
**Lifts for the transport of persons and
goods —**

**Part 33:
T-type guide rails for lift cars and
counterweights**

*Ascenseurs et monte-charges pour le transport des personnes et des
marchandises —
Partie 33: Guides à profil en T des cabines et contrepoids*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 178, *Lifts, escalators and moving walks*.

This first edition of ISO 8100-33 cancels and replaces the fourth edition of ISO 7465:2007, which has been technically revised.

The main changes are as follows:

- in [Clause 5](#) and Bibliography, the reference to ISO 630:1995 is updated with ISO 630-2:2021;
- in [Clause 5](#), steel grades detailed in Table 2, GR235 and GR275, shall be used for the raw material of guide rails;
- [Figures 2](#) and [3](#), and [Tables 6](#) and [8](#) include the minimum distance between the spot-facing and the surface in contact with the fishplate; this parameter affects only to guide rails with inclined foot flange where spot-facing is manufactured;
- some non-preferred rail types have become preferred types in [Tables 5](#), [6](#), [7](#) and [8](#) (T90/A, T75/B, T78/B, T90/B, T114/B, T127-1B or BE);
- in [Table 7](#), the second moment of area related to the X-axis of T127-2/B, I_x is corrected; it was 201,7 cm⁴ and it is 200,17 cm⁴;
- in [Table 7](#), the radius of gyration of T127-1/B is corrected; it was $i_x = 3,065$ cm and $i_y = 2,361$ cm and it is $i_x = 2,875$ cm and $i_y = 2,567$ cm;
- in [Table 8](#), the dimension g of T125/B or BE has been corrected; it was 8 mm and it is 9 mm;
- in [6.2.8](#), the length of short waves is corrected from 500 mm to 1 000 mm;
- in [Table 10](#), the values of the tolerances t_{10} and t_{18} are shifted.
- in [Table 10](#) and [Figure 5](#), tolerance for the parallelism between the top of the blade and the surface in contact with the fishplate t_{19} is added;

- in [Figure 5](#), the envelope requirements for the base machining height at the guide rail ends are removed;
- in [7.1](#), the sentence, which obliges to have a specific tensile strength on the fishplate that depends on the tensile strength of the guide rail, is deleted.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Lifts for the transport of persons and goods —

Part 33:

T-type guide rails for lift cars and counterweights

1 Scope

This document specifies the grades and quality, the dimensional characteristics, the dimensional and geometrical tolerances, and the surface finish of standardized guide rails and their fishplates.

In addition, this document defines a designation system for guide rails.

This document is applicable to guide rails used in passenger lift and service lift installations to provide guiding for the car and the counterweight.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1302, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

guide rail

component that provides guiding for the car or the counterweight

3.2

fishplate

piece of steel used to connect the guides

4 Symbols and units

See [Table 1](#).

Table 1 — Symbols and corresponding units of measurement

Symbol	Dimension	Unit
b_1	Guide rail width	mm
b_2	Fishplate width	mm

Table 1 (continued)

Symbol	Dimension	Unit
b_3	Distance between the axes of the holes (in the transverse direction of the guide and of the fishplate)	mm
c	Width of the connecting part of the foot to the blade	mm
d	Hole diameter	mm
d_1	Countersink diameter	mm
e	Distance from the rear surface to the centre of gravity of the guide rail	cm
f	Foot depth at its connection with the blade	mm
g	Foot depth at its extremity in a transverse plane	mm
h	Guide height at the level of the machined surface for the location of the fishplate	mm
h_1	Guide rail height (for cold-drawn guide rail or on non-machined surface)	mm
I_x	Second moment of area related to the X-axis	cm ⁴
I_y	Second moment of area related to the Y-axis	cm ⁴
i_x	Radius of gyration corresponding to the X-axis	cm
i_y	Radius of gyration corresponding to the Y-axis	cm
k	Blade width	mm
l	Machined surface length for the location of the fishplate	mm
l_1	Fishplate length	mm
l_{2g}	Distance, in the guide rail longitudinal direction, between the axis of the farthest holes from the end of the guide rail and this end	mm
l_{2f}	Distance, in the fishplate longitudinal direction, between the axis of the farthest holes from the transverse axis of the fishplate and this axis	mm
l_{3g}	Distance, in the guide rail longitudinal direction, between the axis of the nearest holes to the end of the guide rail and this end	mm
l_{3f}	Distance, in the fishplate longitudinal direction, between the axis of the nearest holes to the transverse axis of the fishplate and this axis	mm
l_g	Length of the guide rail	mm
l_m	Maximum length for the junction area between the machined surface for the fishplate and the non-machined surface	mm
m_1	Width of the keyway for the junction of the guide rails	mm
m_2	Width of the key for the junction of the guide rails	mm
n	Blade height	mm
p	Foot depth (in the case of a flat foot)	mm
q_1	Linear density for a finished guide rail	kg/m
R_a	Surface roughness (see ISO 1302)	µm
r_s	Foot radius	mm
S	Cross-sectional area of the guide rail	cm ²
t_1 to t_n	Tolerances for geometrical dimensions	mm
u_1	Depth of the keyway for the junction of the guides rails	mm
u_2	Length of the key for the junction of the guides rails	mm
v	Fishplate thickness (when machined)	mm
W_x	Modulus of cross-sectional area related to the X-axis	cm ³
W_y	Modulus of cross-sectional area related to the Y-axis	cm ³

5 Manufacture and materials

Guide rails may be cold drawn or machined. In this document, the manufacturing process for each type of guide is indicated by the symbol /A for “cold drawn”, the symbol /B for “machined”, and the symbol /BE for “machined high quality”.

Type /A guide rails shall be manufactured from steel grade GR235 listed in [Table 2](#). The final properties shall be by agreement between the guide rail manufacturer and the customer.

Type /B guide rails shall be manufactured to one of the steel grades listed in [Table 2](#). The steel grade, if specified, shall be included in the guide rail designation per [6.1](#).

NOTE For a general description of recommended steels, see ISO 630-2:2021 grades S235B and S275B.

Table 2 — Raw material mechanical properties of guide rails

Material grade	k_m mm	UTS N/mm ²	YS N/mm ²	EL %
GR235	≤ 16	370 to	235	26
	> 16 to ≤ 40	510	225	
GR275	≤ 16	410 to	275	22
	> 16 to ≤ 40	520	265	

Key
 k_m Raw material blade thickness
 UTS Ultimate tensile strength
 YS Minimum yield strength
 EL Minimum elongation

6 Guide rails

6.1 Designation

Guide rails complying with the requirements of this document shall be designated as follows:

- 1st element: number of this document, followed by a hyphen: ISO 8100-33-
- 2nd element: guide rail shape: T;
- 3rd element: rounded value of the foot width with, if necessary, the number of the variant for different profiles with the same foot width: 45; 50; 70; 75; 78; 82; 89; 90; 114; 125; 127-1; 127-2; 140-1; 140-2; 140-3;
- 4th element: manufacturing process:
 - cold drawn: /A;
 - machined: /B;
 - machined high quality types: /BE;
- 5th element (optional): steel grade for type /B guide rails only:
 - GR235;
 - GR275;

EXAMPLE 1 Lift guide rail ISO 8100-33 -T82/A.

EXAMPLE 2 Lift guide rail ISO 8100-33 -T89/B/GR235.

EXAMPLE 3 Lift guide rail ISO 8100-33 -T140-1/BE/GR275.

EXAMPLE 4 Lift guide rail ISO 8100-33 -T125/B.

NOTE In EXAMPLE 4, either GR235 or GR275 of Table 2 can be used.

6.2 Dimensional characteristics and tolerances

6.2.1 Length

The length of the guide rail shall be indicated in millimetres, with a tolerance of ± 2 mm. It is recommended to supply bars of 5 000 mm length.

6.2.2 Dimensions

6.2.2.1 General

See Tables 3 to 8.

Two series of dimensions are proposed:

- preferred dimensions, designated without round brackets;

EXAMPLE 1 T82/A.

- non-preferred dimensions, designated within round brackets.

EXAMPLE 2 (T89/A).

Guide rails with other dimensions can be delivered on specific agreement between the guide rails manufacturer and the customer.

6.2.2.2 Cold-drawn, parallel foot-and-blade flange guide rail

See Figure 1 and Tables 3 and 4.

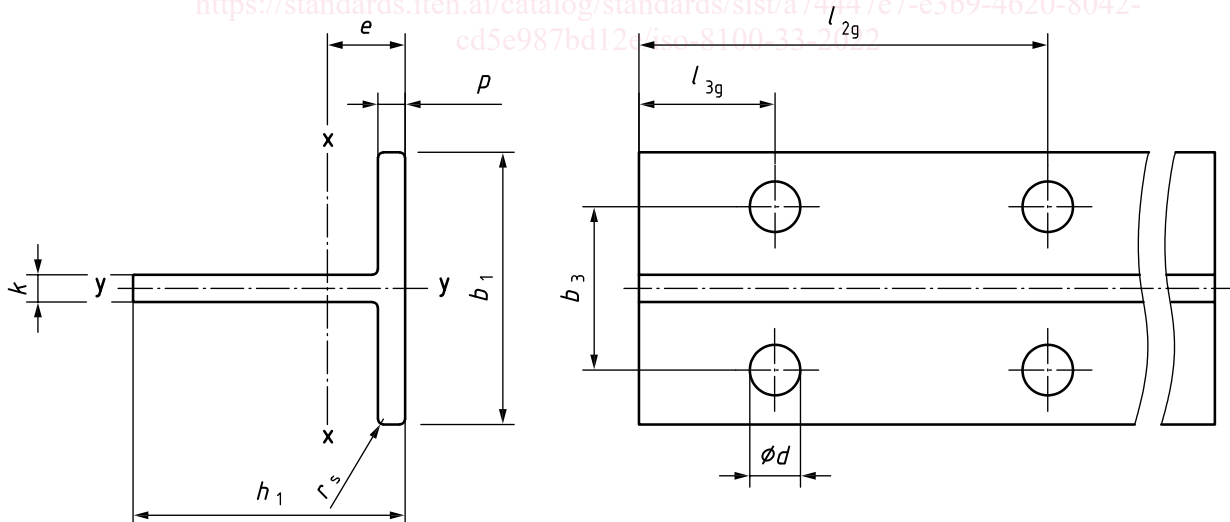


Figure 1 — Cold-drawn, parallel foot-and-blade flange guide rail

Table 3 — Technical characteristics of cold-drawn, parallel foot-and-blade flange guide rails (see Figure 1)

Designation	S cm ²	q_1 kg/m	e cm	I_x cm ⁴	W_x cm ³	i_x cm	I_y cm ⁴	W_y cm ³	i_y cm
(T45/A)	4,25	3,34	1,31	8,08	2,53	1,38	3,84	1,71	0,95

Table 3 (continued)

Designation	S	q_1	e	I_x	W_x	i_x	I_y	W_y	i_y
	cm ²	kg/m	cm	cm ⁴	cm ³	cm	cm ⁴	cm ³	cm
T50/A	4,75	3,73	1,43	11,24	3,15	1,54	5,25	2,1	1,05

Table 4 — Dimensions and tolerances of cold-drawn, parallel foot-and-blade flange guide rails (see Figure 1)

Dimensions in millimetres

Designation	b_1	h_1	k	p	r_s	l_{2g}	l_{3g}	d	b_3
(T45/A)	45	45	5	5	1	65	15	9	25
T50/A	50	50	5	5	1	75	25	9	30
Tolerances	±1	±0,2	±0,15	±0,5	—	±0,2	±0,2	—	±0,2

NOTE Dimensions l_{2g} , l_{3g} , d , b_3 are identical to and have the same tolerances as fishplate dimensions l_{2f} , l_{3f} , d , b_3 .

6.2.2.3 Cold-drawn, inclined-foot flange guide rail

See Figure 2 and Tables 5 and 6.

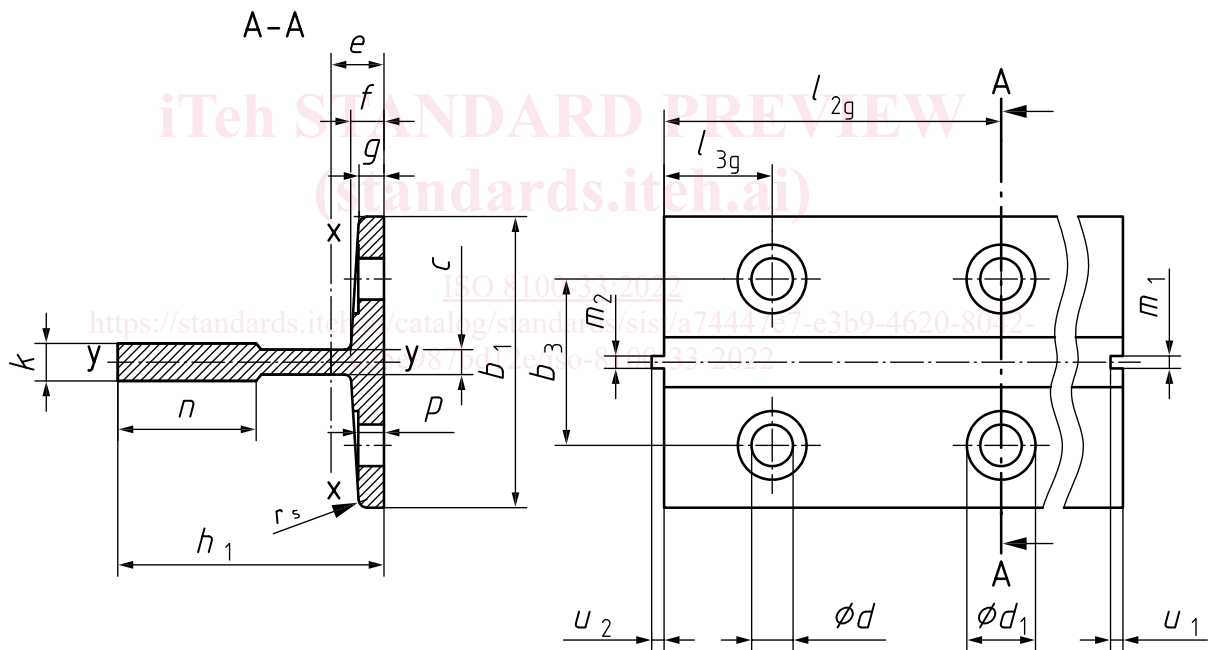


Figure 2 — Cold-drawn, inclined-foot flange guide rail

Table 5 — Technical characteristics of cold-drawn, inclined-foot flange guide rails (see Figure 2)

Designation	S	q_1	e	I_x	W_x	i_x	I_y	W_y	i_y
	cm ²	kg/m	cm	cm ⁴	cm ³	cm	cm ⁴	cm ³	cm
T70/A	9,400	7,379	2,034	40,95	9,169	2,087	18,86	5,389	1,417
(T75/A)	10,91	8,564	1,861	40,29	9,286	1,921	26,47	7,060	1,557
T82/A	10,91	8,564	1,998	49,31	10,27	2,126	30,17	7,358	1,663
(T89/A)	15,77	12,38	2,032	59,83	14,35	1,948	52,41	11,78	1,823
T90/A	17,25	13,54	2,612	102,00	20,86	2,431	52,48	11,66	1,744