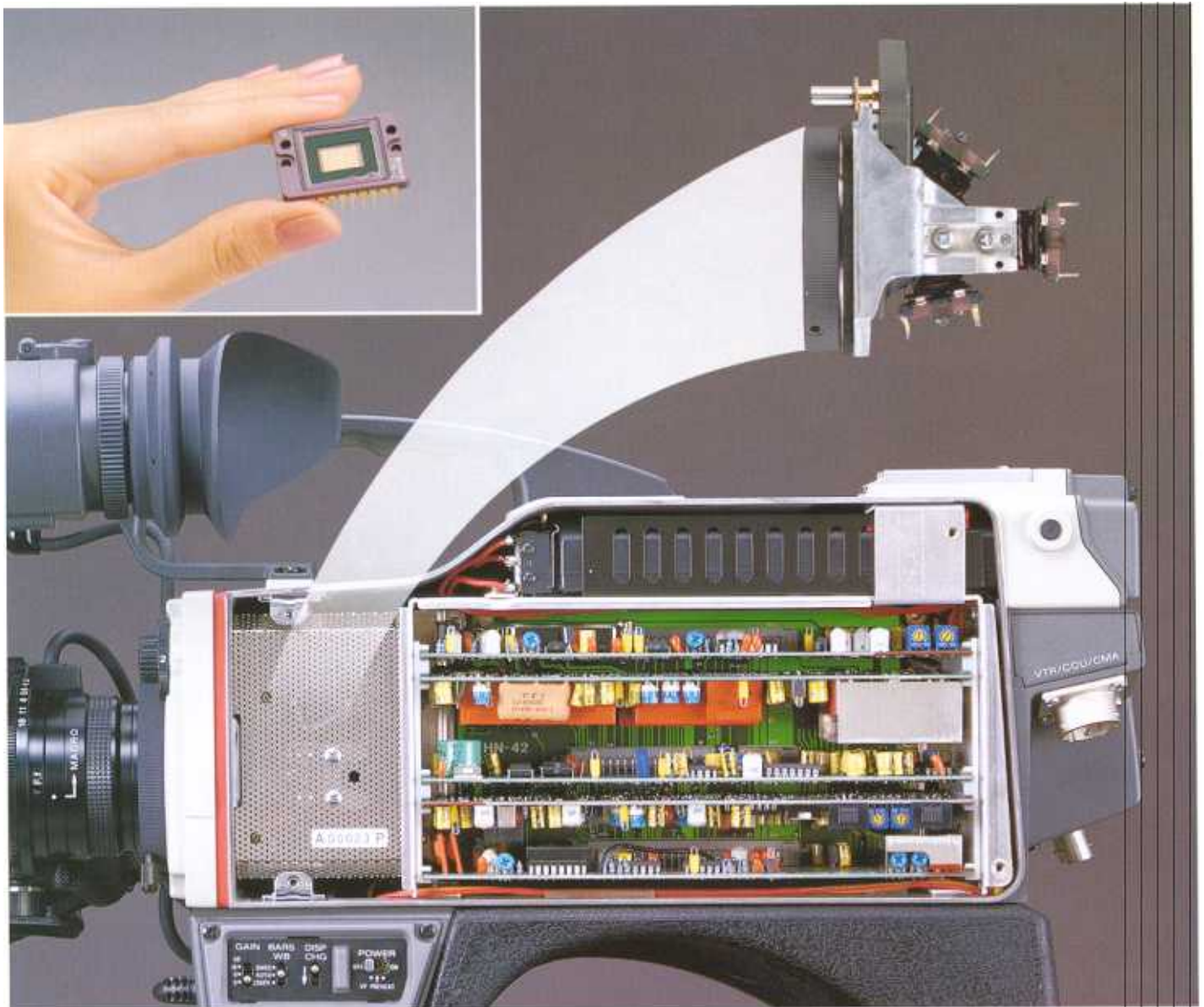




# THE QUALITY AND RELIABILITY OF CCDs FROM SONY

*Sony's world-leading CCD technology has been adopted to be used as the image sensor for color video cameras, adding yet another page to the history of Sony innovations in this field. The innovative 3-chip technology housed in these cameras provides many outstanding features that have never been seen in video cameras before. Among these features are high image burning resistance, low lag, excellent picture reproduction, permanent registration, superior durability and reliability, high sensitivity, freedom from magnetic field interference, high resistance to vibration and shock, and compactness. Yet, no sacrifice is made in the picture quality, which approaches that of high quality 3-tube cameras. Without a doubt, Sony's 3-chip CCD technology has opened up a world of exciting applications for video cameras that before would have been thought impossible.*



# The Sensational Sony Innovation for a Superior Performance Video Camera With the Reliability of CCDs ... the DXC-3000A

The Sony DXC-3000A, a 3-chip CCD color video camera, offers an amazingly high 560 TV lines (luminance at the center) of horizontal resolution and an excellent S/N of 58 dB, along with all of the superior features of CCDs.

Furthermore, the fully automatic control functions of "Intelligent Software Servo" ease the complex balancing and adjustment pertinent to 3-chip/3-tube cameras. Everything necessary for optimum

operation of the camera is computerized and automatic and can be monitored by an interactive viewfinder character display.

Quite simply, the Sony DXC-3000A is the only 3-chip CCD video camera which can almost equal the outstanding performance of 3-tube cameras.

The adoption of CCD technology has allowed Sony to create a feature-packed video camera that is incredibly small, lightweight, and cost-efficient.

## 3-chip Interline-transfer CCD Image Sensor

- A multitude of features that are almost unobtainable from conventional pickup tubes.
- High-density VLSI with over 250,000 picture elements
- Sensing area of  $8.8 \times 6.6$  mm

## Outstanding Portability

- Compact size
- Lightweight
- Low power consumption
- 3-way power supply

## Light Control

- Gain selection: 0dB, 9dB, 18dB
- Auto iris servo

## Superior Picture Quality

- Resolution: 560 TV lines
- S/N ratio: 58 dB

## User-friendly Functions

- Automatic black/white balancing
- ABL (Automatic Black Level)
- Automatic warning system
- Status display
- Title setting

## Quick Start-up

- Only 3 sec. to start up
- No pre-heat necessary

## System Flexibility

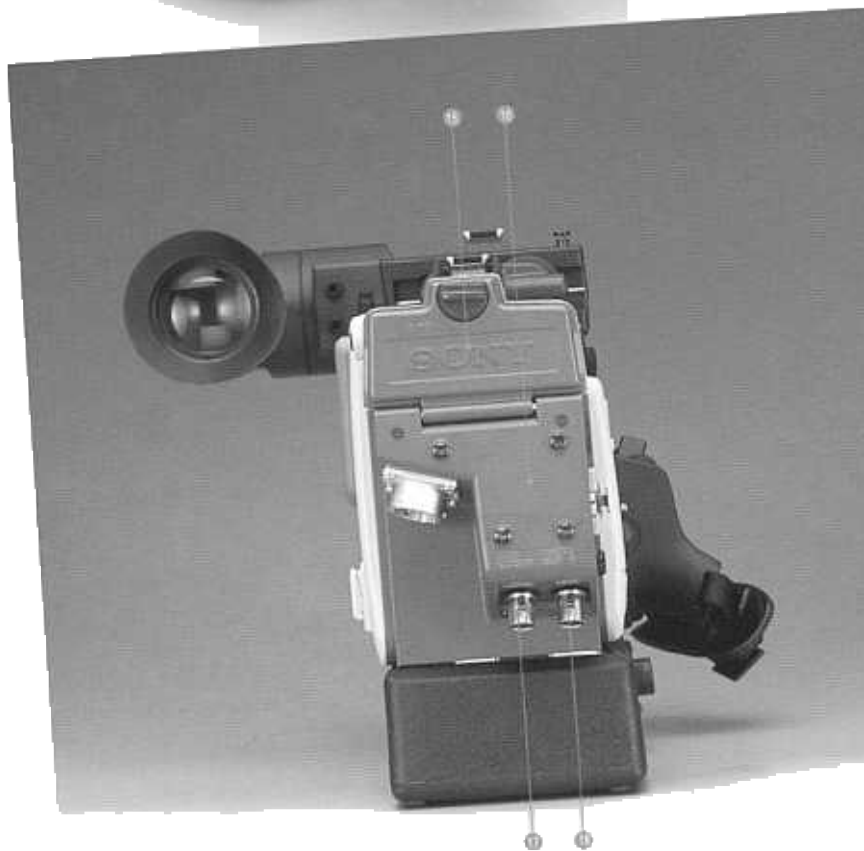
- Direct interface with various VTRs
- Lens compatibility
- Viewfinder compatibility

## Excellent cost performance

- Extremely cost-efficient
- Highly durable
- Easy maintenance



- ① AUTO W/B BALANCE SWITCH
- ② UP/ON BUTTON AND DOWN/OFF BUTTON
- ③ VCL-1012BY ZOOM LENS
- ④ DIOPTOR ADJUSTMENT RING
- ⑤ FILTER SELECTOR (1/2/3)
- ⑥ ZEBRA SWITCH (ON/OFF)
- ⑦ H (horizontal) PHASE CONTROL
- ⑧ SC (subcarrier) PHASE CONTROL
- ⑨ SC (subcarrier) PHASE SELECTOR (0°/180°)
- ⑩ GAIN SELECTOR (0dB/9dB/18dB)
- ⑪ BARS/WB SELECTOR (BARS/AUTO/3200°K)
- ⑫ DISP CHG (display change) switch
- ⑬ POWER/VF PREHEAT SWITCH (ON/OFF/VF PREHEAT)
- ⑭ VTR/CCU/CMA CONNECTOR (Sony Q-type, 14-pin)
- ⑮ BATTERY PACK COMPARTMENT
- ⑯ ATTACH AN OPTIONAL BATTERY ADAPTOR  
SHOE CAC-21 HERE
- ⑰ GEN LOCK INPUT CONNECTOR
- ⑱ VIDEO OUT CONNECTOR
- ⑲ EAR (earphone) JACK
- ⑳ VTR START/RETURN VIDEO BUTTON
- ㉑ ABL (Automatic Black Level) SWITCH
- ㉒ ACCESSORY SHOE FOR VIEWFINDER ATTACHMENT
- ㉓ BUILT-IN MICROPHONE
- ㉔ ATTACH AN OPTIONAL MICROPHONE HOLDER CAC-11A HERE
- ㉕ INTERCOM JACK
- ㉖ MIC IN (microphone input) CONNECTOR
- ㉗ VTR SELECTOR (1/2/3/4)
- ㉘ DC IN CONNECTOR
- ㉙ LENS CABLE CLAMP
- ㉚ VF (viewfinder) CONNECTOR





10 11 12 13

14

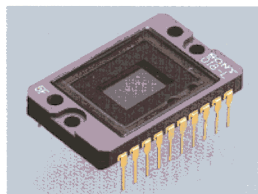


25 26 27

29 30

# A Host of Outstanding Features

## Adoption of 3 Interline-transfer CCD Chips for the Image Sensor



Sony's CCD Image Sensor is a unique, high-density VLSI with over 250,000 picture elements packed onto a tiny chip (only 8.8 x 6.6 mm). Because of this, the CCD image sensor incorporated in the

DXC-3000A offers a multitude of features that are almost unobtainable from conventional pickup tubes.

- High image burning resistance and low lag
- Excellent picture reproduction due to zero geometric distortion in all areas.
- Permanent low registration error of 0.05% in all zone (I, II, III) due to 3 fixed CCD chips.
- Superior durability and reliability
- High sensitivity in a minimum illumination of 25 lux with a F1.7 lens (16 lux with a F1.4 lens)
- Free from magnetic field interference
- High resistance to vibration and shock

## The Most Superior Picture Quality Ever Achieved with a CCD Camera

Sony's original spatial offset technology in the CCD chip alignment offers an amazingly high 560 TV lines (luminance at the center) of horizontal resolution. What's more, as a result of Sony's advanced CCD technology, the on-chip pre-amplifier, and the CDS (Correlated Double Sampling) circuit, an excellent S/N ratio of 58 dB is achieved.

## Increased Sensitivity without Increased Noise

The excellent noise performance of the CCD chip allows full gain up switching (0, +9, and +18dB) for low light shooting.

## Compact in Size and Light in Weight

The adoption of the CCD chip for the image pickup sensor reduces the block size so dramatically that the compact size and light weight of the DXC-3000A are quite remarkable. As a result, a clear view to the right and outstanding portability are obtained.



CCD chip    Conventional tube



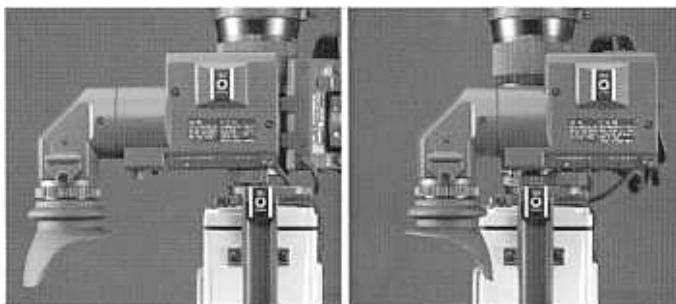
Conventional tube block

CCD block

## Adjustable Viewfinder to Maximize Viewing Comfort

The DXF-3000 Viewfinder has two adjustments that take the need for comfortable viewing by the operators into consideration. The viewfinder can be adjusted to allow left-eye viewing, which should prove invaluable to those operators who prefer to view with that eye.

In addition, the diopter can easily be adjusted to the length which will allow the most comfortable viewing by the operator.



left-eye viewing

right-eye viewing



diopter adjustment

## 100-min. of Consecutive Operations with One NP-1A

Because of the CCD image sensor, the DXC-3000A has very low power requirements. With one NP-1A battery, approximately 100-min. of consecutive operations are possible. An NP-1A battery can even be installed inside the DXC-3000A due to the small size of the image sensor.



## Convenient Built-in Microphone

The DXC-3000A is provided with a convenient built-in microphone, thus reducing the need for attaching optional microphones.



## No Blooming, No Comet-tails

Due to the adoption of the CCD image sensor, the DXC-3000A comfortably handles exceedingly strong light inputs which would cause "blooming" and "comet-tails" in tube cameras.

## User-friendly Automatic Functions for Greater Operational Simplicity

The fully automatic control functions of "Intelligent Software Servo" ease the complex balancing and adjustments pertinent to 3-chip/3-tube cameras and the camera conditions are always monitored by an interactive viewfinder character display. These functions allow the easy and precise setting of the camera for peak performance. These settings are automatically stored in a digital memory for about 12 hours after the power is turned off. All the setting and adjustment procedures of the automatic control functions of the DXC-3000A are virtually the same as those of the DXC-M3A.

## Automatic Balancing

The black set/black balance, as well as the white balance, can be automatically adjusted, in a matter of seconds, using the same switch. Moreover, once set, there's no need to re-adjust the black balance when the gain setting changes.



The black balance has been correctly adjusted.



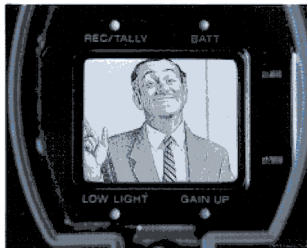
The white balance has been correctly adjusted.

## No More Automatic Centering

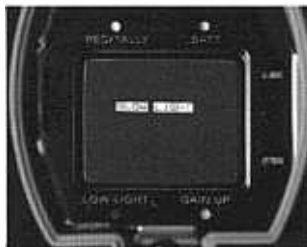
As mentioned previously, the permanent registration of the CCD image sensor frees the camera operator from making centering adjustments.

## Automatic Warning System

When the automatic set-up functions do not operate properly, the character indications and the LED indications of the viewfinder immediately tell the camera operator what to do. When recording, this system also warns the operator of any impending problem conditions such as low light or weak batteries.



LED indicators on the viewfinder



The light is insufficient. Add more light or raise the video output level via the gain selector.



The battery voltage is below approx. 11.0V. Replace the battery with a fully charged one.



The lens iris is not closed. Check the functions of the lens or the connection of the lens plug.



The color temperature is out of automatic control range. Change the filter and repeat the balancing procedure.

## Tape Remaining Time Indication

The tape remaining time is indicated on the viewfinder by the built-in character generator when connected to the Sony Portable U-matic VTR VO-6800 for recording. This indication appears on the viewfinder when the return video button on the camera is pressed while the VO-6800 is in the REC mode.



When the above indication appears, the tape remaining time is approximately 15 min.

## Status Display

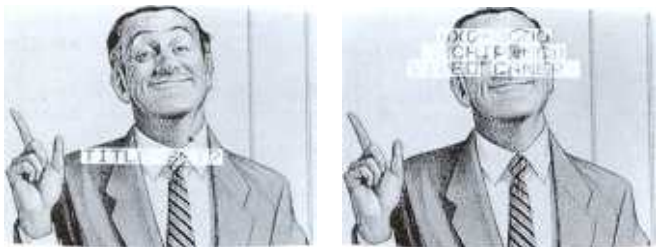
The operational status of the camera can be monitored as

necessary. Many useful messages appear in the viewfinder, such as the black and white balance modes, the gain level setting, and the low light indications of ON and OFF. The display can be also switched for fine-adjustment of the master pedestal from about  $-30\%$  to  $+30\%$  of the reference level in increments of about  $1\%$ , or of the automatic iris reference level from about  $-1.0$  to  $+1.0$  F stop in increments of about  $0.5$ . Moreover, the GAIN UP LED indicator on the viewfinder lights up when the gain selector is set to  $9$  dB or  $18$  dB.



### Title Setting

When the character generator is set to the title setting mode, it can produce letters and numbers for dates, titles, etc. A maximum of 48 characters in 4 lines, either in the upper or lower part of the viewfinder or monitor screen can be shown. They can also be recorded by the VTR.



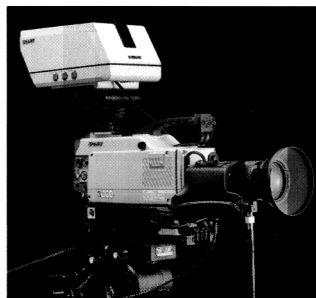
### Zebra Video Level Indication

When the zebra switch is set to ON, a zebra pattern appears on the part of the viewfinder screen where the video level of the picture is  $70\%$  to  $80\%$  of an IRE unit. This function comes in especially handy when manually adjusting the iris.



## More Features for Increased Versatility

### System Flexibility and Portability

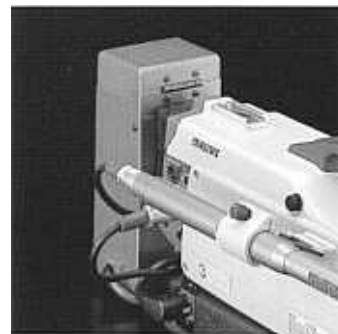


The DXC-3000A is the right choice for active and heavy duty outdoor shooting because it is so compact, light, and durable, and makes an ideal portable system when combined with the Sony Portable U-matic VTR VO-6800. Various other

portable VTRs, including  $1''$ , U-matic, Betamax, and VHS, can be connected, although certain functions of particular VTRs may not be compatible with the DXC-3000A. It also accepts a wide variety of bayonet-mount lenses, as well as both monochrome and color viewfinders. Furthermore, along with various optional accessories and peripheral equipment, the DXC-3000A can easily turn into a studio-use camera.

### Versatile Power Supplies

In the field, the DXC-3000A can operate for approximately 100 minutes, continuously, with one NP-1A battery installed inside the camera or 200 minutes with two NP-1A batteries encased in the optional DC-8 battery adaptor which can be conveniently attached to the back of camera. For longer operations, the DXC-3000A can be powered by either Anton Bauer batteries or an external power supply of DC 12 V connected to the XLR EXT DC IN connector.



In the studio, the CMA-8 AC Power Adaptor is used for AC operation.

### Other Features

- Built-in sync generator
- 2H vertical image enhancer for increased sharpness
- Built-in color bar generator
- Color temperature conversion filters for optimum color balance indoors and out
- Conductive rubber shielding of the camera body to avoid noise interference



# Product Configurations

## DXC-3000AK



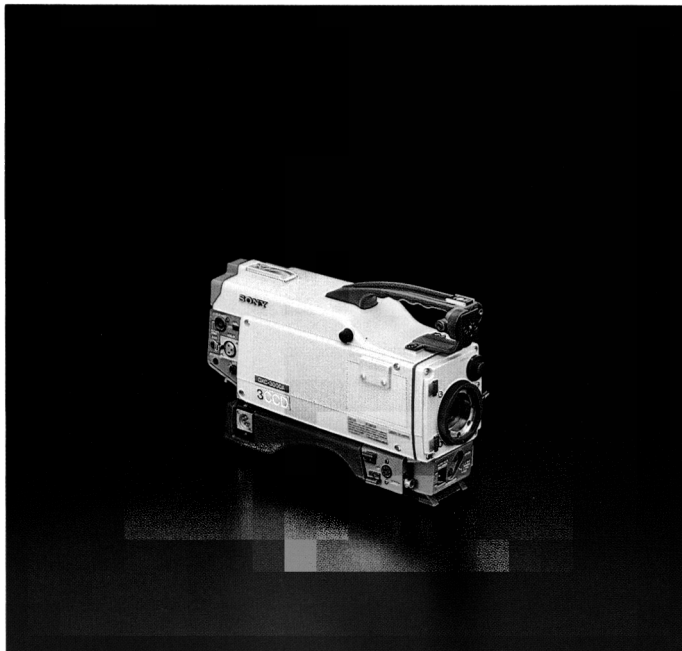
- ① Carrying case LC-3001
- ② Color video camera head
- ③ Camera cable CCQ-2BRS
- ④ Viewfinder DXF-3000
- ⑤ Zoom lens VCL-1012BY
- ⑥ Tripod adaptor VCT-12

## DXC-3000A



- ① Carrying case LC-3001
- ② Color video camera head
- ③ Camera cable CCQ-2BRS
- ④ Viewfinder DXF-3000
- ⑤ Tripod adaptor VCT-12

## DXC-3000AH



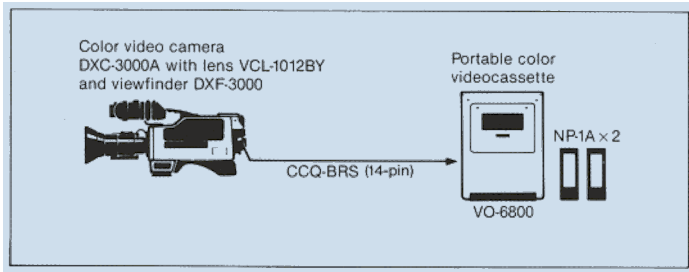
- ① Color video camera head

Model	DXC-3000AK	DXC-3000A	DXC-3000AH
Composition			
Color video camera head	Yes	Yes	Yes
Zoom lens VCL-1012BY	Yes	No	No
Viewfinder DXF-3000	Yes	Yes	No
Carrying case LC-3001	Yes	Yes	No
Camera cable CCQ-2BRS	Yes	Yes	No
Tripod adaptor VCT-12	Yes	Yes	No

# System Applications

## 1. Portable Operation (NP-1A Battery Operated)

When two NP-1A rechargeable battery packs are installed in the VO-6800, continuous operation of approximately 80 minutes is possible.



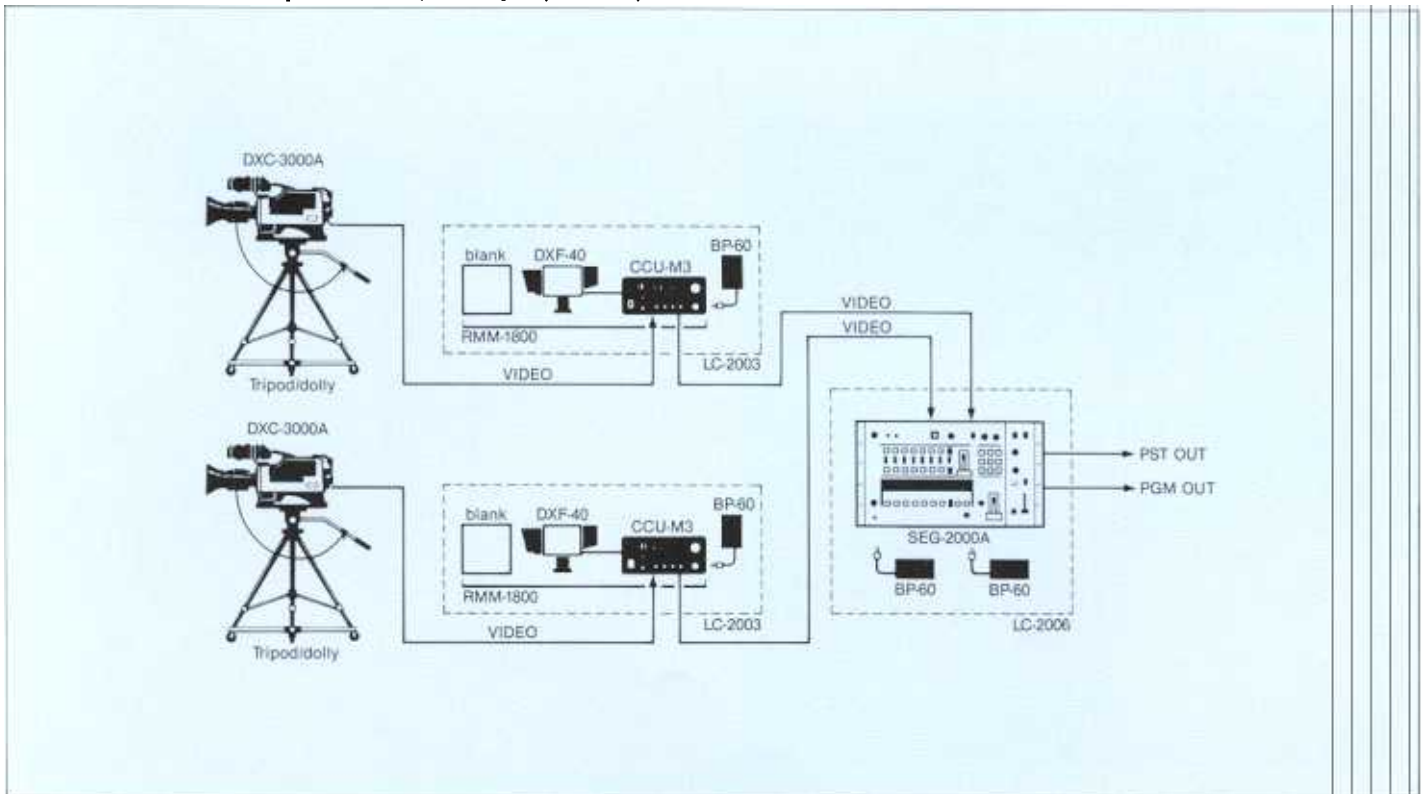
### VTR Interface

The DXC-3000A can be interfaced with various types of portable VTRs, including U-matic, 1", 1/2" Betamax, and VHS format, by setting the VTR select switch to the appropriate position shown in the chart, although certain functions of any particular VTR may not be compatible with the DXC-3000A.

By flipping the switch inside camera, separate luminance (Y) and chrominance (C) signals also become available via CCQ-BRS (14-pin) cable.

VTR select switch	VTRs	Cable for connection
VTR 1	U-matic, 1" VTR	CCQ-AR/ BRS
	Institutional Betamax	CCQJ-2
VTR 2	Consumer Betamax	CCQK-2
VTR 3	VHS format VTR by JVC	CCQJ-2
VTR 4	VHS format VTR by Panasonic	CCQJ-2

## 2. Field Camera Operation (Battery Operated)



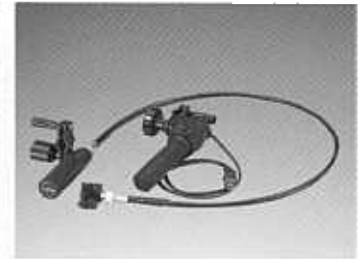
# Optional Accessories

## Lenses

VCL-1012BY (F1.7, 10 - 120mm)  
 VCL-915BY (F1.8, 9.5 - 143mm)  
 J13×9B4 IRS-A (F1.6, 9 - 117mm)  
 J18×9B4 IRS (F1.7, 9 - 162mm)  
 A3.5×6.5BRM-8 (F1.4, 6.5 - 23mm)  
 A14×9BERM-8P-2 (F1.7, 9 - 126mm)  
 J18×8.5B4 IRS (F1.7, 8.5 - 153mm)



J18 x 8.5B4 IRS    A14 x 9BERM-8P-2    VCL-1012BY    J13 x 9B4 IRS-A    VCL-915BY



**LO-23**  
 Flexible Cable Unit (Combination of Servo Zoom and Manual Focus Unit) for VCL-1012BY



**LO-26**  
 Flexible Cable Unit for VCL-915BY



**DXF-3000**  
 1.5" Monochrome Electronic Viewfinder



**DXF-50**  
 5" Monochrome Electronic Viewfinder



**DXF-40**  
 4" Monochrome Electronic Viewfinder



**CCU-M3**  
 Camera Control Unit



**CMA-8**  
 AC Power Adaptor for DXC-3000A or CCU-M3



**CMA-9**  
 AC Power Adaptor for DXC-3000A, CA-M3 or CCU-M3



**CA-M3**  
 Camera Cable Extension Adaptor



**ECM-672**  
 Electret Condenser Microphone



**C-74**  
 Condenser Microphone



**CAC-11A**  
 Camera Mic Holder for ECM-672/C-74



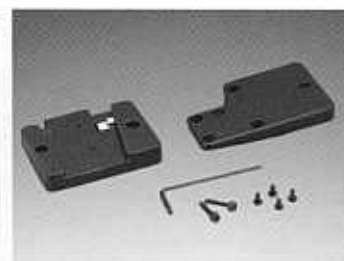
**NP-1A**  
 Rechargeable Ni-Cd Battery Pack



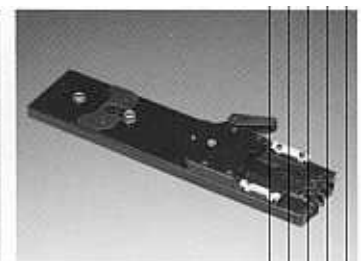
**BC-1WA**  
 Battery Charger for up to four NP-1A Battery Packs



**DC-8**  
 Camera Battery Adaptor



**CAC-21**  
 Battery Shoe



**VCT-12**  
 Tripod Adaptor



**DR-100**  
Intercommunication Headset



**LC-3001**  
Carrying Case for DXC-3000A

### Cables

- CCQ-2BRS/5BRS/10BRS:** Shielded Cable for Connection to Portable VTR (ex. VO-6800) or CMA-8 (14-pin/14-pin)
- CCQ-2AR/5AR/10AR:** Cable for Connection to Portable VTR (ex. VO-6800) or CMA-8 (14-pin/14-pin)
- CCQ-10AM/25AM/50AM/100AM:** Cable for Connection to CCU-M3 (14-pin/14-pin)
- CCQJ-2:** Cable for Connection to 1/2" VHS VTRs (14-pin/10-pin)
- CCQK-2:** Cable for Connection to 1/2" Beta VTRs (14-pin/14-pin)
- CCZ-M10/M100:** Extension Cable for Connection between CHU Adaptor and CCU Adaptor (26-pin/26-pin)
- EC-0.5C2:** Microphone Cable for ECM-672/C-74 (XLR 3-pin connector)

## Peripheral Equipment



**VO-6800**  
Portable U-matic Videocassette Recorder



**VO-5850**  
U-matic Videocassette Recorder



**VO-9600**  
U-matic SP Videocassette Recorder



**SEG-2550A**  
Color Special Effect Generator



**SEG-2000A**  
Color Special Effect Generator



**WEX-2000**  
Wipe Pattern Extender



**CRK-2000**  
Universal Chroma Keyer



**PVM-1220**  
Color Video Monitor



**PVM-1271Q**  
Color Video Monitor



**PVM-8020**  
Portable Video Monitor



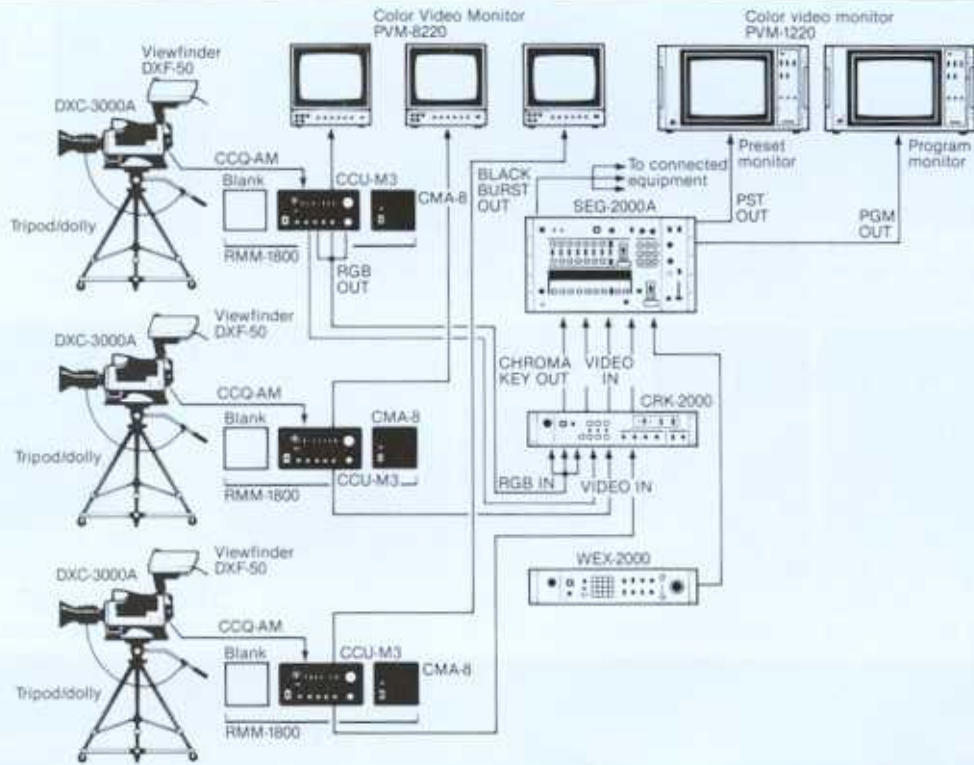
**PVM-8220**  
Color Video Monitor



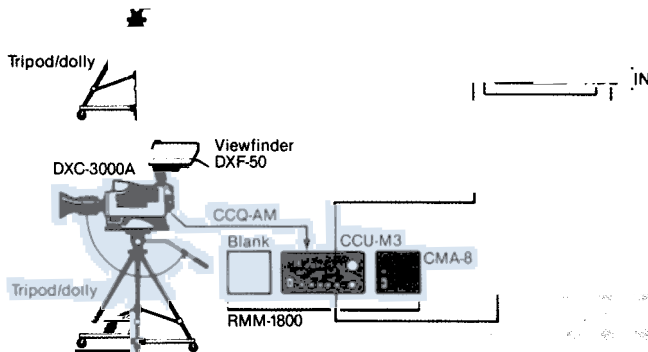
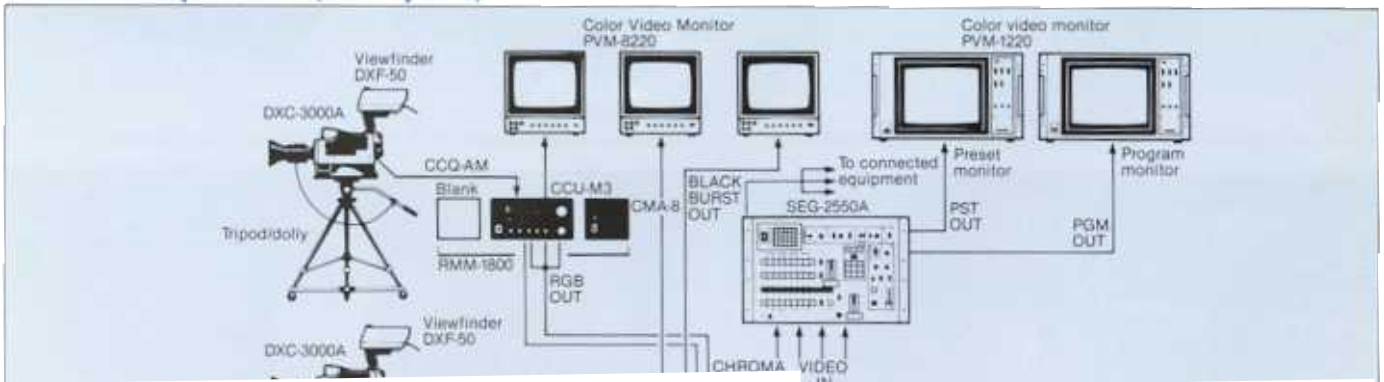
**PVM-91**  
Monochrome Video Monitor



**RMM-1800**  
Rack-mounting Kit for CCU-M3 and CMA-8



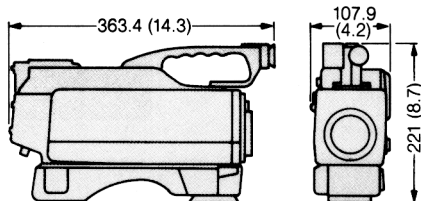
#### 4. Studio Operation (Example 2)



# Specifications

## DXC-3000A Camera Head

Image device	Interline-transfer CCD, 3-Chip
Optics	F1.4 medium index prism system
	510 × 492 (h/v)
	8.8 mm × 6.6 mm (equivalent to a 2/3-inch pickup tube)
	1: 3,200°K 2: 5,600°K + 1/8 ND 3: 5,600°K
Lens mount	EIA standards, NTSC color system
	525 lines, 2:1 interlace, 30 frames/sec.
	15.734 kHz
	Internal or External with the BS or VBS signal supplied to the GEN LOCK input connector, or the reference signal input to the VTR/CCU/CMA connector from the GEN LOCK connector of the CCU-M3
Horizontal resolution	560 lines (Y channel at the center)
	25 lux with F1.7, +18 dB (16 lux with F1.4, +18 dB)
	2,000 lux (200 footcandles) with F5.6, at 3,200°K
	0 dB, 9 dB or 18 dB
	Composite: 1.0 V(p-p), sync negative, 75 ohms, unbalanced Y/C: [Y] 1.0 V(p-p), sync negative, 75 ohms, unbalanced [C] 0.286 V(p-p), 75 ohms, without sync
Signal to noise ratio	58 dB
Registration (A type)	0.05 % for Zone I 0.05 % for Zone II 0.05 % for Zone III
Geometric distortion	All areas 0 % (excluding geometric distortion of lenses)
Inputs/Outputs	VTR/CCU/CMA connector*: Sony Q-type, 14-pin MIC IN: XLR-type, 3-pin GEN LOCK: BNC-type VIDEO OUT: BNC-type LENS: 6-pin VF: 8-pin EARPHONE: mini jack INTERCOM: mini intercom jack *Video output, microphone output, power input, recording and playback picture, etc.
Power requirements	DC 12 V
Power consumption	9.2 W (for camera only)
Operating temperature	-5°C ~ 45°C (23°F ~ 113°F)
Storage temperature	-20°C ~ 60°C (-4°F ~ 140°F)
Weight	
Dimensions	



Unit: mm (inches)

## VCL-1012BY Zoom lens

Focal length	10 mm to 120 mm
	Manual and motorized, selectable zooming ratio: 12 ×
Maximum aperture ratio	1:1.7
	Manual and auto, selectable 1.7 to 16 and C (closed)
Range of object field (at the distance of 1 meter)	W (wide angle): 616 × 822 mm (24.3 × 32.4") T (telephoto): 51.4 × 68.5 mm (2.0 × 2.7")
Minimum object distance	1 m
Filter thread	72 mm dia. 0.75 mm-pitch
	Approx. 1.4 kg (3 lb 1 oz) with hood
	Approx. 120 mm dia. × 204 mm (4.7 × 8.0")

## DXF-3000 Viewfinder

Picture tube	1.5-inch monochrome
Resolution	
Power requirements	DC 12 V
Power consumption	2.3 W

## LC-3001 Carrying Case

Weight	Approx. 4.4 kg (9 lb 8 oz)
Dimensions	Approx. 620(W) × 394(H) × 234(D)mm (24.4 × 15.5 × 9.2")

## VCT-12 Tripod Attachment

Weight	Approx. 770 g (1 lb 11 oz)
Dimensions	Approx. 105(W) × 32(H) × 320(D)mm (4.1 × 1.3 × 12.6")

Design and specifications subject to change without notice.