

Universal External 3-Point Thread Gage

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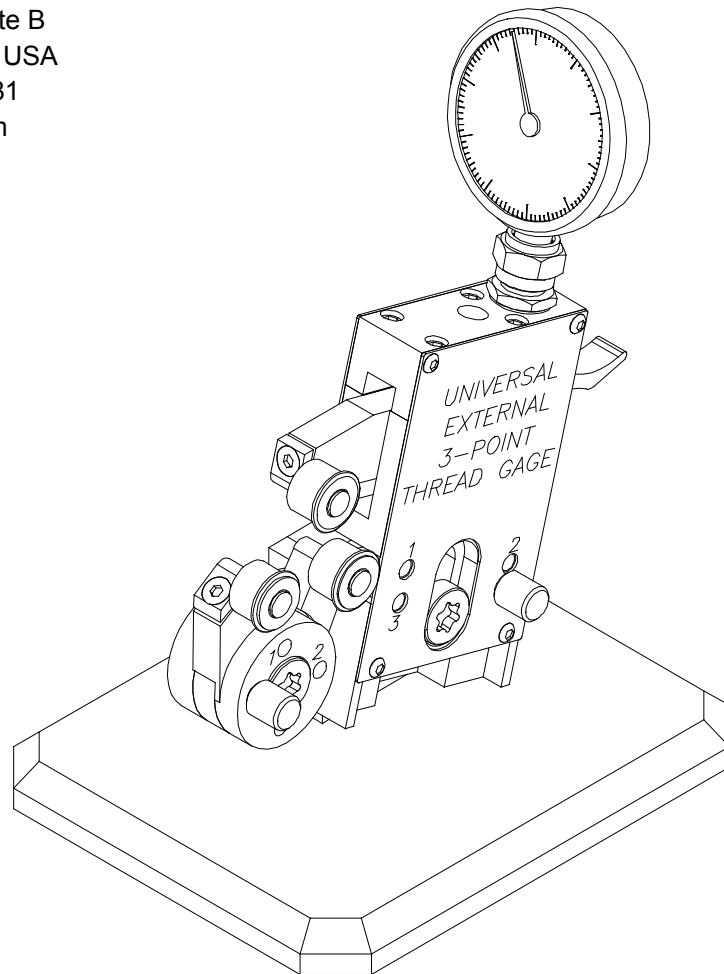
Gage Crib Worldwide Inc

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External 3-Point Gage Assembly
Shown with Best Wire Rolls

OPERATING AND MAINTENANCE MANUAL



Our Product –

Universal Punch Corp.'s External 3-Point Thread Gage System is an accurate and reliable instrument to measure features of externally threaded fasteners. The Gaging system can check Pitch Diameter, Functional Diameter, Major and Minor Diameter in sizes ranging from #4 (3mm) to 1 ½" (40mm) by simply changing the type and size of Rolls. This method of thread gaging generates actual measurements of features allowing qualitative assessment of the inspected characteristic. Knowing the measured value allows operators to make precise adjustments to the machine.

Characteristics –

Gage Frame –

The Frame has a self-alignment system that eliminates the need for setting templates or micrometers to achieve a perfect 120° spacing between each Roller. The Frame design reduces the inspection space and additional expense normally required by other systems using numerous frames for different sizes.

Gage Range –

The 3-Point Thread Gage system covers a size range from #4 (3mm) to 1 ½" (40mm). This is accomplished using two different adjustable Frame sizes:

Frame #1 - #4 (3mm) thru ¾" (20mm)

Frame #2 – 13/16" (22mm) thru 1 ½" (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 Roller Arm assembly exerts a constant force and actuates the indicator providing accurate readings.

Gage durability –

The Thread Rolls are designed to revolve with the workpiece thus distributing wear evenly. An optional Titanium Nitride (TiN) coating protects the Roller surface and provides an additional hardness that extends the life of the Roller.

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 quality and productivity.

Types of Rolls –

The type of measurement required will dictate the type of Roller used in the Gage. Each set of Rolls corresponds to a particular thread size. When measuring Pitch Diameter, use our Best Wire Rolls. When measuring Functional Diameter, use our Full Form Rolls. When measuring Major diameter, use our Plain Rolls and when measuring Minor Diameter, use our Included Angle Rolls.

Mounting Stands –

The Frame Assembly is typically mounted to a Mounting Stand for bench top use. It can also be provided with two units mounted to a single Mounting Stand, or even three units mounted to a single Mounting Stand. Another option provided is to have a Handle inserted into the Frame for hand-held use.

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The Gaging System –

The Gage System consists of five major features:

- 1) Mounting Stand (multiple units) or Handle
- 2) Adjustable Frame Assembly with Setting Pin
- 3) Adjustable Swing Arms with Setting Pin
- 4) Thread Rolls with Roll Pins
- 5) Mechanical Dial or Digital Indicator

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Note: All Figures used are for illustration purposes only and may not represent exact configuration.

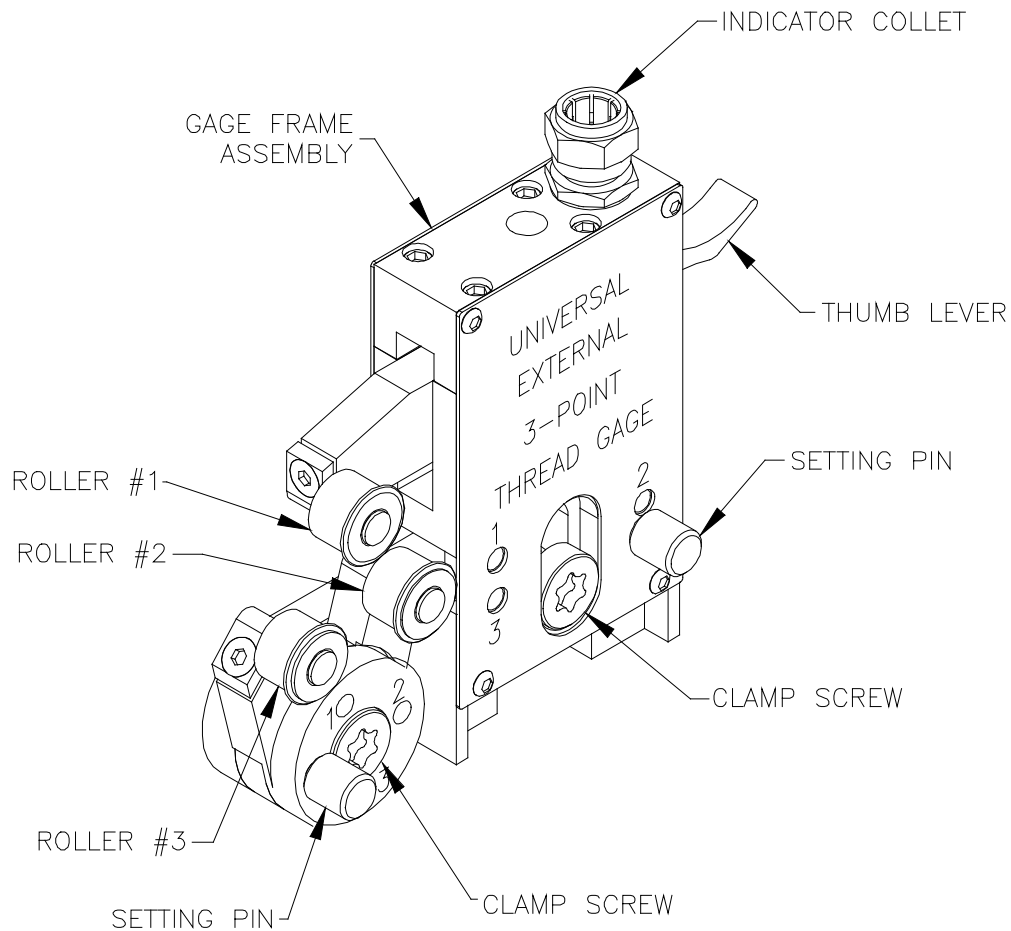


Figure 1
Thread Gage Assembly with
Best Wire Rolls
(Frame #1 shown)

Installing Gage Rolls –

Note: The inner bore of the Gage Arm and Swivel Arms, Roller face and inner bore and Roller Pin surface must be free of any contaminants before assembly. If any dirt or dust is not cleaned thoroughly, the Rolls may not seat properly and thus affect the accuracy of the Gage.

When installing the Rolls on the Gage, the placement of Rolls #2 and #3 depend on the type of threaded feature being inspected. Figure 1 shows the placement of the Rolls for a right-hand thread. If a left-hand thread is to be inspected, the positions of Rolls #2 and #3 shall be switched. For proper identification of Rolls, See Figure 3.

A particular set of Rolls consists of three pieces. Each piece (Roll) has been identified with a #1, #2 or #3 on the body. Figure 3 shows the difference in the three Rolls within a set and how they can be identified.

Loosen the flat head screw on each of the Swing Arms and on the Clamp Arm. Insert the Roller Pin through the Roller as shown in Figure 2 (small end of Pin extends out of Roller). Insert Roller / Pin into the correct position in the Frame (See Figures 1 and 3) and tighten the screw. Ensure that the Roller rotates freely and does not bind.

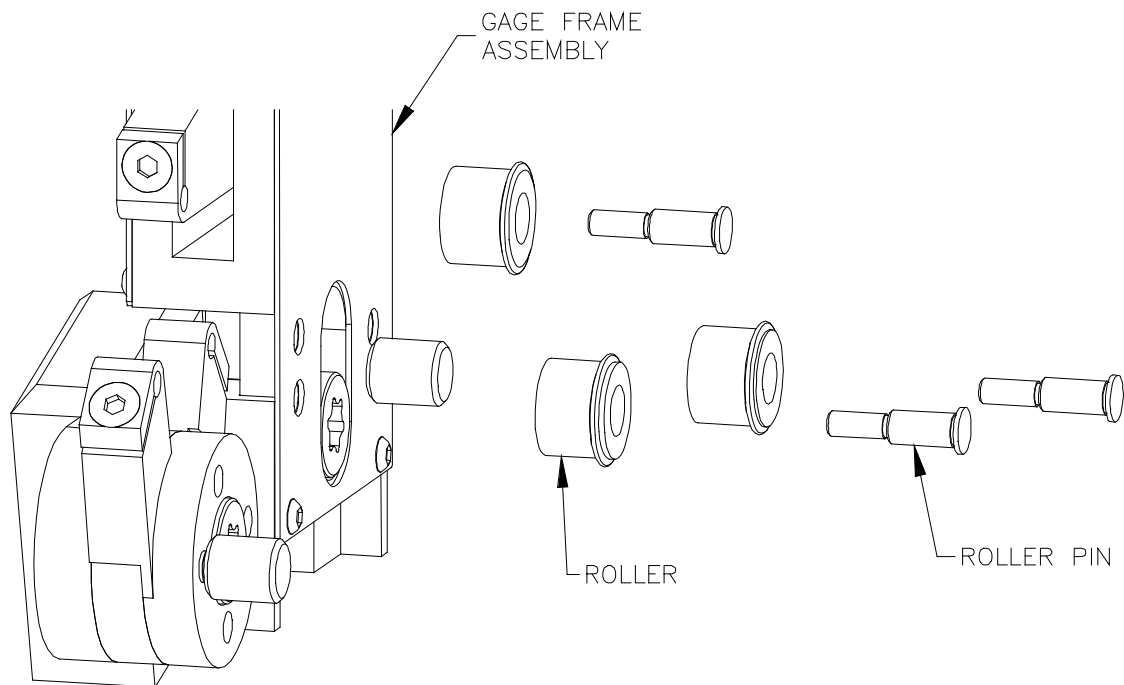


Figure 2
Roller / Pin assembly

Setting the 120° Alignment –

1. Loosen the two Clamping Screws located on the Swing Arms and the Frame (See Figure 1)
2. Remove the two Setting Pins from the Swing Arms and the Frame.
3. Rotate the Swing Arms to align the proper numbers that correspond to the chart below.
4. Tighten the Clamping Screw.
5. Slide the Upper Frame Assembly to align the holes that correspond to the chart below.
6. Tighten the Clamping Screw.

<u>Pin Location</u>	<u>Screw Size</u>
#1	#4 - #8 (M3 - M4)
#2	#10 - 5/16" (M5 - M8)
#3	3/8" - 1/2" (M10 - M14)
#4	9/16" - 3/4" (M16 - M20)

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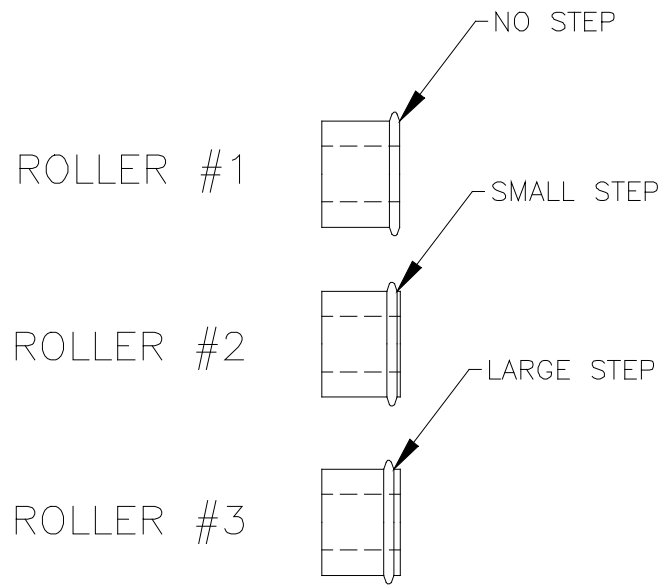


Figure 3
Roller Identification

Mechanical Indicator Installation –

The Mechanical Dial Indicator is secured to the Frame with a Locking Collet. The following steps are for installing the Indicator for the first time for each screw size.

1. Loosen the Locking Collet on top of Gage Frame.
2. Insert Dial Indicator into Collet (Use the Adapter Bushing for Metric Indicators with 8mm shafts).
3. With a Master Plug Gage installed in the Rolls, push the Indicator downward to preload at least one full revolution.
4. Tighten the Locking Collet.
5. Zero Indicator dial.
6. Depress the Thumb Lever and carefully remove Plug Gage.

Electronic Indicator Installation –

The Electronic Dial Indicator is secured to the Frame with a Locking Collet. The following steps are for installing the Indicator for the first time for each screw size.

1. Loosen the Locking Collet on top of Gage Frame.
2. Insert Dial Indicator into Collet (Use the Adapter Bushing for Metric Indicators with 8mm shafts).
3. With a Master Plug Gage installed in the Rolls, push the Indicator downward to preload approximately 1/4".
4. Tighten the Locking Collet.
5. Zero Indicator dial.
6. Depress the Thumb Lever and carefully remove the Plug Gage.

Setting Thread Gage to Master Plug Gage –

1. Select the proper Thread Plug Gage that matches the fastener being inspected.
2. Depress the Thumb Lever until the Rolls are expanded enough to insert the Plug Gage.

Note: Always insert the Plug Gage from the front of the Gage. Do not insert it from the side as this can cause damage to the Rolls.

3. Insert the Plug Gage into Thread Gage.
4. Release the Thumb Lever to seat Rolls on Plug gage.
5. Rotate Plug Gage slightly to ensure proper and seating.
6. Zero the Indicator (rotate bezel for Mechanical style or press “Zero” button for electronic style).
7. Depress the Thumb Lever and carefully remove the Plug Gage.

Measuring parts –

1. Depress the Thumb Lever to expand Rolls.
2. Insert part from front of Gage.
3. Release the Thumb Lever.
4. Rotate part slightly to ensure proper seating.
5. Rotate part and observe readings on Indicator.

Note: If measurements are to be taken along the length of the part, depress Thumb Lever and move part to new position. Never rotate part more than necessary as this may cause premature wear to the Rolls.

Spring Pressure Changes –

If the spring pressure provided with the Thread Gage Assembly is not satisfactory for a particular application, contact Universal Punch Corp. with your specific requirements. A different spring rate can be provided from such requests.

Replacement Parts –

Contact Universal Punch Corp. to obtain an Illustrated Parts Breakdown Drawing for a particular Gage Model. Some replacement parts may be ordered by utilizing the drawing and referencing the appropriate Part Number(s).

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Warranty

Universal Punch Corporation warrants that within twelve (12) months from date of shipment we will replace or repair, at our option, free of charge, any part(s) which, upon examination, we find to be defective in workmanship or material, provided that the product has been reasonably maintained and has not been subject to abuse. This warranty is in lieu of all other expressed or implied warranties including proper application for a particular purpose. In no event shall UPC be liable for any special, indirect, or consequential damages including, but not limited to, lost profits or other damages from loss of production caused by defective product, or by unsatisfactory performance of the product.

Returns

No returns will be accepted without factory authorization. Standard gage components or units are subject to a 15% restocking charge. Precision units are not subject to return privileges.

Special Orders

Special Gage orders on any parts or equipment such as electronic instruments and / or digital indicators are not returnable.



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