

# A T S

## AUTOMOTIVE Test Solutions

Proud to be a U.S. based company 

*The choice of the  
professional technician*

[www.AutomotiveTestSolutions.com](http://www.AutomotiveTestSolutions.com)

**800.572.6112**

- ▶ Scan Tools
- ▶ Leak Detection
- ▶ Scopes
  - ▶ Misfire Detection
  - ▶ Inspection Camera
  - ▶ Gas Analyzers
  - ▶ Induction Cleaning
  - ▶ Vibration Analysis
  - ▶ Training Products



## Tim Harding

"I have several OE level tools and after market tools. ATS eScan is our go to tool for drivability issues; the platform is easy to use for all level of technicians, the plotting in colored mapping is great and graphing is amazing. We have 10 techs and 3 of these scan tools, that is not enough. Again, thank you ATS for great products and easy to use diagnostic equipment."

### Tim Harding

Precision Performance

ASE Master Tech

Professional Technician for 38 years

Using ATS Equipment for 10 years

# eSCANELITE<sup>®</sup>

## Intelligent Power Scan

Patented



- ▶ Automated MAF testing for operational verification at all load and RPM
- ▶ Fuel Trim Analytics - Plot fuel trim in load/RPM matrix - Know exactly where fuel trim deviates from spec.
- ▶ Catalytic converter fast accurate diagnosis
- ▶ Volumetric Efficiency Calculation - Diagnose engine mechanical and pumping problems
- ▶ Never miss anything - Unlimited data recording with zoom and playback
- ▶ Mode 6 - Decoded into plain English
- ▶ Power Test calculates horsepower at the flywheel
- ▶ Fuel Efficiency Test calculates how well the fuel is being used
- ▶ Temperature Test finds cooling system problems
- ▶ Relative Compression Test - Quickly test for engine mechanical issues
- ▶ Accelerometer Power Test - Tests acceleration time to speed, before, distance
- ▶ Accelerometer Braking Test - Tests brake stopping force, distance, brake pull

# eBOB™

## DLC Breakout Box



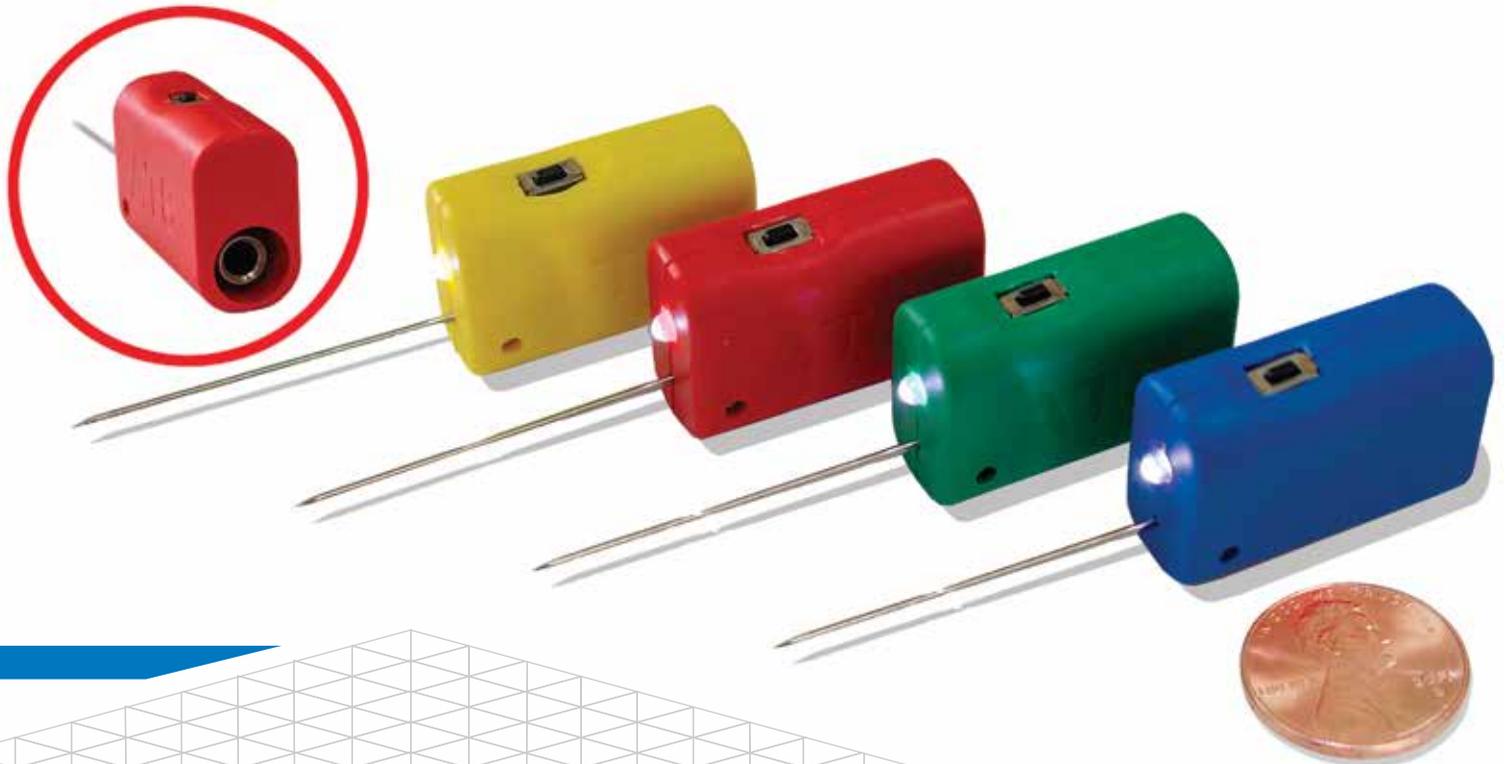
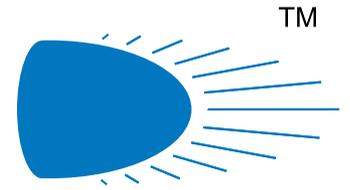
- ▶ Just plug the eBOB into the vehicle's DLC
- ▶ Automatically checks powers and grounds
- ▶ Quickly allows you to check the communication buses
- ▶ LED's show if any communication voltage changes are present
- ▶ Quick banana jack connections for meters, logic probes, or scopes
- ▶ Quickly access data for analysis of communication problems
- ▶ Fused power lead can be used for quick 12 volt supply to power scan tool

(eSCAN ELITE not included)

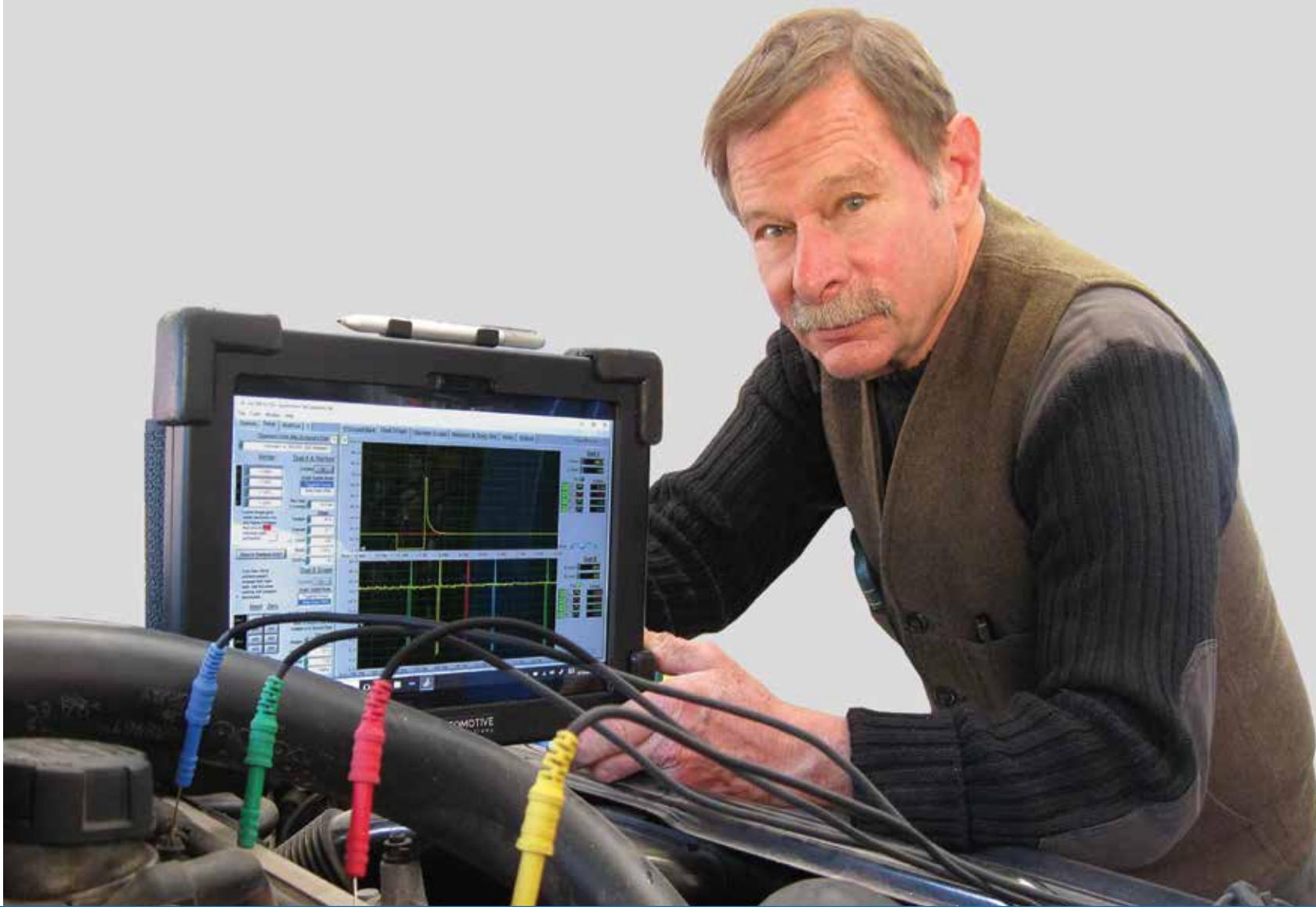
# LIGHT**b**RIGHT™

Lighting Your Diagnostics

Patent Pending



- ▶ LIGHTBRIGHT Back Probes allow you to see the electrical connection point in dimly lit areas.
- ▶ Make connections easy using only one hand in tight areas.
- ▶ Self-powered circuit uses super bright light emitting diode (LED).
- ▶ LED is a white light that will not change the color of wiring.
- ▶ Standard banana jack connects to most electronic measuring equipment.
- ▶ Back probe has replaceable stainless steel pin.
- ▶ Set of 4 colors; yellow, red, green, blue.



## Dave Lang

“When you need the power to quickly diagnose and verify repairs; the only scope I use is the ATS ESCOPE ELITE4. Its intuitive navigation without hidden buttons makes it fast when time counts. The 16 bit vertical resolution gives the waveform clarity I count on for accurate system diagnosis.”

### Dave Lang

2017 Bosch ASE Master Mechanic of the year  
ASE certified Master Technician, with L1, L2, and L3  
Professional Technician for 47 years  
Using ATS Equipment for 18 years



# eSCOPE ELITE 4™

## Electronic Lab Scope 4 Channel

- ▶ **CKP Software:** Converts CKP signal into an advanced misfire analyzer. **NEW!**
- ▶ **Fast Capture:** Allows high waveform resolution. **NEW!**
- ▶ **Compression:** Quickly tests cranking compression of engine and identifies faulty cylinder. **NEW!**
- ▶ **Capture All Data:** ATS' unique circular buffer system does not drop data.
- ▶ **Ultra Sharp Waveforms:** No need for filters that can mask data. ATS designs our scopes so the signal is accurate and clean.
- ▶ **Dual Time Base:** This allows two different frequencies to be displayed on one screen with two different scope displays, simultaneously.
- ▶ **Pull Down Circuit:** A Controlled pulse that sinks power from vehicle circuit to ground. Control circuits like ignition coils, fuel injectors and solenoids.
- ▶ **TTL Output:** Sends a 0-5V square wave signal out of scope. Turn on devices such as ignition coil drivers, test vehicle's circuits, and test vehicle's circuits for loading.
- ▶ **Automatic Test Lead Connection Detection:** This unique feature allows you to know the scope lead has a good connection. "Red"= Bad connection. "Green"= Good connection. It's that easy!
- ▶ **Patented Overlay Technology:** ATS' unique programming overlays an engine cycle grid over your waveforms.
- ▶ **Automatic voltage attenuator:** Just change the voltage setting and the scope does the rest.
- ▶ **Deep Record Function:** No time, voltage, or trigger setup needed.
- ▶ **Pressure Transducers:** Drives four pressure transducers at once.



## Brandon Steckler

"I'm frequently asked, "Is an 8-trace scope really necessary?" For me, the answer is simple. Yes, I use an 8-trace scope more often than not. The key phrase is "Action/Reaction Testing". What better way is there, to see how all the components of a system, function together to accomplish a goal? Inputs, processing and outputs is what needs to be seen. On today's technologically-advanced vehicles, a common system we face on almost a daily basis is variable cam timing. To view this pertinent data for DOHC V6 engine requires captures from four CMPs, a CKP, and at least one ignition input. I also like to view ignition coil and injector current. Without the use of 8 traces, and the capability to analyze them easily, it can make for a significant investment in time, hindering efficiency. The ATS eSCOPE ELITE8 allows me to do this with speed, accuracy and best-of-all..."Confidence!" With the power of the eSCOPE PRO, harnessed into a hand-held, steel-encapsulated tablet, each day I learn and improve my skill set and understanding of today's vehicles. Allowing me to secure my place as a capable, successful diagnostician, well into the future. Thanks ATS!"



# eSCOPE ELITE 8™

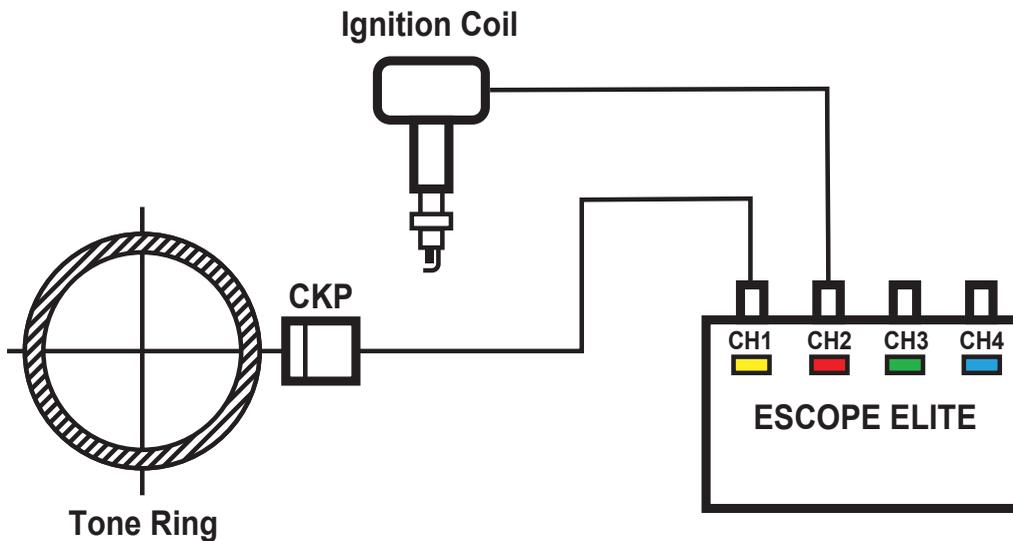
## Electronic Lab Scope 8 Channel

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## CKP Misfire Software Included with Elite Scopes

Patent Pending

The CKP software locates misfiring cylinders using the signal produced from the crankshaft position sensor. Simply connect channel 1 to the CKP signal and channel 2 to an ignition trigger. This trigger event is produced from an ignition coil on a gasoline based engine or a fuel injector on a diesel based engine.



The strokes of the engine directly affect the crankshaft rotational speed. As the piston moves toward the cylinder head compressing the air volume contained within it, the crankshaft speed slows down. Then as the ignition event starts the combustion of the fuel stock, the crankshaft speed increases. By monitoring the crankshaft rotational velocity (speed) the combustion process of the fuel stock can be determined. Thus a cylinder misfire can be determined.

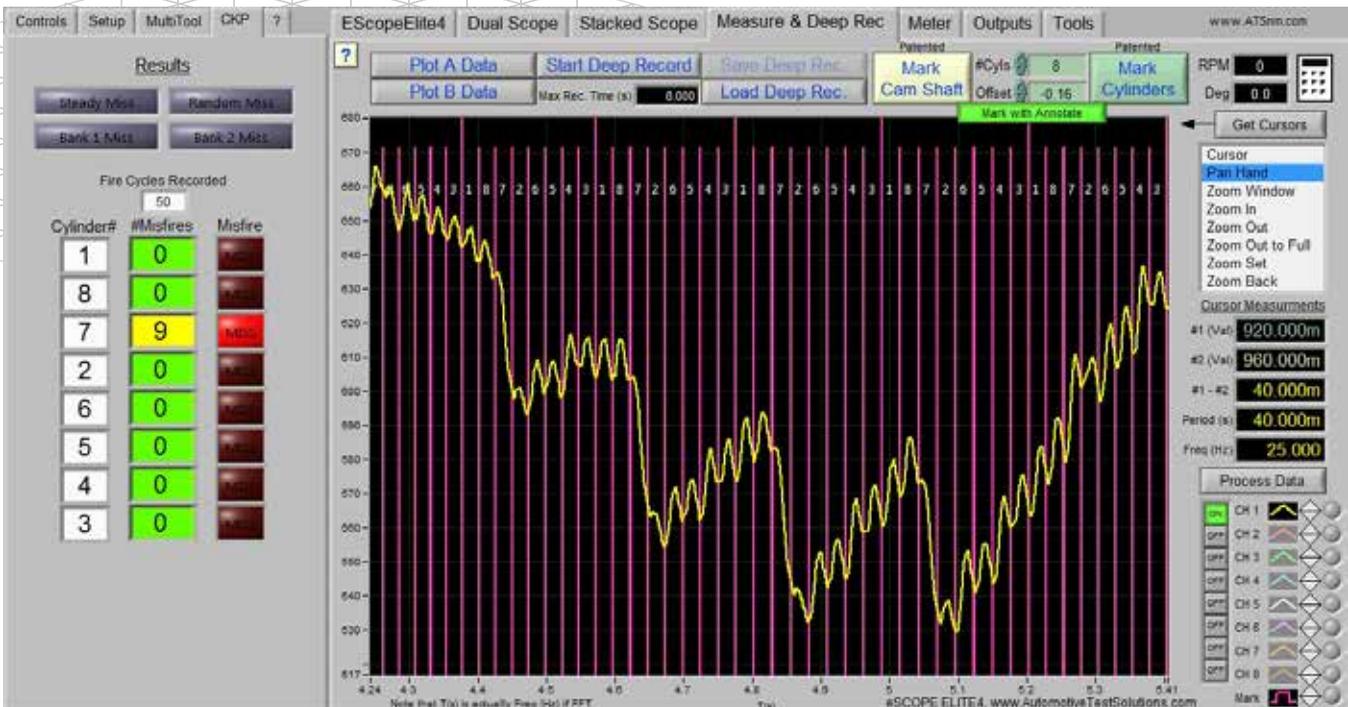
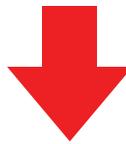
Once you have connected to the CKP and ignition trigger you are ready to run an automated test. Open the CKP software. Choose the cylinder you are connected to and the correct firing order.

Now push the "Start Test" button. When you feel the engine misfire, or you want to check the crank velocity changes, push the "Stop Testing" button. This stops recording data and processes the CKP signal automatically. The misfiring cylinder(s) will be displayed on the left side of the screen as shown below. You can also analyze the data displayed on the graph. When the waveform has a large drop this is an indication of incomplete combustion.

Note: This test has an RPM limit of 2500.

# eSCOPEELITE™

Converts CKP signal into an advanced misfire analyzer





## Rick O'Neil

"The Intelligent Engine Analyzer has changed my diagnostic process. This tool is unbelievable, it actually allows me a window into a running engine. I can check which cylinder is misfiring and then determine the root cause. Things that I would have had to disassemble to check out are now available through a spark plug hole. I highly recommend The ATS system."

### Rick O'Neil

Advanced Auto Electric  
ASE Master Tech L1, TST Hands-On L5  
Professional Technician for 41 years  
Using ATS Equipment for 17 years



**Intelligent Engine Analyzer**

Patented



**A Comprehensive transducer kit with software for misfire detection and advanced engine mechanical analysis. For use with all ESCOPES.**

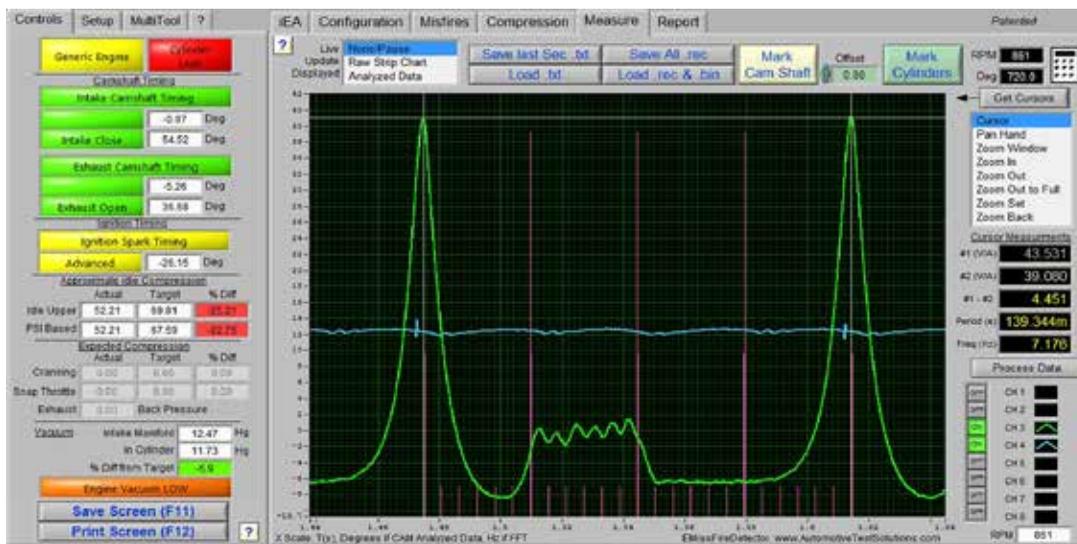
Find misfires fast from exhaust pressure pulses – Saves hours of diagnostic time

- ▶ Easy 3 step process for misfire detection
  1. Connect transducer to exhaust
  2. Connect to ignition trigger
  3. Automatically locates misfires
- ▶ P0300 random misfire – No problem
- ▶ Quickly identify misfiring cylinders
- ▶ Counts and reads in misfire percentage
- ▶ Easy 3 step process for engine mechanical issues
  1. Remove spark plug
  2. Connect pressure transducer
  3. Automatically checks compression waveform
- ▶ Advanced engine mechanical analysis of:
  - valve sealing • valve springs • flat cam lobes • lifter problems • camshaft timing issues
  - wrong camshafts • piston sealing • restricted exhaust • any pressure/vacuum system
- ▶ Check camshaft timing quickly and accurately
- ▶ Catalytic converter back pressure from the spark plug hole – No drilling holes in exhaust systems or removing stuck O2 sensors
- ▶ Compression, intake and exhaust waveforms will identify and accurately diagnose engine mechanical issues

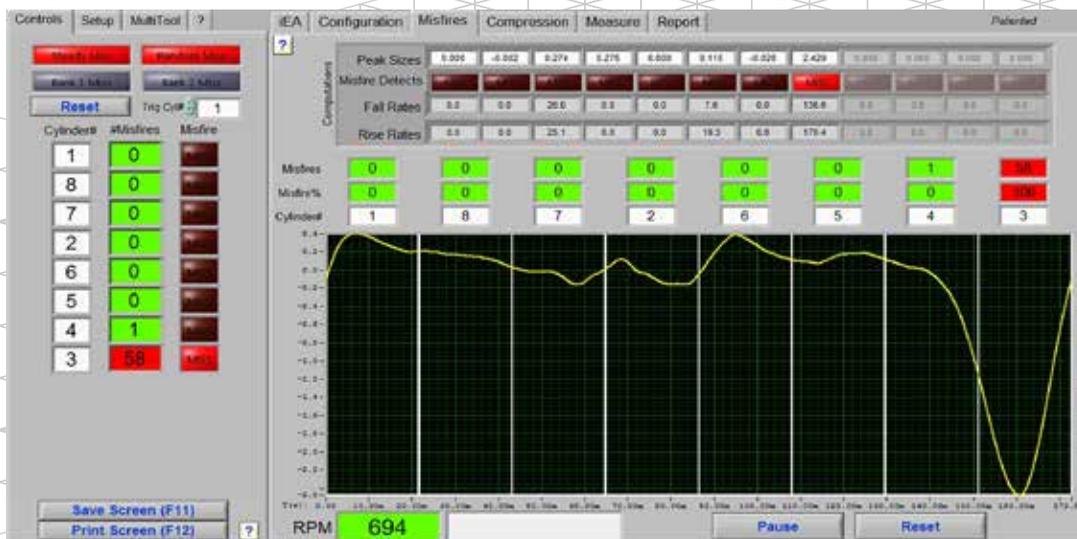
## ATS Pressure Assistant

Every decade or so a new automotive technology is discovered that is truly game changing. The use of pressure transducers in automotive service bays is one of the most exciting discoveries of the 21st century. This innovative technology saves repair shops time and money on a grand scale. ATS pioneered this technology, giving us a distinct advantage over all of the competition. With the advent of the Intelligent Engine Analyzer (iEA), ATS automates this pressure testing so that it is quick and easy to use.

## Misfire software automatically locates the misfiring cylinder(s)



## Compression software automatically analyzes pressure waveforms



# PRESSURE™ PRO



**The Pressure Pro power source adapts ATS Pressure Transducers to your scope or voltage measuring equipment to create a powerful misfire detection system.**

The Pressure Pro allows three pressure transducers to be powered, grounded, and supplies output signals simultaneously. The Pressure Pro allows all three sensors to be independently zeroed. This unit will allow the user to use and display three different pressure transducers on the oscilloscope at once, thus helping with the mechanical testing of engines. When testing the internal combustion engine you will need to monitor in-cylinder pressure (300 PSI Gasoline, or 500 PSI Diesel), induction pressure (-30 Hg), and exhaust pressure (+/- 25 H<sub>2</sub>O) simultaneously. This will allow for accurate testing of the engine.



# ecop™ Ignition Pickup

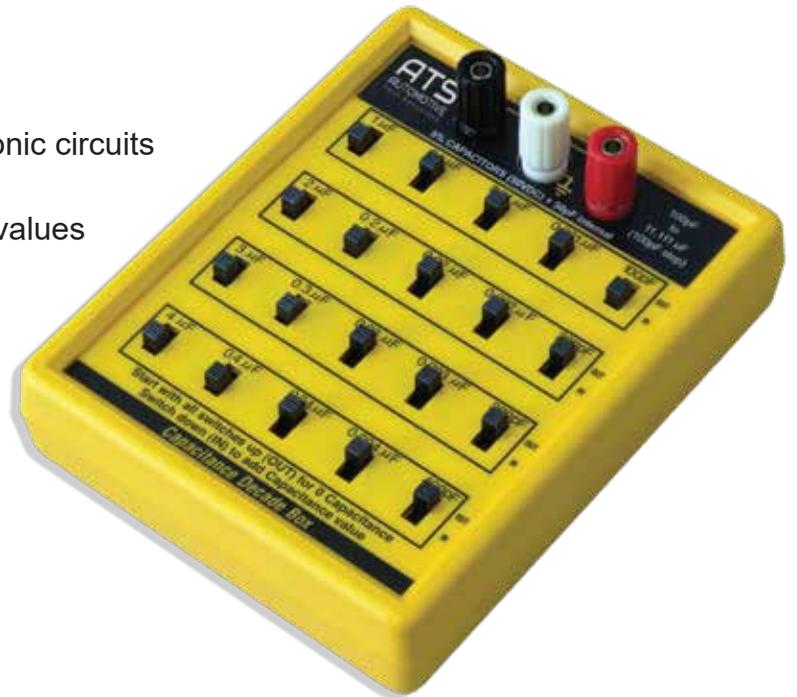
- ▶ Convert your scope into a powerful ignition analyzer
- ▶ Identify engine drivability problems
- ▶ Provides ignition waveforms for analysis
- ▶ Works on all types of ignition systems
- ▶ Quickly attaches to the ignition system
- ▶ Works on all oscilloscopes



# DECADE BOX

## Capacitance Decade Box

- ▶ Quickly test automotive electric circuits
- ▶ Simulate sensors in air bag systems
- ▶ Remove electrical noise from electric and electronic circuits
- ▶ Fast banana jack connections
- ▶ Simple switch adjustment to dial in capacitance values
- ▶ Use with scan tools, meters, or scopes



## Resistance Decade Box

- ▶ Quickly test automotive electric circuits
- ▶ Simulate automotive sensors for testing
- ▶ Easy to install resistance box into circuit to be tested
- ▶ Fast banana jack connections
- ▶ Simple switch adjustment to dial in resistance values
- ▶ Use with scan tools, meters, or scopes



## **Emmanuel Vences**

“I was skeptical at first, but after using the BULLSEYE leak detection equipment for a number of years even the smallest leaks are no match for it. These marvels actually work! Thanks ATS!”

### **Emmanuel Vences**

Automax Service and Repair  
ASE Certified, Section 609 Certified  
Professional Technician for 15 years  
Using ATS Equipment for 10 years



# BULLSEYE

## Leak Detector™

Patented w/Additional Patents Pending

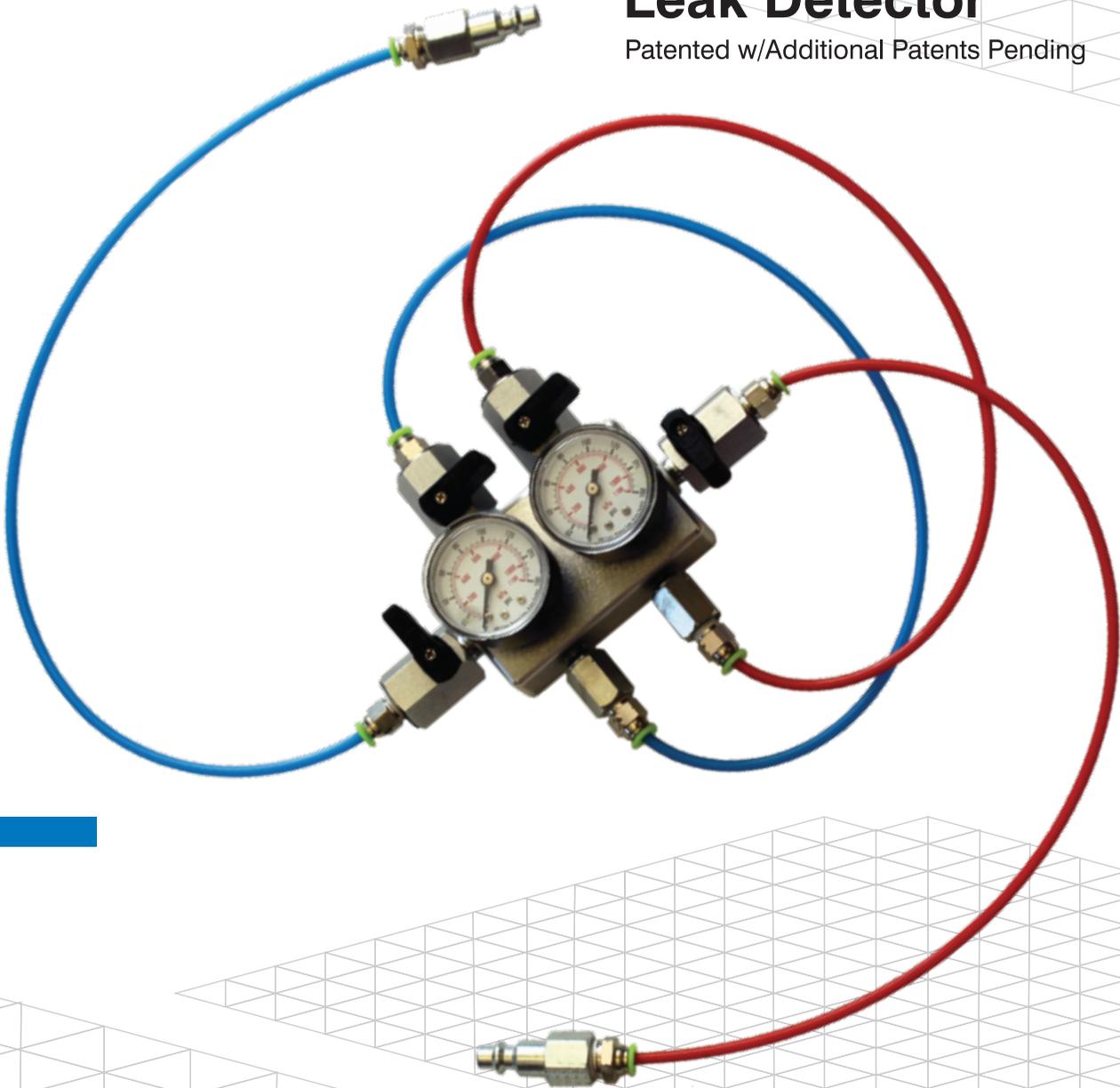
- ▶ Fast – Easy – Accurate
- ▶ Safe for All Systems – EVAP, Fuel, Air Conditioning, Intercooler, Induction Systems, Air Suspension, Cooling Systems, Wheel and Tire – Any Sealed System
- ▶ CO2 Gas Pressurization – Safe – Easy – Effective
- ▶ Electronic CO2 leak detector to quickly zero in on leak site
- ▶ Color changing foam to identify exact leak location
- ▶ Determine leak size with Low Pressure Gauge – Test system pressure decay
- ▶ Will not contaminate or coat EVAP activated charcoal
- ▶ Find leaks as small as 4 grams per year.

Find combustion chamber leaks (e.g. head gasket) without having to repair the system first – Simply check the cooling system for combustion gases (e.g. CO2) at radiator cap or thermostat housing

# BULLSEYE

## Leak Detector™

Patented w/Additional Patents Pending



### **BULLSEYE Air Ride Suspension Test Kit (for VOSS systems)**

- ▶ Quickly connects to VOSS air ride systems
- ▶ Allows the air ride suspension systems to be filled with CO2 so system leaks can be located
- ▶ Gauges and shut off valves allow for the system's air compressor to be tested
- ▶ Allows for dual air ride systems to be filled and tested

# BULLSEYE

## Leak Detector™

Patented w/Additional Patents Pending



## Finding A/C Leaks

**“When you can find these ultra-small leaks; the leaks in other systems are quite easy to locate”**

If a leak is identified as the performance issue of an A/C system, identifying the location of these small leaks is challenged by the limited amount of gas escaping in a short period of time during your investigation. When scanning the A/C system with an electronic leak detector you will only be in front of the leak site for a time of about 1-4 seconds. For example if the system was losing 28 Grams Per Year (GPY), and there is 31,536,000 seconds in a year, then  $28 \text{ GPY} / 31,536,000 \text{ Seconds} = .0000008$  grams lost per second. As you can see there is a very small amount of refrigerant gas leaking in the time you are in front of the leak site. So only the minute amount of refrigerant that is lost during your investigation into the location of the leak site will be available for detection. Anything that can allow more gas to escape from the leak site will help to identify the location of such a leak. There is a pressure temperature relationship with the base refrigerant that is contained within the system, so if the ambient temperature is 60°F there will be only approximately 60 PSI contained in the system. With this low pressure there will be less gas that can escape in the 1-4 second detection range. If the refrigerant is removed from such a system and CO<sub>2</sub> is installed in the system with an adjustable pressure regulator, there will be a greater pressure contained within the A/C system. This means that more gas will escape in the 1-4 second detection range, allowing for a more accurate leak detection process. The greater the CO<sub>2</sub> pressure is the more CO<sub>2</sub> will leak in the 1-4 second detection time, thus the accuracy of the detector will be increased. For the best results using CO<sub>2</sub> gas 150-200 PSI is preferred.

Once the leak area has been located with the BULLSEYE CO<sub>2</sub> Leak Detector the true game changing technology is applied; Leak Seeker Foam. This allows for the exact location of the leak site to be seen. The foam changes from a pinkish color to a yellow color at the leak site. No more guessing where the leak may be; a game changing definite diagnoses can be made quickly and accurately.



## **Matt Lamontagne**

"I've used other borescopes but nothing compares to the ATS iC Inspection Camera. The high-quality images and ease of use make my diagnostics easier and faster. Seeing is believing and the iC Inspection Camera has turned me into a believer!"

### **Matt Lamontagne**

Leo & Sons Auto Repair  
ASE-Certified Master Tech L1 & L3  
Professional Technician for 13 years  
Using ATS Equipment for 4 years



**ic**<sup>TM</sup>  
**Inspection Camera**



- ▶ Articulating submersible tip
- Gets where others can't go
- Sees what other borescopes can't see
- ▶ High resolution on any PC or tablet
- ▶ Visual exam of valve deposits – No disassembly
- ▶ Medical grade at an affordable price
- ▶ HVAC
- Door actuation operation
- Heater core inspection
- Evaporator inspection
- ▶ Print before and after for customer or playback video
- ▶ Display on any Windows computer with USB port
- ▶ Works with Android devices



## Eric Dibner

"I use my iGA5 gas analyzer to quickly diagnose engine problems. This system can check for lambda so I can determine if the vehicle has an O2 or WRAF problem. I also use it for checking catalytic converter efficiency, and using this gas analyzer on no starts or hard starts saves me valuable diagnostic time. ATS equipment just works!"

### Eric Dibner

Euro Auto

ASE Certified Master Tech

Professional Technician for 30 years

Using ATS Equipment for 15 years

# iGAS™

Intelligent Gas Analyzer



- ▶ Automated Air-Fuel-Ratio/Lambda Calculation – Immediately identify fuel delivery and calculation problems
- ▶ Accurately test all air-fuel-ratio sensors – Zirconia dioxide, titania dioxide, wide range fuel sensor (WAF), linear air-fuel ratio sensors (LAF), etc.
- ▶ Highest HC scale in the industry – For accurate misfire and no start diagnostics
- ▶ Unlimited recording, playback, and graphing
- ▶ Connect to tailpipe and in seconds identify or eliminate entire fuel delivery system for diagnostics
- ▶ Great for CO2 or HC leak detection
- ▶ Super-fast gas trace to display
- ▶ Great for catalytic converter efficiency testing



## Gary Machiros

"I taught vibration correction for Chrysler & GM. The ATS Intelligent Vibration Analyzer is in a league by itself. This is the only system on the market that can determine which wheel assembly or which driveshaft is creating the vibration. Not only does it provide real time data on the vibration occurring within the vehicle, but this system can determine which brake assembly is vibrating during deceleration."

### Gary Machiros

Angies Service

Professional Technician for 45 years

Using ATS Equipment for 10 years

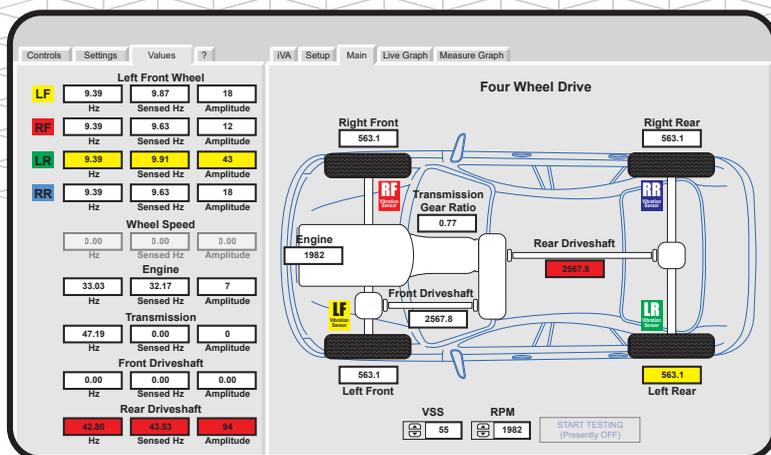


# Intelligent Vibration Analyzer

Patent Pending



## The Next Level in Vibration Analysis

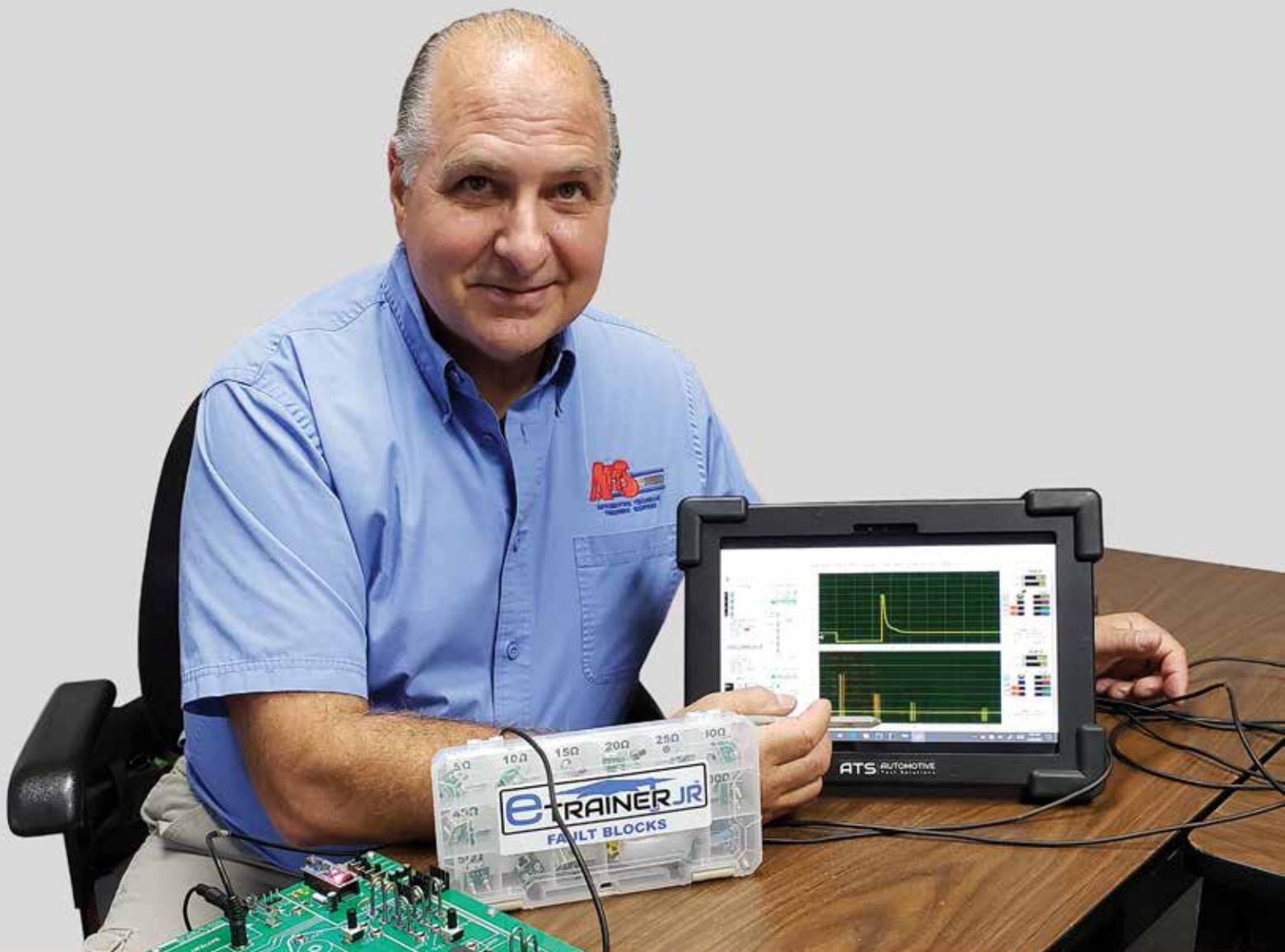


### Quickly pinpoint where the vibration is coming from

- ▶ Which Wheel and Tire (LF-RF-LR-RR)
- ▶ Which Brake (LF-RF-LR-RR)
- ▶ Which Driveshaft (Front- Rear)
- ▶ Engine and Engine Driven Pulleys
- ▶ Transmission and Transfer case

iVA uses Quad Vibration Technology™ (QVT) to locate and identify the vibration then rate the vibration severity with advanced color coding. The iVA can locate multiple vehicle vibrations simultaneously.

## Easy • Quick • Accurate



## “G” Truglia

“I use the ATS eTrainer JR to train technicians in my electrical, computer and lab scope hands on classes. There is nothing better to teach technicians on how to use their meter or scope with. Hands down the BEST training board for the price!”

### “G” Truglia

TST Seminars/ATTS Training

ASE World Class Triple Master Technician in Automotive, Truck & School Bus,

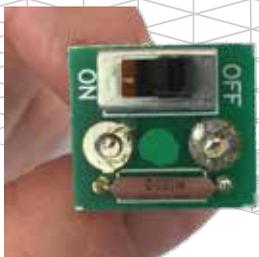
ASE Master Technician with L1, L2, L3, A9,X1,F1,C1, Undercar Specialist

Professional Technician for 46 years

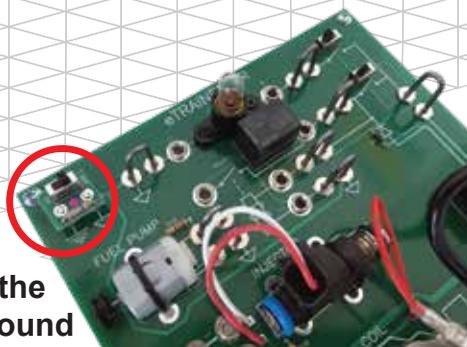
Using ATS Equipment for 18 years

# eTRAINER JR™

Intelligent Automotive Trainer



**Fault Block**



**Fault Block  
Installed on the  
Common Ground**

17 Fault Blocks (included) allow the student to install and remove failures with the flick of a switch. Fault Blocks can be installed anywhere there is a metal jumper. Hundreds of faults can be installed during the course of training.

## The eTrainer JR covers:

- ▶ Series Circuit Testing
- ▶ Parallel Circuit Testing
- ▶ Series-Parallel Circuit Testing
- ▶ Lamp Circuit
- ▶ Motor Relay Circuit
- ▶ Throttle position Sensor Circuit
- ▶ Engine Coolant Sensor Circuit
- ▶ Crankshaft Position Sensor Circuit
- ▶ Camshaft Position Sensor Circuit
- ▶ Fuel Injector Circuit
- ▶ Ignition Coil Circuit
- ▶ Crankshaft to Camshaft (Crank Angle Space) Circuit
- ▶ Oxygen Sensor Circuit
- ▶ Wide Range Air Fuel Circuit
- ▶ Front O2 to Rear O2 Catalytic Converter Testing



## Sherwood Cooke

“The 3C Machine has been one of the best purchases I’ve ever made! When we first started using it we inspected each engine with a borescope both before and after the service - IT WORKS! Much better than the old way of disassembling the engine to clean the valves. We tried several other products over the years to try to save our clients money but none of them worked. The 3C Machine definitely does a fantastic job.”

### Sherwood Cooke

Royalty Auto Service

ASE Master Tech L1

Professional Technician for 33 years

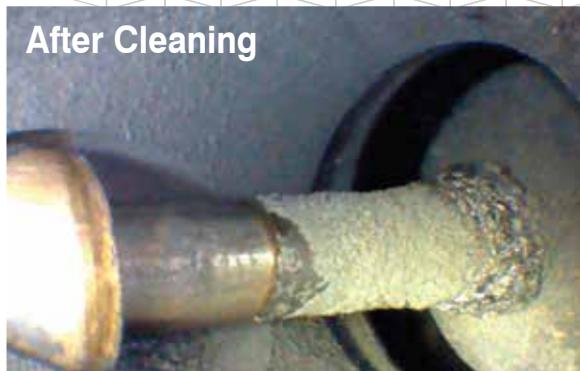
Using ATS Equipment for 12 years

# 3C Intelligent Induction Cleaner™

Patent Pending

- ▶ **3C Intelligent Induction Cleaner™** (Patent Pending) Removes heavy carbon deposits from the internal combustion engine's induction system in under 20 minutes.
- ▶ **3C Tri-Chemical Delivery™** (Patent Pending) Laboratory proven to remove more carbon weight from different carbon types than any other commercially available induction carbon cleaning chemical, while having a low HMIS health rating of (2).
- ▶ **Air Assist Injection Nozzle™** (Patent Pending) Delivers chemical in small droplets that are suspended and carried to the carbon deposits by the engine's air flow. This air assisted nozzle is superior to any other nozzle available for carbon removal.
- ▶ **Chemical Layering™** (Patent Pending) Removes more carbon because it alters the application of chemical mixtures between Chemical A and Chemical B in on/off cycles, then washes the induction system with Chemical C.
- ▶ **Micro-Burst Injection Technology™** (Patent Pending) Delivers the maximum amount of chemical during the cleaning process while still allowing the engine to run well.
- ▶ **Maintaining the GDI engine will be important for engine performance.** GDI engines can have rapid carbon accumulation within the engines induction system. These carbon deposits need to be removed every 30,000 miles. The 3C cleaner can quickly remove heavy carbon deposits restoring the engine's performance.

1.6L Turbo Mini Cooper at 83,000 miles  
(cleaned in just 17 minutes)



**Works on all gasoline based engines**

## Gasoline Engine

### 3C Tri-Chemical Delivery™ (patent pending)

Laboratory proven to remove more gasoline-based carbon by weight, from different gasoline carbon types, than any other commercially available induction carbon cleaning chemicals. Our 3C gasoline chemicals are designed specifically for gasoline-based engines. Additionally these chemicals are safe for exhaust system components such as; O2 sensors, catalytic converters, turbochargers, etc.. All of our chemicals have a low HMIS health rating of (2), thus proving ATS Chemical's concerns and commitment to our customer's health. Furthermore none of these chemicals are currently on the California Proposition 65 regulations. ATS Chemical has discovered over 30 new chemicals (patent pending) that have never been used in the automotive induction carbon removing industry, which makes our chemical mixtures totally unique.



**3C Chemical Accelerants™** (patent pending) are used in our mixtures to ensure that the carbon removed during the induction cleaning process is burned in the combustion chamber. This keeps the removed carbon from redepositing or damaging exhaust components such as turbochargers and exhaust after treatment systems (e.g. catalytic converters). Additionally these accelerants help keep the engine running well during the induction cleaning of the engine.

# Pour-in Treatments

## 505CRF<sup>TM</sup> (patent pending)

An advanced pour-in fuel treatment that enhances gasoline to remove carbon deposits from the internal combustion engine and engine components. This chemical mixture is proven to remove carbon from; fuel injectors, induction ports, induction valves, and combustion chambers. Carbon deposits on the injectors can cause drivability problems and poor fuel mileage. This advanced formula can clean coking from the port style injector and the direct style injector; increasing engine performance and fuel economy.



## 505CRO<sup>TM</sup> (patent pending)

An advanced pour-in oil treatment that breaks down carbon deposits and sludge from lubricated engine components. Sludge and carbon deposits in the motor oil can cause serious engine problems. 505CRO cleans carbon deposits from the engine and reduces problems with; sticking piston rings, sticking lifters, sticking camshaft phasers, sticking oil control valves, sticking timing chain tensioners, restricted oil screens (e.g. oil pump pick up). ATS 505CRO increases engine performance while reducing engine oil consumption all within a 15-20 minute cleaning.

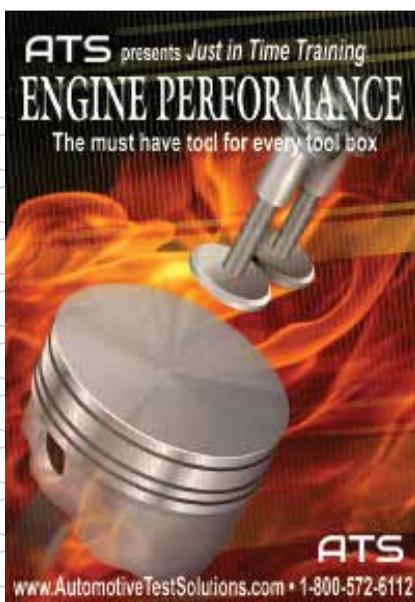
**505CRO and 505CRF treatments are really that easy!**

# TRAINING DVD

## ABC's of Injector On-Time

This Just in Time Training program contains three animated sections describing how the vehicle PCM processes sensor data to calculate injector on-time. Finally: a program that explains this important process. It also includes an extensive explanation of how fuel trim maintains the correct air/fuel ratio, and then alerts the on-board diagnostic system to excessive fuel corrections.

- ▶ Chapter 1 - Fuel Trim 1
- ▶ Chapter 2 - Fuel Trim 2
- ▶ Chapter 3 - Volumetric Efficiency



## Engine Performance

Many times a wiring schematic and the limited information available about an electrical system is not enough for the technician to repair the vehicle right the first time. Once the technician watches and listens to the in-depth animations, the inner workings of the systems become crystal clear and the technician can then use this information to repair vehicles.

- ▶ Learn how the circuits in the engine control system work together in modern vehicles to maximize engine performance, improve fuel economy and reduce harmful tailpipe emissions
- ▶ Learn how the modern PCM senses and adjusts its outputs based on sensor inputs and operating strategies programmed in its memory
- ▶ This is the Must Have tool for every technician's tool box!



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