By Jim Reiland

Select Height Ad Wor

A study of pre-industrial age jointers, coopers, cabinetmakers and shipwrights shows that work surface height varied. Woodworking specialists built their workbenches with one eye to their tasks and tools, and another to themselves. Today's office workers can adopt the same approach when their workstations adjust. »

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Adjustment Method (part 2)

Last issue (ESM April 30, 2004) I addressed the considerations involved in optimal workstation size and shape to support equipment and tasks. Here in part 2, I'll address the worksurface's adjuststability.

What kind of adjustment best suits your needs and your idea of the ideal ergonomic work environment? You might look to your work injury records for some direction. Perhaps you have information on how comfort relates to productivity. Problems you trace to awkward postures indicate the worksurface should be adjusted to each individual. Problems you relate to prolonged static postures indicate the worksurface should also enable frequent movement. In general, workers with daily activities and routines that provide frequent movement breaks may not need sit-stand workstations as much as workers chained to their desks by deadlines or headsets.

Seated Range Adjustment. According to BIFMA guidelines, an "input device support surface" needs to adjust from just over 22" to nearly 29" in order to fit the 5th% female to 95th% male seated height.

Seated range adjustable workstations are effective where office workers have regular movement options during the day. Going to meetings and taking breaks away from the desk provide the needed variety. Manual and crank adjustable desks can be effective choices here.

Manual adjustable worksurfaces include the panel-hung systems your organization may already own, as well as pin/post or pressure-fit screw adjustable worksurfaces. Lots of organizations raise fixed height, free-standing desks on bricks and boards, or even saw legs down to size. All require someone else to make the changes—usually someone from the facilities department. If your organization has budgeted for an ergonomics program that ensures worksurfaces are fitted to workers, you can stop your search right here. Measure workers for their individual seated desk height, and ask the facilities department to make necessary changes.

Crank adjustable workstations are a better choice in single or multi-user shift environments where you want workers to make the adjustment themselves. Crank handles should be easy to reach and easy to use. Top mounted handles are often available with left and right handed placement options, though papers or computer equipment can sometimes cover the crank holes or interfere with handle rotation. Side or front mounted crank handles avoid this problem, but may interfere with chair arms or file pedestals, and can present the same thigh/knee obstruction as keyboard mechanisms. Be cautious about modesty panel crank handles, usually found at knee level under the worksurface. These illustrate a truth about height adjustable workstations: if it's hard to adjust, it won't get adjusted. Out-of-sight, out-of-mind applies here, too.

As for crank speed, 4 to7 turns per inch offers a good balance between speed and effort. Generally, the lower the turns per inch, the greater the turning resistance. Some desk systems offer larger crank handles or pneumatic springs to help make adjusting a loaded worksurface easier.

Sit-Stand Range Adjustment. BIFMA guidelines also recommend that an "input device support surface" adjust up to nearly 46" to support the 95th% male. As the worksurface

needs to start around 22" to fit the 5th% seated female, that's a lot of range! Look for products that cover as much of it as possible. Where workers have few regular daily movement options, you may want to facilitate seated and standing height postures. Alternating between standing and sitting several times each day may provide enough variety to help workers stay mentally alert, reduce static muscle fatigue, and standing keeps meetings short!

Sit-to-stand products like electric, torsion, or pneumatic adjustable desks are a better choice here. The operative words are "range" and "speed." To encourage workers to use

and benefit from a sit-stand feature, the worksurface must move quickly and easily over the entire range. Some crank tables have an adjustment range that covers both seated and standing positions. That's fine when workers are expected to change between sitting and standing postures occasionally during the week, but don't expect hourly sit-to-stand postural changes.

Just a few years ago an electric workstation's top speed was about .75"/second—too slow for most people today. Then, 27" to 42" was considered a pretty good range too. Not anymore. Waiting twelve to eighteen seconds while a worksurface reaches standing height doesn't cut it, and a 14" range is barely adequate. Thankfully, recently introduced electric adjustable workstations move as quickly as 3.5"/second, from as low as 23" all the way up to 50" and beyond.

Electric offers the possibility of simple toggle-switch or up-down finger tip control. Programmable pre-set sit-stand positions for up to three workers is an option with some electric workstations. Some consider this a useful feature that allows for foolproof end-user adjustment; others question its utility with multiple workers who may wear different shoe heights from day-to-day. If you are considering models with this feature, decide who you expect to do the programming—you, facilities technicians, or the end-user.

Torsion and Pneumatic Adjustment as an Option...

These lift-assist tables are the quickest of all, moving as fast as workers sit or stand. There are no electrical power requirements to potentially overload the circuits of older furniture systems and buildings. However, lift-assist technologies have drawbacks. Torsion or pneumatic springs can be calibrated to counterbalance equipment and worksurface loads up to around 150 lbs., which limits them to smaller workstation sizes. Shorter workers may lack the mechanical advantage to lower the desk from its highest point, and people with small hands or hand injuries may find it difficult to squeeze the adjustment lever. Finally, work surface material and equipment load changes require recalibrating the spring tension for the table to work properly. This isn't particularly difficult, but it is easily overlooked because the calibration dial requires "on-your-hands-and-knees adjustment." Still, properly calibrated lift assist technologies can be a good choice where worksurface and equipment loads won't overwhelm them.

Don't forget to look above and below the adjusting worksurface too. Desk height file pedestals impede downward adjustment, and upward adjustment can run into overhead storage or panel mounted tool bars, effectively limiting the range.

Finally, don't forget training. An unadjusted workstation doesn't benefit anyone.

Like anything else, selecting adjustable workstations involves compromise. You may need to strike a balance between what you want and what you can afford, between the ideal size and shape and what can actually fit into the available space, and between what you know will work today and what you think you'll need tomorrow.

You may not be "stuck" with a choice that proves inadequate to your evolving needs. Some adjustable furniture systems are modular and upgradeable, allowing you to convert and change components as your needs change, for example, from smaller to larger worksurface sizes, or from crank to electric, etc. This allows you to buy what you can afford today and upgrade when needs change.

A glance back in time shows examples of how workers in the middle 1800s recognized that equipment, tasks, and anthropometry played a role in choosing (or making) the best worksurface size, shape, and height to optimize comfort and productivity. We're doing the same thing today. Peer into the future, too. It's difficult to have a completely accurate view, but you can be sure it will be different than it is today. Does your crystal ball tell you that the workstation you choose today will support the computer technology and work styles you imagine will be part of the office work world in five or ten years? Any choice will have, well, ups and downs. If you buy quality, and select for today's needs with an eye to the future, your workstation won't let you down. ESM

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Resource: Ergonomics Guideline For VDT Furniture Used in office Work Spaces, BIFMA International, February 2002, pp. 58 – 66.

Also: The Antique Tool Collectors Guide to Value, Ronald S. Barlow, 1999. (Gas City, IN, L-W Book Sales, Gas City), p. 233