Product
Feeding
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Internal Measuring Device

Model MD-1

Measuring Range

From 3/4" to 1-1/2" Bore

Internal Measuring Device

The purpose of this device is to accurately measure both the internal and external surfaces of manufactured or machined components.

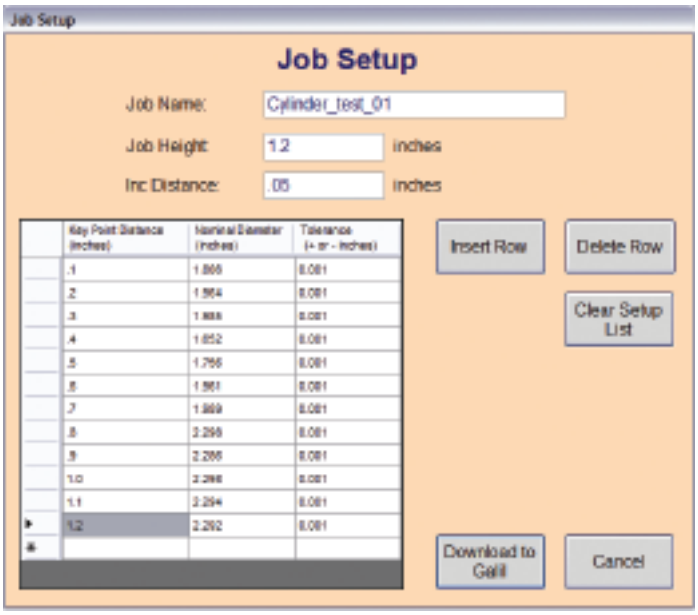
The device is to act as a quality control unit either as an in-line production stage or alternatively as a stand alone/ bench model.

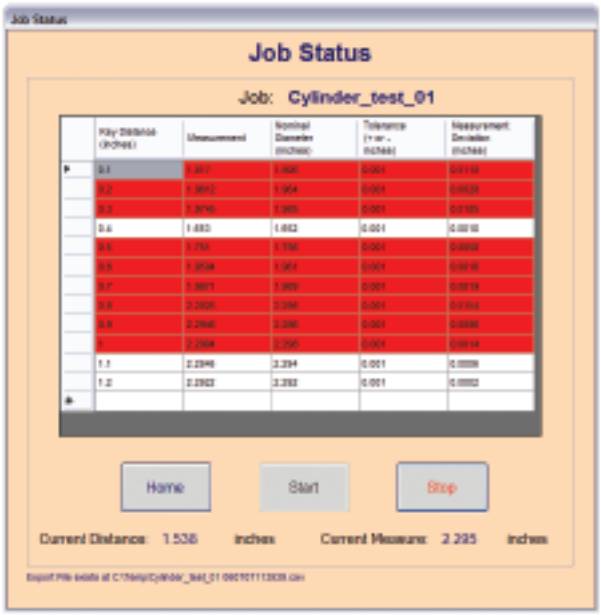
The components to be checked (measured for machining accuracies in keeping with the manufacturing drawing reference.) will be either automatically staged under the measuring head by means of either a rotating disc infeed or in-line conveyor system or placed in position by hand, onto a locating pin.

The device in its different versions can have as many as five (5) axis as followers;

- To move either the measuring head or component to be checked, in a controlled up/down movement with the aid of a Servo or step-motor ('Y' axis) depending on the device type.
- To move either the measuring head or component to be checked, in a controlled left to right movement with the aid of a Servo or step-motor ('X' axis) depending on the device type.
- To rotate the component through 360 degrees about its own axis, with the aid of a Servo or step-motor. ('Z-axis)
- To move the component or measuring head with the aid of a Servo or step-motor from measuring the internal dimension, to also measure the external dimensions.
- To index either a disc infeed or inline conveyor system to automatically position with the aid of a Servo or step-motor the component to be checked.

The method to be used to measure the components is achieved by sending, a laser beam onto a prism designed to deflect the light at 90 degrees onto the target area and then have the beam return again through the prism and





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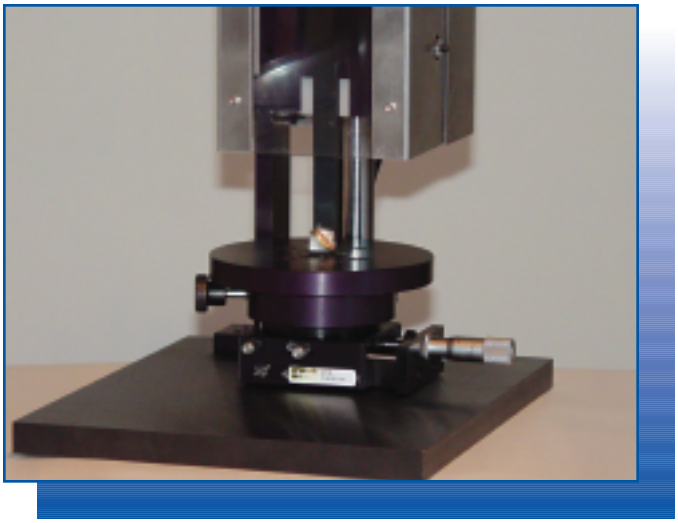


so back to the laser head.

The information gathered in this way, either in an analog or as a digital signal would then be sent to a controller for interpretation and converted mathematically by a software program into a dimension. An image or profile of what is being measured will also be visible on a laptop screen attached to the controller.

It will be possible for the operator to set-up the criteria for the component being measured as well as see the results of the checked piece, since both will be displayed on the touch screen. The information gathered can also be stored on a spreadsheet, and printed if required.

All incremental movement along the various axis will be accurately achieved through a register known as an encoder, working in conjunction with either a step-motor or a servo-motor. This makes it possible for the operator to predetermine the critical locations from which to take a measurement.

In order to ensure the depth of the internal profile of the component is measured, the central locating pin is mechanically pulled downward out of the way, whilst the component is held in position by magnets. Once the checking procedure is complete the locating pin is returned to its original position, awaiting the location of the next component to be measured.

The actual platform on which the component sits, together with its component locating pin is interchangeable for different piece sizes.

By programming the software it would be possible to disclose the information obtained either in millimeters or inches or both.

Model:-IMD-1 Supplied as a One axis device, capable of checking the **'Y' AXIS,** for the internal bore profile of the component.

Model:-IMD-2 Supplied as a Two axis device, capable of checking the **'Y' AXIS** and the **'Z' AXIS,** for both the internal bore profile of the component as well as its concentricity.

Model:-IMD-3 Supplied as a Three axis device, capable of checking the **'Y' AXIS, 'X' AXIS** and the **'Z' AXIS,** for both the internal bore profile of the component as well as its concentricity. It is also capable of repositioning the component so that the external profile can be measured as well as being checked for concentricity.

Two additional model devices are available which are designed to fully automate the devices **IMD-1, IMD-2** and **IMD-3** which are stand alone or bench devices.

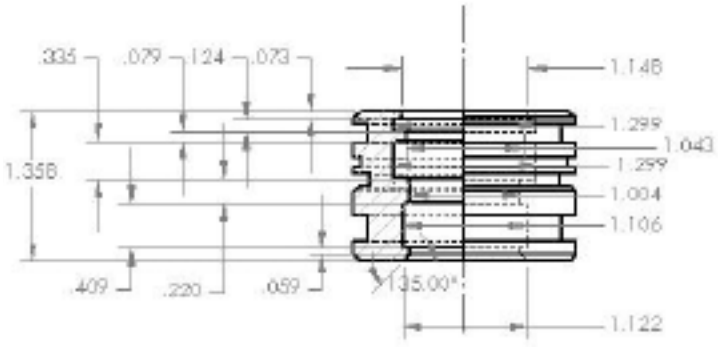
Internal Measuring Device

In both instances the component to be measured will be elevated at the checking station, so that the internal bore profile and its concentricity can be recorded. On completion the component will be returned to its original position and moved out of the way, enabling the subsequent component to come into station. The checked component would move out of the device as either a satisfactory unit or to the reject station if found to be out of tolerance.

As with the bench models a record will be kept on each component measured including the defect attached to the rejected component, allowing the operator to print out a hard copy if required.

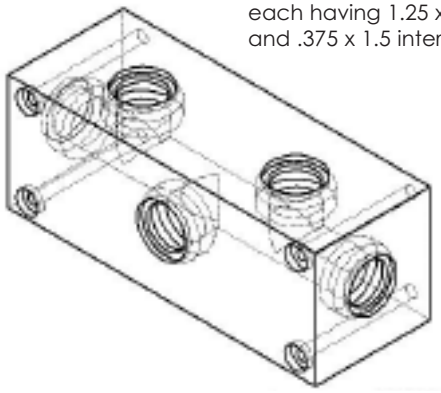
Model	Component Bore Range	Tolerance Range	Number of Axis	Type of Device
IMD-1	FROM 0.75 TO 1.50	+/- 0.001	ONE	BENCH
IMD-2	FROM 1.00 TO 1.75	+/- 0.001	TWO	BENCH
IMD-3	FROM 1.75 TO 2.75	+/- 0.001	THREE	BENCH

Typical Component



Five Port Manifold Block

each having 1.25 x .125 recess and .375 x 1.5 internal groove.



Product Feeding Solutions Incorporated.

11546 S. Austin Ave.
Alsip, IL 60803
www.productfeeding.com

Patent Pending