Flex

BY REPROSCAN

Operator's Manual

Information for Users

Please read this manual thoroughly before operating the Flexx ultrasound equipment. This manual should be kept accessible for future reference. An electronic version of this manual is available from ReproScan. This is a convenient way to keep a backup copy of this manual. Also, please keep in mind that the Flexx Ultrasound is made for veterinary use only.

Intellectual Property Information

Liability and Disclaimer Statement

This user's manual contains warnings for predictable dangers. ReproScan Technologies, LLC shall not be liable for the damages and losses arising out of neglecting to follow the operation instructions herein described. There are unpredictable dangers associated with electronic equipment and livestock handling ReproScan Technologies, LLC shall not take responsibilities for any unpredictable dangers associated with livestock handing around electronic devices.

This user's manual shall be furnished with the machine so that operating and managerial personnel can refer to it any time as necessary.

ReproScan Technologies, LLC shall be responsible for the safety, reliability and proper performance of this equipment on condition that the assembly, readjustment, modification or service of the equipment as describe here within is done by technical personnel authorized or approved by ReproScan Technologies, LLC. The electric equipment is consistent with relevant national standards and the equipment shall be operated in compliance with the operation guidance given in this manual.

ReproScan Technologies, LLC does not guarantee the safety, reliability and proper performance of the product in case of the following conditions: 1-Equipment or equipment parts are disassembled, reassembled, extended or readjusted without proper authorization. 2-The users of the equipment fail to properly operate the equipment in accordance with the requirements specified in this user's manual.

Veterinary Use Only

Limited Warranty and Repair Service (unless otherwise specified)

1. ReproScan offers the following warranty and repair service from the date of purchase for the ReproScan Flexx and its components:
   Twenty-four (24) months for the main ReproScan Flexx module
   Twenty-four (24) months for the 4.0 MHz convex rectal, 6.5 MHz linear rectal probe, C60 3.5 MHz convex probe, C20 6.5 MHz micro-convex probe and L40 7.5 MHz linear probe
   Six (6) months warranty for other components such as batteries and chargers
2. Within the warranty period, the company will not be responsible for the following situations:
   1) Malfunction or damage arising from failing to comply with the instructions of this User's Manual;
   2) Malfunction or damage caused by dropping and other physical damage after purchase;
   3) Malfunction or damage caused by disassembling and assembling, alteration and repair without the prior written consent of the company;
   4) Malfunction or damage caused by major forces (abnormal power supply, fire, flood, lightning);
   5) Malfunction or damage caused by use of unqualified ultrasonic coupling gel, or cleaning material.
   6) Malfunction or damage caused by use of a probe not provided by our company;
   7) Freight charges to and from the service depot
3. The company will offer repair service for ReproScan Flexx and related equipment that is out of warranty. Charges for parts, materials and repair service will apply.

Return of Goods

To obtain the right to return the goods, contact your local ReproScan dealer indicating product/part serial number, product model and reason for return.

Manufacturer's Information

ReproScan Flexx is manufactured for ReproScan Technologies, LLC

ReproScan Technology, LLC
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Winterset, Iowa 50273
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Safety Concerns and Warnings

ReproScan Technologies, LLC, its representatives and dealers provide user manuals, training materials, over the telephone and electronic technical support with the purchase of the ultrasound equipment from ReproScan. If at any time during the use of ReproScan equipment, the operator is unsure of the safe operation of the ReproScan ultrasound or related equipment, the operator shall immediately cease operating the equipment and consult the user manual, training materials and/or contact the nearest ReproScan representative.

Warning Symbols and Definitions

The following warning symbols are used in this manual to indicate safety level and other important items. Please remember these symbols and understand their meaning as you read this User's Manual. These symbols convey specific meanings as detailed in the table below:

Symbols & Words	Connotation
Danger	Indicates an imminent danger that may result in personal death or serious injury if not avoided.
Warning	Indicates a potential danger that may result in personal injury if not avoided.
Attention	Indicates a potential danger or unexpected use condition that may result in injury or property loss or affect the use of the equipment if not avoided.
	Indicates that operator must refer to relevant contents in this manual.

2. Safety Symbols

Symbols	Meaning	Symbols	Meaning
	Type B applied part		Keep dry
	Direct current		Fragile
	Power supply indication		Stacking limit by number
	Battery charge indicator		Temperature limits

	Symbol for the marking of electrical and electronics devices according to Directive 2002/96/EC. The device, accessories and the packaging have to be disposed of waste correctly at the end of the usage. Please follow Local Ordinances or Regulations for disposal.

Heat Plate Warning Label

Label	Description
	**Warning:** This is a heat plate to allow heat release from ultrasound. **Remove this label before using.**

Contents

1.0 Technical Specifications

Power Supply

Adapter (Battery Charger)	Input Voltage 100-240V~	Input Amperage 1.2-0.6A	Input Hz 50-60Hz
Adapter (Battery Charger)	Output Voltage DC12.8V	Input Amperage 3.0 A	
Internal Battery	Lithium Ion	11.1 V DC	6800 mAh

Dimension and Weight

Flexx Module	174 mm H * 56 mm W * 213 mm H	6.8" x 2.2" x 8.4"
Flexx Weight	1. 7 kgs, 3.7 lbs.	(excluding probes)

Video Display and Output

Built in Monitor	See below	5.7"	diagonal
Vista Goggles	VGA	640 x 480 pixels	Via LEMO Port
NFI 5000	NTSC / PAL	Composite	Via LEMO Port
2.0 ReproScan Monitor	Wireless	5.8 GHz	8 Channels
WiFi	Android 5.0 +	.BMP files to App	Calculations on App

Flexx Built-In Monitor Specifications

Screen Size	145 mm	5.7"	diagonal
Brightness	300 cd/m² ?		
Resolution	1280 x 960?		
Technology	TFT	LED backlight	

Transduce (Probe) Specifications

4.0 MHz Convex Rectal	80 elements	2.0 MHz to 5.0 MHz	6 cm to 20.5 cm depth
6.5 MHz Linear Rectal	80 elements	5.0 MHz to 7.5 MHz	4 cm to 16 cm depth
6.5 MHz Micro-Convex	80 elements	5.0 MHz to 9.0 MHz	4 cm to 16 cm depth
3.5 MHz Convex C60	80 elements	2.0 MHz to 5.0 MHz	6 cm to 20.5 cm depth
7.5 MHz Linear L40	80 elements	5.0 MHz to 9.0 MHz	4 cm to 16 cm depth

2.0 Flexx Features and Descriptions

2.1 Features of the Flexx Ultrasound Unit

Languages	English	
Time and Date Preset		
RF 5.8 GHz	8 Channel Presets	Use with 2.0 ReproScan Monitor
Diagnostic Mode Presets	8 Presets per Probe	Exams A to H
Image Brightness	Monitor Screen	50% to 100%
Image Contrast	Monitor Screen	50% to 100%
Total Gain	0~127 dB	
Near Gain	-31~0 dB	
Far Gain	0~31 dB	
Dynamic Range	27~90 dB	
Depth of Scan	Varies with probe	4 cm to 20.5 cm
Focus Functions	Change focus point	Varies with probe type
Frame Rate Function	Changes frame rate	0 to 3 (4 settings)

2.1 Features of the Flexx Ultrasound Unit

Frequency conversion function	2.0 MHz to 9.0 Mhz	Varies each probe
Image post-process adjustment	IP 0 to 3	Improves image detail
Edge enhancement function	IE 0 to 3	Improves edge detail
Image Flip	For inverted use	Use while hanging at chute
Probe orientation	Left or right	Operators preference
Image freeze/unfreeze	Freeze button	
Image store	Stores 400 images	
Image read	Retrieve stored images	
Image transfer	Send images	WiFi to App on Android
CINE Loop	255 images capture	Review 255 images
Measurements	4 caliper measurements	

2.2 Flexx Components

Warning
There is a heat plate on each side of the Flexx that gets very warm. Make sure that these heat plates are allowed to dissipate heat and are not obstructed. Do not touch!

2.3 Function Keys

SN.	Function keys	Function
1	Exam	1. During real-time scanning: press Exam to toggle through 8 preset diagnostic modes; press and hold until a flash is seen to save the parameters in the current diagnostic mode; 2. While an image is frozen, press the Exam key to transfer images to mobile App or PC workstation.
2	Menu / Cine	1. During real-time scanning: press the key Menu key once to select the image adjustment menu; press the Menu key twice to select the main unit settings menu on the left side of the screen; press the key three times to exit the menu screens and return to real-time scanning. 2. While an image is frozen, press the Menu key to start CINE Loop playback (automatic, manual switching).
3	Enter	1. Press Enter to confirm an entry or to save a setting.
4	❄	Freeze Key 1. During real-time scanning, press the Freeze key to freeze an image. Press Freeze again to return to active scanning mode 2. While an image is frozen, press the Freeze key and hold and a the Brightness and Contrast of the built in monitor can be adjusted using the arrow keys.
5	↑ ← → ↓	1. During real-time scanning, press the left/right arrow keys to select the depth setting. 2. During real-time scanning, press the up/down arrow keys to change the focus 3. After pressing Menu, use the arrow keys to move between setting and to increase, decrease or otherwise change a setting 4. While an image is frozen and after pressing Measure, use the arrow keys measure a structure on the image.
6	Esc	Use the Esc key to exit various settings.
7	Measure	While an image is frozen, press the Measure key to enter the Measurement feature. Press the Measure key to change the starting and end point of each measurement.
8	Store / Recall	While an image is frozen, press the Store/Recall key once to store an image or twice to enter recall mode
9	⏻	1. Press the Power Switch to turn the Flexx on or off. 2. Press the Power Switch twice in quick succession to go into power save mode that turns off the monitor.

3.0 Flexx Configurations

The Flexx ultrasound unit offers multiple configurations for scanning multiple species of livestock, horses, exotic animals and pets.

The optional Flexx protective sun-shaded carry case allows for outdoor use in sunny conditions. This carry case works with Ram Mount accessories for mounting at a cattle chute and equine stocks. Make sure you discuss the various Flexx mounting configurations that you may be interested in with your ReproScan representative.

3.1 Options

- Table Top Stand
- Sunshade Carry Case
- RAM Mount Kit
- 5 Probe Options
    - 6.5 MHz L64 Linear Rectal
    - 3.5 MHz C60 T-Handle Convex
    - 7.5 MHz L40 T-Handle Linear
    - 6.5 MHz C20 Micro Convex
    - 4.0 MHz C60 Convex Rectal

Our Team is here to serve you!

Call with questions or to discuss the best mounting options for you.

4.0 Operating Conditions

The Flexx ultrasound unit is splash proof and can operate in moist conditions and in most temperatures that are encountered in veterinary practice. When operating the Flexx in wet conditions care must be taken to avoid moisture entering the Flexx. Keeping the Flexx in a backpack and using an external viewing device, is one option for rainy days. On extremely cold days, the Flexx should be kept at 10˚C or 50˚F. As the Flexx generates considerable heat, keeping the Flexx in a backpack and using an external viewing device will allow ideal operation on cold days. Flipping the Flexx screen when inside the sunshade case is an ideal option to protect the ports from falling particles and moisture while mounted chute side.

Please contact the ReproScan office if you have questions regarding the use of the Flexx ultrasound in challenging conditions.

4.1 Power supply

Adapter ratings - Input	100-240V~,	50-60Hz
Adapter ratings - Output	DC12.8V 3.0A	3.0A
Main device rating	DC12.8V 3.0A	3.0A
Internal supply voltage	DC11.1V±10%	6800 mAmpH – lithium ion

Attention: Always ensure that the battery charger / power adapter is properly grounded. Never use the power adapter without adequate grounding.

Attention: The grid power (main voltage) may be above or below the optimum range of 110V AC 60Hz to 240 V AC 50Hz in some rural areas. Please ensure that the grid power is suitable for charging electronics.

Warning: Do not operate the Flexx ultrasound unit if there is any visible or suspected damage to electrical wires or connector cables. Contact ReproScan Technologies, LLC if you have questions about the safe operation of this equipment.

Attention: Do not operate the Flexx ultrasound unit is extreme weather conditions such as thunderstorms, heavy rainfall, extreme heat and extreme cold. Contact ReproScan Technologies, LLC if you have questions about the safe operation of this equipment.

4.2 Operation Environment

Ideal Ambient Temperature	10℃-40℃ (50˚F-104 ˚F)	Use in colder temperatures with a covering such as a back pack.
Relative humidity	30%-75%	Use in moister conditions with covering. Always allow the Flexx to dry completely between uses.

4.3 Storage and Transportation

Ambient Temperature	-20℃-55℃ (-4˚F- 130˚F)	Warm/cool to room temperature before starting

Relative humidity	30%-93%	Allow Flexx to dry out after exposure to moisture.

5.0 Connecting Ultrasound Probes, Viewing Devices and Power

Always use care when connecting probes, viewing devices and power to your Flexx ultrasound unit. ReproScan uses rugged connections in the construction of its ultrasound equipment but care must be taken to prevent accidental damage to the probe connectors, LEMO goggle connector and the power connector.

Attention: Always turn the Flexx ultrasound unit OFF before connecting or disconnecting ultrasound probes, viewing devices and power cables.

5.1 Connecting an Ultrasound Probe

Turn off the Flexx Module before connecting a probe. Before trying to connect a probe to the Flexx module, carefully examine the connector plug on the probe (male connector) and the socket on the Flexx module (female connector). Identify the marker on the probe's male connector and the marker on the Flexx module. These are important features that will allow you to connect the probes to the Flexx module without any problems. Once you have identified these structures and the slot in the female socket, carefully insert the probe's male connector into the socket on the Flexx module. Once fully inserted, tighten the probe into the socket by turning the sleeve on the probe connector clockwise.

5.2 Disconnecting an Ultrasound Probe

Turn off the Flexx Module before disconnecting a probe. Turn the sleeve counter-clockwise to loosen the probe connector. The firmly pull the probe connector out of the Flexx probe socket. Ensure that probe connectors are protected from physical damage during transportation. Ensure that probe connectors are completely dry before storage so no corrosion can occur.

5.3 Vista Goggles Installation

Turn off the Flexx Module before connecting Vista Goggles. Before trying to connect Vista Goggles to the Flexx module using the LEMO, carefully examine the connector plug on the Vista Goggles (male connector) and the socket on the Flexx module (female LEMO connector). Identify the red marker on the Vista's male connector and the red marker on the Flexx module. These are important markers that will allow you to connect the Vista Goggles to the Flexx module without any problems. Once you have identified these structures, carefully insert the Vista's male connector into the socket on the Flexx module. Note that there is a sleeve that slides on the Vista's male connector. You will need to gently pull back on this connector to remove the male LEMO connector from the Flexx module's female LEMO connector.

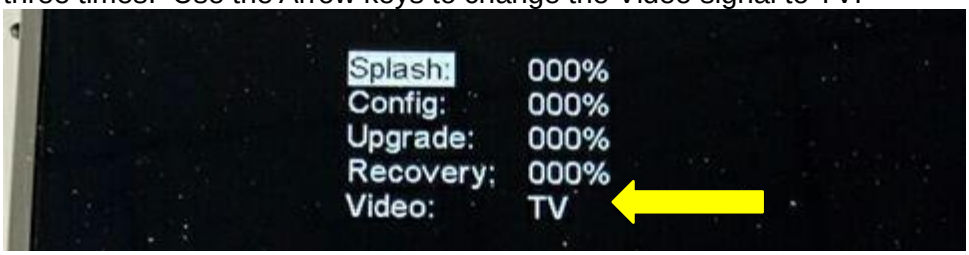
Male LEMO Connector with Red Marker

Female LEMO Connector with Red Marker

5.4 NFI 5000 Monocular Installation

Your NFI 5000 monocular viewing device uses the same LEMO connector as the Vista goggles. Follow the instructions above to connect the NFI 5000 to the Flexx Module. The NFI 5000 requires a Composite NTSC (TV) signal to operate. To change the signal from VGA (standard) to TV, follow these instructions:

When in regular scanning mode, press the Measure key three times, press the Enter key three times. Use the Arrow keys to change the Video signal to TV.



5.5 Connecting the Flexx to a ReproScan 2.0 Wireless Monitor

1. Set the RF according to the instructions in section 6.3.8.2 of this manual and select the RF channel, such as "RF: 1";
2. Turn on the ReproScan 2.0 wireless monitor;
3. Make sure that the monitor is set to Wireless;
3. To set the channel on the wireless monitor to correspond to the wireless signal on the Flexx. Eg. RF1 on Flexx matches Channel 1 on 2.0 ReproScan wireless monitor.

5.6 Connecting the Power to the Flexx Module

Turn off the Flexx Module before connecting the Power Adapter to the Flexx.

1. Lift the protective cover over the 2.5 mm female jack on the Flexx module.
2. Insert the 2.5 mm jack from the power adapter into the Flexx module.
3. Make sure that the adapter is an approved ReproScan 12.8 VDC 3.0 Amp approved power supply.

Danger	Ensure that the power source is 110 VAC 60 Hz to 240 VAC 50 Hz. Ensure that this power source has proper grounding. Ensure that there are no bare wires.

6.0 Changing Settings and Operating the Flexx

6.1 Startup and Shutdown

To power up the Flexx, press the key, the Flexx will start up and the indicator light will turn on.

To shutdown the Flexx, hold down the key, the Flexx will shut down and the power indicator turn off. Note that to shut down the Flexx you will need to hold the key longer than other menu keys.

6.2 Screen saver setting

While the Flexx is in active scanning mode, double click the power the key to enable the display screen saver. This will cause the monitor screen on the Flexx to turn off; double-click the key again to turn the screen back on.

6.3 Changing Settings on the Flexx

While the Flexx is in active scanning mode, the following menu changes can be made:

6.3.1 Language setting

1. Press the Menu Cine key twice to enter Flexx settings menu, press arrow keys to select "Language";
2. Press the arrow keys to select language; the Flexx supports 7 different languages (English, Spanish, French, Russian, Portuguese, German and Chinese);
3. Press and hold the Enter key until the main unit automatically shuts down, turn it on again and the Flexx will display the selected language.

6.3.2 TV Mode setting

(This changes the output from the wireless sender. It does not change the output from the LEMO connector.)

1. Press the Menu Cine key twice to enter Flexx settings menu, press arrow keys to select "TV Mode";
2. Press arrow keys to select "PAL" or "NTSC";
3. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.3 Status setting

1. Press the Menu Cine key twice to enter the Flexx settings menu, press arrow keys to select "Status";
2. Press arrow keys to select "On" or "Off"; If "On" is selected, depth value, focus position, RF channel, WiFi, battery power indicator are displayed at the bottom of the screen;
3. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.4 WiFi setting (For connecting to Android device via App)

1. Press the Menu Cine key twice to the Flexx settings menu, press arrow keys ⬆ ⬇ to select "WiFi";
2. Press the arrow keys ⬅ ➡ to select "On" or "Off"; If "On" is selected, the WiFi icon at the bottom of the screen changes from  to  ;
3. Press the Menu Cine key to confirm this setting and exit the Flexx unit settings menu.

6.3.5 Grid On/Off setting

1. Press the Menu Cine key twice to enter the Flexx settings menu, press the arrow keys ⬆ ⬇ to select "Grid Setup";
2. Press the arrow keys ⬅ ➡ to select "On" or "Off"; If "On" is selected, a grid for measuring is displayed in the image area;
3. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.6 Grid Spacing settings

1. Press the Menu Cine key twice to enter the Flexx settings menu, press arrow keys ⬆ ⬇ to select "Spacing";
2. Press the arrow keys ⬅ ➡ to select "10" or "20". 10 = 10mm or 1 cm grid, 20 = 20mm or 2 cm grid;
3. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.7 Flip image setting (Flip image to use the Flexx inverted)

1. Press the Menu Cine key twice to enter the Flexx settings menu, press arrow keys ⬆ ⬇ to select "Flip Screen";
2. Press the arrow keys ⬅ ➡ to select "0" or "1" to flip the image;
3. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.7 Other settings interface

6.3.7.1 Time setting - (if battery completely discharges, you will need to reset)

1. Press the Menu Cine key twice to enter the Flexx settings menu, press the arrow keys ⬆ ⬇ to select "Other";
2. Press the Enter key to enter Other settings interface;
3. Press the arrow keys ⬆ ⬇ to select "YY, MM, DD, hr, min";
4. When setting the year, month, day, hour and minute, press the arrow key ➡ to increase value or press the arrow key ⬅ to decrease value;
5. Press the Enter key to confirm the time setting and quit the Other settings interface;
6. Press the Menu Cine key to confirm this setting and exit the Flexx settings menu.

6.3.7.2 RF and Channel settings (Change wireless channels)

1. Press the Menu/Cine key twice to enter the Flexx settings menu, press arrow keys ↑ ↓ to select "Other";
2. Press the Enter key to enter Other settings interface;
3. Press the arrow keys ↑ ↓ to select "RF5.8G";
4. Press the arrow keys ← → to select "On" or "Off";
5. If "On" is selected, press the arrow keys ↑ ↓ to select "Channel", press arrow keys ← → again to select RF channels among "0-7"; if "Channel 1" is selected, then the RF channel icon at the bottom of the screen changes from  to  .
6. Press the Enter key to confirm the RF settings and exit the Flexx other settings interface;
7. Press the Menu/Cine key to confirm these settings and exit the Flexx settings menu.

Note: You do not have to exit the other settings menu each time you make changes in items (6.3.1-6.3.8) above. You can make all the required settings changes and then exit the Flexx other settings interface once.

6.4 Image adjustment

In active scanning mode, you can adjust the total gain, near field gain, far field gain, dynamic range, frequency, frame correlation, image post-process, edge enhancement, left/right probe orientation, focus position, depth range, brightness and contrast on the monitor screen, etc.

Contact ReproScan for App guide to help with specific settings.

6.4.1 Total gain adjustment

1. Press the Menu/Cine key to enter image adjustment menu on the right side of the screen, press the arrow keys ↑ ↓ to select "Gain";
2. Press the arrow keys ← → to adjust parameter among 0~127 dB;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.2 Near field gain adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press the arrow keys ↑ ↓ to select "Near";
2. Press the arrow keys ← → to adjust parameter among -31~0 dB;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.3 Far field gain adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press arrow keys ↑ ↓ to select "Far";
2. Press arrow keys ← → to adjust parameter among 0~31 dB;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.4 Dynamic range adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press the arrow keys ↑ ↓ to select "Dyn";

2. Press the arrow keys ← → to adjust parameter among 27~90 dB;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.5 Frequency adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press the arrow keys ↑ ↓ to select "Freq.";
2. Press the arrow keys ← → to select the frequency grade;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.6 Frame correlation adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press the arrow keys ↑ ↓ to select "Frame Avg";
2. Press arrow the keys ← → to select the frame correlation grade;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.7 Image post-process adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press arrow keys ↑ ↓ to select "IP";
2. Press arrow keys ← → to select the IP grade;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

6.4.8 Edge enhancement adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press arrow keys ↑ ↓ to select "IE";
2. Press arrow keys ← → to select the IE grade;
3. Press Menu/Cine key to confirm and exit image adjustment menu.

6.4.9 Probe Orientation L/R adjustment

1. Press the Menu/Cine key to enter image adjustment menu, press arrow keys ↑ ↓ to select "L/R";
2. Press the arrow keys ← → to select "L" or "R" for your preference for probe orientation;
3. Press the Menu/Cine key to confirm and exit image adjustment menu.

Note: The above image setting changes (6.4.1-6.4.9) can all be made during one image adjustment session and then press the Menu/Cine once to confirm all setting changes and exit the Flexx image adjustment menu.

6.4.10 Focus position adjustment

During active scanning, press the arrow keys ↑ ↓ to adjust the position of the focus. The focus value is displayed in the status bar "F:" in millimeters. Eg. 90 mm = 9.0 cm

6.4.11 Depth range selection

During active scanning, press the arrow keys ← → to select one of eight depth settings. The depth value is displayed in the status bar "D:" in millimeters. Eg. 205 mm = 20.5 cm

6.4.12 Flexx monitor image brightness and contrast adjustment

The brightness and contrast level of the built in monitor screen is an important factor affecting the image quality. The brightness and contrast adjustment should be set in relation to the ambient brightness. Therefore the brightness and contrast level should be adjusted according to the specific environmental condition.

1. During active scanning, press and hold the Freeze key for 5 seconds until the "Bright, Contrast" adjustment bars appear on the screen;
2. Press arrow keys, choose between the "Bright and Contrast" adjustment bars;
3. Press the arrow keys, change the brightness and contrast of the image;
4. Finish the settings changes, the adjustment bar will be automatically exit.

Note: Screen brightness and contrast can only be adjusted in active scanning mode. Exit Flexx image or Flexx settings adjustment menus prior to adjusting screen brightness and contrast.

6.5 Image Freeze/Unfreeze

In active scanning mode, press the Freeze key to freeze the image; in frozen status, press key to unfreeze the image.

6.6 Diagnostic mode preset

There are 8 preset settings available for each Flexx probe. For example, a veterinary clinic may use the 4.0 MHz convex rectal probe for beef cattle pregnancy testing and the 6.5 MHz linear rectal probe for equine pregnancy testing. 8 preset exams can be set for each probe. You can store the most suitable settings for your type of examinations in the Flexx by following these instructions:

1. During active scanning mode, press the Exam key until the exam you want to store is selected and select the location where you would like to store the image settings for a particular type of examination. For example, you may wish to save a setting for 4 to 6 month pregnancy examinations of beef cows while using the 4.0 MHz convex rectal probe under Exam D.
2. Go to Exam D and change the depth settings as described in **6.4.11** above.
3. Next change the image settings as described in **6.4** Image Adjustments above.
4. Now press and hold the Exam key until the **Exam D** flashes on the status bar. This saves the depth settings and image settings under **Exam D**.
5. Note that Exam A is always the first Exam shown when the Flexx is turned on. Therefore, set your most commonly used Exam settings at the **Exam A** location.
6. If you do not have 8 favorite examinations, set default Exams (for example make E, F, G, H the same as Exam A) to Exam A settings and adjust the image and depth settings on an individual animal examination basis. (for example make E,F,G,H the same as Exam A)

6.7 Cine Loop

During active scanning, the Flexx system is continuously saving 255 frames of scanned images. The Cine Loop feature always the operator to review the 255 previously scanned frames once the Freeze key is pressed. Therefore, to review images using the Cine Loop feature, press the Freeze key and freeze an image. Then, press Menu Cine key to enter the automatic playback status.

The Flexx will then automatically cycle through the previous 255 frames of images; Press the Menu Cine key at any time to pause Cine Loop while playing back. Press arrow keys ◄► to scroll through the images frame by frame. Press the Menu Cine key again to quit cine loop status. During the process of saving and playback, the lower right corner of the screen shows the relevant saved and played frames.

Press the Esc key to return to frozen image status. Press the ❄ key to unfreeze and return to active scanning mode/

6.8 Taking Measurements of an Image

1. Press the Freeze ❄ key, freeze the image;
2. Press the Measure key, the cursor will show "+";

3. Press the arrow keys to move the "+" mark to desired position, press the Enter key to set the "+" mark position as the starting point of the measurement;
4. Press arrow keys to move the "+" mark to the end point of the measurement. A dotted line appears between the starting point and the end point of the measurement. The measured value is automatically displayed in "mm" at the bottom of the screen;
5. Press the Measure key to exchange the starting point and end point of the measurement;
6. Press the Enter key to finish the first measurement;
7. Repeat the steps 3~6 to complete the multi-group data measurements;
8. Press the Esc key to quit the measurement status;
9. Press the Freeze ❄ key to return to active scanning mode.

6.9 Image Management

6.9.1 To save an image

1. Press Freeze ❄ key, freeze the image;
2. Press the Store Recall key, a "Save" prompt appears on lower right corner of the screen;
3. Press the arrow keys ◄► to select the image number code where the image will be saved, such as "003"; (record this number code and details about the image in a note book)
4. Press the Enter key, the current image will be saved as "003". The saved image number code is preceded with asterisk "*";
5. Press the Esc key to quit saving status;
6. Press the Freeze ❄ key to return to active scanning mode.

Explanation: Images can be saved into the internal memory of main unit. The Flexx can stored up to 420 images.

6.9.2 Read an image

1. Press the Freeze ❄ key, freeze the image;
2. Press the Store Recall key twice, a "Read" prompt appears on lower right corner of the screen;
3. Press the arrow keys ◄► to select the image number code that you wish to review. For

example, "003*";

4. Press the Enter key to retrieve the image stored in the frame "003*", "IMG" character will appear at the lower right corner of the screen;

5. Press the Esc key to quit reading status;

6. Press the Freeze key to return to active scanning mode.

Explanation: Only number codes with an asterisk "*" beside the number have a stored image associated with them.

6.9.3 Deleting a stored image

1. Press Freeze key, freeze an image;

2. Press the Store Recall key to enter image save or image read status;

3. Press the arrow key to select the image number code to be deleted, for example chose "002*";

4. Press up arrow key, the "*002 image stored in the Flexx will be deleted, the asterisk "*" will automatically disappear;

5. Repeat the 3-4 steps, delete other images;

6. Press the Esc key to leave the image save or image read status;

7. Press the Freeze key to return to real-time status.

6.9.4 Review a stored image

1. Press Freeze key, freeze the image;

2. Press the Store Recall key twice to enter image read status;

3. Press the down arrow key to review the images, the stored images will be automatically be displayed at a fixed time interval;

4. Press the arrow keys to select the previous or the next image to review;

5. Press the Esc key to return to frozen status;

6. Press Freeze key to return to active scanning mode.

6.9.5 Transfer the current image to the ReproScan App on an Android Device

1. Connect the Flexx to the ReproScan App on your Android device according to **6.3.4 WiFi Settings** and **Section 10.2.**

2. Press the Freeze key, freeze an image.

2. Press the Exam key, the image displayed on the Flexx monitor is transferred to ReproScan App on your Android device.

3. Press the key to return to active scanning mode.

Note: The connection and functions of ReproScan App, are explained in 10.0 Flexx App Installation and Use Instructions

6.9.6 Transfer a stored single image to the ReproScan App on an Android Device

1. Connect the Flexx to the ReproScan App on your Android device according to **6.3.4 WiFi**

Settings and **Section 10.2.**

2. Press the Freeze key, freeze an image.

3. Press the Store Recall key twice to enter image read status;

4. Press the arrow keys to select the image number code that you wish to review. For example, "003*";

5. Press the Enter key to retrieve the image stored in the frame "003*", "IMG" character will appear at the lower right corner of the screen;

6. Press the Exam key, the image on the Flexx monitor is transferred to ReproScan App.

7. Press the Esc key to exit the image read status;

8. Press the Freeze key to return to active scanning mode.

Note: The connection and functions of ReproScan App, are explained in 10.0 Flexx App Installation and Use Instructions

6.9.7 Batch images transfer to ReproScan App

1. Connect the Flexx to the ReproScan App on your Android device according to **6.3.4 WiFi Settings** and **Section 10.2.**

2. Press the key, freeze an image.

3. Press the Store Recall key twice to enter image read status;

4. Press the Exam key 3 times, a symbol ">>" and the frame number appears on lower right corner of the screen, after the ">>" symbol disappears, all the stored images are transferred to the ReproScan App on your Android device.

5. Press the Esc key to exit the image read status;

6. Press the Freeze key to return to active scanning mode.

7. During the transmission process, the number displayed in the lower right corner of the screen shows the number of the image being transmitted, press Esc key to terminate the transmission at any time.

8. When transferring batch images, the Flexx time displayed in the upper right corner of the main unit stops; when the transmission ends, the Flexx time automatically returns to normal. Batch images transfers may take a considerable amount of time.

7.0 Maintenance of the ReproScan Flexx

Please pay careful attention to the maintenance of your ReproScan Flexx ultrasound unit. You will get many years of reliable service from your Flexx ultrasound unit if recommended maintenance is done and some precautions are taken.
If you have questions about the proper use, care and maintenance of your Flexx, contact your ReproScan representative.

Attention: Always turn off your Flexx unit and disconnect from power while cleaning.
Attention: The Flexx is not waterproof. Clean without using excessive amounts of water. (Ex: Damp cloth or cleaning wipe.)
Attention: Allow the Flexx unit to dry completely before putting into a closed case or container. This will reduce the chance of corrosion on the internal electronics. (Tip: Leave your case open to allow unit to dry completely)
Attention: Do not rinse or submerge the probe connectors. Ensure the probe connectors are very dry when they are stored.

Attention: The 4.0 MHz convex rectal Probe and the 6.5 MHz linear rectal Probe are waterproof and may be completely submerged. The 6.5 MHz micro-convex probe, 7.5 MHz L40 linear probe and the 3.5 MHz C60 convex probes are not waterproof and only the lower 2/3rd of the probes may be submerged in water and disinfectants.

7.1 General cleaning of the Flexx unit and ultrasound probes.

7.1.1 In most situations, general cleaning of the Flexx unit and the probes can be done with a soft cloth or sponge and a mild liquid detergent.
7.1.2 Always allow the Flexx, the probes and in particular, the probe and goggle connectors to completely air dry before putting in a storage container. The internal electronics of the Flexx may corrode if exposed to moisture and excessive humidity.

7.2 Disinfection of the Flexx unit and ultrasound probes

7.2.1. If there is a risk of infection due to the nature of the veterinary patient, environment or disease situation in the country, wear disposable gloves and take precautions associated with prevention and spread of infectious diseases.
7.2.2. Use a soft disposable cloth or sponge and mild soap to clean the Flexx and probes before disinfecting.
7.2.3. To achieve a high level of disinfection use the following disinfectants and techniques.
Refer to the specific instructions for each disinfectant type.

Glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Glutaraldehyde (2.4%)	Cidex Glutaraldehyde disinfectant	Refer to the instructions of the solution for details.

Non-glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Phthalaldehyde solution (0.55%)	Cidex OPA	Refer to the instructions of the solution for details.

The soaking time for a probe in the disinfectant is limited to the minimum time recommended by disinfectant manufacturer (e.g., Cidex OPA manufacturer recommended minimum 12 minutes). Follow local laws and regulations when choosing a disinfectant.

After disinfection, rinse the probe with sterile water to remove the residual chemicals. You may follow the recommended method by the disinfectant manufacturer for the rinse. After finishing the rinse, use a sterilized cloth or gauze to wipe the water on the surface of probe. Do not dry the probe by heating it.

7.3 Use of Probe Covers

Some veterinarians prefer to use probe covers. There are several probe cover types and shapes available. Please contact your veterinary consumable goods supplier for ultrasound probe covers or contact the ReproScan office for assistance.

7.4 Periodic Service Checks

Please send the Flexx ultrasound unit to an approved ReproScan ultrasound service technician for service and inspection. The length of time between inspections will vary with the amount of use that a particular Flexx unit is receiving. Service checks (not more than 2 years apart) are recommended. During these inspections, the service technician will look for corrosion, loose connections and assess the ultrasound unit. Always, contact the ReproScan office or your ReproScan dealer prior to sending in your Flexx for a service check.

8.0 Maintenance of the ReproScan Flexx Rechargeable Battery Pack

8.1 The ReproScan Flexx contains a 11.1 VDC 6800 mAh Lithium Ion battery. This battery shall remain in the Flexx ultrasound case at all times and should only be removed by a qualified ReproScan electronic technician.
8.1.2 The lifespan of this battery will vary depending on the use of the Flexx ultrasound. In general this battery will last between 300 and 500 discharges.
8.1.3 Always store the Flexx with some charge in the battery.
8.1.4 The internal 11.1 VDC 6800 mAh Lithium Ion battery will power the Flexx with the monitor turned on for 6 hours when the battery is new.
8.1.4.1 Length of operational time will be extended by turning off the Flexx monitor. **See 6.2 Screen Saver Setting.**
8.1.4.2 The charging time for the internal 11.1 VDC 6800 mAh Lithium Ion battery from complete discharge to completely charged is approximately 8 hours.
8.1.5 The Flexx ultrasound unit may be used while it is charging. Take extra safety precautions when operating the Flexx while the power adapter is connected to 110 to 240 VDC power.

Danger	If the Flexx is being used at the same time that the Flexx battery is being charge, take extra precautions. Ensure that the electrical circuit is well grounded and all cords and cables are well insulated.

8.2 During long term storage, the Flexx unit should be charged once every 3 months to ensure that the battery does not go completely dead as this will affect long term battery life.
8.3 Replace the Flexx battery when the run time is less than 4 hours. Call the ReproScan office or your ReproScan dealer for instruction on where to send the Flexx to have the battery changed.

9.0 Safety Classifications

9.1. Classified according to electric shock protection type: Class I, internally powered equipment
9.2. Classified according to electric shock protection degree: Type B applied part
9.3. Classified according to the degree of protection against ingress of liquid: Flexx unit IPX0
9.4. Classified according safety of operation in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide: It is neither Category AP equipment nor Category APG equipment
9.5. Classified according to mode of operation: Continuous operating equipment
9.6. Classified according to the protection of radio services: Group I Class A equipment

10.0 Flexx App Installation and Use Instructions

Frozen, still and captured images may be transferred from the Flexx to Android version 9.0 devices using WiFi and the ReproScan App.

Attention: The ReproScan App is currently under going improvements. Please check in the play store or with your ReproScan representative to ensure that you have received the latest version of the ReproScan App.

10.1 Installation of the ReproScan App

Before using the ReproScan App on your Android tablet or Android phone, you will need to install the App on your device. In order to do the installation, have ReproScan Technologies,LLC send you the link to the App via email or go to the Google Play Store and search for the ReproScan Flexx App.

10.2 Details of installation of ReproScan App

10.2.1 Install mobile ultrasound workstation software (it is in the App)

1. The ReproScan App only works when the screen is in a horizontal position. You may need to turn on the auto-rotate feature.
2. The ReproScan App may need Permission from your device to operate. Go to Settings, Apps, tap ReproScan App, Permissions, allow Storage.
3. Return to the open ReproScan App after WiFi has been connected.

10.2.2 Turn on the WiFi on the Flexx as described in 6.3.4 of this Flexx manual and repeated below;

6.3.4 Turn on WiFi setting

1. Press the Menu/Cine key twice to the Flexx settings menu, press arrow keys to select WiFi.
2. Press the arrow keys to select On or Off; turn WiFi to On.
3. Press the Menu/Cine key to confirm this setting and exit the Flexx unit settings menu and return to active scanning mode.
4. The WiFi icon at the bottom of the screen changes from to .

10.2.3 Confirm that the WiFi is connected to the Android Device.

1. Turn on the WiFi Connection on your Android or Windows device:
2. For Android devices: tap Settings, Connections, WiFi and look for the serial number of your Flexx unit eg"1919101". The serial number is the WiFi from the Flexx. Tap to connect. You may see a message: "Internet may not be available". This is a normal response from your device.
3. Return to the App section of your Android device.
4. Tap and open the ReproScan App.
5. The WiFi Symbol on the Flexx Screen changes to when the Flexx and the Android Device

are synced.
6. You may now transfer still images from the Flexx to the Android device.

6.9.5 Transfer the current image to the ReproScan App on an Android Device

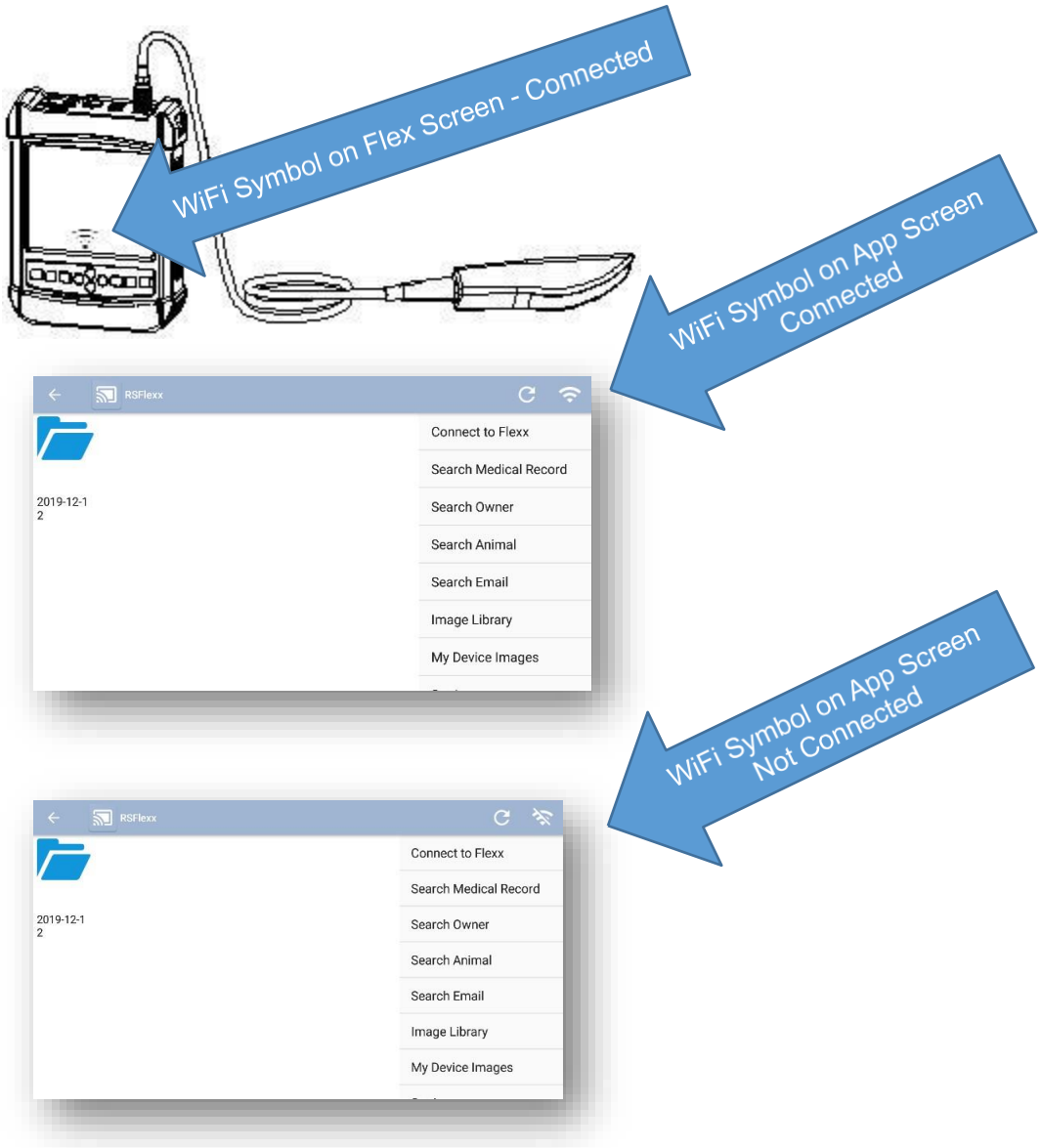
1. Connect the Flexx to the ReproScan App on your Android device according to **6.3.4 WiFi Settings**

2. Press the Freeze ❄ key, freeze an image.

2. Press the Exam key, the image displayed on the Flexx monitor is transferred to ReproScan App on your Android device.

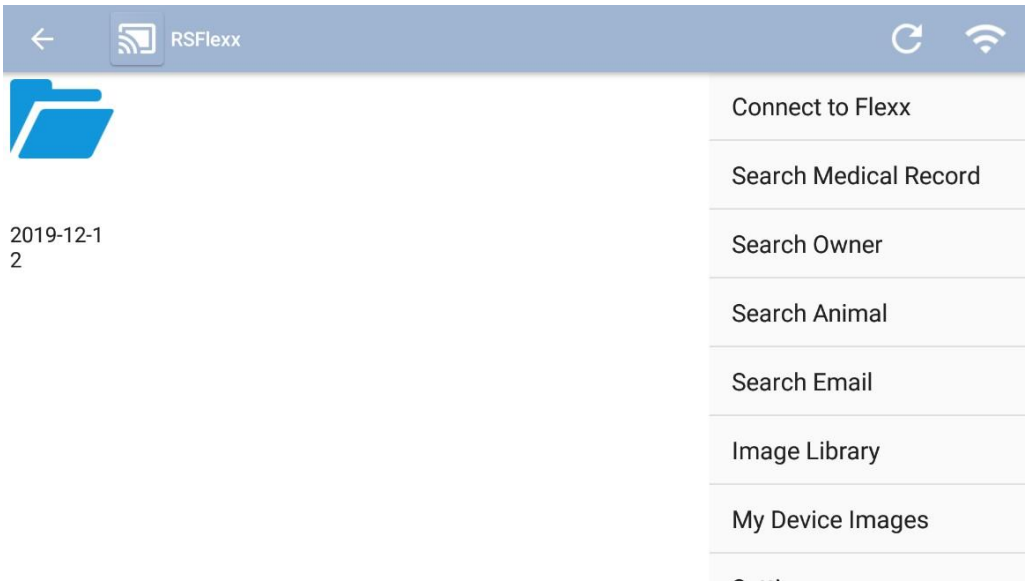
3. Press the ❄ key to return to active scanning mode.

See 6.9.6 and 6.9.7 in the Flexx Manual for additional image transfer features.



10.3 Using the ReproScan App

Appearance of the ReproScan App when open with transferred images are present in file folders.



10.3.1 ReproScan Flexx App Symbols

Icon	Function
	Refresh image
	Opens stored images folder
	Positioning icon: During the measurement, hold down the up/down/left/right arrow keys to fine-tune the position of measurement mark, tap the middle Confirm key to end the current measurement.
	Return to the main interface of the ultrasound workstation
	Body mark
	Text annotation
	Save the processed image
	Exit the ReproScan App

10.3.2 Image viewing, saving and transfer

1. Images should appear in the ReproScan App after transferring. You may need to refresh by

pressing the icon. These images may be measured, saved, transferred to another device or deleted.

2. To transfer to another device, choose one of the following options:
   i) Connect your Android device to another computer via a micro-USB cable and through the computer system, transfer images.
   ii) Retrieve the image from your Android devices files (your Android device will file the transferred images to a file when setting up the App), tap on image, tap the file share icon, use email, text or other program to transfer the image(s)
   iii) Tap the icon, retrieve images from your Android device, tap the icon andtransfer using email, text or other program.
   iv) Tap the icon, tap on photo, press the icon and fill out the medical information. Save and export the information and enter the email to send the information from. Press send. Choose desired sending option.

10.3.2 Measurements

1. Locate the image
2. Touch the location on the image where you want to start the measurement, then touch another point on the image that you want to end the measurement.
3. You may make up to 3 measurements on each image. Tap the measurement icon in between each measurement.

10.3.3 Making Notes on an image

1. Locate the desired image
2. Touch the comment icon on the right side of the image
3. The icon will turn green
4. Now touch the image where you want to leave a comment
5. A red cursor will display on the image and your Android keyboard will open so you can add a note.

10.3.4 Adding medical records to an image

You can add medical record notes (Owner, Animal ID, Date, and Diagnosis comment) to an image and then export these notes along with the image via an email.

1. Locate the desired image.
2. Add any desired image notes or measurements to the image
3. Now touch the Save icon to the right of the image
4. A form will pop up an allow you to add medical record notes associated with the image you have open
5. Add Owner. Note once you have inputted an owner's name the first time, it will be added to a lookup list for future reference.
6. Add Animal ID. Note once you have inputted an Animal ID iit will be added to a lookup list for future reference. The Animal ID will also be cross-reference to that Owner for future use.
7. Select a date
8. Add Diagnosis comments
9. Save or Save & Export.

a. Saving will save this data and reference it to the image for future retrieval via the Search Medical Records link in the menu.
b. Save & Export will open a form to input an email address. Once address inputted, touch save. Your Android device will now prompt you to open your email application of choice so you can send the medical record information along with the image to the specified email address. **IMPORTANT!** ***If your Flexx App is still connected to the Flexx ultrasound via the WiFi connection, your email application may not work. Turn the ultrasound off to close the connection and re-establish a regular WiFi internet connection.***

10.4 Checking for ReproScan App Updates

Please contact the ReproScan Office to inquire about updates for the ReproScan App and to make suggestions for improving the App.

The information contained in this manual is subject to change without notice.

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We are here to serve you, if you have any questions, please contact us!