

Australian Standard™

SAA Lift Code

Part 4: Service lifts—Power operated

This Australian Standard was prepared by Committee ME/4, Lift Installations. It was approved on behalf of the Council of Standards Australia on 12 February 1986 and published on 7 April 1986.

The following interests are represented on Committee ME/4:

Association of Consulting Engineers Australia
Association of Independent Lift Companies
Australian Chamber of Commerce
Australian Uniform Building Regulations Co-ordinating Council
Board of Fire Commissioners of New South Wales
Building Owners and Managers Association of Australia Limited
Confederation of Australian Industry
Department of Employment and Industrial Affairs, Qld
Department of Employment and Industrial Affairs, Vic.
Department of Housing and Construction
Department of Industrial Relations, N.S.W.
Department of Labour, S.A.
Department of Labour and Industry, Tas.
Department of Mines and Energy, N.T.
Department of Occupational Health, Safety and Welfare, W.A.
Department of Public Works, N.S.W.
Department of Territories
Institution of Engineers, Australia
Insurance Council of Australia
Lift Manufacturers Association of Australia Limited
Metal Trades Industry Association of Australia
Royal Australian Institute of Architects

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for the improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, PO Box 1055, Strathfield, NSW 2135.

This Standard was issued in draft form for comment as DR 84252.

Australian Standard™

Lifts, escalators and moving walks

Known as the SAA Lift Code

Part 4: Service lifts—Power operated

First published (included in AS CA3) 1935.
Revised 1947.
AS CA3, Part IV separately published 1970.
AS 1735, Part 4 first published 1975.
Second edition 1982.
Third edition 1986.
Reissued incorporating Amendment Nos 1 and 2 (June 2000).

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd
PO Box 1055, Strathfield, NSW 2135, Australia

ISBN 0 7262 4118 0

PREFACE

This edition of this standard was prepared by the Association's Committee on Lift Installations, to supersede AS 1735, Part 4—1982, Power-operated Service Lifts.

This Standard incorporates Amendment Nos. 1 (July 1989) and 2 (June 2000). The changes required by the Amendments are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure, or part thereof affected.

This edition includes the following technical changes:

- (a) Clause 5.1 extends the access dimension to 750 mm where an effective standing surface is provided for maintenance of service lifts.
- (b) Clause 26.1.3(a)(ii) has been redrafted to clarify its intent.

Other changes of an editorial nature have been made to bring the standard into line with current SAA policy.

CONTENTS

	<i>Page</i>
SECTION 1. SCOPE AND GENERAL	
1.1 Scope	8
1.2 Application	8
1.3 Referenced Documents	8
SECTION 2. CLASSIFICATION AND TYPES	
2.1 Classification	9
2.2 Types	9
SECTION 3. SPEED, RATED LOAD, AND DIMENSIONS	
3.1 Class 1 Service Lifts	9
3.2 Class 2 Service Lifts	9
3.3 Undercounter Service Lifts	9
SECTION 4. SUPPORTS	9
SECTION 5. MACHINE ROOMS AND MACHINERY SPACES	
5.1 Provision of Machine Rooms	10
5.2 Access	10
5.3 Equipment Accessibility	10
5.4 External Maintenance Platform	10
5.5 Ladders	10
5.6 Headroom	10
5.7 Temperature	11
5.8 Lighting	11
SECTION 6. OVERHEAD SHEAVE ROOMS AND PLATFORMS	
6.1 General	12
6.2 Access and Headroom	12
6.3 Lighting	12
SECTION 7. MACHINES	
7.1 Rated Speed	12
7.2 Types	12
7.3 Geared Drives	12
7.4 Belt Drives	12
7.5 Sheaves, Drums, and Chain Wheels	12
7.6 Hand-winding	12
SECTION 8. SHEAVES, DRUMS, CHAIN WHEELS, AND PULLEYS	
8.1 Mechanical Design	13
8.2 Multiplying Sheaves	13
8.3 Guarding of Nip-points	13
8.4 Chain Keeper	13
SECTION 9. SUSPENSION ROPES AND CHAINS	
9.1 Materials	14
9.2 Number	14
9.3 Factors of Safety	14
9.4 Designation and Measurement of Rope Size	14
9.5 Size of Rope	14
9.6 Size of Chain	14
9.7 Data Plates	14
9.8 Handling and Care	14

	<i>Page</i>
SECTION 10. ROPE AND CHAIN ATTACHMENTS AND FITTINGS	
10.1 Ropes	15
10.2 Chains	15
10.3 Load Equalizing	15
10.4 Lengthening or Repairing of Ropes and Chains	15
SECTION 11. LIFTWELLS	
11.1 Enclosures	16
11.2 Pits	16
11.3 Access to Liftwells and Pits	16
11.4 Guarding	16
11.5 Lighting	16
SECTION 12. LIFTWELL CLEARANCES AND FLUSHNESS	
12.1 Clearances Between Cars, Counterweights, and Liftwell Enclosures	18
12.2 Clearances Between Car Sills and Liftwell Surface	18
12.3 Clearances Between Car Sills and Landing Sills	18
12.4 Clearances Between Car Doors and Landing Doors	18
12.5 Clearances at Landing Sills for Horizontally Sliding or Hinged Landing Doors	18
12.6 Flushness of Liftwell Facing Car Entrances	18
12.7 Projections Beyond Landing Sills	18
12.8 Flushness of Liftwell Not Facing Car Entrances	18
SECTION 13. TOP AND BOTTOM CLEARANCES	
13.1 Class 1 and Class 2 Service Lifts	19
13.2 Undercounter Service Lifts	19
SECTION 14. GUIDE RAILS	
14.1 Provision	22
14.2 Material	22
14.3 Overall Length	22
14.4 Cross-section	22
14.5 Joints	22
14.6 Spacing of Fixings	22
14.7 Brackets and Building Supports	22
14.8 Gauge Tolerance	22
SECTION 15. GUIDE SHOES	
15.1 Provision	23
15.2 Type	23
15.3 Play Between Guides	23
15.4 Engagement	23
15.5 Adjustment	23
15.6 Roller Guide Shoes	23
SECTION 16. BUFFERS AND STOPS	
16.1 Provision and Type	24
16.2 Location	24
16.3 Solid Buffers	24
16.4 Spring Buffers	24
16.5 Overhead Stops	24
SECTION 17. SAFETY GEAR AND IMPACT-ABSORBING PIT GEAR	
17.1 Provision and Type	25
17.2 Occupiable Space Under Pit Floor	25

	<i>Page</i>
17.3 General Requirements	25
17.4 Limits of Use	26
17.5 Minimum Factors of Safety and Stresses of Safety Gear Parts . . .	26
17.6 Impact-absorbing Springs	26
17.7 Impact-absorbing Friction Stops	26
17.8 Location of Impact-absorbing Springs and Friction Stops	26
 SECTION 18. SPEED GOVERNORS	
18.1 Location	27
18.2 Design	27
18.3 Governor Ropes	27
 SECTION 19. COUNTERWEIGHTS	
19.1 Application	27
19.2 Construction	27
19.3 Factor of Safety	27
19.4 Guiding	27
19.5 Guarding	27
 SECTION 20. CAR CONSTRUCTION	
20.1 Suspension Attachments	28
20.2 Guiding	28
20.3 Frames and Platforms	28
20.4 Platform Guards	28
20.5 Sills	29
20.6 Walls	29
20.7 Roof	29
20.8 Lighting	29
 SECTION 21. CAR DOORS	
21.1 Class 2 Service Lifts	30
21.2 Class 1 and Undercounter Service Lifts	30
21.3 Number of Car Entrances	30
21.4 Size	30
21.5 Type	30
21.6 Material	30
21.7 Strength	30
21.8 Door Guides Projecting Above Car Roof	30
21.9 Clearance	30
21.10 Vertically Operating Car Doors	30
21.11 Suspension	30
21.12 Counterweights	30
21.13 Handgrips	30
 SECTION 22. LANDING DOORS	
22.1 Provision	31
22.2 Material	31
22.3 Construction	31
22.4 Smoothness of Sliding Landing Door Surfaces	31
22.5 Support and Guiding	31
22.6 Counterbalancing	31
22.7 Door Counterweights	32
22.8 Locking Out of Service	32
22.9 Vision Panels	32
 SECTION 23. POWER OPERATION OF CAR DOORS AND LANDING DOORS	
23.1 Types of Door	33
23.2 Power Opening	33

	<i>Page</i>
23.3 Power Closing	33
23.4 Kinetic Energy and Force Limitations	33
23.5 Operator-protection Device	33
23.6 Maximum Opening and Closing Speeds	33
 SECTION 24. LOCKING OF LANDING DOORS	
24.1 Provision	33
24.2 Vertically Bi-parting Doors	33
24.3 Lock Accessibility	33
24.4 Maintenance and Emergency Door Unlocking Device	33
 SECTION 25. ELECTRICAL INSTALLATION-GENERAL	
25.1 Compliance	34
25.2 Circuit-breaker or Switch	34
25.3 Rectifying Units	34
25.4 Location of Controllers	34
25.5 Clearance Around Controllers	34
25.6 Prevention of Contact with Live Parts	34
25.7 Light Switches	34
 SECTION 26. WIRING	
26.1 General	35
26.2 Liftwells	35
26.3 Cars	35
26.4 Travelling Cables	35
 SECTION 27. EARTHING	
27.1 General	35
27.2 Electrical Apparatus Installed on Lift Cars	35
27.3 Bell and Indicator Transformers	35
 SECTION 28. CONTROL EQUIPMENT	
28.1 General	36
28.2 Control and Operating Circuit	36
28.3 Non-reversing Control	36
28.4 Driving Machine Brakes	36
28.5 Control Buttons	36
28.6 Stop Switches	36
28.7 Indication of Car Position	36
 SECTION 29. ELECTRICAL PROTECTIVE DEVICES	
29.1 Landing Door Contacts	37
29.2 Door Lock Circuits	37
29.3 Car Door Contacts	37
29.4 Liftwell Access Door Switch	37
29.5 Pit Stop Switch	37
29.6 Car Top Stop Switch	37
29.7 Sheave Room or Platform Stop Switch	37
29.8 Liftwell Flap Switch	37
29.9 Slack Rope Switch	37
29.10 Broken Rope Switch	37
29.11 Broken Tape Switch	37
29.12 Safety Gear Switch	37
29.13 Governor Switch	37
29.14 Overtime Switch	38
29.15 Impact-absorbing Friction-stop Switch	38
29.16 Compensating Sheave Switch	38

	<i>Page</i>
SECTION 30. TERMINAL STOPPING DEVICES	
30.1 Normal Limit Switches	39
30.2 Overtravel Limit Switches	39
SECTION 31. TELEPHONES, NOTICES, AND NUMBERING OF LIFTS	
31.1 Communication with Machine Room	40
31.2 Load Notices	40
31.3 Numbering	40
SECTION 32. PROHIBITED EQUIPMENT	40
SECTION 33. MAINTENANCE	40
APPENDICES	
A SCREW-DRIVING MACHINES	41
B PERIODIC INSPECTION AND TESTING	41
INDEX	42

A1 |

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

LIFTS, ESCALATORS, AND MOVING WALKS

PART 4—SERVICE LIFTS—POWER-OPERATED

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out requirements for power-operated service lifts of the types listed in Clause 2.2 and intended for operation under any of the following conditions:

- (a) Rated car speed not more than 1 m/s.
- (b) Rated load more than 12 kg.

NOTE: Lifts required to carry a load in the range 12 kg to 50 kg are designed for and rated at 50 kg, because of the possibility of a person standing on the roof.

- (c) Internal car volume more than 0.06 m³.

This standard is complementary to AS 1735.1 and the relevant requirements of AS 1735.2, but the requirements of this standard take precedence over corresponding requirements in those standards.

1.2 APPLICATION. It is not intended that this^{A1} standard should prohibit service lifts outside its scope. For the requirements for service lifts outside the scope of this standard, reference should be made to the Statutory Authority.

1.3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1204	Structural Steels—Ordinary Weldable Grades	AS 1735.1	SAA Lift Code, Part 1—General Requirements
AS 1530	Methods for Fire Tests on Building Material, Components and Structures Part 1—Combustibility Test for Materials	AS 1735.2	SAA Lift Code, Part 2—Passenger and Goods Lifts—Electric
AS 1532	Short Pitch Transmission Precision Roller Chains and Chain Wheels	AS 1735.10	SAA Lift Code, Part 10—Tests
AS 1656	Steel Wire Ropes (Other than for Mining Purposes)	AS 1735.11	SAA Lift Code, Part 11—Fire-rated Landing Doors
AS 1657	SAA Code for Fixed Platforms, Walkways, Stairways and Ladders	AS 1979	Flexible Travelling Cables for Lifts
AS 1720	SAA Timber Engineering Code	AS 2052	Metallic Conduits and Fittings
		AS 2053	Non-metallic Conduits and Fittings
		AS 2759	Steel Wire Rope—Application Guide SAA Wiring Rules
		AS 2784	Endless Wedge Belt and V-belt Drives
		AS 3000	SAA Wiring Rules
		AS 3116	Approval and Test Specification for Elastomer Insulated Electric Cables and Flexible Cables for Working Voltages of 0.6/1 kV
		AS 3147	Approval and Test Specification for PVC Insulated Electric Cables and Flexible Cables for Working Voltages of 0.6/1 kV
		AS 3187	Approval and Test Specification for Mineral-insulated Metal-sheathed Cables
		AS 3191	Approval and Test Specification for Electric Flexible Cords
		ISO 2020	Aerospace—Mechanical System Parts—Preformed Flexible Steel Wire Rope for Aircraft Controls