

GREAT LAKES MARINE SPECIALTIES

3835 W OLD SHAKOPEE ROAD, SUITE 300-410, MINNEAPOLIS, MINNESOTA 55431 USA
800-821-0207 - 952-920-8500 - FAX 866-657-2634

Why Webasto?

Webasto is a global market leader in the auxiliary heater industry and is a supplier to major equipment manufacturers around the world.



Webasto makes a full line of air and coolant heaters to meet the needs of virtually any size craft. State of the art and micro-processor controlled, all Webasto marine heaters are compact, lightweight, and extremely energy efficient.

Heaters for quiet warmth and cozy comfort.

Small in size but not in power, Webasto air heaters generate warm, dry air quickly and quietly.

Adaptable for installation wherever room allows, the Webasto air heater draws fresh air into a sealed heat exchanger where it is heated very quickly. Powerful fans circulate the warmth evenly throughout any number of outlets, while exhaust is discharged outside.

Heaters for plentiful heat and hot water.

Nothing extends the boating season like a Webasto coolant heater. Sophisticated and powerful enough to heat a yacht, Webasto water heaters are still small enough to fit into snug spaces.

Webasto coolant heaters can warm radiators in all the cabins, or be installed with fan-assisted heat exchangers when space is at a premium. The unit can even be linked to the engine's coolant system, to pre-heat the engine and eliminate cold starts.

With a Webasto heater on board, you'll also have plenty of hot water for showers and the galley, heated by an indirect coil in the hot water tank.

Best of all, you won't be bothered by the drone of a noisy generator. Mounted in the engine room near the batteries and fuel tank, a Webasto coolant heater is almost inaudible.

Webasto Thermo 90ST Coolant Heater

"World class technology with ease of installation, maintenance and operation has made the Webasto Thermo 90ST Heater a popular choice among yacht and large boat owners and technicians." The Webasto Thermo 90ST coolant heater can provide "engine-off" heating, maintain minimum operating engine temperature and preheat your engine in cold weather. Coolant heaters also reduce dependency on expensive shore power for heating while docked.



Choose the Webasto Thermo 90ST coolant heater to provide heating and increased comfort levels for yacht and large boat enthusiasts. Smart technology regulates heat output, saving battery and fuel consumption. All of this saves money and adds to overall boating pleasure and comfort.

- Most compact & lightweight heater in its class
- Ferro-tech burner with metal evaporator is durable and maintenance-free
- Ceramic ignition system for low maintenance & low power consumption
- Booster-staged 31,000 Btu/h for fast coolant warm-up
- Magnetic drive coolant pump eliminates water pump seals
- Weatherproof control unit and electrical connections prevents corrosion
- Extremely advanced diagnostics ensure quick & easy service
- PC interface allows easy component testing and download information
- Self-monitoring system provides protection & driver safety
- Developed & produced under ISO 9000 and QS 9000 quality assurance standards

Webasto Thermo 90ST Specifications:	
Fuel Type:	Diesel #1, #2, Arctic
Variable Heat Output:	From 31,000 Btu/h (9.1 kW) to Variable 6,100—26,000 Btu/h (1.8 - 7.6 kW)
Maximum Fuel Consumption:	Boost 0.29 gal/h (1.1 l/h) Variable to 0.06 to 0.24 gal/h (0.24 to .091l/h)
Rated Voltage:	12 or 24 Volts DC
Power Consumption:	Full 7 Amps @ 12 V Start-up 14 Amps (first 30 seconds)
Dimensions:	17" L x 6" W x 7-1/4" H
Weight:	10.6 lbs. (4.8 kg)

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WEBASTO Thermo 90ST, 31,000 BTU BASIC BOAT HYDRONIC HEATER INSTALLATION KIT W/SUREWIRE

Webasto Thermo 90ST Coolant Cabin Heater



The Thermo 90ST is a 31,000 BTU water heater that can be used to heat up to a 42-ft sailboat or a 40-ft powerboat.* It utilizes a 3/4" water system, a 1 1/2" rigid exhaust system and a 3/16" fuel system. The Thermo 90ST is available in 12 or 24 volt versions. *(Boat design, construction and cruising area environment may require an alternative heater recommended ion. Contact us if you have any questions.)

HEATER EQUIPMENT

ITEM NO.	ITEM	QUANTITY	AMOUNT
T90SSW-12	Webasto Hot Water Heater 31,000 BTU 12V, Sure-wire Kit, Fuel Pump and Marine Installation Manual	1	\$2,979.80

MOUNTING EQUIPMENT

W005-217	Aluminum Side Wall Mount	1	\$25.86
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ELECTRICAL EQUIPMENT

SC1600B-90	Digital Room Thermostat 1-6 Degree Temp Diff.	1	\$59.96
W005-378K	On/Off Switch Kit	1	\$22.20
75135K-20	Main Power Breaker	1	\$15.64
W005-212-KIT	Fan Aquastat Kit	1	\$47.62

INTAKE AND EXHAUST SYSTEM EQUIPMENT

HTR1.25	Hitech 1 1/4" Extension Hose	4ft	\$13.00
001-379	Combustion Air Fitting	1	\$8.59
CLA-016	#16 S/S Hose Clamps	2	\$3.23
W002-109	1-1/2" S/S 316 Grade Thru Hull FTG w/Gaskets	1	\$127.52
W005-110	1-1/2" S/S 316 Grade Long 90 Exhaust ELL w/Drain	1	\$99.75
W001-214	1-1/2" S/S 316 Grade Rigid Exhaust Tube	4ft	\$80.49
W002-742	1-1/2" S/S 316 Grade Exhaust Muffler	1	\$129.29
W002-780	1-1/2" S/S Exhaust Clamps	5	\$59.04
W001-441	Exhaust Insulation Blanket	5	\$179.10
45050	Hi Temp Exhaust Cement	1	\$10.48
PERM-81878	High Temp Silicon Sealer	1	\$9.61

FUEL SYSTEM EQUIPMENT

W11BVR	Garber Fuel Filter with Mount Bracket & Fittings	1	\$58.42
001-010	3/16" Copper Fuel Line	15ft	\$36.73

WATER SYSTEM EQUIPMENT

W002-103	SMS 2.5" Gallon Steel Expansion Tank Kit	1	\$148.89
001-453	3/4" I.D. System Hose	100ft	\$236.66
002-621S	3/4" Shut off Valve W/Hose Barb	2	\$28.72
CLA-012	#12 S/S Hose Clamps	18	\$20.78
001-394K	Drain Valve Kit	1	\$29.06

FAN HEATER EQUIPMENT

005-942FF	MSR Dual 4" Fan Heater Outlets 16,500 BTU 2x.36A	1	\$285.00
005-302	MSR Single 3" Fan Heater 3,500 BTU .36A	1	\$178.00
005-941FF	MSR Single 4" Fan Heater 16,500 BTU 2x.36A	1	\$285.00
005-911	Fan 2 Speed Switch w/Plate 1x .36, 2x .70 amp	3	\$70.88
	Kit Total		\$5,249.32

Special Kit Price (includes Free UPS Ground Shipping on Complete Kit with in lower 48 States) \$4,987.00

Additional components may be required and/or desired for your installation.

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Heating System Guidelines

WHY THE RIGHT SIZE IS IMPORTANT

Many factors are involved when choosing the right heater for a particular boat. The amount of space has to be taken into consideration when choosing a heater. However, merely purchasing a heater based on its compact size for the purpose of "taking the chill off" can be a costly mistake in the long run. Smaller heaters are attractive in boating because they do not take up too much storage space. Many boaters are willing to sacrifice a small temperature difference for that extra room, without knowing the future costs in installing the wrong heater.

A heater that is too small for a boat will work to perform up to the demand called by the thermostat. Even though the heater may keep the boat at only a minimum temperature for comfort, it will run excessively and cause maintenance problems due to wear. The wear that is caused from this excessive running is not covered under warranty, compacting the problem for the customer.

Another common mistake by some boaters is a hot rod mentality. Some customers have expressed interest in installing the largest heater possible in their boat, thinking it will cut down on operation and wear. This, too, is a mistake that can cost in maintenance. If a heater is over-sized for a boat it will be prone to "short cycle". Short cycling is when a heater does not run long enough for proper heat-up and cool-down or purge cycle. Like engines, heaters must be run, and there is a minimum run time for Webasto heaters. In this run time, the heater is allowed to come up to proper temperature and can properly purge itself of carbon buildup. If this time is not reached, the unit will be prone to burning improperly due to carbon buildup, and will begin to destroy its own electrical components.

SIZING A BOAT

Considering these problems, choosing the right heater is obviously very important. Great Lakes Marine Specialties offers a basic chart that can be a quick reference to guide an installer in the right direction. If there is concern about whether or not a heater is right for a boat, there are formulas that can be used to figure out the requirements for a boat. The internal volume of the spaces being heated should be multiplied by 12 if in a sailboat $[(\text{length} \times \text{width} \times \text{height}) \times 12]$, and by 15 if by a powerboat $[(\text{length} \times \text{width} \times \text{height}) \times 15]$. These numbers will give a round number of the BTU requirements for a boat, but other factors must be taken into consideration.

When selecting a heater, the construction of the boat must be considered as well as its size. Windows are sources of heat loss that should be considered in a space. If a main salon has multiple windows, the amount of heat for that space should be raised. Whether or not a boat is insulated is also another factor. Un-insulated boats should also consider raising their heat requirements. These considerations are usually applied only if a boat size rests in between one of the heater sizing specifications. If a heater is well within the range of the performance of a particular heater, these factors may affect installation, but not sizing.

LIVE-ABOARD

Choosing a heater for a live-aboard application will throw out conventional wisdom in choosing a heater. Firstly, air heaters should not be used. The amount of time put on the heater maintaining a household temperature can be too much for an air unit; and, avoiding it as a main heater is advisable.

Most live-aboard boats are larger boats that may require a Thermo 90 or above if chosen for just cruising. If the boat is a live-aboard boat, the DBW 2010, or larger heater, should be installed. The DBW 2010 and DBW 2020/300 are the only heaters in the Webasto line that we advise for installation in a live-aboard situation. In the case of smaller boats that would normally require a Thermo 90, additional water capacity should be designed into the system with the 2010. This will cut down on the run time of the heater without having an effect on performance.

In the end, a properly sized and installed heater will run better and cost less in the long run. By putting in the right heater for the right application, the heater will work well and you will be happier.

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Proper heater size selection is very important to the operation of that heater. If the heater chosen for your boat is too small, it will not heat your boat adequately; and another possible consequence is heightened maintenance costs. This can come from the heater constantly running to maintain the temperature called for inside the boat. This is a very costly mistake, and faults due to overrunning are not covered under warranty. If the heater chosen is too big, it will not run properly as well. Heaters that are too large for their installation will "short cycle." Short cycling is when the heater runs in short bursts and shuts down before being properly heated up and purged. Short cycling will cause coking problems and, ultimately, failure of parts involved in the burning process.

Below is a list that gives a general idea of how to size a heater to a particular boat. Although this list is not exact, and factors such as location and purpose for the heater can affect the choice, the information comes from years of experience in selling and repairing these units. Be sure to contact Great Lakes Marine Specialties for exact information for your boat.

Heater	Sailboat Size	Power Boat Size
AT 2000ST	22-28 foot boat	20-24 foot boat
AT 3500ST	28-34 foot boat	24-30 foot boat
AT 5000ST	34-38 foot boat	30-34 foot boat
HL 60*	42-46 foot boat	38-42 foot boat
TSL 17	27-30 foot boat	26-28 foot boat
Thermo 90ST	38-42 foot boat	34-40 foot boat
DBW 2010*	42-48 foot boat	40-47 foot boat
DBW 2020*	48-56 foot boat	47-58 foot boat
DBW 300*	56-62 foot boat	58-65 foot boat

*Heaters for live aboard application