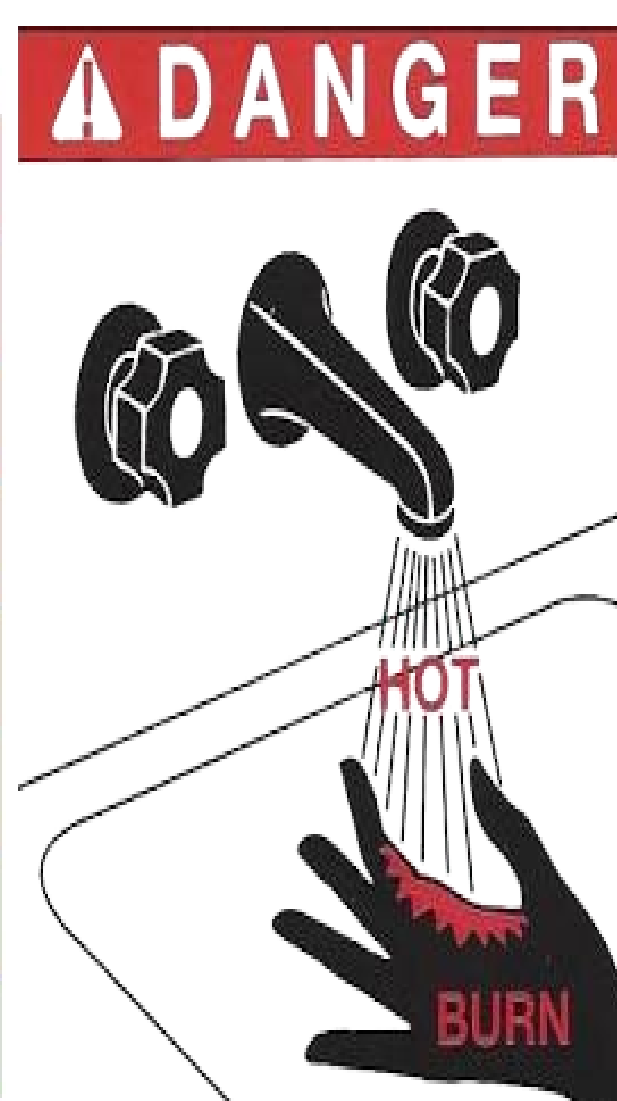
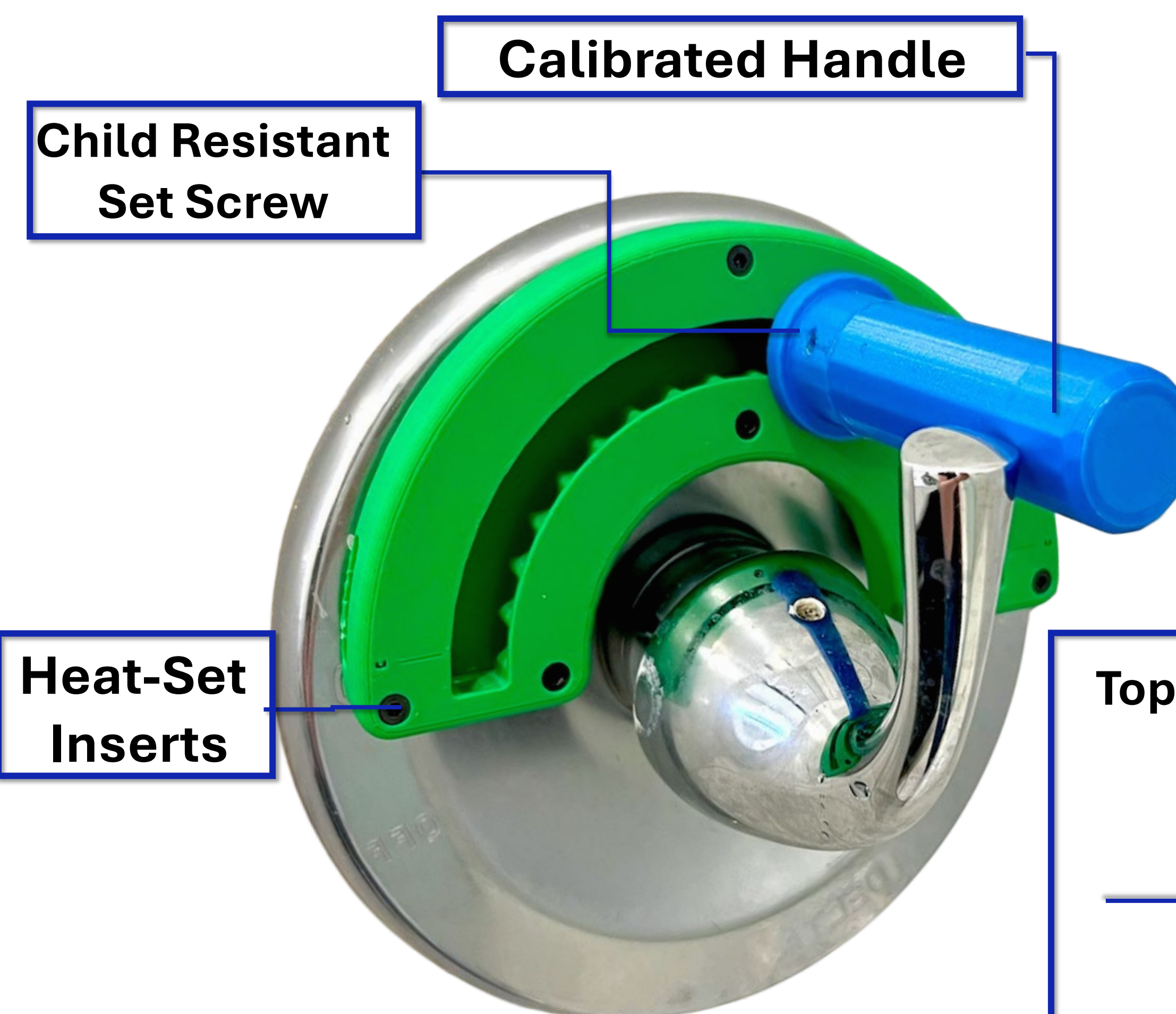


Background & Problem

Water Temperature	Time to 3rd Degree Burn
155° F	1 second
148°	2 seconds
140°	5 seconds
133°	15 seconds
127°	1 minute
124°	3 minutes
120°	5 minutes
100°	Safe temperature for bathing



Design Specifications & Features



- ✓ **Precision Teeth Geometry**
Ensures repeatable, secure and accurate handle positioning
- ✓ **Child Resistant and Non-Obtrusive Design**
Securely locks handle with a child resistant set screw
- ✓ **Durable & Seamless Integration**
Compact design that easily integrates with existing fixtures
- ✓ **Enhanced Safety & Ergonomics**
Plasti-Dip handle coating provides soft, impact resistance surface

Top Frame Teeth



How It Works: Interlocking teeth enable discrete positioning while resisting unintended rotation to prevent accidental water temperature changes

- Scald Injuries from hot water tap remain a significant and preventable public health issue in residential settings
- Accounts for ~ **25% of all scald burns** with **52,000 ER** and **7,000 hospitalizations** in the US
- Existing solutions are limited or inaccessible

Design Requirements

- Child-resistant** and elderly accessible
- Reliable** prevention of scalding temperatures
- Non-obtrusive** design
- Installed** without a plumber

Mounting Material: Testing and Validation



Samples

304 Polished Stainless Steel
Polypropylene vs. High-Density Polyethylene
3M VHB LSE-060F Tape vs.
3M 9500 PC Tape



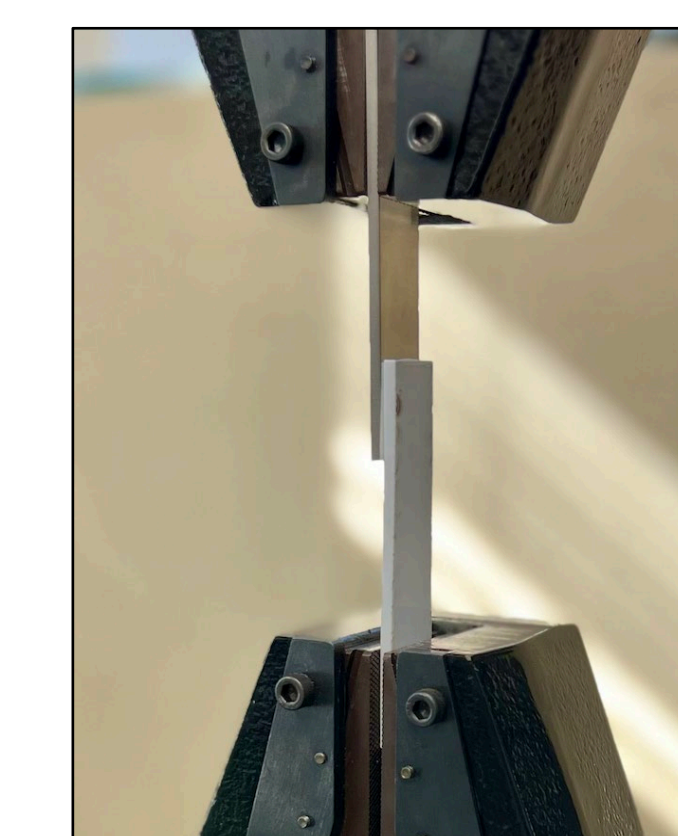
Aging

Humidifier set at 123°F & 70-99% RH to environmentally condition to 1 yr, 2 yr, and 3 yr durations in incubator



Testing

ASTM D1002 Standard Test Method for Apparent Shear Strength of Single-Lap-Joint



Results

3M VHB LSE-060F tape bonded to **polypropylene** had the highest shear being able to **withstand an average of 357 pounds of shear force**

Solution

Our solution is a static lever stop:

- ✓ **Limits handle rotation** to prevent exposure to scalding temperatures
- ✓ Adheres **polypropylene** product onto user's trim plate using **3M VHB LSE-060F** adhesive
- ✓ Uses **non-removable handle** to prevent part loss
- ✓ Enables **tool-free installation** without a professional plumber
- ✓ **Preserves shower flow rate**



Market Comparison

	A.R.K.	Cash Acme 2 Shower Attachment	Thermostatic Mixing Valve
No Plumber Required	✓	✓	✗
Costs Less than \$50	✓	✗	✗
Constant Flow Rate	✓	✗	✓
Shower and Bathtub Coverage	✓	✗	✓

Future Goals

- **Patented** design
- **Child resistance** certification
- **UL** certification
- **Expand technology** to a variety of shower fixtures
- Incorporate live feedback