

BIFMA Ultimate Test for Fit for Furniture Dimensions and Adjustment Ranges:

A Companion Document to ANSI/BIFMA X10.1 – 2024 Ergonomics Requirements for Furniture Designed for Computer Use

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Preamble:

The Ultimate Test for Fit (UTFF) is a companion document to [ANSI/BIFMA X10.1-2024 Ergonomics Requirements for Furniture Designed for Computer Use](#) and is based on the ISO 9241-5 ergonomics principles. It can be used as a tool to evaluate the fit of existing or new products/solutions for individual users without requiring physical measurements.

The work chair and worksurface dimensions/ranges in X10.1-2024 are based on 5th percentile female to 95th percentile male (or in some cases, female) anthropometric dimensions. Products designed to meet these requirements will accommodate a large number of users.

In a given workplace, however, some individual users may have anthropometric dimensions that are outside those used on which the requirements in X10.1-2024 are based. While some of these individual users will still be able to comfortably use products designed to X10.1-2024, others will not be able to do so. To accommodate these individual users, it may be necessary to source products with dimensions outside of this range. The final criteria for determining whether an individual user has been accommodated are found in this tool.

How to Use the UTFF

With the user positioned at their workstation, use this tool to evaluate the fit of a Work Chair, a Worksurface and/or Monitor Placement.

For example, if you are evaluating the fit of the chair for a user, begin with Section 8.0 The Work Chair. Review the statement for each parameter and ask the user if they can achieve the described posture. If fit cannot be achieved for a given parameter, this points to criteria that must be included in an ergonomically sound solution for the user.

8 Work Chair

8.1 Seat

8.1.1 Seat Height

Ultimate Test for Fit for the Individual User

The user should be able to sit with their feet comfortably on the floor or footrest and feel even distribution of their weight on the underside of the thighs. The torso-to-thigh angle should be equal to or greater than 90°.

8.1.2 Seat Depth and Front Edge of Seat

Ultimate Test for Fit for the Individual User

The user should be able to sit in the chair without feeling pressure at the back of the knees or inadequate support for their buttocks and thighs when their back is properly supported by the backrest

8.1.3 Seat Width

Ultimate Test for Fit for the Individual User

The user should be able to make contact with the seat while feeling their weight is comfortably distributed over the seat surface. The user should also be able to change their posture and comfortably use the armrests (see Section 8.4.3 Inside Distance Between Armrests).

8.1.4 Seat Angle

Ultimate Test for Fit for the Individual User

The user should be able to sit in a position with a torso-to-thigh angle of 90° or greater without having to shift excessive weight to their feet and/or experience the sensation of sliding out of the chair.

8.2 Backrest

8.2.1 Backrest Height

Ultimate Test for Fit for the Individual User

The user should feel support in their lower back (lumbar area). For tasks requiring upper body mobility, the user should be able to maintain lower back support

without interfering with their movement. If the user prefers reclined postures, the backrest height should provide support for their upper back and shoulders.

8.2.2 Backrest Width

Ultimate Test for Fit for the Individual User

The user should feel adequate support in the lower back (lumbar area) without experiencing localized pressure points.

8.2.3 Vertical Height of the Most Forward Point of the Lumbar Support

Ultimate Test for Fit for the Individual User

The user should feel that the height and shape of the chair's lumbar support area helps maintain natural curvature of their lower back (lumbar area) without causing localized pressure points.

8.3 Backrest-to-Seat Angle

Ultimate Test for Fit for the Individual User

The user should be able to sit in a position where their torso-to-thigh angle is 90° or greater while maintaining contact with the back support, especially in the lower back (lumbar area), as they recline. The user should be able to stop at various positions within the chair's range of movement.

8.4 Armrests

8.4.2 Armrest Height

Ultimate Test for Fit for the Individual User

The user should be able to sit in a variety of postures while supporting their forearms and/or elbows in a manner that avoids lifting the shoulders (armrests too high) or leaning to the side/dropping the shoulders to reach the armrest (armrests too low).

8.4.3 Inside Distance Between Armrests

Ultimate Test for Fit for the Individual User

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The user should be able to fit their hips between the armrests to easily get into and out of their chair and adjust the armrests to support their arms close to their body.

9 Worksurfaces

9.1 Clearance Envelope – Seated

When centered on their task, the user should be able to fit their legs under the worksurface and change their leg position without obstruction.

9.1.1 Height Clearance for Legs - Seated

Ultimate Test for Fit for the Individual User

The user should be able to fit their legs under the worksurface when there is a 90° angle at the knees without the top of the thighs contacting any structure under the worksurface while allowing some freedom of movement.

9.1.2 Depth Clearance for Knees – Seated

Ultimate Test for Fit for the Individual User

The user should be able to sit close to their worksurface in an upright posture and fit their knees in the space provided under the worksurface without obstruction while allowing some freedom of movement.

9.1.3 Width Clearance for Legs - Seated

Ultimate Test for Fit for the Individual User

The user should be able to fit their knees/legs between the support structures under the worksurface while allowing some freedom of movement.

9.1.4 Height Clearance at Foot Level - Seated

Ultimate Test for Fit for the Individual User

The user should be able sit close to the worksurface in an upright posture without vertical obstruction at foot level while allowing some freedom of movement.

9.1.5 Depth Clearance at Foot Level - Seated

Ultimate Test for Fit for the Individual User

The user should be able to sit close to the worksurface in a upright posture and fit their feet in the space provided under the worksurface without obstruction at foot level while allowing some freedom of movement.

9.2 Clearances Envelope – Standing

When centered on their task, the user should be able to fit their feet under the worksurface and change their foot position without obstruction.

9.2.1 Height Clearance for Feet - Standing

Ultimate Test for Fit for the Individual User

The user should be able to stand close to their worksurface in an upright posture without vertical obstruction at foot level while allowing some freedom of movement.

9.2.2 Depth Clearance for Feet - Standing

Ultimate Test for Fit for the Individual User

The user should be able to stand close to their worksurface in an upright posture and fit their feet in the space provided under the worksurface without obstruction at foot level while allowing some freedom of movement.

9.2.3 Width Clearance for Feet - Standing

Ultimate Test for Fit for the Individual User

The user should be able to stand close to their worksurface in an upright posture without between the support structures while allowing some freedom of movement.

9.3 Worksurface Height for Input Devices

9.3.1 Worksurface Height for Input Devices - Seated

Ultimate Test for Fit for the Individual User

The user should be able to sit in a variety of positions at a worksurface height which is just below one's relaxed elbow height and has adequate clearance for their legs while their feet are comfortably supported on the floor or footrest. The shoulders, elbows and wrists should be in neutral postures.

In some cases, however, the user's body dimensions will be such that there is little space between the top of their thigh and the underside of their forearm in which to fit the keyboard and work surfaces. In these instances, compromises in posture will be necessary even when using an adjustable worksurface.

9.3.2 Worksurface Height for Input Devices - Standing

Ultimate Test for Fit for the Individual User

The user should be able to stand upright in a variety of positions at a worksurface height which is just below their relaxed elbow height with adequate clearance for their feet. The shoulders, elbows and wrists should be in neutral postures.

9.3.3 Worksurface Height for Input Devices – Seated to Standing

Ultimate Test for Fit for the Individual User

As the user alternates between seated and standing postures they should be able to achieve the Ultimate Test for Fit in clause and 9.3.1 and 9.3.2.

10.0 Monitor Screen Placement

10.1 Distance to Monitor Screen – Seated or Standing

Ultimate Test for Fit for the Individual User

When the user is seated while maintaining contact with the backrest (or standing, as appropriate) with their head in an upright (neutral) posture the distance from the user's eyes to the monitor should be approximately an arm's length away from the front of the body to minimize potential for eyestrain. The top of the screen should not be closer to the eyes than the bottom of the screen.

10.2 Monitor Height Range – Seated

Ultimate Test for Fit for Individual the User

When the user is seated while maintaining contact with the backrest with their head in an upright (neutral) posture, they should be able to comfortably view the entire monitor display with minimal effort.

10.3 Monitor Height Range – Standing

Ultimate Test for Fit for Individual the User

When the user is standing with their head in an upright (neutral) posture, they should be able to comfortably view the entire monitor display with minimal effort.

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Annex B.1 Work Chair

B.1.1 Backrest Tension in Upright and Reclined Postures

Ultimate Test for Fit for Individual User

The user should be able to control the chair movement from upright to a fully reclined position and return to the upright position with minimal effort.

For example:

- When sitting upright, the user should not feel like the chair is pushing them forward and should not need to engage their muscles to keep the chair in an upright posture.
- When reclining the user should not need to arch their back causing them to lose contact with the back/lumbar support of the chair, engage their muscles to slow down how fast the chair reclines, or to engage their muscles to bring the chair back to upright.

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