Home lifts – English Paper

Home lifts are used to transport wheelchair users and are usually installed in detached houses. They no longer use classic ropes, but are moved by a hydraulic drive. In contrast to traction lifts, they are designed for low travel heights.

The elevator car is usually driven by one or more hydraulic pistons installed at the bottom of the elevator shaft or next to the car. If the car is firmly connected to the piston, it is called a hydraulic home lift. If the lifting force is transmitted via suspension ropes and rollers, the lift is called an indirect hydraulic lift. The hydraulic drive technology means that less space is required in the shaft and a great deal of design freedom for architects.

Home lifts require little maintenance as there is no wear and tear on pulleys and ropes. The drive is easily accessible to the company to be inspected and maintenance and repair is safer because there is no moving counterweight. Hydraulic vertical lifts are very well suited for retrofitting both inside and outside single-family homes. In order to be suitable for wheelchair users, the lift cabin must be at least 1.5m x 1.5m in size according to DIN 18040-2 and be able to carry a weight of up to 1389 Pounds.

Home lifts are low-noise in operation and can be easily controlled by a handicapped person via hand switch or remote control. In contrast to traction lifts, they are designed for low travel heights. In the meantime, heights of up to 25 m are possible, and they are usually used for heights of up to 10 m. The drive of a home lift is usually located next to the lowest level. If space is at a premium, it can also be installed up to 15 m away. This offers the advantage that the motor of the Home lift, a possibly disturbing source of noise, is not located in the shaft, but outside the apartment or on the lowest floor. Home lifts can also be installed in locations without much space, sufficient stability for a shaft head or in cramped old buildings. They have a flat access ramp and are also suitable for heavy electric wheelchairs. The maximum speed is limited, it is a maximum of 1 m/s, usually 0.63 m/s.

Prices of home lifts

How do you overcome the stairs in your house? You could sell your family home and buy a one-story bungalow house instead, but this comes at a high price if you include the emotions associated with leaving your own home. The installation of a home lift is the best solution for more and more senior citizens.

What used to be possible only for wealthy people is now an affordable option for many people.

Type of Home lift	**Prices**
Installation costs	The average cost of installing a home lift is around 19,000 to 20,000 dollar.
Rope-driven	Rope-driven home lifts are cheaper than hydraulic lifts and cost on average about 20,000 dollar.
Chain-driven	Chain-driven home lifts cost about 25,000 dollar when installed in a new building.
Machine room-less	MRL home lifts cost on average about 10,000 to 18,000 dollar.
Hydraulic	Hydraulic home lifts cost about 30,000 to 40,000 dollar.
Pneumatic	Pneumatic home lifts are easier to install, which keeps installation costs low. On average, they cost about 40,000 dollar.

Unlike many other home improvements, the installation of a home lift involves construction costs. Home lifts that are installed on an interior wall may require the installation of wiring, pipes or piping. An alternative is to have the shaft built against an exterior wall to reduce the number of hours of work. There are also costs for preparing the installation. One elevator retrofit can run into the thousands, and interior finishing work such as wall cladding, custom flooring and lighting can greatly increase costs. The initial cost can be dauntingly high, but home lifts can increase the value of your property by up to 10 percent. The costs associated with home lifts include:

Acquistion costs

A home lift often enables barrier-free access without extensive alterations to the living environment. It can be installed within a very short time and is cheaper than conventional traction lifts. When buying a home lift, you should expect costs of at least 15,000 Dollar. For a single-family house with 3 floors and larger conversion costs, prices of up to 50,000 Dollar can quickly arise. If the lift is installed for a wheelchair user, up to 4,000 dollar subsidy can be applied for from the nursing care insurance and claimed if a corresponding degree of nursing care is available.

The price of a home lift depends on various factors, e.g. the load capacity, the travel speed, the number of stops, the height of the lift shaft, the type of drive, the type of lift and the appearance. Lifts with round and fully glazed cabins are understandably more expensive than vertical lifts with a classic design. The real purchase costs can be determined very accurately by making several estimates with different lift manufacturers and service providers. However, the cost of necessary modifications to a detached house remains incalculable.

If larger ceiling and wall breakthroughs are necessary in and around the single-family home, additional costs may arise because the statics of the house must be re-examined by an expert. The prices for a statics test again vary extremely from architect to architect. Therefore, before buying a home lift, find out about "all" the costs and financial support that are involved.

The prices and possibilities for individualising a home lift vary greatly from manufacturer to manufacturer. There are no flat-rate prices such as a price per floor or square meter of cabin space. Generally speaking, the higher a home lift is and the more weight it can carry, the more expensive it is. One should calculate with at least 15.000 Dollar per floor without costs for static expertises and reconstruction works.

A vertical lift, which is attached to the outside of the facade, is about 15 meters high, has 2 stops, moves via a hydraulic drive and can be used by a wheelchair user or max. 4 persons at the same time, should cost at least 40,000 Dollar including installation. The purchase of a home lift is cost-intensive and should be planned carefully. You can save a lot of money by comparing prices at stairlifto.de. When you make an enquiry, you will receive up to three free and non-binding offers from home lift providers in your region, which you can compare at your leisure and without risk.

Maintenance costs

Home lifts are low-emission, durable, light and space-saving. With a home lift, oil and seals only need to be changed every 15 years. The material required for this is freely available and costs around 100 dollar. For the professional implementation of the oil and seal change, one should reckon with costs of about 1,500 Dollar. In the case of a traction elevator, a rope and sheave change must be carried out on average every 10 years. The components required for this are proprietary and with prices of up to 1,000 dollar very expensive. The labour costs for maintenance are around 10,000 Dollar. As a rule, one concludes a partial or full maintenance contract with the lift manufacturer from whom one buys the home lift, in order to arrange maintenance for a period of five or ten years. The costs for maintenance, inspection, cleaning, lubrication, adjustment work and the replacement of wearing parts are then usually regulated at a flat rate.

Energy costs

The energy costs for a home lift are made up of the consumption during travel and standby times. For a home lift in a single-family house with 4,000 rides per year, i.e. about 11 rides per day, one should calculate with energy costs of 600 kWh standby electricity and 600 kWh traction current. With an electricity price of 0.26 $/kWh, this results in annual costs of approx. 312 Dollar. The electricity consumption for traction lifts is similarly high overall. Lifts in detached houses are out of service 99 % of the time, whereas lifts at airports and railway stations are in peak operation 365 days a year. Energy costs therefore depend primarily on how much the lift is used, whether the installed drive is suitable for the respective usage situation and how high the lift is. As a rule, more than 50 % of the power consumption of all home lifts is consumed in standby (idle mode). In order to save energy costs, it should be ensured when purchasing that LED lamps are used instead of halogen or incandescent lamps and that there is a timer function for lighting and electronics.

Types of home lifts

When searching for the perfect home lift, you have a wide selection to choose from. The drive system or the way the lift car rises and falls determines the types of home lifts available today. Rope-driven lifts are usually the most cost-effective, while pneumatic lifts are usually the most expensive. Chain-driven lifts, traction sheave lifts and hydraulic lifts belong to the medium price segment.

There are five basic types of home lifts

Elevators	**best for ...**
Rope-driven elevators	new building
Chain driven elevators	new building, space saving, durable
Machine room-less	retrofit, Existing apartments
Hydraulic lifts	new building, space saving
Pneumatic lifts	retrofit, Existing apartments

If you plan to buy a home lift to make your house more age-appropriate and accessible, you have a lot of choices. Before you make decision on a particular type, you should think about your space availability for installation. The following information will be useful for you when you sit down with your elevator consultant to decide what type of home lift to install.

Regardless of the drive system, there are a variety of elevator types in different sizes. From compact lifts designed to fit into spaces as small as a closet to larger models that can accommodate a wheelchair, home lifts can become a discreet part of your home.

Rope-driven lifts consist of a shaft, a car, a control system and counterweights. Some models also require a technical room. Rope-driven lifts are similar to those found in commercial buildings. These elevators take up most space due to the shaft and the equipment room, so installing a cable system in a new building is much easier than trying to retrofit an existing building. Traction elevators need a pulley for movement. They are less common for new buildings, as hydraulic technology is used in most cases.

Chain-driven elevators are similar to cable-driven elevators, but they use a chain wrapped around a drum instead of a cable to raise and lower the car. Chains are more durable than cables and do not need to be replaced as often. Chain-driven lifts also do not require a separate machine room, which saves space.

Machine room-less elevators operate by sliding up and down a travel path with a counterweight. This type is an excellent choice for existing residential buildings, since neither machine rooms nor pits reaching into the ground are required. However, traction elevators still require additional space above the elevator roof to accommodate the components required to raise and lower the car. Shaftless home lifts consist of a rectangular elevator cabin positioned on a rail. The lift travels on the route from the lower floor to the upper floor and back.

Hydraulic elevators are driven by a piston that moves in a cylinder. Since the drive system is completely housed in the elevator shaft, no machine room is required and the control system is small enough to fit into a cabinet on a wall near the elevator. For hydraulic systems with holes, the cylinder must extend to the depth of the floor corresponding to the feet of the elevator, while hydraulic systems without holes do not require a pit.

Pneumatic elevators use a vacuum system inside a tube to drive their movement. A pit or machine room is not required, so pneumatic home lifts are easiest to retrofit into an existing home. Pneumatic lifts consist of acrylic tubes or glass (typically about 80 cm in diameter). It look like a mail tube you may know from films or older buildings. Pneumatic elevators are not hidden in the wall and are normally placed in the near to a staircase.

Safety for home lifts

Technical rules for home lifts are regulated and laid down in the European Directive 95/16/EC. This directive has been transposed into national law in Germany by the Lift Ordinance (12. GPSGV). The law stipulates that home lifts must be monitored and maintained and inspected at least every two years. In addition to the main inspection, which must be carried out every two years, so-called intermediate inspections are mandatory. For this reason, the test cycle for home lifts is usually twelve months. In Austria the European lift law is regulated at the level of the federal states. For this reason there are nine lift laws within the building law in Austria, depending on the canton.

Due to high safety requirements, home lifts today are equipped with a safety system that prevents deviations from normal operation, excessive speeds or a fall of the lift car, even if the complete hydraulic system fails and all suspension ropes break. Home lifts in single-family homes, which are state of the art, no longer use classic ropes, but a hydraulic drive or spindle drive. The control electronics constantly monitor the internal electrical resistance. If a change or

greater deviation is registered which indicates damage, the vertical lift is stopped in a controlled manner at the next stopping point, the doors are opened and a fault message is automatically sent. A speed limiter prevents the cabin from travelling too fast or crashing. If a limit value is exceeded, the drive is switched off electronically and the cabin is brought to a mechanical standstill. This safety device is independent of other parts of the vertical lift and functions mechanically, i.e. even in the event of a power failure. Modern vertical lifts are also connected to an automatic emergency call system.

Malfunctions of home lifts can result in the lift car not opening anymore, e.g. if the lift gets stuck between two floors. In this case, an emergency call button is installed, which enables the trapped person to contact a security service or automatically notifies them. The assigned security service must be on site within 30 minutes. On many home lifts installed before 1999, the emergency call button merely triggers a loud noise to alert other people. This type of emergency call system is no longer permitted for new installations today, but existing home lifts may continue to be operated unchanged.

Frequently asked questions about home lifts

How much do home lifts cost? There are so many variables involved in the options and installation of home lifts that it is impossible to give even a rough estimate. The best thing to do is to decide what size you need and how many floors it needs to cover, and then obtain estimates based on these factors.

How fast do home lifts travel? The average speed for a home lift is 12 meters per minute.

What is the difference between home lifts and lifts? Home lifts are not subject to the same size and weight requirements as commercial lifts. However, home lifts are equipped with many of the same safety features as commercial lifts.

How much space does a home lift need? The space required by a home lift depends on the type of lift you want and whether you want to retrofit it or install it in a new home. If you need a free estimate based on your specific situation, you can request a consultation here. The sizes for conventional traction or hydraulic lifts range from 1.1 to 1.4 square meters. To install a traction or hydraulic home lift that is hidden behind a wall or door, you need at minimum 1 square meter of space in your home. A pneumatic lift can be a useful option if

you have only limited space. You need about 1.5 by 1.5 meters to transport a person in the elevator. Another option for limited space are shaftless elevators. It is designed for two people or a wheelchair and normally requires 1.3 square meters of space.

Conclusion

The installation of home lifts can be very expensive. The total costs for the purchase of the lift itself, the necessary safety options and installation such as railings are between about 20,000 and 50,000 Dollar. The type of lift you choose, the number of storeys you need to access and whether you are installing the lift in a new building or retrofitting your existing home will affect the installation costs. Another factor that affects the cost of a home lift is your location.

States with higher lift demand usually have cheaper prices. In general, the purchase and installation of a hydraulic lift for a two-floor home costs approximately $45,000. Pneumatic elevators cost an average of about 40,000 dollar to install and purchase. A shaftless lift is an affordable option and costs on average about 20,000 Dollar to install and purchase.

If you are building a new house, you have the most options for installing a home lift. You can choose the most convenient or attractive location for your elevator and determine how large it should be by allowing for more or less space for the elevator shaft. If you are planning to retrofit your existing home with an elevator, pneumatic vacuum elevators or shaftless elevators are the most affordable options. Both require little space and can be installed almost anywhere in the home. Pneumatic home lifts are often installed next to an existing staircase, but can be installed almost anywhere by drilling a hole in the floor of the second floor.