



®

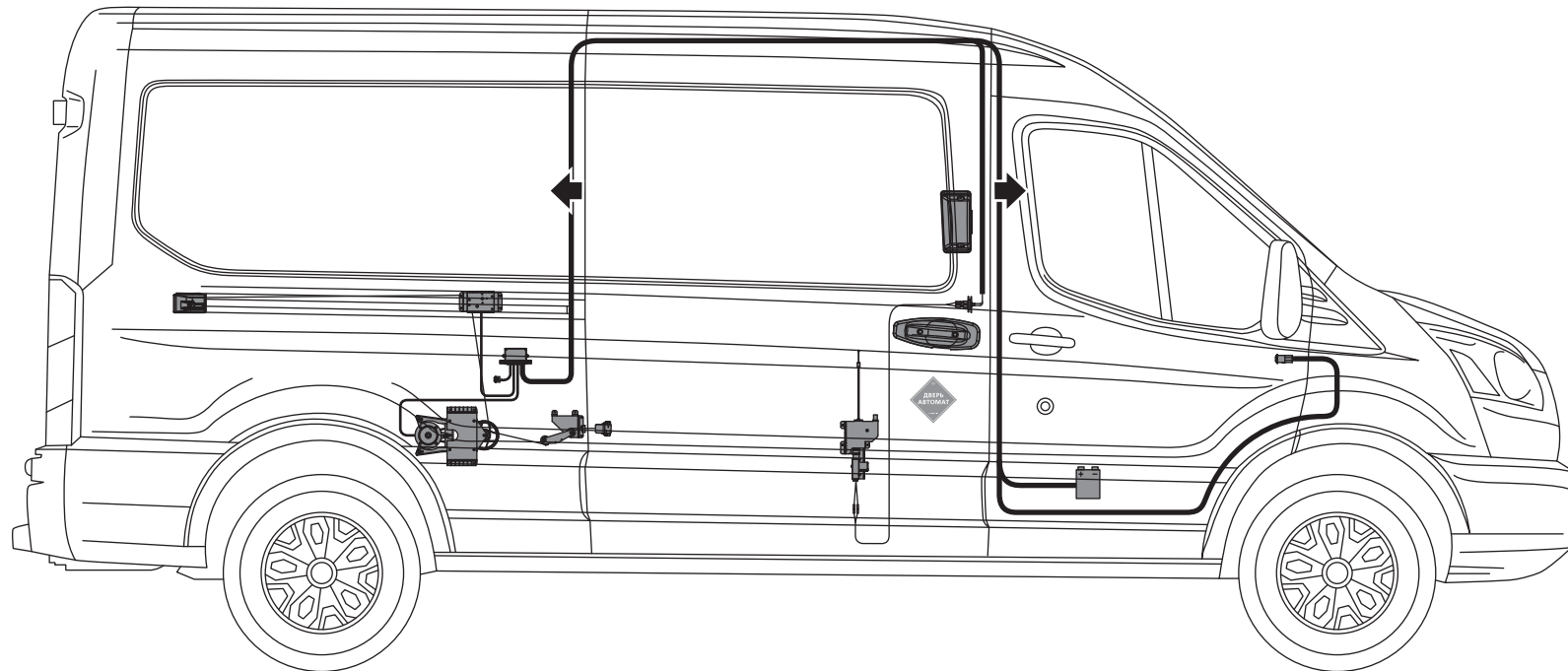
automatic  
doors



# TROC - Cable Door Opener

## INSTALLATION MANUAL

FORD TRANSIT 2



## Chapter I. PREFACE

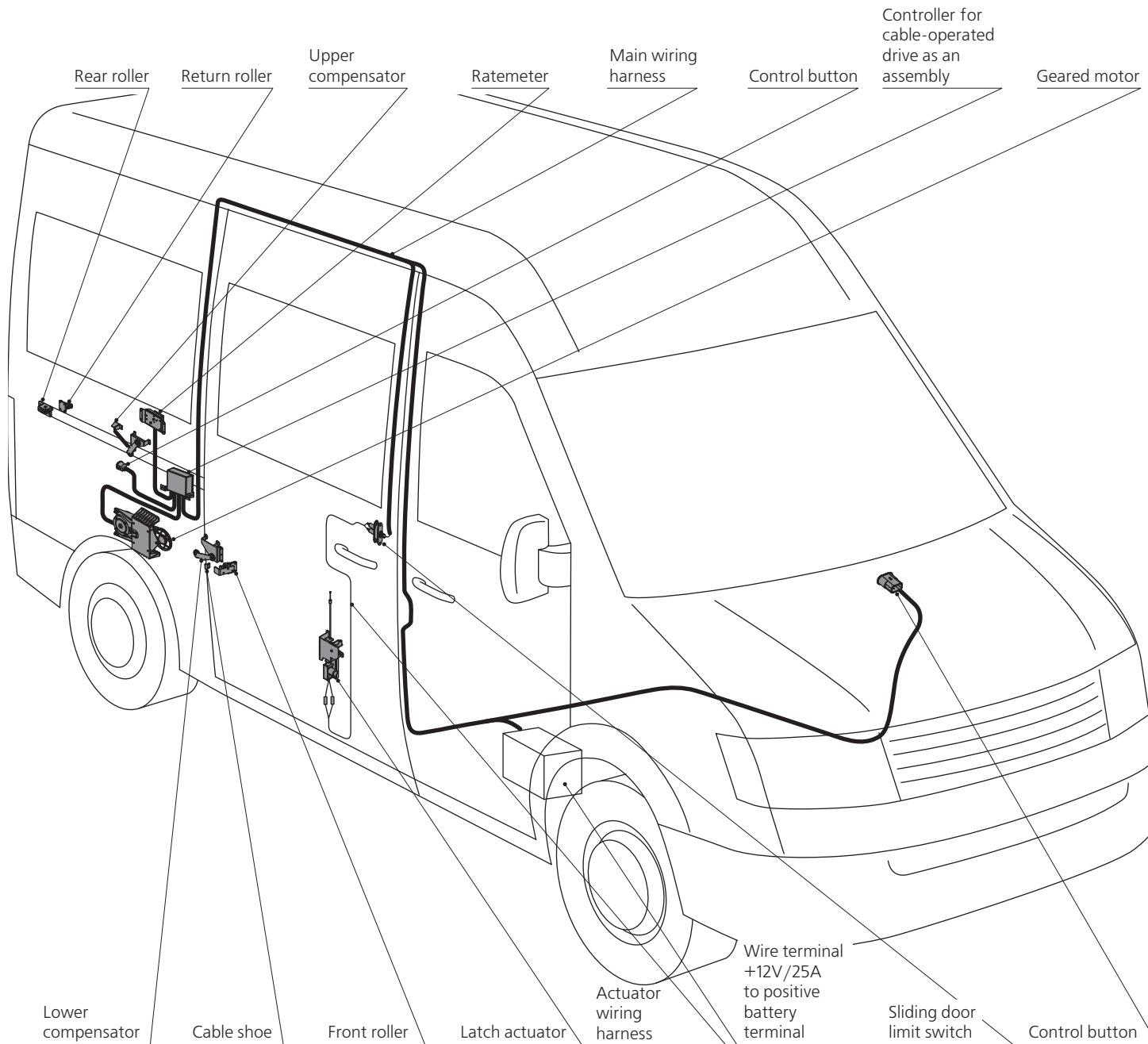
1.1 General information .....	4
1.2 Operating safety and list of tools.....	6
1.3 Delivery set.....	7

## Chapter II. INSTALLATION

2.1 Latch actuator installation.....	8
2.2 Latch actuator and actuator wiring harness.....	9
2.3 Sliding door limit switch.....	10
2.4 Main wiring harness laying and control button installation.....	11
2.5 Negative wire connection, positive wire connection to power supply, control button mounting....	12
2.6 Carriage hook mounting.....	13
2.7 Rear and return rollers.....	14
2.8 Main assembly units: geared motor for cable, controller, ratemeter, upper and lower compensators.....	15
2.9 Front roller, cable shoe and door hook.....	18
2.10 Cable installation, length 4,5 m.....	19

## Chapter III. FINAL OPERATIONS

3.1 Cable tension, length 4,5 m.....	22
3.2 Geared motor control and adjustment.....	23
3.3 Warning sticker.....	24
3.4 Mounting of outer and inner handle covers, rear roller.....	25
3.5 Electric network connection of cable-operated drive.....	26



This model is designed to open and close sliding door in Ford Transit 2 minibus (new generation).

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

**NOTE**

This manual describes the installation of our cable-operated drive with the widest range of drive units. If you install our cable-operated drive without any options then you have to omit the corresponding items of our manual.

**SPEC CHARACTERISTICS:**

Power consumption (max), watt	150
Door-opening time, sec	1,2-3
Door-closing time, sec	1,5-3
Category temperature range, °C	from -40 up to +40
Performance (nominal)	500 cycles per 24 hours

**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.

## 1.1 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:

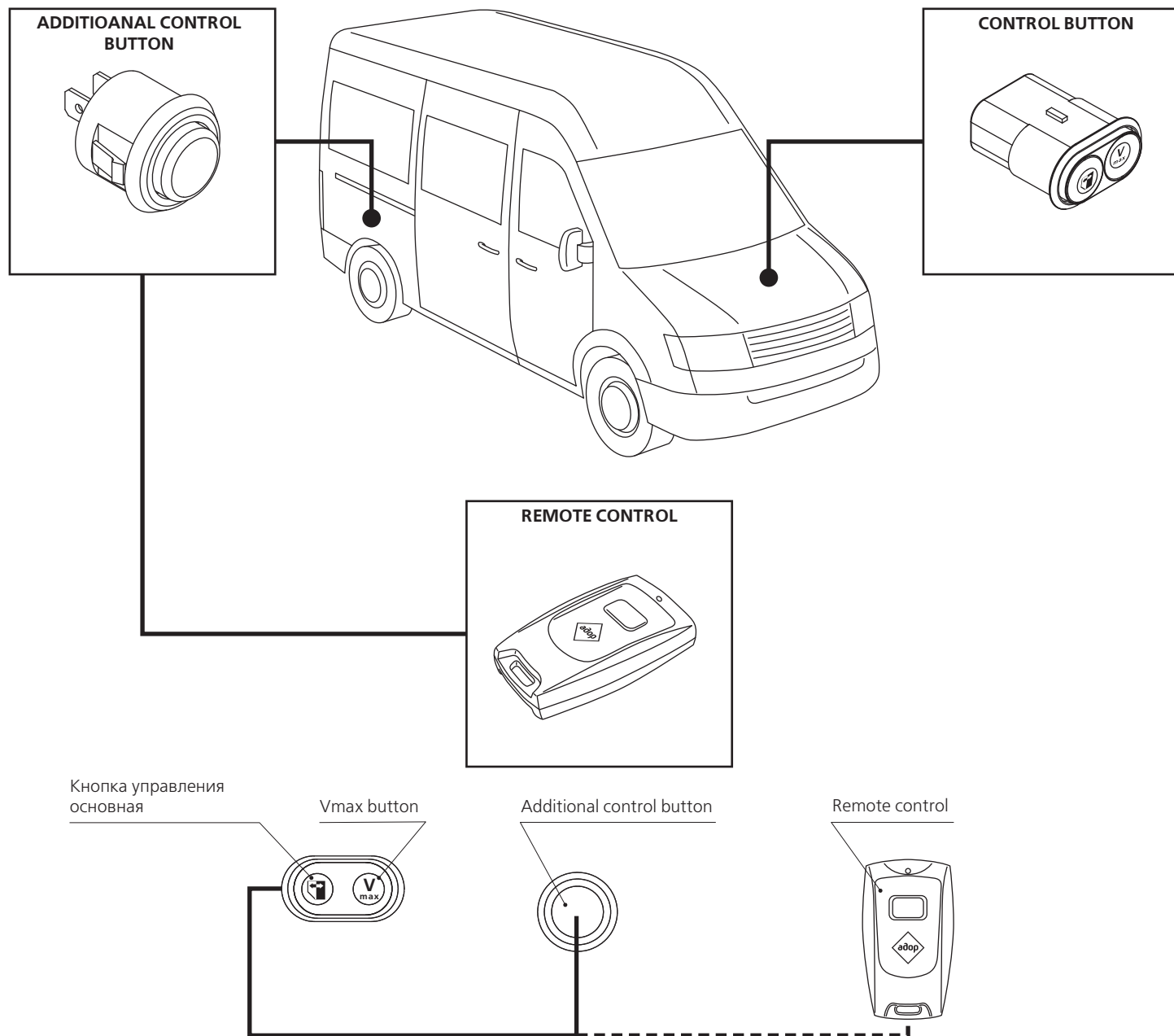
- **Control button**  
This button is designed for controlling the door and system adjustment.
- **Vmax button**  
This button is designed for switching the highest closing speed.
- **Additional control button**  
This button is designed for controlling the door and system adjustment. It is used only for adjustment after installation.
- **Remote control**  
It is used for controlling the door.

### DRIVE FUNCTIONS:

- Opening and closing;
- Automatic rollback;
- Stopping;
- Beep;
- Adjustment of closing speed and opening width;
- Vmax function.

## 1.2 OPERATING SAFETY

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.

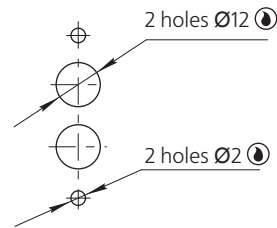
### LIST OF TOOLS:

Cutting nippers .....	1 piece
Set of interchangeable heads from 10mm up to 17mm.....	1 piece
Riveter.....	1 piece
Center punch.....	1 piece
Set of combination wrenches.....	1 piece
Metal ruler.....	1 piece
Hammer .....	1 piece
Set of Allen keys.....	1 piece
Set of star screwdrivers.....	1 piece
Round file.....	1 piece
Flat file.....	1 piece
Knife .....	1 piece
Blade screwdriver.....	1 piece
Cross-slotted screwdriver.....	1 piece
Combination pliers.....	1 piece
Wire.....	3 m
Drills 2,5; 3,2; 5; 6,5.....	1 piece
Drill 12x200 mm .....	1 piece
Taper drill from 4mm up to 20mm.....	1 piece
Clip remover.....	1 piece
Insulation tape.....	1 piece
Electrical socket extender.....	1 piece
Torch.....	1 piece
Sliding caliper.....	1 piece
Power drill.....	1 piece
Multimeter.....	1 piece

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:







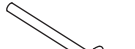
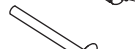
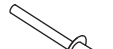





- ☉ — Remove edge fin.
- ☉ — Unedge.
- ☉ — Treat with acid-free antirust liquid.

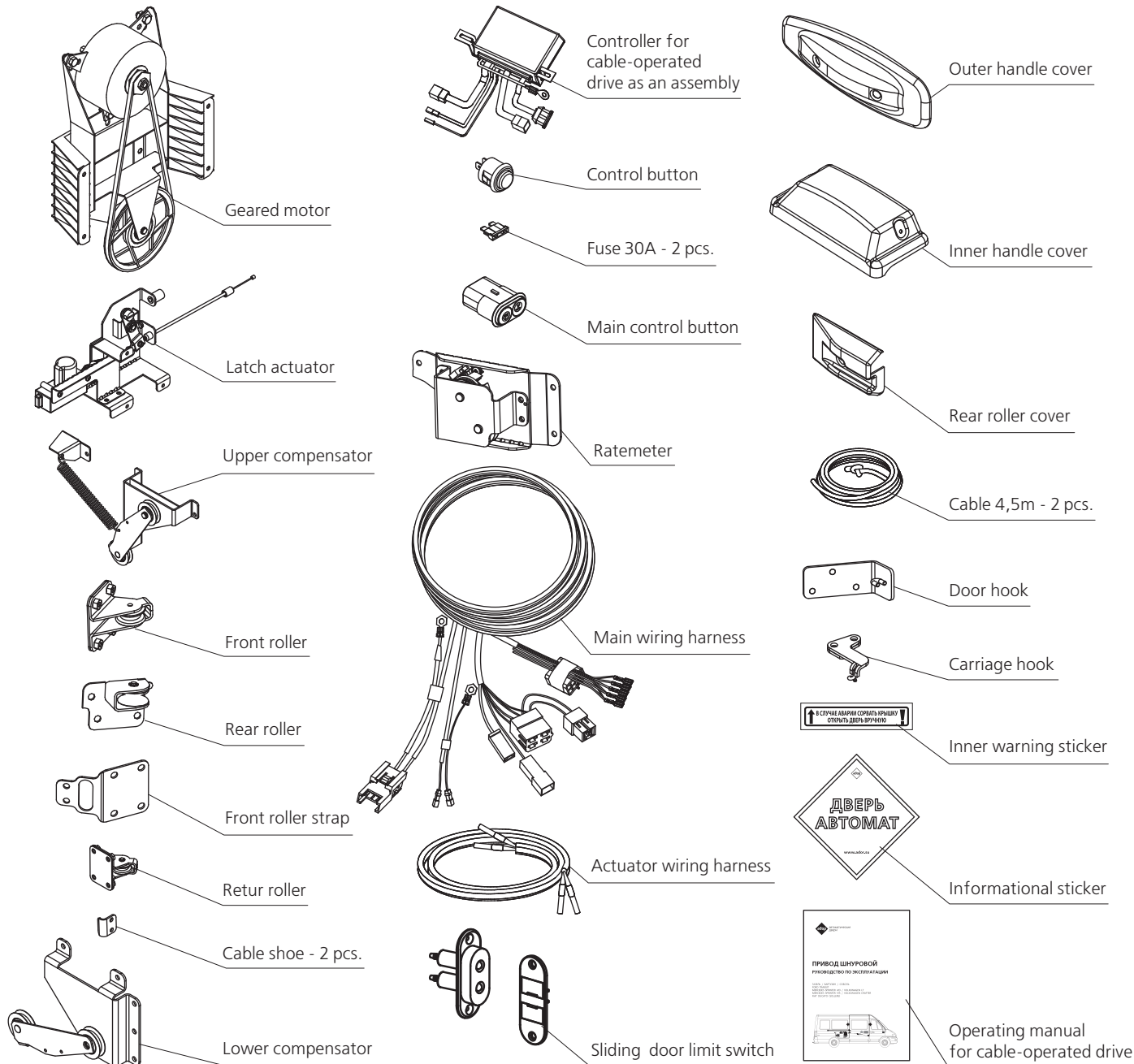
For example, the indicated holes must be treated with antirust liquid.

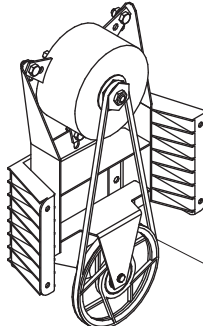
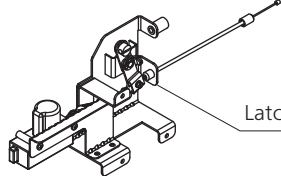
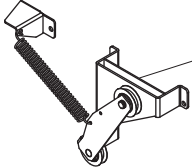


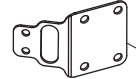


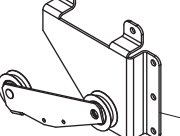
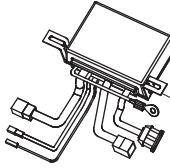



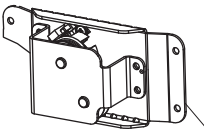
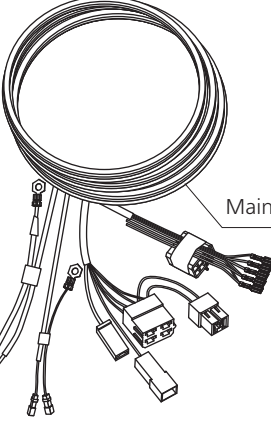
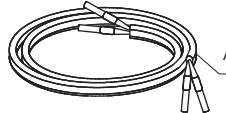
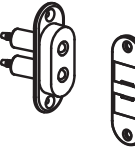
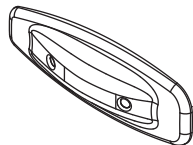
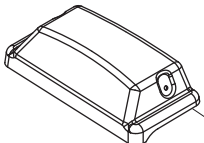
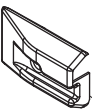

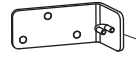






# 1.3 DELIVERY SET

## МЕТИЗЫ

-  Bolt M6x20 - 2 pcs.
-  Bolt M8x30 - 2 pcs.
-  Nut M8 - 2 pcs.
-  Nut M6 - 2 pcs.
-  Screw M6x14 - 8 pcs.
-  Screw M6x30 - 4 pcs.
-  Rivet 4,8x16 - 8 pcs.
-  Rivet 4,8x12 - 20 pcs.
-  Rivet 4,8x8 - 2 pcs.
-  Self-tapping screw 3,9x16 - 4 pcs.
-  Self-tapping screw 4,2x16 - 5 pcs.
-  Toothed washer 6x11x1,5 - 2 pcs.
-  Plate washer 6x12x1,5 - 8 pcs.
-  Lock washer D8 - 2 pcs.

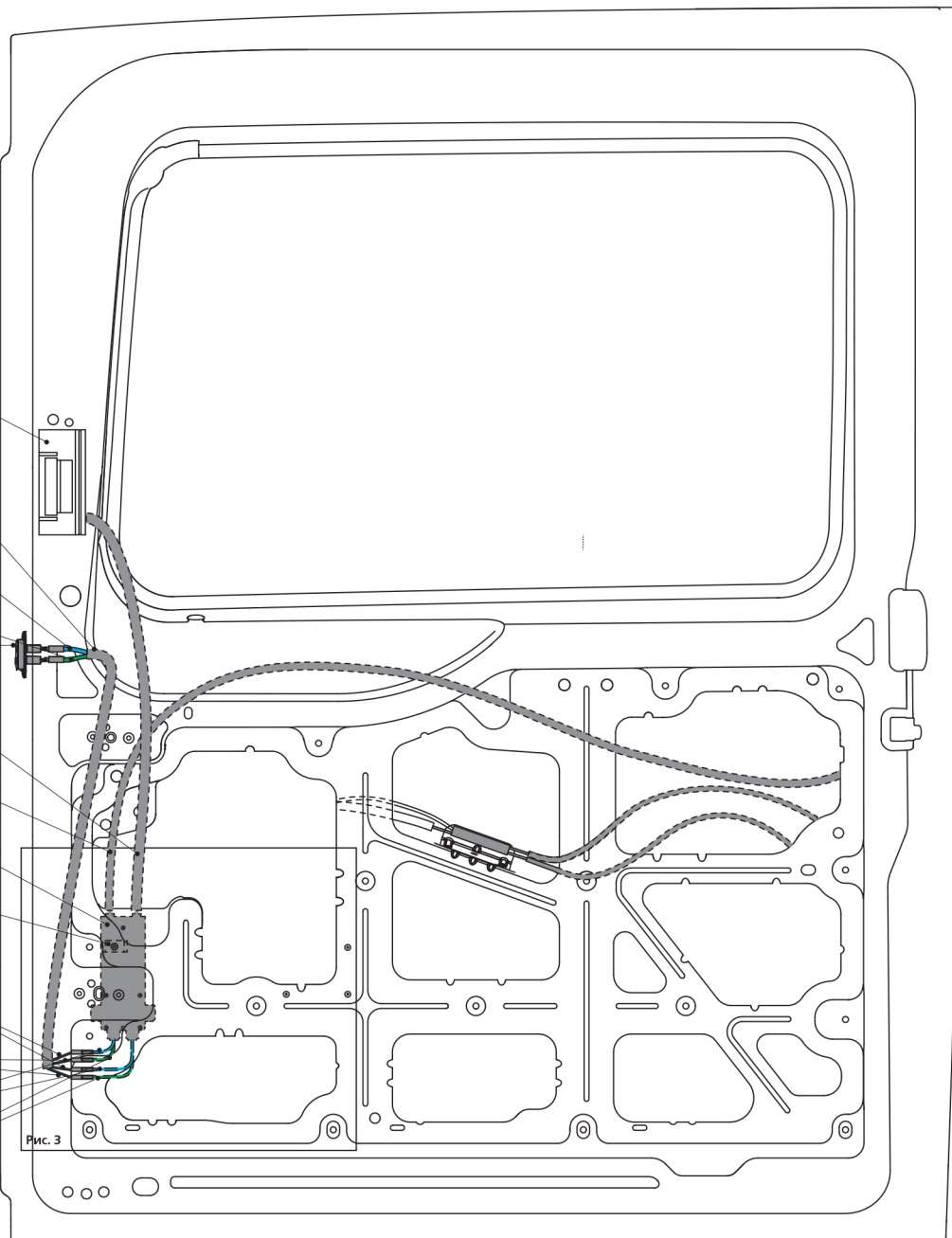


-  Geared motor
-  Latch actuator
-  Upper compensator
-  Front roller
-  Rear roller
-  Front roller strap
-  Return roller
-  Cable shoe - 2 pcs.
-  Lower compensator
-  Controller for cable-operated drive as an assembly
-  Control button
-  Fuse 30A - 2 pcs.
-  Main control button
-  Ratemeter
-  Main wiring harness
-  Actuator wiring harness
-  Sliding door limit switch
-  Outer handle cover
-  Inner handle cover
-  Rear roller cover
-  Cable 4,5m - 2 pcs.
-  Door hook
-  Carriage hook
-  Inner warning sticker
-  Informational sticker
-  Operating manual for cable-operated drive

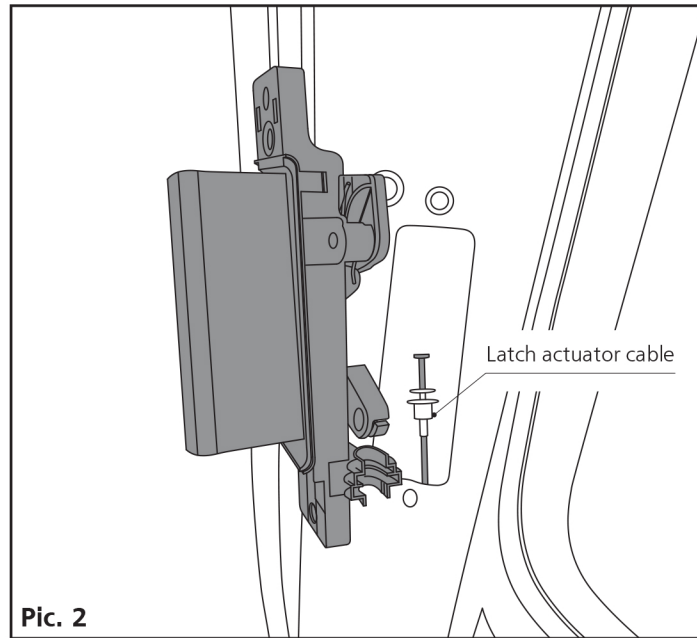
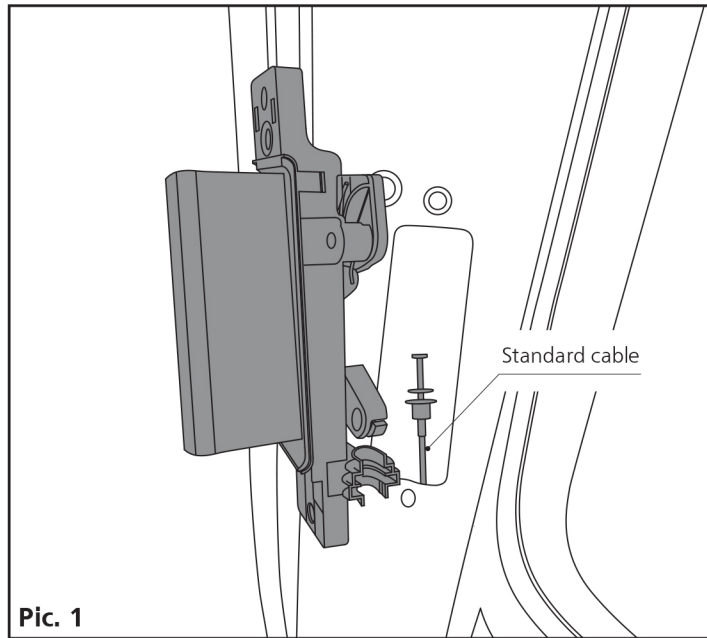
# 8 2.5 LATCH ACTUATOR AND ACTUATOR WIRING HARNESS INSTALLATION

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**



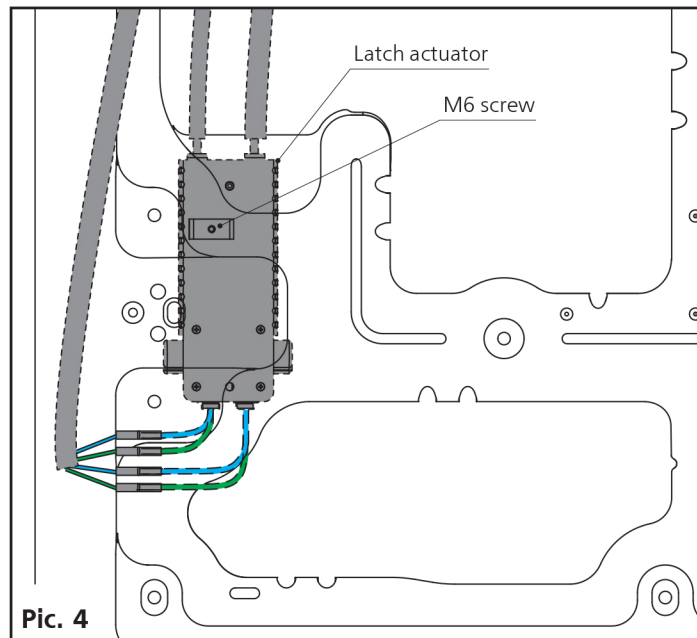
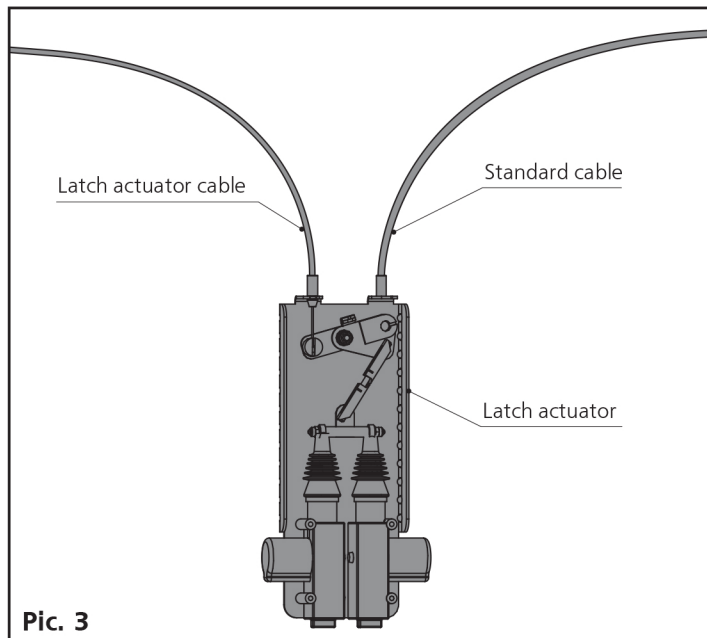
2. Dismantle the inner handle and disconnect it from the standard cable of the latch actuator (picture 1).
3. Connect the latch actuator cable with the inner handle and put it back to its location (picture 2).
4. Connect the standard cable with the latch actuator (picture 3).
5. Make a hole (Ø 6,5 mm) 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.

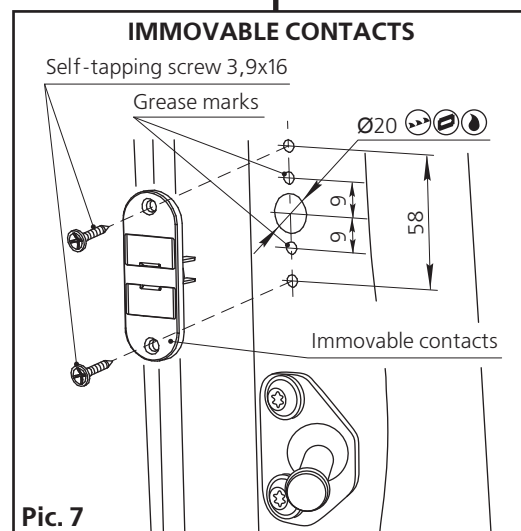
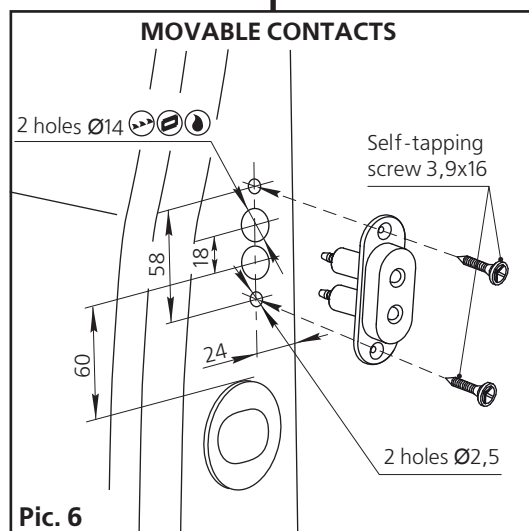
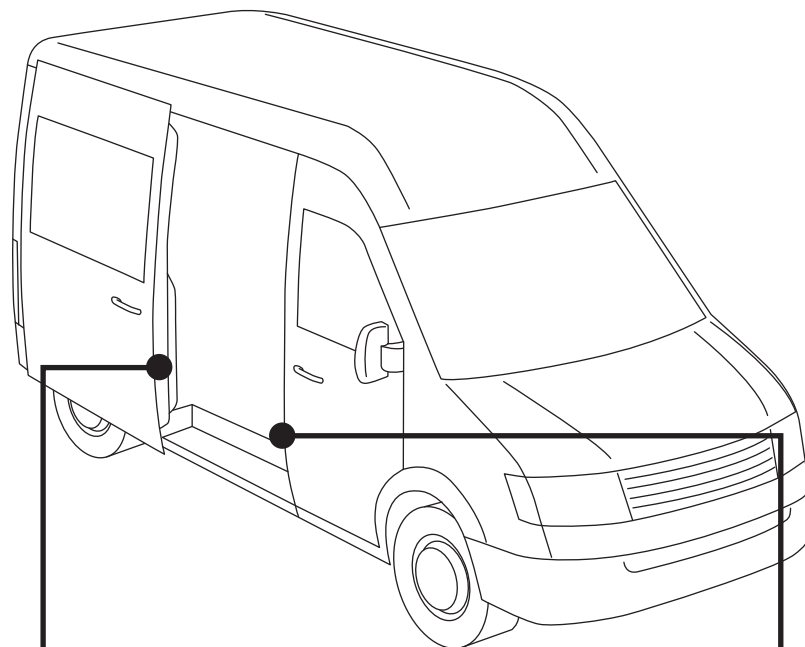


**NOTE**



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. 6).

1. Make holes according to your marking (pic. 6).
2. Connect actuator wiring harness to movable contacts (blue wire to upper contact, green wire to lower contact) (pic. 1 page 8).
3. Fix movable contacts using self-tapping screws.

### IMMOVABLE CONTACTS

Immovable contacts are located on the front doorway pillar (pic. 7).

1. Put some motor grease on 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.7).
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.10).



### NOTE



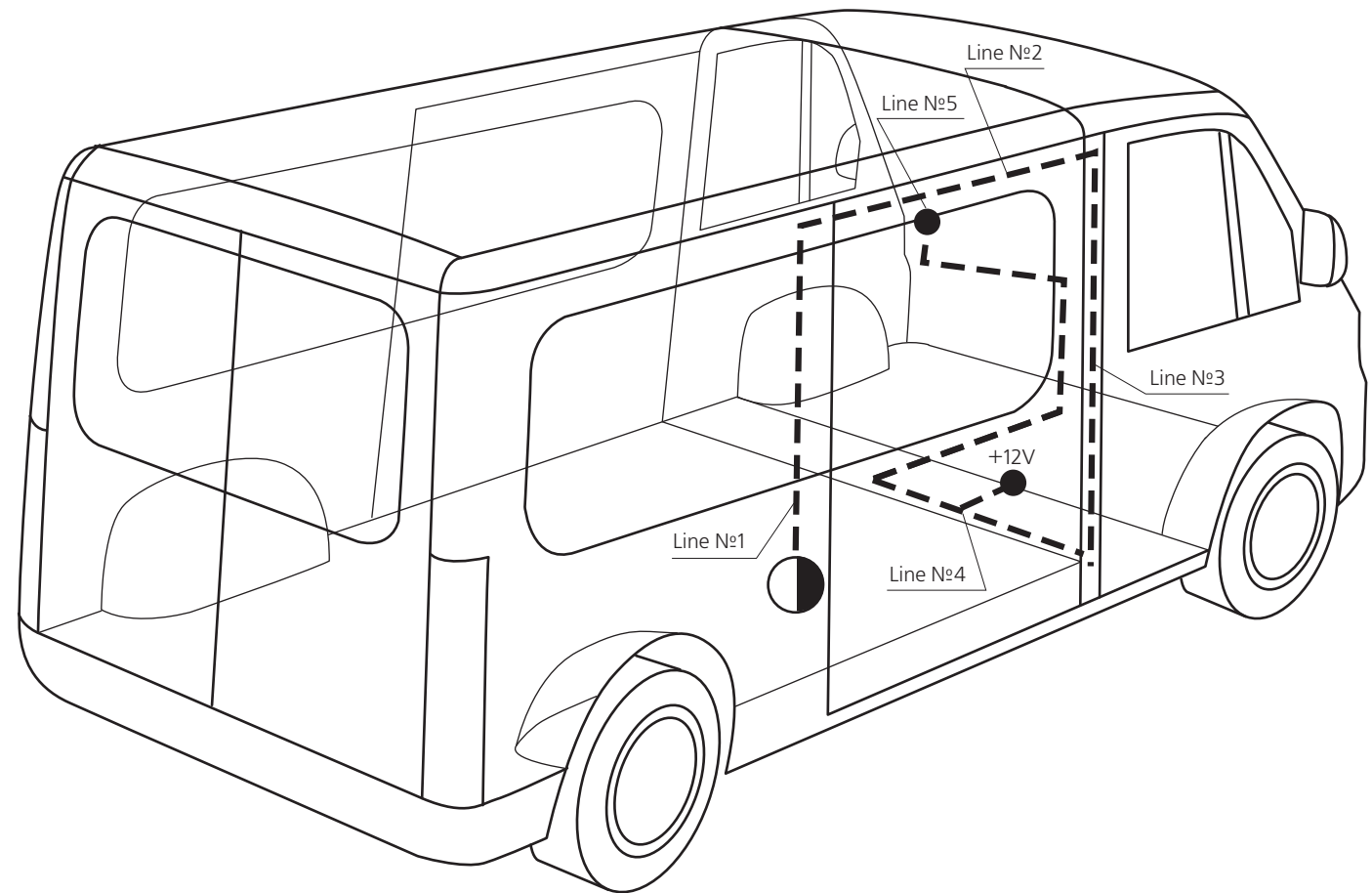
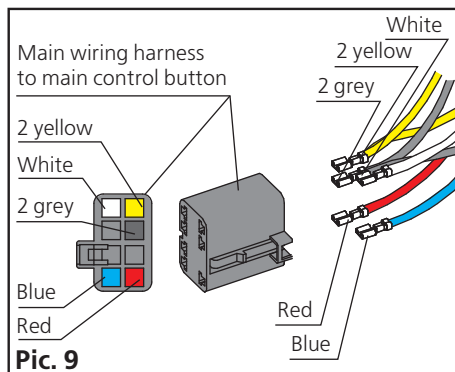
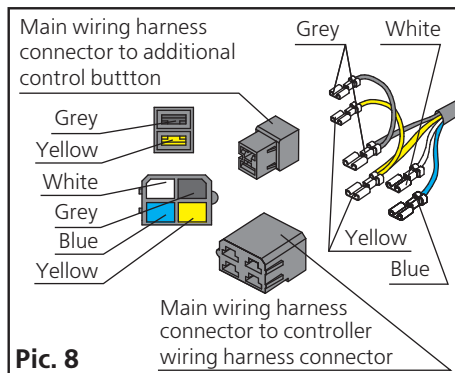
The movable and immovable parts of the limit switch are located in such a way that inscription «Autodoor» must be on top.

## 2.4 MAIN WIRING HARNESS LAYING AND CONTROL BUTTON INSTALLATION 11

Remove shown connectors from the main wiring harness before laying. Install them again after laying, if necessary put some marks (pic. 8, 9).

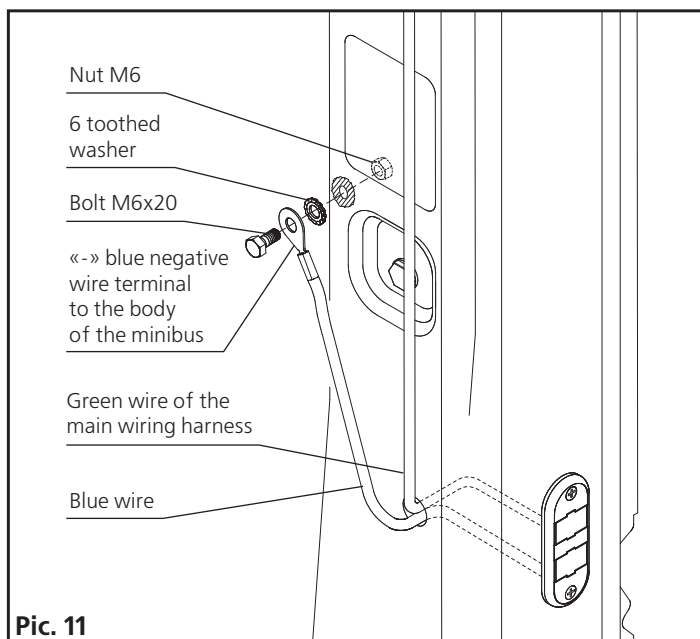
Main wiring harness is located inside the cavities.

Main wiring harness is recommended to lay as shown in picture 10 starting with line №1.



**Pic. 10**

## 2.5 NEGATIVE WIRE CONNECTION, POSITIVE WIRE CONNECTION TO POWER SUPPLY, CONTROL BUTTON MOUNTING



1. Make a hole  $\varnothing 6,5$  mm at any place of the inner side of the pillar near immovable contacts. Remove paint in order to provide a good contact. Use bolt M6x14, toothed washer and nut M6 to fix negative wire terminal «-» (pic. 11). After tightening bolt M6 coat the damaged area with antirust liquid.

2. Connect positive 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. 12).

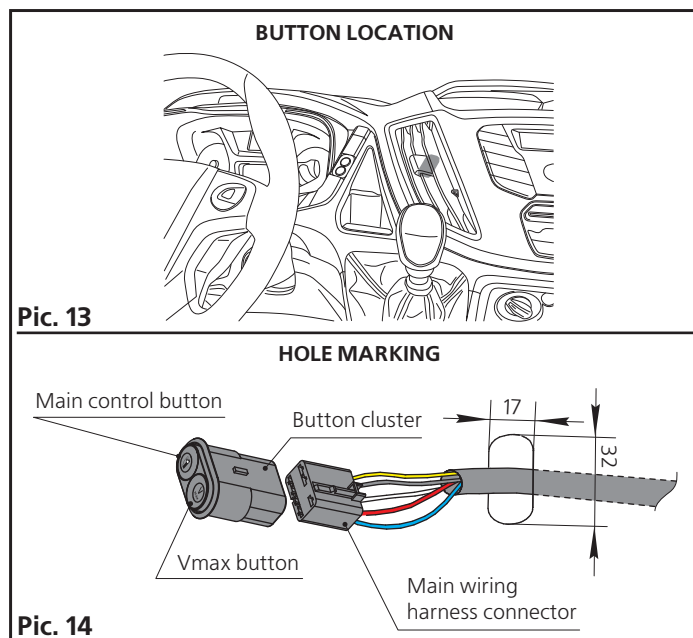
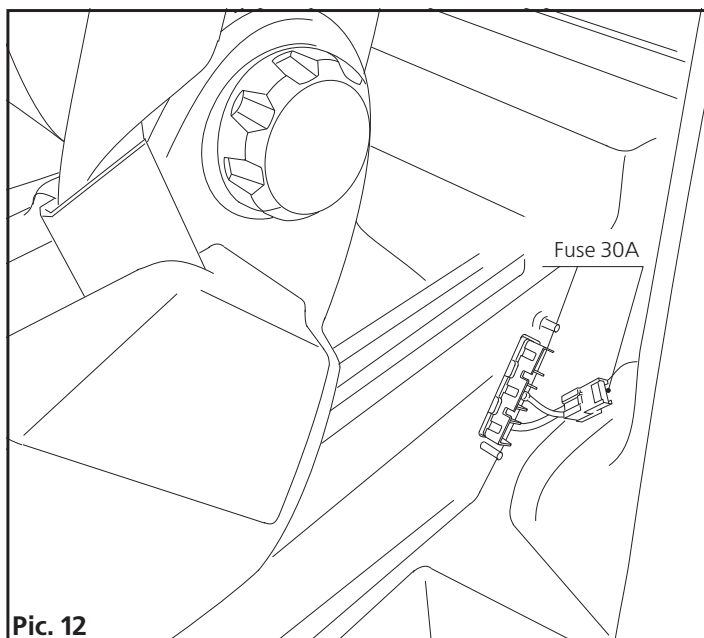


### NOTE



Remove a fuse from the connector before connecting positive wire.

3. Make holes according to your marking for mounting a control button on the gage panel. Stretch button wiring harness through the hole. Connect the control button and insert it into the hole (pic. 13, 14).





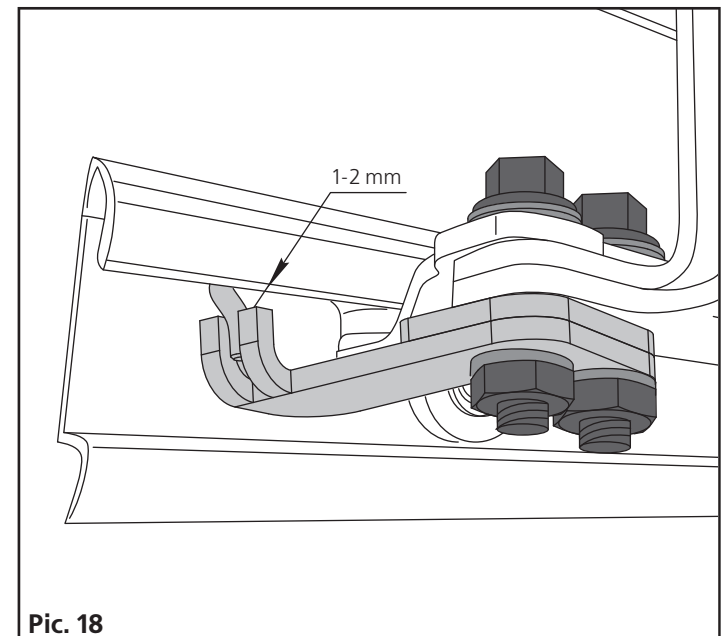
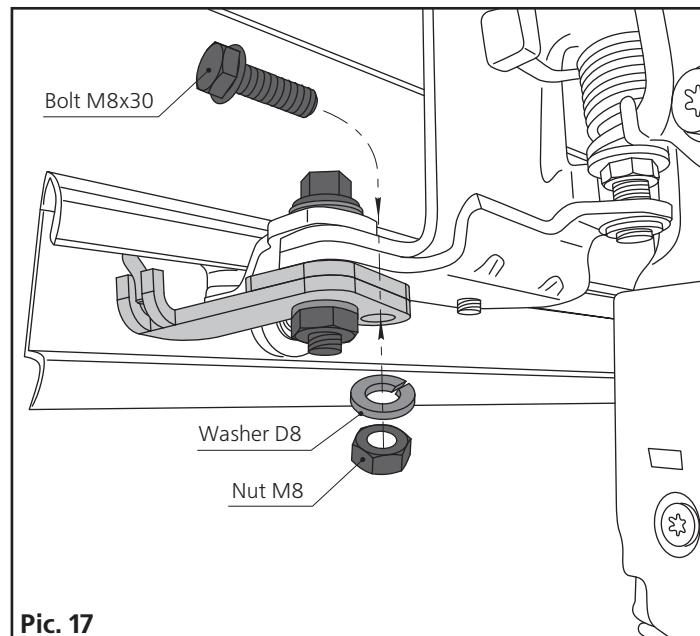
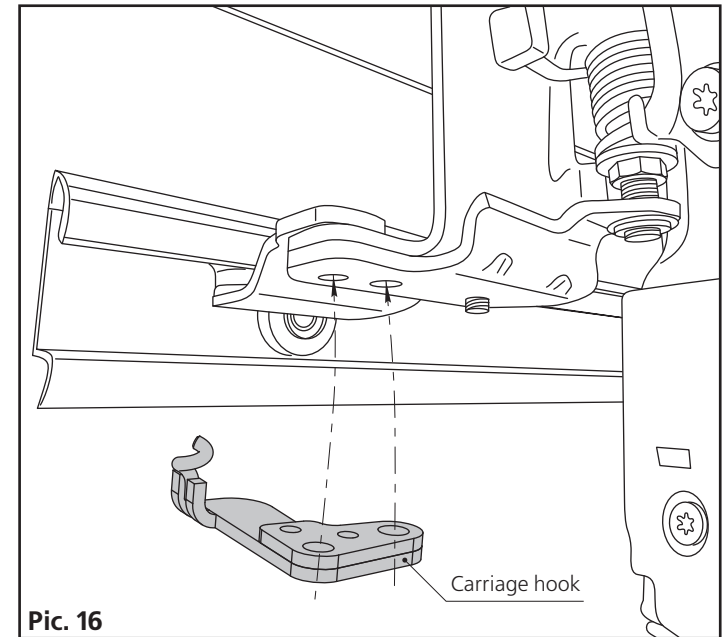
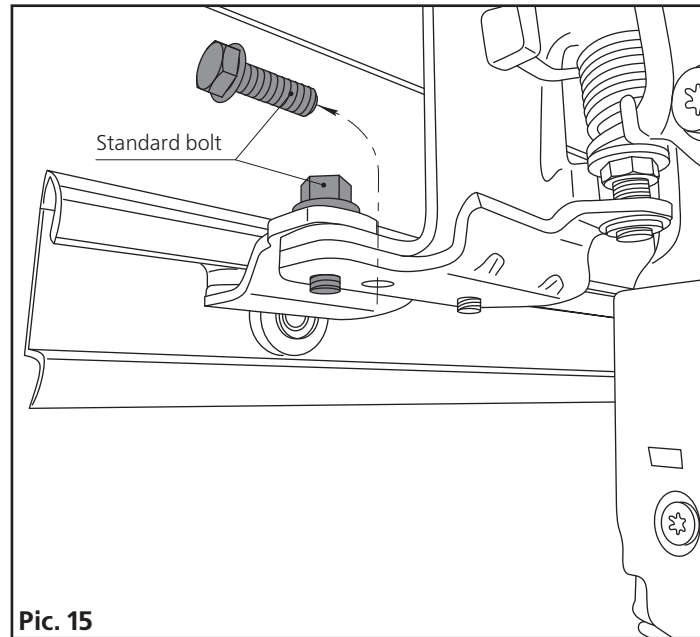
## 2.6 CARRIAGE HOOK MOUNTING

1. Unscrew 2 standard attachment bolts of the middle carriage rollers (pic. 15).

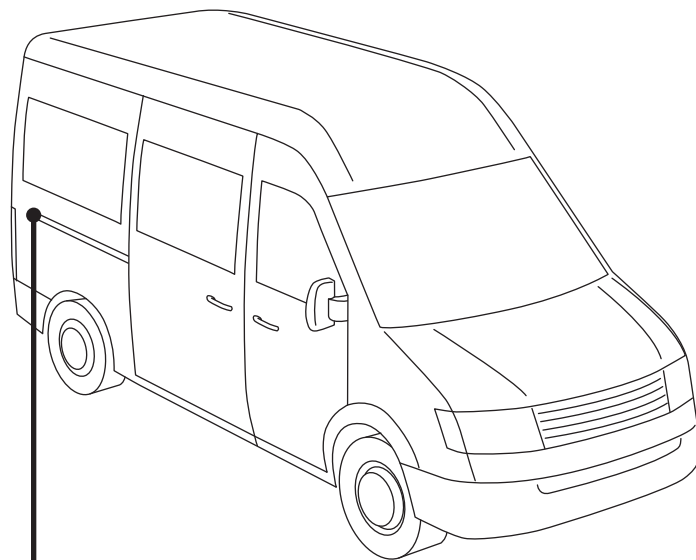
2. Attach the carriage hook to the lower part of the door middle carriage (pic. 16).

3. Fix the carriage hook using two bolts M8x30, washers D8, nuts M8 (pic. 17).

4. Make sure that there is the minimum gap between the carriage hook and the guide as shown in pic. 18.





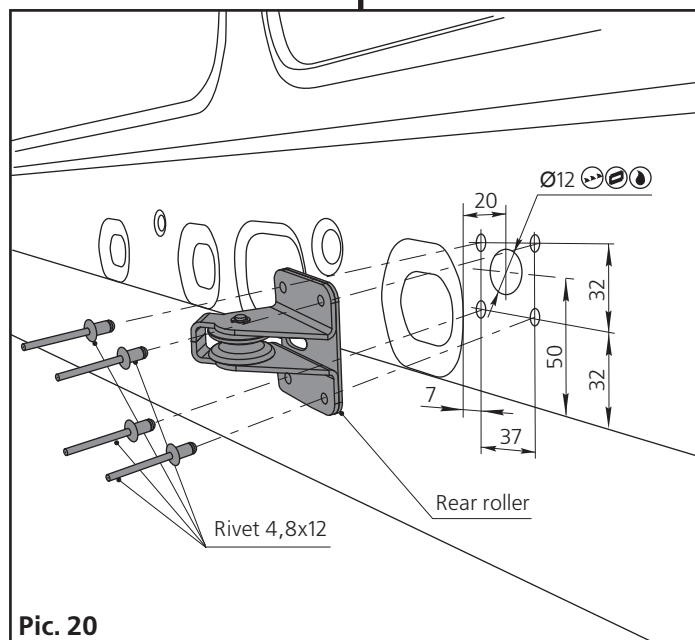
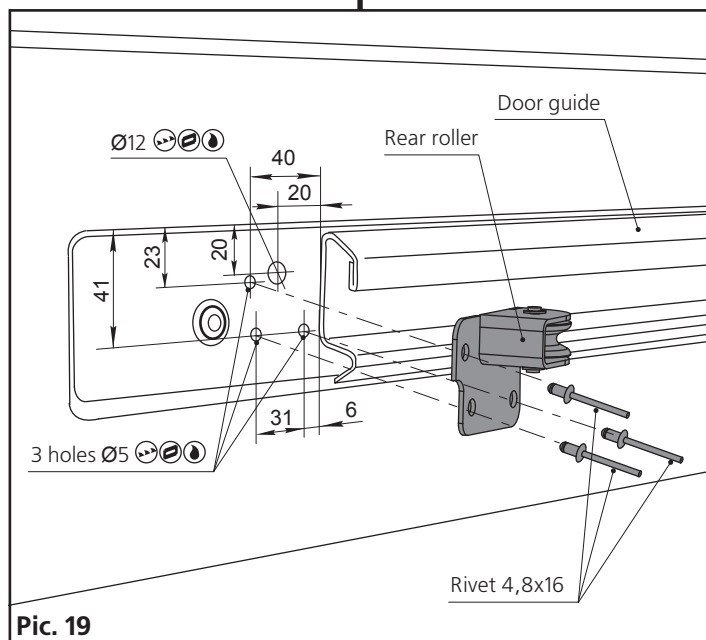


1. Rear roller is installed at the end of the middle guide. Remove the plug from the bar for this purpose.

2. Make a reach-through hole  $\varnothing 12\text{mm}$  and holes  $\varnothing 5\text{mm}$  to fix a rear roller (pic. 19).

3. Fix the rear roller with rivets 4,8x16 (pic. 19).

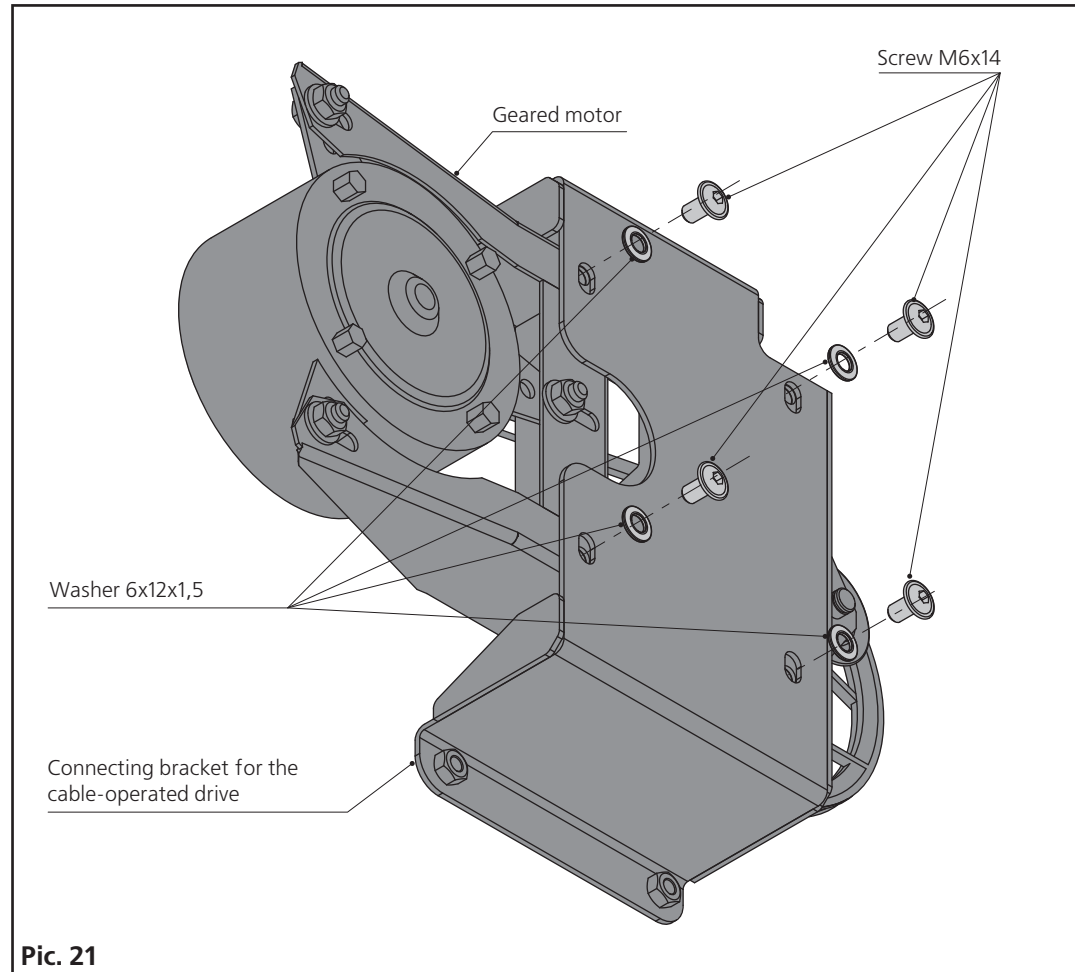
4. Fix a return roller from the inner side of the bus with rivets 4,8x12 (pic.19) using hole  $\varnothing 12\text{mm}$  and holes  $\varnothing 5\text{mm}$  prepared according to your marking (pic. 20).



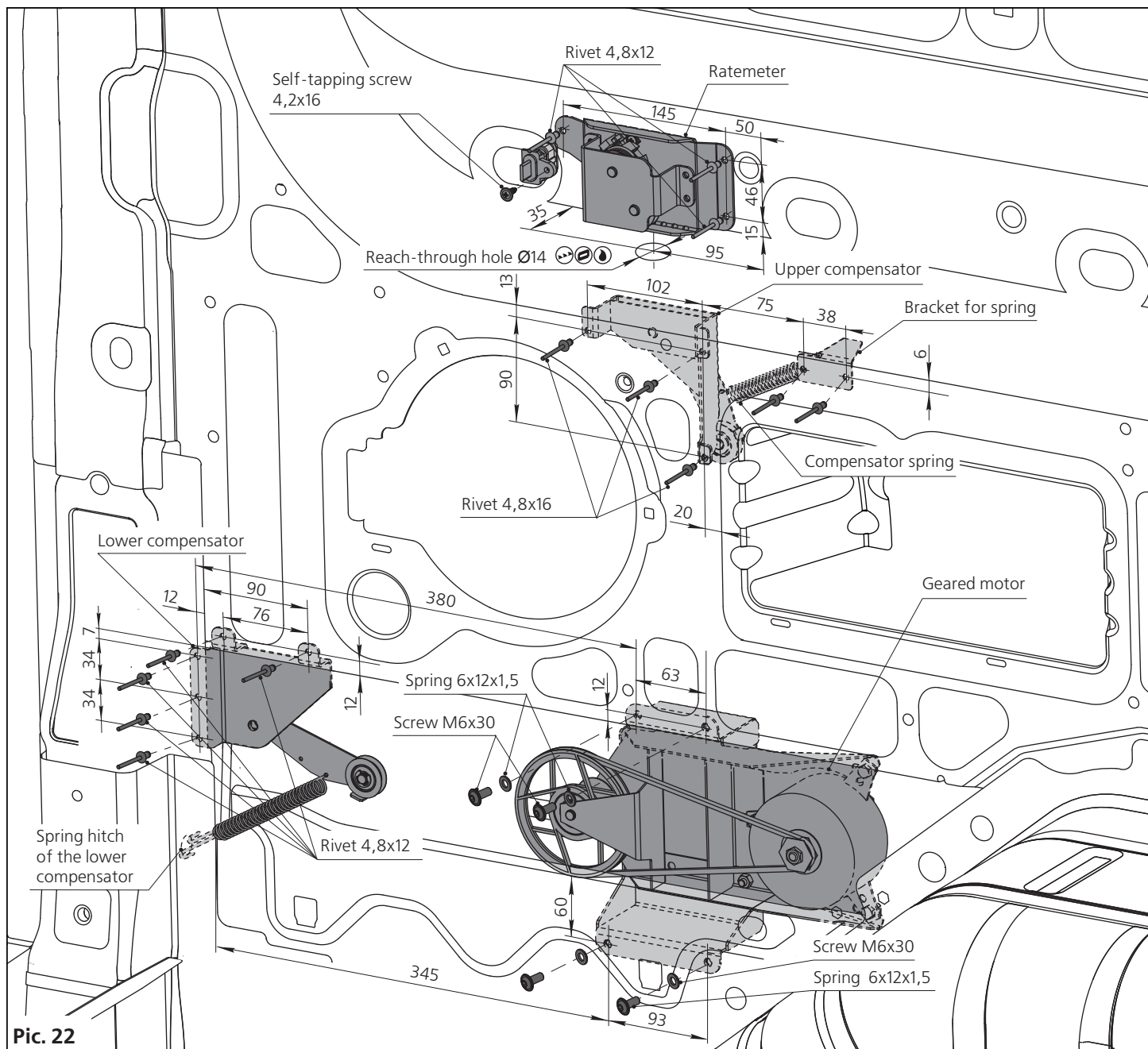
## 2.8 MAIN ASSEMBLY UNITS: GEARED MOTOR FOR CABLE, CONTROLLER, RATEMETER, UPPER AND LOWER COMPENSATORS

The main assembly units are located in the recess of the right side of the bus (pic. 22 page 16).

Attach the geared motor to the bracket using screws M6x14 (pic. 21).



## 2.8 MAIN ASSEMBLY UNITS: GEARED MOTOR FOR CABLE, CONTROLLER, RATEMETER, UPPER AND LOWER COMPENSATORS



Pic. 22

1. Make a reach-through hole  $\varnothing 14$ mm according to marking for laying the cable through 2 ribs of the bus body (pic. 22).

2. Make mounting holes  $\varnothing 5$  mm,  $\varnothing 6,5$  mm using dimensions shown in picture 22.

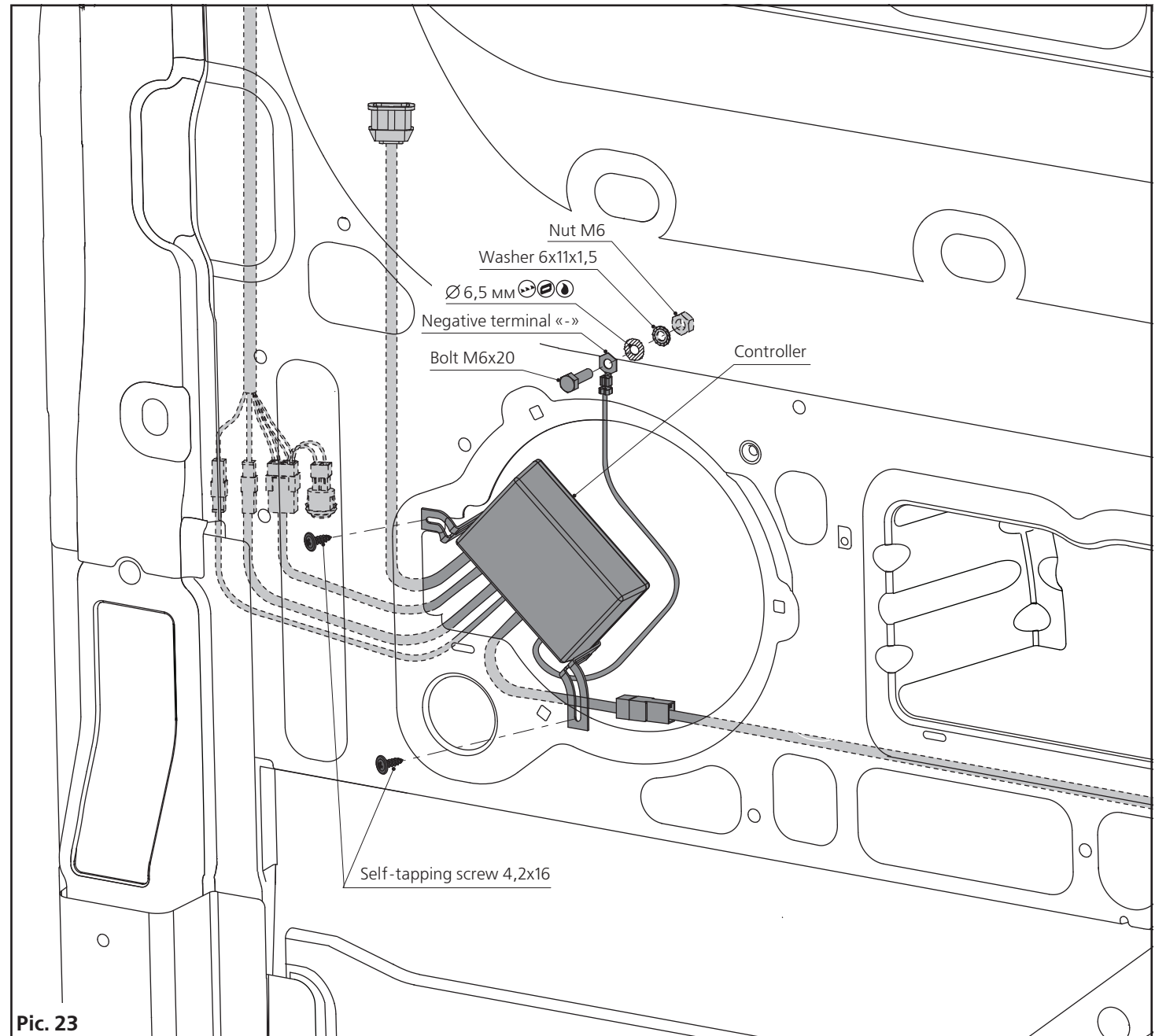
3. Fix the assembly units in compliance with picture 22.

4. Install springs of the compensators (pic.22).

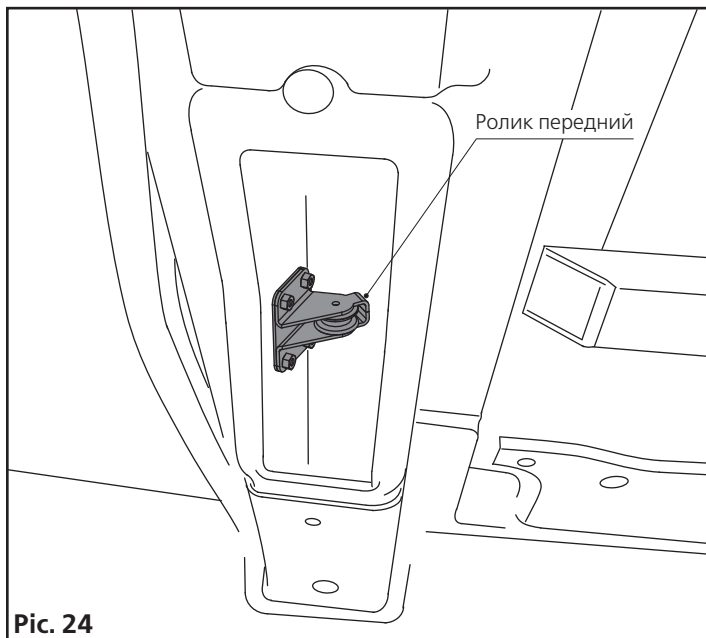
5. Fix the ratemeter connector using self-tapping screw 4,2x16 (pic. 22).

## 2.8 MAIN ASSEMBLY UNITS: GEARED MOTOR FOR CABLE, CONTROLLER, RATEMETER, UPPER AND LOWER COMPENSATORS

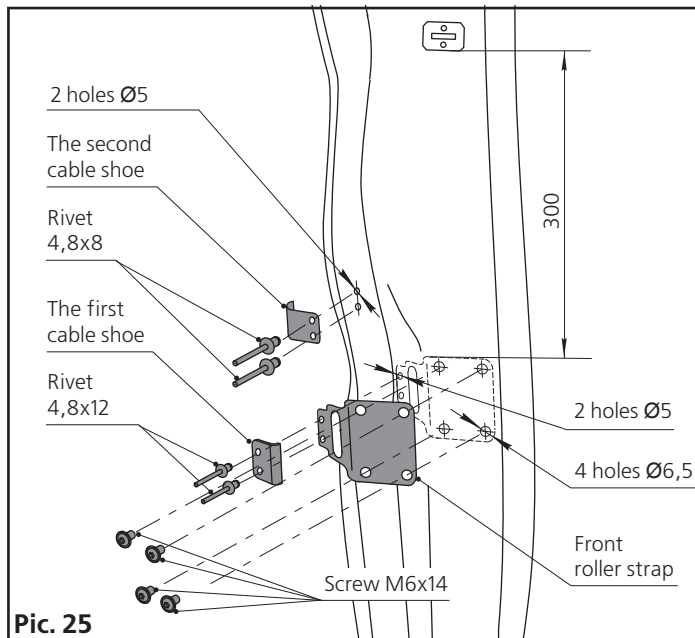
1. Install a controller in the side recess and fix it with 2 self-tapping screws (pic. 23).
2. Make a hole  $\varnothing 6,5$  mm on the inner side near the controller.
3. Remove the paint around the hole.
4. Fix negative wire «-» of the controller using bolt M6x20, toothed washer, nut M6. Coat the damaged area with antirust liquid.
5. Attach controller connectors to the connectors of the main wiring harness, ratemeter and motor correspondingly (pic. 23).



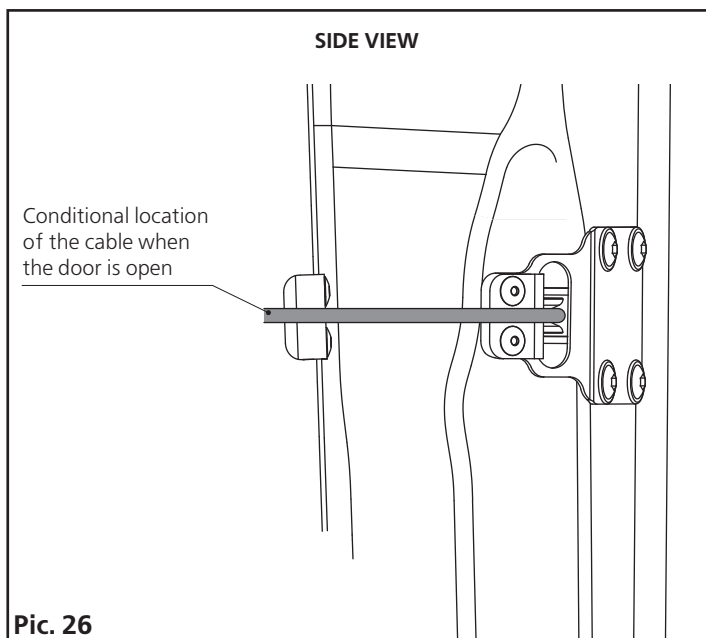
Pic. 23



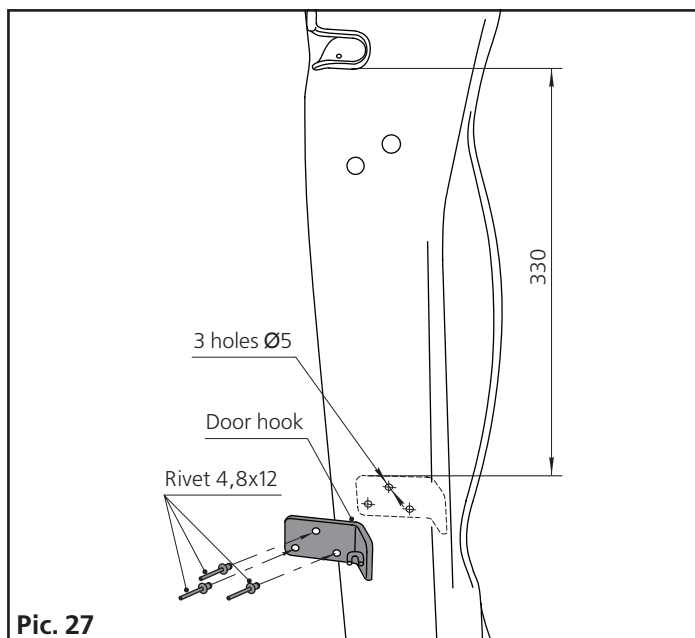
Pic. 24



Pic. 25



Pic. 26



Pic. 27

Front roller is installed in the recess of the rear doorway pillar of the sliding door (pic. 24).

**1.** Draw a line on the rear doorway pillar of the sliding door. It should be accurate to dimension (pic. 25).

**2.** Put the front roller strap in such a way that its upper end coincides with the drawn line.

**3.** Mark oval outlet opening and mounting holes using the strap holes. Make oval outlet opening according to your marking (pic. 25).

**4.** Make 4 holes Ø6,5mm (pic. 25) to fix the front roller.

**5.** Make 2 holes Ø5mm to fix the first cable shoe (pic. 25).

**6.** Fix the front roller with screws M6x14 using the front roller strap (pic. 25).

**7.** Fix the first cable shoe with rivets 4,8x12 (pic. 25).

**8.** Put the second cable shoe in such a way that the cable lies in the middle (pic. 26). Make marking with the help of the cable shoe holes. Make holes Ø5mm. Fix the second cable shoe with rivets 4,8x8 (pic. 25).

**9.** Draw a line on the rear cross-cut end of the sliding door. It should be accurate to dimension (pic. 27).

**10.** Put the door hook in such a way that its upper end coincides with the drawn line (pic. 27).

**11.** Mark centers of the mounting holes via door hook holes.

**12.** Make holes Ø5 for mounting the door hook (pic. 27).

**13.** Fix the door hook with rivets 4,8x12. It is located on the door (pic. 27).

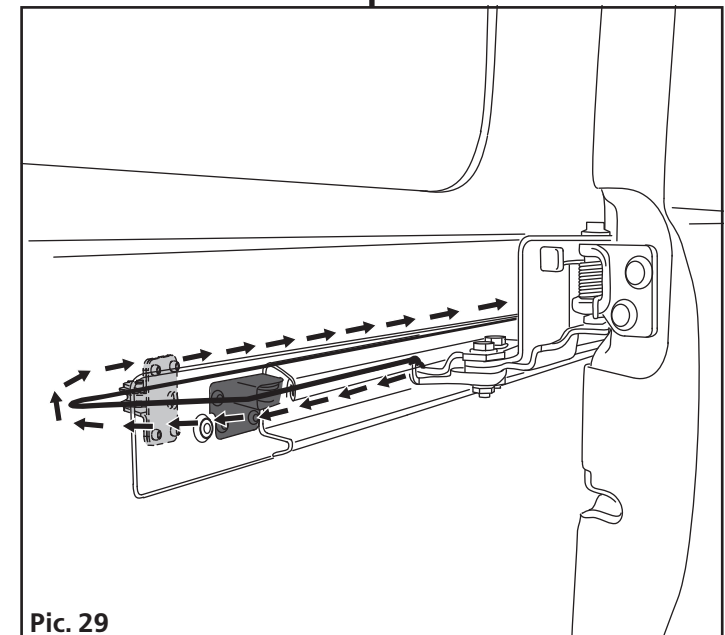
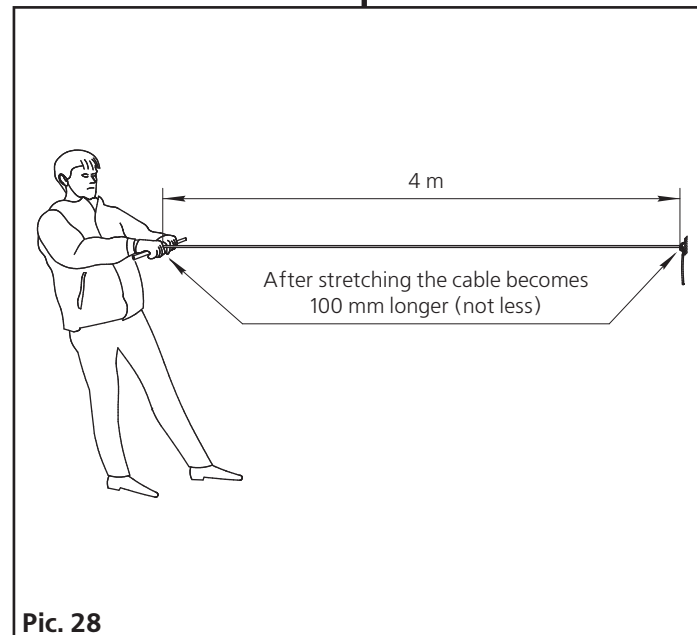
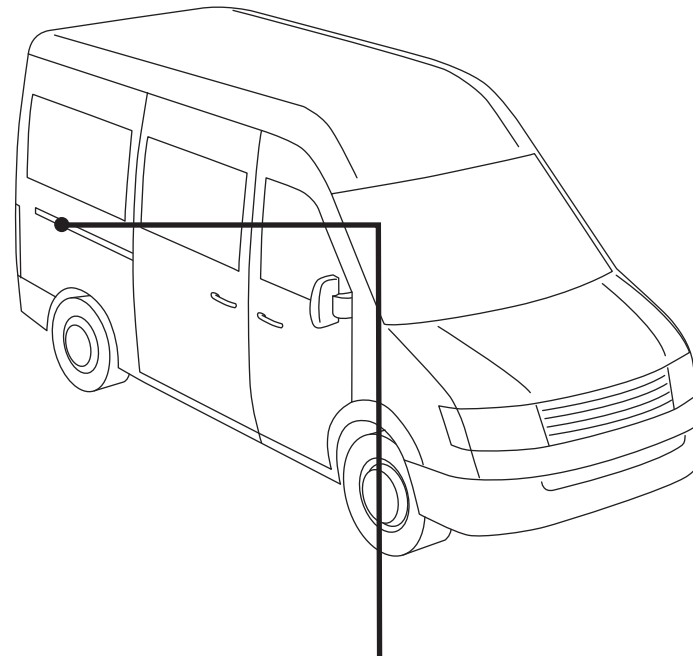
## 2.10 CABLE INSTALLATION, LENGTH 4,5M

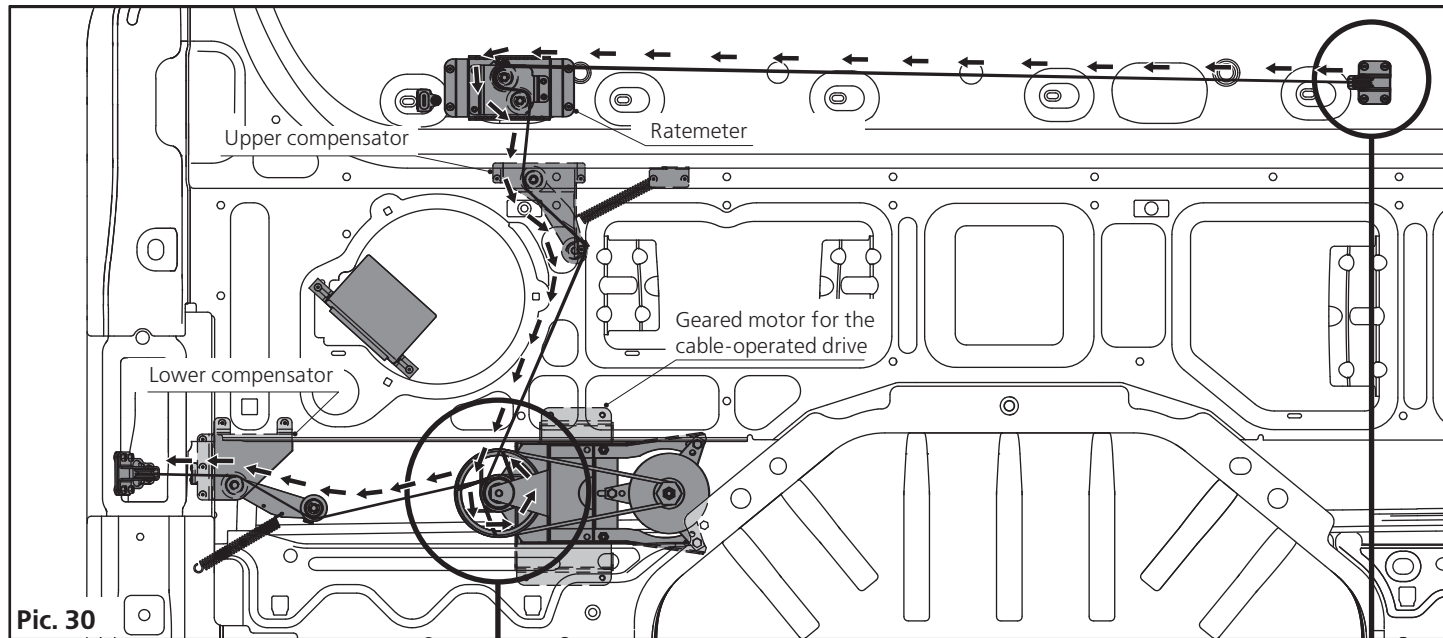
Cable's length is 4,5m. It is located inside the right side of the bus and connects the main assembly units of the drive with the door.

The cable should be stretched before installation (pic. 28). It must be installed during no more than 5 minutes after stretching.

Cable installation:

1. Tie a knot at the end of the cable and fix it on the carriage hook;
2. Put the cable on the rear roller and bring it inside via the hole towards the return roller.





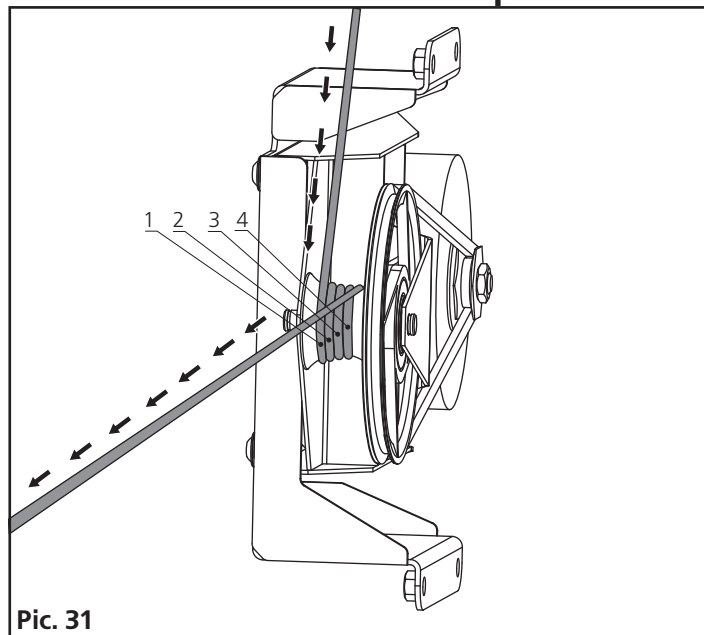
Pic. 30

**3.** The cable is passed through the return roller towards the ratemeter (pic. 30).

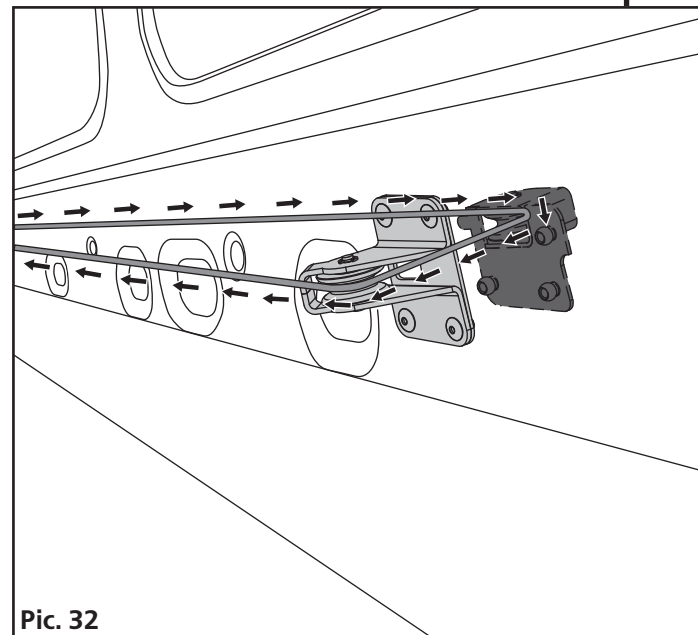
**4.** After the ratemeter the cable is passed through the upper compensator and the friction pulley of the geared motor (pic. 30).

**5.** The cable is wound on the friction pulley forming 4 turns. The direction of the turns is counter clockwise, top-down, outside-in (pic. 31).

**6.** After the friction pulley the cable is passed through the lower compensator in the direction of the front roller (pic. 30).



Pic. 31



Pic. 32

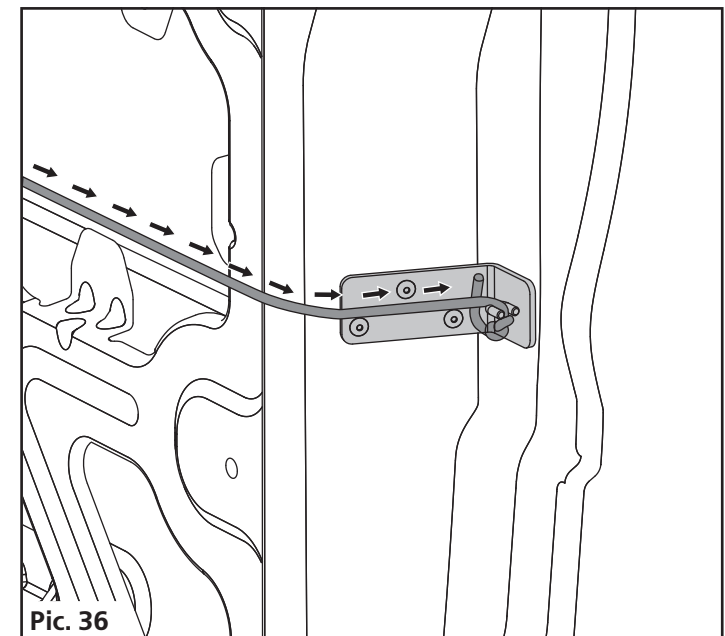
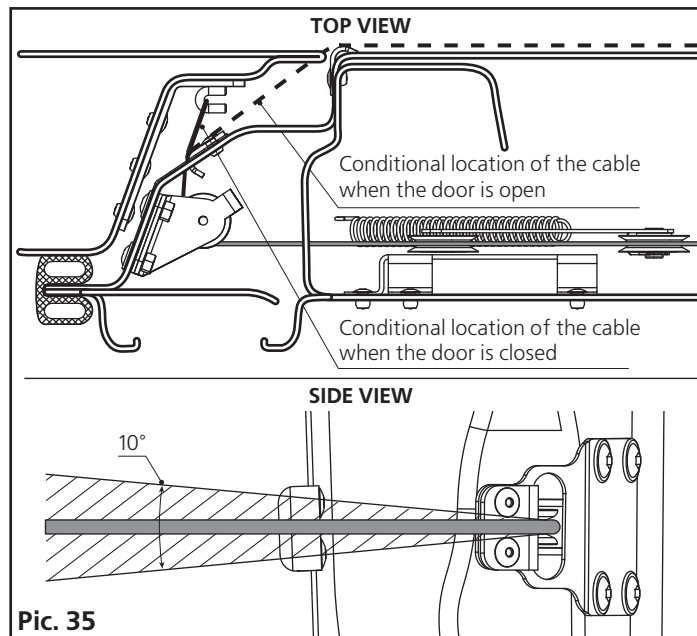
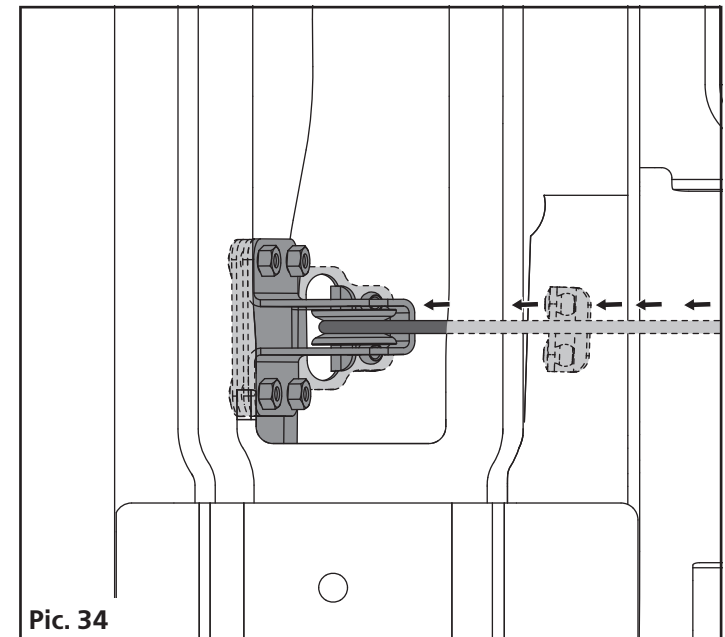
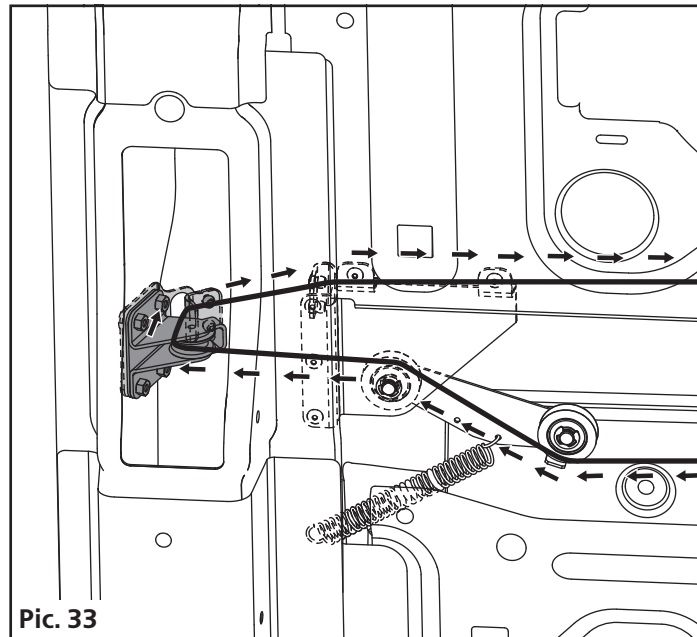


## 2.10 CABLE INSTALLATION, LENGTH 4,5M

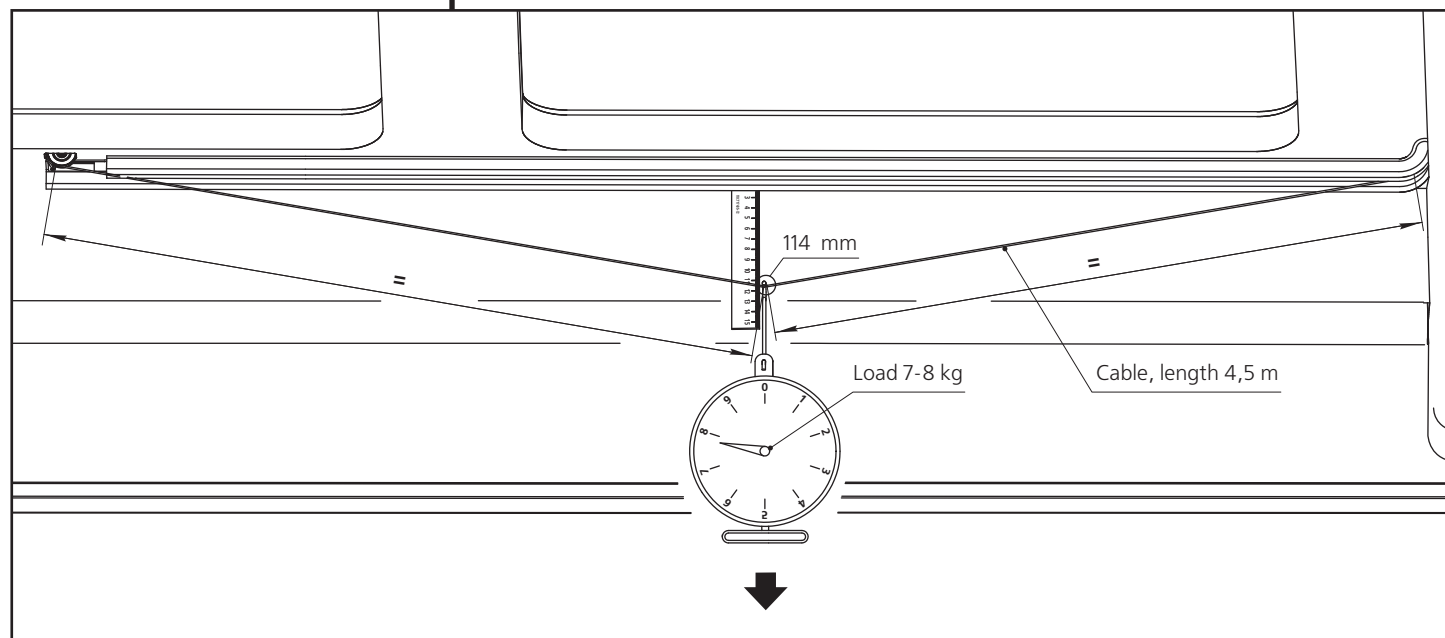
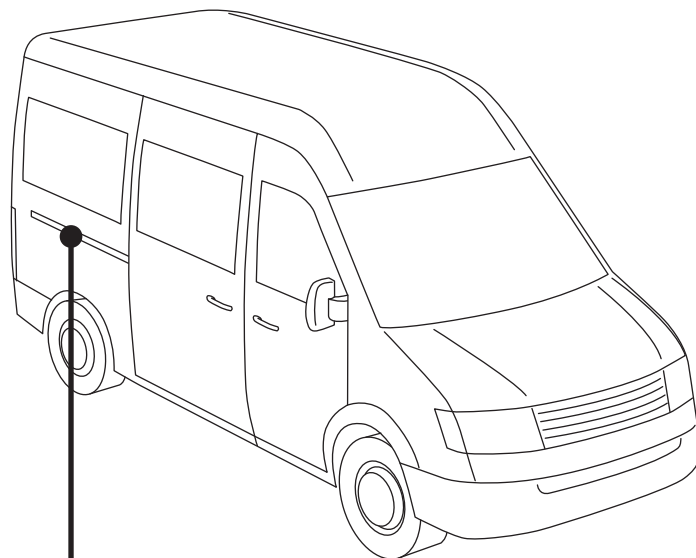
7. The cable is passed through the oval outlet opening in the pillar and comes outside via the front roller (pic. 33, 34).

8. Stretch the cable. All the parts of the cable must be taut. Tie a knot and fix it on the door hook (pic. 36).

9. Open and close the door manually. Make sure that the cable doesn't rub against the hole edges or some other parts.







Connect the drive to the power supply. For this purpose insert a fuse into connector (picture 12 page 12). After that one can hear a long beep and backlighting of the main control button and Vmax will be switched on.

Make 10-15 cycles of opening/closing in order to stretch the drive cable. Keep an interval for not less than 5 sec. in order not to overheat motor and controller.

Inspect the cable tension. Using steelyard check up your cable tension as shown. When distance is 113....115mm the load should be 7-8 kg. Correct your cable tension if necessary.

#### CABLE TENSION ADJUSTMENT

Take off the cable from the door hook. If you want to make it taut, tie a knot further from the end. If you want to reduce tension, tie a knot closer to the end.



#### NOTE



Inspect the cable tension regularly.

### DOOR CONTROL

Main control button, additional button, remote control are used for controlling the door. Push one of these buttons for opening/closing the door.

The door movement starts after releasing a button. Hold button for 0,2-0,5 sec.

### HOW TO CANCEL THE PROCESS OF OPENING/ CLOSING



If you decide to cancel the process of opening or closing and you have already pushed the button, keep holding the button for 2-2,5 sec. till it beeps. Then release the button. The process will be cancelled.

### STOPPING

If you want to stop the door when it is moving, push the button once. When opening the door it will be stopped. When closing the door it will be stopped and returned back.



### VMAX FUNCTION

Start closing the door and while it is moving, push and hold Vmax button. While you are holding the button, it moves with the highest speed.

 **NOTE** 

Adjust the drive only when the bus engine is on.

### DOOR SPEED ADJUSTMENT

 **NOTE** 



One can adjust only closing speed. Opening speed is maximum and the same.

- Push and hold the main control button for 10 sec., release it after two beeps. The controller starts beeping constantly.

- Push the main control button once for opening or closing.

- In order to make speed higher one must push the main control button several times while opening the door. **Each push increases speed gradually.**

- **In order to make speed slower one must push the main control button several times while closing the door.** Each push reduces speed gradually.

 **NOTE** 

Change parameters only while moving the door.

- In order to save the chosen speed push and hold the main control button. Wait for 2 beeps (the first beep sounds when you have just pushed the button, the second beep sounds in 2-2,5 seconds). Then release the button and wait for a continuous beep. It means that your parameters are saved. The other way is not to push any buttons for 25 seconds. In this case your parameters are saved automatically.



### ADJUSTMENT OF OPENING WIDTH

- Push the main control button and hold it for 20 sec. till triple beep sounds. The controller starts beeping continuously.

- Push the main control button once to start opening or closing the door.

- In order to increase opening width it is necessary to push the main control button while opening the door. **Each push increases opening width gradually.**

- **In order to decrease opening width it is necessary to push the main control button while closing the door.** Each push decreases opening width gradually.

 **NOTE** 



Change parameters only while moving the door.

- In order to save the chosen opening width push and hold the main control button. Wait for 2 beeps (the first beep sounds when you have just pushed the button, the second beep sounds in 2-2,5 seconds). Then release the button and wait for a continuous beep. It means that your parameters are saved. The other way is not to push any buttons for 25 seconds. In this case your parameters are saved automatically.

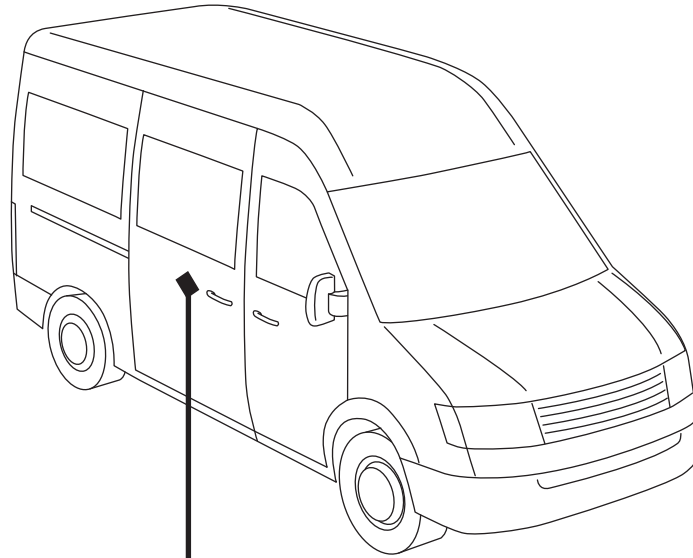
When opening the door the adjustable parameter value is increased by one step (4% of maximum value) with each button push. It is accompanied with a short beep.

When closing the door the adjustable parameter value is decreased by one step (4% of maximum value) with each button push. It is accompanied with a short beep.

The process of opening and closing the door is the same for setting mode and for operating mode. The difference is only in beeps. The movement of the door is not accompanied with beeps in setting mode. Besides, stopping function, automatic rollback function, Vmax function are switched off in setting mode.

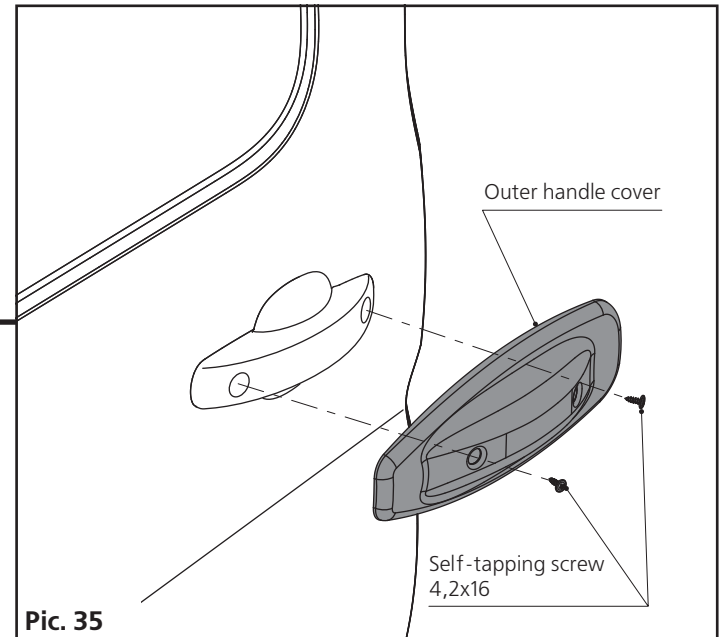
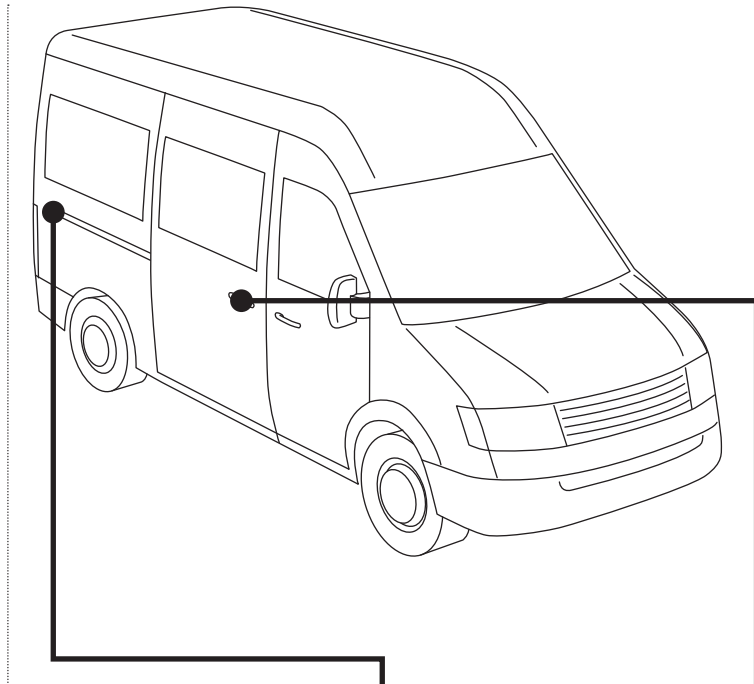
 **NOTE** 

The remote control is not used for the drive adjustment.

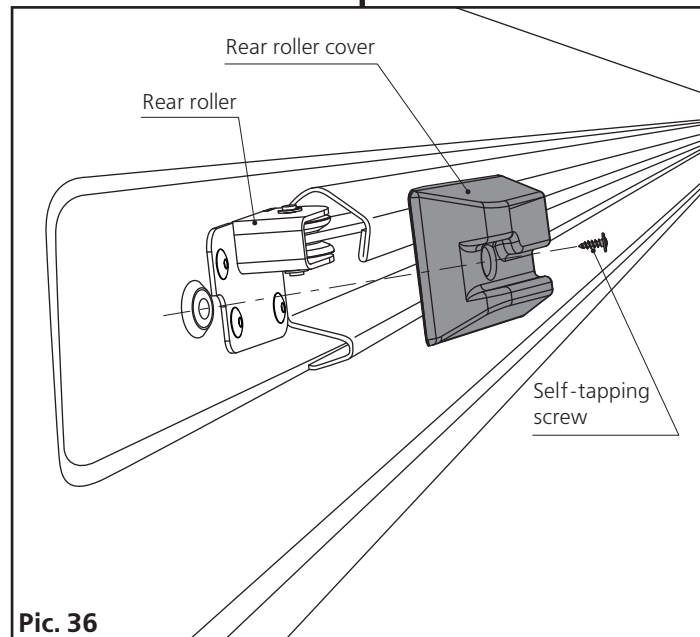


Warning sticker is located outside the sliding door near outer handle. It should be noticeable.

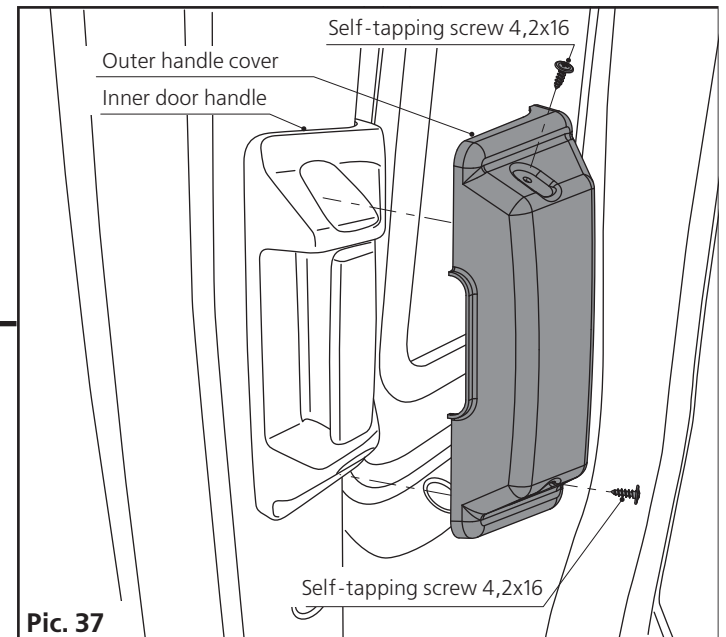
[www.AdorUSA.com](http://www.AdorUSA.com)  
[AdorUSA@gmail.com](mailto:AdorUSA@gmail.com)  
216.214.0828



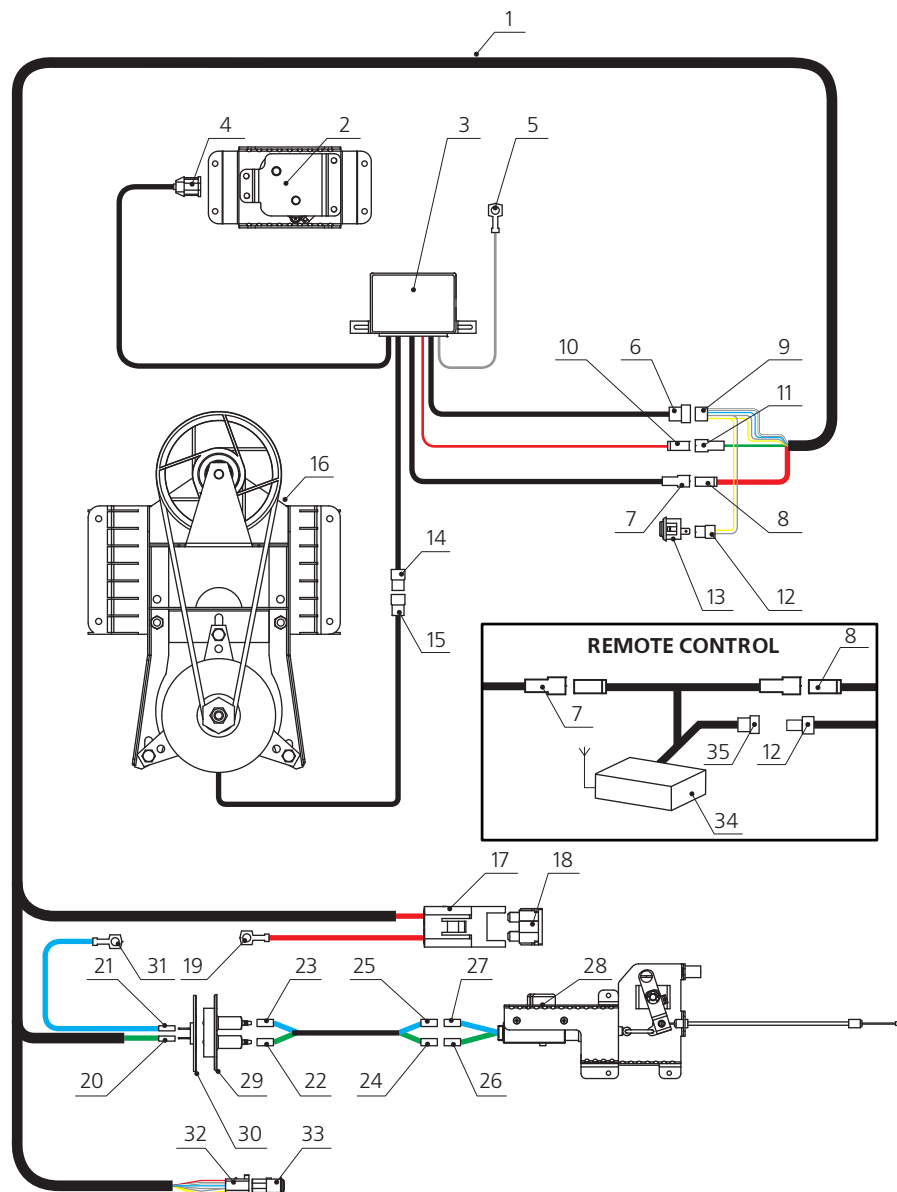
Pic. 35



Pic. 36



Pic. 37



1. Main wiring harness.
2. Ratemeter.
3. Controller for the cable-operated drive.
4. Controller wiring harness connector (grey, green and red wires) to ratemeter connector 2.
5. «-» grey negative wire terminal to the body of the minibus.
6. Controller wiring harness connector (grey, white, yellow and red wires) to main wiring harness connector (white, blue, 2 grey and 2 yellow wires, 9).
7. Controller wiring harness connector (red wire) to main wiring harness connector (red wire, 8).
8. Main wiring harness connector (red wire) to controller wiring harness connector (red wire, 7).
9. Main wiring harness connector (white, blue, 2 grey and 2 yellow wires) to controller wiring harness connector (grey, white, yellow and red wires, 6).
10. Controller wiring harness connector (red wire) to main wiring harness connector (green wire, 11).
11. Main wiring harness connector (green wire) to controller wiring harness connector (red wire, 10).
12. Main wiring harness connector (yellow and grey wires) to control button, 13.
13. Control button to main wiring harness connector (yellow and grey wires, 12).
14. Controller wiring harness connector (blue and grey wires) to wiring harness connector of geared motor. (black and blue wire, 15).
15. Wiring harness connector of geared motor (black and blue wire) to controller wiring harness connector (blue and grey wire, 14).
16. Geared motor.
17. Red wire connector of fuse 30A to fuse 30A, 18.
18. Fuse 30A.
19. Positive red wire terminal +12V/25A of fuse wiring harness to positive bus electric battery terminal.
20. Green wire terminal of main wiring harness to immovable contacts, 30.
21. Blue wire terminal of main wiring harness to immovable contacts, 30.
22. Green wire terminal of actuator wiring harness to movable contacts, 29.
23. Blue wire terminal of actuator wiring harness to movable contacts, 29.
24. Green wire terminal of actuator wiring harness to green wire terminal of latch actuator, 26.
25. Blue wire terminal of actuator wiring harness to blue wire terminal of latch actuator, 27.
26. Green wire terminal of latch actuator to green wire terminal of actuator wiring harness, 24.
27. Blue wire terminal of latch actuator to blue wire terminal of actuator wiring harness, 25.
28. Latch actuator.
29. Movable contacts.
30. Immovable contacts.
31. «-» negative blue wire terminal to bus body.
32. Main wiring harness connector (red, white, blue, 2 yellow and 2 grey wires) to main control button, 33.
33. Main control button to main wiring harness connector (red, white, blue, 2 yellow and 2 grey wires, 32).
34. Remote control.
35. Two-pin connector.

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.

