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**SLC and Viewports
Installation Plan**

Michael Smith

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This is an internal working note
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California Institute of Technology
LIGO Project – MS 18-34
1200 E. California Blvd.
Pasadena, CA 91125
Phone (626) 395-2129
Fax (626) 304-9834
E-mail: info@ligo.caltech.edu

Massachusetts Institute of Technology
LIGO Project – NW22-295
185 Albany St
Cambridge, MA 02139
Phone (617) 253-4824
Fax (617) 253-7014
E-mail: info@ligo.mit.edu

LIGO Hanford Observatory
P.O. Box 159
Richland WA 99352
Phone 509-372-8106
Fax 509-372-8137

LIGO Livingston Observatory
P.O. Box 940
Livingston, LA 70754
Phone 225-686-3100
Fax 225-686-7189

<http://www.ligo.caltech.edu/>

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Abstract

This document describes the plan for installing the Stray Light Control (SLC) baffles and beam dumps, and the Viewports for aLIGO at the LLO and LHO sites

1 Introduction

This document describes the plan for installing the Stray Light Control (SLC) baffles and beam dumps, and the Viewports for aLIGO at the LLO and LHO sites.

2 Preparation for Installation

2.1 Shipping to the Sites

All SLC components will be shipped to the sites in advance of installation.

All new Viewports will be shipped to the sites in advance of installation. Some of the Initial LIGO Viewports will be reused.

2.2 Clean and Bake

2.2.1 Items Shipped to the Sites in a Clean Condition

The porcelainized stainless steel portions of the baffles and beam dumps will be received at the sites in a vacuum-clean condition.

2.2.2 Items to be Cleaned and Baked at Site

1. The suspension structures, mounting brackets, and other items that comprise the baffles and beam dumps will be cleaned and baked at the site.
2. All Output Faraday Isolator and suspension parts
3. All new Viewports

2.3 Storage at the Site

2.3.1 Vacuum-Clean Storage

The porcelainized stainless steel portions of the baffles and beam dumps will be received in advance and must be stored in a vacuum-clean environment until needed for the final assembly.

All other items will be temporarily stored after cleaning and baking at the site until needed for final assembly.

2.3.2 Non Vacuum-clean Storage

Viewport Safety covers are used outside the vacuum and can be stored in a non vacuum-clean area.

2.4 Pre-assembly

2.4.1 Preassembly and Alignment in a Clean Optics Lab

1. Output Faraday Isolator

2.4.2 Preassembly in Temporary Clean Room Next to IFO Installation Access

The cartridge and all other non-cartridge baffles and beam dumps such as the Arm Cavity Baffle will be assembled in a clean room adjacent to the appropriate BSC.

The Manifold/cryopump Baffle will be staged in a clean room adjacent to the removed viewport adapter in the ITM and ETM manifolds.

The Mode Cleaner Tube Baffles will be staged in a clean room adjacent to the removed viewport adapters at each end of the Mode Cleaner Tubes.

The Output Faraday Isolator will be staged in a clean room adjacent to the appropriate HAM.

2.5 Pre-alignment

The center hole in the various baffles and beam dumps will be positioned by means of an infrared autocollimator referenced to the optical beam line and centered on the appropriate COC mirror, such as the ITM or ETM. The power level of the autocollimator may require eye protection and an SOP.

3 Installation

Table 1: Size and Weight of Baffles and Beam Dumps

NAME	SIZE mm x mm x mm	WEIGHT kg
Output Faraday Isolator	375 x 650 x 375	25
FM Elliptical Baffle	340 x 500 x 1.5	5
Beam Dump for FM Elliptical Baffle	340 x 524 x 340	30
FM Beam Dump	200 x 320 x 200	20
Arm Cavity Baffle	300 x 800 x 800	58
Wide Angle Baffle-Suspended	300 x 800 x 800	40
Wide Angle Baffle-Fixed	850 x 550 x 1.5	5
ITM Elliptical Baffle	340 x 525 x 350	25
Manifold/Cryopump Baffle	1820 dia x 850 w	110
Mode Cleaner Tube Baffle	2100 dia x 50 w	30
SR2 Scraper Baffle	160 x 350 x 250	5
SR2 flat Baffle	160 x 160 x 5	2
SR3IN Flat Baffle (per sheet)	280 x 550 x 5	3
SR3OUT Flat Baffle	280 x 550 x 5	3

NAME	SIZE mm x mm x mm	WEIGHT kg
SRM flat Baffle	160 x 160 x 5	2

3.1 LHO, H2

3.1.1 SLC Devices

3.1.1.1 BSC7 and BSC8

3.1.1.1.1 List of Devices

The following baffles and beam dumps will be installed in BSC7 and BSC8:

1. FM Elliptical Baffle
2. Beam Dump for FM Elliptical Baffle
3. FM-X and FM-Y Beam Dumps
4. Arm Cavity Baffle-2-hole
5. Wide Angle Baffle-Suspended
6. Wide Angle Baffle-Fixed

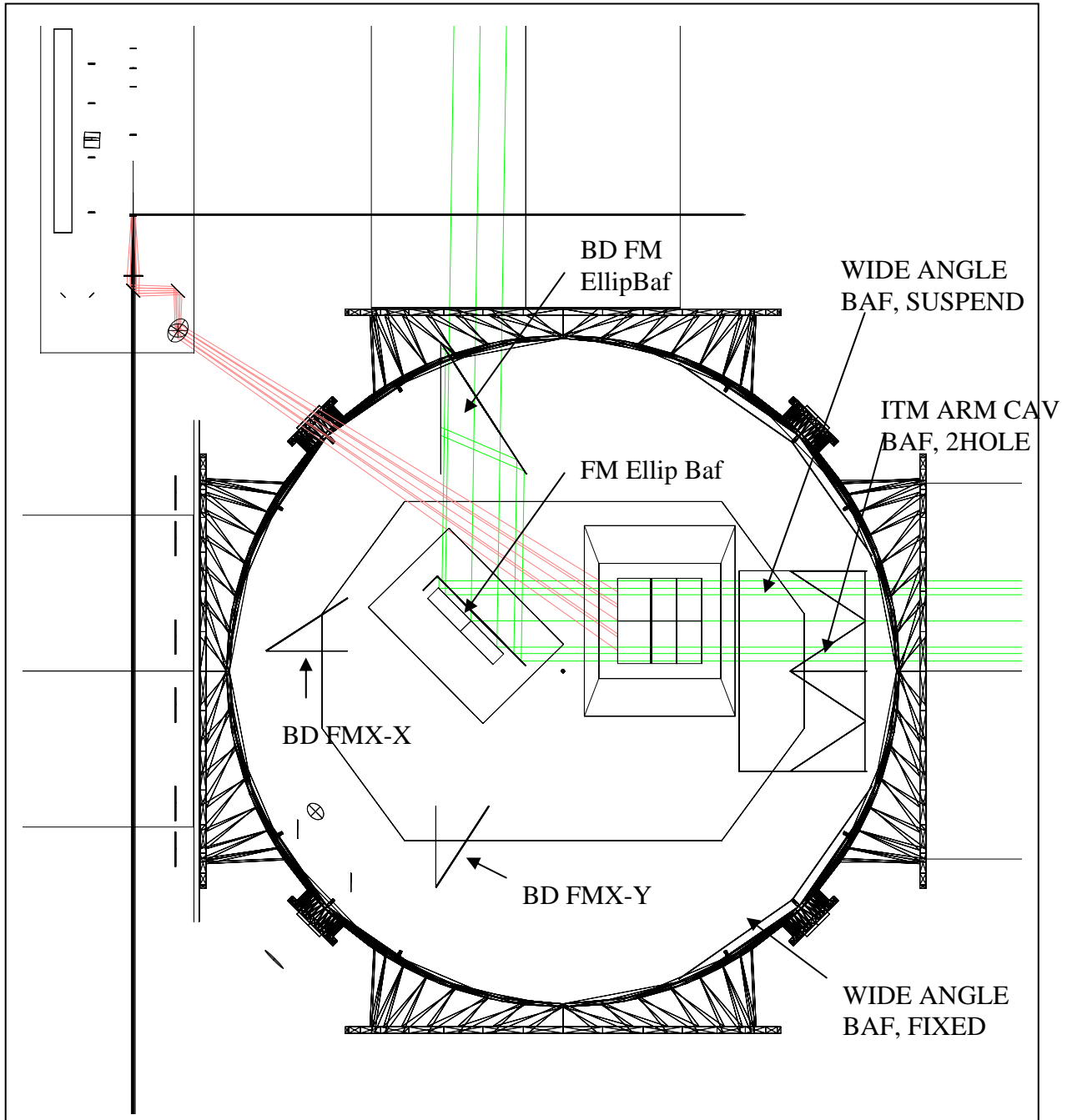


Figure 1: BSC7

3.1.1.1.2 Installation Procedure

Installation, except for the Beam Dump for FM Elliptical Baffle and the Wide Angle Baffle-Fixed, will be done on the cartridge assembly outside the chamber, if possible.

Procedures 3-4 require one or two persons to hold the beam dump and another person to attach the suspension structure to the ISI stage “0” ring.

Procedures 5-6 will require a lifting mechanism if done on the cartridge, or an articulated arm lift mechanism attached to the chamber flange if done inside the chamber.

1. Attach the FM Elliptical Baffle to the FM Suspension frame prior to installing onto Cartridge
2. Remove the BSC7 and BSC8 access door
3. Attach the FM-X and FM-Y Beam Dumps to the ISI stage “0” ring, behind the FM, centered along the leakage beam path through the back surface of the FM.
4. Attach the Beam Dump for FM Elliptical Baffle to the ISI stage “0” ring, centered along the beam path in the power recycling cavity between the FM and the BS.
5. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
6. Attach the Arm Cavity Baffle-2-hole to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
7. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

3.1.1.2 BSC4

3.1.1.2.1 List of Devices

The following baffles will be installed in BSC4:

1. ITMX and ITMY Elliptical Baffles

3.1.1.2.2 Installation Procedure

The installation will be done on the cartridge assembly outside the chamber, if possible. It will require one person to hold the beam dump and another person to attach the suspension structure to the ISI stage “0” ring.

1. Attach the ITMX and ITMY Elliptical Baffles to the ISI stage “0” ring, centered along the beam path in the power recycling cavity between the BS and the FM.

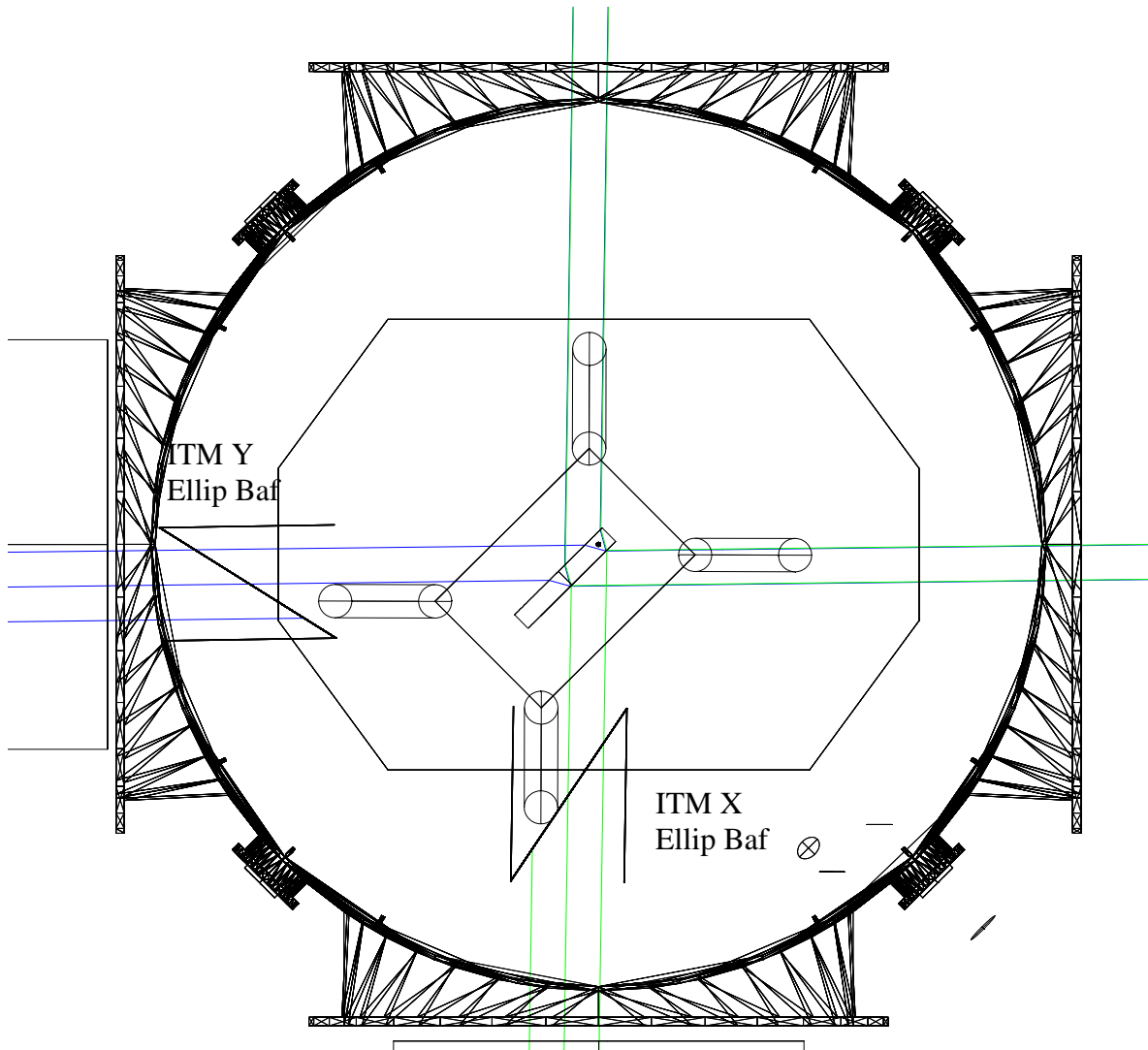


Figure 2: BSC4

3.1.1.3 BSC5 and BSC6

3.1.1.3.1 List of Devices

The following baffles and beam dumps will be installed in BSC5 and BSC6:

1. Wide Angle Baffle-Suspended
2. Wide Angle Baffle-Fixed

3.1.1.3.2 Installation Procedure

The installation 1) will be done on the cartridge assembly outside the chamber, if possible. Installation 2) must be done inside the chamber. It will require one person to hold the baffle and another person to attach the suspension structure to the ISI stage “0” ring.

1. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the ETM and the arm tube.
2. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

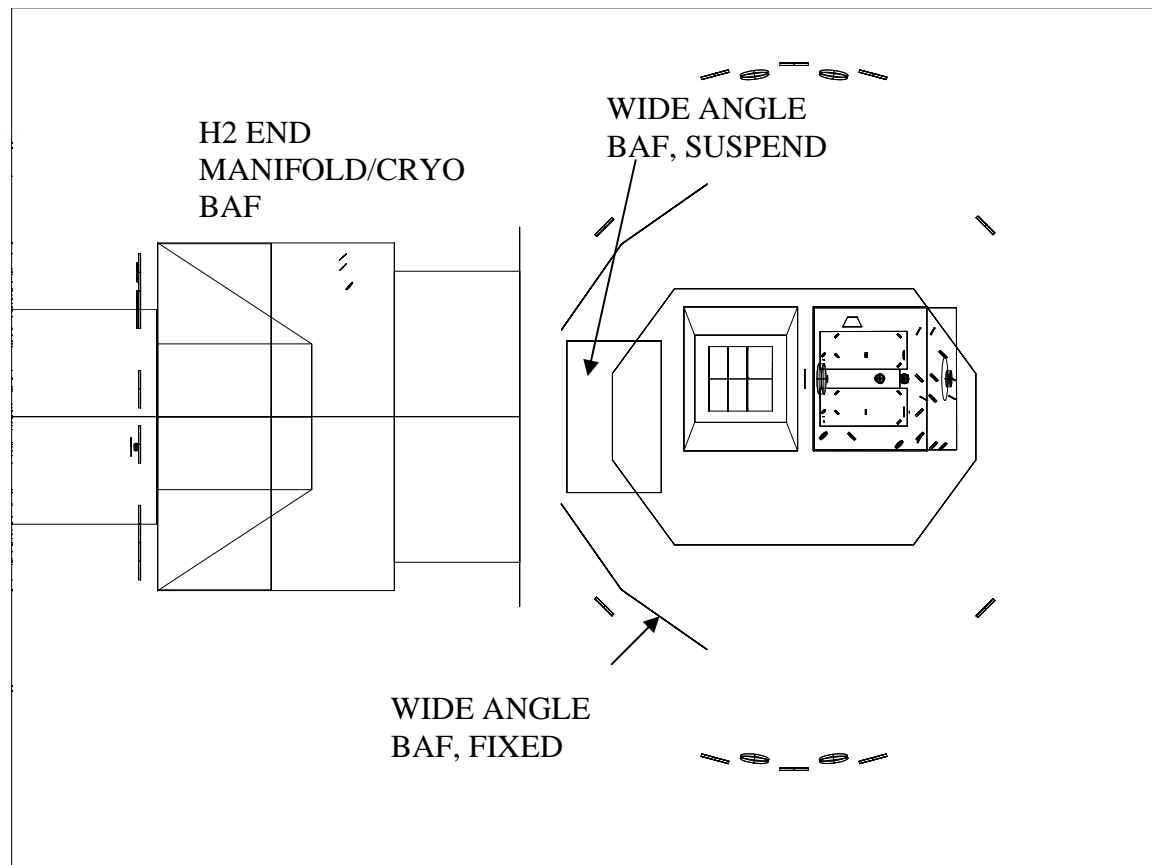


Figure 3: BSC5, H2

3.1.1.4 BSC5 Manifold-Viewport Adapter

3.1.1.4.1 List of Devices

The following baffles and beam dumps will be installed:

1. Manifold/Cryopump Baffle

3.1.1.4.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside, and one crane operator.

1. Remove the Viewport Adapter from the end of the ETM manifold tube.
2. Attach the support ring to the inside of the manifold tube.
3. Use an overhead crane with a special holding attachment to insert the baffle assembly into the opening of the manifold tube to the correct longitudinal position.
4. Attach the blade springs to the baffle support ring.
5. Attach the baffle suspension wires to the baffle.
6. Remove the overhead crane support.
7. Center the baffle inside the manifold.

See Figure 3.

3.1.1.5 ITM Manifold-Viewport Adapter

3.1.1.5.1 List of Devices

The following baffles and beam dumps will be installed:

1. Manifold/Cryopump Baffle

3.1.1.5.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside, and one crane operator.

1. Remove the Viewport Adapter from the end of the ITM manifold tube.
2. Attach the support ring to the inside of the manifold tube.
3. Use an overhead crane with a special holding attachment to insert the baffle assembly into the opening of the manifold tube to the correct axial position.
4. Attach the blade springs to the baffle support ring.
5. Attach the baffle suspension wires to the baffle.
6. Remove the overhead crane support.
7. Center the baffle inside the manifold.

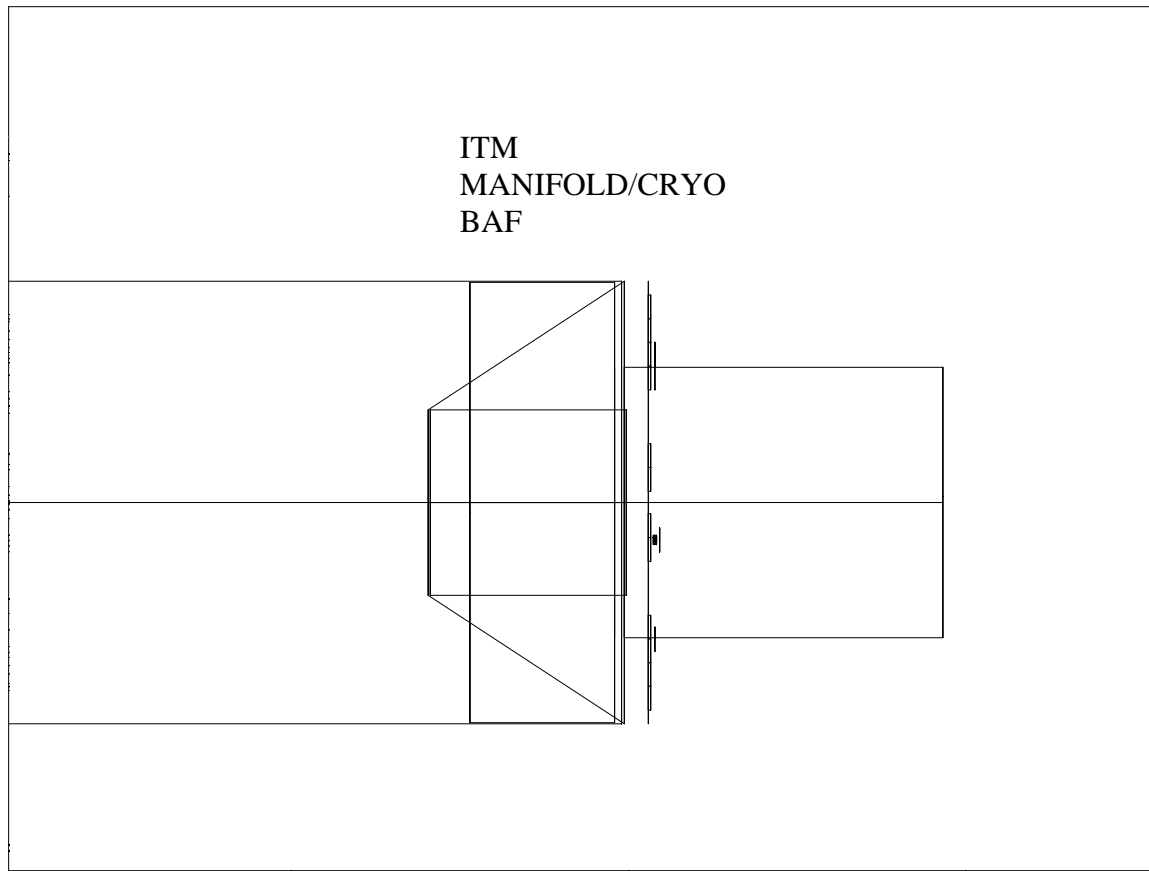


Figure 4: ITM Manifold/ Viewport Adapter

3.1.1.6 WAMCA3 and WAMCB3, Input Mode Cleaner Tube

3.1.1.6.1 List of Devices

The following baffles will be installed:

1. Mode Cleaner Tube A and B Baffles

3.1.1.6.2 Installation Procedure

This procedure requires one person outside the mode cleaner tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.
2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

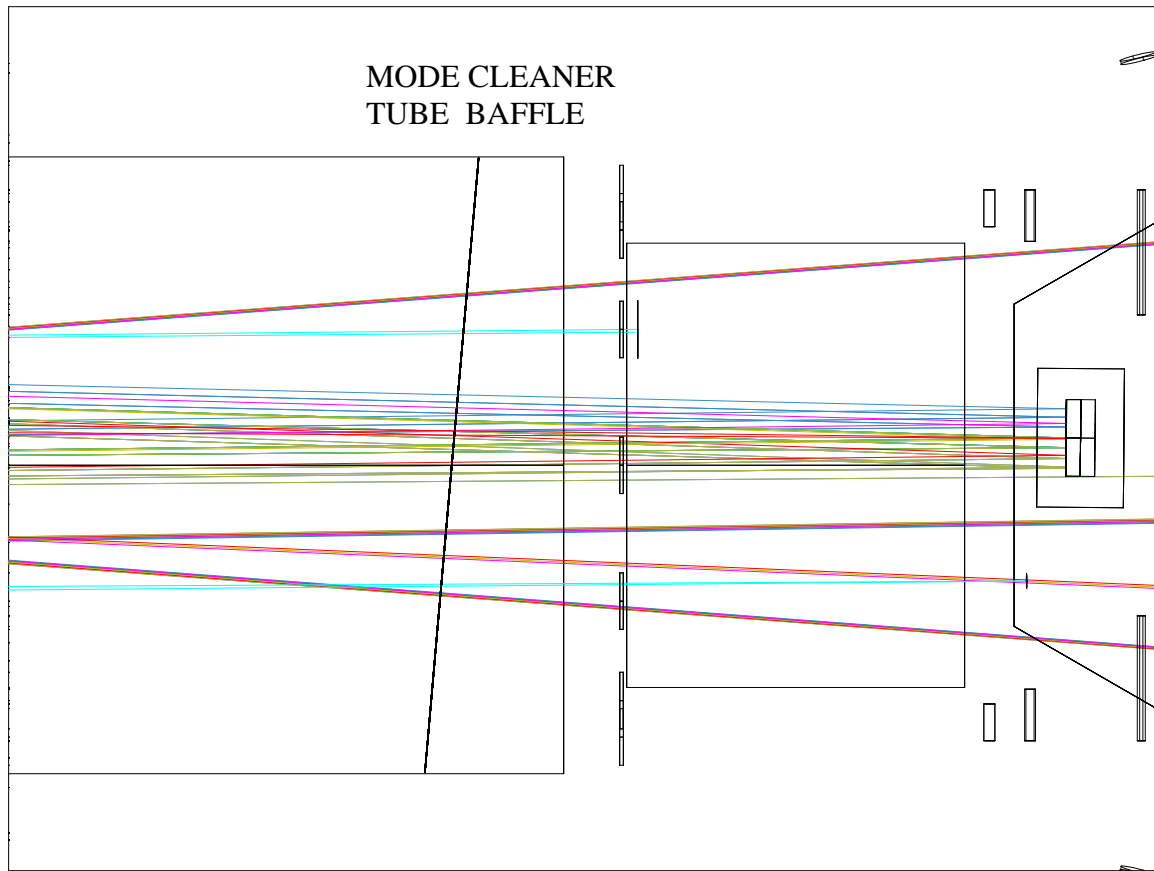


Figure 5: WAMCA3 and WAMCB3, Input Mode Cleaner Tube

3.1.1.7 WAMCA4 and WAMCB4, Output Mode Cleaner Tube

3.1.1.7.1 List of Devices

The following baffles and beam dumps will be installed:

1. Mode Cleaner Tube A and B Baffles

3.1.1.7.2 Installation Procedure

This procedure requires one person outside the mode cleaner tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.
2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

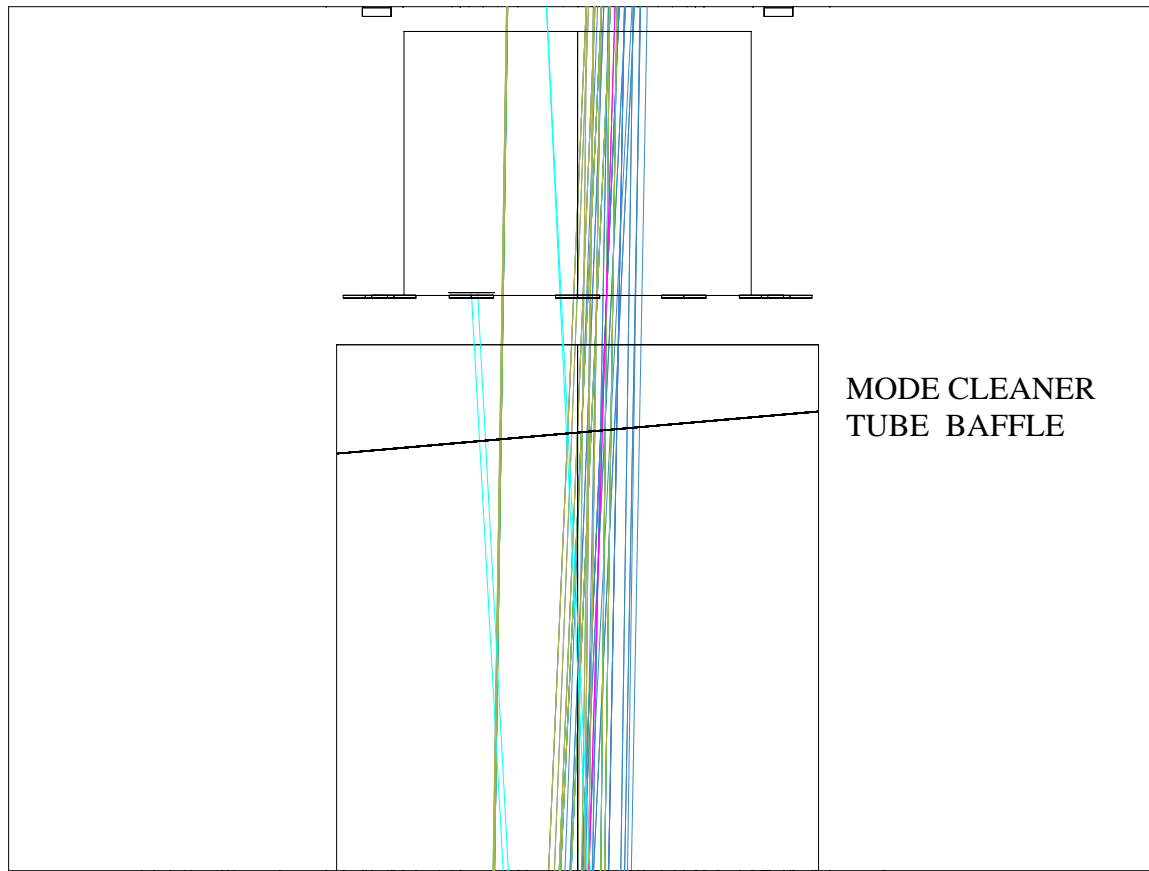


Figure 6: WAMCA4 and WAMCB4, Output Mode Cleaner Tube

3.1.1.8 HAM 10

3.1.1.8.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR2 Scraper Baffle
2. SR2 flat Baffle

3.1.1.8.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside.

1. Remove the access door from the side closest to SR2.
2. Mount the baffles to the HAM optical table.
3. Align the baffles with the signal recycling cavity optical centerline

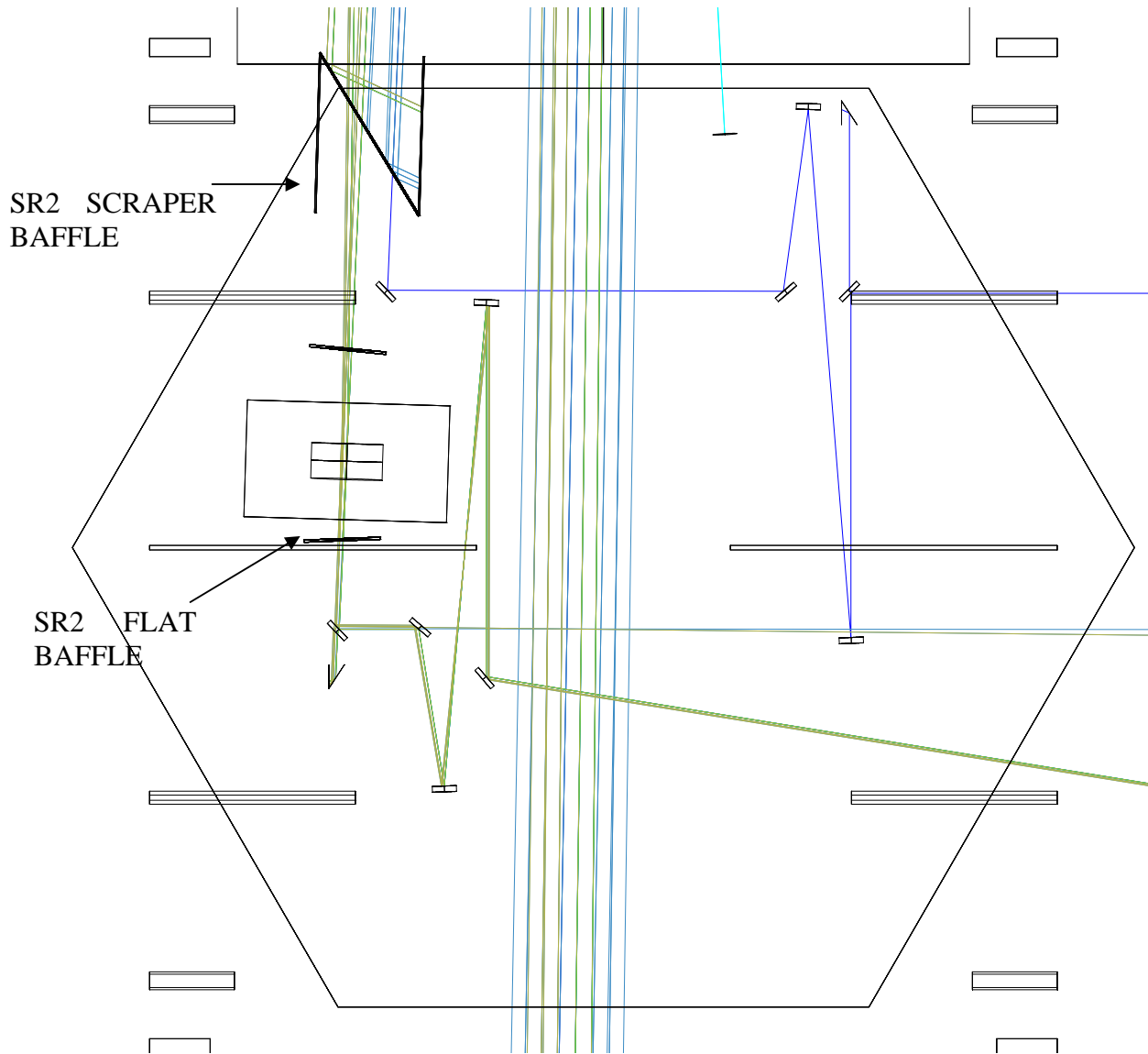


Figure 7: HAM 10

3.1.1.9 HAM 11

3.1.1.9.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR3IN Flat Baffle
2. SR3OUT Flat Baffle
3. SRM flat Baffle
4. Output Faraday Isolator

3.1.1.9.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside, and one person to operate a lifting mechanism.

1. Remove the access door from the side closet to SR3.
2. Mount the baffles to the HAM optical table, and align the baffles with the signal recycling cavity optical centerline.
3. Insert the Output Faraday Isolator using a lifting mechanism. Mount the Output Faraday Isolator to the HAM optical table, and align with the signal recycling cavity optical centerline. Adjust the input optical wedge to make the IFO beam horizontal.

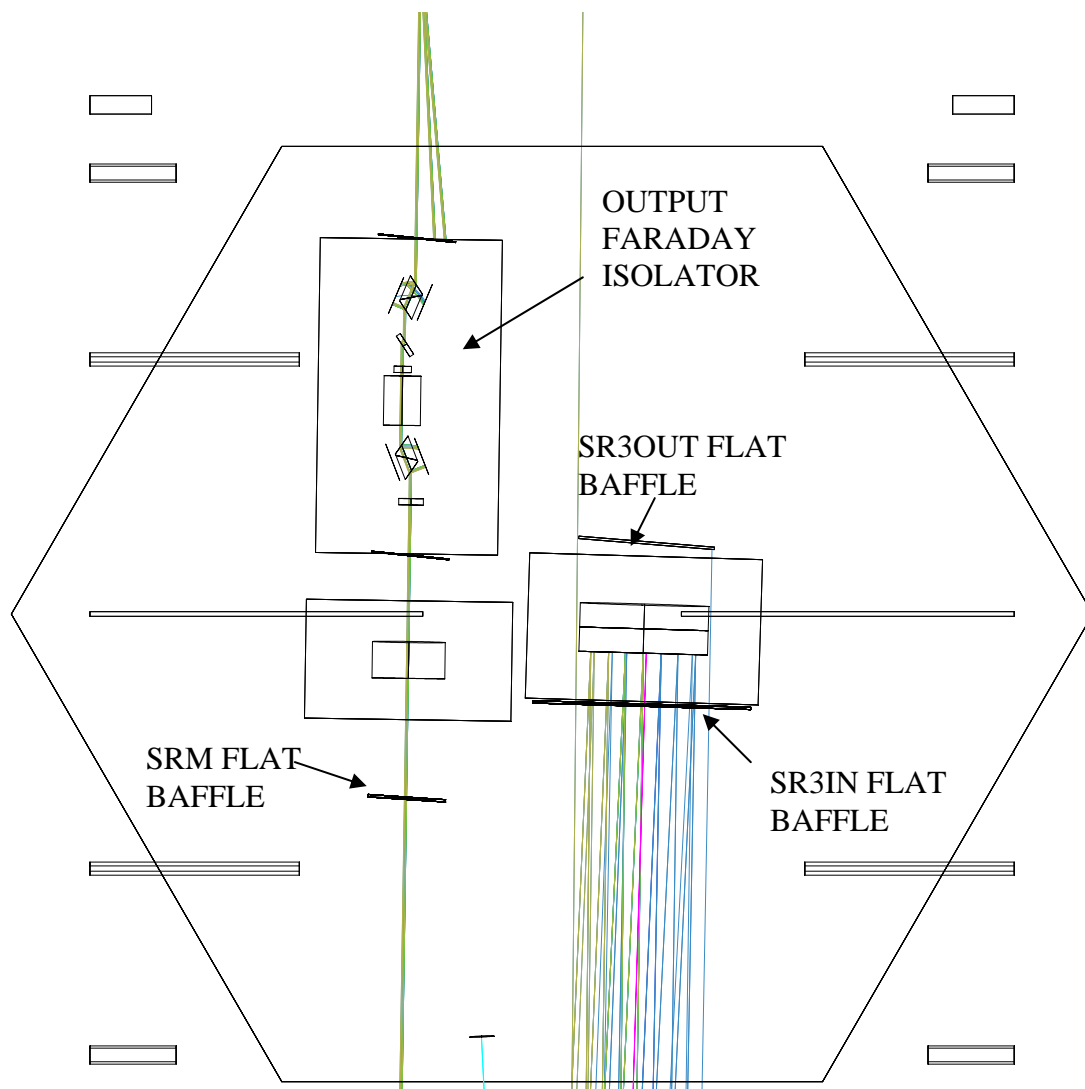


Figure 8: HAM 11

3.1.2 Viewports

See T1000023, Viewport Subsystem Preliminary Design for the locations of the viewports.

3.1.2.1 BSC4, BSC7, BSC8, BSC5, BSC6

Reuse the existing Viewports as required.

3.1.2.2 ITM Manifold Viewport Adapter

Install new 6.0 inch viewports for ITM Optlever input.

Reuse the existing Viewports as required.

3.1.2.3 ETM Manifold Viewport Adapter

Install new 6.0 inch viewports for ETM Optlever input.

Install new 6.0 inch viewports for ETM photon calibrator beams.

Reuse the existing Viewports as required.

3.1.2.4 WAMCA3

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.1.2.5 WAMCB3

Six viewports and six blank flanges will be installed.

Six viewport safety covers will be installed.

3.1.2.6 WAMCA4

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.1.2.7 WAMCB4

Six viewports and six blank flanges will be installed.

Six viewport safety covers will be installed.

3.2 LLO, L1

3.2.1 SLC Devices

3.2.1.1 BSC1 and BSC3

3.2.1.1.1 List of Devices

The following baffles and beam dumps will be installed:

1. Arm Cavity Baffle-1-hole
2. Wide Angle Baffle-Suspended
3. Wide Angle Baffle-Fixed

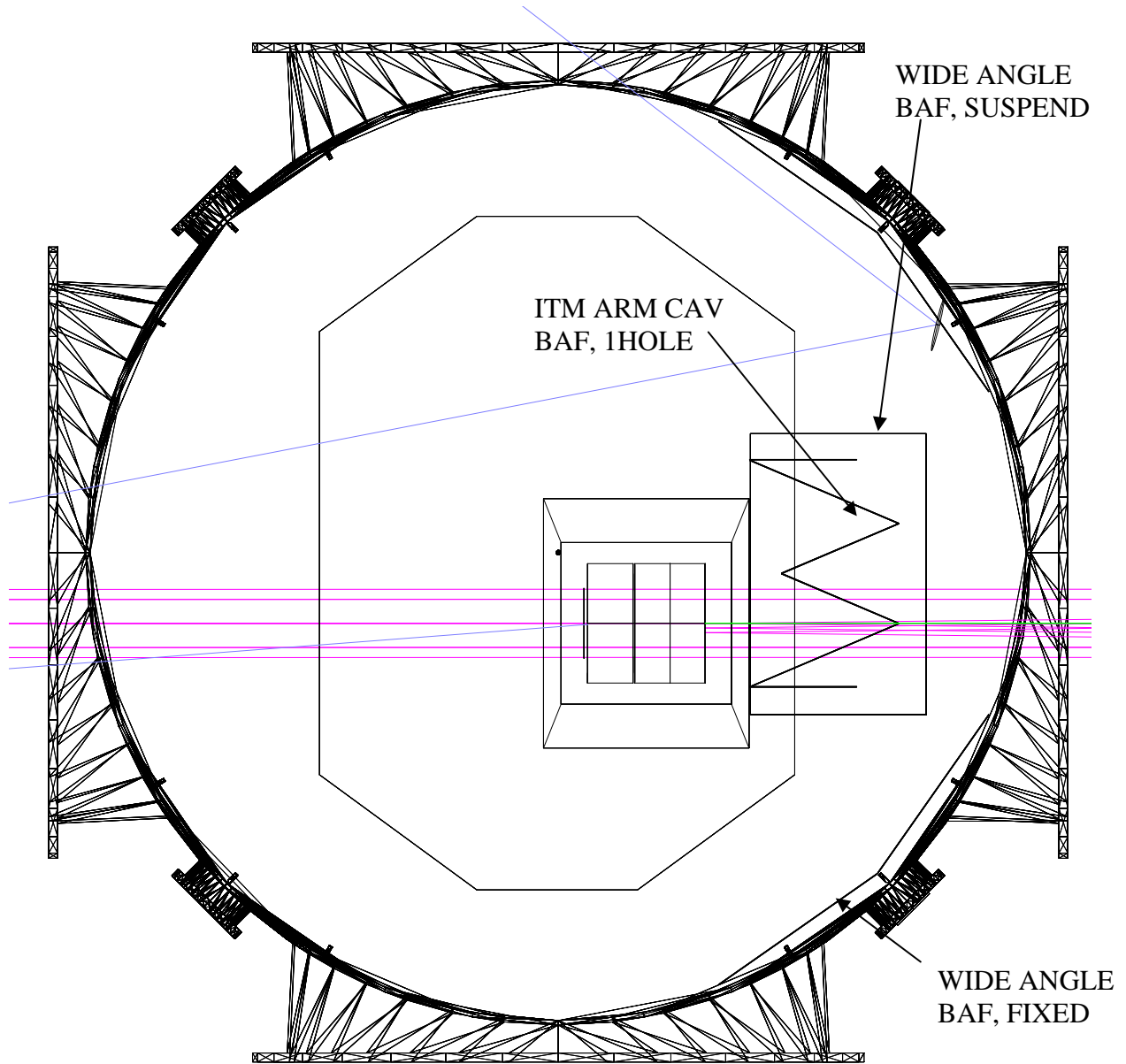


Figure 9: BSC3

3.2.1.1.2 Installation Procedure

The installation, except for the Wide Angle Baffle-Fixed, will be done on the cartridge assembly outside the chamber, if possible.

Procedure 1 requires one or two persons to hold the Wide Angle Baffle and another person to attach the suspension structure to the ISI stage “0” ring.

Procedures 2 will require a lifting mechanism if it is done outside the chamber, or an articulated arm lift mechanism attached to the chamber flange if it is done inside the chamber.

1. Remove the BSC1 and BSC3 access doors.
2. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
3. Attach the Arm Cavity Baffle-1-hole to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
4. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

3.2.1.2 BSC2

3.2.1.2.1 List of Devices

The following baffles will be installed in BSC2:

1. ITMX and ITMY Elliptical Baffles

3.2.1.2.2 Installation Procedure

The installation will be done on the cartridge assembly outside the chamber, if possible. It will require one person to hold the beam dump and another person to attach the suspension structure to the ISI stage “0” ring.

1. Attach the ITMX and ITMY Elliptical Baffles to the ISI stage “0” ring, centered along the beam path in the power recycling cavity between the BS and the ITM.

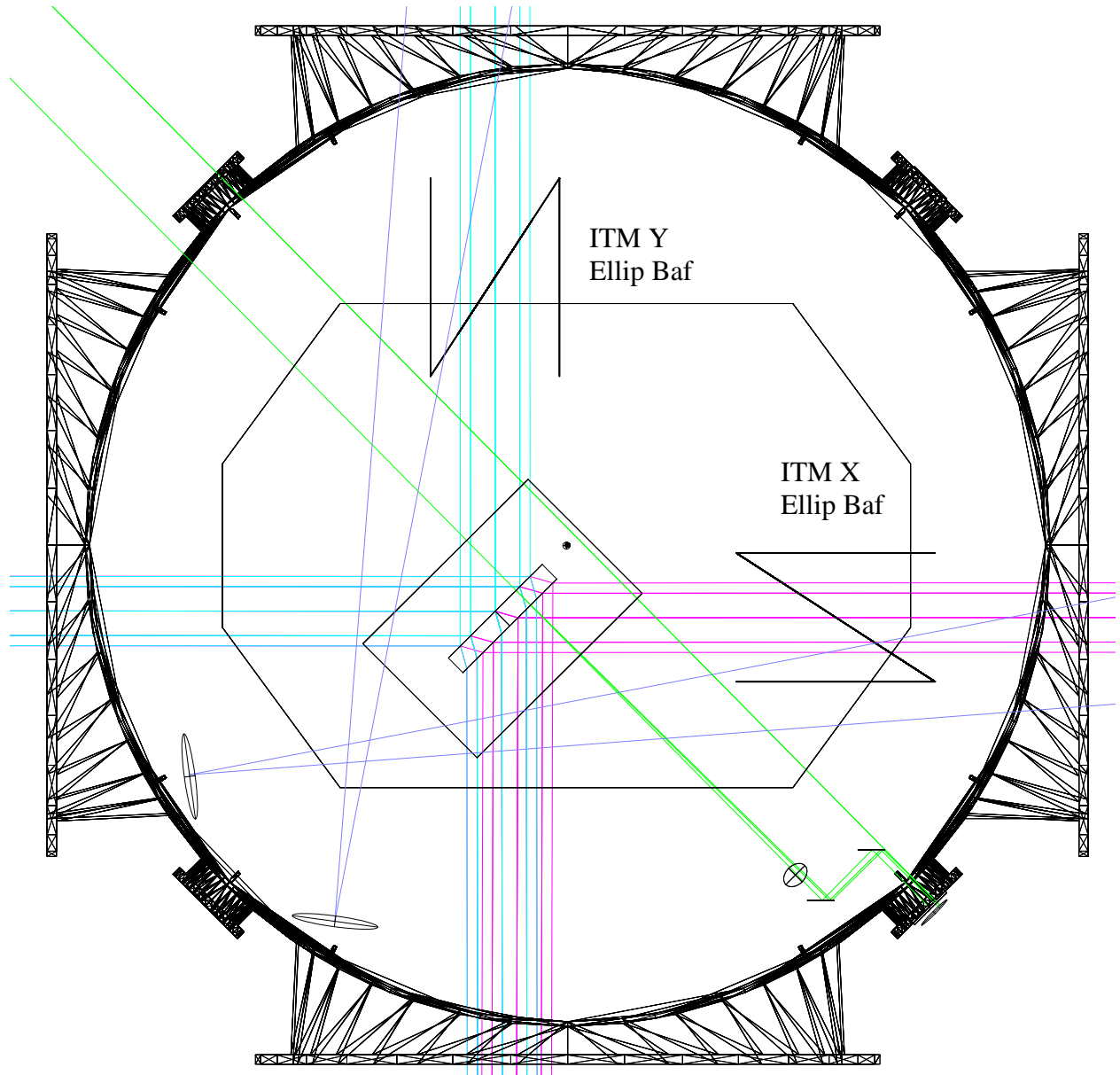


Figure 10: BSC2

3.2.1.3 BSC5 and BSC6

3.2.1.3.1 List of Devices

The following baffles and beam dumps will be installed:

1. Arm Cavity Baffle-1-hole
2. Wide Angle Baffle-Suspended
3. Wide Angle Baffle-Fixed

3.2.1.3.2 Installation Procedure

The installation, except for the Wide Angle Baffle-Fixed, will be done on the cartridge assembly outside the chamber, if possible.

Procedure 1 requires one or two persons to hold the Wide Angle Baffle and another person to attach the suspension structure to the ISI stage “0” ring.

Procedures 2 will require a lifting mechanism if it is done outside the chamber, or an articulated arm lift mechanism attached to the chamber flange if it is done inside the chamber.

1. Remove the BSC1 and BSC3 access doors.
2. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
3. Attach the Arm Cavity Baffle-1-hole to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
4. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

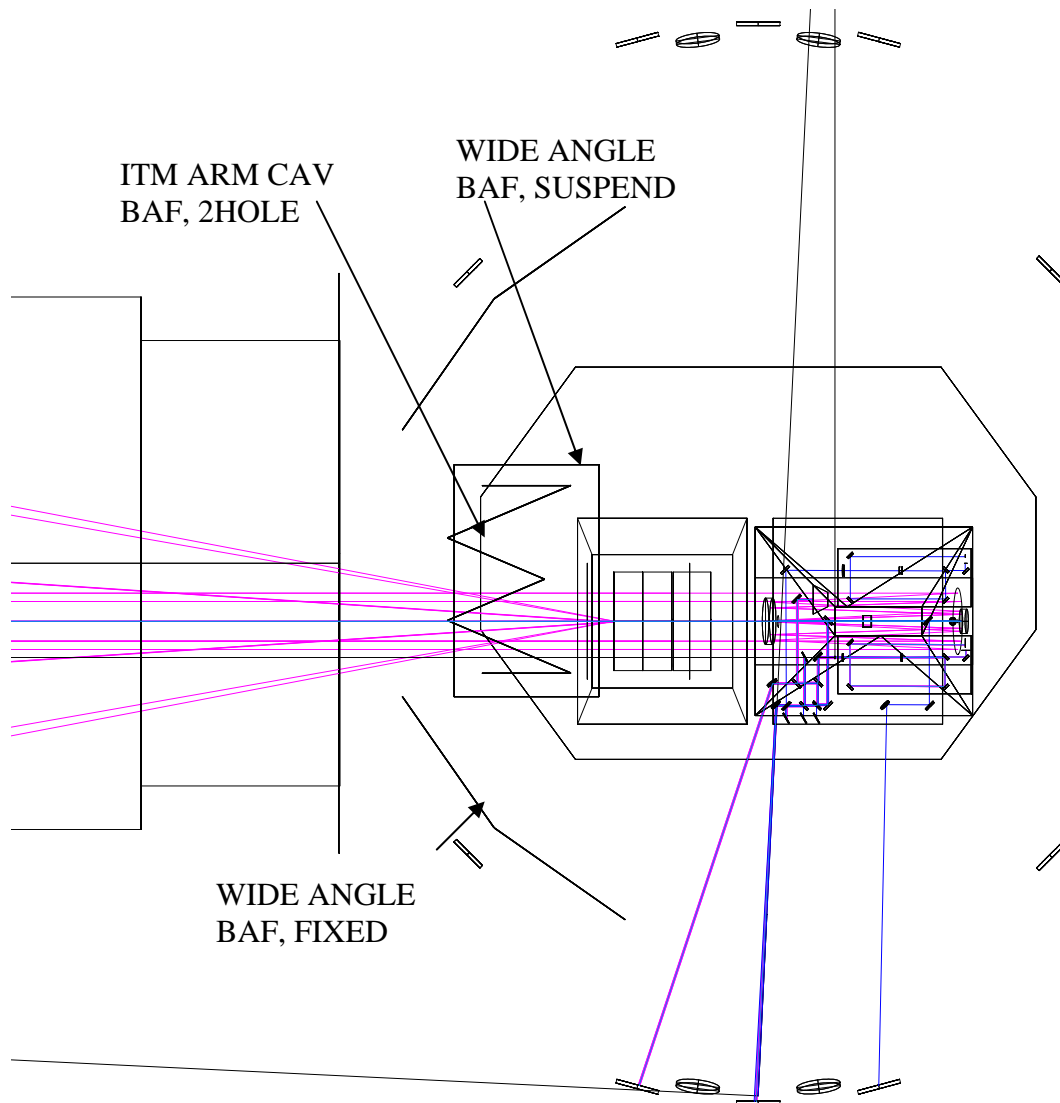


Figure 11: BSC5

3.2.1.4 BSC5 Manifold-Viewport Adapter

3.2.1.4.1 List of Devices

The following baffles and beam dumps will be installed:

1. Manifold/Cryopump Baffle

3.2.1.4.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside, and one crane operator. See

1. Remove the Viewport Adapter from the end of the ETM manifold tube.

2. Attach the support ring to the inside of the manifold tube.
3. Use an overhead crane with a special holding attachment to insert the baffle assembly into the opening of the manifold tube to the correct longitudinal position.

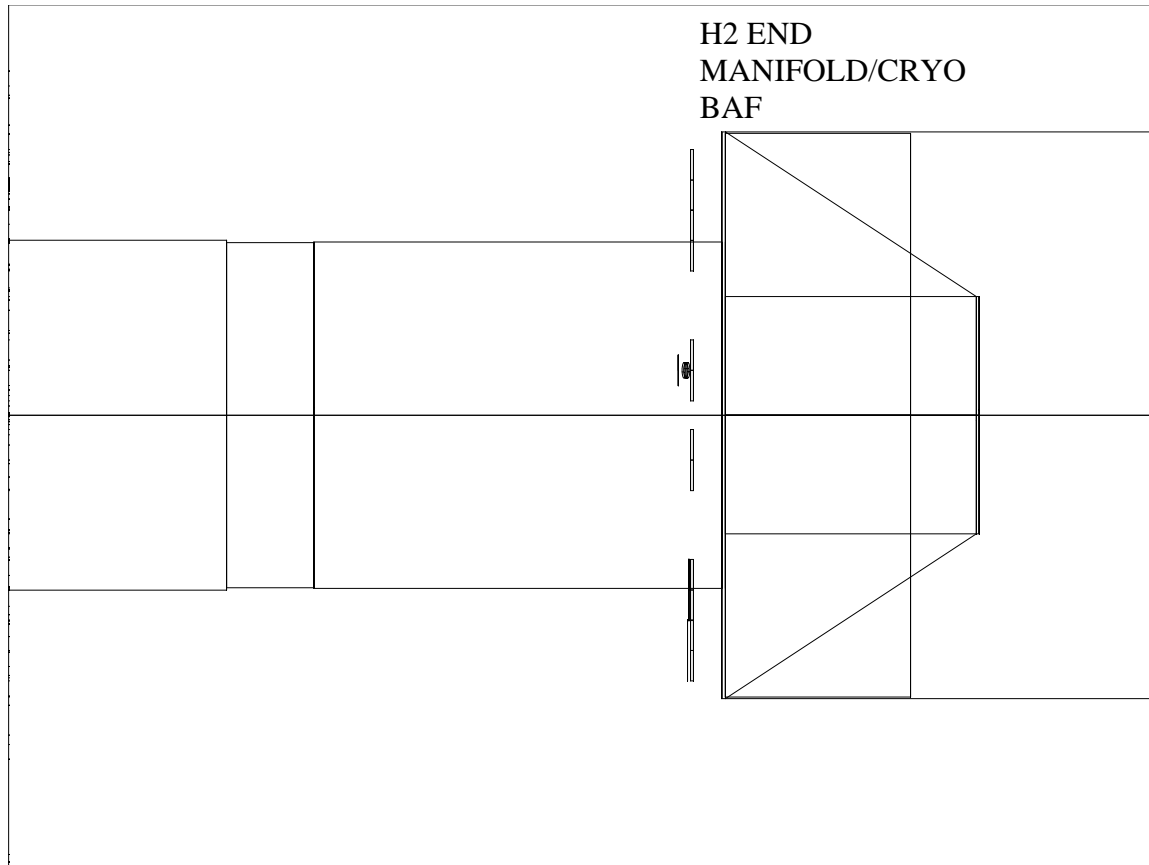


Figure 12: BSC5 Manifold-Viewport Adapter

4. Attach the blade springs to the baffle support ring.
5. Attach the baffle suspension wires to the baffle.
6. Remove the overhead crane support.
7. Center the baffle inside the manifold

3.2.1.5 ITM Manifold-Viewport Adapter

3.2.1.5.1 List of Devices

The following baffles and beam dumps will be installed:

1. Manifold/Cryopump Baffle

3.2.1.5.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside, and one crane operator.

1. Remove the Viewport Adapter from the end of the ITM manifold tube.
2. Attach the support ring to the inside of the manifold tube.
3. Use an overhead crane with a special holding attachment to insert the baffle assembly into the opening of the manifold tube to the correct axial position.
4. Attach the blade springs to the baffle support ring.
5. Attach the baffle suspension wires to the baffle.
6. Remove the overhead crane support.
7. Center the baffle inside the manifold.

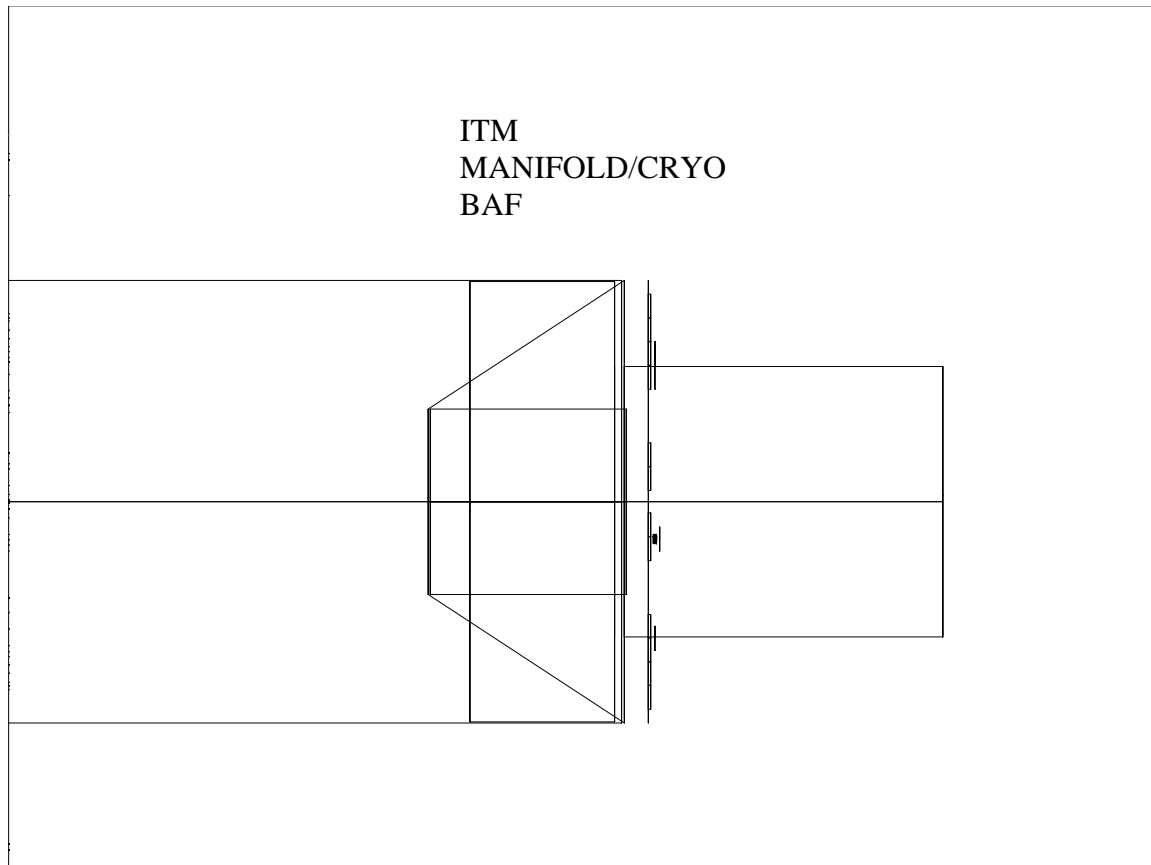


Figure 13: ITM Manifold/ Viewport Adapter

3.2.1.6 LAMCA1 and LAMCB1, Input Mode Cleaner Tube

3.2.1.6.1 List of Devices

The following baffles and beam dumps will be installed:

1. Mode Cleaner Tube A and B Baffles

3.2.1.6.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.
2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

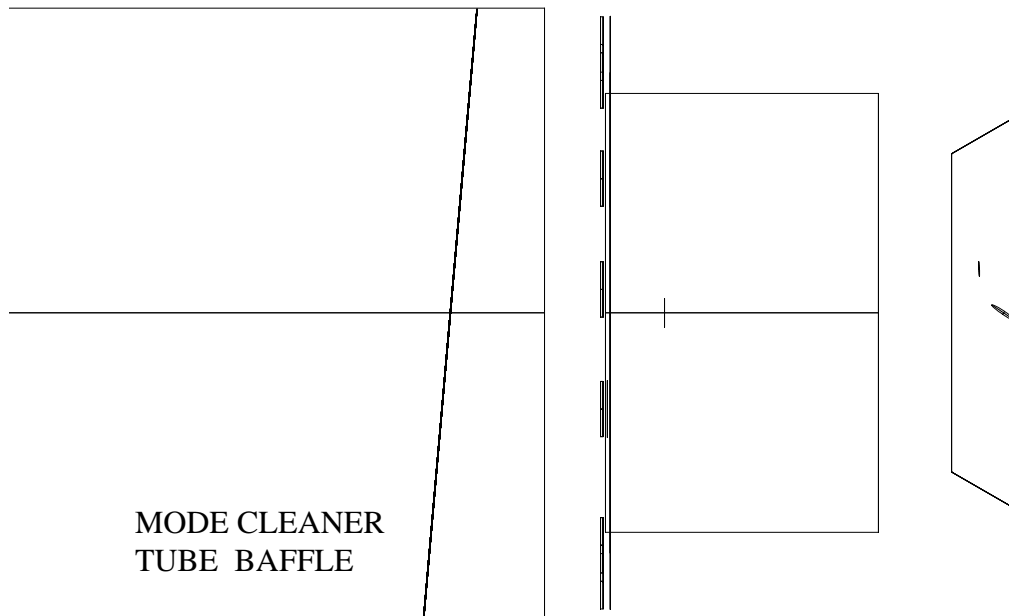


Figure 14: LAMCA1 and LAMCB1, Input Mode Cleaner Tube

3.2.1.7 LAMCA2 and LAMCB2, Output Mode Cleaner Tube

3.2.1.7.1 List of Devices

The following baffles and beam dumps will be installed:

1. Mode Cleaner Tube A and B Baffles

3.2.1.7.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.

2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

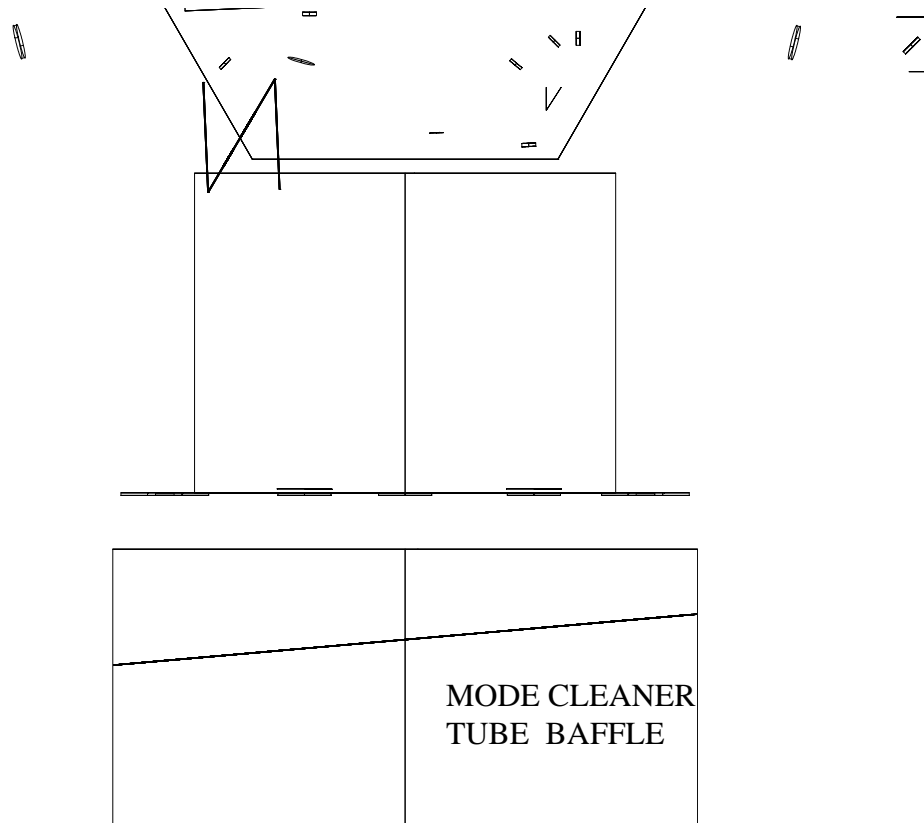


Figure 15: LAMCA2 and LAMCB2, Output Mode Cleaner Tube

3.2.1.8 HAM 4

3.2.1.8.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR2 Scraper Baffle
2. SR2 flat Baffle

3.2.1.8.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside.

1. Remove the access door from the side closes to SR2.
2. Mount the baffles to the HAM optical table.

3. Align the baffles with the signal recycling cavity optical centerline

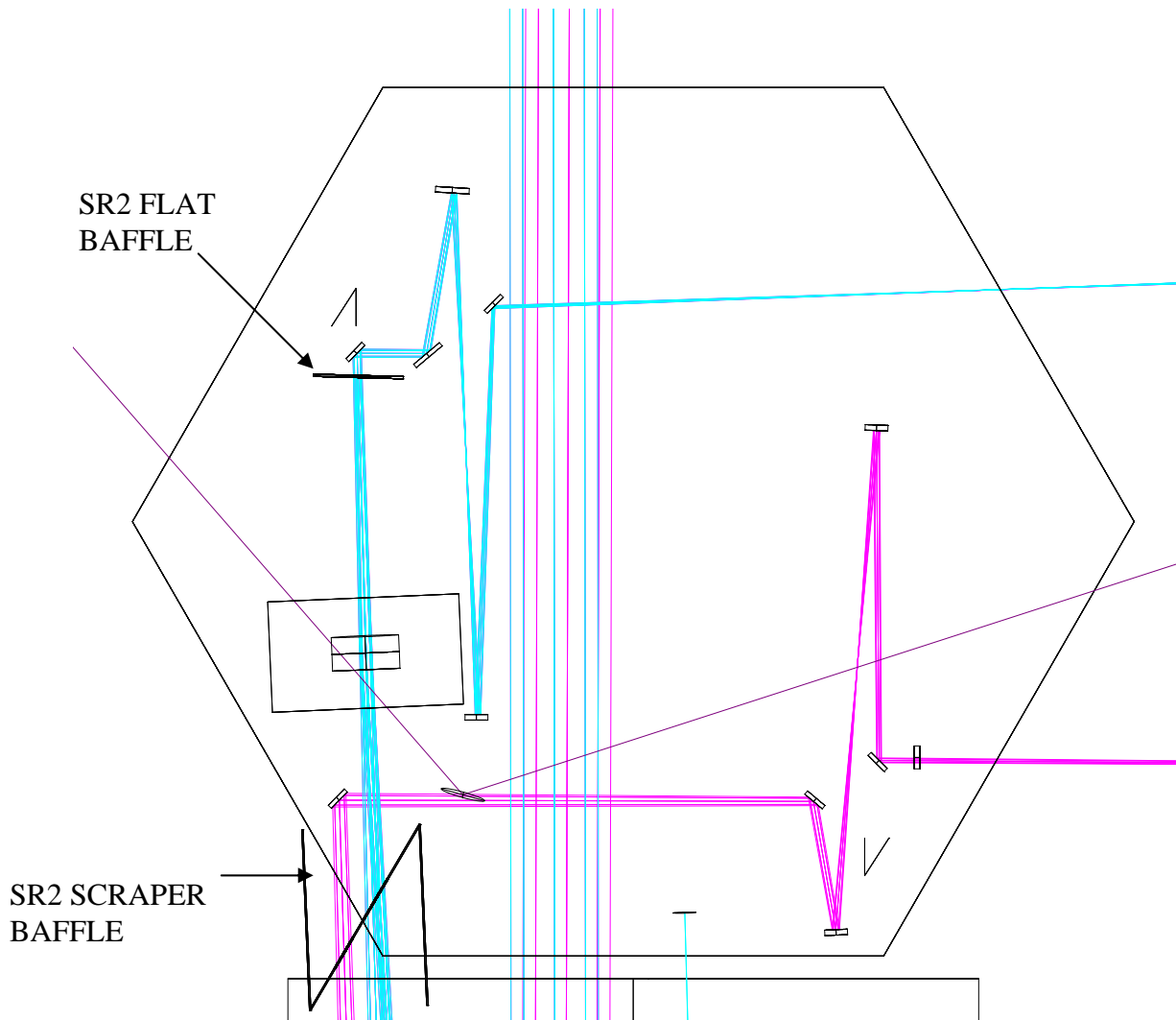


Figure 16: HAM 4

3.2.1.9 HAM 5

3.2.1.9.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR3OUT Flat Baffle
2. SR3OUT Flat Baffle
3. SRM flat Baffle

4. Output Faraday Isolator

3.2.1.9.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside.

1. Remove the access door from the side closet to SR3.
2. Mount the baffles to the HAM optical table, and align the baffles with the signal recycling cavity optical centerline.
3. Insert the Output Faraday Isolator using a lifting mechanism. Mount the Output Faraday Isolator to the HAM optical table, and align with the signal recycling cavity optical centerline. Adjust the input optical wedge to make the IFO beam horizontal.

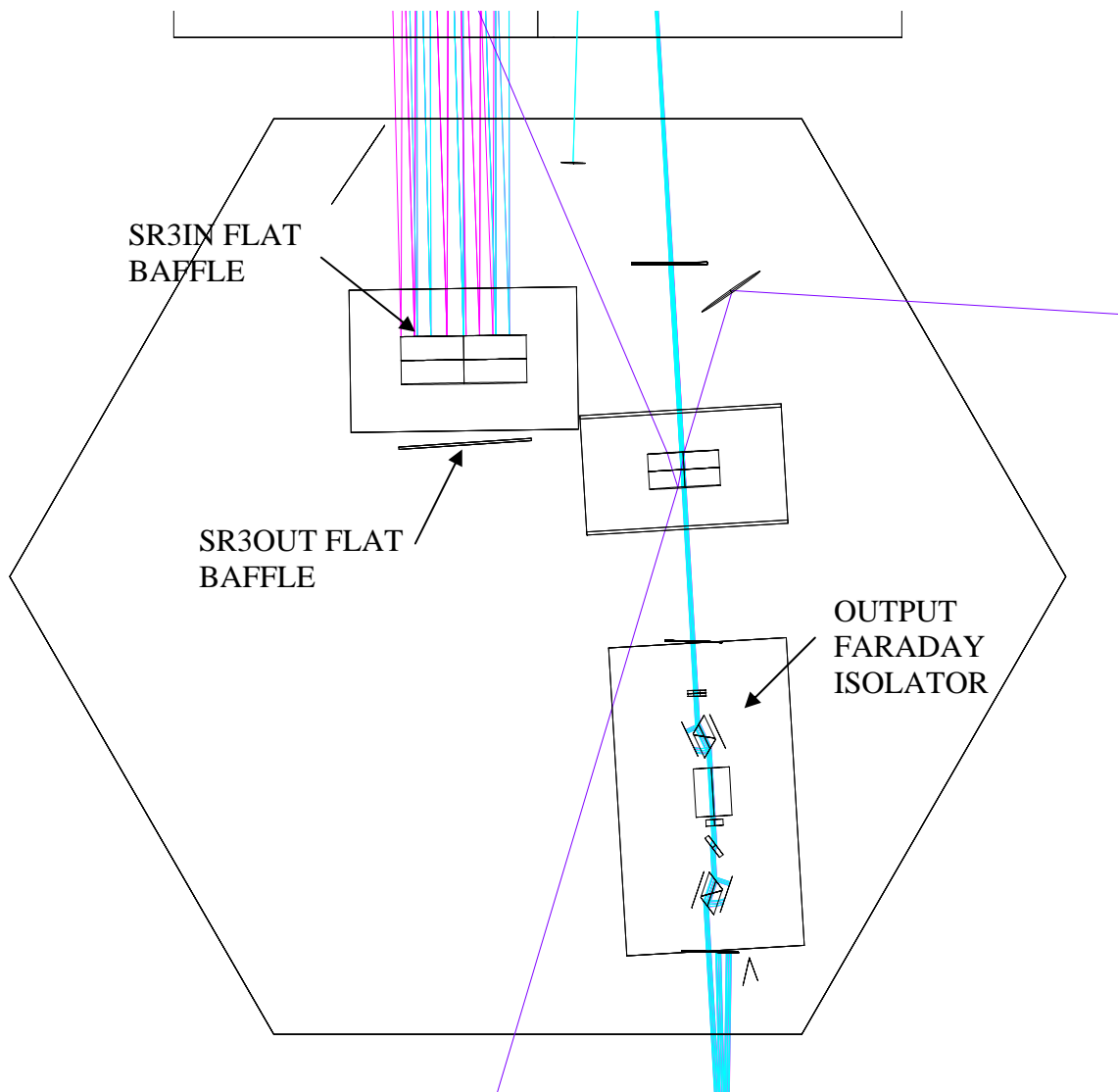


Figure 17: HAM 5**3.2.2 Viewports**

See T1000023, Viewport Subsystem Preliminary Design for the locations of the viewports.

3.2.2.1 BSC2, BSC1, BSC3, BSC5, BSC6

Reuse the existing Viewports as required.

3.2.2.2 ITM Manifold Viewport Adapter

Install new 6.0 inch viewports for ITM Optlever input.

Reuse the existing Viewports as required.

3.2.2.3 ETM Manifold Viewport Adapter

Install new 6.0 inch viewports for ETM Optlever input.

Install new 6.0 inch viewports for ETM photon calibrator beams.

Reuse the existing Viewports as required.

3.2.2.4 LAMCA1

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.2.2.5 LAMCB1

Six viewports and six blank flanges will be installed.

Six viewport safety covers will be installed.

3.2.2.6 LAMCA2

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.2.2.7 LAMCB2

Four viewports and eight blank flanges will be installed.

Four viewport safety covers will be installed.

3.3 LHO, H1

3.3.1 SLC Devices

3.3.1.1 BSC1 and BSC3

3.3.1.1.1 List of Devices

The following baffles and beam dumps will be installed:

1. Arm Cavity Baffle-1-hole
2. Wide Angle Baffle-Suspended
3. Wide Angle Baffle-Fixed

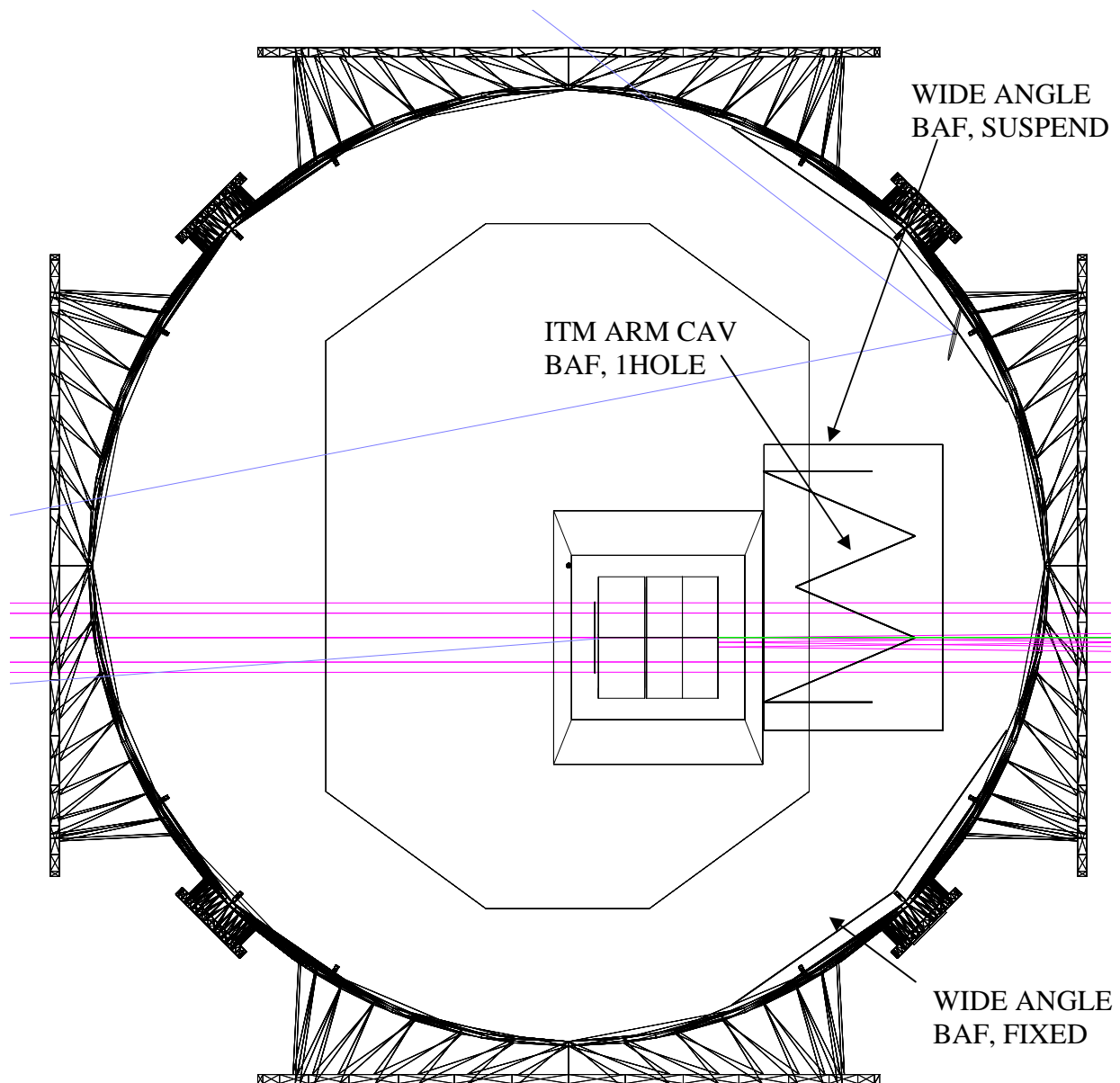


Figure 18: BSC3

3.3.1.1.2 Installation Procedure

The installation, except for the Wide Angle Baffle-Fixed, will be done on the cartridge assembly outside the chamber, if possible.

Procedures 1) requires one or two persons to hold the Wide Angle Baffle and another person to attach the suspension structure to the ISI stage “0” ring.

Procedures 2) will require a lifting mechanism if it is done outside the chamber, or an articulated arm lift mechanism attached to the chamber flange if it is done inside the chamber.

1. Remove the BSC1 and BSC3 access doors.

2. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
3. Attach the Arm Cavity Baffle-1-hole to the ISI stage “0” ring, centered along the beam path in the arm cavity between the arm tube and the ITM.
4. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

3.3.1.2 BSC2

3.3.1.2.1 List of Devices

The following baffles will be installed in BSC4:

1. ITMX and ITMY Elliptical Baffles

3.3.1.2.2 Installation Procedure

The installation will be done on the cartridge assembly outside the chamber, if possible. It will require one person to hold the beam dump and another person to attach the suspension structure to the ISI stage “0” ring.

1. Attach the ITMX and ITMY Elliptical Baffles to the ISI stage “0” ring, centered along the beam path in the power recycling cavity between the BS and the ITM.

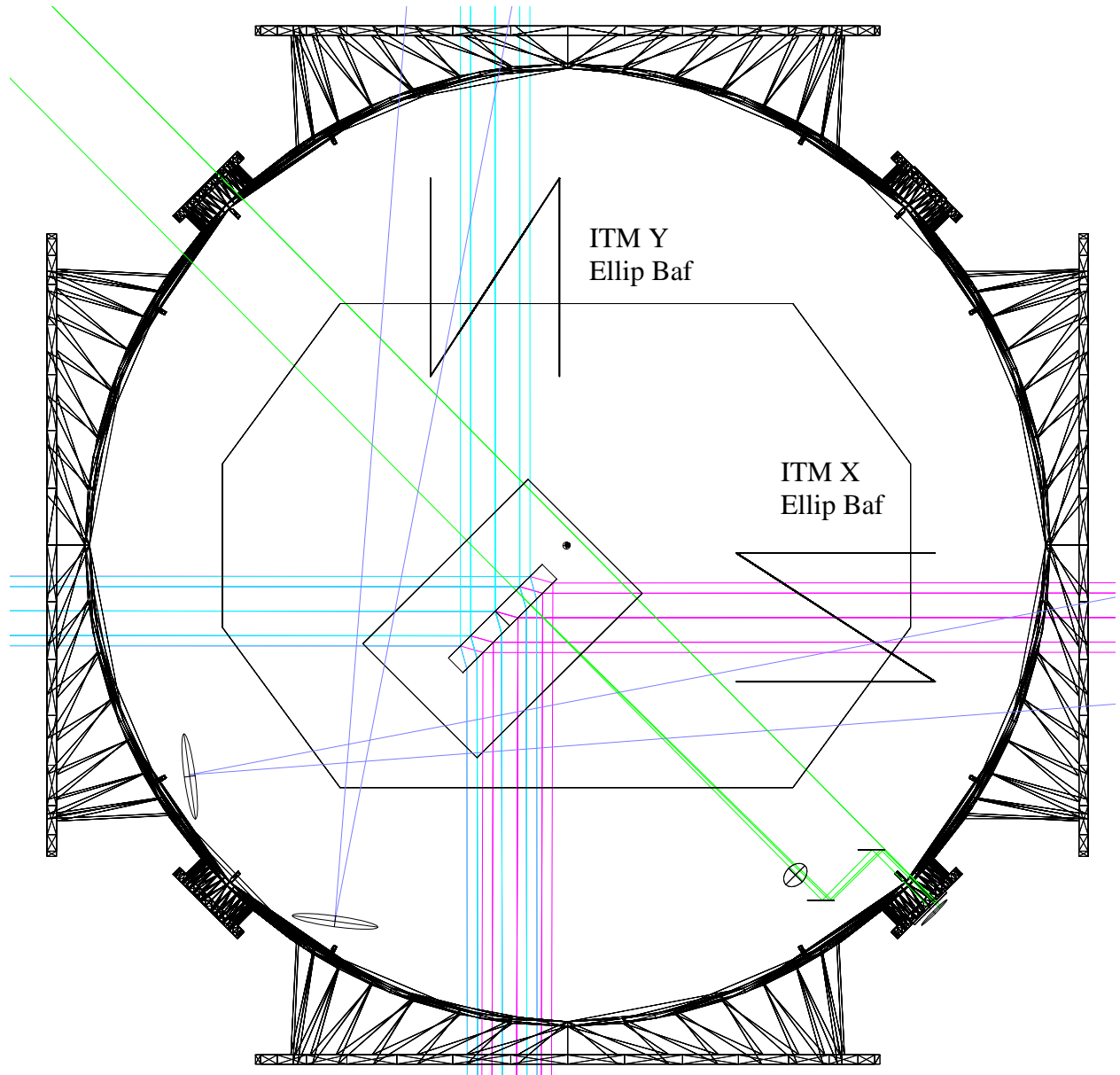


Figure 19: BSC2

3.3.1.3 BSC9 and BSC10

3.3.1.3.1 List of Devices

The following baffles and beam dumps will be installed:

1. Wide Angle Baffle-Suspended
2. Wide Angle Baffle-Fixed

3.3.1.3.2 Installation Procedure

The installation will be done on the cartridge assembly outside the chamber, if possible.

1. Attach the Wide Angle Baffle to the ISI stage “0” ring, centered along the beam path in the arm cavity between the ETM and the arm tube.
2. Attach the Wide Angle Baffle-Fixed baffle plates to the mounting brackets on the inside walls of the BSC.

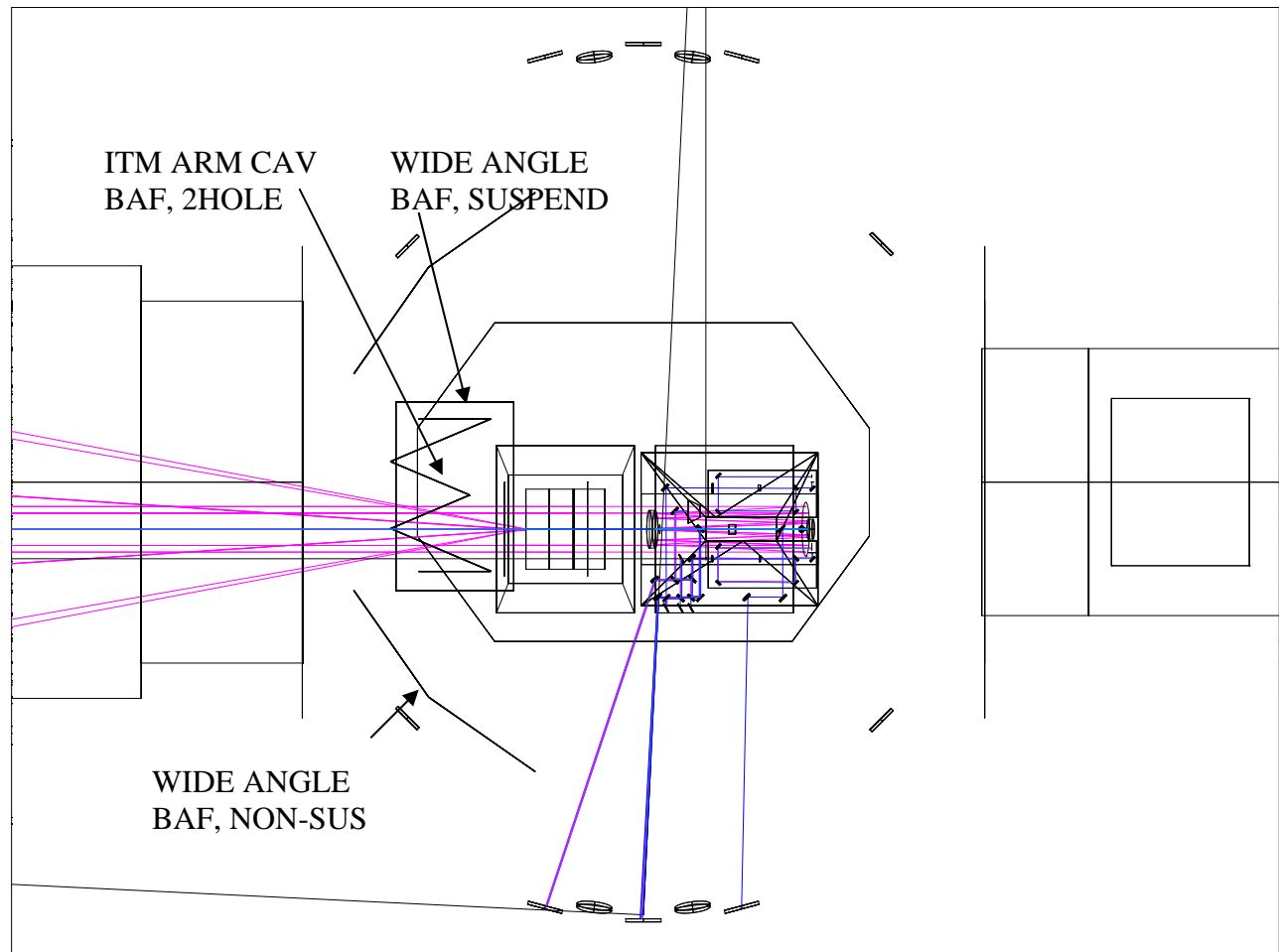


Figure 20: BSC9

3.3.1.4 BSC9 Manifold-Viewport Adapter

3.3.1.4.1 List of Devices

The following baffles and beam dumps will be installed:

1. Manifold/Cryopump Baffle

3.3.1.4.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside, and one crane operator. See

1. Remove the Viewport Adapter from the end of the ETM manifold tube.
2. Attach the support ring to the inside of the manifold tube.
3. Use an overhead crane with a special holding attachment to insert the baffle assembly into the opening of the manifold tube to the correct longitudinal position.
4. Attach the blade springs to the baffle support ring.
5. Attach the baffle suspension wires to the baffle.
6. Remove the overhead crane support.
7. Center the baffle inside the manifold.

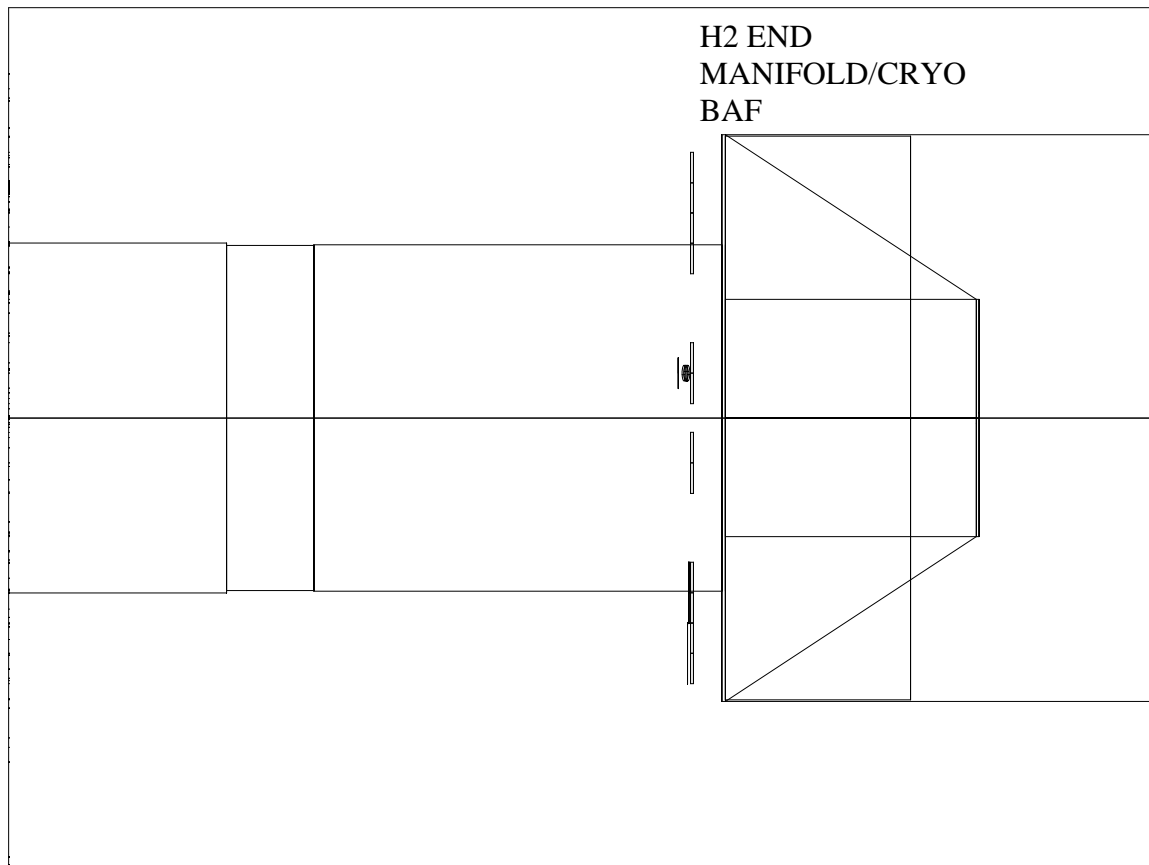


Figure 21: BSC9 Manifold-Viewport Adapter

3.3.1.5 WAMCA1 and WAMCB1, Input Mode Cleaner Tube

3.3.1.5.1 List of Devices

The following baffles and beam dumps will be installed:

1. Mode Cleaner Tube A and B Baffles

3.3.1.5.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.
2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

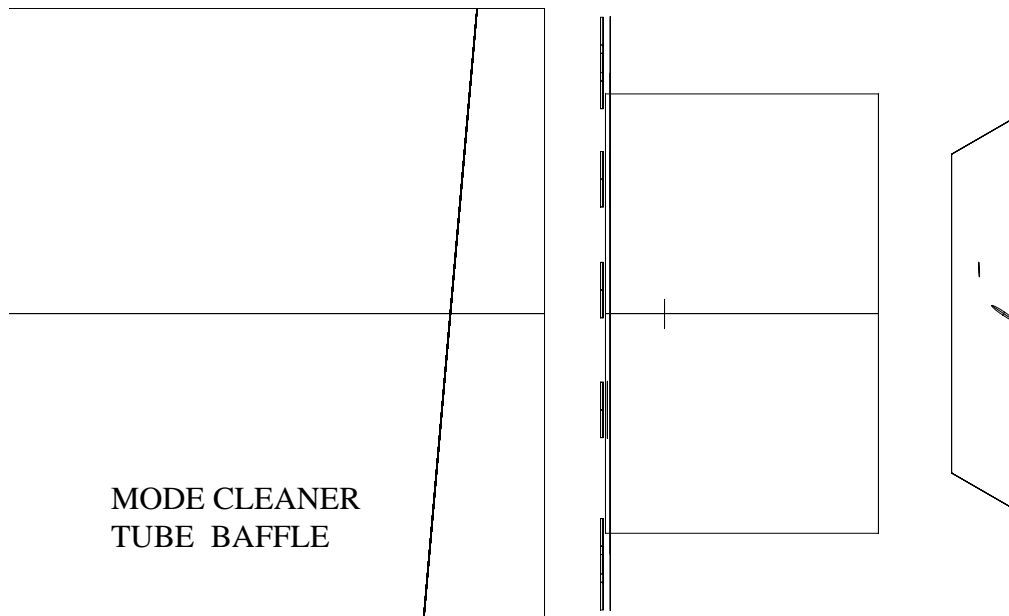


Figure 22: WAMCA1 and WAMCB1, Input Mode Cleaner Tube

3.3.1.6 WAMCA2 and WAMCB2, Output Mode Cleaner Tube

3.3.1.6.1 List of Devices

The following baffles and beam dumps will be installed:

1. Mode Cleaner Tube A and B Baffles

3.3.1.6.2 Installation Procedure

This procedure requires one person outside the manifold tube, one person inside.

1. Remove the Viewport Adapter from each end of the Mode Cleaner Tube.
2. Attach the support ring to the inside of the Mode Cleaner tube.
3. Attach the baffle to the support ring.

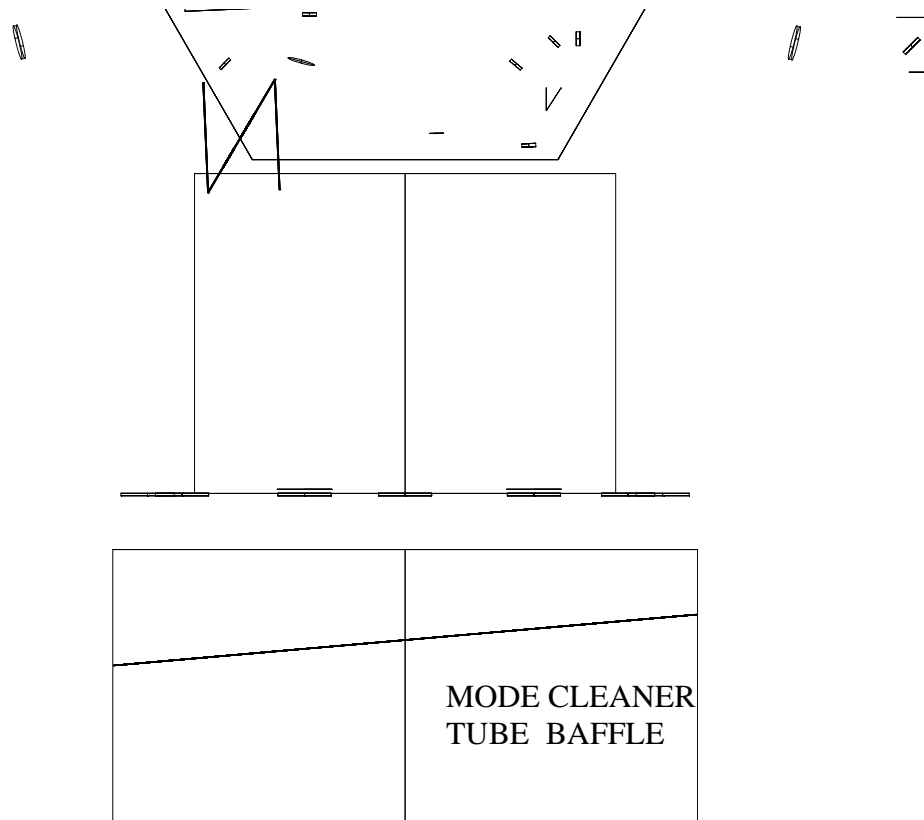


Figure 23: WAMCA2 and WAMCB2, Output Mode Cleaner Tube

3.3.1.7 HAM 4

3.3.1.7.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR2 Scraper Baffle
2. SR2 flat Baffle

3.3.1.7.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside.

1. Remove the access door from the side closes to SR2.
2. Mount the baffles to the HAM optical table.
3. Align the baffles with the signal recycling cavity optical centerline

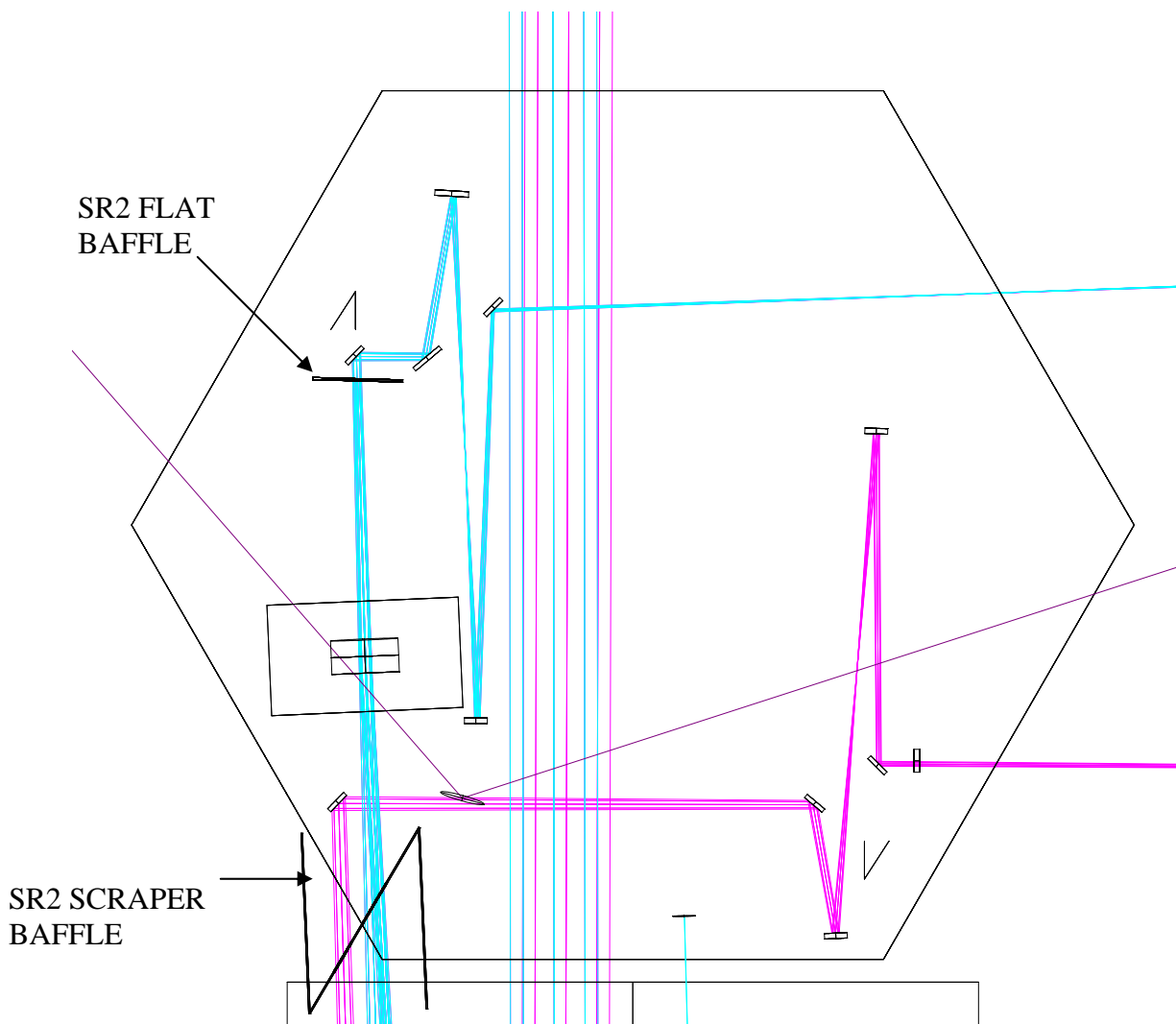


Figure 24: HAM 4

3.3.1.8 HAM 5

3.3.1.8.1 List of Devices

The following baffles and beam dumps will be installed:

1. SR3OUT Flat Baffle
2. SR3OUT Flat Baffle
3. SRM flat Baffle
4. Output Faraday Isolator

3.3.1.8.2 Installation Procedure

This procedure requires one person outside the HAM, one person inside, and one person to operate a lifting mechanism.

1. Remove the access door from the side closet to SR3.
2. Mount the baffles to the HAM optical table, and align the baffles with the signal recycling cavity optical centerline.
3. Insert the Output Faraday Isolator using a lifting mechanism. Mount the Output Faraday Isolator to the HAM optical table, and align with the signal recycling cavity optical centerline. Adjust the input optical wedge to make the IFO beam horizontal.

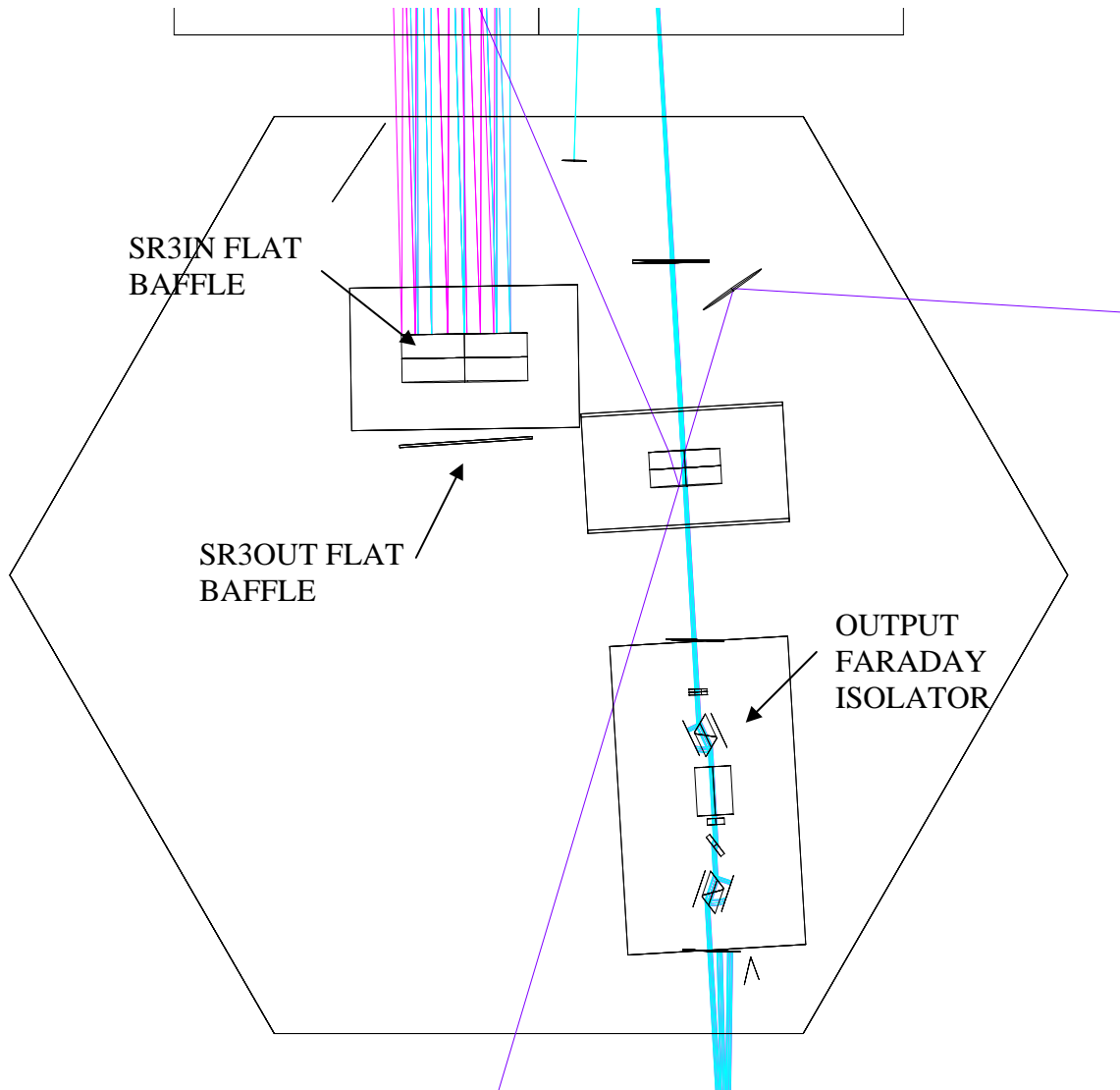


Figure 25: HAM 5

3.3.2 Viewports

See T1000023, Viewport Subsystem Preliminary Design for the locations of the viewports.

3.3.2.1 BSC2, BSC1, BSC3, BSC9, BSC10

Reuse the existing Viewports as required.

3.3.2.2 ITM Manifold Viewport Adapter

Install new 6.0 inch viewports for ITM Optlever input.

Reuse the existing Viewports as required.

3.3.2.3 ETM Manifold Viewport Adapter

Install new 6.0 inch viewports for ETM Optlever input.

Install new 6.0 inch viewports for ETM photon calibrator beams.

Reuse the existing Viewports as required.

3.3.2.4 WAMCA1

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.3.2.5 WAMCB1

Six viewports and six blank flanges will be installed.

Six viewport safety covers will be installed.

3.3.2.6 WAMCA2

Three viewports and nine blank flanges will be installed.

Three viewport safety covers will be installed.

3.3.2.7 WAMCB2

Four viewports and eight blank flanges will be installed.

Four viewport safety covers will be installed.

4 Manpower Requirements

4.1 LHO , H2

Table 2: Manpower Requirements, LHO H2

LOCATION	PERSONS	CRANE OPERATOR
BSC7 & BSC8	3	
BSC4	2	
BSC5 & BSC6	2	
BSC5, BSC6 Manifold-Viewport Adapter	2	1
ITMX,Y Manifold-Viewport Adapter	2	1
Input Mode Cleaner Tube, H2	2	
Output Mode Cleaner Tube	2	
HAM 10	2	

LOCATION	PERSONS	CRANE OPERATOR
HAM 11	2	

4.2 LLO, L1

Table 3: Manpower Requirements, LLO H1

LOCATION	PERSONS	CRANE OPERATOR
BSC1 and BSC3	3	
BSC2	2	
BSC5 & BSC6	2	
BSC5, BSC6 Manifold-Viewport Adapter	2	1
ITMX,Y Manifold-Viewport Adapter	2	1
Input Mode Cleaner Tube, H2	2	
Output Mode Cleaner Tube	2	
HAM 4	2	
HAM 5	2	

4.3 LHO, H1

Table 4: Manpower Requirements, LHO H1

LOCATION	PERSONS	CRANE OPERATOR
BSC1 and BSC3	3	
BSC2	2	
BSC9 & BSC10	2	
BSC9, BSC10 Manifold-Viewport Adapter	2	1
ITMX,Y Manifold-Viewport Adapter	2	1
Input Mode Cleaner Tube	2	
Output Mode Cleaner Tube	2	
HAM 4	2	
HAM 5	2	

