

# Technical Information

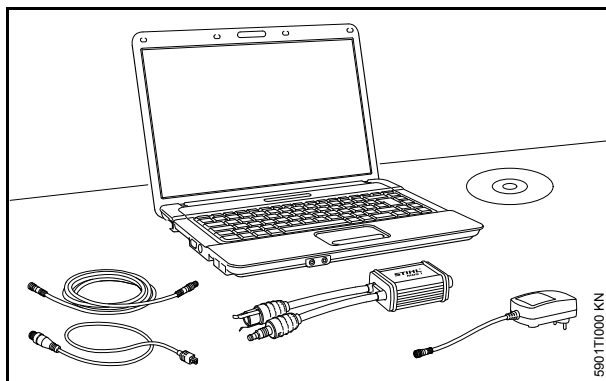
28.2011

## STIHL MDG 1 Engine Analyzer – Series 5910

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### 1. STIHL MDG 1



The STIHL MDG 1 engine analyzer and STIHL diagnostic software have been designed for analyzing specific parts, troubleshooting and performing adjustments.

A computer is required to use the STIHL MDG 1 engine analyzer and the diagnostic software supplied with it, see 2.1 System Requirements.

The STIHL MDG 1 engine analyzer is used to test ignition modules and control units (STIHL M-Tronic™) and connected electrical components quickly and reliably.

The STIHL MDG 1 enables the right action to be taken at the right time.

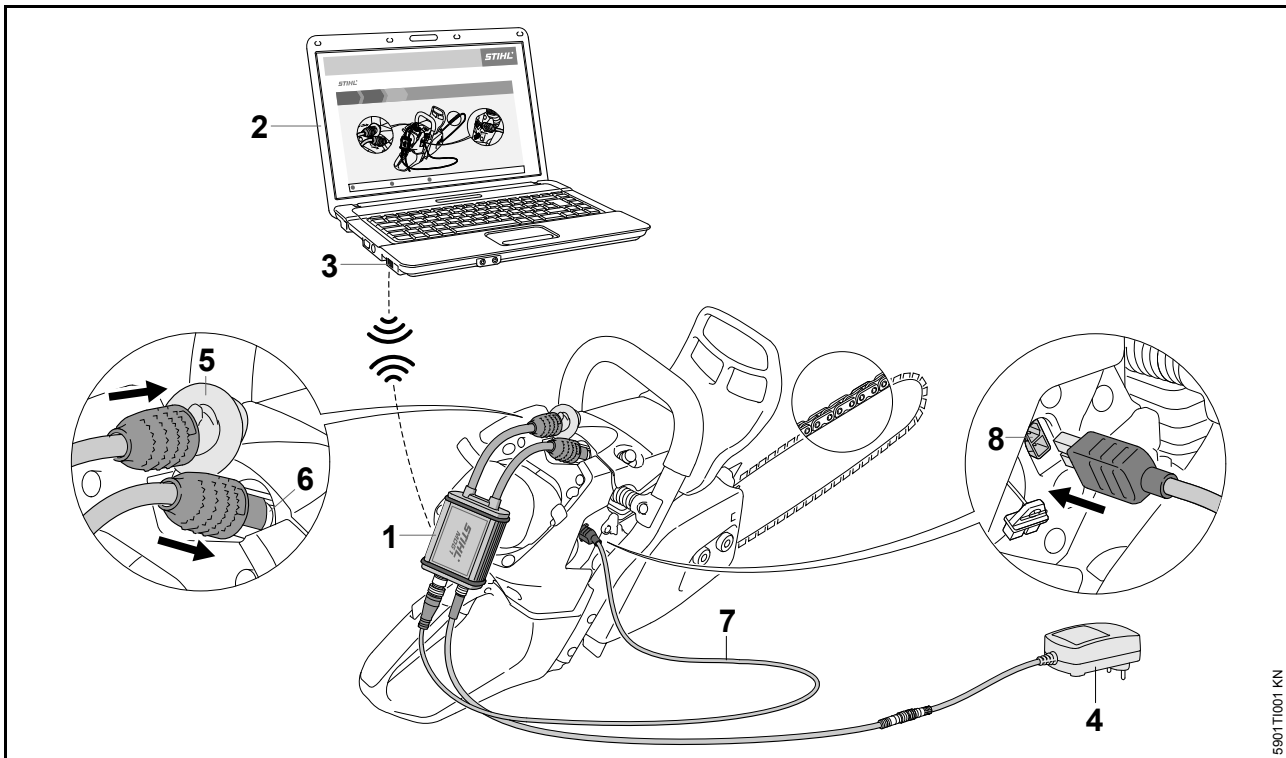
All other diagnostic and repair procedures, e.g. testing engine for leaks or looking for faults in fuel system, remain unchanged.

It is possible to generate a report after every test. The report lists the individual steps and results of the test run. The report may be printed out and saved.

In addition, dealer and customer data, serial number, company logo and the name of the service technician can be included in the report.

The STIHL MDG 1 can be used to test STIHL power tools manufactured from 2000 up to the present day.

## 2. Technical Description



Bluetooth wireless technology is used to transmit information between the STIHL engine analyzer (1) and the computer (2). A free USB port for the bluetooth USB stick (3) or an internal bluetooth function is required for this purpose.

The power supply unit (4) provides the STIHL MDG 1 with power. The STIHL MDG 1 is connected between the spark plug boot (5) and spark plug (6) to test STIHL power tools. Power tools with STIHL M-Tronic™ are connected to the diagnostic socket (8) with the "STIHL M-Tronic™" test cable (7).

### 2.1 System Requirements

STIHL diagnostic software may only be installed on a computer that meets the system requirements. Administrator rights are required for installation under Microsoft® Windows® – contact the system administrator if necessary.

### Operating System

- Microsoft® Windows® XP with Service Pack 3 (SP3) or
- Microsoft® Windows Vista® or
- Microsoft® Windows® 7

### Software Requirements

- Microsoft® .NET 3.5 or higher
- Adobe® Acrobat® Reader 9 or higher

### Hardware Requirements

#### Minimum Requirements

- CPU 1 GHz
- 256 MB free memory
- Minimum of 100 MB hard disk space
- SVGA monitor (minimum resolution 1024 x 768)
- USB interface 1.1 or higher
- CD-ROM or DVD drive

## Recommended Requirements

- CPU 1 GHz
- 512 MB free memory
- Minimum of 100 MB hard disk space
- SVGA monitor (minimum resolution 1024 x 768)
- USB interface 1.1 or higher
- CD-ROM or DVD drive

## 2.2 Installation of STIHL Diagnostic Software

Check system requirements before installation.

It is essential to observe the sequence of the steps described. Only then will the STIHL diagnostic software be properly installed in the computer.

Do not connect the analyzer (MDG 1, ADG 1) to the computer until installation of the STIHL diagnostic software is completed.

### 2.2.1 Installation

Place CD-ROM in computer's CD-ROM or DVD drive.

### 2.2.2 Automatic Start

The automatic start works only if the computer supports automatic starting of a program from a CD-ROM (AUTORUN). Then follow the installation steps of the diagnostic software.

If the setup program is not started automatically, start it manually.

### 2.2.3 Manual Start

Open My Computer and select CD-ROM or DVD-ROM drive. Start installation by double click on "Setup.exe". Then follow the installation steps of the diagnostic software.

## 2.3 Updating STIHL Diagnostic Software

The introduction of new power tools and additional diagnostic functions necessitate a software update. The update can be performed as described below.

### 2.3.1 Direct Update via Internet

Computer with diagnostic software has internet access:

In the menu bar, click on the question mark "?" – select "Check for updates...". The diagnostic software checks whether an update is available. If yes, the update is performed automatically.

### 2.3.2 Indirect Update (without Internet)

Computer with diagnostic software has no internet access:

The data for updating the diagnostic software is supplied by the sales company.

## 2.4 STIHL MDG 1 Instruction Manual

In the menu bar, click on the question mark "?" – select "Instruction manual". The instruction manual is opened.

## 3. Selecting Power Tool

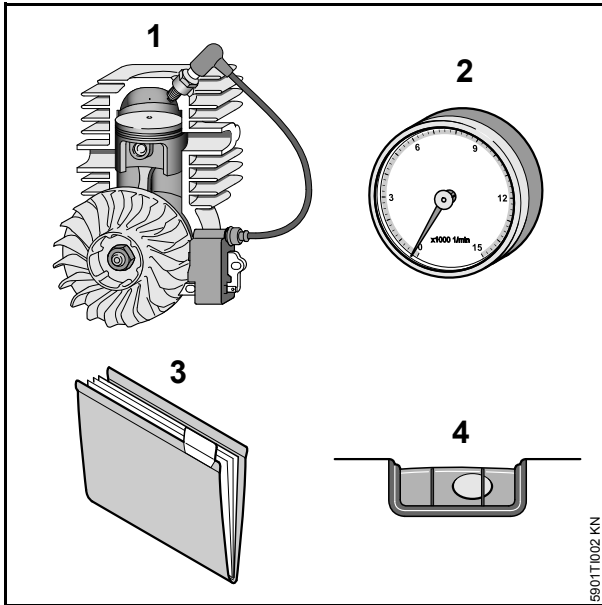
The power tool must be selected before starting the individual diagnostic functions and steps.

Power tools with STIHL M-Tronic<sup>TM</sup> engine management are listed separately and must be selected, e.g. MS 441 C-M.

Select "Other STIHL Products" for basic diagnosis of STIHL power tools manufactured from 2000 up to the present day.

## 4. Functions and Symbols

The individual functions and test steps are identified by the following symbols. The "operating data" and "calibration" functions are only available for power tools with STIHL M-Tronic™.



- 1 Diagnosis
  - Basic diagnosis
  - STIHL M-Tronic™ engine management
- 2 Tachometer
- 3 Operating data  
(only for STIHL M-Tronic™ engine management)
- 4 Calibration  
(only for STIHL M-Tronic™ engine management)

### 4.1 Diagnosis

The STIHL MDG 1 enables the right action to be taken at the right time.

#### 4.1.1 Basic Diagnosis

Ignition modules and components of STIHL power tools manufactured from 2000 can be tested, simply, reliably and quickly with the STIHL MDG 1.

The following points are tested during the test run:

- Ignition voltage
- Ignition spark
- Spark advance
- Short circuit

### 4.1.2 STIHL M-Tronic™ Engine Management

Specific parts diagnosis and troubleshooting for M-Tronic engine management.

- Solenoid valve is tested electrically
- Operating data are read out – control unit and analyzer exchange information, e.g. part number of control unit.
- Positions of Master Control lever / slide control are tested – positions Stop 0, Start ▲ and Run I must be selected for this purpose.

The following points are tested during the test run:

- Ignition voltage
- Ignition spark
- Spark advance (non suppressed spark plug)
- Short circuit
- Ignition timing
- Mixture control
- Idle control
- Maximum engine speed

### 4.2 Tachometer

Tachometer with slave pointer and short-term memory for momentary maximum engine speed. Slave pointer and short-term memory simplify carburetor adjustment.

### 4.3 Operating Data

Control unit and analyzer exchange information. The part numbers of the control unit and the software version are displayed.

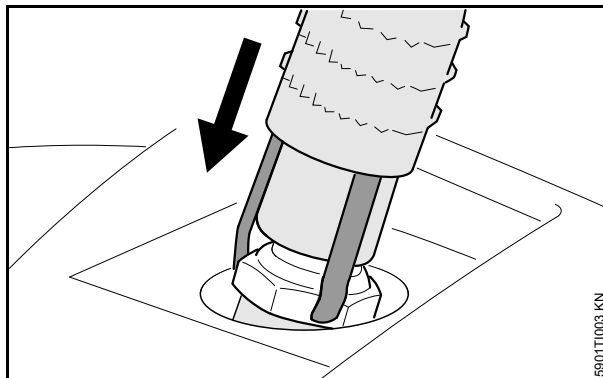
### 4.4 Calibration

If the control unit or carburetor are replaced in the service shop, the STIHL M-Tronic™ has to be re-calibrated.

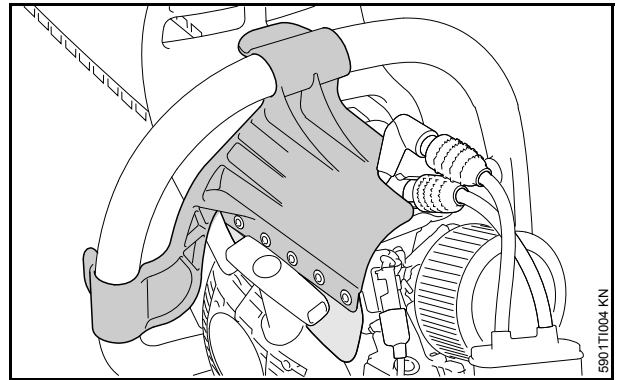
The control unit is adjusted to match the carburetor during the run in the Start position ▲. An immediate shutdown is necessary to store the information.

## 5. Preparing Power Tool and Engine Analyzer

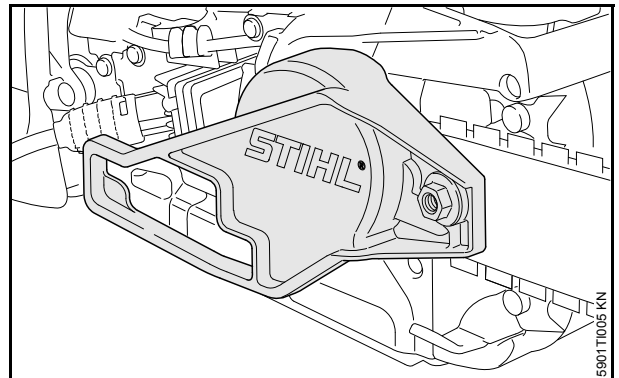
- Country-specific safety regulations and the safety precautions in the instruction manuals must be observed when operating the power tool and engine analyzer.
- The engine analyzer may be operated only if it is in good working order.
- Use the engine analyzer only for testing STIHL power tools made from 2000 to present day.
- Visual inspection – check exterior of power tool for damage
- Check for leaks – do not start the engine if there is fuel leakage
- Before starting the test, exclude any risk of injury from attachment on power tool being tested – risk of accident. Position power tool correctly, mount protective devices or accessories (e.g. chain without cutters)
- Use only spark plugs approved by STIHL
- Connect engine analyzer between the spark plug and spark plug boot



- Contacts must be firmly seated – grounding clamps must locate properly on spark plug hexagon
- Chainsaws on which the air filter cannot be held in place by the carburetor box cover after connecting the engine analyzer: Secure air filter with nut 1138 140 9500

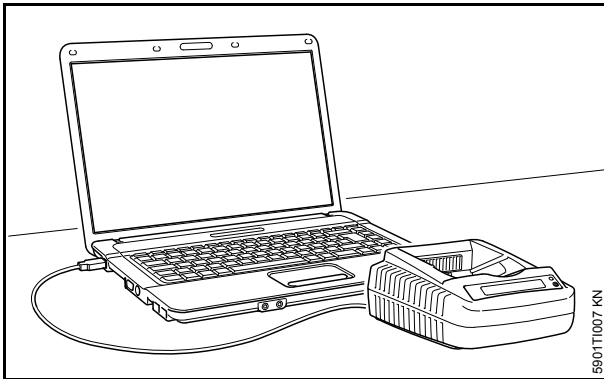


- Run chainsaws with one-piece shrouds only with the special cover 5910 890 3200 mounted in position – there is otherwise a risk of injury from the fanwheel and a risk of engine damage due to overheating.



- Mount special cover 5910 890 3201 and cutterless chain to chainsaws on which the clutch drum or spur sprocket is exposed after connecting the engine analyzer.

## 6. STIHL ADG 1



STIHL diagnostic software enables the ADG 1 battery analyzer to be connected to the computer. The connection to the computer is made with an USB cable.

The USB cable is not included with the unit. Use a standard commercial USB cable with Type A and B USB plugs.

The familiar diagnosis procedures can be performed with computer assistance and subsequent diagnostic report.

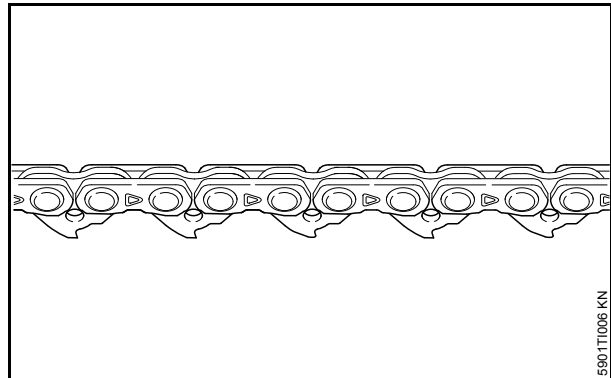
Do not connect the ADG 1 to the computer until installation of the STIHL diagnostic software is completed. For notes on installation see STIHL MDG 1 instruction manual.

## 7. Chain Without Cutters

Chains without cutters are available as special accessories for service shops.

They must be combined with guide bars of the appropriate length. Chains without cutters can also be combined with guide bars with larger groove widths, e.g. 1.3 mm drive link gauge may be used in guide bars with a groove width of 1.5 mm or 1.6 mm.

Chains without cutters should be used for diagnostic work and adjustments as well as demonstrations.



- 3114 003 0064 chain without cutters, 1/4" P; 1.1 mm
- 3110 003 0044 chain without cutters, 3/8" P; 1.1 mm
- 3111 003 0062 chain without cutters, .325"; 1.3 mm
- 3112 003 0066 chain without cutters, 3/8"; 1.3 mm
- 3113 003 0068 chain without cutters, .404"; 1.6 mm