UL 305

STANDARD FOR SAFETY

Panic Hardware

UL Standard for Safety for Panic Hardware, UL 305

Sixth Edition, Dated July 12, 2012

Summary of Topics

This revision of ANSI/UL 305 dated March 16, 2022 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated January 7, 2022.

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UL 305

Standard for Panic Hardware

First Edition – November, 1955
Second Edition – May, 1973
Third Edition – July, 1979
Fourth Edition – December, 1993
Fifth Edition – January, 1997

Sixth Edition

July 12, 2012

This ANSI/UL Standard for Safety consists of the Sixth Edition including revisions through March 16, 2022.

The most recent designation of ANSI/UL 305 as a Reaffirmed American National Standard (ANS) occurred on March 16, 2022. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover releasing devices, such as panic hardware, fire exit hardware and exit locks, that are actuated by an actuating bar (crossbar or push pad) or actuating paddle for outward-opening doors, designed to facilitate the egress of persons from buildings in the event of panic or other emergency.

1.2 These requirements do not pertain to the fire-retardant classification of a door and releasing-device assembly.

1.3 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

1.4 Fire Exit Hardware shall additionally be evaluated to the Standard for Safety for Positive Pressure Fire Tests of Door Assemblies, UL 10C.

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.1.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.1.5 The actuating bar, also called the push pad or cross bar, shall extend across not less than one half of the width of the door leaf. Refer to local codes for location and length of activating bar. Balanced doors with panic hardware shall have push-pad type panics, and the pad shall not extend more than one-half the width of the door measured from the latch side. Refer to local codes for location and length of activating bar or pads.

2.1.6 Actuating paddle is an arm, push plate or paddle which functions as the activating mechanism of an exit lock on the egress side of the door. The active surface of the actuating paddle shall be visually and physically distinct from the rest of the device: also called the arm, push pad or push plate.

2.2 Units of measurement

2.2.1 When a value for measurement is followed by a value in other units in parentheses, the first stated value is the requirement.

2.2.2 Unless otherwise indicated, all voltage and current values mentioned in this standard are root-mean-square (rms).

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.4 Installation instructions

2.4.1 A copy of the operating and installation instructions or equivalent information is to be furnished with the samples submitted for investigation for use as a guide in the examination and test of the mechanism. For this purpose a printed edition is not required.

2.5 Test materials

2.5.1 The tests shall be performed on 3 by 7 ft. by 1 3/4 in. nominal (91.5 by 213.4 cm, by 45 mm) minimum doors of wood or metal. The doors and frames shall be rigid enough to hold firmly and to withstand the tests outlined. Reinforcement is permitted to be used on the door to prevent deformation when the test loads are being applied.

3 Glossary

3.1 For the purpose of these requirements, the following definitions apply.

3.2 ACTUATING MECHANISM – A cross bar, push bar or paddle that when pushed causes the latch or latches to unlatch.

3.3 DOGGING FEATURE – A feature used to retain the latch or latches in the retracted position.

3.4 FIRE DOOR – A door component of a closure assembly which provides a specific degree of fire protection to the opening and has been assigned a fire protection rating.

3.5 FIRE EXIT HARDWARE – Hardware intended for use on fire doors to facilitate the safe egress of persons.

3.6 PANIC EXIT HARDWARE – Hardware intended for use on doors other than fire doors to facilitate the safe egress of persons.

CONSTRUCTION

4 Assembly

4.1 The mechanism shall be of a type which is capable of being readily maintained in proper operating condition.

4.2 The mechanism shall be designed to release the door latch or latches when pressure is applied to the crossbar or push pad in the direction of exit travel.

4.3 The ends of the crossbar or push pad shall be curved, guarded, or otherwise designed to prevent catching on the clothing of persons during exit.

4.4 The release mechanism shall not depend on springs to open the door latch or latches.

4.5 A locking or dogging device provided as part of the mechanism shall not prevent release of the door latch or latches when pressure is applied to the crossbar or push pad in the direction of exit travel. A dogging feature requiring a manual release shall not be provided on fire exit hardware.

4.6 A dead locking bolt shall not be used unless it is released by the action of the crossbar or push pad.

4.7 The projection of the crossbar or push pad, when in the depressed position, shall not unduly restrict the exit opening.

5 Materials

5.1 The materials employed shall have adequate mechanical strength to perform their intended function. An operating part of the mechanism shall be of a material having a solidus point not less than 1000°F (538°C) or the product shall withstand the additional test requirements in 7.2, the Elevated Ambient Exposure Test, Section 8, and the Low Temperature Impact Test, Section 9.

5.2 The materials employed shall reduce the likelihood of the release mechanism becoming inoperative due to corrosion.

PERFORMANCE

6 Endurance Test

6.1 The release mechanism and latches shall function as intended for 100,000 consecutive cycles of operation without failure or excessive wear of the parts.

6.2 The assembly is to be installed on a simulated door and frame assembly in accordance with the manufacturer's instructions. A motor-driven mechanism or other appropriate actuating device is to trigger the actuating bar to release the latches and push the door open, as in service. The rate of operation is to be approximately 15 per minute. For this test, the assembly is to be lubricated with the same material that is provided at the factory or recommended by the manufacturer.

7 Emergency Operation Test

7.1 With the door latched, the release mechanism shall be constructed so that a horizontal force of 15 pounds (66 N) or less will actuate the actuating bar and cause the latches to unlatch from the strike. When the latched door is subjected to outward force as described in 7.5 and 7.5, a force of 50 pounds (220 N) or less shall actuate the crossbar or push pad.

7.2 The sample is to be subjected to the 15-pound (66-N) test before and after the Endurance Test, Section 6, and subjected to the 50-pound (220-N) test after the Endurance Test, Section 6. A product which incorporates operating parts having a solidus point less than 1000°F (538°C) shall also be subjected to the 15-pound and 50-pound tests after the Elevated Ambient Exposure Test, Section 8, and after the Low Temperature Impact Test, Section 9.

7.3 The measurement shall be taken at the center and 1.5 in. (38 mm) from each end on the actuating surface perpendicular to the door in the direction of swing.

7.4 A horizontal force of 250 pounds (1100 N) is to be applied to the door approximately 3 inches (76.2 mm) from the latch side and 40 inches (1020 mm) from the floor in the direction of the door swing. With the door latched, the actuating bar shall be depressed by a force as listed in 7.1 and the door swung open.

7.5 For double doors, a horizontal force of 250 pounds (1100 N) is to be applied against the midpoint of the outer stile of each door.

7.6 The actuating bar is not to be deformed by the test. A spacing of at least 1 inch (25.4 mm) is to be provided between a crossbar and the door face when the horizontal force is applied against the center of the crossbar.

8 Elevated Ambient Exposure Test

8.1 A product that incorporates operating parts having a solidus point less than 1000°F (538°C) shall comply with 8.2.

8.2 Two complete samples of the panic hardware are to be placed in the direction intended for installation in an air-circulating oven and subjected to a temperature of 400°F (204°C) for a period of 7 hours. One of these samples shall comply with the Endurance Test, Section 6, and the Emergency Operation Test, Section 7, prior to this exposure. Following this exposure, the sample is to be cooled to room temperature, may be re-lubricated with the same material that is provided at the factory or recommended by the manufacturer, and then is to comply with 7.2. Immediately upon removal from the elevated ambient, the operating parts of the second sample are to be manipulated and caused to be actuated to confirm that the assembly functions as intended at the elevated temperature and that the exposure results in no mechanical malfunction of the device. The sample shall also be visually examined for signs of degradation of materials such as melting, distortion, warpage and shrinkage. Distortion and warpage is capable of occurring to the extent that mechanical functionability is not adversely affected as determined by the manipulation of the sample as noted above.

9 Low Temperature Impact Test

9.1 A product that incorporates operating parts having a solidus point less than 1000°F (538°C) shall function as intended, show no visible signs of damage, and comply with the Emergency Operation Test, Section 7, after being tested according to 9.2 and 9.3.

9.2 A sample of the panic hardware shall be conditioned in the direction intended for installation in a minus 3°F (minus 20°C) ambient for a period of 7 hours. Immediately following this exposure, the sample shall be installed on a test door and subjected to three impacts of 70 ft.-lb., one each on the left, center, and right areas of the crossbar or push pad. The test door is to be secured in the closed position during this test.

9.3 The impacts shall be produced by a swinging pendulum consisting of a solid steel door cylinder ram weighing 100 pounds (45.5 kg) with a cylindrical body and a hemispherical striking end with a diameter of 6 ±0.008 inches (152 ±0.2 mm) and 13-1/4 inches (336 mm) long overall, rounded impact nose. The length of the ram is to consist of a main portion measuring 11 ±0.11 inches (279 ±2.8 mm) with the cone portion measuring 2.25 ±0.008 inches (57 ±0.2 mm). See Figure 9.1.

9.4 The ram is to be suspended from four steel cables, with two attached to the front and two to the rear of the ram. The cables are to be attached to a fixed overhead beam or the equivalent, 5.5 to 6 feet (1.7 to 1.8 m) above the center line of the ram. The two front and two rear cables are to be parallel to each other and are to be 23 to 25 inches (58 to 63 cm) apart where they are attached to the beam. When the ram is drawn back to deliver the impact, it is to remain level. See Figure 9.2.