

Efficient Workstation Design

By Jim Burke

Planning the most efficient workstations for your operation means balancing floor space usage with effective materials flow



A basic workstation can include an overhead bar for hanging tools and air lines and a shelf for storage of other tools below the main work surface.

Workstations, fitting tables, production tables—whatever you call them, they are the place where everything comes together in a production framing operation. Literally, all the parts of a production frame job come together there for final assembly before being shipped to the customer. Production tables are a very important part of your production business.

One saw operator and one joiner operator generally need at least four to six other people to finish the “fitting” or assembly and prepare the finished frames for shipping. This doesn't include glass and mat cutting people. The four-to-one staffing

ratio is fairly common among companies framing finished art pieces. Along with that, the overall space required to finish a job is greater compared to the space required for cutting and joining.

Four to six people working around fitting tables requires some planning. Since not all frame jobs are the same for every company, flexibility is an important factor. Positioning workstations in the best arrangement for your needs, as well as designing a “workflow” pattern, can be challenging. It is extremely important to get it right so your production can increase in the future. Perhaps your worktables should be on wheels or glides to make moving them easier if a new arrangement is needed in the future.

Start with the workstation design. There are a number of important questions to ask yourself:

- Should it simply be a wooden table that you nail or screw together?
- What is the ideal size for your type of framing? Is a 4'x8' table surface too large or too small?
- Should you design an overhead bridge to hold air lines and pneumatic tools?
- Where are the fitting guns or tools stored when not being used?

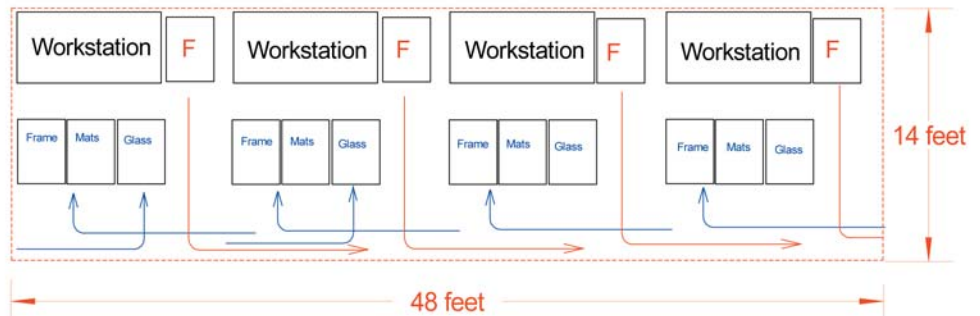
- Do you want some bracing to lean frame components against, or is a clean work space better?
- Which direction will the stacked frame components come from?
- Will the frame components arrive on pallets or rolling carts?
- When assembly is finished, where does the product get stacked, leaned, or stored, and in which direction?
- Do the final shipping corners and hangers get installed at the fitting work areas, or is there a separate workstation for that?

These are just a few of the questions to ponder before building or buying a workstation. Even if you decide to buy workstations or fitting tables from outside vendors, you'll need to spend some time deciding on what your requirements really are. Then you'll need to make a comprehensive flow chart with plenty of extra room for all the carts or hand trucks to get the product in and out of the final fitting area. Think about how you'll move pallets of materials if your production requirements are greater than 300 to 500 frames a day.

Starting with the assumption that four workstations (fitting areas) will be needed, here are some workflow possibilities.



A worktable used for adding protective corners and packaging is similar to a fitting station but without the need for an overhead rail for tools. Padding on the surface of the table helps protect finished frames as they are packaged.



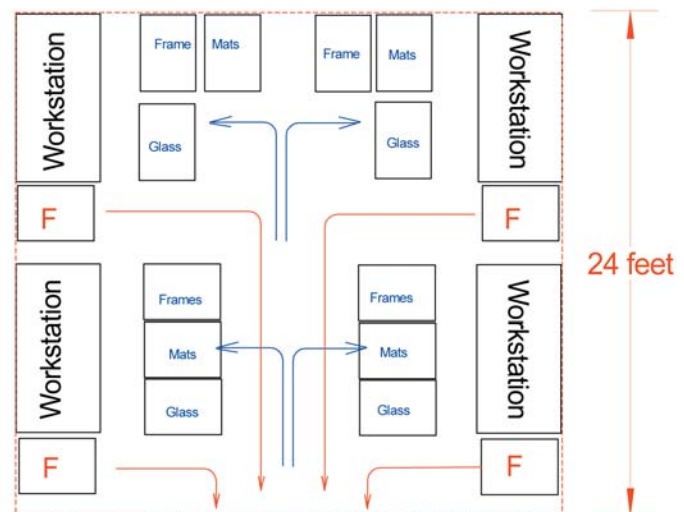
Example #1 uses 672 square feet

Example 1

This set up places all the tables lengthwise end-to-end in a single row with some space between each table (used for storing finished pieces). This works best if your available space is long and narrow. All framing components are brought to the area along the back of the workers' space. This includes frames, glass, mats (if used), and backing material with or without the art mounted. The finished goods are then retrieved as needed from between each station. Using 4'x8' tables with 4' between each table and 10' to one side of all the tables, this requires a space that is 48' long by 14' deep, or a total of 672 square feet.

Example 2

In this set-up, the tables are placed in two rows of two each. This arrangement works better if the area available is more or less square. The tables are accessible from only one side; therefore



Example #2 uses 624 square feet

the components and finished goods are delivered and retrieved from the center of the workflow (the back of the workers' space). Using the same 4'x8' tables with 4' between each table, plus 18' between the two rows, the arrangement will occupy a space of 26' feet wide by 24' deep, or a total of 624 square feet.

Example 3

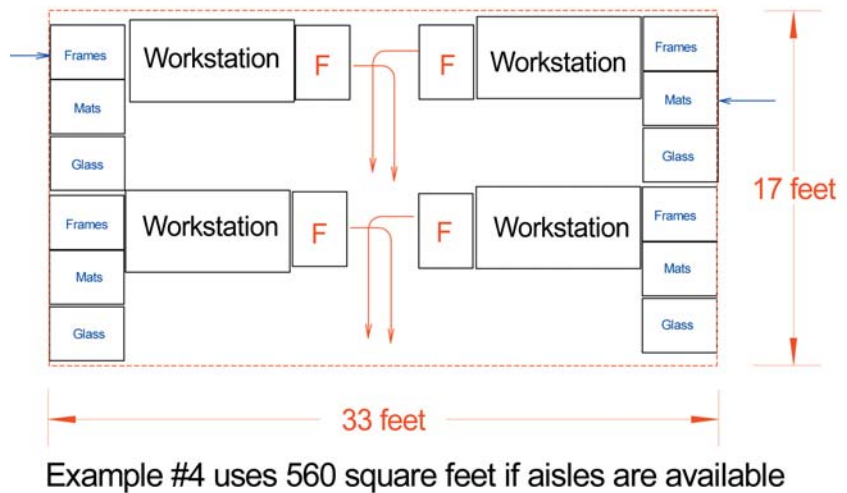
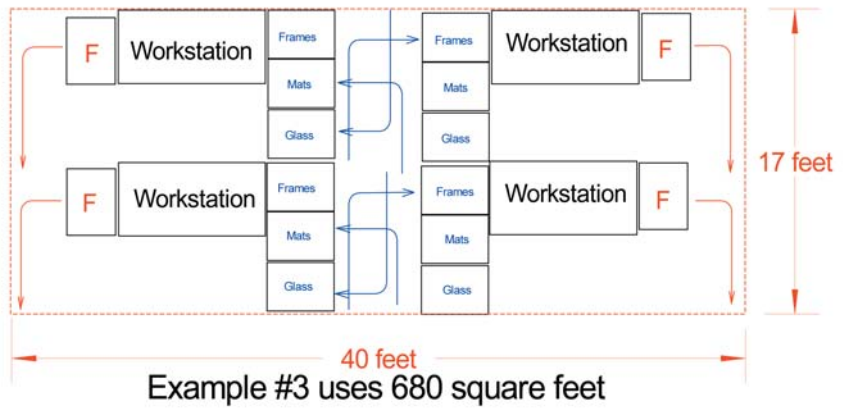
This example also sets the tables in two rows of two but with the tables turned sideways compared to Example 2. This presents a different traffic flow using the center corridor as the access route. Allowing 10' between the tables and 6' on one end of each table, the width of the space is 40'. Allowing 4' for the worker at each table, the depth will be 17', for a total of 680 square feet.

Example 4

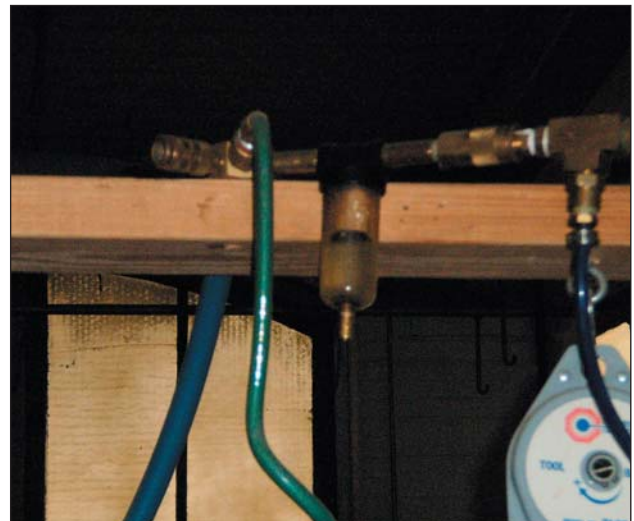
This is the same set up as Example 3 except that the table positions are reversed. This puts the access aisles for the components on the outside of the space. This takes less total space only if the aisles are available or can be combined with traffic aisles that are already there. The width is 33' and the depth is still 17', but the overall space is 560 square feet.

These are just some simple examples to get you started. There are possibly four or five different layouts that might work for you, but selecting the best one can be tricky. And while you want to achieve the most efficient use of your floor space, it is more important to set up your fitting areas with the most efficient flow of goods. The two goals may not be entirely compatible.

The actual worktables or workstations used in fitting stations can be constructed as shown in the accompanying drawings of a 4'x6' table constructed with 2"x4" studs and 3/4" MDF or plywood. To make a 4'x8' or even a 5'x12' table (using large MDF panels), simply expand the rails in each direction. If you want to include air tools and air blowers, you can construct a "bridge" or cantilever support to keep air lines above the table surface. Springs or counter balances for air tools can be hung from the bridge supports. ■



Putting water filters in air lines on an overhead bar is not a recommended practice. Traps at this height often go undrained because they are hard to get to.



Jim Burke owns Machines Etc., a sales and consulting company based in New Bedford, MA. He started in the picture framing industry with Arquati Moulding in Cleveland as general manager. For the past 25 years he has sold and serviced all types of machinery for cutting and joining frames and cutting mats. He has also sold web control machinery to paper mills, tire cord manufacturing, textiles, plastic film extrusion, and paper converting companies throughout the Midwest.