

Clinical Resource

3 Series vs 5 Series



Power & Performance: Understanding the Functional Differences

More Power Isn't Always Better

When prescribing power wheelchairs (PWCs), more power doesn't always equate to better outcomes. With greater power comes greater responsibility—especially when considering the end user's environment, functional needs, and clinical presentation.

Motor Size Matters

One of the key differences between the 3 Series and 5 Series is motor size:

- **3 Series:** Equipped with **350W motors**
- **5 Series:** Equipped with **500W motors**

The 500W motors offer greater endurance and performance in challenging conditions compared to the 350W motors in the 3 Series.

The 500W motors have demonstrated a greater tolerance for sustained work compared to 350W motors. These higher-capacity motors may be better suited for users who place heavy demands on their chairs such as those who regularly navigate outdoor environments, including uneven terrain, soft ground, and hills. These larger motors could help reduce the frequency of servicing and maintenance and potentially extend the chair's overall lifespan.



Torque & Terrain Accessibility

Beyond just power, the 5 Series also delivers increased torque which is the rotational force generated by the gearbox that turns the wheels. Higher torque contributes to:

- **Smoother rides**
- **Improved obstacle climbing at lower speeds**

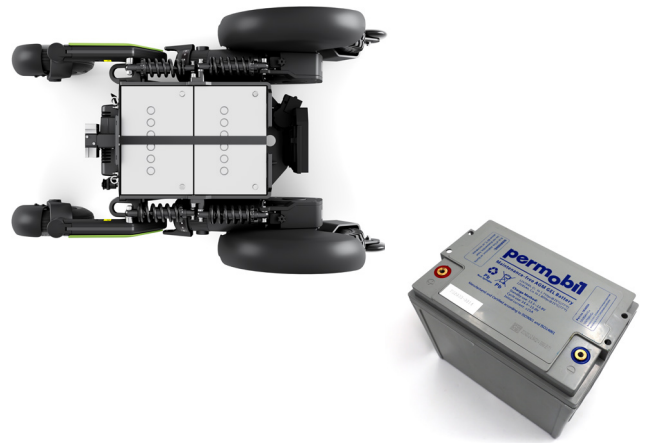
This is particularly beneficial for end users who access alternative drive controls, experience fatigue or pain, or require enhanced postural stability. For these individuals, even small shifts in position when driving over bumps can impact function.



Functional Fit for Everyday Use

While the 5 Series excels in demanding environments, the 3 Series with its 350W motors provides ample power and torque for daily use in indoor and urban settings. It's well-suited for navigating:

- Indoors
- Footpaths
- Smooth urban terrain e.g. shopping centres or paved surfaces



Battery Capacity for Demanding Use

To meet power demands, both the 3 Series and 5 Series come standard with Group 24 batteries (85Ah). This ensures end users have the battery capacity needed to maintain independence and access their environment throughout the day.



Clinical Considerations When Selecting Motor Size

- End users driving over long distances, particularly who drive regularly over unpaved or uneven surfaces, will benefit from having a larger motor. Not only will the large motor provide better performance, it may also provide better longevity and reduce the risk of premature motor fatigue.
- End users who require smoother rides, for reduced vibration, improved comfort, or to prevent loss of positioning, will also benefit from having a large motor. The higher torque that the larger motors offer will allow them to navigate lips and bumps at slower speeds.

Suspension & Ride Comfort: Functional Considerations

Why Suspension Matters

When comparing power wheelchairs, suspension is a key factor—but not all suspension systems are created equal. A well-designed suspension system can significantly improve an end user's health and wellbeing by reducing:

- Muscle tone reactions
- Pain
- Fatigue

This is achieved by minimising vibration and movement experienced while seated.



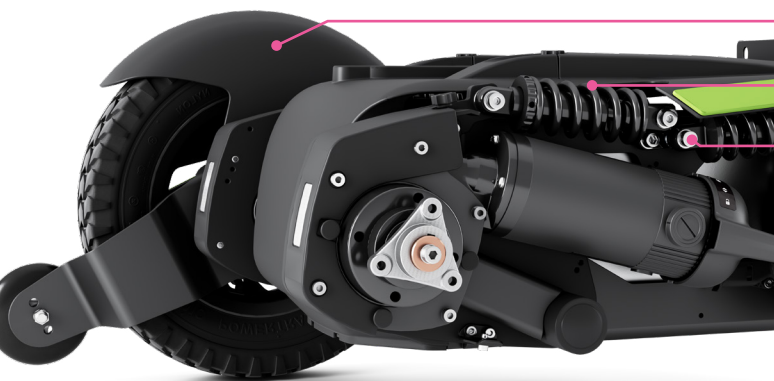
What Makes Up a Suspension System?

Suspension is more than just springs. It includes:

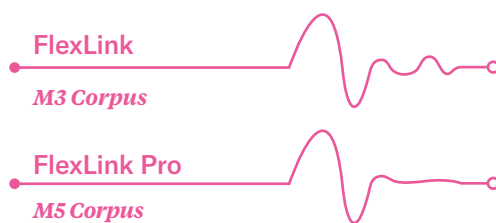
- **Tyres and tyre pressure**
- **Springs and shock absorbers**
- **Linkages**

Road holding is also an essential part of suspension. It refers to how well the wheels maintain contact with the ground.

Together, these components absorb vibration, improve stability, and enhance ride comfort. Maintaining wheel contact with the ground also improves **climbing ability** and **environmental access**.

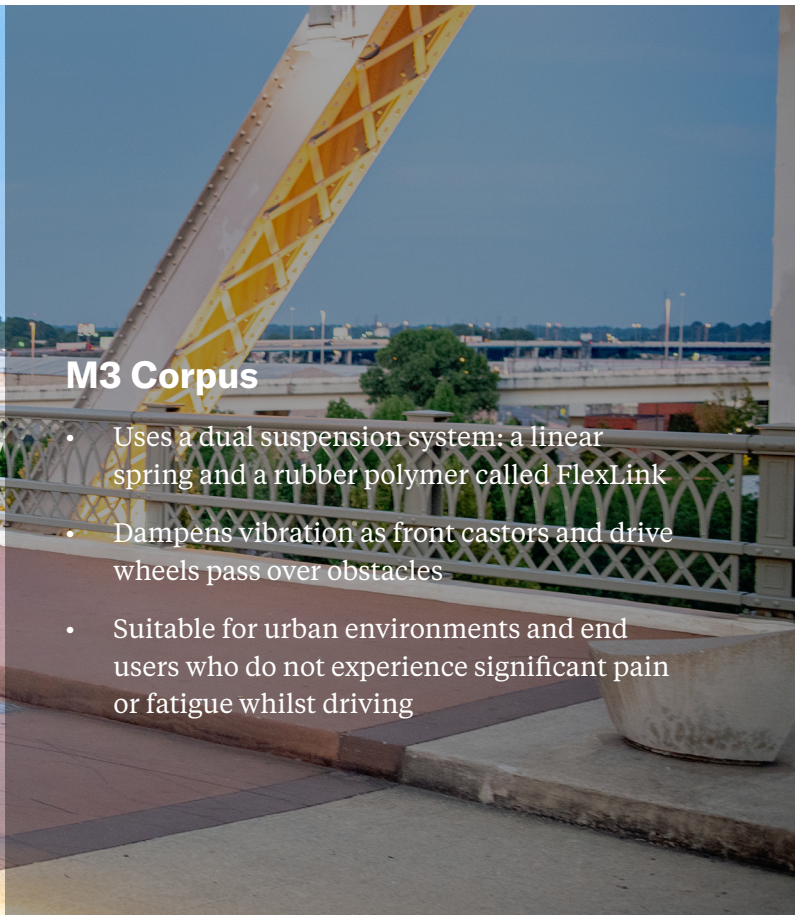


Mid-Wheel Drive Suspension: M3 vs M5



M3 Corpus

- Uses a dual suspension system: a linear spring and a rubber polymer called FlexLink
- Dampens vibration as front castors and drive wheels pass over obstacles
- Suitable for urban environments and end users who do not experience significant pain or fatigue whilst driving

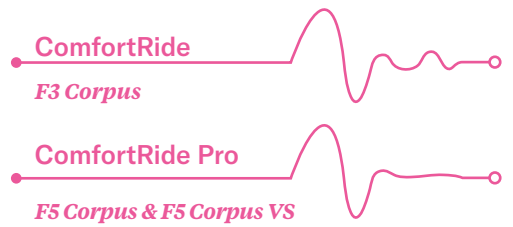


M5 Corpus

- Builds on the M3's system with an additional linear spring at the drive wheel
- Enables independent movement of the drive wheel for a smoother, more stable ride
- Ideal for end users who experience:
 - Pain
 - Fatigue
 - Postural instability due to vibration
- **Independent movement** of castors and drive wheels improves climbing and reduces the chance of losing ground contact
- Can be prescribed with the aggressive tyre package, allowing for 8" castors enhancing ride comfort and climbing ability



Front-Wheel Drive Suspension: F3 vs F5



F3 Corpus

- Offers a high level of suspension using gas-dampened pistons
- Suitable for most end users requiring reliable ride comfort



F5 Corpus

- Features **oil-dampened suspension technology**
- Oil dampening better controls the extension phase of the spring, absorbing energy and reducing the “bounce up” effect
- Results in:
 - Smoother ride
 - Less vibration
 - Improved seated stability



Front-Wheel Drive Advantage

- The **drive wheel leads** when encountering obstacles
- Larger drive wheels climb better than castors
- Motor pulls the chair forward, rather than pushing through terrain
- Enhances:
 - Stability
 - Ride comfort
 - Environmental access



Clinical Considerations When Selecting Higher Level Suspension

- End users driving over soft or unpaved surfaces may benefit from higher level suspension to improve road holding and prevent bridging or spinning of the main power wheel.
- End users who require high levels of comfort or to prevent loss of positioning when driving over bumps.
- End users who experience fatigue after long periods of driving may benefit from higher-level suspension as it will provide reduced vibration and a smoother ride.

Consider drive wheel configuration to meet the end user's goals and needs.

Power Seat Functions: Enhancing Function & Comfort



Both the 3 Series and 5 Series power wheelchairs offer comparable power seat functions, but differ in ActiveHeight™ and ActiveReach™ capabilities. ActiveHeight differences include:

- **3 Series:** Up to 12” of vertical elevation
- **5 Series:** Up to 14” of vertical elevation

That extra 2 inches can make a significant difference in an end users ability to:

- Access higher surfaces
- Maintain shoulder integrity
- Reduce pain and fatigue
- Increase independence and social participation

When considering the 14” elevation, it’s recommended to conduct functional assessments and outcome measures such as the Modified Functional Reach Test (MFRT), to determine clinical benefit.

Driving Whilst Elevated

Both the 3 Series and 5 Series allow end users to drive while elevated at a comfortable walking speed of 5.1km/h without locking out suspension. At full elevation, the seat shifts backwards by 3.5”, improving:

- Stability
- Safety
- Ride comfort

This feature maintains independent movement of castor arms and wheels, ensuring a smoother experience even while elevated.

ActiveReach: Functional Positioning and Reach Through Tilt & Elevation



ActiveReach combines anterior tilt, seat elevation, leg elevation, and backrest recline to help end users achieve an optimal functional reaching position while maintaining postural stability.

ActiveReach by Model

- **All models:** Up to **10°** no charge option available
- **M Series:** Up to **20°** of anterior tilt
- **F3 Corpus:** Up to **30°**
- **F5 Corpus:** Up to **45°**

The increased tilt in the F5 allows for:

- Improved reach and interaction
- Enhanced transfer positioning
- Greater independence in daily tasks

*If driving is required whilst in ActiveReach of 20° or more, then consider talking to your dealer about a Power Standing Wheelchair, the benefits of ActiveReach, and the possibilities with programming.



Clinical Considerations for Selecting Power Seat Functions

To support clinical reasoning, for example when deciding between 12" vs 14" of ActiveHeight or 20° vs 30° of ActiveReach, it is recommended to conduct functional assessments— and assessments such as the Modified Functional Reach Test (MFRT)—to evaluate the specific benefits for the end user and how these features may support their individual goals.

Product Specifications & Resources



M3



F3



M5



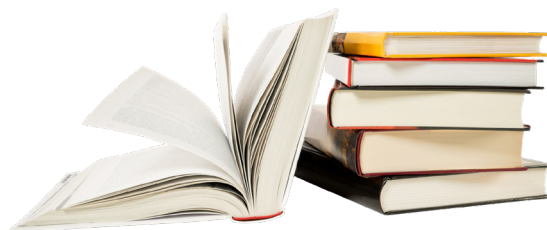
F5

Motor size	350W	350W	500W	500W
Suspension	FlexLink - Rubber polymer only	ComfortRide - Gas-dampened shocks	FlexLink Pro - Rubber polymer and linear spring	ComfortRide Pro - Oil-dampened shocks
ActiveHeight™	12"	12"	14"	14"
ActiveReach™	20°	30°	20°	45°



Useful Resources

- Clinical Resources page
- For further discussion, please reach out to the Permobil Clinical Services Team: education.nz@permobil.com





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