PANDECT

OPERATION AND INSTALLATION MANUAL

IS-250

IMMOBILIZER

2,4GHz

GENERAL INFORMATION

Pandect IS-250 immobilizer is a car anti theft device of a new generation designed for prevention of the attempts of carjacking by means of a concealed penetration and for resistance to the attempts of a vehicle capture with aggressive actions in respect of the owner.

This device can be used with any modern cars without any damage to the regular (design) electronic systems. The system is built using the integral solutions of a new generation and implemented at a highest technical level. It is convenient and reliable in use.

The car owner does not have to undertake any actions to disable an anti theft function. The system, within the radio channel active range, performs a dialogue high-speed authorization codes exchange at the frequency range of 2,4 GHz between the remote control unit and the lockup module, thus disabling the engine's hidden lockup. The identification dialogue is performed within some fractions of a second what embarrasses the attempts not only to scan the codes but even to detect them on one of the 125 channels used for data transmission at the frequency range of 2,4 GHz.

The car equipped with **Pandect IS-250** immobilizer can only be used when a stored into the memory remote unit is available. No external manifestation of the immobilizer use can be found by the potential plotters, because the car owner does not have to perform any manipulation but just to bring the remote unit into the communication zone. The remote control unit can be identified maximum at 3 – 5 meters away from the car equipped with immobilizer.

Work of the system

Immobilizer disables the anti theft function if the remote is located inside a car or at the range of max. 3 -5 meters away from it. The interconnection between the remote and main units is reported by a single "on the line" melody at least 20 seconds upon ignition turning on. If no remote unit available in the car then immobilizer makes possible a single engine start-up for 40 or 60 seconds (safety requirement for a driving vehicle). Then, 30 seconds later, an intermittent tone signal will be heard, warning about the lockup. If the remote unit has not been appearing in the radio communication zone since the moment of ignition turning on, then an intermittent tone signal will be heard for 10 seconds. But if at least one communication session was held between the main and remote units, then this will be reported by a 30 seconds-long interrupted tone signal.

On completion of an intermittent signal sounding the engine lockup is activated. 30 seconds later an intermittent tone signal follows. The next start of the engine is possible for 10 seconds (time necessary for a reliable identification of the remote unit by the system). At the next attempts of engine start-up with the remote unit outside the communication zone, the immobilizer will be blocking the work of engine 1,5 seconds upon turning on the ignition. Each time after turning ignition on the "Enter PIN code" melody sounds as well as 10 tone signals, corresponding to the entered digit of a PIN code, but if no digit has been entered the "Error" melody will sound. Then upon appearance of the "resident" remote unit the system will transit from the lockup mode to the mode of normal work.The remote's feeding element provides its work for the period of 3 years whereupon it should be replaced. The sonic signals at a turned on ignition will remind you of the necessity of batteries replacement. Triple tone signals reminding of a soon elements replacement will be sounding with an interval of 10 seconds at the ignition turned on.

CAUTION! To avoid the problems connected with the elements discharge it is advisable to have an extra new element CR2032 in your car along with its factory package.

If during the car drive you will hear a sonic signal reporting the activation of the anti theft function take an urgent measures for a trouble-free stop since there will be not more then 30 seconds left before the engine lockup. (Upon the engine lockup a steering force may be abruptly increased so far as the hydraulic booster will be disabled; at the same time a breaking effort may also be increased due to the vacuum brake booster deactivation. This is extremely dangerous especially while diving at a high speed).

Do not keep the remote unit in the wallet and not in the same bunch with a car keys. You better keep it in a small pocket of your pants or some other cloth which can not be accidentally forgotten as it may happen with outer clothing. The design and dimensions of the remote unit provide its secret storing.

Technical maintenance

If there is a necessity to leave a car in a service center, without disclosing all the nuances of the immobilizer use to a specialist, it is advisable to put the remote secretly inside the car compartment. Any hidden cavity may be suitable for temporal storing of the remote unit.

Remote unit performance check

If the car with a remote unit inside its compartment won't start and lockup warning signal is head then it is necessary to check a working capacity of the remote unit. Carefully open a plastic body of the remote unit by means of a flat metal subject (ruler or knife). Remove the CR2032 element from the contact group and put it in its place. If the element has a sufficient charge a red LED will flash three times. If the element has a low residual charge the LED will flash just once. If there is no flash at all this means that the element is discharged completely. The LED's flashes are visible through a transition hole the remote's PCB. If the remote unit is operative and the feeding element has a sufficient residual charge, then the next stage should be a performance check of a dialogue radio intercom between the remote and lockup module. For this purpose open the body of the remote unit and turn the ignition on. (In a dim light of the compartment the LED's flashes are seen through the plastic body of the remote unit from the side of "Pandect" inscription, i.e. it is unnecessary to open the remote unit's body to see the flashes of the LED). At least10 seconds later the LED will produce a single flash reporting that the remote has been recognized by the lockup module. This means that the radio channel of the system is functioning properly.

Remote's feeding element replacement

The symptom of the remote's element discharging is a triple tone signal heard not more than once in a minute when the ignition is turned on. In this case it must be replaced as soon as possible. The element used in the remote unit is of CR2032 type.

When buying a new element make sure that its shelf life has not expired and its surface has not been exposed to corrosion. It is advisable to purchase the elements produced by well known manufacturers and with a minimal time elapsed from the moment of their production.

Carefully open a plastic body of the remote unit by means of a flat metal subject (ruler or knife). Remove the old element and insert a new one observing polarity. Elements replacement does not affect the code information of the remote unit so far as the authorization data are stored in a nonvolatile memory of the remote's micro controller. Close the remote's body cautiously. All elements must be kept tightly closed. Make sure if it is so and start using the remote in regular mode.

Disabling the system over a secret code

In emergency the **Pandect IS-250** can be disabled by means of a secret code. PIN code of the system consists of three digits to be entered successively.

Remove the remote unit from the area of coverage. Turn the ignition on and wait for a warning signals cessation (not more than 60 seconds). At this moment the anti theft lockup by immobilizer will be activated.

Turn the ignition off and then turn it on again with an interval of at least 1 second.

The "Enter PIN code" melody will sound once (first digit is ready to be entered) whereupon 10 single tone signals will be heard. Turn the ignition off immediately after the signal the number of which coincides with meaning of the first digit of PIN code. The digit "1" will correspond to the ignition turning off after the first tone signal; the digit "0" will correspond to the turning off after the tenth tone signal.

Turn the ignition on, the “Enter PIN code” must sound twice (second digit is ready to be entered) whereupon 10 single tone signals will be heard. Turn the ignition off immediately after the signal the number of which coincides with meaning of the second digit of PIN code.

Turn the ignition on, the “Enter PIN code” melody must sound three times (third digit is ready to be entered) whereupon 10 single tone signals will be heard. Turn the ignition off immediately after the signal the number of which coincides with meaning of the third digit of PIN code.

Turn the ignition on. If the PIN code was entered incorrectly then the system will return to the beginning of PIN code entering procedure. If the PIN code was entered correctly two tone signals will sound for 5 seconds each. At this moment the lockup is disabled.

The system transits to the maintenance mode (in this mode short tone signals are heard once in a minute to remind that the system is not armed).

The system will automatically exit the maintenance mode if the remote unit will be staying in compartment for over 1 minute and its signal will be unstable.

MODE OF PROGRAMMING

Entering the mode of programming

This mode can be entered without the remote units available in the radio channel coverage zone. Leave the remote units at the range of more than 10 meters from the vehicle.

Turn the ignition on and wait for a warning signals cessation (not more than 60 seconds). At this moment the anti theft lockup by immobilizer will be activated.

Turn the ignition off and then turn it on again with an interval of at least 1 second. Enter a PIN code as it was described above. If the code was entered correctly the lockup is disabled and at the next ignition turning on 2 tone signals will sound for 5 seconds each.

To transit to the mode of remote units programming – turn the ignition off during the first signal sounding.

Remote controls programming mode

Up to 5 remote units can be programmed to the system. Prepare all the remote units that you want to be programmed. Make sure that they are in running order and their elements are duly charged. It is advisable to replace all elements for the new ones before recording the remote units. Before programming withdraw the remotes beyond the limits of radio channel coverage (at least 10 meters) and locate them in accessible place.

Transfer the system to the mode of remote units programming (see “Entering the mode of programming”). Turn the ignition on. The “Remotes programming” melody will sound. Then get each of the remote unit by-turn inside the passenger compartment for at least 10 seconds. Authorization

of each successive remote unit will be confirmed by a triple tone signal of the system.

Upon entering the mode of programming all the recordings regarding the previous remote units are deleted from the system memory. This means that all the remotes intended for control over immobilizer must be stored into the memory during one programming session. It is impossible to record additional remote unit to the system secretly without disabling the remotes that didn't take part in the last programming session.

To exit this mode – turn the ignition off. The system will exit this mode and will return to the normal mode.

CAUTION! Make sure that during the programming only one remote unit is available in a radio channel coverage zone at once. Take measures to exclude possibility of an "alien" remote unit occasional storing. Unauthorized remote recording will be reported by an extra triple tone signal of the system. It is advisable to record the remote units on locations where you can be absolutely sure that there are no "occasional" remote units within a 10 meters range.

New PIN code programming mode

PIN code of the system consists of the three decimal digits. Keep a new PIN code meaning ready in your mind to avoid the unnecessary intervals that may affect the correct code entering.

Switch the system to the mode of a new PIN code programming (ignition turned off after correct code entering during the second tone signal sounding for 5 seconds, see "Entering the mode of programming").

Turn ignition on. The "Enter PIN code" melody will sound for once (ready for the first digit of a new code entering), whereupon 10 single tone signals will start sounding. Turn the ignition off right after the signal the number of which corresponds to the meaning of the first digit of a PIN code.

The ignition turning off after the first tone signal will correspond to the digit of "1"; the ignition turning off after the tenth signal will correspond to the digit of "0".

Turn the ignition on. The "Enter PIN code" melody should sound twice (ready for the second digit of a new PIN entering), whereupon 10 single tone signals will start sounding. Turn the ignition off right after the signal the number of which corresponds to the meaning of the second digit of a PIN code.

Turn the ignition on. The "Enter PIN code" melody should sound for three times (ready for the third digit of a new PIN entering), whereupon 10 single tone signals will start sounding. Turn the ignition off right after the signal the number of which corresponds to the meaning of the third digit of a PIN code.

A PIN code storing is accomplished upon the third digit entering, whereupon the system transits to the mode of a new PIN code accuracy confirmation.

The next ignition turning on will be followed by the “Enter PIN code” melody.

The process of a new code confirmation is identical to the process of entering with the exception of the signals type – not single sonic signals but double ones will sound.

If the confirmation was successful then at the next ignition turning on the “Code is changed” melody will play.

The PIN code meaning remains unchanged if the process of a new code entering or confirmation has not been accomplished successfully.

If during a new digit entering the ignition will not be turned off in due time, then the system will play “Error” melody and will switch to a standby mode. In case a “friendly” remote unit appears in the compartment the process will be interrupted and the system will exit the mode of programming.

The meaning of a PIN code will remain unchanged.

If a “friendly” remote unit doesn’t appear then at the next ignition turning on the system will return to the very beginning (first digit entering).

CAUTION! When changing a PIN code please take care to exclude possibility of forgetting or losing it. Write it down (several times if necessary). If a PIN code is lost the system must be dismantled and returned to the manufacturer. In this case you will loose a possibility to add, erase remotes, change PIN codes, and if the remote unit is out of order or its element discharged you will not be able to perform an emergency disabling of the system in order to start the engine up.

INSTALLATION GUIDE

Pandect IS-250 is intended for installation with the motor vehicles with the airborne voltage of 12 V. The lockup module is located in the hidden cavities inaccessible for observation without partial dismantling of the body, engine or compartment elements. The lockup module can be placed either in the passenger compartment or in the engine area (under hood cover), taking precautions in respect of allowed temperature, environment aggressiveness and humidity.

It is advisable to place the module as far from the metal parts of the car as possible, or to provide a position gap of several centimeters to avoid distortion in the work of a radio channel. The lockup module can be installed in the cavities bordered by metallic surfaces with 75% coverage of a completely closed volume.

During installation in strict conditions of a radio channel shielding it is necessary to check an operating range of the radio channel. As a rule, for normal functioning a twofold margin of range between the module location and the driver's place is enough. (Operative range of the radio channel does not practically depend on a degree of the remote's element discharge).

Wire #1 of the module must be connected to the car body or an effective conductor that connects the body and any regular (design) consumer. This wire is the first one to be connected during installation.

Some specific features of the module connection should be taken to account during installation: at the moment of ignition turning on the module must be supplied by the wire #4 and power supply should not fail in this wire at a turned on ignition under no circumstances.

Dropping of this requirement may cause malfunctioning of the system, so far as irregular activation of the anti theft function may lead to a sudden change in the engine's work.

Wire #3 is connected to the output "-" of a sound radiator (beeper) located in such a place that its signals could be distinctly heard from the driving position. Beeper's output "+" is preferably connected to the wire #4 of lockup module but may also be connected to the airborne circuit of +12 V. A LED connection through the resistor of 1000…1500 Ohm in parallel with the beeper is allowed.

The enclosed to the delivery set beeper may not be used in order to complicate the module location by a potential plotter. But in this case the car owner should be warned about possible problems connected with the absence of such means of notification and diagnostics.

Wires "2" and "5" are connected to the circuit to be blocked. The switching current should not exceed 20A (without inductive component). The dimensions of the module make possible its installation in immediate proximity to the place of lockup performance. During installation special care should be taken to the length and section of the wires used for commutation so far as switching current can be high.

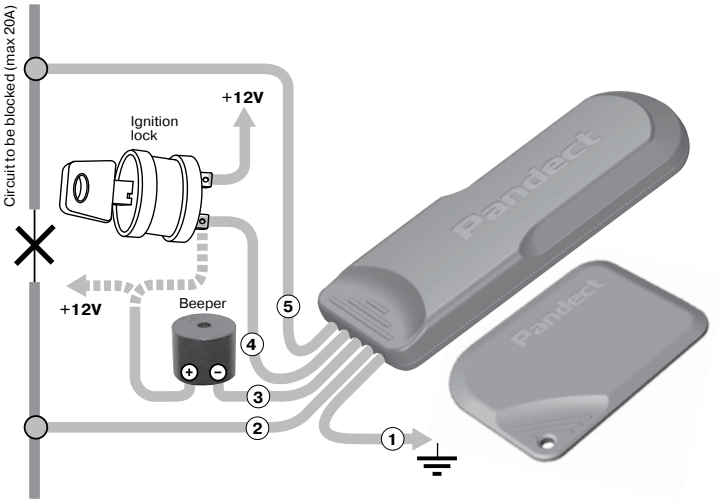
The module's inner relay contacts are connected to the lockup wires as "Normally Closed" (N/C). A version of this item with "Normally Open" (N/O) contacts is also available.

The relay contacts remain closed until the power supply over the wire #4 is available. When the power supply appears the module starts waiting for a communication session with the remote unit and if this session does not happen for a determined period of 40 or 60 seconds, then the relay triggers thus opening the interlock circuit. If the system has entered the lockup mode then every next ignition turning on (starting with the second one) will cause the lockup relay activation in 1,5 seconds.

The first ignition turning on from the moment of interlock or the warning signals will cause triggering of the lockup relay in 10 seconds.

The feeding elements are not inserted to the remote units to avoid their early discharging. The elements of CR2032 type are supplied with the delivery set. Putting the elements in their place make sure that they are not expired and their surfaces are not damaged by corrosion. This may be an evidence of the fact that they have been stored improperly.

With a flat metal subject (ruler or knife) carefully open the body of the remote unit and, observing polarity, put the element into compartment. Now the system is ready for use and programming.



Pandect IS-250 connection diagram

System diagnostics

During installation and use some situations may occur which will need a treatment of a built-in system of the immobilizer diagnostics.

If you have doubts regarding the element operative capacity, open the remote's body and remove the element. Put it back on its place observing polarity watching the LED readings through a transition hole in PCB.

If the element is in good order then the LED will report with a triple flash. If the element is almost discharged the LED will flash just once. If it is discharged completely there will be no flashes of LED at all.

To check operability of the radio channel it is enough to turn the ignition on and to look at the remote's body from the side of "Pandect" capture. A 10 seconds long flash of the LED will confirm a successful establishment of a communication session.

When entering the communication zone pay attention to the LED's readings, in the manner described above, in order to check an operating range of the radio channel. For this purpose turn

the ignition on and step aside from the car for more than 10 meters and then start approaching it with 10 seconds intervals in order to freeze the moment of communication establishment by LED's blinking. It may be hard to notice the LED's flash through the plastic of remote unit in a bright light. In this case it is advisable to do the same with an open remote unit and connected feeding element. Not longer than 10 seconds upon entering a communication zone the LED must confirm the establishment of communication by a single flash. The flash failing reports that the remote unit is either malfunctioning or not stored to the system's memory.

Sonic notification signals

- Single tone signals with intervals of 1 second within 30 seconds – "preliminary activation of lockup".
  Triple tone signals at a turned on ignition with interval of 10 seconds – remote's element discharge warning.
  Single tone signals with interval of 1 minute – system is in maintenance mode (lockup disabled).
  "Enter PIN code" melody.
  Ten single tone signals with interval of 2 seconds – "PIN code digit entering".
  Ten double tone signals with interval of 2 seconds – "PIN code digit entering at its confirmation".
  "PIN code changed" melody.
  "PIN code entering error" melody.
  "On the line" melody.

Delivery set

1. Lockup module..... 1
2. Remote unit of concealed bearing..... 2
3. Beeper (compact sound radiator)……..... 1
4. Plastic buckle 120-150 mm..... 2
5. Ground terminal..... 1
6. Operation & installation manual..... 1

Technical characteristic (specifications)

Parameter name	Description
Current consumption of module in security mode, mA	Not more than 16
Current consumption of module in lockup mode, mA	Not more than 80
Current consumption of remote unit in security mode, mA	Not more than 10
Module supply voltage,	9...18
Radio channel frequency, GHz	2,4 - 2,5
Emission power, mWt	Less than 10
Operative temperature range	–40°C to +85°C
Type of module and remote unit code	Dynamic dialogue
Peak load current , switched in lockup output	20 A
Dimensions (mm):	
- lockup module (without equipment wires)	68x26,5x9,3
- remote control unit	48x34x4,85
- package	210x175x35
Electric circuits protection:	
- feed circuits	Schematic overload /repolarization fault shielding
Precious metals content	No
Feeding element of the remote unit	CR2032, 3 V
Gross weight, not more than, kg	
- lockup module (with equipment wires)	0,04
- remote unit (with feeding element)	0,008

NOTE: Dimensions can slightly vary depending on the applied model, but without any negative affect on the declared characteristics.

Acceptance certificate

Pandect IS-250 anti theft alarm system corresponds to the Technical Requirements TU 4372-007-55684712-2006 and is found suitable for operation.

Factory number _____

Date of manufacture _____

Seal
Packer _____

– –

WARRANTY

The manufacturer guarantees correspondence of the immobilizer to the Technical Requirements with the observance of operating conditions, installation, storage, transportation, stipulated in the given manual.

The item is subject to qualified professional installation with the authorized service centers. The fitter of the system must fill in the certificate of installation, enclosed to the set box.

The composite devices of the system malfunctioned during the warranty period through the fault of the manufacturer are subject to replacement or repair by the fitter (manufacturer or a company, accomplishing complex maintenance).

The consumer is deprived of the right to the after-sales service in the following cases:

• upon the warranty period expiry;

• in case of the violation of the rules of installation, operation, transportation and storage;

• in case of the presence of the mechanical damages of the external components of the system appeared after the moment of sale, including the fire impact, breakdown, penetration of the aggressive liquids and water, misconduct;

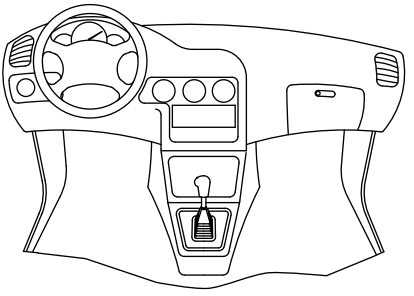
• in case of the presence of the damages caused by improper setting or adjustment;

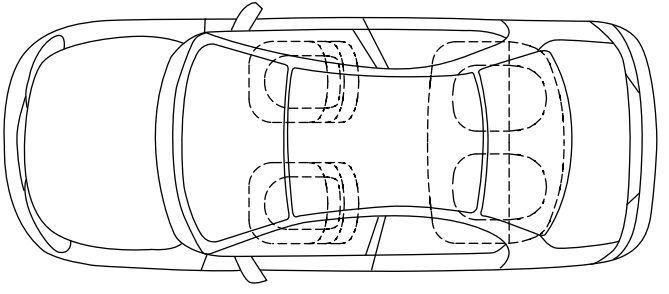
Warranty operation life is 3 years from the date of sale, but not longer than 3,5 years since the moment of manufacture.

This warranty does not apply to the batteries (feeding elements) of remote control units, which have a natural limited service life.

Repair and maintenance of the system with an expired warranty period should be performed for the account of consumer according to the separate agreements between the supplier/fitter and the consumer. Resolutions of the manufacturer (fitter) in respect of the questions, connected with the claims are final. The defective parts which have been replaced are the property of the manufacturer (fitter).

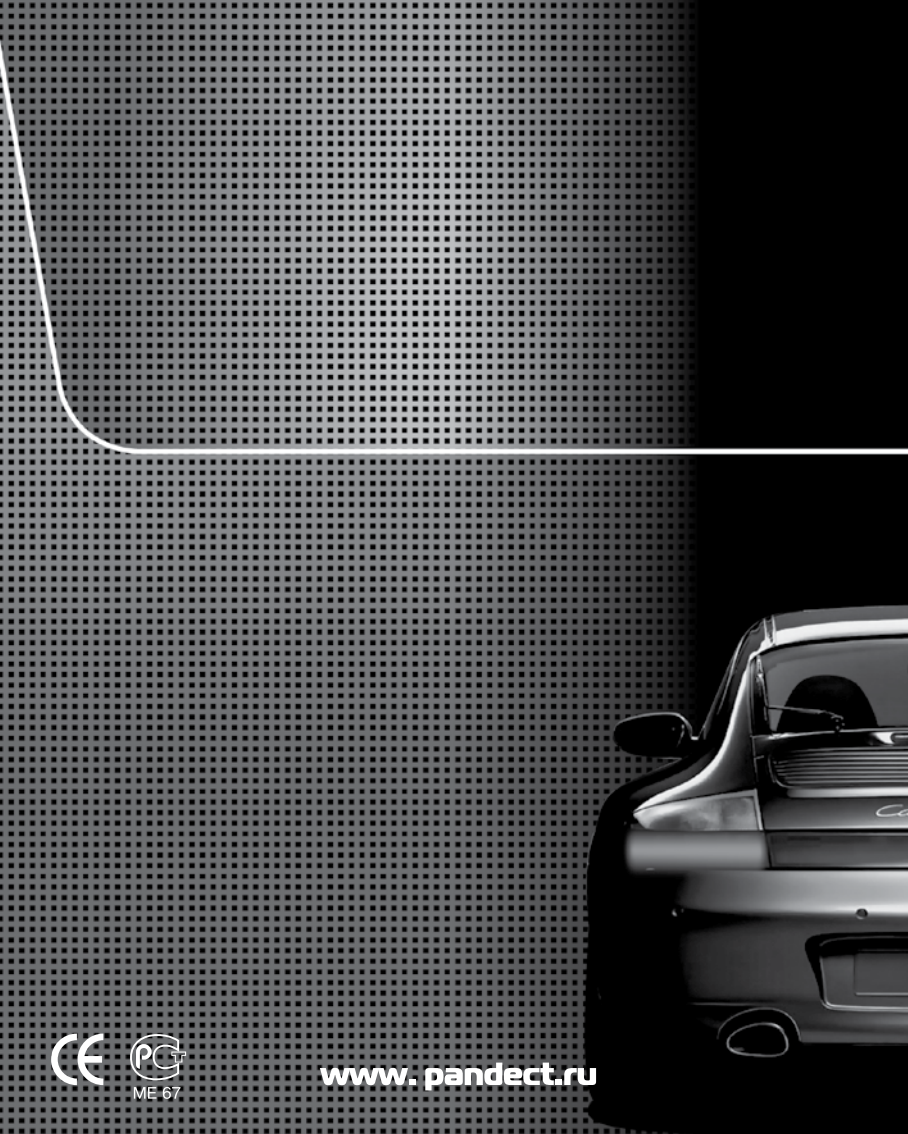
Lockup module location





Fill in this page upon installation. It will later help you find the elements necessary for adjustment.

CAUTION! Keep this manual only outside the vehicle away from a potential carjacker.



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