



# DIAL INDICATOR SET UP GAUGE

555884

## INTRODUCTION

The Shopsmith Dial Indicator Set Up Gauge is the ideal tool for aligning your machines for optimum performance and for making certain operational set-ups with exceptional accuracy.

The Dial Indicator Set Up Gauge consists of a precision dial indicator that is graduated in 1/1000 (.001) increments with a full 1" of travel. This Dial attaches to an adjustable holding device that slides in the Miter Bar slot of your MARK V worktable surface or the top of your MARK V Model 505, 510 or 520 Rip Fence. It can also be used with your Bandsaw Rip Fence or your Shopsmith Pro Fence System Router Table Fence. And, by removing the Miter Bar from the bottom of the Gauge, you can also use it to adjust your Jointer Knives.

The complete package also includes a box containing a total of 22 interchangeable Tips for the end of the Plunger. Some of these Tips have flat ends, some have "domed" ends and others have pointed ends. In addition, some Tips are longer than others, giving you some additional "reach" when required for certain measurements. For most applications, the flat-ended Tips will work best. The two large diameter (short length) Tips are ideal for measuring to saw blade tips or jointer knife edges. Just screw one Tip off and another on.

## NOTE

**Before taking any measurements, be sure the Tip you're planning to use is screwed on TIGHTLY. Loose Tips produce inaccurate measurements.**

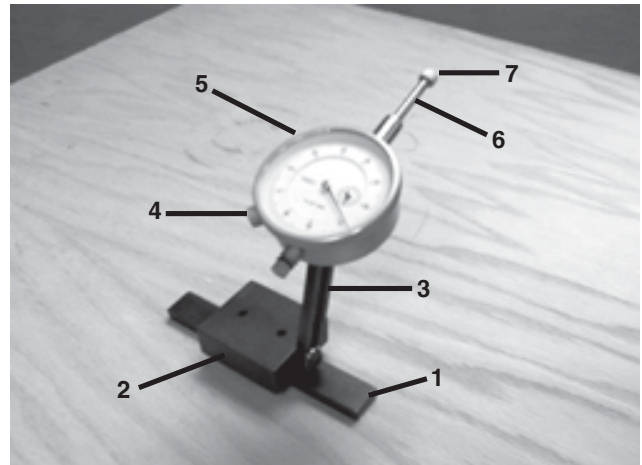


Figure 1

## REFERENCE LIST

Ref. No.	Description
1	Miter Bar
2	Block
3	Slot Bracket
4	Dial Lock Knob
5	Zeroing Dial
6	Plunger
7	Indicator Tip

## PARTS LIST

Part No.	Description	Qty
522007	Indicator Gauge Assembly	1
..120380	Lock Washer	1
..502333	Flat Washer	3
..516027	1/4-20x5/8 Button Head Screw	1
..517829	1/4-20x1/2 Button Head Screw	1
..518461	#10-24 Flat Head Screw	2
..522003	Slot Bracket	1
..522004	Block	1
..522005	Miter Bar	1
..522006	Dial Indicator	1
522153	22-Piece Indicator Tips	1

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## A FEW WORDS ABOUT SAFETY

Throughout this instructional literature, we list **WARNINGS**, **CAUTIONS**, and **NOTES**. We advise that, when you come to one of these listings, please read and understand it fully before proceeding further. Their meanings are:

### **WARNING**

A **WARNING** is given when failure to follow the directions could result in injury, loss of limb, or life.



A **CAUTION** is given when failure to follow the directions could result in temporary or permanent damage to the equipment.

### **NOTE**

A **NOTE** is used to highlight an important procedure, practice, or condition.

### **WARNING**

- ◆ **To protect yourself from injury:**
- ◆ **READ, UNDERSTAND, AND FOLLOW ALL the safety information.**
- ◆ **You must also READ, UNDERSTAND, AND FOLLOW ALL the safety information in the Mark V Owners Manual, as well as the Owners Manual for any power tool for which the Dial Indicator Set Up Gauge will be used.**
- ◆ **Always unplug your machine before making any setup adjustments.**
- ◆ **Do not touch the sharp edges of any cutting tool such as a saw blade tooth or jointer knife while measuring with the Dial Indicator Set Up Gauge.**

## ASSEMBLING THE GAUGE

When your Set Up Gauge arrives, the Block is already attached to the Miter Bar and the Bracket is attached to the Block. Just remove the Dial Indicator from its box and attach it to the threaded hole in the end of the Bracket, using the buttonhead cap screw and two washers, provided. The lock washer goes between the Bracket and the Dial Indicator and the flat washer goes under the buttonhead cap screw.

### HOW PRECISE IS PRECISE ENOUGH?

Each black line on your Set Up Gauge represents 1/1000 of an inch (.001"). As a point of reference, a typical human hair is about 3/1000 of an inch (.003") in diameter.

It's important not to be "fooled" by the sweeping hand as it circles around the large dial. Keep in mind that it takes more than 15 black lines (or, 1/4 of a full revolution) to equal just 1/64". As a result, one full revolution of the Gauge needle represents approximately 3/32"...with 10 revolutions required to equal the Gauge's 1" capacity.

Remember that your MARK V and other shop machines are there to help you perform woodworking operations. With very few exceptions, any time you can make a woodworking cut to within 15/1000 (.015") - about 1/64" - you're doing great.

### MITER BAR/MITER SLOT CLEARANCE

When one metal part slides inside another metal part, there must be clearance to allow for that movement. As with the Miter Gauge Bar on your MARK V, the Set Up Gauge Bar will have from 4/1000 (.004") to 6/1000 (.006") of an inch clearance between the Bar and your Table (or Fence) Slot.

There are two ways for you to compensate for this. The simplest is to always pull (or push) the Gauge Bar firmly and steadily toward the **SAME** side of the slot when taking measurements. Or, if you're not comfortable with this approach, insert a piece of paper between the Bar and Slot to eliminate all clearance before taking your measurement.

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## GETTING STARTED

The Dial Indicator Set Up Gauge is, basically, a highly accurate reference tool. Using the Gauge is simple. Follow the general directions outlined below, and then the more detailed directions for each application listed later.

- 1) Position the Gauge next to the object to be measured (fence, saw blade, etc.). Adjust the Slot Bracket and move the Gauge so that the Plunger is depressed slightly while resting against the object to be measured.
- 2) Loosen the Dial Lock Knob and rotate the Zeroing Dial until the large needle is aligned with the "0" on the Dial. See Figure 1.
- 3) Re-tighten the Dial Lock Knob finger-tight against the Zeroing Dial. You are now ready to measure the difference between a starting point ("0" on the Dial) and another reference point.

### NOTE

**Over-tightening the Lock Knob will damage the Zeroing Dial, making it difficult to turn on subsequent set-ups...even when the Lock Knob has been loosened completely.**

## TABLE SAW SET UPS

### Aligning the Saw Blade with the Work Table

1. Install a Saw Blade that you know to have zero or minimal wobble. The newer the blade the better.
2. Use a marker to mark one tooth on the blade.
3. Rotate this tooth forward until it is at the infeed end of the Table.
4. Install the Set Up Gauge in the left miter slot and position the Tip on a spot near the marked tooth.
5. Loosen the Dial Lock Knob and rotate the Zeroing Dial so the large needle is on "0". Re-tighten the Dial Lock Knob.
6. Rotate the marked tooth towards the outfeed end of the Table.
7. Slide the Set-Up Gauge towards the other end of the Table and read the Gauge measurement at the same spot near the marked tooth. Follow your MARK V (or table saw) owners manual to make necessary adjustments. See Figure 2 and 3.



Figure 1

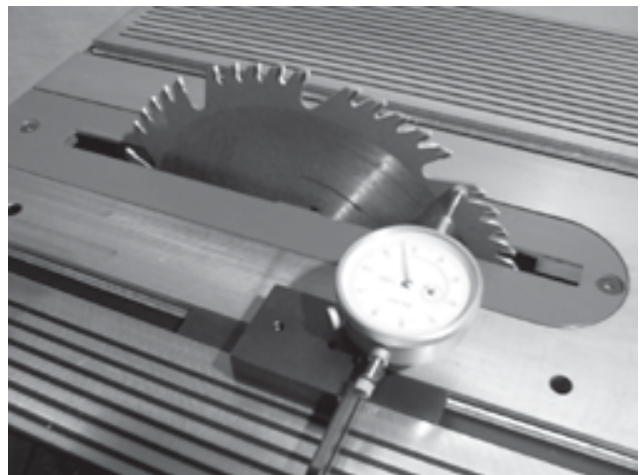


Figure 2

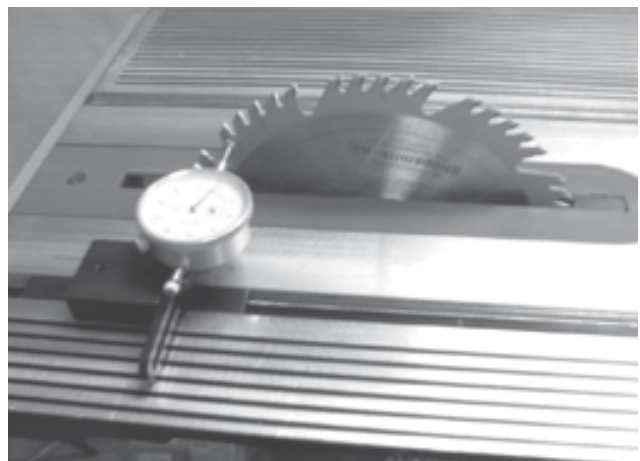


Figure 3

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## **TABLE SAW SET UPS con't.**

### **Aligning the Miter Gauge to 90°**

1. Remove any auxiliary fences/extensions from your Miter Gauge.
2. Clamp the handle of a precision square to the Miter Gauge face, so its blade is parallel with the work table surface.
3. With a 5/32" Allen wrench, tighten the tapered screw in the center of your Miter Gauge Bar to lock it firmly into the Table slot.
4. Position the Set Up Gauge Miter Bar in the Table slot and adjust the Slot Bracket so the Plunger is slightly depressed and the Gauge Tip touches the edge of the square's blade at one end.
5. Loosen the Dial Lock Knob and rotate the Zeroing Dial so the large needle is on "0". Re-tighten the Dial Lock Knob. The Miter Gauge is square to the Table slot when the measurements at each end of the square's blade are equal. See Figure 4.

### **NOTE**

**Be sure to check the 90° stop and adjust it, if necessary.**

### **Aligning the Miter Gauge to 45°**

To align your Miter Gauge for a perfect 45° setting, proceed as described for 90° settings above, with one exception. In place of a precision square, use a 45° Combination Square, triangle or other measuring or marking device having a known 45° face angle. See Figure 5.

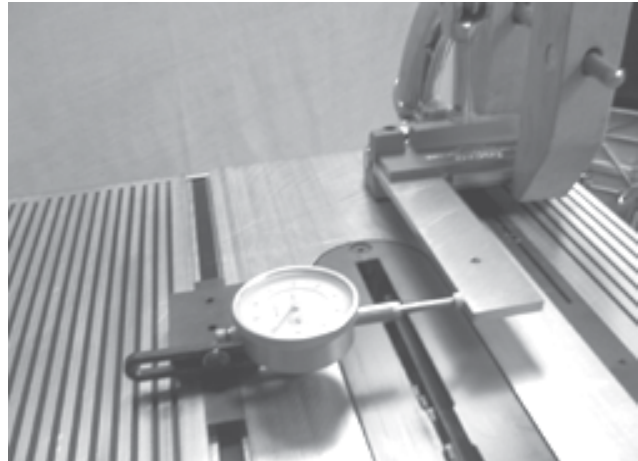
### **Aligning the Rip Fence**

1. Install the Set Up Gauge in the Table slot.
2. Move your Rip Fence into position and lock it down.
3. With the Gauge at the infeed end of the fence, loosen the Dial Lock Knob and rotate the Zeroing Dial so the large needle is on "0". Re-tighten the Dial Lock Knob.
4. Move the Gauge to the outfeed end of the Fence. This end of the Fence should be the same distance from the miter slot as the infeed end of the fence. And, since you have already aligned the saw blade

to the work table, the rip fence is now parallel with the saw blade. See Figure 6.

### **NOTE**

**Setting the fence exactly parallel front to back will allow the fence to be used on either side of the blade.**



**Figure 4**



**Figure 5**



**Figure 6**

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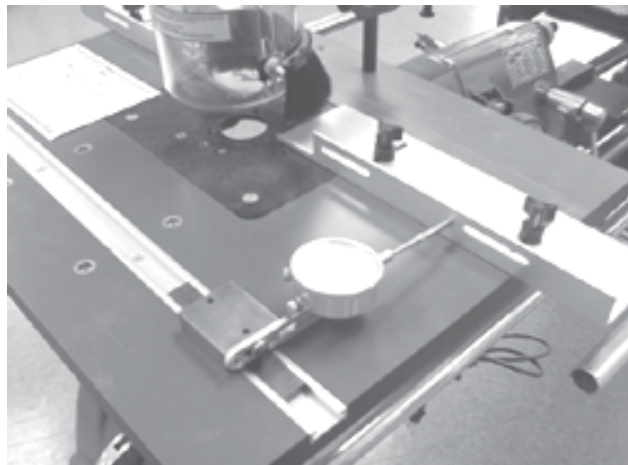
## **SHAPER/ROUTER TABLE FENCE SET UP**

This is particularly handy for cutting precision rabbets or similar joints.

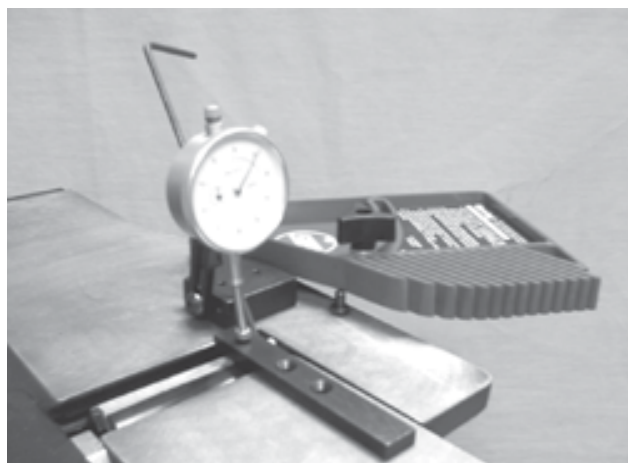
1. Start by installing the Set Up Gauge in the Miter Gauge slot (This procedure also works for Router Table Fences, as shown in Figure 7).
2. Loosen the Dial Lock Knob and rotate the Zeroing Dial so the large needle is on "0". Re-tighten the Dial Lock Knob.
3. Move the Gauge to the outfeed Fence and adjust until you achieve the desired offset. The outfeed fence **MUST** be parallel to the infeed fence.

## **JOINTER KNIFE ADJUSTMENT**

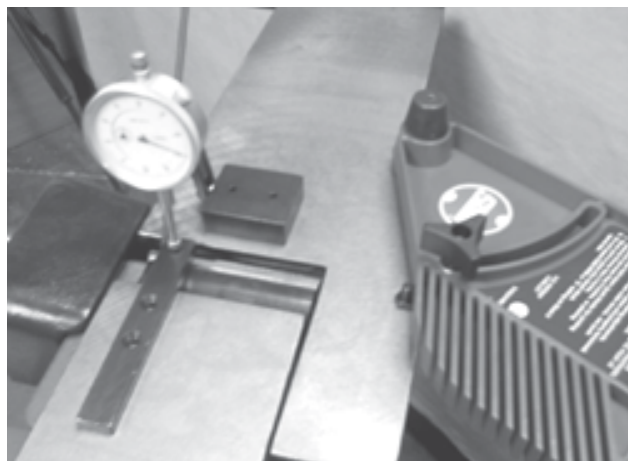
1. Remove the jointer fence.
2. Swing the jointer featherguard completely out of the way and lock it in position.
3. Remove the Miter Bar from the Block.
4. Install the large diameter, domed-end Tip onto the Plunger.
5. Position the Miter Bar over the jointer cutterhead/ knife at one side.
6. Set the Block (with Gauge attached as shown in Figure 8) on the infeed table of your Jointer so the plunger protrudes downward and the Tip touches the Miter Bar at a point directly over the cutterhead/knife.
7. Loosen the Dial Lock Knob and rotate the Zeroing Dial so the large needle is on "0". Re-tighten the Dial Lock Knob.
8. Use a 5/32" Allen wrench positioned in the leveling screw hole to slowly rotate the cutterhead so that the knife contacts/raises the Miter Bar. As this happens, read the measurement on the Dial Indicator Gauge.
9. Move your set up to the other side of the cutterhead, as shown in Figure 9, and repeat steps 5-8. The measurements should be identical at both ends of each knife, or at least within .002" of each other. If not, refer to your jointer owners manual to adjust the knife settings.



**Figure 7**



**Figure 8**



**Figure 9**



**Shopsmith Inc.**  
6530 Poe Avenue  
Dayton, Ohio 45414

**845527**

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