

Betterley UNA-GAUGE

Thank you for purchasing the Betterley UNA-GAUGE. You will find the UNA-GAUGE provides quick adjustments and alignment of most tools and machinery with extreme accuracy. The versatile and intuitive design allows the UNA-GAUGE to easily adapt to the job at hand without any additional set-up tools.

Considering the broad applications for the UNA-GAUGE it would be impossible to describe all of them in one booklet. These instructions present some of the very common applications and are intended to help familiarize you with the tool, with use you will almost undoubtedly find the UNA-GAUGE can easily adapt to many specific applications of your own.

ALWAYS disconnect the power source before using the Betterley UNA-GAUGE with any power tool or machine!

Concept of Use and Design

The Betterley UNA-GAUGE utilizes a dial indicator to provide instant and very accurate measurements for tool adjustment, alignment, and set-up. Using the dial indicator also allows continuous readings while you are making adjustments.

The base components of the UNA-GAUGE are the Indicator Support Bar (ISB), Legs, and the Dial Indicator.

The ISB has four positions to accept the indicator (and/or other accessories) either vertically or horizontally; in addition the indicator can be rotated 360° in any of the positions. The ISB has six tapped holes to provide mounting locations for the legs (and/or other accessories).

The legs have four tapered mounting locations precisely machined in 1" increments. Once the indicator is zeroed on a flat reference surface, the legs can be repositioned to read measurements beyond the 1" travel limit of the indicator. The legs can be used on any of the mounting locations on the ISB providing bridged or cantilevered support for the indicator. Additionally, the bottom of the feet on the legs are machined so that only one edge contacts the reference surface, interchanging the legs left to right effectively changes the width of the support surface.

The long arm on the dial indicator rotates one revolution per .100" of travel, providing "on the fly" measurement readings graduated in .001" increments. The short arm is graduated in .100" increments and rotates one revolution per 1" of travel.

Zero Setting Indicator

Leg Position – Select the appropriate leg locations on the ISB for the application and secure the legs in position A with the leg clamping knobs (position B if using the 1-¼" point). Set the UNA-GAUGE on a flat surface with the leg clamping knobs up when removing and installing the legs then stand the UNA-GAUGE up with the feet on the flat surface for final tightening – finger tight only.

Position Indicator – To remove the indicator loosen the indicator clamping knob and slide the indicator out of the ISB. Slide the indicator clamp out of the ISB and slide into the appropriate cross-hole for the indicator position selected (the notch in the indicator clamp should align with the indicator hole). Slide the indicator into the hole until the contact point touches the flat surface and the indicator moves .010" to .020", tighten the indicator clamping knob. Loosen the bezel lock and rotate the bezel to align the long arm with "0" on the bezel, tighten the bezel lock.

The indicator is now zeroed; you can move the leg mounting position to the appropriate position for the height or depth you need to measure.

Note for routing using a template or guide – If you are routing with the router riding on a template or guide, place the template or guide on the flat surface under the contact point when setting zero on the indicator. You can now set the router bit depth of cut with the UNA-GAUGE directly on the router base and the thickness of the template or guide will be compensated for.

Checking Run-Out or Incremental Movements

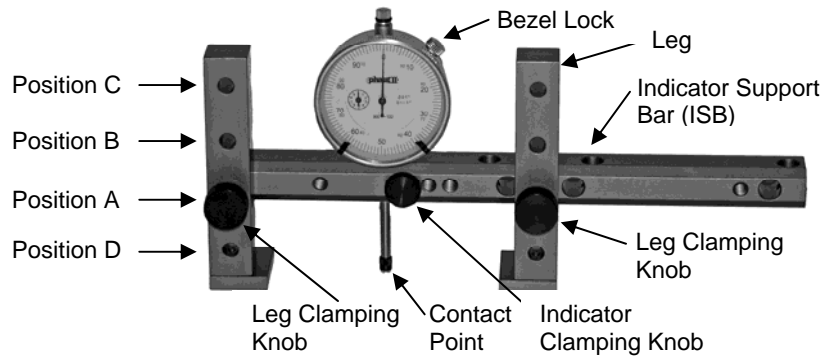
For these types of operations it is not necessary to zero the indicator to a reference surface. The indicator can simply be placed in the appropriate position and incremental readings can be observed.

Measuring Height

Place the UNA-GAUGE on the surface of the tool with the contact point touching the item or cutter you are setting. The reading of the indicator is the exact height of the item or cutter. (ie. To set a router bit to cut ¼" deep, the indicator should read ¼" (.250") with the feet on the router base and the contact point on the bit.)

Measuring Depth

Place the UNA-GAUGE on the surface with the contact point in the hole or groove you are measuring. The reading of the indicator should be subtracted from 1" to obtain the depth of the hole. (ie. When measuring a dado ¼" deep the indicator will read ¾" (1.000" - .750" = .250".))



Leg Mounting Position	Standard Length Contact Points (1/4", Ball, Offset)	Extended Contact Point (1 1/4")
A	ZERO Measure Height 0" - 1"	Measure Depth 0" - 1"
B	Measure Height 1" - 2"	ZERO Measure Height 0" - 1"
C	Measure Height 2" - 3"	Measure Height 1" - 2"
D	Measure Depth 0" - 1"	Measure Depth 1" - 2"

Selecting Contact Point

Ball Point – The ball tipped point provides extremely accurate readings however, it can be difficult to use on sharp edges such as blades or cutting bits. This point is best suited when the indicator is moved along flat surfaces. (ie. Aligning table saw fence or checking shaper spindle for perpendicular alignment.)

1/4" Flat Point – The flat bottom of this point makes measuring cutter height and alignment simple as the point allows the cutter to rotate to Top Dead Center while in contact with the point. This point is the ideal choice for the majority of set-up operations on woodworking tools and machines

1-1/4" Flat Point – This point also features a flat bottom and the extended length allows measuring depths up to 2". The extended length also facilitates checking arbor run-out in situations with limited access. (ie. Checking arbor run-out on a table saw.)

Offset Point – The offset point is designed to allow measurements when access is limited, particularly when the UNA-GAUGE must be positioned against another surface. (ie. When setting a router table fence and the bit is only slightly above the table surface.)

Changing Contact Point

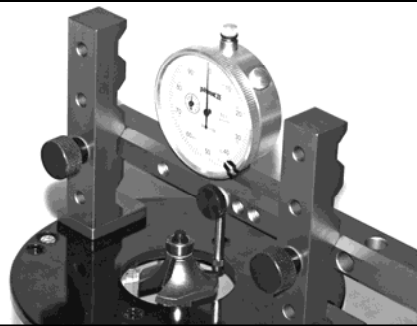
The ball, 1/4" flat, and 1-1/4" flat point are screwed in and out of the indicator by hand – finger tight. The offset point is secured with a screw (snug tight only). The indicator must be positioned in the ISB before installing the offset point.

Typical Router Set-Ups

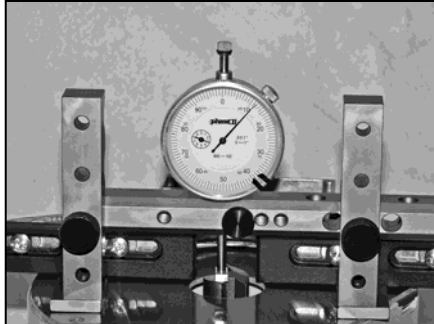
The UNA-GAUGE enables very fast and accurate adjustments of bit depth and edge guide location, as well as checks collet run-out. When using on small surfaces, such as laminate trimmer bases, remember that the indicator can be rotated to allow closer spacing of the legs, and that the legs can be interchanged left to right to alter the effective spacing. In some set-ups (such as checking run-out) it can be helpful to clamp the UNA-GAUGE feet to the router with small spring clamps, holding the UNA-GAUGE in place.



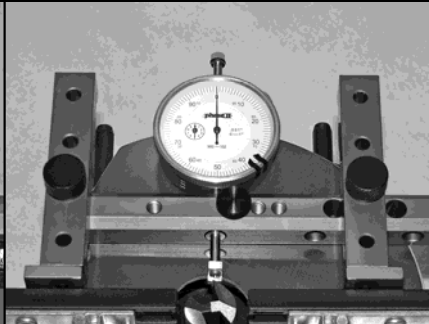
Set bit depth.



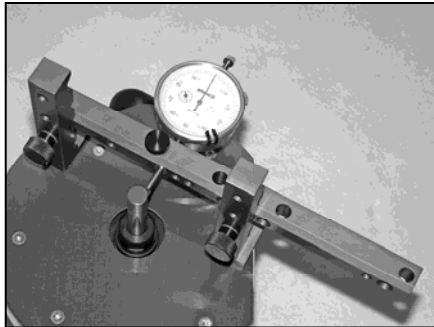
Set round-over bit on edge of cutter with Flat Bottom Point.



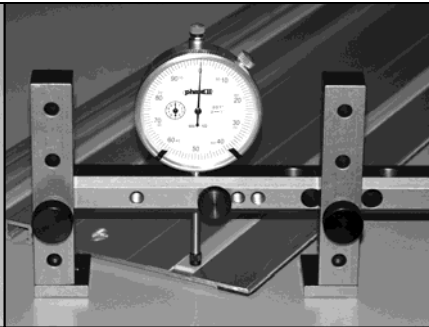
Set bit depth with Offset Point.



Set edge guide with Offset Point.



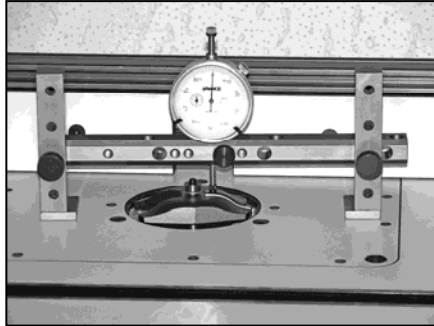
Check collet run-out.



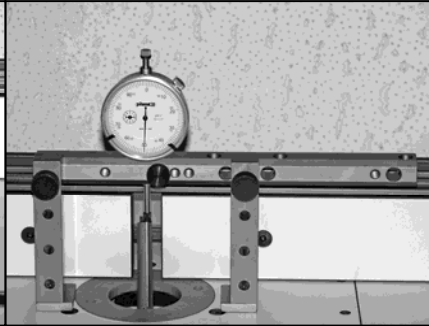
Zero UNA-GAUGE on straight guide.

Typical Router Table Set-Ups

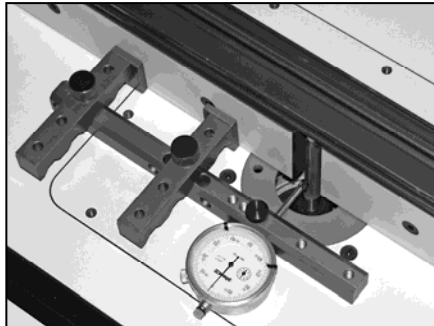
The UNA-GAUGE will make set-up and adjustments quickly and accurately on a router table. If you must hold the UNA-GAUGE completely still (such as when checking run-out) on a non-magnetic surface, it can simply be clamped in place. When making fence adjustments always keep the bottom of the feet on contact with fence. Check the router spindle for perpendicular alignment with the table, if it is not perpendicular; the time spent shimming the base is well worth the effort.



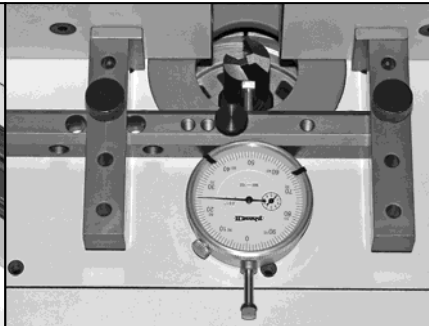
Set bit cutting depth.



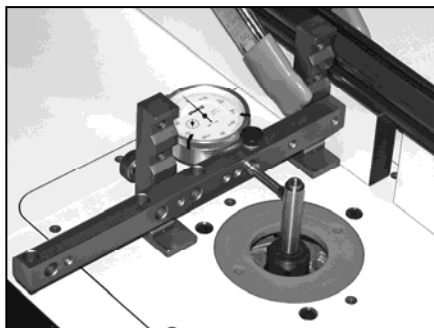
Set bit cutting depth up to 3".



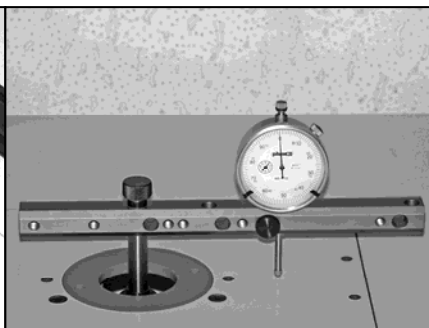
Set off-set fence flush with bit.



Set fence with offset point.



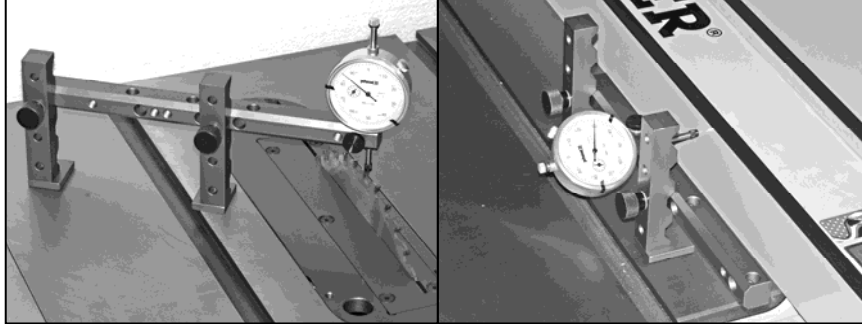
Check collet run-out with UNA-GAUGE clamped in place.



Check router spindle perpendicular to table.

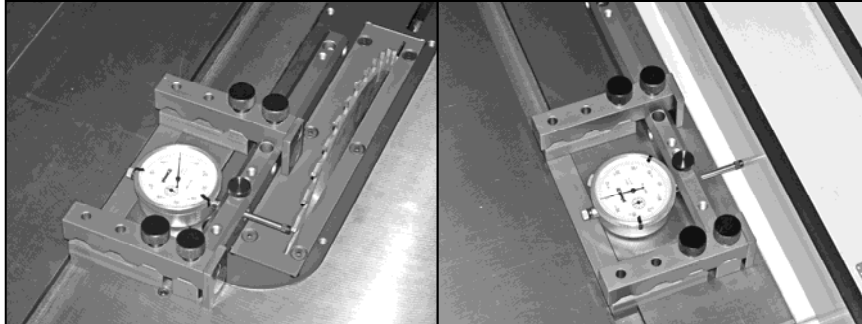
Typical Table Saw Set-Ups

The UNA-GAUGE enables you to fine tune a table saw and make almost any adjustment quickly and accurately. When placing the UNA-GAUGE on a magnetic surface; set the UNAGAUGE down at an angle then tip it upright. To remove the UNA-GAUGE tip the gauge then lift (to reduce the pull of the magnetic feet). When you zero the indicator check a few spots on the table, if your reading changes the UNA-GAUGE is not lying, the table is not perfect. Just zero the indicator on an area that is the most consistent.



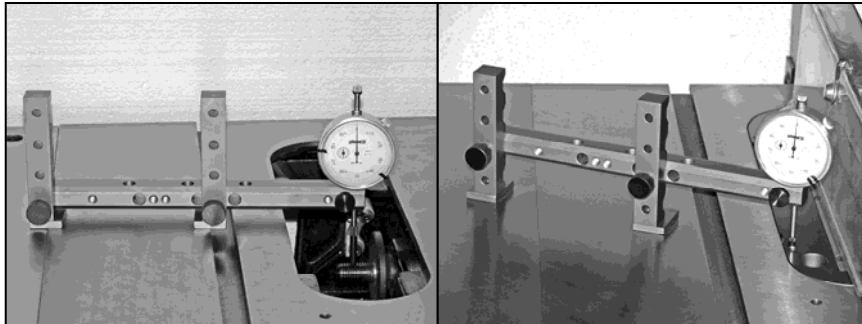
Set blade or dado cutting depth.

Position the indicator horizontally to measure fine fence adjustments.



Use the Miter Slot Adapter to align table parallel to the blade.

Use the Miter Slot Adapter to align fence.

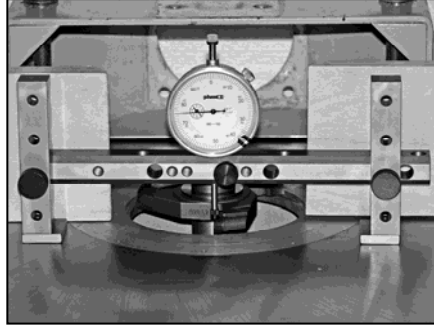


Check arbor run-out with extended length contact point.

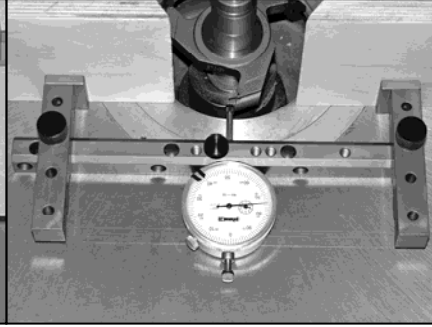
Level throat insert and extension wings.

Typical Shaper Set-Ups

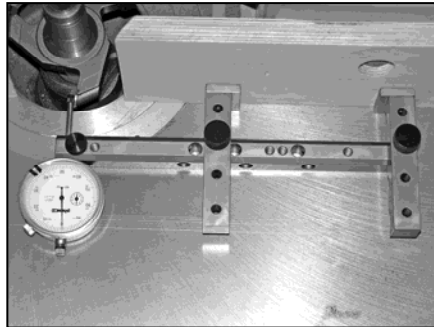
The UNA-GAUGE is ideal for set-up and adjustments on a shaper. Remember to check and record cutter height and fence settings when removing cutters, this will enable repeat set-ups very quickly without tedious test cuts. Check the spindle for perpendicular alignment with the table, if it is not perpendicular take the time to align the machine (shaper cutter manufacturers will tell you that the most common problem with matched cutters not performing is a misaligned shaper spindle).



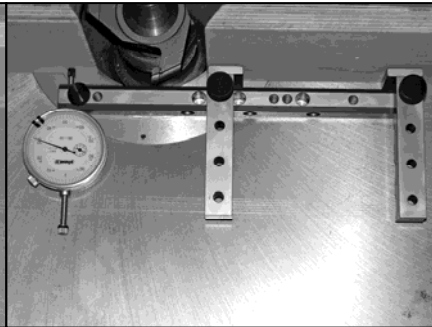
Set cutter depth.



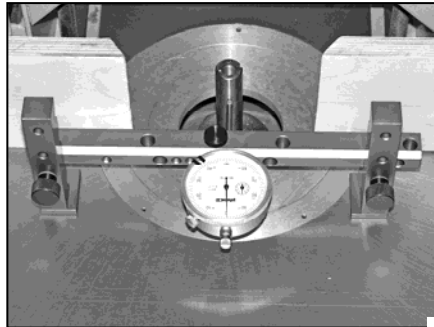
Set straight fences.



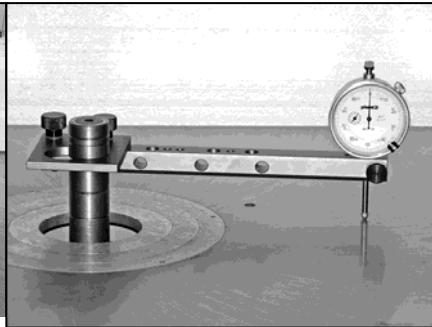
Set offset fences relative to cutter.



Set fence offset



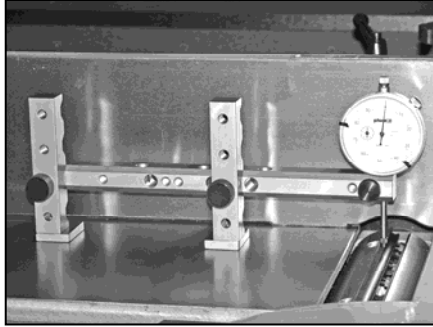
Check spindle run-out.



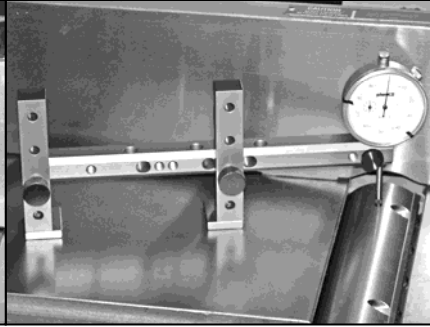
Use Shaper Spindle Adapter to check spindle for perpendicular alignment.

Typical Jointer & Drill Press Set-Ups

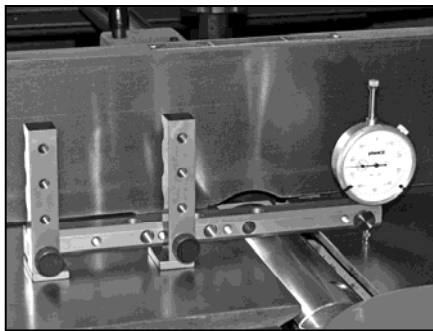
The UNA-GAUGE easily adapts for use on a jointer or drill press. When setting cutting depth on a jointer the UNA-GAUGE can be placed on either table, on the in-feed table it reads actual cutting depth, on the out-feed table remember to subtract for depth reading.



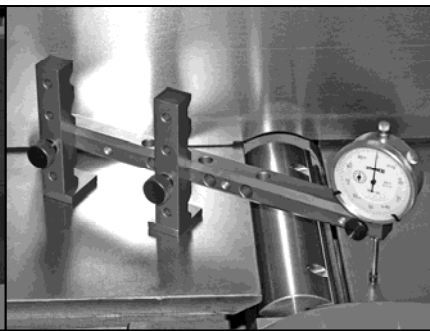
Set jointer blades.



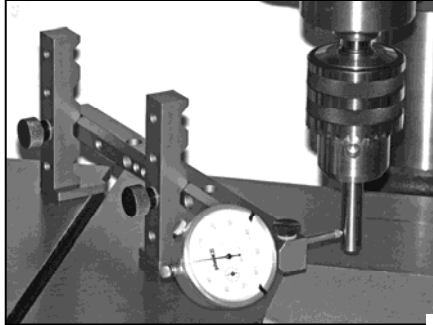
Check cutter head to table alignment.



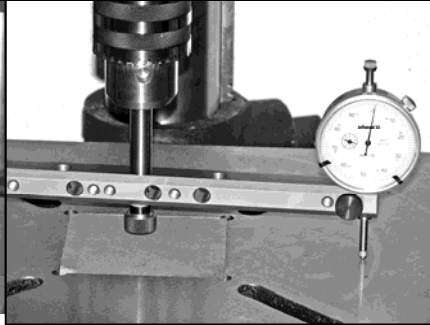
Set cutting depth.



Check tables for parallel alignment.



Check drill press chuck run-out.



Align table perpendicular to drill press spindle.

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POWER TOOLS
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