



Now and Tomorrow
Excellence in Everything We Do



Departmental Occupational Health and Safety Program

Ergonomic Technical Standards

Version 1.0

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1 INTRODUCTION

The Human Resources and Skills Development Canada (HRSDC) portfolio is committed to providing a healthy and safe workplace.

The Departmental Occupational Health and Safety (OHS) Program, Module III: Integrated Ergonomics Program (IEP), focuses on preventing ergonomic-related injuries through information, standards and adjustments.

These standards outline the basic technical features and functions that standard departmental office furniture and equipment must have to ensure maximum adjustability to fit the worker.

For additional information on the adjustment and use of the furniture and equipment outlined in these standards, please refer to the *Ergonomics Guide to Departmental Office Furniture and Equipment*.

1.1 Scope

These standards apply to all workplaces within the HRSDC portfolio, including Service Canada and the Labour Program (hereafter referred to as the Department). The standards outline the minimum requirements that must be met when purchasing and/or replacing standard office furniture and/or equipment.

1.2 Authorities and References

These standards were developed in accordance with the following:

- a) Departmental OHS Program, Module III: Integrated Ergonomics Program
- b) Departmental Ergonomic Guidelines
- c) Canadian Centre for Occupational Health and Safety, [Basic Information](#), 2008
- d) CSA-Z412, Guideline on Office Ergonomics (December 2000)
- e) E.K. Gillin & Associates Inc., 2007
- f) Keyboard Trays, [Ergonomic Adjustable Computer Keyboard Tray Guide](#), 2010
- g) The PC Guide, [Monitors](#), 2001
- h) United States Department of Labour, Occupational Safety & Health Administration, [Computer Workstations](#), 2010

1.3 Enquiries

Questions regarding these standards or their interpretation must be directed to the Regional OHS Advisor.

1.4 Effective and Review Date

These standards take effect on July 1st 2011 and replace previous departmental information on the ergonomic features and functions of departmental furniture and equipment. These

standards will be reviewed every three (3) years, or as required, to ensure consistency with the IEP and industry standards.

2 CHAIRS, SEATING AND RESTS

2.1 Office and Task Chairs

2.1.1 Seat Height

1. The seat height must be readily adjustable by the user.
2. The seat height must have a range of 38 to 51 cm (15 to 20 in).

2.1.2 Seat Depth

1. Shallow seat: a seat depth no less than 38 cm (15 in) and no more than 42 cm (16.5 in).
2. Medium seat: a seat depth greater than 42 cm (16.5 in) and no more than 46 cm (18 in).
3. Deep seat: a seat depth greater than 46 cm (18 in).
4. The seat depth must be adjustable by at least 5 cm (2 in).

2.1.3 Seat Width

1. The seat width must be between 40 and 48 cm (15.75 and 19 in).

2.1.4 Back Support

1. The back support must provide support to the back of the worker in all sitting postures.
2. The back support must have maximum prominence in the mid-lumbar region to support the lower back.
3. The back support must end below the shoulder blades, so as not to inhibit upper body movement.

2.1.5 Backrest Height

1. Standard back: the top of the backrest must be no less than 45 cm (17.75 in) and no greater than 55 cm (21.5 in).
2. High back: the top of the back rest must be at least 7.5 cm (3 in) higher than the standard back.

When free arm movement is necessary:

1. The backrest cushion should have a minimum height of 12 cm (4.75 in), with the preferable height being 15 to 23 cm (6 to 9 in).

2.1.6 Lumbar Support

1. Lumbar support must be vertically convex and horizontally concave for side support.
2. Lumbar support height should be adjustable by at least 5 cm (2 in).

2.1.7 Backrest Width

1. The backrest cushion width must be between 30 and 36 cm (12 and 14 in).
2. When free arm movement is necessary, the backrest cushion width should be between 32 and 38 cm (12.5 and 15 in).

2.1.8 Backrest Angle

1. The backrest angle must be adjustable by a minimum of 10° within a range of 110° to 130°.

2.1.9 Backrest-to-Seat Angle

1. When the backrest-to-seat angle is fixed, the backrest-to-seat angle should not be less than 110° or greater than 130°.

2.1.10 Armrests

1. Armrests should be set back at least 15 cm (6 in) from the edge of the seat.
2. They must not restrict the worker's preferred posture.
3. They must not restrict ease of access to the workplace.
4. They must provide comfortable padded support.

2.1.11 Armrest Height

1. The height adjustment range must be at least 5 cm (2 in), and include a range between 16 and 25 cm (6 and 10 in).

2.1.12 Armrest Length

1. The total length of the armrest must be between 15 and 28 cm (6 and 11 in).

2.1.13 Armrest Width

1. The inside distance between armrests must be adjustable between 46 and 56 cm (18 and 22 in).

2.1.14 Seat Angle

1. When the seat angle is adjustable independently of the backrest, it should be adjustable to a minimum of 3° forward and 4° rearward from the horizontal position.

2. The seat angle must be lockable in various positions.

2.1.15 Casters

1. The configuration should be 5 casters/wheels over a diameter of 40 to 45 cm (15.75 to 17.75 in).
2. The casters should be single-wheel casters.
3. The wheels should be made of soft rubber, with easily swivelling threads on the wheel, and a sealed ball bearing for stability on hard surfaces such as hardwood, ceramic tile, etc.
4. An office chair caster should have a gray, soft rubber wheel to ensure that concrete, linoleum, vinyl and tile will not be marred by unsightly streaks.

2.1.16 Controls

1. Controls must be logical in their placement and direction of activation requiring a positive action to operate.
2. They must not require undue force for activation.
3. They must not require any special training or special tools before an adjustment can be made.
4. They must be designed to prevent unintentional actuation.

2.1.17 Front Edge of Seat

1. The seat should have a waterfall-shaped front edge.

2.1.18 Cushioning Material

1. The material must be neither too hard nor too soft, with a compression of about 2.5 cm (1 in) to allow comfort in multiple positions when foam cushioning is used.

Note: Please refer to the manufacturer's instructions for information on the features of the chair and how to operate it. The instructions are provided with the purchase of the chair.

Figure 1 - Chair dimensions (side view)

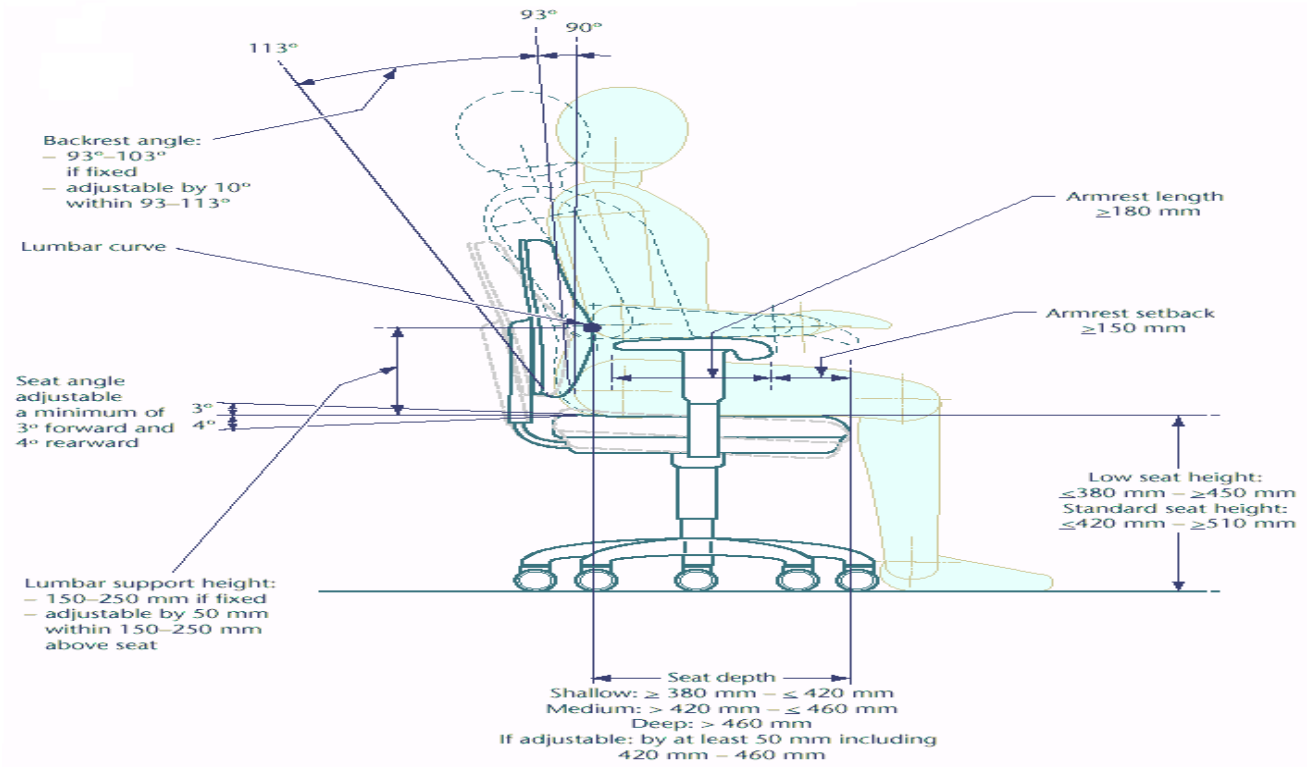
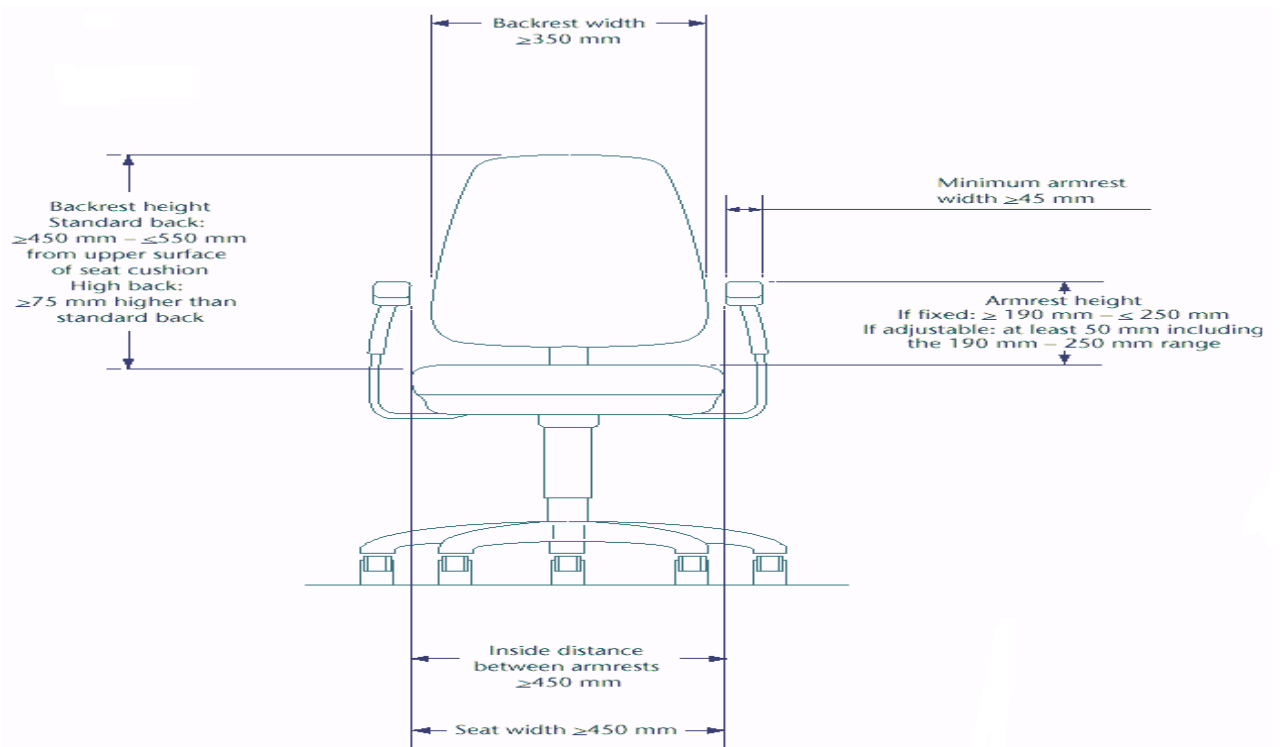


Figure 2 - Chair dimensions (front view)



2.2 Boardroom Chairs

1. The seat height, seat depth, seat width, backrest height, backrest width, armrests, casters/wheels and the seat cushion must meet the basic ergonomic requirements.

2.3 Stools

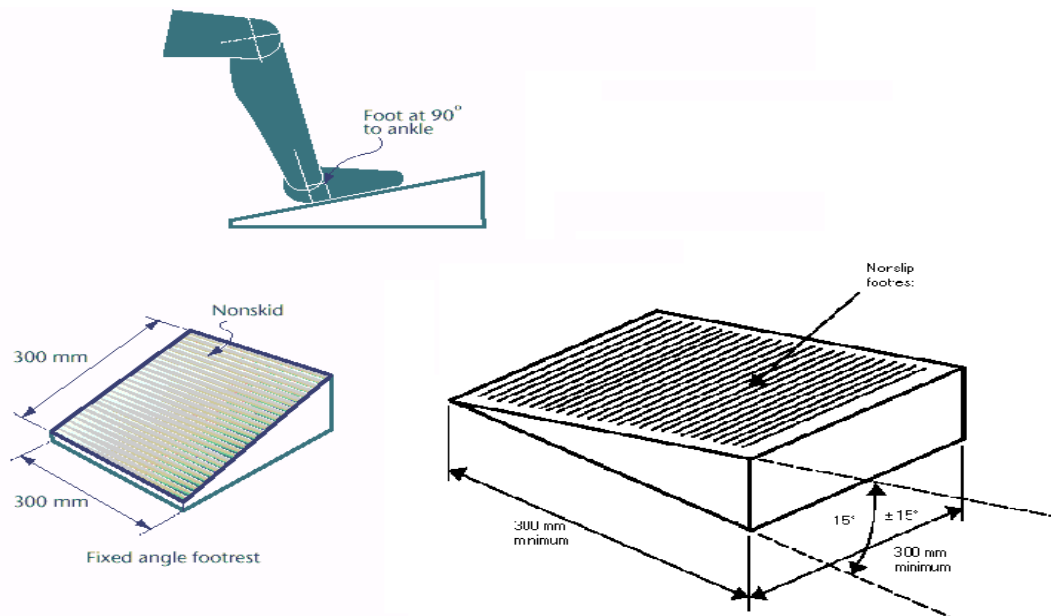
Note: Stools are generally not recommended for use as task seating, but if purchased, they must meet the following standards:

1. Thigh clearance should be a minimum of 20 cm (8 in) under the work surface.
2. Attached footrests should be a ring or sector shape and adjustable from 38 to 53 cm (15 to 21 in) below the top front of the seat.
3. The front of the footrest must extend at least 5 cm (2 in) in front of the front edge of the seat.
4. The stool base must be large enough to ensure that standing on the footrest will not tip the stool.
5. The base should have five points in contact with the floor, and a minimum base diameter of 68 cm (27 in) or a sleigh base.

2.4 Footrests

Note: A footrest should only be used when the desk height is not adjustable and if the chair is raised for a user to reach a work surface and feet are not supported. In those cases, a footrest must:

1. Have a non-skid top surface.
2. Be large enough to hold both feet with the heels spaced 12 cm (4.75 in) apart when sitting.
3. Have a minimum dimension of 30 cm (12 in) wide and 30 cm (12 in) deep.
4. If adjustable, have a height of 2 to 23 cm (0.8 to 9 in) and an inclination angle between 10° and 20°.

Figure 3 – Footrest dimensions

3 COMPUTER AND TELEPHONY EQUIPMENT

3.1 Keyboards

1. The horizontal spacing between the centres of two keys must be between 1.8 and 1.9 cm (0.71 and 0.75 in).
2. The vertical spacing should be between 1.8 and 2.1 cm (0.71 and 0.83 in).
3. The keyboard slope should be no greater than 15°.

3.1.1 Support Surfaces

1. The keyboard support surface must be at least 48 cm (19 in) wide and at least 18 cm (7 in) deep, if there is a separate attached mousing platform.
2. There should be one single tray, the support surface of which should be at least 68.5 cm (27 in) wide and at least 18 cm (7 in) deep.

3.1.2 Adjustable Support Surfaces

1. If incremental, the adjustment must be in increments of no more than 2.5 cm (1 in).
2. The support surface must be capable of being adjusted downward by at least 10 cm (4 in), and be lockable in continuous or incremental positions.

3. Surfaces for keyboards and other input devices should allow clearance under the work surface of at least 5.5 cm (2 in) for the keyboard and input devices.

3.2 Pointing Devices/Mouse

1. The motion-sensing point must be optical and located under the fingers.
2. The device must be designed in such a way that during intended use the fingers can make contact and actuate buttons without excessive deviation from a neutral posture.
3. It must be possible to press the buttons on the mouse without reducing control of the device.
4. The device must support the whole hand and, therefore, must correspond to the hand's shape and size.
5. If a mousing platform is used, it must be at least 20 cm (8 in) wide by 20 cm (8 in) deep.

3.3 Monitors

1. A minimum screen size of 29 cm (11.5 in) and a maximum screen size of 56 cm (22 in) is suggested, with the recommended screen size being 38 cm (15 in).
2. The monitor resolution must correspond to the screen size (see table 1).

Table 1 – Monitor resolution vs. screen size

Monitor Resolution	Screen Size
800x600	12" - 14"
1024x768	15"
1152x870	17"
1280x960	17" - 19"
1600x1200	21"- 24"

3.4 Headsets

1. Corded and wireless headsets
 - a) The cord length must be at least 102 cm (40 in).
 - b) The headband must be adjustable for a comfortable, secure fit.
 - c) The boom must be adjustable to ensure precise microphone positioning.

- d) The earpiece can either be an earplug with an ear loop or a soft cushion.
- e) The headset must be lightweight.

4 DOCUMENT MANAGEMENT

4.1 Document Holders

1. The holder must be easily adjustable in height and angle.
2. It must be sturdy and able to support the documents used.
3. It should be light-coloured and non-glossy.
4. It must be independent of the equipment.

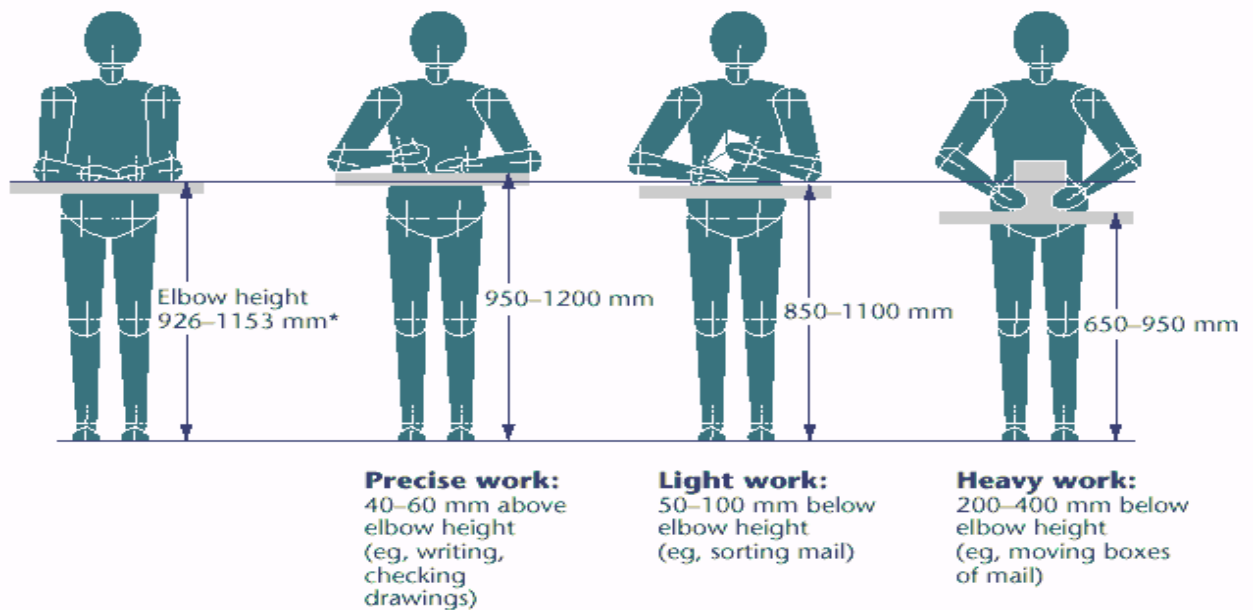
4.2 Angle Boards

1. The board must be adjustable in angle between 0° to 75°.
2. It must be sturdy and able to support the documents used.
3. It should be light-coloured and non-glossy.
4. The lower ledge must be made of a soft/supple material.
5. The weight and size may vary, but it should be lightweight if frequently moved.

5 WORKSTATIONS AND WORK SURFACES

5.1 Standing Workstations

1. Precision work: 4 to 6 cm (1.5 to 2.4 in) above elbow height.
2. Light work: 5 to 10 cm (2 to 4 in) below elbow height.
3. Heavy work: 20 to 40 cm (8 to 15.75 in) below elbow height.

Figure 4 - Guideline for standing work heights

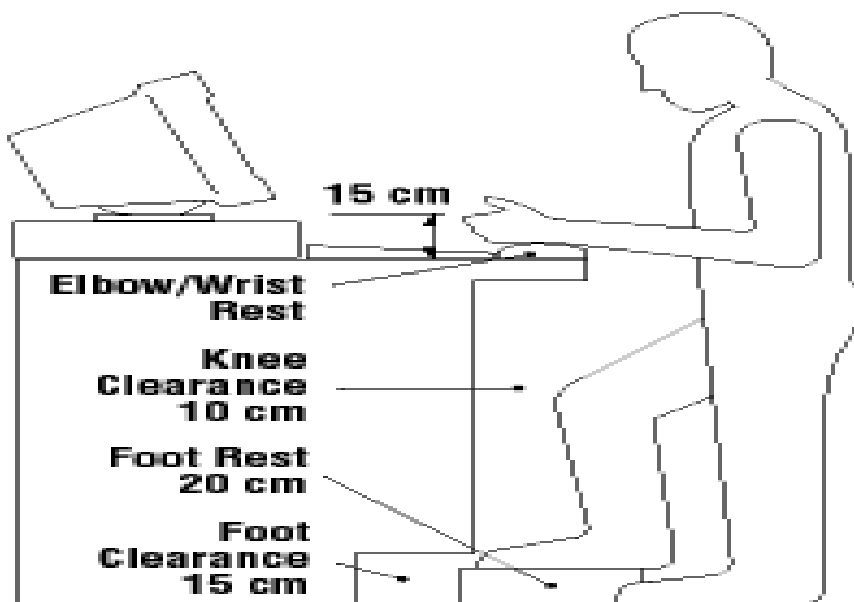
**Based on accommodating the 5th percentile female height to the 95th percentile male height.*

4. A minimum knee clearance of 10 cm (4 in) is required.
5. There must be an overhead clearance of 210 cm (83 in) between the walking surface and any obstruction.
6. There must be a minimum foot depth clearance of 15 cm (5 in).
7. There must be a minimum foot height clearance of 10 cm (4 in).

5.1.1 Anti-Fatigue Mats

1. The mat should be bevelled and slip resistant.
2. It should be made out of rubber or vinyl.
3. It should be at least 1.3 cm (0.5 in) thick.

*The size of the anti-fatigue mat is task-dependent.

Figure 5 - Standing work height dimensions

5.2 Sit/Stand Workstations

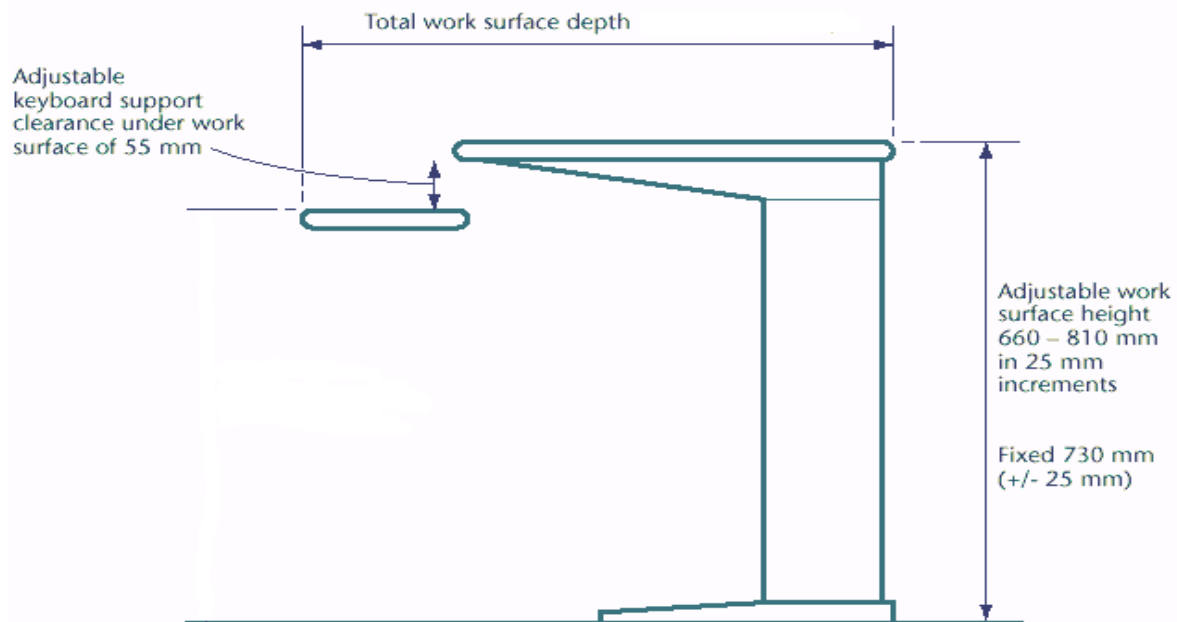
1. Knee room must be at least 30 cm (12 in) deep and 65 cm (26 in) across the workstation, and be free from obstructions.
2. The height of the work above the seat must be between 30 and 60 cm (12 and 24 in).
3. The height of the work above the floor must be between 100 and 120 cm (39 and 47 in).
4. The range of adjustability of the seat pan height must be between 80 and 100 cm (31 and 39 in).

5.3 Seated Workstations

1. The workstation height for precision work is 79 to 109 cm (31 to 49 in).
2. The workstation height for reading and writing is 66 to 81 cm (26 to 32 in).
3. The workstation height for keyboarding and light assembly is 53 to 71 cm (21 to 28 in).
4. Work surface thickness must be 5 cm (2 in) at most.
5. Leg clearance must be at least 61 to 76 cm (24 to 30 in).

6. Knee clearance depth must be at least 38 cm (15 in).
7. Foot depth must be at least 23 cm (9 in).
8. Foot height must be at least 23 cm (9 in).

Figure 6 - Dimensions for seated work surfaces



5.4 Work Surfaces

5.4.1 Work Surface Height

1. Fixed height must be set at 73 cm (28.75 in) \pm 2.5 cm (1 in).
2. Vertical adjustability range for continuous and incremental work surfaces must be at least 66 to 81 cm (26 to 32 in).
3. Incremental work surfaces must be adjustable in increments of no more than 2.5 cm (1 in).

5.4.2 Work Surface Depth

1. A minimum depth of 40 cm (15.75 in) is suggested for writing tasks (no computer).
2. A minimum depth of 61 cm (24 in) is suggested for a single-task worker.
3. A minimum depth of 61 cm (24 in) is suggested for a multi-task worker.

5.4.3 Work Surface Finish

1. The finish of the work surface should be a plastic laminate finish, to minimize specular reflections.

5.4.4 Stability of Work Surface

1. When loaded with equipment, the workstation should not tip over if a person leans on any side or sits on the edge.

6 FLOORING

1. All completion of flooring must be smooth and even, with inconspicuous joints.
2. The user should change the casters to the required flooring. (See 2.1.15-Casters)

7 TASK LAMPS

1. Adjustable task lamps must be positioned directly over source documents.