

# HUNCH One-Handed Trash Bag Container

Crew emailed the ground team saying that the white Nomex trash bag container is getting dirty and they asked if HUNCH could make something similar to the ZSR Covers for holding the trash bags.



Fortunately for HUNCH and the crew, we have already been exploring ideas for making a better trash bag container. Several groups of students across the country have submitted ideas that we think could be combine together to make a more user friendly trash bag container.

## Contributing Schools

Laurel High School - Montana  
Clear Springs High School - Texas  
Clear Creek High School - Texas  
Cypress Woods High School - Texas  
Warren Tech High School - Colorado



# Current Trash Bag Container

- The current green trash bag (Sea to Summit) is similar to the Russian trash bag and is satisfactory at holding smells and desired size—No change.
- The white Nomex trash container prevents the green trash bag from floating freely and is required due to the flammability of the green trash bag.
- Crew doesn't seem to use the current Nomex trash container all the time—safety concern--so the crew receives ground calls to put them away.
- White Nomex trash container is not easily cleanable and is getting dirty.
- Nomex trash container has a large Velcro patch to hold the flap closed—difficult to open so the crew often leave the trash bag sticking out.
- Velcro straps allow bag holder to slide around on the hand rail—not tight or stationary.
- Large pocket on the side for holding Russian rubber bands—good idea.



# Trash Container Replacement Options

- Fly up more of the current white Nomex trash containers
  - Takes care of the issue of cleanability, but does not solve it permanently.
  - Does not solve the issue of crew use.
- Have HUNCH build the same trash containers out of Gortex so they are easier to clean
  - Solves the issue of cleanability but does not solve the issue of crew use.
- Redesign the trash containers so they fit the needs of the crew better so they will use the trash container and it is easy to clean.

# Features to emulate in a trash bag container

- Easy to open lid
- Lid closes on its own
- Lid can stay open if desired
- Trash can stays stationary but is easy to move
- Keeps trash bag mouth open wide
- Cleanable surfaces
- Room to store extra trash bags
- Easy to remove and replace trash bags as they fill up



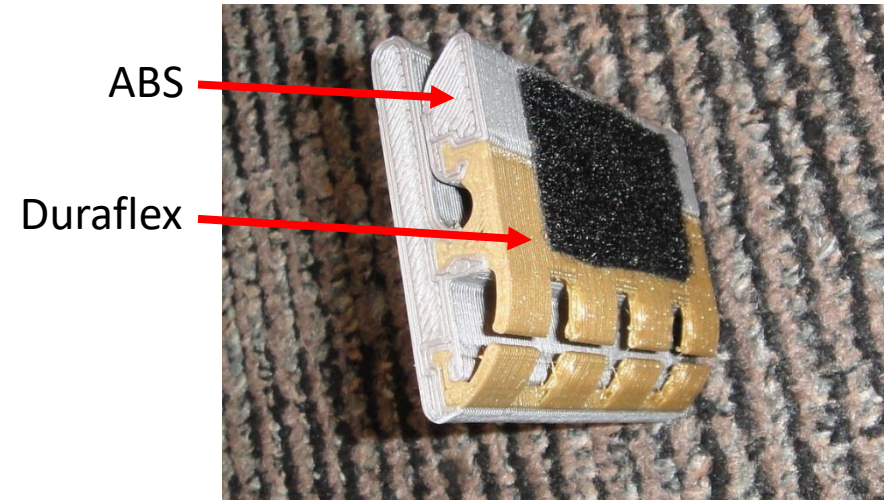
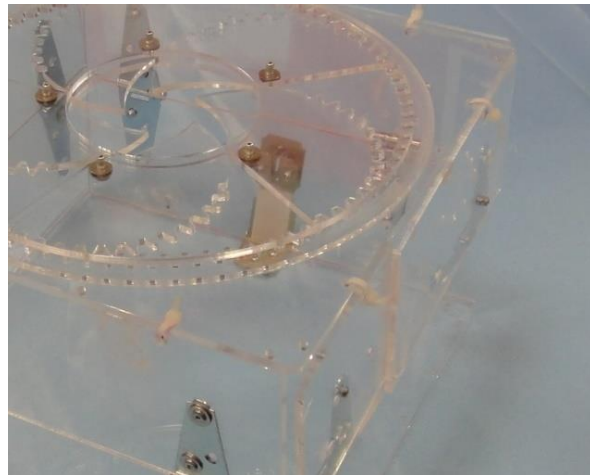
# Student Trash Container Concepts



Cleanable Soft Goods  
Prototype Bag with wire for  
keeping shape  
(Clear Springs High School)



Cleanable, radially opening lid to minimize  
trash from coming out from motion of the  
lid. (Laurel H.S., Montana and Clear Springs  
H.S. Texas—found on Thingiverse)



ABS  
Duraflex

Printing flexible gasket material  
inside rigid structural plastic  
(Warren Tech H.S. Colorado)

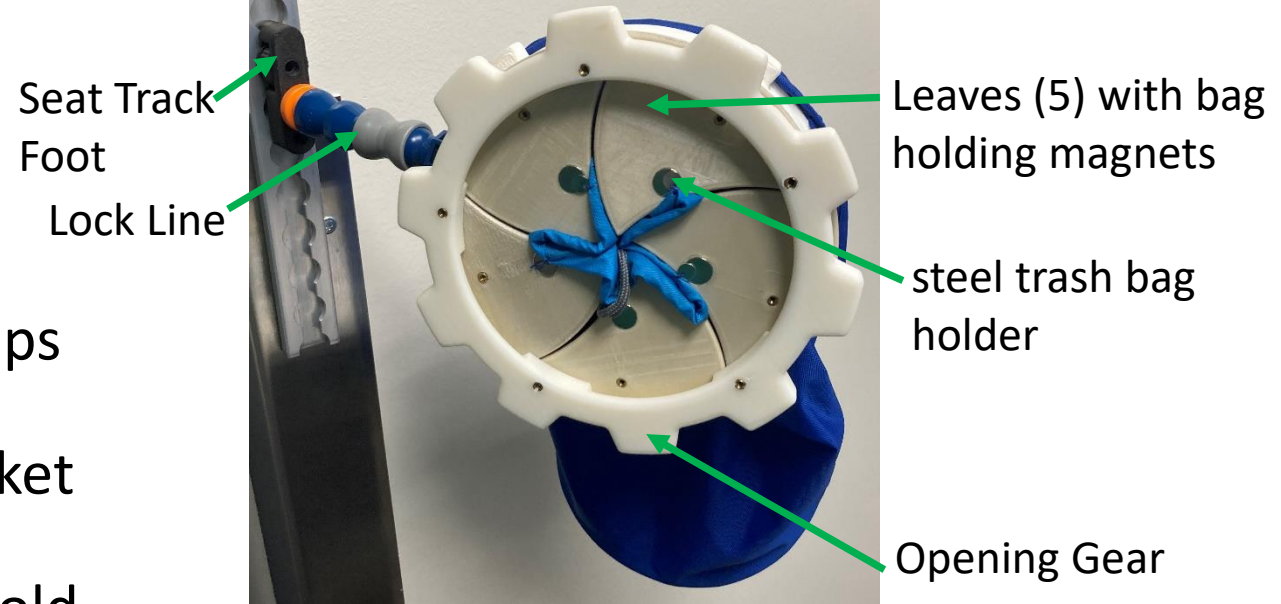


Attach to seat track  
using flex bracket to  
allow for positioning  
(Clear Creek H.S.  
Texas)

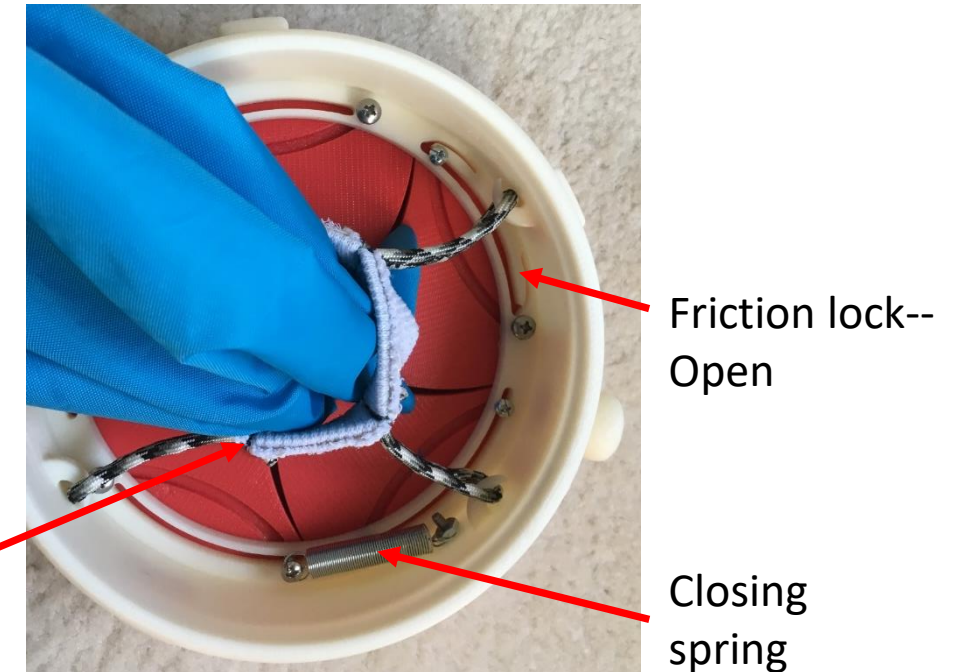
# Lid for Trash Bag Container

- “leaves” made out of rigid ULTEM--cleanable
- Use the bag as the gasket to hold the stink in.
- Clips on the “leaves” to hold the bag open. Clips fit with the bag’s draw string cord.
- Rigid ring attaches to seat track with flex bracket for swiveling.
- Friction locks on the opening mechanism to hold it open and closed
- Spring on the opening so it will close on its own, unless taken to the full open position where it locks open.
- Trash valve— keeps trash in the trash bag away from opening.
- Edges of leaves may be made out of flexible plastic to act as gasket material to aid in stink containment

**Trash valve**—elastic ring allows trash to go in easily but minimizes the trash from coming out on its own.



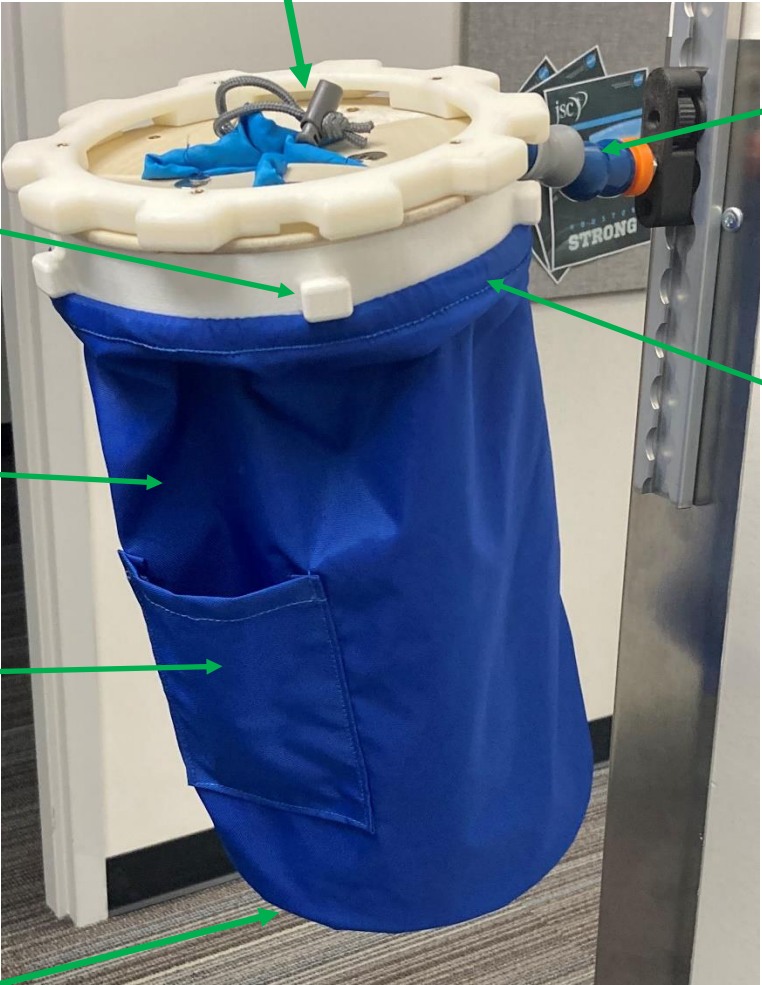
Topside of Trash container lid



Underside of Trash container lid

# Current Design

Magnets on the leaves to hold the steel tabs on the Trash bag.



Finger nubs for one handed opening

Cleanable Gortex exterior bag

Location for a pocket to hold rubber bands for tying the trash bag closed.

Metal ring to hold shape and allow trash bag to fill up

Flex bracket sections and Seat track foot

Gortex bag attaches with draw string

Exterior features

Trash valve --Internal elastic ring to minimize escape of trash

3D printed Cleanable ULTEM construction



Retaining ring for Gortex bag draw string.

"Green" Trash Bag

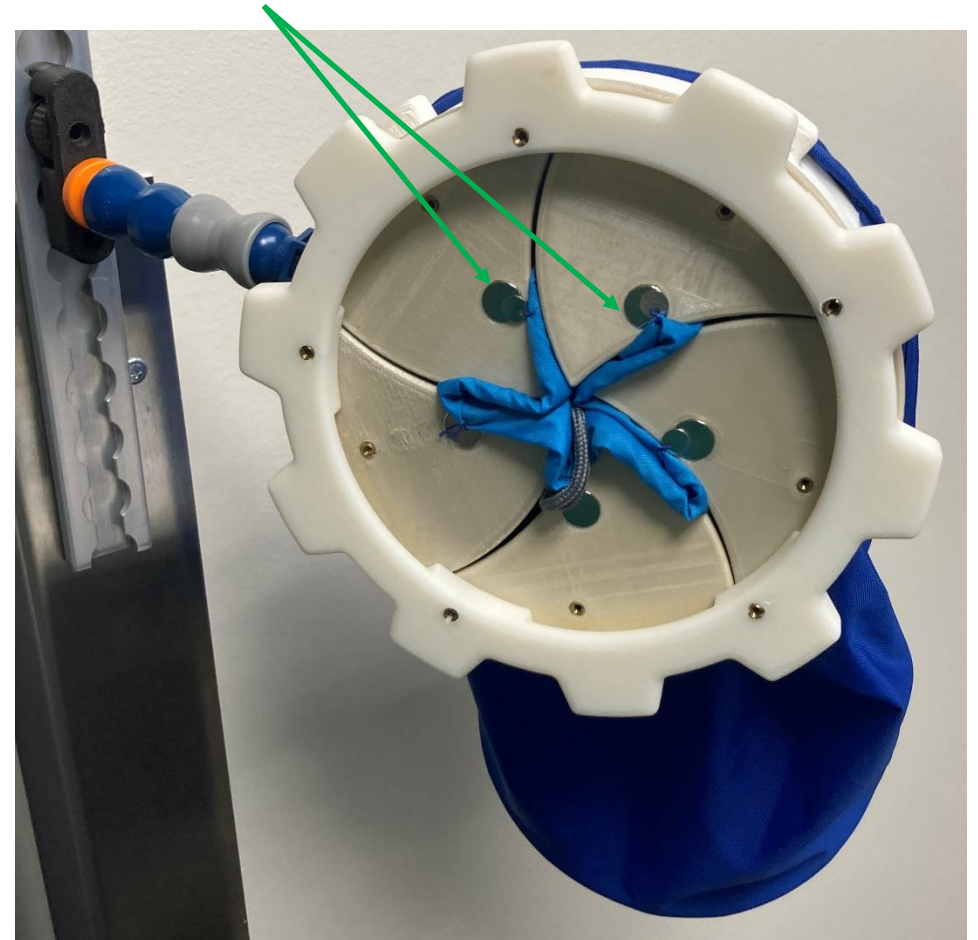
Cut-a-way to show interior features

# Bag attachment

Magnets on each leaf of the lid allows for easy attachment of bags to each of the leaves for full opening of the bag each time.

The trash bag acts as the sealing surface for the leaves. This helps hold in the stink and also means that when placing trash inside, the bag is more likely to get any soiling than the leaves. This helps to minimize cleaning of the 'lid' as the bag will be thrown away when full.

Steel tabs (5) attached to trash bag for attachment to the leaves (5).



Newer version will have smaller magnets

# HUNCH Trash Container Benefits

- Works with minimal change to current trash bag
- Easy to use—one handed operation
- Easy to remove and replace trash bag
- Emulates many features of a home trash container
- Cleanable surfaces
- 2 parts—bag and lid allows for cleaning or replacement
- Attaches firmly to seat track but also repositionable to fit the need at a worksite.
- Fits extra trash bags
- Pocket for Russian rubber bands
- Disposable—like a Russian Toilet set

# Current Plan and Expectations

- The Trash Bag Container is good idea that HUNCH feels will satisfy the needs of the crew and we think the students and engineers have incorporated great ideas. This does not mean it will fly. We are still working on convincing the program and even the crew that this will solve some of the issues on the Station and that the efforts required to certify the equipment will be value added to the Station.
- No matter what happens to the Trash Bag Container, all of the contributors should feel good about the ideas and work they have done on the project. Your ideas are turning heads at NASA and making the HUNCH program look good.

# Progression of Prototypes

New Seat Track foot  
Nomex outer bag



# Zero-G Flight testing



5/18/2024

