9 REPLACEMENT OF DRIVE 10

9.1 Tools

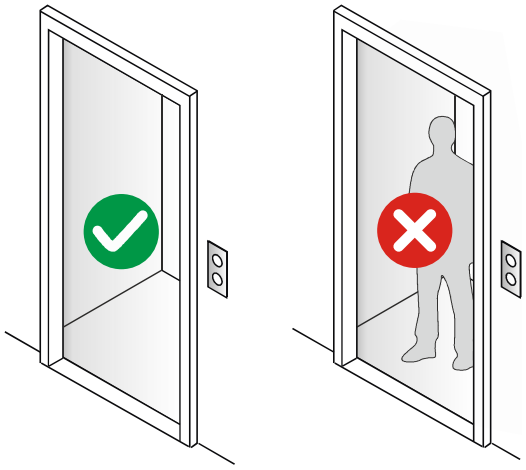
- Standard maintenance tool kit
- Locking set for main switch
- Safety fences
- Maintenance signs
- Work stool
- ESD kit / ESD wrist band kit
- Multimeter CAT III
- Door blocking tool
- Emergency opening key
- Insulation resistance and earth continuity meter

X0000092535 A.5

9.2 Safety measures

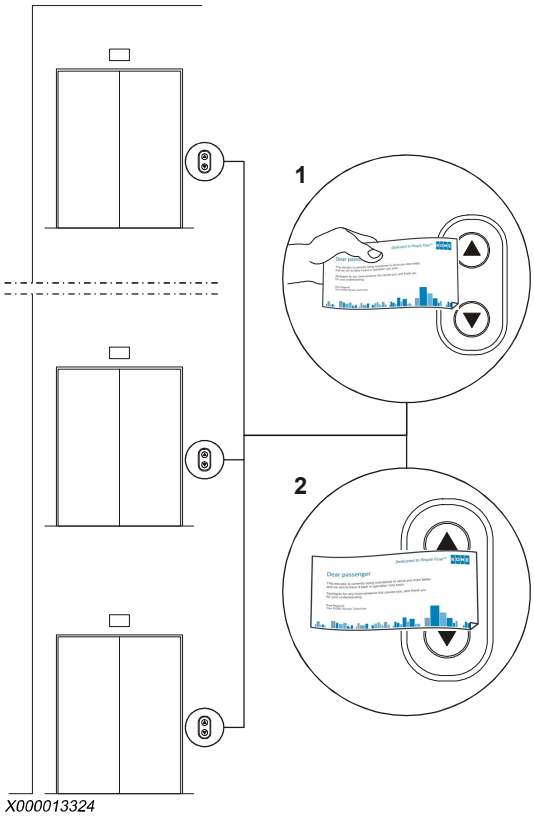
Refer to *AS-01.03.101 Elevator and building door maintenance - safety manual*.

1. Ensure that the elevator car is empty.



X000010460

2. Put under maintenance stickers at all landings.



X000013324

Install the safety fences around the work area to prevent unauthorized access.

X0000086305 B.2

9.3 Replace transformer (Drive 10)

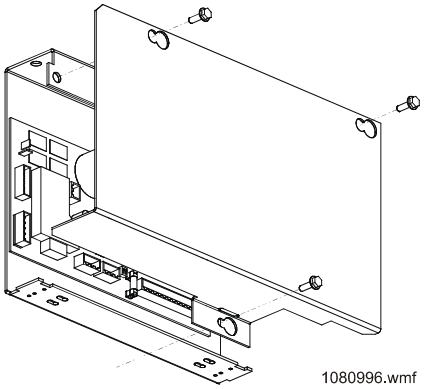
WARNING: Ensure that the main switch is turned off, locked and tagged before commencing the work on the drive.

CAUTION: Electrostatic discharge (ESD) may damage the drive board. For more information on working with ESD sensitive devices, see *AS-12.02.001*.

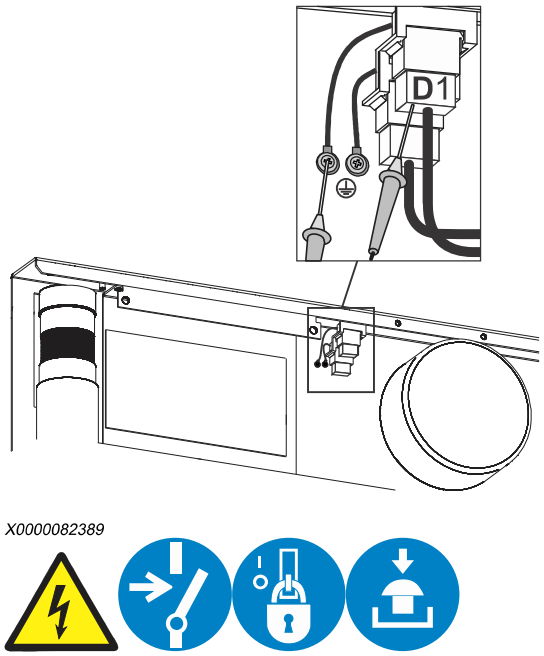
NOTE: If the transformer wires routed under the drive board, remove the drive board to access the wires.

1. Drive the elevator car on RDF to a suitable position to access the car door operator.

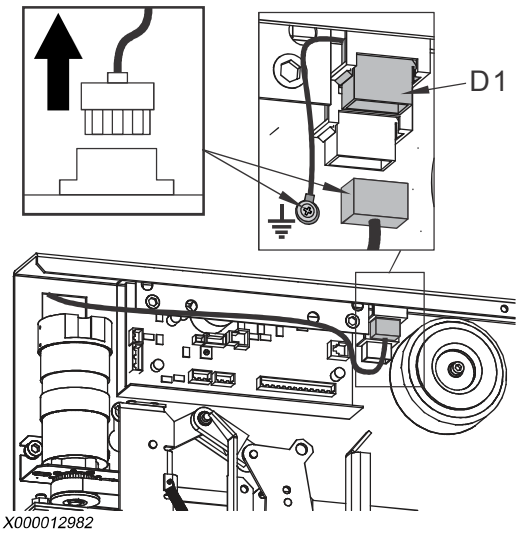
   For more information, see *Preparations and safety measures*.
2. Turn off the main switch.
3. Open landing door with the emergency opening key and block it open.
4. Remove the drive board cover.



   NOTE: In case of low headroom, refer to section *Electrification* to access the drive.
5. Connect the ESD wrist strap to the earth point.
6. Ensure that the car door operator is de-energized, by measuring with multimeter between each connected wire of D1 plug and earth PE.

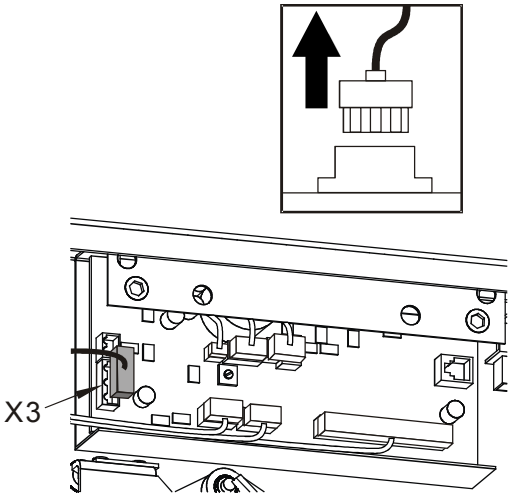


7. Disconnect the power plug D1.



X000012982

8. Disconnect the transformer plug (X3) from the drive board.

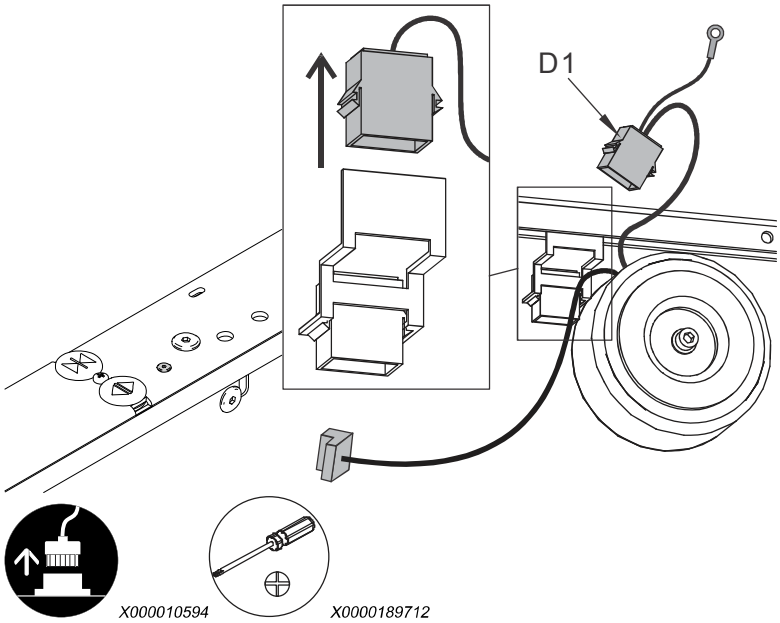


X000012983

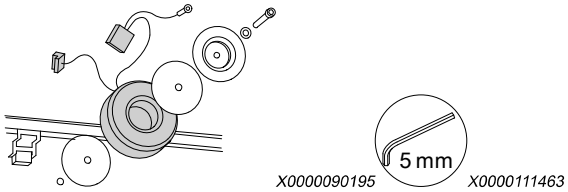
9. Remove the drive board to access the wires, if needed.

10. Loosen the screw to remove the plug bracket from the drive casing.

    Disconnect the transformer plug and the PE wire of D1 plug.



11. Remove the old transformer and install the new transformer.

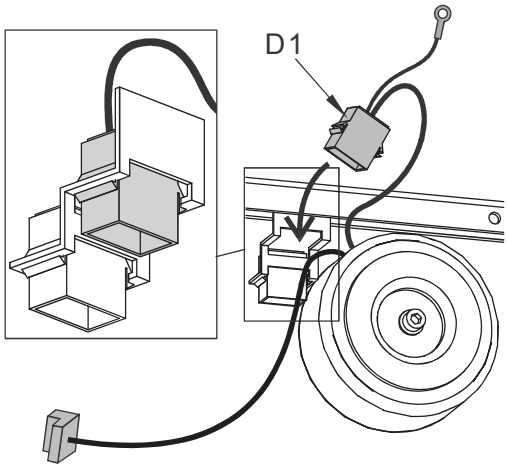


12. Install the drive board, if applicable.

    NOTE: If cables are routed under the board, check that drive board does not damage the cables.

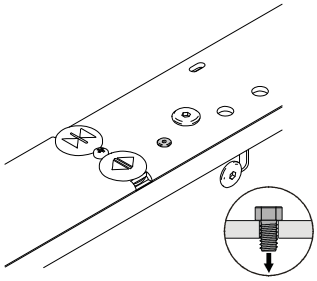
13. Connect the transformer plug (D1) and PE wire.

    Install the plug bracket to the drive casing and tighten the screw.



X000012987

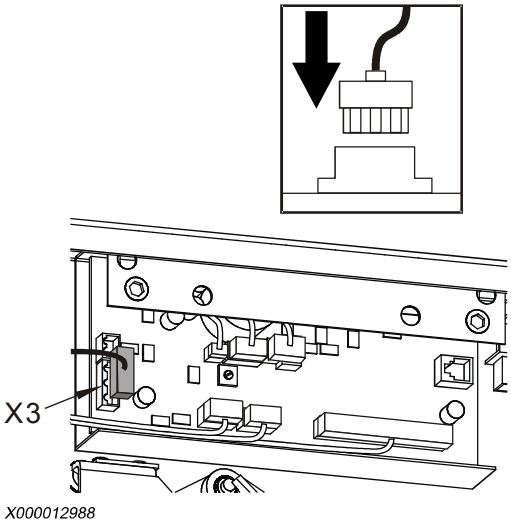
X000010609



X0000082053

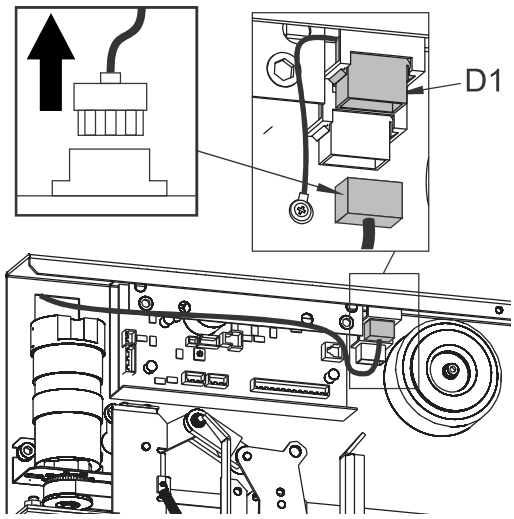
    Measure the PE continuity with multimeter between the car door operator and car top connection box. The resistance must be less than 0.5 Ohm.

14. Connect the transformer plug (X3) to the drive board.



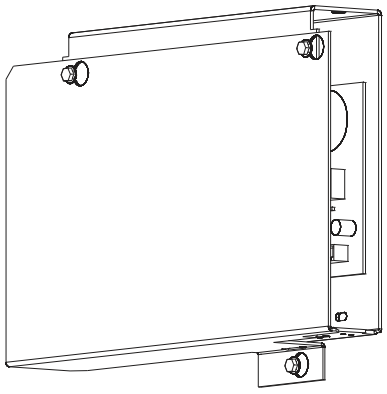
X000012988

15. Connect the power plug (D1).



X0000082057

16. Remove the ESD kit.
17. Install the drive board cover.



X0000090548

18. Release the car roof stop switch.
19. Close the landing door and ensure that the door is mechanically locked.
20. Turn on the main switch.
21. Make a landing call to test the operation of the door.
    1. Ensure that door opens and closes smoothly.
    2. Listen for abnormal noises.
    3. Ensure that the door reopens smoothly when the closing door is interrupted.
22. Finalize the component replacement.

X0000090506 A.12

Related information

– *Electrostatic discharge (ESD) protection for field personnel*
– *Preparations and safety measures (15)*
– *Connect electrostatic discharge wrist strap (50)*
– *Replace drive board (Drive 10P), KM51222160G03 (401)*
– *Finalize the replacement (17)*

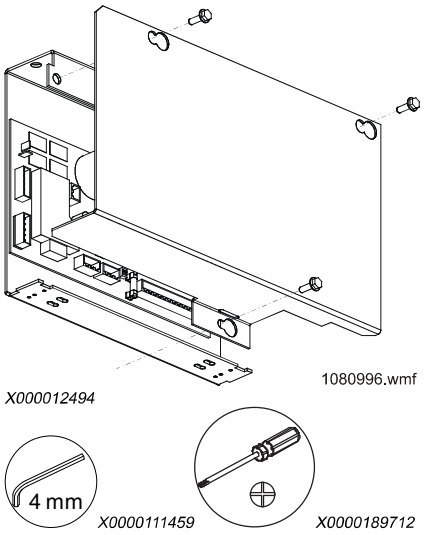
9.4 Replace drive board (Drive 10P), KM51222160G03

CAUTION: Electrostatic discharge (ESD) may damage the drive board. For more information on working with ESD sensitive devices, see *AS-12.02.001*.

---

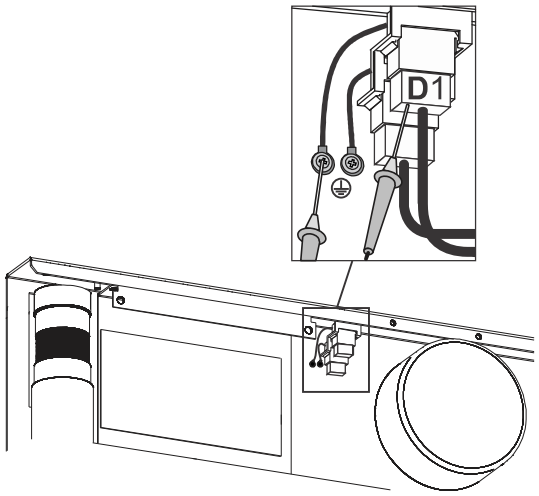
1. Drive the elevator car on RDF to the suitable position to access the car door operator.

   For more information, see *Preparations and safety measures*.
2. Switch off the main switch.
3. Open landing door with the emergency opening key and block it open.
4. Remove the drive board end cover.

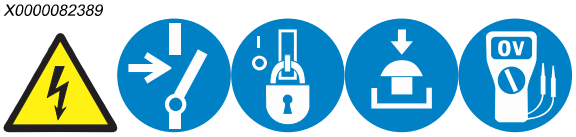


   NOTE: In case of low headroom, refer to section *Electrification* to access the drive.
5. Connect the ESD wrist strap to the earth point.

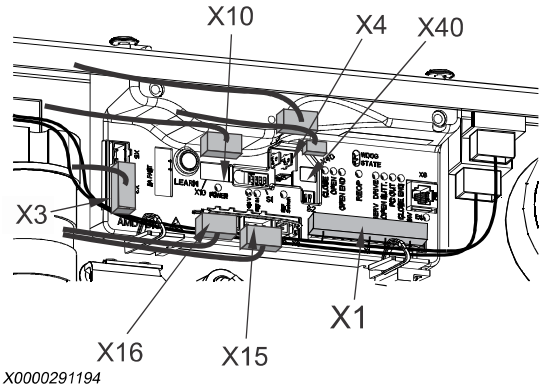
6. Make sure that the car door operator is de-energized, by measuring with multimeter between each connected wire of D1 plug and earth PE.



X0000082389

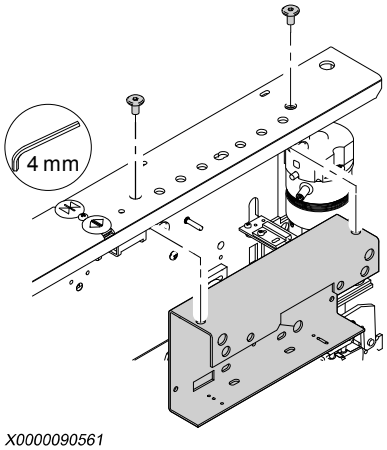


7. Disconnect the plugs from the drive board.



X0000291194

8. Remove the drive board.

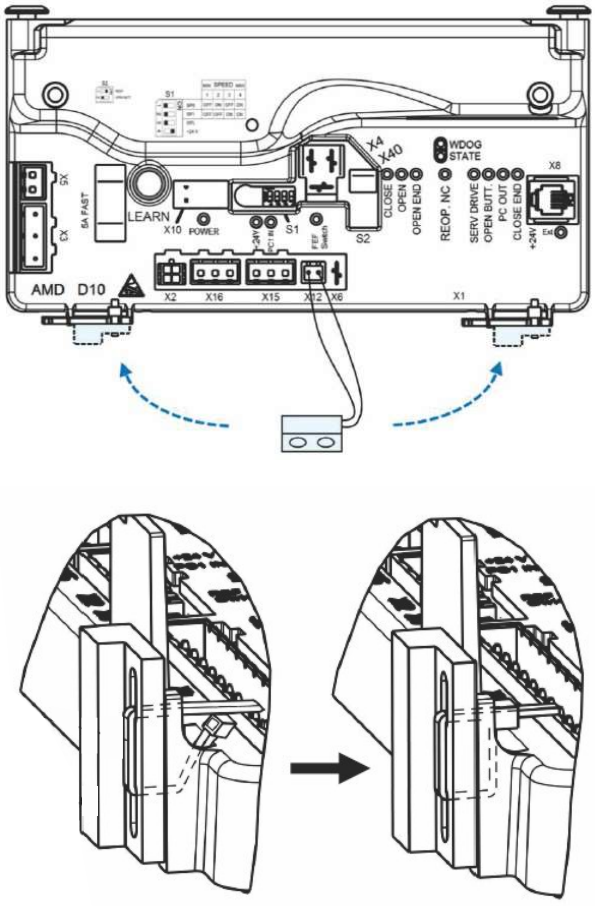


X0000090561

9. Copy the position of the DIP switches from the old drive board to the new drive board.

   NOTE: If drive 1 board must be replaced with new drive 10P board, the S1/4 operation is different. The S1/4 default is ON (COL power save is not enabled).

10. Copy the location of the reference switch on the drive board fixing bracket from the old drive board to the new drive board.



X0000291184

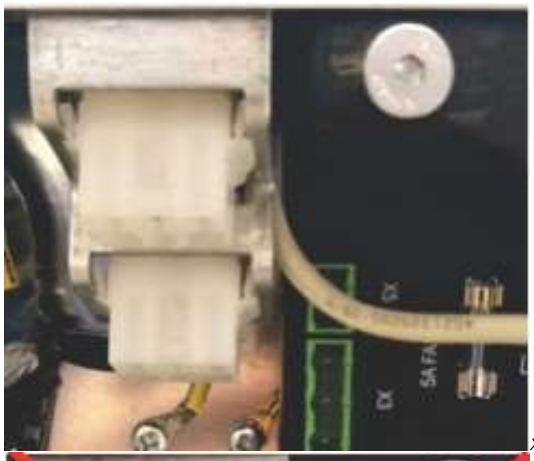
With drive 10P, the reference switch is mounted, so that, the assembly holes for the cable tie are always facing to the right-hand side, regardless if the switch is mounted on the left or right side of the drive board fixing bracket.

The reference switch detects the closed position of the door.

NOTE: The reference switch is located either on left side or right side of the drive board fixing bracket based on the door opening.

NOTE: For more information on the reference switch, see section *Reference switch and 0–position*.

11. To prevent damage to the push-button cable, route the push-button cable behind the D1 and D2 connector bracket as shown in illustration.

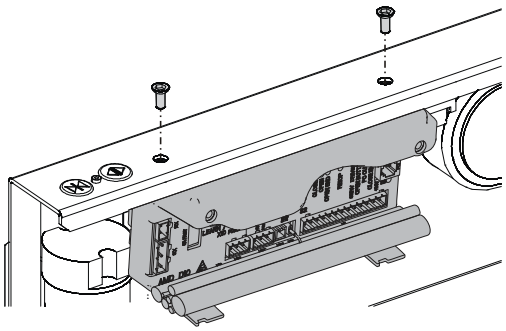


X0000291186

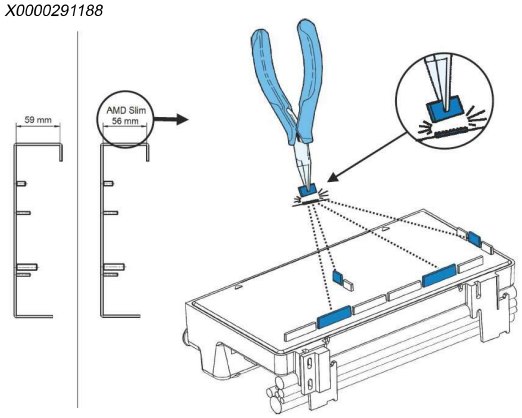
X0000291211

12. Install the new drive board.

NOTE: Only If board is installed to slim (AMDSC) or KONE ReNova (AMDR) door operator (check from label on door operator), the longer spacers on bottom side of drive board should be removed.



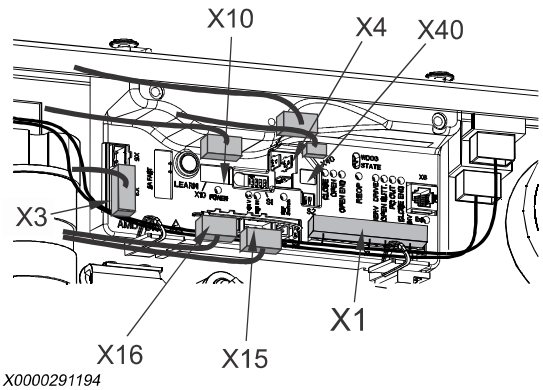
X0000291188



X0000291192

13. Connect the wires to the new drive board.

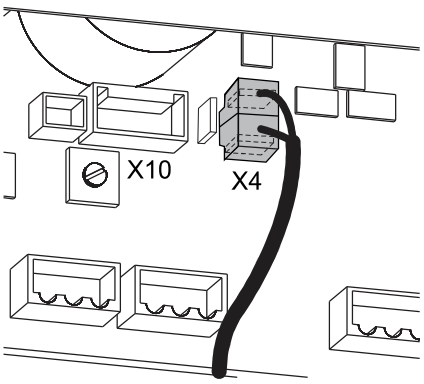
    Secure cables using cable ties.



X0000291194

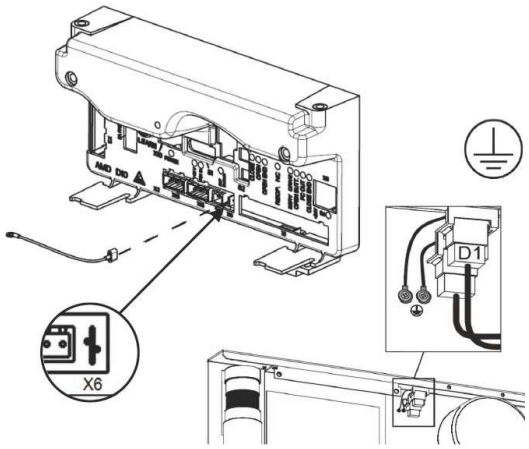
NOTE: D1 board has two-pin motor connector (X4) and can use only DC-motor (2 wires).

D10 board has three-pin connector X4 for the motor and can drive both DC-motor and PMS motor (3 wires). If DC-motor is used with D10 board, connect wires as shown in picture.



X0000090565

14. Connect the separate grounding wire to flat-pin connector X6 on the new drive 10P or drive 10S board and the other end to the earth screw.



X0000291196

15. Close the car doors.
16. Switch on the main switch.

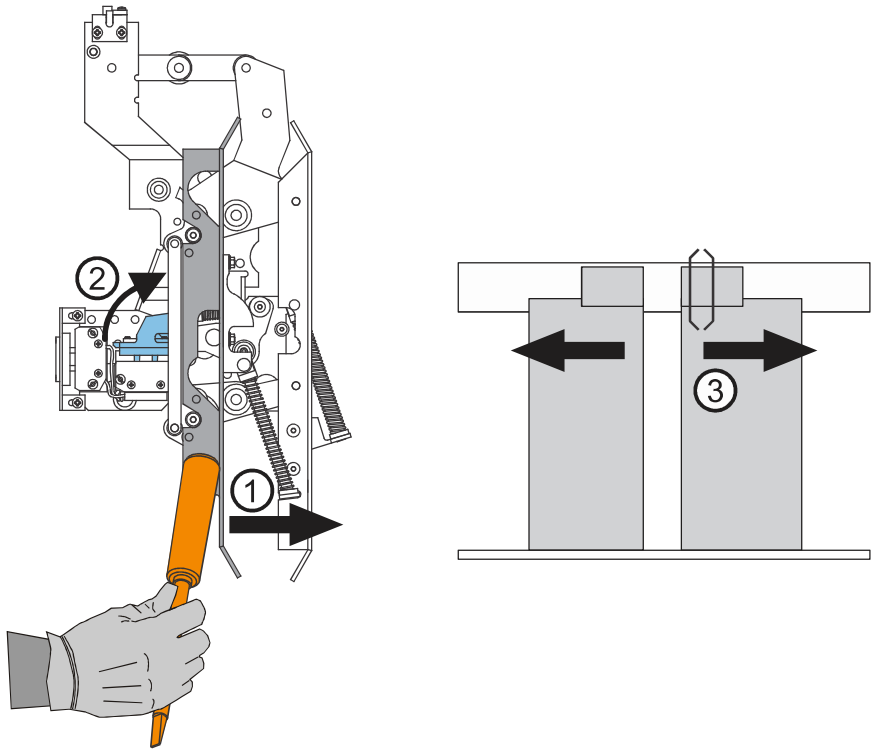
17. Reset the drive board and perform a new learning:

CAUTION: Before starting the task, familiarize with coupler. Verify coupler vane and coupler vane movement direction that opens door lock.

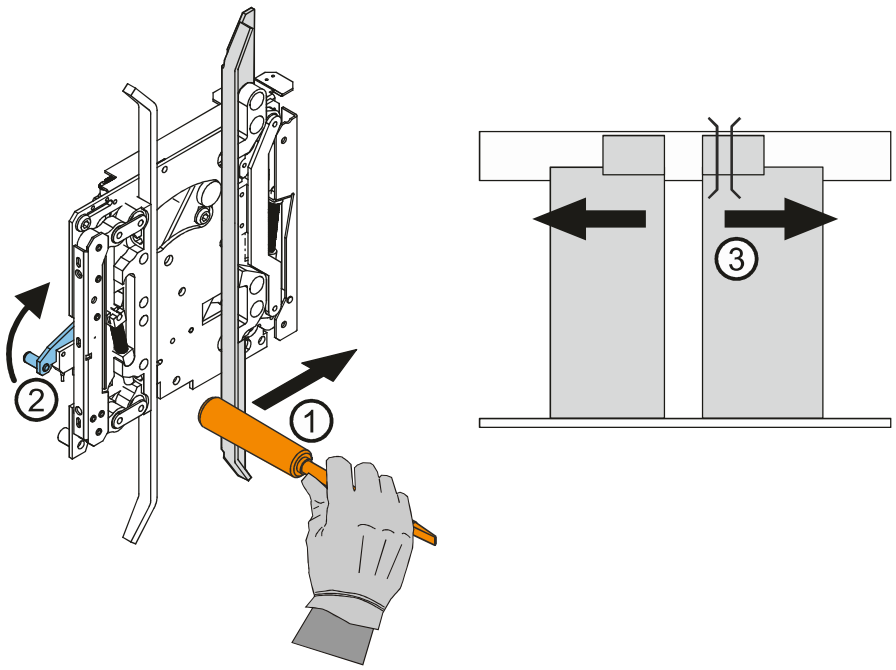
---

1. Make sure that the elevator is in inspection and the doors are in close end position.
2. Press the learn button (*) and hold it for a few seconds.
3. Press and hold the close button to complete the coupler movement.
4. When the door is fully closed, hold the close button for 2 seconds before releasing it.
5. Using end of a screw driver, press (1) coupler vane in relevant direction to release the car door lock (2) manually.

   Otherwise the door will not open.

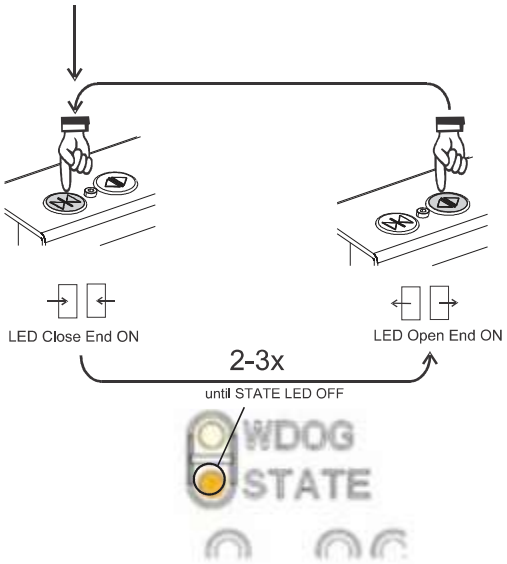


X0000232875

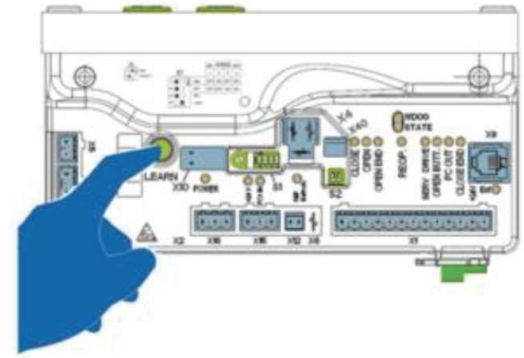


X0000232756

6. When the door is fully opened, hold the open button for 2 seconds before releasing it.
7. Repeat the close and open cycle 2 – 3 times until the state LED switches off.



X0000291198

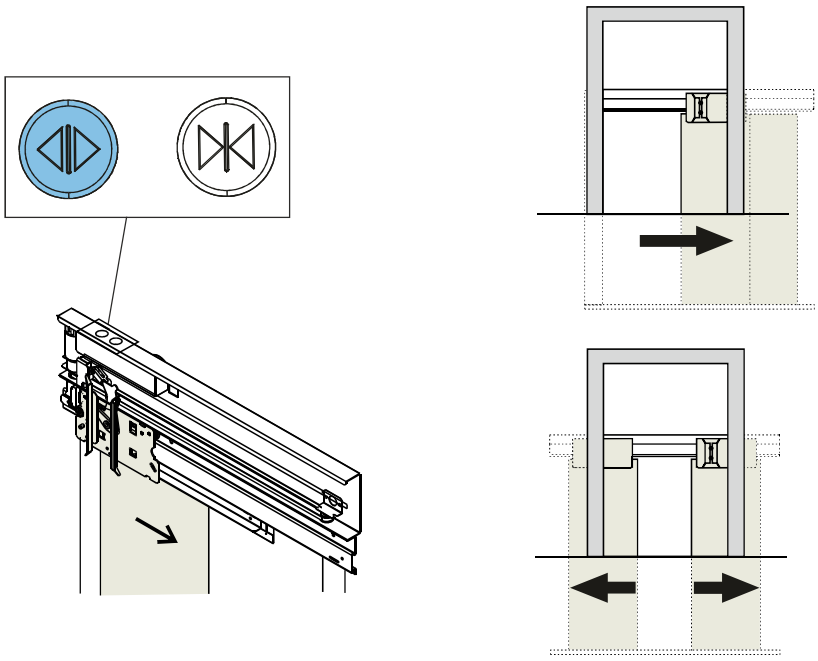


X0000291200

WARNING: Make sure that the ESD wire does not get tangled with the moving parts of the door.

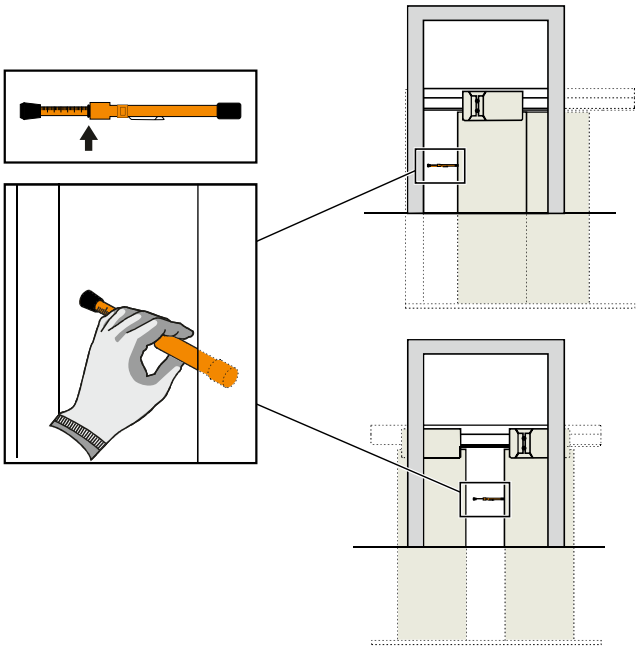
---

18. Check door closing force:
    1. From the landing, open the car doors using the door operator test buttons.



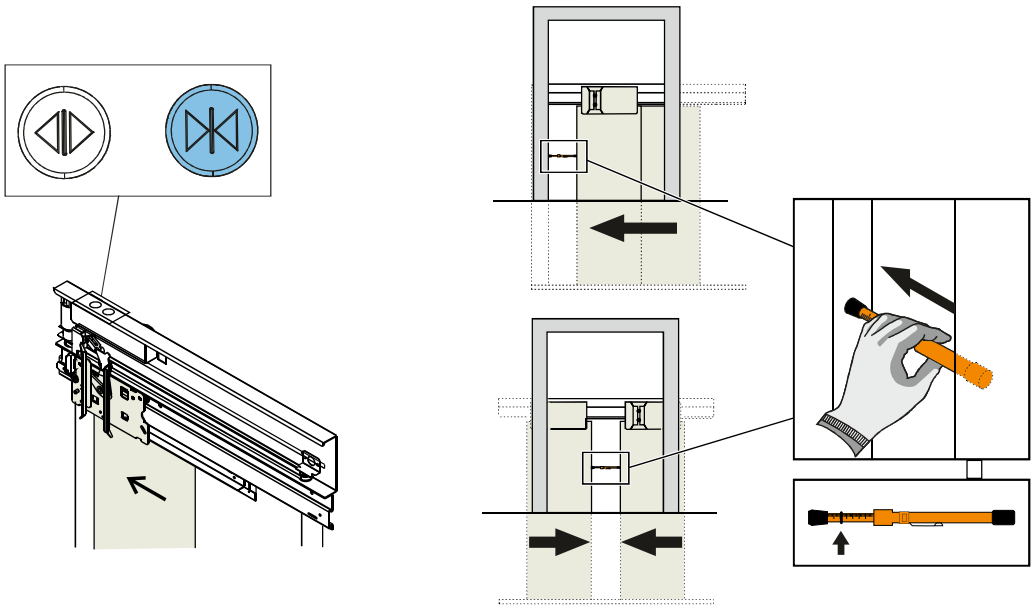
X0000256278

    2. Drive the doors in the close direction. Leave them open enough for the closing force gauge to fit into the gap between the door panels (centre opening door) or the door panel and door frame (side opening door).



X0000256295

    3. Hold the closing force gauge at the door panel (centre opening door) or at the door frame (side opening door). Simultaneously drive the door in the close direction using the door operator test buttons.



X0000256297

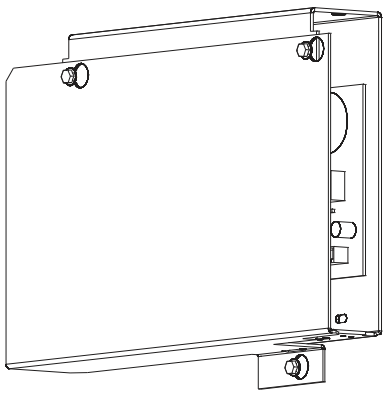
4. Read the value from the closing force gauge.

   Table 10: Door closing force limits

Door opening	**F_{max}**
Centre opening	70
Side opening	140

5. Adjust the closing force potentiometer, if needed. Refer to *Appendix E: Adjust closing force*.

19. Remove the ESD kit.
20. Install the new drive board end cover.



X0000090548

21. Switch the elevator to normal drive.

22. Release the car roof stop switch.
23. Close the landing door and make sure that the door is mechanically locked.
24. Switch on the main switch.
25. Make a landing call to test the operation of the door.
    1. Make sure that door opens and closes smoothly.
    2. Listen for abnormal noises.
    3. Make sure that the door reopens smoothly when the closing door is interrupted.
26. Finalize the component replacement.

X0000090539 A.20

Related information

– Electrostatic discharge (ESD) protection for field personnel
– Preparations and safety measures (15)
– Connect electrostatic discharge wrist strap (50)
– Reference switch and 0-position (52)
– Adjust closing force (501)
– Finalize the replacement (17)
– Effect of DIP switches (66)

9.5 Replace drive board (Drive 10S), KM51222160G02

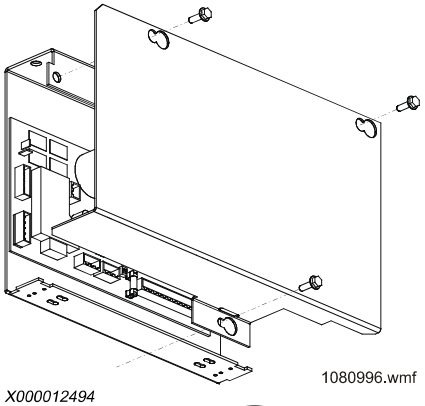
CAUTION: Electrostatic discharge (ESD) can damage the drive board. For more information on working with ESD sensitive devices, Refer *AS-12.02.001*.

---

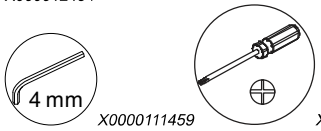
1. Drive the elevator car on RDF to the suitable position to access the car door operator.

   For more information, see *Preparations and safety measures*.
2. Switch off the main switch.
3. Open landing door with the emergency opening key and block it open.

4. Remove the drive board end cover.



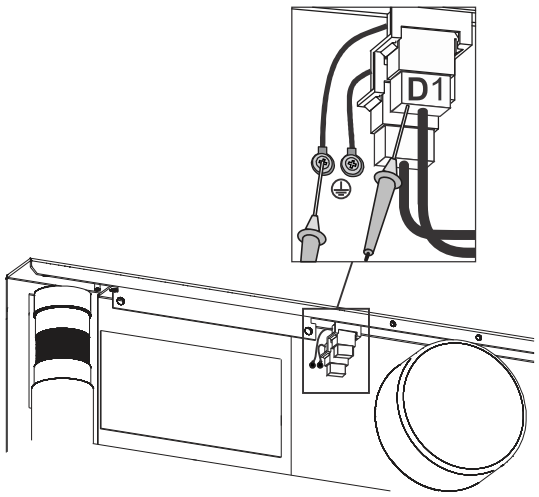
X000012494



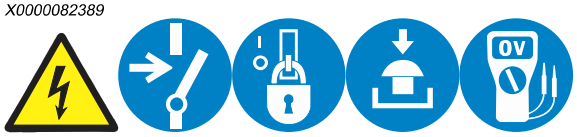
X0000111459 *X0000189712*

NOTE: In case of low headroom, refer to section *Electrification* to access the drive.

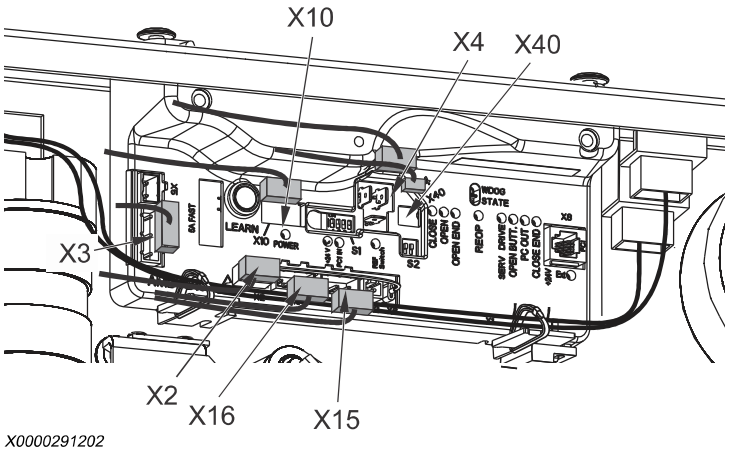
5. Connect the ESD wrist strap to the earth point.
6. Make sure that the car door operator is de-energized, by measuring with multimeter between each connected wire of D1 plug and earth PE.



X0000082389

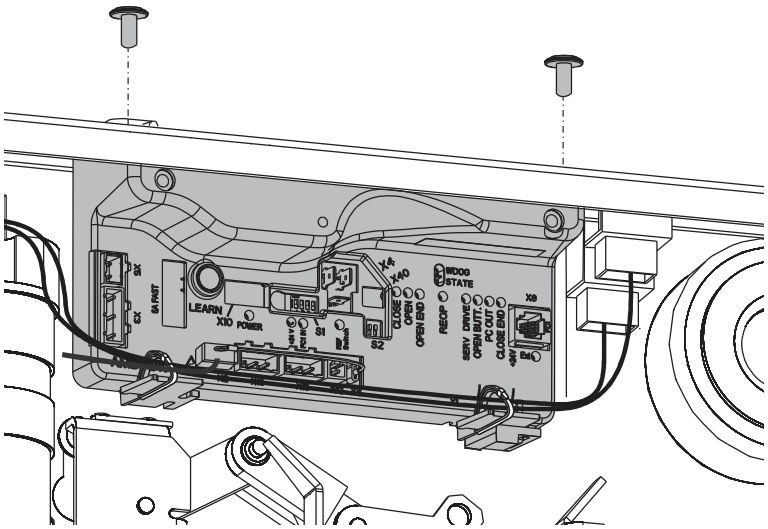


7. Disconnect the plugs from the drive board.



X0000291202

8. Remove the drive board.

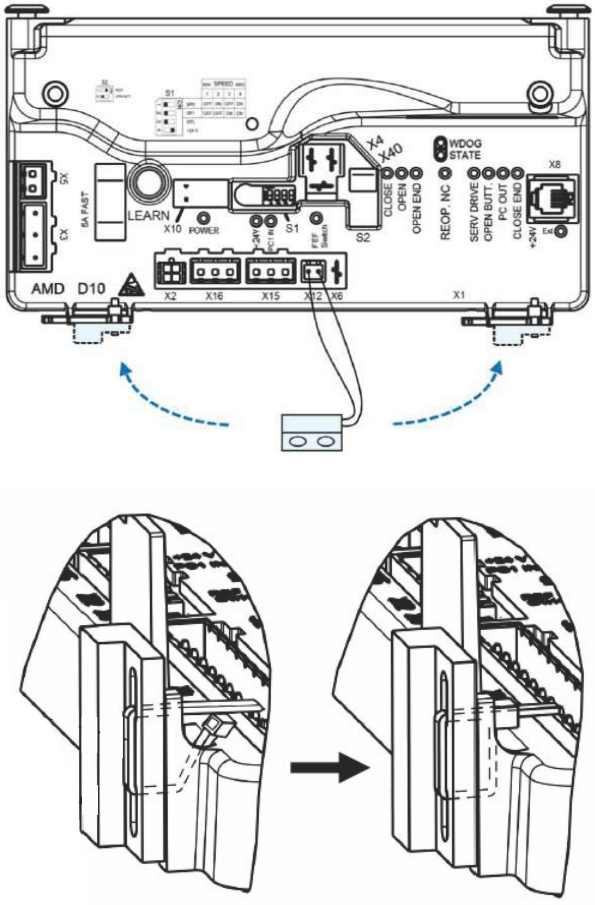


X0000291204

9. Copy the position of the DIP switches from the old drive board to the new drive board.

   NOTE: For more information on the DIP switches, refer Effect of DIP switches.

10. Copy the location of the reference switch on the drive board fixing bracket from the old drive board to the new drive board.



X0000291184

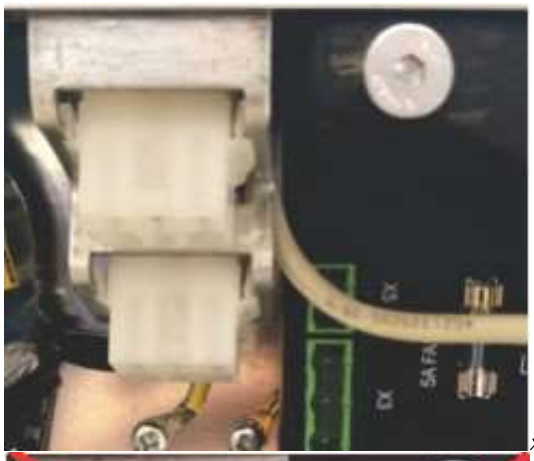
With drive 10S, the reference switch is mounted, so that, the assembly holes for the cable tie are always facing to the right-hand side, regardless if the switch is mounted on the left or right side of the drive board fixing bracket.

The reference switch detects the closed position of the door.

NOTE: The reference switch is located either on left side or right side of the drive board fixing bracket based on the door opening.

NOTE: For more information on the reference switch, see section *Reference switch and 0–position*.

11. To prevent damage to the push-button cable, route the push-button cable behind the D1 and D2 connector bracket as shown in illustration.

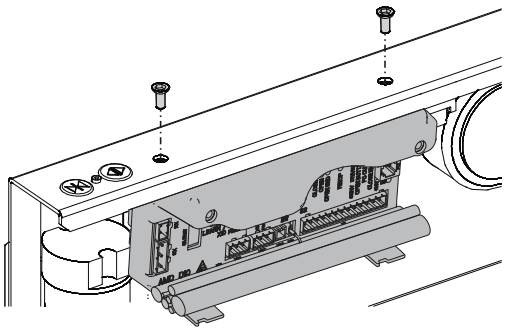


X0000291186

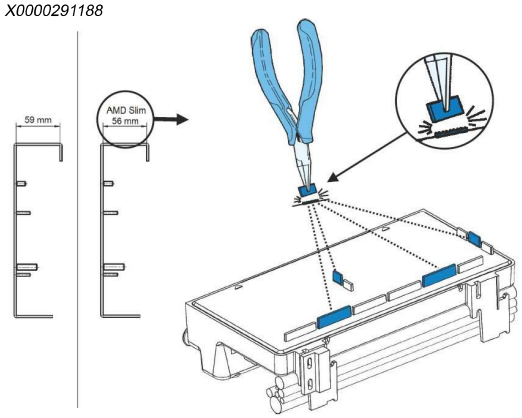
X0000291211

12. Install the new drive board.

    NOTE: Only If board is installed to slim (AMDSC) or KONE ReNova (AMDR) door operator (check from label on door operator), the longer spacers on bottom side of drive board should be removed.



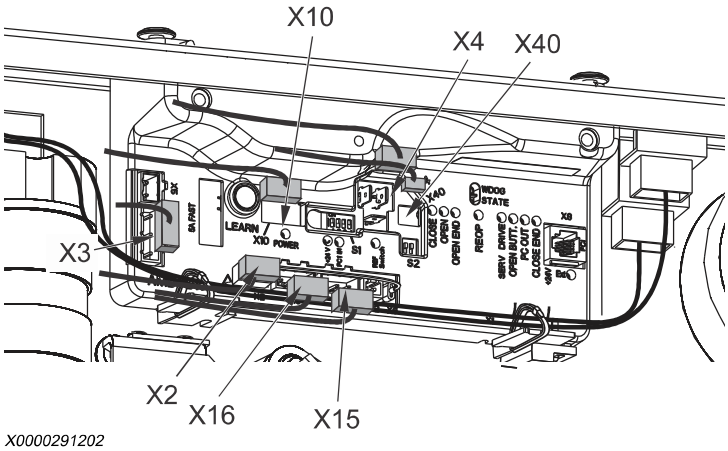
X0000291188



X0000291192

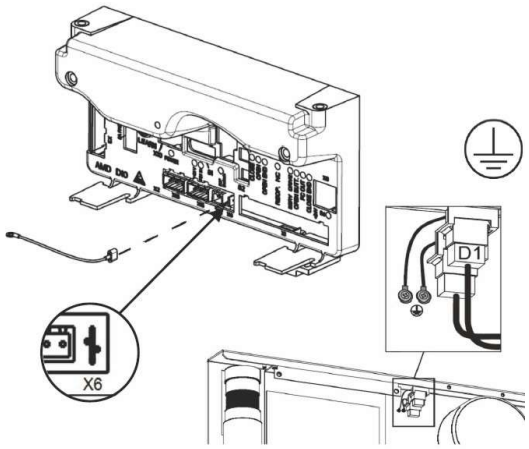
13. Connect the wires to the new drive board.

    Secure cables using cable ties.



X0000291202

14. Connect the separate grounding wire to flat-pin connector X6 on the new drive 10P or drive 10S board and the other end to the earth screw.



X0000291196

15. Close the car doors.
16. Switch on the main switch.

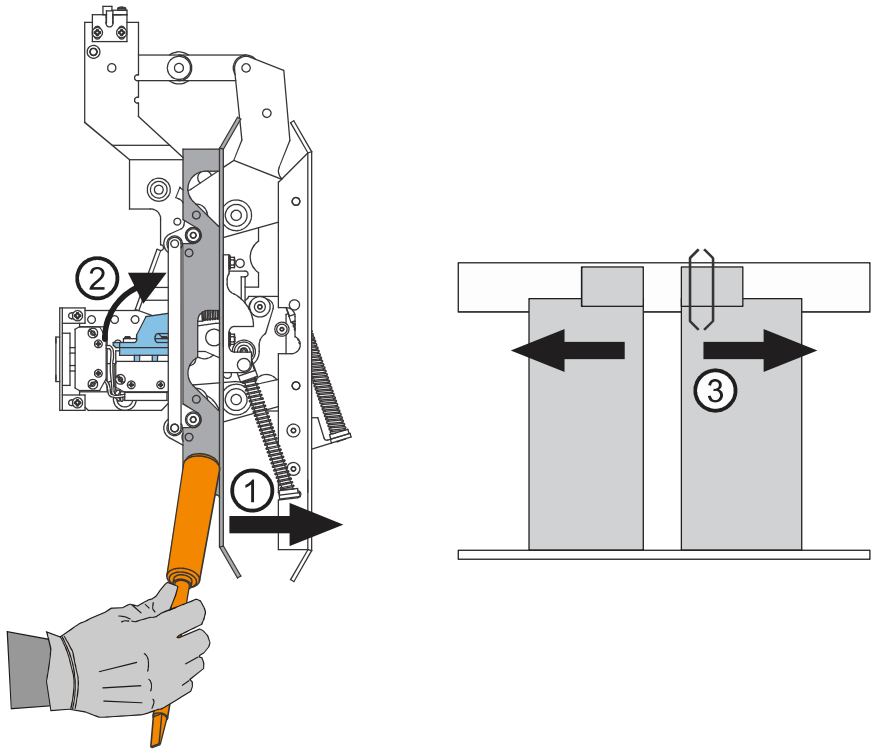
17. Reset the drive board and perform a new learning:

CAUTION: Before starting the task, familiarize with coupler. Verify coupler vane and coupler vane movement direction that opens door lock.

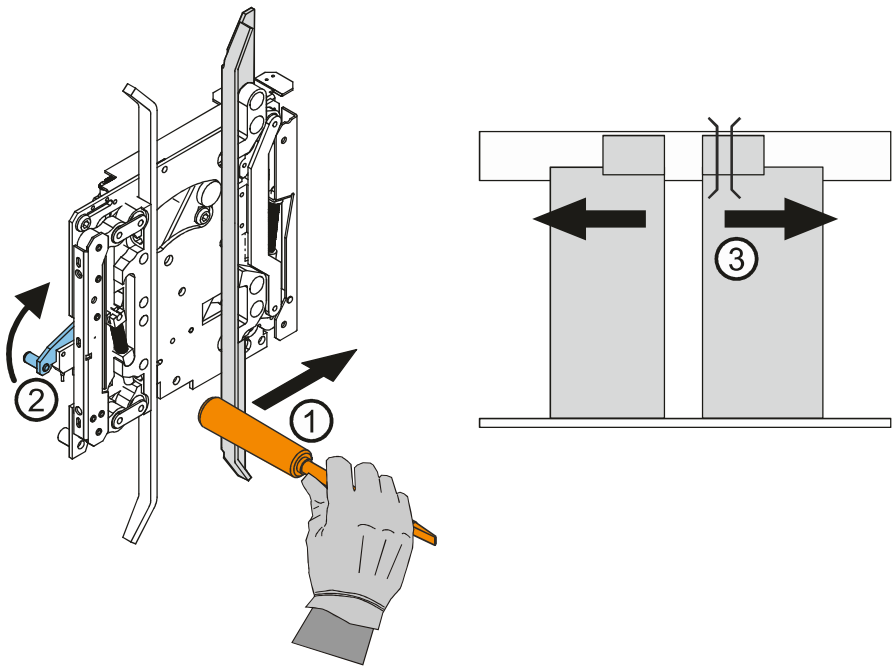
---

1. Make sure that the elevator is in inspection and the doors are in close end position.
2. Press the learn button (*) and hold it for a few seconds.
3. Press and hold the close button to complete the coupler movement.
4. When the door is fully closed, hold the close button for 2 seconds before releasing it.
5. Using end of a screw driver, press (1) coupler vane in relevant direction to release the car door lock (2) manually.

   Otherwise the door will not open.

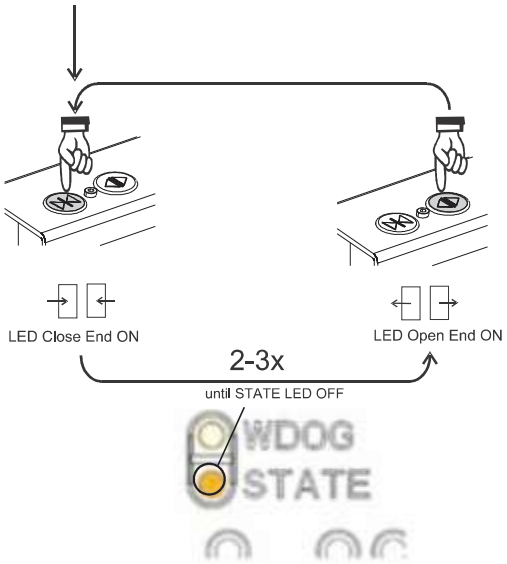


X0000232875

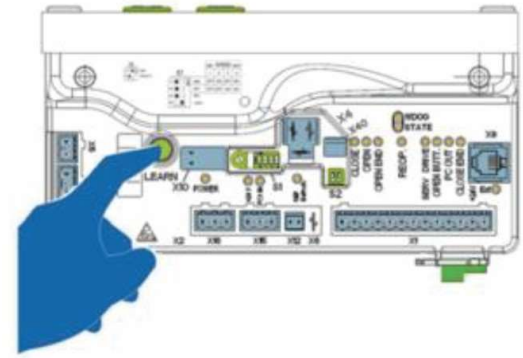


X0000232756

6. When the door is fully opened, hold the open button for 2 seconds before releasing it.
7. Repeat the close and open cycle 2 – 3 times until the state LED switches off.



X0000291198

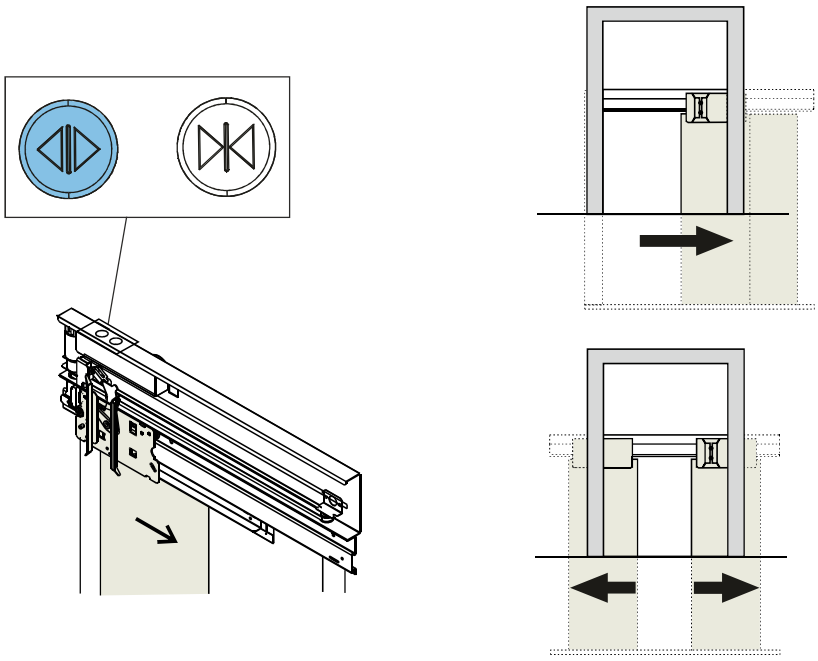


X0000291200

WARNING: Make sure that the ESD wire does not get tangled with the moving parts of the door.

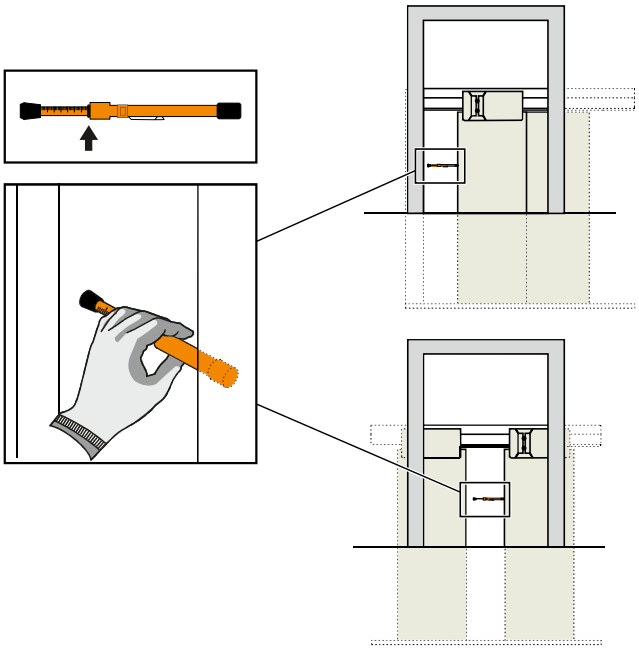
---

18. Check door closing force:
    1. From the landing, open the car doors using the door operator test buttons.



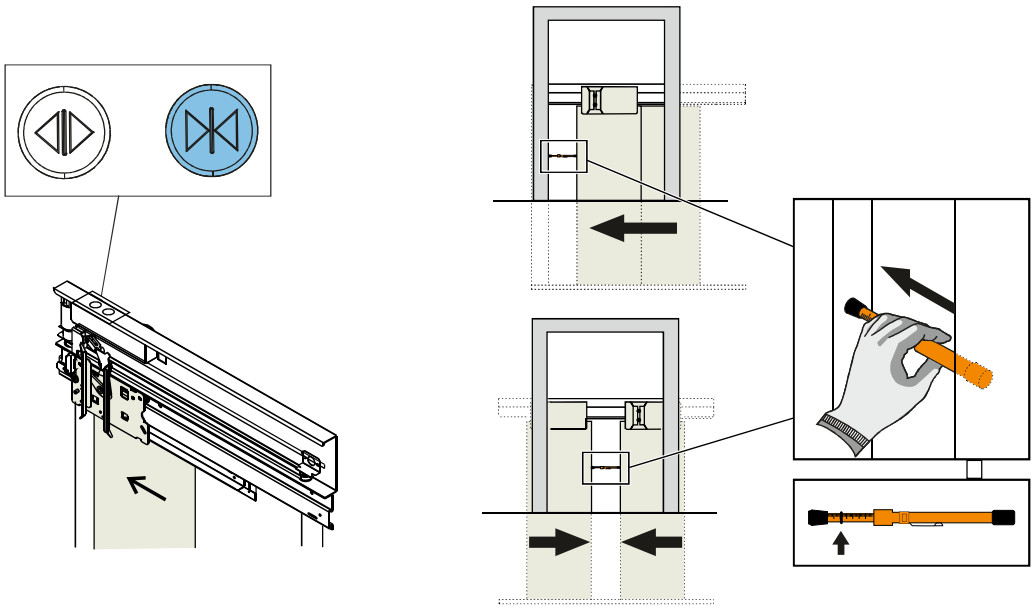
X0000256278

    2. Drive the doors in the close direction. Leave them open enough for the closing force gauge to fit into the gap between the door panels (centre opening door) or the door panel and door frame (side opening door).



X0000256295

    3. Hold the closing force gauge at the door panel (centre opening door) or at the door frame (side opening door). Simultaneously drive the door in the close direction using the door operator test buttons.



X0000256297

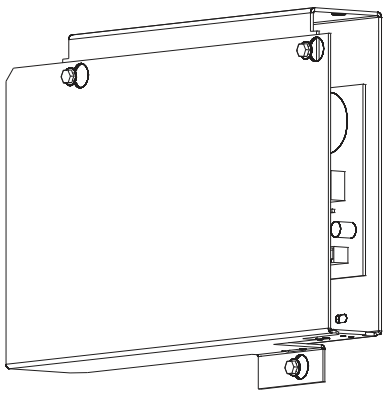
4. Read the value from the closing force gauge.

   Table 11: Door closing force limits

Door opening	**F_{max}**
Centre opening	70
Side opening	140

5. Adjust the closing force potentiometer, if needed. Refer to *Appendix E: Adjust closing force*.

19. Remove the ESD kit.
20. Install the new drive board end cover.



X0000090548

21. Switch the elevator to normal drive.

22. Release the car roof stop switch.
23. Close the landing door and make sure that the door is mechanically locked.
24. Switch on the main switch.
25. Make a landing call to test the operation of the door.
    1. Make sure that door opens and closes smoothly.
    2. Listen for abnormal noises.
    3. Make sure that the door reopens smoothly when the closing door is interrupted.
26. Finalize the component replacement.

X0000291712 A.5

Related information

– *Electrostatic discharge (ESD) protection for field personnel*
– *Preparations and safety measures (15)*
– *Connect electrostatic discharge wrist strap (50)*
– *Reference switch and 0-position (52)*
– *Adjust closing force (501)*
– *Finalize the replacement (17)*
– *Effect of DIP switches (66)*

9.6 Troubleshooting (drive 10, drive 10P and drive 10S)

NOTE: If touching the board during the troubleshooting operations is required, make sure that all the necessary ESD protections are in use.

CAUTION: When making control signal voltage measurements, use terminal EXT GND on the door electronic assembly as the reference. This terminal must be connected to the elevator control signal ground (-/24 V for TMS or EPB, LCECCB, etc.).

If the car door operator is not behaving as expected it is recommended to do the following steps:

1. Use the STATE LED indications to diagnose a possible fault. See *STATE LED indications*.
2. Reset the circuit board and redo the learning. See *Reset board and perform new learning*.
3. If the fault persists, consult the following sections:
   – *Door does not move at all*
   – *Door does not reopen*
   – *Other faults*

NOTE: Although other door and elevator components are considered in this analysis, this troubleshooting section is focused on the door drive.

X0000291726 A.7

9.6.1 STATE LED indications

1. Position the car door operator in a suitable working height when standing on the landing.
2. Remove circuit board cover.
3. Move the door using test drive buttons.

The flashing STATE LED indicates an error code. Count the number of flashes and see the reason for the fault in the table. There is a pause between one sequence of flashes and the following.

Table 12: STATE LED indications

Number of flashes	Description	Door behavior	Recommended action
Continuously ON	Learning has not finished	Door operates according to given command	1. Open and close the doors using the test drive buttons until the state LED switches OFF (maximum 6 cycles). Keep the test drive button pushed for 2 seconds after reaching the mechanical end. This speeds up the learning process. 2. Repeat learning procedure if the LED does not switch OFF. See *Reset board and perform new learning*.
1	Motor or encoder problem	Error code flashes - Door tries to operate	This error may be caused by a faulty motor. Before replacement check connectors X10 and X4 to make sure that motor and encoder are correctly connected.
2	Door is moving in wrong direction or DC-motor polarity connected wrong way.	Error code flashes - Door tries to operate	This error may be caused by someone pushing the door against the movement direction or by a faulty motor. Before replacement: 1. Check that nothing is obstructing the door. 2. If using a DC-motor, check connector X4 to make sure that motor is correctly connected.
3	Internal error of the electronics, overcurrent	Error code flashes - Door tries to operate	This error may be caused by a faulty PCB or motor. Before replacement check if motor cable has clear signs of damage.
4	Errors that can occur during normal operation (for example, mechanical obstruction of the door, motor over heated)	Operation stopped for cooling down	1. Check that nothing is blocking the door movement. 2. Check that the door moves smoothly.

Table 12 STATE LED indications (continued)

Number of flashes	Description	Door behavior	Recommended action
5	Errors related to learning functions	Error code flashes - Door tries to operate	1. Check that reference switch and magnet are correctly positioned. 2. Check reference switch operation by manually closing and opening the door. REF SWITCH LED should be illuminated only when the doors are in the close position. Refer to *Appendix D: Reference switch and 0–position* 3. Check coupler operation during open and close movement.
6	Temperature error (sensor broken or connection not ok)	Operation in low speed	This error may be caused by a faulty motor. Before replacement, check connector X10 to make sure that the encoder is properly connected.

X0000291726

9.6.2 Reset board and perform new learning

Execute the following steps to reset the board and perform a new learning:

1. Check that the elevator is in inspection mode and the doors are in close end position.
2. Set dip switches to correct position.
3. Press and hold the learn button for a few seconds.
4. Press and hold the close button to complete the coupler movement.
5. When the door is fully closed, hold the close button still for 2 seconds before releasing it.
6. Press and hold the open button.
7. When the door is fully opened, hold the open button still for 2 seconds before releasing it.
8. Repeat the open and close cycle 2–3 times (steps 4–7) until the state LED switches off.
9. Switch the elevator to normal drive mode and check the door behavior.

X0000291726

9.6.3 Door does not move at all

Actions to be done if the door does not move at all.

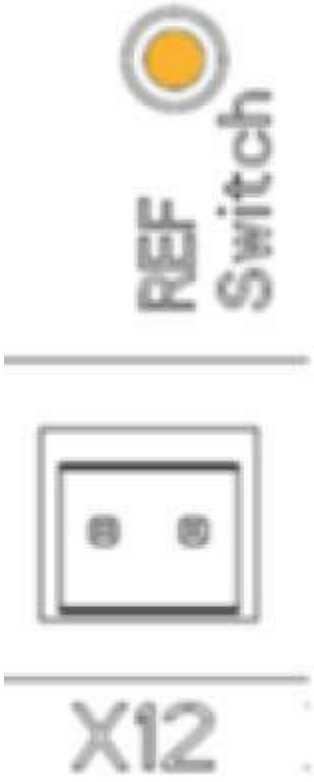
1. Check that the power is ON.
2. Check that supply voltage is properly connected and the circuit breaker in the elevator control panel is ON.

3. Check that the POWER LED is illuminated when the power is ON.

X0000291873

4. Check the fuses.
5. Check that the motor wires (plug X4) and encoder wires (plug X10) are properly connected.
6. Check supply voltage range.

   NOTE: Board has under voltage supervision and if supply voltage is outside of the nominal range (±15%), board decreases the motor power and eventually shuts down the electronics.
7. Check transformer connections.
8. Check that lift control interface (X1) is powered by EXTERNAL 24 V.



X0000291875

LED is not powered if door uses serial interface X2.

NOTE: X1 LED +24 V EXT is illuminated when the elevator control interface is powered by EXTERNAL 24 V.

9. Check that X1 or X2 connector is properly connected.

10. Check STATE LED for possible faults.

X0000291873

NOTE: If drive 10S with serial connection X2 is used: Check also elevator fault log for door related faults. Refer Drive 10S serial door KCE fault codes.

See *STATE LED indications*.

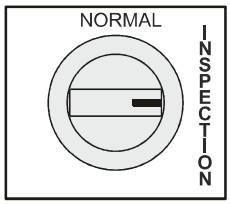
11. Check that there is no high friction if the door is moved manually.

    The board has a supervision limit for motor and power stage temperature. If the supervision limit is reached, the board operates with reduced performance.

12. Check if the closing force is too low (or friction too high). Turn the CLOSE FORCE potentiometer slightly clockwise to increase the force.

    NOTE: Closing force must not exceed 140 N.

13. Switch inspection drive ON from car roof. Check that the doors run with test drive buttons. If the doors run properly, check connection between car roof connection board (LCECCB / KCECCG) and drive board.



X0000114665

NOTE: Inspection drive usage changes the test drive button behavior. If the inspection drive unit is on NORMAL: Test drive buttons are disabled. If the inspection drive unit is on INSPECTION: Test drive buttons are enabled. Commands from elevator controller are disabled. On the drive board, SD-input is enabled SD LED is ON.

14. Check if watchdog LED is illuminated. If the LED is continuously illuminated, replace the board.

X0000291873

Actions to be done if the door does not open.

NOTE: To open the door, the elevator controller must provide a open command to the door electronics.

1. Check that landing and/or car door locks are not jammed.
2. Check that closing device is not jammed or malfunctioning (closing spring, weight, spirator).

3. Check that door moves freely.
4. Check that coupler moves correctly.
5. Switch inspection drive ON from car roof. Check that the doors run with test drive buttons. If the doors run properly, check connection between car roof connection board (LCECCB / KCECCG) and drive board.

   NOTE: Inspection drive usage changes the test drive button behavior. If the inspection drive unit is on NORMAL: Test drive buttons are disabled. If the inspection drive unit is on INSPECTION: Test drive buttons are enabled. Commands from elevator controller are disabled. On the drive board, SD-input is enabled SD LED is ON.
6. Check that X1 or X2 connector is properly connected.
7. If the open closing force limiter is in use (S1/3 is ON):
   1. Switch S1/3 to OFF position temporarily.
   2. Try to open the door using test drive buttons. If the door opens, switch the S1/3 to ON position and increase the closing force by rotating the CLOSE FORCE potentiometer.

   NOTE: If open force limiter is enabled, the value is limited to closing force + 20 N. Closing force must not exceed 150 N.

Actions to be done if the door does not close.

NOTE: To close the door, the elevator controller must provide a close command to the door electronics. If the REOPEN REQUEST signal is active or the PHOTOCELL signal is active the elevator controller will not provide the close command.

1. Check that X1 or X2 connector is properly connected.
2. Switch inspection drive ON from car roof. Check that the doors run with test drive buttons. If the doors run properly, check connection between car roof connection board (LCECCB / KCECCG) and drive board.

   NOTE: Inspection drive usage changes the test drive button behavior. If the inspection drive unit is on NORMAL: Test drive buttons are disabled. If the inspection drive unit is on INSPECTION: Test drive buttons are enabled. Commands from elevator controller are disabled. On the drive board, SD-input is enabled SD LED is ON.
3. Check if the closing force is too low (or friction too high). Try turning the CLOSE FORCE potentiometer slightly clockwise to increase the force.

   NOTE: Closing force must not exceed 150 N.
4. Check correct setting for DIP-switch S2/1 and S2/2. See *Drive 10 dip switches*.

   Incorrect settings of S2 dip switches can cause incorrect activation of reopen request signal to elevator controller.
5. Check location of ramp (unlocking part for elbow lever). Refer to *Change coupler release ramp (unlock elbow lever)*.

Actions to be done if the door opens or closes partially.

1. Check if there is high resistance to door movement or if there is any mechanical obstruction which would block the door movement.
2. Check reference switch and magnet position.

   NOTE: Wrong position causes a new learning.

X0000291726

9.6.4 Door does not reopen

To reopen the door, the maintenance access control panel must receive either a REOPEN REQUEST signal from the door electronics or from an independently wired protective device. For reopening the doors when there is a photocell or curtain of light detection, the door electronics will set the PC OUT signal. In addition, the elevator system must remove the CLOSE command and activate the OPEN command.

Check the wiring of following protective devices:

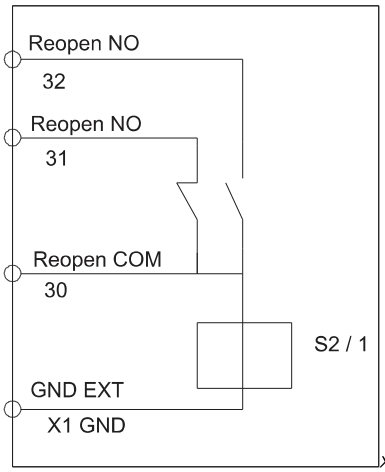
1. Check that reopen request signal to elevator control panel is connected to either Reopen NC terminal 31, or Reopen NO terminal 32 on connector X1.

   Reopen NC (normally closed terminal 31) is usually used with LCE / KCE electrification.

   Reopen NO (normally opened terminal 32) can be in use with other electrification.

   Outputs are solid state relays: If board is not powered re-open NC is actually open circuit.

   NOTE: Reopen request will not be sent in the first 25% of the door movement (when starting from the open position).



X0000291877

2. Check that the closing force is not set to too high value. maximum allowed force is 150N (*Refer to appendix E: Closing force*)

   Make sure the maintenance access / control panel receives the REOPEN REQUEST signal from the door electronics when the closing force limit is activated.

   Re-opening will not work if elevator inspection drive is enabled (SD-input enabled). Commands from elevator controller are blocked if SD-input is enabled in X1 interface (inspection drive switch enabled in car roof).

   Exceeding the closing force limit will cause reopen output to change its state.

3. If Open button is wired to X1 terminal 14: Check correct wiring and dipswitch S2/2 setting for the Open Button.

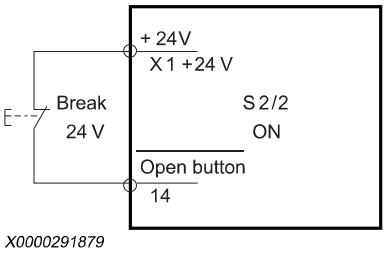


Figure 10: Button with NC contact

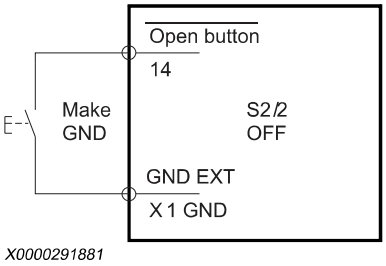


Figure 11: Button with NO contact

Make sure the maintenance access / control panel receives the REOPEN REQUEST signal from the door electronics when the open button is activated.

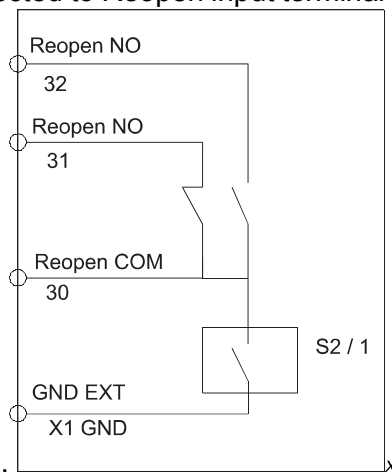
With LCE / KCE, open button interface X1 terminal 14 on drive board is normally not used and S2/2 is in that case configured to OFF position.

In case of other electrifications there is sometimes a need to wire an open button to X1 terminal 14.

4. Check the maintenance access / control panel receives the PC OUT signal from the door electronics when the photo cell or curtain of light detects an object. (if wired to terminal X15/X16).

   Detection of an object will cause the PC OUT signal on the board to go to low state (PC POUT LED is OFF).

5. In Case an additional protective device like a mechanical safety edge is used: check if it is connected to Reopen input terminal 30 on connector X1. Dipswitch S2/1 is set to OFF position.



X0000291883

Normally no additional protective devices are connected to terminal 30 on connector X1 and dipswitch S2/1 is switched ON.

Triggering of this additional protective device will change the state of the reopen request signal.

X0000291726

9.6.5 Other faults

Door always reopens before reaching the close end

NOTE: If the REOPEN REQUEST signal or the PHOTOCELL signal becomes active the elevator controller will remove the close command and give an open command.

1. Check from Maintenance control panel, that reopening of the door is not caused by activation of the Photocell signal. If Photocell signal is activated the elevator controller will remove the close door command and give the open door command.

   If reopening is caused by false COL detections, make sure no objects are interfering with the COL (like pit escape device cable).

2. Check if there is high resistance (friction too high) to door movement or if there is any mechanical obstruction which would block the door movement.

   If the door is re-opened due to too high friction or mechanical blockage, the open force limiter / reopen signal will become active right before the reopening starts.

3. Check if the closing force is too low. Try turning the CLOSE FORCE potentiometer slightly clockwise to increase the force.

   If the door is re-opened due to too low close force limit setting, the open force limiter / reopen signal will become active right before the reopening starts.

   Closing force must not exceed 150N.

4. Increase the door speed with DIP-switches. If speed cannot be increased due to heavy doors or other speed limitations, LCE parameter 7_14 value may need to be changed (default setting is 15s).

   Maximum closing time limit defined by the LCE (parameter 7_14) may be reached if the doors are very wide and slowest speed is selected.

   Maximum closing time may also be reached after a power cut if the doors are not in the closed position.

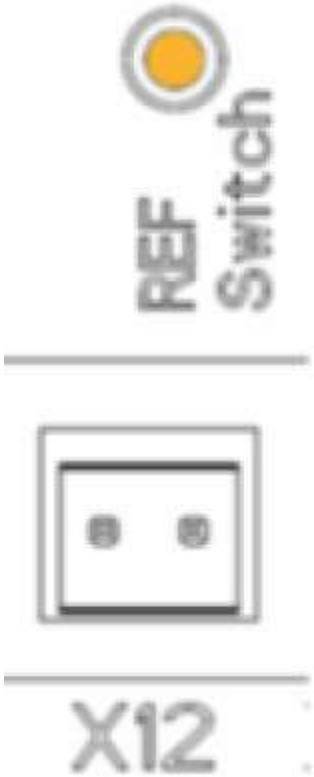
5. Check coupler operation and repeat learning.

   If the door close end signal is not active and the car door contact not closed within the time limit defined by LCE (parameter 7_14), the elevator controller will re-open the doors.

Learning can not be completed

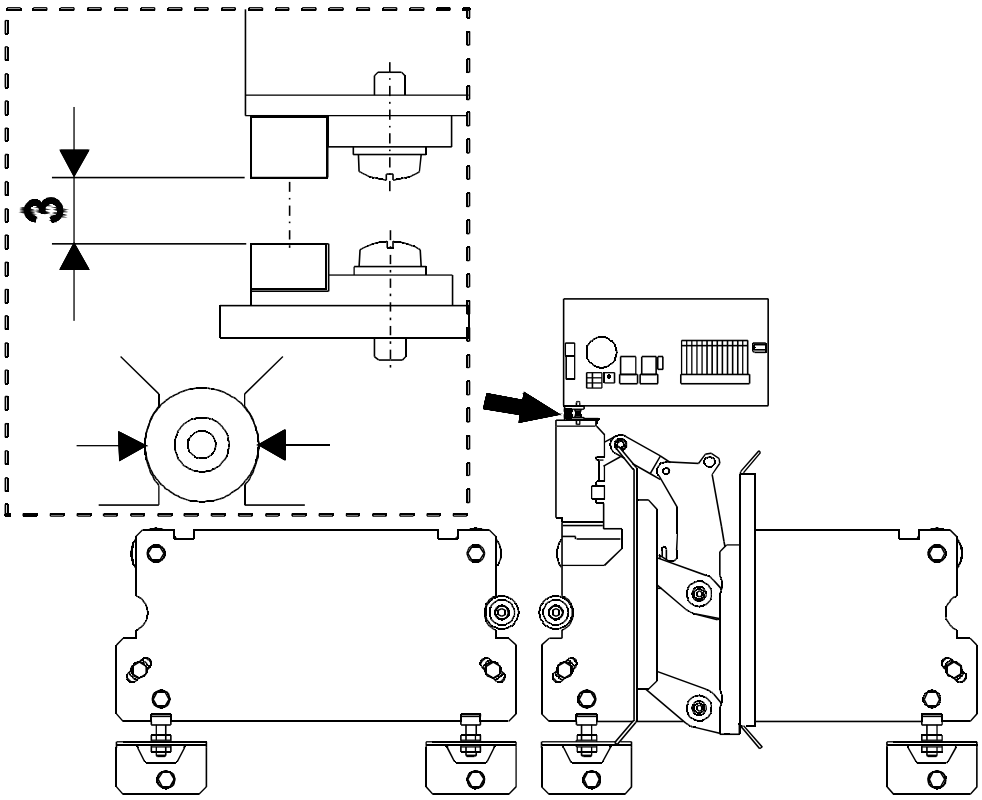
1. Check reference switch operation by manually closing and opening the door.

   REF SWITCH LED should be illuminated only when the doors are in the close position.



X0000291875

2. Check reference switch and magnet position. The magnet and switch aligns when door is fully closed.



X0000105198

3. Check if the closing force is too low (or friction too high). Try turning the CLOSE FORCE potentiometer slightly clockwise to increase the force.

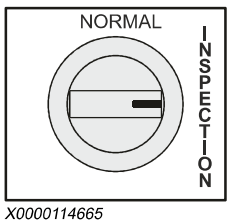
   NOTE: Closing force must not exceed 150 N.

4. Check coupler operation and elbow lever position.

See *Change coupler release ramp (unlock elbow lever)*.

Door closes only with nudging speed.

1. Only drive 10P and drive 10S: Check if the door open command (X1/16) is always active. Switch to inspection drive and test the door operation. If door behaves normally, check wiring between elevator controller and door operator.



X0000114665

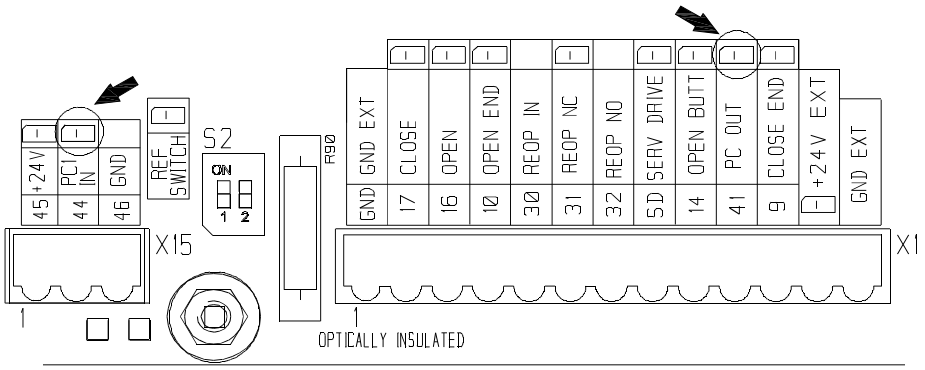
   NOTE: Inspection drive usage changes the test drive button behavior.

   Inspection drive unit is on NORMAL: Test drive buttons are disabled.

   Inspection drive unit is on INSPECTION: Test drive buttons are enabled. Commands from elevator controller are disabled. On the drive board, SD-input is enabled in X1 interface. SD LED is ON.

2. Check curtain of light (COL) circuit operation. If COL is interrupted, the door will always close with nudging speed.

   NOTE: COL input (PC1 IN) and output LED (PC OUT in X1) should change the state when COL is interrupted, also in test drive mode.



X0000105210

   NOTE: North America drive 10 boards will not close with nuding speed if there is a COL detection.

Door closes with banging noise

1. Check location of ramp (unlocking part for elbow lever).

   Refer to *Change coupler release ramp (unlock elbow lever)*.

2. Check that there is gap between the panels when doors are fully closed.

   If needed, add the self adhesive buffers to door panel top and bottom or check the rubber edge. See *Eliminate noise*.

Door does not drive smoothly

1. Check that all the connectors are properly mounted.

   NOTE: Partly loose wires in the connector results in erratic door behavior.

2. Check coupler operation and elbow lever position.

   Refer to *Change coupler release ramp (unlock elbow lever)* and *Reset board and perform new learning*.

3. Check that railings and sill groove are clean.
4. Check that rollers are in good condition.
5. Check that door can move freely when moved manually.

X0000291726

9.7 Drive 10S serial door KCE fault codes

Table 13: Drive 10S serial door KCE fault codes

Fault code	Detection
1692	Error in door operator control board software internal checks.
1693	Door operator control board software has detected abnormal door movement.
1694	Motor current has exceeded the fault limit.
1695	Temperature of the motor/encoder package has exceeded the fault limit.
1696	Door operator control board software has detected a problem with the reference switch.
1697	Door operator control board software has detected abnormal door movement.
1698	Door operator control board software has detected a failure in the motor/encoder package signals.
1699	Door operator control board software internal check has detected a failure in the control board.

X0000291887 B.2