## Cat # 30 (Inch / Standard) and Cat # 31 (Metric)
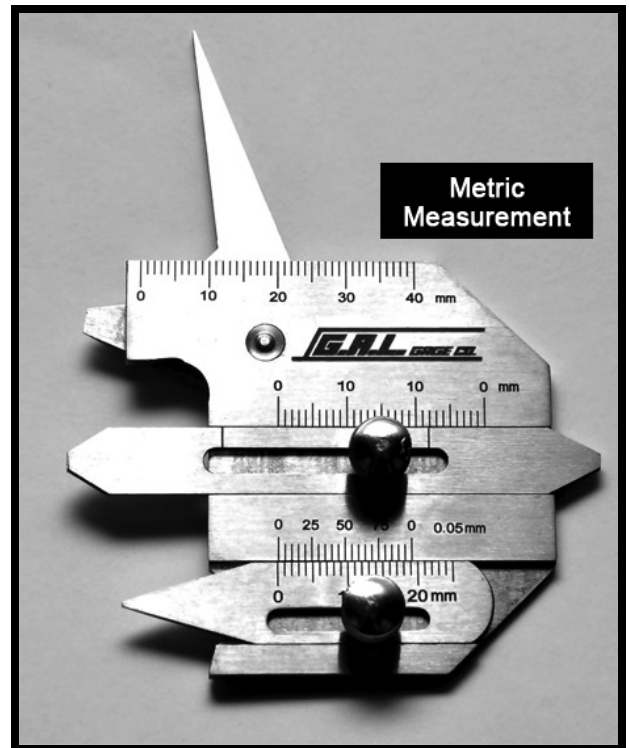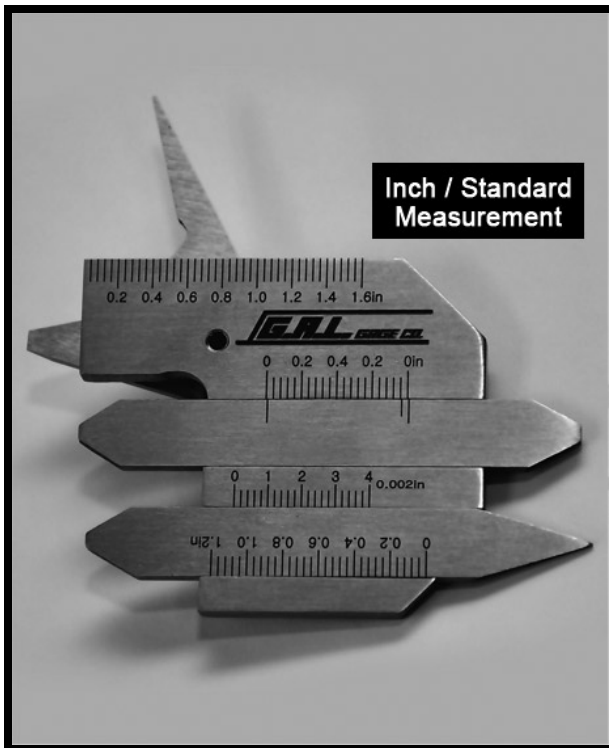## Product Information and Usage Guide
(Import) (Metric is used in demonstrations)



Inch / Standard Measurement



Metric Measurement

## Components of Gauge and Overview:

The CAT # 30 (inch / standard) and CAT # 31 (metric) gauges are composed of stainless steel and can be used to obtain a wide range of measurements. These gauges consist of five major components from which measurements can be taken. They are the rotating fan, working edge, main ruler, side slide with point and center slide. Some types of measurements that can be taken include but our not limited to; butt weld height, undercut, angle of preparation or bevel, gap size, leg of fillet weld throat of fillet weld and the face of the butt weld.
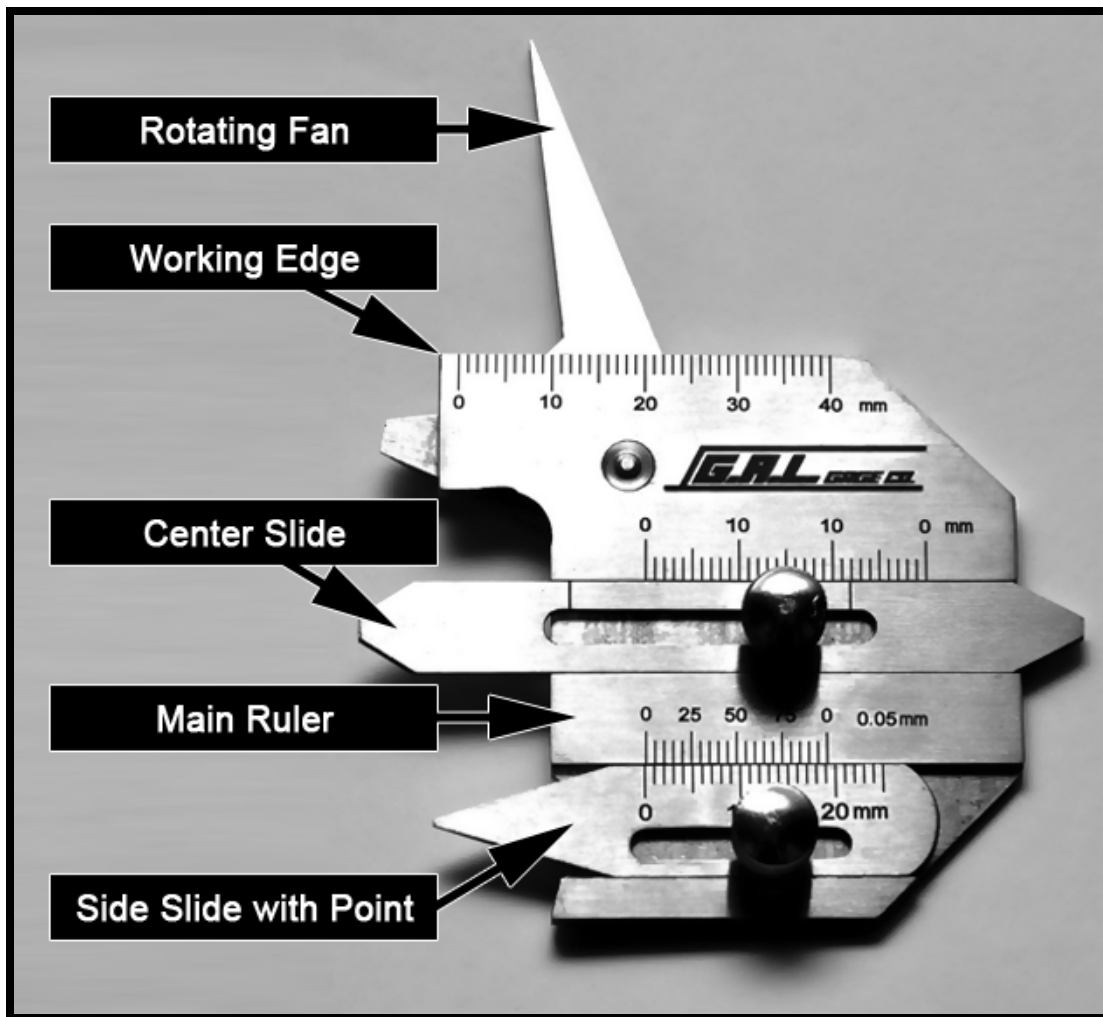
# Components of Gauge and Tolerances



| Measuring Items | | Range | Tolerance for Indicating Value |
|---|---|---|---|
| Height | Butt Weld Measurement | 0.4 inch / 15mm | ± .008 in / 0.2 mm |
| | Height of Fillet Weld | ~ 0 - 1/2 in | ± .008 in / 0.2 mm |
| | | 0-15 mm | ± .008 in / 0.2 mm |
| Width | | ~ 0 - 2 in / 0-60 mm | ± .012 in / 0.3 mm |
| Depth of Weld Undercut | | ~ 0 - 1/4 in / 0-5 mm | ± .004 in / 0.1 mm |
| Angle of Preparation (Bevel) | | 80° - 160° | ± 30° |
| Gap Size | | 1/32 - 3/16th inch 0.5 - 5 mm | ± .004 in / 0.1 mm |

# Application and Methods

## Measuring the Height of the Butt Weld (Figure 1)

To measure the height of a butt weld, first align the side slide with point and the main ruler to zero.  Tighten the screw so that the side slide with point cannot move.  Straddle the weld that you wish to measure in-between the side slide with point and the working edge of the gauge.  The side slide with point and the working edge of the gauge should create a level surface which will enable an accurate measurement to be taken.  Loosen the screw of the center slide and slide the tip down to the top of the butt weld.  Tighten the screw of the center slide and take measurement.
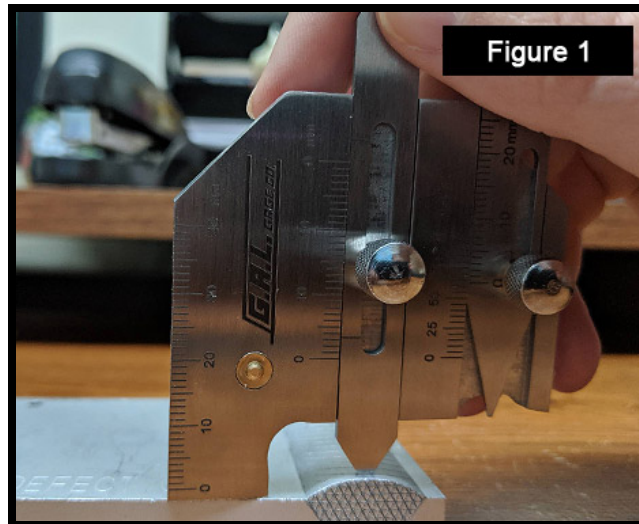


Figure 1

## Measuring the Leg of the Fillet Weld (Figure 2)

To measure the leg of a fillet set the working edge of the gauge on top of the weld.  Loosen the screw of the center slide and move until the bottom tip of the center slide touches the base of where the weld lies.  Tighten the screw of the center slide.  The measurement on the center slide will be the measurement for the leg of a fillet.
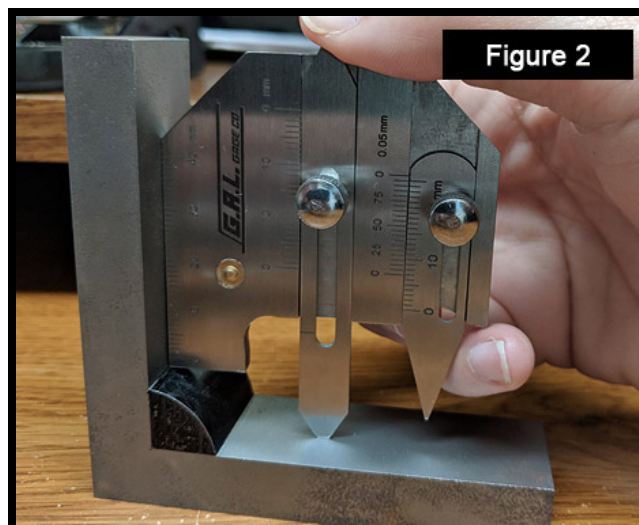


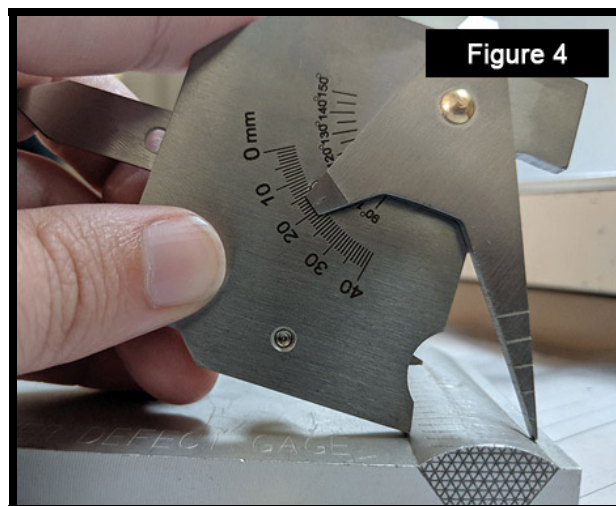Figure 2

# Application and Methods

## Measuring the throat of a fillet weld (Figure 3)

To measure the throat of a fillet weld, first set the side slide with point and the main ruler to zero, this will ensure that you are able to use the slanted edges at the top without interference. Position the gauge so that the one slanted edge touches the base of where the weld is located and the other slanted edge touches just above the where the weld is. This will allow the center slide access to the top of the fillet weld. Move the center point down so that it touches the top of the weld and tighten the screw. Read the indicating measurement from the center slide.



Figure 3

## Measuring the face of a butt weld (Figure 4)

To measure the face of the butt weld, first make sure that the side slide with point is raised so that the point is out of the way and will not interfere with measuring. Also, you will be using the back of the gauge for this measurement. On the side, with the side slide with point, set the bottom edge of the gauge on one side of the weld. Then lower the rotating fan until the point touches the other side of the weld. The measurement is indicated on back of the gauge on the chart provided.
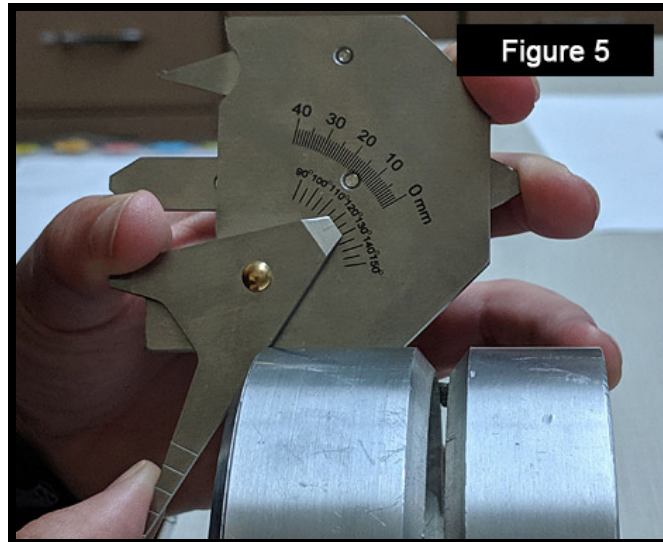


Figure 4
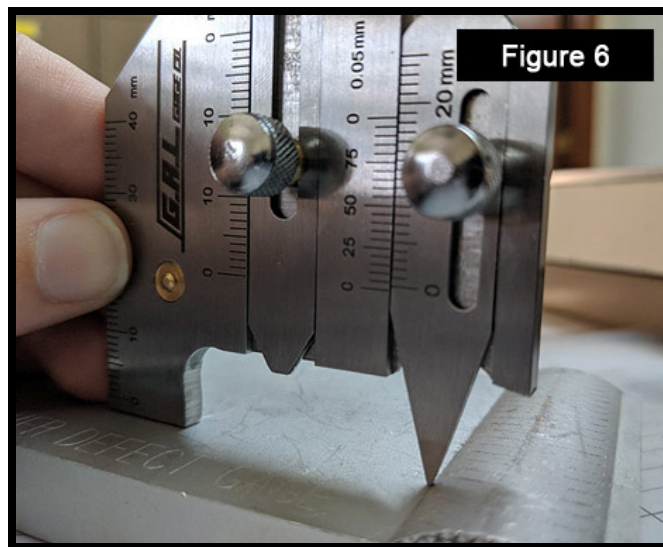
# Application and Methods

## Measuring the angle of preparation (bevel) (Figure 5)

To measure the angle of preparation (bevel), use the back side of the gauge.  Set the gauge on top of the pipe or place where measurement is needed.  The center slide should be parallel to the pipe or where measurement is needed.  Lower the rotating fan until the side touches the angle that needs to be measured. Read measurement from chart provided.



Figure 5

## Measuring the undercut of a weld (Figure 6)

To measure the depth of the undercut, set the center slide to zero and tighten the screw.  Position the side slide with point over the undercut.  Lower the side slide with point into the undercut and tighten the screw.  The measurement for the depth of the undercut can be read off the scale that is on the side slide with ruler.



Figure 6

# Application and Methods

## Measuring the Fit-Up Gap (Figure 7) and (Figure 8)

To measure the fit-up gap, turn the gauge to the back side.  Lower the rotating fan so that the point of the gauge is free from contact with the main gauge itself.  The range of measurement allowed on the point is 0.5mm to 5mm (1/32 to 3/16th inch).

Lower the point in-between the gap.  Continue to lower until both sides touch the top of the gap.  Read measurement from the lines on the rotating fan.
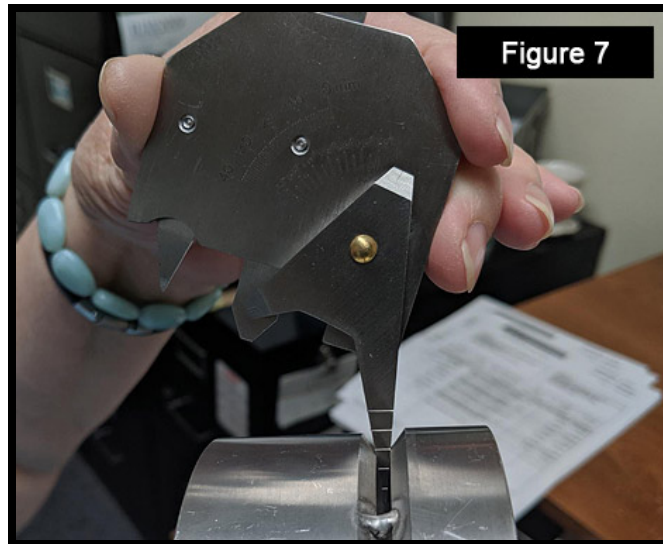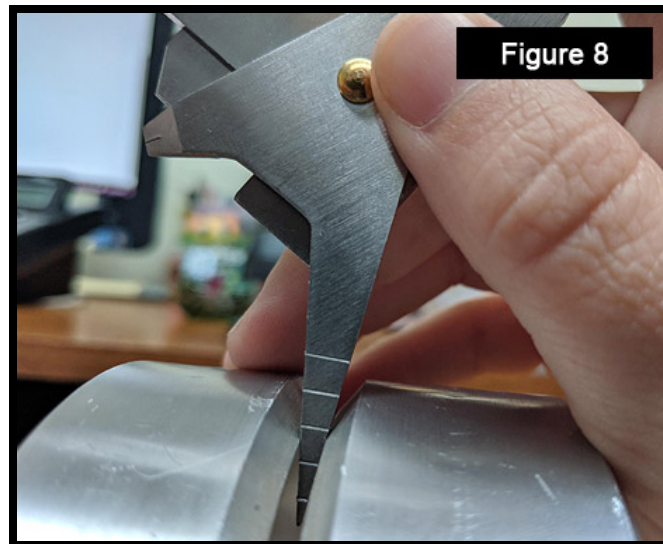

Figure 7


Figure 8