

BISTURÍ ULTRASÓNICO VETERINARIO VETERINARY ULTRASONIC SCALPEL BISTOURI ULTRASONIQUE VÉTÉRIKAIRE

REF. - CODE - RÉF. - **ZMC033** MODELO - MODEL - MODÈLE **AXV250**



Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

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REGULAR WARNINGS

- When cleaning the generator or operating table, the AC power cord must be disconnected from the generator.
- Liquid spillage onto the instrument must be avoided to prevent liquid droplets from penetrating and causing a short circuit and damage to the instrument.
- Do not open the instrument causing damage or electric shock to the machine.
- The instrument must not be inverted, turned on its side or subjected to vibration during transport, installation or operation to prevent damage to the instrument.
- Do not open the equipment without the manufacturer's permission during the warranty period.
- Unauthorized opening of the case will automatically void the warranty.
- If you encounter a problem that you cannot resolve yourself, contact your supplier or the manufacturer.

CHAPTER 1 GENERAL INFORMATION

I. Overview

The veterinary ultrasonic scalpel can generate longitudinal vibrations of 40-80 μm in the cutting head. This type of ultrasonic vibration can cut soft tissue with minimal thermal damage and simultaneously close blood vessels (up to 5 mm) in size at the appropriate pressure. Compared to traditional surgical instruments, this product is safer, more efficient, and more precise.

II. Scope of application

Suitable for cutting and coagulating soft tissue in open and endoscopic animal surgery, safe for coagulating and closing blood vessels (up to 5 mm).

III. Features

Product name	Components	Specification	Quantity
Veterinary Ultrasonic Scalpel	Generator	ZCM035	1
	Shaft*	ZCM036	2
		ZCM037	1
		ZCM038	Opcional
	Transducer*	ZCM039	1

Components marked with "*" can be purchased separately as needed.

CHAPTER 2 EQUIPMENT, COMPOSITION AND PARAMETERS

I. Component diagram



1	Power	Press the power button to start the device, accompanied by a green circular indicator light. Press it again to turn off the device and turn off the indicator light.
2	Interface/Touchscreen	Displays device information and serves as a page for settings, controls, and settings.
3	Sound holes	Used to propagate sound from the generator.
4	Transducer interface	For connecting the transducer to the generator.
5	Heat dissipation holes	For heat dissipation from the generator.
6	Output	For powering the generator.

The generator is used to generate high-frequency alternating current that drives the transducer and provides electrical power to the transducer; it also provides an interface for the operator to control, monitor, and diagnose the status of the veterinary ultrasonic scalpel.

- **Scalpel**



1. Transducer interface for cutting head
2. Housing
3. Shaft
4. Control button (MAX and MIN)
5. Torque wrench
6. Rotation wheel
7. Trigger
8. Side button (ADV, Advanced cutting and coagulation)

- **Transducer**



1. Shaft interface (with connecting bolts)
2. Fixed shaft surface
3. Transducer body
4. Transducer cables
5. Generator interface

The transducer is used to connect the generator and the shaft, converting the high-frequency alternating current generated by the generator into high-frequency mechanical vibration and transmitting the mechanical vibration to the cutting head.

II. Equipment parameters

1. Date of manufacture/service life:

- **Generator**

- i. Date of manufacture: On the product label.
- ii. Service life: 10 years under normal conditions of use and regular maintenance.

- **Shaft**

- i. Date of manufacture: On the product label.
- ii. Shelf life: 3 years. Expired products should not be reused.

- **Transducer**

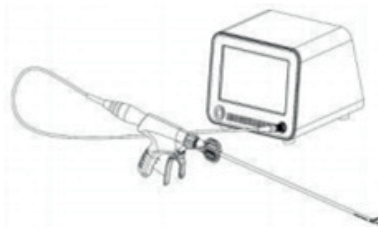
- i. Date of manufacture: On the product label.
- ii. Shelf life: 1-year, expired products should not be reused.

2. Technical parameters:

Main power input	Voltage: 220V Frequency: 50Hz Power: 200VA
Output	Voltage: Maximum 200VAC Output power: Maximum 45 W Frequency: 55.5 kHz
Operating conditions	Temperature: -10 °C to 30 °C Humidity: 30-70%, non-condensing Atmospheric pressure range: 70KPa-106KPa
Transport and storage conditions	Avoid strong pressure, collision, direct sunlight, snow and rain. Store in a ventilated, dry, clean room free from corrosive gases. Temperature: -20 °C to +55 °C Humidity: 10-93%, non-condensing Atmospheric pressure range: 70 kPa-106 kPa
Weight	4kg
Dimensions	575 mm×410 mm×250 mm

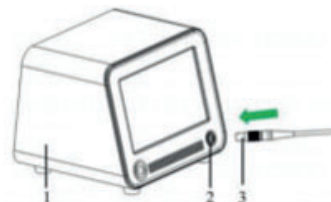
CHAPTER 3 INSTALLATION AND USE

I. Connection diagram

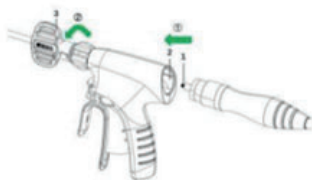


II. Installation

1. Check the generator, transducer and blade for damage. Do not use damaged instruments or components.
2. Connect one end of the power cable to the interface on the rear panel of the generator and plug the other end into a grounded power outlet.
3. Connect the transducer cable to the generator's transducer interface on the front panel, as shown in Figure 3.1.



1. Generator
2. Generator transducer interface
3. Transducer cable



1. Shaft interface (with connecting bolts)
 2. Transducer shaft connector
 3. Torque wrench
- (1). Connect the transducer to the shaft
(2). Tighten the transducer and the

5. Press the “Power” button, the “Power” button indicator turns green, the fan turns on, and the generator plays music and animation.

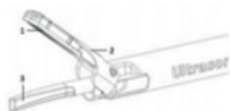
6. After playing the animation and music, the generator will enter self-test mode. Press and hold the MAX or MIN control button to perform a self-test on the generator. The self-test process will last 1 second. If you release the control button in the middle of the self-test, it will not be able to complete. In this case, you must press and hold the control button for 1 second to self-test again and then enter the normal operating interface.

7. After entering the normal operation interface, the operator can use the instrument normally. If an error occurs during the work process, the system will enter the alarm page, and the operator should follow the instructions on the page to perform the relevant operations.

III. Instructions for using the scalpel

During operation, the closing and opening of the head clamp are controlled by holding and releasing the trigger (see Figure 2.3).

In general, when using the cutting head to cut fabric, wait until the clamp is closed in place (either with significant resistance in the trigger or with an audible “click” inside the shaft) before activating. Alternatively, fabric can be cut by picking it up on the fixed side of the clamp without closing the movable arm of the clamp.



1. Moving jaw 2. Head 3. Fixed jaw Fig. 3.3 Schematic diagram of the cutting head

As shown in Figure 3.3, when tissue adheres to the jaws of the forceps and interferes with cutting and coagulation effects, the forceps should be removed from the patient, the jaws opened and immersed in sterile saline solution, then activated at level 5 to allow the adhering tissue to fall off automatically.

The operation should be stopped immediately after cutting or coagulation is complete to prevent excessive wear on the tissue pad of the mobile arm of the forceps.

When it is necessary to adjust the angle during operation, it can be adjusted by alternating the rotation wheel. The MAX button is suitable for closing blood vessels, lymphatic vessels, fallopian tubes, etc. up to 2 mm and for cutting soft tissue. The MIN button is suitable for closing blood vessels, lymphatic vessels, and fallopian tubes measuring 2 mm to 4 mm.

The ADV side button will activate the advanced cutting and coagulation mode, which is suitable for closing blood vessels, lymphatic vessels, and fallopian tubes measuring 4 mm to 5 mm for safer and more complete vascular closure.

IV. Interface

Normal operation interface



1	MIN Low power	The adjustable power level for low power mode. This number will be highlighted (change from white to blue) when this power level is activated. The default power level for MIN is 3.
2	MAX High power	High power level. When this power level is activated, the number will be highlighted (changes from white to blue). The “MAX” level is set to level 5.
3	MIN for lower power	Press this button to lower the power level to the desired setting (from 3 to 1). The selected level is shown on the display.
4	MIN to increase power	Press this button to increase the power level to the desired level (from 2 to 4). The level selection is shown on the display.

On the normal working page, the operator presses the control button to start the generator’s power output and releases the trigger to stop the generator’s power output.



During MAX level activation, the MAX level numerical display on the right side of the generator touch screen changes from white to blue and a high-pitched, short beep will sound to remind the user.

During MIN level activation, the MIN level numerical display on the left side of the generator touch screen will change from white to blue, and a low, long beep will sound like alerting the user.

CHAPTER 4 FAULT INFORMATION AND TROUBLESHOOTING

I. Overview of the alarm system

When a fault occurs during operation, the system enters the alarm state, and the touch screen switches to the corresponding alarm page to display the fault information. The central section of the alarm page displays the alarm information, including the cause of the fault and troubleshooting measures. In addition, there is a blue “Alarm Reset” button at the bottom of the “Tool Failure” alarm page. Clicking this button will return the system to normal status if the fault is cleared or continue the alarm if the fault still exists.

Alarm page	Actions
 <p>The screenshot shows a 'Tool Fault' alarm page. It features a yellow header with the text 'Tool Fault'. Below the header, there is a blue button labeled 'Alarm Reset'. The background image shows a white power tool with a blue handle.</p>	<p>Tighten the shaft or replace the cutting head, press “Alarm reset” for self-test until complete.</p>
 <p>The screenshot shows an 'Instrument Fault' alarm page. It features a yellow header with the text 'Instrument Fault'. Below the header, there is a blue button labeled 'Restart'. The background image shows a white rectangular device.</p>	<p>Restart the device</p>

If the problem is not resolved after trying the measures listed in the table above, contact your sales representative or our after-sales department.

III. Warranty

We ensure that the product is free from defects in material and workmanship under normal conditions of use and periodic maintenance service during the warranty period specified below. Our company's liability hereunder is limited to the repair or replacement of the product or other parts returned to our company or its suppliers that are found to be defective upon examination during the warranty period.

This warranty does not apply to the following products or parts thereof:

- 1) Products or components that have been adversely affected using tools distributed by organisations not authorised by our company.
- 2) Products or components that have been repaired or altered to some extent by unauthorised persons or factories that do not belong to our company's facilities and which, in our company's opinion, may affect their stability or reliability.

The warranty period is as follows:

Product	Warranty period
ZCM035 generator (including power cable)	One-year warranty (from the date of dispatch), including components and labour. dispatch), including components and labour.
ZCM039 transducer	One-year warranty (from date of shipping), including components and labour.

This warranty replaces all other warranties, express or implied, unless otherwise required by applicable local law. Our company is not liable for any unique, incidental, or indirect damages that are not specifically regulated by law, including damages caused by loss of use, business, or goodwill, etc. Except for the above terms, there are no other warranty terms. We reserve the right to make changes to the products we have manufactured and/or sold at any time without incurring any obligation to make the same or similar changes to products we have manufactured and/or sold previously.

CHAPTER 5 PRECAUTIONS FOR THE USE OF PISTOL-TYPE SCALPEL BLADES

1. Standardised operating techniques

1. It is recommended to hold the tissue only within two-thirds of the length of the arm to avoid doing so near the hinge, which could cause the closure to fail or damage the pad on the arm of the forceps.
2. Orient the fixed arm of the clamp towards the surgeon's field of vision. The fixed arm (the one without the pad) should always face the surgeon's field of vision. This helps prevent accidental injury to critical vessels or tissues in blind areas.
3. Release the forceps immediately after transecting the tissue. After completing the closure or cut, immediately release the forceps jaws to prevent empty activation, which can damage the pad and reduce the useful life of the device.
4. Avoid excessive force when pulling on tissue. Ultrasonic scalpels use high-frequency vibrations to cut and coagulate tissue. Only gentle tension is needed, just enough to achieve tissue transection. Excessive traction can accelerate the cutting speed, resulting in incomplete coagulation and compromising surgical safety.

2. Recommended intraoperative usage rhythm

1. Intermittent activation. It is recommended not to activate the device continuously for more than 20 seconds, followed by a cooling interval of at least 5 seconds. This helps to prolong the life of both the scalpel tip and the transducer.
2. Avoid dry firing. Always ensure that fabric is present before activation. Firing without fabric contact can cause overheating and accelerate degradation of the fabric pad.

3. Common errors and risk alerts

Incorrect operation	Potential risk
Activating the scalpel without tissue clamped	Pad breakage, rendering the forceps unusable for further operations
Clamping tissue on the rear hinge of the blades	Inefficient sealing/cutting in non-functional areas. Risk of tissue slippage due to the lever
Activate the scalpel with the fixed arm positioned towards non-visible tissue where the presence of vessels is unknown	Unexpected bleeding due to transection of unrecognised vessels, especially in deep surgical fields

4. Post-operative maintenance and disinfection recommendations

	Disinfection methods		
	Autoclave	Low-temperature plasma	Alcohol
Generator	No	No	Yes
Scalpel tip	No	With caution	Yes
Transducer	No	With caution	Yes
Adjustment key	No	With caution	Yes