw)						0.021	
Spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						31.34	
Attenuated spatial-peak temporal-average intensity( $\text{mw}/\text{cm}^2$ )						11.95	
Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.19					0.19	
Attenuated Pulse-pressure squared integral( $\text{mj}/\text{cm}^2$ )	0.074					0.074	
Peak-rarefactional acoustic pressure (MPa)	2.83						
Attenuated peak-rarefactional acoustic pressure (MPa)	1.97						
-1 2dB output beam area ( $\text{cm}^2$ )			0.61				
Equivalent aperture diameter (cm)							
Depth for TIS (cm)							
Depth for TIB (cm)						2.40	
Depth at max. attenuated pulse-intensity integral (cm)	2.55						
Supplementary information:							

## Appendix C Gestational Table

Gestational Table 1: Equine

Measurement (mm) (Gestational Sac Diameter)	Week	Day
6	1	4
8	1	4
10	1	5
12	1	6
14	1	6
16	2	0
18	2	0
20	2	1
22	2	2
24	2	3
26	2	5
28	4	1
30	4	2
32	4	3
34	4	4
40	5	0
42	5	2
44	5	3
46	5	4
48	5	5
50	5	6
52	6	1
54	6	2
56	6	3

All measurements +/- 3 days

Gestational Table 2: Bovine

Measurement (mm) (Body Length)	Week	Day
8	4	0
10	5	0
12	5	1
14	5	2
16	5	3
18	5	5
20	5	5
22	5	6
24	5	6
26	6	1
28	6	1
30	6	1
32	6	2
34	6	3
36	6	3

All measurements +/- 3 days

Gestational Table 3: Sheep

Measurement (mm) (Umbilicus to Spine Distance)	Week	Day
15	7	1
18	7	3
21	7	6
24	8	1
27	8	4
30	9	0
33	9	2
36	9	4
39	10	0
42	10	2
45	10	5
48	11	3
51	11	5
54	12	1
57	12	2
60	12	4
63	12	6
66	13	2
69	13	4
72	14	2
75	14	4
78	15	0
81	15	2
84	15	5
87	16	6
90	17	0
93	17	1
96	17	3
99	17	6

All measurements +/- 3 days