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VEHICLE PROTECTION SYSTEM AND DEVICE

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Field of the invention

The present invention relates to a vehicle protection system and device which controls and prevents abnormal and/or unauthorised functioning of the motor vehicle's parts by controlling the battery power supply transmission directly from the battery and fuel tank fuel supply directly from the fuel tank.

Prior Art

15 Prior art vehicle anti-theft protection systems use various means to immobilise a vehicle. These usually involve cutting off power supply to the vehicle parts or preventing fuel supply when the car is parked. Alternatively, the vehicle's parking brakes may be activated. A control device is usually placed between the main relay and the engine control unit. Upon receipt of a correct enabling code, the control device will reverse the immobilisation device. The disadvantage of such systems thus far is that such an apparatus can be tampered with by re-wiring or changing of part of the wiring, by for example, connecting the battery to the engine control unit and by-passing the control device. Thus, their reliability is reduced.

25 **Summary of the invention**

The objective of the system of the present invention is to improve upon devices which only control and prevent abnormal and/or unauthorised functioning based upon the power supply, so as to make the device more comprehensive and reliable.

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The invention is now described in more detail in relation to the preferred embodiment of the invention, with reference to the accompanying drawings.

Brief description of the drawings

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Figure 1 is a diagrammatic representation of a Battery Power Supply and Fuel Tank Fuel Control Device according to the preferred embodiment of the present invention.

10 Figure 2 is a diagrammatic representation of a Battery Power Supply and Fuel Tank Fuel Resistance System according to the preferred embodiment of the present invention, which also illustrates the placement of the Battery Power Supply and Fuel Tank Fuel Control Device of Figure 1.

15 Figure 3 is a diagrammatic representation of a Battery Power Supply and Fuel Tank Fuel Resistance System according to another preferred embodiment of the present invention, wherein the Battery Power Supply and Fuel Tank Fuel Control Device is connected between an electrical fuel pump and an oil distribution pump.

20 Detailed description of the Preferred Embodiment of the present invention

Figure 1 is a diagrammatic representation of a Battery Power Supply and Fuel Tank Fuel Control Device (2) according to the preferred embodiment of the present invention. The Battery Power Supply and Fuel Tank Fuel Control Device
25 (2) controls power supply directly from the battery and fuel supply directly from the fuel tank of the vehicle. The Battery Power Supply and Fuel Tank Fuel Control Device (2) includes a Code Signals Control Unit (2A) which is connected to a Battery Power Supply Control Unit (2C) via the Permitting Code Relay (2B), which can be a wire or other electrical or electronic connection. The Battery Power
30 Supply Control Unit (2C) is in turn connected to the Fuel Tank Fuel Magnetic Valve (2D).



The Code Signals Control Unit (2A) comprises a microprocessor and a memory module having 2 codes, a start-up code and a shut-down code. The microprocessor reads these codes from the said memory module. The Battery Power Supply Control Unit (2C) comprises a microprocessor which activates
5 power supply to the Fuel Tank Fuel Magnetic Valve (2D) upon receiving a permitting code from the Code Signals Control Unit (2A). The Fuel Tank Fuel Magnetic Valve (2D) controls the flow of fuel from the fuel tank (5).

The Code Signals Control Unit (2A) receives start-up code signals from the Start-
10 Up Device (1). The Start-Up Device (1) generates and transmits a start-up code signal to the Code Signals Control Unit (2A). Such transmission can be via a wire connection or wireless using radio frequencies and the like. In Figure 1, the Start-Up Device (1) is represented as a transponder device which contains a code, which transmits a data signal to the Code Signals Control Unit (2A) via a loop
15 antenna using radio frequencies. Upon receipt of the data transmitted, the Code Signals Control Unit (2A) compares and confirms the signal code with the code stored in its memory module. The Permitting Code Relay (2B) transmits a permitting code to the Battery Power Supply Control Unit (2C) when the Code Signals Control Unit (2A) verifies that the start-up code signal corresponds to the
20 start-up code stored in the memory module.

The Battery Power Supply Control Unit (2C) and Fuel Tank Fuel Magnetic Valve (2D) control power supply from the battery and fuel from the fuel tank respectively. If such supplies are stopped, unauthorised start-up and movement of the vehicle
25 is prevented.

When the Battery Power Supply Control Unit (2C) receives a permitting code from the Code Signals Control Unit (2A), the Battery Power Supply Control Unit (2C) will allow power supply to the Fuel Tank Fuel Magnetic Valve (2D), thus enabling
30 fuel from the fuel tank (5) to flow to the electric fuel pump (7). Without the said power supply, the fuel supply cannot flow.



At the same time, the Battery Power Supply Control Unit (2C) is also connected to the Engine Control Unit (3), Indication Light (4) and other lights and items (5) concerned with the operation of the motor vehicle. These allow the other parts of the vehicle requiring an electrical supply to function.

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Figure 2 is a diagrammatic representation of a Battery Power Supply and Fuel Tank Fuel Resistance System according to the preferred embodiment of the present invention, which also illustrates the placement of the Power Supply and Fuel Control Device of Figure 1. The Battery Power Supply and Fuel Tank Fuel
10 Control Device (2), as the primary control device, controls the power supply from the battery (3), and fuel supply from the fuel tank (5) and electric fuel pump (7) and/or oil distribution pipes (8). The Battery Power Supply and Fuel Tank Fuel Control Device (2) also controls power transmission from the battery (3) to the Ignition Starter Switch (4), Main Relay (6), Engine Control Unit (10) and the fuel
15 supply from the Fuel Tank (5) to the engine (not shown).

Preferably, the Battery Power Supply and Fuel Tank Fuel Control Device (2) is installed between the vehicle's fuel tank (5) and its electric fuel pump (7). Alternatively, the Battery Power Supply and Fuel Tank Fuel Control Device (2) is
20 installed between the electric fuel pump (7) and the oil distribution pipes (8) (as in Figure 3). These particular positions of the Device (2) ensure that the relevant operational parts of the vehicle are not supplied with the requisite power from the battery (3), and fuel from the fuel tank (5), without confirmation by the Battery Power Supply and Fuel Tank Fuel Control Device (2) of the authorised code
25 signals generated by the Start-Up Device (1).

Upon parking the car, a shut-down code is generated via the Start-Up Device (1) and transmitted to the Code Signals Control Unit (2A). Upon receipt of the data transmitted, the Code Signals Control Unit (2A) compares and confirms the signal
30 code with the shut-down code stored in its memory module. The Permitting Code Relay (2B) transmits another code to the Battery Power Supply Control Unit (2C)

when the Code Signals Control Unit (2A) verifies that the shut-down code signal corresponds to the shut-down code stored in the memory module.

As can be appreciated from the above description, code signals control the start-up or switch-off of the entire protection system. In order to activate the battery power supply and fuel tank's fuel supply to the various parts of the car, a remote control, key, key-pad or transponder apparatus to generate and transmit the signal code may be used. Other methods such as a smart card system, can also be used, depending on the preference of the customer and the state of technology, as long as an appropriate signal can be transmitted to the Code Signals Control Unit (2A) for verification of the access signal.

The system makes it virtually impossible for anyone to tamper with the system by illegitimate re-wiring of the vehicle protection device or by changing of parts of the wiring. Thus the system prevents any illegitimate means of start up and movement of the vehicle. The system is, as a result, more comprehensive, effective and thorough than the prior art.

The invention described herein is susceptible to variations, modifications and/or additions other than those specifically described and it is to be understood that the invention includes all such variations, modifications and/or additions which fall within the spirit and scope of the above description.

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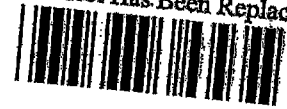
Parts list with reference to the drawings

5	<u>Part No.</u>	<u>Description</u>
	1	Start-Up Device
	2	Battery Power Supply and Fuel Tank Fuel Control Device
	2A	Code Signals Control Unit
	2B	Permitting Code Relay
10	2C	Battery Power Supply Control Unit
	2D	Fuel Tank Fuel Magnetic Valve
	3	Battery
	4	Ignition Starter Switch
	5	Fuel tank
15	6	Main Relay
	7	Electric fuel pump
	8	Oil distribution pipes
	9	Pressure Regulator
	10	Engine Control Unit
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Claims:

1. A vehicle protection system for a vehicle having a fuel tank and an engine
5 comprising:

a start-up device to generate and transmit a start-up code;

a battery power supply and fuel tank fuel control device electrically and
directly connected to a power source and the fuel tank, said battery power supply
10 and fuel tank fuel control device receives said start-up code from the start-up
device and compares said start-up code with a pre-determined start-up code;

wherein once the battery power supply and fuel tank fuel control device verifies
the start-up code to coincide with the pre-determined start-up code, it will
15 simultaneously activate power supply to all parts of the vehicle and permit the flow
of fuel from the fuel tank to the engine, thereby allowing the vehicle to be
mobilised.

2. A vehicle protection system according to claim 1, wherein the start-up
20 device also emits a shut-down code and the battery power supply and fuel tank
fuel control device verifies the shut-up code in accordance with a pre-determined
shut-up code, and discontinues power supply to all parts of the vehicle and stop
the flow of fuel from the fuel tank to the engine.

25 3. A vehicle protection system according to claims 1 or 2, wherein the battery
power supply and fuel tank fuel control device is located between the fuel tank and
electric fuel pump and/or oil distribution pipes.

4. A vehicle protection system according to any preceding claim, wherein the
30 battery power supply and fuel tank fuel control device is connected on the one part
to one terminal of a battery of the vehicle and on the other part to a starter switch





and/or a main relay of the vehicle.

5. A vehicle protection system according to claim 1, wherein the battery power supply and fuel tank fuel control device includes a code signals control unit
5 receiving the start-up code from the start-up unit.
6. A vehicle protection system according to claim 5, wherein the code signals control unit compares the start-up code with the pre-determined start-up code and generates a permitting code if upon verification of the start-up code.
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7. A vehicle protection system according to claim 6, wherein a power supply control unit receives the permitting code, and upon receipt, activates power supply to all parts of the car.
- 15 8. A vehicle protection system according to claim 7, wherein upon receipt of power supply from the power supply control unit, a fuel magnetic valve permits the flow of fuel from the fuel tank to the engine.
9. A vehicle protection system according to any preceding claim, wherein the
20 battery power supply and fuel tank fuel control device includes the code signals control unit, battery power supply control unit and the fuel tank fuel magnetic valve.
10. A vehicle protection system according to any preceding claim, wherein the
25 code signals control unit, battery power supply control unit and the fuel tank fuel magnetic valve include microprocessors and/or memory storage modules.
11. A vehicle protection system according to any preceding claim, wherein the
30 start-up device includes a remote control, key, key-pad, smart-card or transponder apparatus.



12. A vehicle protection system according to any preceding claim, wherein the start-up device communicates with the battery power supply and fuel tank fuel control device through wireless means, such as radio frequency.



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