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OG204

Tooke Paint Inspection Gage/Gauge

The Tooke Paint Inspection Gage/Gauge (Plastic) is a precision tool for inspection and thickness measurement (in accordance with [ASTM D4138](#)) of single or multiple coats on any substrate, and for microscopic observation and measurement of substrate and film defects. The gage uses an illuminated 50-power microscope with measuring reticle, and mounts tungsten carbide cutting tips for precise incision of the work surface.

Direct measurement of total coating thickness and thickness of individual coats of paint is a unique capability of the Tooke Paint Inspection Gage/Gauge. Thus, in addition to routine use, it often serves as a "referee" instrument to calibrate indirect or non-destructive thickness measuring instruments.

Other uses include assessment of substrate conditions and coating adhesion, and observation of microscopic cracking, tendency for brittleness, cratering, or other microscopic film symptoms.

Construction



The gage body is a injection-molded high-impact polycarbonate plastic. It contains the microscope and lamp batteries and the groove-cutting tungsten-carbide cutting tips mounted on the narrow side. Two adjustable threaded guide studs project from the body on the same side as the cutting tips. The tripod thus formed by the three legs (guide studs and cutting tip) provides precise alignment of the tool with the surface to be grooved. A lanyard with keeper looped through the body secures the instrument to the inspector's wrist. The entire unit is designed for convenience and completeness in field inspection tasks.



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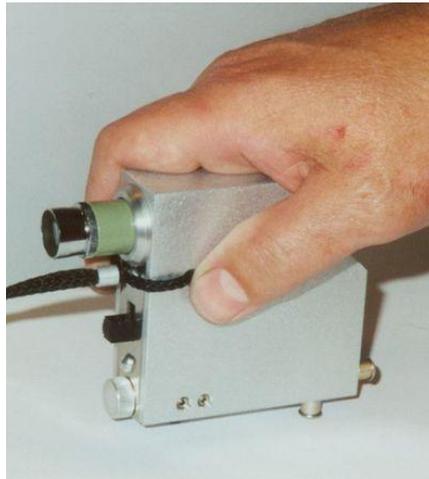
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Operation

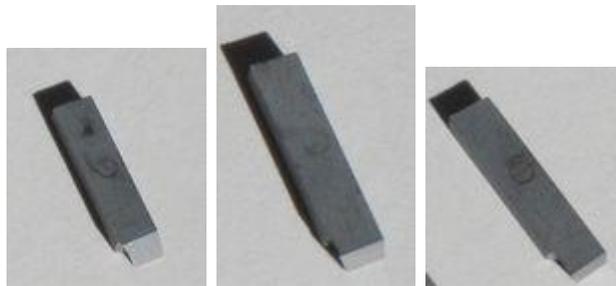
A special cutting tool (the "cutting tip") that is integral to the gage is used to incise a small precision V-groove through the paint film and into the substrate.

Incising the V-groove, shown with the OG202



Micro-Metrics Company cutting tips are precision-ground by hand from tungsten-carbide blanks in a multiple-step process that includes a final inspection by microscope for accuracy of angle, fineness of finish, and lack of chips and damage.

1×, 2×, and 10× cutting tips



The gage in standard configuration mounts 1×, 2×, and 10× cutting tips. An optional 5× tip is available. The gage can also be ordered with three tips of the same size or in any desired configuration (including a single cutting tip with two non-functioning blanks).

The tip slot is marked for the standard tip arrangement

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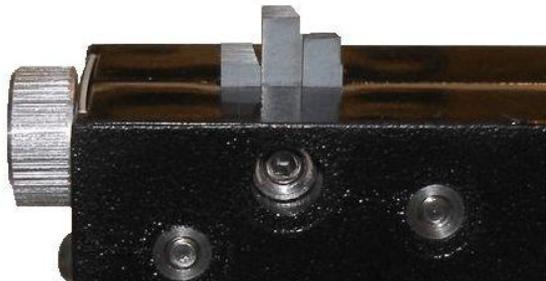
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*Close-up of a standard arrangement of tips,
showing 2× tip extended for use*



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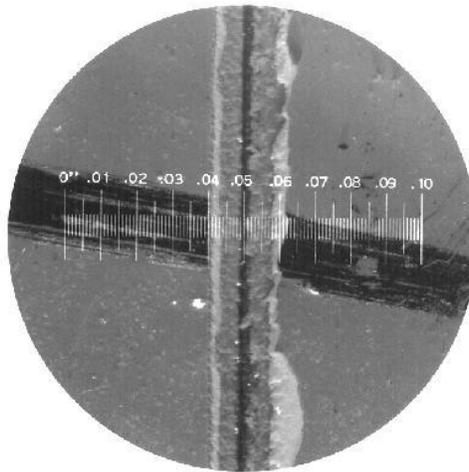
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Principle

The incised V-groove is observed vertically through an illuminated microscope bearing a measuring reticle (scale). An "English" (Imperial) version, with the reticle marked in mils, and a metric version, with the reticle marked in microns, are available.

The view through the (English) microscope



English Reticle Specifications

<i>Cutting tip</i>	<i>Maximum Coating Thickness</i>	<i>Precision of thickness determinations</i>	<i>One division on the reticle scale represents:</i>
1×	100 mils	± 0.25 mils	1.0 mil
2×	20 mils	0.13 mils	0.5 mil
10×	3 mils	0.025 mils	0.1 mil

An enlargement of the (English) reticle view showing the divisions

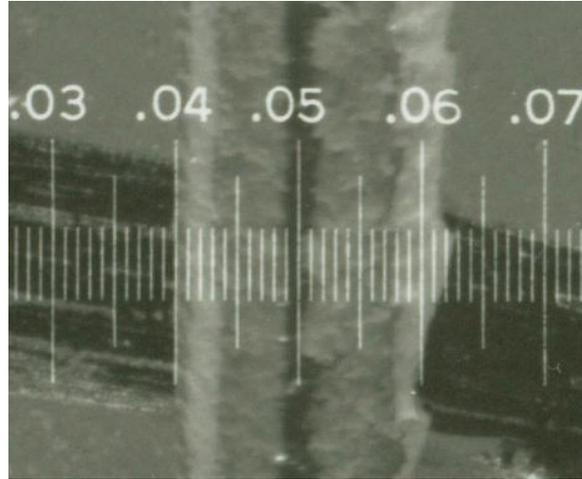


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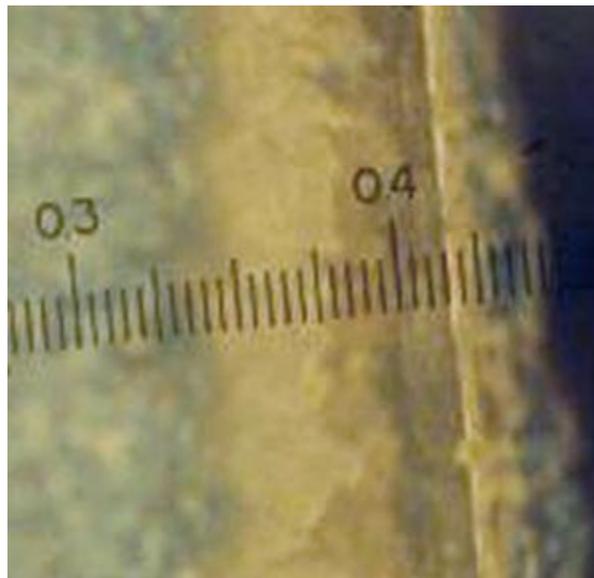
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Metric Reticle Specifications

<i>Cutting tip</i>	<i>Maximum Coating Thickness</i>	<i>Precision of thickness determinations</i>	<i>One division on the reticle scale represents:</i>
1×	2500 μm	$\pm 5 \mu\text{m}$	20 μm
2×	500 μm	$\pm 2.5 \mu\text{m}$	10 μm
10×	75 μm	$\pm 0.5 \mu\text{m}$	2 μm

An enlargement of the (metric) reticle view showing the divisions



The geometry of the Tooke Gage/Gauge incision

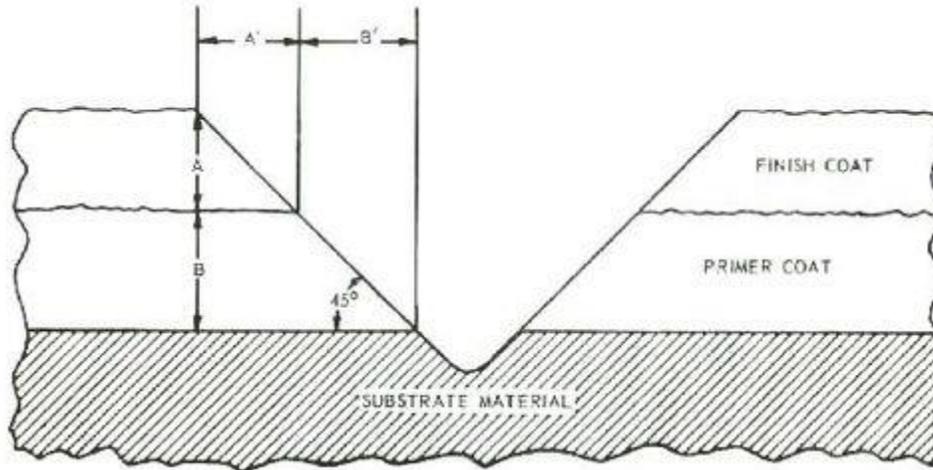


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Special applications

The Tooke Gage/Gauge has been used to assess sandblast cleaning work, to measure plating and paint thickness on ceramics, metal, wood, and concrete, and even to measure protective backing thickness on mirrors. It is virtually the only tool for measuring paint on plastics. The quality of the incision in the film discloses much about the characteristics of the brittleness and adhesion of the material.





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Shipping Specifications

<i>Material</i>	Polycarbonate plastic body
<i>Overall dimensions</i>	4.5" x 3.5" x 1" 11.4 cm x 8.9 cm x 2.5 cm
<i>Microscope</i>	50-power, 45-degree, illuminated
<i>Power</i>	Two 15V AA drycells
<i>Lamp</i>	Penlight bulb,#222GE
<i>Cutting tips</i>	Tungsten-carbide
<i>Shipping Weight</i>	1-1/2 pounds

The injection-molded high-impact polycarbonate plastic Tooke Gage/Gauge comes in a case with strap, spare batteries and bulb, marking pen, hex wrench and a technical data sheet. Standard cutting tips are 1×, 2×, and 10×.

