

Photo/TV Checklist

STS-115

**Mission Operations Directorate
Operations Division**

**Final
July 21, 2006**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



PHOTO/TV C/L, STS-115

FINAL (July 21, 2006)

PCN-2 (Aug 16, 2006) Sheet 1 of 1

List of Implemented Change Requests (482s):

P/TV_FSP-0058

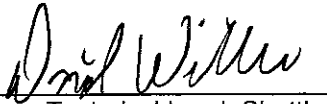
Incorporate the following:

1. Replace iii thru viii
2. Replace 1-31 and 1-32, 1-35 and 1-36
3. Replace 4-3 thru 4-22
4. Replace 12-5 and 12-6, 12-9 thru 12-12
5. Replace 15-5 and 15-6
6. Replace CC 23-5 and CC 23-6, CC 23-11 and CC 23-12

Prepared by:


Assistant Mission Lead
Publication Manager

Approved by:


Technical Lead, Shuttle
Photo/TV Group
Manager, Shuttle Procedures
Management

Accepted by:


FDF Manager

Encl: 42 pages

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

PHOTO/TV C/L, STS-115

FINAL (July 21, 2006)

PCN-1 (Aug 4, 2006) Sheet 1 of 1

List of Implemented Change Requests (482s):

P/TV_FSP-0056

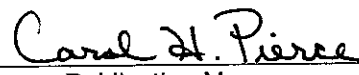
P/TV_FSP-0057

Incorporate the following:


1. Replace iii thru viii
2. Replace 1-7 thru 1-10, 1-15 thru 1-18, 1-31 and 1-32, 1-37 and 1-38
3. Replace 5-9 and 5-10
4. Replace 8-1 and 8-2
After 8-2, add 8-2a and 8-2b
5. Replace 11-1 and 11-2, 11-5 thru 11-8
6. Replace 15-3 and 15-4, 15-7 and 15-8
7. Replace 20-1 and 20-2
8. Replace 21-1 and 21-2, 21-5 and 21-6, 21-17 thru 21-20
After 21-20, add 21-21 and 21-22
9. Replace CC 23-17 and CC 23-18

Prepared by:


Assistant Mission Lead

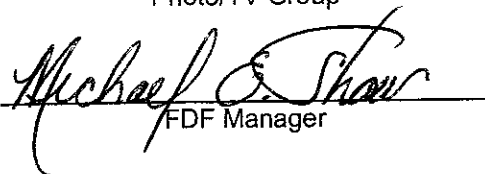

Publication Manager

Approved by:


Technical Lead, Shuttle
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Manager, Shuttle Procedures
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Accepted by:


FDF Manager

Encl: 48 pages

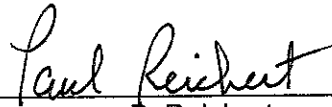
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MISSION OPERATIONS DIRECTORATE

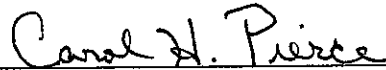
STS-115 PHOTO/TV CHECKLIST

FINAL
July 21, 2006

PREPARED BY:



P. Reichert
Assistant Mission Lead

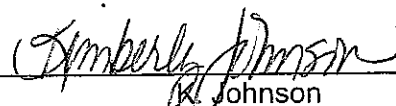


C. Pierce
Publication Manager

APPROVED BY:

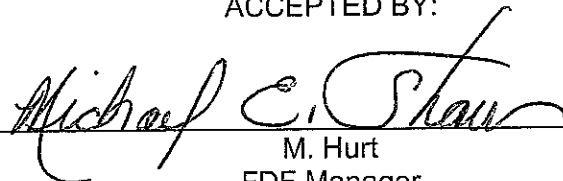


D. Williams
Technical Lead, Shuttle Photo/TV Group



Kimberly Johnson
Manager, Shuttle Procedures Management

ACCEPTED BY:



M. Hurt
FDF Manager

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted via FDF Workflow Crew Procedure Change Request (CR) to DO3/FDF Manager.

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Incorporates the following:			
482#:	P/TV_FSP-0043	P/TV_FSP-0048A	MULTI-1656*
	P/TV_FSP-0044A	P/TV_FSP-0049A	
	P/TV_FSP-0045A	P/TV_FSP-0053A	
	P/TV_FSP-0046A	P/TV_FSP-0055	
	P/TV_FSP-0047A		

* Previously implemented in an earlier publication

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STS-115 PHOTO/TV CHECKLIST

LIST OF EFFECTIVE PAGES

FINAL 07/21/06
 PCN-1 08/04/06
 PCN-2 08/16/06

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x	* 115/FIN	1-46	115/FIN
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1-3.....	115/FIN	1-49	115/FIN
1-4	115/FIN	1-50	115/FIN
1-5.....	115/FIN	1-51	115/FIN
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* – Omit from flight book

2-17	115/FIN	4-21	115/FIN 2
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2-19	115/FIN	4-23	115/FIN
2-20	115/FIN	4-24	115/FIN
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3-6	115/FIN	4-32	115/FIN
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3-8	115/FIN	4-34	115/FIN
3-9	115/FIN	5-1	115/FIN
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4-19	115/FIN	8-2a	115/FIN 1
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11-6.....	115/FIN 1	15-8	115/FIN 1
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16-8.....	115/FIN	CC 23-6	* 115/FIN
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18-6.....	115/FIN	CC 23-14.....	* 115/FIN
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20-4.....	115/FIN	23-20.....	* 115/FIN
20-5.....	115/FIN	23-21 (4 pgs).....	† 115/FIN
20-6.....	115/FIN	23-22 (4 pgs).....	† 115/FIN
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20-8.....	115/FIN		
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20-10.....	115/FIN		
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21-7.....	115/FIN		
21-8.....	115/FIN		
21-9.....	115/FIN		
21-10.....	115/FIN		

* – Omit from flight book

† – Replace with blue K-10 card stock in flight book only

PHOTO/TV CUE CARDS

	<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>	
TV				
	(Front).....	CC 23-3	P/TV-1a/115/O/B	
	(Back).....	CC 23-4	P/TV-1b/115/O/B	
PLAYBACK				
	(Front).....	CC 23-5	P/TV-2a/115/O/D	I
	(Back).....	CC 23-6	P/TV-2b/115/O/C	
ET PHOTO				
	(Front).....	CC 23-7	P/TV-3a/115/O/B	
	(Back).....	CC 23-7	P/TV-3b/115/O/B	
FILM ALLOCATIONS				
	(Front).....	CC 23-8	P/TV-4a/115/O/B	
	(Back).....	CC 23-9	P/TV-4b/115/O/A	
WVS				
	(Front).....	CC 23-10	P/TV-5a/115/O/C	
	(Back).....	CC 23-11	P/TV-5b/115/O/D	I
PLBD VTR RECORDING (NOT BEING FLOWN)				
	(Front).....	CC 23-12	P/TV-6a/115/O/B	
	(Back).....	CC 23-13	P/TV-6b/115/O/B	
LDRI/ITVC				
	(Front).....	CC 23-14	P/TV-7a/115/O/C	
	(Back).....	CC 23-15	P/TV-7b/115/O/C	
LCS				
	(Front).....	CC 23-16	P/TV-8a/115/O/C	
	(Back).....	CC 23-17	P/TV-8b/115/O/D	
IDC				
	(Front).....	CC 23-18	P/TV-9a/115/O/B	
	(Back).....	CC 23-19	P/TV-9b/115/O/A	

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SCENES

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P/TV01 VIDEO SETUP (Concluded)

SCENE SYNOPSIS

Scene contains procedures for documenting Video Setup

SETUP

NOTE

Steps 1-5 minimum reqmt for
FD2 OBSS TPS inspection

1. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
2. Perform SETUP (DTV)
3. Perform V10 FROM MON 1 (SONY V10)
4. Perform V10 FROM MON 2 (SONY V10)
5. ✓RSC Video Cable connected between R12/OPP-RSC Video and R12/VPU-CCTV PL3
6. Perform ANALOG PAO CC (SONY PD100)
7. Perform IN-CABIN MINI-CAM (MINI-CAM)
8. Perform WVS INITIAL SETUP w/o ERCAs (WVS) |
- MF43C 9. Unstow, set up BPSMU w/BPSMU to CCU Adapter Cable at CDR CCU |
10. Perform SSV NOMINAL SETUP (SSV)

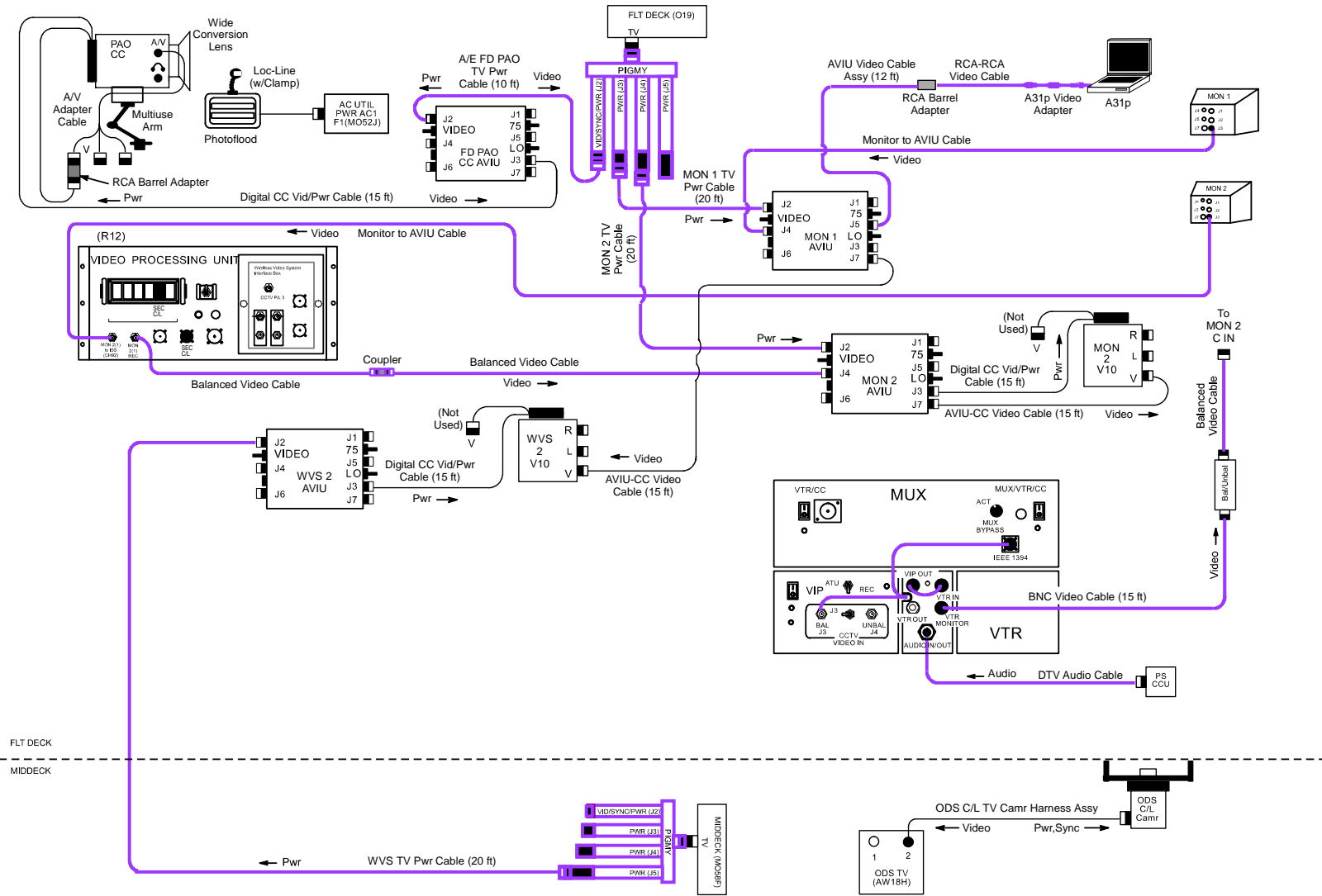
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P/TV02 DOCK

P/TV02 DOCK

H/W SUMMARY



jsc48037_115_002r3.cvx

P/TV02 DOCK (Continued)

SCENE SYNOPSIS

Scene contains procedures for obtaining video, still photos of ISS rndz, docking

QUICK CHECK

V10 (two)		PAO CC	
O19	√TV Pwr – ON	O19	√TV Pwr – ON
R12 (VPU)	√VPU PWR – ON (LED on)	CC	PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK √FOCUS – AUTO
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter	F1 (MO52J)	√AC UTIL PWR AC1 – ON
		Photoflood	ON/OFF – ON
		CC	√Scene composition, focus
C/L Camr		DTV	
C/L Camr	√SSF/STS sw – STS	L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on)
R12 (VPU)	√Green Jumper – SEC C/L √SEC C/L Cap installed √VPU PWR – ON (LED on)	(VIP)	PWR – on (LED on)
		(VTR)	√ON/STBY LED – green √Tape installed
L12 (SSP 2)	C/L CAM PWR – SEC ON	MON 2	SOURCE – C

P/TV02 DOCK (Continued)

SETUP

1. Perform V10 FROM MON 1 FOR DOCK/UNDOCK (SONY V10)
2. Perform V10 FROM MON 2 (SONY V10)
3. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
4. Perform CCTV CONFIG FOR DOCKING/UNDOCKING (RNDZ, RNDZ TOOLS)
5. Perform SETUP (DTV)
6. Perform ANALOG PAO CC (SONY PD100)
7. ✓C/L CAMR INSTALL (CENTERLINE CAMR) performed
8. Perform F5 PROGRAM w/FLASH (NIKON F5)
9. Perform 760 SHUTTER PRIORITY (DCS 760)
10. Perform 760 PROGRAM w/FLASH (DCS 760)

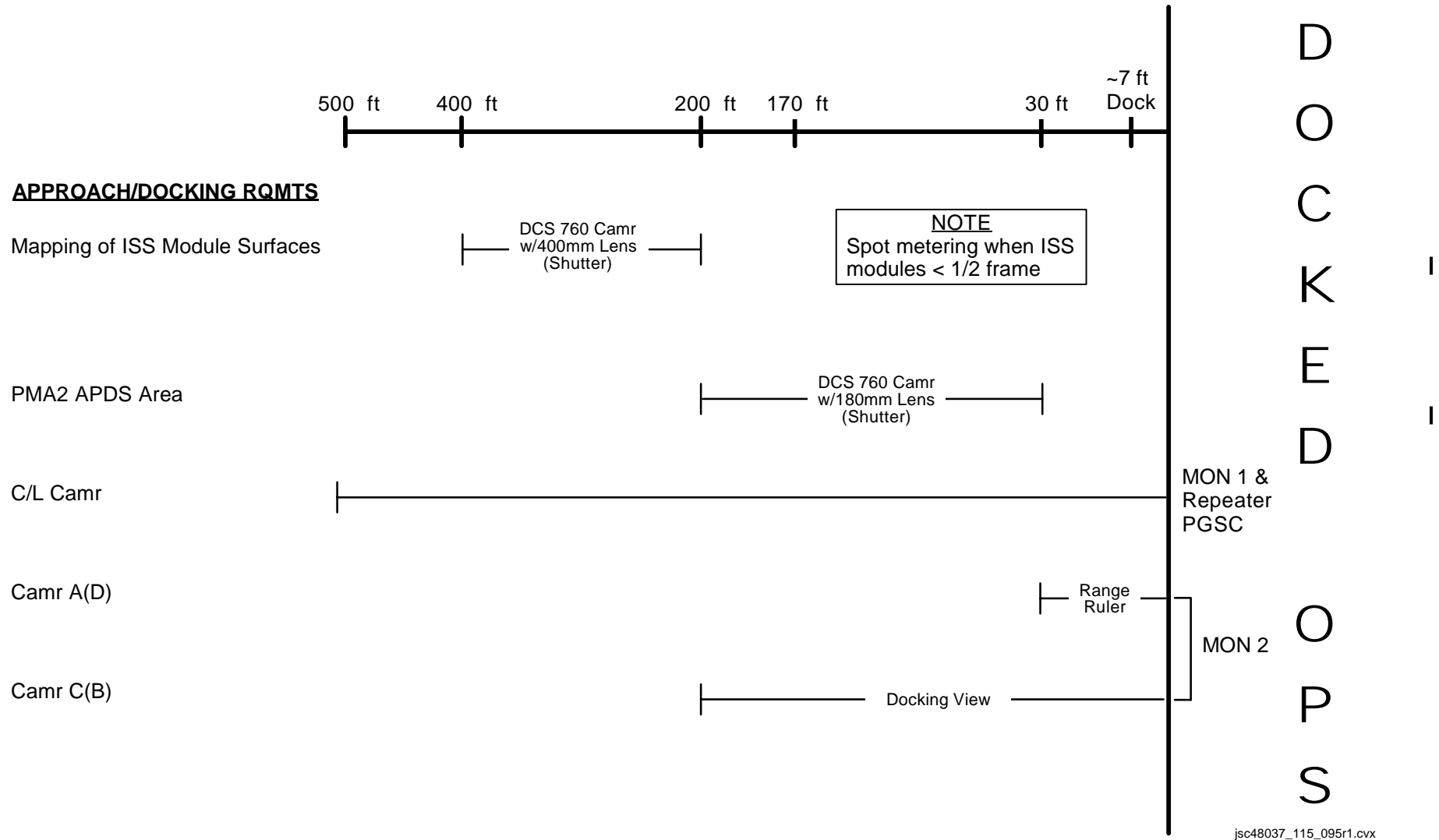
P/TV02 DOCK (Continued)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-12	PAO COVERAGE	<u>F5</u> 28-70mm ISO 160 CNeg If exterior: Flash ON/OFF – OFF	<u>760</u> 28-70mm If exterior: Flash ON/OFF – OFF	As desired	<u>PD100</u> Tape installed	LIVE (If avail)	Plan for end of day crew choice video,DCS
	2. 12A-5	RENDEZVOUS <ul style="list-style-type: none"> • Overall • Closeup • Damage • Deterioration 		<u>760 (Shutter)</u> 400mm(180mm) Flash ON/OFF – OFF	<u>A(B,C,D),ELB</u>	<u>PD100</u> As desired		Map ISS surfaces w/10% overlap
	3. 12A-6	DOCK <ul style="list-style-type: none"> • Docking Targets • Mating Surfaces • Planar, Hemispherical Retroreflector 		<u>760 (Shutter)</u> 400mm(180mm) Flash ON/OFF – OFF	<u>C/L</u> Per RNDZ <u>A(D)</u> Per RNDZ <u>C(B)</u> Docking view	<u>PD100</u> As desired		Rcd video thru hard dock Continually √focus sharpness

P/TV02 DOCK (Continued)

OPS (Continued)



P/TV02 DOCK (Concluded)

OPS (Concluded)

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

1. 35mm F5
√Flash ON/OFF – ON
2. DCS 760
Pwr – OFF
Flash ON/OFF – ON
Start batt recharge as reqd
3. TV System
R12 (VPU) √Green Jumper – SEC C/L
√SEC C/L Cap installed
A7 √VPU PWR – ON (LED on)
VID OUT MON 1 pb – push
IN PL2(VPU) pb – push
L12 (SSP 2) CAMR CMD IRIS – CL
C/L CAM PWR – OFF
ODS Remove, stow C/L Camr, Harness Assy, Bridge
Go to DEACTIVATION (Cue Card, TV) as reqd

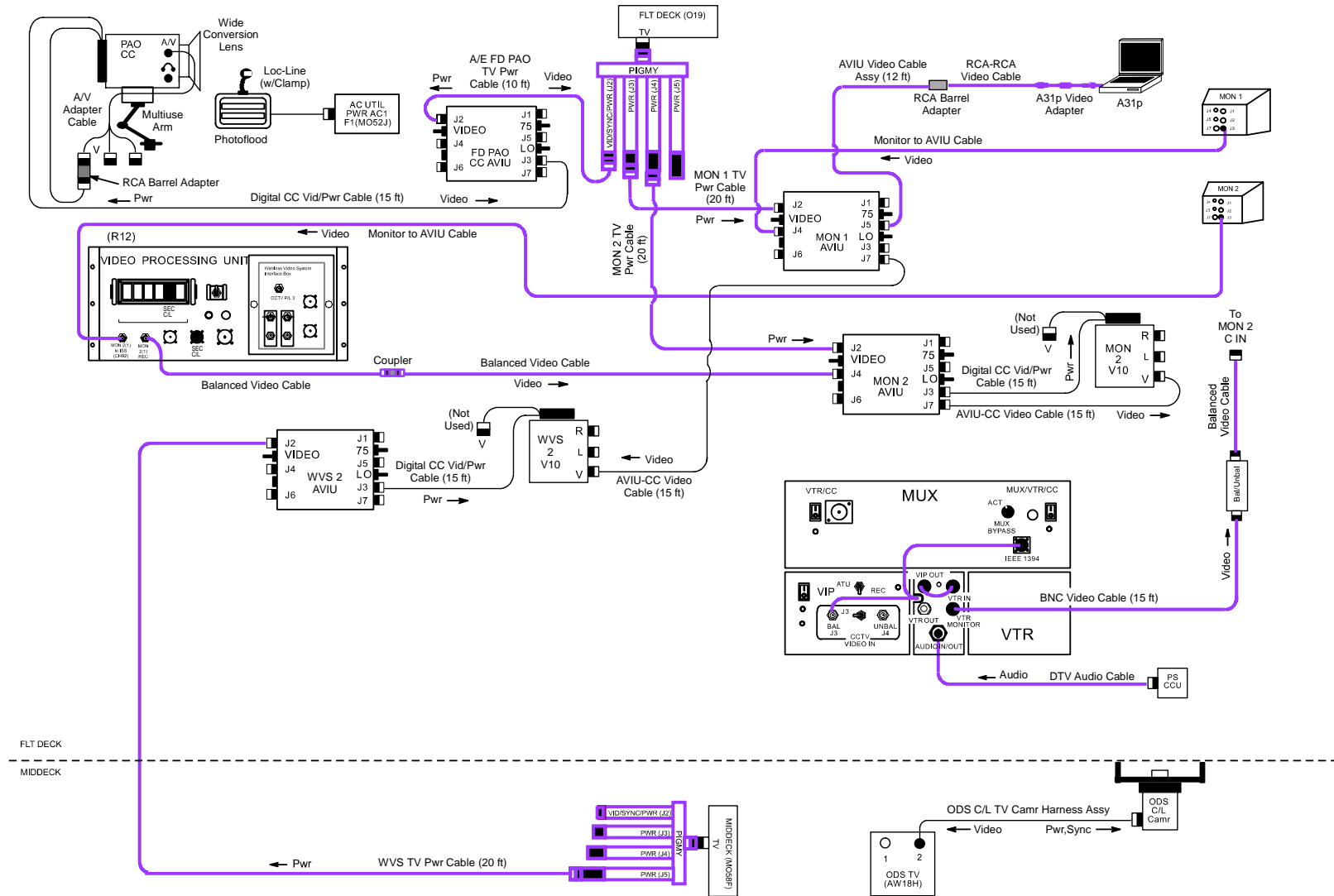
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P/TV03 UNDOCK

P/TV03 UNDOCK

H/W SUMMARY



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P/TV03 UNDOCK (Continued)

SCENE SYNOPSIS

Scene contains procedures for obtaining video, still photos of ISS undocking, flyaround

QUICK CHECK

V10 (two)		PAO CC	
O19	√TV Pwr – ON	O19	√TV Pwr – ON
R12 (VPU)	√VPU PWR – ON (LED on)	CC	PWR – CAMERA Tape – Install
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter		√Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK √FOCUS – AUTO
		F1(MO52J)	√AC UTIL PWR AC1 – ON
		Photoflood	ON/OFF – ON
		CC	√Scene composition, focus
C/L Camr		DTV	
C/L Camr	√SSF/STS sw – STS	L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on)
R12 (VPU)	√Green Jumper – SEC C/L √SEC C/L Cap installed √VPU PWR – ON (LED on)	(VIP)	PWR – on (LED on)
		(VTR)	√ON/STBY LED – green √Tape installed
L12 (SSP 2)	C/L CAM PWR – SEC ON	MON 2	SOURCE – C

P/TV03 UNDOCK (Continued)

SETUP

1. Perform V10 FROM MON 1 FOR DOCK/UNDOCK (SONY V10)
2. Perform V10 FROM MON 2 (SONY V10)
3. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
4. Perform CCTV CONFIG FOR DOCKING/UNDOCKING (RNDZ, RNDZ TOOLS)
5. Zero PTU Angles (If not previously set up by MCC)

A7

Perform ILLUMINATOR OPS (Cue Card, TV) for ELB Camr

VID OUT MON 1(2) pb – push

IN RMS pb – push

CAMR CMD ZOOM – Full zoom out

PAN,TILT – Center Wrist Base in FOV per dwg at right

ZOOM – Full zoom in

PAN/TILT – LO RATE

PAN,TILT – Refine placement of Wrist Base in FOV per dwg at right

PAN/TILT – RESET

If Daylight Undock:

Perform ILLUMINATOR OPS (Cue Card, TV) for Camr C

VID OUT MON 1(2) pb – push

IN C pb – push

CAMR CMD ZOOM – Full zoom out

PAN,TILT – Center Camr D in FOV

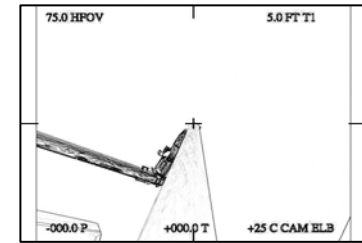
ZOOM – Full zoom in

PAN/TILT – LO RATE

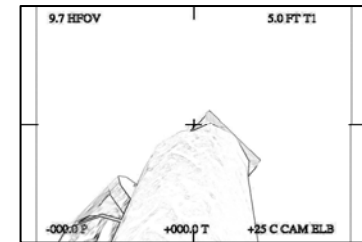
PAN,TILT – Refine placement of Camr D in FOV

PAN/TILT – RESET

6. Perform SETUP (DTV)
7. Perform ANALOG PAO CC (SONY PD100)
8. ✓C/L CAMR INSTALL (CENTERLINE CAMR), steps 1,2
9. Perform F5 PROGRAM w/FLASH (NIKON F5)
10. Perform F5 SHUTTER PRIORITY (DCS 760)
11. Perform 760 PROGRAM w/FLASH (DCS 760)



ELB Zoomed Out



ELB Zoomed In

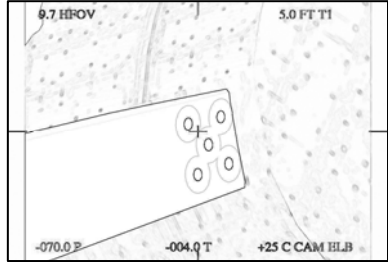
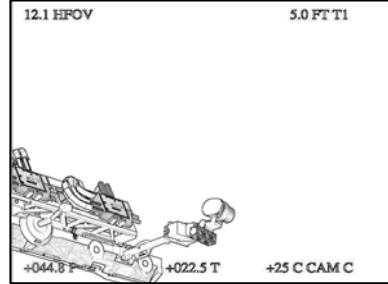
P/TV03 UNDOCK (Continued)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-12	PAO COVERAGE	<u>F5</u> 28-70mm ISO 160 CNeg If exterior: Flash ON/OFF – OFF	<u>760</u> 28-70mm If exterior: Flash ON/OFF – OFF	As desired	<u>PD100</u> Tape installed	LIVE (If avail)	Plan for end of day crew choice video,DCS
	2. 12A-8 12A-9	UNDOCK AND FLYAROUND <ul style="list-style-type: none"> • Docking Target • Mating Surfaces • Planar Retroreflector • Surfaces • Solar Panels • Handrails • SVS Targets • MISSE • SM Thrusters • S0,S1,P1,P6 Truss • Trusses including rads/baseplates and SAWs (In/Outbd SABB insulation degradation) • Plasma arching on amodized surfaces in velocity vector 		<u>760 (Shutter)</u> 180mm(400mm) Flash ON/OFF – OFF	A(D) Per RNDZ C/L Docking tgt & PAO view			Map ISS surfaces w/10% overlap

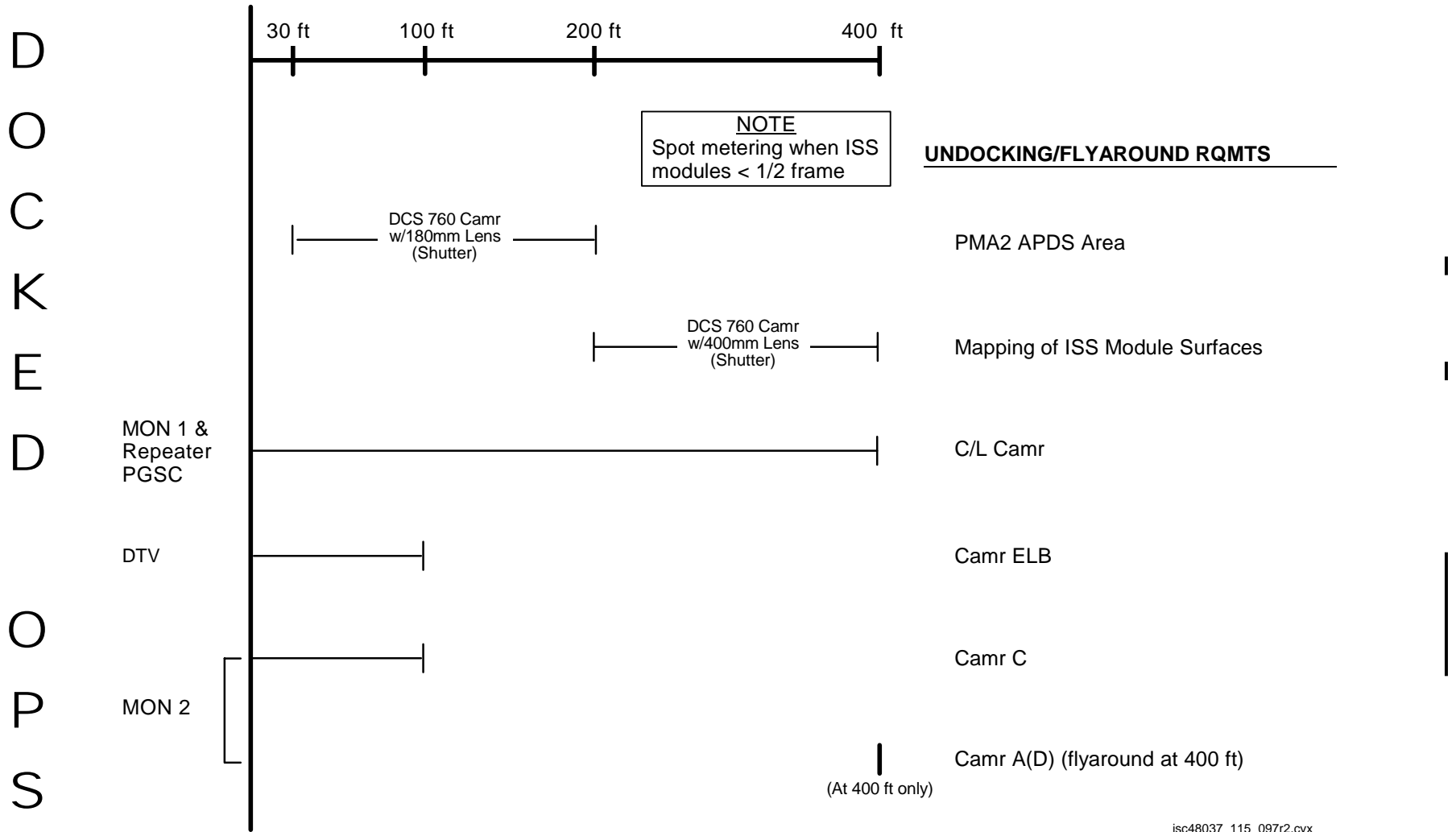
P/TV03 UNDOCK (Continued)

OPS (Continued)

√	Item # Track #	Rqmts	Still Imagery		Video			Notes	
			35mm	DCS	PLB	CC	Dnlk		
	3. 12A-7	P6 Solar Array and SRMS/OBSS Motion During Undock			<p>√ELB Illuminator on</p> <p>ELB</p> <p>PAN: -70.0° TILT: -4.0° FOV: 9.7°</p> <p>Actual FOV: _____</p> <ul style="list-style-type: none"> • Frame FOV as shown • Focus on SVS targets 				<p>Gnd will set up Camr view if Ku avail</p> <p>Begin recording at least 5 min prior to undock</p> <p>During undock, do not adjust Camr pan(tilt). Allow P6 SAW to leave FOV</p> <p>Record until undock + 8 min. When SAW leaves FOV, recording no longer needed</p>
				<p>If Daylight undock:</p> <p>C</p> <p>PAN: 44.8° TILT: 22.5° FOV: 12.1°</p> <p>Actual FOV: _____</p> <ul style="list-style-type: none"> • Frame FOV as shown • Focus on end of Truss • Stbd SAW tip will be in center of FOV ~3 min after undock 					

P/TV03 UNDOCK (Continued)

OPS (Continued)



P/TV03 UNDOCK (Concluded)

OPS (Concluded)

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

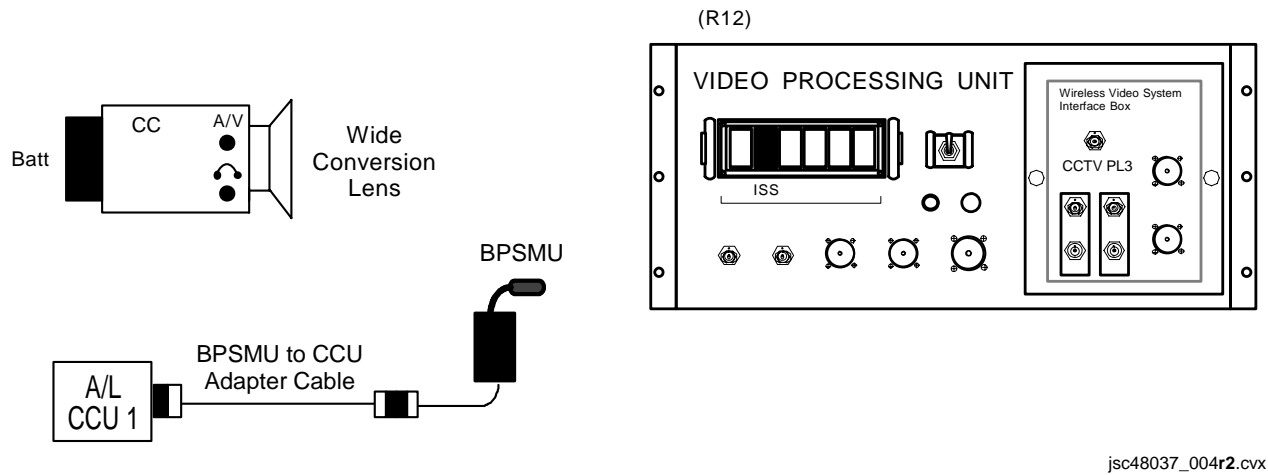
1. 35mm F5
√Flash ON/OFF – ON
2. DCS 760
Pwr – OFF
Flash ON/OFF – ON
Start batt recharge as reqd
3. TV System
R12 (VPU) √Green Jumper – SEC C/L
√SEC C/L Cap installed
A7 √VPU PWR – ON (LED on)
VID OUT MON 1 pb – push
IN PL2(VPU) pb – push
L12 (SSP 2) CAMR CMD IRIS – CL
C/L CAM PWR – OFF
ODS Remove, stow C/L Camr, Harness Assy
Mark first MON 2 tape as “P3/P4 During Undock”
Go to DEACTIVATION (Cue Card, TV) as reqd

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P/TV04 INGRESS/EGRESS

H/W SUMMARY

INGRESS TV CONFIG



P/TV04 INGRESS/EGRESS (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS ingress/egress w/video and still photos

QUICK CHECK

INGRESS CC	
CC	√Batt installed PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK √FOCUS – AUTO √Scene composition, focus
R12 (VPU)	√Green Jumper – ISS √VPU PWR – ON (LED on)

SETUP

1. Config ISS Video
Perform ACTIVATION (Cue Card, TV) for DNLK OPS of ISS signal
R12 (VPU) Green Jumper – ISS
√VPU pwr – ON (LED on)
A7 VID OUT DNLK pb – push
IN PL2(VPU) pb – push
2. Perform Handheld CC SETUP
A17 Acquire two batts, one for CC and one spare
CC Batt Install
PWR – CAMERA
Tape – Install
√Viewfinder (LCD) displays STBY
Camr Settings
√AUTO LOCK – AUTO LOCK
√FOCUS – AUTO
√Audio Muting Plug removed

P/TV04 INGRESS/EGRESS (Concluded)

SETUP (Concluded)

3. Relocate BPSMU w/BPSMU to CCU Adapter Cable to A/L CCU 1
4. Perform F5 PROGRAM w/FLASH (NIKON F5)
5. Perform 760 PROGRAM w/FLASH (DCS 760)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-12	Hatch Opening/Closing, Ingress/Egress	<u>F5</u> 28mm ISO 160	<u>760</u> 28-70mm		<u>PD100</u>	LIVE (if avail)	

If OPS temporarily suspended, perform DEACTIVATION as reqd
 If OPS completed, go to DEACTIVATION

DEACTIVATION

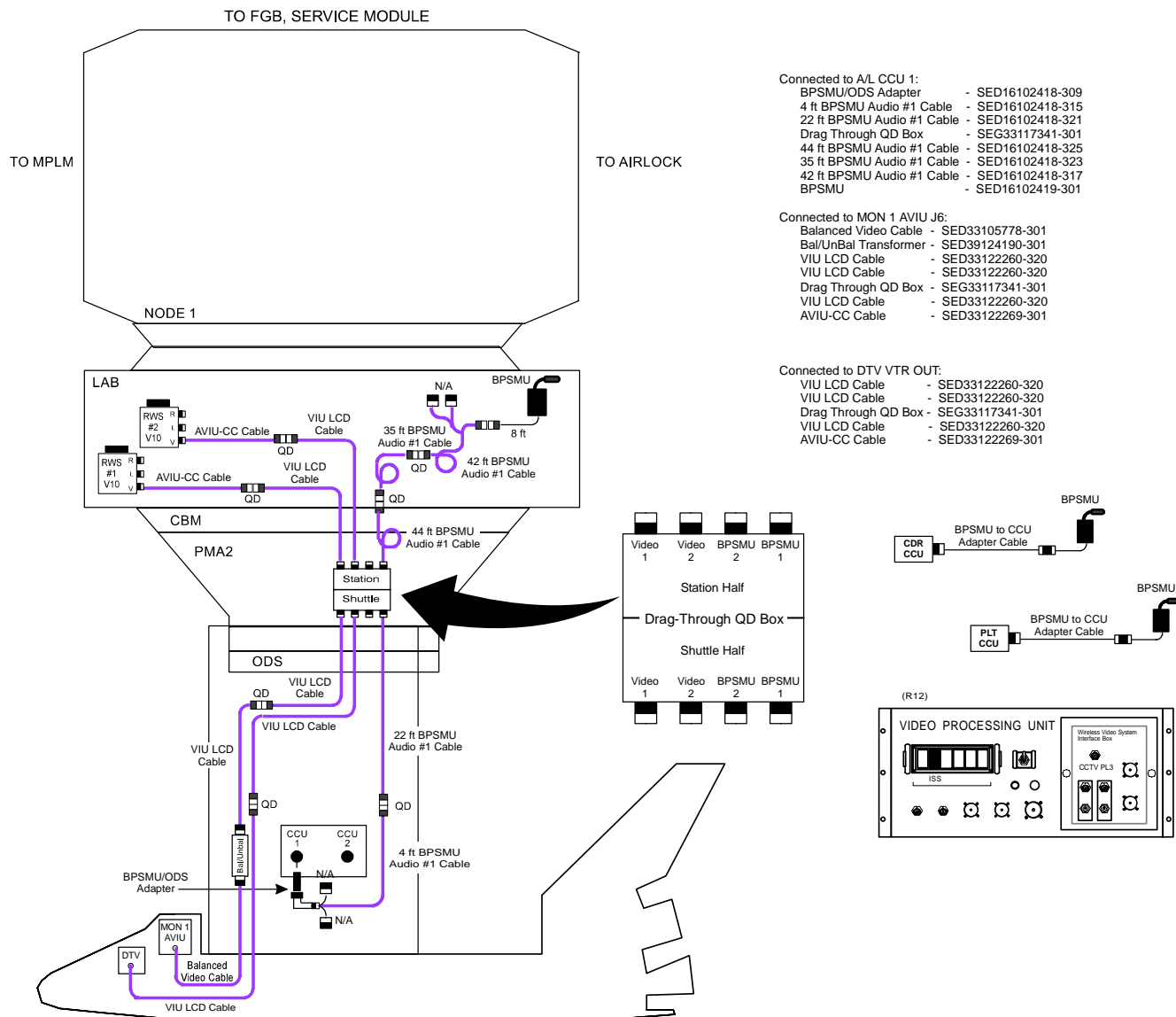
WARNING
 When photo/TV cables not in continuous use, disconnect all QDs except BPSMU
 and restrain cable ends at hatches to prevent cable impairment to hatch closure

1. DCS 760
 Pwr – OFF
 Start batt recharge as reqd
2. TV System
 Go to DEACTIVATION (Cue Card, TV) as reqd

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P/TV05 ISS INTERNAL OPS

H/W SUMMARY



- Connected to AL CCU 1:
- BPSMU/ODS Adapter - SED16102418-309
 - 4 ft BPSMU Audio #1 Cable - SED16102418-315
 - 22 ft BPSMU Audio #1 Cable - SED16102418-321
 - Drag Through QD Box - SEG33117341-301
 - 44 ft BPSMU Audio #1 Cable - SED16102418-325
 - 35 ft BPSMU Audio #1 Cable - SED16102418-323
 - 42 ft BPSMU Audio #1 Cable - SED16102418-317
 - BPSMU - SED16102419-301

- Connected to MON 1 AVIU J6:
- Balanced Video Cable - SED33105778-301
 - Bal/UnBal Transformer - SED39124190-301
 - VIU LCD Cable - SED33122260-320
 - VIU LCD Cable - SED33122260-320
 - Drag Through QD Box - SEG33117341-301
 - VIU LCD Cable - SED33122260-320
 - AVIU-CC Cable - SED33122269-301

- Connected to DTV VTR OUT:
- VIU LCD Cable - SED33122260-320
 - VIU LCD Cable - SED33122260-320
 - Drag Through QD Box - SEG33117341-301
 - VIU LCD Cable - SED33122260-320
 - AVIU-CC Cable - SED33122269-301

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P/TV05 ISS INTERNAL OPS (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS internal ops (ingress, surveys, PAO events, logistics transfers, closeout, egress) w/video,still photos

SETUP

WARNING

Locate QDs at hatches for ease in locating,disconnecting during hatch closure.
Route,restrain cables to prevent loose cable lengths which could entrap crew

- R12 (VPU)
1. √BPSMU AUDIO ONLY (BPSMU) completed
 2. For PAO Live Dnlk Event:
Green Jumper – ISS
√VPU PWR – ON (LED on)
Perform ACTIVATION,OPERATION (Cue Card, TV) for DNLK OPS of ISS CC via PL2(VPU)
 3. Relocate BPSMU w/BPSMU to CCU Adapter Cable to CDR CCU, PLT CCU (two)
 4. Perform F5 PROGRAM w/FLASH (NIKON F5)
 5. Perform 760 PROGRAM w/FLASH (DCS 760)

P/TV05 ISS INTERNAL OPS (Concluded)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-12	GENERAL ISS IVA ACTIVITY <ul style="list-style-type: none"> • PAO Scenes of Interest • Crew Photo 	<u>F5</u> 28mm ISO 160 Cneg For Crew Photo: Perform F5 CREW PHOTO (SETUP, NIKON F5)	<u>760</u> 28-70mm For Crew Photo: Perform 760 CREW PHOTO (SETUP, DCS 760)		<u>ISS PD100</u>	LIVE (if avail)	Plan for end of day crew choice video, DCS

If OPS temporarily suspended, perform DEACTIVATION as reqd
 If OPS completed, go to DEACTIVATION

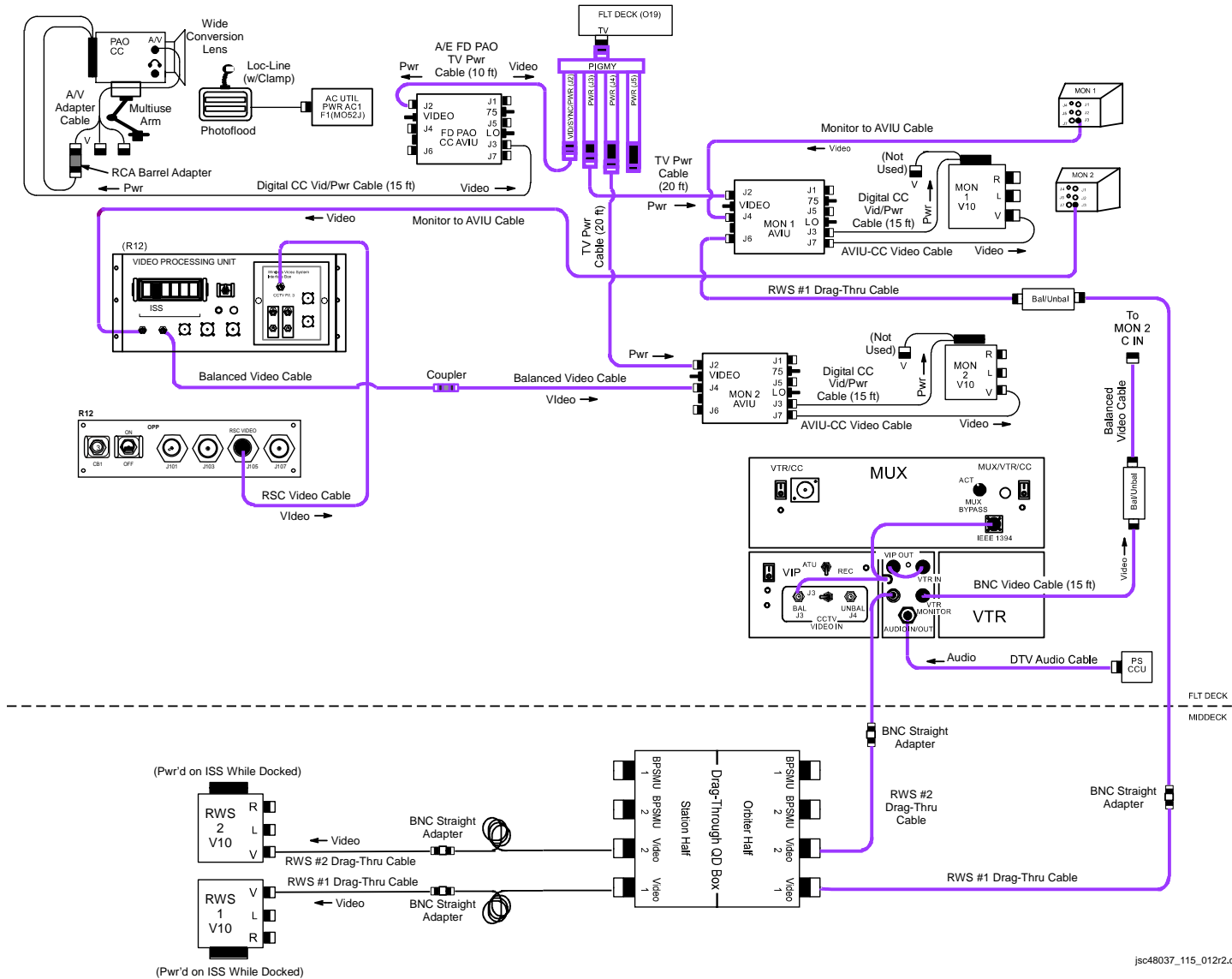
DEACTIVATION

1. DCS 760
Pwr – OFF
Start batt recharge as reqd

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P/TV06 P3/P4 INSTALLATION

H/W SUMMARY



P/TV06 P3/P4 INSTALLATION (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS RMS-assisted Assembly Ops w/video, still photos

QUICK CHECK

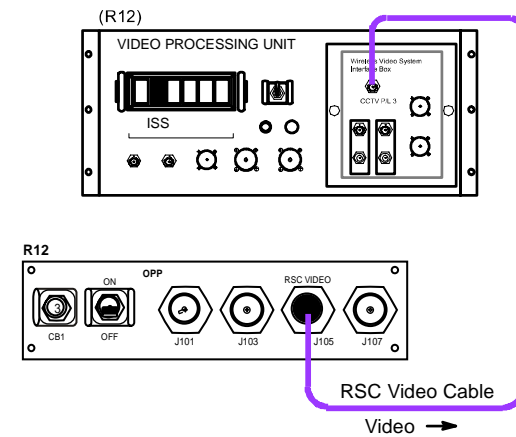
V10 (two)		PAO CC	
O19	√TV Pwr – ON	O19	√TV Pwr – ON
R12 (VPU)	√VPU PWR – ON (LED on)	CC	PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK √FOCUS – AUTO
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter	F1(MO52J)	√AC UTIL PWR AC1 – ON
		Photoflood	ON/OFF – ON
		CC	√Scene composition, focus
RSC Camr		DTV	
R12 (OBSS)	√RSC PWR – ON √RSC Video Cable connected between R12/OPP- RSC Video and R12/VPU-CCTV PL 3	L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on) PWR – on (LED on) √ON/STBY LED – green √Tape installed
		(VIP)	
		(VTR)	
		MON 2	SOURCE – C

P/TV06 P3/P4 INSTALLATION (Continued)

SETUP

1. Perform V10 FROM MON 1 (SONY V10)
2. Perform V10 FROM MON 2 (SONY V10)
3. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
4. Perform SETUP (DTV)
5. Config RSC Camr, ISS
 - √RSC Video Cable connected to WIB PL3 per dwg at right
 - √cb OBSS SW PWR – cl
 - √OBSS SW PWR – ON
 - √RSC PWR – ON
 - √Green Jumper – ISS
 - √VPU PWR – ON (LED on)
6. Perform ANALOG PAO CC (SONY PD100)
7. Perform RWS V10 FROM MON 1 (SONY V10)
8. Perform RWS V10 FROM DTV (SONY V10)
9. √BPSMU w/BPSMU to CCU Adapter Cable connected to CDR CCU

R12 (OPP)
(OBSS)
(VPU)



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P/TV06 P3/P4 INSTALLATION (Concluded)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-13	P3/P4 Unberth/Mnvr <ul style="list-style-type: none"> • Release of P3/P4 attach points • SRMS pre-grapple posn 			Per SODF: RBT FS		LIVE (if avail)	
	2. 12A-14	P3/P4 Installation <ul style="list-style-type: none"> • P3/P4 Installation to installed P1 • Handoff SRMS to SSRMS 			Per SODF: RBT FS		LIVE (if avail)	

If operations temporarily suspended, perform DEACTIVATION as reqd
 If operations completed, go to DEACTIVATION

DEACTIVATION

1. TV System
 Go to DEACTIVATION (Cue Card, TV) as reqd

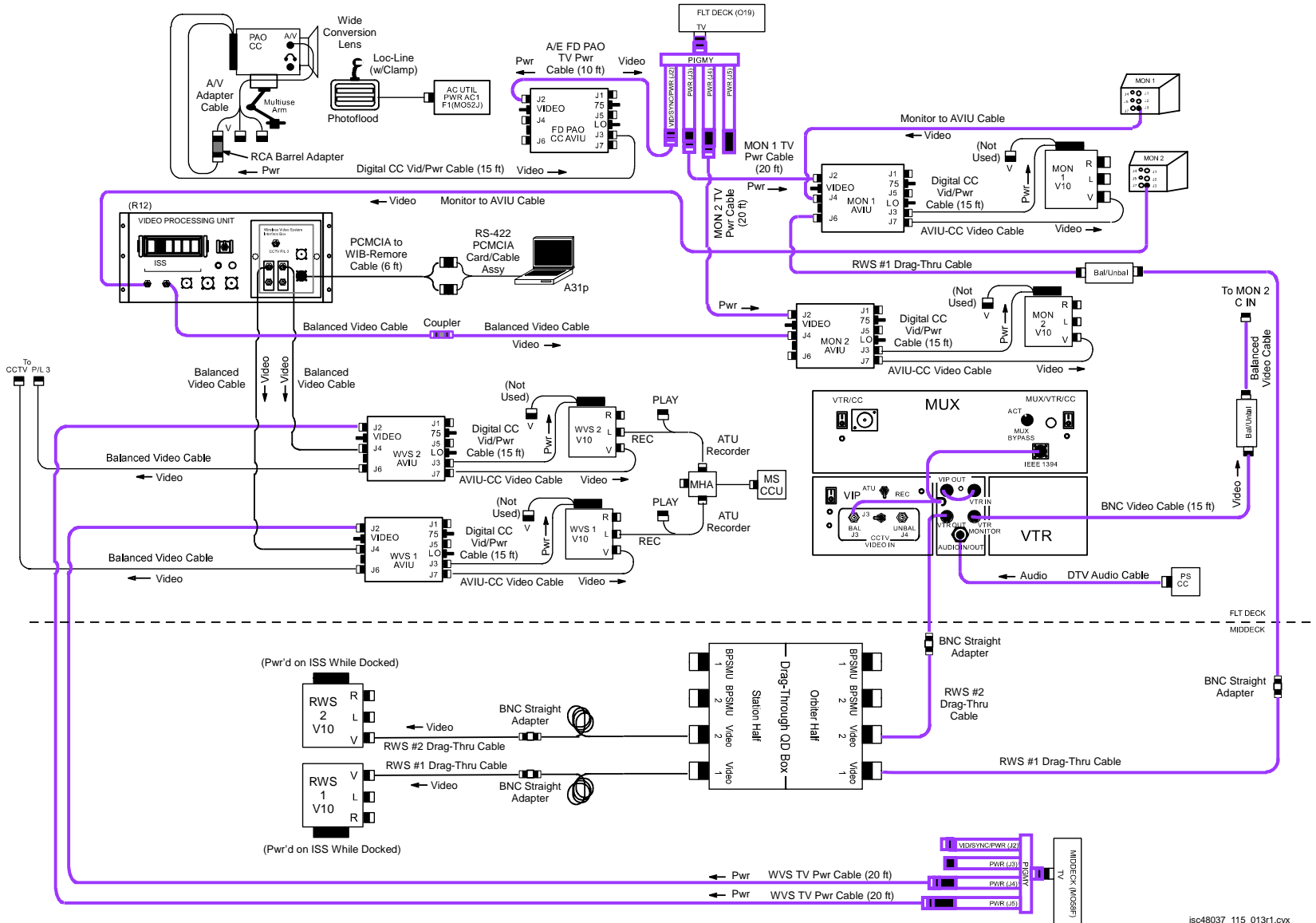
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P/TV07 EVA

H/W SUMMARY



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P/TV07 EVA (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS EVA and IVA ops w/video, still photos

QUICK CHECK

Shuttle V10 (four)		PAO CC	
O19,MO58F	√TV Pwr – ON	O19	√TV Pwr – ON
R12 (VPU)	√VPU PWR – ON (LED on)	CC	PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK √FOCUS – AUTO
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter	F1(MO52J)	√AC UTIL PWR AC1 – ON
		Photoflood	ON/OFF – ON
		CC	√Scene composition, focus
DTV		WVS	
L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on)	A7	√WIRELESS VID HTR – ON PWR – ON
(VIP)	PWR – on (LED on)		
(VTR)	√ON/STBY LED – green √Tape installed		
MON 2	SOURCE – C		

P/TV07 EVA (Continued)

SETUP

1. Perform V10 FROM MON 1 (SONY V10)
2. Perform V10 FROM MON 2 (SONY V10)
3. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
4. Perform SETUP (DTV)
5. Perform ANALOG PAO CC (SONY PD100) for PAO CC (O19)
6. Perform RWS V10 FROM DTV (SONY V10)
7. Perform RWS V10 FROM MON 1 (SONY V10)
8. Config WVS and PGSC
√WVS INITIAL SETUP w/o ERCAs (WVS), steps 1,2 performed
Perform WVS DAY-OF-EVA CHECK (WVS)
9. Perform F5 PROGRAM w/FLASH (NIKON F5)
10. √760 EVA – CAMR ONLY performed (DCS 760 EVA)
11. Perform 760 PROGRAM w/FLASH (DCS 760)

P/TV07 EVA (Continued)

SETUP (Concluded)

- R12 (VPU) 12. Config ISS Video
Green Jumper – ISS
√VPU PWR – ON (LED on)

- R12 (VPU) 13. For EVA 3, Config LDRI/ITVC Video (as reqd)
Green Jumper – LDRI/ITVC
√VPU PWR – ON (LED on)
- (OPP) √cb OBSS SW PWR – cl
- (OBSS) √OBSS SW PWR – ON
√SPEE PWR – ON
ITVC ENA - ON
- A7 VID OUT MON 1(2) pb – push
IN PL2(VPU) pb – PUSH
- R12 (OBSS) If MAN GAIN pb not illuminated:
ITVC ENA – OFF, wait 10 sec, ON
Repeat until MAN GAIN illuminated
- A7 LT LEVEL pb – push
DAY(NIGHT) pb – push
ALC pb – push
AVG pb – push
- MON 1(2) √ITVC Video displayed

OPS

EVA 1								
√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1. 12A-12	PAO Coverage	F5 28-70mm ISO 160 CNeg If exterior: Flash ON/OFF – OFF	IVA 760 28-70mm If exterior: Flash ON/OFF – OFF	As desired	PD100 As desired	LIVE (if avail)	Plan for end of day crew choice video,DCS stills

P/TV07 EVA (Continued)

OPS (Continued)

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	2. 12A-15 12A-20	<u>Obtain Video of the Following Tasks:</u> <ul style="list-style-type: none"> • Connect P3 to P1 upper tray utilities • Close CID S0-4B • Release upper,lower SAAB-to-IEA Restraints • Rotate P4 keel pin • Release upper,lower Beta gimbal restraints and SABBs • Verify 4-bar locking strut assembly trigger cups/latches properly engaged after 4-bar deploy • Confirm both SABBs fully unlatched and all seven BRS pins for each blanket released • Deploy SARJ DLAs • Connect P3 to P1 lower tray utilities • Close CID S0-2B • Swing open MLI cover latch assemblies on covers (spring clamp bolts) • Imagery of each port SARJ DLA after DLA commanded to "engaged" posn and prior to MLI re-install • Remove SARJ launch restraints • Remove SARJ launch locks • Imagery of each port SARJ trundle bearing and surrounding race ring area after launch lock removal • Remove, stow P3 keel pin and drag link 			<u>WVS</u>		LIVE (if avail)	

P/TV07 EVA (Continued)

OPS (Continued)

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	2. 12A-15 12A-20	<u>Obtain Video of the Following Tasks:</u> (Concluded) <ul style="list-style-type: none"> • Release PV radiator cinches • Rigidize P3/P4 AJIS struts • Deploy P3 SARJ brace beams • Install MT temp rail stop • Rotate P1,P3 MT stop • Rotate tether shuttle stop • Remove P3 SVS Target (P3-E8) from Face 1 • Release P4 PVR winch • R&R stbd S-Band BSP and transponder • CID 6,8 removal • Activities associated w/EVA Get-Ahead items • Remove P3 RPDA Covers • Perform CMG RPCM R&R • Perform CMG RPCM patch pnl reconfig • Retrieve MISSE 5 • Engage P6 BGA Hinge Lock • P6 BGA Shoulder Bolt Retainer Install (x8) • Install EWIS antennas,cable on U.S. Lab • Release P4 IEA MMOD Shield Bolt torques • Realign rails by adjusting SARJ launch restraints • EWIS External antennas 			WVS		LIVE (if avail)	EVA DCS 760 images preferred; WVS secondary

P/TV07 EVA (Concluded)

OPS (Concluded)

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

1. 35mm F5
√Flash ON/OFF – ON
2. EVA DCS 760
If between EVAs, perform 760 EVA – CAMR ONLY DISASSEMBLY, BETWEEN EVAs (DCS 760 EVA)
If EVAs completed, perform 760 EVA – CAMR ONLY DISASSEMBLY, POST-EVA (DCS 760 EVA)
3. IVA DCS 760
Pwr – OFF
√Flash ON/OFF – ON
Download images
Start batt recharge as reqd
4. TV System
Perform PWRDN (Cue Card, WVS)
Go to DEACTIVATION (Cue Card, TV) as reqd

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**P/TV08
EXT SURVEY**

P/TV08 EXTERNAL SURVEY

SCENE SYNOPSIS

Scene contains procedures for documenting ISS external structures w/still photos

SETUP

1. 760 Camr Configuration
If Sunlit OMS Pod Survey, config 760 Manual
 - 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 – M
 - SS – 1000
 - AF Area Mode – [] (no “+”)
 - Meter – Matrix
 - Diopter – Adjust
 - Film Adv – S
 - Body Focus Mode – S
 - Lens Focus Mode – A(M/A)
 - Aperture – Min,locked
 - f/stop – F8
 - Flash Settings
 - ON/OFF – OFF

~

P/TV08 EXTERNAL SURVEY (Continued)

SETUP (Concluded)

1. 760 Camr Configuration (Concluded)


~
|
If Earthshine OMS Pod Survey, config 760 Program
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 – [] (no “+”)
Meter – Spot
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A(M/A)
Aperture – Min,locked
Flash Settings
ON/OFF – OFF

2. Perform F5 SHUTTER PRIORITY (NIKON F5)

3. Perform 760 SHUTTER PRIORITY (DCS 760)

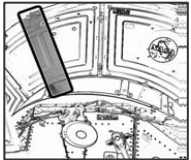
P/TV08 EXTERNAL SURVEY (Continued)

OPS

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnlk	
	1.	<u>OMS Pod Survey</u> <ul style="list-style-type: none"> • 50 percent mapping of both OMS pods and vertical stabilizer w/emphasis on Black Tile areas 		<u>760</u> 180mm(400mm)				Download images to OMS POD folder on KFX once complete
	2. 12A-21	<u>P3/P4 Visual Inspection</u> <ul style="list-style-type: none"> • All exposed sides • Closeups of: <ul style="list-style-type: none"> – P3 mating H/W – Thermal blankets – SVS targets 		<u>760</u> 50mm(180mm)	<u>A,B,C,D,ELB</u>	<u>PD100</u>		

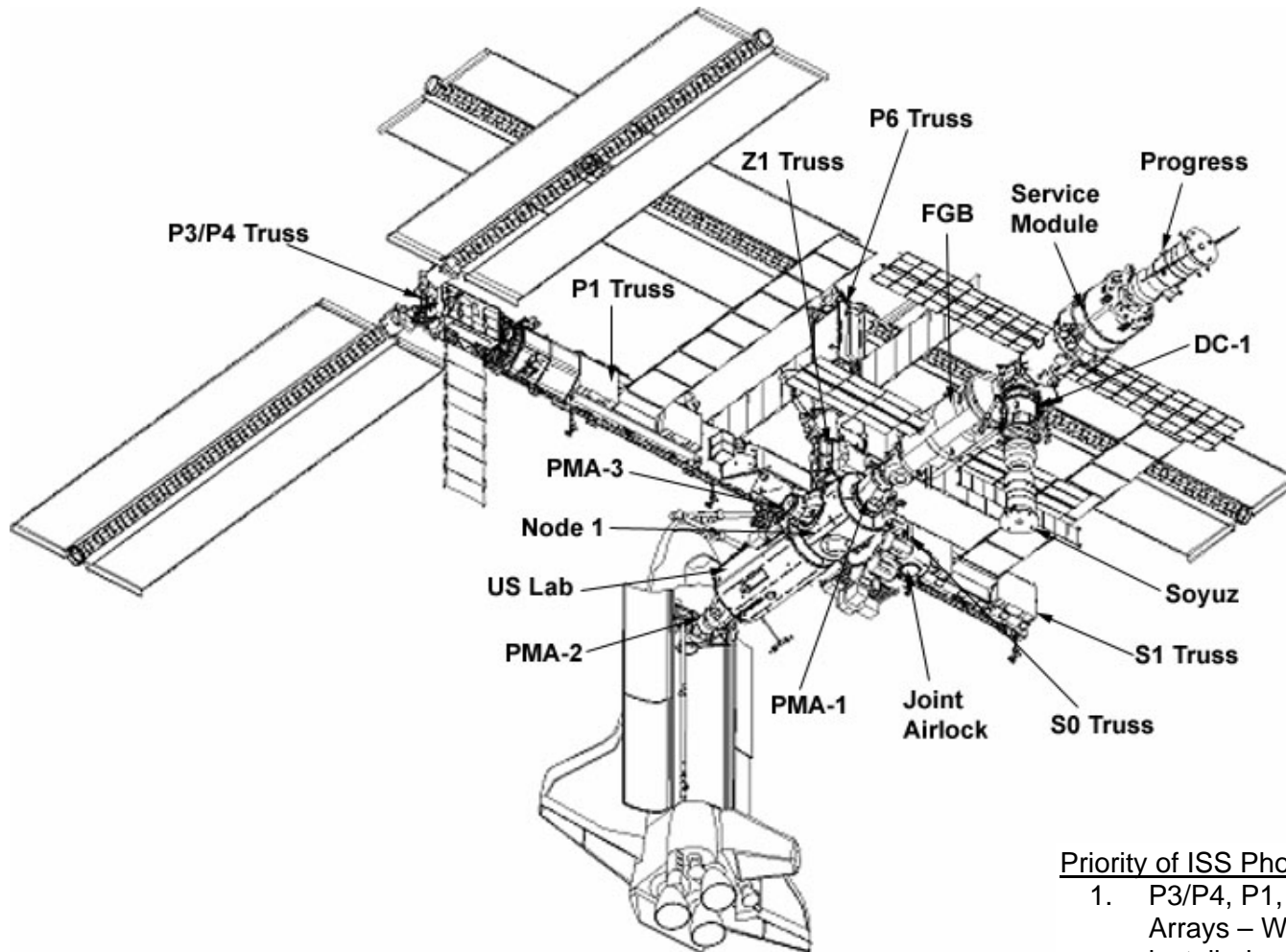
P/TV08 EXTERNAL SURVEY (Continued)

OPS (Continued)

√	Item # Track #	Rqmts	Still Imagery		Video			Notes
			35mm	DCS	PLB	CC	Dnk	
	3. 12A-9 12A-19 12A-20	<u>ISS Still Survey</u> <ul style="list-style-type: none"> • Surfaces • Solar Panels • Handrails • SVS Targets • ESP2 • MISSE • Plasma Arcing on ISS Anodized Surfaces in Velocity Vector • SM Thrusters -zenith side • Trusses including rads/baseplates, SAWs (in/outbd SABB insulation degradation) 	<u>F5</u> 50mm (180mm) ISO 100 CPos	<u>760</u> 50mm(180mm)	<u>A,B,C,D,RMS</u>			Map ISS surfaces w/10% overlap 

P/TV08 EXTERNAL SURVEY (Continued)

OPS (Continued)



Priority of ISS Photographic Targets During Docked Phase:

1. P3/P4, P1, ESP2, Joint Airlock, MISSE 5, S1, Solar Arrays – W1, W6 (special emphasis on newly installed components)
2. P6, S0, Lab – W7,W8
3. PMA2 – W9,W10
4. SVS Targets – All windows
5. P6 Fwd Radiator – Fwd windows

P/TV08 EXTERNAL SURVEY (Concluded)

OPS (Concluded)

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION

DEACTIVATION

1. 35mm F5
Exp Mode – P
Flash ON/OFF – ON

2. DCS 760
Exp Mode – P
PWR – OFF
Flash ON/OFF – ON
Start Batt recharge as reqd

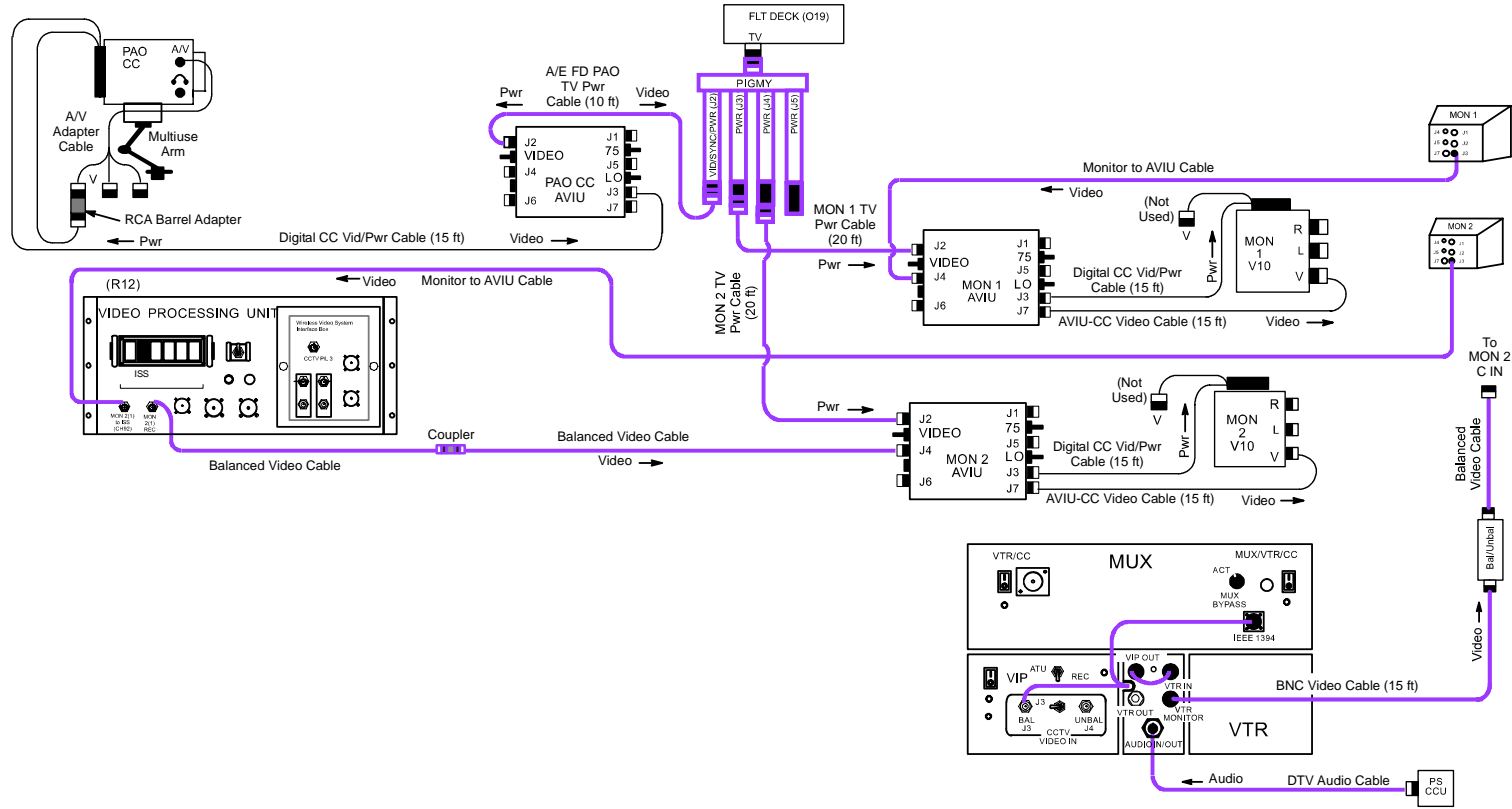
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P/TV09 SAW/PVR

P/TV09 SAW/PVR DEPLOY

H/W SUMMARY



FLT DECK

MIDDECK

jsc48037_115_014r2.cvx

P/TV09 SAW/PVR DEPLOY (Continued)

SCENE SYNOPSIS

Scene contains procedures for recording P4 SAW, PVR Deploys

QUICK CHECK

V10 (two)		DTV	
O19	√TV Pwr – ON	L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on)
R12 (VPU)	√VPU Pwr – ON (LED on)	(VIP)	PWR – on (LED on)
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter	(VTR)	√ON/STBY LED – green √Tape installed
		MON 2	SOURCE – C
PAO CC			
O19	√TV Pwr – ON		
CC	Remove Wide Conversion Lens PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK FOCUS – INFINITY √Scene composition, exposure, focus		

P/TV09 SAW/PVR DEPLOY (Concluded)

DEACTIVATION

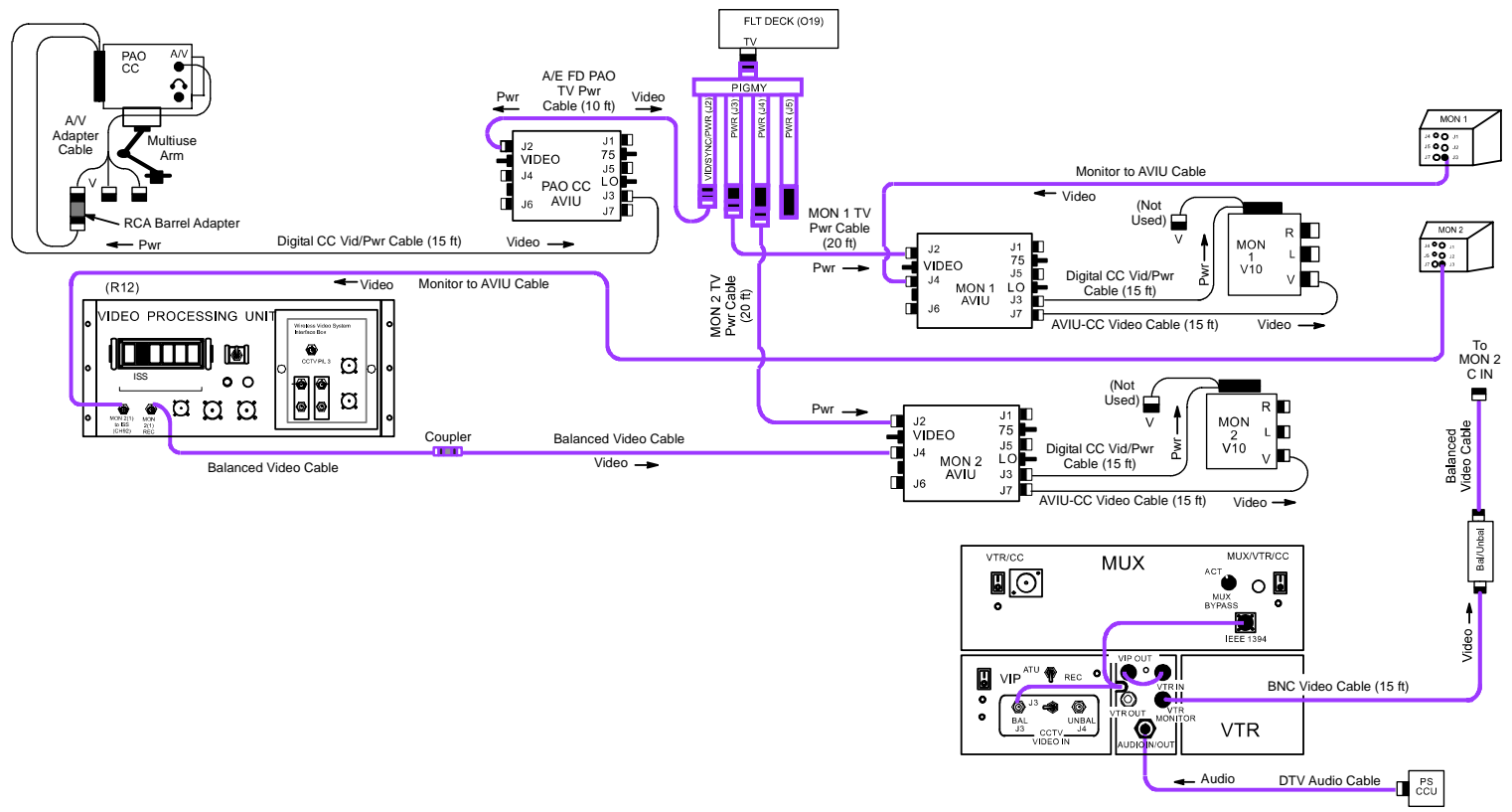
1. PAO CC
Re-install Wide Conversion Lens
2. TV System
Label tapes as "SAW(PVR) DEPLOY"
Go to DEACTIVATION (Cue Card, TV) as reqd

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P/TV10 REBOOST

H/W SUMMARY



FLT DECK
MIDDECK

jsc48037_115_014r2.cvx

P/TV10 REBOOST (Continued)

SCENE SYNOPSIS

Scene contains procedures for recording P4 SAW, P4 TCS Radiator motion during reboost

QUICK CHECK

V10 (two)		DTV	
O19	√TV Pwr – ON	L10 (MUX)	√VTR/CC PWR – on (LED on) If dnk, MUX/VTR/CC PWR – on (LED on)
R12 (VPU)	√VPU Pwr – ON (LED on)	(VIP)	PWR – on (LED on)
V10	PWR – ON Tape – Install DISPLAY pb – Toggle to display tape counter	(VTR)	√ON/STBY LED – green √Tape installed
		MON 2	SOURCE – C
PAO CC			
O19	√TV Pwr – ON		
CC	Remove Wide Conversion Lens PWR – CAMERA Tape – Install √Viewfinder (LCD) displays STBY Camr Settings √AUTO LOCK – AUTO LOCK FOCUS – INFINITY √Scene composition, exposure, focus		

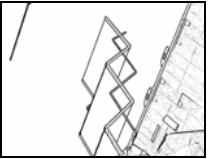
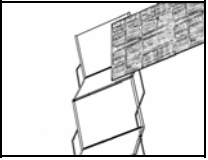
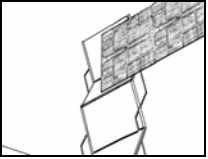
P/TV10 REBOOST (Continued)

SETUP

1. Perform V10 From MON 1 (SONY V10)
2. Perform V10 From MON 2 (SONY V10)
3. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
4. Perform SETUP (DTV)
5. Perform ANALOG PAO CC (SONY PD100), but remove Wide Conversion Lens
6. Config VPU Green Jumper – ISS

P/TV10 REBOOST (Continued)

OPS

√	Item #	Rqmts	Video	Notes
	1. 12A-18	REBOOST • Movement of P4 SAWs TCS Radiators		
	2.	Camr FOV Setup Prior to Test • Frame per values but use pictures for final pan,tilt • Pan/tilt settings approx and assume zeroed, PTU angles • √A,B,C Illuminators – On	<p style="text-align: center;">A</p> <p style="text-align: center;">PAN: 107.8° TILT: 64.5° FOV: 16.0° ± 0.5°</p> <p style="text-align: center;">Actual FOV: _____</p> <hr/> <p style="text-align: center;">B</p> <p style="text-align: center;">PAN: -30.8° TILT: 47.1° FOV: 16.0° ± 0.5°</p> <p style="text-align: center;">Actual FOV: _____</p> <hr/> <p style="text-align: center;">C</p> <p style="text-align: center;">PAN: -36.7° TILT: 44.9° FOV: 16.0° ± 0.5°</p> <p style="text-align: center;">Actual FOV: _____</p>	<p>Frame as shown. Focus on P1 radiator tip</p>  <hr/> <p>Frame as shown. Focus on P1 radiator tip</p>  <hr/> <p>Frame as shown. Focus on P1 radiator tip</p> 

P/TV10 REBOOST (Continued)

OPS (Continued)

√	Item #	Rqmts	Video	Notes
<p><u>NOTE</u> To maintain Time sync, once video recorders started, do not stop tape until test completed</p>				
	3.	Start Recorders (three)	V10 (two) REC pb (two) – push to begin recording √LCD displays RED DOT L10 (VTR) REC pb – push, hold PLAY pb – push, SIMO (RED dot displayed)	
	4.	Route FD CC Video to Recorders (three) and Downlink	VID OUT MON 1 pb – push IN FLT DECK pb – push Frame GMT clock in FD CC FOV using MON 1 VID OUT MON 2 pb – push IN FLT DECK pb – push √GMT clock on MON 2 DTV view of FD CC √GMT clock on V10 LCD (two) VID OUT DNLK pb – push IN FLT DECK pb – push	Rcd at least 10 sec of GMT clock video onto each device Dnlk GMT clock, if comm
	5.	Route Views to Recorders (three) and Downlink	VID OUT MON 1 pb – push IN A pb – push VID OUT MON 2 pb – push IN B pb – push VID OUT DTV pb – push IN C pb – push VID OUT DNLK pb – push IN A pb – push	Rcd views for 35 min or until end of event Gnd may switch dnlk view during test Dnlk view if comm
	6.	Re-route FD CC Video to Recorders (three) and Downlink Before Tape Ends	VID OUT MON 1 pb – push IN MIDDECK pb – push Frame GMT clock in FD CC FOV using MON 1 VID OUT MON 2 pb – push IN FLT DECK pb – push √GMT clock on MON 2 DTV view of FD CC √GMT clock on V10 LCD (two) VID OUT DNLK pb – push IN FLT DECK pb – push	Rcd at least 10 sec of GMT clock video onto each device Dnlk GMT clock, if comm

P/TV10 REBOOST (Concluded)

OPS (Concluded)

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION

DEACTIVATION

1. PAO CC
Re-install Wide Conversion Lens
2. TV System
Label tapes as "REBOOST"
Go to DEACTIVATION (Cue Card, TV) as reqd

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NIKON F5

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NIKON F5

SETUP

F5 PROGRAM w/FLASH

Camr Settings

- Pwr – ON
- √Batt icon full
- √Frame Counter ≥1
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A (M/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 (No M)
- Tilt – Direct

F5 SHUTTER PRIORITY

Camr Settings

- Pwr – ON
- √Batt icon full
- √Frame Counter ≥1
- Exp Comp – 0.0
- Exp Mode – S
- SS – 500
- AF Area Mode – [] (no “+”)

NOTE

- For Docking:
 - Meter – Spot/Matrix
- For Undocking:
 - Meter – Matrix/Spot

Meter – Matrix (Spot when ISS <1/2 frame)

- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A (M/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 – OFF

NIKON F5 (Continued)

SETUP (Continued)

F5 SHUTTER PRIORITY w/AUTO-BRACKETING

Camr Settings

Pwr – ON

√Batt icon full

√Frame Counter ≥1

Exp Comp – 0.0

Exp Mode – S

SS – 500

AF Area Mode – [] (no "+")

Meter – Matrix

Diopter – Adjust

Film Adv – C_H

Body Focus Mode – S

Lens Focus Mode – A (M/A)

Aperture – Min, locked

√ISO – DX

Camr BKT – BKT, 3F 1.0 displayed

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 – OFF

F5 EVA CAMR

1. Unstow H/W and assemble:

Lens – EVA 28mm(EVA 35mm,EVA 50mm)

Film ISO 100 CNeg

EVA Finder

AA Fresh Batts (8) for Camr Body

Unstow, but do not install:

Thermal Cover

EVA Camr Mount

2. Camr Settings:

Pwr – ON

√Batt icon full

√Frame Counter ≥1

Exp Comp – 0.0

Exp Mode – P

AF Area Mode – [] (no "+")

Meter – Matrix

Film Adv – S

Body Focus Mode – S

Aperture – Min, Locked

√ISO – DX

√Camr BKT – Disabled

Focus Area – Center, LOCK displayed

Custom Setting – 12-1, E35 (√12-1 displayed)

√Vert Shooting Shutter Rel sw – lock (L to white line)

Data Back Settings:

√Between Frame – YR MO/DY HH:MM:SS set to GMT

Between Frame Data – PRINT displayed

3. Final Assembly and Test Fire:

√All cntl pnl covers closed

√Exp Mode – P (no *)

Thermal Cover – Install

Test fire Camr

EVA Camr Mount – Install

Temp stow Camr until airlock config for EVA

NIKON F5 (Continued)

SETUP (Continued)

F5 CREW PHOTO

Lens – 28mm
Film – ISO 160 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – A
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – Selftimer
Body Focus Mode – S
Lens Focus Mode – A
Aperture – Min, locked
f/stop – F8
√ISO – DX
√Camr BKT – Disabled
√Focus Area – Center, LOCK displayed
Data Back Settings
Between Frame – TIME, F
√Between Frame Data – PRINT displayed
Flash Settings
ON/OFF – ON
√Mode – TTL, Matrix
√Zoom – Auto (No M)
Tilt – Direct
Remote Release – Install
Multiuse Brkt (Clamp)
Focus
Body Focus Mode – M
Frame, Fire

F5 EXPOSURE MATCH

Lens – 28mm
Film – ISO 160 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
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
√CSM – 21-1, AEL
Data Back Settings
Between Frame – TIME, F
√Between Frame Data – PRINT displayed
Flash Settings
ON/OFF – ON
√Mode – TTL, Matrix
√Zoom – Auto (No M)
Tilt – Direct

TECHNIQUE

1. Fill FOV w/Sunlit subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
Expect values such as 250, F11
4. Focus, Frame, Fire

NIKON F5 (Continued)

SETUP (Continued)

F5 AURORA/AIRGLOW

Lens – 50mm
Film – ISO 800 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – M
SS – 2 “
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – M
Aperture – Min, locked
f/stop – F1.4
√ISO – DX
Camr BKT – BKT, 3F 1.0 displayed
√Focus Area – Center, LOCK displayed
CSM – 17-0, 10A
Data Back Settings
√Between Frame – YR MO/DY HR:MIN SEC
√Between Frame Data – PRINT displayed
Flash Settings
ON/OFF – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire, hold for 3 frames

TECHNIQUE

1. Dim Cabin lights
2. Use Witches Hat or dark clothing to shield window

F5 CITY LIGHTS/STARS

Lens – 50mm
Film – ISO 800 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – M
SS – 4
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – M
Aperture – Min, locked
f/stop – F1.4
√ISO – DX
Camr BKT – BKT, 3F 1.0 displayed
Focus Area – Center, LOCK displayed
√CSM – 17-0, 10A
Data Back Settings
√Between Frame – YR MO/DY HR:MIN SEC
√Between Frame Data – PRINT displayed
Flash Settings
ON/OFF – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire, hold for 3 frames

TECHNIQUE

1. Dim Cabin lights
2. Use Witches Hat or dark clothing to shield window

NIKON F5 (Continued)

SETUP (Continued)

F5 LIGHTNING

Lens – 50mm
Film – ISO 400 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – M
SS – 2”
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – M
Aperture – Min, locked
f/stop – F1.4
√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 – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire

TECHNIQUE

Fire Camr repeatedly. Luck reqd

F5 MOON

Lens – as reqd
Film – ISO 400 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – M
SS – 500
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – S
Lens Focus Mode – M
Aperture – Min, locked
f/stop – F16
√ISO – DX
√Camr BKT – Disabled
√Focus Area – Center, LOCK displayed
CSM – 17-1, 01A
Data Back Settings
Between Frame – TIME, F
√Between Frame Data – PRINT displayed
Auto Brkt – ON, 0.0 CENTER, 1.0 STEP, 5 FRAME
Flash Settings
ON/OFF – OFF
Multiuse Brkt (Clamp)
Focus, Frame, Fire, hold for 5 frames

NIKON F5 (Continued)

SETUP (Continued)

F5 SILHOUETTE

Lens – 50mm
Film – ISO 160 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Aperture – Min, locked
√ISO – DX
√Camr BKT – Disabled
√Focus Area – Center, LOCK displayed
√CSM – 21-1, AEL
Data Back Settings
Between Frame – TIME, F
√Between Frame Data – PRINT displayed
Flash Settings
ON/OFF – OFF

TECHNIQUE

1. Fill FOV w/bright subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
Expect values such as 250, F8-11
4. Focus, Frame, Fire

F5 SUNRISE/SUNSET

Lens – 400mm
Film – ISO 400 CNeg
Camr Settings
Pwr – ON
√Batt icon full
√Frame Counter ≥1
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – S
Lens Focus Mode – M
Aperture – Min, locked
√ISO – DX
√Focus Area – Center, LOCK displayed
Data Back Settings
Between Frame – TIME, F
√Between Frame Data – PRINT displayed
AutoBrkt – ON, 0.0 CENTER, 1.0 STEP, 5 FRAME
Flash Settings
ON/OFF – OFF
Focus, Frame, Fire, hold for 5 frames

WARNING
Do not look at Sun

NIKON F5 (Continued)

SETUP (Concluded)

F5 SUN STAR EFFECT

Lens – 16mm

Film – ISO 400 CNeg

Camr Settings

Pwr – ON

√Batt icon full

√Frame Counter ≥1

Exp Comp – 0.0

Exp Mode – A

AF Area Mode – [] (no “+”)

Meter – Matrix

Diopter – Adjust

Film Adv – S

Body Focus Mode – M

Aperture – Min, locked

f/stop – F22

√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 – OFF

Focus, Frame, Fire

TECHNIQUE

Place Sun w/Earth, orbiter, crewmember, etc, in FOV

NIKON F5 (Continued)

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 – 0.85 lb

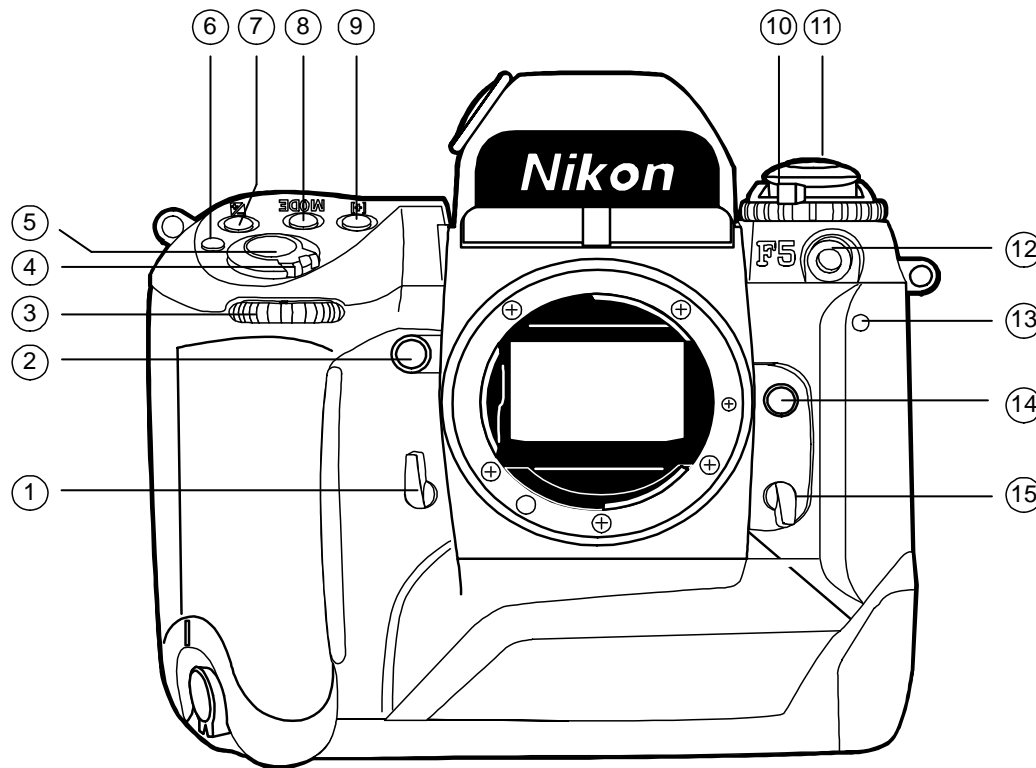
NIKON F5 (Continued)

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		Yes
105mm AF	f/2.8-f/32	19°	13°	23°	1.0	1.22	52mm	Yes	Yes
180mm AFD	f/2.8-f/22	11°	8°	13°	5.0	1.72	72mm		Yes
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	10.58	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

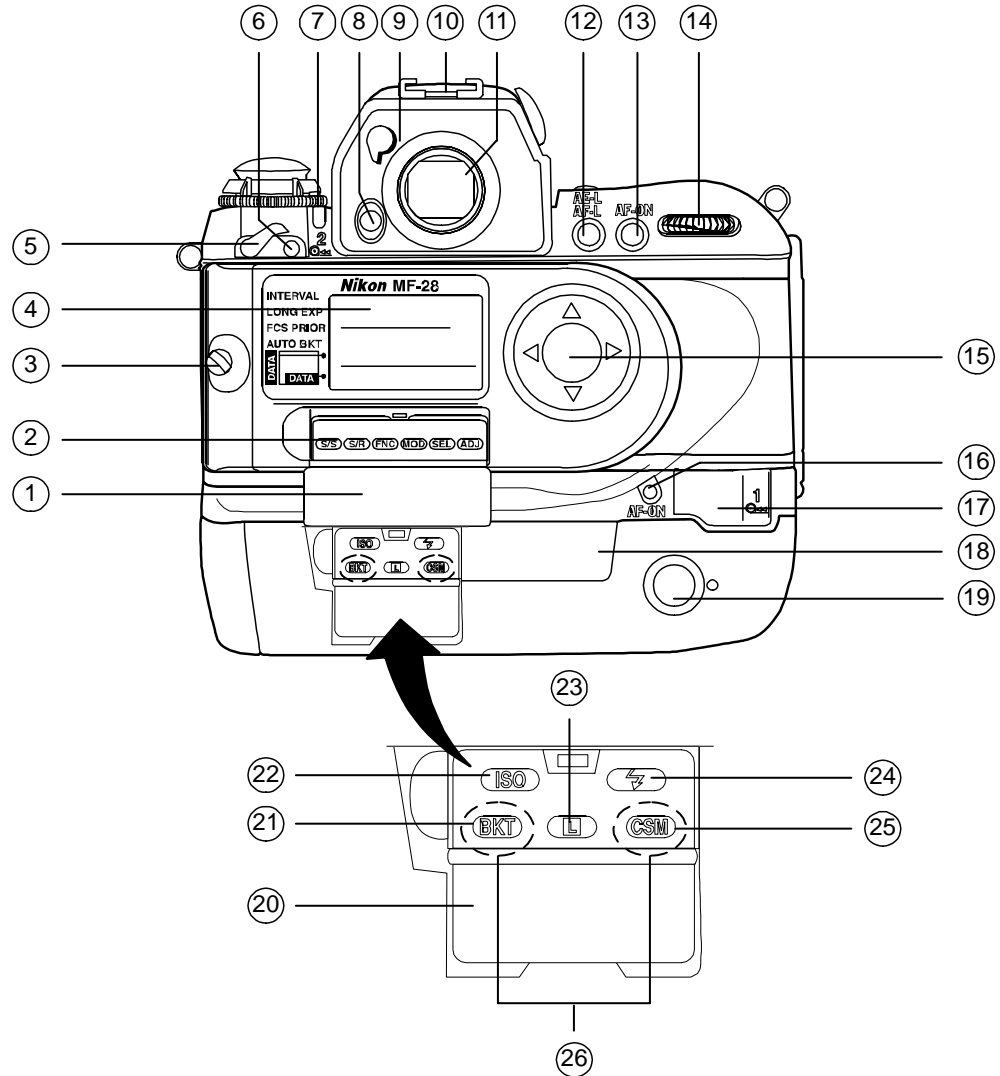
jsc48037_009.cnv

NIKON F5 (Continued)

NOMENCLATURE (Continued)

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

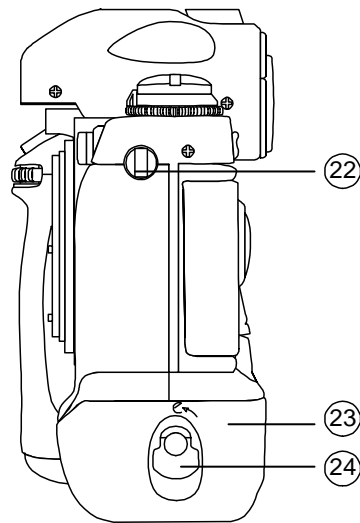
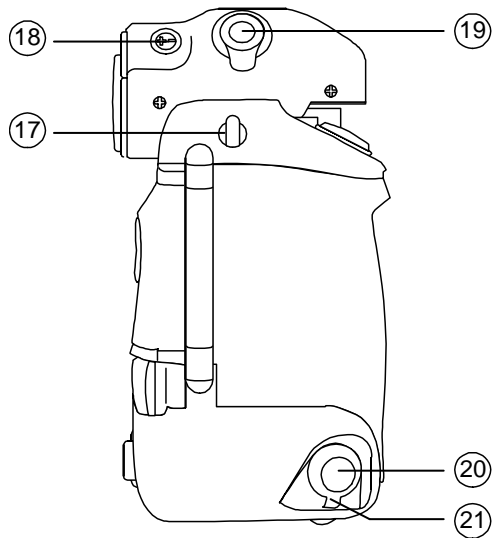
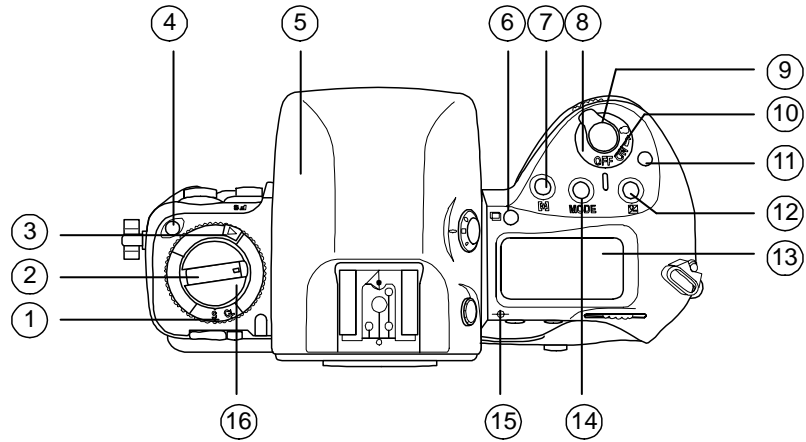
S/S	Start/Stop pb	MOD	Mode pb
S/R	Set/Reset pb	SEL	Select pb
FNC	Function pb	ADJ	Adjust pb
- ③ Data Back Batt Chamber Lid Screw
- ④ Data Back LCD Panel
- ⑤ Film Rewind Lever 2
- ⑥ Film Rewind Lever 2 Lock Release
- ⑦ Alert LED
- ⑧ Finder Release pb
- ⑨ Eyepiece Shutter Lever
- ⑩ Accessory Shoe
- ⑪ Viewfinder 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



jsc48037_010.cnv

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

jsc48037_011.cnv

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	

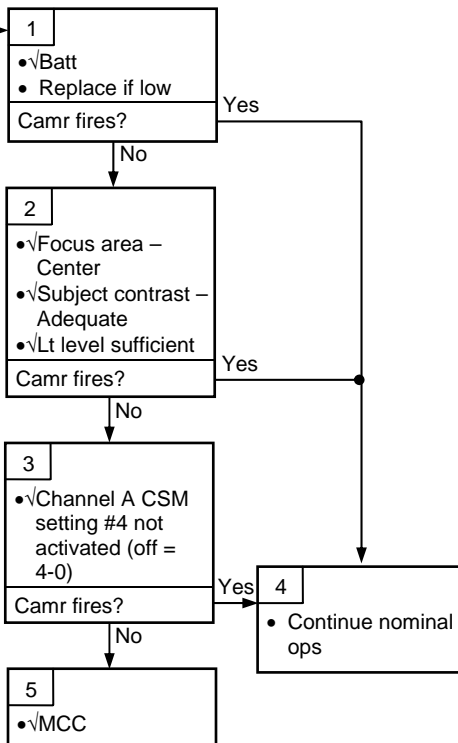
NIKON F5

2.1 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



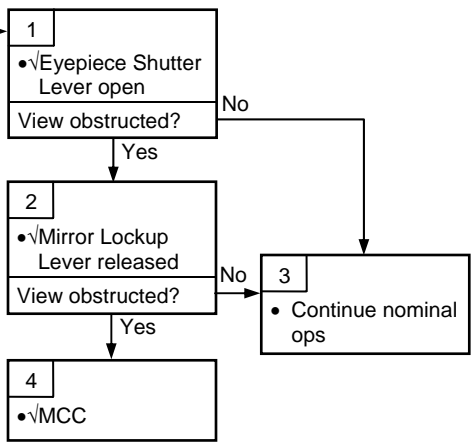
NIKON F5

2.2 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

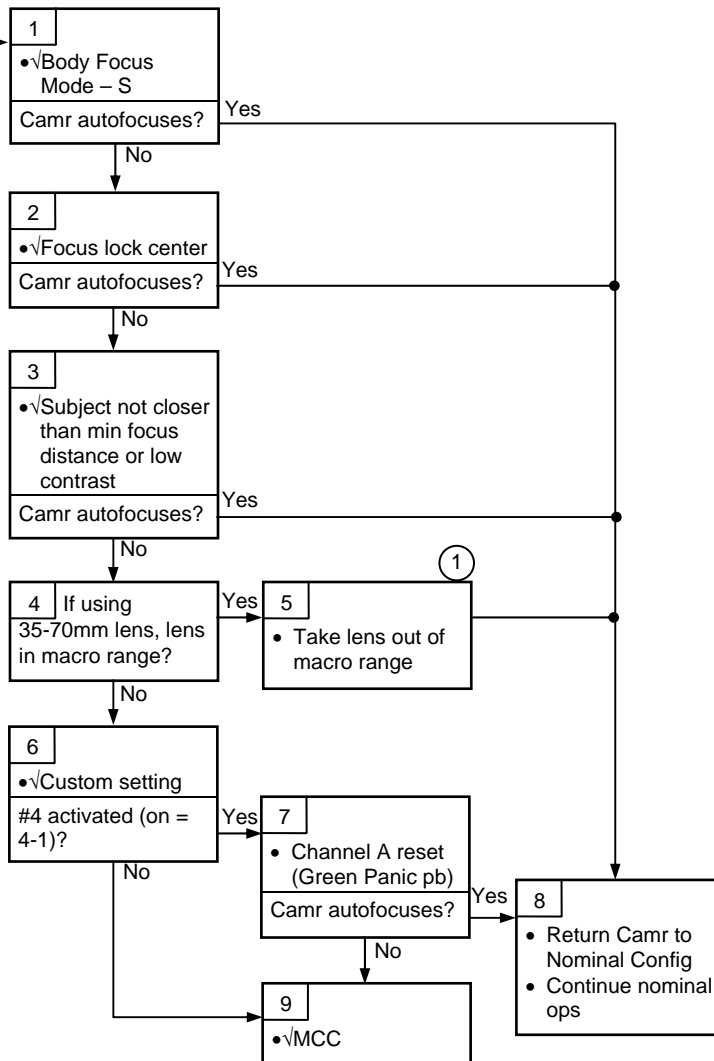
2.3 CAMR FAILS TO AUTOFOCUS

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

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



NIKON F5

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

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

Nominal Config:

(Camr)

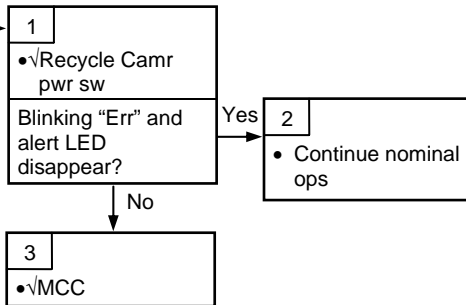
- Lens – As reqd
- Film – As reqd
- Settings
 - Pwr – ON
 - √Batt icon full
 - √Frames remaining sufficient
 - Exp Comp – 0.0
 - Exp Mode – P
 - AF Area Mode – []
 - Meter – Matrix
 - Diopter – Adjust
 - Film Adv – S
 - Body Focus Mode – S
 - Lens Focus Mode – A
 - Aperture – Min, locked
 - √ISO – DX
 - √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



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DCS 760

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DCS 760

SETUP

760 PROGRAM w/FLASH

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 – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A (M/A)
Aperture – Min, locked
Flash Settings
 ON/OFF – ON
 √TTL, Matrix
 √Zoom – Auto (no M)
 Tilt – Direct

760 SHUTTER PRIORITY

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 – S
 SS – 500
AF Area Mode – [] (no “+”)

NOTE

For Docking:
 Meter – Spot/Matrix
For Undocking:
 Meter – Matrix/Spot

Meter – Matrix (Spot when ISS <1/2 frame)
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A (M/A)
Aperture – Min, locked
Flash Settings
 ON/OFF – OFF

DCS 760 (Continued)

SETUP (Continued)

760 SHUTTER PRIORITY w/AUTO-BRACKETING

Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
ISO – 100
BKT – BKT, 3F 1.0 displayed
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – S
 SS – 500
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – S
Lens Focus Mode – A (M/A)
Aperture – Min, locked
Flash Settings
 ON/OFF – OFF

760 CREW PHOTO

Lens – 28mm
Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
√ISO – 100
√BKT – OFF
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – A
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – Selftimer
Body Focus Mode – S
Lens Focus Mode – A
Aperture – Min, locked
 f/stop – 8
Flash Settings
 ON/OFF – ON
 √TTL, Matrix
 √Zoom – Auto (no M)
 Tilt – Direct
Remote Release – Install
Multiuse Brkt (clamp)
Focus
Body Focus Mode – M
Frame, Fire

DCS 760 (Continued)

SETUP (Continued)

760 EXPOSURE MATCH

Lens – 28mm
Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
√ISO – 100
√BKT disabled
√Focus Area – Center, LOCK displayed
√CSM – 21-1, AEL
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
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 – Auto (no M)
 Tilt – Direct

TECHNIQUE

1. Fill FOV w/Sunlit subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
 Expect values such as 250, F11
4. Focus, Frame, Fire

760 AURORA/AIRGLOW

Lens – 50mm
Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
 ISO – 400
 √BKT – BKT, 3F 1.0 displayed
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – M
 SS – 2“
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – M
Aperture – Min, locked
 f/stop – F1.4
Flash Settings
 ON/OFF – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire, hold for 3 frames

TECHNIQUE

1. Dim Cabin lights
2. Use witch’s hat or dark clothing to shield window

DCS 760 (Continued)

SETUP (Continued)

760 CITY LIGHTS/STARS

Lens – 50mm
Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Flash
ISO – 400
√BKT – BKT, 3F 1.0 displayed
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – M
SS – 2
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – M
Aperture – Min, locked
f/stop – F1.4
Flash Settings
ON/OFF – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire, hold for 3 frames

TECHNIQUE

1. Dim Cabin lights
2. Use dark clothing to shield window

760 LIGHTNING

Lens – 50mm
Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Flash
ISO – 400
√BKT – Disabled
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – M
SS – 2”
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – M
Aperture – Min, locked
f/stop – F1.4
Flash Settings
ON/OFF – OFF
Remote Release – Install
Multiuse Brkt (Clamp)
Focus, Frame, Fire

TECHNIQUE

Fire Camr repeatedly. Luck reqd

DCS 760 (Continued)

SETUP (Continued)

760 MOON

Lens – As reqd
Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
 ISO – 100
 √BKT – Disabled
√Focus Area – Center, LOCK displayed
CSM – 17-1, 01A
Exp Comp – 0.0
Exp Mode – M
 SS – 500
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Aperture – Min, locked
 f/stop – F8
Flash Settings
 ON/OFF – OFF
Multiuse Brkt (Clamp)

760 SILHOUETTE

Lens – 50mm
Pwr – ON
√Disk installed
Rear LCD
 √Batt
 √Frames remaining sufficient
 √White Balance – Flash
 ISO – 100
 √BKT – Disabled
√Focus Area – Center, LOCK displayed
√CSM – 21-1, AEL
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Aperture – Min, locked
Flash Settings
 ON/OFF – OFF

TECHNIQUE

1. Fill FOV w/bright subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
 Expect values such as 250, F8-11
4. Focus, Frame, Fire

DCS 760 (Continued)

SETUP (Continued)

760 SUNRISE/SUNSET

Lens – As reqd
Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Flash
ISO – 400
√BKT – BKT, 3F 1.0 displayed
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – C_H
Body Focus Mode – S
Aperture – Min, locked
Flash Settings
ON/OFF – OFF
Focus, Frame, Fire, hold for 3 frames

<p>WARNING Do not look at <u>Sun</u></p>

760 SUN STAR EFFECT

Lens – 16mm
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 – A
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – M
Aperture – Min, locked
f/stop – F22
Flash Settings
ON/OFF – OFF
Focus, Frame, Fire

TECHNIQUE

Place Sun w/Earth, orbiter, crewmember, etc, in FOV

DCS 760 (Continued)

SETUP (Concluded)

760 TV MONITOR

Lens – 50mm
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 – S
 SS – 30
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Aperture – Min, locked
Flash Settings
 ON/OFF – OFF
Focus, Frame, Fire

DCS 760 (Continued)

SPECIFICATIONS

CAMR BODY

CCD SIZE: 18.48mm x 27.65mm

PIXEL COUNT: 2008 x 3032

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: 7.2V

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 – 0.85 lb

DCS 760 (Continued)

LENS DATA

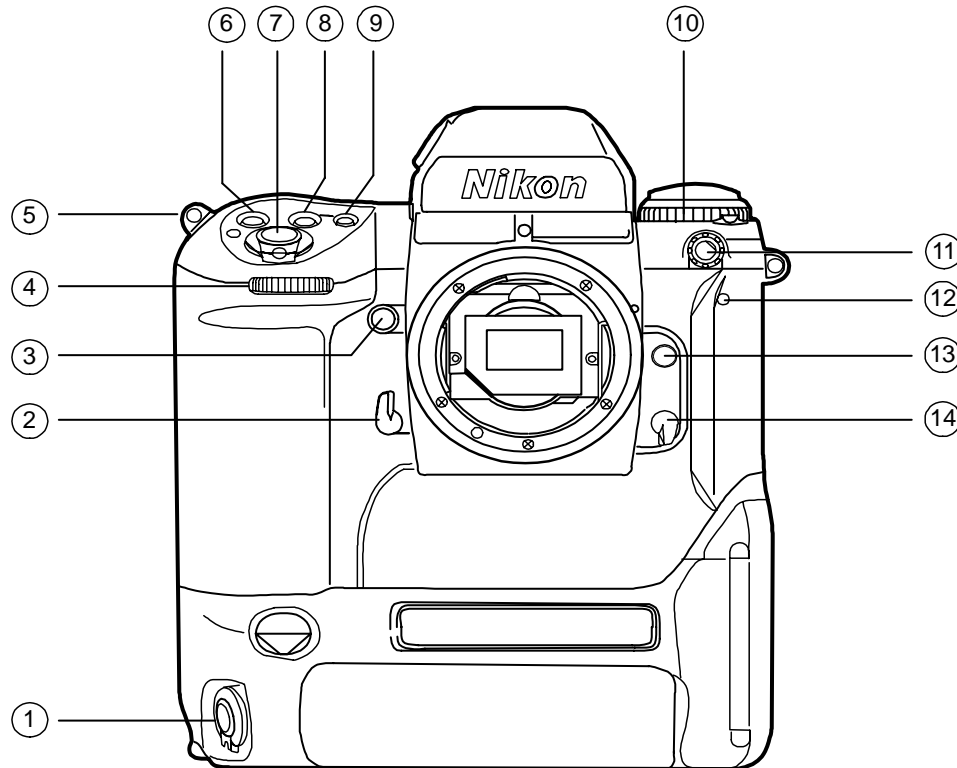
NOTE

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	10.58	52mm	Yes

DCS 760 (Continued)

NOMENCLATURE

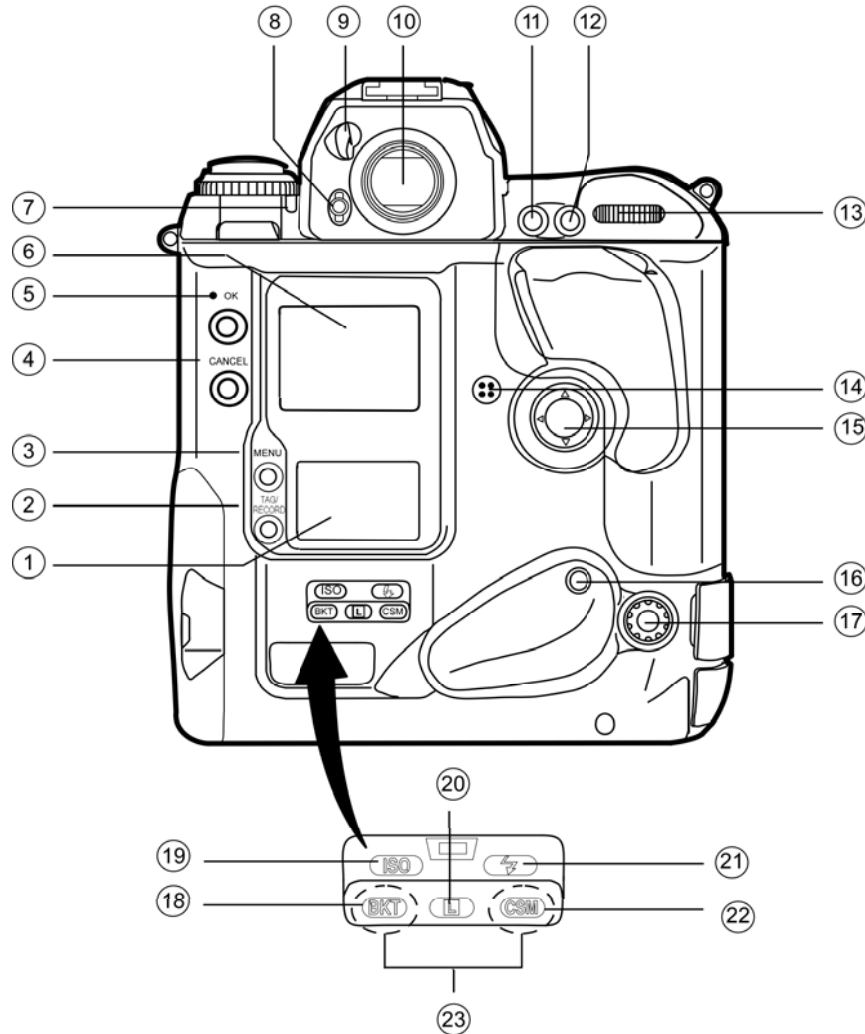


- ① Vertical-Shooting Shutter Release pb
- ② Mirror Lockup Lever
- ③ Depth of Field Preview pb
- ④ Sub-Command Dial
- ⑤ Camr Strap Eyelet
- ⑥ Exposure Compensation pb
- ⑦ Shutter Release pb
- ⑧ Exposure Mode pb
- ⑨ AF Area Mode pb
- ⑩ Film Advance Mode/Selftimer Selector
- ⑪ Sync Terminal
- ⑫ Selftimer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

jsc48037_012.cnv

DCS 760 (Continued)

NOMENCLATURE (Continued)

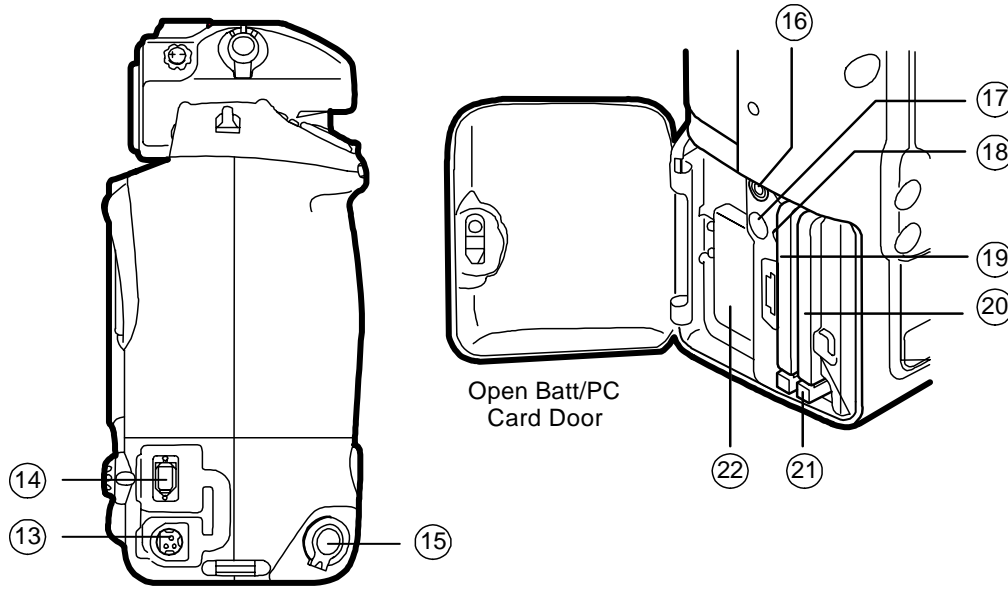
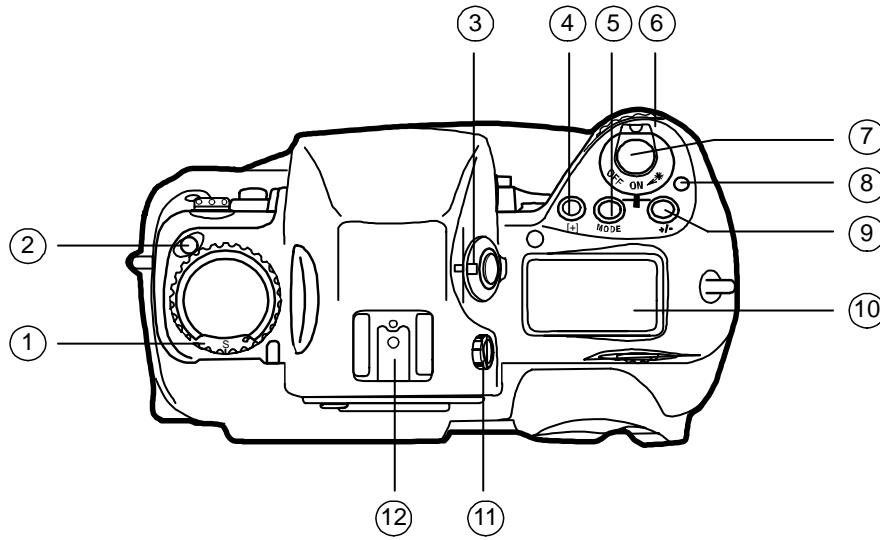


- ① Rear LCD Panel
- ☰ Menu Icon
- ☒ Delete Icon
- ② TAG/RECORD pb
- ③ MENU pb
- ④ CANCEL pb
- ⑤ OK pb
- ⑥ Image LCD Panel
- Speaker Icon
- ⑦ Alert LED
- ⑧ Finder Release pb
- ⑨ Eyepiece Shutter Lever
- ⑩ Viewfinder Eyepiece
- ⑪ Auto Exposure (AE-L)/Autofocus Lock (AF-L) pb
- ⑫ AF Start (AF-ON) pb
- ⑬ Main-Command Dial
- ⑭ Microphone
- ⑮ Navigate Pad
- ⑯ Vertical AF Start (AF-ON) pb
- ⑰ Remote Release Port
- ⑱ Body Bracketing pb **BKT**
- ⑲ ISO pb **ISO**
- ⑳ Shutter Speed/Aperture/Focus Area Lock pb **L**
- ㉑ Flash Sync Mode pb
- ㉒ Custom Setting Menu pb **CSM**
- ㉓ Green Panic pb

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DCS 760 (Continued)

NOMENCLATURE (Continued)

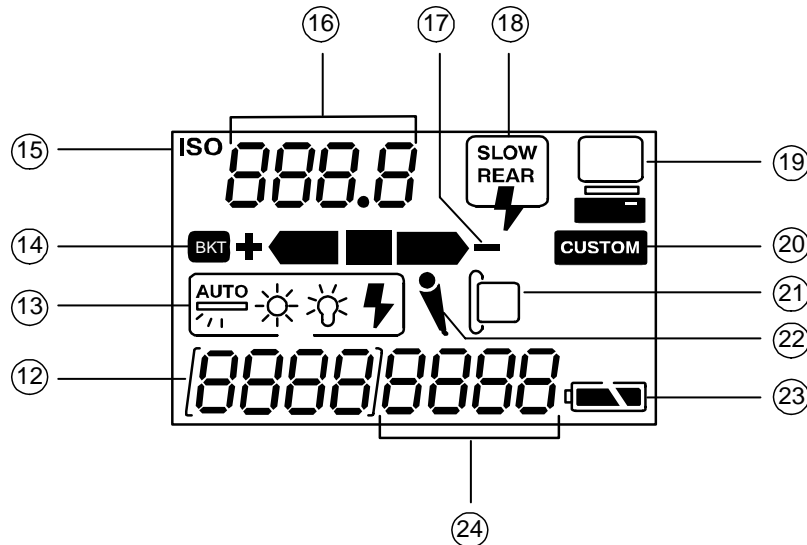
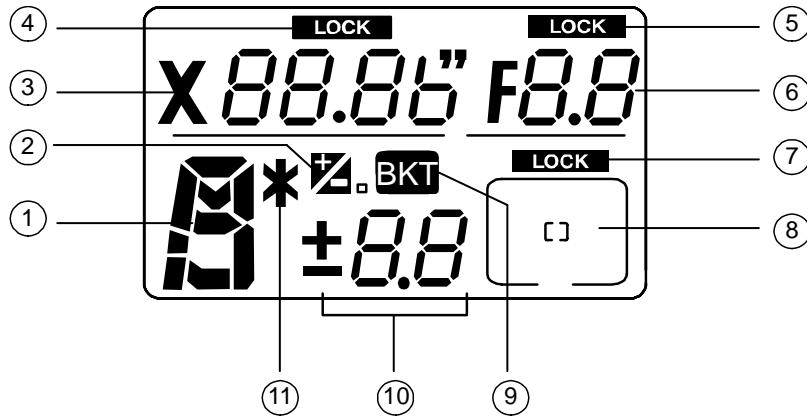


- ① Film Advance Mode/Selftimer Selector
- ② Film Advance Mode Selector Lock Release
- ③ Metering System Selector
- ④ AF Area Mode pb
- ⑤ Exposure Mode pb
- ⑥ Pwr/LCD Panel Illumination sw
- ⑦ Shutter Release pb
- ⑧ Pwr sw Lock Release
- ⑨ Exposure Compensation pb
- ⑩ Top LCD Panel
- ⑪ Diopter Adjustment 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

jsc48037_014.cnv

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

jsc48037_015.cnv

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	

DCS 760 (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	Reserved	8 - 0:	
9	Reserved	9 - 0:	
10	Reserved	10 - 0:	
11	Alert LED in Long Time Exposure	11 - 0: Does not blink	Make Alert LED blink during long time exposure
		11 - 1: Blinks	
12	Reserved	12 - 0:	
13	Reserved	13 - 0: Canceled 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
		14 - 1: Change setting C 8: 8mm-dia C 12: 12mm-dia C 15: 15mm-dia C 20: 20mm-dia A: Average	
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	


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	

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. Sel image
3. TAG/RECORD pb – press, hold ( appears on rear LCD)
4. Talk to MIC (-9-12 in from MIC)
5.  appears under image

DCS 760 (Continued)

IMAGE VIEWING ON PGSC

1. Insert DCS MICRO DRIVE(1 GB EVA Flash Card) into PGSC, brand name up
2. Open SHUTTLE APPS | KODAK DCS PHOTO DESK
3. Sel FILE | OPEN
4. Sel appropriate drive/folder
5. Sel "Open '-----' as contact sheet"
6. To view image info:
 - Sel VIEW
 - √Image Infor selected (check mark next to Image Info)
 - Single-click on desired image
7. To view enlarged individual image:
 - Double-click on desired image

DCS 760 (Continued)

DCS FILE DNLK

NOTE

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

DNLK FROM MICRO DRIVE

1. Insert DCS MICRO DRIVE(1 GB EVA Flash Card) into **KFX PGSC**, brand name up
2. Inform MCC "files ready"

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

1. Insert DCS MICRO DRIVE(1 GB EVA Flash Card) into any **networked PGSC**, brand name up
2. Inform MCC "files ready" on PGSC
3. Delete image files from DCS MICRO DRIVE(1 GB EVA Flash Card) when file copy complete or instruct MCC to do so

DCS 760 (Continued)

SUSPECT HARD DRIVE SCAN

1. Insert suspect DCS MICRO DRIVE(1 GB EVA Flash Card) into PGSC, brand name (white decal) up
2. Sel 'Start' | 'Run...'
3. In 'Run' window, type: SCANDISK, then sel OK
4. In 'ScanDisk' window:
 - Sel MICRO DRIVE 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

DCS 760 (Continued)

IMAGE FILE COMPRESSION

NOTE

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

1. Perform IMAGE VIEWING ON PGSC, steps 1-5 on 3-19, then:
2. Single-click image for compression
3. Sel FILE | SAVE SELECTED AS (**Not “SAVE 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)

If A31p:

7. Enter new file name in “Base Name” window
8. Sel “Save files in ‘-----’ ”

If PGSC 760XD:

9. Enter new file name in New Name window
10. Sel “Save files in ‘-----’ ”
11. Sel IMAGE SIZE = 50%
12. Sel IMAGE QUALITY = GOOD
13. √RESOLUTION = 300
14. √DOTS PER INCH selected
15. Sel OK

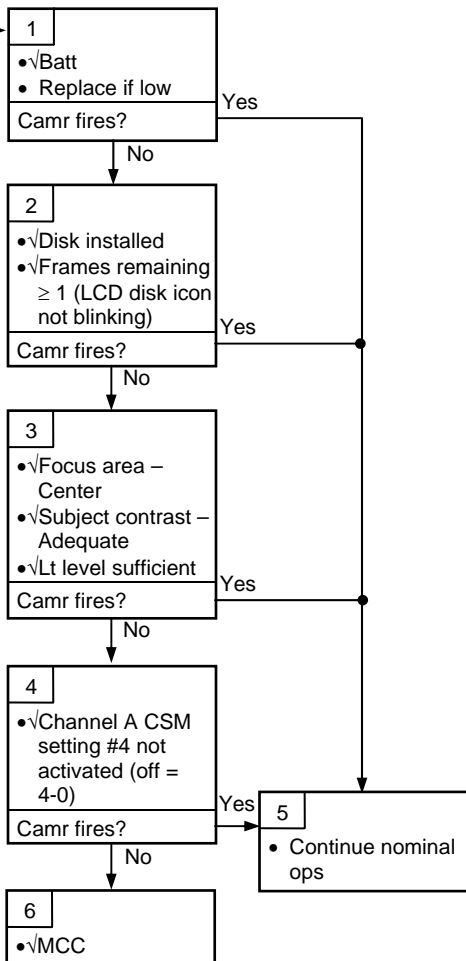
DCS 760

3.1 CAMR FAILS TO FIRE

Camr Fails to Fire

Nominal Config:

- (Camr)
- 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)
- ON/OFF – ON
- √TTL, Matrix
- √Zoom
- Tilt – Direct



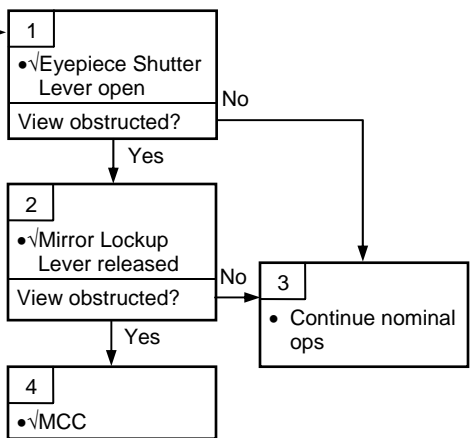
DCS 760

3.2 CANNOT SEE THRU VIEWFINDER

Cannot See Thru Viewfinder

Nominal Config:

- (Camr)
- 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)
- ON/OFF – ON
- √TTL, Matrix
- √Zoom
- Tilt – Direct



DCS 760

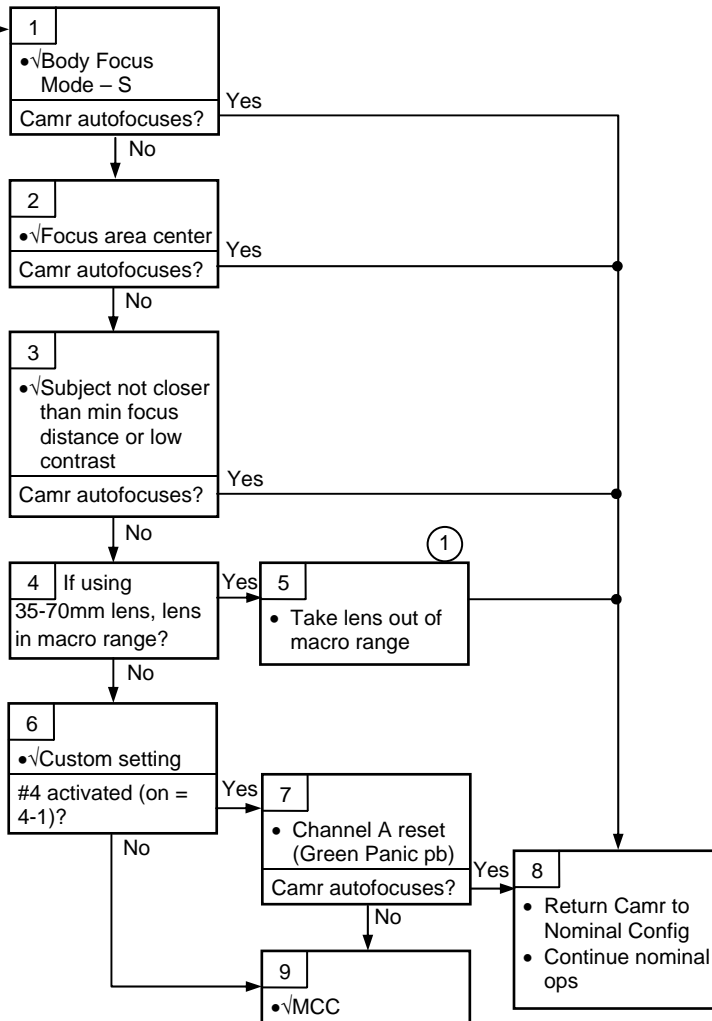
3.3 CAMR FAILS TO AUTOFOCUS

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

Camr Fails to Auto Focus

Nominal Config:

- (Camr)
- 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)
- ON/OFF – ON
- √TTL, Matrix
- √Zoom
- Tilt – Direct



DCS 760

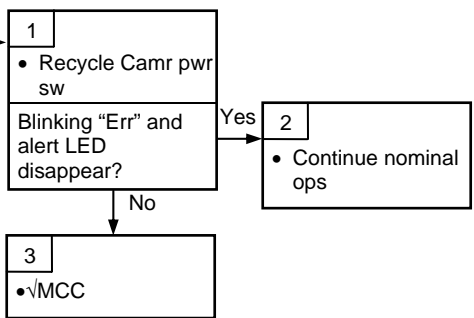
3.4 "ERR" BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS

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

Nominal Config:

- (Camr)
- 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)
- ON/OFF – ON
- √TTL, Matrix
- √Zoom
- Tilt – Direct



DCS 760

3.5 EXCESSIVE SAVE IMAGE TO HARD DISK TIME

Excessive Save Image to Hard Disk Time

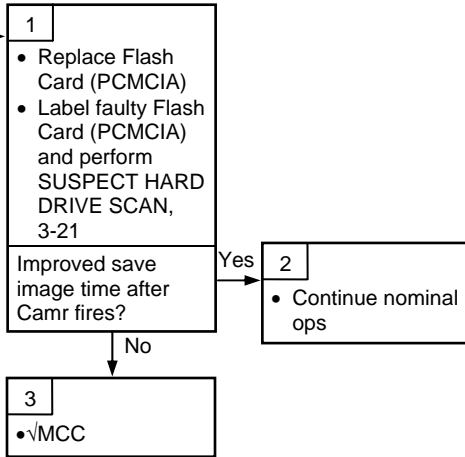
Nominal Config:

(Camr)

- 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)

- ON/OFF – ON
- √TTL, Matrix
- √Zoom
- Tilt – Direct



This Page Intentionally Blank

DCS 760 EVA CAMR

	<u>PAGE</u>
760 EVA – CAMR ONLY	4-2
760 EVA – CAMR ONLY DISASSEMBLY	4-6
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POST-EVA	4-6
760 EVA – CAMR w/BRACKET ONLY	4-8
760 EVA – CAMR w/FLASH	4-14
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DCS 760 EVA

DCS 760 EVA CAMR

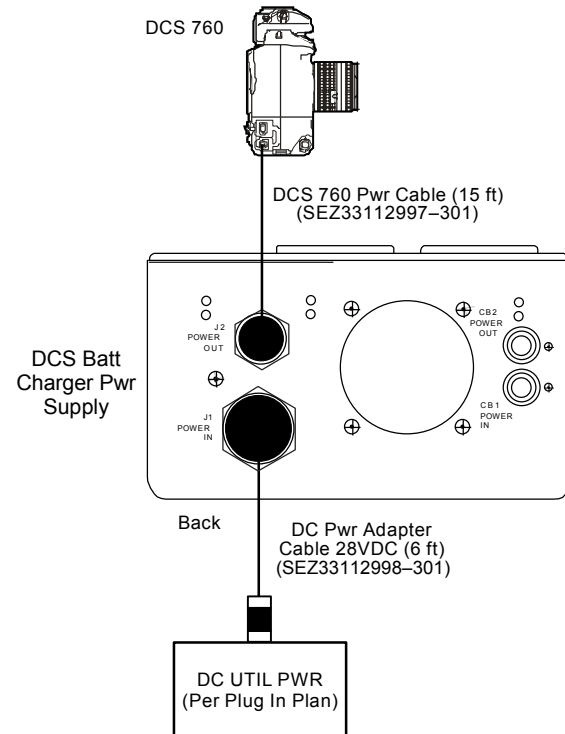
760 EVA – CAMR ONLY

NOTE

When Camr not in use during EVA, Thermal Lens Cap must be installed

1. Unstow and assemble from EVA Camr Accessories Bag
DCS 760 Camr
Lens – As Reqd
If 28(35,50,105)mm EVA Lens:
√Circular Polar 52mm Filter w/o glass fully installed on lens
Action Viewfinder (EVA)
2. Unstow but do not install
1 GB EVA Flash Cards (two)
EVA Camr Blanket
Camr Mounting Assy w/Thermal Blanket
3. Config DCS Batt Charger Pwr Supply (one per Camr) per dwg at right
√cb PWR IN – cl
√OUT – cl
MAIN PWR – ON (LED on)
CAMR PWR – ON (LED on)
4. Camr Settings
Pwr – ON
Install 1 GB EVA Flash Card in slot 1
Rear LCD
√Frames Remaining ≥ 112
If < 112 , perform 760 QUICK FORMAT, 4-29
Remove 1 GB EVA Flash Card
Install second 1 GB EVA Flash Card in slot 1
Rear LCD
√Frames Remaining ≥ 112
If < 112 , perform 760 QUICK FORMAT, 4-29
Install first 1 GB EVA Flash Card in slot 2
√White Balance – Flash

DCS 760



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DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Continued)

- DCS 760 4. Camr Settings (Concluded)
- √ISO – 100
 - √Camr Bracket Disabled
 - Top LCD
 - √Focus Area – Center, Locked
 - Exposure Comp – 0.0
 - Exposure Mode – P
 - Auto Focus Area Mode – [] (no “+” displayed)
 - Meter – Matrix
 - Film Advance – S
 - Body Focus Mode – S
 - Lens Focus Mode – A (if applicable)
 - Aperture – Min, locked
 - √Vertical Shooting Shutter Release – Locked (L to line)
 - Main Menu
 - Menu pb – press
 - Main Menu – press OK
 - √Processing – Off
 - √Time/Date – GMT
 - Menu pb – press twice
 - Properties
 - Properties – press OK
 - Auto OK Errors – Yes
 - √Enable Sharpening – No
 - High Temp Limit – Yes
 - √Long Exposure Processing – Exposures >¼ sec
 - CANCEL pb – press twice
5. Remove Lens
- NOTE
Do not pwr off Camr
- DCS Batt Chgr 6. CAMR PWR – OFF (LED off)
7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr
- DCS 760 8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Continued)

9. ✓Aperture – Min, locked on lens
10. Install lens (EVA Camr Blanket may need to be adjusted)
11. ✓Lens Cap removed
12. Secure EVA Camr Blanket around lens
13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr
- DCS Batt 14. CAMR PWR – ON (LED on)
Chgr
- DCS 760 15. Install DCS 760 Batt
16. Activate Shutter Release:
 - ✓No “FEE” in Viewfinder
 - If “FEE” displayed, go to step 9
 - ✓Lens moves freely under EVA Camr Blanket
17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
20. Complete EVA Camr Blanket installation (close Flaps 1,4)
21. Install Camr Mounting Assy w/Thermal Blanket from rear
22. ✓Camr Mounting Assy seated, will not slip off Camr. Release pb – out
23. Temp stow Flap 3 (will not be used for EVA)
24. Stow Camr until day of EVA

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Concluded)

If Remote Cord Assy used:

25. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)



26. ✓ Remote Cord Assy not locked
27. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3) (Optional)
28. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
29. Test fire DCS 760 Camr w/Remote Release
30. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

NOTE

Do not remove Camr from orbiter pwr

31. Stow until day of EVA

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY DISASSEMBLY

BETWEEN EVAs

NOTE

Removal of Batts, Cards main objective

- DCS 760
1. Detach Camr Mounting Assy from DCS 760
 2. In order to access Batt/PC Door, open Flap 1 of EVA Camr Blanket
 3. Remove Light-Pipe from Batt/PC Door
 4. Open Batt/PC door:
 - Remove DCS 760 Batt
 - Remove 1 GB EVA Flash Cards (two)

POST-EVA

NOTE

Stowing of EVA H/W and IVA use of DCS 760 main objective

- DCS 760
1. Remove Lens
 2. If Remote Cord Assy used, disconnect from Remote Release Port on DCS 760 Camr. Disconnect Flap 3
 3. Remove EVA Camr Blanket:
 - Open Flap 1 on EVA Camr Blanket
 - Uninstall Light-Pipe from DCS 760 Batt/PC Door
 - Remove EVA Camr Blanket from left to right
 4. Temp stow EVA Camr Blanket
 5. Replace lens
 6. Camr Pwr – OFF
 7. Open Batt/PC Door:
 - Remove DCS 760 Batt
 - Remove 1 GB EVA Flash Card (two)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY DISASSEMBLY (Concluded)

POST-EVA (Concluded)

If reqd:

8. Return Camr to Nominal Ops
Replace DCS 760 Batt and 1 GB EVA Flash Card
Camr Settings:
Camr Pwr – ON
Nom Ops settings:
Auto OK Errors – No
High Temp Limit – No
√Long Exposures Processing – Exposures > 1/4 sec
Camr Pwr – OFF
Replace Action Viewfinder w/Nominal Viewfinder

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DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY

NOTE

When Camr not in use during EVA, Thermal Lens Cap must be installed

1. Unstow and assemble from EVA Camr Accessories Bag

DCS 760 Camr

Lens – As Reqd

√ If 28(35,50,105)mm EVA Lens:

√ Circular Polar 52mm Filter w/o glass fully installed on lens

Action Viewfinder (EVA)

2. Unstow but do not install

1 GB EVA Flash Cards (two)

EVA Camr Blanket

Camr Mounting Assy w/Thermal Blanket

Flash Bracket w/Thermal Blanket

Remote Cord Assy (SED33112525-302) as reqd

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3. Config DCS Batt Charger Pwr Supply (one per Camr) per dwg at right

√ cb PWR IN – cl

√ OUT – cl

MAIN PWR – ON (LED on)

CAMR PWR – ON (LED on)

DCS 760

4. Camr Settings

Pwr – ON

Install 1 GB EVA Flash Card in slot 1

Rear LCD

√ Frames Remaining ≥ 112

If < 112 , perform 760 QUICK FORMAT, 4-29

Remove 1 GB EVA Flash Card

Install second 1 GB EVA Flash Card in slot 1

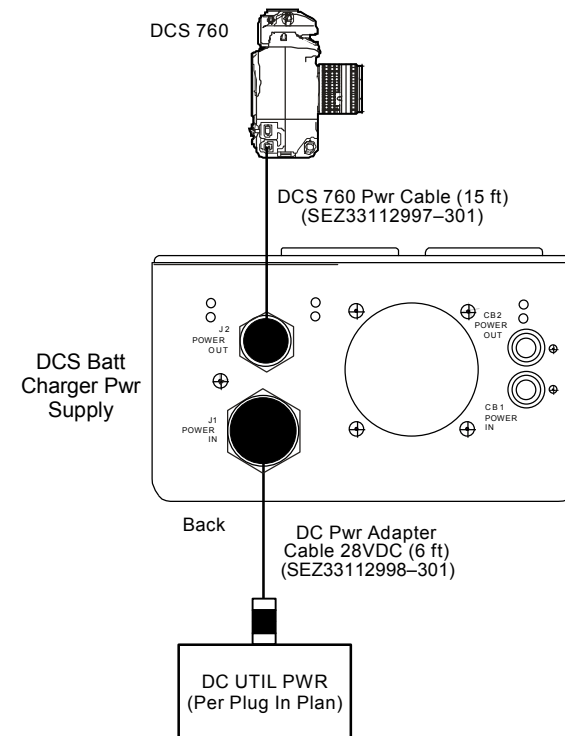
Rear LCD

√ Frames Remaining ≥ 112

If < 112 , perform 760 QUICK FORMAT, 4-29

Install first 1 GB EVA Flash Card in slot 2

√ White Balance – Flash



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DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

INITIAL CAMR SETUP (Concluded)

- DCS 760 4. Camr Settings (Concluded)
- √ISO – 100
 - √Camr Bracket Disabled
 - Top LCD
 - √Focus Area – Center, Locked
 - Exposure Comp – 0.0
 - Exposure Mode – P
 - Auto Focus Area Mode – [] (no “+” displayed)
 - Meter – Matrix
 - Film Advance – S
 - Body Focus Mode – S
 - Lens Focus Mode – A (if applicable)
 - Aperture – Min, locked
 - √Vertical Shooting Shutter Release – Locked (L to line)
 - Main Menu
 - Menu pb – press
 - Main Menu – press OK
 - √Processing – Off
 - √Time/Date – GMT
 - Menu pb – press twice
 - Properties
 - Properties – press OK
 - Auto OK Errors – Yes
 - √Enable Sharpening – No
 - High Temp Limit – Yes
 - √Long Exposure Processing – Exposures >¼ sec
 - CANCEL pb – press twice

- DCS 760 5. Remove Lens

NOTE

Do not pwr off Camr

- DCS Batt Chgr 6. CAMR PWR – OFF (LED off)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

- DCS 760
 - 7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr
 - 8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door
 - 9. ✓Aperture – Min, locked on lens
 - 10. Install lens (Thermal Blanket may need to be adjusted)
 - 11. ✓Lens Cap removed
 - 12. Secure EVA Camr Blanket around lens
 - 13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr
- DCS Batt Chgr
 - 14. CAMR PWR – ON (LED on)
 - 15. Install DCS 760 Batt
 - 16. Activate Shutter Release:
 - ✓No "FEE" in viewfinder
 - If "FEE" displayed, go to step 9
 - ✓Lens moves freely under EVA Camr Blanket
 - 17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
 - 18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
 - 19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
 - 20. Complete EVA Camr Blanket installation (close Flaps 1,4)
 - 21. Obtain Bracket Assy w/Thermal Blanket
- Brkt Assy
 - If Thermal Blanket not installed, install on Bracket Assy:
 - Config Thermal Blanket for use w/o Flash

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

- EVA
- If Remote Cord Assy not configured for use w/Bracket Assy:
22. Temp stow Flap 3 (will not be used for EVA)
 23. Install DCS 760 Camr onto Bracket Assy (from front)



Mount for EVA Camr

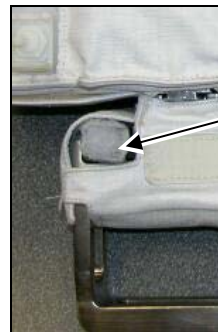
Mount for Camr Mounting Assy (underneath)

24. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)
25. ✓DCS 760 Camr and Camr Mount seated, will not slip off Bracket Assy. Release pb – out

NOTE

Do not remove Camr from orbiter pwr

26. Stow until day of EVA
- If Remote Cord Assy configured for use w/Bracket Assy:
27. Insert Remote Cord Assy thru hole in Thermal Blanket (verify Remote Cord Assy not locked) and place lip of remote under Thermal Blanket

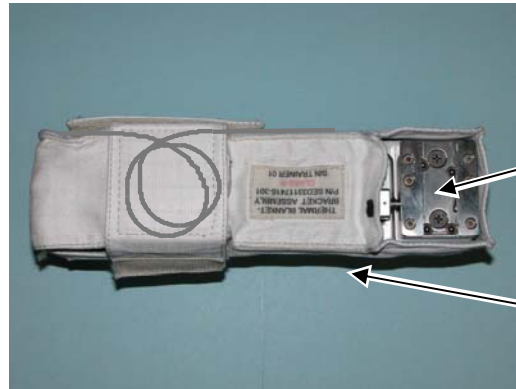


Remote Cord Lip

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BACKET ONLY (Continued)

28. Coil excess cord and stow between mount for EVA Flash and Thermal Cover Flap



Mount for EVA Camr

Mount for Camr Mounting Assy (underneath)

29. Install DCS 760 Camr onto Bracket Assy (from front)
30. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)
31. ✓DCS 760 Camr and Camr Mounting Assy seated, will not slip off Bracket Assy. Release pb – out
- DCS 760 32. Remove Flap 3 from EVA Camr Blanket
Place Remote Cord Assy into Flap 3 per photo; close flaps



33. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Concluded)

34. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)



35. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
36. Test fire w/Remote Release (two shots)
✓Shutter Release on Remote Cord Assy not locked
37. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

NOTE

Do not remove Camr from orbiter pwr

38. Stow until day of EVA

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH

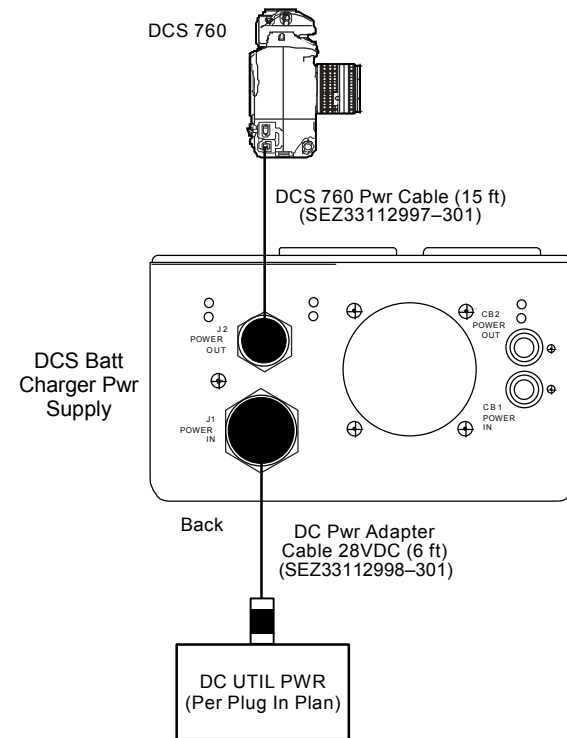
NOTE

When Camr not in use during EVA, Thermal Lens Cap must be installed

1. Unstow and assemble from EVA Camr Accessories Bag
 DCS 760 Camr
 Lens – As Reqd
 If 28(35,50,105)mm EVA Lens:
 √Circular Polar 52mm Filter w/o glass fully installed on lens
 Action Viewfinder
2. Unstow but do not install
 1 GB EVA Flash Cards (two)
 EVA Camr Blanket
 Camr Mounting Assy w/Thermal Blanket
 Bracket Assy w/Thermal Blanket
 EVA Flash w/Thermal Blanket
 Flash Sync Cable Assy w/Thermal Blanket
 Remote Cord Assy (SED33112525-302)
 DCS EVA 7 VDC Pwr Cable
3. Config DCS Batt Charger Pwr Supply (one per Camr) per dwg at right
 √cb PWR IN – cl
 √OUT – cl
 MAIN PWR – ON (LED on)
 CAMR PWR – ON (LED on)
4. Camr Settings
 Pwr – ON
 Install 1 GB EVA Flash Card in slot 1
 Rear LCD
 √Frames Remaining ≥ 112
 If < 112 , perform 760 QUICK FORMAT, 4-29
 Remove 1 GB EVA Flash Card
 Install second 1 GB EVA Flash Card in slot 1
 Rear LCD
 √Frames Remaining ≥ 112
 If < 112 , perform 760 QUICK FORMAT, 4-29
 Install first 1 GB EVA Flash Card in slot 2
 √White Balance – Flash

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DCS 760



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DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

- DCS 760 4. Camr Settings (Concluded)
- √ISO – 100
 - √Camr Bracket Disabled
 - Top LCD
 - √Focus Area – Center, LOCK
 - Exposure Comp – 0.0
 - Mode – P
 - Auto Focus Area Mode – [] (no “+” displayed)
 - Meter – Matrix
 - Film Advance – S
 - Body Focus Mode – S
 - Lens Focus Mode – A (if applicable)
 - Aperture – Min, locked
 - √Vertical Shooting Shutter Release – Locked (L to line)
 - Main Menu
 - Menu pb – press
 - Main Menu – press OK
 - √Processing – Off
 - √Time/Date – GMT
 - Menu pb – press twice
 - Properties
 - Properties – press OK
 - Auto OK Errors – Yes
 - √Enable Sharpening – No
 - High Temp Limit – Yes
 - √Long Exposure Processing – Exposures >¼ sec
 - CANCEL pb – press twice
5. Remove Lens

NOTE

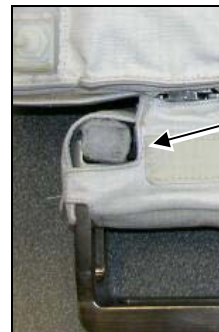
Do not pwr off Camr

- DCS Batt Chgr 6. CAMR PWR – OFF (LED off)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

- DCS 760 7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr
- DCS 760 8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door
- 9. ✓Aperture – Min, locked on lens
- 10. Install lens (EVA Camr Blanket may need to be adjusted)
- 11. ✓Lens Cap removed
- 12. Secure EVA Camr Blanket around lens
- 13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr
- DCS Batt Chgr 14. CAMR PWR – ON (LED on)
- DCS 760 15. Install DCS 760 Batt
- 16. Activate Shutter Release:
 - ✓No "FEE" in Viewfinder
 - If "FEE" displayed, go to step 9
 - ✓Lens moves freely under EVA Camr Blanket
- 17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
- 18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
- 19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
- 20. Complete EVA Camr Blanket installation (close Flap 1)
- 21. Obtain Bracket Assy w/Thermal Blanket
- Brkt Assy If Thermal Blanket not installed, install on Bracket Assy
- 22. Insert Remote Cord Assy thru hole in Thermal Blanket (verify Remote Cord Assy not locked) and place lip of remote under Thermal Blanket

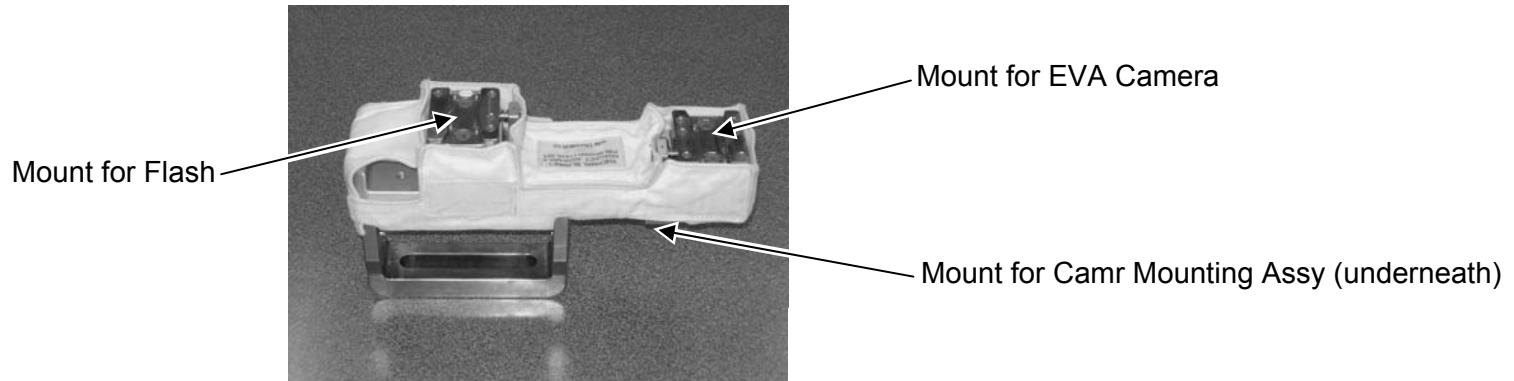


Remote Cord Lip

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

- DCS 760
23. Remove Flash Sync Cover from Flash Sync Cable
 24. Install Flash Sync Cable to Camr Hot Shoe:
 - Lock Flash Sync Cable – turn lever cw
 - Secure Flap 4 to EVA Camr Blanket
 25. Reinstall Flash Sync Cover onto Flash Sync Cable Assy
 26. Secure Flash Sync Cable under Flap 2 on left side of Camr
 27. Install DCS 760 Camr onto Bracket Assy (from front)
 28. Install EVA Flash onto Bracket Assy (from rear)



29. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)
30. ✓DCS 760 Camr, EVA Flash, and Camr Mounting Assy seated, will not slip off Bracket Assy. Release pb – out

DCS 760 EVA CAMR (Continued)

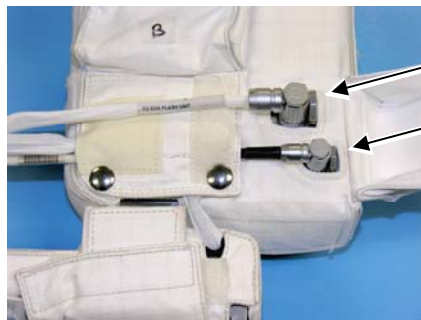
760 EVA – CAMR w/FLASH (Continued)

- EVA Flash
31. Open Flaps A,B
 32. Under Flap B, tuck excess Remote Cord Assy (two coils) into pocket on EVA Flash unit



(Remote Cord Coil)

33. Connect DCS EVA 7 VDC Pwr Cable to Ext Camr Pwr port (small) on EVA Flash under Flap A
34. Run Remote Cord Assy and DCS EVA 7 VDC Pwr Cable under Flap B
35. Close Flap B using two snaps



Sync Port

Ext Camr Pwr Port

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

- DCS 760 36. Connect Flash Sync Cable Assy to Flash Sync port on EVA Flash
 37. Close Flap A over Flash Sync Cable Assy



NOTE

Adjustments to cables may be reqd during installation

38. Remove EVA Camr Blanket Flap 3 from EVA Camr Blanket
Place Remote Cord Assy and DCS EVA 7 VDC Pwr Cable into Flap 3 per photo; close flaps





DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

39. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3)
40. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)



- EVA Flash
41. Access Flash Batt Compartment (remove Flap(s) C as reqd)
 42. Remove Batt Cap
 43. Install one DCS 760 Batt into FLASH slot (align arrows)
 44. Reinstall Batt Cap
 45. Flash – ON
 46. Activate Camr
 47. Open Flap D; verify following:
 - √Mode – 
 - If  not displayed, press viewfinder Forward
 - √Zoom – “M” not displayed
 - If “M” displayed, contact MCC
- DCS 760
48. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
 49. Test fire Camr w/Flash using Remote Release (two shots)
 50. √Flash fired
- EVA Flash
51. Flash – OFF
 52. Close Flap D
 53. Remove DCS 760 Batt from FLASH slot
- DCS 760
54. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)



NOTE



Do not remove Camr from orbiter pwr

55. Stow until day of EVA

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Concluded)

PRIOR TO ENTERING AIRLOCK:

- | | |
|------------------|--|
| EVA Flash | 1. Remove Batt Cap |
| | 2. Install two DCS 760 Batts into CAMERA,FLASH slots (align arrows) |
| | 3. Reinstall Batt Cap |
| | 4. Flash – ON |
| | 5. Activate Camr |
| | 6. Open Flap D; verify following: |
| | √Mode –  |
| | If  not displayed, press viewfinder Forward |
| | √Zoom – “M” not displayed |
| | If “M” displayed, contact MCC |
| DCS 760 | 7. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap) |
| | 8. Test fire Camr w/Flash |
| | 9. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap) |
| EVA Flash | 10. Flash – OFF |
| | 11. Close Flap D |
| | 12. Close Flap C |
| | 13. CAMR BATT PWR – EXT |
| DCS Batt
Chgr | 14. Camr Pwr – off |
| DCS 760 | 15. Disconnect DCS 760 Pwr Cable |
| | 16. Connect DCS EVA 7 VDC Pwr Cable to Camr (flat side fwd) |
| | 17. Secure snap on Flap 3 to EVA Camr Blanket |



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DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH DISASSEMBLY

BETWEEN EVAs

NOTE

Removal of Batts,Cards main objective

FLASH

1. Flash – OFF
2. Open Flap C to access Flash Batt compartment
3. Remove Batt Cap
4. Remove DCS 760 Batts (two)
5. Install Batt Cap
6. Close Flap C

CAMR

1. Remove Flap 3 snap from EVA Camr Blanket
2. Disconnect Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from DCS 760 Camr
3. Detach Flap 3 from EVA Camr Blanket
4. Disconnect Flash Sync Cable Assy from Camr Hot Shoe:
Unlock Flash Sync Cable Assy – turn ccw
5. Remove Flash Sync Cable Assy from under Flap 2 on left side of Camr
6. Detach Camr Mounting Assy from Bracket Assy
7. Detach DCS 760 Camr from Bracket Assy
8. In order to access Batt/PC Door, open Flap 1 of EVA Camr Blanket
9. Remove Light-Pipe from Batt/PC Door
10. Open Batt/PC door:
Remove DCS 760 Batt
Remove 1GB EVA Flash Cards (two)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH DISASSEMBLY (Continued)

POST-EVA

NOTE

Stowing of EVA H/W and IVA use of DCS 760 main objective

CAMR w/FLASH

1. Remove snap on Flap 3 from EVA Camr Blanket
2. Disconnect Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from DCS 760 Camr
3. Detach Flap 3 from EVA Camr Blanket
4. Remove Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from Flap 3
5. Secure Flap 3 to DCS EVA Camr Blanket
6. Disconnect Flash Sync Cable Assy from Camr Hot Shoe:
Unlock Flash Sync Cable Assy – turn ccw
7. Remove Flash Sync Cable Assy from under Flap 2 on left side of Camr
8. Detach Camr Mount from Bracket Assy
9. Detach DCS 760 Camr from Bracket Assy

CAMR

1. Remove Lens
2. Remove EVA Camr Blanket:
Open Flap 1 on EVA Camr Blanket
Uninstall Light-Pipe from DCS 760 Batt/PC Door
Remove EVA Camr Blanket from left to right
3. Temp stow EVA Camr Blanket
4. Replace lens
5. Camr Pwr – OFF
6. Open Batt/PC Door:
Remove DCS 760 Batt
Remove 1 GB EVA Flash Cards (two)

DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH DISASSEMBLY (Concluded)

POST-EVA (Concluded)

EVA FLASH AND FLASH BRACKET

1. Flash – OFF
2. Open Flap C to access Flash Batt compartment
3. Open Batt Cap and remove DCS 760 Batts (two)
4. Secure Batt Cap
5. Close Flap C
6. Open Flaps A,B
7. Remove Remote Cord Assy, Flash Sync Cable and DCS EVA 7 VDC Pwr Cable from Flap B
8. Disconnect Flash Sync Cable Assy from Flash
9. Disconnect EVA 7 VDC Pwr Cable from Flash
10. Close Flaps A,B
11. Remove EVA Flash from Bracket Assy
12. Remove Remote Cord Assy from Thermal Blanket
13. Temp Stow EVA Flash and Bracket Assy w/Thermal Blanket

RETURN CAMR TO NOM OPS (as reqd)

1. Replace DCS 760 Batt and 1 GB EVA Flash Card
2. Camr Settings:
 - Camr Pwr sw – ON
 - Nom Ops settings:
 - Auto OK Errors – No
 - High Temp Limit – No
 - √Long Exposures Processing – Exposures > 1/4 sec
3. Camr Pwr – OFF
4. Replace Action Viewfinder w/Nominal Viewfinder

DCS 760 EVA CAMR (Continued)

SPECIFICATIONS

CAMR BODY

CCD SIZE: 18.48mm x 27.65mm

PIXEL COUNT: 2008 x 3032

DISK/FRAME: 1 GB: 112 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: 7.2V

CAMR BATT LIFETIME: ~100 frames

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

DCS 760 EVA CAMR (Continued)

LENS DATA

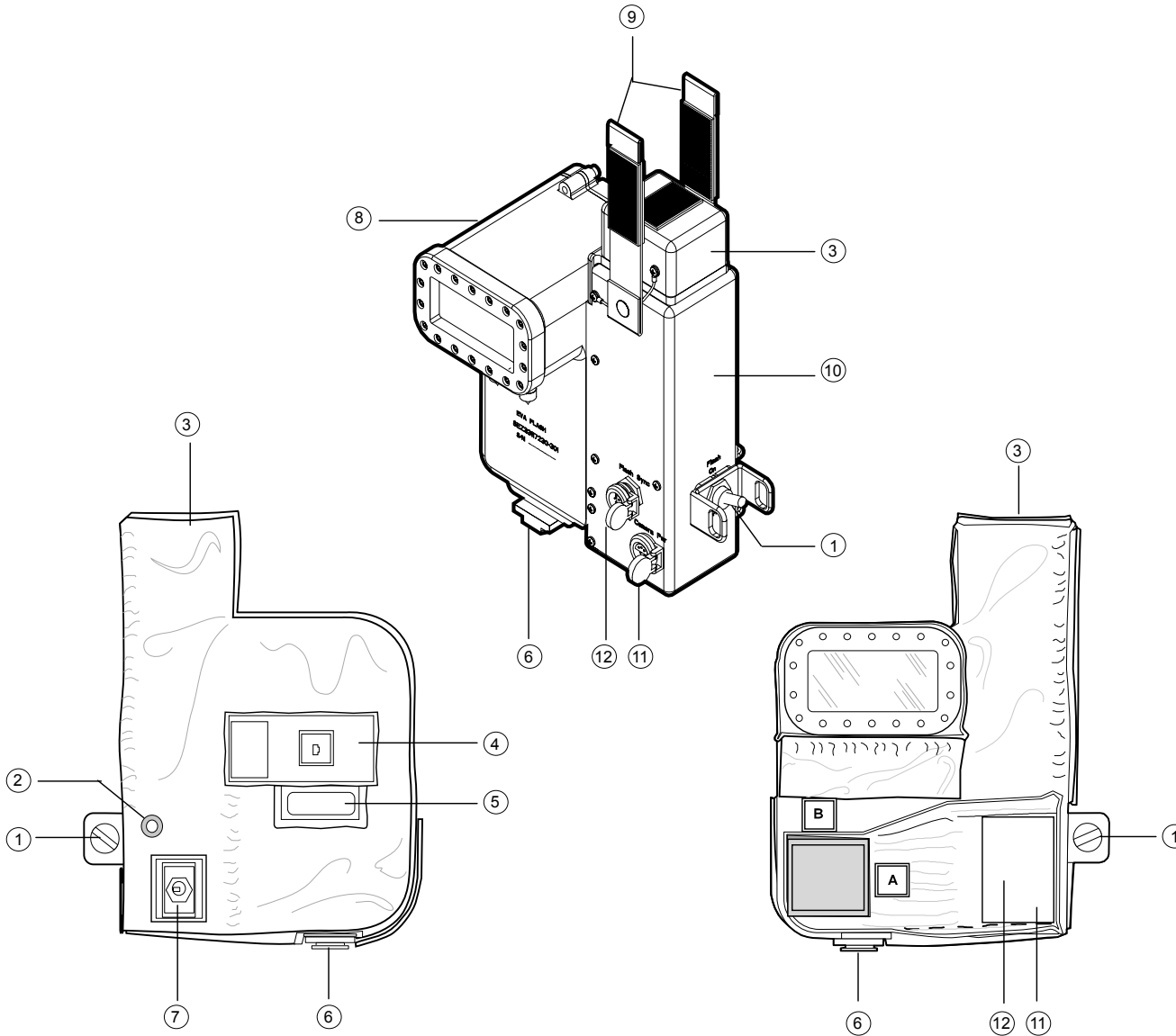
NOTE

Do not use non-EVA lens w/DCS 760 EVA

Lens	Aperture Range (f/stop)	Approximate Field of View (FOV)			Approx Minimum Focus Distance (ft)	Weight (lb)	Filter Size	M-A Sw	Focus Limit Sw
		Horizontal	Vertical	Diagonal					
28mm AF	f/2.8-f/22	53°	37°	61°	1.25	0.46	52mm		
35mm AF	f/2.0-f/22	43°	30°	51°	0.9	0.51	52mm		
50mm AFD	f/1.4-f/16	31°	21°	37°	1.5	0.59	52mm		
85mm AF	f/1.8-f/16	19°	12°	22°	3.0	0.93	62mm	Yes	
105mm AF	f/2.8-f/32	15°	10°	18°	1.0	1.22	52mm	Yes	Yes
180mm AFD	f/2.8-f/22	9°	6°	11°	5.0	1.72	72mm	Yes	
70-200mm AFD	f/2.8-f/22	20°-8°	13°-5°	24°-10°	6.0	2.98	77mm	Yes	

DCS 760 EVA CAMR (Continued)

NOMENCLATURE



- ① Flash Pwr sw
- ② External Camr Batt Low Light/LED
- ③ Batt Cap
- ④ Rear Flash Display Window
- ⑤ Flash Ready Lt Window
- ⑥ Flash Mount Rail
- ⑦ Camr Batt Pwr sw
- ⑧ Flash Housing
- ⑨ Batt Cap Straps
- ⑩ Batt Housing
- ⑪ External Camr Pwr Port
- ⑫ Flash Sync Port

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DCS 760 EVA CAMR (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

DCS 760 EVA CAMR (Continued)

760 QUICK FORMAT

NOTE

Only one card may be in Camr while formatting

1. Pwr – ON
2. MENU pb – press
3. Navigate pad – sel Menu icon ≡, then MAIN MENU
4. OK pb – press
5. Navigate pad – sel 'Card'
6. OK pb – press
7. Navigate pad – sel 'Quick Format'
8. OK pb – press
9. 'Format card? (All data will be erased)'
10. OK pb – press
11. 'Are you sure you want to erase the card?'
12. OK pb – press
13. 'Formatting Card'
14. 'Card format complete'
15. OK pb – press
16. CANCEL pb – press

DCS 760 EVA CAMR (Continued)

760 FULL FORMAT

1. Perform DCS BATT CHARGING (BATTS & FUSES)

NOTE

Pwr Camr from vehicle and batt to ensure completion of formatting.
Only one card may be in Camr while formatting

2. Pwr – ON
3. MENU pb – press
4. Navigate pad – sel Menu icon ☰, then MAIN MENU
5. OK pb – press
6. Navigate pad – sel ‘Card’
7. OK pb – press
8. Navigate pad – sel ‘Full Format’
9. OK pb – press
10. ‘Format card? (All data will be erased)’
11. OK pb – press
12. ‘Are you sure you want to erase the card?’
13. OK pb – press

NOTE

Formatting will take approx 20 min

14. ‘Formatting Card’ will be displayed w/progress bar
15. ‘Card format complete. No bad clusters found’
16. OK pb – press
17. CANCEL pb – press

DCS 760 EVA CAMR (Continued)

760 FIRMWARE UPDATE

PGSC

1. Insert PCMCIA 1 GB MICRO DRIVE into PGSC
2. Copy 'DCS7XX.bin' to root directory of PCMCIA 1 GB MICRO DRIVE
3. Remove PCMCIA 1 GB MICRO DRIVE from PGSC

CAMR

1. Install fresh Batt
2. Install PCMCIA 1 GB MICRO DRIVE w/loaded Firmware
3. Power – ON
4. MENU pb – press
5. Navigate pad – sel Menu icon ≡, then MAIN MENU
6. OK pb – press
7. Navigate pad – sel 'Firmware'
8. OK pb – press
9. Navigate pad – sel 'Update from Card'
10. OK pb – press
11. 'Loading firmware file from card'
12. 'Firmware update will take about 15 seconds'
13. OK pb – press
14. 'Updating firmware'
15. 'Firmware update complete. Turn camera off and on to restart'
16. OK pb – press
17. PWR – OFF
18. PWR – ON
19. 'New firmware version loaded 3.3.11'
20. ✓Version number 3.3.11

NOTE

Process must be completed two times to update both Firmware slots

21. OK pb – OK
22. Repeat steps 4-21, then go to step 23
23. PWR – OFF

DCS 760 EVA CAMR (Continued)

DATA LOG FILE PROCEDURE

CREATING LOG FILE

1. MENU pb – press
2. Navigate pad – sel Menu icon ☰, then MAIN MENU
3. OK pb – press
4. Navigate pad – sel 'Firmware'
5. OK pb – press
6. Navigate pad – sel 'Version'
7. OK pb – press
8. MENU pb – press, hold
9. OK pb – press
10. 'Saving log file' – displayed
11. 'Log file saved' – displayed (log file saved in root directory)
12. OK pb – press
13. Cancel pb – press twice to turn off display
14. Dnlk imagery and log file

DCS 760 EVA CAMR (Continued)

BLANK IMAGE

CAMR SETTINGS – ACTIVATION

NOTE

Camr must be pwr'd off for 30 min prior to performing Blank Image procedure

Install Body(Lens) Cap
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 – M
SS – 30
AF Area Mode – [] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – M
Aperture – Min, locked (‘--’ displayed on top LCD when no Lens installed)
Flash Settings
ON/OFF – OFF

TECHNIQUE

1. Fire Camr
2. Note image number (number in brackets on rear LCD)
3. Rcd audio file to denote “blank image taken”
4. Transfer image to PGSC for dnk to MCC-H

CAMR SETTINGS – DEACTIVATION

Exp Mode – P
Body Focus Mode – S
Flash Settings
ON/OFF – ON

DCS 760 EVA CAMR (Concluded)

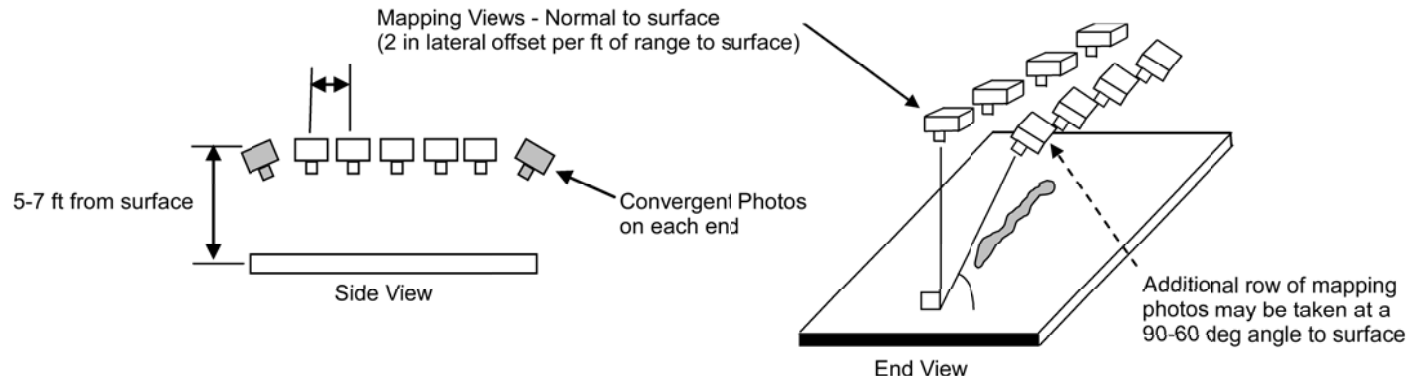
STEREO PHOTOGRAMMETRY PROCEDURE

CAMR SETTINGS – ACTIVATION

1. Rcd CAMR and LENS S/Ns
2. Perform EVA – CAMR ONLY (CAMR w/BRACKET ONLY, CAMR w/FLASH)
3. Install Lens – 50mm EVA (preferred)
Exp Mode – P
Flash Settings:
ON/OFF – OFF

TECHNIQUE

1. Distance to subject: 5-7 ft
2. Take mapping images normal to surface, followed by one additional convergent view on each side
3. Shoot photos in pairs. Offset each image laterally 2 in/ft of subject distance, ~10-14 in
4. An additional row of photos may be taken at a 90-60 deg angle to surface to capture critical details not covered in previous images
5. Repeat as time permits



CAMR SETTINGS – DEACTIVATION

1. Exp Mode – P
Body Focus Mode – S
Flash Settings:
ON/OFF – ON

EVA IR CAMR

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EVA IR CAMR

CAMR SETUP

1. If Camr Bracket not installed, perform IR CAMR BRACKET ASSEMBLY procedure
2. Install EHIP Batt
3. ✓CF card installed
4. Lens Cover – Fold to left side
5. MASTER sw – ON (wait 20 sec for initialization)
6. ✓Manual('Level/Span: Manual') not displayed in top left of LCD
7. ✓Date/Time – GMT
8. E/M pb – push,hold
 - Sel: "File – Burst Setup"
 - Max # frames – 300
 - Save every – 12th frame
 - ✓FPS – 5.0
 - ✓Elapse Time – 60
 - E/M pb – push
9. E/M pb – push,hold
 - Sel: "File – Images..."
 - If images present in directory:
 - E/M pb – push,hold
 - Sel: "Delete all images"
 - Sel: "Delete"
 - ✓NO images present in directory
 - C/L pb – push
10. ENABLE sw – up (hold for 3 sec, observe shutdown msg on screen)
11. Lens cover – Reinstall
12. If not using within 3 hr:
 - MASTER sw – OFF

IR CAMR BRACKET ASSEMBLY

1. Tools Req'd (IFM Tool Locker Tray 3):
 - 1/4-in Torque Wrench (40-200 in-lb)
 - 5/32-in Hex Ball
2. Align Camr Body to Camr Bracket
3. Tighten bracket screws to Camr Body, snug (three screws, 5/32-in Hex Ball)
4. Torque bracket screws to 49 in-lb

EVA IR CAMR (Continued)

SPECIFICATIONS

CAMR

PIXEL COUNT: 320 x 240

SPECTRAL RANGE: 7.5 μ m-13 μ m (Far IR)

INTERNAL RAM MEMORY: 600 images

CF CARD/FRAME: 1 GB/6000 images

FILE SIZE: ~167 KB per image

TEMPERATURE SENSING RANGE: -40°F to +250°F(-40°C to +120°C)

LEVEL/SPAN: Auto(Manual)

EMISSIVITY RANGE: 0.01 to 1.0

BATT: EHIP

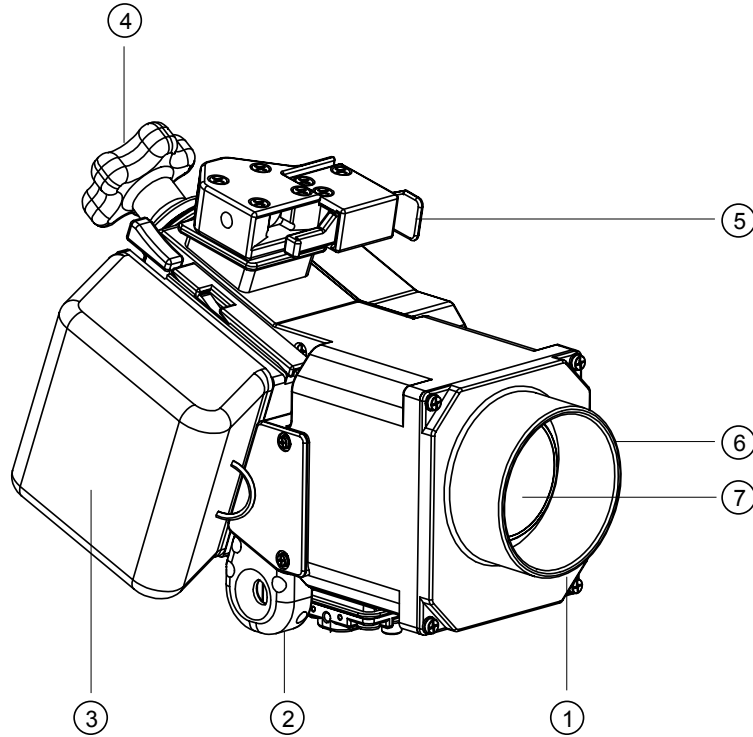
BATT VOLTAGE: 6V

LENS FOV: 24°x18°

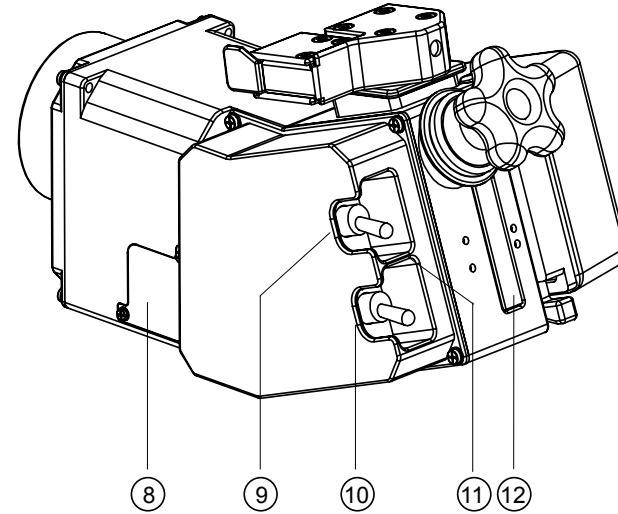
POINTING LASER: Wavelength = 635nm

EVA IR CAMR (Continued)

NOMENCLATURE



- ① Pointing Laser - Lower side of Baffle (not shown)
- ② RCU Cable Strain Relief
- ③ EHIP Batt
- ④ EVA Knob (provides handhold for pointing)
- ⑤ STD Slide-Lock (holds remote during translation)
- ⑥ Lens Baffle

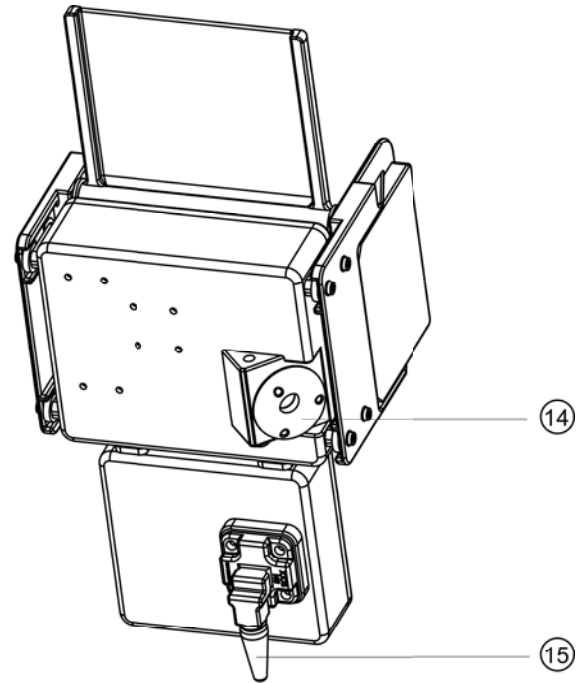
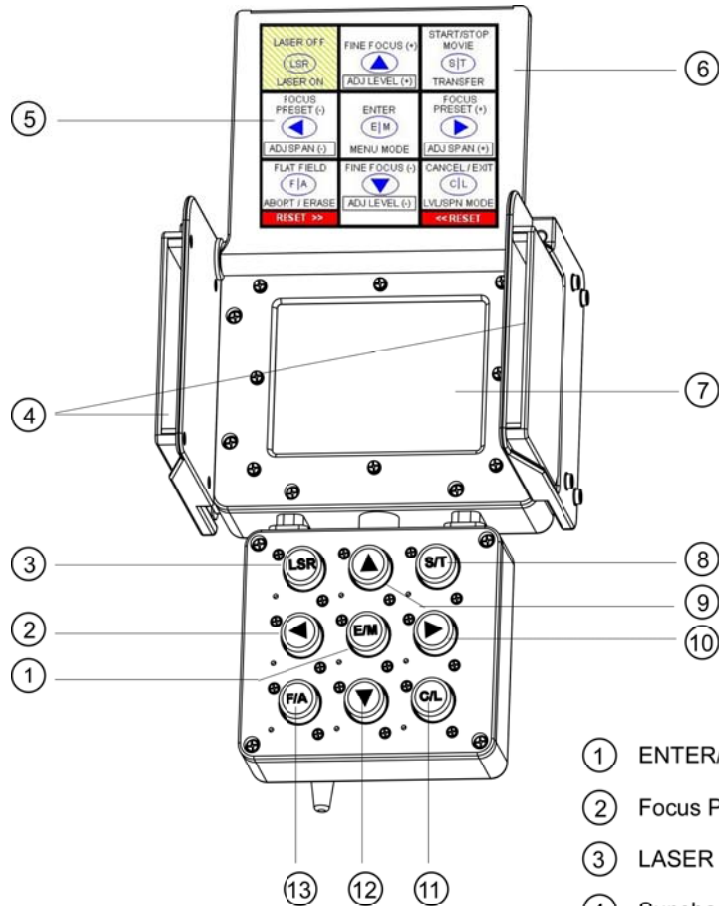


- ⑦ Lens
- ⑧ Access Cover
- ⑨ ENABLE sw
- ⑩ MASTER sw
- ⑪ Batt Status Indicator LED
- ⑫ Compact Flash Memory Card Access
(Card secured w/latch (not shown))

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EVA IR CAMR (Continued)

NOMENCLATURE (Continued)












- ① ENTER/MENU MODE (E/M) pb
- ② Focus Preset (-) / Adj Span (-) pb
- ③ LASER (LSR) pb
- ④ Sunshades
- ⑤ Pb Map/Cheat Sheet
- ⑥ LCD Cover
- ⑦ LCD
- ⑧ START,STOP/TRANSFER (S/T) pb
- ⑨ Fine Focus (+) / Adj Level (+) pb
- ⑩ Focus Preset (+) / Adj Span (+) pb
- ⑪ CANCEL/LEVEL (C/L) pb
- ⑫ Fine Focus (-) / Adj Level (-) pb
- ⑬ FLAT FIELD/ABORT,ERASE (F/A) pb
- ⑭ Cable Attach Point
- ⑮ Bayonet

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EVA IR CAMR (Continued)

NOMENCLATURE (Continued)

LASER OFF  LASER ON	FINE FOCUS (+)  ADJ LEVEL (+)	START/STOP MOVIE  TRANSFER
FOCUS PRESET (-)  ADJ SPAN (-)	ENTER  MENU MODE	FOCUS PRESET (+)  ADJ SPAN (+)
FLAT FIELD  ABORT / ERASE	FINE FOCUS (-)  ADJ LEVEL (-)	CANCEL / EXIT  LVL/SPN MODE
RESET >>		<< RESET

LSR pb

- Push to turn laser OFF
- Push,hold ~3 sec to activate laser

Up/Down Arrow pbs

- Push,hold to fine focus
- When in "Level/Span:Manual", push,hold to increase(decrease) level
- When in Menu Mode, use to navigate and change parameters

S/T pb

- Push to start(stop) movie recording
- Push,hold ~3 sec to transfer images from RAM to compact flash card

Left/Right Arrow pbs

- Push to select preset focus distances (3,6,9,12 ft, or infinity)
- When in "Level/Span:Manual", push,hold to adjust span
- When in Menu Mode, use to navigate and change parameters

E/M pb

- Push to enter functions or change parameters
- Push,hold ~3 sec to enter Menu Mode

F/A pb

- Push to perform flat field correction
- When transferring a movie, push,hold ~3 sec to abort transfer
- When not transferring a movie, push,hold ~3 sec to erase imagery in RAM

C/L pb

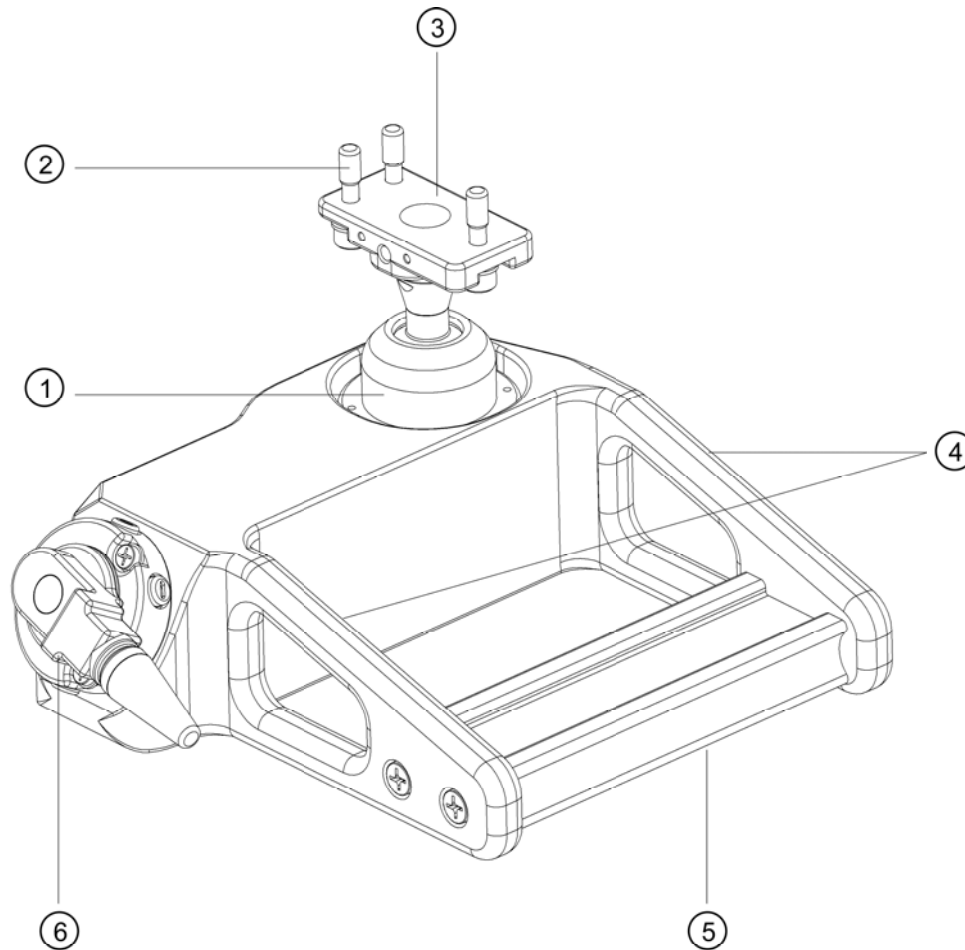
- Push to cancel(exit) various menu/Camr options
- After selecting "Manual Adjust" in menu, push,hold ~3 sec to toggle the functionality of Up/Down/Left/Right arrow pbs between focus and level/span modes

F/A and C/L pbs simo

- Push,hold simo ~3 sec to reset menu settings back to default parameters

EVA IR CAMR (Continued)

NOMENCLATURE (Concluded)



- ① Ball Joint
- ② Bracket Screws
- ③ Camr Interface
- ④ Tether Loop (two)
- ⑤ Dogbone Handrail
- ⑥ Clockable Bayonet

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EVA IR CAMR (Continued)

NOMINAL MENU SETTINGS

FILE ('File')

Images... – N/A
Save – N/A
Burst Setup
 Max # Frames – 300
 Save every – 12th frame
 FPS – 5.0
 Elapse Time – 60
Burst recording... – N/A

ANALYSIS ('Analysis')

Object Param...
 Emissivity – 0.96
 Distance – 6.6 ft
 T Reflected – 68°F
 T Atmosphere – 68°F
 Rel Humidity – 30%
 External optics – Off
 Optics transmission – N/A
 Optics temperature – N/A

IMAGE ('Image')

Level/Span... – N/A
Manual Adjust – displayed
Palette...
 Palette – Gray
 Inverted – No

SETUP ('Setup')


Image...
 Adjust method – Histogram
 Lock scale – Off
 Lock value – blank
 Scale – On
 Status bar – On
 Saturation colours – Off
 Noise reduction – Off
 Shutter period – Normal
Other Settings
 Power...
 Auto power off – None
 Display power off – None
 LCD illumination – Medium
 Date/Time... – set per GMT
Local Settings...
 Temp unit – °F
 Distance unit – Feet
 Date format – MM/DD/YY
Camera info... – N/A
Profile – N/A
Factory default – N/A

EVA IR CAMR (Continued)

MOVIE RECORDING

1. √MASTER sw – ON
2. Lens Cover – remove
3. ENABLE sw – up
4. Wait 5 min before recording images
5. Focus on subject
6. F/A pb – push
7. S/T pb – press (start recording)
8. S/T pb – press (stop recording)
9. S/T pb – press and hold (transfer)
10. √Transfer complete

MOVIE PLAYBACK

1. E/M pb – push,hold
2. Sel: “File – Images...”
3. E/M pb – push
4. Sel desired file
5. E/M pb – push
6. Sel: 
7. E/M pb – push
8. When finished: C/L pb – push

DOWNLINKING FILES

- | | |
|----------|---|
| IR Camr | 1. Remove compact flash (CF) card from Camr |
| | 2. Assemble CF Card and PCMCIA Adapter |
| KFX PGSC | 3. Place assembled card,adapter in PGSC |
| | 4. Copy files to “C:\Oca-down\dto851” |
| | 5. Remove assembled card,adapter from PGSC |
| | 6. Disassemble and place CF Card back into Camr |

DELETING FILES

DELETE SINGLE FILES ON CF CARD

1. E/M pb – push,hold
2. Sel: “File – Images...”
3. E/M pb – push
4. Sel desired file
5. E/M pb – push,hold
6. Sel: “Delete”
7. E/M pb – push
8. Sel: “Delete”
9. E/M pb – push

DELETE ALL FILES ON CF CARD

1. E/M pb – push,hold
2. Sel: “File – Images...”
3. E/M pb – push
4. E/M pb – push,hold
5. Sel: “Delete all images”
6. E/M pb – push
7. Sel: “Delete”
8. E/M pb – push
9. C/L pb – push

EVA IR CAMR (Concluded)

LEVEL/SPAN MODES

MANUAL ADJUST MODE

NOTE

In this mode, user adjusts level,span

1. E/M pb – push,hold
2. Sel: “Image – Manual adjust”
3. E/M pb – push

NOTE

C/L pb will change functionality of arrow pb.

If “Level/Span: Manual” displayed in top left of LCD:
Up/Down arrow pbs adjust level
Left/Right pbs adjust span.

If “Manual” displayed in top left of LCD:
Up/Down arrow pbs adjust fine focus
Left/Right pbs adjust focus preset

CONTINUOUS ADJUST MODE

NOTE

In this mode, Camr automatically adjusts level,span

1. E/M pb – push,hold
2. Sel: “Image – Continuous adjust”
3. E/M pb – push

DATE/TIME SET

1. E/M pb – push,hold
2. Sel: “Setup – Other settings”
3. E/M pb – push
4. Sel: “Date/time”
5. E/M pb – push
6. Sel desired field (up/down arrow pb)
7. Sel desired setting (left/right arrow pb)
8. E/M pb – push

SELECTING DIFFERENT PALETTES

1. E/M pb – push,hold
2. Sel: “Image – Palette...”
3. E/M pb – push
4. Sel desired palette (left/right arrow pb)
5. E/M pb – push

RESET TO NASA PROFILE

1. √All images transferred to CF card
2. F/A pb,C/L pb – push and hold simo for 3 sec

DEACTIVATION

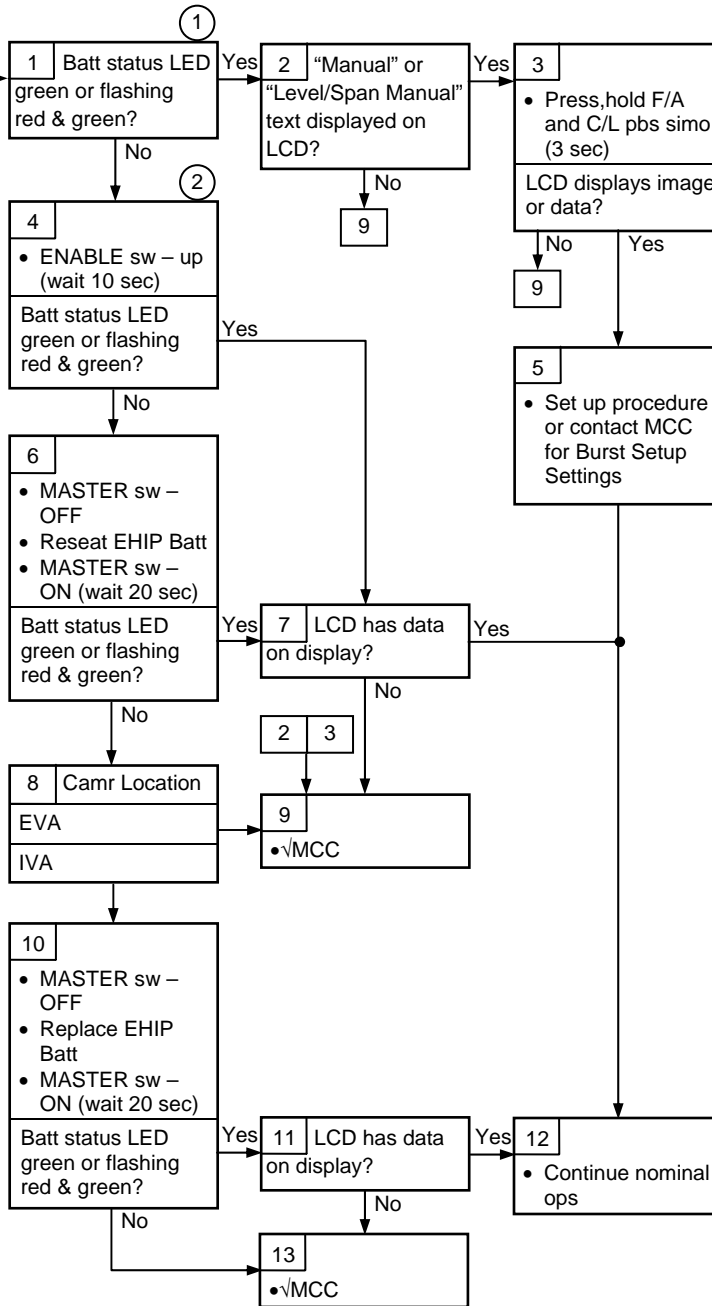
1. √All images transferred to CF card
2. ENABLE sw – up (hold for 3 sec)
3. MASTER sw – OFF
4. Lens Cover – cl

IR CAMR

5.1 NO LCD PWR/DISPLAY

No LCD Pwr/Display

Nominal Config:
 (Camr)
 EHIP – install
 CF Card – install
 Lens Cover – fold to left
 MASTER sw – ON
 “Level/Span: Manual” or “Manual” not display on LCD
 (RCU Menu – Burst Setup)
 Max # frames: 300
 Save every: 12 frame



① Flashing red & green LED indicates that 75% of Batt has been used

② ENABLE sw is a momentary sw

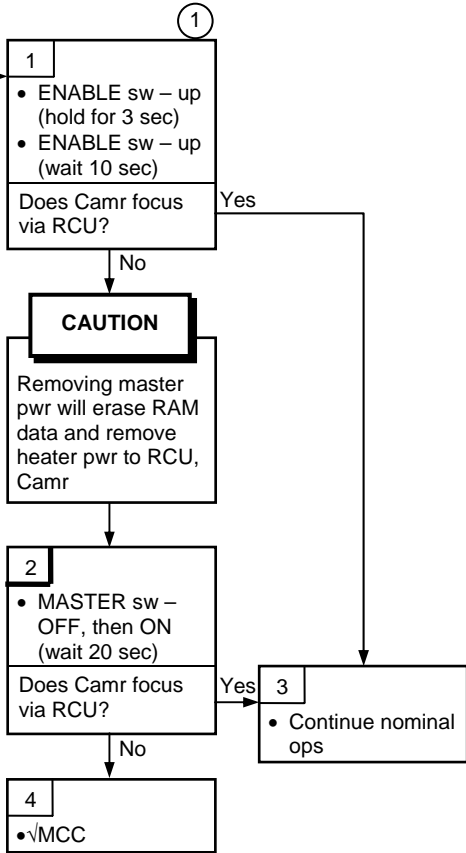
IR CAMR

5.2 RCU pbs NOT RESPONDING

RCU pbs Not Responding

Nominal Config:
(Camr)
EHIP – install
CF Card – install
Lens Cover – fold to left
MASTER sw – ON
√“Level/Scan: Manual” or “Manual” not display on LCD

(RCU Menu – Burst Setup)
√Max # frames: 300
√Save every: 12 frame



①
ENABLE sw is a momentary sw

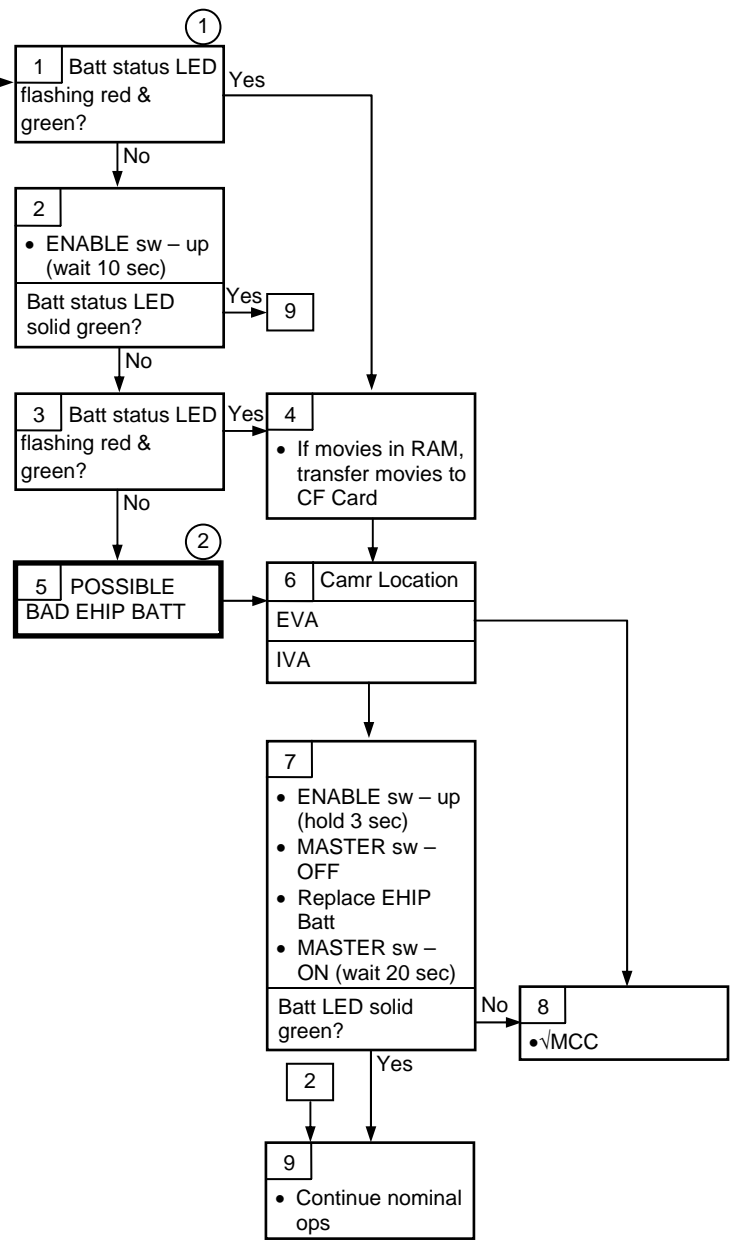
IR CAMR

5.3 BATT LED NOT SOLID GREEN

Batt LED Not Solid Green

Nominal Config:
 (Camr)
 EHIP – install
 CF Card – install
 Lens Cover – fold to left
 MASTER sw – ON
 √“Level/Span: Manual” or “Manual” not display on LCD

(RCU Menu – Burst Setup)
 √Max # frames: 300
 √Save every: 12 frame



①
 Flashing red & green LED indicates that 75% of Batt has been used

②
 ENABLE sw is a momentary sw

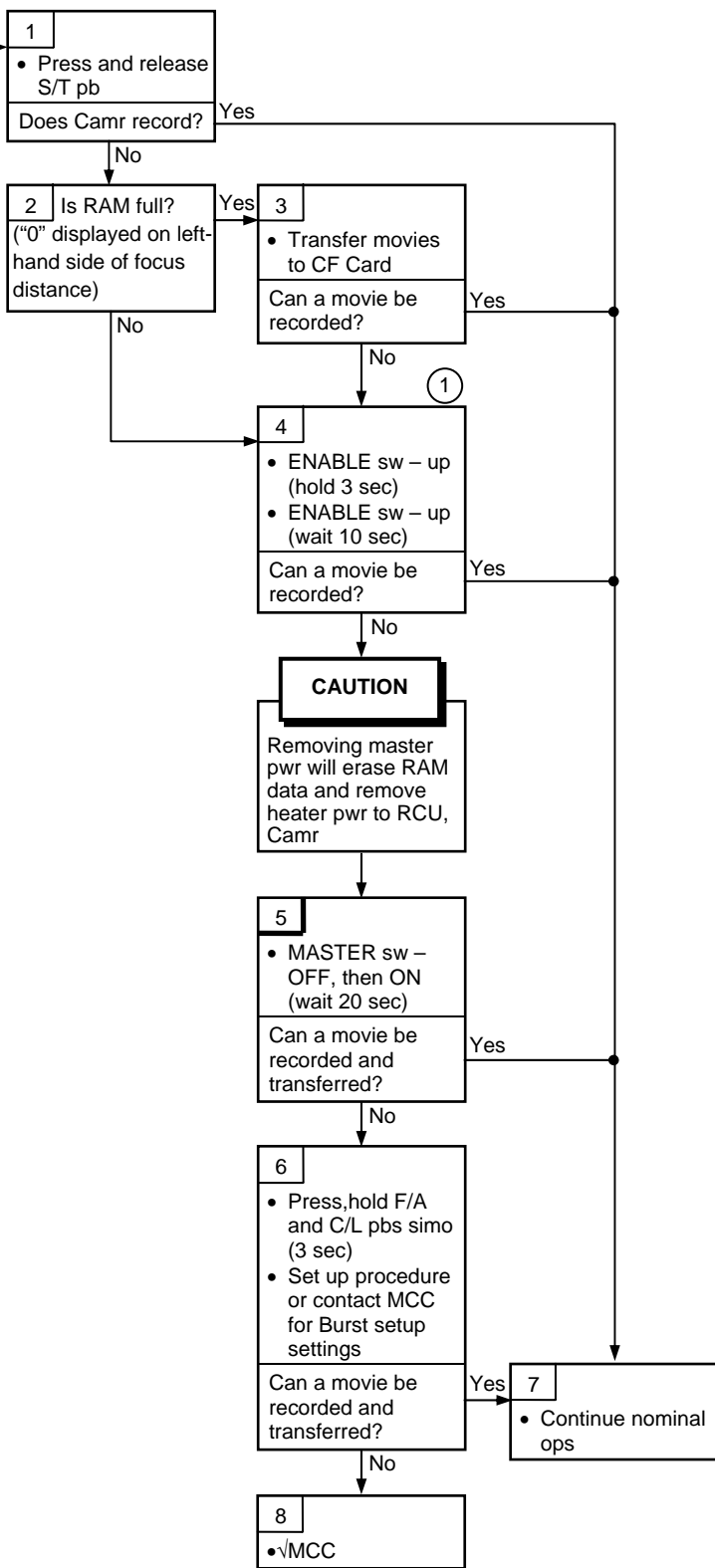
IR CAMR

5.4 IR CAMR WILL NOT RECORD

IR Camr Will Not Record

Nominal Config:
 (Camr)
 EHIP – install
 CF Card – install
 Lens Cover – fold to left
 MASTER sw – ON
 √“Level/Span: Manual” or “Manual” not display on LCD

(RCU Menu – Burst Setup)
 √Max # frames: 300
 √Save every: 12 frame



①
 ENABLE sw is a momentary sw

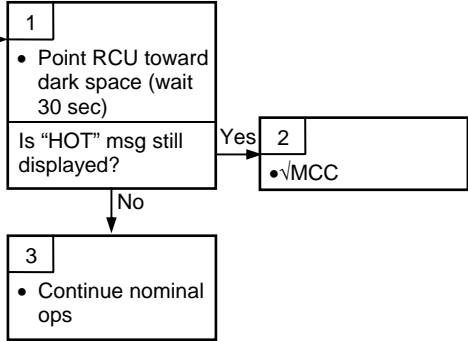
IR CAMR

5.5 WHITE LCD WITH "HOT" TEXT

White LCD With
"Hot" Text

Nominal Config:
(Camr)
EHIP – install
CF Card – install
Lens Cover – fold
to left
MASTER sw – ON
√"Level/Span:
Manual" or
"Manual" not
display on LCD

(RCU Menu – Burst
Setup)
√Max # frames: 300
√Save every: 12
frame



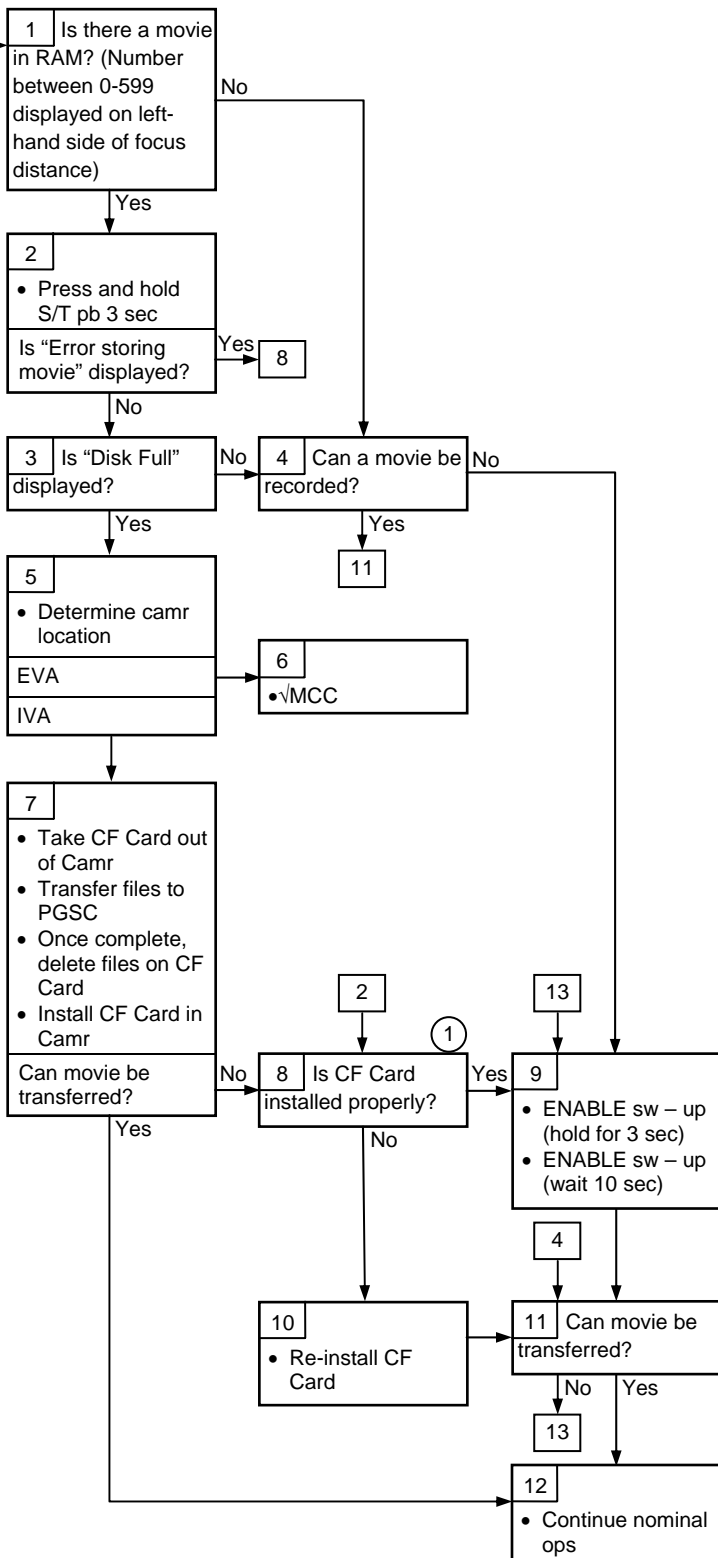
IR CAMR

5.6 MOVIE TRANSFER ERROR

Movie Transfer Error

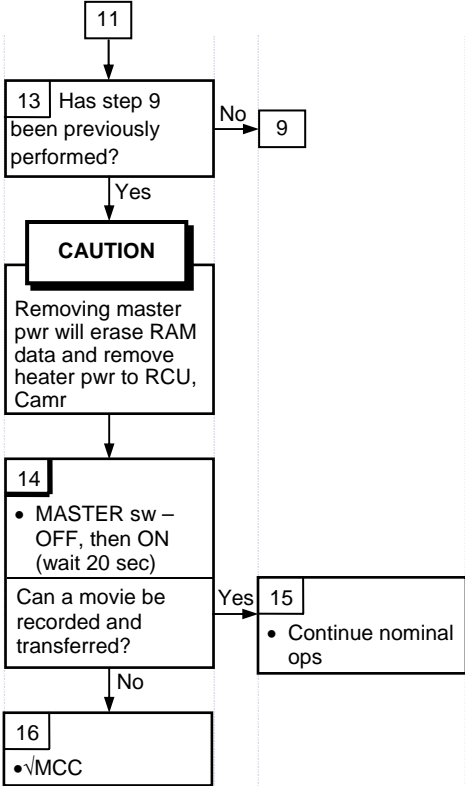
Nominal Config:
(Camr)
EHIP – install
CF Card – install
Lens Cover – fold to left
MASTER sw – ON
√“Level/Span: Manual” or “Manual” not display on LCD

(RCU Menu – Burst Setup)
√Max # frames: 300
√Save every: 12 frame



①
If CF Card not properly installed, Burst record settings are not configurable via menu

IR CAMR 5.6 (Cont)



SPOTMETER 303

NOTE

Not being flown

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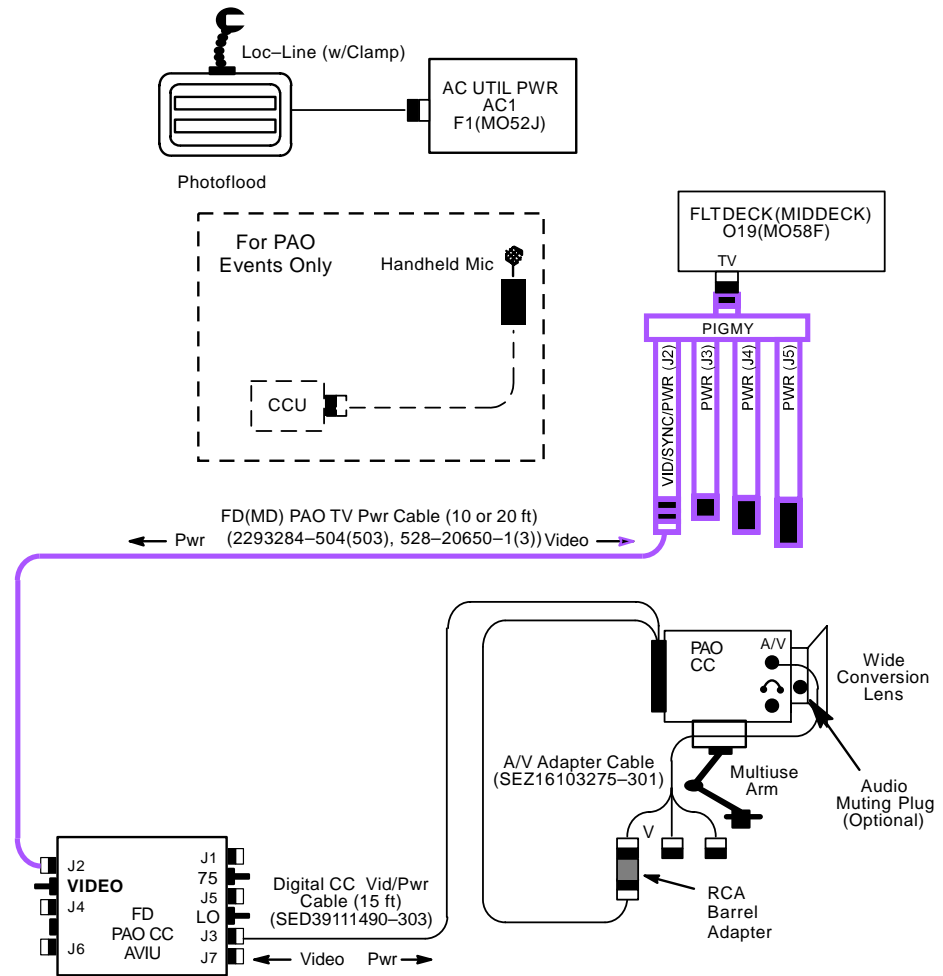
SONY PD100

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SONY PD100

ANALOG PAO CC

- Config H/W per dwg at right
- AVIU SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO
- O19(MO58F) √TV PWR – ON
- CC √Wide Conversion lens installed
PWR – 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
Install Audio Muting Plug (optional)
Multiuse Brkt, Clamp
- F1(MO52J) AC UTIL PWR AC1 – ON
- Photoflood ON/OFF – ON
HI/LO – HI
- Cabin Lts Flt Deck – ON
Lts in FOV – OFF as reqd
Lt Shades – install as reqd
Window Shades – install as reqd
- CC √Scene composition
Adjust Camr angle for best framing
- CCU CCU PWR – ON
- ATU PWR – AUD
A/G 1(2) – T/R
All Other Loops – OFF
XMIT/ICOM MODE SEL – PTT/PTT
MSTR SPKR VOL SEL – As reqd
- When ready for dnk:
A7 √TV DNLK – ENA
PWR CNTL – PNL
CONTR UNIT – MNA(B)
CNTL – CMD (wait 10 sec for system initialization)
VID OUT DNLK pb – push
IN FLT DECK(MIDDECK) pb – push



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SONY PD100 (Continued)

DIGITAL PAO CC

- Config H/W per dwg at right

To compose scene but not dnk:
 VTR/CC PWR – on (LED on)

L10 (MUX)
 CC

 - √Wide Conversion lens installed
 - PWR – 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

Install Audio Muting Plug
 Multiuse Brkt, Clamp

F1(MO52J)
 Photoflood

 - AC UTIL PWR AC1 – ON
 - ON/OFF – ON
 - HI/LO – HI

Cabin Lts

 - Flt Deck – ON
 - Lts in FOV – OFF as reqd
 - Lt Shades – install as reqd
 - Window Shades – install as reqd

CC

 - √Scene composition

Adjust Camr angle for best framing

CCU

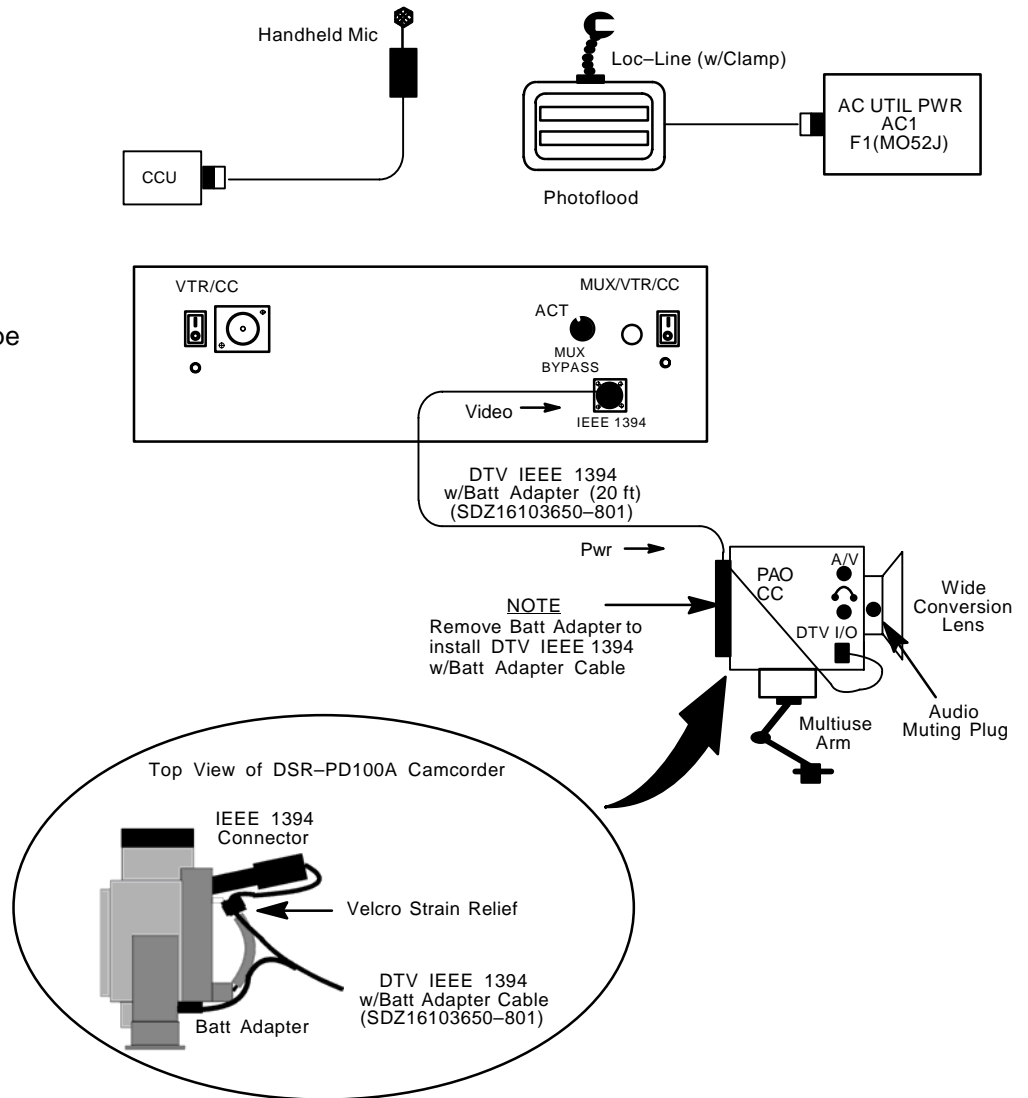
 - CCU PWR – ON

ATU

 - PWR – AUD
 - A/G 1(2) – T/R
 - All Other Loops – OFF
 - XMIT/ICOM MODE SEL – PTT/PTT
 - MSTR SPKR VOL SEL – As reqd

L10 (MUX)

 - When ready to dnk signal:
 MUX/VTR/CC PWR – on (LED on)
 - √MUX BYPASS – ACT
 - √CHANNEL 3 DATA LED – on



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SONY PD100 (Continued)

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/11
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

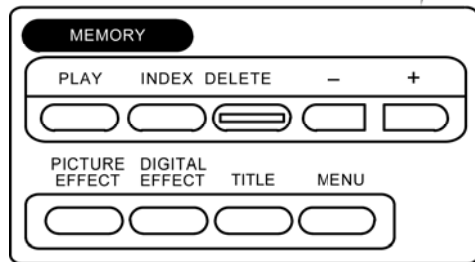
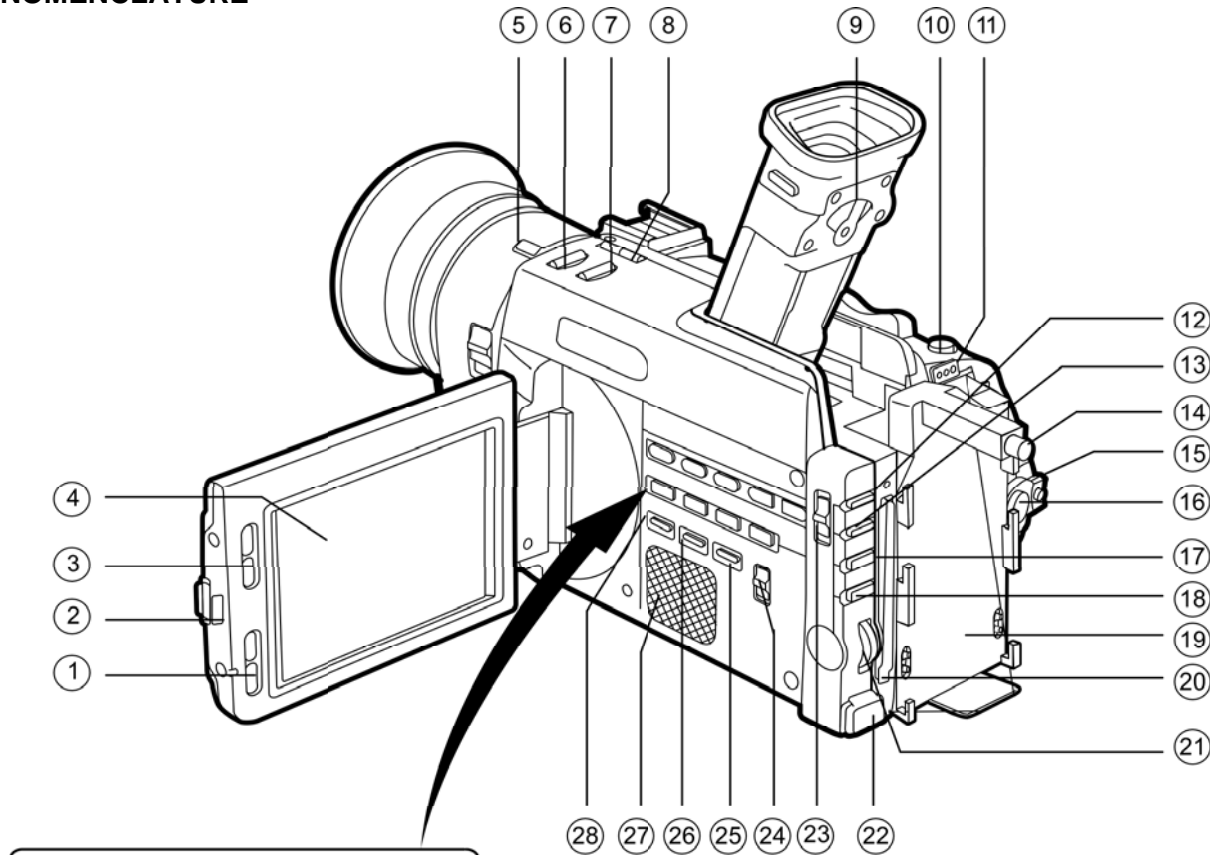
CONVERSION: 0.7X
CONVERTED FOCAL LENGTH: 3.01mm to 36.2mm
WEIGHT: 0.53 lb

LENS DATA




Lens	Zoom Ratio	Approximate Field of View			Filter Size
		Horizontal	Vertical	Diagonal	
4.3-51.6mm	12:1	61.1°-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

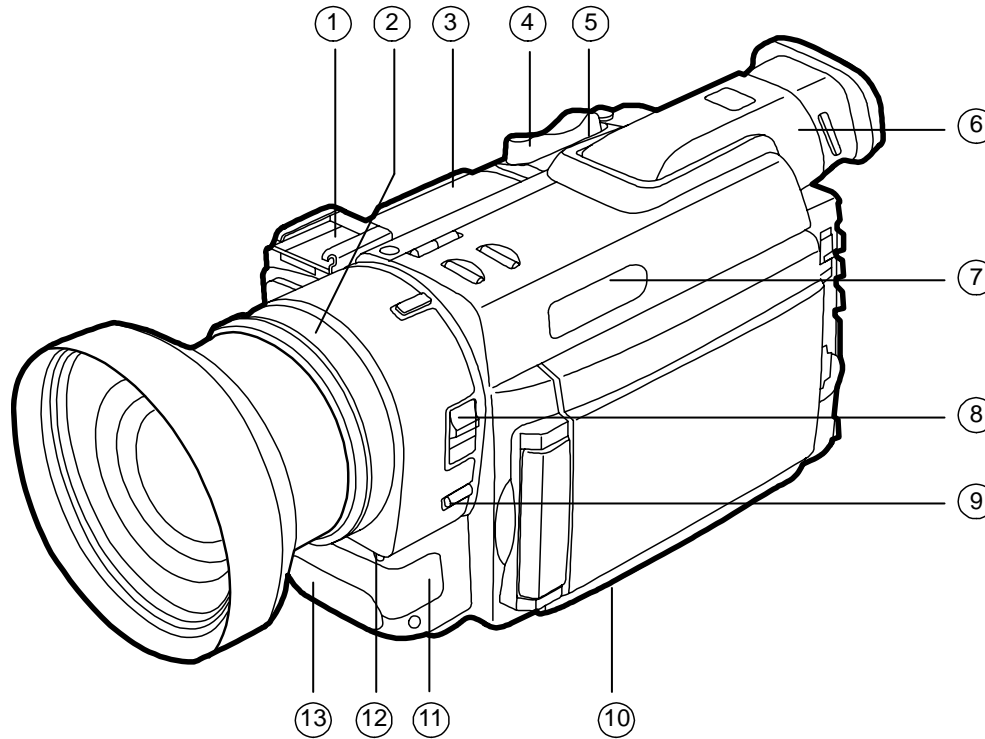


- ⑤ ND FILTER pb
- ⑥ FADER pb
- ⑦ BACK LT pb
- ⑧ EDIT/SEARCH pb
- ⑨ Viewfinder Lens Adjustment Lever
- ⑩ PHOTO pb
- ⑪ BATT RELEASE pb
- ⑫ SHUTTER SPEED pb
- ⑬ WHT BAL (White Balance) pb
- ⑭ POWER SUPPLY RELEASE pb
- ⑮ POWER sw
- ⑯ START/STOP pb
- ⑰ PROGRAM AE pb
- ⑱ EXPOSURE pb
- ⑲ Batt Adapter
- ⑳ Memory 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

- ① VOLUME pb
- ② LCD OPEN sw
- ③ LCD BRIGHT pb
- ④ LCD Screen
-  Tape Remaining
-  Manual Focus
-  White Balance Icon

SONY PD100 (Continued)

NOMENCLATURE (Continued)

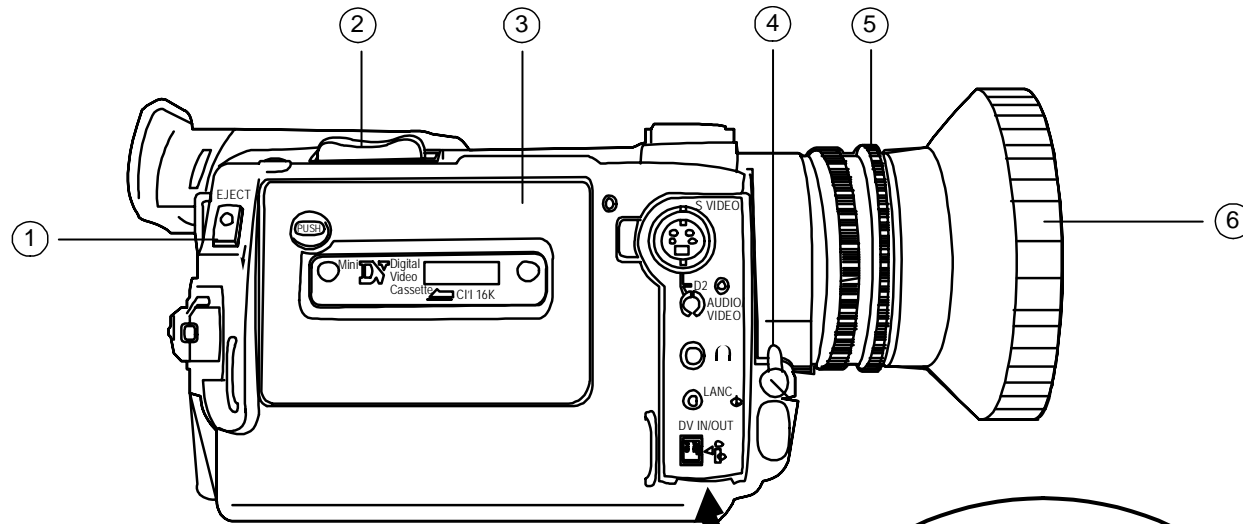


- ① Accessory Shoe
- ② Focus Ring
- ③ Tape Transport pbs
 - STOP (stop)
 - ◀◀ REW (rewind)
 - ▷ PLAY (playback)
 - ▶▶ FF (fast forward)
 - || PAUSE (pause)
 - REC (record)
- ④ Zoom Control
- ⑤ TC RESET pb
- ⑥ Viewfinder
- ⑦ Display Window
- ⑧ FOCUS sw
- ⑨ PUSH AUTO pb
- ⑩ Memory Release pb (not visible)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

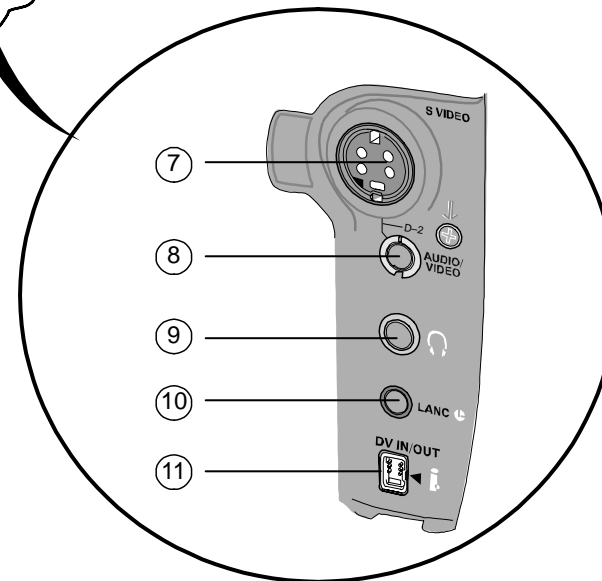
jsc48037_026.cnv

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

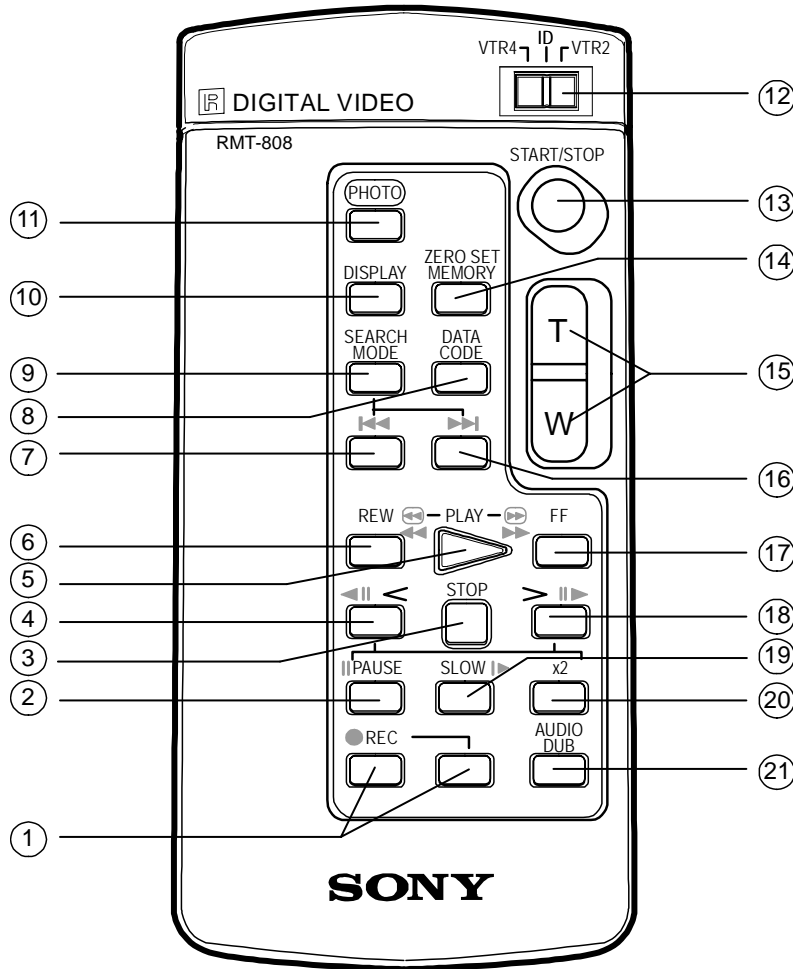


- ⑦ S VIDEO Jack
- ⑧ AUDIO/VIDEO Jack
- ⑨ Headphone Jack
- ⑩ LANC Jack
- ⑪ DV IN/OUT Jack

jsc48037_027.cnv

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

jsc48037_028.cnv

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

PWR – 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

PWR – 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

PWR – 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

PWR – 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)

PD100 TO PD100 VIA FIREWIRE

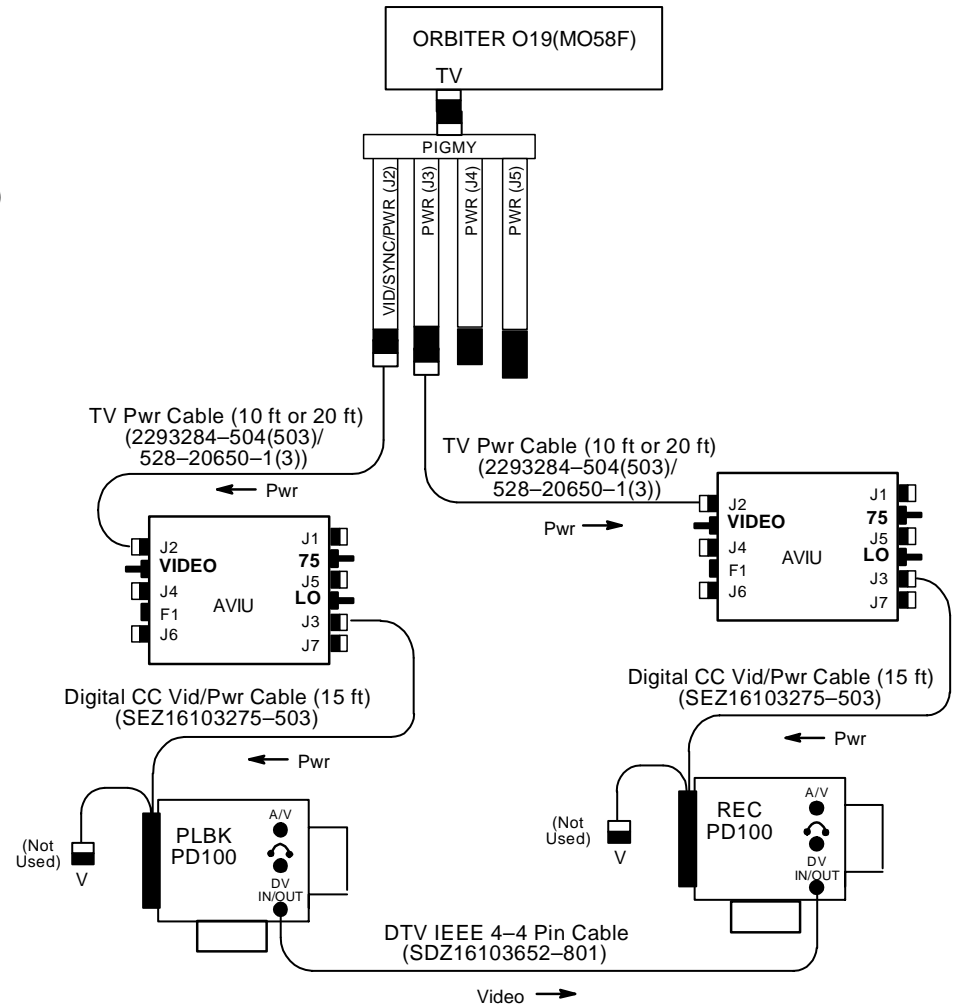
Config H/W per dwg at right

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

PLBK CC PWR – VTR
 DISPLAY pb – push
 Install source tape. Protect Tab – Slide (red visible)
 PLAY pb – push
 Cue tape to desired take
 PAUSE pb – push

RCD CC PWR – VTR
 DISPLAY pb – push
 Install new tape

PLBK CC MENU pb – push
 Sel ETC(OTHERS)/DV EDITING
 Perform following for each video segment:
 Sel IN to mark beginning of video clip
 FF pb – push to move to end of video clip
 Sel OUT to mark end of video clip

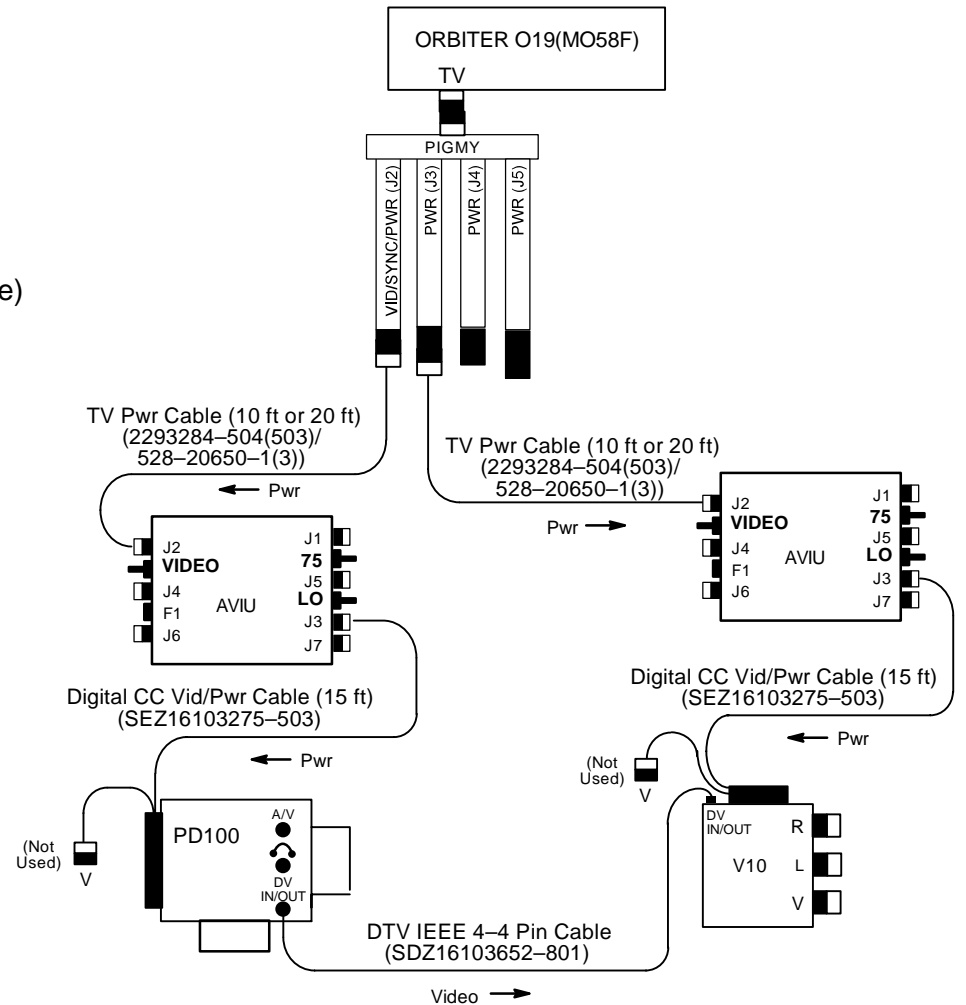


jsc48037_029.cnv

SONY PD100 (Continued)

PD100 TO V10 VIA FIREWIRE

- Config H/W per dwg at right
- AVIU SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO
- CC PWR – VTR
DISPLAY pb – push
Install source tape. Protect Tab – Slide (red visible)
PLAY pb – push
Cue tape to desired take
PAUSE pb – push
- V10 PWR – ON
DISPLAY pb – push
Install new tape
- CC MENU pb – push
Sel ETC(OTHERS)/DV EDITING
Perform following for each video segment:
Sel IN to mark beginning of video clip
FF pb – push to move to end of video clip
Sel OUT to mark end of video clip



jsc48037_030r1.cvx

SONY PD100 (Continued)

PD100 TO V10 VIA ORBITER TV SYSTEM

Config H/W per dwg at right
 ✓Orbiter in async mode

AVIU

SYNC/VIDEO – VIDEO
 HI-Z/75 – 75
 PWR SELECT – LO

CC

PWR – VTR
 DISPLAY pb – push
 Install source tape.
 Protect Tab – Slide (red visible)
 PLAY pb – push
 Cue tape to desired take
 PAUSE pb – push

V10

PWR – ON
 DISPLAY pb – push
 Install new tape
 REC pb – push
 PAUSE pb – push

A7

VID OUT MON 1(2) pb – push
 IN FLT DECK(MIDDECK) pb – push

CC

Perform following for each video segment:

PAUSE pb – push (To PLAY)
 PAUSE pb – push (To REC)

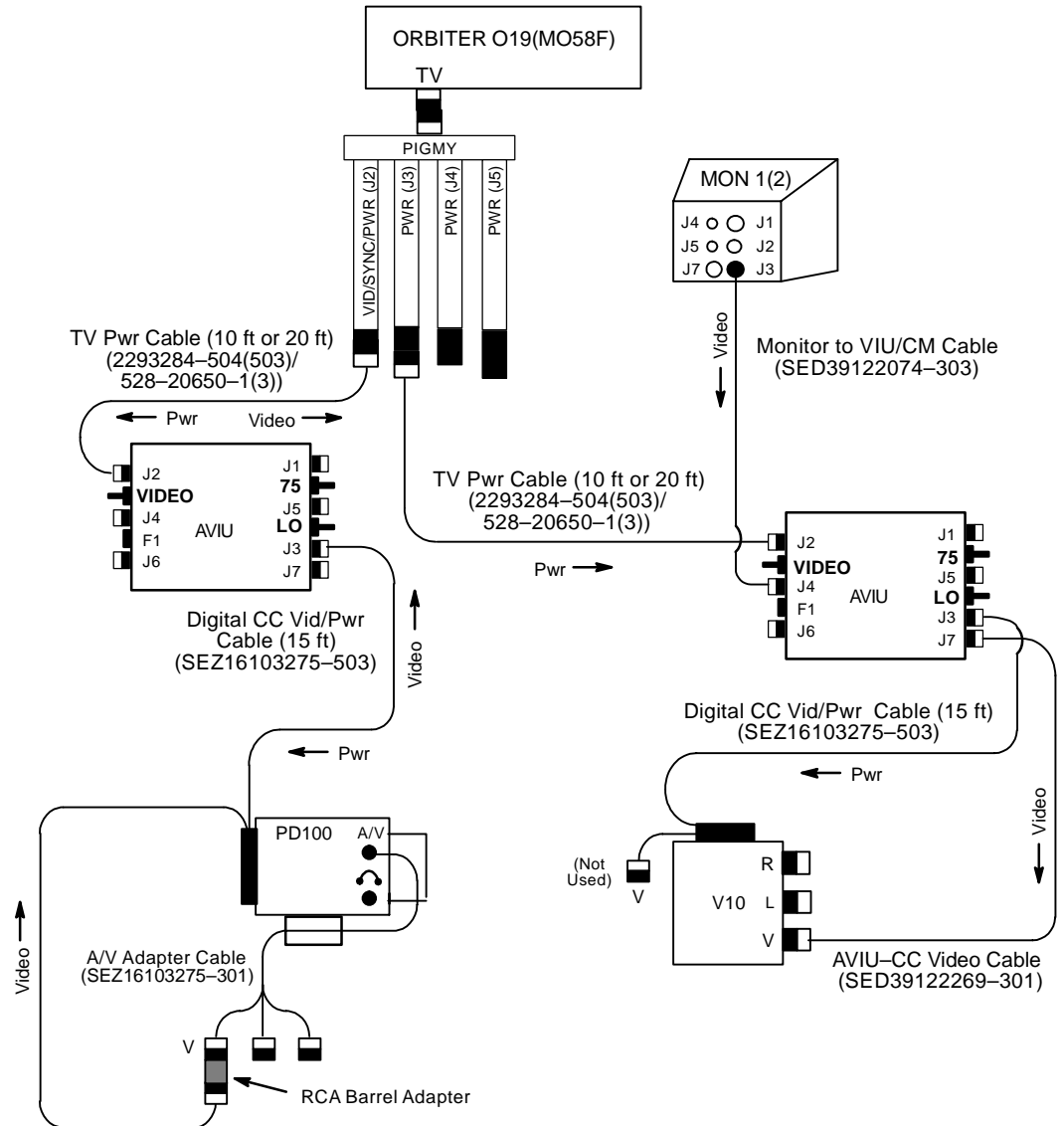
When EDIT segment complete:

CC

PAUSE pb – push (PAUSE)

V10

PAUSE pb – push (PAUSE)



jsc48037_031.cnv

SONY PD100 (Continued)

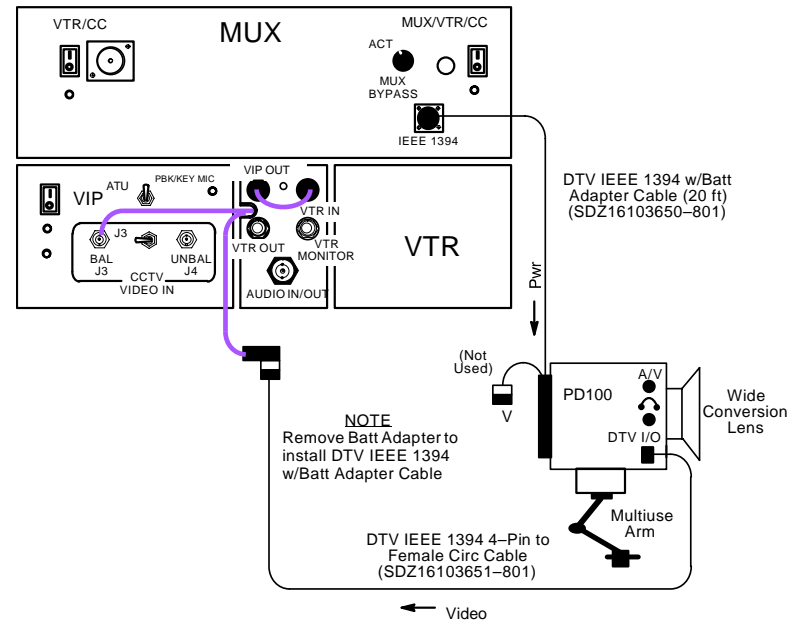
PD100 TO DSR-20 VTR

Config H/W per dwg at right

L10 (MUX) (VTR) $\sqrt{\text{VTR/CC PWR}}$ – on (LED on)
 ON/STANDBY – push (green LED on)
 INPUT SELECT – push twice to change from VIDEO to DV
 Install new tape

CC PWR – VTR
 DISPLAY pb – push
 Install source tape
 Cue tape to desired take
 PAUSE pb – push
 MENU pb – push
 Sel ETC(OTHERS)/DV EDITING
 Perform following for each video segment:
 Sel IN to mark beginning of video clip
 FF pb – push to move to end of video clip
 Sel OUT to mark end of video clip

L10 VTR (MUX)
 When complete:
 INPUT SELECT – push once to change from DV to VIDEO
 Remove, mark tape
 ON/STANDBY – push (red LED on)
 Remove, stow IEEE 1394 female cable
 VTR/CC PWR – off (LED off) as reqd
 Reconnect IEEE 1394 male cable to IEEE 1394 connector



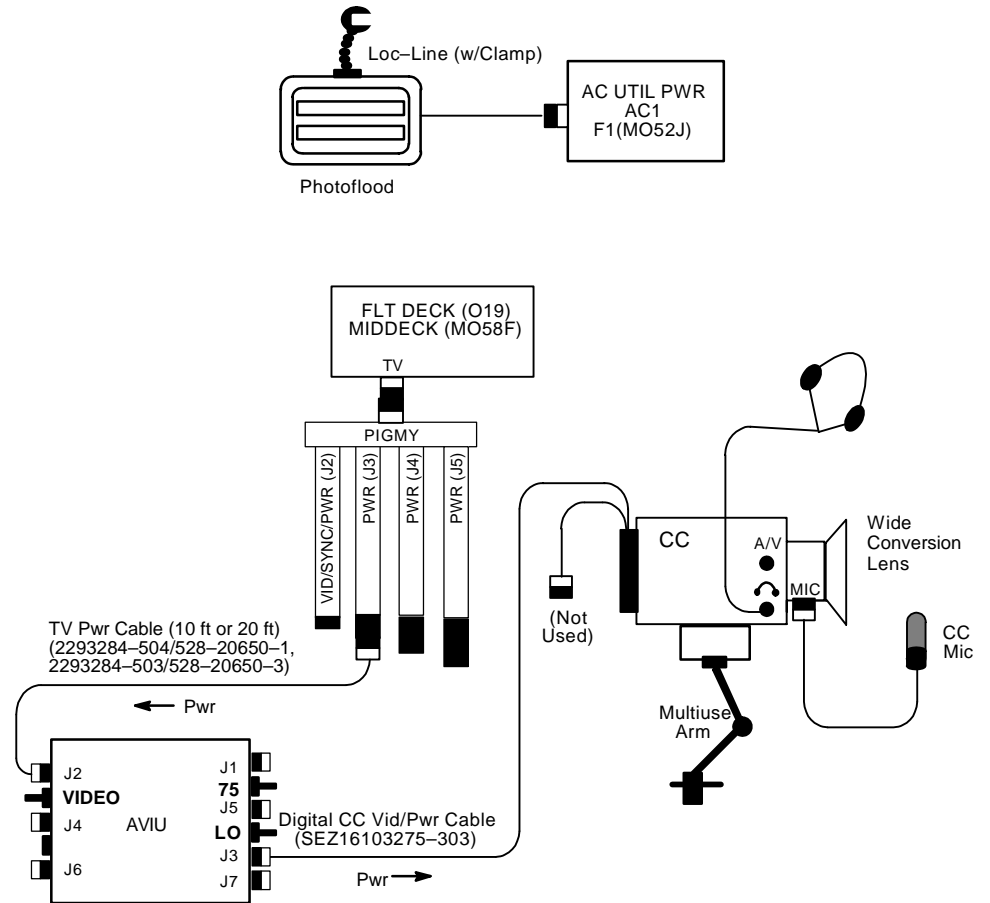
jsc48037_032r2.cvx

SONY PD100 (Concluded)

PD100 w/CAMCORDER MICROPHONE

Config H/W per dwg at right

- AVIU SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO
- O19 (MO58F) ✓TV Pwr – ON
- CC ✓Wide Conversion Lens installed
PWR – CAMERA
Tape – Install
✓Viewfinder(LCD) displays STBY
Camr Settings
✓AUTO LOCK – AUTO LOCK
✓FOCUS – AUTO
Multiuse Brkt, Clamp
- Lav Mic ON/OFF – ON
- F1 (MO52J) AC UTIL PWR AC1 – ON
- Photoflood ON/OFF – ON
HI/LO – HI
- Cabin Lts Flt Deck(Middeck) – ON
Lts in FOV – Off as reqd
Lt Shades – install as reqd
- CC ✓Scene Composition
Adjust Camr for best framing
✓Audio Quality



jsc48037_033.cnv

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SONY V10

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V10 FROM MON 1	8-2a
V10 FROM MON 1 FOR DOCK,UNDOCK.....	8-2b
V10 FROM MON 2	8-3
RWS V10 FROM MON 1	8-4
RWS V10 FROM DTV	8-5
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NOMENCLATURE.....	8-7
MENU SETTINGS	8-9
V10 TO V10 VIA FIREWIRE.....	8-10

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SONY V10

V10 FROM MON 1

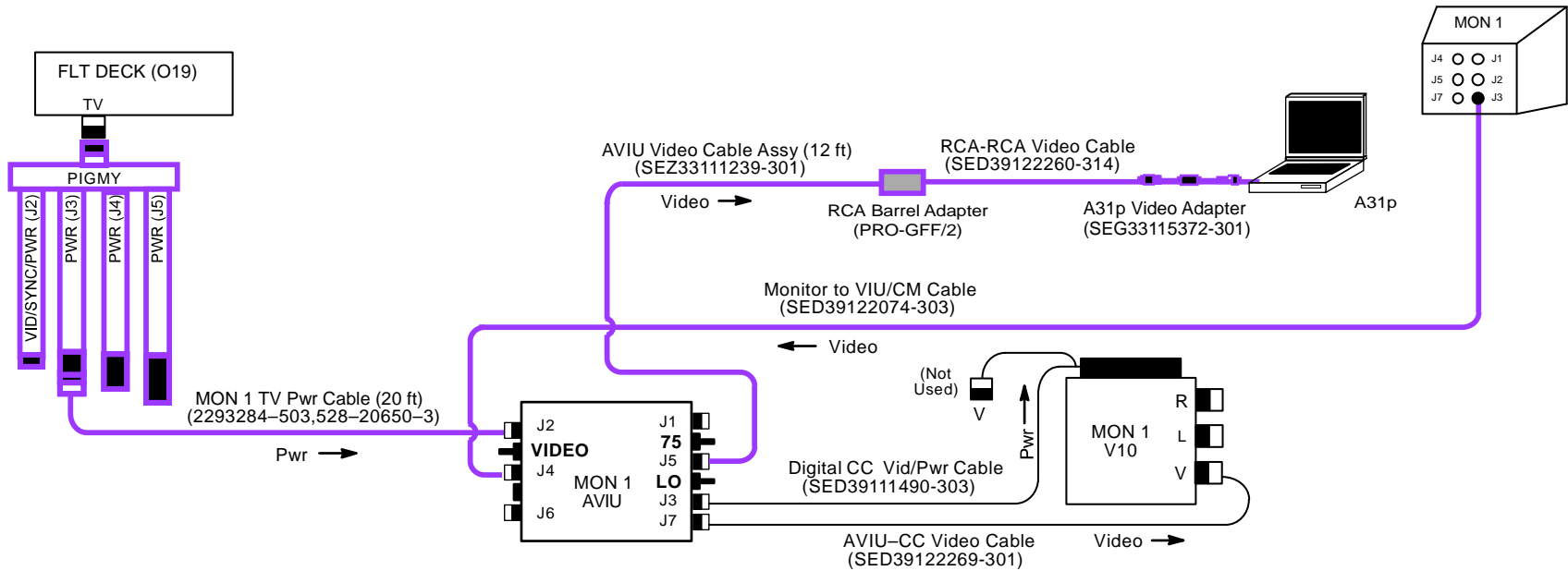
Config H/W per dwg below

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

O19 √TV PWR – ON

V10 PWR – ON
 DISPLAY pb – Toggle to display tape counter
 Tape – Install

FOR A31p AS MON
 Perform A31p VIDEO CONVERTER (PHOTO/TV, PORTABLE MONITORS)



jsc48037_115_034.cvx

SONY V10 (Continued)

V10 FROM MON 1 FOR DOCK, UNDOCK

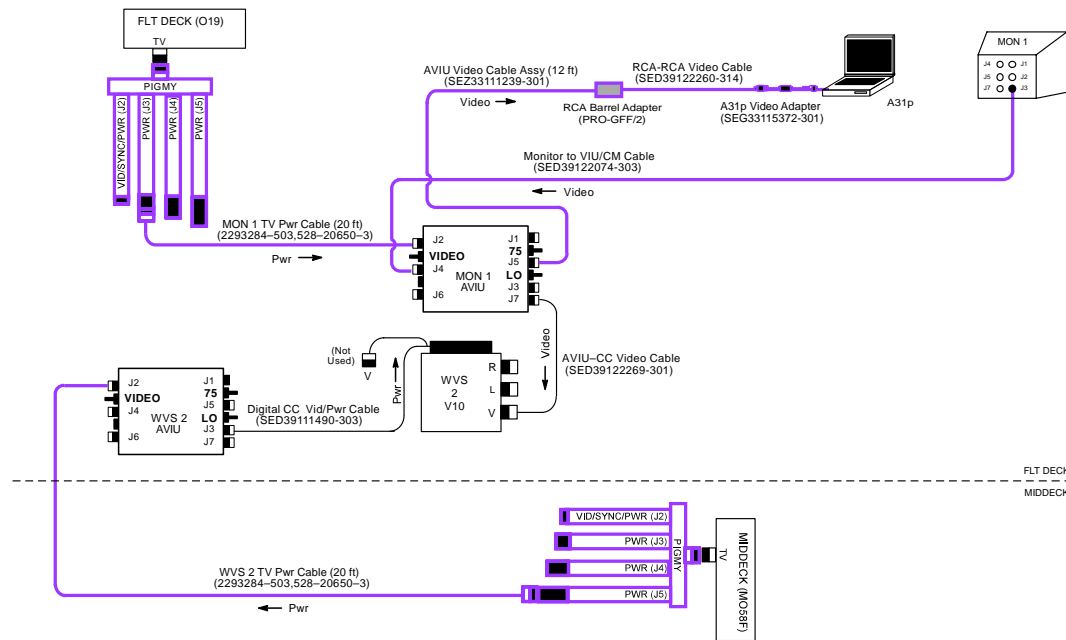
Config H/W per dwg below

AVIU (two) SYNC/VIDEO – VIDEO
 HI-Z/75 – 75
 PWR SELECT – LO

O19, MO58F √TV PWR – ON

V10 PWR – ON
 DISPLAY pb – Toggle to display tape counter
 Tape – Install

FOR A31p AS MON
 Perform A31p VIDEO CONVERTER (PHOTO/TV, PORTABLE MONITORS)

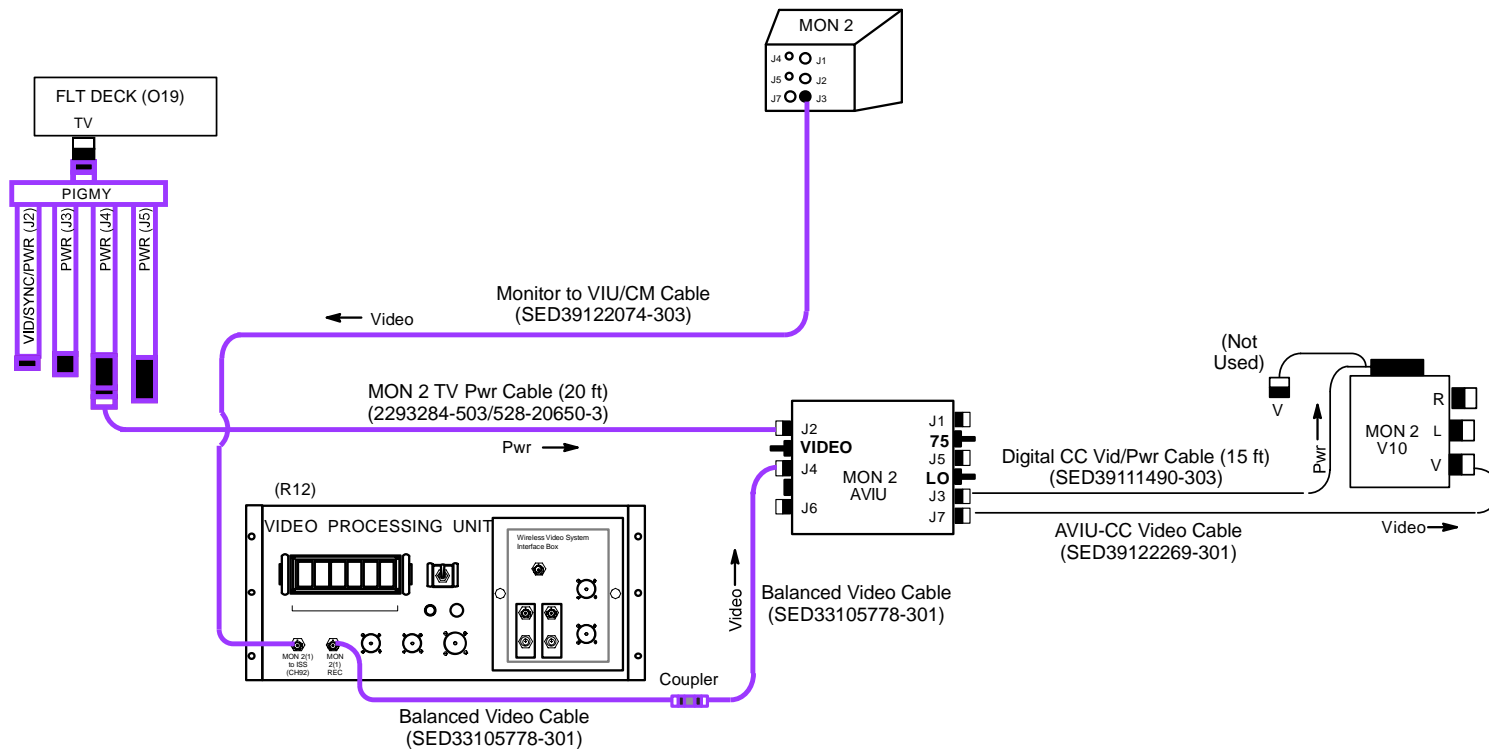


jsc48037_115_034a.cvx

SONY V10 (Continued)

V10 FROM MON 2

- Config H/W per dwg below
- AVIU SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO
- O19 √TV PWR – ON
- V10 PWR – ON
DISPLAY pb – Toggle to display tape counter
Tape – Install
- R12 VPU PWR – ON (LED on)



jsc48037_115_035r1.cvx

SONY V10 (Continued)

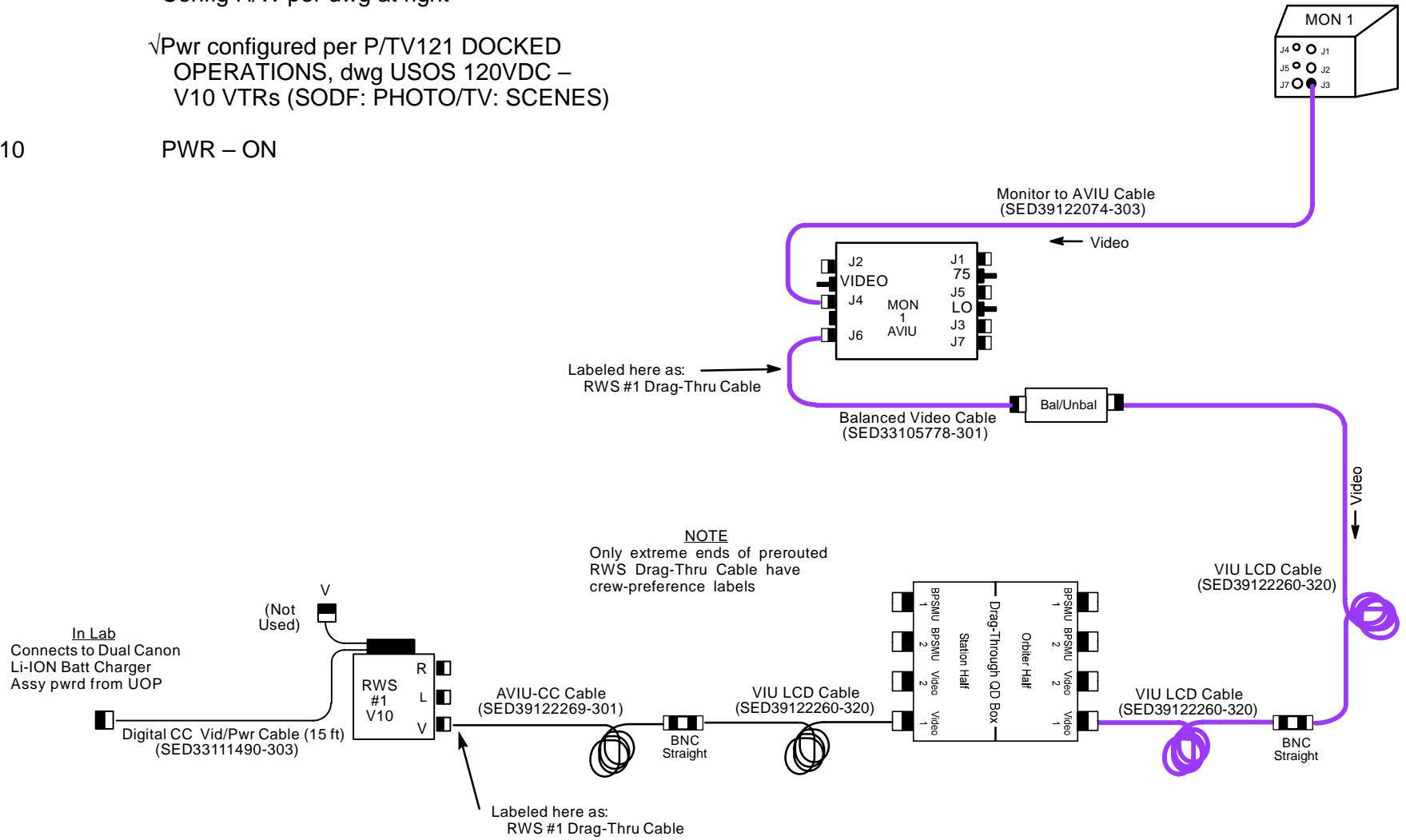
RWS V10 FROM MON 1

Config H/W per dwg at right

√Pwr configured per P/TV121 DOCKED OPERATIONS, dwg USOS 120VDC – V10 VTRs (SODF: PHOTO/TV: SCENES)

V10

PWR – ON



jsc48037_115_107r2.cnv

SONY V10 (Continued)

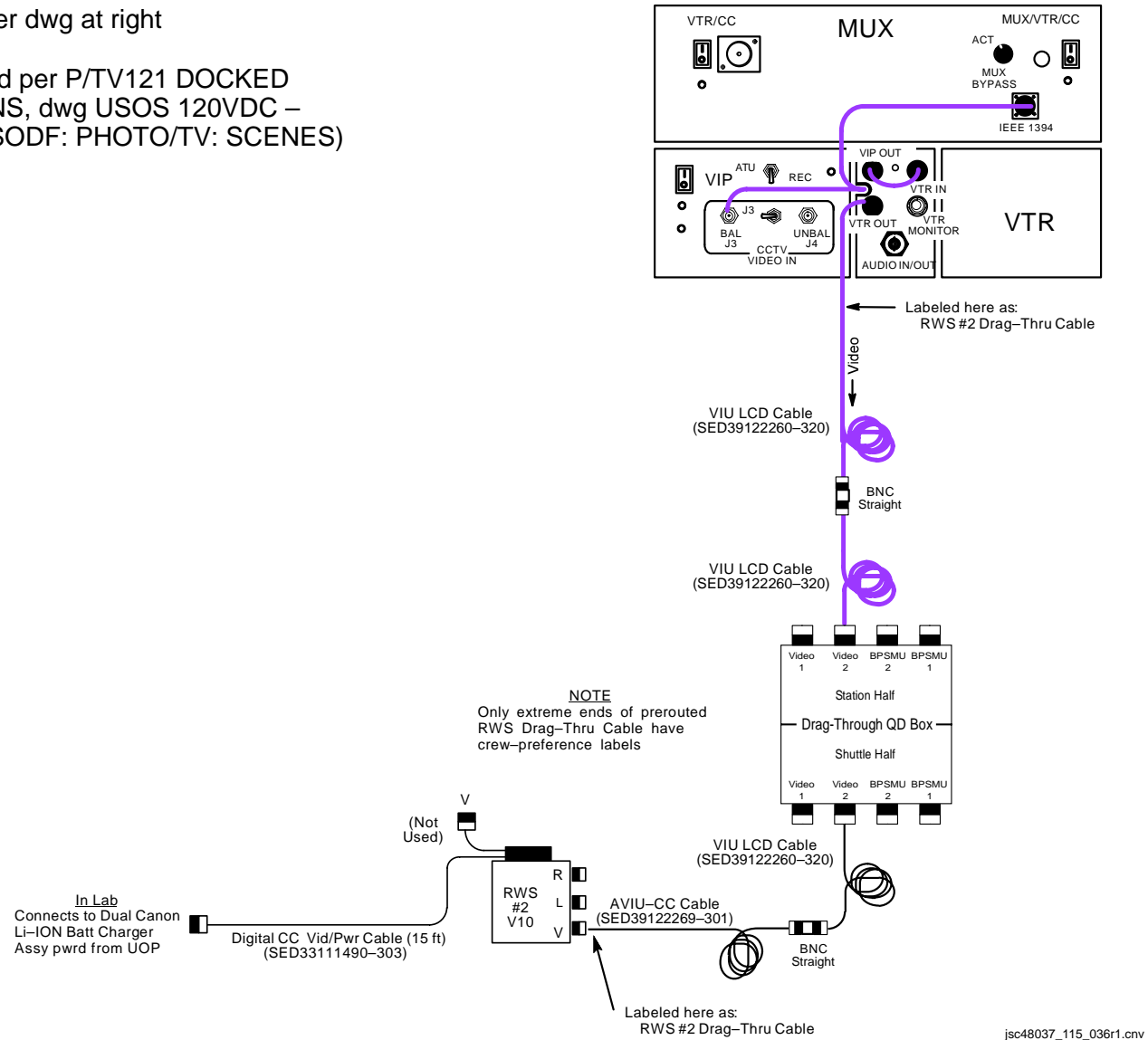
RWS V10 FROM DTV

Config H/W per dwg at right

√Pwr configured per P/TV121 DOCKED OPERATIONS, dwg USOS 120VDC – V10 VTRs (SODF: PHOTO/TV: SCENES)

V10

PWR – ON



SONY V10 (Continued)

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

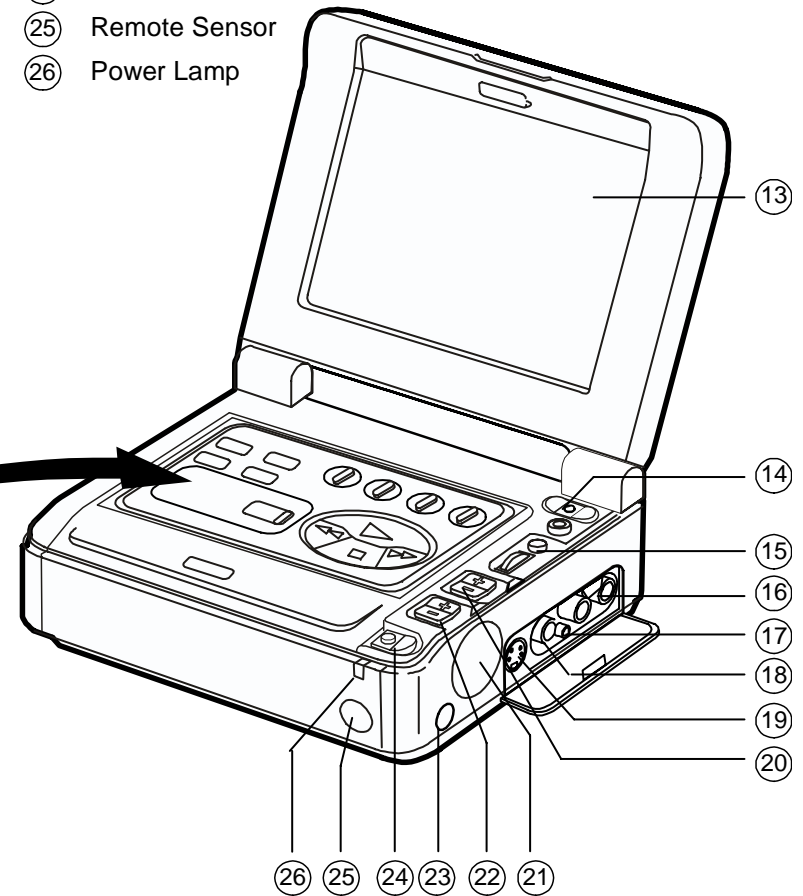
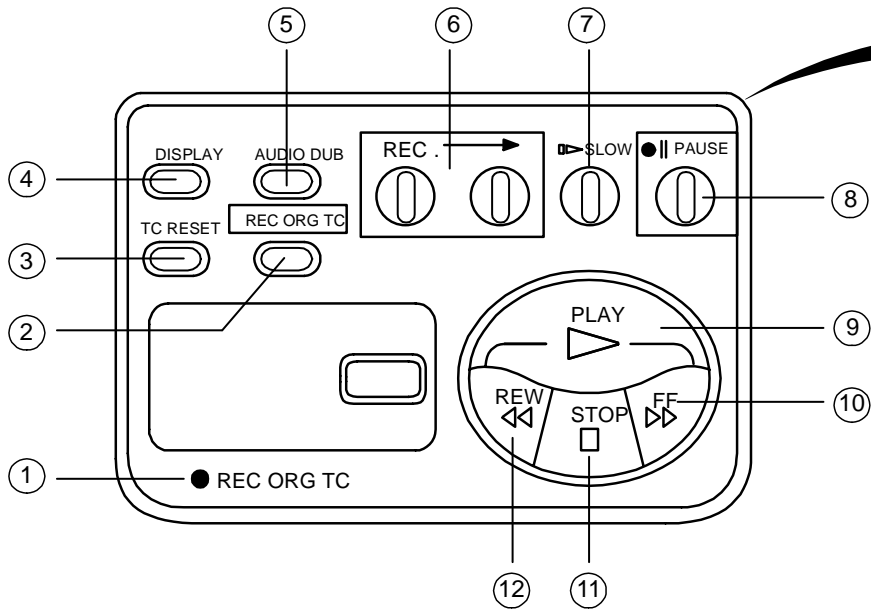
BODY WEIGHT: 2.00 lb

BATT WEIGHT: 0.41 lb

SONY V10 (Continued)

NOMENCLATURE

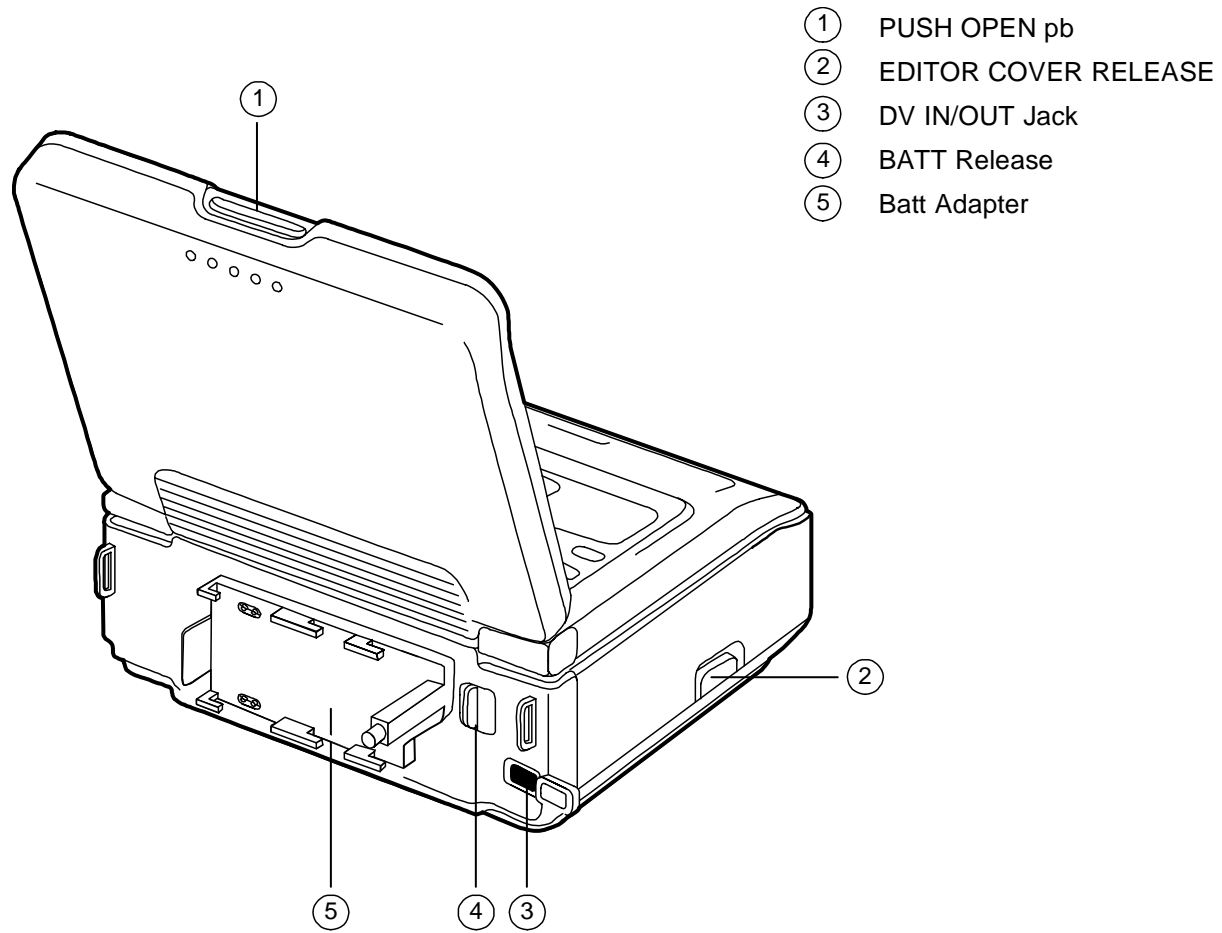
- | | | |
|-------------------------------|----------------------------------|------------------|
| ① REC ORG TC Lamp | ⑫ REW (rewind) pb | ⑳ Headphone Jack |
| ② REC ORG TC pb | ⑬ LCD Screen | ㉑ EJECT sw |
| ③ TC Reset pb | ⑭ POWER sw | ㉒ Remote Sensor |
| ④ DISPLAY pb | ⑮ MENU pb, Control dial | ㉓ Power Lamp |
| ⑤ AUDIO DUB pb | ⑯ AUDIO Input/Output Jacks (R,L) | |
| ⑥ REC (recording) pb and Lamp | ⑰ RFU DC OUT Jack | |
| ⑦ SLOW pb | ⑱ VIDEO Input/Output Jack | |
| ⑧ PAUSE pb | ㉀ S VIDEO Input/Output Jack | |
| ⑨ PLAY (playback) pb | ㉁ LCD BRIGHT pb | |
| ⑩ FF (fast Forward) pb | ㉂ Speaker | |
| ⑪ STOP pb | ㉃ Volume pb | |



jsc48037_037.cnv

SONY V10 (Continued)

NOMENCLATURE (Concluded)



jsc48037_038.cnv

SONY V10 (Continued)

MENU SETTINGS

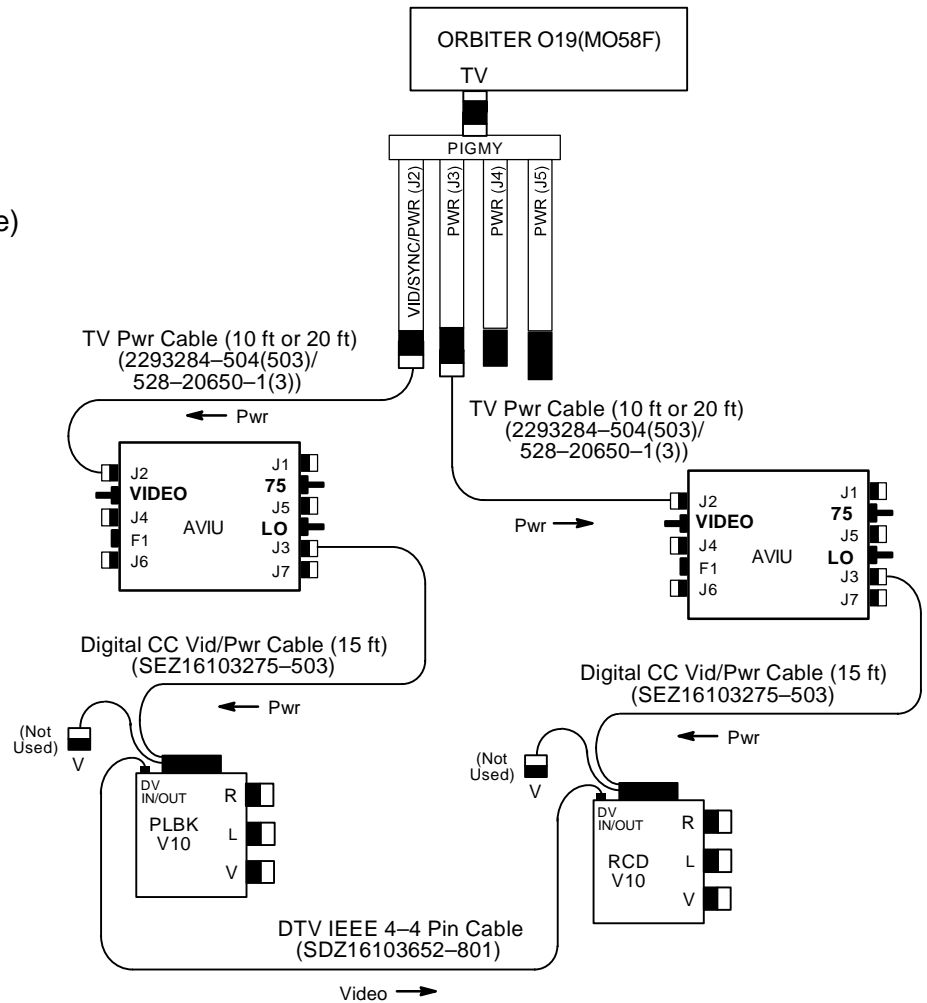
CMD – VTR4
HiFi SOUND – STEREO
AUDIO MODE – FS48K
TIME CODE – DF
BEEP – ON
AUDIO MIX – “left” (ST1)
CM SEARCH – ON
DATA CODE – DATE/CAM
LCD COLOR – “center”
LCD HUE – “center”
DISPLAY – LCD
JOG AUDIO – OFF
CLOCK SET – set to GMT

SONY V10 (Concluded)

V10 TO V10 VIA FIREWIRE

Config H/W per dwg at right

- | | |
|----------|--|
| AVIU | SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO |
| PLBK V10 | PWR – ON
DISPLAY pb – push
Install source tape. Protect Tab – Slide (red visible)
PLAY pb – push
Cue tape to desired take
PAUSE pb – push |
| RCD V10 | PWR – ON
DISPLAY pb – push
Install new tape
REC pb – push
PAUSE pb – push |
| PLBK V10 | Perform following for each video segment:
PAUSE pb – push (To PLAY) |
| RCD V10 | PAUSE pb – push (To REC) |
| PLBK V10 | When EDIT segment complete:
PAUSE pb – push (PAUSE) |
| RCD V10 | PAUSE pb – push (PAUSE) |



jsc48037_039r1.cvx

PORTABLE MONITORS

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A31p VIDEO CONVERTER.....	9-4
SONY LCD SPECIFICATIONS	9-6
SONY LCD NOMENCLATURE	9-6
VPU REPEATER	9-7

I

PORTABLE MONITORS

PORTABLE MONITORS

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 appropriate hardware from video source to VID IN/OUT Cable depending on desired video source per table below

Video Source	Hardware (part #)	From	To	Cable Connections
PAYLOAD/DTV	•AVIU-CC Video Cable (15ft) (SED39122269-301)	•L10A1 VTR OUT	•Vid In/Out cbl	•BNC - RCA
Monitor 1(2) (option 1)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •AVIU Video Cable Assy (SEZ33114239-301)	•Mon/J3 ----- •AVIU/J5	•AVIU/J4 ----- •Vid In/Out cbl	•Circ - Twinax ----- •Unique - RCA
Monitor 1(2) (option 2)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •Balanced Video Cable (SED33105778-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •AVIU/J6 •Balanced Video cbl •Bal/Unbal Xfmr	•AVIU/J4 ----- •Bal/Unbal xfmr •AVIU-CC Video cbl •Vid In/Out cbl	•Circ - Twinax ----- •Twinax - Twinax ----- •BNC - RCA
Monitor 1(2) (option 3)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •AVIU/J7	•AVIU/J4 ----- •Vid In/Out cbl	•Circ - Twinax ----- •BNC - RCA
Monitor 1(2) (option 4)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •Bal/Unbal Xfmr	•Bal/Unbal Xfmr ----- •Vid In/Out cbl	•Circ - Twinax ----- •BNC - RCA

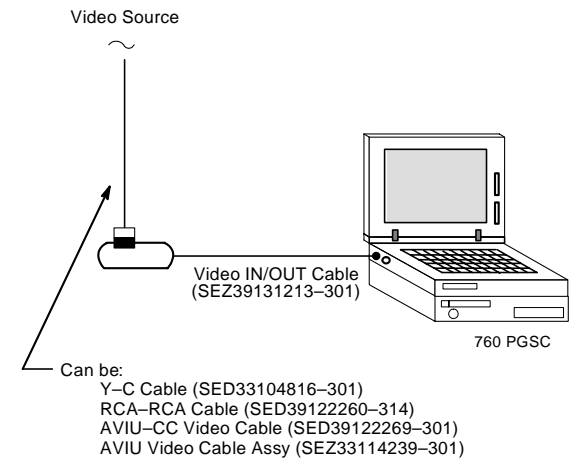
PORTABLE MONITORS (Continued)

PGSC VIDEO OVERLAY (Concluded)

Video Source	Hardware (part #)	From	To	Cable Connections
ISS	<ul style="list-style-type: none"> •VPU Patch Cable (SED39136025-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •VPU FROM ISS ----- •Bal/Unbal Xfmr 	<ul style="list-style-type: none"> •Bal/Unbal Xfmr ----- •Vid In/Out cbl 	<ul style="list-style-type: none"> •Plug - Twinax ----- •BNC - RCA
Spare 1 (SSV)	<ul style="list-style-type: none"> •SSV to PDIP/CIP Cable (SED16103246-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •L11A2 PDIP/J107 ----- •Bal/Unbal Xfmr 	<ul style="list-style-type: none"> •Bal/Unbal Xfmr ----- •Vid In/Out cbl 	<ul style="list-style-type: none"> •Circ - Twinax ----- •BNC - RCA
WVS	<ul style="list-style-type: none"> •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •R12A2 WIB XCVR1(2) UNBAL 	<ul style="list-style-type: none"> •Vid In/Out cbl 	<ul style="list-style-type: none"> •BNC - RCA
PD100 Camc (option 1)	<ul style="list-style-type: none"> •PD100 A/V Adapter Cable (SEZ16103275-301) •RCA - RCA Cable (SED39122260-314) 	<ul style="list-style-type: none"> •PD100 A/V port •A/V adapter 	<ul style="list-style-type: none"> •RCA-RCA cbl (via female adapter) •Vid In/Out cbl 	<ul style="list-style-type: none"> •Stereo - RCA •RCA - RCA
PD100 Camc (option 2)	<ul style="list-style-type: none"> •Y-C Cable (SED33104816-301) 	<ul style="list-style-type: none"> •PD100 S-Video port 	<ul style="list-style-type: none"> •Vid In/Out cbl 	<ul style="list-style-type: none"> •S-Video - S-Video

4. Configure video source
5. Double-click Shuttle Apps > Video Overlay
6. ✓Video overlay displayed


- * If image not displayed on PGSC: *
- * Press 'S' *
- * ✓'VIDEO' selected *
- * Sel OK *



jsc48037_040.crv

PORTABLE MONITORS (Continued)

A31p VIDEO CONVERTER

- A31p
1. √A31p Pwr – ON
 2. Connect A31p Video Adapter to A31p VID IN “

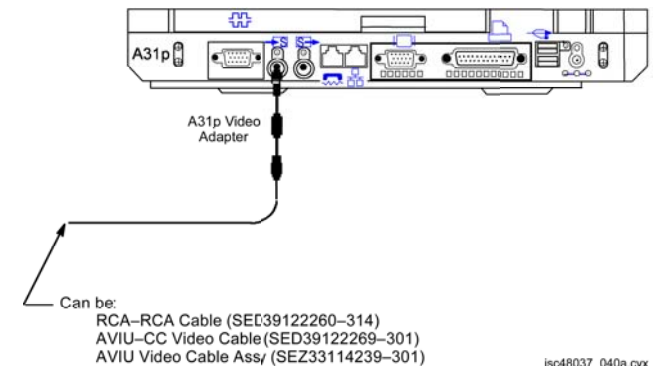
Video Source	Hardware (part #)	From	To	Cable Connections
PAYLOAD/DTV	•AVIU-CC Video Cable (15ft) (SED39122269-301)	•L10A1 VTR OUT	•A31p Video Adapter	•BNC - RCA
Monitor 1(2) (option 1)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •AVIU Video Cable Assy (SEZ33114239-301)	•Mon/J3 ----- •AVIU/J5	•AVIU/J4 ----- •A31p Video Adapter	•Circ - Twinax ----- •Unique - RCA
Monitor 1(2) (option 2)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •Balanced Video Cable (SED33105778-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •AVIU/J6 •Balanced Video cbl •Bal/Unbal Xfmr	•AVIU/J4 ----- •Bal/Unbal xfmr •AVIU-CC Video cbl •A31p Video Adapter	•Circ - Twinax ----- •Twinax - Twinax ----- •BNC - RCA
Monitor 1(2) (option 3)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED33111493-302/303) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •AVIU/J7	•AVIU/J4 ----- •A31p Video Adapter	•Circ - Twinax ----- •BNC - RCA
Monitor 1(2) (option 4)	•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)	•Mon/J3 ----- •Bal/Unbal Xfmr	•Bal/Unbal Xfmr ----- •A31p Video Adapter	•Circ - Twinax ----- •BNC - RCA

PORTABLE MONITORS (Continued)

A31p VIDEO CONVERTER (Concluded)

Video Source	Hardware (part #)	From	To	Cable Connections
ISS	<ul style="list-style-type: none"> •VPU Patch Cable (SED39136025-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •VPU FROM ISS ----- •Bal/Unbal Xfmr 	<ul style="list-style-type: none"> •Bal/Unbal Xfmr ----- •A31p Video Adapter 	<ul style="list-style-type: none"> •Plug - Twinax ----- •BNC - RCA
Spare 1 (SSV)	<ul style="list-style-type: none"> •SSV to PDIP/CIP Cable (SED16103246-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •L11A2 PDIP/J107 ----- •Bal/Unbal Xfmr 	<ul style="list-style-type: none"> •Bal/Unbal Xfmr ----- •A31p Video Adapter 	<ul style="list-style-type: none"> •Circ - Twinax ----- •BNC - RCA
WVS	<ul style="list-style-type: none"> •AVIU-CC Video Cable (15ft) (SED39122269-301) 	<ul style="list-style-type: none"> •R12A2 WIB XCVR1(2) UNBAL 	<ul style="list-style-type: none"> •A31p Video Adapter 	<ul style="list-style-type: none"> •BNC - RCA
PD100 Camc (option 1)	<ul style="list-style-type: none"> •PD100 A/V Adapter Cable (SEZ16103275-301) •RCA - RCA Cable (SED39122260-314) 	<ul style="list-style-type: none"> •PD100 A/V port •A/V adapter 	<ul style="list-style-type: none"> •RCA-RCA cbl (via female adapter) •A31p Video Adapter 	<ul style="list-style-type: none"> •Stereo - RCA •RCA - RCA
PD100 Camc (option 2)	<ul style="list-style-type: none"> •Y-C Cable (SED33104816-301) 	<ul style="list-style-type: none"> •PD100 S-Video port 	<ul style="list-style-type: none"> •A31p Video In port (No A31p Video Adapter) 	<ul style="list-style-type: none"> •S-Video - S-Video

4. Configure H/W per dwg at right
5. Double-click Shuttle Apps > Video Overlay
6. $\sqrt{\text{}}$ 'Video Converter' window displayed
7. Sel 'Local Full Screen'
Press 'ESC' or 'W' key to minimize display as reqd

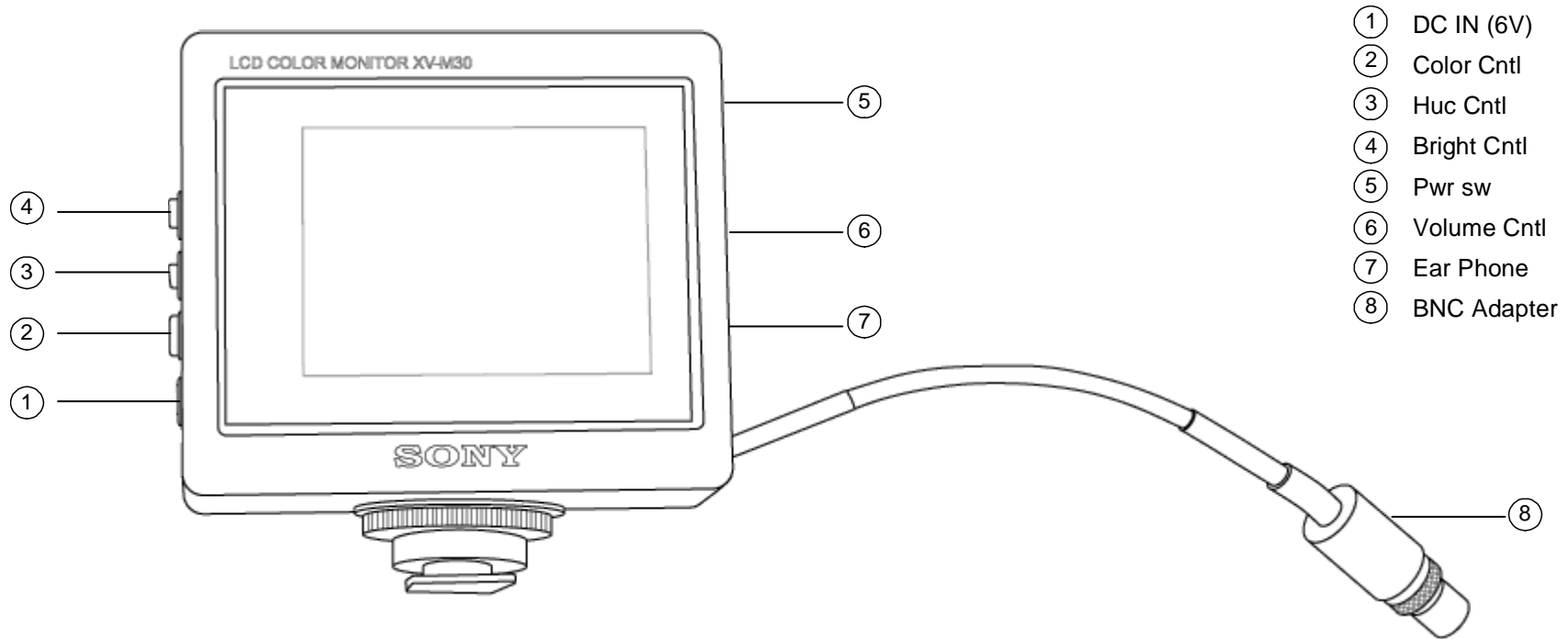


PORTABLE MONITORS (Continued)

SONY 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)

SONY LCD NOMENCLATURE



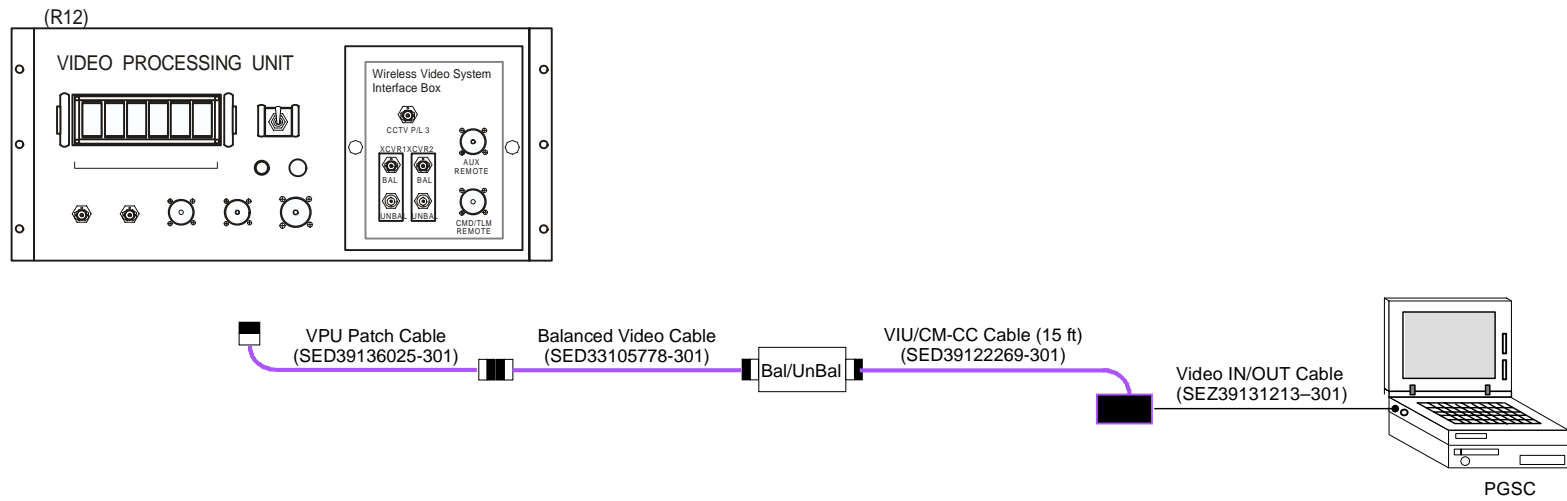
- ① DC IN (6V)
- ② Color Cntl
- ③ Huc Cntl
- ④ Bright Cntl
- ⑤ Pwr sw
- ⑥ Volume Cntl
- ⑦ Ear Phone
- ⑧ BNC Adapter

Sony XV-M30

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PORTABLE MONITORS (Concluded)

VPU REPEATER



jsc48037_115_075.cvx

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CCTV

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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 (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	75°-10°	61°-8°
ITVC (B/W)*	8.5mm-127mm	f/1.7 to f/16 (T2-T360)	15:1	3.0	53°-4°	41°-3°

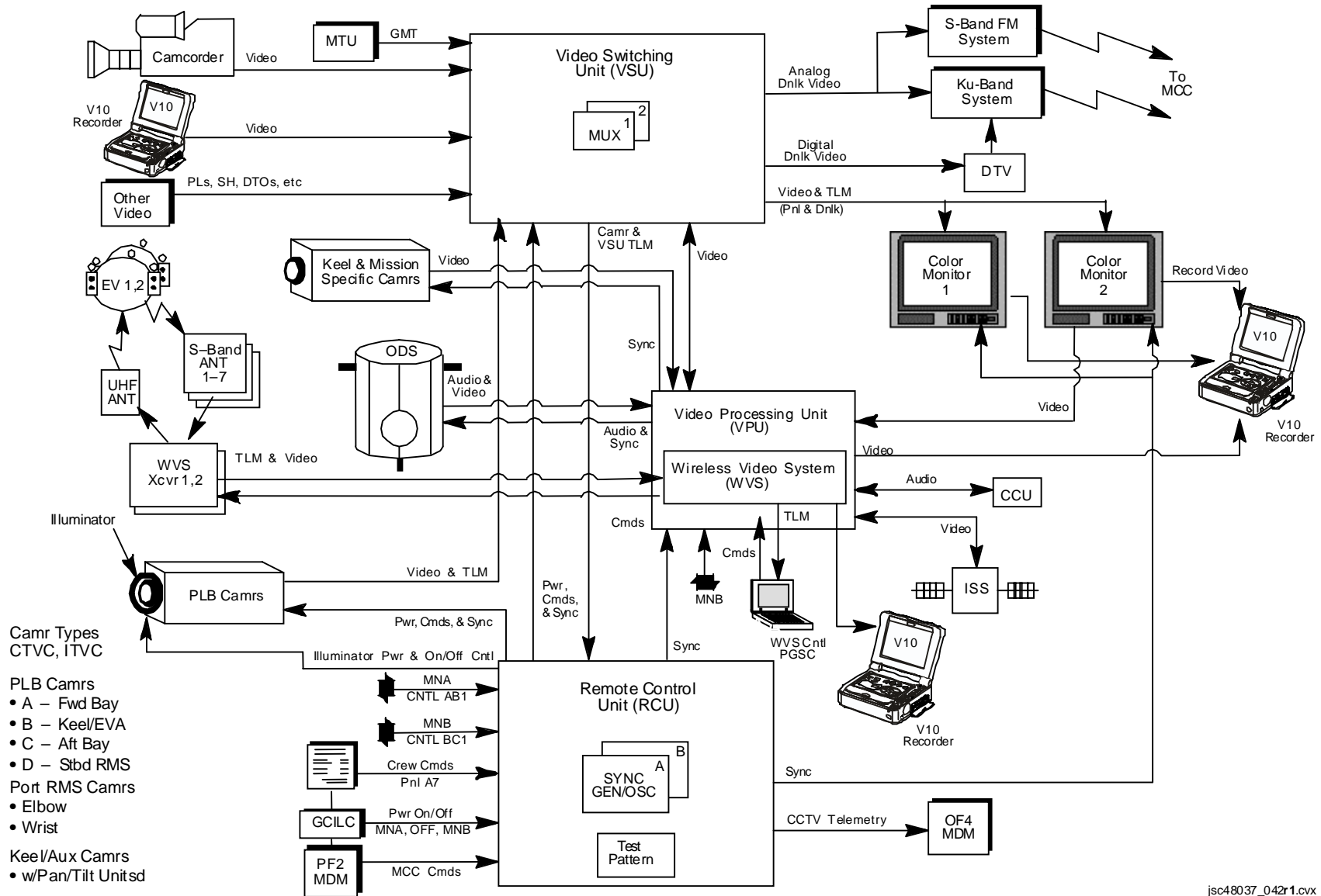
ILLUMINATOR DATA

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)

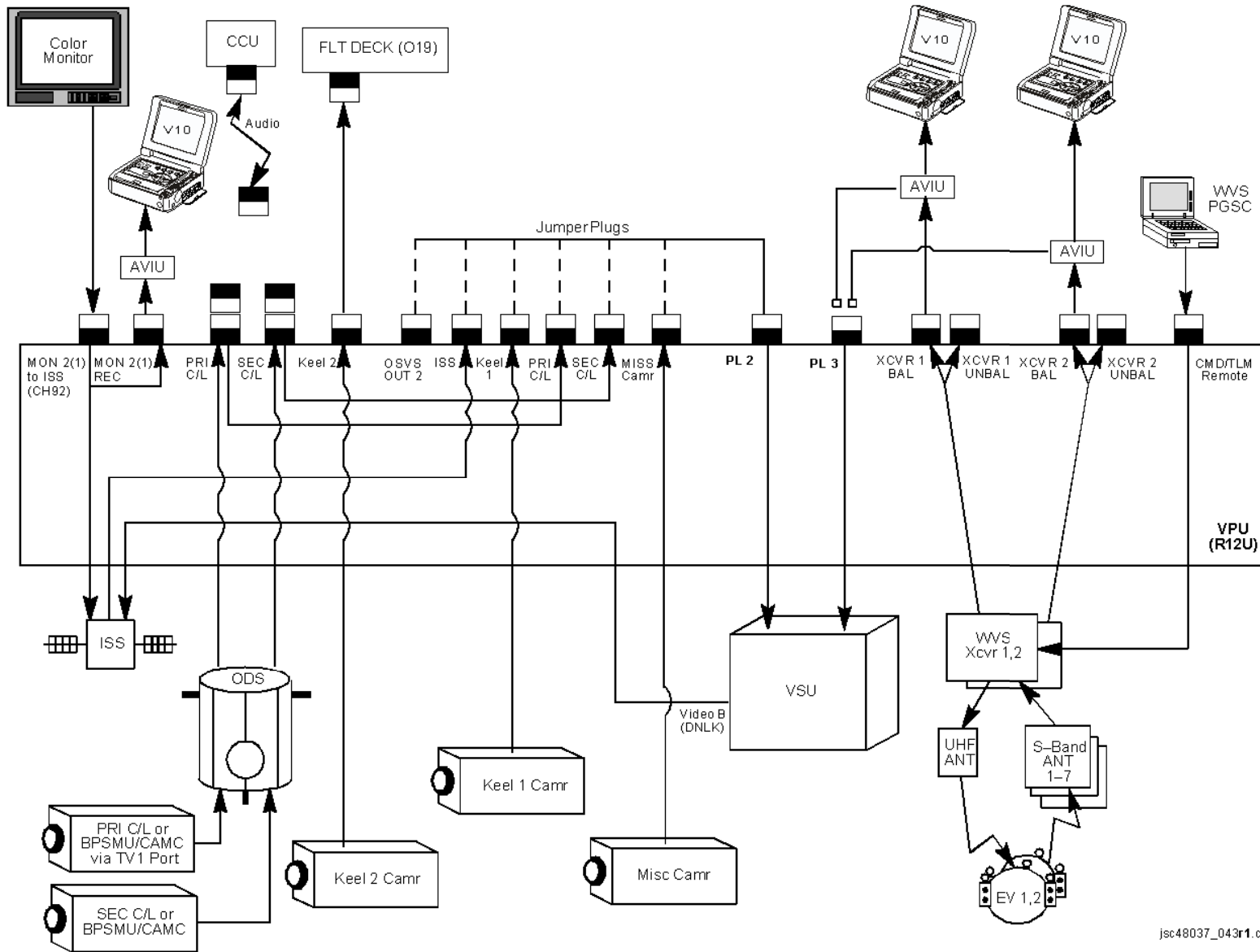
CCTV SYSTEM OVERVIEW



jsc48037_042r1.cvx

CCTV (Continued)

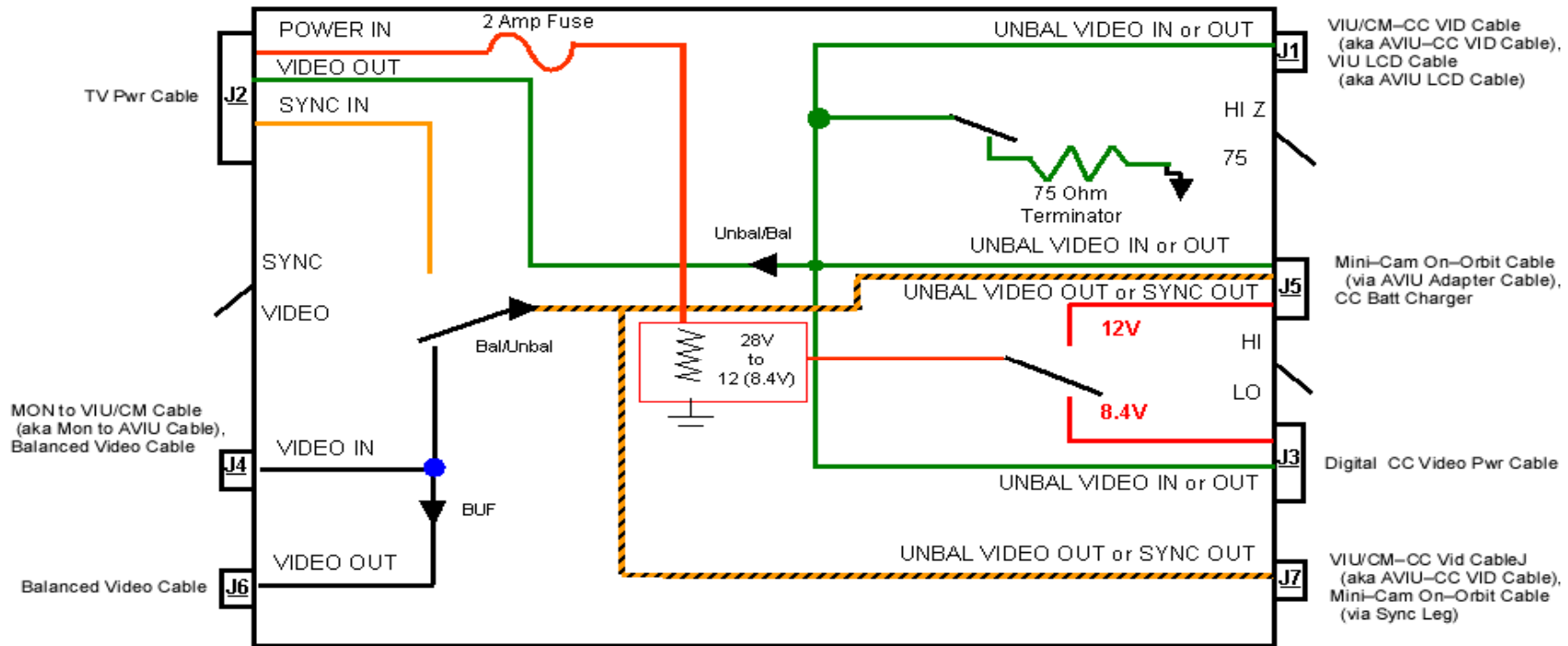
VPU/WIB VIDEO ROUTING OVERVIEW



jsc48037_043r1.cvx

CCTV (Continued)

AVIU OVERVIEW



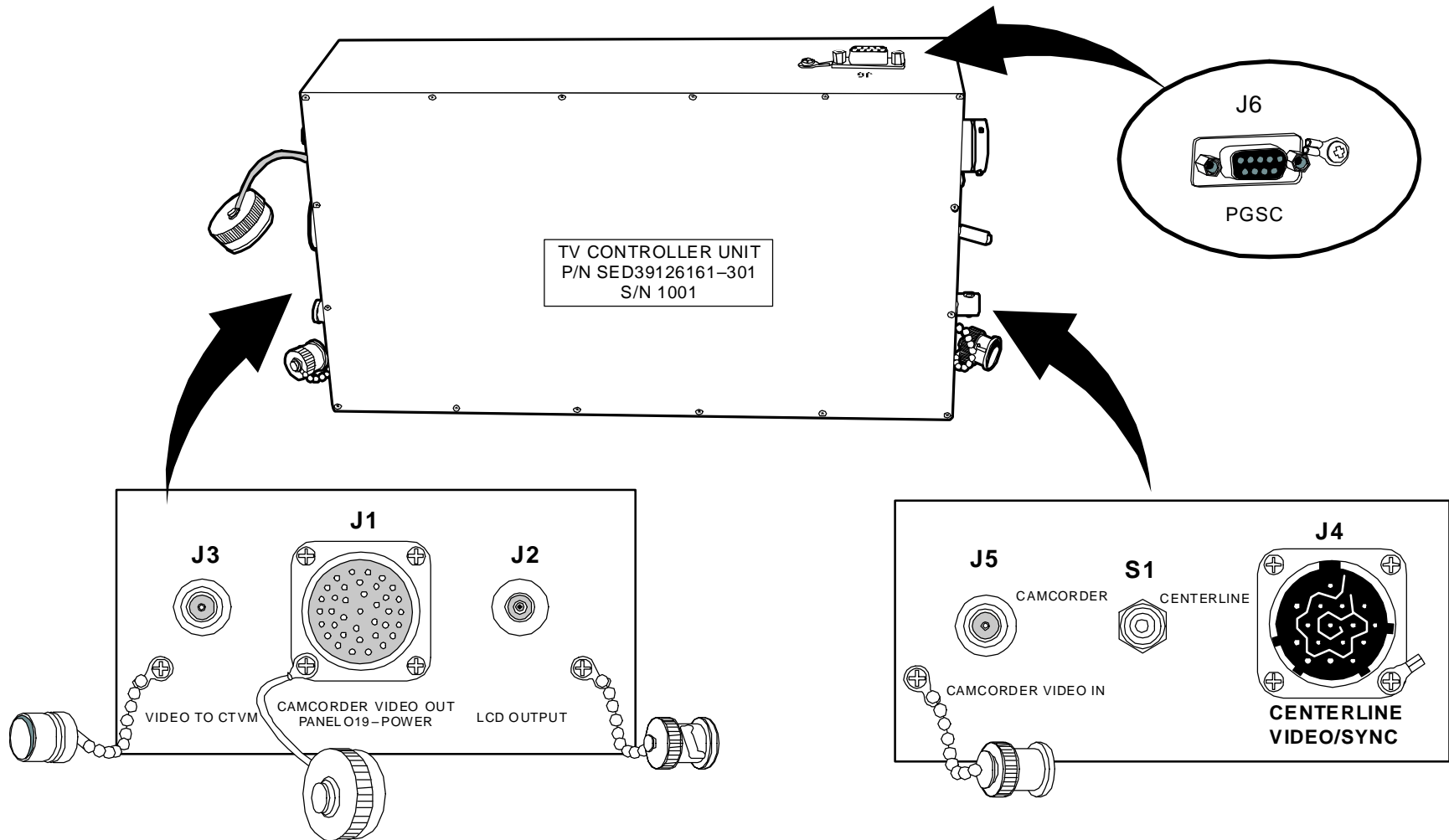
isc48037_044r1.cvx

- J1**
 - Unbalanced Video Input(Output)
- J2**
 - 28V Input
 - Sync Input
 - Balanced Video Output
- J3**
 - 8.4V Power Output if HI/LO sw – LO
 - Unbalanced Video Input(Output)
- J4**
 - Balanced Video Input

- J5**
 - 12V Power Output if HI/LO sw – HI
 - Unbalanced Video Input(Output)
 - Unbalanced Video Output (of J4 Balanced Input) if SYNC/VIDEO sw – VIDEO
 - Sync Output if SYNC/VIDEO sw – SYNC
- J6**
 - Balanced Video Signal Output (turnaround from J4)
- J7**
 - Unbalanced Video Output (of J4 Balanced Input) if SYNC/VIDEO sw – VIDEO
 - Sync Output if SYNC/VIDEO sw – SYNC

- SYNC/VIDEO sw**
 - VIDEO – Unbalanced Video Output to J5,J7 from J4 Input
 - SYNC – Sync Output to J5(J7) from J2 input
- HI-Z/75 sw**
 - 75 – For nominal video output at J1
 - HI-Z – For video output at J1 to a terminal source (i.e., PGSC, PD100, or V10)
- HI/LO sw**
 - HI – 12V output at J5
 - LO – 8.4V output at J3

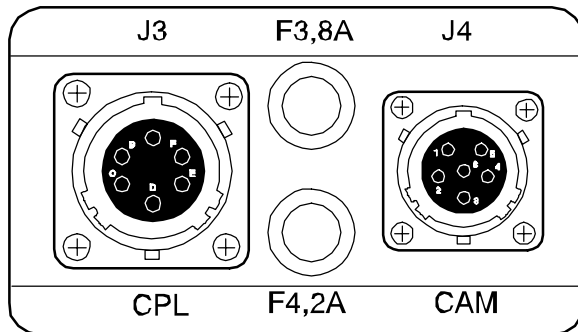
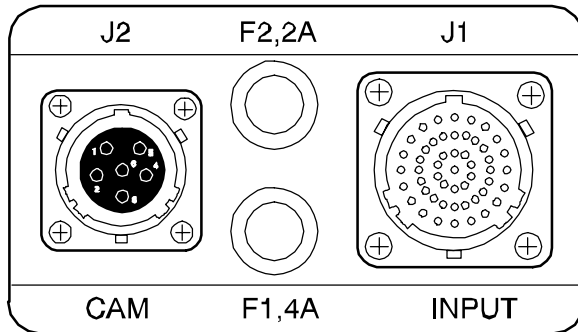
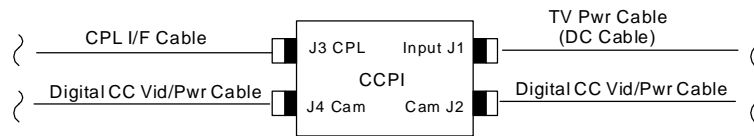
CCTV (Continued)
TVCU



jsc48037_045.cnv

CCTV (Continued)

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.

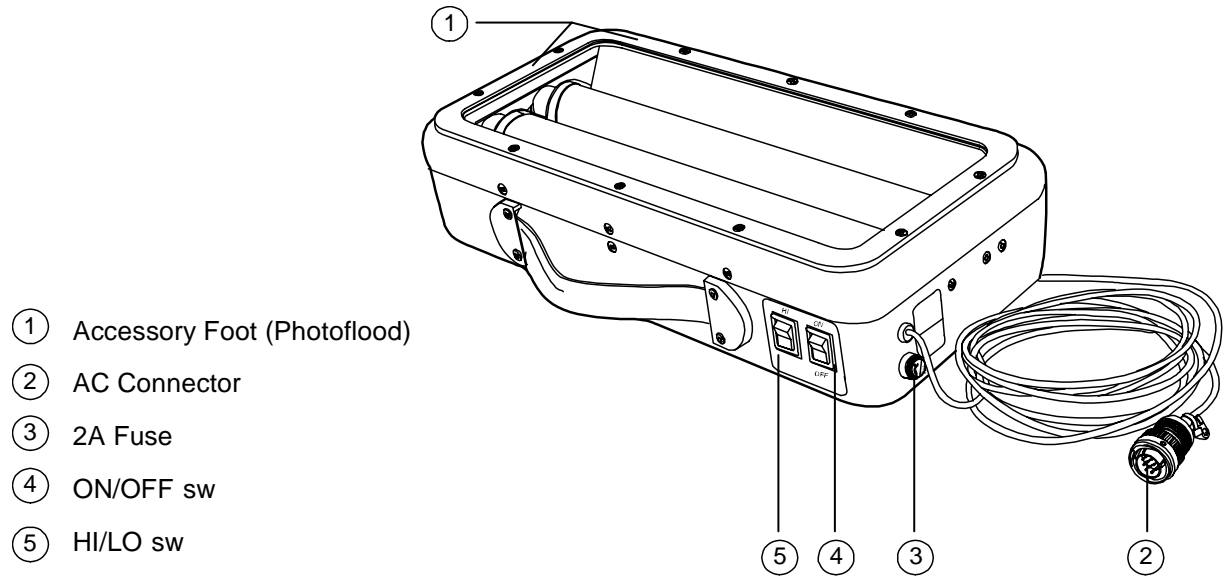
CONTENTS OF

CCPI FUSE KIT (P/N SED33105384-301)

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

jsc48037_046.cnv

CCTV (Continued)
PHOTO FLOODLIGHT



jsc48037_047.cnv

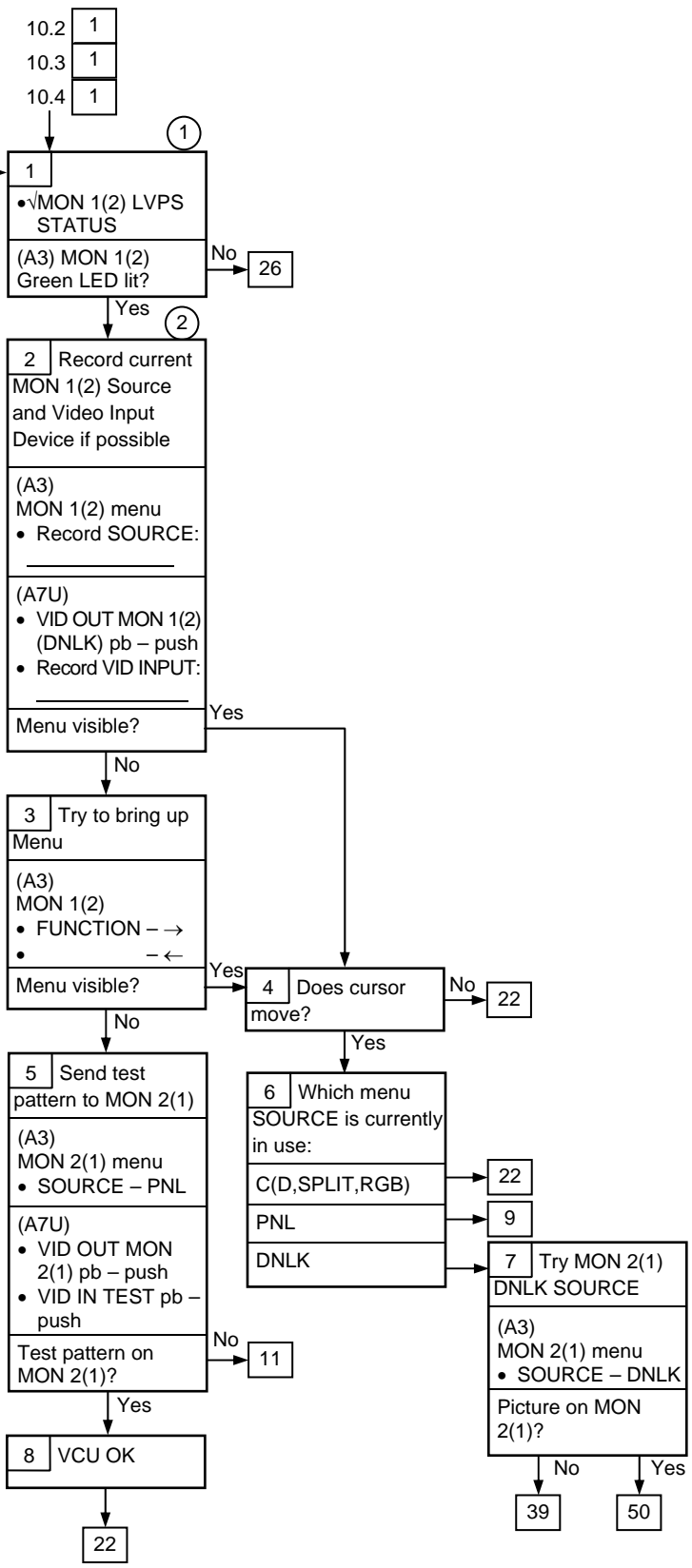
CCTV

10.1 NO MONITOR PICTURE/MENU

No Picture on Monitor 1(2)

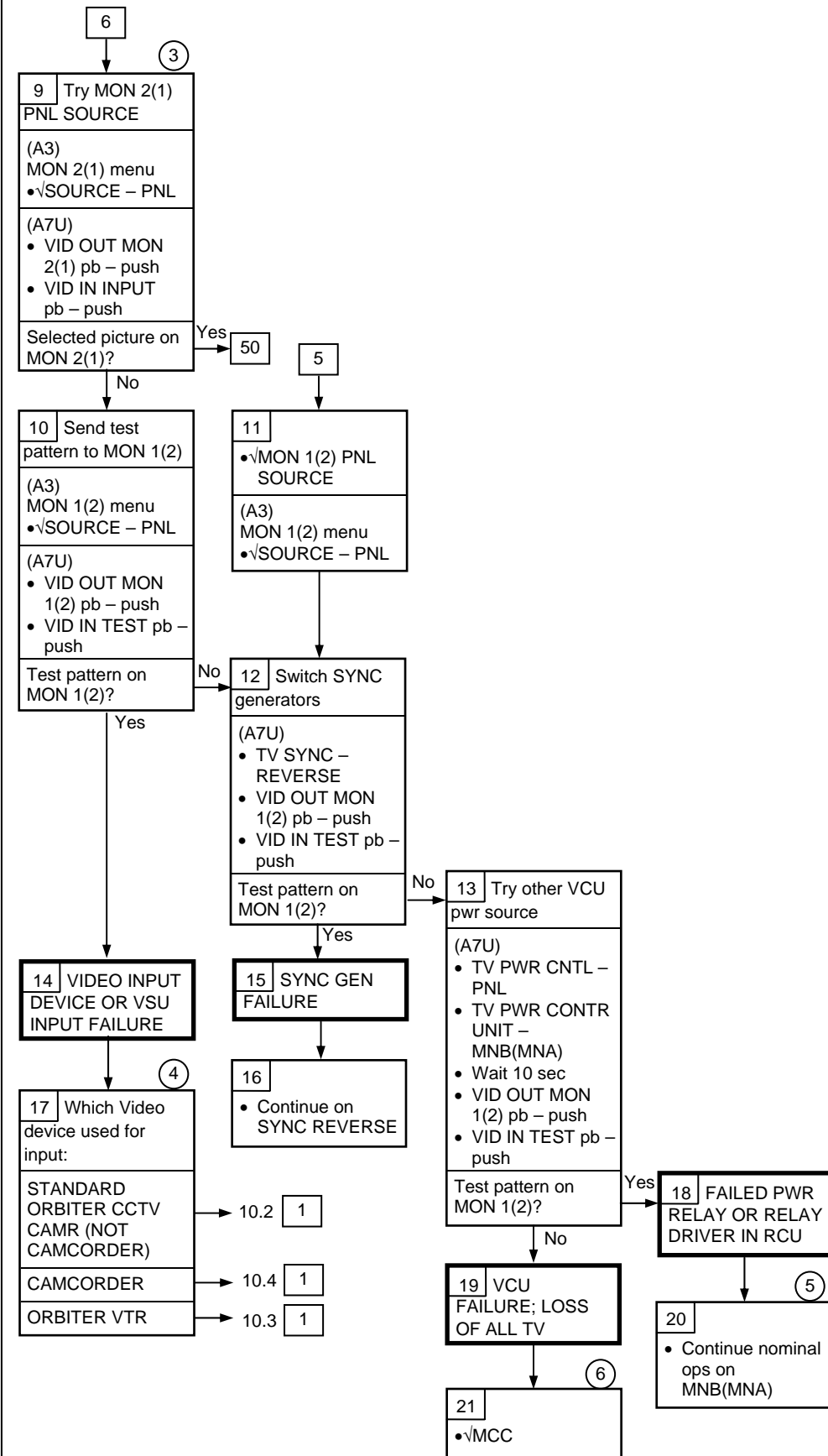
Nominal Config:

- (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

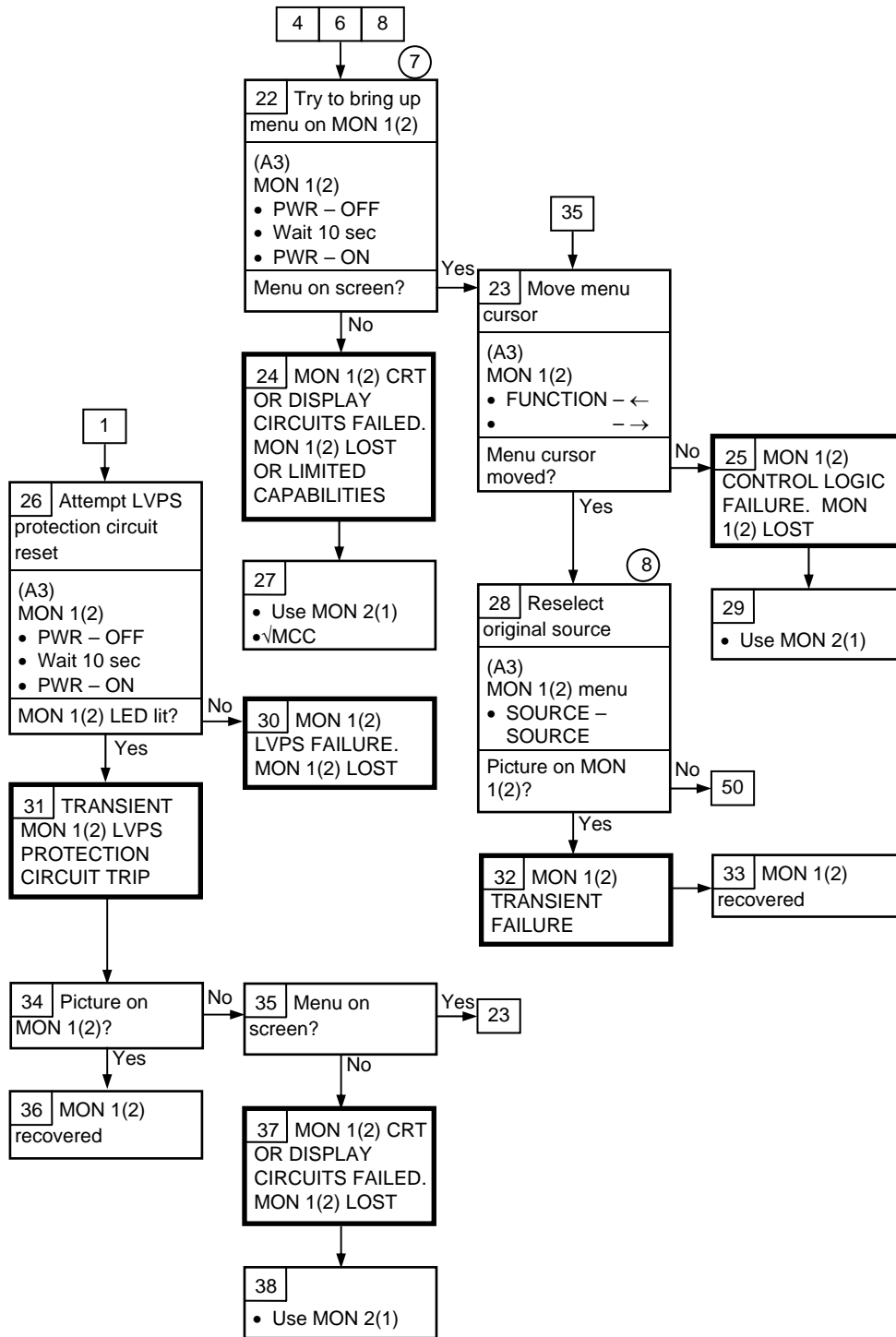


- ① LVPS = low voltage pwr supply
- ② Current SOURCE and INPUT recorded here will be used in subsequent mal blocks

CCTV 10.1 (Cont)



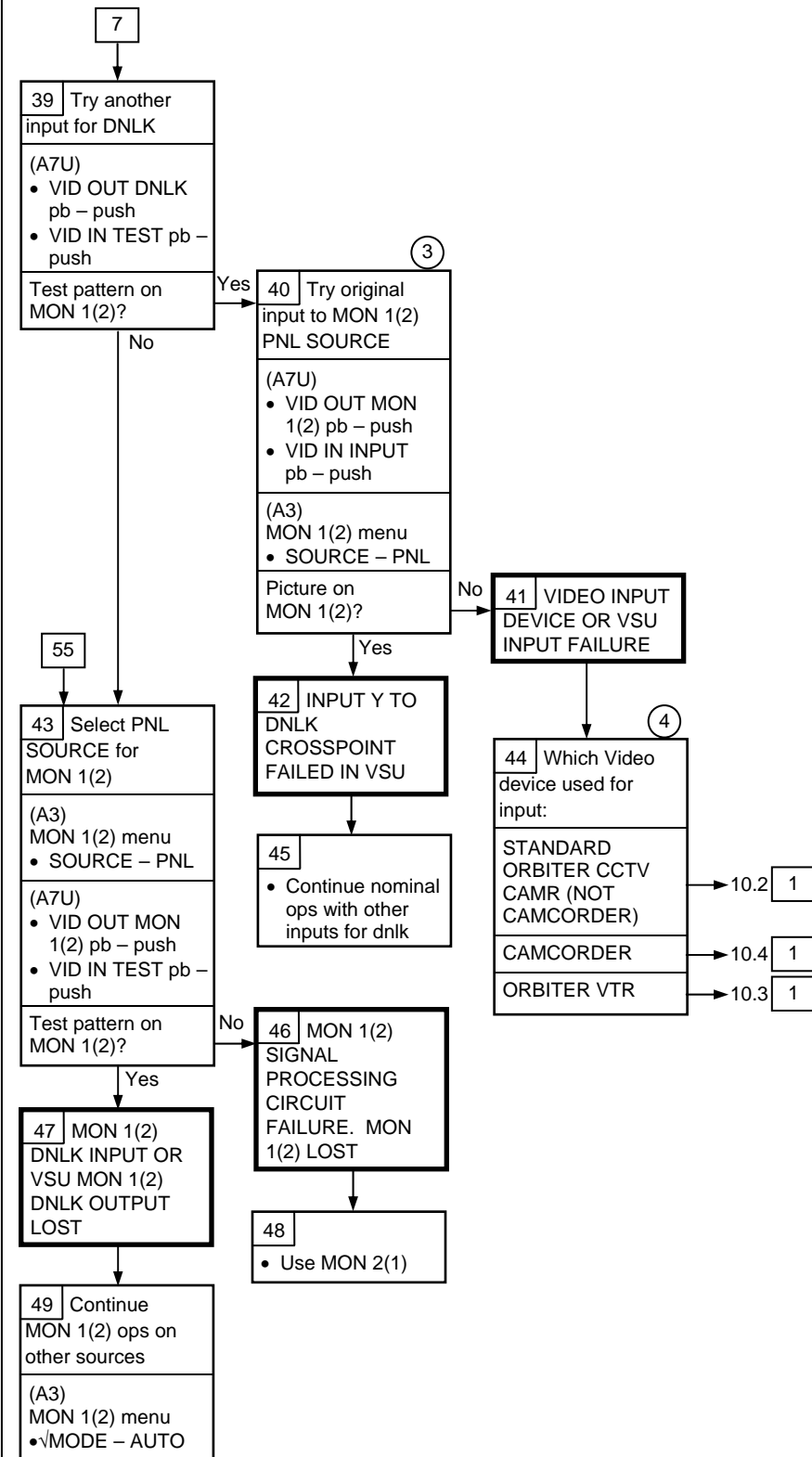
- ③ INPUT used here was recorded in block [2]
- ④ Video Input Device is the device connected to INPUT which was recorded in block [2]
- ⑤ All TV config in VCU will be lost. All camrs must be pwr'd up and reselected
- ⑥ Standalone MON 1(2) ops may be possible on inputs C,D, or RGB if connected and also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



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

8
SOURCE is the source recorded in block 2

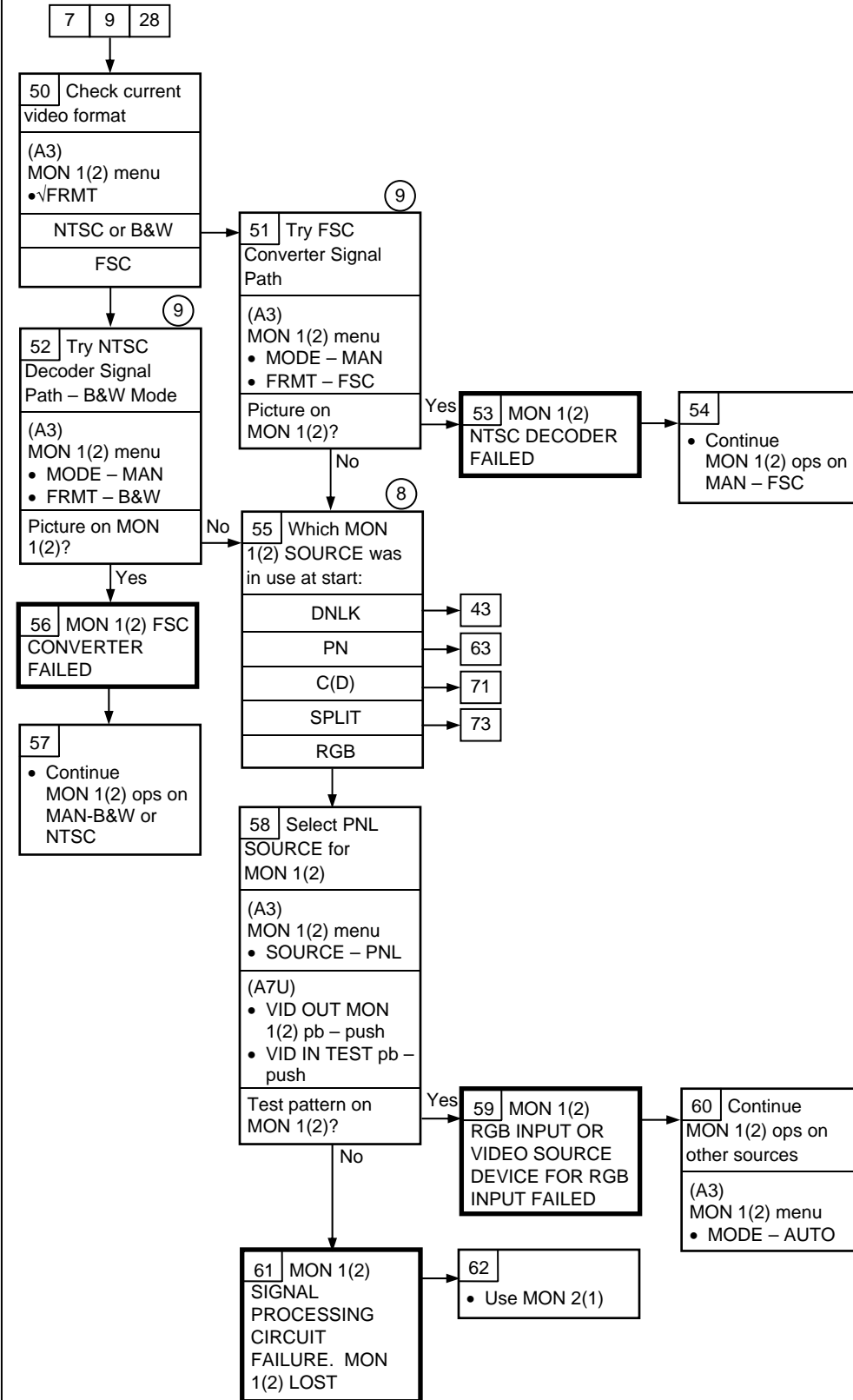
CCTV 10.1 (Cont)



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

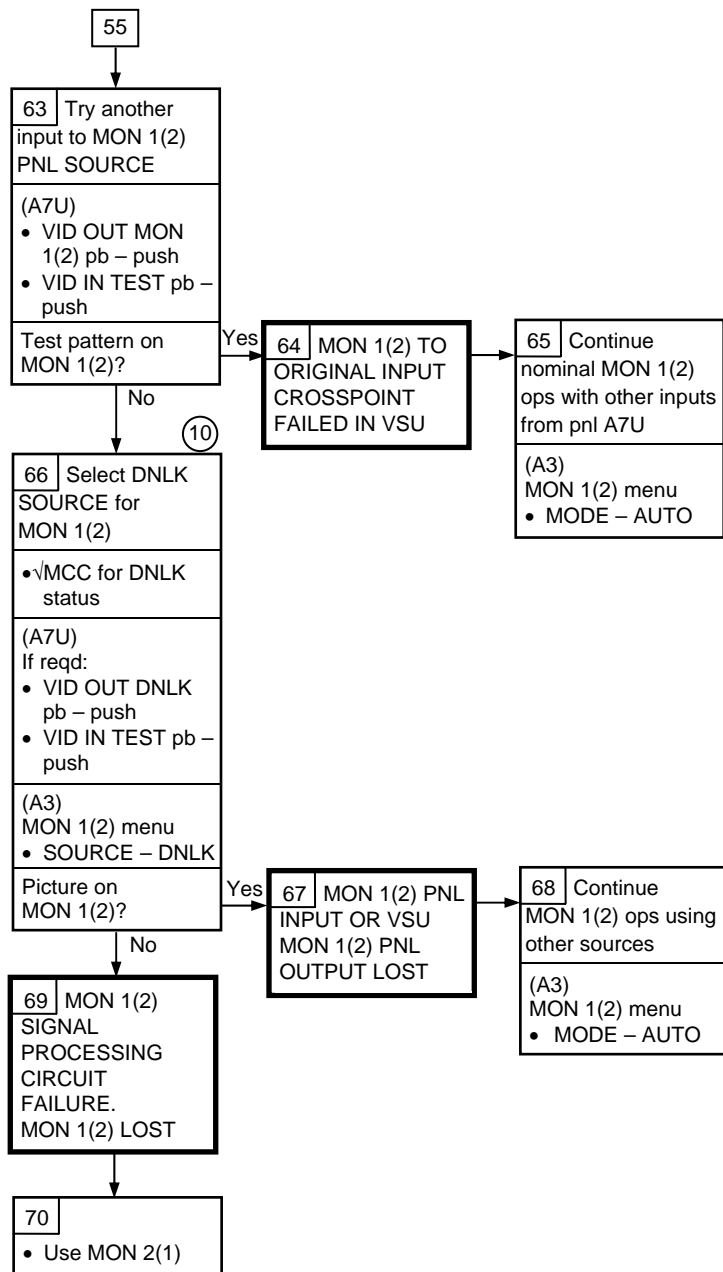
CCTV 10.1 (Cont)



⑧ SOURCE is the source recorded in block **2**

⑨ Picture will be B&W with possible flicker

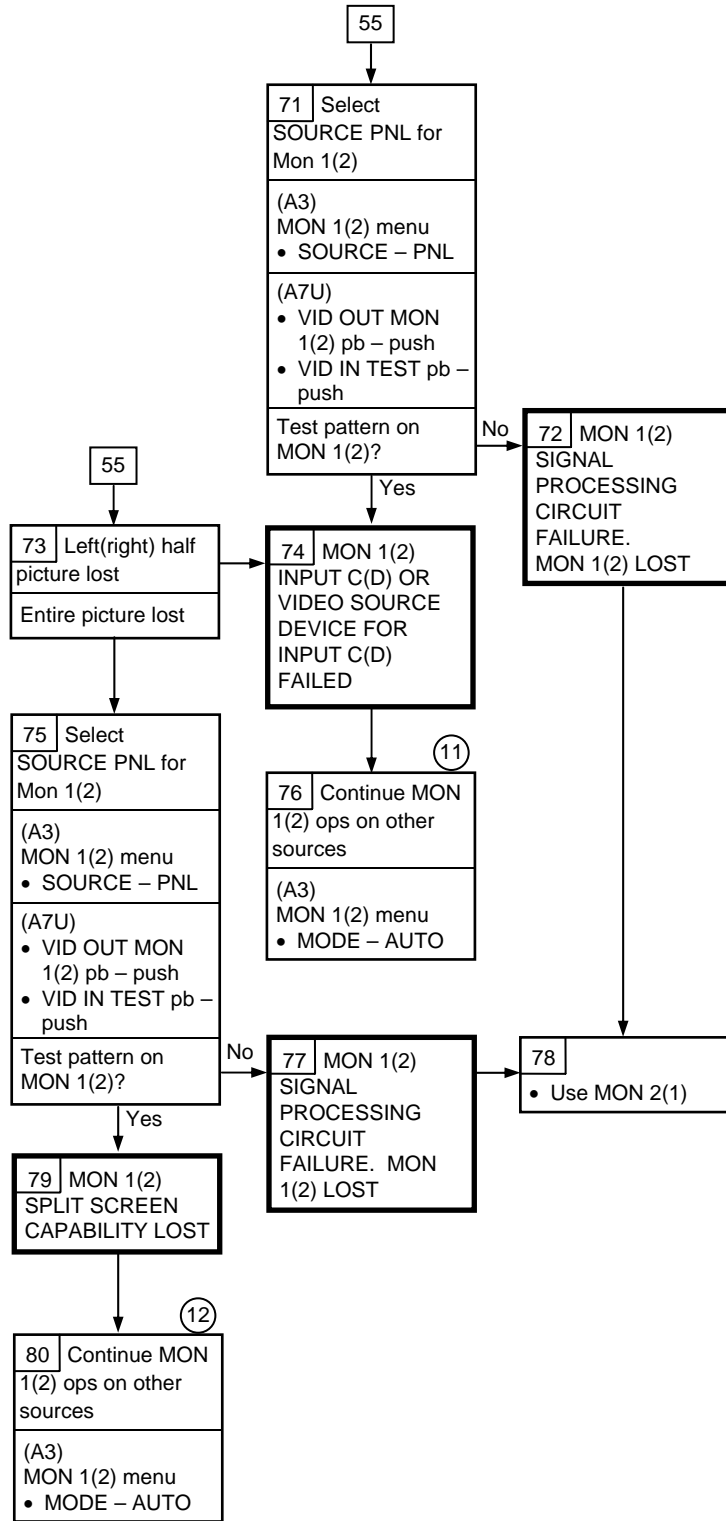
CCTV 10.1 (Cont)



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

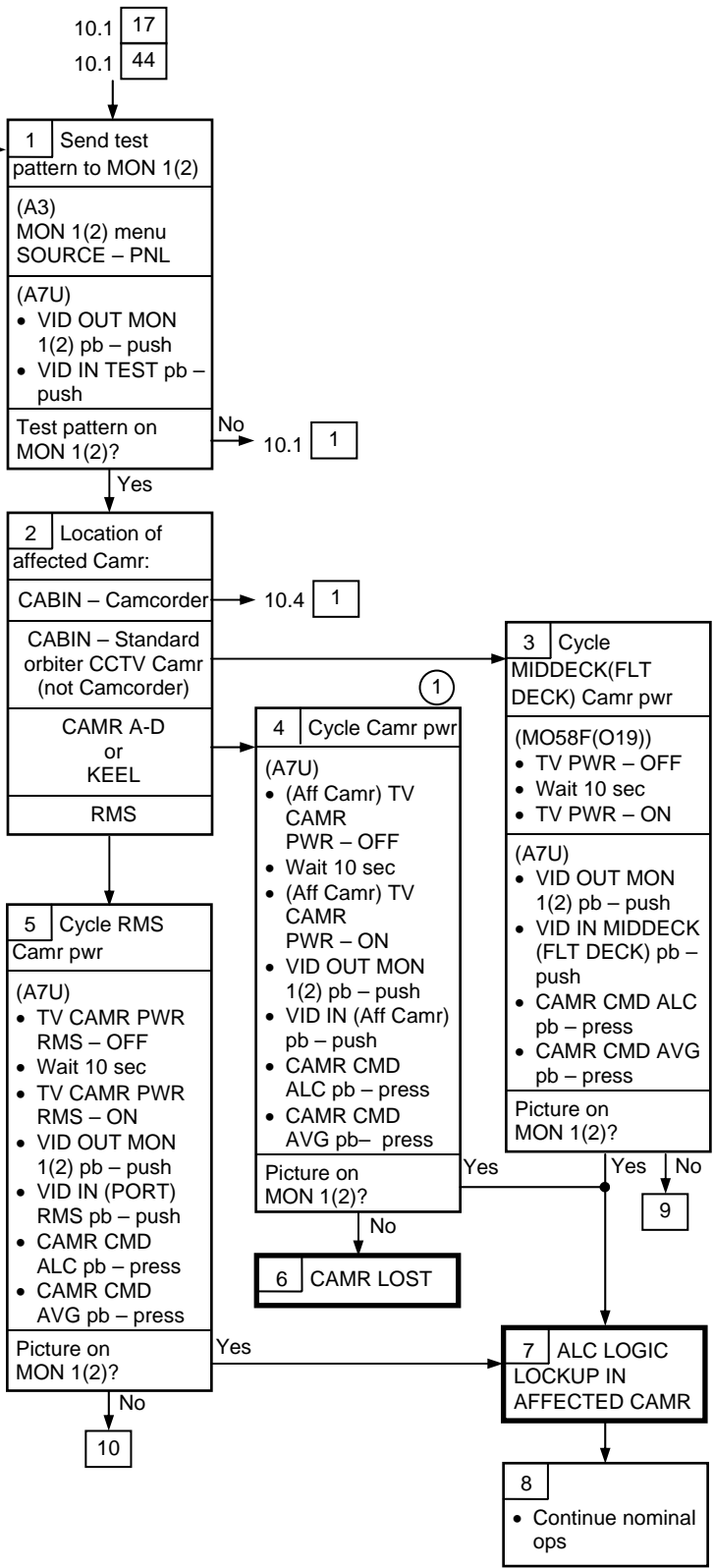
CCTV

10.2 NO CAMR VIDEO

No Camr Video

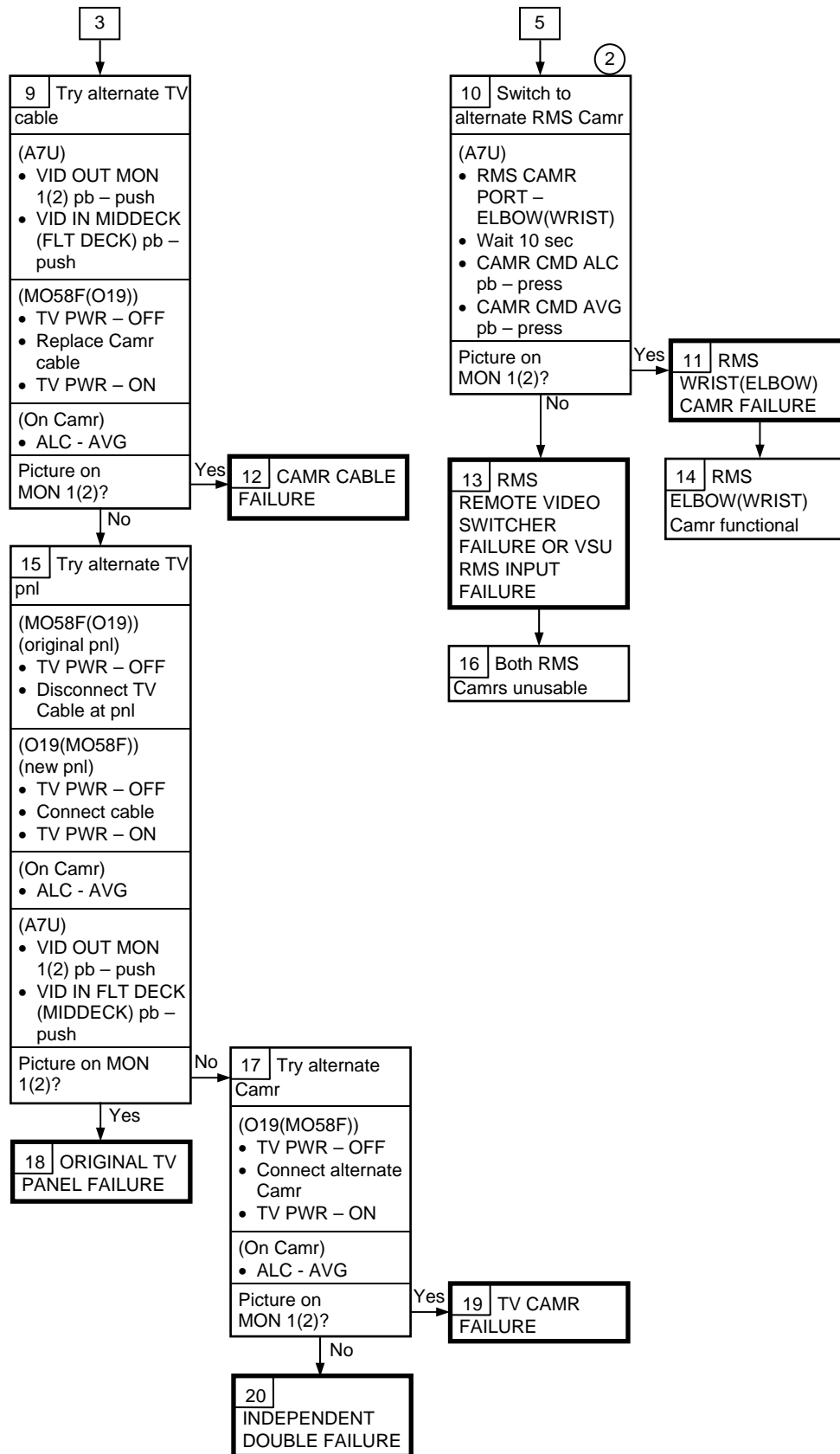
Nominal Config:

- (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 DNK - 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)

CCTV

10.3 NO VTR PLAYBACK VIDEO

No VTR Playback Video

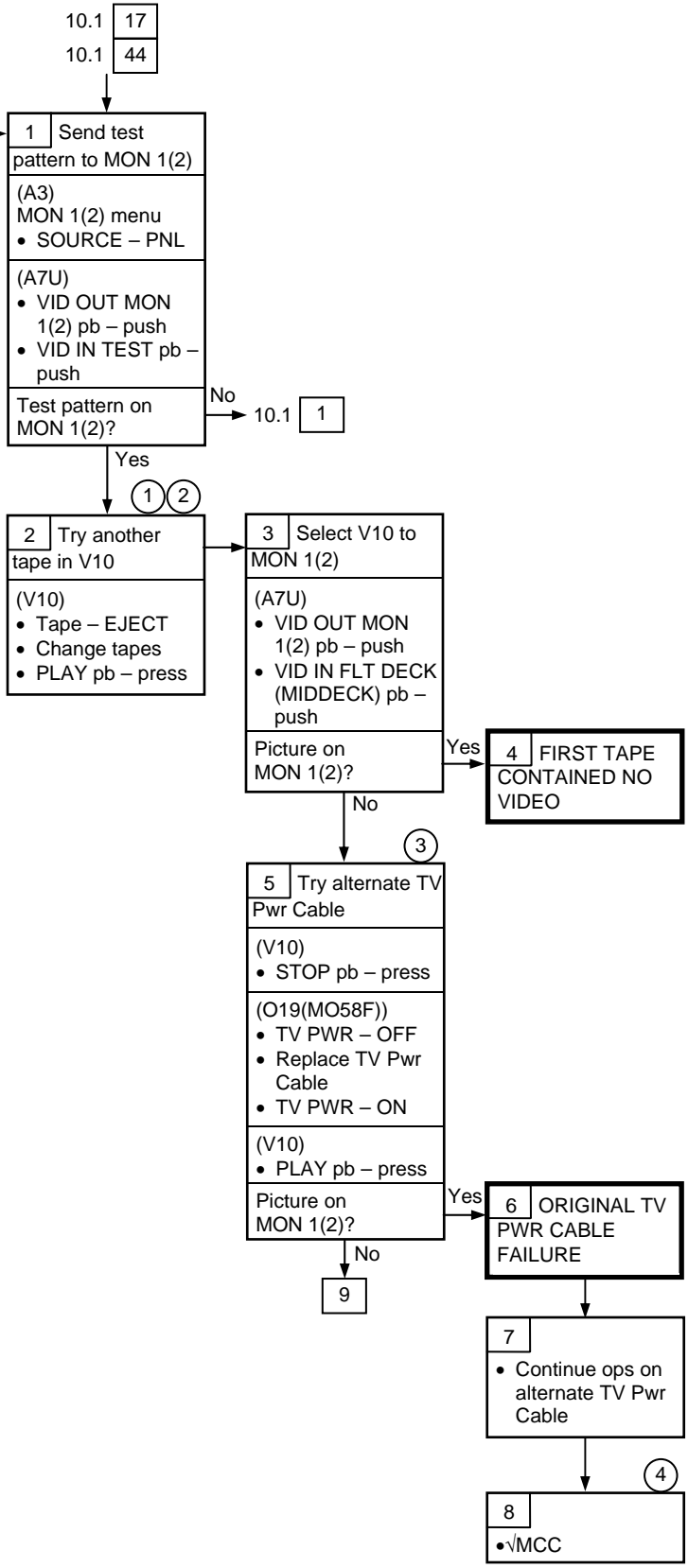
Nominal Config:

(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 DNLK – ENA

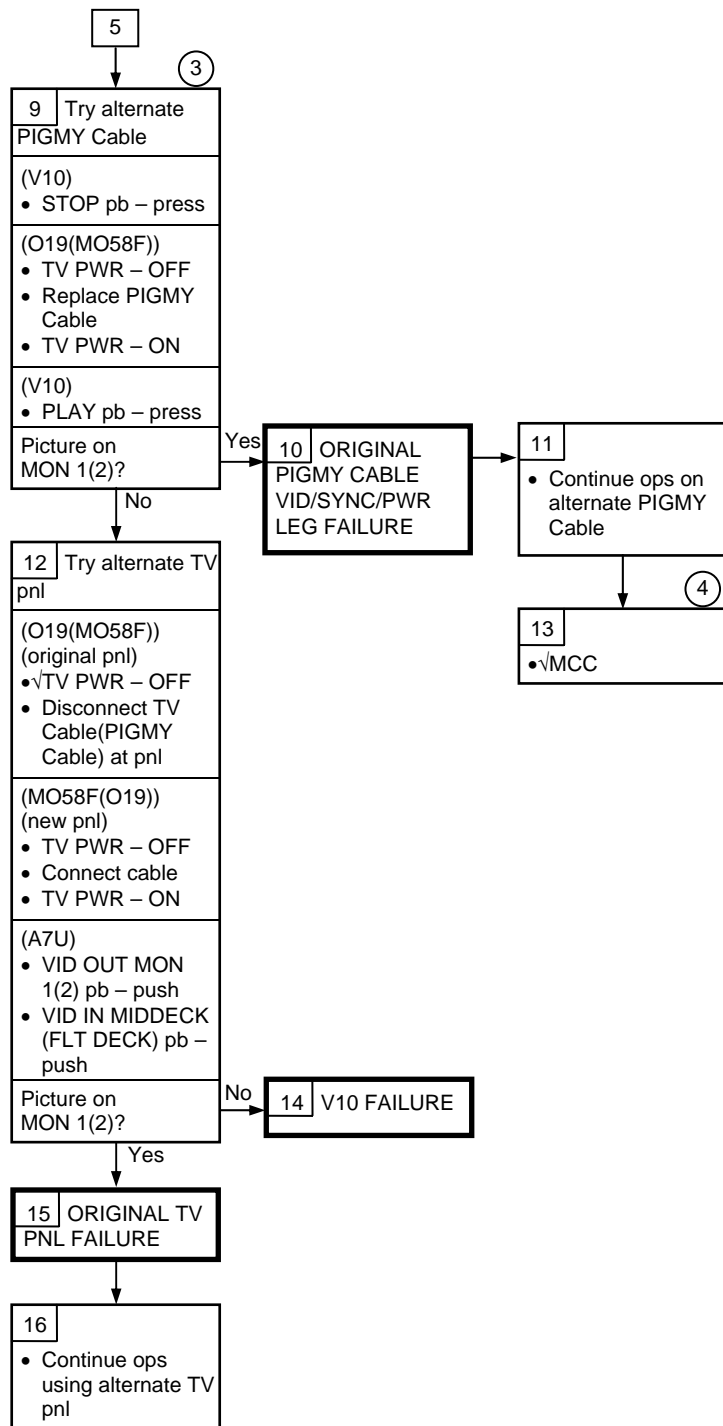
(A3)
 MON 1(2)
 SOURCE – as reqd
 SYNC – INT
 PWR – ON
 MODE – AUTO
 GUNS – R,G,B – ON

(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)

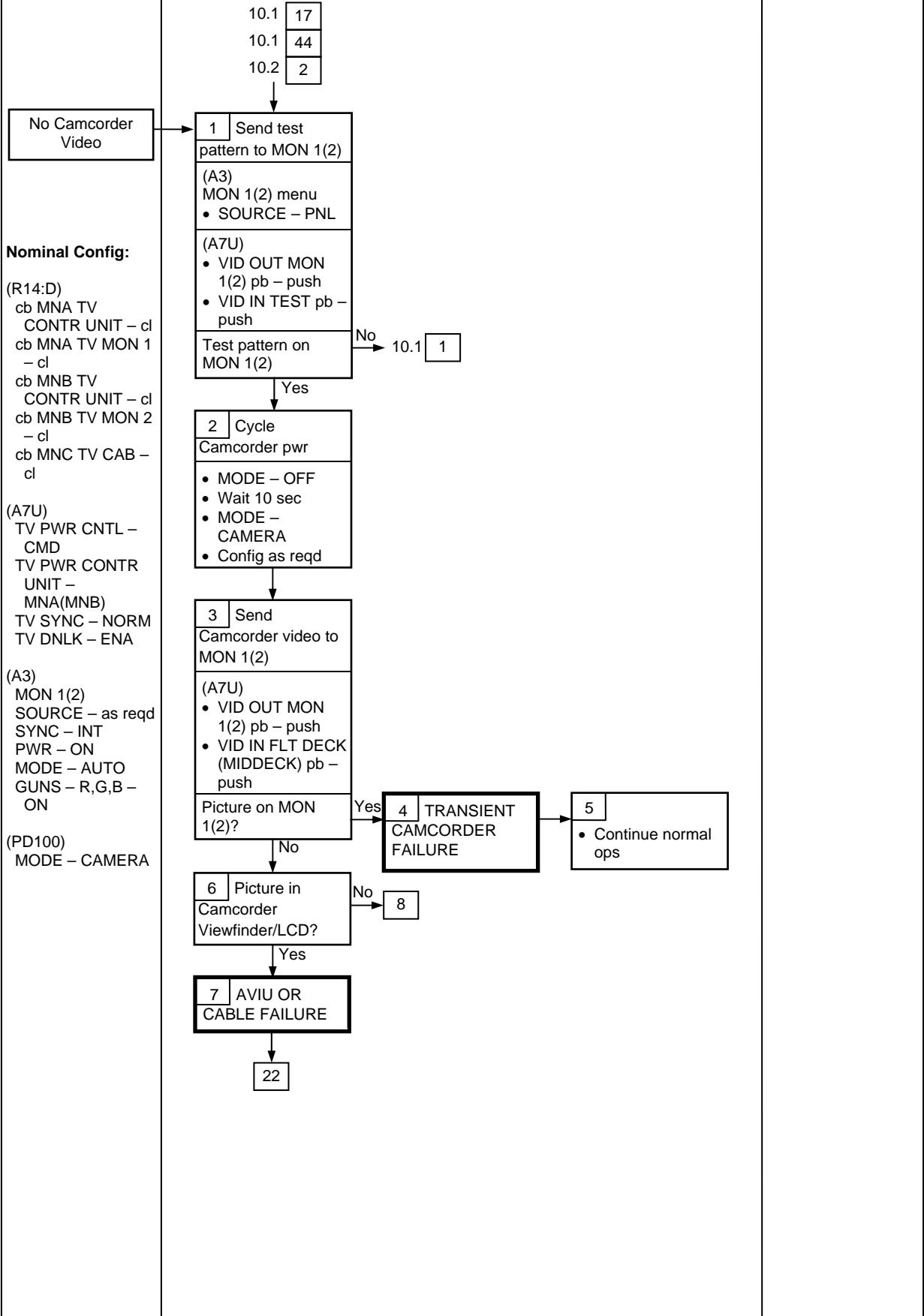


③
√MCC if alternate
equip avail

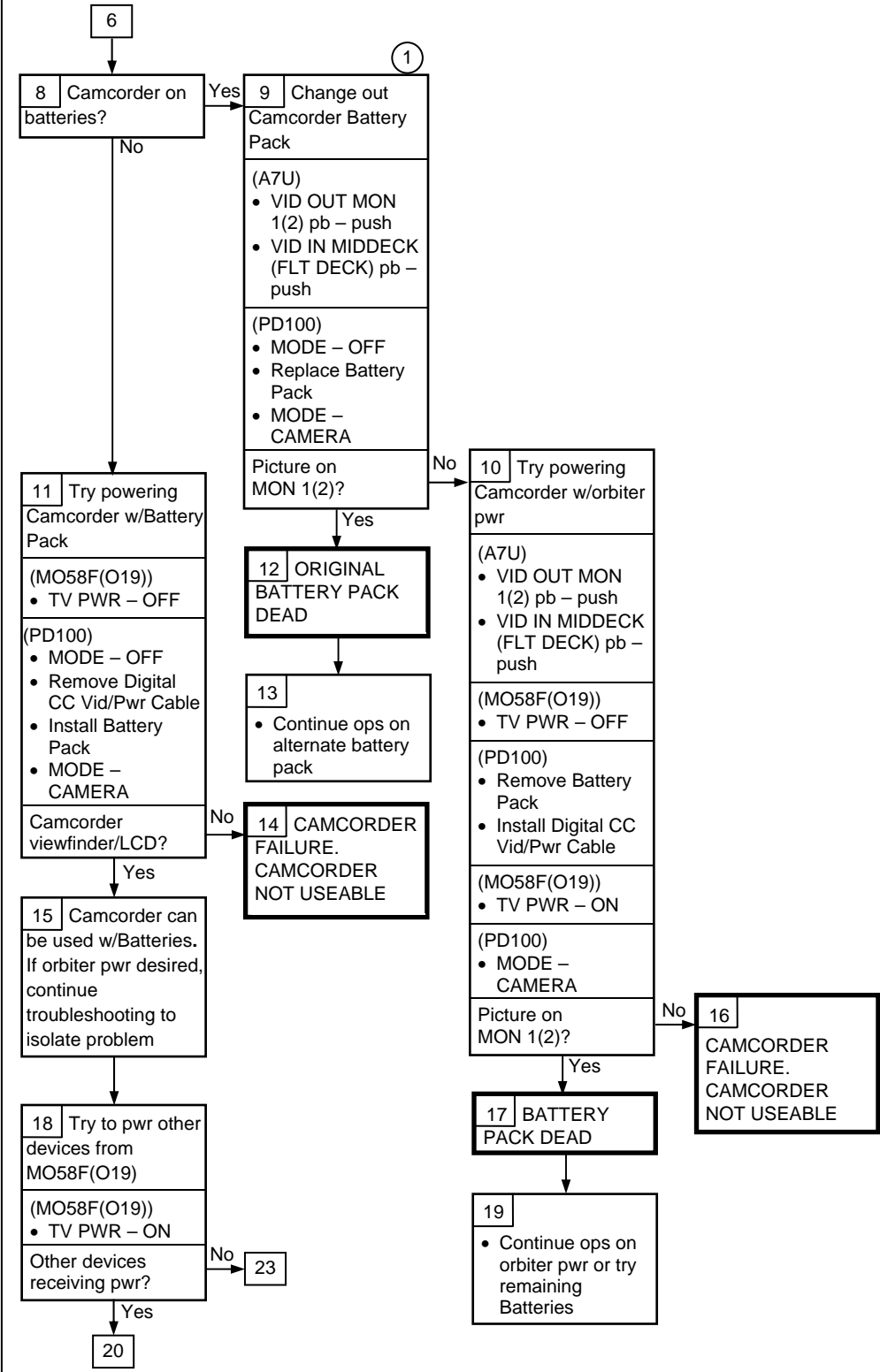
④
IFM for AVIU(cables)
may be possible

CCTV

10.4 NO CAMCORDER VIDEO ON COLOR TV MONITOR

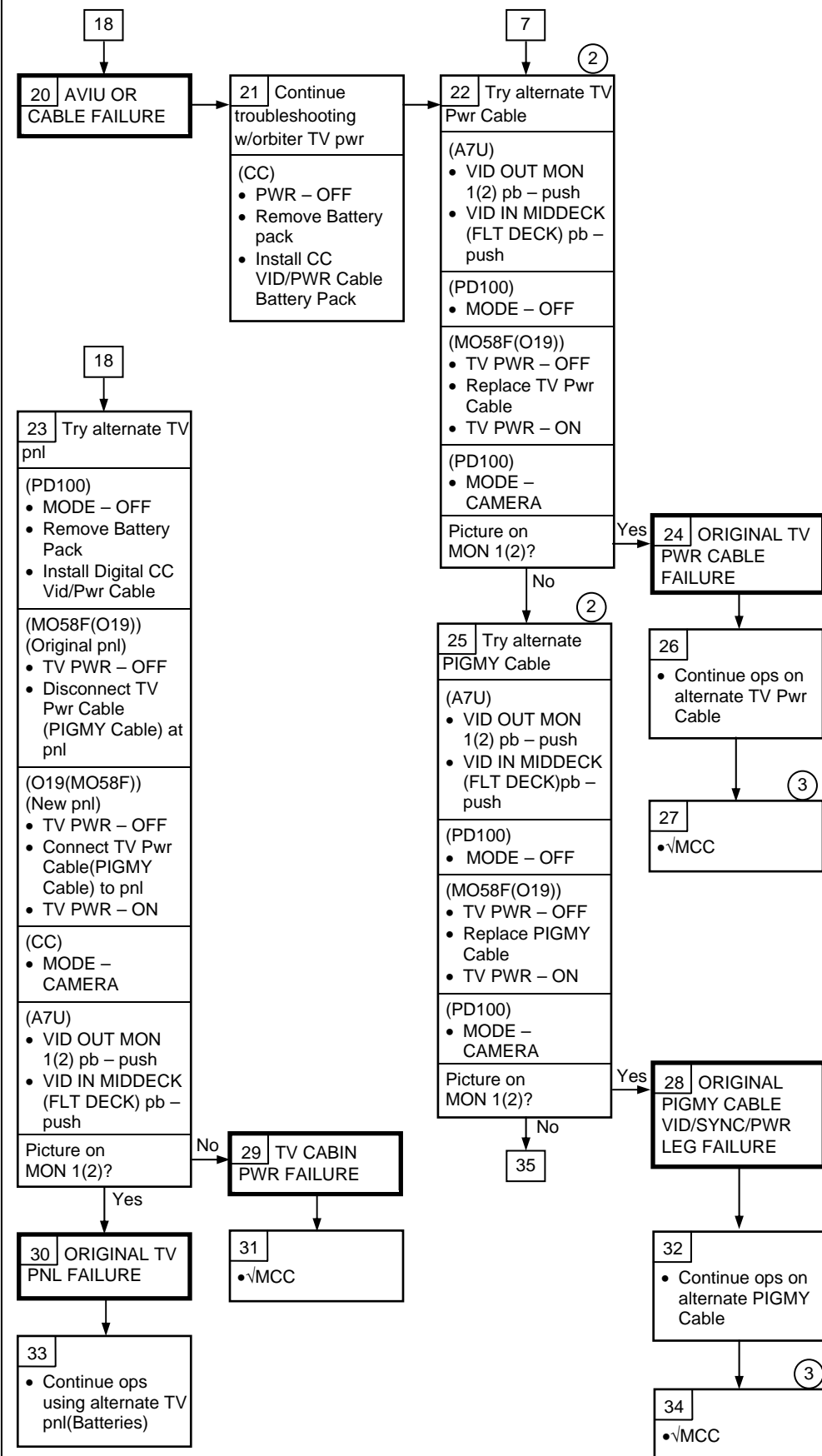


CCTV 10.4 (Cont)



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

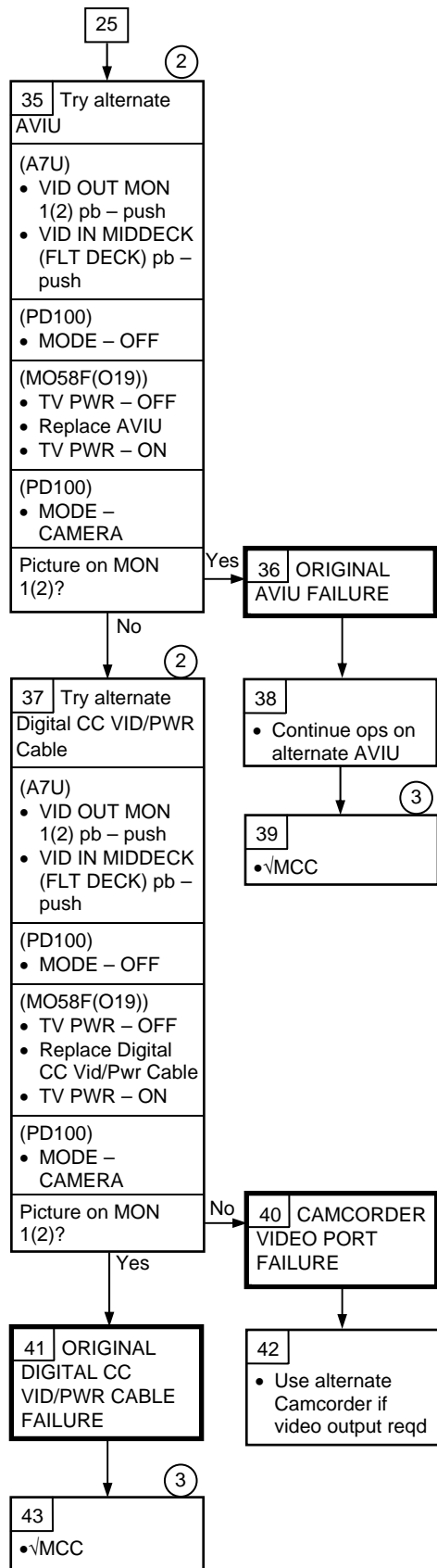
CCTV 10.4 (Cont)



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 DNLK – ENA

(A3)
MON 1(2)
SOURCE – as reqd
SYNC – INT
PWR – ON

1 | √Wrist Camr
(A7U)
• TV CAMR PWR RMS – OFF
• VID OUT MON 1(2) pb – push
• VID IN RMS pb – push

2 | Select Wrist Camr
(A7U)
• PORT RMS CAMR – WRIST
(R14:E)
On MCC GO:
• cb MNB RMS PORT RMS TV
CAMR/PAN-TILT – cl
• Wait 10 sec
cb open?

3 | Turn on Camr pwr
(A7U)
• TV CAMR PWR RMS – ON
• CAMR CMD ALC pb – press
• CAMR CMD PEAK pb – press
Video on Monitor and cb closed?

4 | WRIST CAMR
LOST

5 | Wrist Camr
operational. Wait for
MCC OK to perform
next step

6 | √Elbow Camr
(A7U)
• TV CAMR PWR
RMS – OFF

7 | Select Elbow Camr
(A7U)
• PORT RMS CAMR – ELBOW
(R14:E) (If necessary)
On MCC GO:
• cb MNB RMS PORT RMS TV
CAMR/PAN-TILT – cl
• Wait 10 sec
cb open?

8 | ELBOW
CAMR LOST

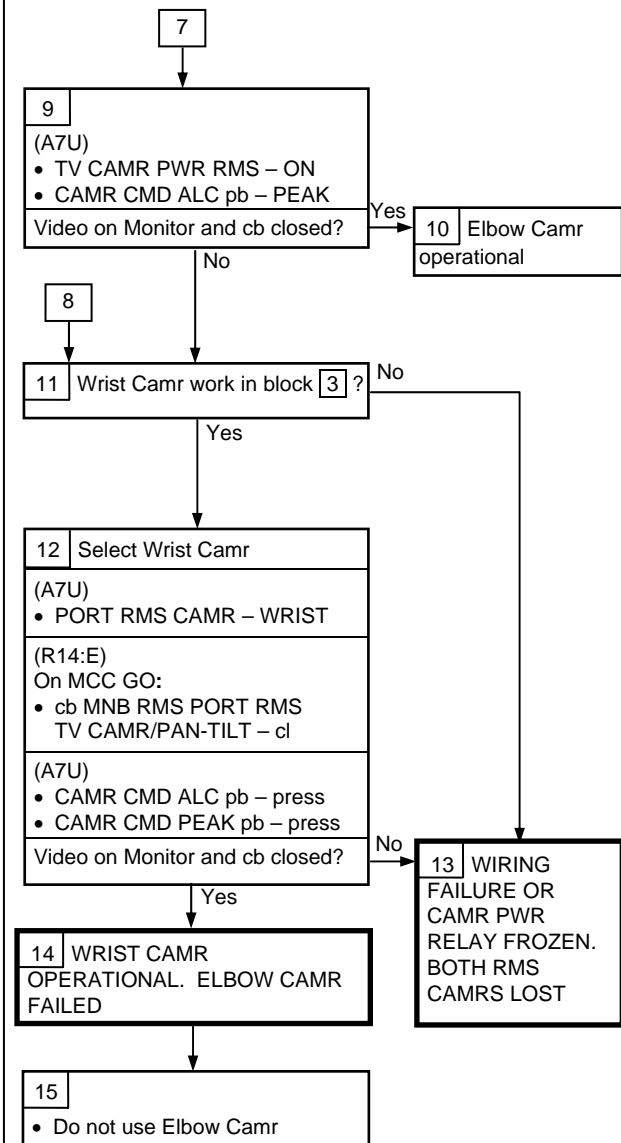
9

11

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)



CENTERLINE (C/L) CAMR

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C/L CAMR MISALIGNMENT	11-8
C/L CAMR OPS FOR VSU FAIL	11-10

CENTERLINE (C/L) CAMR

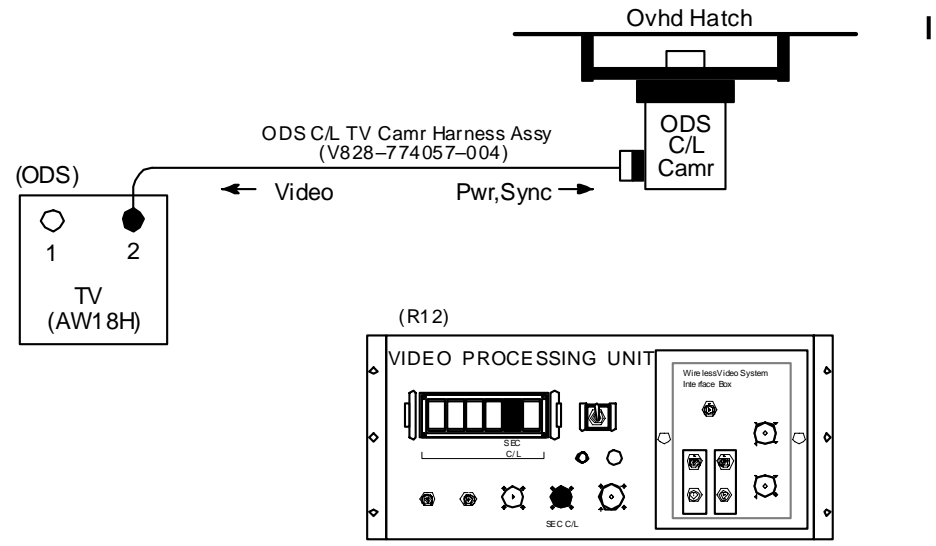
C/L CAMR INSTALL

- 1. ODS C/L Camr Config
- L12 (SSP 2) √C/L CAM PWR – OFF
- R12 (VPU) √SEC C/L Cap installed
 √Green Jumper – SEC C/L
 √VPU Pwr – ON (LED on)
- ML60B Unstow C/L Camr, ODS C/L TV Camr Harness Assy

NOTE

When connecting ODS C/L TV Camr Harness Assy, √pins to socket connection

- ODS √ODS C/L Camr Brkt mounted securely
 Mount C/L Camr to ODS C/L Camr Brkt
 √Flex Duct attached to Camr brkt
 Config cable per dwg at right
- C/L Camr √SSF/STS sw – STS
- L12 (SSP 1) cb SW PWR 1 (CB2) – cl
 (SSP 2) C/L CAM PWR – SEC ON

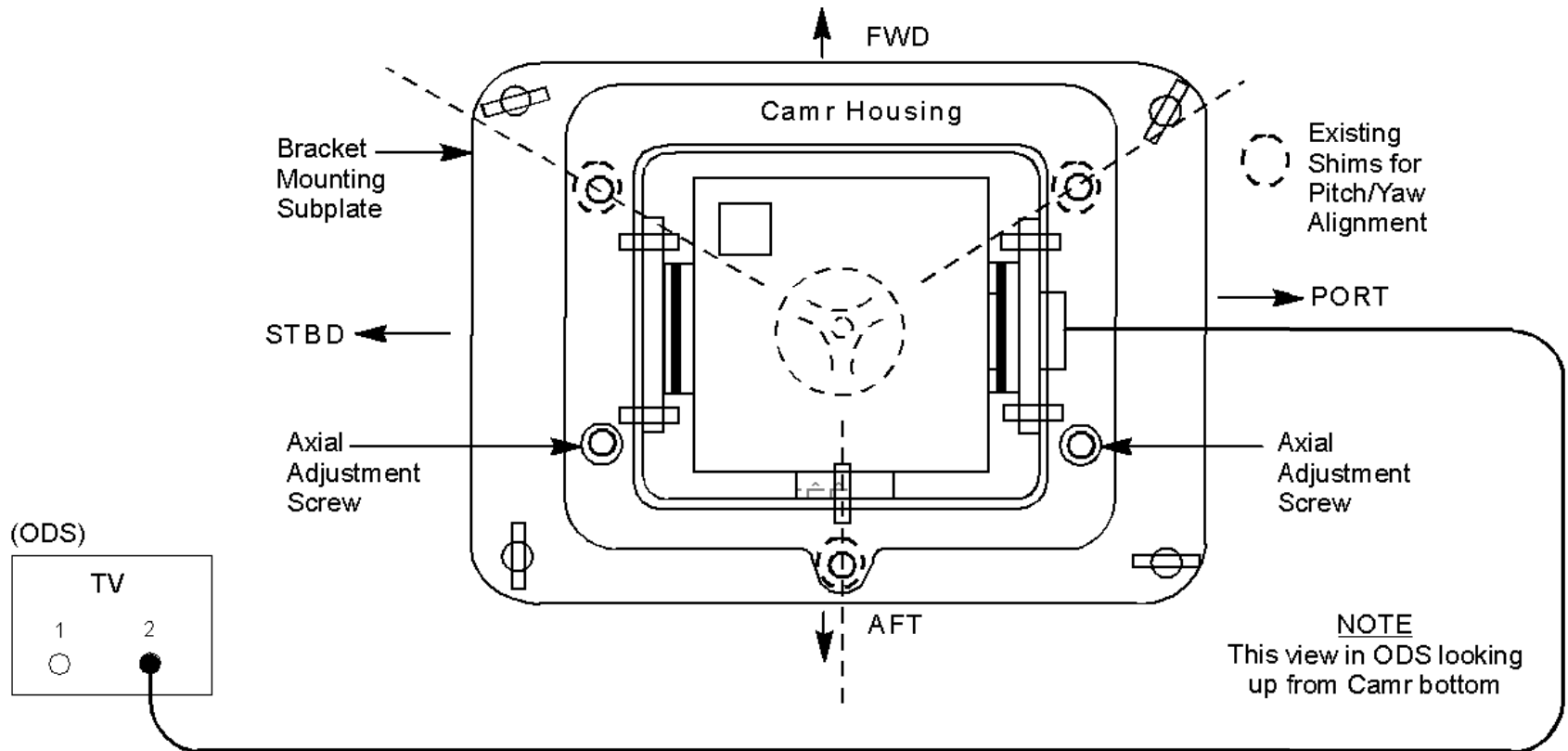


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CENTERLINE (C/L) CAMR (Continued)

C/L CAMR INSTALL (Continued)

2. Camr Position Verification



ODS C/L TV Camr Harness Assy (8.5 ft)
V828-774057-004

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CENTERLINE (C/L) CAMR (Continued)

C/L CAMR INSTALL (Concluded)

3. ODS C/L Camr Alignment Check
Perform ACTIVATION (Cue Card, TV) as reqd

A7 VID OUT MON 1(2) pb – push
IN PL2(VPU) pb – push
ALC pb – push
AVG pb – push

MON 1(2) LDATA – ON
CDATA – GRN
XHAIR – GRN

A7 Zoom to $10^\circ \pm 0.5^\circ$
Focus to see Xhair target

NOTE

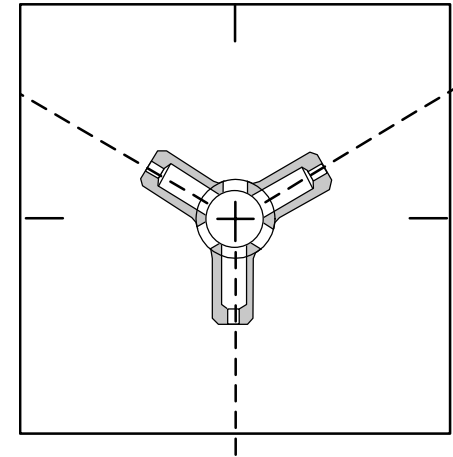
Green xhairs on monitor may move off center in calibration target when zooming in,out. Xhair will be closest to center at full zoom in position

MON 1(2) ✓ Vertical xhairs coincide w/vertical alignment wire and are parallel. If xhair marks overlay each other, no yaw(axial) alignment needed (see dwg above)

✓ Intersection of monitor vertical, horizontal xhair falls within target circular opening from ~10-40° zoom range of Camr

Report results of both alignment verifications (at 10° and 40°) to MCC

4. Deactivation
A7 CAMR CMD IRIS – CL
L12 (SSP 2) C/L CAM PWR – OFF
Go to DEACTIVATION (Cue Card, TV) as reqd



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CENTERLINE (C/L) CAMR (Continued)

C/L CAMR VIDEO TROUBLESHOOT

1. ✓C/L Camr nominal config:
 - ODS Camr SSF/STS sw – STS
 - SEC C/L Camr connected via PRI C/L TV Camr Harness Assy to TV2 port
 - R12 (VPU) ✓VPU SEC C/L Cap installed on SEC C/L
 - ✓Green Jumper – SEC C/L
 - ✓VPU PWR – ON (It ON)
 - L12 (SSP 1) ✓cb SW PWR 1 (CB2) – cl
 - (SSP 2) C/L CAM PWR – SEC ON
 - A7 VID OUT MON 1(2) pb – push
 - IN PL2(VPU) pb – push
 - A3 (MON) ✓C/L Camr Video

If no C/L Camr video on monitor:

2. Pwr-Cycle C/L Camr:
 - A7 CAMR CMD IRIS – CL (hold 8 sec)
 - L12 (SSP 2) C/L CAM PWR – OFF, wait 10 sec, SEC ON
 - A7 ALC pb – push
 - AVG pb – push
 - A3 (MON) ✓C/L Camr Video

CENTERLINE (C/L) CAMR (Continued)

C/L CAMR VIDEO TROUBLESHOOT (Continued)

If still no C/L Camr video on monitor:

3. Change ODS TV port:
 - A7 CAMR CMD IRIS – CL (hold 8 sec)
 - L12 (SSP 2) C/L CAM PWR – OFF

 - ODS Disconnect PRI C/L TV Camr Harness Assy from TV2 port
Connect PRI C/L TV Camr Harness Assy to TV1 port
 - R12 (VPU) √VPU SEC C/L Cap installed on PRI C/L
Green Jumper – PRI C/L
 - L12 (SSP 2) C/L CAM PWR – PRI ON

 - A7 ALC pb – push
AVG pb – push
 - A3 (MON) √C/L Camr Video

If still no C/L Camr video on monitor:

4. Change C/L TV Camr Harness Assy:
 - A7 CAMR CMD IRIS – CL (hold 8 sec)
 - L12 (SSP 2) C/L CAM PWR – OFF

 - ML60M Unstow B/U C/L TV Camr Harness Assy
 - ODS Disconnect PRI C/L TV Camr Harness Assy from ODS TV1 port and PRI C/L Camr
Connect B/U C/L TV Camr Harness Assy to ODS TV1 and PRI C/L Camr
 - L12 (SSP 2) C/L CAM PWR – PRI ON

 - A7 ALC pb – push
AVG pb – push
 - A3 (MON) √C/L Camr Video

CENTERLINE (C/L) CAMR (Continued)

C/L CAMR VIDEO TROUBLESHOOT (Concluded)

If still no C/L Camr video on monitor:

5. Install B/U C/L Camr:
 - A7 CAMR CMD IRIS – CL (hold 8 sec)
 - L12 (SSP 2) C/L CAM PWR – OFF

 - ML60M Unstow B/U C/L TV Camr
 - ODS Disconnect B/U C/L TV Camr Harness Assy from PRI C/L Camr
Remove PRI C/L Camr from ODS C/L Camr Brkt
Mount B/U C/L Camr to ODS C/L Camr Brkt
 - L12 (SSP 2) Connect B/U C/L TV Camr Harness Assy to B/U C/L Camr
C/L CAM PWR – PRI ON

 - A7 ALC pb – push
 - AVG pb – push
 - A3 (MON) ✓C/L Camr Video

If video, perform C/L CAMR INSTALL, step 3

If still no C/L Camr video on monitor:

6. ✓MCC

CENTERLINE (C/L) CAMR (Continued)

C/L CAMR MISALIGNMENT

If green xhair outside inner diameter of circular portion of calibration target during PRI C/L Camr alignment, perform following:

1. Describe to MCC location of xhair in relation to target circle. Reference dwgs, 11-9
2. Remove,re-install Camr to bridge. Recheck alignment per C/L CAMR INSTALL, step 3

Perform each of the remaining steps if misalignment persists:

3. Remove,re-install mounting bridge to ODS. Recheck alignment per C/L CAMR INSTALL, step 3
4. Shim Camr/bridge interface:
 - a. Obtain feeler gauges from ML60B Primary C/L Foam
 - b. Loosen fasteners on Camr/bridge interface
 - c. Insert feeler gauge between Camr brkt and bridge as appropriate to center x-hair and tighten fasteners
 - d. Recheck alignment per C/L CAMR INSTALL, step 3
 - e. Repeat as reqd w/different sized feeler gauges or shim locations until x-hair within target circle

ML60M 5. Install SEC C/L Camr using PRI C/L Camr Harness Assy and ODS TV Port 2 (no change to VPU selections):

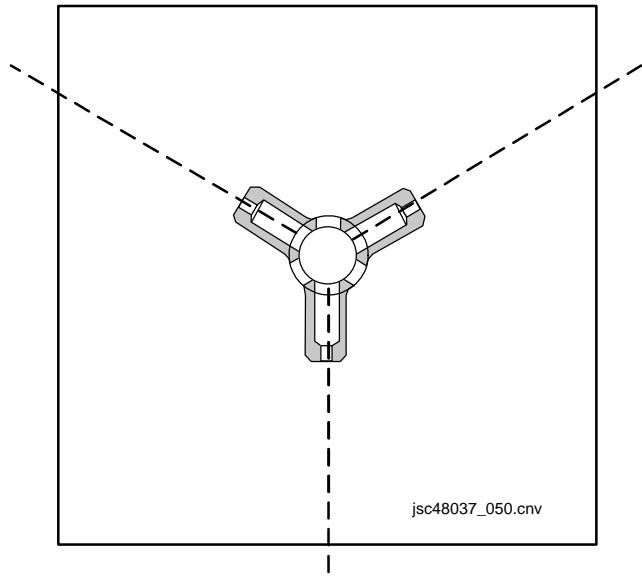
A7 CAMR CMD IRIS – CL (hold 8 sec)
L12 (SSP 2) C/L CAM PWR – OFF
ODS Disconnect Camr Harness Assy from PRI C/L Camr
Replace PRI C/L Camr w/SEC C/L Camr
Connect Camr Harness Assy to SEC C/L Camr
L12 (SSP 2) C/L CAMR PWR – SEC ON
A7 ALC pb – push
AVG pb – push

Check alignment per C/L CAMR INSTALL, step 3. Describe misalignment to MCC per step 1

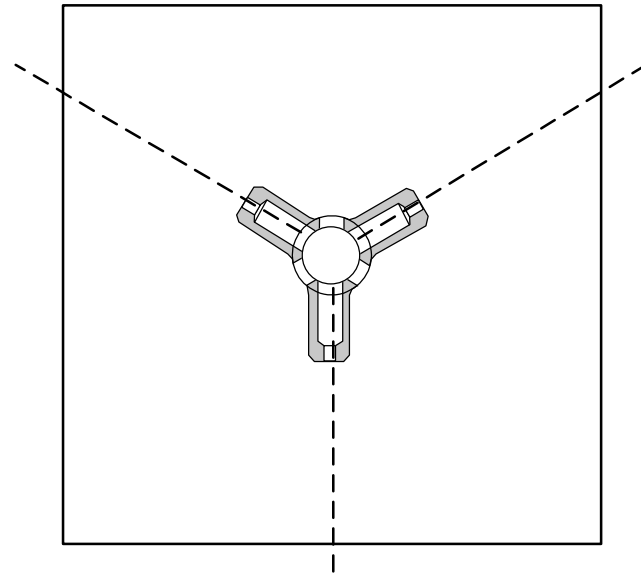
6. Repeat step 4 for SEC C/L Camr
7. If shimming both PRI and SEC C/L Camrs fails to bring xhair within target circle, re-install Camr w/best alignment. Report which Camr installed
8. √MCC to determine if ODS CENTERLINE CAMR ANGULAR ALIGNMENT (IFM, PROCEDURES M THRU R) reqd

CENTERLINE (C/L) CAMR (Continued)

C/L CAMR MISALIGNMENT (Concluded)



PRI C/L CAMR



SEC C/L CAMR

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CENTERLINE (C/L) CAMR (Continued)

C/L CAMR OPS FOR VSU FAIL

1. Setup

Obtain:

TVCU/CIP I/F Cable
 TVCU
 Camr Cont/CTVM Cable
 TV Pwr Cable (20 ft) (2)
 AVIU LCD Cable
 LCD
 RS-232 Cable
 PGSC
 PGSC Pwr Cable(s)
 PIGMY
 AVIU
 V10
 MON to VIU/CM Cable
 Digital CC VID/PWR Cable
 AVIU-CC VID Cable

A3
 R14:D
 A3

√MON 2 PWR – OFF
 cb MNB TV MON 2 – op
 Disconnect Pwr MNB from MON 2 J1

Config per dwg, 11-11

TVCU
 O19
 L12 (SSP 2)

PGSC

R14:D
 A3

V10

LCD

PGSC

2. Activation

CENTERLINE/CAMCORDER sw – CENTERLINE
 TV Pwr – ON
 C/L CAM PWR – SEC ON

PGSC PWR SOURCE – ON
 PGSC – ON

cb MNB TV MON 2 – cl
 MON 2 PWR – ON

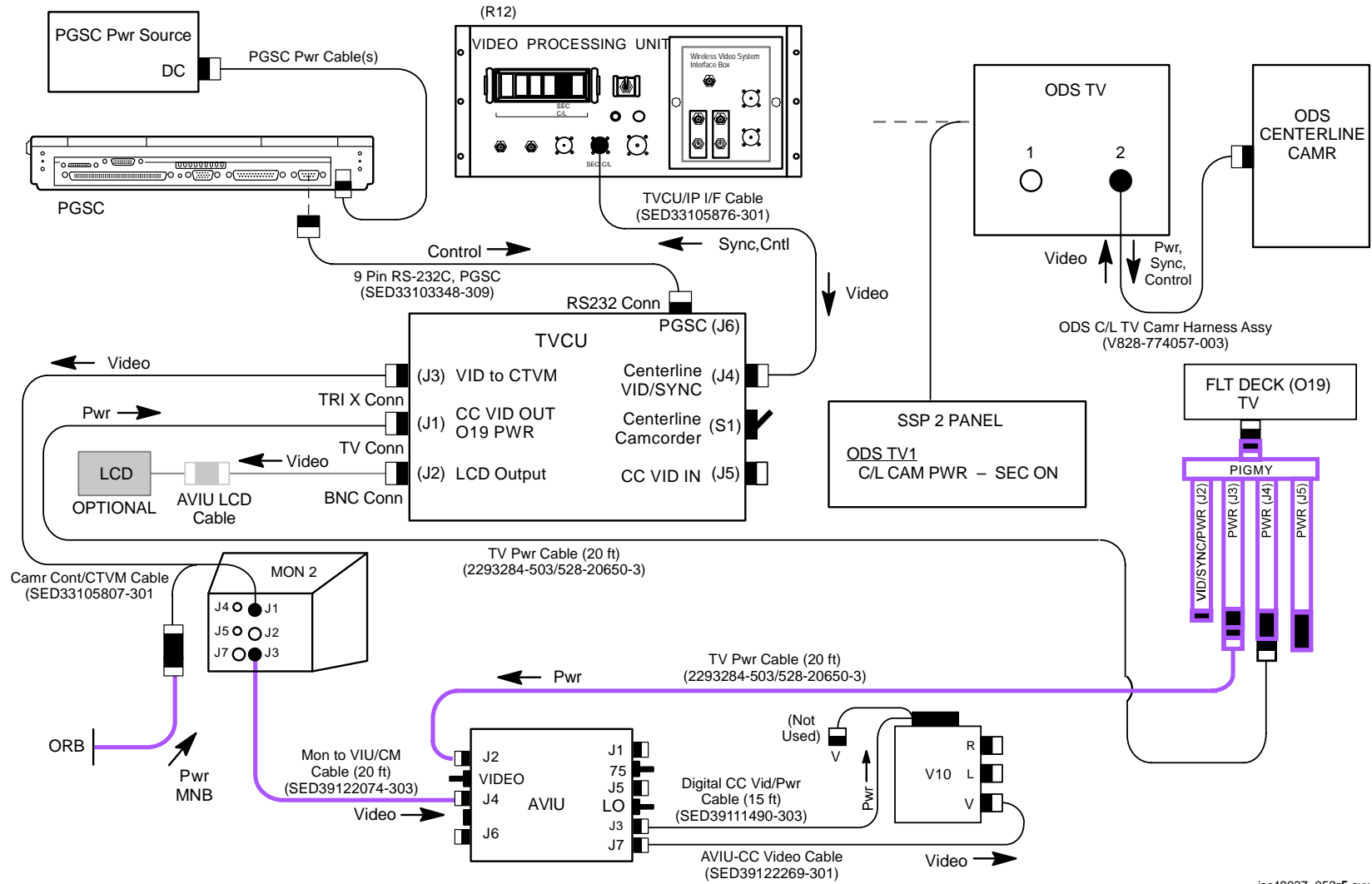
PWR – ON (LED on)
 √Tape – Installed

PWR – ON

RUN TV CONTROLLER program
 SHUTTLE Aps (double-click)
 TV Controller (double-click)
 Sel 'YES' in dialog box
 CTVC CONTROLLER menu
 CAMERA (click)
 P2 (click)
 ALC – AVG (click)
 Return to P/TV scene as reqd
 CTVC CONTROLLER menu
 √Zoom,Iris,Focus as reqd

CENTERLINE (C/L) CAMR (Continued)

C/L CAMR OPS FOR VSU FAIL (Continued)



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CENTERLINE (C/L) CAMR (Concluded)

C/L CAMR OPS FOR VSU FAIL (Concluded)

PGSC 3. Deactivation
 CTVC CONTROLLER menu
 IRIS – CLOSE
 QUIT

 PGSC – OFF
 PGSC Pwr Source – OFF

L12 (SSP 2) C/L CAM PWR – OFF

O19 TV Pwr – OFF

LCD PWR – OFF

MON 2 Pwr – OFF
 Stow hardware as reqd

DTV

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DTV

SETUP

1. Config Panels

Config H/W per dwg at right

L10 (MUX)

VTR/CC PWR – on (LED on)

If dnk:

MUX/VTR/CC PWR – on (LED on)

√MUX BYPASS – ACT

(VIP)

√ATU – REC

√CCTV VIDEO IN – J3

PWR – on (LED on, DATA Flow LED flashes twice)

(VTR)

√ON/STANDBY LED – green

√TIMER – OFF

√KEY INH – OFF

√CHARACTER DISPLAY (LCD) – ON (not BLACK BACK)

√CHARACTER DISPLAY – OFF

√INPUT SELECT – VIDEO

√COUNTER SELECT – COUNTER (TC)

√AUDIO INPUT – FIX

√Tape installed (Tape icon LED on)

MON 2

2. Config Video

SOURCE – C

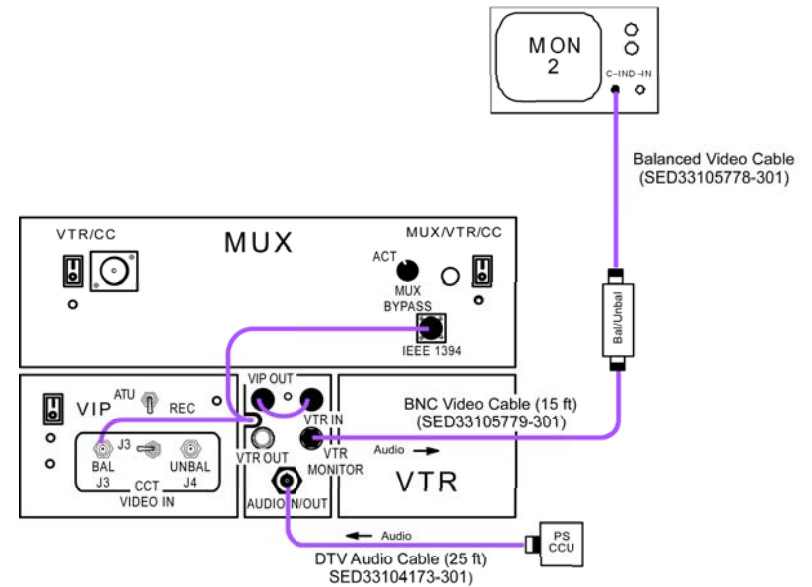
L9

3. Config Audio

PS AUD PWR – AUD

Desired Loops – RCV, Vol tw-5

Other Loops – OFF



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DTV (Continued)

SPECIFICATIONS

VIP

PWR SOURCE: 400 Hz A/C via AC2 PAYLOAD 3 Φ (MA73C:E)
PWR DRAW: 6.84 Watts
FUSES: F1 = 5 amp
 F2 = 2 amp
WEIGHT: 4.19 lb
DIMENSION: 10.5" (L) X 5.25" (W) X 2.69" (H)

VTR (SONY DSR-25)

PWR SOURCE: 13.2 VDC via MUX
PWR DRAW: 12.88 to 33.6 Watts (depending on mode)
TAPE: Standard DVCAM or Mini DVCAM
TAPE LENGTH: 3 hr or 40 min
AUDIO: 2 Channel, 16 bit at 48 KHz
CLOCK PWR: 300 hr internal rechargeable capacitor (after 8 hr charge)
OPERATING TEMP: 41 degF to 104 degF
WEIGHT: 9 lb
DIMENSION: 15.5" (L) X 8.37" (W) X 3.87" (H)

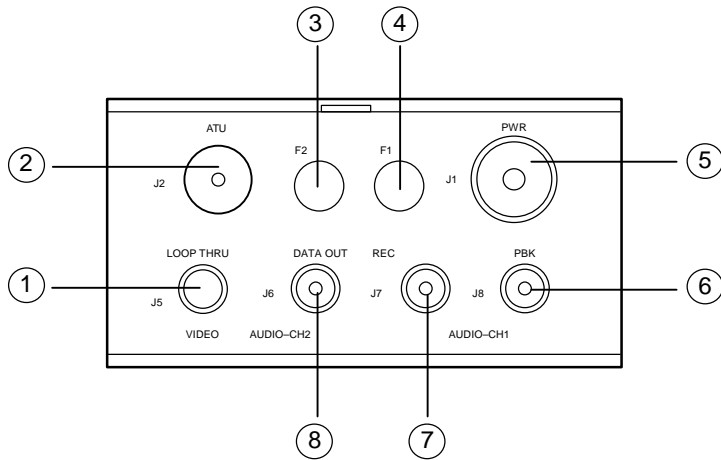
MUX

PWR: 28 VDC via PAYLOAD AUX bus (R1)
PWR DRAW: 39.76 to 72.8 Watts (depending on VTR,CC config)
FUSE: 5 amp
WEIGHT: 15.2 lb
DIMENSION: 19" (L) X 17.88" (W) X 3.45" (H)

DTV (Continued)

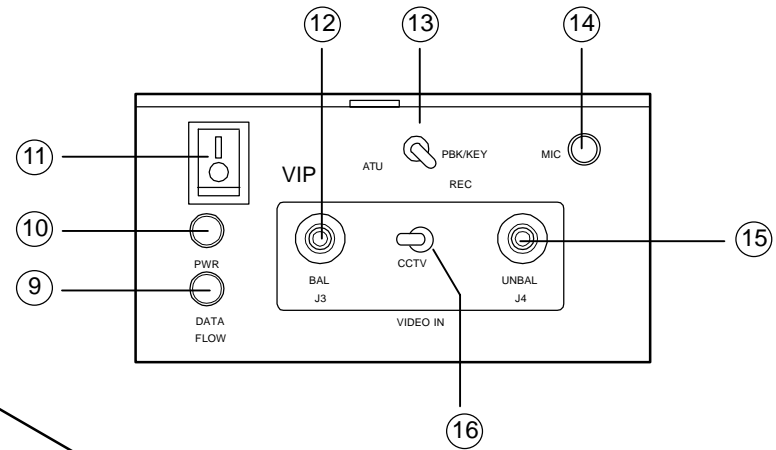
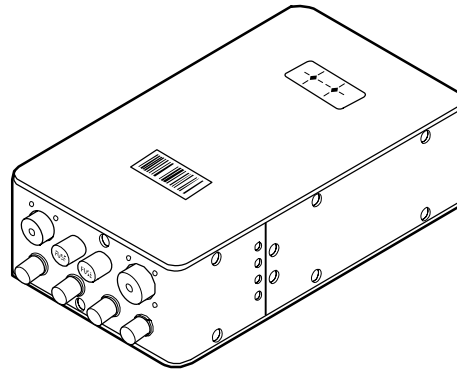
NOMENCLATURE

VIP



BACK

- ① Video Loop Thru Connector (J5)
- ② ATU Audio Connector (J2)
- ③ F2: 2–Amp Fuse
- ④ F1: 5–Amp Fuse
- ⑤ AC Pwr Connector (J1)
- ⑥ Playback Audio Connector (J8)
- ⑦ Record Audio Connector (J7)
- ⑧ Interval DATA OUT Connector (J6)



FRONT

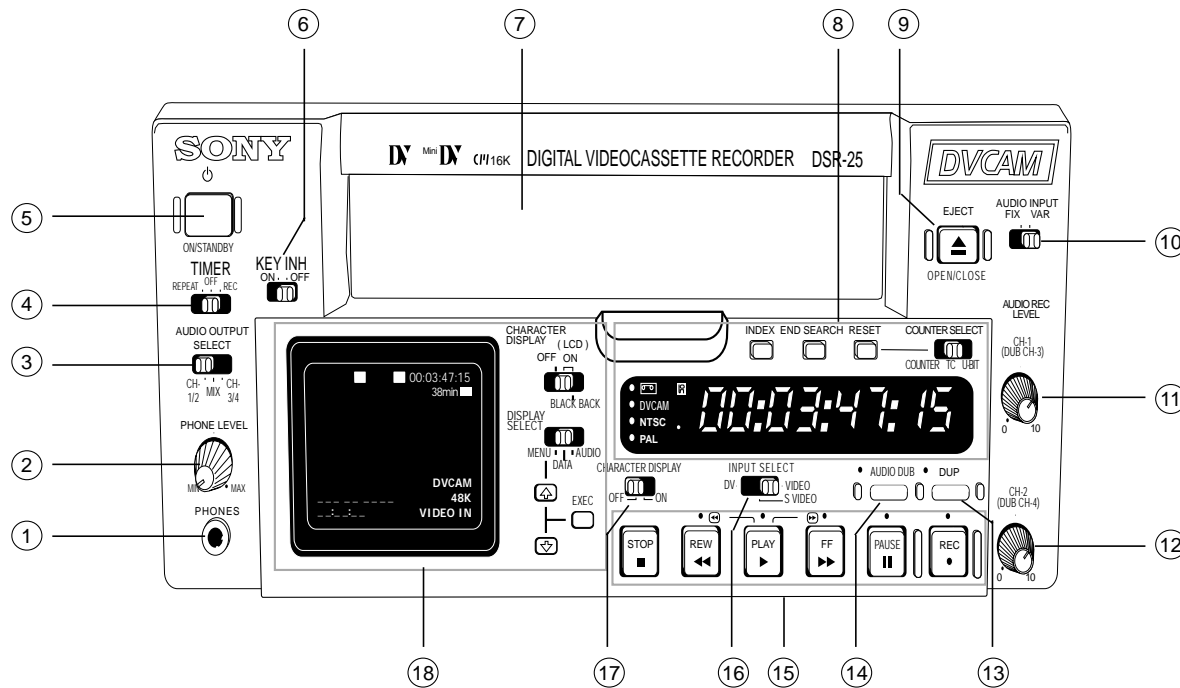
- ⑨ Data Flow LED (green)
- ⑩ PWR LED (green)
- ⑪ PWR sw
- ⑫ Balanced Video Connector (J3)
- ⑬ ATU sw
- ⑭ PLAYBACK/KEY MIC LED
- ⑮ Unbalanced Video Connector (J4)
- ⑯ CCTV VIDEO IN sw

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DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – FRONT PANEL



- ① Phone Jacks
- ② PHONE LEVEL Control kb
- ③ AUDIO OUTPUT SELECT sw (N/A)
- ④ TIMER sw (OFF)
- ⑤ ON/STANDBY pb, LED (red/green)
- ⑥ KEY INH sw (OFF)
- ⑦ Cassette Compartment
- ⑧ Display Window and Controls
- ⑨ EJECT pb
- ⑩ AUDIO INPUT sw (FIX)
- ⑪ CH-1 AUDIO REC LEVEL Control kb (N/A)
- ⑫ CH-2 AUDIO REC LEVEL Control kb (N/A)
- ⑬ DUP pb (not used)
- ⑭ AUDIO DUB pb (N/A)
- ⑮ Tape Transport Controls
- ⑯ INPUT SELECT sw (VIDEO)
- ⑰ CHARACTER DISPLAY sw
- ⑱ Monitor Display and Controls

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DTV (Continued)

NOMENCLATURE (Continued)

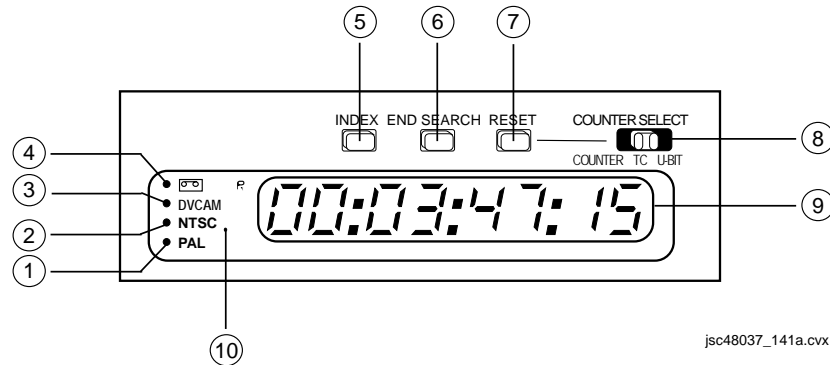
VTR (SONY DSR-25) – FRONT PANEL (Concluded)

①	PHONES jack	Stereo headphone connection point to monitor live(playback) audio
②	PHONE LEVEL kb	Controls headphone jack volume level
③	AUDIO OUTPUT SELECT sw (N/A)	Determines which audio channels are output in 32 kHz mode only
④	TIMER sw (OFF)	Used to auto repeat a tape or automatically start recording once pwr is applied to VTR
⑤	ON/STANDBY pb, LED (red/green)	Changes pwr mode of VTR between STANDBY (red LED) and ON (green LED). Will automatically go to ON when MUX pwr applied
⑥	KEY INH sw (OFF)	Disables all pbs when ON
⑦	Cassette Compartment	Tape insertion location, door opened/closed via EJECT pb
⑧	Display windows and controls	See 12-7 for details
⑨	EJECT pb	Opens/closes cassette compartment door and ejects tape, if installed
⑩	AUDIO INPUT sw (FIX)	Enables/disables AUDIO REC LEVEL control knobs. FIX sets fixed gain based on AUDIO INPUT LEVEL sw on rear of VTR
⑪	CH-1 AUDIO REC LEVEL kb (N/A)	Controls audio level of orbiter audio if AUDIO INPUT set to VAR
⑫	CH-2 AUDIO REC LEVEL kb (N/A)	Controls audio level for VI data if AUDIO INPUT set to VAR
⑬	DUP pb (not used)	Used for tape-to-tape recording to duplicate the time code
⑭	AUDIO DUB pb (N/A)	Used for tape-to-tape recording to duplicate the 32 kHz mode audio channels
⑮	Tape Transport Controls	See 12-8 for details
⑯	INPUT SELECT sw (VIDEO)	Determines which video input jack the VTR will process
⑰	CHARACTER DISPLAY sw	Determines if VTR monitor text is displayed in VTR OUT video
⑱	Monitor Display and Controls	See 12-9 for details

DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – DISPLAY WINDOW AND CONTROLS



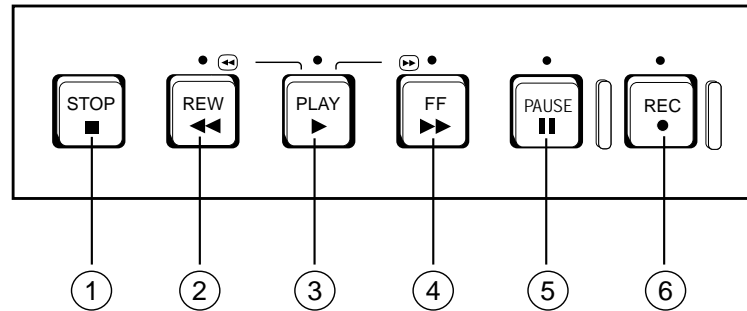
jsc48037_141a.cvx

①	PAL Indicator/Amber (not used)	Lit when NTSC/PAL sw is in PAL posn or PAL formatted video being processed by the VTR
②	NTSC Indicator/Amber (on)	Lit when NTSC/PAL sw is in NTSC posn or NTSC formatted video being processed by the VTR
③	DVCAM Indicator/Amber (on)	Lit when the VTR is playing a DVCAM-formatted tape or when the VTR is set to DVCAM
④	Cassette Indicator/Amber	Lit solid when a tape is loaded into the VTR. Flashes during tape ejection
⑤	INDEX pb	Initiates index mark on the tape that can be used to cue the tape to that posn on the tape via INDEX SEARCH
⑥	END SEARCH pb	VTR will search for the last 5 sec of recorded video, play it, and return to stop mode
⑦	RESET pb	Resets COUNTER displayed numbers to all zeroes
⑧	COUNTER SELECT sw	Determines which time data will be displayed in the counter display
	COUNTER	Count value of the counter (DD:HH:MM:SS)
	TC	Time code
	U-BIT	User bits (not used)
⑨	Time Counter Display	Displays time data (counter/time code/user bits). Self-diagnosis code numbers or error msgs
⑩	Remote Control Detector	Self explanatory

DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – TAPE TRANSPORT CONTROLS



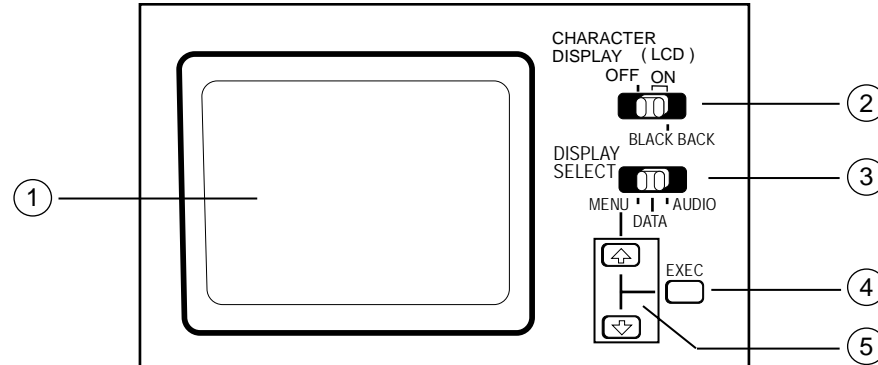
jsc48037_141b.cvx

①	STOP pb	Stops current tape transport operation
②	REW pb/Indicator/Amber	Rewinds tape and illuminates the REW indicator. Video not visible unless held during play or play/pause mode
③	PLAY pb/Indicator/Green	Starts playback ops and illuminates the PLAY indicator
④	FF pb/Indicator/Amber	Fast forwards tape and illuminates the FF indicator. Video not visible unless held during play or play/pause mode
⑤	PAUSE pb/Indicator/Amber	Pauses playback or recording ops
⑥	REC pb/Indicator/Red	Pressing PLAY pb while holding in REC pb will start recording and both PLAY and REC indicators will illuminate. Just pressing REC pb will illuminate the REC indicator and allow for audio,video monitoring

DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – MONITOR DISPLAY AND CONTROLS



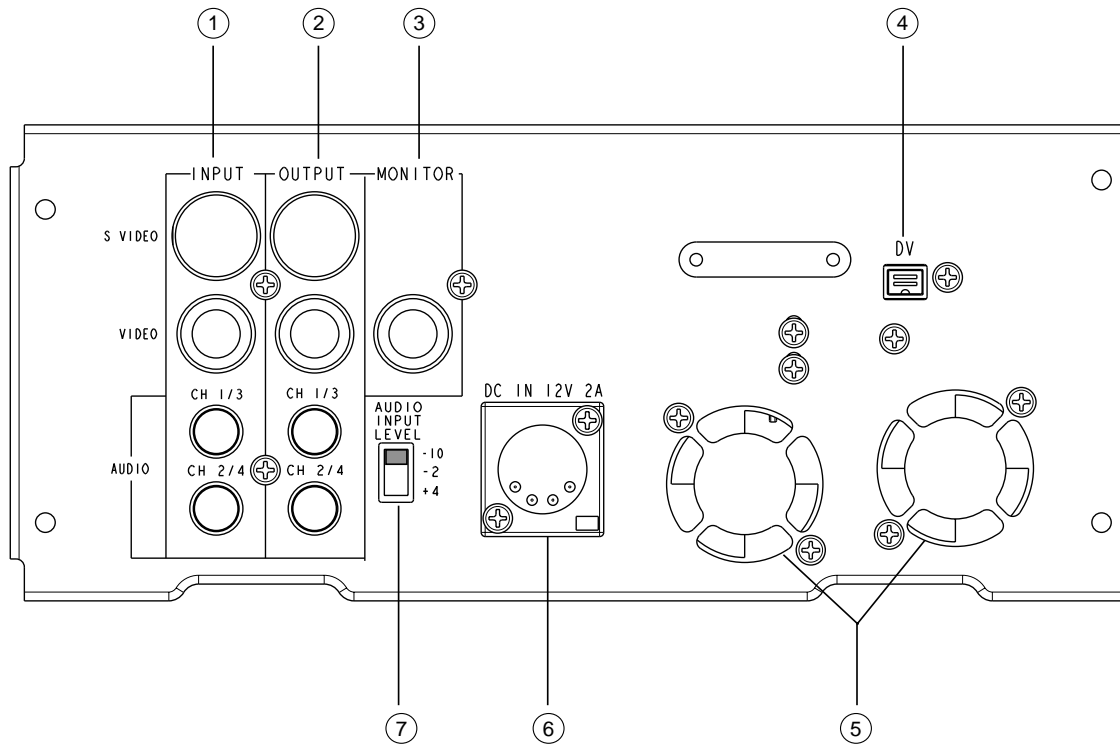
jsc48037_141c.cvx

①	LCD Monitor	Displays playback(live) video and superimposed text, audio levels, and menu data
②	CHARACTER DISPLAY (LCD) sw	Controls the display of superimposed text on the monitor. BLACK BACK will block video flow to the monitor to provide a black background to improve superimposed data viewing
③	DISPLAY SELECT sw	Determine what superimposed data is displayed on the monitor
	MENU	Menu data
	DATA	VTR information
	AUDIO	Audio levels
④	EXEC pb	Executes and selects menu items
⑤	↑↓ pbs	Allows navigation thru and setting of menu items when in MENU mode, and adjusts monitor brightness when in DATA mode

DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – REAR PANEL



- ① INPUT Jacks
- ② OUTPUT Jacks
- ③ MONITOR Jack
- ④ DV Jack
- ⑤ Cooling Fans
- ⑥ DC IN Connector
- ⑦ AUDIO INPUT LEVEL sw (-10)

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DTV (Continued)

NOMENCLATURE (Continued)

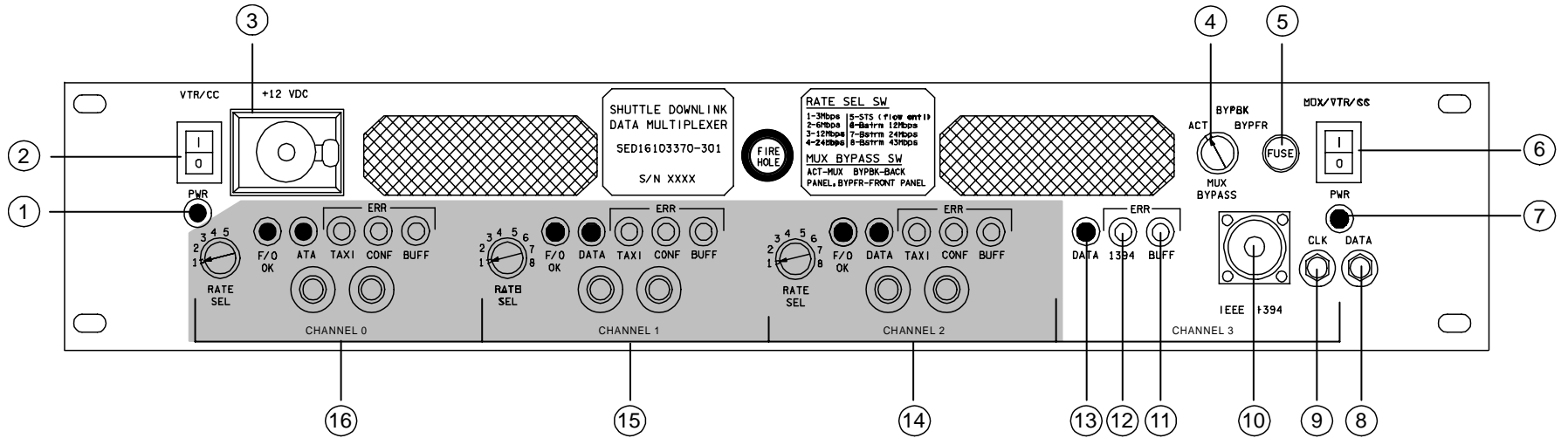
VTR (SONY DSR-25) – REAR PANEL (Concluded)

①	INPUT Jacks	Video and audio inputs
	S_VIDEO	Not used
	VIDEO	Video input of DTV signal from orbiter VSU
	AUDIO CH-1/3	Orbiter audio input
	AUDIO CH-2/4	Orbiter VID input
②	OUTPUT Jacks	Video and audio outputs
	S_VIDEO	Not used
	VIDEO	VTR OUT video
	AUDIO CH-1/3	Orbiter audio playback output
	AUDIO CH-2/4	Not used
③	MONITOR Jack	VTR MON Video (Note: Will not display VTR Playback Video)
④	DV Jack	IEEE 1394 4-pin video/audio connection
⑤	Cooling Fans	Reversed to bring air into unit
⑥	DC IN Connector	DC pwr source connection
⑦	AUDIO INPUT LEVEL sw	Sets the audio fixed gain level when the AUDIO INPUT is set to FIX. Is ignored in the VAR setting

DTV (Continued)

NOMENCLATURE (Continued)

MUX – FRONT



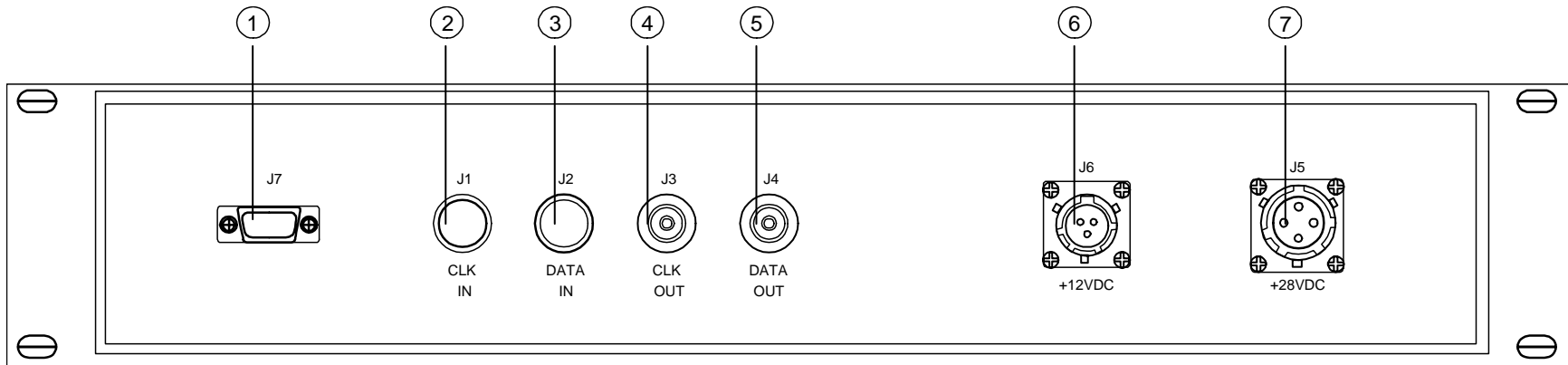
- | | |
|---------------------------|---------------------------------------|
| ① VTR/CC PWR LED (green) | ⑨ BYPFR CLOCK Connector |
| ② VTR/CC PWR sw | ⑩ IEEE 1394 Connector |
| ③ +12 VDC Connector (N/A) | ⑪ CHANNEL 3 BUFFER ERROR LED (yellow) |
| ④ MUX BYPASS sw | ⑫ CHANNEL 3 1394 ERROR LED (yellow) |
| ⑤ MUX 5-Amp Fuse | ⑬ CHANNEL 3 DATA LED (green) |
| ⑥ MUX/VTR/CC sw | ⑭ CHANNEL 2 DATA Ports,LEDs (N/A) |
| ⑦ MUX PWR LED (green) | ⑮ CHANNEL 1 DATA Ports,LEDs (N/A) |
| ⑧ BYPFR DATA Connector | ⑯ CHANNEL 0 DATA Ports,LEDs (N/A) |

jsc48037_058.cnv

DTV (Continued)

NOMENCLATURE (Concluded)

MUX – BACK



- ① DATA Port (N/A)
- ② CLOCK IN Connector (J1)
- ③ DATA IN Connector (J2)
- ④ CLOCK OUT Connector (J3)
- ⑤ DATA OUT Connector (J4)
- ⑥ +12 VDC OUTPUT Connector (J6)
- ⑦ +28 VDC INPUT Connector (J5)

jsc48037_059.cnv

DTV (Continued)

VTR CLOCK SET

1. Activate VTR

R1 √PL AUX – ON

L10 (MUX) VTR/CC – on (LED on)
(VTR) √ON/STANDBY LED – green

2. Set VTR clock to GMT

DISPLAY SELECT – MENU

↑(↓) pb – ETC, EXEC pb – push

↓ pb – CLOCK SET, EXEC pb – push

↑(↓,EXEC) pb – push to set clock to GMT

↓ pb – RETURN, EXEC pb – push

DISPLAY SELECT – DATA

3. Deactivate VTR as reqd

(MUX) ON/STANDBY – push (red LED on)
 VTR/CC – off (LED off)

DTV (Continued)

MALS

12.1 NO VIDEO AT VTR OUT

- A7 √Video Signal routed to VID OUT DTV pb
- MON 2 If using CTVM:
 - √SOURCE – C
- R1 √PL AUX – ON
- MA73C √cb AC2 PL 3Φ – cl
- L10 (MUX) √VTR/CC(MUX/VTR/CC) PWR – on (LEDs on); if not, go to MAL **12.3**
 - (VIP) √CCTV VIDEO IN – J3
 - √PWR – on (LED on); if not, go to MAL **12.5**
 - √DATA FLOW LED – on; if not, go to MAL **12.6**
 - (VTR) √ON/STANDBY LED – green
 - √INPUT SELECT – VIDEO
 - If no joy, √MCC

12.2 NO DIGITAL DNLK VIDEO AT MCC

- √Video from VTR MONITOR, if none, perform MAL **12.1**
- √MCC has configured Ku Signal Band Processor CH3 for PL MAX
- L10 (MUX) √MUX BYPASS – ACT
- If performing PD100 dnlk
 - √IEEE 1394 Batt Adapter Cable – IEEE 1394 port I/F
 - √IEEE 1394 Batt Adapter Cable – Camcorder I/F
- If not performing PD100 dnlk
- L10 (MUX) √IEEE 1394 male cable connected to IEEE 1394 port
- (VTR) DISPLAY SELECT – MENU
 - ↑(↓) pb – VTR, EXEC pb – push
 - ↓ pb – DVEE OUT, √ON
 - ↓ pb – RETURN, EXEC pb – push
- DISPLAY SELECT – DATA
- (MUX) √CHANNEL 3 DATA LED – on; if not, go to MAL **12.4**
- If no joy, √MCC for possible IEEE 1394 male cable replacement

DTV (Continued)

MALS (Continued)

12.3 MUX PWR LED(s) OFF

- R1 √PL AUX – ON
- L10 (MUX) √VTR/CC(MUX/VTR/CC) PWR – on (LEDs on)
Notify MCC before proceeding
√5 Amp Fuse (spare in DTV Fuse Kit)
- If no joy, √MCC

12.4 MUX CHANNEL 3 DATA LED OFF

√DTV MAL 12.2 complete

- L10 (MUX) If CHANNEL 3 1394,BUFF LEDs – on, signal not reaching MUX for processing
 (VTR) | ON/STANDBY – push (red LED on)
 | If PD100:
PD100 | PWR – OFF
- L10 (MUX) MUX/VTR/CC PWR – off, wait 5 sec, on
 (VTR) | √ON/STANDBY LED – green
 | If PD100:
PD100 | PWR – CAMERA
 | If no joy:
 | Repeat pwrndn per previous steps
 | Disconnect,reconnect IEEE 1394 cable
 | Repeat pwrup per previous steps
 | If no joy, √MCC
- | If only CHANNEL 3 1394 LED – on, MUX 1394 format error
 | √MCC
- | If only CHANNEL 3 BUFF LED – on, MUX FIFO memory buffer error
 | √MCC

DTV (Continued)

MALS (Continued)

12.5 VIP PWR LED OFF

MA73C √cb AC2 PL 3Φ – cl

L10 (VIP) √PWR – on
 Notify MCC before proceeding
 Pull VIP from container to check fuses
 √F1 5 Amp Fuse (spare in DTV Fuse Kit)
 √F2 2 Amp Fuse (spare in DTV Fuse Kit)

 If no joy, √MCC

12.6 VIP DATA FLOW LED OFF

MA73C √cb AC2 PL 3Φ – cl

L10 (VIP) √PWR – on
A7 √Video signal routed to VID OUT DTV pb
 √Video signal has Vertical Interval data (PLB Camrs)

L10 (VTR) DISPLAY SELECT – AUDIO
 √CHANNEL 2 AUDIO LEVEL METER indicates signal
 If signal indicated, LED failed
 Notify MCC, continue Nom Ops
 DISPLAY SELECT – DATA
(VIP) PWR – off, then on (√DATA FLOW LED flashes twice)
 If LED does not flash twice, √MCC

DTV (Continued)

MALS (Continued)

12.7 VTR ON/STANDBY RED LED OFF

R1 √PL AUX – ON

L10 (MUX) √VTR/CC(MUX/VTR/CC) PWR – on (LEDs on)
Reset internal fuse by:
VTR/CC(MUX/VTR/CC) PWR – off, wait 30 sec, on

If no joy, √MCC

12.8 VTR STARTS RECORDING OR REWINDS AND STARTS PLAYING AFTER MUX PWR APPLIED

Timer sw out of config

L10 (VTR) √TIMER – OFF

If no joy, √MCC

12.9 VTR TAPE CONTROLS NOT FUNCTIONING (VTR DISPLAY INDICATES “ERR”)

Key Inhibit sw appears to be on

L10 (VTR) √KEY INH – OFF

If no joy, √MCC

12.10 VTR DISPLAYS ERROR MSG 32

VTR has entered SAFE MODE

L10 (VTR) ON/STANDBY – push (red LED on)
(MUX) VTR/CC,MUX/VTR/CC PWR – off (LEDs off), wait 10 sec, on (LED on)
(VTR) √ON/STANDBY LED – green
√Error msg no longer displayed

If no joy, √MCC

DTV (Concluded)

MALS (Concluded)

12.11 VTR DISPLAYS ERROR MSG 21

VTR has detected moisture inside

L10 (VTR) Remove tape
ON/STANDBY – push (red LED on)
Leave for 1 hr before re-attempting pwr on
Notify MCC

12.12 VTR AUTOMATICALLY PWRS OFF

VTR Auto Off feature on

L10 (VTR) DISPLAY SELECT – MENU
↑(↓) pb – ETC, EXEC pb – push
↓ pb – AUTO STBY, √Disable
↓ pb – RETURN, EXEC pb – push
DISPLAY SELECT – DATA

If no joy, √MCC

BPSMU

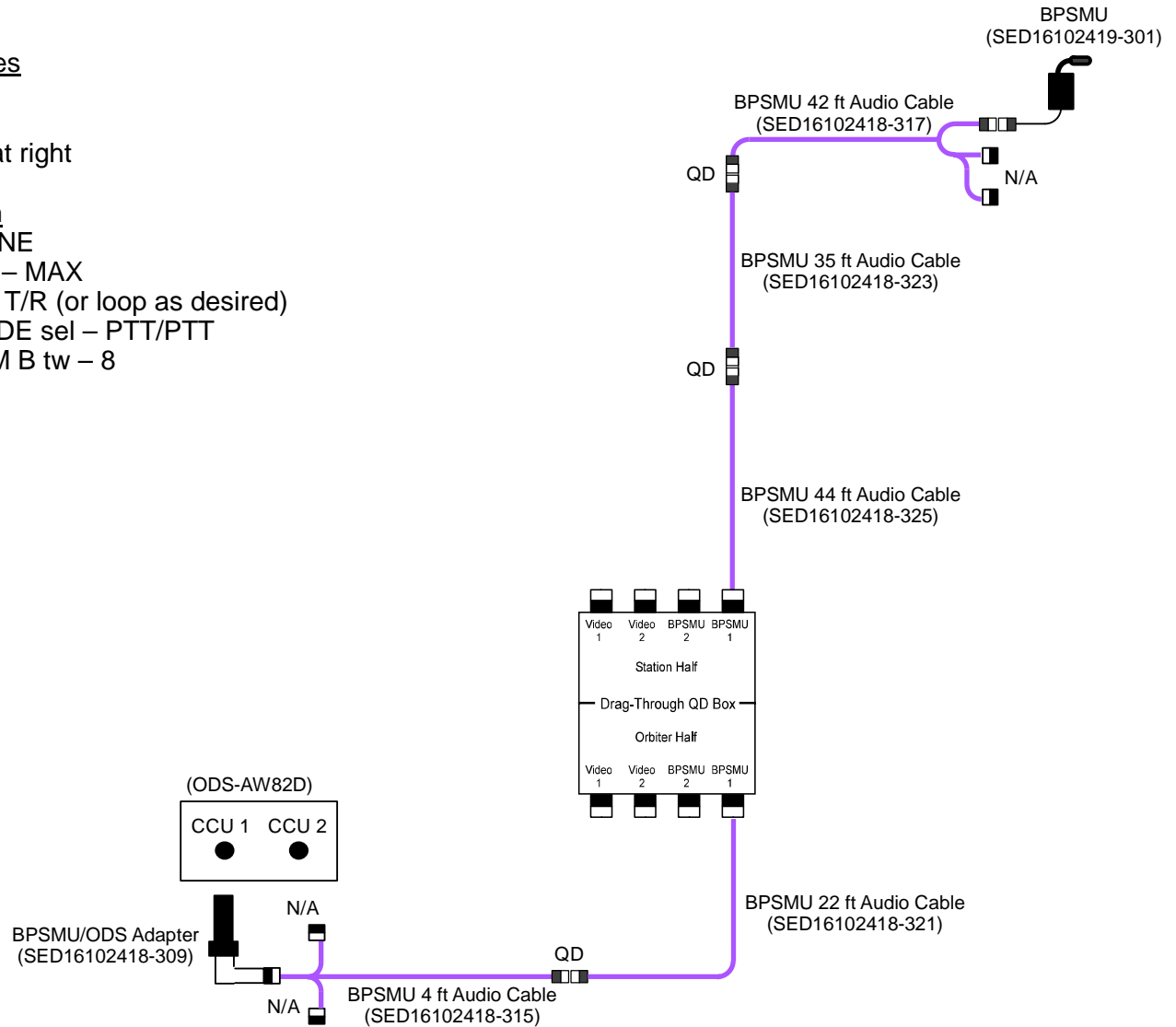
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BPSMU

BPSMU

BPSMU AUDIO ONLY

- BPSMU
1. Set up BPSMU Cables
Connect Batt
- Config H/W per dwg at right
- AW18D
2. Config Comm System
AUD PWR – AUD/TONE
√MSTR VOL 1(2) – MAX
A/G 2,ICOM B – T/R (or loop as desired)
XMIT/ICOM MODE sel – PTT/PTT
VOL A/G 2,ICOM B tw – 8
Other Loops – OFF



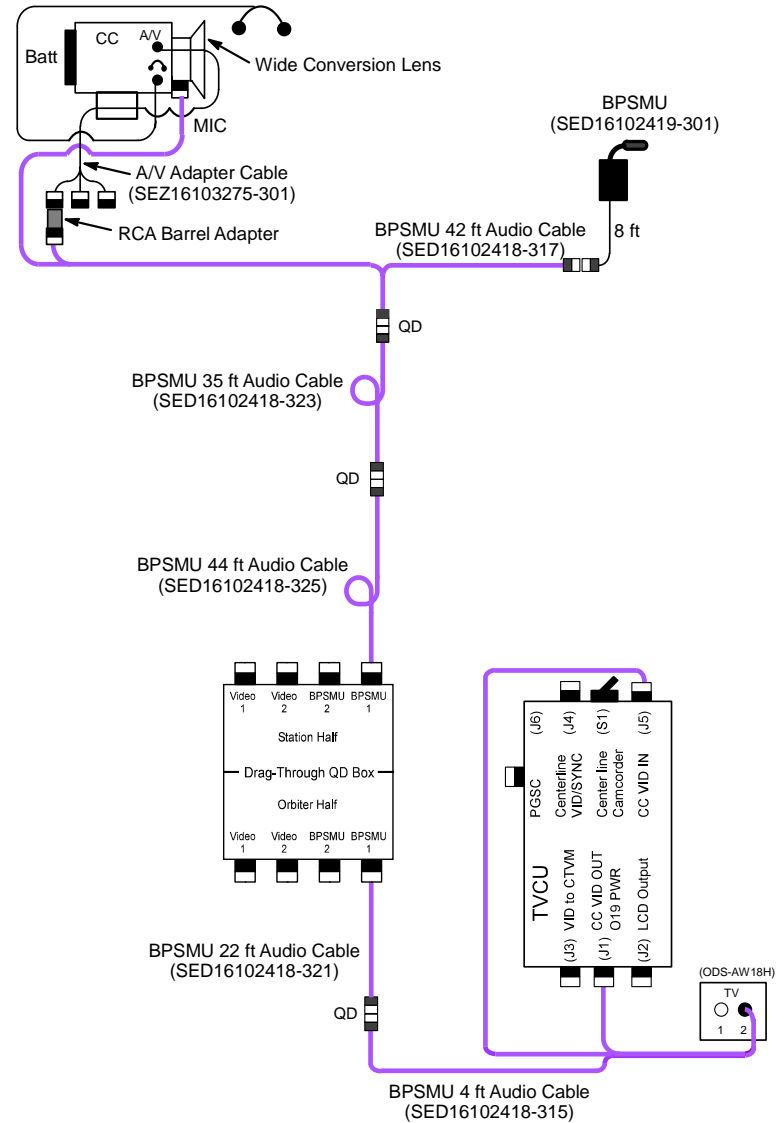
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BPSMU (Continued)

BPSMU AUDIO/VIDEO

- | | |
|---------------------|---|
| BPSMU
L12 (SSP2) | <ol style="list-style-type: none"> 1. <u>Set up BPSMU, Safe ODS TV Port</u>
Connect Batt
C/L CAM PWR – OFF

Config H/W per dwg at right |
| CC | <ol style="list-style-type: none"> 2. <u>Set up PD100</u>
Install Sony Headset
Install Batt
√Wide Conversion Lens installed
PWR – CAMERA
Tape – Install
√Viewfinder (LCD) displays STBY
Camr Settings
 √AUTO LOCK – AUTO LOCK
 √FOCUS – AUTO |
| TVCU | <ol style="list-style-type: none"> 3. <u>Config TVCU</u>
CENTERLINE/CAMCORDER sw – CAMCORDER |



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BPSMU (Continued)

BPSMU AUDIO/VIDEO (Concluded)

4. Config TV System

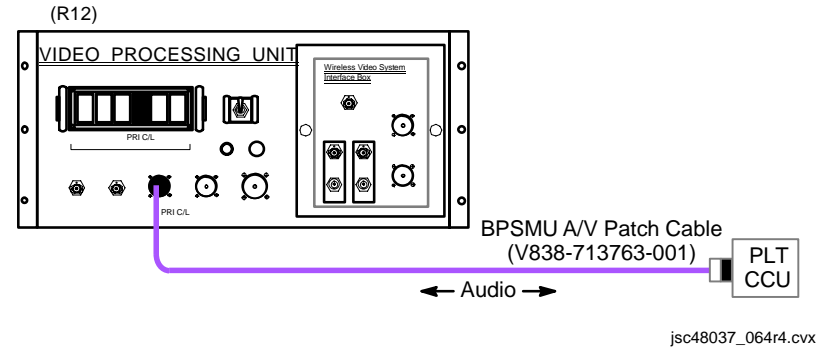
Config H/W per dwg at right

- | | |
|-------------|---|
| R12 (VPU) | Green Jumper – SEC C/L
√VPU PWR – ON (LED on) |
| L12 (SSP2) | C/L CAM PWR – SEC ON |
| MON 1
A7 | PWR – ON (LED on)
TV PWR CNTL – PNL
CONTR UNIT – MNA(B)
CNTL – CMD (wait 10 sec for system initialization)
VID OUT MON 1 pb – push
IN PL2(VPU) pb – push |
| MON 1 | √CC video |

5. Config Comm System

- | | |
|----|--|
| O9 | R AUD PWR – AUD/TONE
√MSTR VOL 1(2) – MAX
A/G 2,ICOM B – T/R (or loop as desired)
XMIT/ICOM MODE sel – PTT/PTT
VOL A/G 2,ICOM B tw – 8
Other Loops – OFF

Perform audio check w/BPSMU |
|----|--|



BPSMU (Continued)

BPSMU SPECIFICATIONS

BPSMU

INTEGRAL CABLE LENGTH: 8 ft

RECOMMENDED MIC POSITION: Directly in front of mouth; 6 in. from mouth

BATT: Two 9V (pwrs mic, not speaker; launched disconnected)

BATT: 18V

BATT LIFETIME: ~7-10 days

BPSMU WEIGHT: 1.12 lb (w/batt)

BPSMU CABLES – DIRECT CCU CONNECTIONS

BPSMU TO CCU ADAPTER (1 ft): Adapts BPSMU integral cable to CCU

BPSMU/ODS ADAPTER (4 in): Adapts 4 ft A/V Cable to CCU

A/V CABLES (4 ft, 42 ft): Minimum A/V Cable config for audio ops

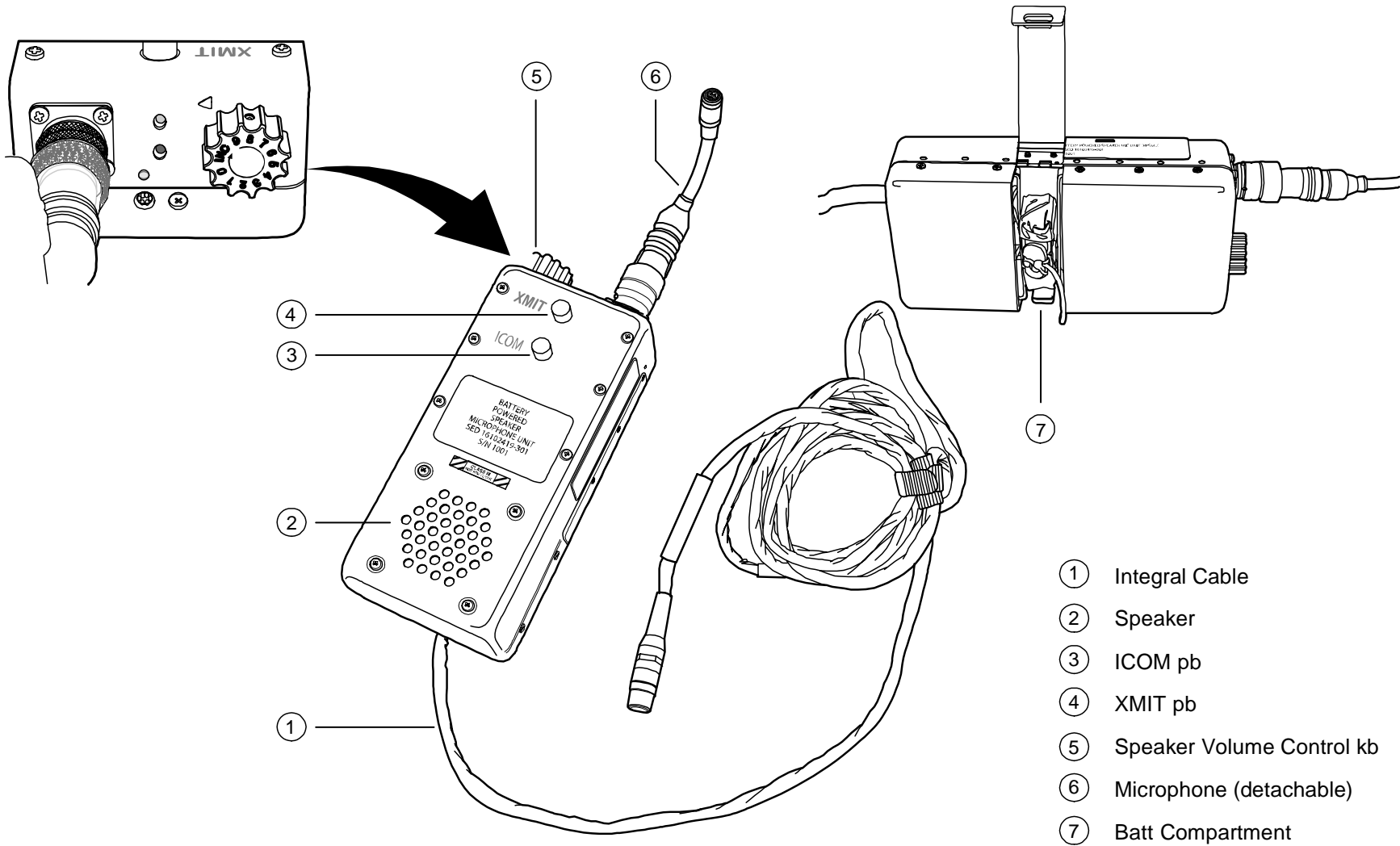
BPSMU CABLES – TV CONNECTIONS

A/V CABLES (4 ft, 22 ft, 44 ft, 35 ft, 42 ft) w/TVCU: Config for Camcorder thru ODS TV 1(2) port (TVCU assumes 125 ft of cable)

BPSMU A/V PATCH CABLE (10 ft): Patches ODS TV Port audio into CCU using PRI(SEC) C/L port on VPU

BPSMU (Continued)

BPSMU NOMENCLATURE



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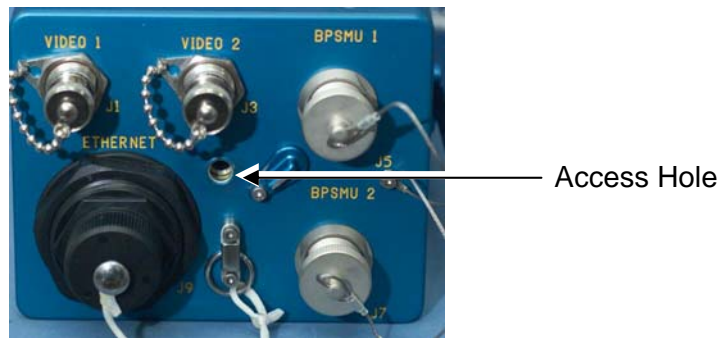
BPSMU (Continued)

DRAG THROUGH QD MATING

NOTE

If activation of quick disconnect feature of the Drag Through QD reqd, both halves (station and orbiter) are to be mated using Alignment Tool

1. Disconnect cables from orbiter half of Drag Through QD. Disconnect cables from Station half as reqd
2. Inspect connectors, mating surfaces for debris or bent pins
3. Open access hole (rotate cw)



4. Remove Alignment Tool from Drag Through QD Handle Stowage (unthread ccw)
5. Place two Drag Through QD halves together, but not mated, and insert Alignment Tool into access hole



BPSMU (Continued)

DRAG THROUGH QD MATING (Continued)

6. Squeeze quick release levers together, rotate Alignment Tool cw (pressure may be needed to engage Alignment Tool threads on station half) until Alignment Tool reaches a soft stop



7. Release quick release levers, verify quick release levers in normal spread posn

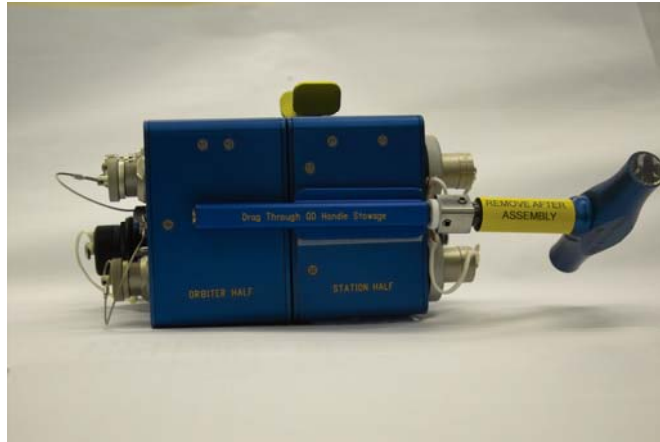


8. Remove Alignment Tool (turn ccw)
9. Stow Alignment Tool in Drag Through QD Handle Stowage (turn cw)

BPSMU (Continued)

DRAG THROUGH QD MATING (Concluded)

10. Replace Alignment Tool on station half of Drag Through QD.

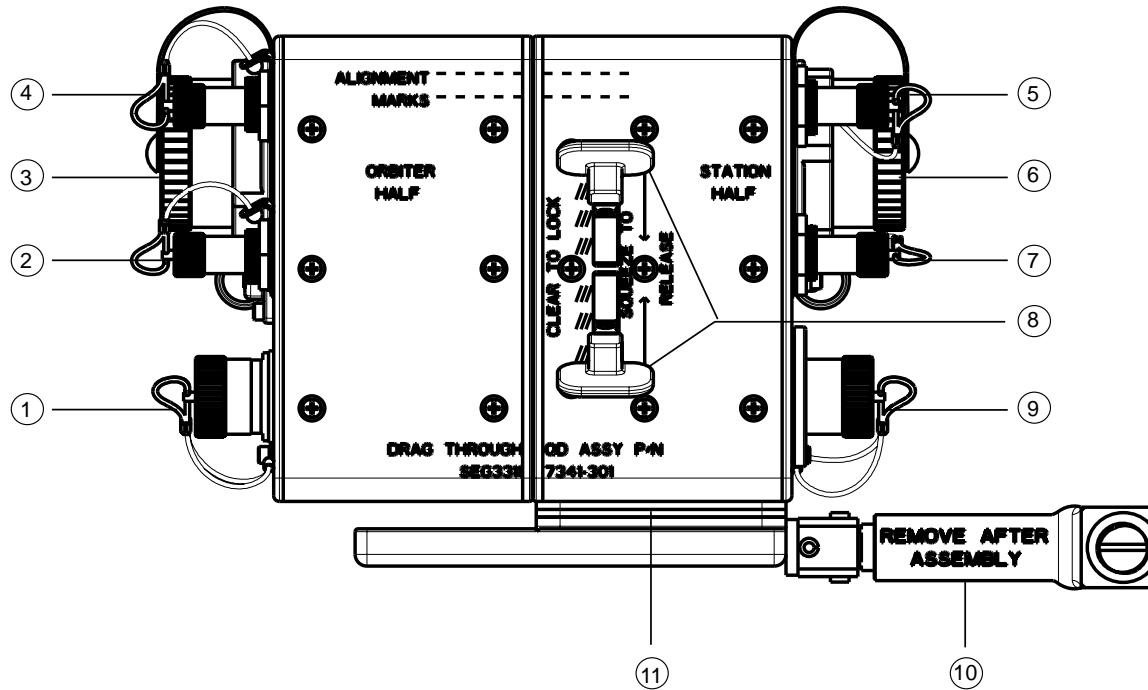


DRAG THROUGH QD DEACTIVATION

1. Disconnect RWS cables (two) from Orbiter Half Video 1,2 ports. Stow on stbd ditch wall
2. Disconnect BPSMU cable(s) from ODS CCU ports 1/2 (coil reqd)
3. Transfer Drag Through QD, BPSMUs and remaining attached cables to ISS

BPSMU (Continued)

DRAG THROUGH QD NOMENCLATURE



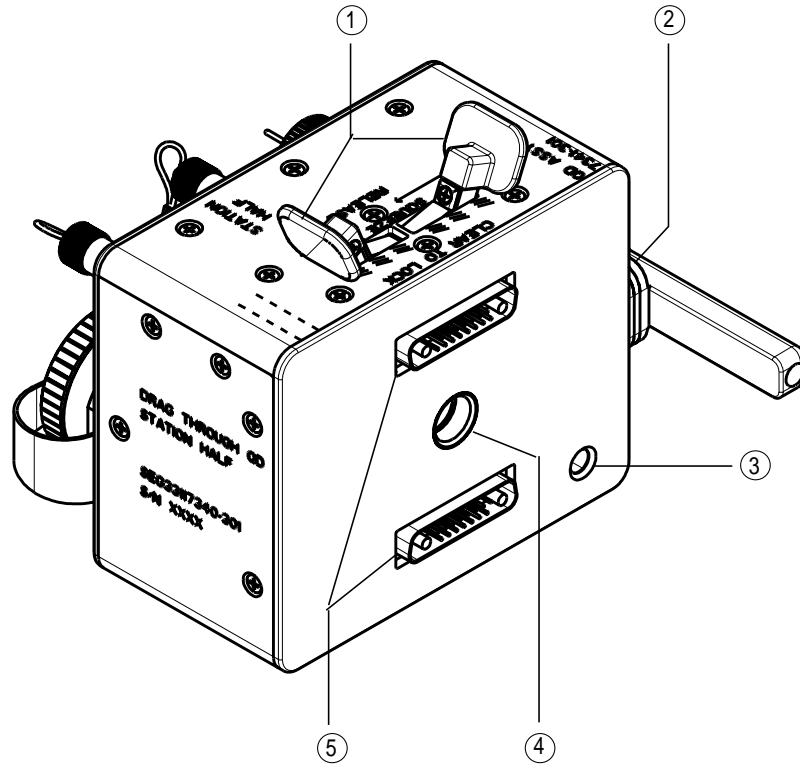
- | | |
|---|---|
| ① BPSMU #1 (J5), BPSMU #2 (J7) directly below | ⑦ Video #2 (J4) |
| ② Video #2 (J3) | ⑧ Quick Release Lever |
| ③ Ethernet (J9) | ⑨ BPSMU #1 (J6), BPSMU #2 (J8) directly below |
| ④ Video #1 (J1) | ⑩ Alignment Tool |
| ⑤ Video #1 (J2) | ⑪ Alignment Tool Holder |
| ⑥ Ethernet (J10) | |

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BPSMU (Continued)

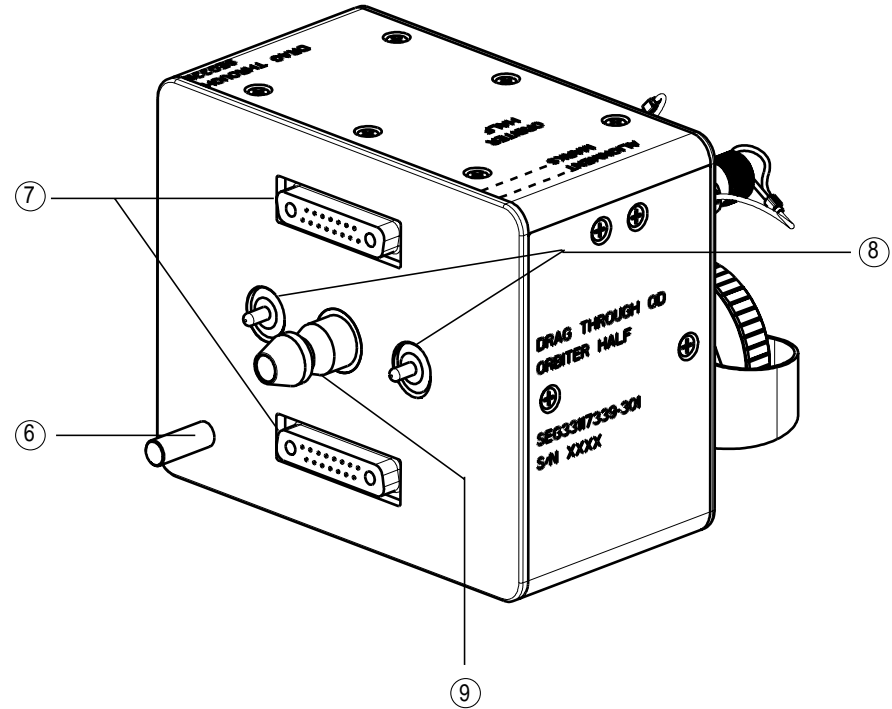
DRAG THROUGH QD NOMENCLATURE (Continued)

STATION HALF



- ① Quick Release Lever
- ② Alignment Tool Holder
- ③ Alignment Pin Receptacle
- ④ Center Locking Pin Receptacle
- ⑤ DB25 Male Connector

ORBITER HALF

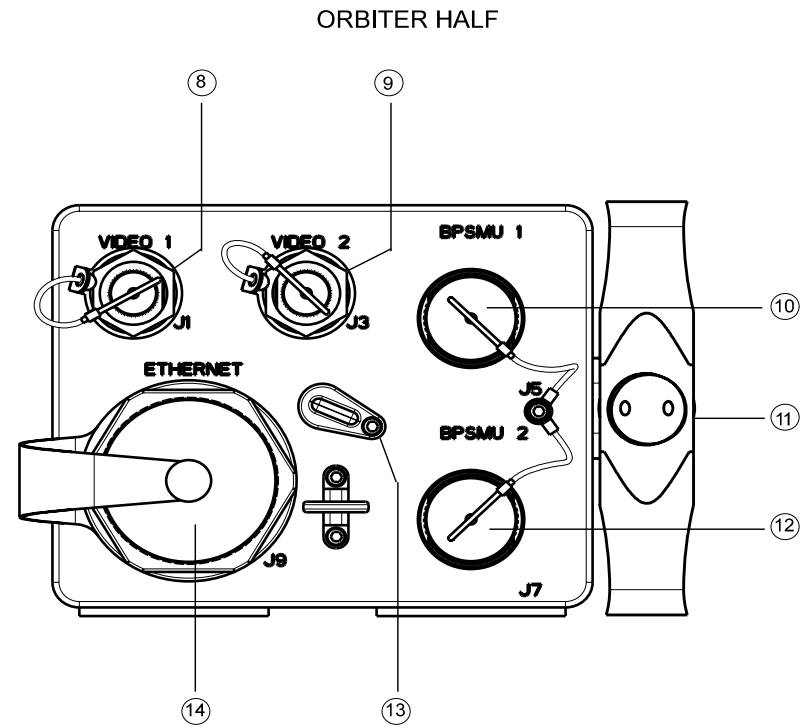
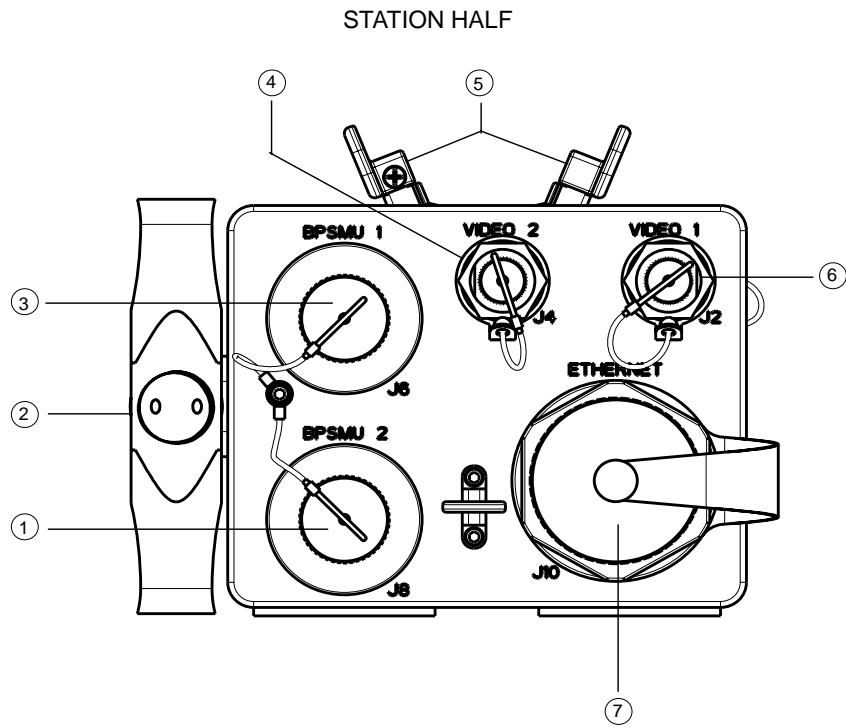


- ⑥ Alignment Pin
- ⑦ DB25 Female Connector
- ⑧ Ball Plunger
- ⑨ Center Locking Pin

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BPSMU (Concluded)

DRAG THROUGH QD NOMENCLATURE (Concluded)



- ① BPSMU #2 (J8)
- ② Alignment Tool
- ③ BPSMU #1 (J6)
- ④ Video #2 (J4)
- ⑤ Quick Release Lever
- ⑥ Video #1 (J2)
- ⑦ Ethernet (J10)

- ⑧ Video #1 (J1)
- ⑨ Video #2 (J3)
- ⑩ BPSMU #1 (J5)
- ⑪ Alignment Tool
- ⑫ BPSMU #2 (J7)
- ⑬ Alignment Tool Access Hole Cover
- ⑭ Ethernet (J9)

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MINI-CAM

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MINI-CAM

MINI-CAM

IN-CABIN MINI-CAM

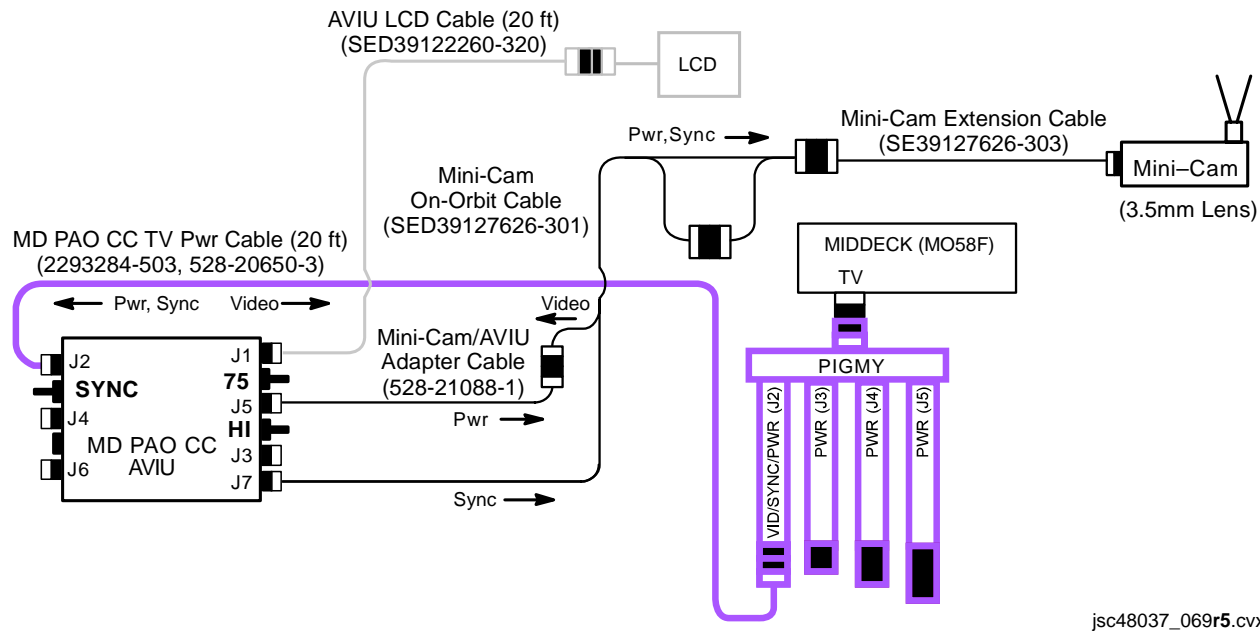
Config H/W per dwg below

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

MO58F √TV PWR – ON

LCD Pwr – ON (as reqd)

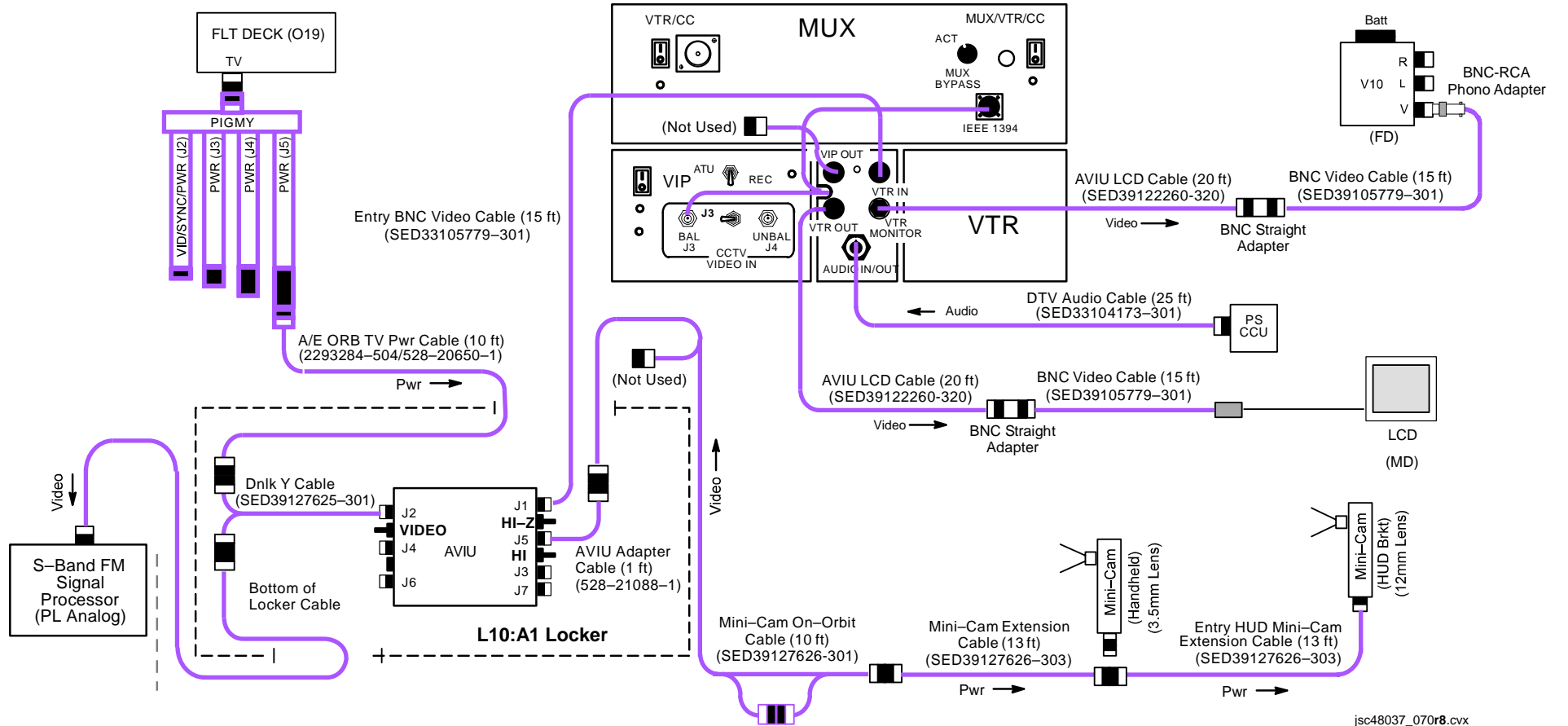
Mini-Cam Lens – 3.5mm
 Aperture – Adjust per LCD



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MINI-CAM (Continued)

ENTRY VIDEO SETUP



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MINI-CAM (Continued)

ENTRY VIDEO SETUP (Continued)

1. Config Mini-Cam, VTR for Audio, Video Recording
Config H/W per dwg, 14-3
- HUD Brkt/Cam Using two (2) captive screws, attach HUD Brkt to installation holes for protective cover w/ HUD Brkt tab pointing up
Attach Tie Wrap thru holes on captive screws to prevent screw from coming loose; cut off extra length on Tie Wrap
Attach Mini-Cam Extension Cable to Mini-Cam
- 12mm Lens Focus – ∞
Aperture – f/5.6
Velcro Mini-Cam w/12mm lens to HUD Brkt. (Top of black Velcro on front of Camr should be at top edge of HUD Brkt.
Only yellow Velcro should be visible above HUD Brkt)
- 3.5mm Lens Aperture – f/1.8
- L10:A1 AVIU
 SYNC/VIDEO – VIDEO
 HI-Z/75 – HI-Z
 PWR SELECT – HI
- O19 TV PWR – ON
- PS ATU Config audio as reqd for entry audio
- L10 (MUX)
(VTR) VTR/CC – on (LED on)
 ON/STANDBY LED – green
- V10 Install fresh batt
PWR – ON
- LCD Install fresh batt
PWR – ON

MINI-CAM (Continued)

ENTRY VIDEO SETUP (Concluded)

√12mm Lens/Mini-Cam producing good video

Change config to 3.5mm Lens/Mini-Cam
√3.5mm Lens/Mini-Cam producing good video

V10 PWR – OFF

LCD PWR – OFF

L10 (VTR) ON/STANDBY – push (red LED on)
(MUX) VTR/CC – off (LED off)

O19 TV PWR – OFF

NOTE

TV, VTR, V10, LCD pwr will be re-enabled per ENT AFT FLT
DECK CONFIG 15 (DEORB, NOMINAL DEORBIT PREP);
recording will be initiated via ENTRY C/L

Start w/3.5mm Lens/Mini-Cam video in-cabin and reconfig for 12mm Lens/Mini-Cam when exterior scene available

When exterior scene avail:

Focus – Adjust per V10

Aperture – Adjust per V10

If needed, turn down brightness on HUD display

Turn off V10 when not needed

MINI-CAM (Continued)

SPECIFICATIONS

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

AVIUVOLTAGE: 12V

WEIGHT: 1.6 lb

LENS DATA

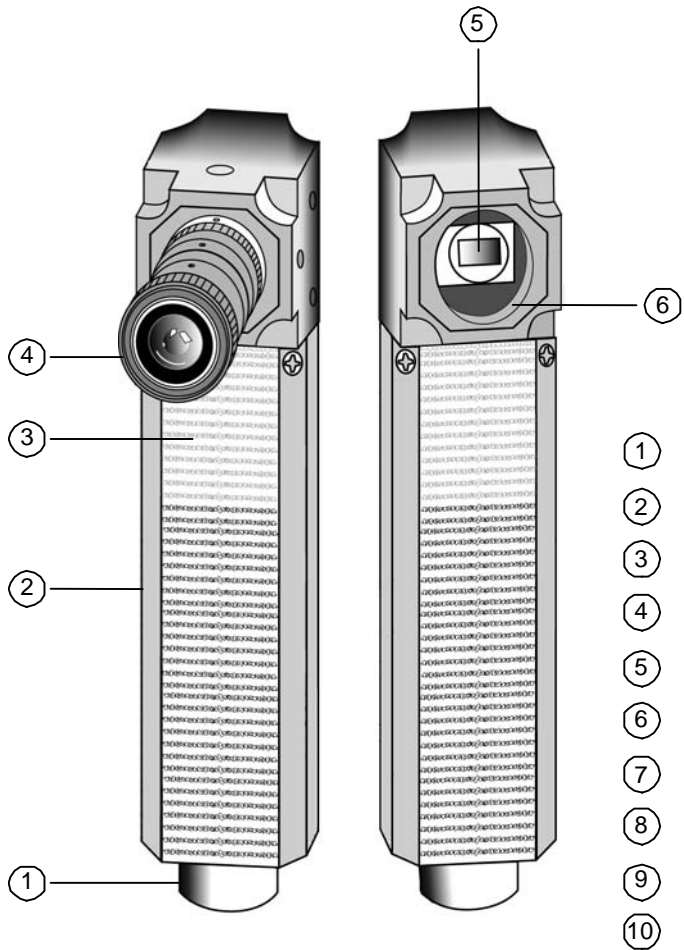
Lens	Aperture Range (f/stop)	Approximate Horizontal Field of View (FOV)	Minimum Focus Distance	Weight (lb)	Configuration Used
3.5mm	f/1.8-f/16	84.87°	Fixed	0.10	Glareshield, Aft Window
6.0mm	f/1.4-f/16	56.15°	0.3m	0.10	Aft Window
12.0mm	f/1.4-f/16	29.86°	0.5m	0.10	HUD
23.0mm	f/1.4-f/22	15.8°	0.2m	0.31	

BRACKET DATA

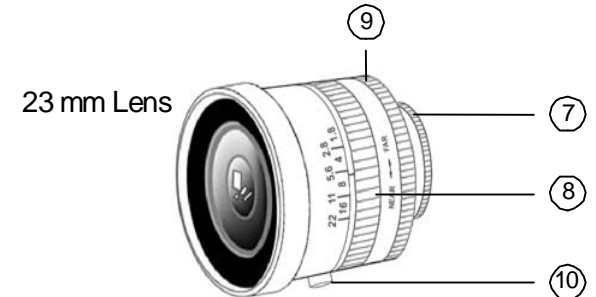
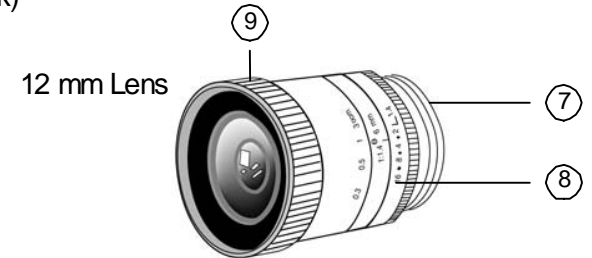
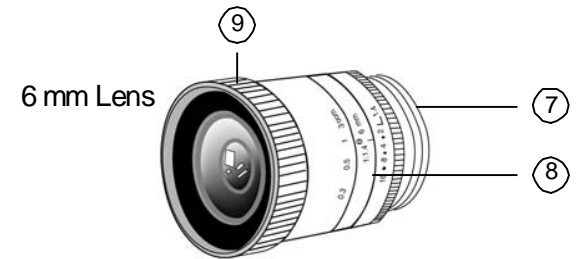
Bracket	Dimensions		Mount Type
	Length	Width	
Glareshield	9.5 in - 10.5 in	2 in	Velcro w/FDF Tether
Rear Window	12 in - 20 in	2 in	Velcro w/FDF Tether
HUD	4.5-in base 1.5-in extension 2-in rise	N/A	Thumbscrew w/Tie Wrap

MINI-CAM (Concluded)

NOMENCLATURE



- ① Pwr/Video Connector
- ② Body (covered in Black Velcro hook)
- ③ Yellow Velcro (HUD Brkt)
- ④ Lens
- ⑤ CCD
- ⑥ Lens Mount
- ⑦ Threaded Mount
- ⑧ Aperture Ring
- ⑨ Focus Ring
- ⑩ Aperture Lock Nut



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WIRELESS VIDEO SYSTEM (WVS)

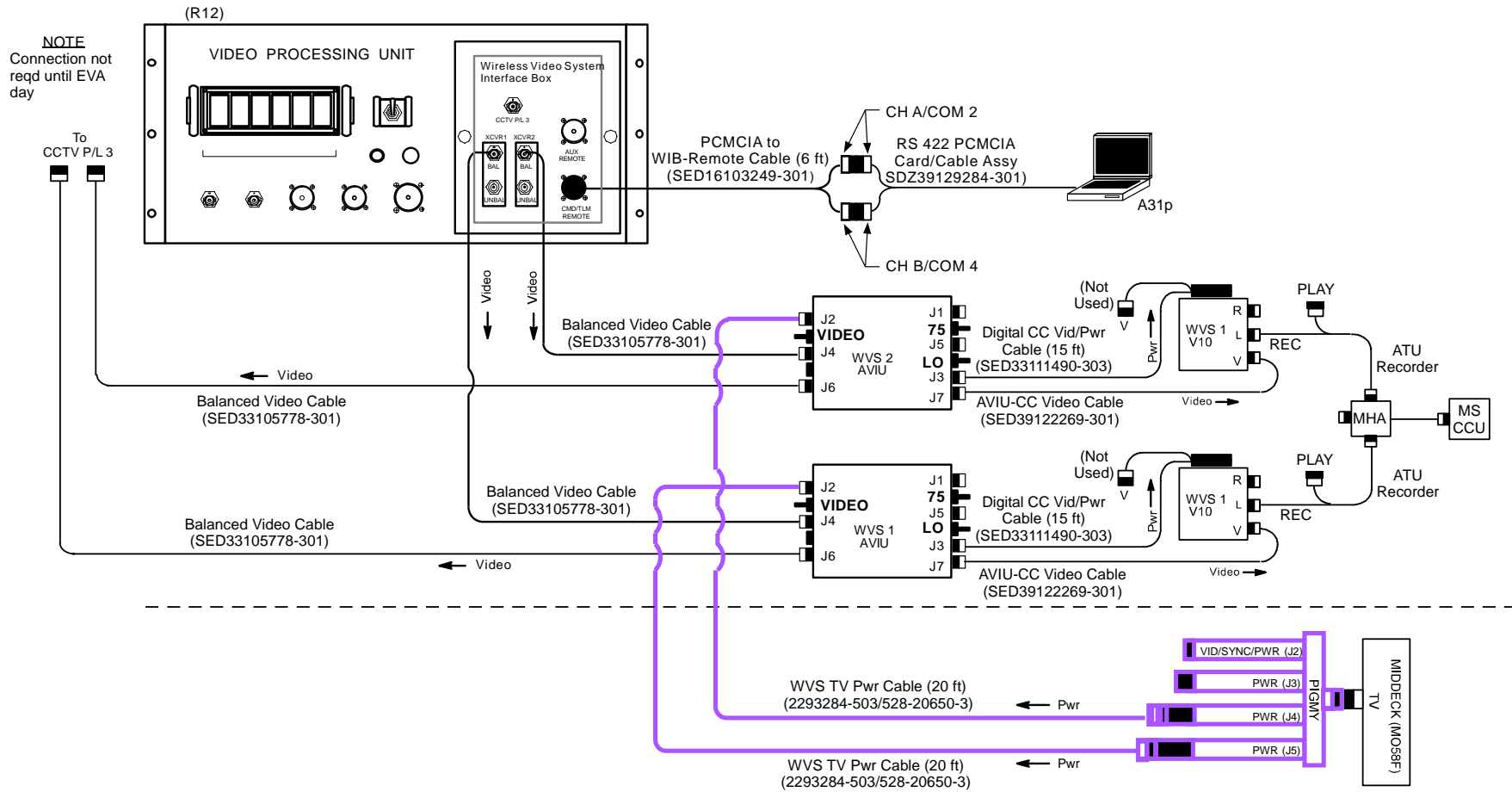
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WIRELESS VIDEO SYSTEM (WVS)

WVS INITIAL SETUP w/o ERCAs

1. Unstow and set up IV H/W per diagram



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WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/o ERCAs (Continued)

2. WVS System

A7 WIRELESS VID HTR – ON
PWR – ON

3. Photo/TV H/W Preparations

AVIUs Powering V10s (two)
SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR/SELECT – LO

MO58F
V10 V10 (two)
√TV Pwr – ON
PWR – ON
√Tape installed
√WVS Test Pattern displayed (color bars w/"No WVS Video")
PWR – OFF

A11
R10 Audio
√CCU PWR – ON
√MS AUD PWR – AUD/TONE
√A/G 1 – T/R
√ICOM A – T/R

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/o ERCAs (Continued)

4. WVS PGSC Prep

O19
PGSC

PGSC Pwrup and Application Opening

√DC UTIL PWR MNC – ON

Pwr – ON

Sel Shuttle Apps icon

Sel WVS icon

Sel 'NO' at 'RESTORE TO PREVIOUS SETTINGS' window

If 'Camera Port Configuration' error displayed:

Remove Quatech RS-422 Card

Sel 'Start'> 'Shut Down'> 'OK'

Reinstall Quatech RS-422 Card

Pwr – ON

Sel Shuttle Apps icon

Sel WVS icon

RF Camera page will appear

Application Setup

If 'Static XCVR'('Bad Camera ID','Temp Alert','Temp Caution') alert msg:

| Perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)

If 'Static RF Camera' alert msg:

Disregard

Sel File → 'Assign Camera ID'

Verify following:

Camr Address	S/N	In Use	Label
16	1010	1	EV1
18	1007	1	EV2

When complete, sel 'OK'

If Camr IDs not correct:

Sel 'Delete Entry' until all deleted

Perform CAMR ID ASSIGNMENT (Cue Card, WVS) as reqd

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/o ERCAs (Concluded)

4. WVS PGSC Prep (Concluded)

Application Setup (Concluded)

Sel File → Advanced Controls

On XCVR tab:

√Chroma Stabilizer – selected

√IF – selected

√Other options not selected

Sel RF Camera tab:

√Power Selections – selected

√Automatic Gain Control – selected

√S-Band Level – selected

√Other options not selected

When complete, sel OK

5. PWRDN

Sel File → Exit

A7

WIRELESS VID PWR – OFF

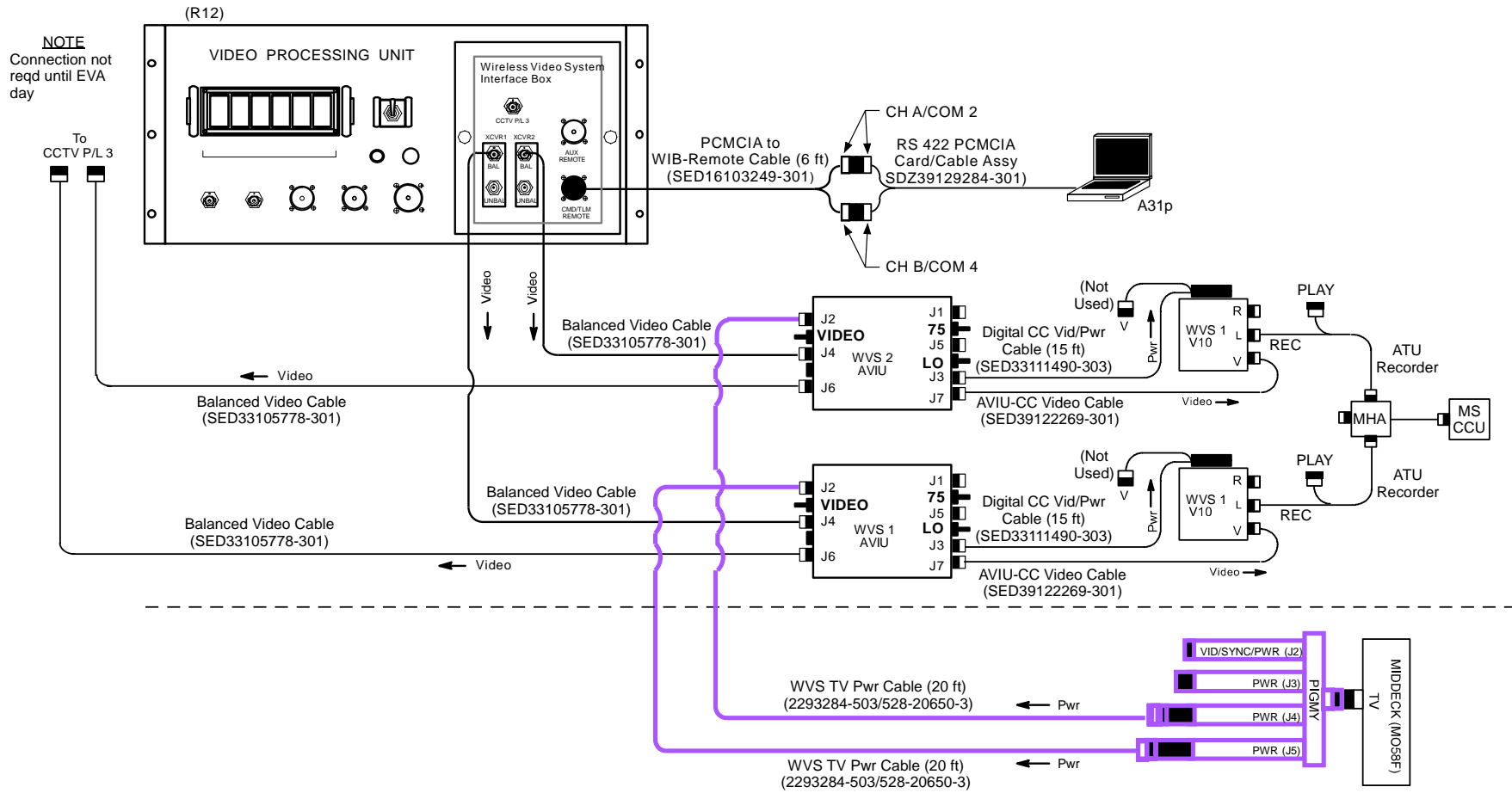
HTR – OFF

Go to DEACTIVATION (Cue Card, TV) as reqd

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs

1. Unstow and set up IV H/W per diagram



jsc48037_115_074.cvx

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Continued)

4. WVS PGSC Prep

O19
PGSC

PGSC Pwrup and Application Opening

√DC UTIL PWR MNC – ON
Pwr – ON

Sel Shuttle Apps icon
Sel WVS icon

Sel 'NO' at 'RESTORE TO PREVIOUS SETTINGS' window

If 'Camera Port Configuration' error displayed:

Remove Quatech RS-422 Card
Sel 'Start'> 'Shut Down'> 'OK'
Reinstall Quatech RS-422 Card
Pwr – ON

Sel Shuttle Apps icon
Sel WVS icon

RF Camera page will appear

Application Setup

Select Page – XCVR
Transceiver 1(2) CMD Power – ON (green CMD PWR:LVL- "ON:Min")

Sel RF Camera 1 – One EVA crewmember (green "ON")
Sel RF Camera 2 – Other EVA crewmember (green "ON")

If crewmember designations not in pulldown menu:

√RF Camera 1,2 – None
Perform CAMERA ID ASSIGNMENT (Cue Card, WVS), then:
Reattempt RF Camr selections

If alert msg, perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Continued)

4. WVS PGSC Prep (Concluded)

Application Setup (Concluded)

Sel File → Advanced Controls

On XCVR tab:

√Chroma Stabilizer – selected

√IF – selected

√Other options not selected

On RF Camera tab:

√Power Selections – selected

√Automatic Gain Control – selected

√S-Band Level – selected

√Other options not selected

When complete, sel OK

5. WVS Checkout

TV System

Perform ACTIVATION (Cue Card, TV)

EMU, Airlock Prep

Lights – ON

√EMU TV installed on Helmet

REBA sw – ON

EMU TV Pwr pb – Press (green LED)

Airlock
EMU
PLSS
EMU

Video Quality Check

REC pb (two) – Press (red LED)

Select Page – RF Camera

For C,L,R lens on each RF Camr Assy:

Lens Iris Cntl – op

√Video quality and perform CAMR ADJUSTMENTS (Cue Card, WVS) as desired

V10
PGSC

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Concluded)

5. WVS Checkout (Concluded)

Video Routing Check

R12 (WIB)	CCTV PL 3 port – One of two XCVR/AVIU inputs
A7	VID OUT MON 1(2) pb – push
	IN PL 3(WVS) pb – push
MON	√Video quality
R12 (WIB)	CCTV PL3 – Other XCVR/AVIU input port
MON	√Video quality

6. PWRDN

Perform PWRDN (WVS, Cue Card)

EMU	EMU TV Pwr pb – push (no green LED)
PLSS	REBA sw – OFF
Airlock	Lights – as reqd

Go to DEACTIVATION (Cue Card, TV) as reqd

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS DAY-OF-EVA CHECK

1. Photo/TV H/W Activation

MO58F V10 (two)
V10 √TV PWR – ON
 PWR – ON
 Display pb – press to display tape counter
 √Tape installed

2. WVS Sys Check

A7 √WIRELESS VID HTR – ON
 PWR – ON

3. PGSC Pwrap and Application Opening

O19 √DC UTIL PWR MNC – ON
 PGSC Pwr – ON
 Sel Shuttle Apps icon
 Sel WVS icon

Sel 'NO' at 'RESTORE TO PREVIOUS SETTINGS' window

If 'Camera Port Configuration' error displayed:

Remove Quatech RS-422 Card
Sel 'Start'> 'Shut Down'> 'OK'
Reinstall Quatech RS-422 Card
Pwr – ON
Sel Shuttle Apps icon
Sel WVS icon
RF Camera page will appear

NOTE

During EVA prep, EMU TV assy will be pwr'd

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS DAY-OF-EVA CHECK (Concluded)

4. Application Setup

Select Page – XCVR

Transceiver 1(2) CMD Power – ON (green CMD PWR:LVL- “ON:Min”)

RF Camera 1 – One EVA crewmember (green “ON”)

RF Camera 2 – Other EVA crewmember (green “ON”)

If crewmember designations not in pulldown menu:

√RF Camera 1,2 – None

Perform CAMERA ID ASSIGNMENT (Cue Card, WVS), then:

Reattempt RF Camr selections

If alert msg, perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)

Near middle of RF Camera page, sel 'Advanced Controls'

S-Band Level (two) – Maximum

Select Page – RF CAMERA

For center lens on each RF Camr Assy:

Lens Iris Cntl – op(cl) until good video on V10(MON)

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SPECIFICATIONS

RF CAMR (aka EVA mobility unit Radio frequency Camr Assembly (ERCA))

MOUNTING INTERFACE: EVA helmet light structure

CAMRS: 3 per helmet

LENS FOCAL LENGTH:

LEFT: 6mm (56° HFOV) (mounted on left helmet light)

CENTER: 3.5mm (85° HFOV)

RIGHT: 12mm (30° HFOV) (mounted on right helmet light)

FOCUS CONTROL: FIXED at HYPERFOCAL

IRIS: MANUAL via PGSC

SHUTTER SPEED: AUTO(MANUAL)

GAIN CONTROL: AUTO(MANUAL) (0 to +6 dB)

WHITE BALANCE: AUTO(PRESET)

IMAGER:

MODEL: Sony XC-999

HORIZONTAL RESOLUTION: 470 lines

PIXEL COUNT: 768 Horizontal, 494 Vertical

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

UHF RCVR ANTENNA: 1 (on top of helmet)

S-BAND XMTR ANTENNAS: 2 (on side of helmet light batts)

POWER: 12V from REBA batt enabled by pwr pb on right side of ERCA

OPERATING TEMP: -31 degC to +185 degC

PAYLOAD BAY TRANSCEIVERS (XCVR): 2 units

LOCATION: BAY 5 (under PLB liner)

OPS POWER: 28 VDC from A7/WIRELESS VIDEO POWER sw, Control Bus BC1

HTR POWER: 28 VDC from A7/WIRELESS VIDEO HEATER sw, Control Bus BC1

OPERATING TEMP: -190 degC to +210 degC

UHF PLB COMMAND ANTENNA: 1 unit

LOCATION: ODS TRUSS – AFT

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SPECIFICATIONS (Concluded)

S-BAND RECEIVE ANTENNAS: Up to 7

LOCATIONS: 2 at BAY 1 PORT, STBD SILL
2 at BAY 4 PORT, STBD SILL
2 at BAY 11 PORT, STBD SILL
1 at AFT BULKHEAD

POWER: 28 VDC from A7/WIRELESS VIDEO HEATER sw, Control Bus BC1

COMMAND LINK: UHF

FREQUENCY: 400 MHz
EFFECTIVE BANDWIDTH: 12kHz
BIT RATE: 9600 bps

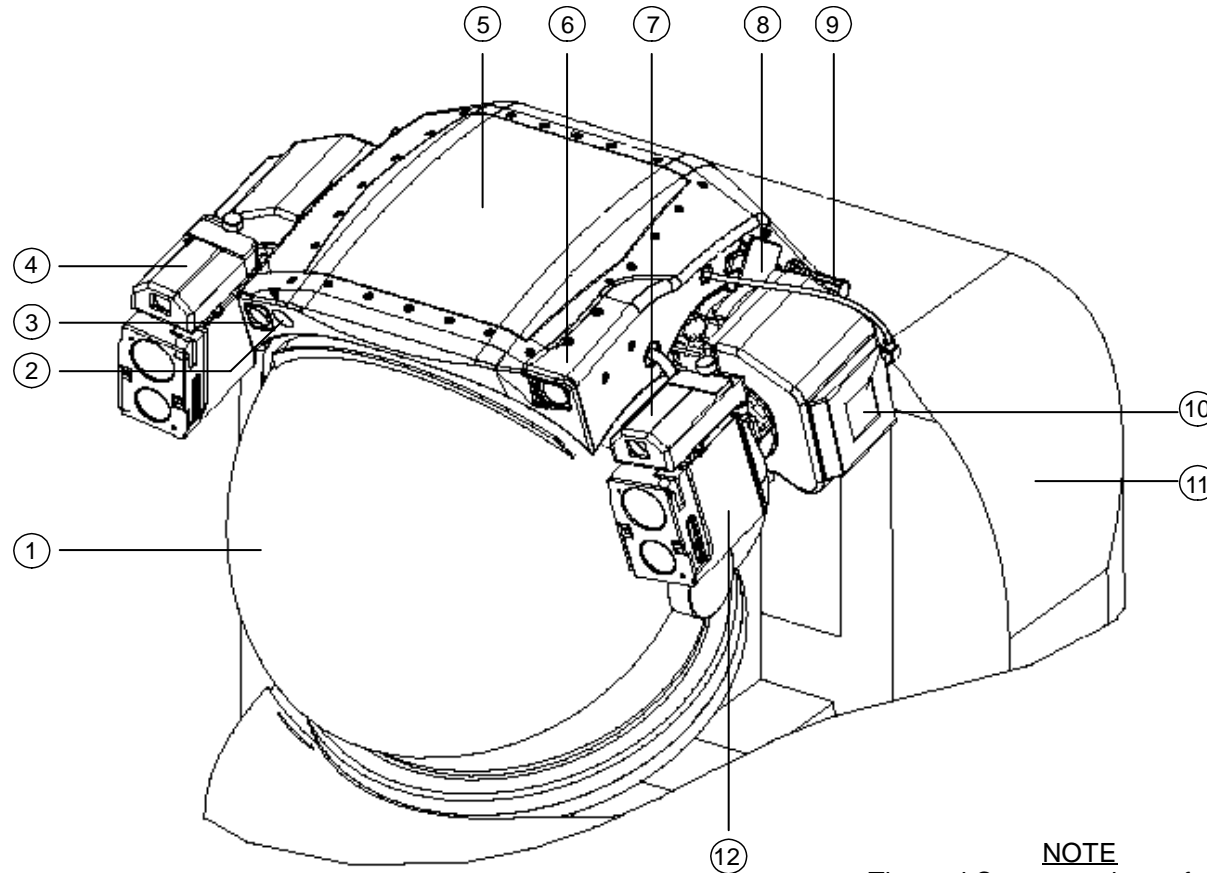
TELEMETRY/VIDEO LINK: S-BAND

FREQUENCY: 2410 & 2470 MHz
VIDEO BANDWIDTH: 16 MHz
TELEMETRY BANDWIDTH: 5.8 & 6.8 MHz
TELEMETRY BIT RATE: 9600 bps per channel
RANGE: 300 ft reqd, 1100 ft expected (direct line-of-sight)

WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE

RF CAMR MOUNTED TO EMU HELMET



- ① EMU Helmet
- ② Pwr Indicator
- ③ Pwr sw
- ④ 12mm Lens
- ⑤ UHF Antenna
- ⑥ 3.5mm Lens
- ⑦ 6mm Lens
- ⑧ Latch (2X)
- ⑨ Pwr Receptacle
- ⑩ S-Band Antenna (2X)
- ⑪ PLSS
- ⑫ Helmet Light Module (2X)

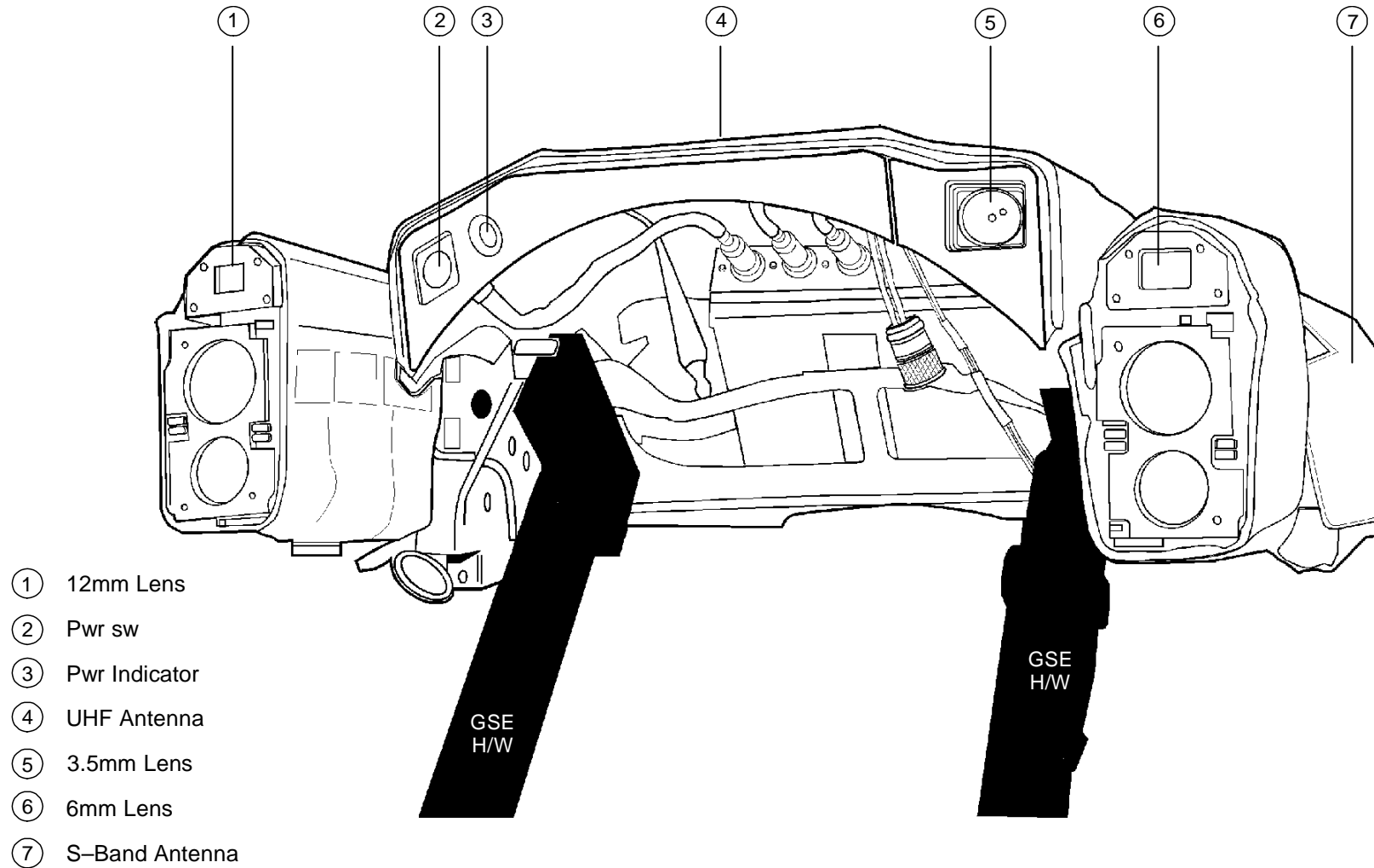
NOTE
Thermal Cover not shown for clarity

jsc48037_075.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE (Continued)

RF CAMR MOUNTED TO EMU HELMET LIGHT

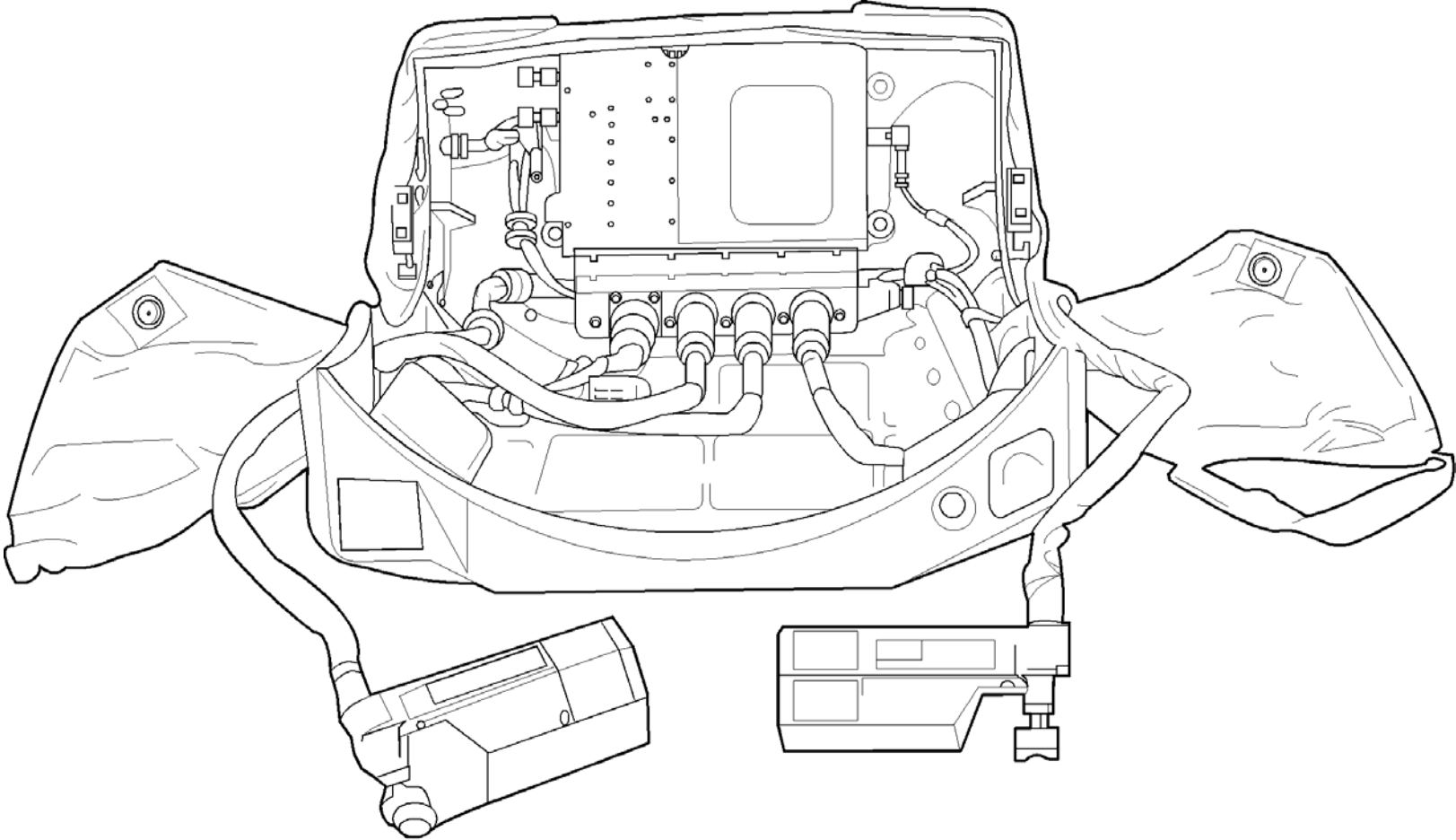


jsc48037_076.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE (Concluded)

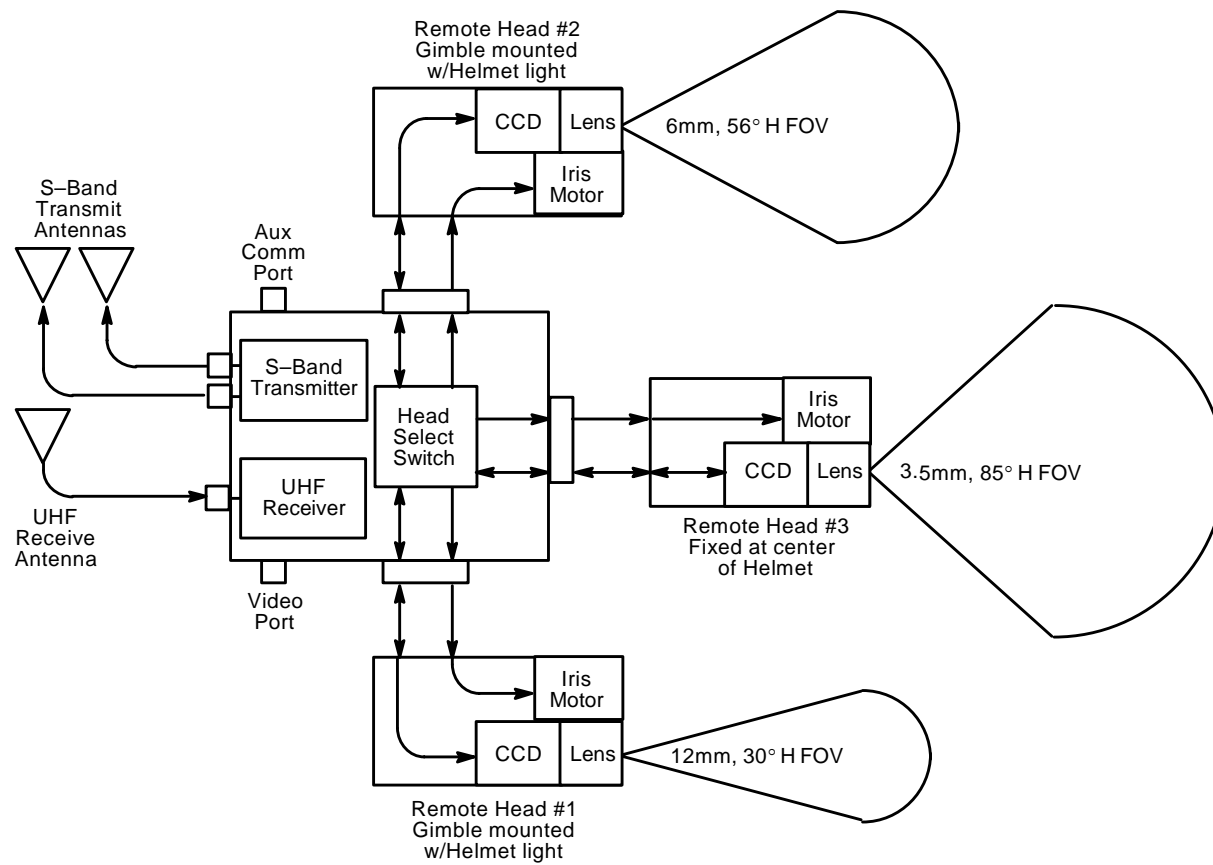
RF CAMR SHELL



jsc48037_077.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

RF CAMR ELECTRONICS

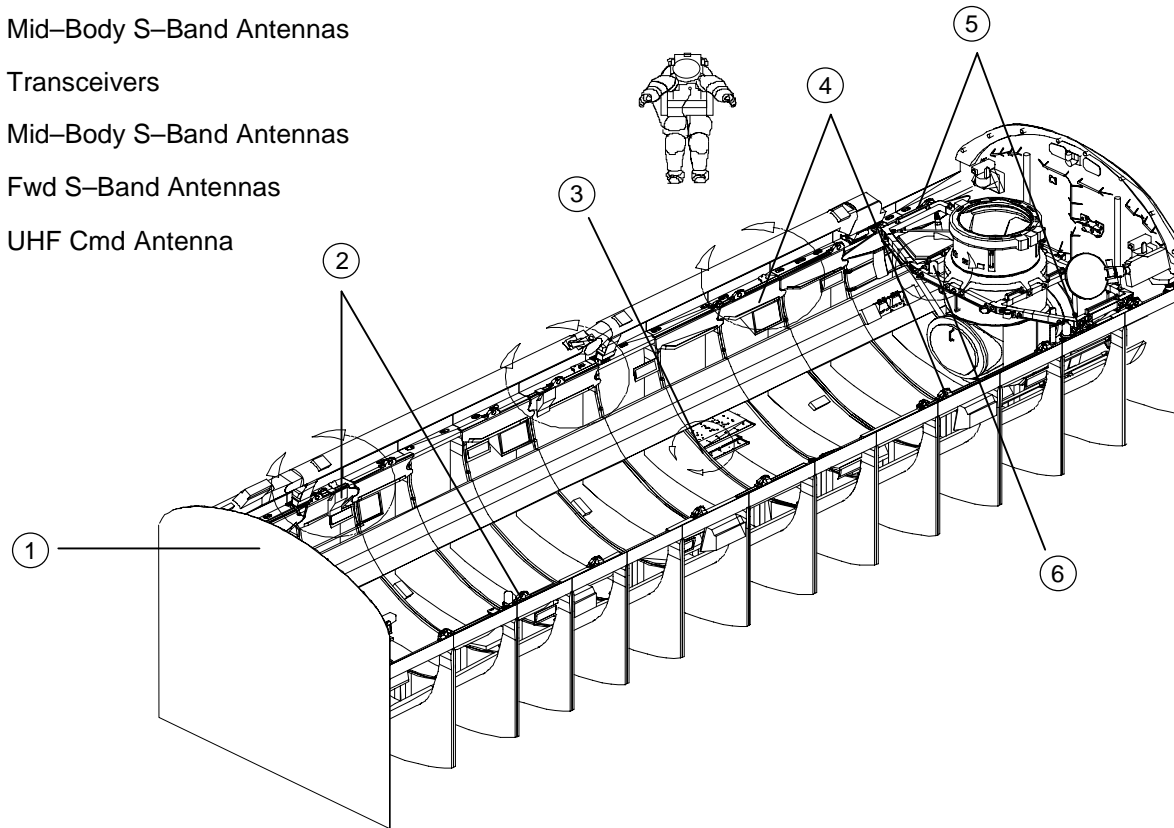


jsc48037_078r1.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS PLB MOUNTED H/W

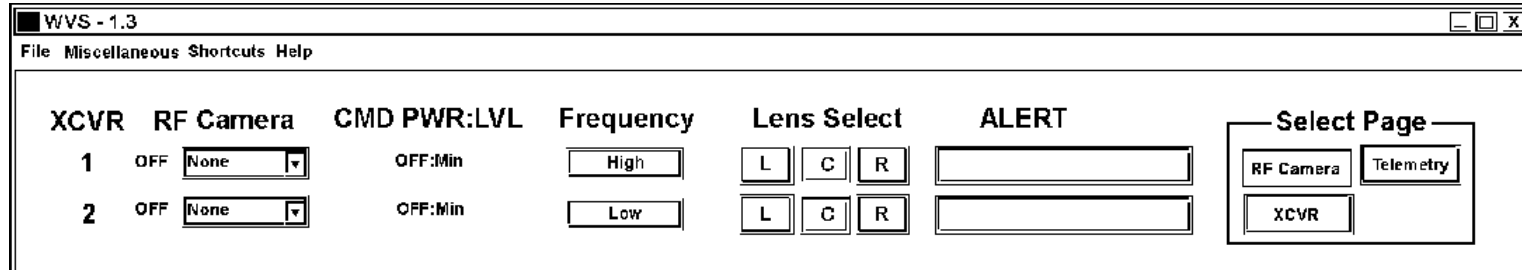
- ① Aft Bulkhead Antenna
- ② Mid-Body S-Band Antennas
- ③ Transceivers
- ④ Mid-Body S-Band Antennas
- ⑤ Fwd S-Band Antennas
- ⑥ UHF Cmd Antenna



jsc48037_079r1.cvx

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – TOP STATUS AREA



jsc48037_080.cnv

RF CAMERA Status
[ON/green / OFF/black]

RF Camr xmtr pwr status changes to ON when Camr selected (in pulldown menu)

RF CAMERA Pulldown

Selects/deselects Camr assignments to each PLB XCVR. RF Camrs will swap assignments if alternate assigned Camr selected

CMD PWR:LVL Status
[OFF:Min(Max) / ON:Min(Max)]

Denotes which PLB XCVR is processing/sending cmds (ON/OFF). Displays cmd level (Min/Max)

Frequency Status/Cmd
[High / Low]

Frequency that PLB XCVR is receiving S-Band signal from RF Camr. Will swap Camr assignments. Easiest way to swap Camr video coming from WIB connectors, recorders

Lens Select Cmd
[L,C,R]

Selects operational lens. Default is Center

ALERT Msg Display

Displays error msgs generated by system. Msgs start off flashing/blue and change to static/black when acknowledged (clicked). "Temp Caution" msg will start off flashing/yellow until acknowledged. Msgs disappear when problem fixed. Highest priority error displayed first. Five available msgs:

Static XCVR

Loss of comm between PGSC, PLB XCVR

Static RF Camera

Loss of comm between XCVR, RF Camr

Bad Camera ID

Mismatch between RF Camr selected and RF Camr transmitting ID

Temp Alert

Displays when RF Camr(PLB XCVR) temp is 5° from going into caution range (ERCA = -35° to -30° C or +80° to +85° C, XCVR = -40° to -35° C or +80° to +85° C)

Temp Caution

Displays RF Camr(PLB XCVR) temp has gone out of limits (ERCA <-35° C or >+85° C, XCVR <-40° C or >+85° C)

Select Page Icons
[RF Camera, XCVR, Telemetry]

Provides selection between the three displays

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – RF CAMR PAGE

The screenshot shows a software window titled "WVS - 1.3" with a menu bar containing "File", "Miscellaneous", "Shortcuts", and "Help". The main interface is divided into several sections:

- XCVR**: Two rows of controls. Row 1: "1 OFF" with a "None" dropdown, "OFF:Min", and a "High" button. Row 2: "2 OFF" with a "None" dropdown, "OFF:Min", and a "Low" button.
- RF Camera**: Two columns of buttons labeled "None" and "C".
- CMD PWR:LVL**: Two columns of buttons labeled "None" and "C".
- Frequency**: Two buttons labeled "High" and "Low".
- Lens Select**: Two columns of buttons labeled "L", "C", and "R".
- ALERT**: Two empty rectangular input fields.
- Select Page**: A box containing buttons for "RF Camera", "Telemetry", and "XCVR".

Below these sections are two identical control panels, each containing:

- Lens Iris Control**: A "Close" button, a left arrow, a right arrow, and an "Open" button.
- Electronic Shutter**: An "Auto" button.
- White Balance Control**: An "Auto" dropdown menu.

In the center is an "Advanced Control" button. Below it are two identical panels, each containing:

- Automatic Gain Control**: A "Disabled" button.
- Power**: Three buttons labeled "ON", "OFF", and "MUTE".
- S-Band Level**: A "Dynamic" button.

jsc48037_081.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – RF CAMR PAGE (Concluded)

Lens Iris Control
[Close,Open]

Opens(closes) Iris for selected lens. No telemetry other than video. Number displayed shows motor speed. Can click,hold

Electronic Shutter Control
[Auto,Manual]

Brightens(darkens) image scene by controlling electronic shutter. Manual status runs from dark (0 = tbd sec) to bright (100 = 1/60 sec). Initial value = 50. Afterwards, setting stays where it was left

White Balance Control
[Auto,2800K,6100K,Variable]

Determines how white balance set for Camr
2800K – PLB lights
6100K – Sunlight
Variable – Allows red,blue gain control

Automatic Gain Control
[Disabled,Enabled]

Controls status of AGC. Enabled needed for dark subjects; otherwise, it is disabled to reduce noise on video

Power Status
[On,Off,Mute]

Status of RF Camr transmitter. Related to top status or RF Camr (black off, green on). Mute stops video signal from being sent to antenna

S-Band Level
[Dynamic,Maximum]

Dynamic (default) – Pwr adjusted per signal strength seen at receiver (adjusted to be received at -40dB)
Maximum – Sends signal at full pwr for signal strength problems

Black Pedestal
[Increase,Decrease]

NOT USED. Brightness control varies from 0 to 100

Zoom,Focus,LED Control

NOT AVAILABLE. Future capabilities

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – XCVR PAGE

WS - 1.3

File Miscellaneous Shortcuts Help

XCVR	RF Camera	CMD PWR LVL	Frequency	Lens Select	ALERT	Select Page
1	OFF <input type="text" value="None"/>	OFF:Min	<input type="text" value="High"/>	<input type="text" value="L"/> <input type="text" value="C"/> <input type="text" value="R"/>	<input type="text"/>	<input type="text" value="RF Camera"/> <input type="text" value="Telemetry"/>
2	OFF <input type="text" value="None"/>	OFF:Min	<input type="text" value="Low"/>	<input type="text" value="L"/> <input type="text" value="C"/> <input type="text" value="R"/>	<input type="text"/>	<input type="text" value="XCVR"/>

Transceiver 1

CMD Power

Antenna

Transceiver 2

CMD Power

Antenna

Advance Controls

Chroma Stablizer

IF

CMD Level

Chroma Stablizer

IF

CMD Level

jsc48037_082.cnv

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – XCVR PAGE (Concluded)

CMD Power
[OFF,ON]

Activates XCVR cmd processor. Only one XCVR can perform this duty. XCVR 1,2 selections are mutually exclusive and an ON cmd will automatically turn the other OFF. Status also shown under CMD PWR:LVL in top status area

Antenna
[Auto,Manual]

Controls antenna selection method. Auto (default) picks antenna based on strongest signal strength. Manual provides antenna number selection. Antenna numbering sequence shown on WVS cue card

Chroma Stabilizer
[On,Off]

NOT USED

Intermediate Frequency (IF)
[Wide,Narrow]

Controls bandwidth sampled for RF Camr return signal. Changed to Narrow during signal strength troubleshooting

CMD Level
[Min,Max]

NOT USED w/new spread spectrum XCVRs. Status shown under CMD PWR:LVL in top status area

WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – TELEMETRY PAGE

WS - 1.3
File Miscellaneous Shortcuts Help

XCVR

1 OFF

2 OFF

RF Camera

OFF:Min

OFF:Min

CMD PWR LVL

High

Low

Frequency

L C R

L C R

Lens Select

ALERT

Select Page

RF Camera Telemetry

XCVR

RF Camera System Telemetry

RF Camera Lens	UHF		Power		Temperature (C)			
	Signal Strength	RX Good	Voltage	Amperes	Electronics	L	C	R
??? -1 M RM	-1.00 M	-1 M	0.00 M	0.00 M	32 M	32 M	32 M	32 M
??? -1 M RM	-1.00 M	-1 M	0.00 M	0.00 M	32 M	32 M	32 M	32 M

Transceiver Telemetry

	Temperature (C)	S Band			Power	
		Signal Strength	Antenna Select	Antenna Mode	Voltage	Amperes
XCVR 1	32 M	0.00 M	1 M	Manual M	10.00 M	10.00 M
XCVR 2	32 M	0.00 M	1 M	Manual M	10.00 M	10.00 M
Quads 1	1 0.0 M 2 0.0 M 3 0.0 M 4 0.0 M 5 0.0 M 6 0.0 M 7 0.0 M 8 0.0 M					
Quads 2	1 0.0 M 2 0.0 M 3 0.0 M 4 0.0 M 5 0.0 M 6 0.0 M 7 0.0 M 8 0.0 M					

jsc48037_083.cnv

WIRELESS VIDEO SYSTEM (WVS) (Concluded)

SOFTWARE – TELEMETRY PAGE (Concluded)

RF Camr System Telemetry

RF CAMERA

Displays RF Camr title

Lens

Displays currently selected lens

[L,C,R]

UHF Signal Strength

Displays cmd link signal strength in dB seen at RF Camr

[nom = -120 to -59]

UHF RX Good

NOT USED

Pwr Voltage

Displays RF Camr system voltage

[nom = 12.8]

Pwr Amperes

Displays RF Camr system current

[nom = 0.40]

Temperature Electronics

Displays RF Camr electronics temp in degC. Alert range = -30° to -35° C and +80° to +85° degC. Caution range = <-35° and >+85° degC

[nom = 13 to 30]

Temperature L,C,R

Displays RF Camr left Camr temp in degC. Alert range = -30° to -35° C and +80° to +85° C. Caution range = <-35° C and >+85° C

[nom = 0 to 33]

Transceiver Telemetry

XCVR 1,2 Temperature

Displays XCVR temp in degC. Alert range = -40° to -35° C and +80° to +85° C. Caution range = <-40° and >85° C

[nom = 18 to 37]

S-Band Signal Strength

Displays return signal strength seen at XVCR in dB

[nom = 97.5 to -10.5]

S-Band Antenna Select

Displays which S-Band antenna the XCVR is using to get video signal

S-Band Antenna Mode

Displays XCVR antenna selection mode

[Auto,Manual]

Power Voltage

Displays XCVR system voltage

[nom = 12.42]

Power Amperes

Displays XCVR system current

[nom = 1.10]

Quads 1,2

Displays current signal strength for each XCVR's selected S-Band antenna in dB showing strongest of antenna quads

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SEQUENTIAL STILL VIDEO (SSV)

	<u>PAGE</u>
SSV NOMINAL SETUP	16-2
SSV DEACTIVATION	16-3
SPECIFICATIONS	16-4
NOMENCLATURE	16-4
CAMCORDER VIA SSV	16-5
TEST PATTERN VIA SSV	16-6
SSV TLM DNLK	16-6
MALS	16-7
16.1 PWR LED NOT LIT	16-7
16.2 FRONT PANEL LEDs NOT INDICATING CORRECTLY	16-7

SEQUENTIAL STILL VIDEO (SSV)

SSV NOMINAL SETUP

MA9F 1. Obtain following H/W:
 SSV Compression Encoder Box
 SSV BNC to BNC Cable
 SSV to PDIP/CIP Cable
 PGSC Pwr Cable
 Bal/UnBal Xfer

2. Config SSV H/W to PDIP 2
 Config H/W per dwg at right

NOTE

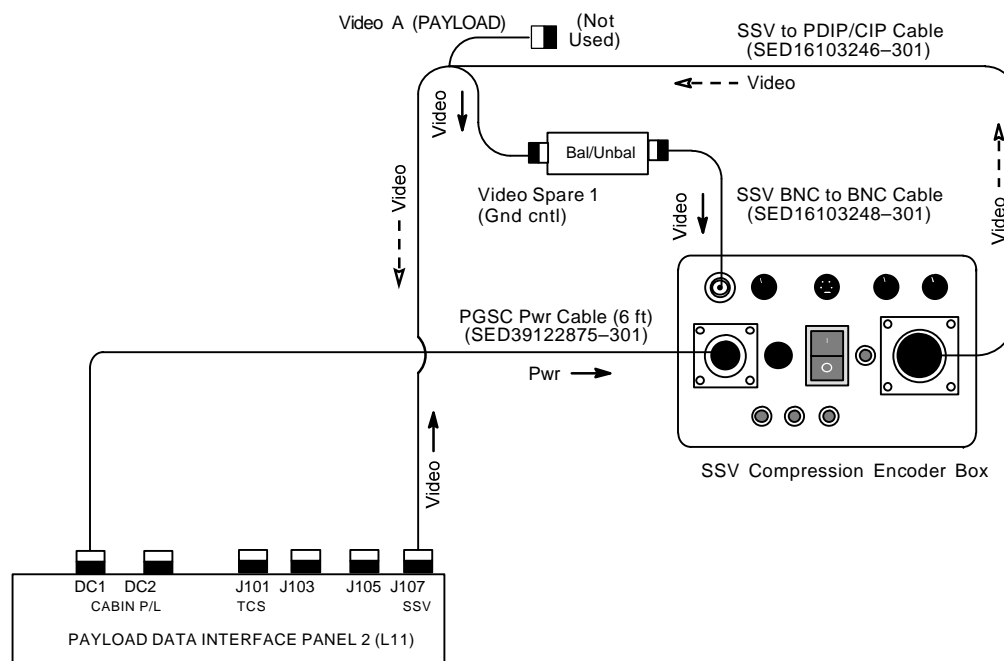
Video Spare 1 controlled
 by MCC instead of pnl A7

L12 (SSP 2) ✓ PDIP 2 PWR 1 (CB3) – cl

L11 (PDIP 2) DC PWR 1 CAB PL – ON

SSV 3. Config SSV settings
 IN SEL – NTSC
 Mode – 3 (may change if desired)
 OUTFRATE per FLIGHT PLAN
 SSV Pwr – on
 ✓ Pwr LED illum
 ✓ ENC DATA LED flickering
 ✓ FRM DATA LED flickering
 ✓ FILL FRM pulsing

4. Inform MCC when SSV SETUP complete



jsc48037_084_r1.cvx

SEQUENTIAL STILL VIDEO (SSV) (Continued)

SSV DEACTIVATION

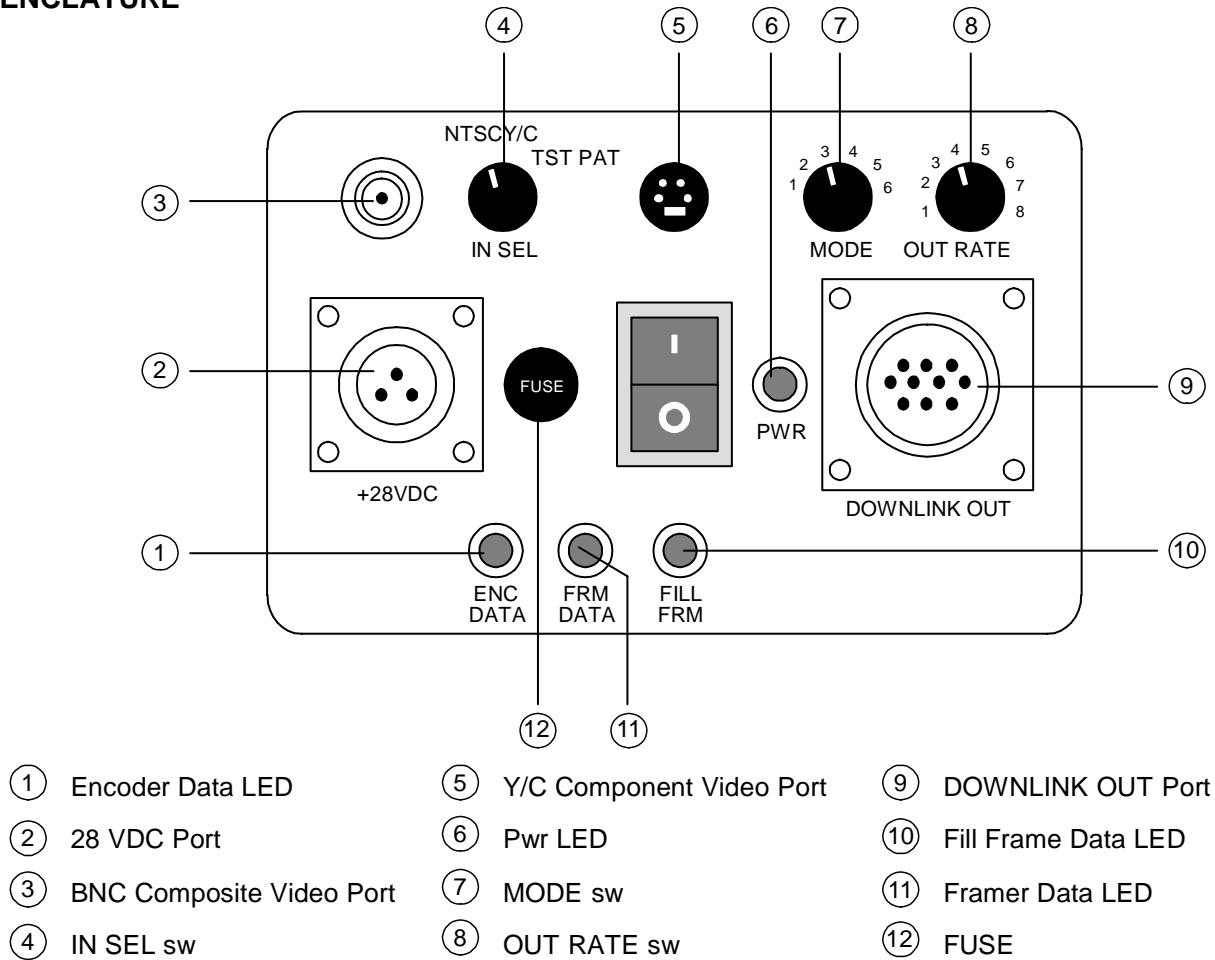
1. SSV
 - SSV Pwr – off
 - √Pwr LED not illuminated
 - √ENC DATA LED not illuminated
 - √FRM DATA LED not illuminated
 - √FILL FRM LED not illuminated
- L11 (PDIP 2) DC PWR 1 CAB PL – OFF
2. TV System
 - Go to DEACTIVATION (Cue Card, TV) as reqd

SEQUENTIAL STILL VIDEO (SSV) (Continued)

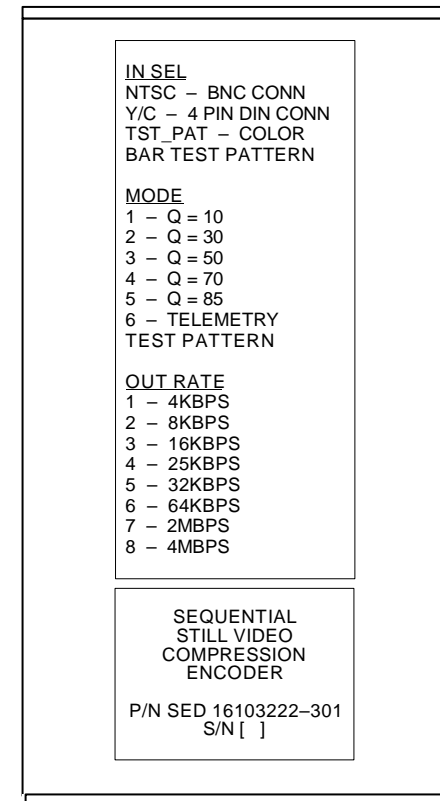
SPECIFICATIONS

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

NOMENCLATURE



TOP DECAL



jsc48037_085.cnv

SEQUENTIAL STILL VIDEO (SSV) (Continued)

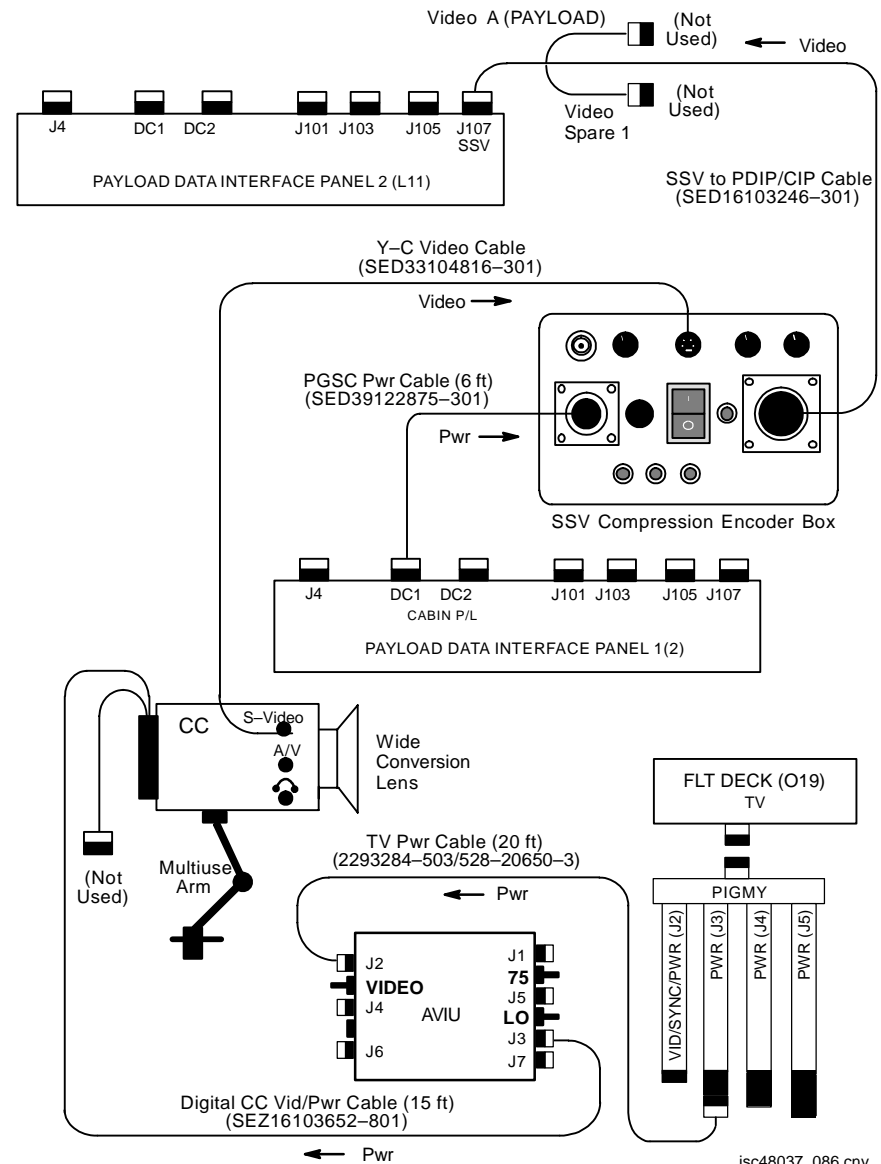
CAMCORDER VIA SSV

1. Config per dwg at right
2. Camcorder Settings

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

PD100 Lens – 3X
 TV Pwr (O19) – ON
 CC Pwr – ON
 ✓Wide Conversion Lens installed
 PWR – 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

3. SSV Settings
 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



jsc48037_086.cnv

SEQUENTIAL STILL VIDEO (SSV) (Continued)

TEST PATTERN VIA SSV

1. Perform SSV NOMINAL SETUP, step 1
2. SSV Settings
 - 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

SSV TLM DNLK

1. Perform SSV NOMINAL SETUP, step 1
2. SSV Settings
 - 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

SEQUENTIAL STILL VIDEO (SSV) (Concluded)

MALS

16.1 PWR LED NOT LIT

√Fuse
Replace fuse if blown w/fuse from SSV Fuse Kit
(SED 15500338-301)

√DC Pwr from orbiter util

16.2 FRONT PANEL LEDs NOT INDICATING CORRECTLY

Cycle pwr on SSV Compression Encoder
SSV Pwr – 0 (off)
Wait 5 sec
SSV Pwr – 1 (on)

√Cables
√Video source

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BINOCULARS

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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

MALS

17.1 CANNOT STABILIZE IMAGE

√Batts, replace as needed
 If stabilization obtainable, continue nominal ops
 |
 If stabilization not obtainable, √MCC

FIBERSCOPE

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FIBERSCOPE

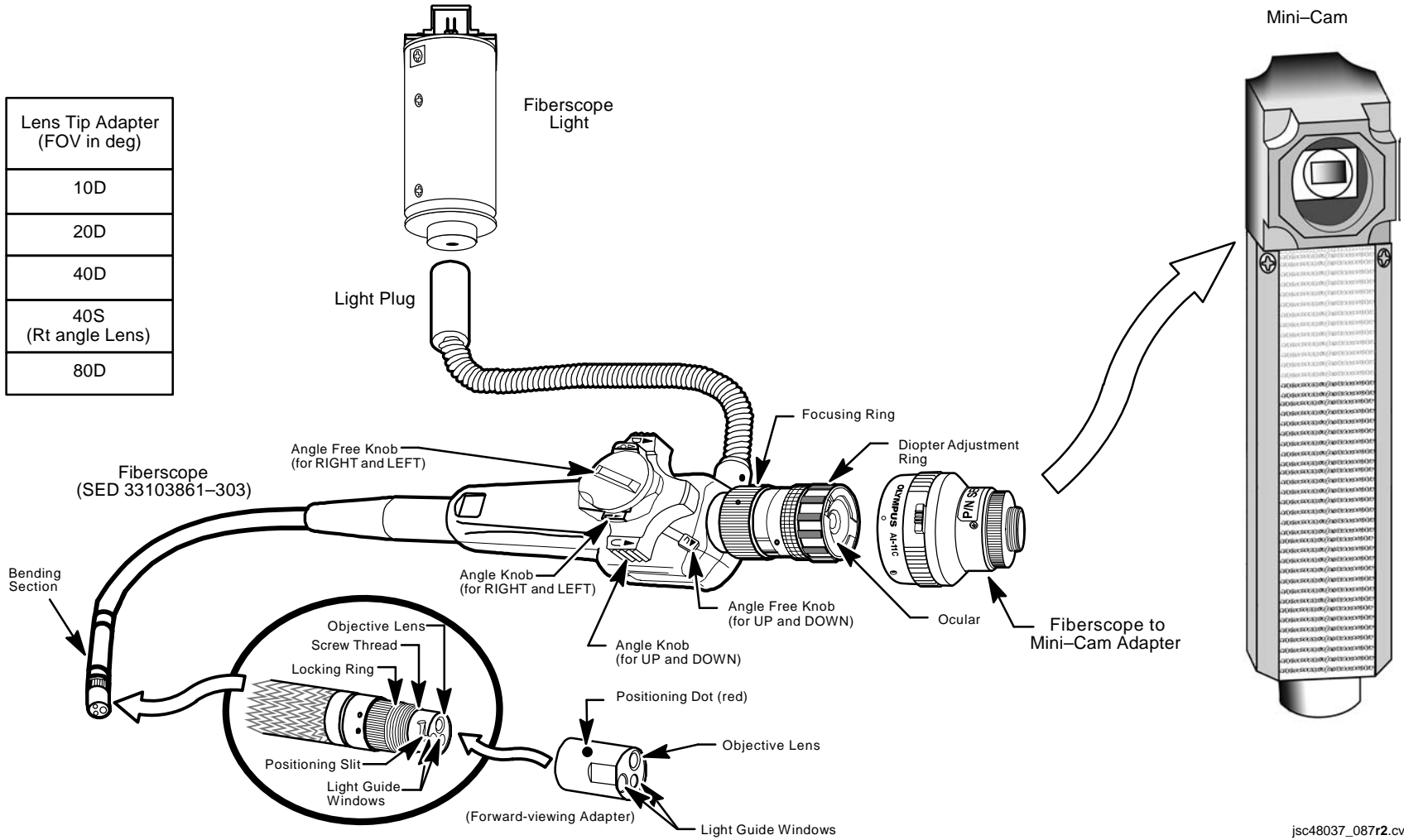
FIBERSCOPE

SPECIFICATIONS

LIGHT PWR: Orbiter – 6V via IFM Breakout Box

NOMENCLATURE

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



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FIBERSCOPE (Continued)

ACTIVATION/OPERATION

- MA9N
1. Unstow Fiberscope Kit, Fiberscope Light , if reqd
 2. If Fiberscope Light reqd:
Install Fiberscope Light Plug into Fiberscope Light
Perform FIBERSCOPE LIGHT PWRUP (30 MIN), 18-4, steps 1 thru 12
 3. If installed lens not desired:
Unstow spare lens
Perform FIBERSCOPE LENS REPLACEMENT, 18-6
 4. If video dnlk(viewing) reqd:
Unstow Fiberscope-to-Mini-Cam Adapter
Screw Adapter into Mini-Cam body lens mount
Mount Adapter to Fiberscope by aligning setter pin w/orange dot, rotate Adapter cw to lock
Perform IN-CABIN MINI-CAM (MINI-CAM)
Route Mini-Cam video to monitor or dnlk:
A7 VID OUT MON 1(2) (DNLK) pb – push
IN FLT DECK(MIDDECK) pb – push
Push button on Adapter and rotate Fiberscope until slit mark on image edge at top of image
OR
Unstow,install Fiberscope Eyepiece
 5. Adjust diopter until slit mark clearly visible
Adjust Camr viewing by rotating up/down,left/right angle knobs while free knobs are in F posn
Adjust focus by rotating focus ring

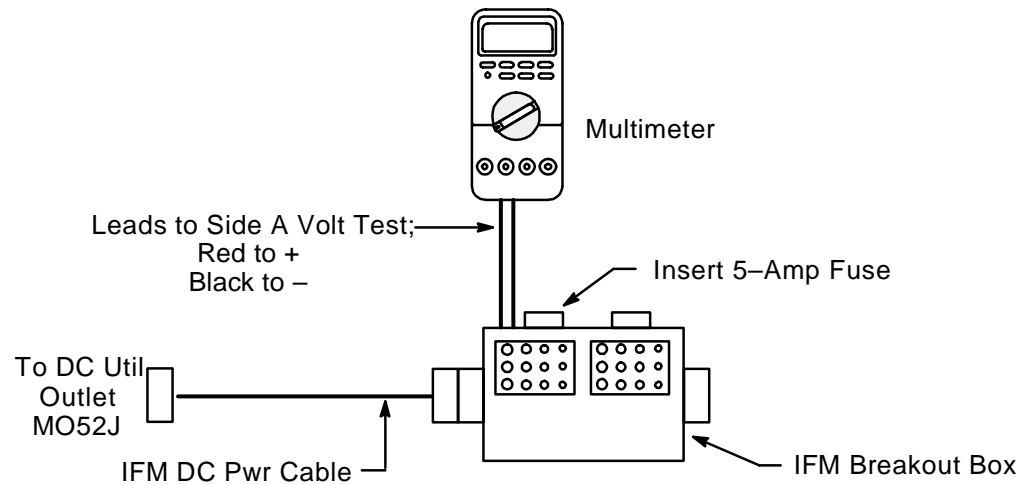
DEACTIVATION

1. If Fiberscope Light used:
Perform FIBERSCOPE LIGHT PWRUP (30 min), 18-4, steps 13 thru 15
Remove Fiberscope Light from Fiberscope Light Plug
Stow Fiberscope Light
2. If Mini-Cam used:
O19(MO58F) TV Pwr – OFF
Remove Mini-Cam Adapter from Fiberscope
Remove,stow Mini-Cam Adapter from Mini-Cam body
3. Remove,stow Fiberscope Eyepiece
4. Stow Fiberscope, Fiberscope Kit

FIBERSCOPE (Continued)

FIBERSCOPE LIGHT PWRUP (30 min)

1. Unstow:
 - Multimeter
 - Pin Kit (two 5-in 20 ga Pin/Pin Test Jumper Leads, two 24-in Minigrabbers, 5-Amp Fuse)
 - Gray Tape
 - IFM Breakout Box
 - DC Pwr Cable
 - MA9N 2. Remove Battery Holder Assembly from Fiberscope Light
 - MO52J 3. √DC UTIL PWR MNA – OFF
 4. a. Config Breakout Box:
 - AUX – OFF
 - 28V/VAR VOLT – VAR VOLTS
 - PWR A,B – OFFb. Remove fuse cap from side A
 - c. Rotate GA SEL A – 20
 - d. Install 5-Amp Fuse, replace cap
5. Assemble Breakout Box and Multimeter as shown below



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FIBERSCOPE (Continued)

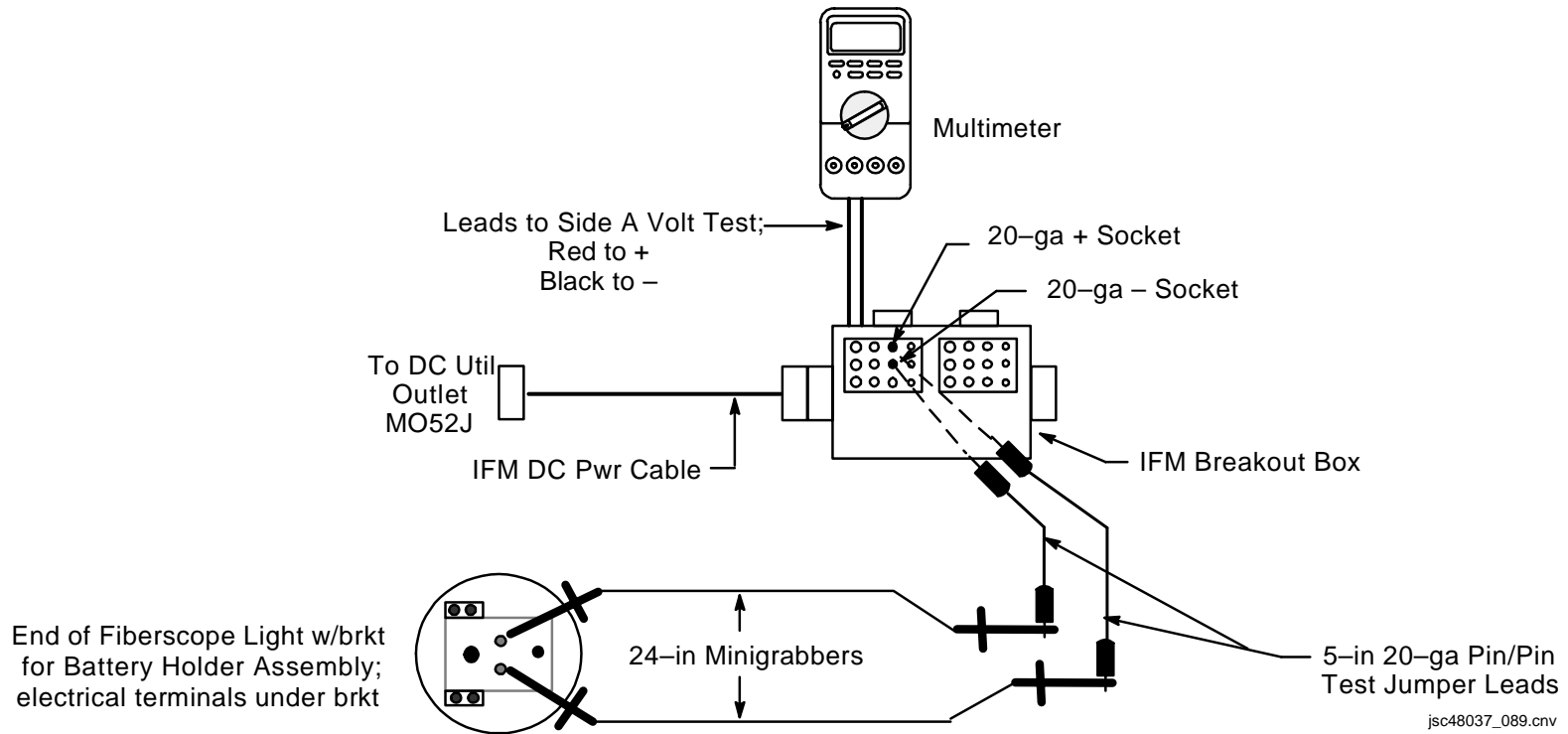
FIBERSCOPE LIGHT PWRUP (30 min) (Continued)

6. Configure Multimeter for DC V (auto range)
- MO52J 7. DC UTIL PWR MNA – ON
8. Breakout Box:
√VAR VOLTS – ON (It on)
9. Set VAR VOLTS output by rotating VAR rotary sw until Multimeter reads 6 VDC

NOTE

Positive, negative leads from Breakout Box can be attached to either terminal on Fiberscope Light

10. Install Breakout Box and cables to Fiberscope Light as shown below



FIBERSCOPE (Concluded)

FIBERSCOPE LIGHT PWRUP (30 min) (Concluded)

11. Secure IFM Breakout Box, Multimeter, and PWR Cable in convenient location
12. When ready to operate Fiberscope,
Breakout Box: PWR A – ON (It on)
13. When finished operating Fiberscope,
Breakout Box: PWR A – OFF
- MO52J 14. DC UTIL PWR MNA – OFF
15. √Disconnect Minigrabbers, Test Jumper Leads, Multimeter, and IFM DC Pwr Cable

FIBERSCOPE LENS REPLACEMENT

1. Unscrew lock ring from lens until second threads disengage
2. Rotate lens to align green dots
3. Pull lens to engage first threads, unscrew lock ring until lens free
4. Select desired lens and stow removed lens in foam
5. Align green dots on lens and Fiberscope; slowly push lens on until lens stops against first threads; screw on lens until first threads disengage
6. Rotate lens until green dot aligns w/Fiberscope red dot
7. Push lens into Fiberscope until it stops against second threads, screw on lens until second threads fully engaged

NIGHT VISION EQUIPMENT

NOTE

Not being flown

NIGHT VISION

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LASER DYNAMIC RANGE IMAGER (LDRI)

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LDRI

LASER DYNAMIC RANGE IMAGER (LDRI)

SPECIFICATIONS

CAMERA MODEL: Sony XC-ST70
PIXEL COUNT: 720 x 480
CAMERA SENSOR FOV: 15 x 19.7 deg
FOCAL LENGTH: 50.6mm
IRIS: Fixed at F11
FOCUS: Fixed at 6 ft

LASER MODEL & TYPE: LaserTeILT-1110-20W-CS, Class IV rated @ 20W and limited to 11W
LASER WAVELENGTH: 805 nm +/- TBD based upon laser temperature
LASER COVERAGE: 23.7 (vertical) x 19.9 deg (horizontal)
CAMERA/LASER PARALLAX: Approx 1.5 in horizontal
HAZARD ZONE: 9 ft

MOUNTING INTERFACE: Bottom of ITVC (ITVC specifications in CCTV section)
POINTING CAPABILITY: Standard Pan Tilt Unit (PTU)
PAN RANGE: Approx +/-168 deg
TILT RANGE: Approx +175 deg to -130 deg
ITVC ILLUMINATOR: LDRI

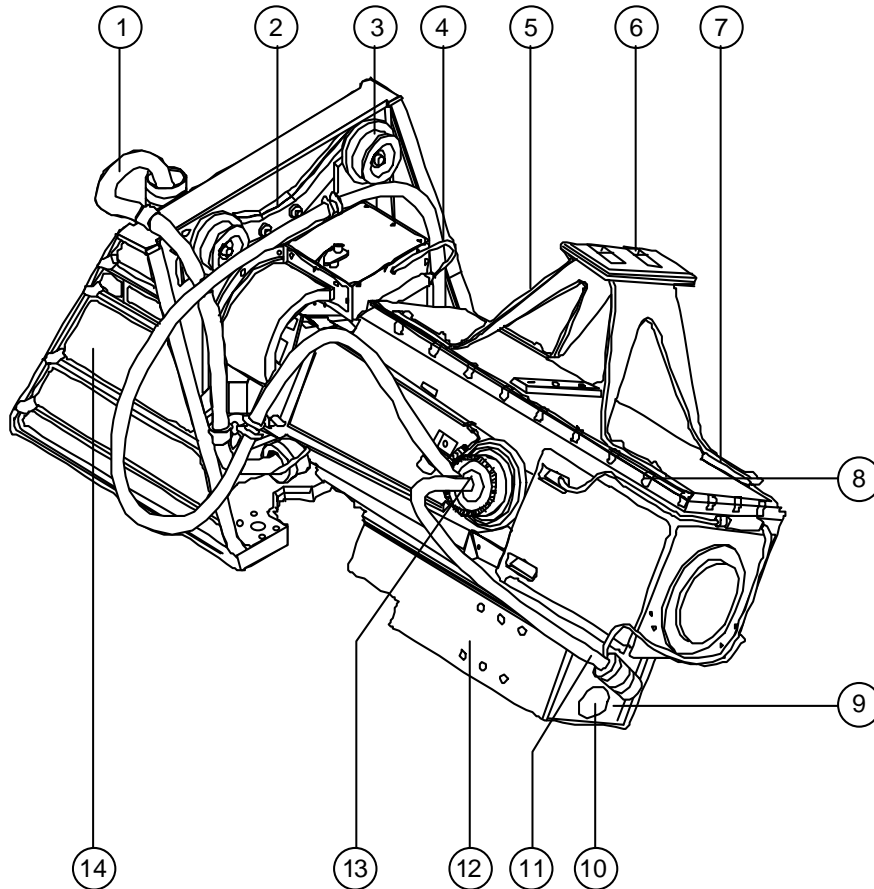
WEIGHT: 6.5 lb + 3 lb counter-weight
DIMENSION: 11 in (L) x 5.88 in (W) x 4.0 in (H)
PWR: 28V +/- 4V

LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

NOMENCLATURE

NOTE

Thermal covers are not depicted



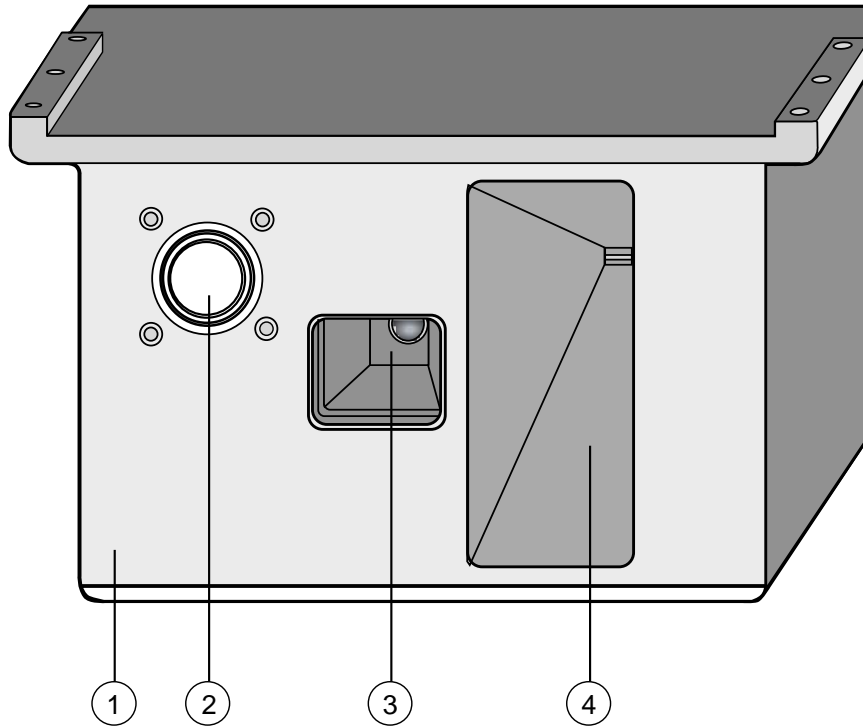
- ① W601 Interface Cable Assembly (EVA releasable at boom I/F)
- ② Isolator Plate
- ③ Isolator (x4)
- ④ PTU External Thermistor Interface Cable*
- ⑤ Counterweight Support
- ⑥ Counterweight
- ⑦ ITVC
- ⑧ ITCV External Thermistor Interface Cable*
- ⑨ LDRI Laser Diffuser
- ⑩ LDRI Camera Orifice
- ⑪ LDRI Power/Sync Input and Video Output
- ⑫ LDRI
- ⑬ ITVC Power/Sync Input and Video Output
- ⑭ Boom Interface Bracket (EVA Releasable)

** Items 4 and 8 are subsets of item 1, the W601 Interface Cable Assembly*

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LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

NOMENCLATURE (Concluded)

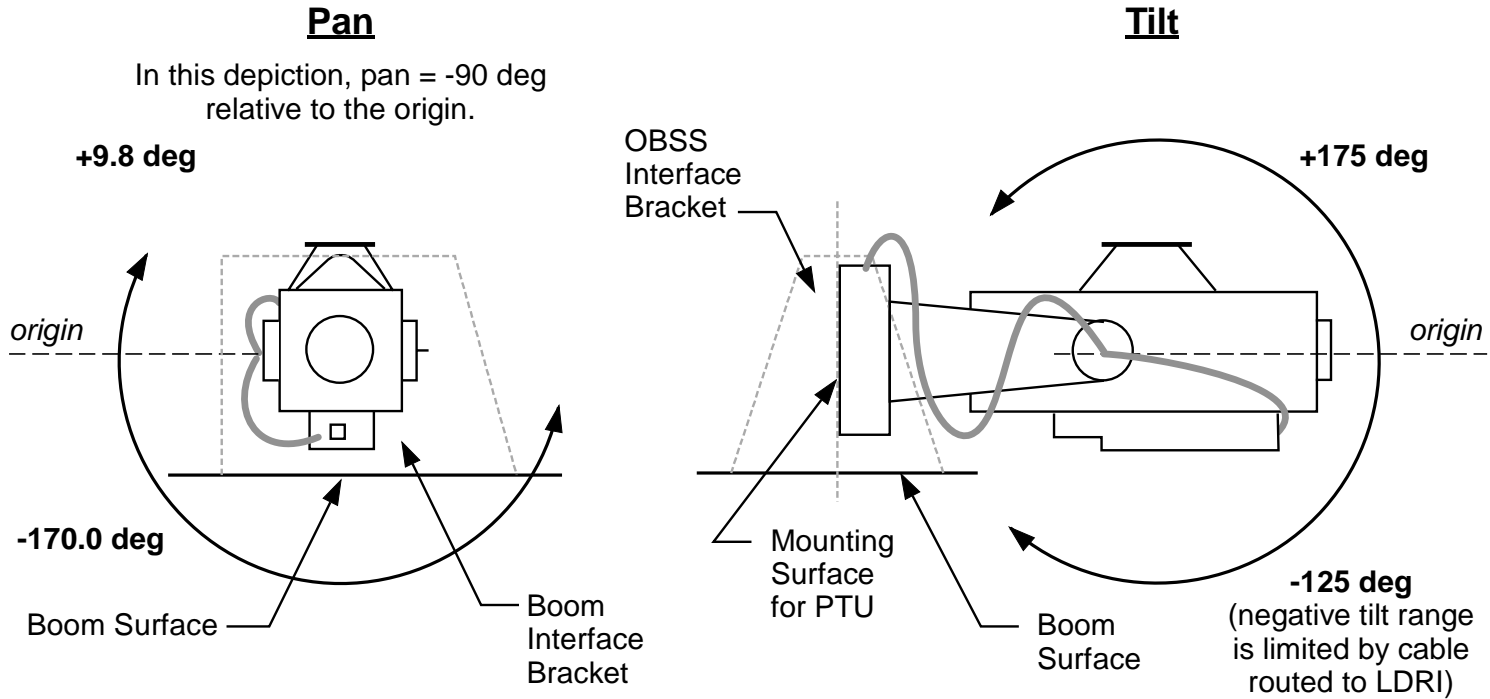


- ① LDRI Front Face
- ② Power/Sync Input and Video Output
- ③ Camera Orifice
- ④ Laser Orifice (covered by diffuser)

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LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

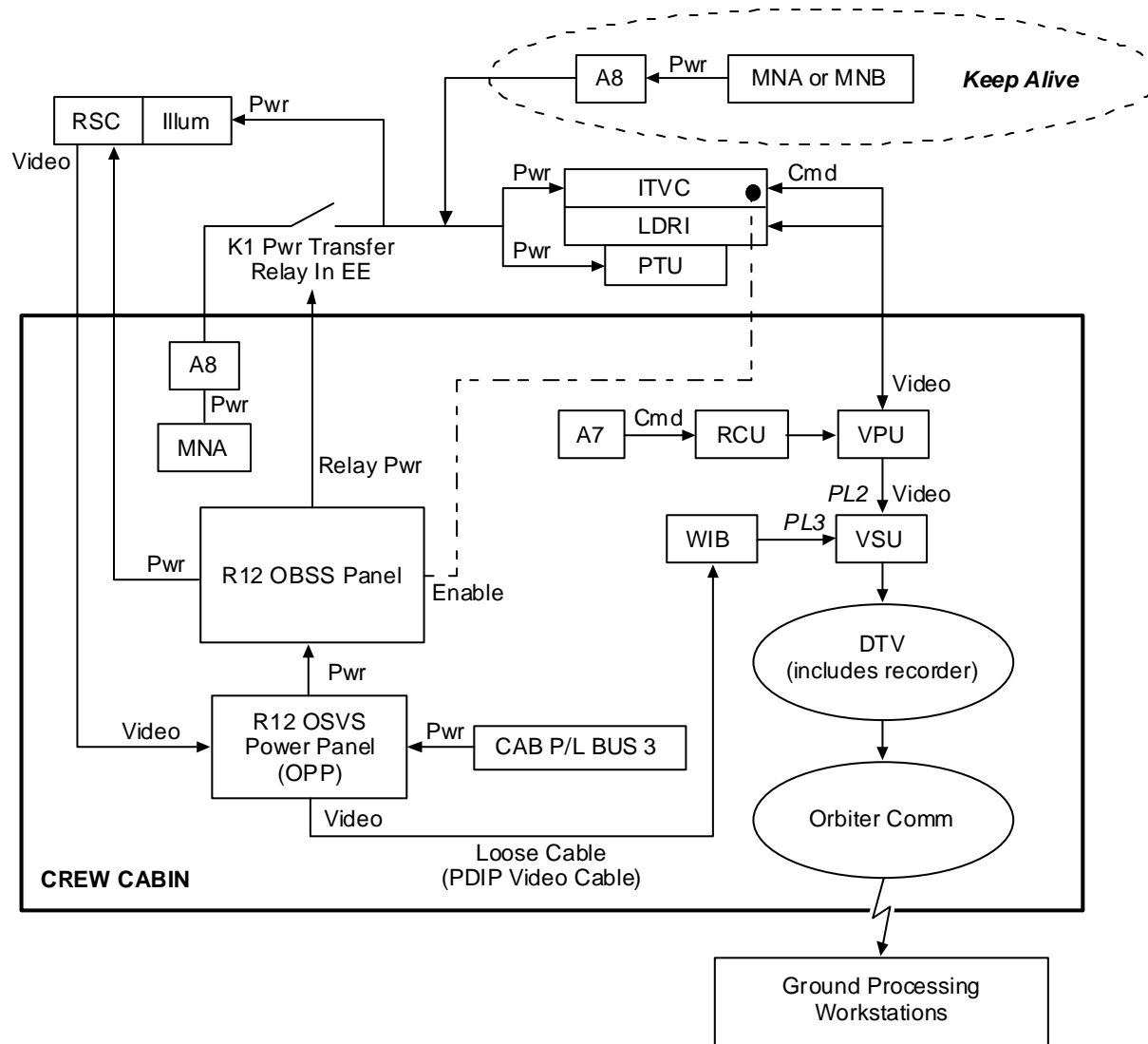
OBSS PTU PAN AND TILT RANGES



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LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

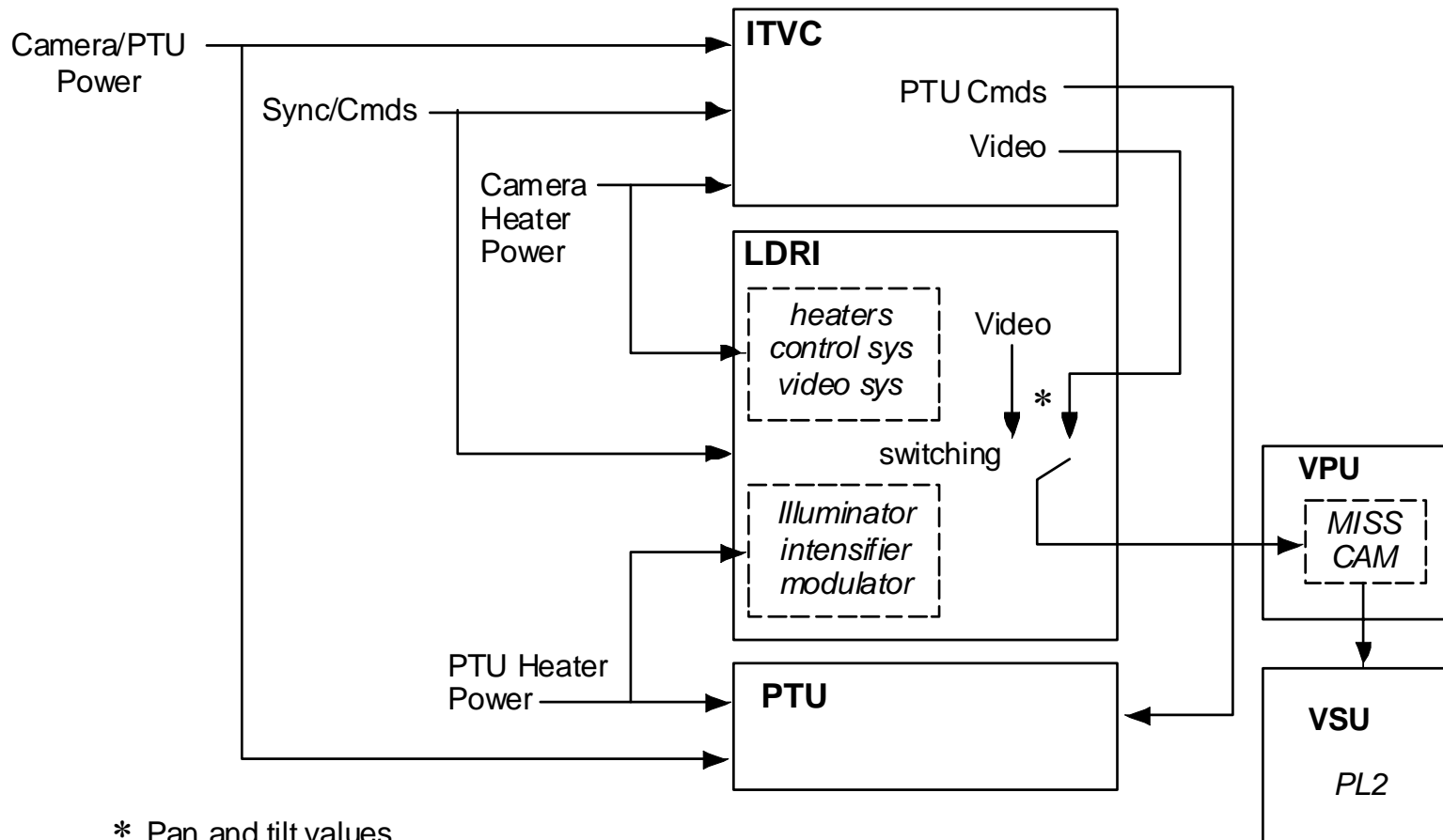
FUNCTIONAL FLOW



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LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

ITVC, LDRI, AND PTU INTERACTIONS



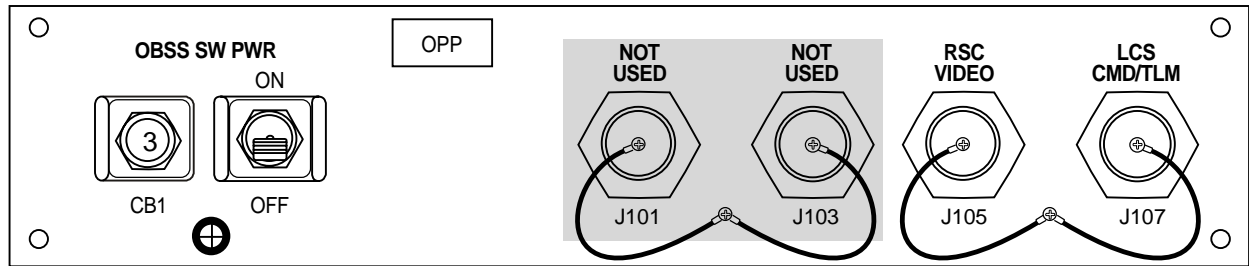
* Pan and tilt values
for display on MON

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LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

OPP PANEL

R12



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OBSS SW PWR (CB1 AND S1)

- Closure of 3-amp OBSS SW PWR cb followed by sw will provide CAB PL3 POWER to R12 OBSS panel

RSC VIDEO (J105)

- Provides balanced, asynchronous video from RMS Sideview Camr (RSC)
- Video will be routed to VSU PL3 input on R12/VPU/WIB using PDIP Video Cable to support viewing/recording/dnlk ops

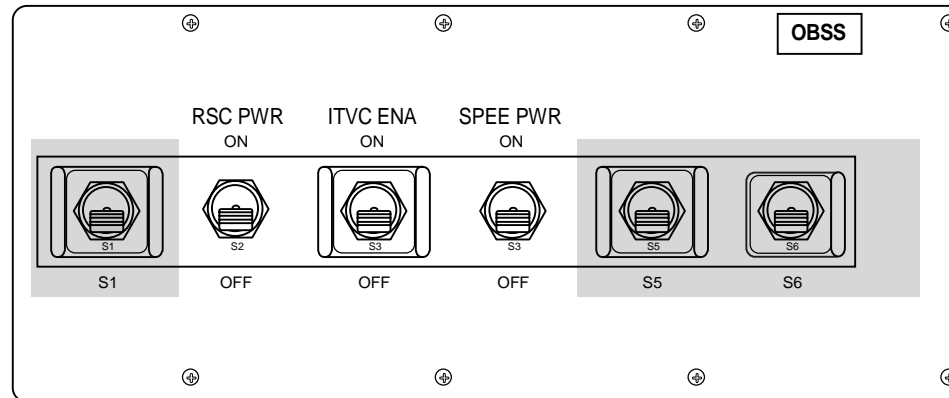
LCS CMD/TLM (J107)

- Provides PGSC interface for crew control, data, and telemetry for Laser Camr System (LCS) and ISIS Digital Camr (IDC)

LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

OBSS PANEL

R12



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RSC PWR (S2)

- Provides CABIN PL3 POWER to RMS Sideview Camr (RSC) and its heater
- Heater must remain active for duration of mission

ITVC ENA (S3)

- ON sends an enable command to the OBSS ITVC
- SPEE PWR must be ON prior to ITVC enable
- OFF disables Camr. A 10 sec wait reqd before re-enabling

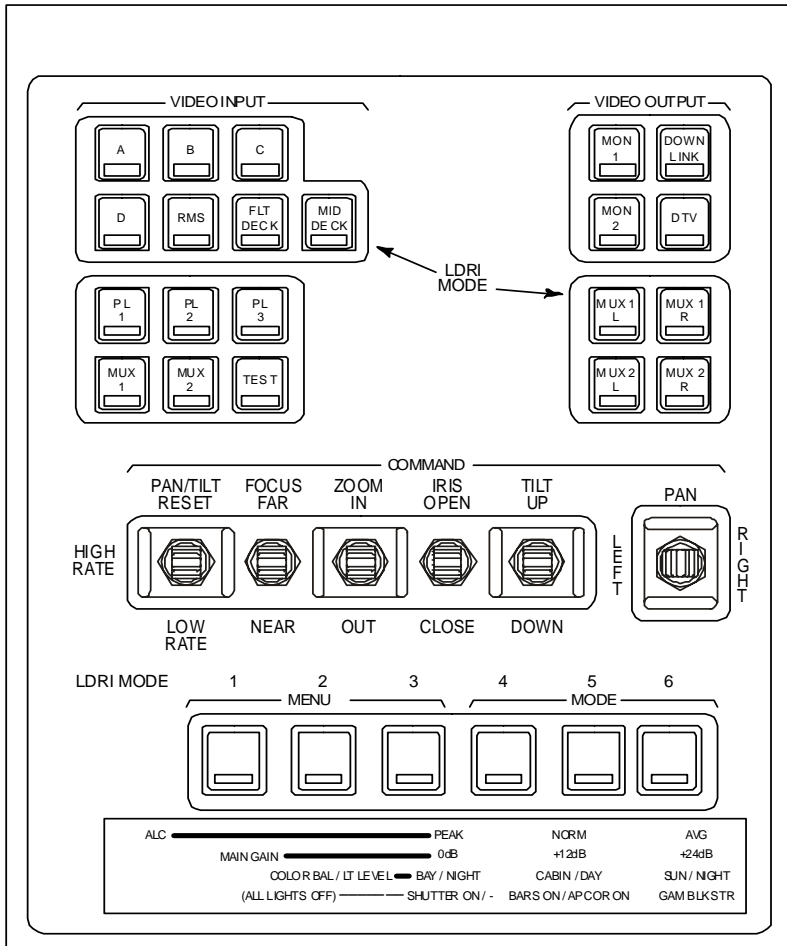
SPEE PWR (S4)

- ON closes K1 pwr relay in RMS End Effector. Pwr flows to OBSS ITVC/LDRI/PTU and to RSC illuminator. Upon initial relay closure, illuminator has pwr but not active
- After initial closure of K1 relay, cycling SPEE PWR sw to OFF, then ON will command RSC illuminator to full pwr (156 LEDs). Subsequent K1 relay cycling will take illuminator to med pwr (84 LEDs), then low pwr (30 LEDs), then OFF, and then back to full pwr
- Cycling K1 relay OFF, then ON will rest OBSS PTU pan and tilt values to zero; take LDRI to stby (Mode 1) and ITVC to manual state

LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

A7 PANEL

A7



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NOTE

Command interfaces listed below pertain only to OBSS LDRI and not to OBSS ITVC/PTU. Commands to ITVC/PTU handled by selecting PL2 as video input and treating that address in same manner as PLB ITVC

MUX1(2)R(L),MIDDECK pb

- Selection of any of four VIDEO OUTPUT MUX pb followed by VID IN MIDDECK pb enables commanding of OBSS LDRI

IRIS sw

- IRIS sw provides gain cntl for LDRI Modes 3,4,5,6. Feedback is available in MON Lens Data in place of T-stop
- Gain range – 70 (brightest) to 280 (darkest). Default value – 280
- Gain applied on one of Modes 3(4,5,6) will apply to other three. Gain returns to default value by selecting Mode 1

MODE, MENU pb

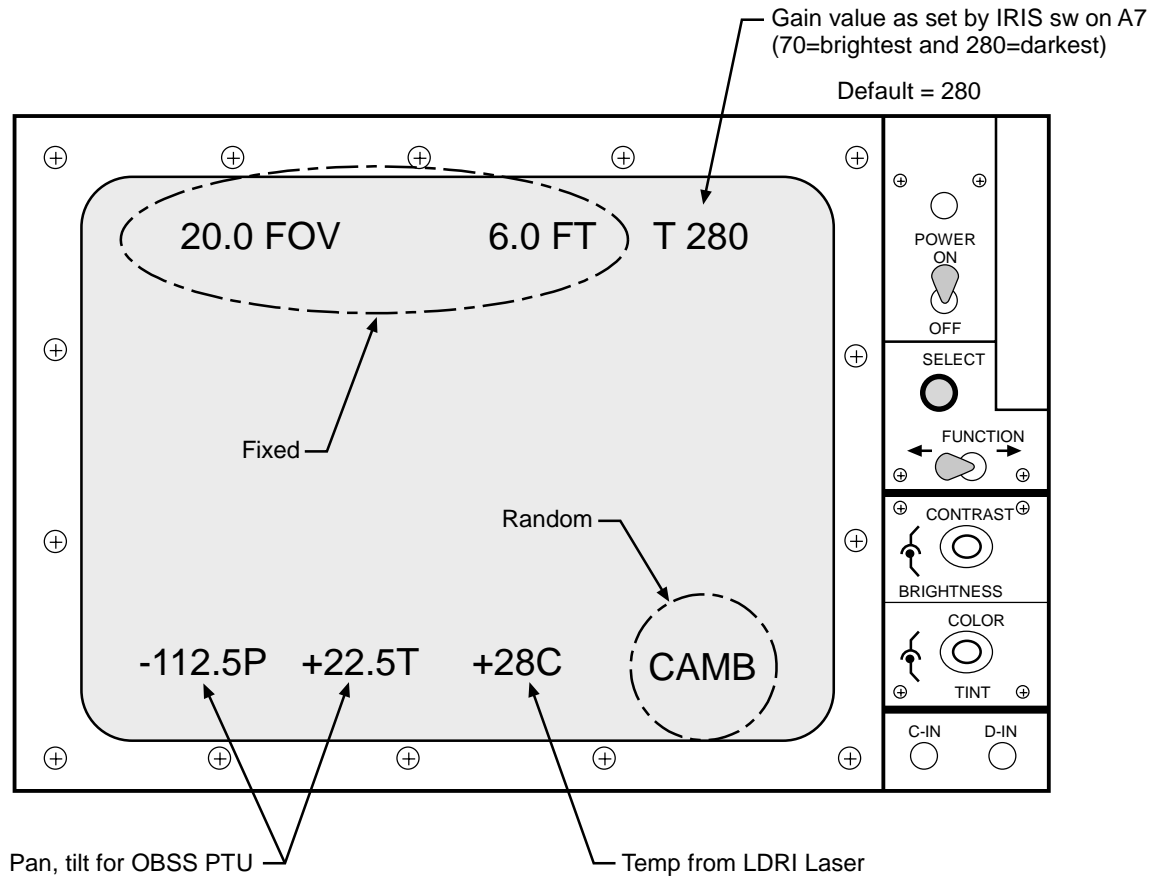
- Six MODE/MENU pb, left to right, allow selection of LDRI modes 1 thru 6:
 - MODE 1 – STANDBY
 - MODE 2 – ILLUMINATOR
 - MODE 3 – 2D
 - MODE 4 – 2D GAMMA
 - MODE 5 – 3D
 - MODE 6 – 3D GAMMA
- If OBSS/ITVC cntl selected (by depressing VID OUT pb selected for PL2) while in LDRI modes 3(4,5,6), LDRI video will continue to flow to VID OUT. For this scenario, all ITVC cmds active in blind
- Mode fdbk for Modes 3,4,5,6 avail when PL2 illuminated. In Modes 1 and 2, MODE/MENU pb indicate ITVC exposure setting, not mode

LASER DYNAMIC RANGE IMAGER (LDRI) (Concluded)

MONITOR INDICATIONS FOR LDRI VIDEO

NOTE

LDRI video assigned to PL2 using R12/VPU MISS CAM jumper posn. LDRI video (Modes 3-6) will have black rounded corners. Lens data and green Camr data ON for this illustration



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LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC)

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LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC)

LCS SPECIFICATIONS

LASER WAVELENGTH: \approx 1500 nm, near-IR

LASER CLASSIFICATION: Class 3b

OPERATIONAL RANGE: 4-10 ft

LASER SPOT SIZE: 0.04 in @ 4.5 ft

HAZARD ZONE:

Nominal Hazard Keep Out Zone (KOZ) – 5 ft

Worst Case Hazard KOZ – 64 ft

LASER COVERAGE:

Detailed Area and Quick View Scan Modes – 30 x 30 deg

Continuous Line Scan Mode – Variable 2 to 42 deg

LINEAR DETECTION ARRAY (LDA): 256-pixel linear array CCD w/13-bit intensity dynamic range

LCH WEIGHT: 24.5 lb

LCH DIMENSIONS: 11 in (L), 10 in (W), 5.6 in (H)

LCH PWR MODES/SOURCES:

OBSS State	Pwr	Source
Operational/RMS Grappled	124V	APCU1
MPM Berthed	28V	MNA and MNB (only LCH, IDC heaters in this mode)

HEATER PWR MODES/SOURCES:

Heater	Pwr	Source
124V Heater (RMS Grappled)	124V	APCU1 (SSP1 APCU1 CONV and OUTPUT RLY sws)
28V Heater (MPM Berthed)	28V	MNA and MNB (Pnl A8 STBD HTRS A,B sws) (only LCH, IDC heaters in this mode)

LASER SCAN MODES:

Detailed Area – Two-directional scanning in rectangular pattern (used for "stop and stare" ops). Both X,Y mirrors used

Quick View – Low-resolution detailed area-scan mode

Continuous Line – One-directional scanning passes thru optical center of FOV (used for scanning ops). RMS provides scanning motion

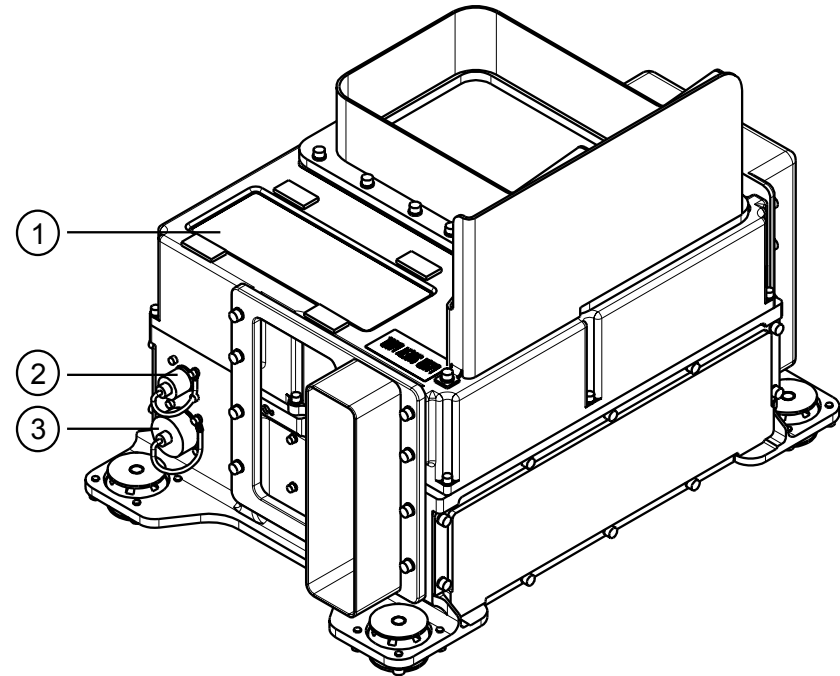
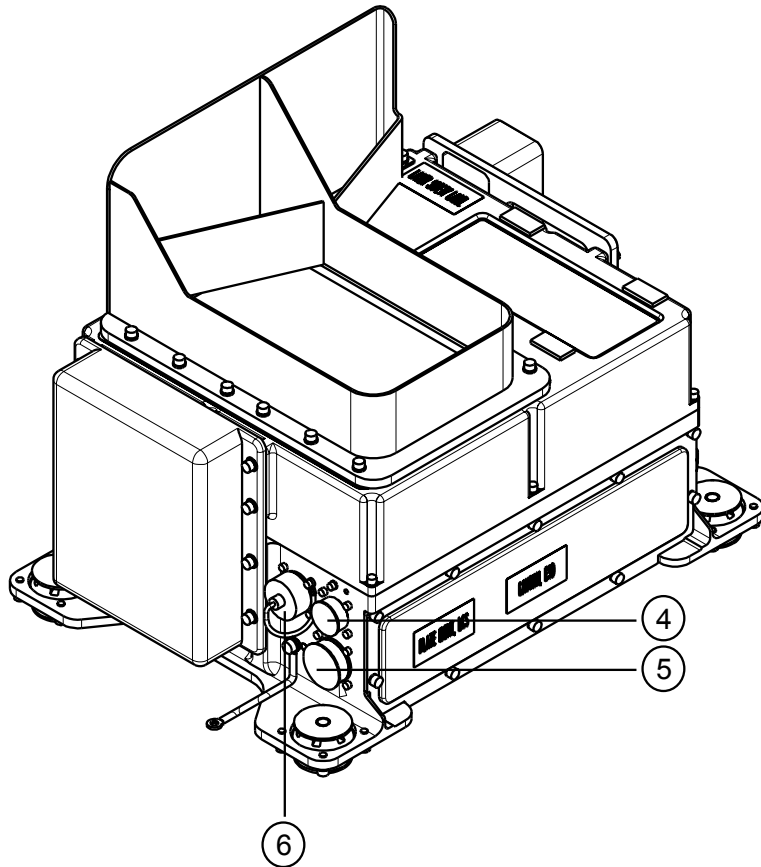
CREW CONTROL:

Hardware – LCC (Laser Camr Controller – A31p)

Software – LCC software shortcut (Shuttle Apps\IDC)

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

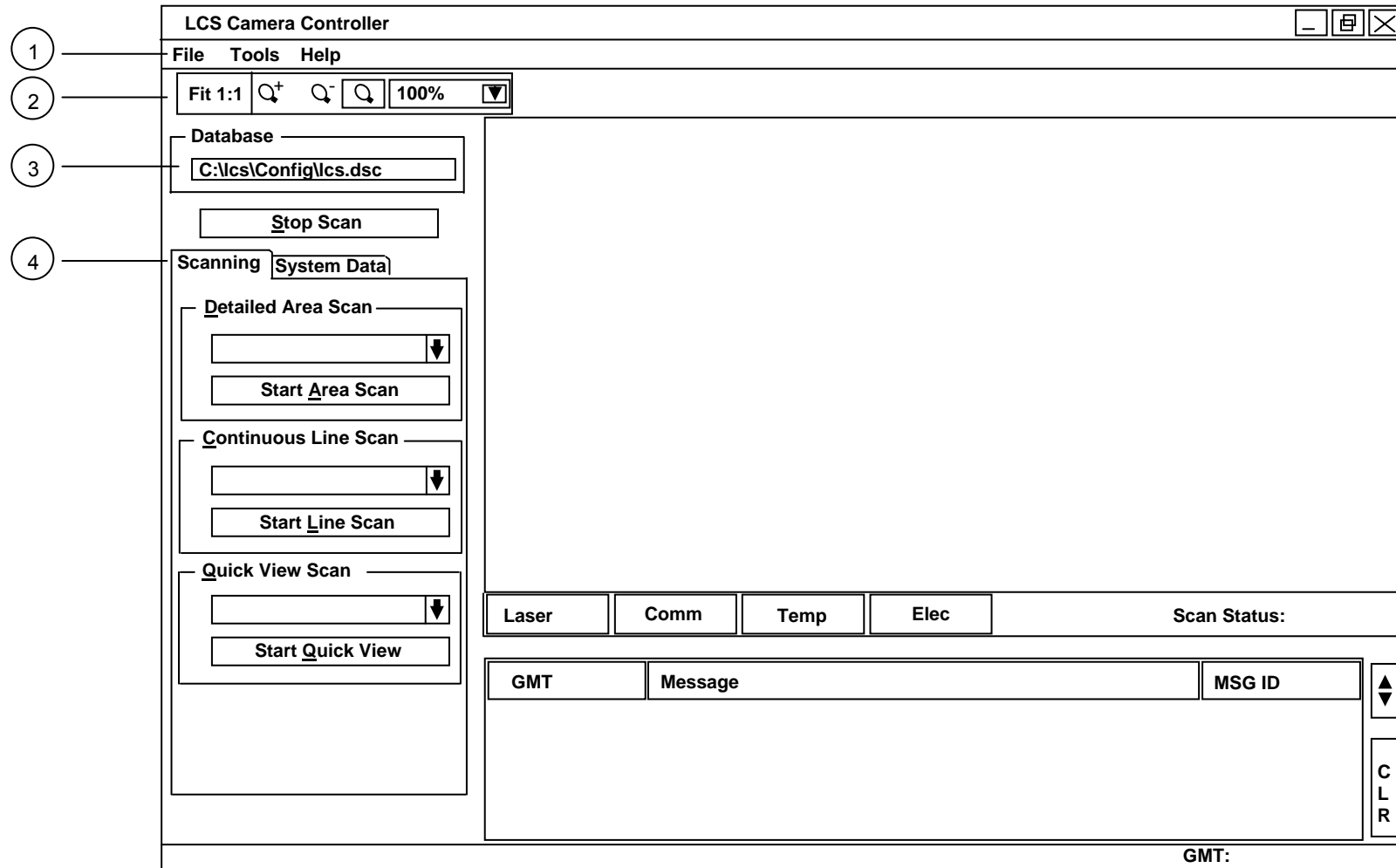
LCS NOMENCLATURE



- ① Laser Orifice
- ② RS422 Connector (J4)
- ③ Test Connector (J3)
- ④ COMMS/DATA Connector (J2)
- ⑤ POWER Connector (J1)
- ⑥ Ethernet Peripheral Device Connector (J5)

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI



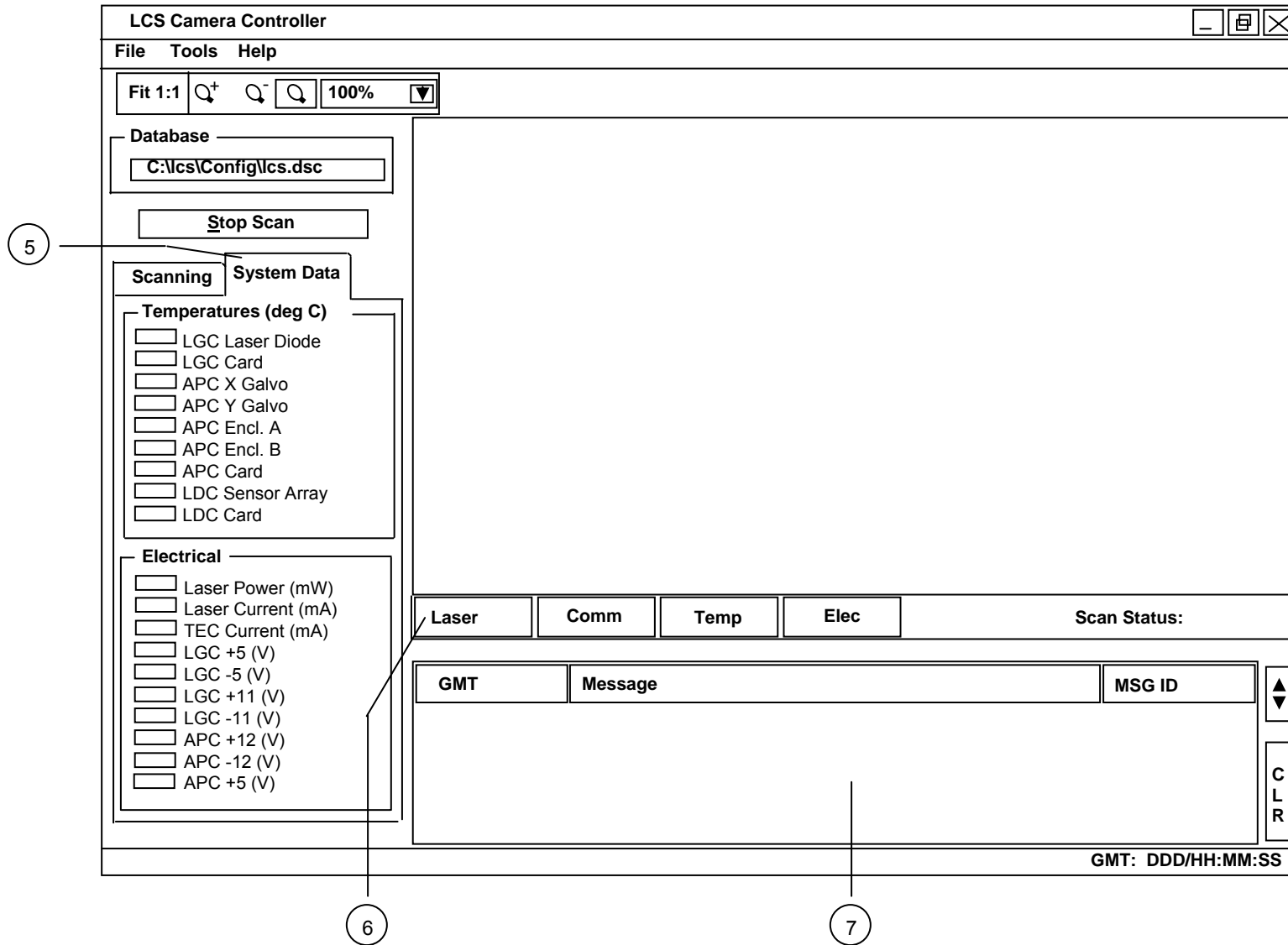
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI (Continued)

①	Menu Bar [File, Tools, Help]		
	[File]	Open	Allows user to open and view previous scan bin files. If several open, they are shown in order under File menu
		Close	Closes displayed scan bin file. Appears only when viewing previous scans. If several open, only currently selected file will be closed with this function
		Close All	Closes all scan bin files. Appears only when viewing previous scans. If several open, all files will be closed. Multiple scans collected in series will reside in RAM until cleared with this feature. Good housekeeping feature to use between scan AOIs
		Load Database	Allows user to change current database. When load database option selected, a window will appear and allow user to select another database. Only files w/.dsc extension selectable
		Exit	See LCC SOFTWARE EXIT DIALOG BOXES, 21-17
	[Tools]	Set GMT	Sets GMT clock on both LCC,LCH. When selected, window will appear allowing A31p time to be set. LCC time must be within 3 sec of onboard SM GPC. Once clock set, LCC A31p will update it's system clock every 5 min using LCH system clock if LCC GUI running
		IDC Control	Not used. Allows user to pwr on(off) IDC. This task preferably done via IDC software
		Zoom Toolbar	Allows Zoom Toolbar to be displayed under Menu Bar
		Intensity Adjustments	Not currently selected(used). Invokes Intensity Adjustment window on GUI so user can adjust Gamma, Brightness, and Contrast of displayed scan image
		Peak Status Highlight	Not currently selected(used). Invokes Peak Status window so user to select voxel status: Below Min Intensity, Above Max Intensity, Overflow, Underflow, Invalid Peak, No Peak, and Multiple Highlights
		Status Toobar	Allows Status Toolbar to be displayed below GUI. Contains only GMT
	[Window] (Menu appears only when scan bin files being viewed)	Cascade	Cascades all currently opened scan bin files
		Tile Vertically	Will 'vertically tile' all opened scan bin files. User can scroll up,down with vertical,horizontal slide bars
		Tile Horizontally	Will 'horizontally tile' all opened scan bin files. User can scroll up with vertical slide bar
		Arrange Icons	If multiple windows open and minimized in display area, will align minimized files
	[Help]	About	Displays window w/software-specific information; i.e., version of release.
Zoom Toolbar			
②	Fit 1:1	If displayed scan bin file has been zoomed in(out), button allows user to fit image to display area	
	Magnifier w/+ Sign	Zoom in button	
	Magnifier w/- Sign	Zoom out button	
	Magnifier in box	Allows user to select a box on display to zoom in on. Mouse arrow will change to magnifier. User will outline area w/two mouse clicks and view is fitted in display area	
	Zoom Percentage Menu	Allows user to zoom in(out) according percentage displayed. Selectable percentages: 25%, 50%, 75%, 100%, 150%, 200%, 300%, 400%, Fit to Window	
Database			
Database		Displays current database and its path. Default is "c:\lcs\config\lcs.doc"	
③	File		Displays name of current file being saved on LCC hard drive during scan. Will display last scan file name when no scan in progress
Scanning Page [Detailed Area Scan, Continuous Line Scan, Quick View Scan]			
(One of two pages which allows user to select scan from one of three drop-down menus and execute each type of scan)			
④	[Detailed Area Scan]	Detailed Area Scan	Drop-down menu allows user to select one out of a possible 30 detailed area scans
		Start Area Scan	Executes detailed area scan selected from drop-down menu
	[Continuous Line Scan]	Detailed Area Scan	Drop-down menu allows user to select one out of a possible 30 continuous line scans
		Start Line Scan	Executes continuous line scan selected from drop-down menu
	[Quick View Scan]	Detailed Area Scan	Drop-down menu allows user to select one out of a possible 10 quick-view scans
		Start Quick View	Executes quick-view scan selected from drop-down menu

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI (Continued)



LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI (Concluded)

5	System Data Page [Temperature (degC), Electrical] (One of two pages. Gives user insight into various temp,elec values of components inside LCH. Values are software FDA'd according to limits set in current database. An out of allowable limit value is backlit in yellow and cause a msg to be displayed)	
	[Temperature]	Displays LCH component temp values in deg Celsius
	[Electrical]	Displays LCH component elec values. Values are milliWatts, milliamps, and Volts
6	Laser On/Off [Laser On, Laser Off, Laser ?] (Displays on,off status of Laser diode)	
	Laser On (Green)	Scan in progress. Backlit in green while laser diode on
	Laser Off (Blue)	Scan not in progress. Backlit in blue while laser diode off
	Laser ? (Gray)	No insight into LCH. Backlit in gray when no LCH to LCC Ethernet connectivity
	Comm	Light displays Ethernet communication state between LCC,LCH Green Light – Indicates good Ethernet connection Yellow Light – Indicates bad Ethernet connection
	Temp	
	Temp (Green/Yellow)	Light displays temp status of LCH components Green Light – Backlit in green when all LCH component temp values within ranges specified by current database Yellow Light – Backlit in yellow when one or more values out of limits
	Elec	
	Elec (Green/Yellow)	Light displays elec status of LCH components Green Light – Backlit in green when all elec values within ranges specified by current database Yellow Light – Backlit in yellow when one or more values out of limits
	Scan Status (Blank, Complete, Vertical Resolution)	
	Blank	When LCS software launched and no scans have been executed
	Complete	Displays last scan line collected or Stop Scan button selected
Vertical Resolution	While scan in progress, field displays vertical resolution of scan and current line being scanned; i.e., 211/512 means current line being scanned and recorded on LCC is 211 and vertical resolution is 512	
7	Message Area	
	GMT	Displays GMT of time tagged off-nominal message
	Message	Displays text description of error messages. Any messages displayed here are logged into system log
	MSG ID	Display unique six-digit number that cooresponds to error message that appears in message area
	CLR	Clears current error messages displayed in message area. Button will invoke a dialogue box asking user if he wants to clear message area
	GMT DDD/HH:MM:SS	Displays GMT based on A31p system clock. Once GMT set via Tools menu, LCC will sync up to time kept on LCH, which is accurate

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SPECIFICATIONS

IDC DIMENSIONS: 6 in (L), 5 in (W), 2 in (D)

IDC ELECTRONIC COMPONENTS: Adimec-2000m/S and Pleora i-port PT1000-CL

IDC ELECTRONIC PWR: 12V conditioned pwr from LCH

HEATER PWR MODES/SOURCES:

OBSS State	Pwr	Source
RMS Grappled	124V	APCU1 (SSP1 APCU1 CONV and OUTPUT RLY sws)
MPM Berthed	28V	MNA and MNB (Pnl A8 STBD HTRS A,B sws) (only heater pwr in this mode)

IMAGER MODEL: Adimec-2000m/S gray-scale imager

CCD: 1920 x 1080

CCD PIXEL SIZE: 7.4 microns (square pixels)

SPECTRAL RESPONSE:

350 nanometers (25%)

500 nanometers (42% Peak)

700 nanometers (20%)

FOCAL LENGTH: 50mm

DYNAMIC RANGE: 60dB

GAIN: 1X-8X

APERTURE: f/8

FOCUS DISTANCE: 6 ft 3 in

WORKING DISTANCE: 5 ft

Target Resolution at 5 ft: 113 pixels/in

Horizontal Coverage at 5 ft: 17 in

Vertical Coverage at 5 ft: 10 in

INTERFACE: 10Base2 half duplex

CREW CONTROL:

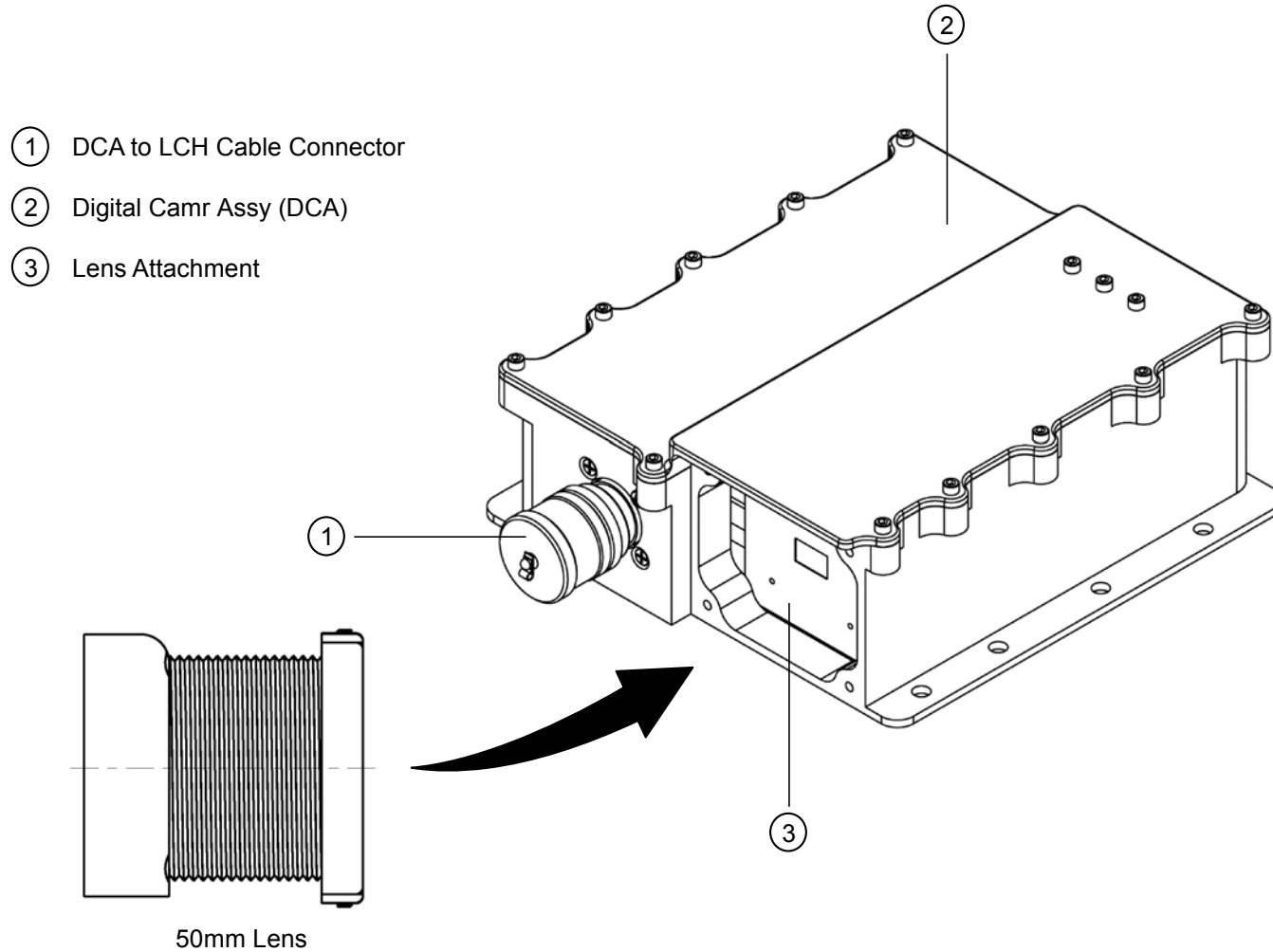
Hardware – LCC (Laser Camr Controller – A31p)

Software – LCC software shortcut (Shuttle Apps\IDC)

IMAGE FORMAT: 16-bit tif

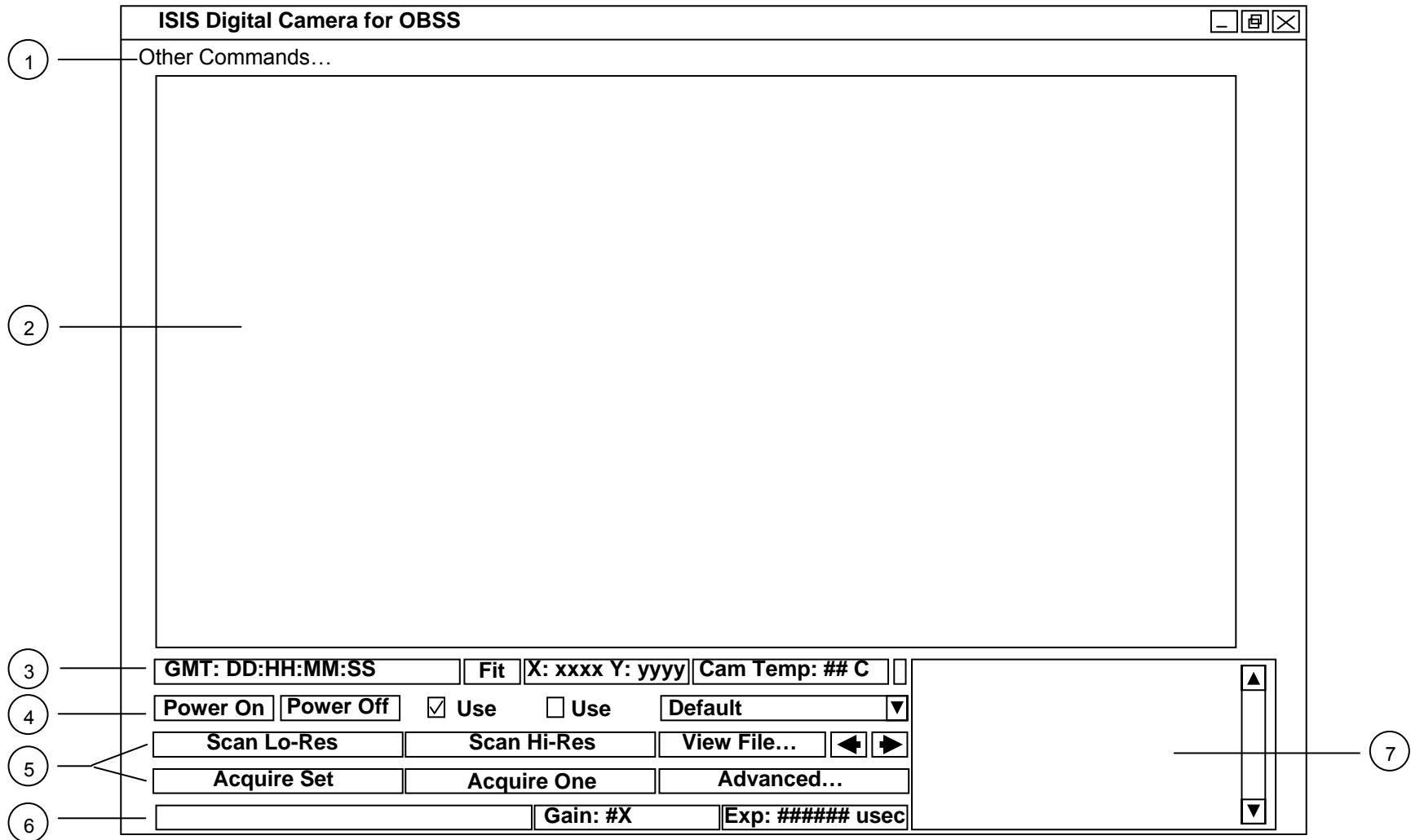
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC NOMENCLATURE



LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI



LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI (Continued)

1	Other Commands (Pulldown menu provides other commands w/hot keys)		
	[F2]	Clear text in text window	
	[F4]	Append text to an image	
	[F5]	Toggle Summary View	
	[F6]	Toggle Image Mode	
	[F7]	Zoom In	
	[F8]	Zoom Out	
	[F9]	Reset Brightness and Contrast	
	[F10]	Reset Auto Exposure Aperture to Default	
	[F11]	Toggle Auto Exposure Aperture Visibility	
[F12]	Find Auto Exposure Aperture		
2	Display Area	Shows the tiff or last image collected	
3	Status Bar 1		
	GMT	Displays current time	
	Zoom Level	Fit, 1X, 2X, 4X, 8X	
	Mouse Position	Shows "X,Y" positions of mouse	
	Camr Temperature	Temperature of Camr in Celsius	
	Comm Status Light	Blinking green light when in nominal case; static while imaging	
4	Power On/Off, Auto Exposure (AE), Color Coded (CC), Scenario File Drop List/Brightness and Contrast Controls]		
	[Power On]/[Power Off]	Buttons control the pwr to the IDC	
	[Use AE]	Allows selection of auto-exposure capability	
	[Use CC]	Allows user to color code the over and under exposed areas of image	
	Scenario File Drop List	Drop down list allows user to select Gain and Exposure settings for all image acquisition buttons that depend upon light scenario	
	Brightness and Contrast	When user switches into "Image Mode", scenario drop down list turns into "Brightness and Contrast" controls, allowing user to manipulate viewable image Note: Brightness and Contrast has no control over Camr brightness or contrast	
5	Image Command Area		
	Image Acquisition Buttons	(Each button may be accessed during another operation to switch acquisition types quickly. Allows user to set scene with "Scan Lo-Res" and then immediately select "Scan Hi-Res", "Acquire Set" or "Acquire One" as needed without extra action	
		Scan Lo-Res	Image(s) not saved to disk. Displays decimated Camr view. Used to set software exposure and situational awareness
		Scan Hi-Res	Continuously saves full images to disk
		Acquire Set	Image(s) saved to disk. Acquires bracket set of images
		Acquire One	Image saved to disk. Acquires one image with no exposure control from AE
	View and Save Files	Allows user to select a file from a directory to view or (when holding "CTRL" key while clicking on "Save File To..." button) select a directory indicating where subsequent images will be saved. Green arrows allow user to quickly browse thru images alphabetically	
	Advanced Command	Button brings up an Advanced Settings dialog box in which user may apply specific setting for individual image acquisition options. See pg 21-12	
6	Status Bar 2	Contains status of current operation, gain and exposure settings for image being displayed, Status Bar Error Advisory, Status Error Strings, and Normal Operation Strings	
7	Comment Area	Provides an entry form to input comments before image acquisition or append comments into a stored image. Note: Previous comments cannot be discarded	

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI (Continued)

The image shows a software dialog box titled "Advanced Settings" with a close button in the top right corner. The dialog is organized into three main sections: "Acquire One", "Acquire Set", and "Scan".

- Acquire One:** Contains two fields: "Exposure" with a numeric input field containing "#####" and the unit "usec", and "Gain" with a dropdown menu showing "#X". A callout circle with the number "8" points to this section.
- Acquire Set:** Contains a "Select Image:" label with a dropdown menu showing "#", "Exposure" with a numeric input field containing "#####" and the unit "usec", "Gain" with a dropdown menu showing "#X", and a "Display" checkbox which is checked. A callout circle with the number "9" points to this section.
- Scan:** Contains a "Select Type:" label with two radio button options: "Lo-Res" (selected) and "Hi-Res". To the right are "Exposure" with a numeric input field containing "#####" and the unit "usec", "Gain" with a dropdown menu showing "#X", and "Decimation" with a numeric input field containing "##". A callout circle with the number "10" points to this section.

At the bottom of the dialog, there are three buttons: "Do Self Test", "Black Level" with a numeric input field containing "##", "Cancel", "Reset to Defaults", and "Accept". A callout circle with the number "11" points to the "Do Self Test" button.

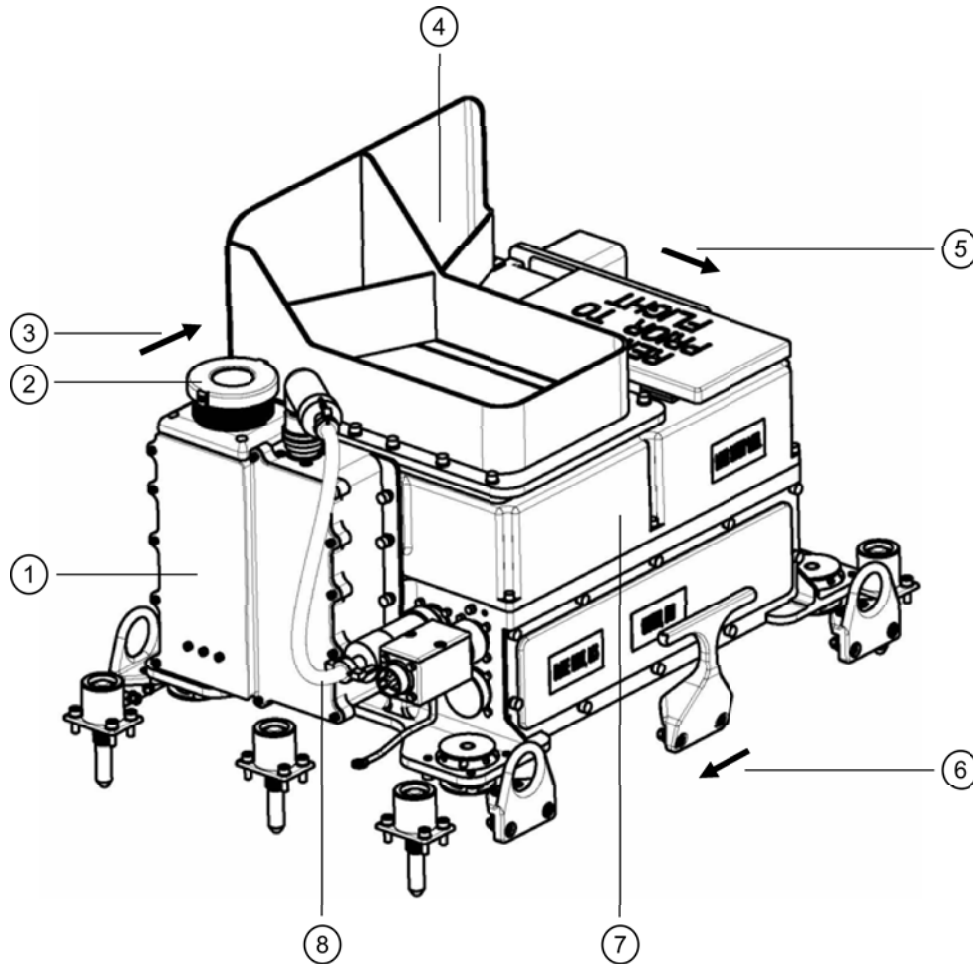
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI (Concluded)

8	"Acquire One" Settings (Allows user to set exposure and gain settings for "Acquire One" cmd which acquires a single image from Camr)	
	[Exposure]	User may set exposure from 25 usec to 80025 usec
	[Gain]	User may set Gain from 1X to 8X
9	"Acquire Set" Settings (user to set exposure and gain settings for "Acquire Set" cmd. Each image acquired in set can have a different setting for exposure and gain. [Display] checkbox will determine if image is to be displayed when acquired)	
	[Select Image]	As a default, user may select up to 7 images
	[Exposure]	User may set exposure from 25 usec to 80025 usec
	[Gain]	User may set Gain from 1X to 8X
	[Display] Checkbox	Selecting checkbox displays each acquired image as it is taken. If unchecked, no images are displayed, only saved. In each case, user will watch acquiring image set status bar count up each acquired image
10	"Scan" Settings (Allows user to exposure, gain, and decimation settings for low/high resolution continuous scans)	
	[Lo-Res]/[Hi-Res] Buttons	User selects which scan to set attributes to: Lo-Res – Scans are displayed only and not saved to disk Hi-Res – Scans are displayed and saved to disk
	[Exposure]	User may set exposure from 25 usec to 80025 usec
	[Gain]	User may set Gain from 1X to 8X
	[Decimation]	User may select a decimation level between 1-16. When decimation is a high number, time for image to be displayed on screen is faster due to smaller size and lower quality of image
11	"Do Self Test" Command	Queries IDC for an image test pattern which is then displayed on main display window. Test image is also stored to disk
	"Black Level" Input Box	Sets Camr's "Black Level" threshold for all acquired images. Can be set from 0 to 4095
	"Reset to Defaults" Command	Restores application defaults applied at startup to all settings. Holding CTRL and pressing "Reset to Defaults" will restore project defaults established in DCCS.ini file

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

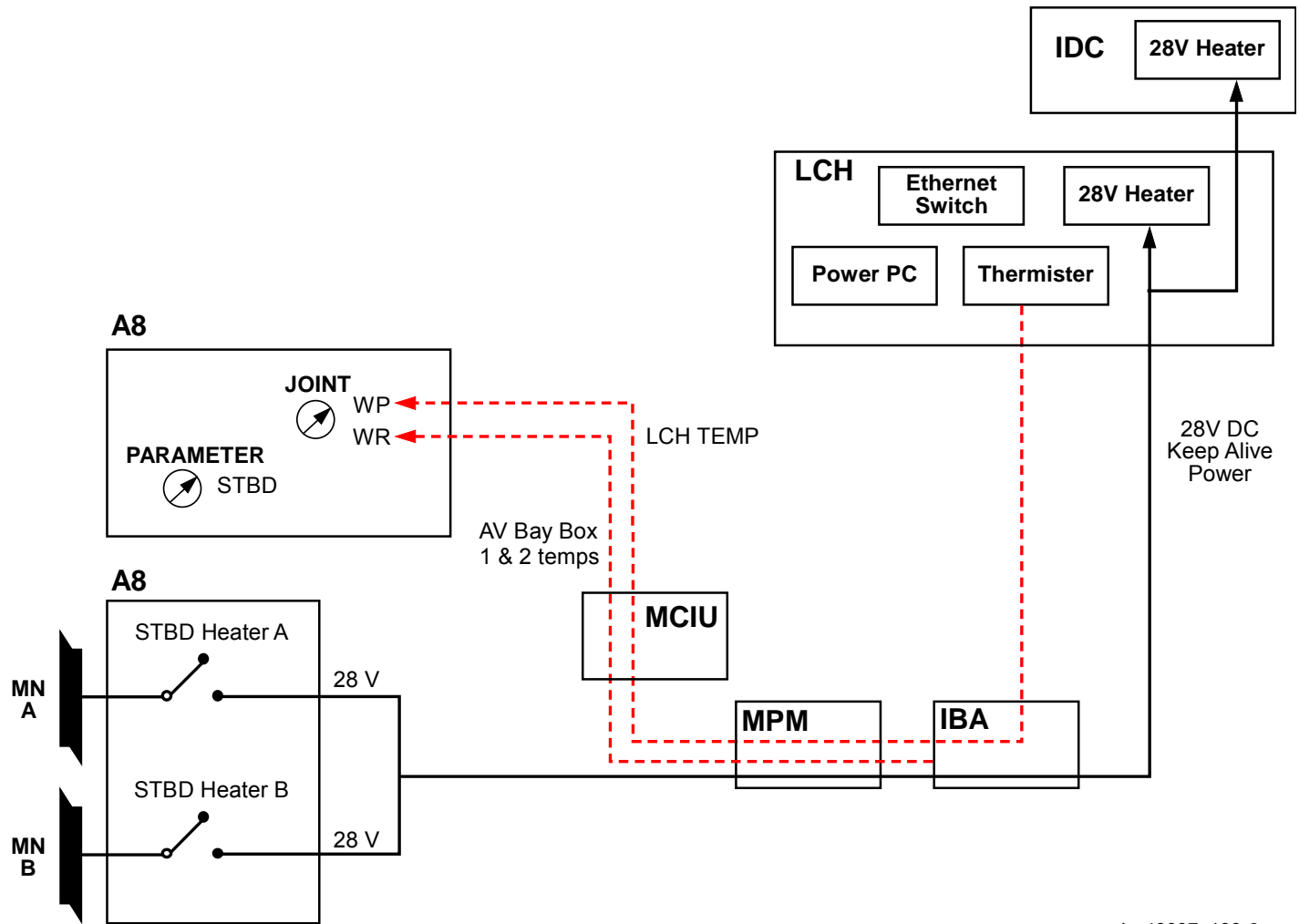
LCS/IDC COMBINED NOMENCLATURE



- ① ISIS Digital Camr (IDC)
- ② 50mm Lens
- ③ Top View (from IDC perspective)
- ④ LCH Radiator
- ⑤ Top View (from LCH scan perspective)
- ⑥ Towards OBSS Grapple Fixtures
- ⑦ Laser Camr Head (LCH)
- ⑧ Laser Camr Head (LCH) to Digital Camr Assy (ECA) Cable

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

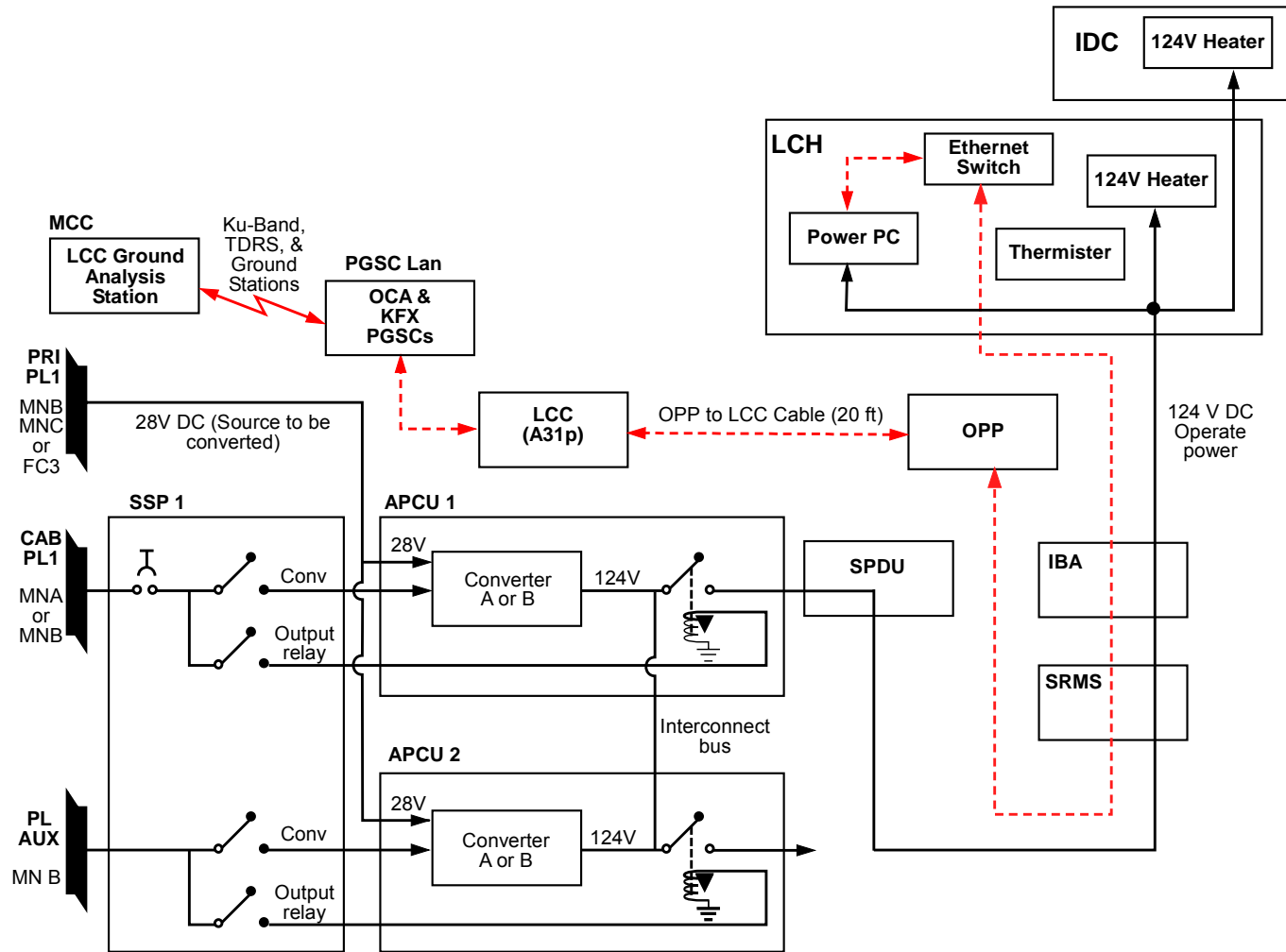
LCS/IDC KEEP ALIVE PWR AND DATA INTERFACES (Berthed on MPMs)



jsc48037_138r3.cvx

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCS/IDC (HEATER ONLY MODE)/(OPERATIONAL PWR MODE) DATA AND PWR INTERFACES



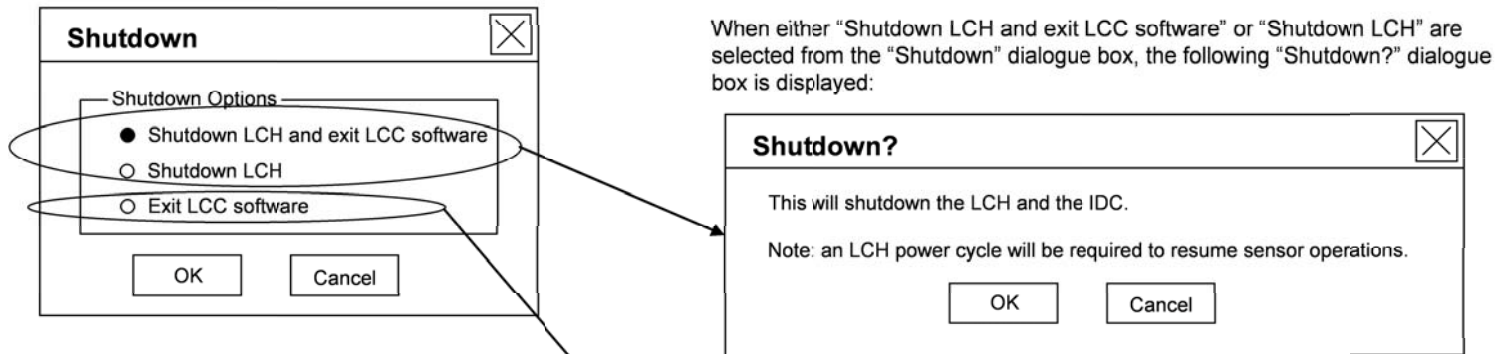
jsc48037_134r2.cvx

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE EXIT DIALOGUE BOXES

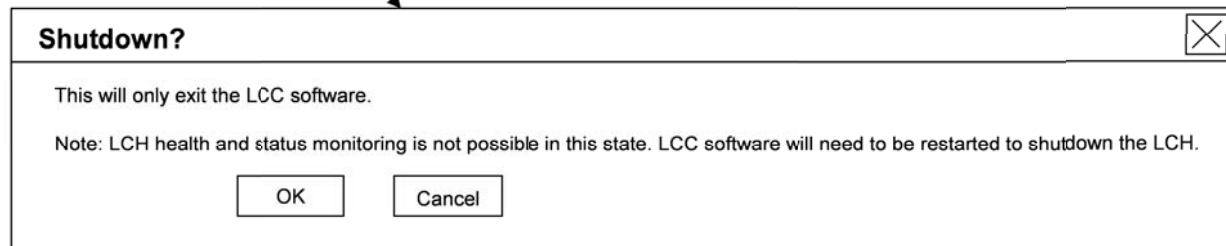
LCC Software Exit Dialogue Boxes

Case 1 : Selecting "File" and choosing "Exit" with a green Comm light.

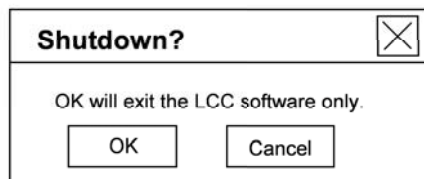


When either "Shutdown LCH and exit LCC software" or "Shutdown LCH" are selected from the "Shutdown" dialogue box, the following "Shutdown?" dialogue box is displayed:

When "Exit LCC software" is selected from the following "Shutdown" dialogue box, the "Shutdown?" dialogue box is displayed:



Case 2 : Selecting "File" and choosing "Exit" with a yellow Comm light



jsc48037_115_001.cvx

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

MANUAL A31p DESKTOP DNLK SETUP

NOTE

For desktop dnlk config to work correctly, ensure there is a load on A31p Video Out port (video coming out of laptop into pwr input, such as AVIU(V10))

- | | | |
|---------------|---|--|
| MO58F
AVIU | 1. ✓Video destination properly configured per LCC ACTIVATION, step 1 (Cue Card, <u>LCS</u>) and pwrd
✓TV PWR – ON
✓HI/LO – LO | |
| A31p | 2. <u>Desktop</u>
Right click
Sel 'Properties' | |
| | 3. <u>'Display Properties' Dialog Box</u>
Sel 'Settings'
✓Screen Area – 1024 x 768
If not 1024 x 768:
Move Screen Area sidebar to 1024 x 768
Sel 'Apply'
When second 'Display Properties' dialog box opens:
Sel 'OK'
When 'Monitor Settings' dialog box opens:
Sel 'Yes' | |
| | 4. <u>'Display Properties' Dialog Box</u>
Sel 'Advanced' | |
| | 5. <u>'(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box</u>
Sel 'Displays' | |

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

MANUAL A31p DESKTOP DNLK SETUP (Continued)

6. ✓TV display tab

If Green tab:

| Go to step 7

If Red tab:

| Click Red tab. Tab automatically turns green after selection (see fig 21-1)

| Go to step 7

If Gray tab:

| Sel 'Cancel' (closes '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box)

✓Video Destination connection

If not connected:

| Configure per LCC ACTIVATION, step 1 (LCS, Cue Card)

| ✓TV PWR – ON

| ✓HI/LO – LO

| Repeat steps 4-6

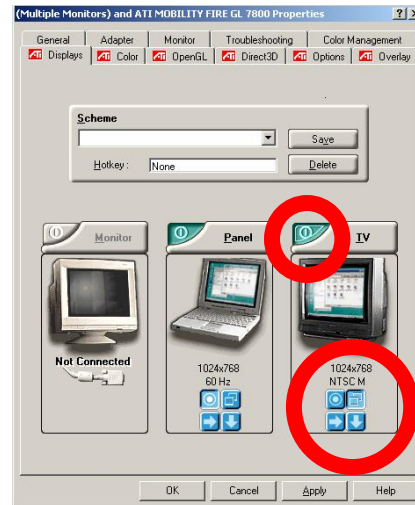
If connected:

| ✓Connection secure

| Repeat steps 4-6

If tab still Gray: ✓MCC

MO58F
AVIU





← (step 6)

← (step 7)

Figure 21-1.- Video Output

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

MANUAL A31p DESKTOP DNLK SETUP (Concluded)

7. ✓ Blue double box () on TV display highlighted (see fig 21-1)
If Blue double box highlighted:
Sel 'OK'
Go to step 9
If Blue double box not highlighted:
Sel double box ()
Sel 'OK'
8. ATI Property Page
Sel 'Yes'
9. 'Display Properties' Dialog Box
Sel 'OK'

RECONFIGURATION OF A31p SCREEN RESOLUTION

NOTE

Following steps will disable auto reconfiguration that automatically ships video. Capture Card will need to be manually configured using MANUAL A31p USING DESKTOP DNLK SETUP procedure, 21-18 for desktop dnlk ops

- A31p
1. Desktop
Right click
Sel 'Properties'
 2. 'Display Properties' Dialog Box
Sel 'Settings'
Sel 'Advanced'
 3. '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box
Sel 'Displays'

LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Concluded)

RECONFIGURATION OF A31p SCREEN RESOLUTION (Concluded)

4. √TV display tab
If Red(Gray) tab:
| Go to step 5
If Green tab:
Click Green tab. Tab automatically turns red after selection (see fig 21-1)
Sel 'Apply'
5. 'ATI Property Page' Dialog Box
Sel 'Yes'
6. '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box
Sel 'OK'
7. 'Display Properties' Dialog Box
Sel 'OK'
8. Desktop
Right Click
Sel 'Properties'
9. 'Display Properties' Dialog Box
Sel 'Settings'
Move Screen Area sidebar to 1600 x 1200
√Colors – True Color (32 bit)
If not, sel True Color (32 bit) from drop down menu
Sel 'Apply'
When 'Display Properties' dialog box opens:
Sel 'OK'
When 'Monitor Settings' dialog box opens:
Sel 'Yes' (within 15 sec)
If 15 sec window missed:
Repeat step 9
When 'Display Properties' dialog box opens:
Sel 'OK'

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BATTS & FUSES

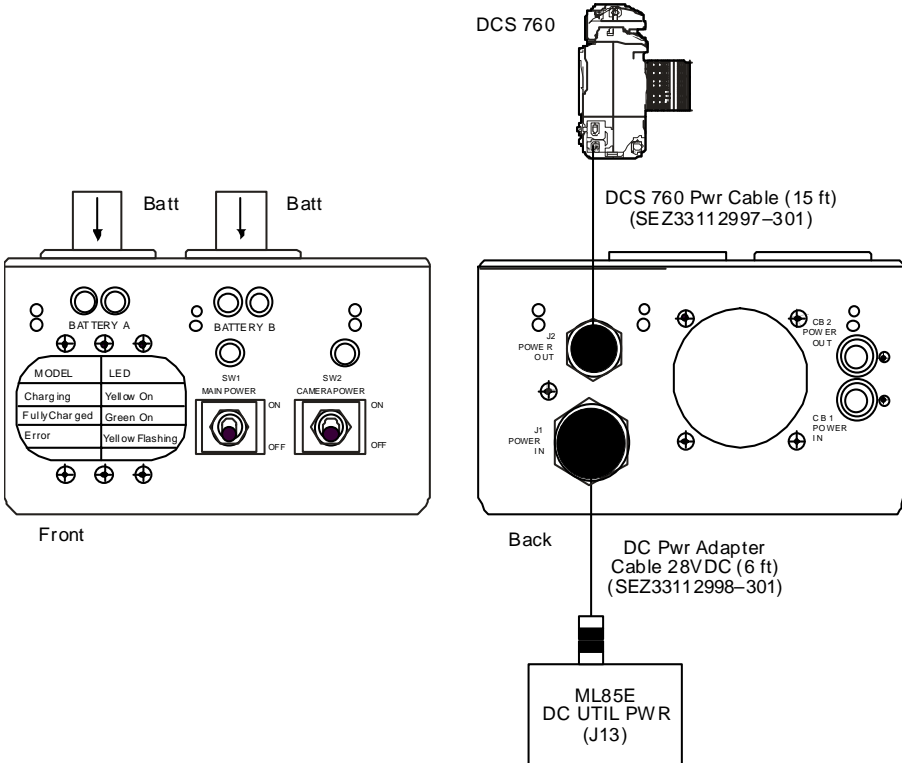
	<u>PAGE</u>
DCS BATT CHARGING.....	22-2
CC BATT CHARGING	22-3
BATT/FUSE REFERENCE.....	22-4

BATTS & FUSES

DCS BATT CHARGING

1. Config H/W per dwg below (DCS 760 Pwr Cable reqd for direct Camr pwr)
- ML85E 2. ✓cb DC 10 AMP MNB CB4 – cl
 ✓DC 10 AMP MNB S4 – ON
- Batt Chgr 3. ✓cb PWR IN (CB1) – cl
4. MAIN PWR – ON (LED on)
5. If Direct Camr Pwr:
 ✓cb PWR OUT (CB2) – cl
 CAMERA PWR – ON (LED on)
6. Insert Batt(s),check charger LEDs for charge status (~2 hr 45 min)

NOTE
 Green lt (≈45 min) = 80% charge. For full charge, leave batts for additional 2 hr. OK to leave batts in charger longer



jsc48037_092r2.cvx

BATTS & FUSES (Continued)

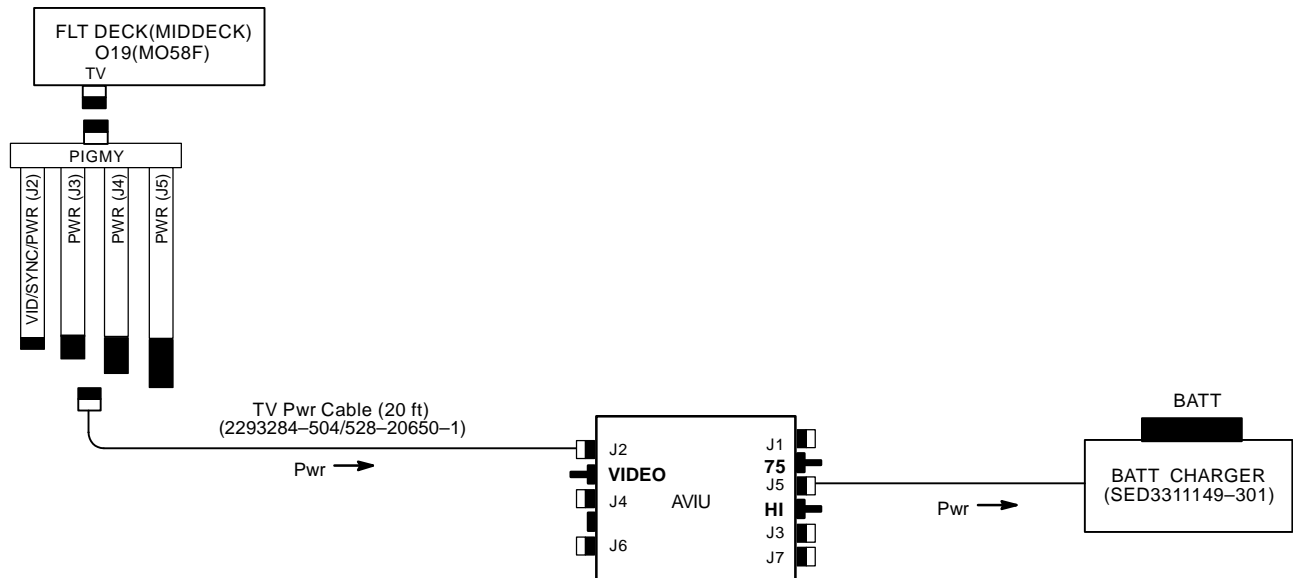
CC BATT CHARGING

1. Config H/W per dwg below
- AVIU
2. SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – HI

NOTE

When batt charger not in use, remove pwr

- O19
(MO58F)
3. √TV PWR – ON
 4. Insert Batt in charger. Check charger LED for charge status (~2 hr)



jsc48037_093.cnv

BATTS & FUSES (Continued)

BATT/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 Batt Charger	N/A	N/A	3A	
CCPI	NONE	N/A	2A (2), 4A, 8A	SPARE CCPI FUSE KIT AVIU
DCS 760	NiMH (RECHARGEABLE)	NONE	N/A	N/A
DCS Batt Charger	N/A	N/A	CB	N/A
HISL	NONE	N/A	5A	NONE
LAVALIER MIC	76 (1)	NONE	NONE	NONE
LCD MONITOR	AA (6)	AA	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 – V10	Li-ION	CAMCORDER – PD100	NONE	N/A
SEQUENTIAL STILL VIDEO ENCODER	N/A	N/A	2A	N/A
IFM FUSE KIT				
INSTRUMENT FUSES		BUS FUSES (1/4 X 1-1/4)		
1/2 A(2)	5A (5)	1/4A (2)	3A (2)	
1A (5)	7.5A (2)	1/2A (2)	5A (5)	
2A (2)	10A (2)	1A (2)	7.5A (2)	
3A (5)		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

CUE CARD CONFIGURATION

	<u>PAGE</u>
TV	CC 23-3
PLAYBACK.....	CC 23-5
ET PHOTO	CC 23-7
FILM ALLOCATIONS	CC 23-8
WVS.....	CC 23-10
PLBD VTR RECORDING (NOT BEING FLOWN)	CC 23-12
LDRI/ITVC	CC 23-14
LCS.....	CC 23-16
IDC.....	CC 23-18

CUE CARDS

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HOOK
VELCRO

TV

ACTIVATION

A3 MON 1(2) PWR – ON (LED ON)
 A7 √TV DNK – ENA
 PWR CNTL – PNL
 CONTR UNIT – MNA(B)
 CNTL – CMD (wait 10 sec for system initialization)

OPERATION**Auto Ops (Auto Exposure)**

NOTE
 √MCC has commanded sync config

A7 TV CAMR PWR A(B,C,D,RMS) – ON (tb-ON)
 VID OUT MON 1(2) pb – push
 IN pb – As reqd

If CTVC:
 ALC pb – push
 AVG pb – push

If ITVC:
 if MAN GAIN pb not illuminated:
 TV CAMR PWR A(B,C,D,RMS) – OFF, wait 10 sec, then ON
 Repeat until MAN GAIN pb illuminated
 LT LEVEL pb – push
 DAY(NIGHT) pb – push
 ALC pb – push
 AVG pb – push
 Repeat for other Camrs as reqd

Dnk Ops

Coordinate dnk and sync config w/MCC
 Config audio as reqd

If analog, on MCC GO:
 A7 VID OUT DNK pb – push
 IN pb – As reqd

If DTV, on MCC GO:
 L10 √Cables connected
 (MUX) √MUX/VTR/CC PWR – on (LED on)
 √MUX BYPASS – ACT
 (VIP) PWR – on (LED on, DATA FLOW LED flashes twice)
 (VTR) ON/STANDBY – push (green LED on)
 √INPUT display – VIDEO

A7 VID OUT DTV pb – push
 IN pb – As reqd

L10 √DATA FLOW LED – on
 (VIP)
 (MUX) √CHANNEL 3 DATA LED – on

DEACTIVATION

If Illuminator ON:
 Refer to Illuminator Ops and perform Illuminator OFF

A7 PORT RMS CAMR – WRIST
 TV CAMR PWR A(B,C,D,RMS) – OFF (tb-OFF), wait 10 sec
 PORT RMS CAMR – ELBOW
 TV CAMR PWR RMS – ON (tb-on), wait 10 sec, OFF (tb-off)

TV PWR CNTL – PNL
 CONTR UNIT – OFF
 CNTL – CMD

A3 MON 1,2 PWR – OFF

If DTV:
 L10 ON/STANDBY – push (red LED on)
 (VTR) PWR – off (LED off)
 (VIP)
 (MUX) MUX/VTR/CC PWR – off (LED off)
 VTR/CC Pwr – off (LED off)

Manual Ops – CTVC/ITVC (Manual Exposure)

CAUTION
 DO NOT LEAVE CAMRS UNATTENDED
 IN MANUAL MODE. DIRECT SUNLIGHT
 WILL DAMAGE CAMRS

Manual Exposure ON

A7 MAN GAIN pb – push
 0(+12,+24) dB pb – push
 CAMR CMD IRIS – OP.CL

Return to Auto Exposure

ALC pb – push
 AVG pb – push

MUX Ops

NOTE
 Although dnk/rcd is in color, MON
 will display MUX in B&W

A7 VID OUT MON pb – as reqd
 IN MUX 1(2) pb – push
 OUT MUX 1(2) L pb – push
 IN pb – As reqd
 OUT MUX 1(2) R pb – push
 IN pb – As reqd

For RSC Ops:
 Go to LDR/ITVC Cue Card

PLAYBACK

HOOK
VELCRO

ANALOG

ACTIVATION

CC Setup per diagram (back of cue card)
 A7 Perform ACTIVATION (Cue Card, TV), as reqd
 O19(MO58F) √TV PWR – ON

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

CC PWR – VTR

OPERATIONS

PLBK or DNLK VIDEO

CC Install tape, if reqd

If audio reqd:
 CCU If MHA, COMM PWR – ON
 ATU PWR – AUD
 Desired Loops – T/R
 Other Loops – RCV(OFF)
 XMIT/ICOM Mode – VOX/VOX
 VOX SENS – MAX

CC Speaker Vol Max

A7 VID OUT MON pb – as reqd
 IN FLT DECK(MIDDECK) pb – push

CC VTR pb – REW(FF) to cue tape

If Dnlk

A7 √MCC has commanded async config
 √TV DNLK – ENA
 VID OUT DNLK pb – push
 IN FLT DECK(MIDDECK) pb – push

CC PLAY pb – push (green ► displayed)

If PLBK(DNLK) complete:
 | STOP pb – push
 If CC ops complete, go to DEACTIVATION

DEACTIVATION

CC Remove, mark, stow tape as reqd
 PWR – OFF
 ATU Reconfig as desired
 O19(MO58F) TV PWR – OFF, as reqd
 Go to DEACTIVATION (Cue Card, TV), as reqd

VTR VIA ANALOG

ACTIVATION

O19 Setup per diagram (back of cue card)
 Disconnect CC Video input from AVIU J3
 Perform ACTIVATION (Cue Card, TV) as reqd
 √TV PWR – ON

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

L10 (MUX) √VTR/CC Pwr – on (LED on)
 (VTR) √ON/STANDBY LED – green

OPERATIONS

ANALOG PLBK or DNLK VIDEO

L10 (VTR) Install tape if reqd
 √DISPLAY SELECT - DATA

(VIP) If audio reqd:
 PWR – on (LED on, DATA FLOW LED flashes twice)
 ATU – PBK/KEY MIC (Amber LED on)

CCU If MHA, COMM PWR – ON
 ATU PWR – AUD
 Desired Loops – T/R
 Other Loops – OFF
 XMIT/ICOM Mode – VOX/VOX
 VOX SENS – MAX

A7 VID OUT Desired MON pb – push
 IN FLT DECK pb – push

L10 (VTR) REW(FF),PLAY,PAUSE pb – push as reqd to cue tape

If Dnlk

A7 √MCC has commanded async config
 √TV DNLK – ENA
 VID OUT DNLK pb – push
 IN FLT DECK pb – push

L10 (VTR) PLAY pb – push (green ● displayed)

If PLBK(DNLK) complete:
 | STOP pb – push
 If VTR ops complete, go to DEACTIVATION

DEACTIVATION

L10 (VTR) Remove, mark, stow tape as reqd
 ON/STANDBY – push (red LED on)
 PWR – off (LED off)
 (VIP) Reconfig as desired
 ATU TV PWR – OFF
 O19(MO58F) Go to DEACTIVATION (Cue Card, TV) as reqd

DIGITAL

ACTIVATION

L10 (MUX) Setup per diagram (back of cue card)
 (VTR) √VTR/CC PWR – on (LED on)
 √ON/STANDBY LED – green

OPERATIONS

PLBK or DNLK VIDEO

L10 (VTR) Install tape, if reqd
 √DISPLAY SELECT – DATA

Remote If Index Search reqd:
 √ID – VTR4
 SEARCH MODE pb – push (INDEX SEARCH mode displayed)
 | ◀▶ (▶▶) | pb – push to move highlight bar to desired GMT start
 When VTR auto-cue complete, green ● displayed:

L10 (VTR) PAUSE pb – push
 REW(FF),PLAY,PAUSE pb – push as reqd to cue tape

If Dnlk

L10 (MUX) MUX/VTR/CC PWR – on (LED on)
 √MUX BYPASS – ACT
 √CHANNEL 3 DATA LED – on

L10 (VTR) PLAY pb – push (green ● displayed)
 If PLBK(DNLK) complete:
 | STOP pb – push
 If VTR ops complete, go to DEACTIVATION

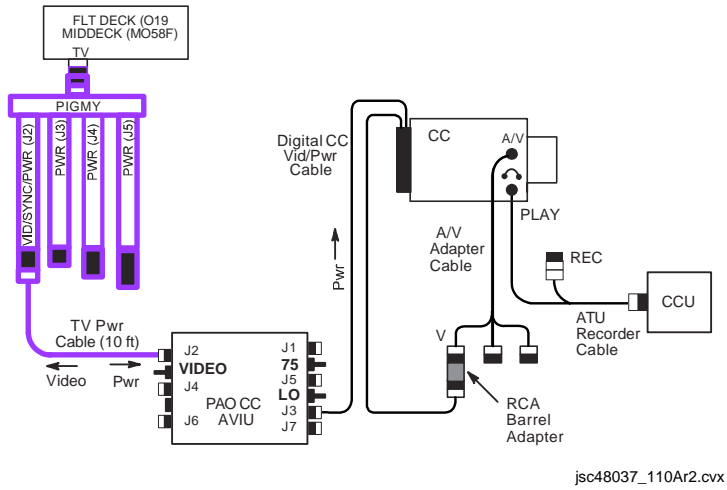
DEACTIVATION

L10 (VTR) Remove, mark, stow tape as reqd
 ON/STANDBY – push (red LED on)
 (MUX) MUX/VTR/CC PWR – off (LED off)
 VTR/CC PWR – OFF (LED off)
 Go to DEACTIVATION (Cue Card, TV) as reqd

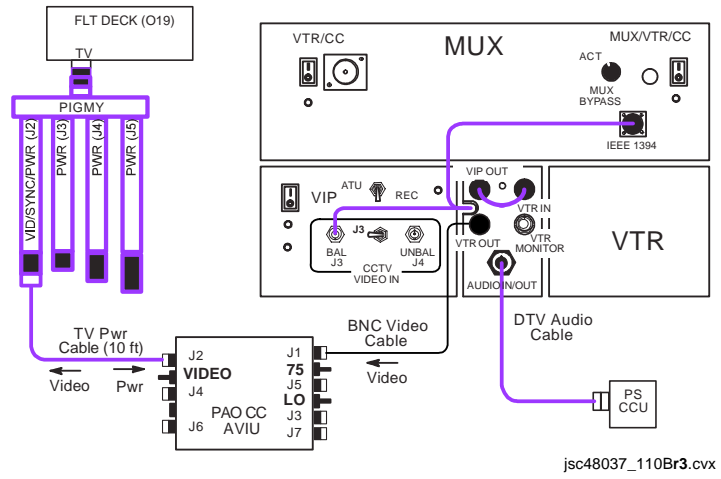
TOP
BACK OF 'PLAYBACK'

HOOK
VELCRO

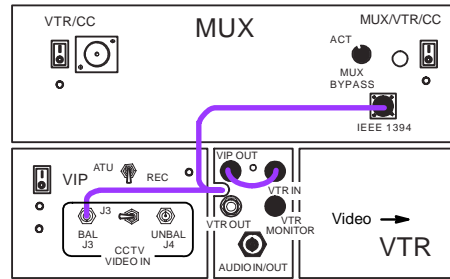
ANALOG PLAYBACK



VTR VIA ANALOG PLAYBACK



DIGITAL PLAYBACK



P/TV-2b/115/O/C

(reduced copy)

CC 23-6

P/TV/115/FIN

TOP

HOOK
VELCRO

ET PHOTO

DCS 760

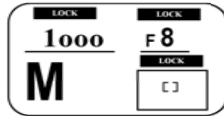
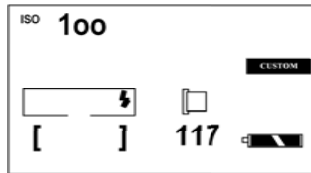
DCS 760

LENS SETTINGS

- √LENS APERTURE RING – MIN, LOCKED
- √LENS FOCUS MODE – M

CAMR SETTINGS

- PWR – ON
- REAR LCD
- √BATT ICON FULL
- √ISO – 100
- TOP LCD
- √EXP MODE – M
- √SS – 1000
- √F/STOP – 8
- DIOPTR – ADJUST
- √FRAME ADVANCE – S
- √BODY FOCUS MODE – S



CRITICAL FOCUS REQD EACH FRAME

P/TV-3a/115/O/B

TOP
BACK OF 'ET PHOTO'

HOOK
VELCRO

ET PHOTO

PD100

PD100

LENS CAP – REMOVE, SECURE

MODE – CAMERA

OPEN LCD

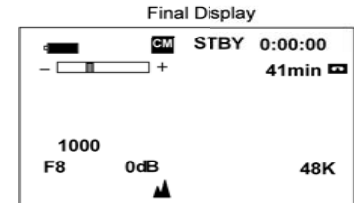
- √STBY
- √1000
- √F8
- √▲ (FOCUS – INFINITY)

√AUTO LOCK – HOLD

ZOOM – WIDE TO FIND TANK, THEN TIGHT

START RECORDING

√LCD DISPLAYS REC



P/TV-3b/115/O/B

TOP

FILM ALLOCATIONS																																																																																																																																																																																																																																																																																		
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CC 23-8

P/TV-4a/115/O/B

P/TV/115/FIN

TOP
BACK OF 'FILM ALLOCATIONS'

HOOK
VELCRO



(reduced copy)

CC 23-9

P/TV-4b/115/O/A



P/TV/115/FIN

TOP

HOOK
VELCRO

WVS

HOOK
VELCRO

CAMR ADJUSTMENTS

ADJUST BRIGHTNESS

Course Adjustment

PGSC Select Page – RF Camera
Lens Iris Control – cl(op)

Fine Adjustment

PGSC Select Page – RF Camera
Electronic Shutter – Manual
Brightness – Dec(Inc)
(# to right: 100 = brightest; 0 = darkest)

DARK SUBJECT

PGSC Select Page – RF Camera
√Advanced Controls displayed
Automatic Gain Control – Enabled
(Disabled preferred)

PWRDN

For all lens (three) on each RF Camera Assy:
PGSC Lens Iris Control – Close until view black

Sel RF Camr 1,2 – None (black "OFF")
V10 √Test Pattern displayed (color bars w/"No WVS
Video')

PGSC Select Page – XCVR
Transceiver 1(2) CMD Pwr – Off
(black CMD PWR:LVL-"OFF:Min")
Sel File → Exit

V10 STOP pb – push
Mark, stow tapes
PWR – OFF

A7 WIRELESS VID PWR – OFF
HTR – OFF

VIDEO SIGNAL PROBLEMS

For problem EMU TV:
EMU EMU TV Pwr pb – push (no LED), wait 10 sec, push
(green LED)

If no joy:
PGSC √Select Page – XCVR
√Advanced Controls displayed
For XCVR w/Video problem: IF – Narrow

If still no joy:
A7 WIRELESS VID PWR – OFF, wait 10 sec, ON

If still no joy:
PGSC For XCVR w/video problem: IF – Wide
For XCVR w/good video: Sel RF Camr – None (black 'OFF')
If video acceptable, other EMU TV interfering w/signal
Alternately sel EMU TVs to acquire video

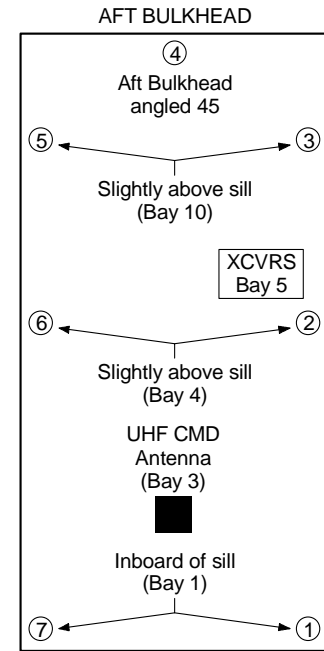
If still no joy:
For XCVR with good video:
Sel RF Camr – reselect original EVA crewmember
For XCVR w/video problem: Antenna – Manual
Sel desired antenna

If still no joy:
For XCVR w/video problem: Antenna – Auto
√MCC

COMMANDING PROBLEM (UHF)

If commanding of WVS not visually seen:
PGSC Select Page – XCVR
Sel Transceiver 2(1) CMD Pwr – On
(green CMD PWR:LVL-"ON:Min")

ANTENNA LOCATIONS



jsc48037_108r1.cvx

P/TV-5a/115/O/C

(reduced copy)

CC 23-10

P/TV/115/FIN

HOOK
VELCRO

HOOK
VELCRO

ALERT MSG TROUBLESHOOTING

STATIC XCVR

Condition: No comm between PGSC & PLB XCVR

- PGSC 1. √Cable connections between WIB and PGSC
A7 2. WIRELESS VID PWR – OFF, wait 10 sec, ON

If no joy:

- PGSC 3. Sel 'Start' > 'Shut Down' > 'Restart' > 'OK'
When reboot complete:
Sel Shuttle Apps icon > WVS icon
Sel 'Yes' at 'Restore To Previous Settings' window
RF Camera page will appear

If still no joy:

4. √MCC

STATIC RF CAMERA

Condition: No telemetry and video received by PLB XCVR from EMU TV

- EMU 1. √EMU TV Pwr pb pushed (green LED)

If no joy:

- PGSC 2. √Correct RF Camera selected via pull-down menu
√RF Camera (two) – ON (green "ON")
If not ON:
RF Camera (of static EMU TV) – sel "None" via
pull-down menu, then sel original EMU TV

If still no joy:

3. RF Camera 1(2) – sel 'None'
Perform CAMR ID ASSIGNMENT
Reattempt RF Camr selections

If still no joy:

4. √CMD PWR:LVL - green "ON:Min" for XCVR 1(2)
If not ON,
Select Page – XCVR
Transceiver 1(2) CMD Power – On
(green CMD PWR:LVL - "ON:Min")

If still no joy:

- EMU 5. EMU TV Pwr pb (of static EMU TV) – push (no LED),
wait 10 sec, push (green LED)

If still no joy:

6. √MCC

BAD CAMERA ID

Condition: Mismatch between EMU TV Camera ID and software camera ID

- PGSC 1. Select Page – XCVR
Transceiver 1(2) CMD Power – On (green CMD PWR:LVL - "ON:Min")
Sel RF Camera 1,2 – None
Sel File > Assign Camera ID
√Camera IDs match data under CAMR ID ASSIGNMENT
If not a match,
Highlight entry, then sel 'Delete Entry' option
Perform CAMR ID ASSIGNMENT
Sel RF Camera 1,2 – EVA crewmembers

If still no joy:

2. √MCC

TEMP ALERT (blue text)

Condition: EMU TV -35 °C to -30 °C OR 80 °C to 85 °C range
PLB XCVR -40 °C to -35 °C OR 80 °C to 85 °C range

- Select Page – Telemetry
Identify component w/temperature alert (blue text)
√MCC

TEMP CAUTION (yellow text)

Condition: EMU TV < -35 °C OR > 85 °C
PLB XCVR < -40 °C OR > 85 °C

- Select Page – Telemetry
Identify component w/temperature alert (yellow text)
√MCC

CAMR ID ASSIGNMENT

- Sel File → Assign Camr ID
√All EV crewmembers listed as options on pull-down 'Label' menu under CAMERA ID SETUP

If label entry reqd:

- Type label into space next to "Add Label" icon
Sel "Add Label" icon to add to listing

Camr ID Data		
Camr Address	16	18
Serial Number	1010	1007
Label	EV1	EV2

Under CAMERA ID SETUP:

- Camera Address – As reqd via left/right arrows
Serial Number – As reqd via left/right arrows
Label – As reqd via pull-down menu
"In Use" Box – Check via single click
Sel "Save Entry" icon to right of Camr ID table (top)
√Data entry visible in Camr ID table

Sel OK

P/TV-5b/115/O/D

(reduced copy)

P/TV-6a/115/O/B
(Front)

NOT BEING FLOWN

(reduced copy)

CC 23-12

P/TV/115/FIN

P/TV-6b/115/O/B
(Front)

NOT BEING FLOWN

(reduced copy)

CC 23-13

P/TV/115/FIN

HOOK
VELCRO

LDRI/ITVC

HOOK
VELCRO

ACTIVATION

1. Config CCTV Sys
 - A7 √ACTIVATION (Cue Card, TV) performed
 - L10 (MUX) √MUX/VTR/CC – on
 - √Cabling from VTR MONITOR port to DTV V10
 - R12 (VPU) √VPU Pwr – ON (LED on)
 - √Green Jumper – LDRI/ITVC
 - MON 1,2 √L-DATA – ON
 - √C-DATA – GRN

2. Apply SPEE Pwr
 - A8L √STBD RMS HTR (two) – OFF
 - R12 (OPP) √cb OBSS SW PWR – cl
 - √OBSS SW PWR – ON
 - (OBSS) SPEE PWR – ON
 - A6U EVENT TIMER CNTL – STOP
 - RESET
 - EVENT TIMER CNTL – START (15 min LDRI calibration warmup)

3. Config RSC Illum to HI
 - A7 VID OUT MON 1(2) pb – push
 - IN C pb – push
 - PAN/TILT – Adjust to see RSC Camr
 - R12 (OBSS) SPEE PWR – OFF, wait 10 sec, then ON
 - MON 1(2) √RSC illum on HI (three rings)

4. Enable ITVC
 - R12 (OBSS) ITVC ENA – ON
 - A7 VID OUT DTV pb – push
 - IN PL 2(VPU) pb – push
 - If MAN GAIN pb not illuminated:
 - R12 (OBSS) ITVC ENA – OFF, wait 10 sec, then ON
 - Repeat until MAN GAIN pb illuminated
 - A7 LT LEVEL pb – push
 - DAY (NIGHT) pb – push
 - ALC pb – push
 - AVG pb – push
 - V10 √ITVC video displayed

5. Verify LDRI Powered
 - A7 VID OUT MUX 1 L pb – push
 - IN MIDDECK pb – push
 - LDRI MODE 6 pb – push
 - V10 √Flickering LDRI w/rounded corners
 - A7 LDRI MODE 2 pb – push
 - V10 √ITVC video displayed
 - A7 VID OUT DTV pb – push, to return to ITVC control

GENERAL LDRI CONTROL

- A7 VID OUT MUX 1 L pb – push
- IN MIDDECK pb – push
- Mode 1 (default at pwrap)**
- A7 LDRI MODE 1 pb – push
- MON 2 √ITVC video displayed
- Mode 2**
- A7 LDRI MODE 2 pb – push
- MON 2 √ITVC video w/illum displayed
- Modes 3(4,5,6)**
- A7 LDRI MODE 3(4,5,6) pb – push
- MON 2 √LDRI w/rounded corners displayed
- To adjust brightness:
- A7 CAMR CMD IRIS – OP,CL, as reqd

PAN/TILT OPS WITH LDRI ACTIVE

NOTE
When adjusting pan/tilt in Modes 3(4,5,6), ITVC FOCUS (ZOOM, IRIS) cntls functional

- A7 VID OUT MON 2 pb – push
- IN PL2(VPU) pb – push
- CAMR CMD PAN,TILT – as reqd
- VID OUT MUX 1 L pb – push, to return to LDRI cntl

DEACTIVATION

- A7 VID OUT MUX 1 L pb – push
- √IN MIDDECK pb
- LDRI MODE 1 pb – push
- R12 (OBSS) ITVC ENA – OFF
- SPEE PWR – OFF
- A6U EVENT TIMER MODE – UP
- CNTL – START

LDRI MODE SUMMARY

Mode 1 – Standby

- ITVC video
- LDRI in standby

Mode 2 – Illuminator

- ITVC video w/illum
- LDRI laser active, LDRI camera inactive

Mode 3 – 2D

- LDRI 2D video
- Similar to ITVC video

Mode 4 – 2D Gamma

- LDRI 2D video w/Gamma Black Stretch
- Similar to ITVC video

Mode 5 – 3D

- LDRI 3D video
- Flicker on MON

Mode 6 – 3D Gamma

- LDRI 3D video w/Gamma Black Stretch
- Flicker on MON

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TOP
BACK OF 'LDRI/ITVC'

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RSC CAMR OPS

NOTE
Camr nominally pwr'd in Block 4 of PI C/L

R12 (OPP) cb OBSS SW PWR CB1 – cl
(OBSS) OBSS SW PWR – ON
RSC PWR – ON

RSC ILLUMINATOR OPS

NOTE
RSC illuminator OFF when SPEE PWR sw initially taken to ON. A cycle of the SPEE PWR sw takes RSC illuminator to HIGH. Subsequent pwr cycles take illuminator to MED, LOW, OFF and then back to HIGH. Config may req alt Camr view of RSC

R12 (OBSS) ✓SPEE PWR – ON
✓RSC PWR – ON
A7 VID OUT MON 1(2) pb – push
IN PL 3(WVS) pb – push
MON 1(2) ✓RSC video displayed

NOTE
SPEE pwr cycle will reset LDRI/ITVC to Mode 1 and reset the PTU angles

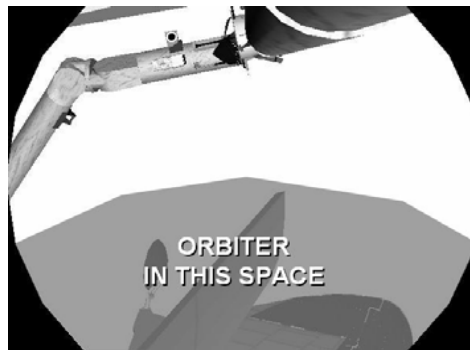
R12 (OBSS) SPEE PWR – OFF, wait 10 sec, then ON
MON 1(2) ✓RSC video w/illum displayed

To cycle thru illuminator modes:
R12 (OBSS) SPEE PWR – OFF, wait 10 sec, then ON

CONTINGENCY LDRI CLEARANCE VIEW

NOTE
Do not apply RMS brakes

A8U AUTO SEQ – STOP (READY lt on)
L10 (VTR) STOP pb – push (no red •)
A7U VID OUT MUX 1 L pb – push (MIDDECK lt on)
LDRI MODE 3(4) pb – push (steady LDRI video)
VID OUT MON2 pb – push
IN PL2(VPU) pb – push
Record PTU Pan _____ and Tilt _____
CAMR CMD PAN/TILT – HI RATE (LO within 10°)
PAN: 0 (left, to hard stop)
TILT: 0 (up, to hard stop)



Note clearance thru LDRI FOV
LDRI

Return PTU to Pan and Tilt values recorded above

VID OUT MUX 1 L pb – push (MIDDECK lt on)
LDRI MODE 6 pb – push (flickering LDRI video)

VID OUT MON2 pb – push
IN pb – as desired (not PL2)

L10 (VTR) REC pb – push, hold
PLAY pb – push, simo (red •)

A8U AUTO SEQ – PROCEED (IN PROG lt on)

LDRI PAN/TILT RESET

Reset PTU
VID OUT MON2 pb – push
VID IN PL2(VPU) pb – push

CAMR CMD PAN/TILT – HI RATE
PAN – L (to hard stop)
TILT – UP (to hard stop)
PAN/TILT – RESET

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CC 23-15

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LCH ACTIVATION

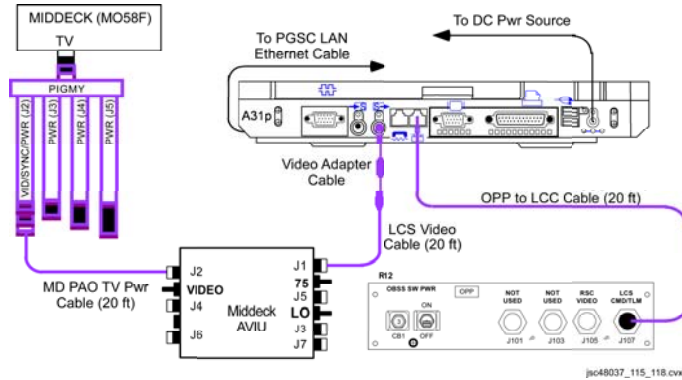
APCU/ LCH Pwrup

- R1 1. PL PRI MNC – ON (tb-ON)
 √CAB – MNA(MNB)
 SSP 1 2. √cb SW PWR 1 – cl
 APCU1 OUTPUT RLY – CL
 CONV – ON (tb-gray)
 √OUTPUT RLY tb – gray
SM 200 APCU STATUS
 √APCU1 OUT VOLT RES HIGH: 122V to 126.5V

LCC ACTIVATION

1. LCC Setup

A31p √Hardware and cables configured per diagram below:



2. LCC PGSC Util Pwr On

- MO63P MN DC UTIL PWR – 10A
 10A J6 – ON
 A31p DC Pwr Supply – ON

3. LCC Startup

- MO58F √TV PWR – ON
 AVIU √HI/LO – LO
 A31p PGSC Pwr – ON
 Sel 'Shuttle Apps' > 'LCC' (Wait 2-3 min from APCU CONV – ON for GUI Status)
 √Laser off – blue
 √Comm – green
 If Laser off and Comm status not correct: √MCC

(For APCU1 flights only)

TOP

LCS

HOOK
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4. Verify LCC Desktop Video

- A7 √VID OUT MON1(2) pb - push
 IN MIDDECK pb – push
 A3 √LCC desktop displayed on MON1(2)
 * If LCC Desktop not displayed *
 * √MCC *

OPERATION

NOTE

PDRS OPS will call for appropriate scan steps on LCC.
 MCC may have limited insight if desktop dnk avail

1. Load Database (if read)

- √MCC for desired LCS database
 √'DB Name': Field on upper left-hand side of LCS GUI

- * If 'DB Name' incorrect: *
 * Sel 'Load Database...' from File menu *
 * Sel MCC desired database file *
 * Sel 'OK' *

2. LCS System Status

LCS SYSTEM STATUS

Laser On/Off	Comm	LCS State
Laser ? (gray)	No Comm (yellow)	Unknown or Keep Alive Heater Only Mode (No LCC to LCH Network Connection)
Laser Off (blue)	Comm (green)	Configuration (Waiting for user command)
Laser On (green)	Comm (green)	Operational (Scan in progress)

While Scan in progress ('Scan Status' counter incrementing):

- √Laser On – green
 √Comm – green
 √Scan Display – updating
 √Temp – green
 √Elec – green

Scan complete when 'Scan Status: Complete' displayed

If LCS system status out of config, perform appropriate TROUBLESHOOTING section of this cue card

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LCC DEACTIVATION

NOTE

Shutting down LCC software also puts LCH in keep-alive heater mode. No LCH scans/insight or IDC ops available. APCU Converter pwr cycle reqd to reinitialize LCH for scanning and IDC ops

1. LCC Software Shutdown

- A31p Sel 'File' > 'Exit'
- When 'Shutdown' dialog box opens:
 - √'Shutdown LCH and Exit LCC Software' selected
 - Sel 'OK'
- When 'Shutdown?' dialog box opens:
 - Sel 'OK'

2. A31p Screen Resolution Reset

Go to RECONFIGURATION OF A31p SCREEN RESOLUTION (LCS/IDC)

LCH DEACTIVATION

CAUTION

Removing APCU Converter Pwr or opening output relay will remove critical keep-alive pwr to LCH and IDC

1. APCU Converters Off/LCH Pwrdn

NOTE

Expect 'S200 APCU1(2) VOLT LMT' Msg

- SSP 1 APCU1 CONV – OFF (tb-bp)

2. Open APCU Output Relay

- SSP1 APCU1 OUTPUT RLY – OP (tb-bp)

3. Remove Primary PL Pwr

NOTE

Expect 'S200 APCU1(2) TRIP' Msgs

- R1 PL PRI MNC – OFF (tb-OFF)

TROUBLESHOOTING

Temp or Elec Status Yellow

- A31p Sel 'System' page
- Report 'Elec' or 'Temp' values backlit in yellow to MCC

Comm Status Yellow and LAN2 Network cable unplugged (red X on A31p system tray)

NOTE

LCC GUI Comm status will be yellow and A31p Local Area Network 2 status (w/red X on A31p system tray) cable unplugged tool tip will appear if LCH is in keep-alive heater mode

- A31p If unexpected red X w/Local Area Network Connection 2 tool tip shown on A31p system tray:



- R12 √OPP to LCC Cable connected to LCS CMD/TLM(J107) port
- A31p √OPP to LCC Cable connected to LCC RJ45 port
- Exit LCC software and shut down Windows

NOTE

Expect 'S200 APCU1(2) VOLT LMT' Msg

- SSP 1 APCU1 CONV – OFF then ON
- √CONV tb –gray
- √OUTPUT RLY tb – gray

SM 200 APCU STATUS

√APCU1 OUT VOLT RES HIGH: 122V to 126.5V

- A31p LCC PGSC Pwr – ON
- √A31p internal RJ45 Network Interface Card LED green
- Perform LCC ACTIVATION, steps 1,3

- √Local Area Network Connection 2 status icon (with red X) in Windows system tray not displayed
- √MCC if LCC GUI Comm status still yellow

Message Area Entry

Report LCC GUI message area log entry(ies) to MCC

(For APCU1 flights only)

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(reduced copy)

CC 23-17

P/TV/115/FIN 1

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IDC ACTIVATION

1. LCC Setup
 ✓Hardware configured per LCC ACTIVATION steps 1,2 (Cue Card, LCS)

A31p PGSC Pwr – ON

2. IDC connectivity Check
 LCC ✓A31p internal RJ45 Network Interface Card LED green
 If RJ45 Network Interface Card LED not green:
 SSP 1 APCU1 CONV – OFF, then ON
 ✓CONV tb – gray
 ✓OUTPUT RLY tb – gray

SM 200 APCU STATUS
 ✓APCU1 OUT VOLT RES HIGH: 122V to 126.5V

IDC SOFTWARE ACTIVATION

1. IDC Software Startup
 A31p Sel 'Shuttle Apps' > 'IDC'

2. Verify GMT
 A31p ✓GMT within 3 sec of SM-GPC GMT

- * If GMT not within 3 sec: *
- * Double click on GMT box on GUI *
- * Adjust GMT as reqd *
- * Sel 'OK' on MTU Time dialogue box *

3. IDC Pwr on and self test

NOTE

Expect 'iport probe failed' message at first pwr on attempt.
 If message persists, see TROUBLESHOOTING section

CAUTION
 Pwr off IDC when not imaging. Pointing IDC at Sun when pwr on will damage Camr

- A31p Sel 'Power On' (pause 3 sec and repeat)
 ✓Black and White self-test image displayed
 ✓'Waiting for User Command' displayed

- * If red backlit error msg displayed: *
- * Perform appropriate TROUBLESHOOTING *
- * steps on this cue card *

OPERATION

NOTE

PDRS OPS will call for IDC image steps on LCC A31p.
 Limited MCC real-time insight avail if configured for desktop dnk

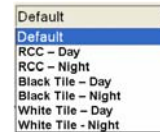
1. Configure LDRI Illumination
 R12 (VPU) ✓Green Jumper – LDRI/ITVC
 A7 VID OUT MUX 1L pb – push
 IN MIDDECK pb – push
 LDRI MODE 2 pb – push
 VID OUT MON 1(2) pb – push
 IN PL2 (VPU) pb – push
 CAMR CMD PAN/TILT – HI RATE
 PAN – L (to hard stop)
 TILT – UP (to hard stop)
 PAN/TILT – RESET
 – LO RATE within 10°
 PAN – +85 (right)
 TILT – -57 (down)

NOTE

If GMT does not update during Ops, an attempt to shut down/restart A31p should be made

2. Auto Exposure (AE) Ops
 A31p ✓'Use AE' checked
 Sel 'Scan Lo-Res'
 Resize and posn AE box as reqd (pause 2 sec)
 Sel 'Scan Hi-Res'
 If Scanning with no RMS Motion:
 | Sel 'Stop Scan' after 30 sec
 If scanning with RMS motion:
 Move box to maintain RCC in AE box (using keyboard arrows)
 Sel 'Stop Scan' at pause point
 ✓'Waiting for User Command' displayed

3. Scenario File Ops
 A31p From Scenario File drop-list, sel appropriate lighting condition



- Sel 'Acquire Set'
- ✓'Acquiring Image Set ... Image X' displayed
- ✓'Waiting for User Command' displayed after set

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HOOK
VELCRO

IDC DEACTIVATION

- IDC and Software Shutdown
A31p Sel 'Power off' on IDC GUI
Close (X) IDC software > 'YES'
- A31p Screen Resolution Reset
Go to RECONFIGURATION OF A31p SCREEN RESOLUTION (LCS/IDC)

APPENDING COMMENT TEXT TO TIFF

- If Comment Added Before Scan
A31p Enter text in comment area

NOTE
All scans will contain this comment. Text can be cleared with [F2] hot key. Comments cannot be edited post scan
- If Comment Added After Scan
A31p Sel 'View File' on IDC GUI
Double click on desired TIFF file
Enter text in comment area
Hit [F4] to append comment

IDC HOT KEY COMMANDS

- | | |
|------------------------------------|-------------------------------|
| F5 – Toggle Summary View | F6 – Toggle Image Mode |
| F7 – Zoom In | F8 – Zoom Out |
| F9 – Reset Brightness and Contrast | F10 – Reset AE Box to Default |
| F11 – Toggle AE Box Visibility | F12 – Find AE Box |

IDC SOFTWARE ERROR MESSAGES

- Can't connect to LCH:** Perform TROUBLESHOOTING, steps 1,2
Condition: Possible heater only mode or Network failure
- lport probe failed:** Perform TROUBLESHOOTING, step 2
Condition: lport startup check failed. Expected during first pwr on attempt-resend pwr on
- lport not responding:** Perform TROUBLESHOOTING, step 2
Condition: lport connection lost
- Camera not responding:** Perform TROUBLESHOOTING, step 2
Condition: Camera connectivity lost
- Image acquisition failed:** Perform TROUBLESHOOTING, steps 1,2
Condition: Camera connectivity lost during imaging
- Network recovery failed:** Perform TROUBLESHOOTING, steps 1,2
Condition: LCH network switch connection lost
- Bad initialization file:** Perform TROUBLESHOOTING, step 3
Condition: Software will not launch due to severe ini file corruption

TROUBLESHOOTING

- LCC to LCH Connectivity Check
A31p If Local Area Network Connection 2 (with red X) tool tip on system tray:



Reseat OPP to LCC Cable (20 ft) to LCC RJ45 port
√Local Area Network Connection 2 Speed 10 mps
If no connection:
Perform LCH, LCC, and IDC Reset, step 2
Continue nominal ops

- LCH, LCC, and IDC Reset
A31p Exit IDC software and shut down Windows
√OPP to LCC Cable (20 ft) connected to LCC RJ45 port

NOTE
Expect 'S200 APCU1(2) VOLT LMT' Msg

- SSP 1 APCU1 CONV – OFF then ON
√ CONV tb – gray
√ OUTPUT RLY tb – gray

SM 200 APCU STATUS

√APCU1 OUT VOLT RES HIGH: 122V to 126.5V

- A31p LCC PGSC Pwr – ON
√A31p internal RJ45 Network Interface Card LED green
- Perform IDC SOFTWARE ACTIVATION
Continue nominal ops

- LCC Swap
A31p Exit IDC software and shut down Windows
Swap LCC with other A31p
Perform IDC Activation
Perform IDC Software Activation
Continue nominal ops

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NOTE

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PHOTO/TV CHECKLIST

STS
115