

Indian Standards

**IS 17900: LIFTS FOR THE TRANSPORT OF PERSONS AND GOODS PART 7: LIFTS FOR
SPECIAL APPLICATIONS SECTION 3: HOME LIFTS**

आईएस 17900: व्यक्तियों और वस्तुओं के परिवहन के लिए लिफ्ट
भाग 7: विशेष अनुप्रयोगों के लिए लिफ्ट अनुभाग 3: घरेलू लिफ्टें

Lifts, Escalators and Moving Walks Sectional Committee, ETD 25

FOREWORD

This draft Indian Standard (Part 7 Section 3) will be adopted by the Bureau of Indian Standards, after the draft finalized by the Lifts, Escalators and Moving Walks Sectional Committee will be approved by the Electrotechnical Division Council.

This Indian Standard is a part of series of Indian Standards on ‘Lifts for the transport of persons and goods. Other parts of this series of standards cover various requirements like specifications for planning and selection, guide for inspection and maintenance of lifts, lifts for special applications, dumbwaiters etc. Parts 1, 2 and 6 of this series of standards are being published as Indian Standards and other parts of this series are under development.

This standard deals with lifts specially designed and installed in or at a private home as a means of access for the residents of the home to the different levels, provided the lifts are so installed and operated that they are not accessible to the public or to other occupants of the building. In the case of home lifts, visitors will have limited access to the lifts in exceptional circumstances, only under the supervision of the residents of the private home. The residents of the private homes shall ensure that access to the home lift is protected from unauthorized use.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

This Draft Indian standard deals with lifts specially designed and installed in or at a private home as a means of access for the residents of the home to the different levels, provided the lifts are so installed and operated that they are not accessible to the public or to other occupants of the building. In the case of home lifts, visitors will have limited access to the lifts in exceptional circumstances, only under the supervision of the residents of the private home. The residents of the private homes shall ensure that access to the home lift is protected from unauthorized use.

The lifts shall be fully compliant with IS 17900-1 and IS 17900-2; however, certain exemptions as detailed in this standard can be granted. Consequently, home lifts shall not be accessible to the public unless they fully comply with both IS 17900-1 & IS 17900-2 as well as other statutory requirements.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS 17900-1
IS 17900-2
IS 17900-5
IS 17900-6

3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 17900: Part 1, IS 17900: Part 2 shall apply.

4 SPECIFICATIONS

4.1 Capacity — The maximum inside net platform area shall not exceed 1.45 sq.m. Deviating clause no. **5.4.2.1** of IS 17900 Part 1, the minimum rated load shall be not less than the following:

For net platform areas up to and including 1.15 sq.m, the rated load shall be not less than 2.00 kN/sq.m or 160 kg whichever is greater.

For net platform areas greater than 1.15 sq.m, the rated load shall be not less than 3.00 kN/sq.m.

4.2 Speed —The rated speed shall not exceed 0.20 m/s.

4.3 Rise—The rise shall not exceed 12 m

4.4 Stops—The number of stops shall not exceed 5.

5 CONSTRUCTION, INSTALLATION, PROTECTION, OPERATION OF HOME LIFTS

The Home Lifts shall comply with IS 17900-1 & IS 17900-2 except as noted hereunder, & may be inspected as per IS 17900-5, & maintained as per IS 17900-6.

5.1 Well Enclosure

The lift well shall be fully enclosed if it is adjacent to areas permitting passage of people such as stairwells, floors, and work spaces outside of the well; however, any exterior windows protected by grill work shall be permitted.

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Deviating from clause no. **5.2.5.2.2.1** of IS 17900-1 the totally enclosed well enclosure is permitted to be omitted for the lift located in open area having enclosed stairways by a solid or openwork enclosure which shall reject a ball 13 mm in diameter; or other open spaces under following conditions:

- a) The lift shall be provided with a safety device having safety contacts which will cause the lift moving in down direction to stop within 75 mm if it encounters obstruction to the lower part of its platform anywhere, generating a reaction force of 18 N or more. The switches of the contacts shall need manual intervention to return to normal position.
- b) The entrances in the solid enclosures on upper floors are protected by landing doors conforming to **5.6**,
- c) Car gate shall be locked except when the car is in the landing zone.

(a) Deviating from clause no. **5.2.5.2.2.1** of IS 17900-1 the totally enclosed well enclosure is permitted to be omitted at the lowest served floor provided:

1) The lowest floor served is not garage.

2) The lift shall be provided with a safety device having safety contact which will cause the lift moving in down direction to stop within 75 mm, if it encounters obstruction to the lower part of its platform anywhere, generating a reaction force of 18 N or more. The switches of the contacts shall need manual intervention to return to normal position.

(b) Deviating from clause no. **5.2.5.2.2.1** of IS 17900-1 the totally enclosed well enclosure is permitted to be omitted at the upper landing provided:

1) The elevator shall operate with continuous pressure on the button,

2) The travel of the lift is only for one floor,

3) The floor opening at the upper landing is protected by an enclosure and gate at least 1000 mm high with openings that will reject a ball 25 mm in diameter and the gate is provided with a combination mechanical lock and electric contact.

5.2 Pit

5.2.1 Guarding of Pit — A pit provided in other than a fully enclosed lift well shall be guarded by a solid enclosure at least 2000 mm high. The entrance shall be provided with a door conforming to clause no. **5.6**. When the enclosure does not extend from floor to ceiling, only solid car doors or gates rejecting a 12 mm diameter ball shall be used.

5.2.2 Pit Maintenance — where a pit is provided, it shall be kept clean and free from dirt and rubbish and the accumulation of water. It shall not be used for storage purposes.

5.2.3 Protection of Spaces Below Pit — Protection of spaces below pit not extending to the lowest level of the structure shall conform to the applicable requirements of clause no. **5.2.5.4** of IS 17900-1 or the space below the pit shall be made inaccessible to persons with a fence / wall.

5.3 Top Car Clearance

The top clearance in highest position of the car as per clause no. **5.2.5.6.1** of IS 17900 Part 1, from the highest point of the car to overhead structure shall not be less than 225 mm.

Where the machine or its controls are located on the top of the car, a refuge space on top of the car enclosure shall be provided in conformance with clause no. **5.2.5.7** of IS 17900 Part 1.

5.4 Location and Guarding of Counterweight

5.4.1 Location of Counterweights — The counterweight, if provided, shall conform to clause no. **5.4.11** of IS 17900-1 and its location shall be in the same well as the car.

5.4.2 Counterweight Pit Guards

(a) Counterweight guards shall be installed in the pit on all open sides of the counterweight path.

(b) The design, construction, and location of the guards shall conform to clause no. **5.2.5.5.1** of IS 17900-1.

5.4.3 Counterweight Coming Down to Floors or Passing Floors or Stairs — Where the counterweight runway comes down to a floor, or passes floors or stairs, it shall be guarded to a height of at least 2000 mm above the floor or the stair treads by a solid or openwork enclosure. Openwork enclosures shall reject a ball 13 mm in diameter.

5.5 Horizontal Car Clearances

5.5.1 Between Car and Well Enclosures — There shall be a clearance of not less than 20 mm between the car and the lift well.

5.5.2 Between Car and Counterweight — There shall be a clearance of not less than 20 mm between the car and its counterweight.

5.5.3 Between Car sill and Landing Sill — The clearance between the car platform sill and the landing sill shall be not more than 35 mm.

5.6 Landing Doors

5.6.1 Where a lift well enclosure is required, landing openings shall be protected by landing doors complying to clause no. **5.3** of IS 17900 Part 1. Deviating from **5.3.1.2** of IS 17900 Part1, landing doors of open work construction and collapsible gates are permitted for protecting the landing openings, provided the gates in fully extended position reject 75 mm ball in diameter.

5.6.2 Collapsible Gates Shall Not Be Power Driven.

5.7 Car Doors

5.7.1 The car door(s) shall be provided and shall comply to clause no. **5.3** of IS 17900 Part 1. Deviating from clause no. **5.3.1.2** of IS 17900 Part1, car doors of open work construction and collapsible gates are permitted for protecting the car openings, provided the gates in fully extended position reject 75 mm ball in diameter.

5.7.2 Collapsible Gates Shall Not Be Power Driven.

5.7.3 Where the lift well enclosure is not continuous for the full travel of the car, the car door or gate shall be provided with a mechanical lock complying with clause no. **5.3.9.2** of IS 17900 Part 1 and clause no. of **5.2** of IS 17900 Part 2, which will lock the car door or gate if the car is more than 150 mm away from a landing.

5.8 Overhead Machinery Beams and Supports

All machines, pulleys, etc.; shall be properly supported and fixed to prevent any unit from becoming loose or displaced. Supporting beams shall be of steel or reinforced concrete. The overhead beams and their supports shall be designed as follows:

- a) The total load on overhead beams shall be assumed as equal to all equipment resting on the beams plus twice the maximum load suspended from the beams.
- b) The factor of safety for all overhead beams and supports based on the ultimate strength of the material and the load in accordance with (i) shall be not less than 5 for steel and 7 for RCC.
- c) The deflection of the overhead beams under the maximum static load andcalculated in accordance with (i) shall not exceed 1/1,500 of the span.
- d) Wood shall not be used for structural framework of any lift.

5.9 Cars

5.9.1 Enclosures Required — Except at the entrance, cars shall be fully enclosed on the sides and top. Deviating clause no. **5.4.3.1** of IS 17900 Part 1, the enclosure shall be solid or of openwork material that will reject a ball 13 mm in diameter.

5.9.2 Securing Enclosure — The enclosure shall be securely fastened to the car platform and so supported that it cannot loosen or become displaced in regular service on application of the car safety, or on engagement of the buffer.

5.9.3 Car Top Mounted Machine or Controller

Where the machine or its enclosed controls are located on top of the car:

- a) They shall be protected by a solid noncombustible enclosure.
- b) the car roof shall be designed and installed in conformance with clause no. **5.4.7** of IS 17900 Part1
- c) Equipment on the top of the car shall be provided in conformance with clause no. **5.4.8** of IS 17900 Part1.
- d) Access shall be provided to the machine or controls for maintenance.
- e) Access panels located in the car shall be provided with an electric contact and lock. The access panel shall be kept closed and locked. The electric contact shall be designed to prevent operation of the machine when the access panel is open.

5.10 Car and Counterweight Safeties.

Car and counterweight safeties shall conform to clause no. clause no. **5.6.2.1** of IS 17900-1, & clause no. **5.3** of IS 17900-2.

5.11 Overspeed Governors

Overspeed Governors shall conform to clause no. **5.6.2.2.1** of IS 17900-1, & clause no. **5.4** of IS 17900-2.

The governor shall operate the safety at a maximum tripping speed of 0.38 m/s

5.12 Suspension

5.12.1 Lift car, counterweight shall be suspended by:

- a) Steel Wire Ropes as per clause no. **5.5** of IS 17900-1.
Deviating from clause no. **5.5.1.2 a)** of IS 17900-1 the minimum diameter of the ropes shall be 6 mm.
Deviating from clause no. **5.5.1.3** of IS 17900-1 the minimum number of ropes shall be 3, or
- b) Coated Steel Belts as per clause no. **5.5** of IS 17900-1.

5.12.3 Guarding of Suspension Means — Suspension means passing through a floor or outside a stairway shall be properly guarded. Means for inspection shall be provided. The floor openings shall not be larger than is necessary to clear the suspension means.

5.12.4 D/d Ratio — Deviating clause no. **5.5.2.1** of IS 17900 Part 1, the ratio between the pitch diameter of sheaves, pulleys, or drums, and the diameter of steel ropes shall be at least 25, regardless of the number of strands of the wire ropes.

5.13 Buffers

Buffers shall be permitted to be omitted when the striking speed is 0.25 m/s or less; and provided:

- 1) the space below the car and counterweight consists of a non-occupiable area, and
- 2) the floor below the car and counterweight has sufficient strength to withstand the impact of the car with rated load and counterweight descending at 125% of rated speed or governor tripping speed whichever is higher, without failure.