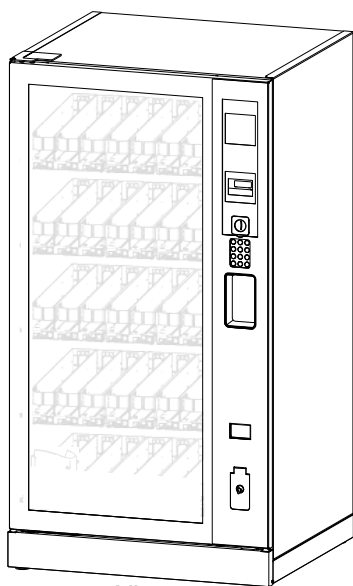


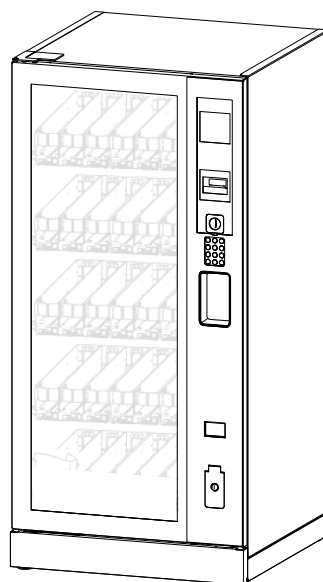


Technical handbook

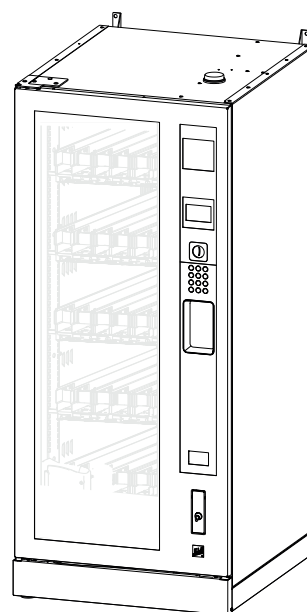
GF Robimat XL / GF Robimat XM / GF Robimat XS



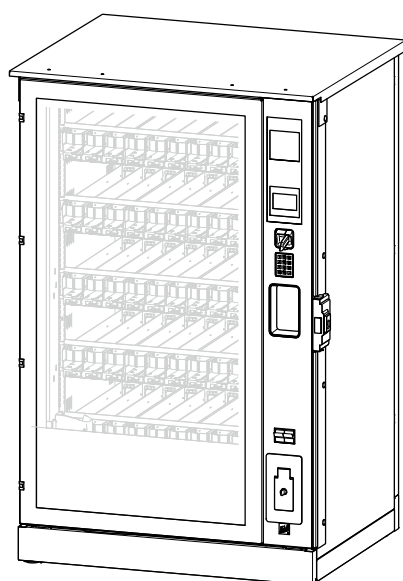
XL



XM



XS



Outdoor

EN

16.03.2023

704 66 020 00 _ 111



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1 General

Modifications

The texts, pictures and data in this manual reflect the technical status of the machine at the time of printing. We reserve the right to make changes in order to make further developments.

Complete document

This document consists of 68 pages. If all the pages are in consecutive order, your document is complete.

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export@sielaff.de; www.sielaff.com		

Intended users

This manual is designed for use by trained personnel and service technicians. It is assumed that target users have received training on the machine.

Variants

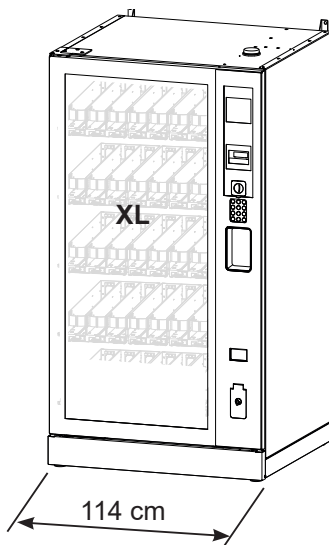
Please note that these operating instructions cover different machine versions. For this reason some information may not apply to your machine.

This manual covers the following versions:

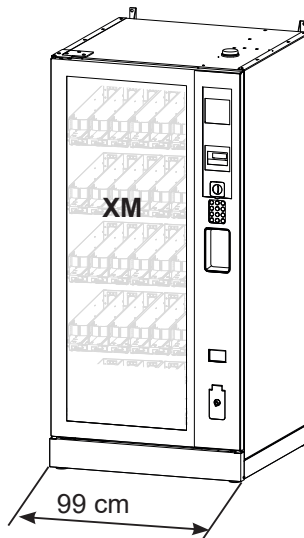
Model	Part No.	Variant
GF Robimat XL 03.....	7040000003	
GF Robimat XL EB03	7040000013	Stainless steel panel
GF Robimat XL EW03	7040000023	Stainless steel panel, white inside
GF Robimat XL RB03	7040000033	RAL panel
GF Robimat XL RO03	7040000043	RAL Outdoor
GF Robimat XM 03.....	7060000003	
GF Robimat XM EB03	7060000013	
GF Robimat XM EW03	7060000023	Stainless steel panel, white inside
GF Robimat XM RB03.....	7060000033	RAL panel
GF Robimat XS 03	7080000003	
GF Robimat XS EB03.....	7080000013	
GF Robimat XS RB03	7080000033	

Per shelf:

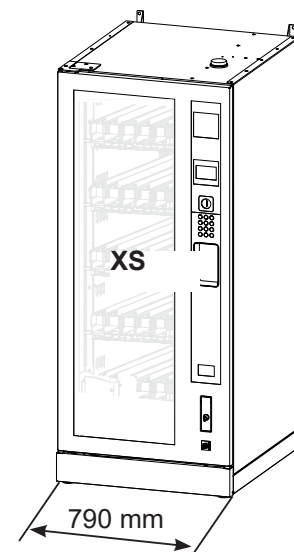
9 product containers (standard)
10 product containers (optional)

**Per shelf:**

7 product containers (standard)
8 product containers (optional)

**Per shelf:**

4 containers (standard)
5 containers (optional)

**Safety information**

- When transporting, setting up, servicing and repairing the vending machine, strict adherence to the following rules and guidelines - in their latest version - is required: EU guidelines, VDE regulations (Association of German Electro-technical Engineers), Country-specific regulations, Accident prevention regulations, Industrial code, Trade association guide-lines, Regulations laid down by the utility company responsible.
- Machine installation and repairs should only be carried out by trained service engineers.
- Prior to all work on electric parts the machine must be unplugged from the mains supply.
- Use original spare parts only.
- Any modification to, or conversion of, the machine is prohibited! SIELAFF rejects any liability for any defects resulting in this way!

Requirements for maintenance and repairs

- Before carrying out any repairs on the machine the mains plug must always be removed from the mains power supply. The mains plug must be so positioned that it can be monitored during the repair to ensure that no one inadvertently puts it back into the socket.

Explanation of signs and symbols

The machine was manufactured in accordance with the latest technical standards. Nevertheless, even the most expertly designed machine, cannot be without risks.

In order to ensure the machine operator a sufficient level of safety, additional safety tips are detailed below. Adequate safety during operation is ensured only when these safety precautions are observed.

Text highlighted below symbolises the following:



Danger

Immediate danger which could result in death or severe injury.



WARNING

Possible dangerous situation which could result in death or severe injury.



CAUTION

Dangerous situation which could result in injury or damage to the vending machine.



NOTE

Information to avoid causing damage to the machine.



Tip

Care when handling facilitates working on the machine.

The following danger symbols may also be used in certain instances:



WARNING electricity! Danger to life!

This symbol warns that electrically live components are installed in this area. Covers marked with these symbols should only be removed by authorised electricians.



Observe handling regulations when dealing with electrostatically sensitive components and modules (ESD)

Behind covers marked with this symbol are parts and components that are susceptible to electrical discharge.

It is imperative that plug connections, electrical leads and component pins are not touched. Only specialist personnel with ESD knowledge are authorised to work on the machine!



DANGER! Flammable materials!

This symbol warns about flammable materials. May cause serious injury or death. Sources of ignition such as burning cigarettes or lighters must be distanced before opening the machine door.

2 Maintenance schedule

To keep unexpected machine down-time to as low a level as possible, we recommend that the following maintenance schedule is adhered to. Depending on the environmental conditions on site it may be necessary to adapt the maintenance intervals.

Every 30,000 vends - or every 12 months

Housing, machine door

OK	Component	Resources	Action/ procedure
	Safe machine position		Check
	Machine exterior	Care and cleaning products	Clean
	Machine door closes properly		Check
	Insulating glass panel	Glass cleaner	Clean
	Coach bolts at top and bottom of machine door	998 90 023 00	Lubricate
	Locking hook	998 90 023 00	Lubricate
	Locking bar	998 90 023 00	Lubricate
	Hinge pin, locking bolts	998 90 023 00	Lubricate
	Lock	According to manufacturer's instructions	Lubricate
	All around door seal		Check clean, maintain if necessary
	Product illumination		Check
	Flap for the division wall: Torsion spring, seal, locking function		Check
	LED functioning		Check
	Folding mechanism, light strip left		Check
	Cable routing top left		Check
	Terminal box (optional) Test key T on the FI-circuit breaker	Test key T on the FI-circuit breaker	Press

Product container

OK	Component	Resources	Action/ procedure
	Legibility of the price/selection labels		Check
	Inside the product container	Rinsing water	Clean
	Product container locking function		Check
	Product pusher	movable with even force	Check
	Slider/slide block engaged		Check
	Position of the belt in the pusher		Check
	Positioning of belt deflector at the back		Check
	Toothed belt without damage		Check
	Front drive wheel		Check
	Hook-in position for pendulum hook		Check
	Retaining spring	Correctly snapped in; no damage?	Check

Payment system

OK	Component	Resources	Action/ procedure
	Coin mechanism (optional)		According to manufacturer's instructions
	Card reader (optional)		According to manufacturer's instructions
	Banknote reader (optional)		According to manufacturer's instructions

Sliding drawer unit

OK	Component	Resources	Action/ procedure
	Vending machine control board M32: Backup battery minimum 2.8V	Voltmeter	Check
	Coin chutes	Rinsing water	Clean
	Selection keypad, external		Clean
	Display		Clean
	Coin return tray		Clean
	Coin return motor - working	Refund button [R]	Check
	Product collection unit, internal area		Clean
	Smooth operation of locking slide including spring		Check
	Delivery unit flap	Consistent motorised travel (hand operated)	Check
	Lifting capacity at least 250 g	e. g. 0.25l can	Check
	Sliding clutch function	e. g. 0.25l can	Check

Lift System

OK	Component	Resources	Action/ procedure
	Horizontal linear rail, top	998 90 023 00	Clean, lubricate
	Horizontal lower guide rail	998 90 023 00	Clean, lubricate
	Damage to horizontal toothed belt		Check
	Damage to vertical toothed belt		Check
	Deflection rollers belt drives (7x)		Check
	Belt tensions: horizontal drive: Measurement point: upper centre; vertical rail far left. 1N with 15 mm stretch or 20 Hz	Newton meter	Check
	Vertical drive: Measurement point in centre, basket right at the bottom. 1N with 15 mm stretch or 15 Hz	Newton meter	Check
	Displacement force: Vertical rail left/right: max. 15 N Basket upwards: max. 9 N Basket downwards: max. 6 N	Newton meter	Check
	Movable lower ribbon cable loop: no kinks / damage ?		Check
	Fork light barrier for height recognition + Y-reference	Brush, air	Clean
	Micro-switch for X reference		Check

Product basket

OK	Component	Resources	Action/ procedure
	Upper part of basket	Rinsing water	Clean
	Light grid	Brush, air, flashing mode in 5 seconds intervals	Clean, check
	Damage on drive belt		Check
	Damage to gear wheel pendulum		Check
	Pendulum gear wheel assembly	Berulub FR 43; 998 90 064 00	Check, lubricate
	Uniform power transmission when the pendulum is swung to and fro		Check
	Damage to pendulum hook		Check
	Bearing for pendulum hook	Microlube GL 261; 998 90 037 01	Check, lubricate
	Gear motor, upper shaft bearing	Microlube GL 261; 998 90 037 01	Check, lubricate

Chiller unit

OK	Component	Resources	Action/ procedure
	Dust filter	Brush, compressed air	Clean
	Compressor	Brush, compressed air	Clean
	Condenser	Brush, compressed air	Clean
	Base plate ventilation slots		Clean
	Connecting gaskets, front, rear + left, on the right side of the housing	Vaseline, rubber treatment	Check, clean, lubricate
	Plugs and connectors		Check
	Fan	Brush, compressed air	Clean
	Gas sensor (no visible damage)		Check
	Gas inlet on gas sensor: Dust, dirt, moisture deposits	Brush, cloth	Clean
	Initiate self test		Check
	Test gas sensor using test gas	Test gas	Check

Final check

OK	Component	Resources	Action/ procedure
	Drive positions for selections 10, 18, 30, 38, 50, 58	X-direction: Toothed wheel for pendulum drive aligned with toothed wheel of product container Y-direction: Pendulum hook catches in the centre of hook-in position on the product container	Check

If required every six months

OK	Component	Resources	Action/ procedure
	Electrical re-testing in accordance with VDE 0701		Carry out

3 Servicing procedures

3.1 Instructions for chiller unit



CAUTION! Risk of injury!

Always wear suitable personal protective equipment (safety glasses, protective gloves, safety boots) when transporting, installing, servicing, dismantling or decommissioning the machine!



ATTENTION, danger of injury!

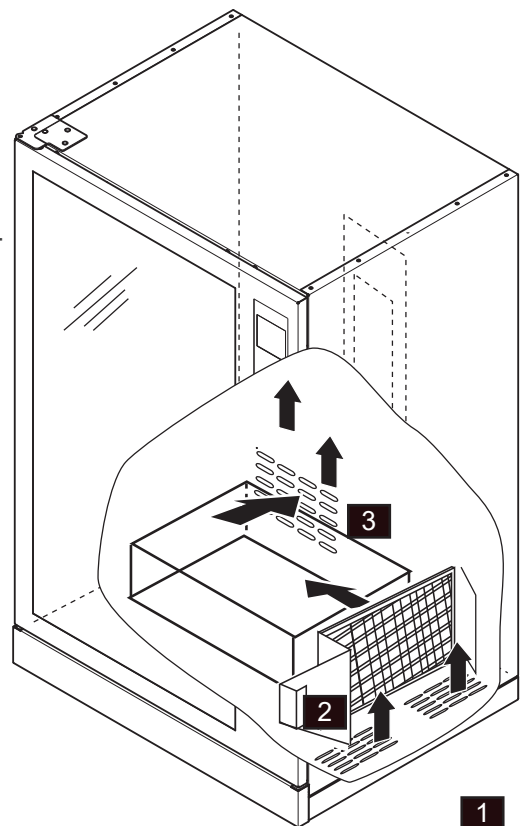
Risk of cuts when touching the slats. Wear protective gloves

The chiller unit should be operated in accordance with the operating regulations specified (BetrSichV). It has been leak tested.

- The chiller unit is controlled automatically by a temperature sensor and the machine control board.
- When the chiller unit stops, the fan starts up automatically at set intervals to circulate the air, in order to prevent air stratification.
- The chiller unit is to a large extent maintenance-free. However, the lint filter and the slats on the evaporator / on the side of the condenser should have any dust removed occasionally using compressed air.

If problems are experienced with the chiller unit

- Check first that the plug for the chiller unit is connected to the power supply.
- Check if the plug underneath the chilling module is connected.
- Check if the chiller unit is switched off on the machine control board.
- If neither of these apply, notify service personnel.



- 1** Air inlet (cold air)
- 2** Lint filter
- 3** Air outlet (hot air)

3.2 Removing the chiller unit



DANGER Electric shock risk!

Live electrical components! Disconnect the mains plug before you start removing the chiller unit!

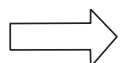
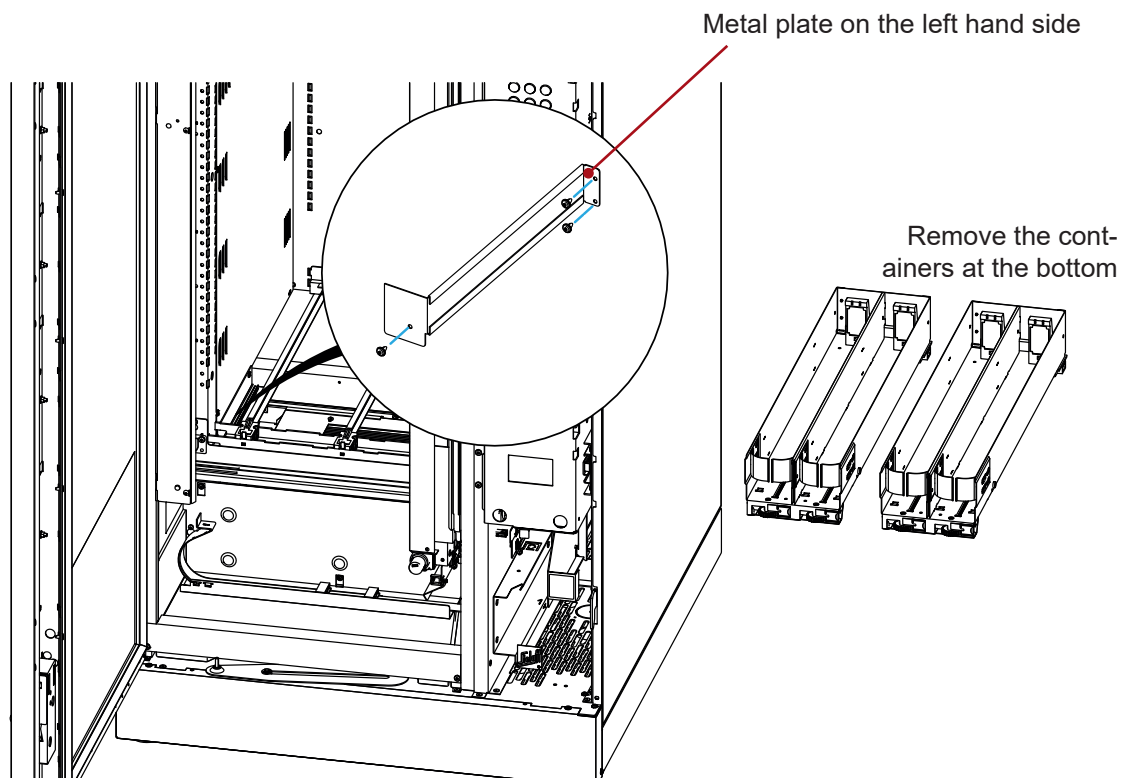
Dismantling the cooling unit

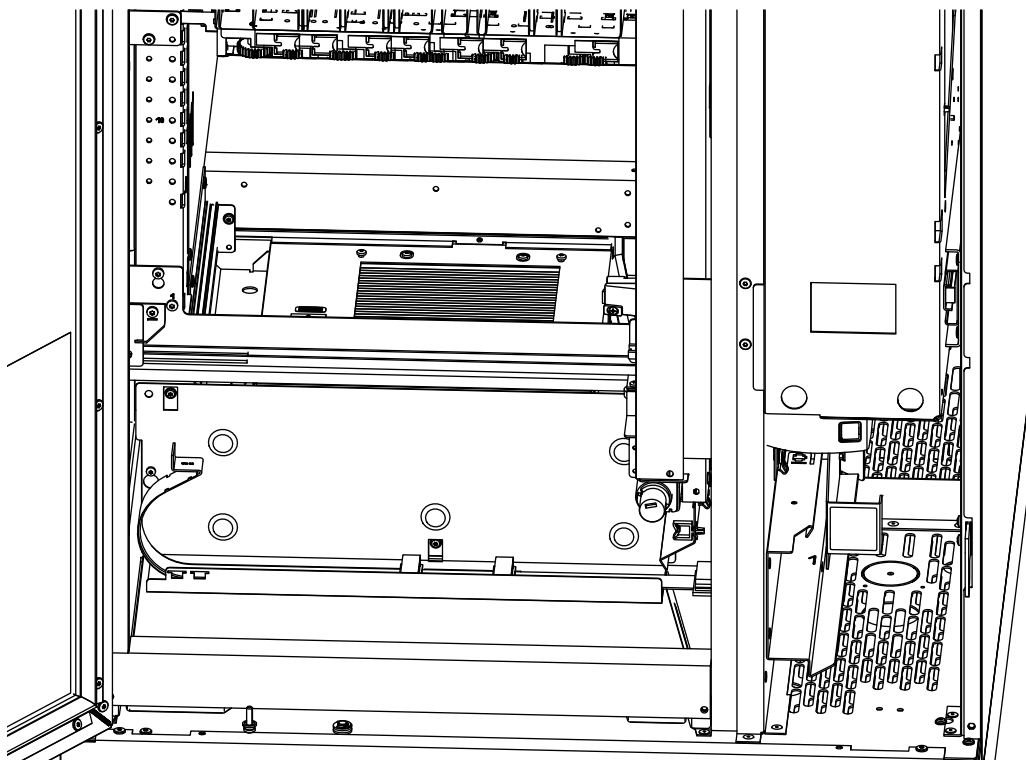
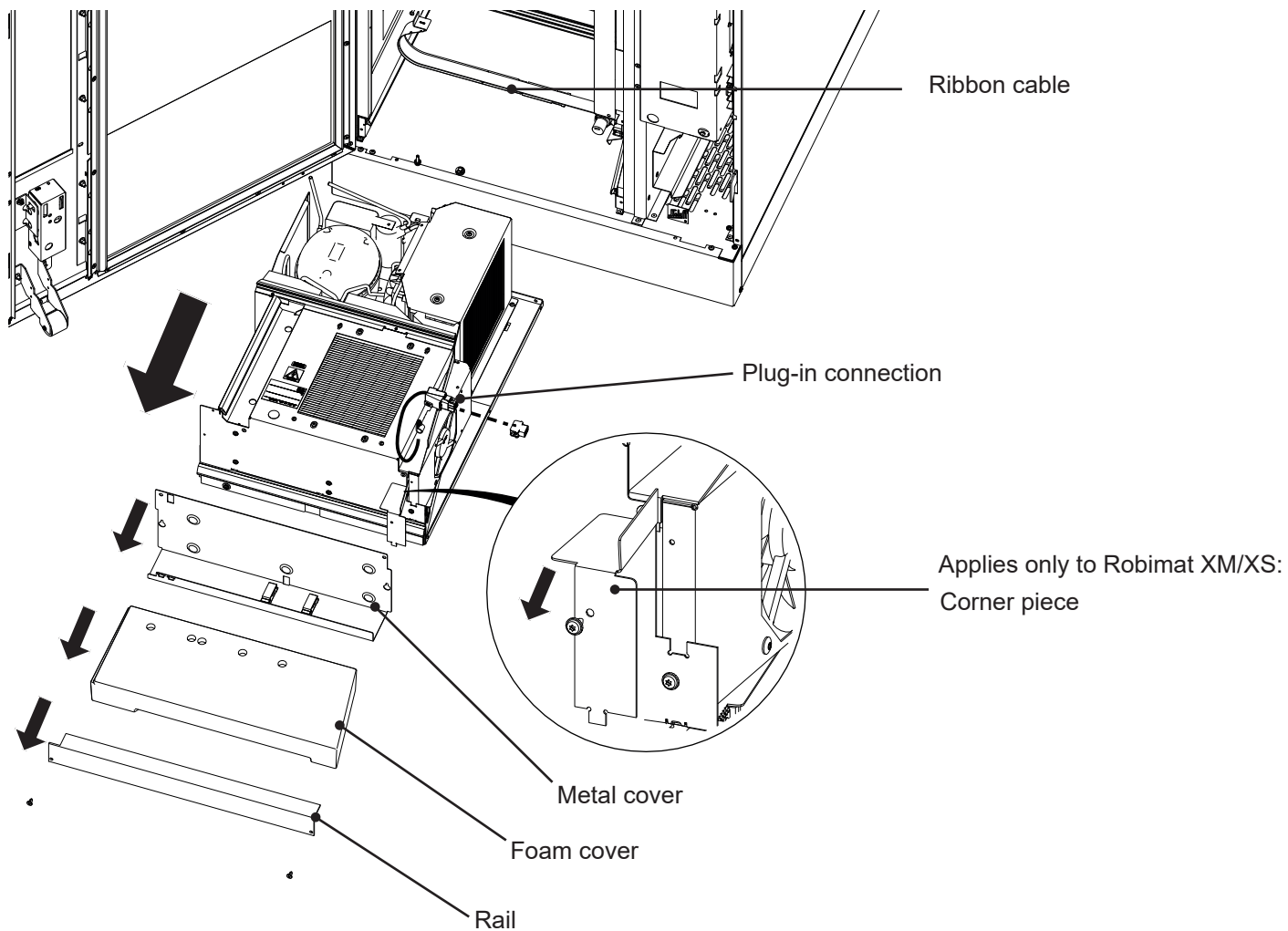
1. Open the machine door.
2. Empty and remove the product containers on the bottom shelf.
3. Applies only to Robimat XS: Remove the screws and take out the metal plate on the left hand side
4. Remove two screws, pull out rail and foam cover (refer to diagram on the next page)
5. Remove the ribbon cable at the bottom from its holders and lift
6. Loosen the screws and remove the metal cover
7. Robimat XM/XS only: Take out screw on the right hand side and remove the corner piece on the chiller unit
8. Move the lift system slowly to the right and raise the product basket. The product basket must reach the delivery pocket, so that the lift system is at its stop position on the right hand side.
9. Pull the chiller module out a little using the straps (approx. 10 cm). Disconnect the plug connections for the electrical connection.
10. The chiller unit can be taken out completely.

Important:

Prior to fitting the chiller module, check that the mounting area is free from foreign objects (e. g. screws). The chiller module is positioned against the whole width of the rear wall. Check if the sealing surfaces on the right and left side of the mounting area are intact.

Applies only to Robimat XS:





3.3 Cleaning the evaporator and condenser

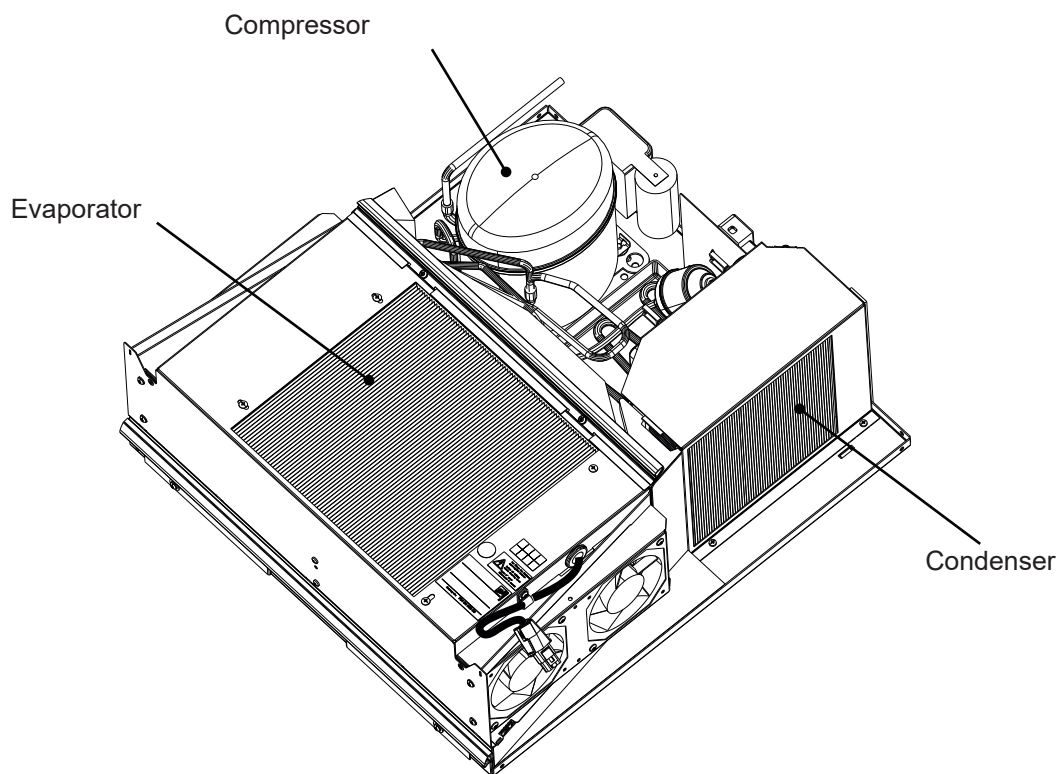
**NOTE**

Cleaning tasks should only be carried out by trained personnel. If the chiller unit is not cleaned properly damage and break-downs may result.

- Do not use sharp-edged tools.
- Do not use cleaning agents containing abrasives or acids.

The evaporator and condenser must be cleaned using a vacuum cleaner or compressed air at least every six months. Any dirt residue reduces performance and increases energy costs.

Areas more prone to dust collection need to be cleaned more regularly.

**Note**

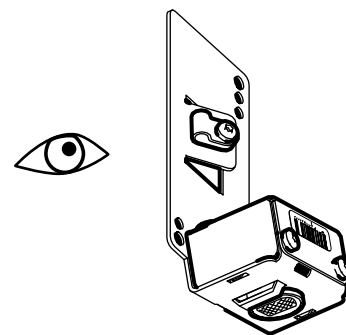
- Do not start the compressor more than 5 times per hour!
- Do not reduce the 5 minute minimum period of idleness for the compressor!
- Every time the door is closed the machine is ready for vending; the compressor can be heard running and the lighting comes on.
- Each time the service key is inserted a closed door is simulated.

Chiller unit temporary shut down

In order to switch off the chiller unit for maintenance work just unplug it from the power supply unit at X4. Plug it back in again once the maintenance work has been completed.

3.4 Check the gas sensor

Check the gas sensor visually for possible damage.



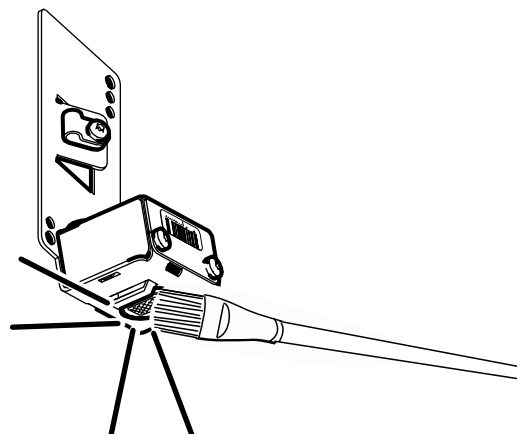
3.5 Clean the gas sensor

Clean the glass inlet using only a brush. The gas inlet must never be obstructed.



NOTE

Never clean the gas sensor with compressed air!
Compressed air damages the sensor.

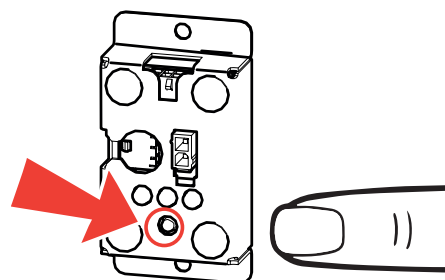


3.6 Initiate self test

To carry out the test the machine must be switched on and operational.

Press the button on the service board for at least 2 seconds. When the button is pressed the machine is disconnected from the mains supply, the **yellow LED** goes out and a self-test is activated.

- During this test the machine is checked for dual pole mains disconnection via both cut-off relays. If the self-test is successful the **green LED** lights up.
If the **red LED** is permanently on, repeat the test. If the **red LED** is still permanently on, the switch-off device must be replaced.
- When the button is released there is still voltage for operating the machine in the power supply and the **yellow LED** is on. The machine is operational.



3.7 Test the sensor

Requirements

- The gas sensor must be accessible (gas inlet)
- commercial universal lighter

How to proceed

1. Switch on the machine
 2. Ignite the lighter outside the machine (flameheight 2 cm)
 3. Extinguish the lighter flame, whilst holding down the actuator on the lighter.
 4. Hold the opening of the lighter for approx. 20 seconds in front of the gas inlet opening on the gas sensor.
 5. Put the lighter to one side and wait a few seconds.
- Safety switch-off device disconnects the machine from mains power. Display, machine illumination etc. goes out.
- ✓ Safety switch-off device is working.

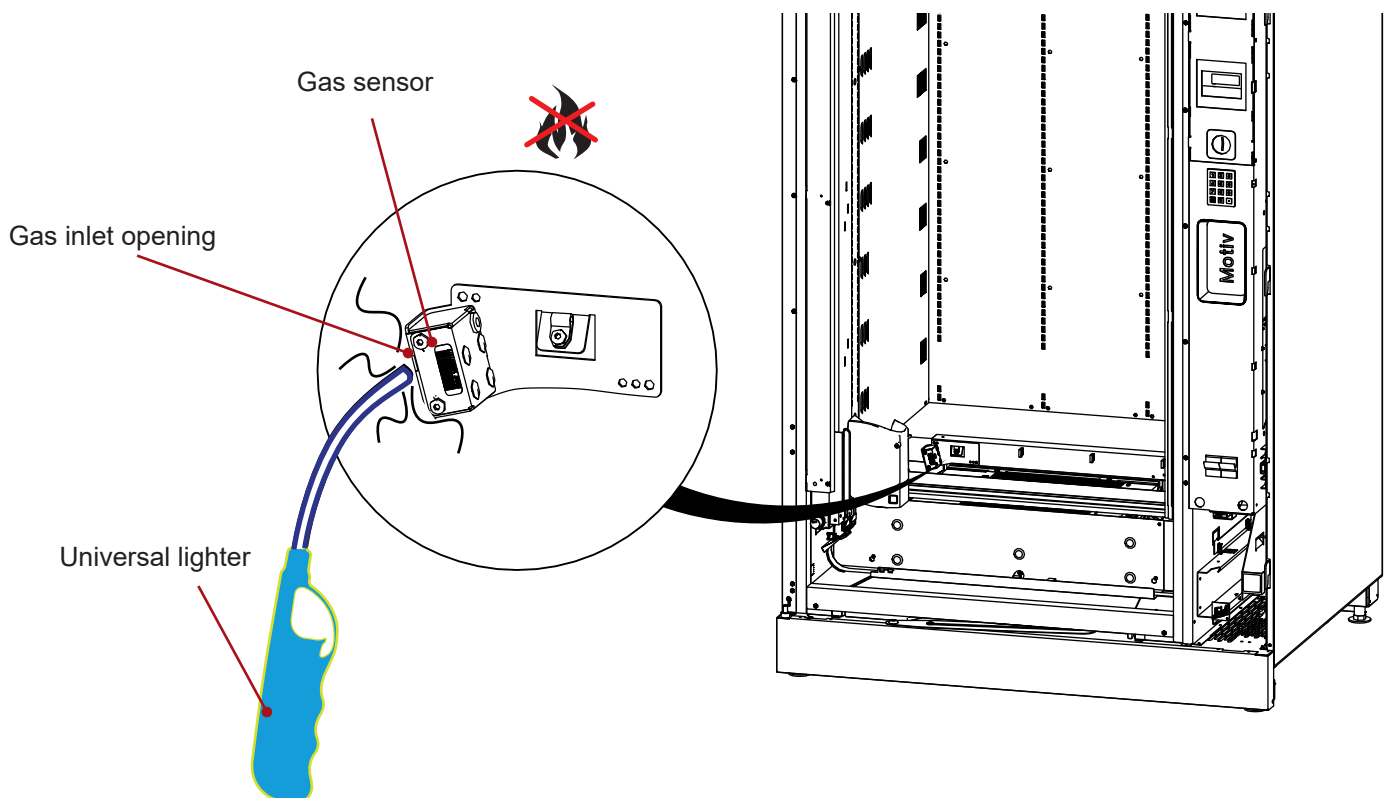
If the machine does not switch off automatically, proceed as follows:

- Check the contents of the lighter as well as the flame height (2 cm). Repeat the sensor test.
- If the test does not work again the gas sensor must be replaced.
The machine must be put out of operation. The switch-off device and chiller unit must be tested.

After testing

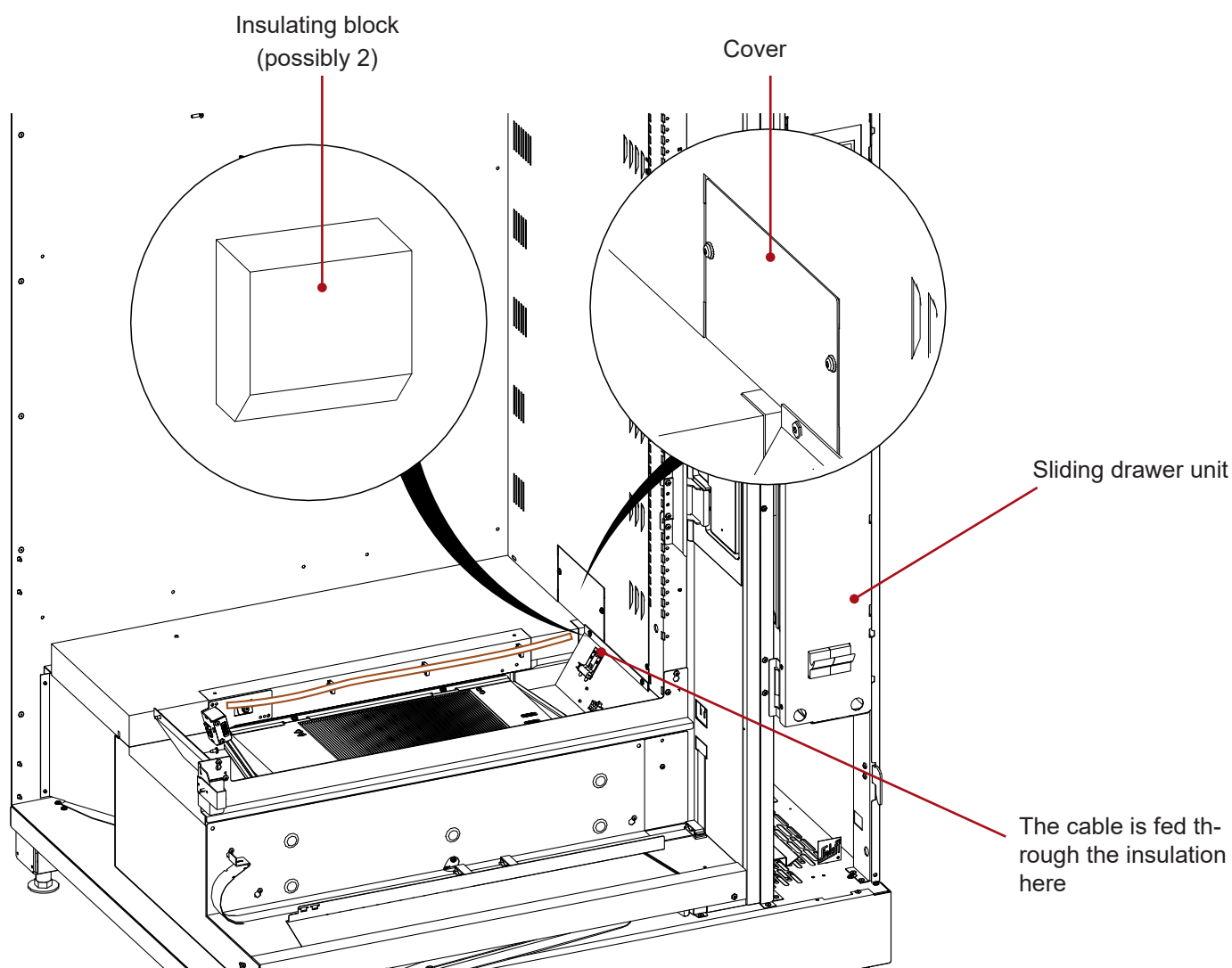
It can take several minutes for the gas to escape from the sensor head and for the concentration in the sensor to be below the maximum permitted. The process can be accelerated by adding air to the sensor.

The machine switches back on.



3.8 Changing the gas sensor

1. Remove the containers from the bottom shelf
 2. Take out two screws and remove the cover
 3. Pull out two insulation blocks
 4. Disconnect the plug-in connection for the gas sensor behind the sliding drawer unit.
 5. Remove screws on the gas sensor holder
 6. Remove the gas sensor with holder and supply cable.
- ✓ The gas sensor has been removed.



Assembly

To fit follow the instructions above in reverse order. When feeding through the side wall insulation, ensure that the two sealing blocks are correctly positioned in order to avoid energy loss

3.9 Replacing the fan motor (chiller unit Robimat XS)



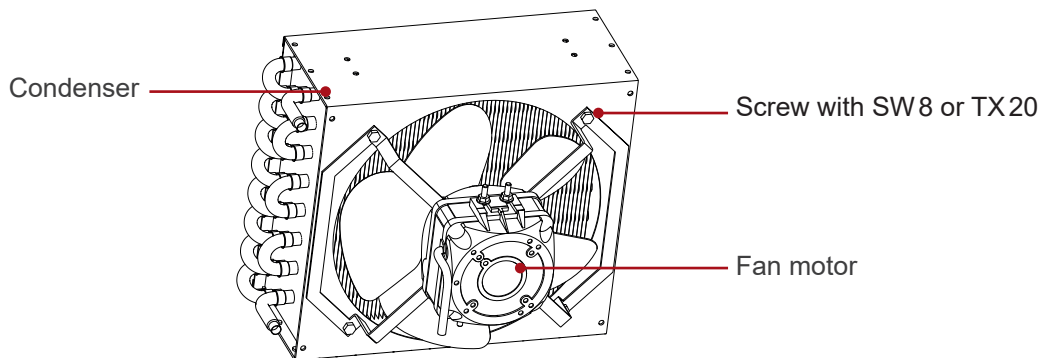
DANGER! Flammable materials!

This symbol warns about flammable materials. May cause serious injury or death. Keep away from ignition sources.



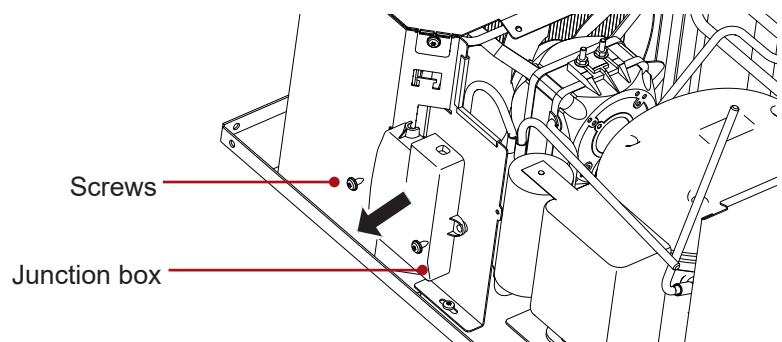
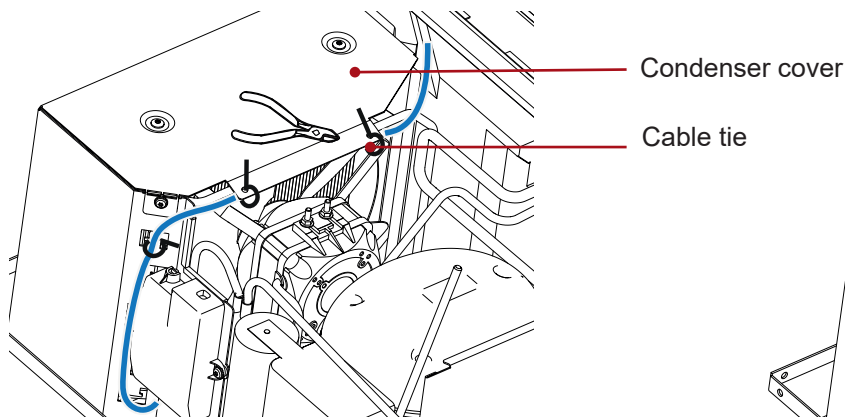
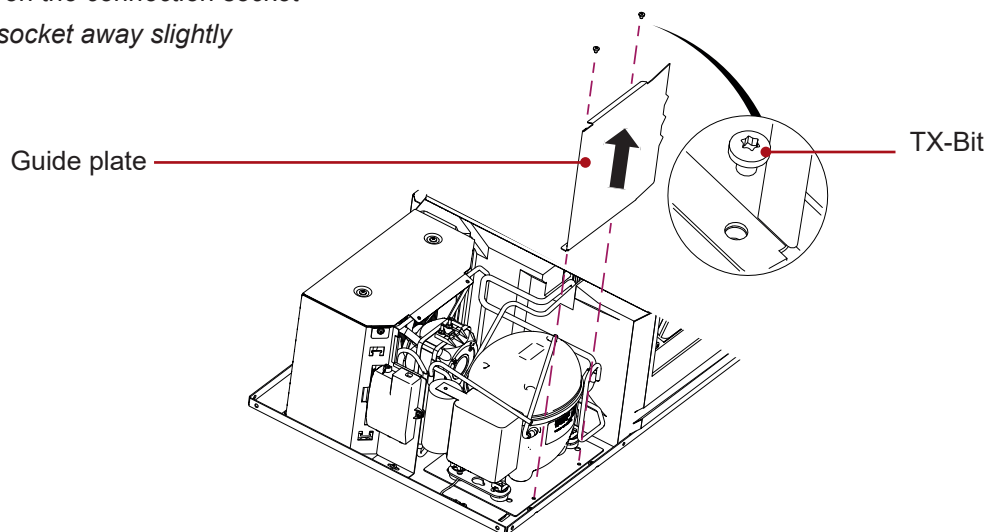
NOTE

The cooling system cables must not be damaged!



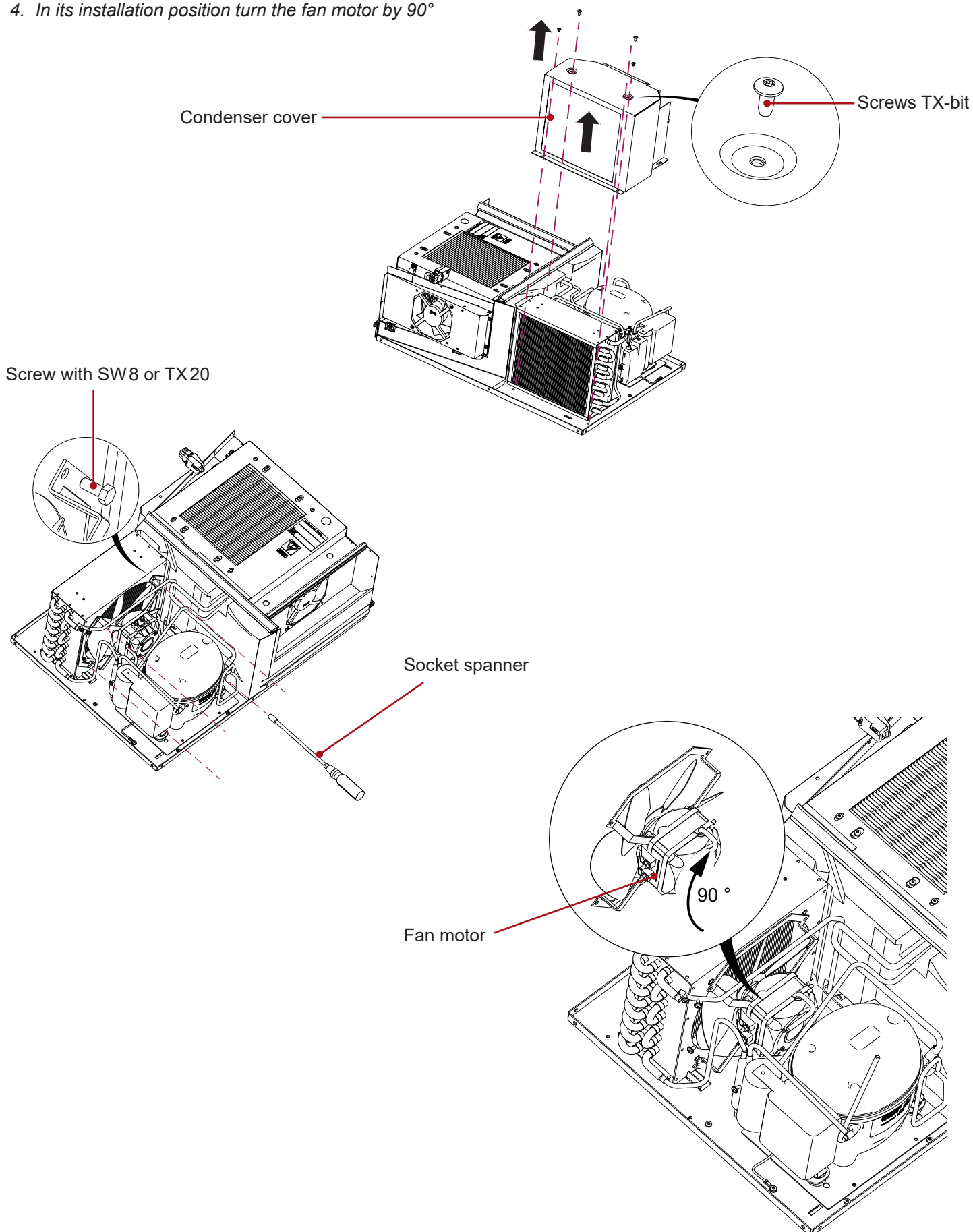
Proceed as follows

1. Loosen screws with TX-bit
2. Remove guide plate
3. Remove the cable ties on the condenser cover so that the electrical cables are free
4. Remove the screws on the connection socket
5. Pull the connection socket away slightly



Proceed as follows

1. Loosen screws with TX-bit
2. Remove the condenser cover
3. Using a long socket wrench (length approx. 25 cm) remove the four screws securing the fan
4. In its installation position turn the fan motor by 90°

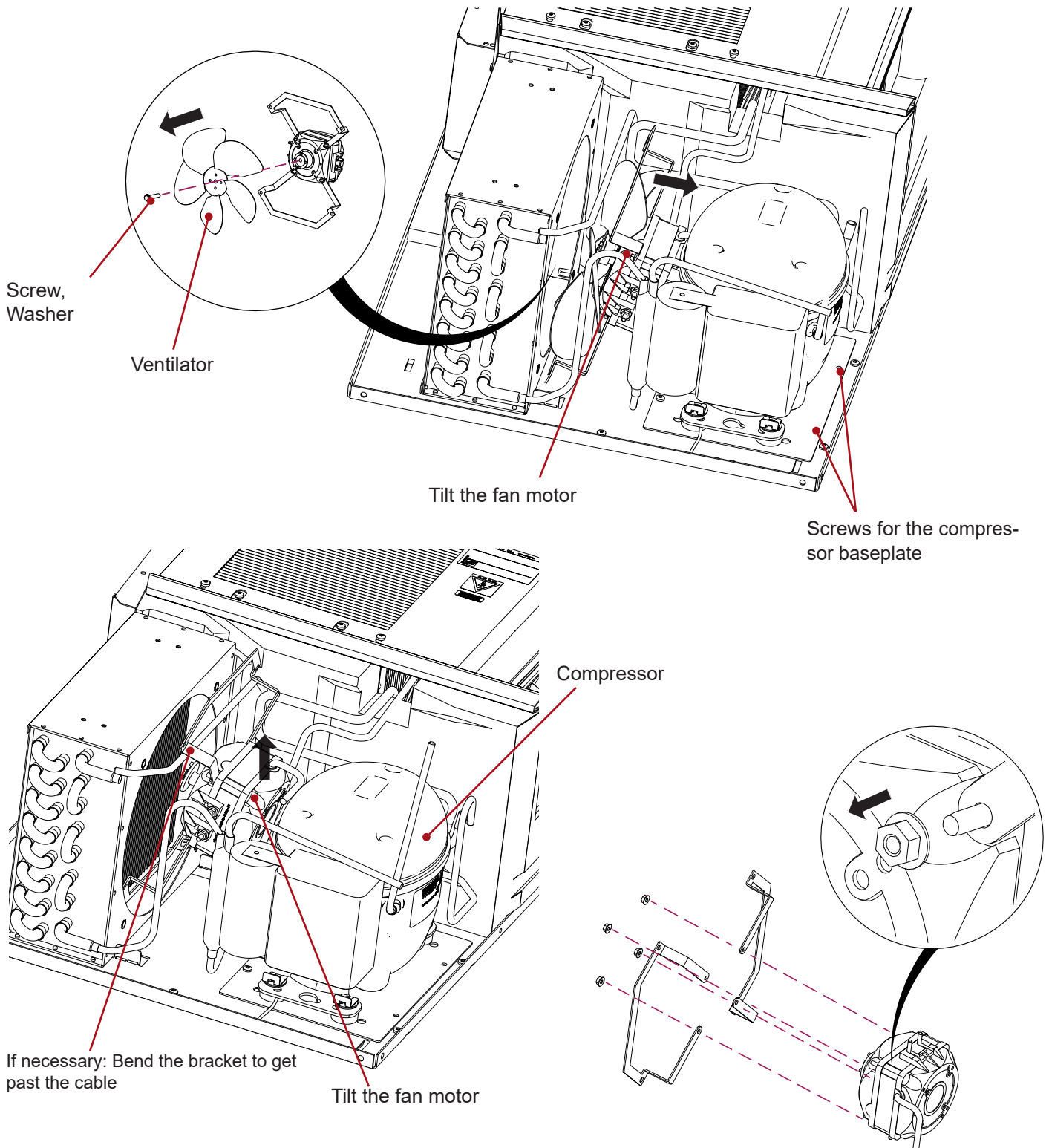


Proceed as follows

1. Push the fan motor with fan onto the compressor
2. Position the fan motor at a slight angle so that the screw on the motor shaft is accessible.
3. Remove the screw and washer
4. Remove the fan blade
5. Lift the fan motor with bracket

Notes

- The pressure pipes from the closed system can be pressed slightly to create space.
- The brackets on the fan motor are easy to bend.
- If necessary: To move the compressor slightly loosen the 4 screws on the compressor base plate.

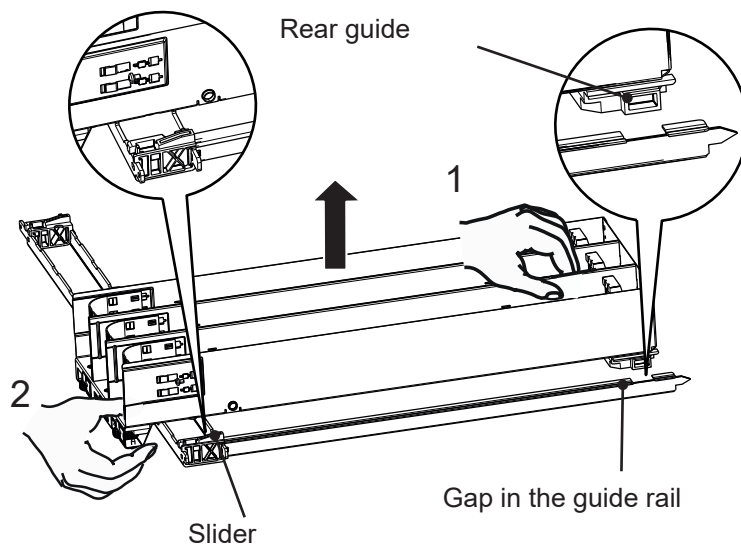


3.10 Removing and inserting the product container

To remove the product container all products must be taken out first.

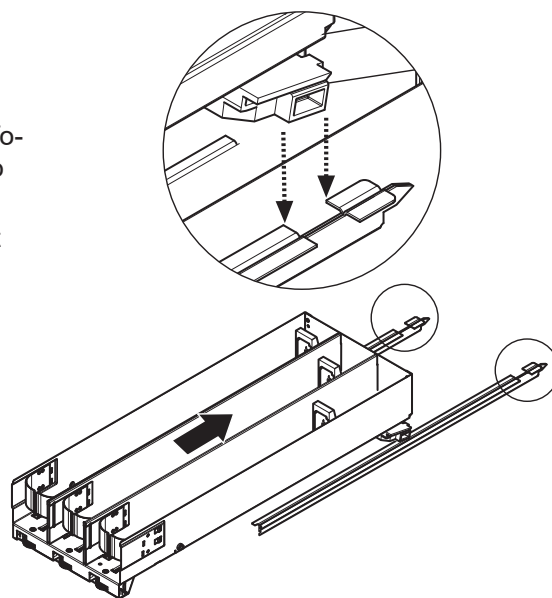
Using one hand lift the product container slightly at the rear whilst pulling it out at the front with the other hand.

The rear guide must be lifted up through the cut-out in the guide rail.



Place the product container on the guide rails and slide in. Shortly before the stop on the rear wall the sliding guide can be heard clicking into the gap in the guide rail.

When inserted, the product container should be horizontal and almost touching the rear wall.



3.11 Tilting the pusher container

Containers can be tilted. The tilting mechanism on pusher containers is disabled when the machine leaves the factory.

Containers are tilted at the operator's own risk.

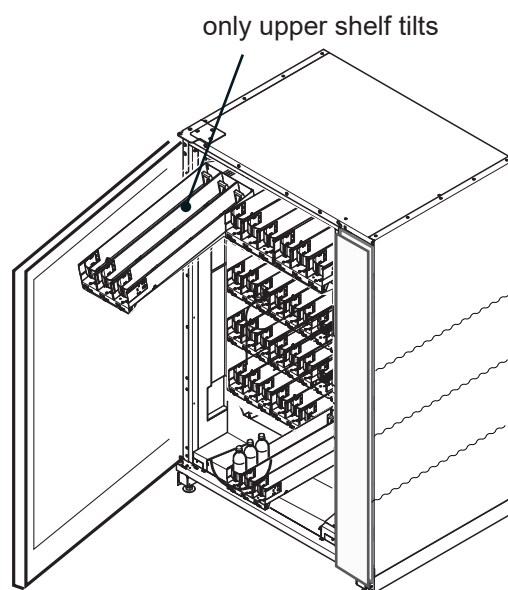
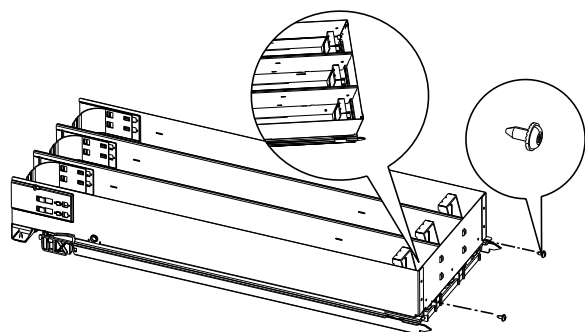


Caution!

Products may fall out if the container is tilted!

The tilt mechanism should not be used for glass bottles.

To activate the mechanism remove both screws at the back of the product container. The bracket can then move freely, the product container can be tilted.

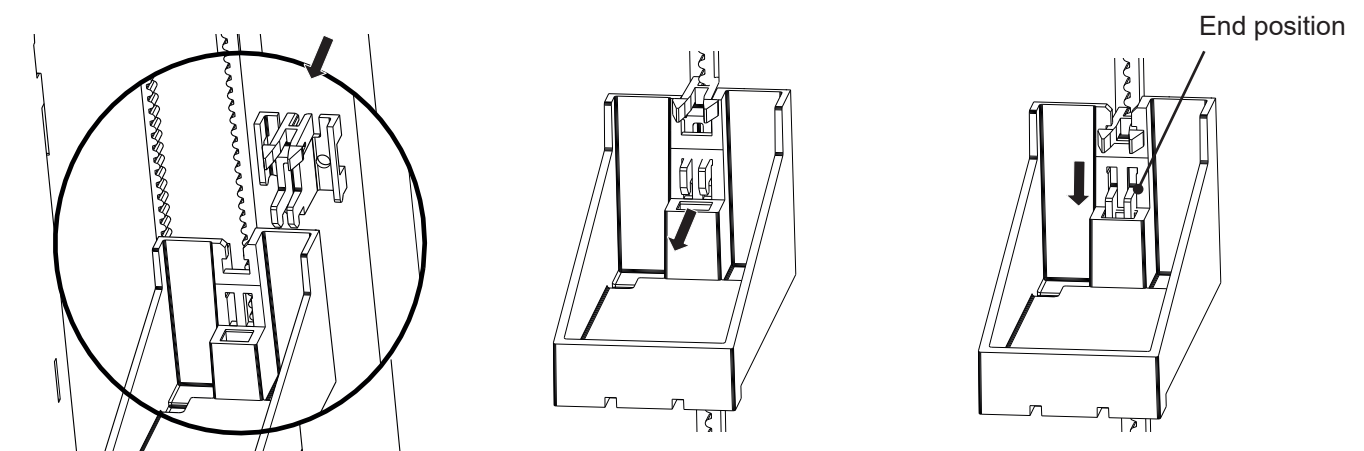
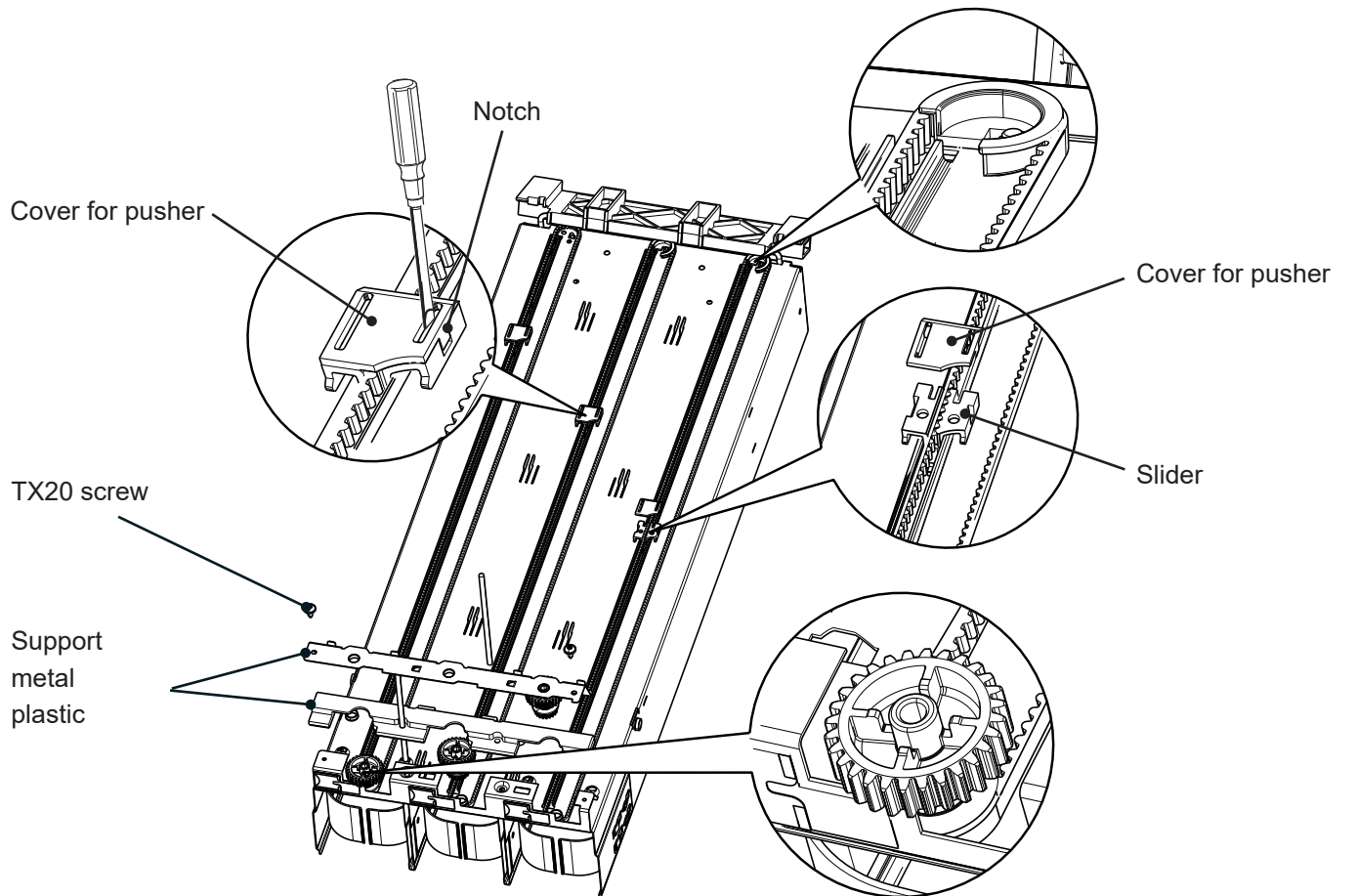


3.12 Exchanging the product container drive

The container drive is designed to be maintenance-free and easy to service. All components can be exchanged if damaged.

How to proceed

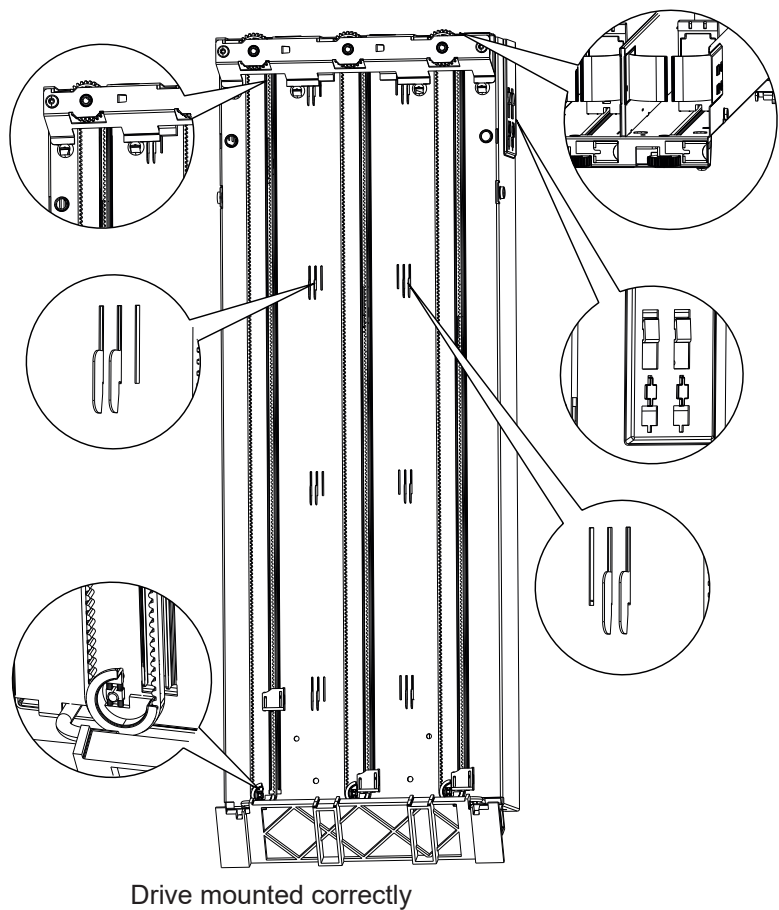
- Turn the product container over. Remove the two screws using a TX 20 screwdriver. Lift off the metal and plastic supports. Pull out the axes.
- Release the notch on the cover and lift the cover off. The ribbed belt can be taken out of the sliding guide.
- To re-install follow the instructions above in reverse order.



Fit the sliding guide to the base of the product container

Hold the pusher and click in the sliding guide.

Move the sliding guide to end position.



3.13 Selection numbering

Container numbering starts top left at number 10 and goes up to number 18 maximum on the right hand side (Robimat XM: 16) (Robimat XS:14) On the second shelf the numbers start at 20 and end at 28 (Robimat XM:26) (Robimat XS): 14 etc. A maximum of eight shelves can be fitted. If the shelves have been modified, menu M10 AutoConfig must be accessed so that the shelves are automatically identified.

Robimat XL

10 11 12 13 14 15 16 17 18

Ten

20 21

Twenty

Thirty ...

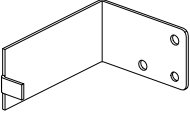
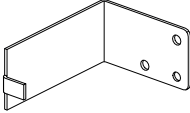
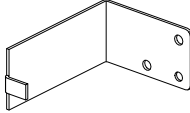
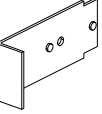
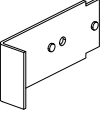
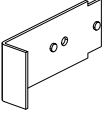
10	11	12	13	14	15	16	17	18
20	21	22	23	24	25	26	27	28
30	31	32	33	34	35	36	37	38
40	41	42	43	44	45	46	47	48
50	51	52	53	54	55	56	57	58
60	61	62	63	64	65	66	67	68
70	71	72	73	74	75	76	77	78
80	81	82	83	84	85	86	87	88

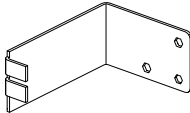
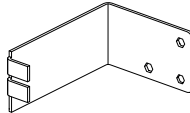
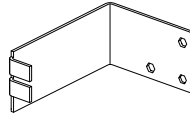
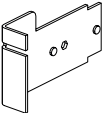
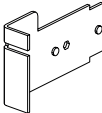
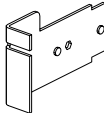
Single product container

Product container

Product container shelf

3.14 Overview of containers and actuator bracket

Standard		
Robimat XL (704 x)	Robimat XM (706 x)	Robimat XS (708 x)
9 product containers on a shelf	7 product containers on a shelf	4 product containers on a shelf
Container bracket  Part no. 704 00 257 00	Container bracket  Part no. 704 00 257 00	Container bracket  Part no. 704 00 257 00
Actuator bracket zero position at the bottom  Part no. 704 00 258 00	Actuator bracket zero position at the bottom  Part no. 704 00 258 00	Actuator bracket zero position at the bottom  Part no. 704 00 258 00
Triple product container (74 mm) Part no. 704 01 100 00	Triple product container (74 mm) Part no. 704 01 100 00 Double product container (74 mm) Part no. 706 01 100 00	Double product container (74 mm) Part no. 706 01 100 00

Optional		
Robimat XL (704 x)	Robimat XM (706 x)	Robimat XS (708 x)
10 product containers per shelf	8 product containers per shelf	5 product containers per shelf
Container bracket  Part no. 704 00 607 00	Container bracket  Part no. 704 00 607 00	Container bracket  Part no. 704 00 607 00
Actuator bracket zero position at the bottom  Part no. 704 00 610 00	Actuator bracket zero position at the bottom  Part no. 704 00 610 00	Actuator bracket zero position at the bottom  Part no. 704 00 610 00
Double product container (63 mm) Part no. 704 00 600 00	Double product container (63 mm) Part no. 704 00 600 00	Double product container (66 mm) Part no. 708 01 105 00 Triple product container (66 mm) Part no. 708 01 100 00

3.15 Changing product shelf heights (width 74 mm) 9 container

The shelves can be installed to suit the product heights.

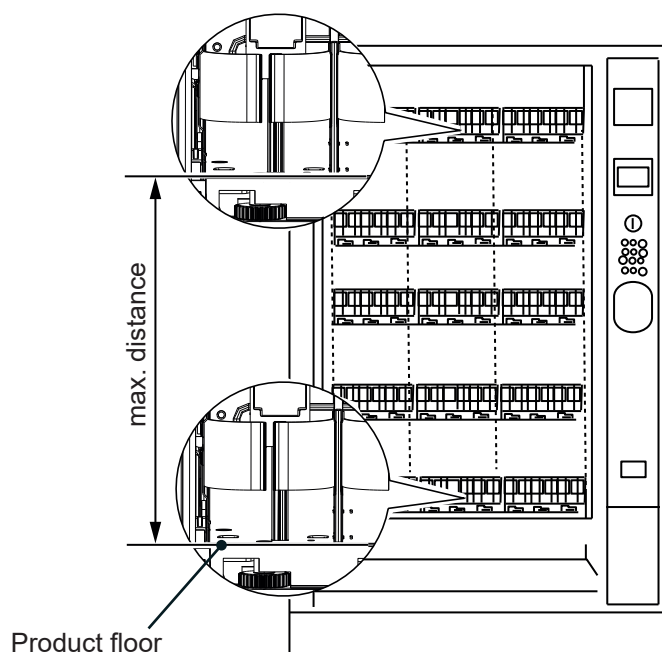
The spacing is 19.35 mm, i.e. the shelf can be moved by this amount.

A reference run must be carried out after the shelves have been relocated. See chap. 4.5

Product requirements	
Can 0.25 l	Ø 53 mm / Height 134 mm
Bottle 0,5l	Ø 66 mm/ Height 234 mm
Bottle 0,6 l	Ø 72 mm/ Height 240 mm

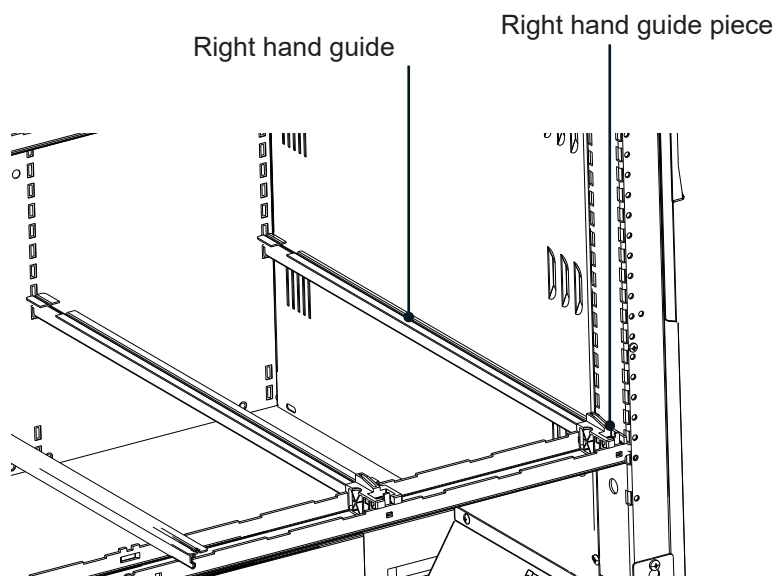
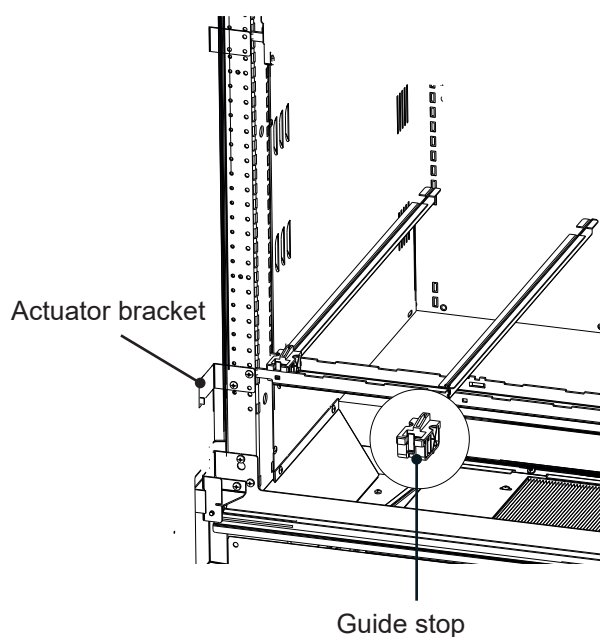
Maximum product heights	
5 shelves	240 mm
8 shelves	123 mm
Transportable through division wall	270 mm

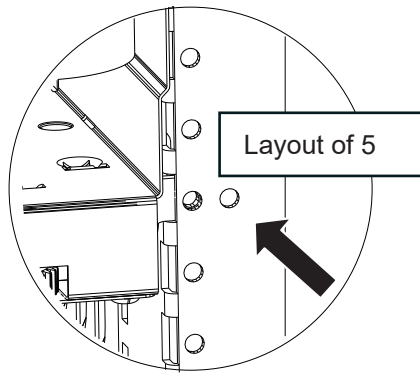
Distance between product floors	
minimum distance	154,8 mm
maximum distance	1161.0mm



How to proceed

- Empty and remove the product containers.
- Unlock the guide pieces and remove the parts. The guide is inserted into the back panel.
- Remove the safety screws on the front cross rail and remove the rail.
Important: also relocate the bracket.

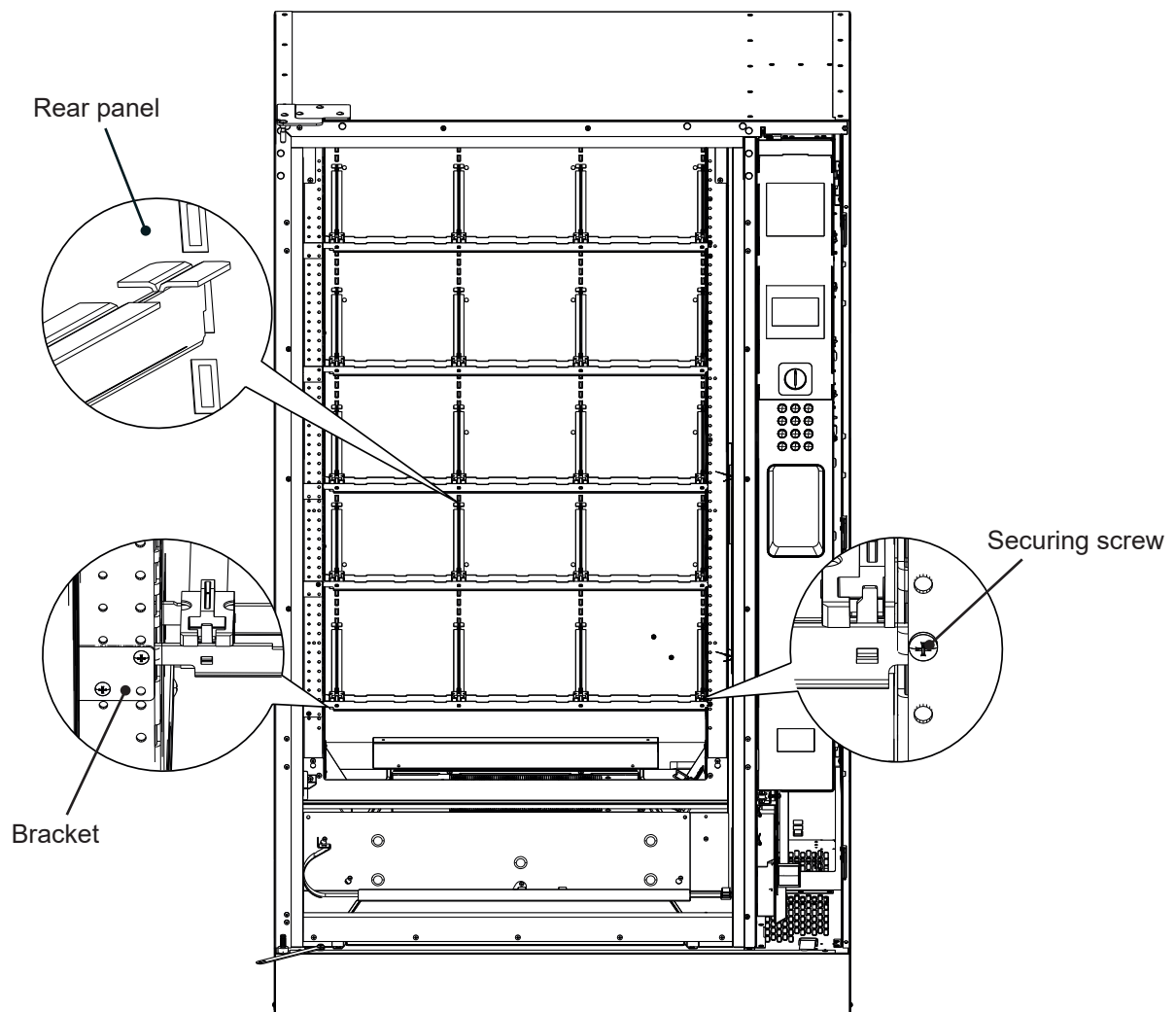




Hole = Layout of 5
(i. e. Sielaff standard layout with 5 shelves)

Install the product shelves

- Insert the crossbar at the required height. Insert a securing screw on the right, fix the bracket on the left with two securing screws.
- First push the guide with the pointed end into the cut-out provided at the back and then secure it with the guide piece at the front.
Please note: There is a "right hand guide" with a "right hand guide block" for the right hand side.
- After mounting the guides check if all shelves are level!

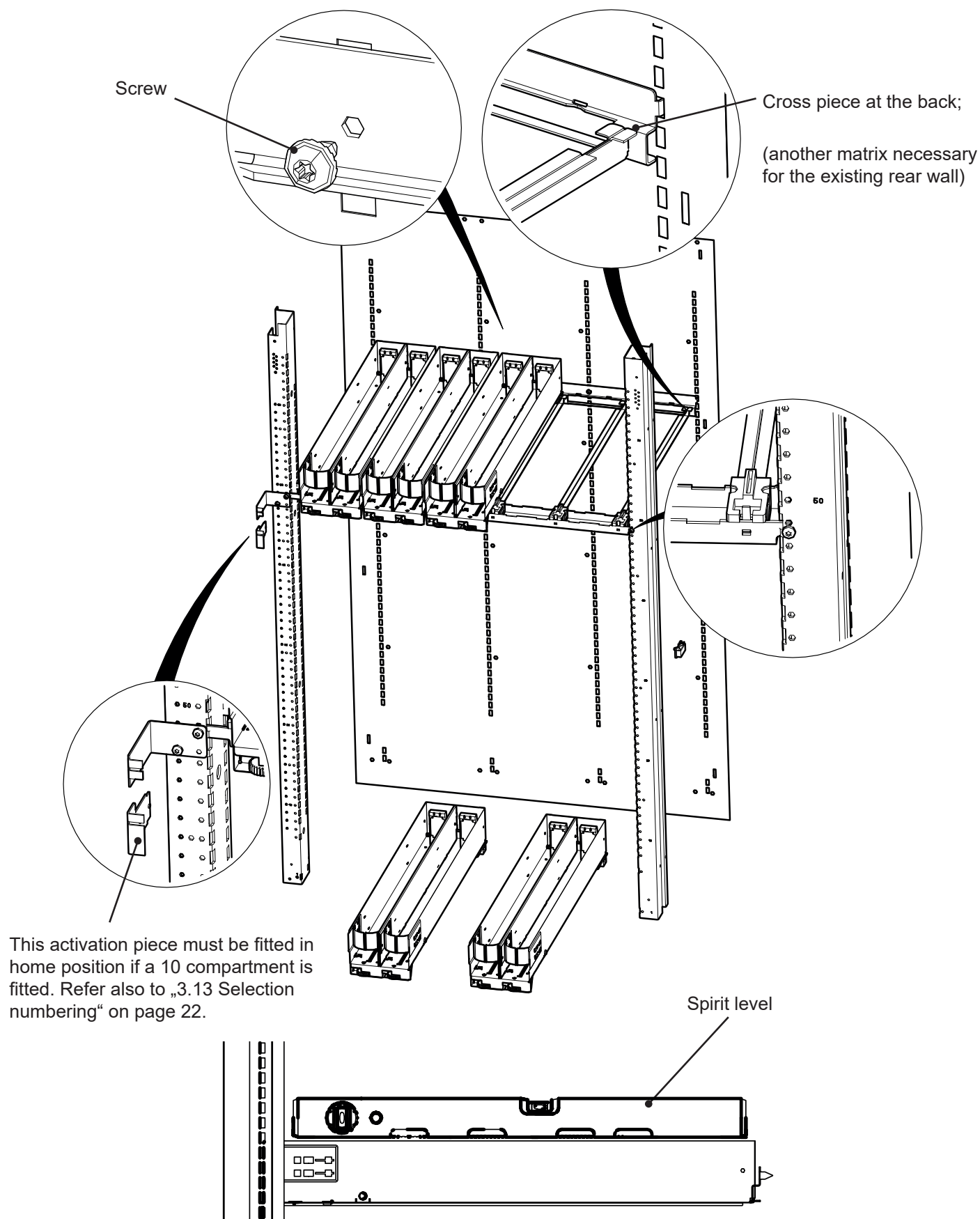


3.16 Changing product shelf heights (width 63 mm) 10 container shelves Robimat XL and 8 container shelves Robimat XM

For this container size an extra cross support must be mounted at the back, secured by two screws.

The cross support is set one hole higher at the back than at the front.

A spirit level must be used to check that the container is horizontal when fitted.

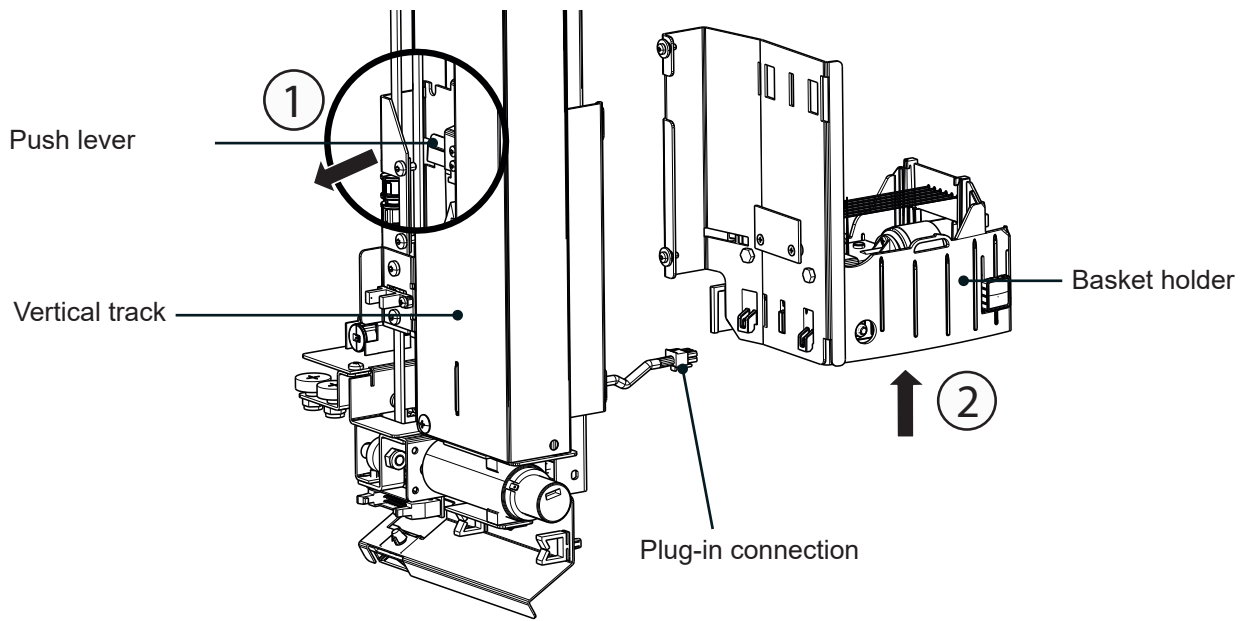


3.17 Exchanging the basket holder

The basket holder can be unhooked and exchanged without using tools.

3.17.1 Removal

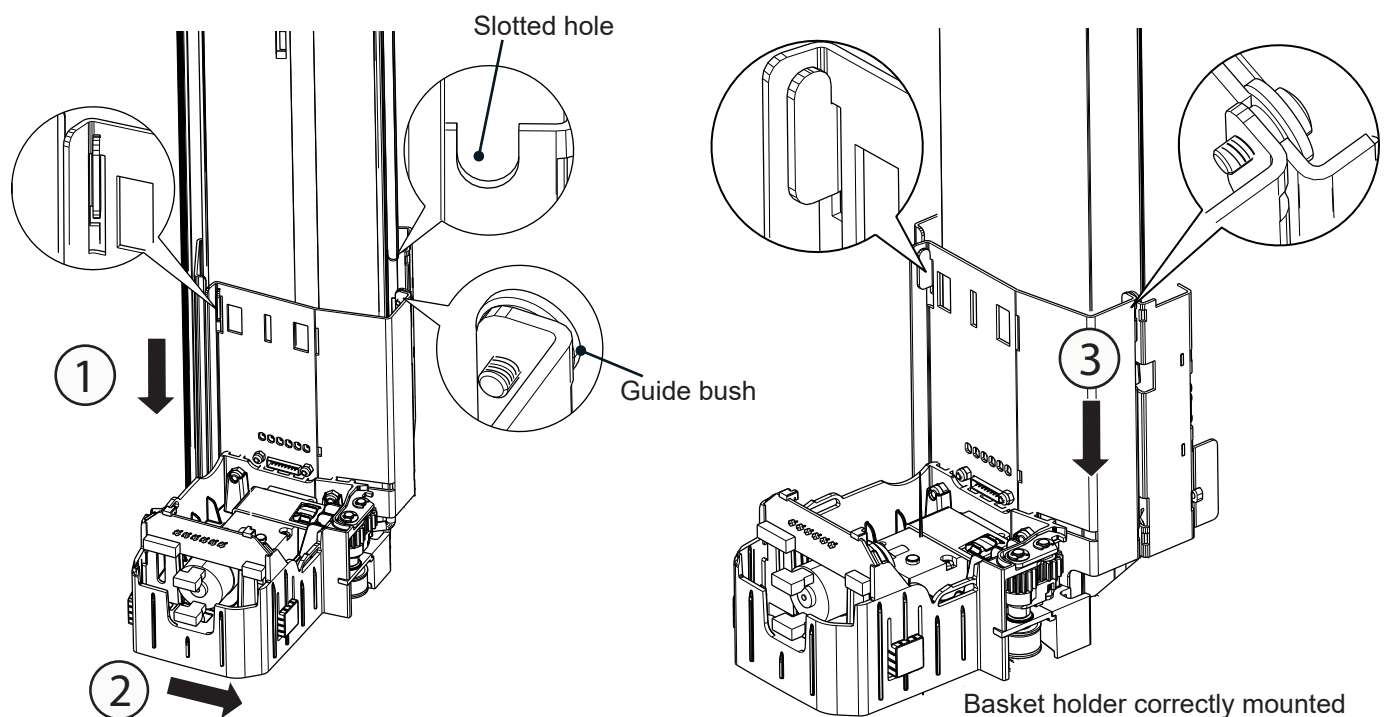
- Hold the carriage of the vertical rail with your left hand and actuate the lever with your index finger (push to the left).
Then carefully push against the basket holder from underneath with your right hand. The basket holder comes off.
- Disconnect the electric cable plug connectors after unhooking the basket holder.



3.17.2 Assembly

Lay the electric cables in the clamping units provided underneath the basket holder and re-connect the plug.

- Fit the basket holder at the front and swivel to the back. The two guide bushes must be inserted into the slots from above by pushing the basket holder downwards whilst simultaneously pressing the lever.
- Ensure that the positioning is correct!



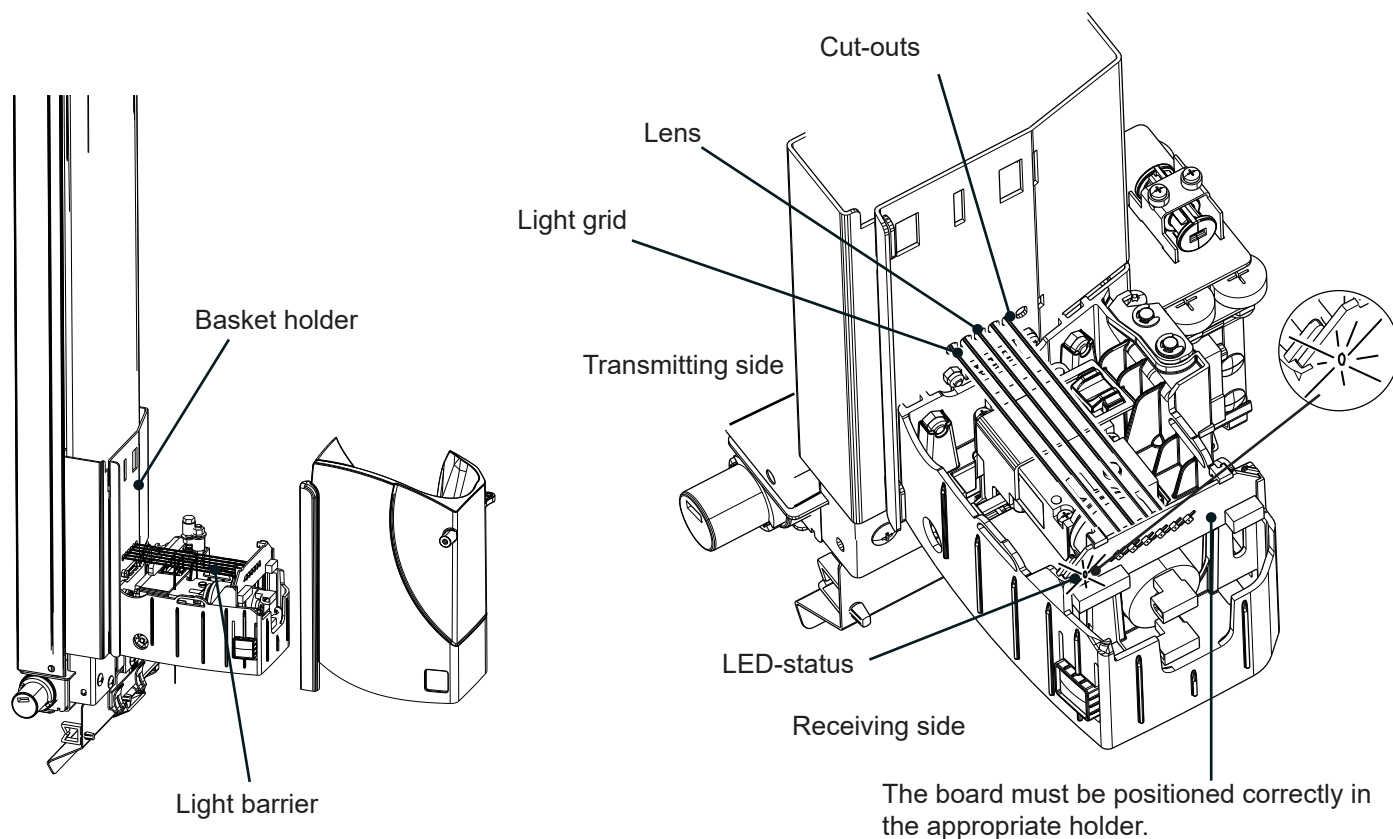
3.18 Product basket light barrier

The light barrier in the product basket must detect the product in the basket. This is done by several rays being arranged in parallel, just one ray breaking is sufficient for product detection.

A status-LED will flash on the receiver board.

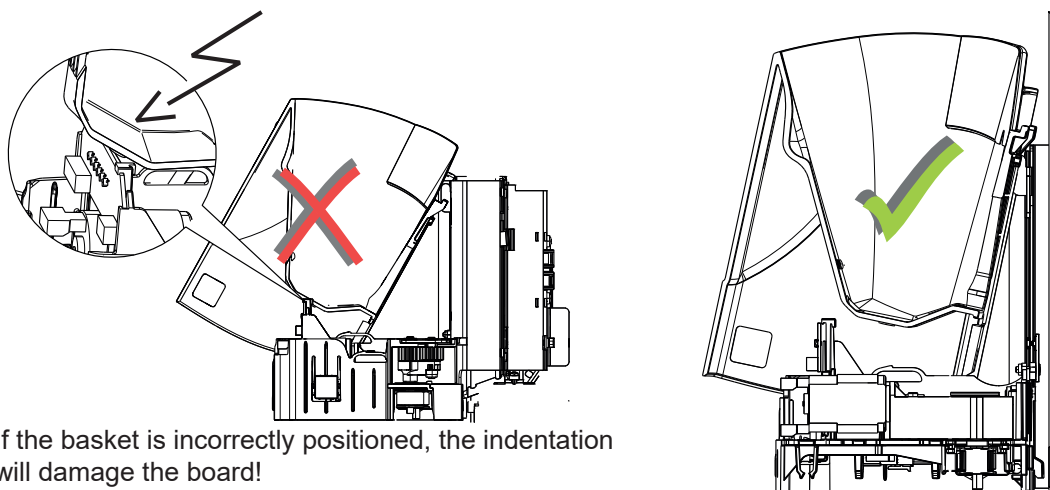
Flashing frequency	Status
slow (every 5 sec.)	OK
fast	Light barrier faulty

The cut-outs and the lenses on both boards must be dust-free; remove foreign bodies (e. g. labels) if necessary. Cleaning with compressed air from a spray is sufficient. Caution, sensitive components! Do not get too close with the spray nozzle.



Be careful not to damage the board!

If the product basket is inserted incorrectly the light barrier board may be damaged. For this reason be careful not to damage the board with the indentation in the bottom of the basket!



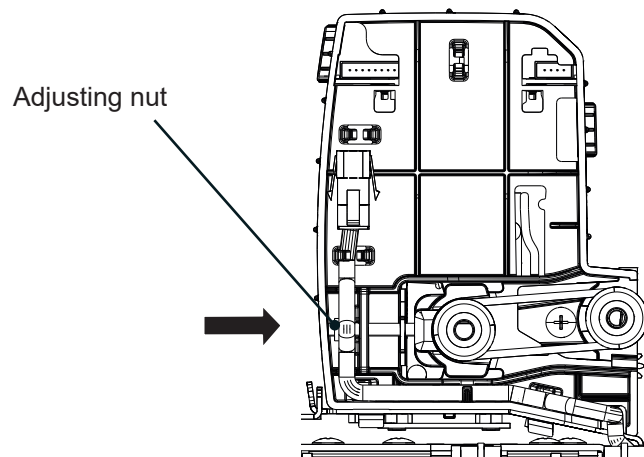
If the basket is incorrectly positioned, the indentation will damage the board!

3.19 Product basket belt tension

**NOTE**

Do not tighten the belt too much, risk of damage!

The toothed belt for the Z-axis drive with the pendulum drive is located on the underside of the basket. In order to adjust the belt tension use a box spanner SW7 (and an adjusting gauge if available).



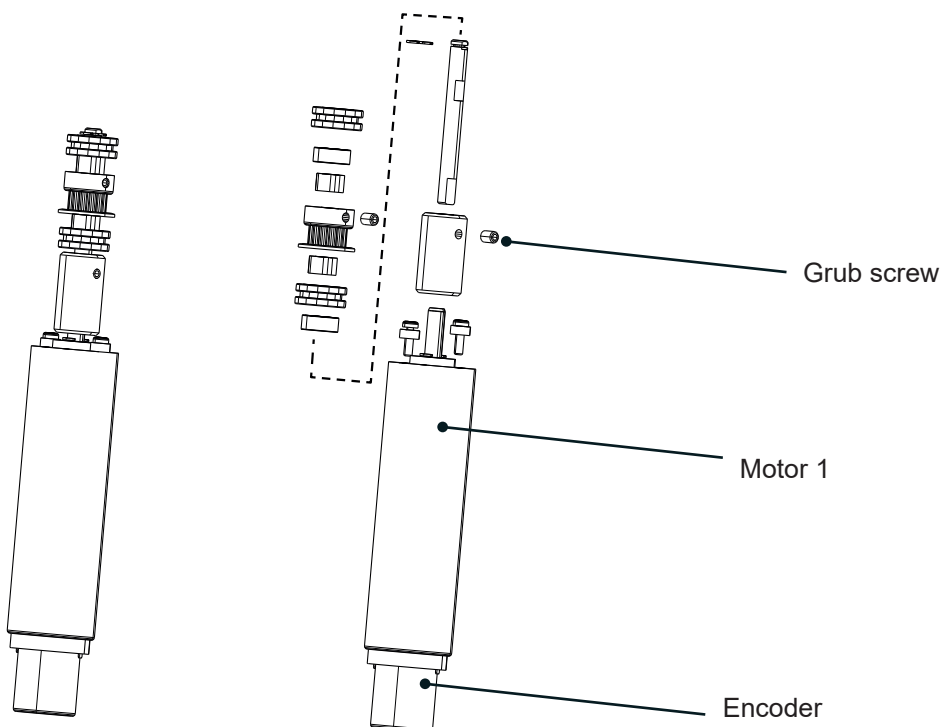
3.20 Motor position

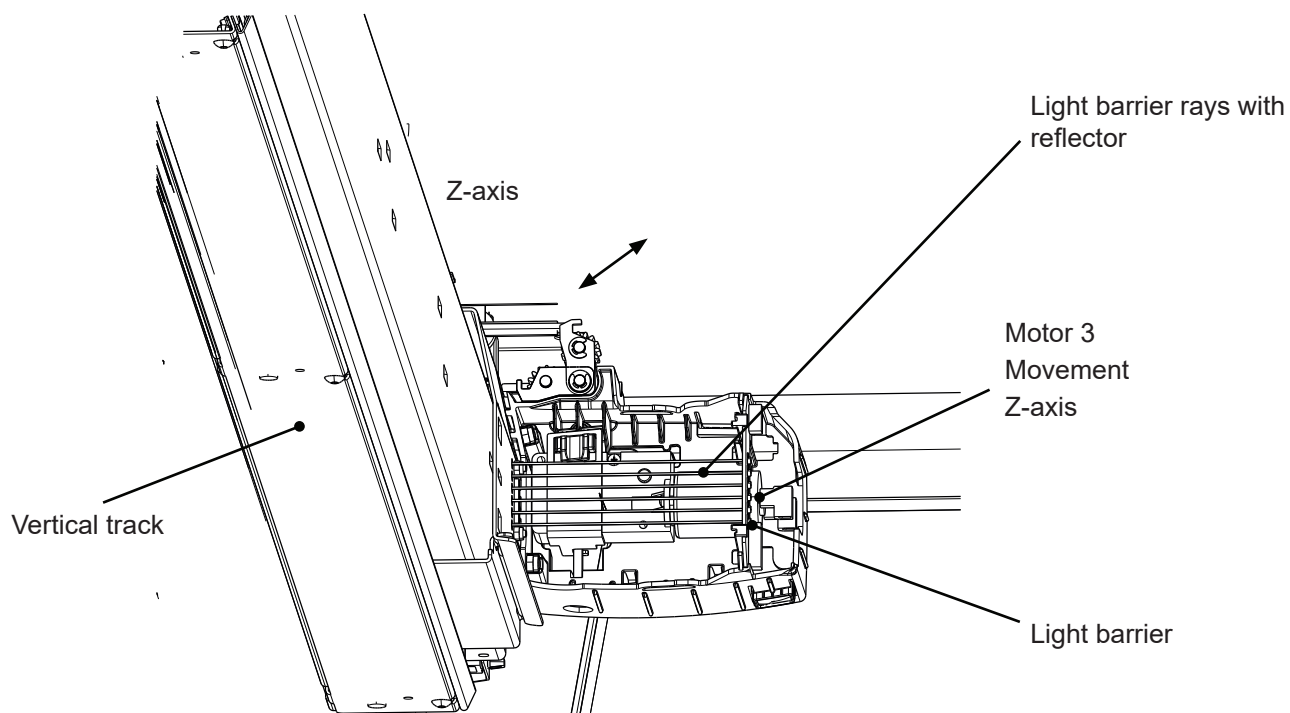
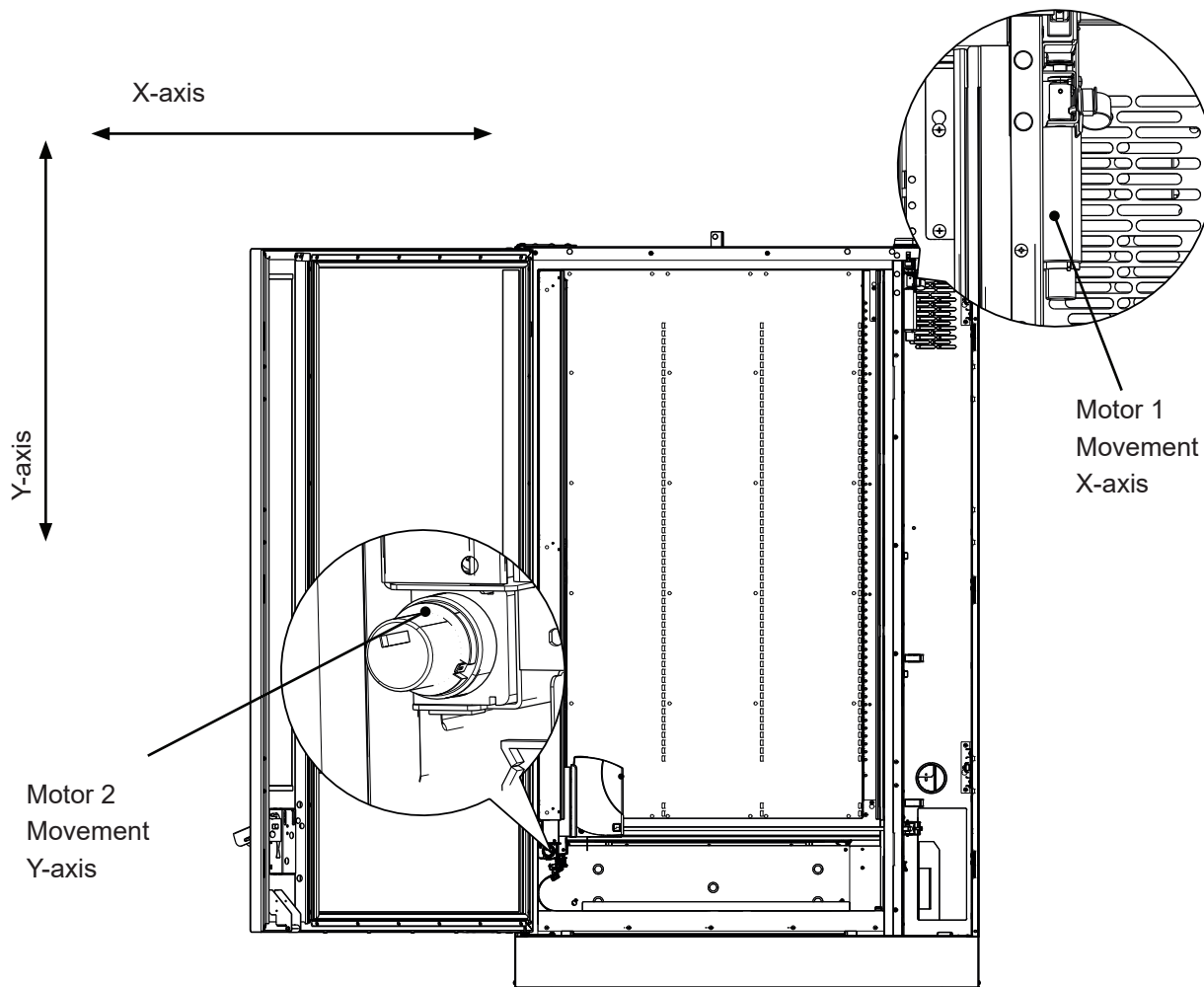
There are 3 electric drive motors in the vending machine.

Motor 1: is located on the right at the top and can be seen once the sliding drawer unit has been pulled out.

Motor 2: is located on the vertical rail outside the product basket.

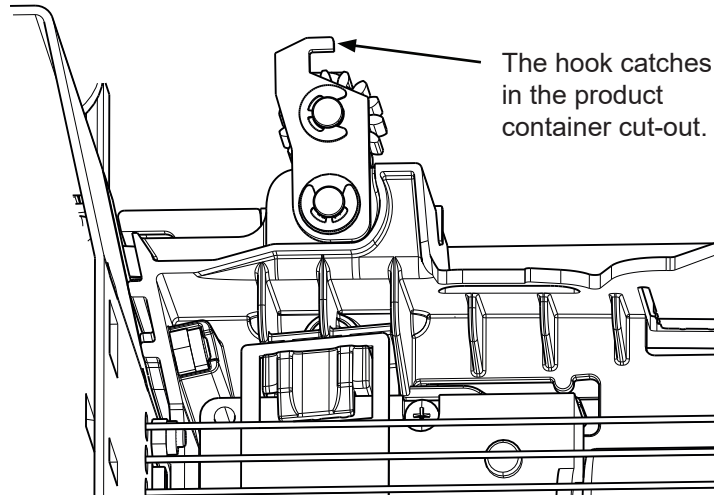
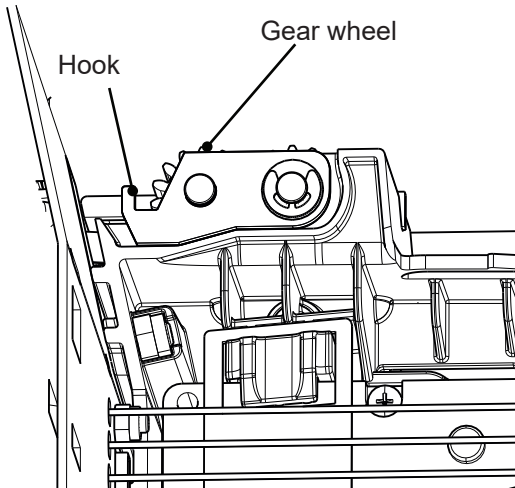
Motor 3: is located under the product basket.



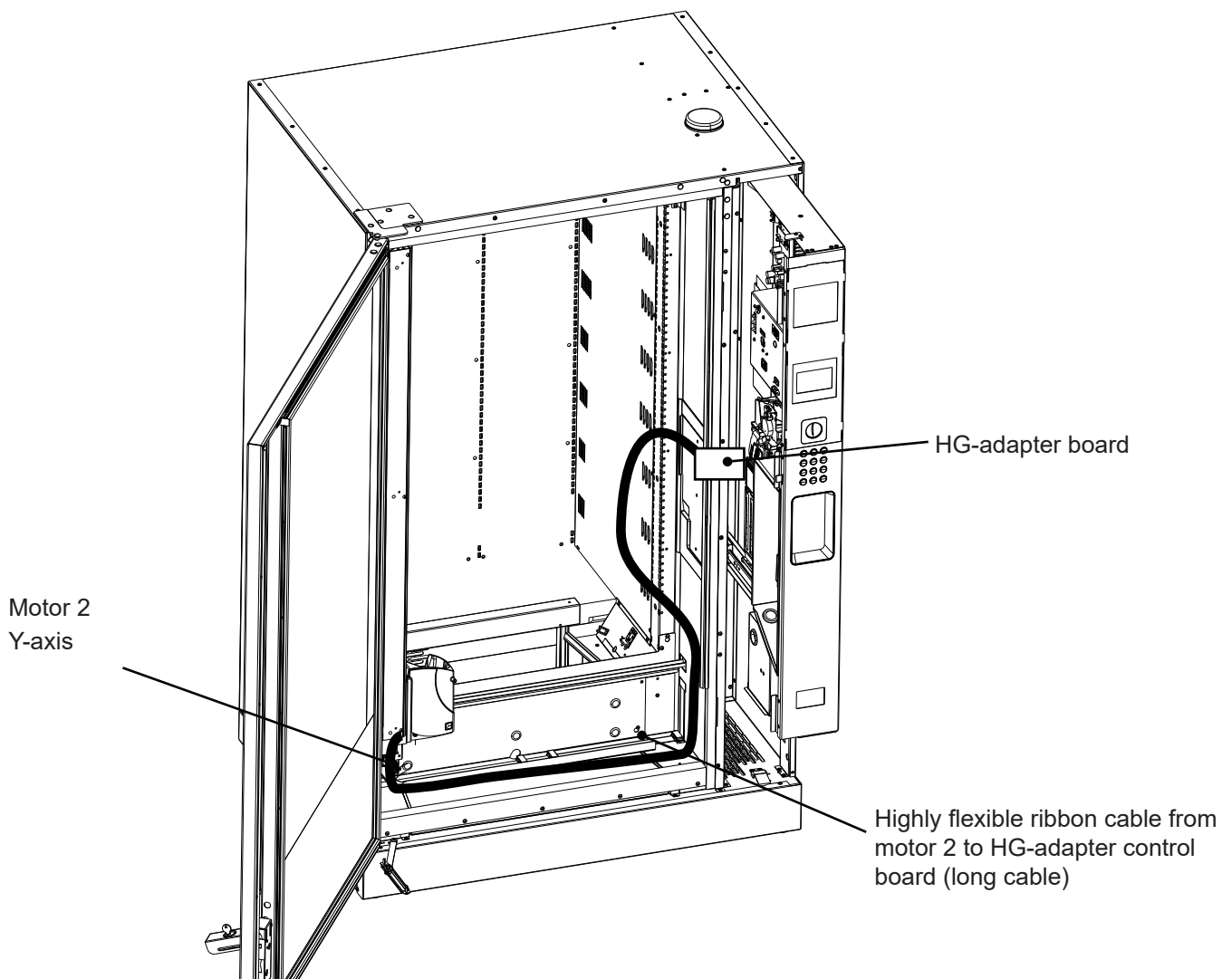


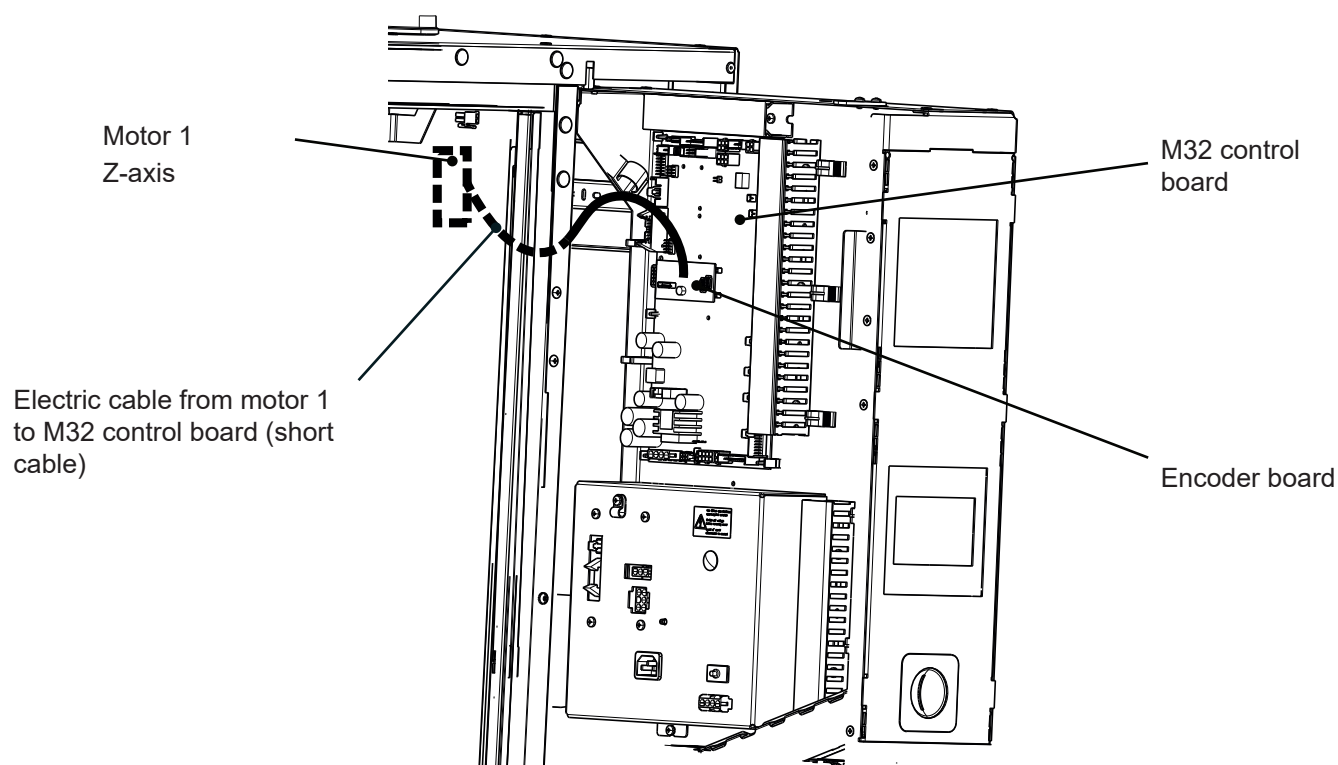
Motor 3
Z-axis
Home position,
Hook engaged

Motor 3
Z-axis
Transportation status,
hook disengaged.
Products in the container are pushed forward when
the drive is active



3.21 Electrical wires, cable connections





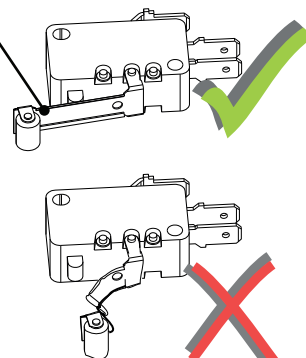
3.22 Switches, buttons, locking mechanisms

This is where the button for
the home position of the
X-axis is located.

Locking mecha-
nism with button for
delivery unit flap
(shutter).

The pin on the pro-
duct basket unlocks
the delivery unit flap.

Actuators



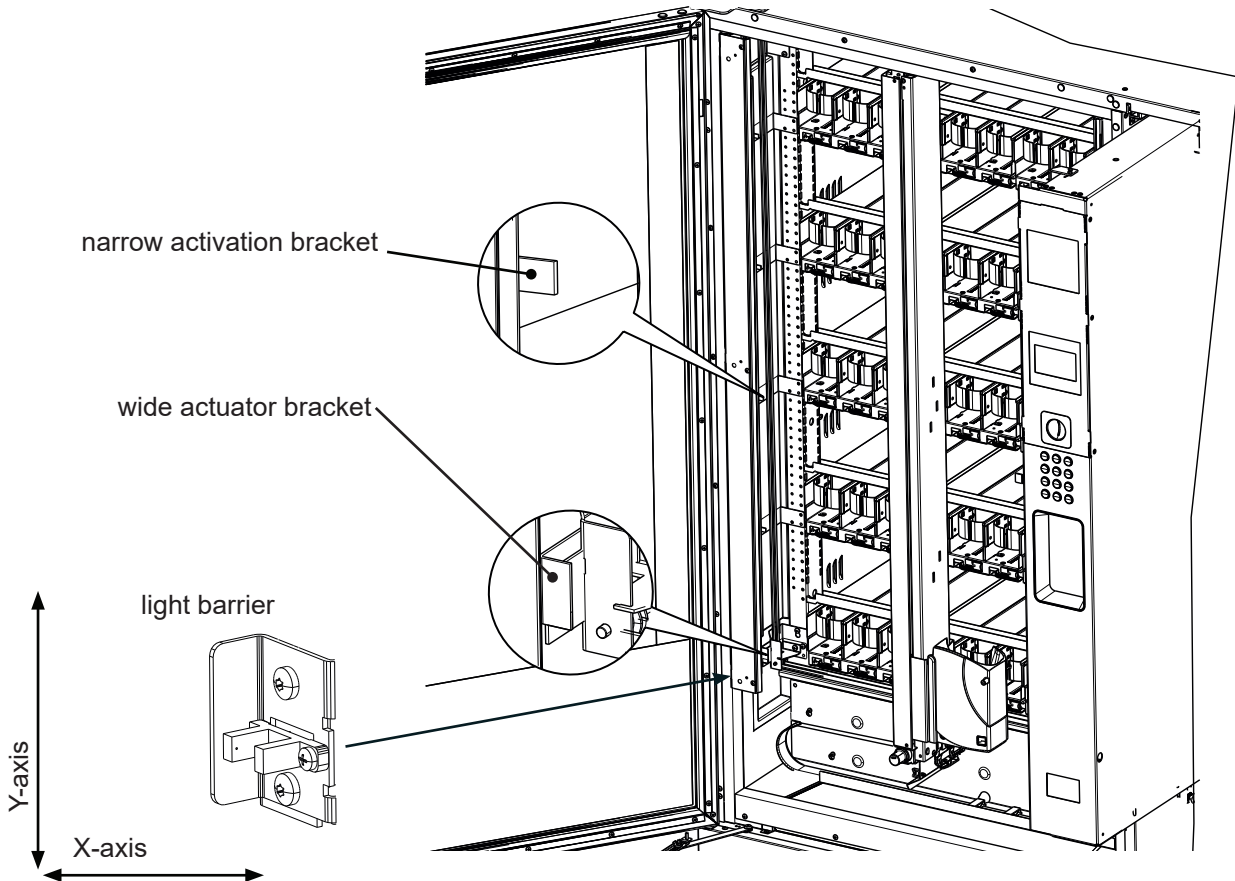
Actuators are available se-
parately as a spare part.

3.23 Activation bracket for determining shelves

The home position of the Y-axis is determined via a light barrier on the product basket:

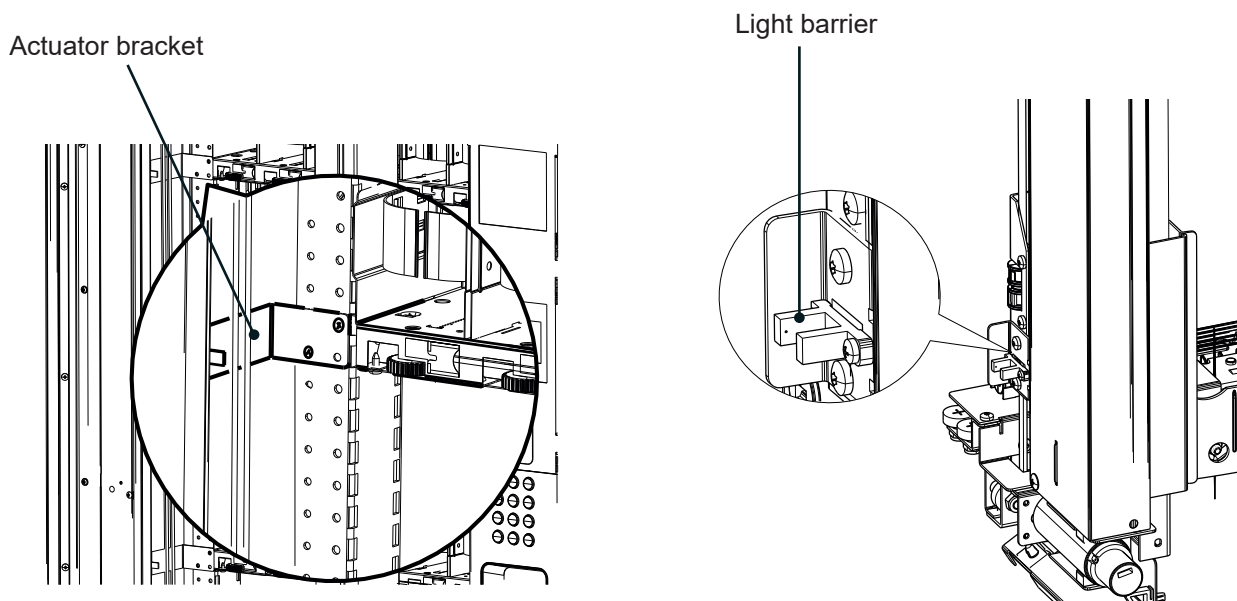
- narrow actuator bracket = container
- wide actuator bracket = home position at the bottom

Refer also to „3.14 Overview of containers and actuator bracket“ on page 23.



Important: Each product shelf, except for the bottom one, must have a narrow actuator bracket (metal bracket) to enable detection during the shelf detection process.

If, due to an oversight, the actuator bracket is omitted when the shelf is converted, this shelf will be ignored!



ROBIMAT [M10] > MASTEROFFSET

Adjusting the pendulum hook (Menu MasterOffset)

MasterOffset - correction of stop positions (pendulum hook)

Entering correction values in mm in the MasterOffset menu ensures that the pendulum hook hooks up correctly and that the power transmission works properly.

Deviations are due to operational demands on the lift system, wear and tear, strain and other factors.

System of axes: X-axis - horizontal

Y-axis - vertical

Z-axis - to the rear (extension of the pendulum hook)

A total of 4 parameters can be set:

XMOffset

YMOffset

XMScale

YMScale

Offset refers to the complete coordinate system.

Scale refers to the deviation at maximum deflection from home position. Interim values are approximated.

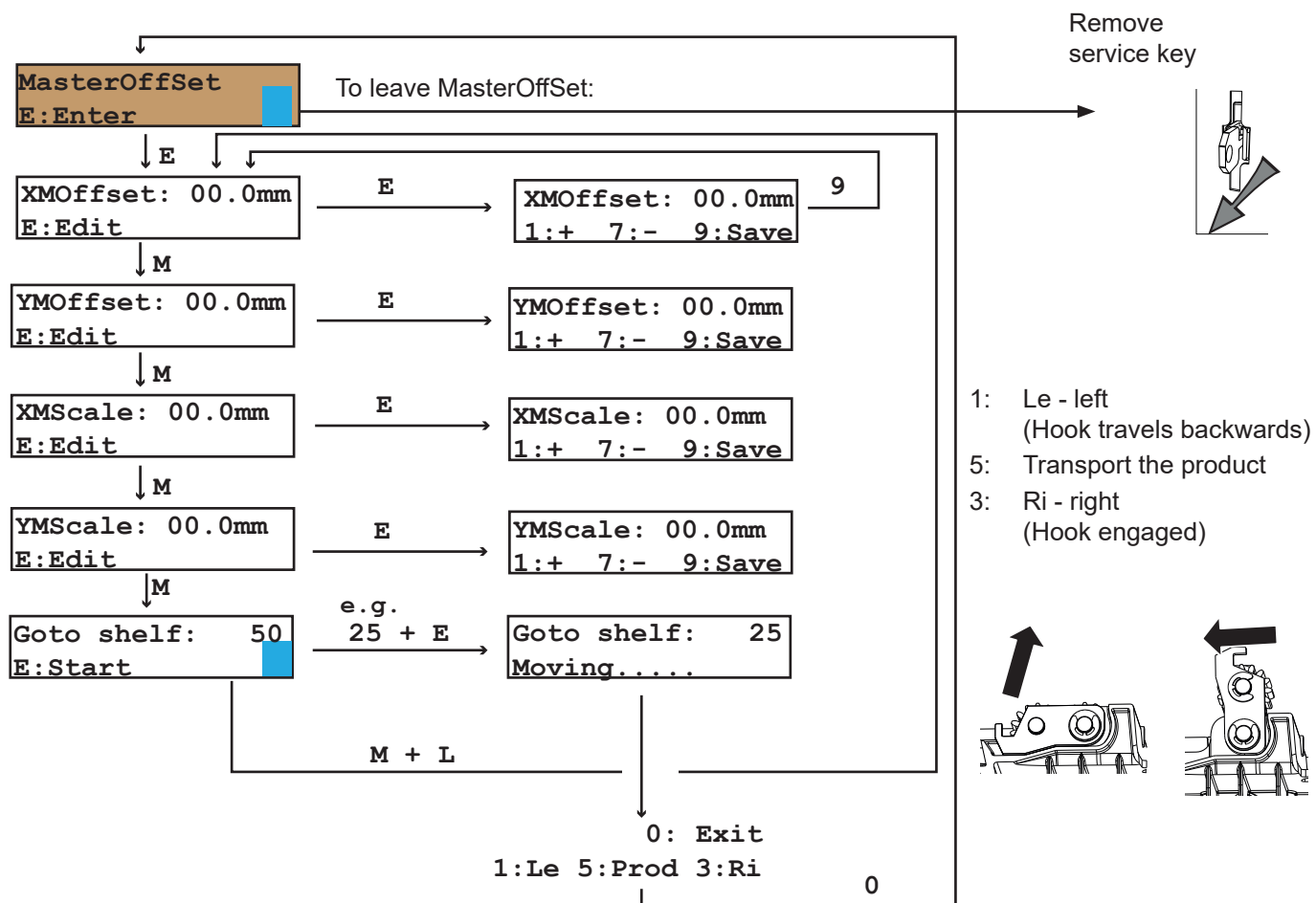
Positive values (e. g. + 2mm) mean "further to the right" or "higher".

Negative values (e. g. - 5mm) mean "further to the left" or "lower".

The data refers to the pendulum hook.

A correction can easily be made by moving to the outer containers and observing how the pendulum hook hooks in and out. Navigating is done simply via the service keys and the selection keypad.

The upper product shelf is awkward to observe, to simplify matters concentrate on the second product shelf.

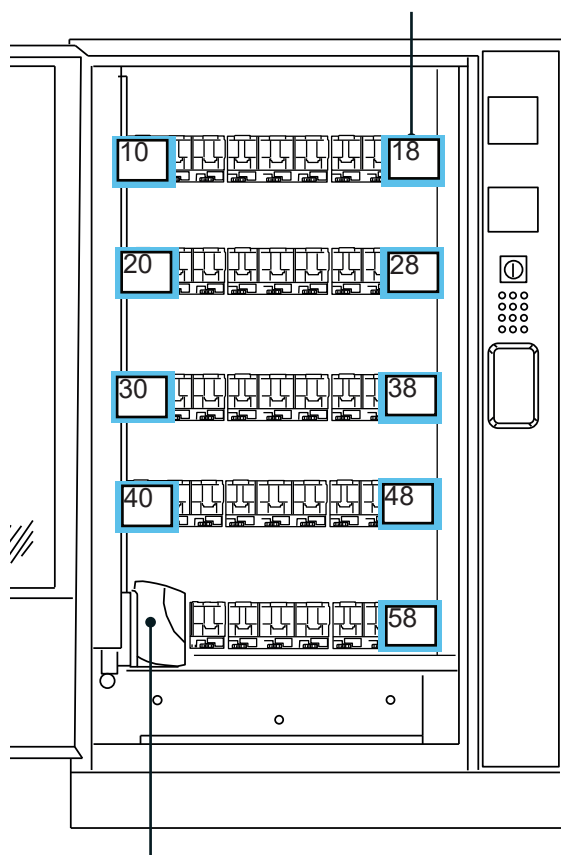


Maximum deflection

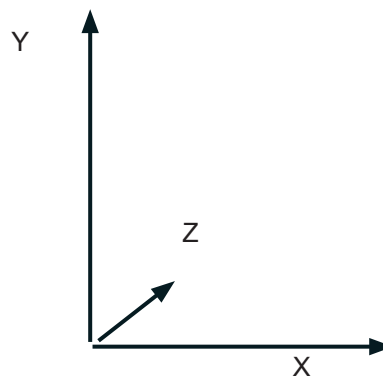
Robimat XL: 18, 28, 38

Robimat XM: 16, 26, 36

Robimat XS: 14, 24, 34



Home position, zero position

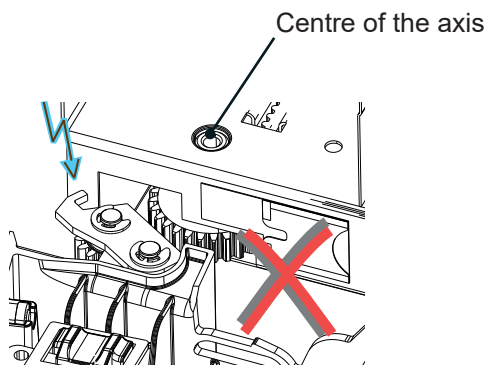


How to proceed

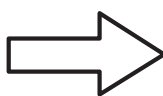
Set the lowermost product shelf - **Offset**
(selection 50 resp. 58)

Set the topmost product shelf - **Scale**
(selection 10 and 18)

XMOffset / YMOffset influences every product container on every shelf!



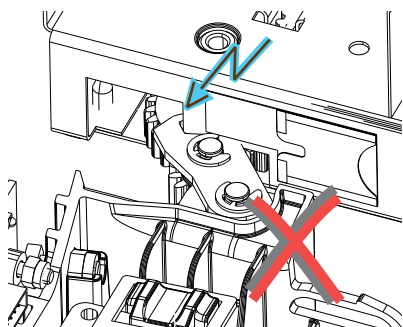
Pendulum hook is too far to the left and cannot hook in. Pendulum hook must be further to the right = + X-direction.



XMOffset - increase value (e.g. +6mm)
YMOffset
XMScale
YMScale

for example:

XMOffset: +06.0mm
1: + 7: - 9: Save



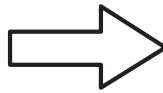
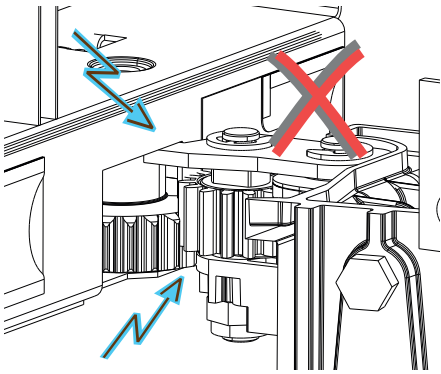
Pendulum hook cannot hook in correctly;
Pendulum hook must move further to the left = - X-direction



XMOffset - reduce value (e.g. -5mm)
YMOffset
XMScale
YMScale

for example:

XMOffset: -05.0mm
1: + 7: - 9: Save

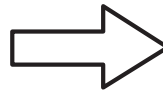
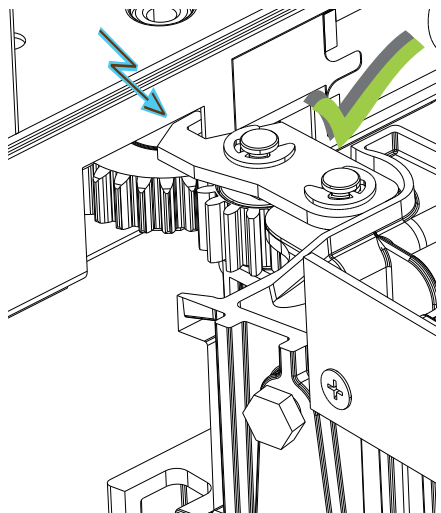


XMOffset
 XMOffset - reduce value (e.g. -3mm)
 XMScale
 YMScale

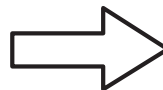
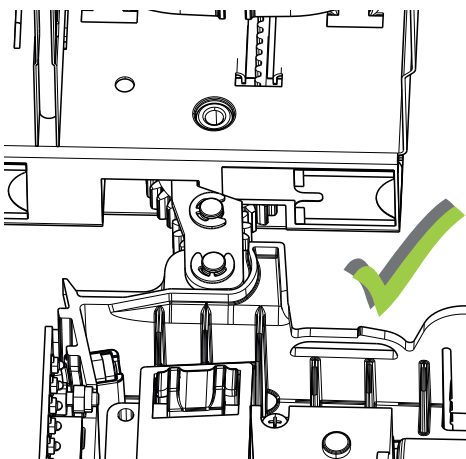
for example:

YMOffset: -03.0mm		
1: +	7: -	9: Save

Pendulum hook drags at the top; gear wheels are not at the same height; pendulum hook must be positioned lower = - Y-direction.



The pendulum hook must freely swing in and out.
 Gear wheels must be at the same height.



The pendulum hook is correctly adjusted.

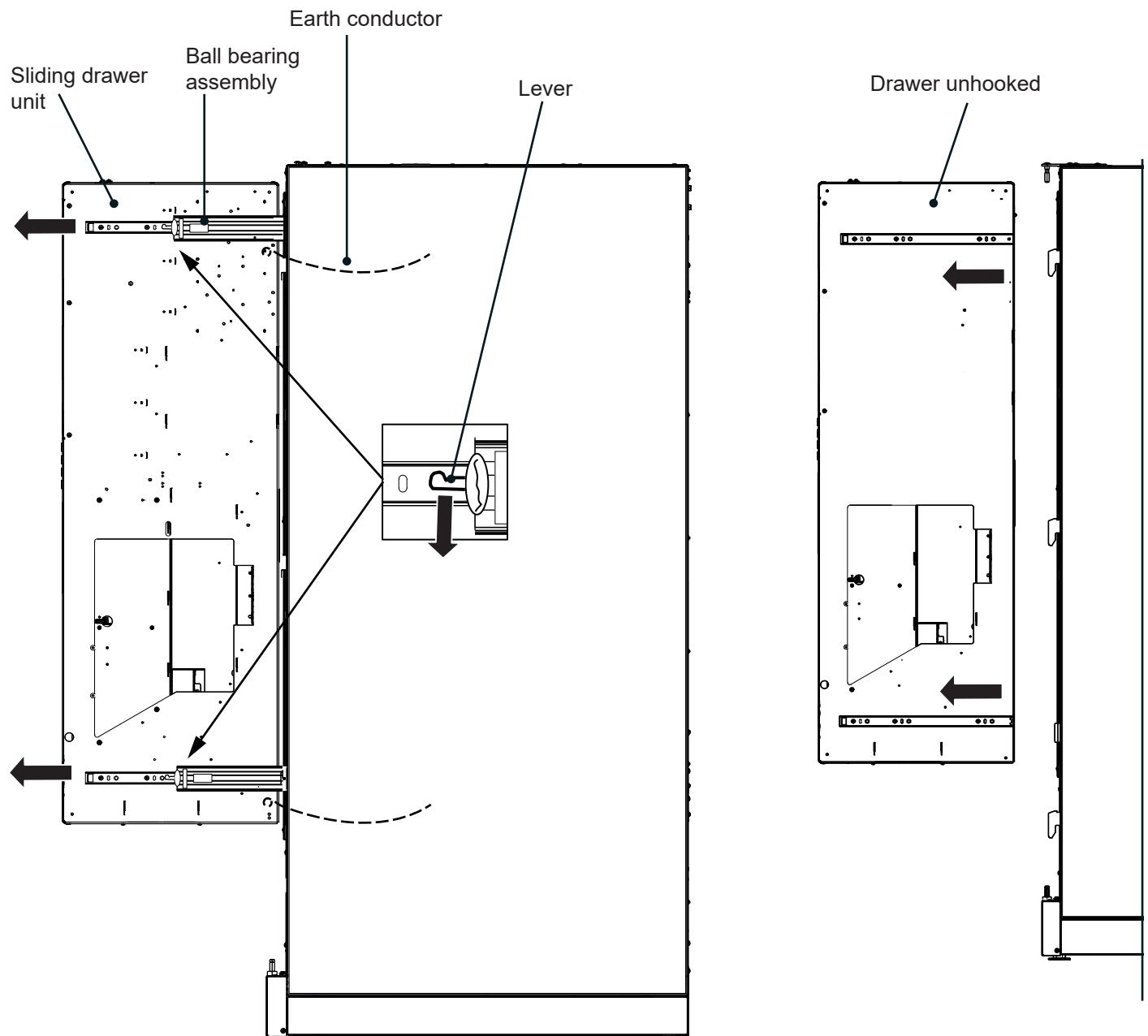
3.24 Taking out the sliding door unit

The sliding door unit can be hooked out for repair work. This process does not take very long.

- Disconnect the electrical cables to the unit.
- Disconnect the two earth conductors with ring cable lug.
- Pull out the drawer unit until it stops, press down the levers at the top and the bottom.
- Pull out the drawer unit thereby separating the rails. Hold the drawer and secure it well!

Inserting the sliding drawer unit

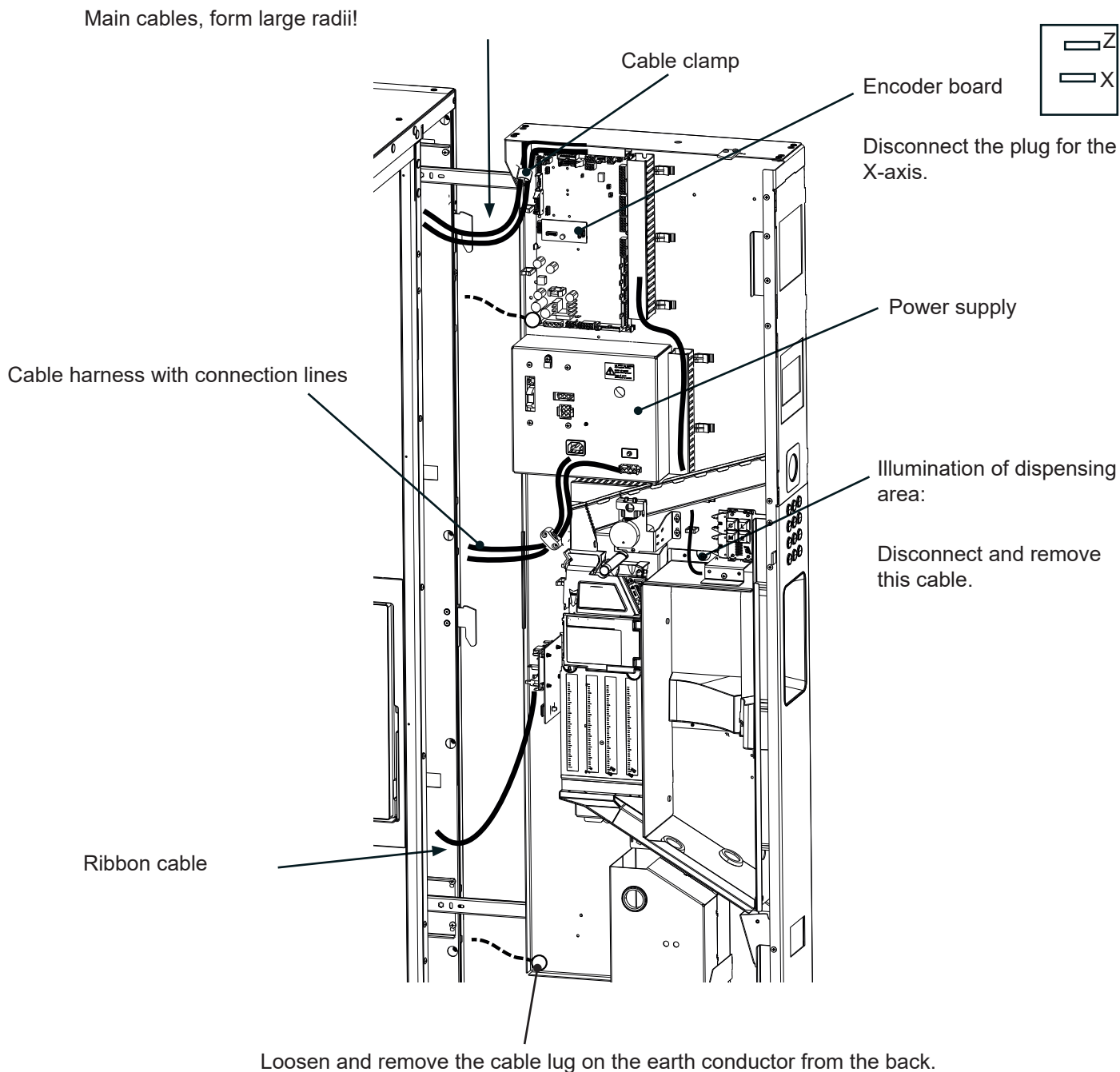
- Pull the ball bearing frontwards to the stop position!
- Position the drawer unit with its two firmly mounted rails into the pulled out rails + ball bearings. Ensure that the ball bearing does not slide backwards and that the rail is inserted in it.



3.25 Sliding drawer unit wiring

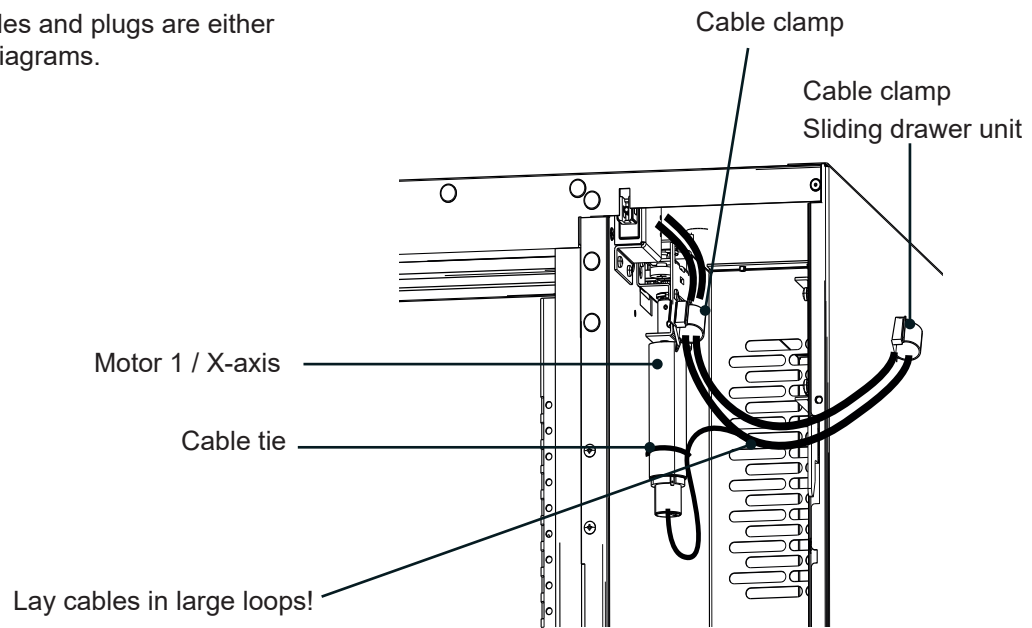
Cables from the machine to the drawer unit must be laid in large loops with strain relief.

Make sure to avoid sharp bends and lay the cables in a way that they do not get caught and are not under tension.



Note on the diagrams

For simplification purposes the cables and plugs are either only indicated or not drawn in the diagrams.

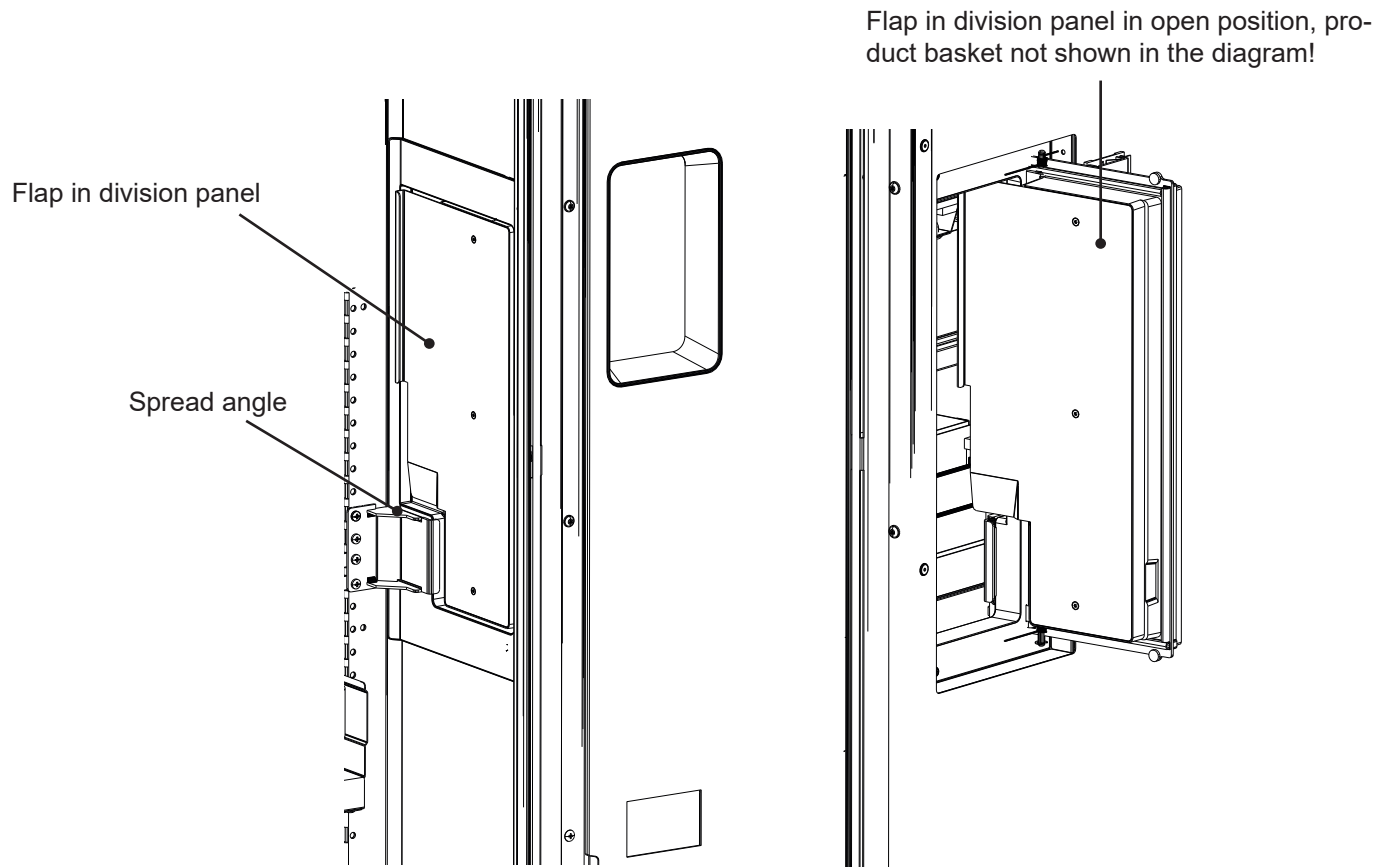


3.26 Flap for the division panel

There is a flap between the chilled area and the ambient area.

It is pushed into locking position with two springs on the hinge axis.

If a product in the basket is to be dispensed, the basket simply pushes this flap in the division panel open. When the basket moves away, the flap closes again.

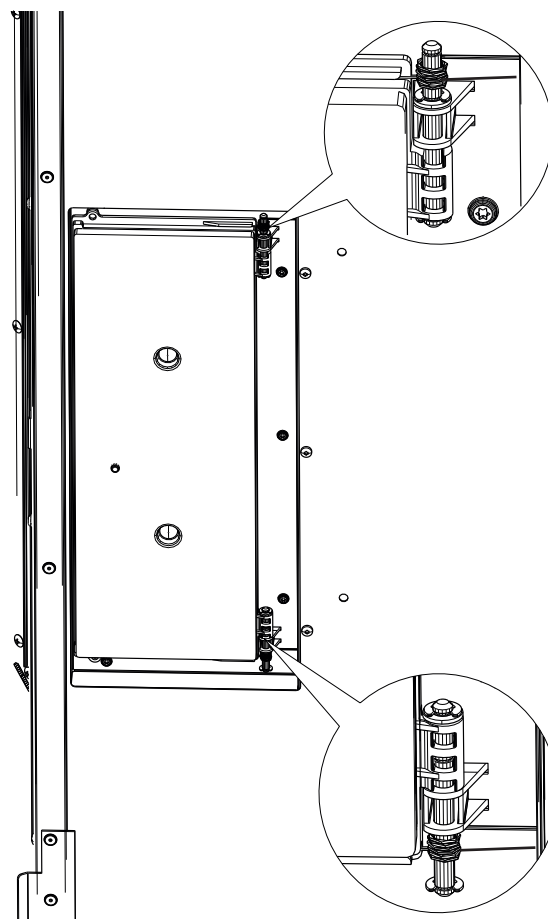


Fitting and removing the flap in the division wall

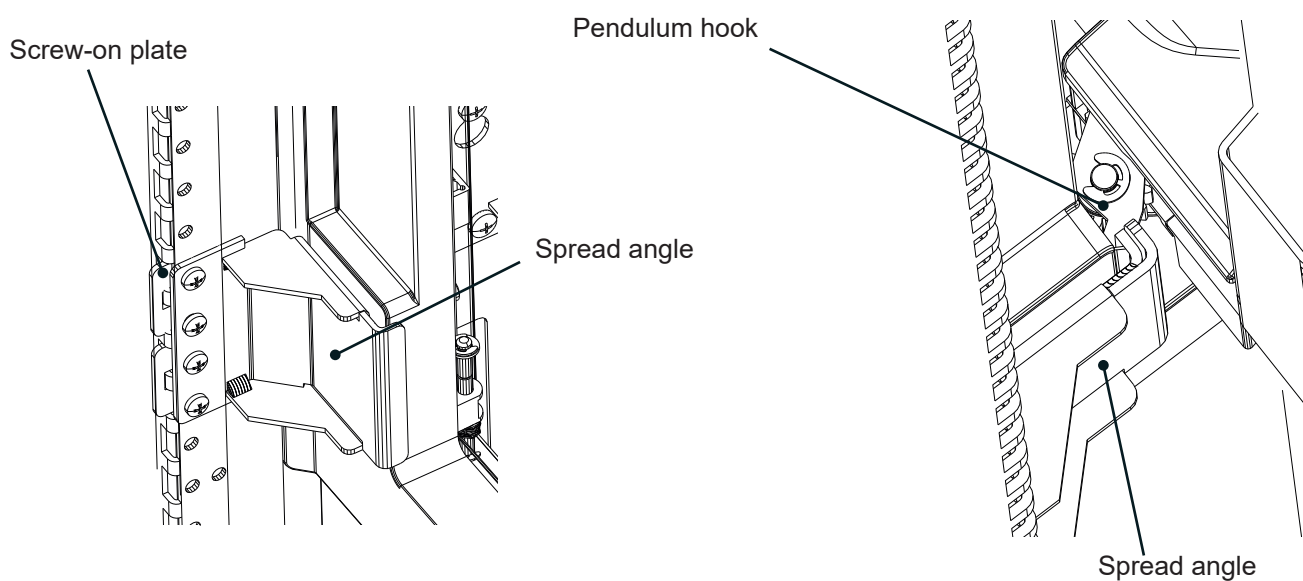
- Unhook the drawer unit (flap accessible; if necessary).
- Remove the two snap rings on the axes.
- Pull the upper axis upwards
Pull the lower axis downwards.
- The flap can be taken out.

To re-install follow the instructions above in reverse order. Finally, check the functioning of the flap to avoid unnecessary loss of energy.

The flap must be self-closing!

**3.27 Protecting the basket during product delivery**

When the vertical rail with the product basket is in the delivery unit, the pendulum hook is pulled out thereby blocking the spread angle. This prevents the product basket from being pushed back mechanically (theft protection).

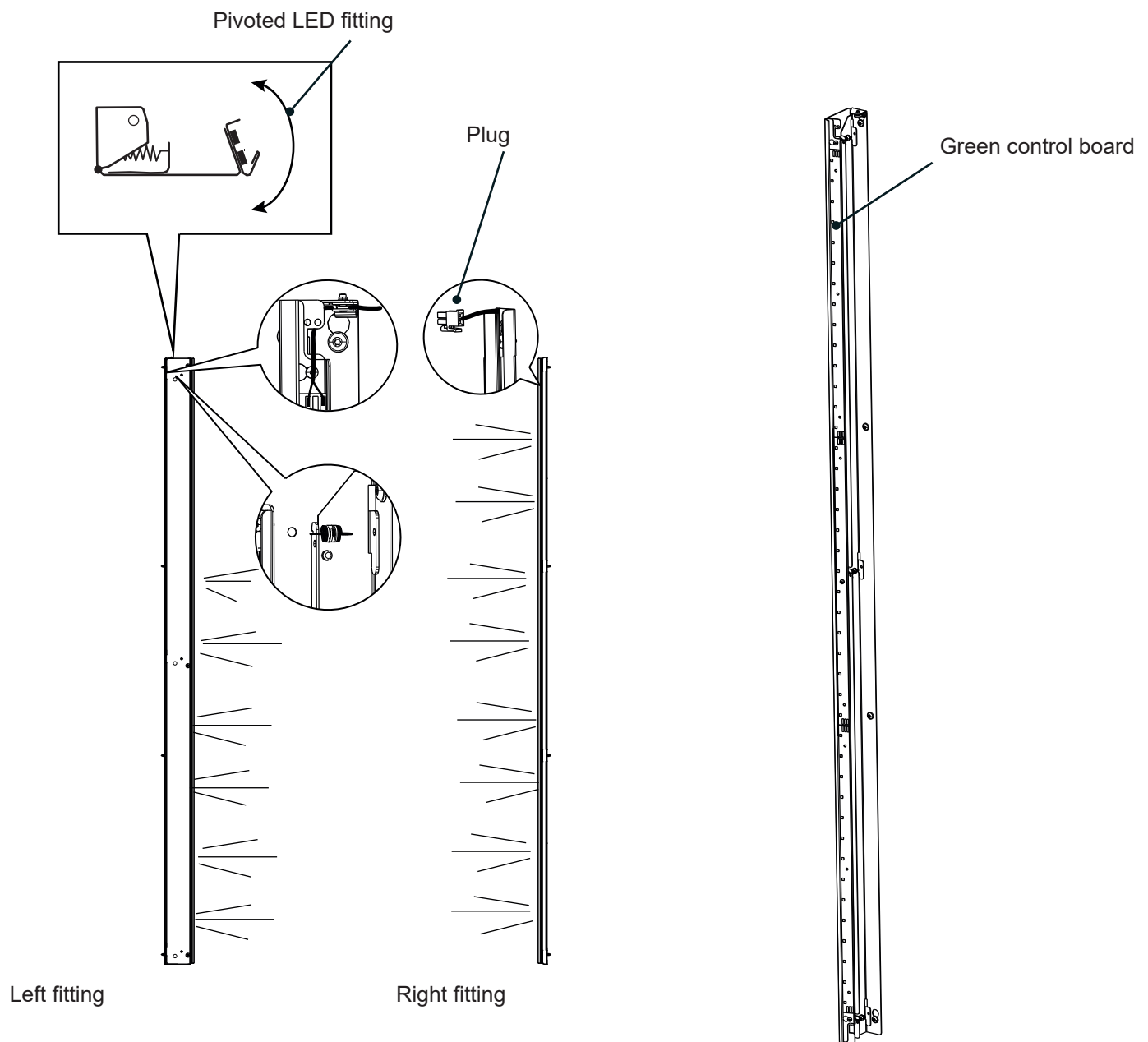


3.28 Machine illumination: LED fitting left/right



Do not touch the green LED light fitting board! It contains sensitive components.

- The products are illuminated by two energy-saving, long-life LED light fittings.
- The left fitting folds out when the door is opened. This prevents damage when the left product containers are pulled out.
- The right hand fitting is firmly mounted.
- The light fittings can be exchanged by loosening the fixing screws. The supply line is connected with a reverse polarity protected plug.

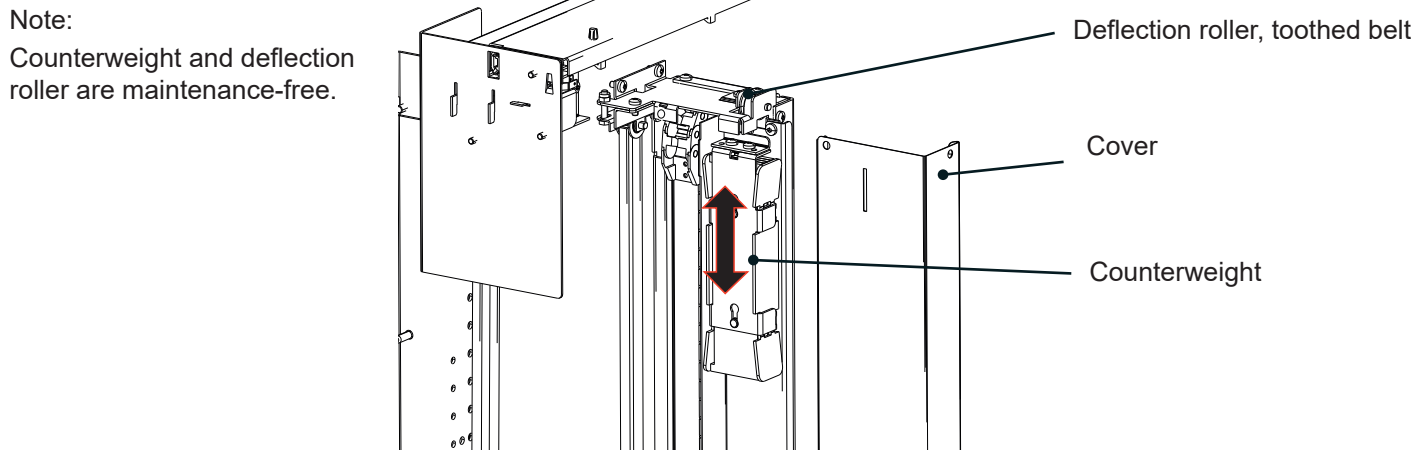


3.29 Lift system

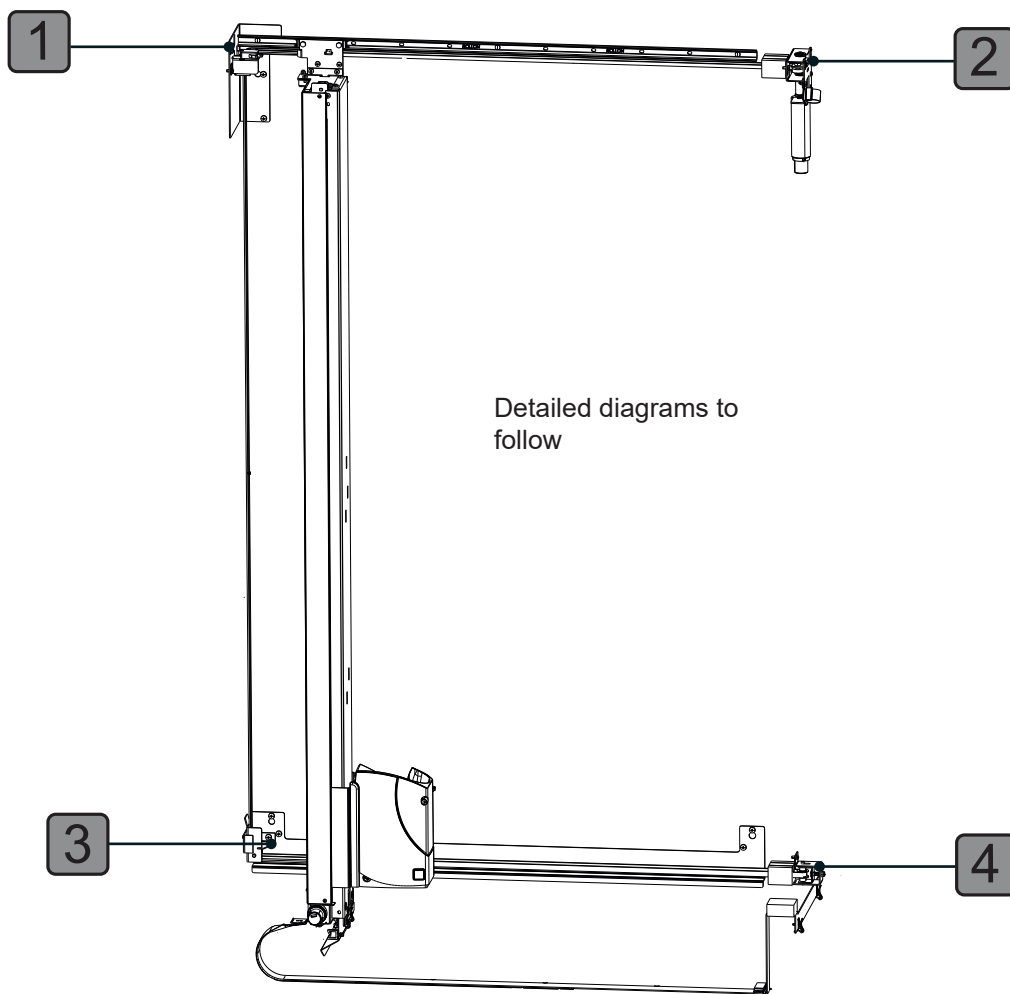
3.29.1 Vertical track counterweight

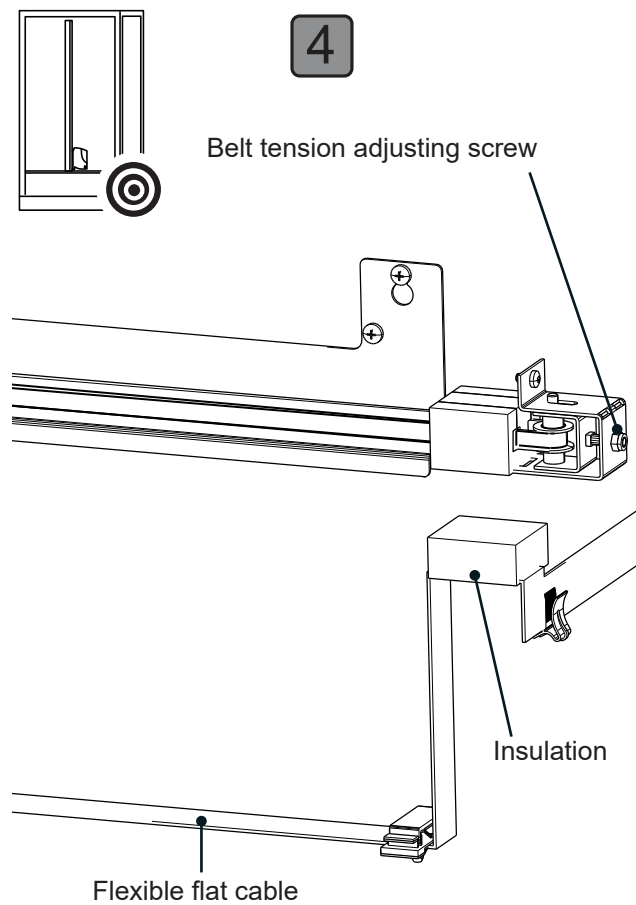
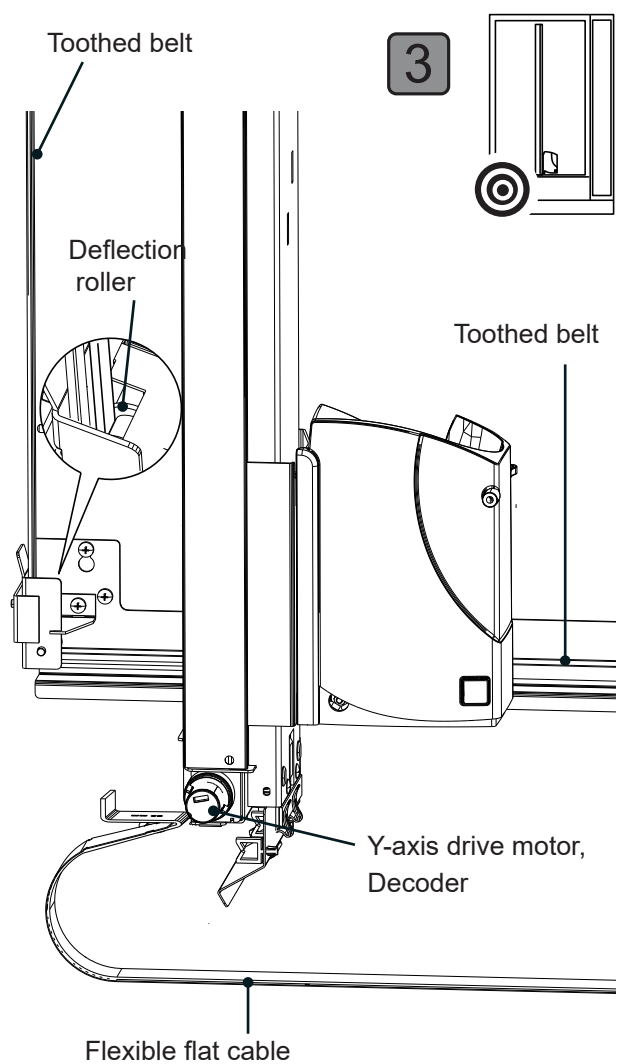
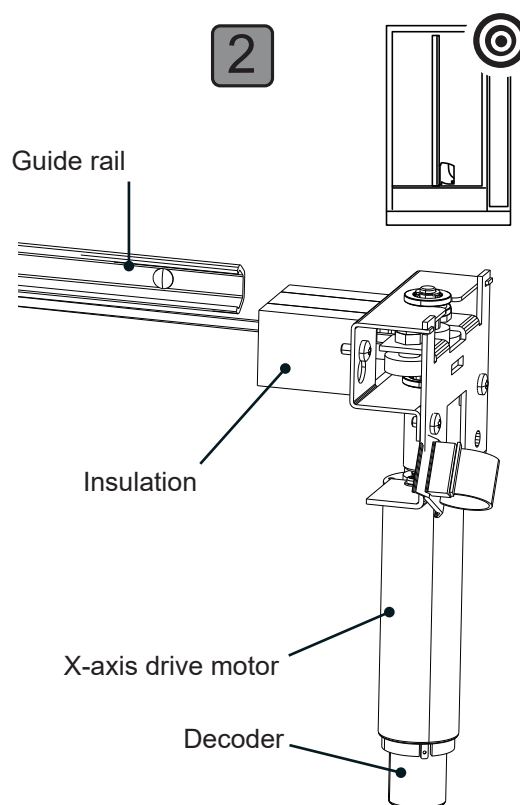
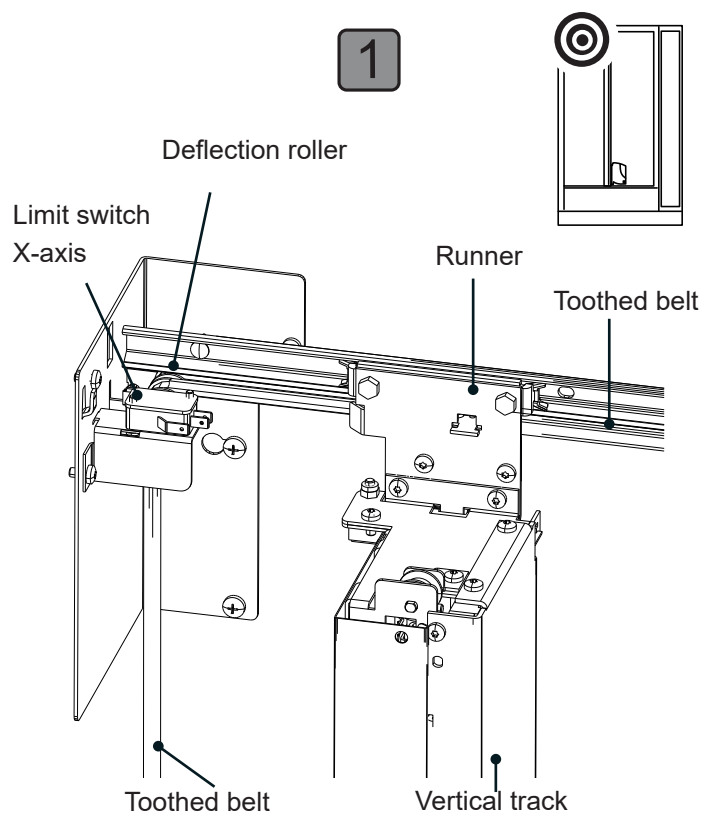
A counterweight of approx. 0.8 kg is built in to balance the weight of the basket. The two parts are connected via a deflection roller with ball bearing and a toothed belt.

The counterweight is accessible once the cover has been removed.



3.29.2 Belt drive, Vertical-rail, lift system set-up





3.29.3 Removing the vertical track

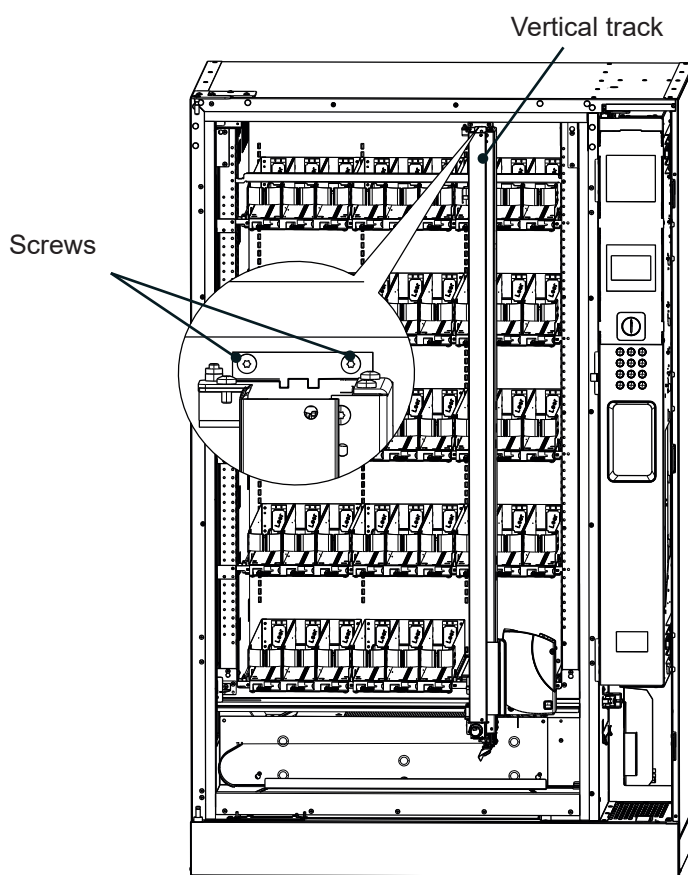
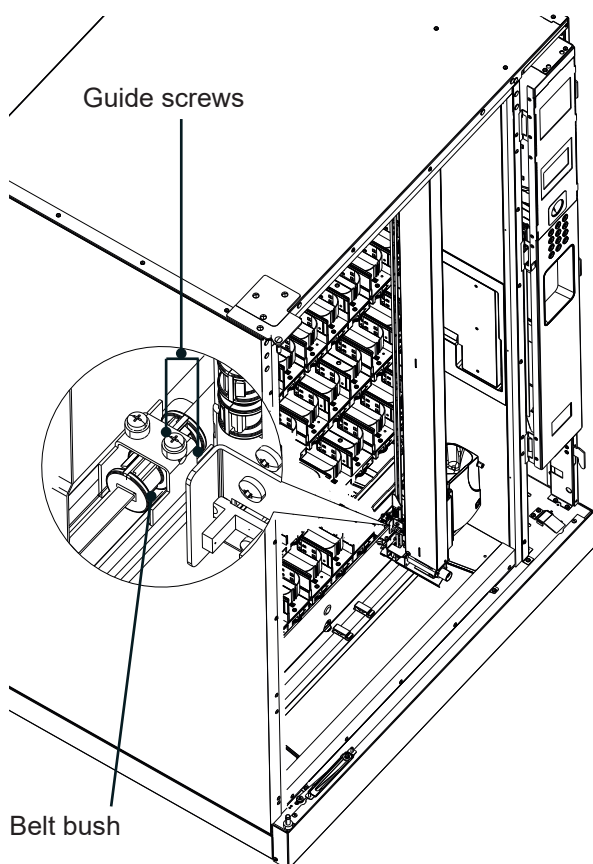
How to proceed

- Empty and remove the bottom right product container.
- Push the vertical rail as far to the right as possible.
- Screw out the two guide screws on the lower belt bushing completely; the vertical-rail/toothed belt connection is now loose.
- Remove the two fixing screws at the top of the vertical-rail. The vertical-rail is no longer fixed and can be taken out completely.

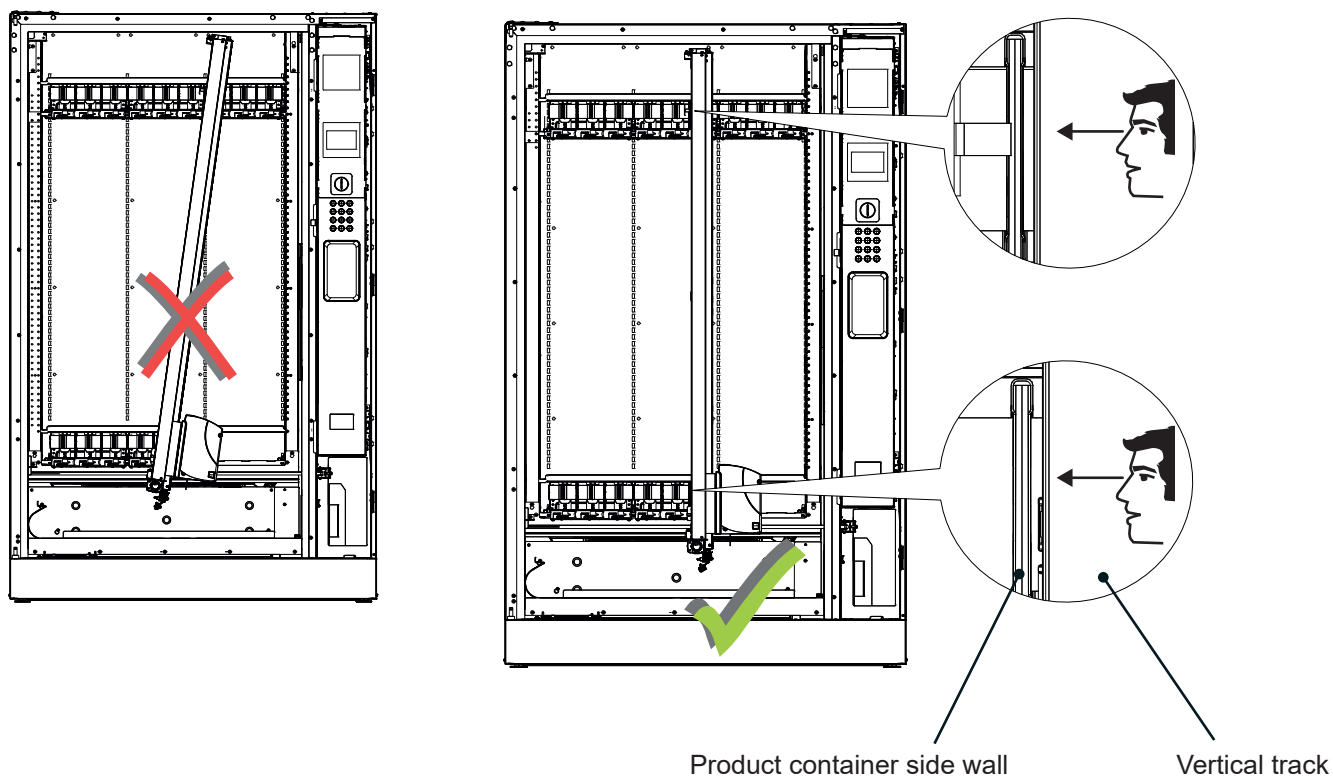
Note when installing

To fit the vertical rail follow the instructions above in reverse order. The lower roller guide must be inserted in the rail from underneath.

After installing push the vertical rail into the centre and check parallelism. For this purpose align top and bottom on the left side of the vertical rail with the product containers. With care and accuracy the alignment can be checked.

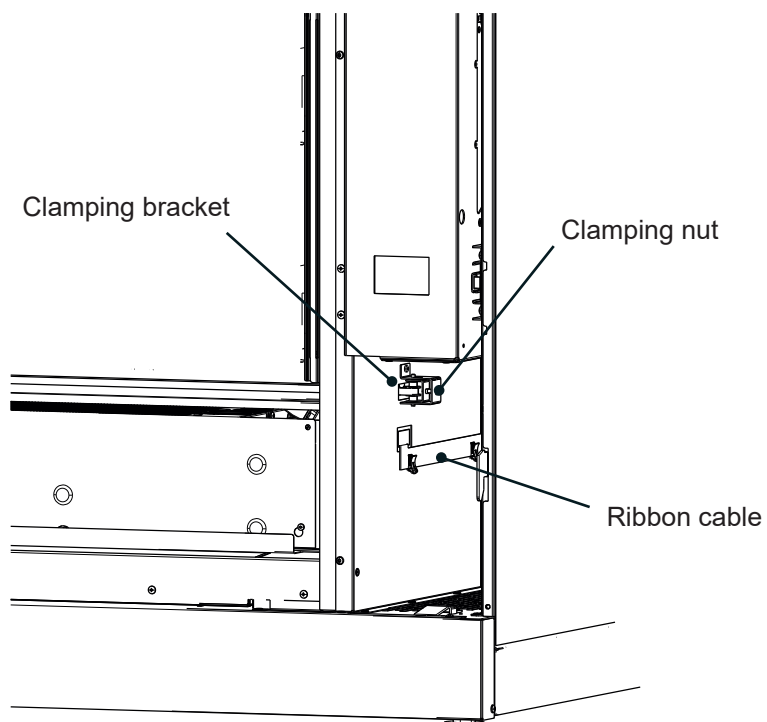


Must be parallel



3.29.4 Setting the belt tension (X axis)

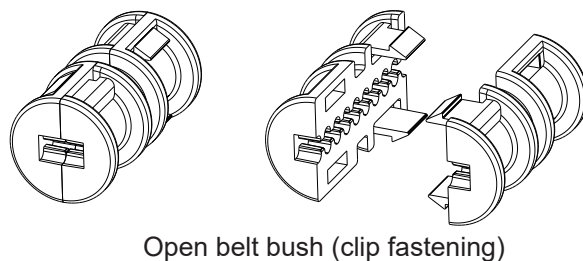
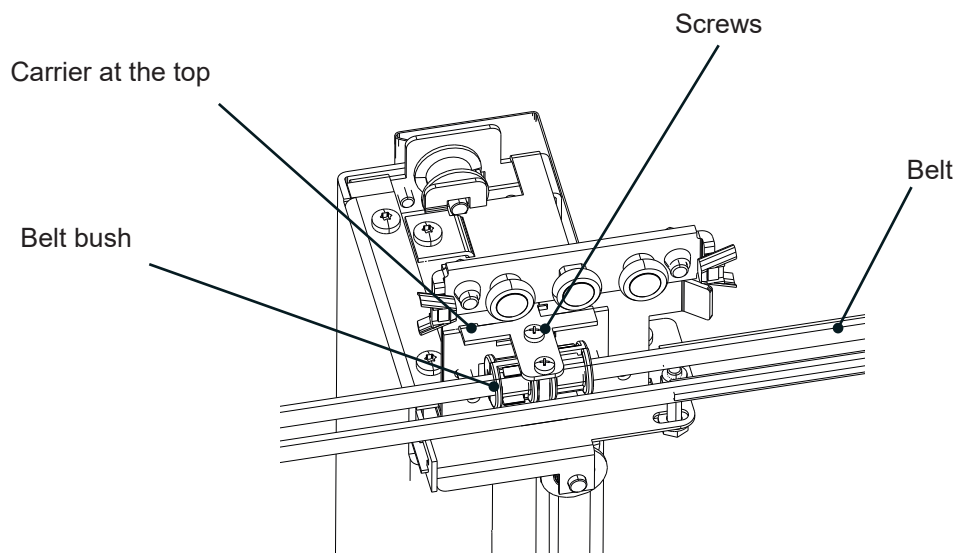
The belt tension and its parallel alignment is adjusted on the clamping bracket by turning the clamping nut. After adjusting the parallelism must be checked!



3.29.5 Unhooking the runner at the top

The runner together with two inserted screws clamps the belt bushing. The belt bushing itself is moved by the belt.

The belt bushing consists of two identical halves that are clipped together.

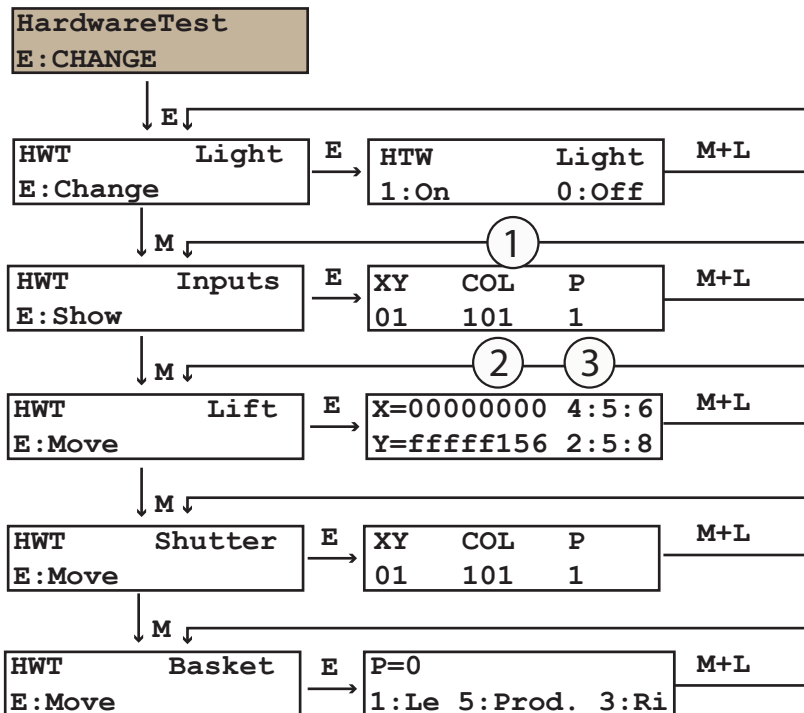


Open belt bush (clip fastening)

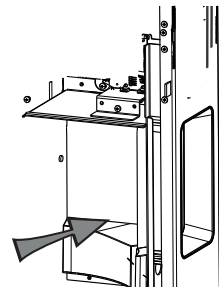
3.30 Test of the hardware (HardwareTest, HWT)

3.30.1 Overview

Use the HardwareTest function to check the lift, product basket and shutter mechanically using the selection keypad.



The shutter only works when the switch has been pressed (use a pen).



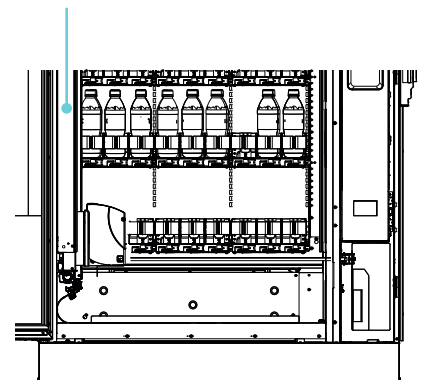
Display	Meaning	Note re. test
Light	Internal illumination	Switch LED illumination on and off.
Inputs	Status of the switches and light barrier	When limit switches are pressed or the light barrier is interrupted, the status must change (0 or 1).
Lift	Vertical rail and product basket	Move it slowly by hand; the hexadecimal display changes (relative change or values, not absolute!).
Shutter	Delivery unit shutter	Loosen the mechanical locking device, open and close the shutter completely by hand.
Basket	Product basket	Extend the hook, let the drive for transporting the product in the container run, retract the hook.

- ① COL = closed; open; light barrier (closed; open; light barrier)
 0 - Switch not activated; 1 - Switch activated;
 P - Product basket (light barrier): 0 Product basket empty, 1 Product in product basket

② move by hand	③ move using button
Lift: count X values	4 - left
Product basket: count X values	5 - holds XY (pause)
	6 - right
	2 - up
	8 - down

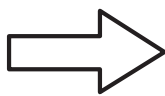
Risk of damage!

Never use button 4 ("move to the left"), when the product basket is in home position.



3.30.2 Light test

HTW	Light
1 : On	0 : Off

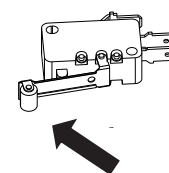
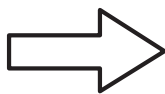


1	2	3
4	5	6
7	8	9
R	0	.

3.30.3 Checking the limit switch, light barrier and locking mechanisms

Press the relevant limit switch on the vending machine and release it again; the display must change accordingly; if it does not, there is an error.

XY	COL	P
01	101	1



press!

Meaning

X - limit switch X-axis

Y - limit switch Y-axis

C - Shutter closed

O - Shutter open

L - Locking mechanism for shutter

P - Product basket light barrier

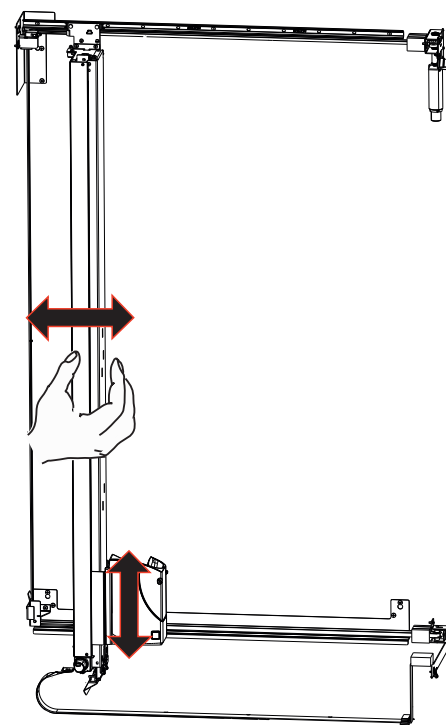
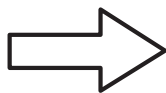
0 - off

1 - on

3.30.4 Checking decoder feedback

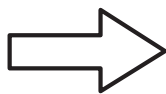
HardwareTest

X=00000000	4:5:6
Y=ffffff156	2:5:8



The respective hexadecimal code will be incremented or decremented

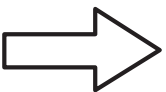
X=00000000	4:5:6
Y=ffffff156	2:5:8



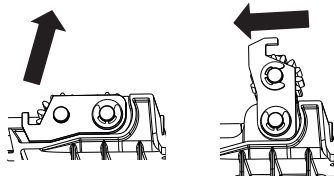
Navigation of vertical rail and basket using buttons 4, 6, 2 and 8.
Button 5 means "pause" (the basket will be held at its current level)

3.30.5 Checking the pendulum hook / gear wheels

P=0
1:Le 5:Prod. 3:Ri



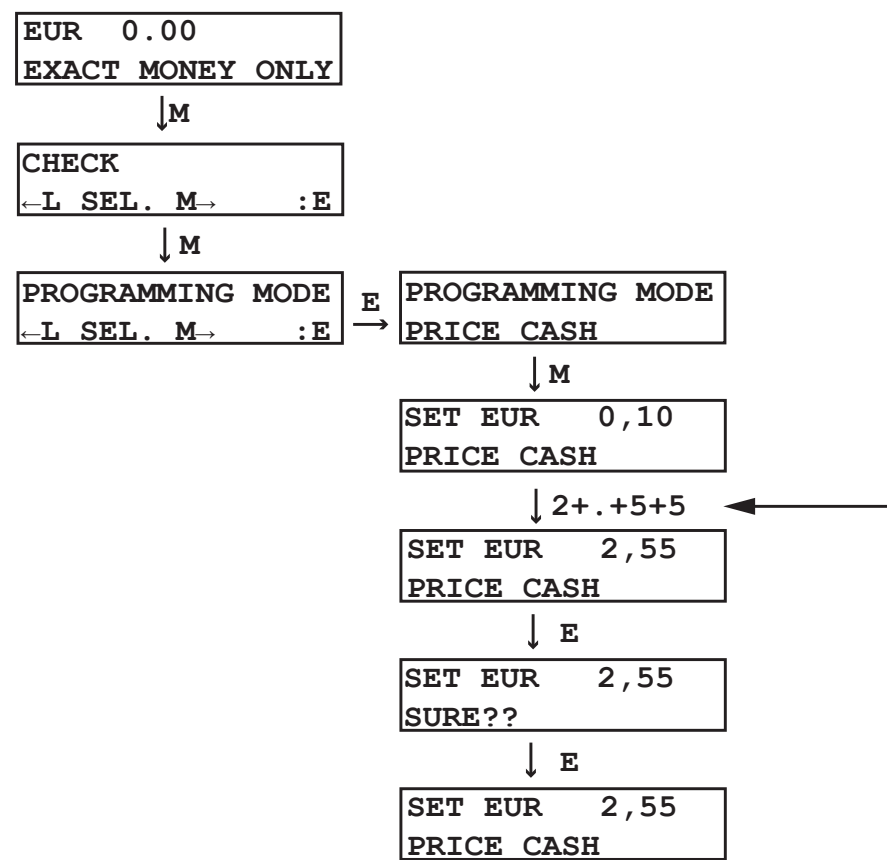
- 1: Le - left
(Hook travels backwards)
- 5: Transport the product
- 3: Ri - right
(Hook engaged)



4 Practical applications

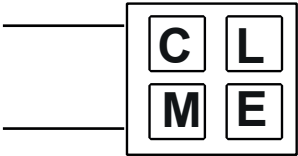
4.1 Setting one price for all product containers

Open the machine door and pull out the sliding drawer unit slightly, so that the service keypad is accessible.
Start programming as follows:



Acknowledge/clear error messages
Delete data

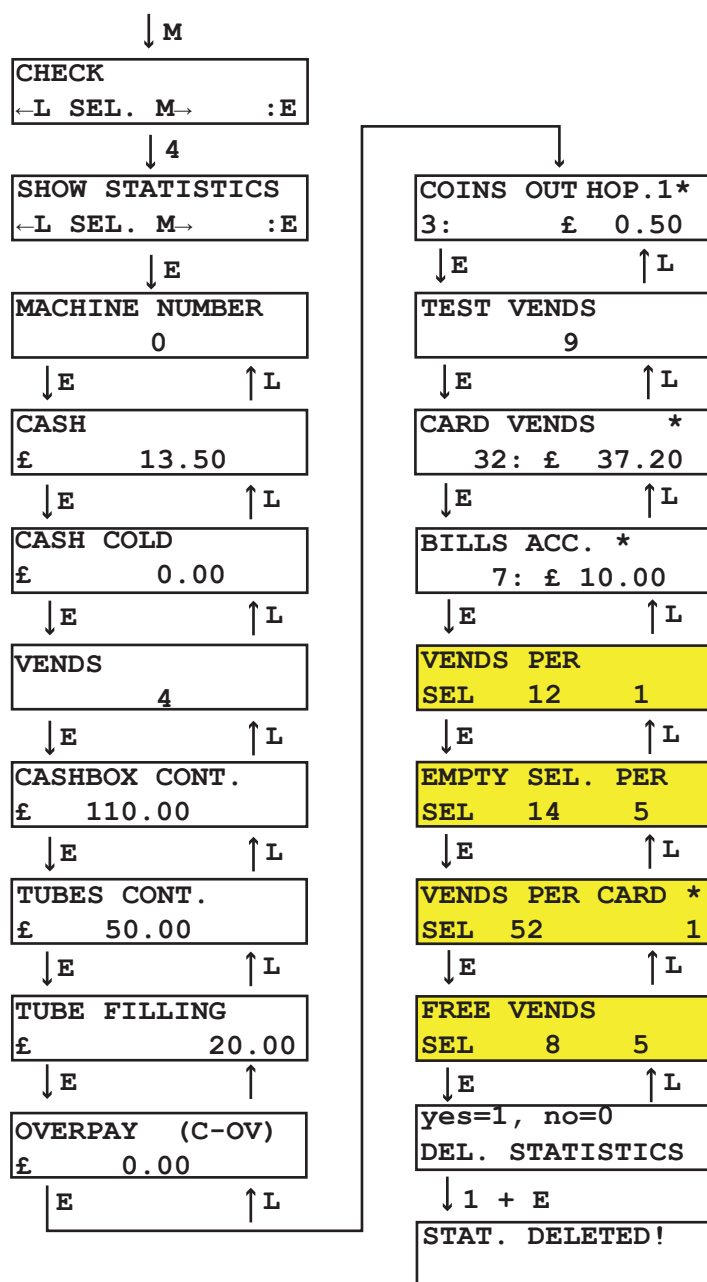
Scroll forwards in menu selection



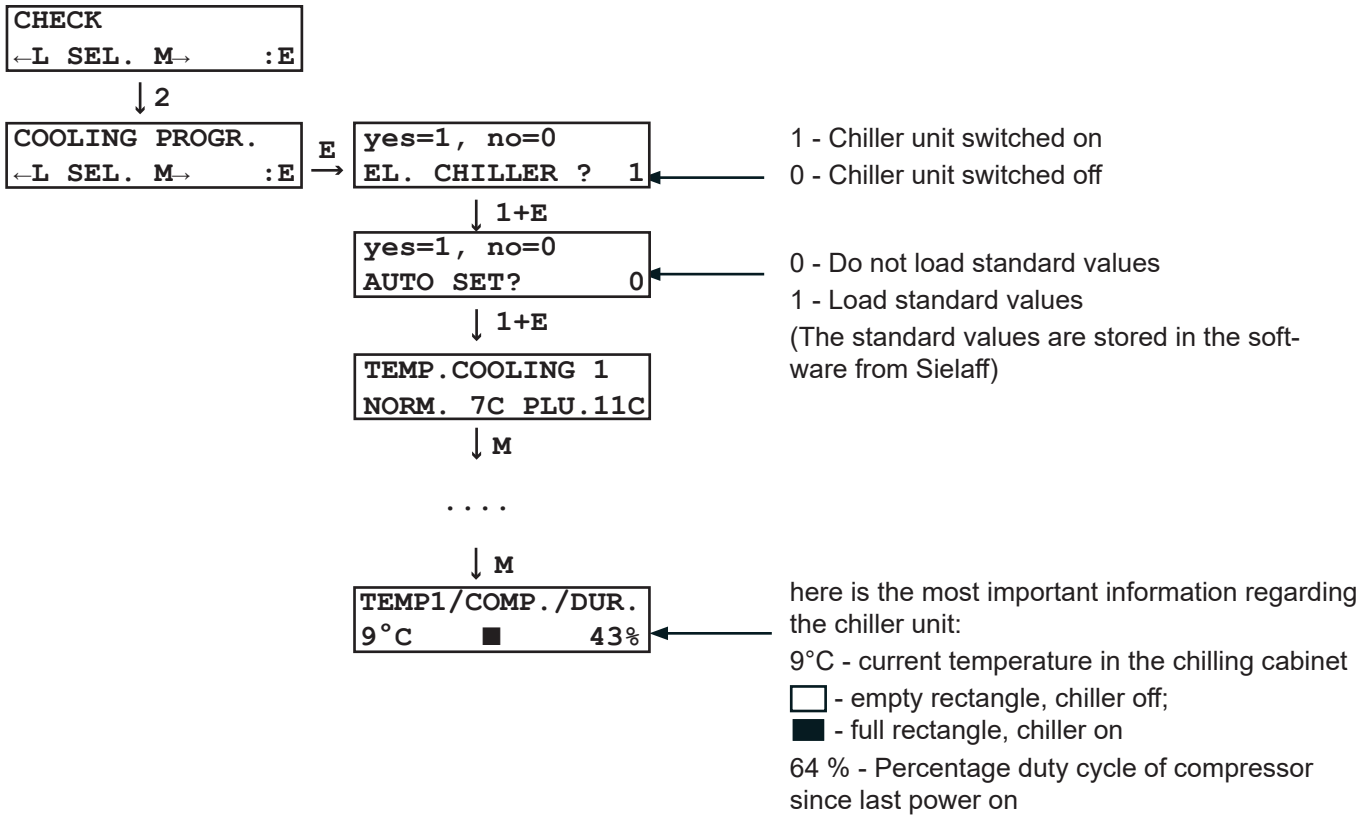
Scroll backwards in various menu functions

Enter, confirm data
Forward in the menu

4.2 Reading the vending statistics



4.3 Checking the temperature and chiller unit operation

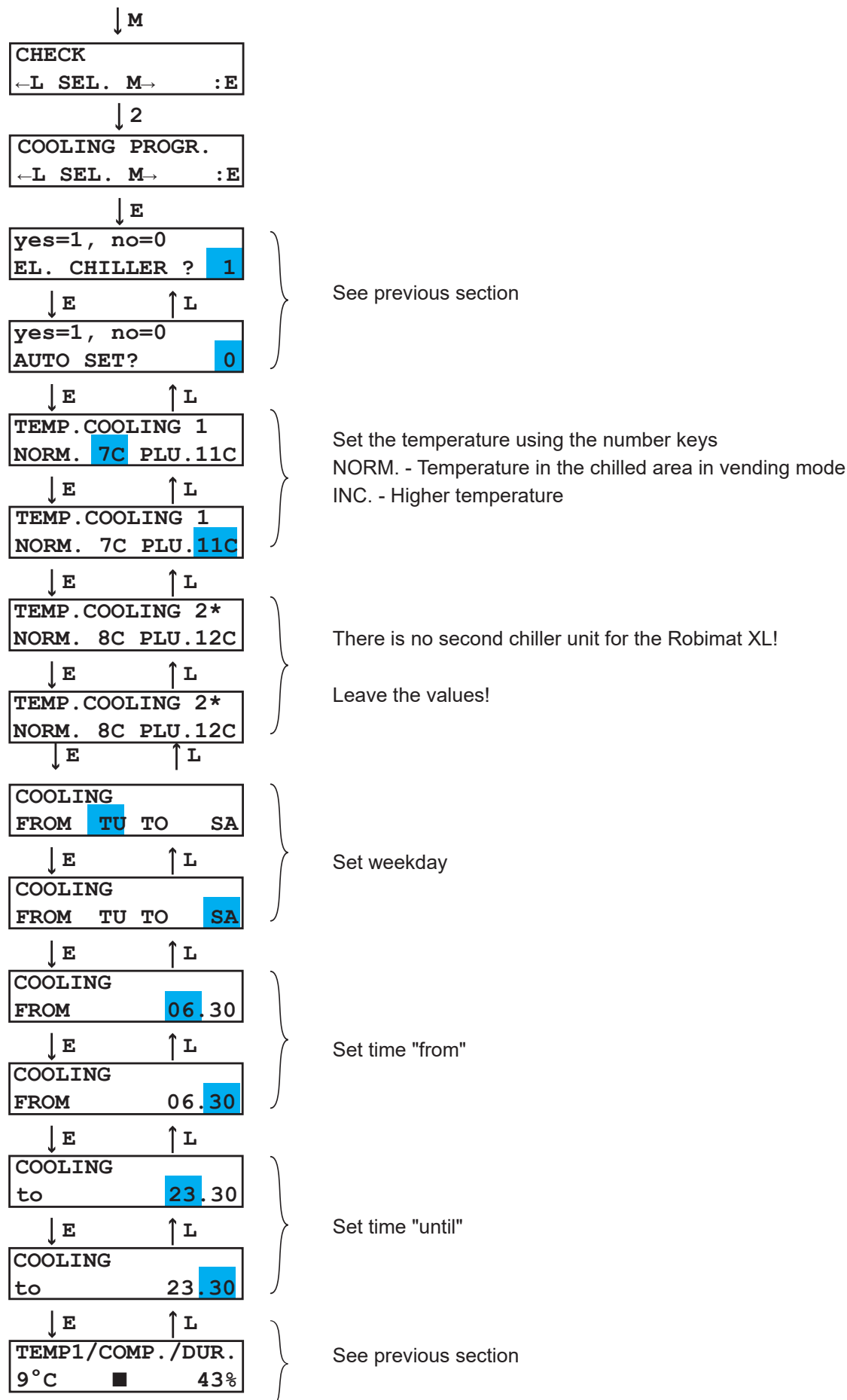


DUR. Compressor duty cycle	Meaning	Explanation
0 %	The chiller unit is not working	- Chiller unit not connected electrically - Chiller unit out of order
96%	The chiller unit runs continuously	This value is feasible for a new unit, which first has to cool down to nominal temperature. In daily operation this value indicates an error/extreme stress: - Ventilation grid (air supply) is blocked - Very hot ambient temperature (summer) with high product turnover - Chiller unit too weak for the conditions on site
64% ... 84%	Feasible value	It is recommended to read this value (DUR.) every time the cashbox is emptied, as it shows an average of the compressor runtime. If the value is correctly interpreted in its context, it indicates correct functioning of the vending machine.

DUR. = duration: Percentage duty cycle of compressor since last switched on

4.4 Setting the temperature of the vending machine

The standard values of the programmed temperatures are adjustable to suit individual requirements.

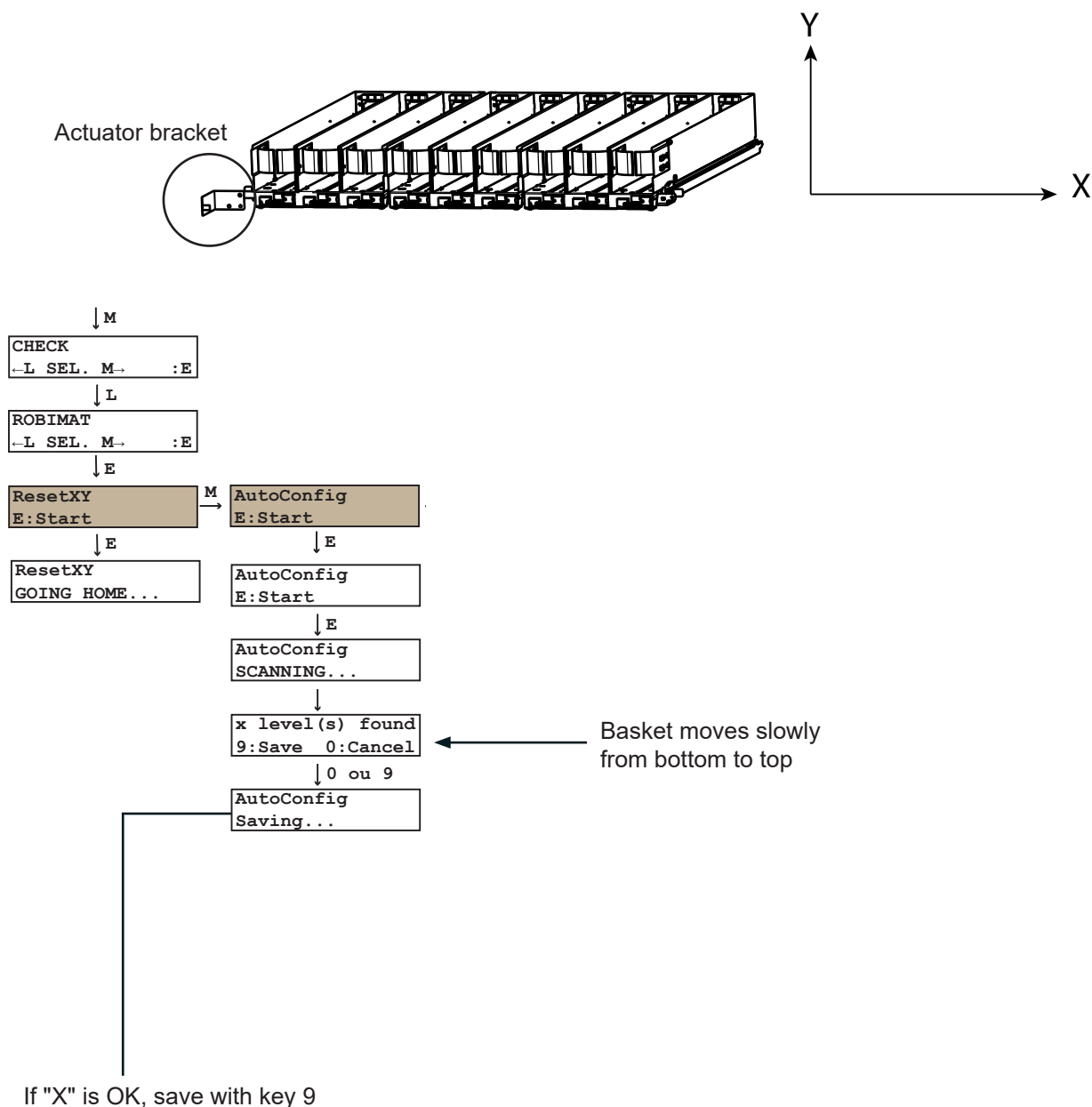


4.5 Triggering a reference run (finding the product shelves)

The product shelves in the Robimat XL can be relocated in order to use the chilled area in the most optimum way and to follow market trends.

If a product shelf has been relocated to another height, a reference run must be triggered **once** so that the control board can detect the change.

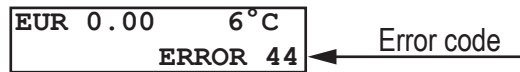
Initiate reference run:



5 Malfunctions

5.1 Error messages

If an error occurs, the corresponding error code will be displayed. In the following you will find potential error causes and suggested course of action for these error codes.



NOTE

If this error message occurs, the machine stops operating.

Error code	Error message	Possible cause	Suggested course of action
20	Mains failure	The voltage is not constant.	a) Check motor voltage, door contact switch; b) check motor M3, M5; refer to circuit diagram see section 3.20 and section 6.1
21	Temperature performance	The temperature is too high	a) Check motor voltage on the mains supply circuit b) Make sure that the lift system and the product basket can be moved easily
34	RESET_NoSensor	No sensor found during system check	a) Sensor check available b) Check if the sensors are connected c) Check if the plugs are correctly positioned
35	RESET_Wrong sensors	Sensor combination not feasible	a) Check the shutter switch ("shutter open", "shutter closed")
41	RESET_MX_Zero	After switching on, limit switch not reached	a) Check if cable connection between motor encoder and control board is OK.
42	RESET_MX_Ref	Limit switch cannot be left after switching on	b) Check limit switch c) Check encoder signal d) Mechanical jam? Obstruction removed.
44	RESET_MX_Encoder-Move	No encoder signal when the motor moves in X-direction	a) Check if cable connection between motor encoder and control board is OK. d) Mechanical jam? Obstruction removed. C) Flat connector plugged onto add-on board
45	RESET_MX_Encoder-Hold	No encoder signal when the motor moves in X-direction	
46	RESET_MX_RunTimeout	Timeout error on X-direction movement	
49	MX_Zero	X-direction motor cannot find a limit switch	
4A	MX_Ref	X-direction motor cannot find a limit switch	
4C	MX_EncoderMove	No encoder signal for X-direction motor movement	
4D	MX_EncoderHold	No encoder signal for X-direction motor stop function	
4E	MX_RunTime out	Time out error on X-direction movement; target position not reached.	

Error code	Error message	Possible cause	Suggested course of action
51	RESET_MY_Zero	After switching on, limit switch not reached	a) Check if cable connection between motor encoder and control board is OK.
52	RESET_MY_Ref	Limit switch cannot be left after switching on	b) Check limit switch c) Check encoder signal d) Mechanical jam? Obstruction removed.
54	RESET_MY_Encoder-Move	No encoder signal when the motor moves in Y-direction	a) Check if cable connection between motor encoder and control board is OK.
55	RESET_MY_Encoder-Hold	No encoder signal when the motor moves in Y-direction	d) Mechanical jam? Obstruction removed.
56	RESET_MY_RunTimeout	Time out error when moving in Y-direction	
59	MY_Zero	Y-direction motor cannot find a limit switch	a) Check limit switch b) Check motor d) Mechanical jam Obstruction removed.
5A	MY_Ref	Y-direction motor cannot find a limit switch	a) Check if cable connection between motor encoder and control board is OK.
5C	MY_EncoderMove	No encoder signal for motor moving in Y-direction	d) Mechanical jam? Obstruction removed.
5D	MY_EncoderHold	No encoder signal for Y-direction motor stop function	
5E	MY_RunTimeout	Timeout error on Y-direction movement; Target position not reached	
71	RESET_Shutter not closed	After switching on, delivery unit flap (shutter) not closed	a) Close the shutter completely by hand
72	RESET_ShutterNicht Verriegelt_ Vorausgabe	-	b) Check delivery unit flap (shutter)
73	RESET_Shutter Nicht Verriegelt_ Unlock Ausgabe	-	c) Check limit switches (2) on the shutter
74	RESET_Shutter Nicht Entriegelt	-	d) Check drive motor on the delivery unit flap (shutter)
75	RESET_Shutter Nicht Verriegelt_ Lock Ausgabe	-	
76	RESET_Shutter not open	The shutter does not open	a) Problem with the shutter
77	RESET_Shutter not closed	The shutter is not completely closed	b) Check limit switch
79	ShutterNicht Verriegelt_ Vorausgabe	Shutter not locked, Lift in "pre-delivery" position	c) Check motor

Error code	Error message	Possible cause	Suggested course of action
7A	ROBIMAT_ERROR_Shutter not locked_Lock delivery outlet	Shutter not locked, lift in locked delivery position	
7D	ROBIMAT_ERROR_RESET_ScanShutterUnlockPosition	After switching on, lift cannot achieve "Shutter not locked" position after switching on	
7E	ROBIMAT_ERROR_RESET_Shutter not locked_Init	After switching on, shutter closed, but not locked	Shutter problem, check limit switches "Shutter closed" and "Shutter released"
7F	ROBIMAT_ERROR_RESET_Shutter not closed but locked	After switching on shutter not closed, but locked	Shutter problem, check limit switches "Shutter closed" and "Shutter released"
80	ROBIMAT_ERROR_Ausgabe-Auf	Internal, should not occur	---
81	ROBIMAT_ERROR_Ausgabe-Auf_MotorTimeout		
82	ROBIMAT_ERROR_Ausgabe-Auf_ShutterTimeout		
88	ROBIMAT_ERROR_Ausgabe-Zu		
89	ROBIMAT_ERROR_Ausgabe-Zu_MotorTimeout		
8A	ROBIMAT_ERROR_Ausgabe-Zu_ShutterTimeout		
A2	ROBIMAT_ERROR_ReadPosition_EepromNotIdle	Eeprom not ready	Software error or Eeprom faulty
A4	ROBIMAT_ERROR_InitEW-Po_EepromNotIdle		
A5	ROBIMAT_ERROR_ReadHW-CfgCRC_EepromNotIdle		
A6	ROBIMAT_ERROR_WriteHW-TA_EepromNotIdle		
A7	ROBIMAT_ERROR_RE-SELECT_ReadPosition_EepromNotIdle		
A8	ROBIMAT_ERROR_PldVersion_Invalid	PLD firmware faulty	Upload PLD firmware or PLD faulty
A9	ROBIMAT_ERROR_PositionCRC_Invalid	Positionen CRC-Fehler	Save AutoConfig in the Robimat menu or Eeprom faulty
AA	ROBIMAT_ERROR_Config-CRC_Invalid	Configuration CRC-Error	
AB	ROBIMAT_ERROR_Config_Invalid	Configuration invalid	Save Auto Configuration or Eeprom faulty
AC	ROBIMAT_ERROR_HWCfg-CRC_Invalid	Hardware configuration CRC-Error	Save HWConfig in the Robimat menu or Eeprom faulty
AD	ROBIMAT_ERROR_HWCfg_Invalid	Hardware configuration invalid	

5.2 Warnings



NOTE

The vending machine will not stop operating if these warnings appear.

ERR	MESSAGE	Explanation	Cause
---	---	---	---
C2	ROBIMAT_WARNING_WahlIllegal	Internal	---
C3	---	---	---
C4	ROBIMAT_WARNING_WahlLeer	Empty selection without current surge detection	Lift position wrong or current surge detection defective
C5	ROBIMAT_WARNING_WahlLeer_BlockadeErkannt	Empty selection with current surge detection	---
C6	ROBIMAT_WARNING_LiftWrong	Lift position wrong	Interfering impulses on the encoders, grub screws not tight or toothed belt jumped
---	---	---	---
C8	ROBIMAT_WARNING_HoleProdukt_VorStartKorbVoll	Internal	---
C9	ROBIMAT_WARNING_HoleProdukt_ErstNachStopKorbVoll	Internal	---
CA	ROBIMAT_WARNING_HoleProdukt_NachStopKorbNichtVoll	Internal	---
---	---	---	---
D1	ROBIMAT_WARNING_RemoteReset	Internal	---
D2	ROBIMAT_WARNING_SelfHealingReset	SelfHealingReset after an error	---
D3	ROBIMAT_WARNING_INT	Internal	---
D4	ROBIMAT_DEBUG_DoVend	Internal	---
D5	ROBIMAT_DEBUG_EmptyVend	Internal	---
D6	ROBIMAT_DEBUG_AgainEmptyVend	Internal	---
---	---	---	---
D8	ROBIMAT_WARNING_Robimator	Internal	---
D9	ROBIMAT_WARNING_RobMenu	Internal	---
DA	ROBIMAT_WARNING_DoorClosed	door closed	---
DB	ROBIMAT_ErrorWarnListPointer	Internal	---
---	---	---	---
DD	ROBIMAT_WARNING_VorProdukt-Holen_KorbZuerstVoll	---	---
---	---	---	---
DF	ROBIMAT_WARNING_StatisticInitialized	Internal	---
E0	ROBIMAT_WARNING_MXEncoder-Low_ZeroRefTimeInterval	MX step losses after position check	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E1	ROBIMAT_WARNING_MXEncoder-High_ZeroRefTimeInterval	MX step losses after position check	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E2	ROBIMAT_WARNING_MYEncoder-Low_ZeroRefTimeInterval	MX step losses after position check	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped

E3	ROBIMAT_WARNING_MYEncoder-High_ZeroRefTimeInterval	MX step losses after position check	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E4	ROBIMAT_WARNING_MXEncoder-Low_LiftWrong	MX step losses after wrong lift position	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E5	ROBIMAT_WARNING_MXEncoder-High_LiftWrong	MX step losses after wrong lift position	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E6	ROBIMAT_WARNING_MYEncoder-Low_LiftWrong	MY step losses after wrong lift position	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
E7	ROBIMAT_WARNING_MYEncoder-High_LiftWrong	MY step losses after wrong lift position	Interfering impulses on the encoder, grub screw(s) not tight or toothed belt jumped
---	---	---	---
F0	ROBIMAT_WARNING_WatchDog	Internal	---
---	---	---	---
F6	ROBIMAT_WARNING_Ausgabe_ShutterVerriegelungFalsch	Shutter locking wrong after a vend	Shutter problem, lift problem or customer operating error
F7	ROBIMAT_WARNING_Ausgabe_ShutterVerriegelungNichtMehrFalsch	Shutter locking after a vend no longer incorrect	---
F8	ROBIMAT_WARNING_Ausgabe_MotorBlockiert	Lift blocked after a vend	Shutter problem, lift problem or customer operating error
F9	ROBIMAT_WARNING_Ausgabe_MotorNichtMehrBlockiert	Lift no longer blocked after a vend	---
FA	ROBIMAT_WARNING_Ausgabe_ShutterBlockiert	Shutter blocked after a vend	Shutter problem, lift problem or customer operating error
FB	ROBIMAT_WARNING_Ausgabe_ShutterNichtMehrBlockiert	Shutter no longer blocked after a vend	---
FC	ROBIMAT_WARNING_KorbVoll	Product basket full after a vend	Basket problem, light barrier or customer operating error
FD	ROBIMAT_WARNING_KorbNichtMehrVoll	Product basket no longer full after a vend	---
FE	ROBIMAT_VendCounter	Number of vends before the error occurred	---
FF	ROBIMAT_PowerUp	Machine has been switched on	---

5.3 Problem: Vending machine without voltage

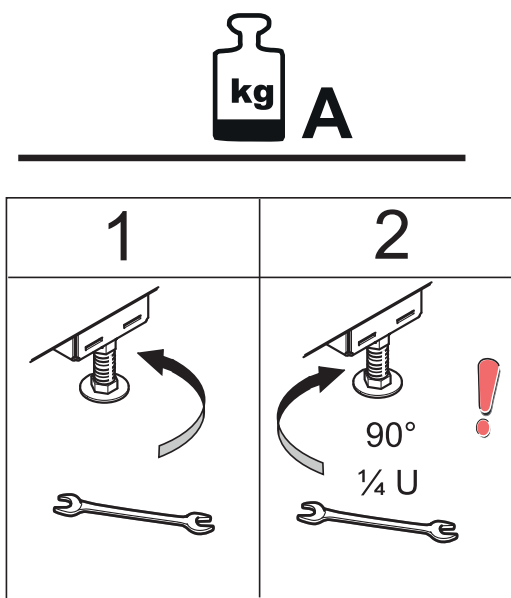
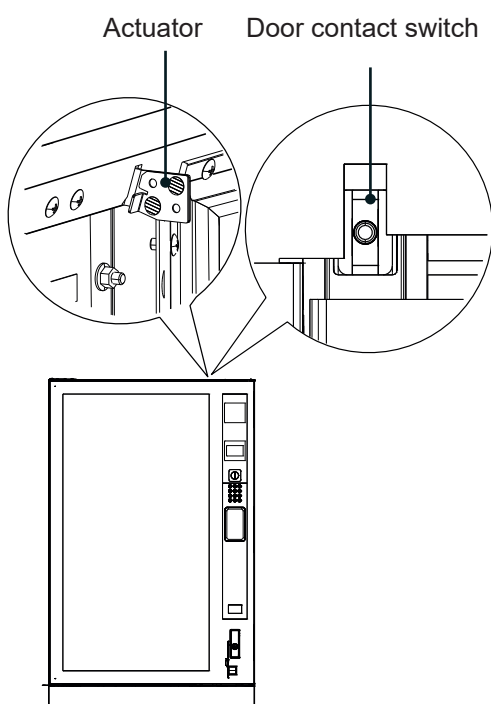
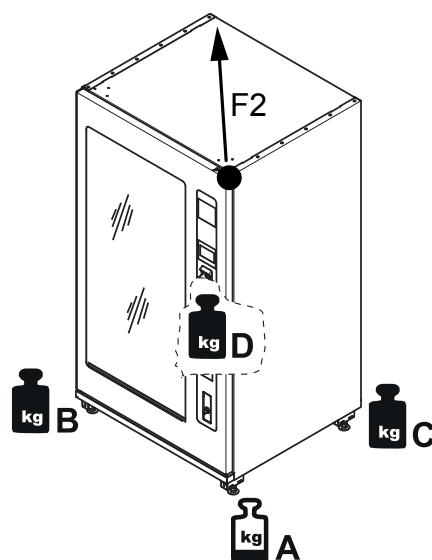
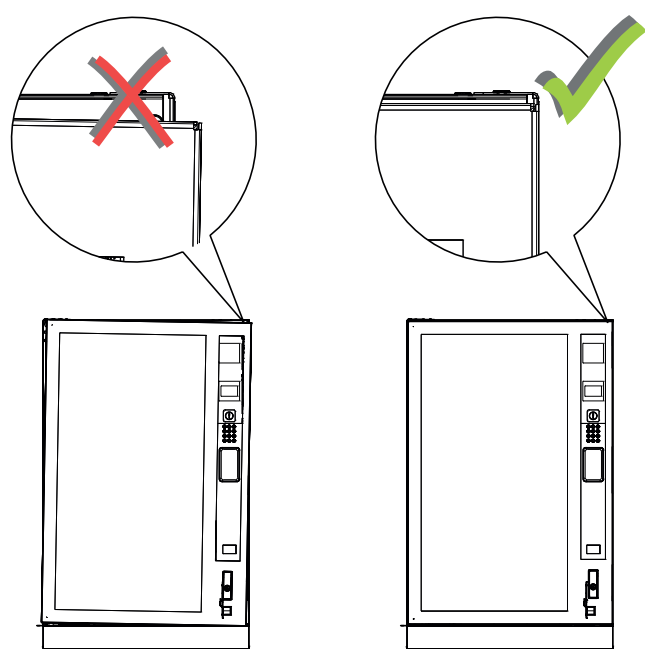
If the machine does not start working when the machine door has been closed, check the following:

- Is the plug plugged into a socket? Is the power cable faulty?
- Pull out the sliding drawer unit and check if the mains plug and the chiller unit plug have been connected to the power supply.
- Has the vending machine been installed correctly?

This vending machine complies with the requirements of the market offering a lot of space for vending with only a small space remaining for the control board and the chiller unit. This requirement demands certain compromises with regard to the construction / the stability, in such a way **that correct installation and machine adjustment are functional basic prerequisites.**

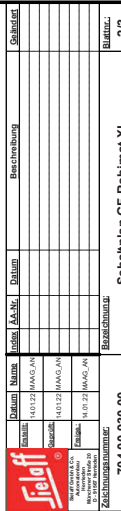
For this reason check if the vending machine is positioned horizontally and that **the front right hand foot is relieved as much as possible.**

Only then the door can be closed correctly!



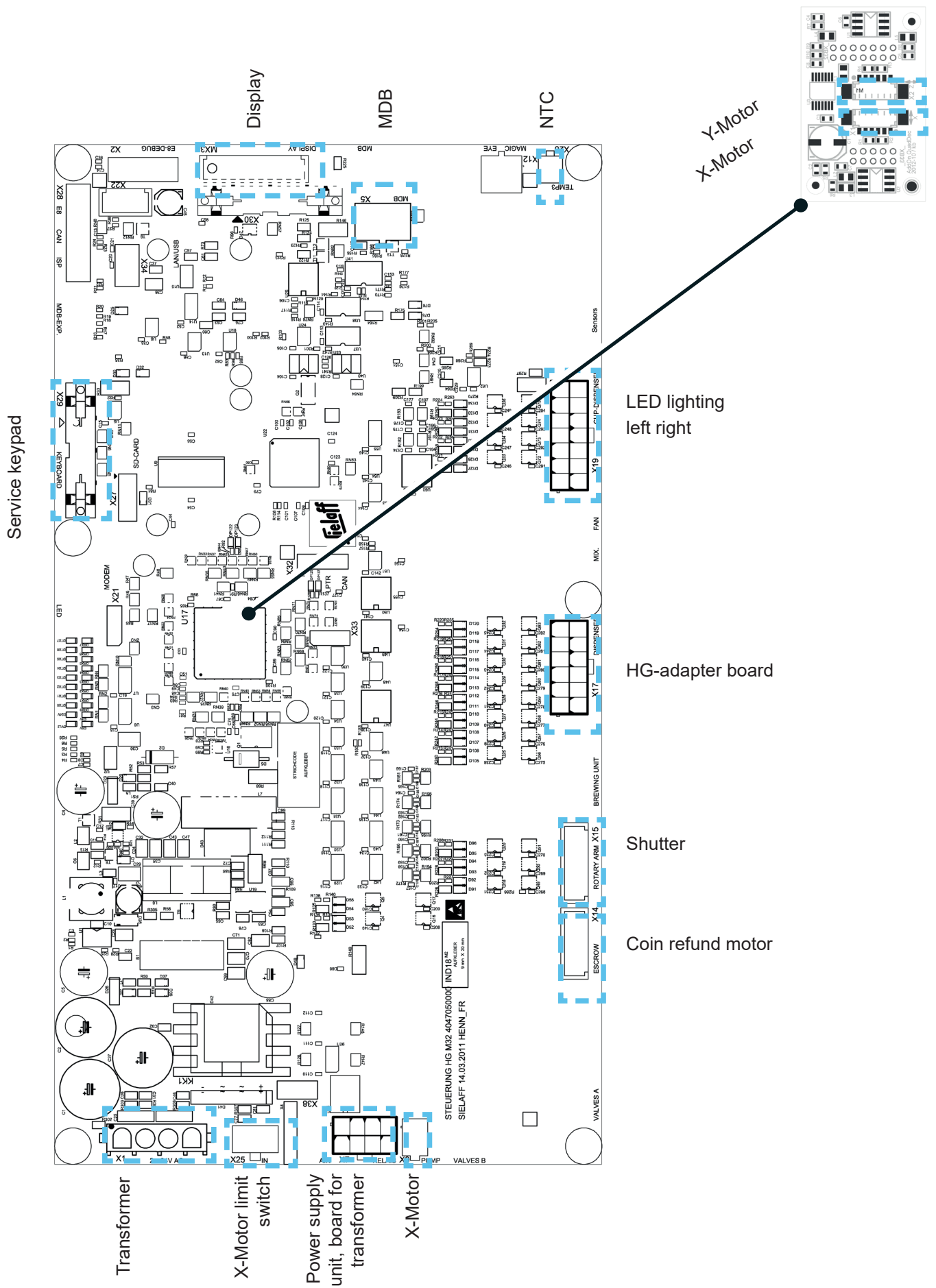
6.1 Wiring diagram partno. 704 00 930 00





63

Encoder board



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