**ISO METRIC PLUG, RING AND CALIPER THREAD GAUGES**


**BS 3643** comprises two parts. Part 1 provides information and data on the basic principles, and is based on ISO 965/1 and ISO 965/3.

Part 2 tabulates diameters of coarse, constant and fine pitch series threads, and is based on ISO 965/2.

**BS 919: Pt3: 1968** contains the recommended gauging system for checking ISO metric threads in accordance with BS 3643. It is based on ISO 1502. The basic profile of the ISO threads is shown below.

This gauge comprises a Go element which tests that the Major and Effective diameters are not too small (maximum material limit). It also tests for pitch or flank errors in the product thread. The Not Go element tests only that the Effective diameter is not too large (minimum material limit). The Minor diameter of the internal thread can be checked separately using a double ended plain plug gauge.

For testing external product threads Go and Not Go ring gauges or caliper gauges having Go and Not Go anvils may be used.

**BS 3643 Pt1 and Pt2** specifies the fundamental deviations and tolerances for e.g. 5H, 6H, 6G and 7H for internal threads, and 4h, 6g, 6e, 8g for external threads.

Generally 6H/6g are regarded as “medium fit”. The nut and bolt deviations and tolerance zones are illustrated here.

**BS 919 Pt3: 1968** specifies the limits for gauges for testing the product thread. The basis for determining the gauge limit is the magnitude of the product tolerance. i.e. the larger the product tolerance, the larger the gauge limit regardless of diameter. The gauges recommended to be used are as follows:-

For testing internal product threads a double ended screw plug gauge (Style E) may be used.
Wherever practicable, external product threads should be tested by means of ring gauges as these provide a full functional test of all thread features: pitch, angle, thread form and size.

Gauges for testing products in the pre-plating condition can be supplied. For internal threads class 6G may be used as a pre-plating condition for 6H after plating. For external threads class 6e may be used as a pre-plating condition for 6g after plating. Class 6g may also be used as a pre-plating condition for 4h after plating. When ordering gauges for other plating conditions it is helpful to advise either the effective diameters required, or the amount of plating to be applied.

The regular checking of gauges in constant use is important. Plug gauges should be checked by direct measurement of the Major and Effective diameters, using a Floating Carriage Measuring Machine or similar specialised equipment. Ring gauges may be checked by direct measurement, or preferably by using Go check and Not Go Wear check plug gauges, as specified in BS 919: Pt3: 1968.

Coventry Gauge Limited have a fully equipped calibration laboratory, with UKAS accreditation, capable of carrying out calibrations of screw and plain gauges, and ancillary equipment.