

Professional diagnostics & tuning tool for
workshops and tuning centers

Serial diagnostics - HW

HARLEY-DAVIDSON[®] & BUELL[®], INDIAN[®] & VICTORY[®]

Version 24.0

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 10 and 11**. There is also a wireless **Bluetooth version** of the communication interface available.



Reference	CCE	ZODIAC	ATAL
1 Communication interface USB	653745	732050	AT532 5006
Communication interface USB+BT	653746	732051	AT532 5007
2 Software Indian [®] & Victory [®]	890084	732043	AT531 5051
3 Software Harley-Davidson [®]	653747	732056	AT531 5049

EUROPEAN DISTRIBUTORS



World's Finest Products For Harley-Davidsons
Custom Chrome Europe GmbH
 Carl-von-Ossietzky-Straße 8
 55459 Grolsheim/Germany
 Phone: +49 (0) 6721-4 007-0; Fax +49 (0) 6721-4 007-100
 e-mail: info@customchrome.de
www.custom-chrome-europe.com



ZODIAC International B.V.
 Industrieweg 44; 3641 RM - Mijdrecht
 Netherlands
 Phone +31 (0) 297 288 621
 Fax +31 (0) 297 288 226
 e-mail: sales@zodiac.nl
www.zodiac.nl

PRODUCER & DISTRIBUTOR



ATAL s.r.o., Lesní 47
 Tábor - Horky, 390 01
 Czech Republic
 Phone: +420 381 410 100
 Fax: +420 381 253 043
info@atal.cz; www.atal.cz
www.diag4bike.com

Professional diagnostics & tuning tool for
workshops and tuning centers

Serial diagnostics - SW

HARLEY-DAVIDSON® & BUELL®

Version 24.0

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 10** and **11**. There is also a wireless Bluetooth version of the communication interface available.

Motorcycle diagnostics for model year 2024 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.)

New function "Service Information", links to Owners manual, Wiring Diagrams, Parts catalog

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
ATAL: AT531 5049

Serial diagnostics - SW

HARLEY-DAVIDSON® & BUELL®**Version 24.0****● 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 2024
- 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®)
- 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 since 2018 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)



Reference:
CCE: 653 747
ZODIAC: 732049
ATAL: AT531 4028

Engine tuning

HARLEY-DAVIDSON[®]

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 DIAG4BIKE. To tune an individual motorcycle a MULTI-DONGLE (hardware key) and tuning licence is needed.
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 rich only by using PROFESSIONAL TUNING method.

Necessary Tuning Components:

DIAG4BIKE



Reference
CCE: 853 745(6)
ZODIAC: 732 050(1)
ATAL: AT532 5006(7)



MULTI DONGLE



Reference
CCE: 921 209
ZODIAC: 735 448
ATAL: AT531 4094.B

Reference
CCE: 653 747
ZODIAC: 732 056
ATAL: AT531 5049

Professional diagnostics & tuning tool for
workshops and tuning centers

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:

AFR TUNING MONITOR

DIAG4BIKE



MULTI DONGLE



Reference
CCE: 619 084
ZODIAC: 732 044
ATAL: AT106 4016



Useful Tuning Components:

INSTALLATION SET LAMBDA

INSTALLATION SET LAMBDA MINI

Reference:
ATAL: AT106 4020

Reference:
ATAL: AT106 4064

SMART POWER BENCH with aluminium ramp



Reference
ATAL: AT531 4098



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



MULTI DONGLE

Reference
CCE: 921 209
ZODIAC: 735 448
ATAL: AT531 4094.B



Multi-Dongle

A new generation of selling tuning licences

Multi-Dongle is a special hardware key that can be used to tune motorcycles using the **DIAG4BIKE** system.

At the same time, it serves as a carrier for electronic tuning licences which are purchased online via the order form, accessible from the **DIAG4BIKE** program (beginning from **version 21.1**).



- Harley-Davidson® and Indian® motorcycles can currently be tuned using the **Multi-Dongle**. In the future, it will be possible to use **Multi-Dongle** for tuning other brands of motorcycles as well
- For one **Multi-Dongle**, an unlimited number of tuning licences can be purchased
- When using the **Multi-Dongle**, the computer must be connected to the Internet
- New **Multi-Dongle** does not include any tuning licences
- Original calibrations read from motorcycles are newly stored on the **DIAG4BIKE** server which is secured at a professional level against data loss
- All **DIAG4BIKE** tuning calibrations are stored on the **DIAG4BIKE** server as well. In this way, newly created calibrations are available immediately after release.
- Users can access the data even after a crash of their computer and from anywhere in the world.
- Access to the data is allowed only to the owner of the respective **Multi-Dongle**
- Customers can still create their own calibrations and save them to their computer

PRODUCER & DISTRIBUTOR



ATAL s.r.o., Lesní 47
 Tábor - Horky, 390 01
 Czech Republic
 Phone: +420 381 410 100
 info@atal.cz; www.atal.cz
 www.diag4bike.com



Learn more about the
Multi-Dongle from the
 training video at
www.diag4bike.com/multidongle

and Blank ECM Flash - HARLEY-DAVIDSON®

Except 2023 CV0 models with 121ci engine. Professional tuning for 2024 models is currently available for the models listed below the table.

DIAG4BIKE® Maps	H-D®- SE Equivalent	Engines	Components	Note
Level 0		All	Stock Intake and Exhaust	<i>Equal to Stock</i>
Level 0 Plus		Milwaukee-Eight	Stock Intake and Exhaust	<i>Driving Comfort Increasing</i>
Level 0.5		Evolution	Open Intake (KN, SE)	<i>Transition Level 0-1</i>
Level 1		All (except Revolution Max®)	Open Exhaust	
Level 1.5		Evolution	Open Intake and partly open Exhaust	<i>Transition Level 1-2</i>
Level 2	Stage 1	All (except Nightster™)	Open Intake and Exhaust	
Level 3	Stage 2	All (except Revolution Max®)	Camshaft, Open Intake and Exhaust	
Level Custom	Stage 3,4	All (except Revolution Max®)	Custom Configuration	Available On Demand

Tuning of 2024 models (Professional and Advanced) is currently available at:
Softail: FLFBS, FXBBS, FLHCS, FXST, FXBR, FXLR, FXLRST, FLBS, FXBS
FLHTouring: FLHRX, FLHP, FLHTP, FLTRP, FLHTK, FLTRK, FLHTCUTG, FLRT, FLTRT
 We are working on other models including 2023 CVO models with 121ci engine.

Smart Power Bench

power bench for bike diagnostics and tuning

• SMART POWER BENCH (SPB) nd 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

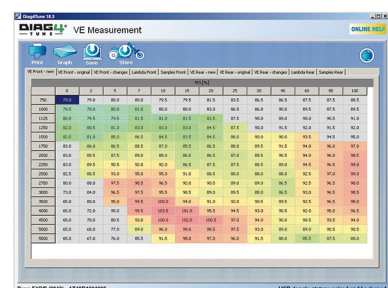
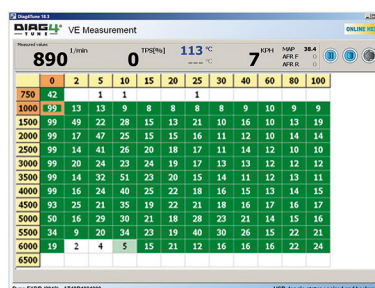
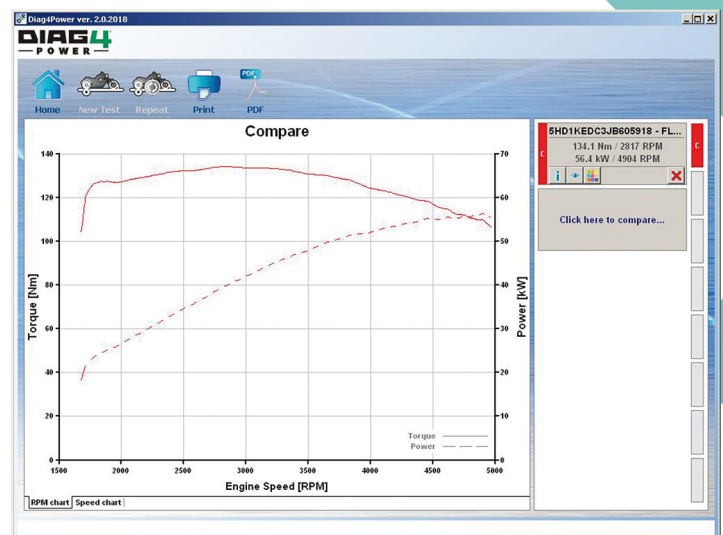
SPB is an ideal tool for motorcycle specialists who carry out bike repairs and servicing, ECU diagnostics and especially engine tuning.

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 kgm² (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):

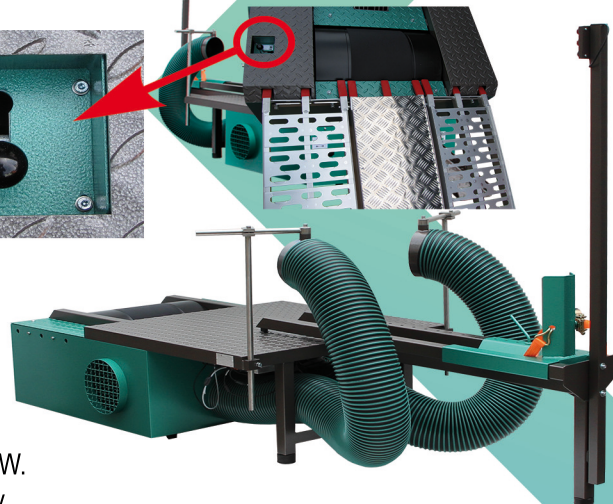
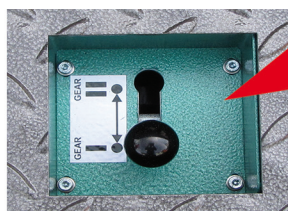
Gear 1

- 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
ATAL: 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



-9°C to 70°C

Contactless infrared thermometer



0°C to 200°C
measuring engine temperature
measuring tire temperature

Software Diag4Power



Ignition sensor SPB



Speed Measurement



Footer adapter



Clampingstraps 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

ATAL: AT857 5016

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

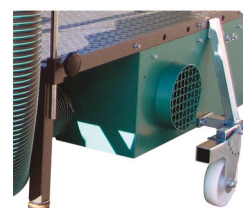
This powerful Axial Fan is useful equipment for additional engine cooling while using the Smart Power Bench. The fan is equipped with two power levels. Power levels are switchable between level 1, level 2 and auto. The Auto level is dedicated for Tuning Measurements (VE maps measurement). The Smart Power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

Reference
ATAL: 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
ATAL: 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



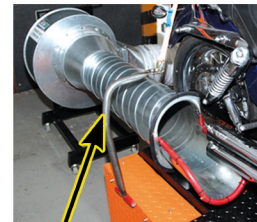
Reference
ATAL: AT131 4001



a) One side exhaust pipe
– diameter 250 mm



b) Duo sides exhaust pipe
– diameter 2x200 mm



c) Yoke

Professional diagnostics & tuning tool for
workshops and tuning centers

Parallel diagnostics

HARLEY-DAVIDSON® & BUELL®, BMW®

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).



Reference			CCE	ZODIAC	ATAL
① Breakout diagnostic box 62P			653749	732053	AT521 3037
② Deriv (T-adapter) 36PT	H-D®	EFI Delphi	653750	732054	AT531 4014
③ Deriv (T-adapter) 35PT	H-D®, BMW®	EFI MM	653752	732055	AT531 4015
④ Deriv (T-adapter) 73PT	H-D®	EFI Delphi (Touring models)	653751	732058	AT531 4064
⑤ Deriv (T-adapter) 12+4PT	H-D®	TSM/TSSM/HFSM	619272	732059	AT531 4077
⑥ Deriv (T-adapter) 36/48PT	H-D®	BCM	619080	732048	AT531 4073
⑦ Deriv (T-adapter) 18/18PT	H-D®	EFI Delphi	619081	732047	AT531 4078
⑧ Deriv (T-adapter) 3x 18PT	H-D®	EFI Delphi	914797	735441	AT531 4080



ATAL s.r.o., Lesní 47, Tábor-Horky, 390 01
help@diag4bike.eu - www.diag4bike.com
(+420) 381 410 100, Czech Republic, EUROPE

Business partners

EUROPE



World's Finest Products For Harley-Davidsons

Custom Chrome Europe GmbH
Carl-von-Ossietzky-Straße 8
55459 Grolsheim/Germany
Phone: +49 (0) 6721-4 007-0
Fax: +49 (0) 6721-4 007-100
e-mail: info@customchrome.de
www.custom-chrome-europe.com



ZODIAC International B.V.
Industrieweg 44; 3641 RM - Mijdrecht
Netherlands
Phone +31 (0) 297 288 621
Fax +31 (0) 297 288 226
e-mail: sales@zodiac.nl
www.zodiac.nl

Southeast Asia



Mario Motorsports
No. 24, Jalan Kempas Utama 1/4
Taman Kempas Utama
81300 Johor Bahru, Johor Malaysia
e-mail: mariomotorsportsJB@gmail.com
Phone: +6016-768 1444

USA



Griffin Tools & Supply, LLC
291 Deerpath Lane
Carpentersville, IL 60110
Phone # (847) 651-3099; Fax # (914) 612-8945
sales@griffintoolsandsupply.com
www.griffintoolsandsupply.com



WPS, Inc.
601 E. Gowen Road, Boise, Idaho, 83716, USA
208-376-8400 ; 800-999-3388
e-mail: info@wps-inc.com ; info@hdtwin.com
www.hdtwin.com for Harley-Davidson®/Buell®
Indian® and Victory®

DIAG4BIKE Centers Locator



DIAG4BIKE LOCATOR

