

DIAGNOSTIC DESIGN

MAST Installation

PLEASE NOTE THAT COMMENTS REGARDING THE DESIGN, FROM JUNE 19TH MEETING, APPEAR IN THESE BOXES

Overview

- Materials
 - 316 stainless steel
 - Boron Nitride Grade A ceramic from St. Gobain
 - Bronze (1 washer)
- Secure Screws
 - Spot-welding SS wire on SS316 screws
 - Spot-welding SS wire on BN?
- Diagnostic Design
 - 4-channel array
 - Each channel separated by 7.5 degrees

COMMENT 2

ISSUE: IS GRADE OF BN CERAMIC APPROPRIATE?

IDEA: CONTACT MAST COLLEAGUES

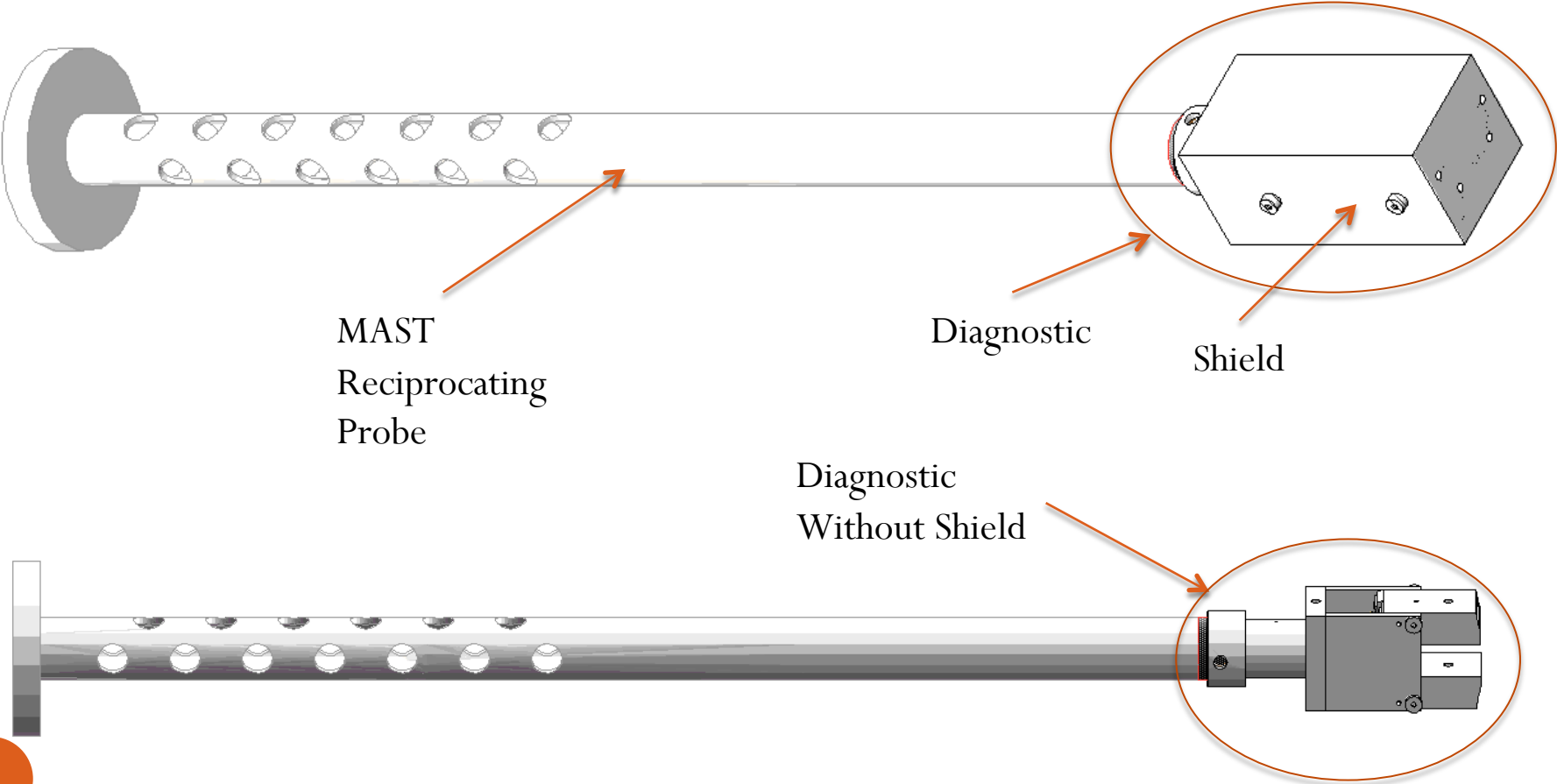
COMMENT 9

ISSUE: FORGOTTEN MAST DESIGN REGULATIONS REGARDING DIAGNOSTICS?

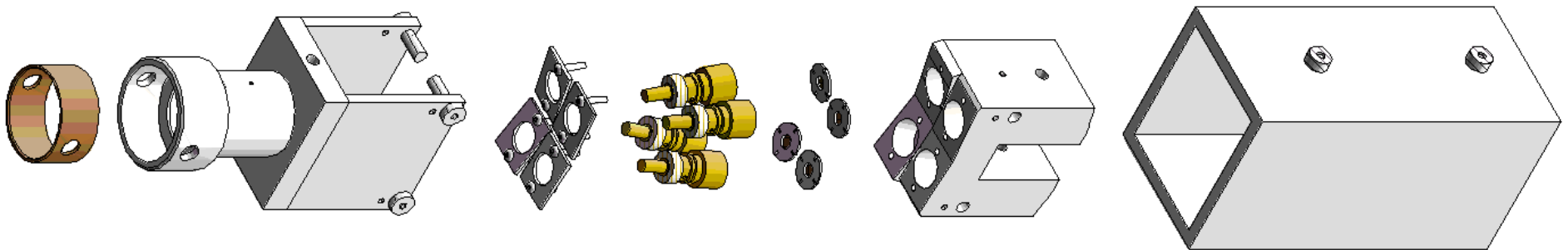
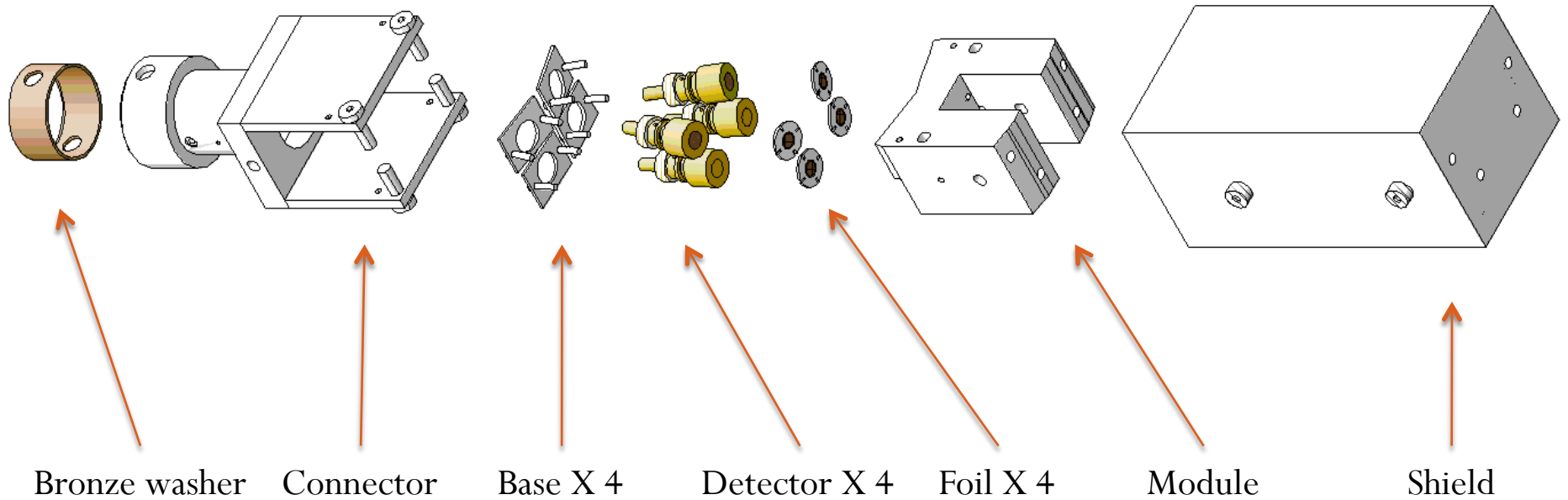
IDEA: CONTACT MAST COLLEAGUES

Total Assembled View

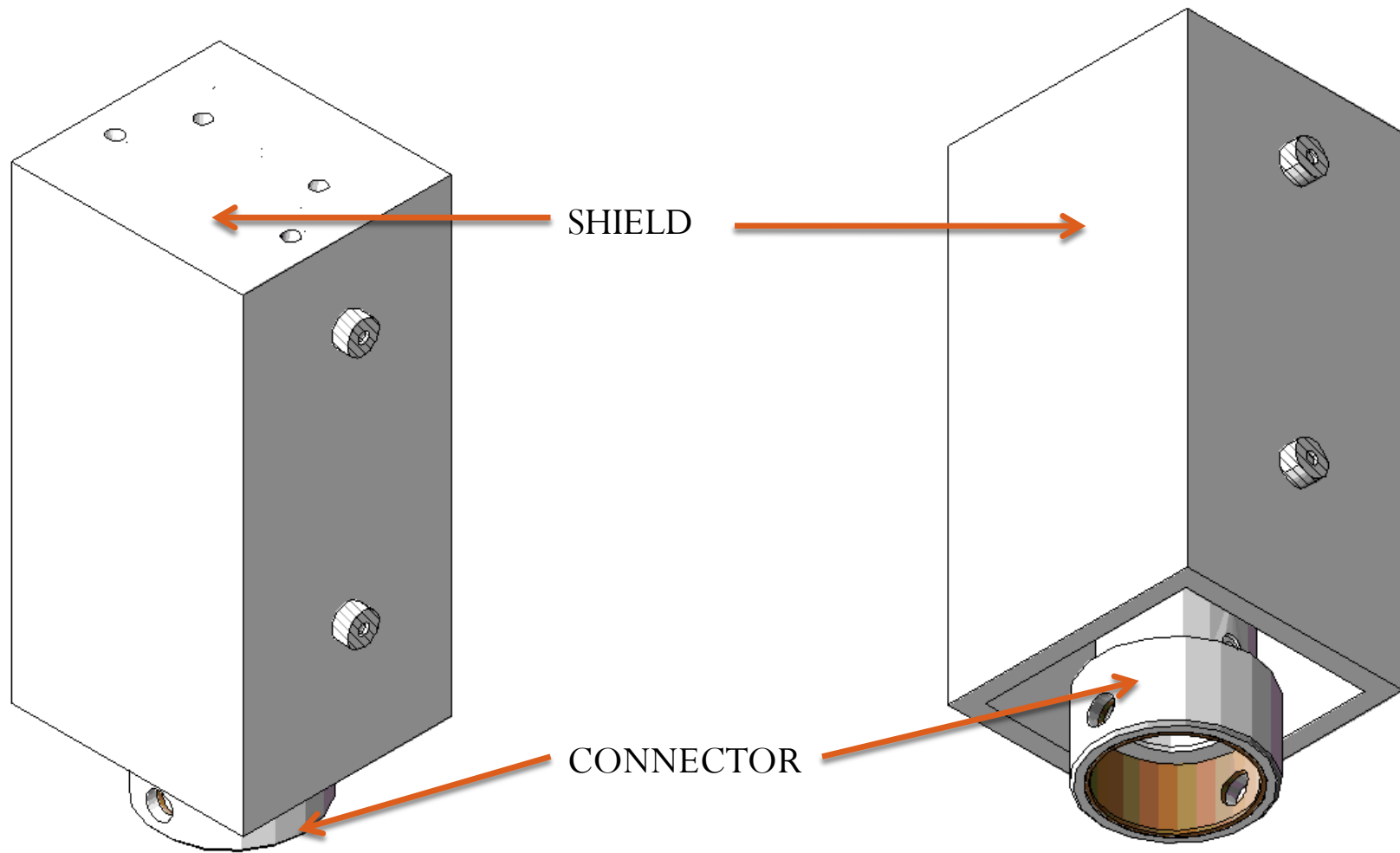
NOTE THAT SLIDE 14 HAS COMMENTS ON SHIELD



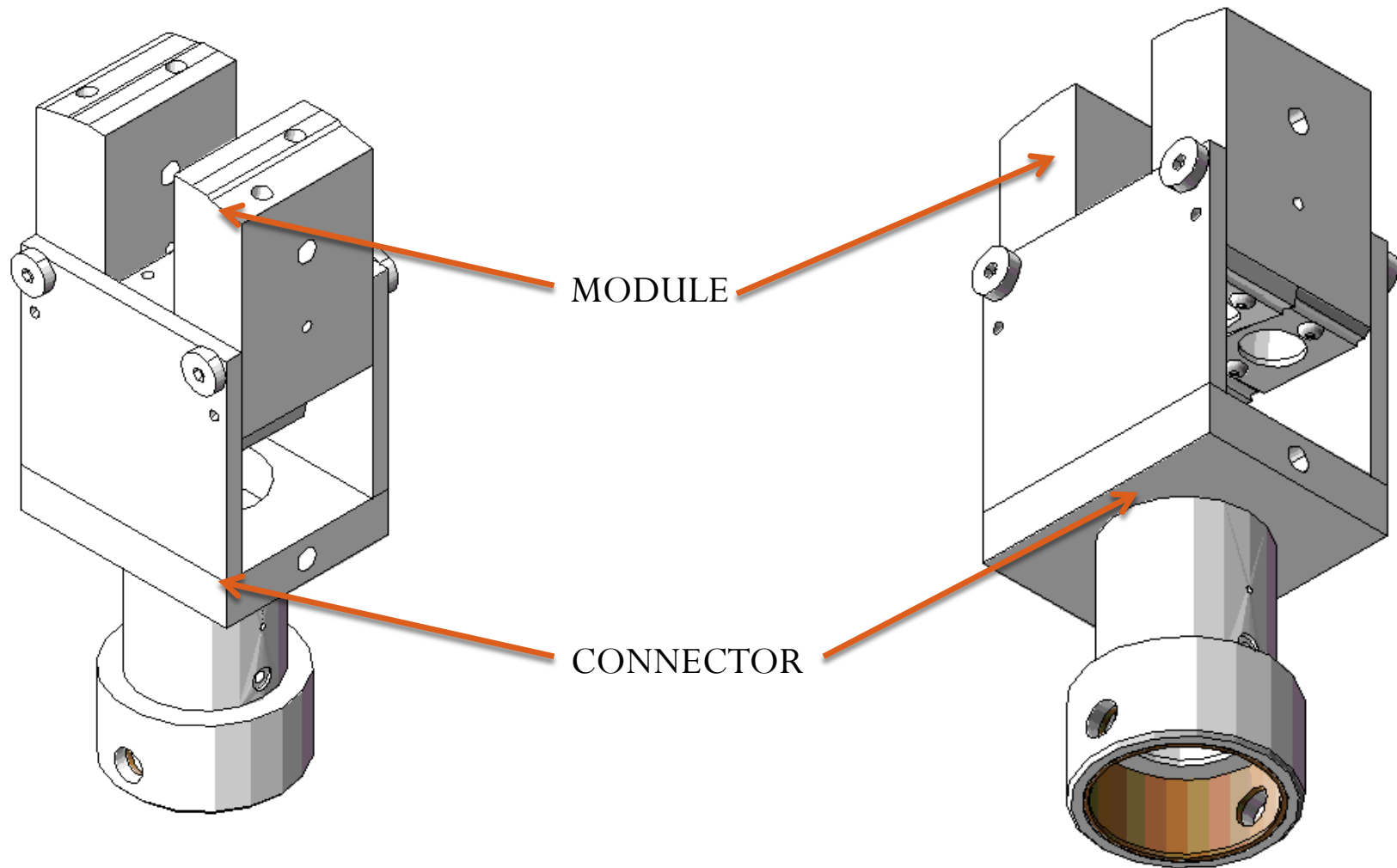
Total Assembled View



Total Assembled View 1

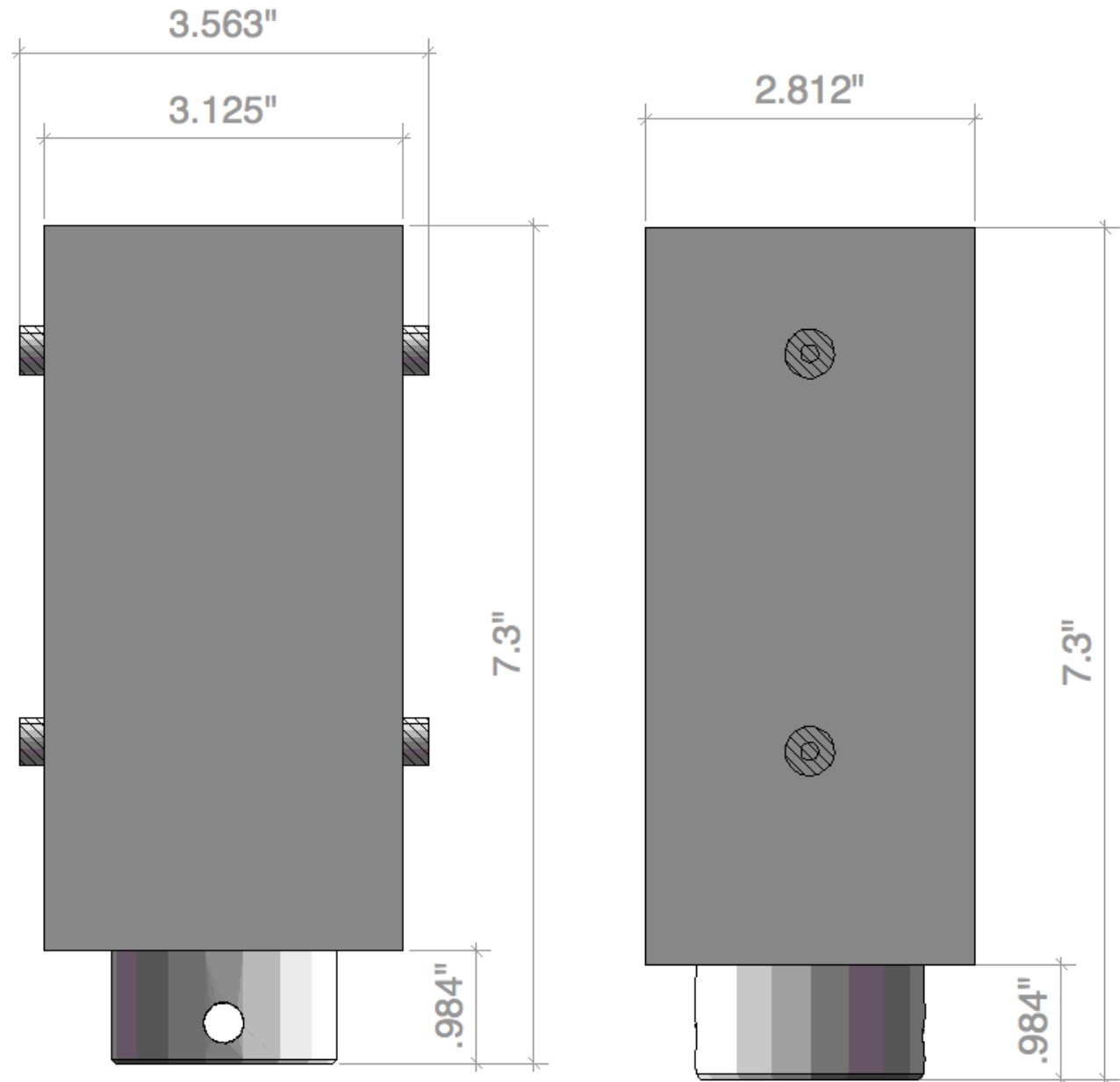


Total Assembled View 2

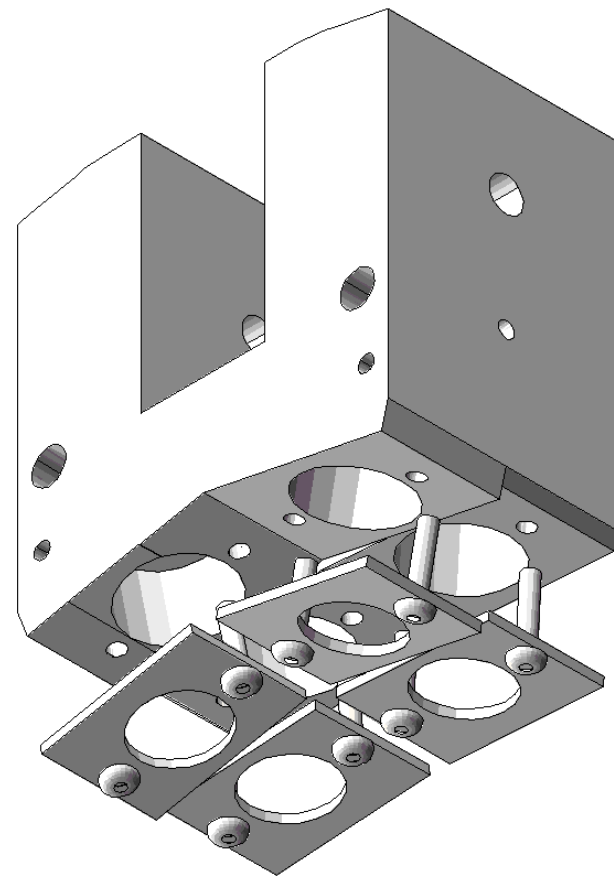
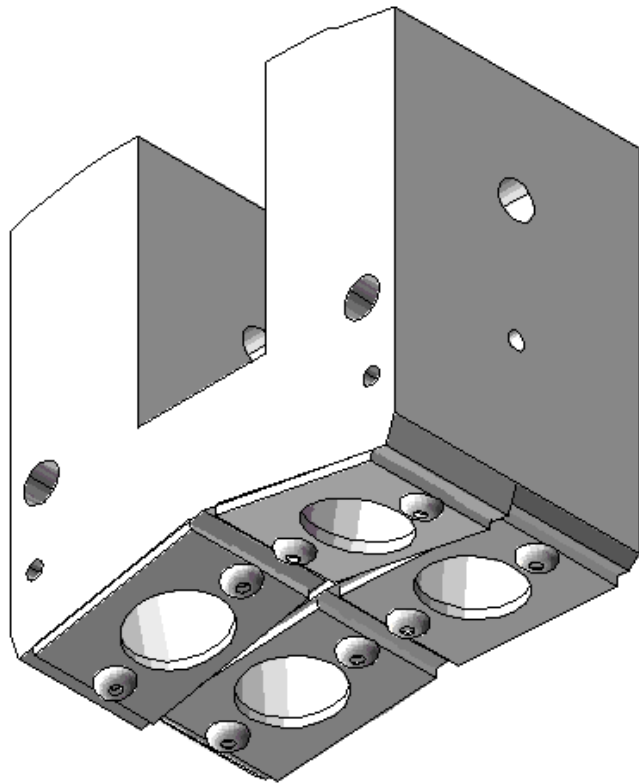
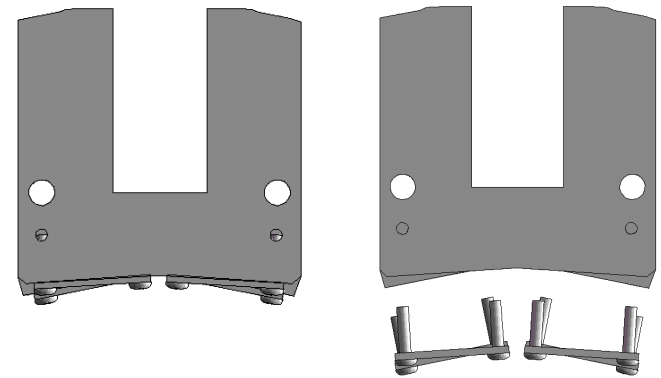


Total Assembled Dimensions

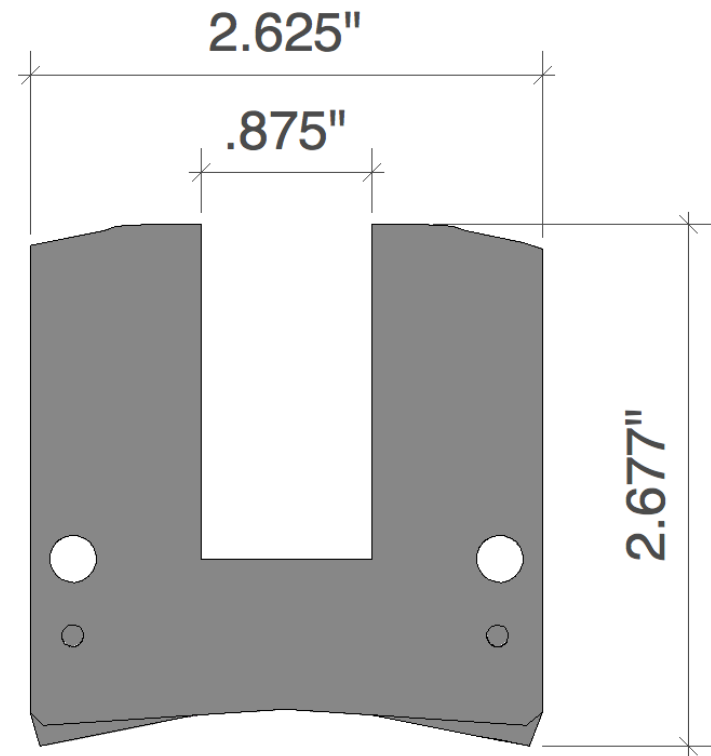
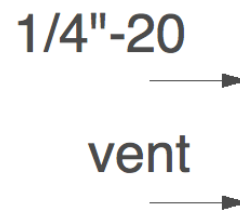
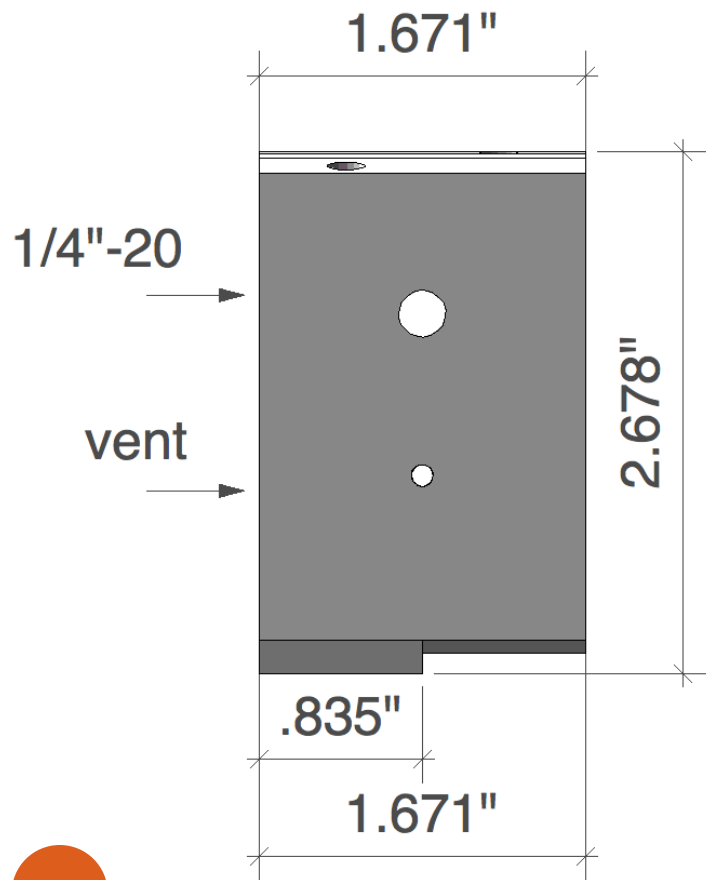
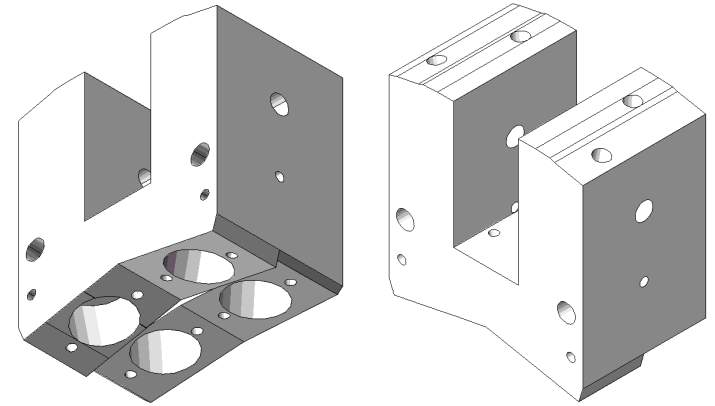
COMMENT 1
ISSUE: POSSIBLE
HARDWARE
COMPLICATIONS AT
MAST, FOR EXAMPLE
NEEDING TO REPLACE A
MACHINE SCREW
IDEA: CHANGE ALL
MEASUREMENTS AND
HARDWARE TO METRIC



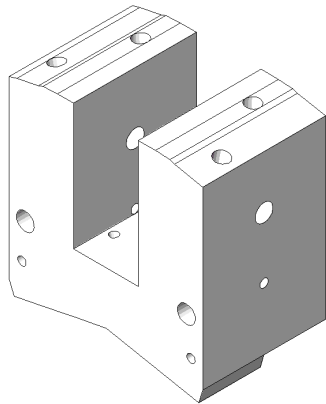
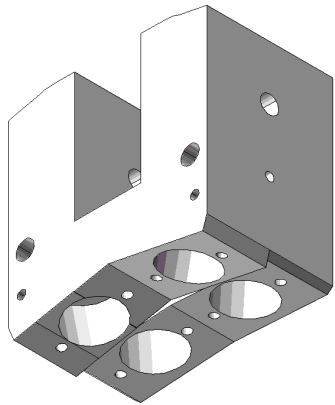
Module Exploded View without detectors



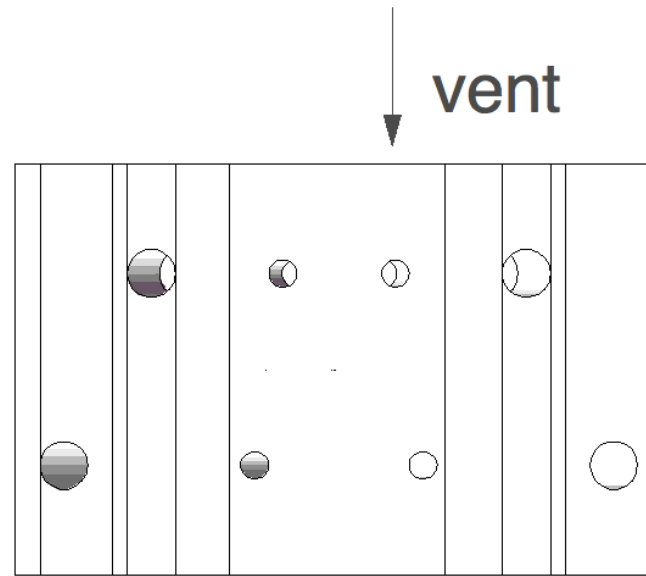
Module Dimensions



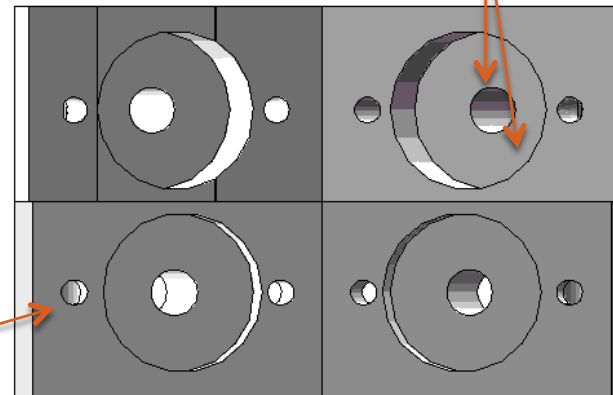
Module Dimensions



collimator
hole



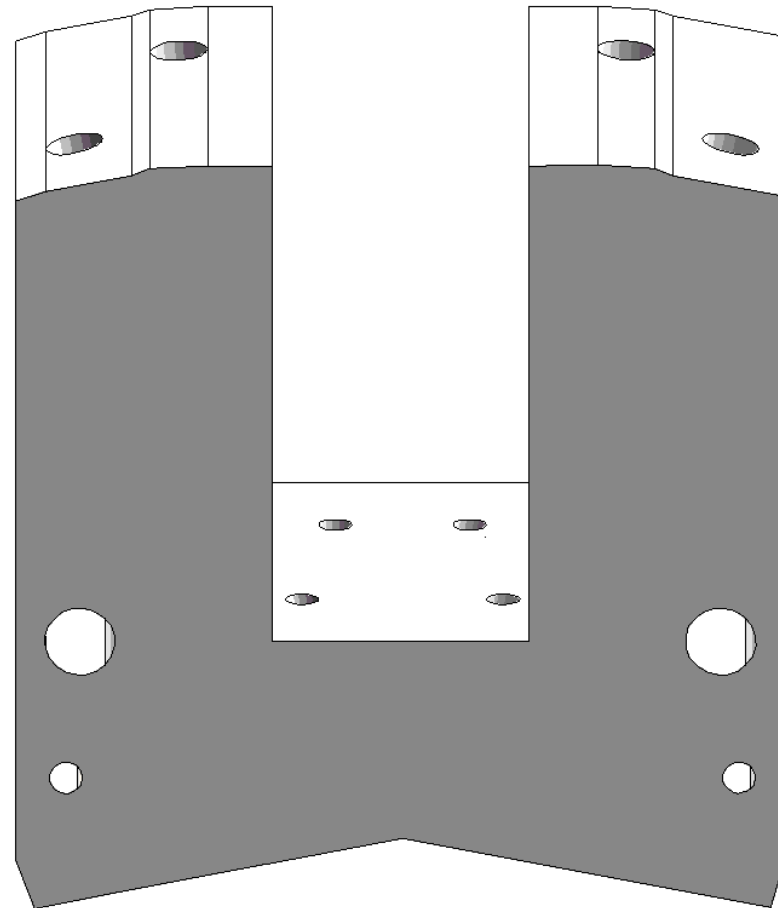
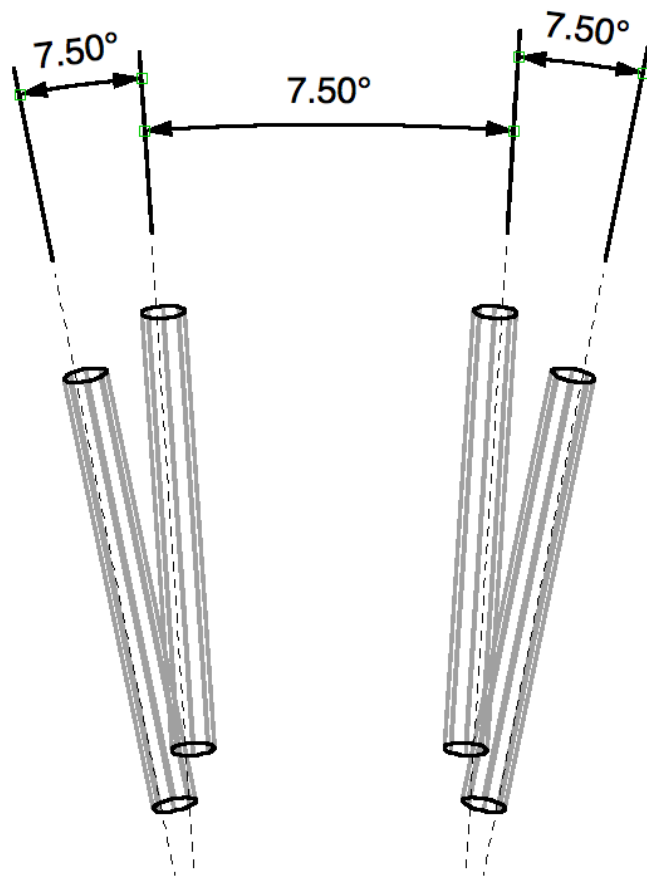
detector and
collimator hole



#4-40 to
secure base
to hold
detectors



Module Angles

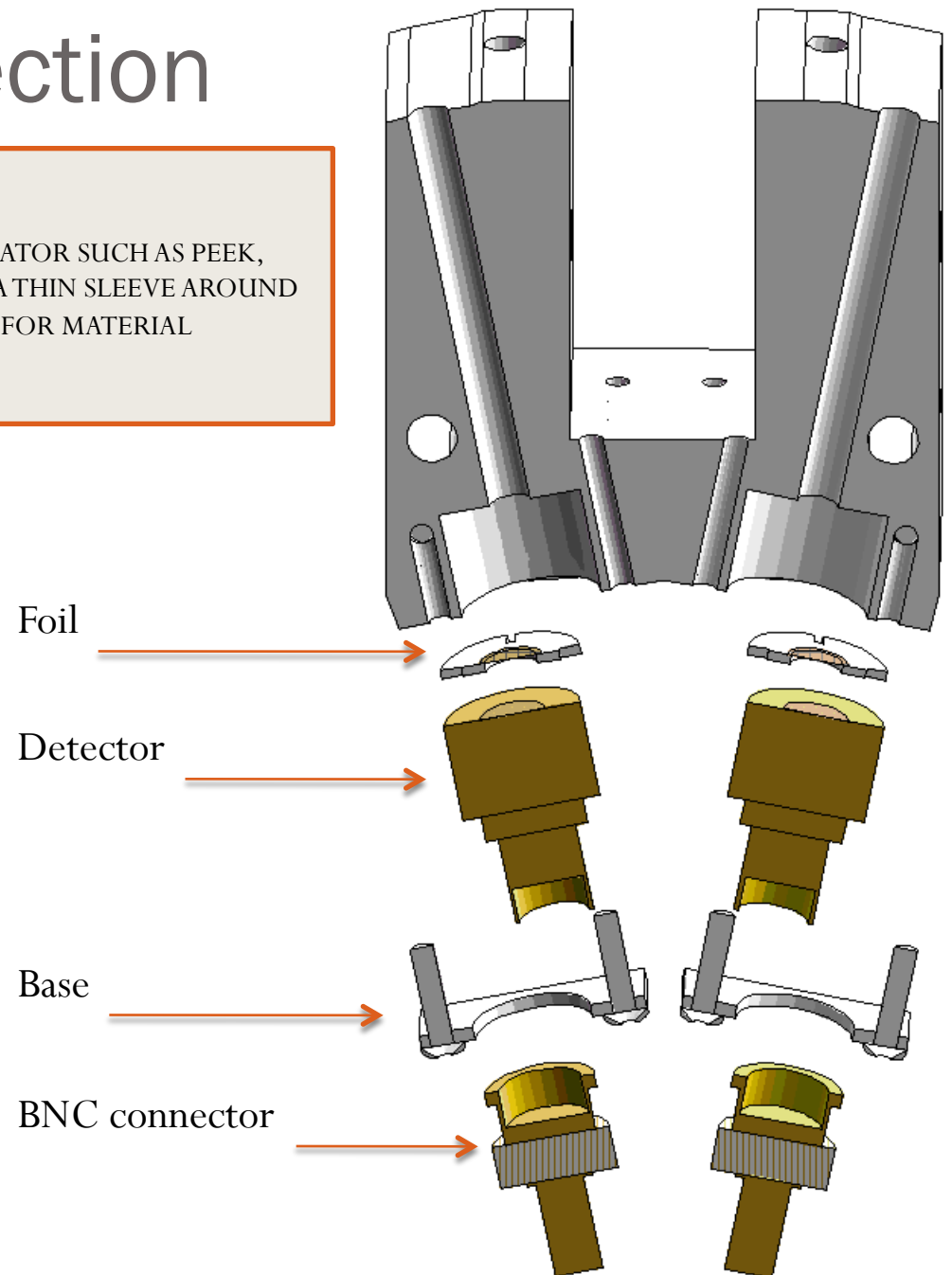
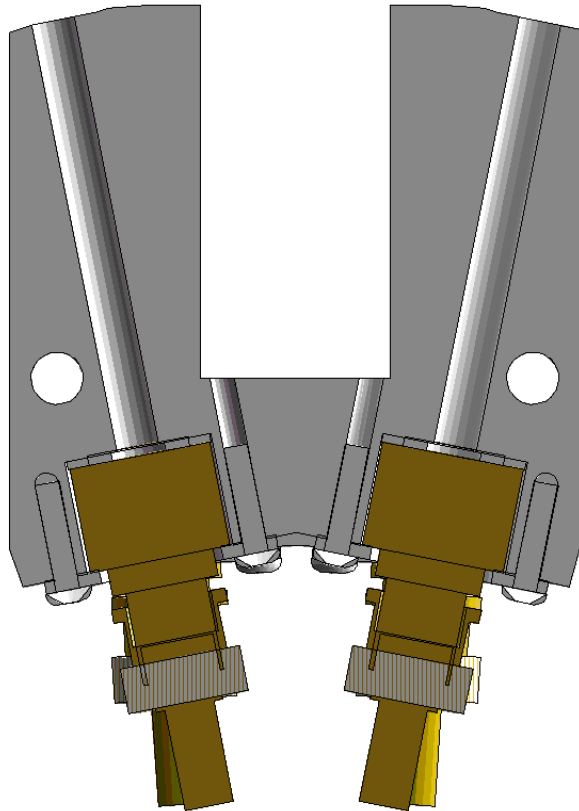


Module Cross-section

COMMENT 8

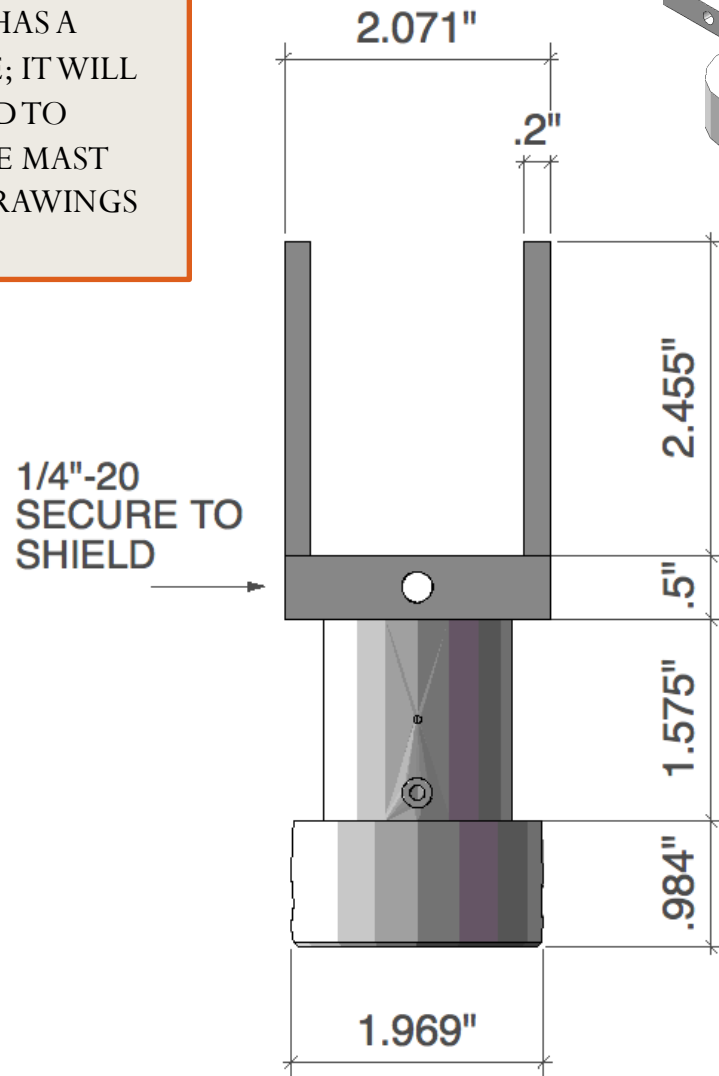
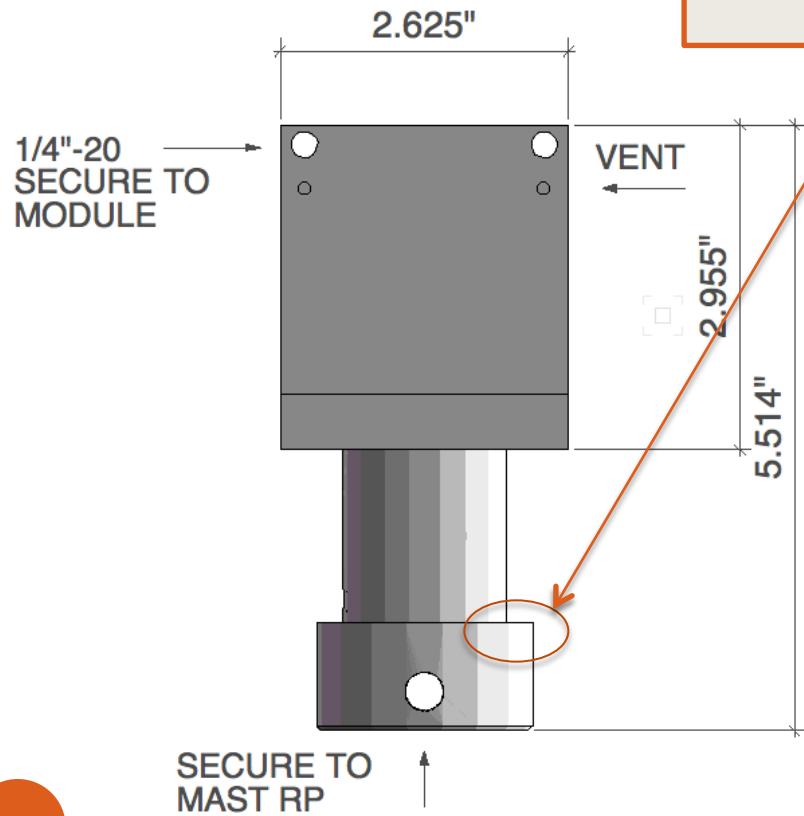
ISSUE: DETECTOR INSULATION

IDEA: USE UHV (ULTRA HIGH VACUUM) APPROVED INSULATOR SUCH AS PEEK, VESPEL, MAYCOR, BN CERAMIC, OR TEFLON TO CREATE A THIN SLEEVE AROUND INDIVIDUAL DETECTORS; CONTACT MAST COLLEAGUES FOR MATERIAL APPROVAL

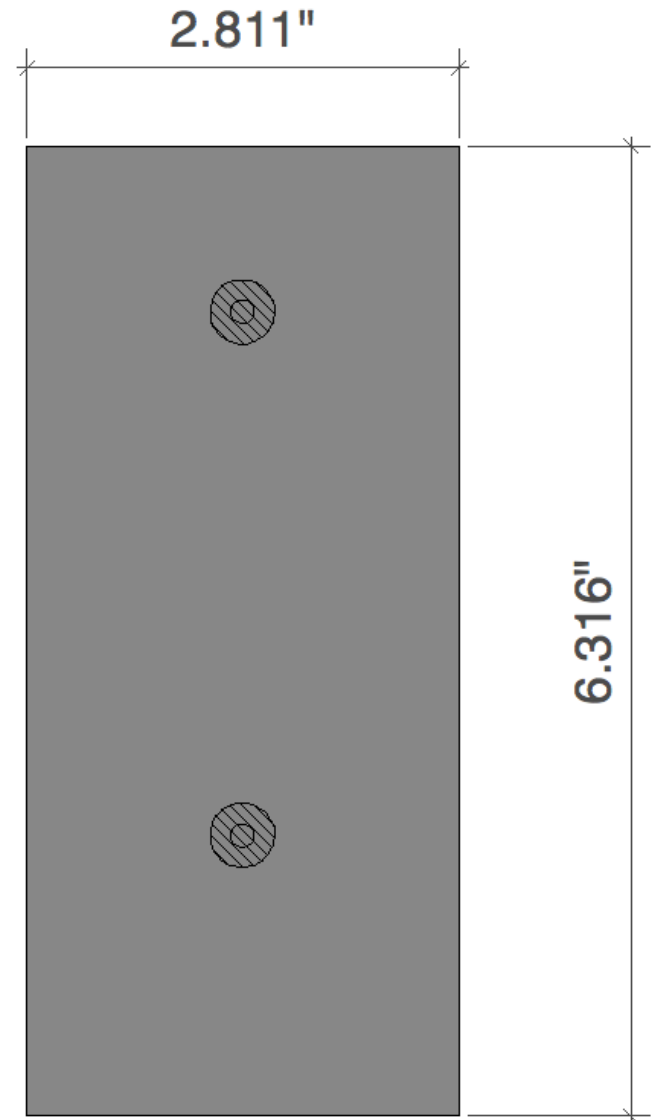
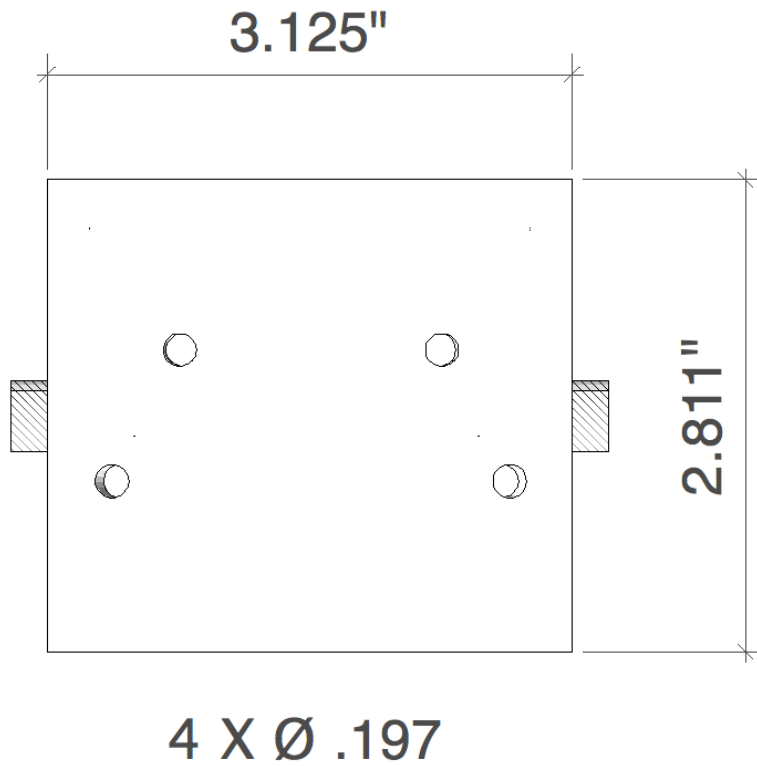
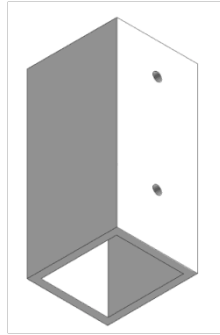


Connector Dimensions

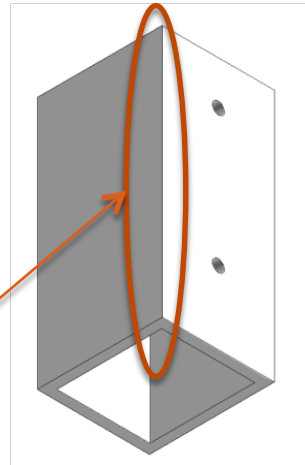
COMMENT 7
STATEMENT: BOTTOM OF CONNECTOR REPLICATING MAST DRAWINGS HAS A SHARP EDGE; IT WILL BE ROUNDED TO REFLECT THE MAST MACHINE DRAWINGS



Shield Dimensions



Shield



COMMENT 5

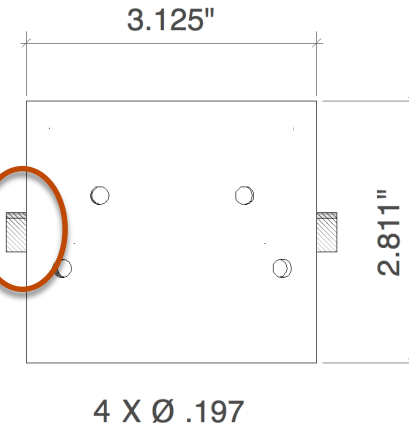
ISSUE: SHARP EDGES ON SHIELD

IDEA: ROUND ALL EDGES ON SHIELD
(INCREASE SHIELD THICKNESS SO
EDGES ARE STILL .25" IN THICKNESS)

COMMENT 6

ISSUE: IS ROUNDED RECTANGULAR SHAPE OKAY
FOR SHIELD, OR DOES MAST PREFER
CYLINDRICAL?

IDEA: CONTACT MAST COLLEAGUES



COMMENT 4

ISSUE: SCREWS NOT FLUSH WITH SURFACE

IDEA: RECESS SCREW HEAD SO IT IS FLUSH
WITH THE SHIELD SURFACE

COMMENT 3

ISSUE: SECURE SCREWS TO BN SHIELD

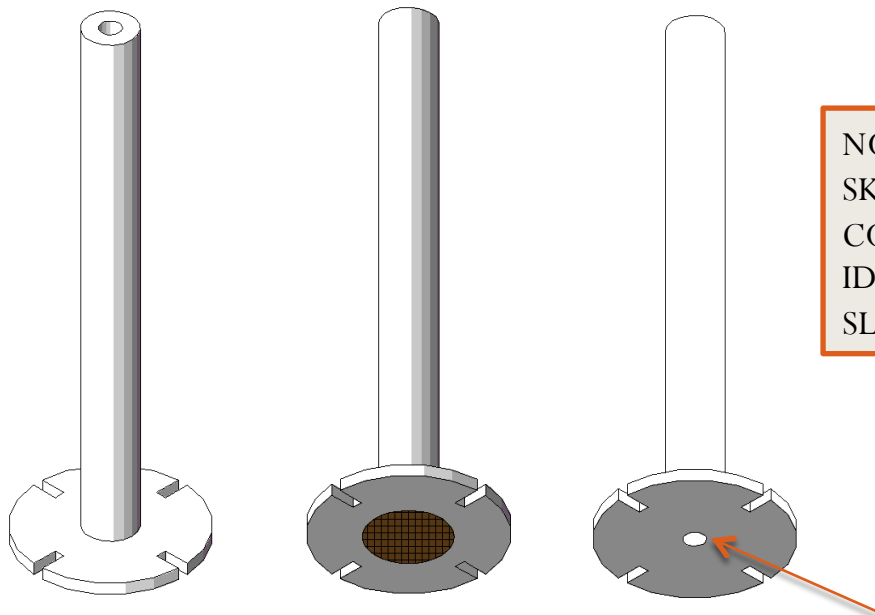
IDEA: SPOTWELD SHIMSTOCK STRAP FROM
SCREW HEAD TO CONNECTOR OR USE
APPROVED UHV CERAMIC ADHESIVE

Alternate Washer: To change collimator size

COMMENT 10

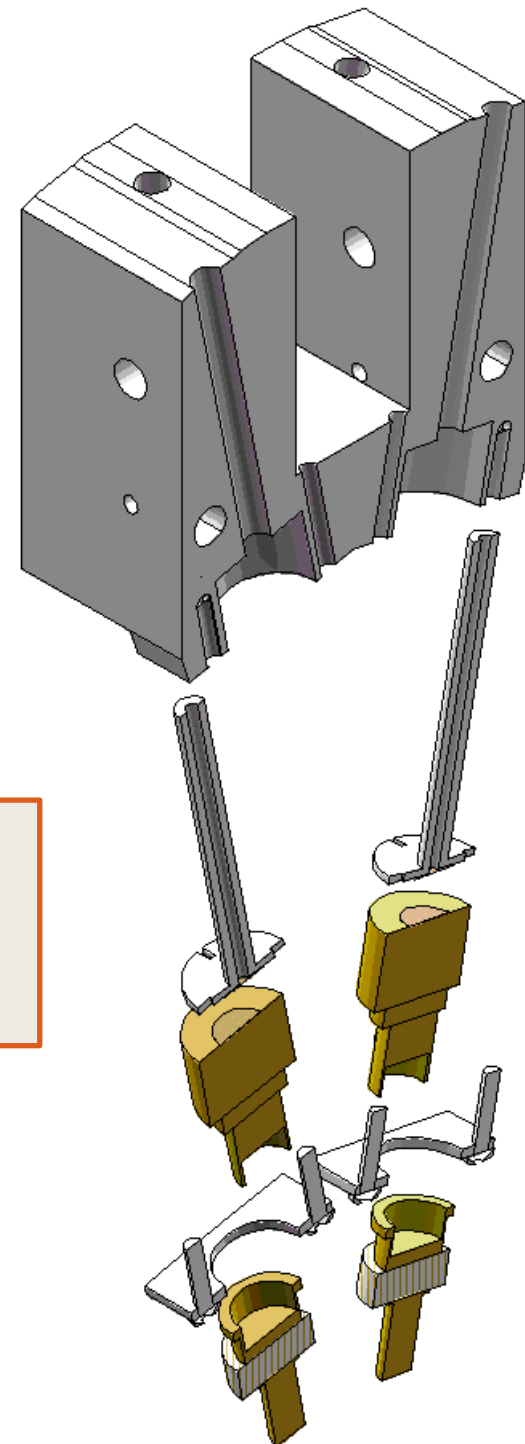
ISSUE: NEED ANOTHER WAY TO CHANGE COLLIMATOR SIZE, PREFERABLY ONLY REQUIRING THE REMOVAL OF THE BN SHIELD (UNLIKE METHOD SHOWN HERE)

IDEA: INSERT NEW COLLIMATOR CYLINDER THROUGH TOP OF MODULE AND PROVIDE FOR ATTACHMENT



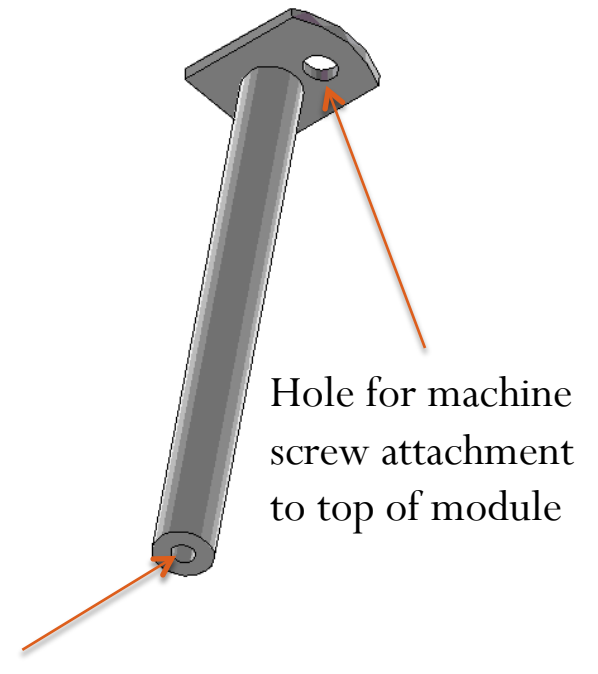
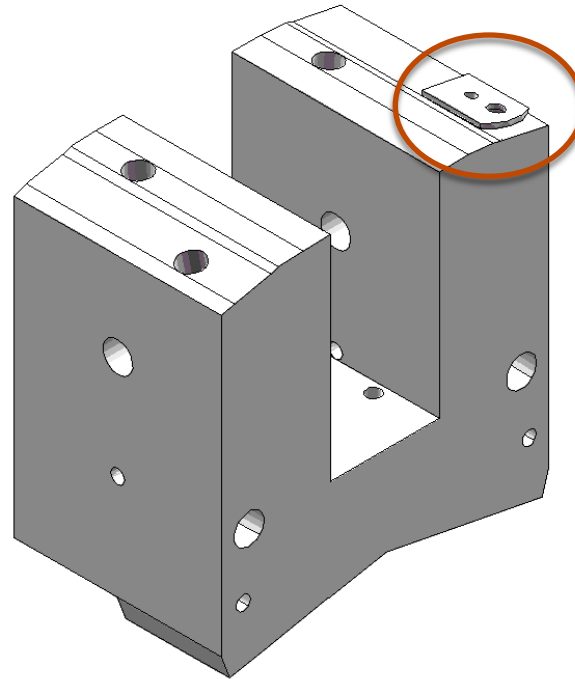
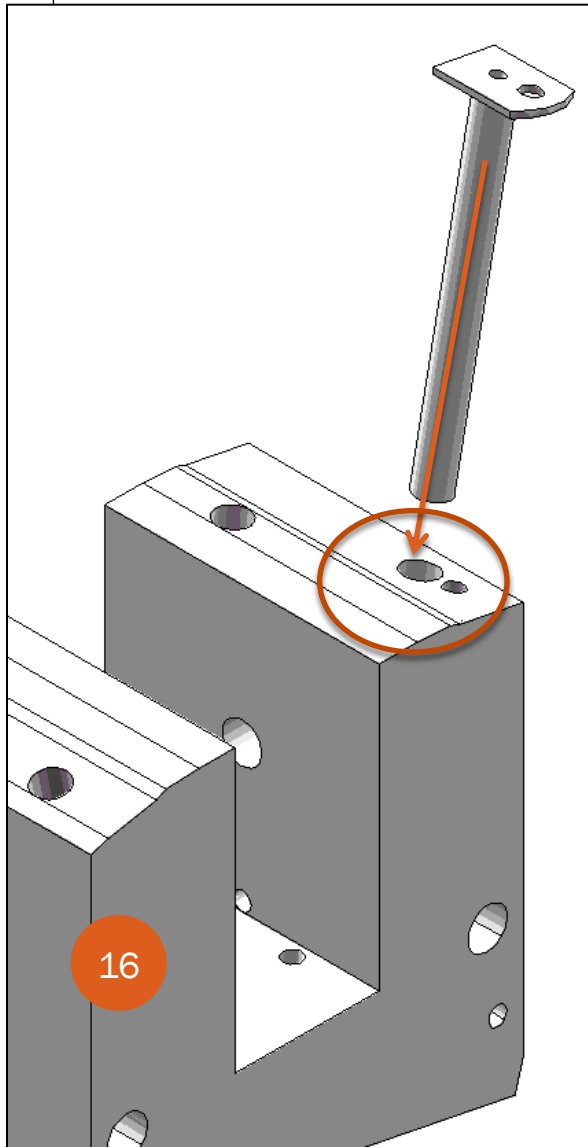
NOTE THAT
SKETCH FOR
COMMENT 10
IDEA IS ON
SLIDE 16

New collimator size



Alternate Washer: To change collimator size

SKETCH OF IDEA FOR
COMMENT 10



New collimator size