

Product: 2015 Caterpillar Dealer Service Tool Catalog Repair Workshop Manual  
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**DIAGNOSTIC TOOLS**  
**AIR CONDITIONING TOOLS**  
**ENGINE TOOLS**  
**POWER TRAIN TOOLS**  
**HOSE ASSEMBLY TOOLS**  
**UNDERCARRIAGE TOOLS**  
**VEHICLE SYSTEM TOOLS**  
**MAJOR EQUIPMENT**  
**CLEANING EQUIPMENT**  
**HYDRAULIC/MECHANICAL  
PULLERS/DRIVERS**  
**LIFTING/BLOCKING/  
CLAMPING**  
**LUBRICATING EQUIPMENT**  
**PNEUMATICS**  
**GENERAL SHOP TOOLS**  
**TOOLS FOR  
ELECTRIC DRIVES**  
**TOOL REPAIR**

# DEALER SERVICE TOOL CATALOG

Sample of manual. Download All 2138 pages at:

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- Tools for Electric Drives

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## Dealer Service Tools Download Instructions

The Caterpillar Dealer Service Tool Catalog download application is designed to provide a simple and efficient way for dealers to find specialty products for your service center. The download can take up to 45 minutes depending upon your bandwidth capacity and server load. When prompted to Open or Save the file, choose to Save locally and execute the installation package from your download location.

### How to Download the Dealer Service Tool Catalog

1. The Dealer Service Tool catalog is available in electronic PDF form.
2. Open your web browser and visit <http://www.dstcwebservices.com/downloaddstc.htm>
3. Underneath the download link you will find minimum system requirements and what's new.
4. Click the "Download Here" link.
5. Have a location to store the file and choose to save the file locally to that directory.
6. Execute the installation by running the setup file from the location you saved it to.

### Installing the Dealer Service Tool Catalog:

- The installation process may take up to 5 or 6 minutes to complete depending on your system configuration. This is not unusual, please be patient.
- The setup is a self extracting executable. When executed the application will launch the setup and install the Dealer Service Tool Catalog on your computer.

### Minimum Hardware Requirements:

- PC with an Intel Pentium 500 MHz processor
- 128 MB RAM (256 MB or better recommended)
- Compatible VGA or other high-resolution monitor supported by MS Windows
- Mouse or other pointing device
- 1024 x 768 Resolution
- 65 MB hard drive storage

### Optional:

- Internet connection to use the Web Update functionality

### Supported Operating Systems:

- Windows XP (Latest Service Pack)/Windows Vista (Latest Service Pack)/Windows 7 (Latest Service Pack)

### Web Update:

- Checks for updates to the Dealer Service Tool Catalog. Requires an active internet connection.
- Access through Start->Programs->Caterpillar Software->Dealer Service Tool Catalog->Web Update.
- Follow the instructions on the windows.

### Catalog Download / Software Information and Support:

Please remember to disable virus protection software before starting the setup. If not, you may notice the Install-Shield Wizard stalling at 99%. The setup is still running, just taking longer to complete.

### Product Support Services:

Free hotline support is provided for the Dealer Service Tool Catalog application during the hours below. This hotline is specifically for installation and application issues. This hotline is not for tooling questions or tooling support.

### Hotline Hours for catalog download and catalog software only:

Monday through Friday

6:00 AM to 7:00 PM United States Central Standard Time (CST)

### Telephone Numbers for catalog download and catalog software only:

888-884-5550 (United States Only) 309-266-2767 (From All Other Locations)

### Internet E-mail for catalog download and catalog software only:

[dstc@catsupport.com](mailto:dstc@catsupport.com)

# Introduction

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## General Information

The Dealer Service Tool Catalog offers Cat dealers and customers a wide selection of general purpose tools, shop equipment, and specialty tools. All orders placed from the Caterpillar Miscellaneous Material Order System for this publication will automatically place you on a subscription list. The subscription will provide you with electronic updates until the next version of the catalog is published. If you do not wish to be added to the subscription list when you order, you must place a verbal order with your order analyst and tell the order analyst at that time not to add your name to the subscription mailing list. However, doing this will prevent you from receiving information on new part numbers that are introduced.

### Tool Warranty

The tool warranty is described in form SELF5389-01 Warranty Statement. Caterpillar Inc. warrants all products sold, against defects in workmanship or materials under normal use, for six months after date of purchase, unless otherwise stated. Certain other products are warranted against defects in workmanship or materials under normal use for either one year from date of purchase, lifetime, or manufacturer's warranty. Please refer to the Dealer Service Tools website for further information: <https://dealer.cat.com/dealer-service-tools>.

### Ordering Procedure

The majority of the products listed in this publication is stocked at Caterpillar parts facilities and are available from the Parts Distribution System using normal stock or emergency ordering routines. These include hand tools, pneumatic tools, torque and electronic tools, reconditioning tools, welding products, certain chemicals, preventative maintenance tools, etc.

### Prices and Returned Goods

#### Prices

Prices are subject to change without notice. Standard dealer payment terms apply for any product ordered from this guide with a Cat part number (whether it is stocked or not). Regular dealer net and consumer list prices can be found in the Caterpillar Dealer Parts Pricing Medium or in the Parts Distribution DTS Inquiry system.

#### Returned Goods:

All products listed in this publication are returnable except:

- Direct ship and Made as Ordered (MAO) items
- Chemicals and hazardous materials
- Electrical test/diagnostic tools and associated accessories

Dealers should refer to the Cat Dealer Numerical Parts Record (NPR) to determine if a questionable item is returnable or not.

#### Catalog Content Support Information:

For questions regarding the Dealer Service Tool Catalog content and/or product, please contact one of the following:

#### Eastern United States & Americas South

Open  
501 S.W. Jefferson Avenue  
Peoria, IL 61630-2125

#### Western United States & APD, SCM

Allan Teuerle  
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Peoria, IL 61630-2125  
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Peoria, IL 61630-2125  
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#### Global Dealer Solution Network

Phone: 1-800-542-8665, Option 1 (USA)  
1-309-578-7372 (International)

#### Dealer Service Tools Website

<https://dealer.cat.com/dealer-service-tools>

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# Electrical Tools

## 368-9910 Multi-Tool Group, Phase 3

Model: All

Warranty: One Year

### Step 1. Order the basic multi-tool group

European Union compliant, CE marked

- Replaces 9 separate diagnostic tools in 1 multi-function unit (8T-1000 Position Indicator Group, discontinued 8T-2700 Blowby/Air Flow Indicator Group, discontinued 8T-5200 Signal Generator/ Counter Group, 8T-5300 Engine Timing Indicator Group, 9U-7400, 9U-7401, 9U-7402 Multitach II, pressure, and burn rate computer)
- Reduces dealer cost by combining 9 tools into one; also provides greater convenience for technician
- Used as a blowby/airflow indicator, signal generator and counter, electronic position indicator, engine timing indicator, multi-tachometer, thermometer, fuel monitor, pressure gage, and flow computer
- Provides technician with a hand-held unit with multiple diagnostic tools using a menu-driven display
- Ergonomic design has large, dual control buttons for ease of use even with gloved hands
- Large, color display is easily readable even in bright sunlight conditions
- Diagnostic Interface Module (DIM) plugs into multi-tool to adapt existing diagnostic sensors and cables
- Multi-tool uses many of the same cables and adapters used by existing tools (for this reason, purchase of new cables and adapters may not be required)
- Once a Diagnostic Interface Module (DIM) is used with a multi-tool, it should remain in use with only that multi-tool (interchanging DIM units and multi-tool units is not recommended without sending both units to the factory for calibration)
- For identification purposes, corresponding serial numbers are printed on the back of each DIM
- Modular design allows additional functions to be added as new software becomes available
- All applications are activated and ready to use
- An internal battery, universal AC power supply, and DC cable for vehicle battery power provides 3 options for supplying power
- 4 AC power cords are included for worldwide use

#### 368-9910 Multi-Tool Group, Phase 3 Includes:

Carrying Case

NEHS1087 Tool Operating Manual

#### 368-9910 Multi-Tool Group, Phase 3

Part Number	Description
285-0896	5 Pin DIN Adapter (gender changer)
285-0903	Cable Assembly with Ground Clip (used with 285-0900 Small Blowby Tool Group)
285-0904	Battery DC Power Cable Assembly (9-32 VDC)
285-0905	Battery Pack (NiMH, 9.6 VDC)
285-0906	Universal AC/DC Power Supply with 4 International Power Cords (90 - 240 VAC)
285-0907	Diagnostic Interface Module (DIM)
285-0908	Multi-Tool
368-9910	Multi-tool Group

## Step 2. Order the sensors for the desired tool functionalities

### Blowby/Airflow Indicator

- Allows technician to measure volume of blowby gases released through crankcase breather or air velocity through a component, such as a radiator core
- Blowby measurements provide helpful information when planning engine repairs
- Airflow measurements identify plugged or partially restricted areas
- Large blowby group checks blowby on 3500 Series and 3600 Series Engines, including ACERT™ models as well as on larger 300 Series Engines
- Small blowby group works on engines smaller than 3500 Series Engines and smaller 300 Series Engines
- Displays blowby and airflow, strip charts, and maximum and minimum values with differences
- Sample rate is adjustable
- Select SAE or metric units
- Print screen capability
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Signal Generator Group with Counter

- Used to simulate signal from a magnetic speed pickup (use 441-7090 cable with current speed sensors) for troubleshooting electronic controls for transmissions, as a frequency counter for pulsating AC or DC input, and for calibration of a number of electronic diagnostic tools
- Allows technician to make frequency and amplitude adjustments simply by pushing a button
- 285-0896 Five-Pin DIN Adapter, part of basic group, must be used to connect generator group cables to diagnostic interface module
- Print screen capability
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Engine Timing Indicator

- Allows technician to measure an engines fuel injection timing
- During timing test, multi-tool will chart engine RPMs vs degrees on built-in display
- For diesel engines, multi-tool must be used with existing 8T-5301 Engine Timing Diesel Group and 285-0897 Engine Timing Pickup Group
- Checks engine timing on natural gas engines using 6V-9060 Engine Timing Gas Group and 285-0897 Engine Timing Pickup Group
- Also checks automatic timing advance unit on engines so equipped
- Print screen capability
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Electronic Position Indicator (Upgraded)

- Replaces mechanical dial indicators in applications where they cannot be used, such as rack measurements on an operating engine or any other rapidly changing dynamic reading
- Simultaneously displays displacement, a strip chart, and maximum and minimum values with differences
- Select SAE or metric units
- Sample rate is adjustable
- Print screen capability
- Six language support: English, French, German, Italian, Portuguese, Spanish
- 4 Channels

# Electrical Tools

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## Step 2. Order the sensors for the desired tool functionalities (cont'd.)

- Record and Playback

### Multitach II

- Simultaneously displays 4 channels, strip charts, minimum and maximum values at once
- Analog gauge or digital display graphic
- Set point indicator measurement
- Print screen capability
- Create channel labels
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Digital Thermometer

- Simultaneously displays 4 channels, strip charts, minimum and maximum values at once
- Analog gauge or digital display graphic
- Two differential measurements
- Bias out small differences between channels
- Print screen capability
- Create channel labels
- Select SAE or metric units
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Fuel Flow Monitor

- Simultaneously displays 2 engines (4 flow meters), burn rate, supply flow, return flow, total, grand total, time, average, windowed average, burn rate, and strip chart
- Sample rate is adjustable: slow, medium, normal
- Print screen capability
- Create channel labels
- Select SAE or metric units
- Run time, elapsed time mode
- Works with new 308-7271 Dual Turbine Flow Meter Group
- Works with 179-0710 Burn Rate Group (6V-2198 Cable required)
- Works with discontinued 154-8103, 154-8104, 168-7735, and 168-7745 Gear Meters (FT3098 Cable required)
- Six language support: English, French, German, Italian, Portuguese, Spanish

### Burn Rate Computer

- Replaces 179-0701 Burn Computer
- Replaces 154-8106 Display
- Print Screen
- Create channel label
- SAE or metric
- Six languages

### Pressure

- 3 pressure pickups with couplers 500; 6,000; 10,000 PSI
- Analog/Digital Display
- Two differential measurements

## Step 2. Order the sensors for the desired tool functionalities (cont'd.)

- Print screen
- Create channel labels
- Select SAE or metric
- Six languages

Sensor and Cable Groups Used with Multi-Tool	
Part Number	Description
<b>285-0897 Engine Timing Pickup Group</b>	
5P-7362	Cable Assembly - Signal TDC
6V-2197	Transducer - Magnetic TDC Pickup 114 mm (4.5 in) long
6V-2199	Adapter - Transducer, 1/8 in NPTF
6V-3093	Adapter - Transducer, 1/4 in NPTF
8T-5184	Transducer - Magnetic TDC Pickup 8.9 cm (3.5 in) long
8T-5185	Transducer - Magnetic 17.8 cm (7.0 in) long
<b>6V-9060 Gas Engine Timing Adapter Group<sup>(1)</sup></b>	
1U-5524	Cable As. - Spark Timing Adapter
8T-5258	Cable - Coil Adapter
<b>8T-5301 Diesel Engine Timing Adapter Group<sup>(2)</sup></b>	
5P-7435	Adapter Group - Tee
5P-7436	Adapter
5P-7437	Adapter
6V-2198	Extension Cable (X8)
6V-3016	Washer
<b>285-0898 Electronic Position Indicator Group (also part of 8T-1000 Electronic Position Indicator Group)</b>	
6V-2198	Extension Cable (X8)
6V-6042	Point Group - Contact
8T-1002	Position Probe (X4)
<b>285-0899 Signal Generator Cable Group (also part of discontinued 8T-5200 Signal Generator/Counter Group)</b>	
6V-2198	Extension Cable (X8)
8T-5112	Signal Input Cable
8T-5197	Calibrator Cable and Adapters
8T-5198	Transmission Adapter Cable
<b>Optional</b>	
441-7090	Current Speed Sensor Cable
448-7983	"Y" Cable
FT3235	Loop Back Cable (for Articulated Truck)
<b>285-0900 Blowby Tool Group (Small Engine) (also part of discontinued 8T-2700 Blowby/Airflow Group)<sup>(3)</sup></b>	

Sensor and Cable Groups Used with Multi-Tool	
Part Number	Description
285-0903	Cable Assembly with Ground Clip (used with 285-0900 Small Blowby Tool Group)
8T-2685	Pickup - Blowby (1,000 CFH)
<b>285-0901 Blowby Tool Group (Large Engine)<sup>(4)</sup></b>	
9M-0164	Clamps - Nose
<b>368-9911 Burn Rate Group</b>	
154-8099	Lid Foam Insert
179-0705	Hose Group
179-0706	Foam Insert
362-9907	Optional 12 to 24 VDC Invertor
362-9913	Meter Cable
4C-9660	Carry Case
<b>368-9914 Pressure Group</b>	
376-4170	500 PSI (X1)
376-4171	6,000 PSI (X2)
376-4172	10,000 PSI (X1)
6V-2198	Extension Cable (X8)
<b>390-7879 Ball Stud Measurement Group</b>	
067-6809	Hex Bolt 3/8 x 5/8 (X4)
390-7875	Magnetic Squaring Wedge
390-7876	Magnetic Base (X4)
390-7877	Probe Bracket (X4)
390-7878	Foam
4C-9656	Pelican Case™
5P-4162	Contact Point (X4)
5P-7590	Socket Screws 6-32 (X4)
6V-2198	Extension Cable (X8)
8T-1002	Position Probe (X4)
<b>308-7265 Multitach 2 Photo Group</b>	
1U-6605	Retro-Reflective Tape, 12.5 mm (0.5 in) x 1.5 m (5.0 ft) long
6V-2198	Extension Cable (X8)
6V-3137	Magnetic Mounting Base for 9U-5140
6V-3138	Extension Rod for 6V-3137
9U-5140	Pickup - LED Photo

- 1 Includes: Fiber Optic Receiver (not serviced), Fiber Optic Transmitter (not serviced), Fiber Optic Cable (not serviced)
- 2 Includes: Injection Timing Transducer Assembly(not serviced)
- 3 Includes: Bushing and Hose Group
- 4 Includes: Blowby Probe (4,000 Cf/h maximum) and Blowby Hose (large engine)

# Electrical Tools

## Step 2. Order the sensors for the desired tool functionalities (cont'd.)

Sensor and Cable Groups Used with Multi-Tool	
Part Number	Description
<b>308-7264 Multitach 2 Group</b>	
1P-7446	Rack Cable
1U-6605	Retro-Reflective Tape, 12.5 mm (0.5 in) x 1.5 m (5.0 ft) long
5P-1759	Tachometer Drive Group (additional parts in accessory case)
5P-7360	Tach Generator (20-tooth internal gear )
6V-2198	Extension Cable (X8)
6V-3137	Magnetic Mounting Base for 9U-5140
6V-3138	Extension Rod for 6V-3137
8T-5111	Cable As. - Rack Adapter
9U-5140	Pickup - LED Photo
9U-7506	Magnetic Adapter Cable (required for TDC Sensors)
<b>308-7267 Digital Thermometer Group</b>	
4C-4545	Adapter Group , 3/4 in O-ring
4C-4547	Adapter Group , 1/2 in O-ring

Sensor and Cable Groups Used with Multi-Tool	
Part Number	Description
4C-6264	Probe - RTD 25.4 mm (1 in) long, 3.2 mm (0.125 in) diameter
4C-6265	Probe - RTD 38.1 mm (1.5 in) long, 3.2 mm (0.125 in) diameter
4C-6266	Probe - RTD 63.5 mm (2.5 in) long, 3.2 mm (0.125 in) diameter
4C-6268	Exhaust Probe RTD
5P-2720	Adapter Group - Probe, 1/8 in NPT
5P-2725	Adapter Group - Probe, 1/4 in NPT
5P-3591	Adapter Group - Probe, 9/16 in O-ring
6V-2198	Extension Cable (X8)
<b>308-7275 Hose Group (optional)</b>	
285-0902	Accessory Case (for cables and sensors [not included])
<b>202-8643 Accessory Case</b>	
202-8643	Case (not included)

## 308-7271 Fuel Flow Group



Part Number	Description
308-7271	Fuel Flow Group
308-7273	Dual Turbine Mtr (2 meters)
308-7274	Cable din to Mtr (2 cables)
6V-3073	Case - Plastic

## Step 3. Order the accessory case



- 285-0902 Accessory Case holds and protects all cables and sensors that are required for all blowby/airflow indicator, signal generator group, engine timing indicator, and electronic position indicator only
- 202-8643 plastic water-tight container (will not rust or scratch like metal boxes)

### References

NEHS1087, Tool Operating Manual, 348-5430 Multi-Tool Group  
 NEHS0605, Tool Operating Manual, 9U-7400, 9U-7401, and 9U-7402 Multitach II  
 SEHS8580, Special Instruction, Information and Use of 8T-5300 Engine Timing Group  
 SEHS8579, Special Instruction, Use of 8T-5200 Signal Generator/Counter Group  
 SEHS8623, Special Instruction, Using the 8T-1000 Position Indicator Group  
 NEHS0776, 179-0710 Burn Rate Group

## Step 3. Order the accessory case (Cont'd.)

### Repair Information

Bosch Service Solutions  
 755 Eisenhower Drive  
 Owatonna, MN 55060  
 Attn: Repair Department  
 Phone: 800-344-4013

Visit the Bosch Repair Track web link to complete and submit the form for proper authorization: <https://repairtrack.bosch-automotive.com>

The 308-7271 Fuel Flow Meter should have the calibration checked annually. ATS (Advanced Technology Service) can provide this service. If recalibration is required, the fuel flow meters should be returned to Flow Dynamics, the supplier. Recalibration is required if the flow meter has been physically damaged. Improper storage and contamination in the fuel can lead to physical damage to the flow meter.

## Step 4. Memory Card



- Multi-tool software upgrades are available by ordering compact flash memory cards preloaded with software
- The flash memory cards are available by ordering the appropriate part number
- The card is permanently inserted into the multi-tool CF slot
- Phase I, 285-0910 Multi-Tool requires factory calibration before upgrade

Multi-Tool Specifications with DIM (Diagnostic Interface Module)	
Global AC input voltage	90 to 240 VAC (50 to 60 Hz)
Vehicle DC input voltage	9 to 36 VDC (must use 285-0904) <sup>(5)</sup>
Internal battery voltage	9.6 V (2300 mA hr)
Battery operating time	Approximately 2 hours (dependent on sensor current draw)
Output voltages (sensor power)	5 VDC @ 140 mA (total current 4 channels)
	8 VDC @ 160 mA
	12 VDC @ 500 mA
Operating temperature	0° to 50° C (32° to 122° F)
Storage temperature	-20° to 70° C (-4° to 158° F)
Analog voltage	± 100 V maximum input
Signal frequency	10 Hz - 100 kHz maximum input, 0.1 to 50 V, Sine Wave

Multi-Tool Specifications with DIM (Diagnostic Interface Module)	
Input impedance	> 500k ohms
Display	320 x 240 LCD, color
Output frequency	1Hz to 100 kHz
Frequency outputs	0 - 8 V, ± 4 V, ± 1.5 V
Frequency output current	10 mA sink and source
Part No.	Tool Function Description
386-5908	CF Memory Card upgrade for phase 3
	Multi-language (English, Spanish, French, German, Italian, and Portuguese) for blowby/airflow, signal enerator/counter, position indicator, upgrade engine timing indicator
	Multitach 2, Digital Thermometer, Fuel Monitor (Phase 2), Burn rate computer, Pressure

5 285-0904 DC Cable has a switching power supply to isolate and protect the multi-tool from harmful voltage transients

# Electrical Tools

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## Memory Card Usage

**Instructions for returning the multi-tool for re-calibration to the supplier:**

1. **Wrap the Multi-Tool and DIM in a cushion-type packaging material, such as Bubble Wrap®.**
2. **Include the following information with the Multi-tool and DIM:**
  - Company Name
  - Contact Name
  - Return Address
  - Service Description (Calibrate for Digital Thermometer Application)
  - E-mail Address
  - Telephone Number
  - Dealer Name
3. **Properly package the Multi-Tool, DIM, and information and send to:**

Bosch Service Solutions  
755 Eisenhower Drive  
Owatonna, MN 55060 USA  
Phone: 800-344-4013  
Visit the Bosch Repair Track web link to complete and submit the form for proper authorization: <https://repair-track.bosch-automotive.com>

Upon receipt, Recalibration Service will contact you for credit card payment information. Caterpillar® will pay for the calibration. The dealer is responsible for shipping and handling fees. Allow about three weeks for calibration service and shipping. For status requests, contact Teleperformance at USA 1-800-344-4013. This program will end June 1, 2010.

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## 225-8266 Clamp On Ammeter

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SMCS Code: 1400-038, 1400-081, 1450-038

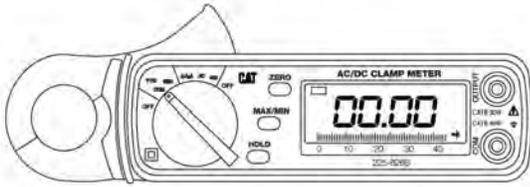
Model: All

Warranty: Manufacturer's One Year

European Union compliant, CE marked

- Used to measure AC or DC current
- Compact size and low cost make this unit indispensable
- Clamp-on probe replaces standard test leads (allows current measurements without breaking circuit)
- Measures current in cables up to 23 mm (0.9 in) diameter
- User selectable 400 amp and 1200 amp scales for both AC and DC
- Powered by two 1U-9533 AA Alkaline Batteries
- Designed with a built-in display, push button zero control for DC operation, "display hold" to freeze display, "max/min recording" to display highest and lowest readings, auto power-off (unit turns off automatically after 30 minutes), and low battery indicator
- Shipped with batteries, carrying case, and users guide

## 225-8266 Clamp On Ammeter (Cont'd.)



### Repair Information

Extech Instruments  
 9 Townsend West  
 Nashua, NH 03061  
 Phone: (781) 890-7440, ext: 220  
 Fax: (781) 890-7864  
 Email: repair@extech.com

Weight	190 g (6.7 oz)
Overall size	183 x 61 x 36 mm (7.2 x 2.5 x 1.4 in)
Resolution	1 A
Part Number	Description
225-8266	Clamp On Ammeter (400, 1200 A ranges)
Service/Repair Parts	
1U-9533	AA Alkaline Battery , non-rechargeable, package qty 96 (5 required to power Indicator III)
6V-6014	Cable

## 349-4205 Voltage Detector

SMCS Code: 1400-0038, 1400-081  
 Model: All  
 Warranty: Manufacturer's Two Year

European Union compliant, CE marked

- Used to quickly test for energized circuits (just touch tip to a terminal strip, outlet, or supply cord)
- Senses steady state electrostatic field produced by AC Voltage even through wire insulation (does not require contact with bare conductor)
- Tip will glow red if voltage is detected (high intensity red LED)
- An optional beeping noise also indicates presence of voltage (feature can be switched OFF)
- Safety rating of CAT IV, 1000 V for added protection
- Requires two AAA alkaline batteries (included)
- Press "Battery Check Button" to determine if batteries are good (if tip glows, batteries are good)
- Each unit is supplied with a manufacturers operating instruction sheet



Operating range	90 V AC to 1000 V AC
Operating temperature	-10 to 50° C (14 to 122° F)
Operating altitude	3000 M (9850 ft)
Voltage sensing range	90 to 1000 V AC; 45 to 405 Hz

# Electrical Tools

## 349-4199 AC/DC Probe (1000 Amp)

SMCS Code: 1400-0038, 1400-081

Warranty: Manufacturer's One Year

European Union compliant, CE marked

- Used to measure AC or DC current
- Used with standard digital multimeter, recorders, digital or analog meters, data loggers/DAS, oscilloscopes, or other test and measurement instruments
- Converts high-current to a low level millivolt signal for input directly into a test instrument
- On/Off switch with red LED is illuminated when in On position
- Low battery voltage indicated by flashing LED
- Zero adjustment knob (adjust output voltage to zero by depressing thumbwheel and rotating)
- Current range selection switch for 200A or 1000A
- Includes carrying case, attached leads, and users manual



Maximum conductor size	31 mm (1.2 in)
Lead length	1.5 m (59 in)
Meter input impedance	10 k Ohms minimum and 100 pF maximum
Current ranges	200A and 1000A DC and AC peak
Overall accuracy	±1% of reading ± 0.5A
Operating temperature	0 to 50° C (32 to 122° F)
Power	9 V battery, NEDA 1604, JIS 006P, IEC 6F22
Battery life	50 hours (alkaline)
Weight	295 g (10 oz)
Size	55 x 220 x 30 mm (2.2 x 8.6 x 1.2 in)

Part Number	Description
349-4199	AC/DC Probe (1000 Amp)

## 271-8590 24-Volt Analyzer Group

Model: All

Warranty: Manufacturer's



European Union compliant, CE marked

- Used to perform battery, electrical system, and diode tests
- Used with 225-8266 Amp Probe and 271-8585 Printer
- Used on 12 and 24 volt electrical systems (digital circuitry accurately controls testing — requires minimal interaction)
- Hand-held
- Large, backlit display requires less scrolling, provides more information
- Long 4.6 m (15.0 ft) cables allow operator to perform tests from cab of machine
- Step-by-step instructions quickly and easily guide technician through tests

## 271-8590 24-Volt Analyzer Group (Cont'd.)

- Tests flooded lead acid and absorbed glass mat (AGM) batteries with 50 to 4000 Cold Cranking Amp (CCA), Cranking Amp (CA), Amp Hours (A-HR), Japanese Industrial Standard (JIS), or German-Deutsche Industry Norm (DIN) capacity ratings
- Tests battery pack configurations, through algorithm design:
  - single battery, 6- or 12-volt
  - 2 batteries in series, 24-volt
  - 2, 3, or 4 batteries in parallel, 12-volt
  - 2 banks in parallel, each bank with batteries in series, 24-volt
- Internal resistance loads are applied for all configurations
- Amp clamp connections allow use of optional amp clamp cables for current drain and starting/charging tests
- Features infrared communications compatibility for optional wireless printer with user defined header and footer for custom printouts
- PC interface port allows unit updates as new software is released — download software for new battery types, system updates, and features
- Ergonomically designed over-molded surround with soft-touch keys for easy operation while wearing gloves during cold weather
- Security cable connection tethers tool in order to prevent drops or for security purposes
- Includes 24-volt analyzer, test cables, battery terminal adapters, manual, and case with foam insert

### Repair Information

The unit is warrantied by the manufacturer for 3 years from the date of receipt. Cables are warrantied for 90 days from the date of receipt. If the unit needs servicing, contact the manufacturer's repair facility.

Bosch Service Solutions

755 Eisenhower Drive

Owatonna, MN 55060

Attn: Repair Department

Phone: 800-344-4013

Visit the Bosch Repair Track web link to complete and submit the form for proper authorization: <https://repairtrack.bosch-automotive.com>

### Reference

NEHS0973, Tool Operating Manual, 271-8590 Analyzer Group (24 Volt)

Item	Description
Battery tests	Flooded lead acid (FLA) absorbed glass mat (AGM)
Cold cranking amp range	50 - 4000 CCA / 24 V
Battery voltage	Single, series, or parallel to 24 V
Electrical system tests	12 and 24 V, starting/charging/diode test
Scales	CCA, CA, AHR, MCA, JIS, DIN
PC interface	For field software updates

# Electrical Tools

## 271-8590 24-Volt Analyzer Group (Cont'd.)

Item	Description
IR compatible	For optional infrared wireless printer
Amp clamp ports	For optional amp clamp connections
Display	Backlit 4 x 20 character display

Part Number	Description
271-8590	24-Volt Analyzer Group
<b>Replacement Parts</b>	
271-8587	Test cables, 4.6 m (15 ft)
271-8589	Analyzer Only
281-1947	Rechargeable Battery
281-1950	Carrying Case with Foam Insert

Part Number	Description
<b>Optional Accessories</b>	
184-7679	Paper - Roll
225-8266	Clamp On Ammeter (400, 1200 A ranges)
271-8585	Optional Printer Group
281-1948	Printer Serial Cable

## 177-2330 Digital Battery Analyzer



SMCS Code: 1401-081, 0785

Model: All

Warranty: One Year

- Replaces 127-8078 Battery Analyzer
- Used to quickly and accurately test condition of 6 and 12 volt batteries (even discharged to as low as 4 volt)
- Check for full state charge, condition of battery, and battery voltage in 20 seconds
- Test batteries in machine or vehicle without disconnecting battery cables
- Battery does not have to be fully charged at time of testing
- Saves time and money by allowing dealers to test condition of a battery while customer is present (works great for warranty claims)
- Eliminates need to charge and discharge a battery to test its condition
- Compensates for cold temperatures when testing batteries in extreme conditions
- Power-down feature prolongs battery life in analyzer
- Analyzer has reverse polarity and is protected to 17 volts maximum

### References

NEHS0764, Tool Operating Manual, Using the 177-2330 Battery Analyzer

<b>Battery rating range:</b>	
Cold cranking amps (CCA)	50 - 4000
Cranking amps (CA)	65 - 5000
Ampere hours (A h)	6 - 500
DC voltmeter range	1.0 - 14 V

## 177-2330 Digital Battery Analyzer (Cont'd.)

Battery rating range:	
Voltmeter accuracy	±0.1 V
Power source	9 V battery or test battery
Test time	20 seconds
Analyzer cable length	815 mm (32 in)
Overall size	210 x 140 x 38 mm (8.25 x 5.5 x 1.5 in)
Weight	0.68 kg (1.5 lb)
Operating temperature range	0° to 50° C (32° to 120° F)
Storage temperature range	-20° to 70° C (0° to 160° F)
Over voltage protection	Up to 18 V

Part Number	Description
177-2330	Digital Battery Analyzer

## 4C-4911 Battery Load Tester



SMCS Code: 1401-081, 0785

Model: All Models

Warranty: One Year

- Used to test 6, 8 and 12 volt heavy equipment and automotive batteries
- Has built-in LCD digital voltmeter and ammeter
- Load adjustment knob for current drawn from battery to be adjusted up to maximum of 1000 amperes
- Cooled by internal fan automatically activated when load applied to prevent carbon pile overheating
- Large, 15 mm (0.59 in) high display digits are easier to read

### Reference

SEHS9249, Special Instruction

Load test	6, 8 and 12 V batteries
Load current	0 - 1000 A (carbon pile)
Duty cycle	Continuous, limited only by cable and clamp heating
Operating temperature	0° - 50° C (32° ± 122° F)
Voltmeter accuracy	0.1% of full scale ± 1 digit
Ammeter accuracy	±3% of reading ± 1 digit
Size	33 x 33 x 30 cm (13 x 13 x 12 in)
Weight	12.428 kg (27.375 lb)

Part Number	Description
4C-4911	Battery Load Tester

# Electrical Tools

## 372-5253 Battery Tester with Expansion Capabilities



Model Usage: CT660 Truck  
 Warranty: Manufacturer's

- Used to test batteries in multi-battery vehicles
- Test up to 6 batteries in parallel without disconnecting
- Test 6 and 12V batteries, group 31 and commercial batteries, AGM and Gel, test 12V starting and charging systems
- Cable-drop test simultaneously calculates voltage drop across positive and negative sides of any circuit and total circuit drop without running engine
- Digital multi-meter capabilities with scope and infrared temperature readings
- Displays voltage, measured CCA, battery, starting and charging system condition, SD memory card capable for record keeping, data transfer, and software upgrades.
- Recall last test on screen or print to optional printer

Specifications	
Dimensions	9.5 x 4 x 2.5 in
Weight	0.43 kg
Part Number	Description
372-5253	Battery Tester with Expansion Capabilities

## 8T-0500 Continuity Testing Light



SMCS Code: 1000-017, 1000-025, 1250-025, 1250-036, 1355-081, 1400-038, 3071-017, 3100-017, 3156-010, 3156-012, 3200-038, 3224-025, 4208-010, 5050-038, 7400-036, 7451-038, 7401-045  
 Model: All Models  
 Warranty: One Year

- Used to test non-energized circuits; lamp comes on brightly when connected across low resistance circuit; no light appears if resistance of circuit exceeds 10 ohms
- Designed for rugged field use
- Comes with light bulb and 2 "N" size batteries (1.5 volts) and instruction decals

### Reference

NEHS0543, Special Instruction, Checking Diodes

Part Number	Description
8T-0500	Light - Continuity Testing
Service/Repair Parts	
4C-8363	Battery, Size N, 1.5 V
6V-3061	Bulb

## 5P-7277 Voltage Tester



SMCS Code: 1400-038, 1400-081, 1450-081, 1700-081, 1800-081, 3168-035, 5050-081, 7300-081, 7400-081, 7451-038

Model: 215, 428, 621E, 627E, 768C, 769C, 793 All models

Warranty: One Year

- Used to make quick checks for presence of voltage
- Indispensable for checking out circuits, relays, bulbs, wires, and switches
- Designed for voltage range from 12 to 36 volts
- Bulb lights brightly when connected to 36 volts and gets progressively dimmer with lower voltages
- Encased in rugged, high-impact plastic housing which is grease and chemical resistant
- Standard 8D-1429 Bulb required for replacement

Part Number	Description
5P-7277	Voltage Tester

## 197-7875 Lock Removal Tool, 197-7876 Connector Removal Tool

SMCS Code: 1800-0776

Model: All

Warranty: Six Months

- Used to service Cat<sup>®</sup> fuse blocks using mini-fuses (GM style)
- 197-7875 used to remove fuse block terminal locks
- 197-7876 used to remove wire and terminal from RTA, if replacement is necessary

### Instructions for use of 197-7875

- From rear side of RTA, insert tool fingers into slots on outboard side of wires.
- With tool handle parallel to wires, press down on locking tabs of terminal locks.
- Pull out terminal locks by hand or with a small, flat blade screw driver.

### Instructions for use of 197-7876

- Remove fuse from top of RTA.
- Locate wire terminal on outboard sides of RTA.
- Place long square fingers into square holes above and below slot for fuse blade.
- Press removal tool fingers completely into connector to compress terminal locking tabs.
- Remove wire and terminal.

# Electrical Tools

## 197-7875 Lock Removal Tool, 197-7876 Connector Removal Tool (Cont'd.)



Part Number	Description
197-7875	Lock Removal Tool
197-7876	Connector Removal Tool

## 140-9944 Terminal Kit



SMCS Code: 1400-023, 0700

Model: All Cat Engines

Warranty: Six Months

- Replaces discontinued 1P-2305 Terminal Kit
- Used to repair wiring harness terminal ends which have become damaged or unserviceable
- Hand crimping tool has built-in dies for crimping insulated and non-insulated terminals, cutting edges for cutting wire, notches for stripping 10 to 22 gauge wire, shears for cutting up to 4.7 mm (0.18 in) diameter bolts, 2-thread chasers for screws with 24 and 32 threads-per-inch screws, and a scale for measuring screw length
- Splice connectors have hot-melt adhesive and shrink ends that when heated will provide an environmental seal around wire

Qty. Shipped	Part No.	Description	Replacement Qty.
1	140-9944	Terminal Kit	1
<b>Terminal and Wire Splice Service/Repair Parts</b>			
1	9S-9150	Terminal Crimp Tool	1
10	2L-8058	Terminal (8 Gauge 1/4 in Stud)	10
10	2L-8066	Terminal (12 - 10 Gauge No. 10 Stud)	10
10	2L-8067	Terminal (12 - 10 Gauge 1/4 in Stud)	10
10	2L-8069	Terminal (12 - 10 Gauge 3/8 in Stud)	10
10	2L-8071	Terminal (12 - 10 Gauge 1/2 in Stud)	10
10	4S-19884S-1988	Terminal (Blade, Crimp Type)	50
15	136-4876	Wire Splice (12 - 10 Gauge)	1
15	136-4877	Wire Splice (16 - 14 Gauge)	1
15	136-4878	Wire Splice (22 - 18 Gauge)	1
15	2L-8077	Terminal (16 - 14 Gauge 1/4 in Stud)	15
15	2L-8079	Terminal (16 - 14 Gauge 3/8 in Stud)	15
20	2L-8075	Terminal (16 - 14 Gauge No. 8 Stud)	20
20	2L-8076	Terminal (16 - 14 Gauge No. 10 Stud)	20
30	5P-4571	Terminal (16 - 14 Gauge)	20

## 8T-5319 CE/VE Connector Tool Group



SMCS Code: 1400-023  
 Model: All Models with CE/VE Connectors  
 Warranty: Six Months

- Used to service all CE/VE Connectors
- Contacts can be removed, installed or rearranged within connector

**Reference**  
 SEHS8038, Special Instruction

Item	Tool Part No.	Description	Color	Wire Gauge
—	8T-5319	Connector Tool Group	—	—
<b>Connectors</b>				
1	4C-4074	Removal Tool, 16 - 18 Gauge	Black	16, 18
2	4C-4073	Removal Tool, 12 - 14 Gauge	Yellow	12, 14
3	4C-4072	Removal Tool, 8 - 10 Gauge	Green	8, 10
4	4C-4071	Removal Tool, 4 - 6 Gauge	Grey	4, 6

## 6V-4148 Electrical Connector Repair Kit



Model: Some models with electronic controls  
 Warranty: Six Months

- Used to repair electrical connectors made by Amp Special Industries that are used in electrical controls and harnesses

Part Number	Description
9G-5859 Includes:	301741 Terminal (8)
	384841 Contact (18)
	384843 Plug (12)
	309491 Housing (16)
	309492 Housing (16)
	301782 Housing (10)
	301531 Housing (4)
	344953 Housing (4)

Part Number	Description
	301739 Socket (8)
	301740 Housing (10)
	301781 Housing (10)
9G-6790 Includes:	399860 Contact (22)
	368748 Connector
	368747 Connector
	389688 Connector (2)

Part Number	Description
6V-4148	Electrical Connector Repair Kit
6V-3001	Sure Seal Crimping Tool
6V-4145	Extraction Tool
6V-4146	Extraction Tool - 301530 Terminal (8)
6V-4147	Extraction Tool - 399862 Housing (4)

Part Number	Description
7N-6545	Terminal (32)
7N-6546	Terminal (32)
9G-5859	Pin (8)
9G-6789	Connector (2), 387062 Connector (2)
9G-6790	Socket (37)

## 6V-4148 Electrical Connector Repair Kit (Cont'd.)

Part Number	Description	Part Number	Description
9G-6791	Pin (32)	9G-6793	Terminal (9), 384842 Connector (6)

## 300-8648 Insulation Tester Group

SMCS Code: 4450-082, 0785

Model: General and Generator Sets

Warranty: Manufacturers One Year OEM

European Union compliant, CE marked

- Replaces discontinued 243-3134 1KV Insulation Tester
- Used to test insulation on generator sets, cables, motors, insulators, and wiring installations
- Test voltages of 50, 100, 250, 500, and 1000 volts
- Automatic calculation of Dielectric Absorption Ratio (DAR) and Polarization Index (PI)
- Repetitive or hard-to-reach testing is made easier with 300-9489 Remote Test Probe
- Make repetitive tests simple and easy with Compare (Pass/Fail) function
- Live circuit detection prevents insulation test if voltage of 30 volts or greater is detected
- Auto-discharge of capacitive voltage for added user protection
- Auto power off extends battery life
- CAT IV 600 volt overvoltage
- Read measurements easily with large, backlit display
- 4 AA alkaline batteries provide at least 1000 insulation tests



Part Number	Description
300-8648	Insulation Tester Group
<b>Service/Repair Parts</b>	
300-8649	Test Leads
300-8650	Test Probes
300-9487	Alligator Clips
300-9488	Case
300-9489	Remote Test Probe

## AC/DC Voltage Measurement

Accuracy	50 Hz to 400 Hz ± (% of reading + digits): ± (2% of reading + 3 digits)
Range	0.1 V to 600.0 V
Resolution	0.1 V
Input impedance	3 MΩ (nominal), < 100 pF
Common mode rejection ratio (1 kΩ unbalanced)	> 60 dB at DC, 50 or 60 Hz
Overload protection	600 V RMS or DC

### Earth Bond Resistance Measurement Specifications

Sample of manual. Download All 2138 pages at:

<https://www.aresairmanual.com/downloads/2015-caterpillar-dealer-service-tool-catalog-repair-workshop-manual/>