



Sturtevant Richmond: *Torque Tool Tips & Techniques Series*

# Torque Tool Tips & Techniques



Clicker-Type  
Torque Wrenches

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# Torque Tools

Want to get the most out of your torque tools? Buying high quality tools is the first step. Once you have the tools, how you treat them and how they are used is even more important in getting the accuracy and reliability that you want.

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The torque tool technique tips in this document apply to every torque tool manufacturer. This is about proper usage techniques for the different types of torque tools. The right tool used the wrong way doesn't help improve quality.

Over the past 70+ years we have spent a great deal of time with customers watching them work in their assembly processes. We have seen the same trends and challenges around the world.

The challenge of training newly hired workers can be daunting. We know that supervisors and managers are pulled in a dozen different directions at any given moment. We also know the other challenge is ensuring that the experienced workers continue to use the proper techniques.

We created this tip sheet to help supervisors and managers ensure their staff is trained properly and that they get the reminders that are needed to ensure threaded fasteners in an assembly are torqued to specification.

## Clicker-Type Torque Wrenches

# Tool Tips



## Can you tell which wrench is in spec?

Torque tools can go out of calibration any time. They can be dropped, pulled over capacity, or experience other treatment that causes them to go out of spec. Using an out of spec torque tool means that your workers are repeating the very errors that you set out to prevent.

Even worse, you cannot tell if a torque tool is in or out of spec just by looking at it.

It has to be verified. You probably already have a daily or shift specific torque tool verification program in place. If not, you may want to consider one because it is a sound quality strategy that pays dividends by reducing torque related rework and warranty costs.

Each torque tool should have a label noting the last day of calibration, the due date for the next calibration, the calibration value, and the person who calibrated the tool. You may want to include the tool serial number on there as well.

If you are working with assembly cells we recommend that you label each tool with a station number and a designator for the tasks to which the tool is assigned.

Armed with the specific tool information and

a daily verification program you can gain valuable insights into your processes, your workers, and the tools that they use. You can also establish the total cost of ownership for each tool. Sometimes low price tools turn out to be more expensive because they break frequently or require calibration more often.

Or, you may even find out that it is not the tool, but the person using the tool. Then you can determine if it is a training issue or a performance issue. If you are verifying a tool on a daily basis, make sure it is verified with the same head length that is used during the day. We see many places where they verify the tool with one head length and then as soon as the tool is out in the assembly area, someone puts a different length head on it. That changes the output and unless there is re-calculation to compensate for the different centerline length, the readings will be inaccurate.

Are your torque tools are designed to provide accuracy at indicated value or full scale value? Why is this important? With an indicated value torque tool, the same level of accuracy applies up and down the scale. If the tool has an accuracy of  $\pm 2\%$ , your readings will be  $\pm 2\%$  up and down the scale.



If the tool has been designed to provide full-scale readings, and the tool is rated at  $\pm 2\%$  your reading at the top of the scale will be  $\pm 2\%$ . However, as you drop down the scale, the level of accuracy diminishes. At half of the tools rated capacity, the accuracy is now down to  $\pm 4\%$  instead of the  $\pm 2\%$  it was at the top of the scale. Our goal is to provide you with a fast and easy to use training tool that helps you remind the people out on the assembly line about proper technique when using a torque tool. We also want to provide tips to help you get the most from the torque tools you currently have.

In this document you will find examples of clicker type torque being used the right way and the wrong way. Photos are included so there can be no mistake in how tools are used.

Posting the photos in an easily

# Tool Tips: Click Wrenches

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visible place can help keep the proper techniques in the forefront of the workers mind.

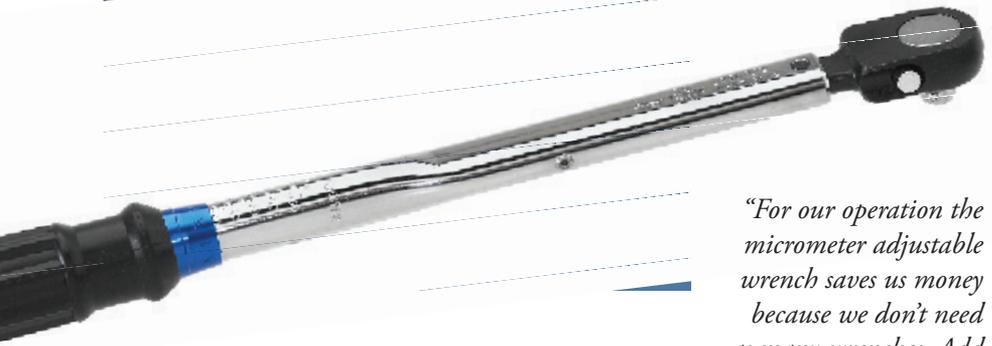
Quick reminders in team meetings are also a good way to review techniques. The focus should be on the HOW and the WHY of these techniques.

This guide covers Clicker type torque wrenches. The same techniques apply for both preset and adjustable torque wrenches.

- If the fasteners your workers tighten all have the same torque value, then the preset torque wrench is the appropriate choice. The preset wrench retains the torque value and is hard to change.
- An adjustable torque wrench, by design, is easy to change the output. As a result, we have seen too many instances of one torque value being applied by adjustable torque wrenches with an incorrect torque value.



*Preset clicker type wrenches are a real work horse in high production environments where one torque value is needed.*



*“For our operation the micrometer adjustable wrench saves us money because we don’t need as many wrenches. Add interchangeable heads and savings increase.”*  
*J. T.—VP Operations  
Materials Handling  
Manufacturer*

- The adjustable torque wrench makes it quick and easy to change the output of the wrench. In a single torque value assembly, adjustable wrenches can easily eat through your profits, as we explain next.

Preset torque wrenches cost less to buy and less to own. With a preset wrench you are paying for one calibration. With adjustable wrenches, you pay for three (3) points of calibration along the scale.

- ASME standards say always use a click wrench within 20% to 100% of the range. The best performance for accuracy and long life is the middle 50% range.
- Some wrenches are accurate from 20% to 100% of the range. Always check the calibration certificate on wrenches. Some companies mark the wrenches below 20% of the capacity, and then provide a certificate starting at 20%.
- If a wrench is not certified, or not certified for a portion of the tool’s rated capacity, there can be no guarantee of accuracy because the wrench has not been tested, validated, and calibrated in those areas.

- Make sure the wrenches are exercised prior to starting the shift and/or prior to verification. Inactive wrenches return to the set position, which requires exercise to return it to a ready for action condition.
- Depending on the tool design, how long a wrench sits can dramatically impact the output on the first few pulls on that wrench.
- Typically three (3) or four (4) pulls will usually get the wrench ready to work.
- If you are using an adjustable click wrench, ASME and ISO standards call for exercising the wrench three (3) times, at or above 40% of the rated value. This provides accurate readings from the first pull in the assembly.
- If you are using a preset wrench, there is no need to change the setting. Just work with the setting that is used out in the assembly cell.
- Consistently using a click wrench at the top of the rated range will create reliability, durability, and accuracy issues. Again it depends on the manufacturer and how the wrench is designed and what materials are used. Even NASCAR drivers do not drive their car at full speed all the time.



*Bearings on all sides of the flattened case provide guidance and support for the mechanism. You do not get that kind of support with round case wrenches. This is why flattened case wrenches last longer and are more accurate.*



Click wrenches with a round case are typically not as durable as those with a flattened case. With a round case, the cam-over mechanism has less support. Less support means more unwanted movement within the cam-over mechanism. That unwanted movement causes breakage and shorter life cycle.

*Do you know what is inside the wrenches you buy? You should.*



*Fast moving production needs accurate AND durable torque tools.*

# Click Wrench Technique Tips:

Keeping the torque wrench in good condition is the first step to accurate readings. Now comes the application aspect.

You know that click wrenches operate on a time value rather than an actual torque value. Even when the tool is used properly, we see workers applying pressure for too long once the wrench has clicked. This is one area that can be hard for a worker to remember especially when they are tired.



This is the correct grip. The hand is aligned with the hand grip.



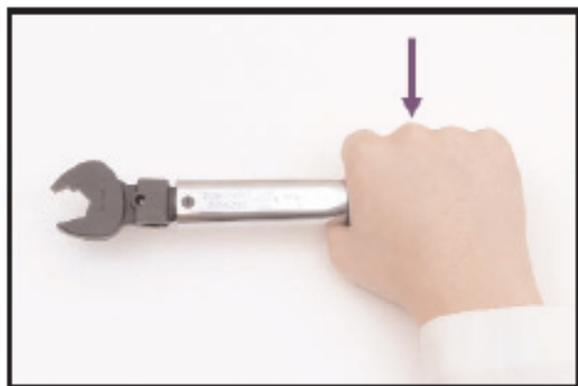
Do NOT "short grip" the wrench.



Do NOT jerk the w



The center of the  
center of the vinyl



Pull the wrench steadily until it "clicks" or  
cams over slightly. When this occurs, the  
correct torque has been reached. Do not  
pull past the click.



e



Do NOT "long grip" the  
wrench.



Do NOT extend your thumb  
for leverage.



wrench.



Do NOT use any form of "cheater bar".



Need help with training? Sturtevant Richmond has provided hands on, user driven torque seminars. We have done them the customer site. We bring in torque testers so the attendees actually see the impact of the items we have discussed in this brochure.

To learn more about our Torque Seminar contact our customer service team at [customerservice@sr torque.com](mailto:customerservice@sr torque.com).

For more information about torque wrenches, go to [www.srtorque.com](http://www.srtorque.com).



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