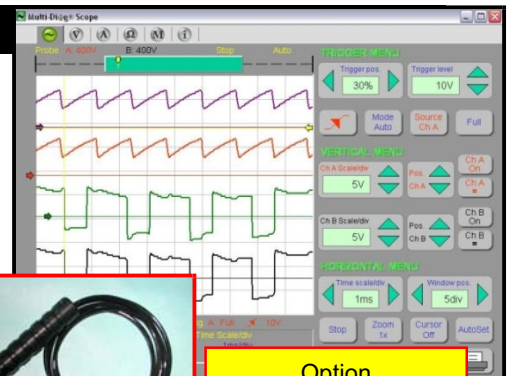


2. Prospectus Multi-Di@g Scope

- Two channel Oscilloscope and Multimeter
- Record Analyzer
- Motortester - optional
- System includes:
 - Multi-Di@g Scope interface
 - Multi-Di@g Scope Cables (Cables and case)
 - **Touch HV sensor - New option**
 - Multi-Di@g Scope Software
 - Host computer (PC) is not included in the set
- Multi-Di@g Scope is a part of modular Multi-Di@g system
- Multi-Di@g Scope - two types with available:
 - 1. Multi-Di@g Scope**
The kit should be used with personal computer (PC is not included in the set)
 - 2. Multi-Di@g Scope / H**
The set is intended to extend Multi-Di@g Handy



Option



New

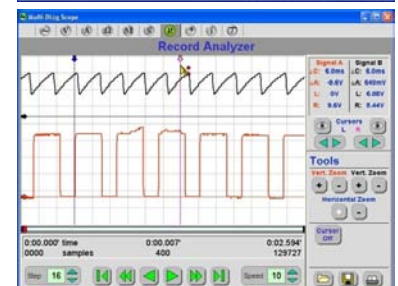
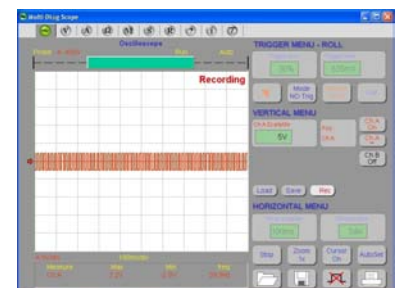


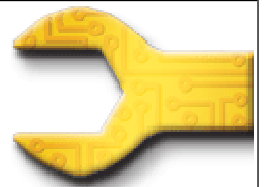
Host computer requirements

- Windows 2000 / XP / VISTA
- Processor: Intel Pentium 400 MHz compatible and faster
- VGA 800x600/16bits
- RAM 32 MB
- CD ROM drive
- Free RS 232 or USB port

Multi-Di@g Scope Record Analyzer

- Allows recording of measured waveforms
- The maximum length of recording depends on the selected time base, it ranges from:
 - 8 seconds (with 1 channel) and 4 seconds (with 2 channels) with 1 ms/div time base to
 - about 5,5 hours (with 1 channel) and about 2,5 hours (with 2 channels) with 2,5 s/div time base
- When the time base is below 1 ms/div "copies of screen" are captured instead and stored as a chain of pictures
- The recorded waveforms can be displayed in an animated form or statically with comfortable navigation
- It is possible to control channel sensitivities, time base, zero base levels and other parameters.
- The records can be saved to disk and reloaded at any time later and all waveforms can be printed out





3. Prospectus Touch HV sensor

New option of Multi-Di@g Scope Touch HV sensor

New



Touch HV sensor with connector for connection to the oscilloscope

The Touch HV sensor serves for the informative detection of HV courses on the ignition systems, in particular on such systems where are not the ignition cables

The sensor does not detect absolute values of flashover voltage, but only provides values to compare the functioning of individual ignition modules

The sensor is attachable to the oscilloscope and also to the motortester

Sensor with reducing adapter 15/15 for connection to the motortester



Reducing adapter 15/15 (AT550 4010) is included in the motortester ses

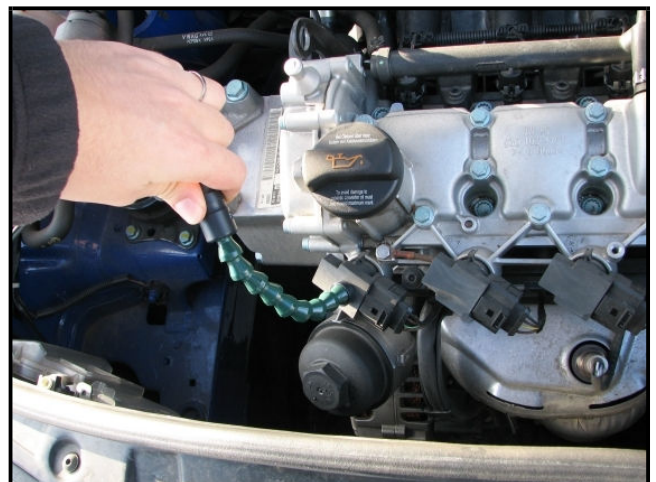
To access the measuring points more easily, a flexible adaptation (turning) of the sensor end is available according to operator's immediate requirements

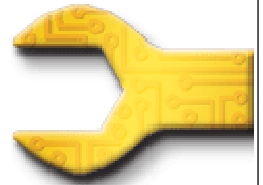


Demonstration of its use in the case of a simple comparison of HV courses between individual ignition modules

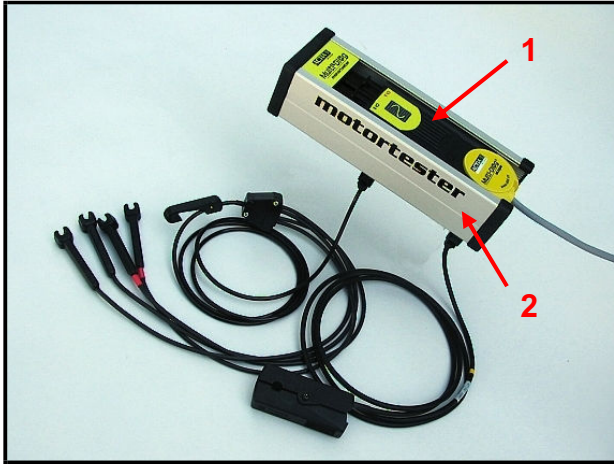
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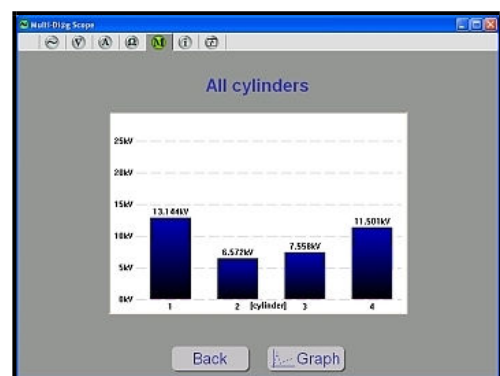
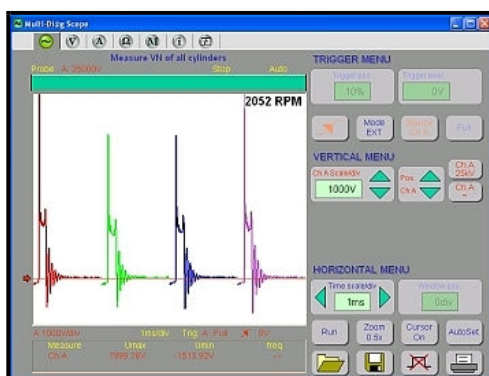
4. Prospectus Motortester

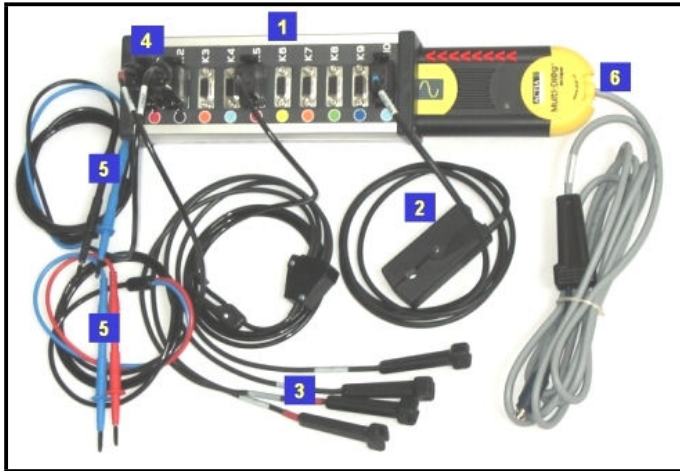
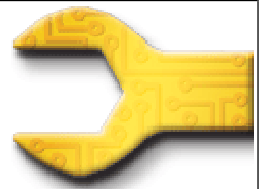


- The Motortester Module is to be connected to Multi-Di@g Scope which is then converted into a specialized automotive measuring device which features measurement of all important quantities on engines including their graphical representation (high voltage on plugs, voltage on ignition coil primary winding, injector waveform, etc.).
- The Motortester Module with Multi-Di@g Scope is compact box which is dedicated for installation on trolley arm.
- Wide range of sensors and other accessories for both spark and compression ignition engines is available

| Measurement | Range | Accuracy | Spark-ignition engines | Compression ignition engines |
|----------------------------------|------------------|----------|--|---|
| RPM | 500 - 9000 min-1 | ± 2 % | • | • |
| Oil temperature | 0 - 120 °C | ± 5 % | • | • |
| Dwell angle | 0 - 80 % | ± 2 % | • | --- |
| Advance ignition | 0 - 90 ° | 2 ° | Stroboscope / T.D.C. sensor *) | --- |
| Pre-injection | 0 - 90 ° | 2 ° | --- | Stroboscope / T.D.C. sensor *) |
| Oscilloscopic measurements | 0 - 25 kV | | <ul style="list-style-type: none"> - High voltage measuring on selected cylinder or on all cylinders at once (course, column graphs) - Primary voltage measuring and ignition coil current measuring | <ul style="list-style-type: none"> - Injection pressure course |
| Voltage and current measurements | | | <ul style="list-style-type: none"> - General voltage and current measurements with displayed engine speed | |

Notes: *) You can use an inductive or semiconductor sensor as a T.D.C. (Top Dead Center) sensor

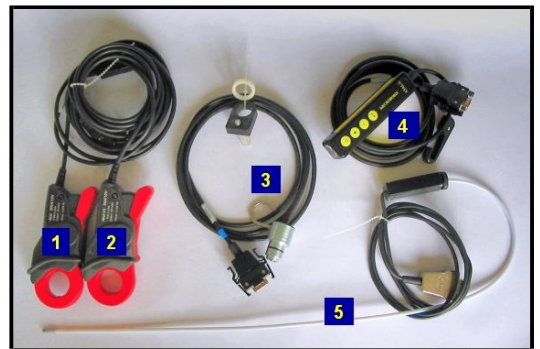


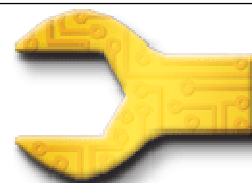


| Pos. | Name | Order numb. |
|------|---------------------------------------|--------------------|
| 1 | Motortester Module | AT 550 3001 |
| 2 | Ignition sensor N2 | AT 102 3009 |
| 3 | HV sensor C4 | AT 111 4007 |
| 4 | Reducing adapter 15/15 – 2 pcs | AT 550 4010 |
| 7 | High-voltage calibration cable | AT 111 4056 |
| | Case AT 550 | AT 550 3013 |
| 5 | Oscilloscope sensor *) | |
| 6 | Multi-Di@g Scope *) | |

Note. *) does not make part of the Motortester

| Pos. | Name | Order numb. |
|------|---|--------------------|
| 1 | Current sensor MS – 500A | AT 114 3006 |
| 2 | Current sensor MS – 50A | AT 114 3005 |
| 3 | Inductive (T.D.C.) sensor C/N (VW Group) | AT 112 4010 |
| 4 | Stroboscope N | AT 101 3005 |
| 5 | Oil temperature sensor 0,65 m / N | AT 103 3012 |





5. News

5.A Software version 7.2

- **Printout protocol**

All measuring results in Multi-Di@g Scope and Motortester (except oscilloscope measurements that are already printable in previous versions) are possible to involve in common protocol and to print it.

| Multi-Di@g Scope Report | |
|--|----------------|
| Vehicle | Škoda 120L |
| Licence plate | TAB 87-33 |
| Date and time | 7.09.2007 9:25 |
| Measure of voltage | |
| U = 12.41V (min 12.41V max 12.41V) | |
| Comment: Accumulator voltage - the engine stopped. | |
| Measure of advance | |
| Advance = 2.1°CS T = 48 °C (80 °F) Speed = 800 RPM | |
| Comment: Measured with idle speed of engine. | |
| Measure of advance | |
| Advance = 13.6°CS T = 54 °C (86 °F) Speed = 2630 RPM | |
| Comment: Measured with increased speed of engine. | |
| Measure of dwell angle | |
| Dwell Angle = 50.0% T = 61 °C (93 °F) Speed = 830 RPM | |
| Measure of leak cylinders | |
| 1 = 94.5% 2 = 100.0% 3 = 95.9% 4 = 99.4% | |
| Comment: It seems the engine is OK. Press into all cylindres is well. | |
| Notice: This measure is only differential bettween cylindres. Labeling of cylinders needn't to be correct. | |

- **Program support for new TOUCH HIGH VOLTAGE SENSOR / A** – see hardware item.
- **Multi-Diag Scope application is running under operating system Microsoft Vista**

5.B Hardware

- In order to eliminate interference (especially from AC/DC power supply adapter) the oscilloscope probes are equipped with additional grounding cable.

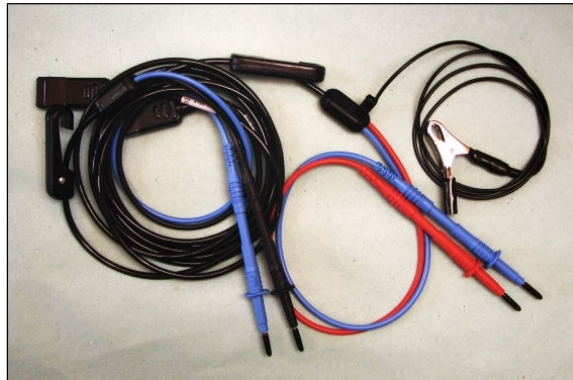
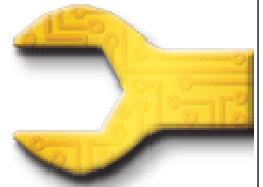
ATAL references:

AT 540 4028 OSCILLOSCOPE PROBE BLACK / N

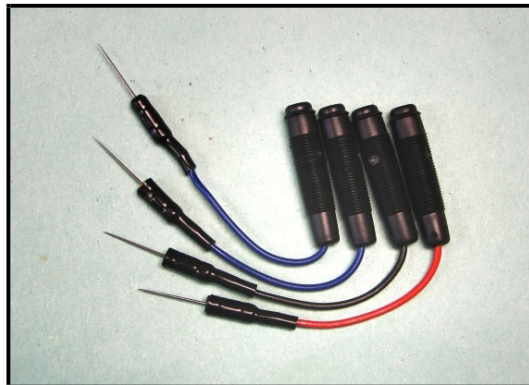
AT 540 4029 OSCILLOSCOPE PROBE RED / N

AT 540 4030 GROUNDING CABLE

The old version of oscilloscope probes will be exchanged by new version free of charge.



- **AT 520 4058 NEEDLE 1-POLE ADAPTER** (set of 4 pieces) is involved in Multi-Di@g Scope set. This set is possible to order in ATAL.

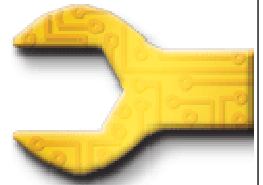


- **AT 111 4015 TOUCH HIGH VOLTAGE SENSOR / A** is a new HV sensor dedicated for high voltage curve sensing on ignition modules which are not equipped with HV cables. Absolute voltage values are not available but a comparison of HV curve among separate ignition modules is very quick way how to identify the HV module defective.

Sensor is possible to connect directly to the M-D Scope interface. A connection to Motortester is realized with connector reduction 15/15 that is inside the Motortester set.

The sensor will be available in October 2007.





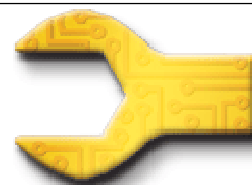
6. Product Description

The **Multi-Di@g Scope** measuring system is designed for the diagnostics and repairs of motor vehicles. It enables to measure and follow the courses of electrical voltage signals or of signals (e.g. current, pressure, ...) which can be converted in the voltage signal by appropriate sensors. **Multi-Di@g Scope** is designed as an open system which can be further extended by special measuring and testing modules.

Multi-Di@g Scope is a part of the modular system for Multi-Di@g Access or Multi-Di@g Master (the multi-make diagnostic system for the diagnostics of electronic control units).

By connecting **Motortester** to **Multi-Di@g Scope**, this set becomes a typical car oscilloscope that can display important diagnostic ignition variables of spark ignition engines, such as high voltage on spark plugs and coil primary voltage. It also allows measuring the engine speed and dwell angle.

If you add other sensors from optional accessories to the **Motortester**, you can construct a complete universal motortester for spark ignition engines and diesel engines.

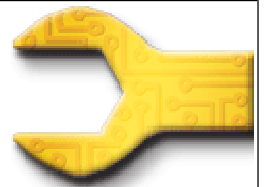


6.A Content of Multi-Di@g Scope set

Scope assembly


| ATAL reference | Description ENG | Picture |
|----------------------------|--|---------|
| AT 540 5001 | Multi-Di@g Scope | |
| AT 540 3001 | Scope interface | |
| AT 530 4059 | Suitcase | |
| AT 540 4028 AT 540 4029 | Oscilloscope probe - black Oscilloscope probe - red | |
| AT 540 4026 | Cable for oscilloscope power supply | |
| AT 107 4023 | Power supply adapter - lighter | |
| AT 540 4015 | Power supply adapter - VCI | |
| 0AZ 00914 | Power supply | |
| AT 520 4058 | Contact point for probe (4pieces)* | |
| AT 540 4022 | Converter RS232/USB | |
| AT 530 4150 AT 530 4151 | VCI holder Adhesive tape | |

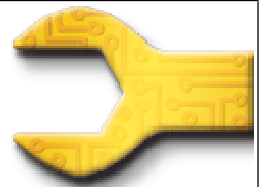
* New produced AT 540 5001 is equipped by AT 520 4058 as a standard accessory



6.B Content of Motortester

Motortester assembly

| | | ATAL reference | Description ENG | Picture |
|-------------------------------------|-------------|----------------|---------------------------------|---|
| | | AT 550 5000 | Multi-Di@g Motortester |  |
| Accessories included in AT 540 5001 | AT 550 3013 | | Black case for Motortester |  |
| | AT 550 3001 | | Motortester Module |  |
| | AT 111 4007 | | HV sensor C4 |  |
| | AT 102 3009 | | Ignition sensor N2 |  |
| | AT 111 4056 | | Calibration cable for HV sensor |  |
| | AT 505 4010 | | Reduction 15 x 15 (2 pieces) |  |



7. Multi-Di@g Trolleys

| | | |
|-------------|---|---|
| AT 550 3014 | Multi-Di@g trolley |  |
| AT 550 3011 | Motortester trolley (mobile) |  |
| AT 190 2008 | MFS Light trolley (with clamping for 17" tablet PC) |  |
| AT 190 2009 | MFS Light - Handy trolley (with base for 8,4" tablet PC) |  |