User Manual

Snow machine

MSK SL 05 - 25 W / L

Table of contents

1 GENERAL

1.1 STRUCTURE OF THE INSTRUCTIONS

The entire operating manual of the MSK SLX consists of 4 parts.

1. Operating instructions with operation, cleaning and maintenance

2. Installation, and commissioning instructions
3. Circuit diagram
4. Technical data sheet

5. Attached component manufacturer's operating instructions

The entire manual has been prepared for supervisors and operators, as well as for cleaning and maintenance personnel.

1.2 STANDARDS, SPECIFICATIONS AND GUIDELINES

This chapter contains all relevant standards, specifications and guidelines for the MSK SLX Touch summarized in a chart.

Component	Standards, specifications and guidelines
Electric Equipment	EN 60204-1 part 1
MSK SLX	EN 378: 2000 Refrigeration systems and heat pumps

1.3 CONTACT ADRESS

If you have any questions, please contact:

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or the local customer service.

Firm stamp

1.4 TYPE PLATE

The MSK SLX is identified with the following type plates:

The type plate is made of PVC.

The following data is shown on the type label:

- Producer
- Type
- Serial number
- Construction year
- Refrigerant
- Max. filling weight
- Permissible operating pressure
- Supply voltage (V) / mains frequency (Hz) / phases (Ph)

Fig. 1 Type plate

1.5 TYPOGRAPHY

The typography describes the means by which the technical facts in this operating manual are presented and explained.

1.5.1 INSTRUCTIONS

Instructions are identified by a hyphen, e.g. B .:

- Tighten the screw.

1.5.2 LISTINGS

Enumerations are identified by a dot, e.g. B .:

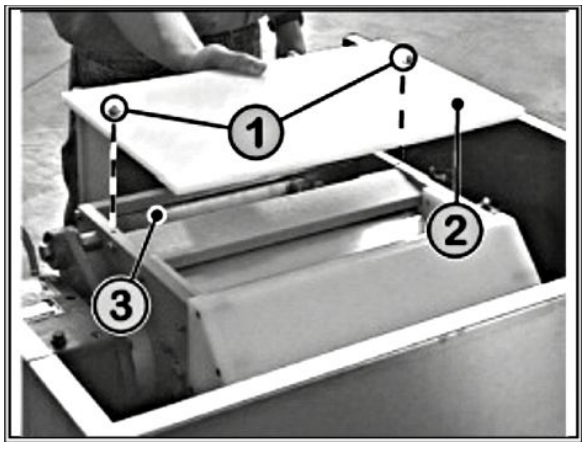
• 6 screws

• 1 valve

1.5.3 POSITION NUMBERS

Components are identified in figures with numbers and position lines.

Position lines point to the component with an arrow or a point.



In the text, bold numbers refer to the individual positions of the components in an illustration.

Illustrations are numbered and referred to in the text.

See the following example:

Fig. 2 Typography

- Loosen screws (1) on the switch flap (2) above the water bath (3) with a tool by turning to the left and … Fig. 3). See the following example:

2 SAFETY

2.1 STRUCTURE OF THE INFORMATION

In this manual, dangers or information are presented as follows:

RISK OF DEATH

This safety instruction warns when life is endangered by electrical voltage.

RISK OF INJURY

This safety notice warns of potential sources of danger that can cause personal injury.

SYSTEM DAMAGE

This safety notice warns of potential sources of danger that can cause damage to property.

NOTE
This note provides general tips for optimal use and further information.

2.2 SAFETY DATA SHEET

NOTE!

The following safety instructions must be observed when installing, operating, cleaning and maintaining the MSK SLX:

1. The entire operating manual must be read before the MSK SLX is installed, commissioned, operated, cleaned and serviced. The operating instructions must be carefully observed in all points. The supervisor has to ensure that the operator has read and understood the operating instructions completely. Operating instructions of the component manufacturers are part of this operating manual.

2. Every working day before start-up, the operator has to carry out a visual inspection of the connections and the MSK SLX in general, as well as the functionality of all safety devices relevant to operation.

3. The operator must immediately report any deficiencies in safety equipment to the supervisor.

4. The supervisor has to arrange for safety equipment that are not functioning to be replaced or repaired immediately. The supervisor has to prepare work instructions for safe operation.

5. The MSK SLX may only be operated, cleaned and serviced by trained personnel. Regular retraining, e.g. B. for operation, cleaning and maintenance are required. The regulations for the prevention of industrial accidents have to be part of the training content.

6. The cleaning method described in the cleaning instructions must be observed. The supervisor has to prepare work instructions for safe cleaning work.

7. The maintenance work described in the maintenance guidelines has to be observed. The supervisor must create work instructions for safe maintenance work.

8. Safety Equipment must be checked for functionality at least once a year by a specialist.

9. The MSK SLX is not allowed to be structurally modified.

10. Only MSK service quantities and MSK accessory may be used.

11. When reselling the MSK SLX, all operating instructions has to be included.

NOTE!

The regulations of the European standards apply to all safety-related and environmentally relevant requirements of these operating instructions.

2.3 GENERAL SAFETY INSTRUCTIONS

RISK OF DEATH

When using damaged supply pipes or defective safety equipment.

When accessing damaged supply pipes, exposed components and / or defective safety equipment, there is a risk to life through electrical voltage.

- **Defects have to be repaired immediately by the Metzger MSK customer service or by someone with the appropriate qualifications.**

RISK OF INJURY

Due to heat, extreme cold and surrounding components.

- **Risk of burns on the motors, caused by a longer operating time.**
- **Risk of burns on heaters**
- **Risk of cuts on steel sheets and edges**
- **Risk of cutting on the grater**
- **Clothes or hair can get caught in surrounding components and cause injuries.**

SYSTEM DAMAGE

Due to low temperatures.

- **Set up or lay water pipes and the machine in a frost-proof area.**

SYSTEM DAMAGE

High-pressure cleaners are not allowed to be used to clean the MSK SLX, as water can penetrate the basic housing construction and damage electrical components.

- **Clean the MSK SLX without high pressure.**

2.3.1 SAFETY EQUIPMENTS

This section lists all safety-relevant components and their constitution.

2.3.2 OPERATOR-RELEVANT SAFETY EQUIPMENT

The safety equipment relevant to operation have to be checked by the operator before each start-up.

pos.-no. + component	component explanation
1. Plug	Connection for power supply to the machine
2. ON / OFF switch	Shifter for switching the machine ON and OFF

2.3.3 OPERATOR-RELEVANT SAFETY EQUIPMENT

The safety equipment relevant to operation have to be checked by the operator before each start-up.

pos.-no. + component	component explanation
1. High pressure transmitter	When the set target pressure is reached, the control switches the compressor off.
2. Float switch	Controls the water level in the water bath.
3. Low pressure transmitter	Monitors the refrigeration system. If the pressure is insufficient, the refrigeration system is stopped.
4. Shaft temperature	Monitors the discharge of snow. If there is a backflow or the ambient temperature is too cold, the system is switched off or the optional shaft heating is switched on if necessary.
5. Supply / power plug	The supply pipe with the mains plug connects the MSK SLX to the mains. The supply pipe has to be firmly connected to the plug and must not be damaged. Never pull the mains plug out of the socket by the cable.
6. Type plate	The type plate is attached to the back of the machine and provides information on the refrigerant used and the connection voltage. The type label has to be accessible in case of emergencies.
7. Thermostat relay	Monitors the motor temperature of the gear motor.
8. Cooling water controller (only with W)	Controls the amount of cooling water and the system pressure.
9. Security measures	Protects the system from short circuits.
10. Evaporator cover	Protection against contact against cold, risk of cuts and also prevents dirt from getting into the evaporator.

11. Rotating field control (only at 400V)	The phase sequence relay monitors the rotating field of the mains connection.
12. Hall sender	Monitors the gear motor.

2.4 ELECTRICAL SYSTEM

The electrical equipment of the MSK Touch complies with EN 60204-1: 2018-09, part 1.

2.4.1 MAINS CONNECTION

The MSK Touch is connected directly to the network. The rated current is <16A and the rated power is <0.5kW.

Exact technical data, see type plate.

2.4.2 DRIVE MEANS

The drive devices for the evaporator roller are built into the basic housing structure.

2.4.3 EMERGENCY STOP DEVICE

Depending on the installation, an emergency stop switch may be required. If the on / off switch is easily accessible from the operator's position, no emergency stop switch is required.

2.4.4 MOTOR AND ELECTRICAL OPERATING FUNDS

The electrical equipment in the switch box (protection class IP 65) is housed in the basic machine structure. The drive motors are equipped with a temperature monitor to protect against overheating. When the motor has cooled down again, the temperature monitor automatically switches the drive motor back down. The hose heater is self-regulating at 10 ° C. The frost protection monitor or the optional shaft heater, using a thermostat.

NOTE

Do not cover the shaft heating or the frost protection guard.

NOTE

When starting up for the first time, pay attention to the direction of rotation of the motors!

NOTE

Observe the attached instruction manual of the component manufacturer.

3 FUNCTIONALITY

3.1 OPERATIONAL AREA

The MSK SLX is exclusively intended for the production of snow from drinking water.

3.2 OPERATION SEQUENCE

An internally cooled roller (evaporator roller) rotates in a water bath. The water freezes to ice on the surface of the drum. This ice is removed from the drum by a scraper and the characteristic, thin shape of the snow is created. The snow falls from the snow discharge opening.

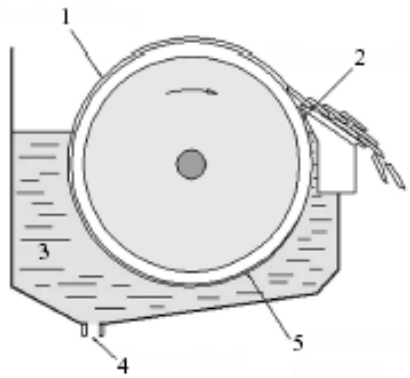


Fig. 2 Schematic structure of the evaporator

1. Ice hypothermia
2. Roll undercooling
3. Water
4. Water drain
5. Continuous ice accretion

4 HYGIENE

4.1 HYGIENE REQUIREMENTS

The MSK SLX is divided into three areas in accordance with EN 1672-2: 2007 Food processing machinery, part 2 Hygiene requirements:

4.1.1 FOOD SECTOR

The food sector includes all components that come into contact with the product.

4.1.2 SPRAY AREA

The spray area includes all surfaces of the machine housing that face the food area.

4.1.3 NON FOOD SECTOR

The non-food area includes all surfaces that do not face the food area and the interior of the basic housing structure.

4.2 MATERIALS

The materials used in the food industry are corrosion resistant and have dense surfaces. Code numbers of the materials (sheets, round and flat material, evaporator roller) are 1. 4301, 1. 4305 and 3. 3206. Plastics used are PE, PA6G and LDPE. The plastics used are food-compatible.

5 SCOPE OF DELIVERY

NOTE

If components are defective or missing, the MSK customer service has to be informed immediately.

– Check that the scope of delivery of the MSK SLX is complete and undamaged.

5.1 SCOPE OF DELIVERY FOR MSK SLX

The scope of delivery for the MSK SLX consists of:

Component	Quantity	
Snow guns MSK SL 05/25 xx	1 piece	
Standard shaft	1 piece	
On / Off button with housing	1 piece	
Water filter	1 piece	
Water inlet hose	1 piece	
Water drain hose SET	1 piece	
Shaft lighting		**optional**
Shaft heating		**optional**
Machine housing		**optional**
Declaration of conformity	1 piece	
Documentation	1 piece	

6 TRANSPORT AND INSTALLATION

6.1 TRANSPORT

To protect the MSK SLX from damage, the unit can be lifted with a forklift truck or transport/loaded with a pallet truck or a crane. If there are forklift stickers on the machine housing, the MSK SLX may only be picked up at the points marked with a forklift sticker. Crane hooks have to be checked for tightness before use.

Fig. 3 Forklift symbol

6.2 INSTALLATION

NOTE

If components are defective or missing, the Metzger MSK customer service must be informed immediately.

- **Check that the scope of delivery of the MSK SLX is complete and undamaged.**

SYSTEM DAMAGE

Risk of falling due to inadmissible means of transport. The means of transport used have to be suitable for transporting heavy machinery!

- **Note weight! (see data sheet)**

If an MSK SLX is assembled from individual modules or extended by additional modules, all circuit points and connections, as well as the machine numbers have to be entered in the machine documents. If additional documentation is required for safety reasons, it must be added to the machinery documentation.

If the MSK SLX is set up on public area, a safety barrier must be erected around the MSK SLX. Measures to ensure that unauthorized persons do not have access must be taken/implemented and compliance with them monitored. The installation may not be spatially blocked or structurally altered.

- Remove packing material and check the MSK SLX for external damage. Report transport damage immediately.
- Set up the MSK SLX on a level, solid base or a console.
- For versions with swivel and fixed castors, the locking mechanism on the swivel castors must be operated.
- The mains connection cable must be laid in such a way that it cannot be damaged or cause tripping hazards
- Clean the MSK SLX before initial operation.
- A clearance of at least 500 mm for ventilation and service purposes must be provided on all sides of the MSK SLX. Possible ventilation grilles must not be covered and a sufficient air supply must be ensured.
- The separate installation and commissioning instructions must be observed.

6.3 ENVIRONMENTAL CONDITIONS

The MSK SLX is designed for use at an ambient temperature and a water temperature of +4°C to +40°C.

At water temperatures below +8°C there is a risk of icing up of the evaporator unit. Water temperatures of over +25°C can lead to defective snow quality (aqueous, not pourable).

The ambient or water temperatures also affect the pressure in the refrigeration circuit. If the temperature is too high, an overpressure is created. A high pressure switch frustrates the snow production. Consequently, the MSK SLX cannot be started.

NOTE

Drain water if the unit is to be taken out of operation for a longer period or if there is a risk of frost.

It is the responsibility of the user to check the appropriateness of the installation site.

- **Carrying capacity**
- **Access for revision, maintenance and service work**
- **Slope for water drain**
- **Connection for power supply**
- **Water supply**
- **Ambient temperatures**

6.3.1 CONNECTING THE ELECTRICAL SYSTEM

For further information on connection, see circuit diagrams.

- Have the mains connection executed by a qualified electrician.
- Connecting the power supply line 230V ,50 Hz, 1 phase, N, PE.

SYSTEM DAMAGE
Due to incorrectly connected supply cables.

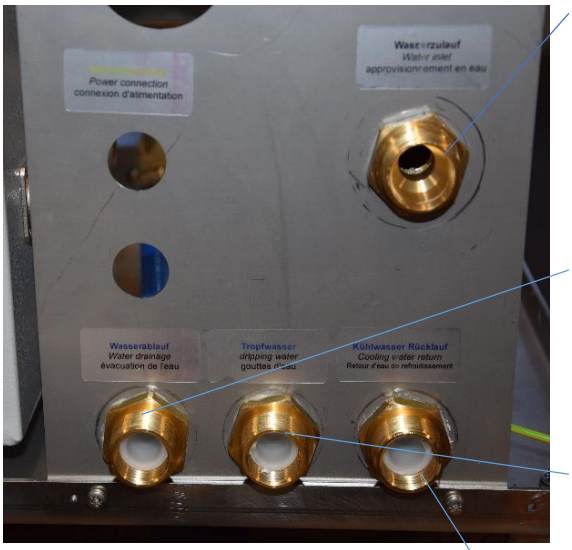
- **Before electrical connection, have the phase sequence and phase position of the supply cables checked by a qualified electrician.**

- After connecting the power supply, check the direction of rotation of the compressor motor.

On delivery, components are filled with synthetic oil ready for operation. For designs with three-phase current connection, the correct direction of rotation of the motors have to be observed! The direction of rotation is indicated by the arrows on the compressor or gear motor.

6.3.2 CONNECTING THE WATER SUPPLIES

The installation of a water inlet filter is recommended.



Connect the water hose for the water supply to the machine using the screw connection on the water supply connection (1). Screw connection of the free hose end, connect to the on-site drinking water pipe.

Connect the water hose for water drain with the screw connection at the connection for water drain (2). Insert the free end of the hose with a drain gradient into the customer's drainage system.

Connect the water hose for the dripping water to the screw fitting on the connection for the dripping water (3). Insert the free end of the hose with a drain gradient into the customer's drainage system.

Connect the water hose for the cooling water return, with the screw connection at the connection for the return (4). Insert the free end of the hose with a drain gradient into the customer's drainage system.

Fig. 4 Water supplies

NOTE

The use of a water inlet filter is recommended. The water inlet filter can be mounted either on the machine housing, or be connected to the on-site water supply line.

An aquastop valve has to be installed at the water connection.

The MSK Group accepts no liability for water damage caused by failure to observe this!

7 COMMISSIONING AND DECOMMISSIONING

7.1 INITIAL COMMISSIONING

The electrical system has to be connected by a qualified electrician or refrigeration specialist.

SYSTEM DAMAGE

Note the correct direction of rotation of the compressor! If the direction of rotation is wrong, have the phases of the power supply replaced by an electrician!

- Clean the MSK SLX before using it for the first time
- Before starting up the MSK SLX, a visual inspection of the system itself and the connections must be carried out.
- Water hoses for water inlet and water outlet must be installed and the mains connection established.

NOTE

The use of a water inlet filter is recommended. The water inlet filter can either be connected to the machine housing or to the on-site water inlet line.

An aquastop valve must be installed at the water connection.

The MSK Group assumes no liability for water damage caused by failure to observe!

7.1.1 ENVIRONMENTAL CONDITIONS

The MSK SLX is designed for use at an ambient temperature and a water temperature of + 4°C to + 40°C.

If the water temperature is below + 8°C, there is a risk of icing on the evaporator unit. Water temperatures of over + 25°C can lead to poor snow quality (watery, not pourable).

The ambient or water temperatures also affect the pressure in the refrigeration cycle. If the temperature is too high, excess pressure is created, and a high-pressure transmitter prevents snow production. The MSK SLX cannot be started.

7.1.2 FUNCTION TEST

- The MSK Touch must have a min. connected to an SLX

- The SLX or, if applicable, the switch box must be connected to the mains

- Activate at least one MSK SLX and switch it on by pressing the ON switch.

The water supply to the machine begins, the gear motor for the roller drive begins to redate. The chiller starts when the process water level is reached.

SYSTEM DAMAGE

Only switch on the main switch for the pump and compressor when the water inlet is open. Otherwise, the pump will be damaged by dry running.

RISK OF INJURY

Due to redating parts and extreme heat.

Do not change the location of the redary evaporators during snow production, as well as control and safety devices.

Do not interrupt the water and power supply during snow production. Avoid brief switching on and off during normal operation.

- Switch off snow production by repeatedly pressing the on / off switch.
- Cooling is stopped.
- The remaining ice is defrosted automatically (duration approx. 20-30 minutes)
- The residual water is then emptied.

Only now disconnect the snow machine from the power supply!

7.2 DECOMMISSIONING

Measures to be taken when decommissioning the MSK SLX depend on the duration of the decommissioning.

- When decommissioning for a short period, leave the MSK SLX on and off.

When decommissioning the MSK SLX over a longer period of time

- Switch off the MSK SLX snow machine with the OFF button and leave it at the power connection for at least 60 minutes
- Close the water inlet
- Drain off residual water

When the MSK SLX is completely decommissioned

- Switch off the MSK SLX snow machine with the OFF button and leave it at the power connection for at least 60 minutes
- Close the water inlet
- Drain off residual water
- Disconnect the system from the mains
- Remove water pipes

NOTE

Drain the water after a long shutdown or risk of frost.

8 OPERATION

NOTE

The snow machine must only be operated as described in these operating instructions.

8.1 SWITCH ON THE MSK SLX

- Before switching on the snow gun, a visual inspection of the system itself and the connections must be carried out.
- Place a suitable container under the snow discharge opening.
- Open the tap of the drinking water supply.
- "Start" the system. After the operating water level has been reached, snow production begins.

The evaporator roller redates, the compressor starts, refrigerant flows through the evaporator roller and snow production begins.

RISK OF INJURY

Do not open the housing cover and switching flap during ice production. Risk of frostbite on hands when accessing the roller. Temperature -20°C.

- Do not change the location of the MSK SLX during snow production, as well as control and safety devices.
- Do not interrupt the water and power supply during snow production. Avoid brief switching on and off.

8.2 SWITCH OFF THE REDARY EVAPORATOR

- Switch off the snow machine by pressing the switch.
- Cooling is stopped.
- The remaining ice is defrosted automatically (duration approx. 20-30 minutes)
- The residual water is then emptied.

NOTE

Disconnect the machine from the power supply at the earliest 60 minutes after switching off, otherwise there will be no complete drainage of residual water.

- Close the on-site water supply line.

8.3 VISUAL INSPECTION

To ensure that the snow machine functions properly and to avoid water damage, the water connections and the water inlet filter must be checked for leaks every working day.

NOTE

At temperatures below 4°C, the water inlet filter can freeze and thus block the water inlet.

- The connection plugs for the power supply must be checked on the supply side and in the coupling of the snow gun for their perfect and tight fit.
- The connection cable for the power supply of the rotary evaporator must be checked for any damage and for its safe installation.

RISK OF INJURY

by fishing.

- **Risk of stumbling on supply cables due to foot fishing. Lay the connection cables so that nobody can trip over them.**

RISK OF INJURY

due to surrounding components, heat and extreme cold.

- **The rotary evaporator must be adequately secured against unauthorized entry or access.**

8.4 DRAIN THE WATER MANUALLY

The residual water must be completely drained if the rotary evaporator is to be put out of operation for a longer period of time and transported.

- Close the on-site water supply line.
- Empty residual water manually.

9 CLEANING

SYSTEM DAMAGE

High-pressure cleaners must not be used to clean the MSK Touch, as water can penetrate the basic housing structure and damage electrical components.

Clean the rotary evaporator without high pressure.

NOTE

Observe the safety data sheet for cleaning.

Regular cleaning of the machine housing, the water hoses, the water bath and the water inlet filter is required.

9.1 EMPTY RESIDUAL WATER MANUALLY

Manual drainage of residual water.

- The water can be emptied manually by unscrewing the elbow fitting under the evaporator.

RISK OF INJURY

By rotating parts

- **Keep a sufficient distance from the rotating parts.**
- **Carry out cleaning work only as described in these instructions.**

NOTE

Comprehensive cleaning instructions must be provided by the system manufacturer. Can be created as required for the customer's system configuration.

9.2 CLEAN THE MACHINE HOUSING

Clean and polish the stainless steel components of the housing with a stainless steel compatible cleaner and a rag. Clean the plastic parts with a food-compatible plastic cleaner and a rag. The use of a high-pressure cleaner or water hose is not permitted.

9.3 RENEW WATER HOSES

Depending on the lime content and contamination of the water, but at least once a year, the water hoses for the water inlet and outlet must be renewed and the water bath must be freed of foreign substances.

- Close the on-site drinking water supply line.
- Unscrew and replace water hoses.

10 MAINTENANCE

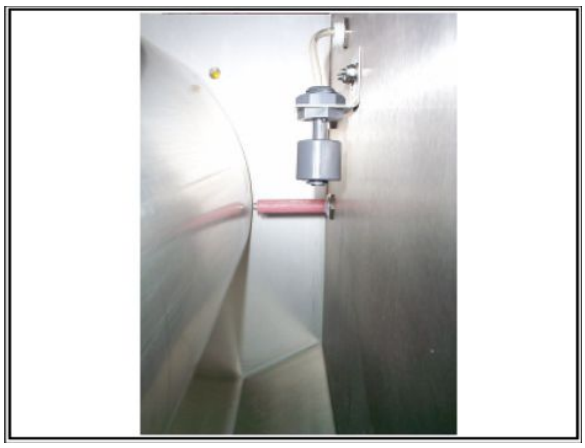
NOTE

Work on the electrical system may only be carried out by an electrical specialist and work on the refrigerant circuit by only a refrigeration specialist.

The water hoses must be checked for leaks at least once a day.

Depending on the lime content and contamination of the water, but at least once a year, the water hoses must be replaced and the water bath must be cleaned of foreign substances.

10.1 WATER BATH



The water bath must be checked for leaks at least once a month. Depending on the lime content and contamination of the water, but at least once a year, the water bath must be freed of foreign substances.

Fig. 5 Water bath

Deviations from our illustrations and descriptions are possible

10.2 ICE EJECTION

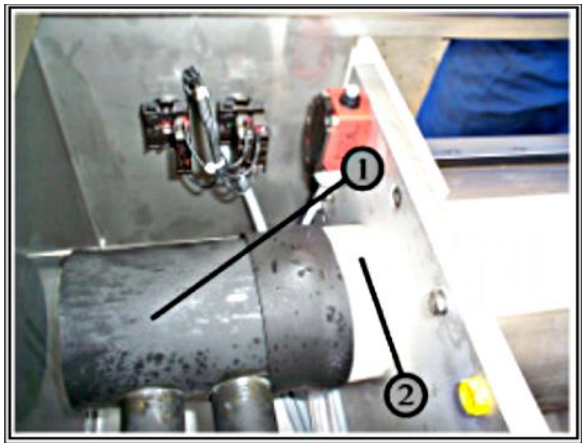
At least once a month, the ice slide and ice guides must be checked for contamination or calcification and cleaned if necessary.

With every maintenance, the distance of the ice scraper must be checked and the ice scraper readjusted or renewed if necessary.

10.3 SOLENOID VALVES (OPTIONAL)

The solenoid valves for the residual water drainage and the water inlet must be checked for function by a butcher MSK service technician or refrigeration specialist and replaced if necessary.

10.4 ROTARY ENTRY AND FLANGE BEARING (OPTIONAL)



The rotary entry (1) and the flange bearings (2) must be checked once a year and repaired or renewed if necessary.

Fig. 6 Rotary entry

Deviations from our illustrations and descriptions are possible

10.5 GEAR MOTOR (OPTIONAL)

On delivery, gearboxes and gear motors are filled with synthetic oil ready for use. A lubricant change must be carried out every 5,000 operating hours or after 2 years. In extreme operating conditions, e.g. High humidity, aggressive environment and / or high temperature fluctuations, shorter lubricant intervals must be observed.

Fig. 7 Gear motor

Deviations from our illustrations and descriptions are possible

It is recommended to combine the lubricant change with thorough cleaning of the gear unit.

10.6 ELECTRICAL SYSTEM

At least once a year, the entire electrical system of the rotary evaporator, including the supply line, must be checked for function.

10.6.1 LIMIT SWITCH ON SWITCHING FLAP (OPTIONAL)

The function of the limit switch on the switching flap must be checked at least once a year.

10.7 CHECK THE REFRIGERANT CIRCUIT

NOTE

The refrigerant circuit must be checked by a refrigeration specialist at least once a year.

At least once a month, the refrigerant circuit must be checked for bubble-free passage and coloring of the refrigerant indicator in the middle of the sight glass.

Fig. 8 Refrigerant sight glass

Deviations from our illustrations and descriptions are possible

NOTE

The test must be carried out when the compressor has reached its operating temperature. The operating temperature is reached after a running time of approx. 10 minutes.

Evaluation of the refrigerant check via the sight glass:

Passage bubble-free:

Amount of refrigerant sufficient.

Passage not bubble free:

The amount of refrigerant may not be sufficient. Have refrigerant refilled by a refrigeration specialist.

Green color of the refrigerant indicator:

Refrigerant ok.

Yellow color of the refrigerant indicator:

Refrigerant damp due to leaking refrigerant circuit. Notify refrigeration specialist.

10.7.1 EXPANSION VALVE (OPTIONAL)

The expansion valve must be checked for function during every maintenance and replaced if necessary.

SYSTEM DAMAGE

Avoid overfilling with refrigerant. The refrigerant must be refilled by a refrigeration specialist.

10.8 ELECTRICAL SYSTEM

At least once a year, the entire electrical system of the rotary evaporator, including the supply line, the on / off switch must be checked for function.

11 DISORDERS

NOTE

If a malfunction occurs, the MSK SLX must be switched off immediately. Operation may only continue after the fault has been checked and rectified.

NOTE

Observe the operating instructions of the SLX.

Disorder	Cause of error	Troubleshooting
Compressor is not running	a) Main switch not switched on b) The fuse has blown c) The pressure switch on the compressor is not switched on d) Motor protection switch in the pressure switch is triggered e) Power supply interrupted	a) Turn on the main switch. b) Reset the fuse if the MSK SLX trips several times. Have it checked by a refrigeration specialist or an MSK service technician. c) Check pressure switch. d) Reset the fuse if the MSK SLX trips several times. Have it checked by a refrigeration specialist or an MSK service technician. e) Check the voltage supply and have it repaired by a qualified electrician if necessary.

Disorder	Cause of error	Troubleshooting
Heating doesn't work	a) Main switch not switched on b) The fuse has blown c) Power supply interrupted d) Heating defective	a) Turn on the main switch. b) Reset the fuse if the MSK SLX trips several times, have it checked by a refrigeration specialist or an MSK service technician. c) Check voltage supply and have it repaired by a qualified electrician if necessary. d) Have the heating checked or replaced by a refrigeration specialist or an MSK service technician.
Water runs out of the drain	a) Ball valves emptying open b) Water drain valve defective or dirty	a) Close ball valves b) Have the valve checked or replaced by a refrigeration specialist or an MSK service technician
MSK SLX switches off completely	a) Fuse in the control box has tripped	a) Check the fuses by a refrigeration specialist or an MSK service technician.

Disorder	Cause of error	Troubleshooting
Little or no Snow performance or poor quality	a) Ambient temperature high. b) Water inlet temperature high. c) High lime content in the water. d) The water conductivity deviates significantly from the normal guide values. e) The pressure ratio is incorrect or deviates too much	a) Switch off the system and wait for colder weather conditions b) Use colder water c) Check water quality d) Check water quality e) Adjust water and or air pressure

If the fault cannot be remedied, please contact customer service or the Metzger refrigeration, ice and snow technicians.

For phone numbers see point 1.3 contact address.

12 LED MESSAGES

12.1 FLASH CODE

The MSK SLX snow machines visualize their operating status by flashing the piezo button or by text messages on the PLC in the control box. Additional data can be read from the PLC or individual settings can be made.

NOTE

More detailed explanations of the blink code can be found in the operating instructions and the commissioning instructions for the MSK SLX.

12.1.1 SYSTEM OFF

None of the light rings are on.

12.1.2 SYSTEM IN OPERATION

The blue LED ring lights up continuously

Blue											
Red											

12.1.3 SYSTEM IN STANDBY MODE

The red LED ring lights up continuously

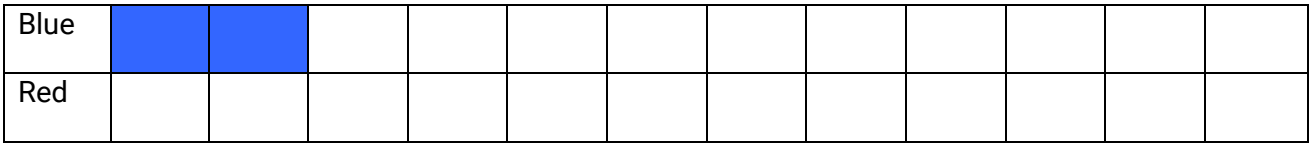
Blue											
Red											

12.1.4 COMPRESSOR PENDULUM PROTECTION

The blue LED ring lights up every 1 second and 2 seconds off

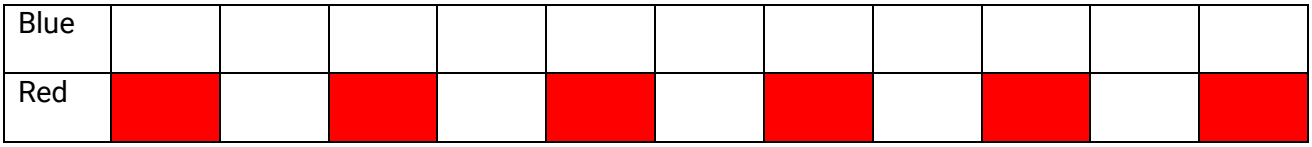
12.1.5 RESIDUAL WATER IN THE MACHINE

The blue LED ring lights up in 2 seconds ON and 10 seconds OFF



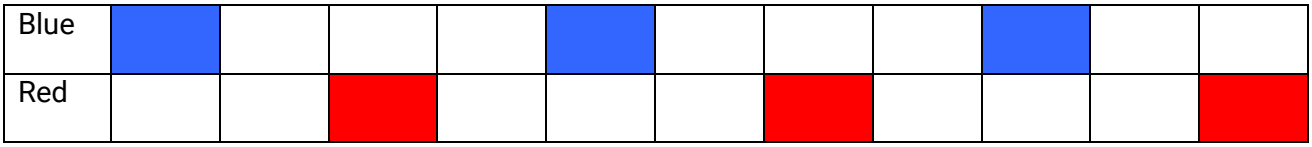
12.1.6 SENSOR MODE 1 TRIGGERED

The red LED ring lights up in 1 second ON and 1 second OFF cycles



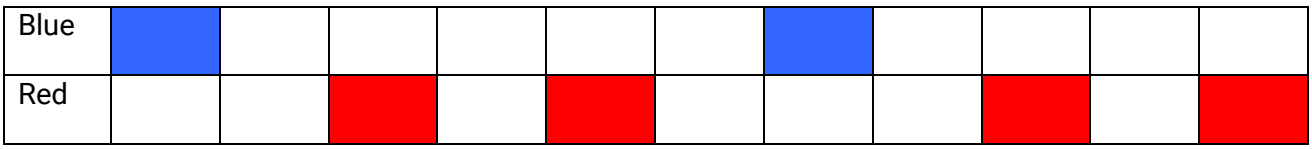
12.1.7 HD DISORDER

The blue and red LED ring lights up in 1 second ON and 1 second OFF cycles



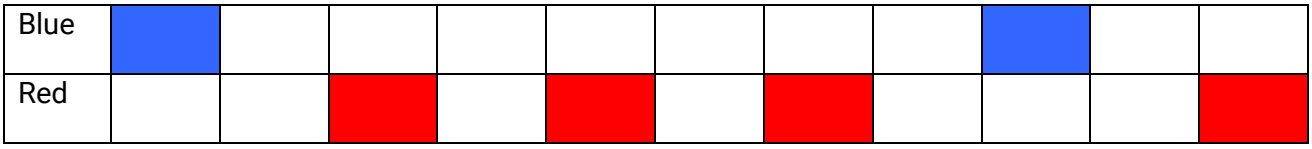
12.1.8 ND DISORDER

The blue and red LED ring lights up in 1 to 2 cycles



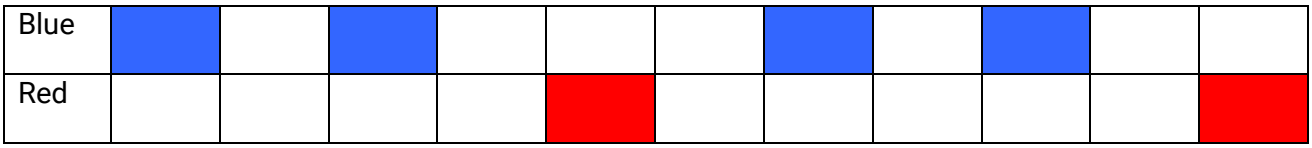
12.1.9 SNOW CONGESTION

The blue and red LED ring lights up in 1 to 3 cycles



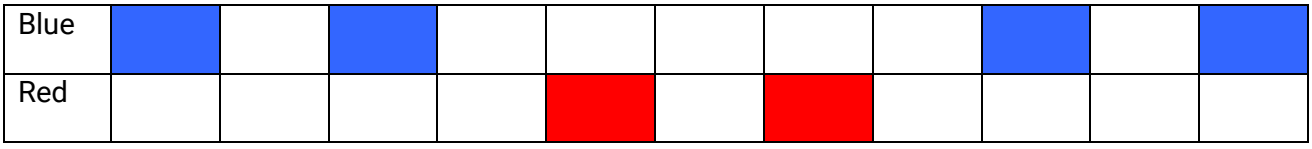
12.1.10 HALL SENSOR GEAR MOTOR

The blue and red LED ring lights up in 2 to 1 cycles



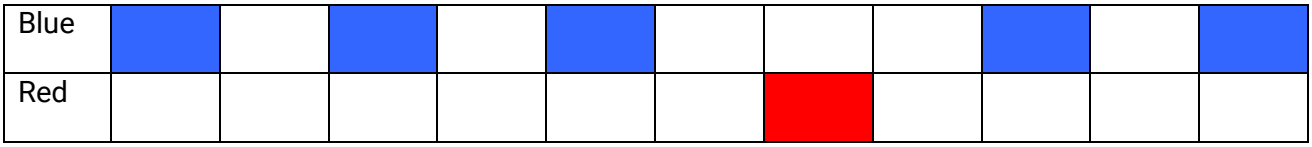
12.1.11 MOTOR PROTECTION DRIVE MOTOR

The blue and red LED ring lights up in 2 to 2 cycles



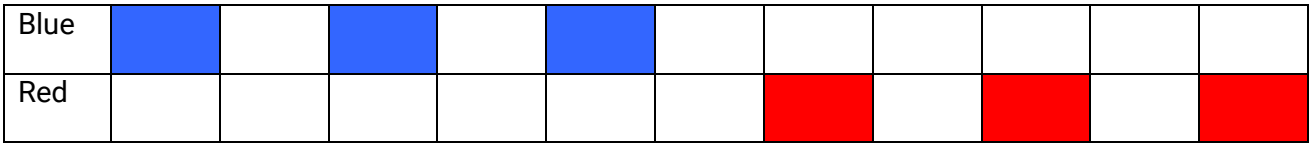
12.1.12 WATER INLET FAULT

The blue and red LED ring lights up in 3 to 1 cycles



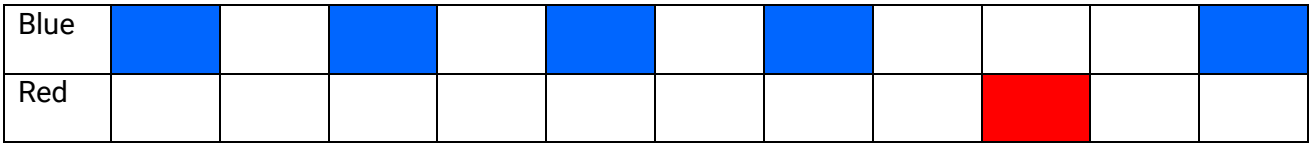
12.1.13 OPTIONAL SEWAGE PUMP FLOODED

The blue and red LED ring lights up in 3 to 3 cycles



12.1.14 OPTIONAL ROTATING FIELD MONITORING

The blue and red LED ring lights up in 4 to 1 cycles



12.1.15 OPTIONAL LEVEL SENSOR HAS TRIGGERED

The blue and red LED ring lights up in 5 to 1 cycles