



AUTOMATED LIFTING WHEELCHAIR FOR DISABLED PEOPLE

Soltanmyradova Ayshirin

4 th year student, Cyberphysical systems faculty of the Oguzhan Engineering Technologies University of Turkmenistan

Narkulyyeva Gulshat

4 th year student, Cyberphysical systems faculty of the Oguzhan Engineering Technologies University of Turkmenistan

Kishikova Maya

4 th year student, Cyberphysical systems faculty of the Oguzhan Engineering Technologies University of Turkmenistan

Churiyeva Ayjahan

4 th year student, Cyberphysical systems faculty of the Oguzhan Engineering Technologies University of Turkmenistan

People with disabilities daily face a lot of problems that are simply invisible to a healthy person. One of the biggest challenges for a wheelchair user is the stairs. Today, buildings, whether residential or social, are designed to meet the needs of all groups of the population. They provide for such a device as a wheelchair lift. The designs of lifts differ in technical characteristics, type and method of use, but they have one task - to make life easier for a person confined to a wheelchair.



Types of lifts

Modern technologies and materials make it possible to produce reliable and compact devices to make life easier for people with disabilities, including lifting devices. Lifts for the disabled can be in the form:

- lift platform;
- lift platform;
- chair seat;
- caterpillar;
- street;
- transport;
- landline or mobile.

Types of lifting mechanisms

All models of lifting mechanisms are divided into two types:

1. Lifts for the disabled with hydraulic drive. The perfect solution for a small height. Smooth running, precise stop at a given level, ease of installation, as a disadvantage, a small lifting speed can be distinguished. There are models of mobile lifts with a hydraulic drive to lift a person.



1. Electrically operated. In addition to platforms and platforms, mobile lifts have such a drive. They work on the principle of a crane. Their main function is to move the disabled person himself. They are used in medical institutions, for working with disabled people in the pool or in hippotherapy classes (therapeutic riding). For home conditions, several different modifications have been developed, you can choose any lift for the disabled in terms of size and functionality. The price corresponds to the quality of the products.

Vertical lifters

Vertical lift for the disabled is widely used in places where it is impossible to install ramps at the right angle. They are installed in old buildings and designed for new buildings.



The absolute advantage is the fact that the vertical lift for the disabled takes up little space, easy to mount. It is absolutely safe during operation, firstly, the stroller is securely fixed on the lifting platform, and secondly, the disabled person independently controls the mechanism. In addition, such a device can also be used to lift a baby stroller or a heavy load up to 250 kg.

Lifting platforms are vital in public transport. Not many cars are equipped with such devices, they are located in the aisles, they are equipped with a very simple mechanism.

Mobile lifts

Modifications of the lift allow you to adapt it to any architectural features of the building. A vertical type mobile lift for the disabled is convenient to use not only on the street, but also inside a building with small flights of stairs. They have proven themselves in old buildings without an elevator, where redevelopment is impossible.

And also in public places, hospitals, shops or, for example, when you need to lift a wheelchair user to the stage from the audience. The ability to move such a lift from place to place makes life much easier for wheelchair users, when a small height of up to 2 meters becomes an insurmountable obstacle.



Inclined lifts

To help a wheelchair user independently overcome the steps, a stair lift for the disabled has been developed and is successfully used. Its main task is to quickly and comfortably move the stroller over the stairs.

The difference in the trajectory of the movement divides the inclined lifts into two types:

- Straight trajectory. Designed to overcome one flight of stairs. Can be mounted both indoors and outdoors. Mounted on a load-bearing wall or on special racks.
- With a complex trajectory. Such a stair lift for the disabled will help to overcome several flights of stairs. Rotation angle 90° or 180° .



Regardless of the type of lift, it must meet the following requirements:

- platform design should be folded so as not to obstruct the passage of the stairs;
- just as easy and simple the platform should be brought into working condition;
- provide the opportunity for a disabled person to use the lift independently, without outside help.

To ensure safety, lifts for the disabled must be equipped:

- stops that do not allow the structure to move beyond the allowable limit;
- speed limiter;
- manual drive, in case of emergencies;
- with a special fence that prevents the passenger from contacting the device parts.

Chair lift



Another type of stair lift is the chairlift. Modern technology has made it possible to abandon wires and circuits. Today, such a rack and pinion device with an independent power source fits perfectly into the interior of any home.

Benefits:

- can be mounted as on the inside and outside of the stairs;
- installed on almost any staircase, regardless of the complexity of the route and its height;
- automatically stops when an obstacle occurs;

- control panel mounted in chair armrest;
- the seat folds compactly and does not obscure the flight of stairs;
- footrest provided;
- reliable and durable.

The trajectory of the chair itself can be either straight or with turns. Safe, easy to manage, mounted both inside the house and outside. When moving to the second floor of the house, up the stairs in the garden, to the veranda, a lift for the disabled will be convenient everywhere. The price of the mechanism is from 5000 euros and more, depending on the model and the complexity of the movement path.

Crawler lift

Crawler lift for the disabled is a mobile device with a platform on which a wheelchair is attached, with rubber tracks. Equipped with a powerful electric drive. The second name is "autonomous step-walker". The versatility of the design allows it to be used on all models of strollers and on a wide variety of stairs.



This type of lift is considered one of the most compact and lightweight devices for moving a wheelchair user up the stairs. When assembled, it can be transported in a car, it fits freely in the trunk.