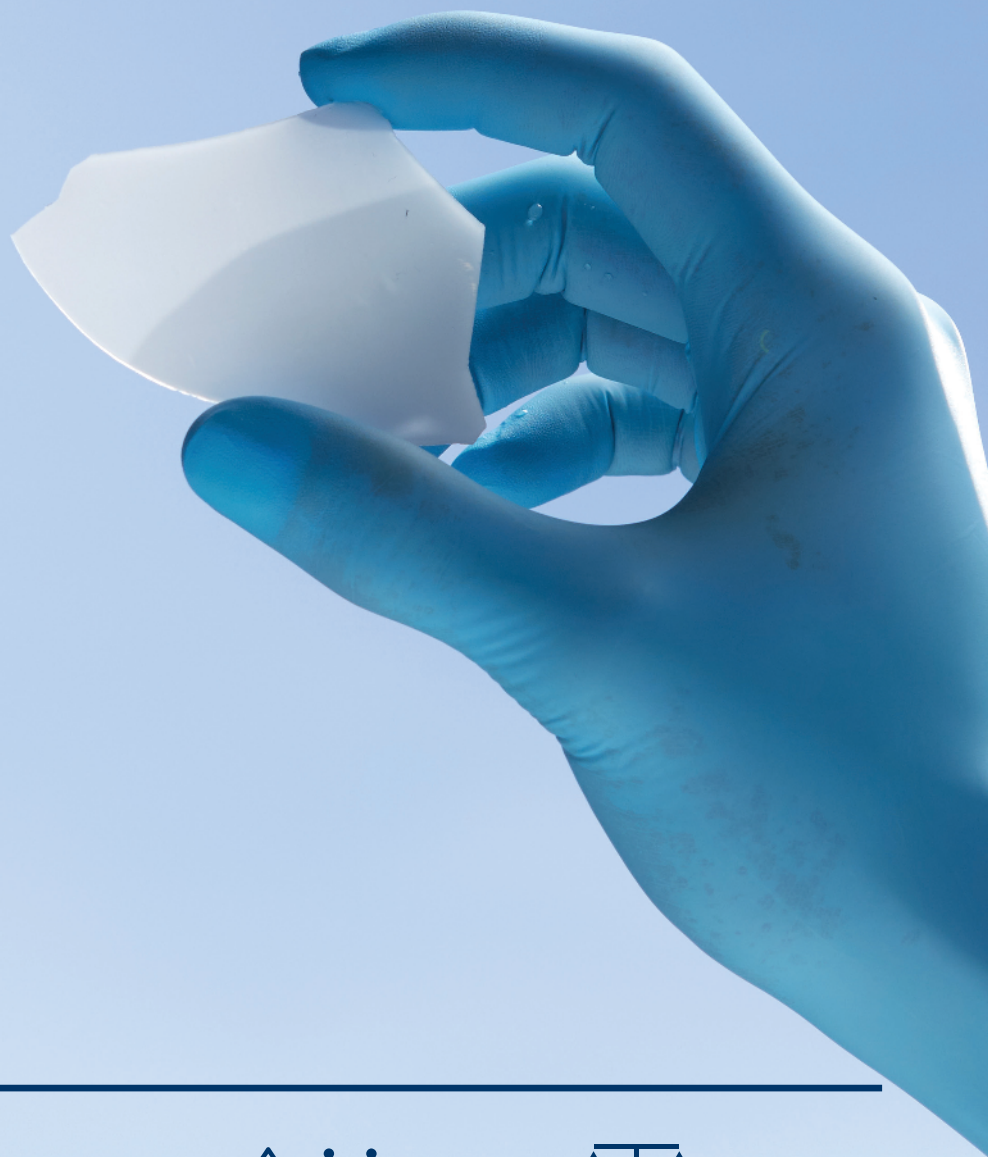


Flake Ice and Nugget Ice

The world of MAJA ice machines

- 
- Cooling and producing of foodstuff
 - Ideal solution for many uses
 - Proven for over 60 years
 - Developed and manufactured in Germany

MAJA flake ice for the food industry



HY-GEN protected

- Hygienic ice production
- Quick and easy cleaning
- Manual and/or fully automatic



High cooling capacity - ice temperature approx. -7 °C

- Quick product cooling
- Slow melting
- Long-lasting freshness



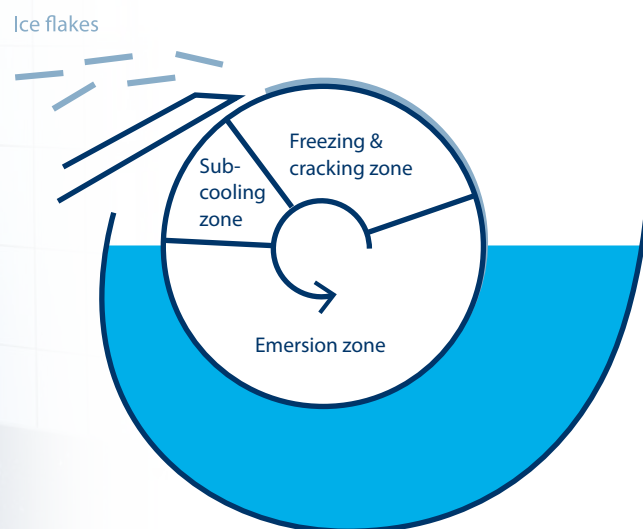
Dry frozen flake ice

- Dry surface
- Virtually no water from melting
- Easy storage
- Easy handling
- Attractive appearance



Low weight (density 0.42 kg/dm³)

- Up to 30% lighter than other types of ice
- Thus less ice requirements for display filling
- Savings on transport costs



Simply brilliant for over 60 years!

A deep-frozen metal cylinder rotating in a water reservoir guarantees constant ice quality. With each rotation, water freezes on the evaporation drum and then flakes off, leaving the machine as dry-frozen ice. This principle was developed by MAJA and has proven itself in practice for over sixty years. It is efficient, cost-effective and does not require special maintenance.

Wide range of applications in the food and non-food sectors:

- Mincer process for emulsified / boiled sausage production
- Dough production for baking and pastry products
- Refrigeration of fish and seafood
- Filling of fresh food displays in supermarkets
- Decorative refrigeration of buffets (in hotels, restaurants, event catering...)
- Cryotherapy in human and veterinary medicine
- Health spas & leisure swimming baths
- Artificial snow tracks for sports and leisure



Thin ice flakes (1 - 2 mm)

- Excellent product covering
- Big surface, thus good heat exchange



Good mixing behaviour

- Low mechanical resistance
- No damage to the product and to the tools, such as mincer blades and dough hooks



Reduced production costs

- High efficiency
- Economical use of resources
- 100% of the water becomes ice



High reliability – low maintenance

- Reduced operating and maintenance costs
- No additional efforts for water treatment, such as softening, filtration etc.

The HY-GEN sanitation principle from MAJA

Ideal conditions for efficient cleaning, manually or fully automatically.

HY-GEN Flake Ice Machines from MAJA are designed to allow the production of flake ice under excellent sanitary conditions. The core piece is the water tank in plastic material, which can easily be removed for cleaning.

The MAJA Label „HY-GEN Protected“ stands for:

- Evaporator can be opened without the use of tools for cleaning purposes and is accessible from all sides
- Easily removable hygiene water tank in plastic material (insulation and no corrosion)
- Round-shaped, cleaning-friendly water tank; if necessary it is even replaceable
- Water tank free of built-in parts without angles, edges and screws, for easy and efficient cleaning
- Automatic water pipe rinsing when the machine was out of operation for more than 24 hours
- Special hygiene advantages in conformity with the current German drinking water regulations issued by the DVGW (German association for water & gas), for example: water supply with back-flow protection



Removable water tank

Water tank removal at the side for all types of SAH 85 EcoPro to SAH 400 EcoPro, SAH 250 to SAH 500 as well as for RVH 250



Water tank removal at the top for all types of SAH 800 – 1500 and RVH 400 – 12000



Option MAJA-SCS

MAJA flake ice machines can also be cleaned fully automatically. Thanks to the patented evaporator self-cleaning system MAJA-SCS, the ice producing unit can be regularly cleaned without investing additional working time or labour.

The cleaning cycle is started manually by ON/OFF push-buttons or fully automatically by programmable control panel (option). A mixture of water and special cleaning agent flows around all machine parts that contact water, thus cleaning, deliming and reduction of germs in one and the same operation.

MAJA-SCS is not only a guarantee for ideal sanitation conditions for the production of flake ice: The efficient routine cleaning process helps to maintain the value of your MAJA Flake Ice Machine.

MAJA SAH 85/170 EcoPro

MAJA SAH 85/170 EcoPro flake ice machine with integrated condensing unit and ice storage system
Ice output 85 and 170 kg/24 h



SAH 85/170 EcoPro



Stackable ice storage systems EV 50 on wheeled base

EcoPro: Pioneering sustainability in flake ice production

The SAH EcoPro series uses the natural refrigerant propane R290 with a GWP of 3. It therefore offers an environmentally friendly and future-proof alternative to machines using conventional refrigerants.

Propane R290 has almost zero impact on the greenhouse effect and is therefore regarded as a particularly environmentally friendly alternative to conventional fluorinated refrigerants. When you opt for an EcoPro model, you are not only choosing a high-quality flake ice machine, you are also making a tangible contribution to making your business processes more sustainable. In this way, you too can contribute to a greener future.

Machine design

- Easy-to-clean machine design based on the HY-GEN principle with removable water tank
- Frame and housing in stainless steel
- With mobile ice storage system EV 50 for storage and transport of approximately 50 kg of flake ice:
 - Inner and outer surface in robust polypropylene
 - Foamed PU insulation for ideal storage conditions
 - Cleaning-friendly surfaces
 - Drainage plate to separate melting water from the ice
 - Easy emptying by water drain with outlet valve
 - Wheeled base in stainless steel for easy mobility
 - Solid and stackable thus space-saving

Operation

- Easy operation by ON/OFF pushbuttons
With function and error code indication, start/stop function of optional self-cleaning system
- Reliable SPS control unit



Water tank removal for cleaning purposes



TECHNICAL DATA

MAJA SAH 85/170 EcoPro

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection 1AC/50Hz/ 230V/PE kW	Width mm	Depth mm	Height mm	Ice storage system kg	Refrigerant Refrigerant charge kg	GWP **)	CO2e t	Weight kg
SAH 85 EcoPro	85 (3.5)	0.085	0.53	705	700	1380	approx. 50	0.09	3	<0.01	156
SAH 170 EcoPro	170 (7.0)	0.170	0.78	705	700	1380	approx. 50	0.12	3	<0.01	167

*) The indicated ice output is an approximate value (depending on installation conditions).
 Water inlet temperature +16 °C
 Ambient temperature +20 °C

Connections: Water supply 3/4" external thread, drain water 2 x 3/4" hose clip

Hygiene options

- **Patented fully automatic self-cleaning system:**
MAJA-SCS for time savings and optimum sanitation safety by automating the cleaning process
- **External UV-degermination** in the water inlet
- **Ozone degermination** in the water inlet

Accessories

- **Additional ice storage systems EV 50:**
For more flexibility by alternating use and increased storage capacity
- **Cover for EV 50:**
For hygienic transportation and storage
- **ON/OFF control panel for remote operation:**
With wall holdfast and cable 5 m
- **Control panel timer with timer function**
Freely programmable production/cleaning cycles
- **External water pre-heater:**
For low water/ambient temperatures between +2 °C and +5 °C

MAJA SAH and SAH EcoPro

**MAJA flake ice machine
with integrated condensing unit
Ice output 250 - 500 kg/24 h**



SAH 250/400 EcoPro



Installation example SAH 250/400
EcoPro on subframe with ice
storage cart

Equipment and machine design features

- Easy-to-clean machine design based on the HY-GEN principle with removable water tank
- Frame and housing in stainless steel

Refrigeration:

- Air-cooled condensing unit (L)
- Refrigerant R290 propane or R449A ***
- With integrated heat exchanger for optimum energy efficiency
- Refrigerant stop valve and refrigerant pump-down when the machine stops

Operation

- Easy operation via ON/OFF button; additional big variety of control panels with or without program function
- Reliable SPS control unit

**MAJA flake ice machine with
integrated condensing unit
Ice output 800 and 1500 kg/24 h**



SAH 800



SAH 1500

Equipment and machine design features

- Easy-to-clean machine design based on the HY-GEN principle with removable water tank
- Frame and housing in stainless steel

Refrigeration

- Condensing unit in different versions:
 - Condensing unit in air-cooled execution (L)
 - Water-cooled execution (W) on demand
- With integrated heat exchanger for optimum energy efficiency
- Refrigerant stop valve and refrigerant pump-down when the machine stops
- Refrigerant R449A, SAH 800 available with R290 propane

Operation

- Easy operation
- Control panels with or without program function

Options

- **Condensing unit in water-cooled execution (W):**
For a temperature difference IN-OUT of about 10 - 20 K
- **Condensing unit cooling by heat exchange circuit (WS):**
For a temperature difference of heat transfer medium or water IN-OUT of about 5 K ($t_{\min} - 8^{\circ}\text{C}$)



TECHNICAL DATA				MAJA SAH 250/400/800 EcoPro					
Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection 1AC/50Hz/230V/PE kW **)	Width mm	Depth mm	Height mm	Refrigerant Filling quantity kg	GWP	Weight kg
SAH 250 EcoPro	250 (10)	0.25	1AC/50Hz/230V/PE 1.08 kW	776	581	996	0.145	3	135
SAH 400 EcoPro	400 (16)	0.50	1AC/50Hz/230V/PE 1.36 kW	776	581	996	0.2	3	165
SAH 800 EcoPro	on request								

TECHNICAL DATA				MAJA SAH 250 L/500 L						
Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection 1AC/50Hz/230V/PE kW **)	Width mm	Depth mm	Height mm	Refrigerant Refrigerant charge kg	GWP **)	CO2e t	Weight kg
SAW 250 L R449A	250 (10)	0.25	1.26	776	581	996	1.6	1397	2.2	140
Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection 3AC/50Hz/400V/PE kW **)	Width mm	Depth mm	Height mm	Refrigerant Refrigerant charge kg	GWP **)	CO2e t	Weight kg
SAW 500 L R449A	500 (20)	0.50	2.05	776	581	996	2.1	1397	2.9	165

Note: Installation with minimum wall distance at the left and rear side of the machine.
Connections: Water inlet 3/4" external thread, water outlet 3/4" hose nozzle

TECHNICAL DATA				MAJA SAH 800 L/1500 L						
Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection 3AC/50Hz/400V/N/ PE kW	Width mm	Depth mm	Height mm	Refrigerant Refrigerant charge kg	GWP **)	CO2e t	Weight kg
SAW 800 L R449A	800 (33)	0.80	2.52	1170	760	1150	4.2	1397 (R449A)	4.9	310
SAW 1500 L R449A	1500 (62)	1.50	4.37	1430	780	1230	5.2	1397 (R449A)	7.3	400

*) The indicated ice output is an approximate value (depending on installation conditions).

Water inlet temperature +16 °C

Ambient temperature +20 °C

**) Special voltage on request

***) The refrigerant R449A (GWP 1397) is a fluorinated greenhouse gas.

Connections: Water inlet 3/4" external thread, water outlet 1" hose nozzle.

RVH Split

MAJA RVH flake ice machine with separate condensing unit as a practical split solution for separate installation
Ice output 250 - 12,000 kg/24 h



RVH with
condensing unit L



RVH with
condensing unit LT

Examples of Condensing units:



L1000



L1500 - L3000



LT2500 - LT3000



L6000/LT6000

Equipment and machine design features

- Easy-to-clean machine design based on the HY-GEN principle with removable water tank
- Separate condensing unit in weather protection housing in galvanized steel. Silent, solid and service-friendly solution with good access for maintenance.
- RVH 9000 and RVH 12000 L/LT consist of two separately operated rotating evaporator units. Advantages: Individual control of ice output according to varying needs and high operational safety

Refrigeration

- The ice producing unit is made for operation with the fluorinated greenhouse gas R449A (GWP 1397) and is supplied without refrigerant filling
- The refrigerant charge and the resulting CO2 equivalent (CO2e) of the ice machine must be determined during its start-up.
- Air-cooled condensing unit
L version temperature range: approx. -15 °C to +35 °C
LT version temperature range: approx. -15 °C to +42 °C
- With heat exchanger for optimum energy efficiency
- Electronic condenser fan speed regulator for automatic adaptation to variable ambient temperatures

Operation

- Easy operation via controls with or without timer function

Options

- **Winter mode:**
For ambient temperatures -15 °C to +35 °C
- **Water-cooled condensing unit:**
Version W for temperature difference water inlet and outlet
 t_{IN}/t_{OUT} approx. 10 - 20 K.
- **Refrigeration of (separate) condensing unit by heat transfer medium or water:**
WS version for temperature difference refrigerant medium or water inlet and outlet t_{IN}/t_{OUT} approx. 5 K (t_{min} -8 °C).
- **Special coating of condenser fans:**
For installation in aggressive (salt-laden) sea air

TECHNICAL DATA L version temperature range approx. -15 °C to +35 °C**MAJA RVH with condensing unit L**

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection RVH 3AC/50Hz/ 400V/N/PE kW	Width mm	Depth mm	Height mm	Weight kg	Condensing unit "L" Dimensions WxDxH mm Electrical connection kW Weight approx. kg
RVH 250 with condensing unit L	250 (10)	0.25	0.28	1045	512	525	90	866x462x581 1.15 65
RVH 400 with condensing unit L	400 (16)	0.40	0.28	1185	512	525	115	1032x462x751 1.71 90
RVH 800 with condensing unit L	800 (33)	0.80	0.28	1345	512	525	140	1352x732x891 2.25/2.55 167
RVH 1000 with condensing unit L	1000 (41)	1.00	0.28	1545	512	525	165	1352x732x891 2.96 168
RVH 1500 with condensing unit L	1500 (62)	1.50	0.28	1695	512	525	175	1352x732x1201 4.09 262
RVH 2000 with condensing unit L	2000 (83)	2.00	0.28	1695	512	525	175	1700x946x1536 6.65 330
RVH 2500 with condensing unit L	2500 (104)	2.50	0.28	1695	512	525	175	1700x946x1536 7.33 344
RVH 3000 with condensing unit L	3000 (125)	3.00	0.34	1730	675	525	215	1700x946x1536 7.33 344
RVH 6000 with condensing unit L	6000 (250)	6.00	0.52	1860	1450	586	425	2200x1300x1810 14.64 1000
RVH 9000 with condensing unit L	9000 (375)	9.00	0.52 0.34	1863	1456	1572	740	2200x1300x1810 14.64 1000 1700x 946x1536 7.33 344
RVH 12000 with condensing unit L	12000 (500)	12.00	0.52 0.52	1863	1456	1572	955	2200x1300x1810 14.64 1000 2200x1300x1810 14.64 1000

TECHNICAL DATA LT version temperature range approx. -15 °C to +42 °C**MAJA RVH with condensing unit LT**

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Electrical connection RVH 3AC/50Hz/ 400V/N/PE kW	Width mm	Depth mm	Height mm	Weight kg	Condensing unit "LT" Dimensions WxDxH mm Electrical connection kW Weight approx. kg
RVH 250 with condensing unit LT	250 (10)	0.25	0.28	1045	512	525	90	866x462x581 1.15 68
RVH 400 with condensing unit LT	400 (16)	0.40	0.28	1185	512	525	115	1032x462x751 2.14 90
RVH 800 with condensing unit LT	800 (33)	0.80	0.28	1345	512	525	140	1352x732x891 2.75 170
RVH 1000 with condensing unit LT	1000 (41)	1.00	0.28	1545	512	525	165	1352x732x1201 4.09 262
RVH 1500 with condensing unit LT	1500 (62)	1.50	0.28	1695	512	525	175	1352x732x1201 5.78 262
RVH 2000 with condensing unit LT	2000 (83)	2.00	0.28	1695	512	525	175	1700x946x1536 7.33 344
RVH 2500 with condensing unit LT	2500 (104)	2.50	0.28	1695	512	525	175	1900x882x1561 8.89 480
RVH 3000 with condensing unit LT	3000 (125)	3.00	0.34	1730	675	525	215	1900x882x1561 8.89 480
RVH 6000 with condensing unit LT	6000 (250)	6.00	0.52	1860	1450	586	425	2800x1300x2275 21.73 1200
RVH 9000 with condensing unit LT	9000 (375)	9.00	0.52 0.34	1863	1456	1572	740	2800x1300x2275 21.73 1200 1900x 882x1561 8.89 480
RVH 12000 with condensing unit LT	12000 (500)	12.00	0.52 0.52	1863	1456	1572	955	2800x1300x2275 21.73 1200 2800x1300x2275 21.73 1200

Special voltage on demand. Suction line heat exchanger enclosed separately.

*) The indicated ice output is an approximate value (depending on installation conditions). Water temperature +16 °C, ambient temperatures +20 °C;

**) R449A belong to the fluorinated greenhouse gases. Without refrigerant filling.

Connections: Water supply 3/4" external thread, drain water 1" hose clip

RVH

MAJA Flake Ice Machine Modular
without condensing unit, for connection to (separate) external
refrigeration units or multicompressor refrigeration systems
Ice output 250 to 12,000 kg/24 h



RVH 400



RVH 1000



RVH 1500 - 3000



RVH 6000



RVH 9000 - 12000

Equipment and machine design features

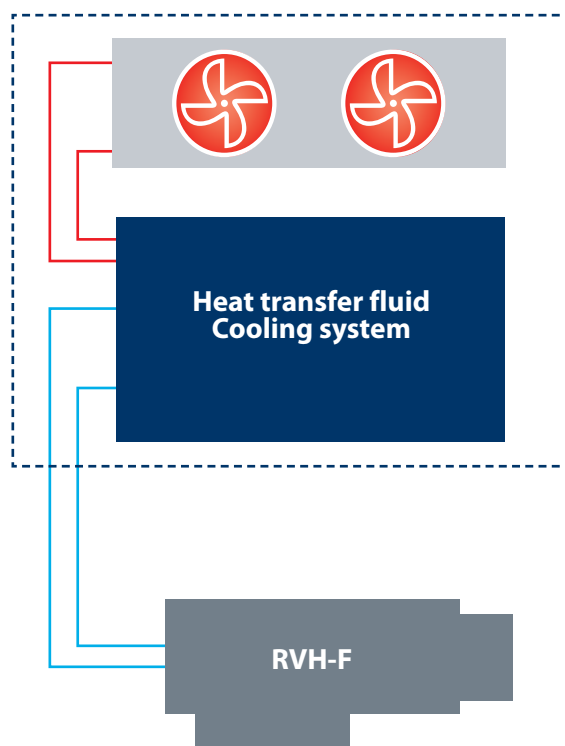
- Easy-to-clean machine design based on the HY-GEN principle with removable water tank
- For connection to (separate) external refrigeration units or multicompressor refrigeration systems
- Models RVH 9000 and RVH 12000: consist of **two** separately operated rotating evaporator units. Advantages: individual control of ice output according to varying needs and high operational safety.

Refrigeration

- For operation with the fluorinated greenhouse gases R449A (GWP 1397).
Other refrigerants on demand.

Operation

- Easy operation via controls with or without timer function



Equipment and machine design features

- Easy-to-clean machine design based on the HY-GEN principle with removable evaporator tank
- For connection to an existing external heat transfer medium circuit (by fluid, e.g. water-glycol mixture). An ecological and future-proof alternative to the traditional refrigerants.

Environmentally friendly flake ice production

- No influence on the destruction of the ozone layer and the greenhouse effect.
Ozone depletion potential ODP = 0
Global warming potential GWP = 0

Operation

- Easy operation via controls with or without timer function

On-site requirements for operation with a refrigerant medium system

- Refrigerant medium circuit
 t_{IN} approx. -25 °C
 t_{OUT} approx. -22 °C

TECHNICAL DATA

MAJA RVH

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Refrigeration ca- pacity required kW	Electrical connec- tion 3AC/50Hz/400V/PE kW	Width mm	Depth mm	Height mm	Weight kg
RVH 250	250 (10)	0.25	t _O -20.0 °C, 1.8	0.28	1045	512	525	90
RVH 400	400 (16)	0.40	t _O -20.5 °C, 2.2	0.28	1185	512	525	115
RVH 800	800 (33)	0.80	t _O -21.5 °C, 4.0	0.28	1345	512	525	140
RVH 1000	1000 (41)	1.00	t _O -18.5 °C, 5.6	0.28	1545	512	525	165
RVH 1500	1500 (62)	1.50	t _O -18.5 °C, 8.4	0.28	1695	512	525	175
RVH 2000	2000 (83)	2.00	t _O -21.5 °C, 11.5	0.28	1695	512	525	175
RVH 2500	2500 (104)	2.50	t _O -21.5 °C, 13.5	0.28	1695	512	525	175
RVH 3000	3000 (125)	3.00	t _O -21.0 °C, 16.2	0.34	1730	675	525	215
RVH 6000	6000 (250)	6.00	t _O -22.0 °C, 33.0	0.52	1860	1450	586	425
RVH 9000	9000 (375)	9.00	t _O -22.0 °C, 33.0 t _O -21.0 °C, 16.2	0.52 0.34	1863	1456	1572	740
RVH 12000	12000 (500)	12.00	t _O -22.0 °C, 33.0 t _O -22.0 °C, 33.0	0.52 0.52	1863	1456	1572	955

Special voltage on demand. Supplied without refrigerant filling.

For optimized working conditions concerning ice capacity and ice quality a suction line heat exchanger is necessary.

TECHNICAL DATA

MAJA RVH-F

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Required Refrigeration ca- pacity kW **)	Electrical connec- tion 3AC/50Hz/400V/PE kW ***)	Width mm	Depth mm	Height mm	Weight kg
RVH 260 F	260 (11)	0.26	1.5	0.28	1185	512	525	85
RVH 530 F	530 (22)	0.53	2.7	0.28	1345	512	525	125
RVH 660 F	660 (27)	0.66	3.8	0.28	1545	512	525	145
RVH 1000 F	1000 (41)	1.00	5.5	0.28	1695	512	525	160
RVH 2000 F	2000 (83)	2.00	11.0	0.34	1730	675	525	220
RVH 4000 F	4000 (166)	4.00	22.0	0.52	1860	1450	586	320
RVH 6000 F	6000 (250)	6.00	11.0 + 22.0	0.34 + 0.52	1863	1456	1572	600
RVH 8000 F	8000 (333)	8.00	22.0 + 22.0	0.52 + 0.52	1863	1456	1572	700

*) The indicated ice output is an approximate value (depending on installation conditions). Water temperature +16°C, ambient temperatures +20°C

**) t_{IN} approx. -25 °C, t_{OUT} approx. -22 °C

***) Special voltage on demand.

Connections: Water supply 3/4" external thread, drain water 1" hose clip

RVH

Flake ice producing unit (rotating evaporator) RVH-NH3 without condensing unit for direct ammonia operation R717 multicompressor refrigeration unit (NH₃) Ice output 7000 and 14,000 kg/24 h

Optimum energy efficiency - increased power density

- Compared to traditional refrigerants, e.g. R449A, the direct ammonia operation brings more power density, thus increased ice output with the same machine scale
- Electronic evaporation pressure regulation for optimum evaporation efficiency
- Model RVH 12000 NH₃ consisting of **two** separately operated rotating evaporator units.
Advantages: individual control of ice output according to varying needs and high operational safety



MAJA RVH 12000 NH₃

Environmentally friendly flake ice production

- Excellent ecological impact by the use of the natural refrigerant R717 (ammonia/NH₃)
- R717 consists of the elements nitrogen and hydrogen, gases which are natural parts of the earth atmosphere.
- No influence on the destruction of the ozone layer, no influence on the greenhouse effect:
Ozone depletion potential ODP = 0
Global warming potential GWP = 0

High safety standard

- Integrated safety system with gas detector and automatic cutoff and blockage in case of leakage.

Easy operation via Control Panel Touch (control unit with touch display)

- Individual placing of the control unit
- With timer function for freely programmable production and cleaning cycles (with option MAJA-SCS self-cleaning system), for having the right quantity of fresh MAJA Flake Ice at your disposal exactly in time

Installation conditions

- Existing R717 multicompressor refrigeration unit working in pump operation, that means the refrigerant becomes liquid and circulates
- Ammonia temperature approx. -30 °C
- Pump pressure 2 - 4 bar

Flake ice producing unit (rotating evaporator) RVH-CO₂ without condensing unit, for direct carbon dioxide operation with a R744 multicompressor refrigeration unit. Ice output 500 to 15,200 kg/24 h. Flake ice machine for direct operation with refrigerant CO₂ (R744).



MAJA RVH 3000 CO₂

Optimum energy utilisation - maximum efficiency

- Compared to traditional refrigerants, e.g. R449A, the direct carbon dioxide operation brings more power density, thus increased ice output of up to 30 % compared with the same machine scale
- Electronic expansion valve for optimum evaporation efficiency

Environmentally friendly ice production

- Excellent ecological impact by the natural refrigerant R744 (carbon dioxide/CO₂). ODP = 0, GWP = 1
- R744 consists of the elements carbon and oxygen, which are natural parts of the atmosphere

Simple operation by Control Panel Touch

- With timer function for freely programmable production and cleaning cycles (with option MAJA-SCS)



TECHNICAL DATA

MAJA RVH-NH3

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Refrigeration ca- pacity required kW	Electrical connec- tion 3AC/50Hz/400V/PE kW	Width mm	Depth mm	Height mm	Weight kg
RVH 6000 NH3	7000 (291)	7.0	t ₀ -30.0 °C, 42	0.96	1860	1450	586	540
RVH 12000 NH3	14000 (583)	14.0	t ₀ -30.0 °C, 84	2 x 0.96	1863	1456	1572	1085

TECHNICAL DATA

MAJA RVH-CO2

Type	Ice output *) kg/24 h (1 h)	Water consumption (fresh water) m ³ /24 h	Required Refrigeration ca- pacity kW	Electrical connec- tion 3AC/50Hz/400V/PE kW	Width mm	Depth mm	Height mm	Weight kg
RVH 400 CO2	500 (21)	0.5	t ₀ -25.0 °C, 2.8 kW	0.28	1185	512	525	120
RVH 800 CO2	1000 (41)	1.00	t ₀ -25.0 °C, 5.5 kW	0.28	1345	512	525	140
RVH 1000 CO2	1300 (54)	1.30	t ₀ -25.0 °C, 7.3 kW	0.28	1545	512	525	155
RVH 1500 CO2	1900 (79)	1.90	t ₀ -25.0 °C, 10.7 kW	0.28	1695	512	525	170
RVH 2000 CO2	2500 (104)	2.50	t ₀ -25.0 °C, 14.4 kW	0.34	1695	512	525	180
RVH 2500 CO2	3000 (125)	3.00	t ₀ -25.0 °C, 16.2 kW	0.34	1695	512	525	180
RVH 3000 CO2	3800 (158)	3.80	t ₀ -25.0 °C, 20.5 kW	0.34	1730	675	525	220
RVH 6000 CO2	7600 (317)	7.6	t ₀ -25.0 °C, 41.0 kW	0.52	1860	1450	586	505
RVH 9000 CO2	11400 (475)	11.4	t ₀ -25.0 °C 41.0 kW + 20.5 kW	0.34 + 0.52	1863	1456	1572	755
RVH 12000 CO2	15200 (634)	15.2	t ₀ -25.0 °C 41.0 kW + 41.0 kW	0.52 + 0.52	1863	1456	1572	965

Special voltage on request.

*) The indicated ice output is an approximate value (depending on installation conditions).

Water temperature +16°C

Ambient temperatures +20°C; higher temperatures may lead to reduced ice output.

Connections: Water supply 3/4" external thread, drain water 1" hose clip.

Overview about the complete range

A big choice of machine types allows individual solutions for special customer requirements

FLAKE ICE MACHINE	Power kg/24h	Condensing unit		
		Compact machine	Split Installation	Without condensing unit
SAH 85 EcoPro - SAH 800 EcoPro	85 - 800	•		
SAH 250 L - SAH 1500 L	250 - 1500	•		
SAW 250 W - 1500 W	250 - 1500	•		
SAH 500 WS - SAH 1500 WS	500 - 1500	•		
RVH 250 - RVH 12000 with condensing unit L	250 - 12000		•	
RVH 250 - RVH 12000 with condensing unit LT			•	
RVH 800 - RVH 12000 with condensing unit W	800 - 12000		•	
RVH 800 - RVH 12000 with condensing unit WS			•	
RVH 250 - RVH 12000	250 - 12000			•
RVH 250 N - RVH 12000 N (without control unit)	250 - 12000			•
RVH 260 F - RVH 8000 F	260 - 8000			•
RVH 6000 NH3 - RVH 12000 NH3	7000 + 14,000			•
RVH 400 CO2 - RVH 12000 CO2	500 - 15200			•
RVE 702 S - RVE 3102 S ship version (integral water tank)	750 - 2900			•

Machine types

- Compact machines with integrated condensing unit (SAH), for ambient temperatures from approx. +10°C to +38°C
- Split version for separate installation of condensing unit and ice producing unit (RVH-L, RVH-LT, RVH-W, RVH-WS)
- Ice producing units without condensing unit for connection to an existing multicompressor refrigeration system (RVH, RVH-N, RVH-NH3, RVH-CO2, RVH-F)
- Ice producing units with integral water tank for installation on fishing vessels without condensing unit for seagoing use onboard of fishing vessels (RVE-2S)

Refrigeration of condensing units							Refrigerant
Air	Water	Refrigerant	R449A	R744 (CO ₂)	R717 (NH ₃)	R290 (propane)	Fluid
•						•	
•			•				
	•		•				
		•	•				
•			•				
•			•				
	•		•				
		•	•				
			•				
			•				
							•
					•		
				•			
			•				

Refrigerants

- Standard refrigerants for MAJA Flake Ice Machines: R449A (GWP 1397). They belong to the fluorinated greenhouse gases. Other refrigerants demand.
- Already since 2008, MAJA can also supply ice machine ranges for operation with natural refrigerants without ecological impact:
 - R717 / NH₃ (ODP = 0, GWP = 0)
 - R744 / CO₂ (ODP = 0, GWP = 1)
 - R290 / propane (ODP = 0, GWP = 3)
- Alternative refrigerant solution
 - Heat transfer fluid (ODP = 0, GWP = 0)



Accessories and options

Individual configuration for meeting with any requirements

Control Panel Touch

- Well-arranged presentation of the control and display elements
- Easy operation
- Programming of automatic start and stop times
- Programming of automatic cleaning cycles (only with option MAJA-SCS self-cleaning system)
- Fast and easy change of language
- Display of additional information
- Residue water outlet (manual)
- Sanitation report

Hygiene options

- **Evaporator self-cleaning system MAJA-SCS (Fig. 1):**
For sanitation safety at the push of a button; fully automatic cleaning, descaling and reduction of germs of all machine parts that contact water.

Ozone degermination (Fig. 2):

Highly reactive oxygen is added to the supply water by the MAJA Ozone Module, reducing germs and microorganisms on all material which is reached by the ozonized water (pipes, water tank, chutes, storage bins...). Easy integration of the MAJA Ozone Module into the water inlet by connecting two water hoses and a permanent 230V power supply.

External UV degermination in the water supply:

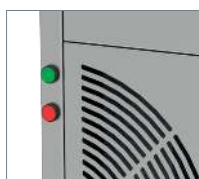
- For hygienization of the supply water
- Automatic restart of the machine after electricity / water cutoff
- Visualization of state of sanitation
- Checkup after manual cleaning "All components correctly placed?"
- Error code indication on the display in clear text
- Display error memory
- Degree of protection IP 65

Optionally available:

- Protective cover for touch display (Fig. 3)
- Cable lengths 5, 10 and 18 m

DIFFERENT TYPES OF CONTROL UNITS

Type	ON/OFF pushbut- tons illuminated, inte- grated into machine frame	Control panel ON/OFF with wall support and 5 m cable for remote operation	Control panel Timer with timer function	Control panel Standard	Control Panel Touch 5 m cable
SAH 85-400 EcoPro & SAH 250-500	Standard	Option	Option	-	-
SAH 800 EcoPro & SAH 800-1500	-	-	-	Standard	Option
RVH with condensing unit L/LT/W/WS	-	-	-	Standard	Option
RVH/RVH-F	-	-	-	Standard	Option
RVH-CO2/RVH-NH3	-	-	-	-	Standard



ON/OFF button



Control panel ON/OFF



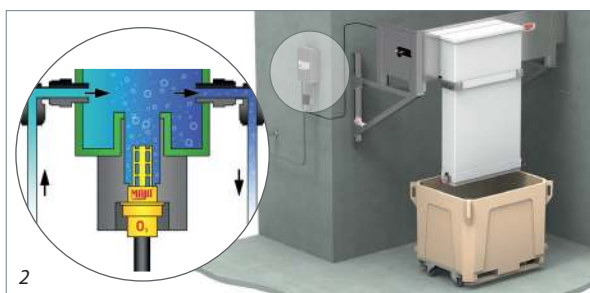
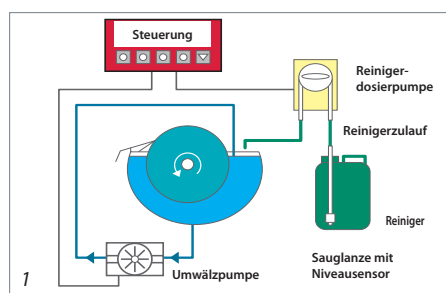
Control Panel Timer



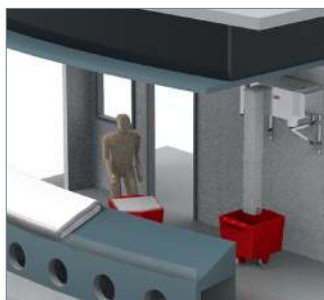
Control Panel Standard



Control Panel Touch



Wide range of installation options



Tailor-made solutions

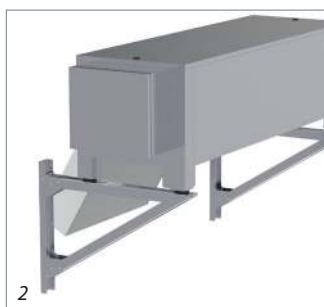
Installation accessories

- **Consoles:**
Special consoles (picture 1 + 2) allow the wall fixation of the SAH compact ice machines up to 400 kg, of the RVH ice producing units up to 3000 kg as well as of the condensing units L/LT 800 - 3000.
They can be combined with different chute systems so that the ice falls directly into storage bins, ice transport carts or directly into a supermarket ice display (picture 5).
- **Subframes:**
To allow the individual installation of the ice machines, different types of subframes are available suitable for the use of one or two ice transport carts (picture 3 + 4).
- **Ice chutes:**
Modular chute systems allow a lot of different installation options for MAJA Ice Machines, starting from a simple chute extension, until an automatic Y-chute system with two ice extraction points (picture 6), which can also be supplied with manual blocker allowing to choose the cart to be filled.

Further accessories: Wall holding devices for chutes, photoelectric barriers, reflection light sensors for ice level control in the reservoir, etc.

1. RVH on wall console with vertical chute
2. RVH on wall console with inclined chute
3. SAH 250/400 EcoPro on subframe with ice storage bin cart EVP 310
4. RVH on universal subframe for two ice transport carts EVA 80

5. Chutes for direct filling of supermarket displays with flake ice
6. RVH on wall console with Y chute for two ice outlets EVP 310
7. SAH 250 EcoPro on ITS 700-31



Ice transport and storage

Ideal conditions for long-lasting freshness

Ice carts for transport and storage:

Different mobile ice collection systems allow the convenient transport and the temporary storage of MAJA Flake Ice:

The cart types EV 50, EVA 80 and EVP 310/460 are equipped with thermal insulation for an optimum conservation of the MAJA Flake Ice during a certain period of time.

The cart types EVL are not insulated and made for short distance ice transportation.

For all types of ice carts special covers are available (option) for protecting the ice from contamination during transport and storage.

CARTS FOR ICE TRANSPORT & STORAGE

Type	Max. ice capacity approx. kg	Width mm	Depth mm	Height mm	Weight kg	Suitable for
EV 50	50	615	650	661	20 (incl. wheeled base)	SAH 85/170 EcoPro
EVA 80	80	681	824 (with handle)	703	22	Subframes + ITS silos K, instead of standard mincer carts
EVF 201	90	649	1055 (with handle)	712 (889 with handle)	25.5	ITS silos
EVP 310	130	747	945	762	42	Base frames
EVP 460	180	1030	1236	628	67	Base frames
EVL 250	105	1030	884	753	25	Base frames
EVL 440	185	780	1100	841	36	Subframes



1. Stackable ice bins EV 50 on wheeled base
2. Ice transport cart EVA 80 for about 80 kg of MAJA Flake Ice
3. Ice storage cart EVP 310 / 460 for approx. 130 / 190 kg of MAJA Flake Ice
4. EVL 250 / 440, the basic solution for the transport of about 105 / 185 kg of MAJA Flake Ice
5. EVF 201 carts for ITS silos: option: set with 6 ice buckets, each for about 11 kg of flake ice

Silo solutions

Optimal storage and simple ice removal

Ice storage bins and silo systems:

If MAJA Flake Ice has to be produced on stock, the quality of the ice and its durability depend significantly on the storage conditions. The MAJA silo bins are equipped with thermal insulation to minimize the melting process.

The silo surfaces are easy to clean.

Drain valves allow the evacuation of melting and cleaning water for sanitary ice storage conditions.

Besides that, the silo ranges EN and ITS simplify the ice handling. The silo EN1 and all ITS-silos are equipped with a comfortable door to take out the ice by hand. Besides that, the ITS-silos have silo bottom scuttle. When unlocking, the ice falls automatically into the ice storage carts below the silo.

For fully automatic ice extraction and dosage of portion control ice batches, learn more about our automatic ice silo systems at page 22.

SILO EN1

Type	Max. silo capacity approx. kg (l)	Width mm	Depth mm	Depth with door mm	Height mm	Weight kg
EN 1	185 (430)	762	788	991 - 1258	1093	94

ITS SILOS WITH ICE STORAGE CART/S EVF

Type	Max. silo capacity approx. kg	Max. capacity approx. kg incl. EVF 201 cart/s	Width mm	Depth mm	Depth with door mm	Height mm	Weight (without cart/s) kg	Number of ice cart/s Included in delivery
ITS 500-31	227	317	788	1016	-	1524	186	1
ITS 700-31	318	408	788	1016	1212 - 1486	1905	217	1
ITS 1350-60	612	792	1524	1016	1212 - 1486	1905	378	2
ITS 2250-60	955	1135	1524	1016	1212 - 1486	2464	412	2
ITS 3250-90	1474	1744	2286	1016	1212 - 1486	2464	642	3

ITS SILOS SUITABLE FOR STANDARD MINCER CARTS

Type	Max. storage capacity approx. kg	Width mm	Depth mm	Depth with door mm	Height mm	Weight kg	Number of mincer carts (not included in delivery)
ITS 500-31 K	227	863	1016	-	1587	210	1
ITS 700-31 K	318	863	1016	1220 - 1486	1949	270	1
ITS 1350-60 K	612	1673	1016	1218 - 1486	1949	425	2
ITS 2250-60 K	955	1673	1016	1220 - 1486	2626	471	2
ITS 3250-90 K	1474	2483	1016	1220 - 1486	2626	692	3



1. SAH 250/400 EcoPro on silo EN 1
2. Silo ITS 1350-60 including 2 ice carts EVF 201
3. Silo ITS 2250-60 K for the use of 2 standard mincer carts



Flake ice storage systems with automatic distribution

Wherever big quantities of flake ice must be handled, the use of automatic silo systems is recommended. The time consuming and labor-intensive manual shoveling of tons of flake ice is no longer necessary thanks to fully automatic extraction and weighing solutions.



Economical and hygienic IXTSilo with automatic distribution:

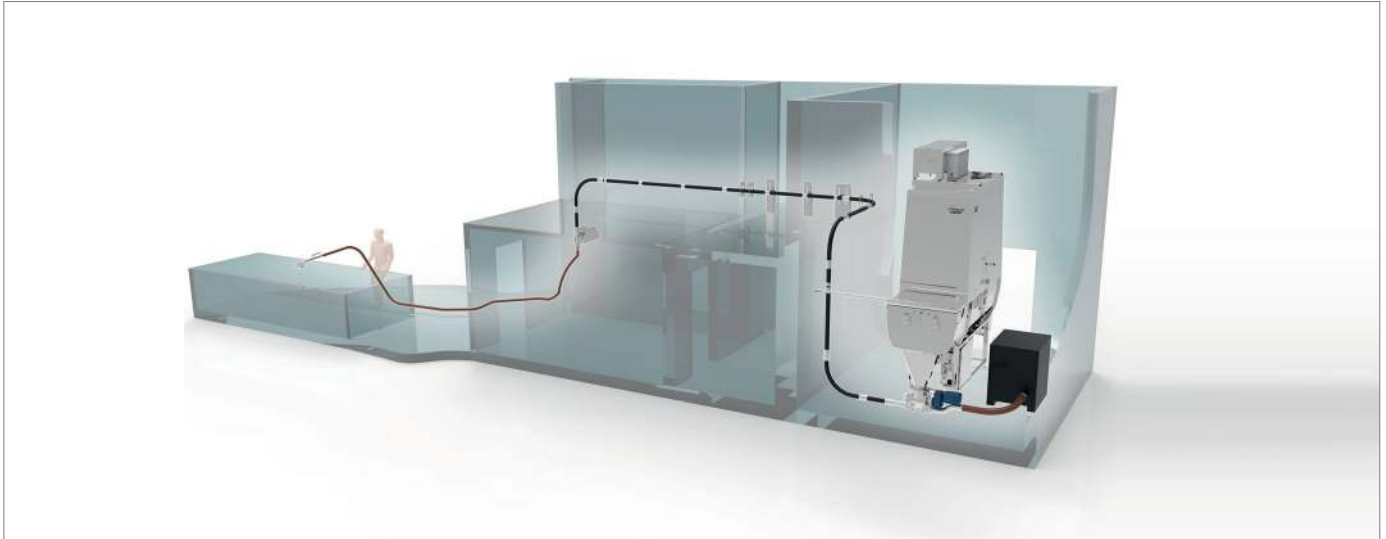
- **Filling of carts without manual labor**
The flake ice produced by the MAJA Flake Ice Machine is temporarily stored in the IXT Silo and, as required, discharged into ice transport carts. Manual shoveling is no longer necessary, which saves time and effort and provides greater hygiene.
- **Hygienic and robust design**
The IXT Silo is made with a stainless-steel frame, housings, and auger conveyors to ensure maximum hygiene.
- **Equipment and options**
Different optional accessories are available for offering for each special application the optimum solution, allowing economical process optimization. They also have an integrated interface for the use of a Marel floor scale for ice storage trolleys with weighing platform mounted on or embedded in the floor.

Examples of options and accessories

- Ice level indicator via digital display (accuracy approx. 1%)
- Further accessories on demand
- Marel floor scales for ice storage carts with weighing platform on top or embedded in the floor

IXT WITH AUTOMATIC DISTRIBUTION

Type	Storage capacity approx.	Number of auger conveyors	Width mm	Length mm	Height mm	Weight of the silo (unloaded)	Electrical connection
IXT 1000	1000 kg	2	1265	3510	3015	1900 kg	2.0 kW
IXT 1500	1500 kg	2	1265	3510	3775	2100 kg	2.0 kW
IXT 2100	2100 kg	2	1265	4050	3810	2400 kg	2.0 kW
IXT 2700	2700 kg	2	1265	4050	4300	2550 kg	2.0 kW
IXT 4000	4000 kg	3	1775	4050	4300	3350 kg	2.75 kW



Precise dosing of ice batches by weight

Reliable and precise for high process reliability

IXT silo with pneumatic ice discharge:

- **Filling your flake ice display has never been more comfortable!**
One or several MAJA Flake Ice Machines are installed on top of a stainless steel IXT Silo, in which the flake ice is stored until its extraction. A spiral conveyor in the silo delivers the ice to a dosing system. Thanks to pneumatics, the display is filled with flake ice by means of a dosing tube - fast, easy and comfortable.

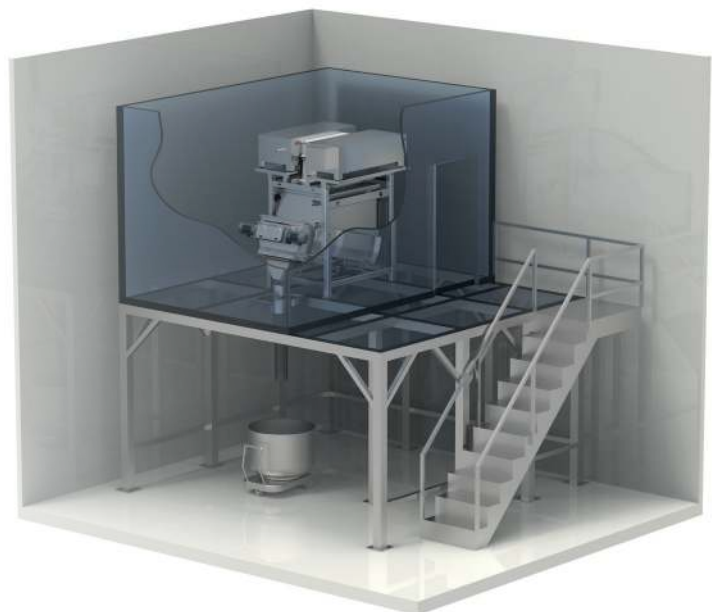
- **Reduced manual labor**
No more shovelling of tons of ice! This simplifies the staff's work and improves working conditions.
- **Time savings**
No internal transportation of the flake ice from the place of production to the display.
- **Improved hygiene**
Less contact with the ice. Silo and discharge auger made of stainless steel. High-quality and robust design.

VS silo with automatic ice weighing system

- **Intelligent ice management for more hygiene and efficiency in production:** The MAJA ice weighing system of the VS range allows the hygienic storage and dosage of precise flake ice batches. Maximizing benefits, processors can automate the entire ice application process - from flake ice production to seamless dispensing directly into the workflow (e.g., in the baking industry).

Equipment and features

- **Storage capacity:** Approx. 300 kg MAJA flake ice at an ambient temperature of max. +15 °C
 - Ice dosage by two solid stainless steel spiral conveyors
 - Individual adjustment of batch volume and batch quantity, depending on the installed ice machine's capacity
- **Short weighing process:** Per batch, e.g.:
 - Approx. 25 sec. for 10 kg
 - Approx. 40 sec. for 20 kg
- **High weighing accuracy:** +/- 250 g (depending on local conditions). This ensures good tempering and consistent consistency, e.g. of doughs
- **Operation via touch display:** To enter the target weight manually
- **Option:** Full process automation by connection to a superordinated recipe control system
 - Highest process reliability and traceability
 - Time optimization through automated dosing



Example: MAJA VS07 ice weighing system with 2x RVH 3000

Flake ice machines for fishing vessels

Flake ice machines (rotating evaporators) without condensing unit, for connection to the on-board compound system, for seagoing use in the fishing industry

Ice output 750 - 2.900 kg / 24 h

Special flake ice machine range for operation on fishing vessels:

- Made for the trouble-free flake ice production under special conditions at sea, where the quality of the catch depends on the continuous availability of ice and refrigeration
- Suitable for fresh water or seawater freezing
- For connection to an existing R449A **) refrigeration system
- With maintenance-friendly electro-mechanical controls
- Compact machine size

Special seagoing machine execution:

- Built-in water tank (non removable), with slap-over protection for trouble-free ice production even in rough sea
- Increased protection from corrosion for operation in salt-laden ambience, e.g. non-corroding evaporator, housing in stainless steel 1.4571 (AISI 316Ti; formerly V4A)

Accessories and options

- Water tank heating for protection from freezing damages caused by ambient temperatures below +6°C or water temperatures below +8°C
- ON/OFF remote control unit with 5 m cable

TECHNICAL DATA								MAJA RVE
Type	Ice output *) kg/24h (1 h)	Water consumption m ³ /24 h	Refrigeration capacity required kW	Electrical connection 3AC/50Hz/400V/PE kW	Width mm	Depth mm	Height mm	Weight kg
RVE 702 S fresh water	1100 (45)	1.10	t ₀ -20.0 °C, 6.7	0.47	1210	884	640	180
RVE 702 S salt water	750 (31)	0.75	t ₀ -33.0 °C, 4.8	0.35	1210	884	640	180
RVE 1702 S fresh water	2000 (83)	2.00	t ₀ -20.0 °C, 12.0	0.47	1410	884	640	220
RVE 1702 S salt water	1700 (70)	1.70	t ₀ -33.0 °C, 9.5	0.35	1410	884	640	220
RVE 3102 S fresh water	2900 (120)	2.90	t ₀ -21.0 °C, 16.2	0.47	1580	884	640	250
RVE 3102 S salt water	2200 (91)	2.20	t ₀ -33.0 °C, 13.0	0.47	1580	884	640	250

Special voltage on demand.

*) The indicated ice output is an approximate value (depending on installation conditions). Water temperature +16°C, ambient temperatures +20°C

**) The refrigerant R449 A (GWP 1397) belongs to the fluorinated greenhouse gases.; supplied without refrigerant charge.

Connections: Water supply 3/4" external thread, drain water 1" hose clip.





MAJA nugget ice for the food industry

Versatile applications

Retail

Refrigeration and presentation of fish and fresh food in supermarket displays

Catering, hotels, restaurants, roadhouses, petrol stations, events, etc.

Refrigeration of foodstuff and drinks, eyecatcher for the appetizing presentation of different food

Bars & clubs

Refrigeration and mixing of drinks and cocktails

Baking business

Dough production of baking and pastry products

Fish industry

Refrigeration of fish and seafood during transport and sales

Vegetables

Refrigeration of vegetables after the harvest, during transportation, in the distribution and retail

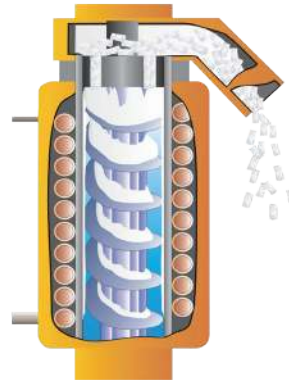


Long freshness, attractive appearance and easy handling!

Ice is important for the refrigeration, the presentation and the production of foodstuff. If you prefer either the fine, matwhite flake ice or the shiny, granular nugget ice - at MAJA it's up to you which ice will suit you best for your individual requirements!

Production of MAJA Nugget Ice:

An evaporator screw rotates in an evaporation drum, which is filled with water and refrigerated from outside. The water freezes on the inner drum surface to small ice particles, which are scraped off by the rotating evaporator screw and conveyed upwards. The ice passes through an extrusion die and gets like that its characteristic nugget shape.



Ice temperature approx. -0.5°C

Ideal cooling properties for a wide range of applications



Characteristics

Density approx. 0.5 kg/dm^3 , shiny, irregularly shaped nuggets, granular structure.

That's why MAJA Nugget Ice has a very appetizing appearance.



Storage properties

MAJA Nugget Ice can be stocked in insulated storage bins. It can be stored in a cold-room at low temperatures above 0°C for several days, remaining loose and easy to dose.

MAJA N-Ice Line

Compact machine, ready for plug & play with integrated self-cleaning system.

Ice output: 170-250 kg/24 h

Equipment and features of the MAJA N-Ice Line

- Use of the environmentally friendly refrigerant propane
- Future-orientated, sustainable and ecological
- Plug & Play compact machine with integrated condensing unit
- Simple operation and visualisation of the operating status via ON/OFF pushbuttons

MAJA-SCS self-cleaning system:

All MAJA Nugget Ice Machines are equipped with the self-cleaning system MAJA-SCS for improved machine sanitation. It allows routine cleaning and deliming - only at the push of a button. All machine parts that contact water are cleaned and delimed thoroughly without demanding precious labour time. Automatic cleaning with MAJA-SCS is not only a guarantee for ideal sanitation conditions for the production of ice: The efficient routine cleaning process helps to maintain the value of your MAJA Nugget Ice Machine.

MAJA nugget ice machine



Highest standards of hygiene

- Innovative machine design
- Integrated MAJA self-cleaning system
- Highest water quality through the use of reverse osmosis (optional)

Possible setups



Illustrations show optional reverse osmosis

TECHNICAL DATA							
Type	Ice output kg / 24h	Water consumption m ³ /24 h	Electrical connection 1AC/50Hz/230V/N/PE kW	Width mm	Depth mm	Height mm	Weight kg approx.
MAJA N-Ice 170	170	0.17	0.64	611	577	669	77
MAJA N-Ice 250	250	0.25	0.9	611	577	669	94

Watertemperature: +16 °C, ambient temperature: +20 °C

*) Higher temperatures may lead to reduced ice output Table available on request.

Water supply: 3/4" external thread, drain water: 3/4" hose clip





**Catering, hotels, restaurants, roadhouses, petrol stations, events**

- Refrigeration of foodstuff
- Drinks and cocktails
- Eyecatcher for the appetizing presentation of different food

Baking industry

Cooling the dough during the production of baked goods and dough pieces

Retail

Refrigeration and presentation of fish and fresh food in supermarket displays

Fish industry

Refrigeration of fish and seafood during transport and sales

**Extended service life thanks to water treatment**

The optional reverse osmosis ensures a high level of hygiene through effective water treatment and prevents deposits in the nugget ice machine. This extends the service life of the machine and reduces maintenance costs.

