



# Safety Scene

## Steel Components & Electric Screw Guns: Minimizing Musculoskeletal Disorders

by Molly E. Butz

### Safety issues to discuss with your crew.

**A** task doesn't need to be complicated to potentially be hazardous. This is the case with cold-formed steel component manufacturing. Most folks will agree that the fabrication process is straightforward with minimal safety concerns. However, one key manufacturing tool, the electric screw gun, can be cause for concern when it comes to musculoskeletal disorders. Fortunately, encouraging good work practices, fine-tuning the design and layout of work areas, and strategically organizing schedules or even adapting the tools themselves can reduce the physical stress put on a worker's body while using a screw gun and diminish or eliminate the potential for injuries.



In an effort to eliminate the potential for MSDs, one Midwestern manufacturing company has introduced a screw "machine" to its steel component manufacturing area. This proprietary mechanism eliminates the need to hold the screw gun and improves safety by reducing operator fatigue.

Unlike circular saws or pneumatic nail guns, screw guns are not inherently dangerous. Nonetheless, repetitive use, as well as awkward angles and the need for excessive force can be the foundation for some sneaky injuries: musculoskeletal disorders (MSDs). MSDs can present themselves in a number of ways, from numbness and tingling to aching and stiffness—think Carpel Tunnel Syndrome. If ignored or simply overlooked, MSDs can lead to days away from work, doctor's visits and expensive workers' compensation claims.

One way to avoid these possible complications is by teaching and encouraging good work practices. A few moments spent stretching at the beginning of each shift can help loosen up the various muscle

groups. Additionally, good posture and body positioning throughout the manufacturing process is critical (download a printable poster from **Support Docs** at [www.sbcmag.info](http://www.sbcmag.info)). This includes:

- Keeping the distance between the worker and the table as short as possible
- Keeping the body and shoulders square to the work table
- Keeping arms and screw gun centered inside the plane of the body
- Keeping the feet shoulder width apart

Figure 1 shows good body positioning where the worker is not bent over, as close to the table as possible and keeping his body and shoulders square to the table.

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### at a glance

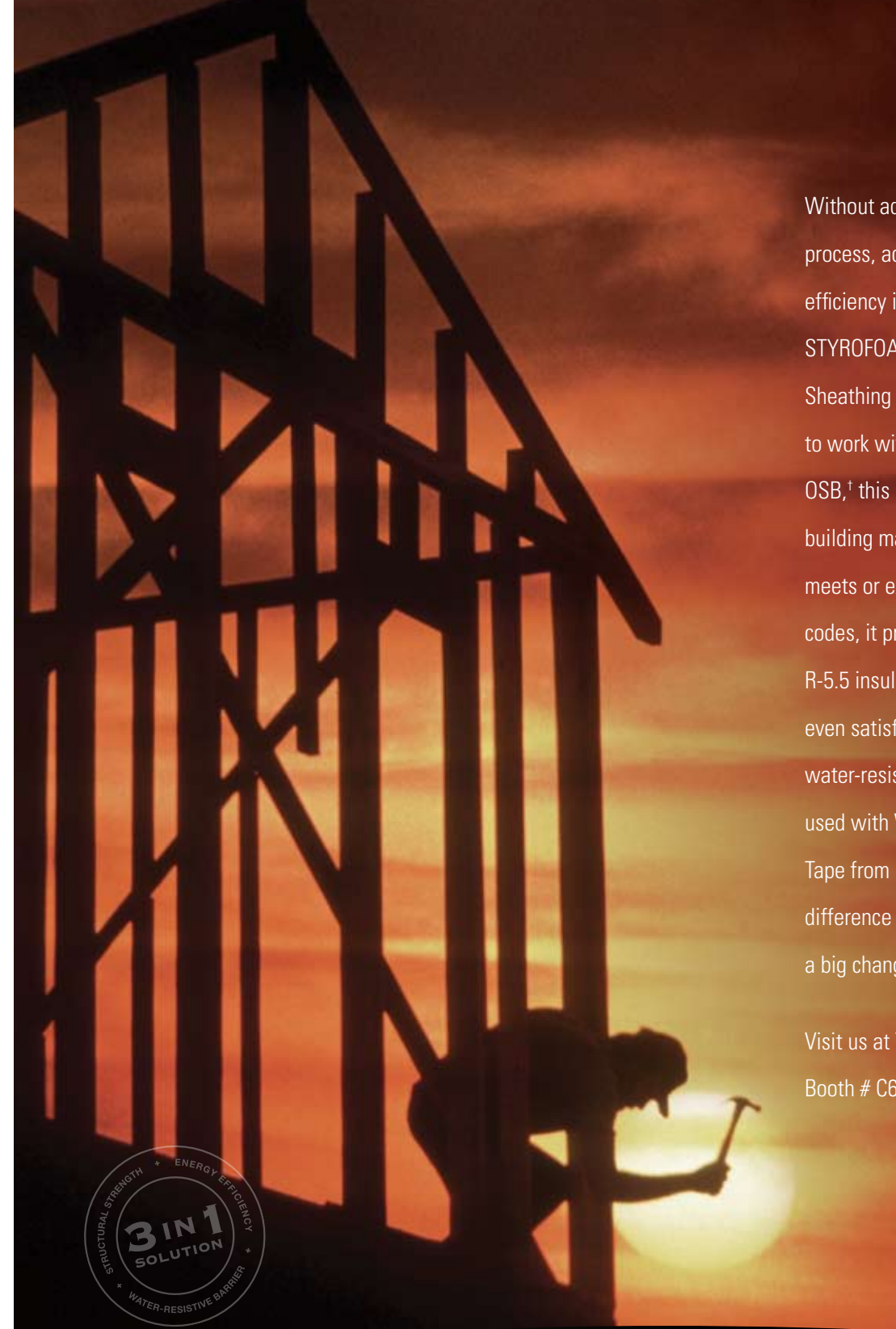
- ❑ Screw guns are not inherently dangerous, but if not used properly, they can cause musculoskeletal injuries.
- ❑ Weight, balance, handle shape and diameter, trigger position and size are factors that contribute to their comfort and efficiency.
- ❑ One Midwestern manufacturing company uses a screw "machine" in its steel component manufacturing area.



Figure 1.



Figure 2.



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Figure 2 shows the worker in an awkward bend at the waist, putting unnecessary stress on his back, shoulders and wrist.

The design and layout of the assembly areas can also help minimize the stresses and strains on a worker's body. "The system that we use is a rail table," offers Chris Pogreba of Precision Steel Truss. These walk-through style tables, Pogreba explains, have strategically placed supports that allow employees to easily approach the pieces of steel and screw the joints together. Open table formats also reduce hazards created by workers crawling under or over the tables or components. Furthermore, adjusting the height of the work table can make an impact as well. Tables that are too high require the worker to apply any necessary force with their arms and wrists rather than from the shoulder; tables that are too low lead to awkward bending and potentially low back strain. "The tables [we use are] waist high," says Pogreba. "That way you don't have to bend over at all."

The screw guns themselves also play a role in warding off MSDs. Several factors contribute to the comfort and efficiency of most hand tools, including: weight; balance; handle shape and diameter; trigger position and size; as well as the general comfort and feel. Heavy, out-of-balance screw guns can put unnecessary pressure on the wrist, elbow, shoulder and back.

"The lighter the better," Pogreba adds. Likewise, poor overall shape of the handle and positioning of the trigger can cause cramping in the hand and fingers. To ensure a good fit, much like the selection process for personal protective equipment, ask your employees to participate in tool selection. This way they'll have an added sense of ownership for their tools and they'll be more likely to have a screw gun that's comfortable and easy for them to use.

The final strategy in limiting the potential for MSDs is through scheduling. The principles are straightforward: keep each employee's tasks varied and allow a reasonable amount of time for breaks from the manufacturing process. This can be accomplished by organizing the projects in a logical order to keep production and people moving. In addition, implementing cross-training allows employees to perform any of several jobs efficiently which allows for more flexibility in scheduling.

Electric screw guns are an integral part of the steel component manufacturing process. Spending just a few extra dollars on a screw gun with a lighter, ergonomic grip or taking 15 minutes out of the day for a tool box talk on body positioning can keep MSDs from creeping up on you and your employees! Safety first! **SBC**

*Thanks to Cascade Mfg Co for submitting the photos for this article. To pose a question for this column, contact Molly at [mbutz@qualtim.com](mailto:mbutz@qualtim.com) or 608/310-6741.*



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