

## Using Dividing Plates with the Rotary Table

Dividing plates allow you to precisely divide a circle into a number of divisions or degrees. The indexing feature helps prevent errors during the repetitive adjustments required in indexing work.

Dividing plates can be used to create bolt circles, gears, polygons, and so on.



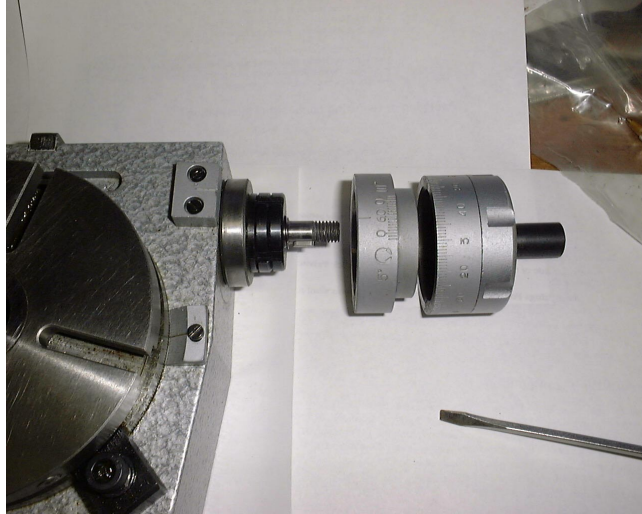
These instructions are for the LittleMachineShop.com 4" H/V Rotary Table part number 1927, or the Phase II 4" Rotary Table part number 1727, and Dividing Plate Set part number 1799.

### *Installing the Dividing Plate*

The dividing plate mounts in place of the hand wheel on the rotary table. Follow these steps to mount the dividing plate.

#### **Remove the Hand Wheel**

1. Remove the nut and washer from the center of the hand wheel.
2. Slide the hand wheel off the shaft.
3. Loosen the setscrew in the side, and slide the inner indexing ring off the shaft.



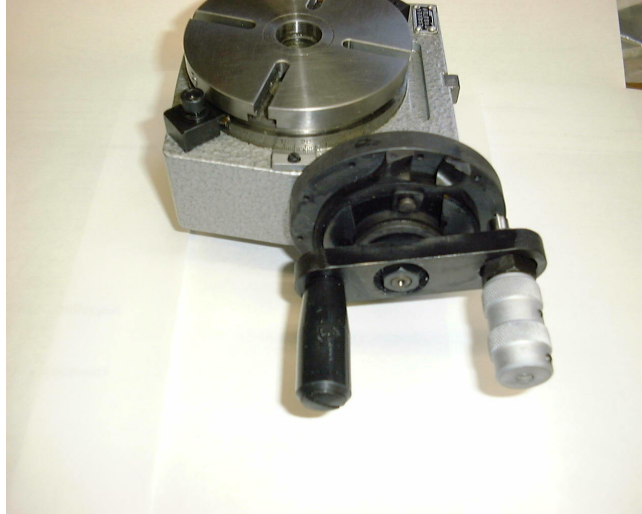
### Assemble the Dividing Plate

1. Put the two sector arms on the dividing plate.
2. Slide the spring clip into the groove on the dividing plate so it retains the sector arms.



### Install the Dividing Plate

1. Transfer the setscrew from the index collar to the dividing plate.
2. Slide the dividing plate onto the shaft.
3. Secure it with the setscrew. The rotational position is not important.
4. Install the crank handle.
5. Reinstall the washer and nut on the end of the shaft.



### *Using the Dividing Plate*

Once the dividing plate is in place, the next step is to make the calculations for the job at hand.

### **Calculate for Degrees**

If you want to advance a certain number of degrees between divisions, here is how to figure out how many turns of the crank handle are needed.

1. Look in the Degrees column in the Indexing Table on page 7 for the number of degrees you want to advance. If you find the value you want, read across the line to find the hole circle to use, the number of full turns, and the number of holes beyond the last full turn. Skip the rest of this procedure.
2. Divide the number of degrees per division by 5. Each full turn of the crank handle advances the rotary table 5 degrees.
3. The whole number is the number of full turns of the crank handle.
4. If there is a remainder in step 2, multiply the remainder by 10.
5. If the answer to step 4 is a whole number, it is the number of extra holes on the 15-hole circle to advance the crank handle.
6. If step 4 does not result in a whole number, you can't advance that number of degrees with this dividing plate.

Here is an example. Suppose you want to create a disk with holes that are 7.5 degrees apart.

|   |                     |
|---|---------------------|
| Divide the number of degrees per division (7.5) by 5            | $7.5/5 = 1.5$       |
| The whole number part of the answer is the number of full turns | 1                   |
| Multiply the remainder (0.5) by 10.                             | $0.5 \times 10 = 5$ |
| The result (5) gives you the number of extra holes              | 5                   |

So to advance 7.5 degrees, you make 1 full turn and then advance an extra 5 holes in the 10-hole circle.

### Calculate for Number of Divisions

If you know the number of divisions into which you want to divide a circle, follow these steps:

7. Find the number of divisions you want in the Divisions column in the table on page 7.
8. Read across the line to find the number of full turns, and the number of holes beyond the last full turn.

Here is an example. Suppose you want to create a circle with 48 holes. Look in the Divisions column in the Indexing Table for 48. Here is that row from the table.

| Divisions | Degrees | Turns | Holes |
|-----------|---------|-------|-------|
| 48        | 7.500   | 1     | 5     |

So to create 48 divisions, you make 1 full turn and then advance an extra 5 holes.

### *Setting up the Dividing Plate*

Once the calculations are done, you are ready to adjust the crank handle and sector arms.

### Set the Crank Handle

1. Make sure that the indexing pin assembly is on the correct side of the sector arms so it will contact a tapered edge of the sector arm.
2. Loosen the nut on the indexing pin assembly.
3. Move the indexing pin assembly in or out until the indexing pin fits in the holes.
4. Tighten the nut on the indexing pin assembly.



Crank handle set with the indexing pin between the sector arms.

### Set the Sector Arms

1. Loosen the locking screw in the outer sector ring.
2. Adjust the sectors until there is the correct number of holes between them.
  - If you will be advancing 7 full turns, plus 4 holes, then there should be 5 holes between the sector arms. (The starting hole, plus the number of holes you are advancing.)



Sector arms set to advance 2 extra holes.

- If you will be advancing almost the full number of holes in the circle, then set the sector arms so they enclose the first hole you want and the last hole you want, but none of the intermediate holes.
3. Tighten the locking screw in the outer sector ring.

### Operating the Rotary Table

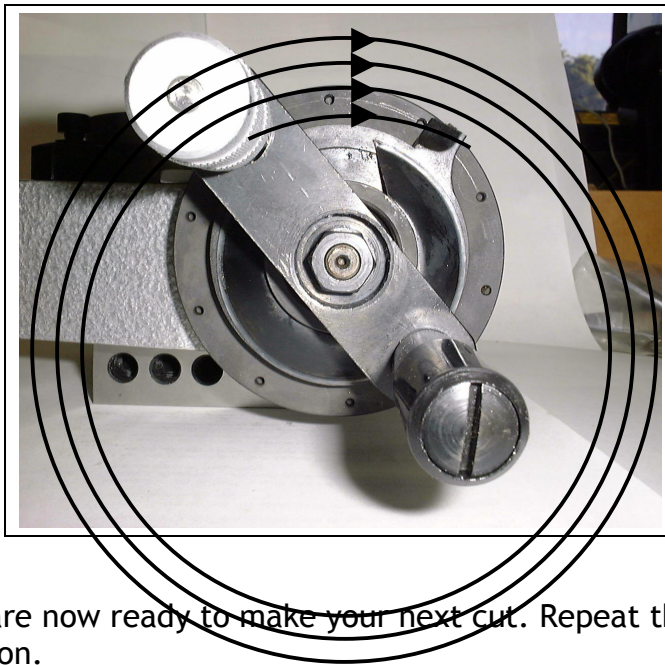
With the dividing plate installed and set up, mount your work piece on the rotary table, and the rotary table on the mill.

The position of the crank handle when you start is not important as long as the indexing pin is in a hole. Make sure it is on the correct side of the sector arms, so it will contact a tapered edge of the sector arm.

Each time you make a cut, you advance the work piece to the next position.

### Advance the Work Piece

1. Pull the handle on the indexing pin assembly to disengage the indexing pin. Pull it far enough so the indexing pin clears the sector arms.
2. Turn the crank handle the number of full turns required, stopping at the position from which you started.
3. Release the indexing pin partially so that the end is at the surface of the dividing plate.
4. Advance the crank handle to the next sector arm. (If you need to pass the sector arms, you will need to retract the pin more to clear the sector arms again.)
5. Release the indexing pin so that it engages the correct hole.
6. Rotate the two sector arms to the next starting position.



This shows rotating three complete turns, plus advancing 2 additional holes to the right sector arm.

You are now ready to make your next cut. Repeat this process for each division.

## Indexing Table

This indexing table is for a rotary table with a 72-to-1 ratio and a dividing plate with 10-holes.

| Divisions | Degrees | Turns | Holes |
|-----------|---------|-------|-------|
| 1         | 360     | 72    |       |
| 2         | 180     | 36    |       |
| 3         | 120     | 24    |       |
| 4         | 90      | 18    |       |
| 5         | 72      | 14    | 4     |
| 6         | 60      | 12    |       |
| 8         | 45      | 9     |       |
| 9         | 40      | 8     |       |
| 10        | 36      | 7     | 2     |
| 12        | 30      | 6     |       |
| 15        | 24      | 4     | 8     |
| 16        | 22.5    | 4     | 5     |
| 18        | 20      | 4     |       |
| 20        | 18      | 3     | 6     |
| 24        | 15      | 3     |       |
| 30        | 12      | 2     | 4     |
| 36        | 10      | 2     |       |
| 40        | 9       | 1     | 8     |
| 45        | 8       | 1     | 6     |
| 48        | 7.5     | 1     | 5     |
| 60        | 6       | 1     | 2     |
| 72        | 5       | 1     |       |
| 80        | 4.5     |       | 9     |
| 90        | 4       |       | 8     |
| 120       | 3       |       | 6     |
| 144       | 2.5     |       | 5     |
| 180       | 2       |       | 4     |
| 240       | 1.5     |       | 3     |
| 360       | 1       |       | 2     |
| 720       | 0.5     |       | 1     |

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