

SmartSpin™ Operator's Manual

SERVICE TAG

WPI #102113

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Device Description

This device is designed to quickly measure cylindrical parts for outer diameter run-out, and part edge run-out (perpendicular to body diameter). To accommodate various size and style of parts, the device includes an adjustable backstop, overhead roll clamping, vertical and horizontal probe positioning.

An integrated a STEPPER motor with specialized drive control hardware and software allows for precision rotation and remote indicator RESET. These features allow for reliable results with proper setup for countless part shapes and sizes within a certain part size range. Two speeds are available for part testing: 50 and 100 RPM.

The factory default Test Cycle is set to Automatic Mode, which means the two-stage test will run without interruption. A manual mode offers a pause between the two stages if needed.

The two digital indicators (Mitutoyo 543-302B) have been modified with remote ZERO function. This useful feature reduces potential unwanted operator motion during the test cycle and increases throughput of the entire test cycle. If the indicator(s) need to be replaced at a future date, the replacement indicator(s) will need to be modified outside the factory* if the automatic ZERO function is desired. If standard indicators without remote zeroing function are substituted, the Indicator Zero Mode must be put into MANUAL mode.

The test cycle is designed to run the test part one rotation to reduce hysteresis (STAGE 1), and then rotate 425° to ensure at least one full rotation for measurement results (STAGE 2). The rotation amount by the STEPPER motor is calculated from diameter that is INPUTED by the operator to the controller.

Results of the test cycle are observed on the displays of the digital indicators once the second stage has completed rotation. Both indicators must be set in TIR mode to properly reflect the full range of indicator motion during the 425° rotation.

If desired, the remote indicator zeroing can be disabled by unplugging the wires that are connected to the underside of the power switch.

*** Contact Willrich Precision Instrument for indicator modification services.**

Operational Features and Guide

A. Controller Functions

The controller provides information to the STEPPER motor for the speed and amount of rotation to the two drive wheels on the device. Also, the controller has the ability to remotely “ZERO” two indicators simultaneously during the test cycle.

1. Test Speed: Press ADJUST knob once to toggle between 50 & 100 RPM.

Even though the digital indicators included with this device are specified to have an infinite response speed, there may be a need to run the STEPPER motor at a different speed between parts tested. The dynamics of friction, part weight, and part shape may need to be compensated by using a slower speed than other parts tested. Choose speed that provides the best repeatable result for the application.

2. Part Size: Rotate ADJUST knob to select part body diameter. (6.25mm to 51.00mm diameter)

The value selected is to match the body of the part that is in physical contact with rollers. Part body diameters are selected to control the amount of rotation for the test cycle. *The correct body size is important to achieve consistent rotation results.*

3. Test Cycle: Press START to begin cycle

The test cycle is comprised of two stages. The first stage is to rotate the part one revolution to help eliminate any hysteresis before indicator readings begin. The second stage of test cycle begins (in automatic mode) after the controller resets the indicators to zero and then rotates the part 425°. Note: Part is rotated 425° to ensure at least one full rotation.

4. Indicator Zero Mode: Press and HOLD ADJUST knob for about 8 seconds. (Auto/Man)

If you want the Test Cycle to automatically run the first and second stage of the test cycle, then Automatic Mode is used. Manual Mode is selected if operator wishes to pause between the two stages of the test cycle, or if the digital indicators have been changed and do not offer remote “zero” support.

5. Jogging: Press and hold START button for about 3 seconds.

This is available if the operator wants to run the drive wheels continuously. This is NOT part of test cycle. To exit jogging, press START again.

B. Digital Indicators (Mitutoyo 543-302B)

Both indicators must be set in **TIR** mode when running the cycle test. To put the indicator into TIR mode, press “PEAK” button on face of indicator several times until TIR appears on indicator display, then press the blue “START” button on the indicator face to begin TIR mode. Indicator will stay in this mode unless someone adjusts it.

C. Part Loading (Part Size Range: 6.25mm to 51.00mm diameter. Lengths from 25mm to 150mm)

1. Rolling Clamp

Generally, it is best to place the overhead roller in the middle of the part body diameter that is in contact with the drive wheels of the device. The spring-loaded vertical rolling clamp handle should be relatively level to base plate with the part resting on the drive wheels (*See Figure 1*).

There are two directions the rolling clamp can be adjusted: Up/Down, Left/Right.

2. Back Stop

Once the part is loaded vertically, the BACKSTOP should be slid into position. The BACKSTOP has two rough positions, and then a fine adjust feature to accommodate a variety of part lengths (*See Figure 2*).

3. Vertical Indicator Arm

Assuming there is a vertical measurement to be evaluated, slide the VERTICAL INDICATOR ARM into range above the feature being measured. Adjust the vertical height to allow the indicator probe to make contact with the appropriate feature. Make sure to allow for enough vertical stroke to capture any run-out that the part will have.

4. Horizontal Indicator Plate

Assuming there is an edge measurement to be evaluated, slide the HORIZONTAL INDICATOR PLATE into range next to the feature being measured. There are two probe extensions to choose: Rolling wheel, and fixed blade. Adjust the probe as desired. There are two ROUGH positions and fine adjust with the horizontal probe (*See Figure 2*). Lock HORIZONTAL INDICATOR PLATE to rails once the probe is resting on part surface. Be sure to confirm indicator is engaged before proceeding.

5. Ready to Run

Check to see the indicators are powered up. Confirm indicators are in TIR mode. (*See Step B*)

D. Test Cycle (Automatic Zero Mode)

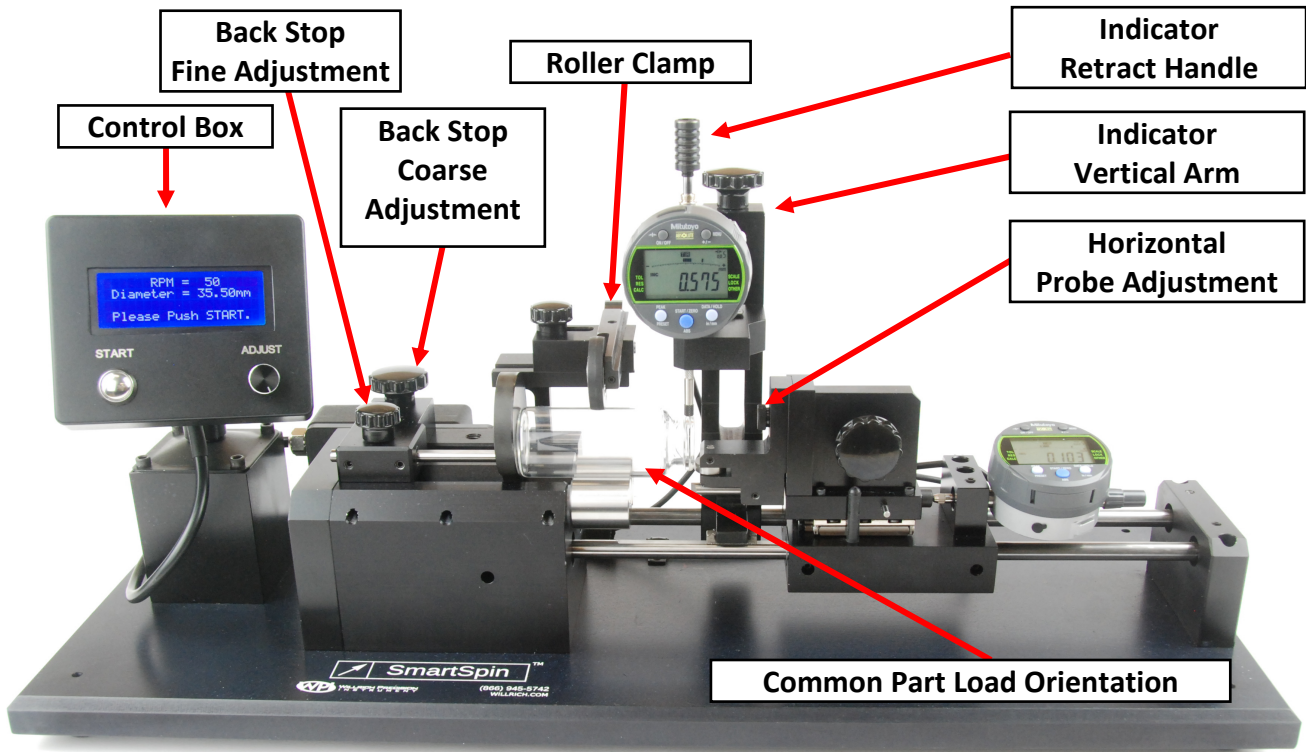
1. Once part is properly loaded, operator presses START button on the controller box.
2. The device should rotate the part one (1) full rotation and then pause briefly.
3. You will hear a click, which is the controller resetting the indicators.
4. The final rotation will occur. (425°)
5. Read indicator(s) for the TIR value(s).
6. Unload Part.
 - Retract Horizontal Plate
 - Push Vertical Arm Back
 - Push Roller Clamp Arm Down
 - Remove Part

E. Test Cycle (Manual Zero Mode)

1. Once part is properly loaded, operator presses START button on the controller box.
2. The device should rotate the part one (1) full rotation and then pause.
3. Controller will prompt you to ZERO indicator(s)*
4. Controller will prompt you to press and hold START to continue test.
5. The final rotation will occur. (425°)
6. Read indicator(s) for the TIR value(s).
7. Unload Part.
 - Retract Horizontal Plate
 - Push Vertical Arm Back
 - Push Roller Clamp Arm Down
 - Remove Part

*Note: Controller will still create a reset signal whether or not the indicator is attached; therefore, you will still hear the click of the system trying to reset the indicator.

[Figure 1]



[Figure 2]

