



**AUTOMOTIVE TOOLS & EQUIPMENT**

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*Specialty Tools from Leitenberger are known for German engineering, quality, durability and performance. Simply the best you can buy.*

## Fuse Master

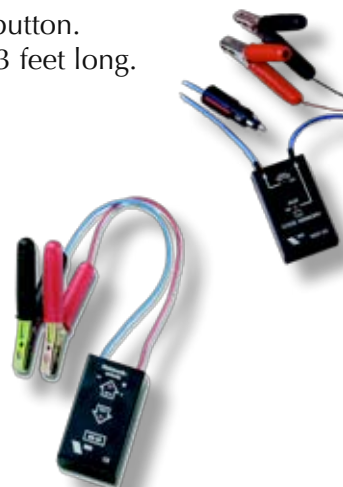
Resettable electronic fuse replacement. Plugs into a fuse socket in place of the fuse. Ideal for short circuit troubleshooting. Adjustable fuse ratings are 5A, 7.5A, 10A, 15A, 20A, 25A and 30A. Microprocessor controlled. Fuse rating is adjustable with a push button switch. LED indicates fuse selection. Reset button. Three fuse adapters are included. Leads are 3 feet long.

## Code Maintainer

Connect battery clips to a 12 volt battery, and plug the cigarette plug into the vehicles cigarette socket. Maintains all user programmed selections while the battery is removed and replaced.

## Surge Suppressor

Protect the vehicle's electronic components while maintenance is being performed. Works on 12 volt and 24 volt systems. Connect across the battery to absorb high voltage spikes.



## Dual Voltage Probe

Multipurpose inspection probe for use on 12 and 24 volt systems. Incorporates an automatic 7.5A circuit breaker which can be activated as often as needed. Apply power and ground to a circuit by pressing the rocker switch. A three color bargraph indicates the voltage measured at the tip of the instruments. Available in 6 different colors.

## Cylinder Leakage Tester

Move cylinder to top dead center and connect the cylinder leakage tester to shop air. Connect the tester in place of the spark plug or glow plug. Fill the cylinder with compressed air. Measure the leakage and listen for leakage.



## Compression Tester

Test cylinder compression on motorcycles, passenger cars, light trucks and diesel engines. High Quality gauge with solid protective rubber cap. Pressure relief valve in spark plug adapter and between gauge and hose supports multiple tests on one cylinder.



## Electronic Pressure Tester

Universal pressure tester with digital display for diesel and gas engines. Test compression, oil pressure, electronic and mechanical fuel pressure. Includes 11 oil pressure adapters, 30 fuel and compression adapters. Also includes RS-232 cable. Packed in a molded storage case.



# BATTERY TESTERS



**Ferret 40**  
Battery Tester

Our battery testers are built tough for the shop environment. Easily tests batteries up to 1200 CCA. Test 6 and 12 volt battery, charging and starting systems. Fan cooled carbon pile tests all types of automotive and marine batteries. Uniquely designed carbon pile will not break by overtightening. All of our battery testers are compatible with the latest battery technologies including deep cycle and glass mat batteries

Inductive amps probe is plug in field replaceable. 1" x 3/4" opening clamps around large battery cables and wire bundles. Cables are jacketed to reduce tangles.

Welded steel with baked powder coat finish. Hang cables on clip bar. Shelf holds tools. Moves easily in the shop or on rough driveways. Base of the stand is large enough to hold a typical battery charger.

## Ferret 40

Test 6 and 12 volt battery, charging and starting systems with a tester that is built tough for the shop environment. Easily tests batteries up to 1200 CCA.

## Ferret 42HD

The Ferret 42HD can test 6, 12 and 24 volt batteries, charging and starting systems. Easily tests batteries up to 1200 CCA. The high capacity inductive amp probe measures up to 1200 amps. Load Hot light illuminates when carbon pile is too hot.

## Ferret 44

The Ferret 44 is equipped with a thermal printer, advanced computer aided system tests and a new larger display. Estimates the cold cranking amps of the battery to detect batteries likely to fail in the near future. Can be used to test starting/charging systems up to 40 volts.



**Ferret 42HD**  
Heavy Duty  
Battery Tester



**Ferret 44**  
Battery Tester w/  
Printer

Function/Analyzer	Ferret 44	Ferret 42HD	Ferret 40
RPM .....	Inductive, 0 to 10,000 RPM .....	N/A .....	N/A .....
Battery Volts .....	4.0 to 199.90 V .....	4.0 to 199.90 V .....	4.0 to 199.90 V .....
External Volts.....	0 to +/- 199.90 V .....	0 to +/- 199.90 V .....	0 to +/- 199.90 V .....
10 Meg Impedance.....	Yes .....	Yes .....	Yes .....
Amps Type.....	Inductive .....	Inductive .....	Inductive .....
Amps Range .....	0 to +/- 600 .....	0 to +/- 600 .....	0 to +/- 600 .....
Load Type.....	Carbon Pile .....	Carbon Pile .....	Carbon Pile .....
Load Range .....	0 to 600 Amps .....	0-600 Amps .....	0-600 Amps .....
Load On & Load Hot.....	No .....	Yes .....	No .....
CCA Estimate.....	Yes .....	No .....	No .....
Amps Ripple.....	Yes .....	Yes .....	Yes .....
Display Type.....	2 Line Backlit LCD .....	LCD .....	LCD .....
Case Size.....	10 x 16.5 x 9.5 in. ....	10 x 16.5 x 9.5 in. ....	10 x 16.5 x 9.5 in. ....
Weight .....	45 Pounds .....	45 Pounds .....	45 Pounds .....
Thermal Printer.....	Included .....	N/A .....	N/A .....

Get the best of both worlds with the ultimate in portable gas analyzers. Small and portable, it can easily be taken on road tests and stored in a toolbox. Absolutely the largest display found on any hand held gas analyzer.

The composite display will show all readings in an easy to understand format. The Grams per Mile display indicates the estimated grams per mile for each measured gas. The big digit display can be seen from across the bay or the vehicle. Record up to 3 hours of real time gas data. Designed to meet or exceed BAR 94 and O.I.M.L. standards for accuracy.



**Ferret 16** (Shown)  
5-Gas Analyzer

## Backlit LCD Display

Absolutely the largest display found on any hand held gas analyzer. 3" x 9.5" 4 line by 40 character.

## Battery Power

Connects to Vehicle 12V battery for power. Optional AC adapters for various worldwide power supplies will be available.

## Aggressive Water Protection

If the end of the sample hose accidentally comes in contact with water or antifreeze, a warning message is set and the pumps are reversed. The fluid will be expelled from the sample hose.

## Three Display Configurations

The composite display will show all readings in an easy to understand format. The Big Digit Display can easily be seen from across the vehicle. The Grams per Mile display shows how each gas is measured in enhanced I/M areas.

## BAR-94 Accurate

Designed to meet or exceed BAR 94 and O.I.M.L. standards for accuracy

## Estimated Grams per Mile

Use one of the three display configurations to display Estimated Grams per Mile calculations. Use this screen in enhanced I/M areas to more fully understand the readings provided by the central testing facility.

## Two Configurations

The GasLink II is sold with or without a Printer. If the unit is purchased without a printer a separate printer can be purchased at a later date.

## Ferret 16P

5-Gas Analyzer w/Built in Thermal Printer

### Measurement Ranges

Hydrocarbons (HC)	0 to 15,000 ppm
Carbon Monoxide (CO)	0 to 15.00%
Carbon Dioxide (CO2)	0 to 20.0%
Oxygen	0 to 25.0%
Nitric Oxide (NOx)	0 to 5,000 ppm
Lambda	0 to 10.00
AFR	0 to 99.9
Tachometer	100 to 5,000 RPM
Warmup Time - Diagnostic Mode	3 Minutes
Warmup Time - Full Stability	15 Minutes

### Physical Dimensions

Operating Temp	2° to 54°C, 35° to 120° F
Storage Temp	-29° to 54°C, -20° to 130° F
Case Size	28x33x9 cm, 11x13x3.5 in.
Lead Length	1.5 m, 8 Feet
Weight	4.5 kg, 10 Pounds
Power Requirements	12 Volt Vehicle Battery
	Optional A/C Adapter

# GAS ANALYZERS



**IPEX-1** (Shown)  
5-Gas Analyzer w/Built in Printer.  
Available with or without printer

Directly measures HC, CO, CO<sub>2</sub>, O<sub>2</sub>, and NO<sub>x</sub> using Protech's own OIML class 0 (Bar-97) certified infracell bench. 1 1/2-Minute warm up time to full stability. Reliable gas sampling and filtration system protects the analyzer from dirt, debris, and water. The IPEX is powered by the vehicle's 12 volt battery and can be taken out on a road test. Record/playback feature can be used to track down difficult problems, or replicate an I/M 240 test. The powerful 32 bit processor lets the IPEX interface with your PC or shop network to save and print test reports for your customers.



Size: 13.5 x 9.2 x 10.3 inches  
Weight: 5.5 lbs

Directly measures HC, CO, CO<sub>2</sub>, and O<sub>2</sub> using Protech's own OIML class 0 (Bar-97) certified infracell bench. Field upgradable to measure NO<sub>x</sub>. 1 1/2-Minute warm up time to full stability. Reliable gas sampling and filtration system protects the analyzer from dirt, debris, and water. The IPEX is powered by the vehicle's 12 volt battery and can be taken out on a road test. The powerful 32 bit processor lets the IPEX interface with you PC or shop network to save and print test reports for your customers.



Size: 13.5x9.2x10.3 inches  
Weight: 5.5 lbs.



**IPEX-D** (Shown)  
4-Gas Analyzer w/Built in Printer.  
Available with or without printer

Analyzers can be purchased with or without a printer. 4-Gas Analyzers can be field upgraded to 5-Gas by purchasing a NO<sub>x</sub> sensor.

Optional Equipment	IPEX-1	IPEX-D
NO <sub>x</sub> .....	Included .....	M022-52
RPM Probe .....	X008-P1 .....	X008-P1
Stand .....	VP701-31 .....	VP701-31
PC Software .....	VP961-30 .....	VP961-30
110V AC Power Adapter .....	VP703-10 .....	VP703-10

# WIRELESS EXHAUST ANALYZERS

V-GAS is available as 4-gas (CO, CO<sub>2</sub>, HC and O<sub>2</sub>) and 5-gas (NO) analyzer. V-GAS meets or exceeds all top international specifications (OIML Class 0 and 1, BAR 97, ISO 3930) for any kind of automobile engine. Windows®-compatible GasPC software provides full monitoring and management of the test. Fit for heavy-duty idle and loaded test cycles on any kind of gasoline engine. Very fast 1 minute warm-up time. Reliable gas sampling and filtration system.

**4-GAS**

A rechargeable power supply and wireless communication to a PC allows the ultimate in testing flexibility.

Weight: 7.7 Pounds



**V-GAS** (Shown)  
Wireless Exhaust  
Gas Analyzer



**V-Smoke** (Shown)  
Wireless Opacity Meter

Partial flow opacity meter for diesel engine emissions testing on cars, light trucks and heavy duty commercial vehicles.

Complies with most important standards worldwide like ISO 3173, and ISO 11614. Does not comply with SAE J 1667 at this time. Rechargeable power supply and radio communication with a PC make the machine easy and safe to use, even during roadside operations. The V-Smoke performs all measurements required by the typical Diesel emission test procedure: opacity, engine speed, oil temperature, etc. Data is available for remote sending for display, storage, printing-out, etc. Automatic zeroing and software-supported calibration. A rechargeable power supply and wireless communication to a PC allows the ultimate in testing flexibility.

Weight: 7.7 Pounds

## Optional Equipment

	IPEX-1	IPEX-D
NOx .....	Included .....	n/a
RPM Probe .....	X008-P1 .....	n/a
PC Software .....	VP961-30 .....	VP961-30
110/220/240V AC Power Adapter .....	VP703-20 .....	VP703-20
Radio Communication Interface .....	VP788-0C .....	VP788-0C
Radio Frequency RPM Probe .....	VP607-20 .....	n/a
Oil Temperature Probe .....	VP711-28 .....	VP711-28



# OPACITY METER



**OPAX 2000-II** (Shown)  
Opacity Meter

Partial flow opacity meter for diesel engine emissions testing on cars, light trucks and heavy duty commercial vehicles.

OPAX 2000 - II complies with most important standards worldwide like EEC 72/306, ISO 3173, ISO 11614 and SAE J 1667; it is approved for statutory test in many countries around the world.

Partial flow continuous gas sampling combined with a heated and temperature controlled smoke chamber compensates for changes in pressure and test conditions to give you the most accurate readings possible.

All-in-one architecture with long sampling hose makes it comfortable and easy to use on any vehicle with any kind of diesel exhaust system including vertical stacks. Dual function power supply supports roadside and repair bay operations.

Real-time clock with battery back-up. Software-supported calibration feature with standard filter. Measures gas pressure and gas temperature. Built in 24-column printer.

Approved for use in California, and Illinois.

Dimensions: 16.7" x 8.9" x 14.6" approx  
Weight: 44 lbs. approx.



## Optional Equipment

	OPAX 2000
Piezo RPM Adapter .....	VP723-10
Battery Tachometer .....	VP709-00
Stand .....	VP701-31
PC Software .....	VP960-32
Oil Temperature Probe .....	VP711-28
Remote Wired Probe .....	VP702-05



# ENGINE ANALYZER

The most complete and affordable portable engine analyzer you will ever find! Our AutoSort feature automatically determines coil, and plug polarity on DIS engines. Connecting to a DIS ignition system has never been easier. Powerful diagnostic routines to help you find the problem area fast. Forget to connect a needed test lead? Unsure about a test procedure? Press the HELP key for context-sensitive assistance. Bargraphs, text, and measurements are displayed on a 4 line by 40 character backlit LCD.

Primary, Secondary, and Hard Start tests support a complete check of the Ignition System with the engine running or cranking.

Ignition Primary on a DIS car allows accurate diagnosis of each individual coil and module. Ignition Secondary displays Burn Time and Peak Kilovolts for each cylinder. The analyzer is fast enough to monitor every cylinder firing and capture min and max data.

Power Balance, Power Contribution, and Electronic Compression tests thoroughly evaluate cylinder power on DIS or Distributor ignitions.

Power contribution measures very small changes in RPM and Timing to determine the power balance of DIS or distributor engines.

Power Balance kills each cylinder and measures the RPM drop on most distributor engines.

Electronic Compression evaluates the mechanical condition of each cylinder by measuring the amperage required to push each cylinder through the compression stroke.

Starting/Charging History guides you through a preprogrammed test that evaluates the entire starting and charging system.

Fuel Injector and Solenoid Duty Cycle tests perform all tests necessary to accurately diagnose the electrical condition of the fuel injection system.



**Ferret 55**  
Diagnostic Analyzer

**Ferret 55P**  
(Shown)  
Diagnostic Analyzer w/Built  
in Thermal Printer

## Measurement Ranges

Battery Volts .....	to 19.99 Volts
Volts, Aux (10 Meg) .....	±20.00VDC
.....	to 50.0 VAC Pk-Pk
Amps, Inductive .....	0 to ±600 Amps
Tachometer.....	100 to 5,000 RPM
Dwell, Ignition .....	Degrees, %, or mSec.
Driver/Points Resistance .....	0 to 3.0 Volts
Dwell Variation .....	in Degrees
Timing Variation .....	in Degrees
Ignition Coil Amps.....	0 to 19.9 mSec
Coil Amps Build Time .....	0 to 9.9 mSec
Spark Burn Time .....	0 to 9.9 mSec
Ignition Energy .....	0 to 99 milliVolt-Seconds
Secondary KV.....	0 to 32 Kilovolts
Pulse Rate.....	0 to 999 Hertz
Cylinder Power Balance .....	% RPM Drop
Cylinder Power Contribution .....	Speed Index
Amps Ripple.....	Message Indicator
Cranking Compression .....	% Amps Peak
Injector Amps Drive Time .....	0 to 99.9 mSec
Injector Peak Amps.....	0 to 19.9 Amps
Throttle Position Sensor .....	Glitch Catcher
O2 Sensor .....	Volts and Crossings

## Physical Dimensions

Case Size.....	28x33x9 cm 11x13x3.5 in.
Power Requirements.....	12 Volt Vehicle Battery

# TIMING LIGHTS & ADAPTERS

Patented Eliminator Optics generates several times the strobe brightness of other timing lights. The Inductive Spark Pickup is rugged and easy to hook up. Sophisticated circuitry discriminates between spark pulses and noise. Convenient controls on the handle or the back panel. Suitable for use on multistrike ignition systems.



The Ferret 80 and 82 have an adaptable power input that supports testing on 6 and 12 volt systems. Flashes well over 10,000 RPM. Optional storage case is available.



The Ferret 81 is suitable for timing racing engines, industrial engines, and automotive engines. Powered by 6 AAA batteries. Batteries will last close to 1 hour of continuous use. Flashes well over 3,000 RPM. Normal and reserve power functions allow a few minutes of use after the batteries have been depleted.

The Ferret 82 is ideal for High Performance engine timing advance measurements. The large calibrated 60° dial provides 1.5° accuracy and easy operation. Can be used on Distributorless Ignitions or Distributor Ignitions. Optional storage case is available.



The Ferret 84 has a single digital display that shows RPM or advance. Molded Storage case is included.

The Ferret 765 adapts most timing lights to measure diesel pump timing on many diesels engines. The piezo adapter clamps around an external fuel line and senses the pulse of fuel to #1 Cylinder. Piezo adapters are available in 1/4", 6mm, and 6.5mm sizes.



Function/Timing Light	Ferret 80	Ferret 81	Ferret 82	Ferret 84
RPM Range.....	up to 10,000 RPM	up to 10,000 RPM	up to 10,000 RPM	up to 10,000 RPM
Pickup Type .....	Inductive	Inductive	Inductive	Inductive
Replaceable Pickup .....	Yes	Yes	Yes	Yes
Advance .....	No	No	Yes	Yes
Advance Type .....	n/a	n/a	Analog	Digital
Advance Range.....	n/a	n/a	0 to 60°	0 to 90°
Advance Display .....	n/a	n/a	Dial	Digital
Power .....	12 Volt Vehicle	6 AA Alkaline	12 Volt Vehicle	12 Volt Vehicle
Storage Case.....	Optional	Optional	Optional	Included

# RECHARGEABLE TIMING LIGHTS

The Ferret 85 is a rechargeable digital timing light ideal for high performance engine timing advance measurements.

Digital display shows RPM, or advance. Can be used on distributorless, distributor, multistrike, and marine ignition systems. Ideal for timing racing engines, small engines, industrial engines, and automotive engines.



Advance Buttons on the handle are used to “move the mark” to zero allowing for accurate timing measurements. Use the 2S/4S button to select between 2 stroke and 4 stroke ignitions. The RPM/Advance button is used toggle the display between RPM and timing advance.



The 85 is packaged in a molded storage case with a spark pickup, recharging transformer, and instruction manual.

## Physical Dimensions

Operating Temp.....-18° to 50°C.....0° to 122° F  
Storage Temp.....-40° to 80°C..... -40° to 180° F  
Case Size.....30x7 cm..... 12x8 in.  
Lead Length..... 1.7 m..... 5 Feet  
Weight .....0.7 kg..... 1.5 Pounds  
Power Requirements.....Rechargeable Battery



The Ferret 83 is a rechargeable dial advance timing light ideal for high performance engine timing advance measurements.

The large calibrated 60° dial provides 1.5° accuracy and easy operation. Can be used on distributorless, distributor, multistrike, and marine ignition systems. Ideal for timing racing engines, small engines, industrial engines, and automotive engines.

The unique RPM LED aids in timing measurements by indicating the approximate test RPM. Simply turn the indicator knob until the LED in the upper right hand corner is blinking and multiply by 100. If the indicator knob is pointing at 15, the engine is running at 1,500 RPM.

A low battery indicator is located on the lower left hand corner of the back panel. It will illuminate when it is time to recharge the batteries. Smart charging technology allows the transformer to be connected to the timing light for long periods of time without overcharging the battery pack.

A Trigger Event indicator is located on the upper left hand corner of the back panel. It will flash whenever a spark event is detected. Use this indicator to ensure you have a good spark pickup signal.



The 83 is packaged in a molded storage case with a spark pickup, recharging transformer, and instruction manual.

## Physical Dimensions

Operating Temp.....-18° to 50°C.....0° to 122° F  
Storage Temp.....-40° to 80°C..... -40° to 180° F  
Case Size.....30x7 cm..... 12x8 in.  
Lead Length..... 1.7 m..... 5 Feet  
Weight .....0.7 kg..... 1.5 Pounds  
Power Requirements.....Rechargeable Battery

# AUTOMOTIVE LABSCOPE



Handheld Dual Trace Labscope is easy to use wherever you need to test. Rechargeable Battery Pack eliminates the need to purchase disposable batteries. Packaged in a molded storage case with test leads, probes, and clips. CD based instructed manual included. Clearly marked buttons and controls

## Easy to Use

Clearly marked, easy to understand controls make the Ferret 93 the easiest 2 channel labscope to use right out of the box.

## Easy to See

The electroluminescent backlight allows the 93 to be used in low light conditions. 128 x 128 pixel LCD displays range, time base, trigger point, trigger level, AC/DC coupling and the sampled waveform.

## Sampling Subsystem

Special anti-aliasing software and the ability to sample up to 25 million samples per second helps insure you get the right picture.

## Presets & Setups

The 93 contains presets measurement ranges for over 50 different sensors, and actuators. Simply pick the sensor you want to test from a menu and begin testing.

## Waveform Library

Every preprogrammed setup has a reference waveform included. Simply press the reference button to see what a known good waveform looks like.

## Dual Trace Scope

Contains a full featured dual trace labscope.

## Memory

Record your own presets and waveform patterns in one of 2 user programmable memory locations.

Bandwidth.....	100 kHz
Channels .....	2
Voltage Ranges (Full Scale) .....	0.5 V to 100 V
Vertical Position.....	Fixed with Offset
Input Coupling .....	AC, DC
Sample Rate .....	25 mHz
Sweep Rate.....	60 s/Div to 100 $\mu$ s/Div
Trigger .....	Auto, Wait
Display .....	128 x 128 pixel LCD
Presets.....	At least 50
Update Rate .....	At least 3 times / Second
RS-232C .....	Talk/Listen capability
Battery.....	6AA Alkaline cells
Battery Life .....	20 hours operation (typical)
External Power.....	With optional AC adapter

## RS-232 Port

Upload and download presets and waveforms using popular waveform manager programs.

## Ignition Testing Capabilities

Using the optional Ferret 953K LabScope KV adapter kit, you can capture ignition parade waveforms on Distributor and DIS ignitions.



# AUTOMOTIVE MULTIMETER

A huge backlit dual line digital display with bargraph. Shielded 6 foot test leads guarantee accurate measurements. The meter is protected from accidental drops by a protective rubber boot. Switch between RPM, Voltage and Amperage readings at the press of a button. Displays measurement pairs such as: Volts/Amps, Peak Amps/Build Time, RPM/Amps, and more! Certified for True RMS readings.

The Ferret 95 includes unique ignition and fuel injection tests, as well as a dedicated fuel pump efficiency test. Use the Volts for all your high impedance voltage and RPM measurement needs. RPM is displayed on the top line of the display and volts are on the bottom. Press Volts to cycle through DC Volts, AC Volts, and Peak to Peak Volts. True RMS function gives accurate readings regardless of the shape of the voltage signal you are measuring.

Measure from 1/10th of an Ohm to 40 million Ohms using the Ohms Button.

Use the Amps button for all your high amps and RPM measurement needs. Press Amps to cycle through DC Amps, AC Amps, and Peak to Peak Amps. Measure from 1 amp to 600 amps inductively.

Plug in the low amps probe and press the LoA button to measure from 10 milliamps to 20 amps. RPM and Lo Amps are displayed at the same time. Press Lo A to cycle through DC Low Amps, AC Low Amps, and Peak to Peak Low Amps.

The V•A button is especially configured for starting/charging system troubleshooting.

Frequency, Pulse Width (up Slope), Pulse Width (Down Slope), Dwell Milliseconds, and Dwell % are access by pressing the Time button.

Use the Low Amps probe and the Fuel test button to measure the fuel pump RPM, fuel pump amperage draw, and the peak to peak amps. Use these three measurements to determine if the fuel pump has the capability to accurately and reliably deliver fuel.



The Coil function helps diagnose fuel injectors, and ignition coils. Use the optional secondary KV adapter to measure the firing KV on any individual cylinder.



DC Volts .....	1 mV to 50V
AC Volts.....	1 mV to 50V
Low Amps DC .....	10 mA to 20A
Low Amps AC.....	10 mA to 20A
High Amps DC .....	1 A to 600A
High Amps AC.....	1 A to 600A
Ohms .....	1 $\Omega$ to 40M $\Omega$
Continuity .....	0 - 100 $\Omega$
Diode Volts.....	0 to 1.999 Volts
Frequency.....	0 to 2KHz
Pulse Width .....	0 mS to 200mS
RPM Inductive....	0 to 10,000 Fuel Pump
RPM .....	4 Ranges
Dwell .....	0 to 100%
Peak Amps.....	0 to 20.0 Amps
Build Time .....	0 - 200 mSec
Drive Time.....	0 - 200 mSec
KiloVolts.....	0 - 40.0 kV

# IGNITION ADAPTERS



The Ferret 911 is a four pack of wire piercing tools. Small enough to fit in hard to reach areas, and able to pierce wires from 1mm to 8mm in diameter.



The Ferret 953 will adapt virtually any labscope to display ignition parade patterns on DIS and Distributor ignitions.

# SMARTSPEC DATABASE



MPC-7360  
SmartSpec  
Database

You just purchased a new piece of equipment and learned how to press the buttons and connect the leads. Now you want to know what a labscope pattern should look like, what the typical RPM of a fuel pump should be, how many amps a coil pack draws, scan tool data stream specifications, and most of all you want easy to read fuel pump and ignition system wiring diagrams. Diagrams that will help you diagnose drivability problems, include relay pin outs, wire colors for sensors and actuators, and real world specifications. You want this information in an easy to read and navigate engine specific database. Now you have it. MPC Publishing delivers SmartSpec information that will make a tech smart! The SmartSpec CD contains information on 1990 through 2002 Ford, GM, and Chrysler domestic vehicles. Three simple clicks of your mouse will access any vehicle's specifications. Easily find recommended battery sizes, spark plug gaps, coil output, coil peak amps and rise time, coil primary and secondary resistance, cam/crank wiring colors, frequency specs, compression values, fuel RPM and pressures, PCM reference voltage sources, O2 sensor values, coolant temperature voltages, TPS specifications, MAF/MAP specifications and more. Find out where to attach your low amps probe to measure fuel pump RPM and amperage. Get vehicle specific data stream information to use with your scan tool. SmartSpec gives you a benchmark to measure against. Learn what each trouble code means and what OBDII Monitors cannot run when a trouble code is set. Get a source of information that is designed specifically for the drivability technician for a yearly price that is far more affordable other information sources. Requirements for SmartSpec Database, Windows 98 or higher.

# DIAGNOSTIC TRAINING AIDS

## Experience Based Training

Remember the vehicle that took six hours to fix, and you were only to be able to bill two? The four hours spent struggling to learn a new system, or find the right information is experience gained for the next job. Use the experience of our experts and save yourself time and money.



MPC-5100  
General Motors  
Guided Diagnostics

### Guided Diagnostics (MPC-5100 & MPC-5200)

Symptom based, interactive engine performance DVD that covers all the GM OBDII vehicles, 1995-2005, or Ford OBDII vehicles, 1995-2005. When you insert the DVD it's as if a master technician is standing next to you, any level technician simply clicks on the symptom the vehicle is displaying and the Master Trainer appears on the screen & walks the technician through the most difficult engine performance problem, whether it's emissions, intermittent, no code or no start, whatever it is. The DVD master technician actually shows even the lowest level technician how to isolate the problem, fix it and verify it's fixed.



MPC-5200  
Ford Motor Company  
Guided Diagnostics



MPC-6100  
Chrysler  
Communications

### Chrysler Communications (MPC-6100)

Each manufacturer implements CAN differently. Up until now, dealers have had a near monopoly on this portion of the repair market. CAN stands for Controller Area Network which is the required scan tool network that is going to be used for all vehicles sold in this country. Learn the information you need to understand CAN operation and will clear up the confusion that dominates most information now published.

## Mastering Mode 6 (MPC-6500)

CARB and the EPA added Diagnostic Test Modes to help the aftermarket do a better job of correcting OBDII diagnostic trouble codes. Mode 6 is one of the most interesting of the diagnostic modes. Each Manufacturer has unique features for Mode 6. Mastering OBDII Diagnostic test modes will help the technician use their aftermarket scan tools to locate Mode 6 data and to understand the information needed to work with different formats used by vehicles manufacturers.



MPC-6500  
Mastering OBDII  
Mode 6



MPC-6600  
Ford Motor Company  
Mode 6

### Ford Motor Company Mode 6 (MPC-6600)

This is a two DVD set that includes detailed information on the Ford Motor Company CAN and J1850 implementation. This disk offers the technician tools that make OBDII diagnostics more effective on Ford Motor vehicles. Each disk is available separately. For CAN information only, order MPC-6610. For J1850 information only, order MPC-6620.

## System Requirements

Windows 98 or Later, Color Monitor, Speakers or Headphones, and DVD-ROM Drive.

# HEADLIGHT ALIGNMENT TOOLS



**HL26D**  
Headlight Alignment  
Tool w/Laser

## **HL26D**

Designed for the small to midsize repair shop, the HL26D is designed for aligning the headlights of cars and light trucks. Headlights of all shapes and sizes that are from 250mm to 1420 mm from the floor can be measured. Mirrored alignment sight and laser pointer gets the proper setup done quickly. Digital Luxmeter directly measure the light output.



**CF1**  
Headlight Alignment Tool

## **CF1**

Designed for the small repair shop, the CF1 is designed for aligning the headlights of cars and light trucks. Headlights from all sizes that are from 250mm to 1200 mm from the floor can be measured. Mechanical alignment sight helps you set up the measuring device quickly and properly.

# ALTERNATOR/STARTER TEST BENCH

## **Junior Test Bench**

Equipped with an inverter. Small test bench for 12 and 24 volt alternator and starter testing. Electronic RPM selector. Single phase 220v 2 hp motor with speed electronic adjuster. Ampmeter reads +/-50 amps. Starter test ampmeter reads up to 1,000 amps. Voltmeter 0-40V. Optional battery power.





# FUEL INJECTOR TESTING



**RedStar Evolution**  
Fuel Injector Test Bench

Off-the-car testing is the only way to verify that each injector is doing its job and allowing each cylinder to operate evenly for peak performance and fuel economy. The Spin fuel injector service stations come equipped with the features you need.

## Flow Test

Use the graduated cylinders to measure the flow of up to 4 injectors (6 with the RedStar). Match sets of injectors for optimum engine performance, and observe the spray pattern.

## Pressure Test

Adjust the pump pressure to the maximum the injector would normally experience to diagnose leaking or dripping injectors.

## Cleaning

Use a combination of the ultrasonic bath and the washing function of the injector test bench to deep clean injectors and confirm an appropriate spray pattern.



**BlueStar**  
Fuel Injector Test Bench

## The Evolution

The RedStar Evolution and the BlueStar Evolution are equipped with pumps that can pressurize injectors up to 150 p.s.i.



**BlueStar Evolution**  
Fuel Injector Test Bench

Function/Analyzer	BlueStar	BlueStar Evolution	RedStar Evolution
RPM .....	1,000 to 7,000	1,000 to 7,000	1,000 to 7,000
# of Injectors .....	4	4	6
Ultrasonic Tank.....	2 Liters	2 Liters	4 Liters
Tank Heating System .....	No	No	Yes
Washing Function .....	50% Duty Cycle	50% Duty Cycle	50% Duty Cycle
Single Point Injectors .....	Yes	Yes	Yes
Multipoint Injectors .....	Yes	Yes	Yes
K-Jetronic Injectors .....	Yes	Yes	Yes
GDI-FSI Injectors .....	No	Yes	Yes
Pressure Drop Test .....	Yes	Yes	Yes
Flow Test .....	Yes	Yes	Yes
RPM Adjustment.....	Yes	Yes	Yes
Optional Timing Light.....	Yes	Yes	Yes
Stand Available.....	No	No	Included

# NITROGEN TIRE FILLING SYSTEMS



**NitroBike**

Nitrogen makes up approximately 80% of the air we breath. N<sub>2</sub> (Nitrogen) is colorless, odorless, and inert. N<sub>2</sub> is a much larger molecule than Oxygen and will not escape through the tire carcass as quickly as Oxygen. Tires filled with 95% or higher concentration of N<sub>2</sub> will maintain pressure longer than tires will with shop air. Tires that maintain the proper inflation pressure will last longer and provide better fuel economy than under-inflated tires.

Nitrogen filled tires also run cooler than tires filled with shop air. Cooler running tires last longer and exhibit less rolling resistance than tires filled with shop air.

Spin Nitrogen Generators are static devices used to transform, shop air into Nitrogen (N<sub>2</sub>). This is possible through the use of a permeable membrane that separates the smaller O<sub>2</sub> molecules from the larger Nitrogen molecules. After this process the Spin systems output Nitrogen with a purity of more than 95%.



**NitroDrive 3**

Spin offers a variety of different Nitrogen Tire filling systems for your business. The portable NitroBike is ideal for use with Motorcycles, and occasional use with cars, and light trucks.



**NitroDrive 1**

The portable NitroDrive 1 has a storage tank that is 4 times the size of the NitroBike making it ideal for use on passenger cars and light trucks.

If you are a high volume shop for cars and light trucks, the NitroDrive 3 has three times the N<sub>2</sub> generation capability of the NitroDrive 1. All units include an inflator/deflator gun. Optional 4-Wheel Adapter allows the NitroDrive 1 and NitroDrive 3 deflate and inflate 4 tires at one time.



**4-Tire Adapter**

Function/Analyzer	NitroBike	NitroDrive 1	NitroDrive 3
Nitrogen Flow Capacity...up to .7 CFM .....	up to .7 CFM .....	Up to 2.1 CFM	
Pressure PSI.....	145 .....	145 .....	145
Nitrogen Purity .....	95% .....	95% .....	95%
Tank Size.....	6 Gallons .....	24 Gallons .....	24 Gallons
Inflator/Deflator .....	Included .....	Included .....	Included
Motorcycle Application .....	Yes .....	Yes .....	Yes
Car Application .....	Marginal .....	Yes .....	Yes
Light Truck Application .....	No .....	Marginal .....	Yes
Portable .....	Yes .....	Yes .....	Yes

# SHOCK & STRUT TOOLS

## Coil Spring Compressor

This spring compressor is a great tool for small coil springs found on many of today's multi-link or A frame suspensions. Two sets of coil plates fit springs from 3" ID up to 5.75"OD. and will compresses a full 8 inches. (Jaw opening adjusts from 12 1/2 " to 4 1/2 ".)The fast action screw type actuator takes just 6 1/2 turns per inch. With a compressed overall length of just 10 1/2 " it gets into those tight spots that other spring compressors can't. Comes packed in a molded case.



## Universal Strut Spring Compressor

Comes with three sets of coil plates to fit virtually any spring found on MacPherson Struts. Included adapter allows use on springs with different top and bottom diameters. Portable and fast, this tool is packed in a molded case for easy storage.

## Strut Mount Tool Kit

This kit contains all the tools you need to make it fast and easy to hold most strut shafts and remove retaining nuts. No more damage from spinning them off with an impact gun. Twenty-five shaft holder tools and fourteen lock nut remover tools fit most Japanese and European models as well as many Ford and Chrysler products. Packed in an indexed molded case for easy storage.



## Strut & Spring Compressor

Air over hydraulic operation makes easy work of strut springs. Three different bottom flanges accommodate a wide variety of spring sizes. The flanges are Teflon covered for long service and ease of use. The top clamps are adjustable to fit almost any type of spring. Compression strength over 2,200 pounds at 116 psi.



