

HAWORTH®



Zody's Ergonomic Features and Adjustments

by: Teresa A. Bellinger, Ph.D.

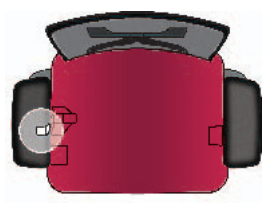
Ergonomic standards and guidelines recommend several working postures – sitting while reclining, upright, or in forward tilt; standing or alternating between sitting and standing – recognizing that no one posture should be used for a long period of time. A good ergonomic chair allows users to sit in these different postures and provides features and adjustments with the ability to enhance the comfort, productivity, and overall well-being of the occupant. Listed below are Zody's key ergonomic features and adjustments along with suggestions on how to adjust the chair to maximize its potential for each individual user.

BACK AND LUMBAR SUPPORT

The combination of the frame flex, mesh construction, lumbar pad, lumbar pad spring suspension and asymmetrical adjustment and pelvic support make up the "PAL™" system's unsurpassed ability to provide comfortable ergonomic support for a broad range of users.

Tension

Zody's tension adjustment is a crank located halfway back on the right side of the seat pan (Figure 1). Adjusting the tension control regulates the amount of resistance a user feels when leaning back in the chair and the effort required to recline the chair backwards. Forward (clockwise) rotation increases the tension and backward (counterclockwise) rotation decreases the tension. Zody's tension can be adjusted to accommodate users of different body types and sizes and for different work styles.



Torsional Movement

Zody was designed to have 2" of passive torsional flex in the upper back. This means the backrest follows the user as it moves, increasing mobility and comfort when reaching sideways for objects.

Mesh Tension

Zody's proprietary suspension mesh is a thin, breathable, 100% polyester woven fabric designed to work in concert with the lumbar pad and pelvic support. Several studies were completed to identify appropriate upper and lower back mesh tensions which provide users with continuous support.

Lumbar Support

When standing, the spine naturally forms an "S-curve," but when seated, the bottom of the back tends to round out as the tailbone is curled under causing the curvature to disappear. This can cause lower back pain when seated, so it is important to maintain the lumbar curvature (lordosis) that occurs normally in the spine of the lower back. Zody's lumbar pad was designed so it responds differently to people based on the amount of support they desire. Its concentric rings are different thicknesses and are interconnected by relatively small flexible webs to ensure support only where the user wants it.

The handles to adjust the lumbar support are located on the back of the chair (Figure 2). The lumbar pad adjusts 4" vertically along the back of the user.



Pull up or down to adjust the height of the lumbar pad. When adjusting the lumbar pad, the height and shape of the lumbar pad should coincide with the lumbar curve ("the small") of the user's back. Rotate the handles up to increase the amount of support and down to decrease the amount of support. The handles can also be adjusted independently of each other so users can achieve varying amounts of support on either the right or left side of their lower back.

Pelvic Support

Zody's pelvic support works in combination with the lumbar support to keep the pelvis from rotating backwards to help maintain the curvature in the lumbar region of the user's back.

Backrest to Seat Pan Angle

The angle between Zody's backrest and the seat pan allows users to sit with a torso-to-thigh angle greater than 90 degrees while still allowing users to perform their tasks. As users recline in the chair, they should also feel a decrease in pressure on the tailbone and lower back.

Back Stop

Zody's backstop allows users to select an upright position or limit the amount of recline (Figure 3). This gives users the ability to select their preferred posture and change postures throughout the day. The back stop lever is located behind the tension crank which is located halfway back on the right side of the seat pan — to activate it, recline and push down on the lever; to release it, pull up on the lever. Zody has back stops every 4 degrees throughout the full recline (24 degrees) of the chair.

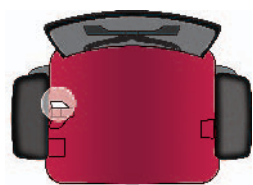


Figure 3

SEAT PAN

Seat Height

The pneumatic height adjustment lever for Zody is located under the seat pan on the front right side of the seat pan (Figure 4). To increase seat height, pull up on the lever and raise your body out of the chair. To decrease seat height, stay in the chair and pull up on the lever. It is important to ensure that seat height is adjusted correctly to avoid hindering circulation to the lower limbs. Seat height should be adjusted so the user is able to place his/her feet flat on the floor or footrest with the thighs parallel to the floor and knees bent at 90 degrees or greater. Users should avoid putting their feet under the chair since this will hinder circulation to the lower limbs. The thighs should be gently resting on the seat pan. If the seat pan is pressing firmly into the back of the thighs, the seat may be too high. The angle between the user's thigh and abdomen (hip angle) should also be greater than 90 degrees. If seat height is too low, the user's legs won't be properly supported and his/her knees will be too high creating a decreased hip angle which may cause cramping. In order to accommodate a wide range of user heights, Zody has different base options which accommodate seat heights from 14.0" to 21.0".

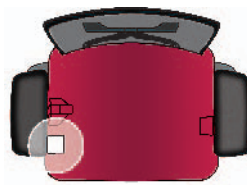


Figure 4

Seat Pan Depth

The seat pan depth adjustment lever for Zody is located under the seat pan on the left side approximately 5" from the front of the seat pan (Figure 5). Zody's seat pan can be adjusted 3" in depth in order to accommodate a wider range of the population. When sitting with the knees bent at 90 degrees, the seat pan

should be adjusted so it does not touch the back of the knees or infringe upon the ability to bend the knees to angles less than 90 degrees. This provides the thighs with support without creating pressure behind the knees. Additionally, this allows the user to sit back far enough in the seat pan to use the lower portion of the backrest.

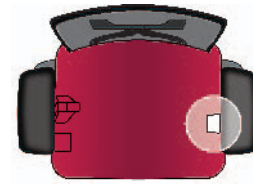


Figure 5

Seat Pan Width

Seat pan width should be wider than the user's seated hip breadth so users can adjust their posture when seated. If the seat pan is too narrow, the sides of the seat pan could come into contact with the bony protrusions (greater trochanters) on the side of the hips which could restrict blood flow and cause discomfort in the hips and in the lower extremities. Zody's seat pan width has been designed so that it will accommodate at least 95% of the population.

Seat Pan Angle/Forward Tilt

The forward tilt option offers users the opportunity to vary their posture throughout the day. As with any posture, forward tilt is an acceptable position to maintain for short periods. Users shouldn't maintain any one posture for more than an hour. Excessive forward tilt may cause users to slide out of the seat or put too much weight onto their feet resulting in prolonged static loading of leg muscles. The forward tilt lever is located in front of the tension crank which is located halfway back on the right side of the seat pan (Figure 6). To activate it, recline backwards in the seat while pushing down on the lever and then lean forwards in the chair. To release forward tilt, recline back in the chair while pulling up on the lever.

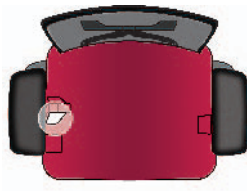


Figure 6

Waterfall Front Edge

Zody's seat pan was designed with a rounded or "waterfall" front edge to help relieve pressure on the back of the thighs/knees. Seat pan edges without a "waterfall" design or without a front edge flex can restrict blood flow causing fatigue and pain.

Seat Pan Shape

The contours of Zody's seat pan design have been developed over years of product iterations to provide maximum comfort by placing increased foam depth in areas of needed support and to provide flexibility in the seat pan to promote movement.

Seat Pan Material

Zody's cushioning materials are molded high-resilient polyurethane foam with densities and IFDs which provide excellent support and longevity.

ARMRESTS

Armrest Height

Zody has a 4" range of height adjustment to accommodate user's varying elbow rest heights. Armrests should be placed so the user's arms are bent at a 90 degree angle or greater with the shoulders remaining in a neutral posture. If the armrests are too high, users will be forced to "shrug" their shoulders. If the armrests are too low, users may experience a "pulling" sensation in their shoulders or the muscles extending from their neck to their shoulders. The armrest height adjustment lever is located on the outside of the armrest post just below the armrest cap (Figure 7).



Figure 7

To change the height of the armrest, just pull up on the lever and slide the armrest up or down as needed.

Armrest Side-to-Side

Side-to-side adjustment of the armrests allows them to be adjusted in closer to the seat pan for users with narrower shoulders and adjusted further from the seat pan for individuals with wider shoulders. To change the width of the armrests, grasp the armrest cap and move it closer or further away as needed (Figure 8).

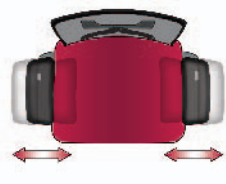


Figure 8

Armrest Front-to-Back

Front-to-back adjustment allows users to position the armrest so they can get close enough to their worksurface to perform tasks while maintaining effective use of the backrest. To change how far forward/backward the armrest is, grasp the armrest cap and move it forward or backwards as needed (Figure 9).

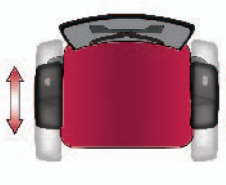


Figure 9

Armrest Pivot

Pivoting the armrests allows users to position the armrests based on the tasks they are performing while still providing the user with proper forearm support. To change the pivot/angle of the armrest, grasp the armrest cap and rotate the front of the armrest towards your body or away from your body as needed (Figure 10).

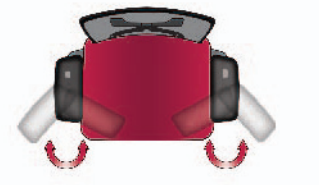


Figure 10

Armrest Posts - Width

The armrest posts should not contact the user's body. This could happen to users that have a wider hip breadth. If the armrest posts do touch the bony protrusions (greater trochanters) on the side of the hips, blood flow could be restricted which could cause discomfort in the hips as well as in the lower extremities. The width between Zody's armrest posts has been designed to accommodate at least 95% of the population.

Balanced Three Point Tilt Mechanism

Adjusting the chair's back tension based on the size and shape of a person allows Zody to suspend the user. This provides a balanced ride for all sizes and shapes. Zody's pivot points are located at the hip, knee and ankle, which follow the normal movements of the body making it easier to recline. So once the tension is adjusted correctly for a user, little effort is needed to recline in the chair allowing the user to stop at any point while reclining.

Additionally, as the user reclines in the chair, he or she doesn't lose contact with the backrest which is an important feature in helping the user maintain the lumbar curvature. Zody achieves this by dropping the seat pan by 1 degree for

every 2.3 degree the user reclines the chair. This feature combined with the location of the pivot points also reduces or eliminates the occurrence of "shirt-pull," which is the pulling up on the user's shirt by the seat back as the user reclines. Zody's mechanism is designed to accommodate the 5th percentile female to the 95th percentile male.

ERGONOMIC STANDARDS/ GUIDELINES

Based on the features of the chair model, Zody meets the following ergonomic standards and guidelines:

- BIFMA G1-2002: Ergonomics Guideline for VDT (Visual Display Terminal) Furniture Used in Office Work Spaces
- BSR/HFES 100-2002: Human Factors Engineering of Computer Workstations, draft standard for trial use
- CAN/CGSB 44.232-2002: Task Chairs for Office Work with Visual Display Terminals
- CSA Z412-2000: Guideline on Office Ergonomics

Remember...

Any adjustments made to the user's chair need to be made while taking into consideration the workstation arrangement (height, knee clearance, etc.) and the task being performed. Users should adjust their chairs to a point where they feel comfortable and to a position that suits their personal needs or tasks. When that position becomes uncomfortable (as it certainly will over a long period), the chair should be readjusted. Don't be afraid to experiment. In fact, constant fine-tuning chair adjustments will yield the greatest benefits because as users adjust it, they are moving, and movement is the key to a healthy and ergonomically sound office environment.