

HIRDLS

HIGH RESOLUTION DYNAMICS LIMB SOUNDER

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SP-HIR-246
TSS to IFC Interface Control Document (ICD)

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Log of Changes

Rev.	Date	Section	Change Description
1 st draft	97-07-08		Initial Draft
2 nd draft	97-08-08		Added Figure 2: BB Envelope Renumbered Figures 3, 4
3 rd draft	98-01-07	1.0	Deleted “Thermal Radiative interfaces...”
4 th draft	98-03-30		Incorporated inputs from Hepplewhite, Oxford New FIG1 Deleted BB Envelope FIG2 Renumbered & revised FIGs 2 & 3
5 th draft	98-05-04	2.1	Added SP-HIR-111 Thermal Requirements Document
		3.1.3	Deleted references to TRCF
		3.3	Revised incorporating comments from Osborne Deleted redundant information
	98-05-19		Initial Release
A draft	98-10-12	2.1	Changed “Thermal Requirements Document” to “Thermal Interface Requirements”
		3.1	Changed “...by steering the telescope...” to “...by steering the scan mirror...”
		3.1.1	FIG1 – Deleted screws from cover FIG2 – Changed thickness of thermal gasket from 1.0 to 1.5 mm Added IRCF coordinates of reference point “R” Added IRCF coordinates of aperture center point Changed socket diameter from 80.9-81.1 to 80.0-81.0 Added angular orientation of BB on its mount Revised BB mount details (for reference only) FIG3 – Deleted screws from cover
		3.3	Deleted redundant information Added paragraphs from JGW e-mail dated 98-05-18
		3.4	Added Optical section
A	98-12-15		Revision A Release

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1.0 Scope

This Interface Control Document (ICD) defines the specific design implementation of the Mechanical, Electrical, Optical, and Thermal Conductive interfaces between the Telescope Subsystem (TSS) and the In-flight Calibrator Subsystem (IFC). The interfaces between these two subsystems are limited to Mechanical, Optical, and Thermal (conductive) between Optical Bench Assembly (OBA) the IFC Blackbody (BB).

2.0 Document References

2.1 Applicable Documents

The documents listed below are a part of this ICD to the extent specified herein. In the case of a conflict between the contents of this ICD and any Applicable Document, this ICD shall take precedence.

SP-HIR-013	Instrument Technical Specification (ITS)	Current Revision
SP-HIR-200	IICD System Section	Current Revision
SP-HIR-111	Thermal Interface Requirements	Current Revision

2.2 Information Documents

The documents listed below are for information only and are explicitly not, by reference, part of this ICD.

SP-HIR-040	Telescope Subsystem Specification Document	Current Revision
SP-HIR-044	In-Flight Calibrator Subsystem Specification Document	Current Revision
SP-LOC-139	Detailed Optical Design Specifications	Current Revision
TC-LOC-074	Instrument Mass Report	Current Revision

3.0 Interface Requirements

3.1 Mechanical

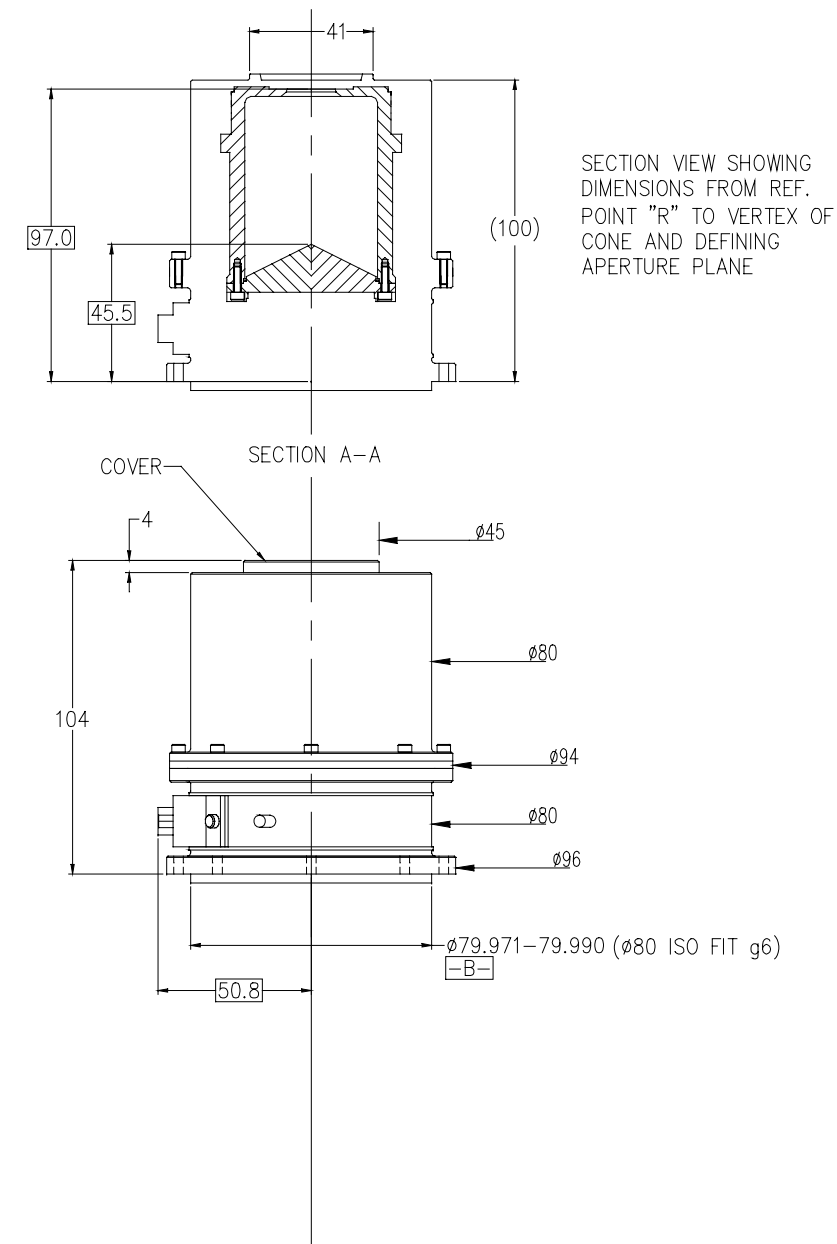
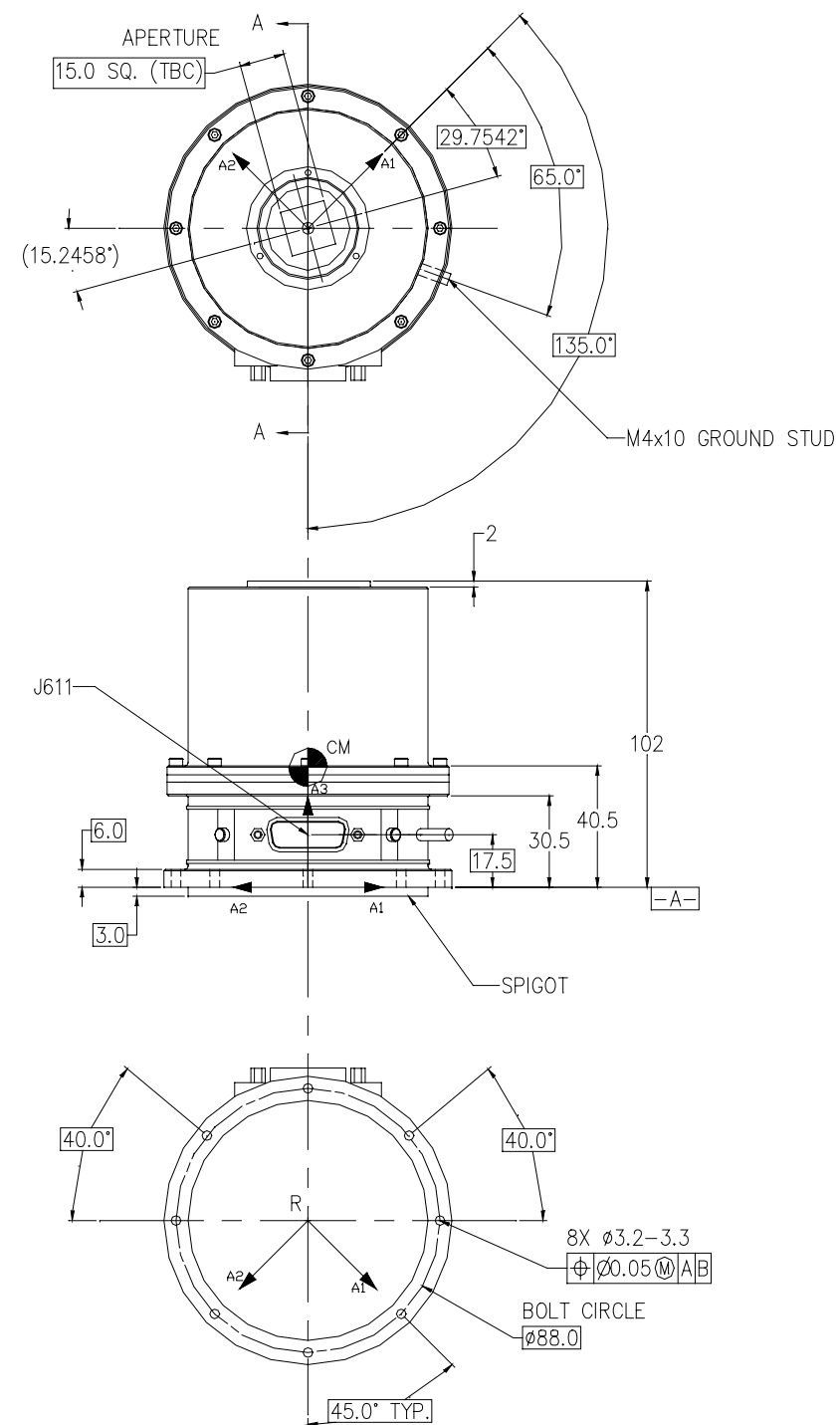
The IFC Black Body (BB) is mounted on to the OBA so that by steering the scan mirror the radiometer can be filled with an accurate source of radiation. The aperture on the BB cavity is optimised for its application and consequently the rotational position of the BB relative to the optical path is important. The BB can be mounted on the OBA in only one orientation.

3.1.1 Drawings

BB mechanical interface drawing = SP-HIR-246-FIG1

BB/OBA interface drawing view on -X face = SP-HIR-246-FIG2

BB/OBA interface drawing view on +Z face = SP-HIR-246-FIG3

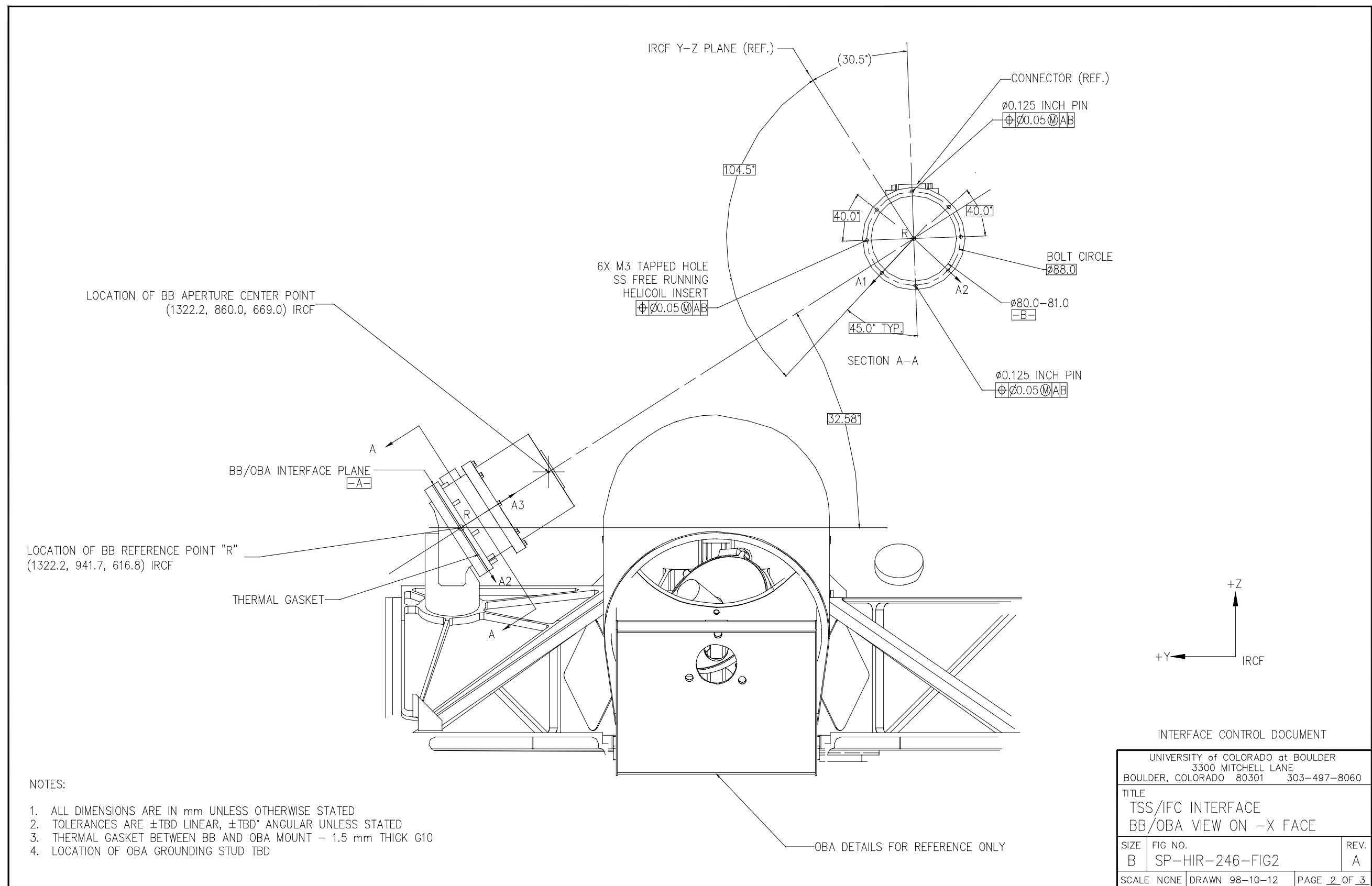


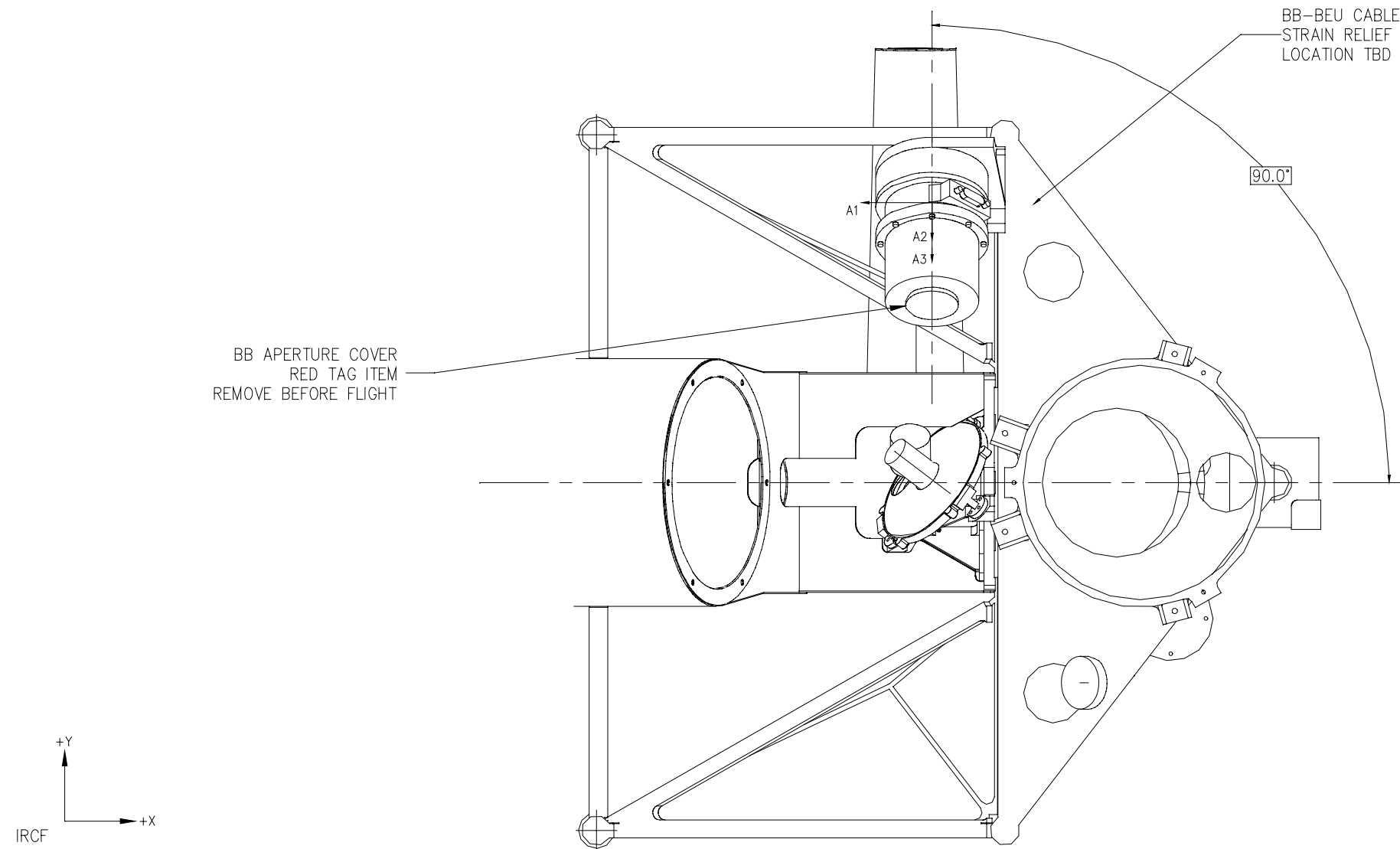
NOTES:

1. DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
2. TOLERANCES ARE ± 0.1 LINEAR, $\pm 0.1^\circ$ ANGULAR UNLESS STATED
3. MOUNTING FLANGE MATERIAL IS ALUMINUM 7075-T6
4. CENTER OF MASS (0 ± 5 , 0 ± 5 , 40 ± 8) LRCF

INTERFACE CONTROL DRAWING

UNIVERSITY of COLORADO at BOULDER 3300 MITCHELL LANE BOULDER, COLORADO 80301 303-497-8060		
TITLE TSS/IFC INTERFACE BLACKBODY		
SIZE B	FIG NO. SP-HIR-246-FIG1	REV. A
SCALE NONE	DRAWN 98-10-09	PAGE 1 OF 3





NOTES:

1. DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
2. TOLERANCES ARE \pm TBD LINEAR, \pm TBD° ANGULAR UNLESS STATED

INTERFACE CONTROL DRAWING

UNIVERSITY of COLORADO at BOULDER 3300 MITCHELL LANE BOULDER, COLORADO 80301 303-497-8060		
TITLE TSS/IFC INTERFACE BB/OBA VIEW ON +Z FACE		
SIZE B	FIG NO. SP-HIR-246-FIG3	REV. A
SCALE NONE	DRAWN 98-10-09	PAGE 3 OF 3

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3.1.2 Mounting

As shown in FIG2 & FIG3.

3.1.3 Alignment & Reference Coordinate Frames

Alignment in the A3 direction, and some degree of tilt may be provided by the thermal gasket shown in FIG2 (TBV).

3.1.4 Mass Properties

BB mass = 0.70 +/-TBD kg

BB moments of inertia = TBD

3.1.5 Venting

BB venting = through aperture (with cover removed), and through base (TBV) at TBD location

3.2 Electrical

The only electrical interface requirement between the BB and OBA concerns grounding.

3.2.1 Grounding

Grounding strap = provided by Instrument Integrator

Grounding strap mounting surface = free of paint

3.3 Thermal

See SP-HIR-111 Thermal Interface Requirements

BB power dissipation will vary from zero to 200mW in Mission Mode, and may occasionally be increased to 2W for a few hours for special calibrations.”

The BB is conductively decoupled from the OBA, and will run close to the ambient temperature. Most of the heat dissipated within the BB will be lost by radiation to the surrounding cavity and main viewing aperture.

3.4 Optical

The optical (alignment) interface between the BB and OBA is defined in FIGs 2 & 3.