

# E1039 Target Frame and Lift Table Status

Scott Cannon

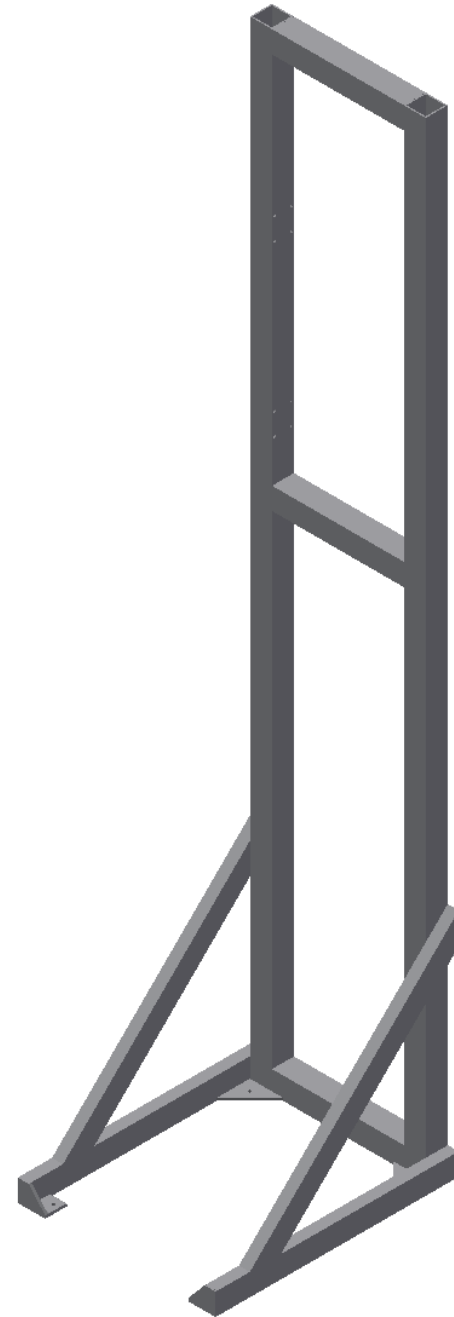
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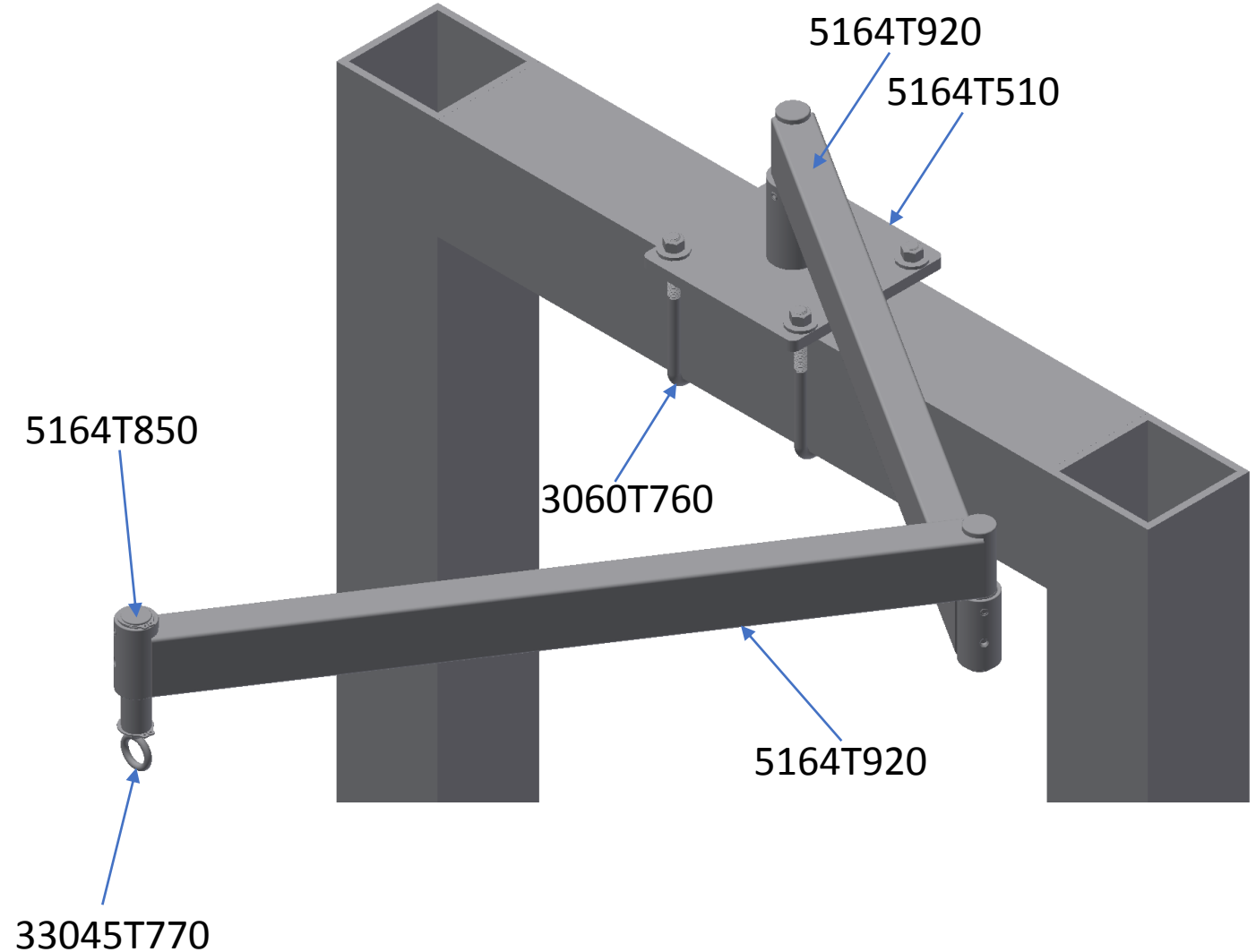
## Target Frame

- Target frame to be completely welded and essentially identical to Fermilab design.
- Primarily 4"x4"x1/4" square and 2"x4"x1/4" rectangular 6061-T6 aluminum extrusions
- PSL fabricators will use fixtures and proper welding techniques to insure squareness and straightness



## Positioning Arm and Attachment

- Positioning arm
  - McMaster-Carr 5164T510, 5164T920 (2), and 5164T850
  - 100lb capacity
- Lifting eyebolt
  - 33045T770
  - 450lb capacity
- Attachment to frame
  - 3060T760 (2) square U-bolts
  - 1075lb capacity each
- U-bolts don't weaken frame and allow side-to-side adjustment



# Materials Used (so far)

## 6000 series aluminum

- Primary support structure

## 18-8 stainless steel

- Used in support and parts away from experiment
- McMaster-Carr states "...may be mildly magnetic"
- With Ni, Mg, C, & N alloying elements, BCC->FCC and is therefore non-magnetic
- If mechanically deformed at room temp, FCC->BCC and may be partially magnetic

## 316L stainless Steel

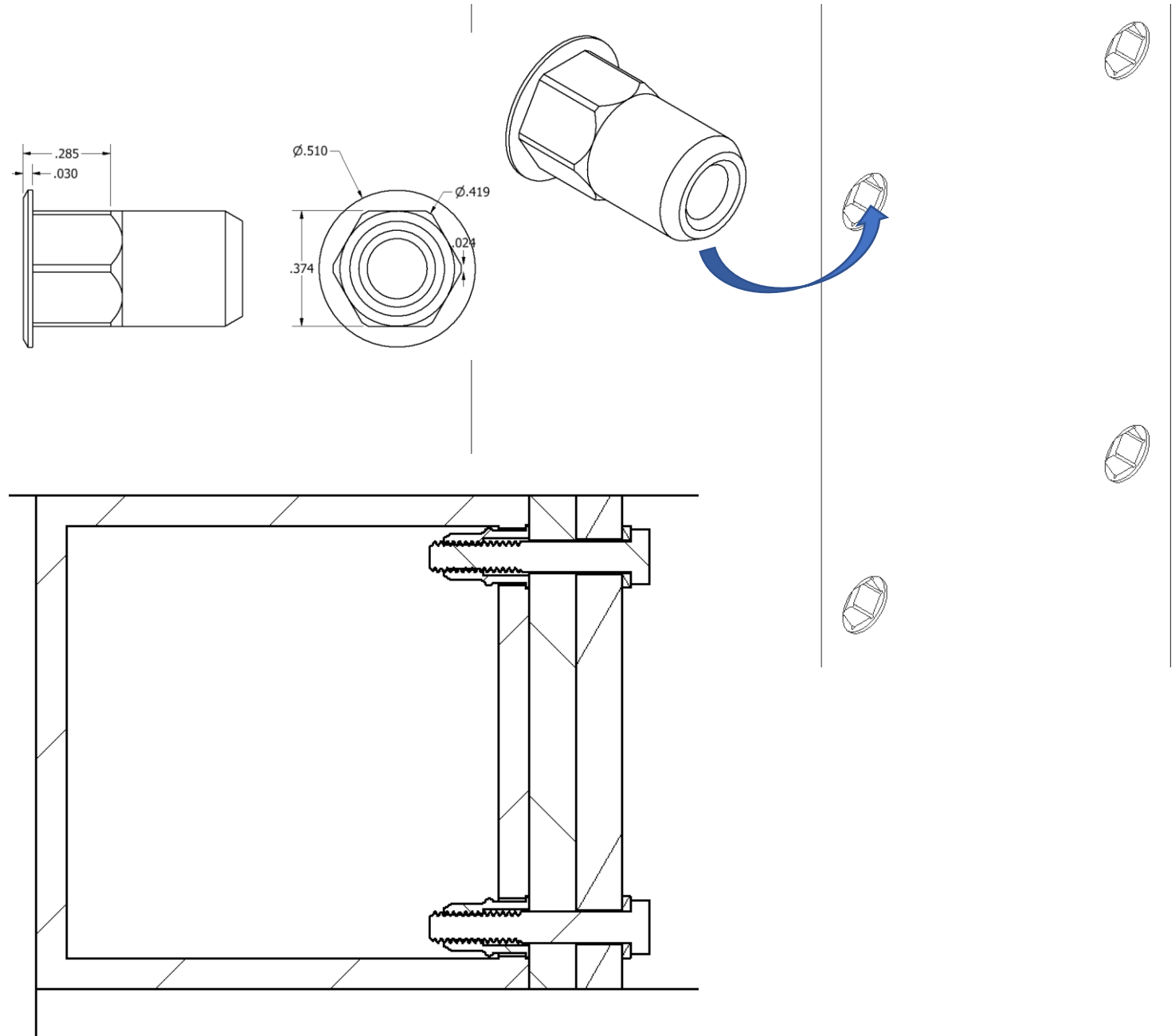
- Used for bellows and other parts close to experiment
- Completely non-magnetic

## Low-Carbon Steel

- Used only for hex-shank threaded inserts
- Looking for stainless steel equivalent

# Attachment to Frame

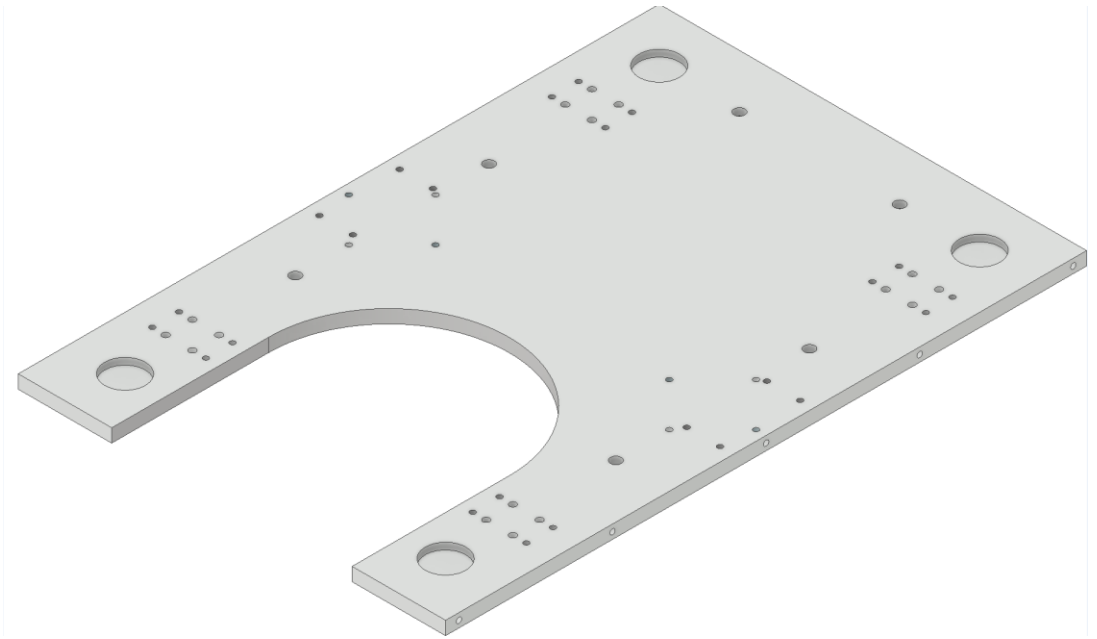
- Counterbores and hex anti-rotation pockets milled into aluminum frame
- PEM (Atlas) AEHS8 half-hex shank threaded inserts (currently carbon steel) installed
- Will look for stainless steel equivalent for inserts



## Location of Frame

- My 8/15 email
- Dustin's 8/17 email
- Will be discussed further and design modified as necessary

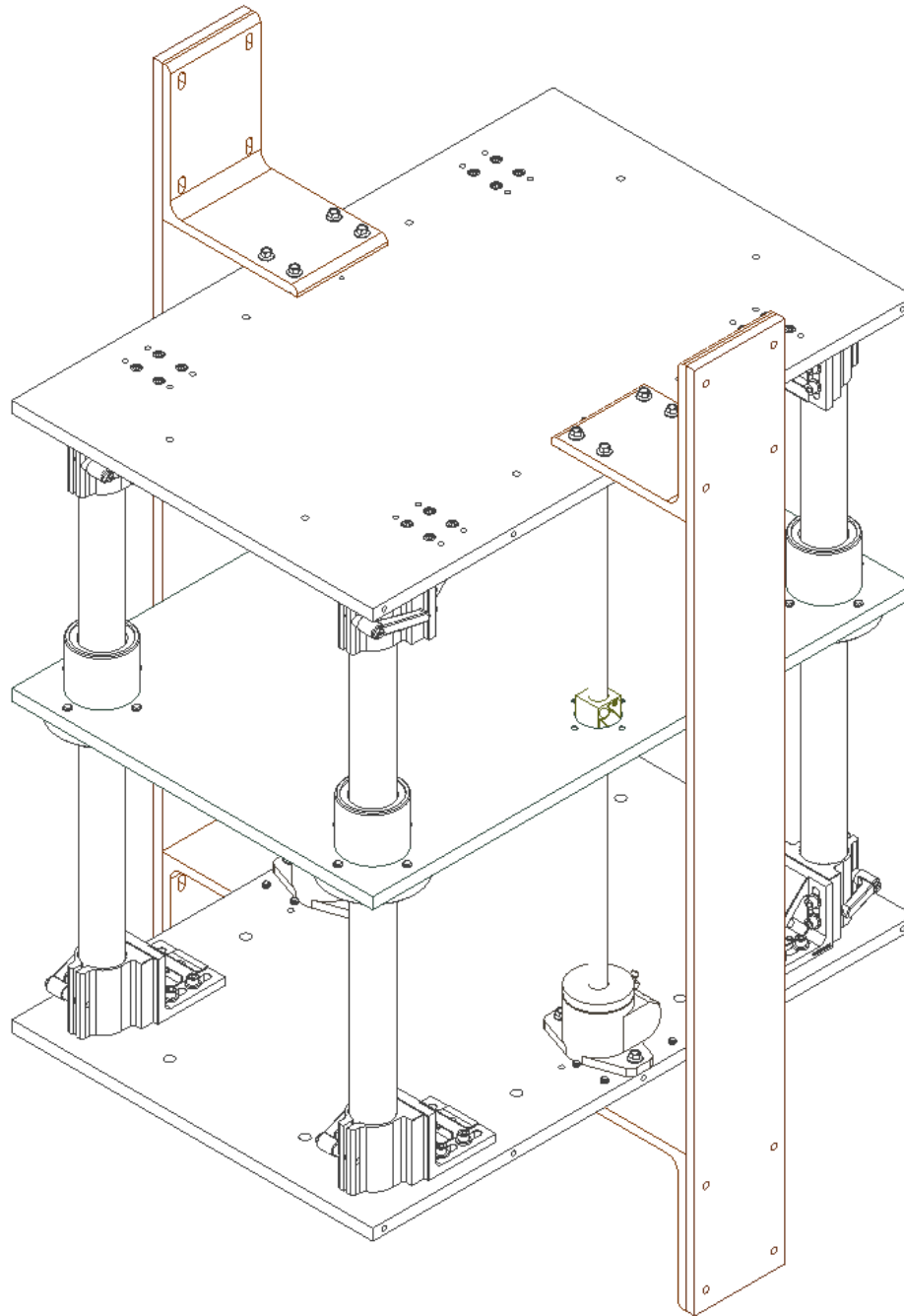
Me: "...the lift table must be moved 12.25" closer to the object being lifted and be U-shaped (see U-Shaped Lifter Base Plate.png attached) to allow the lift point to be that far inward.



Dustin: "...it appears that the green frame could move as much as 5" towards the load (without much design change) and the table would then have to move about another 7" (with the U-shape cut)".

# Lift Table Design

- Detailed design progressing
- Dustin's 8/17 email means the entire design might change



Dustin: "The more I look at this table the more it seems like the drive should really be as close to the load as we can get it, and the distance between the legs looks to me like increased likelihood of binding. The little red microwave generator on the middle plate has to be there or has to lay on some surface that move with the arm, other than that there are no other spatial constraints to this table so it might be worth reconsidering the geometry to work better for our configuration. For example would it be better to have just 2 legs (and not 4) moved in closer together and right out next to the load and have the only 2 legs moved out".

# Bellows Welded Assembly Design

- Detailed discussions with Dustin
- Formulated design
- Communicated design to Key High Vacuum Products
- Awaiting bellows design details and quote
- Will change overall height from 8.091" to 6.5" and requote

