

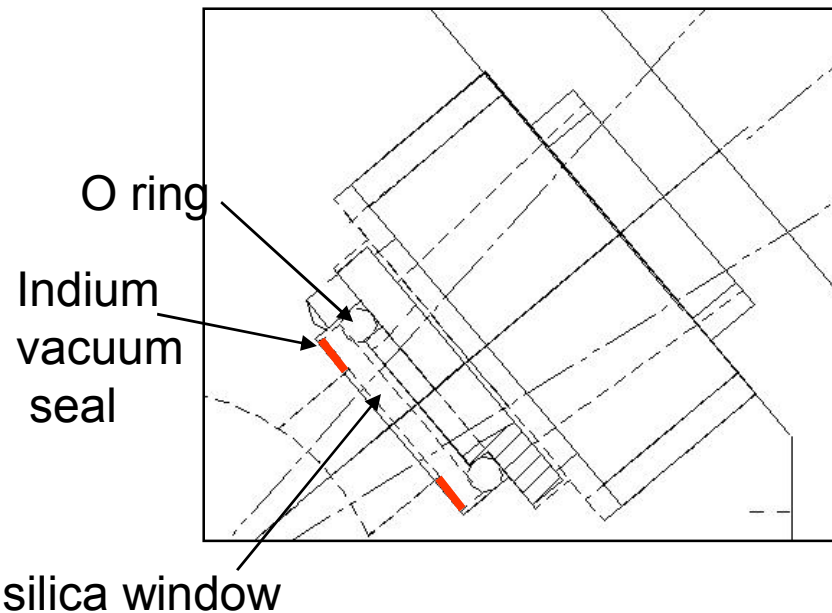
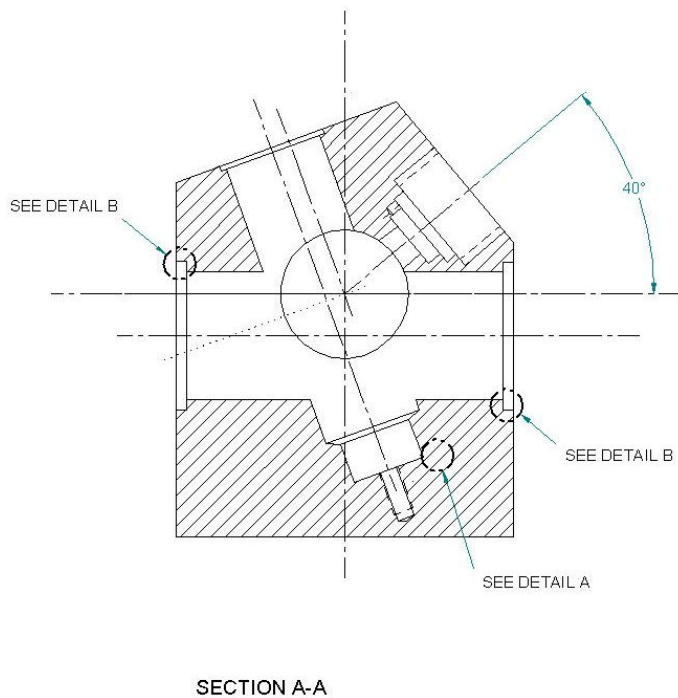
# Four OTR Tasks

# Hardware Fabrication

- Body and optical window parts
  - Provides correct geometry and vacuum sealing of optical window.
- Beam pipe and target insertion tubes
- Target holder and target ball end receiver
  - Places target in the correct location for viewing, and provides repeatable target position on insertion
- Front and rear bellows
  - Allows for OTR body positioning

# Body and optical window

- Made from UHV qualified stainless steel
- Particular attention must be paid to optical window sealing surface. It must be smooth and free of scratches for indium to make a seal.

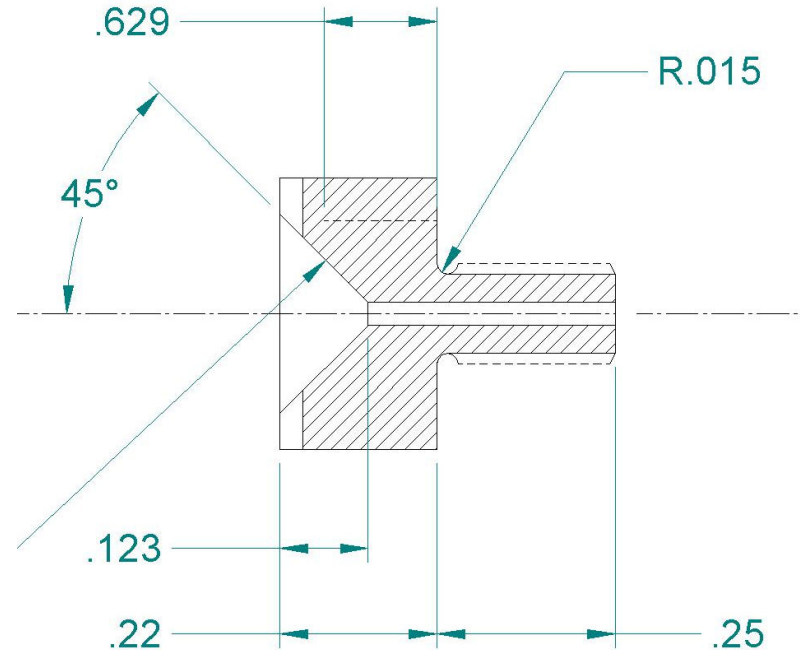


# Beam pipe and target insertion tube

- Welding of beam pipes to OTR body and flanges should be very close to 90 degree.

# Target holder and target ball end receiver

- Target holder is machined from stainless steel. It has a stainless steel ball on the end that seats in a titanium receiver.
- This titanium receiver is screwed into the OTR body and provides repeatable target positioning.
- Titanium was used to avoid any stainless on stainless galling.



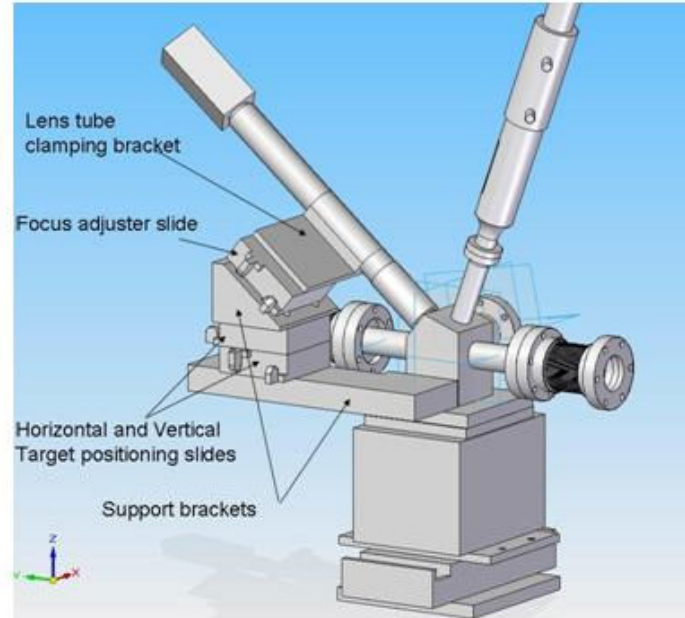
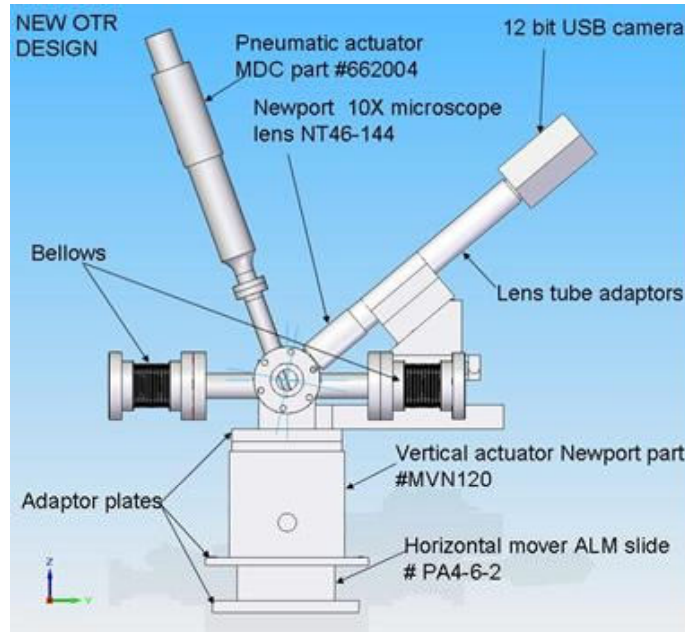
# Bellows

- Bellows need to accommodate about 15mm of vertical motion along with  $\pm 8$ mm of X motion at the same time.
- Total beam line length of the bellows has to be kept small so the overall length of the OTR can be kept below 300mm.
- Bellows should have an ID of at least 38mm for the required compliance with minimum beam line length.

# OTR Motion

- Remote Vertical control
  - OTR is lowered about 15mm for operation. Vertical position is adjusted to track beam motion.
- Remote Horizontal control.
  - Used to track horizontal motion of the beam
- Remote Camera focus.
  - Small stepper motor (Newport CMA) drives the stage that carries lens and camera.
- Local target position viewing control
  - X and Y slides move lens and camera to view different portions of the target. For example if target is damaged a new portion of the target can be imaged.

# OTR motion



- Vertical mover from Newport.
  - Driven by stepper motor and slide.
- Horizontal mover
  - Horizontal mover uses 100mm wide stage driven by a stepper motor.
- Newport CMA stepper motor drives a stage that moves lens and camera for focus control
- Need to fabricate brackets for:
  - Mounting OTR body to vertical and horizontal movers.
  - Supporting lens/camera and motion stages.



# Mover Electronics

- Fabricate 12 channels plus spares of stepper motor drivers. These could be controlled by PCMCIA computer cards.....or
- Purchase a Newport solution. Two eight channel XPS-C8 driver chassis with LAN control.

# CAMERA

- Possible choice:
  - Prosilica GC1290. Camera may have EPICS driver written.