MEASURING A RING USING SLIP GAUGES AND ROLLER

Created: 23 July 2005

Principle:

Slip Gauges have a least count of 0.001mm. Hence if we have to try all possible stacks in steps of 0.001mm, we will have to try a large number of sizes. Hence we follow a technique of successive approximation, called bridging or the rule of halves.

Procedure:

1. Roughly measure the Inner Diameter of the ring using a steel rule to the nearest mm and subtract the diameters of the rollers to obtain the approximate size of the required slip gauges.

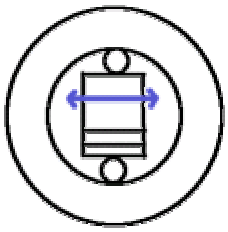
2. Place the ring on a suitable metal plate and place the rollers inside the ring at approximately the ends of a diameter.

3. Build up a stack of slips to 1.5 mm below the approximate size. On to this pile, wring 1.0 mm and try to slip between the rollers.

4. If this pile is too small, change 1.0 for 1.5 mm. If this pile is too large, change 1.5 for 1.25mm. Thus we obtain the size to the nearest 0.25mm.

5. Similarly, we keep changing the last slip gauge, each time aiming for the average of the two stacks, the last stack that went into the gap and that which did not go.

6. As the size of the slip pile which has to fit between the rollers approaches the true size, it will be found more difficult to get them in. As the pile begins to wedge into the radius at the top of the rollers it should be rocked gently to and fro until it passes down between them. In this way the rollers themselves will be rolled until they are exactly across a true diameter when the slips will fall in quite easily, unless they are too large. It is **very important** not to force them in, for the intensity of pressure between the slips, rollers and ring can be very high. If the slips are oversize they can be removed only with some difficulty and possible damage.



7. When the right size has been reached it will slide in easily, and a 0.001mm addition will make a definite tightening of the feel.

8. Leave the slips in position in the ring with the rollers, all resting on the metal plate, for ten or fifteen minutes, in order to equalise the temperature. Adjust the value of the slip gauges after this time if any change in relative size has taken place due to the handling of the slips.

9. Measure the diameter at several positions along the circumference.

Tabular column:

Roller diameters: 1) 2)

Diameter with steel rule:

Approximate size of slip gauges:

Trial no	**Slip Gauges used**	**Stack dimension**	**Result: GO/NO GO**
1			
2			
…			

Diameter of ring: