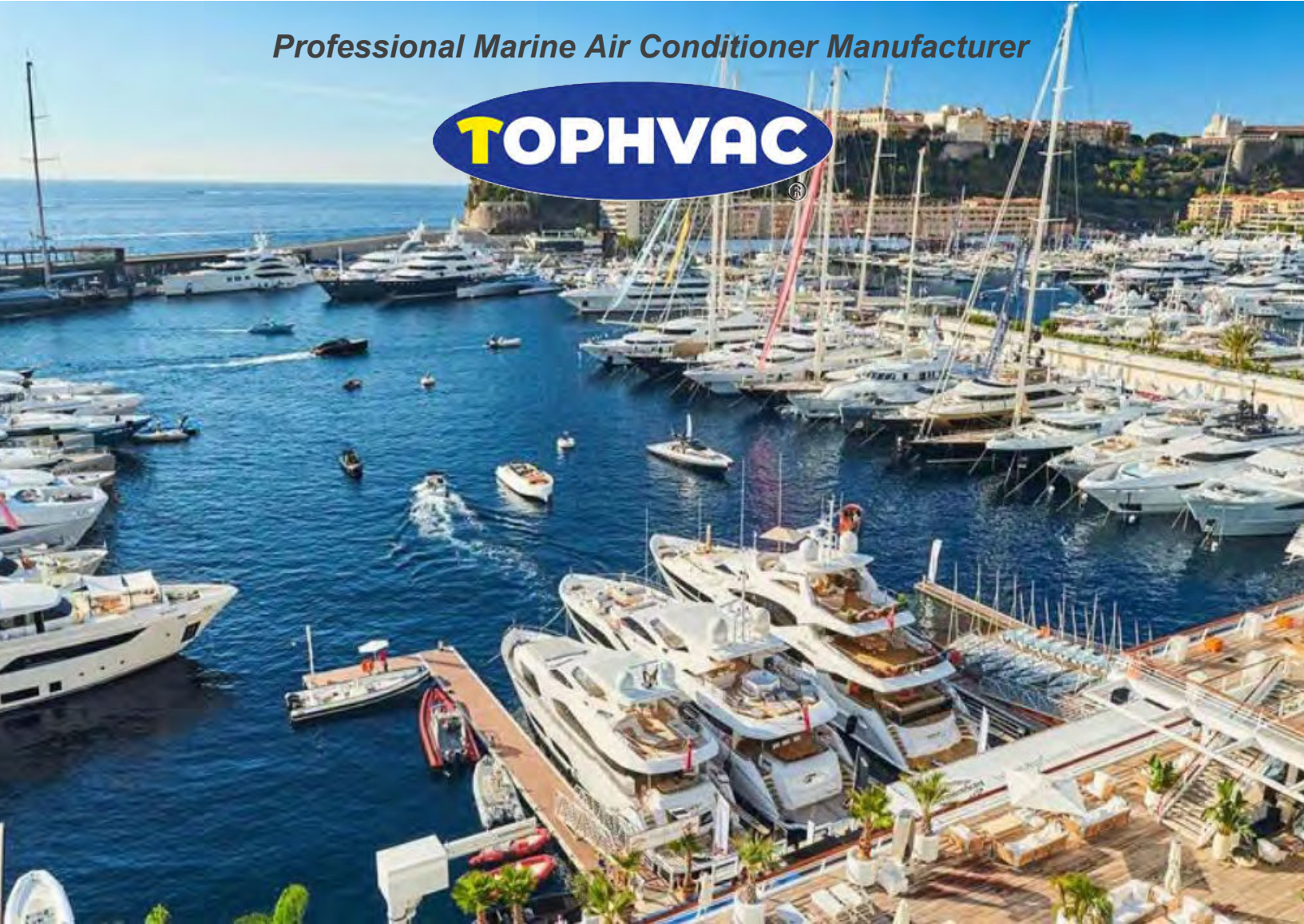


*Professional Marine Air Conditioner Manufacturer*

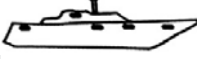



# MARINE AIR CONDITIONER


**MSC** Series


230volts 50Hz 1phase  
220volts 60Hz 1phase  
110volts 60Hz 1phase

# Heat Load Calculation for Your Luxury Boat

	Category 1		
	Portlights only, Cabins all below deck (400 BTU/m <sup>3</sup> )		
Volume of the rooms L * W* H (m <sup>3</sup> )	Region:		
	Normal	Cold	Hot
10	4000	3000	5000
20	8000	6000	10000
30	12000	9000	15000
40	16000	12000	20000
50	20000	15000	25000
60	24000	18000	30000
70	28000	21000	35000
80	32000	24000	40000
90	36000	27000	45000
100	40000	30000	50000
110	44000	33000	55000
120	48000	36000	60000
130	52000	39000	65000
140	56000	42000	70000
150	60000	45000	75000
160	64000	48000	80000
170	68000	51000	85000
180	72000	54000	90000
190	76000	57000	95000
200	80000	60000	100000

	Category 2		
	average glass area, cabins partly below deck (500 BTU/m <sup>3</sup> )		
Volume of the rooms L * W* H (m <sup>3</sup> )	Region:		
	Normal	Cold	Hot
10	5000	3750	6250
20	10000	7500	12500
30	15000	11250	18750
40	20000	15000	25000
50	25000	18750	31250
60	30000	22500	37500
70	35000	26250	43750
80	40000	30000	50000
90	45000	33750	56250
100	50000	37500	62500
110	55000	41250	68750
120	60000	45000	75000
130	65000	48750	81250
140	70000	52500	87500
150	75000	56250	93750
160	80000	60000	100000
170	85000	63750	106250
180	90000	67500	112500
190	95000	71250	118750
200	100000	75000	125000

	Category 3		
	glass area above average, saloon above deck (600 BTU/m <sup>3</sup> )		
Volume of the rooms L * W* H (m <sup>3</sup> )	Region:		
	Normal	Cold	Hot
10	6000	4500	7500
20	12000	9000	15000
30	18000	13500	22500
40	24000	18000	30000
50	30000	22500	37500
60	36000	27000	45000
70	42000	31500	52500
80	48000	36000	60000
90	54000	40500	67500
100	60000	45000	75000
110	66000	49500	82500
120	72000	54000	90000
130	78000	58500	97500
140	84000	63000	105000
150	90000	67500	112500
160	96000	72000	120000
170	102000	76500	127500
180	108000	81000	135000
190	114000	85500	142500
200	120000	90000	150000

	Category 4		
	very large glass areas, saloon and wheel house above deck (750 BTU/m <sup>3</sup> )		
Volume of the rooms L * W* H (m <sup>3</sup> )	Region:		
	Normal	Cold	Hot
10	7500	5625	9375
20	15000	11250	18750
30	22500	16875	28125
40	30000	22500	37500
50	37500	28125	46875
60	45000	33750	56250
70	52500	39375	65625
80	60000	45000	75000
90	67500	50625	84375
100	75000	56250	93750
110	82500	61875	103125
120	90000	67500	112500
130	97500	73125	121875
140	105000	78750	131250
150	112500	84375	140625
160	120000	90000	150000
170	127500	95625	159375
180	135000	101250	168750
190	142500	106875	178125
200	150000	112500	187500

For extreme climatic conditions such as the Persian Gulf with sea water temperatures of 32°C and air temperatures of 40°C, you have to add 25 to 30% onto the calculated f it is also recommended that the condenser is increased in size.

# Easy installation, Easy use

## Features

- Unified marine air conditioner with compact design and light weight. Easy to place with lower height.
- Reverse cycle model equipped with air cooling and heating.
- Non-freon gas.
- Equipped with a lot of sensors for safety.
- Compressor with the function of high-efficiency, low-vibration and low-electricity consumption.
- Condenser coil with high-efficiency spiral double tube allows high-heat exchange rate.
- Freely adjustable air outlet.
- Rust resistant components by using stainless, aluminum and ABS plastic.
- New collection of drain minimize over-flow caused by drain movement.
- Smoother drain is available by placing the best location at installation.
- Expansion of marine air conditioner models and full of accessories.

## Controller with remote



Big LCD display with back-light are supplied as standard for all models. It is high visible display and easy to operate with the buttons. Also, remote controller is easily operation.(option)

## Self-Contained DX Systems

- > All major components are mounted on a single chassis installed in the living area — usually under a bunk or seat or in a locker.
- > A single self-contained unit can cool one cabin or it can be ducted to two or more cabins to save space and cost.
- > Best choice for boats under 40 ft. (12 m) due to lower cost of units and available installation space.

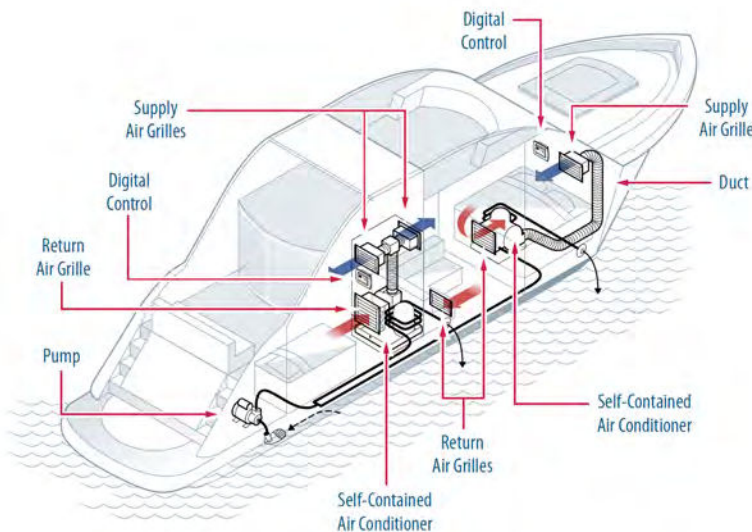


Figure 1: Installation of a MSC System

## Sea Water Cooling System

The seawater cooling system brings seawater into and through the system then discharges it overboard. It consists of an inlet through-hull fitting, seacock (water valve), strainer, pump, and overboard discharge fitting, all connected by hose or piping.

## Air-Distribution System

In cooling mode, warm cabin air is drawn into the air conditioner through a return air grille. It is then cooled and blown through flexible insulated duct and back into the cabin through a supply air grille installed high in the cabin. The supply-air grille should be installed away from the return-air grille to ensure good circulation. Air plenums, or transition boxes, can be installed in the duct to split the air flow into multiple ducts to serve one or more cabins.

## MSC06(U)



	MSC06	MSC06U
Capacity	6000BTU / 0.5TON	
Voltage/Frequency	220V/60Hz	110V/60Hz
Rated Current(Cooling)	2.6A	5.2A
Rated Current(Heating)	2.9A	5.8A
Starting Current	8A	12A
Refrigerant	R410a	
Air Volume	200CFM / 340m <sup>3</sup> /h	
Duct Size	Φ 4" / 100mm	
Seawater inlet/outlet	20 mm	
Dimensions W*D*H mm	400×240×320	
Weight	19.0kg	

\*\*\* The specifications are subject to change without notice.

# MSC08(U) MSC10(U) MSC12(U)



	MSC08	MSC8U	MSC10	MSC10U	MSC12	MSC12U
Capacity	8000BTU / 0.75 TON		10000BTU / 0.8TON		12000BTU / 1TON	
Voltage/Frequency	220V/60Hz	110V/60Hz	220V/60Hz	115V/60Hz	220V/60Hz	115V/60Hz
Rated Current(Cooling)	3.1A	5.8A	3.8A	7.5A	4.8A	9.2A
Rated Current(Heating)	4.2A	7.3A	4.5A	8.7A	5.5A	10.8A
Starting Current	12A	20A	14A	25A	19A	30A
Refrigerant	R410a					
Air Volume	310CFM / 530m <sup>3</sup> /h		340CFM / 580m <sup>3</sup> /h		400CFM / 680m <sup>3</sup> /h	
Duct Size	Φ 4" / 100mm				Φ 6" / 150mm	
Seawater inlet/outlet	20mm				20mm	
Dimensions W×D×H	485×300×320 mm				485×335×320 mm	
Weight	28kg		31kg		33kg	

\*\*\* The specifications are subject to change without notice.

## MSC16(U)

	MSC16	MSC16U
Capacity	16000BTU/1.3TON	
Voltage/Frequency	220V/60Hz	115V/60Hz
Rated Current(Cooling)	5.3A	11.2A
Rated Current(Heating)	5.9A	13.8A
Starting Current	23A	35A
Refrigerant	R410a	
Air Volume	425CFM / 720m <sup>3</sup> /h	
Duct Size	Φ 6" / 150mm	
Seawater inlet/outlet	20mm	
Dimensions W×D×H	535×330×350 mm	
Weight	36kg	

\*\*\* The specifications are subject to change without notice.

Attachments of MSC marine self contained air conditioner unit.



\* Digital control panel with remote



\* RJ45 Cable for Control box



\* Mounting bracket (4pcs)

# MSC18(U) MSC20(U) MSC24(U)



	MSC18	MSC18U	MSC20	MSC20U	MSC24	MSC24U
Capacity	18000BTU / 1.5TON		20000BTU / 1.75TON		24000BTU / 2TON	
Voltage/Frequency	220V/50Hz	220V/60Hz	220V/50Hz	220V/60Hz	220V/50Hz	220V/60Hz
Rated Current(Cooling)	6.4A	6.0A	7.1A	6.8A	7.9A	7.5A
Rated Current(Heating)	7.5A	7.0A	7.9A	7.5A	10A	9.5A
Starting Current	25A	24A	26A	25A	30A	28A
Refrigerant	R410a				R410a	
Air Volume	558CFM / 950m <sup>3</sup> /h				705CFM / 1200m <sup>3</sup> /h	
Duct Size	Φ 7" / 175mm				Φ 8" / 200mm	
Seawater inlet/outlet	20 mm				20 mm	
Dimensions	W565×D360×H410 mm				W610×D410×H450 mm	
Weight	43 kg		46 kg		58 kg	

\*\*\* The specifications are subject to change without notice.

# MSC30(U) MSC36(U)



	MSC30	MSC30U	MSC36	MSC36U
Capacity	30,000BTU / 2.5TON		36,000BTU / 3TON	
Voltage/Frequency	220V/50Hz	220V/60Hz	220V/50Hz	220V/60Hz
Rated Current(Cooling)	9.8A	9.0A	12.8A	12.0A
Rated Current(Heating)	11.5A	10.8A	14.5A	13.8A
Starting Current	35A	33A	45A	42A
Refrigerant	R410a		R410a	
Air Volume	765CFM / 1300m <sup>3</sup> /h		1000CFM / 1700m <sup>3</sup> /h	
Duct Size	Φ 8" / 200mm		Φ 8" / 200mm	
Seawater inlet/outlet	20 mm		20 mm	
Dimensions	W610×D410×H450 mm		W660×D450×H480 mm	
Weight	61kg		68kg	

\*\*\* The specifications are subject to change without notice.

# Air-Distribution System

## Duct and Grille Sizing Chart by BTU/hr Capacity

->> Determine the proper duct diameter (Ø) and grille sizes for your air conditioning system. Use Table 3 to find the correct sizes, which are based on the system's BTU/hr capacity.

Self-contained Unit (BTU/hr)	Duct Ø (in/mm)	Return-Air Grille (ft²/cm²)	Supply-Air Grille (ft²/cm²)
MSC06 6,000BTU/hr	4" 100mm	64/413	32/206
MSC08 8,000BTU/hr	4" 100mm	98/632	49/316
MSC10 10,000BTU/hr	4" 100mm	100/645	60/387
MSC12 12,000BTU/hr	6" 150mm	130/839	70/452
MSC16 16,000BTU/hr	6" 150mm	160/1,032	80/516
MSC18 18,000BTU/hr	7" 175mm	200/1,290	100/645
MSC24 24,000BTU/hr	8" 200mm	240/1,548	140/903
MSC30 30,000BTU/hr	8" 200mm	280/1,806	160/1,032
MSC36 36,000BTU/hr	8" 200mm	360/2,323	196/1,265



\* Teak Wood Air Outlet Grille

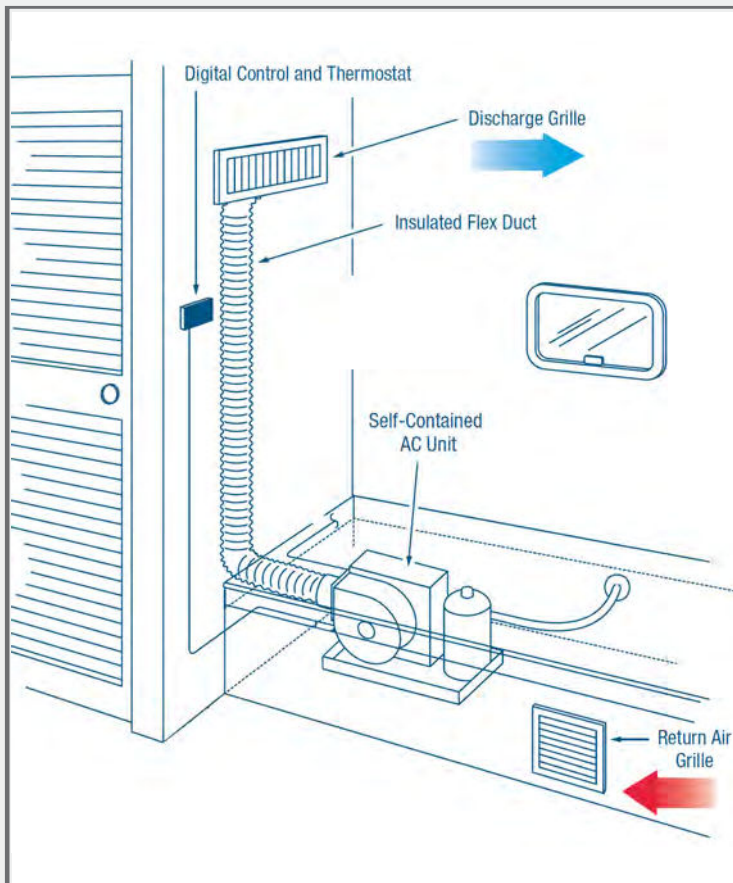


\* Teak Wood Air Inlet Grille with Filter



\* Flexible Insulated Hose

## Typical Installation

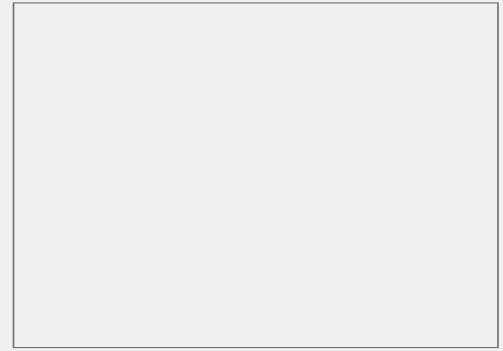
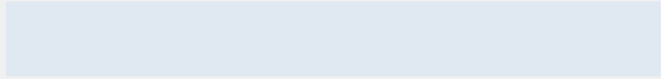
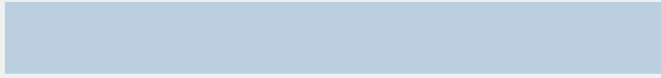


## Air-Distribution System

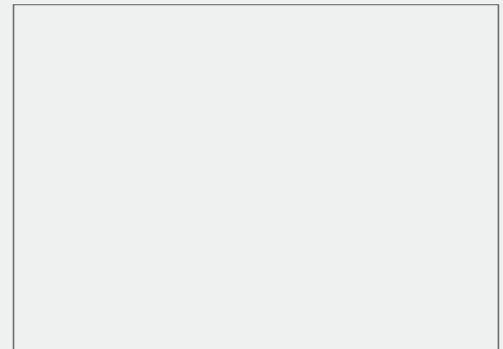
In cooling mode, warm cabin air is drawn into the air handler through a return-air grille. It is then cooled and blown through flexible insulated duct and back into the cabin through a supply-air grille installed high in the cabin.

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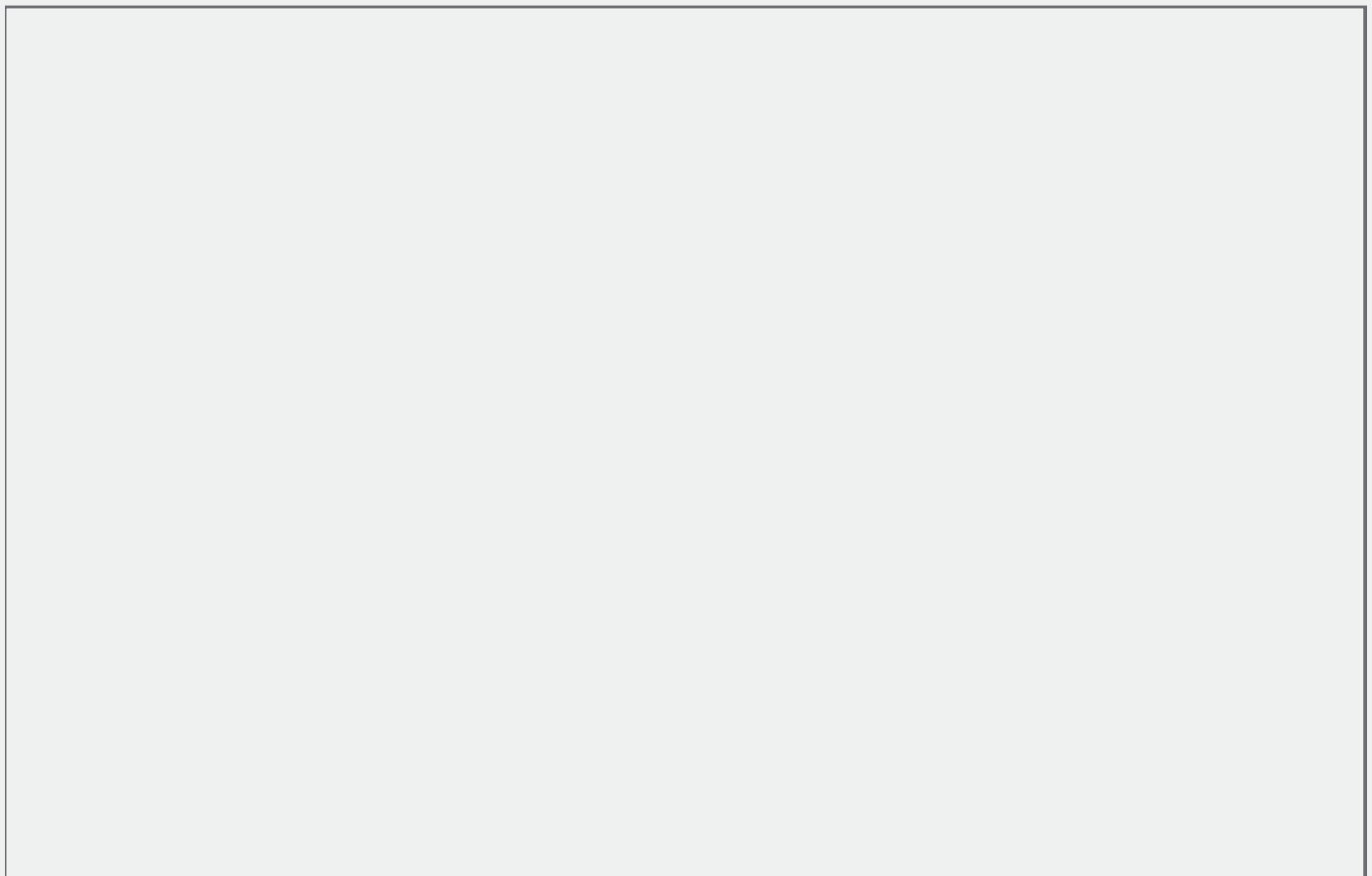


\* Sea Water Pump



\* Sea Water Through Hull Fittings

## Typical Installation



We have various sizes and kinds of Accessories.

### Air Distributing Systems



### Seawater Pump



### Chilled Water Piping Kits



### Attached Thermo Sensor



### Soft Starter



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**Specialist in Marine Air Conditioning Systems**

