

## Considerations When Purchasing Workstations for a Laboratory

Buying technician workstations for your laboratory is a major capital expense requiring careful consideration of a variety of business issues. The initial purchase price, long-term cost of ownership, laboratory layout and workstation design, and the support services offered by suppliers all affect the purchasing decision. Also critical for keeping the laboratory competitive is selecting workstations that can support changing laboratory environments, due to expansion and consolidation through mergers and acquisitions, and the changing trends in equipment design and usage. Careful examination of these criteria will help you develop a selection checklist appropriate to your circumstances.



vary greatly, especially when units are shipped fully assembled, which requires more space on a truck, train, or ship. Imported products from out-

side North America may be subject to additional tariffs or brokerage fees.

Though the initial purchase price includes the “landed cost” – all expenses associated with delivering the product to

the door of the laboratory – the following additional costs of ownership must be considered:

- Installation costs
- The time, cost, and complexity of adjusting individual workstations
- Costs for add-on accessories (e.g., shelves, storage, and tool and equipment holders)
- Reconfiguration costs (e.g., converting single-sided workstations to double-sided)
- Lifetime of the product (including durability and obsolescence)

### Organizational agility

Prior to making a purchasing decision, you also should consider future business plans, including expansion, reorganization, or relocation. Changes in processes and techniques also create a

### Business issues

#### Workstation cost

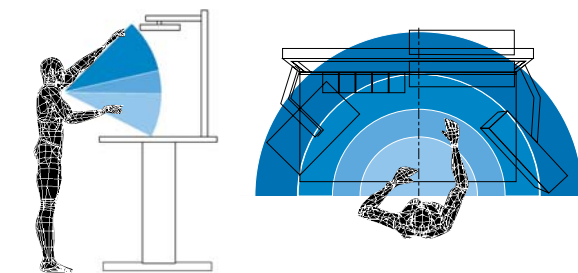
Workstation cost is a major expense of laboratory renovation. For most lab owners, the primary focus is the initial purchase price. However, a wide range of associated cost differences exists, depending on workstation design, construction, materials, aesthetics, and where the units are manufactured. Shipping costs, for example, can

need for changing workstation layout. Furnishings that are modular and easily expanded or rearranged provide the organizational agility required for reacting to changing business conditions.

On the other hand, “built-in” workstations limit flexibility and usually are costly to construct and install. If you are operating from a rented or leased facility, additional costs for repairing walls and floors may be incurred when you vacate the premises. Although installation or reconfiguration may require many additional parts, elaborate or complex assembly procedures or the need for specialty installers, the flexibility of reconfiguration will be limited and an increase in cost of ownership usually results.

### **Ergonomic concerns**

An increase in incidents of repetitive strain injuries (RSIs), which result in musculoskeletal disorders (MSDs) such as carpal tunnel syndrome, has sharpened the focus on ergonomics in the workplace. Occupational diseases often mean repeated surgery, intractable pain, inability to work, time



Vertical Reach Zones

Horizontal Reach Zones

off for the affected employee, and higher costs for the employer. Not fitting the job to the worker also can earn the laboratory a citation and possible fine under OSHA’s General Duty Clause.

Ergonomics removes the barriers to work productivity by designing equipment and organizing workspaces to fit the physical makeup of the individual employee and the tasks performed. Factors including worksurfaces at the wrong height, uncomfortable chairs, shelves and bins that are

too high or out of reach, and awkward hand tools all contribute to increased risk of MSD injury and may offer a negative impact on productivity.

An employee’s ability to rearrange workstation elements easily is essential to addressing ergonomic concerns. Workstations should offer sufficient flexibility and adjustability to ensure that technicians, regardless of physical characteristics or the tasks performed, can raise or lower workbench height, chair seat height, or change the elevation of work shelves and worksurfaces.

### **Custom services**

No two labs are alike; no two lab owners’ needs are exactly the same. Modifications to standard workstations may be required to meet your needs. The willingness and ability of a supplier to modify standard products at reasonable expense and within a reasonable timeframe can prove invaluable when outfitting a lab.

### **Support**

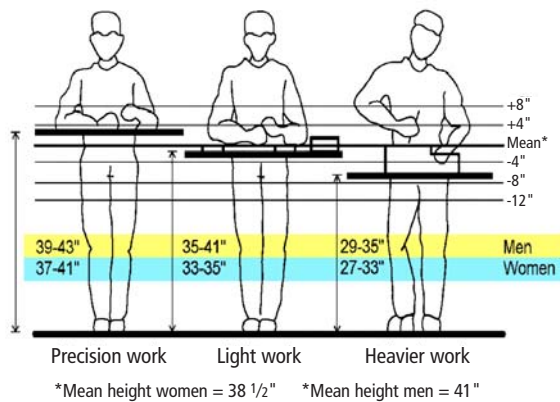
Select a reliable supplier that can confidently ensure the stability of the company’s future. Find out how long the company has been in business. For laboratories that operate from multiple locations, be sure the supplier has support branches near all locations. Ask about support services, such as laboratory layout and design, ability to customize purchased products, installation services, and training.

## **Trends in equipment use**

The equipment used to execute essential tasks in a laboratory has changed over the years, and is still changing dramatically. Examples include:

- Increased use of high-speed electric and air hand tools
- Central suction featuring variable port control
- Laser welding replacing soldering
- Vacuum-pressure induction casting
- Increased use of computers featuring scanning and CAD systems

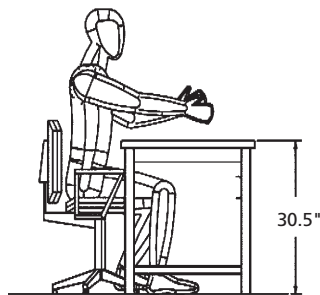
External forces could also necessitate changes in the way work is done in the laboratory, the tools used, who does the work, and when the work gets done. Though difficult to predict, some of the issues that may require workstations to be significantly reconfigured, or the lab workstation layout to be changed, include:



## Standing

*Determine optimal standing worksurface height depending on the type of work being performed.*

- Changes in production processes (including new processes, combining processes, and eliminating processes)
- Changes in tools and equipment used (including relocation of equipment, tool holders, addition of more equipment in the same space, new types of equipment, increased use of computers, and peripheral equipment)
- Technician cross-training (one technician may "float" and work from several different workstations during the course of a shift)
- Multi-shift operations (technicians with varying physical characteristics who use the same workstation in a 24-hour period)



## Sitting

*30.5" worksurface height will accommodate 99.5% of all male and 99.9% of all female workers.*

## Reconfiguration

When a laboratory undergoes a major layout redesign due to expansion, to the changing nature of the work, or to departmental reorganization, workstations must support that change, not present an obstacle. Truly modular and flexible workstations permit a variety of layout designs such as in-line, back-to-back, L, C, or X configurations by sharing interchangeable components. Care also must be taken to understand what the conversion costs are when changing workstation layouts.



Evaluate workstations based on the need for new components and the waste associated with discarding previously purchased components. In some cases, conversions may require purchasing large quantities of new components, sometimes at higher costs relative to the original purchase price. Being able to achieve flexibility without discarding parts in which you have already invested makes flexibility practical, not simply theoretical.

## Self-installation considerations

Most lab owners prefer to install workstations themselves to save the cost of professional installers. A number of factors that can contribute to the ease, cost, and safety of performing installations should be considered:

**Tools.** The number and types of tools required relate directly to the complexity of the installation process. How many tools are required for installation? Are any specialty tools needed that may be expensive, difficult to obtain, hard to use, or proprietary to the manufacturer?

**Hardware.** How much hardware is needed? The more hardware required, the more installation

time is needed. Is the hardware standardized, or of many different types and sizes? Is the measurement scale English or metric?

**Laboratory access.** Can shipped workstations, or their components, be easily transported into the facility? Will accommodations be required to widen laboratory doors or remove walls?

**Transportation equipment.**

Will there be a need for lifting or moving equipment such as dollies, hand trucks, jacks, or other mechanisms?

**Weight of components.** Are components sized for easy handling? Are components light enough to carry without risking strain or other injury?

**Working conditions.** Overall risk of injury to yourself or your employees should be considered if you perform the installation. Will installers need to work in confined spaces, bending or stretching in unusual ways?

## Workstation flexibility

Technicians must be able to adjust the workstation to better accommodate their individual physical characteristics as well as the task being performed. Typical adjustments include:

- Raising, lowering, or changing the tilt angle of workstation shelves
- Adding or removing shelves
- Changing the height or tilt angle of work-surfaces
- Changing the height or direction of lighting
- Raising or lowering the height of footrests
- Addition or relocation of accessories (including power, air, tool and equipment or document holders)
- Ability to mount or relocate tools, equipment, and storage on either side of a workstation



For workstation shelving, a variety of attachment and adjustment methods exist. Some systems require the use of a level to ensure shelves or worksurfaces are evenly positioned, a task that usually requires two people. Attachment systems, utilizing the hook and slot method, require the use of no tools, and one person can accomplish most adjustments.

It's also important that the workstation utilize vertical space to help keep the workstation footprint smaller. By maximizing use of vertical space (all space, starting from the floor and running to the uppermost limit of the workstation), the physical size of the worksurface often can be made smaller than it would be otherwise, reducing floor space requirements.

Workstations that can address different applications within the laboratory also may be an important issue. If so, avoid workstations designed around a single tasks or process. A flexible, modular design with common, interchangeable components and with provisions to accommodate a wide variety of worksurfaces, drawers, shelves, and other accessories, can be utilized in a variety of departments, including shipping/receiving, administration, and the computer room.



For more information, contact:

**Lista International Corporation**

106 Lowland Street

Holliston, MA 01746-2094 USA

Phone: (800) 722-3020

Fax: (508) 626-0353

Internet: [www.listaintl.com](http://www.listaintl.com)

E-mail: [sales@listaintl.com](mailto:sales@listaintl.com)

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