

# **Mobile Veterinary Endoscope**

## **MVE series**

# **User Manual**

### **Precautions**

Prior to using this mobile veterinary endoscope, be sure to undertake sufficient practice in correct sequences, not least read this manual carefully to have full understanding of each content to avoid serious adverse consequences to the animals or users. Meanwhile, it is also necessary to carefully read the operating manuals of other devices and accessories associated with this manual and handling issues. The hazards it may bring during the operation of mobile veterinary endoscope normally include: perforation, electric burns and stimulation, bleeding, infection, rupture, etc.

Knowing that incompliance with the user manual may damage the mobile veterinary endoscope or cause malfunction.

## **Important Notice**

The MVE series mobile veterinary endoscope have been elaborately developed by our company to satisfy the demand of both domestic and foreign physicians for their clinic needs. The mobile veterinary endoscope is useful in check and diagnosis of upper digestive tract of animals. Be sure not to use this mobile veterinary endoscope for any other purpose.

Before using this instrument, carefully read this User Manual, which contains most appropriate descriptions in terms of maintenance and operation of the mobile veterinary endoscope. Even so, as to the mobile veterinary endoscope per se, it actually belongs to precise instrument. Therefore, proper operation and cleaning following the methods revealed in this manual will definitely reduce the possibility of malfunction, also prolong the lifetime of new instrument.

This manual is to address the preparation and ideal procedures required for instrumental examination. It is neither intended to give detailed guide pertaining to clinical examination, nor purported to make beginners become acquainted with the technique of mobile veterinary endoscope examination along with medical knowledge. This instrument is only for the use of those physicians who have a good command of mobile veterinary endoscope technology and have got trained.

The security of mobile veterinary endoscope is not only dependent on itself but also the auxiliary instruments used together with it. In order to assure the compatibility, it is recommended to use the auxiliary equipments acknowledged by our company.

This manual is accompanied by a list of standard set of accessories. After purchase, please check the assembly unit of complete equipments one by one according to such list. In case of shortage or any inferior accessory was found, please contact our company or distributor in a timely manner.

After purchase, please take out the mobile veterinary endoscope and its accessories from the package, and safely keep them in accordance with "Storage" contained in this manual. The mobile veterinary endoscope box is not suitable for the use of safekeeping mobile veterinary endoscope but for loading or transporting only.

Prior to the first use of your newly purchased mobile veterinary endoscope, please be sure to clean and disinfect it (including accessories) thoroughly.

In case of doubt or you have any question relating to the contents in this manual or operation and security of the mobile veterinary endoscope, please contact our company or our authorized service station nearby.

## Warning

The mobile veterinary endoscope can generate powerful light rays when it is in combined use with intense light source. When the head end of mobile veterinary endoscope is too close to the mucosa, there will be strong light rays concentrating in a quite small area whose surface temperature will naturally rise in consequence of long-time light irradiation, and may cause ambustion when exceeding 41°C. The surface temperature of mobile veterinary endoscope may surpass 41°C in a short time and up to maximum 50°C when used in conjunction with its accessories. It is advisable to reduce the observation time on a fixed point in a close range as the electric flashlight has a lack of automatic light adjustment. Once the light bulb of flashlight is burned out during operation, there will be no image showing up in the FOV, and blind operation will cause certain harm to the patient. So, resume the operation after replacement of light bulb.

It can pose increased burn risk under the following conditions:

1. Take too long time to approach the mucosa or observe one fixed point.
2. Advance slowly the mobile veterinary endoscope in the narrow lumen.

In order to lessen the burn risk, following methods are recommendable.

1. Attempt to avoid fixed-point observation as far as possible.
2. Turn off the lighting switch when out of use, to avoid accident.

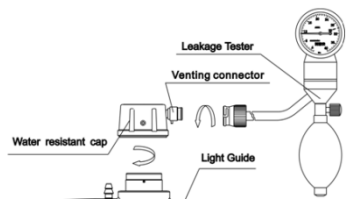
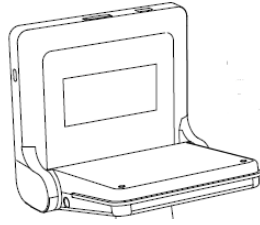
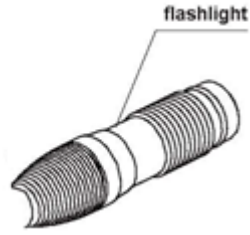


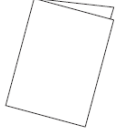

Note: Use is prohibited when the instrument is in the state of charging.

# Contents

I.	Name and Structure of Each Part .....	3
II.	Application and Characteristics.....	5
III.	Key Technical Indexes and Completeness of Instrument.....	6
IV.	Preparation Before Use and Checking.....	7
V.	HOW TO USE .....	12
VI.	Maintenance and Upkeep .....	23
VII.	Transportation, Storage and Repair .....	27
VIII.	Contraindication for Mobile Veterinary Endoscope .....	28
IX.	Production Date and Service Life.....	29
X.	Announcements .....	29

## Package Contents Check

Match all items in the package with the components shown below. Inspect each item for damage check. If a component is missing or damaged, please contact Aohua.

Name	Qty. (pcs)	Image
Leakage tester and Water-resistant cap	1	
Display unit	1	
SD card	1	
Charger	1	
Flashlight suit	1	
Biopsy valve	3	
Suction valve	1	
User Manual	1	
Mouthpiece	1	

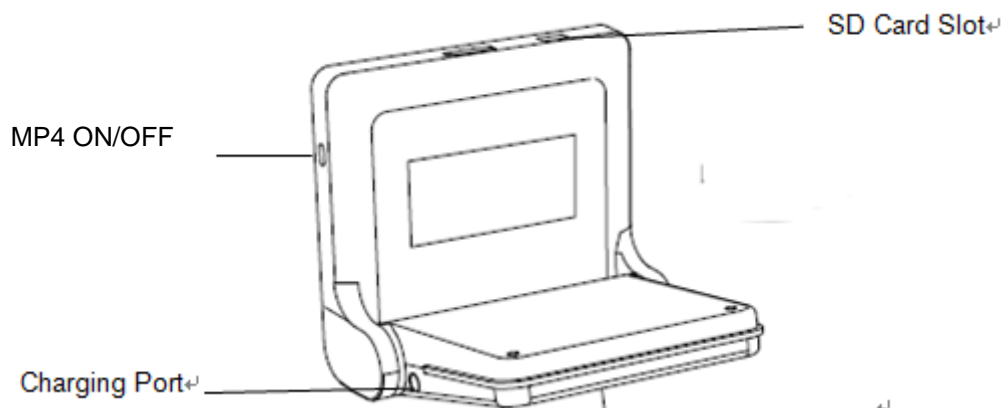
Cleaning brush	1	
Cleaning kits	1	
Biopsy forceps	1	

# User Manual

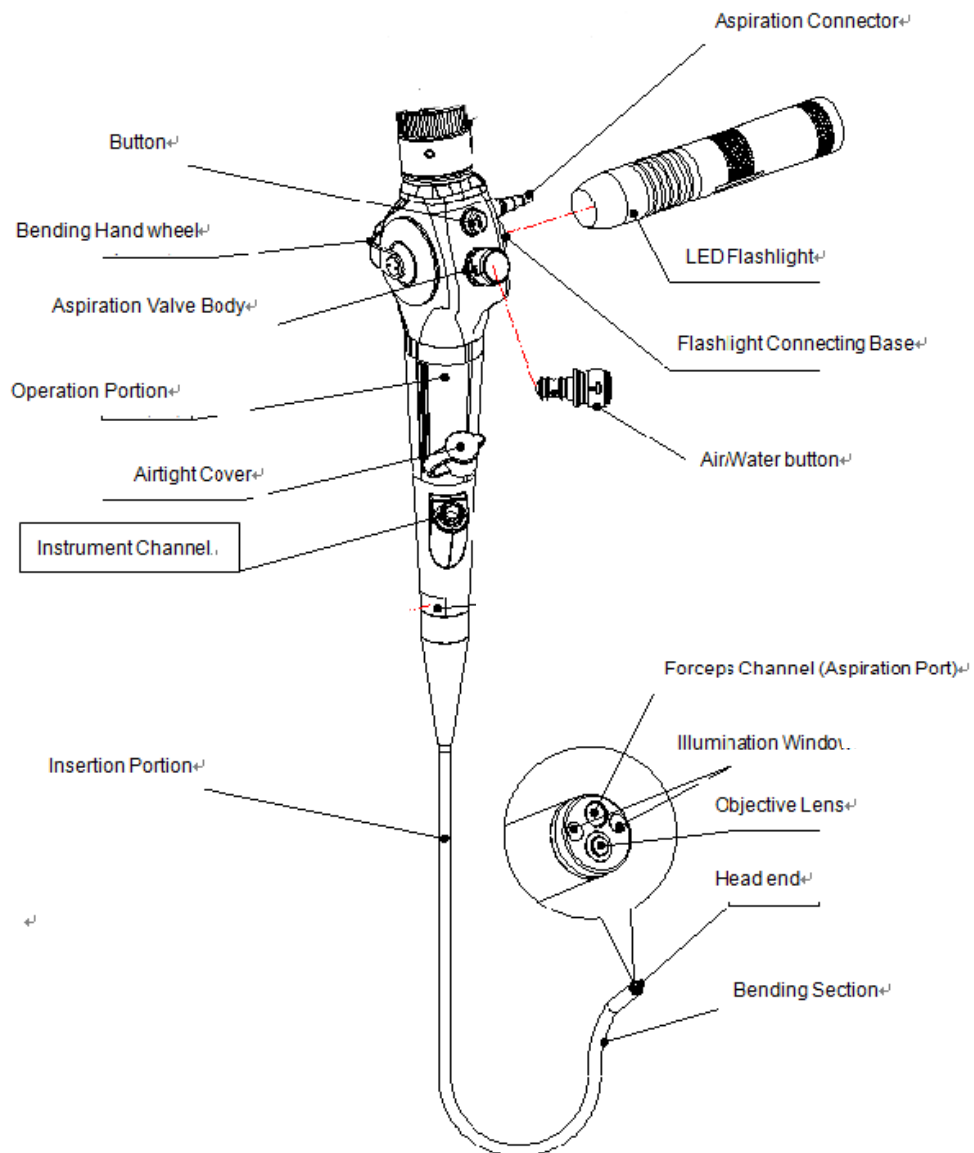
Thank you for buying our mobile veterinary endoscope. This manual will give you more information about how to use the mobile veterinary endoscope in a right way. Please carefully keep the manual for future reading.

You can develop the advantage of mobile veterinary endoscope at all times if you read this manual carefully. Please be sure to make use of this manual adequately.

## I. Name and Structure of Each Part



**Figure 1 MP4 of MVE-5/-6**



**Figure 2 Mobile Veterinary Endoscope( connecting the MP4 for usage)**



## **II. Application and Characteristics**

### **1. Application**

This mobile veterinary endoscope is applicable to check and diagnose the upper digestive tract of the animals.

### **2. Product Structures and Components**

This product consists of endoscope body, MP4 (incl. battery, power adapter), display screen, and electric flashlight (incl. battery, power adapter). Among them, the endoscope body is comprised of operation section, insertion tube and distal end.

### **3. Characteristics**

#### **(1) Operating Environment**

- a) Ambient temperature range: +5℃~+40℃
- b) Relative humidity range: 30%~85%
- c) Atmospheric pressure range: 700 hPa~1060 hPa

#### **(2) Product Features**

- a) Noxious liquid inlet resistance rating: IPX7
- b) Manufacturer: SHANGHAI AOHUA PHOTOELECTRICITY ENDOSCOPE CO., LTD.
- c) Product name: Mobile Veterinary Endoscope  
Model: MVE-5010 /MVE-6010
- d) Attention: Refer to accompanying documents



- e) The outer diameter of insertion tube applied to MVE-5010 and MVE-6010 stands at 4.8mm and 5.7mm respectively, with good insertion performance. Working at an upward angle of 160°and downward angle of 130°plus a configured objective lens with FOV angle of 100°enables the mobile veterinary endoscope to reach the observed position quickly and smoothly, and discover the lesion in the end.
- f) The operation portion of mobile veterinary endoscope is wholly covered with plastic full of freshment.
- g) The mobile veterinary endoscope has great depth of field, wide visual angle and circular field of view, making it possible to fully get clear images within the range of 3-50 mm without missing even a tiny lesion.

### **4. Technical Requirements for Medical Device Jointly Used with Mobile veterinary endoscope**

#### Requirement for Biopsy Forceps Coupled with MVE-5010

Biopsy	a) Max width of insert portion: less than $\Phi 1.5\text{mm}$
Forceps	b) Working length: 1050mm

#### Requirement for Biopsy Forceps Coupled with MVE-6010

Biopsy	a) Max width of insert portion: less than $\Phi 2.0\text{mm}$
Forceps	b) Working length: 1050mm

### III. Key Technical Indexes and Completeness of Instrument

#### 1. Key Technical Indexes

Performance \ Model		MVE-5010	MVE-6010
Optical System	FOV Angle	100°	100°
	Visual Direction	0°	0°
	Depth of Field of Observation	3-50mm	3-50mm
Headend	O.D.	$\Phi 5.2\text{mm}$	$\Phi 5.8\text{mm}$
Bending Section	Angle of Bending	Upward 160°, Downward 130°	Upward 160°, Downward 130°
Insertion Portion	O.D.	$\Phi 4.8\text{mm}$	$\Phi 5.7\text{mm}$
	Max O.D. of Insertion Portion	$\Phi 5.6\text{mm}$	$\Phi 6.5\text{mm}$
Effective Length		1000mm	1000mm
Total Length		1300mm	1300mm
I.D. of Biopsy Channel		$\Phi 1.5\text{mm}$	$\Phi 2.0\text{mm}$

#### 2. Complete set of Instrument

(1) Mobile Veterinary Endoscope	v
(2) Power Adapter of MP4	1pcs
(3) Power Adapter of Flashlight	1pcs
(4) User Manual	1copy
(5) Certificate of Approval	1copy
(6) Product Warranty Bill	1copy

#### 3. Parameter of Power Adapter

- 1) Power Adapter for MP4 (3C Certified)

Input: 100-240V    50/60Hz    0.15A

Output: DC 4.2V    1200mA

## 2) Power Adapter for Flashlight(3C Certified)

Input: 100-240V    50/60Hz    0.15A

Output: DC 4.2V    1200mA

## IV. Preparation Before Use and Checking

### 1. Preparation Before Use:

#### ★ Sealing performance checking

Prior to use, the insert portion of mobile veterinary endoscope must undergo sealing performance checking by taking the following steps:

(1) Before leak hunting, be sure to bring down the LED flashlight from the mobile veterinary endoscope, and turn off MP4 before taking it down, that can help prevent damage to the mobile veterinary endoscope.

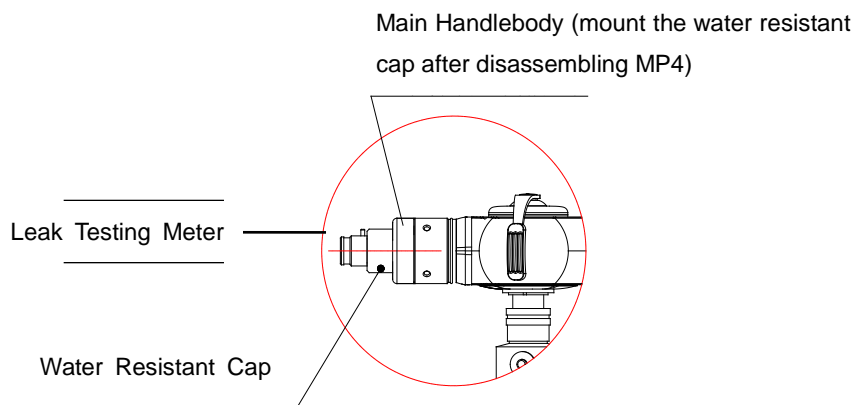
(2) Cover the leak-hunting lid on the top end of the operation portion, make connection in reference to Figure 2 and seal up the outlet of MP4.

(3) Connect the leak hunting meter with leak hunting lid. (See Figure 3)

(4) Pressurize the leak hunting meter up to 30Kpa, then stop pressurization to see whether the pointer reading of the hunt leaking meter declines or not.

(5) If the pointer-reading is slowly going down, then resume pressurization gently (remaining below 30Kpa to protect mobile veterinary endoscope against damage), and in the meantime, put the insertion portion into the water to watch whether there have bubbles coming up from the water in succession. If it comes true, the air leakage is surely proven in this portion, and thereby never carry on immersion disinfection for this product as you are supposed to stop using it and contact our after-sales service department.

(6) In case there is no change of pointer reading in leak hunting meter, then it makes clear the mobile veterinary endoscope provides high sealing performance and can be used as normal or go through cleaning and disinfection.

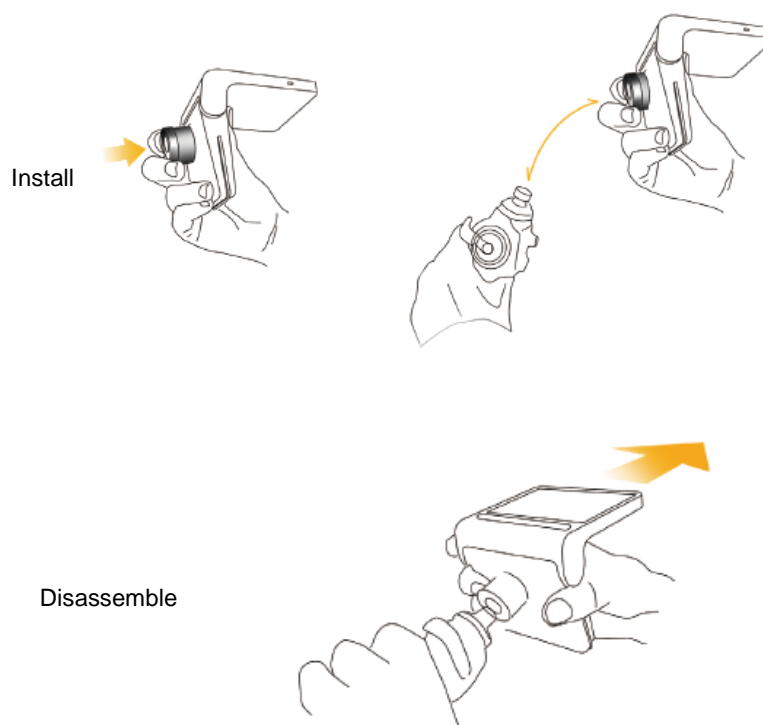


**Figure 3**

★ [Attention]: The leak testing meter is a separately ordered accessory rather than a constituent part of the product. Please make reference to Figure 3 for right connection.

## **2. Preparation of Mobile Veterinary Endoscope**

- (1) Tightly connect the flashlight to the flashlight connecting base located in the operation portion of the veterinary endoscope (refer to Figure 1 and Figure 2). Press the button switch of the flashlight, the electric quantity indicator will light up subsequently.
- (2) Insert the MP4 into the socket located on the top end of operation portion (refer to Figure 4 for installing and disassembling MP4), and their connections should be solid.

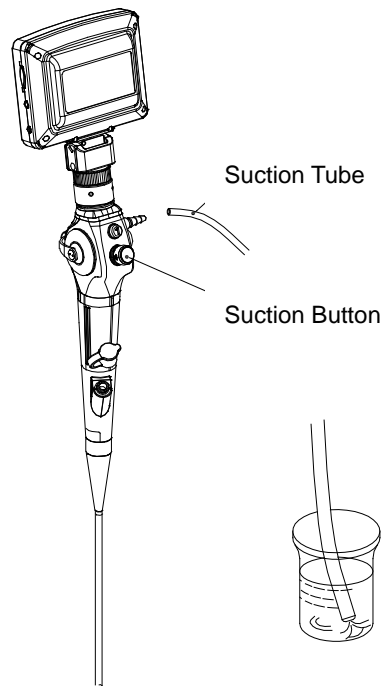


**Figure 4**

★ [Attention]: Since the insertion of MP4 plug is in the right way of tropism, so please set your sights on the direction of connector when you attempt to insert MP4. It is unadvisable to insert forcibly, and inappropriate position alignment may result in damage to MP4 plug.

## **3. Preparation Before Aspiration**

- (1) One end of the suction tube is connected to the suction apparatus, and the other end to the suction connector on the operation portion of mobile veterinary endoscope. (See Figure 5)
- (2) Switch on the power source for the suction apparatus, and immerse the headend of mobile veterinary endoscope into water. Use the suction button of mobile veterinary endoscope to implement control over the aspiration. (See Figure 5)



**Figure 5**

#### **4. Functional Check of Mobile Veterinary Endoscope**

Everytime before clinical application, start checking functions in accordance with the following procedures. And in case of any defect or abnormal event, even tiny one(s), stop using it and contact our company in a timely manner.

##### **(1) Check Insertion Tube**

- Visually check the drawback on the tube's surface such as concave-convex, fracture, and so forth.
- Move your fingers on the insertion tube back and forth for several times to check whether any concave-convex does exist. Check its inside to try to ascertain the relaxation or any other abnormality.
- ★ It is not allowed to grip the bending section by using brute force.
- ★ Keep the distal end away from any hard object to protect the objective lens against damage.

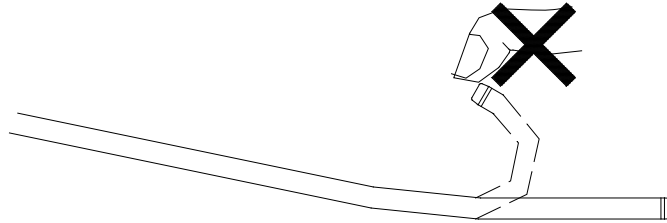
##### **(2) Check Bending Mechanism**

- Slowly operate the bending handwheel to reach maximal bending angle in each direction. Make sure the bending section can execute bending movement smoothly and achieve maximal bending.
- Check the bending handwheel to make sure it's able to move freely and execute

bending movement smoothly, and also it can return back to home position.

- Check the rubber sleeve in bending section to ascertain whether some tiny holes, fractures and other defects are present.

- ★ To bend and wring the bending section at the same time is unallowed. (Figure 6)



**Figure 6**

### (3) Check Optical System

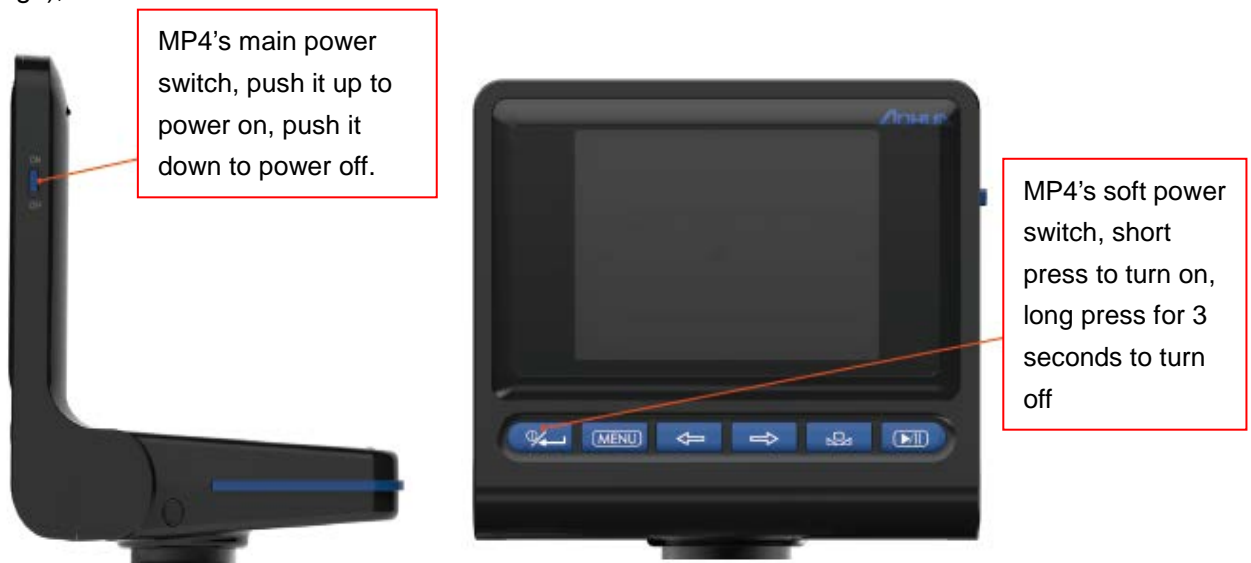
- Use clean alcohol-soaked (70%) gauze to wipe the surface of objective lens along with light-guide window.

- ★ It's refused to use grinding cleanser on the surface of objective lens and light-guide window otherwise the camera lens may get hurt.

- Press down the switch of LED flashlight to keep it in open state and check the radial brightness.

### (4) Validate MP4

MP4 appearance and function keys are shown in Figure 7 (see MP4 Operation about usage);





**Figure 7**

- Press switch button to open MP4, and view the images on the screen to check whether the object 7mm away from the objective lens can be display clearly.

Note: After turning on the power switch of MP4, the indicator light either glows green or red, the former is showing the equipment can work as normal, and the latter tells the power supply is not enough and battery charging is a priority (see also Figure 1, 2, 3 about the connection between MP4 and power adapter).

#### (5) Check Suction Mechanism

- Make sure the suction apparatus is having a safe operating state and a proper negative pressure. Connect the suction tube on the suction apparatus to the suction connector on the operation portion of mobile veterinary endoscope.
- Dip bending section of mobile veterinary endoscope into water, then press the suction button to confirm the water has been aspirated (the airtight cover of forceps should be sealed), then release the button and make sure it has returned back to the previous position, and the suction will have stopped. (See Figure 3)

#### (6) Check Biopsy Channel

- Gently pass the biopsy forceps into the biopsy channel, and make sure the biopsy channel is unimpeded.
- In case the biopsy forceps is unlikely to come out of the biopsy channel outlet, then quit without reluctance.

★ Overexertion or forced passage may cause damage to the biopsy channel, also can lead to other severe consequences.

Notice: The user shall voluntarily arrange the biopsy forceps in accordance with the type stipulated by this manual. See details of operation approach from the instruction book of

biopsy forceps.

## **5. Final Preparation Before Use**

### **(1) Instrument Cleaning and Disinfection**

Implement cleaning and disinfection for the mobile veterinary endoscope and other instruments in compliance with the cleaning procedure of mobile veterinary endoscope.

### **(2) Usage of Lens Cleaner and Antifoggant**

- Use clean gauze with lens cleaner to wipe the objective lens and light-guide lens.
- Gently wipe off the abundant lens cleaner.
- ★ The lens cleaner should keep clean.
- ★ It is not allowed to smear the lens cleaner on the lens directly.

### **(3) Usage of Silicon Oil (Lubricant)**

- Spread the water-soluble medical-grade lubricant on the flexible tube of insertion portion, excluding the lens on the distal end.
- Olive oil, lidocaine ointment or petroleum-based lubricant or vaseline-contained lubricant are excluded from use. These substances can cause damage to some materials of mobile veterinary endoscope.

## **V. HOW TO USE**

This section discusses the basic operation of mobile veterinary endoscope and summarizes its general operation procedures. The examiner should study the clinical factors associated with each procedure and institute the technical details for each procedure.

### **1. Preparation of Examinee**

The examiner should make full preparations and be sure there are no dregs remaining in the inspection area. Give the examinee proper guidance, such as psychological comforting, direction of bed-rest inspection area etc.

### **2. Holding the Mobile Veterinary Endoscope**

- Hold the operation portion with left hand and insertion tube with right hand. At this time, the left index should be able to operate the aspiration button while the thumb can operate the bending handwheel.
- The examination can start up through oral cavity or nasal cavity. If it is decided to insert the mobile veterinary endoscope into oral cavity, then you must let the examinee use the oral pad (mouth protector). Afterwards, insert the distal end of mobile veterinary endoscope into the examinee's throat with observation all the way.
- ★ If the mobile veterinary endoscope is planned to insert into the oral cavity, then the oral pad (mouth protector) must be used in order to prevent examinee mistakenly trying to bite



the insertion tube.

### **3. Insertion and Observation**

(1) Insert mobile veterinary endoscope

- Gently insert the mobile veterinary endoscope into oral cavity or nasal cavity.

(2) Bending Operation

- In case of need, operate the bending handwheel to guide the bending section to facilitate observation. Use left thumb to push the bending handwheel.

★ Please stop examination without hesitation in case some abnormality can be felt during the operation of mobile veterinary endoscope. Firstly set the bending handwheel in the middle (center) position, and then withdraw the mobile veterinary endoscope in a careful manner.

★ If some abnormal resistance were felt when turning the bending handwheel, then it is not necessary to bend it further with reluctance.

★ It is favorable for the examiner to develop a habit of operating the bending handwheel in a slow manner all the while.

### **4. Suction**

- When the observation is becoming hard because of impurities and/or others, then eliminate them by suction. Removing any liquids from the oral cavity also can take advantage of suction.

- It is unfavorable to aspire mucosa to reach aspiration connector, and in case such thing happens, immediately stop suction and draw the mobile veterinary endoscope back a little to help mucosa escape from the aspiration connector.

### **5. Usage of Biopsy Forceps**

(1) Switch on the biopsy channel's opening valve on the operation portion of mobile veterinary endoscope;

(2) Close biopsy forceps and slowly insert into the biopsy channel inlet;

(3) Look for the target object in the field of view before grasping while aiming the biopsy forceps at the desired target; Try to open the small bowl of the biopsy forceps to grasp the object.

(4) After grasping a viable tissue or foreign matter, please close the biopsy forceps to pull it out through the biopsy channel outlet.

(5) In case the foreign matter is too big to pass through the biopsy channel, please pull it out from the examinee's mouth together with the mobile veterinary endoscope at one time.

(6) After pulling out biopsy forceps or other instrument(s), please seal the airtight cover for the biopsy channel's opening valve.

**Notice: Please pay attention to following matters to avoid damaging biopsy channel and the accessories of mobile veterinary endoscope:**

★ It is not suggested to use any accessories in compliance with those described in this mobile veterinary endoscope because incompatible accessories will cause damage to both biopsy channel and accessories.

★ At the time of inserting or pulling out biopsy forceps or other instrument, please close the small bowl or cephalic moving parts of biopsy forceps.

★ When it is faced with too big resistance during inserting the accessory into the biopsy channel, attempting to make insertion by brute force is not advised.

★ Before inserting the accessory, try to get bending section to restore to natural state of extension, to avoid damaging biopsy channel.

## **6. MP4 Operation**

(1) **Power-on:** Find out the main power switch and push up, the green power light will glow--press the ENTER button momentarily--display screen will enter into power-on mode and self check voltage, normal voltage enables normal boot otherwise auto power-off will become true due to UVP--normal images will begin to display after normal power-on as shown below (Figure 8).



**Figure 8**

(2) **Power-off:** Long press ENTER button for 3 seconds--display screen will enter into power-off state--find out the main power switch and push it down to shut off the main power supply.

(3) **White-balance Adjustment:** Turn on the main power of MP4 and power light will glow--press ENTER button momentarily to start up--normal images will display-- turn on the main power for flashlight and adjust the brightness until it looks good--aim the built-in lens at the white paper while press the **【WB】** button to adjust the screen image into appropriate state.

Comparison between the image before and after adjustment (Figure 9)



**Figure 9**

(4) **Saving Video and Picture:** During the surgery, you may press **【CAMERA】** button momentarily to start recording and short press **【CAMERA】** button again to stop recording, the recording file will be saved into SD card automatically. During the surgery, you may short press the camera button on the handle to take a picture which will be saved into SD card likewise.

(5) **Setting Menu:** Pressing **【MENU】** button in the video interface can enter into setting screen. You can view or set "Replay", "Language Setting", "Date/Time", "Standby Time", "Auto Off", "Photo Setting", "Video Saving Time", "Format", "TV Mode", "Image Rotation", "Color", "Default Setting", "Version". As shown in Figure 10 as below:



**Figure 10**

(6) **"Replay"**: The pictures and videos quickly captured during the surgery can be reviewed by such "Replay" function. Method: In video display interface, press **【MENU】** button to enter setting screen--select "Reply" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select file type (Video or Picture) to view through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select file through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to view. In Figure 11 as below, select pictures on left screen, and videos on right screen.



**Figure 11**

(7) **Language Setting:** In video display interface, press **【MENU】** button to enter into setting screen--select "Language Setting" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select desired language through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--press **【MENU】** button to return.

(8) **Date/Time:** In video display interface, press **【MENU】** button to enter into setting screen--select "Date/Time" setting function **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--set "Year"--press **【ENTER】** button to confirm--set "Month"--press **【ENTER】** button to confirm--set "Date" --press **【ENTER】** button to confirm--set "Hour"--press **【ENTER】** button to confirm--set "Minute"--press **【ENTER】** button to confirm--set "Second"--press **【ENTER】** button to confirm--set display format for date and time--press **【ENTER】** button to confirm--press **【MENU】** button to return.

(9) **"Standby Time":** In video display interface, press **【MENU】** button to enter into setting screen--select "Standby Time" setting function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select 5 minutes to stand by or 10 minutes to switch off through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--press **【MENU】** button to return. So, under the condition of no operation, the Standby Mode will get activated when standby time is met.

(10) **Auto Off:** The auto-off time can be set here. Under the condition of no operation, it will shut down automatically when auto-off time is met. Operation Method: In video display interface, press **【MENU】** button to enter into setting screen--select "Auto Off" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select 10 or 30 minutes to switch off through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】**

button to confirm--press 【MENU】 button to return. So, under the condition of no operation, it will shut down automatically when auto-off time is met.



Figure 12

(11) **Photo Setting:** In video display interface, press 【MENU】 button to enter into setting screen--select "Photo Setting" function through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--select appropriate options through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--press 【MENU】 button to return.



Figure 13

(12) **Video Saving Time:** This function is purported to set automated saving time of a recording, say, it will package a recording in a file automatically at the set time. Operation Method: In video display interface, press **【MENU】** button to enter into setting screen--select "Video Saving" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select appropriate options through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--press **【MENU】** button to return.



**Figure 14**

(13) **Format:** In video display interface, press **【MENU】** button to enter into setting screen--select "Format" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select "confirmed" option through **【LEFT】** and **【RIGHT】** buttons--to format all SD card data--press **【MENU】** button to return.





**Figure 15**

(14) **TV Mode:** In video display interface, press **【MENU】** button to enter into setting screen--select "TV Mode" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm and enter into "NTSC", "PAL" mode--select one mode through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--press **【MENU】** button to return.

(15) **Image Rotation:** In video display interface, press **【MENU】** button to enter into setting screen--select "Image Rotation" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select "Off" option through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--press **【MENU】** button to return. See the effect of image rotation on right screen as below.





**Figure 16**

(16) **Color:** In video display interface, press 【MENU】 button to enter into setting screen--select "Default Setting" function through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--adjust brightness through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--adjust chromaticity--through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--adjust contrast through 【LEFT】 and 【RIGHT】 buttons--press 【ENTER】 button to confirm--press 【MENU】 button to return.

Note: "LEFT" button represents increase of parameter value; "RIGHT" button represents decrease of parameter value.



**Figure 17**

(17) **Default Setting:** In video display interface, press **【MENU】** button to enter into setting screen--select "Default Setting" function through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm--select "Confirm" through **【LEFT】** and **【RIGHT】** buttons--press **【ENTER】** button to confirm and restore factory default settings--press **【MENU】** button to return.



**Figure 18**

(18) **"Version" View:** In video display interface, press **【MENU】** button to enter into setting screen--select "Version" view function through **【LEFT】** and **【RIGHT】**

buttons--press 【ENTER】 button to confirm--view the actual version of software--press 【MENU】 button to return. As shown in Figure 19 as below:



Figure 19

## VI. Maintenance and Upkeep

### 1. Overview

It is required to clear up the mobile veterinary endoscope with care ahead of disinfection or sterilization. Everytime after finish an examination, please shut down the LED flashlight along with MP4 and disassemble them for cleaning up the mobile veterinary endoscope; Long time missing cleaning may cause mobile veterinary endoscope's performance to become unusual.

The cleaning and disinfection method applied to mobile veterinary endoscope shall be determined by the attending physician and Hospital Infection Control Committee or comply with the Technical Operation Regulation for Endoscope Cleaning and Disinfection issued by Chinese Ministry of Health. The cleaning and disinfection method applied to GlisdScope entails auto cleaning plus disinfection, and manual cleaning plus disinfection. Our company only presents the method of manual cleaning plus disinfection. We refer you to relevant equipment descriptions as to other auto cleaning plus disinfection method.

### 2. Washing Up Mobile Veterinary Endoscope

★ **Everytime after finishing clinical examination, it is a must to clean and disinfect the mobile veterinary endoscope promptly.**

★ Some cleaners and disinfectants or methods may cause damage to the materials used by the mobile veterinary endoscope and its instrumental accessories. It is advised to use and strictly follow the instructions of this manual to accomplish cleaning. The following

methods have been used in comprehensive testing and clinical application, proved no adverse impact on mobile veterinary endoscope.

(1) Mobile veterinary endoscope Cleaning:

- a) Put the headend into clean water, and aspirate the water for about 10 seconds. Then alternately take out and immerse the headend, while alternately aspirate the water and air for several times. (Press the aspiration button to start aspiration) Shut off the aspirator and disassemble the aspiration tube.
- b) Take down the suction button and airtight cover of the forceps, then rinse them under clean water, and after that, immerse them in a disinfectant solution.
- c) Wipe the insertion portion in clean water by using gauze or fluffy sponge and remove the feculent substances from the tube.
- d) Immerse the insertion portion in cleaning fluid, and wipe the insertion tube repeatedly by using gauze or fluffy sponge.
- e) Insert cleaning brush into biopsy channel inlet and aspiration valve body to scrub the biopsy channel as well as the inner surface of aspiration channel.

★ **[Attention] The cleaning brush is not allowed to move reversely in the midway, and can only be pulled out in reverse direction after the brush head fully comes out of the headend, that will prevent the damage to inner surface of the channel.**

- f) At the time of cleaning suction channel and biopsy channel, firstly connect the purge pipe of channel cleaning (disinfection) device to the aspiration valve body located on the operation portion of mobile veterinary endoscope while using the matched plug of channel cleaning (disinfection) device to block up the aspiration valve body along with the forceps opening on the mobile veterinary endoscope. Whereafter, put the inlet valve of the channel cleaning (disinfection) device into cleaning fluid, and repeatedly aspirate the injector to clean the aspiration and biopsy channels. (For connection and operation methods, see Figure 6, say, sketch map for channel cleaning and disinfection)

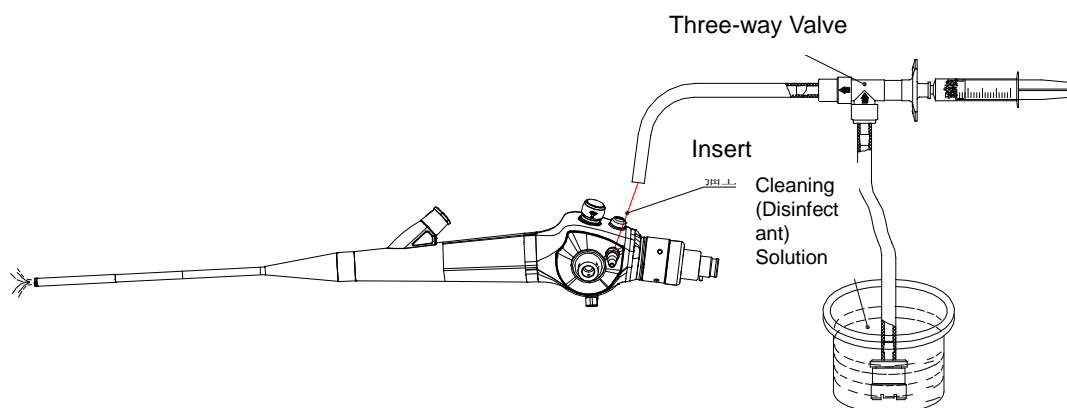


Figure 6

**Note: The relevant contents contained in this manual related to aspiration channel and biopsy channel are not applicable to MVE-4.**

### 3. Mobile Veterinary Endoscope Disinfection

The product is completely waterproof. Immersion disinfection is doable. But leakproofness should be inspected before immersion (for inspection method, please refer to mobile veterinary endoscope leakproofness inspection, see Figure 5).

- (1) Immerse the insertion portion of mobile veterinary endoscope into a disinfectant solution, and use gauze or fluffy sponge to scrub the insertion tube repeatedly.
- (2) Put the inlet valve of the channel cleaning (disinfection) device into a disinfectant solution to disinfect each channel in accordance with the cleaning method for biopsy channel and suction channel.
- (3) After the disinfection is finished, use clean water to rinse the mobile veterinary endoscope in order to remove residues left by disinfectant solution. Meanwhile, it also needs to remove the residual disinfectant left behind in the channels in accordance with the cleaning method for biopsy channel and suction channel.
- (4) Use dry gauze to wipe the outside surface of mobile veterinary endoscope.
- (5) Seal up the forceps opening and suction valve body, then connect up the suction tube and open suction pump to completely dry the suction channel and biopsy channel.
- (6) Use clean water to rinse the suction button and airtight cover of forceps, which are immersed in a disinfectant solution, and wipe each button by using dry gauze until install them onto corresponding connecting base.
- (7) Wipe the whole outside surface of mobile veterinary endoscope by using the alcohol-soaked (70%) gauze.

### 4. Matters Need Attention for Mobile Veterinary Endoscope Disinfection

General cleaning solution and method are not effective for disinfection purpose. To disinfect the mobile veterinary endoscope, it is worth to put considerable thoughts into various disinfection method and material, and make option from the perspective of medical profession and in line with special clinical conditions.

- (1) Some disinfectants may cause damage to some material (such as synthetic resin and rubber) used in the mobile veterinary endoscope structure. It requires to pay close attention to the mobile veterinary endoscope's safety before employing any disinfection method.
- (2) Following disinfection solutions have been proven to be safe on the basis of long-term testing and clinical application.

Chlorhexidine Solution; Glutaraldehyde Solution

- (3) Following disinfection methods, which can lead mobile veterinary endoscope to pretty major failures, are absolutely **PROHIBITED!**

- Pressurized disinfection with pressure equivalent to or over 1.5 times of the standard atmospheric pressure, Heat disinfection with a temperature over 40 °C, EGO disinfection

- Ultrasonic cleaning and disinfection
- Boiling water sterilization
- Dry-heat sterilization and disinfection
- Steam disinfection
- Disinfection with cresol solution or formaldehyde
- Disinfection with undiluted solution used for chlorobenzene cleaning and disinfection

(4) Immersion time should be less than 1 hour as long-time or repetitive immersion in disinfectant solution can increase the interior humidity of mobile veterinary endoscope thereby making the lens become vague or even get injured.

(5) Please conduct sealing performance checking for mobile veterinary endoscope before cleaning and disinfection in order to avoid serious damage and high cost of repair due to water leakage. (Please refer to sealing performance checking of mobile veterinary endoscope, see Figure 4)

## **5. Mobile Veterinary Endoscope Storage**

- The mobile veterinary endoscope should be wiped dry before storage. Inject sufficient air into each channel to dry its inner surface. Take special care of headend and the surface of all lens. Use dry cotton swab to gently wipe dry the objective lens and light guide lens. Spread the lens cleaner on a slice of gauze ( silicon waxes) and softly wipe the surface of lens. This will prevent residual water droplet from leaving remaining trace on the lens.
- The storage environment should be quiet, dry, have excellent ventilation and maintain normal temperature. Keep out of direct sunlight, high temperature, high humidity and X-rays irradiation.
- Try to make the insertion tube stay straight as far as possible when preserving the mobile veterinary endoscope. If it has to wind into disc-like shape for preserve, please wind the insertion tube more relaxed than it stays in the mobile veterinary endoscope case.
- Using mobile veterinary endoscope case for storage is not advisable. The mobile veterinary endoscope case is designed for loading and shipping only. Preserving in damp, dark, poorly ventilated environment may leave the infection control at a disadvantage. Please do not wind up.

## **6. Usage of Flashlight Battery**

### **➤ Battery Installation**

**Please install fully charged battery in the flashlight everytime before use, and connect the flashlight to the mobile veterinary endoscope in the light of Chapter 4.**

- 1) Open the battery cover, put the battery into flashlight, then tighten up the cover.
- 2) Secure the flashlight to the connecting base on the operation portion of mobile veterinary endoscope (refer to the connection diagram in Figure 1). Press the flashlight

button switch, and keep normal use if the light glows. Please replace the battery in case of insufficient brightness.

#### ➤ **Replacement of Battery**

- 1) Make sure the flashlight remains in off-state, and bring down the flashlight.
- 2) Remove the lithium battery from the flashlight and change it by fully charged lithium battery. Install the shorted battery on the battery holder to start charging.

#### ★ **[Notice]**

- **Lithium battery is not allowed to touch water or any kind of liquid.**
- **Never get the battery closed to flame, heater, microwave oven, roaster, cooking range, fireplace or other high temperature place. Overheat may cause the battery to get worse. Never heat the battery or throw into fire. It may cause the electrolyte to catch alight.**
- **Never expose the battery to high temperature, such as intense, direct sunlight, behind windscreen and so forth. Otherwise the battery will get overheated to degrade its performance.**
- **Never use any way to hurt the battery such as nailing, hammering, crush, etc. It can give rise to battery leakage or internal short circuit.**

#### **Flashlight Charging**

- 1) In case of low battery power, turn off the power switch of flashlight, and take down the flashlight.
- 2) Connect the flashlight with power adapter to start charging. And make sure the flashlight remains in off-state during charging.

**[Notice] : Before battery charging, you must bring down the flashlight and turn off the power switch.**

### **VII. Transportation, Storage and Maintenance**

#### **1. Matters Need Attention to Transportation and Storage**

Transportation and storage are behind packaging. After packing, the mobile veterinary endoscope shall be kept in inside storage room with relative humidity less than 80%, without corrosive gas and well-ventilated.

- (1) Ambient Temperature Range: -40 ℃~55 ℃;
- (2) Relative Humidity Range: 10%~95%;
- (3) Atmospheric Pressure Range: 500hPa~1060hPa

#### **2. Mobile Veterinary Endoscope Maintenance**

If the mobile veterinary endoscope is in need of repair, please put it into original packing box, and send back to our company or our authorized service station along with the fault or injury statement. Please also notify our responsible repair personnel of your address, postcode, contacts and phone number.

Some small problems connected to usage of mobile veterinary endoscope can be fixed by endoscope operator or assistant. But all repairing work can only be performed by EndoscopeRepair.com authorized service shop. Any harm or damage resulted from the repair by other personnel except above mentioned ones, our company will assume no liability or responsibility.

★ Any instrument pending the return for repair must be completely cleaned and sterilized beforehand with a view to preclude infection and keep all repair personnel safe. If the instrument ever provided service to animals with infectious disease, please explain to our responsible repair personnel.

### 3. Trouble Shooting Guide

Faults	Solution
● No image, or MP4 won't turn on.	Check the electric quantity of MP4, connection between MP4 and operation portion of mobile veterinary endoscope.
● Catch sight of water droplet or stripe.	Stop using, send back to our company for repair.
● No lighting or light is dim.	Check the battery level of LED flashlight.
● Angle of bend is insufficient or there is no bending action.	Contact our Maintenance Service Department.
● Sampling tongs and other handling instruments failed to insert.	Check whether the seal ring of forceps opening has fallen into the opening.
● The suction is weak or failed.	Check suction pump, suction tube and suction connector.
● There has needle-like protrusion fallen apart, depressed on the surface of insertion tube	Contact our Maintenance Service Department.
● There has crack in the observation window, illuminating window.	Contact our Maintenance Service Department.

### VIII. Contraindication for Mobile Veterinary Endoscope

(1) Animals with severe heart disease: serious arrhythmia, low ventricular rate, acute myocardial infarction, severe cardiac failure.



(2) Animals with severe pulmonary disease such as acute bronchial asthma, respiratory failure.

#### **IX. Production Data and Service Life**

(1) Product production date: [see details in Product Certificate of Approval](#)

(2) Product service life: 2 years

Remark: The product has one year warranty period. Efficacy-lost chargeable batteries, airtight cover of forceps and other consumables can return to normal use after replacement.

Please check the compliance of technical specifications before using the mobile veterinary endoscope everyday. In case of non-conformance or failure of accessories, please contact our maintenance center for repair. Beyond that, the product can keep in normal use.

#### **X. Announcements**

(1) During the operation of mobile veterinary endoscope, please pay close attention to the electrical safety of any device in connection with it. Electric shock, ambustion and other accidents caused as a result of incompliance with standard for use is at the purchaser's own risk.

(2) During the operation of mobile veterinary endoscope, please mind that bending, folding, torsion, collision will put it at disadvantage because it has an exquisite internal structure.

(3) The mobile veterinary endoscope cannot withstand high temperature, moist and dust. Please take care of the storage environment. The mobile veterinary endoscope is unsuited to be kept in the mobile veterinary endoscope case.

(4) If the flashlight and MP4 are out of use for a period time, pleas make sure their batteries stay in normal state to be suited for new use otherwise unsuitable to clinical practice.

(5) When any abnormal event suddenly happens on the mobile veterinary endoscope, please stop using it immediately and contact out company or franchised dealer or authorized service shop nearby. Any artificial damage, for example, the insertion tube of endoscope was bitten by animals leaving tooth print or to become flat, and any quality problem due to operators or buyers voluntary disassembly of the product, are out of the range of "Three Guarantees of Quality".

(6) The mobile veterinary endoscope will enjoy 1 year of "Three Guarantees of Quality" from the date of purchase. The purchase invoice and 3G return card shall serve as the proof of Three Guarantees of Quality.

(7) Physicians attention: Never get LED flashlight and MP4 soaked in water or sprayed by water.

(8) If the product and its internal components are discarded as useless, they shall be

disposed according to relevant waste and residue disposal regulations of the state.

## Product Warranty Card

### User Information (Please fill in the details)

User's Name:	
Detailed Address:	
Product Name:	Product No.:
Place of Purchase:	Date of Purchase
Invoice No.:	Contact Number:

### Attention

\* The warranty bill must be sent back to our company within one month from the purchase date.

Warranty way: Contact our maintenance center on the basis of the invoice (or copy). The warranty bill must be sent back to our company within one month from the purchase date.

Warranty condition: The company shall repair the product free of charge for any fault caused by manufacturing quality within one year from the purchase date.

Following conditions are beyond the warranty scope:

1. Damages caused by improper usage or preservation of the user
2. Disassembly or modification made by the user himself / herself.

**1800Endoscope.com LLC**  
**7322 Manatee Ave. West #265**  
**Bradenton, FL. 342090**  
**941-792-7138**  
**repairs@endoscoperepair.com**