

Cat® MultiTool Plus Group

515-8465

April 2021



The new and improved 515-8465 MultiTool Plus Group improves field diagnostics capability to enable your field technicians to serve customers more efficiently and effectively. The Cat® Dealer Service Tools group has worked to combine eleven tools into one to reduce the technician's burden of carrying multiple diagnostic devices to the jobsite. This eliminates the potential of forgetting a specific diagnostic tool.

The MultiTool Plus supports the most-used technician software and comes with Electronic Technician (ET) and SIS 2.0 already installed so there is no need for a separate PC.

Using built-in update capability over a WIFI network, the MultiTool Plus alerts you to firmware and software updates and upgrades automatically, so you don't need to be concerned with your device becoming outdated.

Unsurpassed diagnostic capability means that the MultiTool Plus can log up to 16 Electronic Control Module (ECM) datalink channels and 8 sensor channels (expandable to 32 channels with additional modules) in real time, allowing complex relationships between signals to be understood.

The MultiTool Plus also allows remote access from another MultiTool Plus or a personal computer for safety enhancement, supporting our efforts to eliminate live work.

The MultiTool Plus Group, and its supporting diagnostic test groups, are available individually so you can easily customize the right combination of tools for your needs.

Tool Functions:

- Cat® ET
- Dataview (logger)
- Blowby/Airflow Indicator
- Signal Generator and Counter
- Engine Timing Indicator
- Electronic Position Indicator
- Multitach 2
- Temperature Measuring
- Fuel Flow Monitor
- Burn Rate Meter
- Pressure Meter

Features:

- 1000 Samples/Second Sample Rate
- 120 GB Mass Storage
- Remote Operation for Live Work Safety
- Operating Manual and Certifications available on Tool

Cat® MultiTool Plus Group

MULTITOOL PLUS COMBINES THE FOLLOWING TOOLS:

- The concept of the 515-8465 Multi-Tool is simple...provide the functionality of several diagnostic tools in a single, menu-driven, handheld unit. The operating Manual and Certifications are available on the Tool.
- Data can be viewed while logging as a Strip Chart, Analog Gauges, Digital Display or a Data List. Collected Data can also be converted to a .CSV format for use with spreadsheets and exported from the tool over USB.
- The MultiTool unit itself is the diagnostic tool and the PC. It features a bright 10 inch (1280x800 pixel) color LED backlite display readable in sunlight. Its large touchscreen display is easy for technicians to use, even with gloved hands.
- Dataview can connect 8 physical Sensors (Expandable to 32 with 3 expansion modules) and 16 Data Link channels at a time.
- Currently, the multi-tool replaces 11 existing tools. The 515-8465 Multi-Tool Group sets a new standard with a diagnostic tool that grows according to the demands of your service operation.

Description	Part No.	Note
CAT ET	-	Can run independently or Pull Datalink information for Dataview Application.
Dataview (logger)	131-5050	Instrument was used with Customers PC. MT+ uses most of the same cables and Sensors.
Blowby/Airflow indicator Group	8T-2700	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Signal Generator and Counter Group	8T-5200	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Engine Timing Indicator Group	8T-5300	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Electronic Position Indicator Group	8T-1000	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Multitach 2 Group	9U-7400	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Digital Thermometer Group	4C-6500	Referred to as Green or Black Box Tool. MT+ uses most of the same cables and Sensors.
Fuel Flow Monitor	154-8106	Hand held Display used with several Fuel Meter Systems.
Burn Rate Computer	179-0701	In the past, A Burn Rate Computer was required to convert pulses to engineering units and temperature correct flow.
Digital Pressure Group	198-4240	Group still exists. Multitool Plus can Graph, Log and compare against other data parameters. (Pressure Sensors used in 198-4240 are not compatible with Multitool plus.)

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Power Source Options:

- There are 3 options to power the Multitool:
 - a) AC universal power supply 100-240 Volts AC (50-60Hz)(515-8466).
 - b) DC cable for the vehicle battery 9-36 Volts DC (515-8467).
 - c) Re-chargeable internal battery (Li-Ion) 10.8 Volt 5200mA Hour.
- Universal AC Power cords are also included with the Multitool. The DC cable has large alligator clips, allowing the unit to get power from a wide range of machine/ vehicle batteries.

The 515-8465 Multi-Tool Plus Group consists of the following:

Quantity	Part No.	Description
1	515-8463	Diagnostic Tool
1	515-8466	Power Supply AC Cable
1	515-8467	Power Supply DC Cable
1	515-8470	Adapter Group
5	515-8471	Adapter Rtd.
4	547-8142	Adapter Pwm.
2	515-8472	Adapter Phono
2	4C-4029	Adjustment Tool
1	558-8409	USB Flash Drive
1	515-8475	Decal Kit 1

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Cat® ET Application

- Cat® ET is diagnostic software that can help technicians to diagnose existing and potential problems with their electronically controlled Caterpillar Engines and Machines. The software accesses information when connected to the Electronic Control Module (ECM).
- Cat ET can be used by itself or with the Dataview logging Tool.
- Dataview uses CAT ET to pull Datalink data from a Machine or Engine so it can be viewed and logged along with other physical Sensors being measured.
- A Communication Adapter and the appropriate Cables are required to connect between Multitool and the Machine/ Engines Data Link Connection. CAT ET must be licensed.

Cat Electronic Technician 2020A v1.0 - Status

File View Diagnostics Information Service Utilities Help

3406E MAR (1LW12345)

- Status Group #1
- Status Group #2
- Status Group #3
- Custom Status Groups
- <TEMPORARY GROUP>

Description	Value	Unit	Min	Max	ECM
Status Group #3					
Run/Stop Switch	Run				3406E MAR (1LW12345)
ECM Battery Voltage	16.0	Volts	16.0	16.0	3406E MAR (1LW12345)
Engine Hours	7	hours	7	7	3406E MAR (1LW12345)
Gear Status	Engaged				3406E MAR (1LW12345)
Coolant Level	Low				3406E MAR (1LW12345)
Trolling Mode	Not Active				3406E MAR (1LW12345)
Engine Load Factor	0	%	0	0	3406E MAR (1LW12345)
Transmission Oil Pressure	0	psi	0	0	3406E MAR (1LW12345)

Code	Description
3406E MAR (1LW12345)	
-22-13	Engine Speed Signal Calibration Not Performed (42)
-91- 8	Throttle Position Invalid (32)
-94- 3	Fuel Pressure voltage high (37)
-100- 3	Oil Pressure voltage high (24)
-102- 3	Boost Pressure voltage high (25)
-105- 3	Intake Manifold Air Temperature voltage high (38)
-108- 3	Barometric Pressure voltage high (26)
-110- 3	Coolant Temperature voltage high (27)
-177- 3	Transmission Oil Temperature voltage high (67)
-253- 2	Check Customer or System Parameters (56)

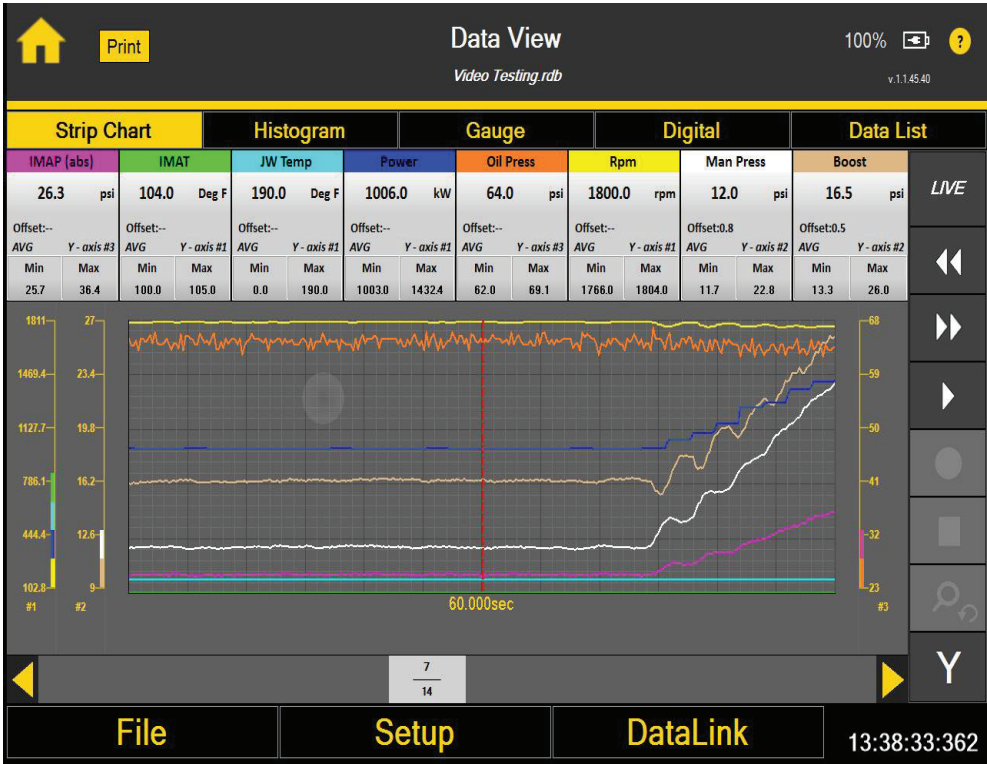
Active Codes [10] Status Flags [1]

Status Group #3 3406E MAR (1LW12345)

Cat® MultiTool Plus Group

Dataview (Logger Tool)

- Dataview is the Logging tool that can log 8 Physical sensors (expandable to 32 with additional modules) and 16 Datalink Channels together in real time.
- The Data can be displayed on 4 different Displays, Strip Chart, Gauges, Large Digital Numbers and Data List.
- Strip Chart Data can be zoomed and 4-Y axis can be created to analyze the data.
- A Histogram is available for live data.
- Dataview files can be converted to .CSV file format and moved to a USB Flash Drive. A .CSV file can be opened on a Personal Computer using Excel Spreadsheet.
- The Multitool and all of its applications can be run remotely on another Multitool or Personnel Computer for Live Work safety. A Travel Modem is required to remote into the Multitool with another Multitool or Personnel Computer.
- The Multitool can log physical sensor data up to 1000 samples/second. It has 120 GB of mass storage.
- Selectable Data Triggers can be set to help capture an event.



Cat® MultiTool Plus Group

Multitool Plus Adapter Cables

- 4 Adapter Cables Styles are used with the Multitool Plus. These Cables allow existing and future Sensors to connect to the Multitool device.
- The two adjustable Rotary switches on each adapter must be set to the required settings for the sensors being used. A table with these settings is built into the Multitool and is shown as sensors are selected.
- A Decal Kit is available to cover the switches to preserve the selected setup.
- The Technician can add additional Sensors not listed in the “Master Sensor Table” using the “Define User Sensor Application” found in Dataview.

User Defined Sensor

Sensor Name

Unit

Range Min

Range Max

Signal Min

Signal Max

Look Up Table

Open Adapter Diagrams

Adapter #

Signal Type

Adapter Setting

Sensor Type

Ground

Power Supply

Input

Power Supply Pin

Apply

Cancel



Part No.	Signal Type
515-8471	RTD (Temperature, blue)
547-8142	PWM, Frequency (Sensors, gray),
515-8470	Voltage, Low frequency (5 Pin, black),
515-8472	Voltage, Low frequency (2 Pin, black),

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Expansion Module Group 518-1559

- Each Expansion Module Group adds 8 more Channels of physical Sensor capability. Up to 3 Expansion Modules maximum can be added for a total of 32 channels (including 8 channels on Multitool).
- There are 2 options to power the Expansion Modules:
 - 1) AC universal power supply 100-240 Volts AC (50-60Hz) (515-8466).
 - 2) DC cable for the vehicle battery 9-36 Volts DC (515-8467).
- Universal AC Power cords are included with the Multitool expansion modules. The DC cable has large alligator clips, allowing the unit to get power from a wide range of machine/vehicle batteries.

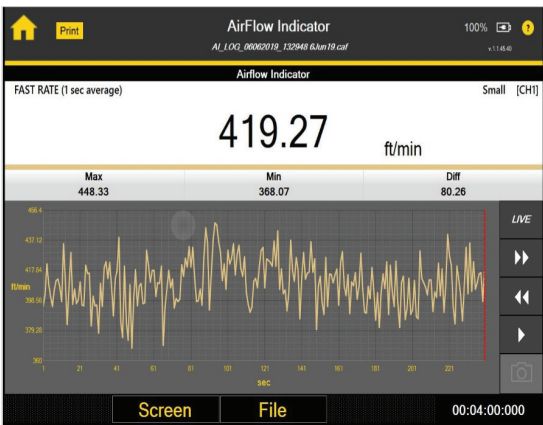
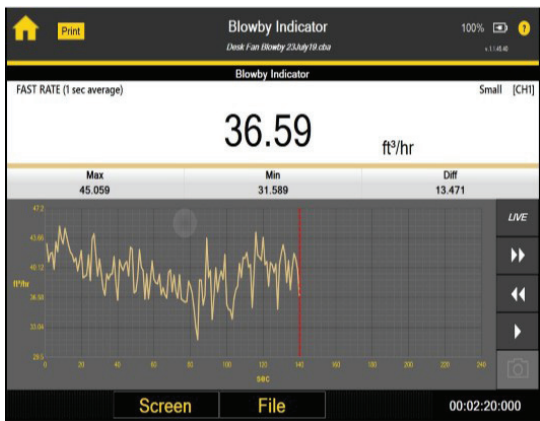


Part No.	Description
518-1559	Expansion Module Group (8 Channels/Group)
515-8464	Expansion Module
515-8466	Power Supply AC Cable
515-8467	Power Supply DC Cable
578-7161	Ethernet Cable RJ45 CAT6

Cat® MultiTool Plus Group

Blowby/Airflow Application

- The blowby/airflow indicator application allows the technician to measure the volume of blowby gases released through the crankcase breather or the air velocity through a component. Blowby measurements provide helpful information when planning engine repairs. Airflow measurements identify plugged or partially restricted areas of the cores.
- Both large and small blowby groups are available. The large blowby group checks blowby on 3500 Series and 3600 Series engines, including ACERT models as well as on the larger 300 Series Engines. The small blowby group is used on engines smaller than 3500.
- The blowby/airflow indicator displays blowby and airflow. It also displays strip charts, maximums, and minimums with the differences. The sample rate is adjustable, and the technician can easily select between SAE and metric units of measure.



Blowby Tool Group (Small Engine) 285-0900



Part No.	Description
8T-2685	Blowby Pickup (Small Engine 1,000 CFH Max)
285-0903	Cable Assembly

Blowby Tool Group (Large Engine) 285-0901

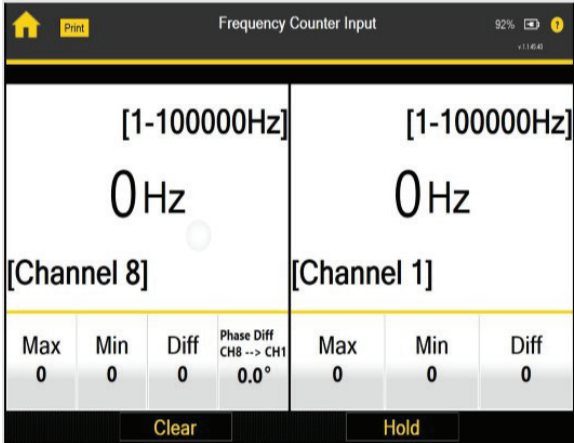
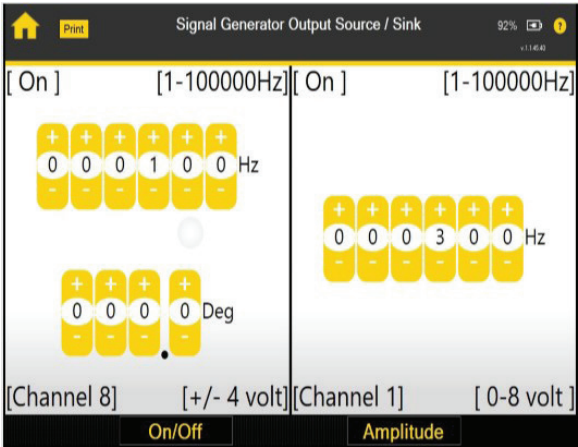


Qty	Part No.	Description
1	1U-8861	Blowby Pickup (Large Engine 4,000 CFH Max)
1	9M-0164	Clamp
1	1U-8868	Blowby Hose (Large Engine)

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Signal Generator Counter Application

- The signal generator group is primarily used to simulate the signal from a magnetic speed pickup for troubleshooting electronic controls on transmissions. It also serves as a frequency counter to measure pulsating AC or DC inputs. The signal generator group can be used for calibration of a number of electronic diagnostic tools. As part of the MultiTool Plus Group, this signal generator group application allows the technician to set frequency and amplitudes simply by touching the screen. (Amplitude +- 4 Volt or 0 to 8 Volt)
- These cables can be used with the Multi-Tool. The five pin DIN adapter 285-0896, must be used to connect 5 pin cables to the Multitool (Channels 1 or 8).



285-0899 Signal Generator Cable Group with Counter

Qty	Part No.	Description
1	6V-2198	Cable Assembly
1	8T-5197	Cable Assembly
1	8T-5198	Cable Adapter Assembly
1	8T-5112	Input Frequency Cable Assembly



Cat® MultiTool Plus Group

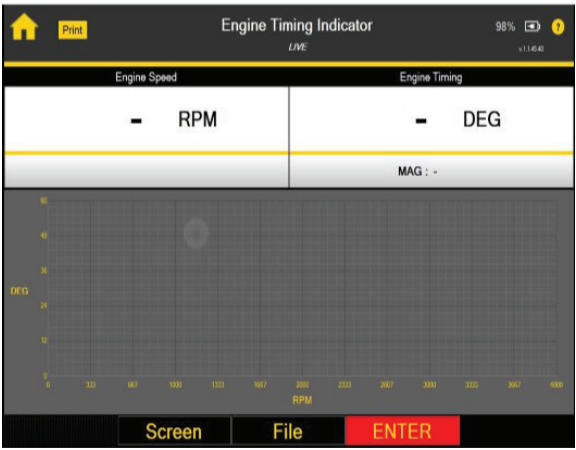
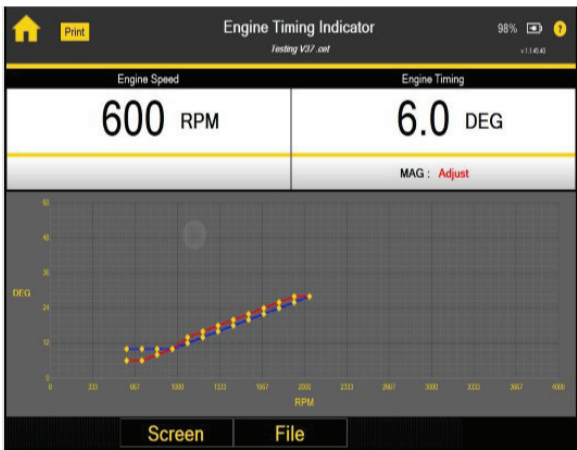
Engine Timing Indicator Application

- The engine timing indicator allows your technician to measure an engine's fuel injection timing. During the timing test, the Multi-tool can chart engine RPM's versus degrees on the display. For diesel engines, the Multi-tool must be used with the existing 8T-5301 Diesel Engine Timing

Adapter Group and the 285-0897 Engine Timing Pickup Group. The timing indicator also can check the automatic timing advance unit on engines so equipped.

- The 6V-3093 Transducer Adapter, the 6V-2199 Transducer Adapter, the 6V-2197 Transducer, and the 5P-7362 Signal Cable

Assembly are parts of the 8T-5300 Engine Timing Indicator Group. Dealers who have these groups do not have to repurchase them.



8T-5301 Diesel Engine Timing Adapter Group



Part No.	Description	
1	5P-7437	Adapter
1	5P-7436	Adapter
1	6V-7910	Injection Timing Transducer Assembly
1	5P-7435	Tee Adapter Group
1	6V-3016	Washer
1	6V-2198	Cable Assembly

285-0897 Engine Timing Pickup Group

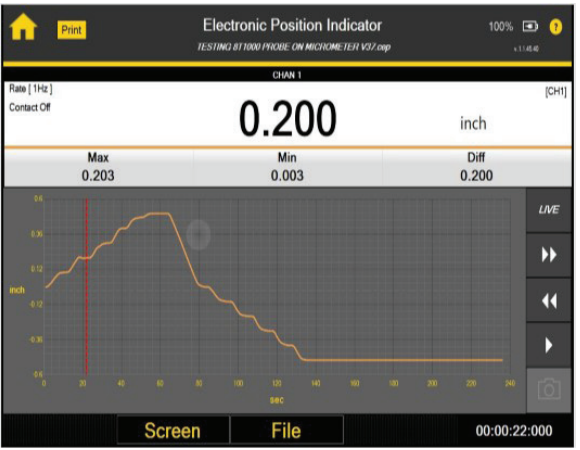
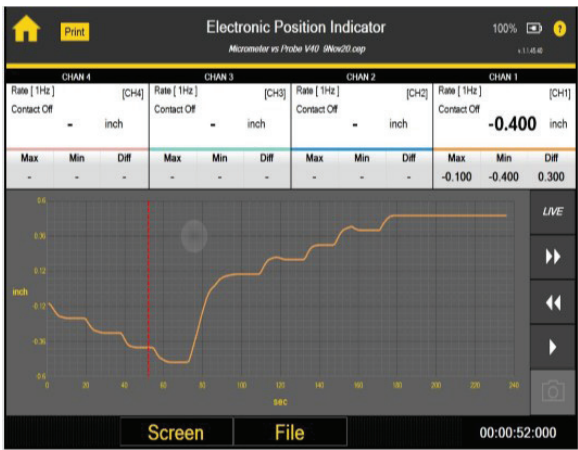


Qty	Part No.	Description
1	6V-3093	Transducer Adapter
1	6V-2199	Transducer Adapter
1	6V-2197	Magnetic Transducer Assembly
1	5P-7362	Signal Cable Assembly

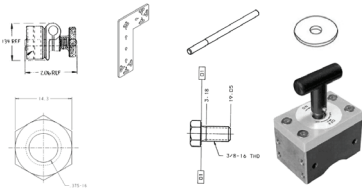
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Electronic Position Indicator Application

The application will allow 4 measurements at the same time. This can be used with the 576-0855 Ball Stud Measurement Group. The 576-0855 Group and the Multi-Tool are used to measure wear in the steering linkage on Off Highway Trucks. See M0104934.



576-0855 Group



Qty	Part No.	Description
1	570-4825	Tool-Magnet
1	570-4826	Bracket
1	570-4827	Stud
2	0S-0509	Bolt 3/8-16
4	9L-9132	Washer-Hard
1	7H-1948	Snug-Swivel Post
2	9S-8752	Nut-Hex 3/8-16

Accessories



285-0898 Electronic Position Indicator Group

Qty	Part No.	Description
1	285-0898	Indicator Group
1	6V-6042	Point Gp-Contact

Qty	Part No.	Description
1	8T-1002	Pickup Assembly
1	6V-2198	Cable Assembly

Cat® MultiTool Plus Group

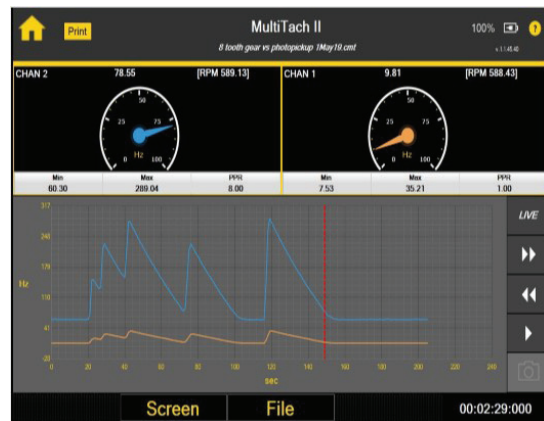
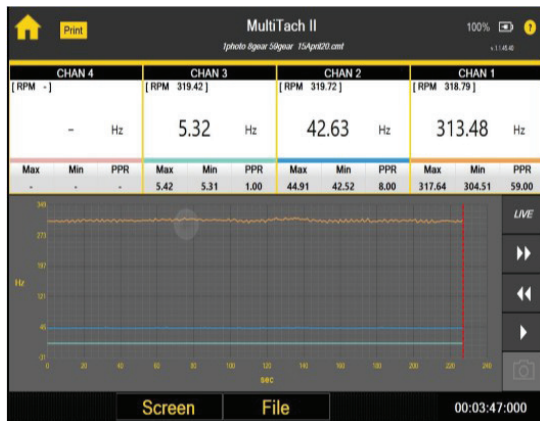
Multitach II Application

- The multitach application is used to measure rpm, frequency, and show engine set point. The engine set point indicator captures and displays set point rpm. The Hz frequency meter measures other signal frequency. The multitach also displays minimum, maximum, and the difference values of inputs.
- The Multitach II application is a four channel digital/ analog tachometer. It

is actually three instruments in one, a Programmable Tachometer, an Engine Set Point Indicator, and a Frequency Meter. The following features are included in Multitach II:

- Can display 4 digital or analog displays simultaneously
- Engine set point indicator captures and displays set point RPM
- Hz frequency meter

- Displays minimum, maximum values of inputs
- Can display 4 strip charts simultaneously
- The Multitach II application accepts many different types of pickups used with the former Multitach II interface. Each input can be programmed separately with different PPR (Pulses per Revolution) values for each input.



Accessories



308-7264 Multitach II

Qty	Part No.	Description
1	9U-5140	LED Pickup
1	1U-6605	Tape
1	6V-3138	Extension Rod
1	9U-7506	Adapter Cable
1	8T-5111	Adapter Cable
1	5P-1759	Drive Group
1	6V-2198	Cable
1	1P-7446	Rack Cable
1	6V-3137	Base

Cat® MultiTool Plus Group

308-7265 Multitach II



Qty	Part No.	Description
1	9U-5140	LED Pickup
1	1U-6605	Tape
1	6V-3138	Extension Rod
1	6V-2198	Cable
1	6V-3137	Base

Options

Qty	Part No.	Description
1	4C-6919	Retro-reflective Tape, 26mm (1.0 in.) x 2.5m (100 in) long roll, with honeycomb pattern design
1	6V-0093	Retro-reflective Tape, 12mm (.5 in.) x 47.5m (50 ft) long
1	6V-4950, 564-9413	Injection Line Speed Pickup Group
1	8L-4171	General Purpose Magnetic Speed Sensor, 91mm (3.5 in) long, 5/8-18 Thread (also need 6V-4156 cable)
1	6V-2197	Magnetic TDC Pickup 114mm (4.5 in) long, 6.35mm (.25 in) diameter
1	8T-5185	Magnetic TDC Pickup 178mm (7.0 in) long, 6.35mm (.25 in) diameter
1	8T-5184	Magnetic TDC Pickup 89mm (3.5 in) long, 6.35mm (.25 in) diameter
1	9G-6724	Magnetic Speed Sensor, 76mm (3.0) long, 3/4-16 Thread (also need 6V-4156 cable)
1	6V-2199	Sensor Mounting Adapter, 1/8 NPTF, 6.35mm (.25 in) diameter
1	6V-3093	Sensor Mounting Adapter, 1/4 NPTF, 6.35mm (.25 in) diameter

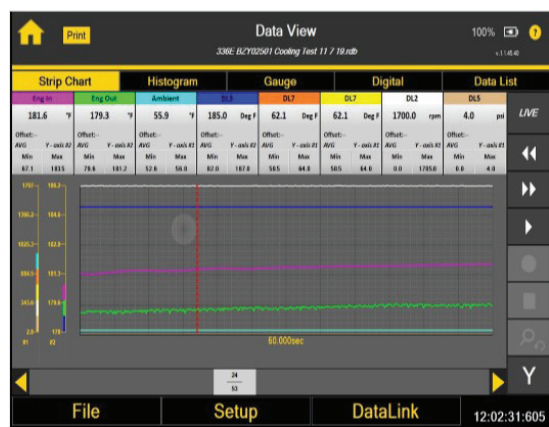
Cat® MultiTool Plus Group

Temperature Measurement (Dataview)

Dataview provides a fast method of measuring temperature. The measurements are used to analyze heating or cooling issues on machines. The temperatures of fluids, coolants, and exhaust can be measured when using the correct probes.

The thermometer has the capability of measuring eight individual temperatures (up to 32, with expansion modules), recording the minimum and maximum temperature for each of the channels.

Differential temperatures are measured by creating calculated channels. This application uses probes that are designed to be used with Caterpillar Probe Seal Adapters.



Data List(v.1.1.45.40)

Sensor Name	Value	Unit	Offset	Min	Max
Rad Out	181.7	°F	--	63.1	187.4
Eng In	181.6	°F	--	67.1	187.2
Eng Out	179.3	°F	--	79.6	183.6
Ambient	55.9	°F	--	52.6	56.0

308-7267 Temperature Group



Qty	Part No.	Description
4	6V-2198	Extension Cable 5.5M (18.0')
1	4C-6264	Probe, 1" RTD
1	4C-6265	Probe, 1.5" RTD
1	4C-6266	Probe, 2.5" RTD
1	4C-6268	Exhaust Probe, RTD
6	5P-2720	Self Sealing Probe Adapter Group
6	5P-2725	Self Sealing Probe Adapter Group
1	5P-3591	Self Sealing Probe Adapter Group
1	4C-4547	Self Sealing Probe Adapter Group
1	4C-4545	Self Sealing Probe Adapter Group

- Optional: 4C-6267 3.5"RTD Probe (not part of group)



Cat® MultiTool Plus Group

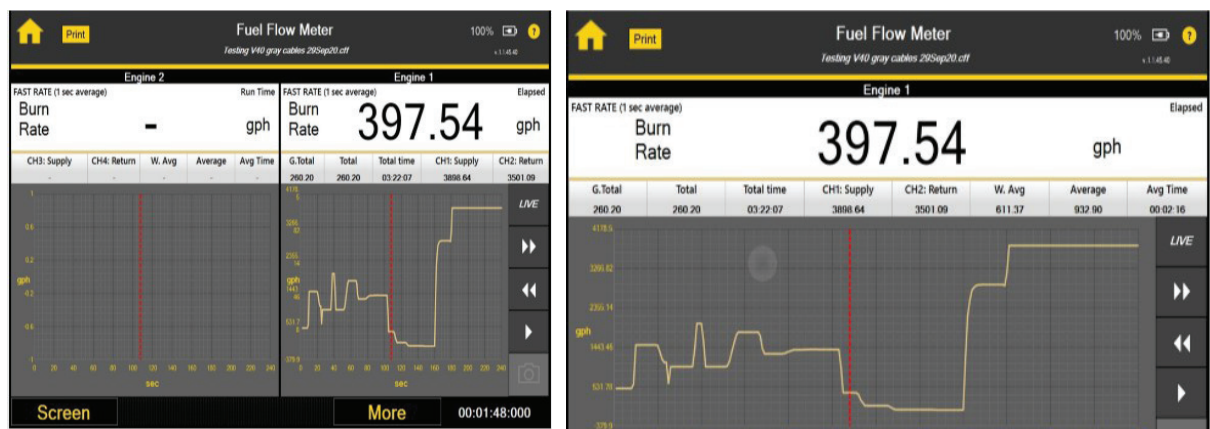
Fuel Flow Meter Application

The Fuel Flow Meter Application utilizes the 308-7271 Fuel Flow Group to read State of the Art Turbine Flowmeters. These meters have an extremely wide flow range of 50 to 3900 gallons per hour. They are not sensitive to flow direction and do not require flow straightener tubes. The meter uses temperature corrected readings to measure volumetric flow. They also have built in screens to protect the

turbines from contamination in the fuel lines. The 308-7271 Fuel Flow Group uses the Multi-Tool/Fuel Flow application to power the flowmeters and display fuel data.

The Flow Meter application works with the following Caterpillar Flowmeters: 179-0700 with 179-0701, 154-8104, 154-8103, 168-7745, 168-7735, and 308-7273.

The FT3098 (Fabricated Tool) cable connects the Multi-Tool to gear type fuel flowmeters 154,8104, 154-8103, 168-7745, and 168-7735. The 179-0700 with 179-0701 connects using a standard 6V-2198 cable.



308-7271 Fuel Flow Group



	Part Number	Description
2	308-7273	Dual Turbine Meter
2	308-7274	Cable DIN to Meter
1	6V-3073	Case
1	-	Foam Not Serviced

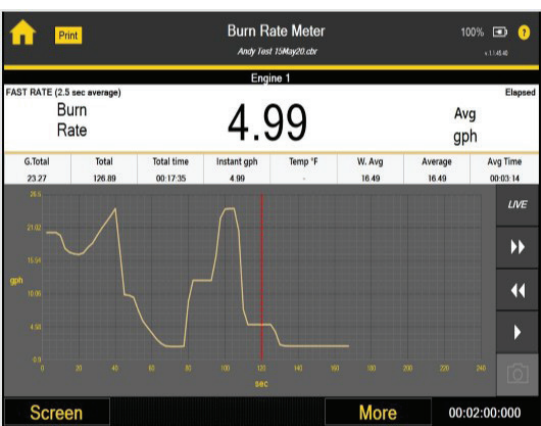
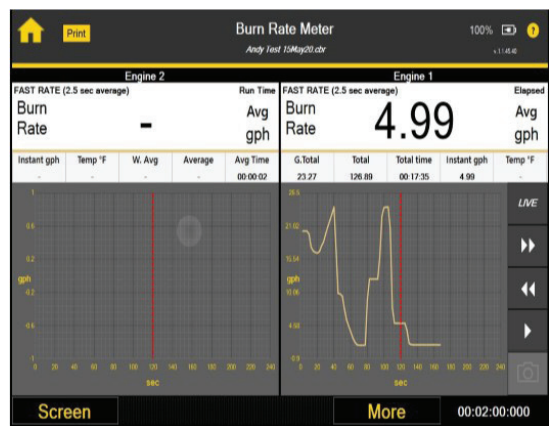
Cat® MultiTool Plus Group

Burn Rate Meter Application

The Burn Rate Meter application is used with the 368-9911 Burn Rate Meter Group (formerly 179-0710). It allows the Multi-Tool to replace the old 179-0701 Burn Rate Computer and

154-8106 Hand Held Display and associated cables. The application has both a Snapshot and playback feature that can save 1 screen width of graph data (The last 4 minutes) to

internal memory and a USB memory stick. The playback mode has 1x, 2x and 4x viewing.



368-9911 Burn Rate Group



	Part Number	Description
1	368-9913	Cable
1	179-0700	Burn Rate Meter
1	4C-9660	Carrying Case
1	179-0706	Foam Insert Bottom
1	179-0705	Hose Group
1	154-8099	Foam Lid
1	368-9907	Optional Invertor 12-24 VDC



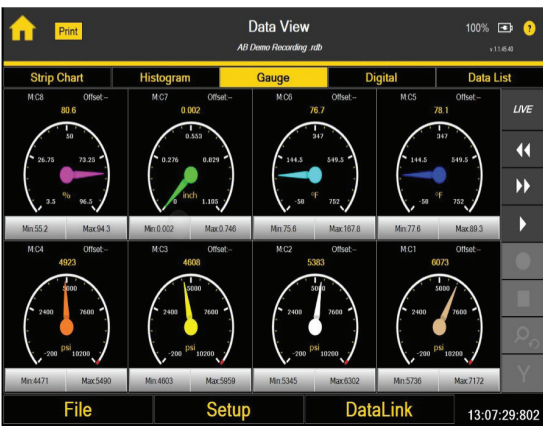
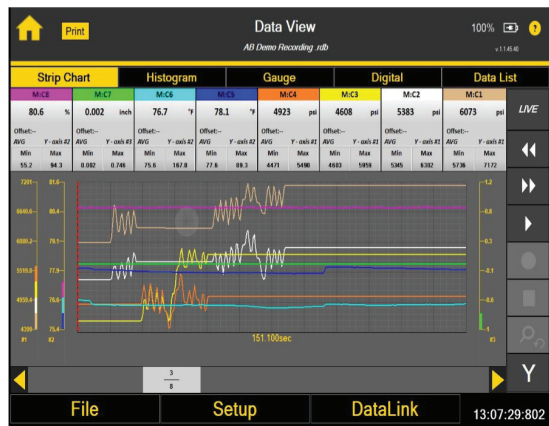
Cat® MultiTool Plus Group

Pressure Sensors (Dataview)

Dataview can log 8 (up to 32 with 3 expansions modules) channels of pressure at one time. Seven new pressure sensors are

available. They are 50 psi, 100 psi, 500 psi, 1000 psi, 6,000 psi, 10,000 psi and 14,504 psi. Pressure sensors from previous Dataview and

Multitool devices will work with the Multitool Plus, check the included sensor table for compatibility.



Quantity	Part Number	Description (New Sensors)
1	376-4170	500 psi (Measures Vacuum -14.7 psi)
1	376-4171	6,000 psi
1	376-4172	10,000 psi
1	585-5199	14,504 psi (5 pin Din Connector)
1	609-3944	50 psi (Measures Vacuum -14.7 psi)
1	609-3945	100 psi (Measures Vacuum -14.7 psi)
1	609-3946	1000 psi (Measures Vacuum -14.7 psi)



Cat® MultiTool Plus Group

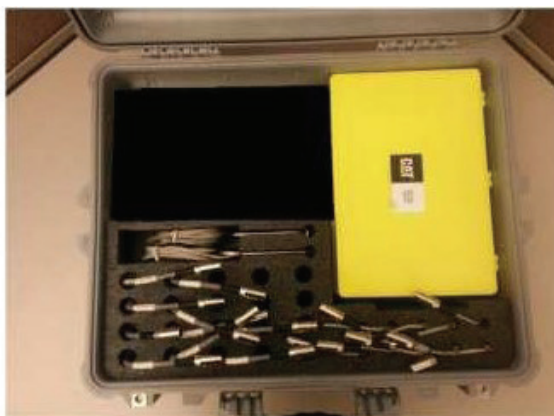
Marine Sea Trial Group 583-1971

The 583-1971 Marine Sea Trial Group contains cables and sensors to measure 24 channels of pressures and temperatures electronically on an engine. An Adapter Group is included with the required fittings to attach pressure and temperature sensors to the engine.

The Dataview application on the Multitool Plus requires 2 additional expansion modules (not included in the 583-1971 kit) to collect data for all the included sensors. 16 Channels of ECM data can also be recorded with the addition of a Communication Adapter and appropriate

cables. For more details and information, please refer to publication M0106327 (Multitool User Manual) and M0106329 (Sea Trial Kit Manual).

All of the fittings in the 464-1091 Group are identified with a lid decal and are available in the Cat Parts System for easy replacement.



583-1971 Group

Quantity	Part No.	Description
1	4C-9660	Pelican Carrying Case
24	6V-2198	5 Pin Din Extension Cable
12	376-4170	500 psi Pressure Sensor
2	4C-6265	RTD Sensor 1.5 in probe
8	4C-6266	RTD Sensor 2.5 in probe
2	4C-6268	RTD Exhaust Sensor
1	464-1093	Foam Insert
1	582-1529	Decal for Carrying Case
24	9U5061	Velcro Cable Tie
1	M0106327 Multi Tool Plus, M0106329 Marine Sea Trial Group	
1	464-1091	Tool Operating Manual
1	464-1091	Adapter Group
12	515-8470	Adapter Sensor
12	515-8471	Adapter RTD
1	515-8475	Decal Group
1	4C-4029	Screwdriver

Cat® MultiTool Plus Group

Marine Sea Trial Group 583-1971

464-1091 Adapter Group

Quantity	Part No.	Description
Sea Trial Probe Fittings		
1/8 Pipe Thread	5P-2720	2
1/4 Pipe Thread	5P-2725	2
9/16 Standard Thread	5P-3591	5
1/2 x 20 Thread	4C-4547	5
3/4 x 16 Thread	4C-4545	2
Adapters		
#10 Male/Female JIC to 1/8"NPTF Tee	480-3000	2
1/4 NPTF male to 1/8 NPTF female	3B-6768	10
1/2 NPTF male to 1/8 NPTF female	2H-5547	4
1/8 NPTF male to 1/8 NPTF female	0A-2926	2
1/8 NPTF Tee	030-9208	10
7/16 STOR male to 1/8 NPTF female	5P-5528	4
7/16 STOR O-ring	3J-7354	50
1/2 NPTF male to 1/8 NPTF female	5P-4487	8
1/2 STOR O-ring	1J-9671	50
9/16 STOR male to 1/8 NPTF female	3Y-2888	4
9/16 STOR O-ring	3J-1907	50
3/4 STOR male to 1/8 NPTF female	9T-6635	4
3/4 STOR O-ring	6V-6609	10
Pressures		
Adapter 1/4 NPTF male to 1/8 NPTF female	4M-5317	6
Adapter 1/4 NPTF female to 1/4 NPTF female	3F-2779	6
Nipple Assembly 1/4 inch male pipe	6V-3966	4
Nipple Assembly 1/8 inch male pipe	8T-3613	10
ACC Case #1	4C-3724	1
Identification Decal for ACC case - inside lid	NEEG3165	1
ACC Case #2	4C-3722	1
Identification Decal for ACC Case - inside lid	NEEG3166	1
Decal for ACC Cases	NEEG3164	2
C175		
M12 x 1.5 Male STOR x M14 x 1.5 Female STOR	451-0503	2
M12 x 1.5 Male STOR to 1/8-27 NPTF	415-2241	4
M14 x 1.5 STOR to 1/8-27 NPTF	469-2961	4
O ring STOR	6V-6560	4
M18 x 1.5 Male STOR to 1/8 - 27 NPTF	469-2962	1
O ring STOR	8T-7524	1
Nipple x M14 x 1.5 STOR	9X-2329	9
ORFS T	7X-0873	1
O Ring ORFS	6V-9746	2

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