CASTERS

Casters are a clinically important component that significantly influences the mobility, safety, comfort, and independence of wheelchair users. Choosing the right casters and ensuring proper maintenance can contribute to better outcomes and quality of life. As always in manual wheelchair prescription, our goal is to select components that increase efficiency. Below are caster options and specific features that can impact ride characteristics and maneuverability.

CASTER OPTIONS

STANDARD

The standard front caster is the most common selection because of its low maintenance, generally smooth ride and low cost. This is the most universal option with a firm tire composite hub material and narrow 1" width.

ULTRA/SOFTROLL

The convex shape, with a protruding central contact area, allows for efficient propulsion on hard surfaces. The wider width allows for efficiency and pressure distribution on softer or more uneven terrain. The softer rubber material allows for smooth ride characteristics.

PNEUMATIC

A pneumatic front caster when maintained correctly can provide a smooth ride with clinical benefits. They also can overcome small obstacles with ease. This is the least popular of caster options for manual wheelchairs because of the effort to maintain tire pressure and risk of catastrophic failure.

CASTER FEATURES

DIAMETER: A larger diameter caster will make it easier to roll over obstacles and maintain propulsion speed, while the smaller options will give more precision point versatility in terms of turning radius and decreasing overall footprint. A larger diameter caster will typically begin to flutter at slower speeds compared to a smaller diameter caster.

PRO TIP:
The diameter of a caster can impact front to seat floor height. A larger diameter allows for a higher front seat to floor height. Smaller diameter casters allow a lower front seat to floor height. A combination of caster diameters, forks, and stem bolts are used to find the ideal combination for seat to floor height.

WIDTH: A narrow caster will decrease rolling resistance and are ideal for smooth surfaces. A wider caster will increase the rolling resistance due to the surface area and friction. However, wide casters can also improve the ability to roll over obstacles when on softer/varied surfaces and can therefore be more desirable in an outdoor environment.

HUB MATERIAL: There really is no "gold standard" for hub material. A composite hub is going to be lighter than its aluminum/metal alloy counterpart. Aluminum/Metal Alloy wheel hubs are great for dynamic wheelchair users and difficult terrain due to the increased durability.

PRO TIP:
A wider width caster with a small diameter will overcome obstacles similar to a narrower width caster with a large diameter. Best of both worlds!

TIRE MATERIALS: Materials will impact ride characteristics and durability. A softer tire material will allow for a smoother ride but my not be as durable. Harder materials can withstand a rugged environment but may have a rougher ride.

WEIGHT: Casters are a small component, but considering weight with every piece is important because it can add up over time. Functionally, a heavier caster will flutter sooner at higher speeds causing inefficiencies.

PRO TIP:
Dependent on client activity and environmental factors, the lifetime of a caster is approximately 2 years.

CASTER SPECIFICATIONS WITH IMAGES

CASTER OPTIONS	DIAMETER	WIDTH	HUB MATERIAL	TIRE MATERIAL	WEIGHT *SINGLE 5" CASTER* (12.7 cm)	CLINICAL JUSTIFICATION Consider with advantages and limitations of each feature on page 2
SOLID *(see above rational to include in justification for this option)*						
COMPOSITES WHEEL W/ PU TIRE 	3", 4", 5", 6", 7", 8" (7.6, 10.2, 12.7, 15.2, 17.8, 20.3 cm)	1" (2.5 cm)	Composite	Firm Poly Urethane	0.48 lbs. (0.22 kg)	• Standard no charge option. • Smaller width allows for a smaller caster footprint but may affect maneuverability. • Firmer tire material for durability.
NEWTON ULTRACASTER COMPOSITE 	4", 5", 6" (10.2, 12.7, 15.2 cm)	1 1/2" (3.8 cm)	Composite	Softer Poly Urethane	0.56 lbs. (0.25 kg)	• Ideal for client in multi-terrain environments. • Convex shape allows efficiency on hard and soft surfaces. • Wider width and smaller diameter allow for similar maneuverability as a larger caster diameter with a narrow width. This can allow a specific seat to floor height without compromising maneuverability. • Softer tire material versus a standard caster allows a smoother ride. • Aluminum: hub material allows for added durability. • Aluminum: red sleeve between metal bearings and metal hub ensures easier bearing maintenance, not requiring special tools for replacement.
NEWTON ULTRACASTER ALUMINUM 	4", 5", 6" (10.2, 12.7, 15.2 cm)	1 1/2" (3.8 cm)	Aluminum T6 6061	Softer Poly Urethane	0.56 lbs. (0.25 kg)	
PNEUMATIC CASTER 	6", 8" (15.2, 20.3 cm)	1 1/4" (3.2 cm)	Composite	Ribbed Polyurethane	0.60 lbs. (0.27 kg) *(6" caster)* (15.2 cm)	• Air offers a softer ride which can benefit those with spasticity, tone, chronic pain etc. • Maintenance is required to regulate pressure. • Catastrophic failure possible.

This is what is offered on Motion Composites order forms, principles can be applied to other market options.

NOTES

SCAN HERE FOR OPTIONS AND ACCESSORIES GUIDE.

CASTER SPECIFICATIONS WITHOUT IMAGES

CASTER OPTIONS	DIAMETER	WIDTH	HUB MATERIAL	TIRE MATERIAL	WEIGHT *SINGLE 5" CASTER* (12.7 cm)	CLINICAL JUSTIFICATION Consider with advantages and limitations of each feature on page 2
SOLID *(see above rational to include in justification for this option)*						
COMPOSITES WHEEL W/ PU TIRE	3", 4", 5", 6", 7", 8" (7.6, 10.2, 12.7, 15.2, 17.8, 20.3 cm)	1" (2.5 cm)	Composite	Firm Poly Urethane	0.48 lbs. (0.22 kg)	• Standard no charge option. • Smaller width allows for a smaller caster footprint but may affect maneuverability. • Firmer tire material for durability.
NEWTON ULTRACASTER COMPOSITE	4", 5", 6" (10.2, 12.7, 15.2 cm)	1 1/2" (3.8 cm)	Composite	Softer Poly Urethane	0.56 lbs. (0.25 kg)	• Ideal for client in multi-terrain environments. • Convex shape allows efficiency on hard and soft surfaces. • Wider width and smaller diameter allow for similar maneuverability as a larger caster diameter with a narrow width. This can allow a specific seat to floor height without compromising maneuverability. • Softer tire material versus a standard caster allows a smoother ride. • Aluminum: hub material allows for added durability. • Aluminum: red sleeve between metal bearings and metal hub ensures easier bearing maintenance, not requiring special tools for replacement.
NEWTON ULTRACASTER ALUMINUM	4", 5", 6" (10.2, 12.7, 15.2 cm)	1 1/2" (3.8 cm)	Aluminum T6 6061	Softer Poly Urethane	0.56 lbs. (0.25 kg)	
PNEUMATIC CASTER	6", 8" (15.2, 20.3 cm)	1 1/2" (3.8 cm)	Composite	Ribbed Polyurethane	0.60 lbs. (0.27 kg) *(6" caster)* (15.2 cm)	• Air offers a softer ride which can benefit those with spasticity, tone, chronic pain etc. • Maintenance is required to regulate pressure. • Catastrophic failure possible.

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