

# Product Contract

**Product Description:** Grocery basket attachment for wheelchairs

**Intended Customers:** Wheelchair users with some upper body control

**Market:** Independent wheelchair users

Customer Need	Product Attribute(s)	Engineering Specification(s)
<b>Operation</b>		
Speed of attachment	Time to attach	Less than 60 seconds
Speed of detachment	Time to detach	Less than 60 seconds
Ability of basket to change position	Track rotation	At least 90 degrees
Ability to carry fully-loaded basket	Acceptable grocery weight	Required range of 0-40 lbs
Ability to hold large volume items	Acceptable basket volume	At least 1.5 cubic ft
Can turn corners with ease	Maximum chair width when basket is extended	Less than 22 inches
Allows for user to reach all points in basket	Distance of farthest point from trunk of user	Less than 2.5 ft
Allows for user to view contents of basket	Percentage of bottom of basket that user can see	At least 80 percent
Ease of manipulation of basket	Necessary applied force	Less than 15 lb <sub>F</sub> required even when basket is loaded
Ability of user to firmly grasp attachment	Attachment pole diameter	At least 1 inch
Ability to stow basket	Basket is removable	Yes
<b>Safety</b>		
Allows for clear field of view	Basket height	Top of basket less than 3.5 ft above ground
Ability of user to easily wheel attachment load	Weight of attachment	Less than 10 lbs
Allows for stability of basket during forward motion	Critically damped frequency of oscillation	Acceptable range of 0.3-0.7 Hz
Allows for leg comfort, inhibits chafing	Added width of attachment	Less than 0.5 inches
Basket allows for unimpeded wheeling	Minimum accessible distance on wheel	At least 12 inches
<b>Marketability</b>		
Affordability	Market price	Less than 300 dollars
Adaptability for multiple wheelchair frame diameters	Range of inner diameter on attachment mechanism	At least 0.5-1.5 inches diameter
Adaptability for multiple wheelchair frame angles	Front end angle (posts above footrest)	Necessary range of 70-90 degrees
Attachment can completely detach	Attachment has only temporary fixtures to chair	Yes