

07/2018

Mod: ICE160MAS-R2

Production code: G160A HC



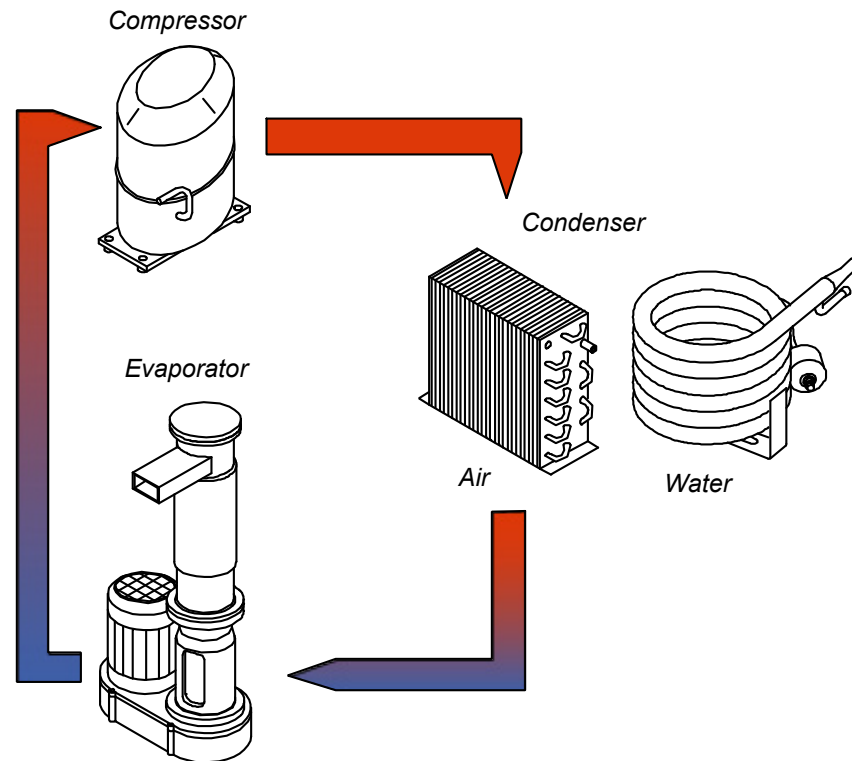
Diamond
catering equipment

GRANULAR ICE MAKERS “AUGER SYSTEM”

Last Update: 05/03/2014

G160 Line

The following diagram shows the main concepts of the granular ice makers working.



Each ice maker uses the properties of compression and expansion of the liquefiable gases; its main principle is that each change of bodies state is got by producing or absorbing heat.

The **compressor** sucks up the gases, generated by the evaporation, and compresses them, increasing their temperature and pressure.

A **condenser**, made up of a series of tubes (refrigerated by cold water or ventilated air), carries away the heat comprised in the gases from the compressor and helps, in this way, the gas liquefaction.

The refrigerating fluid, in its liquid state, circulates in the **evaporator** that allows the optimal heat exchange with the outside water, taking away calories and producing therefore ice by freezing the water in it.

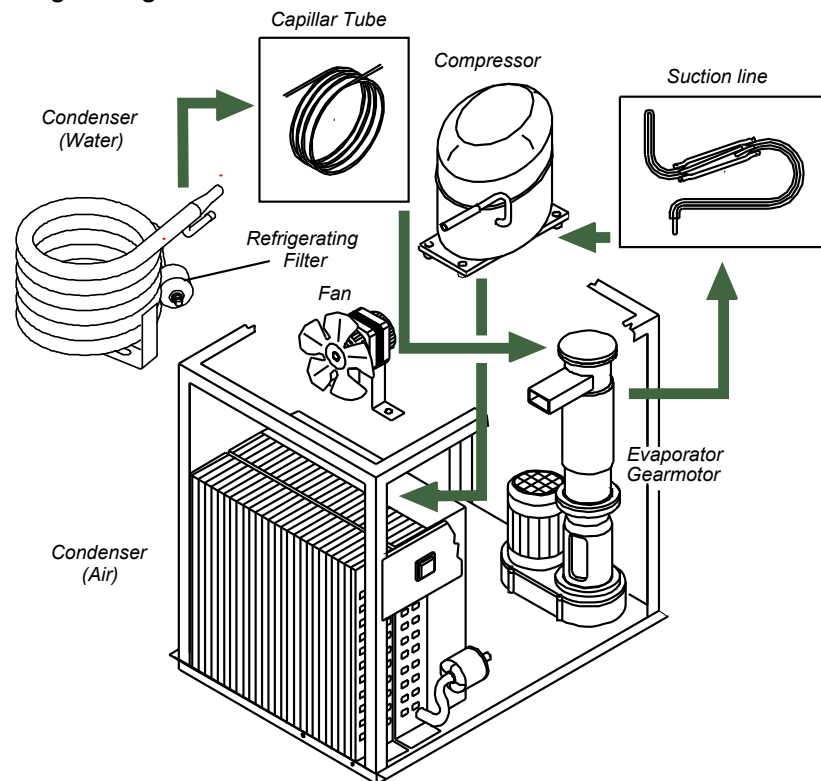
The ice makers **G160** model do not have a built-in bin, so they have to be combined with an external bin, to be placed underneath the machine.

Refrigerating Circuit

The working of this machine is linear.

The ice machine begins producing granular ice about 10 minutes after its starting up and goes on working continuously till it stops.

The following diagram shows the main concepts of the refrigerating circuit:



The refrigerating circuit includes all the components that allow the compression and the expansion of the refrigerating gas, thus producing the cold necessary to get ice.

Compressor

Receives the gases from the evaporator by the suction line and compresses them, increasing their pressure and temperature.

Condenser (Air/Water)

If 'Water', it is made of a series of tubes, refrigerated by cold water.

If 'Air', it is a radiator, that exchanges heat with the ambient, and is refrigerated by the air ventilated by an electric driven fan.

Both of them carry away the heat comprised in the gases from the compressor helping the gas liquefaction.

Refrigerating Filter + Capillary Tube

The refrigerating filter stops possible impurities and the circuit humidity.

The gas, in liquid status, enters the evaporator through this filter and the capillary tube.

Evaporator

Allows an optimal heat exchange with the water in it and produces ice freezing water.

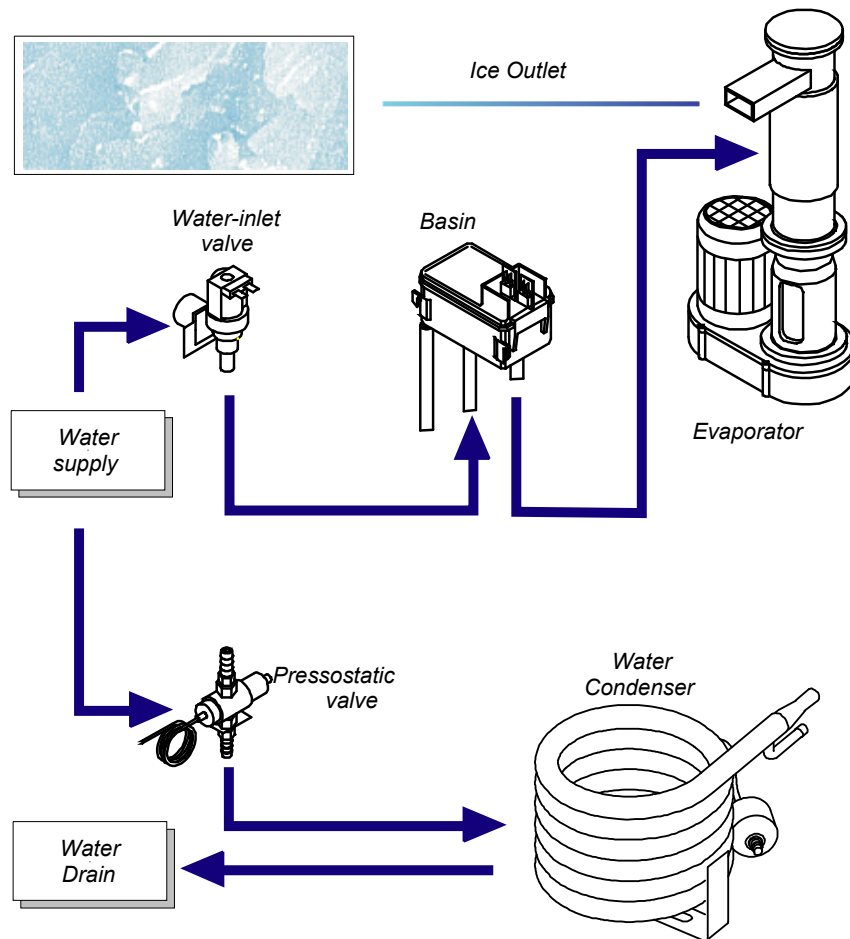
An endless screw, called 'Auger', operated by a gearmotor, ejects ice from the outlet hole.

Suction Line

Leads the refrigerating fluid from the evaporator to the compressor. The exceeding refrigerating fluid in liquid state that might be present in the circuit is kept by a boyler, in order to avoid damages to the compressor.

Hydraulic Circuit

The following diagram shows the main concepts of the hydraulic circuit:



The water supply circuit of the basin and evaporator is on all machines **G160** models, while the water supply circuit of the condenser is only on water cooled versions.

Water-inlet valve

It starts working at the ice machine start-up.

It controls the water inlet from the water mains and lets the water flow into a basin that feeds the evaporator.

The second valve (only water cooled models) allows the water to flow in the water condenser.

Basin

It gets the water from the water inlet valve and feeds the evaporator.

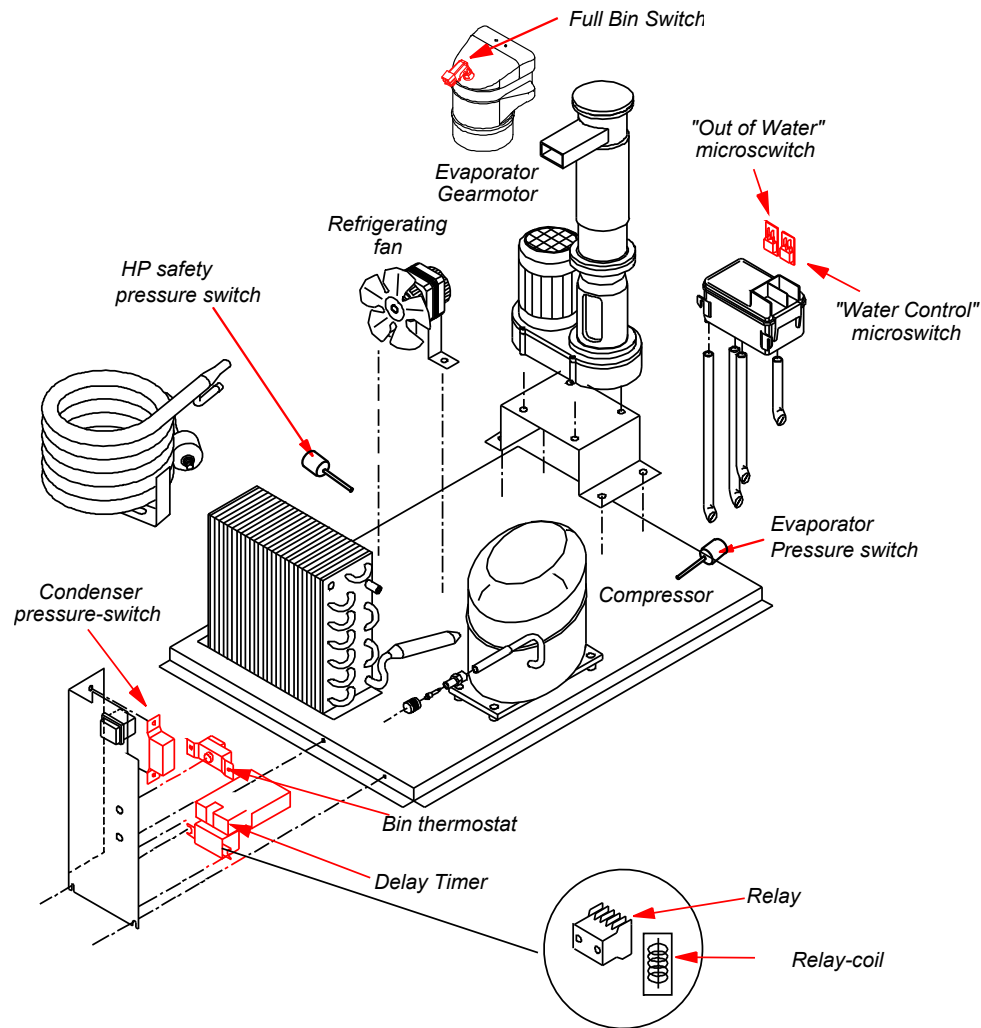
The water level is kept constant by a float, connected to a microswitch that operates the water inlet valve.

Pressostatic valve (Water cooled version)

It is installed only on water cooling models and it controls and keeps constant the condensing pressure, regulating the water flow in the condenser.

Electric Circuit

The following diagram shows the main concepts of the electric circuit:



The relay feeds compressor, refrigerating fan or water inlet valve for the water condenser. The water inlet valve of the basin is energized by the 'water level control' microswitch.

Ice Machine Start up

By switching on the ice machine the gearmotor starts and the delay timer is energized.

When 10 minutes have elapsed (stand-by imposed by delay timer) the timer feeds the relay coil and the compressor starts running



*Do not switch off the ice machine before the stand by time is over, in the attempt to re-start the machine !!
This operation resets the timer and it will restart counting the 10 minutes delay.*

Electric Circuit (Continued)

Control Devices

'Water level control' microswitch – It controls the water level in the basin cutting off power to the water inlet valve when the float (connected to the microswitch), perceives that the basin is full.

Condenser pressure switch – It controls and keeps constant the condensing pressure operating the fan motor (air version) or the condenser water inlet valve (water version)

Relay coil – Feeds compressor and disconnects the power when the out-of-water microswitch trips.

Delay timer – It is connected in series with the safety devices of the appliance. After 10 minutes stand-by, it energizes the coil of relay and the compressor starts.

Safety Devices

'Out of water' microswitch – It stops the ice machine when the float (connected to the microswitch), perceives that the basin is empty.

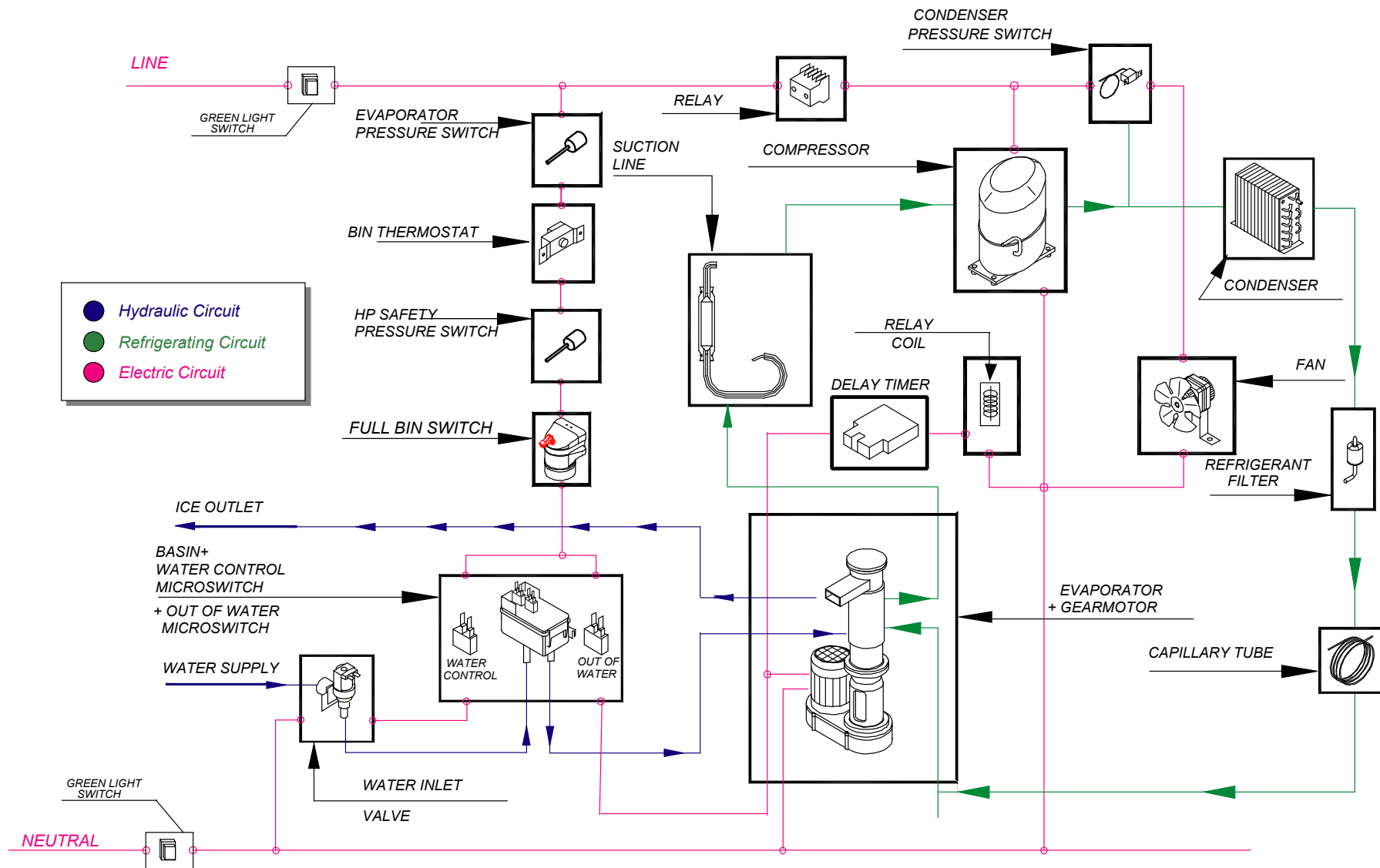
Bin thermostat – It stops the machine when it feels the temperature drop due to the ice accumulated in the bin. The probe is placed in the ice chute. When the ice is removed the machine restarts.

Evaporator pressure switch – It is connected to the evaporator, it stops the machine when the evaporation temperature drops under setting value. It has automatic reset: once the evaporation temperature rises beyond the setting the production restarts.

'Full bin' switch – It is installed on the ice chute, stops the machine when the ice rises in the ice chute and bin thermostat fails to operate.

Safety Pressure Switch – It will stop the machine working if there is condensation overpressure. It has automatic reset.

Working Scheme (Air Version)



Working Scheme (Water Version)

