



Armour Technologies, Inc.



GAGE-IT™ Hardware Gauge User Guide
P/N: TEM-GHO-02
Rev. 1.1 06/12/00

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1.0 **Overview**

1.1 The GAGE-IT™ Hardware Gauge is a tool for measuring, sizing and selecting common hardware. The gauge consists of a thin flexible plastic sheet printed on both sides and die cut to allow insertion of the hardware item being gauged. The GAGE-IT™ Hardware Gauge is manufactured in the U.S.A..

2.0 **Product Specifications**

2.1 Material: White/clear laminated PVC

2.2 Dimensions: 8.69" x 4.25" x 0.023"

2.3 Weight: Approx. 0.55 oz (15.5 g)

3.0 **Product Description**

3.1 **Front Side** (Reference drawing Appendix I)

3.1.1 Inches Ruler: An eight (8) inch ruler with a 1/16 inch increment spans the bottom front length of the gauge.

3.1.2 Metric Ruler: A twenty (20) centimeter ruler with a one (1) millimeter increment spans the top front length of the gauge.

3.1.3 Circular Drawing Compass: A series of 1/16" diameter holes located above the inches ruler serve as a circular drawing compass. Circles may be drawn from 1/2" in diameter to 8" in diameter in increments of 1/2", and from 8" in diameter to 14" in diameter in increments of 1".

Use: Circles are formed by rotating around any one of the 1/16" holes and marking with one of the other holes.

3.1.4 Hanging Hole: A Hanging slot is located next to the 'V' shaped cutout on the left front side of the gauge. The slot (5/8"x 1/4" triangular cutout) is designed to hang on a retail peg or clip.

3.1.5 Logo: The GAGE-IT™ HARDWARE GAUGE logo is located on the center front of the product. The micrometer in the

background represents a precision measuring instrument for measuring outer diameters.

- 3.1.6 Screws and Bolts: The gauge is provided with twenty (20) sized holes corresponding to sizes #2, #3, #4, M3, #5, #6, M4, #8, #10, M5, #12, M6, 1/4", 5/16", M8, 3/8", M10, 7/16", M12 and 1/2" screws or bolts. The '#' and fractional sizes are for English threads, while the 'M' sizes are for Metric threads. The coarse (UNC) and fine (UNF) threads per inch are given for English threads and threads per cm are given for common Metric threads.

Use: The Screw or Bolt size is determined by inserting the Screw or Bolt perpendicular to the gauge through the smallest hole that it passes freely (DO NOT ROTATE the screw or bolt as it will thread into the gauge and give an inaccurate sizing).

- 3.1.7 Pipe and Tubing Sizing by Outer Diameter: A 'V' shaped cut-out on the left front side of the gauge enables 1/8" to 2" steel, brass and PVC pipe to be sized with the top graduations as well as copper and CPVC tubing ranging from 1/4" to 2" with the lower graduations.

Use: The Pipe or Tubing size is determined by inserting the Pipe or Tube perpendicular to the gauge into the 'V' shaped cut-out until the outer surface contacts both the upper and lower edges of the cutout. (DO NOT INSERT END of pipe or tube as this will give an inaccurate sizing). Pipe sizes are measured on the top of the cut-out, and tube sizes are measured on the bottom of the cut-out. The gauge marking closest to the pipe or tube point of contact corresponds to the size of the pipe or tube inserted.

- 3.1.8 Drills, Rod, Tube and Wire Sizing by Outer Diameter: A tapered slot located near the bottom left front of the gauge enables 1/16" through 3/8" drills, rod and tubing to be quickly selected. Electrical wire may also be measured from 18 gauge to 2 gauge with the corresponding maximum current capacity referenced for each.

Use: The outer diameter or wire gauge size is determined by inserting the part through the slot perpendicular to the gauge and sliding the part to the left until both the upper and lower surfaces of the part contact the slot edges. The gauge marking closest to the point of contact indicates the part diameter (top edge) or gauge size (bottom edge). (PART MUST BE PERPENDICULAR AND SQUARE to the gauge for an accurate measurement)

3.1.9 Pipe and Tube Fitting Size: A 'V' shaped flap located near the bottom right front of the gauge enables 1/8" to 1" internally threaded pipe fittings (Steel, Brass, and PVC) to be sized with the right side graduations as well as 1/4" to 1-1/4" copper or CPVC joint tube fittings to be sized with the left side graduations.

Use: The Fitting size is determined by pushing the flap towards the front (by pushing on the back side) until it can be inserted into the fitting to be measured. Place the flap straight into the fitting until both edges of the flap are contacting the top edge of the fitting. The gauge marking closest to the point of contact indicates the fitting size- Internally taper threaded pipe fittings (NPT) (right edge) or Copper and CPVC joint tube fittings (left edge).

3.1.10 Nails: A 'T' shaped cutout on the right front side of the gauge enables 2d, 3d, 4d, 6d, 8d, 10d, 12d & 16d common and finish nails to be sized. Lengths for each nail size are listed, along with approximate quantities per pound for each size common or finish.

Use: The nail size is determined by inserting the nail head into the 'T' shaped cutout (common nail heads fit into the top of slot and finishing nail heads fit into the bottom portion of the slot). The gauge marking closest to the nail point indicates the nail size.

3.1.11 Nuts: Seven (7) tapered protrusions on the right front side of the gauge provide for the sizing of #8, #10, 1/4", 5/16", 3/8", 7/16" and 1/2" nuts. The nut position on each protrusion indicates if the nut thread is fine or coarse (fine and coarse threads per inch are listed on each protrusion).

Use: The nut size is determined by placing the nut over the various tapered protrusions until it mates snugly. The nut size is listed above each protrusion. The nut position on the protrusion indicates the thread size (the number on the protrusion closest to the nut position).

3.2 Back Side (Reference Appendix II)

3.2.1 Architectural Scales and Angles: A six (6) inch long architectural scale with 1/8 inch and 1/4 inch scaling spans the bottom back length of the gauge.

3.2.2 Protractor: A 0° to 60° (degree) protractor in increments of 5° spans the top back length of the gauge referenced from a hole on the bottom left hand corner.

Use: Angles are measured and drawn by referencing from the hole at the bottom left corner of the gauge and locating the desired angle at the top of the gauge. Angles are referenced from the vertical.

3.2.3 Screws and Bolts: Decimal outer diameter dimensions are given on the back side of the gauge for each of the twenty (20) screw or bolt sizes in inches (English)and millimeters (metric). Wood screw pilot hole sizes are provided for soft and hard woods for size #2 through 1/4" for English sizes. Metal tap drills (UNC and UNF) are given for all English sizes while metric tap drill sizes are given for metric sizes.

Use: The Screw or Bolt size is determined by inserting the Screw or Bolt perpendicular to the gauge through the smallest hole that it passes freely (DO NOT ROTATE the screw or bolt as it will thread into the gauge and give an inaccurate sizing).

3.2.4 Larger Outer Diameters: A 'V' shaped cut-out on the right back side of the gauge enables the outer diameter of cylindrical objects with diameters ranging from 3/8" to 2-3/8" (top edge) or 9mm to 6 cm (bottom edge) to be measured.

Use: The outer diameter is determined by inserting the part to be measured perpendicular to the gauge into the 'V' shaped cut-out until the outer surface contacts both the upper and lower edges of the cutout. (DO NOT INSERT END of the object as this will give an inaccurate sizing). Sizes are measured in inches on the top of the cut-out, and in centimeters on the bottom of the cut-out. The gauge marking closest to the point of contact corresponds to the outer diameter of the object inserted.

3.2.5 Smaller Outer Diameters: A tapered slot located near the bottom right back side of the gauge enables diameters ranging from 0.040" to 0.375" (top edge) or 1 mm to 9.5 mm (bottom edge) to be measured.

Use: The outer diameter is determined by inserting the part through the slot perpendicular to the gauge and sliding the part to the left until both the upper and lower surfaces of the part contact the slot edges. The gauge marking closest to the point of contact indicates the part diameter in inches (top edge) or in millimeters (bottom edge). (PART MUST BE PERPENDICULAR AND SQUARE to the gauge for an accurate measurement.)

3.2.6 Internal Diameters: : A 'V' shaped flap located near the bottom left back of the gauge enables internal diameters

ranging from 1/4" to 1-1/2" (right edge) or 5 mm to 37.5 mm (left edge) to be measured.

Use: The internal diameter is determined by pushing the flap out (by pushing on the front side) until it can be inserted into the internal diameter being measured. Place the flap straight into the object until both outer edges of the flap are contacting the top edge of the diameter. The gauge marking closest to the point of contact indicates the internal diameter in inches (right edge) or in millimeters (left edge).

3.2.7 **Nuts:** Seven (7) tapered protrusions on the left back side of the gauge provide for the sizing of M4, M5, M6, M8, M10, M12 and M14 metric nuts. A marking on each protrusion represents the nut position for each size.

Use: The nut size is determined by placing the nut over the various tapered protrusions until it mates snugly and aligns with the appropriate marking. The nut size is listed above each protrusion.

3.2.8 **Decimal Equivalents:** Decimal equivalents are given for every fraction from 1/64 to 63/64 in increments of 1/64. The eighths and quarter fractional and decimal values are bold.

3.2.9 **Lumber:** Actual lumber sizes are listed for each nominal lumber dimension- 1x2, 1x3, 1x4, 1x6, 1x8, 1x10, 1x12, 2x2, 2x3, 2x4, 2x6, 2x8, 2x10, 2x12, 4x4 and 6x6. One (1) board foot is also defined.

3.2.10 **Conversions:** Thirteen (13) common conversions are listed for converting from acre to sq. yard, cm. to in., cu. ft. to gal., cu. ft. H₂O to lb., Hp. to W, in. to cm., kg. to lb., km./hr. to mil/hr., L to qt., m. to ft., N to lbf., oz. to g. and ton to lb.

Use: Conversions are calculated by multiplying the 'From' unit of measure (unit of measure that is being converted) by the 'Mult By' column to obtain the 'To' unit of measure (unit of measure that is being calculated).

3.2.11 **UPC Symbol:** A UPC-A symbol is located on the right lower back corner of the gauge.

4.0 Cleaning

- 4.1 Use only mild soap and a cloth dampened with water to clean the outer surfaces of the gauge. Avoid detergents, cleaners, or other abrasives that could damage the gauge.

5.0 Warranty

- 5.1 Armour Technologies, Inc. warrants the GAGE-IT™ Hardware Gauge against any defects that are due to faulty material or workmanship for a one year period after the original date of consumer purchase or receipt as a gift. This warranty does not include damage to the product resulting from accident or misuse.

APPENDIX I



APPENDIX II



