



# Test Report

Client Name : Ucom(Guangzhou) Commercial Industrial Co., Ltd.

Address : RM 2109, No.5, Ting Yuan Road, Hai Zhu District,  
Guangzhou City, Guangdong Province, China.

Manufacturer : Ucom(Guangzhou) Commercial Industrial Co., Ltd.

Address : RM 2109, No.5, Ting Yuan Road, Hai Zhu District,  
Guangzhou City, Guangdong Province, China.

Product Name : Electric Toilet Lift

Date : 2022-06-21

**Shenzhen JLA Testing Co., Ltd**





**TEST REPORT**  
**ISO 17966:2016**  
**Assistive products for personal hygiene that support users**  
**— Requirements and test methods**

**Report**

Report reference No. : JLA22FR0821S

Tested by (signature) : Peter Liu/


Reviewed by (+signature) : Kevin Duan/

Date of issue : 2022-06-21

**Testing laboratory**

Name : Shenzhen JLA Testing Co., Ltd

Address : 306, Building B, Xinlida Industrial Park, Guanlan Street, Longhua District, Shenzhen

Test location : Same as above

**Client**

Name : Ucom(Guangzhou) Commercial Industrial Co., Ltd.

Address : RM 2109, No.5, Ting Yuan Road, Hai Zhu District, Guangzhou City, Guangdong Province, China.

**Test specification**

Standard : ISO 17966:2016

Non-standard test method : N.A.

**Test item**

Description : Electric Toilet Lift

Brand Name : UKOM

Model No. : UC-TL-18-A6, UC-TL-18-A1, UC-TL-18-A2, UC-TL-18-A3, UC-TL-18-A4, UC-TL-18-A5.

Power rating : Input: 100-240V~, 50/60Hz  
Battery inside: 24V, 2.5Ah

Manufacturer : Ucom(Guangzhou) Commercial Industrial Co., Ltd.

Address : RM 2109, No.5, Ting Yuan Road, Hai Zhu District, Guangzhou City, Guangdong Province, China.



**Particulars: test item vs. test requirements**

Equipment mobility ..... : Stationary equipment  
 Operating condition ..... : Continuous  
 Tested for IT power systems ..... : No  
 IT testing, phase-phase voltage (V) ..... : N/A  
 Class of equipment ..... : Class II  
 Equipment maximum load ..... : 200Kg

**Test case verdicts**

Test case does not apply to the test  
 object ..... : N/A  
 Test item does meet the requirement ... : P(ass)  
 Test item does not meet the requirement F(ail)  
 ..... :

**General remarks:**

“(See remark #)”refers to a remark appended to the report.  
 “(See appended table)”refers to a table appended to the report.  
 Throughout this report a comma is used as the decimal separator.  
 The test results presented in this report relate only to the object tested.  
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**Copy of marking plate**

Electric Toilet Lift  
 Model: UC-TL-18-A6  
 Rating: 100-240V~,50/60Hz  
 Battery inside: 24V, 2.5Ah  
 Ucom(Guangzhou) Commercial Industrial Co., Ltd.  
 RM 2109, No.5, Ting Yuan Road, Hai Zhu District,  
 Guangzhou City, Guangdong Province, China.



Made in China



ISO 17966			
Clause	Requirement + Test	Result - Remark	Verdict
4	General requirements and test methods		P
4.1	Risk analysis		P
	The safety of an APPH shall be assessed by identifying hazards and estimating the risks associated with them using the procedures specified in ISO 14971 and, if relevant, ISO 12100. When an APPH is intended by the manufacturer to be used in combination with a device that is not a medical device the device shall behave in a safe way, as a system.		P
4.2	Intended performance		P
	An APPH shall have sufficient strength and durability to sustain all loads expected during intended use.	In line with expectations	P
4.3	Clinical evaluation and investigation	No clinical trial required	N
4.4	Assistive products for personal hygiene that can be dismantled		P
	If it is intended that an APPH can be dismantled for storage or transportation, it shall not be possible to reassemble it in a manner that presents a hazard.		P
4.5	Fasteners		P
	The fasteners which are loosened or removed to allow this dismantling shall not be single use fasteners. All load-bearing fasteners shall be either self-locking or fitted with a locking device to prevent inadvertent detachment.		P
4.6	Means to prevent falling out		P
	If there is a risk of the user falling out of the product during normal use, means to prevent the user falling out shall be available.	There are measures to prevent falling.	P
4.7	User mass/load limits		P
	The maximum user mass shall be declared. If the maximum load is different both shall be declared by the manufacturer. All products with the intended purpose of supporting an occupant/user in a seated or lying position shall be capable of supporting a person with at least 100 kg body mass. If a product is intended by the manufacturer to be used by a person of less than 100 kg body mass, there shall be a limitation in the design of the product to prevent the potential misuse by a person with higher body mass than the one stated by the manufacturer. The maximum user mass and the maximum load as specified by the manufacturer shall be used in the relevant test methods of this International Standard. When the loading pad is used for testing, the mass thereof	Has declared maximum user quality	P



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Clause	Requirement + Test	Result - Remark	Verdict
	shall be taken into account for the test value of loading.		
4.8	Apparatus		N/A
4.9	Test conditions		P
	The product shall be tested in the as-delivered state (to the customer). However if the product is of a multi-purpose design that can be assembled in different formats, it shall be assembled according to instructions given by the manufacturer. If the product is intended to be used in different combinations, then the most adverse combination shall be tested. If the product is delivered disassembled it shall be assembled according to manufacturer's instructions before testing.		P
	Unless otherwise specified, the tests shall be performed under normal indoor conditions: - with temperatures between 15°C and 30°C; - with humidity between 20% RH and 85% RH.		P
	All tests shall be performed on a single product. A new product can be chosen if the original test object breaks down, and cannot be repaired. Some tests relevant to the safe functioning of the product might have to be repeated on the new product. This is up to the manufacturer of the product to consider in each separate case.		P
5	Materials		P
5.1	General		P
	Manufacturers should, wherever possible, use materials that can be recycled for further use. It should be stated in the instructions for use which parts can be recycled.		P
5.2	Flammability		P
5.2.1	General		P
	Manufacturers shall consider the environments and methods of use to which an APPH, or any materials that are usually used in combination with this APPH, will be exposed and take appropriate steps to minimise any fire hazard. The manufacturer shall include a warning in the instructions for use about safe combinations of flame resistant and non-flame resistant materials.		P
5.2.2	Moulded parts used as enclosures for electrical equipment		P
	If a risk can potentially be caused by an electrical component the housing of the moulded part shall be tested in accordance with FV-1 of IEC 60695-11-10 or better. If the product is of a type that the person with disability cannot escape from or detect as a dangerous situation it shall be FV-0.		P
5.2.3	Upholstered parts and moulded parts		□



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	<p>If the manufacturer claims that the upholstered parts are resistant to ignition by cigarette, progressive smouldering ignition and flaming ignition shall not occur when the materials used for the upholstered parts of an assistive product are tested in accordance with ISO 8191-1 and ISO 8191-2.</p> <p>If the manufacturer claims that moulded parts are resistant to ignition by small flames, such as those from a match, progressive smouldering ignition and flaming ignition shall not occur when tested in accordance with IEC 60695-11-10.</p>		N/A
5.3	Biocompatibility and toxicity		N/A
	<p>Materials which come into contact with the human body shall be assessed for biocompatibility using the guidance in ISO 10993-1.</p> <p>The assessment shall also take into account the intended use and contact by those involved in user care.</p> <p>The result of the assessment shall be incorporated in the risk analysis (see 4.1).</p> <p>The assistive products shall be designed and manufactured in such a way as to reduce to a minimum the risks posed by substances leaking from the assistive product. Special attention shall be given to substances which are carcinogenic, mutagenic or toxic to reproduction and other substances of very high concern (SVHCs).</p> <p>The assessment should follow the guidance given in Annex C.</p>		N/A
5.4	Infection and microbiological contamination		P
5.4.1	Cleaning and disinfection		P
	If an APPH is intended to be cleaned and/or disinfected, the method and suitable cleaning or disinfection materials shall be described in the information supplied by the manufacturer.		P
	If an APPH is intended to be cleaned by automatic washing systems or hand-held jet stream/steam washing the details of the procedure, such as temperature, pressure, flow and pH value of cleaning/rinsing solution shall be described in the instructions for use.		P
5.4.2	Resistance against temperature alternations		P
	<p>If an APPH is intended to be heated up during the disinfection or washing process, it shall pass the following test.</p> <p>The test sample is exposed to the maximum temperature <math>\pm 2^{\circ}\text{C}</math> during the washing and disinfection process as</p>		P





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	described by the manufacturer and afterwards cooled down to a temperature of 30°C. This cycle of alternating temperatures is repeated ten times. For products intended to be disinfected by heat one of the following three temperatures and duration of exposition can be used: a) a temperature of 90°C for 1 minute; b) a temperature of 85°C for 3 minutes; c) a temperature of 80°C for 10 minutes. The test shall be performed before any strength and/or durability tests of the product.		
5.4.3	Animal tissue		N/A
	Where a device has been manufactured utilising tissues of animal origin or their derivatives, a risk assessment shall be performed and documented according to ISO 22442-1.		N/A
5.5	Resistance to corrosion		P
	The risk of corrosion affecting the safety of the user or an assistant shall be assessed in the risk analysis. Assistive products that are identified to be at risk of corrosion shall be sufficiently protected against corrosion, which can be confirmed by using the salt spray test according to ISO 9227 with a test duration of 72 hours.		P
6	Emitted sound and vibration		N/A
6.1	Noise and vibration		N/A
	If noise and vibration are not part of the intended performance of an APPH, hazards and nuisance from noise and vibration shall be assessed in the risk analysis (see 4.1). Measurements of noise from a power operated APPH shall be made in accordance with ISO 3746, and the result of the measurement shall be recorded in the pre-sale information of instructions for use.		N/A
6.2	Sound pressure levels and frequencies of audible warning devices		N/A
	The frequency shall be within 500 Hz and 3000 Hz.		N/A
7	Electromagnetic compatibility		P
7.1	General		P
	An APPH containing electrical or electronic devices/components shall conform to IEC 60601-1-2 and shall, in addition, conform to 7.2, 7.3 and 7.4.		P
7.2	Emissions		P
	When tested in CISPR 11, the equipment shall meet the radiated emissions limits specified in CISPR 11 for group 1, class B equipment.		P



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	The APPH shall meet the requirements of IEC 61000-3-2 and IEC 61000-3-3, if applicable.						
7.3	Immunity		P				
	In addition to the requirements in IEC 60601-1-2:2014, APPH shall also be tested with a field strength of 10V/m (RMS value of the unmodulated carrier) in the frequency range of 800 MHz to 2,5 GHz. The test shall be performed in accordance with IEC 61000-4-3. If, as a result of the application of this test, the APPH presents a hazard, or there is any unintentional operation of the APPH, the APPH fails the test.		P				
7.4	Power frequency magnetic field immunity		P				
	When the equipment is tested in accordance with IEC 61000-4-8, test level 4, at any voltage using either 50 Hz or 60 Hz: a) the equipment shall behave safely in the presence of the applied field; b) electrically powered devices or electrically moved functions shall not move in the presence of the applied field. Perform the continuous field immunity test specified in IEC 61000-4-8 on the equipment as table-top equipment. Test the equipment for not less than one minute for each orientation of the applied field.		P				
8	Electrical safety		P				
8.1	General		P				
	An APPH shall fulfill the relevant requirements stated in Table 1 regarding electrical safety. An APPH connected to mains shall be either of class I (protective earth) or class II (double isolation). For APPHs which are marketed by the manufacturer as medical electrical equipment and are intended to be used in the home care environment and which are not permanently installed only class II is allowed according to IEC 60601-1-11.		P				
8.2	Electrical systems		P				
	An electrical system can consist of several components, each tested to different standards. For the applicability of standards for components of electrical systems see Table 1.  Table 1 — Applicable standards for electrical safety		P				
	<table border="1"> <thead> <tr> <th>APPH that fall within the scope of IEC 60601-1:2005 are tested according to:</th> <th>APPH that fall within the scope of IEC 60335-1 are tested according to:</th> </tr> </thead> <tbody> <tr> <td>IEC 60601-1 IEC 60601-1-11 IEC 60601-2-xx</td> <td>IEC 60335-1 IEC 60335-2-xx</td> </tr> </tbody> </table>	APPH that fall within the scope of IEC 60601-1:2005 are tested according to:	APPH that fall within the scope of IEC 60335-1 are tested according to:	IEC 60601-1 IEC 60601-1-11 IEC 60601-2-xx	IEC 60335-1 IEC 60335-2-xx		
APPH that fall within the scope of IEC 60601-1:2005 are tested according to:	APPH that fall within the scope of IEC 60335-1 are tested according to:						
IEC 60601-1 IEC 60601-1-11 IEC 60601-2-xx	IEC 60335-1 IEC 60335-2-xx						
8.3	Safe positioning		N/A				





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	The APPH shall always be capable of being set into a position that enables safe transfer of the occupant in case of a single fault failure or by loss of power.		N/A
8.4	Single fault safety		N/A
	The APPH shall be so designed and manufactured that it remains single fault safe, or the risk remains acceptable as determined through the risk analysis process according to IEC 60601-1:2005, 4.7.		N/A
8.5	Hold to run activation		N/A
	Electrically operable movements shall only be possible by the activation of control device(s) which initiate and maintain operation of the device only as long as the manual control is actuated and where the manual control automatically returns to the 'Stop' or 'Off' position when released.		N/A
8.6	Emergency stopping functions		P
	<p>If the risk analysis demonstrates that there is a risk for the user or any other person around the APPH to be squeezed or a single fault appearing that might create a safety hazard there shall be an emergency stop as specified in ISO 13850 together with the following requirements:</p> <ul style="list-style-type: none"> <li>- the APPH shall be designed to prevent accidental damage. If this is not feasible the APPH shall stop moving;</li> <li>- the emergency stopping device shall be readily accessible to the operator, and stop the dangerous situation within one action;</li> <li>- the stopping device shall maintain the equipment in a safe position, but not interfere with any essential performance functions, as defined by the manufacturer;</li> <li>- the emergency stopping device shall maintain the APPH in a stopped position until it is released by a designated procedure;</li> <li>- a safe stopping distance shall be considered in the risk analysis;</li> <li>- the designated procedure for the release of the emergency stop shall be different from the movement needed to activate the emergency stop.</li> </ul>		P
8.7	Continuity of power supply		P
	<p>If the safety of a person using an APPH powered from electrical supply mains depends upon the continuity of the power supply, the APPH shall be provided with a level of protection as follows.</p> <ul style="list-style-type: none"> <li>- In case of a power cut, it shall be possible to return the APPH to a position enabling safe transfer using an auxiliary source of power or to provide sufficient power to allow</li> </ul>		P



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	<p>further actions.</p> <p>-If the power is cut, an auxiliary source of power is automatically connected to the APPH and a means to signal to the assistant that a discontinuity of the power supply has occurred. The auxiliary source of power shall provide sufficient power to allow for further actions.</p> <p>-If the intended operator is able to react in a reasonable and timely manner by himself as power is cut, an auxiliary source of power and a means to signal to the operator that a discontinuity of the power supply has occurred, the auxiliary power source shall provide sufficient power to allow for further actions.</p> <p>-If it is feasible, a method of non-electrical operation shall be provided that reduces the risk to users to an acceptable level until they can be moved from the APPH, or until power is restored together with a means to signal power failure to the operator/assistant who is intended for such emergency operations.</p> <p>If there is a battery backup when there is a failure in the mains, this shall start to function as fast as possible and have a performance time long enough to bring the user into a position to enable safe transfer.</p> <p>If the safety of a person using an internally powered APPH depends upon the continuity of the power supply, a means of informing the operator of a critical charge of the power supply shall be provided.</p> <p>At the time of reaching the critical charge, either an auxiliary source of sufficient power or a sufficient reserve charge of the internal power supply shall be available to allow timely reaction.</p>		
8.8	Battery powered assistive products for personal hygiene		P
8.8.1	Battery housings		P
	<p>Battery housings shall provide protection so that it shall not be possible for the following safety risks to occur.</p> <p>a) The need for, and the design of, battery housings shall be based on the risk analysis (see 4.1) and shall identify the hazards and evaluate the risks associated with:</p> <ol style="list-style-type: none"> <li>1) leakage of acid and/or other substances from the battery(ies);</li> <li>2) ventilation of gases generated during charging and/or use;</li> <li>3) short circuits of the battery(ies);</li> </ol> <p>when operated in accordance with the conditions of use.</p>		P



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	<p>b) Housings containing batteries from which gases can escape during charging or discharging, shall be ventilated.</p> <p>c) If a short circuit of a battery could result in a safety hazard, the battery shall be contained in a housing/compartment that prevents the risk of accidentally short circuiting the battery(ies).</p> <p>d) Any battery housing/compartment shall collect and store any fluids and/or substances (other than gases) which may leak from the battery(ies) specified by the manufacturer.</p> <p>e) The materials used in the manufacture of battery housings shall be resistant to the substances that might leak from the battery(ies) specified by the manufacturer.</p>		
8.8.2	Connection		P
	If a safety hazard can develop from the incorrect connection or replacement of a battery, an APPH shall be fitted with a means of preventing incorrect polarity.		P
8.8.3	Charge level indicator		P
	If the safety of a person using an internally powered APPH depends upon the power supply, a means of informing the operator of the state of the charge of the power supply shall be provided. At the time of indicating the critical charge, sufficient reserve charge of the internal power supply shall be available to allow for a timely reaction.		P
8.9	Circuit protection		P
	The APPH shall meet the requirements and test methods for circuit protection as in IEC 60601-1+A1:2012:2005.		P
8.10	Electrically heated blankets, pads and similar flexible heating appliances		N/A
	An electrically heated blanket, pad or similar flexible heating appliances shall fulfil the requirements in IEC 60601-2-35 with a maximum temperature according to Table 2.		N/A
8.11	Ingress of liquids		P
	<p>Enclosures shall be classified according to the degree of protection against harmful ingress of water as detailed in IEC 60529.</p> <p>Compliance is checked by tests in IEC 60529 with the APPH placed in the least favourable position for normal use. APPHs that are not in contact with water during normal use or reasonably foreseeable misuse (e.g. during the cleaning process) shall at least be protected to IPX2.</p> <p>APPHs that are normally in contact with water or body fluids shall at least be protected to IPX4 and in public areas at least IPX5.</p> <p>APPHs that are temporarily submerged into water during</p>		P



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	normal use, shall at least be protected to IPX7. APPHs that are normally submerged into water during normal use shall at least be protected to IPX8. If water unintentionally can come into an enclosure there shall be a way for the liquid to get out of the enclosure, or the liquid shall not cause any kind of hazard. Test the APPH within 5 minutes after the water test and after 1 hour to verify its functions.		
9	Overflow, leakage, and ingress of liquids		P
9.1	Ingress of liquids		P
9.1.1	Requirements		P
	If liquid can come unintentionally into an enclosure there shall be a way for the liquid to get out of the enclosure, or the liquid shall not cause any kind of hazard. The hazards that can be caused by the ingress of liquids to non-electrically powered APPHs shall be assessed in the risk analysis (see 4.1).		P
9.1.2	Test method		P
	Test if there is a way for the liquid to get out of the enclosure, by using procedures as in normal use and handling of the product. If possible tilt the product in different directions to verify this.		P
9.2	Overflow and leakage		N/A
9.2.1	General		N/A
	The requirements given in 9.2.2 do not apply to the body fluids which may be collected in an APPH (e.g.a commode chair) but only to those substances which are an integrated part of an APPH or are needed for its function (e.g. oil and grease).		N/A
9.2.2	Substances which may leak from an APPH in intended use and in fault conditions		N/A
	The APPH shall be designed and manufactured in such a way as to reduce to a minimum the risks posed by substances leaking from the APPH. Special attention shall be given to substances which are carcinogenic, mutagenic or toxic to reproduction and other substances of very high concern (SVHCs). The assessment should follow the guidance given in Annex C.		N/A
10	Temperatures of parts that come in contact with human skin		P
	The risk analysis (see 4.1) shall identify hazards and evaluate the risks associated with the surface temperature of parts which can come into contact with human skin during the intended conditions of use.		P



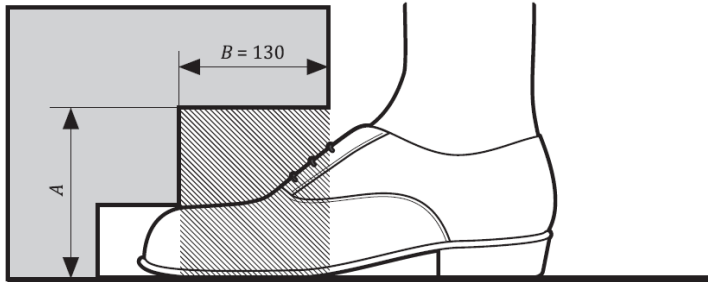
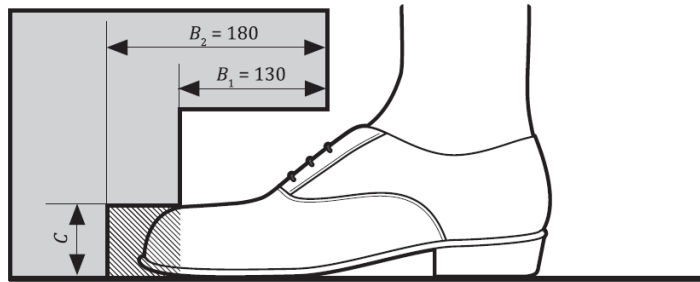
ISO 17966			
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	<p>The risk analysis shall take account of:</p> <p>a) the range of ambient temperatures to be expected during the intended use and foreseeable misuse;</p> <p>b) temperatures that may result from single fault conditions;</p> <p>c) the ergonomic data on acceptable temperatures of touchable surfaces in IEC 60601-1:2005+A1:2012.</p> <p>Table 24 adapted to the use of APPHs by people with insensitive skin (e.g. cannot feel heat) and/or damaged skin for a duration of 10 min or more. In this case the maximum temperature shall not exceed 41 °C (see Table 2 below) when measured by the methods of test in IEC 60601-1:2005+A1:2012.</p> <p>If a manufacturer cannot meet the requirement of c) without impairing the intended performance of the APPH, each assistive product should be supplied with a warning identifying which surfaces may reach a higher temperature than that specified in Table 2 and a description of the precautions necessary to offset the increased risk.</p>		
11	Safety of moving and folding parts		N/A
11.1	Squeezing		N/A
	<p>Unless the intended purpose of an APPH, or part of an APPH, is to grip, cut, squeeze etc., or if the intended use cannot be achieved without a hazard such as risk of squeezing:</p> <p>a) any moving parts that constitute a safety hazard shall be provided with guards that can only be removed by the use of a tool; or</p> <p>b) the gap between exposed parts of an assistive product that move relative to each other shall be maintained throughout the range of movement at less than the minimum value or more than the maximum value set out in Table 3.</p> <p>c) If cords (ropes), chains and drive belts are used, they shall either be confined so that they cannot run off or jump out of their guiding devices, or a safety hazard shall be prevented by other means (mechanical means applied for this purpose shall be removable only by the use of a tool); or</p> <p>d) the APPH shall incorporate a control device which initiates the movement when it is operated and stops the movement when it is released (e.g. a spring loaded control device that returns to the stop position when released); or</p> <p>e) the APPH shall incorporate a means for detecting that a person is in danger of being trapped and automatically activate a means of preventing injury (e.g. by stopping the</p>		N/A





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	<p>movement).</p> <p>For moving parts that can cause squeezing, manufacturers shall take into consideration those part/parts of the body that are at risk. The user/user group has to be specified, so that correct safety distances can be applied.</p> <p>To avoid a hazard where parts of the body can be trapped when the APPH is folded, the following shall be assessed:</p> <ul style="list-style-type: none"> <li>— the APPH shall incorporate means to protect the user from trapping and/or squeezing hazards; or</li> <li>— the gap between exposed parts of an APPH that move relative to each other shall be maintained throughout the range of movement at less than the minimum value or more than the maximum value set out in Table 3; or</li> <li>— if the intended purpose of an APPH cannot be met without a hazard such as squeezing, a warning and instructions on how to operate the APPH safely shall be provided in the instructions for use. <p>If guards are applied, the design of a guard shall take into consideration the forces that can be applied in normal use.</p> </li></ul>		
11.2	Velocity of powered lifting and lowering movements		P
11.2.1	Requirements		P
	<p>Requirements for velocity of powered lifting and lowering movements:</p> <p>a) the rate of lifting or lowering shall not exceed 0,15 m/s when loaded;</p> <p>b) the rate of lifting or lowering shall not exceed 0,25 m/s when unloaded.</p>		P
11.2.2	Test method		P
11.2.1	<p>When measured with the maximum load, the rate of lifting and lowering shall not exceed the velocity in 11.2.1 a).</p> <p>When measured unloaded, the rate of lifting and lowering shall not exceed the velocity in 11.2.1 b).</p>		P
11.3	Mechanical wear		P
	<p>Parts subject to mechanical wear likely to result in a safety hazard shall be accessible for inspection, unless it is intended to be replaced by a service interval specified by the manufacturer.</p>		P
11.4	Trapping zones for feet in relation to moving parts		N/A
	<p>The locations identified in Figures 11 and 12 shall be considered as trapping zones for feet.</p> <p>For the area in Figure 11 where B = 130 mm; the distance A shall always be <math>\geq</math> 120 mm.</p>		N/A



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	<p>For the area in Figure 12 where the distance B1 and B2 is between 130 mm to 180 mm; the distance C shall always be <math>\geq 50</math> mm.</p>  <p>Figure 11 — Foot and toe clearance area between moving parts and the floor</p>																	
	 <p>Figure 12 — Toe clearance area between moving parts and the floor</p>		N/A															
12	Prevention of traps for parts of the human body		P															
12.1	Holes and clearances		P															
	<p>Holes in and clearances between stationary parts that are accessible to the user and/or assistant during the intended use of an APPH shall be as specified in Table 4. These measurements shall be done before and after any relevant strength, durability and impact testing.</p> <p style="text-align: center;">Table 4 — Safe distances between stationary parts</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>To avoid</th> <th>Safe distances for adults</th> <th>Safe distances for children<sup>a</sup></th> </tr> </thead> <tbody> <tr> <td>Finger traps</td> <td>Less than 8 mm or more than 25 mm</td> <td>Less than 5 mm or more than 12 mm</td> </tr> <tr> <td>Foot traps</td> <td>Less than 35 mm or more than 100 mm</td> <td>Less than 25 mm or more than 45 mm</td> </tr> <tr> <td>Head traps</td> <td>Less than 120 mm or more than 250 mm</td> <td>Less than 60 mm or more than 250 mm</td> </tr> <tr> <td>Genitalia traps</td> <td>Less than 8 mm or more than 75 mm</td> <td>Less than 8 mm or more than 75 mm</td> </tr> </tbody> </table> <p><sup>a</sup> Also includes adults with a height of less than 146 cm, or a mass of less than 40 kg, or a BMI of less than 17.</p> <p>If the intended purpose of an APPH cannot be met without a hazard caused by the size of holes and the clearance between stationary parts, a warning and instructions on how to operate the APPH safely shall be provided in the</p>	To avoid	Safe distances for adults	Safe distances for children <sup>a</sup>	Finger traps	Less than 8 mm or more than 25 mm	Less than 5 mm or more than 12 mm	Foot traps	Less than 35 mm or more than 100 mm	Less than 25 mm or more than 45 mm	Head traps	Less than 120 mm or more than 250 mm	Less than 60 mm or more than 250 mm	Genitalia traps	Less than 8 mm or more than 75 mm	Less than 8 mm or more than 75 mm		P
To avoid	Safe distances for adults	Safe distances for children <sup>a</sup>																
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Genitalia traps	Less than 8 mm or more than 75 mm	Less than 8 mm or more than 75 mm																



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>instructions for use.</p> <p>For stationary parts that can cause a trap, manufacturers shall take into consideration those parts of the body that are at risk. The user/user group has to be specified, so that correct safety distances can be applied.</p> <p>The design of parts that confine a hole or clearance shall take into consideration the forces that can be applied in normal use.</p> <p>NOTE 2 A force might cause a hole/clearance to widen. This can then cause a failure, as specified in Table 4.</p> <p>On holes with the shape of a keyhole or V-shaped openings the lower limit shall not apply. When inspecting the APPH for traps for body parts, any flexibility/elasticity of adjacent parts shall be taken into account.</p> <p>The test method for measuring the gap between foot rests is specified in 16.4.2.4.</p>		
12.2	V-shaped openings		P
	The risk of entrapment in V-shaped openings shall be assessed by the manufacturer. A V-shaped opening should be at least 75 degrees. This will reduce the risk of a user being trapped by the head at any position.		P
13	Folding and adjusting mechanisms		P
13.1	General		P
	<p>Folding and adjusting mechanisms may cause a hazard if parts of the body can enter a gap between parts and be trapped when the gap is closed. See Clause 11 for further requirements.</p> <p>If an APPH incorporates folding and/or adjusting mechanisms it shall conform to 13.2.</p> <p>If a product is able to be height adjustable the increments shall not exceed 25 mm.</p>		P
13.2	Locking mechanisms		N/A
	The mechanisms shall be capable of being securely locked when the APPH is in any fixed working configuration. It shall also be capable of being securely locked when folded if it constitutes a risk for the user or assistant. It shall be protected against unintended release.		N/A
14	Lifting and carrying means		N/A
14.1	General		N/A
	<p>Manufacturers should note that national or other requirements may demand test loads different to the following.</p> <p>If an APPH or a part of an APPH has a mass of 10 kg or more and the intended use is for it to be portable or to be</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict												
	<p>handled according to manufacturer's instructions, it shall either:</p> <p>a) have one or more carrying-handles suitably placed which enable the portable APPH or part to be carried by two or more persons, or be provided with suitable handling devices (e.g. handles, lifting eyes); or</p> <p>b) the instructions for use shall indicate the points where the APPH or its part can be lifted safely and describe how they should be handled during lifting, assembly and/or carrying. If practical, the APPH or component parts shall be labelled to indicate where it can be lifted safely and/or how it can be handled during assembly and/or carrying.</p>														
14.2	Requirement		N/A												
	<p>If an APPH incorporates carrying handles or grips, they shall not become detached from the APPH and there shall not be any permanent distortion, cracking or other evidence of failure when tested as specified in 14.3.</p> <p>After the completion of the test the APPH shall operate as intended by the manufacturer.</p>		N/A												
14.3	Test method		N/A												
	<p>If an APPH has one handle or grip, or if an APPH can readily be carried or lifted by one of a number of handles or grips, determine the force on each handle or grip when it is carried or lifted.</p> <p>If an APPH has more than one handle or grip, determine the force on each handle or grip when the APPH is carried or lifted in the intended manner.</p>		N/A												
15	Portable and hand-held products for personal hygiene or hand-held parts		N/A												
	<p>A portable or hand-held APPH, or any one of its parts that is portable or hand-held during intended use, shall withstand the stresses caused by a free-fall from the height indicated in Table 5 on to a hard surface.</p> <p style="text-align: center;">Table 5 — Drop height</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Mass (<i>m</i>) of portable APPH or its parts kg</th> <th>Drop height cm</th> </tr> </thead> <tbody> <tr> <td><math>m \leq 0,2</math></td> <td>100</td> </tr> <tr> <td><math>0,2 &lt; m \leq 1</math></td> <td>20</td> </tr> <tr> <td><math>1 &lt; m \leq 10</math></td> <td>5</td> </tr> <tr> <td><math>10 &lt; m \leq 50</math></td> <td>3</td> </tr> <tr> <td><math>m &gt; 50</math></td> <td>2</td> </tr> </tbody> </table>	Mass ( <i>m</i> ) of portable APPH or its parts kg	Drop height cm	$m \leq 0,2$	100	$0,2 < m \leq 1$	20	$1 < m \leq 10$	5	$10 < m \leq 50$	3	$m > 50$	2		N/A
Mass ( <i>m</i> ) of portable APPH or its parts kg	Drop height cm														
$m \leq 0,2$	100														
$0,2 < m \leq 1$	20														
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$10 < m \leq 50$	3														
$m > 50$	2														
16	Static strength, impact and durability		P												



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Clause	Requirement + Test	Result - Remark	Verdict																											
16.1	General		P																											
	Static strength, durability and impact are critical tests for a safe product. The formulae for calculating the forces in the different tests are dealt with in 16.2. Each subclause starts with its own requirements followed by test methods.		P																											
16.2	Formulae		P																											
16.2.1	Formulae for calculating forces		P																											
	<p>The formulae in Table 6 shall be used to calculate the force, F, in the test methods within this International Standard.</p> <p>Table 6 — Formulae for calculating forces</p> <table border="1"> <thead> <tr> <th>Test</th> <th>Formula</th> <th>Maximum force (calculation based on <math>m_d</math> 130 kg)</th> </tr> </thead> <tbody> <tr> <td>Static strength on a seat surface</td> <td><math>F=m \times g \times S</math></td> <td></td> </tr> <tr> <td>Static strength of a lying support surface</td> <td><math>F=m \times g \times S</math></td> <td></td> </tr> <tr> <td>Durability of seat surface</td> <td><math>F=m_d \times g</math></td> <td></td> </tr> <tr> <td>Static strength of back support</td> <td><math>F=0,5 \times m \times g</math></td> <td></td> </tr> <tr> <td>Static strength on arm support downward<sup>a</sup></td> <td><math>F = \frac{m_d \times g \times S}{2 \times \cos 15^\circ}</math></td> <td>950 N</td> </tr> <tr> <td>Durability of the arm support downward<sup>a</sup></td> <td><math>F = \frac{m_d \times g}{2 \times \cos 15^\circ}</math></td> <td>635 N</td> </tr> <tr> <td>Static strength on foot support downward<sup>a</sup></td> <td><math>F=m_d \times g</math></td> <td>1200 N</td> </tr> <tr> <td>Static strength on foot support remaining gap</td> <td><math>F = 0,125 \times m_d \times g</math></td> <td>200 N</td> </tr> </tbody> </table> <p>where  <math>m_d</math> is maximum user mass in kg  <math>m</math> is the maximum load (maximum user mass in kg, plus any additional load where applicable)  <math>S</math> is the safety factor equal to 1,5  <math>F</math> is the force to be applied in Newton  <math>g</math> is the gravitational constant = 9,807 m/s<sup>2</sup>.  <sup>a</sup> The result of the calculation or the maximum force, whichever is lower.</p>	Test	Formula	Maximum force (calculation based on $m_d$ 130 kg)	Static strength on a seat surface	$F=m \times g \times S$		Static strength of a lying support surface	$F=m \times g \times S$		Durability of seat surface	$F=m_d \times g$		Static strength of back support	$F=0,5 \times m \times g$		Static strength on arm support downward <sup>a</sup>	$F = \frac{m_d \times g \times S}{2 \times \cos 15^\circ}$	950 N	Durability of the arm support downward <sup>a</sup>	$F = \frac{m_d \times g}{2 \times \cos 15^\circ}$	635 N	Static strength on foot support downward <sup>a</sup>	$F=m_d \times g$	1200 N	Static strength on foot support remaining gap	$F = 0,125 \times m_d \times g$	200 N		P
Test	Formula	Maximum force (calculation based on $m_d$ 130 kg)																												
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16.3	Number of test cycles for durability		p																											
	<p>The number of test cycles to which a product is tested depends on the intended environment and shall be calculated according to the following formula.</p> $n_{TC} = u_{UC} \times u_{TD} \times 365 \times t_{DL}$ <p><math>n_{TC}</math> number of test cycles  <math>u_{UC}</math> uses per user cycle  <math>u_{TD}</math> typical uses per day  <math>t_{DL}</math> designed life time, in years</p> <p>Expected life time shall be a minimum of three years. If the expected life time is less, it shall be stated in the instructions for use and also in the label.            Minimum values for the factors on the environment of intended use. The minimum values as specified in Tables 7 and 8 shall be used.            The intended life time shall be indicated by the manufacturer.            The manufacturer shall indicate in the instructions for use</p>		p																											



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Clause	Requirement + Test	Result - Remark	Verdict
	the intended life time and the environment(s) of intended use.		
16.4	Static strength of lying support, arm and foot supports and seat and back surfaces		P
16.4.1	Requirements		P
	<p>During and after the static strength tests in 16.4.2 no parts of the APPH shall:</p> <ul style="list-style-type: none"> <li>— become unstable;</li> <li>— exhibit any cracking;</li> <li>— have any loose connections;</li> <li>— have visible deformations or gaps disturbing the function;</li> <li>— become detached.</li> </ul> <p>Further depending on the APPH:</p> <ul style="list-style-type: none"> <li>— there shall be no permanent tilt;</li> <li>— all adjustable parts shall function as intended;</li> <li>— the deflection of an arm support during test shall not disturb the function in relation to transfer;</li> <li>— the foot support shall either have means to prevent the feet from sliding into the gap between them, or have a gap that is less than stated in Table 4;</li> <li>— the foot support is allowed to deflect all the way down to the floor during test (after the test the remaining deflection shall not exceed 10 mm);</li> <li>— if an APPH is intended to be folded for transport and/or storage, it shall not fold unintentionally;</li> <li>— after the test, the APPH shall operate as intended by the manufacturer.</li> </ul> <p>All pass/fail criteria shall be fulfilled after or during the test, whenever it occurs.</p>		P
16.4.2	Test methods		P
16.4.2.1	Static strength of a lying support surface		P
	<p>The tests shall be performed on a horizontal surface with the load applied for 20 minutes.</p> <p>If there are any brakes, they shall be activated.</p> <p>The APPH shall be kept stable during the whole test.</p> <p>First test. Attach the load according to Table 6 to the lying support surface, distributed according to Figure 14.</p> <p>Second test. This test(s) shall be performed on the most critical part of the surface where it is possible for the user to put the maximum load while transferring according to Figure 15. If it is possible to transfer both at the ends and along the side of the lying support surface, each test shall be performed separately.</p>		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Remove the test load and inspect the APPH for damage.		
16.4.2.2	Static strength of an arm support downwards		P
	<p>Calculate downward force to be applied to an arm support using the formulae in Table 6.</p> <p>Each arm support is loaded for a minimum of 60 s in a point 50 mm from the front edge.</p> <p>With the APPH standing on the horizontal test plane, attach the maximum load determined by the formula or any greater load specified by the manufacturer, so that its line of action intersects the support surface of the arm support as shown in Figure 18 and 19 using a loading pad selected as specified in 4.8.12.1 and 4.8.12.2.</p> <p>Before commencing the test set-up, the means to prevent the assistive product from tipping and the means to prevent the assistive product from moving backwards and forwards are applied.</p> <p>If there are two arm supports half the load shall be applied to each of the arm supports simultaneously or one at a time individually.</p> <p>Slowly increase the load until the force F1 reaches the value specified in the formula or the greater value specified by the manufacturer.</p>		P
16.4.2.3	Static strength of seat and back support		P
	<p>Set up the APPH according to manufacturer's instructions. The APPH shall be secured so that it does not move during testing in a way that does not affect the test.</p> <p>For the static strength test of the seat, apply the maximum load (F1) according to Table 6, using a loading pad as specified in 4.8.12.4 for 20 min to the part of the APPHs seat support surface according to Figure 16.</p> <p>If the APPH has a seat lid, the load shall be placed on the upper surface of the lid due to foreseeable misuse.</p> <p>For the static strength test of the back support, apply the maximum load (F2) according to Table 6, using a loading pad as specified in 4.8.12.3 for 20 min to the part of the APPH's back support surface according to Figure 16. If there are any brakes, they shall be activated and the APPH shall not be able to tilt during the test.</p> <p>The test shall be done with the back support in the most adverse position if it has an adjustable recline function.</p>		P
16.4.2.4	Static strength of foot supports		P
	Before commencing the test set-up, the means to prevent the APPH from tipping and the means to prevent the APPH from moving backward and forward are applied.		P





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Clause	Requirement + Test	Result - Remark	Verdict
	<p>Calculate downward forces to be applied to the foot support using the formulae in Table 6. With the APPH standing on the horizontal test plane, apply the forces (F) determined by Table 6, “Static force on foot support downward“ and “Static force on foot support remaining gap”, or any greater force specified by the manufacturer, at the foot support locations illustrated in Figure 17.</p> <p>Use a convex loading pad (see Figure 3) to apply the load on flat foot supports and foot supports consisting of two or more tubes and use a concave cylindrical loading pad (see Figure 2) on foot supports consisting of a single tube.</p> <p>If the foot support is height adjustable it shall be positioned in the most adverse position of intended use.</p> <p>If tubular foot supports or other constructions are used which do not have a flat foot support surface, apply the force at an angle of <math>25^{\circ} \pm 5^{\circ}</math> to the vertical inclined towards the seat.</p> <p>If foot supports are of an open construction so that a standard loading pad cannot transmit load to the structure, fit a suitable rigid plate to the foot support so that load is carried by the parts of the foot support nearest to the loading point.</p> <p>If two separate foot supports are used apply half of the load to each foot support in turns.</p> <p>Slowly increase the load until the force F2 reaches the value specified in the formula in Table 6 or the greater force specified by the manufacturer. Maintain the load for a period of between 5 s and 10 s.</p> <p>Remove the load.</p>		
16.5	Durability		P
16.5.1	Requirements		P
	<p>During and after the durability tests in 16.5.2 no parts of the APPH shall:</p> <ul style="list-style-type: none"> <li>— become unstable;</li> <li>— exhibit any cracking;</li> <li>— have any loose connections;</li> <li>— have visible deformations or gaps disturbing the function;</li> <li>— become detached.</li> </ul> <p>Further, depending on the APPH:</p> <ul style="list-style-type: none"> <li>— there shall be no permanent tilt;</li> <li>— all adjustable parts shall function as intended;</li> <li>— the deflection of an arm support during test shall not disturb the function in relation to transfer;</li> <li>— the foot support shall either have means to prevent the</li> </ul>		P



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>feet from sliding into the gap between them, or have a gap that is smaller than stated in Table 4;</p> <p>— the foot support is allowed to deflect all the way down to the floor during test (after the test the remaining deflection shall not exceed 10 mm);</p> <p>— if an APPH is intended to be folded for transport and/or storage, it shall not fold unintentionally (after the test, the APPH shall operate as intended by the manufacturer).</p> <p>All pass/fail criteria shall be fulfilled after or during the test, whenever it does occur.</p> <p>During the test, the following conditions apply.</p> <p>1) Readjustment of postural supports is allowed.</p> <p>2) Retightening, readjusting or refitting of components that are identified in the manufacturer's instructions for use as operator-adjustable components is allowed. Components identified as operator adjustable may require the use of tools, if the tools are provided with the assistive product. If there are operator adjustable components, durability test equipment may be stopped at 25% plus or minus 5% intervals, for inspection of operator-adjustable components to determine if retightening, readjusting or refitting of operator-adjustable components is required. Retightening, readjusting or refitting shall then be performed, following the procedures outlined in the instructions for use for the APPH. Continue durability testing after retightening, readjusting or refitting has been performed.</p> <p>3) Retightening, readjusting or refitting of any other component is not allowed.</p> <p>4) During the durability testing, replacement of normal wear items is allowed in accordance with manufacturer's instructions.</p> <p>5) For electrically operated APPHs, the duty cycle shall be declared by the manufacturer.</p>		
16.5.2	Test methods		P
	<p>Apply the maximum load intended by the manufacturer (including any accessories) to the support surface in the most adverse position, in a manner that ensures that there is negligible dynamic loading.</p> <p>The test cycle shall be calculated as specified in 16.3 (see Tables 7 and 8) regarding the intended area of use and specified life time of the product, unless otherwise determined in this International Standard.</p> <p>The APPH shall be prevented from slipping or moving by</p>		P



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Clause	Requirement + Test	Result - Remark	Verdict
	means of a stopper.		
16.5.2.1	Durability of the arm support		P
	<p>With the APPH standing on the horizontal test plane, apply the force <math>\pm 3\%</math> determined by the formula in Table 6, or any greater force specified by the manufacturer, so that its line of action intersects the support surface of the arm support as shown in Figure 18 and 19 using the concave loading pad selected as specified in 4.8.12.1.</p> <p>The cyclical application of the load may be applied to both arm supports simultaneously or one at a time. The cycling shall be done in a smooth manner.</p> <p>Slowly increase the load until the force F1 reaches the value specified in formula in Table 6, or the greater value specified by the manufacturer. The cycling shall be less than 20 cycles per minute.</p> <p>After the test remove the load.</p>		P
16.5.2.2	Durability of seat surface		P
	<p>The APPH shall be positioned horizontally on the test plane. Apply the load as specified in Table 6 vertically to the seat surface, according to Figure 16.</p> <p>Use a suitable loading pad (see 4.8.12.4) to apply the load. A test dummy according to ISO 7176-11 may also be used.</p> <p>The number of cycles shall be calculated as specified in the formula in 16.3 and in Table 7 and Table 8 regarding the intended area of use.</p> <p>After the test remove the load.</p>		P
16.5.2.3	Durability of a power operated height adjustment mechanism		P
	<p>Place the APPH in its lowest position horizontally on the test plane. Apply the maximum load distributed as indicated in Figure 14 for a lying support surface or 16.4.2.3 (Figure 16) for a sitting surface. A test dummy according to ISO 7176-11 may also be used.</p> <p>The APPH is raised and lowered completely in accordance with the procedure stated in the instructions for use. The number of test cycles shall be calculated as specified in the formula in 16.3 and Table 7 and Table 8 regarding the intended area of use.</p> <p>After the test remove the load.</p>		P
16.5.2.4	Durability of power operated movable sections		N/A
	<p>The APPH shall be positioned horizontally on the test plane. Apply the maximum load distributed as indicated in Figure 14 for lying support surface or 16.4.2.3</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>(Figure 16) for a sitting surface on the movable section. A test dummy according to ISO 7176-11 may also be used. Each of the movable sections is operated through their full range of travel as in normal use.</p> <p>The number of test cycles shall be as specified in the formula and Table 7 and Table 8 in 16.3 regarding the intended area of use.</p> <p>Inspect the product 5 min after cycling is completed.</p> <p>After application of the load, no elements of the product shall become loose, fractured or present any hazard.</p> <p>Deformation of more than 10 mm (after removal of the load) from the corresponding measurements taken before the application of the load is not acceptable.</p>		
16.5.2.5	Durability of the frame of an APPH with a sitting surface equipped with legs/wheels		N/A
	<p>This test method is not intended for fixed products. The APPH shall be positioned horizontally on the test plane. Set the wheels/legs according to Figure 20, against the stopper.</p> <p>For hydraulic, mechanical, electrical or any other adjustable APPH, the test has to be performed so that any movement of the adjusting system does not interfere with the test result.</p> <p>The seat is loaded with 80% of the maximum load in a box, when tilted in the forward and backwards directions. The seat is loaded with 40% of the maximum load in a box when tilted in sideways directions.</p> <p>The box (350 mm wide, 350 mm deep and 300 mm high) shall be fastened at the centre of the seat and secured against sliding.</p> <p>A test dummy according to ISO 7176-11 may also be used. The number of cycles shall be as specified in Table 7 and Table 8 in 16.3 regarding the intended area of use. It shall not exceed 10 000 times in each direction.</p> <p>The force is applied perpendicular to the box.</p> <p>The APPH is tilted at the box (see Figure 20) until two legs have lifted by 30 mm. Afterwards the chair drops freely back onto the test plane (4.8.7). Test 1 is in the backwards direction, test 2 in the forwards direction and tests 3 and 4 in the two sideways directions. Each test is performed separately with the full number of cycles before the next test is started.</p>		N/A
16.6	Impact		P
16.6.1	Requirements		P



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>After performing the tests in 16.6.2 the following requirements shall be fulfilled.</p> <p>a) No component shall be fractured or have become detached, with the following exceptions:            — readjustment of postural supports is allowed;            — retightening, readjusting or refitting of components that are identified in the manufacturer's instructions for use as operator-adjustable components is allowed; components identified as operator adjustable may require the use of tools, which shall be provided with the assistive product;            — retightening, readjusting or refitting of any other component is not allowed.</p> <p>b) Cracks in surface finishes, such as paint, that do not extend into the structural material do not constitute a failure.</p> <p>c) No externally visible electrical cable shall be abraded or crushed. No externally visible electrical connector shall be crushed or disconnected.</p> <p>d) All parts intended to be removable, folding or adjustable shall operate as described by the manufacturer.</p> <p>e) All power-operated systems shall operate as described by the manufacturer.</p> <p>f) No elements of the APPH shall become loose, fractured or present any hazard.</p> <p>g) Handgrips shall not be displaced.</p> <p>h) No component or assembly of parts shall exhibit deformation, free play or loss of adjustment that adversely affects the function of the APPH.</p>		P
16.6.2	Test methods		P
16.6.2.1	Test method for a back support		P
	<p>This test applies to products where the back support height is 320 mm or greater above the seat.            The measurement of the 320 mm is taken from the upper surface of the seat base at an angle of 90 ° from the centre of the seat.</p> <p>For back supports that have a pivot that allows them to align freely with the back of the user as shown in Figure 21, position the back support impact test pendulum (see 4.8.13) with the bar vertical so that the mass is touching the back support on a horizontal line passing through the back support pivot.</p> <p>For products with other types of back supports, position the impact test pendulum with the bar vertical so that the mass is touching the centre line of the back support at a point 30</p>		P





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Clause	Requirement + Test	Result - Remark	Verdict
	<p>mm below the top of the back support as shown in Figure 22.</p> <p>Apply the brakes (if any).</p> <p>Position a rigid stopper (see 4.8.8) against the rear wheels/legs of the product and attach a loose restraint that is just long enough to prevent the APPH from tipping backwards beyond the balance point. Support the pendulum so that the rigid bar is at an angle of <math>30^\circ \pm 2^\circ</math> to the vertical as shown in Figure 22, and then allow it to fall freely one time and strike the back support.</p> <p>If the manufacturer claims that the product exceeds the minimum requirements, use the angle claimed by the manufacturer <math>\pm 2^\circ</math> for the test.</p> <p>If the back support is height adjustable the test shall be performed in worst case position.</p> <p>For products where the back support is mounted on two supporting members repeat the test twice with the pendulum repositioned so that it strikes the centre line of each back support 20 mm below the top of the back support.</p> <p>For products where the back support is mounted on a single central support repeat the test with the pendulum positioned to strike the back support at points located 0,4 times the back support maximum width from each side of its centre line.</p>		
16.6.2.2	Test method for a lying support surface		P
	<p>The following tests shall be performed in the sequence in which they are listed.</p> <p>Place the mattress, if any, as specified by the manufacturer, onto the lying support surface, in a position in which any moving elements are free of supporting elements and their inclination is less than <math>7^\circ</math> in relation to horizontal, and if height-adjustable, the lying support surface shall be placed in the middle of the possible range of the adjustment.</p> <p>From a height of 180 mm above the mattress/lying support surface, drop the impactor (4.8.16) onto the APPH 20 times onto each of the locations marked "A" in Figure 23. The impactor shall be allowed to fall freely, but guides may be used to help ensure that the impacts occur as close as possible to the recommended locations.</p>		P
17	Stability		P
17.1	Requirements for static stability		P
	During the stability test according to 17.2, a mobile and static APPH loaded with the maximum load shall not lose its equilibrium (balance) at a $10^\circ$ angle forward and		P





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Clause	Requirement + Test	Result - Remark	Verdict
	backwards, and at a 5° angle sideways.		
17.2	Test method for static stability		P
	<p>The tests shall be carried out in the forward, backward and sideward directions as specified by the manufacturer on the inclined test plane (4.8.7) according to the required angle for each test. If for mobile APPHs, there is more than one intended direction of travel (forwards) they shall all be regarded as forwards. For mobile APPHs, the base is positioned in the travelling position as indicated by the manufacturer.</p> <p>The APPH shall be secured against slipping on the inclined surface by the means of stoppers (see 4.8.8 and Figure 1). Apply the maximum load distributed as indicated in Figure 14 for APPHs with a lying support surface.</p> <p>For APPHs with a sitting surface the centre of gravity of the load shall be placed according to Figure 16, force F1, but not more than 350 mm from the front edge of the seat. A test dummy according to ISO 7176-11 may also be used.</p> <p>For an APPH with a lying support surface the tests are repeated on a horizontal surface with loads distributed as indicated in Figure 15 both at the ends and at the sides, one test at a time. The tests shall be carried out with the APPH in its most adverse position regarding the position of wheels, support surface, base and brakes, if applicable.</p>		P
18	Surfaces, corners, edges and protruding parts		P
	<p>If not required for the intended function of an APPH, all accessible edges, corners and surfaces shall be smooth and be free from burrs and sharp edges.</p> <p>If not required for the intended function, an APPH shall not have any protruding parts. Where possible necessary protruding parts shall have protection to prevent injury and/or damage.</p>		P
19	Small parts		P
	<p>APPHs and their parts intended to be used by small children shall not be of a size where they can create a danger of small children being choked.</p> <p>Regarding APPHs for children, any part that can be detached without the use of a tool should not fit wholly within the cylinder as specified in EN 716-2:2008, subclause 5.4.</p>		P
20	Forces in soft tissues of the human body		P
	The hazards that can be caused by forces applied to the soft tissues of the body shall be assessed in the risk analysis (see 4.1).		P



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Clause	Requirement + Test	Result - Remark	Verdict
21	Ergonomic principles		P
	<p>An APPH may be used not only by whom it is primarily intended for, but also by an assistant. The ergonomic principles set out in EN 614-1 shall apply to all involved persons.</p> <p>Grips, handles and pedals shall suit the functional anatomy of the operator, according to the intended use and meet the following requirements (where applicable, the APPH shall be loaded with the maximum load):</p> <p>a) the surface of buttons shall at least cover a circle of 15 mm in diameter; any distance between buttons shall be more than 10 mm;</p> <p>b) the distance between any handle (part intended to be grabbed) requiring an operating force of more than 10 N and any construction part of the APPH shall not be less than 35 mm;</p> <p>c) the distance between any upper surface of a pedal (in any operating position) and any other part of the APPH shall have a vertical toe clearance of not less than 75 mm;</p> <p>d) the diameter of any operating handles and/or knobs requiring an operating force of more than 10 N shall be between 19 mm and 43 mm;</p> <p>e) for an APPH operated from a standing position, pedals shall be placed not more than 300 mm above the surface of the floor;</p> <p>f) for an APPH operated from a standing position, hand operated controls shall be placed at a height of 800 mm to 1 200 mm above the surface of the floor;</p> <p>g) for an APPH operated from a sitting position, controls intended to be operated by the occupant while seated shall be within the occupant's reach space;</p> <p>h) the operating forces or torques required for those parts of the device that are designed to be operated by fingers, hands/arms or feet shall not exceed the values in Table 9.</p>		P
22	Mobile APPHs		P
22.1	General		P
	<p>This clause specifies requirements and test methods for mobile APPHs which are additional to those specified in Clauses 4 to 21.</p> <p>The requirements and test methods apply to APPHs provided with wheels or other means for transporting an occupant in place within the following examples of divisions of ISO 9999:2011 (in brackets):</p> <p>— commode chairs (09 12 03);</p>		



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Clause	Requirement + Test	Result - Remark	Verdict
	— bath/shower chairs, bath boards, stools, back supports and seats (09 33 03); — bathing stretchers, shower tables and diaper-changing tables (09 33 12).		
22.2	Immobilizing means		P
22.2.1	General		P
	A mobile APPH or any of its parts that could constitute a risk for the user or a nearby person shall be fitted with immobilizing means to prevent any undesired movement.		P
22.2.2	Requirements for locking devices		P
	Mobile APPH shall not result in an unacceptable risk due to unwanted movement when tested in accordance with 22.2.3 and 22.2.4. When the product has come to a total standstill, there shall be no movement of the mobile APPH greater than 50 mm (in relation to the inclined plane) within 1 min.		P
22.3	Test methods for locking devices		N/A
	Prior to the test, the mobile APPH is prepared with the following in the most adverse position of normal use: — the height and length; — castors/wheels. The mobile APPH is placed with the maximum load in place distributed as indicated in Figures 14, and 16 and the locking device (e.g. brakes) activated, on a test plane (4.8.7) inclined to 6° from horizontal. Any initial movement shall not result in an unacceptable risk, taking into account the normal use of the APPH. Adjust the locking device (e.g. brakes) in accordance with the manufacturer's instructions for use without exceeding the operating force requirements stated in Table 9.		N/A
22.2.4	Test methods for durability of brakes		N/A
	Set up the mobile APPH as in 22.2.3 on a horizontal surface. For lever operated brakes, durability testing of the brakes is performed with a test cycle calculated as specified in 16.3 (see Table 7 and Table 8) regarding the intended area of use and specified life time of the product. For foot operated brakes at castors, the durability test shall be performed according to EN 12527:1998. After the tests the brake shall still comply with the requirement of 22.2.2.		N/A
22.2.5	Brake operated by a lever		N/A
	If a mobile APPH is intended to allow sideways transfer then any brake lever in the engaged position shall not protrude		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	above the unoccupied seat.		
22.3	Electrical safety for mobile APPHs		N/A
22.3.1	Power-driven mobile APPHs		N/A
	Power-driven mobile APPHs for transportation shall have a means (e.g. free wheeling) to allow transport by the assistant under single fault condition of the transport system.		N/A
22.4	Rough handling and movement		N/A
22.4.1	General		N/A
	Mobile APPHs intended to transport occupants shall withstand the stresses caused by rough handling and movement. The requirements do not apply to mobile APPHs specified by the manufacturer only to be moved a very short distance, e.g. within a room, for cleaning purposes or to allow access to the occupant.		N/A
22.4.2	Requirements		N/A
	After the tests specified in 22.4.3 and 22.4.4 the mobile APPH, product parts and accessories shall present no loss of function, and without unlocking/unlatching of any side rails, or physical deterioration, e.g. deterioration of fixings, unlocking of accessories if fixed on the mobile APPH (like side rails), which can reduce the normal use or create a risk like collapsing, or permanent deformation, modifying gap for entrapment or pinching. The mobile APPH shall go over the obstruction and shall not overbalance (tip over) when tested according to 22.4.3. The mobile APPH or product parts shall not present an unacceptable risk. Unacceptable risk is determined by inspection of the mobile APPH, its parts, and relevant information from the risk management file.		N/A
22.4.3	Test method for movement over a threshold		N/A
	All accessories intended for normal use during transport shall be attached to the APPH and with the height in the worst case position and with the maximum load in place distributed as indicated in Figures 14 and 16. A test dummy according to ISO 7176-11 may also be used. Set up an obstruction which is fixed flat on the floor, with a rectangular cross-section, 10 mm high and at least 80 mm wide with a radius of 2 mm at the top edges. The APPH shall be moved at a speed of 0,8 m/s ± 0,1 m/s, or for motor-driven mobile APPHs for transportation, the maximum speed shall be used, while all castors shall impact and pass over the obstruction. Manual mobile APPHs are propelled by a force acting at its handle(s). The mobile		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>APPH, with all castors, shall then be pulled back over the obstruction and back to the starting position of the test. This is repeated 10 times.</p> <p>Alternative method of testing: A double drum set-up may be used (see ISO 7176-8) on the condition that it cycles back and forth and it is adapted to the attachments and speeds as per above.</p> <p>This is repeated 10 000 times.</p>		
22.4.4	Test method for door frame shock		N/A
	<p>All accessories intended for normal use during transport shall be attached to the mobile APPH and with the maximum load in place distributed as indicated in Figures 14 and 16 and the height in the worst case position. A test dummy according to ISO 7176-11 may also be used.</p> <p>Set up a hardwood vertical obstacle having a width and thickness of 40 mm affixed to a vertical rigid support (e.g. concrete). The height of the vertical obstacle shall be at the same level as the height of the APPHs contact point(s). The direction of movement is perpendicular to the face of the obstacle. The sample is moved three times in its normal direction(s) of travel as specified by the manufacturer at a speed of 0,4 m/s <math>\pm</math> 0,1 m/s, or, for a motor driven mobile APPH for transportation, the maximum speed capable of being maintained, against the obstacle.</p>		N/A
22.5	Functional requirements for mobile APPHs		P
2.5.1	Foot supports		P
	<p>If a mobile APPH is provided with a foot support, it shall be designed to minimize the risk of the user's feet being injured from rotation of the wheels.</p> <p>This shall be assessed in the risk analysis (see 4.1).</p>		P
22.5.2	Position of push handles/points		P
	Handles for pushing and/or pulling shall be possible to be operated at a height of 900 mm above the floor.		P
22.5.3	Turning diameter of mobile APPHs		P
	<p>The turning diameter and reversing width of a mobile APPH shall be included in the instructions for use with an accuracy of <math>\pm</math> 25 mm. The following measurements shall be determined and recorded.</p> <p>a) Minimum distance between two vertical and parallel walls between which a APPH can turn 180° in one constant forward drive (see Figure 9).</p> <p>b) Diameter of the smallest cylindrical envelope in which the APPH can be turned for 360° in one constant forward drive with maximum steering effect.</p>		P





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Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) Minimum distance between two vertical and parallel walls between which an APPH can turn 180° allowing for reversing movements.</p> <p>— Construct a corridor so that the distance between its walls is variable by using two parallel adjustable barriers. Place the APPH into the corridor and orient it parallel to the walls.</p> <p>— Turn the APPH around in the corridor in the most suitable manner for the particular APPH involved. The test drive is completed when the APPH has turned through 180°.</p> <p>— Gradually reduce the width of the corridor and determine the minimum corridor width in which the APPH can be turned around without touching the walls.</p>		
22.6	Moving forces		P
22.6.1	Requirements for moving forces		P
	<p>The maximum forces required for moving the mobile APPH shall be as follows when tested according to 22.6.2 with the maximum load on the mobile APPH positioned as indicated in Figures 14 and 16.</p> <p>a) Starting force maximum 160 N. b) Driving (pushing/pulling) force maximum 85 N.</p>		P
22.6.2	Test methods for moving forces		P
	<p>The test shall be carried out on a hard and horizontal test plane (4.8.7).</p> <p>The mobile APPH shall be loaded with the maximum load in place distributed as indicated in Figures 14 and 16 at the support surface.</p> <p>For the test of the starting force in the forward and backward direction, the castors shall be set at 180° to the direction of pushing/pulling.</p> <p>The starting force is gradually applied to the push handle until the mobile APPH begins to move. Repeat five (5) times in each direction. The average maximum force for each direction noted during these tests shall be recorded as the starting force.</p> <p>Remain a constant force at 1 m/s for 1 m, as the mobile product is moving and measure the force needed for driving. The starting force shall be recorded as follows:</p> <p>a) in the forward direction; b) in the backward direction.</p> <p>The driving force shall be recorded as follows:</p> <p>a) in the forward direction; b) in the backward direction.</p>		P
23	Fixed APPHs		P





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Clause	Requirement + Test	Result - Remark	Verdict
23.1	General		P
	<p>This clause specifies requirements and test methods for fixed APPHs which are additional to those specified in Clauses 4 to 21.</p> <p>The requirements and test methods only apply to fixed APPHs within the following divisions of ISO 9999:2011 (in brackets):</p> <ul style="list-style-type: none"> <li>— shower seats (09 33 03)</li> <li>— bath/shower chairs (without wheels), bath boards, stools, back supports and seats (09 33 03)</li> <li>— bathing stretchers, shower tables and diaper-changing tables (09 33 12)</li> <li>— raised toilet seats (09 12 12 / 09 12 18)</li> <li>— handrails, handles (18 18 03)</li> <li>— suction handles, bath clamp handles (18 18 10)</li> <li>— hinged rails and arm supports (18 18 11)</li> <li>— height adjustable plinths and brackets (18 15 06)</li> </ul> <p>The requirements and test methods do not take into consideration the fixation of the APPH nor the building structure. During testing the APPH shall be adequately fixed onto a suitable test bench/wall so as not to test the fixation but only the APPH.</p>		P
	<p>The number of test cycles in the durability testing of fixed APPHs shall be as specified in 16.3 (see Table 7 and Table 8) regarding the intended area of use and specified lifetime of the APPH and at appropriate intervals. In case of a hinged APPH, the test method shall include folding from the complete upright position to the complete down position.</p>		P
23.2	Requirements		P
	<p>After and during performing both static strength and durability tests, the requirements in 16.4.1 and 16.5.1 shall be fulfilled.</p> <p>During the durability testing of the APPHs, it is permissible to make adjustments according to the manufacturer's instructions for use.</p> <p>The method of fastening to the wall/tub/floor/other APPH shall be recommended by the manufacturer and included in the instructions for use. It shall be specified by the manufacturer how much load each fastener shall sustain.</p> <p>Additional requirements (if any) to each APPH group can be found in the relevant subclause. ISO 21542 should also be looked at for relevant parts as fixed APPHs are tested.</p>		P
23.3	Shower seats (09 33 03)		N/A
23.3.1	Description		N/A



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	Seats for mounting on the wall or to the floor in bathrooms might be hinged, equipped with a back support, arm supports and/or supporting legs. For testing of back supports and arm supports, if applicable, see Clause 16.		N/A
23.3.2	Test methods for static strength, durability and impact for shower seats		N/A
23.3.2.1	Test method for static strength		N/A
	The seat is loaded vertically according to Table 6 for 60s (F1) with the centre of gravity 13 of the distance from the front edge (see Figure 24). The load shall be applied with a loading pad (see 4.8.12.4). To test both sides of the seat, the loading pad is then placed in turn on left (F2) and right (F3) hand side of the seat as close to the edge as possible. See Figure 24).		N/A
23.3.2.2	Test method for durability		N/A
	The seat shall be tested with a load according to Figure 16 of the specified maximum user mass as specified in 16.5.2.2. The load shall be applied using the loading pad (4.8.12.4) in the position of intended use. If the seat is foldable, it shall be folded from the complete upright position to the complete down position as many times as specified in the formula in 16.3 and Table 7 and Table 8 and at appropriate intervals.		N/A
23.3.2.3	Test method for impact		N/A
	The shower seat shall be able to resist horizontal sideward impacts. The test is performed using the 25 kg test pendulum (see 4.8.13 and Figure 6), 50 mm from the front, F1, according to Figure 25.		N/A
23.4	Bathing stretchers, shower tables and diaper changing tables (09 33 12)		N/A
23.4.1	Description		N/A
	Stationary tables on which a person lies during bathing, showering or diaper-changing, often height-adjustable.		N/A
23.4.2	Test methods for static strength and durability for bathing stretchers, shower tables and diaper changing tables		N/A
23.4.2.1	Test methods for static strength		N/A
	The support surface is loaded according to Table 6, for minimum 60 s. The load F1 is distributed over the support surface according to Figure 14 and 16. The load test is then repeated with an asymmetrical load F1 (according to Figure 26) test where the entire load is placed on each side of the		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	table one at the time, in the worst case position. If the intended use of the table is also to contain water while a person is lying on it, the maximum load shall be used instead of the maximum user mass. A test dummy according to ISO 7176-11 may also be used. The test is repeated for both sides.		
23.4.2.2	Test method for durability of support surface and folding mechanism		N/A
	The support surface shall be tested with a vertical load of the specified maximum load or at least 100 kg as specified in 4.7. The load shall be placed on the Table according to Figure 14 (on a lying surface). If the APPH is foldable, it shall be folded from the complete upright position to the complete down position as many times as specified in formula in 16.3 and Table 7 and Table 8 and at appropriate intervals. A test dummy according to 7176-11 may also be used.		N/A
23.5	Bath/shower chairs (without wheels), bath boards, stools, back supports and seats (09 33 03)		P
23.5.1	Description		P
	APPHs aimed for supporting sitting during bathing or showering. Seats without back support placed on the rim of the bathtub. The seat is at the level of the rim of the bathtub. Seats placed on the rim of or down in the bathtub. These may have solid or detachable back support. Some can have a rotational function to help the person with disability to ingress/egress in the bathtub.		P
23.5.2	Test method for durability		P
	The seat/board shall be tested according to 16.5.2.2 with a vertical load of the specified maximum load as stated in Table 6 (see Figure 27). The load shall be applied using the loading pad in 4.8.12.4. The load F1 according to 4.8.12.2 shall be placed on the seat. In the case of a rotating seat it shall be tested as above. The seat must be able to swivel by using forces given in Table 9 when loaded with maximum user weight.		P
23.6	Raised toilet seats (09 12 18)		N/A
23.6.1	Description		
	An APPH to elevate the sitting height of a toilet seat (without raising the toilet itself) to facilitate lowering and rising from the toilet. It may be fixed through the standard holes in the toilet or by other means.		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
23.6.2	Requirements for static strength for raised toilet seats		N/A
	Additional to 23.2, the raised toilet insert shall be equipped with facilities which keep the raised toilet seat safely on the toilet and secures it against slipping off (e.g. form fit/force fit connection). It shall be specified by the manufacturer which toilets the raised toilet seat will fit onto. After performing the test, the raised toilet seat shall not come loose from the toilet.		N/A
23.6.3	Test methods for static strength and durability for raised toilet seats		N/A
23.6.3.1	Test method for static strength		N/A
	The APPH shall be fixed onto a suitable surface with characteristics to represent standard toilets in shape and surface texture. The seat is vertically loaded according to Table 6 for at least 60 s. The load (F1) shall be applied centrally by means of the loading pad (4.8.12.4) over the whole surface (see Figure 28). The seat, if adjustable, shall be raised to the most adverse position.		N/A
23.6.3.2	Test method for durability		N/A
	Additional to 16.5.2.2. The test does not have to be done on a toilet. The loading pad according to 4.8.12.2 has to be placed on the seat or the lid, if provided.		N/A
23.7	Handrails, grab bars and handgrips (18 18 03 and 18 18 06)		N/A
23.7.1	Description		N/A
	Handrails and handgrips are designed to aid balance and prevent people who are weak or unstable from falling. Grab bars are usually cylindrical, attached to a wall, floor or other stable structure, to provide the means for a person to support or stabilize himself/herself using hands or arms while in the bathroom.		N/A
23.7.2	Ergonomic principles for handrails, grab bars and handgrips		N/A
	Additional to Clause 21 (Ergonomic principles). The handrail/handle can be round, with a diameter of 25 mm to 45 mm. If it is not round the handrail/handle, it shall have an equivalent grip area. The span between the fixing points shall be defined by the manufacturer as it depends on the materials. The handrail/handle should not have undue flexibility. The gap between the wall and the grab handrail/handle shall be at least 35 mm and shall furthermore follow the requirements within Table 4. Suction cup attachments shall be tested and have the same		N/A



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	requirements as for attachments above.		
23.7.3	Test methods for static strength and durability for handrails, grab bars and handgrips		N/A
23.7.3.1	Test method for static strength		N/A
	<p>The wall-fastened handrail is loaded vertically (F1) using the formula for static force on seat surface in Table 6 for at least 60 s in the most adverse position and then horizontally using 50% of the static force indicated in Table 6. See Figure 29.</p> <p>The handrail shall be attached to a solid wall, with material strong enough to withstand the forces of the tests. The fixation shall be strong enough so that the handrail does not come loose during the test.</p>		N/A
23.7.3.2	Test method for durability		N/A
	<p>The wall-fastened handrail is loaded vertically and horizontally with 40% of the test force for seat surface in Table 6. The amount of cycles is specified according to the formula and Table 7 and Table 8 in 16.3 (see Figure 29).</p> <p>The handrail shall be attached on a solid wall, with material strong enough to withstand the forces of the tests. The fixation shall be strong enough so that the handrail does not come loose during the test.</p>		N/A
23.8	Removable grab rails and handgrips (18 18 10)		N/A
23.8.1	Description		N/A
	<p>APPHs, usually straight or angled bars, that can be temporarily attached to walls, floors, ceilings or furniture (e.g. beds) using e.g. clamps or suction pads and removed without tools; they provide support to a person while changing position.</p>		N/A
23.8.2	Ergonomic principles for removable grab rails and handgrips		N/A
	<p>Additional to Clause 21 (Ergonomic principles).</p> <p>The handle can be round, with a diameter of 25 mm to 45 mm. If it is not round the bar shall have an equivalent grip area. The span between the fixing points shall be defined by the manufacturer, as it depends on the design of the handle and the materials on which they can be fixed. The gap between the wall and the grab bar shall be at least 35 mm and shall furthermore follow the requirements within Table 4.</p> <p>Suction handles shall be equipped with a safety indicator. For example a display showing the residual force (= maximum user mass).</p> <p>Bath clamp handles shall be securely fastened to the bathtub without damaging the tub and the substructure.</p>		N/A





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Clause	Requirement + Test	Result - Remark	Verdict
	The suction/bath clamp handle shall not come loose while tested.		
23.8.3	Test methods for static strength and durability for removable grab rails and handgrips		N/A
23.8.3.1	Test method for static strength		N/A
	Attach the test equipment onto the supporting stands (4.8.15). Suction handrails are loaded (F1) with 75 % of the maximum load horizontally and 50 % of the maximum load vertically, 90° to the wall and parallel to the wall in the worst case position (see Figure 29 as an example). Bath clamp handles are loaded (F1) with 75 % of the maximum load horizontally and 50 % of the load vertically, 90° to the bath tub and parallel to the bath tub on the top of the handle (see Figure 29 as an example). The test surface shall be of stainless steel that is fixed and has at least the size of the test item.		N/A
23.8.3.2	Test method for durability		N/A
	Attach the test equipment onto the supporting stands (4.8.15). Suction handles are loaded in the middle of the handle under an angle of 15° outward-upward and outward-downward with 40 % of the maximum load, using Table 7 and Table 8 in 16.3 (see Figure 30 as an example). Bath clamp handles are loaded parallel to the bath tub on the top of the handle with 40 % maximum user weight according to the formula and Table 7 and Table 8 in 16.3, see Figure 29. The test surface shall be of stainless steel that is fixed and has at least the size of the test item.		N/A
23.9	Hinged rails and arm supports (18 18 11)		N/A
	Description		N/A
	APPHs that provide support to a person when changing her/his position; they can be fixed to a wall or floor and can be folded upwards or sideways or lowered down to allow access or to stow when they are not needed.		N/A
23.9.2	General		N/A
	Hinged rails/arm supports shall be secured to prevent unintentional folding down.		N/A
23.9.3	Test method for static strength for hinged rails and arm supports		N/A
	Hinged rails/arm supports are loaded (F1) according to the test force in Table 6 regarding arm support downward, at a		N/A





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Clause	Requirement + Test	Result - Remark	Verdict
	point 50 mm ± 5 mm from the front edge with an angle of 15° ± 2° outwards and downward for at least 60 s (see Figure 30).		
23.9.3.1	Test method for durability for hinged rails and arm supports		N/A
	Hinged rails/arm supports are loaded (F1) vertically at a point 50 mm ± 10 mm from the front edge under an angle of 15° ± 2° outward with 40 % of the maximum specified load according to the formula in Table 6 and Table 7 and Table 8 in 16.3 (see Figure 30).		N/A
23.10	Height-adjustable plinths and brackets (18 15 06)		N/A
23.10.1	<b>Description</b>		N/A
	Height adjustable plinths and brackets when used in the bathroom as an APPH on which hygiene products can be mounted. They can be either manually or electrically operated. They can be used for height adjustment of e.g. wash basins or toilets.		N/A
23.10.2	Test methods for static strength and durability for height-adjustable plinths and brackets		N/A
	Test method for static strength		N/A
	A bracket/plinth used for adjusting the height of an APPH intended to support the weight of a person is vertically loaded according to Table 6 for 60 s as close to the front edge as possible. See Figure 31. The load shall be applied with a loading pad, see 4.8.12.4. The bracket/plinth used for adjusting the height shall be able to withstand the load as specified by the manufacturer. In addition, the bracket/plinth shall be able to bear the weight of a user supporting himself/herself and it is tested with a vertical load of 75 % of maximum user weight for 60 s as close to the front edge as possible.		N/A
23.10.2.2	Test method for durability		N/A
	The bracket/plinth intended to support the weight of a person with disability shall be tested with maximum specified load according to the formula and Table 7 and Table 8 in 16.3 (see Figure 31). The bracket/plinth used for height adjustment of an APPH shall be tested with a load equal to the specified maximum load according to the formula and Table 7 and Table 8 in 16.3 (see Figure 31).		N/A
24	Static APPHs		P
24.1	General		P
	This clause specifies requirements and test methods for static APPHs in addition to those specified in Clauses 4 to 21.		P



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Clause	Requirement + Test	Result - Remark	Verdict
	The requirements and test methods for APPHs in this clause apply to the following divisions of ISO 9999:2011 (in brackets): — raised toilet seats mounted on frame (09 12 12); — toilet seats inserts (non fixed) (09 12 15); — toilet seats with built-in raising mechanism to help standing up and sitting down (non fixed) (09 12 21); — bath/shower chairs (without wheels), bath boards, stools, back supports and seats (09 33 03).		
24.2	Stability and strength tests for static APPHs		P
	General conditions for the relevant tests in addition to the general part shall be as follows: a) in the stability and strength tests, a constant force shall be applied or the force shall be increased gradually; b) in the strength tests, the force shall be applied with negligible dynamic load; c) for an APPH that has a dimension adjustment mechanism, the APPH shall be adjusted to the most adverse position in relation to the test.		P
24.3	Toilet seats inserts (non fixed) (09 12 15)		N/A
24.3.1	Description		N/A
	Raised toilet seats (loose attachments) placed directly on the toilet pan/toilet seat where the APPH can be easily removed from the toilet pan/toilet seat.		N/A
24.3.2	Impact		N/A
24.3.2.1	Requirements		N/A
	The APPH shall meet the requirements in 16.6.1 and 24.2. In addition to the requirements in 16.6.1, the APPH shall not fall from the position of intended use. If the product becomes dislocated from the position of intended use, it shall go back into the position of intended use after placing the 60 kg test mass on the front edge of the product as described below (see Figure 34).		N/A
24.3.2.2	Test methods		N/A
	The following describes one test method for assessing the stability of a toilet seat insert, which has no fixation to the toilet, during a user's transfer onto the APPH from standing. As this is not a validated test method the risks associated with a loosely attached raised toilet seat shall be addressed in the risk analysis (see 4.1). Set up the APPH in the position of its intended use onto a suitable surface with characteristics to represent standard toilets in shape and surface texture. Position the raised toilet seat impact test pendulum (see 4.8.14 and 4.8.15) with the		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	edge of the pendulum in contact with the surface of the APPH on either the front or side (see Figure 33). Support the pendulum so that the rigid bar is at an angle of $30^{\circ} \pm 2^{\circ}$ to the vertical and then allow it to fall once F1 freely and strike the APPH. The impact load shall be applied to the front of the APPH and to one of its sides (see Figure 32).		
24.4	Toilet seats with built-in raising mechanism to help standing up and sitting down (non-fixed) (09 12 21)		N/A
24.4.1	Description		N/A
	Toilet seats that have a built-in lifting mechanism to help a person to sit down onto and get up from the toilet.		N/A
24.4.2	Durability		N/A
	The ascending and descending movements of the raising mechanism will be considered as one cycle (two movements per cycle). The number of cycles is specified in the formula in 16.3 together with Table 7 and Table 8. The tests are to be performed according to 16.5.2.3 with requirements stated in 16.5.1.		N/A
24.5	Bath/shower chairs (without wheels), bath boards, stools, back supports and seats (09 33 03)		P
24.5.1	Description		P
	APPHs for supporting sitting during bathing or showering.		P
24.5.2	Materials		P
	Bath seats shall not float in water.		P
24.5.3	Stability		P
	APPHs which are designed to be placed on the floor, such as shower chairs and stools, shall meet the stability requirements in Clause 17. APPHs which are designed to be supported by the sides of a bathtub, such as bath boards/seats and transfer benches, shall meet the stability requirements in 24.5.4. In addition, such APPHs which also feature a back support, shall meet the requirements of the backward stability test in 24.5.4.5. APPHs which are designed to be placed on the floor of a bathtub, such as bath seat inserts, shall meet the stability requirements in Clause 17.		P
24.5.4	Stability tests for APPHs designed to be supported by the sides of a bathtub		N/A
24.5.4.1	Requirements		N/A
	The APPH shall not overturn after the force is applied.		N/A
24.5.4.2	Forward stability test method		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>This test does not apply to rim-mounted bath benches or bath boards.</p> <p>The transfer bench or bath board/seat shall be placed on the supporting stand (4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 600 N (F1) shall be applied vertically on the seat using the seat loading pad (4.8.12.4). In addition, a force of 60 N (F2) shall be applied horizontally extending forward from the seat (see Figure 35) to test for overturn.</p> <p>APPHs with height adjustable legs shall have the height set to the maximum level or the most adverse position.</p>		N/A
24.5.4.3	Sideward stability test method for transfer bench without a handle		N/A
	<p>The transfer bench or bath board/seat without a handle shall be placed on the supporting stand (4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 600 N (F1) shall be applied vertically on the seat using the seat loading pad (4.8.12.4), according to Figure 36. In addition, a force of 60 N (F2) shall be applied horizontally extending sideways from the seat (see Figure 36) to test for overturn.</p> <p>APPHs with height adjustable legs shall have the height set to the maximum level or the most adverse position.</p>		N/A
24.5.4.4	Sideward stability test method for transfer bench with a handle		N/A
	<p>The transfer bench or bath board/seat with handle shall be placed on the supporting stand (see 4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 250 N (F1) shall be applied vertically on the seat using the seat loading pad in a position for intended use (4.8.12.4), according to Figure 37. Next, a force of 350 N (F2) shall be applied vertically to the centre of the handle using a loading pad (see 4.8.12.4). In addition, a force of 60 N shall be applied horizontally extending sideways from the seat to test for overturn (see Figure 37 for horizontal handle and Figure 38 for vertical handle).</p> <p>APPHs with height adjustable legs shall have the height set to the maximum level or the most adverse position.</p>		N/A
24.5.4.5	Backward stability test method (when back support is provided)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	The transfer bench or bath board/seat shall be placed on the supporting stand (4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. The weight of 60 kg (F1) shall be put at the position 175 mm forward from the centre of rear edge of the seat according to Figure 39. A force of 140 N (F2) shall be applied horizontally in a backward direction from the centre of the top edge of the back support (see Figure 39) to test for overturn. APPHs with height adjustable legs shall have the height set to the maximum level or the most adverse position.		N/A
24.5.5	Strength test of brackets		P
24.5.5.1	Requirements		P
	See 16.4.1.		PP
24.5.5.2	Test method		
	The transfer bench, bath board/seat or bench-type bathtub shelf shall be placed on the supporting stand(s) (4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. The force of 200 N (F1) shall be applied vertically to the centre of the seat using the seat loading pad (4.8.12.4). Next, a force of 400 N (F2) shall be applied horizontally along the length of the APPH and repeated 10 times in alternate directions. The force shall be maintained each time for at least 10 s. After removing the test force, the APPH and its parts shall meet the requirements listed in 16.4.1 (see Figure 40, Figure 41 and Figure 42). APPHs with height adjustable legs shall have the height set to the maximum.		P
24.5.6	Friction test of bath board/seat		P
24.5.6.1	Requirements		P
	The static friction coefficient shall be 0,3 or more.		P
24.5.6.2	Test method		P
	The bath board/seat shall be placed on the supporting stand(s) (4.8.15) in the position of intended use. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 200 N (F1) shall be applied vertically to the seat using the seat loading pad (4.8.12.4), according to Figure 43. A force shall be applied horizontally in the backward direction (F2) (see Figure 44). Measure three times the force at which the bath board/seat starts to slip along the support stand. The friction coefficient shall be calculated by using the mean		P





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Clause	Requirement + Test	Result - Remark	Verdict
	<p>value of the three times according to the following formula:</p> $\mu = \frac{F}{9,8 \times W}$ <p>where</p> <p><math>\mu</math> friction coefficient;</p> <p><math>F</math> mean value of forces at start of slip (N);</p> <p><math>W</math> total mass (kg).</p>		
24.5.7	Static horizontal force test on handle		P
24.5.7.1	Requirements		P
	See 16.4.1.		P
24.5.7.2	Test method		P
	<p>The transfer bench or bath board/seat shall be placed on the supporting stand (4.8.15) in the position of intended use and prevented from movement. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 400 N (F1) shall be applied horizontally to the handle using the loading pad (4.8.12.1) according to Figure 43, at the centre of the handle, 10 times. The horizontal force shall be maintained each time for at least 10 s. After removing the test force, the APPH and its handle shall meet the requirements listed in 16.4.1 APPHs with height adjustable legs shall have the height set to the maximum.</p> <p>Key</p> <p>1 bench</p> <p>2 handle</p> <p>3 supporting stand</p>		P
24.5.8	Static vertical force test of handle of bath and transfer boards		N/A
24.5.8.1	Requirements		N/A





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Clause	Requirement + Test	Result - Remark	Verdict
	See 16.4.1.		N/A
24.5.8.2	Test method		N/A
	The transfer bench or bath board/seat shall be placed on the supporting stand (4.8.15) in the position of intended use and prevented from movement. The angle of the supporting stands will be adjusted, if required, for the intended use of the APPH. A force of 800 N (F2) shall be applied vertically to the handle using the loading pad (4.8.12.1) 10 times using the loading pad (see 4.8.12.4) at the centre of the handle, according to Figure 44. The vertical force shall be maintained each time for at least 10 s. After removing the test force, the APPH and its handle shall meet the requirements listed in 16.4.1. APPHs with height adjustable legs shall have the height set to the maximum.		N/A
25	Requirements for information supplied by the manufacturer		P
25.1	General		P
	<p>The information supplied by the manufacturer comprises the data in the instructions for use and the details on the label. The information applied to, and supplied with, APPHs shall conform to EN 1041.</p> <p>APPHs covered by the scope of a specific standard shall, in addition to ISO 17966, conform to the clause dealing with information regarding electrical aspects of the product, if applicable.</p> <p>Any means of provision of information with APPHs shall take into account the intended users, the conditions of use and any issues specific to individual APPH types that are necessary for the safe and effective use of the product. Manufacturers are advised to inform users of any tests that have been performed. Special attention shall be paid to the user information, particularly the operating instructions and the design of labels and the design and presentation of warnings.</p> <p>Further guidance on requirements for persons with different types of impairments can be found in Annex A.</p> <p>In addition, the manufacturer should provide the information in the instructions for use in three separate sections: pre-sale, user, and service information as specified in 25.2.1, 25.2.2 and 25.2.3.</p> <p>These may be provided as separate printed documents or in other forms of media to meet the needs of individual users or their assistants.</p> <p>All requirements within the three different clauses are only applied were it is applicable.</p>		P



ISO 17966			
Clause	Requirement + Test	Result - Remark	Verdict
	Further guidance on the preparation of instructions for use can be found in IEC 82079-1.		
25.2	Instructions for use		P
25.2.1	Pre-sale information		P
	<p>In addition to the requirements of 25.1, pre-sale information shall include the following:</p> <p>NOTE Presale information does not have to be in a brochure. It might also be in a website as a PDF.</p> <p>a) information on the intended user;</p> <p>b) information on how to obtain the user information in a format appropriate for use by people with visual, reading or cognitive disabilities;</p> <p>c) all information available in pictogram(s) as far as possible;</p> <p>d) a description of the intended use and the intended environment(s);</p> <p>e) maintenance instructions, if applicable;</p> <p>f) if an APPH is intended to be cleaned, a description of the method and suitable cleaning materials, including precautions needed to avoid corrosion, if applicable;</p> <p>g) if an APPH is intended to be disinfected, a description of the method and suitable materials, including any precautions needed to avoid corrosion, if applicable;</p> <p>h) the overall dimensions (width, length and height) of the APPH, expressed in millimetres, and its mass, expressed in kilograms, when it is ready for use and, if applicable, when it is folded or dismantled;</p> <p>i) the turning diameter and minimum distance that the APPH can be turned 180 ° for a mobile product;</p> <p>j) the mass of the APPH expressed in kilograms (if the APPH can be dismantled or has any removable parts that have a mass heavier than 10 kg, the mass of those parts shall be included);</p> <p>k) if the APPH is supposed to be used in combination with other products, the manufacturer shall state to which products, and how this can be done in a safe way;</p> <p>l) instructions on forces caused on the wall for products fixed to the wall in normal use;</p> <p>m) if applicable, a warning about dangerous combinations of devices (e.g. cushions for the prevention of pressure injury often only work on correct seat surface) and combinations of flame-resistant and non-flame-resistant material;</p> <p>n) a list of accessories, detachable parts and materials that</p>		P



ISO 17966			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>the manufacturer has determined as being intended for use with the APPH;</p> <p>o) if a programmable controller is fitted, information on the method of programming, the competence required to carry out the programming and the effects on performance (if it is only programmable by the manufacturer this shall be stated);</p> <p>p) a warning if the APPH might disturb the operation of devices in its environment that emit electromagnetic fields;</p> <p>q) a warning if the performance of the APPH can be influenced by electromagnetic fields (e.g. those emitted by portable telephones, electricity generators or high power sources);</p> <p>r) operator control adjustments;</p> <p>s) whether and how the APPH can be folded or dismantled to assist in storage or transport;</p> <p>t) instructions regarding transport of the APPH (e.g. in a car or aeroplane);</p> <p>u) measured sound pressure level;</p> <p>v) expected lifetime of the APPH;</p> <p>w) maximum user mass and maximum load.</p>		
25.2.2	User information		P
	<p>User information shall be provided by the manufacturer with each APPH. Information shall contain all pre-sale warnings and information and the following as applicable for each APPH:</p> <p>a) the location and the type of identification number/word on the APPH shall be given for the unique identification number of the APPH;</p> <p>b) any adjustment or settings required before the APPH can be used and information on how adjustments or settings affect the APPH;</p> <p>c) information on adjustment possibilities and the competence required to carry out these adjustments;</p> <p>d) instructions on operation of all controls;</p> <p>e) the battery type and nominal voltage;</p> <p>f) instructions for battery maintenance;</p> <p>g) instructions for operating the battery charger, including warnings regarding any potential safety hazards (e.g. a possibility of gas accumulating in the charging area);</p> <p>h) instructions on dismantling and re-assembly of the APPH or any removable parts;</p> <p>i) the positions of points where the component parts can be gripped for safe moving and handling and/or a method for</p>		P



ISO 17966			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>handling during dismantling, assembly or carrying;</p> <p>j) a warning if surface temperatures can increase/decrease when exposed to external sources of heat or cold (e.g. sunlight, outdoor environment);</p> <p>k) if the intended purpose of an APPH cannot be met without a hazard (e.g. holes, V-shaped openings), a warning and instructions on how to operate the APPH safely;</p> <p>l) if the intended purpose of an APPH cannot be met without a hazard due to moving parts such as squeezing, a warning and instructions on how to operate the APPH safely;</p> <p>m) the level of resistance to ignition of materials and assemblies;</p> <p>n) information on the recycling of used batteries and other parts of the APPH;</p> <p>It is recommended to include instructions on how to solve simple problems for the ease of use.</p>		
25.2.3	Service information		P
	<p>The service information shall contain all the pre-sale information, user information and instructions necessary for the maintenance, adjustment and repair of the APPH and for the replacement of parts.</p> <p>The service information shall contain all the pre-sale information and the user information, unless provided in three different documents.</p> <p>The service information shall be sufficiently detailed concerning preventive inspection, maintenance and calibration, including the frequency of such maintenance. For periodic inspection see also Annex D.</p> <p>The service information shall provide information for the safe performance of such routine maintenance necessary to ensure the continued safe use of the APPH.</p> <p>Additionally, the service information shall identify the parts on which preventive inspection and maintenance shall be performed by service personnel, including the periods to be applied and details about the actual performance of such maintenance.</p>		P
25.3	Labelling		P
	<p>In addition to the requirements of 25.1, the manufacturer shall apply permanent labels for the year of production for the product.</p> <p>Detachable parts of an APPH with a mass of more than 10 kg shall be marked with the actual mass on the part.</p> <p>Symbols for use in the labelling of medical devices shall be in accordance with ISO 15223-1.</p>		P



ISO 17966			
Clause	Requirement + Test	Result - Remark	Verdict
	The labels shall only be removable with a tool or by appreciable force and shall be sufficiently durable to remain clearly legible during the expected life time of the APPH. In considering the durability of the markings, the effect of normal use shall be taken into account. Attach a unique serial number on products where possible.		
26	Packaging		P
	The hazards that can be caused by inadequate protective packaging shall be assessed in the risk analysis (see 4.1).		P





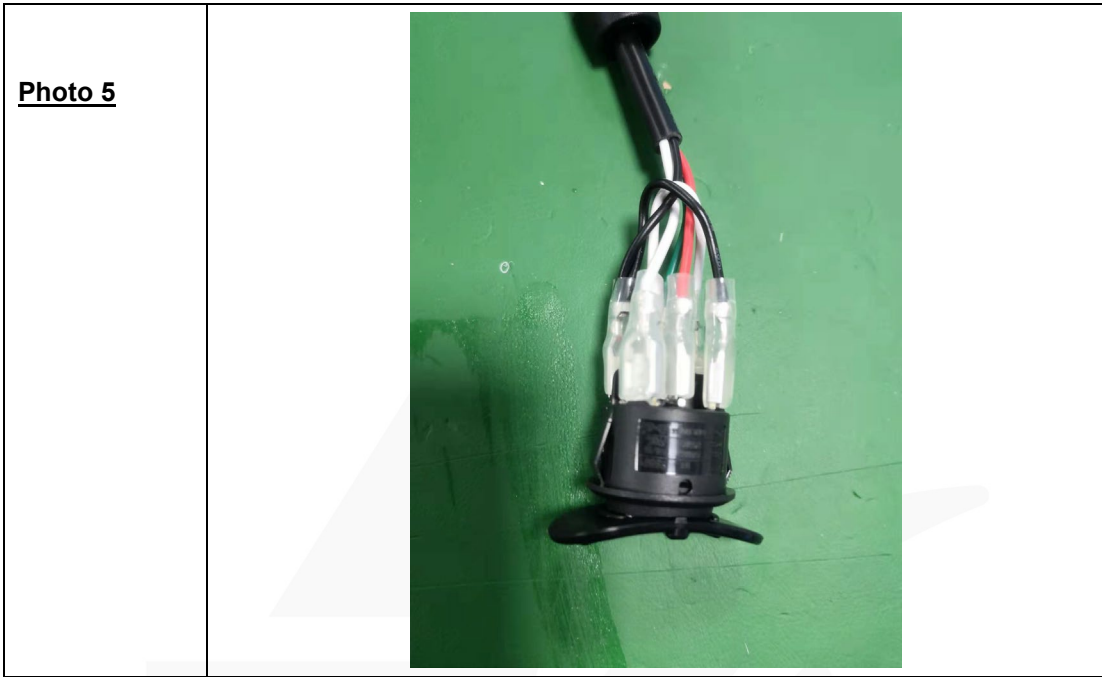


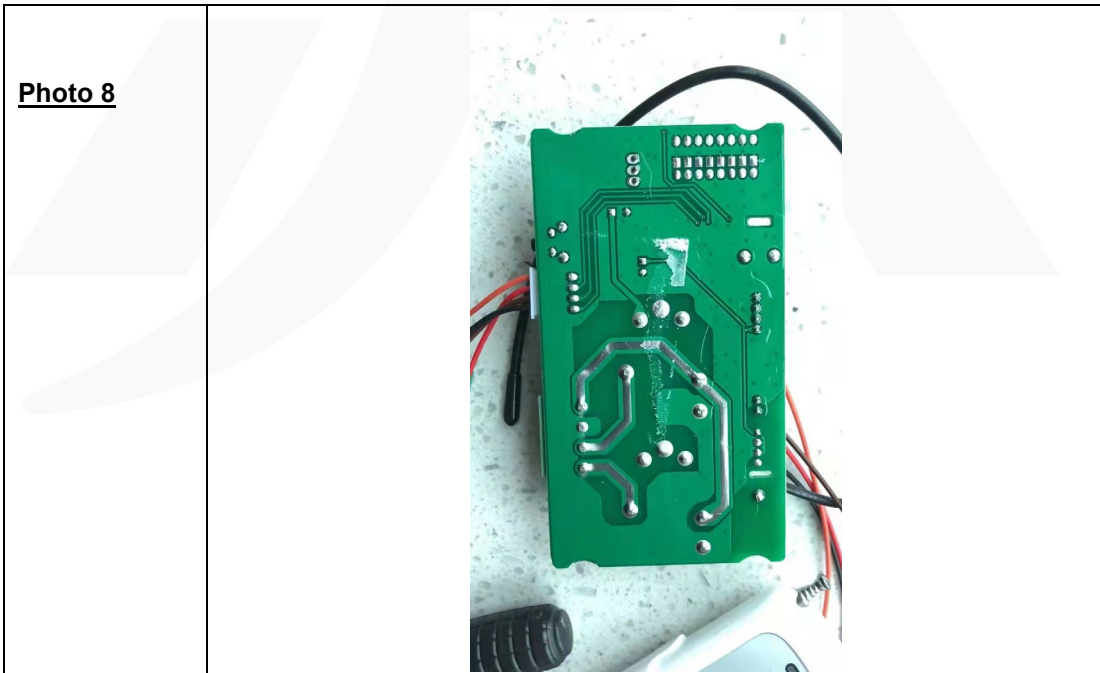
### Appendix for photos

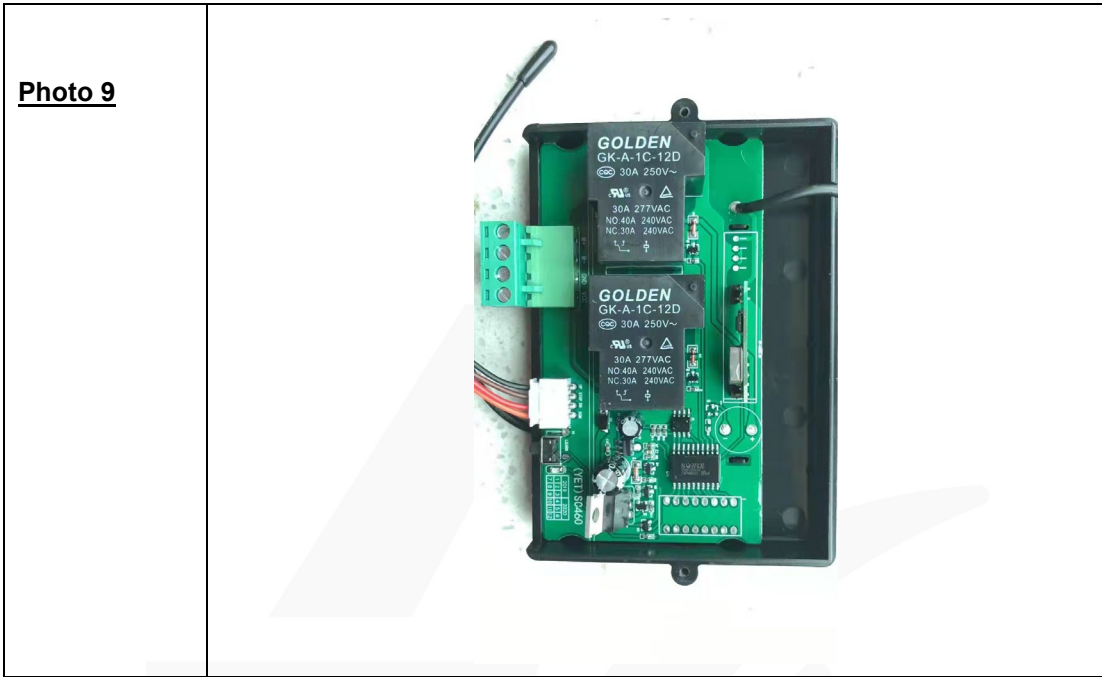












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