karma A Better Wheelchair, A Better Fit

Flexx Clinical Justification

Overweight

To support users up to 170 kg, Flexx HD utilizes a reinforced frame and adjustable seating geometry to accommodate excessive soft tissue and shifting centers of gravity. By integrating angle-adjustable backrests and rearward axle positioning, the system assists the user's posture and enhances the base of support, ensuring this configuration does not compromise safety, comfort, or skin integrity.

The reinforced frame, crossbar, and rigidifying push bar of Flexx HD provides sturdiness to support user weight up to 170 kg.

Large seat width options and seat depth adjustability allow users with larger body measurements to fit into the chair accordingly.

Excessive abdominal soft tissue result in difficulty sitting straight up.

- **Angle adjustable backrest** improved positioning and comfort leading to improved quality of life.
- **Break extension lever** allows user to park the chair without additional effort.

Seat height adjustable to a lower extent provide additional stability for heavier users by lowering the center of gravity, alowing safe propelling and reaching; also allows additional clearance when entering tables and working areas.

Tension adjustable backrest can accommodate excessive soft tissue on the posterior side of the user.

Rearward-placed axel increases the Base of Support of the wheelchair, providing addition stability of the chair for heavier users.

Shifting the axel to the forward position allow experienced users to operate the wheelchair with less energy expenditure. (Increase the risk of tipping backward, please evaluate personal skill and safety before this adjustment.)

Accessory / Feature	Clinical Application for Amputation
Selectable Seat Width	Providing precise seat width offers adequate lateral constraint and support to the pelvis, maintaining seated posture stability. 20"-24" range ensures approximately 1-2 finger-widths of clearance between each thigh and the side guard after seating, reducing shear and pressure. Selecting the seat width closest to the user's hip width allows the arms to hang naturally and propel the wheelchair along the most energy-efficient trajectory, improving propulsion efficiency.
Adjustable Seat Depth	Proper seat depth helps the user sit securely and comfortably by minimizing movement on the seat, which reduces pressure and shear forces. Maintain approximately 2-3 finger-widths of clearance behind the popliteal fossa. This ensures the user's back remains in full contact with the backrest, avoids compression of the sensitive neurovascular structures in the popliteal region, keeps neutral pelvic alignment, and reduces the risk of the pelvis sliding forward.

Adjustable Seat-to-Floor Height	Adjusting seat height to the low position lowers the center of gravity for heavier users, providing additional stability for safer propulsion and reach activities. Adjusting seat height so the wheelchair is level with the bed or toilet surface (or slightly higher) achieves level transfers, substantially reducing the effort required during transfers. Adjusting seat height to match the home environment (e.g., kitchen counter, desk) better accommodates daily functional needs. Resolves environmental accessibility issues (Wheelchair users frequently encounter the problem of being unable to fit under tables.)
Adjustable Backrest Angle	For users with excess body weight who may have a larger abdomen, adjusting the backrest angle posteriorly allows for more comfortable seatingReclining the backrest compensates for cervical spine deformity through hip joint angle adjustment, helping the user restore a horizontal line of sight. Slight recline utilizes gravity to rest the trunk against the backrest, reducing the force needed for trunk control, thereby reduce the risk of kyphosis and respiratory efficiency. Combined with seat angle adjustment, it effectively prevents anterior pelvic sliding. The Flexx HD offers 4-degree increment adjustments, enabling therapists or caregivers to precisely identify the optimal balance between stability and mobility. This ensures adequate spinal support (stability) while preserving the range of motion needed for upper extremity wheelchair propulsion (mobility) - particularly critical for users who rely on their upper limbs for activities of daily living (ADLs).
Tension Adjustable Backrest	Accommodates excess posterior soft tissue, conforming to the user's body contours. The tension-adjustable backrest allows loosening of straps corresponding to thoracic kyphosis, increasing the contact surface area and thereby distributing pressure. Tightening the straps at the lumbar region creates a built-in lumbar support, helping maintain the physiological spinal curvature and delaying fatigue. The tension-adjustable backrest can be re-tightened at any time as the fabric stretches, ensuring the backrest consistently provides effective support rigidity and maintains correct seated posture.

Adjustable Rear Wheel Axle	Moving the rear axle anteriorly positions the axle center closer to the user's center of gravity (approximately below the vertical line of the shoulder joint). This increases propulsion stroke length and reduces the frequency, achieving energy efficiency and improved endurance for long-distance travel. It also reduces moment of inertia, decreases energy expenditure, and increases maneuverability. Repositioning the rear wheel axle posteriorly increases the wheelchair’s base of support, significantly enhancing stability. This adjustment is critical for providing a sense of security for new wheelchair users.
Flip-Back Armrests	Ideal for lateral transfers when the lower extremities are non-weight-bearing or when caregiver assistance is required. With the armrests flipped back, the wheelchair seat surface aligns seamlessly with the bed surface or transfer board. This eliminates barriers to lateral transfer, significantly reducing energy expenditure and fall risk during transfers.
Quick-Release Swing In/Out Legrests	The entire support structure can be swung outward and detached. Swinging the legrests away allows the wheelchair to be positioned closer to the target surface (e.g., toilet or hospital bed), shortening the physical transfer distance and reducing risk for both the caregiver and the user.
Aluminum Footplate	For users with heavier limbs, a robust aluminum alloy footplate provides stable support, ensuring the footplate does not deform or break— preventing posture changes or secondary injuries.
ATransverse Push Handle	FCaregivers can select the most natural grip based on their shoulder width for pushing. This resolves the pushing burden caused by excessively wide push handles, aligning with a natural pushing posture. The transverse handle also serves as a structural support, resolving insufficient frame rigidity in larger wheelchair frames by locking the relative position of the back canes, substantially improving overall driving stability and extending the wheelchair's service life.

Push-Lock Brake with Brake Extension Lever	The extension lever increases the lever arm length. The longer the lever arm, the less force required, making wheelchair locking effortless. The push-lock brake design allows the user to leverage body weight for braking.
Anti-Tipper	Anti-tipper provide the protection during sudden center-of-gravity shifts, preventing the wheelchair from tipping over.

The clinical recommendations provided in this document are for professional therapists' reference only and should not replace individualized clinical assessment. The actual prescription should be determined by healthcare professionals based on the user's physical functions, home environment, and individual needs. Karma Medical reserves the right to change product specifications.

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