

# **UNIVERSAL VARIABLE READING THREAD GAGING SYSTEM**



**SYSTEM CONFORMS TO SPECIFIED REQUIREMENTS, MIL-S-8879C,  
S7742D, FED-STD-H28/20, & ANSI/ASME B1.1, 1.2, 1.3M STANDARDS**

# Universal Variable Reading Thread Gages

**REDUCING INSPECTION TIME-** Universal variable reading thread gaging systems provide a fast and accurate way to maintain tolerances during the manufacturing process. Measurements of functional size, pitch diameter, minor diameter, major diameter, taper, and circularity can be quickly and accurately determined.

**COMPLIANCE TO STANDARDS-** Both internal and external variable reading thread gaging systems meet the specifications for Federal, Military, and ANSI/ASME standards.

**PROVEN GAGING METHODS-** Universal variable thread gaging generates actual measurements of features, allowing qualitative assessment of the inspected characteristic. Measurements obtained can be compared to the tolerance limits to determine trends in manufacturing.

**GAGING EFFICIENCY-** Knowing the measured value allows operators to make adjustments to the machine more precisely and with less guess work. Variation from part to part can be monitored and adjustments made before limits are exceeded, improving the quality of products.

**COST CONSIDERATION-** By measuring the position within the assigned tolerances, less time is spent in costly rework, sorting, and remanufacturing. The end result is improved quality and increased profit.



## Mounting Stands And Handle

HANDLE OR SINGLE STAND



DUAL MOUNT STANDS



MULTIPLE MOUNT STAND



**STAND CONFIGURATION-** Universal mounting stands and portable handles are quickly and easily set up for use to suit your gaging requirement. A variety of base systems are available for both internal and external thread gaging systems. All are very solid for trouble-free operation and provide the versatility to mount single or multiple gages into one unit.



# External 3-POINT™ Thread Gage

**3-POINT™ GAGE FRAME-** Has a self-contained alignment system that eliminates the need for setting templates or micrometers to achieve perfect 120° spacing. The frame design reduces the inspection space and additional expense normally required by other systems using numerous gage frames for different sizes.

**GAGE RANGE-** The 3-POINT™ Thread System covers a size range from #4 (3mm) to 1-1/2" (40mm) with two adjustable frames. **1st Frame;** #4 (3mm) to 3/4" (20mm) **2nd Frame;** 13/16" (22mm) to 1-1/2" (40mm).

**GAGE PERFORMANCE-** The gage roll sets are easily changed from one size to another. The lower rolls are mounted in a fixed position to support the workpiece. The upper roll arm assembly exerts a consistent force and actuates the indicator providing accurate readings.

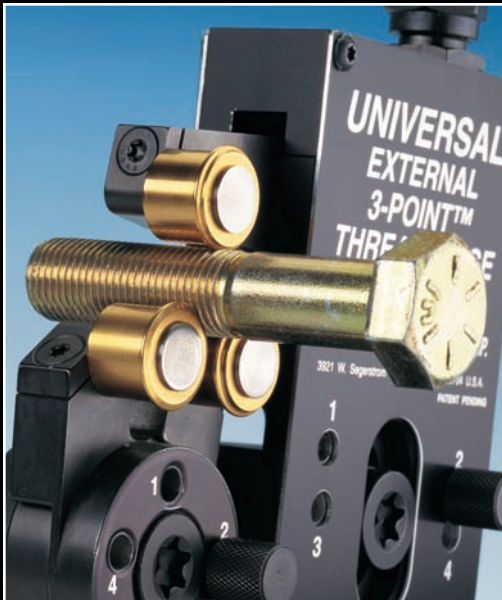
**GAGE DURABILITY-** Thread rolls are designed to revolve with the workpiece, distributing wear evenly. (Optional) TITANIUM-NITRIDE (TiN) coatings protects the gage roll surface and provides additional hardness that extends gage roll life.

**SPC COMPATIBLE-** Universal gages provide the ideal system for data collection. Adjustments can be made at the machine before scrap is created, resulting in improved productivity and quality.

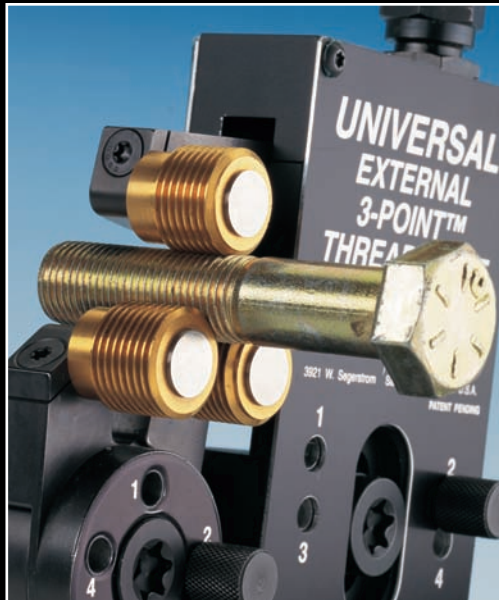


## External Gage Rolls

**BEST WIRE ROLLS**  
Pitch Diameter  
(Minimum Material Condition)



**FULL FORM ROLLS**  
Functional Diameter  
(Maximum Material Condition)



**PLAIN ROLLS**  
Major Diameter  
(Multi Lobe Out-Of-Roundness)



**GAGING ROLLS-** There are interchangeable gage rolls available for standard thread gaging applications. Each set of 3 rolls corresponds to one particular thread size. For measuring Pitch Diameter use best wire rolls. For measuring Functional Size use full form rolls. For measuring Major Diameter use plain rolls. For measuring Minor Diameter (not shown) use included angle rolls. Special thread rolls are priced on request.

# External 2-POINT™ Thread Gage

**2-POINT™ GAGE FRAME-** Utilizes the most advanced precision linear bearings. Accurate linear movement and consistent gaging force assures repeatable readings throughout the measuring range. Universal's 180° frame design provides the best method for gaging functional size and other thread geometry.

**GAGE RANGE-** The 2-POINT™ gages cover a size range from #4 (3mm) to 3/4" (20mm) or 13/16" (22mm) to 1-1/2" (40mm).

**GAGE PERFORMANCE-** The external thread gages are easily set-up to use. With an appropriate thread setting plug gage, adjustment can be made quickly in setting the indicator to the actual size of the master, greatly reducing inspection time.

**GAGE DURABILITY-** The external 2-POINT™ thread gages are constructed to provide a consistent gaging force for repeatable readings. The frame offers positive alignment that gives the flexibility to measure parts at the machine.

**UNAMBIGUOUS READINGS-** A consistent and precise reading eliminates opinion and operator variability. With a master thread plug gage, setting adjustments are made in seconds allowing actual size to be "seen" as opposed to the operator "feel" necessary with GO NO/GO ring gaging.



## External Gaging Segments

**FLAT SEGMENTS**  
Major Diameter  
& Out-Of-Roundness



**FULL FORM SEGMENTS**  
Functional Diameter  
(Maximum Material Condition)



**BLADE SEGMENTS**  
Minor Diameter  
& Taper



**GAGING SEGMENTS-** There are various interchangeable gaging segments available for standard and special threads. Thread gage segments are (Optional): TITANIUM-NITRIDE (TiN) coated for maximum wear. This coating provides additional hardness to the surfaces and visual indication of the need for replacement. Special thread segments are priced on request.



# Internal 2-POINT™ Thread Gage

**INTERNAL THREAD GAGE FRAME-** Utilizes advanced state of the art precision linear bearings ensuring zero deflection and accurate movement. Consistent gaging force and smooth gage action guarantee repeatable readings throughout the entire measuring range.

**GAGE RANGE-** The Internal 2-POINT™ System covers a size range from #4 (3mm) to 1-1/2" (40mm) with two adjustable frames. **1st Frame;** #4 (3mm) to 3/4" (20mm) **2nd Frame;** 13/16" (22mm) to 1-1/2" (40mm).

**GAGE PERFORMANCE-** The internal thread gaging elements are easily set-up to use. With precision frame alignment, thread elements are easily changed from one size to another.

**GAGE DURABILITY-** Universal internal thread gage frames have a three year limited warranty. All internal gaging elements are TITANIUM-NITRIDE (TiN) coated for maximum wear. This coating protects the surface and provides additional hardness that extends gage element life.

**COST EFFECTIVE-** With a master thread setting ring gage adjustments are made in seconds to the actual size. This process reduces inspection time to a third of that required for inspecting parts with "GO-NOT GO" plug gages.



## Internal Gaging Elements

**"CONE & VEE" ELEMENTS**  
Pitch Diameter  
(Minimum Material Condition)



**FULL FORM ELEMENTS**  
Functional Diameter  
(Maximum Material Condition)



**PLAIN ELEMENTS**  
Minor Diameter  
(Taper & Out-Of-Roundness)



**INTERNAL GAGING ELEMENTS-** For measuring Pitch Diameter use single gaging elements "Cone & Vee" design. For measuring Functional Size use full form elements. For measuring Minor Size and Circularity use plain elements. Special thread elements are priced on request.

# Indicator Selection

**MECHANICAL DIAL INDICATORS-** Universal offers a wide variety of brand name indicators; Federal Products, Mitutoyo, Brown & Sharpe, Starrett, Mahr, Ono Sokki and CDI Chicago Dial Indicator Co. These indicators are available in both inch and metric type to meet your requirements.

**ELECTRONIC DIAL INDICATORS-** Universal can supply electronic indicators with special features to simplify the measuring processes that include; SPC capabilities, special ranges, analog LCD display, preset features, inch/metric conversion, battery or AC power. Most brands are available directly from us.

**GAGE SELECTION-** A basic variable reading thread gage system consists of one base, two gage frames, two indicators, and one set each of pitch diameter and functional diameter rolls, segments, or elements. In addition, thread setting masters and other accessories are necessary.

**INDICATOR ACCESSORIES-** Indicators for variable reading thread gages may require standard indicator extensions. Indicators with 8mm stem will require a split bushing adapter before installing into the 3/8" collet mount.



## SPC Data Acquisition System

**STANDARD SPECIFICATIONS-** Built into a world standard platform, Kurt Check SE provides on line real-time SPC that is truly cost effective. This fully IBM PC compatible computer comes with the ability to support direct interface for up to 20 LVDT, half-bridge, digital, analog, or RS-232 measuring devices. Advanced menu-driven SPC software package, supplied with the computer system, gives operators easy access to SPC charts for both variable and attribute data. With a single key stroke, the computer system provides operators instant access to information required to center and control their process. By adding a standard network card, the computer system can pass and retrieve data within your network. This computer system has the power to help you achieve zero defect production in a familiar, cost effective package.

### SYSTEM INCLUDES:

- KurtSPC, menu driven and real time software
- Windows' 95 or NT operating system software
- 400 MHz Pentium® III with MMX™ technology
- 128Mb ram, 4.1 GB Hard Drive, 1.44Mb floppy drive, 24x CD Drive
- 101 Keyboard with a standard mouse
- 14" SVGA .26DPI color CRT
- Four channel user selected gage interface board
- two serial and one parallel ports
- Expandable slot up to 20 gage inputs



# Gage Selection

**GAGE COMPONENTS-** There are 5 components that comprise a complete internal or external variable reading thread gage. To assist you when ordering please specify the following information.

**1) BASE-** Select one of the following; single stand, dual stand, multiple mount stand or gage handle for portable use.

**2) GAGE FRAMES-** There are 2 basic frames covering screw sizes from #4 (3mm) to 3/4" (20mm) or 13/16" (22mm) to 1-1/2" (40mm). Select internal or external system and the range of thread sizes to be measured.

**3) MEASURING COMPONENTS-** There are available various types and sizes of interchangeable external rolls, external segments and internal elements for measuring specific attributes.

**4) INDICATORS-** Offered are the following: mechanical or electronic, inch/metric, preset features, analog readout, SPC capabilities, battery and/or AC powered.

**5) CERTIFIED MASTERS-** Short form certifications are supplied with thread setting plug gages, thread setting rings gages and plain ring gages. Long form certifications are quoted separately.



## Master Setting Thread Gages

**THREAD SETTING PLUG GAGES**  
(ANSI B1.2/B1.16M Standards)



**THREAD SETTING RING GAGES**  
(ANSI B1.2/B1.16M Standards)



**PLAIN RING GAGES**  
(ANSI B89.1.6 Standards)



**SETTING THREAD GAGES-** Universal Master Setting Thread Gages provide a traceable means to set and maintain the Variable Reading Thread Gaging System. Each thread size requires a Master Setting Thread Gauge or Plain Ring Gauge to establish a calibrated position before measuring a product.





Universal Punch Corp. has been a leader in the tooling and gaging industry for over 30 years. As part of our continuing commitment to providing precision and excellence in all of our products we have expanded into a new 55,000 sq.ft. facility. Our new plant is equipped with increased machining capacity, expanded heat treating facilities, and a state of the art calibration and inspection laboratory. This new laboratory will ensure that all products sold conform to specifications for ANSI or ISO standards. All measuring equipment and gaging masters are directly traceable to N.I.S.T. certification processes and procedures will conform to ISO 10012 and ISO guide 25. Universal Punch Corp. will be able to service your gaging requirements well into the twenty first century.



**GAGE CALIBRATION**



**PRECISION MEASURING**



**UNIVERSAL PUNCH CORP.**

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