

Photo/TV Checklist

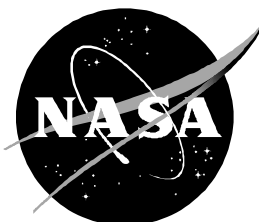
**Mission Operations Directorate
Operations Division**

**Generic, Rev H
October 19, 2001**

NOTE
For STS-108 and subsequent flights

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



United Space Alliance

Verify this is the correct version for the pending operation (training, simulation or flight).
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PHOTO/TV CHECKLIST

GENERIC, Rev H (Oct 19, 2001)

PCN-1 (Jan 4, 2002) Sheet 1 of 1

List of Implemented Change Requests (482s):

P/TV-661

Incorporate the following:

1. Replace iii thru x
2. Replace Section 1 (16 pages)
3. Replace 2-1 thru 2-22
After 2-22, delete 2-23 thru 2-32
4. Replace 3-3 & 3-4, 3-7 thru 3-12
5. Replace 4-5 & 4-6
6. Replace 6-9 thru 6-20
7. Replace 8-1 & 8-2
8. Replace 9-5 & 9-6
9. Replace 11-3 & 11-4
10. Replace Section 15 (4 pages)

NOTE
For STS-109 and subsequent flights

Prepared by: _____
Book Manager

Approved by: _____
Lead, Shuttle Photo/TV Group (USA)

Accepted by: _____
FDF Subsystem Manager (NASA)

Encl: 78 pages

File this PCN immediately behind the front cover as a permanent record

MISSION OPERATIONS DIRECTORATE

PHOTO/TV CHECKLIST

GENERIC, REVISION H

October 19, 2001

PREPARED BY:

G. Kilgo
Book Manager (USA)

R. Tijerina
Assistant Book Manager (USA)

APPROVED BY:

D. Williams
Lead, Shuttle Photo/TV Group (USA)

ACCEPTED BY:

John W. Bearley
FDF Subsystem Manager (NASA)

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Incorporates the following:

482#: P/TV-653

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DX34/G. Kilgo	281-244-7926
Assistant Book Manager	DX34/R. Tijerina	281-244-7927
Lead, Shuttle Photo/TV Group	DX34/D. Williams	281-244-7882

PHOTO/TV CHECKLIST

LIST OF EFFECTIVE PAGES

GENERIC 11/13/87
 REV H 10/19/01
 PCN-1 01/04/02

Sign Off	* ALL/GEN H	2-22	ALL/GEN H,1
ii	* ALL/GEN H	2-23	deleted
iii	* ALL/GEN H,1	2-24	deleted
iv	* ALL/GEN H,1	2-25	deleted
v	* ALL/GEN H,1	2-26	deleted
vi	* ALL/GEN H,1	2-27	deleted
vii	* ALL/GEN H,1	2-28	deleted
viii	* ALL/GEN H,1	2-29	deleted
ix	* ALL/GEN H,1	2-30	deleted
x	* ALL/GEN H	2-31	deleted
1-1	ALL/GEN H	2-32	deleted
1-2	ALL/GEN H,1	3-1	ALL/GEN H
1-3	ALL/GEN H,1	3-2	ALL/GEN H
1-4	ALL/GEN H	3-3	ALL/GEN H
1-5	ALL/GEN H,1	3-4	ALL/GEN H,1
1-6	ALL/GEN H,1	3-5	ALL/GEN H
1-7	ALL/GEN H,1	3-6	ALL/GEN H
1-8	ALL/GEN H	3-7	ALL/GEN H
1-9	ALL/GEN H	3-8	ALL/GEN H,1
1-10	ALL/GEN H	3-9	ALL/GEN H,1
1-11	ALL/GEN H	3-10	ALL/GEN H,1
1-12	ALL/GEN H,1	3-11	ALL/GEN H,1
1-13	ALL/GEN H,1	3-12	ALL/GEN H,1
1-14	ALL/GEN H,1	3-13	ALL/GEN H
1-15	ALL/GEN H,1	3-14	ALL/GEN H
1-16	ALL/GEN H	4-1	ALL/GEN H
2-1	ALL/GEN H,1	4-2	ALL/GEN H
2-2	ALL/GEN H	4-3	ALL/GEN H
2-3	ALL/GEN H	4-4	ALL/GEN H
2-4	ALL/GEN H,1	4-5	ALL/GEN H,1
2-5	ALL/GEN H,1	4-6	ALL/GEN H
2-6	ALL/GEN H,1	4-7	ALL/GEN H
2-7	ALL/GEN H,1	4-8	ALL/GEN H
2-8	ALL/GEN H	4-9	ALL/GEN H
2-9	ALL/GEN H	4-10	ALL/GEN H
2-10	ALL/GEN H	5-1	ALL/GEN H
2-11	ALL/GEN H	5-2	ALL/GEN H
2-12	ALL/GEN H,1	5-3	ALL/GEN H
2-13	ALL/GEN H,1	5-4	ALL/GEN H
2-14	ALL/GEN H,1	5-5	ALL/GEN H
2-15	ALL/GEN H,1	5-6	ALL/GEN H
2-16	ALL/GEN H,1	6-1	ALL/GEN H
2-17	ALL/GEN H,1	6-2	ALL/GEN H
2-18	ALL/GEN H,1	6-3	ALL/GEN H
2-19	ALL/GEN H,1	6-4	ALL/GEN H
2-20	ALL/GEN H,1	6-5	ALL/GEN H
2-21	ALL/GEN H,1	6-6	ALL/GEN H

* - Omit from flight book

6-7	ALL/GEN H	10-22	ALL/GEN H
6-8	ALL/GEN H	10-23	ALL/GEN H
6-9	ALL/GEN H	10-24	ALL/GEN H
6-10	ALL/GEN H,1	10-25	ALL/GEN H
6-11	ALL/GEN H,1	10-26	ALL/GEN H
6-12	ALL/GEN H,1	10-27	ALL/GEN H
6-13	ALL/GEN H,1	10-28	ALL/GEN H
6-14	ALL/GEN H,1	11-1	ALL/GEN H
6-15	ALL/GEN H,1	11-2	ALL/GEN H
6-16	ALL/GEN H,1	11-3	ALL/GEN H
6-17	ALL/GEN H	11-4	ALL/GEN H,1
6-18	ALL/GEN H	11-5	ALL/GEN H
6-19	ALL/GEN H,1	11-6	ALL/GEN H
6-20	ALL/GEN H	12-1	ALL/GEN H
7-1	ALL/GEN H	12-2	ALL/GEN H
7-2	ALL/GEN H	12-3	ALL/GEN H
7-3	ALL/GEN H	12-4	ALL/GEN H
7-4	ALL/GEN H	13-1	ALL/GEN H
7-5	ALL/GEN H	13-2	ALL/GEN H
7-6	ALL/GEN H	13-3	ALL/GEN H
7-7	ALL/GEN H	13-4	ALL/GEN H
7-8	ALL/GEN H	14-1	ALL/GEN H
7-9	ALL/GEN H	14-2	ALL/GEN H
7-10	ALL/GEN H	15-1	ALL/GEN H
8-1	ALL/GEN H	15-2	ALL/GEN H,1
8-2	ALL/GEN H,1	15-3	ALL/GEN H,1
9-1	ALL/GEN H	15-4	ALL/GEN H
9-2	ALL/GEN H		
9-3	ALL/GEN H		
9-4	ALL/GEN H		
9-5	ALL/GEN H		
9-6	ALL/GEN H,1		
9-7	ALL/GEN H		
9-8	ALL/GEN H		
10-1	ALL/GEN H		
10-2	ALL/GEN H		
10-3	ALL/GEN H		
10-4	ALL/GEN H		
10-5	ALL/GEN H		
10-6	ALL/GEN H		
10-7	ALL/GEN H		
10-8	ALL/GEN H		
10-9	ALL/GEN H		
10-10	ALL/GEN H		
10-11	ALL/GEN H		
10-12	ALL/GEN H		
10-13	ALL/GEN H		
10-14	ALL/GEN H		
10-15	ALL/GEN H		
10-16	ALL/GEN H		
10-17	ALL/GEN H		
10-18	ALL/GEN H		
10-19	ALL/GEN H		
10-20	ALL/GEN H		
10-21	ALL/GEN H		

CONTENTS

	<u>PAGE</u>
<u>NIKON F5</u>	1-1
SPECIFICATIONS	1-2
LENS DATA	1-3
NOMENCLATURE	1-4
NOMINAL SETUP	1-7
CUSTOM SETTINGS	1-8
MALS	1-12
1.1 CAMR FAILS TO FIRE	1-12
1.2 CANNOT SEE THRU VIEWFINDER	1-13
1.3 CAMR FAILS TO AUTOFOCUS	1-14
1.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS	1-15
<u>DIGITAL CAMERA SYSTEM (DCS)</u>	2-1
DCS 760	2-2
SPECIFICATIONS	2-2
LENS DATA	2-3
NOMENCLATURE	2-4
NOMINAL SETUP	2-8
CUSTOM SETTINGS	2-9
DATE/TIME SET	2-12
DELETING SINGLE IMAGES	2-12
ADDING .WAV FILES TO AN IMAGE	2-12
IMAGE VIEWING ON PGSC	2-13
DCS FILE DNLK	2-14
SUSPECT HARD DRIVE SCAN	2-15
IMAGE FILE COMPRESSION	2-16
MALS	2-17
2.1 CAMR FAILS TO FIRE	2-17
2.2 CANNOT SEE THRU VIEWFINDER	2-18
2.3 CAMR FAILS TO AUTOFOCUS	2-19
2.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS	2-20
2.5 EXCESSIVE SAVE IMAGE TO HARD DISK TIME	2-21

	<u>PAGE</u>
<u>HASSELBLAD 203S</u>	3-1
SPECIFICATIONS	3-2
LENS DATA	3-2
NOMENCLATURE	3-3
NOMINAL SETUP	3-5
HORIZONTAL(VERTICAL) GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)	3-6
STEREO AND MAPPING TIME INTERVALS	3-6
DEPTH OF FIELD FOR PLB AND EVA PHOTOGRAPHY	3-7
MALS	3-8
3.1 CANNOT SEE THRU VIEWFINDER	3-8
3.2 NO CAMR ACTIVATION OR FINDER DISPLAY	3-9
3.3 CAMR FAILS TO OPERATE	3-10
3.4 CANNOT REMOVE LENS	3-11
3.5 CANNOT INSTALL LENS	3-12
FILM LOADING	3-13
DATA MODULE PROGRAMMING	3-14
<u>LINHOF</u>	4-1
SPECIFICATIONS	4-2
LENS DATA	4-2
HORIZONTAL GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)	4-2
NOMENCLATURE	4-3
NOMINAL SETUP	4-5
MALS	4-6
4.1 CAMR FAILS TO FIRE	4-6
4.2 CAMR FAILS TO PWR ON	4-7
4.3 LENS SEQUENCE LT (RED) REMAINS ON	4-8
FILM LOADING	4-9
<u>SPOTMETER 303</u>	5-1
SPECIFICATIONS	5-2
NOMENCLATURE	5-2
OPERATIONS	5-3
MALS	5-4
5.1 DISPLAY OFF – NO READING	5-4
5.2 DISPLAY FLASHING	5-5
5.3 'E' IN DISPLAY	5-6

	<u>PAGE</u>
<u>SONY PD100</u>	6-1
SPECIFICATIONS	6-2
WIDE ANGLE CONVERTER	6-2
LENS DATA	6-2
NOMENCLATURE	6-3
NOMINAL SETUP	6-7
NOMINAL MENU SETTINGS	6-8
CAMR MODE	6-8
VTR MODE	6-8
MANUAL SETTINGS	6-9
SCHEMATICS	6-10
SINGLE CAMCORDER	6-10
MULTIPLE CAMCORDER W/PIGMY CABLE	6-11
AND CCPI	6-12
SINGLE CAMCORDER W/CAMCORDER MICROPHONE	6-13
CAMCORDER VIDEO W/ORBITER AUDIO	6-14
AS VTR (LINE IN) W/ORBITER AUDIO,VIDEO	6-15
PLAYBACK W/AUDIO,VIDEO	6-16
EDITING – CAMCORDER/CAMCORDER VIA FIREWIRE	6-17
– CAMCORDER/VTR VIA FIREWIRE	6-18
– CAMCORDER/VTR VIA ORBITER TV SYSTEM	6-19
CAMCORDER/BATT PWR SPEAKER MICROPHONE UNIT (BPSMU) W/PHOTOFLOOD	6-20
 <u>MINI-CAM</u>	 7-1
SPECIFICATIONS	7-2
LENS DATA	7-2
BRACKET DATA	7-2
NOMENCLATURE	7-3
SCHEMATICS	7-4
ASCENT SETUP	7-4
ENTRY VIDEO SETUP	7-5
UNSYNCHRONIZED MINI-CAM VIDEO ROUTED TO V10 (OPTION #1)	7-6
(OPTION #2)	7-7
CCTV SYSTEM	7-8
SYNCHRONIZED MINI-CAM VIDEO ROUTED TO CCTV SYSTEM	7-9

	<u>PAGE</u>
<u>LCD</u>	8-1
SPECIFICATIONS	8-2
NOMENCLATURE	8-2
<u>V10</u>	9-1
SPECIFICATIONS	9-2
NOMENCLATURE	9-3
MENU SETTINGS	9-3
SCHEMATICS	9-6
V10 AS VTR (LINE IN) W/ORBITER AUDIO, VIDEO	9-6
PLAYBACK W/AUDIO, VIDEO	9-7
EDITING – V10/V10 VIA FIREWIRE	9-8
<u>CCTV</u>	10-1
SPECIFICATIONS	10-2
LENS DATA	10-3
ILLUMINATOR DATA	10-3
PLB LOCATIONS	10-4
VIDEO PROCESSING UNIT (VPU)	10-5
VPU/WVS VIDEO ROUTING OVERVIEW	10-6
CCTV SYSTEM OVERVIEW	10-7
PGSC VIDEO OVERLAY	10-8
ACCESSORIES	10-9
CAMCORDER/COMPACT PORTABLE LIGHT POWER INTERFACE (CCPI)	10-9
COMPACT PORTABLE LIGHT (CPL)	10-10
PHOTO FLOODLIGHT	10-10
MALS	10-11
10.1 NO MONITOR PICTURE/MENU	10-11
10.2 NO CAMR VIDEO	10-18
10.3 NO VTR PLAYBACK VIDEO	10-20
10.4 NO CAMCORDER VIDEO ON COLOR TV MONITOR	10-22
10.5 RMS TV cb OPENS	10-26

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NIKON F5

	<u>PAGE</u>
SPECIFICATIONS	1-2
LENS DATA	1-3
NOMENCLATURE	1-4
NOMINAL SETUP	1-7
CUSTOM SETTINGS	1-8
MALS	1-12
1.1 CAMR FAILS TO FIRE	1-12
1.2 CANNOT SEE THRU VIEWFINDER	1-13
1.3 CAMR FAILS TO AUTOFOCUS	1-14
1.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS	1-15

NIKON F5

SPECIFICATIONS

CAMR BODY

FILM WIDTH: 35mm

FILM IMAGE SIZE: 24mm x 36mm

FILM LOAD: 36 exposures per roll

EXPOSURE CONTROL: Auto (program, shutter priority, aperture priority), Manual

METER PATTERN: 3D Color Matrix, Center Weighted, Spot

EXPOSURE COMP: ± 5 stops in 1/3 EV stop increments

SHUTTER:

Program & Aperture Priority – 1/8000 thru 30 sec (virtually stepless)

Manual & Shutter Priority – 1/8000 thru 30 sec (1/3 stop increments) and Bulb (manual only)

ISO SETTING:

DX – 25–5000

Manual – 6–6400 in 1/3 stop increments

FILM ADVANCE SPEED:

Single

Continuous – C_L (3 fps), C_H (7 fps), C_S (1 fps)

BATT: 8 AA

BATT VOLTAGE: 12V

BATT LIFETIME: ~2000 exposures/55 rolls

FUSE: None

BODY WEIGHT: w/o batts – 2.67 lb

FLASH

BATT: 4 AA

BATT LIFETIME: ~4–6 rolls, 36 exp

WEIGHT: w/o batts – .85 lb

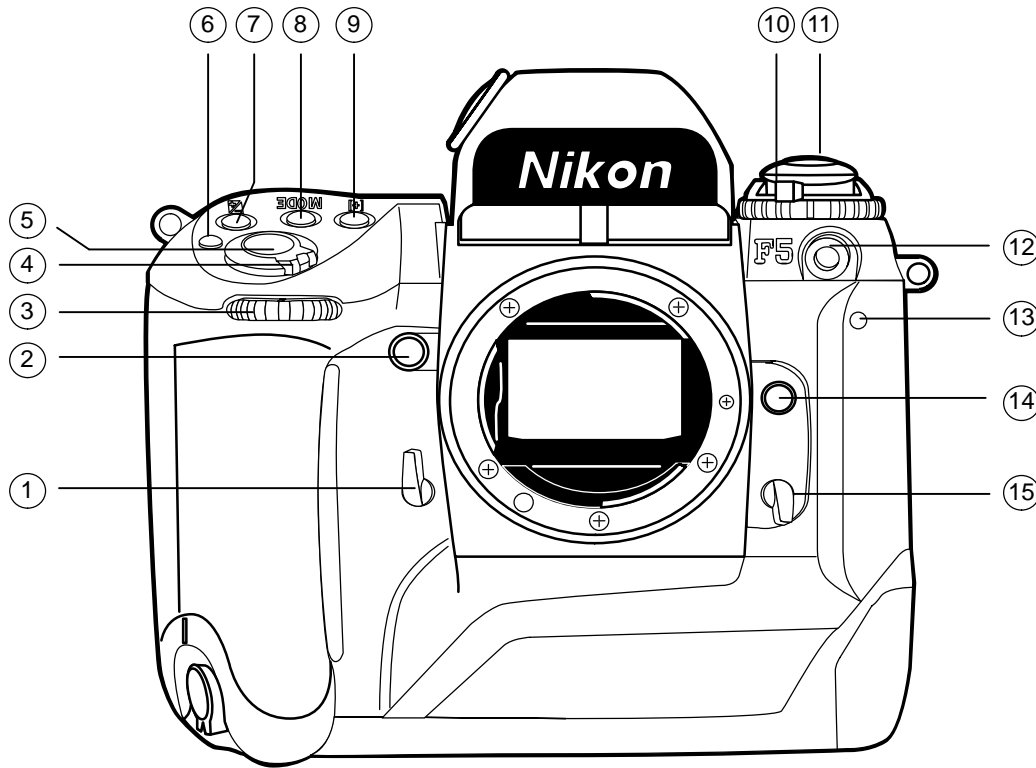
NIKON F5 (Continued)

LENS DATA

Lens	Aperture Range (f/stop)	Approximate Field of View (FOV)			Approx Minimum Focus Distance (ft)	Weight (lb)	Filter Size	M-A Switch	EVA Certified
		Horizontal	Vertical	Diagonal					
16mm AF	f/2.8-f/22	150°	100°	180°	1.0	0.69	Rear		
17-35mm AFD	f/2.8-f/22	93°-54°	70°-38°	104°-64°	1.0	1.64	77mm	Yes	
20mm AF	f/2.8-f/22	84°	62°	94°	0.85	0.62	62mm		
20-35mm AFD	f/2.8-f/22	84°-54°	62°-38°	94°-62°	1.7	1.36	77mm	Yes	
28mm AF	f/2.8-f/22	66°	46°	74°	1.25	0.46	52mm		Yes
28mm AFD	f/1.4-f/16	66°	46°	74°	1.14	1.15	72mm	Yes	
28-70mm AFD	f/2.8-f/22	66°-29°	46°-20°	74°-34°	2.3(1.5 ft macro)	1.95	77mm	Yes	
35mm AF	f/2.0-f/22	54°	38°	62°	0.9	0.51	52mm		Yes
24-50mm AF	f/3.3(4.5)-f/22	74°-40°	53°-27°	84°-46°	2.0 (1.6 ft macro)	0.86	62mm		
35-70mm AF	f/2.8-f/22	54°-29°	38°-20°	62°-34°	2.0 (0.9 ft macro)	1.5	62mm		
50mm AFD	f/1.4-f/16	40°	27°	46°	1.5	0.59	52mm		Yes
60mm AF	f/2.8-f/32	33°	23°	39°	0.73	0.93	62mm	Yes	
85mm AF	f/1.8-f/16	24°	16°	29°	3.0	0.93	62mm		
105mm AF	f/2.8-f/32	19°	13°	23°	1.0	1.22	52mm	Yes	
180mm AFD	f/2.8-f/22	11°	8°	13°	5.0	1.72	72mm		
80-200mm AFD	f/2.8-f/22	25°-10°	17°-7°	30°-12°	6.0	2.98	77mm	Yes	
300mm AF	f/2.8-f/22	7°	5°	8°	10.0	6.36	39mm	Yes	
400mm AFD	f/2.8-f/22	5°	3°	6°	9.75	15.65	52mm	Yes	

NIKON F5 (Continued)

NOMENCLATURE



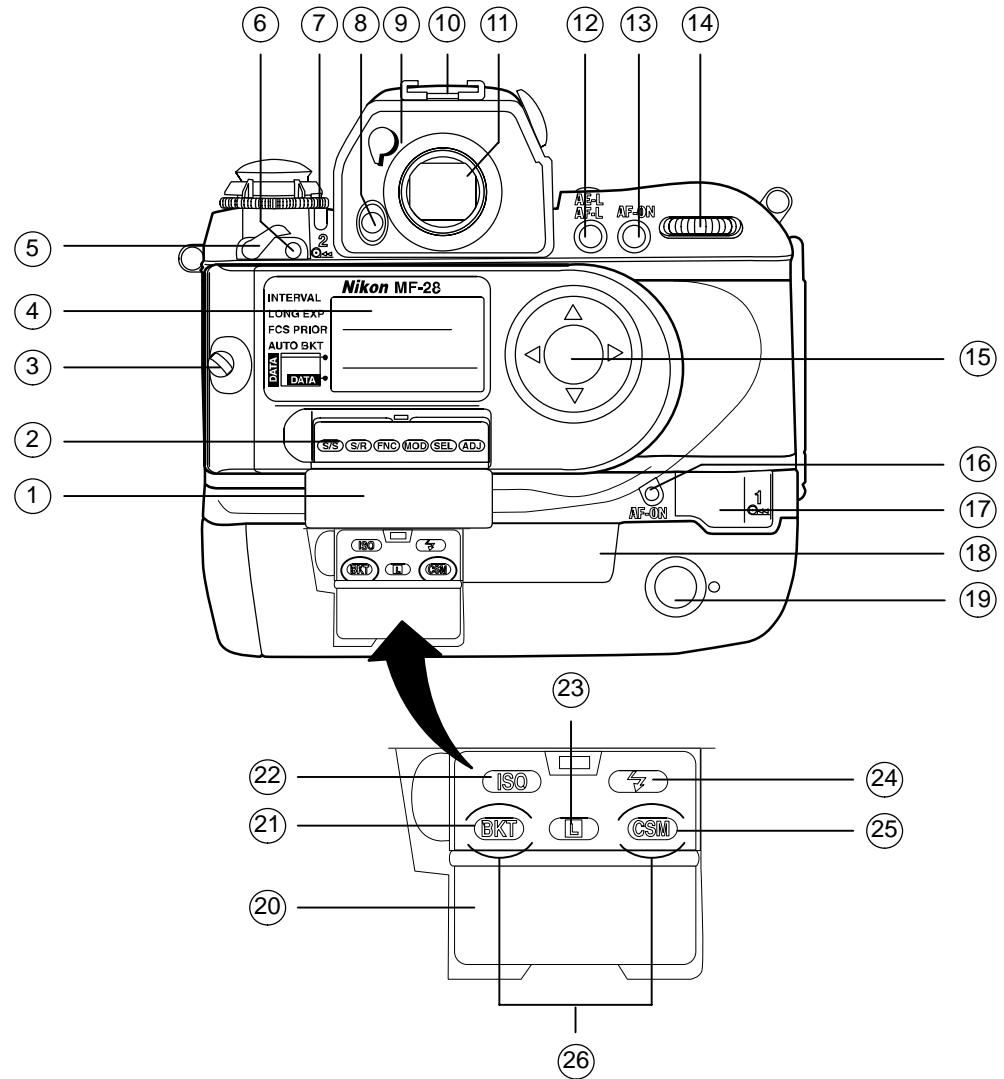
- ① Mirror Lockup Lever
- ② Depth of Field Preview pb
- ③ Sub-Command Dial
- ④ Pwr/LCD Panel Illumination
- ⑤ Shutter Release pb
- ⑥ Pwr sw Lock Release
- ⑦ Exposure Compensation pb
- ⑧ Exposure Mode pb
- ⑨ AF Area Mode pb
- ⑩ Camr Back Lock Release
- ⑪ Film Rewind Knob
- ⑫ PC Connector
- ⑬ Selftimer LED
- ⑭ Lens Release pb
- ⑮ Body Focus Mode Selector

NIKON F5 (Continued)

NOMENCLATURE (Continued)

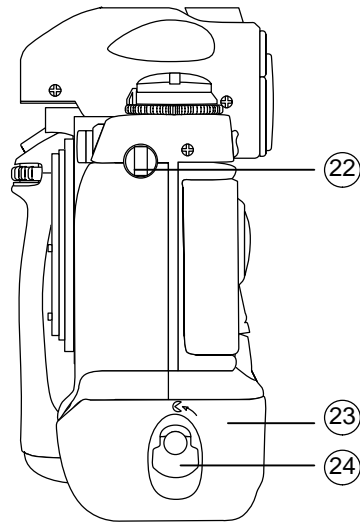
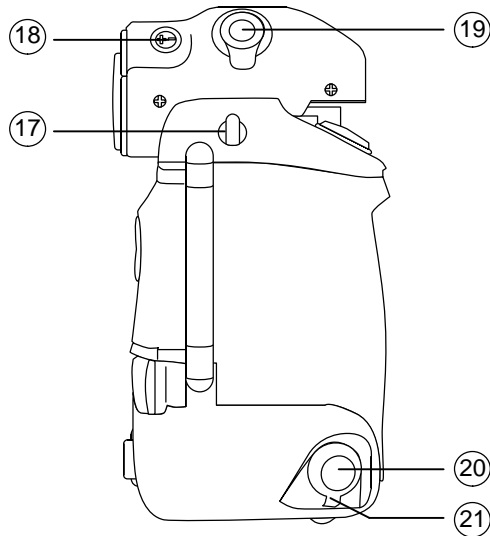
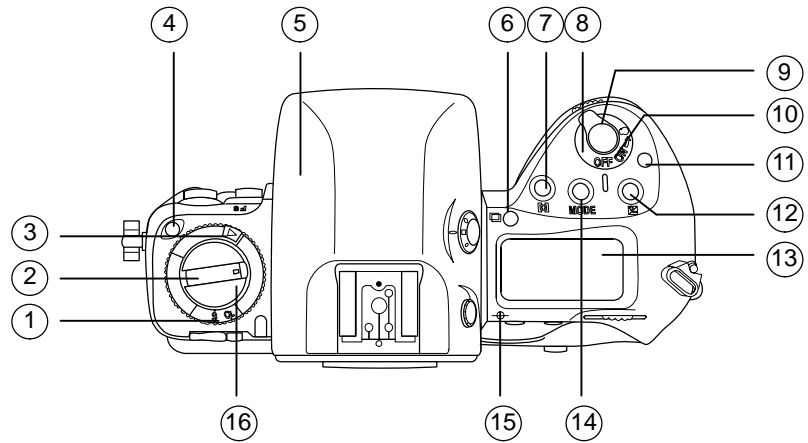
- ① Data Back Control Panel Cover
- ② Data Back Controls

S/S	Start/Stop pb	MOD	Mode pb
S/R	Set/Reset pb	SEL	Select pb
FNC	Function pb	ADJ	Adjust pb
- ③ Data Back Batt Chamber Lid Screw
- ④ Data Back LCD Panel
- ⑤ Film Rewind Lever 2
- ⑥ Film Rewind Lever 2 Lock Release
- ⑦ Alert LED
- ⑧ Finder Release pb
- ⑨ Eyepiece Shutter Lever
- ⑩ Accessory Shoe
- ⑪ Viewfinder Eyepiece
- ⑫ Auto Exposure/Auto Focus Lock pb
- ⑬ AF Start pb
- ⑭ Main Command Dial
- ⑮ Focus Area Selector
- ⑯ AF Start pb (for Vertical Shooting)
- ⑰ Film Rewind pb 1 (under door)
- ⑱ Rear LCD Panel
- ⑲ 10-Pin Remote Terminal
- ⑳ Rear Control Panel Cover
- ㉑ Body Bracketing pb
- ㉒ ISO pb
- ㉓ Shutter Speed/Aperture/Focus Area Lock pb
- ㉔ Flash Sync Mode pb
- ㉕ Custom Setting Menu pb
- ㉖ Green Panic pb



NIKON F5 (Continued)

NOMENCLATURE (Concluded)



- ① Film Advance Mode/Self Timer Selector
- ② Film Rewind Crank
- ③ Camr Back Lock Release
- ④ Film Advance Mode Selector Lock Release
- ⑤ Interchangeable Focusing Screen
- ⑥ Multiple Exposure pb
- ⑦ AF Area Mode pb
- ⑧ Sub Command Dial
- ⑨ Pwr/LCD Panel Illumination sw
- ⑩ Shutter Release pb
- ⑪ Pwr sw Lock Release
- ⑫ Exposure Compensation pb
- ⑬ Top LCD Panel
- ⑭ Exposure Mode pb
- ⑮ Film Plane Indicator
- ⑯ Film Rewind Knob
- ⑰ Camr Strap Eyelet
- ⑱ Diopter Adjustment Knob
- ⑲ Metering System Selector
- ⑳ Vertical-Shooting Shutter Release pb
- ㉑ Lock Lever for Vertical-Shooting Shutter Release pb
- ㉒ Camr Strap Eyelet
- ㉓ Batt Holder
- ㉔ Batt Holder Release Knob

NIKON F5 (Continued)

NOMINAL SETUP

Lens – As reqd
Film – As reqd
Camr Settings
 Pwr – ON
 ✓Batt icon full
 ✓Frames remaining sufficient
 Exp Comp – 0.0
 Exp Mode – P
 AF Area Mode – []
 Meter – Matrix
 Diopter – Adjust
 Film Adv – S
 Body Focus Mode – S
 Lens Focus Mode – A
 Aperture – Min, locked
 ✓ISO – DX
 ✓Camr BKT – Disabled
 ✓Focus Area – Center, LOCK displayed
Data Back Settings
 ✓Between Frame – YR MO/DY HR:MIN SEC
 ✓Between Frame Data – PRINT displayed
Flash Settings
 ON/OFF – ON
 ✓Mode – TTL, Matrix
 ✓Zoom – Auto
 Tilt – Direct

NIKON F5 (Continued)

CUSTOM SETTINGS

NOTE

There are two menus for custom settings. Options on each menu are identical. Although either menu can be used, menu A is recommended for consistency

Activation

CSM pb – press,hold
 Main Command Dial – Rotate to desired setting number (lower rear LCD)
 Sub-command Dial – Rotate to desired setting (lower rear LCD)

CSM pb – release, then press,hold again
 ✓Number after dash is “1” and “CUSTOM” displayed on lower rear LCD

Deactivation

BKT pb, CSM pb – press simo, hold for 2 sec (display blinks)
 ✓“CUSTOM” no longer displayed on lower rear LCD
 Focus Area – Center, LOCK displayed
 Between Frame Data – PRINT

#	Menu	Settings	Notes
0	Selecting Custom Menus	0 – A: Custom settings A	Can specify setting combinations wanted for A,B; makes it easy to switch from one setting combination to another
		0 – B: Custom settings B	
1	Continuous Servo AF	1 – 0: Release-priority	Change from release-priority to focus-priority
		1 – 1: Focus-priority	
2	Single Servo AF	2 – 0: Focus-priority	Change from focus-priority to release-priority
		2 – 1: Release-priority	
3	Bracketing Order	3 – 0: Metered value, below metered value, above metered value	Change order to under the metered value, the metered value, and over the metered value
		3 – 1: Below metered value, metered value, above metered value	
4	Autofocus Activated When Shutter Release pb Lightly Pressed	4 – 0: Activated	Delete shutter release pb's AF activation function
		4 – 1: Disabled	
5	AE Lock	5 – 0: Exposure value	Lock shutter speed and aperture for AE lock function
		5 – 1: Shutter speed and aperture value	
6	Direction of Command Dial Rotation	6 – 0: Default	Change from left-to-right to right-to-left when increasing values
		6 – 1: Opposite	

NIKON F5 (Continued)

CUSTOM SETTINGS (Continued)

#	Menu	Settings	Notes
7	AE Lock When Shutter Release pb Lightly Pressed	7 – 0: Disabled	Lock exposure when shutter release pb lightly pressed
		7 – 1: Activated	
8	Auto Film Advance to Frame #1	8 – 0: Disabled	Film automatically advances to first frame when Camr back closed
		8 – 1: Enabled (when pwr on)	
9	Film Advance Speed in C _H	9 – 0: Default (8 fps)	Change from 8 fps to 6 fps
		9 – 1: Change setting CH8: 8 fps CH6: 6 fps	
10	Film Advance Speed in C _L	10 – 0: Default (3 fps)	Change from 3 fps to 4 fps(5 fps)
		10 – 1: Change setting CL5: 5 fps CL4: 4 fps CL3: 3 fps	
11	Alert LED in Long Time Exposure	11 – 0: Does not blink	Make Alert LED blink during long time exposure
		11 – 1: Blinks	
12	Auto Film Stop	12 – 0: Disabled (film advances until end of roll)	Stop film advance at frame 35(36)
		12 – 1: Change setting E35: Frame 35 E36: Frame 36 E—: Disabled	
13	Multiple Exposure	13 – 0: Canceled after release	Continue multiple exposure after second shot
		13 – 1: Still on after release	
14	Center-Weighted Metering	14 – 0: Default (75% concentration in 12mm dia. area)	Change 12mm-dia area to 8mm(15mm,20mm) average metering, or customize diameter (i.e., by using computer link)
		14 – 1: Change setting C 8: 8mm-dia C 12: 12mm-dia C 15: 15mm-dia C 20: 20mm-dia A: Average PC: Custom (by PC)	

NIKON F5 (Continued)

CUSTOM SETTINGS (Continued)

#	Menu	Settings	Notes
15	Time Delay for Auto Meter-Switch-Off	15 – 0: Default (16 sec)	Change from 16 sec to 4(8,12) sec
		15 – 1: Change setting L 4: 4 sec L 8: 8 sec L 16: 16 sec L 32: 32 sec	
16	Self-Timer Duration	16 – 0: Default (10 sec)	Choose from 2 to 60 sec Go to L10 to clear setting
		16 – 1: Change setting L 2 to L60: 2 to 60 sec	
17	Bracketing in Manual Exposure Mode	17 – 0: Default (shifts shutter speed)	Change shifting factor in Manual Exposure mode from shutter speed to choice of shutter speed/aperture combination, aperture, or flash output level
		17 – 1: Change setting 11A: Shutter speed/aperture combination 10A: Shutter speed 01A: Aperture 00A: Flash output level	
18	Focusing Screen Compensation	18 – 0: No compensation	Change EV level of focusing screen from –2.0 to +2.0 in 0.5 EV steps. See special focusing screen instruction manual for reqd compensation value
		18 – 1: Change setting –2.0 to 2.0: –2 to +2 in 0.5 EV steps	
19	Prolong Shutter Speed	19 – 0: Disabled	Choose from 40 sec to 30 min duration
		19 – 1: Enabled	
20	Top TTL, Flash Sync Speed	20 – 0: Default (1/250 sec)	To set top TTL flash sync speed. 1/300 sec* can be selected only in Shutter-Priority Auto or Manual Exposure modes *Shutter speed controlled by 1/250 in Programmed Auto or Aperture-Priority Auto exposure modes
		20 – 1: Change setting 300: 1/300 sec 250: 1/250 sec 200: 1/200 sec 160: 1/160 sec 125: 1/125 sec 100: 1/100 sec 80: 1/80 sec 60: 1/60 sec	

NIKON F5 (Continued)

CUSTOM SETTINGS (Concluded)

#	Menu	Settings	Notes
21	AE-L/AF-L pb	21 – 0: Default (simultaneous lock)	Change to AE(AF) lock only
		21 – 1: Change setting AEL: AE lock AFL: AF lock L-L: Simultaneous lock	
22	Aperture Setting via Sub-Command Dial	22 – 0: Enabled	Only way to set aperture is to rotate lens aperture ring
		22 – 1: Disabled	
23	▶ or ◀ Focus Indicator	23 – 0: Displayed	Don't show display of ▶ and ◀ (focused at rear or in front of subject) in viewfinder during Autofocus mode
		23 – 1: Not displayed	
24	Auto Exposure/Flash Exposure Bracketing	24 – 0: Default (auto exposure/flash exposure bracketing)	When Auto(Flash) Exposure Bracketing only wanted
		24 – 1: Change setting 01E: Auto exposure (ambient) bracketing 10E: Flash exposure bracketing 11E: Auto exposure/flash exposure bracketing	

NIKON F5

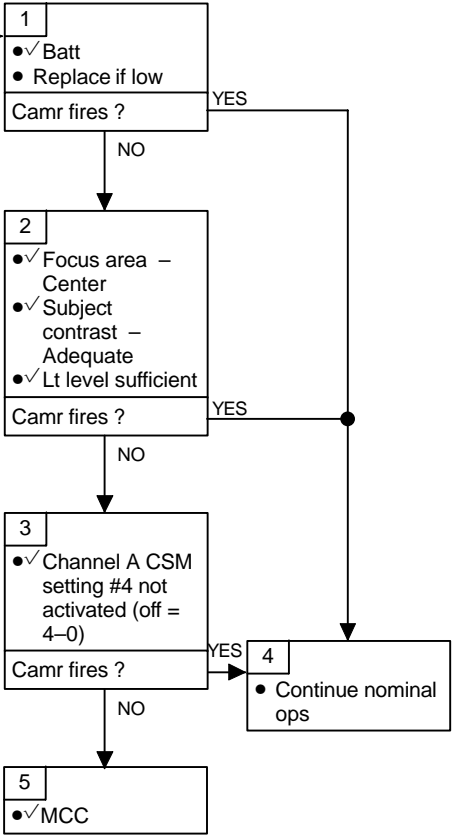
1.1 CAMR FAILS TO FIRE

Camr Fails to Fire

Nominal Config:
 (Camr)
 Lens – As reqd
 Film – As reqd
 Settings
 Pwr – ON
 ✓ Batt icon full
 ✓ Frames remaining sufficient
 Exp Comp – 0.0
 Exp Mode – P
 AF Area
 Mode – []
 Meter – Matrix
 Diopter – Adjust
 Film Adv – S
 Body Focus
 Mode – S
 Lens Focus
 Mode – A
 Aperture – Min, locked
 ✓ ISO – DX
 ✓ Camr BKT – Disabled
 ✓ Focus Area – Center, LOCK displayed

(Data Back)
 ✓ Between Frame – YR MO/DY HR:MIN SEC
 ✓ Between Frame Data – PRINT displayed

(Flash)
 ON/OFF – ON
 ✓ Mode – TTL, Matrix
 ✓ Zoom – Auto
 Tilt – Direct



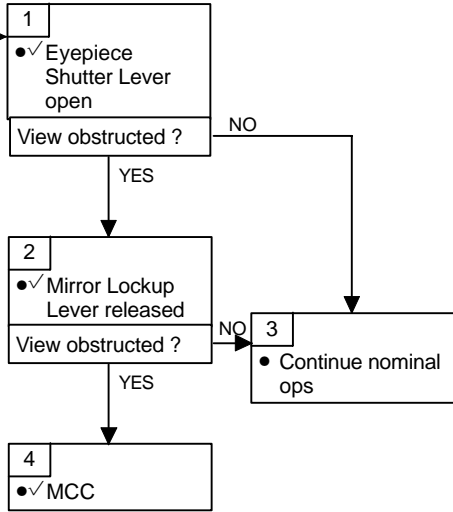
NIKON F5

1.2 CANNOT SEE THRU VIEWFINDER

Cannot See Thru Viewfinder

Nominal Config:

- (Camr)
- Lens – As reqd
- Film – As reqd
- Settings
- Pwr – ON
- ✓ Batt icon full
- ✓ Frames remaining sufficient
- Exp Comp – 0.0
- Exp Mode – P
- AF Area
- Mode – []
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus
- Mode – S
- Lens Focus
- Mode – A
- Aperture – Min, locked
- ✓ ISO – DX
- ✓ Camr BKT – Disabled
- ✓ Focus Area – Center, LOCK displayed
- (Data Back)
- ✓ Between Frame – YR MO/DY HR:MIN SEC
- ✓ Between Frame Data – PRINT displayed
- (Flash)
- ON/OFF – ON
- ✓ Mode – TTL, Matrix
- ✓ Zoom – Auto
- Tilt – Direct



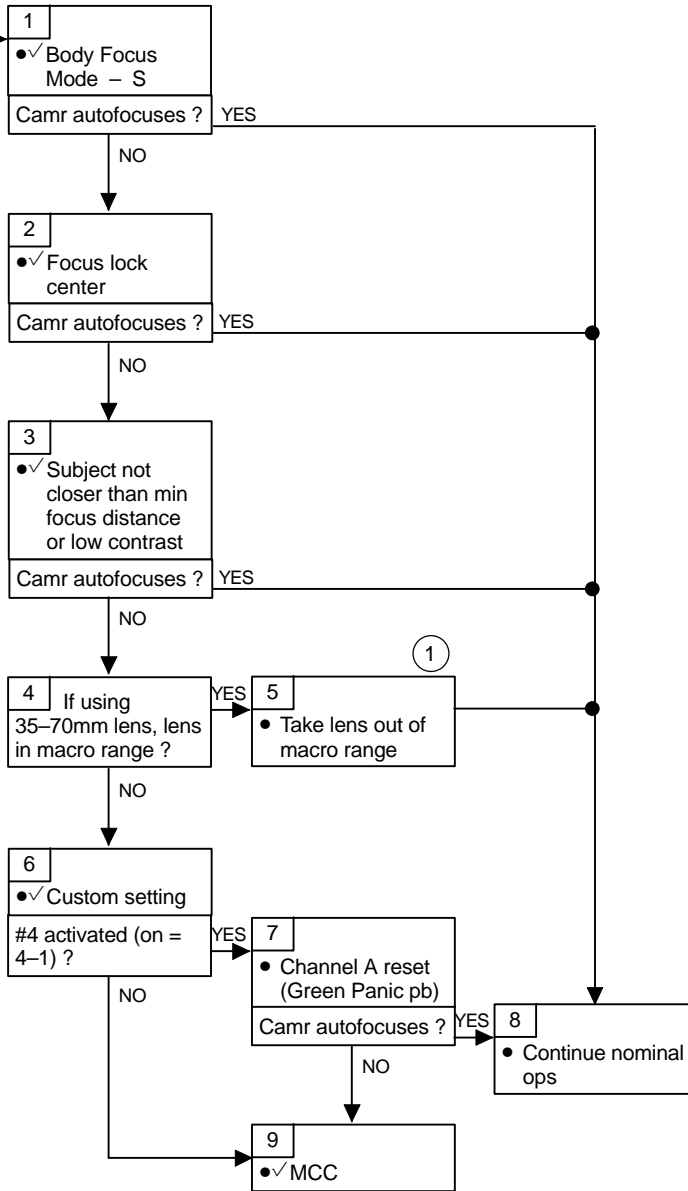
NIKON F5

1.3 CAMR FAILS TO AUTOFOCUS

Camr Fails to Auto Focus

Nominal Config:

- (Camr)
- Lens – As reqd
- Film – As reqd
- Settings
- Pwr – ON
- ✓ Batt icon full
- ✓ Frames remaining sufficient
- Exp Comp – 0.0
- Exp Mode – P
- AF Area
- Mode – []
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- ✓ ISO – DX
- ✓ Camr BKT – Disabled
- ✓ Focus Area – Center, LOCK displayed
- (Data Back)
- ✓ Between Frame – YR MO/DY HR:MIN SEC
- ✓ Between Frame Data – PRINT displayed
- (Flash)
- ON/OFF – ON
- ✓ Mode – TTL, Matrix
- ✓ Zoom – Auto Tilt – Direct



① 35-70mm lens will not auto-focus in Macro

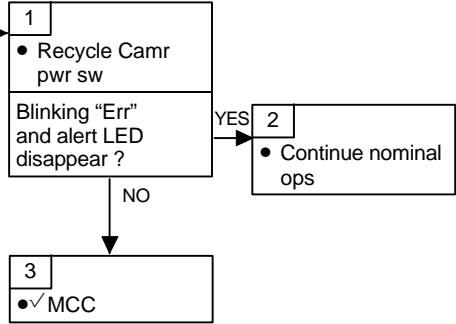
NIKON F5

1.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS

"Err" Blinks On Top LCD And Alert LED Also Blinks

Nominal Config:

- (Camr)
- Lens – As reqd
- Film – As reqd
- Settings
 - Pwr – ON
 - ✓ Batt icon full
 - ✓ Frames remaining sufficient
 - Exp Comp – 0.0
 - Exp Mode – P
 - AF Area
 - Mode – []
 - Meter – Matrix
 - Dioptr – Adjust
 - Film Adv – S
 - Body Focus
 - Mode – S
 - Lens Focus
 - Mode – A
 - Aperture – Min, locked
 - ✓ ISO – DX
 - ✓ Camr BKT – Disabled
 - ✓ Focus Area – Center, LOCK displayed
- (Data Back)
 - ✓ Between Frame – YR MO/DY HR:MIN SEC
 - ✓ Between Frame Data – PRINT displayed
- (Flash)
 - ON/OFF – ON
 - ✓ Mode – TTL, Matrix
 - ✓ Zoom – Auto
 - Tilt – Direct



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DIGITAL CAMERA SYSTEM (DCS)

	<u>PAGE</u>
<u>DCS 760</u>	2-2
SPECIFICATIONS	2-2
LENS DATA	2-3
NOMENCLATURE	2-4
NOMINAL SETUP	2-8
CUSTOM SETTINGS	2-9
DATE/TIME SET	2-12
DELETING SINGLE IMAGES	2-12
ADDING .WAV FILES TO AN IMAGE	2-12
IMAGE VIEWING ON PGSC	2-13
DCS FILE DNLK	2-14
SUSPECT HARD DRIVE SCAN	2-15
IMAGE FILE COMPRESSION	2-16
MALS	2-17
2.1 CAMR FAILS TO FIRE	2-17
2.2 CANNOT SEE THRU VIEWFINDER	2-18
2.3 CAMR FAILS TO AUTOFOCUS	2-19
2.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS	2-20
2.5 EXCESSIVE SAVE IMAGE TO HARD DISK TIME	2-21

DIGITAL CAMERA SYSTEM 760 (DCS 760)**SPECIFICATIONS**CAMR BODY

CCD SIZE: 18.48mm x 27.65mm

PIXEL COUNT: 2048 x 3012

DISK/FRAME: 520 MB: 81 Frames; 1 GB: 117 Frames

FILE SIZE: 6 MB

EXPOSURE CONTROL: Auto (program, shutter priority, aperture priority), Manual

METER PATTERN: 3D Color Matrix, Center Weighted, Spot

EXPOSURE COMP: ± 5 in 1/3 stops

SHUTTER:

Program & Aperture Priority – 1/8000 thru 30 sec (virtually stepless)

Manual & Shutter Priority – 1/8000 thru 30 sec (1/3 stop increments), and B (manual only)

ISO SETTING:

Manual: 80–400

MOTOR DRIVE: Single, C_H (1.5 fps), C_L (1.0 fps), C_S (1.0 fps)

Interval: 10–25 shot burst

CAMR BATT: Rechargeable

CAMR BATT VOLTAGE: 9.6V

CAMR BATT LIFETIME: ~100 frames

CAMR WEIGHT: 4.09 lb (w/batt & PCMCIA)

FLASH

BATT: 4AA

BATT LIFETIME: ~144–216 shot

WEIGHT: w/o Batts – .85 lb

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

LENS DATA

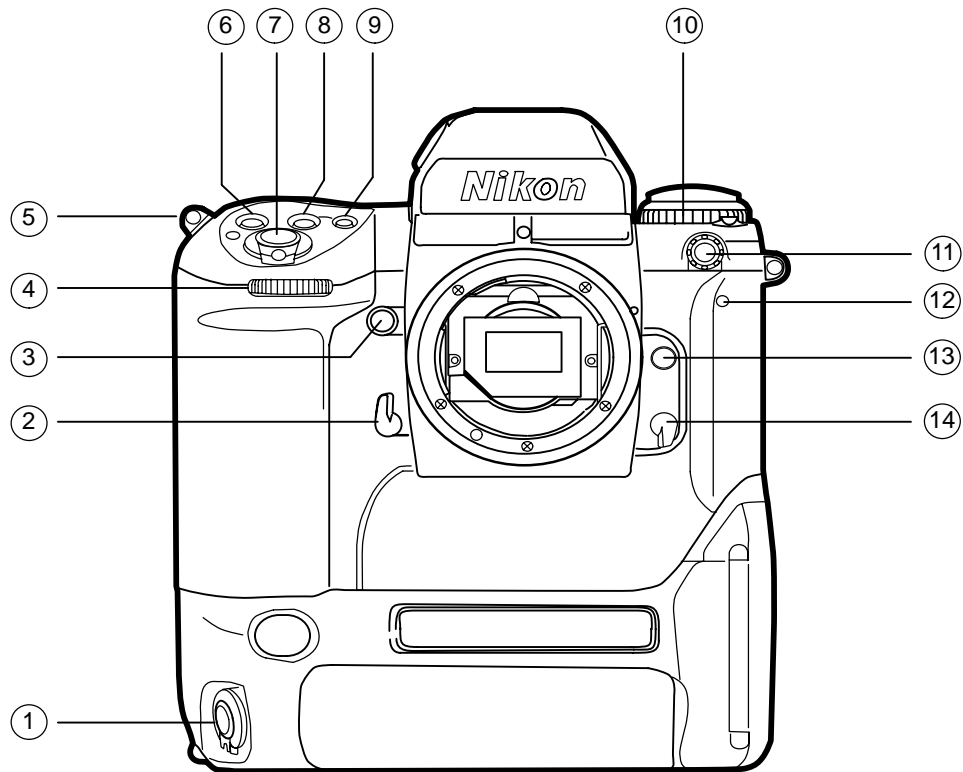
NOTE

Do not use non-AF lens w/DCS 760

Lens	Aperture Range (f/stop)	Approximate Field of View (FOV)			Approx Minimum Focus Distance (ft)	Weight (lb)	Filter Size	M-A Switch
		Horizontal	Vertical	Diagonal				
16mm AF	f/2.8-f/22	123°	82°	148°	1.0	0.69	Rear	
17-35mm AFD	f/2.8-f/22	78°-43°	57°-30°	89°-51°	1.0	1.64	77mm	Yes
20mm AF	f/2.8-f/22	69°	50°	80°	0.85	0.62	62mm	
20-35mm AFD	f/2.8-f/22	69°-43°	50°-30°	51°	1.7	1.36	77mm	Yes
28mm AF	f/2.8-f/22	53°	37°	61°	1.25	0.46	52mm	
28mm AFD	f/1.4-f/16	53°	37°	61°	1.14	1.15	72mm	Yes
28-70mm AFD	f/2.8-f/22	53°-22°	37°-15°	61°-27°	2.3(1.5 ft macro)	1.95	77mm	Yes
35mm AF	f/2.0-f/22	43°	30°	51°	0.9	0.51	52mm	
24-50mm AF	f/3.3(4.5)-f/22	60°-31°	42°-21°	69°-37°	2.0 (1.6 ft macro)	0.86	62mm	
35-70mm AF	f/2.8-f/22	43°-22°	30°-15°	51°-27°	2.0 (0.9 ft macro)	1.5	62mm	
50mm AFD	f/1.4-f/16	31°	21°	37°	1.5	0.59	52mm	
60mm AF	f/2.8-f/32	26°	18°	31°	0.73	0.93	62mm	Yes
85mm AF	f/1.8-f/16	19°	12°	22°	3.0	0.93	62mm	
105mm AF	f/2.8-f/32	15°	10°	18°	1.0	1.22	52mm	Yes
180mm AFD	f/2.8-f/22	9°	6°	11°	5.0	1.72	72mm	
80-200mm AFD	f/2.8-f/22	20°-8°	13°-5°	24°-10°	6.0	2.98	77mm	Yes
300mm AF	f/2.8-f/22	5°	4°	6°	10.0	6.36	39mm	Yes
400mm AFD	f/2.8-f/22	4°	3°	5°	9.75	15.65	52mm	Yes

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

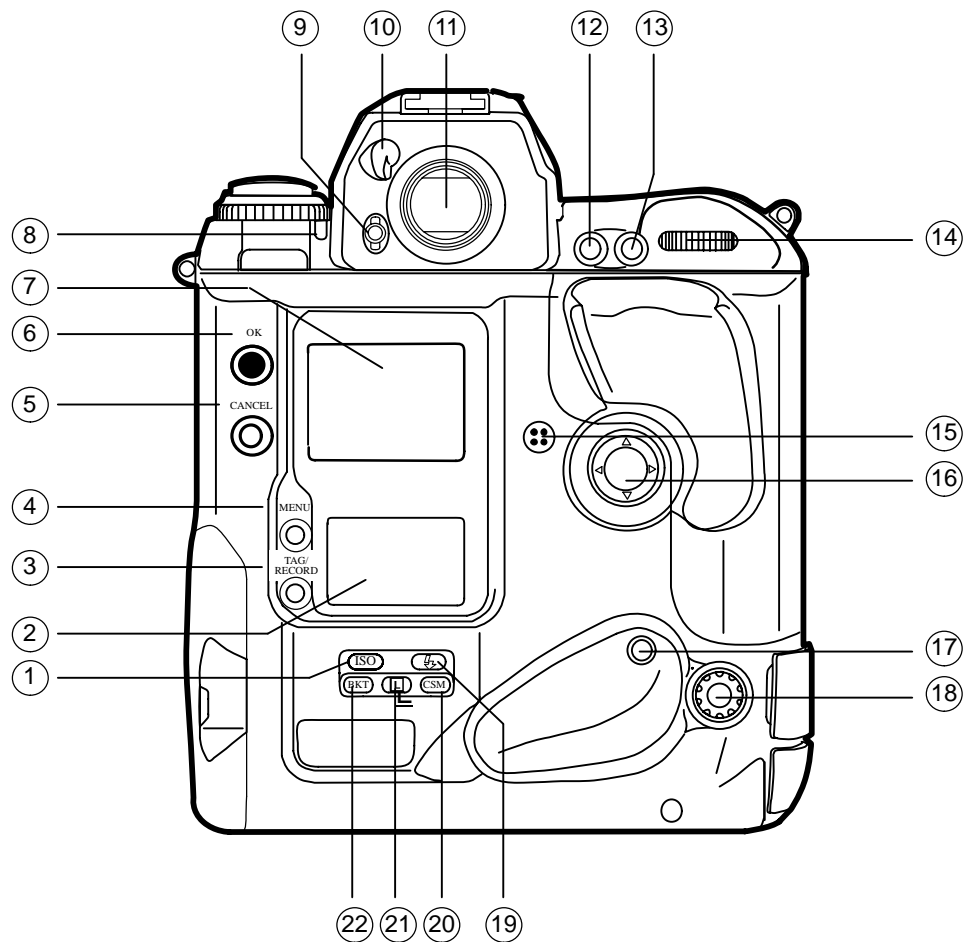
NOMENCLATURE



- ① Vertical-Shooting Shutter Release pb
- ② Mirror Lockup Lever
- ③ Depth of Field Preview pb
- ④ Sub-Command Dial
- ⑤ Camr Strap Eyelet
- ⑥ Exposure Compensation pb
- ⑦ Shutter Release pb
- ⑧ Exposure Mode pb
- ⑨ AF Area Mode pb
- ⑩ Film Advance Mode/Selftimer Selector
- ⑪ Sync Terminal
- ⑫ Selftimer LED
- ⑬ Lens Release pb
- ⑭ Body Focus Mode Selector

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

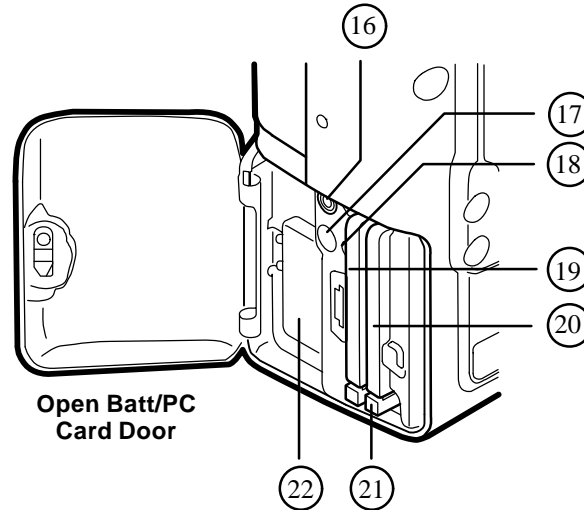
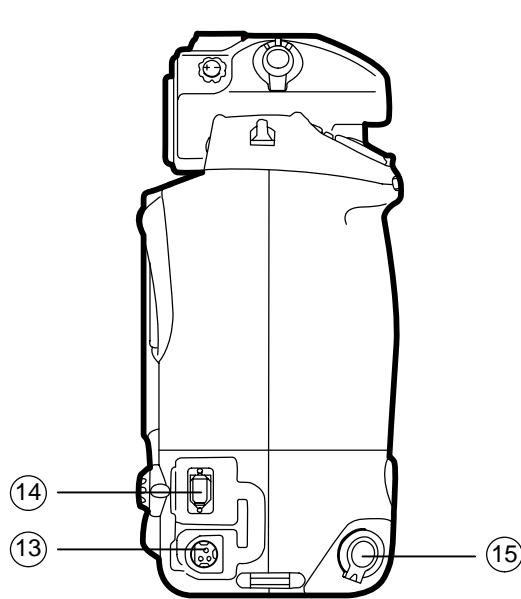
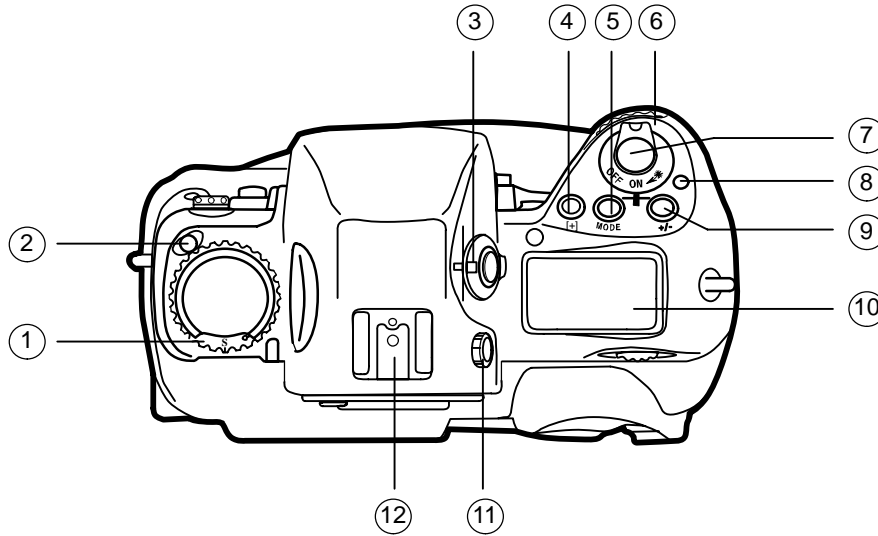
NOMENCLATURE (Continued)



- ① ISO pb **ISO**
- ② Rear LCD Panel
- ③ TAG/RECORD pb
- ④ MENU pb
- ⑤ CANCEL pb
- ⑥ OK pb
- ⑦ Image LCD Panel
- ⑧ Alert LED
- ⑨ Finder Release pb
- ⑩ Eyepiece Shutter Lever
- ⑪ Viewfinder Eyepiece
- ⑫ Auto Exposure (AE-L)/Autofocus Lock (AF-L) pb
- ⑬ AF Start (AF-ON) pb
- ⑭ Main-Command Dial
- ⑮ Microphone
- ⑯ Navigate Pad
- ⑰ Vertical AF Start (AF-ON) pb
- ⑱ Remote Release Port
- ⑲ Flash Sync Mode pb ⚡
- ⑳ Custom Setting Menu pb **CSM**
- ㉑ Shutter Speed/Aperture/Focus Area Lock pb **L**
- ㉒ Body Bracketing pb **BKT**

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

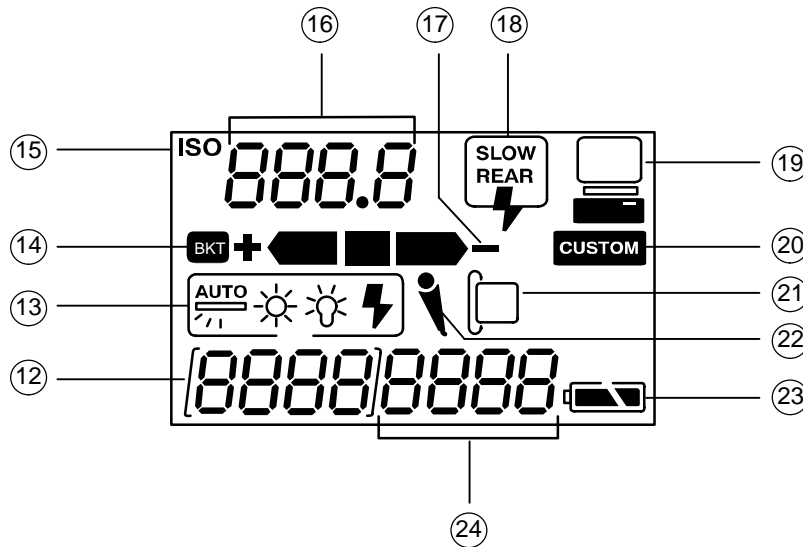
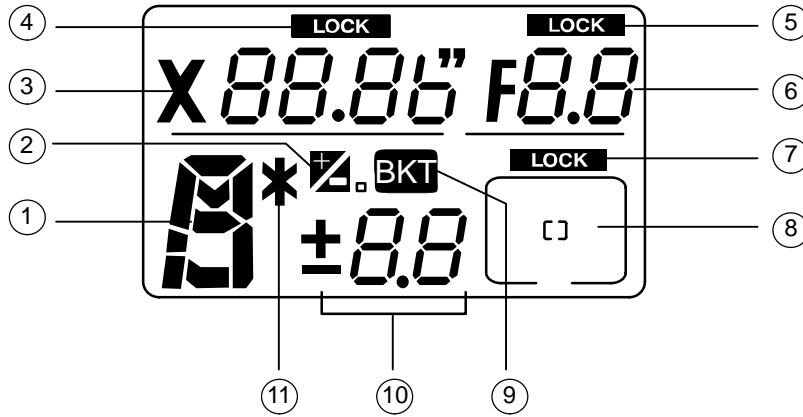
NOMENCLATURE (Continued)



- ① Film Advance Mode/Selftimer Selector
- ② Film Advance Mode Selector Lock Release
- ③ Metering System Selector
- ④ AF Area Mode pb
- ⑤ Exposure Mode pb
- ⑥ Pwr/LCD Panel Illumination sw
- ⑦ Shutter Release pb
- ⑧ Pwr sw Lock Release
- ⑨ Exposure Compensation pb
- ⑩ Top LCD Panel
- ⑪ Diopter Adjustment Knob
- ⑫ Accessory Shoe
- ⑬ Pwr Adapter Connection (cover not shown)
- ⑭ IEEE 1394 Cable Port (cover not shown)
- ⑮ Vertical-Shooting Shutter Release pb
- ⑯ Serial Port
- ⑰ Video Port
- ⑱ Card Busy LED
- ⑲ Hard Drive Slot 1
- ⑳ Hard Drive Slot 2
- ㉑ Eject pb
- ㉒ Batt

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

NOMENCLATURE (Concluded)



- ① Exposure Mode
- ② Exposure Compensation
- ③ Shutter Speed
- ④ Shutter Speed Lock
- ⑤ Aperture Lock
- ⑥ Aperture
- ⑦ Focus Area Lock
- ⑧ Focus Area
- ⑨ Bracketing
- ⑩ Exposure Compensation Value
- ⑪ Flexible Program
- ⑫ Frame Number
- ⑬ White Balance
- ⑭ Bracketing
- ⑮ ISO Setting Mode
- ⑯ ISO/Bracketing Information/Custom Setting
- ⑰ Bracketing Bar Graphs
- ⑱ Flash Sync Mode
- ⑲ Personal Computer Connection
- ⑳ Custom Setting
- ㉑ Hard Drive Present
- ㉒ Microphone
- ㉓ Batt Level
- ㉔ Frames Remaining on Hard Drive

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

NOMINAL SETUP

- Pwr – ON
- ✓Disk installed
- Rear LCD
 - ✓Batt
 - ✓Frames remaining sufficient
 - ✓White Balance – Flash
- ISO – 100
- ✓BKT disabled
- ✓Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – []
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- Flash Settings
 - ON/OFF – ON
 - ✓TTL, Matrix
 - ✓Zoom
 - Tilt – Direct

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

CUSTOM SETTINGS

NOTE

There are two menus for custom settings. Options on each menu are identical. Although either menu can be used, menu A is recommended for consistency

Activation

CSM pb – press,hold
 Main Command Dial – Rotate to desired setting number (lower rear LCD)
 Sub-command Dial – Rotate to desired setting (lower rear LCD)

CSM pb – release, then press,hold again
 ✓Number after dash is “1” and “CUSTOM” displayed on lower rear LCD

Deactivation

BKT pb, CSM pb – press simo, hold for 2 sec (display blinks)
 ✓“CUSTOM” no longer displayed on lower rear LCD
 Focus Area – Center, LOCK displayed
 Between Frame Data – PRINT

#	Menu	Settings	Notes
0	Selecting Custom Menus	0 – A: Custom settings A	Can specify setting combinations wanted for A,B; makes it easy to switch from one setting combination to another
		0 – B: Custom settings B	
1	Continuous Servo AF	1 – 0: Release-priority	Change from release-priority to focus-priority
		1 – 1: Focus-priority	
2	Single Servo AF	2 – 0: Focus-priority	Change from focus-priority to release-priority
		2 – 1: Release-priority	
3	Bracketing Order	3 – 0: Metered value, below metered value, above metered value	Change order to under the metered value, the metered value, and over the metered value
		3 – 1: Below metered value, metered value, above metered value	
4	Autofocus Activated When Shutter Release pb Lightly Pressed	4 – 0: Activated	Delete shutter release pb's AF activation function
		4 – 1: Disabled	
5	AE Lock	5 – 0: Exposure value	Lock shutter speed and aperture for AE lock function
		5 – 1: Shutter speed and aperture value	
6	Direction of Command Dial Rotation	6 – 0: Default	Change from left-to-right to right-to-left when increasing values
		6 – 1: Opposite	

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

CUSTOM SETTINGS (Continued)

#	Menu	Settings	Notes
7	AE Lock When Shutter Release pb Lightly Pressed	7 – 0: Disabled 7 – 1: Activated	Lock exposure when shutter release pb lightly pressed
8	Reserved	8 – 0:	
9	Reserved	9 – 0:	
10	Reserved	10 – 0:	
11	Alert LED in Long Time Exposure	11 – 0: Does not blink 11 – 1: Blinks	Make Alert LED blink during long time exposure
12	Reserved	12 – 0:	
13	Reserved	13 – 0: Canceled after release	
14	Center-Weighted Metering	14 – 0: Default (75% concentration in 12mm dia. area) 14 – 1: Change setting C 8: 8mm-dia C 12: 12mm-dia C 15: 15mm-dia C 20: 20mm-dia A: Average	Change 12mm-dia area to 8mm(15mm,20mm) average metering
15	Time Delay for Auto Meter-Switch-Off	15 – 0: Default (16 sec) 15 – 1: Change setting L 4: 4 sec L 8: 8 sec L 16: 16 sec L 32: 32 sec	Change from 16 sec to 4(8,12) sec
16	Self-Timer Duration	16 – 0: Default (10 sec) 16 – 1: Change setting L 2 to L60: 2 to 60 sec	Choose from 2 to 60 sec Go to L10 to clear setting
17	Bracketing in Manual Exposure Mode	17 – 0: Default (shifts shutter speed) 17 – 1: Change setting 11A: Shutter speed/aperture combination 10A: Shutter speed 01A: Aperture 00A: Flash output level	Change shifting factor in Manual Exposure mode from shutter speed to choice of shutter speed/aperture combination, aperture, or flash output level


DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

CUSTOM SETTINGS (Concluded)

#	Menu	Settings	Notes
18	Focusing Screen Compensation	18 – 0: No compensation	Change EV level of focusing screen from –2.0 to +2.0 in 0.5 EV steps. See special focusing screen instruction manual for reqd compensation value
		18 – 1: Change setting –2.0 to 2.0: –2 to +2 in 0.5 EV steps	
19	Prolong Shutter Speed	19 – 0: Disabled	Choose from 40 sec to 30 min duration Long exposures may add noise and produce a less desirable image. Images should not be > 0.5 sec
		19 – 1: Enabled	
20	Top TTL, Flash Sync Speed	20 – 0: Default (1/250 sec)	To set top TTL flash sync speed. 1/300 sec* can be selected only in Shutter–Priority Auto or Manual Exposure modes *Shutter speed controlled by 1/250 in Programmed Auto or Aperture–Priority Auto exposure modes
		20 – 1: Change setting 300: 1/300 sec 250: 1/250 sec 200: 1/200 sec 160: 1/160 sec 125: 1/125 sec 100: 1/100 sec 80: 1/80 sec 60: 1/60 sec	
21	AE–L/AF–L pb	21 – 0: Default (simultaneous lock)	Change to AE(AF) lock only
		21 – 1: Change setting AEL: AE lock AFL: AF lock L–L: Simultaneous lock	
22	Aperture Setting via Sub–Command Dial	22 – 0: Enabled	Only way to set aperture is to rotate lens aperture ring
		22 – 1: Disabled	
23	▶ or ◀ Focus Indicator	23 – 0: Displayed	Don't show display of ▶ and ◀ (focused at rear or in front of subject) in viewfinder during Autofocus mode
		23 – 1: Not displayed	
24	Auto Exposure/Flash Exposure Bracketing	24 – 0: Default (auto exposure/flash exposure bracketing)	When Auto(Flash) Exposure Bracketing only wanted
		24 – 1: Change setting 01E: Auto exposure (ambient) bracketing 10E: Flash exposure bracketing 11E: Auto exposure/flash exposure bracketing	

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

DATE/TIME SET


1. MENU pb – press
2. Navigate pad – sel Menu icon  , then MAIN MENU
3. OK pb – press
4. Navigate pad – sel TIME/DATE
5. OK pb – press

NOTE



Set TIME/DATE to GMT

6. Navigate pad – sel desired field (left,right)
7. Navigate pad – sel desired setting (up,down)
8. OK pb – press

DELETING SINGLE IMAGES

1. OK pb – press
2. Sel image
3. Navigate pad – down to sel Delete option 
4. OK pb – press (twice) to delete
5. CANCEL pb – press to exit Delete option

ADDING .WAV FILES TO AN IMAGE

1. OK pb – press
2. Select image
3. TAG/RECORD pb – press, hold (✓microphone icon  appears on rear LCD)
4. Talk to MIC (~9–12 in from MIC)
5. ✓Speaker icon  appears under image

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

IMAGE VIEWING ON PGSC

1. Insert DCS PCMCIA into PGSC
2. Open SHUTTLE APPS > PHOTO DESK
3. Sel FILE > OPEN
4. Sel appropriate drive/folder
5. Sel "Open '————' as contact sheet"
6. To view enlarged individual image:
Double-click on desired image
7. To view image info:
Sel VIEW
√Image Infor selected (check next to Image Info)
Single-click on desired image

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

DCS FILE DNLK

NOTE

MCC will delete images after dnlk. To save image onboard, copy file to DCSIMAGE folder on PGSC hard drive. MCC will not delete from this folder

DNLK FROM FLASH CARD (PCMCIA)

1. Insert DCS Flash Card (PCMCIA) into expansion chassis of **ProShare PGSC**, brand name up
2. Inform MCC “files ready”

DNLK FROM HARD DRIVE (TO FREE UP CARD OR SLOT)

1. Insert DCS Flash Card (PCMCIA) into expansion chassis of any **networked PGSC**, brand name up
2. Using Windows Explorer, highlight and drag TIFF files for dnlk to “DCS folder on ProShare” icon on desktop
3. Delete TIFF files from original location when file copy complete
4. Inform MCC “files ready” on ProShare PGSC

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

SUSPECT HARD DRIVE SCAN

1. Insert suspect Flash Card (PCMCIA) into PGSC, brand name (white decal) up
2. Sel 'Start' > 'Run...'
3. In 'Run...' window:
Open: SCANDISK, then sel OK
4. In 'ScanDisk' window:
Sel Flash Card (PCMCIA) drive (usually D: drive)
√'Type of Test' – Standard
Sel 'Automatically fix errors'
Sel 'Start'
5. In 'ScanDisk Results' Window:
If error fixed(nonexistent), continue to use hard drive
|
If error not fixed, mark and stow hard drive
Notify MCC of results
6. Close all windows used to scan hard drive

DIGITAL CAMERA SYSTEM 760 (DCS 760) (Continued)

IMAGE FILE COMPRESSION

NOTE

Do not compress images for OCA dlk. Image compression to be used only for image insertion into a document or e-mail

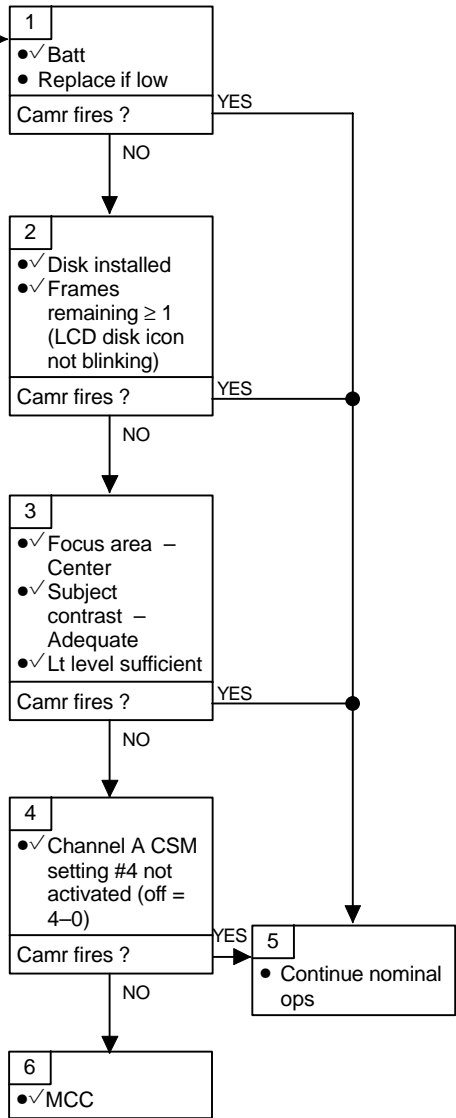
1. Perform IMAGE VIEWING ON PGSC, steps 1–6 on 2–13, then:
2. Single-click image for compression
3. Sel FILE > SAVE SELECTED AS
4. Sel appropriate drive and folder in “Save In” window
5. Sel “Standard JPEG” (*.jpg)” in format window
6. Sel RENAME IMAGE FILE(S)
7. Enter new file name in NEW NAME window
8. Sel “Save files in ‘_____’ ”
9. Sel IMAGE SIZE > 50%
10. Sel IMAGE QUALITY > GOOD
11. ✓RESOLUTION – 300
12. ✓DOTS PER INCH selected
13. Sel OK

DCS 760

2.1 CAMR FAILS TO FIRE

Camr Fails to Fire

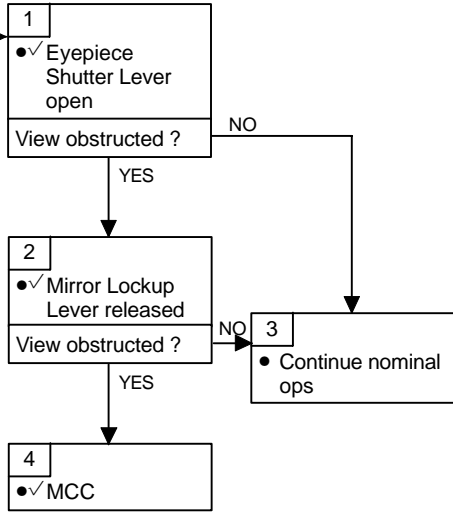
- Nominal Config:**
- Pwr – ON
 - ✓ Disk installed
 - Rear LCD
 - ✓ Batt
 - ✓ Frames remaining sufficient
 - ✓ White Balance – Flash
 - ISO – 100
 - ✓ BKT disabled
 - ✓ Focus Area – Center, LOCK displayed
 - Exp Comp – 0.0
 - Exp Mode – P
 - AF Area Mode – []
 - Meter – Matrix
 - Dioptr – Adjust
 - Film Adv – S
 - Body Focus Mode – S
 - Lens Focus Mode – A
 - Aperture – Min, locked
 - Flash Settings ON/OFF – ON
 - ✓ TTL, Matrix
 - ✓ Zoom
 - Tilt – Direct



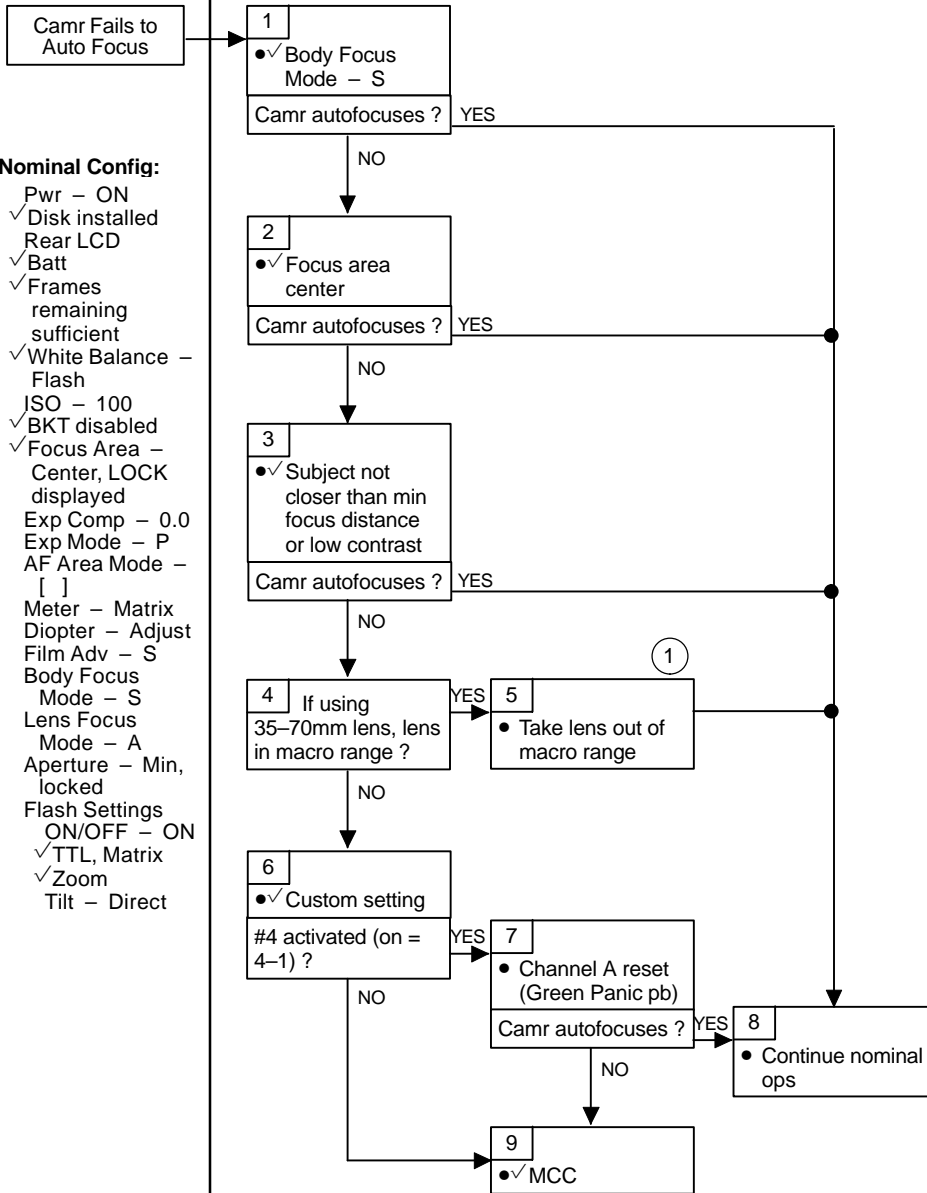
Cannot See Thru Viewfinder

Nominal Config:

- Pwr – ON
- ✓ Disk installed
- Rear LCD
- ✓ Batt
- ✓ Frames remaining sufficient
- ✓ White Balance – Flash
- ISO – 100
- ✓ BKT disabled
- ✓ Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – []
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- Flash Settings ON/OFF – ON
- ✓ TTL, Matrix
- ✓ Zoom
- Tilt – Direct



- Nominal Config:**
- Pwr – ON
 - ✓ Disk installed
 - ✓ Rear LCD
 - ✓ Batt
 - ✓ Frames remaining sufficient
 - ✓ White Balance – Flash
 - ISO – 100
 - ✓ BKT disabled
 - ✓ Focus Area – Center, LOCK displayed
 - Exp Comp – 0.0
 - Exp Mode – P
 - AF Area Mode – []
 - Meter – Matrix
 - Dioptr – Adjust
 - Film Adv – S
 - Body Focus Mode – S
 - Lens Focus Mode – A
 - Aperture – Min, locked
 - Flash Settings ON/OFF – ON
 - ✓ TTL, Matrix
 - ✓ Zoom
 - Tilt – Direct



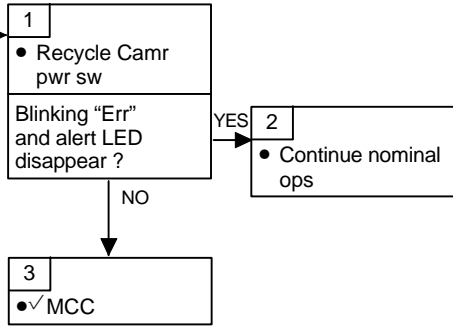
① 35–70mm lens will not auto-focus in Macro

2.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS

"Err" Blinks On Top LCD And Alert LED Also Blinks

Nominal Config:

- Pwr – ON
- ✓ Disk installed
- ✓ Rear LCD
- ✓ Batt
- ✓ Frames remaining sufficient
- ✓ White Balance – Flash
- ISO – 100
- ✓ BKT disabled
- ✓ Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – []
- Meter – Matrix
- Dioptr – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- Flash Settings ON/OFF – ON
- ✓ TTL, Matrix
- ✓ Zoom
- Tilt – Direct



2.5 EXCESSIVE SAVE IMAGE TO HARD DISK TIME

Excessive Save Image to Hard Disk Time

Nominal Config:

- Pwr – ON
- ✓ Disk installed
- ✓ Rear LCD
- ✓ Batt
- ✓ Frames remaining sufficient
- ✓ White Balance – Flash
- ISO – 100
- ✓ BKT disabled
- ✓ Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – []
- Meter – Matrix
- Dioptr – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- Flash Settings ON/OFF – ON
- ✓ TTL, Matrix
- ✓ Zoom
- Tilt – Direct

1

- Replace Flash Card (PCMCIA)
- Label faulty Flash Card (PCMCIA) and perform SUSPECT HARD DRIVE SCAN, 2-15

Improved save image time after Camr fires ?

YES

2

- Continue nominal ops

NO

3

- ✓ MCC

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HASSELBLAD 203S

	<u>PAGE</u>
SPECIFICATIONS	3-2
LENS DATA	3-2
NOMENCLATURE	3-3
NOMINAL SETUP	3-5
HORIZONTAL(VERTICAL) GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)	3-6
STEREO AND MAPPING TIME INTERVALS	3-6
DEPTH OF FIELD FOR PLB AND EVA PHOTOGRAPHY	3-7
MALS	3-8
3.1 CAMR FAILS TO OPERATE	3-8
3.2 CANNOT SEE THRU VIEWFINDER	3-9
3.3 INSTALL LENS	3-10
3.4 REMOVE LENS	3-11
3.5 NO CAMR ACTIVATION OR FINDER DISPLAY	3-12
FILM LOADING	3-13
DATA MODULE PROGRAMMING	3-14

HASS 203S

HASSELBLAD 203S

SPECIFICATIONS

FILM WIDTH: 70mm

FILM IMAGE SIZE: 55mm x 55mm

FILM LOAD: ~95 exposures per Mag

EXPOSURE CONTROL: Auto/Manual

SHUTTER:

Auto – 1/2000 sec to 90 sec in 1/2 stop increments

Manual – 1/2000 sec to 34 min in 1/2 stop increments; B, C

ISO SETTINGS:

Manual – 12 to 6400 in 1/3 stop increments

FILM ADVANCE: 1 Frame/sec

BATT:

Motor Drive – 6 AA cells

Camr – E544

Data Module – 4 N

BATT VOLTAGE: 9V (Motor Drive), 6V (Camr)

BATT LIFETIME: ~1000 exposures

FUSE: N/A

BODY WEIGHT: 2.31 lb

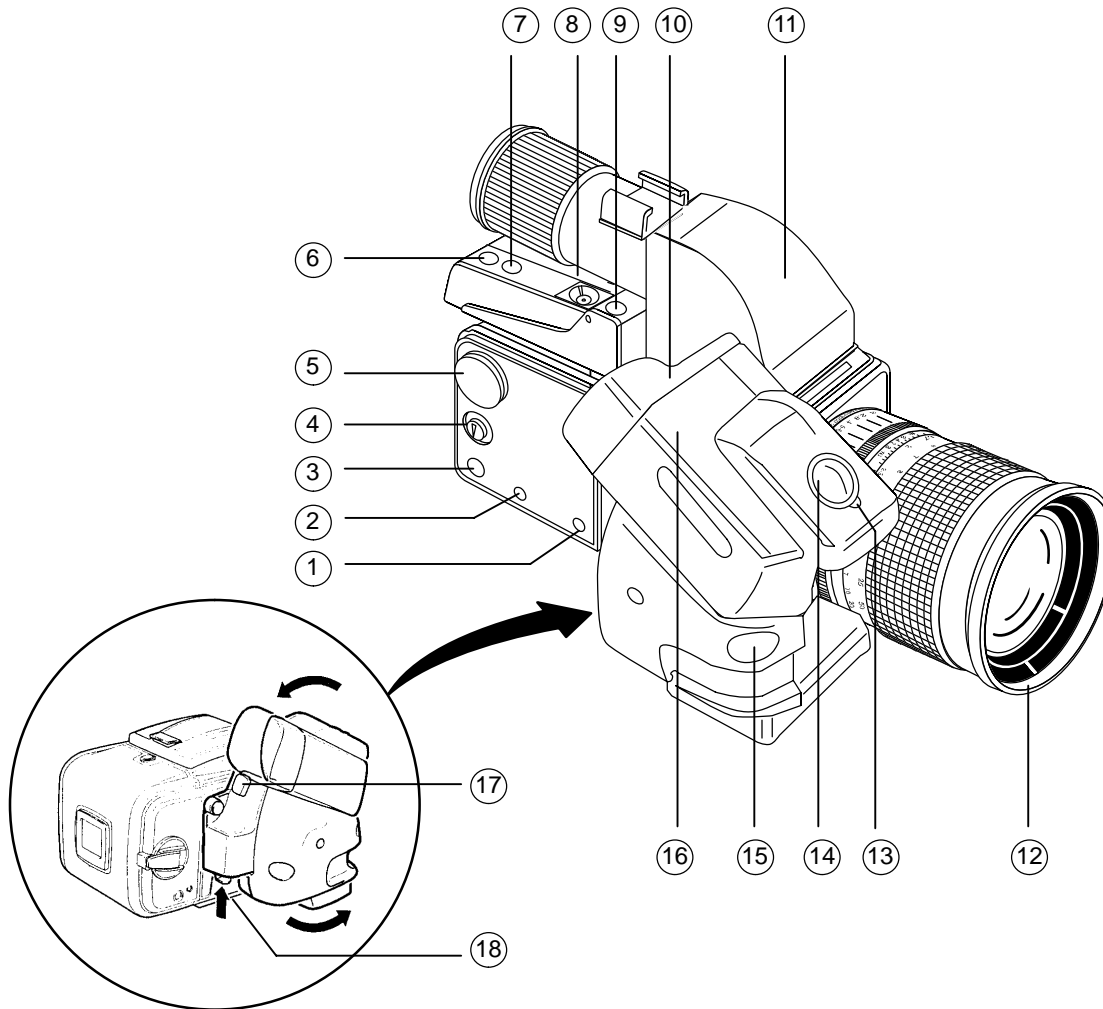
MAGAZINE WEIGHT W/FILM: 1.89 lb

LENS DATA

Lens	Aperture Range (f/stop)	Approximate Field of View (FOV)			Minimum Focus Distance	Weight (lb)	Filter Size
		Horizontal	Vertical	Diagonal			
50mm	f/2.8 – f/22	58°	58°	82°	1.5 ft	2.73	93mm
110mm	f/2 – f/16	28°	28°	40°	2.5 ft	1.67	70mm
250mm	f/4 – f/32	13°	13°	18°	8.3 ft	2.03	70mm
350mm	f/4 – f/32	9°	9°	13°	6.3 ft	4.4	93mm

HASSELBLAD 203S (Continued)

NOMENCLATURE

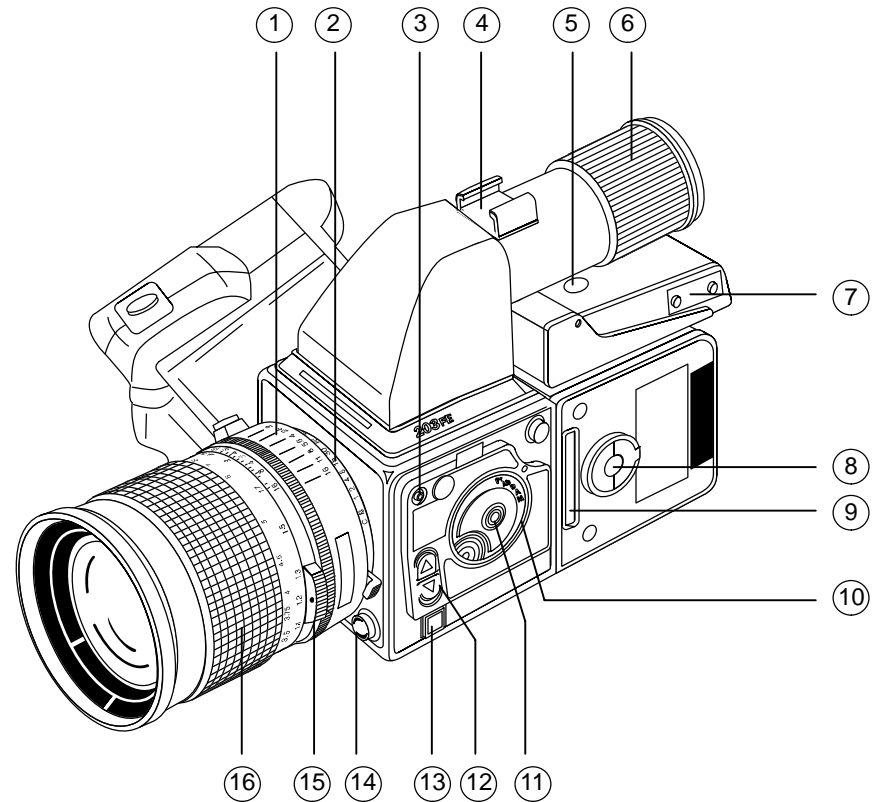


- ① Film Advance Indicator
- ② End of Film Indicator
- ③ Frame Counter
- ④ Frame Counter Reset
- ⑤ Manual Film Advance
- ⑥ Green LED (good Data Module batts)
- ⑦ Red LED (weak Data Module batts)
- ⑧ ON/OFF
- ⑨ Data Module Release pb
- ⑩ Motor Drive Batt Compartment
- ⑪ Viewfinder
- ⑫ Filter
- ⑬ Film Advance Mode Selector
- ⑭ Shutter Release pb
- ⑮ IR Sensor (for remote release)
- ⑯ Motor Drive
- ⑰ Motor Drive Batt Holder
- ⑱ Motor Drive Release

HASSELBLAD 203S (Continued)

NOMENCLATURE (Concluded)

- ① Aperture Ring
- ② Shutter Speed Ring
- ③ Flash Connectors
- ④ Flash Shoe
- ⑤ Data Module ISO Selector
- ⑥ Diopter Adjustment
- ⑦ Data Module Batt Compartment
- ⑧ Magazine Insert Lock
- ⑨ Darkslide
- ⑩ Mode Selector Dial
- ⑪ Auto Exposure Lock
- ⑫ Adjustment pbs
- ⑬ Camr Body Batt Compartment
- ⑭ Lens Release pb
- ⑮ Depth of Field Preview Tab
- ⑯ Focus Ring



HASSELBLAD 203S (Continued)

NOMINAL SETUP

- Lens – As reqd
- Film – As reqd
- ✓Yellow Filter removed
- ✓Data Module – ON
- Darkslide – Remove
- Motor Drive – C
- Mode – Ab
- SS – Set at 1 sec
- Aperture – Adjust for $SS \geq \text{Lens focal length}$

HASSELBLAD 203S (Continued)

HORIZONTAL(VERTICAL) GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)

Lens	Orbital Altitude						
	150nm	180nm	210nm	240nm	270nm	300nm	330nm
50mm	166	199	233	266	299	332	366
110mm	75	90	105	120	134	149	164
250mm	34	41	48	55	62	68	75
350mm	24	28	33	38	43	47	52

STEREO AND MAPPING TIME INTERVALS

HASSELBLAD									
Lens		Orbital Altitude (nm)							
		120	150	180	210	240	270	300	330
350mm	Ground Coverage (nm)	19	24	28	33	38	43	47	52
	Sec/FOV	4	5	6	7	8	9	10	11
	Stereo Interval (sec) (60%)	2	2	2	3	3	4	4	4
	Mapping Interval (sec) (10%)	4	5	5	6	7	8	9	10
250mm	Ground Coverage (nm)	26	33	40	46	53	59	66	73
	Sec/FOV	5	7	8	10	11	12	14	15
	Stereo Interval (sec) (60%)	2	3	3	4	4	5	6	6
	Mapping Interval (sec) (10%)	4	6	7	8	9	11	12	13
110mm	Ground Coverage (nm)	60	75	90	104	119	139	149	164
	Sec/FOV	12	15	18	22	24	28	31	33
	Stereo Interval (sec) (60%)	5	6	17	9	10	11	12	13
	Mapping Interval (sec) (10%)	11	13	16	19	21	24	28	30

HASSELBLAD 203S (Continued)

DEPTH OF FIELD FOR PLB AND EVA PHOTOGRAPHY

Lens	f/ stop	LENS FOCUSING DISTANCE																	
		10 FT			20 FT			30 FT			40 FT			50 FT			60 FT		
		Near Limit	Far Limit	Total	Near Limit	Far Limit	Total	Near Limit	Far Limit	Total	Near Limit	Far Limit	Total	Near Limit	Far Limit	Total	Near Limit	Far Limit	Total
50mm	2.8	8.3	12.5	4.2	14.2	33.7	19.5	18.6	77.1	58.5	22.0	217.3	195.3	24.7	∞	–	27.0	∞	–
	4	7.8	14.0	6.2	12.7	47.7	35.0	16.0	236.3	220.3	18.5	∞	–	20.3	∞	–	21.8	∞	–
	5.6	7.1	16.8	9.7	11.0	106.7	95.7	13.5	∞	–	15.2	∞	–	16.4	∞	–	17.4	∞	–
	8	6.4	23.6	17.2	9.3	∞	–	10.9	∞	–	12.0	∞	–	12.8	∞	–	13.3	∞	–
	11	5.6	48.0	42.4	7.7	∞	–	8.8	∞	–	9.5	∞	–	10.0	∞	–	10.3	∞	–
	16	4.7	∞	–	6.0	∞	–	6.7	∞	–	7.1	∞	–	7.3	∞	–	7.5	∞	–
	22	3.9	∞	–	4.8	∞	–	5.2	∞	–	5.4	∞	–	5.5	∞	–	5.6	∞	–
110mm	2	9.7	10.3	0.6	18.9	21.3	2.4	27.5	33.0	5.5	35.7	45.4	9.7	43.5	58.8	15.3	50.8	73.2	22.4
	2.8	9.6	10.4	0.8	18.5	21.8	3.3	26.7	34.3	7.6	34.3	48.1	13.8	41.3	63.3	22.0	47.9	80.3	32.4
	4	9.5	10.6	1.1	17.9	22.7	4.8	25.4	36.6	11.2	32.3	52.6	20.3	38.5	71.4	32.9	44.1	93.8	49.7
	5.6	9.2	10.9	1.7	17.2	24.0	6.8	24.0	40.1	16.1	30.0	60.2	30.2	35.2	86.2	51.0	39.9	121.2	81.3
	8	8.9	11.3	2.4	16.2	26.2	10.0	22.1	46.8	24.7	27.0	76.8	49.8	31.3	125.1	93.8	34.9	215.1	180.2
	11	8.6	11.9	3.3	15.1	29.7	14.6	20.1	59.1	39.0	24.1	117.3	93.2	27.4	286.2	258.8	30.1	∞	–
	16	8.1	13.0	4.9	13.6	38.1	24.5	17.5	105.9	88.4	20.4	965.5	945.1	22.7	∞	–	24.6	∞	–
250mm	4	9.9	10.1	0.2	19.6	20.7	0.9	29.0	31.6	2.1	38.3	41.9	3.6	47.3	53.1	5.8	56.1	64.5	8.4
	5.6	9.9	10.2	0.3	19.4	20.7	1.3	28.7	31.6	2.8	37.6	42.7	5.1	46.3	54.4	8.1	54.7	66.4	11.7
	8	9.8	10.2	0.4	19.1	21.0	1.8	28.1	32.4	4.1	36.6	44.0	7.4	44.9	56.5	11.6	52.7	69.7	17.0
	11	9.7	10.3	0.6	18.8	21.4	2.5	27.4	33.4	5.7	35.5	45.8	10.3	43.2	59.4	16.2	50.4	74.1	23.7
	16	9.6	10.5	0.9	18.4	22.2	3.6	26.4	35.2	8.4	33.8	49.0	15.2	40.6	65.0	24.4	47.0	85.0	36.0
	22	9.4	10.6	1.2	17.8	23.1	5.0	25.3	37.7	11.6	31.9	53.5	21.6	38.0	73.2	35.2	43.5	96.9	53.4
	32	9.2	10.9	1.7	17.0	24.8	7.4	23.6	42.6	17.7	29.3	63.2	33.9	34.2	92.7	58.5	38.6	134.6	96.0
350mm	4	9.9	10.1	0.2	19.8	20.7	0.4	29.5	30.5	1.0	39.1	41.0	1.9	48.6	51.5	2.9	58.0	62.2	4.2
	5.6	9.9	10.1	0.2	19.7	20.7	0.6	29.3	30.7	1.4	38.7	41.3	2.6	48.0	52.1	4.1	57.2	63.1	5.9
	8	9.9	10.1	0.2	19.6	21.0	0.9	29.0	31.1	2.1	38.2	42.0	3.8	47.2	53.1	5.9	56.1	64.5	8.4
	11	9.9	10.2	0.3	19.4	21.4	1.2	28.6	31.5	2.9	37.6	42.7	5.1	46.3	54.4	8.1	54.7	66.4	11.7
	16	9.8	10.2	0.4	19.1	22.2	1.8	28.1	32.2	4.1	36.6	44.1	7.5	44.8	56.6	11.8	52.6	69.8	17.2
	22	9.7	10.3	0.6	18.8	23.1	2.5	27.4	33.1	5.7	35.5	45.9	10.4	43.1	59.6	16.5	50.3	74.4	24.1
	32	9.6	10.4	0.8	16.9	24.8	5.1	26.4	34.8	8.4	33.7	49.1	15.4	40.5	65.2	24.7	46.8	83.5	36.7

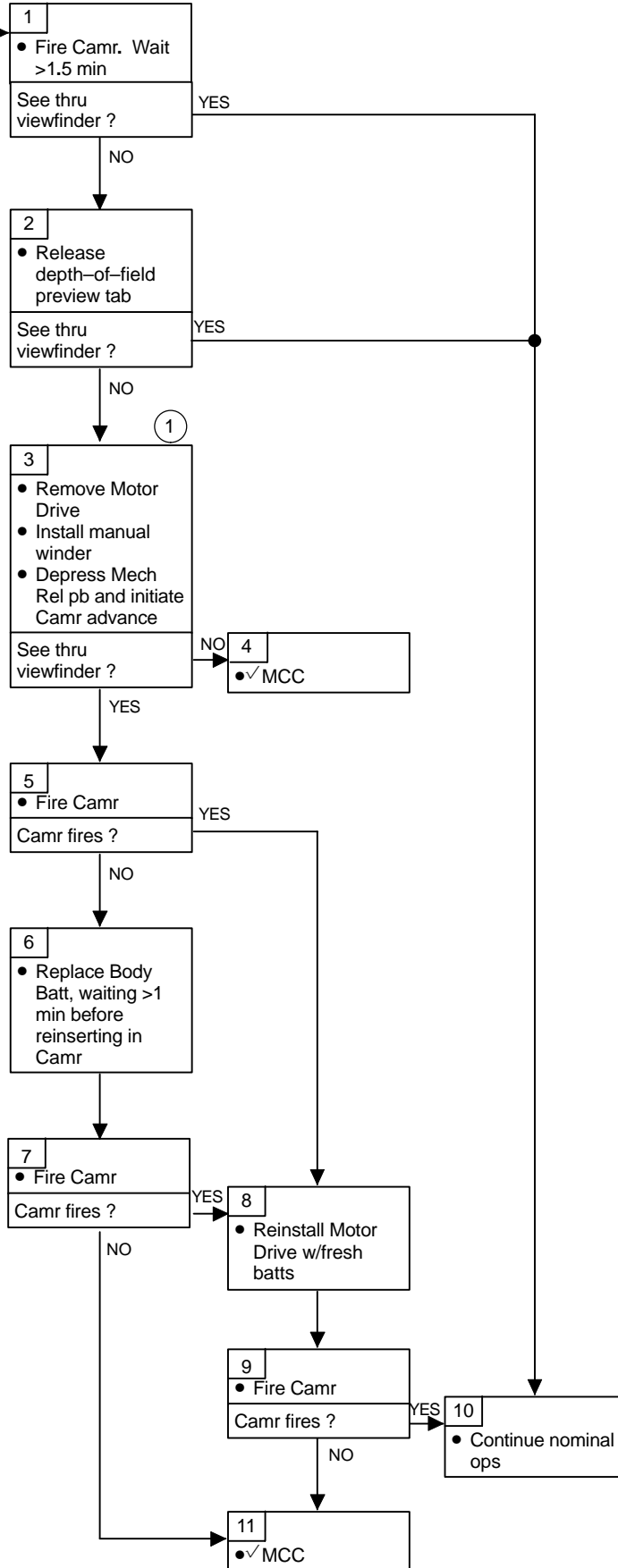
HASS 203S

3.1 CANNOT SEE THRU VIEWFINDER

Cannot See Thru Viewfinder or View Dark

Nominal Config:

- (Camr)
- Lens – As reqd
- ✓ Yellow Filter removed
- ✓ Film – ISO CPos
- ✓ Data Module – ON
- Darkslide – Remove
- Motor Drive – C
- Mode – Ab
- SS – Set at 1 sec
- Aperture – Adjust for SS ≥ Lens focal length



① If 250mm (350mm) Lens:
 Motor Drive – S
 Shutter Rel – press,hold
 Remove Batts
 Remove Motor Drive

HASS 203S

3.2 NO CAMR ACTIVATION OR FINDER DISPLAY

No Camr
Activation Or
Finder Display

Nominal Config:

(Camr)
Lens – As reqd
✓ Yellow Filter
removed
✓ Film – ISO CPos
✓ Data Module –
ON
Darkslide –
Remove
Motor Drive – C
Mode – Ab
SS – Set at 1 sec
Aperture –
Adjust for SS \geq
Lens focal
length

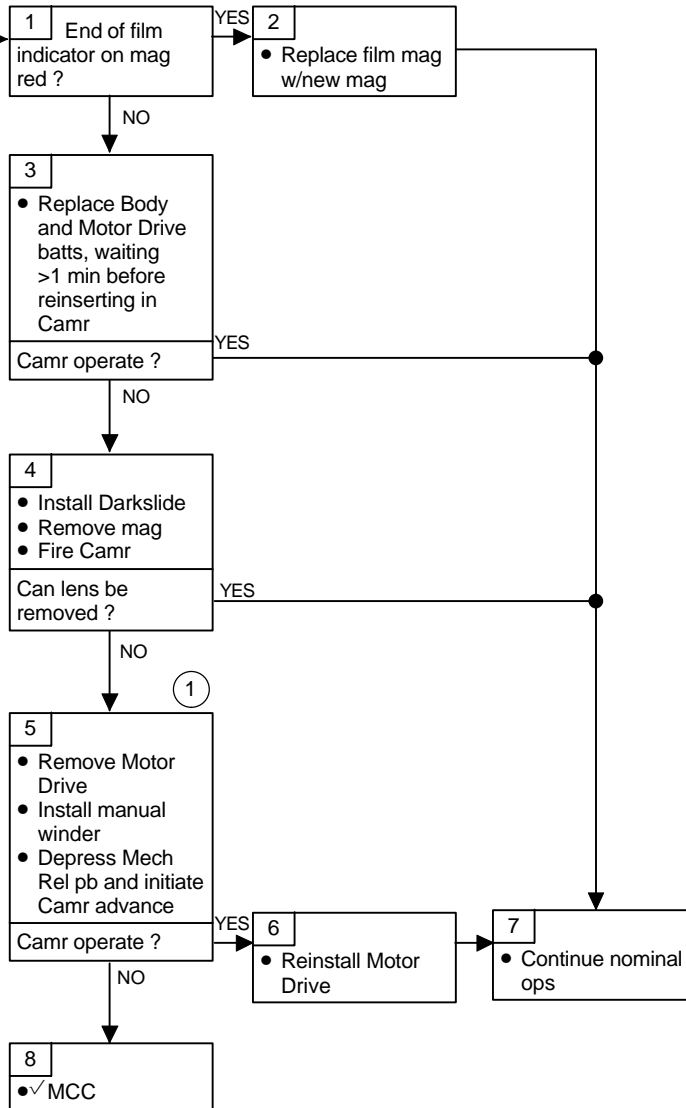
1
• Replace body
batt, waiting
>1 min before
reinserting in
Camr

2
• Continue nominal
ops

Camr Fails to Operate

Nominal Config:

- (Camr)
- Lens – As reqd
- ✓ Yellow Filter removed
- ✓ Film – ISO CPos
- ✓ Data Module – ON
- Darkslide – Remove
- Motor Drive – C
- Mode – Ab
- SS – Set at 1 sec
- Aperture – Adjust for $SS \geq$ Lens focal length

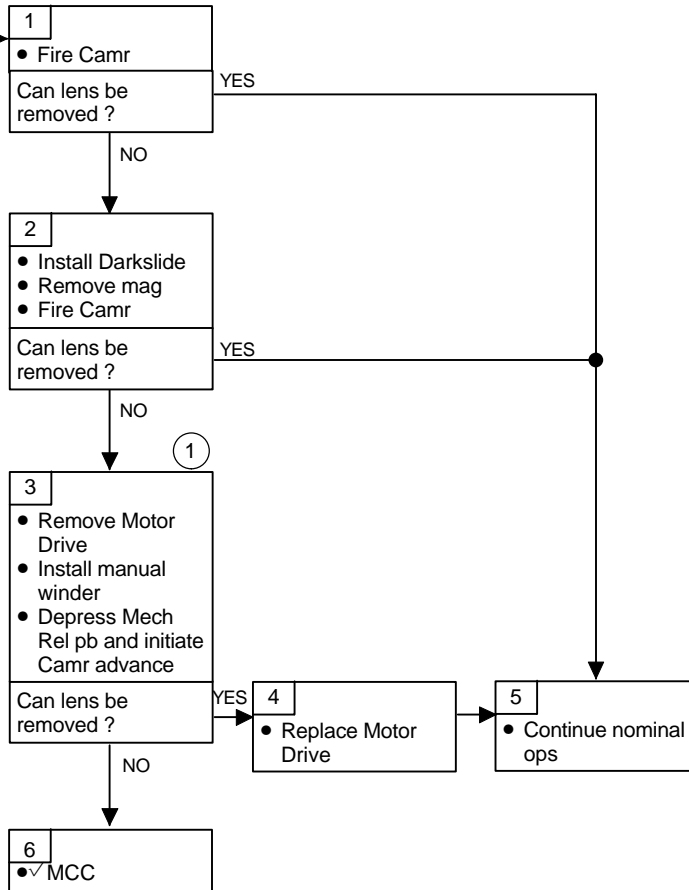


① If 250mm (350mm) Lens:
 Motor Drive – S
 Shutter Rel – press,hold
 Remove Batts
 Remove Motor Drive

Cannot Remove Lens

Nominal Config:

- (Camr)
- Lens – As reqd
- ✓ Yellow Filter removed
- ✓ Film – ISO CPos
- ✓ Data Module – ON
- Darkslide – Remove
- Motor Drive – C
- Mode – Ab
- SS – Set at 1 sec
- Aperture – Adjust for SS ≥ Lens focal length



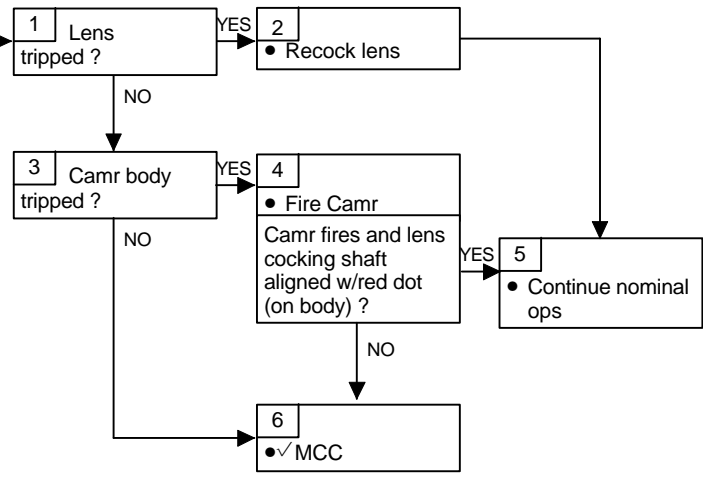
① If 250mm (350mm) Lens:
 Motor Drive – S
 Shutter Rel – press,hold
 Remove Batts
 Remove Motor Drive

HASS 203S

3.5 CANNOT INSTALL LENS

Cannot Install Lens

- Nominal Config:**
(Camr)
Lens – As reqd
✓ Yellow Filter removed
✓ Film – ISO CPos
✓ Data Module – ON
Darkslide – Remove
Motor Drive – C
Mode – Ab
SS – Set at 1 sec
Aperture – Adjust for SS ≥ Lens focal length



HASSELBLAD 203S (Continued)

FILM LOADING

Before placing items in dark bag

1. Remove tape from fresh film can, temp stow tape
2. Remove tape from left side of mag and discard
3. Unfold film adv lever (right side)
4. ✓Darkslide installed w/lip fwd

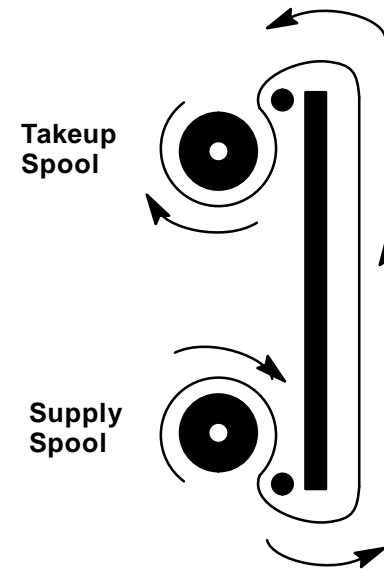
Place magazine and film can in dark bag

5. Open can, remove rubber band; put on wrist
6. Remove magazine insert
7. Remove takeup spool; secure film w/rubber band
8. Remove fresh film from can/bag; temp stow
9. Put exposed film in bag/can; install lid
10. Remove empty spool; place clip on finger
11. Remove tape from fresh film; place on outside of can
12. Clip end of film to takeup spool (w/curl)
13. Install supply spool (bottom of mag)
14. Turn mag lock lever cw; thread film under clamp
15. Pull 3 in. of film toward takeup side; lock clamp
16. Install takeup spool on mag. Take out slack by turning supply spool two (2) turns
17. ✓Sprocket engaged
18. Re-assemble mag. Turn film adv lever on right side as reqd to allow mag to close completely
19. ✓Darkslide installed

Remove H/W from dark bag

20. Replace tape on film can. Remove ASA decal from can and place on mag
21. Note MET on bottom of mag
22. Turn film adv lever three (3) full turns
23. Turn film adv lever slowly to obtain white dot in fwd window
24. Reset frame counter to 1

**FILM THREAD
DIAGRAM**



HASSELBLAD 203S (Concluded)

DATA MODULE PROGRAMMING

1. ✓PGSC Pwr – ON
2. Connect Hass RS 232 Cable to Hass Magazine port and PGSC (Expansion Chassis) RS 232 COM 1 port
3. Data Module – ON (green momentary It)
4. Sel Shuttle Apps > “Hasselblad Programmer” icon
5. Sel “Get data from module” option
6. Sel “Date/Time” option
7. Sel “Label” option and mission ID in pulldown menu
8. ✓“Roll Number” option selected and enter number from film can decal
9. ✓“Frame Number” option selected
10. Enter Magazine serial number
11. ✓“Will appear on film as” data
12. Sel “Send data to module” option
13. ✓“Currently appears on film as” data correct
14. File > Exit

LINHOF

	<u>PAGE</u>
SPECIFICATIONS	4-2
LENS DATA	4-2
HORIZONTAL GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)	4-2
NOMENCLATURE	4-3
NOMINAL SETUP	4-5
MALS	4-6
4.1 CAMR FAILS TO FIRE	4-6
4.2 PWR ON	4-7
4.3 LENS SEQUENCE LT (RED) REMAINS ON	4-8
FILM LOADING	4-9

LINHOF

LINHOF

SPECIFICATIONS

FILM WIDTH: 5 in
 FILM IMAGE SIZE: 3¾ in x 4¾ in
 FILM LOAD: 180 exposures
 EXPOSURE CONTROL: Manual
 SHUTTER SPEED: 1/500 to 1/15 sec in full stop increments
 FILM ADVANCE: Auto – 1 Frame/sec (max)
 BATT:
 Data Module – 4 N
 POWER REQUIREMENT: 28 VDC orbiter power

NOTE

Spare fuses located in handle (three 2–Amp fuses, 3rd being high reliability fuse)

FUSE: Body/Lens – 1.5 Amp; Mag – 2 Amp
 BODY WEIGHT: 4.4 lb
 MAGAZINE WEIGHT WITH FILM: 9.0 lb

LENS DATA

Lens	Aperture Range (f/stop)*	Approximate Field of View (FOV)			Minimum Focus Distance	Weight (lb)	Filter Size
		Horizontal	Vertical	Diagonal			
90mm	f/5.6 – f/45	68°	56°	81°	30 ft	4.4	95mm
250mm	f/5.6 – f/32	27°	22°	34°	40 ft	7.5	Bayonet

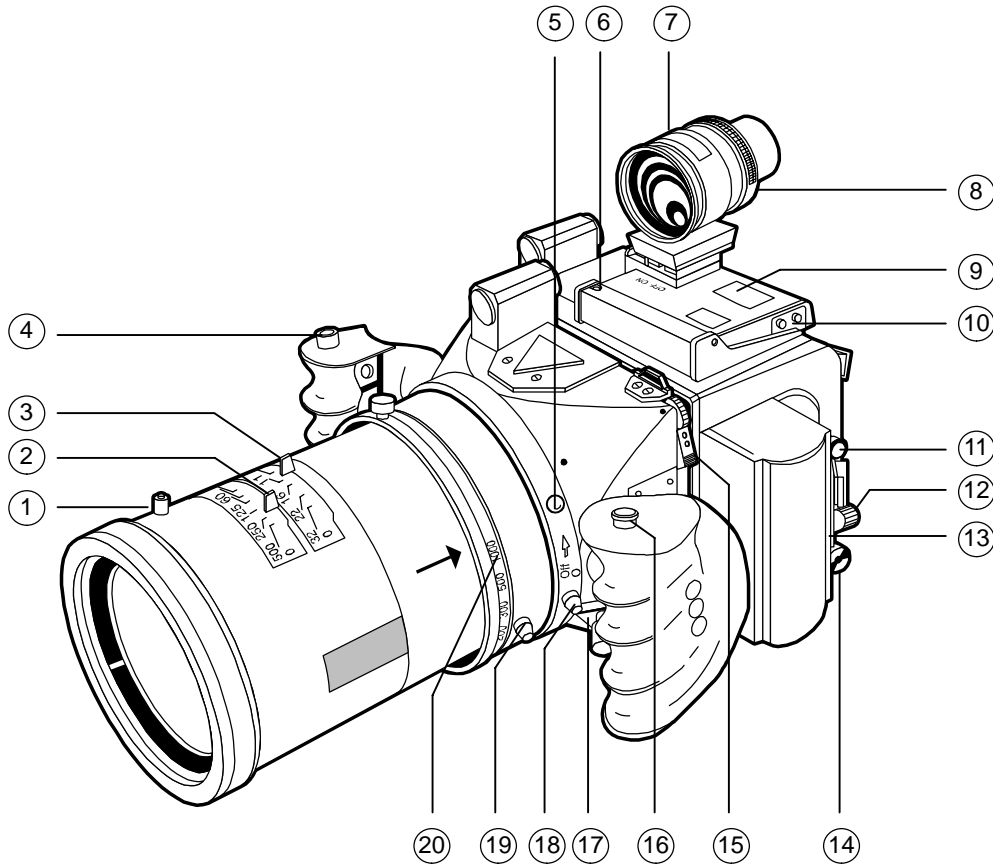
*Detent at each 1/3 f/stop

HORIZONTAL GROUND COVERAGE FOR NADIR PHOTOGRAPHY (Nautical Miles)

Lens	Orbital Altitude						
	150nm	180nm	210nm	240nm	270nm	300nm	330nm
90mm	198	238	278	318	357	397	437
250mm	72	87	101	115	130	145	159

LINHOF (Continued)

NOMENCLATURE

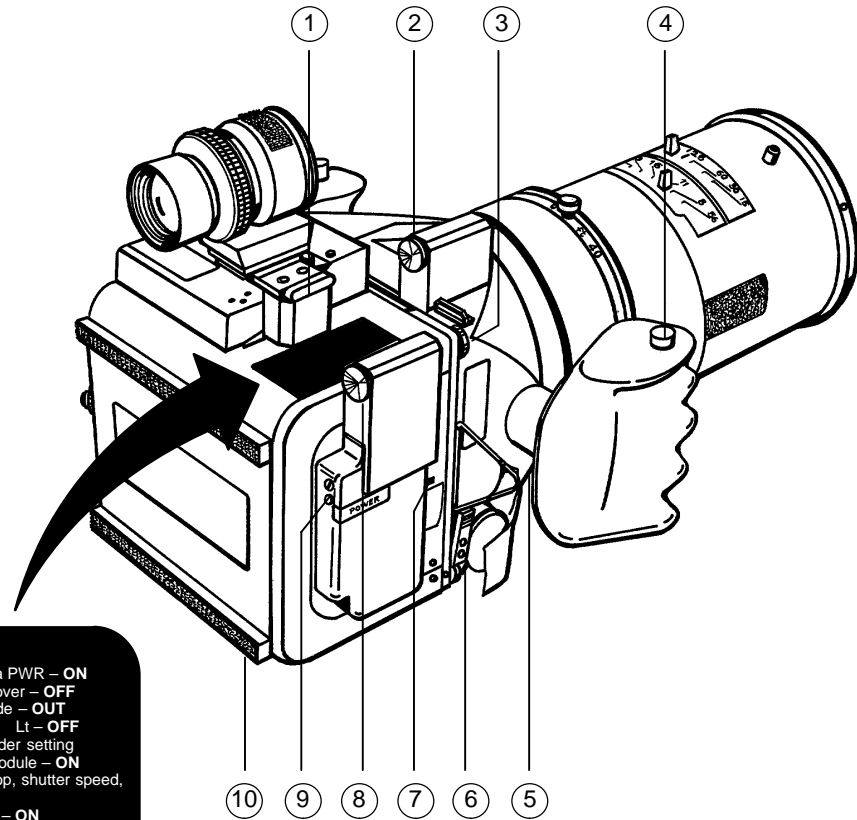


- ① Lens Sequence Lt (red)
- ② Shutter Speed Control Lever
- ③ Aperture Control Lever
- ④ Shutter Release
- ⑤ Lens Release pb
- ⑥ Data Module Release pb
- ⑦ Viewfinder
- ⑧ Viewfinder Field of View Selector Ring
- ⑨ Data Module
- ⑩ Data Module Batt Compartment Door
- ⑪ Pwr sw
- ⑫ Pwr Connector
- ⑬ Blown Mag Fuse Lt (red)
- ⑭ Mag Fuse Receptacle (2 Amp)
- ⑮ Mag Lock Release (two)
- ⑯ Spare Fuses (three) (2 Amp)
- ⑰ Remote Control Connector (gnd use only)
- ⑱ Lens Reset pb (behind left handgrip)
Lens Fuse Receptacle (behind left handgrip)
(1.5 Amp)
- ⑲ Focus Ring Lock (250mm only)
- ⑳ Focus Ring (250mm only)

LINHOF (Continued)

NOMENCLATURE (Concluded)

- ① Data Module ON/OFF sw
- ② Darkslide Indicator Lt (red)
- ③ Mag Lock (four)
- ④ Shutter Release
- ⑤ Darkslide
- ⑥ Mag Lock Release (two)
- ⑦ Film Counter
- ⑧ Film Transport Lt (red)
- ⑨ Pwr Lt (green)
- ⑩ Darkslide



- ✓ Camera PWR – ON
- ✓ Lens cover – OFF
- ✓ Darkslide – OUT
- ✓ Lt – OFF
- ✓ Viewfinder setting
- ✓ Data Module – ON
- ✓ Set f/stop, shutter speed, focus
- ✓ PWR Lt – ON
- ✓ Depress, release trigger
- ✓ Supply spool turns
- ✓ Red lens seq Lt
- ON (~4 SEC)
- OFF

LINHOF (Continued)

NOMINAL SETUP

Camr Settings

Connect Camr to DC Pwr

DC Pwr – ON

Lens as reqd

Lens cover – OFF

Film – as reqd

Darkslide – Removed

Viewfinder – set to lens

Camr Pwr – ON

Data Module – ON

f/stop – as reqd

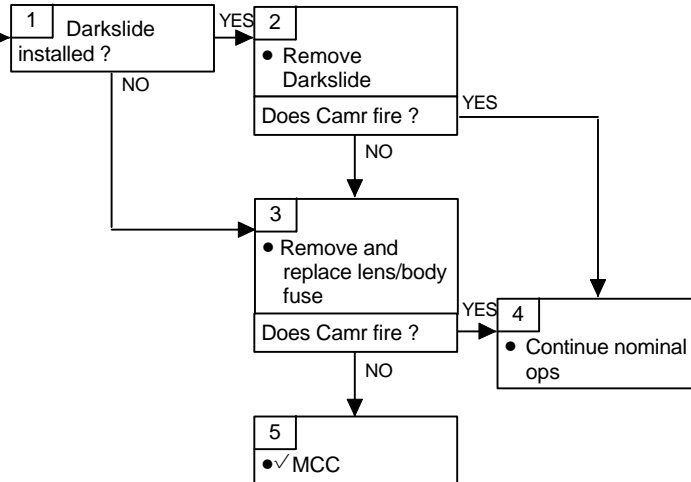
SS – as reqd

LINHOFF

4.1 CAMR FAILS TO FIRE

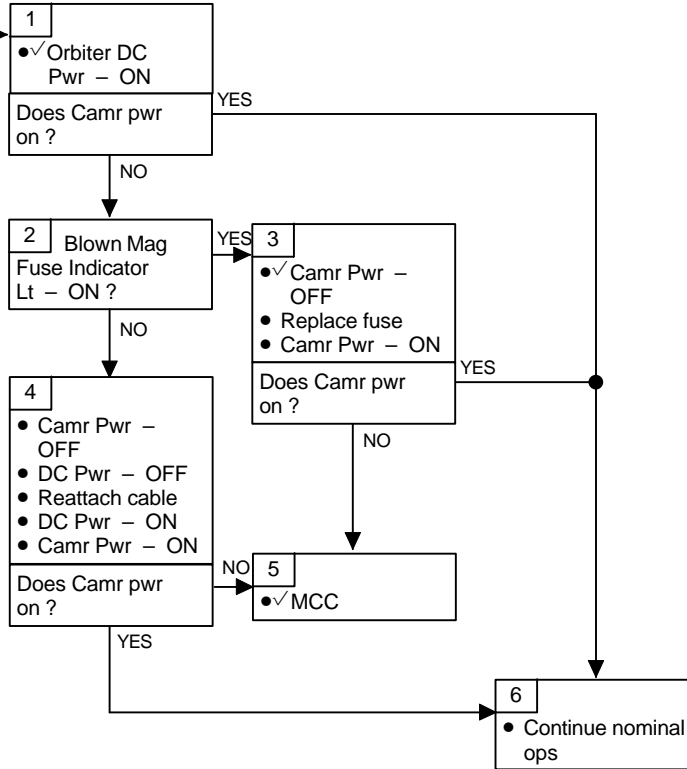
Camera Fails to Fire

Nominal Config:
Connect Camr to DC Pwr
DC Pwr – ON
Lens as reqd
Lens cover – OFF
Film – as reqd
Darkslide – Removed
Viewfinder – set to lens
Camr Pwr – ON
Data Module – ON
f/stop – as reqd
SS – as reqd



Camera Fails to Pwr On

Nominal Config:
 Connect Camr to DC Pwr
 DC Pwr – ON
 Lens as reqd
 Lens cover – OFF
 Film – as reqd
 Darkslide – Removed
 Viewfinder – set to lens
 Camr Pwr – ON
 Data Module – ON
 f/stop – as reqd
 SS – as reqd

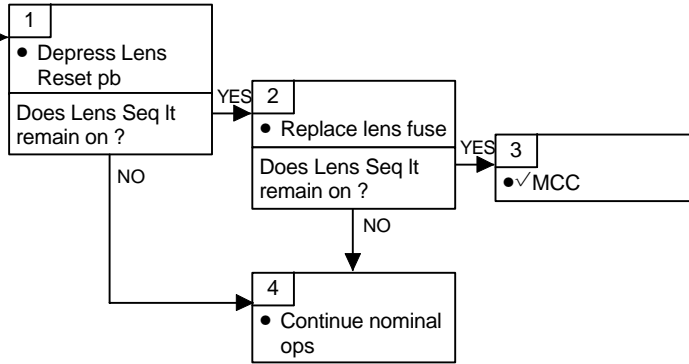


LINHOFF

4.3 LENS SEQUENCE LT (RED) REMAINS ON

Lens Seq Lt Remains On

Nominal Config:
Connect Camr to DC Pwr
DC Pwr – ON
Lens as reqd
Lens cover – OFF
Film – as reqd
Darkslide – Removed
Viewfinder – set to lens
Camr Pwr – ON
Data Module – ON
f/stop – as reqd
SS – as reqd



LINHOF (Concluded)

FILM LOADING

Before placing items in dark bag

1. Remove tape from can, temp stow tape
2. Remove tape from mag tabs and discard

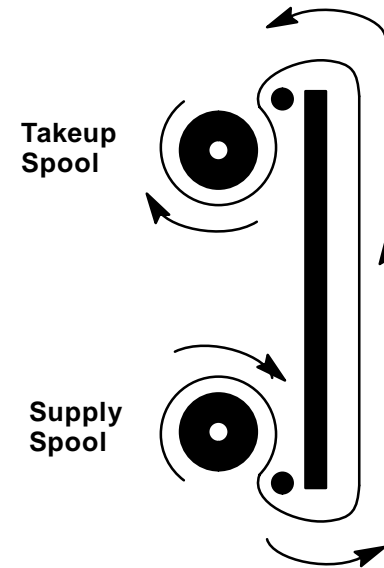
Place magazine and film can in dark bag

3. Open can, remove rubber band; put on wrist
4. Remove magazine cover (2 tabs)
5. Remove assembly from housing
6. Remove full takeup spool; secure film w/rubber band; temp stow
7. Move empty spool to takeup side
8. Remove fresh film from can/bag; temp stow
9. Put exposed film in bag/can; temp stow
10. Remove tape from fresh film and place on back of hand
11. Install fresh supply spool
12. Thread film into slot on takeup spool and tape (emulsion side out)
13. Turn takeup spool three (3) times
14. Take out slack by turning supply spool
15. Reassemble mag; verify that cover snaps in place

Remove H/W from dark bag

16. Reset counter
17. Remove ASA decal from can and place on mag
18. Tape film can; stow

**FILM THREAD
DIAGRAM**



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SPOTMETER 303

	<u>PAGE</u>
SPECIFICATIONS	5-2
NOMENCLATURE	5-2
OPERATIONS	5-3
MALS	5-4
5.1 DISPLAY OFF – NO READING	5-4
5.2 FLASHING	5-5
5.3 'E' IN DISPLAY	5-6

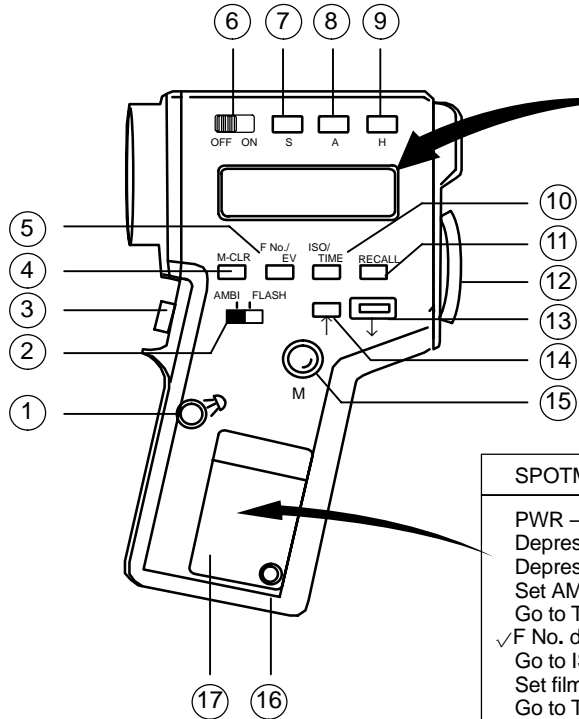
SPOTMETER 303

SPOTMETER 303

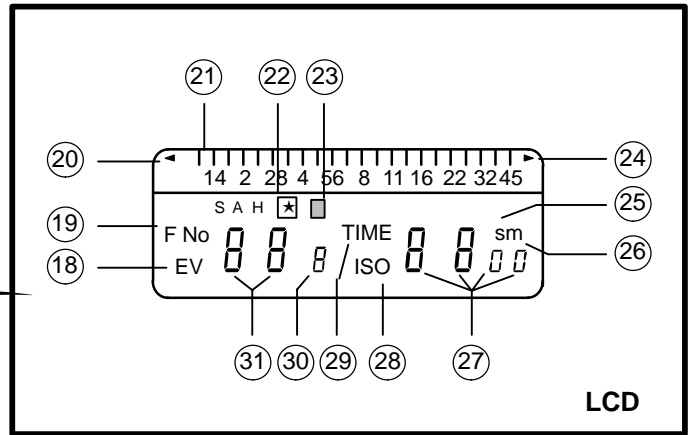
SPECIFICATIONS

METERING AREA: 1° spot
 ISO RANGE: 12–6400 in 1/3 stops
 F/STOP RANGE: f/.7 – f/90 in half stop increments
 SHUTTER SPEED RANGE: 1/8000 sec – 30 min
 BATT VOLTAGE: 1.5V (1AA)
 BATT LIFE: Entire mission
 BODY WEIGHT: .6 lb

NOMENCLATURE



SPOTMETER OPS	
PWR – ON	Depress trigger
	Depress M–CLR
	Set AMBI mode
	Go to TIME mode
✓ F No. displayed	Go to ISO mode
	Set film ISO
	Go to TIME mode
	Set Shutter Speed
	Take reading
	Set F No. on Camr



- ① Viewfinder Illumination pb
- ② Ambient/Flash
- ③ Trigger
- ④ Memory Clear pb
- ⑤ F No./EV Select pb
- ⑥ On/Off
- ⑦ Shadow pb
- ⑧ Average pb
- ⑨ Highlight pb
- ⑩ ISO/Time Select pb
- ⑪ Memory Recall pb
- ⑫ Eyepiece/Diopter
- ⑬ ISO/Timer Decrease pb
- ⑭ ISO/Timer Increase pb
- ⑮ Memory Entry pb
- ⑯ PC Connector
- ⑰ Decal
- ⑱ EV Mode
- ⑲ F No. Mode
- ⑳ Low Light (off scale)
- ㉑ Analog Aperture Scale
- ㉒ Differential Star
- ㉓ Flash Indicator
- ㉔ High Light (off scale)
- ㉕ Seconds (Shutter Speed)
- ㉖ Minutes (Shutter Speed)
- ㉗ ISO/Shutter Speed
- ㉘ ISO Mode
- ㉙ Time Mode
- ㉚ Tenths of an F No.
- ㉛ F No. Display

SPOTMETER 303 (Continued)

OPERATIONS

METERING WHITE FOR AVERAGE SCENE

Take normal reading
Open 1 stop (smaller f-number) from what meter says;
i.e., if meter reads f/8, set f/stop to f/5.6
Brkt all shots

METERING BLACK FOR AVERAGE SCENE

Take normal reading
Close 1 stop (larger f-number) from what meter says;
i.e., if meter reads f/4, set f/stop to f/5.6
Brkt all shots

AVERAGING MODE

Pwr – ON
ISO – As reqd
TIME – As reqd
M-CLR – Depress
Take reading on light area
Depress M pb
Take 2nd reading on dark area
Depress M pb
Depress A
Read f/stop under middle tick mark on analog scale (Digital readout)
Set Camr

NOTES

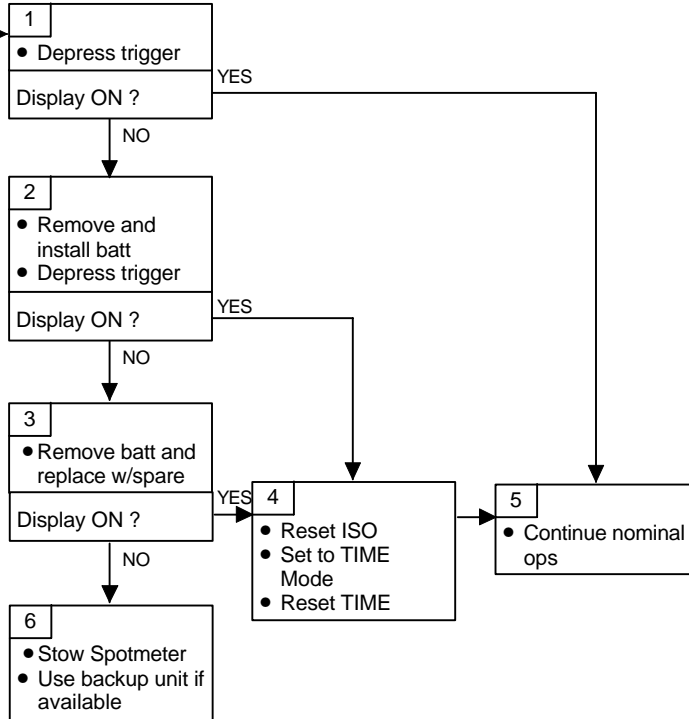
1. f/stop can be read in three places:
 - Digital display on side
 - Analog scale above side digital display
 - Digital display in viewfinder
2. To change from EV to F No., meter must be ON and in TIME mode
3. Power interruption (pulling batt out) will cause meter to default to ISO 100, 1/60 sec, & F No.
4. Meter will store up to two readings. Both must be put into memory by using 'M' pb
5. After taking meter reading, different shutter speeds (TIME) can be selected (using increase (↑) decrease (↓) pbs) and meter will automatically display corrected f/stop w/o having to take another reading (equivalent exposures)
6. After a meter reading is obtained, if S(A,H) pb depressed, a '★' appears. Next reading will display difference between first and second readings for as long as trigger depressed. To clear '★' and return to normal ops, depress M-CLR pb

SPOTMETER 303

5.1 DISPLAY OFF – NO READING

No Display

Nominal Config:
ON/OFF sw – ON
AMBI/FLASH –
AMBI
ISO – As reqd
TIME – As reqd
F No./EV – F No.
M-CLR – Depress

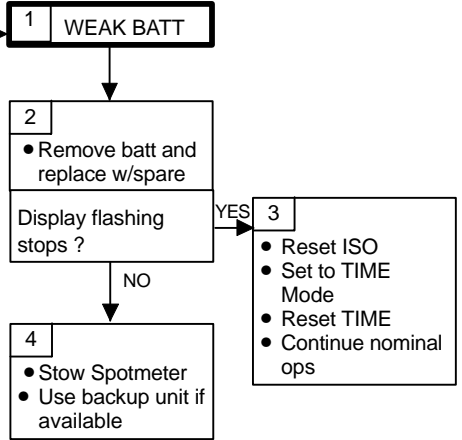


SPOTMETER 303

5.2 DISPLAY FLASHING

Display Flashing

Nominal Config:
ON/OFF sw – ON
AMBI/FLASH –
AMBI
ISO – As reqd
TIME – As reqd
F No./EV – F No.
M-CLR – Depress

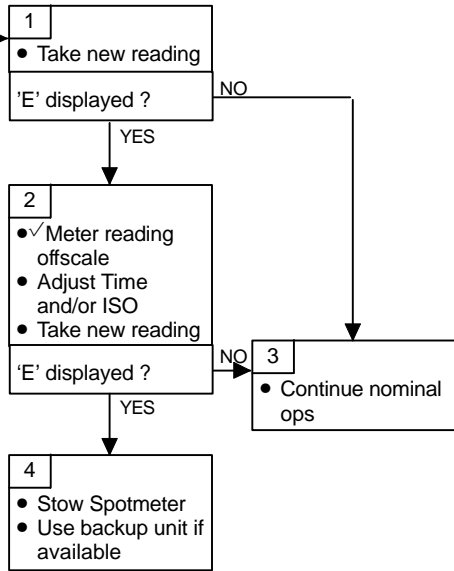


**SPOTMETER
303**

5.3 'E' IN DISPLAY

①
'E' Displayed

Nominal Config:
 ON/OFF sw – ON
 AMBI/FLASH –
 AMBI
 ISO – As reqd
 TIME – As reqd
 F No./EV – F No.
 M-CLR – Depress



① 'E' appears when reading is outside metering range

SONY PD100

	<u>PAGE</u>
SPECIFICATIONS	6-2
WIDE ANGLE CONVERTER	6-2
LENS DATA	6-2
NOMENCLATURE	6-3
NOMINAL SETUP	6-7
NOMINAL MENU SETTINGS	6-8
CAMR MODE	6-8
VTR MODE	6-8
MANUAL SETTINGS	6-9
SCHEMATICS	6-10
SINGLE CAMCORDER	6-10
MULTIPLE CAMCORDER W/PIGMY CABLE	6-11
AND CCPI	6-12
SINGLE CAMCORDER W/CAMCORDER MICROPHONE	6-13
CAMCORDER VIDEO W/ORBITER AUDIO	6-14
AS VTR (LINE IN) W/ORBITER AUDIO,VIDEO	6-15
PLAYBACK W/AUDIO,VIDEO	6-16
EDITING – CAMCORDER/CAMCORDER VIA FIREWIRE	6-17
– CAMCORDER/VTR VIA FIREWIRE	6-18
– CAMCORDER/VTR VIA ORBITER TV SYSTEM	6-19
CAMCORDER/BATT PWR SPEAKER MICROPHONE UNIT (BPSMU) W/PHOTOFLOOD	6-20

SONY PD100

SPECIFICATIONS

TAPE: Mini DVCAM Cassette
 TAPE LENGTH: 40 min
 SENSING AREA: 1/4-in Color CCD (three) (5.08mm Horizontal, 3.81mm Vertical, 6.35mm Diagonal)
 VIEWFINDER: Color
 LCD: Color, 3.5 in
 ZOOM: 12X, 48X Digital Zoom
 FOCAL LENGTH: 4.3mm to 51.6mm
 APERTURE: f/1.6–2.6 – f/16
 MICROPHONE: Built-in Stereo Electric Condenser
 AUDIO: 16-Bit at 48KHz
 MINIMUM ILLUMINATION: 4 Lux at f/1.6
 POWER: 7.2V Batt
 8.4V DC IN
 BATT LIFETIME: ~60 min
 BODY WEIGHT: 2.5 lb
 BATT WEIGHT: 0.41 lb

WIDE ANGLE CONVERTER

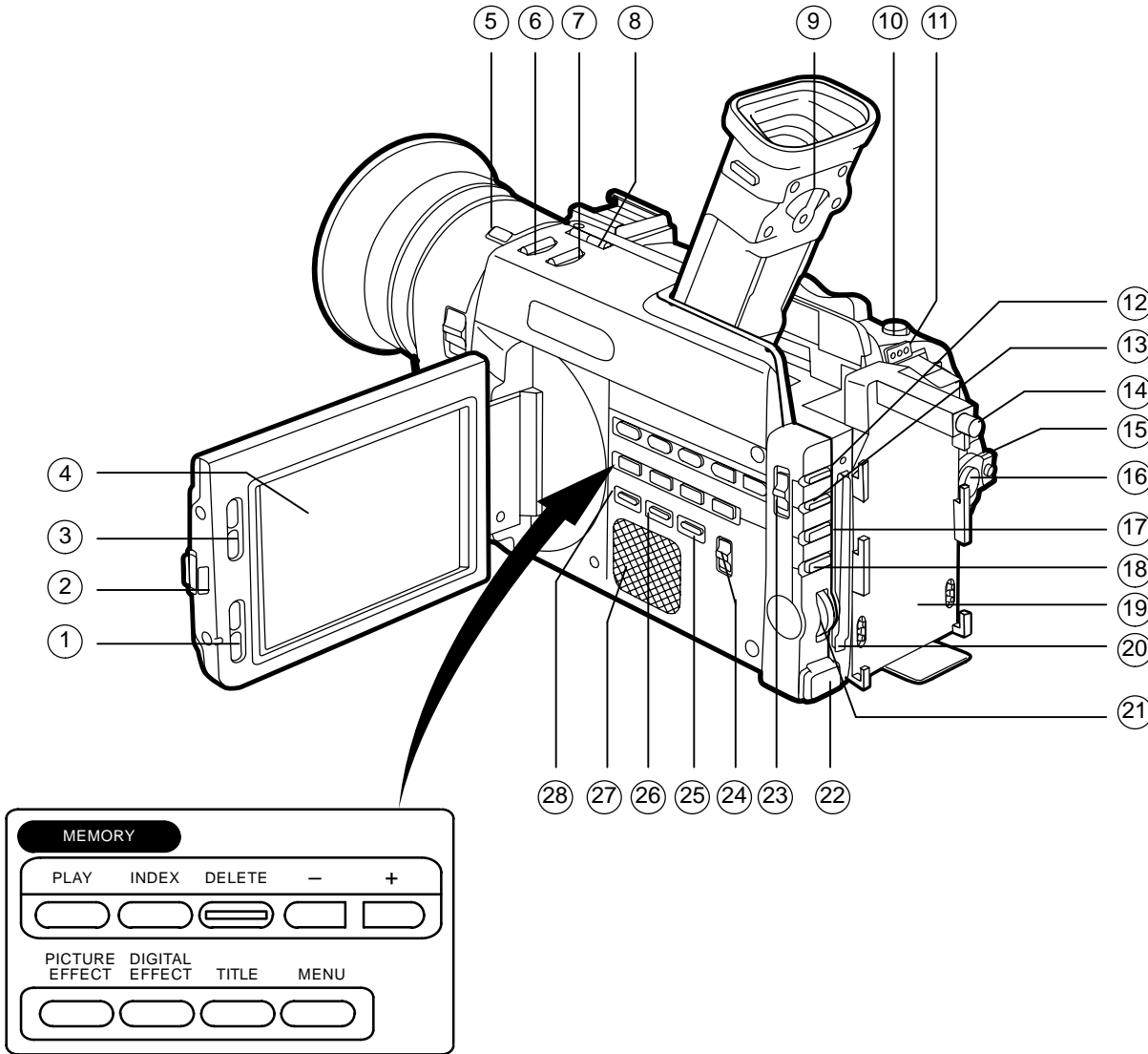
CONVERSION: 0.7X
 CONVERTED FOCAL LENGTH: 3.01mm to 36.2mm
 WEIGHT: 0.53 lb

LENS DATA

Lens	Zoom Ratio	Approximate Field of View			Filter Size
		Horizontal	Vertical	Diagonal	
4.3–51.6mm	12:1	6.1°–5.6°	47.8°–4.2°	72.9°–7.0°	52mm
w/Wide Conversion Lens 3.0–36mm	12:1	80.3°–8.0°	64.7°–6.0°	93.1°–10.0°	N/A

SONY PD100 (Continued)

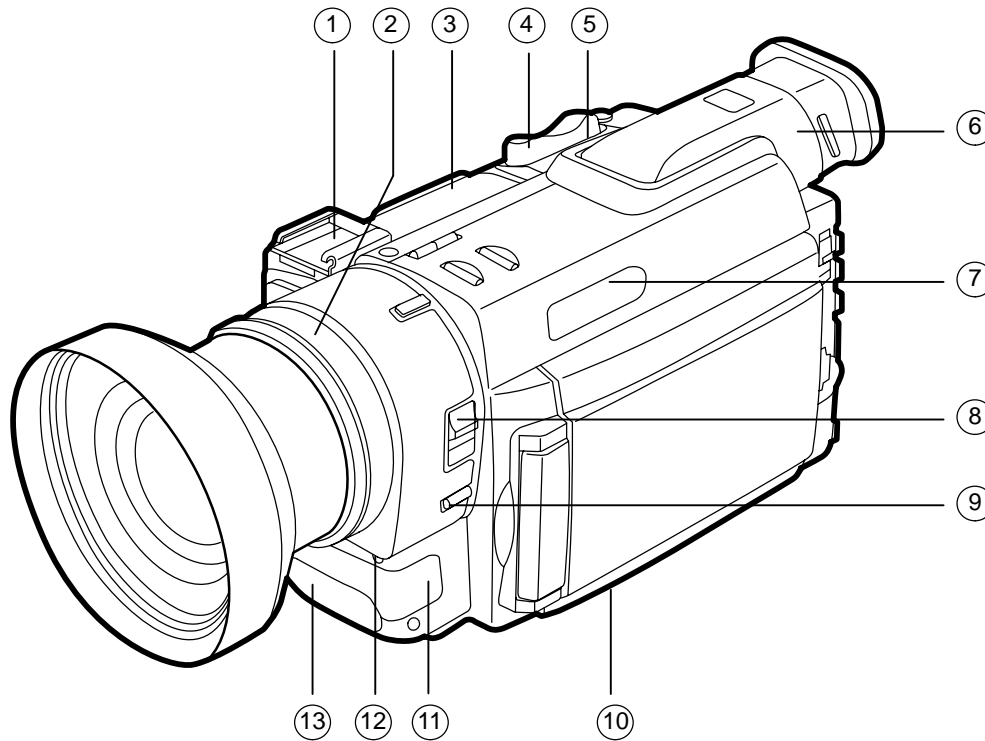
NOMENCLATURE



- ① VOLUME pb
- ② LCD OPEN sw
- ③ LCD BRIGHT pb
- ④ LCD Screen
- ⑤ ND FILTER pb
- ⑥ FADER pb
- ⑦ BACK LT pb
- ⑧ EDIT/SEARCH pb
- ⑨ Viewfinder Lens Adjustment Lever
- ⑩ PHOTO pb
- ⑪ BATT RELEASE pb
- ⑫ SHUTTER SPEED pb
- ⑬ WHT BAL (White Balance) pb
- ⑭ POWER SUPPLY RELEASE pb
- ⑮ POWER sw
- ⑯ START/STOP pb
- ⑰ PROGRAM AE pb
- ⑱ EXPOSURE pb
- ⑲ Batt Adapter
- ⑳ Memory Card Slot
- ㉑ Control tw
- ㉒ DC IN
- ㉓ AUTO LOCK Selector
- ㉔ ZEBRA Selector
- ㉕ END SEARCH pb
- ㉖ DISPLAY pb
- ㉗ Speaker
- ㉘ DATA CODE pb

SONY PD100 (Continued)

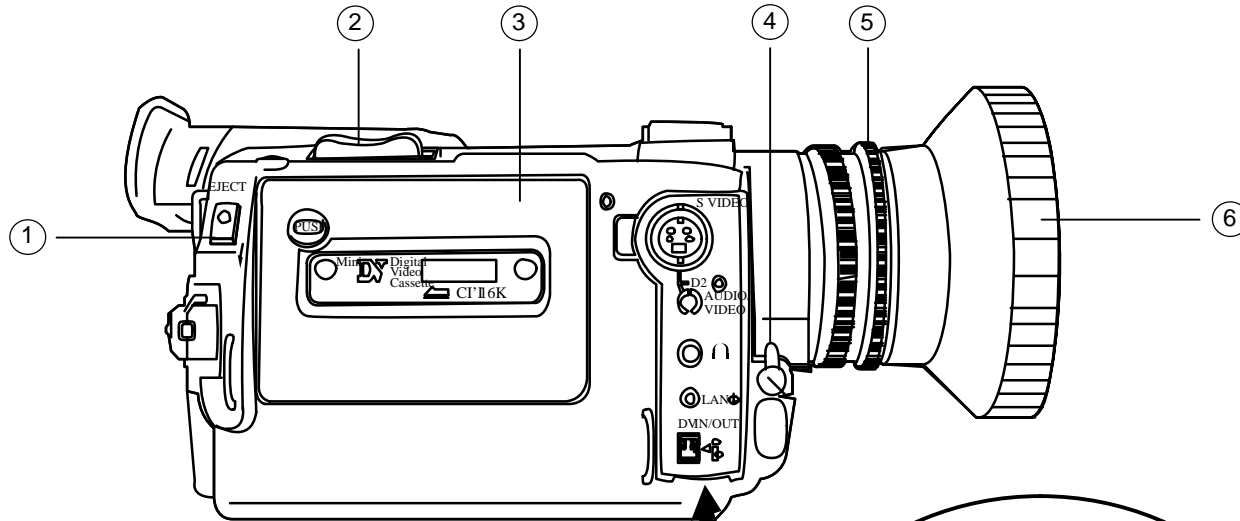
NOMENCLATURE (Continued)



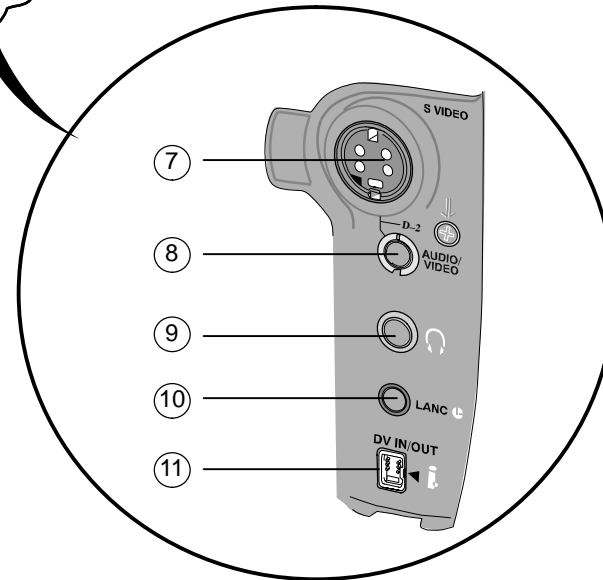
- ① Accessory Shoe
- ② Focus Ring
- ③ Tape Transport pbs
 - STOP (stop)
 - ◀◀ REW (rewind)
 - ▷ PLAY (playback)
 - ▶▶ FF (fast forward)
 - || PAUSE (pause)
 - REC (record)
- ④ Zoom Control
- ⑤ TC RESET pb
- ⑥ Viewfinder
- ⑦ Display Window
- ⑧ FOCUS sw
- ⑨ PUSH AUTO pb
- ⑩ Memory Release pb (not visible)
- ⑪ Built-in Microphone
- ⑫ REC Lamp
- ⑬ Remote Sensor

SONY PD100 (Continued)

NOMENCLATURE (Continued)

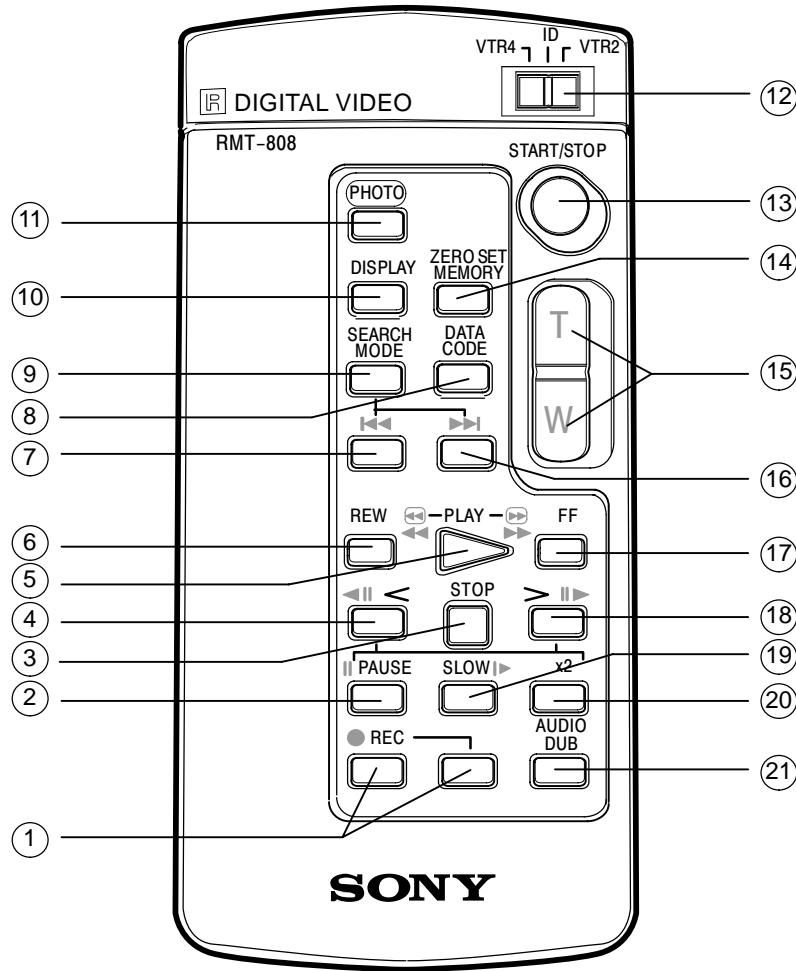


- ① Cassette Eject
- ② Zoom Control
- ③ Cassette Compartment
- ④ MIC PLUG-IN Pwr
- ⑤ Wide Conversion Locking Collar
- ⑥ Wide Conversion Lens



SONY PD100 (Continued)

NOMENCLATURE (Concluded)



- ① REC pb
- ② PAUSE pb
- ③ STOP pb
- ④ Frame by Frame Reverse pb
- ⑤ PLAY pb
- ⑥ REW pb
- ⑦ REW Search pb
- ⑧ DATA CODE pb
- ⑨ SEARCH Mode pb
- ⑩ DISPLAY pb
- ⑪ PHOTO pb
- ⑫ VTR SELECT
- ⑬ START/STOP pb
- ⑭ ZERO SET MEMORY pb (not used)
- ⑮ Zoom Controls
- ⑯ FF Search pb
- ⑰ FF pb
- ⑱ Frame by Frame FF pb
- ⑲ SLOW pb
- ⑳ X2 pb
- ㉑ AUDIO DUB pb

SONY PD100 (Continued)

NOMINAL SETUP

- ✓Wide Conversion lens installed
- Mode – CAMERA
- If rec to tape:
 - Tape – Install
 - ✓Viewfinder (LCD) displays STBY
- If live event:
 - Tape – Remove
 - ✓Viewfinder (LCD) displays blinking yellow tape
- Camr Settings
- ✓AUTO LOCK – AUTO LOCK
- ✓FOCUS – AUTO
- Multiuse Brkt, Clamp

SONY PD100 (Continued)

NOMINAL MENU SETTINGS

CAMR MODE

MANUAL SET

AUTO SHUTTER – ON
PROG SCAN – OFF

CAMR SET

D.ZOOM – OFF
16:9 WIDE – OFF
STEADYSHOT – ON
AE SHIFT – “Center”
GAIN SHIFT – 0dB
FRAME REC – OFF
INT REC – OFF

LCD/VF SET

LCD B.L. – BRT Normal

CM SET

N/A

TAPE SET

AUDIO MODE – FS48K
MIC LEVEL – AUTO
 REMAIN – ON
TIME CODE – DF

SETUP MENU

CLOCK SETUP – set per GMT
LTR SIZE – NORMAL

OTHER

WORLD TIME – 0
BEEP – NORMAL
COMMANDER – ON
DISPLAY – LCD
REC LAMP – ON
COLOR BAR – OFF

VTR MODE

VTR SET

HiFi SOUND – STEREO
AUDIO MIX – “left” (ST1)

LCD/VF SET

LCD COLOR – “center”
VF BRIGHT – “center”

MEMORY SET

N/A

CM SET

N/A

TAPE SET

AUDIO MODE – FS48K
MIC LEVEL – AUTO
 REMAIN – ON
DATA CODE – DATE/CAM
TIME CODE – DF

SETUP MENU

LTR SIZE – NORMAL

OTHER

BEEP – NORMAL
COMMANDER – ON
DISPLAY – LCD
DV EDITING – N/A


SONY PD100 (Continued)

MANUAL SETTINGS

FOCUS

MANUAL FOCUS

Camr Mode – CAMERA

FOCUS sw – MANUAL (✓  display in viewfinder (LCD))

Zoom – IN to subject

Focus manually

Zoom to desired setting

Begin recording as reqd

TEMP AUTO FOCUS

PUSH AUTO pb – Press,hold for temp Auto Focus

SHUTTER

Mode – CAMERA

AUTO LOCK – “center”

SHUTTER SPD pb – Press

CONTROL tw – Rotate to select SS from 1/4 to 1/10,000 sec

To exit Shutter Speed:

SHUTTER SPEED pb – Press

✓No SS displayed

WHITE BALANCE

Mode – CAMERA

Camr Settings

AUTO LOCK – “center”

WHT BAL pb – Press

To set WHT BAL, place white sheet of paper in CC FOV (under same lighting conditions)

CONTROL tw – Press

White Balance icon  will blink for 2 sec and become steady

To exit WHT BAL:


WHT BAL – press

APERTURE

Mode – CAMERA

AUTO LOCK – “center”

PROGRAM AE pb – Press

✓  displayed

CONTROL tw – Press

Adjust aperture as reqd

To exit Aperture:

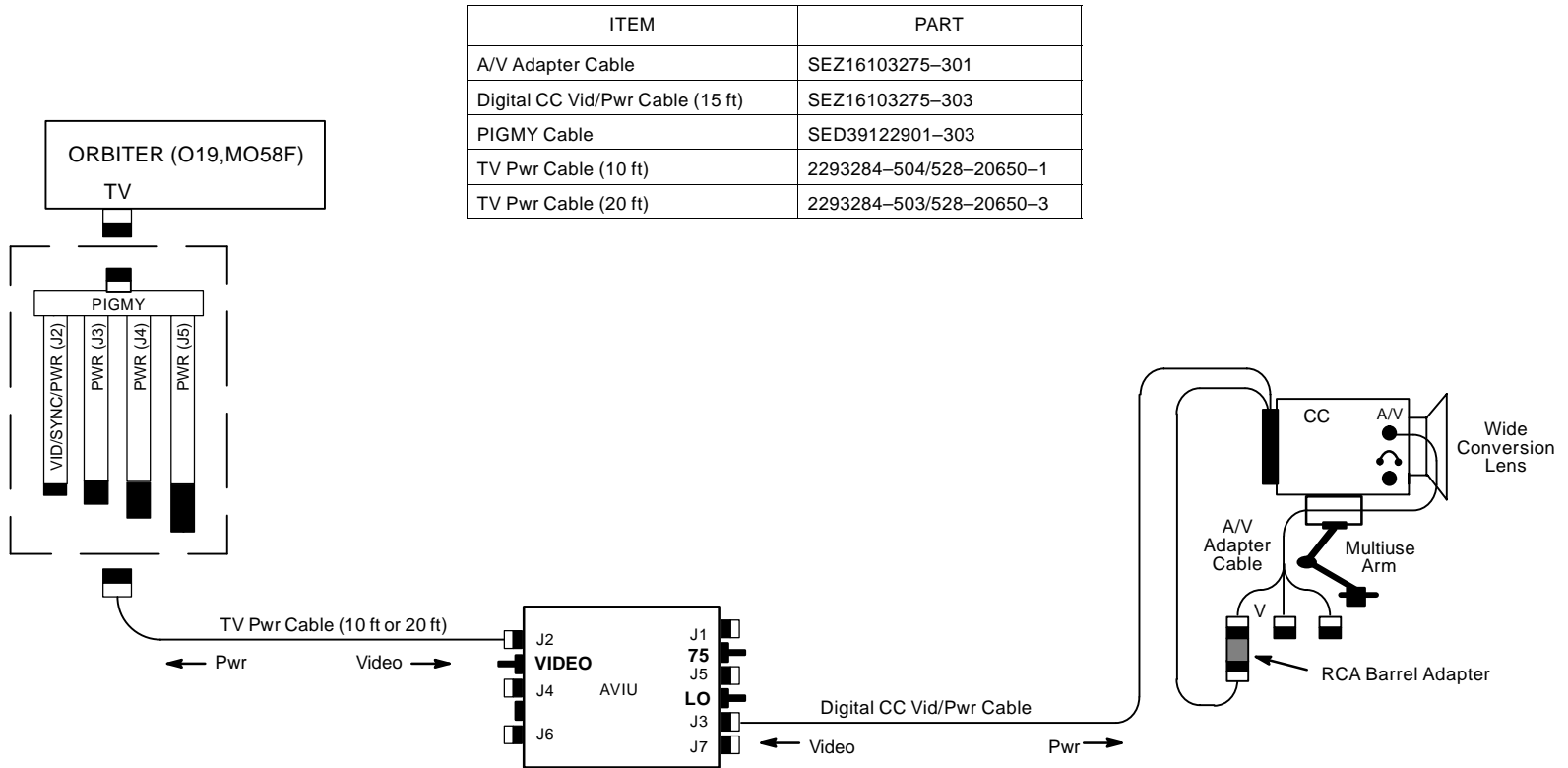
PROGRAM AE pb – Press

✓No  displayed

SONY PD100 (Continued)

SCHEMATICS

SINGLE CAMCORDER

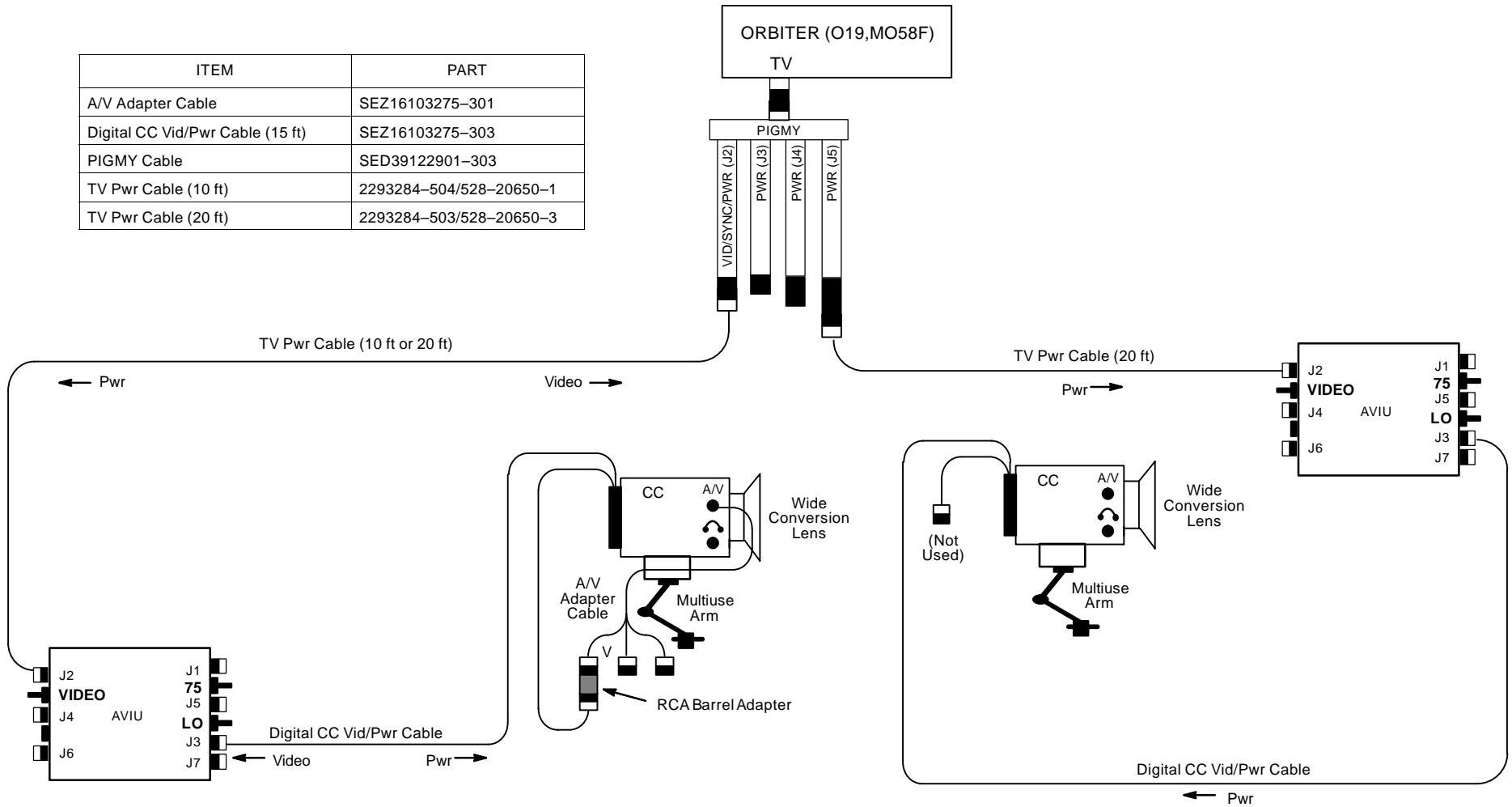


SONY PD100 (Continued)

SCHEMATICS (Continued)

MULTIPLE CAMCORDER W/PIGMY CABLE

ITEM	PART
A/V Adapter Cable	SEZ16103275-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3

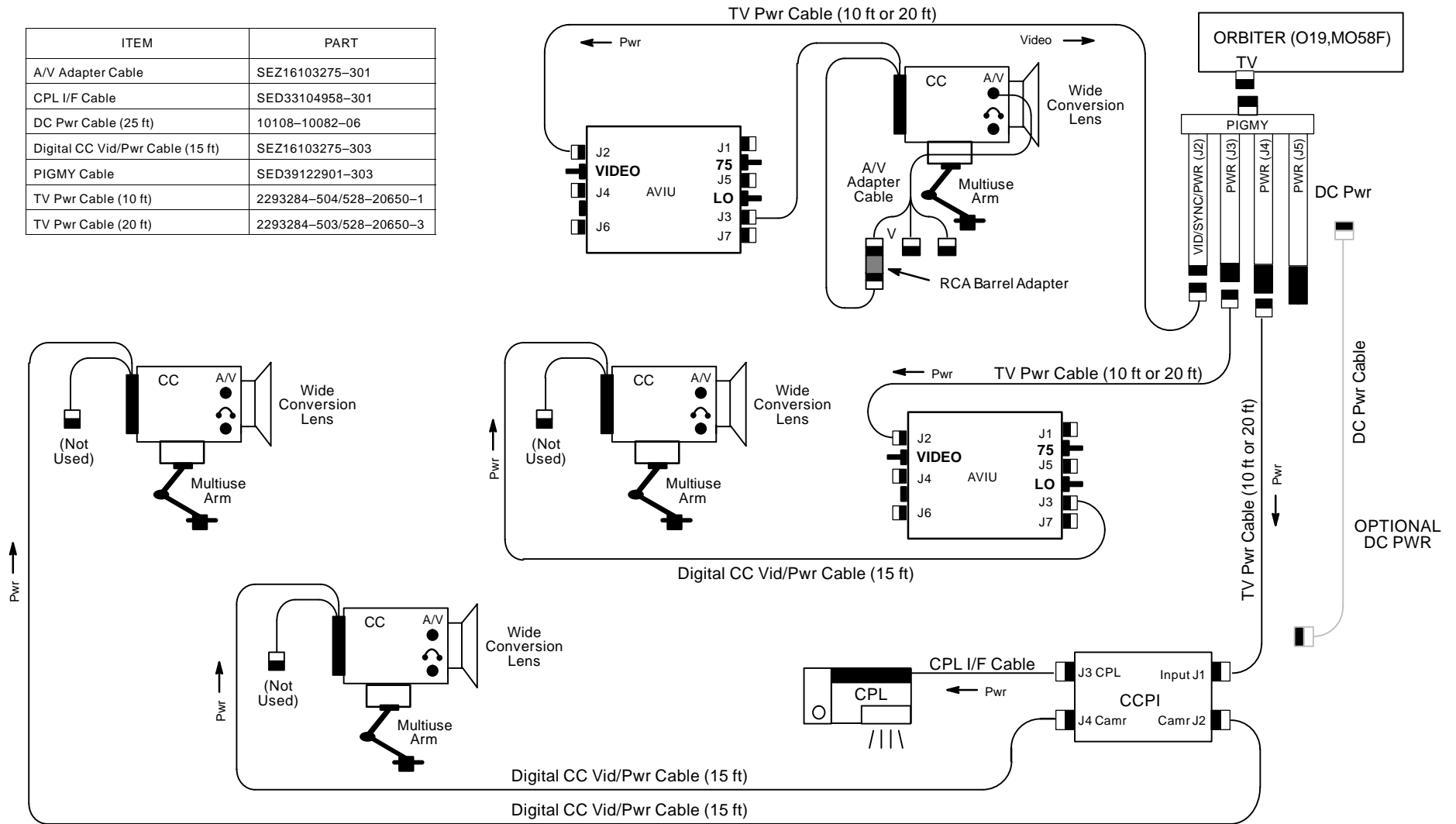


SONY PD100 (Continued)

SCHEMATICS (Continued)

MULTIPLE CAMCORDER W/PIGMY CABLE AND CCPI

ITEM	PART
A/V Adapter Cable	SEZ16103275-301
CPL I/F Cable	SED33104958-301
DC Pwr Cable (25 ft)	10108-10082-06
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3



SONY PD100 (Continued)

SCHEMATICS (Continued)

SINGLE CAMCORDER W/CAMCORDER MICROPHONE

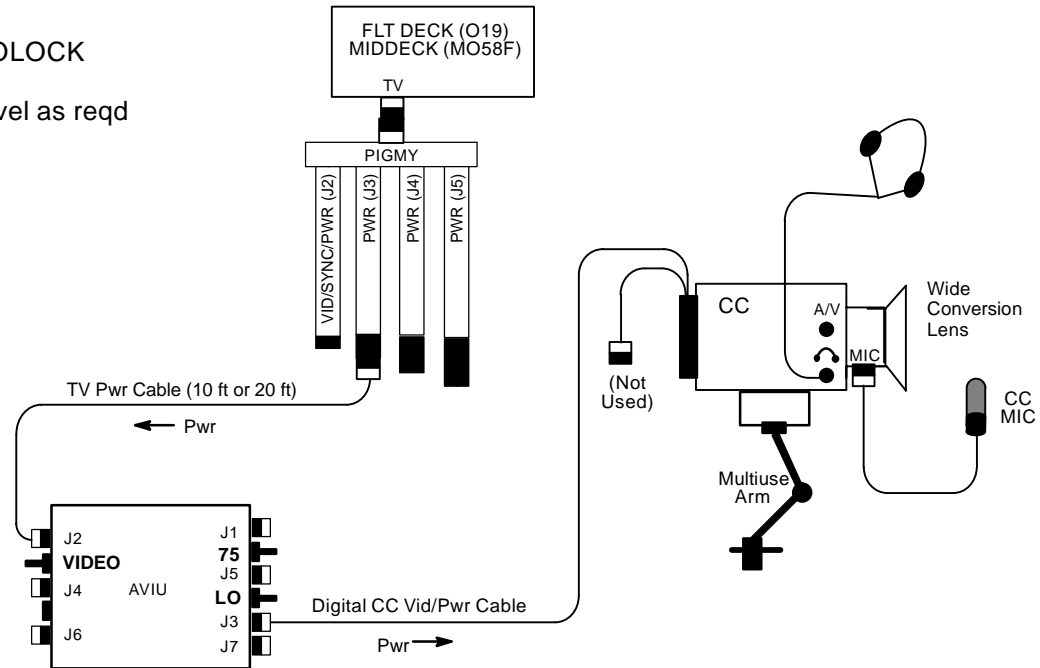
AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

CC SETTINGS

4. MODE – CAMERA
5. Camr Settings
 - ✓AutoLock – AUTOLOCK
6. CC MIC – ON
7. Adjust Headphone level as reqd

ITEM	PART
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3



SONY PD100 (Continued)

SCHEMATICS (Continued)

CAMCORDER VIDEO W/ORBITER AUDIO

ITEM	PART
ATU Recorder Cable	SED39117770-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3

ATU

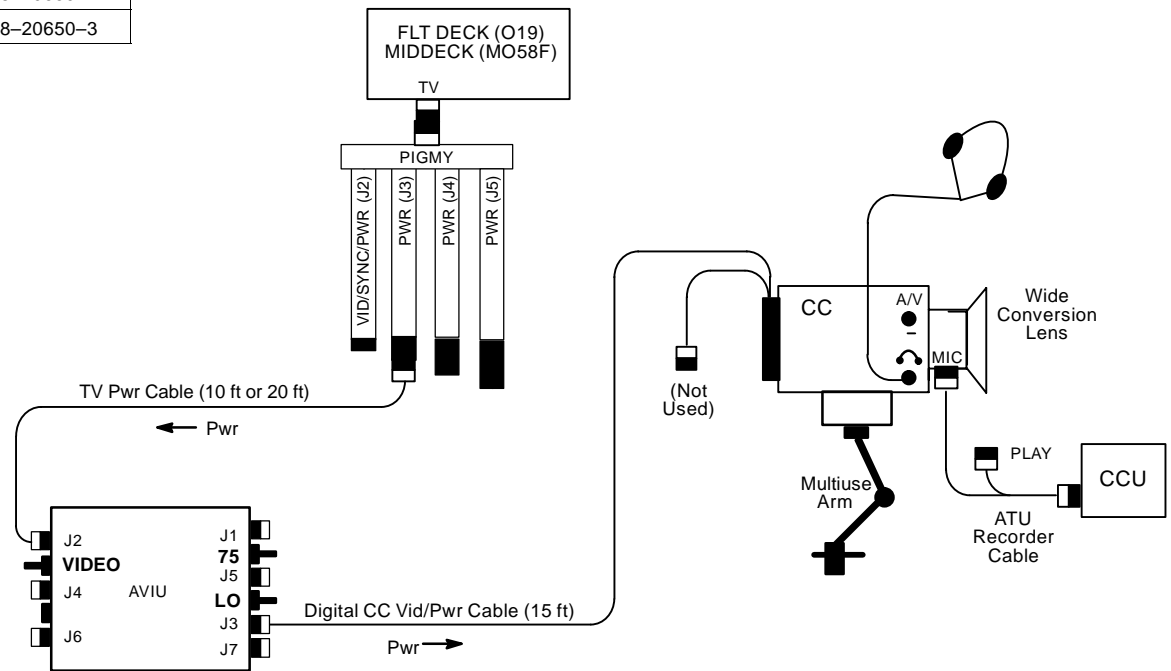
1. PWR – AUD
2. Desired Loops – T/R(RCV), Vol tw – 8
3. Other Loops – OFF

AVIU

4. SYNC/VIDEO – VIDEO
5. HI-Z/75 – 75
6. PWR SELECT – LO

CC

7. MODE – CAMERA
8. Camr Settings
 ✓AutoLock – AUTOLOCK
9. Adjust Headphone level as reqd

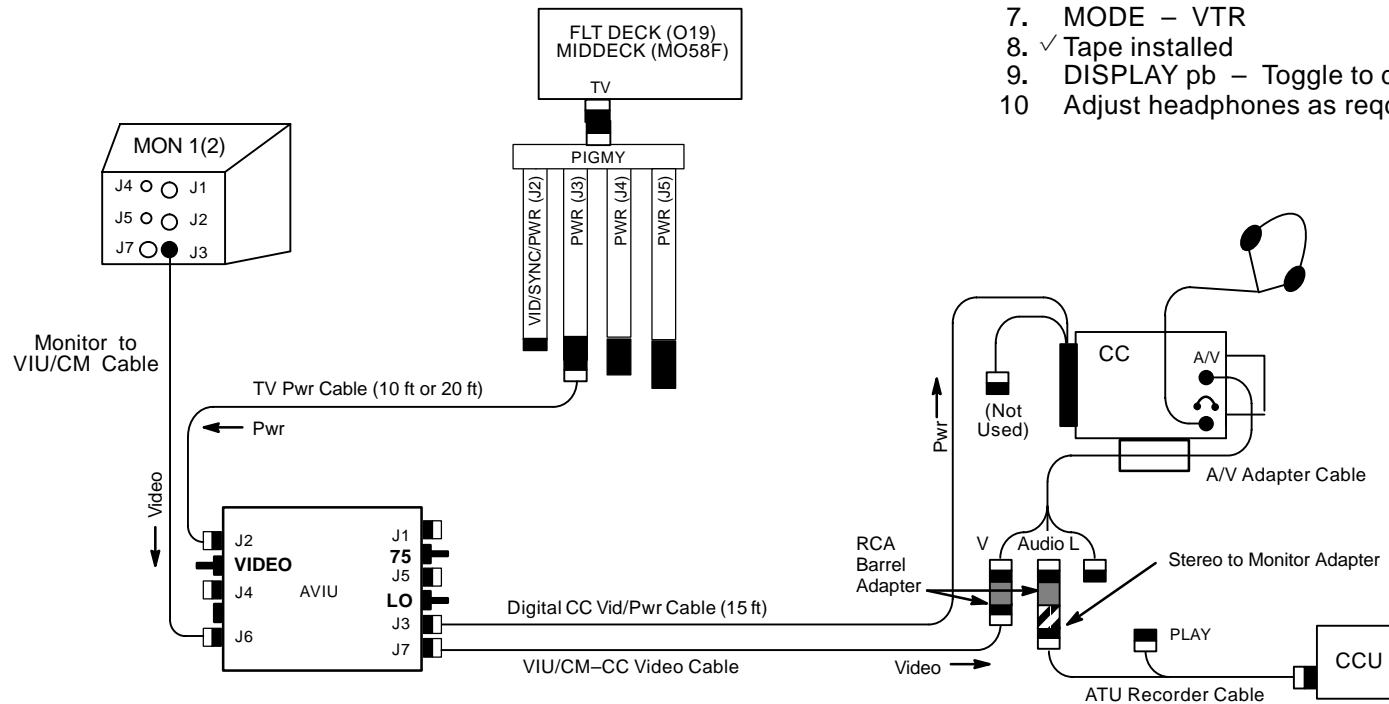


SONY PD100 (Continued)

SCHEMATICS (Continued)

CAMCORDER AS VTR (LINE IN) W/ORBITER AUDIO,VIDEO

ITEM	PART
ATU Recorder Cable	SED39117770-301
A/V Adapter Cable	SEZ16103275-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
Monitor to VIU/CM Cable (20 ft)	SED39122074-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3
VIU/CM-CC Video Cable	SED39122269-301



ATU

1. PWR - AUD
2. Desired Loops - RCV, tw - 0
3. Other Loops - OFF

AVIU

4. SYNC/VIDEO - VIDEO
5. HI-Z/75 - 75
6. PWR SELECT - LO

PD100

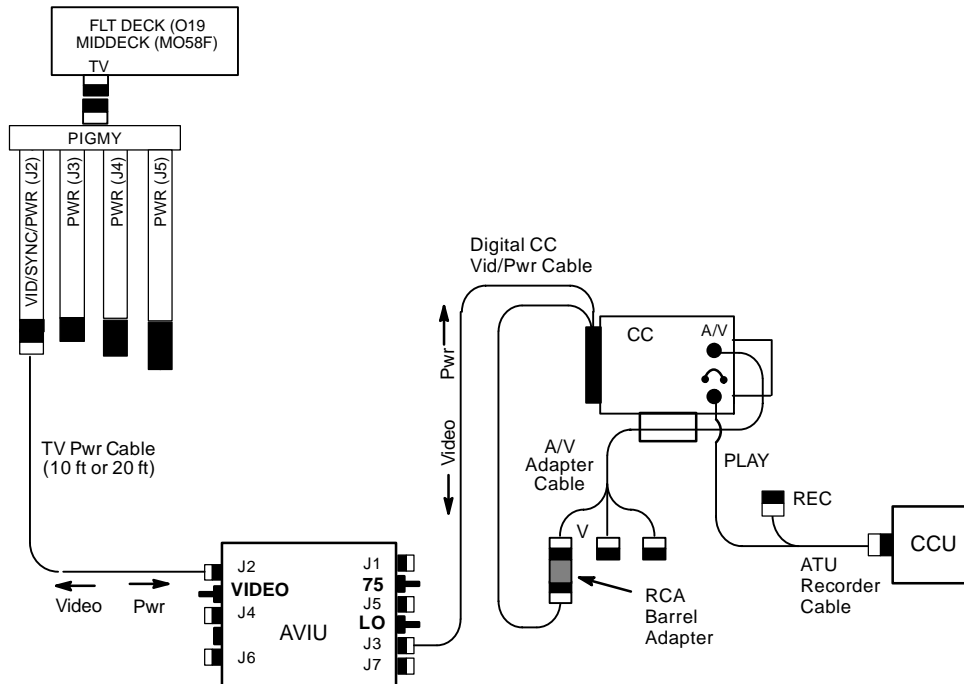
7. MODE - VTR
8. ✓ Tape installed
9. DISPLAY pb - Toggle to display tape counter
10. Adjust headphones as reqd

SONY PD100 (Continued)

SCHEMATICS (Continued)

CAMCORDER PLAYBACK W/AUDIO,VIDEO

ITEM	PART
ATU Recorder Cable	SED39117770-301
A/V Adapter Cable	SEZ16103275-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3



AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

PD100

4. Install tape, if reqd

CCU/ATU

5. If MHA, COMM PWR – ON
6. PWR – AUD
7. Desired Loops – T/R
8. Other Loops – RCV (OFF)
9. XMIT/ICOM Mode – VOX/VOX
10. VOX SENS – MAX

PD100

11. Speaker Vol Max

A7

12. VID OUT pb – Desired MON
IN pb – FLT DECK(MIDDECK)

PD100

13. VTR pb – REW(FF) to cue tape

IF DNLK

A7

14. ✓ MCC has commanded async config
15. ✓ TV DNLK – ENA
16. VID OUT pb – DNLK
IN pb – FLT DECK(MIDDECK)

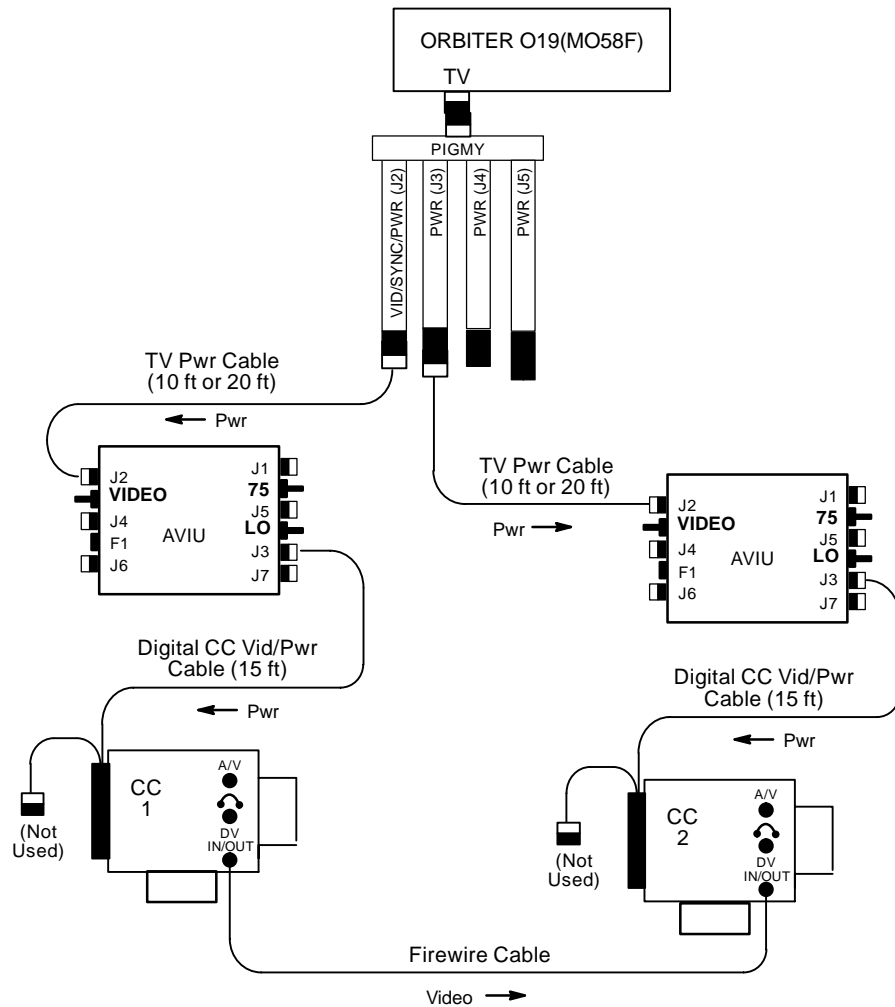
PD100

17. VTR pb – PLAY
18. ✓ PLAY indication and tape counter incrementing
19. If PLBK(DNLK) complete:
| VTR pb – PAUSE
If PD100 ops complete, go to DEACTIVATION

SONY PD100 (Continued)

SCHEMATICS (Continued)

EDITING – CAMCORDER/CAMCORDER VIA FIREWIRE



ITEM	PART
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
Firewire Cable	SED16103652-801
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3

AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

CC 1 (PLBK)

4. Install source tape. Protect Tab – Slide (red visible)
5. MODE sw – VTR
6. PLAY pb – Press
7. Cue tape to desired take. PAUSE pb – Press (PAUSE)

CC 2 (RCD)

8. Install new tape
9. MODE sw – VTR

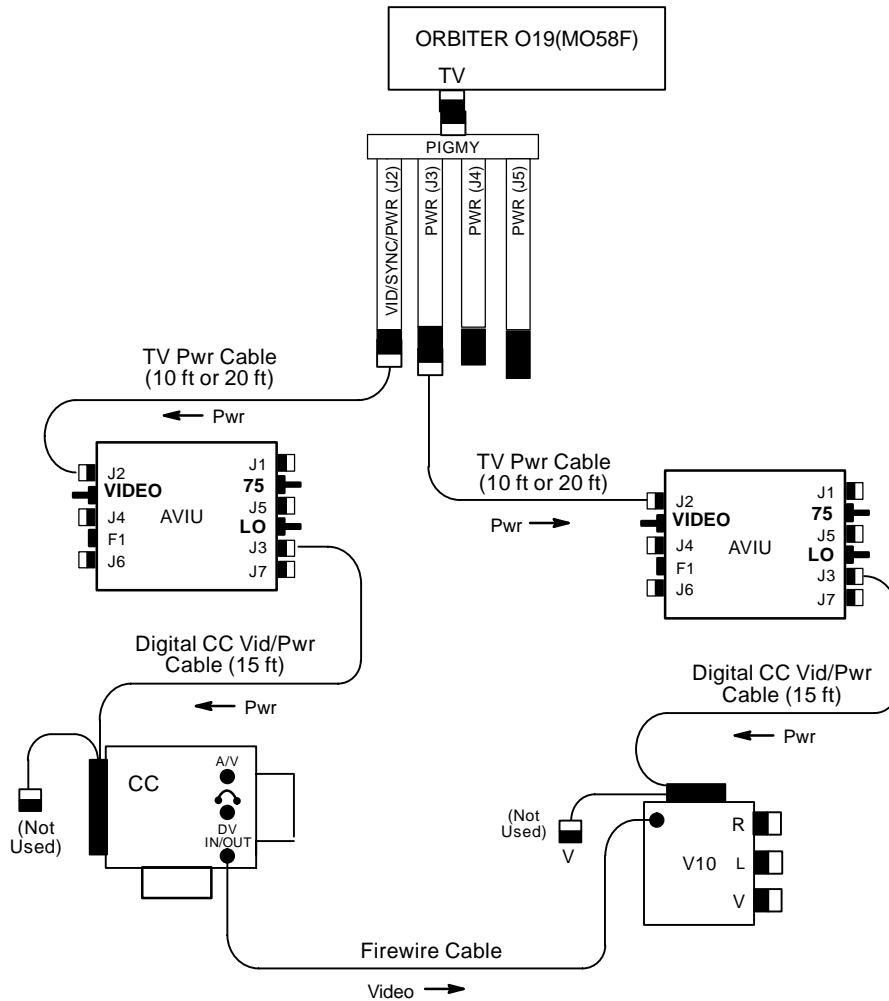
CC 1 (PLBK)

10. MENU pb – Press
11. Sel ETC(OTHERS)/DV EDITING
12. Sel IN to mark beginning of video clip
13. FF pb – Press to move to end of video clip
14. Sel OUT to mark end of video clip
15. When DV EDIT segment complete, repeat steps 12 thru 14 as reqd

SONY PD100 (Continued)

SCHEMATICS (Continued)

EDITING – CAMCORDER/VTR VIA FIREWIRE



ITEM	PART
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
Firewire Cable	SED16103652-801
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3

AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

CC (PLBK)

4. Install source tape. Protect Tab – Slide (red visible)
5. MODE sw – VTR
6. PLAY pb – Press
7. Cue tape to desired take. PAUSE pb – Press (PAUSE)

VTR (RCD)

8. Install new tape
9. MODE sw – ON

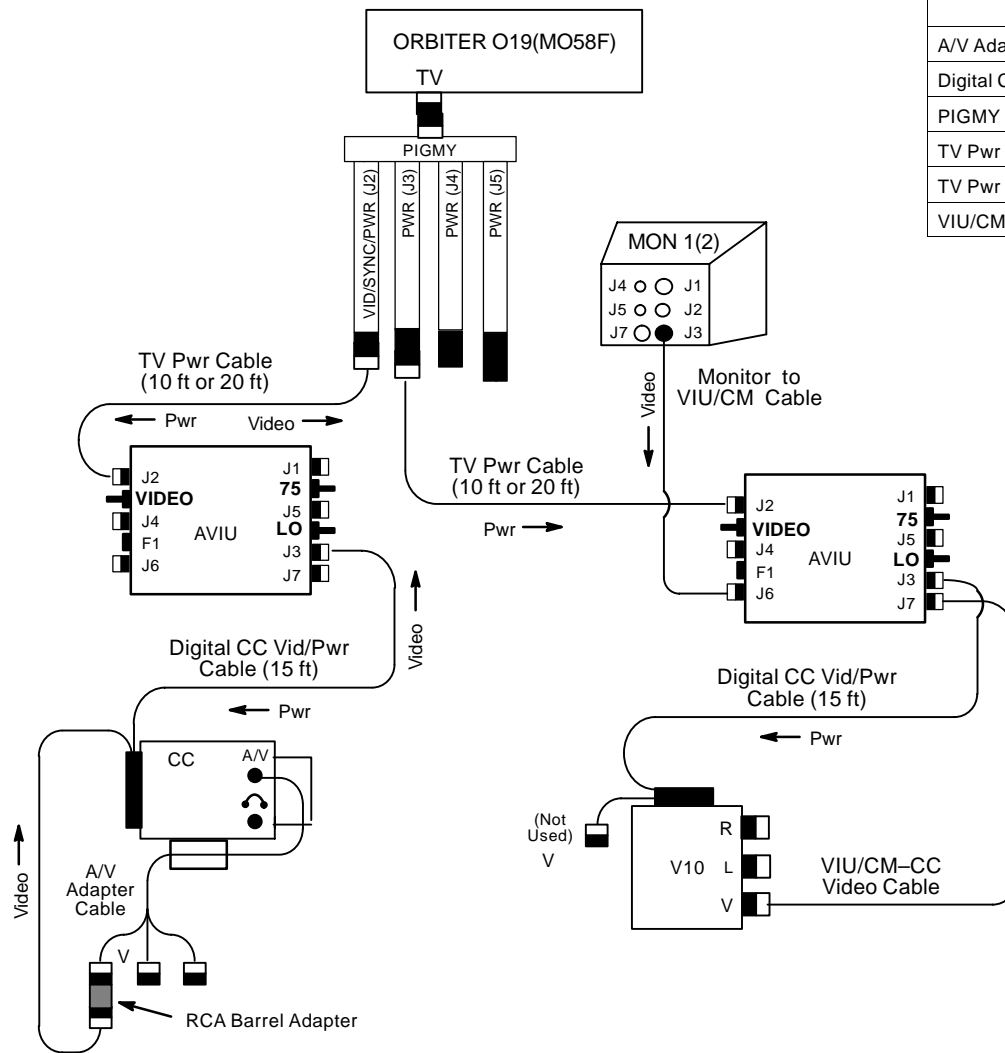
CC/VTR (SIMO)

10. MENU pb – Press
11. Sel ETC(OTHERS)/DV EDITING
12. Sel IN to mark beginning of video clip
13. FF pb – Press to move to end of video clip
14. Sel OUT to mark end of video clip
15. When DV EDIT segment complete, repeat steps 12 thru 14 as reqd

SONY PD100 (Continued)

SCHEMATICS (Continued)

EDITING – CAMCORDER/VTR VIA ORBITER TV SYSTEM



ITEM	PART
A/V Adapter Cable	SEZ16103275-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3
VIU/CM-CC Video Cable	SED39122269-301

1. Orbiter in async mode

AVIU

2. SYNC/VIDEO – VIDEO
3. HI-Z/75 – 75
4. PWR SELECT – LO

CC (PLBK)

5. Install source tape. Protect Tab – Slide (red visible)
6. MODE sw – VTR
7. PLAY pb – Press
8. Cue tape to desired take. PAUSE pb – Press (PAUSE)

VTR (RCD)

9. Install new tape
10. POWER sw – ON
11. REC pb – Press. PAUSE pb – Press (PAUSE)

AZ

12. MON 1(2) – FLT DECK(MIDDECK)

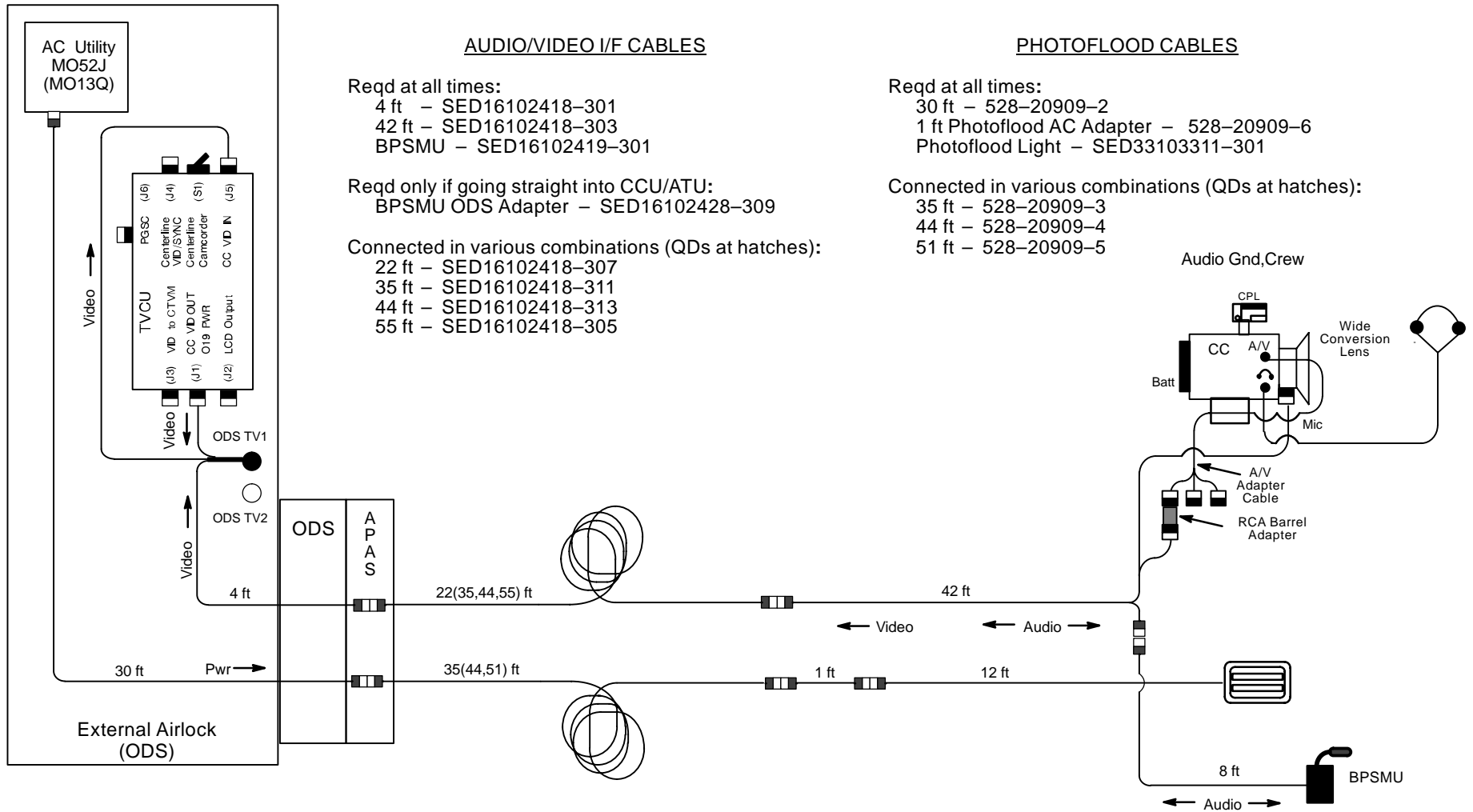
CC/VTR (SIMO)

13. CC: PAUSE pb – Press (TO PLAY)
VTR: PAUSE pb – Press (TO REC)
14. When EDIT segment complete,
CC: PAUSE pb – Press (PAUSE)
VTR: PAUSE pb – Press (PAUSE)
15. Repeat steps 13,14 as reqd

SONY PD100 (Concluded)

SCHEMATICS (Concluded)

CAMCORDER/BATT PWR SPEAKER MICROPHONE UNIT (BPSMU) W/PHOTOFLOOD



MINI-CAM

	<u>PAGE</u>
SPECIFICATIONS	7-2
LENS DATA	7-2
BRACKET DATA	7-2
NOMENCLATURE	7-3
SCHEMATICS	7-4
ASCENT VIDEO SETUP	7-4
ENTRY VIDEO SETUP	7-5
UNSYNCHRONIZED MINI-CAM VIDEO ROUTED TO V10 (OPTION #1)	7-6
(OPTION #2)	7-7
CCTV SYSTEM	7-8
SYNCHRONIZED MINI-CAM VIDEO ROUTED TO CCTV SYSTEM	7-9

MINI-CAM

SPECIFICATIONS

CAMR DIMENSIONS: 5 1/4 in (L) X 1 in (W) X 1 3/16in (D)

WEIGHT: 0.40 lb

IMAGER MODEL: XC-999

HORIZONTAL RESOLUTION: 470 lines

PIXEL COUNT: 768 Horizontal, 494 Vertical

SENSING AREA: 6.4mm Horizontal, 4.8mm Vertical, 8.0mm Diagonal

AVIU VOLTAGE: 12V

WEIGHT: 1.6 lb

LENS DATA

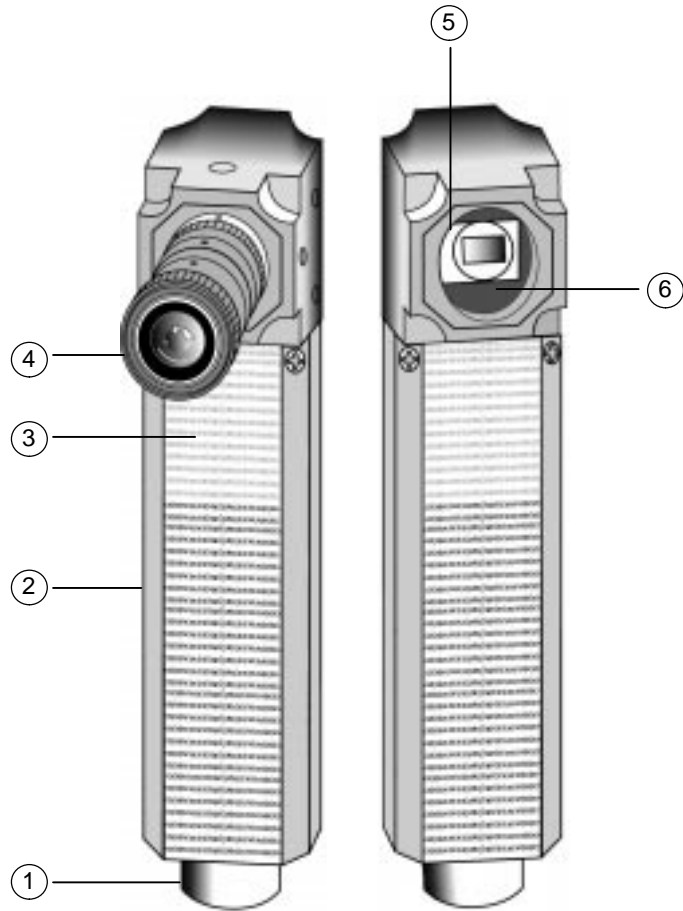
Lens	Aperture Range (f/stop)	Approximate Horizontal Field of View (FOV)	Minimum Focus Distance	Weight (lb)	Configuration Used
3.5mm	f/1.8-f/16	84.87°	Fixed	0.10	Glareshield
6.0mm	f/1.4-f/16	56.15°	0.3m	0.10	Aft Window, Video Teleconference
12.0mm	f/1.4-f/16	29.86°	0.5m	0.10	HUD, COAS

BRACKET DATA

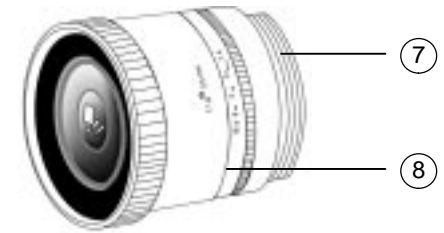
Bracket	Dimensions		Mount Type
	Length	Width	
Glareshield	9.5 in – 10.5 in	2 in	Velcro w/FDF Tether
Rear Window	12 in – 20 in	2 in	Velcro
COAS	5.75-in base 3.5-in extension	N/A	Thumbscrew
HUD	4.5-in base 1.5-in extension 2-in rise	N/A	Thumbscrew w/Tie Wrap

MINI-CAM (Continued)

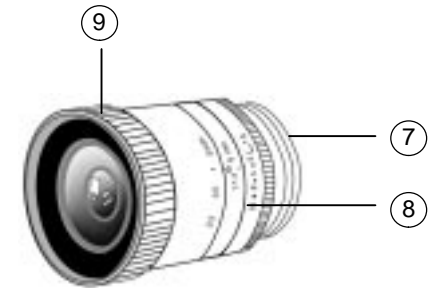
NOMENCLATURE



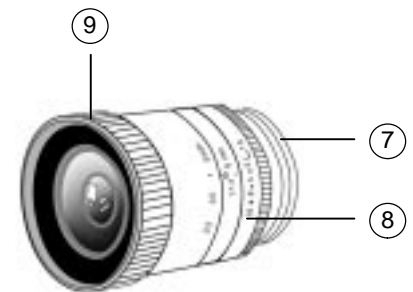
- ① Pwr/Video Connector
- ② Body (covered in Velcro hook)
- ③ Yellow Velcro HUD/COAS Brkt
- ④ Lens
- ⑤ CCD
- ⑥ Lens Mount
- ⑦ Threaded Mount
- ⑧ Aperture Ring
- ⑨ Focus Ring



3.5 mm Lens



6 mm Lens

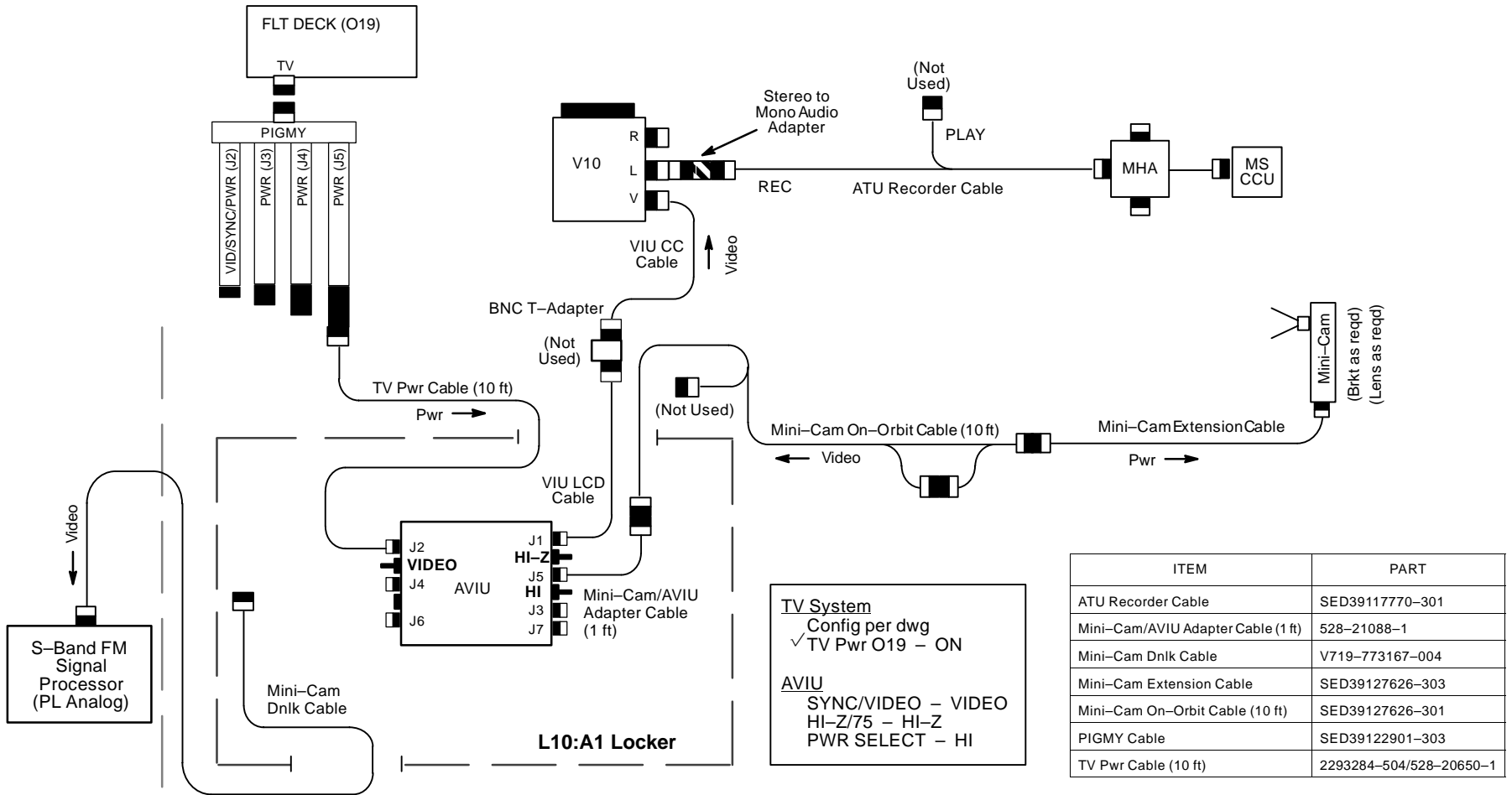


12 mm Lens

MINI-CAM (Continued)

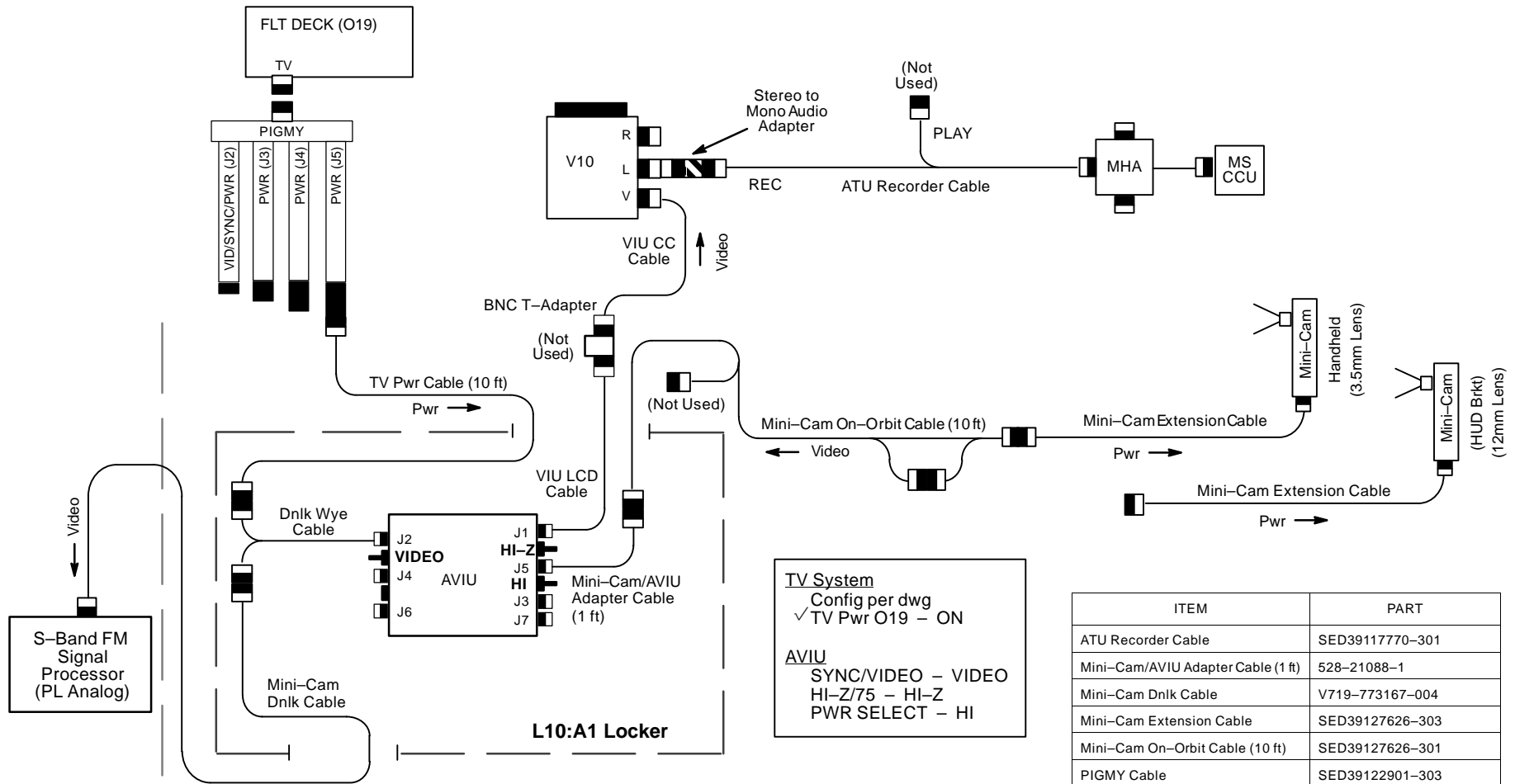
SCHEMATICS

ASCENT VIDEO SETUP



MINI-CAM (Continued)
SCHEMATICS (Continued)

ENTRY VIDEO SETUP
 HUD Mini-Cam DNLK via FM Signal Processor



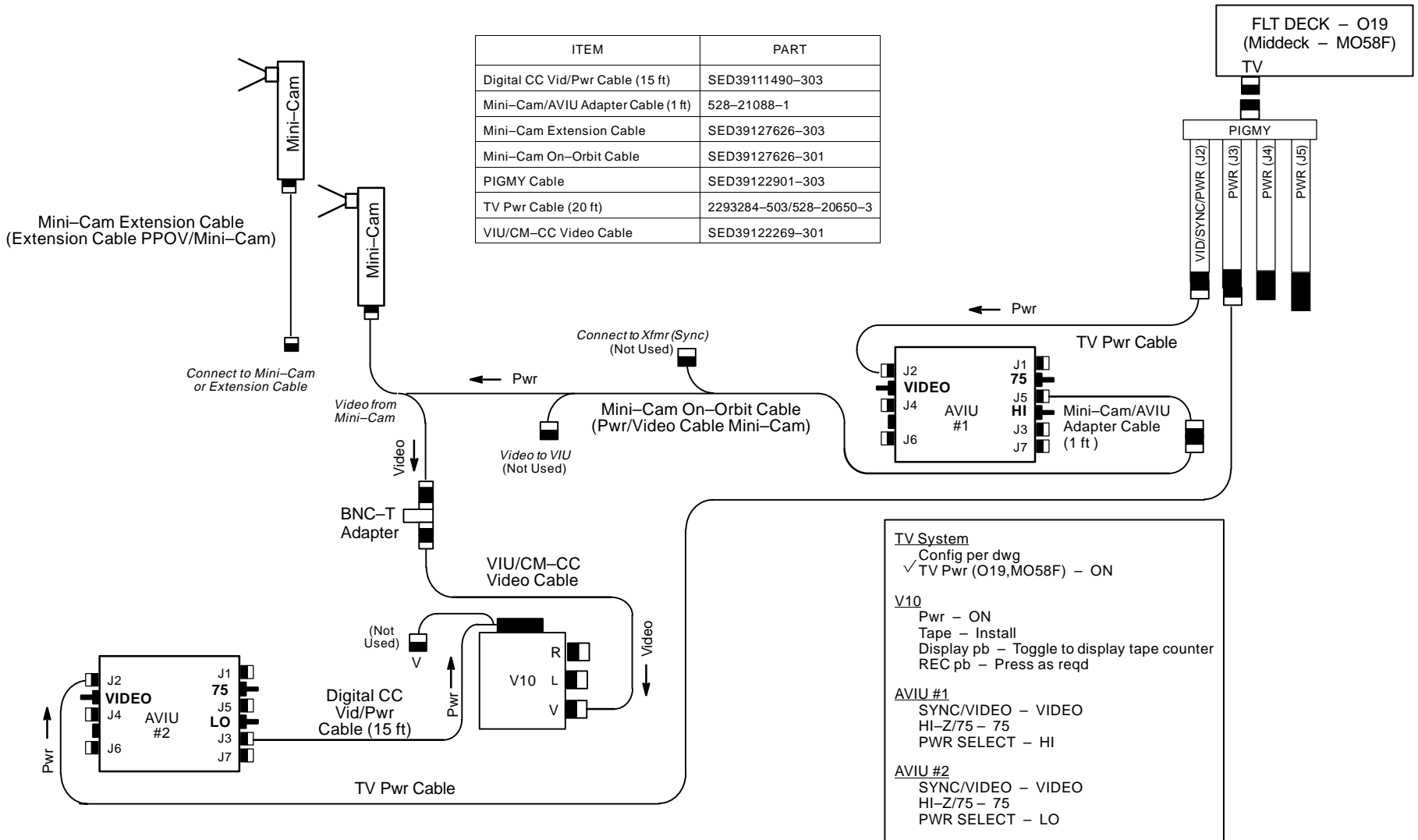
TV System
 Config per dwg
 ✓ TV Pwr O19 - ON

AVIU
 SYNC/VIDEO - VIDEO
 HI-Z/75 - HI-Z
 PWR SELECT - HI

ITEM	PART
ATU Recorder Cable	SED39117770-301
Mini-Cam/AVIU Adapter Cable (1 ft)	528-21088-1
Mini-Cam Dnlk Cable	V719-773167-004
Mini-Cam Extension Cable	SED39127626-303
Mini-Cam On-Orbit Cable (10 ft)	SED39127626-301
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1

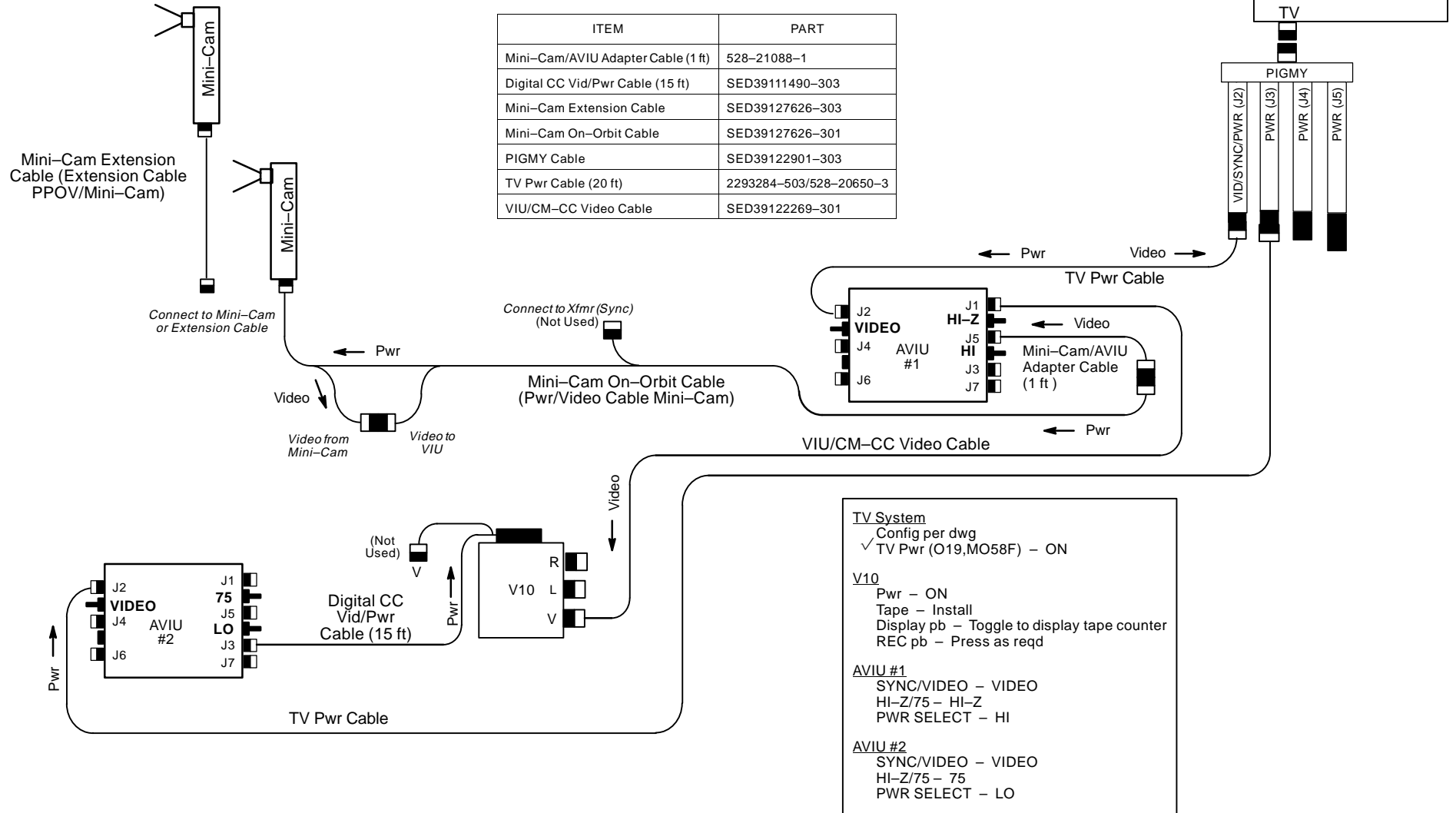
MINI-CAM (Continued)
SCHEMATICS (Continued)

UNSYNCHRONIZED MINI-CAM VIDEO ROUTED TO V10 (OPTION #1)



MINI-CAM (Continued)
SCHEMATICS (Continued)

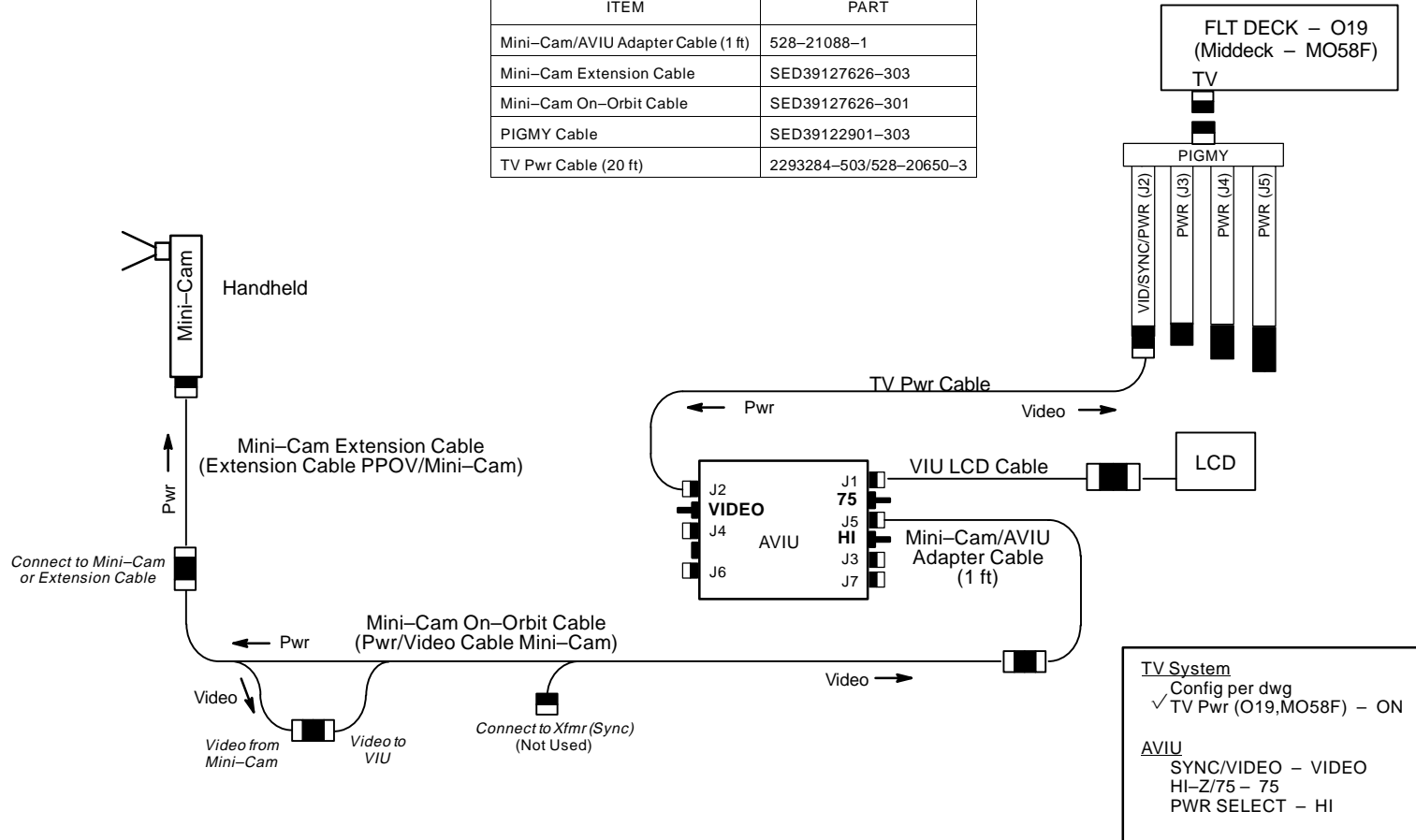
UNSYNCHRONIZED MINI-CAM VIDEO ROUTED TO V10 (OPTION #2)



MINI-CAM (Continued)
SCHEMATICS (Continued)

UNSYNCHRONIZED MINI-CAM VIDEO ROUTED TO CCTV SYSTEM

ITEM	PART
Mini-Cam/AVIU Adapter Cable (1 ft)	528-21088-1
Mini-Cam Extension Cable	SED39127626-303
Mini-Cam On-Orbit Cable	SED39127626-301
PIGMY Cable	SED39122901-303
TV Pwr Cable (20 ft)	2293284-503/528-20650-3



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LCD

|

PAGE

SPECIFICATIONS	8-2
NOMENCLATURE	8-2

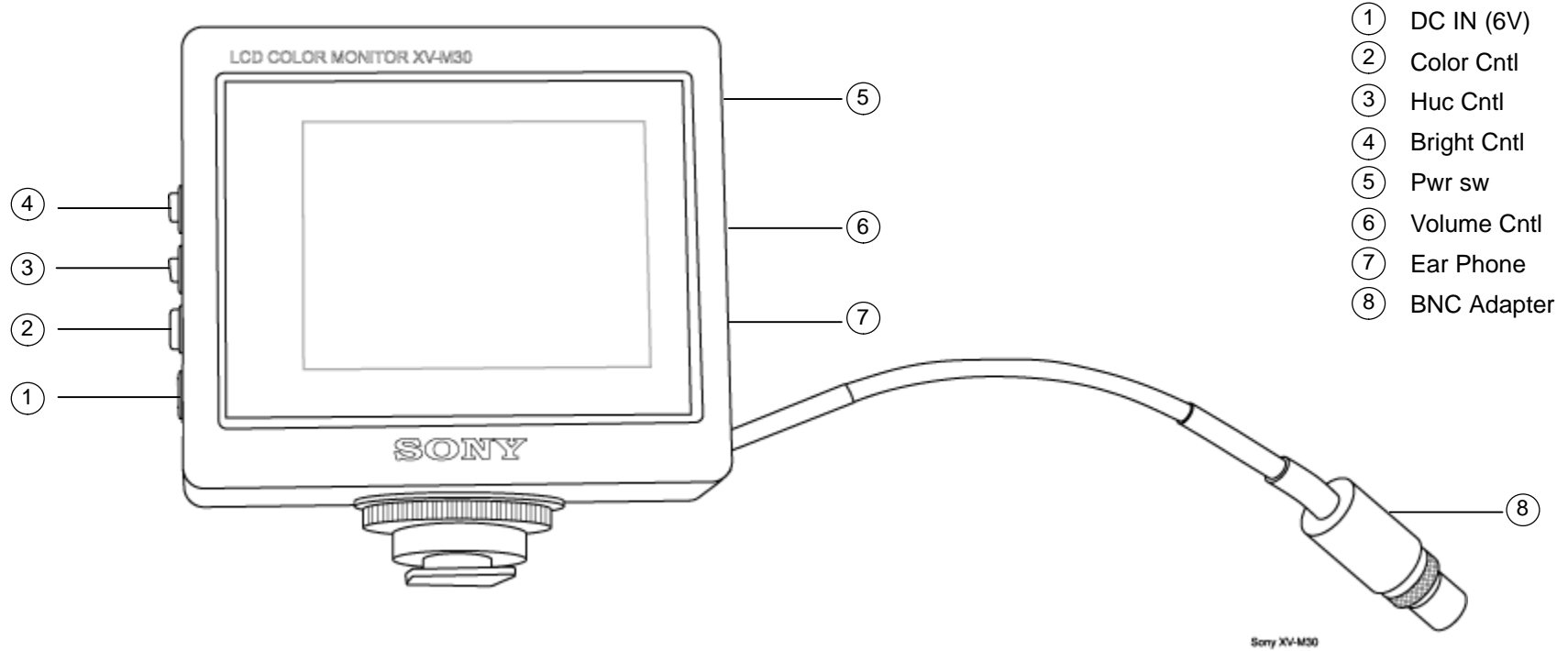
LCD

LCD

SPECIFICATIONS

IMAGE AREA: 3 in
BATT: 6 AA
BATT VOLTAGE: 9V
DIMENSIONS: 1.5 in (L) X 4 in (W) X 3.25 in (H)

NOMENCLATURE



V10

	<u>PAGE</u>
SPECIFICATIONS	9-2
NOMENCLATURE	9-3
MENU SETTINGS	9-3
SCHEMATICS	9-6
V10 AS VTR (LINE IN) W/ORBITER AUDIO,VIDEO	9-6
PLAYBACK W/AUDIO,VIDEO	9-7
EDITING – V10/V10 VIA FIREWIRE	9-8

V10

SPECIFICATIONS

TAPE: Mini DVCAM Cassette

TAPE LENGTH: 40 min

CD: Color, 5.5 in

AUDIO: 16 bit at 48 KHz

PWR: 7.2V Batt

8.4V DC IN

BATT LIFETIME: ~60 min w/LCD closed

~30 min w/LCD open

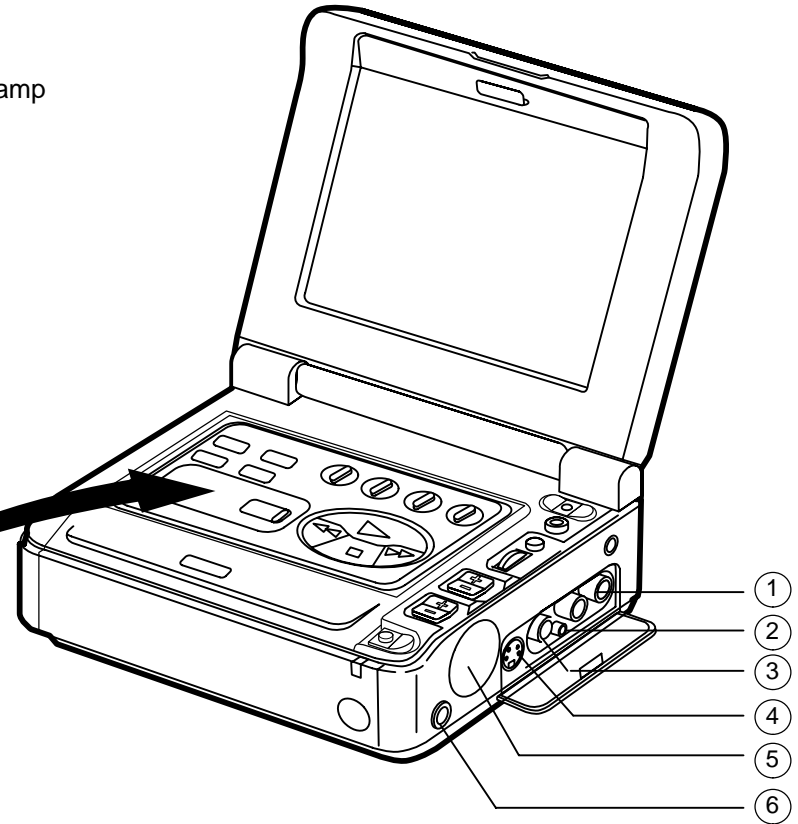
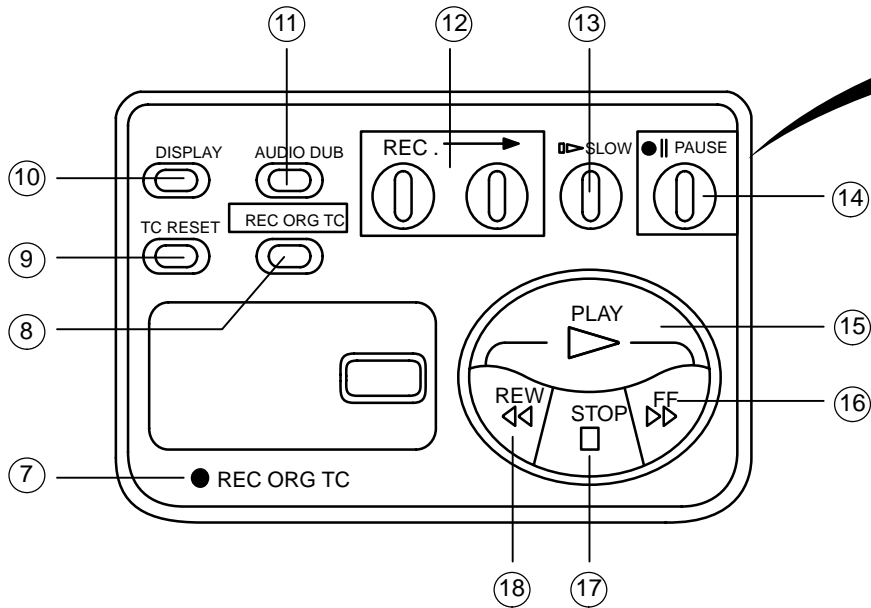
BODY WEIGHT: 2.00 lb

BATT WEIGHT: 0.41 lb

V10 (Continued)

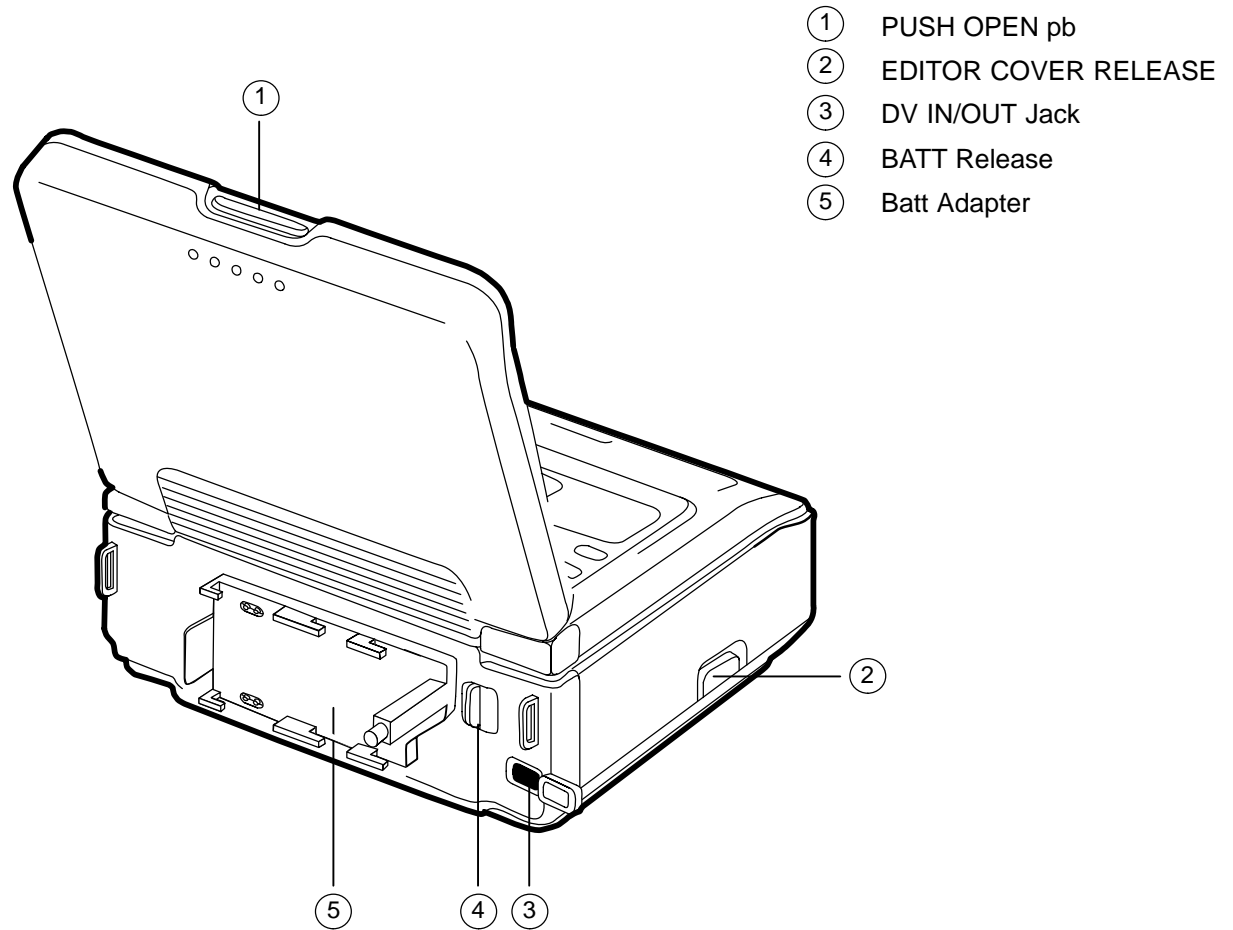
NOMENCLATURE

- | | |
|----------------------------------|-------------------------------|
| ① AUDIO Input/Output Jacks (R,L) | ⑩ DISPLAY pb |
| ② RFU DC OUT Jack | ⑪ AUDIO DUB pb |
| ③ VIDEO Input/Output Jack | ⑫ REC (recording) pb and Lamp |
| ④ S VIDEO Input/Output Jack | ⑬ SLOW pb |
| ⑤ Speaker | ⑭ PAUSE pb |
| ⑥ Headphone Jack | ⑮ PLAY (playback) pb |
| ⑦ REC ORG TC Lamp | ⑯ FF (fast Forward) pb |
| ⑧ REC ORG TC pb | ⑰ STOP pb |
| ⑨ TC Reset pb | ⑱ REW (rewind) pb |



V10 (Continued)

NOMENCLATURE (Concluded)



V10 (Concluded)

MENU SETTINGS

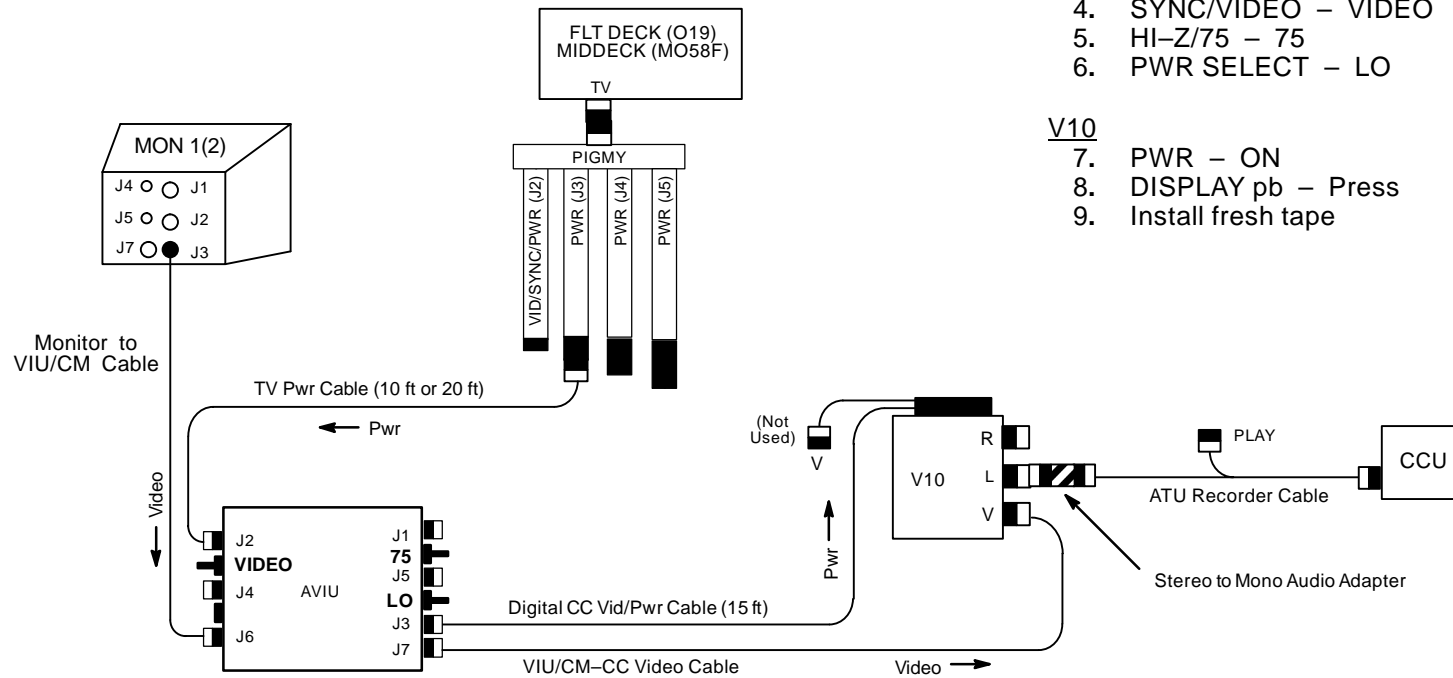
CMD – VTR4
HiFi SOUND – STEREO
AUDIO MODE – FS48K
TIME CODE – DF
BEEP – ON
AUDIO MIX – “left” (ST1)
CM SEARCH – ON
DATA CODE – DATE/CAM
LCD COLOR – “center”
LCD HUE – “center”
DISPLAY – LCD
JOG AUDIO – OFF
CLOCK SET – as reqd

V10 (Continued)

SCHEMATICS

V10 AS VTR (LINE IN) W/ORBITER AUDIO,VIDEO

ITEM	PART
ATU Recorder Cable	SED39117770-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
Monitor to VIU/CM Cable (20 ft)	SED39122074-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3
VIU/CM-CC Video Cable	SED39122269-301



ATU

1. PWR - AUD
2. Desired Loops - RCV, tw - 0
3. Other Loops - OFF

AVIU

4. SYNC/VIDEO - VIDEO
5. HI-Z/75 - 75
6. PWR SELECT - LO

V10

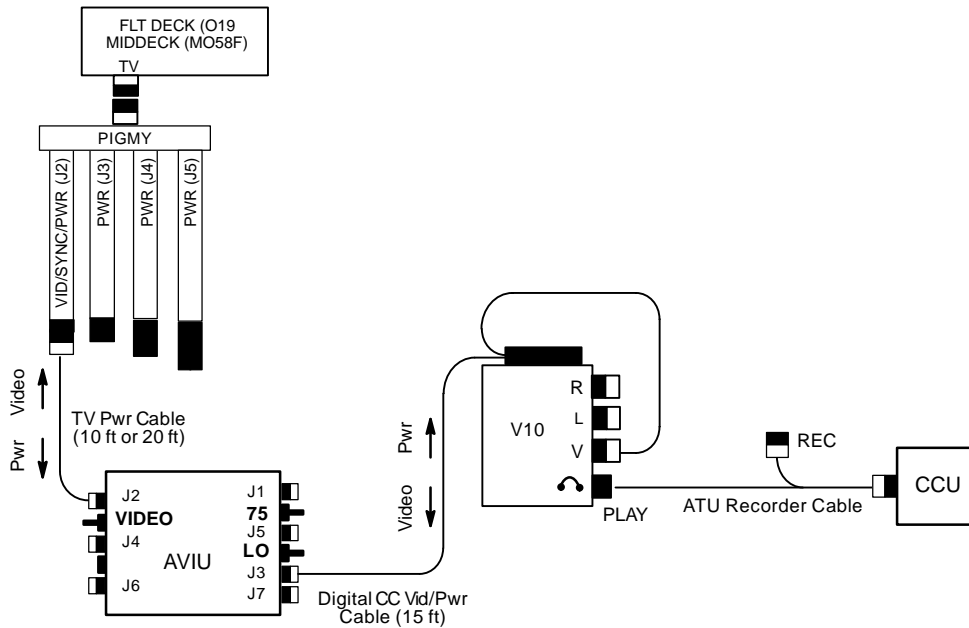
7. PWR - ON
8. DISPLAY pb - Press
9. Install fresh tape

V10 (Continued)

SCHEMATICS (Continued)

V10 PLAYBACK W/AUDIO,VIDEO

ITEM	PART
ATU Recorder Cable	SED39117770-301
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3



AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

V10

4. PWR – ON
5. DISPLAY pb – Press
6. Install tape, if reqd

CCU/ATU

7. If MHA, COMM PWR – ON
8. PWR – AUD
9. Desired Loops – T/R
10. Other Loops – RCV (OFF)
11. XMIT/ICOM Mode – VOX/VOX
12. VOX SENS – MAX

V10

13. Speaker Vol Max

A7

14. VID OUT pb – Desired MON
IN pb – FLT DECK(MIDDECK)

V10

15. VTR pb – REW(FF) to cue tape

IF DNLK

A7

16. ✓ MCC has commanded async config
17. ✓ TV DNLK – ENA
18. VID OUT pb – DNLK
IN pb – FLT DECK(MIDDECK)

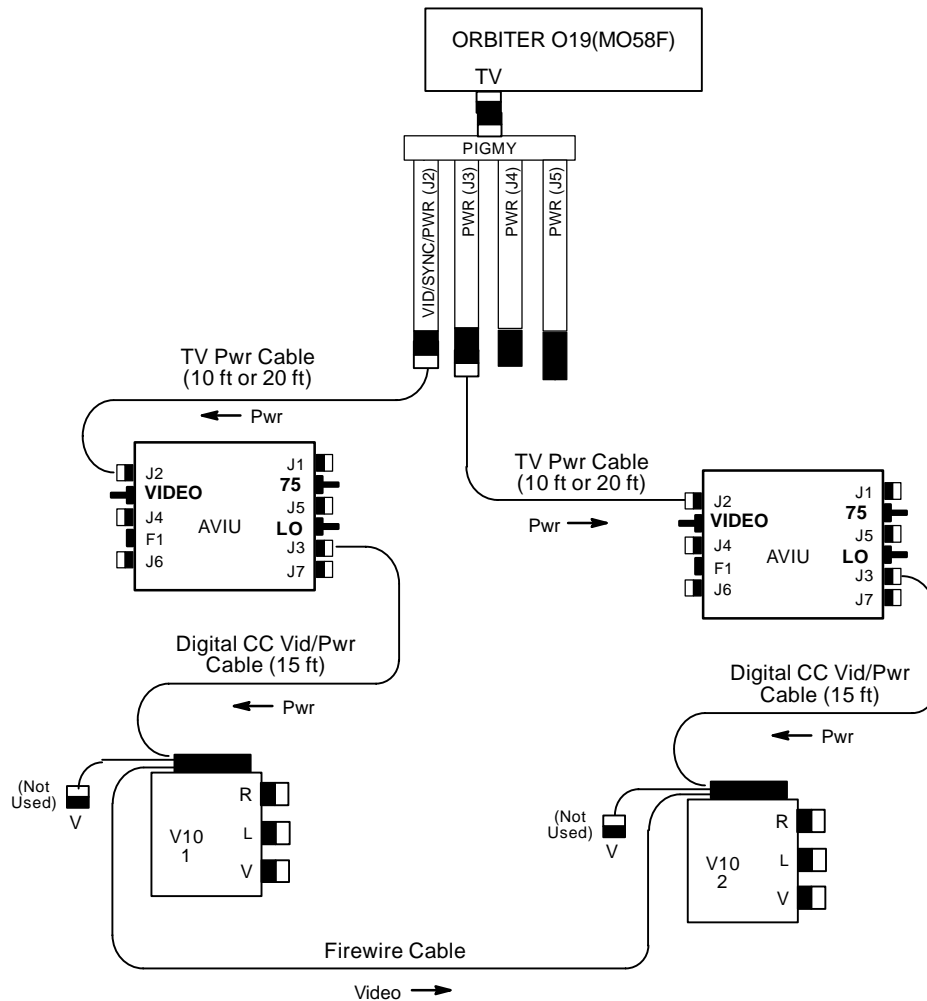
PD100

19. VTR pb – PLAY
20. ✓ PLAY indication and tape counter incrementing
21. If PLBK(DNLK) complete:
 - | VTR pb – PAUSE
 - If V10 ops complete, go to DEACTIVATION

V10 (Concluded)

SCHEMATICS (Concluded)

EDITING – V10/V10 VIA FIREWIRE



ITEM	PART
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
Firewire Cable	SED16103652-801
PIGMY Cable	SED39122901-303
TV Pwr Cable (10 ft)	2293284-504/528-20650-1
TV Pwr Cable (20 ft)	2293284-503/528-20650-3

AVIU

1. SYNC/VIDEO – VIDEO
2. HI-Z/75 – 75
3. PWR SELECT – LO

V10 1 (PLBK)

4. Install source tape. Protect Tab – Slide (red visible)
5. POWER sw – ON
6. PLAY pb – Press
7. Cue tape to desired take. PAUSE pb – Press (PAUSE)

V10 2 (RCD)

8. Install new tape
9. POWER sw – ON
10. REC pb – Press. PAUSE pb – Press (PAUSE)

V10 1/V10 2 (SIMO)

11. VTR 1: PAUSE pb – Press (TO PLAY)
VTR 2: PAUSE pb – Press (TO REC)
12. When EDIT segment complete,
VTR 1: PAUSE pb – Press (PAUSE)
VTR 2: PAUSE pb – Press (PAUSE)
13. Repeat steps 11,12 as reqd

CCTV

	<u>PAGE</u>
SPECIFICATIONS	10-2
LENS DATA	10-3
ILLUMINATOR DATA	10-3
PLB LOCATIONS	10-4
VIDEO PROCESSING UNIT (VPU)	10-5
VPU/WVS VIDEO ROUTING OVERVIEW	10-6
CCTV SYSTEM OVERVIEW	10-7
PGSC VIDEO OVERLAY	10-8
ACCESSORIES	10-9
CAMCORDER/COMPACT PORTABLE LIGHT POWER INTERFACE (CCPI)	10-9
COMPACT PORTABLE LIGHT (CPL)	10-10
PHOTO FLOODLIGHT	10-10
MALS	10-11
10.1 NO MONITOR PICTURE/MENU	10-11
10.2 CAMR VIDEO	10-18
10.3 VTR PLAYBACK VIDEO	10-20
10.4 CAMCORDER VIDEO ON COLOR TV MONITOR	10-22
10.5 RMS TV cb OPENS	10-26

CCTV

CCTV

SPECIFICATIONS

CTVC (SOLID STATE)

EFFECTIVE IMAGE SIZE: 6.54mm X 8.62mm
PWR: 43.3W at 32V (all motors on)
ZOOM SPEED: End-to-End 8 sec
FOCUS SPEED: End-to-End 22 sec
IRIS: Auto(Manual) Close ~7 sec
WEIGHT: 18.9 lb
DIMENSION: 17" (L) x 6.4" (W) x 6.3" (H)

ITVC

EFFECTIVE IMAGE SIZE: 6.54mm X 8.62mm
PWR: 33.6W at 32V
ZOOM SPEED: End-to-End 8 sec
FOCUS SPEED: End-to-End 22 sec
IRIS: Auto close ~6 sec
WEIGHT: 17 lb
DIMENSION: 19.6" (L) (Includes 3.2" Lens) x 6.4" (W) x 6.3" (H)

CCTV BODY/MLA/WLA/CLA

EFFECTIVE IMAGE SIZE: 9.5mm X 12.7mm
PWR: 37.4 Watts at 32V
ZOOM SPEED: End-to-End – WLA ~8 sec, MLA,CLA ~7 sec
FOCUS SPEED: End-to-End – WLA ~9 sec, MLA,CLA ~7 sec
IRIS: Auto close ~4 sec
WEIGHT: Body – 9.7 lb; Lens – WLA 8.1 lb, CLA 7.7 lb, MLA 6.7 lb
DIMENSION: Body/Lens – 17.9" (L) X 6.3" (W) X 5.7" (H)

CCTV (Continued)

LENS DATA

Lens/Focal Length		Aperture Range	Zoom Ratio	Minimum Focus Distance (ft)	Approximate Field of View (FOV)	
					Horizontal	Vertical
CTVC (COLOR)*	5.5mm–47mm	f/1.7 to f/16 (T2–T360)	8:1	1.0	77°–11°	61°–8°
ITVC*	8.5mm–127mm	f/1.7 to f/16 (T2–T360)	15:1	3.0	53°–4°	41°–3°
MONOCHROME (MLA)	18mm–108mm	f/1.6 to f/16	6:1	2.5	33°–7°	25°–5°
COLOR (CLA)	18mm–108mm	f/1.6 to f/16	6:1	2.5	33°–7°	25°–5°
WIDE ANGLE (WLA)	8.2mm–25mm	f/3.5 to f/22	3:1	2.0	81°–30°	61°–22°

*CTVC,ITVC Lens not removable from Camr. FOV also different due to target size

ILLUMINATOR DATA

Color	LEDs	LED Deg Angles	Camr Type	Locations	Modes	Control
Red	120	8°/22°/8° *	ITVC	Bulkhead, Elbow, Keel	ON/OFF	cb CAMR HTR
	120	22°	ITVC	Bulkhead, Elbow, Keel	ON/OFF	cb CAMR HTR
White	40	44°	CTVC	Wrist	ON/OFF	cb CAMR HTR
	180	20°	CTVC/ITVC	Bulkhead, Elbow, Keel	ON/OFF	cb PAN/TILT HTR
	156	29°	Videospection	Keel	156 LED/84 LED/30 LED/OFF	SSP/CAMR HTR sw

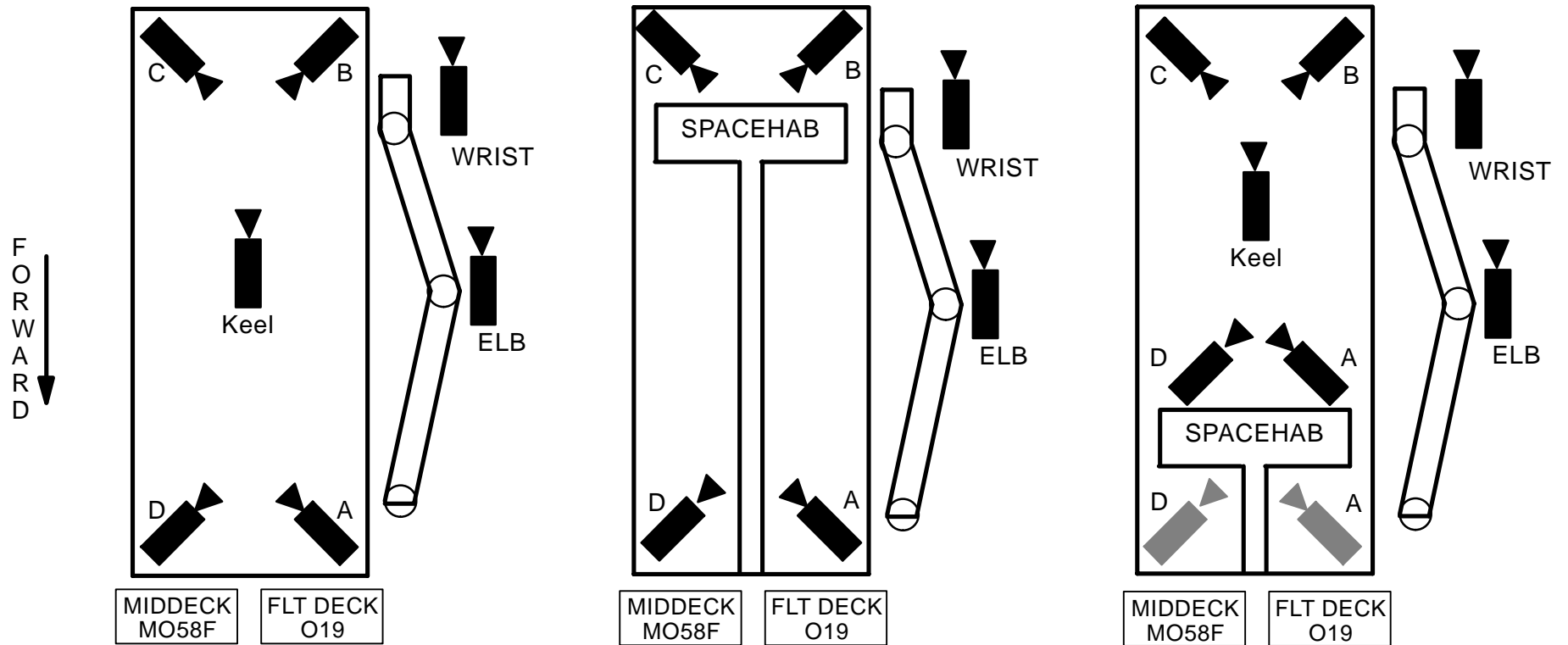
*Three rings of LEDs:

Inner,outer rings – 8° LEDs

Middle ring – 22° LEDs

CCTV (Continued)

PLB LOCATIONS

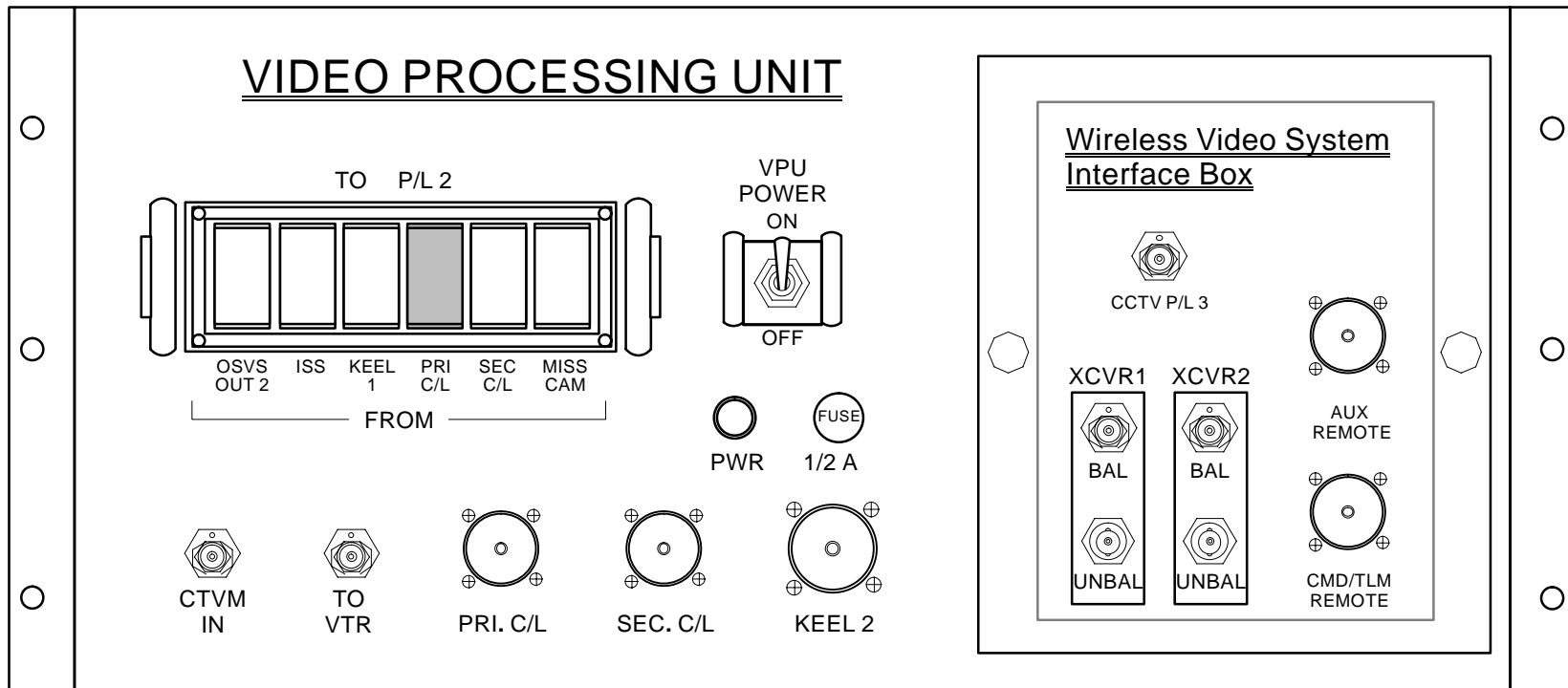


CCTV (Continued)

VIDEO PROCESSING UNIT (VPU)

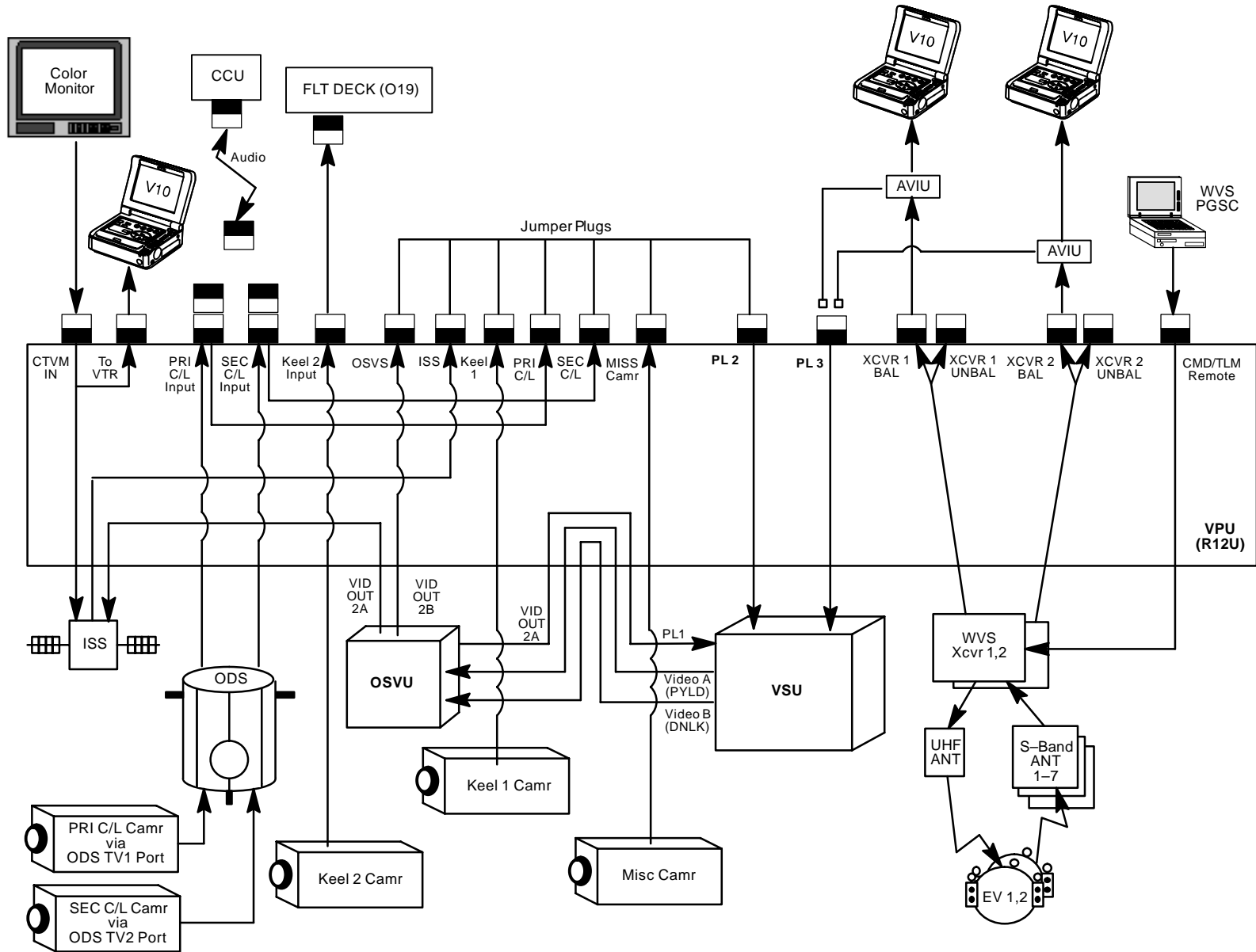
NOTE

VPU jumpers config as indicated:
Shaded (green) – Functional
Not shaded (blue) – Non-functional



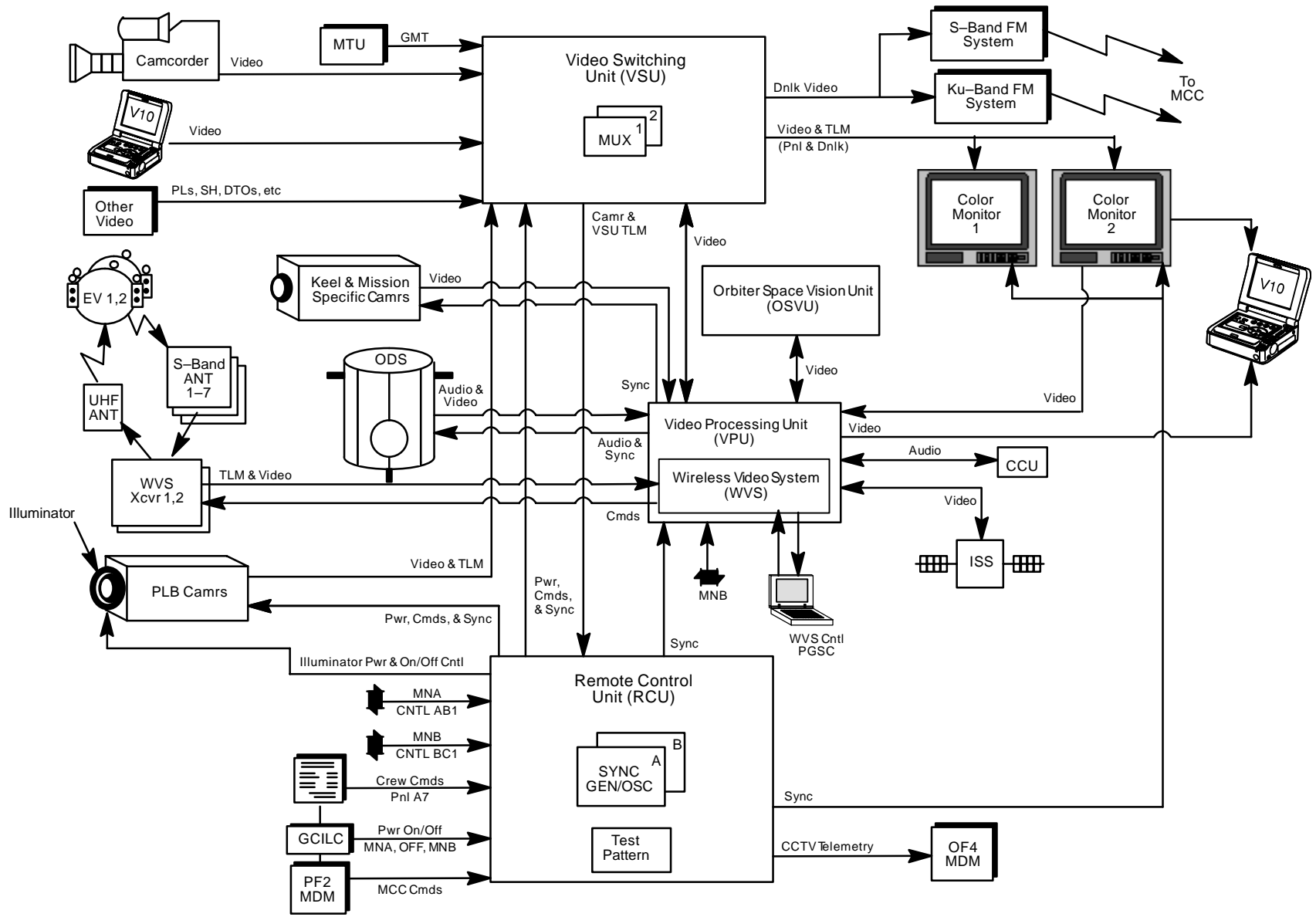
CCTV (Continued)

VPU/WVS VIDEO ROUTING OVERVIEW



CCTV (Continued)

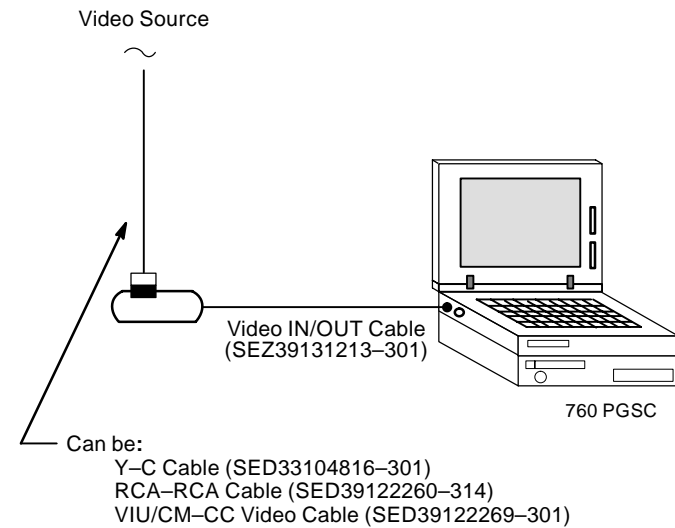
CCTV SYSTEM OVERVIEW



CCTV (Continued)

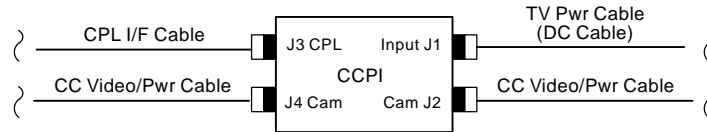
PGSC VIDEO OVERLAY

- PGSC 1. ✓PGSC Pwr – ON
2. Connect VID IN/OUT Cable to PGSC VID IN port (i.e., port w/Camr symbol next to Pwr port)
 3. Connect VIU/CM–CC Video (RCA–RCA, Y–C) Cable from video source RCA Video(S–Video) connector to VID IN/OUT Cable RCA Video(S–Video) connector
 4. Video Source Pwr – ON
 5. Double–click SHUTTLE APPS > VIDEO OVERLAY
 6. ✓Video overlay displayed
- * If image not displayed on PGSC: *
 - * Press 'S' *
 - * ✓'VIDEO' selected *
 - * Sel OK *



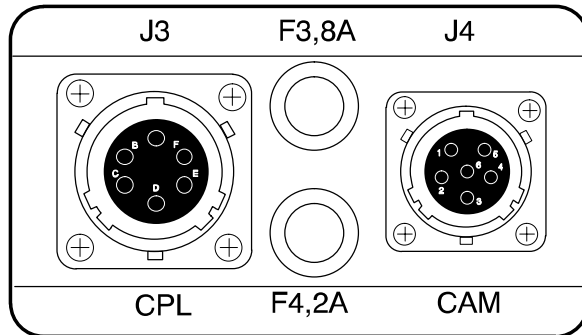
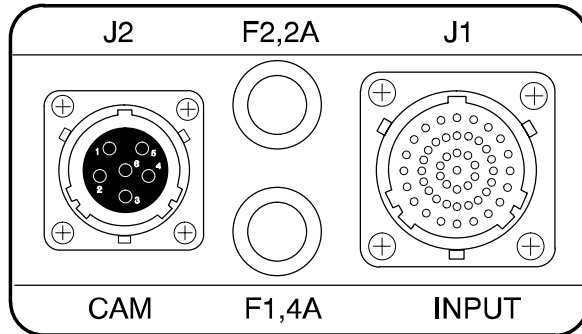
CCTV (Continued)
ACCESSORIES

CAMCORDER/COMPACT PORTABLE LIGHT POWER INTERFACE (CCPI)



DECAL on CCPI

OPERATING LIMITS
 CAMCORDER ONLY – UNLIMITED
 CPL ONLY – 10 MIN.
 CPL + ONE CAMCORDER – 14 MIN.
 CPL + TWO CAMCORDERS – 11 MIN.



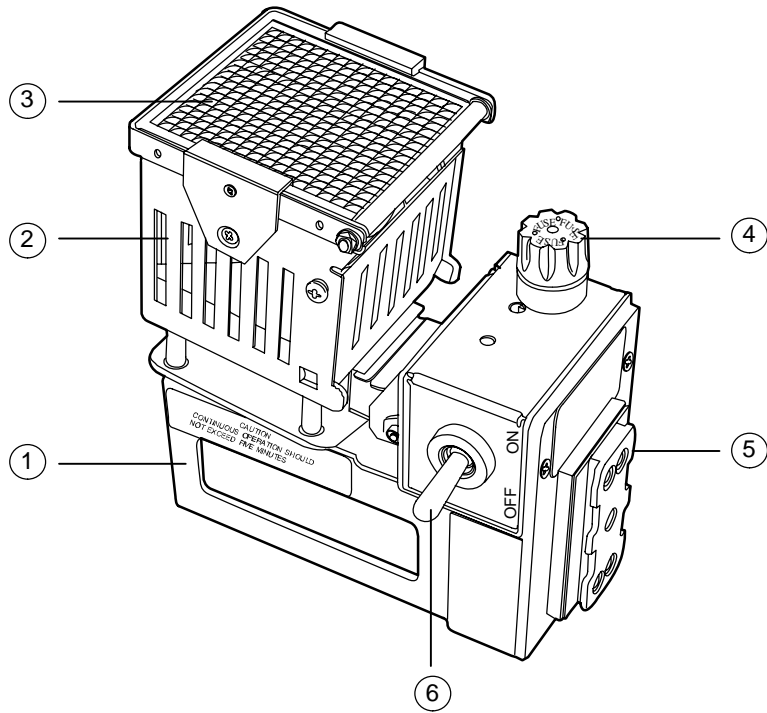
CONTENTS OF
CCPI FUSE KIT
(P/N SED33105384-301)

CCPI	
CPL OUT	8A
INPUT	4A
CC OUT	2A
VIU	
VIU-TEAC	2A
VIU/C/CM	1A

CCTV (Continued)

ACCESSORIES (Concluded)

COMPACT PORTABLE LIGHT (CPL)



① Batt Compartment

② Light

③ Diffuser

④ 15A Fuse

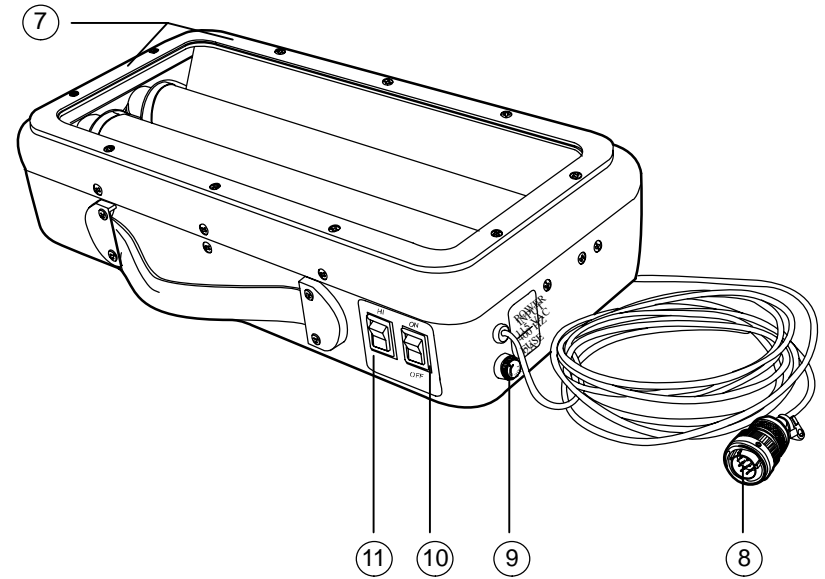
⑤ Accessory Foot (CPL)

⑥ ON/OFF sw

⑦ Accessory Foot (Photoflood)

⑧ AC Connector

PHOTO FLOODLIGHT

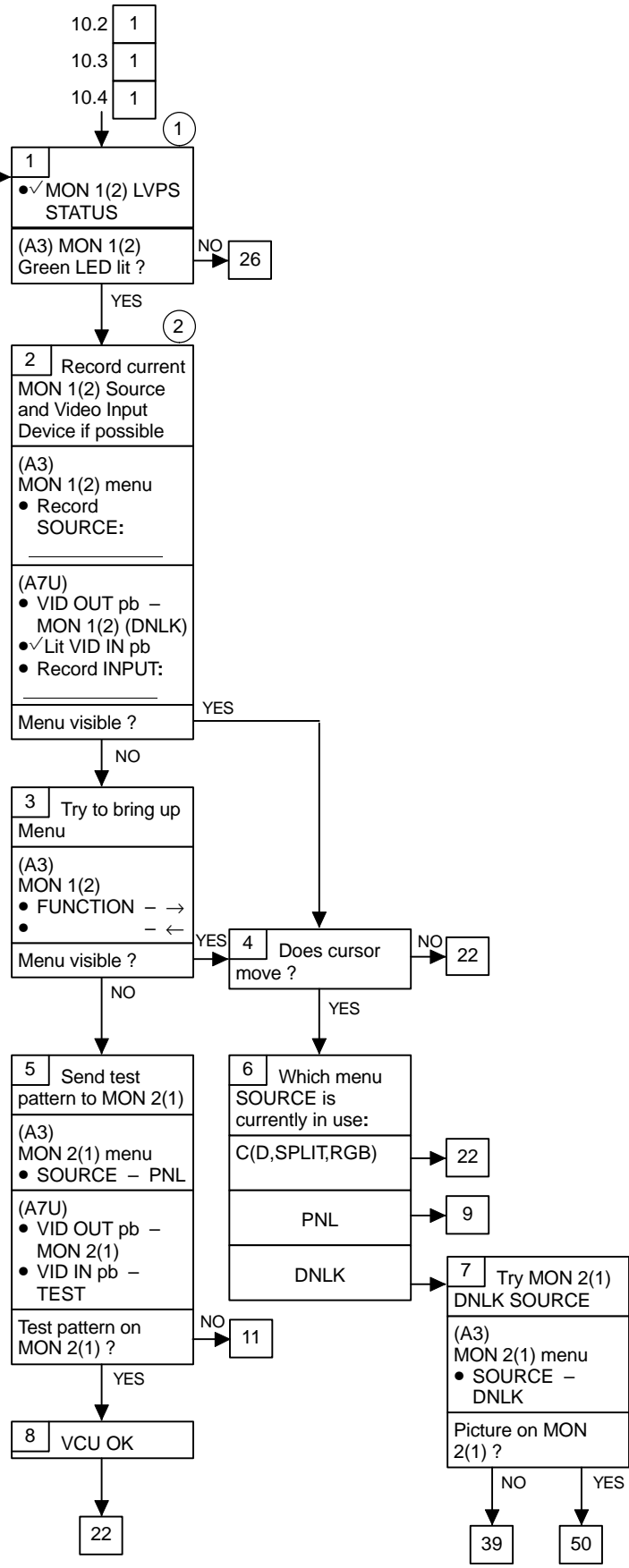


⑨ 2A Fuse

⑩ ON/OFF sw

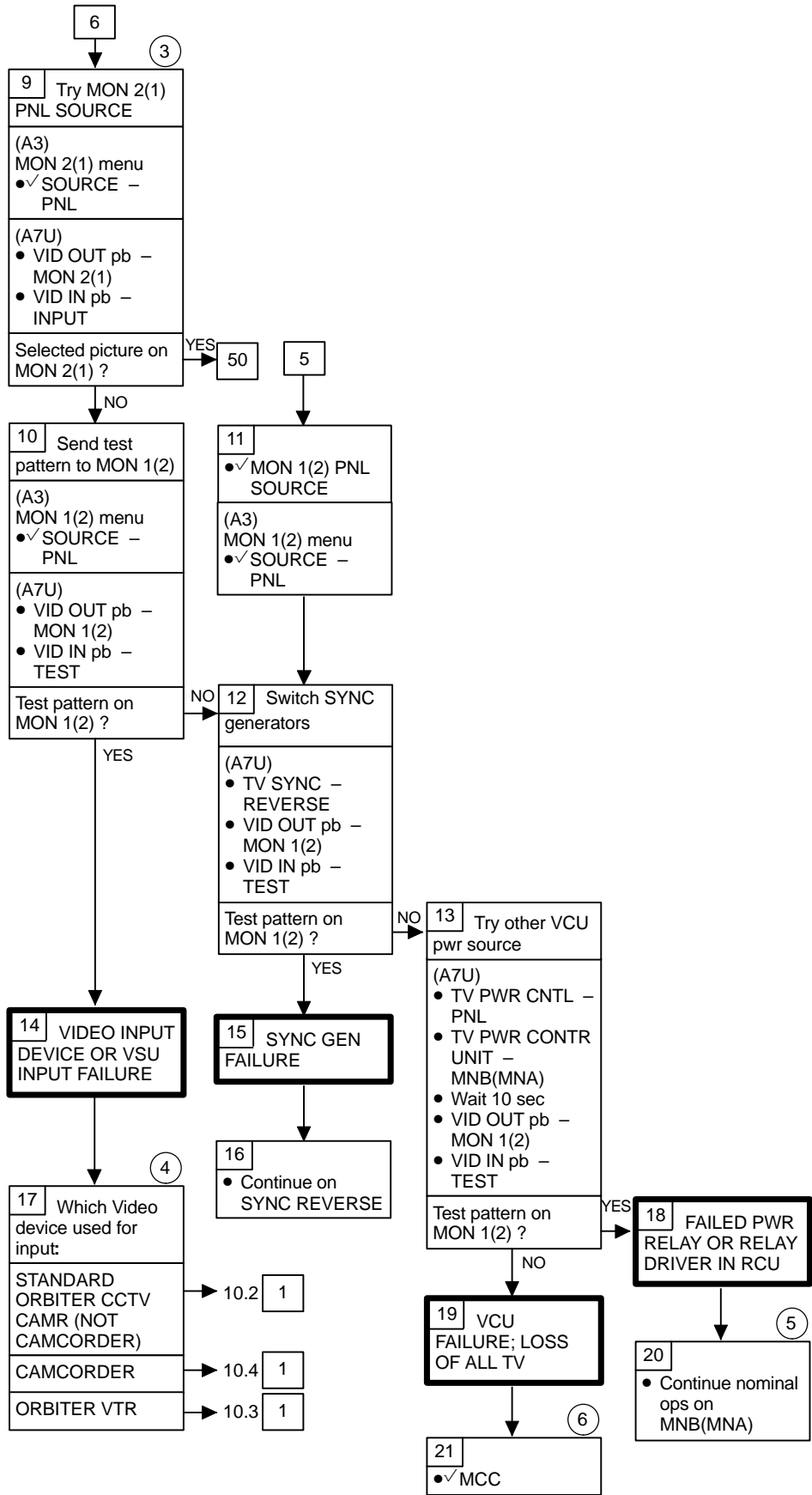
⑪ HI/LO sw

Nominal Config:
 (R14:D)
 cb MNA TV C AFT
 BAY CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNA TV CONTR UNIT - cl
 cb MNA TV MON 1 - cl
 cb MNB TV A FWD BAY CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNB TV CONTR UNIT - cl
 cb MNB TV MON 2 - cl
 cb MNC TV B KEEL/EVA CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNC TV CAB - cl
 (R14:E)
 cb MNA D STBD RMS TV CAMR/PAN-TILT - cl
 CMR HTR - cl
 PAN-TILT HTR - cl
 cb MNB RMS PORT RMS TV CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 (A7U)
 TV PWR CNTL - CMD
 TV PWR CONTR UNIT - MNA(MNB)
 TV SYNC - NORM
 TV DNLK - ENA
 (A3)
 MON 1(2)
 SOURCE - as reqd
 SYNC - INT
 PWR - ON
 MODE - AUTO
 GUNS - R,G,B - ON



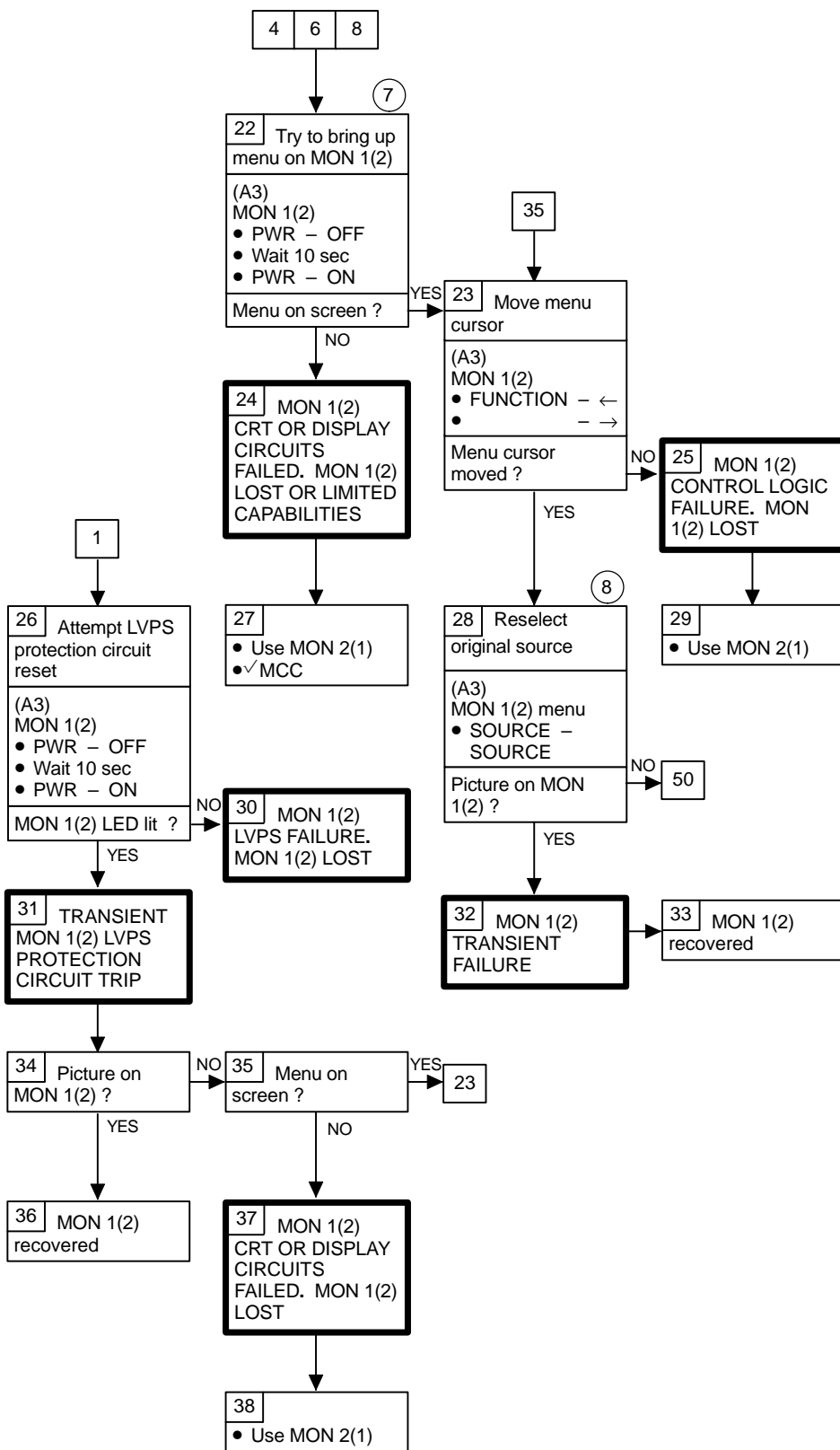
① LVPS = low voltage pwr supply
 ② Current SOURCE and INPUT recorded here will be used in subsequent mal blocks

CCTV 10.1 (Cont)



- ③ INPUT used here was recorded in block 2
- ④ Video Input Device is the device connected to INPUT which was recorded in block 2
- ⑤ All TV config in VCU will be lost. All camrs must be pwr'd up and reselected
- ⑥ Standalone MON 1(2) ops may be possible on inputs C,D, or RGB if connected and also if input SOURCE generates its own sync

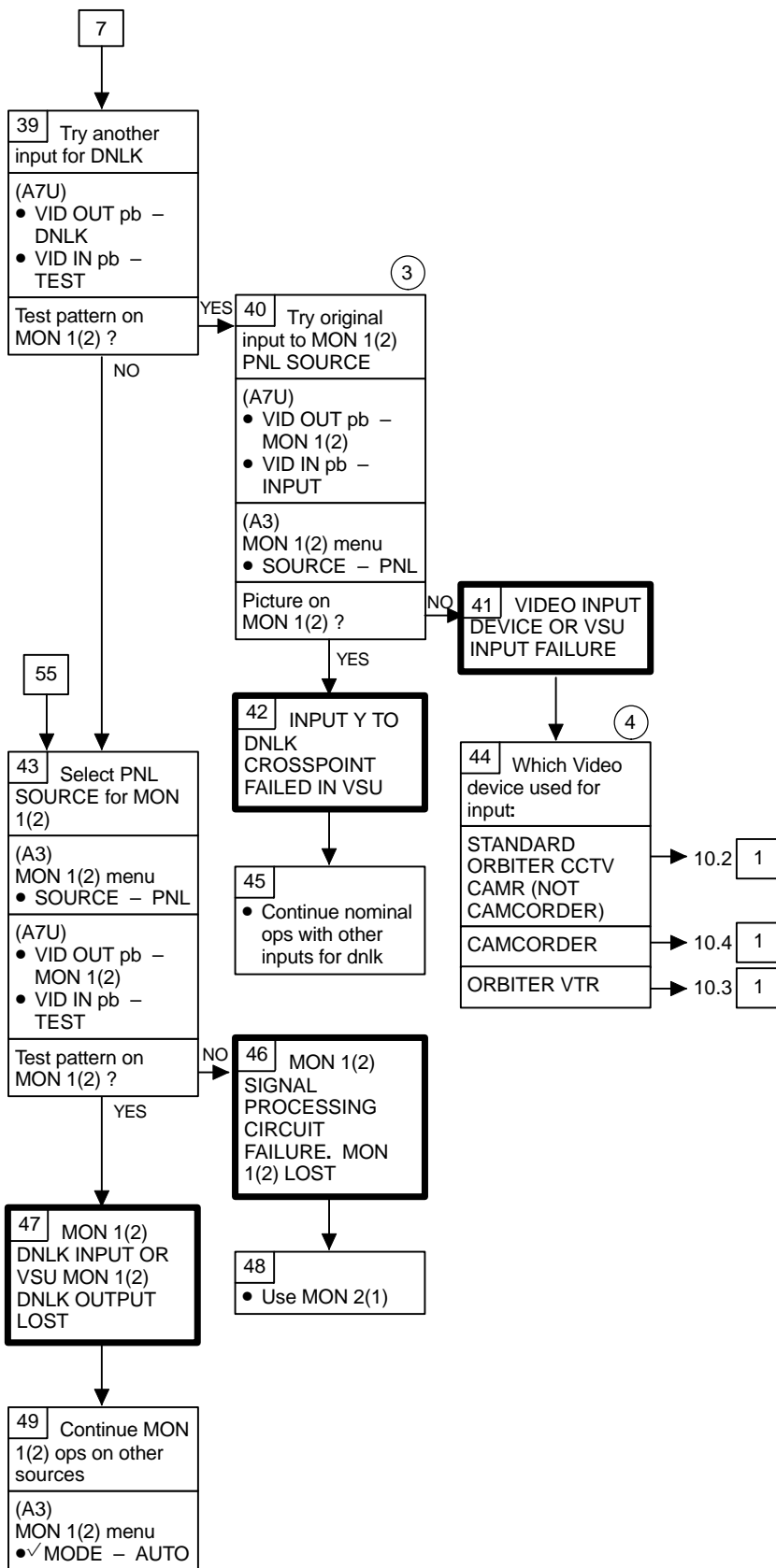
CCTV 10.1 (Cont)



⑦ Brightness and contrast controls may need to be adjusted to see menu

⑧ SOURCE is the source recorded in block 2

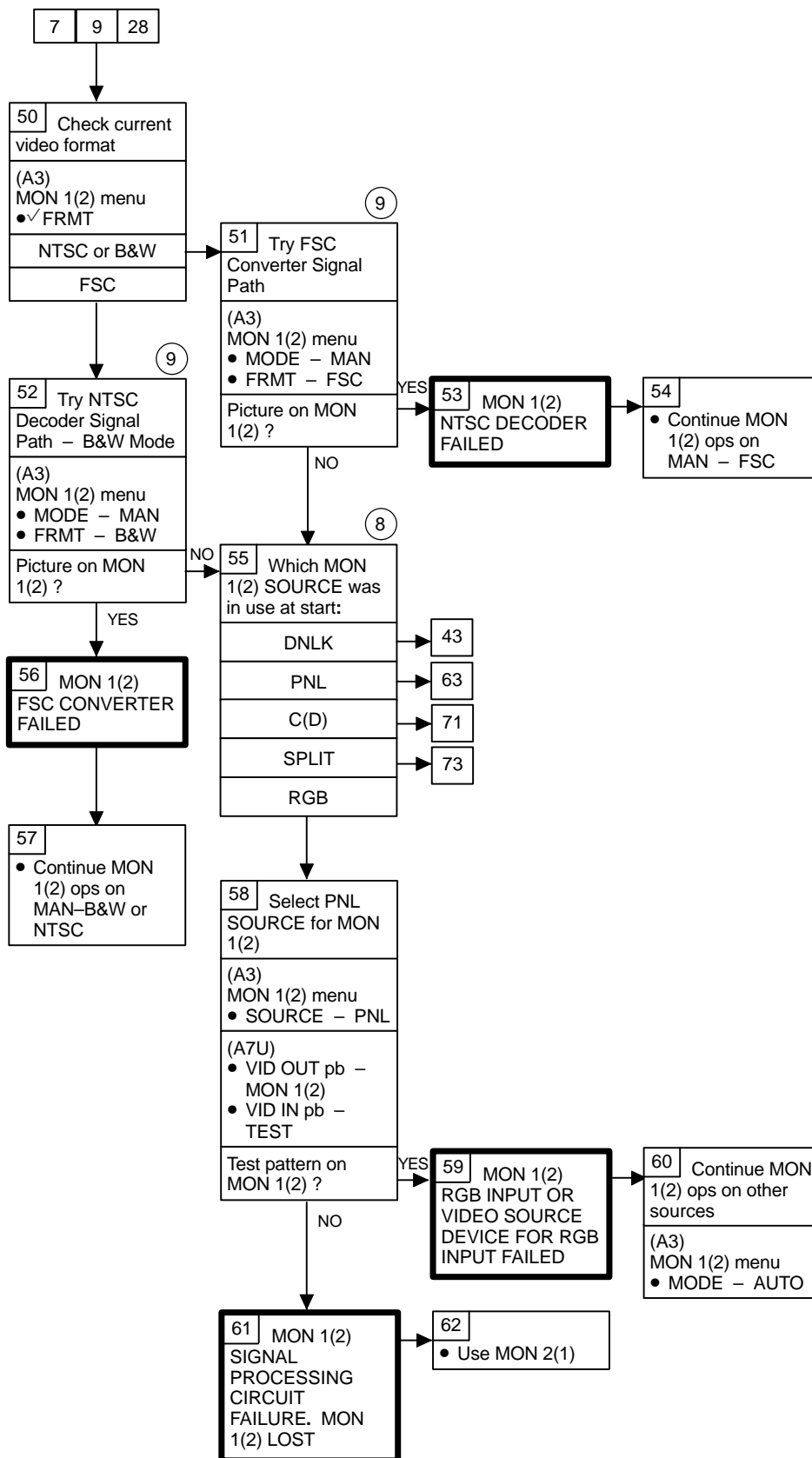
CCTV 10.1 (Cont)



③ INPUT used here was recorded in block ②

④ Video Input Device is the device connected to INPUT which was recorded in block ②

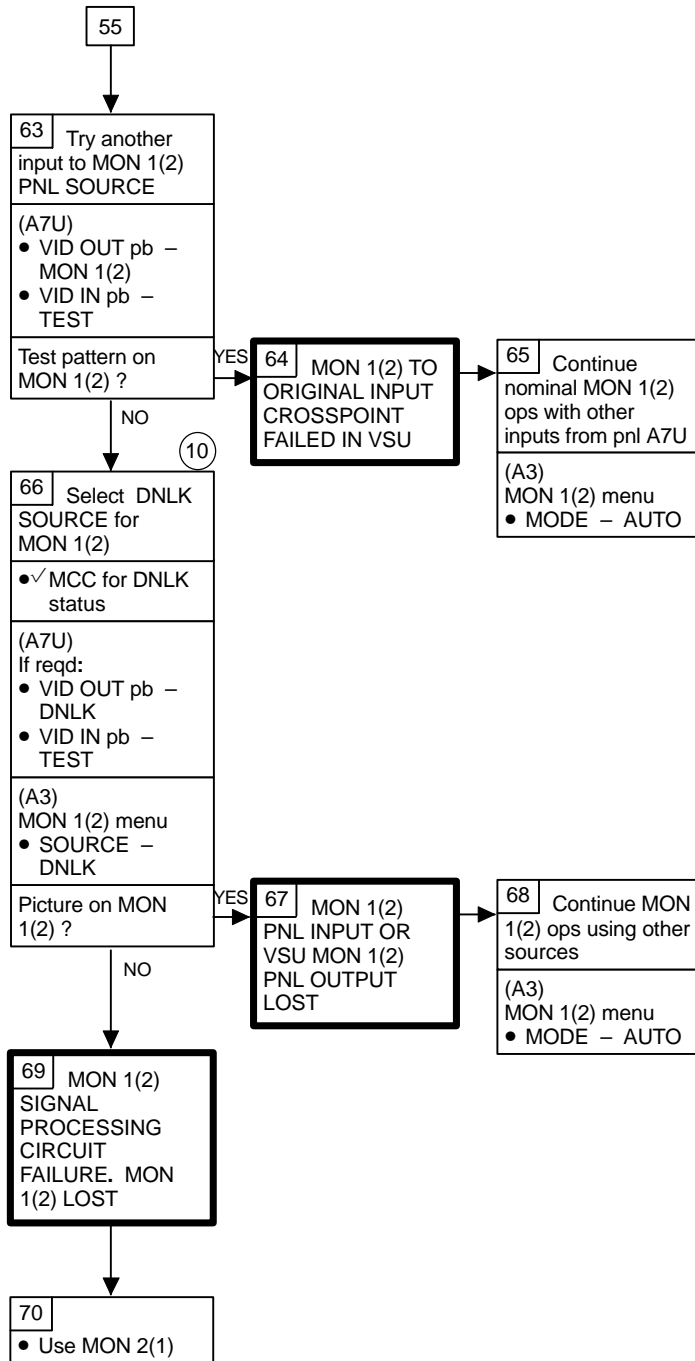
CCTV 10.1 (Cont)



⑧ SOURCE is the source recorded in block 2

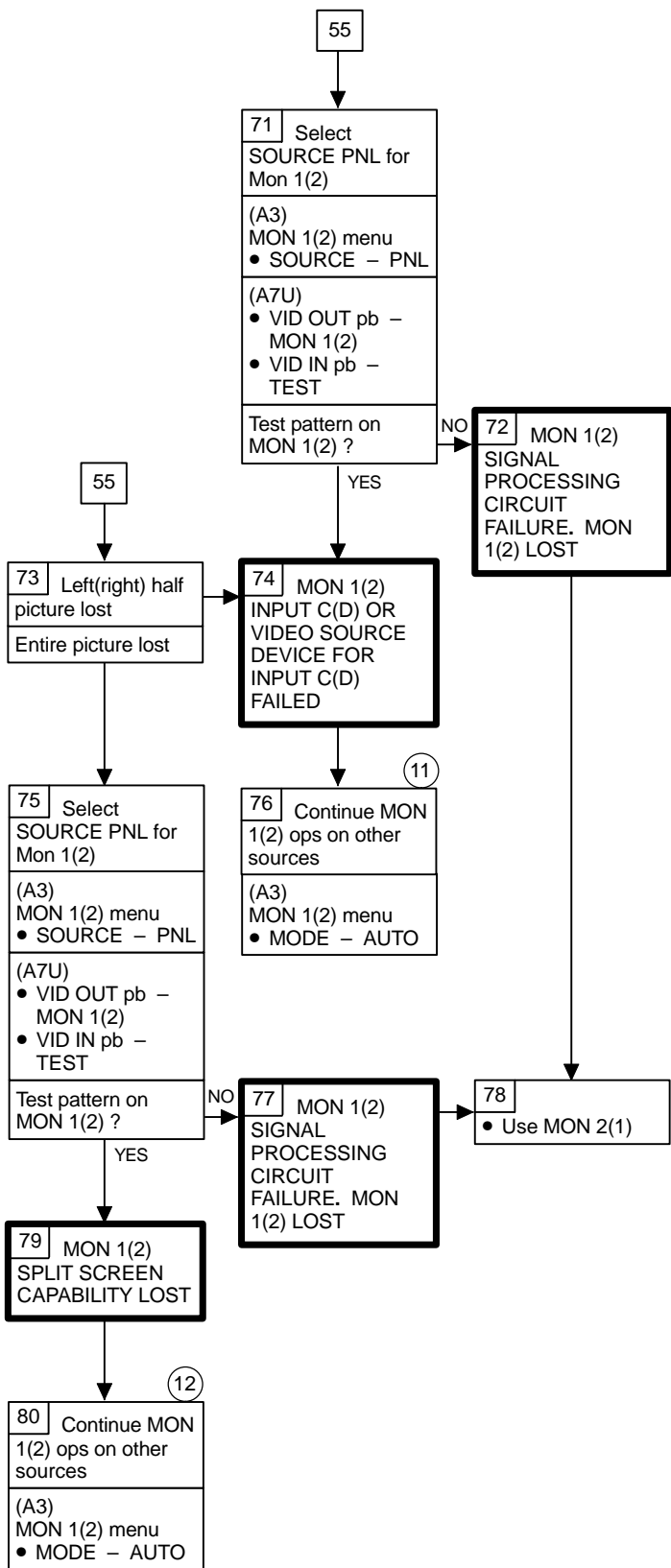
⑨ Picture will be B&W with possible flicker

CCTV 10.1 (Cont)



⑩ If DNLK in progress, selecting test pattern to DNLK not reqd. MCC will advise on DNLK status

CCTV 10.1 (Cont)



① Recovery of video source device may be possible

② Inputs C,D may be useable without SPLIT

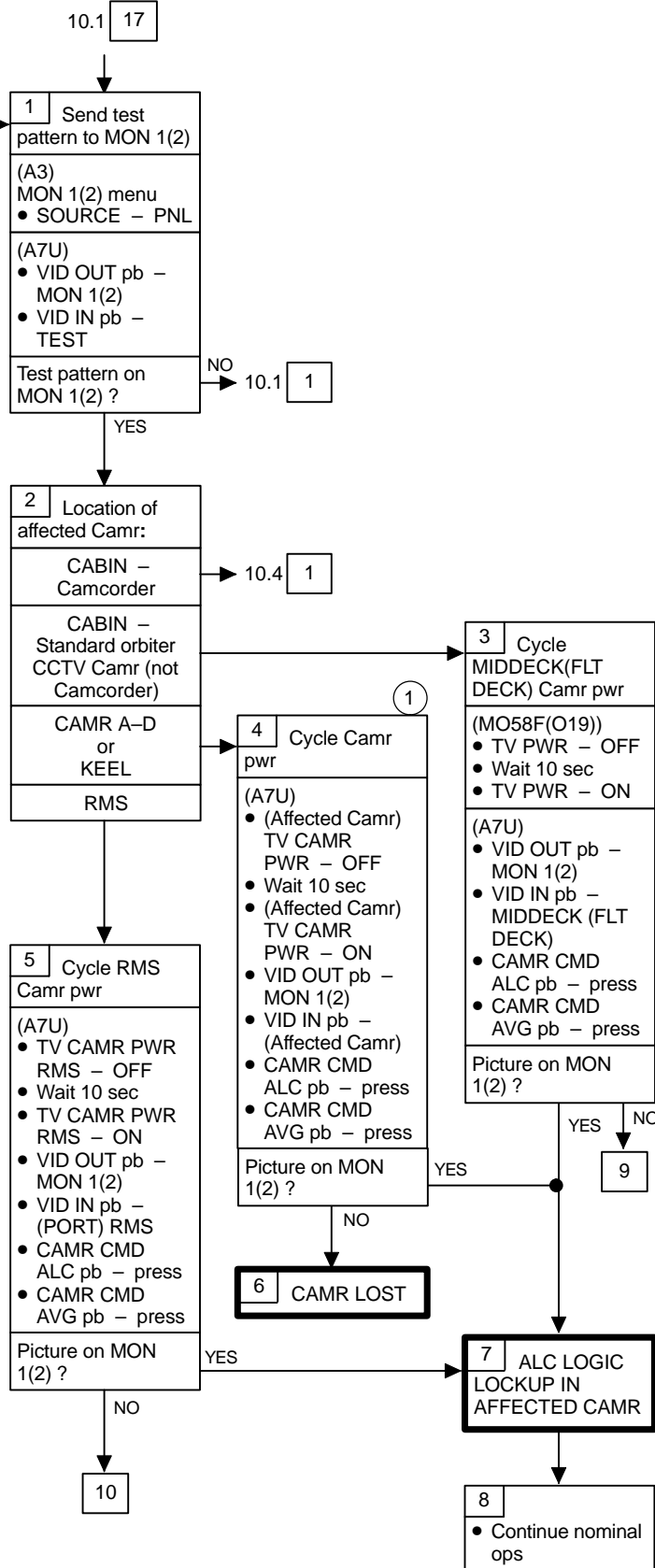
CCTV

10.2 NO CAMR VIDEO

No Camr Video

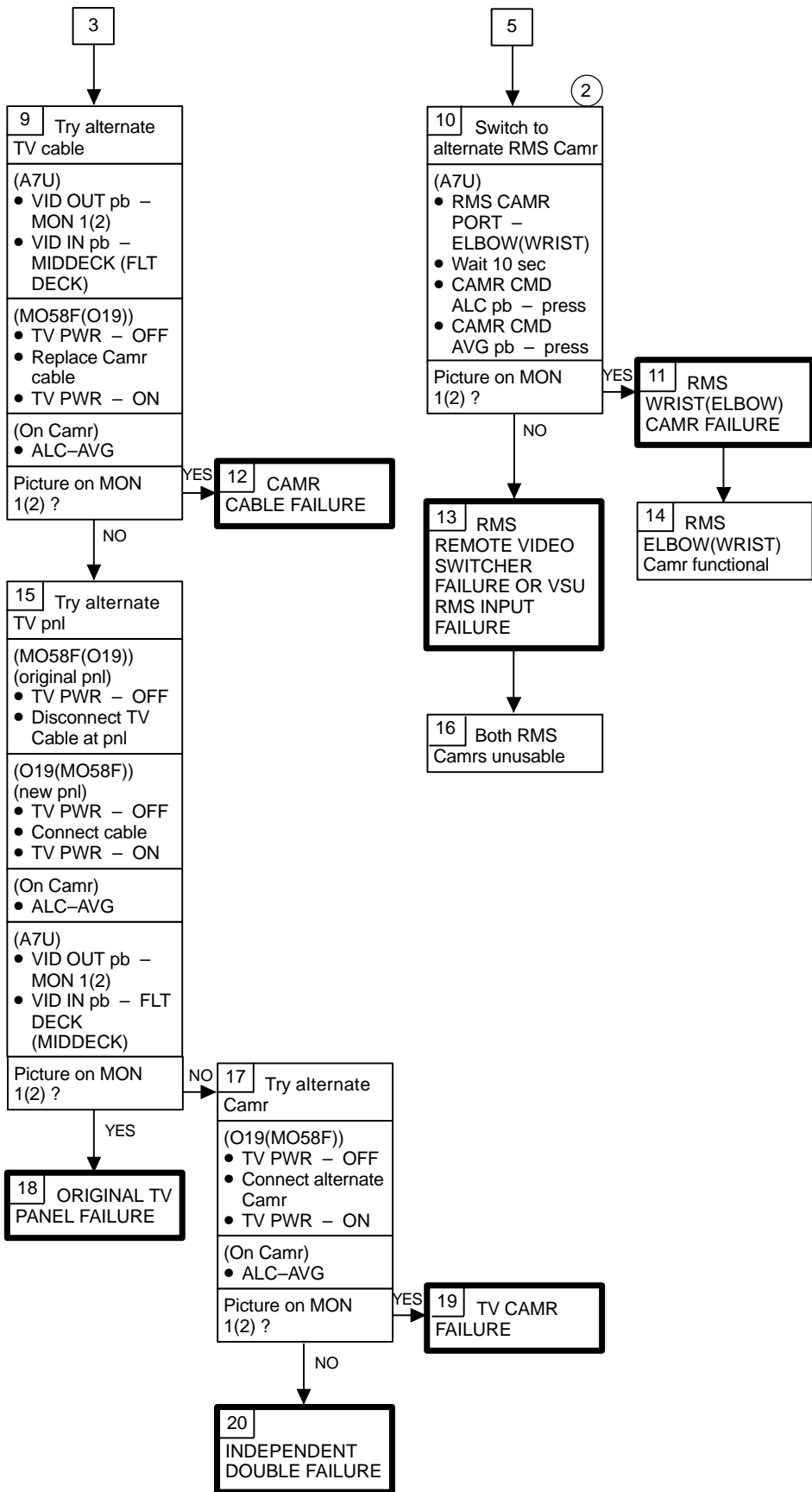
Nominal Config:

- (R14:D)
 cb MNA TV C AFT
 BAY CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNA TV CONTR UNIT - cl
 cb MNA TV MON 1 - cl
 cb MNB TV A FWD BAY CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNB TV CONTR UNIT - cl
 cb MNB TV MON 2 - cl
 cb MNC TV B KEEL/EVA CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 cb MNC TV CAB - cl
 (R14:E)
 cb MNA D STBD RMS TV CAMR/PAN-TILT - cl
 CMR HTR - cl
 PAN-TILT HTR - cl
 cb MNB RMS PORT RMS TV CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 (A7U)
 TV PWR CNTL - CMD
 TV PWR CONTR UNIT - MNA(MNB)
 TV SYNC - NORM
 TV DNLK - ENA
 (A3)
 MON 1(2)
 SOURCE - as reqd
 SYNC - INT
 PWR - ON
 MODE - AUTO
 GUNS - R,G,B - ON



① KEEL Camr pwr control and KEEL Camr Video inputs are mission specific

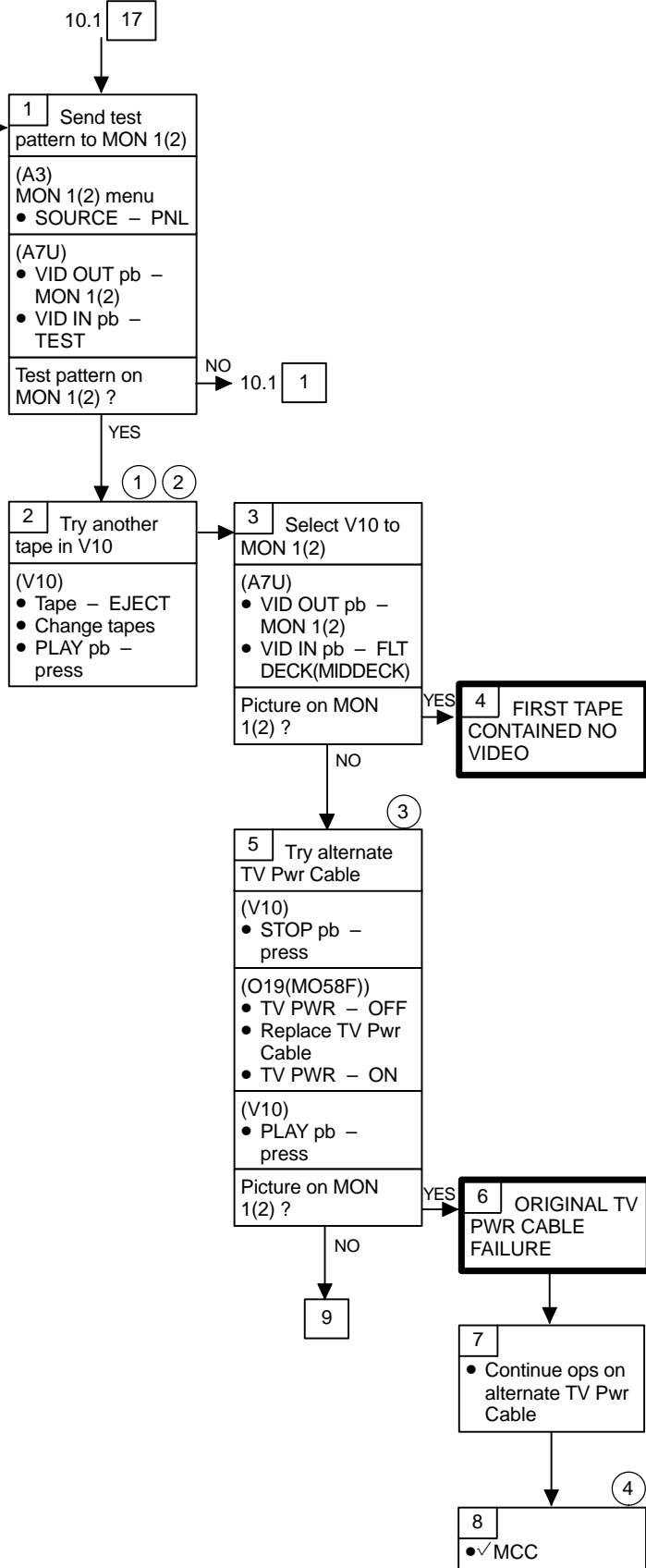
CCTV 10.2 (Cont)



② If currently selected to WRIST(ELBOW) then select ELBOW (WRIST)

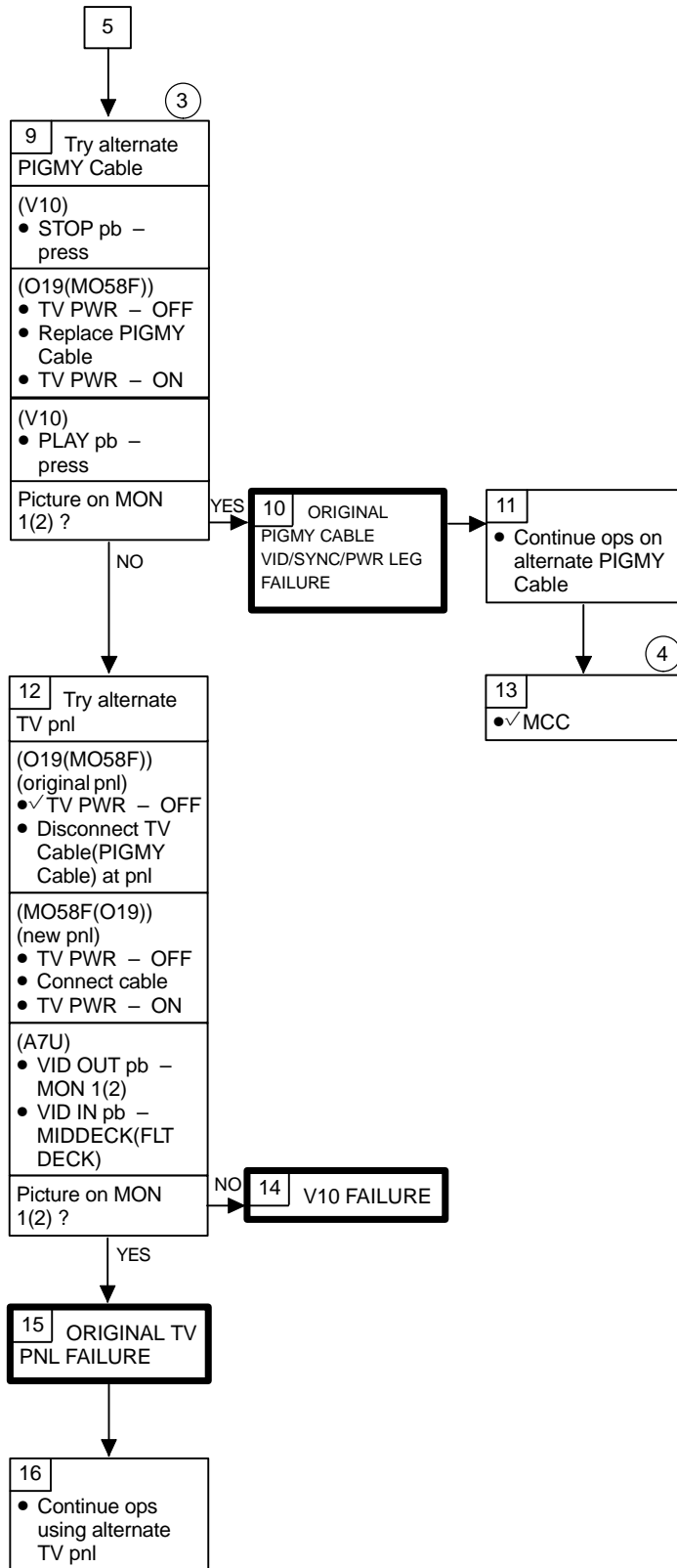
No VTR Playback Video

Nominal Config:
 (R14:D)
 cb MNA TV CONTR UNIT - cl
 cb MNA TV MON 1 - cl
 cb MNB TV CONTR UNIT - cl
 cb MNB TV MON 2 - cl
 cb MNC TV CAB - cl
 (A7U)
 TV PWR CNTL - CMD
 TV PWR CONTR UNIT - MNA(MNB)
 TV SYNC - NORM
 TV DNK - ENA
 (A3)
 MON 1(2)
 SOURCE - as reqd
 SYNC - INT
 PWR - ON
 MODE - AUTO
 GUNS - R,G,B - ON
 (V10)
 PWR - ON



- ① Replacement tape should have good video recorded on it
- ② V10 requires dump thru pnl O19(MO58F)
- ③ ✓MCC if alternate equip avail
- ④ IFM for AVIU(cables) may be possible

CCTV 10.3 (Cont)



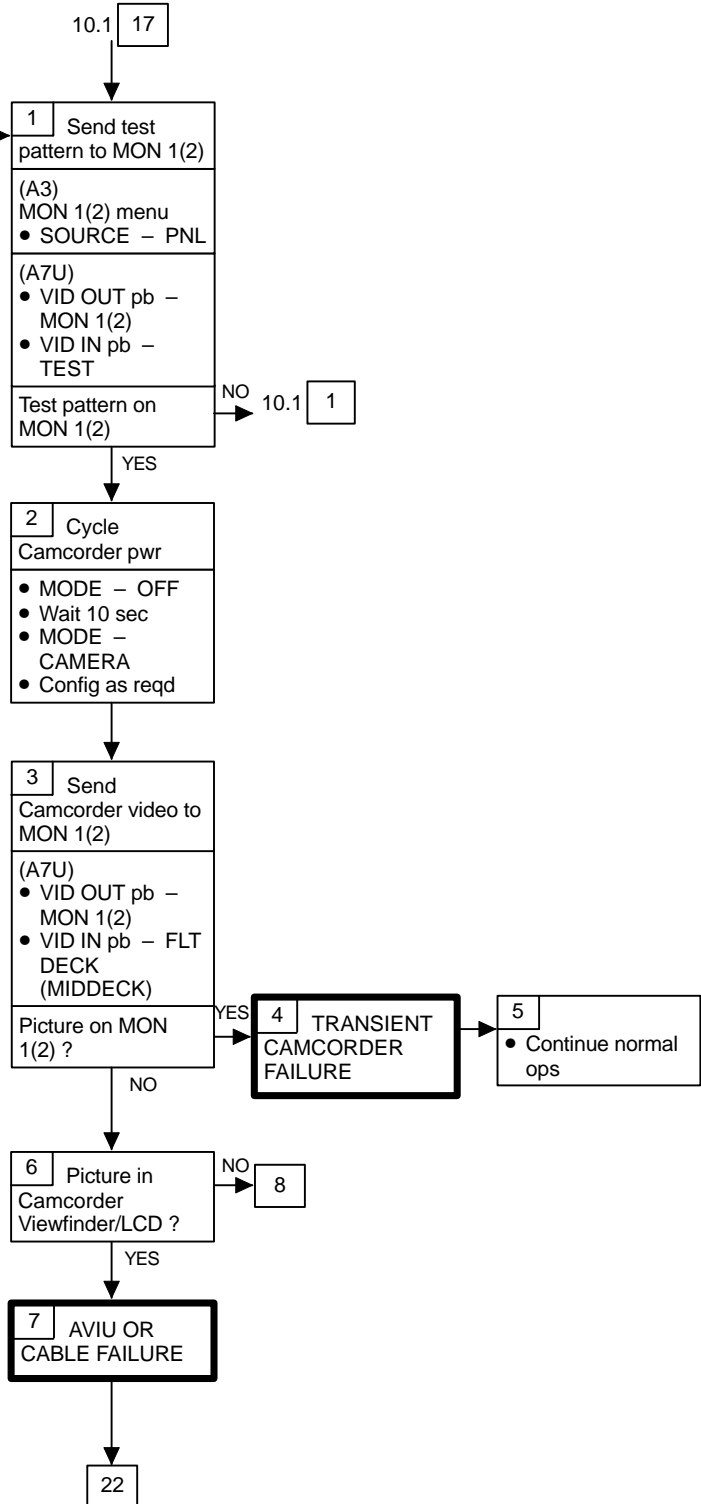
- ③ ✓ MCC if alternate equip avail
- ④ IFM for AVIU(cables) may be possible

CCTV

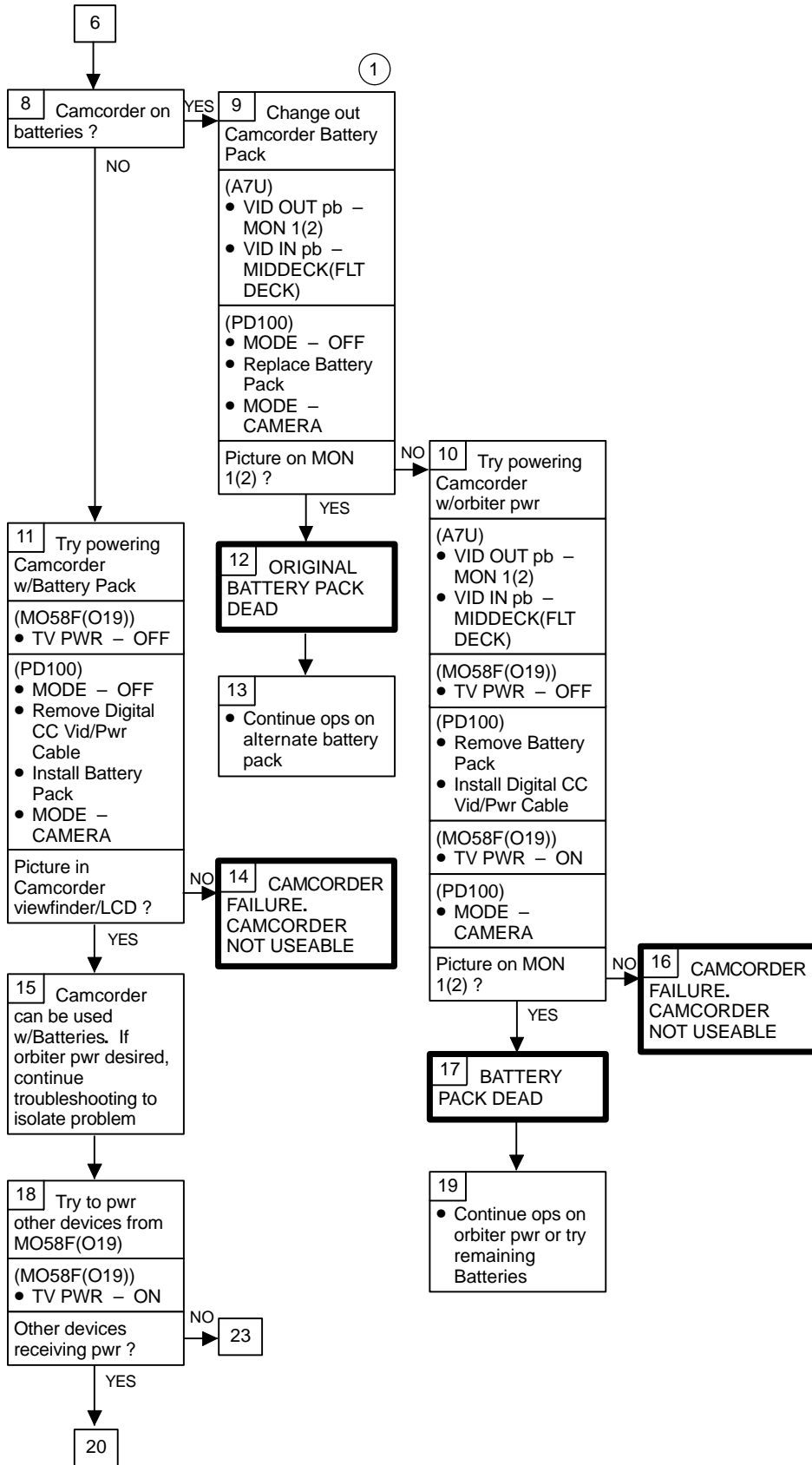
10.4 NO CAMCORDER VIDEO ON COLOR TV MONITOR

No Camcorder Video

Nominal Config:
 (R14:D)
 cb MNA TV CONTR UNIT - cl
 cb MNA TV MON 1 - cl
 cb MNB TV CONTR UNIT - cl
 cb MNB TV MON 2 - cl
 cb MNC TV CAB - cl
 (A7U)
 TV PWR CNTL - CMD
 TV PWR CONTR UNIT - MNA(MNB)
 TV SYNC - NORM
 TV DNK - ENA
 (A3)
 MON 1(2)
 SOURCE - as reqd
 SYNC - INT
 PWR - ON
 MODE - AUTO
 GUNS - R,G,B - ON
 (PD100)
 MODE - CAMERA

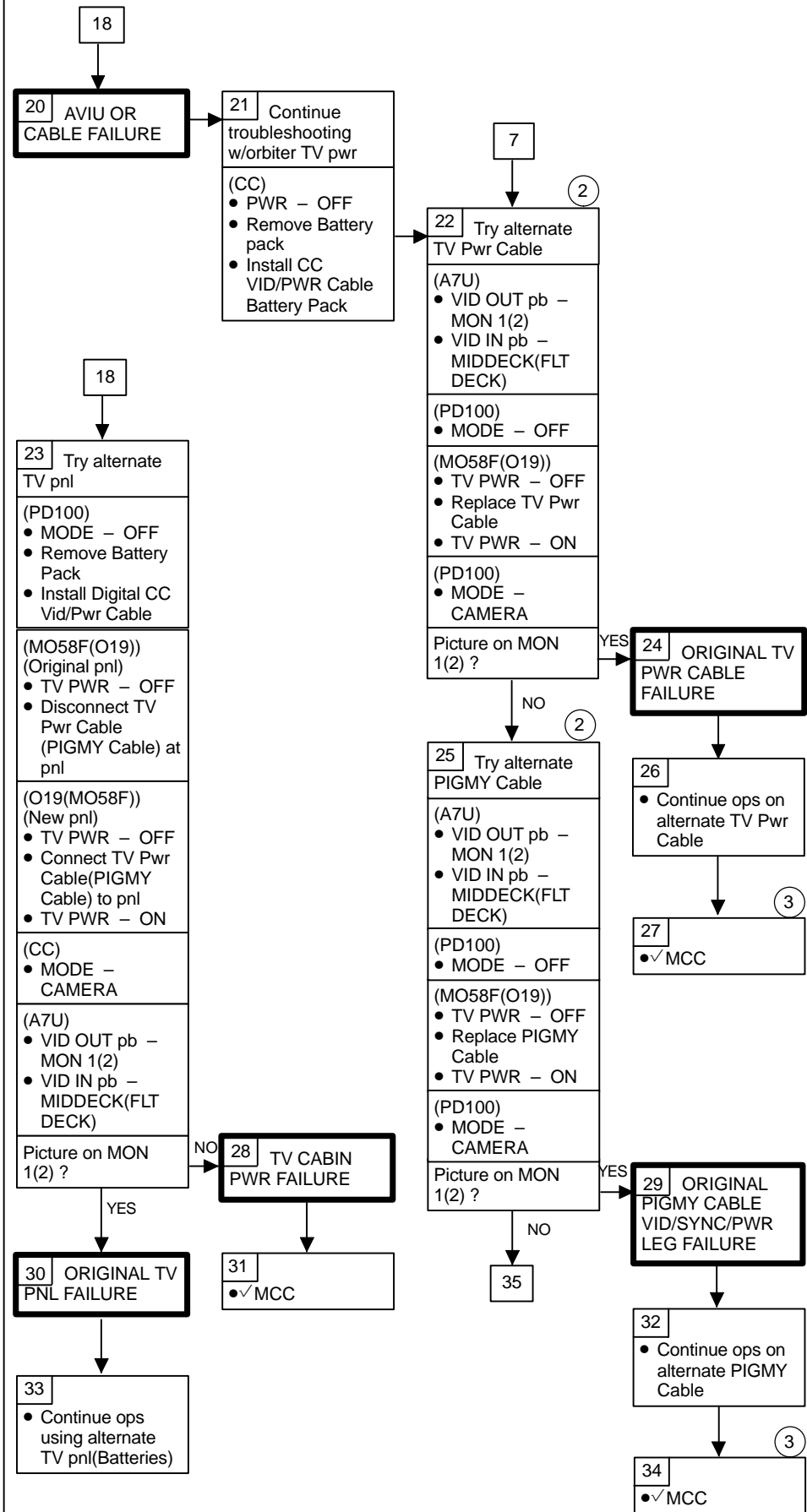


CCTV 10.4 (Cont)



① Video link from Camcorder to orbiter TV pnl should already be connected via Digital CC Vid/Pwr cable, AVIU, and TV Pwr cable when viewing Camcorder video on orbiter color TV monitor

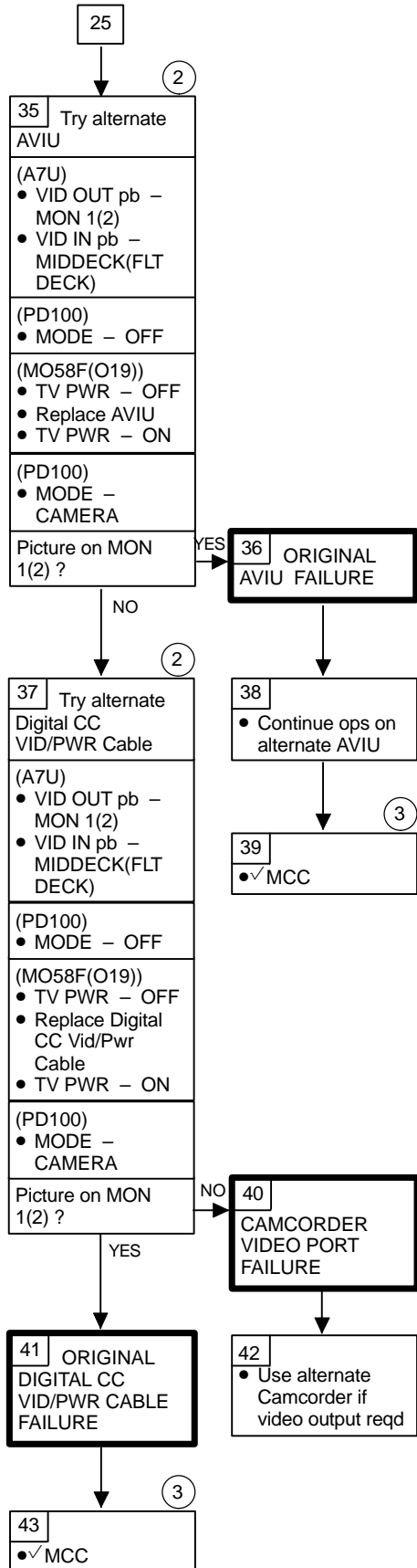
CCTV 10.4 (Cont)



② ✓MCC if alternate equip not avail

③ IFM for AVIU or cables may be possible

CCTV 10.4 (Cont)



② ✓MCC if alternate equip not avail

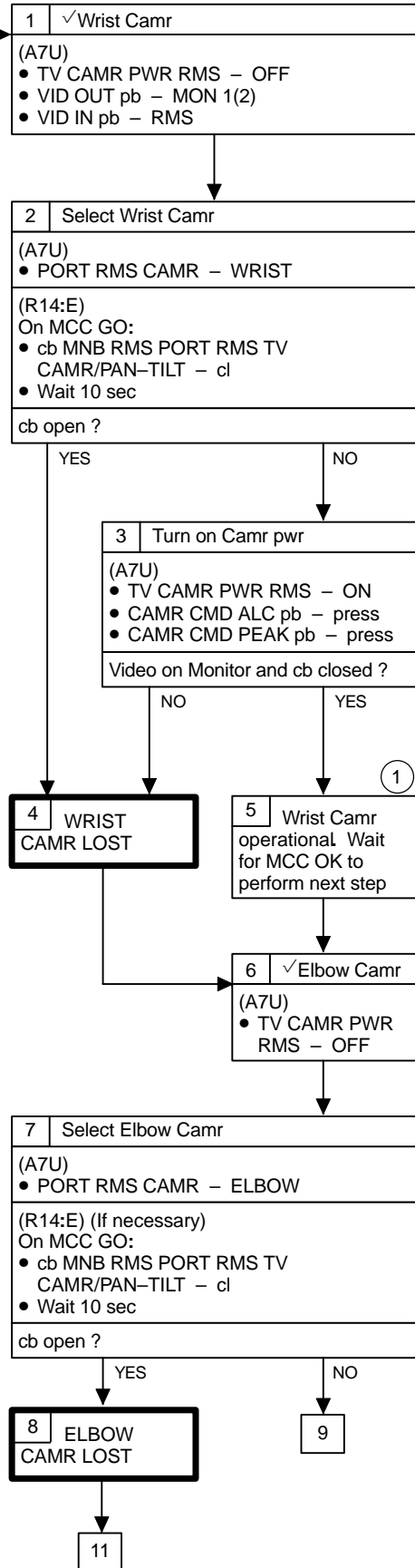
③ IFM for AVIU or cables may be possible

CCTV

10.5 RMS TV cb OPENS

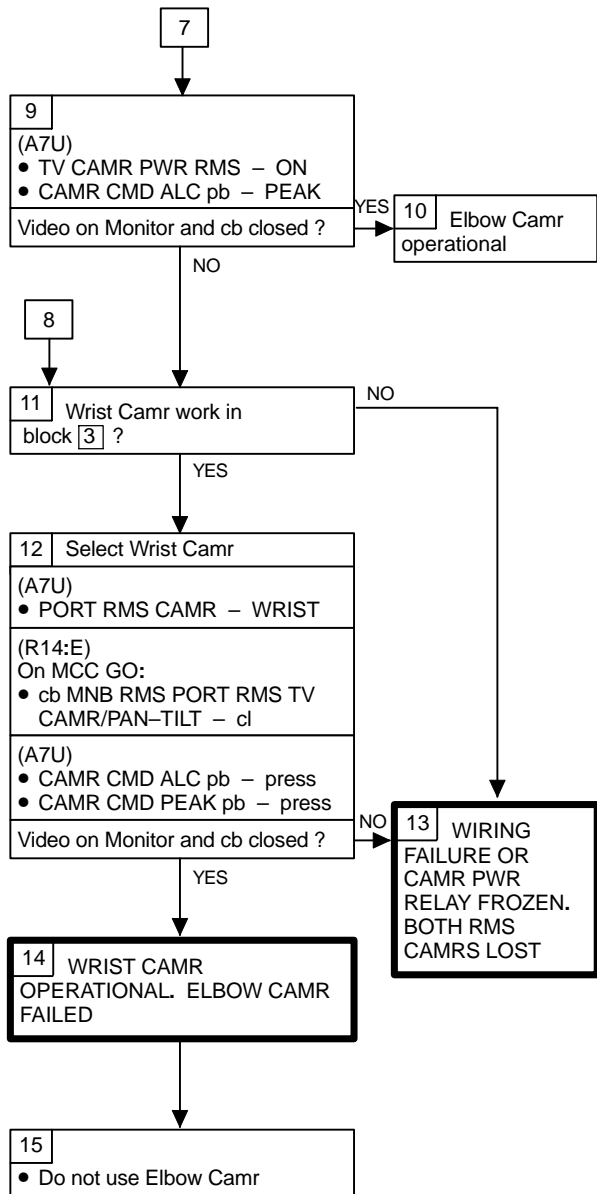
Port RMS TV Camr/Pan-Tilt cb Opens

Nominal Config:
 (R14:D)
 cb MNA TV CONTR UNIT - cl
 cb MNA TV MON 1 - cl
 cb MNB TV CONTR UNIT - cl
 cb MNB TV MON 2 - cl
 cb MNC TV CAB - cl
 (R14:E)
 cb MNB RMS PORT RMS TV CAMR/PAN-TILT - cl
 CAMR HTR - cl
 PAN-TILT HTR - cl
 (A7U)
 TV PWR CNTL - CMD
 TV PWR CONTR UNIT - MNA(MNB)
 TV SYNC - NORM
 TV DNK - ENA
 (A3)
 MON 1(2)
 SOURCE - as reqd
 SYNC - INT
 PWR - ON
 MODE - AUTO
 GUNS - R,G,B - ON



① Pwr routed to both Camrs at all times and switched inside Camrs. Short occurring in one Camr may cause loss of pwr to both Camrs on RMS. Decision to proceed based on current spikes, if any, and importance of RMS Camrs to remainder of mission

CCTV 10.5 (Cont)



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SEQUENTIAL STILL VIDEO (SSV)

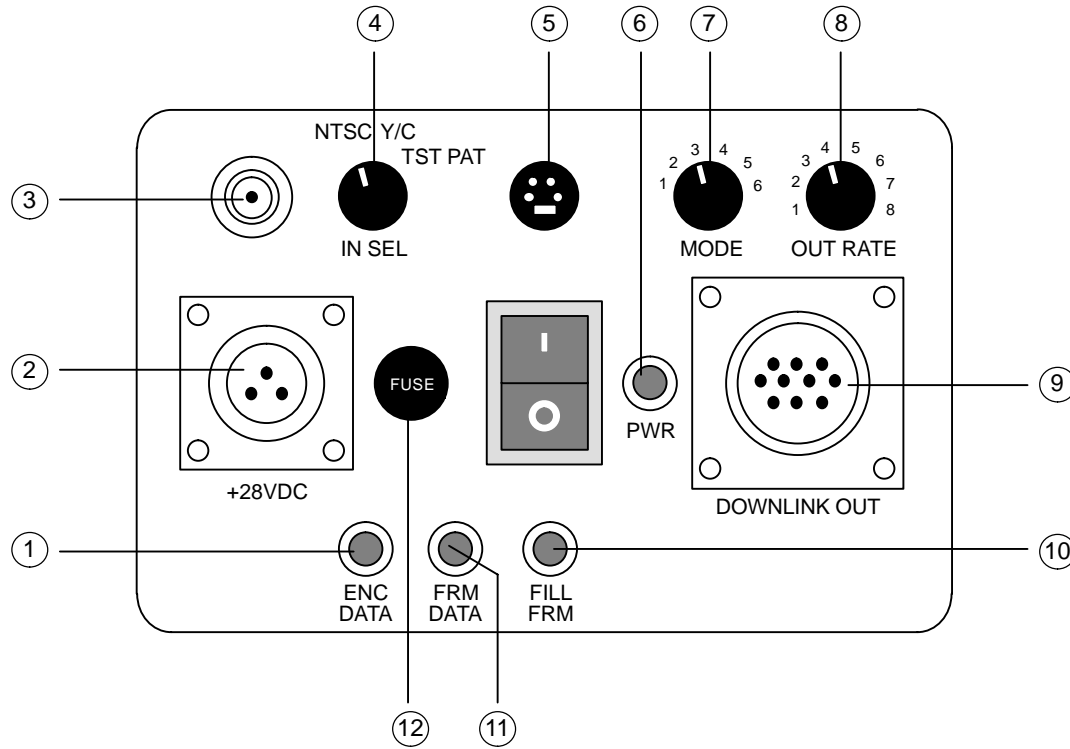
	<u>PAGE</u>
SPECIFICATIONS	11-2
NOMENCLATURE	11-2
SETUP	11-3
SCHEMATICS	11-4
MALS	11-5

SEQUENTIAL STILL VIDEO (SSV)

SPECIFICATIONS

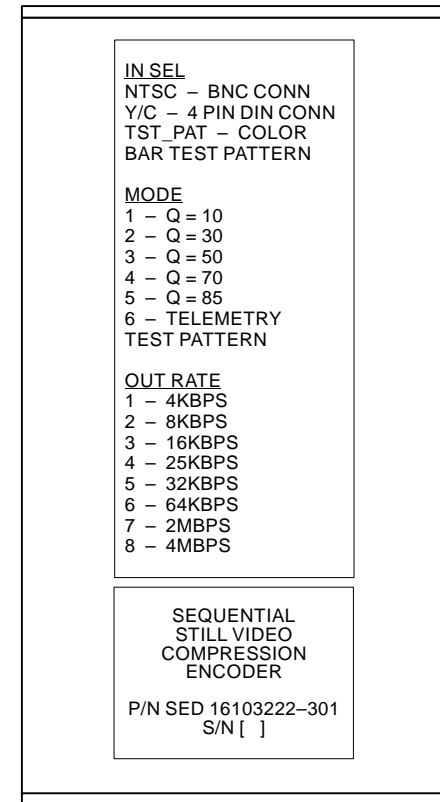
DIMENSIONS: 8.5 in (L) x 4.245 in (W) x 2.72 in (H)
 PWR: 28V
 FUSE: 2A
 WEIGHT: 3.02 lb

NOMENCLATURE



- ① Encoder Data LED
- ② 28 VDC Port
- ③ BNC Composite Video Port
- ④ IN SEL sw
- ⑤ Y/C Component Video Port
- ⑥ Pwr LED
- ⑦ MODE sw
- ⑧ OUT RATE sw
- ⑨ DOWNLINK OUT Port
- ⑩ Fill Frame Data LED
- ⑪ Framer Data LED
- ⑫ FUSE

TOP DECAL



SEQUENTIAL STILL VIDEO (SSV) (Continued)

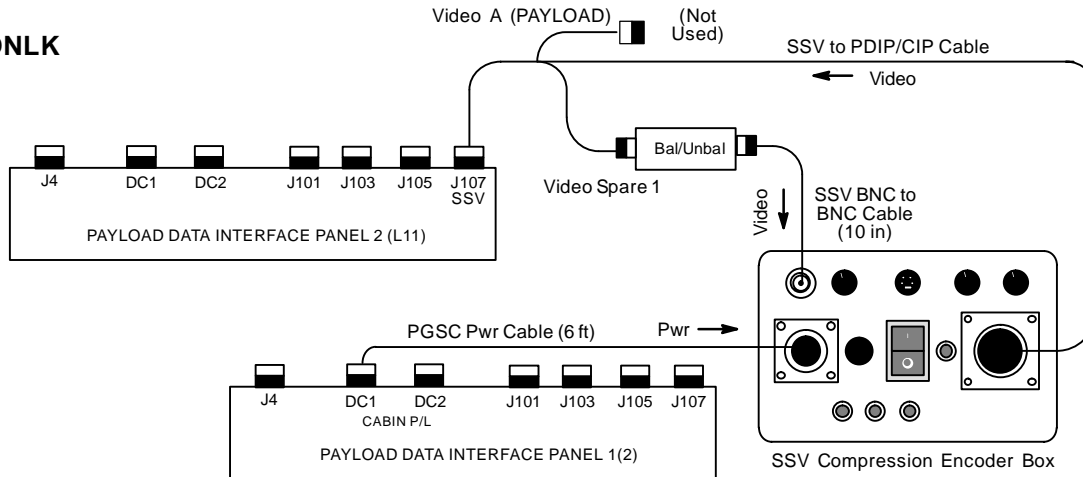
SETUP

CC DNLK	TEST PATTERN DNLK	TLM DNLK
<p>Config per CC DNLK dwg, 11-4</p> <p><u>AVIU</u> SYNC/VIDEO – VIDEO HI-Z/75 – 75 PWR SELECT – LO</p> <p><u>CC</u> Lens – 3X TV Pwr (O19) – ON CC Pwr – ON ✓Wide Conversion Lens installed Mode – CAMERA Tape – Remove ✓Viewfinder displays blinking yellow tape Camr Settings ✓AUTO LOCK – AUTO LOCK FOCUS – AUTO Multiuse Brkt, Clamp Zoom in to check focus; zoom out to frame</p> <p>Config pwr per PHOTO/TV FS, <u>SCENES</u>; P/TV06 SSV</p> <p><u>SSV</u> IN SEL – Y/C Mode – 5 (may change if desired) OUT RATE per FLIGHT PLAN SSV Pwr – ON ✓Pwr LED illum ✓ENC DATA LED flickering ✓FRM DATA LED flickering ✓FILL FRM pulsing</p>	<p>Config per CCTV SYSTEM DNLK dwg, 11-4</p> <p>Config pwr per PHOTO/TV FS, <u>SCENES</u>; P/TV06 SSV</p> <p><u>SSV</u> IN SEL – TEST PAT Mode – 3 (may change if desired) OUT RATE per FLIGHT PLAN SSV Pwr – ON ✓Pwr LED illum ✓ENC DATA LED flickering ✓FRM DATA LED flickering ✓FILL FRM pulsing</p>	<p>Config per CCTV SYSTEM DNLK dwg, 11-4</p> <p>Config pwr per PHOTO/TV FS, <u>SCENES</u>; P/TV06 SSV</p> <p><u>SSV</u> IN SEL – NTSC Mode – 6 OUT RATE per FLIGHT PLAN SSV Pwr – ON ✓Pwr LED illum ✓ENC DATA LED flickering ✓FRM DATA LED flickering ✓FILL FRM pulsing</p>

SEQUENTIAL STILL VIDEO (SSV) (Continued)

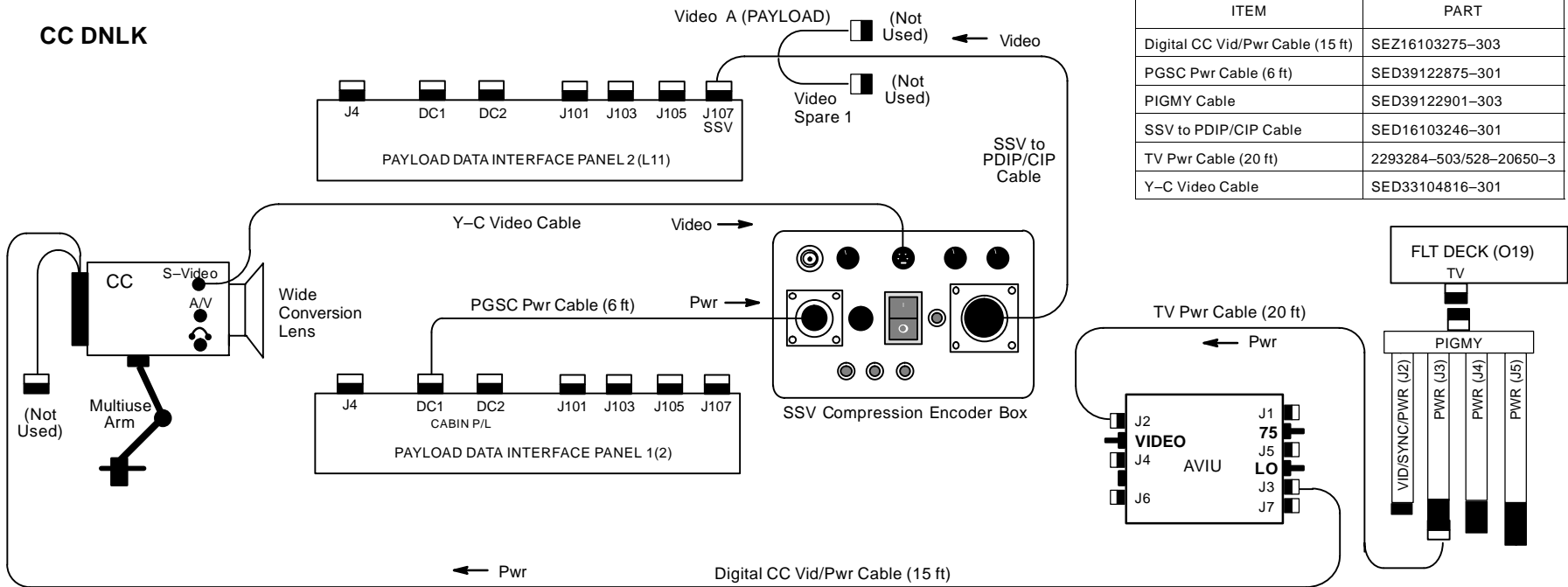
SCHEMATICS

CCTV SYSTEM DNLK



ITEM	PART
SSV BNC to BNC Cable (10 in)	SED16103248-301
PGSC Pwr Cable (6 ft)	SED39122875-301
SSV to PDIP/CIP Cable	SED16103246-301

CC DNLK



ITEM	PART
Digital CC Vid/Pwr Cable (15 ft)	SEZ16103275-303
PGSC Pwr Cable (6 ft)	SED39122875-301
PIGMY Cable	SED39122901-303
SSV to PDIP/CIP Cable	SED16103246-301
TV Pwr Cable (20 ft)	2293284-503/528-20650-3
Y-C Video Cable	SED33104816-301

SEQUENTIAL STILL VIDEO (SSV) (Concluded)

MALS

PWR LED NOT LIT	FRONT PANEL LEDs NOT INDICATING CORRECTLY
<ul style="list-style-type: none">✓ Fuse Replace fuse if blown w/fuse from SSV Fuse Kit (SED 15500338–301) ✓ DC Pwr from orbiter util	<ul style="list-style-type: none">Cycle pwr on SSV Compression EncoderSSV Pwr – 0 (off)Wait 5 secSSV Pwr – 1 (on) ✓ Cables✓ Video source

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BINOCULARS

	<u>PAGE</u>
SPECIFICATIONS	12-2
MALS	12-3
12.1 CANNOT STABILIZE IMAGE	12-3

BINOCULARS

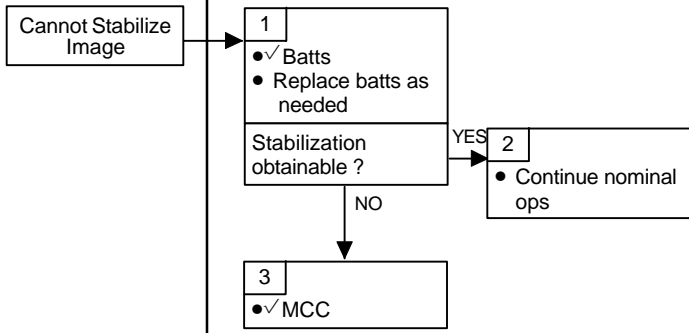
BINOCULARS

SPECIFICATIONS

Model	Stabilization	Pwr	Magnification	Objective Lens (mm)	Exit Pupil	Approx FOV	Approx Linear FOV @ 1000 yd	Approx Minimum Focus (ft)	Weight (lb)
Zeiss 8 X 20	No	N/A	8X	20	2.5mm	6.6°	346.5 ft	9.0	0.39
Fuji 10 X 40 Day/ Night	Yes (Gyro)	6AA	10X	40	4.5mm	5.0°	210.0 ft	65.0	5.5
Fuji 14 X 40	Yes (Gyro)	6AA	14X	40	2.8mm	4.0°	210.0 ft	75.0	4.6
Fuji 16 X 70	No	N/A	16X	70	4.4mm	4.0°	210.0 ft	100.0	4.76
Zeiss 20 X 60	Yes (Mechanical)	N/A	20X	60	3.0mm	2.9°	150.0 ft	50.0	3.66

**BINOCULAR
(GYRO)**

12.1 CANNOT STABILIZE IMAGE



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NIGHT VISION

NIGHT VISION EQUIPMENT

SPECIFICATIONS

	Litton Night Scope	AstroScope
AMPLIFICATION	2500X	500–1000 (high IR sensitivity)
WEIGHT	1.18 lb	1.19 lb
BATT	1AA	None
VOLTAGE	1.5V	50mA (via CC)
DIMENSIONS	6 in X 3 in X 3 in	2.5 in X 4 in (tube)
ILLUMINATION	IR available	None

CAUTION

Do not pwr scope ON except in darkness

Do not view point light source for extended periods of time

Do not point scope directly at Sun or any other bright object w/pwr ON(OFF)

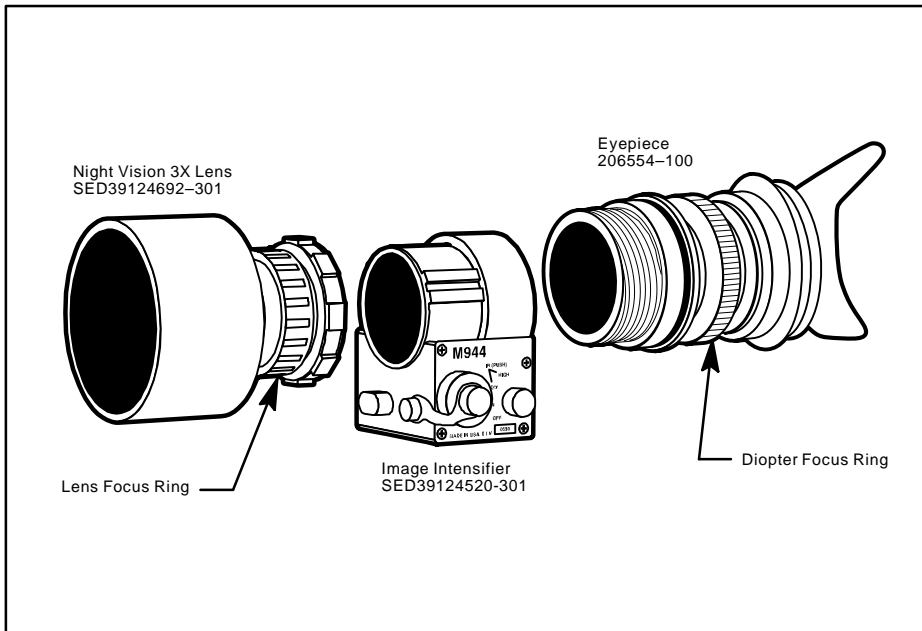
Keep scope away from high–pwrd light and strong magnetic fields

Do not dismantle unit. (High pwr supply voltage present in interior)

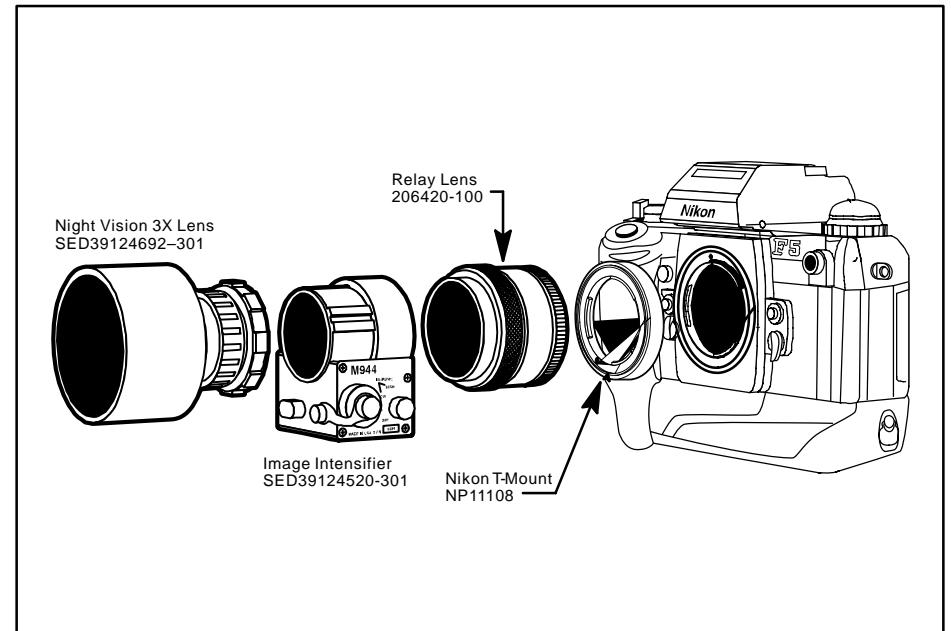
NIGHT VISION EQUIPMENT (Continued)

LITTON NIGHT SCOPE

LITTON LENS – LITTON IMAGE INTENSIFIER/EYEPIECE



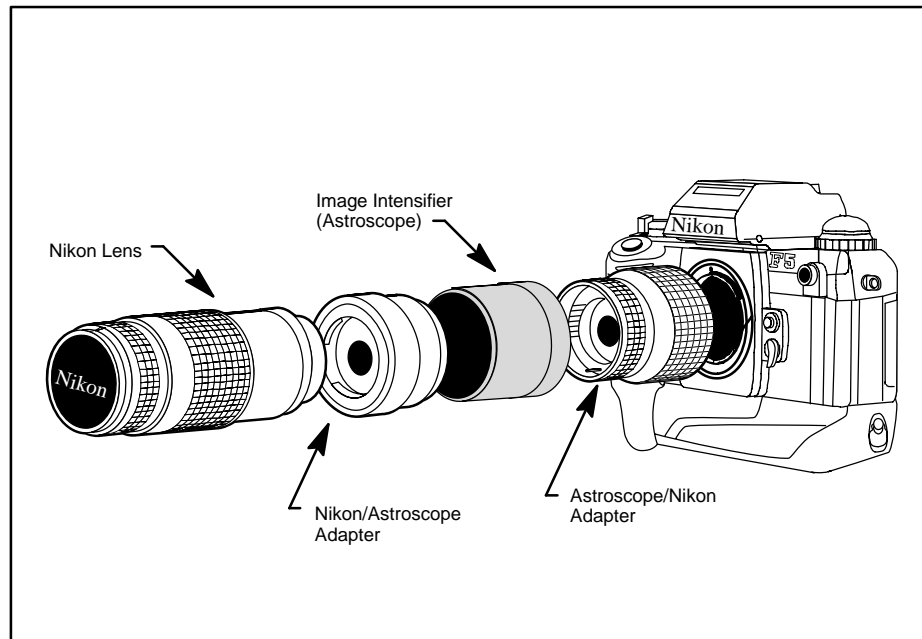
LITTON LENS – LITTON IMAGE INTENSIFIER/NIKON F5



NIGHT VISION EQUIPMENT (Concluded)

ASTROSCOPE

NIKON LENS – IMAGE INTENSIFIER (ASTROSCOPE)/NIKON F5 (SED33107778–305)



FIBERSCOPE

	<u>PAGE</u>
SPECIFICATIONS	14-2
NOMENCLATURE	14-2

FIBERSCOPE

FIBERSCOPE

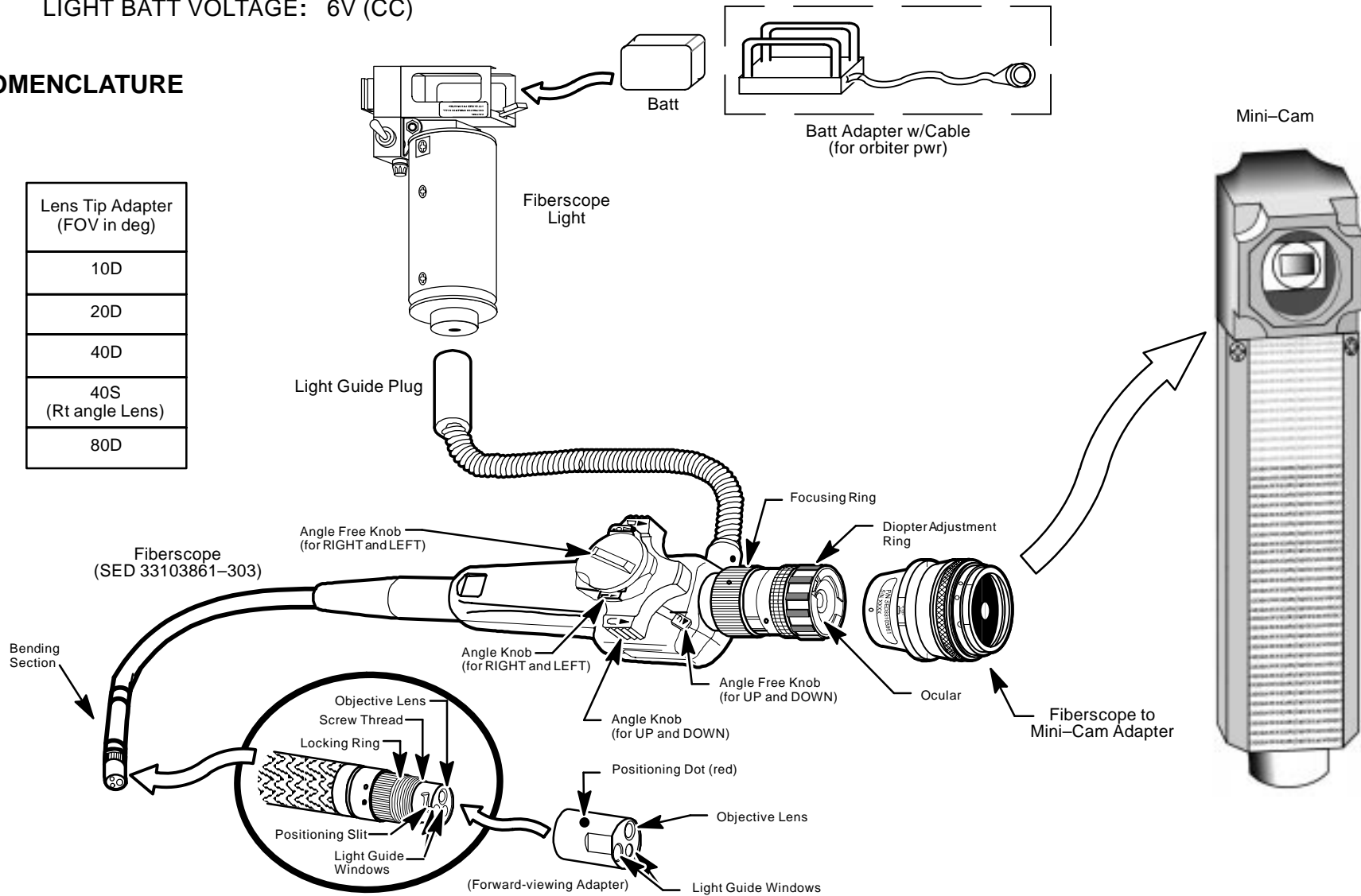
SPECIFICATIONS

LIGHT PWR: Orbiter – 28V via CCPI

LIGHT BATT VOLTAGE: 6V (CC)

NOMENCLATURE

Lens Tip Adapter (FOV in deg)
10D
20D
40D
40S (Rt angle Lens)
80D



REFERENCE TABLES

PAGE

BATTERY/FUSE REFERENCE 15-2

**REFERENCE
TABLES**

BATTERY/FUSE REFERENCE

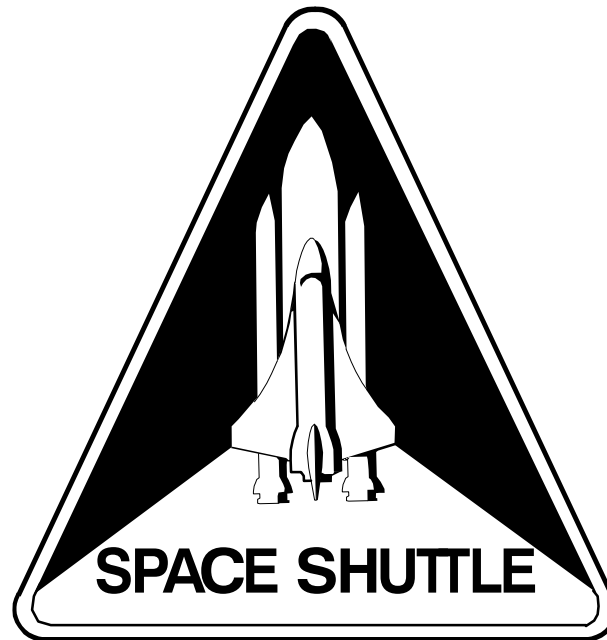
ITEM	BATTERY	SAME AS:	FUSE	SAME AS:
AVIU	NONE	N/A	2A	CCPI
BINOCULARS – 14 X40 GYRO – 10 X40 GYRO	AA (6)	AA	NONE	N/A
BPSMU	18V (two 9V)	NONE	NONE	N/A
CAMCORDER – PD100	Li-ION	RECORDER – V10	NONE	N/A
CC PWR/VIDEO CABLE (15 ft)	NONE	N/A	3A W/SPARE (2) (only for Mode 1)	LINHOF
CCPI	NONE	N/A	2A (2), 4A, 8A	SPARE CCPI FUSE KIT AVIU
CPL	6V NiCd	FIBERSCOPE LIGHT (–302)	15A	NONE
DCS 660/760	RECHARGEABLE (NOT REPLACEABLE) TBD DATE/TIME BATT	N/A	NONE	N/A
DCS 760	NiMH (RECHARGEABLE)	NONE	N/A	N/A
DISCMAN	AA (2)	AA	NONE	N/A
EOS ADAPTER	LITHIUM	NONE	NONE	N/A
EOS NIGHTSCOPE	NONE	N/A	NONE	N/A
FIBERSCOPE LIGHT (–301)	C (2)	NONE	1A DISC	NONE
FIBERSCOPE LIGHT (–302)	6V NiCd	CPL	15A	NONE
HASSELBLAD 203S BODY	E544	NONE	NONE	N/A
HASSELBLAD 203S MOTOR DRIVE	AA (6)	AA	NONE	N/A
HASSELBLAD 203S REMOTE	3X LITHIUM – CR2	NONE	NONE	N/A
HASSELBLAD DATA MAG	N 1.5V (4)	NONE	NONE	N/A
HISL	NONE	N/A	5A	NONE
INTERVALOMETER	AA (4)	AA	0.10A	NONE

BATTERY/FUSE REFERENCE (Concluded)

ITEM	BATTERY	SAME AS:	FUSE	SAME AS:
LAVALIER MIC	76 (1)	NONE	NONE	NONE
LCD MONITOR	AA (6)	AA	NONE	N/A
LINHOF	NONE	N/A	1.5A 2A W/SPARE (3)	NONE CC PWR/VIDEO CABLE (15 ft)
LITTON NIGHT VISION IMAGE INTENSIFIER	AA (1)	AA	1A DISC W/SPARE*	NONE
MICROPHONE – IMAX	9V (2)	NONE	NONE	N/A
NIKON F5 BODY	AA (8)	AA	NONE	N/A
NIKON F5 DATA BACK	CR 2025 3V (2)	NONE	NONE	N/A
NIKON FLASH	AA (4)	AA	NONE	N/A
PHOTOFLOOD	NONE	N/A	1.7A	N/A
RECORDER – ICOM	AA (4)	AA	NONE	N/A
RECORDER – IMAX	D (2)	NONE	NONE	N/A
RECORDER – MICROCASSETTE	AAA (2)	SLAVE FLASH	NONE	N/A
RECORDER – V10	Li-ION	CAMCORDER – PD100	NONE	N/A
SEQUENTIAL STILL VIDEO ENCODER	N/A	N/A	2A	N/A
SLAVE FLASH	AAA	MICROCASSETTE RECORDER		
SPOTMETER – 303	AA (1)	AA	NONE	N/A
WALKMAN	AA (1)	AA	NONE	N/A
IFM FUSE KIT				
INSTRUMENT FUSES				BUS FUSES (1/4 X 1-1/4)
1/2 A(2)	5A (5)			1/4A (2)
1A (5)	7.5A (2)			3A (2)
2A (2)	10A (2)			1/2A (2)
3A (5)				5A (5)
				1A (2)
				7.5A (2)
				2A (2)
				10A (2)

*Night Vision Image Intensifier fuse is 1A Disc type which is glued to Battery cap. Spare is actually another Battery cap

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**PHOTO/TV
CHECKLIST**

**STS
ALL**