

How to Choose the Right **SuperYacht Chiller**

Introductory
Chiller Guide for
Builders, Owners,
and Naval Architects

ISO 9001:2000

ID: 2624 Rev. 20081024

 **Dometic**

Cruisair[®]

MARINE AIR SYSTEMS[®]
AIR



The Critical Role of Yacht Air Conditioning

In any yacht design, especially in the design of a super yacht, air conditioning plays a critical role. No matter how elegant the surroundings, they won't feel luxurious if the temperature of the living area is less than comfortable. It is wise, therefore, to engineer the air conditioning system for the unique characteristics of each yacht, and address climate control with as much attention and expertise as you give to the design of the yacht itself.

Dometic: Global Leader In Marine Air Conditioning for 50 Years.

Occasionally, naval architects, builders, and owners do not have the experience and specialized knowledge it takes to assess real-world air conditioning requirements. Look to Dometic for the resources and expertise you need. Our senior engineers can design your yacht's air conditioning system or review your design and specifications to make sure everything is correct.

The Three Biggest Challenges When Choosing the Right Company

Do you know the three biggest challenges to consider when choosing the right air conditioning company for your yacht?

- 1 Complete engineering support:** Proper system sizing, specifications, installation supervision, and system training.
- 2 Broad selection:** A wide variety of chilled water systems, air handlers, and control systems to suit the needs of different yachts and different usage profiles.
- 3 Equipment reliability:** Quality, dependable equipment backed up by a certified worldwide service network.

Since 1959, Dometic Cruisair and Marine Air have been providing the most proven and innovative marine air conditioning systems in the world.

Dometic's expert and experienced engineering team will review your drawings and specifications to ensure all measurements and load calculations are correct. Or, you can have them layout your system, size all the appropriate capacities, and provide you with the world's broadest range of equipment and accessories. We also support installation and startup supervision, reliable documentation, and system training.

Dometic engineers and builds the most dependable air conditioning systems in the

world, and keeps them running with a global network of trained sales and service personnel, available 24/7, 365 days a year.



Capacity From 16,000 to 2.52 Million BTUs

For Yacht Lengths of 20m to over 90m

Dometic's chillers range in capacity from 16,000 to 2.52 million BTUs. To meet many unique needs, systems are available in a variety of styles, such as compact units, modular staged units, and mammoth tube-and-shell systems for very large yachts. Custom chillers can also be designed to meet special needs.

Key Benefits

- Largest equipment selection.
- Global service network.
- Installation supervision.
- Proper system sizing.
- Equipment reliability.

Mid-Range Capacity Single Stage

Cruisair's reverse-cycle **TWC Compact** is available in 24K-36K BTU/hr models.



Mid-Range Capacity Multi Stage

Cruisair's new environmentally-safe **MTD** provides up to 120K BTU/hr.



The Marine Air **MCW Low Profile** delivers 36K to 72k BTU/hr in a height-saving package.



The Marine Air **MCW** can deliver up to 180K BTU/hr in a single unit.



Large-Capacity Tube-and-Shell

Designed for pleasure yachts and commercial vessels, the 25-ton **MTS** tube-and-shell chiller provides high-capacity cooling in modular form.



Custom-engineered tube-and-shell units are configured to meet the customer's capacity and feature requirements, while adhering to their unique space limitations.



Custom Engineering Solutions

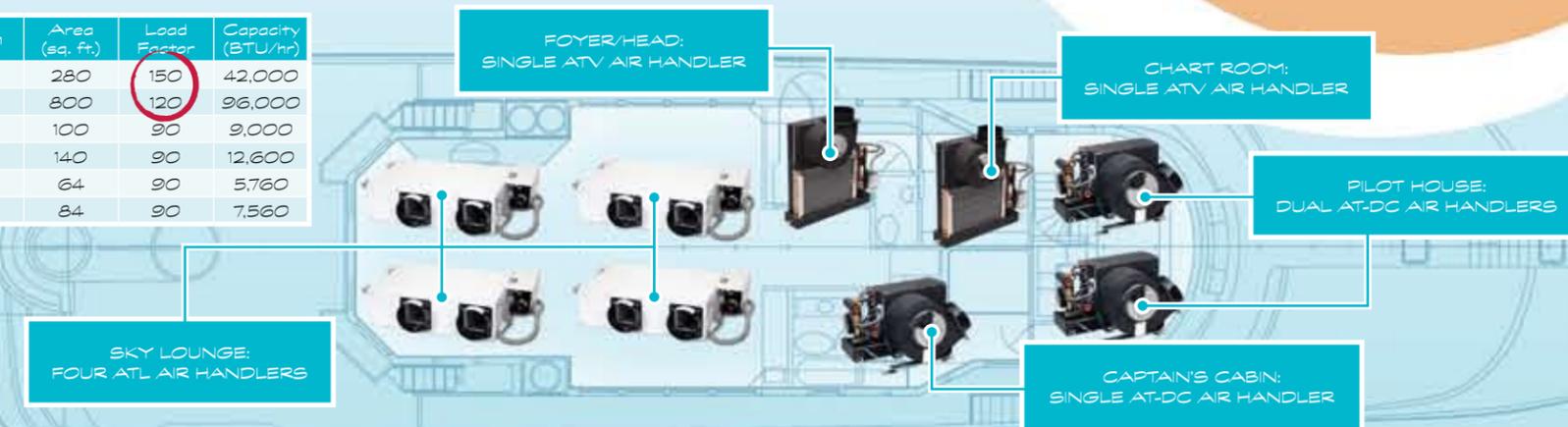
Dometic Eliminates Your Sizing Guess Work

Dometic's engineering team will work with you to develop a chiller system that meets your BTU capacity and fits the spatial limitations of your yacht's

architecture. Our engineers are with you from start to finish with system design, installation supervision, system start-up, documentation, and training.

Load Calculation Table

Cabin	Length	Width	Area (sq. ft.)	Load Factor	Capacity (BTU/hr)
Pilot House	14'	20'	280	150	42,000
Sky Lounge	40'	20'	800	120	96,000
Chart Room	10'	10'	100	90	9,000
Capt. Cabin	14'	10'	140	90	12,600
Capt. Head	8'	8'	64	90	5,760
Foyer/Head	12'	7'	84	90	7,560



Custom Load Calculation Table Note

Based on the deck plan below, our engineers compensated for the unique needs of each accommodation space. In the Load Calculation Table, the pilot house and the sky lounge have different load factors although they are on the same deck. This adjustment is to offset the heat generated by electronics and the surrounding pilot house windows.

Single Stage Chillers

TWC36C
 The TWC chiller cools and heats, and is currently available in 24K, 30K, and 36K BTU/hr sizes.

Capacity	Voltage/Cycle/Phase
36,000 BTU/hr	All standard voltages.

MCWLP
 The modular MCW Low Profile is available in 36K to 72K BTU/hr models in a height-saving design.

Capacity	Voltage/Cycle/Phase
72,000 BTU/hr	All standard voltages.

MCW
 The modular MCW is available in capacities from 24K BTU/hr to 180K BTU/hr.

Capacity	Voltage/Cycle/Phase
180,000 BTU/hr	All standard voltages.

Custom Multi Stage Chillers

TWC3X2.5HC-CS-TWLC
 Three 2.5-ton TWC units on a standard base.

Capacity	Voltage/Cycle/Phase
90,000 BTU/hr	230/60/1

FMTC55VDC-407
 Two 5-ton MTC units on a vertical frame.

Capacity	Voltage/Cycle/Phase
120,000 BTU/hr	230/50/3

MCW192
 Four 4-ton MCW units mounted on a standard base.

Capacity	Voltage/Cycle/Phase
192,000 BTU/hr	230/60/3

FMTC4X5.5HECK
 Four 5.5-ton units on a standard base with bolt-on frame.

Capacity	Voltage/Cycle/Phase
264,000 BTU/hr	230/60/3



FMTC5X5HD-407
 Five 5-ton MTC units painted Japanese Coast Guard green.

Capacity	Voltage/Cycle/Phase
300,000 BTU/hr	230/60/3

FMTCCLP6X5VDC
 Six 5-ton MTC low profile modules on a custom frame.

Capacity	Voltage/Cycle/Phase
360,000 BTU/hr	230/60/3

MCW480(009)SCL
 Four 10-ton MCW cool-only units on a custom vertical frame.

Capacity	Voltage/Cycle/Phase
480,000 BTU/hr	208/60/3

MCW540(002)SEHN
 Three 15-ton MCW cool-only units on a custom frame.

Capacity	Voltage/Cycle/Phase
540,000 BTU/hr	460/60/3

All Chillers Available In 60Hz or 50Hz



Tube-and-Shell Chillers



MTS480
 Two 20-ton MTS units on standard base and frame.

Capacity	Voltage/Cycle/Phase
480,000 BTU/hr	380/50/3

STS540(001)SEH
 Three 15-ton units with tube-and-shell condensers on a custom base and frame.

Capacity	Voltage/Cycle/Phase
540,000 BTU/hr	230/60/3



Dometic's **Pump Packages** conveniently reduce the installation time of chilled-water systems by combining several necessary components in one package.

- Includes pump, expansion tank, dual-scale (psi/kPa) pressure gauge, and fill assembly.
- Bladder-style expansion tank relieves water pressure to prevent leaks.
- Dual-scale pressure gauge is convenient for US and international customers.



AT-MU air handlers are designed for use in fresh air make-up systems where outside air is drawn in by the air handler, cooled, dehumidified, and reheated to room temperature, then ducted to various areas.

- Compact design with vibration isolation mounts.
- Electric heat with 2-stage electric heat overload.
- Integrated 3-way bypass valve.



Our **Variable Frequency Drive** eliminates the large starting in-rush of current of the compressor by ramping up voltage and frequency in a controlled time period.

- 208/230V 3-phase output with 1-phase or 3-phase input.
- Full 60Hz capacity even at 50Hz input (230V only).
- 400/480V 3-phase models available.



Accessories for improved efficiency of chilled water AC systems.

- The **Spirovent™** bleeds the entire system of excess air.
- The **Back-flow Preventer** protects fresh water from contamination.
- The Pressure Regulator protects the loop water from high-pressure damage.

Dometic's Environmental Policy

We are committed to minimizing the environmental impact of our products through regular assessment of energy and material demands, emissions, waste generation, and recyclable resources.

For many years we have proudly displayed our "Environmentally Responsible" logo, which indicates our commitment to protecting the environment.

Since 1994, with the phase out of R-12 and now R-22, Dometic leads the industry in the development of globally compliant marine air conditioning systems.



Ship-Wide Networkable Controls Total Control at the Touch of a Button

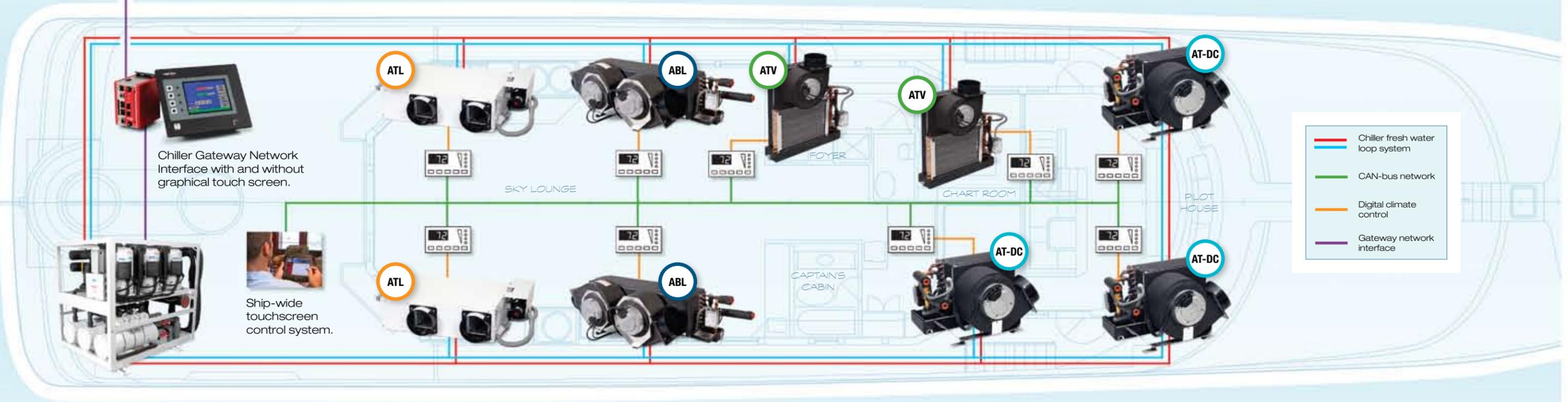
The **Cruisair Chiller Gateway** allows monitoring and control of a Cruisair multi-staged chiller system from a remote location via a Modbus TCP/IP connection.

- Puts chiller control on yacht's integrated network.
- High-speed digital interface.
- Monitors the optional Variable Frequency Drive.
- Configuration capable of monitoring up to six chillers.
- Monitors temperatures, current, pressures, input/output status, system faults/alarms, mode of operation, and system logs.

For complete climate control on board your yacht, Dometic Cruisair and Marine Air offer the **Q-Logic** and **Elite™** digital control systems. Both are available with optional CAN-bus network adapters, and a wide variety of attractive, stylish bezels.

- Cruisair Q-Logic Controls:**
- Dual microprocessor-based.
 - Supports both the Qht and Q3 displays.
 - Optional CAN-bus network adapter provides ship-wide monitoring and climate control.

- Marine Air Elite™ Control:**
- Operates with Passport I/O circuit board.
 - Integrated faceplate air sensor.
 - Optional CAN-bus network adapter provides ship-wide monitoring and climate control.



Chilled Water Air Handlers Featuring WhisperCool Technology

WhisperCool Technology eliminates the annoying "motor hum" from traditional air conditioning blowers that occurs at very low speeds. Incoming alternating current is converted to drive a high-efficiency, brushless DC fan motor. The result is a much quieter fan operating across a broad

range of variable speeds, permitting the user to select the desired comfort level. Additional improvements eliminate condensate drain problems. Better dehumidification, better cooling, less noise...just the kind of performance one expects aboard a luxury yacht.

- AT-DC Air Handler:**
- Advanced, super-quiet variable speed DC fan motor.
 - Engineering improvements eliminate condensate drain challenges—a positive-flow drain pan, larger drain connections, offset coil from drain-pan edge, and a redesigned bypass valve.
 - Improved coil design for better dehumidification and cooling.
 - More accessible maintenance points.

- ATL and ABL Air Handlers:**
- Height-saving design is ideal for over-head applications.
 - Suspend from above or support from beneath.
 - Vibration isolation included.
 - Heater elements accessible from underneath.
 - Bypass valve has removable power head for simple servicing.
 - Valve body is soldered to unit to prevent leaks.

- ATV Air Handler:**
- Fits into walls.
 - Unique vertical design.
 - Minimal depth.
 - DC blower provides strong, quiet performance.
 - Blower rotates to vertical or horizontal positions for ducted applications.
 - Electric heater included.

Certified Worldwide Sales and Service Network



Largest Global Service Network

Dometic has the largest global network of trained sales and service teams to support you.

No matter where you build or travel, Dometic has the certified personnel to support you.

DOMETIC CORPORATION, ENVIRONMENTAL DIVISION

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