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Low-level work platform with one working platform with side protection for use by one person with a maximum working platform height not greater than 2.5 m – Specification

bsi.

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 30, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2016. It was prepared by Subcommittee B/514/24, *Access Towers*, under the authority of Technical Committee B/514, *Access and Support Equipment*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This British Standard is based on PAS 250:2012.

Information about this document

This British Standard is based on PAS 250 and introduces the following principal changes.

- A new more consistently available surface has been introduced for the test for resistance to sliding given in Annex D.
- New dimensional requirements for side protection following the identification of potential safety issues have been included.

Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause **J.1.1**, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

Low-level work platforms (LLWPs), commonly referred to as podiums or pulpits, became extensively used following the implementation of The Work at Height Regulations 2005 [1]. In particular this led to demand for an LLWP with one working platform with side protection for use by one person.

These LLWPs fall outside the scope of standards for similar products. For instance, they differ from:

a) mobile access and working towers specified by BS EN 1004 because LLWPs have working platform heights of less than 2.5 m;

b) mobile elevating work platforms specified in BS EN 280 because they are not powered;

c) prefabricated tower scaffolds specified in BS 1139-6 because LLWPs have smaller working platforms and are only designed for use by one person; and

d) standing ladders with platforms specified in BS EN 131 (all parts), BS 2037 and BS 1129 because LLWPs have side protection to the working platform.

Designs that emerged for LLWPs have been developed in the absence of a formal standard. Whilst the majority of LLWPs provide a safe solution to low-level access, there are aspects of some products that could be improved by adherence to relevant and specific design criteria.

1 Scope

This British Standard specifies requirements for an LLWP with one working platform with side protection, for use by one person, with a maximum working platform height not greater than 2.5 m. The maximum working load of the LLWP is 150 kg.

In particular, this British Standard specifies requirements for materials, design loads, dimensions, strength and stability tests, marking and instruction manuals.

This British Standard does not cover:

a) mobile access and working towers with a height from 2.5 m to 12.0 m (indoors) and from 2.5 m to 8.0 m (outdoors), in accordance with BS EN 1004;

b) prefabricated tower scaffolds, in accordance with BS EN 1139-6;

c) mobile elevating work platforms, in accordance with BS EN 280;

d) standing step ladders with platforms and mobile ladders with platforms, conforming to BS EN 131 (all parts);

e) aluminium standing step ladders with platforms, folding trestles and lightweight stagings, in accordance with BS 2037; and

f) timber trestles and lightweight stagings, in accordance with BS 1129.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 7371 (all parts), *Coatings on metal fasteners*

BS EN 572-2, *Glass in building – Basic soda lime silicate glass products – Part 2: Float glass*

BS EN 13706-3:2002, *Reinforced plastics composites – Specifications for pultruded profiles – Part 3: Specific requirements*

BS EN ISO 3834 (all parts), *Quality requirements for fusion welding of metallic materials*

BS EN ISO 6892-1, *Metallic materials – Tensile testing – Part 1: Method of test at room temperature*

BS EN ISO 14713-1, *Zinc coatings – Guidelines and recommendations for the protection against corrosion of iron and steel in structures – Part 1: General principles of design and corrosion resistance*

BS EN ISO 14731, *Welding coordination – Tasks and responsibilities*

3 Terms and definitions

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

3.1 access
series of climbing surfaces designed to provide a means of ascending to and descending from a working platform

3.2 adjustable leg
component of an LLWP that can be adjusted to level the low-level work platform on uneven or sloping ground

NOTE 1 Adjustable legs can be fitted with either a mobility device or a foot.

NOTE 2 Adjustable legs are not intended for use to gain additional working height.

3.3 castor wheel
wheel that swivels permitting it to turn towards its plane of rotation

NOTE Castor wheels are fitted to LLWPs to provide mobility.

3.4 climbing surface
component that provides a foothold or a handhold

3.5 deployed position
position of use with all components assembled and positioned in accordance with the instruction manual

NOTE Components include, for example, access, mobility devices, toe-boards and stability devices.

3.6 foot
component of an LLWP that rests on the ground, supports the LLWP and is not designed to enable the movement of the LLWP

NOTE 1 For example, a base plate.

*NOTE 2 See also mobility device (**3.8**).*

3.7 low-level work platform (LLWP)
mobile, freestanding structure incorporating one working platform

NOTE 1 An LLWP is mobile in the sense that it can be moved manually through physical effort alone or with the aid of mobility devices.

NOTE 2 Examples of LLWPs and their components are given in Figure 1.

3.8 mobility device
component of an LLWP that rests on the ground, supports the LLWP and is designed to enable the movement of the LLWP

NOTE 1 For example, a wheel or ski.

*NOTE 2 See also foot (**3.6**).*

3.9 rotational mobility device
mobility device with rotating parts

NOTE For example, a ball wheel, castor wheel or fixed wheel.

3.10 side protection
barrier designed to prevent a person accidentally falling

NOTE 1 For example, guard-rails, railings or mesh panels.

NOTE 2 Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 2, paragraph 3(a), which refers to side protection as a guard-rail or similar means of protection above the edge from which any person is liable to fall.

3.11 side protection gate
section of the side protection that can be opened to permit entry to and exit from the area enclosed by the side protection

NOTE 1 This is sometimes referred to as a guard-rail gate.

NOTE 2 A side protection gate can be made up of several components. These can include, for example, vertical supports, railings or mesh panels.

3.12 stability device
component that assists in preventing the LLWP from overturning

NOTE For example, an outrigger or counterweight.

3.13 toe-board
barrier along the edge of a working platform to prevent the fall of tools or materials and also to prevent a person overstepping the edges of the working platform

NOTE This is sometimes referred to as a toe-rail or kick plate.

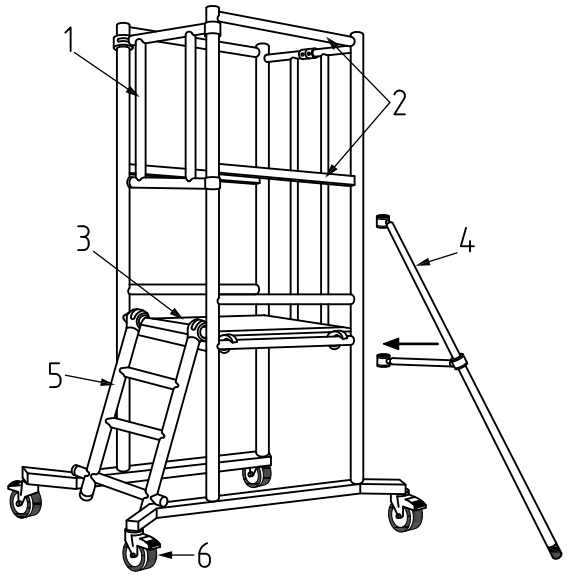
3.14 working height
height a user can reach when standing on a working platform without overreaching

3.15 working load
combined mass of a user, their clothing, materials and tools

3.16 working platform
raised surface on which a person stands to work

3.17 working platform height
height from the ground to the top surface of the working platform with any adjustable legs set at their minimum extension

Figure 1 **Examples of low-level work platforms** ***(1 of 3)***

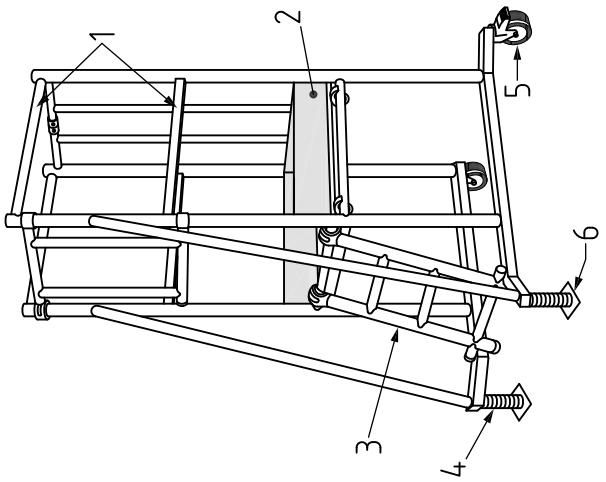


Key

1	Side protection gate	4	Stability device
2	Side protection	5	Access
3	Working platform	6	Castor wheel

a) Low-level work platform with castor wheels, a stability device, side protection and an inclined ladder as an access (toe-boards not shown)

Figure 1 **Examples of low-level work platforms (2 *of* 3)**

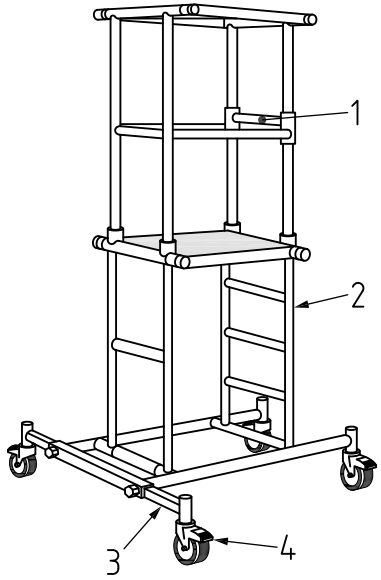


Key

1	Side protection	4	Adjustable leg
2	Toe-board	5	Castor wheel
3	Access	6	Foot

b) Low-level work platform with feet, adjustable legs, castor wheels, toe-boards, side protection and an inclined ladder as an access

Figure 1 **Examples of low-level work platforms (*3 of 3*)**



Key

1	Side protection gate
2	Access
3	Stability device
4	Castor wheel

c) Low-level work platform with castor wheels, a stability device, a vertical sliding side protection gate and an integral vertical ladder as an access (toe-boards not shown)

4 Materials

*COMMENTARY ON CLAUSE **4***

Guidance on where to find information on materials often used in an LLWP is given in BS EN 12811-2. It draws attention to a number of points for designers. The information given is limited to commonly used steel, aluminium alloys, cast iron, timber and timber-based materials. Requirements are also specified for welding and for limiting corrosion and other deterioration. It is limited to the selection of types and grades of material from standards, which are either international or European standards.

The minimum values for yield stress or proof stress and for the tensile strength specified in the material standards referenced in BS EN 12811-2 should be used as characteristic values in design calculations for an LLWP.

The effects of forming or other fabrication techniques such as welding that can affect material properties should be taken into account in the design of an LLWP.

The materials and protective coatings used in an LLWP should be chosen to suit the expected operational constraints and requirements of its intended use, e.g. in terms of durability and resistance to the elements.

Plastic materials and rubber should be selected having regard to the stresses to which they might be subjected and their resistance to environmental deterioration, especially that due to ultraviolet light.

4.1 All components, with the exception of metal fastenings, shall be protected from corrosion by one of the methods given in BS EN ISO 14713-1. Metal fastenings shall be protected against corrosion by one of the methods given in BS 7371.

4.2 All load-bearing components made of aluminium alloy shall have a minimum percentage elongation after fracture (*A*) of 5% when measured in accordance with BS EN ISO 6892-1.

4.3 If cold rolled steel or a special alloy steel is used, the ratio between 0.2% yield stress and ultimate strength (Rp0.2/Rm) shall be not greater than 0.92.

4.4 Load-bearing components made from reinforced plastic composites shall conform to BS EN 13706-3:2002, grade E23.

5 Design

5.1 General

5.1.1 Components forming part of the LLWP shall be secured such that they are incapable of movement or disconnection except by direct intentional action.

NOTE It should be easy to assemble, reposition and dismantle components that are normally assembled, repositioned and dismantled by the user when using the LLWP in accordance with the instruction manual, although those components should be designed such they cannot move or detach without a direct intentional action by the user.

5.1.2 Threaded fastenings shall be secured against accidental loosening.

5.1.3 Joints shall be welded in accordance with BS EN ISO 3834 and BS EN ISO 14731.

5.1.4 Accessible edges shall be free of burrs or sharp points and chamfered, rounded or otherwise formed in order to avoid injuries.

NOTE The design should avoid wherever possible the existence of shear and squeeze points which can create potential finger traps when the LLWP is used in accordance with the instruction manual.

5.1.5 When tested for strength in accordance with Annex A, the LLWP shall not collapse, deform or fracture.

5.1.6 When tested for resistance to overturning in accordance with Annex B, the LLWP shall not overturn.

5.1.7 When tested for rigidity in accordance with Annex C, the maximum deflection, *D*, measured under load shall be ≤(10 mm + 0.01 *h*), where *h* is the height of the top surface of the working platform above the ground.

5.1.8 When tested for resistance to sliding in accordance with Annex D, the LLWP's contact points with the ground when in the deployed position shall not move horizontally by more than 5 mm.

5.1.9 When tested for stability to ascending or descending in accordance with Annex E, the datum pointers on the opposite side of the LLWP to the side subjected to the test loads shall remain in contact with the ground.

5.2 Working platform

NOTE Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 3, Part 1, which specifies requirements for working platforms.

5.2.1 The LLWP shall only incorporate one working platform.

5.2.2 The maximum working platform height shall be not greater than 2.5 m.

5.2.3 The working platform shall have a minimum useable surface, with any toe-boards in place, of 500 mm wide and 500 mm long and a maximum useable surface of 600 mm wide and 950 mm long.

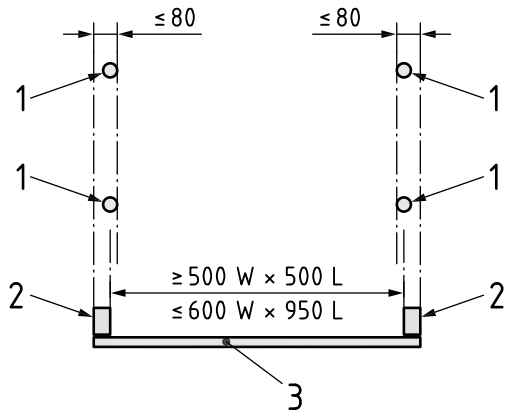
NOTE 1 These dimensions are illustrated in Figure 2.

NOTE 2 Attention is drawn to The Work at Height Regulations 2005 [1], Regulation 7 (2)(a)(i), which specifies requirements for selecting work equipment for work at height.

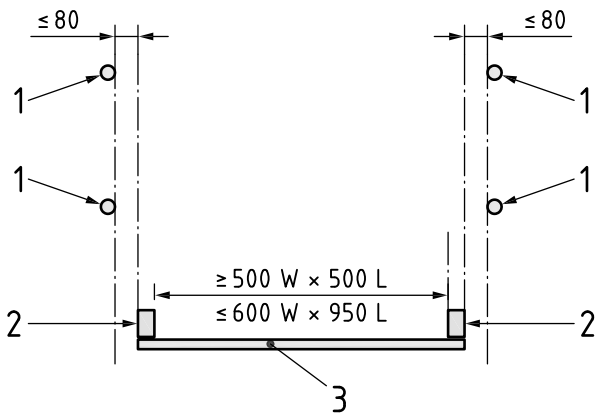
NOTE 3 Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 3, Part 1, paragraph 5(b), which requires a working platform be so constructed that the surface of the working platform has no gap through which a person could fall, through which any material or object could fall and injure a person, and giving rise to other risk of injury to any person, unless measures have been taken to protect persons against such risk.

Figure 2 **Dimensions for the clearance between the outside edge of the working platform and the inside edge of the side protection and the useable surface area of the working platform**

Dimensions in mm



a) Side protection within the perimeter of the work platform



b) Side protection outside the perimeter of the working platform

Key

1 Side protection
2 Toe-board
3 Working platform

5.2.4 The working platform shall have a slip-resistant surface and shall not have obstructions or surface variations that might cause the user to slip or trip.

NOTE Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 3, Part 1, paragraph 5(c), which requires a working platform be so erected and used, and maintained in such condition, as to prevent so far as is reasonably practicable the risk of slipping or tripping or any person being caught between the working platform and any adjacent structure.

5.2.5 The working platform shall incorporate a means to prevent its unintentional disconnection.

NOTE It should be easy to assemble, reposition and dismantle working platforms that are normally assembled, repositioned and dismantled by the user when using the LLWP in accordance with the instruction manual, although working platforms should be designed such that they cannot move or detach without a direct intentional action by the user.

5.2.6 The working platform shall incorporate a means by which it can be fitted with toe-boards.

NOTE In every design, it should be possible to fit toe-boards at the working platform where they are shown as necessary by a risk assessment.

5.2.7 Where the working platform is provided with an aperture in its surface as a means of gaining entry to and exit from the working platform, the aperture shall have a minimum clear opening of 400 mm wide and 600 mm long. The aperture shall be provided with a means of being closed to prevent the user falling through.

5.2.8 When tested for strength in accordance with **F.2** and **F.3**, the maximum permanent deformation of the top surface of the working platform after removal of the test load shall be not greater than 0.5% of the working platform width or length, whichever is the greater.

5.2.9 When tested for displacement in accordance with Annex G, the working platform shall not incline by more than 6° to the horizontal.

5.3 Side protection

NOTE Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 2, which specifies requirements for guard-rails, toe-boards, barriers and similar collective means of protection.

5.3.1 The working platform shall have side protection along its entire perimeter.

5.3.2 The top surface of the side protection shall be a minimum of 950 mm above the top surface of the working platform when the LLWP is in the deployed position.

NOTE Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 2, paragraph 3(a), which requires that the principle (top) guard-rail or other similar means of protection be at least 950 mm above the edge from which any person is liable to fall.

5.3.3 In each case of side protection, between the top surface of the side protection and the top surface of the working platform, and with the LLWP in its deployed position, there shall be no opening in the plane of the side protection greater than:

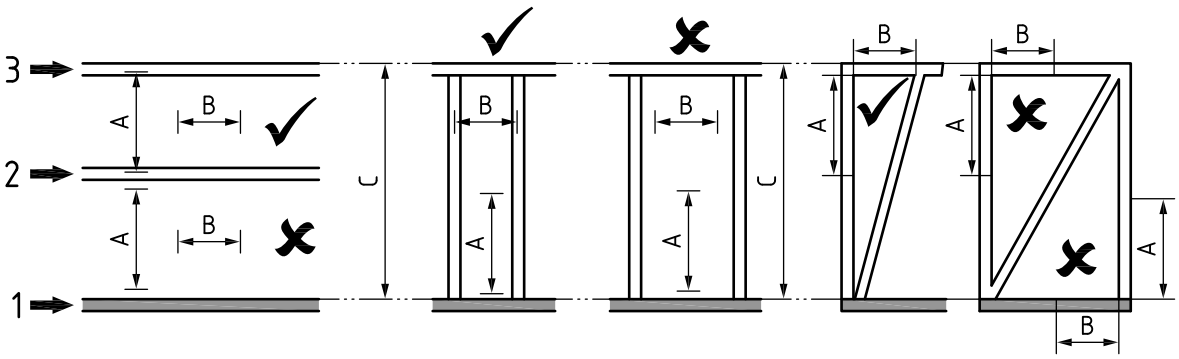
a) 470 mm when measured vertically at any point except where the opening is less than 180 mm when measured horizontally at any point;

b) 180 mm when measured horizontally at any point except where the opening is less than 470 mm when measured vertically at any point.

NOTE 1 Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 2, paragraph 3(c), which requires that any intermediate guard-rail or similar means of protection be positioned so that any gap between it and other means of protection does not exceed 470 mm.

NOTE 2 Dimensions for openings in side protection are shown in Figure 3.

Figure 3 **Dimensions for openings in side protection**



Key

1	Platform	A	Maximum 470 mm vertical gap
2	Intermediate guard-rail	B	Maximum 180 mm horizontal gap
3	Principle (top) guard-rail	C	Minimum 950 mm

5.3.4 The clearance defined by the vertical planes passing through the outside edge of the working platform and the inside edge of the side protection shall be not greater than 80 mm.

NOTE This clearance is illustrated in Figure 2.

5.3.5 When tested for strength with a downward load in accordance with **H.2**:

a) all components of the side protection, including any side protection gates that provide a foothold width of 50 mm or more, shall not detach or fracture;

b) all components of the side protection shall not exhibit permanent deformation at any point greater than 50 mm from their position prior to the test; and

c) side protection gates shall not open during the test and shall continue to open, close and function in accordance with the instruction manual after the test.

5.3.6 When tested for strength with a horizontal load in accordance with **H.3**:

a) all components of the side protection including any side protection gates shall not detach or fracture; and

b) side protection gates shall not open during the test and shall continue to open, close and function in accordance with the instruction manual after the test.

5.3.7 When tested for deflection in accordance with **H.3**:

a) all components of the side protection, including any side protection gates, shall not deflect permanently or elastically by more than 35 mm measured with reference to their supports at the points of connection; and

b) side protection gates shall not open during the test and shall continue to open, close and function in accordance with the instruction manual after the test.

5.4 Toe-board

NOTE Attention is drawn to The Work at Height Regulations 2005 [1], Schedule 2, which specifies requirements for guard-rails, toe-boards, barriers and similar collective means of protection.

5.4.1 The top surface of any toe-boards shall be not less than 150 mm above the top surface of the working platform.

5.4.2 When tested for strength with a horizontal load in accordance with **H.4**:

a) each toe-board shall not detach or fracture; and

b) side protection gates shall not open during the test and shall continue to open, close and function in accordance with the instruction manual after the test.

5.4.3 When tested for deflection in accordance with **H.4**:

a) each toe-board shall not deflect permanently or elastically by more than 35 mm measured with reference to their supports at the points of connection; and

b) side protection gates shall not open during the test and shall continue to open, close and function in accordance with the instruction manual after the test.

5.5 Access

5.5.1 Access shall be incorporated into an LLWP when the working platform height is greater than 400 mm, with any adjustable legs set at their nominal maximum height adjustment.

NOTE An LLWP can incorporate more than one access to the working platform.

5.5.2 The type of access and its dimensions shall be in accordance with Table 1.

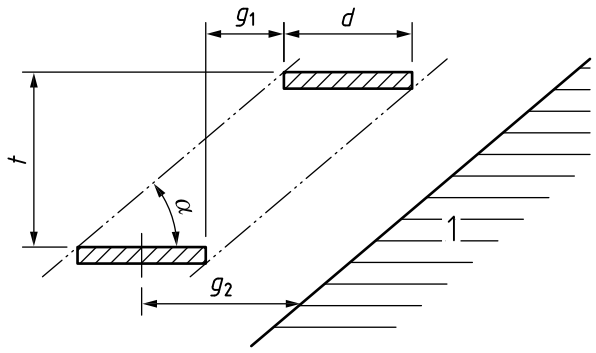
NOTE Access dimensions are shown for each access type in Figure 4.

Table 1 **Access dimensions**

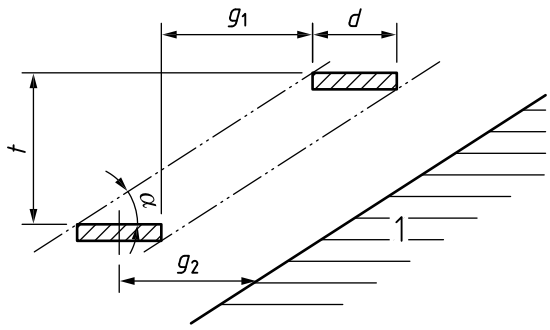
Dimensions in mm

Dimension	Symbol	Stairway		Stair ladder		Inclined ladder		Vertical ladder	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Climbing surface depth	d	125	–	80	–	20	80	20	51
Climbing surface spacing	t	190	250	150	250	230	300	230	300
Climbing surface width	w	300	–	300	–	300	–	300	–
Inclination	α	35°	55°	35°	55°	60°	75°	0°	0°
Unobstructed horizontal gap between climbing surfaces	g_1	0	50	0	160	–	–	–	–
Unobstructed horizontal gap behind climbing surface	g_2	150	–	150	–	150	–	150	–
Distance from ground to top of lowest climbing surface	L	0.5t	t + 15	0.5t	t + 15	0.5t	t + 15	0.5t	t + 15

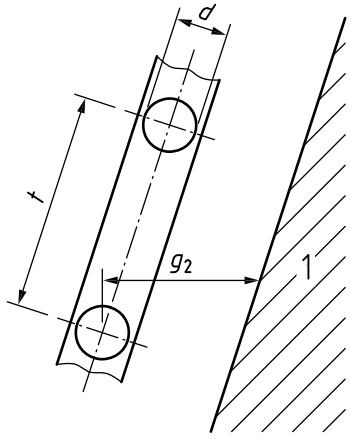
Figure 4 **Dimensions for each access type (*1 of 2*)**



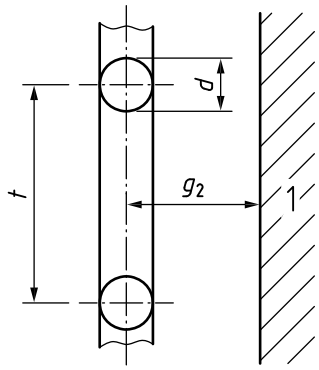
a) Stairway



b) Stair ladder

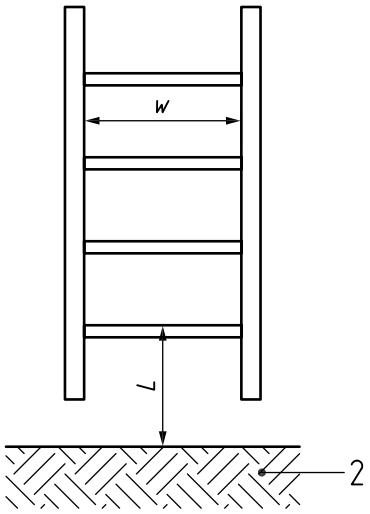


c) Inclined ladder



d) Vertical ladder

Figure 4 **Dimensions for each access type (*2 of 2*)**



e) Climbing surface width, *w*, and distance from ground to top of lowest climbing surface, *L*, shown on a vertical ladder

Key

1	Obstacle	*t*	Climbing surface spacing
2	Ground	*w*	Climbing surface width
d	Climbing surface depth	α	Inclination
g_1	Unobstructed horizontal gap between climbing surfaces	*L*	Distance from ground to top of lowest climbing surface
g_2	Unobstructed horizontal gap behind climbing surface		

5.5.3 Climbing surface spacing, *t*, shall be constant within a tolerance of ±2 mm.

5.5.4 The top of each climbing surface shall be slip-resistant.

5.5.5 Where an access extends for the purpose of height adjustment, overlapping climbing surfaces shall be aligned at any extension height.

5.5.6 The access shall incorporate a means to prevent its unintentional movement or disconnection.

NOTE It should be easy to assemble, reposition and dismantle access that is normally assembled, repositioned and dismantled by the user when using the LLWP in accordance with the instruction manual, although access should be designed such that it cannot move or detach without a direct intentional action by the user.

5.5.7 When tested for strength with a downward load in accordance with **I.2** the permanent deformation of the climbing surface shall be ≤0.5% of the inner width of the climbing surface after removal of the test load.

5.5.8 When tested for strength by applying torque in accordance with **I.3**:

a) there shall be no relative movement in the connection between the climbing surface and its adjoining members during the test; and

b) the permanent rotational deformation at the midpoint of the climbing surface shall be ≤(1 ±0.2)° after the test.

5.6 Mobility device

5.6.1 Mobility devices in contact with the ground in the deployed position shall not deflate if punctured.

5.6.2 Any brake on a mobility device shall be designed such that it can only be unlocked by a deliberate action.

5.6.3 A castor wheel that is in contact with the ground in the deployed position shall be fitted with a brake that prevents it from swivelling unless there is no horizontal offset between the vertical centreline of the castor wheel and the vertical centreline of the swivel component when the wheel brake is applied in the deployed position.

5.6.4 Mobility devices that are in contact with the ground in the position of use shall have brakes unless by design the LLWP is prevented from lateral movement in the position of use when tested for resistance to sliding in accordance with Annex D.

5.6.5 When tested for strength in accordance with **J.2**, mobility devices in contact with the ground in the deployed position shall not have collapsed, deformed or fractured.

5.6.6 When tested in accordance with **J.3**, any brake on a rotational mobility device shall prevent the rotational mobility device from rotating by ≥5 mm from the reference mark.

5.6.7 When tested for retention in accordance with Annex K, mobility devices in contact with the ground in the deployed position shall remain functional and shall not have moved by more than 4 mm from their original position.

5.7 Foot

5.7.1 When tested for strength in accordance with **J.2**, feet in contact with the ground in the deployed position shall not have collapsed, deformed or fractured.

5.7.2 When tested for retention in accordance with Annex K, feet in contact with the ground in the deployed position shall remain functional and shall not have moved by more than 4 mm from their original position.

5.8 Adjustable leg

When tested for retention in accordance with Annex K, adjustable legs shall remain functional and shall not have moved by more than 4 mm from their original position.

NOTE Adjustable legs are not intended for use to gain additional working height. Their purpose is to level the LLWP on uneven or sloping ground.

6 Marking

6.1 Markings shall be legible, durable and permanently fixed.

NOTE Markings can be in the form of adhesive labels, etching, engraving or printing.

6.2 When tested for durability in accordance with Annex L:

a) there shall be no reduction in the legibility of the markings; and

b) adhesive labels shall not have worked loose or become curled at the edges.

6.3 Graphical symbols in markings shall measure not less than (15 × 15) mm.

6.4 Markings shall provide as a minimum:

a) the identity of the manufacturer and/or supplier;

b) the month and year of manufacture;

c) the maximum working load, which shall be given as 150 kg;

d) the maximum working height, which shall be given as 2 m above the maximum working platform height;

e) the weight of the LLWP;

f) the following words or graphical symbols which convey the same message:

1) "Read the instructions";

2) "Do not use damaged equipment";

3) "Do not overreach";

4) "Do not use on loose or slippery surfaces";

5) "Do not use on sloping or uneven surfaces", where the LLWP is not fitted with a means of levelling the LLWP, such as adjustable legs;

6) "Never stand on the side protection or use boxes, stepladders or other objects to gain extra height";

7) "Never more than one person";

8) "Never move when a person is standing on the working platform";

9) "Never use as a means of access to another place";

10) "Never stand on the access ladder to work";

11) "Beware of power lines or other live electrical equipment";

12) "Working platform shall be level";

13) "Inspect before use";

14) "Only ascend or descend the LLWP using the access provided";

15) "Face the access when ascending and descending", where the LLWP has stair ladder, inclined ladder or vertical ladder access;

16) "Ensure all brakes are locked", where the LLWP incorporates brakes;

17) "Ensure side protection gate is closed and secured before use", where the LLWP incorporates a side protection gate; and

18) "Beware of finger traps", where these potentially exist.

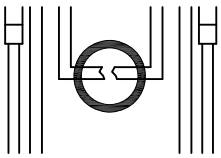
NOTE Some examples of the above cases are given in Figure 5.

Figure 5 **Examples of graphical symbols**

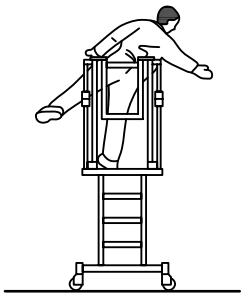
Read the instruction

Ensure all brakes are locked

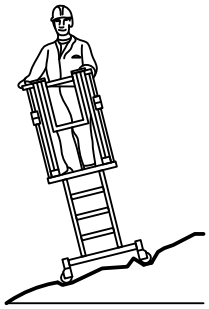
a) Mandatory examples



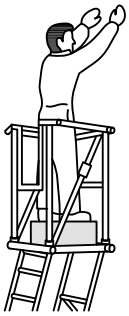
Do not use damaged equipment



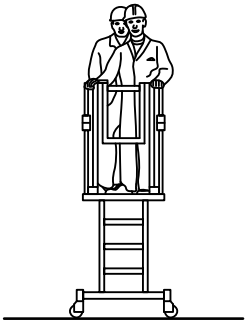
Do not over reach



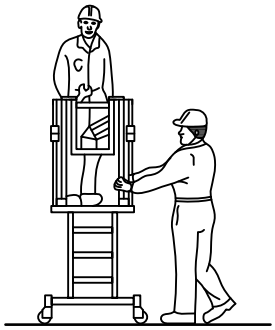
Do not use on sloping or uneven surface



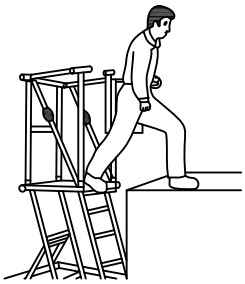
Never stand on the side protection or use stepladders, boxes or other objects to gain extra height



Never more than one person

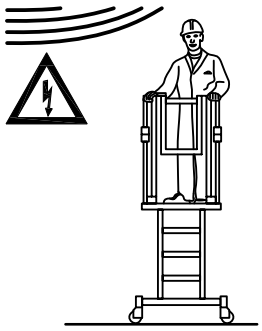


Never move when a person is standing on the platform



Never use as a means of access to another place

b) Prohibited examples



Beware of power lines of other live electrical equipment

c) Warning example

7 Instruction manual

An instruction manual shall be provided with every LLWP, which shall contain as a minimum:

a) the markings as in Clause **6**;

b) where the LLWP has separate components (e.g. a working platform, access and stability devices), a list of the type and quantity of components, and instructions for the assembly and dismantling of those components; and

c) where the LLWP has separate components, the words "Ensure all components are present and correctly fitted before use" or a graphical symbol which conveys the same message.

Annex A (normative) Test for strength

A.1 Apparatus

A.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

d) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

A.2 Procedure

Apply a test load of 3.20 kN uniformly distributed over the working platform for a period of 1 min.

Annex B (normative) Test for resistance to overturning

B.1 Apparatus

B.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth surface inclined in the direction identified as being most likely to cause the LLWP to overturn at 1% of the LLWP's outermost contact points with ground in that direction;

NOTE For example, for an LLWP that has contact points 1 m apart in the direction identified as being most likely to cause the LLWP to overturn, the elevation to the outermost contact points at one side is 10 mm.

b) with toe-boards omitted if they are designed to be removable;

c) set at its maximum working platform height;

d) with any castor wheels that are eccentric in the deployed position, rotated inwards in the position that is identified as being most likely to cause the LLWP to overturn;

e) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

f) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

B.2 Procedure

B.2.1 Secure the mobility devices or feet on the side of the LLWP subjected to the test loads against lateral movement by positioning them against a batten measuring 10 mm high that is fixed to the ground.

B.2.2 Position a rigid steel load plate measuring (200 × 200) mm on the working platform with one or more of its edges aligned against the edges of the working platform in the position identified as being most likely to cause the LLWP to overturn when subjected to the horizontal load applied in **B.2.5**.

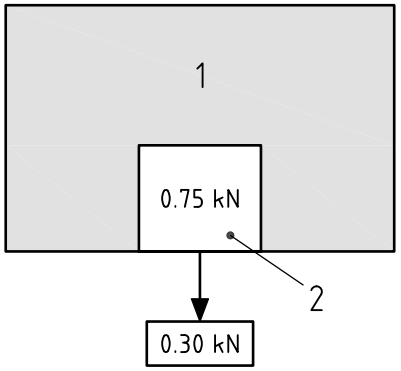
B.2.3 Where the LLWP is fitted with non-removable toe-boards, position one or more of the edges of the load plate against the inside faces of the toe-boards, parallel to the edges of the working platform.

B.2.4 Apply a downwards vertical load of 0.75 kN uniformly distributed over the load plate.

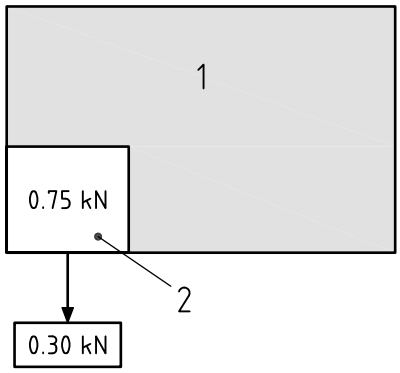
B.2.5 Apply a horizontal pulling load of 0.30 kN to the principle (top) guard-rail for a period of 1 min in the direction identified as being most likely to cause the LLWP to overturn. Apply the horizontal load such that it is level with the principle (top) guard-rail of the working platform and perpendicular thereto and in line with the midpoint of the load plate.

NOTE Example representations of the loads applied are given in Figure B.1.

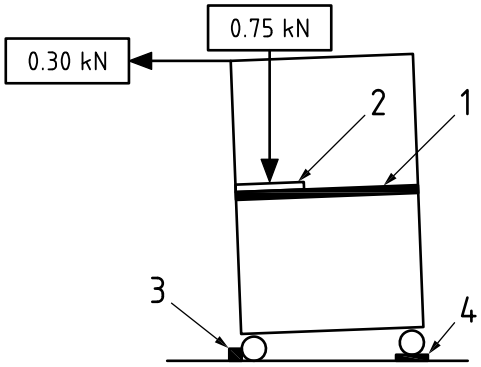
Figure B.1 **Example representations of the loads applied in the test for resistance to overturning**



a) A view from above showing an example of the rigid steel load plate positioned with one edge aligned to the edge of a working platform



b) A view from above showing an example of the rigid steel load plate positioned with two edges aligned to the edge of a working platform



c) A view from one side showing an example of the rigid steel load plate (2) positioned with its edge aligned to the edge of the working platform and a 10 mm high batten (3) positioned and fixed to the ground to prevent lateral movement and blocks (4) placed underneath the contact points with ground on one side to incline the LLWP 1%

Key

1 Working platform
2 Rigid steel load plate
3 10 mm high batten fixed to the ground
4 Blocks inclining the LLWP by 1%

Annex C (normative) Test for rigidity

C.1 Apparatus

C.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with any castor wheels that are eccentric in the deployed position, rotated inwards in the position that is identified as being most likely to cause the LLWP to deflect;

d) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

e) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

C.2 Procedure

C.2.1 Secure the mobility devices or feet to the ground to prevent loss of ground contact without increasing the rigidity of the LLWP.

C.2.2 Measure the height, *h*, of the top surface of the working platform above the ground.

C.2.3 Position a rigid steel load plate measuring (200 × 200) mm in the middle of the working platform.

C.2.4 Apply a downwards vertical load of 0.75 kN uniformly distributed over the load plate.

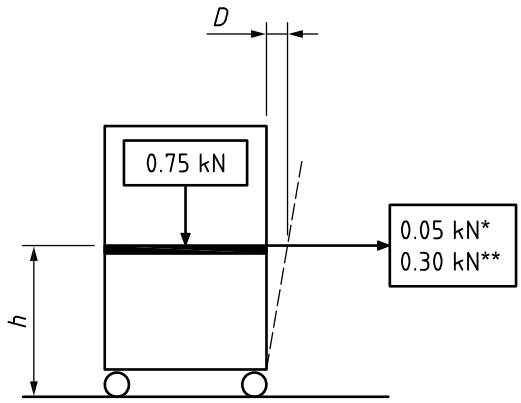
C.2.5 Apply a horizontal preload of 0.05 kN to the working platform edge for a period of 1 min in the direction identified as being most likely to cause the LLWP to deflect. Apply the horizontal preload such that it is level with the top surface of the working platform and perpendicular thereto and in line with the midpoint of the load plate. Establish a datum for the top surface of the working platform edge from which any horizontal deflection under the horizontal test load in **C.2.6** can be determined.

C.2.6 Increase the horizontal test load to 0.30 kN. After 1 min, measure the deflection, *D*, under load from the datum position.

C.2.7 Repeat **C.2.1** to **C.2.6**, applying the horizontal preload and test load at 90° to the direction used in **C.2.5**.

NOTE An example of the load positions applied is given in Figure C.1.

Figure C.1 **Example of the load positions applied in the test for rigidity**



Key

D	Maximum deflection	*	Horizontal preload
h	Height of the top surface of the platform above the ground	**	Horizontal test load

Annex D (normative) Test for resistance to sliding

D.1 Apparatus

D.1.1 *Test rig*, which is the LLWP:

a) in its deployed position with all its contact points with the ground on a sheet of float glass conforming to BS EN 572-2. The glass shall be of a suitable thickness to support the weight of the LLWP and the test loads;

b) set at its maximum working platform height;

c) with any castor wheels that are eccentric in the deployed position, rotated inwards in the position that is identified as being most likely to cause the LLWP to move;

d) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position;

e) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test; and

f) with new mobility devices and feet.

D.2 Procedure

D.2.1 The test shall be carried out in an air temperature range of (20 ±5) °C which shall be maintained throughout the duration of the test. The air temperature shall be measured:

a) within 100 mm measured horizontally from the contact points of the LLWP with the float glass surface supporting the LLWP; and

b) at a height not greater than 10 mm above the float glass surface supporting the LLWP.

The air temperature surrounding the feet shall be (20 ±2) °C.

D.2.2 Prior to positioning the LLWP on the glass, the glass shall be cleaned using ethanol (96% vol) and a dry cotton cloth (120/125 g per m^3). After cleaning remove any remaining ethanol with another dry cotton cloth.

D.2.3 Position a rigid steel load plate measuring (200 × 200) mm in the middle of the working platform.

D.2.4 Apply a downwards vertical load of 0.75 kN uniformly distributed over the load plate.

D.2.5 Apply a horizontal preload of 0.05 kN:

a) to the middle of the edge of the working platform that is most likely to cause the LLWP's contact points with the ground to move horizontally by more than 5 mm;

b) for a period of 1 min;

c) in a direction that is most likely to cause the LLWP's contact points with the ground to move horizontally by more than 5 mm; and

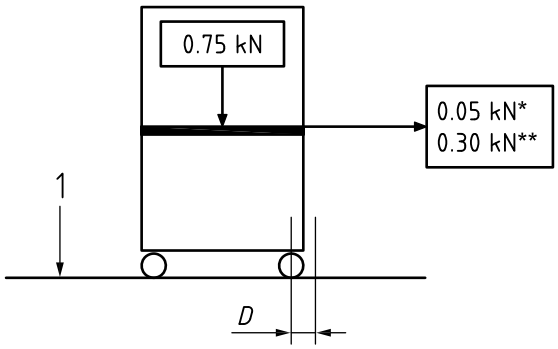
d) such that it is level with the top surface of the working platform edge and perpendicular thereto.

D.2.6 Establish horizontal datums for the LLWP's contact points with the ground (i.e. its mobility devices or feet in the deployed position) from which any horizontal deflection under the horizontal test load in **D.2.6** can be determined.

D.2.7 Increase the horizontal test load to 0.30 kN for a period of 1 min. Measure the deflection, *D*, under load from the datum position.

NOTE An example representation of the loads applied is given in Figure D.1.

Figure D.1 **Example representation of the loads applied in the test for resistance to sliding**



Key

D	Maximum deflection	*	Horizontal preload
1	Float glass confirming to BS EN 572-2	**	Horizontal test load

Annex E (normative) Test for stability when ascending or descending

E.1 Apparatus

E.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with any castor wheels that are eccentric in the deployed position, rotated inwards in the position that is identified as being most likely to cause the LLWP to lift from the ground;

d) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

e) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

E.2 Procedure for an LLWP with access

E.2.1 Apply a downwards vertical load of 0.75 kN to the lowest climbing surface of the access, 100 mm inwards from the end of the climbing surface and uniformly distributed over 100 mm of its width and across the complete depth front to back.

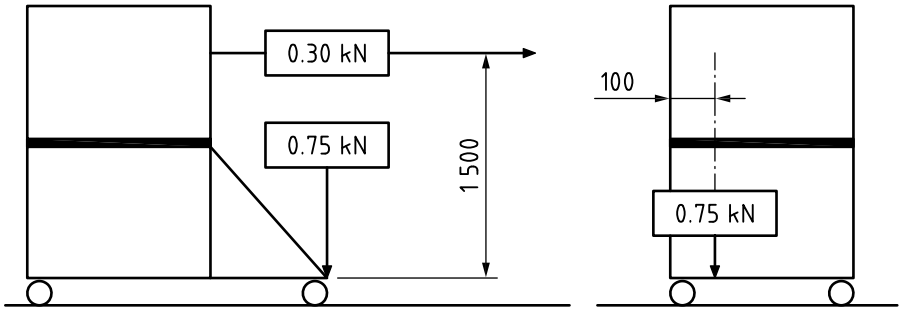
E.2.2 Establish a vertical datum for measurement by securely fixing rigid datum pointers to the LLWP on the opposite side of the LLWP to the side subjected to the horizontal load point in **E.2.3**. Fix the datum pointers so that they are in contact with the ground as close as possible to the LLWP's contact points with the ground (i.e. its mobility devices or feet in the deployed position).

E.2.3 Apply a horizontal load of 0.30 kN at a point 1 500 mm above the downwards vertical load in **E.2.1** at the nearest point of the LLWP that would serve as a handhold for a person standing on the lowest climbing support and ascending the LLWP. Apply the horizontal load for a period of 1 min in a direction that would be towards a person accessing the working platform.

NOTE An example representation of the loads applied is given in Figure E.1.

Figure E.1 **Example representation of the loads applied in the test for stability when ascending or descending an LLWP with access**

Dimensions in mm



a) A view from one angle showing the downward vertical load and horizontal load applied at a distance of 1 500 mm apart

b) A view from an angle perpendicular to a), showing the downward vertical load applied 100 mm in from the end of the climbing surface

E.3 Procedure for an LLWP with no access

E.3.1 Where no access is provided, position a rigid steel load plate measuring (100 × 100) mm aligned against the middle of the edge of the working platform used to obtain access to the working platform. Where access to the platform can be obtained from more than one side of the LLWP, position the load plate against the middle of the edge of the working platform most likely to cause the LLWP to lift from the ground when the horizontal load in **E.3.4** is applied.

E.3.2 Apply a downwards vertical load of 0.75 kN uniformly distributed over the load plate.

E.3.3 Establish a vertical datum for measurement by securely fixing rigid datum pointers to the LLWP on the opposite side of the LLWP to the side subjected to the downwards vertical load in **E.3.2**. Fix the datum pointers so that they are in contact with the ground as close as possible to the LLWP's contact points with the ground (i.e. its mobility devices or feet in the deployed position).

E.3.4 Apply a horizontal load of 0.30 kN at a point 1 500 mm above the downwards vertical load in **E.3.2** at the nearest point of the LLWP that would serve as a handhold for a person standing on the ground in a position where they might stand before stepping onto the working platform. If there is no point at 1 500 mm above the downwards vertical load, apply the horizontal load at the highest point above the downwards vertical load that would serve as a handhold. Apply the horizontal load for a period of 1 min in a direction that would be towards the person stepping onto the working platform.

Annex F (normative) Tests for working platform strength

F.1 Apparatus

F.1.1 *Test rig*, which is the LLWP:

a) in its deployed position (with or without toe-boards) on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with any castor wheels that are eccentric in the deployed position, rotated inwards in the position that is identified as being most likely to cause the LLWP to deform;

d) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

e) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

F.2 Procedure in the middle of the working platform

F.2.1 Position a rigid steel load plate measuring (200 × 200) mm in the middle of the working platform.

F.2.2 Apply a downwards vertical preload of 0.20 kN uniformly distributed over the load plate for a period of 1 min. Establish datums for the height of the top surface of the working platform after removal of the preload.

F.2.3 Apply a downwards vertical test load of 2.60 kN uniformly distributed over the load plate for a period of 1 min. Measure the maximum permanent deformation of the top surface of the working platform from the datum positions after removal of the test load.

F.3 Procedure in a corner of the working platform

F.3.1 Position a rigid steel load plate measuring (200 × 200) mm with two of its edges aligned against the edges of the working platform in the position identified as being most likely to cause the maximum permanent deformation of the working platform surface to exceed 0.5% of the working platform width or length, whichever is the greater, when subjected to the downwards vertical test load applied in **F.3.3**.

F.3.2 Apply a downwards vertical preload of 0.20 kN uniformly distributed over the load plate for a period of 1 min. Establish datums for the height of the top surface of the working platform after removal of the preload.

F.3.3 Apply a downwards vertical test load of 2.60 kN uniformly distributed over the load plate for a period of 1 min. Measure the maximum permanent deformation of the top surface of the working platform from the datum positions after removal of the test load.

Annex G (normative) Test for working platform displacement

G.1 Apparatus

G.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

d) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

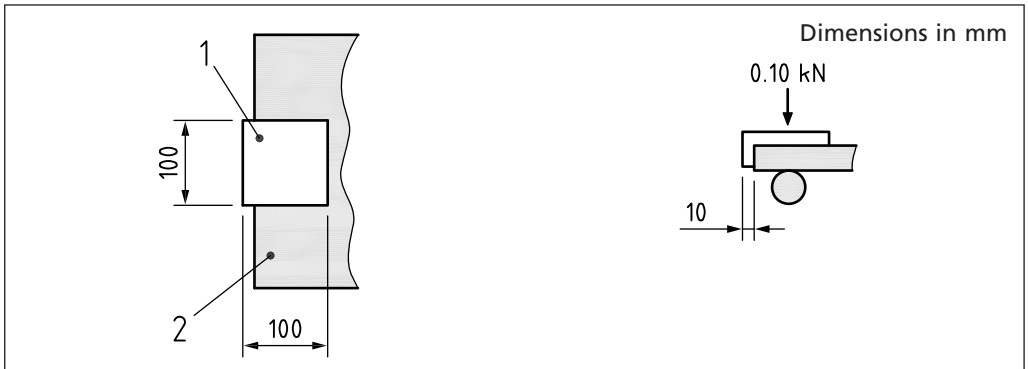
G.2 Procedure

G.2.1 Position a rigid steel load plate measuring (100 × 100) mm at the edge of the working platform and in the position identified as being most likely to cause the working platform to incline by more than 6° to the horizontal when subjected to the downwards vertical load applied in **G.2.2**. Establish a datum for the top surface of the working platform edge from which any incline under the downwards vertical test load in **G.2.2** can be determined.

G.2.2 Apply a downwards vertical test load of 0.10 kN uniformly distributed over the load plate for a period of 1 min. Measure the incline under load from the datum position.

NOTE An example representation of the load applied is given in Figure G.1.

Figure G.1 **Example representation of the load applied in the test for working platform displacement**



a) A view from above of the rigid steel load plate positioned on the edge of the working platform

b) A view from the side of the downwards vertical test load applied to the rigid steel load plate positioned on the edge of the working platform

Key

1 Rigid steel load plate

2 Working platform

Annex H (normative) Tests for side protection and toe-board strength

H.1 Apparatus

H.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

d) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

H.2 Procedure for downward load test for side protection strength

H.2.1 Where side protection gates are fitted, conduct the test once with the gate closed and once with the gate open.

H.2.2 Establish datums for the position of all side protection components.

H.2.3 Apply a point load of 1.25 kN for a period of 1 min on each side protection component at a position where failure to conform to **5.3.5** is most likely to occur. Apply the load in a downwards direction within a sector of ±10° from the vertical.

H.2.4 Measure the extent of permanent deformation from the datums established in **H.2.2**.

H.3 Procedure for horizontal load test for side protection strength and deflection

H.3.1 Where side protection gates are fitted, conduct the test once with the gate closed and once with the gate open.

H.3.2 Apply a horizontal point load of 0.30 kN for a period of 1 min on each side protection component at a position where failure to conform to **5.3.6** is most likely to occur.

H.3.3 Apply a horizontal point load of 0.30 kN for a period of 1 min on each side protection component at a position where failure to conform to **5.3.7** is most likely to occur.

H.4 Procedure for horizontal load test for toe-board strength and deflection

H.4.1 Where side protection gates are fitted, conduct the test once with the gate closed and once with the gate open.

H.4.2 Apply a horizontal point load of 0.15 kN for a period of 1 min on each toe-board at a position where failure to conform to **5.4.2** is most likely to occur.

H.4.3 Apply a point load of 0.15 kN for a period of 1 min on each toe-board at a position where failure to conform to **5.4.3** is most likely to occur.

Annex I (normative) Tests for strength of access

I.1 Apparatus

I.1.1 *Test rig*, which is the LLWP:

a) in its deployed position on a smooth and level ground surface;

b) set at its maximum working platform height;

c) with brakes applied to mobility devices in contact with the ground when the LLWP is in its deployed position; and

d) with adjustable legs set at their nominal maximum height adjustment and not adjusted any further during the test.

I.2 Procedure for downward load test

I.2.1 Apply a downwards vertical preload of 0.20 kN in the midpoint of the weakest climbing surface for a period of 1 min, uniformly distributed over a width of 100 mm and across the complete depth of the climbing surface front to back.

I.2.2 Establish the origin for measurement as the vertical position of the midpoint of the underneath of the climbing surface, after removal of the preload.

I.2.3 Apply a downwards vertical test load of 2.60 kN to the same climbing surface at the same point in **I.2.1** in for a period of 1 min, uniformly distributed over a width of 100 mm and across the complete depth of the climbing surface front to back.

I.2.4 Measure the extent of permanent deformation from the origin for measurement established in **I.2.2**.

I.3 Procedure for torque test

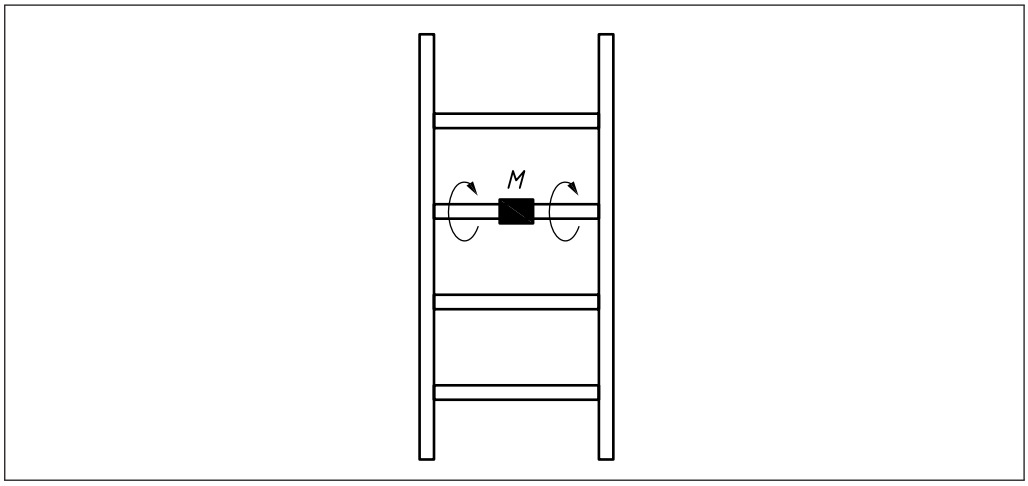
I.3.1 Establish the origin for measurement as the vertical position of the midpoint of the underneath of the climbing surface.

I.3.2 Apply a torque, *M*, of 50 N·m at the midpoint of the weakest climbing surface via a 100 mm wide clamping device. Apply the torque for a period of 10 s alternately ten times in a clockwise direction and ten times in an anticlockwise direction.

NOTE An example representation of the load applied is given in Figure I.1.

I.3.3 Measure the extent of permanent rotational deformation from the origin for measurement established in **I.3.2**.

Figure I.1 **Example representation of the load applied in the torque test for strength of access**



Annex J (normative) Tests for mobility device and foot strength

J.1 Apparatus

J.1.1 *Test rig*, which is any mobility device or foot in contact with the ground when the LLWP is in the deployed position. The test rig is set up such that:

a) the mobility device or foot is separated from the LLWP; and

b) all brakes, if any, are applied.

J.2 Test for mobility device and foot strength

J.2.1 Calculate the test load in accordance with equation J.1.

$$TL = (150 + W) \times 0.75 \quad \text{(J.1)}$$

where:

TL is the test load in kg;

W is the weight of the LLWP in kg.

J.2.1 Test for durability of markings

Markings shall be rubbed first for 15 s with a cloth soaked in water and then for 15 s with a cloth soaked in petroleum spirit.

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1129, *Specification for portable timber ladders, steps, trestles and lightweight stagings*

BS 1139-6, *Metal scaffolding – Part 6: Prefabricated tower scaffolds outside the scope of BS EN 1004, but utilizing components from such systems – Specification*

BS 2037, *Specification for portable aluminium ladders, steps, trestles and lightweight stagings*

BS EN 131 (all parts), *Ladders*

BS EN 280, *Mobile elevating work platforms – Design calculations – Stability criteria – Construction – Safety – Examinations and tests*

BS EN 1004, *Mobile access and working towers made of prefabricated elements – Materials, dimensions, design loads, safety and performance requirements*

BS EN 12811-2, *Temporary works equipment – Part 2: Information on materials*

Other publications

[1] GREAT BRITAIN. The Work at Height Regulations 2005. London: The Stationary Office. [Statutory Instrument 2005 No. 735]

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