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TC 59

INTERNATIONAL STANDARD ISO 3571/I

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Passenger lift installations — Part I : Residential buildings — Definitions, functional dimensions and modular co-ordination dimensions

Installations d'ascenseurs — Partie I : Bâtiments à usage d'habitation — Définitions, dimensions fonctionnelles et dimensions de coordination modulaire

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3571/I was developed by Technical Committee ISO/TC 59, *Building construction*, and was circulated to the member bodies in November 1974.

It has been approved by the member bodies of the following countries :

Austria	India	Poland
Belgium	Israel	Portugal
Brazil	Italy	Spain
Denmark	Japan	Sweden
Ethiopia	Netherlands	Switzerland
France	New Zealand	United Kingdom
Germany	Norway	Yugoslavia

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
Finland
Ireland
U.S.S.R.

This International Standard is the first of a series dealing with lift installations in various types of building.

During the preparation of subsequent parts, it was thought desirable

a) to incorporate in a single document specifications for all types of lift whatever their use,

b) to adopt, as far as modular co-ordination is concerned, the principle of modulation between boundary planes instead of interaxial modulation.

Consequently, the completion of the above-mentioned general standard, which will include the information contained in ISO 3571/I, may lead to the amendment or cancellation of this International Standard.

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Passenger lift installations – Part I : Residential buildings – Definitions, functional dimensions and modular co-ordination dimensions

1 SCOPE AND FIELD OF APPLICATION

This International Standard fixes the necessary dimensions to permit the accommodation of passenger lift installations in residential buildings, as well as the resultant modular co-ordination dimensions. It also fixes the dimensions of lift cars appropriate for these buildings. Table 4 summarizes the values presented in the three preceding tables.

2 DEFINITIONS

2.1 General

2.1.1 passenger lift : A fixed hoisting appliance, serving distinct levels, having a car dimensioned and arranged to permit the access of persons, and moving between vertical or substantially vertical guides.

2.1.2 car : The part of the passenger lift intended to accommodate the persons and goods to be transported.

2.1.3 well : The space in which the car and the counterweight (if any) move. This space is materially enclosed by the bottom of the pit, the approximately vertical walls and the ceiling.

2.1.4 landing : A flat space for access to the car at each level of use.

2.1.5 pit : That part of the well below the lowest landing served by the lift.

2.1.6 machine room : A room housing the lift machine and control gear.

2.2 Dimensions

2.2.1 *Inner dimensions of the car*

2.2.1.1 car width : The horizontal distance between the inner surfaces of the car walls measured parallel to the front entrance side.

2.2.1.2 car depth : The horizontal dimension perpendicular to the width.

These two dimensions (2.2.1.1 and 2.2.1.2) shall be measured 1 m above the floor without taking account of decorative or protective panels or handrails, as indicated in figure 1.

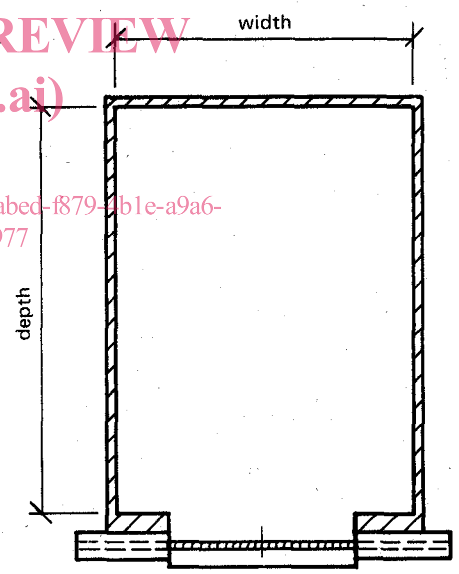


FIGURE 1

2.2.1.3 car height : The vertical inner distance between the entrance threshold and the constructional ceiling of the car.

Light fittings and false ceilings shall be accommodated within this dimension.

2.2.1.4 clear entrance into the car : The width and height of the entrance measured when the landing and car doors are fully open.

2.2.2 *Inner dimensions of the well*

2.2.2.1 well width : The horizontal distance between the inner surfaces of the well walls measured parallel to the car width.

2.2.2.2 well depth : The horizontal dimension perpendicular to the width.

NOTE — For the incorporation of lifts in the building, the well must have a certain free volume enclosed by a rectangular parallelepiped inscribed in the well, having vertical edges and having bases formed by the bottom of the pit and the ceiling of the well.

2.2.2.3 pit depth : The vertical distance between the finished floor of the lowest level served and the bottom of the well.

2.2.2.4 height above the highest level served : The vertical distance between the finished floor of the highest level served and the ceiling of the well.

2.2.3 *Inner dimensions of the machine room*

2.2.3.1 machine room width : The horizontal dimension measured parallel to the car width.

2.2.3.2 machine room depth : The horizontal dimension perpendicular to the width.

2.2.3.3 machine room height : The vertical distance between the part of the finished floor above the well and the room ceiling.

2.3 Other characteristics

2.3.1 rated speed : The speed at which the lift is designed to operate.

2.3.2 rated load : The maximum load at which the lift is designed to operate.

2.3.3 group collective lifts : In residential buildings, a group of lifts the controls of which are common and electrically interconnected, having the same rated speed, of which the rated load and car dimensions may be different, serving the same levels and having doors within sight of, and close to, each other at those levels.

3 DIMENSIONS (see figure 2)

3.1 Inner dimensions of cars

The three following types of car are adopted for passenger lift installations in residential buildings :

— car of small size for 400 kg rated load lift;

— car of medium size for 630 kg rated load lift, allowing normal wheel-chairs for handicapped persons and perambulators to be carried;

— car of large size for 1 000 kg rated lift, allowing stretchers with removable handles, coffins and furniture to be carried.

Pending the establishment of an internationally agreed ratio of load to surface area of lift car in national safety regulations, values of nominal load somewhat different from those given above and in the tables of this International Standard may be used in countries where the load/surface area ratio is given in the national standards.

The inner dimensions of cars shall have the values shown in table 1.

TABLE 1 — **Inner dimensions of cars**

Dimension		Rated load of lift, kg		
		400	630	1 000
Width, *A*	mm	1 100	1 100	1 100
Depth, *B*	mm	950	1 400	2 100
Height	mm	2 200	2 200	2 200
Clear entrance width of door, *E*	mm	800	800	800
Clear entrance height of door, *F*	mm	2 000	2 000	2 000

NOTE — The symbol shows the dimensions of a car allowing normal wheel-chairs for handicapped persons to be carried. A 400 kg lift should not be provided separately in a residential building, but only in combination with larger lifts accessible to wheel-chairs.

3.2 Inner dimensions of the well

3.2.1 *Individual lifts*

The dimensions of the well shall have the values shown in table 2.

3.2.2 *Multiple lifts side by side*

The inner dimensions of the common well shall be determined as follows :

— the total width of the common well shall be equal to the sum of the individual well widths plus the sum of the boundary widths between the wells, each boundary width being at least 200 mm;

— the depths of the constituent parts of the common well shall be the same as those laid down for the individual lifts;

— the pit depth shall be determined by reference to the fastest lift in the group;

— the minimum height above the highest level served shall be determined by reference to the fastest lift in the group.

3.3 Clear entrance dimensions of landing doors

The clear entrance dimensions of the landing doors shall have the values shown in table 1 for the dimensions of the car doors.

TABLE 2 – **Inner dimensions of wells**

Dimension[1]			Rated load of lift, kg		
			400	630	1 000
Width	*Minimum inner dimension, C*	mm	1 800[3]	1 800[3]	1 800[3]
	Modular dimension[2] between axes, *C'*		21M	21M	21M
Depth	Minimum inner dimension, *D*	mm	1 600	2 100[4]	2 600
	Modular dimension[2] between axes, *D'*		18M	24M	30M
Pit depth, P, according to rated speed V_n of the car	mm	$V_n \leqslant 0{,}63$ m/s	1 400	1 400	1 400
		$V_n \leqslant 1{,}00$ m/s	1 500	1 500	1 500
		$V_n \leqslant 1{,}60$ m/s	1 700	1 700	1 700
		$V_n \leqslant 2{,}50$ m/s	–	2 800	2 800
Minimum height, *Q*, above the highest level served[5]	mm	$V_n \leqslant 0{,}63$ m/s	3 700	3 700	3 700
		$V_n \leqslant 1{,}00$ m/s	3 800	3 800	3 800
		$V_n \leqslant 1{,}60$ m/s	4 000	4 000	4 000
		$V_n \leqslant 2{,}50$ m/s	–	5 000	5 000

1) The lift-well plan dimensions specified are the minimum clear plumb sizes. The architect, in conjunction with the builder, must ensure that adequate tolerances are added to the specified dimensions in the building design, so that minimum plumb dimensions are obtained in the finished work. These dimensions apply only to lift installations with guiding of the counterweight by rigid metal guides.

2) **1M** = 100 mm. With regard to modular dimensions, see the Foreword.

3) To meet the particular requirements of certain countries using lifts having single sliding doors, it is permissible in such cases for a limited period to use a well width of 2 000 mm.

4) To meet the particular requirements of certain countries using lifts having single sliding doors, when a well width of 2 000 mm is used, it is permissible for a limited period to reduce the depth of the well to 1 900 mm. The counterweight will then be situated at the side of the well.

5) Higher minimum values may be required in certain countries to satisfy existing national regulations.

3.4 Dimensions of the machine room

3.4.1 *Individual lifts*

The dimensions of the machine room shall have the values indicated in table 3.

3.4.2 *Multiple lifts side by side*

Machine room dimensions shall comply with the following conditions with respect to area, width and depth.

3.4.2.1 AREA

a) *Multiple lifts having the same load rating* : The minimum area of the common machine room shall be equal to the sum of the minimum areas required for the individual lifts.

b) *Two lifts having different load ratings* : The minimum area of the common machine room shall be equal to the sum of the minimum areas required for the individual lifts, plus the difference between the well areas of the two lifts.

c) *A group of more than two lifts having different load ratings* : The minimum area of the common machine room shall be equal to the sum of the minimum areas required for the individual lifts, plus the sum of the differences between the well area of the largest lift and the well areas of each of the other lifts.

3.4.2.2 WIDTH

The minimum width of the common machine room shall be equal to the total width of the common well plus a lateral extension corresponding to that appropriate to the lift with the greatest individual requirement.

3.4.2.3 DEPTH

The minimum depth of the common machine room shall be equal to the depth of the deepest individual well plus 2 100 mm.

TABLE 3 – Dimensions of machine rooms

Rated car speed, V_n m/s	Dimension			Rated load of lift, kg		
				400	630	1 000
⩽ 1,00	Minimum area, S		m^2	7,5	10	12
	Width	Minimum inner dimension, R	mm	2 200	2 200	2 400
		Modular dimension [1] between axes, R'		24M	24M	27M
	Depth	Minimum inner dimension, T	mm	3 200	3 700	4 200
		Modular dimension [1] between axes, T'		36M	39M	45M
	Height, H [2]		mm	2 000	2 000	2 000
⩽ 1,60	Minimum area, S		m^2	10	12	14
	Width	Minimum inner dimension, R	mm	2 200	2 200	2 400
		Modular dimension [1] between axes, R'		24M	24M	27M
	Depth	Minimum inner dimension, T	mm	3 200	3 700	4 200
		Modular dimension [1] between axes, T'		36M	39M	45M
	Height, H [2]		mm	2 200	2 200	2 200
⩽ 2,50	Minimum area, S		m^2	–	14	16
	Width	Minimum inner dimension, R	mm	–	2 800	2 800
		Modular dimension [1] between axes, R'		–	30M	30M
	Depth	Minimum inner dimension, T	mm	–	3 700	4 200
		Modular dimension [1] between axes, T'		–	39M	45M
	Height, H [2]		mm	–	2 600	2 600

1) 1M = 100 mm. With regard to modular dimensions, see the Foreword.

2) Higher values may be required in certain countries to satisfy existing national regulations.

3.5 Arrangement of machine room

3.5.1 *Common arrangement*

In every case :

— the machine room shall be above the well;

— the lateral extension of the machine room with respect to the well (or common well) can be taken on either the right or the left of the well;

— the depth extension of the machine room with respect to the well shall be taken at the front.

3.5.2 *Particular arrangement for individual lifts*

The rear wall of the machine room and one of its side walls shall be in line with the two corresponding walls of the well.

3.5.3 *Particular arrangement for multiple lifts side by side*

The rear wall of the machine room shall be in line with the corresponding wall of the deepest well, and one of its lateral walls shall be in line with the corresponding wall of the common well.

3.6 Dimensions of landings

3.6.1 *Individual lifts*

Horizontal dimensions of landings shall comply with the following conditions :

— the minimum depth, measured wall to wall and in the same direction as car depth, shall be equal to the car depth;

— the minimum effective area shall be equal to the product of car depth and width of well.

3.6.2 *Multiple lifts side by side*[1)]

Horizontal dimensions of common landings shall respect the following conditions :

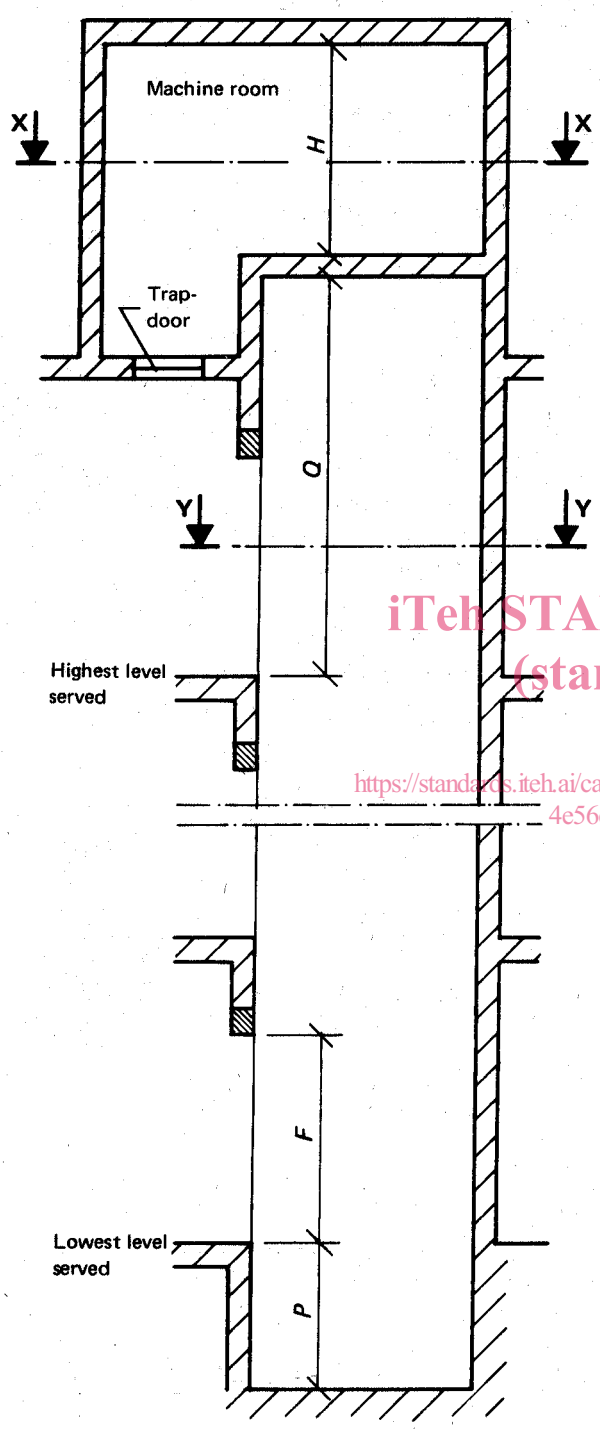
— the minimum depth, measured wall to wall and in the same direction as car depth, shall be equal to the depth of the deepest car;

— the minimum effective area shall be equal to the product of the depth of the deepest car and the width of the common well.

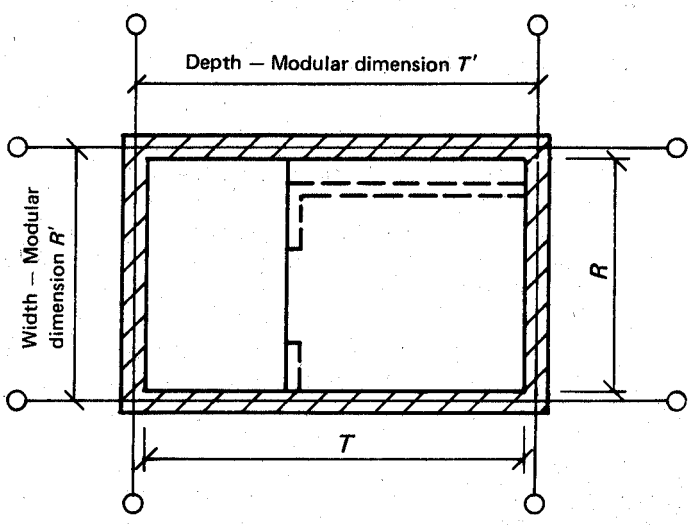
3.7 Distance between landings

The minimum distance between two successive landings to permit the accommodation of landing doors shall be 2 450 mm.

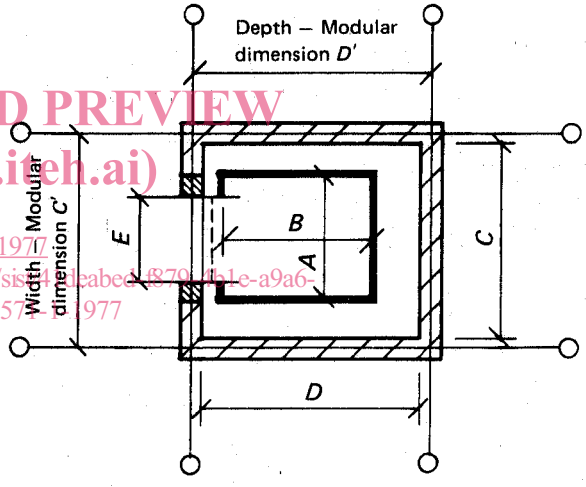
1) Lifts placed opposite one another or at right angles are not dealt with in this sub-clause. In any event, lifts at right angles are inadvisable.



Vertical section of well and machine room



Section X-X
of machine room



Section Y-Y
of well and car

NOTES

1 Close-hatched areas represent rough openings.

2 This sketch does not preclude the desirable installation of a door for access to the machine room.

FIGURE 2

TABLE 4 – **Summary of dimensions for single lifts**

Rated load	Rated speed, V_n	CAR			WELL						CAR AND LANDING DOORS		LANDING			MACHINE ROOM					
					Functional dimensions		Modular dimensions between axes[7]				Clear entrance					Minimum functional dimensions			Modular dimensions between axes		
		Width, A	Depth, B	Height	Width, C[1]	Depth, D	Width, C'	Depth, D'	Minimum height above the highest level served, Q[3]	Pit depth, P	Width, E	Height, F	Minimum depth	Minimum area[6]	Distance between landings	Minimum area, S[6]	Width, R	Depth, T'	Width, R'	Depth, T	Minimun height, H[4]
kg	m/s	mm	mm	mm	mm	mm			mm	mm	mm	mm	mm	m^2	mm	m^2	mm	mm			mm
400	⩽ 0,63	1 100	950	2 200	1 800	1 600	21M	18M	3 700	1 400	800	2 000	950	1,75	2 450	7,50	2 200	3 200	24M	36M	2 000
	⩽ 1,00	1 100	950	2 200	1 800	1 600	21M	18M	3 800	1 500	800	2 000	950	1,75	2 450	7,50	2 200	3 200	24M	36M	2 000
	⩽ 1,60	1 100	950	2 200	1 800	1 600	21M	18M	4 000	1 700	800	2 000	950	1,75	2 450	10	2 200	3 200	24M	36M	2 200
630 ♿[5]	⩽ 0,63	1 100	1 400	2 200	1 800	2 100[2]	21M	24M	3 700	1 400	800	2 000	1 400	2,50	2 450	10	2 200	3 700	24M	39M	2 000
	⩽ 1,00	1 100	1 400	2 200	1 800	2 100[2]	21M	24M	3 800	1 500	800	2 000	1 400	2,50	2 450	10	2 200	3 700	24M	39M	2 000
	⩽ 1,60	1 100	1 400	2 200	1 800	2 100[2]	21M	24M	4 000	1 700	800	2 000	1 400	2,50	2 450	12	2 200	3 700	24M	39M	2 200
	⩽ 2,50	1 100	1 400	2 200	1 800	2 100[2]	21M	24M	5 000	2 800	800	2 000	1 400	2,50	2 450	14	2 800	3 700	30M	39M	2 600
1 000 ♿[5]	⩽ 0,63	1 100	2 100	2 200	1 800	2 600	21M	30M	3 700	1 400	800	2 000	2 100	3,80	2 450	12	2 400	4 200	27M	45M	2 000
	⩽ 1,00	1 100	2 100	2 200	1 800	2 600	21M	30M	3 800	1 500	800	2 000	2 100	3,80	2 450	12	2 400	4 200	27M	45M	2 000
	⩽ 1,60	1 100	2 100	2 200	1 800	2 600	21M	30M	4 000	1 700	800	2 000	2 100	3,80	2 450	14	2 400	4 200	27M	45M	2 200
	⩽ 2,50	1 100	2 100	2 200	1 800	2 600	21M	30M	5 000	2 800	800	2 000	2 100	3,80	2 450	16	2 800	4 200	30M	45M	2 600

1) See note 3 to table 2.

2) See note 4 to table 2.

3) See note 5 to table 2.

4) See note 2 to table 3.

5) See the note to table 1.

6) Rounded values.

7) With regard to modular dimensions, see the Foreword.