

# TS-ALIGNER



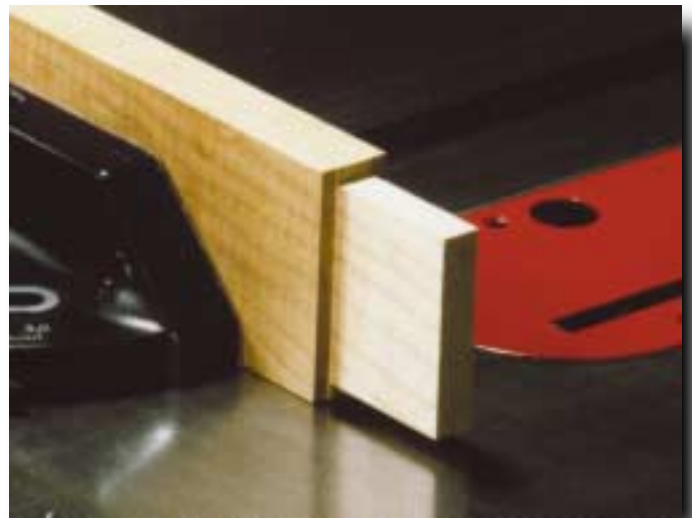
The Ultimate Precision Woodworking

# Precision is Efficiency

If you've been working with wood for any length of time, you're probably quite familiar with the problems pictured here. You may also be quite skilled at correcting them. But, did you ever stop to think how much wasted time and materials goes into reworking things that could have been done right in the first place? Well, doing it right the first time is what precision woodworking is all about. If you can easily align and adjust your machines to the right settings on the first try, you'll save huge amounts of time and materials that would otherwise be wasted with test cuts and rework. In addition, the quality of your work will improve drastically.

The problem is that most woodworking machines have very crude and inaccurate adjustments. Clean cuts and tight joints require some pretty close tolerances. In fact, most people are surprised to discover that good quality results require working wood to within a few thousandths of an inch. So, you're almost always forced to make several test cuts in order to obtain the correct setting. Nobody would be proud of the work shown here. Yet, each example demonstrates how a very small amount of error can produce huge problems. The burn marks on both the bevel cut and the rip cut were produced with only 0.008" of saw misalignment. The uneven shoulder cuts are the result of a 0.015" mistake. The gap in the octagon is the result of only  $\frac{1}{10}^{\circ}$  error in each angle.

Using an accurate alignment tool eliminates the guess work entirely. Adjustments are made according to precise measurements, not estimates. Wood is cut correctly the first time. The project proceeds quickly and smoothly without wasting time and materials. TS-Aligner is designed to help you make these accurate measurements very quickly and easily without any test cuts or rework.

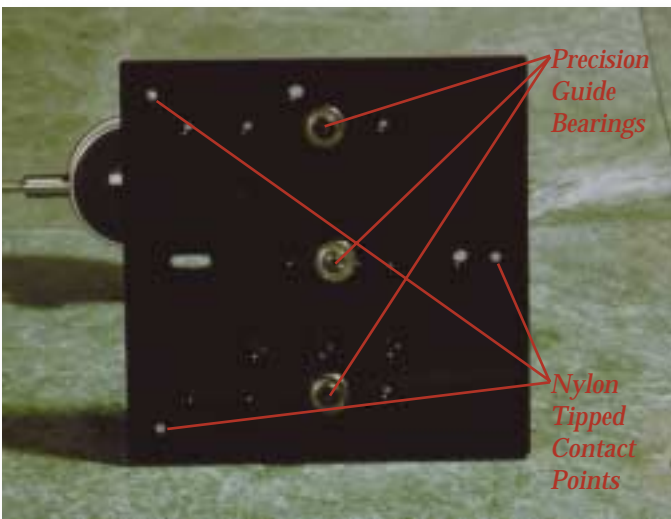


# TS-ALIGNER is Precision



## Design

TS-Aligner was designed with the assistance of Engineers, Consultants, Machinists, and Woodworkers to ensure accuracy and ease of use. Our goal was to design a tool that applies standard metrological principals to the adjustment of woodworking machines. Used by the metal working industry for decades, these principals have proven themselves in thousands of machine shops all over the world. We also wanted the tool to provide repeatable and accurate results for many years. Therefore, we chose high quality 303 stainless steel and black anodized 6061 aluminum tooling plate for all of the major components. Knowing that molding or stamping wouldn't produce adequate results, we decided to machine all important surfaces flat and square. Finally, we designed an assembly and calibration process worthy of the world's finest woodworking alignment tool.



## Implementation

TS-Aligner uses the miter slot and the table surface as references for all of its measurements. Accurate and smooth motion along the miter slot is critical. No bar could accomplish the task better than our three precision guide bearings. The two outer bearings are fixed and the center bearing is easily adjusted to fit almost any miter slot with absolutely no play. TS-Aligner glides across the table surface on three nylon tipped contact points. These three points can be easily adjusted so that vertical motion of the dial indicator assembly is perfectly square with the table surface. Using three point contact also eliminates rocking and minimizes other instability due to uneven table surface. Extremely accurate vertical motion is accomplished with custom machined acetal/nylon bearings and precision ground and polished stainless steel rods.



## Practice

The heart of TS-Aligner's measurement abilities is the dial indicator. While this instrument is not very good at measuring extended distances, it is extremely accurate at measuring changes in distance to within one thousandth of an inch. This enables you to detect even the slightest alignment error. It is extremely easy to make even complex adjustments (like this  $22\frac{1}{2}^\circ$  blade tilt) with extraordinary accuracy. Angles are measured to within one tenth of a degree with the help of a trigonometric feature called the "Poor Man's Angle Set" (included). When more accuracy is required, precision ground and lapped angle blocks can be used to translate surfaces so that they are measured directly by TS-Aligner (as shown here). These blocks are used by machinists for accomplishing the very same task on precision milling machines and lathes. **Measurement accuracy can be within one minute of arc ( $1/60^\circ$ ).**

# Use TS-ALIGNER on Almost



## Radial Arm Saw

Many people feel that the Radial Arm Saw isn't an accurate machine. By using the optional RS-Aligner, TS-Aligner can help your radial arm saw deliver accuracy you never dreamed was possible. RS-Aligner is designed like a giant "T" square. It provides a flat surface with a true miter slot for TS-Aligner to ride in. It includes a bracket for mounting the dial indicator directly to the arbor and complete instructions.



## Table Saw

When it comes to the table saw, TS-Aligner really shines! Align your blade to eliminate heeling. Align your fence for accurate rip cuts. Square the blade and square the miter gauge. Set precise angles **without test cuts!** Eliminate common and frustrating accuracy problems. Operate your saw at its ultimate potential! Virtually all adjustments can be made very quickly and accurately with help from TS-Aligner.



## Shaper or Router Table

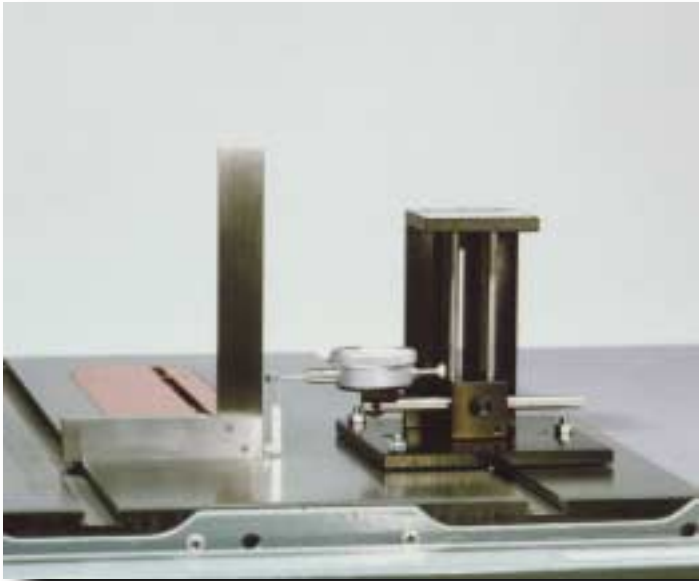
TS-Aligner can help you set up your shaper or router table without any frustrating test cuts. Use it to align the fences to avoid snipe at the end of a cut. Use it to set a precise offset in the fences so that you can control the depth of cut on full face cutters. Point the dial indicator downwards and use it like a height gage to precisely set up rail and stile sets.



## Jointer

TS-Aligner can be used on larger jointers to set the fence so that it is perfectly square with the table surface. In addition, you can also turn the dial indicator so that it points downwards. In this position, installation and adjustment of cutter knives is extremely easy. You can also use this position to set the height of the out-feed table to avoid snipe.

# Every Machine in Your Shop!



## Squareness Standard

TS-Aligner is calibrated at our factory using a class N square on a granite surface plate. We guarantee its accuracy to be within  $\pm 0.001$ " from perfect squareness over its entire range. So checking a square is as easy as placing it on a flat surface (like the saw top shown above) and using TS-Aligner against its edge. If you have a square of known accuracy, you can also use this setup to re-calibrate TS-Aligner.



## Disk Sander

TS-Aligner works well in any application that can benefit from precision alignment, especially with respect to squareness. The disk sander is a good example. It's easy to use TS-Aligner to check the squareness of the table on a disk sander. While you're at it, you can also use the dial indicator to check for runout on the surface of the disk. You'll be surprised at the number of applications for TS-Aligner.



## Drill Press

If you've ever attempted to align the table on a drill press using a square you know how difficult it can be. Using the horizontal rod on TS-Aligner in the drill chuck, and the offset at the end of the dial indicator, you can "sweep" the table surface to determine squareness. Spindle runout is also easily checked with TS-Aligner.



## Band Saw

Whenever you do re-sawing or pattern cutting on the bandsaw, you want to make sure that the table is perpendicular to the blade. If you use TS-Aligner to help you, you'll never struggle with this adjustment again. In addition, TS-Aligner can help you to avoid a lot of trial and error when setting up a fence to compensate for any blade lead.

# Accessories



## Micro-Tangent Angle Set

This set consists of five fixed angle blocks (5°, 10°, 20°, 30°, and 45°) ground and lapped from 1/4" hardened tool steel to incredible tolerances. The sixth item is called the "Micrometric Tangent Bar" (MTB). It is adjustable from 0° to 5° in one minute increments (1/60°). By combining angle blocks and the MTB, virtually any angle can be set with astounding accuracy.



## RS-Aligner

If you have a radial arm saw, this accessory is a must! RS-Aligner is made from blue anodized 6061 aluminum tooling plate. It provides the references needed to align your radial arm saw with ease. Included is a bracket that allows you to mount a dial indicator on the saw arbor. Obtain accuracy in your radial arm saw that you never dreamed was possible.



## Precision Squares

These squares are each made from a solid piece of thick tool steel hardened to Rockwell 55. All edges are ground and lapped to meet accuracy Class 2 specifications. They are designed to be used as a reference with dial indicators. They will stand up or lie flat on the table making them ideal for TS-Aligner calibration and setting your miter gauge.



## Custom Storage Case

Here's the perfect case for your TS-Aligner and accessories. It features double wall construction for maximum protection and light weight. Inside is a custom foam insert for the TS-Aligner (with dial indicator attached), the dial indicator box, the Micro-Tangent Angle Set, and the 6.5 inch Precision Square. On top is a comfortable handle.