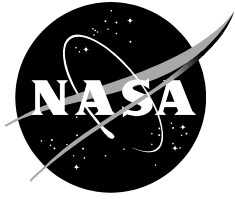


NASA/TP—2017–220020



Astrobee Mechanical Payload ICD A9SP- 1500-M501_PAYLOAD_ICD

Hugo S. Sanchez
NASA Ames Research Center

Marion F. Smith
NASA Ames Research Center

August 2017

NASA STI Program ... in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA scientific and technical information (STI) program plays a key part in helping NASA maintain this important role.

The NASA STI program operates under the auspices of the Agency Chief Information Officer. It collects, organizes, provides for archiving, and disseminates NASA's STI. The NASA STI program provides access to the NTRS Registered and its public interface, the NASA Technical Reports Server, thus providing one of the largest collections of aeronautical and space science STI in the world. Results are published in both non-NASA channels and by NASA in the NASA STI Report Series, which includes the following report types:

- **TECHNICAL PUBLICATION.** Reports of completed research or a major significant phase of research that present the results of NASA Programs and include extensive data or theoretical analysis. Includes compilations of significant scientific and technical data and information deemed to be of continuing reference value. NASA counterpart of peer-reviewed formal professional papers but has less stringent limitations on manuscript length and extent of graphic presentations.
- **TECHNICAL MEMORANDUM.** Scientific and technical findings that are preliminary or of specialized interest, e.g., quick release reports, working papers, and bibliographies that contain minimal annotation. Does not contain extensive analysis.
- **CONTRACTOR REPORT.** Scientific and technical findings by NASA-sponsored contractors and grantees.

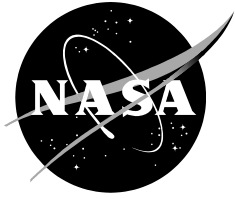
- **CONFERENCE PUBLICATION.** Collected papers from scientific and technical conferences, symposia, seminars, or other meetings sponsored or co-sponsored by NASA.
- **SPECIAL PUBLICATION.** Scientific, technical, or historical information from NASA programs, projects, and missions, often concerned with subjects having substantial public interest.
- **TECHNICAL TRANSLATION.** English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services also include organizing and publishing research results, distributing specialized research announcements and feeds, providing information desk and personal search support, and enabling data exchange services.

For more information about the NASA STI program, see the following:

- Access the NASA STI program home page at <http://www.sti.nasa.gov>
- E-mail your question to help@sti.nasa.gov
- Phone the NASA STI Information Desk at 757-864-9658
- Write to:
NASA STI Information Desk
Mail Stop 148
NASA Langley Research Center
Hampton, VA 23681-2199

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NASA Ames Research Center

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, California

August 2017

Acknowledgments

This report is available in electronic form at
<http://>

8

7

6

5

4

3

DRAWING NUMBER

A 9SP-1500-M501

SHEET

1

REV

A

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING PER ASME Y14.100-2004. INTERPRET DIMENSIONS AND TOLERANCES IAW ASME Y14.5-2009.

2. THE CREO MASTER CAD MODEL FOR THIS PDF DRAWING IS LOCATED ON THE WINDCHILL SERVER IN CODE R (BLDG N213) UNDER THE PROJECT NAME "ASTROBEE". CHANGES TO THIS DRAWING MUST BE MADE BY MODIFYING THIS MASTER MODEL. FOR ASSISTANCE, CONTACT THE BUILDING N213 INFORMATION TECHNOLOGY GROUP AT EXTENSION 4-2013.

3. THE LATEST PDF VERSION OF THIS DRAWING IS LOCATED ON THE AMES RESEARCH CENTER'S SVN DATABASE (https://babelfish.arc.nasa.gov/svn/freeflyer_docs/Mechanical/OfficialDrawings/). ANY CHANGES TO THIS DRAWING SHALL BE DOCUMENTED ON THIS WEB SITE. CONTACT HUGO SANCHEZ AT 650-604-4721 FOR ASSISTANCE.

4. FREE FLYER COORDINATE SYSTEM ORIGIN IS LOCATED AT THE GEOMETRIC CENTER OF THE FREE FLYER.

5. STANDARD PAYLOAD VOLUME (PART A9SP-1500-M501-2) IS MAXIMUM VOLUME FOR EACH DESCRIBED PAYLOAD BAY. LARGER PAYLOADS ARE POSSIBLE BY COMBINING THE TWO BOTTOM PAYLOAD BAYS OR INCLUDING THE AVAILABLE TOP FORWARD VOLUME SHOWN.

6. PAYLOAD RAILS (2X PER BAY) CAN BE USED FOR INITIAL ALIGNMENT DURING PAYLOADS INSERTION. RAILS PROVIDE LATCHING MOMENT REACTION WHEN USING QUICK RELEASE ATTACHMENT METHOD DETAILED IN NOTE 8. CORRESPONDING PAYLOAD SLOTS SHOULD BE 0.175" WIDE TO ALLOW FINAL ALIGNMENT FROM PAYLOAD CONNECTOR ALIGNMENT HOLE AND SLOTS (SEE NOTE 7).

7. PAYLOAD CONNECTOR ALIGNMENT HOLE AND SLOTS SHALL BE USED FOR FINAL AND ACCURATE ALIGNMENT OF PAYLOAD CONNECTOR. ALIGNMENT IS PROVIDED WHEN PAYLOADS INCORPORATE TWO PINS: ONE PIN MATES WITH ALIGNMENT HOLE AND ONE PIN MATES WITH ONE OF THE THREE ALIGNMENT SLOTS. USE STANDARD 3/16" (0.1875") DIA. PIN. PIN SHALL NOT EXTEND MORE THAN 0.3" INTO FREE FLYER.

8. STANDARD QUICK RELEASE (NO TOOL) ATTACHMENT METHOD USES CONNECTOR ALIGNMENT FEATURES (HOLE AND SLOTS DETAILED IN NOTE 7) AND 2X QUICK RELEASE CLEVIS INDICATED. SEE DRAWING A9SP-1500-M562 FOR STANDARD QUICK RELEASE PAYLOAD DESIGN.

9. STANDARD CAPTIVE FASTENER ATTACHMENT METHOD USES CONNECTOR ALIGNMENT FEATURES (HOLE AND SLOTS DETAILED IN NOTE 7) AND UP TO 4X #8-32 HOLES INDICATED. SEE DRAWING A9SP-1500-M572 FOR STANDARD CAPTIVE FASTENER PAYLOAD DESIGN. FASTENERS SHALL NOT EXTEND MORE THAN 0.3" INTO FREE FLYER. STANDARD FASTENER TORQUE IS 8.0 IN-LBS.

10. PAYLOAD COORDINATE SYSTEM ORIGIN IS LOCATED ON THE BOTTOM SURFACE CENTERLINE ALIGNED WITH THE FREEFLYER X-AXIS ORGIN AS SHOWN. AXES ORIENTATION IS AS SHOWN.

11. LEGEND FOR ASSEMBLY COMPONENT BALLOON CALLOUTS:

ITEM NUMBER

QUANTITY

4

5

6

7

8

9

10

2

1

TOP AFT PAYLOAD

5

3

1

5

2

1

BOTTOM AFT PAYLOAD

2

1

VERTICAL PAYLOAD INSERTION

2

1

BOTTOM FWD PAYLOAD

5

TOP FWD PICTORIAL VIEW

FOR REFERENCE ONLY

5

2

1

BOTTOM AFT PICTORIAL VIEW

FOR REFERENCE ONLY

1

3

- 1

QTY REQ'D PER ASSY

CAGE CODE

PART OR IDENTIFYING NO.

DESCRIPTION/NOMENCLATURE

MATERIAL SPECIFICATION

SHEET ZONE

ITEM NO.

A9SP-1500-M130-1

A9SP-1500-M501-2

A9SP-1500-M501-1

ASTROBEE FF

STANDARD PAYLOAD VOLUME

PAYLOAD ICD

PRELIMINARY RELEASE DATE

DATE

DRAWN

DATE

INITIAL RELEASE

DATE

CHECKED

DATE

LATEST REVISION

DATE

DESIGNED

DATE

PROJECT MGR

DATE

STRESS

DATE

SUPERVISOR

DATE

MATERIAL

DATE

REQUESTOR

DATE

O.A.

DATE

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES. ALL DIMENSIONS AND TOLERANCES APPLY AFTER SURFACE TREATMENT.

TOLERANCE UNLESS OTHERWISE SPECIFIED

FRACTIONAL ± /

.X ± 0.03

.XX ± 0.01

.XXX ± 0.005

ANGULAR ± 0.5

DIAMETER ON SAME AXIS TOTAL RUN OUT .005

ALL MACHINED SURFACES TO BE 63 ✓

DO NOT SCALE DRAWING

PRELIMINARY RELEASE DATE

DATE

DRAWN

DATE

INITIAL RELEASE

DATE

CHECKED

DATE

LATEST REVISION

DATE

DESIGNED

DATE

PROJECT MGR

DATE

STRESS

DATE

SUPERVISOR

DATE

MATERIAL

DATE

REQUESTOR

DATE

O.A.

DATE

THIS DRAWING SUPERCEDES ALL PREVIOUS VERSIONS & REVISIONS

REVISION LETTER: A

DATE:

SIGNATURE: _____

PRINTED COPIES OF THIS DRAWING ARE UNCONTROLLED. VERIFY THIS REVISION IS THE LATEST PRIOR TO FABRICATION/ASSEMBLY

Ames Research Center

Moffett Field, California 94035-1000

PAYLOAD ICD

ASTROBEE

SIZE

CAGE CODE

A 9SP-1500-M501

REV

A

SCALE

1/2

INDEX DATE

SHEET 1 OF 4

PROJ: DRAWING FILE NAME:

9SP-1500-M501

WC REV:

A.9

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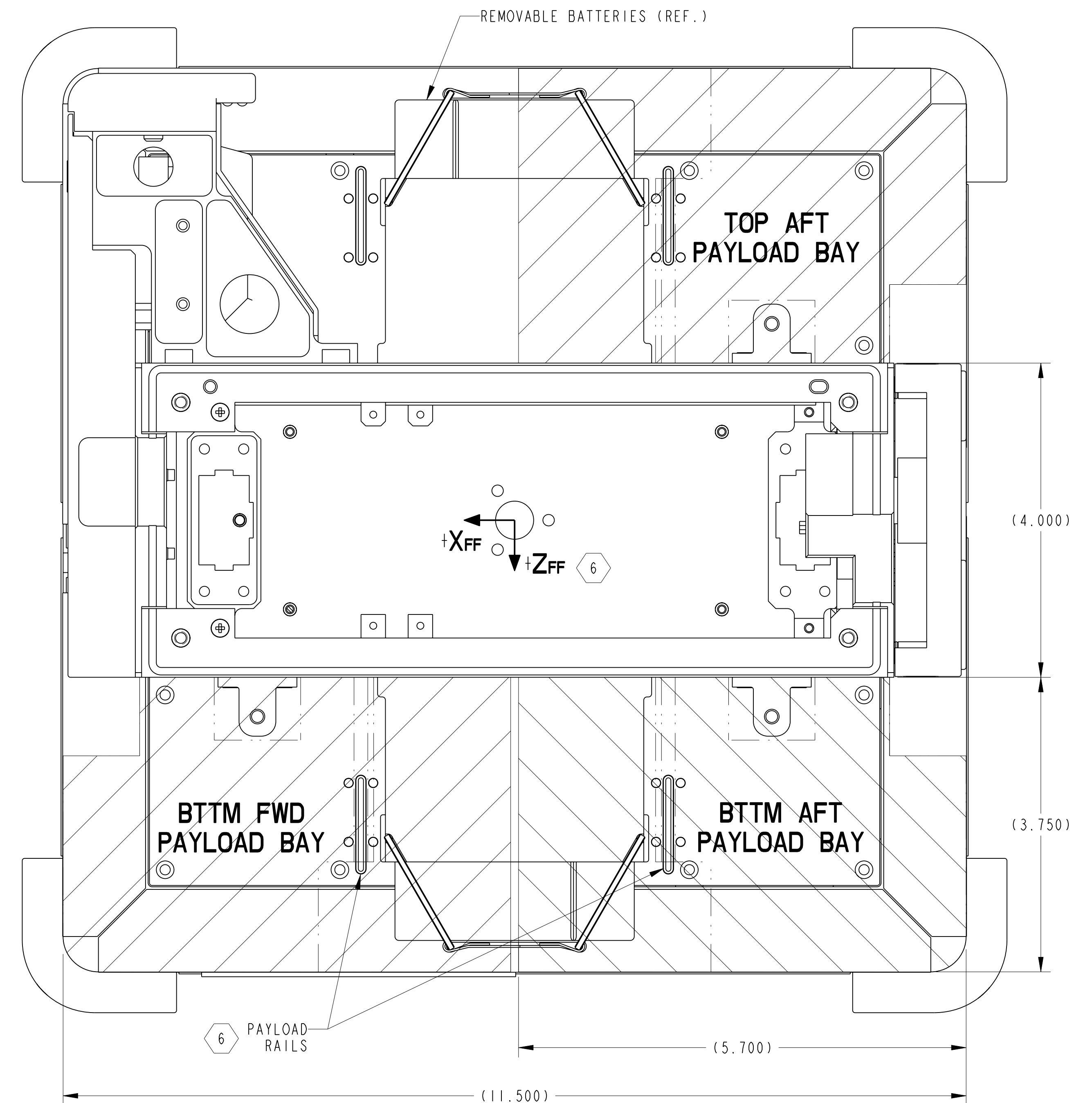
5

4

3

2

1



FRONT VIEW

REVISION LETTER: A
DATE:
SIGNATURE: _____

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FABRICATION/ASSEMBLY

LEFT SIDE VIEW
LEFT PROPULSION SYSTEM REMOVED

SEE SHEET ONE FOR REVISIONS			
SIZE	CAGE CODE	A	REV
D	25307	9SP-1500-M501	A
SCALE	1/3	INDEX DATE	SHEET 2 OF 4
PRO/E DRAWING FILE NAME:		WC REV:	
9SP-1500-M501		A.9	

