WEEKLY BLOG

The Importance of "Sweeping the Gauge"

Here at Gauge Training Inc., we aim to keep you informed on all the most up to date information on thread measurement, proper inspection techniques and correct gauging practices. In this weekly blog, we will focus on one specific aspect within the above mentioned gauging categories. The purpose of this blog is to educate the industry on proper gauging and inspection techniques which will in turn increase productivity, decrease waste and improve the overall quality in the industry. Each week we will choose a new subject and detail to focus on, define it, and finally provide you with details on how and why it is so important.

This week's gauging category will be proper gauging practices with a focus on properly sweeping the gauge to obtain the correct measurement. While this may seem like a simple concept, it is often overlooked and can cause improper measurements.

When we say "Sweeping the Gauge", it means:

- **The act of using one end of the gauge as a pivot, while sweeping the other end of the gauge when setting on a standard or obtaining a measurement on your part. The goal is to let the gauge find the apex point and tell you where your reading is.**

When measuring each individual thread element, you must first adjust/size the gauge, then zero the gauge and finally inspect the part. In order to properly zero your gauge and inspect the part, you must let the gauge direct you where to look by watching the indicator needle.

What is this needle doing and why is it so important to properly sweep the gauge?

The reason we sweep the gauge when on the standard or on the part is because we are looking for the apex dimension. The apex dimension being where the accessories of the gauge (contact points, shoes, thread rolls, etc.) form a straight line between each other. The only way to find this dimension is to sweep the gauge past the apex dimension in both directions looking for the indicator needle to pause and change directions. The gauge is designed for the needle to move very smoothly in either direction when sweeping. If the needle is not moving smoothly when sweeping, then one or more of your accessories is not positioned correctly. The moment you stop sweeping or hold the gauge where you think the apex dimension is, you are now guessing. This industry is driven by precise measurements, so guessing is not an option.

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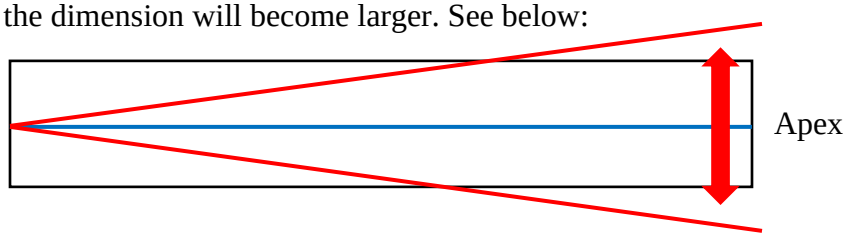
What is the gauge looking for when sweeping? Where's the apex dimension?

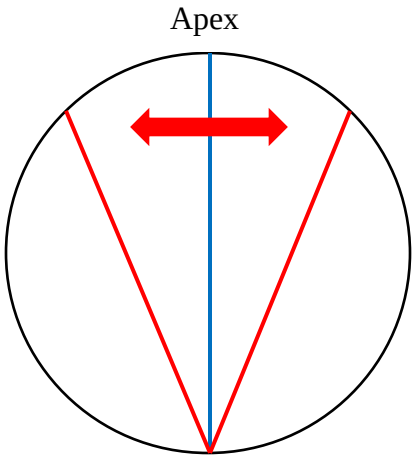
Above we mentioned that sweeping the gauge is the act of finding the apex dimension, but let's break that down more. The apex dimension is different when setting on a flat standard as opposed to measuring on a round part.

When you are setting your gauge on a setting standard, flat surface, then you are looking for the smallest dimension when sweeping the gauge. Since you are setting on a straight surface, the shortest distance between those two points is your apex. As you sweep one end of the gauge to the left/right, the dimension will become larger. See below:



As you can see by the above diagram, the dimension becomes larger as you sweep past the apex point in both directions when on a FLAT standard.

When you are measuring on a ROUND surface, it is the opposite. The apex dimension over a round surface is the largest dimension instead of the smallest dimension. As you sweep one end of the gauge to the left/right around a round surface, the dimensions will become smaller. See below:



As you can see by the above diagram, the dimensions become smaller as you sweep past the apex point in both directions when on a ROUND surface. While the apex dimension definition alters slightly between measuring on flat and round surfaces, the goal of the gauge is the same. The gauge itself doesn't care whether you are looking for the largest measurement or shortest measurement, it is designed to show you where the apex point is regardless.

How do I properly sweep the gauge to ensure I get a good dimension?

No matter which individual thread element you are measuring, it is vitally important how/where you add pressure when sweeping the gauge. All the individual thread element gauges are designed very well to measure specific aspects of a thread, but if not used properly, an incorrect measurement will be shown.

When sweeping a gauge to obtain a measurement, you must apply a slight bit of pressure in a certain direction to ensure it sweeps smoothly. The goal is to apply "sufficient" pressure on the accessories (contact points, shoes, thread rolls, etc.) of the gauge to ensure they are seated correctly inside/outside of the thread. If an accessory is not positioned correctly in the thread, then it will not give you a correct measurement. The pressure being applied should always be towards the part, but not enough to skew the measurement; only enough to ensure the accessories are positioned correctly in/on the threads. When applying this pressure to the gauges, always operate on the side of caution as it doesn't take much pressure to make these gauges work smoothly.

The biggest issue when sweeping a gauge is moving one end slight up/down/left/right which causes one of the accessories to come out of or off of the threads. When sweeping the gauge, always think about a pendulum motion (like a grandfather clock). Meaning that once you begin sweeping the gauge, you want to keep consistent pressure and speed when sweeping. This will ensure smooth needle movement and prevent you from constantly coming off or out of the threads. You want to sweep a little slower as you reach the apex point to ensure you read the needle correctly, but it should look like the needle is "bouncing" off one number consistently when you have a good sweeping motion. Where the needle changes direction is where you turn the indicator to read zero on the standard or you receive you measurement on the part.

In Conclusion:

Sweeping is a vital part of the inspection process. When sweeping the gauge on any type of surface, the gauge is looking for the apex dimension to be set at. In order to find the proper apex to zero and/or measure your part, you **MUST** sweep all the way through the apex dimension. The only way to find the apex dimension is to sweep the gauge until you find where the indicator needle changes direction. This is the only way the gauge can tell you the correct location. No matter how familiar you are with these gauges, no one person's touch can come close to replicating the accuracy of a calibrated gauge. So use the gauge properly and let the gauge do all the work for you. Sweep Away!!

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