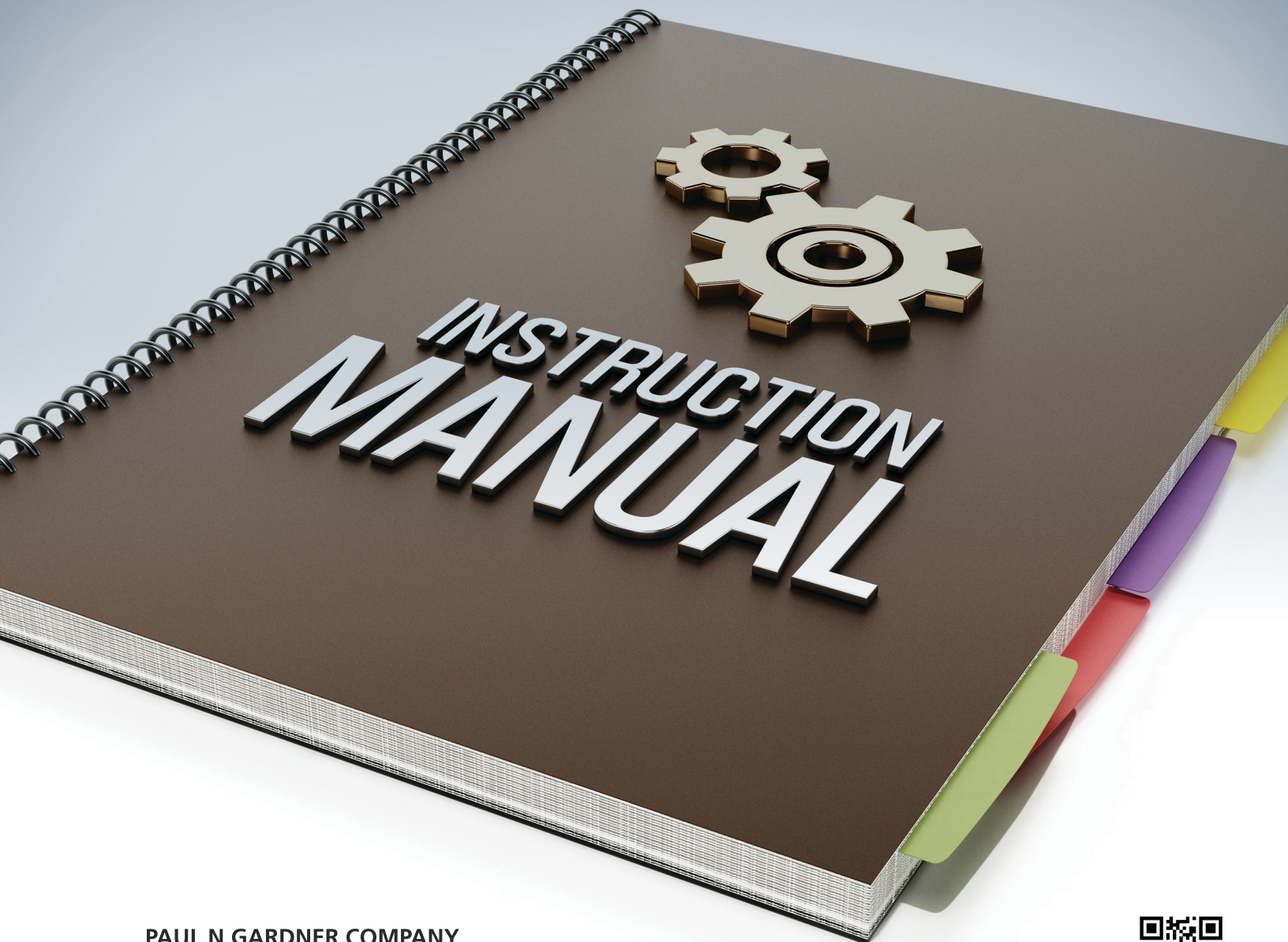




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INSTRUCTIONS

GARDCO DISTRIBUTED PRODUCTS



TIPS ON USE

A. HOLD GAUGE VERY LOOSELY BY CAP to allow the magnet to "self-center" and thereby insure accurate repeatable readings. If the gauge is held by its body, it will not be perfectly square to the panel causing erratic, higher readings.

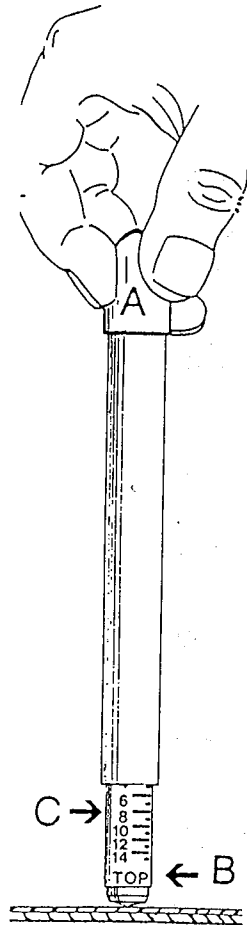
TAKE THREE READINGS. After taking a first reading to learn the approximate thickness, take two more readings but pull the gauge very slowly as it nears the first reading.

INSPECT THE MAGNET for particles if readings are not repeatable.

B. TOP SCALE is used on horizontal surfaces such as the top of roofs, hoods and trunk lids.

SIDE SCALE is used on vertical surfaces such as sides of fenders and doors.

C. LONG LINES indicate the thickness value printed next to the scale. On mil gauges, these are even numbers such as 2, 4, 6 etc. The short lines indicate the odd numbers such as 1, 3 and 5. Long lines on metric gauges indicate 50, 100, 150 etc. while short lines indicate 25, 75, 125 etc.



CARE AND MAINTENANCE

With its dent-resistant thermoplastic housing and corrosion-resistant components, Pro Gauge II is virtually maintenance free. Store the gauge in its case to keep it clean and safe. Avoid extreme heat: Do not leave Pro Gauge II on car dashboards or seats.

LIFESPAN: Pro Gauge II will last indefinitely under normal use. It has no wearing parts and neither its high energy magnet nor its specially designed stainless steel spring will go out of calibration if the cautions listed below are observed.

INSPECTION: Closely inspect the magnet because it attracts small rust particles and metal filings.

CLEANING: Particles can be wiped off with a clean damp cloth or blown off with low pressure air. Only use water for cleaning. Wipe gently to prevent damage to the scale.

CAUTION: When letting someone else use the gauge, instruct them:

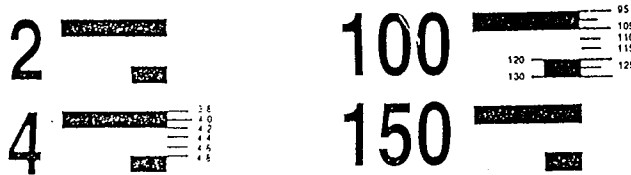
1. DO NOT PULL OFF THE CAP
2. Do not pull the scale out past the STOP warning.
3. Do not touch the magnet to any other magnet.

Any of these will void the warranty!

FACTORY CALIBRATION & ACCURACY

Before leaving the factory, each Pro Gauge II is checked against six precision calibration thickness standards. The readings are checked for accuracy at the beginning, end and middle of both TOP and SIDE scales.

Typical accuracy is within .1 to .2 mils (3 to 5 microns) on the TOP scale in the most important range: from 1 to 10 mils (25 to 250 microns). No gauge leaves the factory if an error greater than .3 mils (8 microns) is observed in this range on either scale. Readings are most sensitive to the way the gauge is held on vertical surfaces (SIDE scale readings) especially when the coating thickness approaches the upper end of the range (14 mils or 350 microns for example).



Mils: The center of the line is 0 and the edges are .2 mil markers.

Microns: Edges of lines are 5 micron markers.

DESCRIPTION: Pro Gauge II is a magnetic coating thickness gauge which measures the thickness of nonferrous coatings (paints, platings, plastics, etc.) on steel. Range is 1 to 15 mils (.001 to .015 inch) or 25 to 375 microns.

WARRANTY: Pro Motorcar Products, Inc. will replace or repair Pro Gauge II for one year from date of purchase. Send gauge along with \$3 P&H and sales receipt to PMP, 22025 US 19 N, Clearwater, FL 34625

SPECIAL APPLICATIONS

TEMPERATURE EFFECTS: Air temperature or vehicle temperature have negligible effect on Pro Gauge II readings. However, for maximum accuracy keep the magnet and gauge near room temperature. For example, when used in very cold weather, simply warm the gauge in your pocket.

SUBSTRATE EFFECTS: The thickness of the steel panel (substrate) has negligible effect on Pro Gauge II readings if it is thicker than .020 (.5 mm). In fact, Pro Gauge's performance is superior to most expensive electronic gauges in this respect. However, the Pro Gauge was designed with a large magnet in order to be less sensitive to dirt in automotive and industrial applications. The trade-off is that the magnet may be too powerful for accurate readings on very small parts or test standards less than 1.5 inch (4 cm) square.

SOFT COATINGS: Magnetic gauges such as Pro Gauge II are often the best choice for measuring soft coatings because the reading is achieved at a point of nearly zero pressure. Electronic gauges usually have spring loaded probes which give inaccurate readings because they push down into soft coatings.

SUBSTRATE CURVATURE: Pro Gauge II gives the most accurate readings on surfaces which are flat or have gentle curves. Small radius curves, corners or readings taken within 1/2 inch (or 1 cm) of an edge should be avoided.

BOTTOM SURFACES: (surfaces from which the gauge hangs upsidedown) Read the SIDE scale and subtract 2 mils (50 microns). For example, if the SIDE scale reading is 8 mils (200 microns), the actual thickness is 6 mils (150 microns).

CUSTOM SCALES: Adhesive labels can be added next to the SIDE and TOP scales. These can be colored or marked "Good", "Poor", "Bad", etc. to make readings easier for special applications.

FIBERGLASS & CASTINGS: Place a bare piece of steel next to the surface being painted. Apply the same amount of paint materials to this piece as to the non-ferrous (this includes plastic, aluminum, pot metal) part. When the coating dries, measure the thickness on the test piece.

CHECKING CALIBRATION

CHECKING CALIBRATION: Pro Gauge II is resistant to shock and holds the calibration set at the factory indefinitely. Should handling or damage make it wise to check calibration, check the gauge on a painted steel panel.

WARNING: If a much more expensive gauge gives a reading which is different than the Pro Gauge II, don't automatically assume the expensive gauge is correct! Independent laboratory tests have proven that Pro Gauge is considerably more accurate than gauges which cost \$200 and more. You are invited to write to the factory for copies of these tests. Also be aware that many of the most expensive gauges are fragile and can easily go far out of calibration. Always double check before assuming Pro Gauge II needs adjustment.

MAKING A TEST PANEL: Choose a painted panel which is at least 5 cm by 5 cm and .8 mm or thicker. Scrape the paint off in one area and then measure both this area and a painted section with a micrometer. Subtract the readings to find the coating thickness. Mark these numbers on the panel and keep it under the foam in the case for future reference.

ALTERNATE METHODS AND CAUTIONS: Layers of cellulose tape can be used in place of paint on an uncoated piece of steel. However, because tape is soft, measurements by electronic gauges will be inaccurate (too low). Also be aware that the calibration foils supplied with most electronic gauges should not be used with magnetic gauges. Foils often cause the magnet to snap off too soon and thereby produce readings which are too high. Painted panels work for both magnetic and electronic gauges.

RECALIBRATING: Recalibration can be accomplished by making a small slit in the end of the vinyl cap to enable access to the calibration screw. Turn the screw a quarter turn and recheck calibration. Note warning above. It is highly unlikely that Pro Gauge II needs recalibration in normal use.

HOW PRO GAUGE II CAN HELP YOUR BUSINESS

The importance of paint thickness measurement is stressed by all major paint manufacturers. Coating thickness should be monitored during application: if the film build is too thin, poor coverage, poor adhesion, or poor durability results and future sales will be jeopardized. If paint is applied too thick, it may crack and the business will suffer because very expensive paint is being wasted.

Pro Gauge II can also help avoid costly problems by inspecting vehicles, parts or equipment. It can alert you to paint which is dangerously thick or thin, or areas which have been repaired and repainted.

Beyond the technical powers of this paint gauge, it can be a very valuable sales tool particularly for automotive businesses. Here are some of the ways managers have found Pro Gauge to help their business:

1. **SELL MORE WORK** Use Pro Gauge to show customers where paint is too thin (and needs refinishing) or too thick (and needs stripping).
2. **WIN NEW CUSTOMERS** Positive first impressions pay dividends: start off right by letting customers see you carefully measure their paint.
3. **AVOID CUSTOMER DISPUTES** Showing customers proof of previously existing work or other problems can quickly defuse disputes.
4. **PROTECT WARRANTY WORK** Measurement of paint thickness, before and after, insures that you are safely within warranty requirements.
5. **BUILD A REPUTATION AS A PROFESSIONAL** Showing people that you are technically advanced and care about things other business-
es neglect builds a valuable reputation and generates customer referrals.

Finally, one of the greatest advantages of Pro Gauge II is that because it is so affordably priced, it can be on-hand: in your pocket in the field, or in the production area when you need it.

PRO GAUGE- THE STORY BEHIND AN INDUSTRY BREAKTHROUGH

In 1989, a field representative of one of the major paint manufacturers approached Pro Motorcar Products, Inc. about the need for an affordable paint thickness gauge. All current gauges cost upwards of \$200 and were seldom found in use in the automotive aftermarket.

After a year of design and testing, the Pro Gauge was introduced. It was a breakthrough of proportions which is rarely seen in industry: the Pro Gauge cost less than 1/4 the price of any other paint gauge in the world. Within a year it became the fastest selling paint gauge in history.

The breakthrough was even more amazing because the Pro Gauge design was significantly more accurate than the gauges which cost four to five times as much. Pro Gauge introduced separate indices to compensate for the weight of the magnet tube. On any given thickness the magnet tube will pull further out on top surfaces before snapping off because the gravitational force is combined with the magnetic force. For decades, other gauge manufacturers failed to inform customers that their pencil type gauges read differently on side versus top panels.

Today, the Pro Gauge has been inspected, thoroughly tested, and is private labeled for most of the major paint manufacturers, major automotive tool manufacturers and the major distributors of coating thickness gauges. It is the most popular paint thickness gauge in the world.

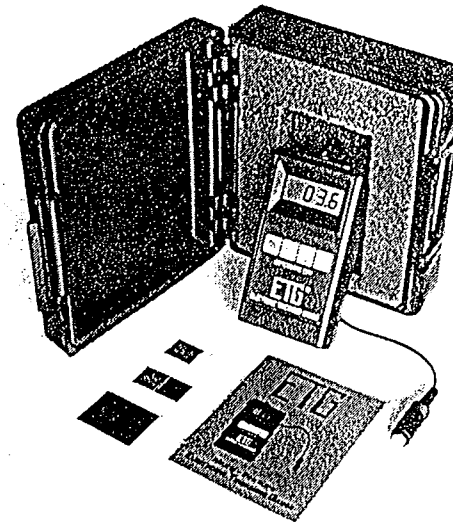
The new generation, Pro Gauge II, combines all the features of the original Pro Gauge with a number of enhancements and refinements, including a shortened exterior tube to permit easier cleaning and inspection of the magnet, and a very durable storage case to withstand the rigors of shop life.

ETG - THE ELECTRONIC THICKNESS GAUGE BREAKTHROUGH

After the response Pro Gauge generated, Pro Motorcar Products, Inc. examined the electronic coating thickness gauge field. The conclusion was that existing gauges were extremely expensive while their performance had much room for improvement. The answer was the ETG, designed by U.S. defense system's engineers employing advanced technologies.

The ETG price and performance was so superior to all existing gauges that it became the first paint gauge ever chosen by the Chrysler and Ford dealer equipment programs. ETG also became the new choice of the GM program. ETG did what no paint gauge in history had done: become the choice of all the Big Three.

ETG measures paint to .1 mil (or 1 micron) and comes standard with features only found on much more expensive gauges: memory, probe on a cable, audio tolerance limits and full-range $\pm 1\%$ accuracy. In addition, ETG can be upgraded to the print option (ETG-P) at any time and costs only 1/3 to 1/2 of the price of any comparable print option package. The non ferrous model (ETG-N) measures paint on aluminum, brass etc.



AUTOMOTIVE PAINT THICKNESS REFERENCE GUIDE

The following is a guide to interpretation of readings in mils (and microns).

2 - 3.5 (50 - 90) At two mils (50 microns), the primer is about to show through on most cars and if it is a clear coated car, the clear coat is mostly gone. Even at 3 mils (75 microns) the paint is thin, and you would be well advised to be very careful with any polishing.

3.5 - 5.5 (90 - 140) This is the normal range of most factory paint jobs. One of the most conclusive tests is to look for variation in the paint thickness around the car. Although a variation of one mil (25 microns) is not uncommon on a factory painted panel (such as a door), if all of the car reads close to 4 mils (100 microns) and one fender reads 6 (150), that is evidence that the fender was repainted.

5.5 - 7.5 (140 - 190) It still may be factory paint but on many cars paint which measures this thick indicates repainting has occurred. If it is a two tone car, one color may have been painted over the other at the factory and the thickness may exceed 6 mils (150 microns) on that overlaying color. Look closely for overspray on moldings or tape lines on door jams to further identify repainting.

7.5 - 9.5 (190 - 240) It is almost certainly repainted but the finish may last if the vehicle is garaged, if it is a northern car, or if it has urethane top coats over a good base. Few paint manufacturers would recommend painting over paint this thick.

9.5 - 12.5 (250 - 325) In most cases you will only find paint this thick on a car which has at least three paint jobs on top of one another. Paint this thick is risky, particularly on a car which sits out in the sun.

Over 13 (over 325) With few exceptions, automotive paint thicker than this is quite likely to crack, fade or peel under constant exposure to the sun and weather. The exception is anti-chip coatings sprayed on lower panels.

MAXIMUM ALLOWABLE PAINT THICKNESS REDUCTION DURING PAINT DEFECT REPAIRS, FINESSING OR BUFFING

If more than this amount of paint is removed, the car manufacturers specify that the affected panels must be repainted.

	Mono Coats	Clear Coats	(Microns)
Ford	.3 mils (8)	.3 mils (8)	
Chrysler	.3 mils (8)	.5 mils (13)	
General Motors	.3 mils (8)	.5 mils (13)	

Note: The above amounts are the total allowable reductions in paint thickness before repainting is required. In other words, .3 mils cannot be removed each time if the car is buffed or finessed more than once (.3 mils is .0003, three ten thousandths of an inch or 8 microns)

The above information is current as of 1994. Please check each manufacturer's technical service bulletins for updates.

CONVERTING MILS TO MICRONS

Mils to microns: Multiply mils by 25.

Microns to mils: Divide microns by 25.

These figures are rounded off for ease of use, if greater precision is required use 25.4.

Mils	Microns	Mils	Microns
1	25	5	125
2	50	6	150
3	75	7	175
4	100	8	200

John Pfanstiehl is the author of the Automotive Paint Handbook (HP Books) and his articles on refinishing and restoration have appeared in major trade and consumer magazines.

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