

EICKVIEW HD VIDEO ENDOSCOPE

USER MANUAL



Art. No. 306168, 306169, 306170, 306177, 306178

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Important information — Please Read Before Use

- Before use, thoroughly review this manual.
- Please keep all instruction manuals in a safe, accessible place.
- Contact Aohua for any questions or comments about this instruction manual.



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Important Information — Please Read Before Use

Intended use

The VET series endoscope(VET-6010, VET-9833HD,VET-9830HD, VET-1335HD, VET-8028HD, VET-3512, VET-8015HD, VET-9215HD, VET1330HD) are intended to be used with an AOHUA endoscope imaging processor (VET-OR series), portable MP4 player(inapplicable to VET-3512), and other ancillary equipment in endoscopy, endoscopic diagnosis and treatment for veterinary use.

Do not use this instrument for any purpose other than its intended use. Select the endoscope to be used according to the objective of the intended procedure based on the full understanding of the endoscope's specifications and functionality as described in this instruction manual.

Instruction Manual

This instruction manual should be kept in an accessible place. Before use, thoroughly review this manual which contains the most appropriate instructions regarding to the maintenance and operation of this endoscope. Although the endoscope itself is fine and precise, the malfunction rate could be significantly reduced by following the essentials in this manual during operation and maintenance, resulting in extended lifetime of the endoscope.

Any questions about the information provided in this user manual or about the endoscope operation and safety regards, please contact AOHUA.

User qualifications

This user manual introduces the ideal preparation and inspection procedures. It is not the detailed instruction for clinical examination and does not intend to familiarize beginners with endoscopy techniques and medical knowledge. This device must be operated by a medical practitioner capable of safely performing endoscopy after operation technique training.

Ancillary Equipment

The safety of the endoscope does not only rely on the endoscope itself, but also relies on its ancillary equipment. To guarantee the compatibility, only the ancillary equipment manufactured by AOHUA or confirmed by AOHUA is recommended to use.

AOHUA prepared the standard accessory and spares list. Please carefully check the items in the package according to the list provided in Section 1.1, "Checking the package contents list" after purchase. If any item is missing or damaged, contact AOHUA or distributor immediately. Prior to the first time use of a new endoscope, completely clean and disinfect the endoscope and accessories.

The endoscope and other components should be removed from the carrying case and stored according to the following Section 4.7, "Maintenance, shipping and storage of the endoscope". The carrying case is not intended to store the endoscope, but to transport endoscope.

Instrument compatibility

Before use, please refer to "Ancillary Equipment" to confirm that this instrument is compatible with the ancillary equipment being used. Using incompatible equipment can result in patient or operator injury and/or equipment damage.

Spare equipment

Be sure to prepare another endoscope to avoid interruptions during examination due to equipment failure or malfunction.

Repair and modification

This instrument does not contain any user-serviceable parts. Do not disassemble, modify or attempt to repair it; patient or operator injury and/or equipment damage and/or the failure to obtain the expected functionality may result. This instrument should be repaired by AOHUA authorized personnel only.

Important Information — Please Read Before Use

Signal words

The following signal words are used throughout this manual:



: It indicates a potentially hazardous situation, if not be avoided, could result in death or serious injury.



: It indicates a potentially hazardous situation, if not be avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.



: It indicates additional helpful information.

Warnings and cautions

Follow the warnings and cautions below when handling this instrument. Information below is to be supplemented in each chapter.



- After using this endoscope, clean, disinfect and store it according to the instruction manual.
- Before endoscopy, remove any metallic objects from the patient.
- Do not strike, hit, or drop the endoscope's distal end, insertion tube, bending section, control section, universal cord, or endoscope connector. Also, do not bend, twist or pull the endoscope's distal end, insertion tube, bending section, control section, universal cord, or endoscope connector with excessive force.
- Never perform angulation control forcibly or abruptly.
- Never insert or withdraw the endoscope's insertion tube while the bending section is locked in position.
- Never operate the bending section, feed air or perform suction, insert or withdraw the endoscope's insertion tube, or use endotherapy accessories without viewing the endoscopic image or while the image is frozen or magnified.
- Do not touch the endoscope connector immediately after removing it from the endoscope imaging processor because it is extremely hot.
- When the endoscopic image does not appear on the monitor, the sensor may have been damaged. Turn the imaging processor OFF immediately.
- If it is difficult to insert the endoscope, do not forcibly insert the endoscope; stop the endoscopy.
- Be sure to inspect that the bending section bends smoothly by touching it with hands before inserting the endoscope into the patient. Immediately stop using it and withdraw it from the patient if any irregularity is observed.
- Keep the insertion section and bending section as straight as possible during endoscopic treatment to give smooth access to the endoscopic instrument.

Important Information — Please Read Before Use

WARNING

- The video endoscope can generate intense light rays. When the distal end of video endoscope is too close to the mucosa, strong light rays concentrating in a small area will increase the surface temperature in consequence of long-time irradiation, and may cause ambustion when exceeding 41°C. The surface temperature of video endoscope may exceed 41°C in a short time and up to maximum 50°C when used in conjunction with its accessories. Stop using when the lamp is burned out during operation. Blind operation will cause injury to the patient.
- Burning risk may be increased when taking too long time to approach the mucosa or observe one fixed point or advance the video endoscope too slow in a narrow lumen. To reduce the burning risk, avoid performing fixed-point observation as far as possible.
- The common injuries may be caused by endoscope operation include perforation, mucous irritation, bleeding, infection, rupture, etc., if the endoscope is not used by following the instruction manual, damages or malfunctions may result.

CAUTION
















- Do not touch the electrical connector inside the electrical connector.
- Do not apply shock to the distal end of the insertion tube, especially the objective lens surface at the distal end.
- Do not twist or bend the bending section with excessive force.
- Do not squeeze the bending section forcefully.
- Turn the imaging processor OFF before connecting or disconnecting the endoscope connector.
- Electromagnetic interference may occur on this instrument near equipment marked with the following symbol or other portable and mobile RF communications equipment.



- Before inserting the endoscope into the human body, turn the angulation knob at the “F ▶” position; ensure that the distal end can move smoothly. If encountering irregularities or obstructions when inserting the endoscope or operating the angulation knob, do not use it and contact AOHUA.
- When use the endoscope together with the imaging processor, it is recommended to connect a voltage regulator with over 1000W capacity and automatic regulation function. Do not use a residential used voltage regulator on the endoscope.

Important Information — Please Read Before Use

Labels and Symbols

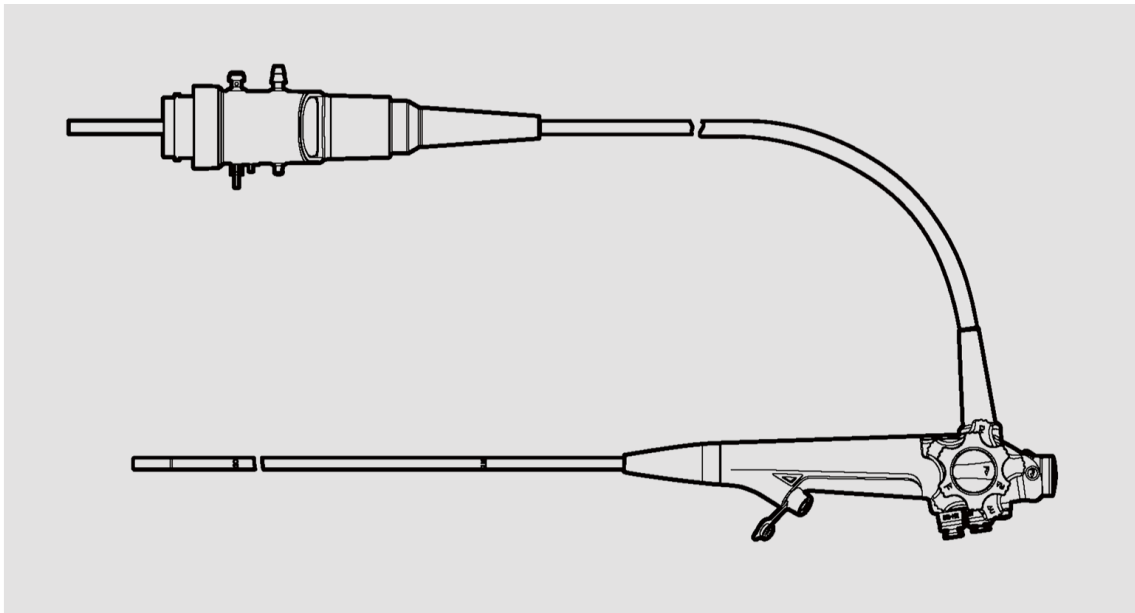
	Type BF equipment
	Protective earth(ground)
	Caution
	Equipotentiality
	This way up
 Blue	Refer to instruction manual
	Date of manufacture
	Manufacturer
	Keep dry
	Use-by date
	Keep away from sunlight
	Serial Number
	Fragile, handle with care
	Stacking limit by number
	Temperature limit

01 Checking the Package Contents

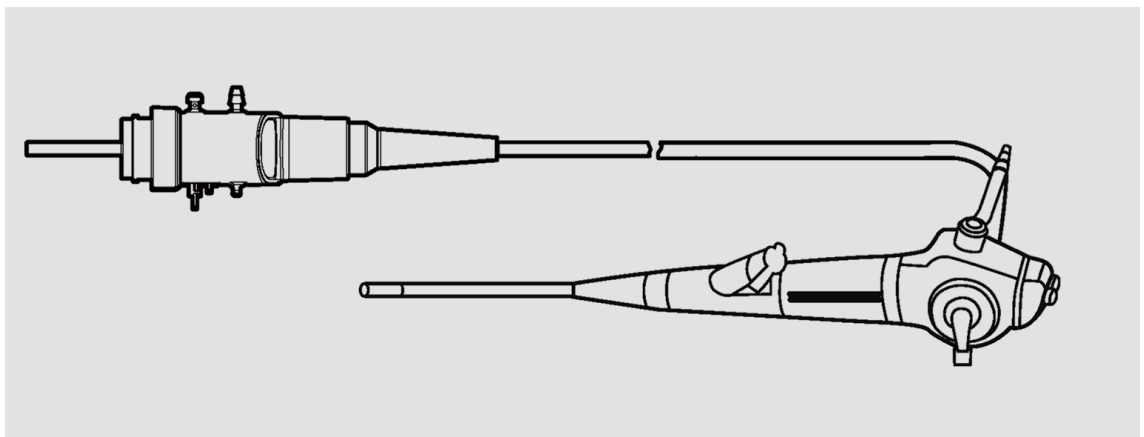
1.1 Checking the package contents list

CAUTION

- Check all items in the package against the components listed below. If any component is missing or damaged, do not use the item; contact AOHUA immediately. Accessories below in the list are only for the reference. Please refer to the packing list/ shipping list included in each shipment.

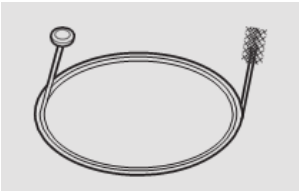
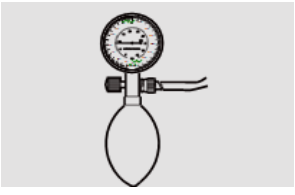

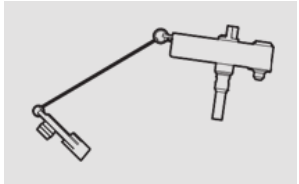
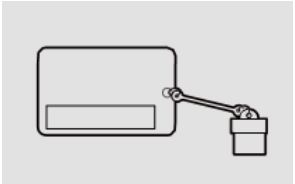
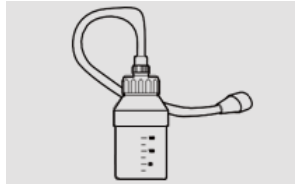
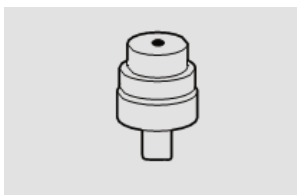
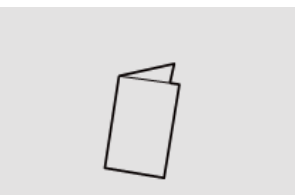

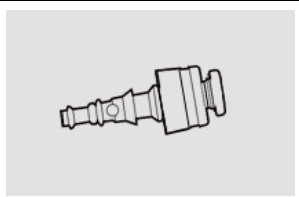


(Endoscope: VET -6010, VET-9833HD, VET -9830HD, VET -1335HD, VET -8028HD, VET -8015HD, VET-9215HD, VET-1330HD)



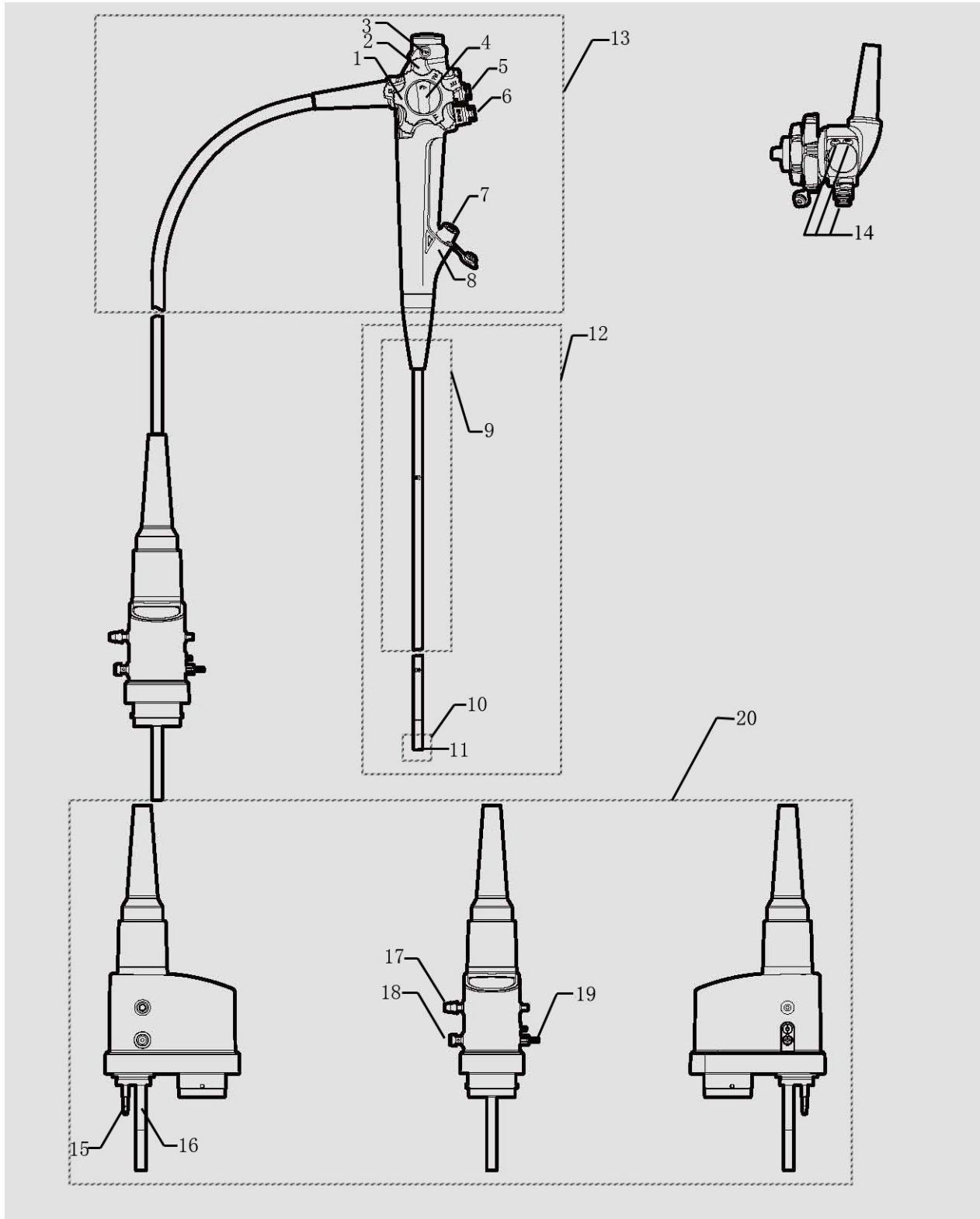
(Endoscope: VET -3512)

01 Checking the Package Contents

 <p>Cleaning Brushes</p>	 <p>Leakage Tester</p>	 <p>Cleaning Kit</p>
 <p>Channel Plug</p>	 <p>Sealing Plug</p>	 <p>Water Bottle</p>
 <p>Suction Valve</p>	 <p>User Manual</p>	 <p>Biopsy Valve</p>
 <p>Air-water Valve</p>		

02 Nomenclature and Functions

2.1 Nomenclature and Functions



(Figure 2.1.1 Endoscope VET -6010, VET-9833HD, VET -9830HD, VET -1335HD, VET -8028HD, VET -8015HD, VET-9215HD, VET-1330HD)

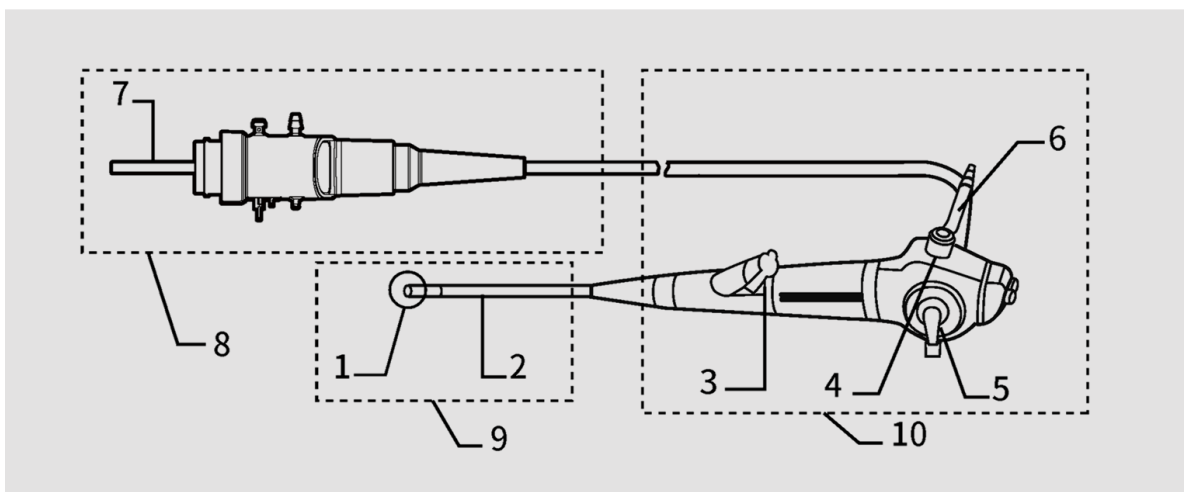
02 Nomenclature and Functions

Nomenclature	Description
1. RIGHT/LEFT angulation control knob	When this knob is turned in the “R▲” direction, the bending section moves RIGHT. When the knob is turned in the “▲L” direction, the bending section moves LEFT.
2. UP/DOWN angulation control knob	When turn this knob in the “▲U” direction, the bending section moves UP; when turn this knob in the “D▲” direction, the bending section moves DOWN.
3. UP/DOWN angulation lock	Moving this lock in the “F▶” direction frees angulation. Moving the lock in the opposite direction locks angulation.
4. RIGHT/LEFT angulation lock	Turning this lock in the “F▶” direction frees angulation. Turning the lock in the opposite direction locks angulation.
5. Suction cylinder	Attach the suction valve to this cylinder.
6. Air/water cylinder	Attach the air/water valve to this cylinder.
7. Biopsy Valve	This valve is attached to the instrument channel inlet, and the endotherapy accessory is inserted, or a syringe is attached
8. Instrument channel	The instrument channel functions as: <ul style="list-style-type: none"> ● channel for the insertion of an endotherapy accessory ● suction channel ● fluid feed channel
9. Insertion tube limit mark	This mark shows the maximum point to which the endoscope may be inserted into the patient’s body.
10. Distal end	The objective lens and air/water nozzle are on this distal end of the endoscope.
11. Bending section	This section moves the distal end when the UP/DOWN and RIGTH/LEFT angulation control knobs are operated.
12. Insertion section	This section is inserted into the patient body cavity.
13. Control section	Operates the bending section, feeds air and water, and performs suction.
14. Optional buttons	The functions of the buttons can be selected on the endoscope imaging processor.

02 Nomenclature and Functions

Nomenclature	Description
15. Air pipe	Connects the endoscope to the imaging processor and transmits air to the distal end of the endoscope.
16. Light guide pin	Connects the endoscope to the output socket of the endoscope imaging processor and transmits light from the processor to the endoscope.
17. Suction connector	Connects the endoscope to the suction tube of the suction pump.
18. S-cord connector mount	Connects the endoscope with electrosurgical unit via the S-cord.
19. Air/water supply connector	Connects the endoscope to the water container via the water container tube to supply water to the distal end of the endoscope.
20. Endoscope connector	Connects the endoscope to the light source and transmit light to the distal end of the endoscope.

02 Nomenclature and Functions



(Figure 2.1.2 Endoscope VET -3512)



Nomenclature	Description
1. Distal end	The objective lens, light guide lens, and instrument channel outlet are on this distal end of the endoscope.
2. Bending section	This section moves the distal end when the UP/DOWN and RIGTH/LEFT angulation control knobs are operated.
3. Instrument channel and Biopsy Valve	The instrument channel functions as the channel for the insertion of an endotherapy accessory. This valve is attached to the instrument channel inlet, and the endotherapy accessory is inserted.
4. Suction valve	This valve is depressed to active suction. The valve is used to remove fluids from the patient.
5. UP/DOWN angulation control knob	When turn this knob in the “▲U” direction, the bending section moves UP; when turn this knob in the “D▲” direction, the bending section moves DOWN..
6. Suction connector	Connects the endoscope to the suction tube of the suction pump.
7. Light guide	Connects the endoscope to the endoscope imaging processor and transmits light to the distal end of the endoscope.
8. Endoscope connector	Connects the endoscope to the endoscope imaging processor and transmits light to the distal end of the endoscope.
9. Insertion section	This section is inserted into the patient body cavity.
10. Control section	Operates the bending section and performs suction.

02 Nomenclature and Functions

2.2 Performance characteristics

- 1 The video endoscope applied advanced micro image sensor technology with higher resolution rate and clear enlarged image, comparing to the fiber endoscope.
- 2 The diameter of soft and flexible insertion tube is designed as $\Phi 6.0\text{mm}$ or $\Phi 9.6\text{mm}$ or $\Phi 12.8\text{mm}$ or $\Phi 8\text{mm}$ or $\Phi 3.5\text{mm}$ to achieve smooth insertion and significantly alleviate discomfort of patients.
- 3 The diameter of biopsy and suction tube is designed as $\Phi 2.2\text{mm}$ or $\Phi 2.8\text{mm}$ or $\Phi 3.7\text{mm}$ or $\Phi 1.2\text{mm}$ or $\Phi 2.0\text{mm}$ to give access to general biopsy forceps, cytology brush and other standard instruments.
- 4 Electromagnetic air pump is included inside of endoscope imaging processor of VET-OR series. Feeding of air and water and suction operation could be activated by operating Air/Water valve (inapplicable to VET-3512) or suction valve.

2.3 Product characteristics

- 1 This equipment is classified as type BF applied part.
- 2 The ingress protection rating is IPX7.
- 3 Manufacturer: Shanghai AOHUA Photoelectricity Endoscope Co., Ltd
- 4 Product name: Video endoscopes; Model: VET -6010, VET-9833HD, VET -9830HD, VET -1335HD, VET -8028HD, VET -8015HD, VET-9215HD, VET-1330HD, VET-3512
- 5 Classification label: type BF applied part. 
- 6 Caution! 
- 7 This equipment should not be used with air and flammable anesthetic gas mixture; or oxygen/nitrous oxide and flammable anesthetic gas mixture.

2.4 Specifications

2.4.1 Operating environment

- Ambient temperature : 5°C - 40°C
- Relative humidity : 30% - 85%
- Atmospheric pressure : 700 - 1060hPa

02 Nomenclature and Functions

2.4.2 Interconnected equipment specifications

This endoscope is intended to be used with endoscope imaging processor (VET-OR series) manufactured by Aohua. The ancillary equipment shall comply with relevant regulations and standards.

Equipment		Interconnected endoscope model								
		VET-6010	VET-8028 HD	VET-9833 HD	VET-9830 HD	VET-1335 HD	VET-3512	VET-8015 HD	VET-9215 HD	VET-1330 HD
Biopsy forceps	Maximum insertion outer diameter	2.2mm	2.8mm			3.7mm	1.2mm	2.0mm	2.8mm	3.7mm
	Working length	1000mm	1500mm	3300mm	3000mm	3500mm	600mm	1500mm	1500mm	3000mm

2.4.3 Endoscope specifications

Model	VET-6010	VET-8028 HD	VET-9833 HD	VET-9830 HD	VET-1335 HD	VET-3512	VET-8015 HD	VET-9215 HD	VET-1330 HD
Working length	1000mm	1500mm	3300mm	3000mm	3500mm	600mm	1500mm	1500mm	3000mm
Distal end outer diameter	6.0mm	8.0mm	9.6mm	9.6mm	12.8mm	3.8mm	8.5mm	9.0mm	12.8mm
Insertion tube outer diameter	6.0mm	8.1mm	9.6mm	9.6mm	12.8mm	3.5mm	8.0mm	9.0mm	12.8mm
Minimum instrument channel inner diameter (Biopsy outer diameter)	2.2mm	2.8mm	2.8mm	2.8mm	3.7mm	1.2mm	2.0mm	2.8mm	3.7mm
Angulation range	UP: 210° DOWN: 90° LEFT: 100° RIGHT: 100°				UP: 180° DOWN: 180° LEFT: 160° RIGHT: 160°	UP: 160° DOWN: 130°	UP: 210° DOWN: 90° LEFT: 100° RIGHT: 100°		UP: 180° DOWN: 180° LEFT: 160° RIGHT: 160°
Field of view	120°		140°			120°	140°		
Depth of field	2mm~50mm		3mm-100mm			2mm~50mm	3mm ~ 100mm		
Direction of view	0° (Forward Viewing)								

03 Preparation and Inspection

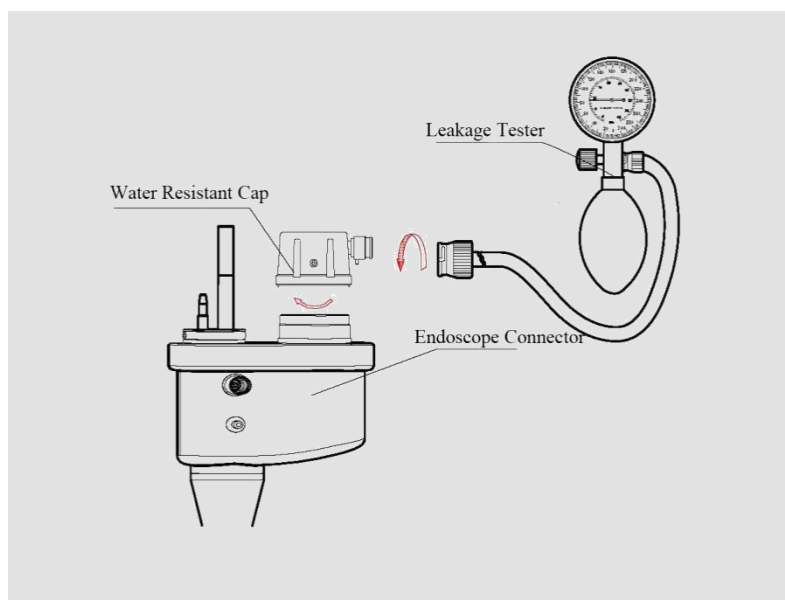
WARNING

- Before using, prepare and inspect this instrument as instructed below.
- Using an endoscope that is not functioning properly may compromise patients' or operators' safety and may result in more severe equipment damage.
- This instrument is not cleaned, disinfected or sterilized before shipment. Before the first time use of this instrument, reprocess it according to the Section 4.6, "Cleaning and disinfection of the endoscope".

3.1 Sealing performance Inspection

Prior to use, sealing performance of the endoscope must be inspected according to the steps below:

- 1 Connect the leakage tester, water resistant cap and the venting connector on the endoscope connector according to the method shown in Figure 3.1.



(Figure 3.1)

- 2 During the leakage test, detach the endoscope connector of the endoscope from the endoscope imaging processor. Otherwise, damage to the endoscope may result.
- 3 Stop inflating the leakage tester until the gauge points to the red number.
- 4 If the pressure is slowly falling, continue to slowly inflate the endoscope (do not exceed 30 kPa, otherwise damage may result), and immerse the video endoscope into water to observe whether there are bubbles continuously bubbling up from the endoscope or not (Normally, 3 or less bubbles per minute is acceptable). The continuous bubbles indicates leakage exist. Immediately stop using this equipment, and contact AOHUA.
- 5 If there is no change to the leakage tester's pointer, the video endoscope has a sound sealing performance and is available for use, cleaning and disinfection.

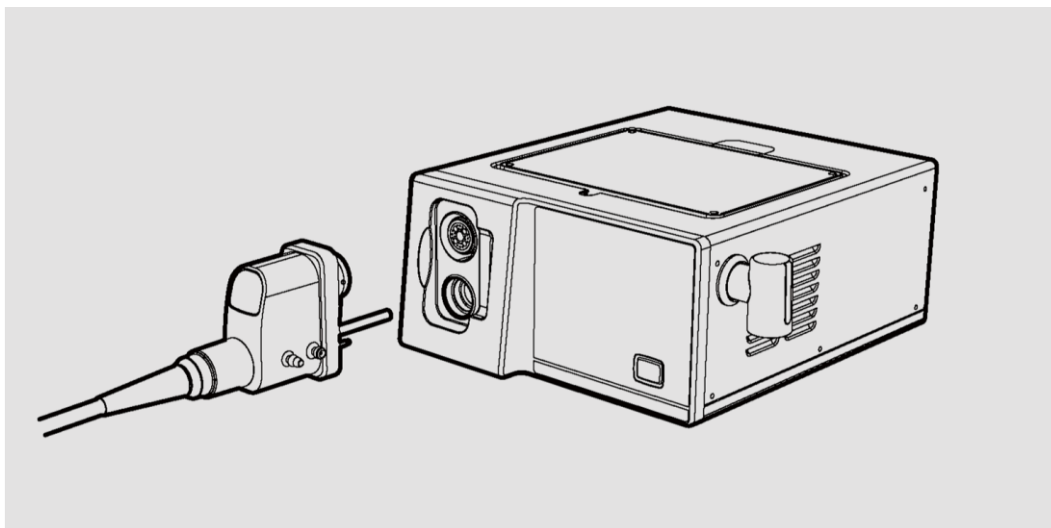
03 Preparation and Inspection

3.2 Preparation of the equipment

! CAUTION

- The monitor must be approved by Aohua that it complies with relevant regulations and safety standards, and its resolution shall be greater than 600 lines.

- 1 Connect the video output terminals of the endoscope imaging processor with the video input terminals of the monitor.
- 2 Firmly connect the endoscope connector of the endoscope and the output socket in the endoscope imaging processor as shown in figure 3.2; ensure the power supply switch of the processor is OFF.



(Figure 3.2)

! CAUTION

- Insert the endoscope connector into the output socket with correct direction.

- 3 Connect the power cord to power supply socket of endoscope imaging processor and to the wall mains outlet.
- 4 Turn on the power supply switch of the processor and assure the brightness adjustability.

! CAUTION

Assure the reliable grounding is available.

03 Preparation and Inspection

- 5 Fill water bottle with purified water to 80% of the capacity, tighten the bottle cap, and connect the water bottle and the air/water supply connector (inapplicable to VET-3512) of the endoscope. Switch the pump ON.
- 6 Immerse the bending section of the endoscope in a cup with purified water, ensuring the air is fed from the nozzle at the distal end when cover the air/water valve's hole (inapplicable to VET-3512), and the water is fed onto the objective lens when press air/water valve.
- 7 Ensure the switches of the imaging processor and the pump are OFF, and then connect the power supply cords of the imaging processor and the monitor with the wall mains outlet.

CAUTION

- The power supply switch of imaging processor must be OFF before cutting off the power of the imaging processor and monitor. Otherwise, the damage caused by it is not warranted by Aohua in any manner.

- 8 Turn on the light; the twinkling LED lamp at the endoscope connector of the endoscope indicates it works normally.
- 9 Turn on the imaging processor and the monitor, check whether the imaging color on the monitor is normal or not.

3.3 Inspection of the endoscope

3.3.1 Inspection of the insertion section

- 1 Visually inspect the surface of the insertion tube for dents, bulges, swelling, fractures or other irregularities.
- 2 Carefully run your hand back and forth over the entire insertion section, ensuring no dents, bulges, swelling on the insertion section. Also, ensure the insertion section is not slack and no other irregularities.

CAUTION

- The insertion tube surface shall not have any defects that may cause injury to the patients. Stop using the endoscope even the abnormality found is very tiny, and contact AOHUA.

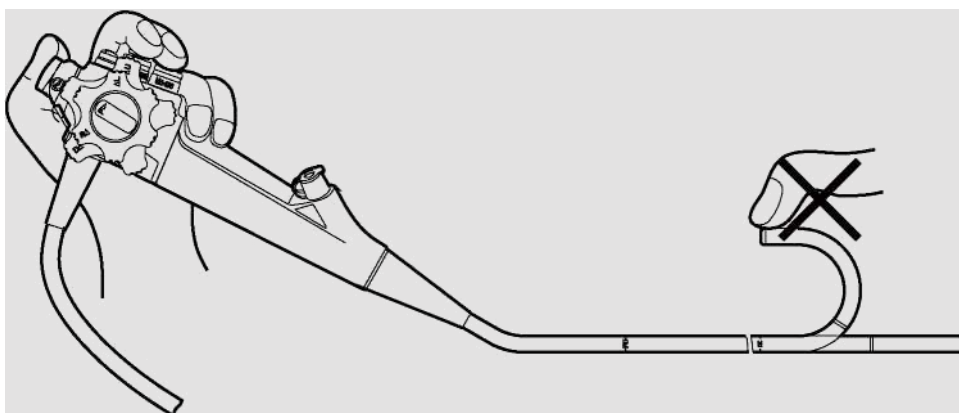
03 Preparation and Inspection

3.3.2 Inspection of the bending section

- 1 Slowly operate the angulation knob, confirm that the bending section and the angulation knob and angulation lock angulate smoothly and correctly, that maximum angulation can be achieved.

CAUTION

- It is prohibited to forcibly bend the bending section as shown in Figure 3.3.2.



(Figure 3.3.2)

3.3.3 Inspection of instrument channel

- 1 Confirm that the instrument channel valve has no any foreign objects or water drops.
- 2 Slowly insert the accessory through the biopsy valve and confirm that no any obstruction.
- 3 Do not force the biopsy forceps extend from the distal end.

CAUTION

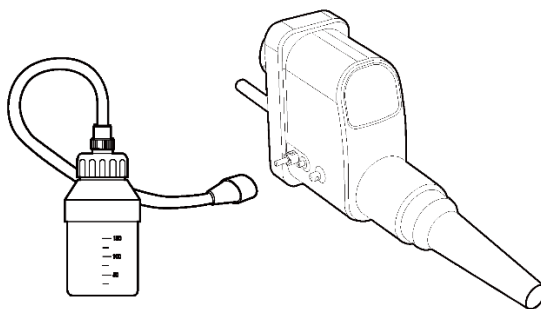
- Extending the biopsy forceps forcibly may cause damage to the instrument channel and other severe consequences.

3.4 Inspection of the accessories

3.4.1 Inspection of the air/water (inapplicable to VET-3512) and suction valves

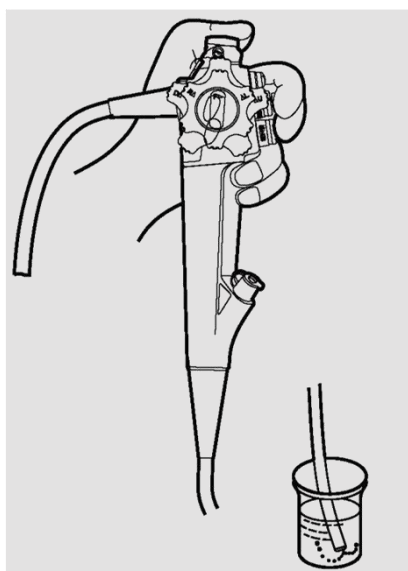
03 Preparation and Inspection

- 1 Connect the water bottle with the water/air supply connector at the endoscope connector of the endoscope as shown in figure 3.4.1.1.

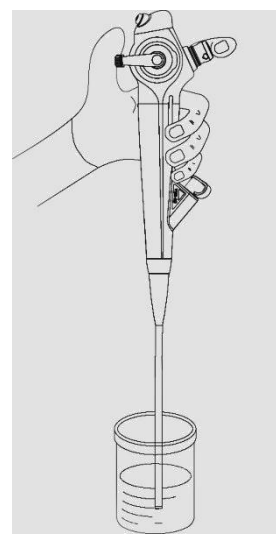


(Figure 3.4.1.1)

- 2 Connect the suction tube of the suction pump with the suction connector at the endoscope connector of the endoscope. Turn ON the power supply of the suction pump.
- 3 Fill the water bottle with distilled water (or purified water) to 80% of capacity and tighten up the bottle cap.
- 4 Turn ON the switch of the air pump built inside of the endoscope imaging processor.
- 5 Cover the air/water feeding valve (inapplicable to VET-3512) and confirm that air is fed to the distal end; press the air/water feeding valve and confirm that water is fed to the distal end; release the valve and confirm that the air/water feeding stops.
- 6 Immerse the distal end of the endoscope into water as shown in Figure 3.4.1.2 and press the suction valve by finger; confirm that water is aspirated; release the suction valve and confirm that water aspiration stops.



VET -6010/9833HD/9830HD/1335HD/8028HD/8015HD/9215HD/1330HD



VET-3512

(Figure 3.4.1.2)

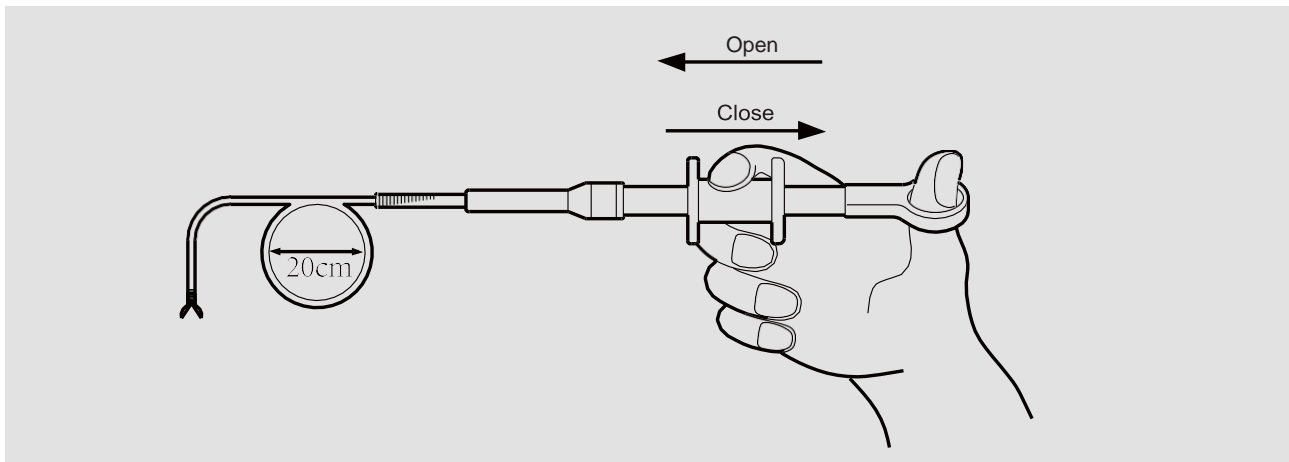
03 Preparation and Inspection

CAUTION

- Keep the suction pressure under 30 kPa. Excessive suction pressure prevents the suction valve from returning to original position.
- Replace the biopsy valve with a new one when the liquids leak from the biopsy valve during suction. To maintain good performance and prevent cross-infection, the biopsy valve is recommended to be replaced regularly.

3.4.2 Inspection of the biopsy forceps

- 1 Bend the biopsy forceps into a circle with the diameter of 20 cm as the figure 3.4.2 shown; slightly operate the biopsy forceps, confirm that the distal end of the biopsy forceps can be opened and closed smoothly.



(Figure 3.4.2)

- 2 Stop use and replace with a new biopsy forceps when any irregularity observed.
- 3 Hold the grip section and slightly insert the biopsy forceps into the instrument channel; confirm that the instrument channel is unobstructed and the biopsy forceps can smoothly extend from the distal end.

CAUTION

- The size of the biopsy forceps should be compatible with the size of the instrument channel; using over-sized biopsy forceps may cause damage to the instrument channel.

04 Operation

The operator of the endoscope must be a medical practitioner capable of safely performing endoscopy after operation technique training. This manual does not explain or discuss clinical endoscopic procedures. It only describes basic operation of the endoscope. Before using the endoscope, ensure to perform preparation inspection on the endoscope as described in Chapter 3, "Preparation and inspection".

4.1 Preparation

- 1 Perform cleaning, disinfection on the endoscopes according to the Section 4.6, "Cleaning and disinfection of the endoscope".
- 2 Check and confirm correct connection of all components, refer to the instruction manual of each product for details.
- 3 Prepare the necessary supplies (alcohol cotton, lens detergent, gauze, biopsy forceps, wax paper, etc.).
- 4 Wipe the insertion tube, bending section and distal end of the endoscope carefully with alcohol cotton.

4.2 Insertion and observation

- 1 Turn ON the power supply switch of the imaging processor.
- 2 Align the distal end of the endoscope with white balance cap; depress the white balance button on the imaging processor for automatic real color adjustment.
- 3 Turn ON the LED lamp, press the brightness adjustment buttons and adjust it to the appropriate observation intensity.
- 4 Feed air and water if necessary; adjust the angulation by operating the angulation control knob; carefully observe surrounding area and slowly advance the distal end of the endoscope towards the target area.
- 5 If the image is blurred by mucus or flush, clean the lens by feeding water from the air/water valve (inapplicable to VET-3512); utilize air feeding and aspiration to quickly eliminate the blurring.

CAUTION

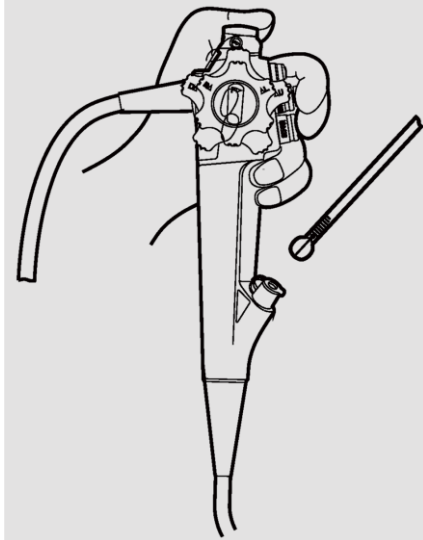
- Maintain the suction pressure at the minimum level necessary when performing aspiration. Otherwise, excessive suction pressure may cause injury to the mucous membrane.

4.3 Biopsy forceps application

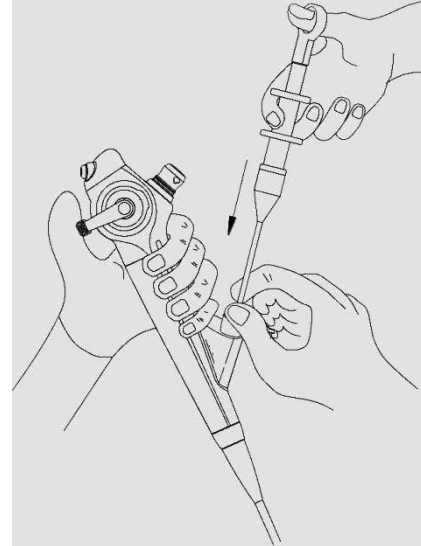
- 1 Open the biopsy valve at the control section of the endoscope.
- 2 Close the distal end of the biopsy forceps; slowly insert it through the biopsy channel as shown in figure 4.3.
- 3 In the field of view, position to the target biopsy site and align the biopsy forceps with the target, open the cup of the biopsy forceps to cut the specimens.
- 4 Close the cup and withdraw the biopsy forceps from the biopsy channel after the sampling.

04 Operation

- 5 If the foreign body is too large to pass the biopsy channel, directly withdraw the biopsy forceps with endoscope from the examinee's body.
- 6 Cover the biopsy valve with the rubber cap after the withdrawal of the biopsy forceps or other instruments.



VET -6010/9833HD/9830HD/1335HD/8028HD/8015HD/9215HD/1330HD



VET-3512

(Figure 4.3)

CAUTION

- AOHUA do not recommend the use of endoscopic instruments not approved by AOHUA.
- Do not forcibly insert the instruments into the instrument channel.
- The use of incompatible instruments may cause damage to the endoscope instrument channel and the instruments.
- Release the endoscope bending section to neutral position before insert instruments to avoid instrument damage.
- Also refer to the instruction manual of the biopsy forceps and other instruments for details.

04 Operation

4.4 Video Endoscope Withdrawal

CAUTION

- The high surface temperature of the front end of the endoscope connector may be caused by the transmission of high energy light. Do not contact it immediately with skin and wait for at least 2 minutes for safe contact.
- The power switch of the endoscope imaging processor must be shut OFF, and then disconnect the videoscope cable before disconnecting the endoscope from the imaging processor.

- 1 Turn the UP/DOWN and RIGHT/LEFT angulation locks to the “F” direction to release them.
- 2 Turn the UP/DOWN and RIGHT/LEFT control knobs to their respective neutral positions; confirm that the bending section returns to an approximately straight condition
- 3 Carefully withdrawal the endoscope from the body while observing the endoscopic image.

4.5 Cleaning and disinfection of the endoscope

WARNING

After each examination, disconnect the endoscope from the processor and clean it, especially when the distal end and the instrument channel has contacted with mucus. Insufficient cleaning and disinfection time may lead to cross-contamination between patients and undesired performance of the endoscope.

After each clinical examination, cleaning and disinfection should be conducted immediately.

The cleaning and disinfection method is determined by the user and hospital infection control committee, etc.

The cleaning and disinfection include automatic and manual method. AOHUA only introduces recommendation on manual cleaning and disinfection methods. For the automatic method, refer to the instruction manual for relevant equipment.

04 Operation

4.5.1 Precautions

CAUTION

- Ordinary detergent solution and method cannot satisfy disinfection requirement, disinfection method and material should be studied and selected according to the professional medical viewpoint and particular clinical condition.

1 Disinfection methods

The following disinfection methods, which will cause major fault to the video endoscope, should be PROHIBITIVE!

- Heating and pressing EGO disinfection at the atmospheric pressure of over 1.5 and the temperature of over 40°C.
- Ultrasound cleaning or disinfection
- Scalding
- Disinfection by drying
- Steam disinfection
- Disinfection by cresol solution or formaldehyde
- Clean by chlorobenzene and disinfect by the disinfectant solution not diluted

2 Detergent and disinfectant

According to the long-term test and clinical application, the following detergent and disinfectant solutions are safe for the video endoscope if correctly used:

- Medical low-foaming detergent
- Chlorhexidine solution
- Glutaraldehyde solution

4.5.2 Preprocessing

CAUTION

- During aspiration, observe carefully and prevent the liquid in the suction bottle from overflowing, which may damage the suction pump.

- 1 Before removing the endoscope from the endoscope imaging processor, use a clean lint-free cloth dampened with detergent to remove all visible dirt after clinical examination. Lint-free cloth should be disposable.
- 2 Switch ON the air pump in the endoscope imaging processor and adjust the air feeding pressure to the maximum degree; press the air/water valve (inapplicable to VET-3512) to feed water into the air/water channel for 30s; cover the air/water valve to feed air into the air/water channel for 10s.

04 Operation

- 3 Switch ON the suction pump and Install the biopsy valve; immerse the distal end of the endoscope into the detergent and depress the suction valve to aspirate detergent into the instrument channel for 30s; remove the distal end from the detergent and cover the suction valve to aspirate air for 10s.
- 4 Switch OFF the pump and disconnect the endoscope from the endoscope imaging processor; remove suction valve and biopsy valve from the endoscope.
- 5 Attach the water resistant cap onto the endoscope connector; put the endoscope, air/water valve (inapplicable to VET-3512), suction valve and biopsy valve into container and transport them to the cleaning and disinfection room.

04 Operation

4.5.3 Leakage detection

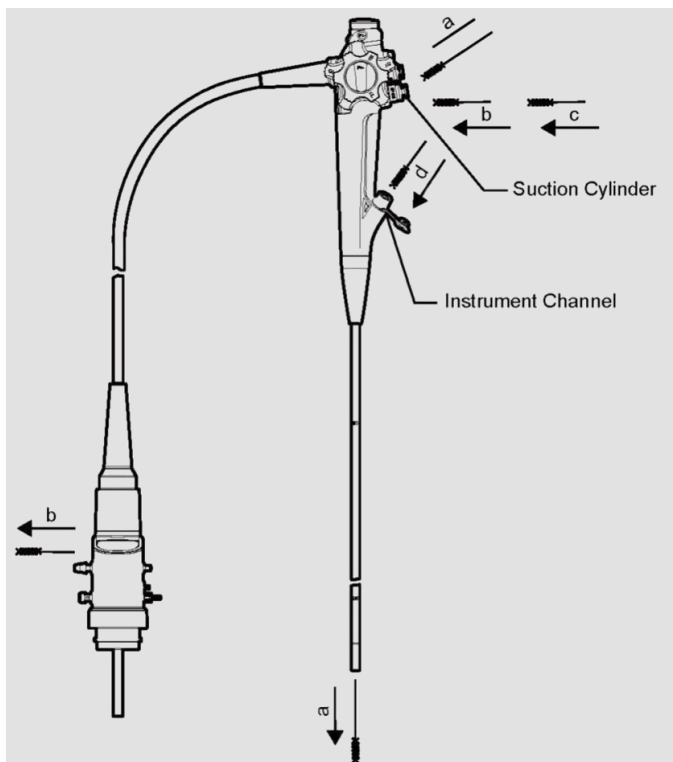
Conduct sealing performance inspection after preprocessing to ensure its ingress protection performance. Refer to the Section 3.1, "Sealing performance inspection" for detailed procedures.

4.5.4 Manual Cleaning of the video endoscope

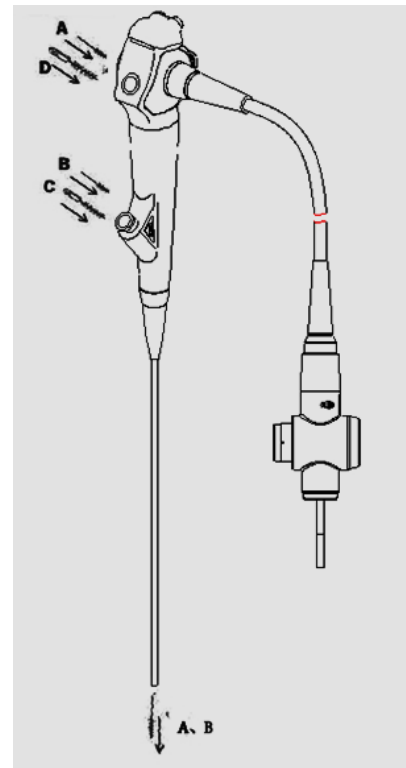
CAUTION

- The cleaning brush should not be inserted from the reverse direction, it should be pulled back until the head completely exposing from the distal end. Otherwise, it will damage the internal surface of the channel.
- Please cover the water proof cap (monitor side) when cleaning and disinfecting the endoscope.

- 1 Immerse the entire endoscope, air/water valve (inapplicable to VET-3512), suction valve and biopsy valve into the detergent.
- 2 Use a clean lint-free cloth to wipe the outer surface of the entire endoscope in the detergent, especially the air/water nozzle (inapplicable to VET-3512) and the object lens; ensure that all outer surfaces are completely cleaned.
- 3 According to the following steps, brush the suction cylinder, instrument channel, the air/water valve (inapplicable to VET-3512), the suction valve and biopsy valve (as shown in figure 4.7.3.1).



VET -6010/9833HD/9830HD/1335HD/8028HD/8015HD/9215HD/1330HD
(Figure 4.7.3.1)



VET-3512

04 Operation

- **To brush the suction cylinder from the control section to the distal end (route a)**
 - 1- Straighten the bending section of the endoscope.
 - 2- Insert the cleaning brush with a 45° angle into the suction cylinder, slowly advance the brush until the brush head completely exposes from the distal end.
 - 3- Clean the cleaning brush with fingertips in the detergent; then pull out the brush from the suction cylinder carefully.
 - 4- Clean the cleaning brush with fingertips in the detergent again.
 - 5- Repeat step 3 and 4 at least 9 times to ensure that no debris is left.

- **To brush the suction cylinder from the control section to the endoscope connector (route b)**
 - 1- Insert the cleaning brush straightly into the suction cylinder; slowly advance the brush until the brush head completely exposes from the suction connector.
 - 2- Clean the cleaning brush with fingertips in the detergent, and then pull out the brush from the suction cylinder carefully.
 - 3- Clean the cleaning brush with fingertips again.
 - 4- Repeat step 2 and 3 at least 9 times to ensure that no debris is left.

- **To brush the suction cylinder (route c)**
 - 1- Insert the channel-opening cleaning brush into the suction cylinder until half of the brush is inserted to the cylinder.
 - 2- Rotate the channel-opening cleaning brush once.
 - 3- Pull out the channel-opening cleaning brush, and clean the brush with fingertips in the detergent.
 - 4- Repeat the step 2 and 3 at least 9 times to ensure that no debris is left.

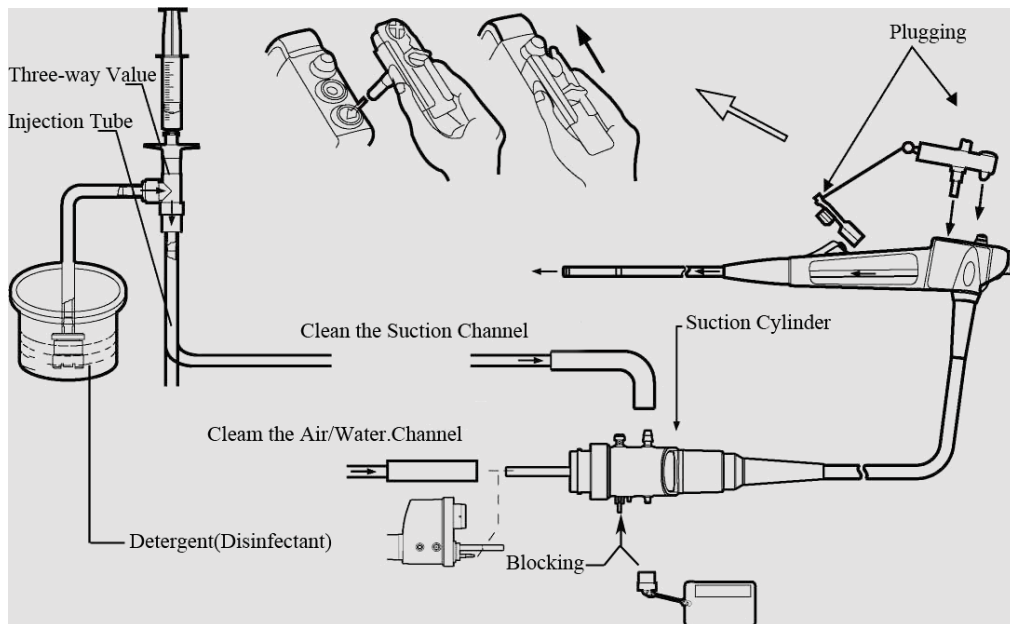
- **To brush the instrument channel (route d)**
 - 1- Insert the channel-opening cleaning brush into the instrument channel until half of the brush is inserted to the instrument channel inlet.
 - 2- Rotate the channel-opening cleaning brush once.
 - 3- Pull out the channel-opening cleaning brush, and clean the brush with fingertips in the detergent.
 - 4- Repeat the step 2 and 3 at least 9 times to ensure that no debris is left.

- **To brush air/water valve (inapplicable to VET-3512), suction valve and biopsy valve**
 - 1- Scrub the air/water valve (inapplicable to VET-3512) and the suction valve thoroughly with the channel-opening cleaning brush until all the debris is removed.
 - 2- Scrub the inside and opening of the biopsy valve thoroughly with the channel-opening cleaning brush until all debris is removed.

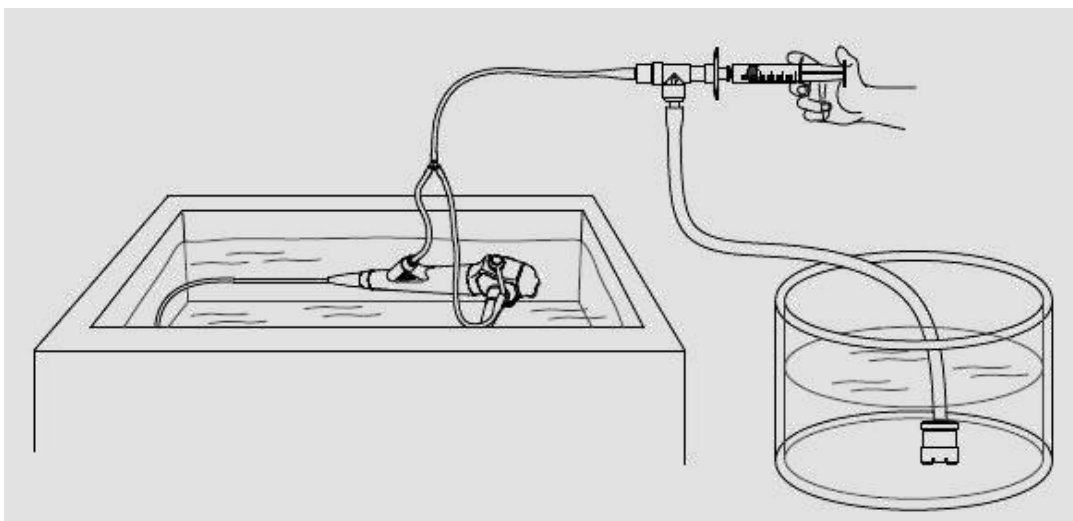
04 Operation

4 Inject detergent into each channel

- 1- Block the suction cylinder, air/water cylinder(inapplicable to VET-3512), instrument channel with the channel plug; block the air/water supply connector with the sealing plug; connect the injection tube to the endoscope connector; ensure that the distal end of the endoscope is thoroughly immersed in the detergent.
- 2- Use a 50ml syringe to respectively inject detergent into the air/water channel (inapplicable to VET-3512) and suction cylinder of the endoscope through the injection tube at least 15 times (750ml) (as shown in figure 4.7.3.2).
- 3- Disconnect all channel plugs and the injection tube from the endoscope and immerse them into the detergent.



VET -6010, VET-9833HD, VET -9830HD, VET -1335HD, VET -8028HD, VET -8015HD, VET-9215HD, VET-1330HD



VET-3512

(Figure 4.7.3.2)

04 Operation

- 4- Cover the manual cleaning tank with a sealing cover to reduce detergent volatilization.
- 5- Immerse the entire endoscope, air/water valve (inapplicable to VET-3512), suction valve, biopsy valve and all ancillary components in accordance with the immersion time, temperature, and detergent concentration recommended by the manufacturer.

4.5.5 Rinsing

- 1 Transfer the cleaned endoscope, air/water valve (inapplicable to VET-3512), suction valve and biopsy valve to the rinse tank.
- 2 Connect the suction cylinder, air/water cylinder (inapplicable to VET-3512), instrument channel inlet with the channel plug; block the air/water supply connector with the sealing plug; connect the injection tube to the endoscope connector as shown in figure 4.7.3.2.
- 3 Use a 50ml syringe to respectively inject sterile water into the air/water cylinder (inapplicable to VET-3512) and suction cylinder of the endoscope through the injection tube at least 15 times (750ml)
- 4 Wash the outer surface of the endoscope, air/water valve (inapplicable to VET-3512), suction valve and the biopsy valve with flowing water; place them in a sterile container.
- 5 Use a 50ml syringe to respectively inject air into the air/water cylinder (inapplicable to VET-3512) and suction cylinder of the endoscope through the injection tube at least 15 times (750ml).
- 6 Disconnect all ancillary components from the endoscope.
- 7 Dry the outer surface of the endoscope, the air/water valve (inapplicable to VET-3512), the suction valve and the biopsy valve with a clean lint-free cloth.

4.5.6 Disinfection of the endoscope

WARNING

- The immersion disinfection time of endoscope should be no less than 45 minutes; but do not immerse the endoscope for excessively extended time, since frequent or long-time immersion in the disinfectant may increase inner humidity of the endoscope and destroy imaging system, which results in lens blur or damage to the sensor.
- It is strictly prohibited to disinfecting the endoscope by ultrasonic cleaner or autoclave.

NOTE

Ensure that the syringe connector of the injection tube is completely immersed in the disinfectant and all channels of the endoscope are filled with disinfectant.

04 Operation

- 1 Transfer the dried endoscope, air/water valve(inapplicable to VET-3512), suction valve and the biopsy valve to the disinfection tank, and immerse them in the disinfectant.
- 2 Block the suction cylinder, air/water cylinder(inapplicable to VET-3512), instrument channel inlet with the channel plug; block the air/water supply connector with sealing plug; connect the injection tube to the endoscope connector as shown in figure 4.7.3.2; ensure that the endoscope is thoroughly immersed in the disinfectant.
- 3 Use a 50ml syringe to respectively inject disinfectant into the air/water cylinder (inapplicable to VET-3512)and suction cylinder of the endoscope through the injection tube at least 15 times (750ml).
- 4 Disconnect all channel plugs and the injection tube from the endoscope and immerse them in the disinfectant.
- 5 If bubbles appear on the endoscope surface or the tools, wipe the bubbles off with a clean lint-free cloth.
- 6 Cover the disinfection tank with a sealing cover to reduce disinfectant volatilization.
- 7 Immerse the entire endoscope, air/water valve(inapplicable to VET-3512), suction valve, biopsy valve and all cleaning and disinfecting accessories in accordance with the disinfection immersion time, temperature, and disinfectant concentration recommended by the manufacturer.
- 8 Replace the gloves and use a 50ml syringe to respectively inject air into the air/water cylinder(inapplicable to VET-3512) and suction cylinder of the endoscope through the injection tube at least 15 times (750ml).

4.5.7 Rinsing after disinfection

- 1 Transfer the endoscope, air/water valve(inapplicable to VET-3512), suction valve and biopsy valve into the final rinse tank.
- 2 Block the suction cylinder, air/water cylinder(inapplicable to VET-3512), instrument channel inlet with the channel plug; block the air/water supply connector with sealing plug, connect the injection tube to the endoscope connector as shown in figure 4.7.3.2.
- 3 Use a 50ml syringe to respectively inject sterile water into the air/water cylinder (inapplicable to VET-3512)and suction cylinder of the endoscope through the injection tube at least 15 times (750ml).
- 4 Wash the outer surface of the endoscope, air/water valve(inapplicable to VET-3512), suction valve and the biopsy valve with flowing water; place them in a sterile container.
- 5 Use a 50ml syringe to respectively inject air into the air/water cylinder (inapplicable to VET-3512)and suction cylinder of the endoscope through the injection tube at least 15 times (750ml).
- 6 Disconnect the injection tube and connect the sterile suction tube on the suction pump to the suction connector of the endoscope; turn on the suction pump to aspirate air at least 15s.

04 Operation

- 7 Turn off the suction pump and disconnect suction pump and all ancillary components from the endoscope.
- 8 Dry the surface of the endoscope, the air/water valve(inapplicable to VET-3512), the suction valve and the biopsy valve with a sterile lint-free cloth.

4.5.8 Drying

NOTE

- Alcohol is flammable and must be used safely.

- 1 Place the endoscope, the air/water valve(inapplicable to VET-3512), the suction valve and the biopsy valve on the sterile towel; replace sterile towel every 4hours.
- 2 Block the suction cylinder, air/water cylinder, instrument channel inlet with the channel plug; block the air/water supply connector with sealing plug, connect the injection tube to the endoscope connector.
- 3 Use a 50ml syringe to respectively inject 75%~95% alcohol into the air/water cylinder (inapplicable to VET-3512)and suction cylinder through the injection tube at least 15 times (750ml).
- 4 Use a 50ml syringe to respectively inject air into the air/water cylinder (inapplicable to VET-3512)and suction cylinder through the injection tube at least 15 times (750ml).
- 5 Dry the outer surface of the endoscope, the air/water valve(inapplicable to VET-3512), the suction valve and the biopsy valve with a sterile lint-free cloth.
- 6 Dry the inner surface of air/water cylinder(inapplicable to VET-3512), suction cylinder and instrument channel inlet with sterile cotton swab.
- 7 Install the water/air valve(inapplicable to VET-3512), suction valve and the biopsy valve on the endoscope.

4.5.9 Other accessories cleaning, disinfection and sterilization

CAUTION

- All accessories included are NOT immune to autoclave sterilization.

- 1 Refer to respective instruction manuals of accessories to conduct cleaning and disinfection procedures.
- 2 Ultrasound cleaning is the ideal method to implement the particle-level physical cleaning. If possible, sterilize these accessories with ethylene oxide gas. If sterilization is not available, please conduct immersion disinfection, rinse and dry them completely.

04 Operation

- 3 For the small cup of the biopsy forceps, use silicone oil spray or liquid lubricant to lubricate and protect it to prevent from clinging.

4.6 Maintenance, shipping and storage of the endoscope

CAUTION

- The packaged video endoscope should be stored in a clean, cool and dry room with relative humidity not greater than 80% and good ventilation. Keep the endoscope from intense sunlight, liquid contamination, chemicals, and explosive gas.

- 1 Storage and transportation environment requirement:
 - Ambient temperature range : -40°C - $+55^{\circ}\text{C}$
 - Relative humidity range : 10% - 95%
 - Atmospheric pressure range : 500hPa - 1060hPa
- 2 Before storage, the video endoscope must be thoroughly dry and maintain as straight as possible; keep the insertion tube away from external force. The power supply switch of the imaging processor must be turned off before storage. Ensure the power supply cord is disconnected.
- 3 The carrying case is not for storage; do not use it to store the endoscope in case of contamination.
- 4 All non-natural damaged, for instance, damage of insertion tube resulted from biting, and malfunctions caused by operators or purchasing unit's unauthorized disassembly, are not warranted by AOHUA in any manner.

05 Troubleshooting

5.1 Troubleshooting

If any of the following irregularities is observed, do not use the endoscope and solve the problem as described in the following table.

If the problem is not included in this section or cannot be resolved by provided countermeasures, contact with AOHUA.

Irregularity description	Solution
Unclear image or signal interference	Check if the voltage is stable and the lens surface is attached with dirt.
Water drop or stripe observed	Contact AOHUA.
No or insufficient illumination	Check the built-in light source and the endoscope connector.
Insufficient angulation or angulation failure	Check if the light fiber is broken. Contact AOHUA.
Angulation lock failure	Contact AOHUA.
Instrument fails to access the instrument channel	Check if there is foreign object in the instrument channel.
Insufficient air/water feeding or air/water feeding failure	Check the connection between the endoscope connector and imaging processor, water bottle assembly, air/water supply connector; check the air pump.
Insufficient suction or suction failure	Check the suction pump, suction tube, suction connector and instrument channel.
Needlelike protrusions, fractures or dents observed on the surface of the insertion tube.	Contact AOHUA.
Fractures observed on light guide lens or objective lens	Contact AOHUA.

05 Troubleshooting

5.2 Returning the endoscope for repair

CAUTION

- AOHUA is not responsible for any injuries to the human or damages to the endoscope resulted from repair activities attempted by non-AOHUA personnel.
- If any spare parts or electronic components of the VET series endoscope are damaged, only use the spare parts or electronic components approved by AOHUA. AOHUA is not responsible for any damages caused by using unapproved spare parts or electronic components.

When returning the endoscope for repair, send the endoscope with a description of the malfunction or damage and the name and telephone number of the individual at your site who is the most familiar with the problem. Also, include the warranty card.

06 Other Announcements, Product Contraindications

6.1 Other Announcements

CAUTION

- To prevent infection and ensure the safety of all maintenance personnel, ensure to clean and strictly disinfect the video endoscope before sending the defected endoscope back to Aohua for repair. If the endoscope is used by any HA positive patient or patient with other infectious diseases, inform the personnel of AOHUA in advance.

- 1 When insert, withdraw or store the video endoscope, ensure the angulation lock has been freed.
- 2 The internal structure of video endoscope is very delicate, do not forcibly bend, fold, twist or collide the endoscope.
- 3 Do not store the video endoscope in a high temperature, humid, and dusty environment.
- 4 If the video endoscope is exposed in X-ray, aging and color change of the internal sensor and other delicate components may result; limit the usage of X-ray to the minimum level.
- 5 Do not align the distal end of the video endoscope with strong light (e.g., sunlight, emergent light of light source, etc.). Damage may be caused to the light-sensitive and precise device.
- 6 If the video endoscope does not function normally, stop using it immediately and shut OFF the grid power supply and contact AOHUA timely.
- 7 Comply with relevant waste disposition regulations to dispose the endoscope and its internal components needed to be discarded.

6.2 Contraindications

No direct related adverse event is known.

06 Other Announcements, Product Contraindications

6.3 Manufacture Date

CAUTION

- Daily check if the technical requirements of the endoscope are met before using; contact Aohua when nonconformity is observed.

- 1 Product Manufacture Date: refer to the product nameplate.
- 2 Product service life: 2 years

Warranty Card of Product

● **User's Information (fill out it in detail)**

User's Name			
Specific Address		Zip Code	
Product Name		Product No.	
Purchase Place		Purchase Date	
Invoice No.		Telephone	

The warranty card must be sent back to Aohua within one month after purchase of this product.

Shanghai AOHUA Photoelectricity Endoscope Co., LTD.

Warranty policy:

Provide the original invoice (or copy) of the product and contact Aohua maintenance center. Be sure to send the warranty card of the product within one month after purchasing this product.

Warranty conditions:

Within half year after purchasing, any quality failure of this product is warranted by Aohua free of charge.

The following cases are not covered by the warranty:

1. Any damage caused by the improper operation or storage of the user.
2. Any damage caused by the unauthorized disassembly of the user.

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