

Australian/New Zealand Standard™

**Office desks, office workstations and
tables intended to be used as office
desks—Mechanical, dimensional and
general requirements and test methods**



AS/NZS 4442:2018

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Australian/New Zealand Standard™

Office desks, office workstations and tables intended to be used as office desks—Mechanical, dimensional and general requirements and test methods

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PREFACE

This Standard has been prepared by Joint Standards Australia/Standards New Zealand Committee CS-088, to supersede AS/NZS 4442:1997, *Office desks* and AS/NZS 4443:1997, *Office panel systems—Workstations*.

The objective of this Standard is to provide manufacturers, specifiers, retailers, purchasers and users with requirements and test methods for general safety, strength, durability, stability and dimensions for office desks, office workstations, and tables intended to be used as office desks (the term ‘unit’ is used in this Standard), for use in indoor commercial and/or home office environments, to assist in determining the suitability of these items for their intended purpose.

The revision of AS/NZS 4442 and AS/NZS 4443 was considered necessary to maintain relevance, implement improvements, and to ensure the methodology and requirements reflect current use and design. For example, monitor technology has changed, and unit designs have become more complex in the years since AS/NZS 4442 and AS/NZS 4443 were first published in 1997.

The revision of AS/NZS 4442 and AS/NZS 4443 into one standard was considered practical due to desks and workstations fulfilling a near identical role in the office environment, which necessitated near identical requirements and test methodologies.

This Standard references AS/NZS 4790:2006 (reconfirmed 2016), *Furniture—Storage units—Determination of strength and durability*, for the testing of storage units that are attached to the unit.

This Standard references AS/NZS 4688.2:2000 (reconfirmed 2016), *Furniture—Fixed height chairs*, Part 2: *Determination of strength and durability*, for the testing of fixed height seating that is attached to, or is integrated into the structure of the unit.

In the wider furniture industry the terms ‘office workstation’ and ‘office desk’ are often used interchangeably. Readers of this Standard should be aware that specific definitions of an office desk, office workstation, and a table intended to be used as an office desk are used in this Standard.

The Standard’s dimensional requirements are intended to allow the ergonomically correct use of the unit by the user. However, this Standard does not instruct on the ergonomic use of a unit.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

A lack of current Australian and New Zealand anthropometric data necessitated the selection of another source if dimensional requirements were to be included in this Standard. Business and Institutional Furniture Manufacturers Association document, BIFMA G1-2013, *Ergonomics Guideline—Ultimate Test for Fit*, was referred to in the preparation of this Standard because it was publicly available and considered likely to be relatively similar to the Australian and New Zealand populations.

When used with adjustable height chairs and, if necessary, suitable foot stools, units meeting the dimensional requirements of this Standard, with the exception of the work surface height of fixed height primary worktops, can be expected to be suitable for the majority of users within the height range (stature) from 5th percentile female to 95th percentile male as defined in the publication BIFMA G1-2013.

The work surface height of fixed height primary worktops meeting the dimensional requirements of this Standard can be expected to be suitable for the majority of users within the height range from 5th percentile female to <95th percentile male, as defined in BIFMA G1-2013.

The exception of fixed height primary worktops is included because, by being fixed, a primary worktop's height must be skewed toward use by taller users to enable a greater range of people who can utilize it. Shorter people may need to utilize a footrest with such a worktop and 95th percentile height range males may not find the fixed worktop high enough and should use a height adjustable desk. Therefore, user height adjustable primary worktops, either manual or electric, are recommended over the ergonomic compromise that is a fixed height primary worktop.

The strength and durability tests of this Standard have been developed to emulate the estimated rigours of a typical 10 year unit life that encompasses single shift (8 hour) use per day. Conformance with this Standard does not necessarily guarantee a 10 year life, because in practice variables such as the environment, user size, usage, care, misuse, and maintenance cannot be fully anticipated.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Office desks, office workstations and tables intended to be used as office desks—Mechanical, dimensional and general requirements and test methods**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies testing procedures and performance requirements to assist with evaluation of office desks, office workstations and tables intended to be used as office desks (collectively referred to as a 'unit'), to determine their suitability for use in the internal commercial or home office environment. Minimum requirements for dimensions, general safety, stability, strength and durability are specified. This Standard is applicable to units with fixed height, height adjustable, and/or flip top worktops.

The following are not covered by this Standard.

- (a) Acoustics attenuation properties.
- (b) Counter units.
NOTE: Defined as desks of standing or sitting height across which workers on one side of the unit perform transactions or services for the public who are located on the other side of the unit.
- (c) Tables not intended to be used as office desks.
- (d) Electrical safety and electrical compliance with regulations.
- (e) Environmental and sustainability concerns, except for formaldehyde emissions covered under Clause 2.3.6, and the sustainability benefits inherent in a unit conforming to this Standard's dimensional, general safety, stability, strength, and durability requirements.
- (f) Flammability.
- (g) Free standing screens.
NOTE: Defined as freestanding vertical space dividers that do not possess a primary worktop.
- (h) Units fixed to the structure of a building.
- (i) Ergonomic use.
- (j) Units designed specifically for use by disabled persons.
- (k) Monitor arms.
- (l) Desktop converters.
NOTE: Defined as height adjustable platforms that sit on a desk's worktop. By raising the platform, on which a monitor and keyboard sit, they enable a person to work while standing at the desk.

1.2 APPLICATION

Conformance to this Standard cannot ensure suitability of any particular unit for all potential office uses. Therefore, specifiers and purchasers should determine suitability for each individual application.

Units with a fixed height worktop generally require use of chairs with an adjustable seat height and may also require use of a footrest to allow the operator to obtain a suitable working position.

A unit with a fixed height worktop and an adjustable keyboard platform fitted may be an adequate alternative when a unit with a user height adjustable worktop is not available and where keyboard operation is the major task undertaken.

Keyboard platforms are not recommended, but if they are present, they are considered a part of the primary worktop if they are set into it and can be set level with it and will need to satisfy dimensional and mechanical requirements.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

NOTE: Further information may be found in documents listed in Appendix A.

AS/NZS

- 1859 Reconstituted wood-based panels—Specifications
- 1859.1 Part 1: Particleboard
- 1859.2 Part 2: Dry process fibreboard
- 2098 Methods of test for veneer and plywood
- 2098.11 Method 11: Determination of formaldehyde emissions for plywood
- 2269 Plywood—Structural
- 2269.0 Part 0: Specifications
- 4266 Reconstituted wood-based panels—Methods of testing
- 4266.1 Method 1: Base panels
- 4688 Furniture—Fixed height chairs
- 4688.2 Part 2: Determination of strength and durability
- 4790 Furniture—Storage units—Determination of strength and durability

ISO

- 17025 General requirements for the competence of testing and calibration laboratories

1.4 DEFINITIONS

For the purpose of this Standard the following definitions apply.

1.4.1 Accuracy

The degree of closeness to the true value or the specified value of whatever dimension is being measured, or force applied.

1.4.2 Corner sleeve

A sleeve that slides across two joining planes of a primary worktop, filling the corner and effectively becoming an extension of the worktop. Corner sleeves are typically metal and extend the worktop thereby increasing worktop depth. A corner sleeve is also known as a 'desk sleeve', 'keyboard sleeve', or 'desk lozenge'.

1.4.3 Deflection

The distortion produced in the plane of the primary or secondary worktop's work surface as a result of test force application.

1.4.4 Designated working position

The point against the front edge of the worktop where the user is intended to sit/stand when working. At the designated working position sufficient space is required on the worktop's work surface and under the worktop, for the user. A unit can have more than one designated working position.

1.4.5 Drawer

As per Clause 1.4.7, Extension element.

1.4.6 Duty cycle

Relationship between the active (operating) time and the inactive (resting time) of an equipment or machine. For example, the electric motors used to adjust a unit's worktop height often have a duty cycle expressed as '2 minutes on/18 minutes off.'

1.4.7 Extension element

An extendable storage item that may be attached to, or be part of a unit. Includes drawers, and other extendable elements, such as extendable shelves, extendable storage bins, and extendable writing surfaces, etc.

1.4.8 Fixed height worktop

A worktop where the height from the floor to its work surface is predetermined by the manufacturer and is designed to not be user adjustable. Levelling of a fixed height worktop's work surface may be possible, but this is not considered a height change. In some cases the substitution of components, e.g. legs, may be possible. *See also* 'height adjustable worktop', 'technician height adjustable worktop', 'user height adjustable worktop', and 'work surface'.

1.4.9 Flat packed furniture

A unit intended to be assembled by the user. Also known as 'ready to assemble', and 'knock down' (KD) furniture.

1.4.10 Flip top units

A unit, typically a table or desk, that has a mechanism that will allow the primary worktop to be rotated from a horizontal (open) position to a vertical (closed) position, usually to enable easier storage of the unit. Can be either a fixed or height adjustable worktop. Also known as a 'tilting top table'.

1.4.11 Front edge

As per Clause 1.4.45, Working edge.

1.4.12 Hazard

A potential cause of harm to a person, property or equipment.

1.4.13 Height adjustable worktop

A worktop where the height from the floor to its work surface is designed to be user adjustable. Varying worktop height using levelling devices is not considered height adjustment. *See also* 'fixed height worktop', 'technician height adjustable worktop', 'user height adjustable worktop', and 'work surface'.

1.4.14 Keyboard platform

A platform on which a keyboard sits while being used. It is typically adjustable and attached to the primary worktop.

1.4.15 Leg space

The clear space beneath the worktop that is provided for the placement of the user's legs, including knees and feet, while working at the unit. The leg space is in line with the designated working position.

1.4.16 Levelling

Adjustment provided in the support structures, frame, feet, castors, glides and/or worktop to assist with levelling of the work surface.

1.4.17 Mixed tasks

Typically a combination of keyboard and general office work. Most users will be expected to be undertaking mixed task operations.

1.4.18 Modesty screen

That part of a screen attached to the unit and positioned, at least in part, beneath the worktop to provide a visual barrier. Usually positioned opposite the working edge. A vertical panel can serve the same function as a modesty screen. *See also* 'screen' and 'vertical panel'.

1.4.19 Office desk

A furniture item or assembly of furniture items and components that—

- (a) typically has no integrated services fitted, e.g. power, or communication;
- (b) is a freestanding unit;
- (c) permit(s) the performance of office type tasks, such as general office work, word processing and computer use;
- (d) has at least one primary worktop that is, or can be adjusted to, $\pm 0.2^\circ$ variation from the horizontal when in the unloaded condition, with the lowest edge being the working edge;
- (e) has either a fixed height or height adjustable worktop; and
- (f) has a primary worktop supported by legs or by panels that typically do not project above the worktop.

The term 'desk' refers to an office desk, or an office table intended to be used as a desk. *See also* 'office workstation'.

1.4.20 Office tables intended to be used as desks

As per Clause 1.4.19, Office desk. *See also* 'office workstation'.

1.4.21 Office workstation

A furniture item or assembly of furniture items and components that—

- (a) has integrated services fitted, e.g. power, and/or communication;
- (b) has been designed to be assembled on site and left in one place;
- (c) permit(s) the performance of office type tasks such as general office work, word processing and computer use;
- (d) has at least one primary worktop that is, or can be adjusted to $\pm 0.2^\circ$ variation from the horizontal when in the unloaded condition, with the lowest edge being the working edge;
- (e) has either a fixed height or height adjustable worktop; and
- (f) has a primary worktop at least partially supported by vertical panels, or by frames holding screens that project above the worktop.

The term 'workstation' refers to an office workstation. *See* also 'office desk'.

1.4.22 Precision

The degree to which repeated measurements show the same results. It is usually expressed as a percentage range ($\pm\%$) about the true value or the specified value of whatever dimension is being measured, or force applied.

1.4.23 Primary worktop

A worktop on which the majority of office work is intended to be conducted. May also include a smaller attached surface, sometimes called a return, at a similar height and on which work can be conducted or stored. A primary worktop may also comprise several, usually equally sized, attached surfaces. Keyboard platforms that can be set level with, and set into the primary worktop are considered part of the primary worktop. *See* also 'mixed tasks', 'secondary worktop', 'single task', and 'work surface'.

1.4.24 Range

As per 1.4.38, System.

1.4.25 Screen

A generally non-load bearing vertical space divider attached to the unit. A screen can be positioned above and/or below the worktop. Screens can be freestanding, but these are not covered by the scope of this Standard. *See* also 'modesty screen', and 'vertical panel'.

1.4.26 Secondary worktop

A worktop, other than a primary worktop, generally higher than the primary worktop and on which transactions are conducted, or paperwork, or light weight office equipment is stored. Secondary worktops are not expected to be under high loading during typical use. May also be a shelf. Does not include light transom hung accessories, such as trays. *See* also 'primary worktop', and 'work surface'.

1.4.27 Segmented convex

A simple polygon with all interior angles being less than or equal to 180 degrees.

1.4.28 Serviceable

Where the unit and/or its components can be used for their intended purpose while remaining hazard free, aesthetically acceptable, and with all its functions operating as intended. Surface wear of the unit due to the application of tests outlined in Sections 4 and 5 is considered aesthetically acceptable.

1.4.29 Shall

Indicates that a statement is mandatory.

1.4.30 Shelf

As per 1.4.26, Secondary worktop.

1.4.31 Should

Indicates a recommendation.

1.4.32 Significant damage

Damage that prevents the unit or its components from being used safely for their intended purpose. Damage that weakens the unit, such as a crack in the worktop or leg, for example, is significant, because such damage may lead to the collapse of the unit, thereby making the unit more hazardous to use.

1.4.33 Single tasks

Typically a task such as paperless keyboard work where the user requires a relatively small area to accomplish the work.

1.4.34 Sit to stand unit

A unit with a user height adjustable worktop with a height adjustment range that allows use by a person in both sitting and standing positions. *See also* ‘user height adjustable worktop’.

1.4.35 Sitting unit

A unit intended to be used by a person in a sitting position only.

1.4.36 Standing unit

A unit intended to be used by a person in a standing position only.

1.4.37 Supplier

The organization/individual who supplies the unit to the test laboratory for testing. A supplier could be a manufacturer, distributor, wholesaler, or retailer.

1.4.38 System

The various combinations of frames, legs, worktops and other components, with similar configurations, manufactured from the same basic materials and listed under the one system or range name that can be assembled to permit the performance of office type tasks. *See also* ‘mixed tasks’ and ‘single tasks’.

1.4.39 Table

As per 1.4.20, Office tables, intended to be used as desks.

1.4.40 Technician height adjustable worktop

A worktop where the height from the floor to its work surface is designed to only be adjustable with special instruction and/or tools. Partial or complete disassembly (and then reassembly) of the unit may be necessary to effect the change in work surface height. A unit that requires substitution of components, e.g. swapping short legs for long legs, to effect work surface height change is not considered technician height adjustable (in such a case this would be construed as two separate units one with short legs and another with long legs). A technician adjustable worktop is considered to be a type of fixed height worktop but may also be known as ‘height selectable’ since the height can be adapted to the user at installation. *See also* ‘fixed height worktop’, ‘height adjustable worktop’, and ‘user height adjustable worktop’.

1.4.41 Unit

An office desk, office workstation, or table intended to be used as an office desk. May also be referred to as the ‘test unit’ when supplied to the test laboratory for testing to the requirements of this Standard.

1.4.42 User

The individual or individuals who will use the unit.

1.4.43 User height adjustable worktop

A primary worktop where the height from the floor to its work surface is designed to be adjusted by the user, usually from the normal working position without the need for special instruction and/or separate tools. Special instruction does not refer to operator instructions that maybe provided on how to operate a user height adjustment mechanism. *See also* ‘fixed height worktop’, ‘height adjustable worktop’, ‘technician height adjustable worktop’, and ‘work surface’.

1.4.44 Vertical panel

Generally a load bearing planar or curved vertical structure designed to support the primary worktop and/or associated items and/or provide privacy for the user. Can be either attached to and mainly supported by the unit's other components (e.g. legs and primary worktop) or may be attached to and a major support structure for the primary worktop and other components. *See* also 'modesty screen', and 'screens'.

1.4.45 Working edge

The edge or face of a primary worktop against which the user sits and/or stands and undertakes single task or mixed task work. Also called the 'front edge'. A working edge can be straight, curved, or segmented. A unit can have more than one working edge.

1.4.46 Work surface

The top surface of a unit's worktop on which office work is intended to be conducted. *See* also 'primary worktop', 'secondary worktop', and 'worktop'.

1.4.47 Worktop

A panel or panels on which office work is conducted. The upper surface of the worktop is called the 'work surface', which is horizontal or inclined (when not adjusted to its horizontal position). A worktop can be either primary or secondary. The worktop shape, dimensions and materials are important for many of the tests conducted including those relating to strength, durability and stability. *See* also 'fixed height worktop', 'height adjustable worktop', 'primary worktop', 'secondary worktop', 'working edge', and 'work surface'.

1.4.48 Worktop height

The height of a worktop is the vertical distance from the floor to its work surface measured at the lowest point along its working edge. A height adjustable worktop will have a height range.

SECTION 2 TESTING CONSIDERATIONS, REPORTING, AND GENERAL SAFETY REQUIREMENTS

2.1 TESTING CONSIDERATIONS

2.1.1 Laboratory accreditation

Laboratories performing tests outlined in this Standard shall meet the requirements of AS ISO/IEC 17025 with the exception that AS ISO/IEC 17025 requirements for measurement uncertainty do not apply to this Standard.

NOTE: Accreditation bodies which are signatories to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for testing laboratories are able to offer accreditation against the requirements of AS ISO/IEC 17025. A listing of ILAC signatories is available from the ILAC website (www.ilac.org). In Australia and New Zealand, the National Association of Testing Authorities (NATA) and International Accreditation New Zealand (IANZ) are signatories to the ILAC MRA.

2.1.2 Multiple component systems

Office desks, office workstations and tables intended to be used as office desks are often part of a wider system. Such systems usually include multiple units with mostly similar components, e.g. frames and legs, but with varying orientations and configurations of components, and different worktop sizes and shapes. Component design may also vary within a system.

Where variation across a system is large, testing of each individual configuration may be impracticable. In such cases the weakest or worst-case unit(s) or configuration(s) may be tested to indicate general conformance of the system as a whole. A manufacturer should liaise with the testing laboratory to determine the worst-case unit(s) of a system.

The test report shall identify the actual unit(s) and configurations(s) tested. However, if any considerations regarding the testing of a worst-case unit and a wider system are to be reported, they shall be identified as opinion in the test report. It is important that there be no ambiguity in the test report regarding which unit(s) and configuration(s) was tested.

2.1.3 Accuracy and precision

Unless otherwise stated, all forces shall have an accuracy of $\pm 2\%$, and a precision of $\pm 5\%$, that is, all force application devices shall be initially set to apply $\pm 2\%$ of the specified value and all subsequent applications of force shall fall within $\pm 5\%$ of the specified value. All masses shall have an accuracy of $\pm 2\%$. All dimensional measuring instruments shall have an accuracy of ± 1 mm.

2.2 TEST REPORT

Each test report shall specify at a minimum, the following:

- (a) The heading 'Test report'.
- (b) Reference to this Standard, i.e. AS/NZS 4442.
- (c) Name and address of the unit's supplier.
- (d) Test unit's designation (e.g. name and/or number).
- (e) Test unit's functional classifications, as listed in Clause 3.2.1.
- (f) Description of the unit and components tested, including a description of the primary worktop dimensions, shape, and materials.

- (g) Images (i.e. a scanned photograph or the digital equivalent, and not a diagram or drawing) to clearly identify the conformance or non-conformance of the unit tested.
NOTE: A diagram or drawing of the unit can be included in the report provided an image is also present.
- (h) Date testing of the unit to this Standard commenced.
- (i) Date testing of the unit to this Standard finished.
- (j) Test laboratory's name and contact details, including street address.
- (k) The name(s), function(s), and signature(s) or equivalent identification of person(s) who conducted testing.
- (l) The name(s), function(s), and signature(s) or equivalent identification of person(s) authorizing the test report.
- (m) The unit's dimensional values as per Section 3.
- (n) Test results and/or identification of 'conformance' or 'non-conformance' with the test criteria, as relevant.
- (o) If a requirement or test is not applicable to a unit then a result of 'not applicable' shall be recorded.
- (p) If a requirement or test is not conducted either due to early failure of the unit, thereby preventing testing, or at the supplier's direction, then a result of 'Not assessed' shall be recorded with a footnote identifying why, e.g. 'test not conducted due to preceding failure', or 'test not conducted due to supplier's direction'.
- (q) Observations regarding the presence of any defects evident before testing.
- (r) Any deviations from, additions to, or exclusions from the test methods of this Standard.
- (s) A notation that the test results refer only to the item(s) tested.
- (t) When appropriate and necessary, opinions and interpretations, which shall be clearly marked as such in the test report.

NOTE: A best practice test report should include multiple images of the unit tested, and when applicable images of critical non-conformance damage caused by testing.

2.3 GENERAL SAFETY REQUIREMENTS

2.3.1 General

The general safety requirements in this Clause 2.3 are not necessarily a complete list of safety considerations. Conformance with these requirements does not constitute a comprehensive safety assessment.

The testing laboratory should confirm test units with electrical components are electrically safe before proceeding with testing.

Clause 2.3.3, and Clause 2.3.4 shall be conducted on the same test unit.

2.3.2 Assembly instructions

Units intended to be assembled by the user, e.g. flat packed, shall be supplied with assembly instructions on a leaflet (or other material) with the following details:

- (a) The name and/or designation of the unit.
- (b) A list of the components and hardware supplied.
- (c) Details of any tools required to assemble the unit.
- (d) Detailed diagrams and text instructions showing how to assemble the unit.

2.3.3 User worktop height adjustment mechanism

2.3.3.1 General

When fitted, the user worktop height adjustment mechanism and its controls shall be in accordance with the following:

- (a) The controls of manually actuated height adjustment mechanisms shall be operable without requiring excessive physical effort. This requirement is satisfied when the test requirement in Clause 5.15.3(b) or Clause 5.16.3(b), as appropriate, is met.
- (b) The control mechanism shall be stable when the control is released, e.g. the worktop shall not lower under gravity alone or when a test load is placed on the surface. This requirement is satisfied when the test requirement in Clause 5.15.3(c) or Clause 5.16.3(c), as appropriate, is met.
- (c) The height adjustment control shall be positioned, and/or designed so as to avoid inadvertent activation.
- (d) All equipment and/or tools required to operate the mechanism shall be supplied with the unit.
- (e) Out-stops shall be fitted to the height adjustment mechanism to prevent dislodgement of components or damage to the unit at the extremes of its height adjustment range.

NOTES:

- 1 Indicators that identify the height position of the work surface within its adjustment range are recommended to enable accurate adjustment of the work surface height by repeat alternating users.
- 2 Remote control operation of an electrically actuated worktop is permitted and in such cases it is recommended that a receptacle be attached to the unit to hold the remote control when not in use.

2.3.3.2 Electrically actuated worktop height adjustment

Units with electrically actuated worktop height adjustment shall be in accordance with the following:

- (a) Height adjustment of the worktop shall be smooth and continuous.
- (b) The worktop shall possess—
 - (i) an overload device or other sensor incorporated into the height adjustment mechanism that is able to detect obstructions between the worktop and other structures and thereby reduce the risk of injuries; or
 - (ii) a ≥ 25 mm gap, throughout the full adjustment range, between the edges of the electrically actuated worktop and adjacent structures on the same unit; and/or a ≤ 8 mm gap, throughout the full adjustment range, between the edges of the electrically actuated worktop and adjacent structures on the same unit.
- (c) The duty cycle of an electric height adjustment mechanism shall not inhibit the functionality of the unit. This requirement is satisfied when the test requirement in Clause 5.15.3(f) or Clause 5.16.3(f), as appropriate, is met.

NOTES:

- 1 If a unit has an electrically actuated worktop that does not conform to Item 2.3.3.2(b)(i) then the assembly instructions should state that the unit should be positioned, during installation, so its worktop is 25 mm or more from other structures and units.
- 2 Clause 2.3.3.2(c)—This requirement is intended to ensure a user/s can make reasonable use of the adjustment mechanism without the mechanism ceasing to function.
- 3 When the adjustable desk is operated and loaded, the noise should be within acceptable office environment noise levels.

2.3.4 Edges, corners, and gaps

The unit shall be designed to minimize personal injury and clothing damage. Conformance shall be demonstrated as follows:

- (a) All exposed edges, and corners of the unit are rounded or chamfered.
- (b) The worktop corners against which the user works shall have the sharp edge removed. This can be achieved, for example, by a ≥ 2 mm radius, arris, or chamfer.
- (c) The worktop edges, top and bottom, against which the user works have a ≥ 2 mm radius.
- (d) Gaps formed, at least in part, by moving parts of a user height adjustment mechanism (not including the worktop) and accessible from the user's adjustment position, are either—
 - (i) ≥ 25 mm throughout the full adjustment range; or
 - (ii) ≤ 8 mm with no reduction in the gap throughout the full adjustment range.

NOTES:

- 1 Clause 2.3.4(d) is not applicable to the space between the worktop and adjacent structures on the same unit, instead see Clause 2.3.3.2(b).
- 2 Clause 2.3.4(d) is not applicable to gaps where the dimensions remain unchanged.

- (e) The ends of accessible hollow components with gaps ≥ 8 mm are sealed or capped.
- (f) Exposed metal surfaces, edges and corners of the assembled unit are free of burrs.

2.3.5 Extendable components

Extendable elements shall have out-stops fitted, or other means to prevent accidental dislodgement when fully extended.

2.3.6 Workmanship

The unit, when assembled according to the manufacturer's or supplier's instructions, should exhibit an acceptable level of workmanship.

2.3.7 Formaldehyde emissions

Composite or engineered wood products, used in the construction of the unit, shall have a formaldehyde emission grade no higher than those shown in Table 1. The testing procedure shall be as per the applicable Standard in Table 1, or a procedure that produces equivalent results.

NOTE: Examples of composite or engineered wood products are, but not limited to, particle board or MDF worktops, or the particle board that can be in an office workstation's vertical panels.

TABLE 1
REQUIREMENTS FOR FORMALDEHYDE EMISSIONS
FROM COMPOSITE OR ENGINEERED WOOD PRODUCTS

Composite wood product	Testing procedure as per Standard	Minimum formaldehyde emission requirement as per Standard
Plywood, laminate and veneer products	AS/NZS 2098.11	E1 Grade as per AS/NZS 2269.0
Particleboard and other board products	AS/NZS 4266.1	E1 Grade as per AS/NZS 1859.1
Dry processed fibreboard products	AS/NZS 4266.1	E1 Grade as per AS/NZS 1859.2

NOTE: E1 grade formaldehyde emissions are less than those emitted by a material classed as E2, but higher than those emitted by a material classed as E0 or Super E0.

SECTION 3 DIMENSIONAL REQUIREMENTS

3.1 GENERAL

Dimensions shown are for each individual operator position. For units intended for simultaneous use by more than one user, refer to Clause 3.9.

If fitted, keyboard platforms inset into the primary worktop, and corner sleeves shall be considered part of the primary worktop.

The tests outlined in Section 3 shall be conducted on the same test unit.

NOTE: Primary worktop design should incorporate user height adjustability to allow users to obtain the correct work surface height, appropriate for their stature and for the particular task they are undertaking. This is especially important where a unit is being designed for use by multiple users.

3.2 FUNCTIONAL CLASSIFICATIONS

3.2.1 Supplier identification

Prior to testing, the following information shall be available to the test laboratory:

- (a) The maximum number of users intended to use (i.e. sit or stand) at the unit concurrently.
- (b) Whether the unit is intended to be used for single tasks and/or mixed tasks.
- (c) Whether the unit is intended to be a sitting unit, standing unit, or sit to stand unit.
- (d) Whether the unit is intended to have either a fixed height or height adjustable worktop.
- (e) If the unit has a fixed height worktop, whether the worktop is intended to be technician adjustable.

3.2.2 Test laboratory verification

The unit's functional classifications shall be verified (see Clause 3.2.1) and recorded in the test report.

3.3 TEST SET UP

In preparation of the recording of dimensions, as required by Section 3, the unit shall—

- (a) be assembled in accordance with the manufacturer's or supplier's instructions;
- (b) be positioned in its entirety on a rigid level surface, for example, a plywood platform, or an equivalent surface that gives similar or firmer support, such as concrete covered with vinyl tiles;
- (c) have the work surface of its primary worktop positioned as near to horizontal as possible; and
- (d) have any levelling adjusters set to their most advantageous position with respect to work surface height and leg space.

3.4 PRIMARY WORKTOP—WORK SURFACE REQUIREMENTS

3.4.1 General

The unit shall have at least one primary worktop.

3.4.2 Work surface levelling

The work surface of each primary worktop shall—

- (a) be positionable $\pm 0.2^\circ$ from the horizontal, with the lowest edge being the working edge; and
- (b) require ≤ 10 mm of differential vertical adjustment of levelling devices, such as extendable glides, in order to effect levelling.

NOTE: It is assumed that the floor on which the unit has been assembled is flat, and horizontal and therefore any need to level the work surface is due to the unit's construction.

3.4.3 Designated working position

3.4.3.1 General

Each primary worktop shall have space for at least one designated working position.

The designated working position shall be located at a position that conforms to the applicable requirements of Clause 3.4.3.3, Clause 3.4.3.4, Clause 3.4.3.5, Clause 3.4.3.6, Clause 3.4.3.7, Clause 3.7 and either Clause 3.4.4.2 or Clause 3.4.4.3.

NOTES:

- 1 It is not intended that the unit, when supplied to the user, has a designated working position marked on the desk, only that the required available space be present.
- 2 The intent of the requirements for a designated working position are to ensure that a user has the option of a location along the primary worktop, where they can position themselves, with—
 - (a) sufficient space on the worktop for a monitor to be placed a comfortable distance away from the user; and
 - (b) sufficient space for placement of a keyboard or reading/writing materials; and
 - (c) sufficient space underneath the worktop for the user's legs.

3.4.3.2 Template size

A flat isosceles trapezium shaped template shall be used to determine whether adequate work surface area is available at the designated working position. The template shall have one base 650 mm wide and its other base 500 mm wide. The distance between bases shall be 700 mm and the length of the trapezium's legs shall both be 704 mm (see Figure 1).

NOTE: The template does not represent the minimum worktop size, only the work surface area required in front of where the user is sitting/standing. See Clause 3.4.4 for further work surface space requirements.

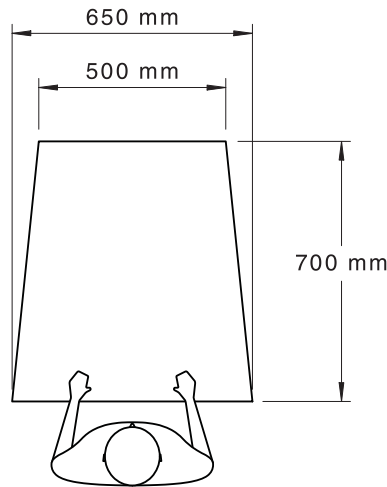


FIGURE 1 SIZE OF DESIGNATED WORKING POSITION TEMPLATE

3.4.3.3 Width and depth

The template, described in Clause 3.4.3.2, shall be placed on the primary worktop's work surface, with the template's 650 mm wide base touching the working edge, and parallel to and centred on a user, assuming they are sitting/standing face-on against the working edge at the designated working position. At the position described, the template shall not project outside the work surface (see Figure 2 and Figure 3).

3.4.3.4 Working edge—General requirements

The length of the working edge abutting and/or bordering the front (650 mm wide base) of the template, positioned on the work surface as per Clause 3.4.3.3, shall be in accordance with one of the following:

- (a) Be straight (see Figure 2 and Figure 8).
- (b) If convex, including segmented straight lined, i.e. trapezium shaped, its radius shall be ≥ 1500 mm (see Figure 3).
- (c) If concave, including segmented straight lined, i.e. trapezium shaped, a flat 700 mm diameter semicircle template shall be able to touch the centre of the designated working position at the working edge (see Figure 4 and Figure 9).

NOTES:

- 1 When using a convex desk forearm support can be provided by using a chair with adjustable arm rests.
- 2 Units with a concave working edge, i.e. those in accordance with Clause 3.4.3.4(c), may prevent a chair with arms from sitting close enough to the unit to provide the user with sufficient access to the designated working position. Purchasers of desks and/or chairs should take worktop shape as well as chair design into account to ensure adequate access to the unit is possible.

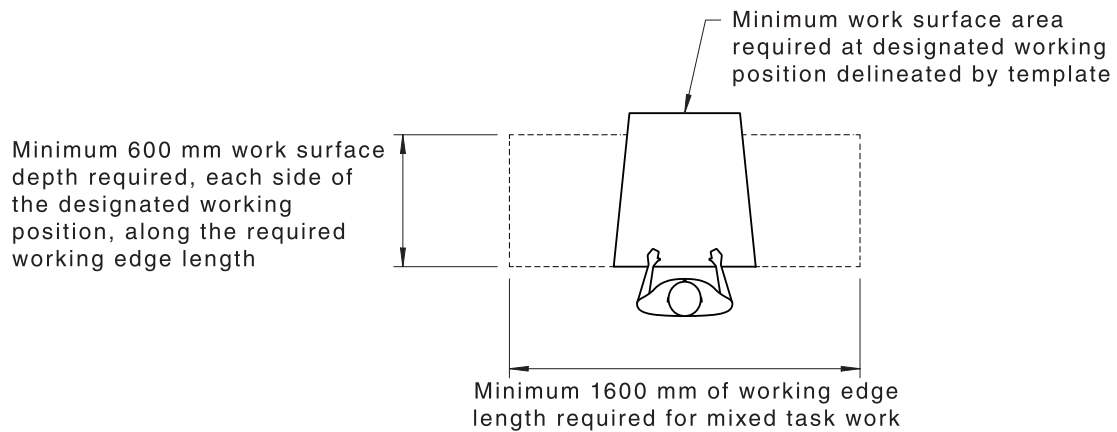


FIGURE 2 MINIMUM WORK SURFACE AREA USING A STRAIGHT WORKING EDGE AS AN EXAMPLE

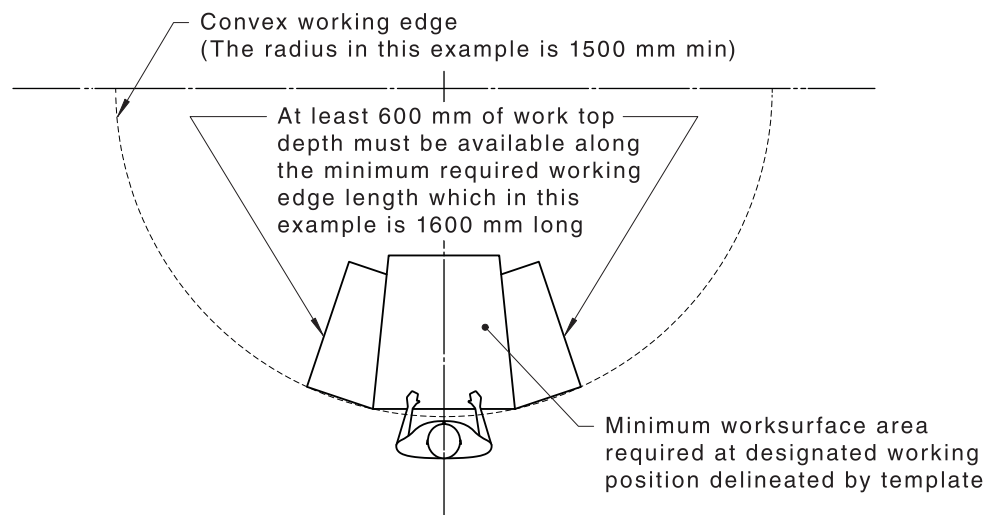


FIGURE 3 MINIMUM WORK SURFACE AREA USING A CONVEX WORKING EDGE AS AN EXAMPLE

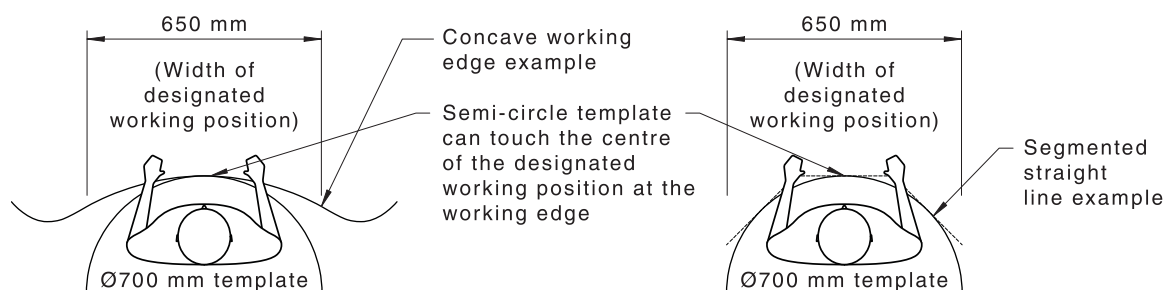


FIGURE 4 CONCAVE WORKING EDGE EXAMPLE

3.4.3.5 Working edge—Edge restriction

Except for working edges with a concave ≥ 350 mm to < 675 mm radius, including those segmented straight lined, i.e. trapezium shaped, or those that are segmented convex there shall be no more than 40 mm difference, in the *plan view*, between the inner most working edge and outer most working edge across the length of the working edge abutting and/or bordering the front (650 mm wide base) of the template (see Figure 5).

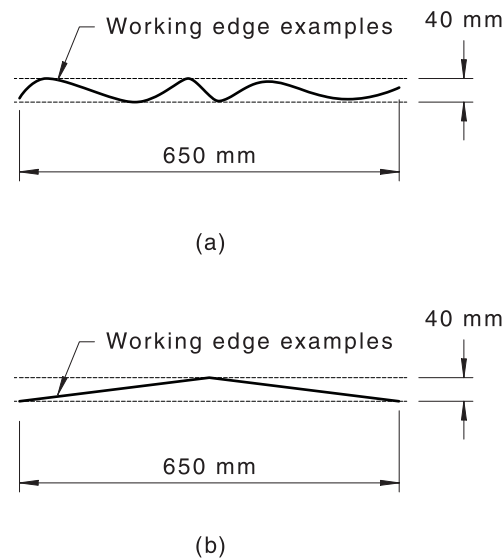


FIGURE 5 WORK SURFACE REQUIREMENTS—DESIGNATED WORKING POSITION—WORKING EDGE—EDGE RESTRICTION—PLAN VIEW

3.4.3.6 Working edge—Segmented convex edge restriction

If the working edge is segmented convex, across the width of the designated working position, then the working edge, abutting and/or bordering the designated working position, shall not fall inside the 1500 mm radius by more than 40 mm (see Figure 6).

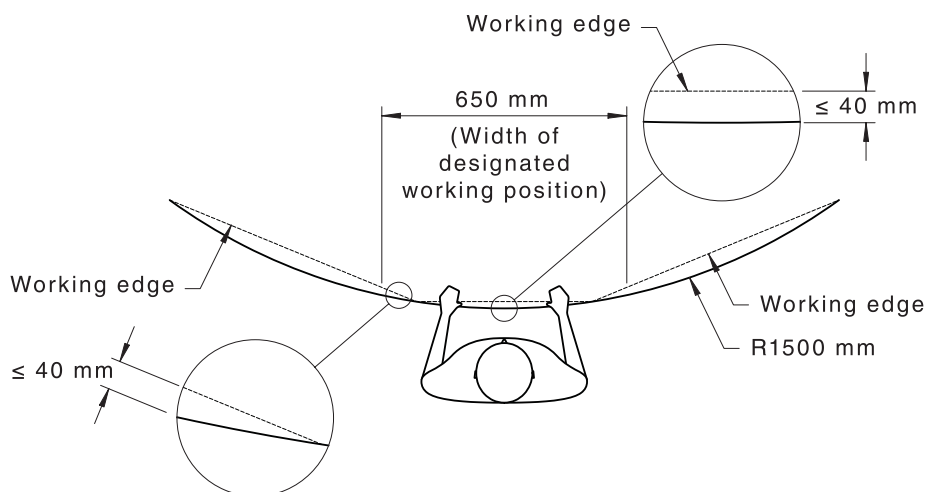


FIGURE 6 WORK SURFACE REQUIREMENTS—WORKING EDGE—CONVEX EDGE RESTRICTION

3.4.3.7 User access

The unit should have a minimum clear area, in front of the designated working position that drawers and other extendable elements, except for pen drawers and extendable keyboard platforms, should not protrude into when open. The recommended minimum clear area should be defined by an erect semicylinder with a diameter of 700 mm, with the arc of the cylinder centred on the designated working position at the working edge. The height of the semicylinder should equal or exceed the primary work surface height of the unit (see Figure 7).

NOTE: This recommendation is intended to identify the need for adequate user access to the unit's designated working position.

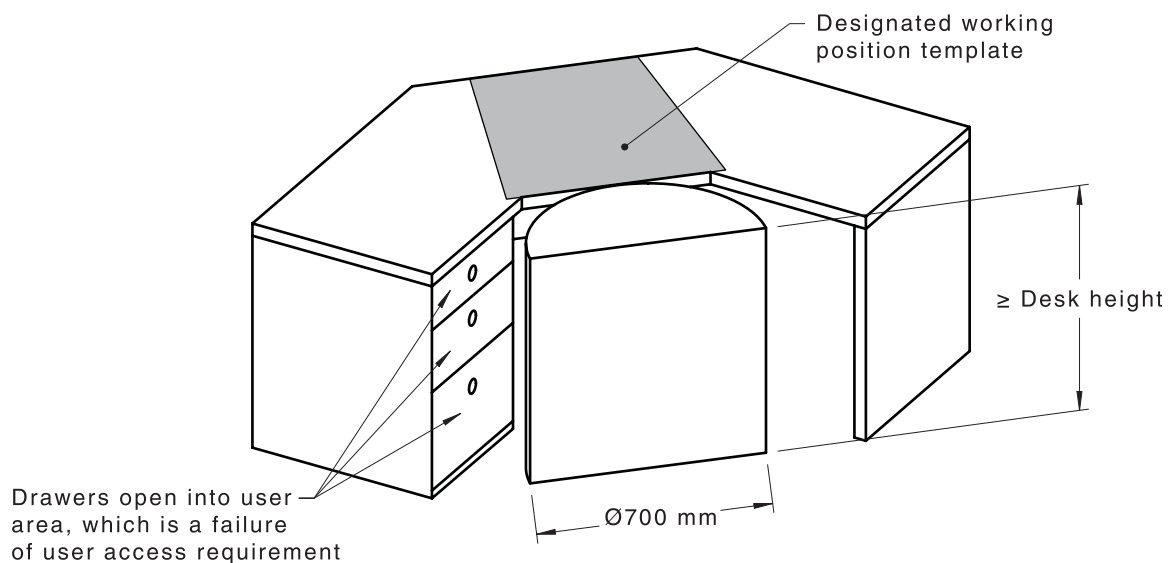


FIGURE 7 WORK SURFACE REQUIREMENTS—USER WORK SURFACE ACCESS

3.4.4 Available work surface area

3.4.4.1 General

Each primary worktop shall conform to either Clause 3.4.4.2 or Clause 3.4.4.3.

3.4.4.2 Single task work

For single task work the primary worktop shall—

- (a) have ≥ 1200 mm of working edge length;
- (b) have a work surface depth ≥ 600 mm along the 1200 mm of working edge length (see Figure 8, Figure 9 and Figure 10);

NOTE: The work surface depth will need to be 700 mm deep at the designated working position to allow the template to fit on the work surface. However, either side of the designated working position the work surface depth can be as shallow as 600 mm. Of course desks with a straight rectangular worktop type will, by necessity of their design, need to have a minimum work surface depth of 700 mm to fit the template.

- (c) have the designated working position located within the 1200 mm of working edge length, but shall be no less than 250 mm from either end of the 1200 mm of required working edge; and

- (d) when the working edge either side of the designated working position angles away from the user (sitting/standing at the designated working position) it shall do so at no more than 25° for the remaining length of the required 1200 mm of working edge (see Figure 10).

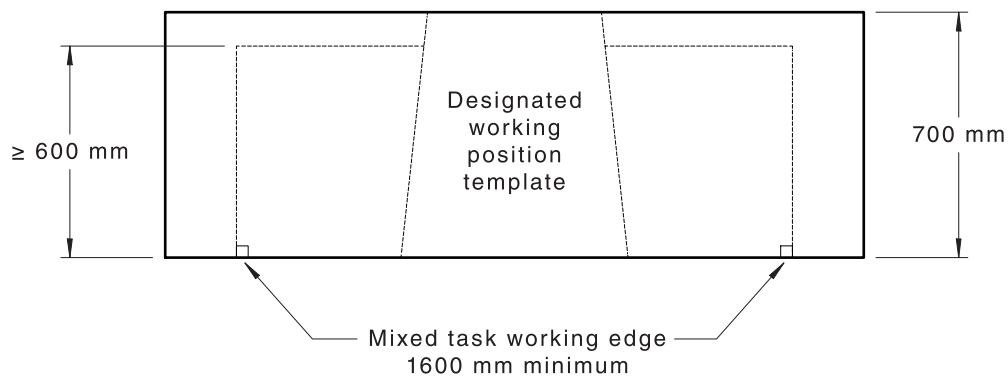
3.4.4.3 Mixed task work

For mixed task work the primary worktop shall—

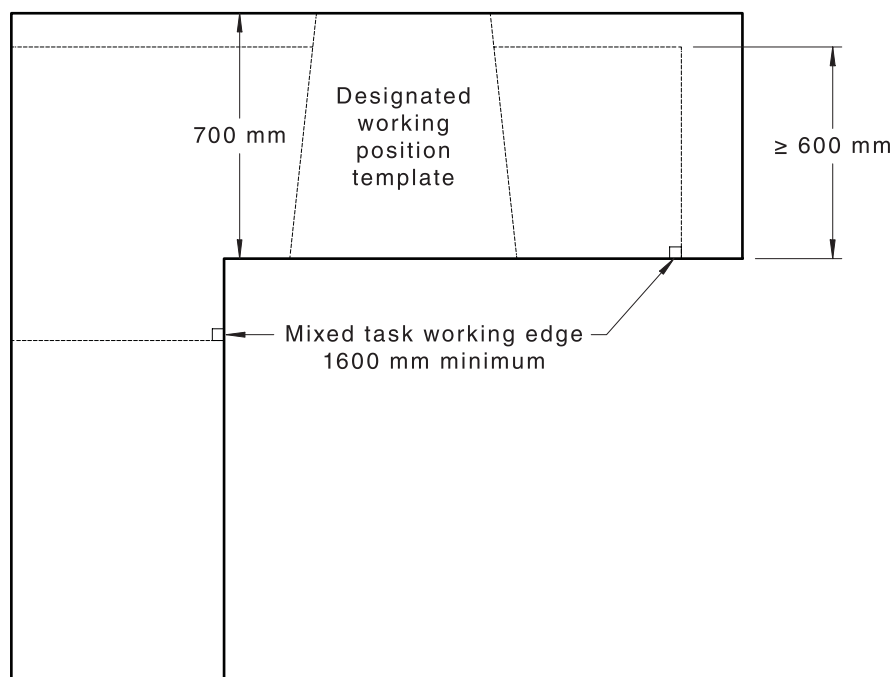
- (a) have ≥ 1600 mm of working edge length (see Figure 8, Figure 9 and Figure 10);
- (b) have a work surface depth ≥ 600 mm along the 1600 mm of working edge length;
NOTE: The work surface depth will need to be 700 mm deep at the designated working position to allow the template to fit on the work surface. However, either side of the designated working position the work surface depth can be as shallow as 600 mm. Of course desks with a straight rectangular worktop type will, by necessity of their design, need to have a minimum work surface depth of 700 mm to fit the template
- (c) have the designated working position located within the 1600 mm of working edge length, but shall be no less than 250 mm from either end of the 1600 mm of required working edge; and
- (d) when the working edge either side of the designated working position angles away from the user (sitting/standing at the designated working position) it shall do so at no more than 25° for the remaining length of the required 1600 mm of working edge (see Figure 10).

3.5 PRIMARY WORKTOP—WORKTOP THICKNESS REQUIREMENT

The maximum thickness of the primary worktop at the working edge shall be ≤ 35 mm.



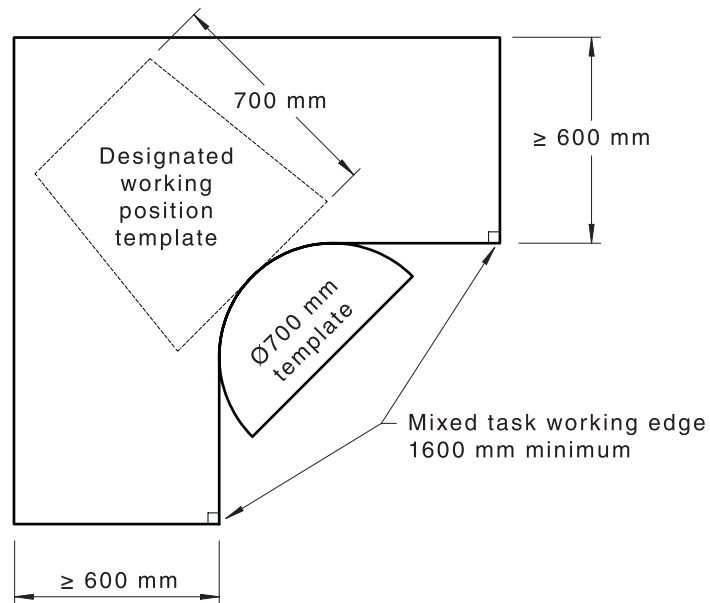
(a) Rectangular worktop example (plan view)



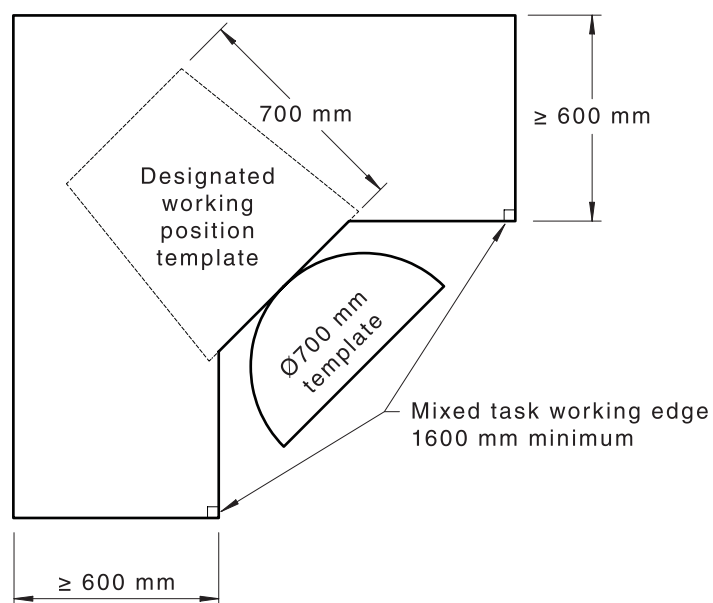
(b) 90° Worktop example (plan view)

NOTE: The work surface depth will need to be 700 mm deep at the designated working position to allow the template to fit on the work surface. However, either side of the designated working position the work surface depth can be as shallow as 600 mm. Of course desks with a straight rectangular worktop type will, by necessity of their design, need to have a minimum work surface depth of 700 mm to fit the template.

FIGURE 8 WORK SURFACE REQUIREMENTS—TYPICAL WORK SURFACE AREAS



(a) 90° Worktop example (plan view)



(b) 90° Worktop example (plan view)

NOTE: The work surface depth will need to be 700 mm deep at the designated working position to allow the template to fit on the work surface. However, either side of the designated working position the work surface depth can be as shallow as 600 mm.

FIGURE 9 WORK SURFACE REQUIREMENTS—TYPICAL WORK SURFACE AREAS