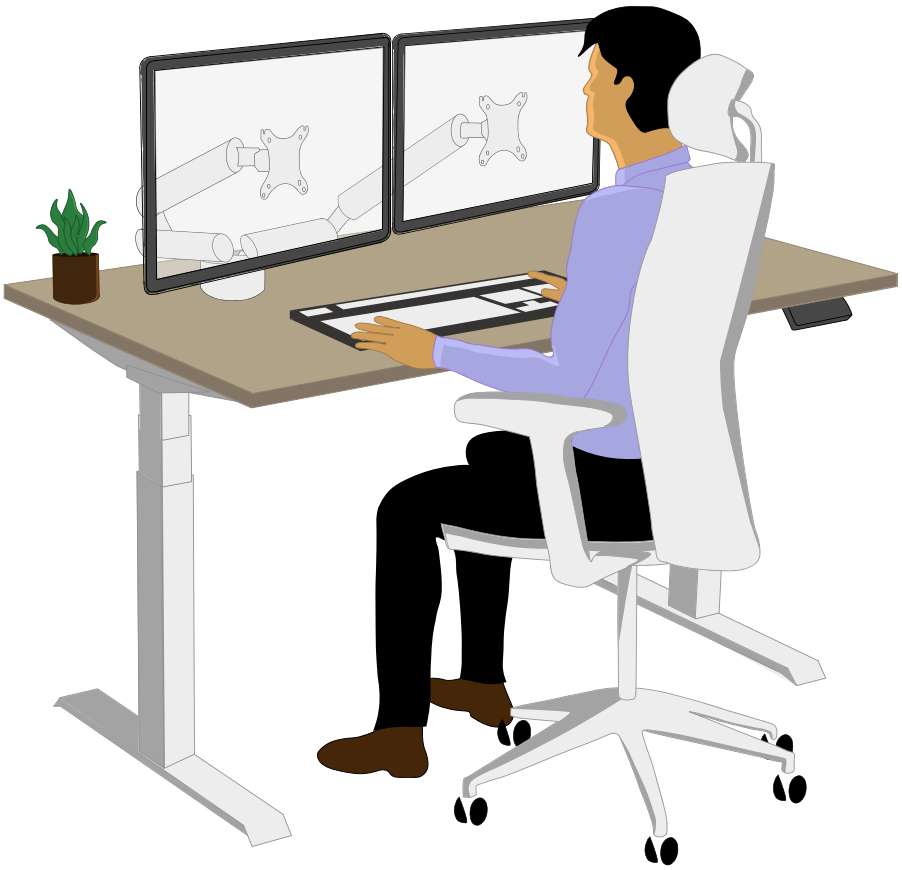
# Home Office Buying Guide



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## Foreword

This guide has been prepared by FIRA International Ltd on behalf of the Furniture Industry Research Association.

This document is an ergonomics guide to buying furniture and accessories for the home office. It does not replace any legislative documents that are available and is simply additional information to help achieve a comfortable and safe home working environment. As such, the regulations and relevant supporting documentation (details of which can be found at the end of this document) must also be understood.

The dates and titles of Designated Standards and Regulations referenced within this document were current at the time of publication. It is advised that advice be sought on the status of these and any other applicable documentation when assessing product conformity.

All efforts have been made to ensure this document is correct at the time of going to press. The opinions and advice expressed are given in good faith. However, the authors cannot be held responsible for any action resulting from the content of this guide as the ultimate interpretation of the Regulations rests with the courts. Where serious doubt occurs professional legal opinion should be sought.

## Version Control

Any amendments or revisions made to this document are recorded here:

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## Introduction

There has been a dramatic rise in the number of people working from home since the start of the Coronavirus pandemic in March 2020, having been forced to adapt very quickly, companies and individuals are better equipped to support more flexible working arrangements going forward, and have experienced the advantages that flexible working brings to both the employer and the employee. The summer of 2021 saw UK social distancing restrictions being lifted and government guidance updated to encourage workers to go back to the office, however, many employers and employees are expressing their desire to continue remote working arrangements for the foreseeable future, whether it be full time, part-time or just occasionally. As home working arrangements become more permanent, the employer has a legal obligation to comply with the Display Screen Equipment (DSE) Health Safety 2003 Regulations (Ref. 1), and ensure that their workers are using an adequate workstation in the home as they would be in the office.

This guide has been produced to help:

- Individuals and companies know what to look for when selecting products for home workstations.
- Manufacturers when designing for the domestic market.
- All users understand key ergonomic considerations to ensure the most suitable equipment is selected.

### Employers legal responsibility to home working employees

The Health and Safety Executive (HSE) states that employers have the same health and safety responsibilities for home workers as for any other workers.

For all home workers, employers must consider:

- How they will keep in touch with them?
- What work activity they will be doing (and for how long)?
- Can it be done safely?
- Do control measures need to be put in place to protect workers?

Whilst the HSE maintain that employers do not need to ask employees who are temporarily working from home to do a home workstation assessment, the guidance states that:

'as temporary home working extends, employers should have regular discussions with workers to assess whether additional steps are needed, for example where they report:

- Aches, pains or discomfort related to their temporary DSE arrangements.
- Adverse effects of working in isolation, on remote IT systems.
- Working longer hours without adequate rest and recovery breaks.'

The HSE have also said that 'for those people who are working at home on a long-term basis, the risks associated with using DSE must be controlled. This includes them doing workstation assessments at home.'

Where employers decide to make working from home arrangements permanent, they should explain how to carry out full workstation assessments and provide workers with appropriate equipment and advice on control measures. If employers are planning to give employees a budget to buy their own equipment, this should not be done without proper guidance on how to select appropriate furniture and accessories to support their needs.

Employers should assume their responsibility to ensure that home workers are well supported in the tasks that they undertake daily. It is no longer acceptable to expect workers to make do with only a laptop and no peripheral devices (e.g keyboards and mice), sitting on dining chairs or at kitchen counters.

Considering the health and safety of home working employees and providing them with suitable equipment should not be seen as only a safety issue or treated as a box-ticking exercise, the space and equipment people have available to them for home working has a significant impact on their well-being and productivity.

### Why is this guidance important?

With more people setting up workstations in their home for long term or permanent use it is important to ensure that these meet minimum ergonomic and safety standards. In order to avoid the onset of musculoskeletal disorders, the selection of furniture and equipment requires a fit to be achieved between task requirements and the needs of the user (BS EN ISO 9241-5).

This guide provides a greater understanding of what products are available and how to select suitable products for an individual whilst avoiding gimmicks and inappropriate home working solutions. By following this guidance, it will help to ensure compliance with DSE regulations and contribute to the comfort and well-being of the employee.

## What equipment is necessary based on time spent working from home?

The amount of time an individual spends working from home will help determine the minimum requirements of their workstation. The more time someone spends working from home, the more important it is that they have a DSE compliant ergonomic home workstation, the HSE has advised that there is no increased risk from DSE work when working from home temporarily or on an ad hoc basis, therefore fewer provisions are required for these workers. In all cases, regular contact should be made with home workers to make sure they are healthy and safe as well as ensuring they feel connected and supported in their work. The recommended minimum workstation provisions, depending on the time spent working from home, are detailed below.

### Three days per week to full time

Full DSE workstation including desk, task chair (type B or type A as specified in BS EN 1335-1), separate monitor, keyboard and mouse, footrest if required and adequate lighting.

*Acceptable compromise:*

Minimum legroom width of height adjustable desks could be less than the requirement detailed in BS EN 527-1 but must be at least 850mm in order to comfortably fit an office chair between the leg structure, the worksurface must have enough space for all required equipment.

### One to two days per week

Full DSE workstation including desk, task chair (type B or type A as specified in EN 1335-1), separate monitor, keyboard and mouse, footrest if required and adequate lighting.

*Acceptable compromises:*

Width of desk can be reduced, but the legroom width should not be less than 850mm.
Laptop screen only, used with laptop holder and a separate keyboard and mouse.
Height adjustable chair (Type C as specified in BS EN 1335-1 – limited adjustable range and fewer adjustable features).

**By exception/occasional (<1 day per week/odd hours in evenings and weekends)**

If the user is only working from home very infrequently or for a limited time period it is acceptable to use a laptop on its own, however, using it with a laptop riser and keyboard and mouse would be preferable.

A fixed height seat such as a dining chair or similar may be used so long as it is a reasonable match to the height of the work surface.

Cushions can be used for back support and raising the sitting height on a fixed height chair. A sturdy box can be used as a footrest, and books can be used to raise the screen height.

More advice on setting up an ergonomic home workstation can be found in the FIRA Ergonomic home working employee guide, (Ref. 2).

## Product Guidance

The product guidance section details the specific features that are important to consider when buying products for a home workstation, it provides guidance for evaluating products which may be suitable for use but do not necessarily have the relevant certification. The 'key points' sections provide a quick guide to the most important factors to consider for each product type. Further details, other aspects to consider and rationale for the guidance can be found by reading beyond these key points.

# Chairs

## Key Points

**Seat Height**
The chair height should match the worksurface height:
Wrists and forearms should be in line with the desk surface when elbows are bent at around 90 degrees. Feet should be firmly placed on the floor or a footrest.

**Reclining Backrest**
A chair with a reclining backrest allows for frequent passive movements and changes in posture throughout the day. This helps to keep the spine healthy and improve overall comfort.

**Lumbar Support**
Good lumbar support helps to support the natural curvature of the spine to help to stop the user from slouching. Without lumbar support, it is more difficult to maintain a good posture causing the muscles in the lower back to work harder to hold an upright posture. This means the individual will get fatigued more quickly.

**Seat Depth Adjustment**
Being able to adjust the seat depth is important to ensure the depth of the seat can be set to suit the individual, it should be possible for the seat depth to be adjusted so that the individual's back is in contact with the backrest of the chair, whilst leaving a small amount of space between the front edge of the chair and the back of the user's legs.

Introduction

The chair is a fundamental aspect of the home working set-up. The chair needs to be comfortable and supportive as the user will use it for long periods of time.

## Applicable Standards

Further details about each of the standards listed below can be found in Appendix A.

- BS EN 1335-1 – Office furniture - Office work chair, Part 1: Dimensions - Determination of dimensions.
- BS EN ISO 9241-5 – Ergonomic requirements for office work with visual display terminals (VDTs) - Part 5: Workstation layout and postural requirements.
- BS EN 1335-2 Office furniture - Office work chair Part 2: Safety requirements.
- BS 5459-2 – Specification for performance requirements and tests for office furniture – Part 2: Office pedestal seating for use by persons weighing up to 150Kg and for use up to 24 hours a day, including type-approval tests for individual components.
- FIRA guidance document - Flammability guidance for contract seating - Fire safety of office work chairs in domestic environments

## DSE regulations minimum requirements

The HSE guidance document to the DSE regulations (Ref. 3) states that:

- The work chair shall be stable and allow the operator or user easy freedom of movement and a comfortable position.
- The seat shall be adjustable in height.
- The seat back shall be adjustable in both height and tilt.
- A footrest shall be made available to any operator or user who wishes one.

Buyers should ensure that at a minimum, the chair has adjustable seat height, a reclining backrest and lumbar support. Compliance with BS EN 1335-1 and BS EN ISO 9241-5 will help demonstrate that a chair meets the requirements set out in the DSE regulations.

## Ergonomic considerations

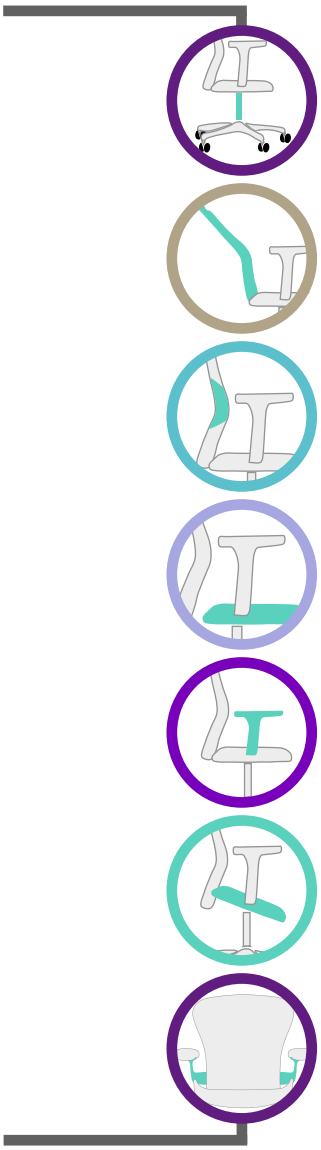
A task chair is an essential component of an ergonomic workstation, if working from home on a regular basis i.e., more than one day per week, the individual should use a task chair with at least basic adjustable features (seat height adjustment, a reclining backrest and lumbar support). For individuals who are working from home on a more infrequent and ad hoc basis, an existing dining room chair can be used but modifications may be required to enable the user to obtain the right seat height to bring their elbows in line with their worksurface, a seat cushion could be used to lift the user to an appropriate height.

It is important to consider the ergonomic features of a chair before the aesthetics, many chairs marketed for homeworking do not meet minimum ergonomic requirements and do not offer any lumbar support, dynamic movement, or have limited height adjustability, they often also have seats that are too narrow. Care should be taken to purchase office work chairs which meet the standards listed on Page 9.

The chair should enable the user to sit in a position where they are not having to strain any parts of their body when working at their workstation.

The adjustments themselves should be easy and straightforward to use so that they are accessible and not too confusing, if controls are difficult to use or understand, they are unlikely to be used and the user will not make the most of the adjustments available to them. With this in mind, it is also advised that when a user is supplied with a new chair, some level of training or advice is provided on how to adjust the chair to suit their needs.

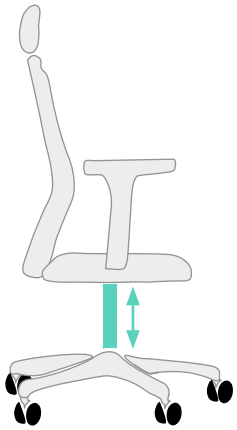
Some features of the chair are more important than others, see below for the hierarchy of adjustment features.



1. Seat Height
2. Reclining Backrest
3. Lumbar Support
4. Seat Depth
5. Armrest Height
6. Seat Pad Inclination
7. Gap Between Armrests

## Height Adjustability

Selecting a chair with adequate seat height adjustability to match the user and the worksurface height is the most important factor when purchasing a task chair, having a chair with at least some height adjustability is preferred over a chair with none. A BS EN 1335-1 compliant office chair should have an adequate height adjustable range to enable the user to raise the seat height so that their elbows are in line with the worksurface when their shoulders are relaxed.



It is also important that the user's feet are placed firmly on the floor to ensure their legs are supported. If the user is particularly tall, they may find that when they have adjusted the seat height to suit a fixed height desk so that their elbows are in line with the worksurface, their knees are higher than their hips, this is undesirable and means that the desk height is too low. Taller users may find that they require a chair with an extended gas lift and a higher desk, this could be fixed height or height adjustable. On the other hand, a shorter user may find that their feet do not touch the floor, in which case a foot support will be required.

## Reclining Backrest

The chair should have a backrest which is appropriately sized and shaped for the individual, the backrest should be big enough to provide support for the lower and middle back and the shape should support the natural curvature of the user's spine.

To meet the minimum requirements of the DSE regulations, the chair should have a backrest with an adjustable recline function. This feature is particularly important to encourage frequent passive movement throughout the day to maintain the health of the user's spinal discs. Spinal discs do not have their own blood supply therefore movement is essential to maintain oxygen replenishment, remove waste products and avoid long-term compression that may ultimately lead to degeneration. Sitting for long periods of time will cause detrimental effects to the health of the spine. Using office chairs and desks that aid frequent movement throughout the day, even in subtle ways is beneficial for the health of the user.
Different chairs with reclining backrests have varying degrees of adjustability, the different adjustable functions are explained below:

- Fixed recline positions – allows the user to fix the backrest in a specific recline position to maintain that angle without any force being applied by the user.
- Adjustable backrest recline limits – allows the user to limit the degree that a backrest will recline, some users may find this helpful if they would prefer not to fully recline when they lean back against the chair.
- Automatic tension adjustment – the chair automatically responds to the weight of the user and adjusts the tension required to recline the backrest. This means the user does not need to make any manual adjustments; however, they have no way of adjusting the tension to their preference.
- Adjustable backrest tension – the chair has a control which allows the user to adjust the backrest tension to fine-tune the amount of force required to recline the backrest.

Chairs may be able to perform more than one of these functions. Having some degree of control over the tension or degree of recline will help the user to adjust the chair to suit their needs.

## Lumbar Support

The lumbar support is provided by supporting the region of the lower back where the spine curves inwards. Good lumbar support supports the natural curvature of the spine. Using a chair for long periods without lumbar support can lead to aches and pains over time as the muscles in the lower back are required to work harder to keep the back upright.

Office chairs come with varying levels of lumbar support adjustability, some chairs have fixed lumbar support, others are adjustable in height only, some chairs offer lumbar support which is adjustable in height and depth.

Whilst lumbar support is a key feature of the chair, it is not always necessary to have an adjustable lumbar device on a chair. Some mesh-back chairs have been designed such that they automatically mould to the shape of the user's back to provide support in the right place for the individual.

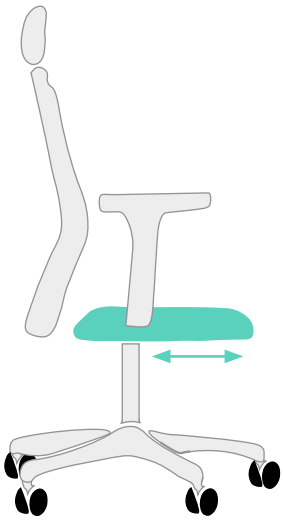
If a user has a specific back issue, a chair with an adjustable lumbar support may be beneficial to provide the user with the best fit possible. The lower back is a common source of pain for office workers so

having a chair with good lumbar support which can be adjusted to the user's body shape is helpful to prevent these issues.

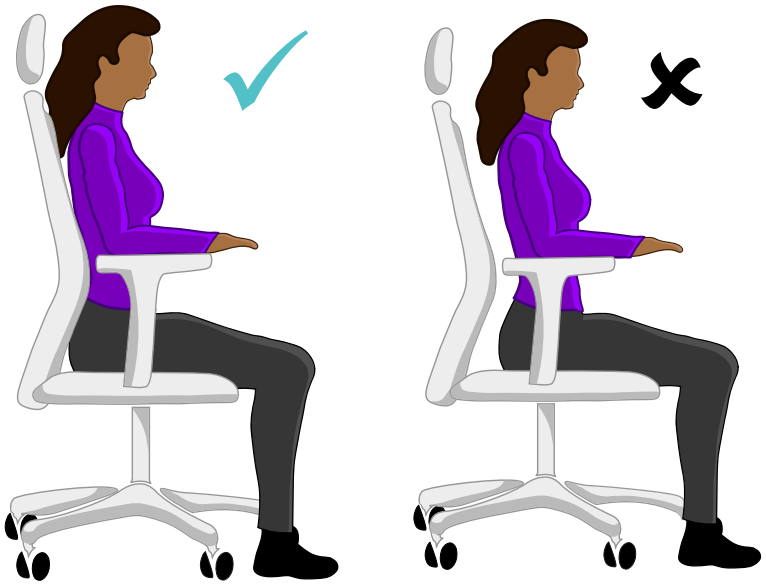
The user's requirements for lumbar support in a chair depends on the specific needs of the user and can be influenced by a number of factors including body shape, the height of the user, existing injuries, health conditions and general personal preference. Just because a chair has adjustable support does not mean it will be suitable for everyone as every users' body is different.

## Seat Depth Adjustment

The depth of a chair's seat is the distance from the backrest to the front of the seat. The seat depth should be long enough to support a large portion of the user's thighs, without making any contact with the back of the knees when the user is sitting so their back is supported by the backrest.

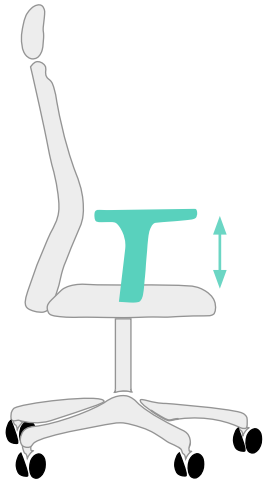


If the seat depth is too long, the user will sit further forward in the chair and will not be able to make use of the backrest. Chairs with adjustable seat depth enable a higher percentage of the user population to find a comfortable seat depth.



## Armrests

Armrests help to support the weight of the user's arms but in order for them to be used effectively, they must be in the correct position for the user, both in height and distance apart. The position of the armrests should allow the user to rest the elbows and forearms whilst maintaining a relaxed neutral posture, with their arms close to their body.

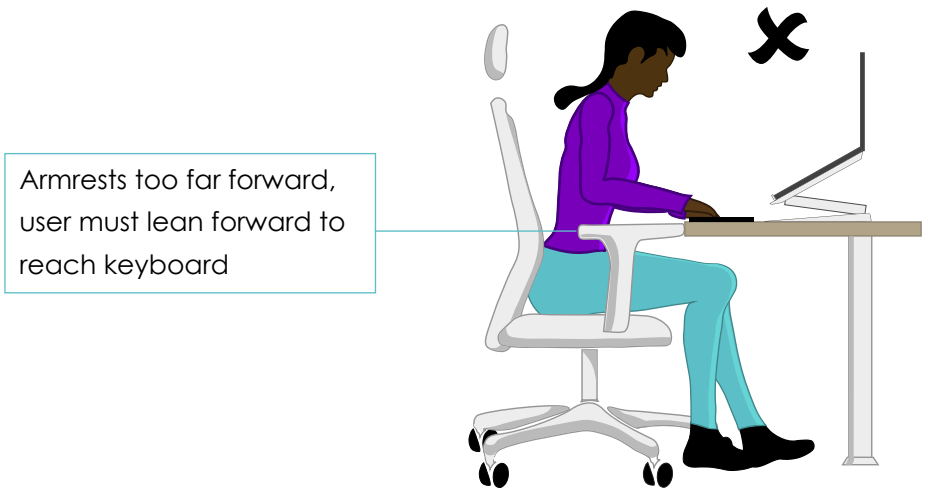


If the armrests are not in the correct position the following issues could be experienced:

- Armrests too low or too far apart – user cannot make use of them.

- Armrests too high causes the user to hunch their shoulders which over time can cause tension and musculoskeletal issues.
- Armrests too close together – may prevent larger users from getting their hips past the armrests.
- Armrests too far forward – may prevent users from getting close to their desk – this is a particular issue if the user is unable to use the armrests and would prefer to rest their arms on the worksurface.

Correct positioning of the armrests can help to reduce the risk of repetitive strain injuries. If the user is forced to hunch their shoulders or overstretch to use their input devices, these undesirable postures can cause straining and pain in the shoulder and down the arm.

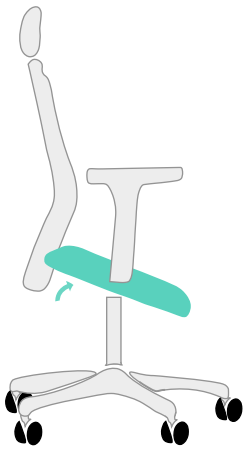



The gap between the armrests on some chairs can be adjusted, enabling users to position the armrests to be the same width as the distance between the user's elbows.

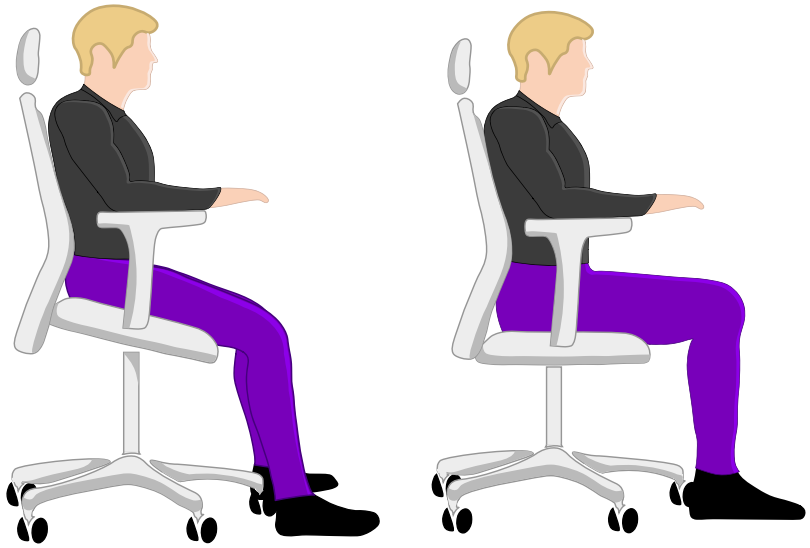
In addition, this adjustment can allow for larger users to extend the distance between the armrests so they can comfortably get their hips past them whilst sitting in the chair.

## Seat Pad Inclination

Some chairs have a feature that enables the user to adjust the seat pad inclination, independent of the backrest.



Usually, this feature allows the user to adjust the seat pad between a horizontal position and a forward tilting position; by adjusting the seat pad to a forward tilting position, the user can achieve a more open angle between the torso and thighs, which makes it easier to keep a more upright seated posture, helping to maintain the natural S-shape of the spine and prevent slouching.



## Neck Support

Unless specifically required by a user, a chair with a neck support is not necessary, even when they are provided, they are rarely used, particularly while actively working in an upright posture.

If a chair with a neck support is purchased, it is important that the neck support is at the right height and does not force the users head too far forwards as this can cause a hunched position which can lead to tension and pain in the neck and shoulders.

## Castors

Consideration should be given to the kind of flooring that the chair will be used on. The castors should be specified to suit the floor type, i.e. high friction castors for hard floors. Hard and low friction castors for carpeted floors.

# Desks

## Key Points

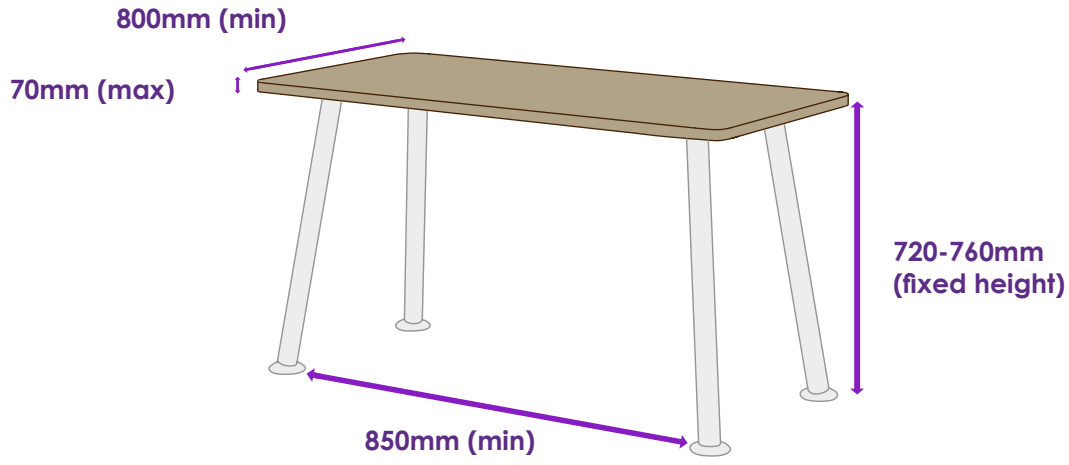
**Desktop Depth**
The depth of the desk should allow the user to stretch out their legs without hindrance – this makes it easier for users to adjust their posture throughout the day which is important for long term comfort, desktop depth should be a minimum of 800mm.

**Viewing Distance**
The display screen should be positioned approximately arm's length away from the user.

**Legroom Width**
Ensure there is adequate space between the legs of the desk so that an office chair can comfortably fit within, ideally not less than 850mm.

**Worksurface Height**
The user should be able to adjust their chair to have their elbows in line with or slightly higher than the worksurface when their feet are placed firmly on the floor. Fixed height desks should be between 720mm – 760mm high, height adjustable desks should have a minimum adjustable range of 680mm – 1180mm.

**Desktop Thickness**
Ensure the thickness of the worksurface will not stop the user from comfortably sitting at the right height. Drawers in desks often prevent the user from adjusting their seat to the right height and hinder them from moving around their workstation, desktop thickness should be less than 70mm.



Introduction

The worksurface is a fundamental part of the workstation. The desk is the largest item of the workstation, and when purchasing for the home consideration must be given not only to the work requirements but also to how the space is used as a domestic setting. With this in mind, whilst every attempt should be made to ensure the desk meets minimum standards as required in offices, some compromises are acceptable. These are discussed in detail throughout this section.

## Applicable Standards

Further details about each of the standards listed below can be found in Appendix A.

- BS EN 527-1 - Office furniture. Work tables and desks. Dimensions
- BS EN 527-2 - Office furniture. Work tables. Safety, strength and durability requirements
- BS EN ISO 9241-5 - Ergonomic requirements for office work with visual display terminals (VDTs). Workstation layout and postural requirements

## DSE regulations minimum requirements

The HSE guidance document to the DSE regulations states that:

- The work desk or worksurface shall have a sufficiently large, low reflectance surface and allow a flexible arrangement of the screen, keyboard, documents and related equipment.
- There shall be adequate space for operators or users to find a comfortable position.

Compliance with BS EN 527-1 and BS EN ISO 9241-5 will demonstrate that a desk meets these requirements set out in the DSE regulations.

## Ergonomic considerations

The worksurface should be suitable for the person using it and the equipment they are required to use. Specific requirements for desks can be found in the standards listed on page 21, however, the key ergonomic considerations are detailed below.

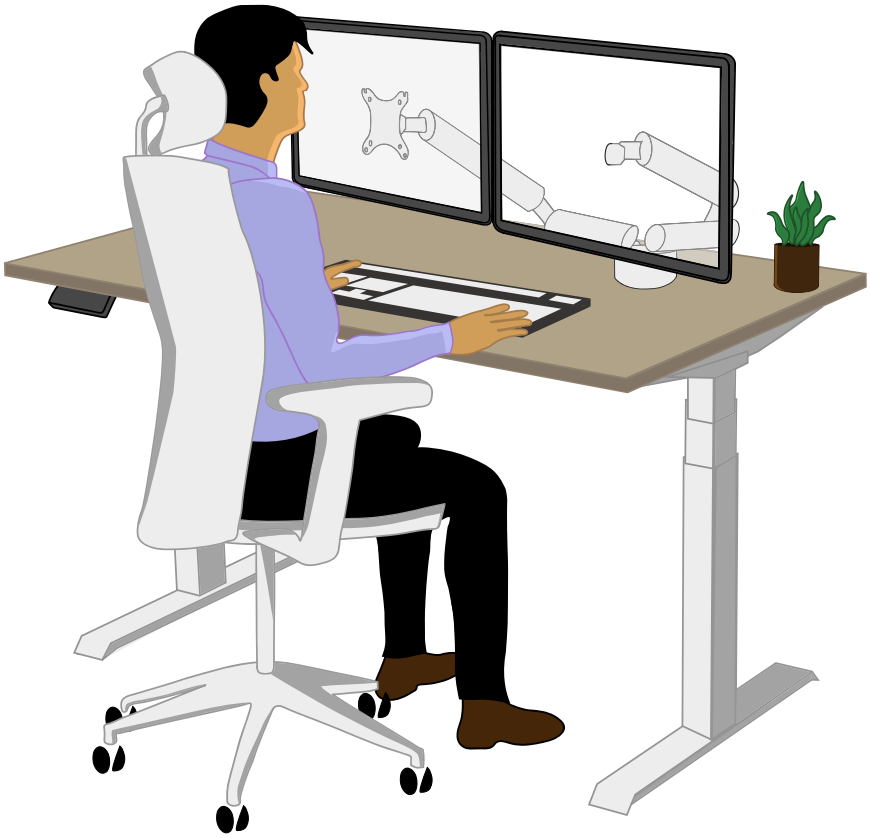
## Worksurface height

The worksurface height should be in line with or slightly lower than the user's elbow height. There are four types of desk available:

- Fixed height - no integrated height adjustment options, it is fixed in height.
- Height selectable - the height can be adapted to the user at installation.
- Limited height selectable/adjustable – the height of these desks can be adjusted within a limited range, this could be seated only, standing only or enable both seated and standing work but within a more limited height range than a fully height adjustable desk.
- Fully height adjustable (sit-stand) - The height of the desk can be adjusted in height between a seated and standing position in everyday use within a height range which will be suitable for most of the working population (5th percentile to 95th percentile).

If a user is working from home on a regular basis, permanently or for an extended period of time, it is important that the worksurface height is matched to their needs, worksurfaces that are too high cause the user to hunch their shoulders, worksurfaces that are too low cause the user to lean forward and hunch their torso over their desks, over time both of which cause stresses and strains in the arms, shoulders and back.

Taller users may require a height adjustable desk or a higher fixed height desk to ensure the worksurface is at an optimum height to enable them to raise their seat height, so their elbows are in line with the worksurface and their feet placed firmly on the floor whilst their knees are in line with or slightly lower than their hip height.



Shorter users may require a height adjustable desk to get the worksurface low enough to be seated with optimum posture. If using a fixed height desk, a footrest may be required to ensure their feet are well supported to relieve pressure under the thighs.

It is important to bear in mind that when working from home, workers may find that they are more sedentary and have less opportunity to get up from their desk, spending more time on virtual meetings, feeling obligated to be at their computer at all times. In the office they would frequently get up to talk to colleagues, attend physical meetings, visit the printer or get a drink. Where this is the case, users might find it beneficial to use a sit-stand desk to allow them to switch between seated and standing work to build more movement into their day.

## Legroom

Adequate legroom under the worksurface plays a key role in ensuring that the user can freely adjust their posture throughout the day, this is important for overall comfort. Adequate legroom width and depth are both important to ensure the user can change posture and move about their workstation without hindrance.

The legroom depth should be a minimum of 800mm without obstructions to allow the user to stretch out their legs and change position when seated at their desk.

The minimum requirement for legroom width varies depending on whether a fixed height or adjustable height desk is being used. A fixed height desk should have a minimum legroom width of 790mm and an adjustable height desk should have a minimum legroom width of 1200mm.

These minimum legroom requirements are set out in BS EN 527-1 which was written with the office environment in mind. When considering purchasing desking for the home environment it is important to take into account the space limitations the user may have; if space is limited and compromises need to be made, the implications of these compromises should be carefully considered to limit the impact they have on usability. For example, if the user would prefer to use a sit-stand desk but does not have enough space for a full-size desk which meets the minimum legroom width requirement, there is a reasonable argument that it is more beneficial to have a sit-stand desk with reduced legroom width (not less than 850mm), than to buy a fixed height desk of the same dimensions, this will help the user to obtain a good working height with the ability to switch between seated and standing work.

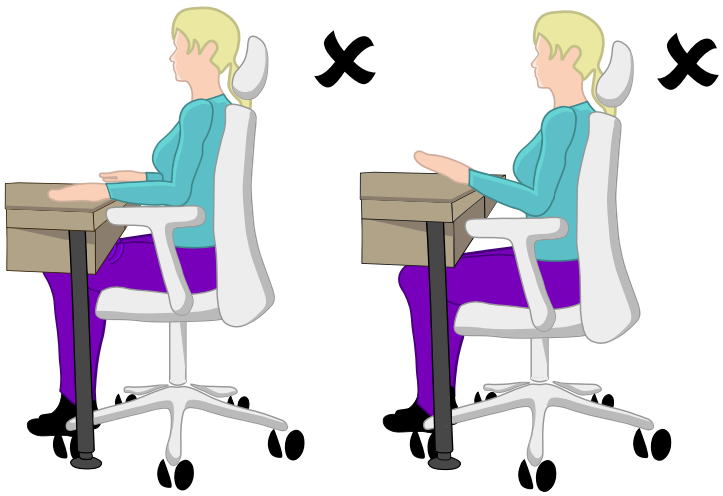
On the other hand, if space is limited such that it is not possible to fit a desk which provides the minimum legroom depth, this is a more significant issue which, depending on the user's height and leg length, could seriously impact the user's comfort over time and has

the potential to cause ongoing pain or discomfort by inhibiting the user's ability to make frequent changes in posture throughout the day. In this case, alternative options could be considered such as fold out worksurfaces or desk extenders which can be stowed away when not in use.

## Worksurface

The worksurface should be large enough to accommodate all tasks that the user is required to perform, provide space for all necessary equipment and allow for the user to comfortably reach the equipment in their workspace.

Desktop thickness is one of the key dimensions which can affect the user's ability to adopt a comfortable posture and enable varied leg positions throughout the day. The desktop thickness should not be greater than 70mm at the front and 100mm at 500mm from the front edge, this is to avoid the worksurface impacting on thigh clearance when seated at the correct height. With this in mind, it is not advisable to buy a desk with drawers built into the worksurface. Whilst it may seem that this additional storage function will improve the functionality of the desk, the user will likely find that the drawers prevent them from sitting at the correct height to use their desk comfortably.



Elbows at right height, thighs impacting on drawers.

Thighs fit under drawers, elbows too low.

The desktop depth should allow the position of the screen to be approximately arm's length from the eyes, to be able to read text on the screen comfortably. Most users find that a comfortable viewing distance is 600mm ± 150mm away from their eye position. The desktop should have a minimum depth of 800mm to enable this.

The worksurface finish should be matt to avoid glare and reflection from lights and windows. White and shiny worksurfaces increase issues with glare and reflections.

The edges of the worksurface should not be sharp, to ensure the comfort of users leaning their forearms, wrists, and legs against the surfaces of the desk, therefore the edges around the main support surface, including the underside, should be rounded.

## Cable management

Cable management should be used to keep cables from trailing across the desk, thereby maintaining a neat and tidy work area as well as stop wires trailing underneath the desk to prevent the risk of entanglement and tripping.

# Display Screens

## Key Points

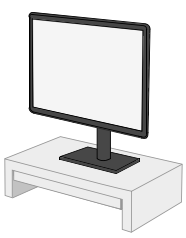
**Screen Height**
The top of the display should be in line with or just below the user's eye height. Adjustable height monitors, monitor risers or monitor arms can be used to help achieve this. Laptops should be used with a laptop riser, an external keyboard and a mouse.

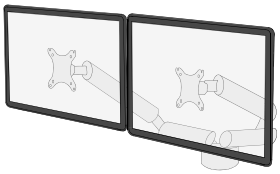
**Viewing Distance**
The display screen should be positioned approximately arm's length away from the user's eye position. A desk with an adequate worksurface depth will be required to achieve this, bear in mind that larger screen sizes require a greater eye to monitor distance.

**Screen Size and Multiple Screens**
The size of the screen should be appropriate for the tasks being performed, if the user is frequently working across multiple documents it can be helpful to have two or more display screens.

## Introduction

Correct positioning of display screens plays a significant role in helping the user to maintain a comfortable and healthy posture, the screen height should be at the right height and distance for the individual, depending on the device being used, this can be achieved using laptop risers, monitor risers and monitor arms.





## Applicable Standards

Further details about the standard listed below can be found in Appendix A.

- BS EN ISO 9241-5 - Ergonomic requirements for office work with visual display terminals (VDTs). Workstation layout and postural requirements

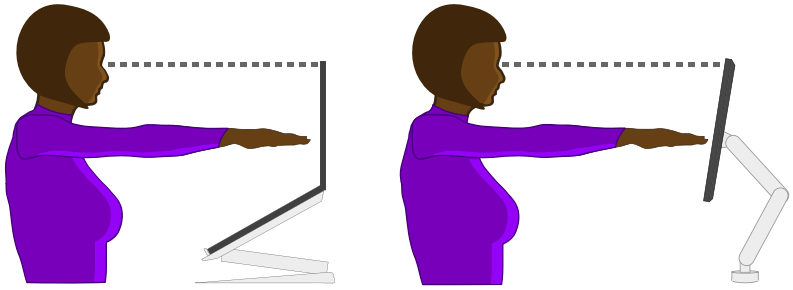
## DSE regs minimum requirements

- The screen and the characters or images on it need to be large enough for the user to do their work comfortably.
- The brightness and the contrast between the characters and the background shall be easily adjustable by the operator or user, and also be easily adjustable to ambient conditions.
- The screen must swivel and tilt easily and freely to suit the needs of the operator or user.
- The screen shall be free of reflective glare and reflections liable to cause discomfort to the operator or user.

### Ergonomic considerations

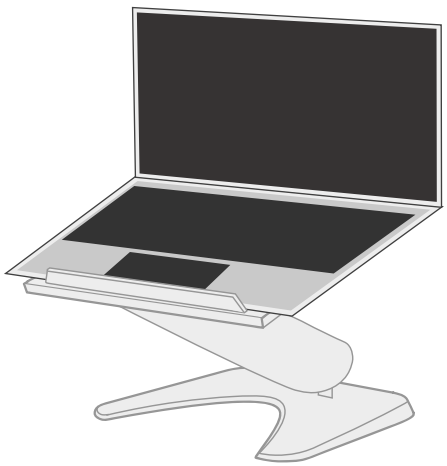
The position of the display screen will affect the neck posture the user adopts during their working day, e.g. if it is too low, the user is likely to flex their neck to look downwards, this increases the pressure on the spinal discs and over time this can lead to injury and pain caused by the additional strain. The size of the display screen should be appropriate for the task and viewing distance available. The position of the display screen should be able to be positioned away from any reflections or glare from lights or windows. In terms of viewing distance, users tend to prefer monitor viewing distance of between 450mm-750mm.

The display screen should be able to be adjusted so that the top of the display is in line with or just below the user's eye height. The height of the display screen can be raised using a laptop riser, a monitor stand or a monitor arm. These products are discussed in more detail below.



## Laptop Risers

It is important to note that laptops should not be used for extended periods of time without using a laptop riser and peripheral input devices. Generally speaking, when laptops are used directly on the desktop, the screen height is far too low causing the user to flex their neck, causing strain, discomfort and injury over time.



Laptop risers can be used to raise the height of the display so that it is in line with or just below the user's eye level.

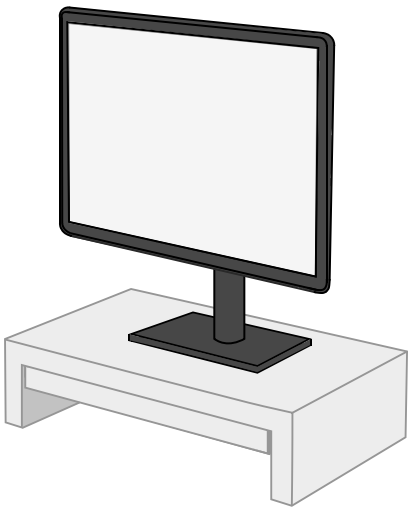
When buying a laptop riser, the following factors should be considered:

- Height adjustable range: the adjustable range should be sufficient to raise the height of the display to a comfortable level.
- Ease of use: the laptop riser should be simple and easy to set up and adjust.
- Stability: the laptop riser should provide a stable support surface to hold the laptop in a raised position, such that it is secure and does not wobble or disturb the display.
- Portability: If the user is likely to use the laptop in multiple work locations, e.g. at home, in the office and whilst travelling for work, a lightweight portable laptop riser could be considered.

The use of external input devices (keyboards, mice etc) is vital when using a laptop on a laptop riser to prevent strain in the wrists.

### Monitor Risers

A monitor riser may be necessary if the monitor screen height is not adjustable, and the fixed height of the screen is too low for the user.

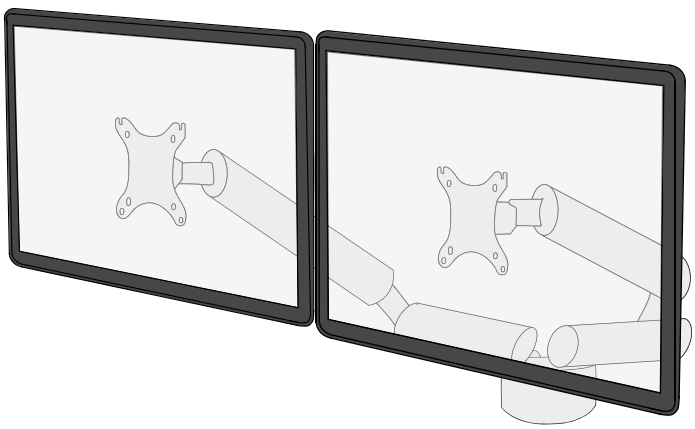


Like laptop risers the following factors should be considered when buying a monitor riser:

- Height adjustable range: the adjustable range should be sufficient to raise the height of the display to a comfortable level.
- Ease of use: the monitor riser should be simple and easy to set up and adjust in height.
- Stability: the monitor riser should provide a stable support surface to place the monitor, such that it is secure and does not wobble or disturb the display.
- Size: the size of the monitor riser should be adequate to securely support the monitor being used but not take up too much space on the desk, look for products that use the space effectively, e.g., have open space underneath to store stationary or paperwork.

## Monitor Arms

A monitor arm enables the position of the monitor to be easily manipulated to suit the requirements of the user whilst taking up minimal desk space. A good quality monitor arm allows the user to adjust the height and horizontal position of the monitor with minimal effort, this can be beneficial as the user changes tasks or posture throughout the day, it is also particularly beneficial where desk space is limited.

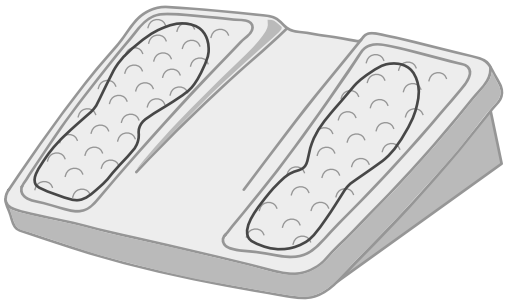


Consideration should be given to the following factors when selecting a monitor arm:

- Ease of use and adjustability: some are dynamically adjustable whilst in use, these typically have a sprung loaded arm and are usually very simple and easy to adjust, others require a tool to adjust the height of the arm on a central stem and depending on the weight of the monitor(s) and the strength of the user, a second pair of hands may be required to make adjustments.
- Number of screens: monitor arms are available for single, dual, triple and even multiple monitors, for most users a single or dual monitor arm is sufficient.
- Type of dual monitor arm: Dual monitor arms are available in two different types, dual bar - holds both monitors on one bar, this does not allow for independent positioning of the monitors; double arm – holds each monitor on a separate arm allowing the user more freedom to position each monitor independent of each other. Both types of dual monitor arm are good, however, it will be down to the user's preference as to which one is best suited to the individual.
- Weight limit: ensure that the weight limit of the monitor arm is adequate to support the weight of the monitor(s) being used.
- Adjustable height range: ensure that the range of height adjustment is suitable for the individual, e.g., taller users will require a product with a higher range of adjustment.
- Cable management: Ensure the monitor arm has at least basic cable management to help keep cables from trailing across the desktop.

## Foot Supports

A foot support is necessary where the work chair height is to be set in a position which does not allow the user's feet to rest firmly on the floor (See page 24).



It should be possible to place the foot support on the floor where required and it should not move unintentionally while in use, its surface should be non-slip and be of sufficient size to allow freedom of movement. The inclination of the support surface should be adjustable.

It is possible to buy foot supports with varying degrees of adjustability, some simple designs allow the user to freely adjust the angle of the footrest using their feet, others allow the user to fix the angle of the support surface at their preferred incline. It is also possible to buy foot supports that are adjustable in height and angle, these offer the user the ability to adjust the height of the support surface to obtain the perfect leg and foot position.

When choosing a foot support it is helpful to consider the following factors:

- Quality – higher quality foot supports offer quieter and more controlled adjustments, therefore providing support whilst causing minimal disruption to the user and other people in the vicinity.
- Height – Ensure that the height or height range of the foot support matches the requirements of the

user, e.g., very short users will need a foot support with a higher range of adjustment.

- Surface area – ensure that the surface area of the support surface is large enough to fit the whole length of the user's feet.
- Materials – consider whether the foot support will be used with or without shoes, if the intention is to use the foot support without shoes, a softer, warmer material will be more comfortable for the user to rest their feet on.

# Keyboards

## Introduction

Keyboards are fundamental input devices used with both desktop and laptop computers. While laptop keyboards can be used for short periods, they are not ideal for long term use as they force the user to use the laptop directly on the desk within easy reach, this generally means that the laptop screen is too close and too low which over time can result in eye strain and musculoskeletal strain injuries to the neck, shoulders and wrists. Using an external keyboard when using a laptop is vital as it helps to prevent the user from overstretching their arms and adopting undesirable wrist postures. It also allows the user to position the screen at a more suitable viewing distance and height. Without exception, external keyboards should always be used when a laptop is used with a laptop riser.

## DSE regs minimum requirements

- Keyboard design should allow workers to locate and activate keys quickly, accurately and without discomfort.
- The choice of keyboard will be dictated by the nature of the task and determined in relation to other elements of the work system.
- Hand support should be provided while keying or when hands are at rest, depending on what the worker finds comfortable. Support can be built into the keyboard, gained by leaving an adequate space between the keyboard and the front edge of the desk; or may be provided by a separate hand/wrist support on the work surface.
- Split or otherwise ‘ergonomic’ keyboards may be worth considering, for example to rehabilitate a worker suffering from upper limb pain.

## Ergonomic considerations

There are a variety of keyboard options available:

- Wired or wireless keyboards – wireless options require charging or replacement batteries but allow for greater freedom of movement and do not have wires trailing across the desk leaving the workspace clearer.
- Standard keyboards – good for users who frequently use the number pad and other function keys.
- Compact keyboards – shorter keyboards without a number pad, these are easy to fit in a laptop bag and are very transportable. Compact keyboards also enable users to use their mouse in a neutral arm position without stretching their arm out to the side.
- Ergonomic and Split keyboards – Ergonomic keyboards are designed to enable the user to maintain a comfortable wrist and hand position while typing. Split keyboards allow more freedom to position each side of the keyboard to be parallel with your shoulder, therefore, reducing the strain on your wrists.

There should also be sufficient space in front of the keyboard for the user to provide support for their arms and hands. The keyboards should have a matt surface to avoid any reflective glare, have a usable layout. The symbols on the keys should adequately contrast the keys themselves and be legible from the working position.

# Mice

## Introduction

As with keyboards, a mouse or similar device is a key input device when using a desktop computer or laptop. Using a mouse for extended periods whilst adopting poor postures can strain the muscles and tendons in your hand, wrist and arm. Performing repetitive focussed movements overwork the small muscles in your wrist and hand which can cause painful musculoskeletal injuries including repetitive strain injury, one of the most common being carpal tunnel syndrome.

Laptop users have the option to use the trackpad on the laptop itself or use an external mouse. Using the trackpad on the laptop creates the same issues as using the laptop keyboard, forcing the user to position the laptop directly on the desktop with the display screen too close and too low. In many cases the position of the trackpad causes the user to lean their wrist on the front edge of the laptop which can put pressure on the delicate nerves and tendons in the wrist causing discomfort and damage over time. Therefore, it is recommended that an external mouse or similar input device is used when using a laptop. Without exception, a peripheral mouse should always be used when a laptop is used with a laptop riser.

### DSE regs minimum requirements

The HSE guidance to the DSE regulations states that there are no specific requirements for mice and other non-keyboard input devices. These are covered in a general way; the requirement is that such equipment should not be a source of risk.

## Ergonomic considerations

There are numerous products on the market to choose from, the key factors to consider are that it fits the shape and size of your hand and the way the mouse is used, i.e. how much clicking and scrolling is performed and how much time is spent moving the mouse around the desk. Ergonomic mice are designed to encourage the hand into a more comfortable, neutral position and relieve discomfort to extend the time the device can be used.

There are a number of options to consider when choosing a mouse or similar input device:

- Wired or wireless - wireless options require charging or replacement batteries but allow for greater freedom of movement and do not have wires trailing across the desk leaving the workspace clearer.
- Standard mouse - most commonly used.
- Vertical mouse - places the hand in a "handshake" position which prevents the wrist from twisting and putting pressure on the median tendon which can lead to carpal tunnel syndrome.
- Roll bar mouse - a roll bar mouse sits directly in front of the keyboard, allowing the user to use either or both hands together to point, click and scroll. Mouse buttons remain close to the hand for finger and thumb control.
- Trackball mouse - trackball mice help to reduce unnecessary wrist movements by enabling the user to quickly and accurately control the cursor using only the fingertip, which is beneficial if the user has mobility issues in their hands. Trackball mice can be useful for users without a lot of desk space. There are versions of these that are meant to be used by the fingers or by the thumb.

## Wrist Supports

Some users may benefit from the use of an additional wrist support when typing on a keyboard or using a mouse. Wrist supports can be beneficial but should be used with caution to not cause further issues, it is best in the first instance to carry out a workstation assessment to find out if there is an underlying issue causing wrist discomfort and address those before trying a wrist support.

If a wrist support is deemed necessary, then the following should be kept in mind:

- The wrist support should be placed immediately in front of the input device.
- The wrist support should not cause additional flexion or extension or the wrist.
- The wrist support should have a depth between 50mm and 100mm to provide a comfortable area to place the hand and wrist.
- No part of the wrist support should cut into the wrist.

## Document Holders

A document holder is recommended for users that frequently look between documents and the display screen, this will reduce the amount of head, neck and eye movement required when scanning between the document and the display screen. A document holder will also enable the document to be positioned at a comfortable height and angle for the user to read.

A document holder used for copy typing should be able to be positioned at the same height as the display screen and should be able to comfortably accommodate the size of documents most frequently used by the user and be stable so that it is unaffected by movement of the worksurface. An alternative option for people who often refer to and make notes on paperwork but are not copy typing would be a writing slope/document holder, these are typically positioned between the keyboard and the monitor to hold documents in a convenient position to view and make notes on, there are also a number of options that enable the user to slide the writing slope surface forward over the keyboard bringing it to a more comfortable position for the user to make notes.


## Sustainability

It is highly recommended to evaluate and consider the sustainability targets and credentials of the companies you're buying from to ensure they align with your own.

Key things to look out for:

- Recycled content
- Locally sourced materials and labour
- The distance the product has travelled
- End of Life considerations

## References

1. The Health and Safety (Display Screen Equipment) Regulations 1992. Available at legislation.gov.uk

2. FIRA. 2020. FIRA Ergonomic homeworking employee guide. Available at: www.fira.co.uk/homeworking.

3. Health and Safety Executive. 2003. Work with display screen equipment - Health and Safety (Display Screen Equipment) Regulations 1992 as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002 - Guidance on Regulations, 2nd edition.

4. FIRA. 2021. Flammability Guidance for Contract Seating: Fire Safety of Office Work Chairs in Domestic Environments. Available at www.fira.co.uk/technical-information/flammability/flammability-guidance-for-contract-seating-fire-safety-of-office-work-chairs-in-domestic-environments

## Appendix A: Standards

**BS EN 1335-1:2020 – Office furniture — Office work chair, Part 1: Dimensions — Determination of dimensions**

This European Standard specifies the dimensions of four types of office work chairs as well as test methods for their determination. The four types of office chairs are as follows:

Type Ax work chair – office work chair with the largest range of adjustments
Type A work chair – office work chair with a large range of adjustments
Type B work chair – office work chair with a range of adjustments
Type C work chair – office work chair with limited adjustability

The dimensions in this document are based on anthropometric measurements, mechanical design, subjective preference and other factors. Chairs that comply with this standard should accommodate a large part of the European office population, but it is important to bear in mind that as described above, chairs with only limited adjustability are still able to meet this standard, therefore even if a chair has met the requirements of this standard, care should still be taken to select a chair which meets the needs of the user and has the required level of adjustability.

**BS EN 1335-2:2018 Office furniture - Office work chair Part 2: Safety requirements**

This document specifies safety, strength and durability requirements for office work chairs. The requirements are based upon use for 8 hours a day by persons weighing up to 110 kg.

**BS 5459-2 – Specification for performance requirements and tests for office furniture – Part 2: Office pedestal seating for use by persons weighing up to 150Kg and for use up to 24 hours a day, including type-approval tests for individual components.**

This part of BS 5459 specifies performance requirements and test methods for the structural safety and stability of office pedestal seating when used by persons weighing up to 150kg or when used for up to 24 hours a day, including chairs for use with tables and desks higher than those specified in BS EN 527-1. This part of the standard also specifies requirements and test methods for type approval of bases, columns, seat actions, back stems and locking devices.

**FIRA guidance document - Flammability guidance for contract seating - Fire safety of office work chairs in domestic environments**

This document provides guidance for the contract seating industry to address the fire safety of contract seating used in home environments. This guidance was developed in collaboration with Trading Standards.

Full details about fire safety of office work chairs in domestic environments are provided in the FIRA guidance (Ref. 4), however for the purposes of this document, it is important to note that chairs knowingly to be sold for use in the domestic environment that contain any upholstered parts are covered by the Furniture and Furnishings (Fire) (Safety) Regulations 1988 (as amended in 1989, 1993 and 2010) (FFFSR). Mesh only chairs or mesh parts of chairs will be covered by the General Product Safety Regulations.

**BS EN ISO 9241-5: 1999 - Ergonomic requirements for office work with visual display terminals (VDTs). Workstation layout and postural requirements**

This part of BS ISO 9241 specifies ergonomic guiding principles which apply to the user requirements, design, and procurement of workstation equipment for office tasks using VDTs.

In particular, the general principles and requirements specified in this part of BS ISO 9241 apply to the standards specifying technical design of furniture and equipment constituting the workplace.

BS EN ISO 9241 Part 5 (ergonomics standard) is the standard recommended by the HSE to show compliance with the DSE Health and Safety Regulations. If a product has gained certification for BS EN ISO 9241 Part 5 it shows that it complies with or exceeds the minimum ergonomics requirements.

**BS EN 527-1: 2011 - Office furniture. Work tables and desks. Dimensions**

This European Standard specifies dimensions of work tables and desks for office tasks to be undertaken in a seated, a sit-stand or standing position.

The dimensions in this standard are based on the requirements of anthropometric measurements, mechanical design, subjective preference, and other factors.

The dimensional requirements of the tables and desks are based upon the 5th and 95th percentile of the European office user group. In general, this is the 5th percentile female and the 95th percentile male (from 1493 mm to 1913 mm for the stature height). To accomplish the needs of users outside this range, individual solutions can be applied.

**BS EN 527-2: 2016 + A1: 2019 - Office furniture. Work tables. Safety, strength and durability requirements**

This European Standard specifies safety, strength and durability requirements for work tables and desks for office tasks to be undertaken in a seated, a sit-stand or standing position.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