

Instructions For The
PRECISION EDGE GAUGE



***Precisely Measures Grip Span Dimensions
and Provides a Template for Tracing New Layouts***

- Measures grip dimensions quickly and accurately using hole edges;
- Copies an existing grip directly into a new layout;
- Set the Gauge from drill sheet records to perform a new layout;
- Quickly compares multiple layouts for accuracy and consistency;

Accurate, Reproducible, Fast, Intuitive

***Inspired, Developed, Manufactured, and Represented by
Leading Innovators in the Pro-Shop Industry...***



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CONGRATULATIONS!

Congratulations on your purchase of the Precision Edge Gauge! This device is only one in a series of tools developed in the collaboration of two innovative companies: Jayhawk Bowling Supply and Precision Analytical Instruments, Inc. Together, they bring manufacturing expertise, technical ability, and an intimate knowledge of bowling to their product development, yielding state-of-the-art devices that are precisely suited to the needs of the community.

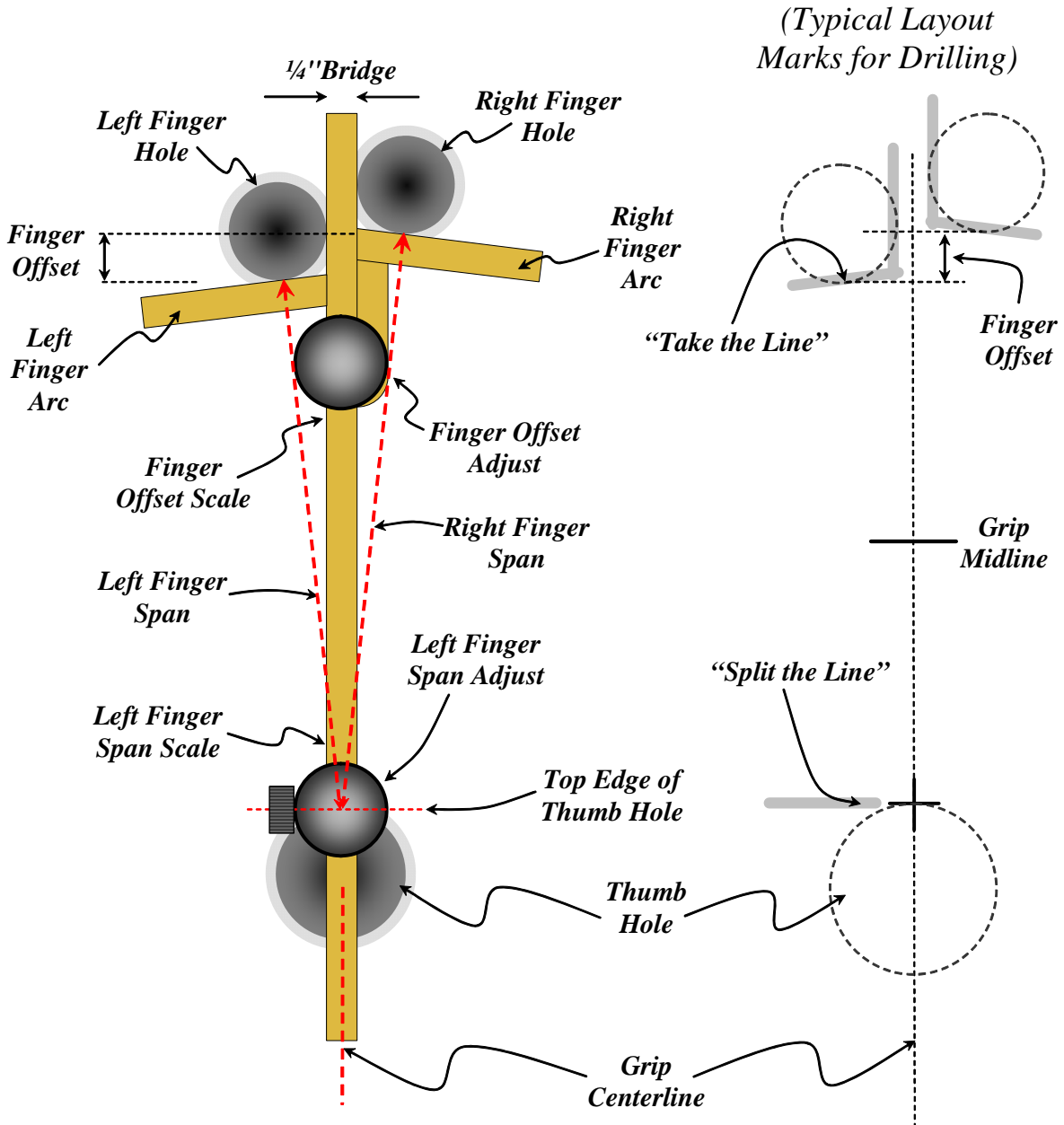
The Precision Edge Gauge was designed to make grip span measurements and layouts easier, faster, more accurate, and more consistent. The Gauge is intuitive to use, as it complements the most common edge-to-edge layout and drilling strategies, including those taught in modern pro-shop training courses. As with our other layout tools, once you start using the Precision Edge Gauge you won't want to operate without one!

What can you do with the Gauge?

- Measure the grip dimensions of an existing layout quickly and accurately;
Align the Gauge over an existing grip and adjust the Left Finger Span and Finger Offset, aligning the Gauge to each finger hole. Read the scales on the Gauge, and record the dimensions on your drill sheet.
- Copy the grip dimensions from an existing grip directly into a new layout;
After aligning the Gauge on an existing grip, remove the Gauge and place it over the new layout (the Gauge retains its settings). Trace the alignment arms to directly transfer the dimensions. Record the measured values on a drill sheet for future use.
- Set Gauge dimensions from drill-sheet records to perform new layouts;
First, set the Gauge according to existing drill sheet records. Then, place the Gauge over the new layout and trace the alignment arms.
- Quickly compare multiple layouts to verify accuracy and consistency of grip dimensions;
Move the Gauge from ball to ball (grip to grip) to quickly verify the accuracy and consistency of several layouts. A fast way to confirm a layout before drilling.
- Customize the Gauge to match your personal measuring style and equipment;
First, align the Gauge on an existing grip layout. Then, measure the same layout with your own equipment. Adjust the left finger span indicator on the Edge Gauge to match the span you measured.

PRECISION EDGE GAUGE SCHEMATIC (TOP VIEW)

The Gauge complements layout and drilling strategies based upon hole edge-to-edge distances. In the illustration below, the gauge is configured such that the *finger-hole lines should be drilled* (“take the line”), and the *thumb-hole line should be split* (“split the line”). Because a variety of measurement and drilling techniques are used in practice (some ball-drillers prefer to ‘split the line’ and some ‘leave the line’), the Gauge can be customized by adjusting the Left Finger Span pointer (see ‘Customizing the Gauge’ below).



CUSTOMIZING THE GAUGE

The Precision Edge Gauge is calibrated at the factory assuming layout measurements are made 'edge-to-edge.' When the Gauge is adjusted and traced in this mode, the person drilling the grip holes should align the edge of the drill bit to the center of the thumb hole dimple ('split the line') and to the near side of the finger line ('take the line').

However, the Gauge is adjustable to allow for a large variety of measuring tools and drilling techniques. For example, various rulers employ different alignment mechanisms, and some ball drillers prefer to 'split-the-line' while others prefer to 'leave the line'.

To adjust the Gauge to match your particular measuring style and equipment, complete the following operations:

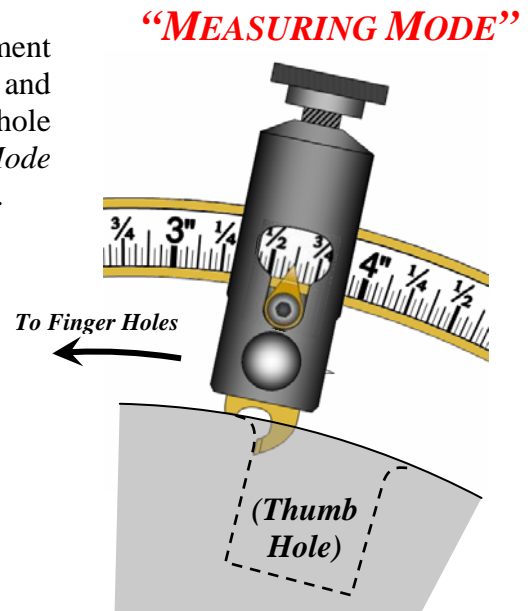
- 1) Locate a previously drilled ball with finger and thumb holes that have minimal beveling and a ¼" finger bridge (no beveling is best for calibration purposes). Measure the existing layout in your usual fashion with your existing tools, including the bridge and left finger span;
- 2) Place the Gauge in 'Measurement Mode' (see below) and adjust the thumb screw on the Left Finger Span Adjust so it can slide, but is not sloppy;
- 3) Place the Edge Gauge on the existing the layout. While aligning the gauge, keep the Thumb Hole Alignment Fixture pressed against the top edge of the thumb hole and the Gauge's Bridge centered over the finger hole bridge;
- 4) Adjust the Left Finger Span so that if the Left Finger Arc were traced with your usual marking implement (e.g. grease pencil), the resulting line would mark the hole in the way you would typically mark it for drilling. When you are satisfied that you have the Left Finger Span adjusted properly, carefully tighten the Left Finger Span thumb screw. (Note that you will always be 'taking the line' closest to a ¼" bridge);
- 5) Using the wrench provided, loosen the screw holding the Left Finger Span Pointer and adjust the Pointer so it reads the same value you measured with your own tools. Remember to re-tighten the screw after adjusting the Pointer;
- 6) **CHECK:** To verify that your Gauge is calibrated to your technique, set the Gauge according to a previous layout, trace the layout onto a disposable ball using the Gauge, and then drill the layout according to your usual practice. Measure the resulting spans. If you do a careful job and the Gauge is calibrated properly, you should be able to reproduce the grip dimensions within 1/64" of an inch.
- 7) **ALTERNATIVE STRATEGY:** Set the Gauge to some typical dimensions, trace the Gauge onto a practice ball, and drill the new layout according to your usual technique. Measure the resulting left finger span, and adjust the Left Finger Span Pointer accordingly.

Important: Before drilling new equipment, we strongly recommend that you drill some practice layouts with the Gauge!

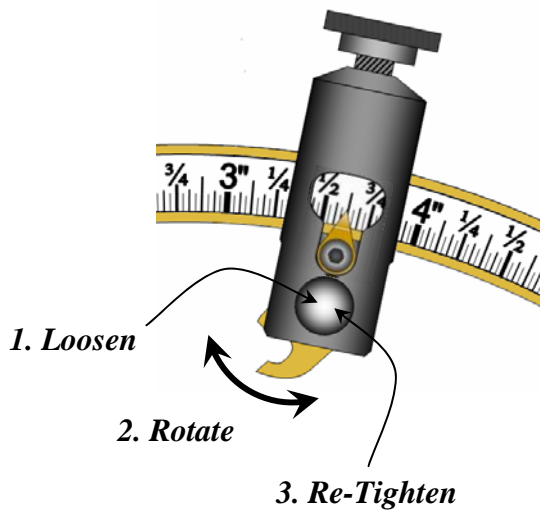
MEASURING MODE VS. LAYOUT MODE

The Gauge is equipped with a Thumb Hole Alignment Fixture that operates in two modes, *Measuring Mode* and *Layout Mode*. *Measuring Mode* is used when a thumb hole already exists (measuring an existing layout), and *Layout Mode* is used when there is no thumb hole (laying out a new grip).

Measuring Mode. The Thumb Hole Alignment Fixture is oriented so that it reaches *into the ball*, aligning against the top edge of an existing thumb hole.

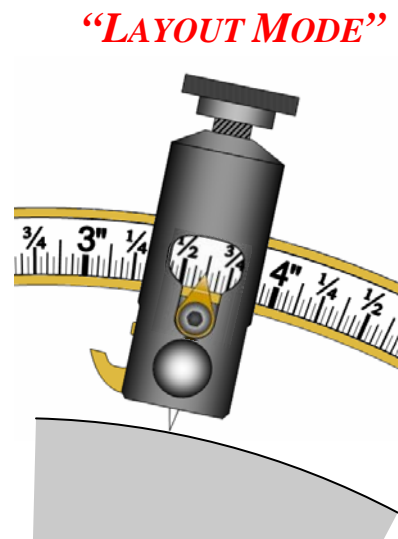


(Changing Modes)



Changing Modes. It is simple and fast to switch operating modes. Simply (1) loosen the thumb screw; (2) rotate the Thumb Hole Alignment Fixture to one of two limits; and (3) then re-tighten the thumb screw. *Be careful not to poke yourself with the alignment pin!*

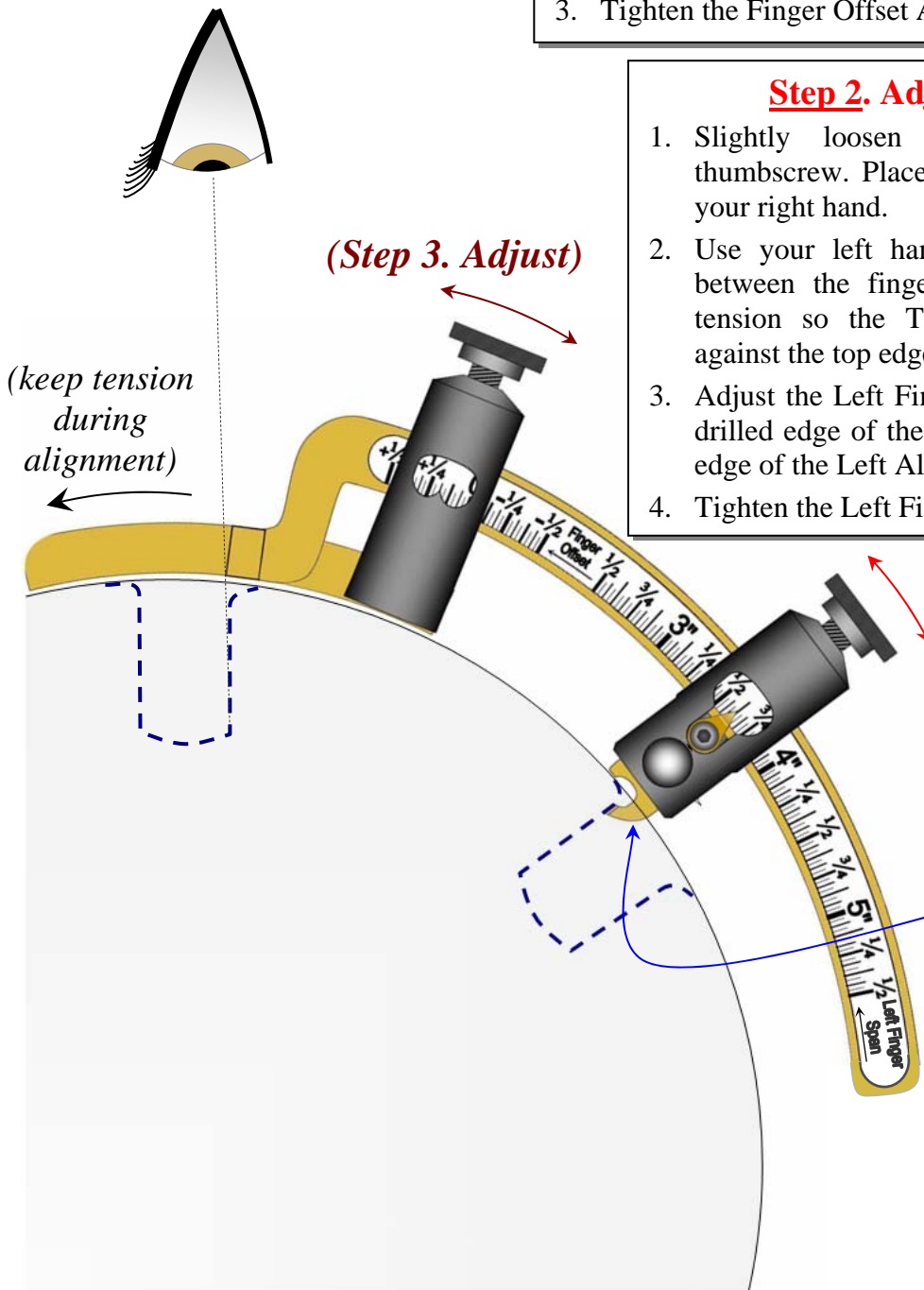
Layout Mode. The Thumb Hole Alignment Fixture is oriented so that the alignment pin rests *on the surface of the ball*. The pin marks the top edge of the thumb hole to be drilled.



ALIGNING THE GAUGE ON AN EXISTING GRIP

Finger Hole Alignment

The left and right finger hole alignment arms are adjusted properly when the operator can sight down the bottom edge of each arm to the drilled edge of each finger hole. It sometimes helps to place a ruler into the hole.



Step 3. Adjust the Finger Offset

1. Continue using your left hand to keep the bridge of the Gauge centered between the finger holes, while keeping tension so the Thumb Alignment Fixture stays seated against the top edge of the thumb hole.
2. Loosen the Finger Offset Adjust thumbscrew, and adjust the Finger Offset with your right hand until the drilled edge of the right finger hole is aligned to the bottom edge of the Right Alignment Arm.
3. Tighten the Finger Offset Adjust thumbscrew.

Step 2. Adjust the Left Finger Span

1. Slightly loosen the Left Finger Span adjustment thumbscrew. Place the Gauge on the ball, holding it with your right hand.
2. Use your left hand to center the bridge of the Gauge between the finger holes (over the centerline), keeping tension so the Thumb Alignment Fixture stays seated against the top edge of the thumb hole.
3. Adjust the Left Finger Span with your right hand until the drilled edge of the left finger hole is aligned to the bottom edge of the Left Alignment Arm.
4. Tighten the Left Finger Span Adjust thumbscrew.

Step 1. Setup

1. Place the ball on a stable surface with the grip oriented so you can see the drilled edge of the finger holes.
2. Verify that the Thumb Alignment Fixture is in Measuring Mode (p.5).
3. Place the Gauge on the ball with the Thumb Alignment Fixture seated against the top edge of the thumb hole.

READING THE GAUGE SCALES

The Gauge is calibrated in inches, with the smallest graduations corresponding to $1/32$ of an inch. Reading the scales carefully allows for accurate measurements to $1/64$ of an inch. Readings are accurate over the range of the gauge: left-finger spans from $2\frac{1}{2}$ to $5\frac{1}{2}$ inches and finger hole diameters from $\frac{1}{2}$ to $1\frac{1}{8}$ inches.

Finger Offset Scale

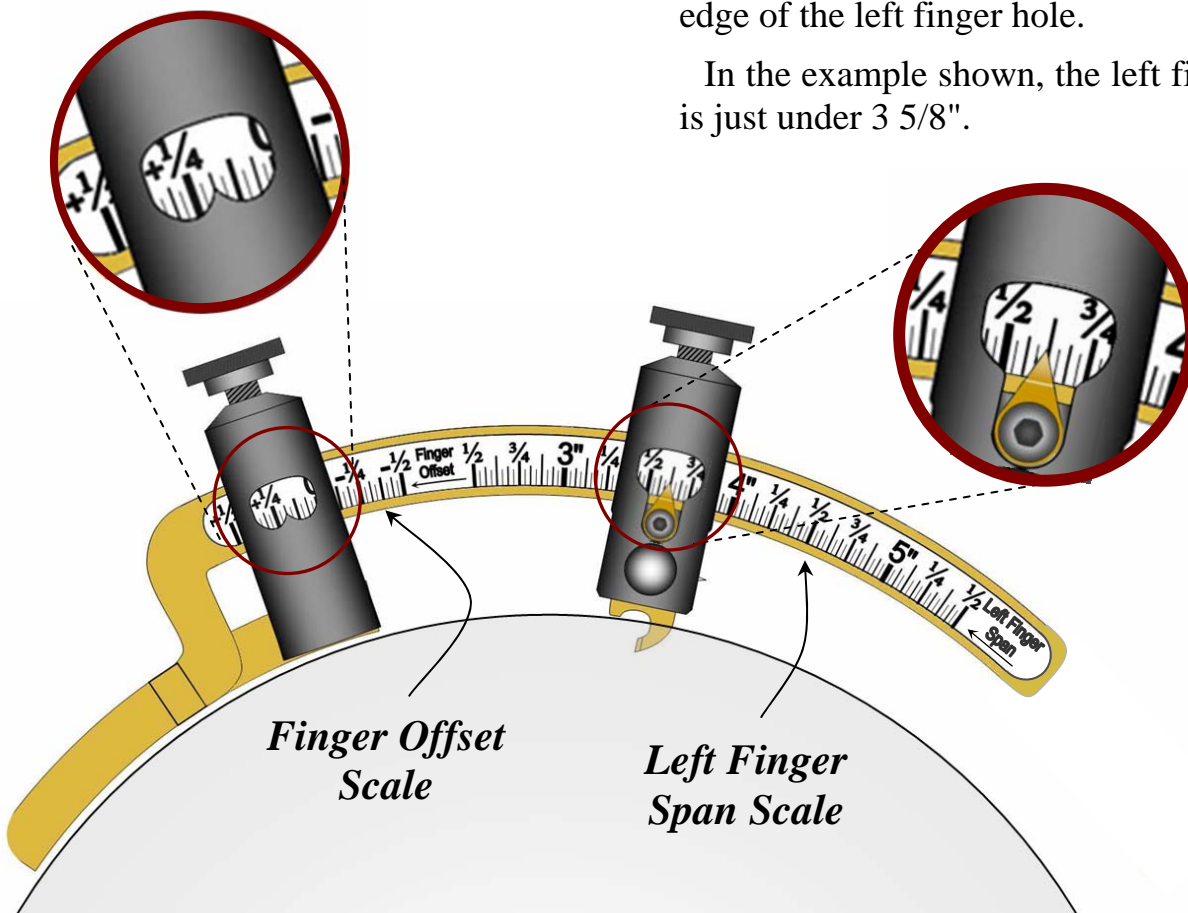
Displays the difference between the left and right finger spans parallel to the grip centerline. A positive offset value means that the right finger span (typically the ring finger for a right-handed bowler) is longer than the left finger span (typically the middle finger for a right-handed bowler).

In the example shown, the finger offset is $3/8$ ".

Left Finger Span Scale

Displays the distance from the top edge of the thumb hole to the center of the bottom edge of the left finger hole.

In the example shown, the left finger span is just under $3\frac{5}{8}$ ".



MARKING A NEW LAYOUT

To mark a new layout using the Gauge as a template, you first prepare the Ball and the Gauge:

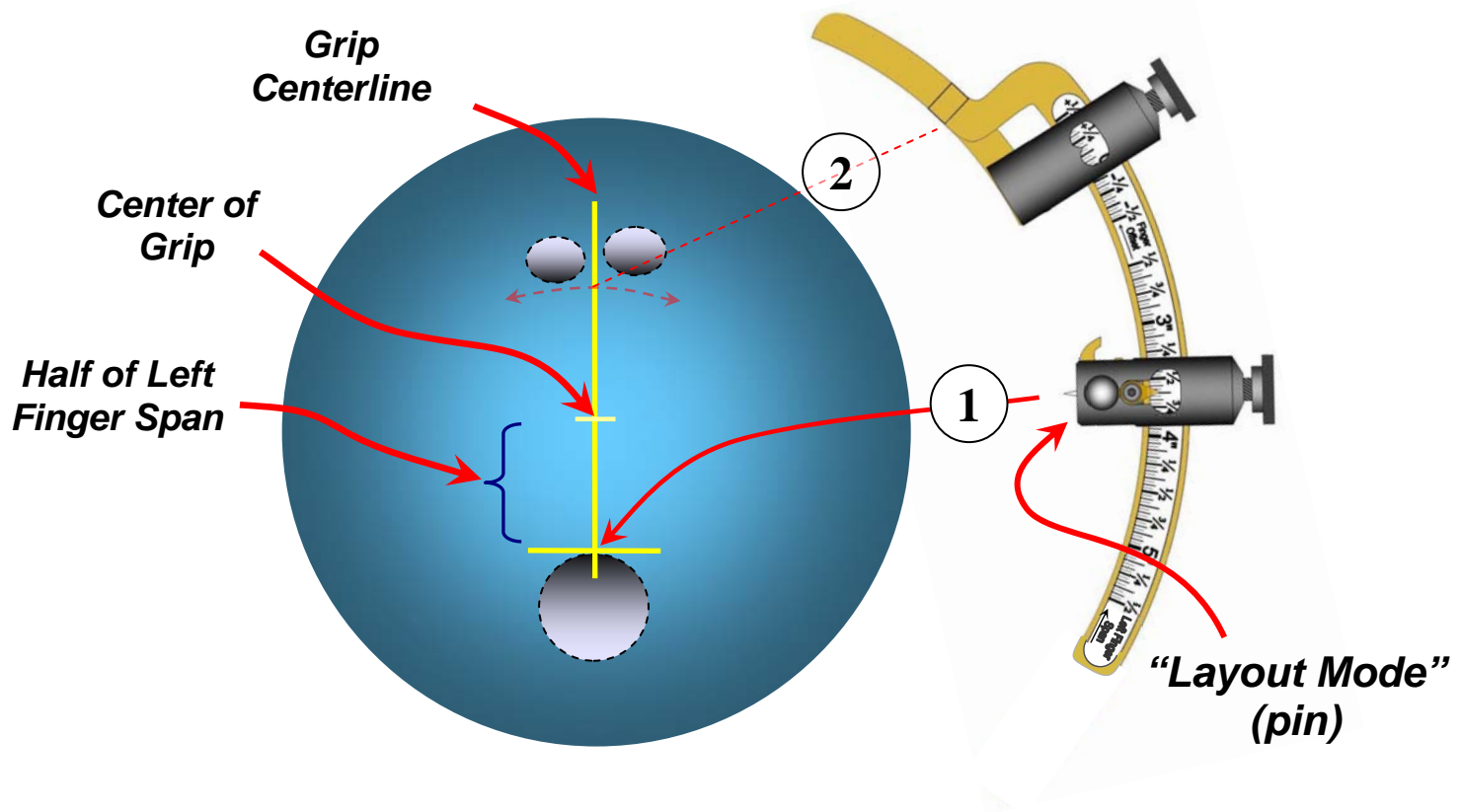
*Prepare the Ball**

- ✓ Mark the grip centerline in the new layout;
- ✓ Mark the top edge of the Thumb Hole (located below the grip center along the grip centerline, a distance equal to half of the Left Finger Span.)

Prepare the Gauge

- ✓ Set Finger Offset and Left Finger Span from drill sheet values or by aligning the Gauge to an existing grip to be copied.
- ✓ Place the Gauge in Layout Mode (page 5);

Once the Ball and Gauge are prepared, place the Thumb Alignment Pin of the Gauge on the thumb hole edge intersection with the Grip Centerline (1). Then, rotate the Gauge on the ball, aligning the grip centerline with the centerline of the Gauge.

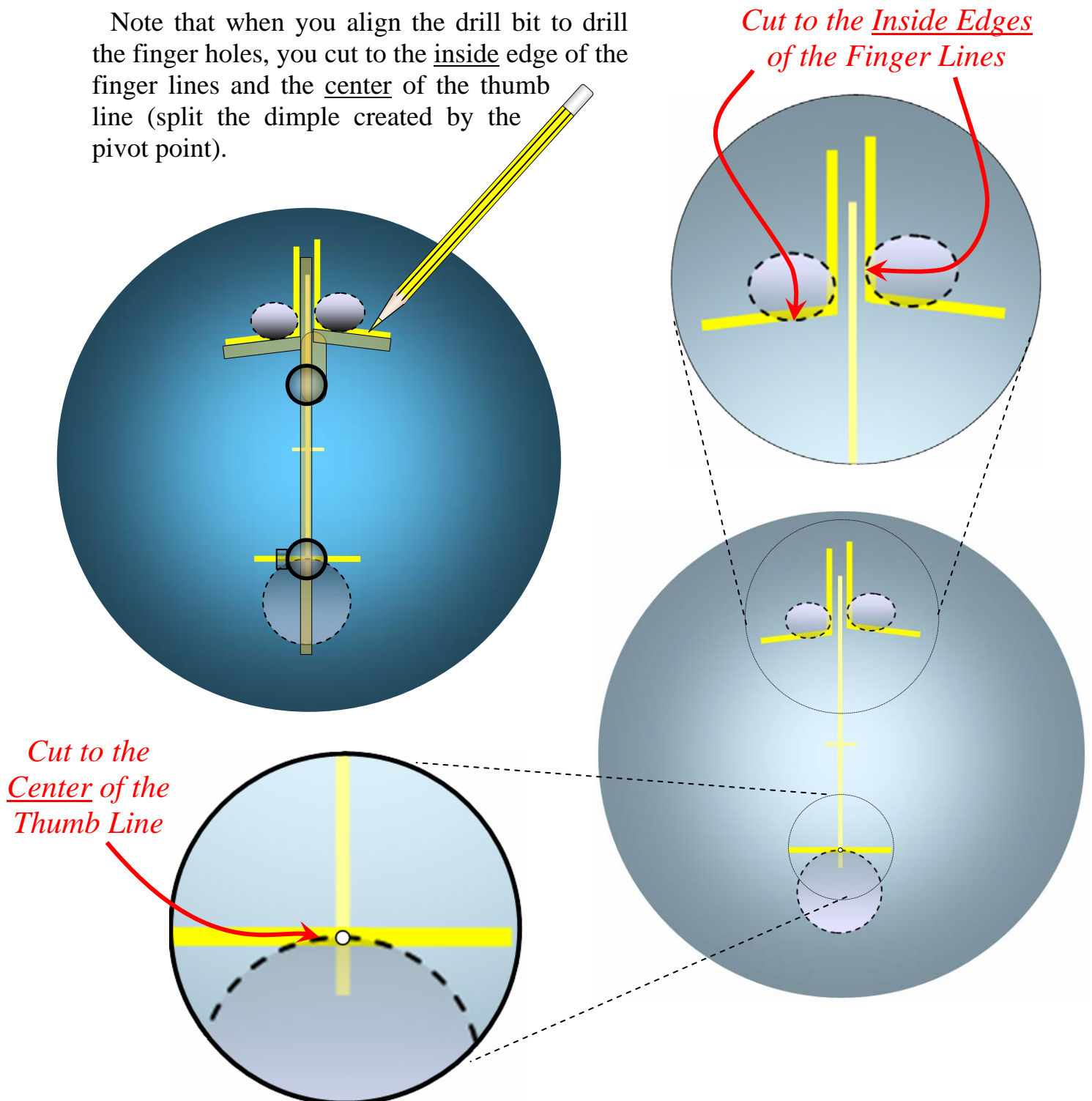


(*The Precision Ball Compass and Axis Reversing Tool are ideally suited to this task!)

MARKING A NEW LAYOUT (CONT)

Once the Gauge has been aligned in the new layout, you are ready to trace the Bridge and Alignment Arms of the Gauge. Holding the Gauge firmly in place with one hand and using a sharpened pencil or scribe in the other, trace the four edges indicating where the finger holes are to be drilled. When tracing is complete, set the gauge aside and review your layout. If the lines are clear, and the bridge is $\frac{1}{4}$ " then you are ready to align the ball in the drilling jig and drill the holes.

Note that when you align the drill bit to drill the finger holes, you cut to the inside edge of the finger lines and the center of the thumb line (split the dimple created by the pivot point).



What to do when the bridge is not 1/4"

The Gauge bridge is 1/4" wide, which is the most common value found in actual layouts. Seldom is this dimension less than 1/4", due to manufacturer warranties. How does one use the Gauge when the bridge is not 1/4"?

Alignment and Measurements. Various bridge sizes do not affect how the Gauge is aligned. Simply center the bridge of the Gauge between the finger holes, as normal. The bridge dimension has a negligible effect on Gauge readings.

Copying an Existing Grip into a New Layout. When using the Gauge as a template for a new layout, start by tracing the alignment arms of the Gauge, as normal, but do not trace the bridge. Then, set the Gauge aside and use a ruler to draw two new lines equal distance from and parallel with the centerline. For example, in the case of a 3/8" bridge:

