

Australian Standard[®]

**POWERED ROTARY
LAWNMOWERS**

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Australian Federation of Consumer Organizations
Confederation of Australian Industry
Department of Consumer Affairs, N.S.W.
Department of Employment and Labour Relations, Qld.
Department of Industrial Relations, N.S.W.
Department of Main Roads, N.S.W.
Interstate Noise Control Committee
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PREFACE

This standard was prepared by the Association's Committee on Power Lawnmowers and Edge Trimmers. It supersedes AS 2657—1983 Powered Rotary Lawnmowers. Preparation of this edition was considered necessary to overcome some anomalies in the testing procedures. The revised procedures in this edition can be considered to achieve a higher level of safety than those which have been superseded.

The standard specifies requirements for the design and construction of the mower with the emphasis on safety for the user and the bystander, while consistent with the permitting of satisfactory performance in the intended task of cutting and catching grass. Throughout the preparation of this edition particular consideration was given to the safety of the operator while in control of the mower, and for this purpose, suitable test methods are specified in order to limit the possibility of accidental contact with the blades, and to control the dangerous ejection of objects from the mower. Tests for blades and their means of attachment are included to ensure that they are sufficiently robust to withstand all conditions which may occur in the normal use of a mower.

This standard is based on ISO 5395.

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CONTENTS

	<i>Page</i>
SECTION 1. SCOPE AND GENERAL	
1.1 Scope	4
1.2 Application	4
1.3 Referenced Documents	4
1.4 Definitions	4
1.5 Electrical Safety Requirements	4
SECTION 2. CONSTRUCTIONAL REQUIREMENTS	
2.1 Blades	5
2.2 Blade Mountings	5
2.3 Handle	5
2.4 Cut-out Switch	5
2.5 Power Controls	5
SECTION 3. TEST REQUIREMENTS	
3.1 Accessibility	5
3.2 Foot Probe Test	5
3.3 Impact Test	5
3.4 Unbalance Test	5
3.5 Reverse Torque Test	5
3.6 Structural Integrity Test	5
3.7 Thrown Object Test	5
SECTION 4. SAFETY INSTRUCTIONS AND MARKING	
4.1 Safety Instructions	6
4.2 Marking	6
4.3 Warning Notice	6
APPENDICES	
A Accessibility	7
B Foot Probe Test	8
C Preconditioning Procedure for Impact and Structural Integrity Type Tests	10
D Impact Test	11
E Unbalance Test	13
F Reverse Torque Test	14
G Structural Integrity Test	15
H Corrugated Fibreboard Penetration Test	17
J Thrown Object Test	19
K Safety Instructions	22

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for the construction and design of powered rotary lawnmowers, together with appropriate test methods for qualitatively assessing the robustness of the cutting means and their means of attachment.

The standard does not include performance requirements for lawnmowers other than those relating to safety.

1.2 APPLICATION. This standard applies to powered rotary lawnmowers of the walk-behind type intended essentially for domestic use.

It does not apply to powered cylinder type lawnmowers or powered lawnmowers of the ride-on type.

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

AS 1074 Steel Tubes and Tubulars Threaded or Suitable for Threading with Pipe Threads of Whitworth Form

AS 3156 Approval and Test Specification for Electric Lawnmowers

1.4 DEFINITIONS. For the purpose of this standard the following definitions apply:

1.4.1 Powered rotary lawnmower—a mower incorporating one or more blade assemblies in which the cutting edge or edges are in a substantially horizontal plane and driven in rotation about a vertical axis at

such a speed that will, under normal operating conditions, cut grass.

NOTE: Throughout this standard the term 'mower' is to be taken to mean 'powered rotary lawnmower'.

1.4.2 Blade—the means by which grass is cut including both metal and non-metal cutting means.

1.4.3 Blade tip circle—a circle described by the outermost point of a fully extended blade as it rotates about its vertical axis.

1.4.4 Swing-over handle—a handle which may be pivoted from one end of a mower to the other to permit reversing the direction of travel of the mower without turning the mower around.

1.4.5 Maximum speed—the maximum rotational speed of the blade assembly attained under no-load conditions using the controls provided for the operator.

1.4.6 Cutting area of the blades—the area of the blades which lies in the annulus between the blade tip circle and a concentric circle which has a diameter which is 80 percent of that of the blade tip circle (see Fig. 1).

1.5 ELECTRICAL SAFETY REQUIREMENTS.

This standard does not include the electrical safety requirements which must be observed to secure approval for connection or sale of mowers. An electrically powered rotary lawnmower shall, in addition to complying with this standard, comply with the requirements of AS 3156.

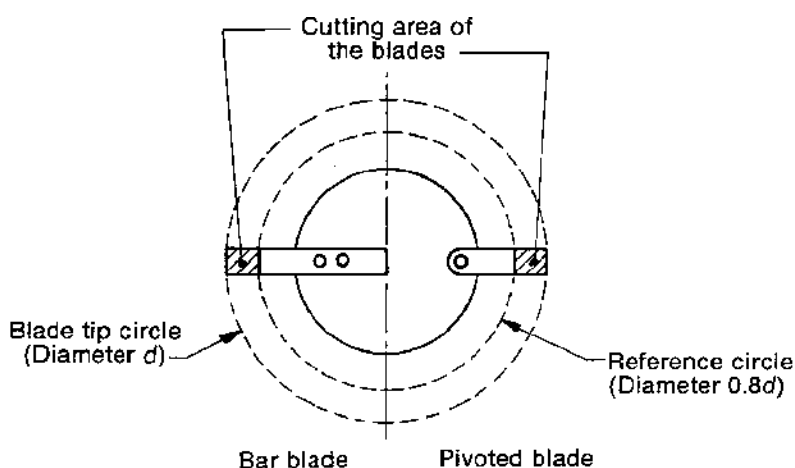


Fig. 1. CUTTING AREA OF THE BLADES

SECTION 2. CONSTRUCTIONAL REQUIREMENTS

2.1 BLADES.

2.1.1 Material. The material used for the cutting means shall comply with the requirements of Section 3.

Where the cutting means is of metal it shall have a directionality of grain which runs in the lengthwise direction of the blade.

2.1.2 Blade stopping time. The blade(s) of the mower shall come to a stop from maximum speed conditions within 7 s of actuating the switch to the off position or on disengaging the clutch.

2.1.3 Blade height adjustment. Where the blade height can be adjusted whilst the mower is running, the means for the height adjustment shall be so located and arranged that such adjustment can be safely carried out.

2.2 BLADE MOUNTINGS. Each blade mounting shall be—

- (a) capable of effectively securing and Supporting the blade(s); and
- (b) of such design and arrangement that will facilitate easy replacement of the blade(s). Blade mountings shall not be permanently fixed to the blade(s).

2.3 HANDLE. A positive locking means such as a suitable clamp (not being a smooth faced friction

clamp), upstop or latch shall be provided for mower handles which shall not allow any part of the handle normally gripped by the operator when mowing to come closer than 430 mm measured as the horizontal distance between any point on the handle grips and any point on the blade tip circle, unless the positive locking means is intentionally disengaged.

2.4 CUT-OUT SWITCH. Each mower shall incorporate a cut-out switch for the purpose of stopping the motor and preventing inadvertent starting, as follows:

- (a) For mowers powered by internal combustion engines. The switch shall be in the form of an ignition cut-out. The cut-out operation shall be positive and shall remain effective in any position in which the mower may be placed. The switch shall be operable from the normal operating position when mowing.
- (b) For mowers powered electrically. The switch shall comply with the relevant requirements of AS 3156.

2.5 POWER CONTROLS. The power controls on electrically powered rotary lawnmowers shall be of a type requiring constant actuation by the operator and there shall be no provision to override the controls.

NOTE: A control that requires constant actuation is commonly known as a 'dead man's handle'.

SECTION 3. TEST REQUIREMENTS

Every mower submitted for test shall be capable of complying with the requirements of Clauses 3.1 to 3.7.

NOTE: Some of the tests are severe and it is permissible to use a new mower for each test if necessary.

3.1 ACCESSIBILITY. When tested in accordance with Appendix A, none of the designated points shall be accessible.

3.2 FOOT PROBE TEST. When tested in accordance with Appendix B, the design of the blade enclosure shall prevent the foot probe from coming into contact with any part of the blade assembly.

3.3 IMPACT TEST. When tested in accordance with Appendix D, no part of the blade assembly of the mower shall fracture, break, loosen or deform to the extent that the mass of any blade is reduced by 2 g or more.

3.4 UNBALANCE TEST. When tested in accor-

dance with Appendix E, no part of the mower shall fracture, break or become detached.

3.5 REVERSE TORQUE TEST. When tested in accordance with Appendix F, no part of the mower shall fracture, break or become detached.

3.6 STRUCTURAL INTEGRITY TEST. When tested in accordance with Appendix G, the mower shall not fail in terms of the criteria defined in Appendix G.

3.7 THROWN OBJECT TEST. When tested in accordance with Appendix J, the number of hits shall not exceed any of the following:

- (a) Lower zone : 30 hits.
- (b) Top zone : 6 hits.
- (c) Head zone : no hits.

The thrown object test shall be performed without the grass-catcher and repeated with the grass-catcher in place if a grass-catcher is supplied.

SECTION 4. SAFETY INSTRUCTIONS AND MARKING

4.1 SAFETY INSTRUCTIONS. Safety instructions covering items of essential maintenance, mower operation and mowing procedures shall be supplied with each mower. Such instructions shall include the information listed in Appendix K except where inappropriate to the particular type of mower.

4.2 MARKING.

4.2.1 General. Each mower shall be legibly and indelibly marked with the following:

- (a) The name or registered trade name or mark of the manufacturer, or other distinguishing mark.
- (b) If not the only type of powered rotary lawnmower marketed by the manufacturer, a catalogue number, type number or name, or other marking which will distinguish it from any other type marketed by the manufacturer.

4.2.2 Other marking. In addition to the requirements of Clause 4.2.1, each electrically powered rotary lawnmower shall also be marked in accordance with the requirements of AS 3156.

NOTE: Manufacturers who place the number of this Australian standard on lawnmowers, on packaging or on literature related thereto should ensure that the lawnmowers are manufactured to comply with the standard.

Attention is particularly drawn to the scheme for independent assurance provided by the AS Mark which is a registered certification trade mark owned by the Standards Association of Australia and which is available for use with suitable Australian standards.

The presence of the AS Mark on or in relation to a product is an assurance that the goods have been produced under a system of supervision, control and testing applied during manufacture and including periodical inspections at the manufacturer's works in accordance with the certification mark scheme of the SAA.

The AS Mark can be used only by manufacturers licensed under the certification mark scheme operated by the SAA, and only when accompanied by the number of the relevant Australian standard. It will usually be a requirement that the words 'Manufactured to Australian Standard' accompany the number of the standard and enclose the Mark as shown below; however, this is a matter for negotiation with the Association.

Further particulars of the terms of licence and suitability of this standard for certification purposes may be obtained from the Quality Assurance and Certification Department, Standards Association of Australia, 1 The Crescent, Homebush, NSW 2140.



4.3 WARNING NOTICE. The word 'DANGER' or 'CAUTION' shall be indelibly marked on the mower at or near the discharge opening and shall be easily legible from a standing position, with and without the grass catcher attached.