



automatic
doors



USA

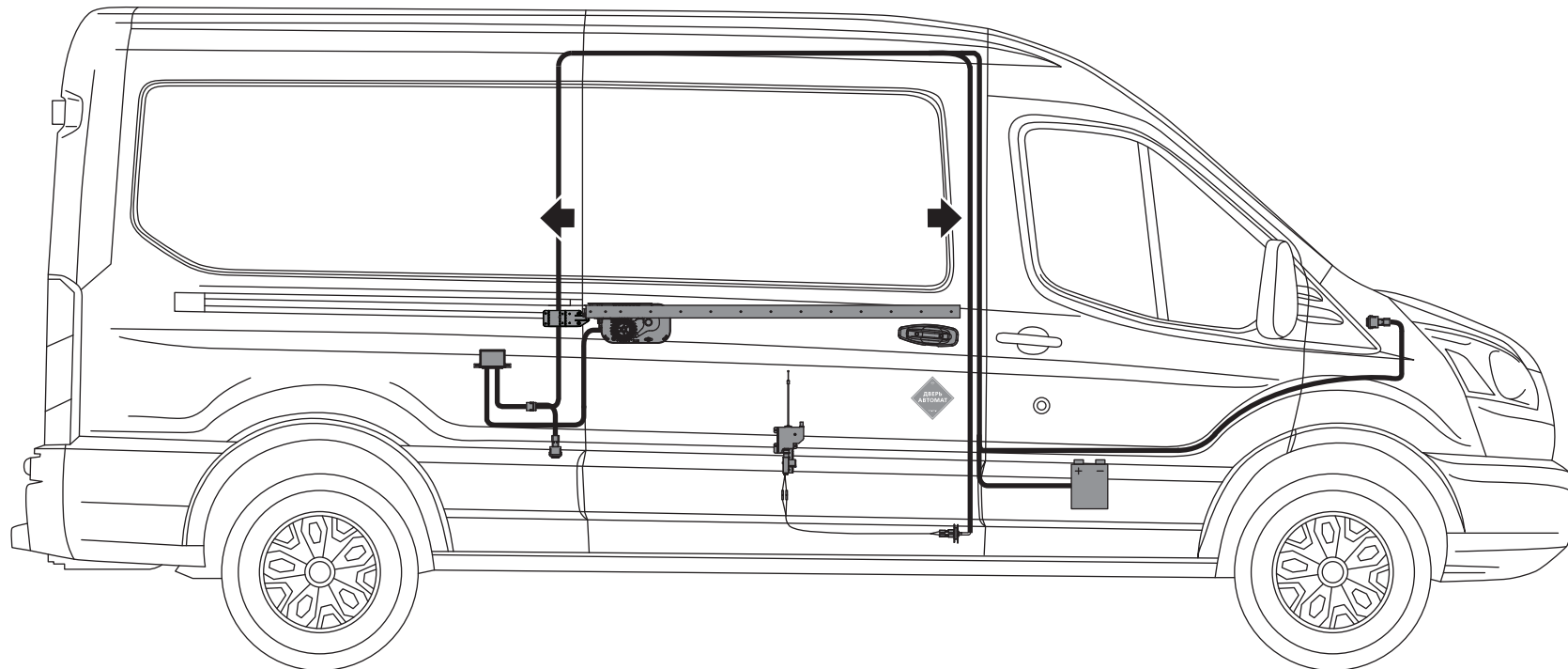


CROCO - Gear Train Door Opener

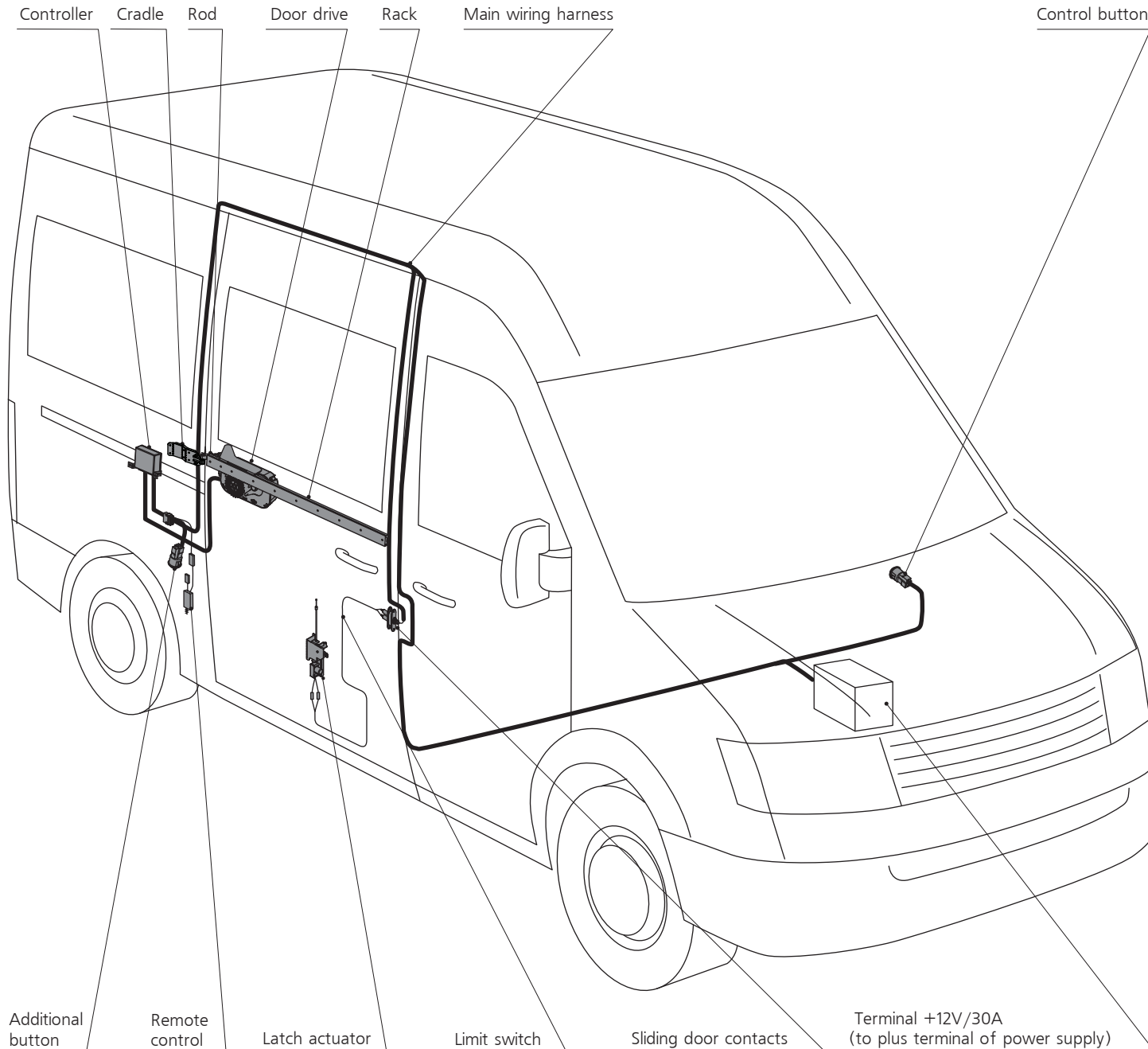
19.03.2020

INSTALLATION MANUAL

FORD TRANSIT 2 < 2019



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This rack-and-pinion drive is designed to open and close sliding door in Ford Transit 2 minibus.

The layout of the units is shown on the base of the universal minibus prototype.



NOTE



This manual describes the installation of the rack-and-pinion drive with the widest range of drive units. If you install the rack-and-pinion drive without latch actuator or remote control then you have to omit the corresponding items of the manual.

SPEC CHARACTERISTICS:

CROCO drive is designed for opening and closing doors in minibuses working as taxi buses.

| | |
|---|-----------------------------|
| Power consumption (rating), watt | 70 Wt |
| Power consumption (max), watt | 250 Wt |
| Door-opening time, sec (it depends upon the opening width adjustment) | 2 s |
| Door-closing time, sec (it depends upon the opening width adjustment) | 2 s |
| Category temperature range, °C | from -25 °C up to +40°C |
| Maximum slop for the door to be closed | 10° |
| Resources | Not less than 150000 cycles |

NOTE

Durability and failure-free operation of Ador's drive depend directly on the quality of installation. That is why installations are performed in the specialized dealership centres of Ador company.

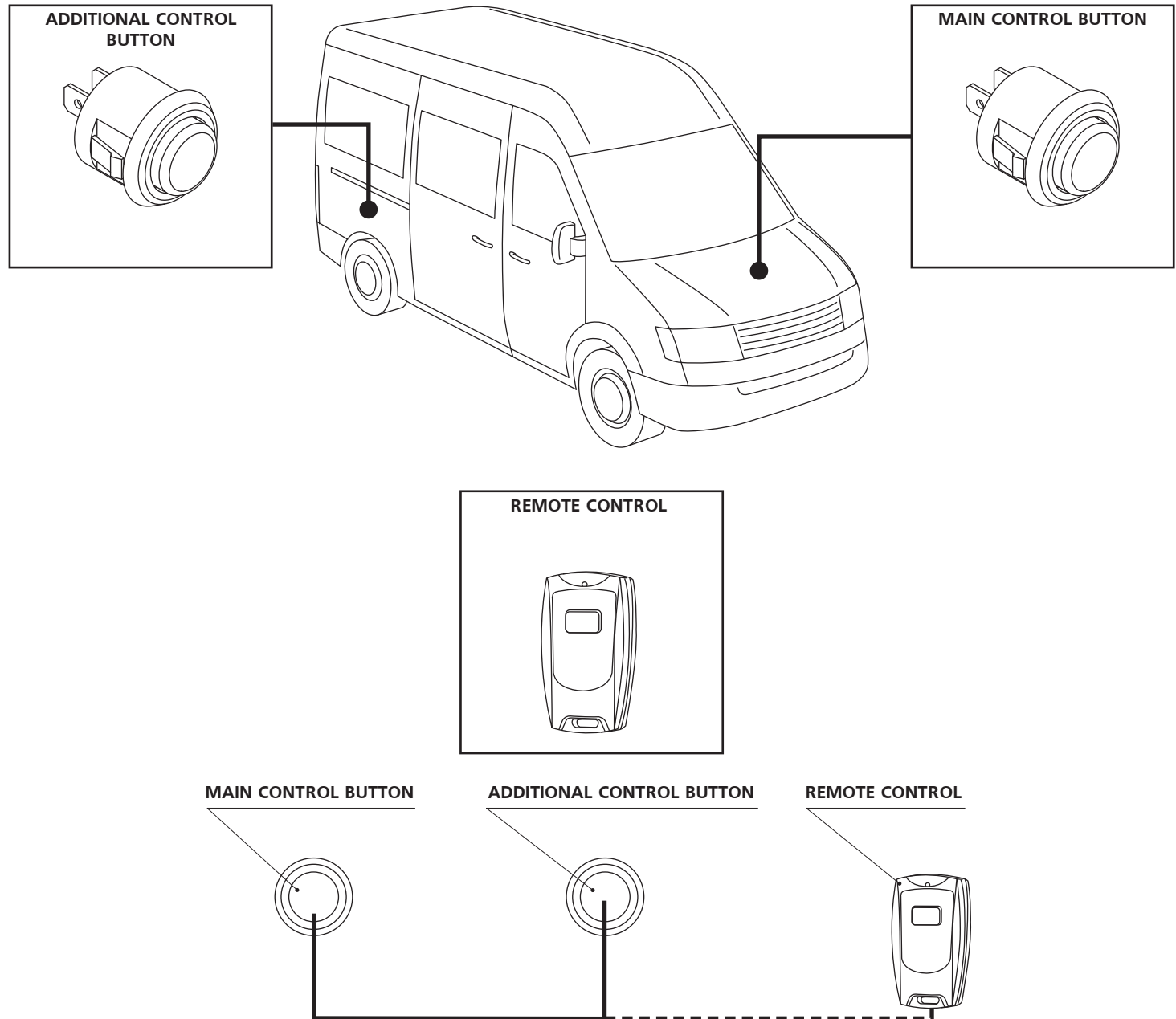
CONTROLS

Ador's drive is an electromechanical device powered from electric battery of a minibus. The drive consists of 2 parts: a latch actuator and a sliding door drive. The latch actuator opens its latch, the sliding door drive opens and closes its door. The drive control is performed with the help of:

- **Control buttons**
These buttons are designed for controlling the door and system adjustment.
- **Remote controle**
It is used for controlling the door.

DRIVE FUNCTIONS:

- **Opening and closing;**
- **Automatic rollback;**
- **Stopping;**
- **Beep;**
- **Operation mode without fixation / with sliding door fixation;**
- **Adjustment of opening width.**



OPERATING SAFETY

Rack-and pinion drive installation is connected with some modification of minibus body. The parts of the body are mainly made of sheet metal that is why there is a great danger of getting injured for the reason of sharp edges appeared after modification, or because of the movable parts of your hand cutting tools. Observe safety regulations while installing the drive, provide adequate clearance inside the bus. Arrange all the units and tools before assemblage, remove unnecessary things

Failure-free operation and drive durability depend upon your observance of the installation instructions and also upon the correct positional relationship of the units and components. All the surfaces should be thoroughly marked before making mounting holes. Inspect the positional relationship of the units and components. Having fixed the unit, check up its location.

The drive is an electromechanical device thus one must observe electricity safety rules. Keep contacts clean, failure-free operation and reliability depend on it.

LIST OF TOOLS

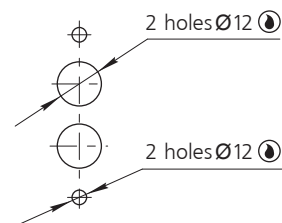
| | |
|---|-------|
| Clip remover..... | 1 |
| Set of interchangeable heads from 10mm up to 17mm..... | 1 set |
| Riveter..... | 1 |
| Riveter for blind rivet nuts GESIPA, GBM10..... | 1 |
| Center punch..... | 1 |
| Spanner wrenches..... | 1 set |
| Metal ruler..... | 1 |
| Hammer..... | 1 |
| Set of Allen keys..... | 1 |
| Set of star screwdrivers..... | 1 |
| Knife..... | 1 |
| Blade screwdriver..... | 1 |
| Cross-slotted screwdriver..... | 1 |
| Combination pliers..... | 1 |
| Wire..... | 3 m |
| Drills 2,5; 3,2; 5; 6,5; 9..... | 1 |
| Taper drill from 4mm up to 24mm..... | 1 |
| Ratchet..... | 1 |
| Electrical socket extender..... | 1 |

| | |
|------------------------|----|
| Torch..... | 1 |
| Sliding calipers..... | 1 |
| Power drill..... | 1 |
| Hacksaw..... | 1 |
| Multimeter..... | 1 |
| Cutting nippers..... | 1 |
| Rivet nut..... | 15 |
| Industrial spirit..... | 1 |

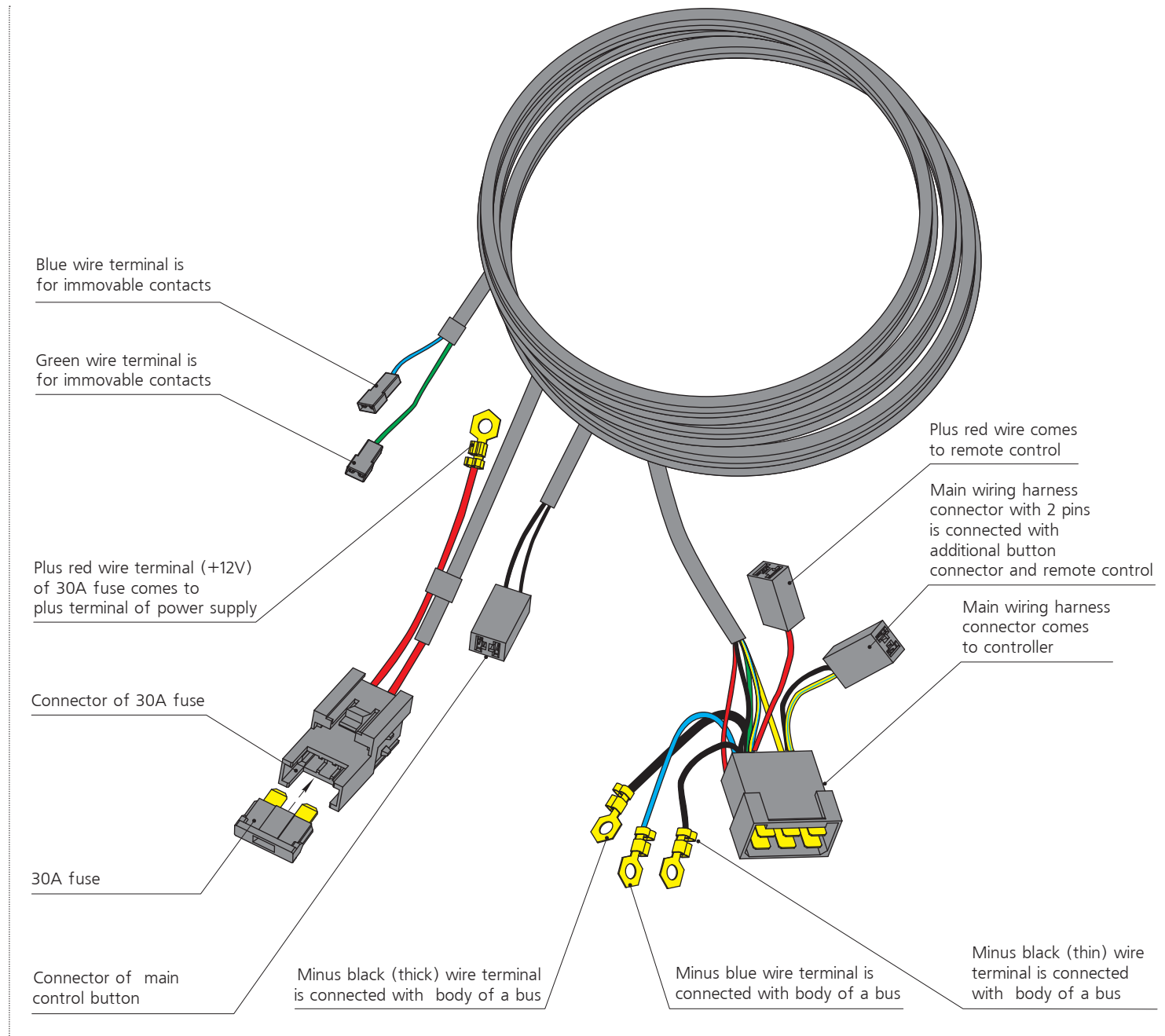
There may appear some edge fin after making holes, finally it leads to the damage of the paint coat. There are symbolic notations on the places where some treatment is required:

- ☹ - Remove edge fin;
- ☹ - Unedge;
- ☹ - Treat with acid-free antirust liquid.

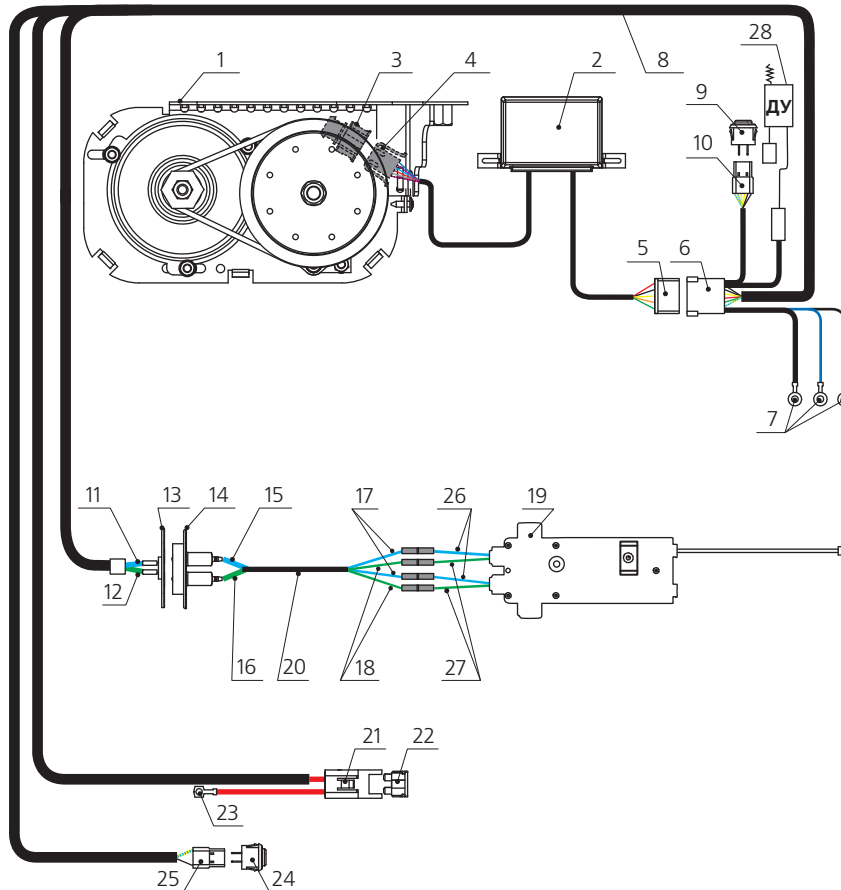
For example, the indicated holes must be treated with antirust liquid.



2.1 MAIN WIRING HARNESS



2.2 CONNECTION DIAGRAM FOR RACK-AND-PINION DRIVE



1. Rack-and-pinion drive
2. Controller
3. Drive connector (black, red, gray-black, blue-black, gray-white, white-red)
4. Connector of controller wiring harness (black, red, gray-black, blue-black, gray-white)
5. Connector of controller wiring harness (red, black, green, yellow-blue, yellow)
6. Connector of main wiring harness (green, red, blue, black (thick), black (thin), yellow-blue)
7. Minus wire terminals (black (thick), black (thin), blue) are connected with body of a bus.
8. Main wiring harness
9. Additional button
10. Connector of additional button (black, yellow-blue)
11. Blue wire terminal of main wiring harness comes to immovable contacts.
12. Green wire terminal of main wiring harness comes to immovable contacts.
13. Immovable contacts
14. Movable contacts
15. Blue wire terminal of actuator wiring harness comes to movable contacts.
16. Green wire terminal of actuator wiring harness comes to movable contacts.
17. Blue wire terminal of actuator wiring harness
18. Green wire terminal of actuator wiring harness
19. Latch actuator
20. Wiring harness of actuator
21. Red wire connector of 30A fuse
22. 30A fuse
23. Plus red wire terminal (+12V) comes to plus terminal of power supply
24. Main control button
25. Main control button connector (black, yellow-blue)
26. Blue wire terminal of actuator
27. Green wire terminal of actuator
28. Remote control

2.3 MAIN WIRING HARNESS LAYOUT

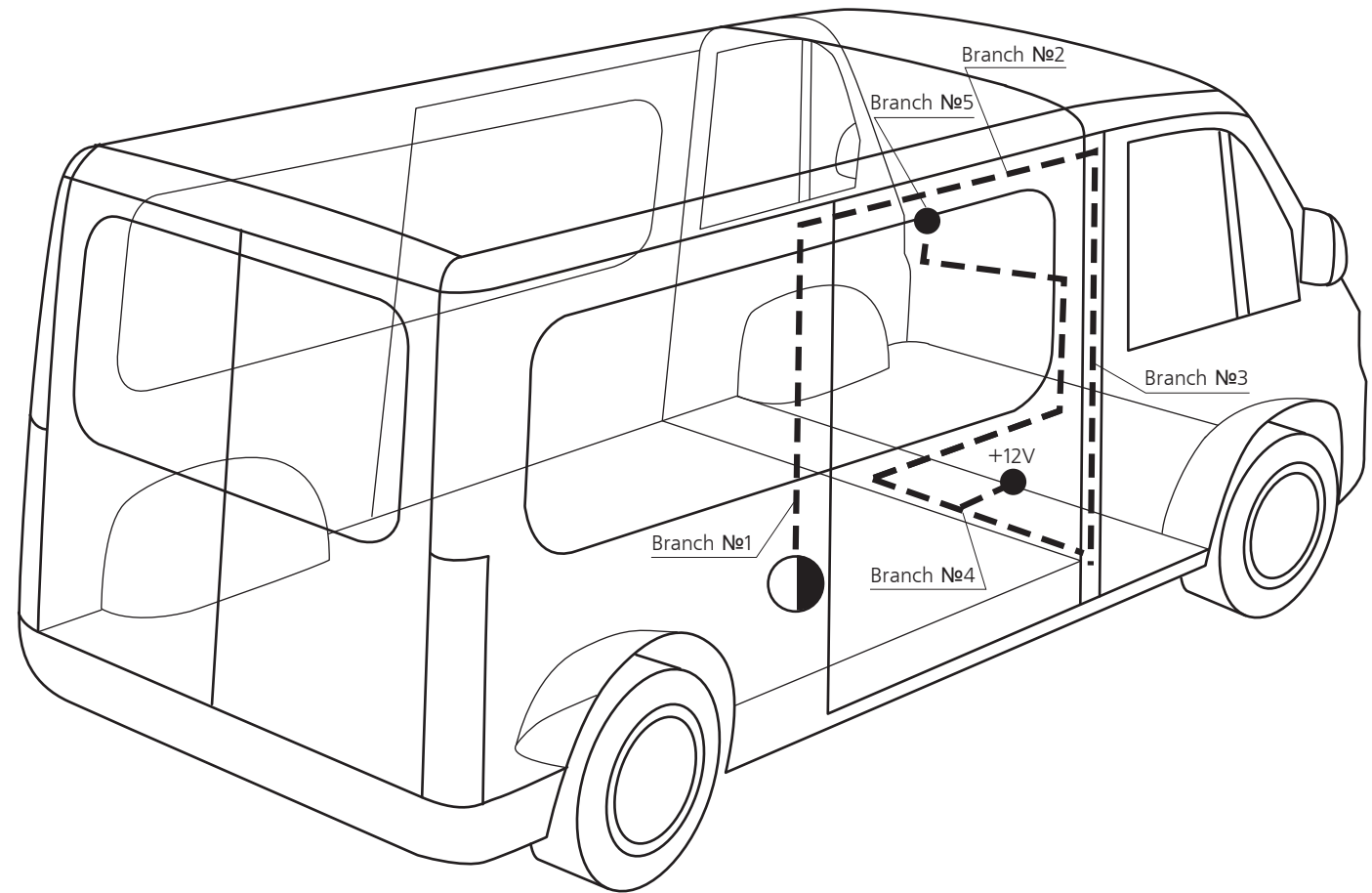
⚠ NOTE ⚠

All wires must be protected and firmly attached to avoid any breakage, abrasion or chafing.

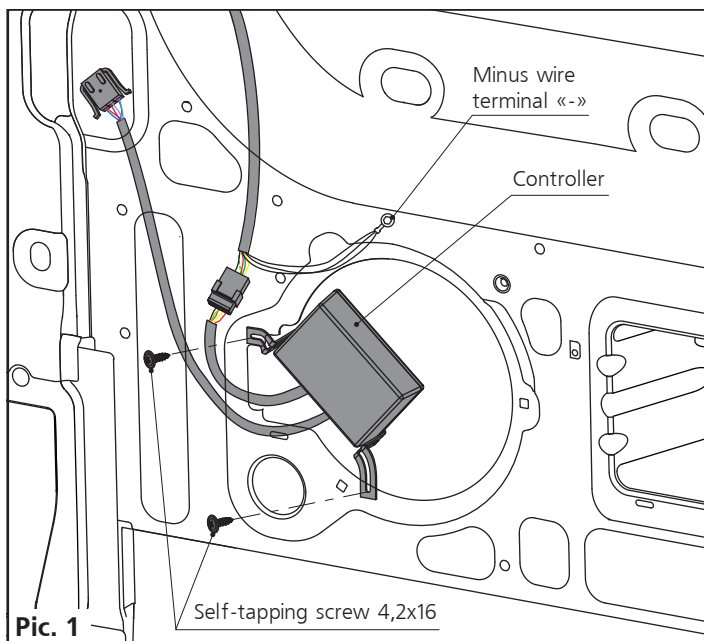
Remove shown connectors from the main wiring harness before laying. Install them again after laying, if necessary put some marks.

Main wiring harness is located inside the cavities.

Main wiring harness is recommended to be laid as shown in picture 1 starting with line №1.



Pic. 1

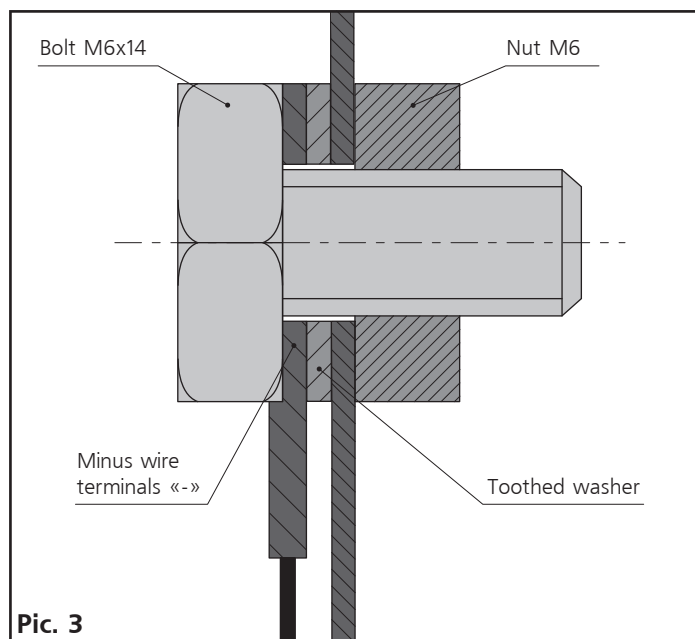
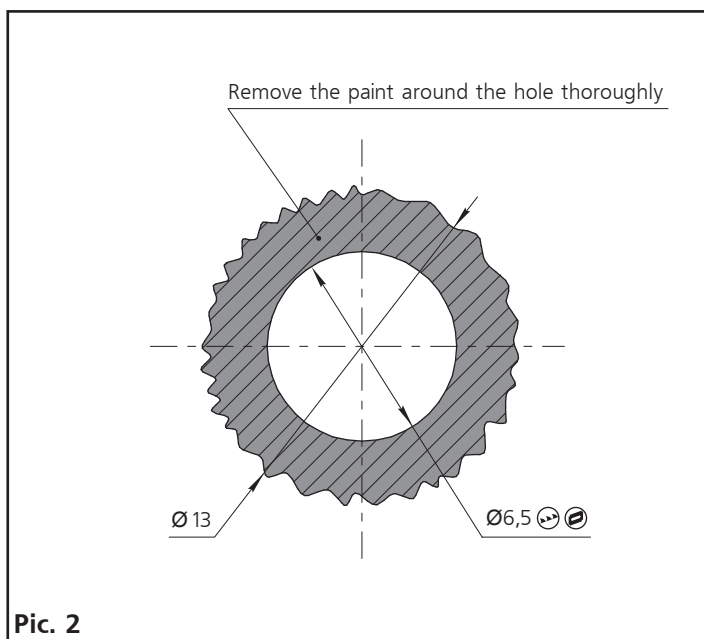


Install a controller in the side recess of the sliding door and fix it with 2 self-tapping screws 4,6x16 as shown in picture 1.

Make a hole $\varnothing 6,5\text{mm}$ on the inner side near the controller (picture 1) for mounting minus wire terminal.

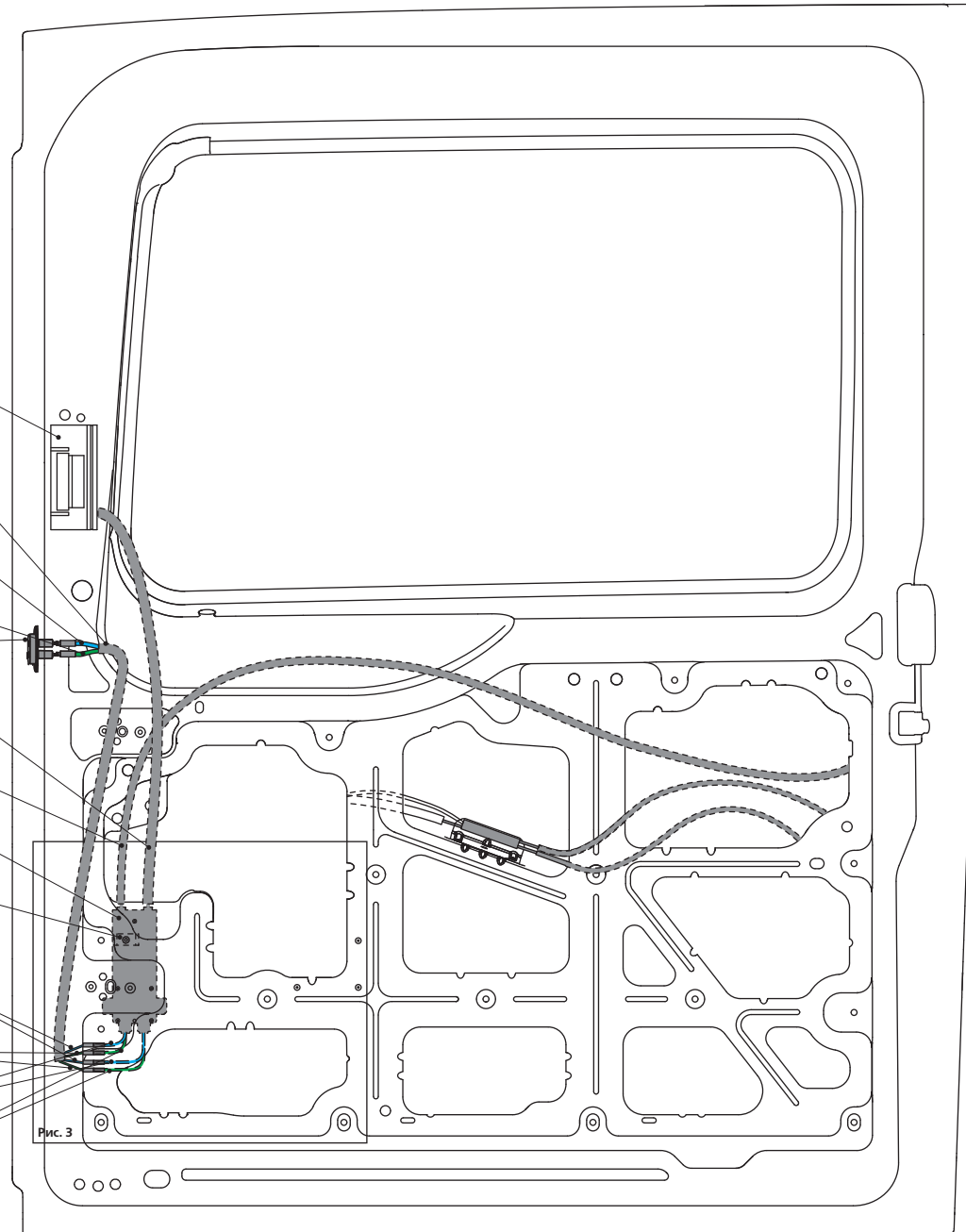
Remove the paint around the hole thoroughly in order to make a good contact (picture 2).

Use bolt M6x14, toothed washer and nut M6 to fix minus wire terminal «-» (pic. 3). After tightening bolt M6 coat the damaged area with antirust liquid.

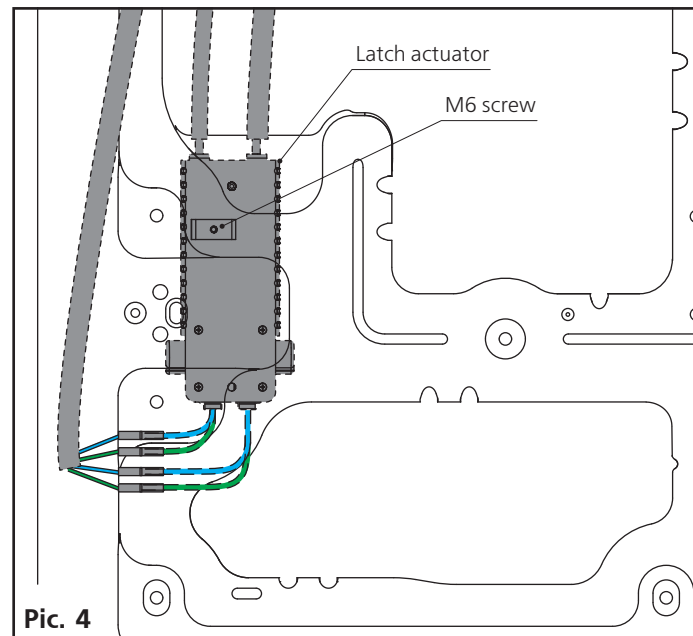
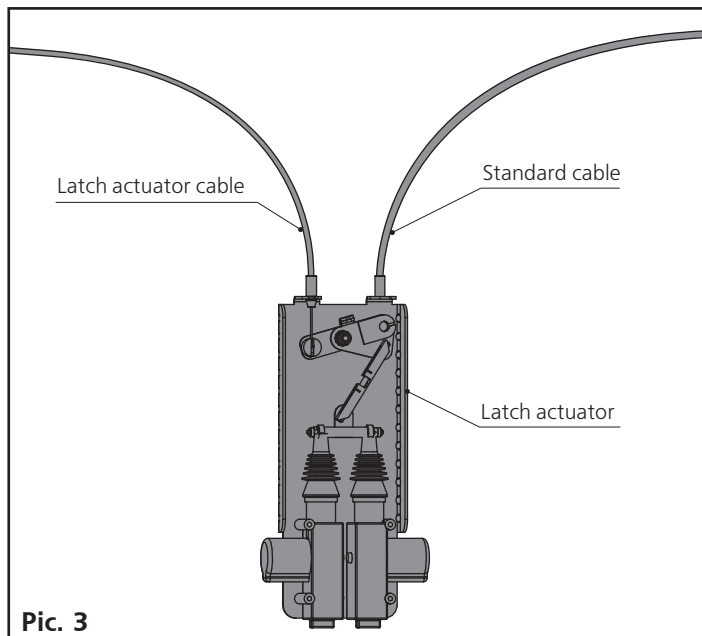
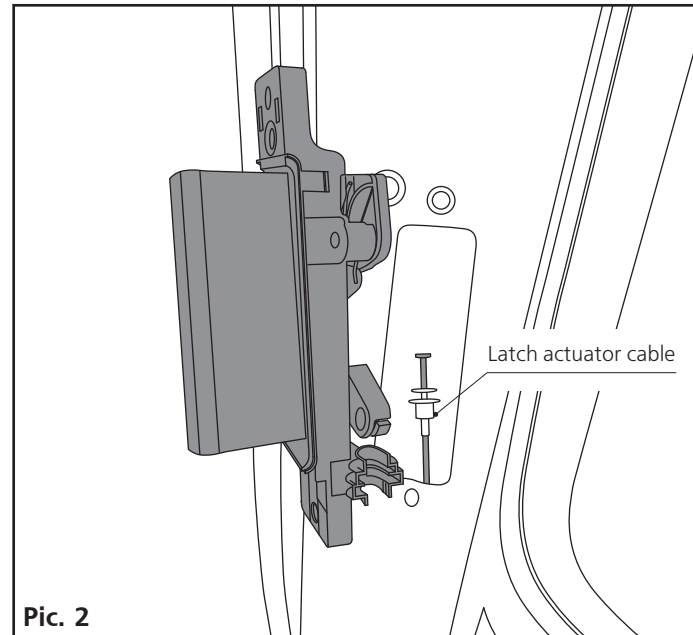
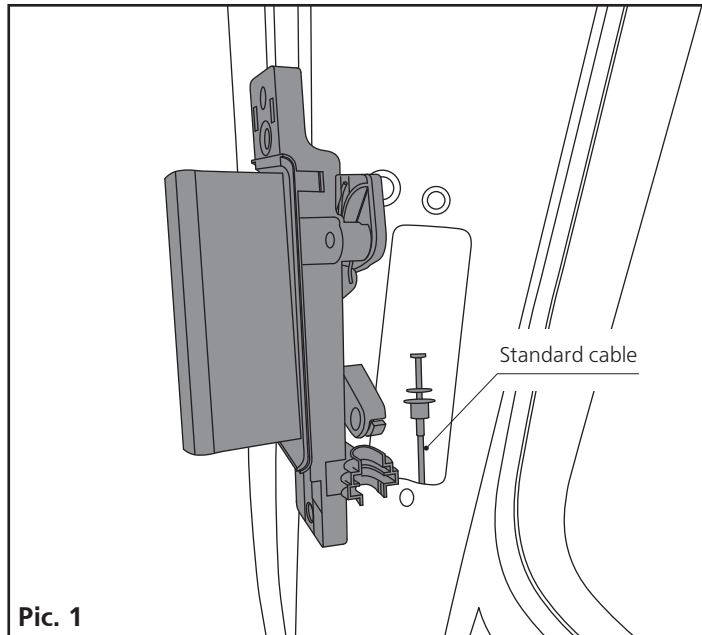


1. Latch actuator is located inside a door (picture 1).

- Inner handle
- Actuator wiring harness
- Blue wire of actuator wiring harness
- Green wire of actuator wiring harness
- Movable contacts
- Latch actuator cable
- Standard cable
- Latch actuator
- Attaching point of latch actuator
- Blue wire of actuator wiring harness
- Green wire of actuator wiring harness
- Blue wire of actuator
- Green wire of actuator



Pic. 1



2. Dismantle the inner handle and disconnect it from the standard cable of the latch actuator (picture 1).
3. Connect the latch actuator cable with the inner handle and put it back to its location (picture 2).
4. Connect the standard cable with the latch actuator (picture 3).
5. Make a hole (\varnothing 6,5 mm) in the place suitable for latch actuator mounting. Insert the latch actuator into the door recess, fix it with M6 screw (picture 4).
6. Connect the latch actuator according to picture 4 and picture 1 on page 11.

**NOTE**

Arrange the standard cable with the smallest possible number of windings (picture 1 on page 11).

MOVABLE CONTACTS

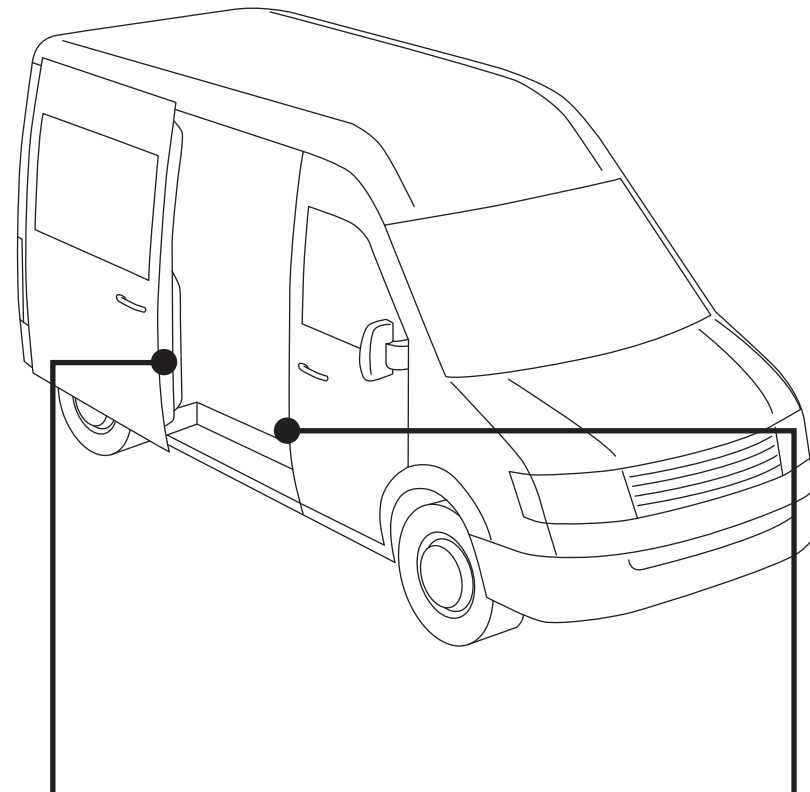
Movable contacts are located on the front mounting face of the sliding door (pic. 1).

1. Make holes according to your marking (pic.1).
2. Connect actuator wiring harness to movable contacts (blue wire to upper contact, green wire to lower contact (pic. 1 page 11).
3. Fix movable contacts using self-tapping screws.

IMMOVABLE CONTACTS

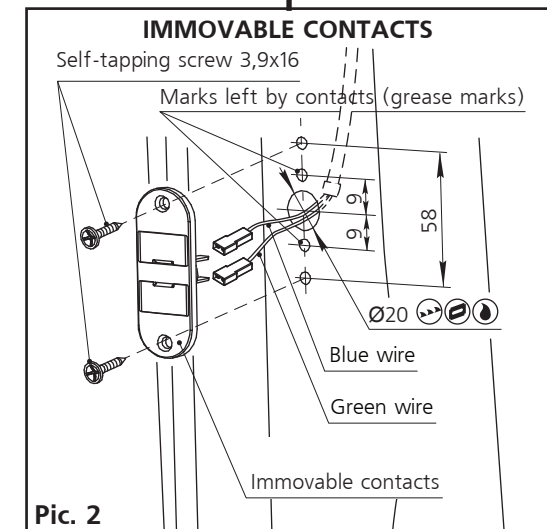
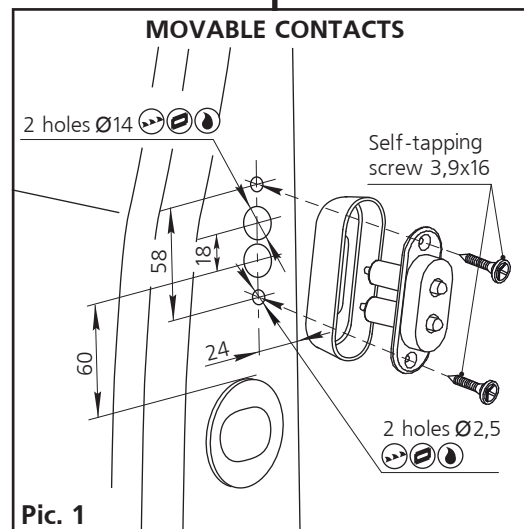
Immovable contacts are located on the front doorway pillar (pic.2).

1. Put some motor grease on the tips of the movable contacts.
2. Close and open the door.
3. Using grease marks left on the doorway pillar, make some marking and then make holes (pic. 2)
4. After mounting the main wiring harness connect blue wire to the upper contact and green wire to the lower contact. Fix immovable contacts on the doorway pillar using self-tapping screws (pic. 2).

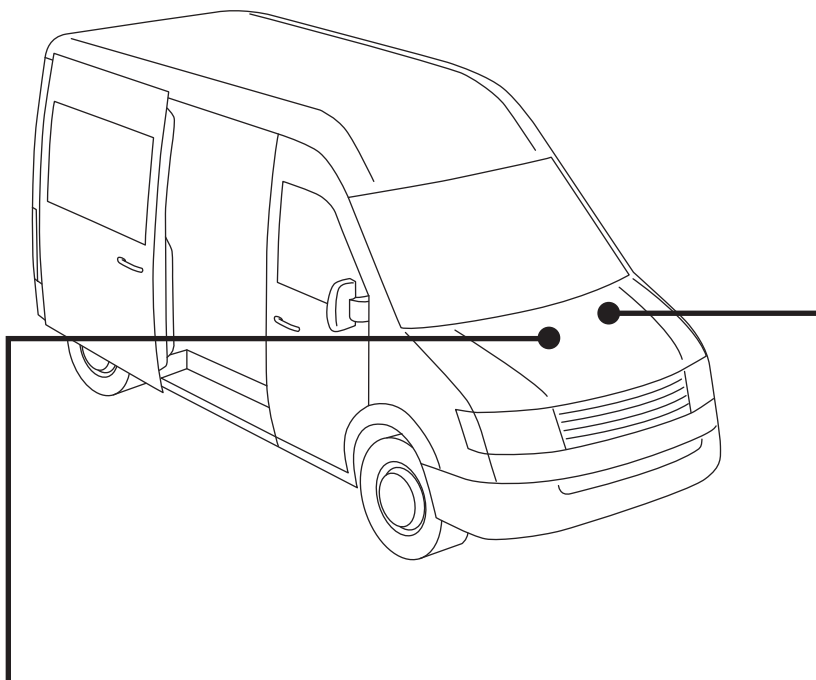


NOTE

The movable and immovable parts of the limit switch are located in such a way that inscription «Autodoor» must be on top.



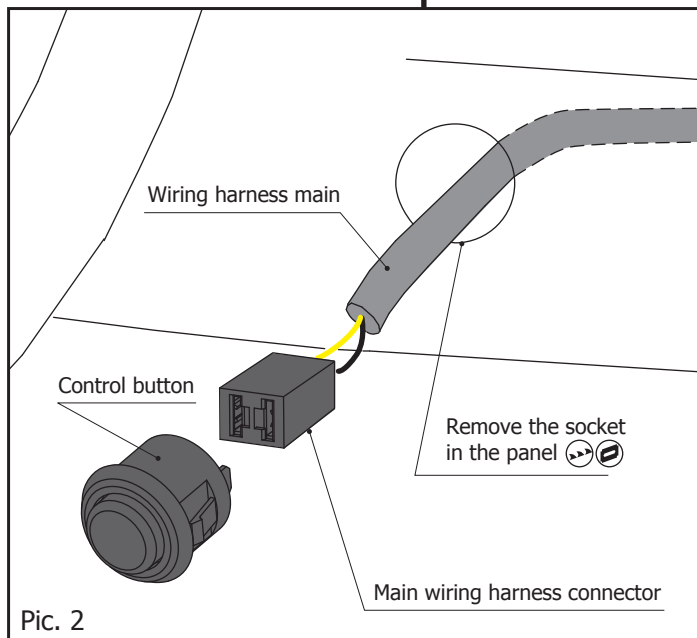
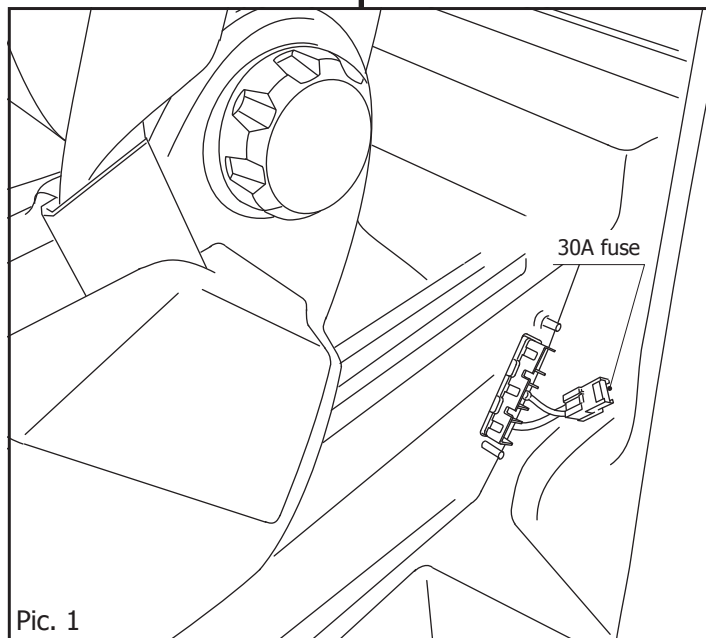
2.7 POSITIVE WIRE CONNECTION TO POWER SUPPLY AND CONTROL BUTTON INSTALLATION



⚠ NOTE ⚠
 Remove a fuse from the connector before positive wire connection.

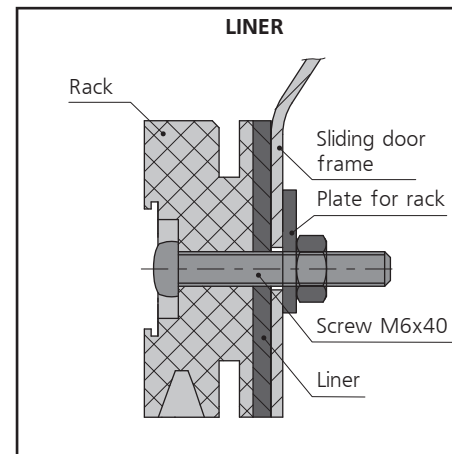
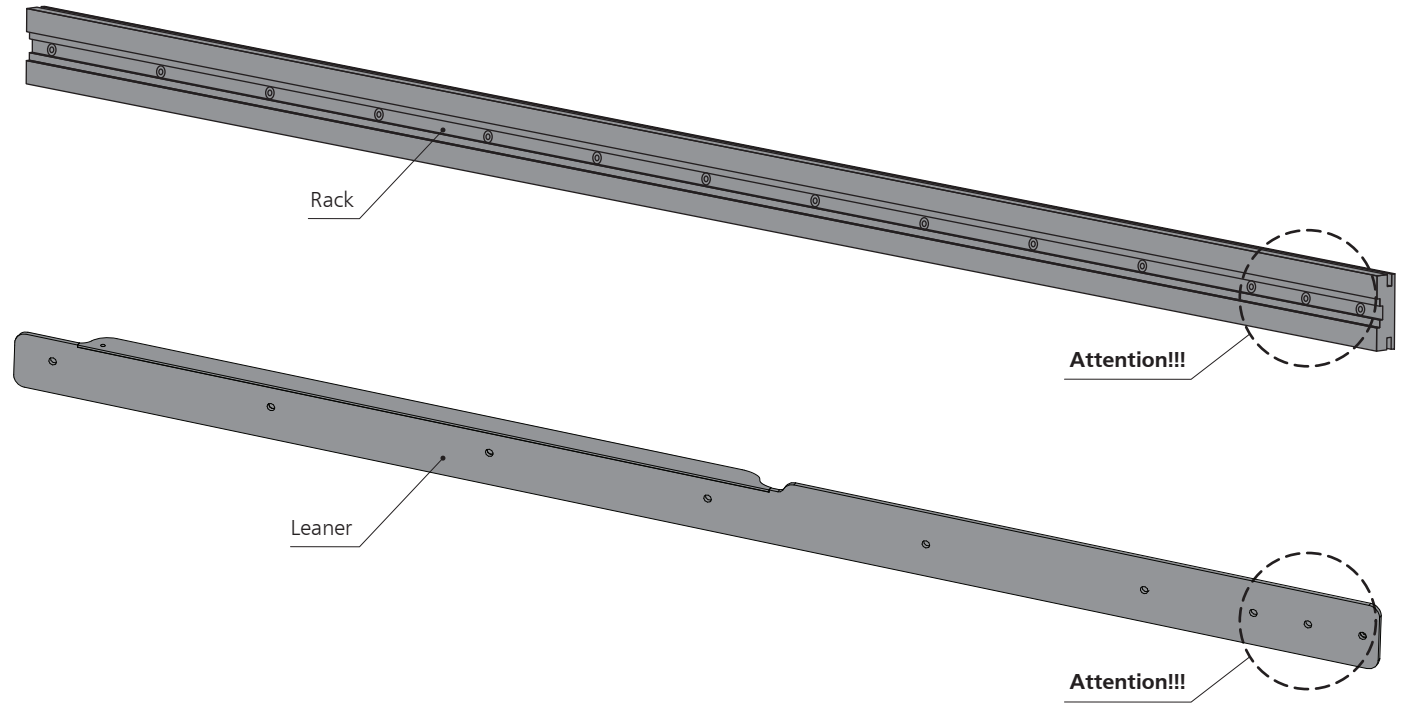
Connect plus wire terminal with any battery terminal of the minibus using nut M6. The battery terminal is located in the lower side part of the driver's seat (pic. 1).

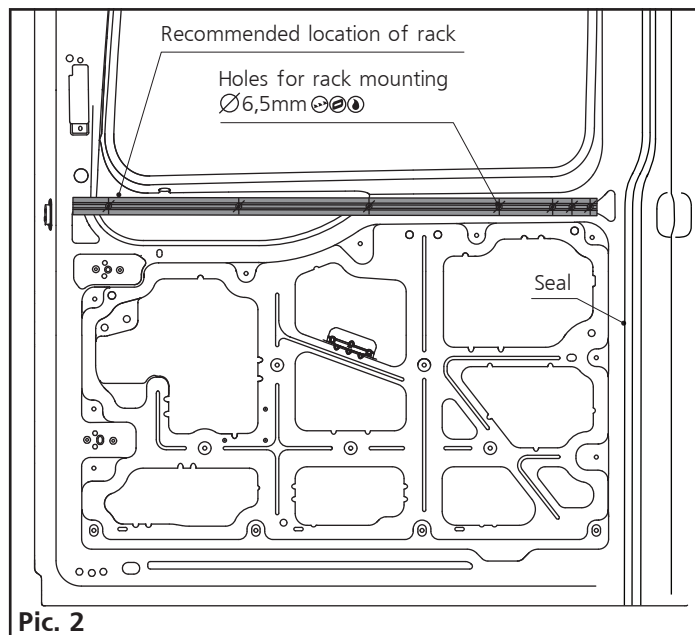
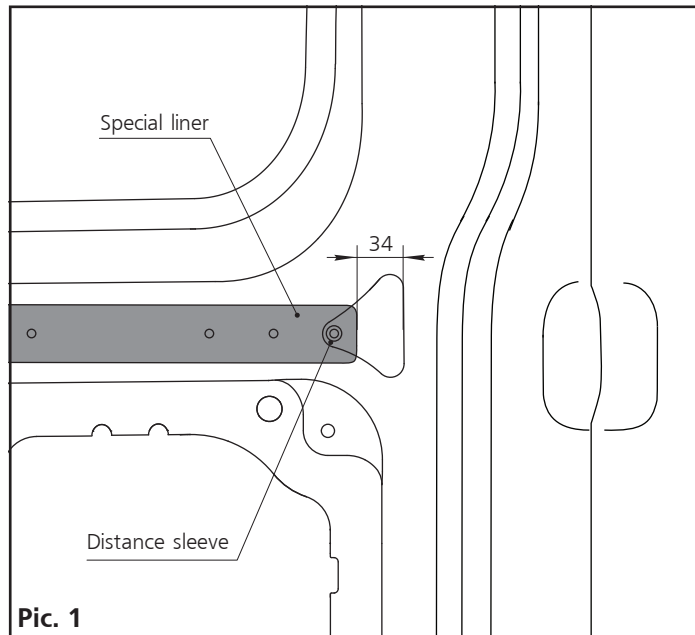
Make a hole (Ø23 mm) in a suitable place on the gage panel for mounting a control button. Remove edge fins and unedge. Insert the control button into a hole after connecting it to the main wiring harness connector (pic. 2).



3.1 RACK MOUNTING

It is recommended to install a rack with maximum length using some special liners.





This page shows recommended location of the rack, the place where it is installed on the interior panel of the sliding door.

Close the door, remove door upholstery.

Attach special liner to the recommended place of rack mounting as shown in pic.1.

Pay attention that distance sleeve on the rear part of the liner should be located in the front part of the extruded area of the interior panel.

Using liner mark centres of the mounting holes.

Using marks make holes $\text{Ø}6,5\text{mm}$. Fix the rack with liner on the door with the help of plates and screws.



NOTE



It is necessary to use a plate for rack in order to avoid metal rupture (option). It is installed under four rear mounting holes of the rack.

3.2 CRADLE MOUNTING

Remove door seal in the place used for cradle mounting. (pic. 1).

Attach cradle tightly to pillar. Mark centres of the mounting holes (pic. 2). Pay attention that there is a distance of 7 – 8 mm between cradle plane B and rack plane A (pic. 3).

NOTE

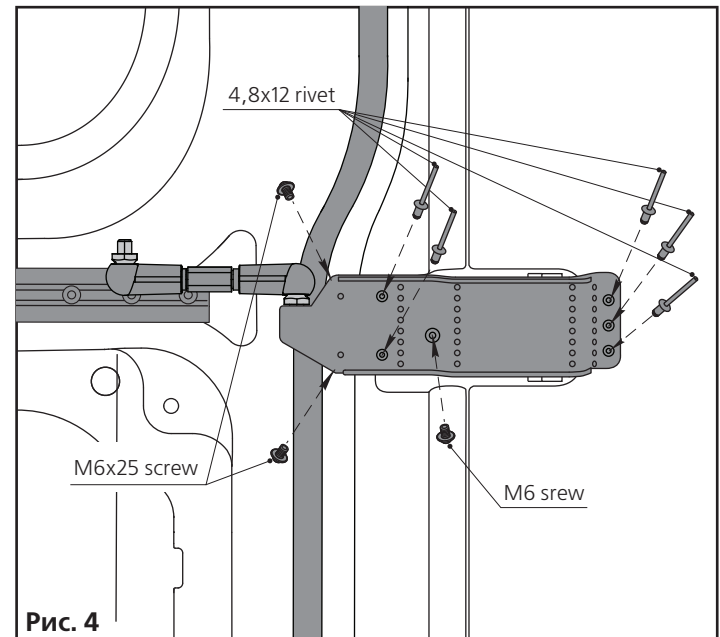
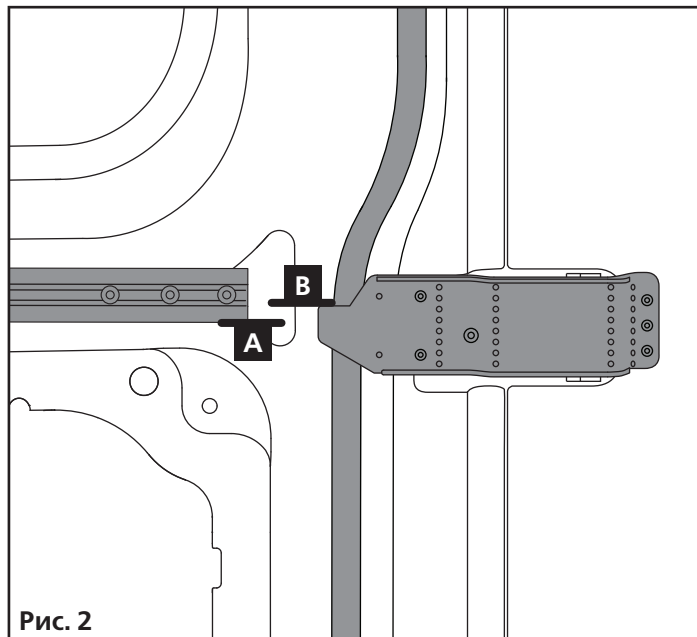
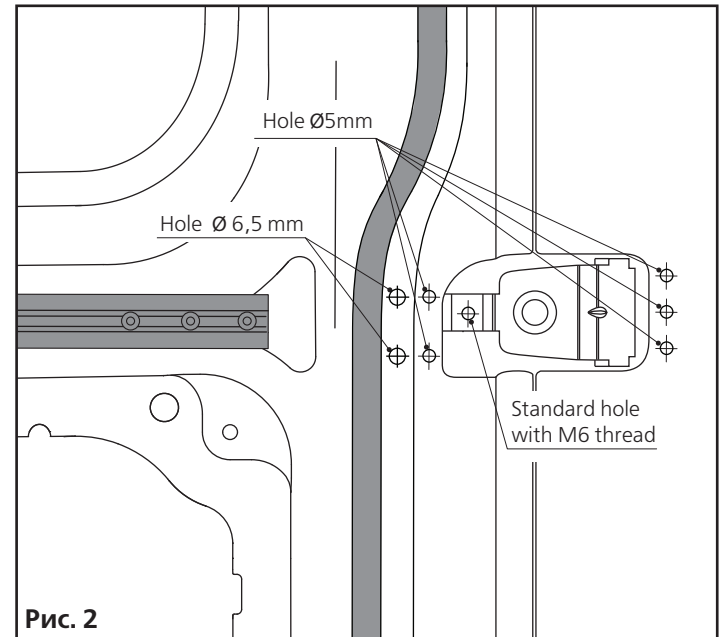
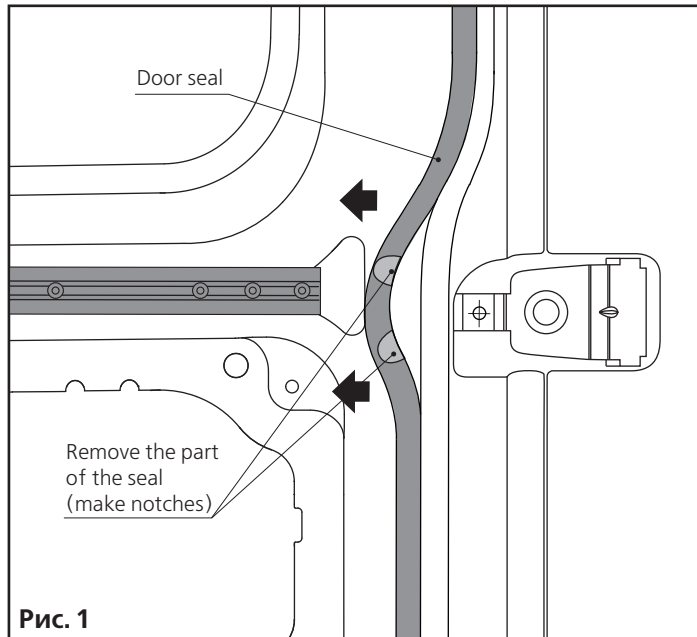
Cradle of Ford > 2019 is positioned according to the standard hole with M6 thread and additionally attached to the bracket with M6 screw.

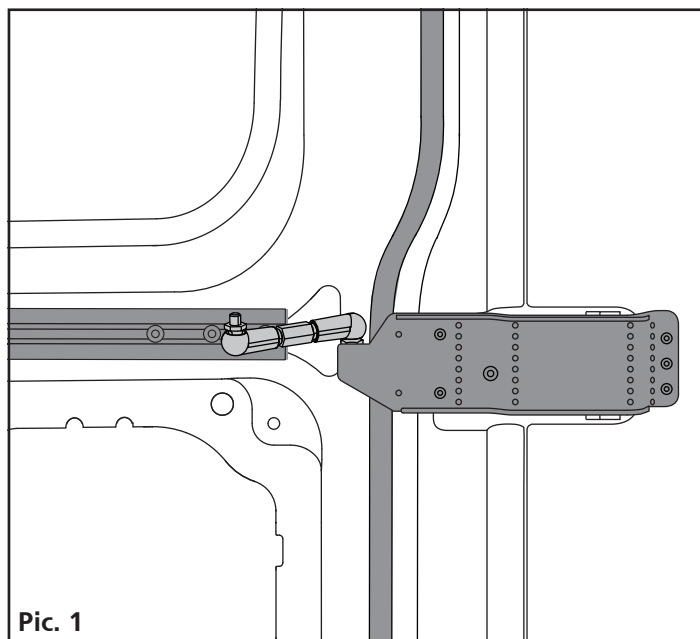
Make 2 holes $\varnothing 6,5\text{mm}$ and 5 holes $\varnothing 5\text{ mm}$ according to marking (pic. 2).

Use screws M6x25 to fix the cradle at first, then use rivets 4,8x12 (pic. 4).

Make 2 notches on the inner side of the seal to include distance sleeves of the cradle (pic. 1).

Remount seal (pic. 4).





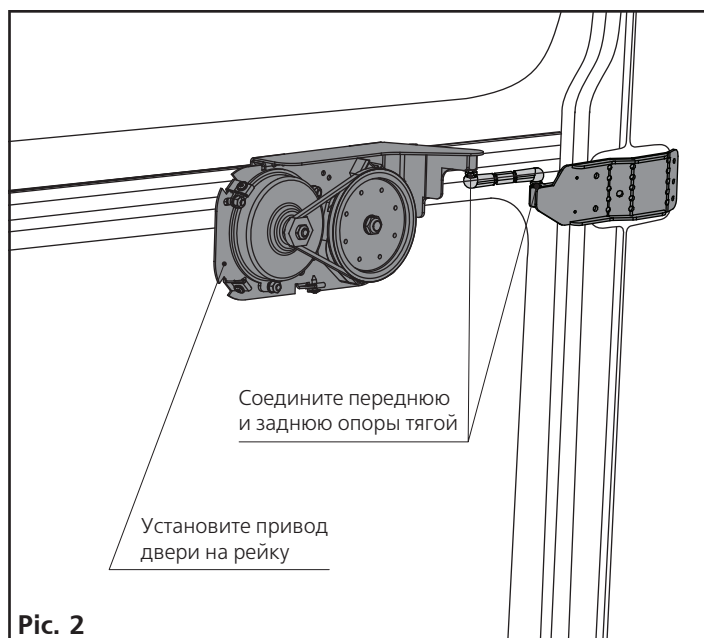
Pic. 1

Close the door manually.

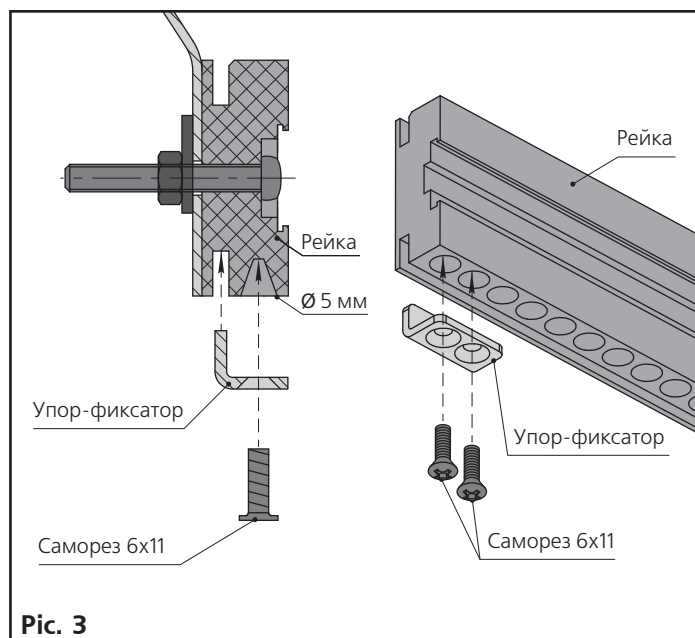
Make sure that cradle and rod parts do not hinder the door from closing.

Install the rack-and-pinion drive on the rack (pic.2). Attach the rod to the rack-and-pinion drive.

Make two holes $\varnothing 5$ mm in the front part of the rack, install a stop here.



Pic. 2



Pic. 3

Clean slots of the rack (pic. 2).

Connect the drive to the controller.

Insert 30A fuse into its connector. The controller gives a long beep.

Start the car engine.

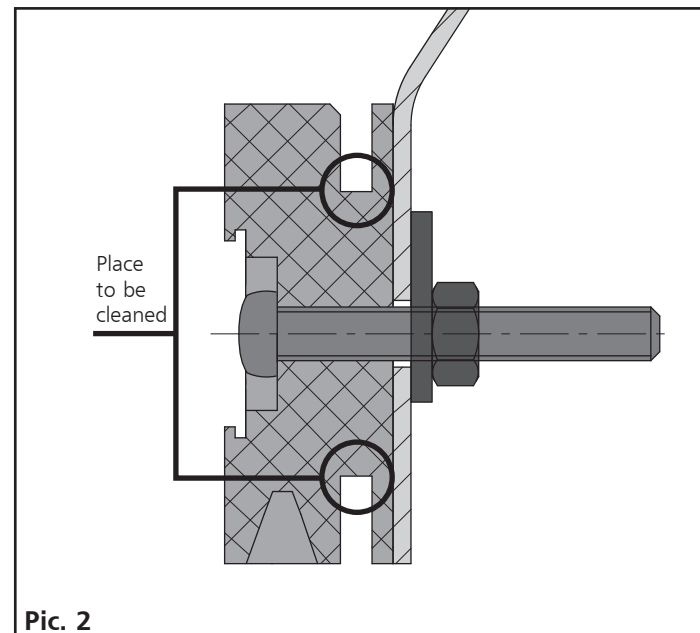
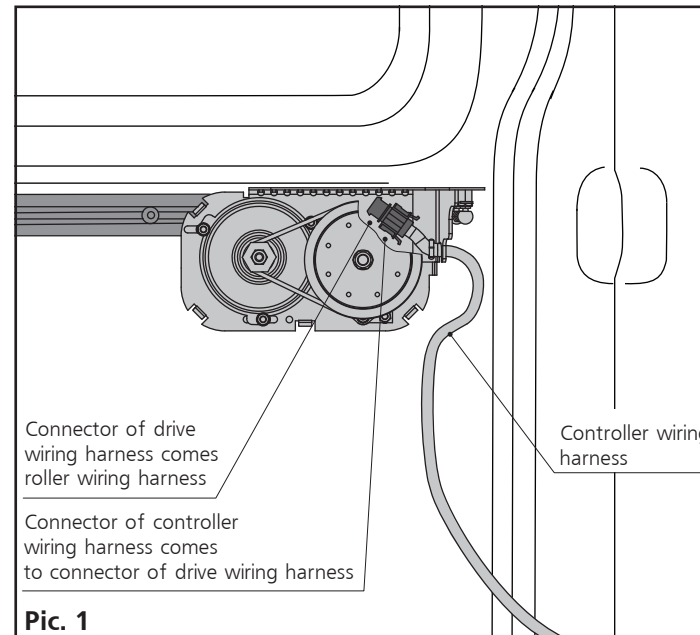
Push control button. The drive will close the door and the controller will be beeping for 1-2 sec. Then start opening. The drive will open the door and reach a stop slowly. Then the drive will start operating in a normal mode.

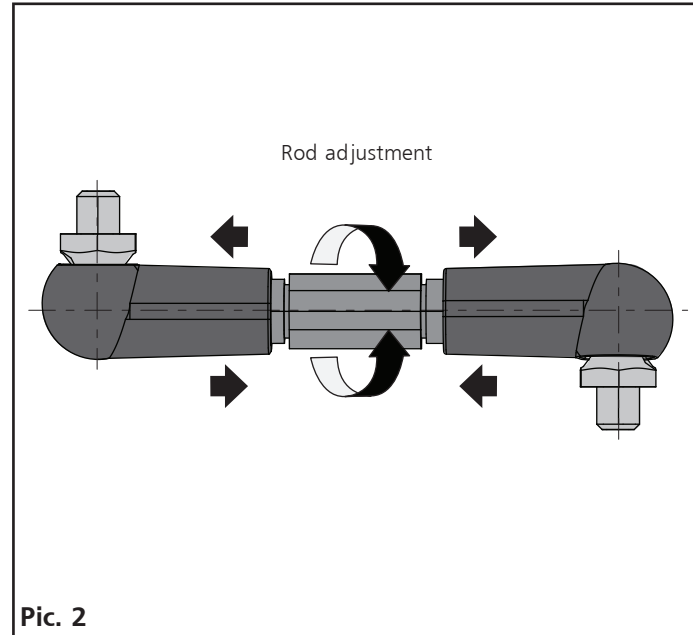
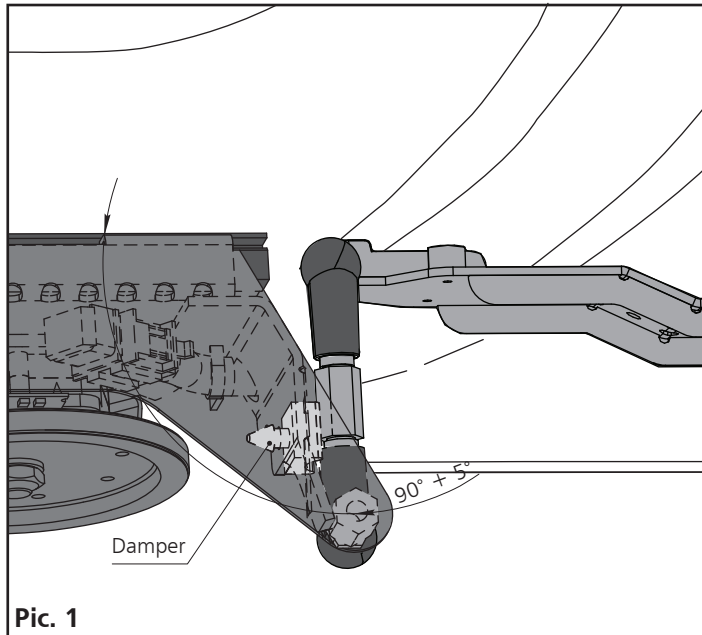


NOTE



If you need to disassemble the drive or disconnect the controller, remove 30A fuse from its connector at first.



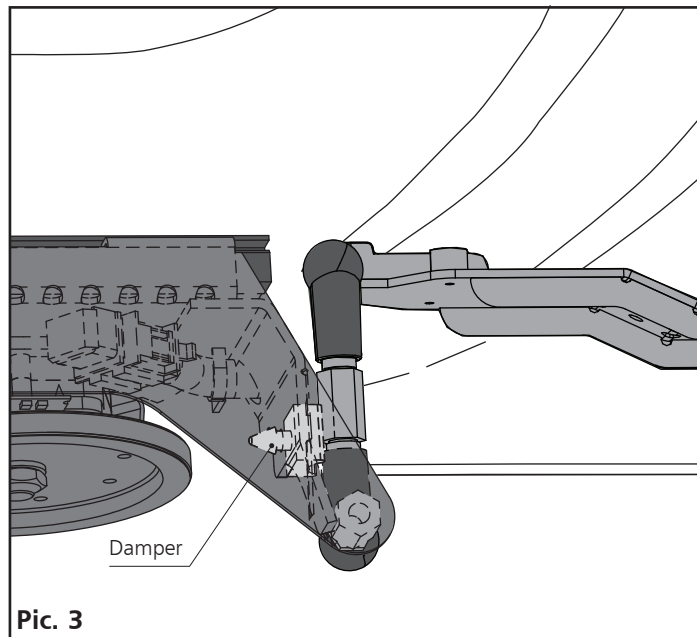


ROD ADJUSTMENT

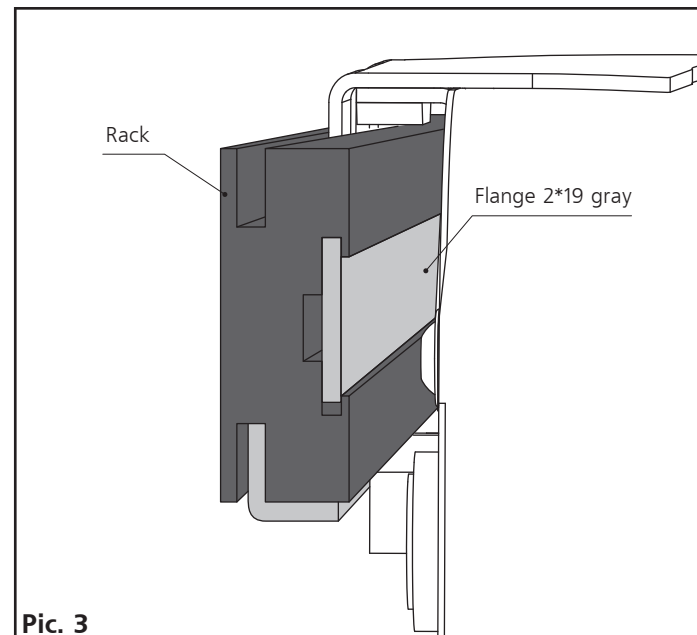
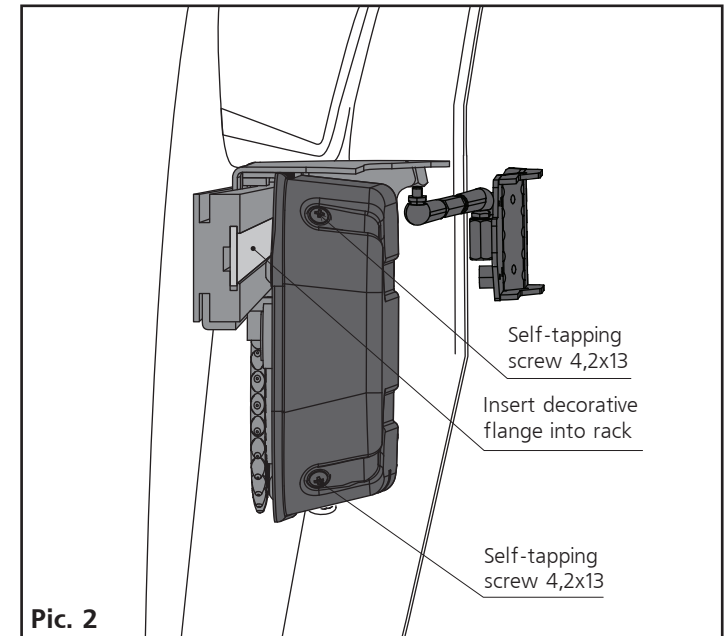
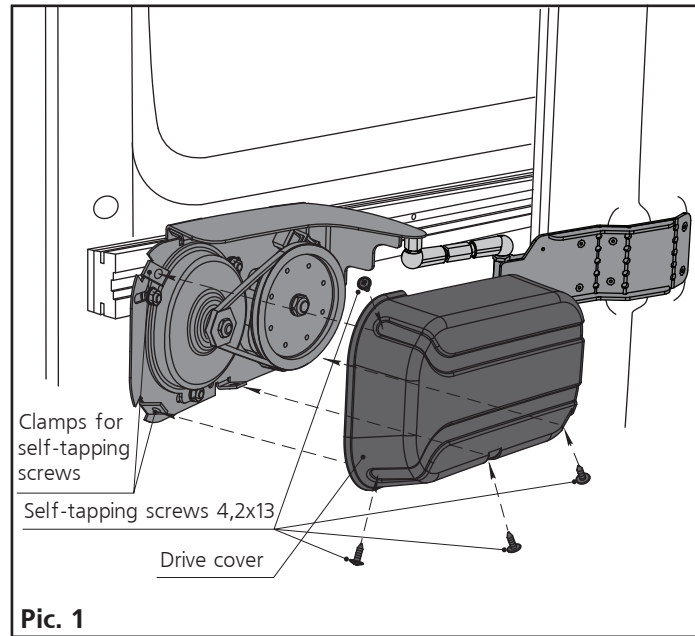
The rod position, when the door is normally closed, is shown in the picture 1.

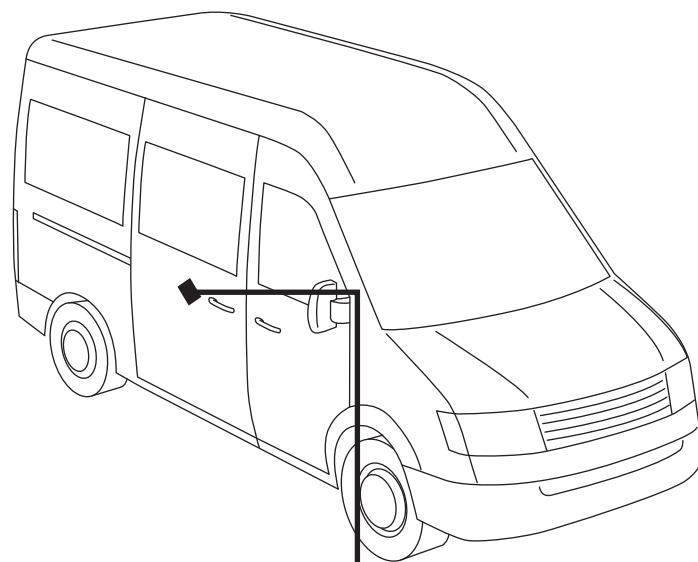
Rotate stud using a hex nut (pic. 2). Adjust rod length for the door to be closed tightly.

When the rod is installed correctly, it should touch a damper on the carriage (pic. 3).



1. Fix a drive cover with four self-tapping screws 4,2x13 (pic.1).
2. Insert flange accurately into the rack as it is shown in pictures 2 and 3.
3. Cut off unnecessary part of flange according to the rack (pic. 2 and 3).

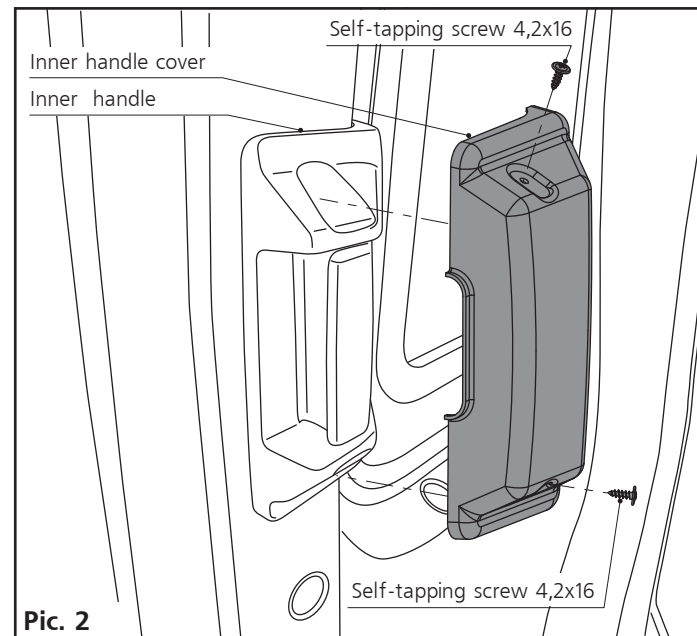
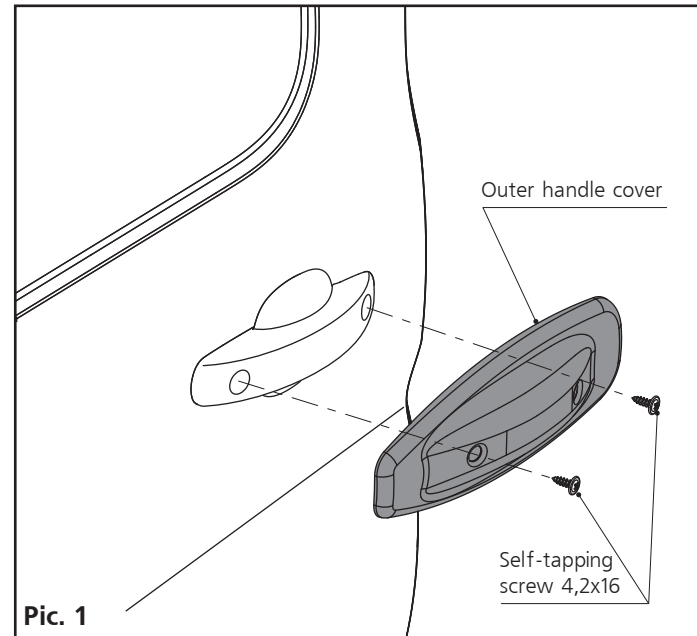


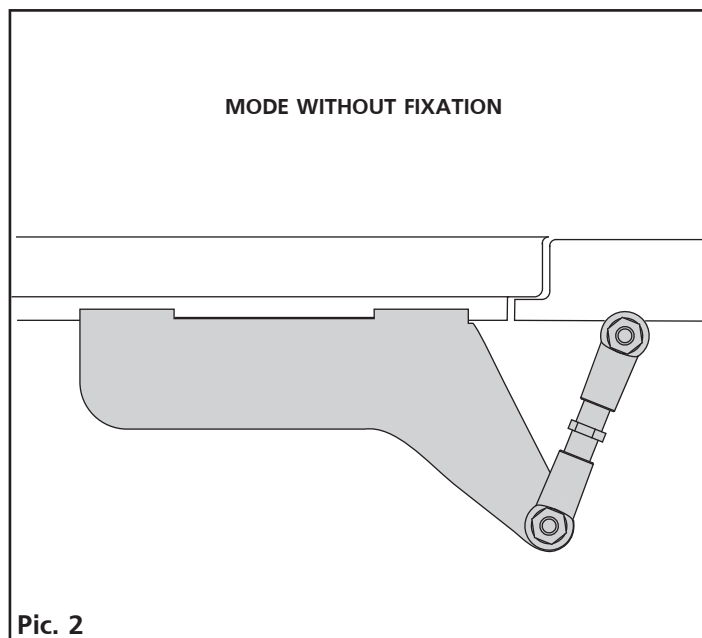
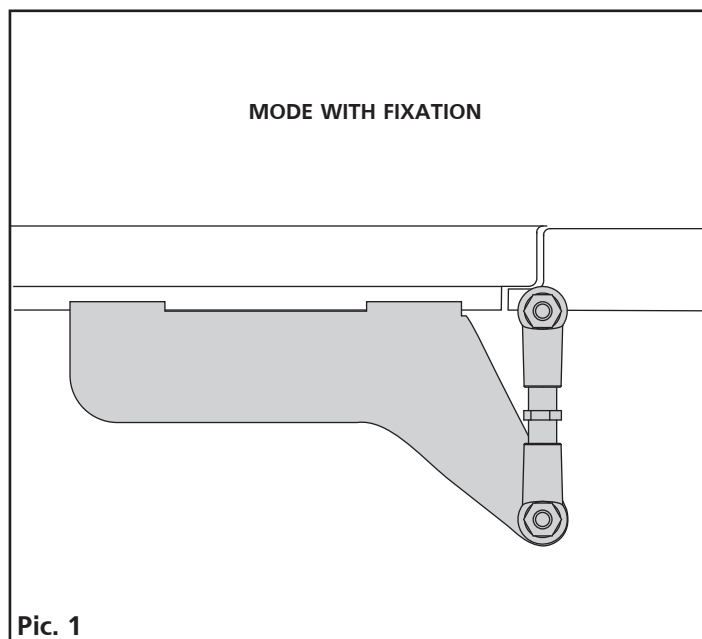


Self-adhesive warning sticker is located outside on the panel of the sliding door. It should be noticeable.

Attach outer handle cover to open/close handle, mark and make two holes $\varnothing 3$ mm. Fix the outer handle cover with 2 self-tapping screws 4,2x16 (pic.1).

Attach inner handle cover to the marked place and fix it with self-tapping screws 4,2x16 (pic.2).



**OPENING AND CLOSING**

Push and hold control button for ~0,5 seconds. When you release it, the door starts moving.

STOPPING

Once push the button in order to stop the door while it is moving.

AUTOMATIC ROLLBACK

When encountering an obstruction, the door stops and comes back automatically.

ADJUSTMENT OF OPENING WIDTH

Open the door. Set the required opening width manually. Push and hold control button for ~ 10 sec till two beeps. Release control button. Now the drive remembers the set opening width.

OPERATION MODE WITH FIXATION

The drive has two operation modes:

1. with fixation (factory setting) pic.1
2. without fixation (only with latch actuator) pic.2

To get the mode without fixation push and hold control button for ~ 15 seconds till three long beeps. Release the button.

RETURN TO FACTORY SETTING

Keep and hold control button for ~ 20 seconds till four beeps. Release the control button. All the settings returned to the factory ones.

**NOTE**

All the settings return to the factory ones in case when the power is switched off.

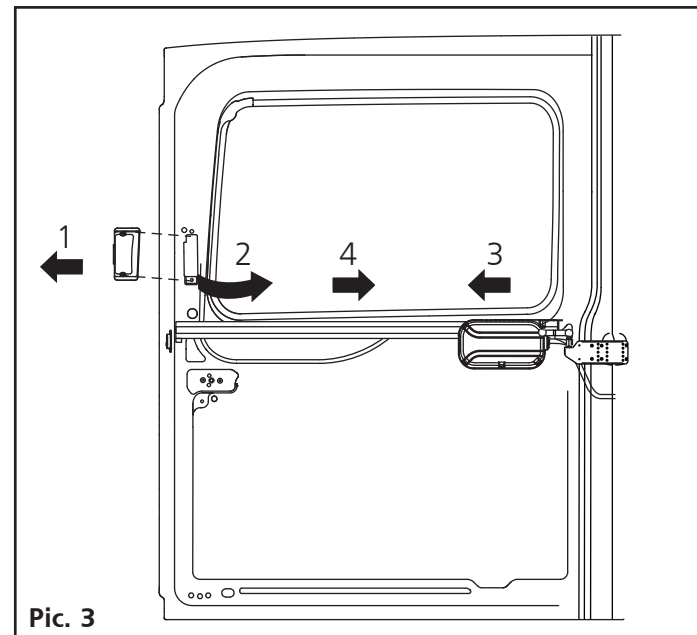
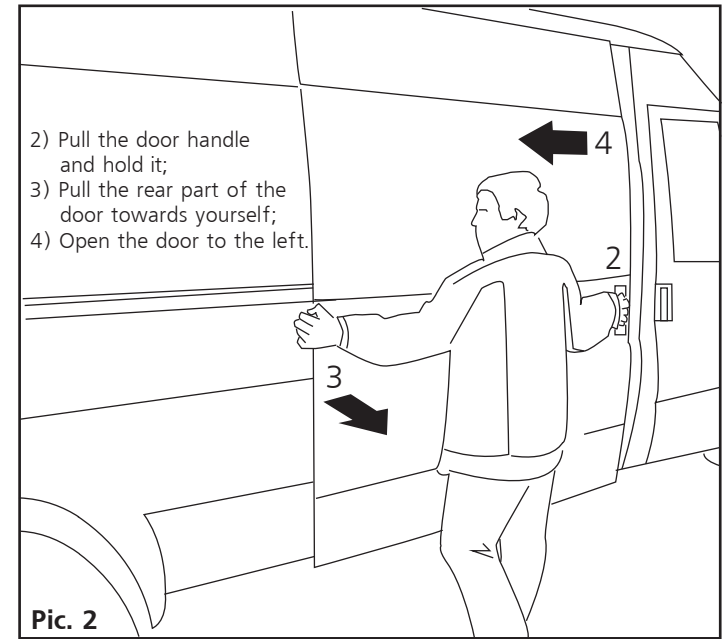
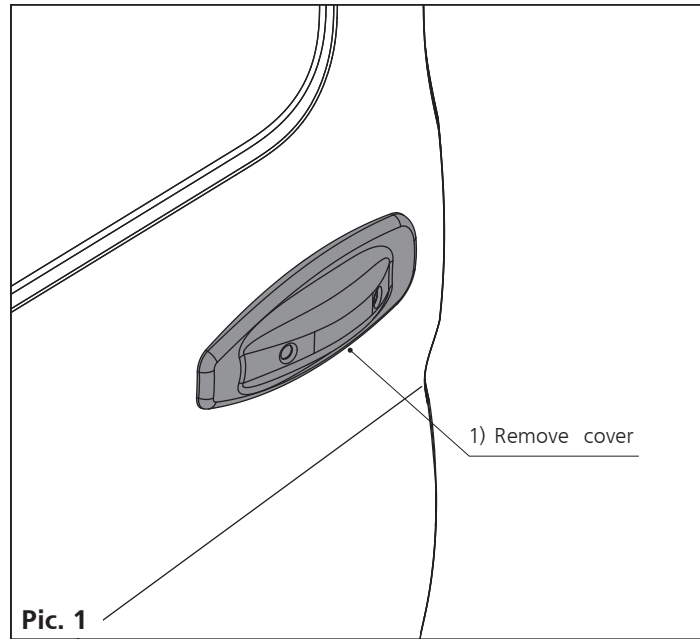
EMERGENCY OPENING

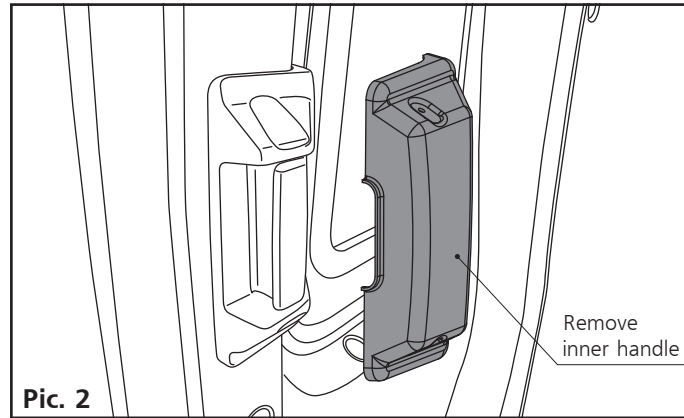
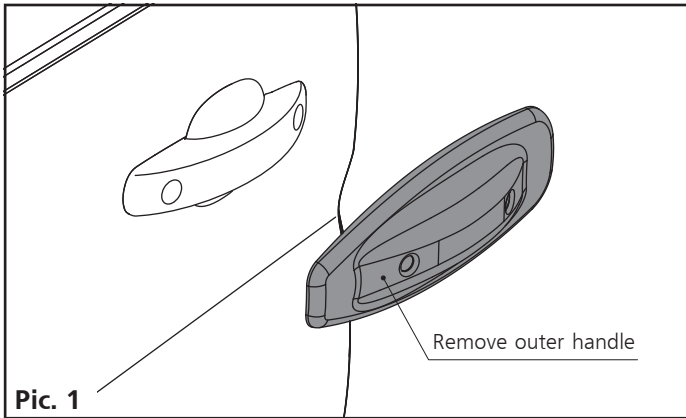
OUTSIDE (ONLY IN MODE WITHOUT FIXATION):

1. Remove outer cover (pic.1);
2. Pull the door handle and hold it (pic.2);
3. Pull the rear part of the door towards yourself (pic.3);
4. Open the door to the left (pic.2).

INSIDE:

1. Remove inner cover;
2. Pull the door handle and hold it;
3. Move the drive from "the dead space" moving it towards the direction of the bus movement;
4. Open the door manually (pic. 3).



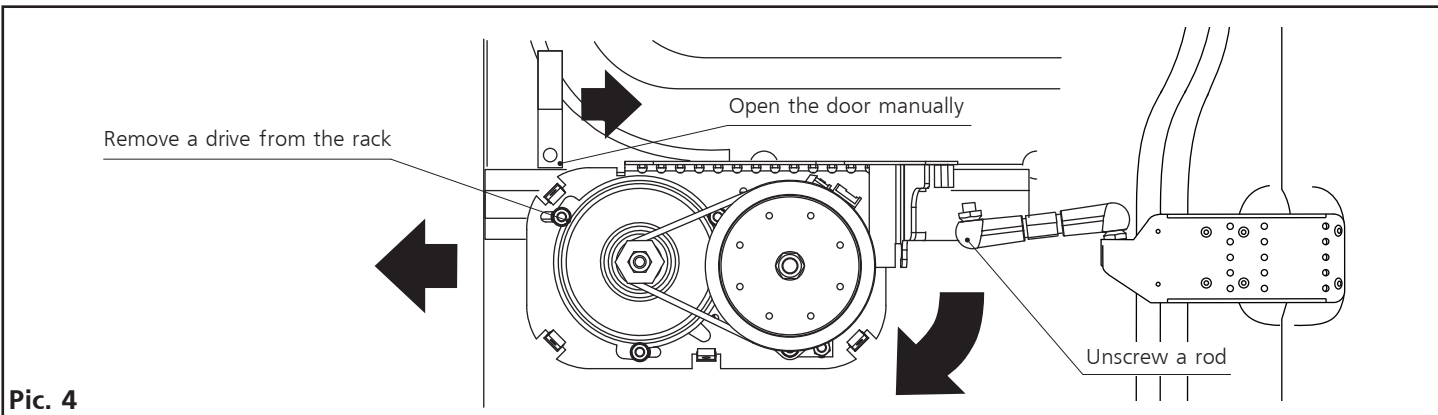
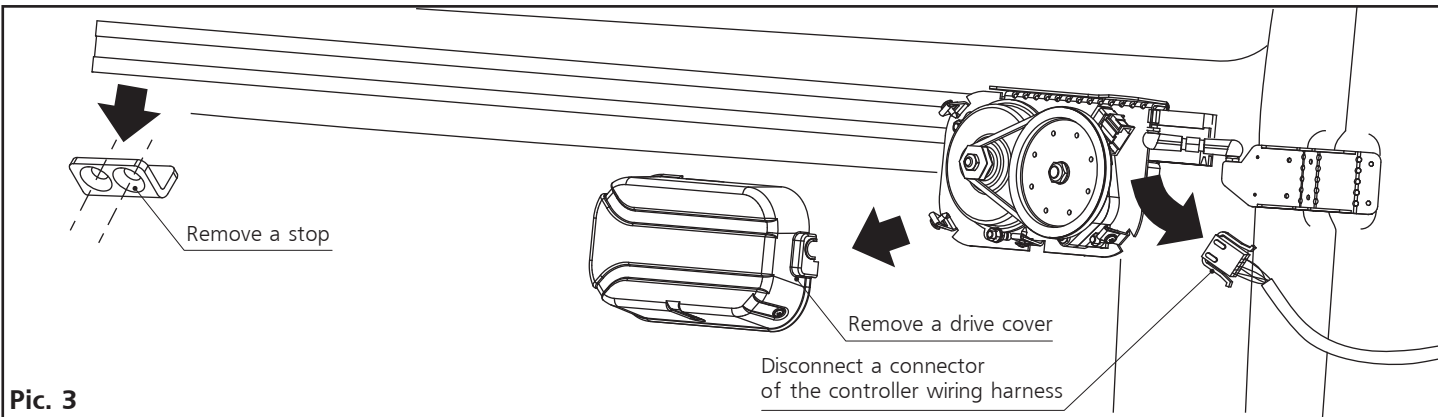


MANUAL MODE RESET

1. After removing handle covers open the door manually (pic.1, 2).
2. Remove a stop (pic.3).
3. Remove a drive cover (pic.3).
4. Disconnect a connector of the controller wiring harness (pic. 3).
5. Unscrew a rod (pic. 4).
6. Remove a drive from the rack (pic.4).
7. Remove a fuse (30A) from the connector.

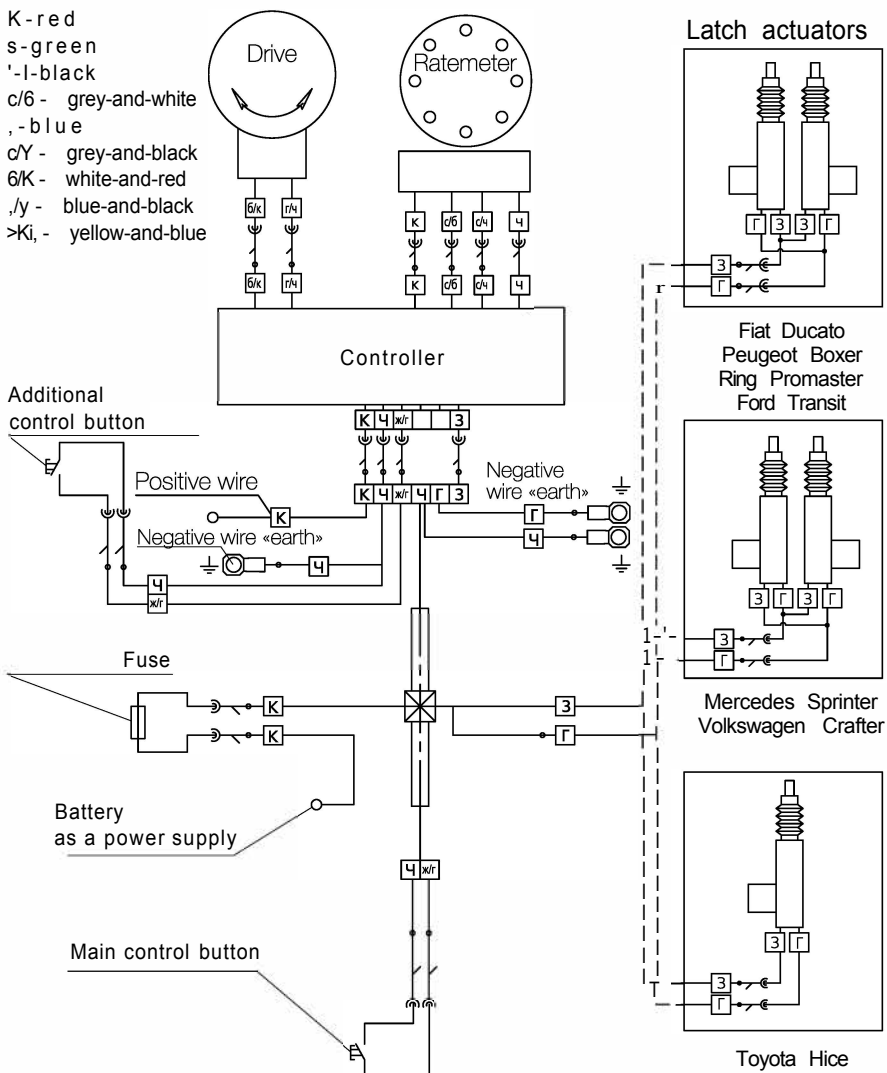
The door may be operated in a manual mode if there is a latch actuator.

If there is no latch, standard latch must be restored.



ELECTRIC NETWORK

- K - red
- s - green
- '-l - black
- c/6 - grey-and-white
- , - blue
- c/Y - grey-and-black
- 6/K - white-and-red
- ,/y - blue-and-black
- >Ki, - yellow-and-blue



DEAR CUSTOMER!

if you have any questions concerning warranty, post warranty maintenance service and parts, please contact us at:

<http://www.adorusa.com>

Email: AdorUSA@gmail.com

Phone number: +1 (216) 214-0828 (USA)

Please, make pictures/video of failed part, issue with installation or operation of device.

Text or email.

Ador Tech support will reply shortly with solution.

