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- APCU JUMPER (W1001)
- APCU JUMPER (W1002)
- DATA BUS TERMINATION CONNECTORS (P1–T)
- DEADFACE CONNECTOR (P1–D1)
- DEADFACE CONNECTOR (P1–D2)
- DATA BUS LOOPBACK CONNECTORS (P1–S)
- SLIDEWIRE
- HANDRAILS AND CONNECTORS VIEW A, LOOKING AFT

NOD1/03–06
NOD1/03–07
NOD1/03–04
NOD1/03–03
NOD1/03–05 (w/APFR)
NOD1/01–02
NOD1/01–01

(0134)
(0135)
(0136)
(0137)
(0138)
(0139)
(0140)
(0141)
(0142)
(0143)
(0144)
(0145)
RACU JUMPER INSTALLATION

FLIGHT 2A CONFIGURATION
(SOME STRUCTURE AND UTILITIES OMITTED FOR CLARITY)
EARLY COMM/ORLAN CABLE ROUTING
ZENITH MDM SUNSHADE

SUNSHADE ASSY, STOWED
HANDLE AND STOWAGE BRACKET
ZENITH MDM SUNSHADE (Cont)

INBOARD–PORT EVA–AID

OUTBOARD–PORT EVA–AID

CENTER EVA–AID

INBOARD–STBD EVA–AID

STOWAGE BRACKET IN STOWED POSITION

OUTBOARD–STBD EVA–AID

TETHER POINT

SUNSHADE STANCHION ASSY

SUNSHADE HANDLE

MID–PORT EVA–AID

PANEL #4 (PORT)

PANEL #3

PANEL #2

PANEL #1 (STBD)

MID–STARBOARD EVA–AID

PANEL #1

SUNSHADE ASSY (IF93230–1)
EVA–AIDS AND HANDLE

j_48024_88_016
ZENITH MDM SUNSHADE (INSTALLED/UNDEPLOYED)

SUNSHADE ASSEMBLY (1F93230–1)

STANCHION ASSY

STANCHION "BOSS"
SUNSHADE INTERFACE

SUNSHADE ASSY
STOWED POSITION
(MOST UTILITIES OMITTED FOR CLARITY)
**RACU RE–START JUMPER CABLE DESIGN**

### Channel 1/4

**J608**
- Connector: NZGL06G2525LN7SN
- Sockets: NZGC–C–8SB
- Seal Plugs: NZGSP–8
- Splice: YSV4C–L
- Ferrule: YSM8C
- Wire: NSFW–SIL–4VB
- NSFW–SIL–8VB
- Total Length: ~ 30 ft.
- Beta Wrap: STM0484–01

**P2G**
- Connector: NZGL06G2525LN3PG
- Pins: NZGC–C–4PB
- Seal Plugs: NZGSP–8

### Channel 2/3

**J607**
- Connector: NZGL06G2525LN7SA
- Sockets: NZGC–C–8SB
- Seal Plugs: NZGSP–8
- Splice: YSV4C–L
- Ferrule: YSM8C
- Wire: NSFW–SIL–4VB
- NSFW–SIL–8VB
- Total Length: ~ 30 ft.
- Beta Wrap: STM0484–01

**P2H**
- Connector: NZGL06G2525LN3PH
- Pins: NZGC–C–4PB
- Seal Plugs: NZGSP–8

**FS 17–11**

**EVA/98/FIN A**
RACU RE–START CABLE ROUTING

RACU Re–start Jumpers
~ 30 feet long each

Node J607, J608
SECONDARY POWER FEEDBACK JUMPER DESIGN

Connector: NZGL00T2525LN3SG
Sockets: NZGC–C–4SB
Seal Plugs: NZGSP–8

Length: ~ 2.5 ft.
Or as short as is practical

(2 – 4 ga, 1 – 8 ga)

Wire: NSFW–SIL–4VB
Beta Wrap: STM0484–01

Connector: NZGL00T2525LN3SG
Sockets: NZGC–C–4SB
Seal Plugs: NZGSP–8

FS 17–13
EVA/98/FIN A
SECONDARY POWER FEEDBACK JUMPER ROUTING

P6 Secondary Feedback Jumper

Y-Bypass Jumpers

Z1–005

Z1–006

J2H

J2G

RACU Cables shown for RACU Re–Start Cable Routing

SPDA
Z1–4B

SPDA
Z1–3B
CROSS-CHANNEL CONNECT JUMPER DESIGN

(2 – 0 ga, 1 – 4 ga)

Total Length: ~6 feet

(2 – 0 ga, 1 – 4 ga)

P430

Connector: NZGL06G3333N3PA
Pins: NZGC-C-0PB
Backshell: NZGA-SX-33-N-40Z
Prot. Cover: NZGL-PPC-N-33-R
Seal Plugs: NZOSP-4

Wire: NSFW-SIL-0VB
Beta Wrap: STM0484-01

# 1/0

to DCSU-4B – Hot
to DCSU-4B – Rtn

P440

Connector: NZGL06G3333N3PN
Pins: NZGC-C-0PB
Backshell: NZGA-SX-33-N-40Z
Prot. Cover: NZGL-PPC-N-33-R
Seal Plugs: NZGSP-4

FS 17–15

EVA/98/FIN A
NOTE: CIDs are not installed until Flight 5A, Pre–5A CCC Jumper is installed directly to connector patch panels.
EVA NODE STOWAGE BAG (INSTALLED)

Straps to be labeled as follows:

1 – 0113 (Bottom, Front, Left)
2 – 0100 (Bottom, Front, Right)
3 – 0007 (Top, Rear, Left)
4 – F8 (Top, Rear, Right)
5 – 0119 (Bottom, Rear, Right)
6 – 0117 (Bottom Rear, Left)

GAP SPANNER
54 in

SOFT STRAPS/ HANDHOLDS
ON ALL SIDES

TWO FIXED LOCATING HOOKS

NODE STBD SIDE

FS 17–17
EVA/98/FIN A

EVA
TOOLS/HDW
EVA NO DE STOWAGE BAG INTERNAL LAYOUT

EVA NODE STOWAGE BAG CONTENTS

Pocket A
- PAD

Under Pocket A
- RACU Jumpers (2) (on Adj Fuse Tether on Pocket K D–ring)

Pocket B
- CBM Contingency Tools
  - Socket Caddy
    - 3/8–in Socket w/Adapter
    - 3/16–in Allen Driver w/Adapter
    - 5/32–in Allen Ball End Driver
  - CBM Connector Tool (on Adj Fuse Tether on Pocket K D–ring)
  - CBM Tether Points (2) (on Adj Fuse Tether on Pocket K D–ring)

Pocket C
- Russian Contingency Tools:
  - Chisel
  - Driftpin
  - Handle
  - Holder

- Russian Capture Latch Tool

Pocket D
- APFR Ingress Aid

Pocket E
- MMOD Tool Board w/Allen Wrenches (3)

Pocket E D–ring
- Adj Fuse Tether
  - Safety Tethers (4)
  - WIF
  - QD Cap Tool

Pocket F
- PFR (P=10, R=D)

Pocket G
- 96–Bolt Tool Bag
  - 7/16–in Box End Ratchet Wrench (2)
  - ODS Clamps (2)
  - ODS Clamp Handles (2)
  - PB Art Socket
  - Bridge Rail Clamp
  - RAD with 7/16–in Sockets (2)

Pocket H
- Round Scoop
- Socket Caddy
  - 9–in Ext (2)

Pocket J
- Probe

Pocket K
- Connector Pin Straightener

Pocket K D–ring
- Adj Fuse Tether (contents in Pocket B)

Pocket L
- Hydrazine Brush

Pocket M
- WIF Socket Adapter w/pip pin

Pocket M D–ring
- Gap Spanners (2)
MAST CANISTER BAG

Contents:
Mast Canister Handling Device
Y-Bypass Jumpers (2)
ARTICULATING PORTABLE FOOT RESTRAINT (APFR)

- HEEL CLIPS
- ROLL CONTROL
- BOOT PLATE
- YAW JOINT (UNDER BOOT PLATE)
- ROLL JOINT
- LOAD LIMITER
- PITCH LOCK KNOB
- PITCH JOINT
- ACTIVE WORKSITE INTERFACE (WIF)
APFR JOINT SETTINGS

**PITCH**

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<td>HH</td>
<td>+72°</td>
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<td>–90°</td>
</tr>
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</table>

**ROLL**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>A</td>
<td>90°</td>
</tr>
<tr>
<td>B</td>
<td>72°</td>
</tr>
<tr>
<td>C</td>
<td>54°</td>
</tr>
<tr>
<td>D</td>
<td>36°</td>
</tr>
<tr>
<td>E</td>
<td>18°</td>
</tr>
<tr>
<td>F</td>
<td>0°</td>
</tr>
<tr>
<td>G</td>
<td>–18°</td>
</tr>
<tr>
<td>H</td>
<td>–36°</td>
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<td>J</td>
<td>–54°</td>
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<tr>
<td>K</td>
<td>–72°</td>
</tr>
<tr>
<td>L</td>
<td>–90°</td>
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**YAW**

<table>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
<td>60°</td>
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<td>3</td>
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<td>150°</td>
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<td>6</td>
<td>180°</td>
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<td>7</td>
<td>210°</td>
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<td>8</td>
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<td>270°</td>
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<tr>
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<td>11</td>
<td>330°</td>
</tr>
<tr>
<td>12</td>
<td>0°</td>
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</table>

180° ARTICULATION (9° INCREMENTS)

360° ARTICULATION (30° INCREMENTS)

ROLL POSITION INDICATOR

YAW POSITION INDICATOR

BACK VIEW

TOP VIEW

jsci48204_88_003
INTEROPERABLE APFR (IAPFR)
PFR ATTACHMENT DEVICE (PAD)

<table>
<thead>
<tr>
<th>Dimensional Data</th>
<th>inches</th>
<th>cm</th>
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<td>12.87 stowed</td>
<td>32.69</td>
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<td></td>
<td>11.94 max. open</td>
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<tr>
<td>B</td>
<td>7.35</td>
<td>18.67</td>
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<tr>
<td>C</td>
<td>7.50 stowed</td>
<td>19.05</td>
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<tr>
<td></td>
<td>11.37 max. open</td>
<td>28.88</td>
</tr>
</tbody>
</table>

Blue reflector (fore and aft)

Red reflector (port and stbd)

Contingency
Release Bolts

Contingency
Release Bolts
WORKSITE INTERFACE (WIF)

Secondary Alignment Mark

Primary Alignment Mark

Worksite Interface (WIF) Adapter

On-orbit Installable WIF

Installable WIF Adapter Plate
TOOL STANCHION (TS)

ECOM SOCKET  TETHER POINTS  TOOL HEAD ROTATION LEVERS  HOOP BRACKET

BAYONET RECEPTACLES
TOOL BOARD LATCH ASSY
DOVETAIL INTERFACE FOR CRU TETHER

TILT/ROTATE OVER CENTER LEVERS
ECOM SOCKET

APFR INTERFACE

29.50 IN

TETHER POINTS

HANDLING/INSTALLATION AID

FS 17–28

EVA/98/FIN A
BALL STACK

2 Position Locking Collar:
Lock and Release

RIGIDIZING COLLAR

FLEXIBLE SEGMENT

EVA CHANGE-OUT MECHANISM (ECOM) ASSEMBLY (TYPICAL BOTH ENDS)

Debris Cover Not Shown

ORU TETHER

EQUIPMENT HOOK

3 Position Selector Knob;
Free, Lock In, Lock Out

Tether Loop

ORBITAL REPLACEMENT UNIT TETHER BASE
STRELA BOOM, TOP VIEW

- EVA BOLT
- EVA BOLT
- EVA BOLT
- EVA BOLT
- EVA BOLT
- EVA BOLT
- MASS ≈ 50 KG ≈ 110 LB
- EXTEND/RETRACT HANDLE
- EVA ICC BOLT
- EVA ICC BOLT
- EVA ICC BOLT
- MAGNETIC BALL INTERFACE
- LOCK LEVER
STRELA BOOM EXTENSION

LOCK LEVER

EXTEND LEVER

TETHER POINT

MAGNETIC BALL INTERFACE

MAGNETIC BALL INTERFACE

MASS ≈ 15 KG = 33 LB

2 TELESCOPING TUBES

STRELA TRANSPORTATION RING

4802415_101, ART 1

FS 17–37

EVA/98/FIN A
STRELA GRAPPLE FIXTURE ADAPTER

Adapter latch

Paddles (3)

Handholds (2)
MODULAR MINI–WORKSTATION (MMWS)
BODY RESTRAINT TETHER (BRT)
MULTI–USE TETHER (MUT)

- Swivel Joints (2)
- Rigidizing Collar
- Locking Interface to Modular Miniworkstation
- Flexible Segment
- EVA Change-out Mechanism (ECOM)
- MUT End Effector Attaches Here
MUT HANDRAIL END EFFECTOR

ECOM SOCKET

SECONDARY LOCKING MECHANISM
(3/4 TURN)

BUTTON

JAWS

BUTTON
WAIST TETHER

SMALL CREW HOOK

LOAD ALLEVIATING STRAP

LARGE CREW HOOK

SAFETY TETHER

SMALL HOOK

LOAD ALLEVIATION TETHER

SAFETY TETHER REEL ASSEMBLY

LARGE HOOK

LOCK LEVER

SMALL HOOK

MEASUREMENTS ARE IN INCHES
RETRACTABLE EQUIPMENT TETHERS

- EQUIPMENT HOOK
- LARGE CREW HOOK
- SMALL CREW HOOK
- SLIDE LOCK
- ADJUSTABLE EQUIPMENT TETHER
- D-RING
- EQUIPMENT HOOK
- CAM BUCKLE
- EQUIPMENT HOOK
CONNECTOR PIN STRAIGHTENER

MEASUREMENTS ARE IN INCHES.
CONNECTOR CLEANER KIT

Caddy

Connector Cleaner Tool
ETSD EXTERNAL LAYOUT

ETSDs SHOWN WITH ORU HANDLING TOOLS ON EXTERIOR

FS 17–47

EVA/98/FIN A
18-INCH SOCKET PANEL

SPARE TOOL POST

(14.09)

(1.77)

PIP PIN RETAINER

7/16" SOCKET-18" EXTENSION

(18.99)

RESTRAINT EYE

7/16" STD. EVA BOLT

SINGLE LOCKING SLIDE

SPARE BAYONET RECEPTACLE

MEASUREMENTS ARE IN INCHES.
CHEATER BAR

MEASUREMENTS ARE IN INCHES.
SQUARE TORQUE MULTIPLIER BOARD

SQUARE TM

SPARE TOOL POST

MICRO SOCKET SET

BAYONET RECEPTABLE

TM QUARTER TURN

RETRACTABLE TETHER

SQUARE TORQUE MULTIPLIER

LATCH HANDLE

TETHER LOOP

ANTI-BACK DRIVE SELECTOR

BAYONET PROBE

CONTINGENCY RELEASE BOLT LOCATION

MEASUREMENTS ARE IN INCHES.
ROUND TORQUE MULTIPLIER BOARD

MEASUREMENTS ARE IN INCHES.

ROUND TORQUE MULTIPLIER
RATCHET WRENCH BOARD

TOOL POST

7/16" SOCKET-12" EXTENSION

7/16" SOCKET-2" EXTENSION

3/8" RATCHET DRIVE

SINGLE LOCKING SLIDE

RETRACTABLE TETHER

SLIDE LOCK

RIGHT ANGLE DRIVE

MEASUREMENTS ARE IN INCHES.
RATCHET WRENCH

- CW/CCW SELECTOR
- REMOVABLE PALM WHEEL
- BAYONET PROBE
- TETHER POINT
- 3/8 DROP PROOF TETHER INTERFACE
RIGHT ANGLE DRIVE

2.50 MAX.

Tether Point

3/8 Drop Proof Tether Interface

3/8 Drop Proof Tether

11.00 MAX.

2.50 MAX.

MEASUREMENTS ARE IN INCHES.
TRASH BAG BOARD

LARGE TRASH BAG

SMALL QUARTER TURN

(8.06)

(6.59)

(2.64)

BAYONET RECEPTACLE

SMALL TRASH BAG

SOFT GOODS STRAPS

MEASUREMENTS ARE IN INCHES.

FS 17–57

EVA/98/FIN A
SOCKET BOARD

5/8" x 7.8" RIGID SOCKET EXTENSION

1/2" x 8" RIGID SOCKET EXTENSION

(8.06)

(2.84)

TRIPLE LOCKING SLIDE

(14.32)

5/32" ALLEN WRENCH

5/16" x 7" RIGID SOCKET EXTENSION

SINGLE LOCKING SLIDE

RETRACTABLE TETHER

MEASUREMENTS ARE IN INCHES.
ROUND SCOOP

- **D-HANDLE INTERFACE**
- **ACTUATOR**
- **EVA CHANGE-OUT MECHANISM (ECOM) SOCKET**
- **Tether Point**
- **Dog-bone Segment for BRT Translation**
- **5/32nd Allen Contingency Release**
- **COLLET (X5)**
- **BAYONET PROBE**

**MIDROCONICAL FITTING (ROUND FITTING LOCATED ON ORU, SUBCARRIER, OR OTHER EQUIPMENT. THIS FITTING IS PROVIDED BY MULTIPLE PROGRAM PARTICIPANTS.)**
SQUARE SCOOP

3 Positions, Locked, Release, Capture

D-HANDLE INTERFACE

ACTUATOR

EVA CHANGE-OUT MECHANISM (ECOM) SOCKET

TETHER POINT

ECOM to Ballstack

Opening for Fastener Access

COLLET (X4)

BAYONET PROBE

MICRO FIXTURE (SQUARE FITTING LOCATED ON THE ORU OR OTHER EQUIPMENT. THIS FITTING IS PROVIDED BY MULTIPLE PROGRAM PARTICIPANTS.)

Dogbone Handrail segment for BRT Translation

5/32nd Allen Contingency Release

FS 17–61
ISS TOOL CADDY

SOFT GOODS LOOP (4x)

MEASUREMENTS ARE IN INCHES.
PMA1 HANDRAILS AND WIFs

PORT VIEW

PMA1/01–01
PMA1/01–03 (4)
PMA1/01–05 (2)
PMA1/01–04 (3)
PMA1/01–01

ZENITH VIEW

PMA 1/01–02
(0005)
PMA1/01–02 (5)
PMA1/01–01 (6)
PMA1/01–01 (4)
(0008)
(0006)
PMA1/01–03 (4)
(0008)
(0006)

SHADED ARROWS INDICATE PRIMARY TRANSLATION PATHS

NADIR MDM (REF ONLY)
PMA1/02–08
PMA1/02–07
PMA1/02–05
(0011)
(0010)
(0009)
(0013)
(0012)
(0013)
(0012)

PORT VIEW

ZENITH VIEW

PMA1/02–03
(0009)
PMA1/02–09
(0004)
PMA1/02–06
(0011)
PMA1/02–04
(0004)
PMA1/02–05
(0009)

PMAs
PMA1 HANDRAILS AND WIFs (Cont)

SHADED ARROWS INDICATE PRIMARY TRANSLATION PATHS

ZENITH MDM (REF ONLY)

NADIR MDM (REF ONLY)

STARBOARD VIEW

NADIR VIEW

PMAs
PMA1 TO NODE 1 UMBILICALS (Cont)
PMA2 HANDRAILS AND WIFs

STARBOARD VIEW

ZENITH VIEW

SHADOWED ARROWS INDICATE PRIMARY TRANSLATION PATHS

GRAPPLE FIXTURE #1 (REF ONLY)

GRAPPLE FIXTURE #2 (REF ONLY)

MODE INDICATOR (REF ONLY)

PMA2/01–01 (6)

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

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PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01

PMA2/02–05

PMA2/02–04

PMA2/02–01
PMA2 HANDRAILS AND WIFs (Cont)

PORT VIEW

NADIR VIEW
PMA2 UMBILICALS, STOWED

STARBOARD VIEW
(UMBILICALS STOWED)

ZENITH VIEW
PMA2 UMBILICALS DEPLOYED

NODE 1

PMA2

PMA3

FS 17–73
PMA3 HANDRAILS AND WIFs

FWD VIEW (POST 3A)

STBD VIEW (POST 3A)
PMA3 HANDRAILS AND WIFs (Cont)

AFT VIEW (POST 3A)

PORT VIEW (POST 3A)
PMA3 UMBILICALS STOWED

COORDINATES AFTER PMA3 ATTACHED TO NODE 1
PMA3 UMBILICALS STOWED (Cont)

Coordinates after PMA3 attached to Node 1
NODE 1 HANDRAILS AND WIFs

ZENITH

0138 0139

0137 0144

0136

NOD1/03-07

STARBOARD

0135

0134

0133

0132

0112

ARROWS INDICATE PRIMARY TRANSLATION PATH

SLIDEWIRE

NADIR

FORWARD VIEW

PORT

0141

0140

0142

0143

0145
NODE 1 HANDRAILS AND WIFs (Cont)
NODE 1 HANDRAILS AND WIFs (Cont)
NODE 1 HANDRAILS AND WIFs (Cont)
NODE 1 MMOD SHIELD LAYOUT
NODE 1 MMOD SHIELD LAYOUT (Cont)
NODE 1 MMOD SHIELD LAYOUT (Cont)
NODE 1 MMOD SHIELD LAYOUT (Cont)
NOTE

These Zones contain sensitive equipment, which can be damaged by an EVA crewmember. Protection of EVA crew from hazards such as thruster plane and antenna radiation is provided by EVA INHIBIT PAD procedure in EVA CHECKLIST. Additional views and values of RF Keepout Zones can be seen on FGB/NODE 1 EVA CD-ROM.
NOTE

These Zones contain sensitive equipment, which can be damaged by an EVA crewmember. Protection of EVA crew from hazards such as thruster plane and antenna radiation is provided by EVA INHIBIT PAD procedure in EVA CHECKLIST. Additional views and values of RF Keepout Zones can be seen on FGB/NODE 1 EVA CD–ROM.

LEGEND

- EMU RF Keepout Zone
- Human RF Keepout Zone
- No Touch Area
- Potential Pitch Point
- Potential Sharp Edge
These Zones contain sensitive equipment, which can be damaged by an EVA crewmember. Protection of EVA crew from hazards such as thruster plane and antenna radiation is provided by EVA INHIBIT PAD procedure in EVA CHECKLIST. Additional views and values of RF Keepout Zones can be seen on FGB/NODE 1 EVA CD-ROM.
These Zones contain sensitive equipment, which can be damaged by an EVA crewmember. Protection of EVA crew from hazards such as thruster plane and antenna radiation is provided by EVA INHIBIT PAD procedure in EVA CHECKLIST. Additional views and values of RF Keepout Zones can be seen on FGB/NODE 1 EVA CD–ROM.
FGB HANDRAILS (PLANE I)
Docking Target
FGB HANDRAILS (PLANE IV)
FGB HANDRAILS (FWD)

Zenith

Starboard

Nadir

Port
FGB HANDRAILS (AFT)
SM OVERVIEW (PLANE IV)
SM KEEPOUT ZONES (PLANE I)

LEGEND

* EMU RF KEEPOUT ZONE
+ HUMAN RF KEEPOUT ZONE
- NO TOUCH AREA
\triangle POTENTIAL PINCH POINT
\triangle POTENTIAL SHARP EDGE
SM KEEPOUT ZONES (PLANE III)

LEGEND
- EMU RF KEEPOUT ZONE
- HUMAN RF KEEPOUT ZONE
- NO TOUCH AREA
- POTENTIAL PINCH POINT
- POTENTIAL SHARP EDGE

PLANE IV
- ORBIT RADIO TRACKING ANTENNA WA1 [P&O]
- TV ANTENNA WA2 [TBG]
- [CTTC] ANTELLA AM9-WA2
- [CTTC] ANTELLA AM6-WA4
- REGULOMI ANTENNA WA2 [BHA]
- [CTTC] ANTELLA AM7-WA6
- ANTELLA [API]
- ANTELLA [AP2]

ROLL THRUSTERS (TYPE K III)
PITCH THRUSTERS (TYPE T III)

[OHA] ANTELLA (POSITION 2)
EVA HANDRAIL BRACKETS

PLANE III
- [CTTC] ANTELLA AM9-WA1
- [CTTC] ANTELLA AM6-WA4
- REGULOMI ANTENNA WA2 [BHA]
- ANTELLA [API]
- ANTELLA [AP2]

PLANE II
- [CTTC] ANTELLA AM9-WA1
- [CTTC] ANTELLA AM6-WA4

PLANE I
- [CTTC] ANTELLA AM9-WA2
- [CTTC] ANTELLA AM6-WA4
- REGULOMI ANTENNA WA2 [BHA]
- ANTELLA [API]
- ANTELLA [AP2]
SM HANDRAILS (PLANE II)
SM EVA LABELS (PLANE I)
SM EVA LABELS (PLANE III)
Z1 OVERVIEW

- SGANT DISH
- SGANT BOOM
- SGTRC
- RTAS CAPTURE CLAW
- Z1 TO P6 UMB
- RTAS CAPTURE LATCH DRIVE
- SPDA/RPCM
- Z1 TO LAB FLUID LINES
- Z1 TO LAB UMB
- Z1 TO S0 UMB JACKS
- MBM 2
- MBM DRIVE
- VIEW A
- SWIS ANT
- SASA
Z1 HANDRAILS AND WIFs

Diagram of Z1 HANDRAILS AND WIFs with various labeled parts.

Z1/02-02

Z1/02-18

Z1/02-19

Z1/02-15

Z1/02-12

Z1/02-10

Z1/02-08

ZENITH SIDE

FORWARD SIDE

STARBOARD SIDE

Diagram details and labels:

- Z1/02-02
- Z1/02-18
- Z1/02-19
- Z1/02-15
- Z1/02-12
- Z1/02-10
- Z1/02-08
Z1 HANDRAILS AND WIFs (Cont)
Z1 TO NODE 1 UMBILICALS
P6 OVERVIEW

- SASA relocation
- Unstow Upper SABB/Mast Tip
- Release Lower Beta Gimbal Restraint
- Release Upper Aft SABB-to-IEA Restraints
- Release Upper Fwd SABB-to-IEA Restraints
- P6-2 WIS Antenna relocation
- P6 Long Spacer
- Release Stbd EETCS Radiator Cinches
- Attach Z1-to-P6 FQDC
- Z1 aft location
- Connect Z1-to-P6 Utilities
- Z1 Truss
- Remove DDCU Thermal Shroud
- Remove ACBSP Thermal Shroud
- Z1 aft/starboard location
- SASA relocation
- Z1-2 WIS Antenna relocation

Station Starboard
- Center Line Camera Cable mate

Station Port
- Stow PMA2 Prime Umbilicals
- Stow PMA2 Redundant Umbilicals

Z1 Patch Panel Reconfiguration
Z1 Port location

Z1/P6 Attachment Bolts
(4 corner bolt locations)
Z1 Capture Latch
P6 OVERVIEW (Cont)
P6/IEA HANDRAILS AND WIFs

(SABB are not shown for clarification)
P6/IEA HANDRAILS AND WIFs (Cont)

P6 Long Spacer Nadir view

IEA Zenith bulkhead offset

Solar array mast canisters

Gap Spanners

<table>
<thead>
<tr>
<th>P6 Face</th>
<th>IEA H/H</th>
<th>LS H/H</th>
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<tbody>
<tr>
<td>Aft Stbd Edge</td>
<td>5303</td>
<td>5326</td>
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<tr>
<td>Aft Port Edge</td>
<td>5341</td>
<td>5329</td>
</tr>
<tr>
<td>Fwd Stbd Edge</td>
<td>5339</td>
<td>5327</td>
</tr>
</tbody>
</table>
During 4–Bar Linkage Deployment
IEA AND BETA GIMBAL ASSEMBLY INTERFACE WITH 4–BAR MECHANISM

LOCKING FLANGE (4)
ONE PER RotATING JOINT,
4 PER BETA GIMBAL TRANSITION
STRUCTURE MECHANISM
SOLAR ARRAY BLANKET BOX AND LATCH KEEPOUT ZONES

Areas designated as EVA Restricted Work Areas include reels and guidewire mechanisms from handhold in middle of blanket box cover to outer edge.

Areas designated as EVA Keepout Zones include following:
- Blanket – Not designed to withstand impact
- Mast – Not designed to withstand impacts and does not meet edge and corner requirements
- Latches – Latches create a pinch point while moving to unlatch or latched position. It takes 20 sec to complete either cycle—unlatch to latched or from latched to un latch.
EVA Restricted Work Area

This area has unprotected reels and guidewire mechanisms that could be damaged. They do not present an EVA crewmember hazard because there are no sharp edges or holes.

CAUTION
Equipment Damage – Avoid contact with SABB skirts. SABB skirts run the entire length of both sides of both upper and lower SABB containment boxes.
MAST CANISTER TIP/PIVOT ASSEMBLY KEEPOUT ZONE

EVA Restricted Work Area
P6 TO Z1 UMBILICALS DEPLOYED

- Mate umbilical U204-P254 to P6 J154, transfer connector cap from P6 J154 to Z1 J254
- Mate umbilical U205-P255 to P6 J155, transfer connector cap from P6 J155 to Z1 J255
- Mate umbilical U140-P256 to P6 J156, transfer connector cap from P6 J156 to Z1 J256
- Mate umbilical U42-P257 to P6 J157, transfer connector cap from P6 J157 to Z1 J257
- Mate umbilical U46-P258 to P6 J158, transfer connector cap from P6 J158 to Z1 J258
- Mate umbilical U11A-P259 to P6 J159, transfer connector cap from P6 J159 to Z1 J259
- Mate umbilical U08A-P260 to P6 J160, transfer connector cap from P6 J160 to Z1 J260
- Mate umbilical U11A-P261 to P6 J161, transfer connector cap from P6 J161 to Z1 J261

Z1 J253
Z1 J254
Z1 J255
Z1 J256
Z1 J257
Z1 J258
Z1 J259
Z1 J260

Port
Zenith

FS 17-146
EVA/98/FIN A
P6 TO Z1 FLUID LINES STOWED

DETACH STRAP FROM THERMAL BLANKET (RE4409) SLIDE BLANKET OUT OF THE WAY

THERMAL BLANKET P6 (RE3315)

DETACH STRAP FROM THERMAL BLANKET (RE4409) SLIDE BLANKET OUT OF THE WAY
P6 TO Z1 FLUID LINES DEPLOYED

ATTACH STRAP FROM THERMAL BLANKET (RE4409) TO RINGS ON P6 BLANKET (RE3315) REPOSITION BLANKET OVER ODS'S AND TCS LINES

THERMAL BLANKET (RE3315)

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US LAB HANDRAILS AND WIFs (FWD/PORT VIEW)

* Denotes 12-in. handrail
Double box - Denotes OIWIF
US LAB HANDRAILS AND WIFs (AFT/STBD VIEW)

* - Denotes 12-in. handrail
Double box - Denotes OIWIF
US LAB HANDRAILS AND WIFs (AFT/STBD VIEW) (Cont)

* - Denotes 12-in. handrail
Double box - Denotes OIWIF
MBM CAPTURE LATCH – DRIVE BOLT

MBM LATCH HOOK

THERMAL BLANKET STBD #2
(RE3366)

PMA BULKHEAD

CAPTURE LATCH DRIVE SHAFT
(693-55207-5)

2: MBM CAPTURE LATCH

FS 18–16

EVA/98/FIN A
RELEASE P6 PV RADIATOR CINCHES AND WINCHES

AFTER ACTUATING WINCH DRIVE H16
DISENGAGE PIP PIN (RE4363-09) TO
RELEASE H33 WINCH ROD ASSY
(83-42141-101)

UNFASTEN H15-
CINCH ASSY AND STOW CINCH

UNFASTEN H13-
CINCH ASSY AND STOW CINCH

UNFASTEN H11-
CINCH ASSY

UNFASTEN EVA BOLT-
(83-42161-103) 4X

REMOVING COVER
(83-40376-103)

TEAR AWAY H15 EVA
RIDs PRIOR TO
DEPLOYMENT 2X

WINCH DRIVE
H16 UNDER
COVER

CINCH CLIP
(REF)

STARRBOARD

AFT CINCH ASSY AND STOW CINCH

CINCH CLIP-
(83-42096-103) 6X

CINCH ASSY AND STOW CINCH

CINCH ASSY AND STOW CINCH

CINCH ASSY AND STOW CINCH

CINCH ASSY AND STOW CINCH

CINCH ASSY AND STOW CINCH

EVA/98/FIN A
RELEASE P6 PV RADIATOR CINCHES AND WINCHES (Cont)

After retracting winch drive M10, re-install cover (83-48039-103) and EVA fasteners (83-42161-103).

Stow cinches in cinch clips (6x).

Cinch clip (6x)
(83-42096-103)

Stow cinches in cinch clips (6x).
RELEASE EETCS STBD RADIATOR CINCHES

UNFASTEN H11 CINCH ASSY AND STOW CINCH
THermal COVER

UNFASTEN H13 CINCH ASSY AND STOW CINCH

UNFASTEN H15 CINCH ASSY AND STOW CINCH

UNFASTEN H12 CINCH ASSY AND STOW CINCH

UNFASTEN H14 CINCH ASSY AND STOW CINCH

UNFASTEN H16 CINCH ASSY (FOR STOWAGE OF CINCHES ONTO CLIPS, SEE SHEET 18)
(83-42056) 6F12 15X3 BREAK GROUND SET TORQUE

FS 18–20

EVA/98/FIN A
RELEASE EETCS STBD RADIATOR CINCHES (Cont)

View AG

View AC

View AE

View AM
PASSIVE COMMON BERTHING MECHANISM (PCBM) CONTAMINATION COVER

Velcro Tab (2)

Loop (2)
KU–BAND SGAN'T GIMBAL LOCKS AND STOWAGE BRACKET

Gimbal Lock Plate #1

Tether Point

7/16" EVA Bolts (4)

Soft Dock Pin To Plate #2

Soft Dock Pins (2)

Interface with Plate #1 Soft Dock Pin

Gimbal Lock Plate #2

Tether Point

Interface with Plate #1 Soft Dock Pin

7/16" EVA Bolts (8)

Stowage Bracket
CIRCUIT INTERRUPT DEVICE (CID)

Main CID Box

Connectors

NOTE: CID #1 thru #4 have size 25 electrical connectors and CID #5 and #6 have size 33 electrical connector

Overview Shot
AMMONIA VENT TOOL

46" Long Flexhose
(1/4" thick)

Equipment Hook

1" QD

Fluid Cap

Direction of flow

Direction of flow
NON–PROPULSIVE VENT (NPV), VENT PLATE, AND EVA COVER

7/16" EVA Bolts (4)

Tether Point

Velcro Straps

7/16" EVA Bolts (4)

Vent Plate w/ Cover

EVA Cover

Open/Close Windows

Non-Propulsive Vent (NPV) w/ Cover

NOTE: Vent thermal cover not shown
PCA AND PCA THERMAL COVER

PCA Vent on Lab

PCA Vent w/ Thermal Cover Lid Open

PCA Vent w/ Thermal Cover (side view)
ON–ORBIT INSTALLABLE GAP SPANNER/HANDRAIL

On-orbit Installable Gap Spanner

On-orbit Installable Handrail
MMOD SHIELDS (PDGF/VSC AREA)

Cross-Sectional View

Fwd Shield

1/4 Turn DZUS Fasteners (6)

Shield Handling Interfaces (2)

Aft Shield

1/4 Turn DZUS Fasteners (6)

Shield Handling Interfaces (2)
PDGF AND PDGF FLIGHT SUPPORT EQUIPMENT (FSE)

NOTE: Delta to above picture – PDGF located in left side of FSE
PDGF AND LAB PDGF MOUNTING RING

- EDF #4
- Shaft Release Mechanism Drive
- STA 799.20
- 52.50 degrees
- EDF #3
- Mate/Demate Connector (Saddle)
- Mate/Demate Mechanism (Saddle)
PDGF FINAL ROUTING
VIDEO SIGNAL CONVERTER (VSC)
PDGF CONNECTOR LAUNCH BRACKET

Launch Bracket w/o PDGF Connectors

Launch Bracket w/ PDGF Connectors Installed
PDGF DUMMY BRACKET
PDGF CABLE HARNESS

VSC Connectors

PDGF Connectors

400 Panel Connectors

P420, P421, P402, P423, P424, P405
WINDOW SHUTTER AND GEARBOX

7/16" EVA Bolts (2)

Window Shutter

Gearbox

7/16" EVA Bolts (4)

Tether Point

Alignment Pin

Gearbox Arm

Gearbox
STOVEPIPE AND ACBM THERMAL COVER

Stovepipe with ACBM Thermal Cover Installed

ACBM Thermal Cover

1/4 Turn Fastener (2)

Drawstring Release Point
SLIDEWIRE CARRIER

- EVA HANDLE/MULTI-USE TETHER (MUT) INTERFACE
- SLIDEWIRE/STRUCTURE ADAPTER
- BAYONET PROBE

SLIDEWIRE ASSEMBLY
- SLIDEWIRE/STRUCTURE ADAPTER

SLIDEWIRE AND SLIDEWIRE PLATE

JSC48024_88_010
JSC48024_88_011
SASA MOUNTED ON FLIGHT SUPPORT EQUIPMENT

Note: SASA thermal blankets (inner and outer) removed for clarity.
SASA RELOCATION – ATTACH TO P6

ALIGNMENT GUIDE

IEA RADIATOR
(RE1296)

MOUNT ASSEMBLY,
5-BAND ANTENNA,
IEA STRUCTURE
(RE0773891)

(P6 DUMMY RECEPTABLES)

ALIGN SASA TO MOUNT ASSEMBLY

STRIED

SMALLR

FORWARD

FACET SAST TO P6 MOUNT ASSEMBLY

FASTEN BOLT
(IF81535)

HOUSING ASSY
BOLT-STANCHION
(IF81535)

1

77

BGA
(RE75800)

AC 

FASTEN BOLT
(IF80535)

FS 18-47

EVA/98/FIN A
SASA RELOCATION – ATTACH TO P6 (Cont)

View AC

REMOVESASA CAPS ON J2, J3, J4 CONNECTORS

ATTACH W31A TO SASA RECEPTACLE J3

(Note TA Clamp release is optional)
CONNECTOR PIN MAPS

Z1 Tray to US LAB

J213/P313
Connector Size: 15
Pin Size: 20

J214/P314
Connector Size: 15
Pin Size: 22D
Pins Used: 1, 6, 7, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22

J215/P315
Connector Size: 25
Pin Size: 4 (Qty 2)
8 (Qty 1)
Pins Used: A and C

J216/P316
Connector Size: 25
Pin Size: 4 (Qty 2)
8 (Qty 1)
Pins Used: A and C
CONNECTOR PIN MAPS (Cont)

Z1 Tray to US LAB

J200/P300
Connector Size: 25
Pin Size: 8
Pins Used: A and B

J201/P301
Connector Size: 25
Pin Size: 4 (Qty 2)
8 (Qty 1)
Pins Used: A and C

J202/P302
Connector Size: 25
Pin Size: 4 (Qty 2)
8 (Qty 1)
Pins Used: A and C

J203/P303
Connector Size: 15
Pin Size: 20

J204/P304
Connector Size: 15
Pin Size: 22D
Pins Used: 1, 6, 7, 8, 9, 14, 15, 16, 17, 18, 19, 20, 21, 22
CONNECTOR PIN MAPS (Cont)

PMA2 to US LAB

P611/J103
Connector Size: 17
Pin Size: 22
Pins Used: 1, 2, 3, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 34, 35, 36, 37, 41, 43, 44, 45, 48, 49, 50, 51

P612/J106
Connector Size: 21
Pin Size: 20
Pins Used: a, b, c, d, e, f, g, h, i, j, k, m, n, p, q, r, s, t, N, P, R, S, T, U, V, W, X, Y, Z

P613/J105
Connector Size: 15
Pin Size: 22
Pins Used: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37
CONNECTOR PIN MAPS (Cont)

PMA2 to US LAB

P616/J101
Connector Size: 15
Pin Size: 22
Pins Used: 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37

P615/J102
Connector Size: 15
Pin Size: 22
Pins Used: 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37

P614/J104
Connector Size: 15
Pin Size: 22
Pins Used: 29, 30, 32, 33, 34, 35, 36, 37

P609/J115
Connector Size: 25
Pin Size: 8
Pins Used: A, B, G

FS 18–54
EVA/98/FIN A
IEA MDM (Cont)

- Acme Screw
- Robotic Target
- Status Indicator
- Tether Attachment Hole
- Alignment Holes (2)
- Microconical Fixture
- Lower Bracket Assembly
- Connectors Mate with Connectors on Cable Box
- Alignment Sleeve
- Clocking Alignment Hole Mates with Pin on IEA

Top View

Bottom View