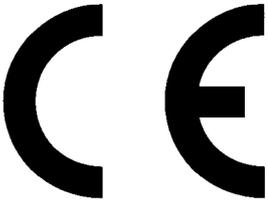


**PENTAX®**

OWNER'S MANUAL

VIDEO PROCESSOR

**EPK-700**



The CE mark guarantees that this product complies with the EU directive for safety requirements.  
Das CE Zeichen garantiert, daß dieses Produkt die in der EU erforderlichen Sicherheitsbestimmungen erfüllt.  
Le logo CE certifie que ce produit est conforme aux normes de sécurité prévues par la Communauté Européenne.  
Il marchio Ce assicura che questo prodotto è conforme alle direttive CE relative alla sicurezza.  
La marca CE asegura que este producto cumple todas las directivas de seguridad de la CE.  
A marca CE garante que este produto cumpre todas as normas de segurança previstas pela Comunidade Europeia  
CE-märkningen garanterar att denna produkt uppfyller EU-direktivens krav på säkerhet.  
Het CE-teken garandeert dat dit product voldoet aan de binnen de EU vereiste veiligheidsbepalingen.  
CE-merkintä on takeena siitä, että tämä tuote vastaa EU:ssa voimassa olevia ja direktiivin tarkoittamia turvallisuusmääräyksiä.  
Το σήμα CE εγγυάται ότι το προϊόν αυτό πληροί τους κανονισμούς ασφαλείας που απαιτούνται στην ΕΕ.

## **INTENDED USE:**

This electro-medical device (Video Processor) is intended to be used for endoscopic diagnosis and treatment.

Together, this Video Processor and Pentax video endoscope provide optical visualization of, and/or therapeutic access to, various body cavities, organs and canals. Do not use this device for any purpose other than that for which it has been designed.

This device should only be used by physicians who have thoroughly studied all the characteristics of this device and who are familiar with the proper techniques of endoscopy.

## **IMPORTANT**

*Read this manual before operating and keep this book for future reference.*

This manual describes the recommended procedures for inspecting and preparing the EPK-700 Video Processor prior to its use and the care and maintenance after its use. It does not describe how an actual procedure is to be performed, nor does it attempt to teach the beginner the proper technique or any medical aspects regarding the use of the equipment. Failure to follow the instructions in this manual may result in damage to and/or malfunction of the equipment.

Do not use this device for any other purpose than that for which it has been designed.

If you have any questions regarding any of the information in this manual or concerns pertaining to the safety and/or use of this equipment, please contact your local Pentax representative.

## **CAUTION:**

Federal (USA) law restricts this device to sale by, or on the order of a physician or other appropriately licensed medical professional.

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## 1 Safety precautions – important

The following precautions should always be taken when using electro-medical equipment to ensure safety to all parties involved – user(s), patient(s), etc.

Please study and comply with this owner’s manual.

### 1-1 Training

1. This equipment should only be used under the supervision of a trained physician in a medical facility. Do not use in other locations or for any other purposes than the intended application.

### 1-2 Installation

1. This equipment should NEVER be installed or used in areas where the unit could get wet or be exposed to any adverse environmental conditions such as high temperature, humidity, direct sunlight, dust, salt, etc., which could adversely affect the equipment.
2. This equipment should NEVER be installed or used in the presence of flammable or explosive gases or chemicals.
3. This equipment should NEVER be installed, used or transported in an inclined position nor should it be subjected to impact or vibration.
4. For safety reasons, this equipment must be properly grounded. (This equipment should be connected to a three-pin hospital grade socket outlet in U.S.A. or Canada.)
5. Ensure that all power requirements are met and conform to those specified on the name plate located on the rear panel.
6. Do not block the air intake vent of this equipment.
7. Do not allow the power cord to become twisted, crushed or pulled taut.
8. When using an isolating transformer for any ancillary equipment, ensure the power requirements of the devices do not exceed the capacity of the isolating transformer. For further information, contact your local Pentax distributor.

### 1-3 Prior to use

1. Confirm that this equipment functions properly and check the operation of all switches, indicators, etc.
2. To prevent electric shock when used with endoscopes, this equipment is insulated (type BF electro-medical equipment). Do not allow it to be grounded to other electrical devices being used on the patient. Rubber gloves should always be worn to prevent grounding through user(s).
3. Confirm that other devices used in conjunction with this equipment function properly and that these other devices will not adversely affect the operation or safety of this equipment. If any component of the endoscopic system is not functioning properly, the procedure should not be performed.

4. Check and confirm that all cords and cables are connected correctly and securely and are not damaged.

### 1-4 During use

1. To prevent electric shock, the endoscope and/or any other ancillary device should NEVER be applied directly to the heart.
2. Make sure that no contact is made between the patient and this equipment.
3. To avoid damage to the luminous display and flat touch switches, do not press any keys with sharp or pointed objects.
4. The light emitted by the (Metal Halide) lamp is extremely intense. Avoid looking directly at the light exiting the endoscope and/or this equipment.
5. To protect the users’ eyes and avoid risk of thermal injury during an endoscopic examination, use only the minimum amount of brightness required.
6. During clinical procedures, avoid unnecessary prolonged use which could compromise patient/user safety.
7. Continually monitor this equipment and the patient for any signs of irregularities.
8. In the event that some type of irregularity to the patient or this equipment is noted, take the appropriate action to ensure patient safety.
9. If the operation of any of the components of the endoscopic system fails during the procedure and the visualization of the procedure is lost or compromised, place the endoscope in the neutral position and slowly withdraw it.
10. This equipment should only be used according to the instruction and operating conditions described in this manual. Failure to do so could result in compromised safety, equipment malfunction or instrument damage.

### 1-5 After use

1. Refer to the operating instructions supplied with all the components of the endoscopic system to establish the right order in which components should be turned off. Some peripheral devices may have to be turned off first to avoid compromising their operation.
2. Wipe all surfaces clean with gauze slightly moistened with alcohol.
3. Do not allow connector interfaces or ventilation openings to become wet or splashed with liquids.

# **SAFETY PRECAUTIONS – IMPORTANT**

## **1-6 Storage**

1. This equipment should NEVER be stored in areas where the unit could get wet or be exposed to any environmental conditions such as high temperature, humidity, direct sunlight, dust, salt, etc., which could adversely affect the equipment.
2. This equipment should NEVER be stored in the presence of flammable or explosive gases or chemicals.
3. This equipment should NEVER be stored or transported in an inclined position, nor should it be subjected to impact or vibration.
4. Cords, accessories, etc., should be cleaned and neatly stored.
5. This equipment should be maintained in a clean condition during storage and be ready for subsequent use.

## **1-7 Service**

1. Alterations/modifications to the equipment should NEVER be made. Repairs should only be performed by an authorized Pentax service facility.
2. The lamp should be replaced by an authorized Pentax service facility.

## **1-8 Maintenance**

1. The operation and safety of this equipment and any applicable accessories should be periodically inspected.

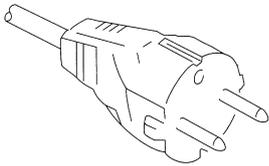
## **1-9 Disposal**

1. The equipment should be returned for disposal to Pentax. Contact your local Pentax representative or service facility.

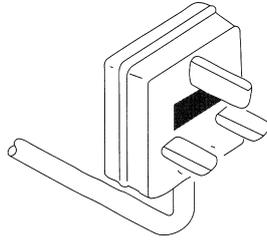
# SAFETY PRECAUTIONS – IMPORTANT

## Power requirements

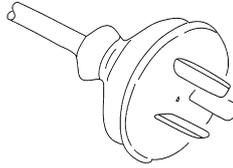
Check the standard power plug configurations that are used in your country. If the appropriate power cord is not included in your product, notify your local Pentax distributor.



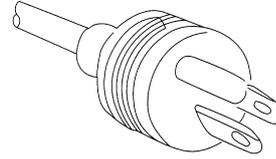
Continental Europe  
(Use an SEV approved  
plug for Switzerland)



U.K.



Australia  
and  
New Zealand



U.S.A and  
Canada  
(Hospital Grade)

## Symbols on marking



Alternating current



Type BF applied part (Safety degree specified by IEC 60601-1)



OFF (Power: disconnection from mains)



ON (Power: connection to the mains)



Attention, consult Owner's Manual



Protective earth (ground)

## Conventions

The following conventions have been established in the text of this manual to aid in the identification of potential hazards during operation;



**WARNING**

Could result in death or serious injury.

**CAUTION**

May result in minor or moderate injury or property damage.

**NOTE**

May result in property damage. Also, advises owner/operator about important information on the use of this equipment.

# SPECIFICATIONS

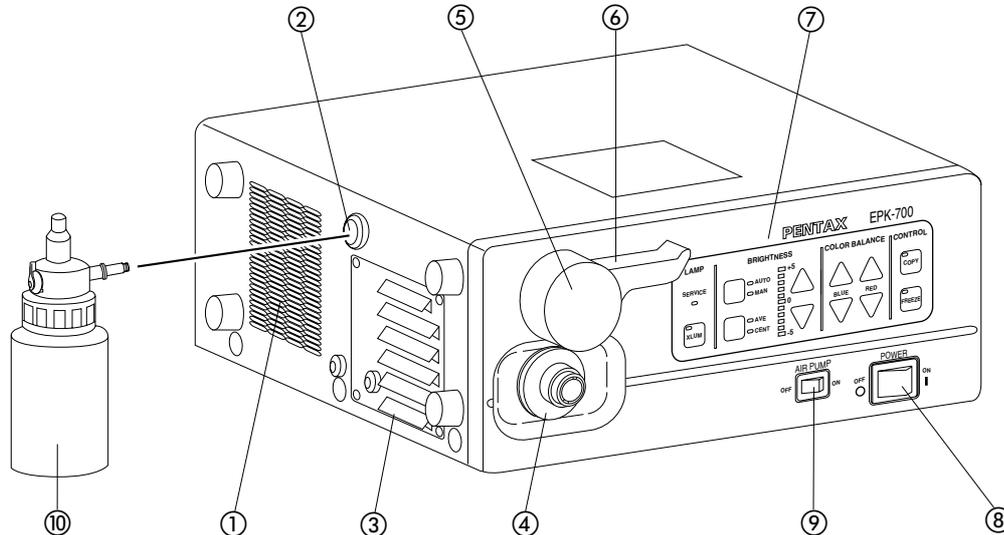
## 2 Specifications

Item	Specification	For USA & Canada	Europe & Oceania
Power Requirements	Voltage	120 VAC (NTSC MODEL)	230 V (PAL MODEL)
	Frequency	50 – 60 Hz	
	Power consumption	1.5 A	0.8 A
	Voltage fluctuation	+/- 10%	
Operating Environment	Temperature	10 ~ 40 °C	
	Relative humidity	30 ~ 85 %	
	Air pressure	700 – 1060 hPa	
Storage/Transport Environment Temperature	Temperature	-20 ~ 60 °C	
	Relative humidity	0 ~ 85 %	
	Air pressure	700 ~ 1060 hPa	
Illumination	Lamp	Metal Halide Lamp MSCR 70-50E	
	Lamps average life span	200 hours, continuous use	
	Colour temperature	≤ 12,000 K	
	Lighting format	Switching regulator with continuous illumination	
	Brightness control	Selection – Automatic or Manual	
	Automatic iris	Servo type	
Scope Compatibility	Pentax colour video endoscopes	NTSC Model	PAL Model
	Pentax fiberscopes	With use of appropriate fiberscope video adapter module	
		NTSC Modell	PAL Modell
	Other manufacturers' fiberscopes	With use of appropriate fiberscope video adapter module and appropriate eyepiece/light guide adapters	
Air Feed System	Air pump system	Electro-magnetic vibrator system	
	Pressure setting at zero flow rate	0.38 ~ 0.42 kg/cm <sup>2</sup> (37 ~ 41 kPa)	0.42 ~ 0.63 kg/cm <sup>2</sup> (41 ~ 62 kPa)
	Standard air feed volume at inlet of water bottle	3.1 ~ 5.3 L/min	4.5 ~ 8.0 L/min
Water Feed System	Water bottle assembly pressurized by pump	Bottle capacity = 250 mL	
Brightness Control System	Automatic Manual	Selection - Average or Centre +/- 5 step adjustment	
Colour System	Colour correction	Red +/- 5 steps Blue +/- 5 steps	
Freeze Function	Live video image provided when freeze mode activated		
Cooling	Forced air cooling		
Video Outputs	2 sets: RGBS (NTSC or PAL), 9-pin D-Sub female connectors 2 sets: Composite (NTSC or PAL), BNC connector 2 sets: Separate Video (Y/C), 4-pin female connector 1 set: Computer, 9-pin D-Sub female connector		
Classification as Electro-Medical Equipment	Type of protection against electric shock	Class I equipment, three-pin plug	
	Degree of protection against electric shock	BF Type (Body Floating), using insulated endoscope. Use on heart is prohibited	
	Degree of explosion proofing	Do not use in potentially flammable surroundings	
Audible Noise	Sound pressure level	< 70 dB (A) (Based on ISO 7779)	
Electro-Magnetic Compatibility		CLSPR1 1	EN 60601-1-2
Compliance	Designed in accordance with	UL 2601-1	EN 60601-1
Size	Dimensions	Width = 380 mm Height = 153 mm Depth = 405 mm	
Weight		Main Body = 13.5 kg (29.8 lbs)	

## 3 Nomenclature, controls and functions

### 3-1 EPK-700 Video processor

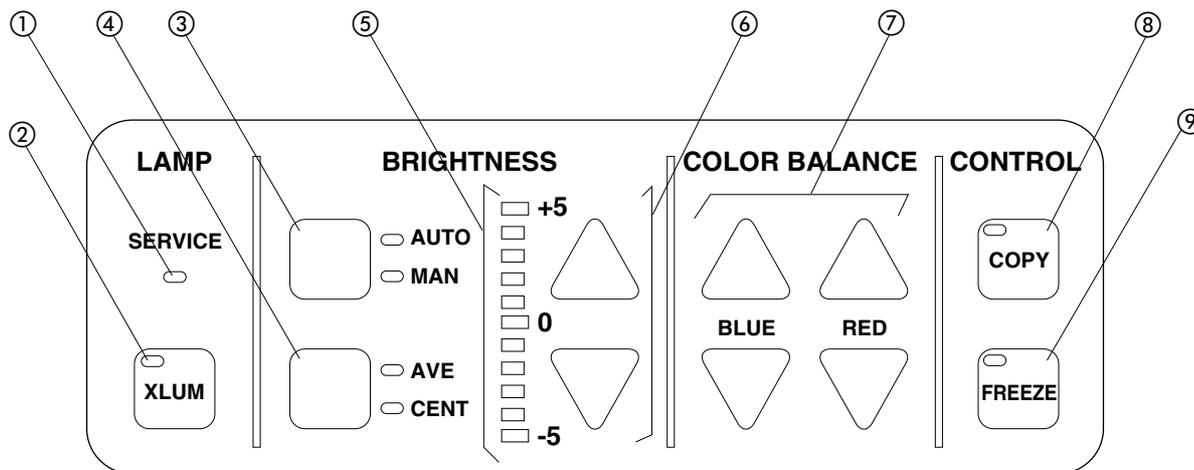
#### 3-1-1 Main body



No.	Name	Function
①	Ventilation Grid	Allows for adequate ventilation and cooling lamp/unit.
②	Water Bottle Receptacle	Accepts air pipe from PENTAX water bottle assembly.
③	Lamp Cartridge Access	Provides access to replace lamp cartridge.
④	Fiber optic Attachment	AE-P1 adapter for standard Pentax endoscopes. Port accepts video endoscope or fibrescope fibre optic. Adapter can be changed for use as light source for other manufacturers' endoscopes or for use with fibrescope video adapter module.
⑤	Endoscope Electrical Connector	Accepts Colour video endoscope electrical connector or fibrescope video adapter module electrical connector. <b>CAUTION - Always turn OFF the power switch BEFORE connecting/disconnecting an endoscope. Connecting/disconnecting the endoscope while the processor is ON could damage the endoscope.</b> <b>CAUTION - When you take the fiber optic out of this socket, the sleeve of the fiber optic might be hot. Take care when removing the fiber optic from the socket.</b>
⑥	Scope Locking Lever	Open the lever before adjusting or removing an endoscope. After connecting the endoscope to the processor, close the lever.
⑦	Front Panel	See the section 3-1- (2)
⑧	Power Switch Lamp Switch	The processor and the lamp are turned I : ON, or O : OFF. Switch lights green when switched ON. Switch should not be hit with object like endoscope fiber optic, when being switched ON or OFF. <b>NOTE - When power is turned OFF, wait 60 seconds before turning power switch ON. Failure to do so may cause a malfunction.</b> <b>NOTE - Before turning the EPK-700 power ON, ensure the air flow vents are not obstructed.</b>
⑨	Air Pump Switch	Selects air pump ON/OFF. LEDs or switches light to indicate which is selected.
⑩	Water Bottle	See section 3-2.

# NOMENCLATURE, CONTROLS AND FUNCTIONS

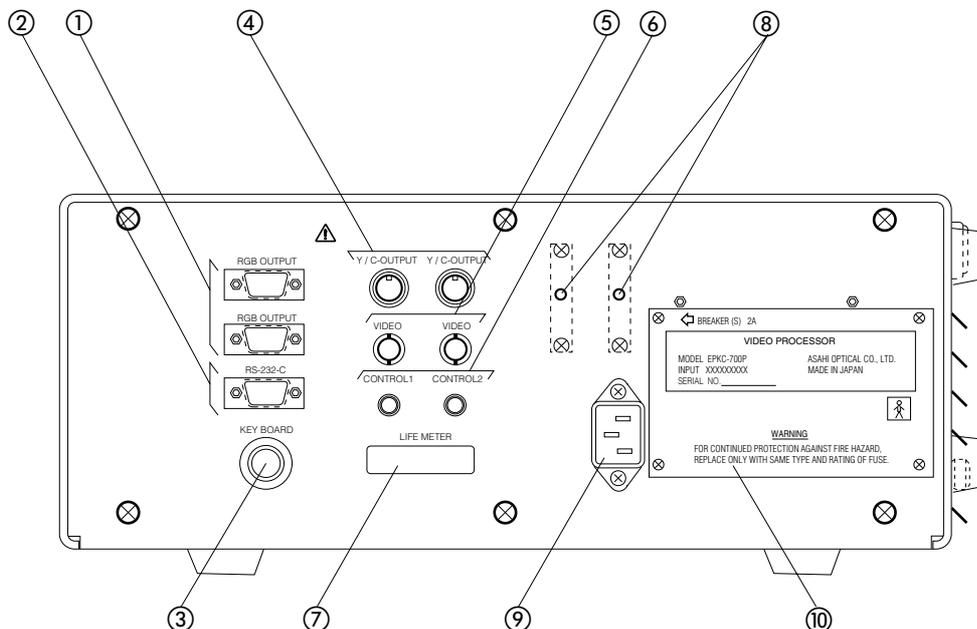
## 3-1-2 Front panel



No.	Name	Function
①	Lamp Service	The LED lights when the lamp is NOT ignited after power ON. <b>CAUTION - Lamp to be replaced only by Pentax service facilities or authorised personnel.</b>
②	X LUM Switch	Maximizes light amount to enable the user to identify the position of the distal end of an endoscope. Used for transillumination or when processor is used as a conventional light source with fibrescopes. When activated, the LEDs on 3, 4 and 5 go out and become automatically invalid.
③	AUTO/MAN Select Switch	Selects AUTO (automatic) or MAN (manual) brightness control mode. When MANUAL is selected, AVE/CENT SWITCH light goes OUT and becomes automatically invalid.
④	AVE/CENT Select Switch	Selecting AUTO will require selection of light measuring method, AVERAGE or CENTER. AVERAGE: the brightness level is adjusted with respect to an averaging of the brightness of the video signal. CENTER: the brightness level is adjusted with respect to the brightness of the center of the screen.
⑤	Brightness Indicator	Indicates the brightness level selected by the user.
⑥	Brightness Adjustment Switch	Controls the brightness level. Δ increases the brightness level. ∇ decreases the brightness level.
⑦	Colour Balance Switch	Adjusts the video image colour, Blue or Red by +/- 5 steps. The balance level is shown at the bottom off the screen.
⑧	Copy Switch	Depressing the switch will automatically freeze the image, activate a hard copy system to capture the image.
⑨	Freeze Switch	Freezes the image on the main screen while the sub-screen displays the live endoscopic image.

# NOMENCLATURE, CONTROLS AND FUNCTIONS

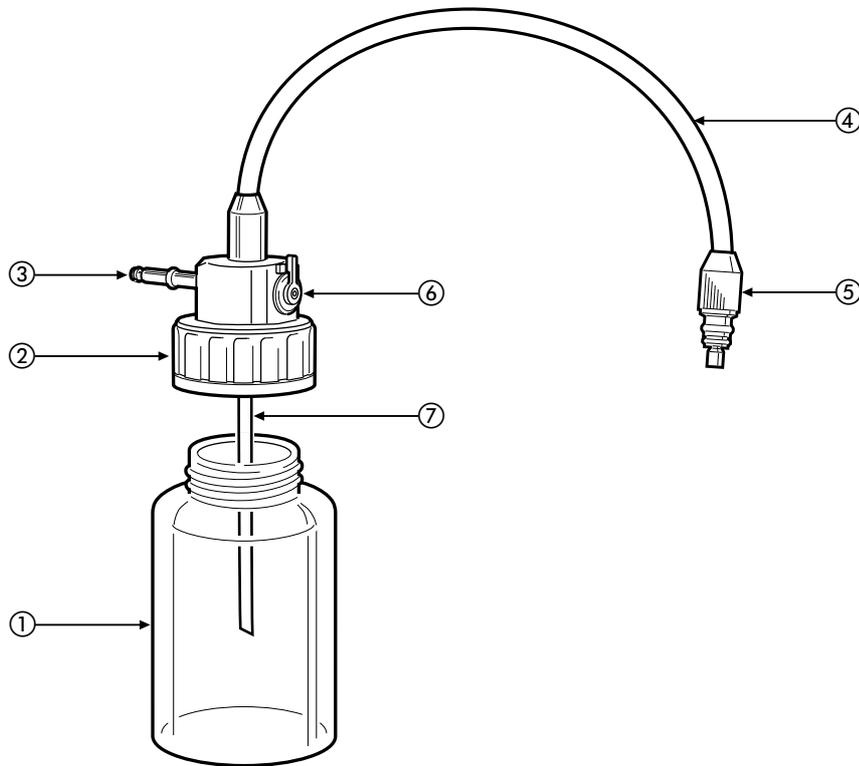
## 3-1-3 Rear panel



No.	Name	Function
①	RGB Video Output	NTSC or PAL RGB video out connectors, 9-pin D-sub female connectors.
②	Interface Connector	For RS-232C interface.
③	Keyboard Connector	Accepts the keyboard supplied by Pentax.
④	Separated Video Output	Y/C video out connector (4-pin S connector), two (2) outputs on rear panel
⑤	Composite Video Output	NTSC or PAL composite video out connector, BNC type connector, two (2) outputs on rear panel.
⑥	Control	Is activated by either the endoscope control buttons (C, V) or the processor front panel copy switch to control peripherals.
⑦	Lamp Life Meter	Indicates hours for (Metal Halide) lamp installed in video processor. The lamp life meter should be replaced when the (Metal Halide) lamp is replaced.
⑧	Breaker	Activates with a red button protruded out when abnormal current flows. <b>CAUTION - When the circuit breaker is activated, try first to reset. If the circuit breaker is activated again, when the processor is turned ON, do NOT use the processor and return it to Pentax.</b>
⑨	Power Input Socket	Accepts AC power cord.
⑩	Rating Plate	Displays unit model number, serial number, power requirements.

# NOMENCLATURE, CONTROLS AND FUNCTIONS

## 3-2 Water bottle assembly, Model OS-H2



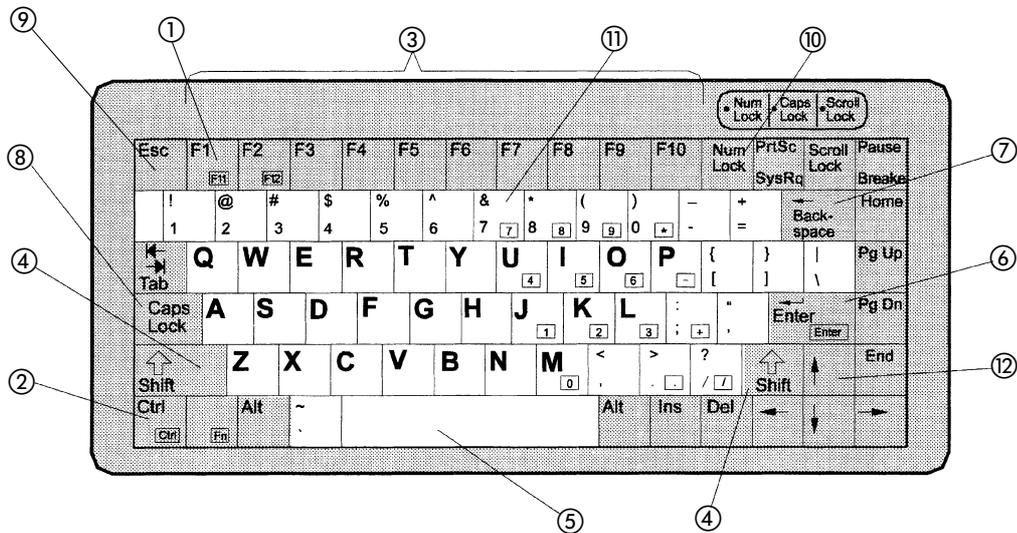
No.	Name	Function
①	Bottle	Holds sterile water for procedure. (use up to 2/3's full)
②	Water Bottle Cap Assembly	Must be firmly secured to bottle to prevent air leakage.
③	Air Pipe Stem	Inserts into video processor water bottle receptacle.
④	Air/Water Hose	Contains (2) independent tubes - 1 for air, 1 for water.
⑤	Air/Water Connector	Inserts into Air/Water socket of endoscope umbilical connector.
⑥	Air/Water-Drain Lever	Must be set to upright (A/W) position for delivery of air and water.
⑦	Water Feeding Stem	Channel for water to be displaced from bottle and into scope.

### NOTE

*If the water bottle assembly has been mishandled, the water feeding tube inside the Air/Water hose may be disconnected at the A/W connector for the endoscope. To test, remove the cap assembly and using a syringe, inject water into the water feeding stem. If the water comes out of both the center hole of the A/W connector and the series of holes around the center hole, the water feeding tube is disconnected. Use another water bottle assembly.*

# NOMENCLATURE, CONTROLS AND FUNCTIONS

## 3-3 Keyboard



**NOTE**

FOR EUROPE Flat type keyboard with appropriate CE marking should be used with PAL model.

**NOTE**

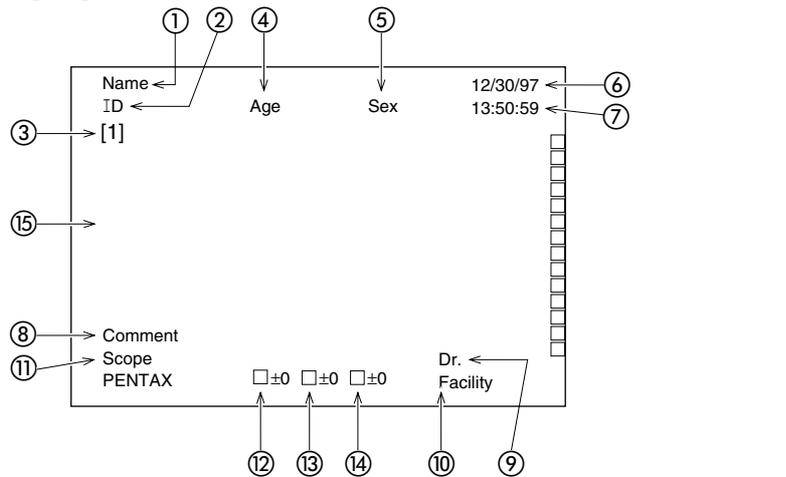
The Keyboard supplied with your EPK-700 in North America may differ slightly from the one described here. All keyboards will have similar functionality, only key positions and select indicators may vary.

No.	Name	Function
①	Function Keys	Refer to FUNCTION KEY INDEXES.
②	Ctrl (Control) Key	Used to access control/function menus.
③	Alphanumeric Keys	Include keys for letters, numbers and special characters (brackets, commas, etc.) as well as command keys (Control, Shift, Enter etc.).
④	Shift Keys	When Caps Lock is OFF, holding the Shift key and pressing alpha - numeric key will be typed to the monitor screen as a capital letter or the special character pictured on the key.
⑤	Space Bar	Gives a space and deletes a previously typed character.
⑥	Enter Key	Moves cursor to the next field.
⑦	Back Space Key	Moves cursor left or back and deletes the character.
⑧	Caps Lock Key	Caps Lock indicator will light to show Caps Lock selected. When Caps Lock is ON, all alpha keys will be typed to the monitor screen as capitals.
⑨	Esc (Escape) Key	Returns to the normal mode.
⑩	Num Lock Key	Locks function of number keys to print numbers only. Status indicator will light when selected.
⑪	Number Keys	Can be used for numerical data entry. Sometimes preferred over use of lower case number keys in the alpha key grouping.
⑫	Cursor Movement Keys	Up, Down, Left and Right arrows move the cursor to each direction when Num Lock is OFF.

# NOMENCLATURE, CONTROLS AND FUNCTIONS

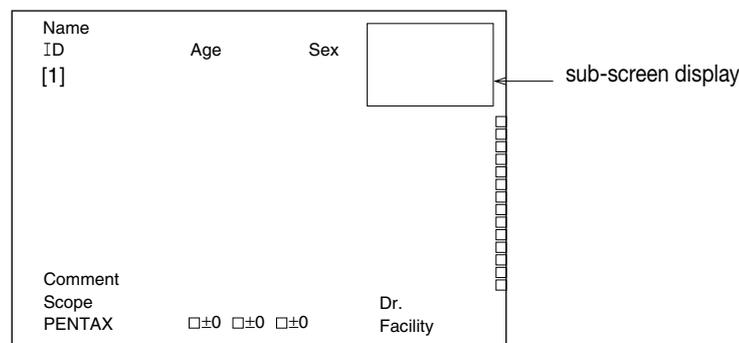
## 3-4 Monitor display screen

### 3-4-1 Normal



No.	Name	Function
①	Name	Alphanumeric field, 24 characters long.
②	ID	Alphanumeric field, 12 characters long.
③	ID Number	Numeric field 1-15
④	Age	Alphanumeric field, 3 characters long.
⑤	Sex	Alphanumeric field, 1 character long.
⑥	Date	Numeric field, Month/Day/Year
⑦	Clock Stopwatch	24h format, Hours: Minutes: Seconds.
	Stopwatch	Numeric display, [Hours: Minutes: Seconds] appears only in case of stopwatch function activated.
⑧	Comment	Alphanumeric field, 40 characters long.
⑨	Doctor's Name	Alphanumeric field, 12 characters long.
⑩	Facility	Alphanumeric field, 12 characters long.
⑪	Scope Name	When video endoscope is connected to the EPK-700, the model name will be displayed. Alphanumeric field, 10 characters long.
⑫	Blue Colour Level Value	Numeric display of Blue colour level +5 to -5.
⑬	Red Colour Level Value	Numeric display of Red colour level +5 to -5.
⑭	Brightness Level Value	Numeric display of brightness level +5 to -5.
⑮	Main Screen	Endoscopic image will be displayed on the monitor screen.

### 3-4-2 Freeze (sub-screen display)



Endoscopic image will be displayed in this area of the monitor screen when freeze function is activated.

#### NOTE

Appearance of sub-screen covers Date and Clock.

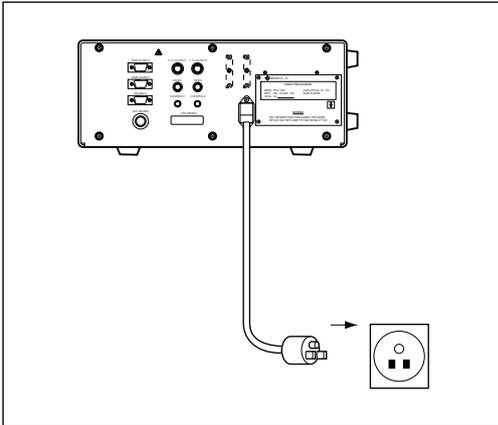
# PREPARATION AND SAFETY CHECK

## 4 Preparation and safety check

### 4-1 Preparation

#### 4-1-1 Setting up the EPK-700

1. Place the EPK-700 video processor on a stable, level surface (trolley, bench, stand, etc. ...).



#### NOTE

- Avoid places where the EPK 700 may be splashed with liquid.
- **DO NOT use in any environment with explosive or flammable gases.**
- Do not block the venting louvres on the sides of the video processor.
- When moving the EPK-700, do not hold the endoscope locking lever.

2. Make sure the power switch is OFF.
3. Plug the power cord into the power source using the three-pin plug supplied with the unit.
4. Ensure the keyboard is properly connected.

#### CAUTION

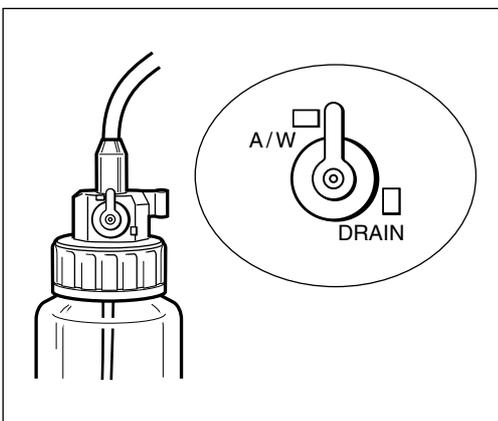
To prevent electric shock, connect power cords of ancillary equipment to medical isolating transformers.

#### NOTE

When using medical isolating transformers, be sure to check that the total power consumption of all the devices does not exceed the isolating transformers' power ratings. Make sure that the power cord is connected to the power line (vs) mains (8 rit) with a three-pin plug (In the U.S.A. use UL2601-1 rated isolating transformers and/or power strips only).

#### 4-1-2 Connecting the water bottle

1. Fill the water bottle approximately 2/3 full with sterile water.
2. Screw the water bottle cap assembly firmly to the water bottle.



#### NOTE

Do not over tighten the water bottle cap

3. Set the Air/Water-Drain lever to A/W.
4. Insert the water bottle air-pipe stem into the EPK-700 water bottle receptacle and press until the water bottle 'clicks' into position.

## PREPARATION AND SAFETY CHECK

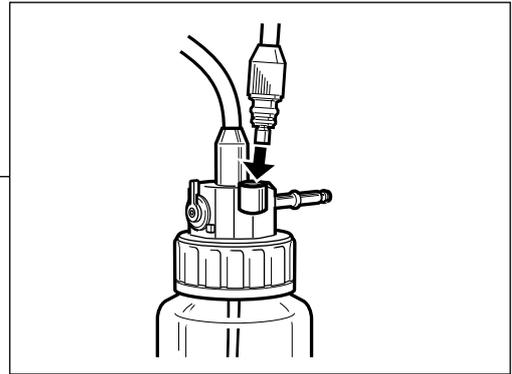
### NOTE

Do not press the water bottle too forcefully into the EPK-700. Mishandling may cause water to leak onto/into the video processor.

5. Insert the Air/Water connector into the holder on the water bottle cap assembly until the endoscope is connected

### NOTE

Always disconnect the water bottle before moving the video processor into a position other than in normal use. Always disconnect the water bottle before packing the EPK-700 for shipment.



### 4-1-3 Connecting the endoscope

#### CAUTION

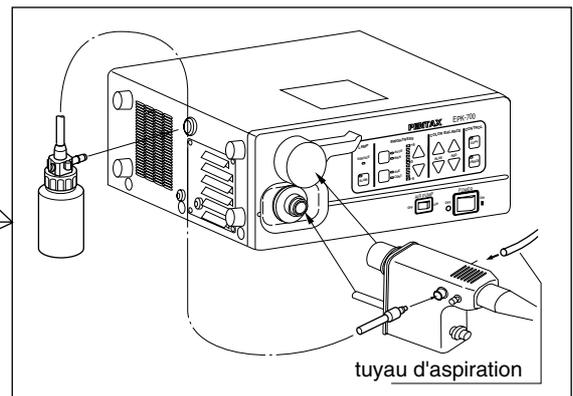
Always turn OFF the processor BEFORE connecting an endoscope. Connecting the endoscope while the processor is ON might damage the endoscope.

1. Check to ensure the appropriate (light guide) adapter is mounted onto the EPK-700. The adapter, AE-P1 is already attached to the EPK-700.

### NOTE

Connecting a video endoscope without a (light guide) adaptor in place will reduce light output at the endoscope distal end. Attempting to connect a fibrescope without a (light guide) adapter and/or an appropriate (light guide) sleeve in place may damage the fibrescope and the EPK-700.

2. Check to ensure that the (scope) locking lever is open.
3. Connect the (scope) light guide into the processor.
4. Connect the (scope) electrical connector into the processor.
5. Close the (scope) locking lever
6. Connect the water bottle Air/Water connector to the Air/Water receptacle on the endoscope's umbilical connector.
7. Connect the suction tube of the suction device to the suction nipple on the umbilical connector of the endoscope.



# PREPARATION AND SAFETY CHECK

## NOTE

*When using the fibrescope video adaptor module, make sure the eyepiece of the fibrescope is properly connected to the module (use adapters as required). Connect the electrical connector of the module to the electrical connector of the EPK-700, lining up the red dots on each.*

### 4-1-4 Connecting the peripheral equipment

1. Referring to the rear panel diagram, connect a TV monitor to the EPK-700
2. Connect other equipment required such as hard copy equipment, VCR etc.



## CAUTION

- *When used in clinical or residential areas near radio and TV receiver units, this equipment may be subjected to radio interference.*
- *To reduce electromagnetic interference, switch off the unit when not in use and remove scopes from the processor.*
- *To avoid and eliminate electromagnetic interference, do NOT operate this equipment near RF equipment.*



## CAUTION: FOR EUROPE

- *This equipment is a Class A Medical Equipment (as specified in EN 55011) and is intended for hospital or health care districts.*
- *Use the connection cables as specified below and the keyboard with appropriate CE Marking.*

Composite video cable (1.5 m), RGB video cable (1.5 m), Y/C video cable (1.5 m), control (1,2) cable (1.5 m), RS-232C cable (2.0 m)

### 4-2 Pre-use safety checklist

## WARNING

*The following points should be checked on every occasion before use. If any function or device in the video endoscope system does not perform properly, DO NOT perform the endoscopic examination. Contact the manufacturer of the device, your Pentax sales representative or a Pentax service center before using the equipment for an endoscopic examination.*

## PREPARATION AND SAFETY CHECK

1. Ensure video processor is placed in a stable and level position.
2. Ensure water bottle is properly prepared and connected.
3. Ensure endoscope (and fiberscope video adaptor module if applicable) is connected properly.
4. Ensure EPK-700 lamp life is less than 200 hours. If lamp life is 200 hours or more, contact your Pentax sales representative or a Pentax service center.
5. Turn ON monitor and other peripheral devices.
6. Turn ON EPK-700 power switch. Ensure switch lights green, the lamp is light and the sound of the ventilation fans can be heard.

### CAUTION

*Always turn ON the processor AFTER connecting an endoscope.*

### NOTE

*Power function switches should not be actuated by contact with objects like endoscope light guides, when being switched ON or OFF.*

*After power is turned OFF, wait 60 seconds before turning power switch ON. Failure to do so may cause a malfunction.*

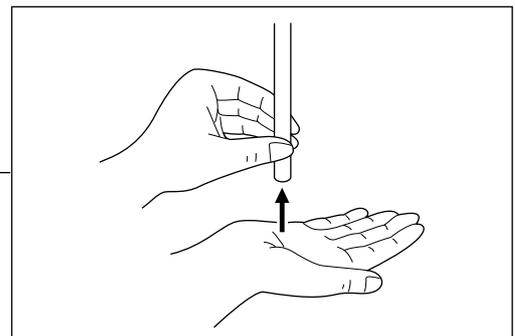
*Before turning the EPK-700 power ON, ensure the airflow vents are not obstructed.*

7. If lamp fails to light, turn EPK-700 OFF, wait 60 seconds and repeat steps 6 and 7.

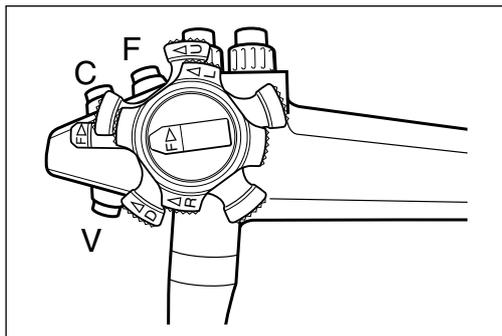
### NOTE

*If lamp fails to light, DO NOT attempt to perform an endoscopic examination, contact your Pentax service facility.*

8. With lamp lit and endoscope connected, check for live endoscopic image on the monitor.
9. Operate the endoscope's automatic iris. Bring the tip of the endoscope within 1 cm of the palm of your hand and move it to about 5 cm away from the palm. Watch the image on the monitor to ensure the brightness at both distances is similar. Lift the distal end of the endoscope to the room lights, the light being emitted at the distal end of the scope should lower significantly (dependent on the ambient light levels in the room). Return the distal end of the endoscope to point at the palm and ensure the light is being emitted from the distal end of the endoscope.



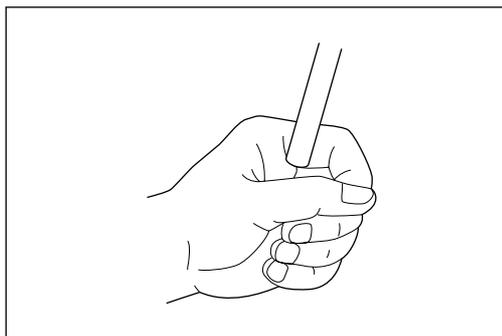
## PREPARATION AND SAFETY CHECK



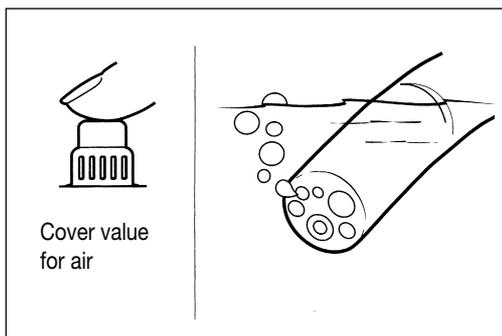
- 10. Check the endoscope control buttons positioned on the control body of the endoscope. Each button; F, C and V will beep when pressed.
- 11. Select auto or manual brightness control. If selecting AUTO, also select average or center light measurement mode. And operate the brightness control buttons to ensure the brightness indicator and controls are functioning.
- 12. Operate the colour adjustment as described below.

### NOTE

*Allow the processor to run for ten (10) minutes with main lamp ON before adjusting colours.*

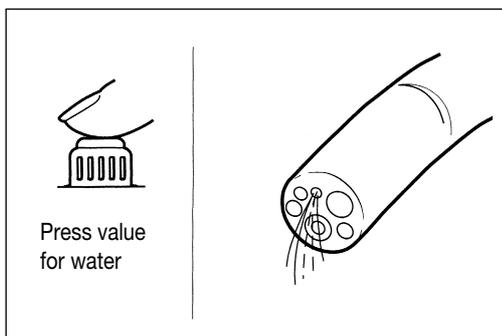


- Cup the distal end of the endoscope loosely in your hand. Ensure that the monitor displays a natural colour. Operate the colour adjust buttons (Red Up and Down and Blue Up and Down) to ensure the changes are recognizable in the image of your hand. Remember, the 0 values are considered standard and all colour adjustments should be made with that in mind.



- 13. If XLUM is intended to be used during the procedure, operate the XLUM function. Upon selecting the switch, LED will light and maximize the brightness level.
- 14. Turn ON the air pump. The switch LED will light and the sound of the air pump should be heard.

- 15. Operate Air/Water delivery through the endoscope. Covering air venting hole on top of Air/Water button lightly should deliver air at the distal end of the endoscope by submerging the distal end in enough water to cover the tip, air flow will be demonstrated by a trail of bubbles. Pressing the button all the way down should deliver water through the tip of the endoscope.



If all above controls appear to function satisfactorily, then the endoscopic procedure may be performed. If any functionality above malfunctions, DO NOT attempt to perform the endoscopic procedure.



**NOTE**

The EPK-700 has a battery backup memory and will retain and advance the Date and Time accordingly even if the unit is turned OFF or disconnected from the power supply.

Name			12/30/97
ID	Age	Sex	13:50:59
Comment			
Scope			Dr.
PENTAX	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0
			Facility

## 5-3 Second adjustment

Press F6 and the second counter will;

- Turn to 00 if the existing seconds value is 29 seconds or less.

Turn to 00 and add 1 minute to the minute value if the existing seconds value is 30 seconds or more.

## 5-4 Entering screen (patient) data

**NOTE**

The EPK-700 has a battery backup memory and will retain the last entries for all information fields of the screen even if the unit is turned OFF or disconnected from the power supply. When the video processor is turned ON, the last entries for the screen information fields will be displayed.

### 5-4-1 Clearing screen information

1. To clear the previous entries from the screen information fields, hold the Ctrl key down and press F9. All fields will be reset to blank except the ID number, Clock, Date and Facility. To change the ID number, hold the Ctrl key down and press either the up cursor key to increase the number up to 15 or the down cursor key to decrease the number. The (scope's) model name will also remain unchanged if a (scope) is connected.
2. The cursor will be positioned on the first character of the Patient Name field and will appear as a flashing underline.

Name			12/30/97
ID	Age	Sex	13:50:59
[1]			
Comment			
Scope			Dr.
PENTAX	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0
			Facility

### 5-4-2 Entering screen information

1. After clearing the previous entries for the screen information fields, and selecting the ID number, use the alpha keys to type the desired information in fields;

# OPERATION

- Holding down the Shift key and typing an alpha key will display the capital alpha key or upper case special character.
- Pressing the Caps Lock key (check status indicator to ensure Caps Lock is selected) will cause all alpha keys typed to be displayed as capitals.
- To type numbers use the alpha group number keys or press Num Lock to activate the number keys on the right of the keyboard.
- The Backspace key will back the cursor one space to the left each time it is pressed.
- If an entry is typed in a field and the number of characters exceeds the number of characters in the field, the cursor will stop at the last character in the field and display the last character typed.

## NOTE

*If the monitor is displaying unusual characters and pressing keys on the keyboard produces no response, turn the processor OFF and contact your local Pentax service center.*

2. After typing an entry press Enter or the down arrow key, to advance to the next field.
3. Information fields will be accessed in the following order; Name, ID, Age, Sex, Comment, Dr. (Doctors Name), Facility, (Scope) Name
4. The Scope field will be automatically established when a video endoscope is connected to the EPK-700. The field can be overtyped.
5. After pressing Enter in the (Scope) field, the cursor and the ID number will be removed from the screen.

Name			12/30/97
ID	Age	Sex	13:50:59
[1]			
Comment			
Scope			Dr. Facility
PENTAX	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0	<input type="checkbox"/> ±0

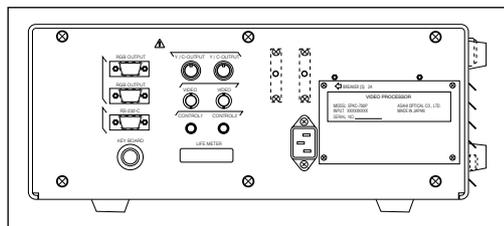
## NOTE

*The EPK-700 has a backup battery memory and will retain the last entries in the screen information field if the unit is turned OFF or disconnected from the power supply. It may be advantageous to enter patient information and shut the video processor OFF until the Pre-Use Safety Check.*

### 5-4-3 Editing/correcting screen information

1. If the cursor is not already visible, press the Enter key to have the cursor appear on the first character of the Patient Name field. It will appear as a flashing underline.
2. Select the appropriate ID number and use the Enter key to advance the cursor to the field to be corrected.

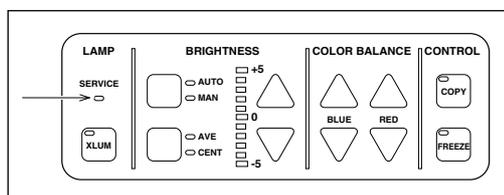
3. Use the Right or Left arrow keys to position the cursor under the character to be corrected.
4. Characters can be typed over with alpha keys (including the Space bar).
5. All fields can be edited/corrected except the Date and Clock. See section 5-2, Setting the Date and Clock.



## 5-5 Processor functions

### NOTE

*Check the lamp life hour meter on the rear panel frequently, a lamp with 200 hours or more should be replaced before beginning a procedure.*



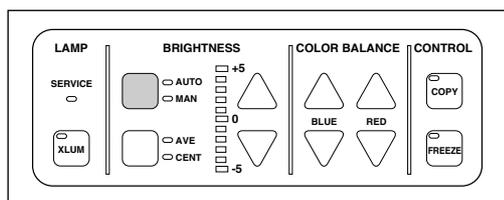
### 5-5-1 Lamp

Turn on the power switch to light the lamp. If the lamp fails to light, the lamp service LED lights. Turn off the processor, wait 60 seconds and turn on the processor. If the lamp still fails to light, do not attempt to perform an endoscopic procedure. Contact your local Pentax service center.

### NOTE

*After the lamp lights, allow the processor to run for ten (10) minutes. This will allow the colour temperature to stabilize and ensure accurate colour.*

When the procedure is completed, the lamp can be switched OFF by turning the EPK-700 power OFF. Wait 5 minutes before turning on the Lamp again.



### 5-5-2 Brightness

Brightness functions can be controlled from either the processor front panel control buttons or the endoscope control buttons. (See section, Endoscope control buttons).

AUTO = Automatic brightness control, where the video signal of the endoscope will automatically maintain the brightness level selected by the brightness adjustment buttons. The switch will beep when pressed and the AUTO indicator will light when the AUTO mode is selected.

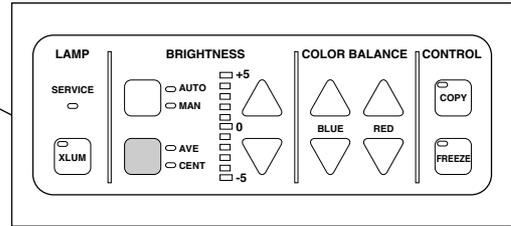
# OPERATION

If the AUTO brightness mode is selected, select the desired brightness level and the light measurement method, AVE or CENT, using the light measurement switch on the front panel or the endoscope control buttons.

AVE = The brightness level is automatically adjusted with respect to an averaging of the brightness of the video signal.

CENT = The brightness level is adjusted with respect to the brightness of the center of the screen.

The switches will beep when pressed and the AVE or CENT indicator will light when either is selected.



## NOTE

*Halation is defined as the appearance of a halo around an area of extreme brightness. Halation may occur if the AVE mode is selected when observing an area deep in a lumen on the center of the screen in CENT MODE, the area can be observed clearly while around the area halation may occur.*

MAN = Manual brightness control; the user will select the brightness level by using the brightness adjustment buttons. The switch will beep when pressed and the MAN indicator will light when manual mode is selected.

## NOTE

*Always select manual mode when using the EPK-700 as a light source for the fiberscope.*

There are eleven (11) brightness levels. The brightness level will be displayed as a value -5 to +5 on the monitor display and on the brightness indicator on the front panel.

To change the brightness level;  
Press the Up button  $\Delta$  to increase the level.  
Press the Down button  $\nabla$  to decrease the level.

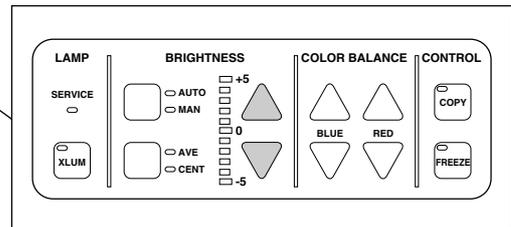
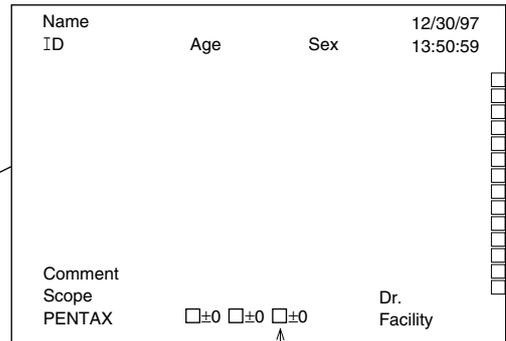
The switches will beep when pressed and the brightness level indicator will change accordingly.

## NOTE

*Minimum required brightness levels should be used at all times to avoid risk of injury to the patient.*

## NOTE

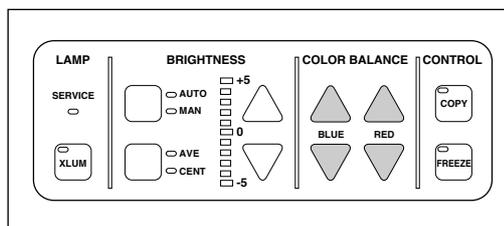
*The EPK-700 has a battery backup memory and will retain the last selected brightness value even if the unit is turned OFF or disconnected from the power supply.*



## 5-5-3 Colour balance

### NOTE

*Do not attempt to colour balance the image if the processor has not been turned on for at least 10 minutes.*



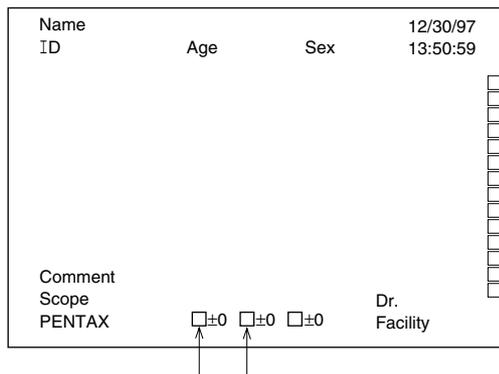
● Colour balance functions can be controlled from either the processor front panel colour-balance control buttons or endoscope control buttons.

● There are eleven (11) colour levels for both Red and Blue tones. They will be displayed as a value -5 to +5 on the monitor display at either end of the colour bar.

All the switches described above will beep when pressed.

### NOTE

*The EPK-700 has battery backup memory and will retain the last selected colour balance levels even if the unit is turned OFF or disconnected from the power supply.*



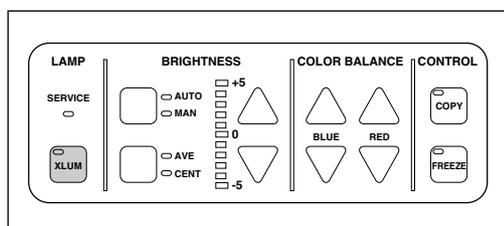
## 5-5-4 XLUM (Transillumination)

The XLUM function can be controlled from either the processor front panel XLUM switch or the endoscope control buttons.

The XLUM (Transillumination) maximizes the brightness to enable the user to identify the position of the distal end of the video endoscope while in the body.

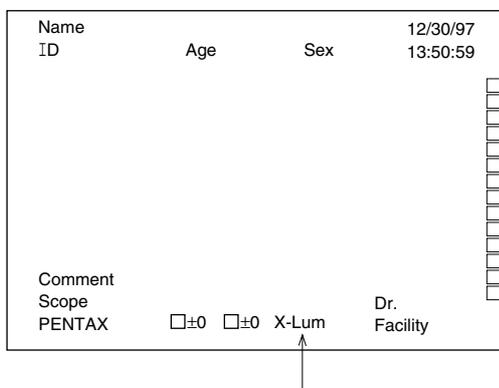
### WARNING

*Prolonged use of the XLUM function could result in discomfort and/or burns to the patient. Avoid excessive use of the XLUM mode.*



● When the XLUM switch is pressed, the LED on the switch will light to indicate XLUM is selected and the brightness level on the monitor display is replaced with XLUM. At the same time, AUTO/MAN, AVE/CENT and Brightness go out and become invalid.

To turn the XLUM function OFF, press the XLUM switch again. When the switch is pressed, the LED in the switch will go OUT.



## 5-5-5 Air pump

The air pump function can be controlled from the processor front panel air-pump switch.

# OPERATION

## NOTE

Take care not to deliver too much air to prevent over insufflation.

Turn on the air pump switch. Then the lamp on the switch will light and the sound of the air pump will be heard. To turn the air pump OFF, turn off the switch. The lamp on the switch will go OUT.

### 5-5-6 Copy

The copy function to activate a hard copy system to capture the image can be controlled from either the endoscope C button or V button or the processor front panel COPY button. Be sure to read the instructions for the hard copy equipment carefully.

### 5-5-7 Freeze

The freeze function can be controlled from the endoscope F button or the processor front panel FREEZE button.

When the freeze function is activated, the main screen will display a still endoscopic image frozen at the time the freeze selection was made and the sub-screen will display the live endoscopic image observed with the video endoscope.

When selected, the switch will beep and the LED on the switch will light to indicate that the freeze function is selected.

To release the freeze function, press the endoscope F button or processor front panel FREEZE button. The main screen will be released from the still image, the live image sub-screen display will be removed and the LED on the FREEZE button on the front panel will go OUT.

### 5-5-8 Enhance

Hold down the Ctrl key and press F3 on the keyboard. The enhance feature provides three levels of image enhancement:

Low, Medium and High.

Enhancement levels and enhance ON/OFF can be selected from the function control menu or the endoscope control buttons.

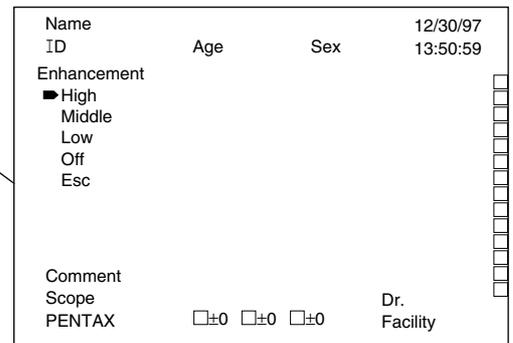
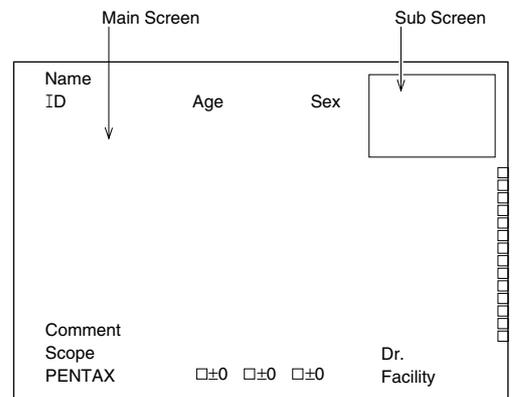
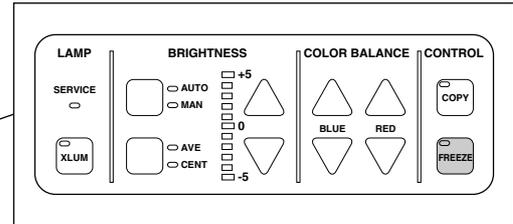
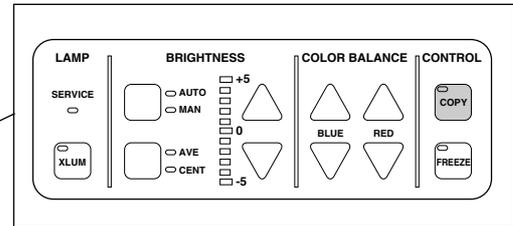
ENT key will store the setting.

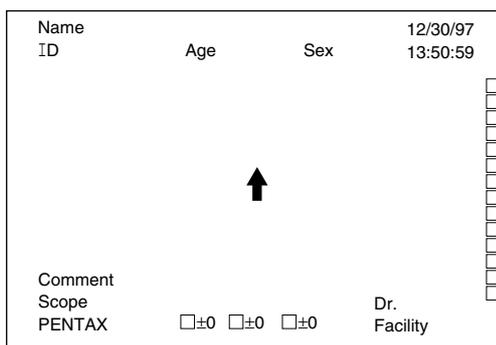
ESC before depressing ENT key loads the previous setting.

### 5-5-9 Colour bar

Press F2: the colour bar will disappear.

Press F2 again: the colour bar will appear again.





## 5-5-10 Screen characters ON/OFF

All screen information such as Name, ID, Age, etc. and the colour bar can be turned OFF or ON by pressing F3.

## 5-5-11 Pointer

The pointer function is a small arrow that will appear on the main screen when activated.

Press F4 to activate the pointer function.

### NOTE

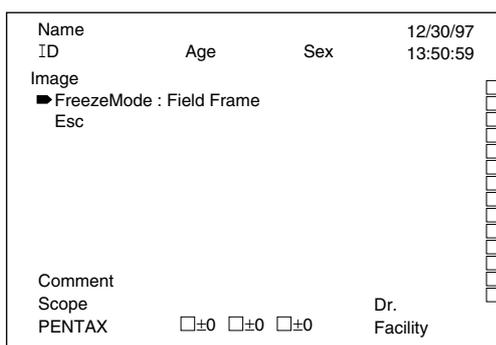
*Each time the EPK-700 is turned ON, the pointer position is established at the center of the main screen.*

To change the position of the pointer, use the Up, Down, Left, Right arrow keys.

To turn the pointer OFF, press the F4 key again.

### NOTE

*If the processor is not turned OFF, when the pointer is activated again, it will appear in the position previously selected.*



## 5-5-12 Freeze image control mode

Hold down the Ctrl key and press F1 to control the freeze image. Press arrow keys to select Field for a more stabilized freeze image or Frame for a higher resolution.

## 5-5-13 Stopwatch

The stopwatch function can be controlled by either the function menu or the endoscope control buttons.

When selected, the stopwatch is displayed immediately below the clock on the monitor display.

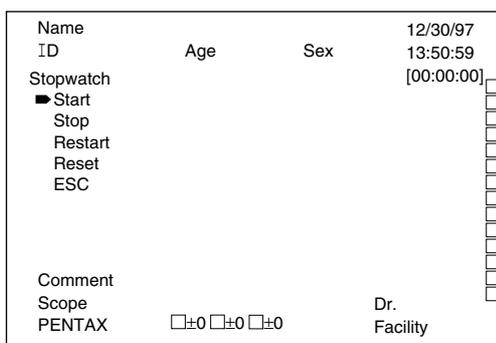
The stopwatch display format is

[HH:MM:SS];

HH = Hour

MM = Minute

SS = Second



To activate the stopwatch function, press F5. When activated, the stopwatch sub-menu will be displayed.

The arrow to the left of the menu indicates the cursor position.

To start the stopwatch, press Enter when the arrow is at Start position.

The stopwatch [00:00:00] will appear on the monitor display.

Use the Up and Down arrow keys to advance the cursor to the other menu selections and press ENT to activate the selected function.

# OPERATION

Stop will stop the stopwatch and display its last value.  
 Restart will restart the stopwatch from its last value.  
 Reset will reset the stopwatch to [00:00:00]. It will also stop the stopwatch.  
 Esc will exit the stopwatch sub-menu.

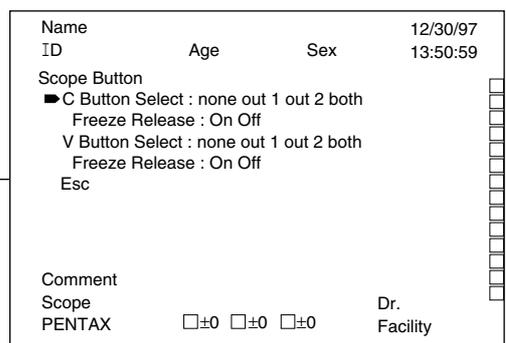
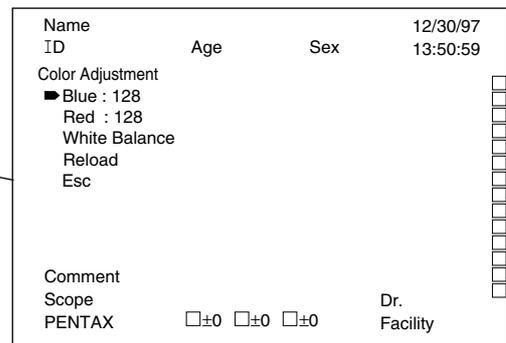
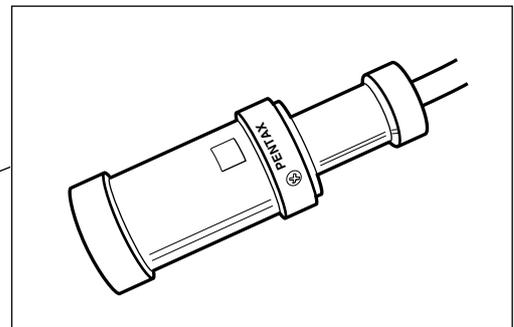
## NOTE

*If the stopwatch is ON or stopped, it will remain on the monitor display when the sub-menu is exited. If the stopwatch is reset, it will be removed from the display when the sub-menu is exited.*

### 5-5-14 Colour adjustment

This function adjusts the colour setting of each endoscope.  
 Proper white balance requires the use of the white balance adjuster supplied with the video processor. If a vector scope is available, it will make the adjustment easy and accurate.  
 Contact your local Pentax service center for the details if required.

1. Allow the processor to run for ten (10) minutes the lamp lights in order to stabilize the colour temperature.
2. Put the distal end of the video endoscope into the white balance adjuster.
3. Watching the monitor, adjust the position of the distal end of the scope in the adjuster so that the grains inside the adjuster can be recognized on the full screen. If any halation is recognized on the screen at this time, lower the brightness level so that the grains inside the adjuster can be recognized clearly.
4. Hold down the Ctrl key and press F6. When activated, the colour adjustment menu will be displayed.
5. Press the Up/Down arrow keys according to the menu screen, and then ENT.  
 Blue value or Red value can be adjusted with Right/Left arrow keys. Holding down Alt key and pressing the cursor key change the value by  $\pm 10$  steps.  
 White balance will restore colour balancing based on a white colour automatically.  
 Reload returns to the previous setting of the white balance.



### 5-5-15 Scope buttons

Hold down the Ctrl key and press F5. When activated, the menu will be displayed. Press the Down arrow keys corresponding to the menu screen and select with the Right/Left arrow key.

None: None of the two output terminals (control 1 and 2) on the rear panel is activated.

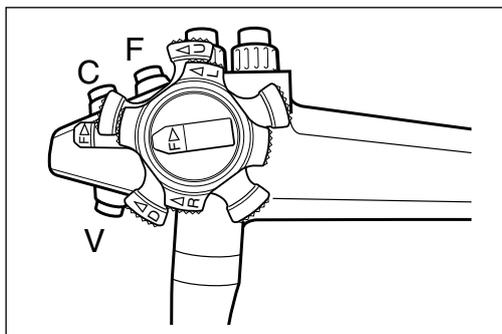
Out1: Control 1 is activated.

Out2: Control 2 is activated.

Both: Both of the control 1 and 2 are activated.

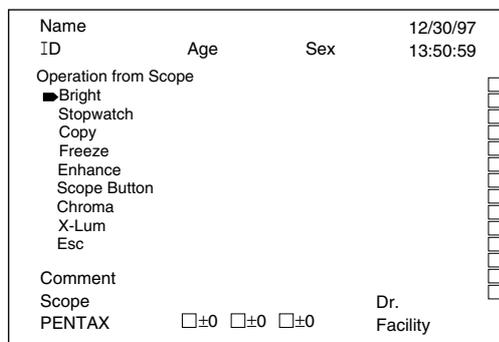
Freeze Release ON: Freeze is released after activating the peripheral.

Freeze Release OFF: Freeze is not released after activating the peripheral.



### 5-5-16 Control of video processor function from the endoscope control buttons

The feature provides users with access to certain processor functions from the endoscope control buttons or from the keyboard Up, Down and Enter keys. Refer to section 8 FUNCTION SUMMARY DIAGRAM for menu selections and paths.



● Press both the F and C button on the endoscope control body at the same time. "Operation from Scope menu" will be displayed and the F, C and V buttons on the endoscope control body will be redefined;

F = Down arrow

C = Up arrow

V = Enter

Use the F and C buttons on the endoscope control body or the Up/Down arrow keys on the keyboard to move cursor to desired menu selections.

Press the V button on the endoscope control body or the Enter key on the keyboard to activate selections or access sub-menus.

# MAINTENANCE

## 6 Maintenance

### 6-1 After each procedure

#### NOTE

Some peripheral devices may have to be turned off **BEFORE** the EPK-700 to avoid their malfunction. Refer to the operating instructions supplied with all the components of the video endoscopy system to establish the right order in which each component should be turned off in due course

Disconnect the endoscope and water bottle.

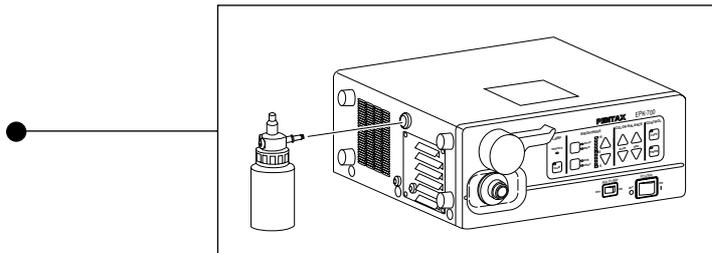
#### NOTE

Always turn off the processor **BEFORE** disconnecting the endoscope.

Wipe all surfaces with gauze slightly moistened with alcohol.

#### NOTE

Never allow liquids to be splashed onto the EK-700. Ensure connector interfaces and ventilation ports do not become wet.



### 6-2 Water bottle cleaning

#### NOTE

Take care in handling the water bottle. **DO NOT** carry the water bottle by the Air/Water Connector or Air/Water hose. When the cap assembly has been separated from the bottle, be careful in handling the water feeding stem.

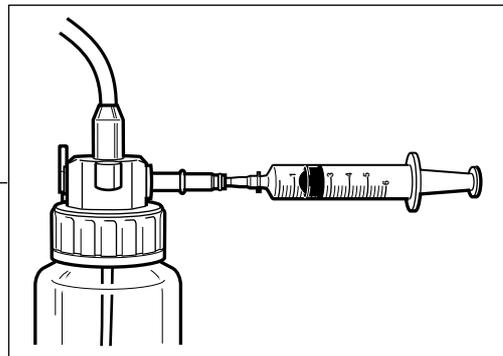
Water bottles should be sterilized at least on a daily basis.

Like all endoscopic accessories, the water bottle assembly must be thoroughly cleaned. Failure to do so could result in incomplete or ineffective sterilization.

#### 6-2-1 Cleaning

1. After use, the entire water bottle assembly (bottle, cap assembly and tubing) should be washed with clean water and moistened gauze or scrubbing brush. Enzymatic detergent solution should be used for soiled items.

Detergent may be applied to internal surfaces of the water bottle by injecting the detergent into the air pipe stem (opposite the A/W-Drain lever on the water bottle cap) using a syringe. The A/W-Drain lever should be in the A/W position to ensure contact with all internal tubes.



2. Ultrasonic cleaning of the entire water bottle assembly is recommended to access difficult to reach areas. Use an operating frequency of 40 kHz or higher for a period 5-10 minutes.
3. After washing with the cleaning solution, all surfaces of the water bottle assembly should be thoroughly rinsed and dried. Use gauze or cloth to wipe dry most surfaces. Compressed air and 70% alcohol should be used to facilitate drying of hard to reach areas.

## 6-2-2 Sterilization

Before any attempt has been made to sterilize the water bottle assembly, ensure the cleaning process above has been completed.

### 6-2-2-1 Steam sterilization

#### **NOTE**

*EPK-700 standard water bottle assembly is model OS-H2 and is steam autoclavable. DO NOT confuse the OS-H2 steam autoclavable water bottle with its non-autoclavable predecessor that had been supplied as a standard accessory with other Pentax products.*

The OS-H2 water bottle assembly can be easily identified by the black Air/Water hose, off-white coloured plastic cap (NOT transparent) and the clear plastic bottle.

1. The OS-H2 water bottle assembly has been designed to withstand high pressure steam sterilization procedures. Use the parameters below:

TEMP: 121 °C (250 °F)  
PRESSURE: 101.3 kPa (1 atmosphere)  
TIME: 90 minutes

2. During steam sterilization, ensure the cap assembly has been removed from the bottle and the drain lever set to the upright (A/W) position.

# MAINTENANCE

## 6-2-2-2 ETO Sterilization

1. The following parameters for ethylene oxide gas sterilization are proposed

	20:80 ETO/CO <sub>2</sub>	10:90 ETO/HCFC
Temperature:	55 °C	55 °C
Relative humidity:	50%	50%
Vacuum:	533 mm Hg	533 mm Hg
	Actual	Actual
Pressure (Start):	69 kPa (0.70 kg/cm <sup>2</sup> , 10 PSI)	96 kPa (0.98 kg/cm <sup>2</sup> , 14 PSI)
EO Concentration:	450 mg/L	600 mg/L
Pre-conditioning:	1 Hour	1 Hour
Aeration:	12 Hours at 55 °C	12 Hours at 55 °C
Gas exposure time:	5 Hours	5 Hours

2. Following ETO Sterilization, aeration time of 72 hours is required. An aeration chamber may be used to shorten the aeration time to 12 hours but the temperature must not exceed 55 °C (131 °F).

## 6-2-3 Care during storage

Prior to storage it is important to ensure that no residual water is left inside the water bottle assembly. Thoroughly dry all surfaces to reduce the potential for bacteria colonization during storage. Compressed air and 70 % alcohol should be used to facilitate drying.

## 6-3 Storage

Do not store the unit in direct sunlight or where temperature and humidity are high.

Do not store the unit where it can be exposed to liquids.

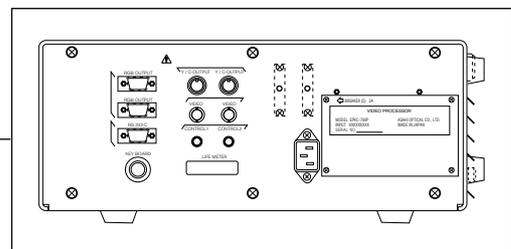
For long term storage, take precautions to reduce dust build up within the EPK-700.

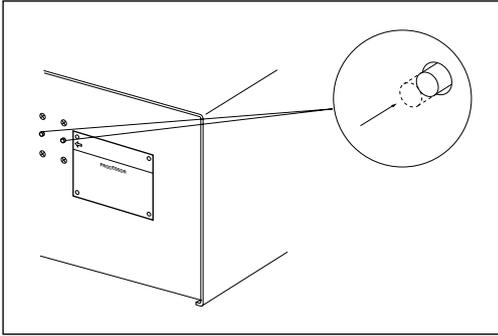
## 6-4 Changing the lamp

Check the lamp life hour meter on the rear panel frequently. A lamp with 200 hours or more should be replaced before beginning a procedure

### NOTE

To replace the lamp, contact your local Pentax service center.





## 6-5 Resetting the circuit breakers

1. If the video processor is not operational after turning ON the power, turn the power switch OFF.
2. Check the circuit breaker buttons on the rear panel. If these buttons are out, press both buttons down until they "click" into the depressed positions.
3. If operation stops during procedure, first turn the processor OFF. Wait 10 seconds or more and then press both circuit breaker buttons down until they click into the depressed positions.
4. After resetting the circuit breakers, if the trip when the EPK-700 is turned ON, turn the power OFF immediately and disconnect the power cord. Contact Pentax service center.

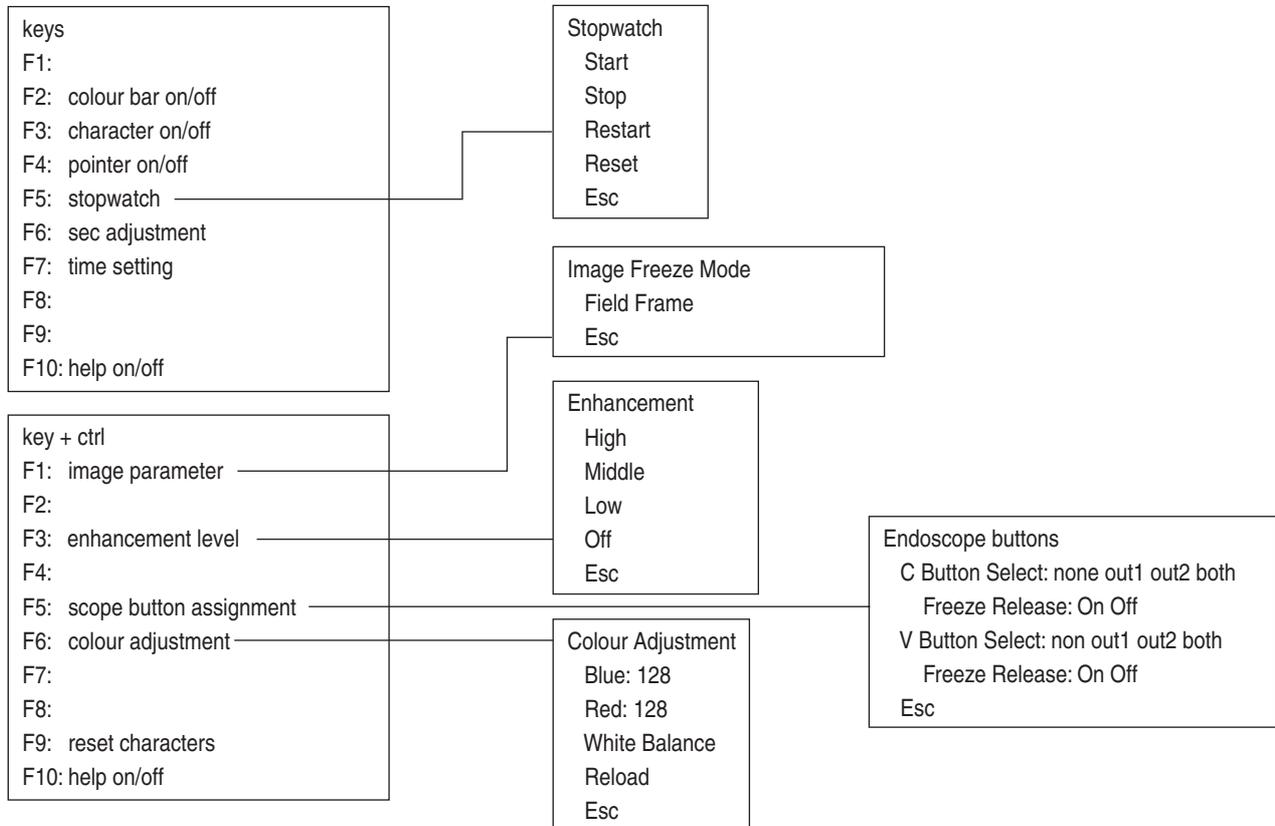
# TROUBLE-SHOOTING GUIDE

## 7 Trouble-shooting guide

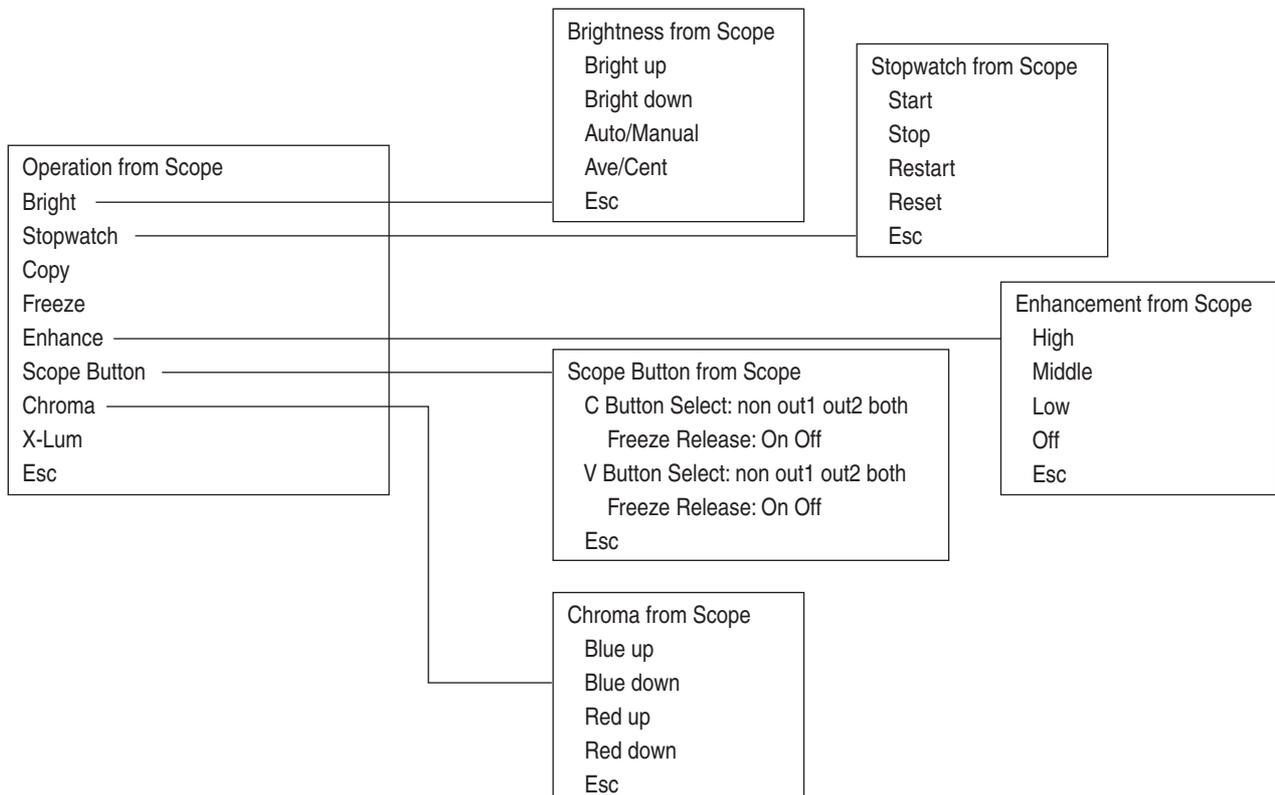
Condition	Check	Action
Power does not come ON	Power cord	Ensure proper connection at unit and wall outlet.
	Breaker	Ensure the red button is not protruding out.
	Power outlet	Move the power cord to a power socket that is known to work.
No display on monitor	Monitor/other peripheral devices	Ensure power is ON for all devices.
		Ensure proper video input is selected for all devices.
	Cable connections	Ensure all video cables are connected properly.
Text cannot be typed to screen	Monitor display	Ensure cursor is visible, press Enter to evoke cursor.
	Keyboard	Ensure keyboard is properly connected to the processor.
Numbers cannot be typed to screen	Keyboard	Ensure Num Lock is ON and use numeric keys.
Lamp will not ignite	Lamp life meter	Ensure less than 200 hours lamp life. If more, change the lamp.
No image on main screen	Endoscope	Ensure the endoscope is connected properly.
	Lamp	Ensure lamp is lit.
Image on screen is black and white	Lamp	Ensure lamp is lit.
Unusual characters on screen and no response to any key on the keyboard		Turn OFF the processor and contact your Pentax service center.
Endoscope control buttons do not control functions	Scope	Ensure endoscope is properly connected.
	Freeze, Copy, VCR front panel control buttons	Test front panel control buttons. If they activate features and endoscope control buttons do not, call a service representative.
	Cables	Ensure all control cables are properly connected.
No air delivery at distal end of endoscope	Air pump	Ensure air pump is ON.
	Water bottle	Ensure proper connections at EPK-700 and endoscope.
		Ensure the A/W-Drain lever is in the A/W position.
A/W-Ventil	Check if the air/water valve is blocked. Check all O-rings and clean the valve.	
No water delivery at distal end of endoscope	Air pump	Ensure air pump is ON.
	Water bottle	Ensure proper connections at EPK-700 and endoscope.
		Ensure water bottle is 2/3 full.
		Ensure the A/W-Drain lever is in the A/W position.
		Ensure the water feeding stem is connected to the cap assembly inside the bottle.
A/W valve	Ensure the A/W valve aperture is not clogged, inspect all O-rings, clean the A/W valve.	

## 8 Function summary diagramm

### 8-1 Control from the keyboard



### 8-2 Control from the endoscope



**Declaration of conformity**

We, Asahi Optical Co., Ltd.  
2-36-9, Maeno-cho Itabashi-ku, 174-8639 Tokyo, Japan

declare under our sole responsibility, that the product:  
Product Name: VIDEO PROCESSOR  
Model Number (S): EPK-700

conforms to:  
the applicable provisions of the Medical Device Directive 93/42/EEC.

PENTAX GmbH

Importer into EEA

ASAHI OPTICAL Co., Ltd.

Manufacturer

**NOTICE**

This equipment is a Class A Medical Equipment (specified EN55011) and is intended for hospital or health care (districts).

When used in clinical or residential areas near radio and TV receiver units, this equipment may be subjected to radio interference.

To reduce electromagnetic interference, do NOT keep turning on the main SWITCH of the equipment hanging a videoendoscope on a scope-hanger when not operated.

To avoid and resolve adverse electromagnetic effects, do NOT operate this equipment near RF-equipment.

Only connection cables and keyboard specified by PENTAX comply with the above standards.

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Our representative in your area:

- Specifications are subject to change without notice and without any obligation on the part of the manufacturer.