ADVANTAGES AND DISADVANTAGES OF VARIOUS THREAD INSPECTION AND MEASUREMENT METHODS

THREAD PLUG, RING AND CALIPER GAUGES

ADVANTAGES

Inspects full thread profile and pitch

Can be used with a minimum of training

Assuming correct use of both GO and NO-GO gauges the component can be judged ”good” or ”bad”

DISADVANTAGES

Only reveals if the component is ”good” or ”bad” – not the relationship to the tolerance

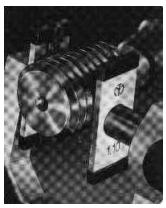
Time consuming when setting up the machine and performing process control

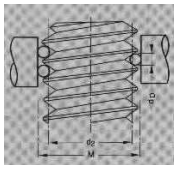
Difficult/expensive to calibrate

Manufacturing tolerances and wear on the gauges usually give less tolerance on the actual components to be inspected

Can only be used to the specific thread and tolerance stated on the gauge

MEASURING WIRES FOR A MICROMETER





ADVANTAGES

Very accurate, assuming correct flank angle

Can be used on all external threads

Suitable for machine set-up and process control

DISADVANTAGES

Only suitable for external threads

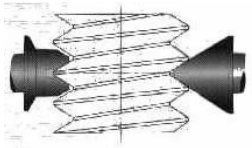
Requires a calculation to find the correct measurement result

Measuring wires must be bought to suit the relevant micrometer spindle diameter

N.B. there are 3 standard micrometer spindle diameters – Ø8mm (5/16”), Ø6,5 and Ø6,35 mm (1/4”)

“Only” measures thread pitch diameter

THREAD INSERTS FOR SPECIAL MICROMETER



ADVANTAGES

Accurate assuming correct flank angle

Can be used on all threads with the same flank angle

Suitable for machine set-up and process control

DISADVANTAGES

Only suitable for external threads

Requires special (and thus expensive) micrometer

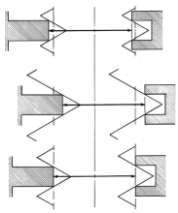
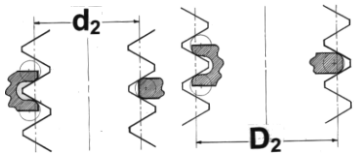
Requires set-up/reference master when used with a micrometer larger than 0 – 25mm

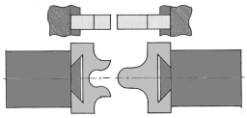
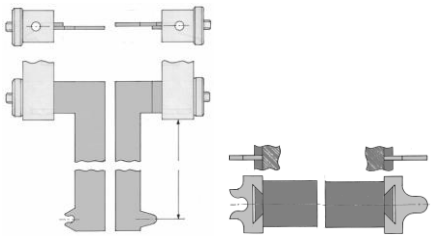
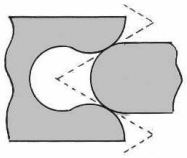
“Only” measures thread pitch diameter

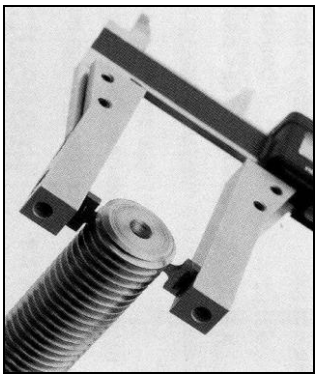
N.B. One advantage can outweigh several disadvantages, just as one disadvantage can outweigh several advantages.

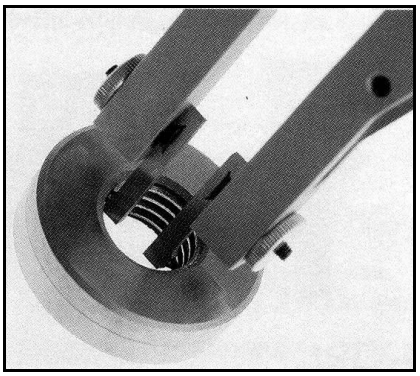
ADVANTAGES AND DISADVANTAGES OF VARIOUS THREAD INSPECTION AND MEASUREMENT METHODS

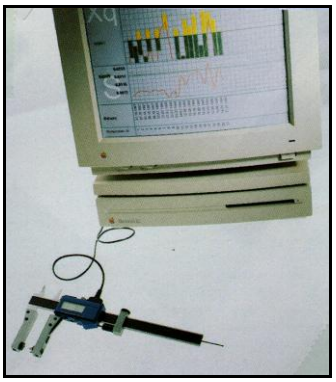
F-M-S THREAD INSERTS WITH A DIGITAL CALIPER

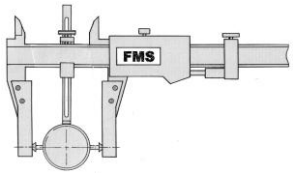
PRINCIPLE		ADVANTAGES	DISADVANTAGES
		For measuring pitch diameter on both external and internal threads Available for all thread types Suitable for machine set-up and process control SPC possibilities with a digital caliper	"Only" measures thread pitch diameter

FMS thread inserts	FMS thread inserts	contact	**Thread examples**
 for external threads	 for internal threads		*(with FMS)* **M, UNC, UNF, UN, UNS, G, Rp, R, Rc, Tr, ACME, STUB ACME, Rd, NH, NPT, NPTF, NPTR, API, ANPT, NPS, NPSC, NPSF, NPSH, NPSI, NPSL, NPSM, NGO, BSW, BSF, WHIT, E, S, Pg, FuG, etc.**


External measurement


Internal measurement


SPC



There are many other thread measurement possibilities but most of these are either expensive or not suitable for workshop use. Probably the best (inexpensive) method is a combination of using a "GO" thread plug or ring gauge (giving correct thread profile and pitch), and measurement of the thread pitch diameter (giving correct positioning within the tolerance).

WWW.F-M-S.DK