

Power pack for manual wheelchairs

Device to be installed on a compatible manual wheelchair to provide additional power for propulsion. It can assist the wheelchair user or an assistant in making the wheelchair easier to propel. These additional power elements can take the form of units attached to the main driving wheels, usually through the hub: the motors are housed in the wheels and support the movement in proportion to the force applied to the push rims and allow the user to actively participate in the movement of the chair. Additional power elements designed to assist assistants usually consist of motors and wheels that are attached to the wheelchair, usually at the back of the wheelchair and typically controlled with remote control unit.

- **Product Classification**
 - APL (WHO Assistive Product Priority List): 49 (Wheelchairs, electrically powered)
 - ISO 9999:2022: 122409 (Propulsion units for manual wheelchairs)
- **Possible configuration variants**
 - Motors housed in the wheelchair wheel hubs, with attached power packs.
 - Power pack attached to the back of the wheelchair (including motor and wheels).
 - Power pack with a tiller steering mechanism attached to the front of the manual wheelchair (including motor and wheels).
- **Possible accessories or optional components**
 - Battery charger: mounted to the wheelchair.
 - Control interface: wristband.
 - Charger for automobiles.
 - Control interface: integral to the push rim of the wheel.
 - Control interface: push button switches.
 - Control interface: joystick.
 - Control interface: tiller.
- **Product goals**

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

 - Moving around using equipment [\[d465\]](#).
 - Moving around in different locations [\[d460\]](#).
- **Indicated impairments**

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

 - Walking [\[d450\]](#).
 - Heart functions [\[b410\]](#).
 - Blood pressure functions [\[b420\]](#).
 - Respiration functions [\[b440\]](#).
- **Contraindicated impairments**

Difficulties for which the product may be inappropriate:

 - Cognitive difficulty that may impact safe use and wayfinding. *Unless used with variants: Power pack attached to the back of the wheelchair*
- **Indicated environments**

Specific environments in which the product should be used:
None specified.
- **Contraindicated environments**

Environments in which the product may be inappropriate:

- Adverse weather conditions (such as excessive rainfall or snow, which may affect the performance of power packs)
- **Other indicated factors**

Other factors or situations the product is intended to address:

 - Mitigating the possibility of overuse injuries (such as shoulder injuries from manual propulsion of the wheelchair). *Only if used with variants: Motors housed in the wheelchair wheels, with attached power packs*
 - Providing additional power to the wheelchair users (to navigate longer distances, rough surfaces, thick carpet, uneven terrain or up slopes and ramps).
 - Reducing the strain of the attendant of pushing the wheelchair (including assistance when climbing slopes and ramps and navigating rough surfaces, thick carpet, uneven terrain, or up slopes). *Only if used with variants: Power pack attached to the back of the wheelchair*
 - Retaining the possibility of driving the wheelchair manually independently. *Only if used with variants: Power pack with a tiller steering mechanism attached to the front of the manual wheelchair, Motors housed in the wheelchair wheels, with attached power packs*
- **Other contraindicated factors**

Other factors or situations in which the product may be inappropriate:
None specified.
- **Points to be considered in product selection**
 - Consider the physical abilities of the user to operate a manual wheelchair, and the need for power assist to compensate for functional limitations and requirements of the environment.
 - Consider the need for portability of the power pack and the ability to mount it onto the wheelchair.
 - Consider the compatibility of the power pack with the manual wheelchair on which it has to be mounted, as well as the compatibility of other wheelchair features such as its tilt-in-space.
 - Consider the capacity, the range and the maximum speed of the power pack (in relation to the use environment and the size and weight of the user).
 - Consider the configuration of the user interface.
 - Consider the need for braking function.
 - Consider the type of battery charger (e.g. separate or mounted to wheelchair), the need for car charging converter and battery gauge.
 - Consider the type of tires to be used in the intended environment.
- **Points to be considered in product fitting**
 - The user interface needs to be configured, mounted, and programmed in relation to the maximum speed of power pack and the user's ability to handle the speed of wheelchair.
 - Product must be properly installed on manual wheelchair.
- **Points to be considered in product use**
 - Batteries must be maintained and charged.
 - Consider the ease of installation on detachment for transportation.
 - Observe whether the product hinders transfers.
- **Points to be considered in product maintenance / follow-up**
 - Batteries must be maintained.
- **Examples of products available on the market**
 - Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=122409>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

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The project led to a prototype online tool called ASPREX (ASsistive PROduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.