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CATALOG

CONTENTS

HARDWARE

Space Flight Equipment is one of HUNCH's largest programs allowing us to create high quality hardware items for the International Space Station. With many different applications we create items from approved design projects to requested items from Crew Systems. Since these projects are likely to fly to the International Space Station they need to be of the highest quality and meet the stringent tolerances applied to all hardware for the International Space Station.

Many of our most successful projects are items requested by the Astronaut Crew and developed through our Design and Prototyping program. Items such as the Galley Table help with crew comfort as well as other items providing maintenance solutions that keep the International Space Station running for a long time to come. With our largest project of Stowage Lockers of various sizes to hold experiments we are working at our highest quality, pushing students to produce the very best work possible.

Since most items are built to drawing specifications, they need to show the highest quality output possible from our schools. We teach students about quality assurance best practices so that they learn to expect quality from all the items they create. They are also shown proper safety documentation throughout the process making them more accountable for their output insuring tractability from start to finish. We want to ensure that all HUNCH products meet the highest quality standards possible so that student work has the best chance of reaching the International Space Station.

Quality Assurance of HUNCH Hardware

The HUNCH hardware is on par with any flight hardware we have seen produced by any vendor or the NASA manufacturing labs. NASA QA has audited the HUNCH quality system and control of materials and they meet all requirements to produce flight hardware."

– Larry Zielke, NASA QA

Single Stowage Lockers

Single Stowage Lockers – stowage containers used to house payloads, bolt directly into express racks, machined,

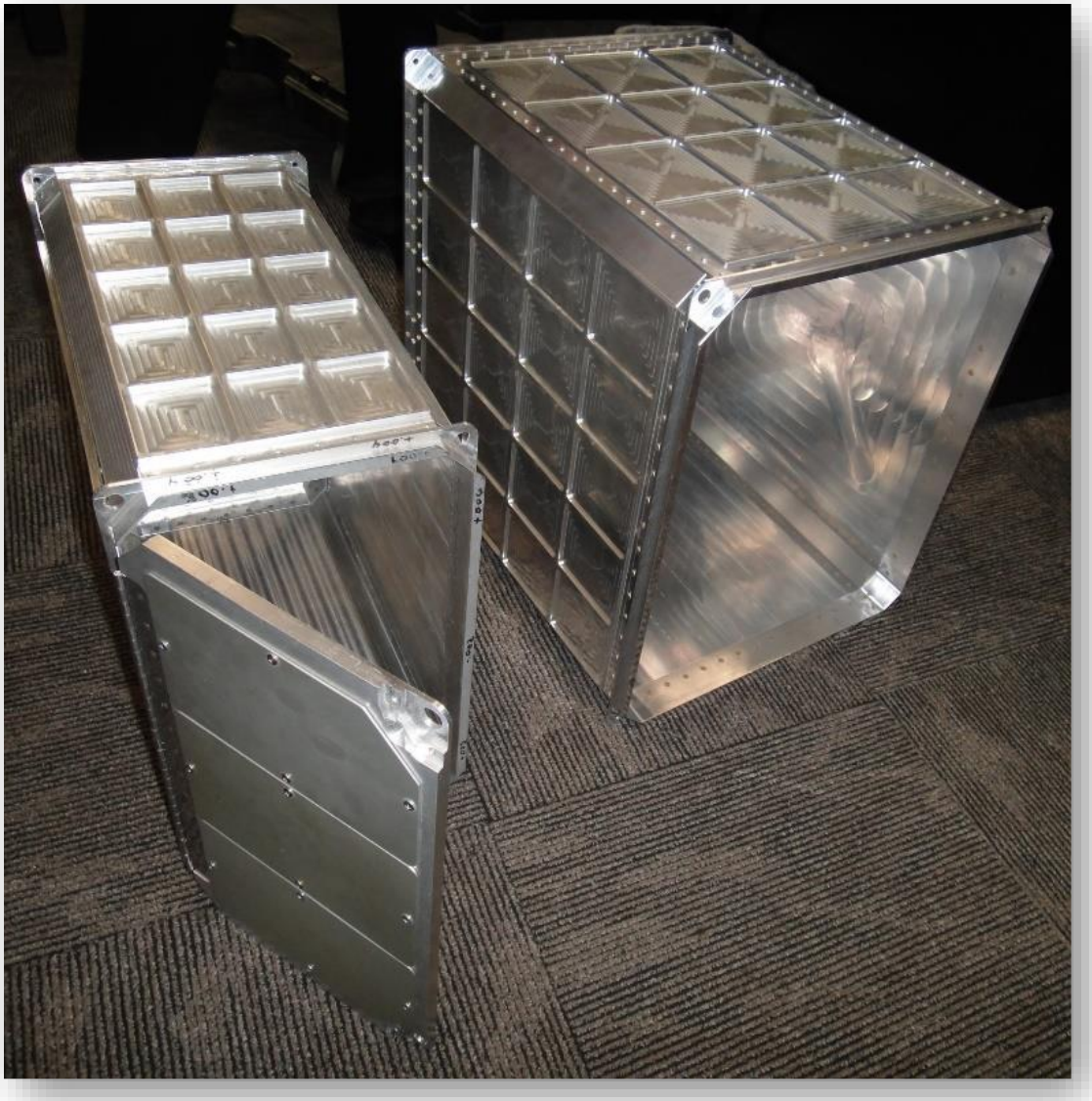
- Fabrication and Assembly

- Door Assembly, Single Stowage Locker
- Door Cover Plate Assemblies
- Internal Close-Out Cover Assembly, Single Stowage Locker
- Panel Assembly, Door, Single Stowage Locker
- Hinge Assembly, Single Stowage Locker
- Frame Assembly, Single Stowage Locker
- Stud, Latch, Door, Mid-Deck Stowage Locker Assembly
- Seals, Rear Plate, Assembly, Single Stowage Locker

Double Stowage Lockers

Double Stowage Lockers – stowage containers used to house payloads, bolt directly into express racks, machined, fabrication and assembled consistent with single stowage lock production

Both single and double lockers available in sheet metal versions for training needs



Galley Table System

Galley Table System – Gathering location for up to 6 crewmembers, located in Node 1, machined,

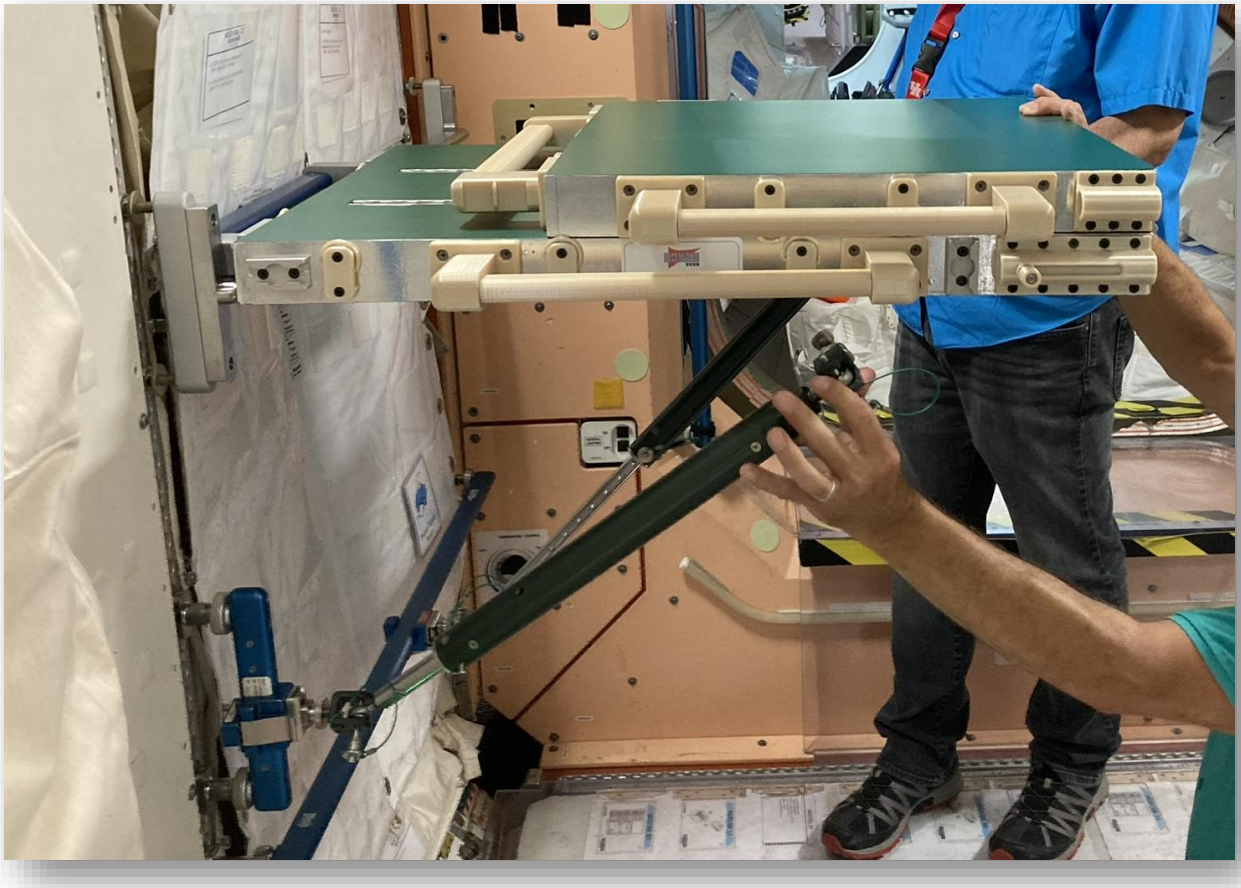
- Drafting to NASA Format
- Fabrication and Assembly

- Galley Table Bracket Assembly
- Handrail Assembly
- Galley Table Strut
- Large Leaf, Galley Table
- Small Leaf, Assembly Galley Table
- Slide Bolt Assembly, Galley Table
- CLEVIS

Light Weight Galley Table

Light Weight Galley Table- Training, mockup for training purposes,

- Drafting to NASA Format
- Fabrication and Assembly



EVA Tools

Acme Thread Cleaning Kit – EVA tool set used to remove any debris or metal shavings from the threads that may cause an increase in torque when the new equipment is installed. Machined – Drafting to NASA Format, Fabrication and Assembly

IVA Handrails

IVA Handrails – IVA handrails assemblies use for hand and foot holds inside the ISS, attach to seat track, machined- Fabrication and Assembly

- Fixture Cap Assembly

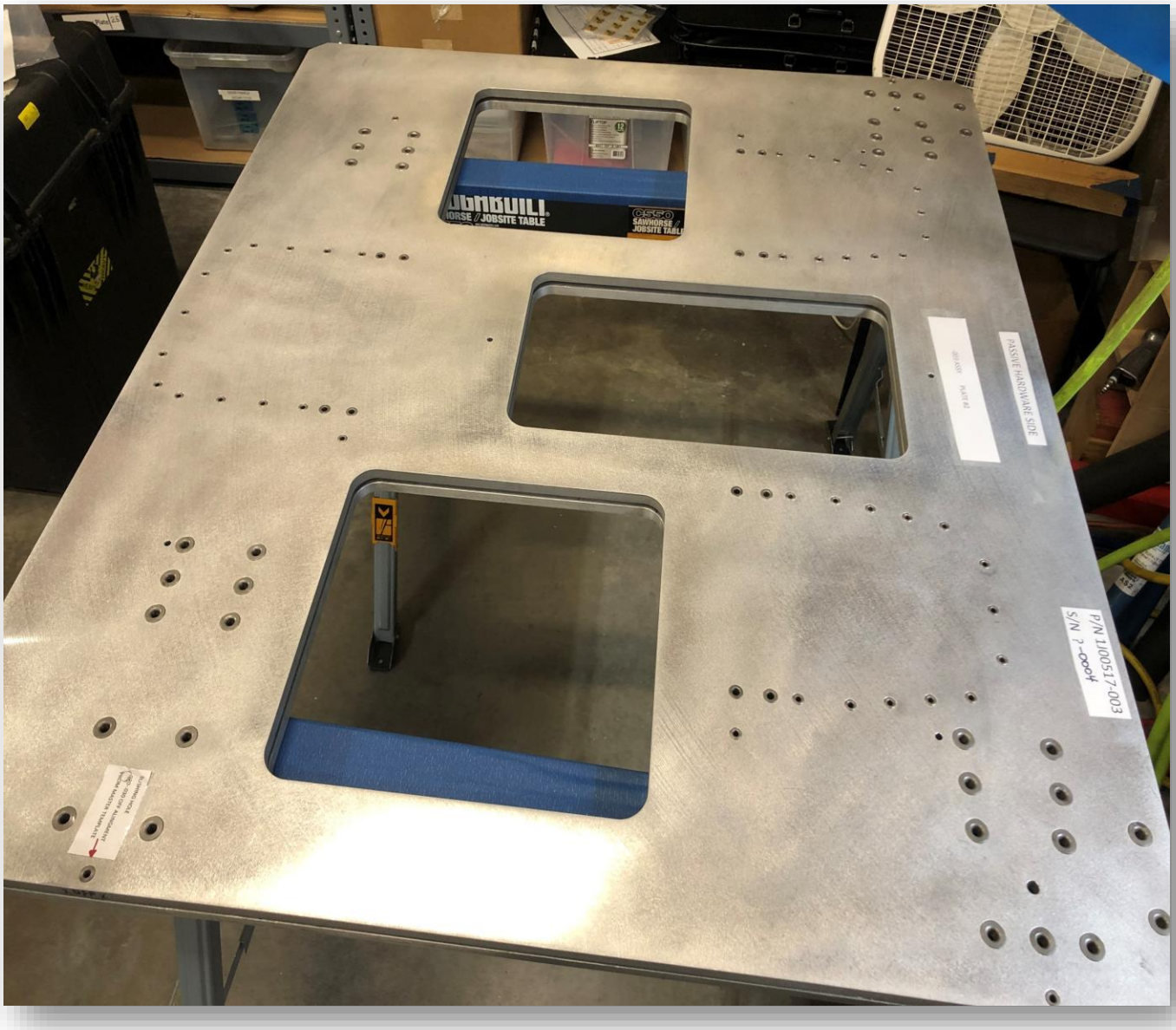
Tape Dispenser

Tape Dispenser - holds two rolls of tape such as Kapton or Grey and attaches directly to seat track, machined and 3D printed components, - Drafting to NASA Format, Fabrication and Assembly

- **One** Handed **Seat Track Attachment**

Passive FRAM Drill Plates

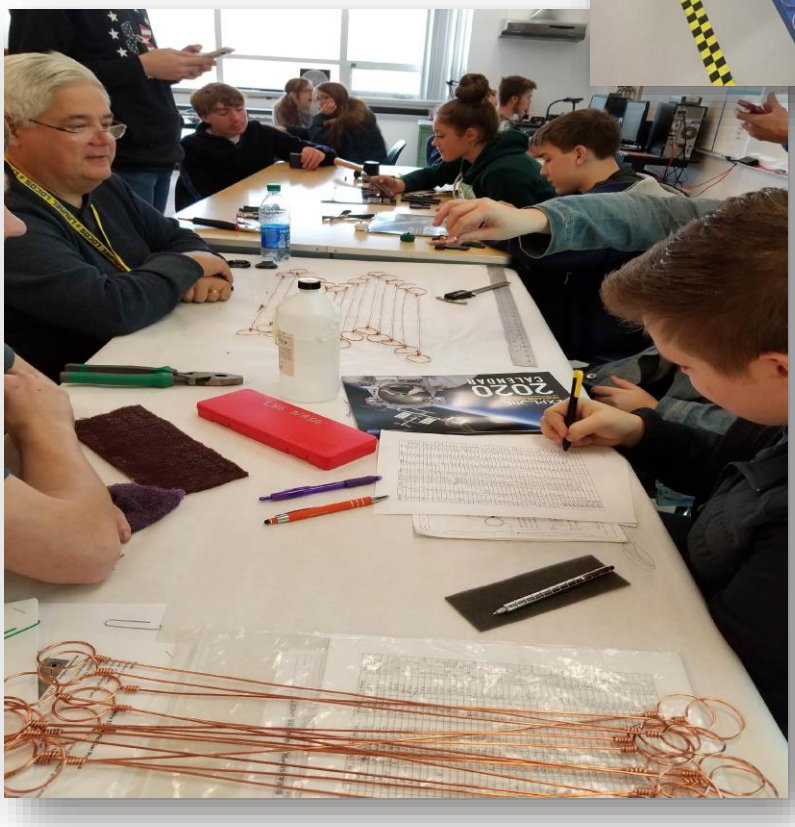
Passive FRAM Drill Plates- Used for locating and drilling Class I, Passive FRAM for interfacing components, Drafting to NASA Format, Fabrication and Assembly



EVA Wire Ties

EVA Wire Ties – used for securing on items outside the vehicle during EVAs on ISS.

- Fabrication and Assembly



One Handed Seat Track Foot

One Handed Seat Track Attachment - auto-locking attachment device for attaching to seat track, machined, - Drafting to NASA Format.

- **Fabrication and Assembly**

HUNCH Utility Bracket

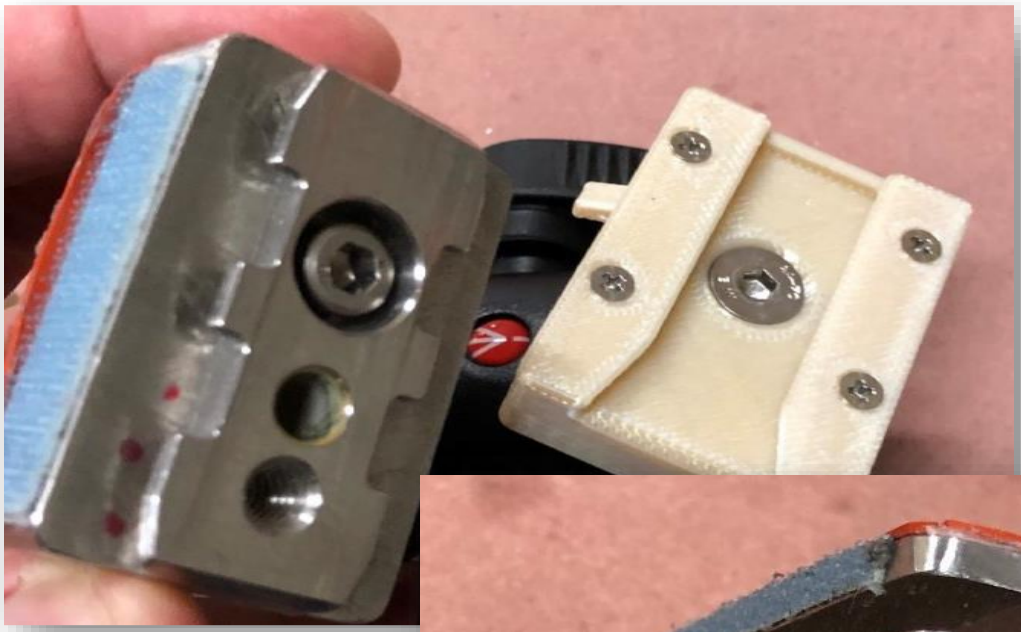
HUB - In development, replacement for the Bogan Arm, - Drafting to NASA Format, Fabrication and Assembly

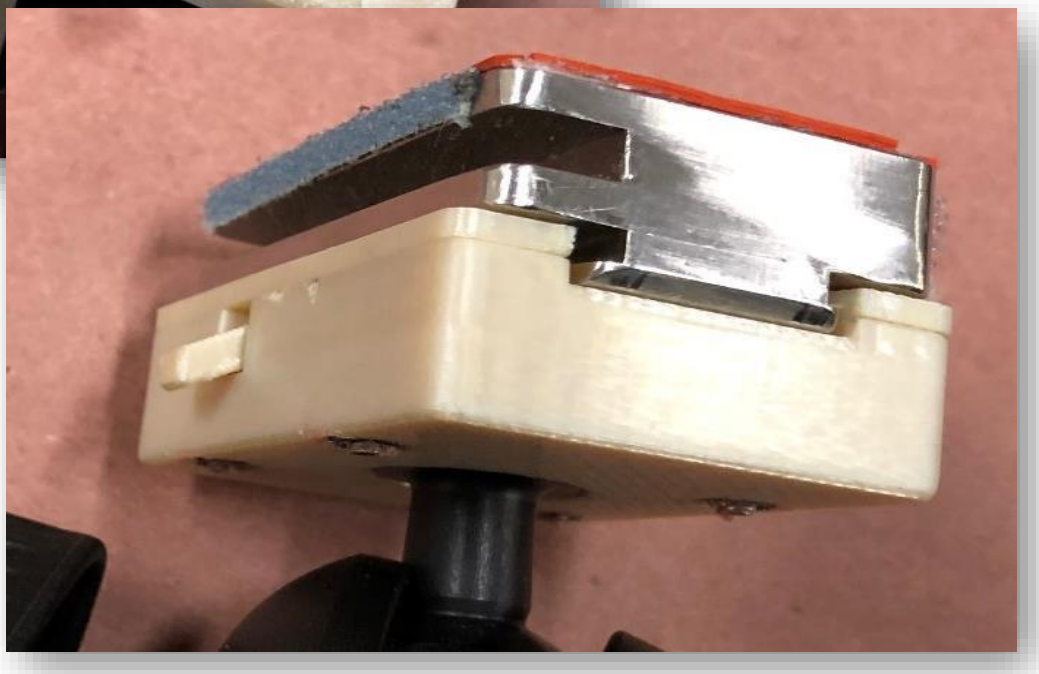
This sturdy HUNCH Utility Bracket (HUB) attaches and releases quickly from seat track as a soft dock or can be locked into place with just a twist of the thumb wheel. This rugged utility bracket has two off the shelf ball heads and a Variloc locking hinge. The hinge allows for independent positioning and allows users to rotate and lock in the required position.

EZ – Slide Camera Shoe

Camera Shoe - Preparing for launch, auto-locking attachment device that captures the standard camera feet used on orbit, machined

- Drafting to NASA Format
- Fabrication and Assembly





ARISS Fan Cover

ARISS Fan Cover - Holds cooling fans for the power supply, 3D printed. –

- Drafting to NASA Format
- Fabrication

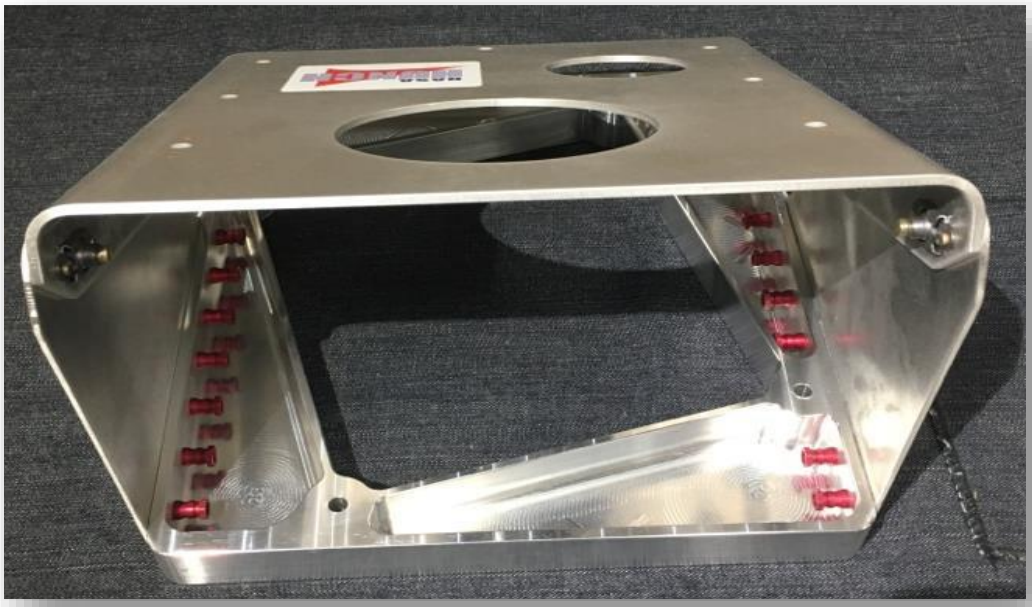
Crew Quarters Lint Catchers

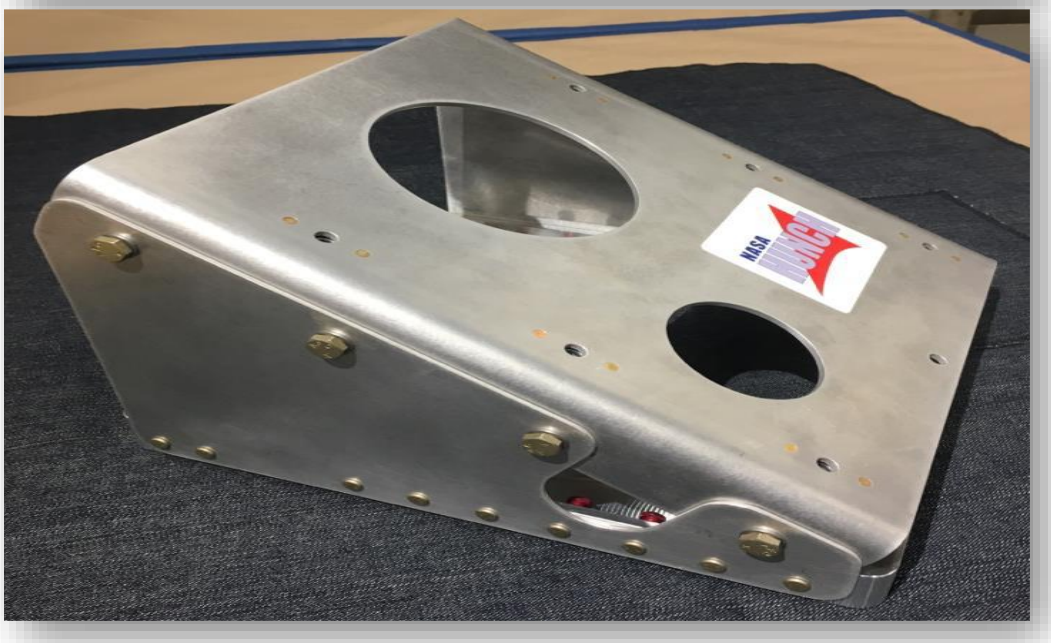
CQ Lint Catchers - Lint from the module is pulled into the Crew Quarters clogs up the ducting and air flow sensors giving false indications of low air flow. HUNCH students designed and built grills to hold stainless steel mesh.

- Drafting to NASA Format
- Fabrication and Assembly

Chinook Helicopter Flare Mount

Military designed Flare Dispensers are built to exacting precision to allow hot flares to be ejected from the helicopter and prevent heat seeking missiles from impacting our troops and missions.





Ball Clamp Monopod

Ball Clamp Monopod - Preparing for launch, variable length pivoting arm that attaches to an IVA handrail with a 360-degree camera mount, contains seat track for attaching lights and camera equipment as needed, machined and 3D printed components. **-** Drafting to NASA Format, Fabrication and Assembly

- Camera Shoe
- Ball Clamp

Ball Clamp Foot Restraint

Ball Clamp Foot Restraint - adjustable foot restraint that attaches to IVA handrails using a Ball Clamp, machined and 3D printed components 3D printed and Machined, - Drafting to NASA Format

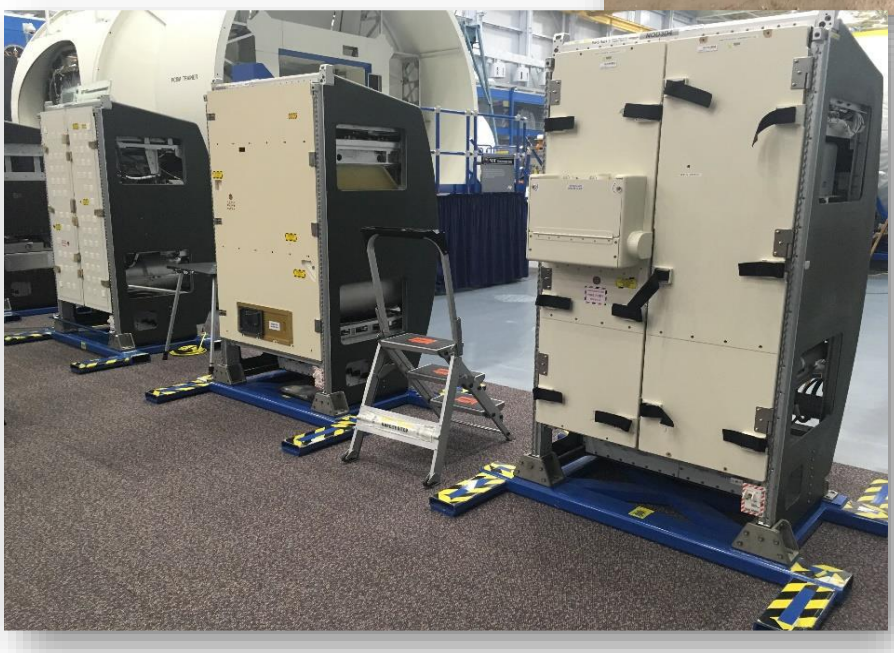
- Fabrication and Assembly

Rack Stands / Flat Frogs

Are your racks feeling tipsy or wobbly?

Need something extra heavy to make them safe for training?

Flat Frogs are produced by our students near Marshall Space Flight Center. Our students do it all. Everything from the cutting and welding of the heavy steel bars, machining of stainless-steel brackets to flight rack standards and then painted by our auto shop students.



Each rack stand comes complete with the safety tape

Caution and Warning Panel Covers

Caution and Warning Panel Covers - clear polycarbonate panels used to protect switches, machined

- Fabrication and Assembly

Orion Cursory Control Device Mount

Cursory Control Device Mount - Orion Crew Training, wedge plates, 8020 Mount plates, CCD mount plates for the RPL lab, 3D printed and machined.

- Drafting to NASA Format
- Fabrication and Assembly

Orion DU-Back Plates

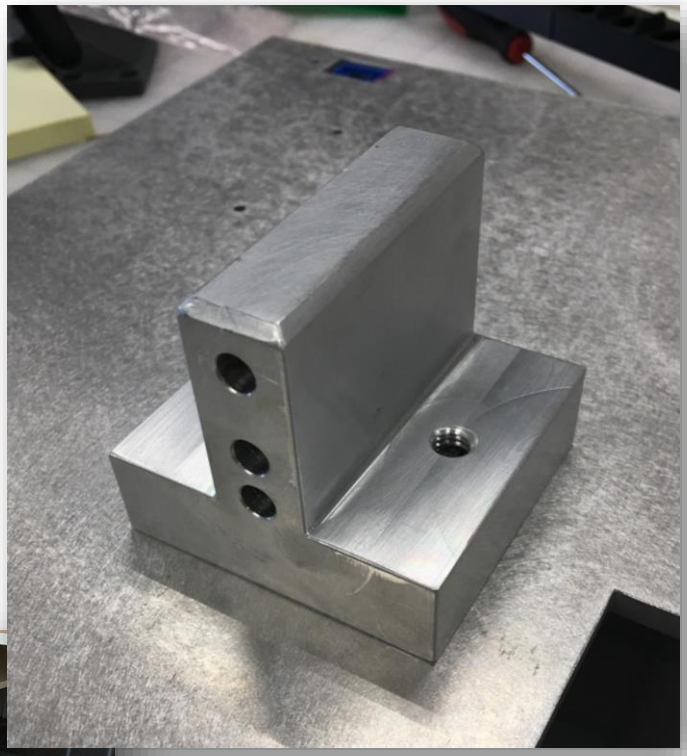
DU-Back Plates - Orion training, adjustable mounting device for monitors

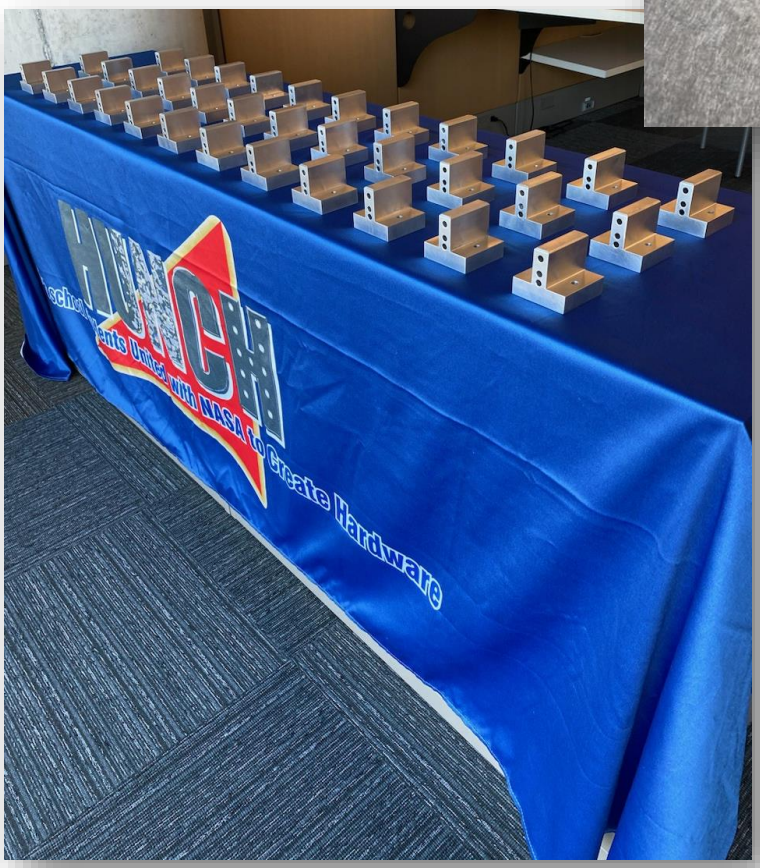
- Drafting to NASA Format
- Fabrication and Assembly

RPL Swivel

RPL Swivel - Orion training, adjustable mounting device for monitors.

- Drafting to NASA Format
- Fabrication

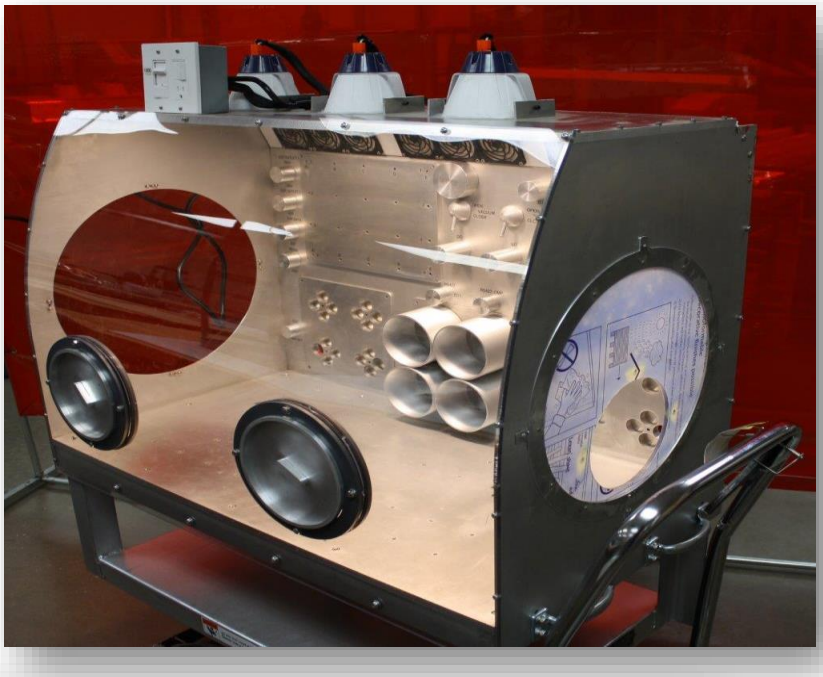




Micro-Gravity Sciences Glove Box

MSG - Crew Training units

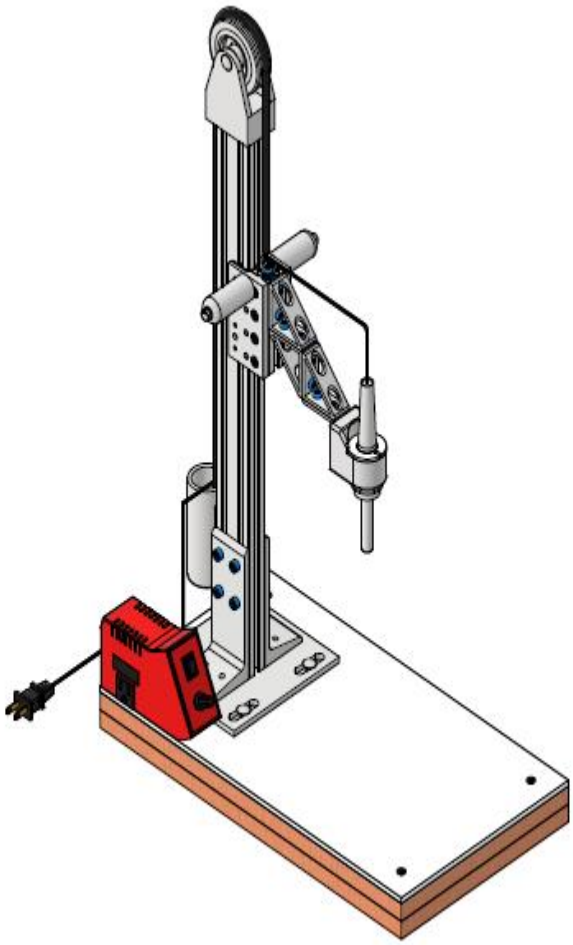
- Drafting to NASA Format
- Fabrication and Assembly



Heat Staking Tools

Heat Staking Tools - Device to insert threaded inserts into 3D printed parts.

- Drafting to NASA Format
- Fabrication and Assembly



ARED Cable Cover

ARED Cable Cover - In development, protects a cable that is suspected of being damaged by contact with astronauts' feet as they exercise,

- Drafting to NASA Format
- Fabrication and Assembly

Can Crusher

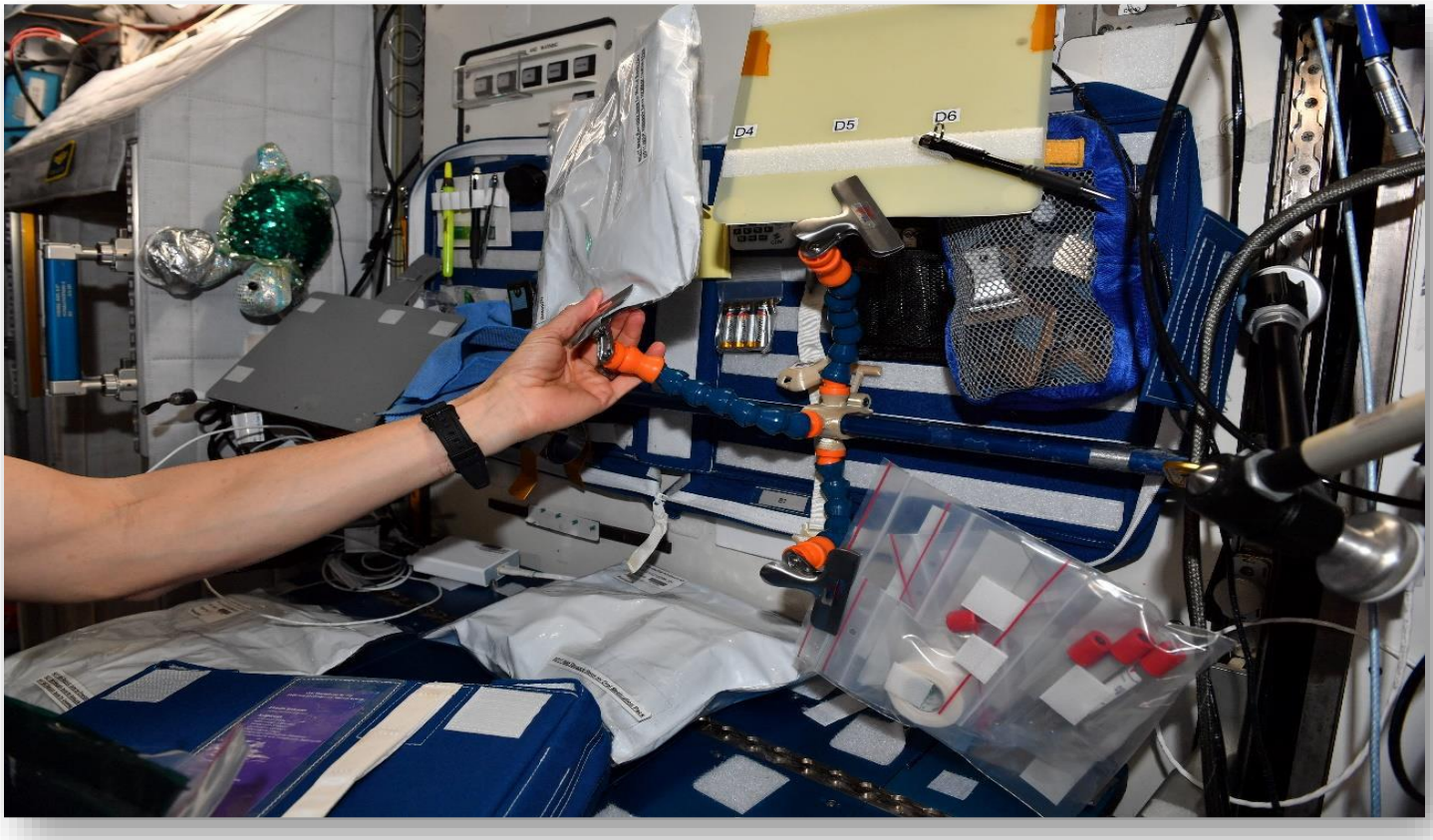
Can Crusher - device used for compacting food cans, machined.

- Drafting to NASA Format
- Fabrication and Assembly

Handrail Flex Clips

Handrail Flex Clips - multiarmed tool and utility holder attaches to IVA handrails, 3D printed.

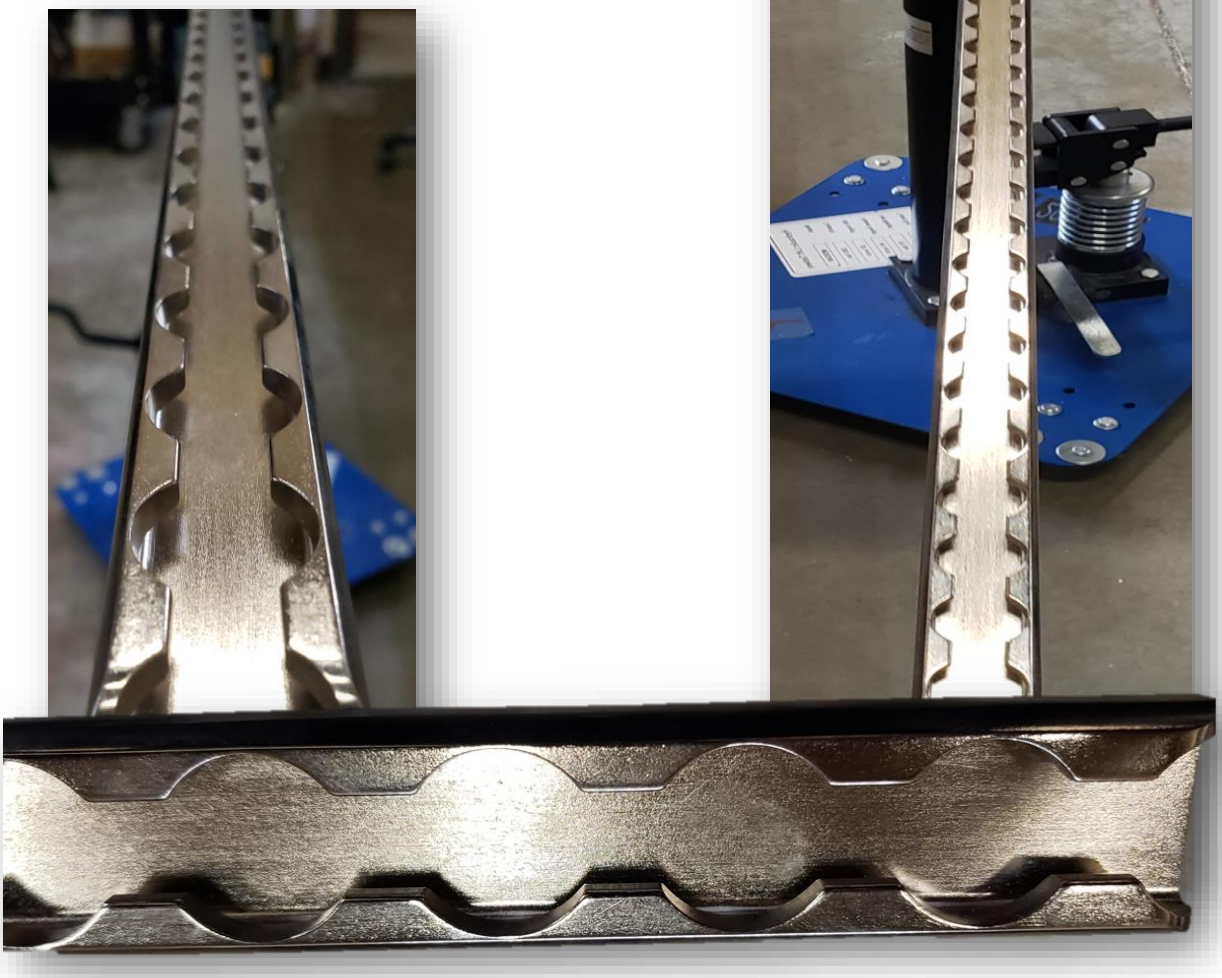
- Drafting to NASA Format
- Fabrication and Assembly



72” Seat Track

72” Seat Track – Seat Track is an aerospace grade aluminum channel bolted to the walls and equipment of the International Space Station and is used for attaching equipment to the walls and racks.

- Drafting to NASA Format
- Fabrication and Assembly



HUNCH Sewn Flight Articles, also known as Softgoods, is a program using fabric and other soft materials to create goods requested by different NASA centers as well as the International Space Station Astronaut Crew. This can range from redesigning the crew pantry to creating kits for the Crew's personal items. Softgoods provides a unique design opportunity using various materials to keep the crew not only safe but clean and comfortable aboard their stay.

These products range from items we've designed through Design and Prototyping and had flown up to the International Space Station as well as items that already exist aboard the International Space Station such as Cargo Bags. This range of items allows schools with different skill levels to all participate so that no one is denied the chance to create.

Since most items are built to drawing specifications, they need to show the highest quality output possible from our schools. We teach students about quality assurance best practices so that they learn to expect quality from all the items they create. They are also shown proper safety documentation throughout the process making them more accountable for their output insuring tractability from start to finish. We want to ensure that all HUNCH products meet the highest quality standards possible so that student work has the best chance of reaching the International Space Station.

US Hygiene Kit

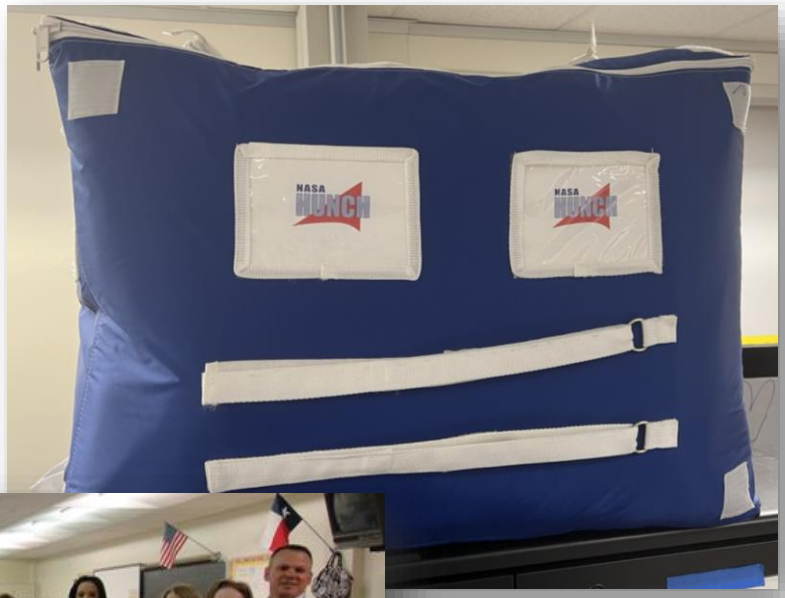
US Hygiene Kit - fabric modular kit with pockets for Astronaut toiletries, sewn.

- Drafting to NASA Format
- Fabrication and Assembly

Cargo Transfer Bags (Training & Flight)

Cargo Transfer Bags (CTBs) - are the primary containers used by NASA to send cargo to the International Space Station, sewn.

- Fabrication and Assembly



US Sleeping Bag Liners

US Sleeping Bag Liners - soft material against the crew member inside the sleeping bag. Designed to facilitate a hygienic environment by periodic replacement with a new, clean liner. The liner consists of a thin material that attaches to the sleeping bag shell via Velcro, sewn.

- Fabrication and Assembly.

Foot Pads

Foot Pads - Shoe like pads to protect the top of the foot from pressure when utilizing railing to maintain location, sewn.

Replacement in development to incorporate from feedback after flight.

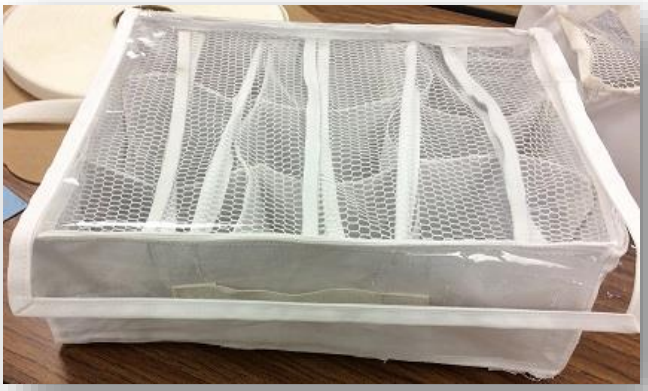
- Drafting to NASA Format
- Fabrication and Assembly

Payload Pantry

Payload Pantry - Modular shelving system with inserts to accommodate research supplies. Patterned after the Food Pantry, sewn.

Replacement in development from crew feedback after flight.

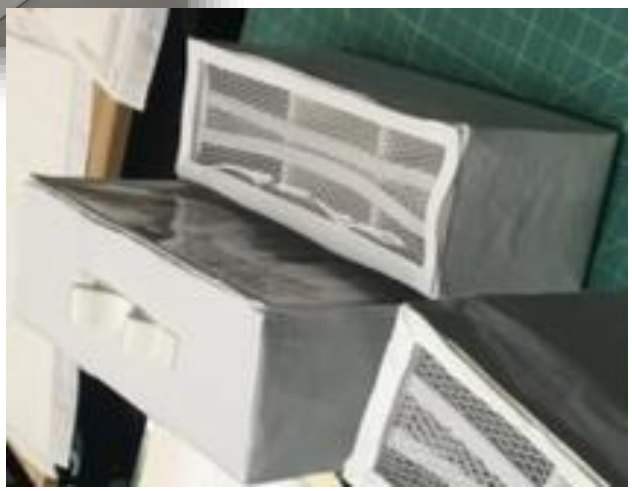
- Drafting to NASA Format
- Fabrication and Assembly



Food Pantry

Food Pantry - Modular shelving system with inserts to accommodate food and condiments, sewn.

- Fabrication and Assembly



Privacy Curtain

Privacy Curtain - Cloth panel designed to provide privacy during hygiene activities aboard the ISS, sewn.

- Drafting to NASA Format
- Fabrication and Assembly

Emergency Bags (Training & Flight)

Emergency Bags - Bags designed to for use during emergencies for ISS crewmembers, sewn.

Emergency Mask Bag / Ammonia Cartridge Bag / Emergency CTBs

- Fabrication and Assembly

Jettison Stowage Bag - JSB (Training & Flight)

Jettison Stowage Bag – for dry trash disposal, sewn.

- Fabrication and Assembly

ATV CTBs
(Training & Flight)

ATV CTB - are the cargo containers used by ESA to send cargo to the International Space Station aboard the Automated Transfer Vehicle, sewn.

- Fabrication and Assembly

Crew Quarter Organizer

Crew Quarter Organizer - Fabric modular kit with pockets for Astronaut personal items in Quarters, sewn.

- Fabrication and Assembly

ZSR Covers

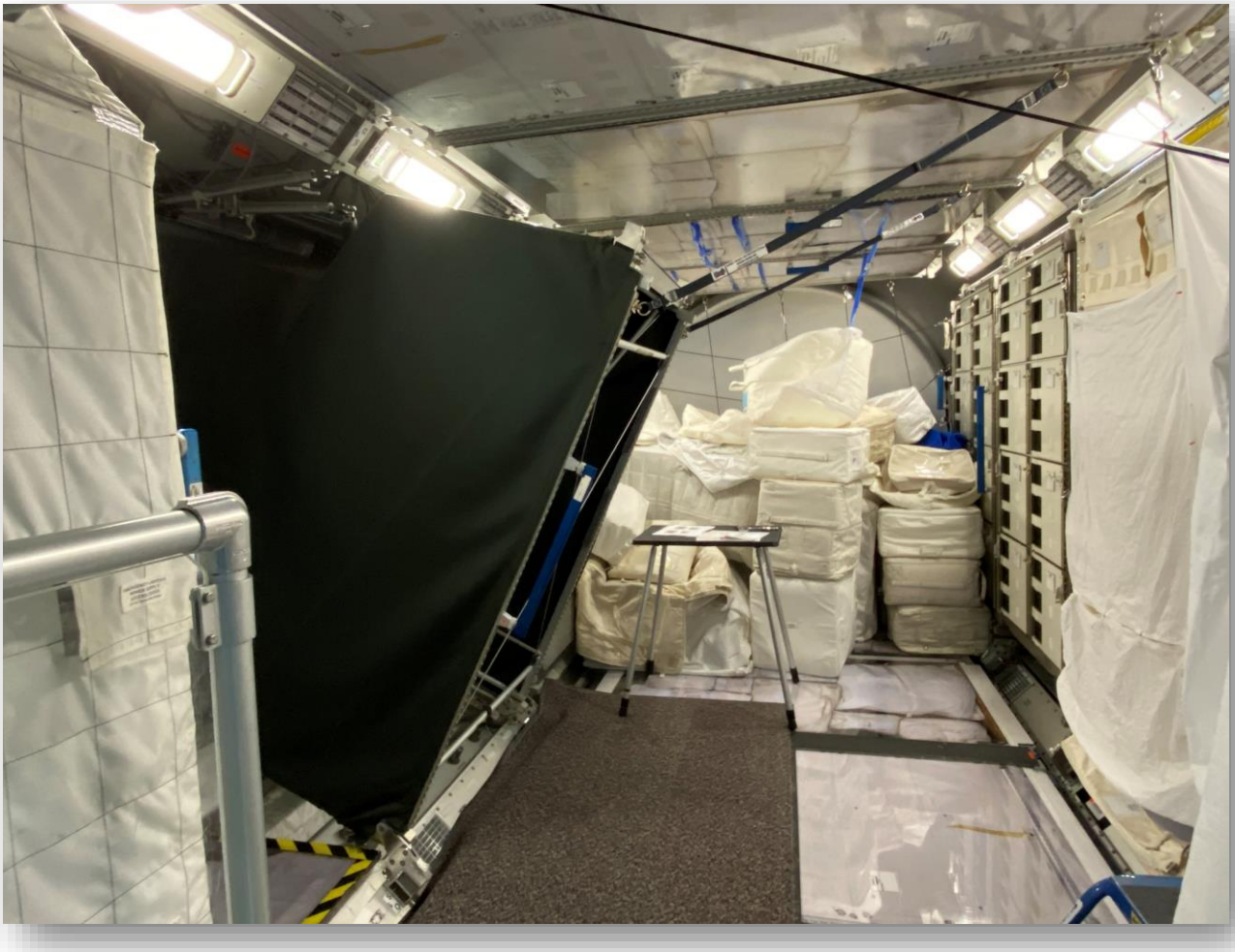
ZSR Covers - Fabric panels that closeout the front of ZSR racks with integrated Teflon to lessen staining from food in the Galley module and increase the cleanability of the surface closest to the galley table, sewn.

- Fabrication and Assembly

SHREC Strap

SHREC Strap – Used to limit the rotation of the ARS rack, sewn.

- Drafting to NASA Format
- Fabrication and Assembly



Desiccant Bag

Desiccant Bag – Used to hold desiccant to absorb moisture, sewn.

- Drafting to NASA Format
- Fabrication and Assembly

Trash Container

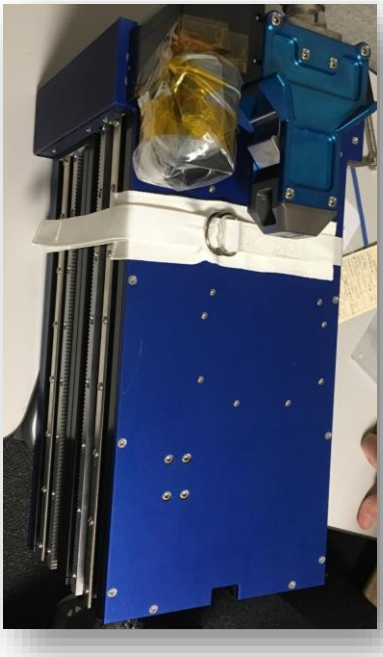
Trash Container – container with disposable bags to hold trash and contain odors, sewn.

- Drafting to NASA Format
- Fabrication and Assembly

MISSE Retention Straps

MISSE Retention straps – Custom Launch Stowage strap for the MISSE payload.

- Drafting to NASA Format
- Fabrication and Assembly



Algae Growth Kit Bag

Algae Growth Kit Bag - custom payload stowage bag for collecting and returning Algae Growth samples, sewn.

- Drafting to NASA Format

Fabrication and Assembly

Odor Control Jettison Stowage Bag

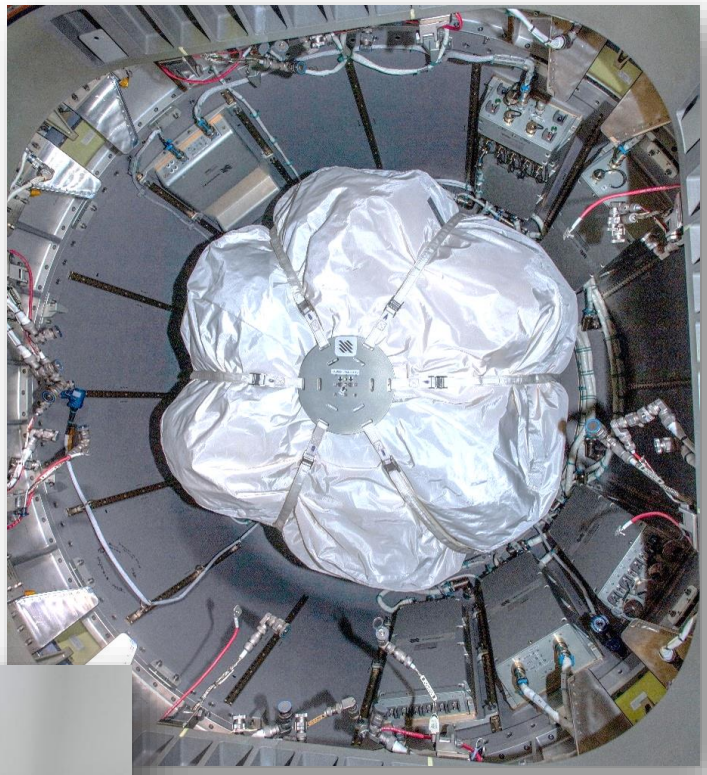
Odor Control JSB - Stowage Bag which has an added layer of activated charcoal fabric to lessen odor presence, sewn.

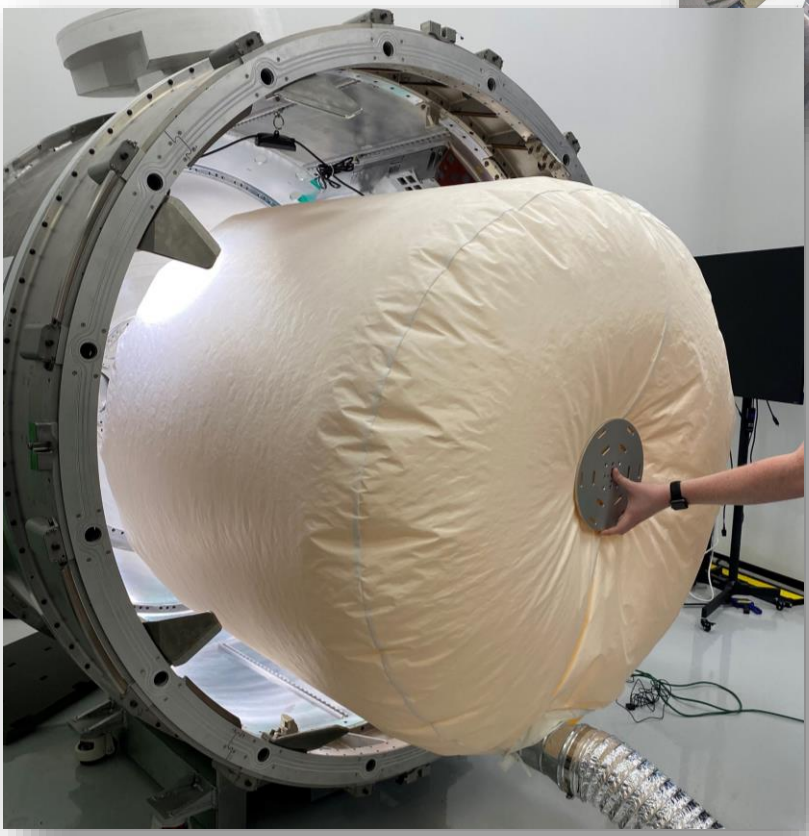
- Drafting to NASA Format
- Fabrication and Assembly

Airlock Trash Bag

Airlock Trash Bag - Specially designed trash bag for the Bishop Airlock on Station. Once filled it is then launched from the airlock. Includes strapping required for deployment.

- Fabrication and Assembly





Hygiene Covers

Hygiene Covers- cloth panel designed to protect cargo in areas utilized for crew member hygiene activities.

Rack Hygiene Cover

Bay Divider Hygiene Cover

- Drafting to NASA Format
- Fabrication and Assembly