TECHNICAL REPORT

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Comparison of worldwide safety standards on lifts for firefighters

Comparaison des normes de sécurité sur le plan mondial relatives à la lutte contre l'incendie dans les ascenseurs

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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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 16765 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators, passenger conveyors*.

Introduction

At the 1996 plenary meeting of ISO/TC 178 it was agreed via Resolution 136 that a comparison between CEN Standard EN 81-72 for firefighting lifts (elevators) and the national codes of Australia, USA, Canada, Japan and Russia, would be produced. This has in the meantime been extended to include the codes of China, Hong Kong, India (Mumbai), Korea, Malaysia, New Zealand, Singapore and Taiwan. The goal was to prepare a technical report which would provide reference information to assist national standards committees when reviewing and revising individual codes and which may initiate a gradual convergence of the technical requirements worldwide.

It was agreed by ISO/TC 178 that the comparison required the additional input of firefighting experts in WG 6.

The comparison includes reference to national lift (elevator) codes, fire codes and building regulations.

The content of this Technical Report is based on the information provided by the ISO/TC 178/WG 6 members.

This Technical Report is intended to aid standards writers in developing their firefighters lift (elevator) requirements and to help standards users understand the basis for the requirements as they are applied throughout the world.

This Technical Report must be read in conjunction with the various lift (elevator), fire and building codes, as it was often necessary to summarize the requirements for the sake of the comparisons. Further, the information contained in this Technical Report does not necessarily represent the opinions of the standards writing organization responsible for the developments of the safety standards which are being compared and they should be consulted regarding interpretations of their requirements.

This Technical Report will be used as a basis together with an appropriate risk assessment when preparing a global standard for firefighting and/or evacuation lifts (elevators).

Comparison of worldwide safety standards on lifts for firefighters

1 Scope

This Technical Report consists of a comparison of the requirements of selected topics as covered by worldwide safety standards from the following countries.

a) ASME

— ASME/ANSI A17.1, Safety codes for Elevators and Escalators (Edition 2000)

b) Australia

— SA – AS 1735: Lifts 1997

c) Canada

— CAN/CSA B44 Safety Codes for Elevators (Edition 1994 including supplement 2 – 1998)

d) CEN

— European Standard EN 81: Part 3 (Edition 2000)

e) China

f) Hong Kong

g) India

h) Japan

— BSLJ 34-2

— BSLJ-EO 129-13-3

— JISC 0920 (1971)

— JEAS A 505 (1988)

— JEAS D 401 (1995)

— JEAS A 504 (1989)

— Notification No. 2000 – 1428

i) Korea

j) Malaysia

k) New Zealand

l) Russia

— SNIP 2-01-97 Fire Safety of buildings NPB 250-97 Firefighting lifts – general technical requirements

m) Singapore

n) Taiwan

This Technical Report applies to electric traction lifts only, although some sections may also be applicable for positive drive lifts and other lifts suspended by rope or chain.

It should be noted that in addition to the above listed standards, lifts should conform to the requirements of other standards covering mechanical, structural and electrical equipment.

Section 1 includes:

— Europe (Based on EN 81-3)

— Australia

— Russia

— Japan

— USA

— Canada

Section 2 includes:

— China

— Hong Kong

— India

— Korea

— Malaysia

— New Zealand

Section 3 includes:

— Singapore

— Taiwan

2 Terminology

2.1 The term **lift** as used in the CEN standard (and in Russia Code, as written in the Russian language) is referred to as **elevator** in ASME and CSA standards and in the English translation of Russia code. These terms are used interchangeably in this Technical Report.

2.2 For the purposes of this Technical Report, unless otherwise specified, the term **passenger lift** and **freight lift** correspond to the terms used in other standards and shown in Table 1.

Table 1 — Corresponding terms used in European, USA, Canadian, Russian and Japanese standards

Terms used in this Technical Report	Correspond to terms used in the following standards				
	CEN	ASME	CSA	Russia	Japan
Passenger lift	Lift except non-commercial vehicle lift	Passenger elevator + Freight elevator permitted to carry passengers		Passenger + Passenger freight elevator	Passenger + Passenger freight elevator
Freight lift	Non-commercial vehicle lift with instructed users	Freight elevator		Attendant operated freight elevator	Freight elevator (cannot be used as firefighting lift)
Firefighting lift	Special lift for normal use with special firefighter requirements	Every passenger lift for normal use, all with special firefighter requirements	Special firefighter elevator for normal use with special firefighter requirements	as CEN	Special lift for normal use with special firefighter requirements

Annex A
(informative)

Comparison of fire codes

Section 1 includes: Europe, Australia, Russia, Japan, USA, Canada

Section 2 includes: China, Hong Kong, India, Korea, Malaysia, New Zealand

Section 3 includes: Singapore, Taiwan

	Section 1	EN 81-72	Australia	Russia	Japan	USA	Canada
1	**Building requirements**						
1.1	**Do you have harmonized building requirements?**	No Country specific	Yes Building code of Australia, being revised	Yes Construction norms and regulations of RF SNIP 21.01.97 "Fire safety of buildings" Items 8.1, 8.10	Yes BSLJ 34-2 BSLJ-EO 129-13-3	Yes Local codes by state/city typically based on one of 3 model-building codes. Numerous local variations	Yes A17/B44 harmonized codes and National building code of Canada
	Is a protected lobby in front of FF lift required?	Yes. New proposal to EU is already used in several countries e.g. UK, France etc.	No. Currently being considered	Guarded lift hall is required. (Fire safety norms "firefighting lifts). General technical requirements" NPB 250-97 Item 5.2.4	Yes BSLJ-EO 129-13-3-(3)	Sometimes, depending on the local building code requirements NOTE – A single, special firefighters' lift is not permitted and/or acceptable. All lifts must have fire fighter's service.	Yes. 45 min rating
1.2	**Above what building height (m) is an FFL necessary for**					.	
a)	firefighting?	18 m – 30 m	25 m	FFL shall be placed in buildings of more than 28 m in height with the purpose of firefighting and rescuing (non evacuation). SNIP 21.1.97 Item 8.10	31 m (BSLJ 34-2)	All lifts required to have Firefighters' Service	18 m (Residential) 36 m (other occupancies)
b)	evacuation?	N/A	No specification		Not required BSLJ-EO 129-13-3-(2)	All lifts can be used on phase 2 for evacuation. See Note 1 and response to 3.3	N/A

Section 1		EN 81-72	Australia	Russia	Japan	USA	Canada
1.3 a) b)	**Is smoke control required in** lift well? lobby?	 Some countries Some countries	 AS/NZS1668/1	Yes. Lift hoistways for firemen, as well as their lift halls in the sub-basements and basements of buildings shall be equipped with autonomous systems of inflow anti-fire ventilation for the creation of an excessive pressure at fire. NPB 250-97 Item 5.2.6	 Not required Yes BSLJ-EO 129-13-3-(2)	 Varies by local building code requirements Varies by local building code requirements	 No No
1.4	**Does the building design reduce water flowing into lift well during a fire?**	Yes Drainage in lobby. Protection to lift, drainage in lift pit. Building regulations	No	Yes There is a general requirement: “Penetration of water used for firefighting, in hoistways and machine rooms of lifts for firemen shall be prevented by building means and activities” NPB 250-57	Yes JEAS-A505 (88-Mar.)	No ASME A17.1 current and proposed requirements have taken into account water from fire fighting, e.g. water accumulation in pit due to sprinkler.	Pit drainage
1.5	**Can lifts other than FFL be used for evacuation?**	Country specific Special lifts for handicapped persons	No	No Code for the design and safe operation of elevators (PUBEL)	No	See response to 1.2 and 1.11. Model building codes require a minimum of one stretcher size car in high-rise buildings. They are required to accommodate an ambulance type stretcher (1 930 mm x 610 mm) in the horizontal position.	No
1.6	**Can lifts with partial well enclosures be used as FFLs?**	No	No	No specification	No	Yes and see Note 1	No

Section 1		EN 81-72	Australia	Russia	Japan	USA	Canada
1.7	**Can FFLs be part of a group?** If yes:	Yes	Yes	Yes. NPB 250-97 Item 5.1.3	Yes	Yes and see Note 1	Yes
a)	What are maximum number of lifts in one well?	Any (France 3)	No limit	No specification	Two — both lifts in one well shall be FFLs BSJL-EO 129-13-3-(4)	Varies with local building code, but never more than 4	No specification
b)	Must there be a solid dividing wall between FFL and rest of lifts in a common well?	Optional Subject to local building	No Was required in previous building code	FF2 is allowed to be placed in the common hoistway with other lifts. NPB 250-97 Item 5.1.7	Yes	NA. See Note 1	No
1.8	**Applicability of FFLs in a building**		Over 25 m	No specification	BSLJ-EO 129-13-3-(2)	See Note 1	
a)	single elevator	Yes		.	Yes		Yes — required
b)	multiple (group) elevators	Yes			Yes		Yes — permitted
c)	all elevators in a building	No			Yes		No
1.9	**What is maximum working temperature?**			No specification			No specification
a)	In machine room	40 °C	43 °C	.	Not required	As defined by lift manufacturer	
b)	In lift well	40 °C	No specification		Not required	Not defined	
c)	On lobby side of landing doors	65 °C	No specification		Not required	Not defined	
1.10	**What is the maximum time(s) for FFL to travel from fire service access level to top floor with normal power?**	60 s.	No specification	⩽ 60 s NPB 250-97 Item 4.2	About 60 s (not required) BSJL-EO 129-13-3-(11)	Not defined	60 s — Normal or emergency power
1.11	**Must a <u>single</u> FFL serve all floors of a building including those with sky lobbies?**	Yes	No Every floor must be served by two lifts	No specification	Yes BSJL-EO 129-13-3-(3)-1 Not required to serve floors where firefighting service is not necessary.	Model building codes require lift service to all floors in high-rise buildings. This may be provided by more than one lift. See Note 1.	No — one change allowed