

# Mockup Review: Adjustable Height Crib

Team Red A  
(Safety and Security)

# Adjustable Height Crib

- Product Description:  
Adjustable Height Crib
- Intended Customer:  
Parents and Child Care Givers
- Market:  
Infant Furniture

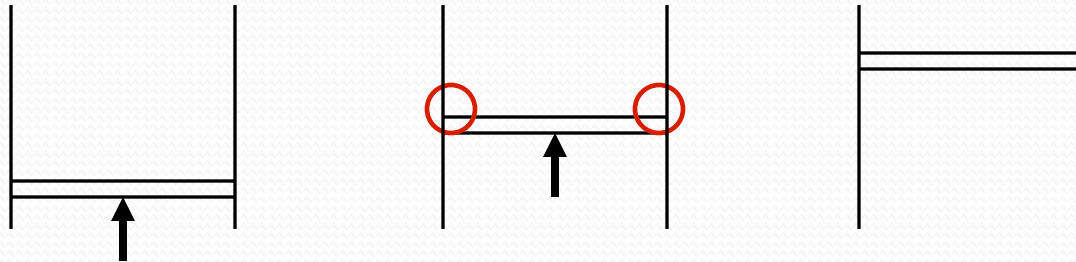
Mockup model



# Key Design Criteria

- **Pinch Point**

- Hide pinch points exposed to baby.



- **Lifting Mechanism**

- Select and design appropriate lifting mechanism.

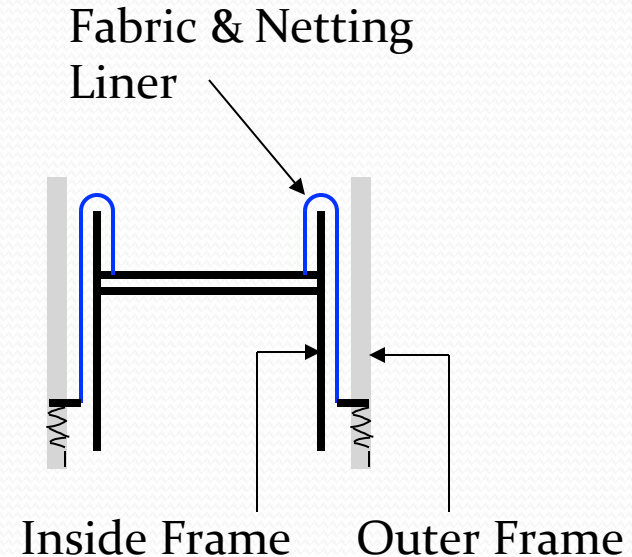
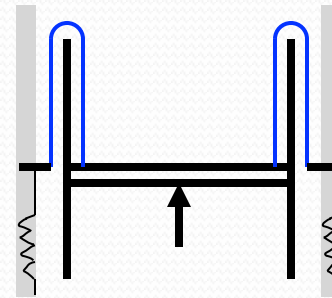
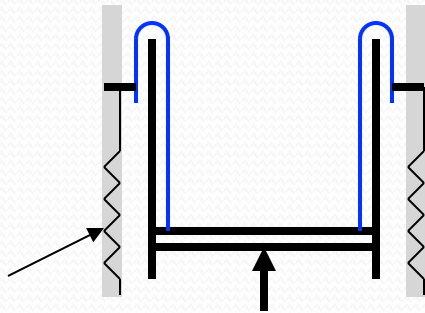


Sketch Model  
(scary)

- Customer's sense of safety
- Lifting performance requirements

# Pinch Point Guard

- Moving liner



Springs  
(to keep fabric taut)

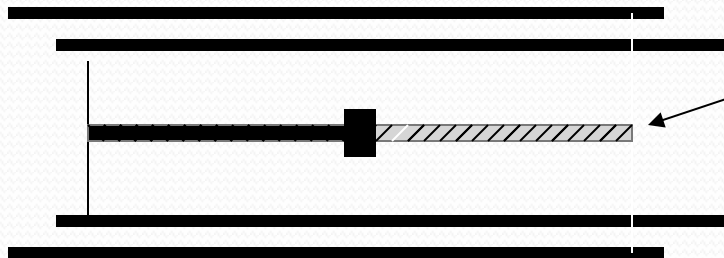
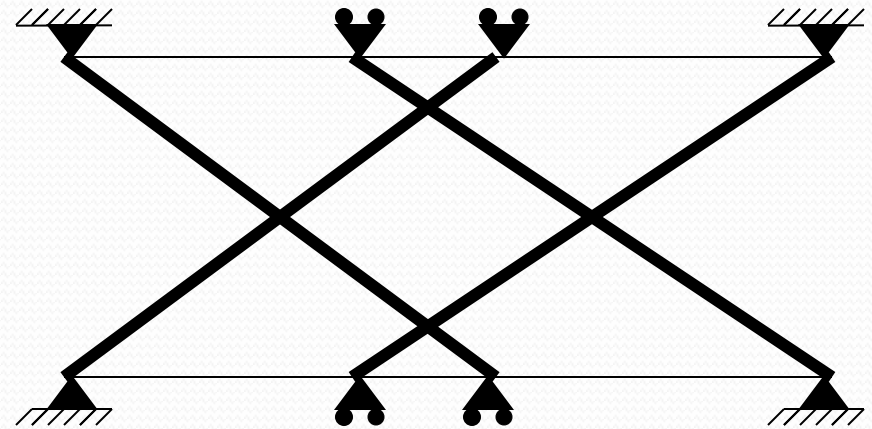
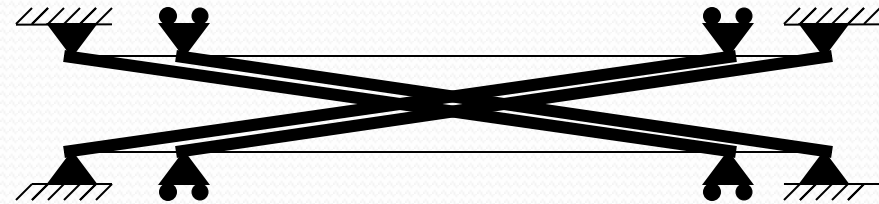
Necessary Spring Force  
with:

- 6 springs
- 0.68 m displacement

| Force to Pull Fabric (N) | Force perSpring (N) | Spring constant necessary |
|--------------------------|---------------------|---------------------------|
| 90                       | 15                  | 21.87                     |
| 120                      | 20                  | 29.16                     |
| 180                      | 30                  | 43.74                     |
| 60                       | 10                  | 14.58                     |
| 30                       | 5                   | 7.29                      |

# Lifting Mechanism

- Scissor Linkage



Top view

Two sets of scissor linkages driven in opposing directions by left and right lead screws.

Lead screw: 10 revolution/inch

Traveling 22 inches in 10 seconds

Motor ~800 rpm

# Customer Feedback

- **Buy Buy Baby Customers**
  - Current crib could not prevent child from climbing out, even at it's lowest position.
  - Child learned how to drop lowering side walls.
  - Current cribs are too hard to adjust.
  - Wooden cribs are highly preferred.
  - Price is important, but most will pay up to \$700.
- **Pediatric Nurse Practitioner**
  - Height Concern

# Product Contract

| Customer Needs                | Design Attributes                              | Engineering Specifications |
|-------------------------------|--|----------------------------|
| Wooden Frame/ Nice Aesthetics | Visible Structure=Wood                         | Hide all metal parts       |
| Price                         | Price range                                    | \$350-\$700                |
| Ease of Adjustability         | Motorized Lifting Mechanism                    | 27' ' in 10-15 seconds     |
| Child Climbing Prevention     | Wall height when lowered                       | h=36"                      |
| Crib Size                     | Standard Bed Dimension (between rails), Height | 52" x 28"<br>H=40"-45"     |

# Future Considerations

- Safety Regulations and Testing
  - According to Federal Regulation Documents
- Scissor geometry
- Appropriate motor
- Weight of Assembly