

## PNEUMATIC VACUUM ELEVATORS

### INTRODUCING RESIDENTIAL PNEUMATIC VACUUM ELEVATORS

Gone are the days of science fiction when people traveled in transparent bubbles. Today this is no longer a product of our imagination. There is a bubble that can carry you without cables, pulleys or pistons. It is our self-supporting vacuum elevator; a light and resistant structure built with aluminium and polycarbonate. By simple principles of physics; the difference in air pressure above and beneath the vacuum elevator cab literally transports you by air. It is the vacuum pumps or turbines that pull you up to the next Floor and the slow release of air pressure that floats you down.

Pneumatic Vacuum Elevators are easier to install, maintain, and operate than traditional elevators. They are especially ideal for existing homes due to their compact design because excavating a pit, and hoistway are not required. Air pressure above and beneath the elevator cab are the key to transporting.

The reliability and safety of these vacuum elevators are unsurpassed due to the physics behind the design; it is virtually impossible to get stuck between floors, or freefall.



### Why choose a Pneumatic Vacuum Elevator? Features and Benefits for your House, condo or Boat

- **Be On The Cutting Edge:** Revolutionary vacuum technology now available for residential elevators
- **Sleek and Compact Design:** 37inch diameter that can be placed virtually anywhere with a 360 degree panoramic view
- **Flexibility and Speed:** 30 feet/min, available in 2 and 3 stops, up to 35 feet, installation is less than a week and can be relocated if needed
- **Safe:** Due to the advanced safety features, the vacuum elevator cannot fall. Also, during a power outage, the vacuum elevator will automatically return to the bottom floor
- **Energy Efficient:** Zero energy consumption during descent, low when ascending with 220 volt turbines
- **Exceptional Price and Value:**
  - No costly excavation, hatch or machine room to install .
  - Tax benefits
  - Increases the resale value to your existing home and can be moved to your new one
  - Virtually no maintenance cost nor any lubrication required

## How Vacuum Elevators Work

### Sophisticated Vacuum Elevators For Your House, Condo or Boat.

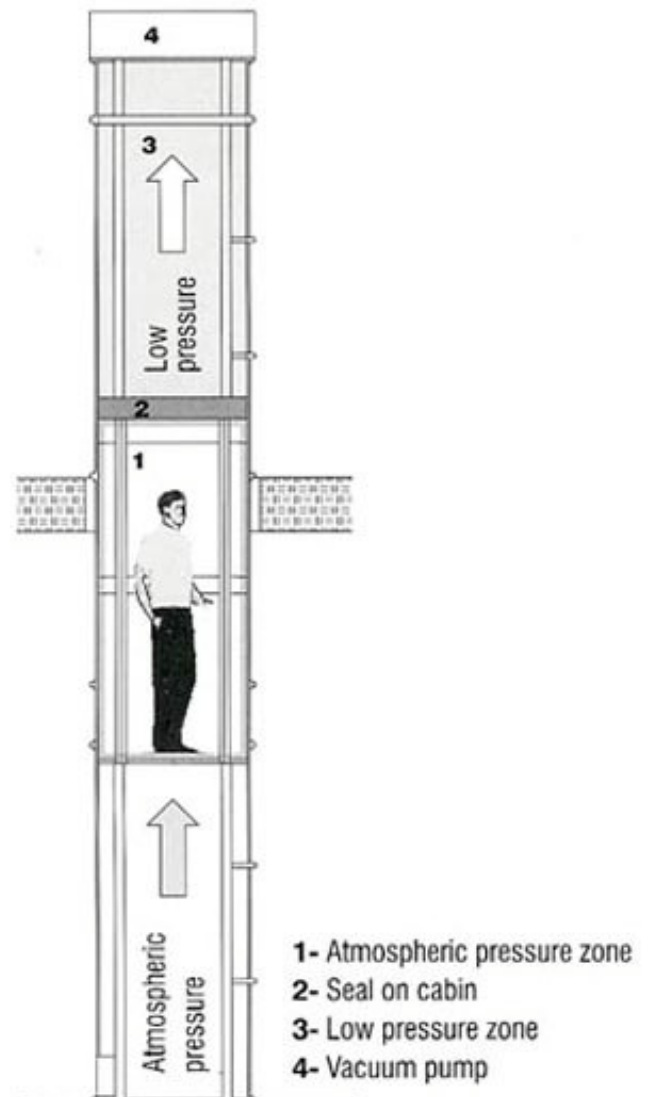
#### Operation:

When the piston gear depressurizes the area inside the cylinder above the vacuum elevator cab, the cab is then lifted by higher atmospheric pressure below the cab. The inside of the vacuum elevator cab always remains at the atmospheric pressure. As air pressure is lowered above the cab, the cab is lifted.

A valve regulating inflow of air in the upper part of the shaft controls the pneumatic depression and enables descent. When the valve lets in air (at atmospheric pressure) into the low pressure chamber, the vacuum elevator cab will safely lower to the desired level. This valve also controls the speed of the cab.

The lower part of the shaft is open to ensure free entrance of air at atmospheric pressure. The air suction process simply consists of a suction device that sets the difference in pressures between the atmospheric and that inside the shaft limited by the piston, the side walls and the upper end.

The vacuum elevator cab has locking devices included in the interior of the shaft to stop the cab at the upper and lower limits of travel. For better safety conditions, a braking system located on the roof of the car activates in case the tube above the vacuum elevator cab has a sudden return to atmospheric pressure. The braking system is made up of either a diaphragm or piston.



## Vacuum Elevator Safety Controls

### Safety Controls:

The upper chamber has a pressure switch which will detect instant depressurization of the upper chamber. If this unlikely incident were to occur, the elevator will brake within 2 inches on free fall.

If a sudden power outage occurs while the vacuum elevator is being used, the elevator cab automatically descends to ground floor at slower than normal speed because there is no air being induced into the upper chamber (as is the case when power is on).

Each vacuum elevator comes with an alarm system., emergency ventilation, and door safety switches. The doors can not be opened while the vacuum elevator is in operation.

Each cab comes with telephone base mount and wiring for the cab to the vacuum elevator controller located in the pump box above the cylinder.

## Vacuum Elevator Technical Information

### Specifications:

1. Total Weight - 660 lbs (for 10' lifting height - 2 stops), 990 lbs. (for 20' lifting height - 3 stops)
2. Lift Capacity - 450 lbs.
3. Velocity - 30' per minute.
4. Halogen Lighting - inside cab
5. Electrical Circuits - 24 volt.
6. Illuminated pushbutton controls inside cab and at each landing just outside of door .
7. Doors - may open from same side on each floor OR on opposite sides of the polycarbonate cylinder.
8. Installed as a self supporting unit - floor bears all.
9. Base of vacuum elevator requires a smooth and level surface capable of bearing unit weight plus capacity.
10. Safety pressure switch - on free fall elevator brakes within 2 inches; on electricity cut-off the vacuum elevator automatically descends to ground floor; alarm system in cabin; emergency ventilation, door safety.
11. Base mount for telephone inside cab, telephone wiring from base mount to elevator controller box provided. Telephone and telephone wiring to controller provided by others.
12. Alarm system- Located inside cabin with emergency ventilation



## The Essential Parts of the Vacuum Elevator:

**Hoistway Cylinder** - A clear, self-supporting tube built out of specially designed sections. The walls of this tube are made of curved sheets of polycarbonate. The tube is made by modular lengths that fit together easily. The doors are made of the same material. They are airtight and provided with safety magnetic locks. The roof of the tube, made of steel, ensures air tight core and has suction valves and air inlets.

**The Vacuum Elevator Car** - Made of transparent polycarbonate and is mounted on a steel frame. On the cab roof, there is an air tight joint that ensures normal pressure and air conditions for the passenger. An anchoring system activates when reaching the desired floor, thereby assuring the passenger an exact stop with the cab locked at that level mechanically.

**The Suction Assembly** - Can be built and placed in different ways, either on the same tube that holds the cab or separately at distances up to 30ft. from cylinder. In all cases, the motor is monophase.

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## Vacuum Elevator Dimensions:

- a) External Cylinder Diameter: 37" (3feet, 1 inch)
- b) Internal Cabin Diameter: 32" (2feet, 8 inches)
- c) Internal Cabin Height: 77" (6 feet, 5 inches)
- d) Door Height : 75" (6 feet, 3 inches)
- e) Door Width: 21" (1 foot, 9inches)
- f) Pump box: (top mount) 11" H x 37" diameter (fits directly on top of cylinder)
- g) Remote Pump Box System: (attic or machine room mount) 29" x 18" x 21" mounted directly onto 37" x 11" pump box. Note: a 39" opening or larger opening is required to install in attic. Also a 36" attic height from joist to joist is required in order to have enough room to install properly. Pump box will be connected to elevator with 2 - 4" W PVC pipes up to 25' long.



## Your Part

### Requirements for Installation of the Vacuum Elevator:

95" (7' 11") from floor-to-ceiling (or greater), 92" (7' 8" if dropping cylinder into basement floor)

39" diameter opening between floors

107" (8' 11") for top mount pump OR 95" (7' 11") for attic mount pump (3ft. overhead required in attic)

Note: As Alternative a separate machine room can be built in lieu of attic mount pump.

39" (3' 3") diameter opening between floors unless serving balcony or loft on upper landings.

Note: Floor joists will be visible when traveling up and down the elevator. It is recommended that your contractor provide a finished look between floors OR you can purchase our optional stainless steel or powder painted rings and collars to cover any visible areas between the ceiling of the downstairs and the floor on the upstairs.

### Pre-delivery & Home Access Requirements:

a) Each entranceway from outside the home directly to the point of installation on main level only must be at least 39" wide. (Typical door with frame is 35.5"W)

Note: Door or window frame may need to be removed and reattached to transport elevator in home unless has double doors or larger on main level to point of install.

b) Ceiling removal may be necessary to install attic pump box for ceilings less than 8' 11".

c) Openings between floors must be complete before delivery.

d) 220V power source capable of 30amps must be within 5' of elevator tube. We recommend choosing an area on the ceiling or high on walls of the uppermost landing. A junction box will work as long as you can provide a licensed electrician at the time of hook up. As an alternative, you can provide 220V - 30 amp receptacle (same as clothes dryer outlet) as long as it is approved for use with out elevator by your local building inspector.

e) Decide which side you would like your doors to open, and clearance distance for each floor.  
Click Here for Drawings

f) Storage space may be required for (3 or 4) - 4' square pallets until installers arrive after delivery of elevator.

### Warranty, Cleaning and Maintenance

**Parts Warranty** - One year for any parts determined defective.

**Labour Warranty** - Comprehensive, 1 year

**Cleaning** - The exterior surface of the cylinder will attract dust over time. It is recommended that the exterior surface be "wiped down" with a damp scratch-free cloth using an anti-static solution. We strongly recommend using the cleaning products by a company called US Plastics™. The US Plastics™ products called Novus 1 and Novus 2 work much better on Polycarbonate, lexan, or Plexiglas products than anything else we have tried and it is non-toxic. Visit their web site at [www.usplastic.com](http://www.usplastic.com) To order on-line. Cleaning is recommended every thirty days or as needed (No Lubrication required as with conventional elevators). **DO NOT USE WINDEX OR ANYTHING ELSE CONTAINING AMMONIA TO CLEAN THIS ELEVATOR.**

**Pressure Liner** (located above the car) - eventually will need to be replaced every 15,000 trips .This is not a safety issue, however, it will need to be done periodically in order to maintain an acceptable speed. It is recommended that liner replacement be preformed by an authorized PVE dealer to ensure the job is done right.

## FAQ

### Frequently Asked Questions:

**Q: Can these vacuum elevators accommodate a wheel chair?**

A: No, the cab is designed only for up to 2 people standing with a weight capacity of 450 lbs. It is possible to attach a fold-up chair for convenience. Wheelchair accessible models are currently being explored.

**Q: Can the vacuum elevator fit through the doors of my house when being installed?**

A: The largest piece of cylinder delivered is 37" in diameter by 92" long. We must be able to get this inside the house in one piece. Single doors are normally 35.5" wide, with a rough opening of approximately 38". However, our installers can remove door frames or window frames at an additional cost if necessary. Please inform us of this situation if you know this to be true.

**Q: Can I see a live demo ?**

A: Yes. For inquiries please contact Daytona Elevator to set up an appointment.

**Q: How many vacuum elevators have been installed ?**

A: Approximately 300 have been installed worldwide. The first installations were in 1999, primarily in Argentina.

**Q: Can you customize the vacuum elevator to use a brass colored framing?**

A: Not at the present time, they are trying to standardize in order to bring the cost down.

**Q: What Color is the vacuum elevator available in?**

A: The standard color for the metal portion is grey, or as an option you can upgrade to a light grey or white color. The polycarbonate panels (Plexiglas) are all tinted dark except for the doors, which are clear.

**Q: How much do vacuum elevators cost?**

A: Cost ranges depending on the location, and specific home or boat requirements, please contact us directly, or fill out a [price request form](#) and email it to [info@daytonaelevator.com](mailto:info@daytonaelevator.com) in order that we may provide you with an estimate specific to your needs. Some additional costs will be associated with preparing the home for the elevator such as 220-volt power and cutting out openings between floors. Cost varies depending on the number of levels served, height of the tube, and shipping charges. Cost for the retrofit applications are generally less than traditional elevators because extensive modifications to the home are not needed. No hoist way or pit is necessary either.

**Q: What maintenance does the vacuum elevator require ?**

A: After about 15,000 elevator trips the liner, which helps provide an airtight chamber above the unit must be replaced. Cost of the liner is approximately \$200.00 plus labor. The vacuum pumps (5) are the only other parts that may need replacement as the unit ages. Under normal operating conditions, they should last many years. It is also recommended that the exterior of the cylinder be "wiped down" with an anti-static solution approximately once a month, or as needed.

WINDEX OR ANY OTHER AMMONIA PRODUCTS ARE NOT RECOMMENDED. We recommend you visit [www.usplastic.com](http://www.usplastic.com) for an excellent product called Novus 1 and Novus 2, designed for plastic cleaning

**Q: How loud is the vacuum elevator ?**

A: The vacuum elevator is 87 decibels, for a noise comparison chart please click on this link:

<http://www.lhh.org/noise/decibel.htm>