INTERNATIONAL STANDARD

ISO 4190-1

Fourth edition
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Lift (Elevator) installation —

Part 1: Class I, II, III and VI lifts

Installation d'ascenseurs —

Partie 1: Ascenseurs des classes I, II, III et VI

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4190-1 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators and moving walks.*

This fourth edition cancels and replaces the third edition (ISO 4190-1:1999).

This edition reflects the requirements of the global marketplace and includes

a) harmonization, where possible, of Japanese dimensions of car and door sizes, loads and speeds,

b) relocation of the 450 kg lift from Figure 8 to Figure 5,

c) relocation of the 320 kg lift from Figure 4 to Figure 9,

d) introduction of 1 350 kg lift in Figures 6 and 7, and

e) introduction of speeds 0,75 m/s, 1,5 m/s and 1,75 m/s.

NOTE 1 In certain instances, harmonization is not possible and these sizes are shown in Figures 9, 10 a), 10 b), and 10 c).

NOTE 2 National regulations can demand greater dimensions in some instances.

ISO 4190 consists of the following parts, under the general title *Lift (Elevator) installation*:

— *Part 1: Classes I, II, III and VI lifts*

— *Part 2: Class IV lifts*[1)]

— *Part 3: Service lifts class V*[1)]

— *Part 5: Control devices, signals and additional fittings*

— *Part 6: Passenger lifts to be installed in residential buildings — Planning and selection*[1)]

1) It is intended that, upon revision, the introductory element of the title of this part will be harmonized with part 1.

Introduction

This part of ISO 4190 reflects the requirements of the global marketplace and includes:

— the special needs, access and full manoeuvrability of people with physical disabilities;

— appropriate use of stretchers, beds and ancillary medical equipment in hospitals and nursing homes;

— a range of intensive-use lifts[2)] typically used for high-rise buildings for rated speeds of 2,5 m/s to 6,0 m/s; the rated speeds have been mainly based upon the Renard series for speeds of up to 2,5 m/s;

— improved utilization of building space by reducing well (hoistway) sizes where practicable.

2) Hereinafter, the term “lift” is used instead of the term “elevator”.

Lift (Elevator) installation —

Part 1:
Class I, II, III and VI lifts

1 Scope

This part of ISO 4190 specifies the necessary dimensions to permit the installation of passenger lifts of class I, II, III and VI.

The dimensions given reflect the requirements for the apparatus. This part of ISO 4190 is applicable to all new lift installations, irrespective of drive systems, including a car with one entrance, to be installed in a new building. However, for arrangements with counterweight at the side, a through-entrance configuration is possible. Where relevant, this part of ISO 4190 is also applicable to an installation in an existing building.

This part of ISO 4190 is not applicable to lifts, the speed of which is higher than 6,0 m/s.

NOTE It is the responsibility of the user to consult the manufacturer for such installations.

2 Terms and definitions

For the purposes of this part of ISO 4190, the following terms and definitions apply.

2.1 General

2.1.1
car
part of the lift which carries the passenger and/or other loads

2.1.2
head room
part of the well situated above the highest landing served by the car

2.1.3
landing
area providing access to the car at each level of use

2.1.4
machine room
room in which the machine or machines and/or the associated equipment are placed

2.1.5
lift GB
elevator US
permanent lifting appliance serving defined landing levels, comprising a car, the dimensions and means of construction of which, clearly permit the access of passengers

2.1.6
pit
part of the well situated below the lowest landing served by the car

2.1.7
through entrance car
car with doors at the front and rear which may or may not be able to open at the same time

2.1.8
well
hoistway
space in which the car, the counterweight(s) and hydraulic jack(s) move

NOTE This space is usually bounded by the bottom of the pit, the walls and the ceiling of the well.

2.2 Lift classes

2.2.1
class I
lift designed for the transport of persons

2.2.2
class II
lift designed mainly for the transport of persons, but in which goods may be carried

NOTE This differs from a class I, III and VI lift, essentially, by the inner fittings of the car.

2.2.3
class III
lift designed for health-care purposes, including hospitals and nursing homes

2.2.4
class IV
lift designed mainly for the transport of goods (freight) which are generally accompanied by persons

2.2.5
class V
service lift GB
dumbwaiter US

2.2.6
class VI
lift especially designed to suit buildings with intensive traffic, i.e. lifts with speeds of 2,5 m/s and above

2.3 Dimensions

See Figure 1.

2.3.1
car width
b_1
horizontal distance between the inner surface of the car walls measured parallel to the front entrance side

NOTE This dimension is measured as indicated in Figure 1, 1 m above the floor. In certain regions, e.g. Asia-Pacific and North American regions, the car width, b_1, is measured between the finished panels, whereas in Europe, the car width is measured excluding decorative or protective panels.

2.3.2
car depth
d_1
horizontal distance between the internal walls of the car, measured perpendicular to the front entrance side

NOTE This dimension is measured as indicated in Figure 1, 1 m above the floor. In certain regions, e.g. Asia-Pacific and North American regions, the car depth, d_1, is measured between the finished panels, whereas in Europe, the car depth is measured excluding decorative or protective panels.

2.3.3
car height
h_4
vertical inner distance between the entrance threshold and the constructional roof of the car.

NOTE 1 Light fittings and false ceilings should be accommodated within this dimension (see Figure 1).

NOTE 2 In certain regions, e.g. Asia-Pacific and North American regions, the car height, h_4, is measured between the floor and the underside of the false ceiling, whereas in Europe, the car height is measured to the underside of the structural roof.

2.3.4
entrance width into car
b_2
clear width of the entrance, measured when the landing and car doors are fully open

2.3.5
entrance height
h_3
clear height of the entrance, measured when the landing doors and car doors are fully open

2.3.6
well width GB
hoistway width US
b_3
horizontal distance between the inner surface of the well walls, measured parallel to the car width

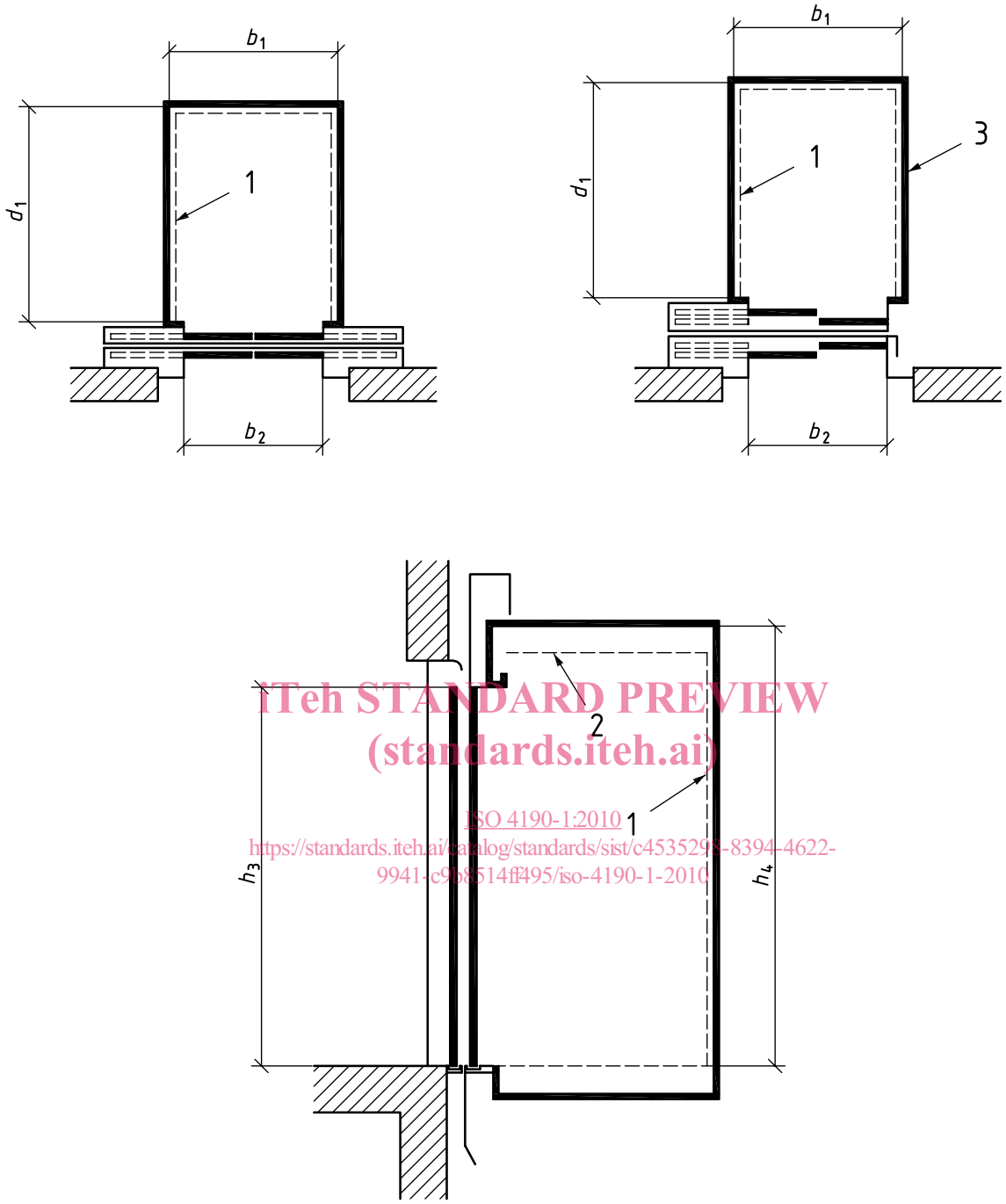
2.3.7
well depth GB
hoistway depth US
d_2
horizontal dimension between the inner surface of the well walls, perpendicular to the width

2.3.8
pit depth
d_3
vertical distance between the finished floor of the lowest landing served and the bottom of the well

2.3.9
headroom height
h_1
vertical distance between the finished floor of the highest landing served and the ceiling of the well (not including any pulley over line of car)

2.3.10
machine room width
b_4
horizontal dimension between the inner surface of the walls, measured parallel to the car width

See Figure 3.



Key

1 decorative panels
2 false ceiling
3 car wall

b_1 car width
b_2 entrance width
d_1 car depth
h_3 entrance height
h_4 car height

Figure 1 — Car and entrance dimensions

2.3.11
machine room depth
d_4
horizontal dimension between the inner surface of the walls, perpendicular to the width

2.3.12
machine room height
h_2
smallest vertical distance between the finished floor and the room ceiling, satisfying both the requirements of the national building regulations and lift equipment

2.4 Other characteristics

2.4.1
rated speed
v_n
speed for which the lift has been built and at which it is designed to operate

2.4.2
rated load
load for which the lift has been built and under which it is designed to operate

2.4.3
group collective lift GB
group collective elevator US
group of electrically interconnected lifts for which landing controls are common

3 Lift characteristics

3.1 Renard series

The dimensions of the car are related to the loads which have been selected to be close to the Renard R10 series of preferred numbers.

The dimensions of the pit, headroom and machine room have been determined in relation to the speeds which, up to 2,5 m/s, are based on the R5 series of preferred numbers.

NOTE The Renard series is a series of preferred numbers adopted at the international level in 1946 (Budapest International Congress).

The Renard series is a geometrical progression and has a multiplier selected on exponents of 10.

For lifts, the multipliers are:

— car load: R10 = $\sqrt[10]{10} = 1{,}258\,9$

— car speed: R5 = $\sqrt[5]{10} = 1{,}584\,9$

The results are approximate, which give:

- Loads expressed in kilograms: 1 000 → 1 275 → 1 600; 1 000 → 800 → 630

- Speeds expressed in metres per second: 1,00 → 1,60 → 2,50; 1,00 → 0,63 → 0,40

3.2 Rated loads

These shall be, in kilograms:

— 450 - 630 - 800 – 1 000 - 1 275 – 1 350 - 1 600 - 1 800 - 2 000 - 2 500

NOTE 1 350 kg (3 000 lb) and 1 800 kg (4 000 lb) are not Renard numbers, but are popular sizes in the Asia-Pacific and North American regions.

3.3 Rated speeds

These shall be, in metres per second:

— 0,40 - 0,63 - 0,75 - 1,00 - 1,50 - 1,60 – 1,75 - 2,00 - 2,50 - 3,00 - 3,50 - 4,00 - 5,00 - 6,00

NOTE 0,75, 1,50, 1,75, 2,00, 3,00 and 5,00, are not Renard numbers, but are popular speeds in the Asia-Pacific and North American regions.

Speeds from 0,63 m/s to 6,00 m/s apply to electric lifts.

Speeds from 0,40 m/s to 1,00 m/s apply to hydraulic lifts.

3.4 Selection of class of lift

Any type of building may be equipped with lifts of different classes. The lifts are grouped in Figures 5 to 10 a), 10 b) and 10 c).

4 Dimensions

4.1 Inner dimensions of cars

4.1.1 Accessibility

It is recommended that in multi-storey buildings there be at least one lift accessible to transport persons in wheelchairs.

This lift shall meet all conditions required for this application, and shall be indicated by the sign:

Accessible for wheelchairs.

