

ASME A17.1-2013 Section 5.3 Private Residence Elevators  
Synopsis

Introduction

- This is a synopsis of the requirements most noteworthy to installers – this is not a full list of all ASME requirements.
- Codes that do not apply to Waupaca designs are not included.
- Local codes and requirements may differ.
- Final interpretation and acceptance is subject to inspection by a code enforcing authority.

5.3.1 Private Residence Electric Elevators

5.3.1.1 Hoistway

- Solid construction in conformance with local building codes.

5.3.1.2 Pit

- Guarded by the hoistway.
- Kept clean.

5.3.1.3 Car Top Clearance

- 6 inches minimum.
- 1 additional inch of every 3.3 FPM over 30 FPM (9 inches for 40 FPM).
- Refuge space with car top equipment (overhead machine?).

5.3.1.4 Horizontal Clearance

- 3/4 inch minimum between car and hoistway.
- 1/2 inch minimum, 1 1/2 inch maximum between car and landing sill.

5.3.1.5 Pipes in Hoistway

- Pipes which present a danger when discharged are prohibited.
- (Most inspectors will prohibit any pipes that are not part of the elevator).

5.3.1.6 Guarding of Cables

- Cable passing through a floor or stairway, outside of the hoistway, must be guarded to reject a 1/2 inch ball.
- A means of inspection must be provided.
- Floor openings can be no larger than required by the equipment.

5.3.1.7 Hoistway Doors

- Swing or sliding doors are permitted.
- Doors must be fire rated to conform to the local building code.
- Doors must be strong enough to withstand 150 pounds/force
- Maximum of 3 inches between the inside face of the door and the landing sill edge.
- Maximum of 5 inches between the inside face of the door and the car gate.
- No door hardware can project beyond the sill except for the interlock.
- Door must be equipped with a locking device.

- Interlocks must prevent movement of the car unless the door is closed and locked or closed only and locked within 6 inches of the landing.
- Interlocks must be listed by a certifying organization.
- It must be possible to open doors without reaching behind a car gate or wall.
- Sliding doors must be guarded against coming off of their track.
- Emergency access must be provided.
  - Must not be accessible with common tools.
  - Access must not be located higher than 83 inches.

#### 5.3.1.8 Car Enclosure

- Must be enclosed on all sides except for entrances.
- Must be secured to the platform.
- Must remain intact upon engagement of the safeties or buffer.
- Glass, plastic or acrylic panels must meet the applicable ANSI Z97.1 standards.
- All entrances must have a car gate.
- Car gates must be monitored by an electric contact
  - Must be positively opened by a lever
  - Maintained open by gravity or a spring
  - Designed and located to not be accessible from inside the car
  - Must prevent the car from moving unless the gate is within 2 inches of closed.
- A light shall be provided activated by a switch or automatic means.

#### 5.3.1.9 Car Frame and Platform

- A metal car frame (sling) with a safety factor of 5 times the rated load shall be provided.
- Platforms shall be metal or laminated wood.
- If the car is provided with 2 way leveling, toe guards shall be provided (hydraulic units).

#### 5.3.1.10 Capacity, Loading, Speed and Rise

- Maximum net inside platform area is 15 square feet.
- For platforms up to and including 12 square feet, the capacity shall be a minimum of 40 pounds per square foot or 350 pounds, whichever is greater.
- For platforms over 12 square feet, the capacity shall be a minimum of 62.5 pounds per square foot.
- Rated speed shall not exceed 40 feet per minute.
- The rise shall not exceed 50 feet.

#### 5.3.1.11 Safeties

- Car safeties are required.

#### 5.3.1.12 Suspension Means

- Not less than two steel ropes.
- 1/4 inch minimum diameter for 500 pound units.
- 3/8 inch minimum diameter for units over 500 pounds capacity.
- Must have at least one spare rope turn on winding drums when the car is in the pit (Waupaca Elevator recommends at least 2).
- Rope ends must be clamped and secured from interference with equipment.

#### 5.3.1.13 Counterweights

- Not applicable to Waupaca units.

#### 5.3.1.14 Buffers

- Buffers are only required if there is occupiable space below the car.

#### 5.3.1.15 Guide Rail Fastenings

- Mounting bolts shall be graded fasteners (Waupaca Elevator recommends grade 5).

#### 5.3.1.16 Driving Machines, Sheaves and Their Supports

- Overhead driving machines and sheaves shall not be fastened to the underside of supporting beams.
- Residence elevators shall be arranged for manual operation in case of power failure.
  - Instructions shall be posted near the manual operating device.

#### 5.3.1.17 Terminal Stopping Devices

- Upper and lower terminal stopping devices operated by the car shall be provided
- Upper and lower final terminal stopping devices operated by the car shall stop the car after it passes the terminal stopping device and before an obstruction is struck.
- A slack rope switch may be used as a lower final terminal stopping device.
- Winding drum units require a machine operated terminal stopping device unless 2 top finals, one bottom final and a slack rope switch are provided.
- Final terminal stopping devices must prevent movement in both directions.

#### 5.3.1.18 Operating Devices

- Operation of the car shall be by continuous-pressure or automatic means.
- Exterior entrances shall be operated by a key switch.
- An emergency stop switch shall be provided in the car.
- Winding drum units require a slack rope device which must be reset manually.

#### 5.3.1.19 Emergency Signaling Devices

- A telephone shall be installed in the car.
- An emergency signaling device, audible outside the hoistway, shall be provided.

#### 5.3.1.20 Marking Plates

- A capacity plate indicating rated load shall be inside the car.
- A data plate shall be installed in the machinery area. The installer must complete the "date installed".

### 5.3.2 Private Residence Hydraulic Elevators

#### 5.3.2.1 General Requirements

- Hoistway construction must meet the same basic standards as electric elevators.

#### 5.3.2.2 Driving Machines

- Not less than two steel ropes.
- Means shall be provided to prevent the ropes from leaving the sheave grooves.
- A slack rope device which must be reset manually is required.
- Hydraulic piping must be of listed / certified grade. (Schedule 80 recommended by Waupaca Elevator)
- Accessible piping outside of the machine room or hoistway must be marked "Elevator Hydraulic Line".
- Flexible hose shall not be installed within the hoistway or project through any walls.
- The pump relief valve shall be adjusted to prevent raising the pressure more than 50% above the working pressure at maximum capacity.
- The installer shall mark the working pressure on the pump data tag.

#### 5.3.2.3 Terminal Stopping Devices

- Upper and lower terminal stopping devices operated by the car shall be provided.

#### 5.3.2.4 Anticreep Leveling Device

- Each elevator shall be provided with an anticreep leveling device which will maintain the car within 1 inch of the landing.