



Empulse M90

Compatibility Guide

Rev D – 07.2026

Empulse

General Compatibility



WHEEL SIZE

- The M90 is only compatible with manual wheelchairs that use a 24" (540mm) wheel.
- The M90 is NOT compatible with other wheel sizes.

CAMBER

The M90 requires a camber of zero degrees.

NOTE: If an M90 is installed on a manual wheelchair with a camber other than zero degrees, the M90 mounting hardware will eliminate the camber. After the install of the M90 mounting hardware, the manual wheelchair will have a camber of zero degrees.

CASTERS

The M90 is compatible with all caster sizes.

NOTE: 5" or larger casters are recommended to improve stability and obstacle deflection at the M90's top speed.

CONTROLLER

The M90 requires 1.2" (30mm) of space along the manual wheelchair's frame to mount the M90 controller, which should be mounted for easy accessibility to the user.

HANDRIMS

The M90 is compatible with tab mount handrims only, and they must be mounted in a standard or wide position. Narrow positions are not compatible with the M90.

TIRES

The M90 is compatible only with 24" (540mm) tires. Tire, tread, and width will affect the M90's performance. For optimal performance, the Schwalbe Marathon Plus is recommended.

TRANSIT BRACKETS

The M90 is compatible with transit options, though brackets may need to be moved to the inside of the manual wheelchair's axle plate.

Rear Seat Height & Center of Gravity

The M90 is compatible with most rear seat heights designed for 24" wheels.

- Quickie Nitrum: All RSH 16-20" x COG 1-4" are a go
 - Quickie 2: All RSH 16-21" x COG 1-3.5" are a go
 - Quickie 5R: All RSH 16-20" x COG 1-4" are a go
 - Quickie QRi: All RSH 16-20" x COG 1-3" are a go
 - Quickie QS5 X: All RSH 16-19" are a go x COG 1-3"
- * QS5 X not compatible with M90 at a 19.5 rear seat height.

RSH / COG	1.0"	1.5"	2.0"	2.5"	3.0"
16.0"	✓	✓	✓	✓	✓
16.5"	✓	✓	✓	✓	✓
17.0"	✓	✓	✓	✓	✓
17.5"	✓	✓	✓	✓	✓
18.0"	✓	✓	✓	✓	✓
18.5"	✓	✓	✓	✓	✓
19.0"	✓	✓	✓	✓	✓
19.5" *	✓	✓	✓	✓	✓

NOTES

- For chairs not listed follow the general M90 compatibly guidelines.
- For rear seat heights below 16" (406 mm), adjustments to the center of gravity, armrest, and/or side guard may be required to avoid interference with the M90 motor. Sunrise Medical cannot guarantee compatibility for all wheelchair configurations.
- Matrix assumes M90 attached to bare frame (no transit, armrest, clothing guard) and standard 24" wheels with RSH ≥ 16 ". A Go on COG can still become a NoGo once armrest is layered in. Below 16" RSH, there is a high likelihood of interference, which may require adjustment of wheelchair components.

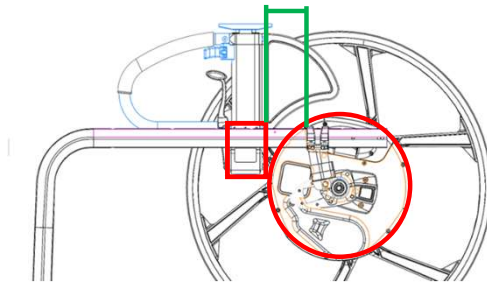
Armrests & Spacing

Depending on the armrest, the motor and armrest may collide. If there is interference between the motor and armrest, the armrest will need to either be moved forward away from the motor or the M90 mounting bracket moved away from the chair.

NOTES

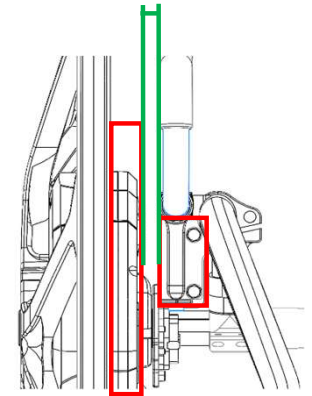
- All M90 mounting kits include the maximum amount of spacers allowed for each chair model.
- Not all spacers are required for every chair's configuration.

Side View



Green line = Minimum Distance, measured from front of axle plate to back of SPHA armrest mount. Red box highlights the SPHA armrest mount; red circle highlights the M90 motor.

Front View



Green line = the clearance between the M90 motor (red box, left) and the SPHA armrest mount (red box, right).

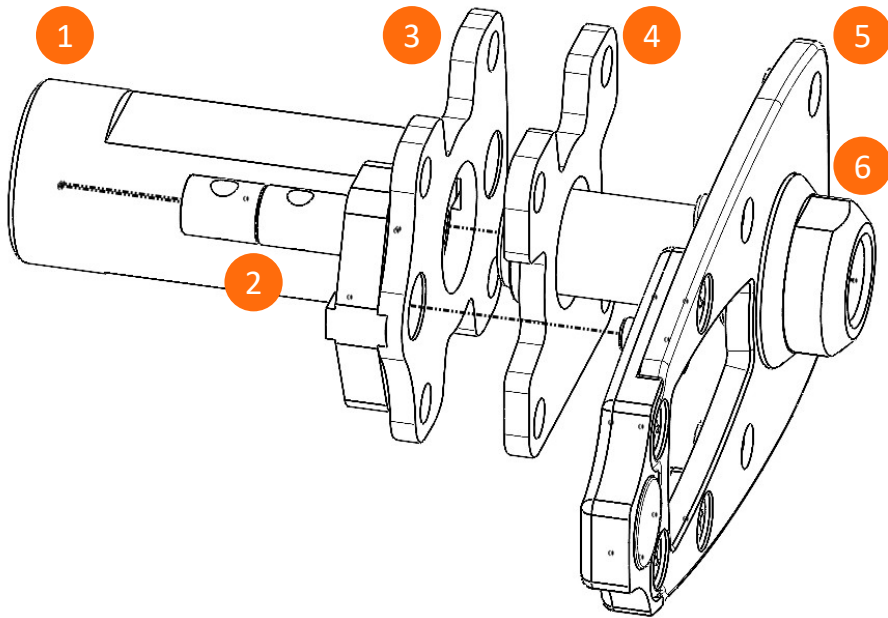
NOTE: If clearance is insufficient, the SPHA armrest mount must be moved forward beyond the M90 motor's diameter so the motor can rotate without touching the mount.

How the Parts Fit Together

Example of Nitrum, Q7R, Zone

Below is a reference diagram of the M90 mounting hardware.

NOTE: Work instructions included in each M90 kit are chair specific and will show minimum assembly requirements and where spacers can be added (if needed) to fit the chairs configuration or armrests.



Armrest Reference



Quick lookup for the most common configurations.

	Single Post Height Adjustable		Tubular Padded Swing Away	T-Post	Flip Back		Flip Up	
	High or STD Mount	Flip Back			Fixed	Classic Height Adjustable	Adjustable Locking	Length Adjustable Locking
Nitrum	GO *	N/A	GO	GO *	N/A	N/A	N/A	N/A
Zone	GO *	N/A	N/A	GO *	N/A	N/A	N/A	N/A
Q7R	GO *	N/A	GO	N/A	N/A	N/A	N/A	N/A
QS5 X	GO *	GO *	GO	N/A	N/A	N/A	N/A	N/A
Q2	GO *	GO *	GO	N/A	GO *	GO *	GO *	GO *
5R	No-Go	No-Go	GO	N/A	N/A	N/A	N/A	N/A
QRi	No-Go	No-Go	GO	N/A	N/A	N/A	N/A	N/A
GP	No-Go	No-Go	GO	N/A	N/A	N/A	N/A	N/A
Qx / Qxi	No-Go	No-Go	GO	N/A	No-Go	No-Go	N/A	N/A
Q2 Lite	No-Go	No-Go	GO	N/A	N/A	No-Go	N/A	N/A

NOTES

- **GO *** To make room for armrests that attach near the M90 motor, the M90 will need to be moved away from the wheelchairs frame, and will increase the chairs overall width.
- The hardware for this adjustment is included in the M90 mounting hardware kits.
- See the work instructions included with the M90 mounting kit on how to use the included spacers.

Wheel Locks



Quick lookup for the most common configurations. For detailed chair compatibility, see the individual guide by Sunrise Medical manual wheelchair models.

Chair	Arm Rest	Push To Lock	Pull To Lock	Compact	Compact - Direct Mount	Ergo Scissor	Unilateral	Knee Lever	Eagle Compact	Standard Wheel Lock
Nitrum Q7R Zone	Omit	Go	Go	Go	Go	Go	N/A	Go	Go	Go
	Tubular Swing Away									
	Single Post Height Adjustable	Go with extension	Go with extension	Go with extension	No Go	Go with extension	N/A	No Go	Go with extension	No Go
Q2	Omit	Go	Go	Go	N/A	Go	Go	N/A	Go	N/A
	Tubular Swing Away									
	flip up Adjustable locking									
	Flip up Length Adjustable Locking									
	Single Post Height Adjustable	Go with extension	Go with extension	Go with extension	N/A	Go with extension	No Go	N/A	Go with extension	N/A
	Single Post Height Adjustable flip back									
	Flip Back									
	Flip back height adjustable classic									
QS5 X	Omit	Go	Go	Go	N/A	Go	N/A	Go	N/A	N/A
	Tubular Swing Away									
	Single Post Height Adjustable	Go with extension	Go with extension	Go with extension	N/A	Go with extension	N/A	Go with extension	N/A	N/A
	Single Post Height Adjustable flip back									

NOTES

- Most Wheel locks are compatible with the M90. Depending on the chairs configuration and armrest selection the M90 will be moved away from the chairs frame and a wheel lock extension may be required for sufficient engagement of the wheel lock.
- The wheel lock extension is included in the M90 mounting hardware kit.
- If the Sunrise wheelchair is not listed in the chart the wheel lock options for the wheelchair are all compatible with the M90.

Effect on Overall Chair Width

Standard Wheel Widths for Reference - Measured from frame to outside edge of wheel.

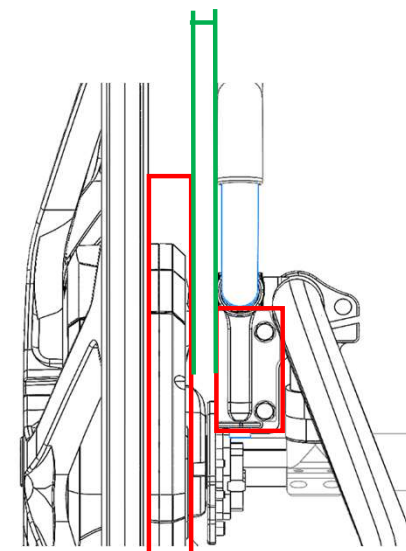
	5 Spoke Mag	6 Spoke Mag	Lite Spoke
Width added per side in inches	3.00	1.94	2.00

M90 Wheel Width Impact - Measured from frame to outside edge of wheel.

Width added per side in inches	M90 Mounting hardware in Standard configuration.	M90 Mounting Hardware using maximum amount of spacers
Nitrum/Q7R/Zone	4.89	5.99
Q2	4.87	5.37
QS5 X	4.58	5.09

NOTES

- The M90 mounting hardware spacer combination will depend on the chairs configuration and armrest selected. If there is interference with the M90 motor the spacers are used to move the M90 away from the frame and interference.
- If the Sunrise wheelchair is not listed above only one configuration of the mounting hardware is possible adding ~ 4.8" of width preside to the chair.



Never Quote

All hard NoGos and escalation-required cases in one place - read this before going to the chair pages

Cannot be made compatible

- **IRIS with SPHA Low Mount:** Geometry cannot be resolved with any spacer combination
- **IRIS with Dual Post:** Listed as compatible in original compatibility guide (02.26) but is a NoGo.
- **QS5 X at 19.5" RSH:** COG matrix shows NoGo across every COG setting (1-3") at this rear seat height. No workaround.
- **Wheelchairs with Rear Suspension**
- **Wheelchairs with One Arm Drive**
- **Wheelchairs with Drum Brakes**
- **Wheelchairs with Carbon Camber Tubes**

Configurations that have not been validated

- **Any Chair with RSH below 16":** The M90 is designed for RSH greater than 16". Other configurations have not been validated. High likelihood of interference. May require adjustment of wheelchair components.
- **Rigid Wheelchair + Swing Away Joystick:** Rigid + M90 forces tubular armrest only "without" spacer, which precludes a swing-away joystick mount. Clinically inappropriate for many users - do not promise the M90 here.
- **Wheelchairs with Carbon Frames:** Carbon frames are not recommended for any Empulse Power Assist combination.