

# Scissor Tip Pliers

GROUP 5

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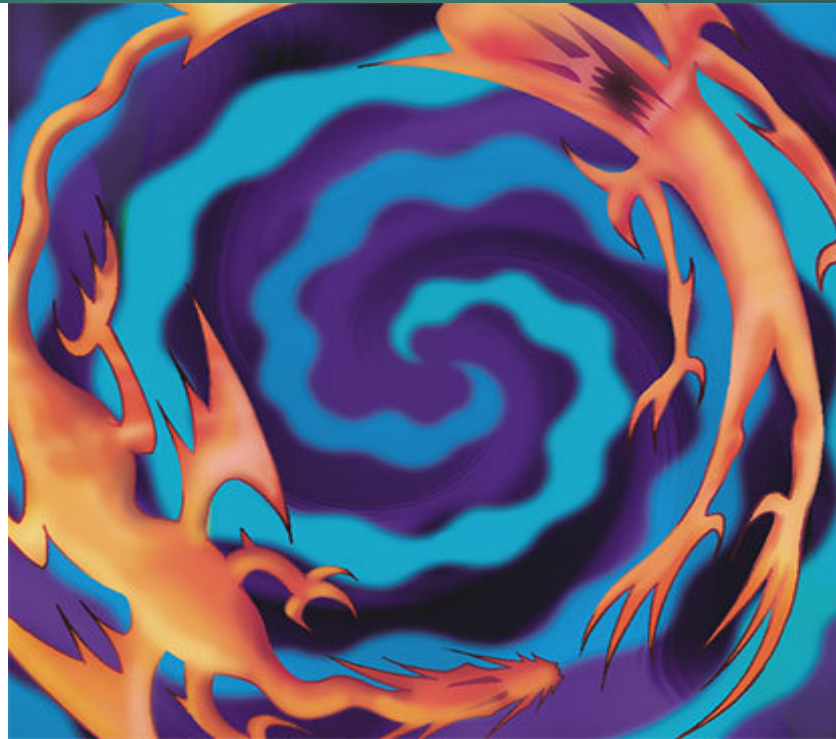
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# Ideas:

- ▶ Everyday Products
  - ▶ Charger [usb-c & lightning]
  - ▶ Spring extension key holder device
  - ▶ Auto extending heels
- ▶ Kitchen Products
  - ▶ Sticky kitchen gloves
  - ▶ Serrated paring knife
- ▶ Tools & Accessories
  - ▶ Scissor tip pliers
  - ▶ Phone stabilization rig
  - ▶ 3-IN-1 Cigar cutter
  - ▶ Perfume/Pepper spray
  - ▶ Auto Guitar Tuner
  - ▶ Beverage holder for belt
- ▶ Hygiene
  - ▶ Auto cleaning mouth guard
  - ▶ Sideways tooth brush

# Mission Statement

- ▶ To create a new product (scissors tip pliers) while improving two other products already in the market.



# Charter

- ▶ To create and improve a product: multifunctional
- ▶ maintaining it's quality and ease of use.
- ▶ grip, cut, twist, into smaller spaces.
- ▶ The product will have a low price point.

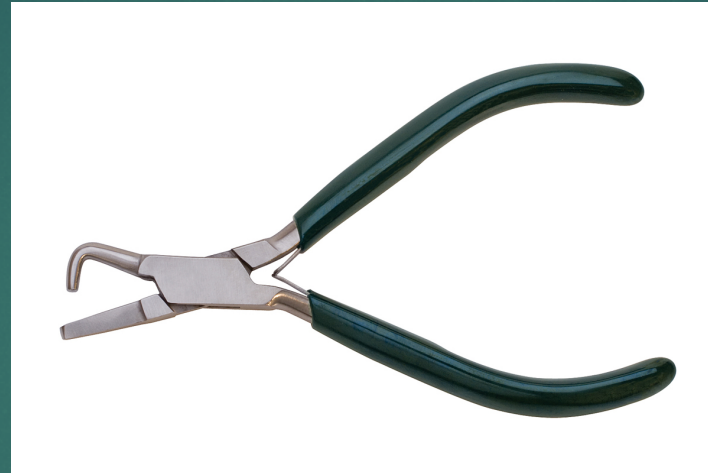


# Available on the Market

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▶ Needle nose



▶ Dimple



▶ Hook nose

# Opportunities:

- ▶ Integrating scissors into the needle nose pliers
- ▶ Derivative of an original product platform
- ▶ Ability for more applicable uses

# Opportunities (cont...)





# Capabilities:

- ▶ Cutting
- ▶ Tight spots
- ▶ Precision
- ▶ Gripping
- ▶ Torsion
- ▶ Swappable cutting tips & gripping tips
- ▶ Average force necessary fro gripping is 220 N.

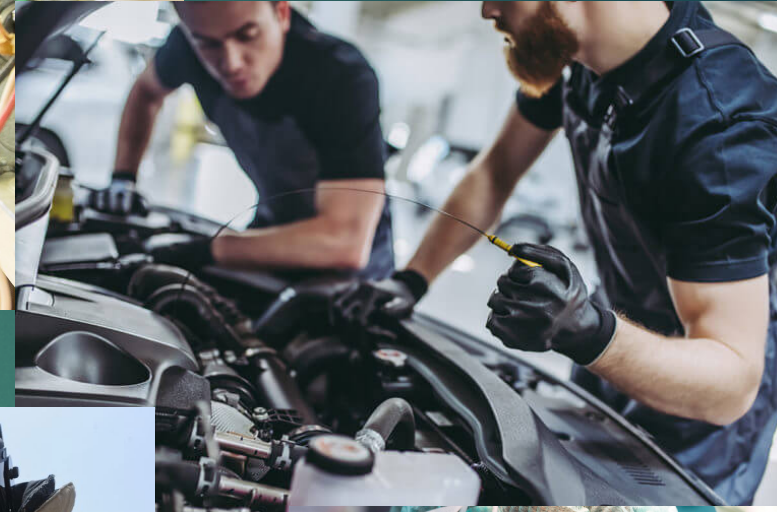
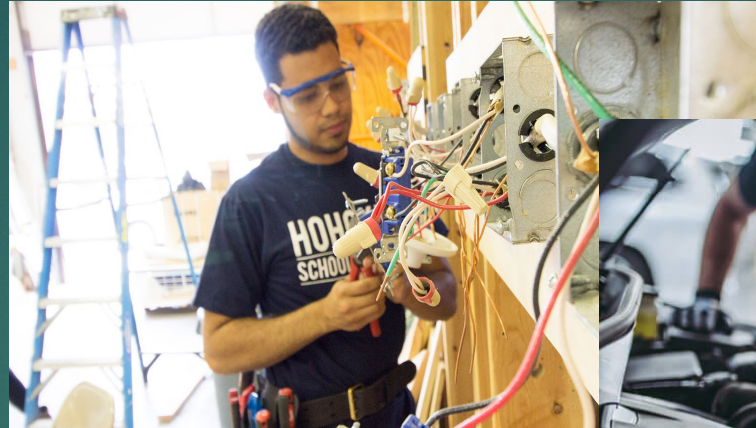
Table 2 Total Grip Strength (N) over over gender

	Total Grip Strength (N)	
	Male	Female
45mm	190.94 <sup>A</sup>	165.49 <sup>A</sup>
50mm	213.52 <sup>AB</sup>	169.65 <sup>A</sup>
55mm	234.94 <sup>B</sup>	170.43 <sup>A</sup>
60mm	214.45 <sup>AB</sup>	158.44 <sup>A</sup>
65mm	226.92 <sup>AB</sup>	166.85 <sup>A</sup>
70mm	217.58 <sup>AB</sup>	149.30 <sup>A</sup>
75mm	210.89 <sup>AB</sup>	138.80 <sup>A</sup>
mean	215.60	159.85

(Note: alphabetic letters represent groupings for same total grip strengths by statistical significance)

# Target Audiences:

- ▶ Electricians
- ▶ Mechanics
- ▶ Military
- ▶ Surgeons
- ▶ House Use

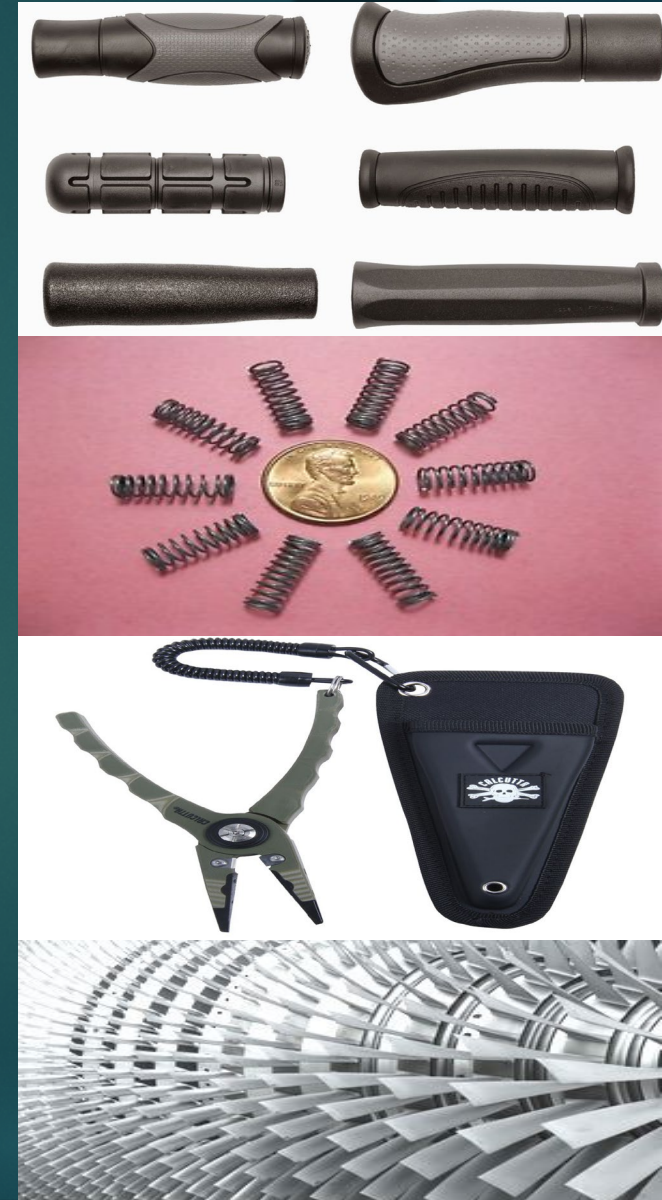


# Need Statements.

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According to customer input, our product will have to....

- ▶ Cost \$15/<sub>plier</sub> and \$3/<sub>head</sub>
- ▶ Have interchangeable heads
- ▶ Nonslip handles
- ▶ Be sold at home improvement and hardware stores
- ▶ made in medium hand held, pocket: sizes 8" / 200mm Long
- ▶ spring assisted mechanism will be implemented to aid in opening the pliers
- ▶ included with each purchase is a sturdy plastic case to house and carry the pliers
- ▶ pliers will be environmentally friendly and use recyclable materials
- ▶ will be a child protection lock on the pliers as a safety feature



# Metrics.

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Need	Metric	Level of importance (1-5)
The Product should be useable with one hand.	Size of product	5
The product should be fairly inexpensive.	Development cost	3
Should have a safety mechanism.	Safety cost	5
Should be made of durable materials.	Development costs	4
Product should have nonslip handles.	Safety cost	5
Product should be pocket sized	Size of product	3
Spring assisted.	Development costs	3
Case to house pliers in.	Development costs	2
Environmentally friendly materials.	Development costs	4

# Competitor's information.

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- ▶ Stanley 3 piece set:
  - ▶ \$9
  - ▶ Forged-Steel construction
  - ▶ Chrome-Nickel cutting edge
- ▶ Irwin Long Nose Pliers:
  - ▶ \$10
  - ▶ Chrome-Nickel steel construction
  - ▶ Induction hardened cutting edge
  - ▶ Extra comfort and fatigue reducing grips

Stanley 84-114 3 Piece Basic 6-Inch Slip Joint, 6-Inch Long Nose, and 6-Inch Diagonal Plier Set



IRWIN VISE-GRIP Long Nose Pliers with Wire Cutter, 8", 2078218



# House of Quality

Customer Requirements

Technical Requirements

Customer Priority

Targets

Correlations:  
 ⊕ Strong Positive  
 + Positive  
 ⊖ Strong Negative  
 - Negative

Relationships:  
 ●● Strongest= 5  
 ● Strong= 4  
 ⊙ Fair= 3  
 ○ Weak= 1

Actions Noted /  
Competitive Evaluation

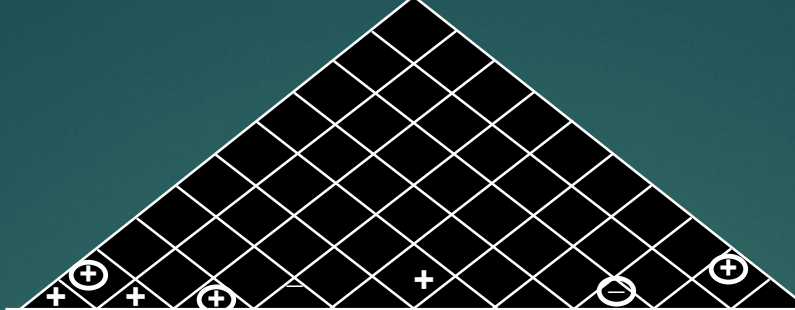
Customer Requirements	Importance Rating	Carbide OR	Titanium Heads	Rubber OR	Silicone Handles	Child Protection Lock	Spring Assisted	Kydex Sheath/Case	Pocket Size	Recycled Materials	Color Variations	Replacement Heads	Multifunctional	Targets	Competitive Evaluation
One Handed Use	5					●			●					~6" tall	+
Safety Mechanism	5				●●		●							Locking Spring Latch	+
Durable Material	4	●●	●●											Wear Resistant	+
Inexpensive	2							○		⊙		○		\$10-\$15	-
Strong Sturdy Sheath	5						●●							Molded Durable Plastic	+
Sold at Hardware Stores	3										⊙	●		Distributed to large Hardware Stores	-
Nonslip Handles	4		●●							○				Texturize & Nonslip	+
Interchangeable Heads	5									●		●●	⊙	Scissor, Electrical, Precision	+
Ease of Opening & Use	3				○		●	⊙	●				●●	Springs open when safety mechanism is disengaged	+

Importance Rating  
Σ(Priority X Relationship)

Technical Assessment

+	+	+	+	+	+	-	-	+	+
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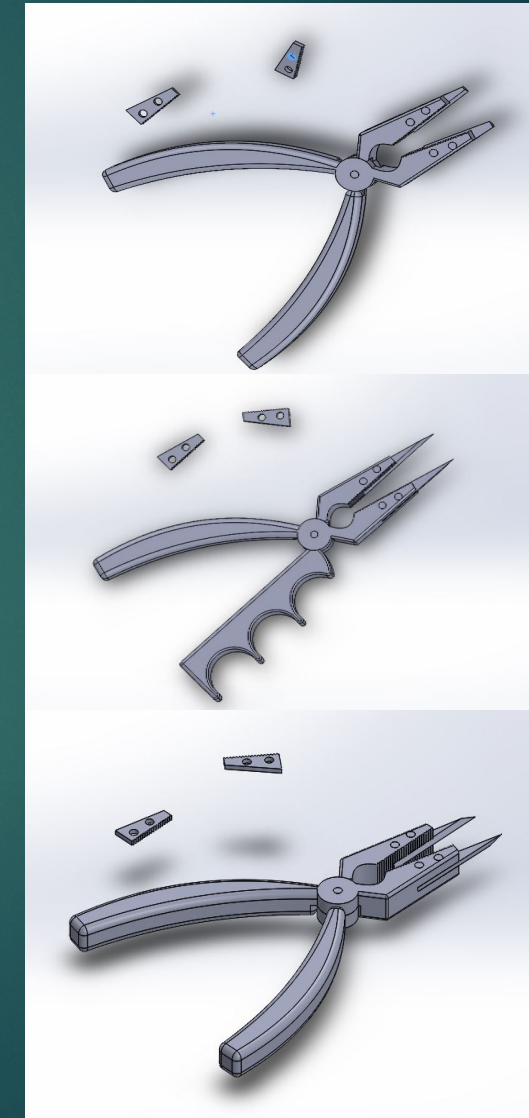
○	○	↓	↓	↑	○	↑	↑	○	○
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# Concept Selection

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Gripping	Locking (top part)	Unlocking	Encasing (the whole equipment)
<b>Normal Handles</b>	spring lock	Manual locking	Case for pliers
<b>Normal handle + indented handle</b>	lever lock		sheath
<b>indented handles (2)</b>	magnet lock		plastic head covers
	Pressure lock		
	Screw lock		
<b>Concept 1</b>			
<b>Normal Handles</b>	spring lock	Manual locking	Case for pliers
<b>Concept 2</b>			
<b>Normal handle + indented handle</b>	magnet lock	Manual locking	plastic head covers
<b>Concept 3</b>			
<b>Normal Handles</b>	lever lock	Manual locking	plastic head covers

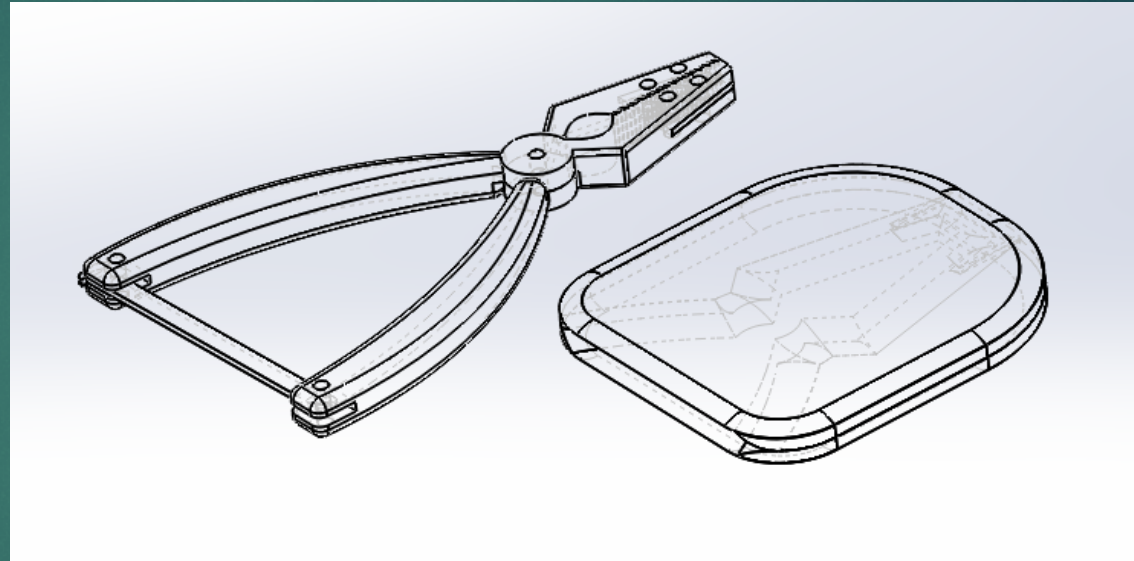
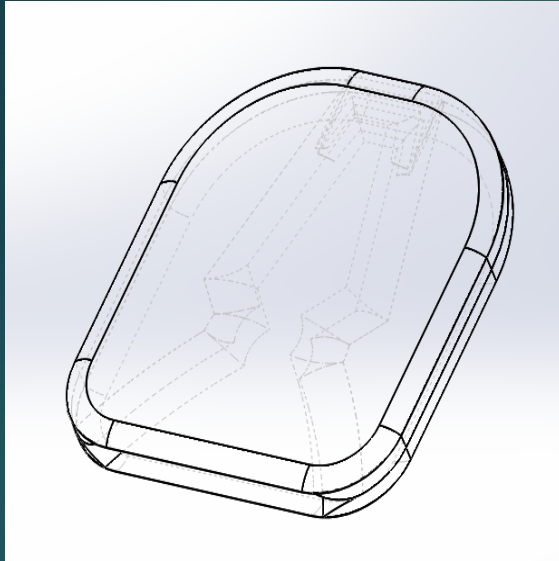


1

2

3

# Concept Selection 2



Sheath & Lever lock



# Concept Screening & Scoring

Selection Criteria	Scissor Tip Pliers (Normal handles)	Scissor Tip Pliers (Half and half)	Scissor Tip Pliers (Normal handles and lever lock)	Selection Criteria	Weight	Rating	Weighted Score
Portability	0	0	0	Portability	15%	3	0.45
Ease of handling	0	+	-	Ease of handling	20%	4	0.8
Ease of opening/use	-	+	-	Ease of opening/use	20%	5	1
Durability	+	-	+	Durability	10%	2	0.2
Ease of Locking	-	0	-	Ease of Locking	10%	4	0.4
Safety	0	+	-	Safety	25%	5	1.25
Sum of +'s	1	3	1	Total Score	4.1		
Sum of 0's	3	2	1	Rank	1		
Sum of -'s	2	1	4	Continue?	Develop		
Net Score	-1	2	-3	<b>Relative Performance</b>			
Rank	3	1	4	<b>Rating</b>			
Continue?	No	Yes	No	Much worse than reference	1		
				Worse than reference	2		
				Same as reference	3		
				Better than reference	4		
				Much better than reference	5		

Ranking:

Yes: 1 and 2

No: 3 and 4

# Conclusion

- ▶ The product will be readily available at a budget friendly cost.  
\$15/<sub>plier</sub> and \$3/<sub>head</sub>
- ▶ innovation of this product will aid professionals in the field, it will also be a go to product for and DIYers.
- ▶ It will be utilized in tight precision cutting, it will also provide various easily interchangeable heads for the end user to swap out to perform other tasks
- ▶ Swappable tips, plier to scissors.