

Ammonia & R-22 Models

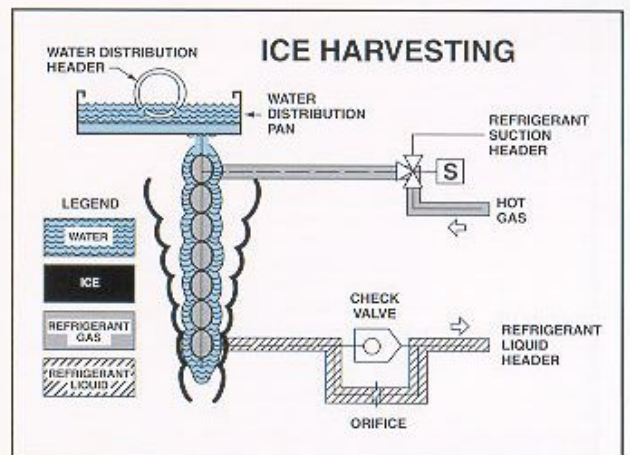
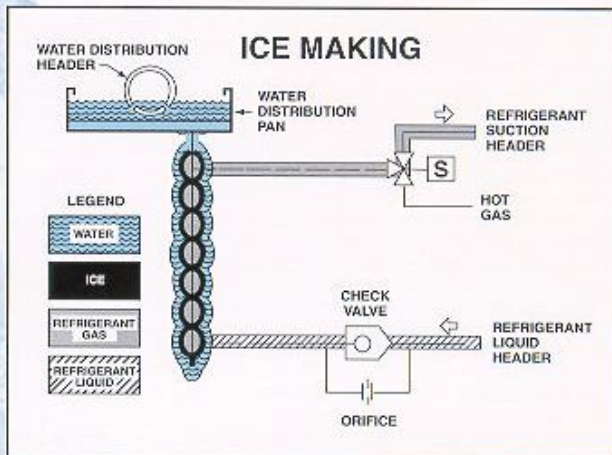
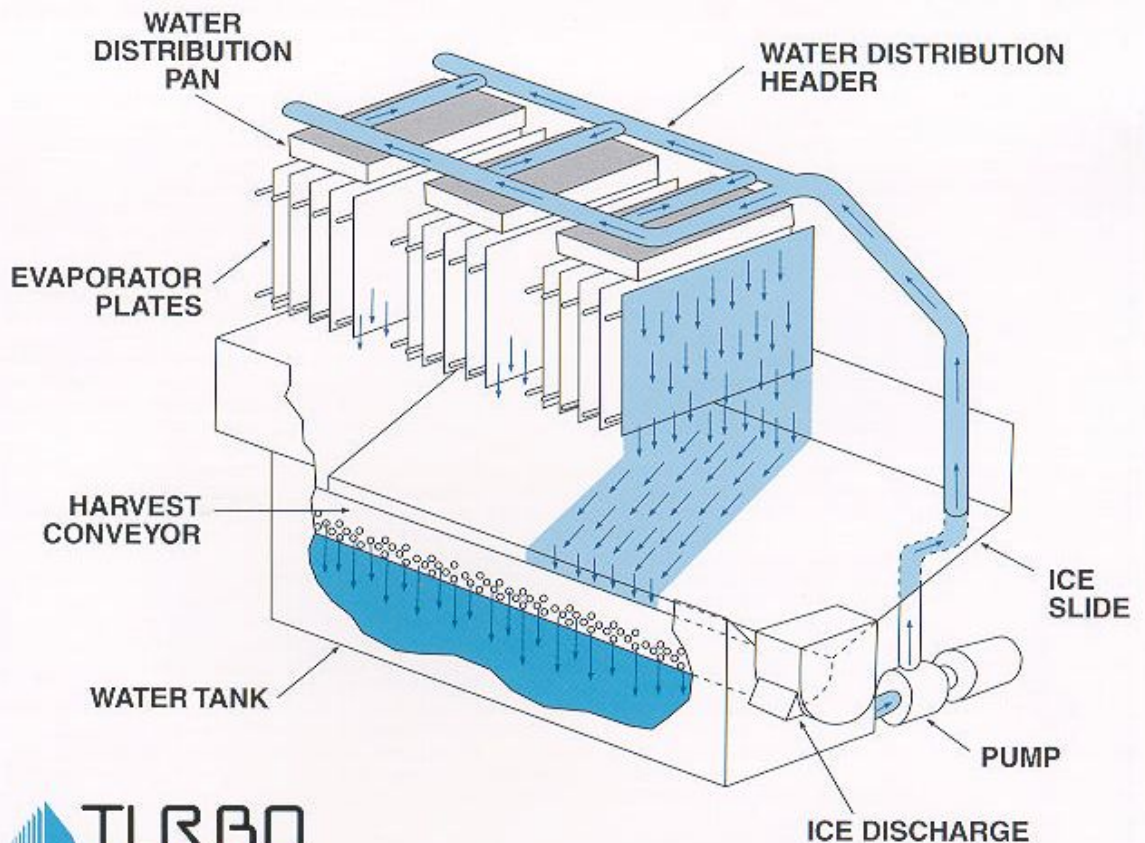
TIG R-22 Series TIGAR Ammonia Series Ice Makers

**Designed & Built To
Out-Perform &
Outlast All Other
Ice Making Systems**



 **TURBO**
REFRIGERATING[®]

Producing ice with the High I.Q. - high internal quality



The Concept

Different from other ice generators, the ice making surfaces are stainless steel plates welded together to form internal passages to control the flow of refrigerant. This computer-designed system gives you positive water control, distributing the water uniformly over the outside of the plates.

Plates are grouped vertically with ice forming on both sides in sheets 3/16" to 1/2" thick. At pre-determined intervals, hot refrigerant gas enters the plates, causing the ice to break away. Then it's dropped into the internal screw conveyor. After

breaking into sized pieces, it's then moved to the storage facility. A dryout section reduces excess water. The cycle is repeated as long as there's a need for additional ice reserves.

You can depend on these units for their continuous ice making capability. This simple design using multiple ice making sections assures the user of:

- Less chance of component failure
- Longer operation with less chance of costly downtime.
- Value-added benefits for the user.

TIG series specifications

TIG Series Specifications – self-contained R-22 freon models

Nominal Ice Capacity U.S. tons (24 hrs)	Model Number	Refrigerant Required (tons) (KW)		Overall Dimensions L x W x H (inches)	Operating Weight (lbs)	Ship Weight (lbs)	Compressor Motor (hp)	Water Pump (hp)	Evaporative Condenser HP Fan (pump)	Feedwater Flow (gpm)	FLA Amps @ 230/3/60
18.0	TIG-18-SC	24.3	85.4	142 x 94 x 115	11,100	9,000	50	1.5	N/A	3.0	141.6
18.0	TIG-18-SCE	24.3	85.4	276 x 94 x 117	15,500	13,100	50	1.5	3 (3/4)	3.0	133.6
18.0	TIG-18-SCER	24.3	85.4	142 x 94 x 115	10,500	8,400	50	1.5	3 (3/4)	3.0	141.6
16.0	TIG-18-SCAR	24.3	85.4	142 x 94 x 115	10,500	8,400	50	1.5	N/A	3.0	141.6
21.0	TIG-21-SC	32.4	113.9	142 x 94 x 115	15,600	12,500	60	1.5	N/A	4.0	165.6
21.0	TIG-21-SCE	32.4	113.9	276 x 94 x 117	21,600	17,900	60	1.5	5 (3/4)	4.0	198.6
21.0	TIG-21-SCER	32.4	113.9	142 x 94 x 115	14,900	11,800	60	1.5	5 (3/4)	4.0	165.6
19.0	TIG-21-SCAR	32.4	113.9	142 x 94 x 115	14,900	11,800	60	1.5	N/A	4.0	165.6
33.0	TIG-33-SC	48.6	170.9	187 x 94 x 115	23,400	18,200	100	2@1.5	N/A	6.0	265.4
33.0	TIG-33-SCE	48.6	170.9	351 x 94 x 115	31,500	25,400	100	2@1.5	10 (1)	6.0	323.4
33.0	TIG-33-SCER	48.6	170.9	187 x 94 x 115	22,400	17,300	100	2@1.5	10 (1)	6.0	265.4
30.0	TIG-33-SCAR	48.6	170.9	187 x 94 x 115	22,400	17,300	100	2@1.5	N/A	6.0	265.4
43.0	TIG-43-SC	64.8	227.8	238 x 94 x 117	30,000	23,700	2@60	2@1.5	N/A	7.0	325.2
43.0	TIG-43-SCE	64.8	227.8	385 x 94 x 117	38,700	33,400	2@60	2@1.5	10 (1-1/2)	7.0	386.2
43.0	TIG-43-SCER	64.8	227.8	238 x 94 x 117	28,800	22,500	2@60	2@1.5	10 (1-1/2)	7.0	325.2
64.0	TIG-64-SC	97.3	342.1	288 x 94 x 117	44,100	34,300	2@100	3@1.5	N/A	11.0	518.0
64.0	TIG-64-SCER	97.3	342.1	288 x 94 x 117	42,500	32,800	2@100	3@1.5	N/A	11.0	518.0
85.0	TIG-85-SC	129.0	453.6	348 x 94 x 117	55,500	43,100	2@125	3@2	N/A	14.0	651.0
85.0	TIG-85-SCER	129.0	453.6	348 x 94 x 117	53,600	41,200	2@125	3@2	N/A	14.0	651.0

- Dimensions are for the base unit and do not include the screw conveyor extension of 36".
- Dimensions may vary. Please verify correct dimensions before plant design.
- SCE model dimensions are based on 78° wet bulb.
- Harvest conveyor motor is 2 hp.

Standard rating conditions

- 60°F entering water temperature, 90°F ambient temperature.
- 95°F SCT for base capacity rating, 105°F SCT for water-cooled, 120°F SCT for air-cooled.
- Ice thickness for base rating is 1/4".

TIG Ice Generator A self-contained complete ice making unit consisting of the high side and low side sections integrated on a single steel base. The high side consists of the compressor(s), motor(s), suction accumulator, filter drier and oil return system. Starters for compressor motor(s), recirculating water pump(s) and harvest conveyor motor are included, factory wired to the motors and controlled by a programmable controller. The high side is refrigerant piped and wired to the low side (evaporator section) for use with R-22 refrigerant. The low side consists of stainless steel ice making plates, insulated exterior panels (aluminum or stainless steel), stainless steel water distribution pans and reservoir, stainless steel water pump and stainless steel screw conveyor for ice handling. All necessary refrigerant control valves are piped and wired.

TIG SC A self-contained, TIG ice generator with a **water-cooled condenser** piped into the high side. Seawater condensers are available. Designed for 85°F inlet water and 105°F SCT. Includes water regulating valves (shipped loose). R-22 refrigerant charge is included for U.S. shipments only. Cooling towers supplied separately.

TIG SC*R Remote condenser unit "E" for **evaporative-cooled condenser** or "A" for **air-cooled condenser**. These ice makers include the receiver, relief valve and liquid king valve

(shipped loose). Condensers are sold separately for field installation and sized for design operating conditions. Turbo supplied condensers are included with all motor starters and appropriate head pressure controls.

TIG SCE Ice generator and evaporative condenser are mounted on a common steel base and interconnected for ease of installation. R-22 refrigerant charge is included on U.S. shipments only. Listed unit dimensions based on 78°F wet bulb/95°F SCT.



TIGAR 31" Series Specifications – remote ammonia models

Nominal Ice Capacity U.S. tons (24 hrs)	Model Number	Refrigeration (tons)	Ammonia Flow (gpm)	Overall Dimensions L x W x H (inches)	Ship Weight (lbs)	Water Pump (hp)	Feedwater Flow (gpm)	FLA Amps @ 230/3/60
25	TIGAR-25	37.5	12	73 x 94 x 110	6,900	1.5	4	12.6
50	TIGAR-50	75.0	24	118 x 94 x 110	11,500	2@1.5	8	16.2
75	TIGAR-75	112.5	36	163 x 94 x 110	17,300	3@1.5	13	22.8
100	TIGAR-100	150.0	48	211 x 94 x 110	23,000	4@1.5	17	27.4

- TIGAR units available for liquid recirculation (TIGAR) or flooded (TIGAR-FL) duty.
- TIGAR 36 units available for recirculated ammonia duty. Consult factory for flooded application..
- For use with remote ammonia high side refrigeration equipment.
- Harvest conveyor motor is 2 hp.
- Dedicated ammonia high sides are available, please consult the factory.

Feedwater Temperatures	35°F	40°F	50°F	60°F	70°F	80°F	90°F
Ice Capacity Multipliers	1.17	1.13	1.06	1.00	0.944	0.895	0.851
Evaporator Temperatures	-5°F	0°F	5°F	10°F	15°F	20°F	
Ice Capacity Multipliers	1.15	1.00	0.844	0.688	0.531	0.375	



Standard rating conditions

- 60°F entering water temperature.
- 90°F ambient temperature.
- 0°F refrigerant temperature.
- Ice thickness is 1/4".

General notes

Metric Tonnes = US Tons x .907. 50 Hz Capacity = Nominal Capacity x .83 (SC Units).

The above specifications are current at the time of printing. However, in order to continue to off the finest icemaking products, Turbo Refrigerating reserves the right to change specifications without notice and without responsibility for such changes. Some data is preliminary and subject to change. Consult Turbo distributor or factory for additional information.

TIGAR 36" Series Specifications – remote ammonia models

The next evolution of the TIGAR ice maker. Designed with a larger plate surface, this ice generator produces high quality, clear type ice while maximizing efficiencies in water, power consumption and space.

Capacity U.S. tons (24 hrs)		Model Number	Refrigeration (tons)		Ammonia Flow (gpm)		Overall Dimensions L x W x H (inches)	Ship Weight (lbs)	Harvest Conveyor Motor (hp)	Water Pump (hp (qty))	Feedwater Flow (note 1)		MCA@ 230/3/60 (note 2) Amps
1/4" ice	1/2" ice		1/4" ice	1/2" ice	1/4" ice	1/2" ice					1/4" ice	1/2" ice	
51.1	45.4	TIGAR 36-2D	83.4	64.0	21.3	16.3	73 x 94 x 110	6,600	2	1.5	8.5	7.6	12.8
92.0	81.8	TIGAR 36-36	150.2	115.3	38.3	29.4	118 x 94 x 110	10,100	5	1.5 (2)	15.3	13.6	26.3
143.1	127.2	TIGAR 36-56	233.6	179.4	59.6	45.8	163 x 94 x 110	13,400	5	5 (2)	23.8	21.2	42.7
184.0	163.5	TIGAR 36-72	300.3	230.5	76.6	58.8	211 x 94 x 110	16,500	5	5 (2)	30.6	27.2	42.7

- Notes: 1. Based on 0% blowdown.
2. Does not include 7A, 115/1/60 control circuit.

- TIGAR 36 units available for recirculated ammonia duty. Consult factory for flooded application..
- For use with remote ammonia high side refrigeration equipment.
- Harvest conveyor motor is 2 hp.
- Dedicated ammonia high sides are available, please consult the factory.

Standard rating conditions

- 60°F entering water temperature.
- 90°F ambient temperature.
- 0°F refrigerant temperature.

TIGAR Ice Generator Remote ice maker for use with a **recirculated ammonia system** (by others). These units include stainless steel ice making plates, stainless steel refrigerant piping in the evaporator compartment, insulated exterior panels (aluminum or stainless steel), stainless steel water distribution pans and reservoir, stainless steel water pumps and stainless steel screw conveyor for ice handling. All necessary refrigerant control valves are piped and wired. A programmable controller coordinates operation of the ice maker.

TIGAR-FL Ice Generator Remote ice maker for use with a **flooded ammonia system** (by others). These units have the same inclusions as the TIGAR for recirculated use with the following additions shipped loose for field installation: un-insulated surge drum, liquid level controller, oil accumulator drum (A.S.M.E. rated), and hot gas strainer. Allow a maximum of 4 feet from the top of the ice maker for surge drum installation.

The **TIG (R-22)** and **TIGAR (ammonia)** series ice generators are industry workhorses and have been since the introduction of this icemaker over 15 years ago. Ongoing design improvements have made this the most **efficient, durable** and **flexible** ice producer available. The ice produced has the High I.Q. that many users are looking for – an internal quality that results in a clear, hard ice that can be specifically tailored to the user's specifications.

Because of these qualities, these icemakers can be found in many applications:

- Poultry icing and bird chilling.
- Produce packaging.
- Packaged ice (human consumption).
- Pharmaceutical reaction cooling.
- Dye process cooling.
- Fish processors (shipboard and land based).
- Chemical uses.
- Concrete cooling.
- Textile processes.

Given the harsh conditions and operation requirements from most of the users, the equipment

possesses the qualities that make it a natural selection for our customers. Some of these include:

- Inlet water chilled by the ice fines generated in the icemaking process.
- Stainless steel delivery conveyor and water pumps.
- PLC based control system for easy operator interface and control.
- Easy access to all components for maintenance.
- Insulated enclosure for indoor or outdoor placement of the ice machine.
- Multi-sectioned unit allows for independent operation of separate sections.
- Water and energy efficient with hot gas harvest.

Combine all of these features with a proven plate ice making design that's been in use for over 25 years and you will quickly see why they are becoming the popular choice for industrial uses. Easy to maintain, energy efficient, simple to control and a robust construction that will last for many years are the reasons the **TIG/TIGAR** icemakers are taking the industry by storm.

Durability

Feature	Advantage	User Benefit
Stainless steel construction of all key components	Corrosion resistant service over the life of the ice maker	Sanitation and replacement not a concern
Frames – welded steel construction	Long life of support framework, better built to handle tough environments	Heavy-duty construction spreads maintenance costs over long equipment life
A.S.M.E. coded vessels and UL listed panels	TIG/TIGARs exceed required compliance for equipment of this type	Higher standard of construction gives confidence in supplier selection

Reliability

Feature	Advantage	User Benefit
Factory design and field proven ice making plate design	Design life of over 20 years for ice making plates	Deferred replacement and repair costs
Factory tested both in design and production	Proven performance for repeatable operation	Capacity, energy efficiency and maintenance expectations are exceeded over equipment life
Multi-section design for each ice maker	Similar to multiple small ice machines in the same unit	Redundancy – if a component fails, the ice maker can continue to produce ice – not totally decommissioned
Staged defrost from ice making sections	Allows optimum energy efficiency, steady rate of ice production	Better ice handling system design outside of ice maker, great water and power efficiencies

Flexibility

Feature	Advantage	User Benefit
Wide product capacity range and application	18 to 85 tons per R-22 unit 25 to 184 tons for NH3 units	Meets most any capacity need or refrigeration requirement
Ice thickness control	Control from 1/8" to 1/2" thick ice	Any type of ice needed – from flake type ice to solid nuggets type ice is available
Programmable controller	Ease of program modification to meet specific installation needs	No need to rely on outside sources to program the equipment

The case for ice sizing

TURBO offers solutions to ice making problems. One example is this ice sizer that can increase your bag count by significantly reducing snow. It's the perfect compliment to the **TIG/TIGAR** unit to give users a uniform sized ice. You get higher production rates with a much drier end product. With drier ice, you get less waste and a more sellable product in the bag. Consider this benefit with better product uniformity for more accurate bag weight and bag stacking, and you can see how this sizing concept can help make money for you.

Check out these other cost-effective features of the ice sizer

- High capacity. Can handle up to 1,000 pounds per minute.
- Rugged construction. Sanitary stainless steel and UHMW construction fights corrosion.
- Sized ice works better in drink dispensers. Uniform blade spacing assures even sizing. Evenly proportioned ice with a minimum of snow results in more product for more profits.



Ice Sizer



TIGAR 36-72

Manufacturing & testing

Proof of **TURBO** manufacturing capabilities exists throughout the industry. Whether for single pieces of ice equipment or complete ice systems, liquid chillers or thermal storage, **TURBO** specialists put together the best in the business. We assemble units that match customers' specific applications from every standpoint – cost, efficiency, operation and maintenance.

Automated production facilities assure the most modern manufacturing techniques. This helps to keep costs down and quality up. **TURBO** boasts utilizing computer aided welding and metal working equipment. Over 40 years of experience with materials, components and assemblies that make up ice equipment call for a multitude of checks and inspections. From start to finish, each unit receives the care and scrutiny you'd expect from **TURBO** production experts.

About TURBO

Our business philosophy has been a simple one – offering equipment that increases output and reduces operating costs for the industries that require ice systems. **TURBO** has been the pioneer in industrial ice harvesting and consumer packaged ice systems for years as well as a world leader in ice harvesting thermal storage systems and industrial chillers.

Since 1952, **TURBO** has taken a leadership role in applying plate heat transfer technology to a greater range of refrigeration applications. With this technology has come a wider variety of industrial applications such as food preservation/processing, concrete cooling, chemical processing, as well as air conditioning using ice harvesting thermal energy storage equipment.

TURBO also offers a number of accessory items for ice storage and processing: rake bins, block presses, pneumatic delivery systems, sizers and speciality controls, to name but a few.

Turbo...innovative solutions to tough ice making problems.

 **TURBO**
REFRIGERATING®
ICE SYSTEMS □ FLUID CHILLERS □ THERMAL STORAGE