

American National Standard

*for Consumer Turf Care Equipment –
Pedestrian-Controlled Mowers
and Ride-On Mowers –
Safety Specifications*



Currently in preview, click buy full version

ANSI/OPEI B71.1-2017

Revision of
ANSI/OPEI B71.1-2012

American National Standard
for Consumer Turf Care Equipment –

**Pedestrian-Controlled Mowers
Ride-On Mowers –
Safety Specifications**

Secretariat

Outdoor Power Equipment Institute, Inc. (OPEI)

Approved January 24, 2017

Published April 6, 2017

American National Standards Institute, Inc.

American National Standard

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgement of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute

Published by

**American National Standards Institute, Inc.
25 West 43rd Street, New York, NY 10036**

Copyright © 2017 by Outdoor Power Equipment Institute, Inc. (OPEI)
All rights reserved.

No part of this publication may be reproduced in any form, stored in an electronic retrieval system, or transmitted in any form or by any means (electronic, photocopying, recording, or otherwise), without prior written permission of the Outdoor Power Equipment Institute, Inc. (OPEI).

Printed in the United States of America

Contents

	Page
Foreword	vi
Part I General.....	1
1 Scope.....	1
2 Normative references.....	1
3 Definitions	2
Part II Pedestrian-controlled mowers	3
4 Controls.....	3
4.1 Control identification	6
4.2 Shutoff control device	6
4.3 Handle-mounted engine speed controls	6
4.4 Self-propelled mowers	6
5 Guards and shields.....	6
5.1 Power drives	6
5.2 Hot surfaces.....	6
5.3 Fuel ignition protection.....	7
5.4 Attachment of guards and shields.....	7
5.5 Pressurized hoses	7
6 Servicing	7
6.1 General requirements	7
6.2 Servicing points.....	7
6.3 Stored-energy devices	8
7 Electrical requirements	8
7.1 General.....	8
7.2 Line voltage.....	8
7.3 Low voltage battery powered circuits.....	8
8 Label durability requirements.....	9
8.1 General	9
8.2 Additional requirements	9
8.3 Types considered durable.....	9
8.4 Silk screening.....	9
9 General requirements - Blade rotation warning	9
10 Specific requirements - Rotary mowers	9
10.1 Blade enclosure	9
10.2 Protective guards.....	10

	Page
10.3	Performance tests..... 10
10.4	Starting arrangement 17
10.5	Mower stabilization 17
10.6	Blade speed..... 17
10.7	Handle structure 17
11	Specific requirements - Reel mowers 18
11.1	Blade stopping time 18
11.2	Handle structure 18
11.3	Self-propelled (SP) interlock 18
12	Safety messages - Pedestrian-controlled mowers 18
12.1	On-product labeling 18
12.2	Safety instructions 18
12.3	Safety pictorials and wording..... 19
13	Requirements - Mowers which meet the exclusions of CPSC 1205.1 (c)..... 19
13.1	Machine identification 19
13.2	Foot probe 19
13.3	Safety label 19
13.4	Blade stop..... 19
14	Additional requirements - Mowers not subject to CPSC 1205 regulation 20
14.1	Protective shields - Foot probe 20
14.2	Mower controls - Blade stop 20
14.3	Machine identification 20
14.4	Safety label 20
Part III	Ride-on mowers 21
15	Machine identification 21
16	Controls 21
16.1	General requirements 21
16.2	Ride-on mowers..... 21
17	Guards and shields..... 26
17.1	Power drives 26
17.2	Hot surfaces..... 27
17.3	Fuel ignition protection..... 28
17.4	Attachment of guards and shields 28

	Page
17.5	Movable seat structures 28
17.6	Pressurized hoses..... 28
18	Servicing 29
18.1	General requirements 29
18.2	Servicing points..... 29
18.3	Stored-energy devices 29
19	Electrical requirements..... 29
19.1	General 29
19.2	Line voltage..... 29
19.3	Low voltage battery powered circuits 29
20	Label durability requirements 30
20.1	General 30
20.2	Additional requirements 30
20.3	Types considered durable..... 30
20.4	Silk screening..... 30
21	Requirements - Ride-on mowers 30
21.1	General requirements 30
21.2	Stability tests 31
21.3	Braking requirements 34
21.4	Attachment drive clutch..... 36
22	Safety messages - Ride-on mowers 36
22.1	On-product labeling..... 36
22.2	Safety instructions..... 36
22.3	Safety pictorials..... 37
23	General requirements - Ride-on rotary and reel mowers..... 37
23.1	Blade rotation warning 37
23.2	Blade stopping time..... 37
23.3	Controls - attachments 37
24	Specific requirements - Ride-on rotary mowers and mower attachments..... 38
24.1	Blade enclosure 38
24.2	Guards and grass catchers 38
24.3	Performance tests 39
24.4	Blade speed 45

Tables

1	Method for the use of the test cones	7
2	Air inlet hole for structural integrity test for pedestrian-controlled mowers and mower attachments	13
3	Average hits in any zone	17
4	Method for the use of the test cones	28
5	Air inlet hole for structural integrity test for ride-on rotary mowers and mower attachments	41
6	Average hits in any zone	45

Figures

1	Test cones for the determination of hot parts accessibility	46
2	Single-spindle pedestrian-controlled mower	47
3	Multi-spindle pedestrian-controlled mower	47
4(a)	Impact test fixture, schematic plan view	48
4(b)	Impact test fixture, test arrangement	49
5(a)	Test enclosure, general layout.....	50
5(b)	Single-spindle pedestrian-controlled mower test enclosure	51
5(c)	Multi-spindle pedestrian-controlled mower test enclosure.....	52
5(d)	Single-spindle ride-on mower - test enclosure	53
5(e)	Two spindle ride-on mower - test enclosure	54
5(f)	Three spindle ride-on mower test enclosure	55
5(g)	Test fixture for corrugated board penetration tests	56
5(h)	Nail plan of test fixture base	57
5(i)	Thrown object test fixture - base detail	57
5(j)	Test enclosure walls and base	58
6	Safety instructions for pedestrian-controlled and ride-on mowers	59
7	Finger probe	62
8	Characteristic dimensions for a blade enclosure	63
9	Operator zones for 95th percentile man	64
10(a)	Foot probe	65
10(b)	Foot probe, schematic plan view	66
10(c)	Side view of a foot probe for a rotary mower	67
11(a)	Plan view of a single-blade front discharge, fixture for structural integrity test.....	67
11(b)	Plan view of a single-blade side discharge, fixture for structural integrity test.....	68

	Page
11(c) Plan view of a single-blade top discharge, fixture for structural integrity test	68
11(d) Plan view of a multi-blade side discharge, fixture for structural integrity test	69
11(e) Plan view of a multi-blade rear discharge, fixture for structural integrity test	70
11(f) Test arrangement with grass catcher	71
11(g) Views of rear discharge pedestrian-controlled mower with grass catcher	72
11(h) Plan view of arrangement for lawn mower with side discharge grass catcher	73
11(i) Plan view of arrangement for ride-on lawn mower with grass catcher	74
Annexes (informative)	
A Rationale	75
B Pictorials	90
C CPSC Requirements for Pedestrian Controlled Mowers	94
Subpart A The Standard	94
§ 1205.1 Scope of the standard	94
§ 1205.2 Effective date	95
§ 1205.3 Definitions	95
§ 1205.4 Walk-behind rotary power mower protective shields	96
§ 1205.5 Walk-behind rotary power mower controls	100
§ 1205.6 Warning label for reel-type and rotary power mowers	101
§ 1205.7 Prohibited stockpiling	102
§ 1205.8 Findings	102
Subpart B Certification	105
§ 1205.30 Purpose, scope, and application	105
§ 1205.31 Effective date	106
§ 1205.32 Definitions	106
§ 1205.33 Certification testing	106
§ 1205.34 Recordkeeping requirements	107
§ 1205.35 Product certification and labeling by manufacturers	107
§ 1205.36 Product certification and labeling by importers	107
D Bibliography	109

Foreword (This foreword is not part of American National Standard ANSI/OPEI B71.1-2017.)

This standard is a revision of American National Standard for Consumer Turf Care Equipment - Walk-Behind Mowers and Ride-On Machines with Mowers - Safety Specifications, ANSI/OPEI B71.1-2012. The first edition of this standard was approved and published by the American National Standards Institute in 1960. It has been revised fourteen times since initial publication, including this revision.

The present revision was prepared by the Outdoor Power Equipment Institute's (OPEI) Lawn Mower Committee, as part of OPEI's continuing work on standards.

A summary of the principal changes included in this revision are as follows:

Part I - General:

- 2 Normative references - Removed revision dates
- 3 Definitions - Updated

Part II - Pedestrian-Controlled Mowers:

- 5.4 Guards which need frequent access may be no-tools (harmonized with ANSI/OPEI B71.4)
- 5.5 Pressurized hydraulic hose guarding added (harmonized with ANSI/OPEI B71.4)
- 6.3 Stored energy safety sign (harmonized with ANSI/OPEI B71.4)
- 8.1 Revised label durability ASTM reference
- 10.1.4 Revised other openings - limited number and size
- 10.2.1 Moved grass catcher durability message to the instructions
- 10.3.6.1 Defined an operator target for grass catchers structural integrity test
- 10.3.7.1 Redefined operator target for throw object test
- 12.1 Single-color only safety warnings are not permissible
- 14 Requirements added for mowers not subject to CPSC 1205 regulation

Part III - Ride-On Mowers:

- 16.2.2.2 Added electric option for PTO control
- 17.4 Guards which need frequent access may be no-tools (harmonized with ANSI/OPEI B71.4)
- 17.6 Pressurized hydraulic hose guarding added (harmonized with ANSI/OPEI B71.4)
- 18.3 Stored energy safety sign (harmonized with ANSI/OPEI B71.4)
- 21.1.3 Added ROPS exemption for Out-Front Zero-Turn mowers, 400-600 kg, stability >25 degrees
- 21.2.4 Limited sudden traction test to fixed-ratio transmission units
- 22.1 Single-color only safety warnings are not permissible
- 24.1.4 Revised other openings - limited number and size
- 24.2 Moved grass catcher durability message to the instructions

Figures:

- 5** Updated figure to match text
- 6** Updated safety messages, eliminated duplicates, and combined pedestrian-controlled and ride-on
- 11(g)** Figure for new operator target for grass catcher

Consensus for this standard was achieved by use of the Canvass Method. This standard contains annexes that are all informative and are not considered requirements of this standard.

Suggestions for improvement of the standard are welcome. They should be sent to the Outdoor Power Equipment Institute, 341 South Patrick Street, Alexandria, VA 22314, or www.opei.org.

The following organizations, recognized as having an interest in the standardization of safety requirements for pedestrian-controlled mowers and ride-on mowers, were contacted prior to the approval of this revision of the standard. Inclusion in the list does not necessarily imply that the organization concurred with the submittal of the proposal to ANSI.

Producers

Ariens Company
Jacobsen, A Textron Company
Kawasaki Motors Corporation
Scag Power Equipment

Users

Steven A. Points, independent consultant
Thomas L. Wise, independent consultant

General Interest

American Society of Agricultural and Biological Engineers (ASABE)
Consumer Product Safety Commission (CPSC)
Dan Nielsen, independent consultant
Underwriters Laboratories

American National Standard
for Consumer Turf Care Equipment –

Pedestrian-Controlled Mowers and Ride-on Mowers – Safety Specifications

Part I: General

1 Scope

The safety specifications given in this standard are for powered

- (a) reel and rotary pedestrian-controlled lawn mowers,
- (b) reel and rotary ride-on lawn mowers,
- (c) ride-on lawn tractors with mower attachments,
- (d) ride-on lawn and garden tractors with mower attachments, and
- (e) lever-steer and zero-turn ride-on mowers.

These specifications are intended to provide safety requirements and to help ensure uniform operator environments. They are intended to apply to products specifically intended as consumer products for the personal use of a consumer around a house. These specifications are not intended to apply to commercial products customarily used by hired operators or to products designed primarily for agricultural purposes such as defined in SAE J1116. They are not intended to cover sulky-type units, pedestrian-controlled tractors, flail mowers or sickle bar mowers, and are not intended to completely cover electrical requirements. This standard applies to all aftermarket parts, attachments and accessories. Any manufacturer of aftermarket parts, attachments and accessories is responsible for ensuring compliance to this standard. Safety specifications in this standard apply only to a configuration of attachments/implements/accessories approved by their respective manufacturers.

The U.S. Consumer Product Safety Commission (CPSC) has promulgated a mandatory standard relating to certain aspects of pedestrian-controlled power lawn mower operations (SAFETY STANDARD FOR WALK-BEHIND POWER LAWN MOWERS, CPSC 16 CFR PART1205). A copy of the CPSC mandatory standard is contained in Annex C. The CPSC standard contains requirements for products sold in the US by manufacturers of consumer pedestrian-controlled lawn mowers that meet any of the following criteria:

- a) Cutting width between 305 mm (12 inches) and 762 mm (30 inches)
- b) Mass less than 90.7 kg (200 pounds)
- c) Engine horsepower less than 6 kW (8 hp).

The effective implementation date of this standard shall be two (2) years after the publication date and shall apply to all products built after that date. Manufacturers may also comply with the requirements of this standard any time after the publication date.

2 Normative references

The following standards contain provisions, which through reference in this text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI Z535.4, *Product safety signs and labels*¹⁾

¹⁾ ANSI and ISO standards available from the American National Standards Institute, 25 West 43rd Street, New York, NY 10036; (212) 642-4900; www.ansi.org.