



## INSTRUCTION SHEET

# PERFORM REAR WHEEL ALIGNMENT ON MOTION COMPOSITES FOLDING WHEELCHAIRS



This document describes:

- How to verify the wheel alignment
- How to correct toe-in or toe-out misalignment using the **axle bushing method** on Motion Composites **folding wheelchairs**
- How to check for other alignment problems

Note that the wheel alignment method using the axle bushing as explained in this document is **valid only for wheelchairs with a camber angle**. **0° camber angle rear wheels cannot be aligned**. There is no other way to align the wheels. If you cannot achieve alignment using this method, check section “**Alignment problem checks**” below.

Please, also refer to the other documents of the series available at [motioncomposites.com](http://motioncomposites.com) (Support and Education/How-to documents):

- Camber, rear wheel parallelism, toe-in, toe-out, and how to verify alignment (MC-MTKG-WI-0001)
- **Perform rear wheel alignment on Motion Composites folding wheelchairs (MC-MTKG-WI-0002) (this document)**
- Perform rear wheel alignment on Motion Composites rigid wheelchairs (MC-MTKG-WI-0003)
- Rear wheel camber parts and hardware for folding and rigid wheelchairs (MC-MTKG-INF-0001)
- Changing camber angle on folding wheelchairs (MC-MTKG-WI-0004)
- Changing camber angle on rigid wheelchairs (MC-MTKG-WI-0005)

### Wheelchair models:

- HELIO A6/A7/C2/XC2/Kids/K
- VELOCE
- PLATINE 1/2

### Tool(s) required:

- Measuring tape
- Marker pen or masking tape
- Torque wrench
- 26 mm flat wrench or socket wrench with 26 mm socket
- 5/8" flat wrench Worktable or a flat and even surface
- Wheelchair support or any kind of object to hold the wheelchair



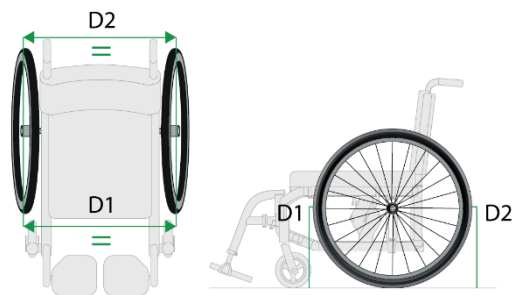
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### VERIFY THE WHEEL ALIGNMENT

- Please refer to the document “**Camber, rear wheel parallelism, toe-in, toe-out, and alignment (MC-MTKG-WI-0001)**” for detailed instructions on how to verify the wheel alignment.
  - For pneumatic tires, make sure that the air pressure is at the recommended value.
  - Place the wheelchair on a flat and even surface.
  - Block the wheels on both sides.
  - Ensure the axle bushings are the same length on both sides.
  - **Do not use the wheel lock system because it can affect the wheel alignment.**

- Measure the front (D1) and rear (D2) distances between wheels at the centre of the wheels.
- Front and back measured distances must be the same **within ¼.” (6 mm)**
  - If the front measure (D1) is smaller than the back measure (D2), it is a **toe-in** situation, and the **wheels must be aligned.**
  - If the front measure (D1) is greater than the back measure (D2), it is a **toe-out** situation, and the **wheels must be aligned.**



- On both sides, measure the distance between the inner edge of the tire and the side of the frame at the front to help determine which wheel may require adjustment.
- The measured distances must be the same **within 1/8” (3 mm)**. If the difference is greater than that it means that the **wheels are not parallel with the centre line and alignment must be performed.**
- If the difference of distances measured is large, you may need to align both wheels.
  - In this case we recommended you first position the axle bushing a zero (or initial) position with the flat edges of the axle bushing parallel to the vertical axis (see next page).
  - Most of the time, it is the easiest and fastest way align the wheels properly when they are very misaligned.



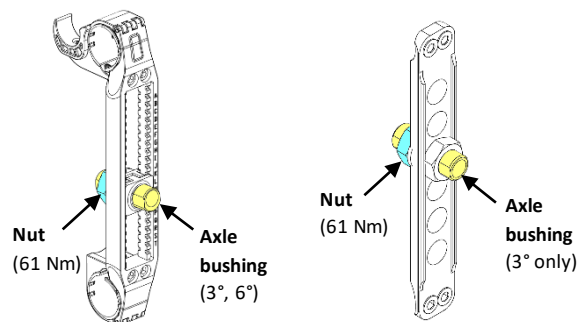


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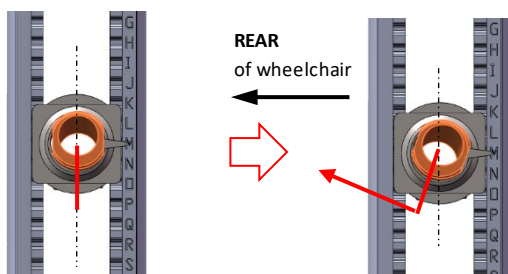
### CORRECT TOE-IN AND TOE-OUT

- Remove a wheel and put a support or something under the frame.
- Using a **26 mm flat wrench or socket**, loosen the rear nuts (the nuts inward) on the mounting plate but **keep a tension on the nut**.
- **Maintain the nut in place** with a **26 mm wrench or socket**.
- Use a **5/8" flat wrench** to turn the **axle bushing slightly** in a direction or another to adjust the alignment (toe-in or toe-out) of the wheels.

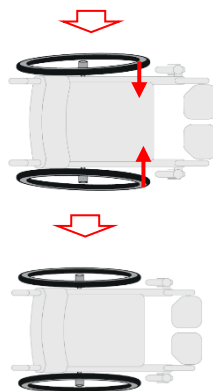


- To correct **toe-out** situation:

- Turn the **bottom** of the **axle bushing** (the thickest wall) toward the rear of the chair **on both sides**.
- This is “**closing**” the wheel **toward the inside**, correcting the toe-out.

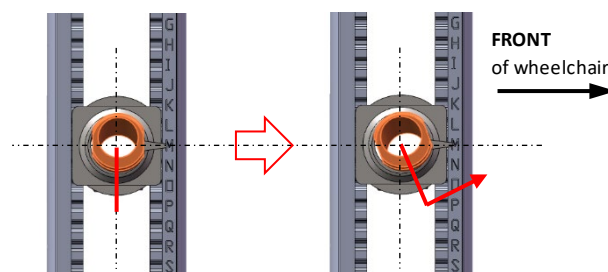


Zero position or initial position

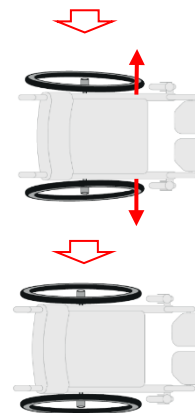


- To correct **toe-in** situation:

- Turn the **bottom** of the **axle bushing** (the thickest wall) toward the **front** of the chair **on both sides**.
- This is “**opening**” the wheel **toward the outside**, correcting the toe-in.



Zero position or initial position





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- Reinstall the wheel on the chair.
- **Recheck** the **tire-to-frame** distance and continue adjustment until both sides are equal.
- To achieve a **proper alignment**, you may have to perform this adjustment on **both wheels**.
- Remeasure the **wheel-to-wheel distances** in **front** and in **back** at **wheels middle height**
- If the difference between the two measurements is less than  $\frac{1}{4}$ " (**6 mm**), the wheels are aligned.
- If not, **repeat the process** until the **measurements** in the **front** and **back** are **equal**, and the **measurements between the tire and frame** are equal on both sides of the chair.
  - Once the wheel alignment is complete, **tighten the nuts at 61 Nm**

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### ALIGNMENT PROBLEMS CHECKS

If the wheelchair has **0° camber angle** or **you cannot achieve the rear wheel alignment** on a wheelchair with camber angles with the method described in this document, **check the following points** because the root cause of the suspected misalignment may not be the wheel alignment :

- First, make sure that tire pressure (on pneumatic tires) is at recommended value
- Verify the axle nut tightness and torque
- Check for rear wheels shaking and wobbling
- Check for tire or rim deformation
- Check the axle straightness
- Verify the rear wheel mounting plates
- Inspect the frame for any deformation or breaks