Air Probes

An air probe is used to measure an internal diameter. It consists of a cylindrical hardened steel body which is precision ground to "slip-fit" in the workpiece to be measured at the low size limit of the hole. In operation, air is passed through the probe. A back pressure is produced where the surface of the workpiece throttles the air flowing from the probe. A readout (air comparator) measures the resulting back pressure and the workpiece size is displayed.

An illustration of a two-jet air probe is shown in Figure 1 below. (Note that some manufacturers refer to air probes as air plug gages or air spindles.)

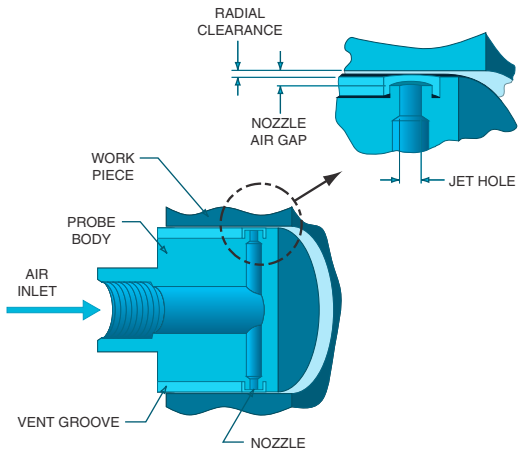

Figure 1
AIR PROBE CROSS SECTION

In Figure 1, air is passed into the air inlet and through the nozzle. A magnified view of the nozzle shows that the nozzle tip is recessed a small amount below the surface of the probe. This feature makes the air gage measurement essentially non-contact. Therefore, wear does not directly affect the accuracy of the gage. Moreover, the flow of air purges the gaging surface of contaminants which makes it self-cleaning.

The use of a set of opposed nozzles makes measurement independent of the radial position of the probe within the test bore. Radial motion of the probe causes an increase in flow from one nozzle to be offset by a decrease in flow in the opposing nozzle. This "differential" type of measurement makes it possible to obtain highly accurate measurements with limited oper-ator skill.

Another characteristic of the gage is that the air is throttled at the exit of the jet hole. Consequently, accurate measurement requires the surface of the workpiece to completely cover the jet hole. It is not necessary to cover the land surrounding the nozzle tip in order to obtain reliable data.

Air probe styles vary depending on how close the air jets are to the leading edge of the probe body. "Thru- hole" style probes have gaging nozzles located near the center of the probe body. "Blind" or "Super-blind" probe styles have nozzles located near the lead edge. (See pages 16 & 18 for air probe dimensional specifications.)

THRU-HOLE & BLIND STYLE AIR PROBES

THRU-HOLE AIR PROBE WITH FACTROY ADDED EXTENSION

BLIND AIR PROBE WITH HEAVY DUTY HANDLE

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