



**CR 1**

ProRacing® Chip Box Digital CR1

Certificate IPC: 7711/21, IEC: 61340-4-1

## Table of Contents.

1. ProRacing® Chip Box Digital CR1 .....	3
2. Set contains.....	3
3. Principle of operation.....	4
4. Pro Power Increase – The Power Boost. ....	4
5. Pro Driving Safety – For your and others’ safety.....	4
6. Pro-Eco Driving – Fuel Economy. ....	5
7. Product usability. ....	5
8. Typical location of the sensor connection.....	6
9. Guides on the plugs. ....	7
10. Removing the guides on plugs. ....	8
11. Proper connecting. ....	8
12. Installation. ....	9
13. Installation in 1.6 and 1.4 HDI engines.....	11
14. FAQ. ....	13
15. Regulation of the device.....	14
16. We meet the global IPC standards.....	15
17. ProRacing® in the world.....	15
18. Customer Service.....	16

## 1. ProRacing® Chip Box Digital CR1.

ProRacing Chip Box Digital Series are modern digital devices connected in the engine compartment, designed for cars with diesel engines with Common Rail injection system. It is equipped with additional self-regulation system - adjustment screw. The set includes dedicated wires with Plug & Play plugs.

Get ready for:

- 1. The power increase up to 25%
- 2. The torque increase up to 25%
- 3. Reducing fuel consumption up to -15%

## 2. Set contains.

- ProRacing® Chip Box Digital CR1,
- Cables with dedicated plugins,
- Assembly instructions and an operating manual,
- Warranty card.



### **3. Principle of operation.**

The device is prepared for mounting in the engine compartment, to a suitable sensor on the common rail. As a result, we modify the data transmitted between the control computer (ECU) and the corresponding sensor, including fuel injection, fuel charge, turbocharger boost, air feed rate, engine speed, throttle position, injector opening time.

### **4. Pro Power Increase – The Power Boost.**

1. Increase in power and a maximum speed of the car.
2. Torque increase, guaranteeing:
  - better driving dynamics,
  - stable and flexible engine operation,
  - much better acceleration due to faster response to the gas pedal,
3. Easy starting of the engine even in winter conditions.
4. Reducing turbo lag in turbo-charged cars.
5. Smooth acceleration starting from low engine revs.

### **5. Pro Driving Safety – For your and others' safety.**

1. Increased driving dynamics.
2. Easier and safer overtaking manoeuvre.
3. Improved driving comfort.
  - The device improves driving comfort. Improved driving dynamics and improved engine performance mean increased road safety.
  - When the device is connected, the torque increases significantly. The car becomes more dynamic, better responsive to the gas pedal. This is very important, for example, when overtaking.
  - Thanks to the easy overtaking, we are taking care of our passengers and their safety. The overtaking manoeuvre will be easier and, above all, safer when we are sure of the power of the car.

## 6. Pro-Eco Driving – Fuel Economy.

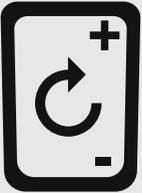
1. Reduce fuel consumption up to 1.5 l per 100 km
  - The increase in power and torque improves the engine performance. Optimizing engine performance reduces fuel consumption. Performance depends on the output parameters of the car and the driving style.
  - In a continuous route, without rapid acceleration and deceleration, we can expect a reduction of up to 1.5 l per 100 km. The higher the fuel consumption and engine capacity, the greater the achievable combustion savings.
2. By reducing the combustion, we reduce the number of harmful substances emitted to the atmosphere, including nitrogen and carbon oxides.
  - We can refuel less, save money and protect the environment.

## 7. Product usability.



### **Car warranty protection.**

The device can be used on cars with a guarantee because in the computer control (ECU) no parameters are permanently changed. When the device is disconnected, the ECU returns to the serial parameters, so the modification is undetectable by the service during the technical review.



### **Additional self-regulating system - an adjustment screw.**

Allows you to make software modifications - it makes it easy to adjust the device to the needs of the engine - reduce or increase the power of the device.



### **LED light.**

LED indicating the correct operation of the device.



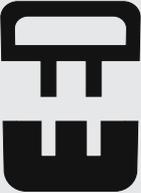
### **Engine protection function.**

Ensures the engine operates in a safe range of engine speed. The power increase is always maintained within the tolerance range of the engine. This function prevents the engine from overheating at high loads - very dynamic driving.



### **Fast effect.**

The power of the car is increased by the electronics, so there is no need to interfere with the mechanical parts of the engine or the components, and the effect is almost immediate.

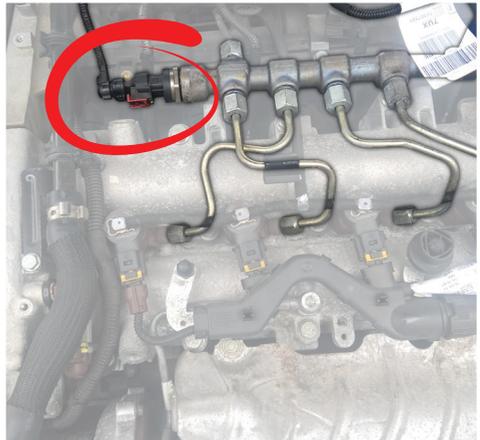


### **Easy Plug & Play installation.**

This device is intended for self-installation. Includes detailed installation instructions and dedicated cables with original manufacturer plugs.

## **8. Typical location of the sensor connection.**

The photos below present Common Rail bar with a plugin at the end. This is a plug of already mentioned pressure sensor. The plug may be located in the middle of the rail. Such a plug located in the middle of a rail can be headed downwards, straight or upwards.





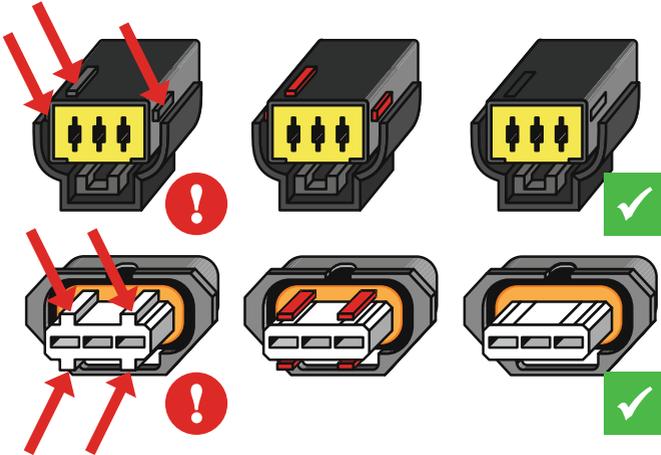
## 9. Guides on the plugs.

It can happen that the chip with cables we received for Chip Box ProRacing® CR1 device differs slightly from the one we have in a car.

For the reason of import of cars from different countries it happens sometimes that car subassemblies can differ a bit. In such situation we usually remove the strips on the plugs. The strips are only for the robots in a factory during assembling cars allowing to plug the connector in a proper way. During a car usage the strips are useless and the plug is pinned the same and is equally water-resistant and reliable.

## 10. Removing the guides on plugs.

Cutting the guides is a simple operation. We remove only the guides on the plugs delivered with a device. There is no need to interfere into plugs in a car. **Notice! After removing the guides, you DO NOT LOSE the warranty on the device!** We need a sharp tool (a knife for fitting carpets for example or a scalpel.) There can be 1,2, or 4 little guides as in the picture below:



### Attention!

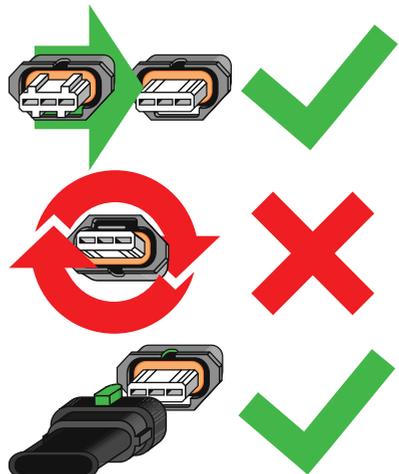
A sharp tool must be used for cutting the guides indicated above. **Please take extra care not to risk any injury!** It is advisable to use protective gloves.



## 11. Proper connecting.

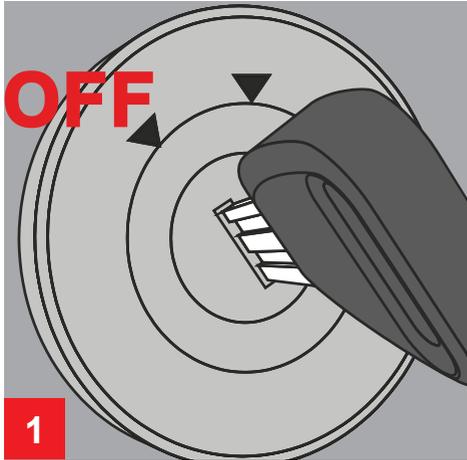
**Attention!** During assembly make sure the ChipBox plugin you connect exactly the same way as the original plugin in the car is installed – it is presented in the picture beside. When the plugins are installed the other way, the diode on device will not light up.

**Do not turn the engine on!** The car is not going to start and at the attempt of starting the engine some mistakes indicated by CHECK ENGINE warning light may occur later.



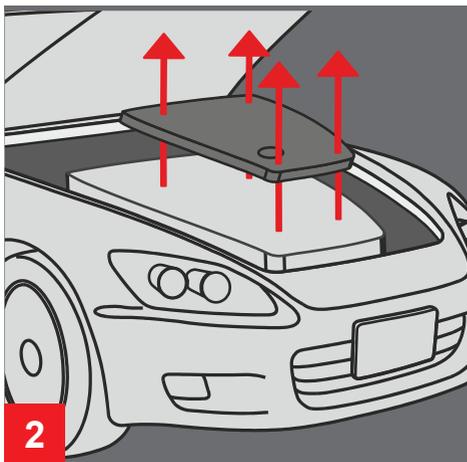
## 12. Installation.

The device is prepared for mounting in the engine compartment, to a suitable sensor on the common rail. As a result, we modify the data transmitted between the control computer (ECU) and the corresponding sensor, including fuel injection, fuel charge, turbocharger boost, air feed rate, engine speed, throttle position, injector opening time.



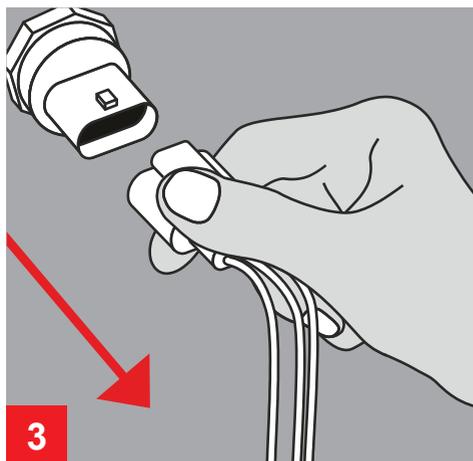
### Step 1.

**Make sure the car's engine is not working and all electric elements are in an OFF position.** The key in the ignition ought to be in an OFF position, no devices such as navigation, car radio, air- conditioning, internal lighting etc. ought to be working. If a car is not started with a key, the power ought to be cut off with a START/STOP button or by removing a card.



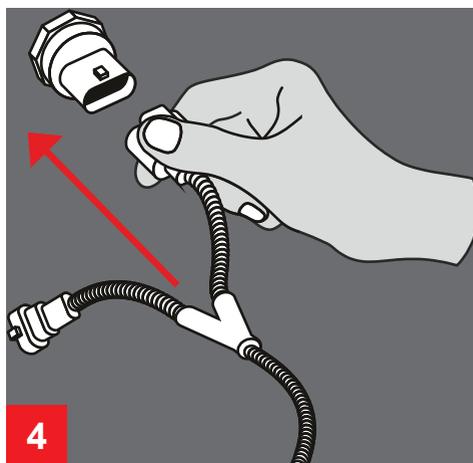
### Step 2.

**After removing the engine compartment cover locate the common rail (main element of an injection system).** There is a pressure sensor on the rail. Its location is shown in a detailed manual attached to the kit – Notice! the location may be different for different models of cars.



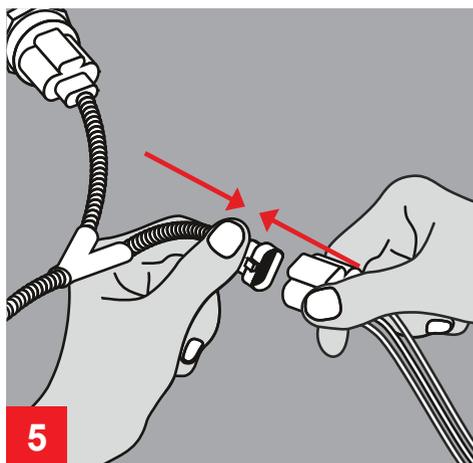
### Step 3.

**Unpin a plug from the indicated pressure sensor on the common rail.** On the plug there are latches or metal clasps. They should be unpinned before trying to unplug the connector from a socket. The attempt to disconnect the plug without former unpinning may cause its permanent damage.



### Step 4.

**Connect a female plug with a free socket of a pressure sensor on the common rail.** Notice there is a characteristic sound of click of a clasp while pinning. It guarantees certainty of connection.



### Step 5.

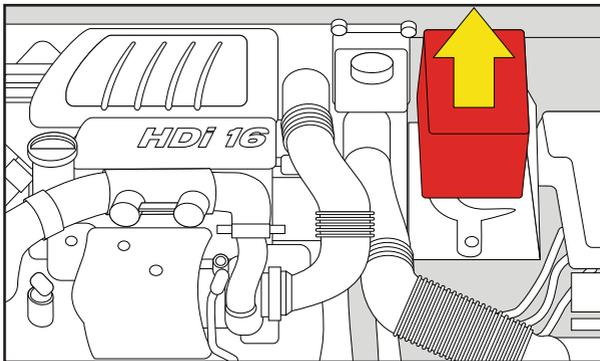
**Connect a male plug with the female plug formerly unpinned from the pressure sensor and then connect the cable with Chip Box CR1.** After completing the connection correctly switch on the ignition (turn the key in the ignition not starting the engine!) The device should be started. The proper connection is indicated with a glowing diode. When the diode starts glowing you can start the engine! Otherwise check all connections of plugs.

## 13. Installation in 1.6 and 1.4 HDi engines.

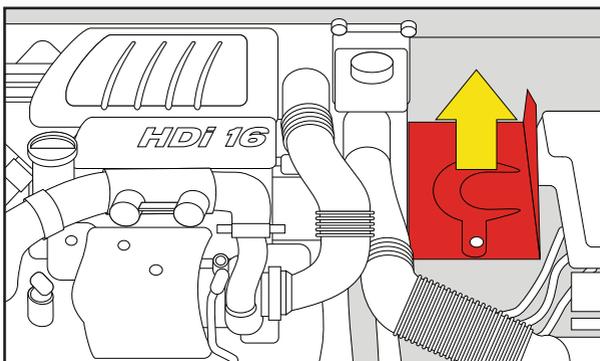
ProRacing® ChipBox CR1 generally is very simple. Unfortunately, there are always exceptions to the rule. There are cars in which the plug is located behind an engine or in other difficult to reach places. The most common problem according to the location of the pressure sensor is in cars of PSA group (Citroen, Peugeot) with 1.6 i 1.4 HDi engines. 1.6 HDi engines we can spot also in Ford (e.g. Ford Focus), Mazda (e.g. Mazda 3), Suzuki (e.g. SX4 since 2006), Volvo (e.g. Volvo V40) Mini (since 2006. )

**More time is required during installation in these cars. Sometimes help of a mechanic is needed. The biggest difficulty is the need to remove the battery with the base or the air filter. It is necessary to be able to reach the plug.**

1. Remove the battery and its plastic tray.

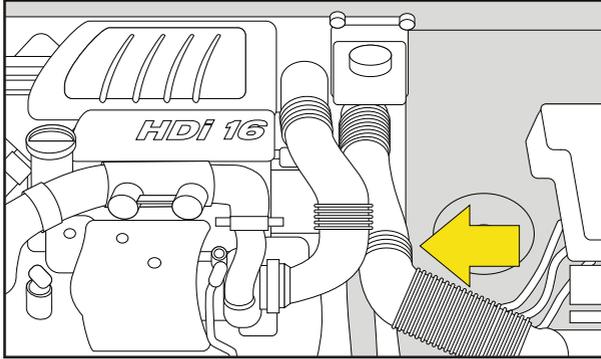


2. After removing the battery and its tray, a metal base which was underneath should be dismantled. It is held by a few screws.

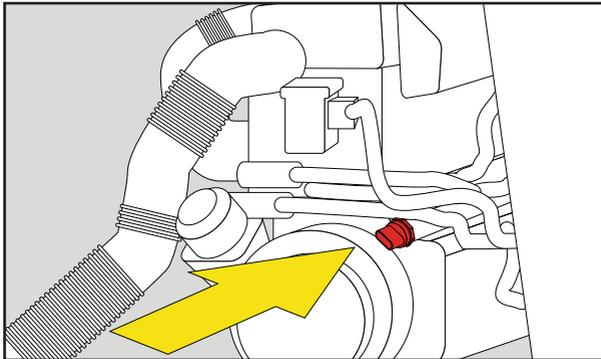


**When despite unscrewing all visible bolts the base can not be removed, it may appear that there additional hidden bolts may be placed beneath, which**

go from a wheel house shell. It is common in cars of PSA group (Peugeot, Citroen.)



3. Now, when the base of the battery is removed you have an access to a fuel pressure sensor on a Common Rail. The picture beside presents its location just above the cover of a flywheel.



4. Remove the plug. If there is a yellow plastic element on the plug it means that a clasp on the plug should be **PRESSED** with a finger and not until then pull to remove it (the plug can be checked with a mirror or a keyhole camera.) If the plug does not have a yellow element you should prise the clasp on the plug off and then pull it.

**Before disconnecting the plug it is recommended to train it using similar ones placed in an engine compartment.**

When the plug is placed in a way that unables prising the clasp with a finger you should use a hooked tool or a wire loop or a line to catch the clasp and pull.

**Remember! Trying to remove an unpinned plug may cause it would clench even tighter. Before removing it it is advisable to press the plug into the socket to ease the clasp.**

## 14. FAQ.

Q

**Q: Must the device be constantly plugged into common rail?**

A

A: Yes, the device must be constantly plugged into the sensor of a common rail. When you disconnect the device the car returns to its factory settings.

Q

**Q: Should I turn the engine off before adjusting?**

A

A: Yes. To let ChipBox ProRacing® CR1 device work properly the engine should be turned off each time before adjusting. Then we can be sure that the modification is going to impact ECU correctly in a car.

Q

**Q: Despite switching the engine off the diode on the device is still glowing. Can the situation cause discharging the battery in my car?**

A

A: No. The diode in the device takes minimum electricity. After switching the engine off the computer automatically cuts the power off in a car system. It disappears after some defined time, it can happen after 10 minutes or just 1 minute. It is dependent on a model of a car and solutions applied in it.

Q

**Q: After connecting the device, the LED does not light up, what should I do?**

A

A: If the LED on the device does not light up, do not start the engine yet. Check the connection, maybe one of the plugs is unplugged or incorrectly plugged in (see paragraph 12 on pages 9-10). Please make sure that you install the device to the correct sensor.

Q

**Q: The plug in my car slightly differs from the one provided with the device - it has a different strips spacing.**

A

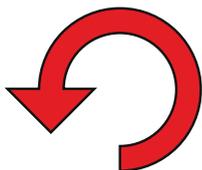
A: No worries. Detailed information on this subject can be found in paragraph 9 on page 7 and a solution to this problem in paragraph 10 on page 8.

## 15. Regulation of the device.

You receive a device programmed for your car. Chip Box should not be adjusted immediately after installing! After installing the device, the car should cover a distance of about 100 km (not necessarily in one drive.) The engine has to be heated up and cooled at least once so that ECU can completely read the parameters which are changed by Chip Box. Most often there is no need to perform additional regulation of the device.

**Additional regulation with an adjusting screw is done only when:**

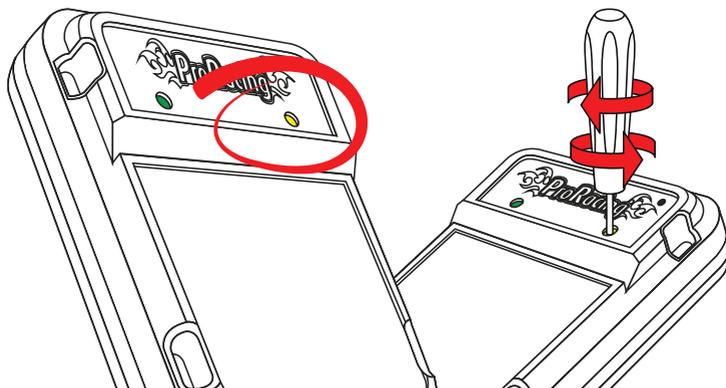
- a glow plug or CHECK ENGINE indicator appear on a dashboard, the engine does not work in an even way or goes into emergency mode. The regulation is performed with a not working engine. The adjusting screw shown in the picture should be moved 4 turns to the right. Then the engine should be started and its work checked. The action should be repeated until the undesired symptoms disappear.
- when after covering the distance of 100 km you want to raise the power increase, the adjusting screw should be moved 2 turns to the left with a not working engine. Next, the engine should be started and its work checked. The action can be repeated until a satisfactory effect is obtained, but implementing new settings can be performed on condition of maintaining steady even work of an engine. If the engine starts working in an unsteady way return to turning the adjusting screw to the right.



**Turns to the LEFT  
- anti-clockwise.**



**Turns to the RIGHT  
- clockwise.**



## 16. We meet the global IPC standards.

**Our production meets the highest standards of international Association Connecting Electronics Industries (IPC) and Polish and international standards of production.**

IPC® certifications are recognized around the world for guaranteeing the quality of our products and services in the electronics industry. The application of the PN-IEC production standards guarantees high quality and repeatability of the technological process which directly translates into high trust for our products. We are proud to offer the high quality cutting edge technological solutions, that are able to win high demand competition on the global tuning electronics market in premium segment.

**Check it out and join to our satisfied users!**

## 17. ProRacing® in the world.



**Our top class devices are sold all over the world!  
Join our team!**

## 18. Customer Service.

Our service is available to you from Monday to Friday, from 9<sup>00</sup> to 17<sup>00</sup>.

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