

Australian Standard™

Wood processing machinery—Safety

Part 6: Finishing machinery—Surface planing and thicknessing machines



This Australian Standard was prepared by Committee SF-007, Guarding of Woodworking Machinery. It was approved on behalf of the Council of Standards Australia on 8 February 2005.
This Standard was published on 9 March 2005.

The following are represented on Committee SF-007:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Woodworking Industry Suppliers Association
Construction, Forestry, Mining and Energy Union
Department for Administrative and Information Services, S.A.
Department of Consumer and Employment Protection, W.A.
Department of Infrastructure, Energy and Resources (Tasmania)
Furniture Teachers Advisory Group
National Distribution Union, New Zealand
Safety Institute of Australia
Tasmanian Forest Industries Training Board
Victorian Association of Forest Industries
Victorian WorkCover Authority

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to the Chief Executive, Standards Australia, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 01145.

Australian Standard™

Wood processing machinery—Safety

Part 6: Finishing machinery—Surface planing and thicknessing machines

Originated as part of AS CZ10—1960.
Previous edition AS 1473—1991.
Revised and redesignated in part as AS 1473.6—2005.

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 6521 1

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee SF-007, Guarding of Woodworking Machinery as a revision, in part, of AS 1473–1991, *Guarding and safe use of woodworking machinery*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

It is one of a series dealing with the safety of woodworking machinery, which have been developed following requests from regulatory authorities for a new edition of the Standard. Other Standards in the series are the following.

AS

- 1473.1 Woodprocessing machinery—Safety, Part 1: Primary timber milling machinery
- 1473.2 Woodprocessing machinery—Safety, Part 2: Finishing machinery—Common requirements
- 1473.3 Woodprocessing machinery—Safety, Part 3: Finishing machinery—Circular sawing machines
- 1473.4 Woodprocessing machinery—Safety, Part 4: Finishing machinery—Bandsawing machines
- 1473.5 Woodprocessing machinery—Safety, Part 5: finishing machinery—Moulding machines and routers with rotating tool

In common with many other Standards dealing with safeguarding of machinery, the Committee agreed to base the series on a number of drafts and published Standards emanating from the European Community. This Standard is therefore based upon three published Standards, DIN EN 859:1997, *Safety of woodworking machines, Handfed surface planing machines*, DIN EN 860:1997, *Safety of woodworking machines, One-side thickness planing machines* and DIN EN 861:1997, *Safety of woodworking machines, surface planing and thicknessing machines*.

This Standard specifies the requirements which are unique to surface planing machines thicknessing machines and machines combining both functions. The requirements which are common to all wood processing machines are specified in AS 1473.2 *Wood processing machines—Safety, Part 2: Finishing machinery—Common requirements* and this Standard should be read in conjunction with that Standard.

Statements expressed in mandatory terms in footnotes to tables are deemed to be requirements of this Standard.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 OBJECTIVE.....	4
1.3 APPLICATION	4
1.4 REFERENCED DOCUMENTS	4
1.5 DEFINITIONS	5
SECTION 2 REQUIREMENTS FOR HAND-FED SURFACE PLANING MACHINES	
2.1 SCOPE OF SECTION	12
2.2 DESIGN OF KNIVES AND CUTTERBLOCKS	12
2.3 WORKPIECE SUPPORTS AND GUIDES	12
2.4 PREVENTION OF ACCESS TO MOVING PARTS	16
2.5 SAFE WORK METHODS.....	22
SECTION 3 THICKNESS PLANING MACHINES	
3.1 SCOPE OF SECTION	31
3.2 PROVISION OF EMERGENCY STOP	31
3.3 DESIGN OF KNIVES AND CUTTERBLOCKS	31
3.4 ANTI-KICKBACK DEVICE	31
3.5 PREVENTION OF ACCESS TO MOVING PARTS	33
3.6 GUARDING OF INTEGRATED FEED MACHINES	33
3.7 GUARDING OF DRIVES	34
3.8 CHARACTERISTICS OF GUARDS AND SAFETY DEVICES	34
3.9 EMISSION OF CHIPS, DUST AND GASES	34
3.10 SAFE WORKING PRACTICE.....	34
SECTION 4 COMBINED SURFACE PLANING AND THICKNESSING MACHINES	
4.1 SCOPE OF SECTION	36
4.2 PROVISION OF EMERGENCY STOP	36
4.3 DESIGN OF KNIVES AND CUTTERBLOCKS	36
4.4 ANTI-KICKBACK DEVICE	36
4.5 WORKPIECE SUPPORTS AND GUIDES	38
4.6 SURFACING TABLE REQUIREMENTS	38
4.7 THICKNESSING TABLE REQUIREMENTS	41
4.8 PREVENTION OF ACCESS TO MOVING PARTS	42
4.9 CHARACTERISTICS OF GUARDS AND SAFETY DEVICES	46
4.10 EMISSION OF CHIPS, DUST AND GASES	46
APPENDICES	
A TABLE LIP RESISTANCE TESTS	47
B TESTS FOR GUARDS FOR PLANING MACHINES	51
C KICKBACK TEST FOR THICKNESSING MACHINES SAFETY DEVICES	52

STANDARDS AUSTRALIA

Australian Standard
Wood processing machinery—Safety**Part 6: Finishing machinery—Surface planing and thicknessing machines**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies additional requirements for the design, manufacture, safeguarding and use of surface planing and thicknessing machines used in the manufacture of components for furniture, joinery and the like. It is to be read in conjunction with AS 1473.2, which contains general requirements.

1.2 OBJECTIVE

The objective of this Standard is to provide designers, manufacturers, suppliers and users of surface planing and surface thicknessing machinery with the means of minimizing the risks to the health and safety of persons working with them.

1.3 APPLICATION

This Standard is intended for those who design, manufacture, supply, install, use, maintain or modify surface planing and thicknessing machinery.

Alternative methods of providing safety to those given may be used provided that the level of safety offered by the alternative is at least equivalent to that provided by the methods given in this Standard.

Some regulatory authorities have specific requirements relating to the forms that guarding may take and to the order in which guarding techniques may be considered. Users of this Standard should therefore make themselves aware of any specific requirements in the jurisdiction where the machinery will be used.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- | | |
|--------|---|
| 1473 | Wood processing machinery—Safety |
| 1473.2 | Part 2: Finishing machinery—Common requirements |
| 4024 | Safeguarding of machinery |
| 4024.1 | Part 1: General principles |

ISO

- | | |
|------|--|
| 7568 | Woodworking machines—Thickness planing machines with rotary cutterblock for one-side dressing—Nomenclature and acceptance conditions |
| 7571 | Woodworking machines—Surface planing machines with cutterblock for one-side dressing—Nomenclature and acceptance conditions |

1.5 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.5.1 Cutterblock

The machine component designed to hold the cutting knives or cutting blades.

1.5.2 Short workpiece

A workpiece having a length of less than 600 mm.

1.5.3 Surface planing and thicknessing machine

A combined machine designed to plane a surface and to give a workpiece a set thickness by means of a horizontally rotating cutterblock.

When surfacing, the workpiece is passed over the cutterblock and the lower surface is planed. The infeed table of the surface planing unit is adjustable in height.

When thicknessing, the surfacing tables are raised or pivoted. The workpiece rests on the height adjustable thicknessing table and passes below the cutterblock. Its upper surface is planed. The main parts of the machine are shown in Figure 1.1.

1.5.4 Surface planing machine

A machine designed to plane the surface of wood and similar materials by means of horizontally rotating tool located between two tables used to position and to support the workpiece. The lower surface of the workpiece is planed. The main parts of the machine are shown in Figure 1.2.

1.5.5 Swivel guard

A pivoting spring-loaded guard over the cutterblock in front of the fence of a surface planing machine. In use, the guard is pushed aside by the leading edge of the workpiece just prior to the workpiece making contact with the cutterblock as the workpiece is fed along the infeed table.

The spring on the guard serves both to hold the workpiece against the fence, and immediately after the workpiece has passed the cutter, to return the guard to its rest position covering the full length of the cutterblock.

1.5.6 Thickness planing machine

A machine designed to plane wood or similar material to a set thickness by means of one or two horizontally rotating cutterblocks. The distance between the cutting diameter and the surface of the table supporting the workpiece is adjustable.

The upper surface and, on double sided machines, the lower surface of the workpiece is planed.

The main parts of the machine are shown in Figure 1.3.

NOTE: In this Standard, 'table' is used for the workpiece support that may consist of rollers, belts etc. not mechanically/electrically driven.

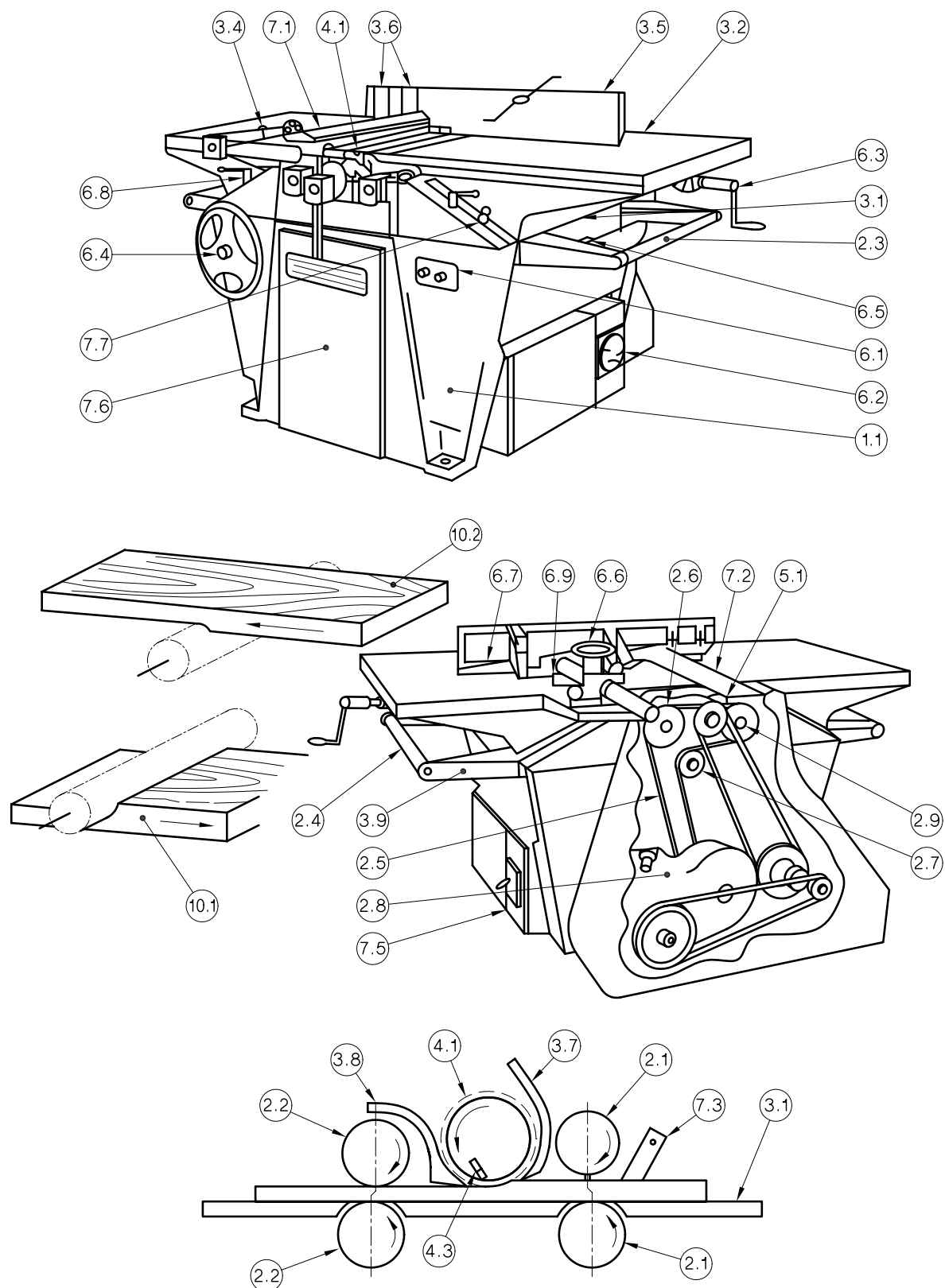


FIGURE 1.1 (in part) SURFACE PLANING AND THICKNESSING MACHINE

LEGEND

1 = Framework

1.1 = Main frame

2 = Feed of workpiece and/or tools

2.1 = Infeed feed roller

2.2 = Outfeed feed roller

2.3 = Thicknessing table roller

2.4 = Table extension roller

2.5 = Feed roller drive chain

2.6 = Feed roller drive sprockets

2.7 = Tensioning roller sprockets

2.8 = Speed reduction gearbox or variable speed gear

2.9 = Outfeed drive roller sprocket

3 = Workpiece support and clamp guide

3.1 = Thicknessing table

3.2 = Infeed surfacing table

3.4 = Outfeed surfacing table

3.5 = Tilting fence

3.6 = Fence gauge plates

3.7 = Infeed pressure bar

3.8 = Outfeed pressure bar

3.9 = Table extension support arm

4 = Tool-holders and tools

4.1 = Cutterblock

4.3 = Blades

5 = Workheads and tool drives

5.1 = Cutterblock bearing

6 = Controls

6.1 = Starting and stopping switch

6.2 = Isolating switch

6.3 = Surfacing table vertical adjustment

6.5 = Thicknessing table rollers vertical adjustment

6.6 = Fence fine adjustment

6.7 = Fence canting adjustment

6.8 = Surfacing table drawback lock

6.9 = Fence traverse lock

7 = Safety devices

7.1 = Cutterblock guard (bridge guard)

7.2 = Cutterblock rear guard

7.3 = Anti-kick-back fingers

7.5 = Dust extraction outlet

7.6 = Access door to control gear

7.7 = Scale for thicknessing

10 = Examples of work

10.1 = Thicknessing

10.2 = Planing

FIGURE 1.1 (in part) SURFACE PLANING AND THICKNESSING MACHINE

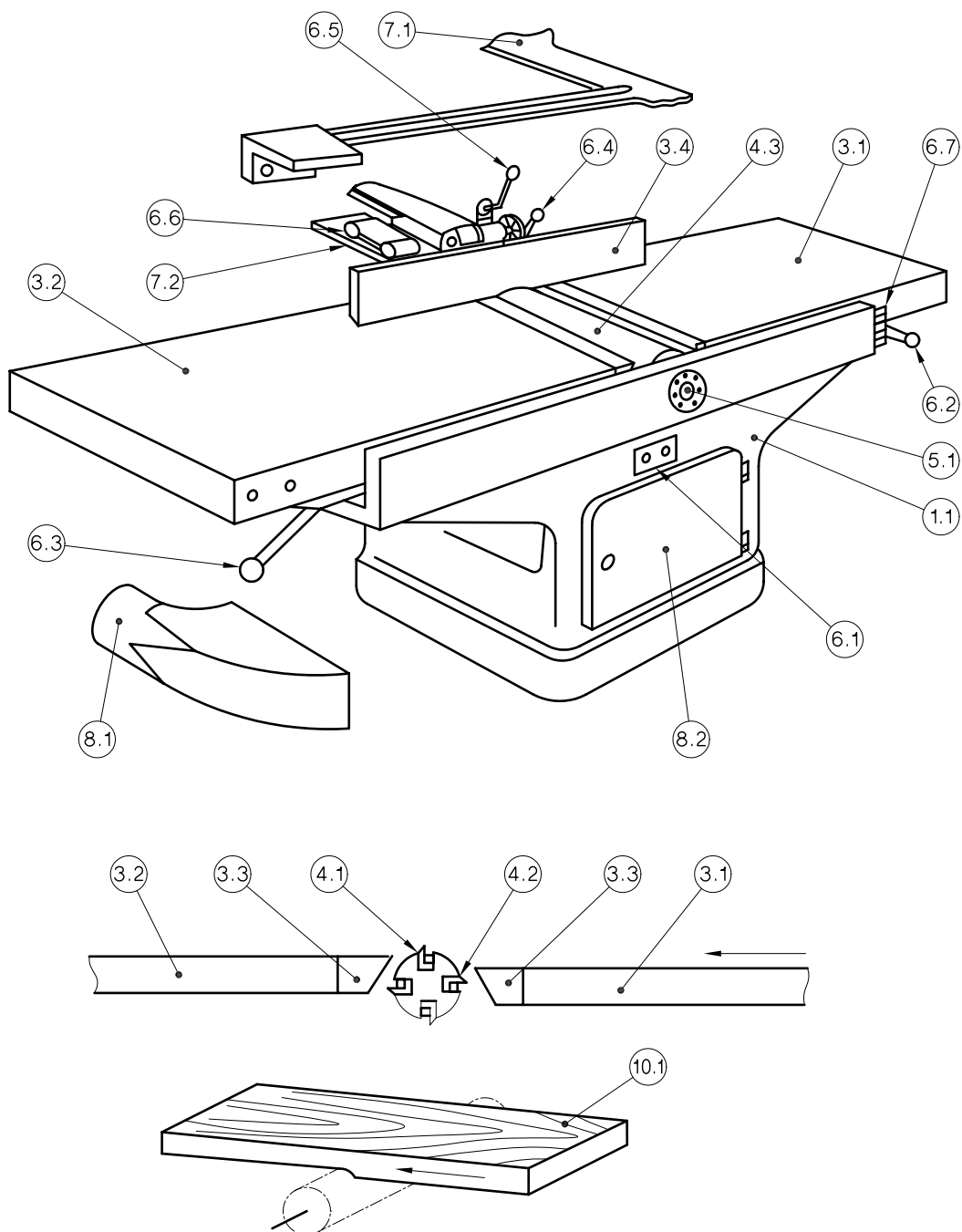


FIGURE 1.2 (in part) HANDFED SURFACE PLANING MACHINE

LEGEND:

1 = Framework

1.1 = Main frame

3.1 = Infeed table

3.2 = Outfeed table

3.3 = Table lip plates

3.4 = Canting fence

4 = Tool-holders and tools

4.1 = Blade

4.2 = Cutterblock wedge

4.3 = Cutterblock

5 = Workheads and tool drives

5.1 = Cutterblock bearing

6 = Controls

6.1 = Starting and stopping switch

6.2 = Infeed table vertical adjustment

6.3 = Outfeed table vertical adjustment

6.4 = Fence canting adjustment

6.5 = Fence canting lock

6.6 = Fence traverse lock

6.7 = Infeed table adjustment scale

7 = Safety devices

7.1 = Cutterblock guard (bridge type)

8 = Miscellaneous

8.1 = Dust extraction hood

8.2 = Access door to control gear

10 = Examples of work

10.1 = Planing

FIGURE 1.2 (in part) HANDFED SURFACE PLANING MACHINES

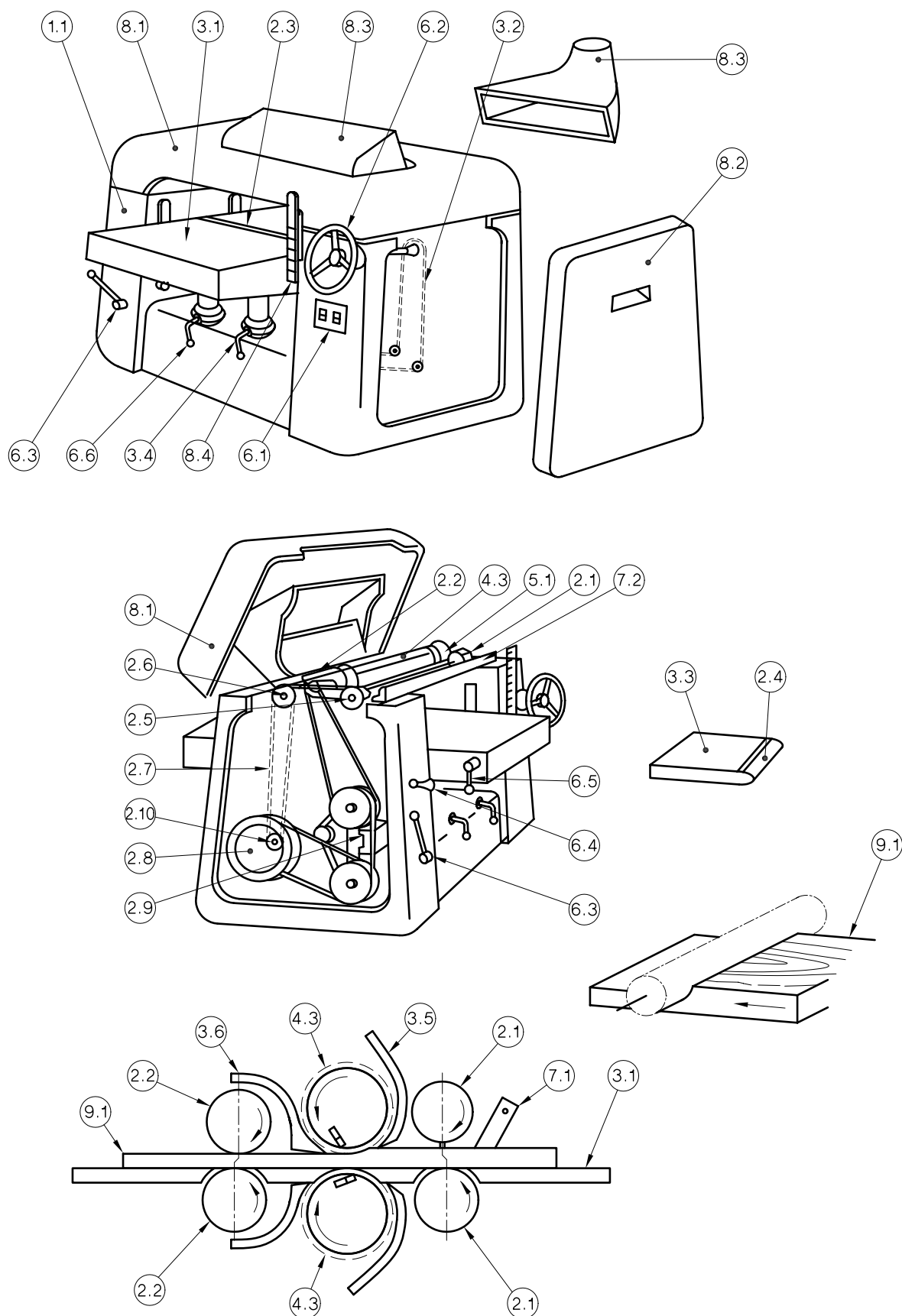


FIGURE 1.3 (in part) THICKNESS PLANING MACHINES

LEGEND:

1	=	Framework	5	=	Workheads and tool drives
1.1	=	Main frame	5.1	=	Cutterblock bearing
2	=	Feed of workpiece and/or tools	6	=	Controls
2.1	=	Infeed feed roller	6.1	=	Starting and stopping switch
2.2	=	Outfeed feed roller	6.2	=	Table vertical adjustment
2.3	=	Table roller	6.3	=	Feed speed adjustment
2.4	=	Table extension roller	6.4	=	Feed engagement lever
2.5	=	Infeed roller drive sprocket	6.5	=	Table roller adjustment
2.6	=	Outfeed roller drive sprocket	6.6	=	Table vertical adjustment lock
2.7	=	Feed roller drive chain	7	=	Safety devices
2.8	=	Speed reduction gearbox	7.1	=	Anti-kickback fingers
2.9	=	Variable speed gear	7.2	=	Depth cut limiter
2.10	=	Tensioning idler sprocket	8	=	Miscellaneous
3	=	Workpiece support clamp and guide	8.1	=	Hood
3.1	=	Table	8.2	=	Access door to control gear
3.2	=	Chain transmission for table rise and fall movement	8.3	=	Dust extraction outlet
3.3	=	Table extension	8.4	=	Scale for thicknessing
3.4	=	Table elevating screw	9	=	Example of work
3.5	=	Infeed pressure bar	9.1	=	Example of thicknessing work
3.6	=	Outfeed pressure bar			
4	=	Tool-holders and tools			
4.3	=	Cutterblock			

FIGURE 1.3 (in part) THICKNESS PLANING MACHINES

SECTION 2 REQUIREMENTS FOR HAND - FED SURFACE PLANING MACHINES

2.1 SCOPE OF SECTION

This Section sets out the additional requirements for hand-fed surface planing machines.

2.2 DESIGN OF KNIVES AND CUTTERBLOCKS

2.2.1 General

Cutterblocks for hand-fed surface planers shall be of a cylindrical form and shall comply with the requirements of Clauses 2.2.2 to 2.2.4.

2.2.2 Requirements for the cutterblock

Accessories (cutterblock wedges, gibs, screws, etc.) shall be maintained within a weight tolerance of $\pm 0.25\%$.

The cutterblock design shall ensure that knives are clamped over their total length. The minimum length of knives which can be mounted in the cutterblock shall be given in the manufacturer's instructions.

The cutterblock shall be marked with the identification of wedges and gibs in their corresponding housing.

2.2.3 Requirements for the knife

The knife shall not project beyond the cutterblock by a distance greater than 1.1 mm.

2.2.4 Knife fixing

Where a cutterblock wedge is used for knife fixing, the distance between the wedge and the cutterblock body shall not exceed 7 mm.

Wedges shall be so designed that knives cannot escape when mounted in accordance with the manufacturer's instructions.

Means shall be provided to allow knives to be mounted, set and dismounted.

2.3 WORKPIECE SUPPORTS AND GUIDES

2.3.1 Table requirements

The requirements for machine tables are as follows:

- (a) The machine design shall not allow for rebating at the cutterblock end.
- (b) The vertical adjustment of the machine outfeed table shall be limited to 1.1 mm below the cutting diameter.
- (c) Machines designed to have depth of cut exceeding 1 mm shall be provided with vertical infeed table adjustment.
- (d) Both infeed and outfeed tables shall be flat in accordance with G1 of ISO 7571.
- (e) Where the infeed table is provided with vertical adjustment, it shall remain parallel (see G2 of ISO 7571) to the outfeed table throughout the full range of adjustment. The range of adjustment shall be limited such that the depth of cut cannot exceed 8 mm.
- (f) Tables shall be made of light alloy, cast iron or steel having a minimum ultimate tensile strength of 200 MPa.
- (g) Table lips—

- (i) provided as an integral element of the table or as a removable part shall be made of steel, light alloy or cast iron;
 - (ii) made of light alloy, cast iron, or iron sheet profiles shall be subject to the test described in Appendix A; and
 - (iii) made of steel with bores or slots shall have a minimum resilience of 35 J/cm^2 .
- (h) The table shall be as follows:
- (i) The distance between the table lips and the cutting diameter is $3 \pm 2 \text{ mm}$ whatever height the tables are set at (see Figure 2.1).
 - (ii) Where the table or table lips are slotted (for the purpose of noise reduction), the slots shall not exceed 6 mm in width and 15 mm in length. The tooth width shall be a minimum of 6 mm. The minimum tooth thickness shall be 1.5 mm at the tip and 5 mm at the base of the slot (see Figure 2.2).
 - (iii) Where the length of the slot exceeds 15 mm the table lips shall be subject to the test described in Appendix A.
 - (iv) Where the table or table lips are drilled (for the purpose of noise reduction), the bores shall be staggered and shall not allow for the passage of a 6 mm diameter cylindrical pin.
- (i) The table dimensions shall be such that the requirements given in Table 2.1 are met (see Figure 2.3).
- (j) If the machine is designed for use with a demountable power feed unit the fixing of it shall be behind the fence.

TABLE 2.1
TABLE DIMENSIONS

Useful working width (W) mm	Minimum distance between the table end and the cutterblock rotational axis (infeed and outfeed) mm
$W \leq 600$	$2 \times W$
$W > 600$	1200

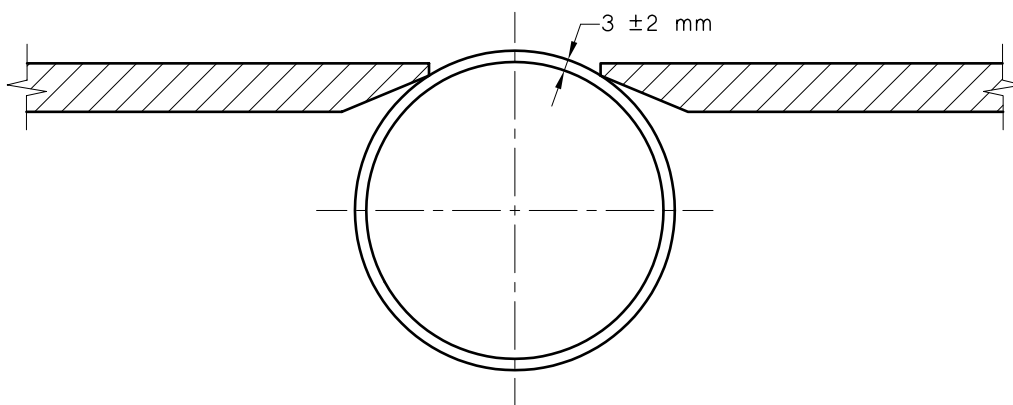
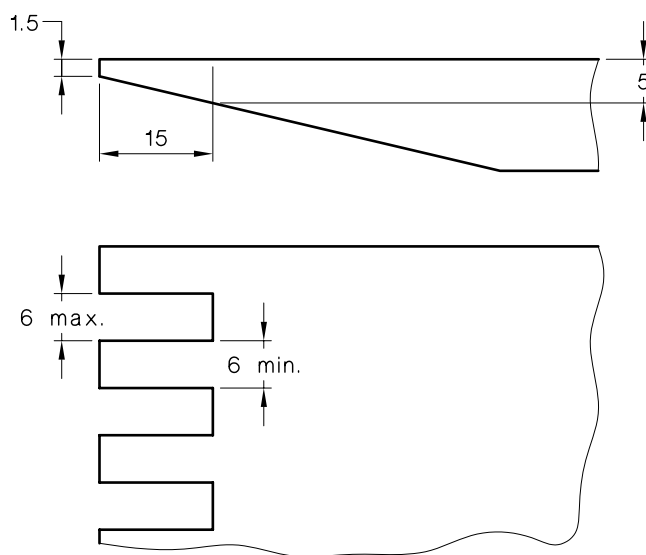


FIGURE 2.1 TABLE LIP CLEARANCES



DIMENSIONS IN MILLIMETRES

FIGURE 2.2 TABLE LIP DIMENSIONS

2.3.2 Workpiece guiding

2.3.2.1 General

All surface planing machines shall be equipped with a fence.

The fence shall be attached to the machine and shall, on machines with a useable working width greater than 160 mm, be laterally adjustable over the whole cutterblock length without the aid of a tool.

The fence shall be capable of being locked in any position. The minimum fence dimensions for surface planing machines, related to the useful working width, shall be as shown in Table 2.2 and Figure 2.3.

The gap between the surface of the outfeed table and the lower surface of the fence shall not exceed 5 mm in any position of the fence.

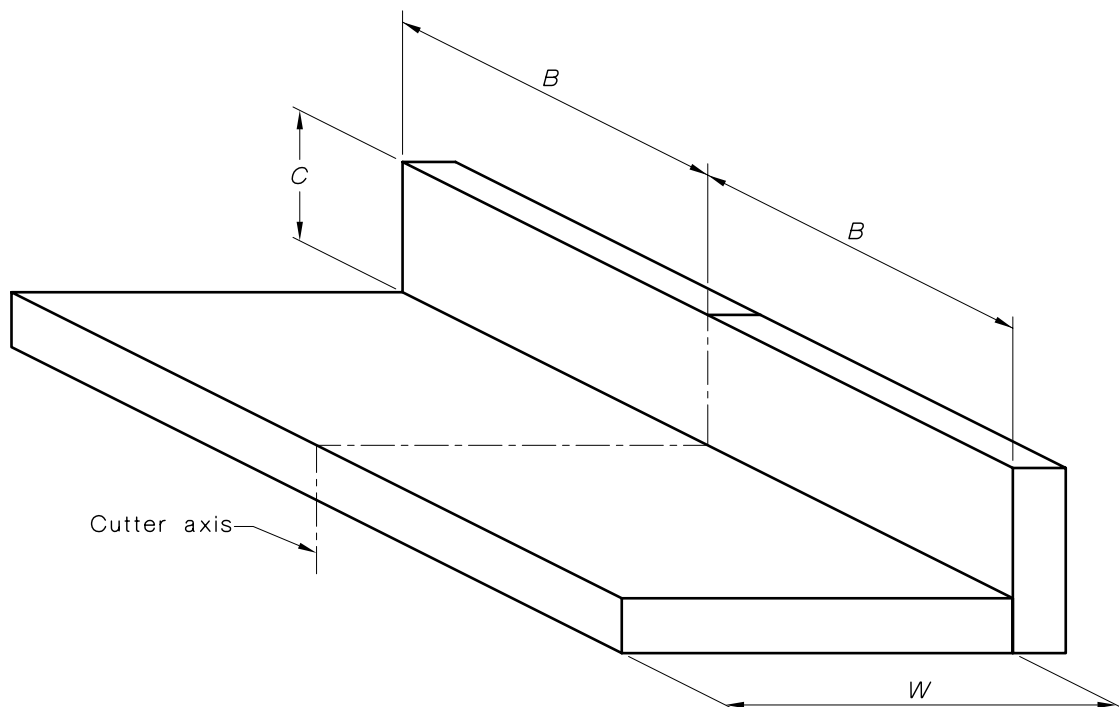


FIGURE 2.3 FENCE DIMENSIONS

2.3.2.2 Tiltable fence

Where a tiltable fence is fitted, its normal position shall be at 90° to the face of the table and its movement be limited by a stop. Its movement shall be limited to 45° in a clockwise direction from its normal position when viewed from the infeed end of the machine.

The gap between the lower surface of the tiltable fence and the surface of the outfeed table in front of the fence shall not exceed 5 mm in all positions of the tiltable fence (e.g. where positioned for bevelling at 45°).

Tilting the fence shall not create a gap at the rear between the fence and guard such that fingers can come into contact with the knife.

TABLE 2.2
FENCE DIMENSIONS

Useable working width (<i>W</i>) mm	Minimum fence length* on both sides of cutter axis (<i>B</i>) mm	Fence height (<i>C</i>) mm
$W \leq 260$	$B \geq 1.15 \times W$	$C \geq 120$
$W > 260$	550	$C \geq 150$

* Not to exceed table length.

2.3.2.3 Integral auxiliary fence

Where an integral auxiliary fence is provided for shallow work, e.g. hinged to the main fence (see Figure 2.4) its height shall be not less than 20 mm and not greater than 25 mm and its width shall exceed 60 mm.

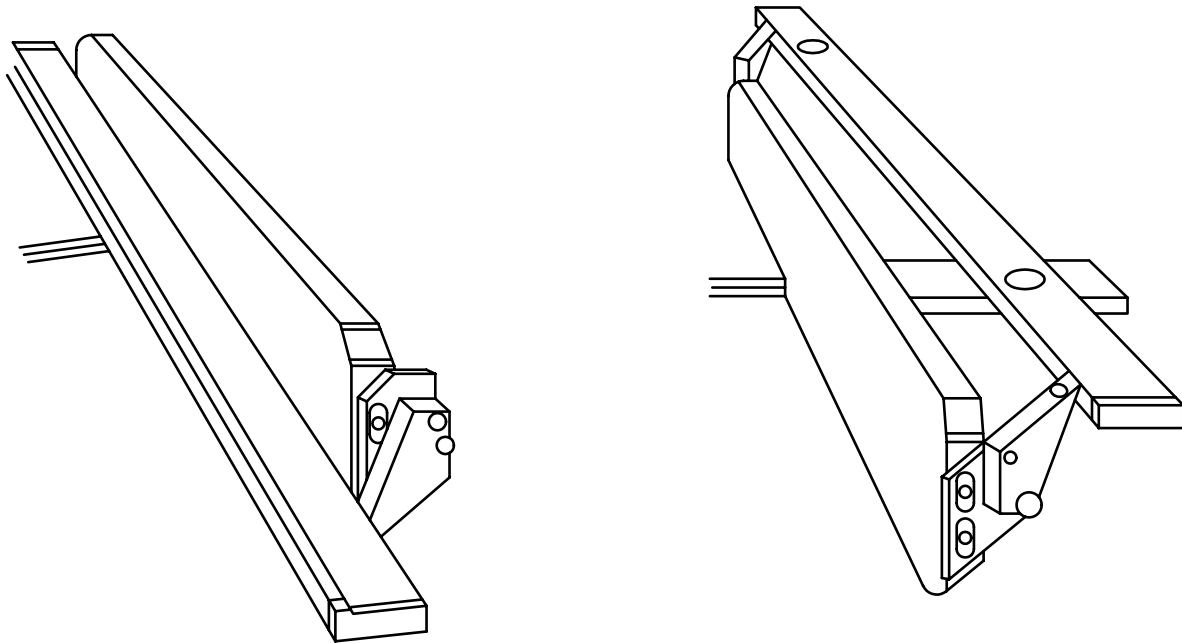


FIGURE 2.4 INTEGRAL AUXILIARY FENCE

2.4 PREVENTION OF ACCESS TO MOVING PARTS

2.4.1 General

For definitions and requirements for the various types of guards and safety devices, see AS 4024.1 and AS 1473.2. Power feed units can assist in minimizing hazards.

2.4.2 Cutterblock guarding on handfed machines

The guards in front and behind the fence shall be designed so that they cannot be removed from the working position without dismantling with the aid of a tool.

The cutterblock beneath the surfacing table shall be adequately guarded to prevent access to the cutterblock.

2.4.3 Safeguarding at the front of the fence

The cutterblock shall be guarded by a bridge or swivel guard fixed to the machine, e.g. to the machine frame on the outfeed table side.

Where the machine is designed to be used with an optional demountable power feed unit, the bridge guard shall be used to cover the exposed part of the cutterblock (i.e. the part not covered by the demountable power feed unit).

The guard shall satisfy the following requirements:

- (a) The guard shall be adjustable without the aid of a tool.
- (b) The guard shall be capable of being adjusted manually or automatically so as to reduce the gap between the fence and the guard to a maximum of 6 mm and to cover the total exposed length of the cutterblock in front of the fence, regardless of the position of the fence and tables.
- (c) The guard shall be so designed that contact between any part of the hand and the workpiece is maintained during planing. The guard's upper surface shall be smooth, and without projecting parts (see Figure 2.5).
- (d) The lower surface of the guard shall be so designed that there is no contact with the cutterblock when the guard is pressed down on to the table with a static force of 300 N.