2. Litter Handle

Adjustable Litter Handle for Search and Rescue
3,453 wilderness rescue operations in the US in 2017
Manual Carries
Product Goals

- More comfortable cooperation between rescuers of different heights
- More ergonomic lifting for rescuers
- Lessen fatigue in rescuers
Litter Handle CAD
Litter Handle

Split clamp attachment

Ratchet
Release lever
## Product Contract

<table>
<thead>
<tr>
<th>CUSTOMER NEED</th>
<th>PRODUCT ATTRIBUTE</th>
<th>ENGINEERING SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can attach to existing stretchers or litters</td>
<td>Attachment Mechanism</td>
<td>Attaches to ( \frac{5}{8}'' - \frac{3}{4}'' ) diameter litter railing</td>
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<tr>
<td>Makes it easier to carry and lift someone</td>
<td>Adjustable height and angle of handle</td>
<td>90 degree rotation, adjustable height of at least 12''</td>
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<tr>
<td>Can easily be transported to emergency location and back</td>
<td>Weight</td>
<td>Total weight less than 5 lbs</td>
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<tr>
<td>Easy to navigate through small spaces</td>
<td>Size</td>
<td>Less than 3'' wide when vertical, less than 13'' wide when horizontal</td>
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<tr>
<td>Can support the weight of a person</td>
<td>Load weight</td>
<td>More than 200 lbs</td>
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</tbody>
</table>
Risks and lessons

- Clamp mechanisms only lock in tension
- Ratchets have directional locking
- Parallel translational mechanisms led to mechanical binding
- Rotational adjustments are limited by handle position
Pricing

Cascade Rescue Equalizer
- $465 - $850 for a set of four handles

Our litter handles
- $100 - $150 per handle
Next Steps

- User testing for ease of use
- Iterate on design and customize parts
- Design for adaptability to different litters
- Further consider design constraints
Citations


