• Ammeters
• Bar to Bar Testers
• Brush Tension Scales
• Coil Testers
• Megohm Testers

• Motor Rotation/Phase Sequence Indicators
• Temperature Testers
• Tachometers
• Voltage Testers
Over 95 Years of Service.

Martindale Electric Co. started in the electric motor maintenance tool manufacturing business in 1913. From the start, we put emphasis on quality materials and workmanship — and on dedicated customer service.

Martindale specializes in the manufacture of equipment and supplies for the electric motor repairman. This section of our catalog describes our complete line of Electrical Test Equipment, as used by Motor Repair Technicians. The products on the following pages are the result of continuous field experience and research in an effort to help industry minimize the costs of maintaining electric motors and generators.

Martindale’s years of experience, along with the latest technology, provides you the highest quality products demanded by the industry. Martindale is staffed to help you with your most challenging applications.
## ELECTRICAL TEST EQUIPMENT CONTENTS

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- Brush Tension Scale .................................................... 13
- Coil Tester .................................................................. 8
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- Phase Sequence Indicators ......................................... 8
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Digital Multimeter

**True RMS with backlit display**

### Features:
- Measurement functions include AC/DC Voltage and Current, Resistance, Capacitance, Frequency, Temperature & AC Bandwidth
- Relative, Min/Max, Peak Hold & Zoom
- Smart Auto Power Off
- Complete with Built-In Stand, Test Leads, Protective Holster, 9V Battery, & Bead Wire Temperature Probe

### Ranges:
- AC/DC Voltage: .01 mV to 1,000 V
- AC/DC Current: .01 μA to 20 A
- Resistance: .01 to 50 M
- Capacitance: 0.01 nF to 9999 μF
- Frequency: 10 Hz to 125 kHz
- Temperature: -58° to 1,832° F
  - -50 C to 1,000 C
- AC Bandwidth: 40 Hz to 20 kHz

**CAT IV-600V**

**CE/UL Listed**

### Catalog Number

<table>
<thead>
<tr>
<th>Digital Multimeter</th>
<th>VAOTMPS30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Weight</td>
<td>0.75 Lb. (340g), Shipping Weight 2 Lbs.</td>
</tr>
</tbody>
</table>

### Dimensions:
- 7.32” x 3.42” x 1.39”
  - (186 x 87 x 35.5 mm)

---

V.A.O. Testers

**Simpson Models 260-8 and 260-8P**

### Features:
- **Model 260-8** — world famous; offers movement overload protection, input protection, increased stability, and self-shielded meter movement.
- **Model 260-8P** — is identical to Model 260-8, but with built-in meter and tester protection approaching 100% which makes this instrument virtually GOOF-PROOF. A reset button pops out indicating overload. Circuits cannot be reset while the overload is present. This is especially important for inexperienced operators.

### Mirrored Scale

### UL Listed

### Ranges:
- Volts, D.C.: 0-0.250, 1, 2.5, 10, 50, 250, 500, 1000.
- Amperes, D.C.: 0-10 (250 MV Drop).
- Amperes, A.C.: up to 250 amperes in 6 ranges with Model 150-2 Amp-Clamp.
- Milliamperes, D.C. only: 0-1, 10, 100, 500.
- Ohms: Rx1 0-2000 (12Ω center) \ Rx100 0-200,000 (1,200Ω center) \ Rx10,000 0-20 megohms (120,000Ω center)
- dB Scale, (IMW 600 ohms) -20 to +10, - 8 to +22, + 6 to +36, +20 to +50.

### Catalog Number

| Model 260-8 complete with leads | VAOT2608 |
| Model 260-8P complete with leads | VAOT2608P |
| Net Weight                      | 3-1/2 Lbs., Shipping Weight 5 Lbs. |
| Carrying Case for either of above | VAOT260C |
**AC DIGITAL CLAMP-ON MULTIMETER**

**True RMS 1,000A**

**Features:**
- Include Power, Current Insulation Resistance & Temperature
- Min/Max & Data Hold
- Auto Off & Disable
- True Power, Apparent Power and Reactive Power, plus Horsepower, Power Factor, and Phase Angle with Lead/Lag Indicator
- Complete with Test Leads, Type K Probe -58° to 482° F / -50° C to 250° C, Case & 9V Battery

**Ranges:**
- AC/DC Voltage: 600 V
- AC Current: 1,000 A
- Resistance (Ω): 100 M
- Capacitance: 7,000 μF
- Frequency: 1 kHz
- Temperature: -58° to 1,000° F / -50° C to 900° C

CAT III-600V
CE/UL Listed

**Catalog Number**
AC Digital Clamp-On Multimeter . . . . . . . . . VAOT380976

Net Weight 16.4 oz. (465g), Shipping Weight 4 Lbs.

**Dimensions:**
9” x 3” x 1.6”
(228 x 76 x 39 mm)

---

**AC/DC DIGITAL CLAMP-ON MULTIMETER**

**True RMS 2,000A**

**Features:**
- Full Range Multimeter Functions with High Resolution to 0.1 μA/0.1 mV
- Data Hold & Push Button Zero Adjust Improves DC Accuracy
- AC/DC Current Via Clamp with 0.1A Resolution
- Complete with Test Leads, Built-In Stand & 9V Battery

**Ranges:**
- AC/DC Voltage: 1,000 V
- AC/DC Current: 2,000 A
- Resistance (Ω): 40 M
- Capacitance: 50 μF
- Frequency: 100 kHz
- Temperature: -58° to 1,000° F / -50° C to 900° C

CAT III-1,000V
CE/UL Listed

**Catalog Number**
AC/DC Digital Clamp-On Multimeter . . . . . . . . . VAOT380926

Net Weight 14 oz. (465g), Shipping Weight 3 Lbs.

**Dimensions:**
10” x 2.9” x 1.5”
(255 x 73 x 38 mm)
Applications:
Portability lends itself well to field service personnel with many resistance measurement uses. Ideal for acceptance testing and preventative maintenance of cables, wire harnesses, and motors.

Features:
- 1000 V. Test Voltage
- Two Ranges: 20 Megohm & 2000 Megohm, with 2% basic accuracy.
- Auto Hold and Auto Power Off
- Large 3-1/2 Digit (1999 count) multifunction backlit LCD Display.

Ranges:
<table>
<thead>
<tr>
<th>Insulation Resistance:</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy (%rdg+digits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20MΩ</td>
<td>2000MΩ</td>
<td>0.01MΩ</td>
<td>±1% (±2% + 2d)</td>
</tr>
<tr>
<td>2000MΩ</td>
<td></td>
<td>1MΩ</td>
<td>±&lt;500MΩ (±4% + 2d) &gt;500MΩ ±(5% + 2d)</td>
</tr>
</tbody>
</table>

Dimensions: 7” x 1.7” x 1.6” (17.8 x 4.3 x 4 mm)

Insulation Tester/Megohmmeter

Features:
- Power Lock for 3 minute Test
- Overload Protection
- Large 0.65” LCD Display

Ranges:
- 2000 Megohms @ 1000 VDC
- 200 Megohms @ 500 VDC
- 200 Megohms @ 250 VDC
- 200 Ohms 600 Volts

Power Lock for 3 minute Test
Overload Protection

Dimensions: 6” x 4” x 2-1/2” (15.2 x 10.2 x 6.4 cm)

Catalog Number
Insulation Tester/Megohmmeter with 6 - AA Batteries, test leads and case   INST380360
Net Weight 2 Lbs., Shipping Weight 3 Lbs.

Major Megger® Insulation and Continuity Tester

The rugged taut-band movement and all electronic circuitry assure maximum accuracy, reliability and durability.

Powered by an easy to crank, brushless D.C. generator driving solid state circuitry, this field model is always ready for use with no dependence on batteries or line power.

This unit is housed in an impact resistant poly carbonate case with a carrying handle which folds flush into the case.

Readings are shown directly on an analog meter with a large, clear white-on-black scale.

Ranges:
0 to 2000 Megohms @ DC Test Voltages: 100V, 250V, 500V, & 1000V
Resistance: 0-5000 Ohms

Model 212159 Major Megger Insulation and Continuity Tester with 6 ft. leads and carrying case   MEGT212159
Net Weight 2-1/2 Lbs., Shipping Weight 6 Lbs.

Dimensions: 7” x 6” x 5” (17.78 x 15.24 x 12.7 cm)
High voltage insulation testers indicate breakdowns, grounds, and shorts. Use them to apply a high-voltage test at various steps in the manufacture or repair of electrical products. This permits early detection of insulation weakness or failure that might otherwise show up only in the actual use.

These testers are built with a breakdown light which also serves as an “on” light. This indicating light dims or goes out completely to indicate a problem.

In addition, 4 models have a built-in safety switch that immediately stops current flow in the event of a breakdown. Along with the visual indication of a problem these units also have a buzzer which signals a problem. These units will shut down in the event of a breakdown and will not start up again until the start/reset button is reset.

All units are supplied with self retracting probed test leads. The probes are spring loaded and housed within the insulated fibre handles. The fibre slide buttons are pressed to expose the test probes. This safety feature minimizes the chance of accidental contact with the probes.

<table>
<thead>
<tr>
<th>Model</th>
<th>115 V.</th>
<th>230 V.</th>
<th>Output</th>
<th>Automatic Shutdown</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2109</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>INST2109A</td>
</tr>
<tr>
<td>2110</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>INST2110A</td>
</tr>
<tr>
<td>2119</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>INST2119A</td>
</tr>
<tr>
<td>2120</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>INST2120A</td>
</tr>
<tr>
<td>2129</td>
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<td>✓</td>
<td></td>
<td>INST2129B</td>
</tr>
<tr>
<td>2130</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>INST2130B</td>
</tr>
<tr>
<td>2139</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>INST2139B</td>
</tr>
<tr>
<td>2140</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>INST2140B</td>
</tr>
</tbody>
</table>

Net Weight 18 Lbs., Shipping Weight 20 Lbs.

**5000V DC Hipot**

- **Input Voltage:** 115/230V selectable
- **Output:** Rating: DC 0 - 5000V, 3 mA
- **Voltage Setting:** 0V - 5kV, 10 volts/step
- **Ripple:** < 5% at 5KVDC / 3 mA
- **Dwell Time:** 0, 1 or 60
- **Setting:** “0” for continuous running
- **Ramp Timer:** 0 and 0.2 - 999.9 seconds, 0.1 second / step
  
  0 ramp setting = 0.1 seconds fixed ramp
- **Failure Settings:**
  - **High Limit:** 0.02 - 3.00 mA, 0.01 mA / Step
  - **Accuracy:** ± (2% of setting + 0.02 mA)
- **Voltmeter (4 digits):**
  - **Range:** DC 0.00 - 5.00 KV
  - **Accuracy:** ± (2% of reading + 10 V)
- **Ammeter (4 digits):**
  - **Range:** DC 0.00 - 3.00 mA
  - **Accuracy:** ± (2% of reading + 0.02 mA)
- **Timer Display:** Range: 0.0 - 999.9 seconds
- **Dimensions:** 4-3/4” x 5-3/4” x 14-1/2”
  
  12 x 14.6 x 36.8 cm

**Features:**

- This model meets the UL, CSA, VDE, IEC, and UL 120K Ohm test requirement. This unit feature audible and visual failure alarms, and shut off high voltage upon reject.

- Operators can set output voltages and trip currents to desired levels in the absence of any high voltage, a key safety feature that conventional analog hipot testers lack.

- Easy-to-read digital display simplifies the task of setting test parameters and interpreting test results. Meter memory allows operators to review the last test results.

**Model:** 2503, with Safety Probe with 6 ft. lead, Ground Return Clip with 6 ft. lead, and High Voltage Clip with 6 ft. lead

**Catalog Number:** MEGT2503

Net Weight: 16 Lbs., Shipping Weight: 18 Lbs.
Phase and Motor Rotation Test Set (Biddle Instruments)

This Test Set provides a positive way to identify the leads of a disconnected polyphase motor, and also identify true phase sequence of energized 60 cycle a.c. power lines up to 600 Volts. Both are necessary to insure that a motor will rotate in a prescribed direction when energized.

The Test Set permits the electrician to permanently connect and tape the terminals of the motor being installed, without having to first energize the motor by a temporary hook-up to determine motor rotation. These temporary connections are time consuming and costly, and can be quite hazardous.

Two other important uses for the Test Set: it can determine the polarity of power and instrument transformers, and it can be used as a continuity tester in checking electrical circuits.

Catalog Number
Phase and Motor Rotation Test Set . . . . . . . . .PHSI56
Net Weight 3-1/2 Lbs., Shipping Weight 6 Lbs.

Motor Rotation & 3-Phase Tester

Motor rotation tester for measuring the rotation direction of motor shafts. Ensures motor is not damaged from incorrect wiring.

Testing phase orientation of three phase power sources ranging from 100 to 600 VAC.

Frequency Range over 50 to 70 Hz.

Five LED’s indicate phase orientation (clockwise or counter-clockwise); and whether each of three phases is live.

Complete with three large alligator clips.

Dimensions: 6” x 3-1/3” x 1-1/2”

Catalog Number
Motor Rotation & 3-Phase Tester . . . .PHSI480403
Net Weight 14 ozs., Shipping Weight 2 Lbs.
Vinyl Pouch Carrying Case . . . . . . . . .PHSI409996

All-Test PRO™ 31

Motor Coil & Winding Tester
Goes Far Beyond Ordinary Megohm-Meters

Tests:
- Turn-to-Turn Faults
- Internal Faults
  Turn to Turn
  Coil to Coil
  Phase Balance
- Broken Rotor Bars & Casting Voids
- Grounded, Open, Contaminated Windings
- Shorted Armature Windings (DC Motors)
- Capacitor Failures

Testing Frequencies Used:
25, 50, 60, 100, 200, 400 & 800 Hz.

Batteries: 6 to a pack, 1.2V-1000mAh.
Rechargeable NiMH

Dimensions: 7.5” L. x 4” W. x 1” D.
19 x 10.2 x 2.5 cm
CE Listed

Catalog Number
All-Test PRO™ 31 Complete with Batteries,
Test Leads, 115V or 230V Charger (Specify Which),
Manual on CD Rom, Carrying Pouch & Reset . . . . . . . . . .COTE31(A) or (B)
Net Weight 1 Lb. (454g), Shipping Weight 3 Lbs. (1,361g)
Model 101 Bar to Bar Tester

State Of The Art — Easy To Use — Eliminates Guesswork

This meter will check any armature that has enough resistance to move the meter needle into the green or “OK” section of the meter face during the initial “zeroing-in”. On a large armature which has very little resistance, the meter needle will show less deflection but enough to establish a starting point.

“Dead shorts” are detected by a reading on that portion of the meter and even partial shorts can be detected by a deflection from the “zeroing-in” point that the test was started from.

The color coded meter face also has indications for open and reversed coils.

- One meter/One setting indicates circuit OK, shorted, open, or reversed
- Eliminates guesswork — zeroes right in on problem circuit
- Never again strip a good armature only to find equalizers caused a short to be indicated
- Sensitive enough to identify unsatisfactory circuits that other testers cannot find
- Pays for itself by eliminating unnecessary repairs or expensive second teardowns
- A quality buy, this highly scientific and advanced test equipment will maintain or increase in value

Model MAS Bar to Bar Tester

The Model MAS Mainframe is a self contained unit that forms the basic component of the motor Analysis System. The Mainframe contains the necessary power supplies, amplifiers and logic necessary to drive the various heads and probes allowing numerous tests on a wide range of rotating equipment. Auxiliary heads may be added at any time and require no modification or alteration to the Mainframe. The Mainframe comes complete with a 7 foot cable that interfaces with the heads.

The Armature Head performs a four point AC variable frequency test on DC armatures. The Armature Head in conjunction with the Mainframe automatically selects one of four thousand different frequencies and power levels to match the armature being tested. The automatic feature makes this head fast to set up and easy to use. This permits accurate and repeatable analysis of most common armature problems such as shorts, opens, crossed connections, partial opens or shorts and misconnects. Armatures with equalizers and uneven turns are also easily tested. These features make this Bar to Bar Tester affordable and practical.

The Field Coil & Neutral Plane Test Head allows testing of series fields, interpoles and shunt fields. When used with the flux probe it is possible to test most coils in the machine without breaking the individual coil connections or isolating the coils from one another. The test quickly identifies coil polarity. The probe measures the impulse magnetic field flux generated by each coil allowing a relative comparison between coils. Shorted turns are indicated as a reduction in flux generated by a coil. This head allows easy and precise setting of neutral plane.

Since this head supplies all impulse power to the fields being tested, there is no need to connect the motor to a test panel or any other power source.

This head comes with the Flux Probe and all necessary cables.

Catalog Number

Model 101 Bar to Bar Tester . . . . . . . . . INST101
Net Weight 2 Lbs., Shipping Weight 3 Lbs.

Model MAS Bar to Bar Tester

Specifications:

**Main Frame:**
- 120 V or 220 V
- Size: 10-1/2 x 7-1/2 x 15”
- Weight: 26 lbs. net

**Armature Head:**
- Power supplied by Main Frame
- Test Frequency: 100hz 5khz
- Max. Current Output: 2.5 amps true rms
- Readout: 30 segment solid state bar graph

**Field Coil & Neutral Plane Test Head:**
- Power supplied by Main Frame
- Output: Unipolar pulse
- Output Current: 40amps (short circuit)
- Pulse Width: 6ms and .5sec
- Repetition Rate: 10hz and 1.5hz switch selectable
- Readout: 30 segment bar graph

Catalog Number

Model MAS Bar to Bar Tester, 115 V . . . .INSTMAS
Model MAS Bar to Bar Tester, 230 V . . . .INSTMASB
Net Weight 28 Lbs., Shipping Weight 33 Lbs.

MARTINDALE • 1375 Hird Ave • Cleveland, OH 44107
Phone (216) 521-8567 • Fax Local 521-9476 / USA & Canada (800) 344-9191
E-Mail: sales@martindaleco.com
Web Site: www.martindaleco.com
General Information

When an alternating current is passed through a Growler, it sets up a magnetic flux in the iron of the armature or stator spanned by the jaws of the Growler.

As this flux passes through any coil, it induces a potential. A current will flow if the coil is short-circuited. When current flows, it sets up a magnetic field around the shorted coil which can be detected with an iron feeler. (The increased load on the Growler sometimes changes the tone of the hum; hence the name “Growler”).

Open coils can also be found; see discussion below.

Open Circuits

Open circuits can be detected by shorting adjacent commutator bars with a screwdriver, or any other piece of metal. Good coils will spark as the bars are shorted. No sparks indicate the coil is open. All field coils can be tested by shorting the lead wires. Another way is to use a continuity tester such as the ones shown in our catalog.

Grounds can also be detected with a continuity tester.

How Growlers Are Used

The most common way of using a Growler is the “feeler method” in which the Growler spans a slot containing a coil, and a “feeler” of iron, such as a hack-saw blade is held about 1/4” above the slot containing the other side of the same coil.

If the coil is shorted the feeler will be pulled down to the slot and will stick and vibrate. The action is very positive and is recognized instantly.

The feeler can also be used on the same side of the coil that is spanned by the Growler, either a separate feeler or the convenient built-in feeler of Types F and I-X.

Foot-Switch

A Foot-Switch with an 8 ft. line cord, and a female connection is available for use with any of the Growlers. Large armatures cannot be easily rotated without shutting off the Growler current. This is conveniently done with the Foot-Switch, while the hands are left free to turn the armature.

Types F and I-X are similar in appearance, with built-in feeler as pictured, except the feeler on Model I-X is adjustable, which gives it a wider range of applications. Both have fixed jaws 2” long, and a thumb-switch.

Both can be used in stators as small as 2-3/8” inside diameter, and on armatures from 2-1/2” diameter up. The built-in feeler makes testing a one-hand operation, and is especially desirable in small stators where there isn’t room for a separate feeler. The adjustable feeler on the I-X is more satisfactory where a variety of large and small armatures and stators are involved.

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Length Face</th>
<th>Range for Armatures, Diameter</th>
<th>Range for Stators, Diameter</th>
<th>Weight — Lbs.</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-2</td>
<td>4” 2-1/2&quot;</td>
<td>1” &amp; up 5-3/4” &amp; up</td>
<td>11-1/4 12-1/2 Hz.</td>
<td>20</td>
<td>GRLRU2A GRLRU2B</td>
</tr>
<tr>
<td>B-1</td>
<td>2-1/2”</td>
<td>1” - 18”</td>
<td>11-1/4 12-1/2 Hz.</td>
<td>20</td>
<td>GRLRB1A GRLRB1B</td>
</tr>
<tr>
<td>F</td>
<td>2” 2-1/2’-12”</td>
<td>2-3/8’-12”</td>
<td>5-1/2 6-1/2 Hz.</td>
<td>5-1/2</td>
<td>GRLRF6A GRLRF6B</td>
</tr>
<tr>
<td>I-X</td>
<td>2” 2-1/2’-12”</td>
<td>2-3/8’-12”</td>
<td>5-1/2 6-1/2 Hz.</td>
<td>5-1/2</td>
<td>GRLR1X6A GRLR1XB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-3/4” &amp; up</td>
<td>5-1/2 6-1/2 Hz.</td>
<td>5-1/2</td>
<td>GRLR1XSA GRLR1XB</td>
</tr>
</tbody>
</table>

Foot Switch — 115 V. 230 V. 50 Hz. 60 Hz. 115 V. 230 V. 50 Hz. 60 Hz.
The Model 1726 Hand-Held Digital Tachometer is a dual function instrument providing contact and non-contact measurement of rotational and linear motions. With an accuracy of .025% of indicated reading 1 LSD, this unit is ideal for use in production, engineering, inspection, and maintenance.

This unit offers sixteen different functions of measurement from 6 - 99,999 RPM to .033 - 53 F/S, plus 14 more ranges.

Checks and analyzes motion and speed by simply aiming and synchronizing its flash rate (fpm) with a rotating object. Read RPMs on 4 digit LED display. Duty cycles from 5 to 30 minutes. High accuracy over a wide, dynamic range via exclusive microcomputer LSI circuit and crystal control time-base.

Ideal for measuring the speed of moving gears, fans, pumps, motors and other equipment used in general maintenance, production, quality control or laboratories.

Complete with 6 ft. power cord, handle and can be tripod mounted.

Specifications:
Flash/Speed Rate: 100 to 10,000 fpm/rpm
Accuracy: ± (0.05% rdg + 1d)
Dimensions: 8.3 x 4.8 x 4.8”

 MARTINDALE • 1375 Hird Ave • Cleveland, OH 44107
Phone (216) 521-8567 • Fax Local 521-9476 / USA & Canada (800) 344-9191
E-Mail: sales@martindaleco.com
Web Site: www.martindaleco.com

01/06
Surface Temperature Tester

Calibrated Fahrenheit

Model 312F is built for rough industrial use without any lessening of accuracy. The bimetallic sensor is a specialty processed alloy that is conditioned and tested for permanent calibration and maximum stability.

Recommended primarily for temperature measurement of electric motors and generators, bearings, etc., this tester can be used for checking any other surface within the range of 0° F to 250° F. Calibration is for use in an ambient temperature of about 70° F. Higher or lower surrounding air temperatures will result in slightly higher or lower readings. Three minutes should be allowed for the instrument to reach full stability when taking a reading.

The more nearly flat the surface being measured, the better contact will be made by the sensor. The magnets provide convenient temporary or permanent mounting to any ferrous surface, but the instrument is equally effective on non-ferrous horizontal surfaces.

Dimensions: 2” diam. x 1/2” thick.

Catalog Number

Model 312F (Fahrenheit) .......................... TEMP312F
Net Weight 2 oz., Shipping Weight 6 oz.

High Temperature InfraRed Thermometer

Non Contact Measurements
With Laser Pointer & 2000 Count Backlit LCD Display

Ranges:
-58° to 1400° F
-50° to 760° C

Accuracy:
+2%+2<932° F (500° C)
+2.5%+5>932° F (500° C)

Field of View:
12:1 Distance to Target Ratio
A 1” Square Target Area can be accurately read from a distance of 12 feet

Dimensions:
3.9” x 2.2” x 9” (100 x 56 x 230mm)

Catalog Number

InfraRed Thermometer with 9V Battery .................. TEMP42540
Net Weight 10.2 oz. (290g), Shipping Weight 3 Lbs. (1,361g)
Brush Tension Scale

For “Pull” Testing

Compact size for fast, easy readings.
Efficient, durable and small enough to fit in your hand, this Electronic Digital Scale is the convenient way to measure brush holder spring force. Simply attach the interchangeable strap or hook to the spring assembly and pull the scale taut by the comfort-grip handle. The measured force is clearly displayed in easy-to-read, 1/2” LCD numerals.

Precise Spring Force Measurements
The battery-operated Digital Scale accurately reads force measurements of both spiral torsion springs and constant force springs up to 15 lbs. (+ or - 2 oz.). Convenient automatic zeroing ensures measurement of only the spring force.

Spring Pressure Formula
Spring Pressure (P.S.I.) = \[
\frac{\text{Measured Force (Lbs.)}}{\text{Brush Thickness (in.)} \times \text{Brush Width (in.)}}
\]

(For recommended spring pressures, contact your motor manufacturer.)

Precise Spring Force Measurements
The battery-operated Digital Scale accurately reads force measurements of both spiral torsion springs and constant force springs up to 15 lbs. (+ or - 2 oz.). Convenient automatic zeroing ensures measurement of only the spring force.

Spring Pressure (P.S.I.) = \[
\frac{\text{Measured Force (Lbs.)}}{\text{Brush Thickness (in.)} \times \text{Brush Width (in.)}}
\]

(For recommended spring pressures, contact your motor manufacturer.)

Catalog Number
Brush Tension Scale,
15 lb. capacity . . . . . . . . . . BRTSIN15EL
Net Weight 9 Ozs., Shipping Weight 2 Lbs.

Repairman’s Stethoscope

This tool provides a low cost method of locating and identifying worn motor and equipment bearings and bushings, worn gears, and other trouble spots which can be traced by sound. The 2-piece probe reaches 11-3/4”.

Catalog Number
Repairman’s Stethoscope . . . . . . . . . MARTRS
Net Weight 6 ozs., Shipping Weight 1 Lb.