

**DIAG4<sup>®</sup>**  
— B I K E —

**ACTIA<sup>®</sup>**  
ACTIA CZ CZECH REPUBLIC

Professional diagnostics & tuning tool for  
workshops and tuning centers



**Verze 20.2**

Equipment for  
Motorcycle Repair  
Shops and  
Tuning Centers  
FOR / FROM  
Professionals

Professional diagnostics & tuning tool for  
workshops and tuning centers

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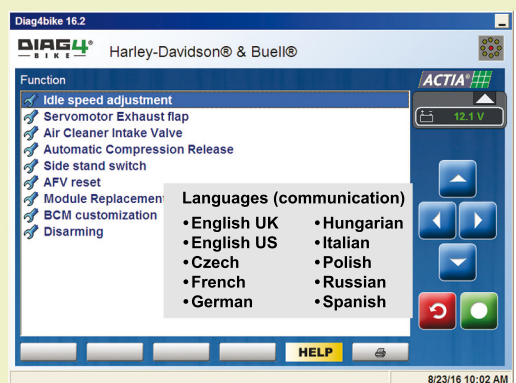
# Serial diagnostics - HW

HARLEY-DAVIDSON<sup>®</sup> & BUELL<sup>®</sup>, BMW<sup>®</sup>, INDIAN<sup>®</sup> & VICTORY<sup>®</sup>

Version 20.2

Our aim is to provide the user of **DIAG4BIKE** with a diagnostic tool that is comparable to the original diagnostic equipment for the brands in terms of common diagnostic operations.

It enables the user to perform diagnostics of electronic fuel injection modules and others (i.e. security modules, ABS etc.) through the diagnostic connector on the vehicle. The kit contains a **communication interface** with the necessary **adapter(s)**, a **USB cable** for connection to your laptop (or PC) and **diagnostic software** that is compatible with **Windows 7, 8 and 10**. There is also a wireless **Bluetooth version** of the communication interface available.



Reference	CCE	ZODIAC	ACTIA CZ
① Communication interface USB	653745	732050	AT532 5006
Communication interface USB+BT	653746	732051	AT532 5007
Software *) HARLEY-DAVIDSON <sup>®</sup>	653747	732056	AT531 5049
Software *) BMW <sup>®</sup>			AT531 5089
Software *) Indian <sup>®</sup> & Victory <sup>®</sup>	890084	732043	AT531 5051

\*) includes adapters

## EUROPEAN DISTRIBUTORS



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## PRODUCER & DISTRIBUTOR



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[www.diag4bike.eu](http://www.diag4bike.eu)

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# Serial diagnostics - SW

**HARLEY-DAVIDSON® & BUELL®**

**Version 20.2**

Includes functions to perform diagnostics of electronic fuel injection modules and others (i.e. security modules, ABS etc.) through the diagnostic connector on the motorcycle. The kit contains a communication interface with a **Harley-Davidson®** adapters, a **USB cable** for connection to your laptop (or PC) and **diagnostic software** that is compatible with **Windows 7, 8 and 10**. There is also a wireless Bluetooth version of the communication interface available.

## Motorcycle diagnostics for model year 2020 and older

### ● Overview of the Harley-Davidson® models

All models since 1995 (Delphi, Magneti Marelli, VDO IGN, Thunder MAX EFI)

### ● Overview of control units that can be diagnosed and functions

Ignition Module

EFI (Electronic Fuel Injection Module).....All models

TSSM (Turn Signal Security Module).....Key FOB with button

HFSM (Hands Free Security Module).....Key FOB without button

BCM (Board Control Module).....Key FOB without button

SCM (Security Control Module)

Gauges (Speedo, Tacho and Instrument Module).....All models

ABS Module (Delphi + CAN models).....All models

Radio, Thunder MAX EFI (models with 4-pin Datalink connector)

Read and Clear Diagnostic Trouble Codes.....All models, updated trouble codes, parameters and texts

Limits of measured parameters

New modules LHCM and RHCM (Left/Right) hands control module (parameters, special functions)

Read Identification data (parts number, VIN number).....All models

Monitoring real-time data (throttle position, temperature, oxygen sensors, turn signals etc.)

Test actuators (injectors, coils, main relay, fuel pump, idle, turn signals, tachometer, lamps, **alarm** etc.)

Buell diagnostics is incorporated in Harley-Davidson diagnostics

Unit of measure selection metric/american

Communication interface is CAN ready (models with 6-pin Datalink connector)

- **Motorcycle report** (search for and identify all embedded control units, read fault code memory, erase fault code memory by one button, generate and print a diagnostic report, odometer reading, the diagnostic report is printed into pdf file after successful motorcycle report).



Reference:  
CCE: 653747  
ZODIAC: 732056  
ACTIA CZ: AT531 5049

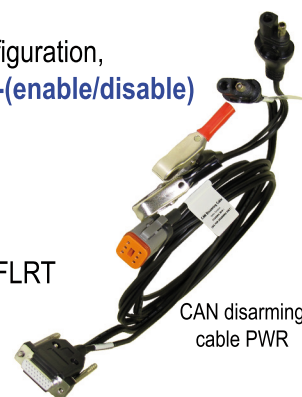
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# Serial diagnostics - SW

**HARLEY-DAVIDSON<sup>®</sup> & BUELL<sup>®</sup>**

**Version 20.2**

- **Toolbox** (special functions in one place with description of the functions)
  - **Speedo module : Parking Brake, Instrument External Indicator Bar, Traction control telltale ( two wheels / trike ) Instrument TPMS Option ( enable/disable )**
  - **Vehicle speed sensor calibration (VSS)**
  - Module replacement (TSSM, HFSM, BCM)
  - ABS Service (Bleeding and configuration, Delphi + CAN models) up to model year 2020
  - ACR (Automatic compression release during starting)
  - Cruise Control, Exhaust actuator, EITMS (enable/disable)
  - Side Stand Switch configuration - All models
  - Intake solenoid valve configuration on CAN models (6-pin Datalink connector)
  - Chassis Fan Cooler configuration ( enable/disable )
  - Radio customization (all models including)
    - RADIO BOOM!™ BOX GTS 2019 - Speaker Configuration, Radio region code, Digital Audio Broadcast, Rear Speaker switch installed, Navigation, TPMS ( Tyre Pressure Monitoring System ), Audio input 1 2 and 3, CB Radio, CB Frequency, Intercom, WHIM ( Wireless Headset Interface Module), Bluetooth, Apple CarPlay Mic Type, Apple Siri, SMS Text Messaging, Front Audio Output, Rear Audio Output
  - Custom Audio Flash - J&M Corporation ( Audio Flash Stage 5 )
  - ABS Telltale configuration on CAN models
  - Radio pairing, Buell TPS adjustment, Speedo pairing (CAN models)
  - Reset AFV (all models and Buell<sup>®</sup>)
  - Oil Cooler Fan (enable/disable)
  - TCU module Installed / not Installed (Telematic Control Unit)
  - Exchange PTT and Cruise Control on Hand Control modules
  - Idle speed adjustment - all models with Delphi Electronic Fuel Injection Module up to 2017
    - for models 2018-20 is idle speed adjustment available in advanced or professional tuning
  - TSSM Customization - PIN read/change, Auto arming disable/enable, Key FOB assignment instruction
  - HFSM Customization - Key FOB assignment/replacement, PIN read/change,
    - disable/enable: Auto arming, Sidecar, Service mode
  - BCM Customization - External Bank Angle sensor, Auxiliary/Fog light Operation, etc.
    - Updated Key FOB assignment/replacement, PIN read/change, disable/enable: Auto arming, Sidecar, Service mode, Lights configuration, Keyless ignition, **BCM customization : Stealth mode "Police"-(enable/disable)**
    - Rider Assistance - ABS, Traction Control configuration
    - Fork Lock Switch - configuration
    - TPMS - valve assignment
    - Front and rear turn signal (LED/Incandescent)
    - EBAS (External Bank Angle Sensor) - no EBAS / FLHTCUTG / FLRT
    - Power Lock Switch for Saddle bags and Trunk (disable/enable)
  - Disarming (HFSM/BCM module) - PIN read/FOB assignment on armed bike
    - (for BCM modules a CAN disarming cable is needed)
  - TPMS configuration - BCM, Speedo, Radio
  - Odometer units settings KM / MIL - All models
  - Button with a direct link to the On Line Help ([www.doc4bike.eu](http://www.doc4bike.eu))
- **Demo version** - Available for download on the product website



Reference:  
CCE: 653 747  
ZODIAC: 732049  
ACTIA CZ: AT531 4028



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# Serial diagnostics - SW

**INDIAN® & VICTORY®**

**Version 20.2**

Includes functions to perform diagnostics of all embeded control units through the diagnostic connector on the motorcycle.  
The kit contains a communication interface with a **INDIAN® & VICTORY®** adapter, a **USB cable** for connection to your laptop (or PC) and diagnostic software that is compatible with **Windows 7, 8 and 10**. There is also a wireless Bluetooth version of the communication interface available.

## Motorcycle diagnostics for model year 2020 and older

### ● Models

Indian – 2014 - 2019 (excepting model FTR)  
Victory – 2008 - 2017

### ● Overview of control units that can be diagnosed and functions

Engine control module  
ABS control module  
Gauge (Speedo, Tacho ...) module  
Vehicle control module  
Radio control module

Read Vehicle information  
Reading / erasing errors  
Reading parameters

### ● Motorcycle report

Search for and identify all embedded control units, read fault code memory + generate and print a diagnostic report

### ● Software Kit included

Adapter Indian® & Victory®  
SW installation on USB disk  
SW licence code



Reference:  
CCE: 890084  
ZODIAC: 732043  
ACTIA CZ: AT531 5051

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# Engine tuning **HARLEY-DAVIDSON<sup>®</sup>**

## TUNING STRATEGY

- The tuning system focuses on Harley-Davidson engines equipped with DELPHI EFI (diagnostic communication J1850 or CAN)
- The tuning system is based on diagnostic system **DIAG4BIKE**. **DIAG4BIKE** is the professional diagnostic tool for Harley-Davidson Motorcycles. The tuning software **DIAG4TUNE** is included in the diagnostic software from Version 12. To tune an individual motorcycle a TUNING DONGLE (or EASY TUNING DONGLE) must be purchased that can be used for that specific motorcycle. It is recommended to use last version of **DIAG4BIKE** software for diagnostic or tuning.
- The tuning process does not require the installation of additional component(s) or any motorcycle harness modification. Tuning is based on the modification of EFI Calibrations (software modification) exclusively via the diagnostic connector.
- The first step in Tuning is storage of the original EFI Calibration. The tuning operator can restore the original EFI Calibration at any time during tuning process (stock calibration).
- The tuning process is used to optimize Fuel Maps in case of any changes to the configuration of engine components or accessories (exhaust or/and intake system etc.)

## AVAILABLE TUNING METHODS

### 1. ADVANCED TUNING

By this method of the tuning is possible to use full range of **DIAG4TUNE** functions. The method provides ability to use an embedded database of calibrations. These calibrations (maps) are pre-set for several configurations of exhaust and intake components (open exhaust, intake and combinations). Advanced tuning method provides important improvement of engine functions. The best engine efficiency is possible to reach only by using PROFESSIONAL TUNING method.

### Necessary Tuning Components:

**DIAG4BIKE**



Functional set

**TUNING DONGLE**



Reference  
CCE: 619 083  
ZODIAC: 732 045  
ACTIA CZ: AT531 4094

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# Engine tuning HARLEY-DAVIDSON®

## 2. PROFESSIONAL TUNING - engine fuel maps optimization

By this method of the tuning is possible to use full range of **DIAG4TUNE** functions. The key function is here **VOLUMETRIC EFFICIENCY MAP MEASUREMENT** under load. It means real VE maps measurement of each engine configuration. VE map measurement can be done on an appropriate Roller Station, good example is **SMART POWER BENCH**, or during Road Test on the street. Professional tuning method provides the best bike tuning for each special engine - maximal efficiency, torque and power.

### Necessary Tuning Components:

#### DIAG4BIKE



#### TUNING DONGLE



#### AFR TUNING MONITOR

Reference  
CCE: 619 084  
ZODIAC: 732 044  
ACTIA CZ: AT106 4016



### Useful Tuning Components:

#### THROTTLE CONTROL LIMITER

Reference  
CCE: 690 896  
ZODIAC: 732 046  
ACTIA CZ: AT531 4097



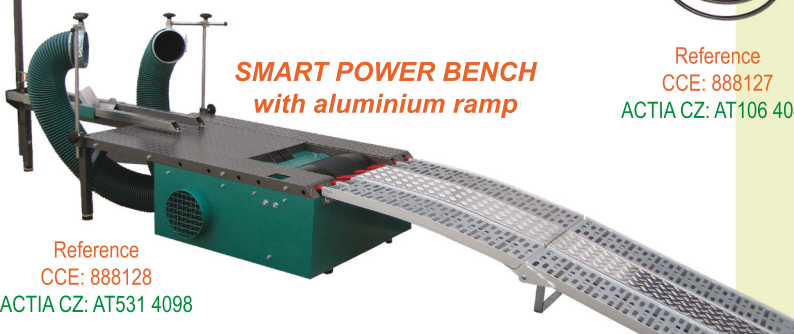
#### KIT-ADAPTER FOR OPEN EXHAUST (option)



Reference  
CCE: 888127  
ACTIA CZ: AT106 4047

#### SMART POWER BENCH with aluminium ramp

Reference  
CCE: 888128  
ACTIA CZ: AT531 4098



#### INSTALLATION SET LAMBDA

Reference: CCE: 690 897 ; ZODIAC: 732 042  
ACTIA CZ: AT106 4020

# Blank ECM Flash

This function is used to flash a new blank ECM. By this function you can set a VIN number and after flash the selected calibration according to the VIN number. It can be also done for the used ECM. If this function is successful you can do full range of the **DIAG4TUNE** functions.

#### DIAG4BIKE



#### TUNING DONGLE

Reference  
CCE: 619 083  
ZODIAC: 732 045  
ACTIA CZ: AT531 4094





# Models for tuning

and Blank ECM Flash - HARLEY-DAVIDSON®

Version 20.2

Professional tuning is available for H-D® models 2006-2020

Advanced tuning maps available for H-D® models 2006-2020 ( see below )

DIAG4BIKE® Maps	H-D®- SE Equivalent	Engines	Components	Note
Level 0		All	Stock Intake and Exhaust	Equal to Stock
Level 0 Plus		Milwaukee-Eight	Stock Intake and Exhaust	Driving Comfort increasing
Level 0,5		Evolution	Open Intake (KN, SE)	Transition Level 0-1
Level 1		All	Open Exhaust	
Level 1,5		Evolution	Open Intake and partly open Exhaust	Transition Level 1-2
Level 2	Stage 1	All	Open Intake and Exhaust (SE Components)	
Level 3	Stage 2	All	Camshaft, Open Intake and Exhaust (SE Components)	
Level Custom	Stage 3,4	All	Custom Configuration	Available On Demand

Advanced tuning exceptions:

Level 1-4 is not available for: Softail® 2006 25 deg.injectors, Touring® 2006

Only Level 0 and Level 2 are available for following models : XL883 L,N,R 2007-19 / XL883 P 2007-10 / Street® / Dyna®2006 / Dyna®2007-10 SE / V-Rod® 2006-07 except

VRSCR,VRSCD / Softail® 2006 / Softail® 2007-13 SE / Touring® SE, CVO

Tuning of models Pan America®, Bronx®and LiveWire® is not available yet

# Smart Power Bench

power bench for bike diagnostics and tuning

## • SMART POWER BENCH (SPB) 2nd Generation (with gearbox)

- The station may only be operated by a trained person
- Simulates engine load equivalent to road test - **Gear 1**
- Simulates double load for comfortable tuning measurements (VE maps) - **Gear 2**
- Provides measurements for both power and torque curves - **Gear 1**
- Facilitates measurement of VE maps for engine tuning
- Provides the opportunity to carry out engine diagnostics whilst under load
- Utilises built-in fan for engine & rear tyre cooling
- Embedded protection of rear tyre

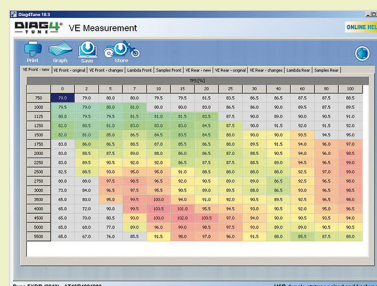
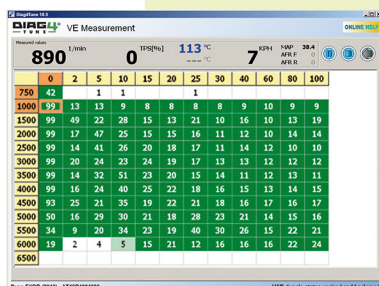
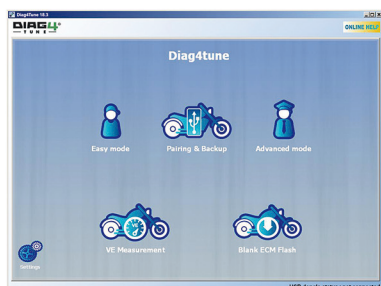
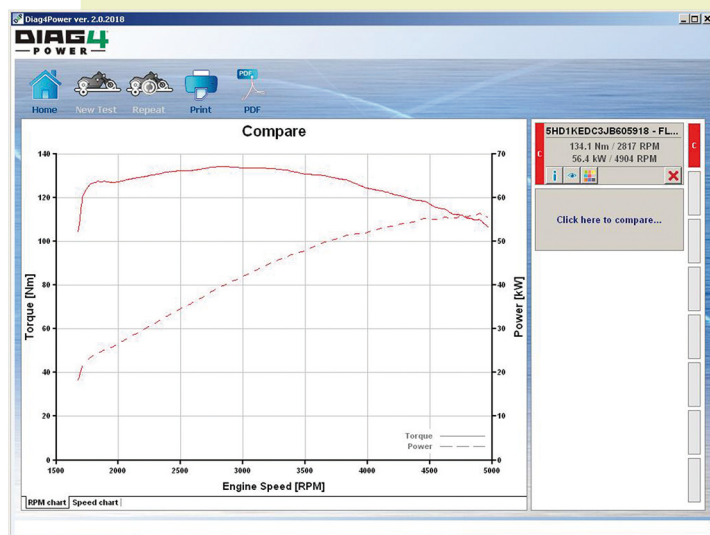
**SPB** is an ideal tool for motorcycle specialists who carry out bike repairs and servicing, ECU diagnostics and especially engine tuning.

**SPB** gives you more than basic measuring capabilities.

It is able to simulate the engine load without the hazards associated with road tests, under both stable and dynamic conditions. Utilising a large roller with high moment of inertia & specially adapted fan assembly is equivalent to the motorcycle and rider mass and drag caused by air flow.

**SPB** is designed to complement the range of equipment available in the **DIAG4BIKE** family and is especially well suited for the tuning of Harley-Davidson engines.

**DIAG4POWER** is our new software program allowing full control of measurements with **SMART POWER BENCH**.



# Smart Power Bench

power bench for bike diagnostics and tuning

## • SPB specifications

- Weight : 550 kg
- Dimensions: 2,8m x 0,5m x 1m (W x H x D), 110" x 20" x 40"
- Roller diameter: 450 mm, 18"
- Mass moment of inertia of the system: ~12 kgm<sup>2</sup> (see label on SPB) - **Gear 1**
- Measurement range of engine power: 10 – 250 kW
- At load, power input of the fan is mainly given by the built-in load fan, and is dependent on the engaged gear of the station (the following data is for illustration only):

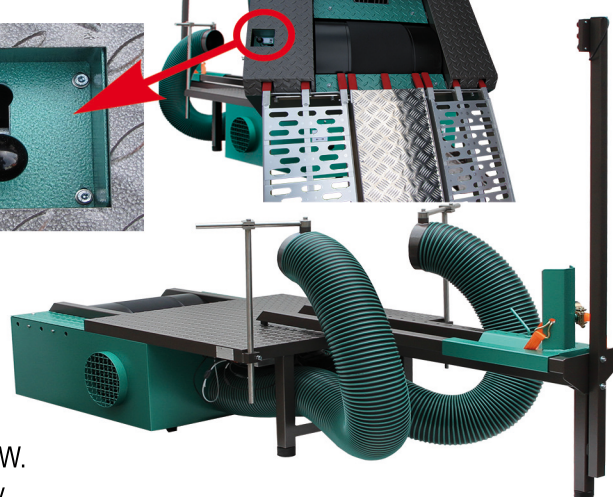
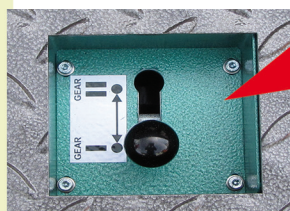
### **Gear 1**

- o 10 kW at 100 km/h (60 MPH)
- o 30 kW at 150 km/h (90 MPH)
- o 70 kW at 200 km/h (120 MPH)

### **Gear 2**

- o 10 kW at 50 km/h (30 MPH)
- o 30 kW at 75 km/h (45 MPH)
- o 70 kW at 100 km/h (60 MPH)

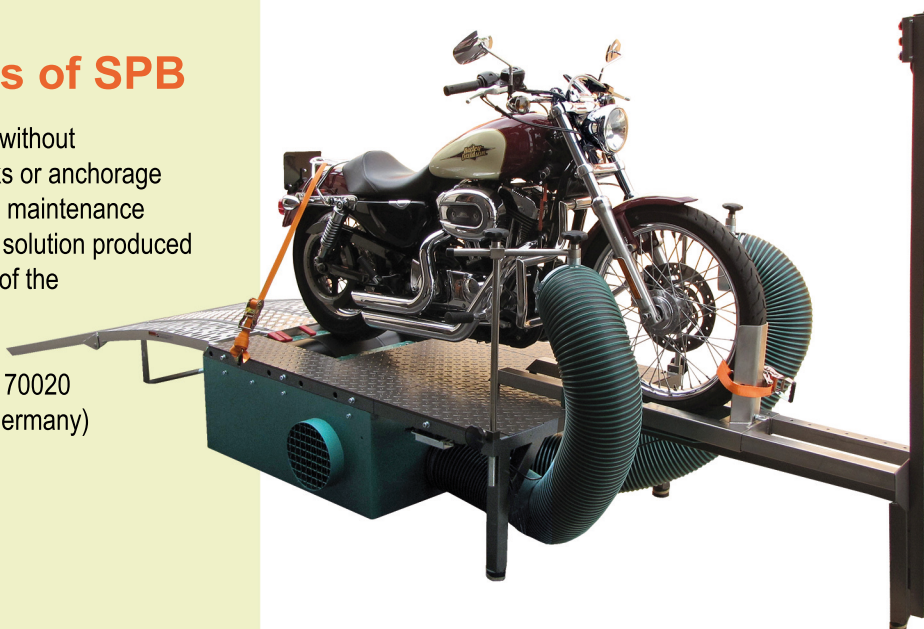
- Maximum driving speed (peripheral speed of the roller):
  - o Gear 1: 225 km/h, 140 MPH
  - o Gear 2: 110 km/h, 68 MPH
- Connection to PC: RS 232 or USB
- Required PC operation system: W7, W8, W10
- Power supply of the station: 230V AC or 12V DC with power of 24 W.  
Power supply can therefore be provided from a 12V vehicle battery.
- The operating temperature range of the station: +10 to +40 °C
- Cooling of rear tire: provided automatically by the built-in fan
- Temperature measurement of the rear tire: IR measurement
- Remote control: IR (infra red)
- Measuring ambient air pressure: 870 to 1100 hPa (at sea level)



Reference  
CCE: 888128  
ACTIA CZ: AT531 4098

## • Notable features of SPB

- Fast & Simple installation without the need for building works or anchorage
- Intuitive usage and simple maintenance
- Cost effective high quality solution produced 100% in Europe (product of the Czech Republic)
- Approved for P&T measuring according to DIN 70020 and ECE-85-R standards (Germany)





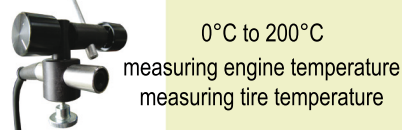
# Smart Power Bench

## • Standard accessories

### Intake air temperature sensor



### Contactless infrared thermometer



### Software Diag4Power



### Ignition sensor SPB



### Footer adapter



### Clamping straps for motorcycle



### Wireless infrared remote controller

## • Option



### Trolley with PC for SPB

Kit includes:

- Trolley
- Industrial box PC with OS
- Monitor 21.5" with Touchscreen \*)
- Ink color printer
- Keyboard and mouse

\*) Trolley with PC for SPB without Touchscreen

Reference  
ACTIA CZ: AT857 5016 ; ACTIA CZ: AT857 5015 \*)

New

### Diag4Bike

Speed reading

Reference

CCE: 653747

ZODIAC: 732056

ACTIA CZ: AT531 5049



Functional set

**Diagnostic and Tuning System DIAG4BIKE for H-D®**  
It allows to read the engine parameters for power and torque measurement directly from the H-D® diagnostic connector (engine speed and temperature, TPS position, VIN number)



### Additional motorcycle cooling

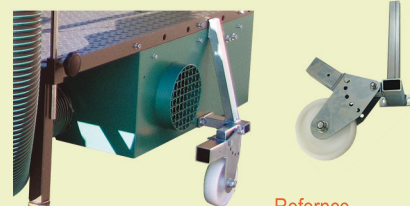
This powerful Axial Fan is useful equipment for additional engine cooling while using the Smart Power Bench. The fan is equipped with two power levels. Power levels are switchable between level 1, level 2 and auto. The Auto level is dedicated for Tuning Measurements (VE maps measurement). The Smart Power Bench automatically controls the power level of the fan dependent on engine temperature.

Reference  
ACTIA CZ: AT131 4002

**Level 1** - Electric Power 0.5 kW, Airflow 4 700 m3/h, Air speed 26 km/h

**Level 2** - Electric Power 2 kW, Airflow 11 000 m3/h, Air speed 60 km/h

### Transport wheels for SPB



Reference  
ACTIA CZ: AT533 4074

### Exhaust gas extractor

This powerful Radial Fan is designed for extraction of exhaust gases from motorcycles during power tests and during tuning measurements. The fan is equipped with adapters for one side and two side motorcycle exhaust pipe configurations. The fan output is connected to the hose diameter of 305 mm with a length of 3 m. Electric Power 3 kW, Airflow 6000 m3/h



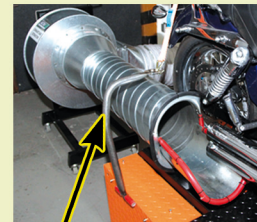
Reference  
ACTIA CZ: AT131 4001



**a) One side exhaust pipe**  
– diameter 250 mm



**b) Duo sides exhaust pipe**  
– diameter 2x200 mm



**c) Yoke**

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# Parallel diagnostics

**HARLEY-DAVIDSON<sup>®</sup> & BUELL<sup>®</sup>, BMW<sup>®</sup>**

Parallel diagnostic equipment is designed for measuring input and output signals to and from the electronic control unit (ECU) which is typically used in modern vehicles to control engine functions. However, it can also be used for measurements on other control units installed in vehicles. Measurements can be carried out on a system that is in operation (i.e. a running engine).



## VOLTMETER-BOX - option

The VOLTMETER-BOX is an accessory unit for the **DIAG4BIKE** communication interface. It is a 2-channel graphical voltmeter which can be used for independent measurement of DC voltage within a range of 0V to +39V.

Reference			CCE	ZODIAC	ACTIA CZ
③ Breakout diagnostic box 62P			653749	732053	AT521 3037
④ Deriv (T-adapter) 36PT	H-D <sup>®</sup>	EFI Delphi	653750	732054	AT531 4014
⑤ Deriv (T-adapter) 35PT	H-D <sup>®</sup> , BMW <sup>®</sup>	EFI MM	653752	732055	AT531 4015
⑥ Deriv (T-adapter) 73PT	H-D <sup>®</sup>	EFI Delphi (Touring models)	653751	732058	AT531 4064
⑦ Deriv (T-adapter) 12+4PT	H-D <sup>®</sup>	TSM/TSSM/HFSM	619272	732059	AT531 4077
⑧ Deriv (T-adapter) 36/48PT	H-D <sup>®</sup>	BCM	619080	732048	AT531 4073
⑨ Deriv (T-adapter) 18/18PT	H-D <sup>®</sup>	EFI Delphi	619081	732047	AT531 4078
⑩ Deriv (T-adapter) 3x 18PT	H-D <sup>®</sup>	EFI Delphi			AT531 4080
⑫ Voltmeter BOX			619213	732057	AT540 5005

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# Serial diagnostics - SW

**BMW®**

**Version 20.2**

Includes functions to perform diagnostics of all embeded control units through the diagnostic connector on the motorcycle. The kit contains a communication interface with a BMW® adapter, a USB cable for connection to your laptop (or PC) and diagnostic software that is compatible with **Windows 7, 8 and 10**. There is also a wireless Bluetooth version of the communication interface available.

## Motorcycle diagnostics for model year 2019 and older

### ● Control units

Engine control units - ENG  
Brakes - ABS  
Body electronics - ZFE (ESA included)  
Body electronics on new models:  
ESA, BCO, FSA, ASW, BCL, BCA, SAF, SVA, TPM  
Tyre pressure control - RDC  
Anti-theft alarm system - DWA  
Instrument cluster - Kombi  
Audio

### ● Diagnostic functions

Read and Clear Diagnostic Trouble Codes - up to 2019  
Read Identification data - up to 2019  
Monitoring real-time data - up to 2019  
Test actuators

### ● Special functions

Read and Set service date - up to 2019  
Read and Set remaining distance to the service - up to 2019  
Below Special Functions are Supported only by Keyworld Control Modules  
Adaptation values reset  
Adaptation of the tank ventilation system reset  
Over-revving Analysis  
Idle air control calibration  
Date adjustment  
Clock display 12h/24h  
Outside temperature display °F/°C  
Tyre pressure display bar / kPa / psi  
Complete configuration (ABS, ESA, ...) of Instrument cluster  
Units of consumption display (l/100km, km/l, mpg(GB), mpg(US) )

### ● Motorcycle report

Search for and identify all embedded control units,  
read fault code memory + generate and print a diagnostic report

ESA - Elektronische Fahrwerkseinstellung  
/ Electronic suspension adjustment  
BCO - Grundmodul  
/ Basic module control unit  
FSA - Grundmodul-Satellit  
/ Basic module satellite  
ASW - Scheinwerferelektronik  
/ Headlight electronics  
BCL - Grundmodul  
/ Basic module control unit  
BCA - Grundmodul-Sonderfahrzeug  
/ Basic module special vehicle  
SAF - Elektronische Fahrwerkseinstellung  
/ Electronic suspension adjustment  
SVA - Side View Assist  
/ Side View Assist  
TPM - Telematik  
/ Telematics



Reference  
ACTIA CZ: AT531 5089





## Professional diagnostics & tuning tool for workshops and tuning centers

# High Voltage Tester

# AT111 4025



**High Voltage Tester** is a unique tool for checking ignition systems of spark-ignition engines.

It is used to measure the performance of ignition module (ignition coils) as well as the flash-over voltage on spark plugs. The test is very simple and fast, and is performed by connecting parts of the tester to the HV cables following the operating instructions.

It is carried out directly on the motorcycle (or vehicle) without dismantling the ignition modules or spark plugs.

The kit includes a set of high voltage loads which simulate the spark plug under the conditions of operation with the possibility of setting the high voltage in the range of **2.5 kV to 32.5 kV** in **2.5 kV** increments. In addition, the kit comprises a module simulating the spark gap of the spark plug using LED light. The simulated ignition of the plug can therefore be evaluated optically, without the risk of fire.

# Business partners

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# Tuning Center Locator



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