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Residential lifts

Lifts in the home enable people with limited mobility to travel up and/or down a range of distances. Residential lifts for instance, are designed to carry a wheelchair occupant from across a one metre change of level to many floors within a multi-residential building. The technology that enables lift installation and ease of operation is changing rapidly in response to increased consumer demand. Thus it is important to reflect carefully about trends and issues prior to purchase or recommendation for any residential lift. Obviously a crucial component, in choosing the most appropriate residential lift, involves considering the potential user's abilities, caregiver situation and environment. Lifts have become the "device of choice" for short-range elevation changes in the built environment within existing buildings because of their convenience, relatively small overall footprint and enhanced safety features. However, for effective installation, the actual spatial and material of the home in question remain equally important. This is because many homes and existing staircases and/or stairwells have features that affect lift selection, positioning options and installation feasibility. Thus careful inspection of the staircase and surrounding areas must be made prior to any suggestions or recommendations being made.

In general, a contractor or supplier with experience installing lifts should inspect the staircase and provide input during the selection process. Critical factors to consider include the shape, angle, length and width of the current vertical transfer options (typically stairs or staircase), as well as the walls, railings. The size and shape of landings and adjacent space or hallways is also important.

Residential lifts are used for indoor and outdoor usage and should comply with the Australian Standards on Lifts Escalators and Moving Walks. The relevant Australian Standards to consider are as follows:

AS 1735.1:2003

Lifts, escalators and moving walks - General requirements

AS 1735.11:1986

Lifts, escalators and moving walks (known as the SAA Lift Code) - Fire-rated landing doors (1986) Standards Australian

AS 1735.12:1999

Lifts, escalators and moving walks - Facilities for persons with disabilities (1999)

AS 1735.12:1999/Amendment 1:1999

Lifts, escalators and moving walks - Facilities for persons with disabilities (1999)

AS 1735.14:1998

Lifts, escalators and moving walks - Low-rise platforms for passengers (1998)

AS 1735.15:2002 (2002)

Lifts, escalators and moving walks - Low rise passenger lifts - Non-automatically controlled

AS 1735.16:1993

Lifts, escalators and moving walks - Lifts for persons with limited mobility - Restricted use - Automatically controlled (1993)

AS 1735.17:1995

Lifts, escalators and moving walks - Lifts for people with limited mobility - Restricted use - Water-drive (1995)

AS/NZS 1735.18:2002

Lifts, escalators and moving walks - Passenger lifts for private residence - Automatically controlled (2002)

AS 1735.2:2001

Lifts, escalators and moving walks - Passenger and goods lifts - Electric (2001)

AS 1735.3:2002

Lifts, escalators and moving walks - Passenger and goods lifts - Electrohydraulic (2002)

AS 1735.7:1998

Lifts, escalators and moving walks - Stairway lifts (1998)

Table 1. Comparison of residential lift types

Product	A) rise; B) max. speed; C) rated load	Max floor area m²	Advantages and disadvantages
Platform lift (Low rise) (AS 1735.14-1998)	a) 1 metre; b) rated speed shall be not more than 0.15 m/s. c) not less than 220 kg per sq metre subject to a minimum of 115 kg	1.60 400 x 600 mm	The minimum dimensions of a platform lift are 850mm by 1200mm. ✓ Not required to have fully enclosed platform ✓ Range of controls available ✗ Possibility of child, small animal entrapment when lift is operating ✗ Require protection from weather for all operating machinery
Waterlift (Water-drive) A lift powered by water pressurised by a recirculatory or pressure amplifier pump. (AS 1735.17)	a) 3 metres; b) rated speed shall be not more than 0.10 m/s. c) not less than 190 kg per sq metre subject to a minimum of 115 kg	1.30	These are not permitted in certain parts of Australia. ✓ Generally easy to install and economic to run ✓ Can be clipped on as whole unit to exterior of house ✗ Any machinery located outside liftwell requires lockable enclosure ✗ Requires a clearance of 1850 mm above the car platform when the car is level with the top floor. ✗ Requires a door locking device ✗ Requires guide rails and guide shoes

Note: Table key for advantages and disadvantages column

✓ Advantages

✗ Disadvantages

Product	A) rise; B) max. speed; C) rated load	Max floor area m ²	Advantages and disadvantages
Stair climber (stairway lifts) Device used for transiting 2 or more levels by a guided carriage moving in the direction of the flight of stairs. (AS 1735.7)	a) no limit b) rated speed shall be not more than 0.16 m/s. c) not less than 115 kg for standing and 200 kg for wheelchair	Standing platform: 0.35, length 370 x 290 mm; Wheelchair platform: 1.00, 1000 x 685 mm	Where it may be impractical to provide a passenger lift, a wheelchair stairs lift may constitute a reasonable alternative. ✓ No need for a separate machine room ✗ May obstruct access and emergency egress
Elevator (Electric and electro-hydraulic (i.e. chain or rope suspended) (AS 1735.2; AS 1735.3; AS 1735.12; AS 1735.15; AS 1735.16; AS 1735.18)	a) no limit b) rated speed shall be not more than 1.00 m/s. c) not less than 220 kg per sq metre subject to a minimum of 115 kg	1,60 600 x 600 mm	May need to consider doors closure pressure and delays. ✓ Gravity descent in the case of power failure or similar situation (no need to wait in lift for lift mechanic to free occupants) ✓ Vertical forces transferred directly to the pit floor ✓ No dependence on rope tension for loading and unloading ✓ No need for a supporting lift-shaft ✓ Small or minimal pit depth ✓ Ability to fit out interior ✓ Choice of door materials ✗ Requirement for pit depth clearance ✗ Cost of installation, operation and maintenance

Note: Table key for advantages and disadvantages column ✓ Advantages ✗ Disadvantages

In terms of ensuring usability and desired outcome, some critical factors to consider are

- Rated load of lift in relation to assumptions about maximum passenger load. For example, is client bariatric or obese? In general the minimum rated load for one passenger is 68 kg (AS 1735.2-2001, Table 22.1.2, p 94)
- Number of passengers that need to be accommodated i.e. client and carer or stretcher and ambulance officers etc.
- Degree and type of passenger impairment (i.e. visual, cognitive, strength etc.)
- Number of landing at which the lift must stop
- Rated speed at which the lift should safely and conveniently travel

Other factors that may need to be considered in terms of design include but are not limited to:

- Lift car and counterweight mass, length and counterweight mass may be relevant
- Safety features such as presence or absence of Carriage Guide rails, such as buffers, car guides and or shoes
- Pit Clearances i.e. top & bottom mechanical housings)
- Ropes and chains if used features such as construction and breaking load may be relevant
- Control i.e. if electric features such as voltage and door interlock type may be relevant
- Lift Installation qualifications
- Maintenance access inspections and replacement of parts (usually required at a minimum of one yearly intervals by an authorised person)
- Emergency egress options
- Emergency power or breakdown assistance
- Ventilation & lighting (min 75 lx)
- Fire rating
- Access to power and or hydraulic sources
- Fixed Seating and/or handrails
- Ownership (i.e. if funding is provided who is the owner and/or has maintenance liability)

Additionally, some previous authors have recommended that clients should be asked to sign an indemnity form confirming that verbal and written instructions have been given re safe usage (Wilson,1990).

In discussing lift options with suppliers Perr, & Barnicle. (1994) suggested that you should ask specifically about:

- What models of lifts do you carry? Why?
- How many chair and wheelchair lifts do you install in a year?
- How long have you been in business?
- How much do lifts cost? Does this price include installation?
- What is the approximate lifespan of a lift?
- Do you service lifts? How much does a service call cost?
- Do you offer service contracts? How much does one cost and what do you cover?
- How long is the warranty? What does it cover?
- Is there a residential lift that you have installed in the area that I can see?

Funding options:

Home usage: PADP, Veterans Affairs RAP scheme, Starlight Foundation, Bobby Goldsmith Foundation, Local clubs (i.e. including but not limited to Rotary, Apex, RSL, Variety etc.)

Public usage: Developer, Building operator and the Local chamber of Commerce

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Appendix 1:

Standards Relevant to (Topic)

AS 1735.1:2003

Lifts, escalators and moving walks - General requirements

AS 1735.11:1986

Lifts, escalators and moving walks (known as the SAA Lift Code) - Fire-rated landing doors

AS 1735.12:1999

Lifts, escalators and moving walks - Facilities for persons with disabilities

AS 1735.12:1999/Amendment 1:1999

Lifts, escalators and moving walks - Facilities for persons with disabilities

AS 1735.14:1998

Lifts, escalators and moving walks - Low-rise platforms for passengers

AS 1735.15:2002 (2002) Standards Australia

Lifts, escalators and moving walks - Low rise passenger lifts - Non-automatically controlled

AS 1735.16:1993

Lifts, escalators and moving walks - Lifts for persons with limited mobility - Restricted use - Automatically controlled