



# TABER MULTI FINGER SCRATCH/MAR TESTER

**DATASHEET** 

#### INTRODUCTION

The design of Taber's Multi-Finger Scratch / Mar Tester is based on the apparatus described in automotive specifications (including Ford BN 108-13; General Motors GMN3943; Daimler-Chrysler LP-463DD-18-01 & PF-10938; and Nissan NEW M0159 Supplement U01-1), which is commonly referred to as a five-finger (five-arm) scratch & mar tester.

The instrument includes a pneumatically driven, moveable sledge to which the test sample is mounted. The sledge moves in a linear fashion, and is operated by a control knob for one or multiple pass testing. An electronic timer displays the rate of speed, which can be controlled by reducing or increasing air pressure.



A gantry supports five independent splined-fingers, which provide a constant, vertical load on interchangeable scratch pins (1.0mm or 7.0mm diameter hemisphere). The gantry system includes a handle to raise and lower the arms. In addition, five support rests are incorporated to allow one or more arms to be moved to an upright, rest position such that the arm does not contact the specimen during testing.

Individual weights of varying loads mount to the top of each arm finger to exert a standard force on the surface of the test material. Each instrument includes a weight set of 2N, 3N, 4N, 5N, 6N, 7N, 10N, 15N and 20N loads. Other weights are available for 8N, 13N, 18N and 25N. Using the precision weight kit, a load of 0.6N can be obtained.

Although flat specimens up to 22mm thick are normally tested, the 'free-floating' arms fingers enable you test evaluate slightly contoured specimens provided they are rigid or adequately supported. A spring-loaded specimen holder is standard and can be mounted to the end or side of the moveable sledge for greater flexibility. To mount contoured specimens, an optional set of 'moveable' hold-down clamps is available.

In addition to the standard 1.0mm or 7.0mm diameter hemisphere tips, an optional conical diamond tool holder is available. This permits testing with a 90° 3mil or 3.5mil radius point diamond tool. A 'scuffing kit' is also available.

## **APPLICATIONS**

The 'five-finger' scratch tester has been popular in the automotive industry for testing smooth or grained plastics commonly used in ornamentation or trim. Useful for quality control as well as material or product development, the Multi-Finger Scratch / Mar Tester is ideal for evaluating plastics, rigid organic materials, paints and coatings, soft metals, linoleum, plus many others.

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## **FEATURES**

Pneumatically driven, moveable platform

Control knob operation

Five independent spline-shaft fingers with support rest

9-piece weight set (2N, 3N, 4.5N, 5N, 6N, 7N, 10N, 15N, 20N)

"Gripping" spring clamp specimen hold-down

Replaceable specimen platform protective guard

Electronic timer accurate to 1/100 second

Air regulator control with built-in lubricator

# **STANDARDS**

Test procedures for the TABER® Scratch / Mar Tester (also known as Five (5) Finger Scratch Tester) have been established by a number of organizations. The following is a partial listing.

| Chrysler          | LP-463DD-18-<br>01 | Determination of Scratch and Mar Resistance of Automotive Plastics             |
|-------------------|--------------------|--|
| Chrysler          | PF-10938           | Scratch and Mar - Resistance of Molded-In-Color Plastic Components             |
| Ford              | BN 108-13          | Resistance to Scratching   |
| Ford              | BO-162-01          | Resistance to Scratch and Mar  |
| General<br>Motors | GMN 3943           | Scratch and Mar Resistance of Plastics, Five Arm Test                          |
| General<br>Motors | GMW 14698          | Scratch Resistance of Organic Coatings and Self-Adhesive Foils                 |
| Nissan            | NES M0159          | Testing Method of the Scratch Resistance of Interior Polypropylene Resin Parts |

### **INCLUDED ACCESSORIES**

Spline Shaft Finger Assembly (5 each)

Scratch Tip, 1.0 mm Diameter Hemisphere (5 each)

Mar Tip, 7.0 mm Diameter Hemisphere (5 each)

9-Piece Weight Set

Electronic Timer with Digital Display

Adjustable Specimen Clamp (set of 2)

Quick Disconnect Socket for Air Supply

Hex Wrench





#### INTERCHANGEABLE TOOLS

1.0 mm Tungsten Carbide Ball Scratch Tip 7.0 mm Tungsten Carbide Ball Mar Tip Conical Scratch Tips (sold separately) Diamond Tool Holder (sold separately)

## **ACCESSORY WEIGHT OPTIONS**

Precision weight kit (to obtain 0.6N) Weight set (includes 8N, 13N, 18N) Weight, 25N

#### **SPECIAL CARE**

- Though robust in design, this instrument is precision-machined. Never drop it or knock it over
- Always clean the instrument after use.
- Clean the instrument using a soft dry cloth. Never clean the instrument by any mechanical means such as a wire brush or abrasive paper. This may cause, just like the use of aggressive cleaning agents, permanent damage.
- Do not use compressed air to clean the instrument.
- Always keep the instrument in its case when not in use.
- We recommend annual calibration

# **SAFETY PRECAUTIONS**

- Not suitable to be put in the sun or in the high light
- Avoid using it in over-high or over-low temperature environment
- Avoid humidity
- Always make sure the instrument is connected to an earthed electric socket.
- Always make sure the instrument's power is turned off while adjusting any electric component
- A knife is a sharp object. Be careful when using it.

# **DISCLAIMER**

The right of technical modifications is reserved.

The information given in this sheet is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Whilst we endeavour to ensure that all advice we give about the product (whether in this sheet or otherwise) is correct we have no control over either the quality or condition of the product or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatsoever or howsoever arising for the performance of the product or for any loss or damage (other than death or personal injury resulting from our negligence) arising out of the use of the product. The information contained in this sheet is liable to modification from time to time in the light of experience and our policy of continuous product development.