

Product Contract

Description: Powered Ice Scraper

Intended customers: Car owners in colder regions of the US

Market: Automotive Accessories

Customer Need	Design Attribute	Engineering Specification
Minimal effort required to scrape ice	Applied force at hand grips is less than state-of-the-art	? – in the process of testing
Quick clearing time	Clearing time for a 58" x 34" windshield	< 5 min
Lightweight	Weight	< 3 lbs
Able to reach middle of windshield	Length from handhold to blade	≥ 18 in
Compact storage in car	Size	$\leq 4'' \times 4'' \times 18''$
Comfortable to hold	Handle diameter (to accommodate 5 th percentile woman's hand)	$1'' \leq \text{diameter} \leq 1.5''$
	Handhold length (to accommodate 95 th percentile man's hand)	$18'' > \text{length} > 3.8''$
Affordable	Consumer price	< \$100
Works in freezing conditions	Electronics operating temperature range	> -40°F
Not contaminated by water	Resistant to precipitation	Yes/no
Reasonably consistent scraping performance	Operates effectively over range of ice thickness	thickness < 0.25" ice - want to be competitive with Ice Dozer
Long battery life	Usage time on full battery	> 20 min
	Battery charge time	< 4 hours
Durability	Number of uses before blade failure	? – in the process of testing