

# Portable Ultrasound System Service Manual

## Catalogue

1. PRODUCT APPEARANCE.....	5
2. INSIDE VIEW.....	6
3 PARTS VIEW .....	9
4 FAULT PHENOMENA AND SOLUTIONS.....	10
SHOW BLACK LINE IN PRINTING .....	10
CAN'T PRINT .....	10
NO VIDEO SIGNAL AFTER CONNECTING CENTRAL SYSTEM .....	10
IMAGE OVERLAPPING .....	10
BLURRED SCREEN.....	11
NO IMAGE .....	11
BREEZING IMAGE.....	11
BLOWING UP FUSE AFTER POWER ON.....	11
UNABLE TO BOOT .....	11
NO IMAGE .....	12
SHOW BLACK LINE IN PRINTING .....	12
UNABLE TO PRINT .....	13

IMAGE OVERLAPPING .....	13
SPARK PHENOMENON.....	13
PROBE GETS HOT .....	13
ECHO AREA ISN'T A FAN WHEN USE INTRAVAGINAL PROBE .....	13
CONVEX PROBE IDENTIFIED AS TRANSVAGINAL PROBE.....	13
VERY DARK IMAGE WHEN USE TRANSVAGINAL PROBE .....	14
CAN'T MOVE OR NOT SENSITIVE .....	14
LOUD NOISE .....	14
KEYBOARD NOT WORK.....	14
AUTOMATIACLLY REBOOT.....	14
UNABLE TO START .....	14
A BRIGHT LINE ON SCREEN.....	15
SCREEN FLICKERS .....	15
IMAGE NOT CLEAR .....	15
UNABLE TO START .....	15
MANY SLANTING AND THIN LINES IN BOOTING IMAGE.....	16
SCRIPT NOT CLEAR .....	16
SERIOUS DISTURBANCE.....	16
SYSTEM CRASH FREQUENTLY DURING LITHOTRIPSY.....	16

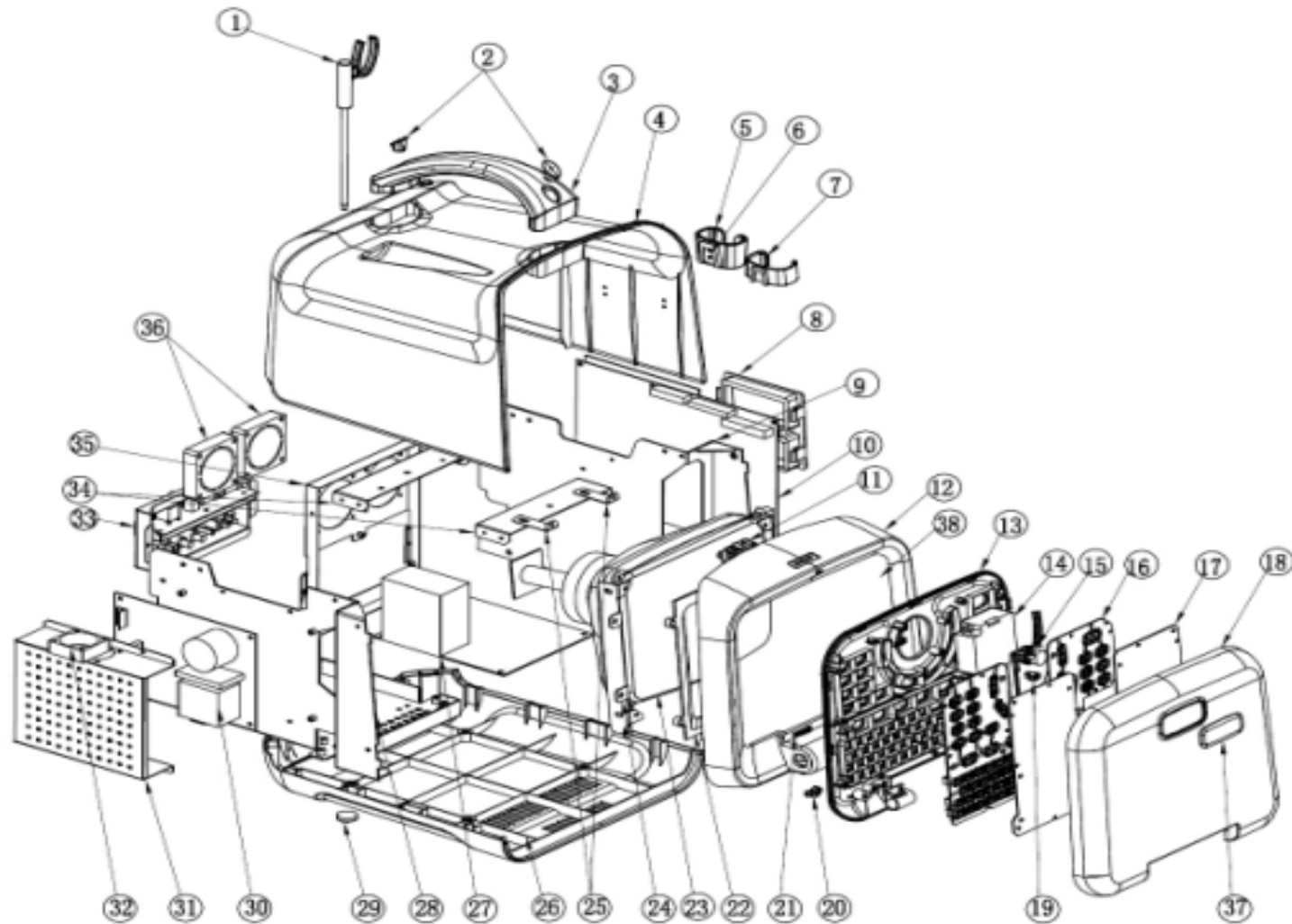
5	ILLUSTRATION OF UNITS DISMANTLING .....	17
5.1	DISMOUNT UPPER AND BOTTOM COVER.....	17
5.2	DISMOUNT DSP .....	18
5.3	DISMOUNT POWER BOARD.....	19
5.6	DISMOUNT KEYBOARD/CONNECTION CABLE .....	错误！未定义书签。
5.4	DISMOUNT COOLING FAN .....	20
5.5	DISMOUNT FUSE .....	21
5.6	DISMOUNT KEYBOARD/CONNECTION CABLE .....	22

## 1. Product Appearance



- ① Keyboard
- ② Trackball
- ③ 8 Segments TGC
- ④ CRT Display
- ⑤ Convex Probe

## 2. Inside View

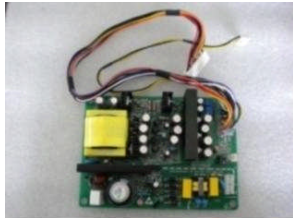


Sequence	1	2	3	4	5
Name	Probe cable hook	Nut of Handle	Handle	Upper cover of main body	Transvaginal probe hook
Sequence	6	7	8	9	10
Name	Metal part of hook	Abdominal probe hook	Shield cover of probe board	Metal frame side cover	Probe socket board
Sequence	11	12	13	14	15
Name	CRT hook	CRT front frame	Keyboard upper cover	Trackball	Gaining
Sequence	16	17	18	19	20
Name	Silicone keypad	Keyboard PCB board	Keyboard bottom cover	TGC cap	Keyboard screw cap
Sequence	21	22	23	24	25
Name	Screen adjusting	Filter holder	CRT Display	CRT fix metal parts	Front screen fix part

Sequence	26	27	28	29	30
Name	Bottom cover	CRT display board	Metal Frame L board	Bottom shim	Power supply board
Sequence	31	32	33	34	35
Name	Power shield board	Power cooling fan	Back output	Handle connecting board	Back metal frame
Sequence	36	37	38		
Name	Main body cooling fan	Brand LOGO	Filter		



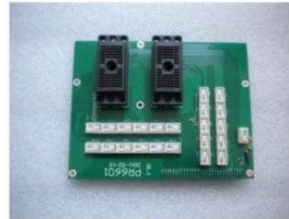
### 3 Parts View



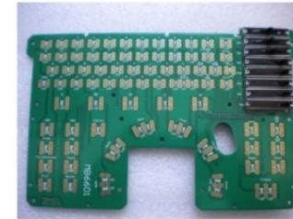
Power Board



Digital Singnal Board



Probe Board



Keyboard



Video Board



Lightness Adjust  
Board



TrackBall



Convex Probe



intraluminal probe



Cooling Fan



Input keyboard



Flat Cable



CRT Display





Power Line




Back Output  
Board

## 4 Fault phenomenon and solutions


Part	Sequence No.	Fault Phenomenon	Cause Analysis	Solution	Figure Illustration
<b>4.1 Digital Signal Board (DSP)</b>	4.1.1	Show Black line in printing	Malfunction of DSP	<p>If black line still exists by using transvaginal probe, then press , and exchange two probes' position (remove probe counterclockwise). Check whether there's black line, please use Abdominal probe if problem still exists. Or try to shake the probe socket to test whether it's well connected</p> <p>② Replace probe ③ If you have tried all above and can't solve it, please replace the DSP.</p>	  Refer to figure 1/2
	4.1.2	Can't print	Malfunction of DSP	<p>① Replace probe ② If you have tried all above and can't solve it, please replace the DSP.</p>	
	4.1.3	No video signal after connecting Central System	Malfunction of DSP	<p>① Check the Video Output setting of Central System. If other Ultra-sound machine is normal, there must be problem in Mother board of computer ② Replace probe</p>	
	4.1.4	Image overlapping	Malfunction of DSP	<p>① It occurs in inspection of Gyn and Uro, which is caused by too many focus point. Press [Focus], then</p>	

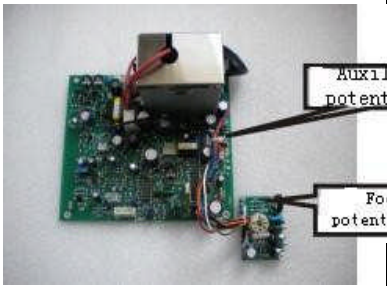
				adjust [Value] and change 4 focus point to 2 (4 to 1) ③ Replace probe ③If you have tried all above and can't solve it, please replace the DSP.	
	4.1.5	blurred screen	Malfunction of DSP	replace the DSP	
Part	Sequence No.	Fault Phenomenon	Cause Analysis	Solution	Figure Illustration
	4.1.6	No image	Malfunction of DSP	① State of mode, [Freeze] or not ②Check the sign of probe at the right corner, if there's no probe, then you should restart machine and replace one and screw up ③If [B Gaining] is at its highest but no image on screen, the probe may not work ④If you have tried all above and can't solve it, please replace the DSP.	
	4.1.7	Breezing image	Malfunction of DSP	No Speckle noise in far-field, then check whether B Gaining is at lowest value in 8 TGC segment, if it's at its highest, indicating bad DSP	
4.2 Power Board (PB)	4.2.1	Blowing up fuse after power on	Malfunction of PB	Replace PB	Refer to figure 1/3
	4.2.2	Unable to boot	Malfunction of PB	① Check the insertion on thread plate, then check fuse, if fuse is good but no response after pressing [Start], please replace the [Start Key]. If fuse doesn't work, replace a fuse or power supply cable.	

				② Display may not work ③ If you have tried all above and can't solve it, please replace the PB	
<b>4.3 Probe</b>	4.3.1	No image	Malfunction of Probe	① State of mode, [Freeze] or not ② Check the sign of probe at the right corner, if there's no probe, then you should restart machine and replace one and screw up ③ If [B Gaining] is at its highest but no image on screen, the probe may not work ④ If you have tried all above and can't solve it, please replace the DSP.	
<b>Part</b>	<b>Sequence No.</b>	<b>Fault Phenomenon</b>	<b>Cause Analysis</b>	<b>Solution</b>	<b>Figure Illustration</b>
	4.3.2	Show Black line in printing	Malfunction of Probe	① If black line still exists by using transvaginal probe, then press  , and exchange two probes' position (remove probe counterclockwise) .Check whether there's black line, please use Abdominal probe if problem still exists. Or try to shake the probe socket to test whether it's well connected ② Replace DSP ③ If you have tried all above and can't solve it, please send probe back and repair	

	4.3.3	Unable to print	Malfunction of Probe	① Replace DSP ② If you have tried all above and can't solve it, please send probe back and repair	
	4.3.4	Image overlapping	Malfunction of Probe	① It occurs in inspection of Gyn and Uro, which is caused by too many focus point. Press [Focus], then adjust [Value] and change $\Delta$ focus point to 2 (4 to 1) ② Replace probe ③ If you have tried all above and can't solve it, please replace the DSP.	
	4.3.5	spark phenomenon	Malfunction of Probe	Replace probe	
	4.3.6	Probe gets hot	operation	It's normal when Tep is under 40℃. Probe will get hotter after working a period of time. Please press [Freeze] when don't use it	
	4.3.6	Echo area isn't a fan when use transvaginal probe	operation	Probe connection problem leads to unable to be identified, please reinstall the probe	
Part	Sequence No.	Fault Phenomenon	Cause Analysis	Solution	Figure Illustration
	4.3.7	Convex probe identified as	operation	Power off and remove the probe (can be easily removed by turning the switch 90°counterclockwise), then boot with LOGO and press [Freeze]. If it still show C-R13,	

		Transvaginal probe		please press [reset], normally screen will show C-R60, then install the probe and freeze	
	4.3.8	Very dark image when use Transvaginal probe	operation	Firstly shift to convex probe mode and turn the acoustical power/B Gaining to its highest focus point to one, then back to Transvaginal mode, adjusting Total Gaining and TGC to proper value	
<b>4.4 trackball</b>	4.4.1	Can't move or not sensitive	Operation/ Malfunction of Trackball	① Slide 8 TGC bar several times. The reason is that System check TGC first and then Trackball. System can't check trackball if the TGC is not working ② you have tried all above and can't solve it, please replace the Trackball	Refer to figure 6
<b>4.5 Cooling fan</b>	4.5.1	Lound noise	Malfunction of fan	Generally led by aging of fan, please replace it	Refer to figure 1/4
<b>4.6 Keyboard or connection cable</b>	4.6.1	Keyboard not work	Malfunction of Keyboard or connection cable	Check Keyboard and connection cable whether they disconnect. Or replace Keyboard or connection cable	Refer to figure 6
	4.6.2	Automaticaly reboot	Malfunction of Keyboard	① Voltage is low, please equip a 800W voltage regulator ②[ Reset] button cause short-circuit, please replace a keyboard	
<b>4.7 Display</b>	4.7.1	Unable to start	Malfunction of Display	①Check the insertion on thread plate, then check fuse, if fuse is good but no response after pressing	

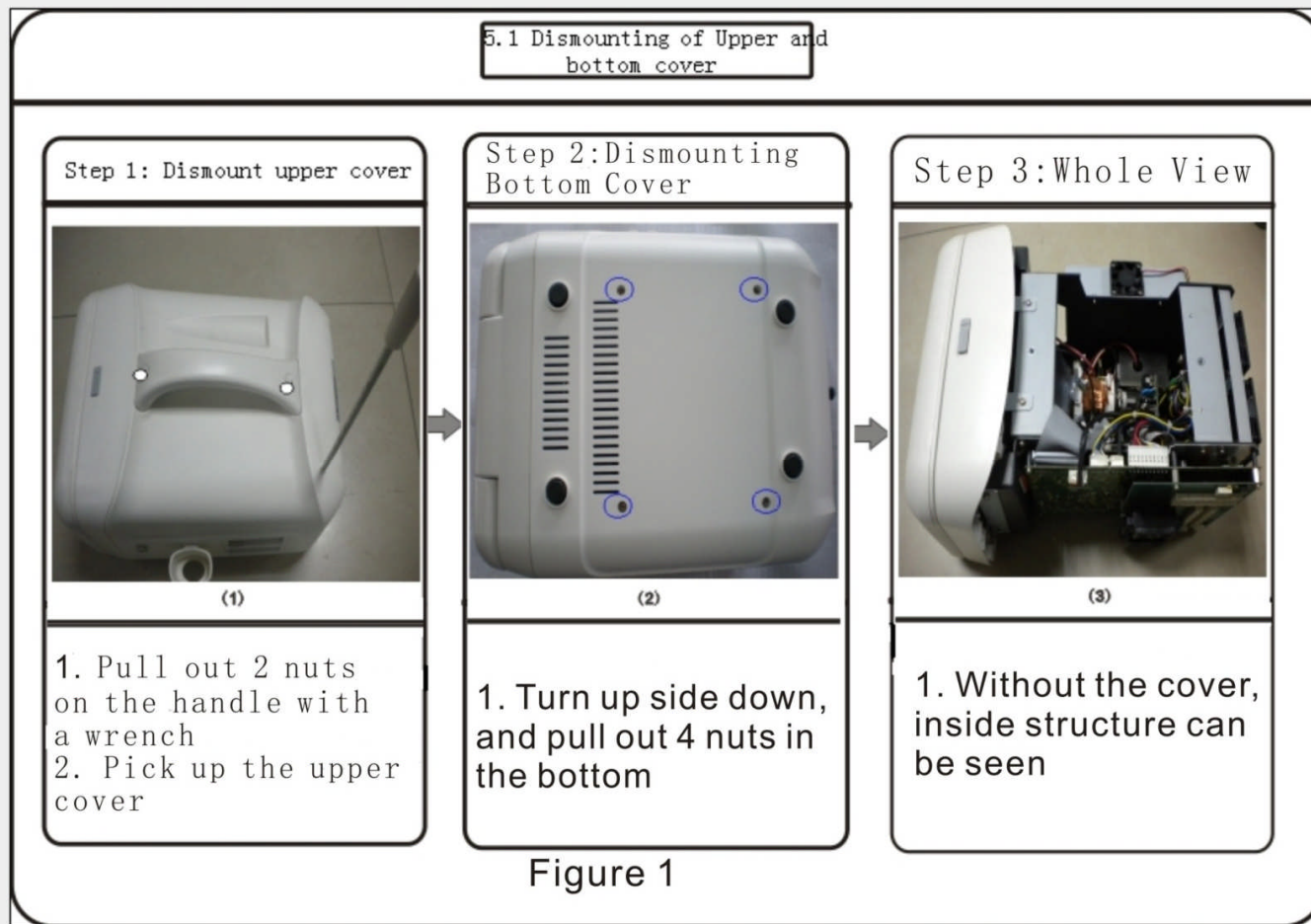
				<p>[Start], please replace the [Start Key]. If fuse doesn't work, replace a fuse or power supply cable.</p> <p>② Display may not work</p> <p>③ If you have tried all above and can't solve it, please replace the PB or send back to repair</p>	
Part	Sequence No.	Fault Phenomenon	Cause Analysis	Solution	Figure Illustration
	4.7.2	A bright line on screen	Malfunction of Display	Incontrollable of H-hold and V-hold signal, please send back to repair	
	4.7.3	Screen flickers	Malfunction of screen brightness potentiometer	send back to repair	
	4.7.4	Image not clear	Operation	<p>① Echo signal particles are too bold, please adjust frame</p> <p>② If image is dark, you need to adjust contrast and brightness. Firstly turn both to its lowest, turning brightness to its highest and then adjusting contrast to the best state.</p>	
<b>4.8 Fuse and power supply cable</b>	4.8.1	Unable to start	Malfunction of Fuse /power supply cable	<p>① Check the insertion on thread plate, then check fuse, if fuse is good but no response after pressing [Start], please replace the [Start Key]. If fuse doesn't work, replace a fuse or power supply cable.</p> <p>② Display may not work</p> <p>If you have tried all above and can't solve it, please replace the PB or send back to repair</p>	Refer to figure 5

4.9 Mother board of display	4.9.1	Many slanting and thin lines in Booting image	Auxiliary potentiometer	Open the upper cover and decrease the value of the Auxiliary potentiometer	
	4.9.2	Script not clear	Focus potentiometer	Open the upper cover and adjust the value of the Auxiliary potentiometer	
Part	Sequence No.	Fault Phenomenon	Cause Analysis	Solution	Figure Illustration
4.10 Operation	4.10.1	serious disturbance	Operation	① If you have equipped Central Computer Workstation, please disconnect them ( pull out computer power and video cable ) Then check, if no disturbance any more, please replace a better power ② If there's disturbance without a workstation, please ensure there're no high power electric instrument or transformer signal towers and keep away from such devices ③ If no situation above, please equip Filter regulators to avoid grid noise jamming.	
	4.10.2	System crash frequently during lithotripsy	Operation	Add a filter on the input side	

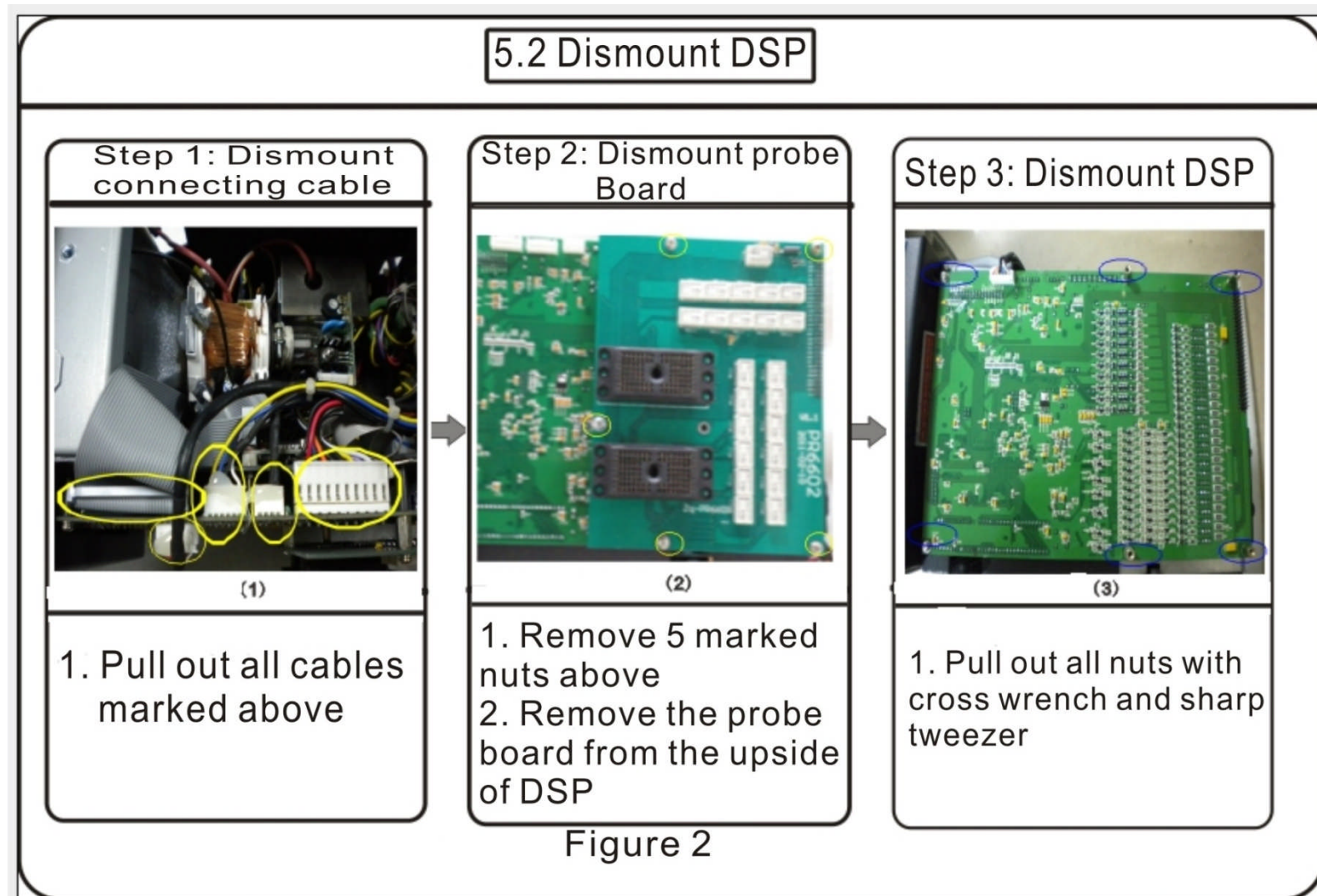


## 5 Illustration of Units Dismantling

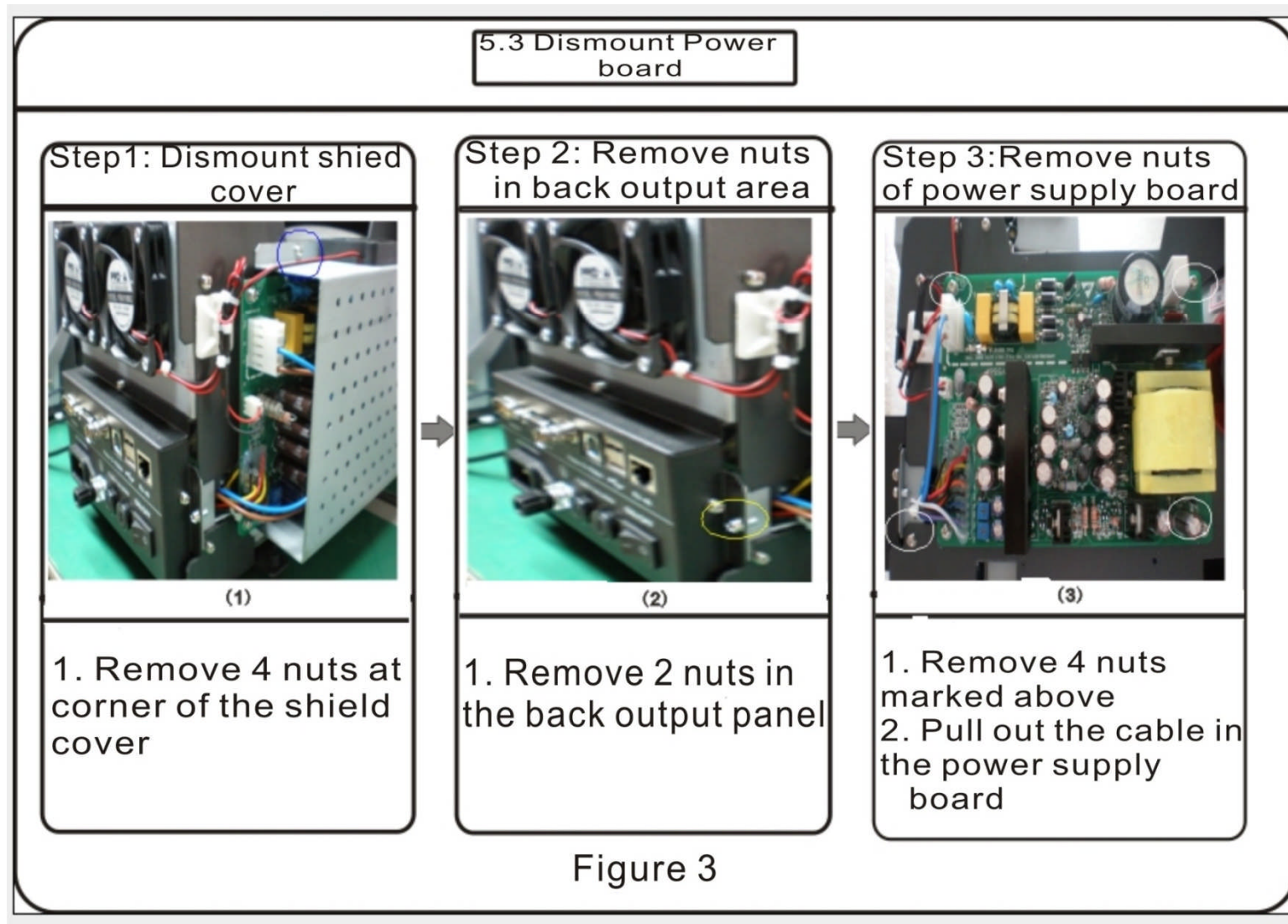
### 5.1 Dismount upper and bottom cover



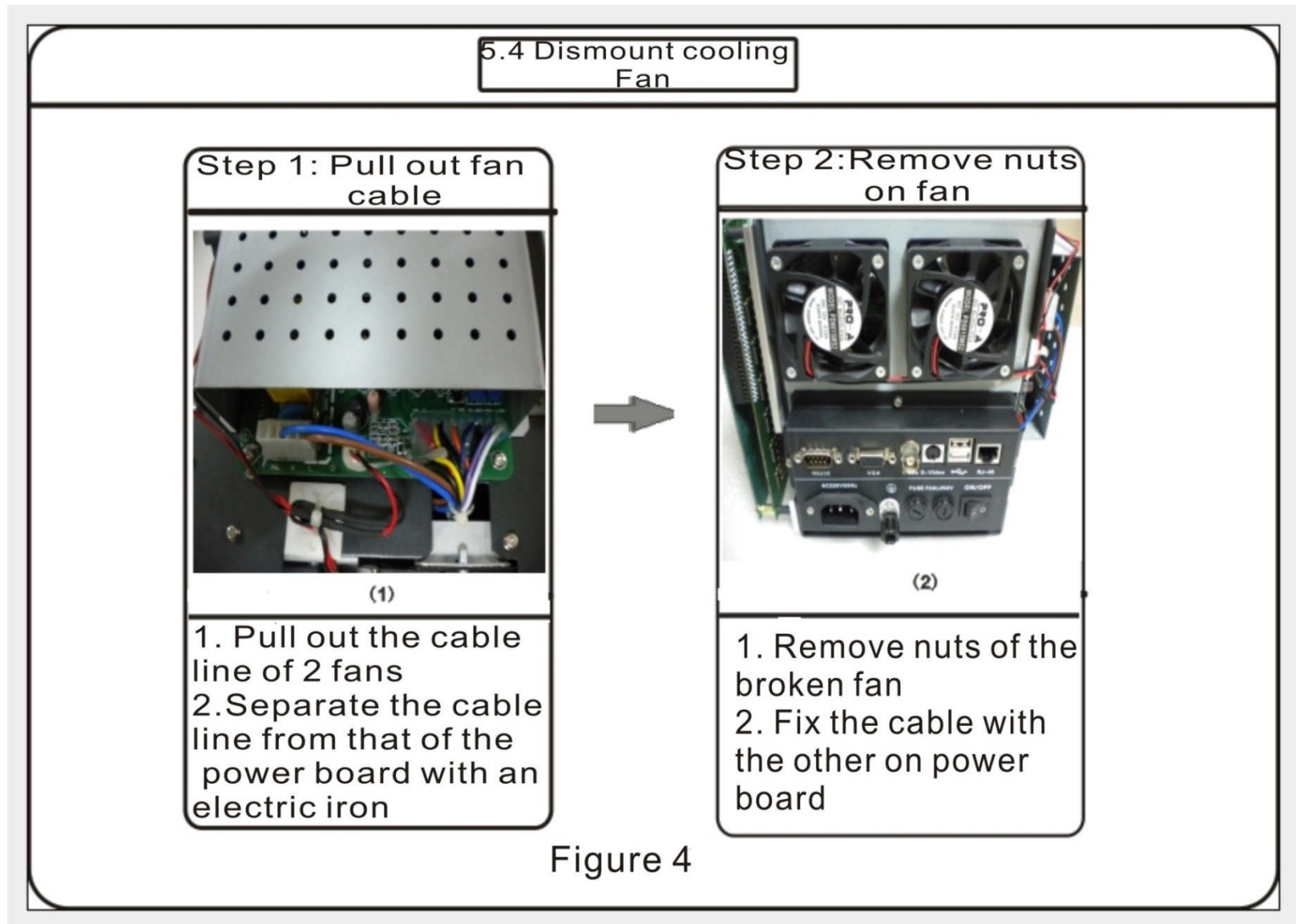
## 5.2 Dismount DSP



### 5.3 Dismount Power board

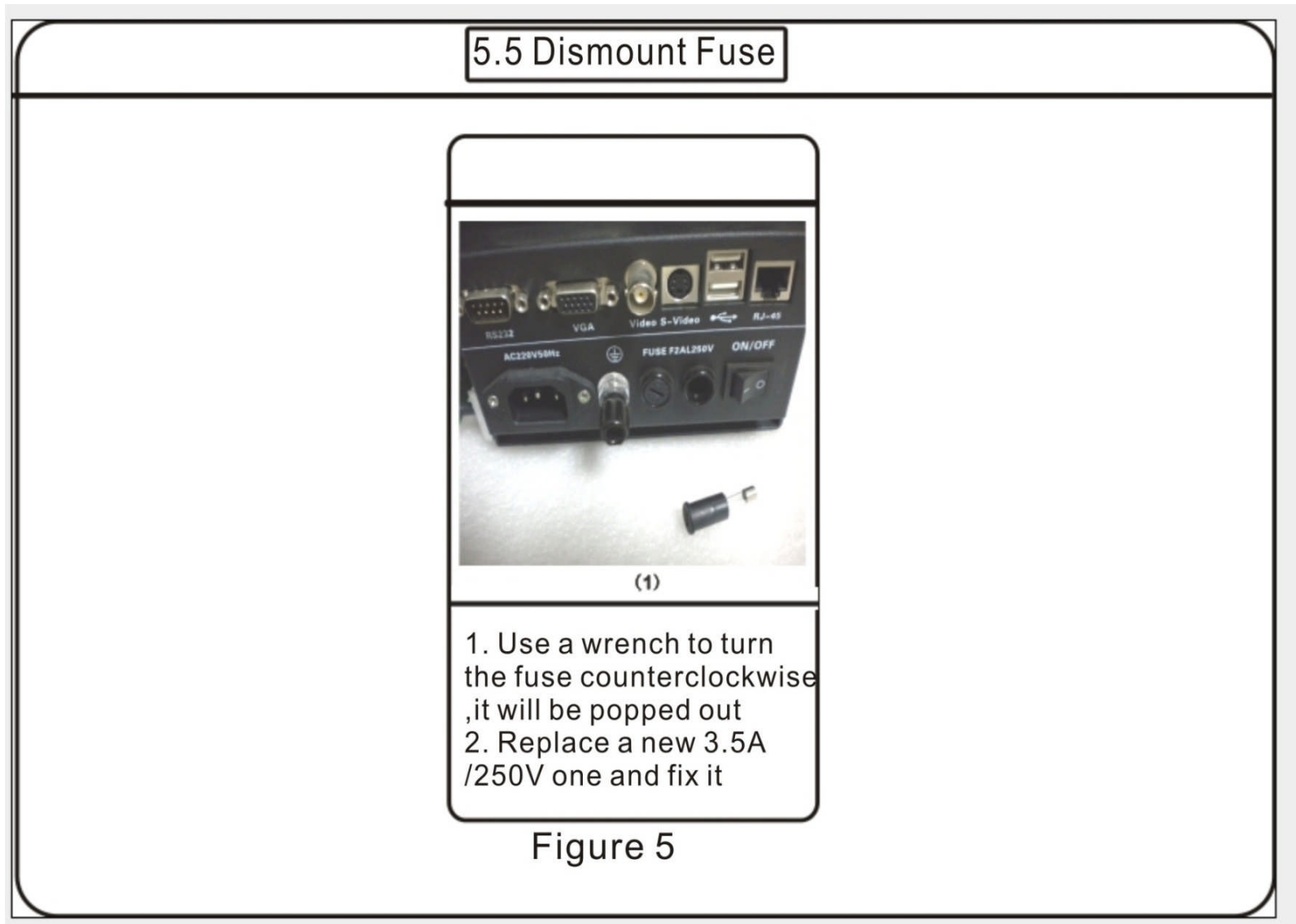


## 5.4 Dismount cooling fan





## 5.5 Dismount fuse



## 5.6 Dismount keyboard/connection cable

