

## History and Evolution of Swimming Pool Lifts

This paper will discuss the history and evolution of swimming pool lifts and provide information relating to the design and application of these products. The object is to provide the reader a better understanding of the types of lifts and their respective benefits in providing access to swimming pools.

### History

The biggest challenge in providing aquatic-based therapy programs was simply getting people in and out of the water. This process was greatly facilitated in 1980 with the introduction of the first commercially successful water-powered swimming pool lift.

As commercial pool designs evolved, it became apparent that these designs had limited applications. In 1997, the next step in the evolution of swimming pool lifts addressed many of these limitations. This new product was a battery-powered, free-standing pool lift that was designed to work with more contemporary swimming pool designs.

### From Patient Lifts to Pool Lifts

Swimming pool lifts are a type of patient lift that provides the ability to transfer an individual from the pool deck into a pool and from the pool back to the deck.

Patient lifts are regulated in the United States by the Food and Drug Administration. Any company in the United States that manufactures a product regulated by the FDA is required to register their manufacturing facility with the FDA and ensure that the facility employs current “good manufacturing

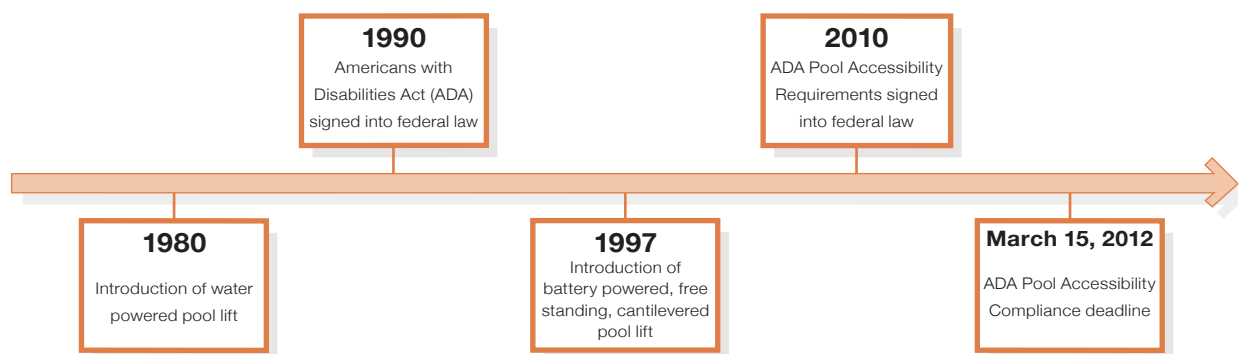
processes” in their operation. One of the requirements of a good manufacturing process is the use of a prevailing standard in the design and manufacture of such products.

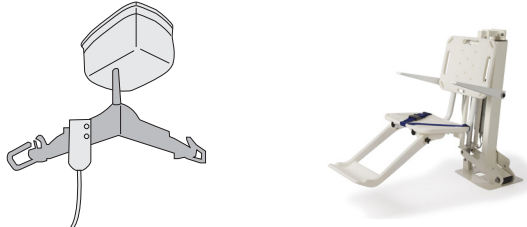


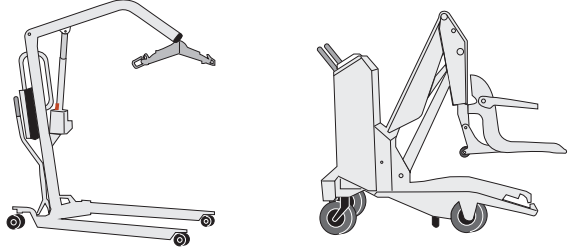
The only existing standard for patient lifts is ISO10535:2006. This standard not only provides design and manufacturing criteria, it also defines the various categories for patient lifts. There are two types of patient lifts or hoists: stationary hoists and mobile hoists. (**Note:** internationally, the term “hoist” is used to define these types of products, as the term “lift” refers to an elevator. Since ISO Standards are written in Europe, the term “Hoist” is used in their publication.)

A **stationary hoist** is a piece of equipment with which a person is lifted, transferred or moved within a predefined area. Stationary hoists can either be fixed, as in mounted to a wall, ceiling or floor, mounted in an allied device (such as a deck anchor), or can be free standing on the floor.

A **mobile hoist** is a piece of equipment fitted with a device or devices (e.g. wheels) that is freely movable along the floor, and with which a person is lifted, transferred or moved independent of a fixed installation or other allied device.

The basic difference between a mobile hoist and a stationary hoist is that mobile hoists are used to transport the user from place to place, such as from a bed to a bath or toilet facility. Stationary hoists require the user to actually be brought to the device to be transferred to the intended destination, which is adjacent to the stationary hoist.



Hoist Type	Function	Applications
Stationary	Lifts, transfers or moves person in a predefined area.  There are three types: fixed, anchored, or free-standing	<p><b>Fixed — mounted on a wall, ceiling or floor</b></p>  <p><b>Ceiling Track Hoist</b>      <b>Stationary Pool Lift</b></p>
		<p><b>Anchored — mounted on the floor</b></p> 
		<p><b>Free Standing — free standing on the floor</b></p>  <p><b>Portable Overhead (Gantry) Hoist</b>      <b>Free Standing Pool Lift</b></p>
Mobile	Lifts, transfers or moves a person independent of a stationary system.	 <p><b>Mobile Hoist</b>      <b>Mobile Pool Lift</b></p>

A good example of a mobile hoist is a Hoyer-type Lift. This type of hoist is very common both in health care facilities as well as in private residences.

Mobile hoists are usually not used for pool lifts. Since they involve moving a person from place to place, such as the locker room to the pool, they always require an attendant. This fact alone will disqualify this type of lift from any ADA regulated installation.

Stationary hoists, especially ceiling mounted versions, can be found in many healthcare

applications. Swimming pool lifts are a good example of a stationary hoist. Current designs for swimming pool lifts feature all three types of stationary hoists, i.e., those fixed in place; those placed in an allied device (such as a deck anchor), and those that are free standing.

Swimming pool lifts can be further broken down as follows:

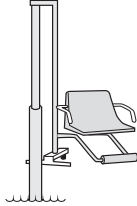


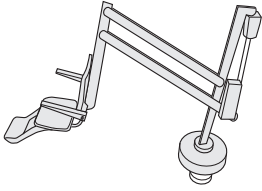
**Non-cantilevered lifts** are lifts where the seat is attached to and rotates around the anchor point. The use of non-cantilevered lifts is limited to

simple pool designs that feature either no gutter or recessed gutters. Water powered lifts are good examples of non-cantilevered lifts. Non-cantilevered lifts are usually fixed in place, but can, in some instances be placed in a deck anchor. The limitation is that these types of lifts always have to be connected to a water supply.

**Cantilevered lifts** are designed to allow the seat to extend out from the anchor point. They can be fixed, anchored or free standing. Cantilevered lifts provide access to a greater number of pool designs, including rim-flow gutters, roll out gutters, or any type of design where there is a substantial horizontal distance from the loading point to the water. There are two types of cantilevered lifts:

- **Non-rotational cantilevered lifts** extend the seat directly out from the loading point. These lifts have similar range of motion restrictions as those found with non-cantilevered lifts and are most effective with simple pool edge designs with no gutter.
- **Rotational cantilevered lifts** have the ability to raise and rotate the seat position over the deck and extend the seat out and over any obstacle in the path to the water. Rotational cantilevered lifts can work effectively with virtually any type of pool design.

Design criteria and appropriate testing protocols for all types of patient lifts are contained in

Pool Lift Type	Function & Application	Examples
<b>Non-Cantilevered</b>	Lifts designed to rotate the seat around the anchor point. Installed either fixed or removable anchor.	 <p data-bbox="1016 1056 1219 1077">Water Powered Lift</p>
<b>Cantilevered</b>	Lifts designed to allow the seat to extend out from the anchor point. Installed fixed, removable or free standing.	 <p data-bbox="899 1318 959 1339">Fixed</p> <p data-bbox="1052 1381 1203 1402">Free Standing</p> <p data-bbox="1284 1350 1386 1371">Anchored</p>
<b>Non-Rotational Cantilevered</b>	Lifts designed to extend the seat directly out from the loading point. Ideal for simple pool edge designs with no gutter.	 <p data-bbox="946 1625 1289 1646">Non-Rotational Cantilevered Lift</p>
<b>Rotational Cantilevered</b>	Lifts designed to raise and rotate the seat position over the deck and extend the seat out and over any obstacle (i.e., pool wall) in the path to the water.	 <p data-bbox="984 1898 1273 1919">Rotational Cantilevered Lift</p>

ISO10535:2006. Adherence to this standard will ensure a safe product with respect to structural integrity, stability, electrical or electronic safety, and operation. Although the FDA requires documentation that supports Standard compliance to be available at the manufacturing facility, there is no scheduled audit process for Class III devices, which includes patient lifts. However, any products sold internationally, especially into the European Community, generally must prove compliance with a prevailing Standard. If a company is ISO9001 certified, they can self-certify their products as all of their processes are audited annually. Other companies can employ independent certification agencies to document their compliance to a Standard.

There is currently no UL listing process for swimming pool lifts.

### Access for All

In 2010, the Department of Justice expanded the existing scope of the ADA to include recreational

facilities, including swimming pools. Beginning on March 15, 2012, public swimming pools will be subject to ADA Accessibility Requirements. Section 242 of the revised Regulations outlines accessibility requirements for different types of aquatic facilities.

In order to ensure operational consistency among the different products on the market, Section 1009.2 of the ADA Regulations provides criteria for swimming pool lifts. Section 1009.2 lists nine different elements for swimming pool lifts. Some of the elements are design specific, meaning they are required to be incorporated into the design of the lift. The remaining elements are specific to the actual installation of the lift.

It is important to note that many of the site specific requirements are also dependent on the lift you select. Check with the manufacturer to ensure you select the proper lift for the specific application.

The following is a summary of each of the requirements:

### ADA Pool Lift Requirements as outlined in Section 1009.2 of the ADA Accessibility Guidelines

Requirement*	Pool Specific	Pool Lift Specific
Water depth at point of lift entry is no more than 48".	•	
When over the deck, the centerline of seat is at least 16" from the edge of the pool.	•	
There is 36" x 48" of clear deck space on the side of the seat opposite the pool. Measurement starts at the rear edge of the seat.	•**	•**
In the loading area, the slope of the deck is no greater than 1:48.	•	
Seat is 16"-19" from the deck to the top of the seat surface.		•
Seat is at least 16" wide.		•
There are footrests that move with the seat.		•
Armrests (optional) are removable or fold clear of the seat to allow the user to easily load the lift.		•
The lift is user operable from both the deck and water.		•
The seat submerges at least 18" into the water.	•	•
Lifting capacity is at least 300 pounds.		•

\* For complete guidelines see Section 1009.2 of the ADA regulations at <http://www.ada.gov>

\*\* Some requirements may impact both the site requirement and design requirement.

These are the only published requirements for swimming pool lifts provided by the Department of Justice.

## Options for Every Pool

Today, pool owners have a wide array of options to make their pool accessible. As with any type of product, the different types of lifts have their advantages and disadvantages. Cost and convenience are the two primary considerations used to select a specific product.

Non-cantilevered lifts, which include water powered lifts, are inexpensive and fairly easy to operate. Since they require connection to a reliable water source, these types of lifts are usually permanent installations. They can, however, be installed using a deck anchor and can be disassembled when not in use. Due to the design of these lifts, they can only be used with simple pool designs as they are mounted parallel to the side of the pool.

Cantilevered lifts provide access to a wider variety of pool designs. Non-rotational cantilevered lifts, however, do have range of motion restrictions similar to those found with non-cantilevered models. Non-cantilevered lifts can be fixed, anchored, and free standing.

Rotational cantilevered lifts provide the greatest versatility of any of the different design types. Their rotational capability allows the seat to be positioned well over the deck area and away from the pool edge. This feature allows for safe transfers, whether they are independent or assisted. The cantilevered arms can extend both upwards and outwards to clear any type of obstacle between the deck and the water. Complex pool edge designs, such as rim flow or flush gutter designs, roll out gutters, or above ground pools can easily be accommodated with a rotational cantilevered lift. Rotational cantilevered lifts are most often either anchored or free standing, as this permits a facility to easily remove the lift when it is not in use.

Free standing cantilevered lifts are generally the most expensive to purchase outright. The added cost is due to the ballast that must be included in the lift design to allow the lift to be free standing and meet both the ADA and ISO10535 requirements for stability. In some cases, however, the cost of installing a deck anchor for an anchored lift may equate to the cost difference between a free standing and anchored product.

Manually operated lifts in any configuration cannot be used in any type of public swimming

accommodation, as they do not comply with Section 1009.2.7 which requires that lifts be capable of unassisted operation. These products can, however, be used in a residential pool, as these pools are not regulated by the ADA.

Free standing lifts and anchored lifts that can be easily removed when not in use are the most popular types of lifts on the market. These products give facilities an easy way to manage their access program and its equipment. Free standing lifts can



**Free Standing Cantilevered Lift**

be stored when the pool is not in use and thereby be protected from both the weather and vandalism. In addition, when specific programming for the pool does not include people with disabilities, such as a collegiate swim meet, the lift can be moved away from the edge of the pool to facilitate judging and spectators. In the absence of any disabled guests, hotels can store a free standing lift to prevent it from becoming an attractive nuisance for children using the pool. This is an important point, as unattended diving boards have disappeared from hotels due to liability issues. Having a free standing lift that can be stored when not needed will prevent this same problem from happening with pool lifts.

Any of the types of lifts mentioned, with the exception of manually operated products, comply with all published requirements for lifts that have been issued by the Department of Justice.

For more information about swimming pool lifts, you can contact the Department of Justice at [www.ada.gov](http://www.ada.gov) or visit [www.poollifts.com](http://www.poollifts.com) for complete information relating to swimming pool accessibility. Copies of the Standard ISO10535:2006 can be purchased from the International Organization for Standardization at [www.iso.org](http://www.iso.org).