

MABRU ROOFTOP RVSC 12000 DC 12V MANUAL

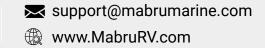
You can use the sunroof or vehicle skylight hole to install your New Mabru RV. Self-contained 12,000BTU @12Volts air conditioner (RVSC12DC) on your van, truck, or RV. You can also use the template included in the box to relocate the hole.



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DESCRIPTION

TThe Mabru Power Systems 12V / 24V rooftop air conditioning unit is the ideal unit for RVs, trucks, vans, buses and motorhomes. Our unit has been designed to be sleek, streamlined, aesthetically beautiful and efficient 12V / 24V systems in its class. The 12V / 24V ceiling unit provides fresh air in 15 seconds creating a cool and comfortable space.

This unit is designed to work inside a motorhome, van, bus, mobile houses, trucks and motorhomes and in any similar application.

PARAMETERS



MODEL	T2000-24V	T2000-12V
RATED VOLTAGE	DC24V	DC12V
EVAPORATOR AIR VOL.	600m3/h	550m3/h
ВТИ		12300 BTU
CONDENSER AIR VOL.	2200m3/h	2000m3/h
RATED WATTAGE	850W	700W
REFRIGERANT	R134A	R134A
SIZE (ROOF)	38,19 (L)x33,78(W)x6,5(H) inches	
MAX SIZE (INSIDE)	36,61(L)x21,26(W) inches	
MIN SIZE (INSIDE)	18,11(L)x11,42(W) inches	
MINIMUM SIZE HOLE	14"x14" or 14,5/8"x20,1/8"	
WEIGHT		59LB
SHIPPING WEIGHT		76LB

CURRENT CONSUMPTION AT 12V

High Blower (HB) Medium Blower (MB) Low Blower (LB)

 High speed (Max)
 54,4Amp
 51,2Amp
 48,2Amp

 Medium speed
 46,2Amp
 43Amp
 40,8Amp

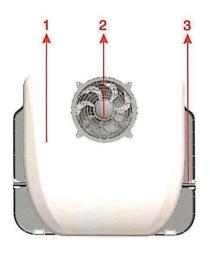
 Low speed (Eco)
 34,2Amp
 25,2Amp
 22,5Amp



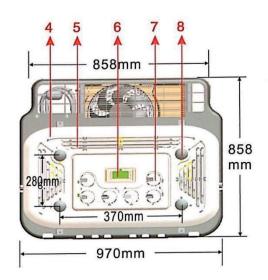


support@mabrumarine.com
www.MabruRV.com

COMPONENTS AND CONTROLS GUIDE



- 1. Outdoor Unit Cover
- 2. Condenser Fan
- Outdoor and Indoor unit separator. Mounting plate

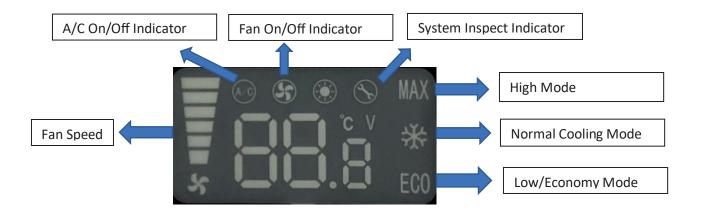


- 4. Skylight Panel
- 5. Return Inlet
- 6. Display
- 7. Supply Outlet
- 8. LED Lights









12V AC Controls

- 1. To turn the unit on locate the button and press until screen powers on.
- 2. To adjust the blower speed, locate the button until the desired speed is selected.
- 3. The 12V Rooftop Air Conditioning unit comes with 3 different power modes. To change the mode of the unit press then M on the unit to cycle between the 3 modes.

Modes

- Max setting is the largest energy consuming mode and will provide the most cooling in the shortest amount of time.
- setting is the medium cooling setting and recommend for routine use.
- ECO setting is the energy saving mode that uses the minimum number of amps while providing cooling at a less efficient rate.
- 4. To view the current voltage being used by the unit. Simply press and hold the M button for 6 seconds and the voltage value will appear on the screen. To exit the current voltage mode, do not press any buttons for 6 seconds and the unit will return the main menu automatically.
- 5. The display will always show the set temperature. The possible temperate ranges on the unit vary between 5-40 degrees Fahrenheit (Note: the units only come with temperature settings in Fahrenheit). To view the current inlet temperature, press the symbol for 6 seconds and the screen will display the temperature in Fahrenheit. To view the current outlet temperate press the for 6 seconds and the screen will display the temperature in Fahrenheit.





ERROR CODES AND TROUBLE SHOOTING

Digital Display	Fault Description	Fault Troubleshooting
E2	Current Protection	Check to see if pressure is too high and if the fan is running
E3	Stall Protection	Low battery or too much pressure
E4/LU	Undervoltage protection	The battery is too low and needs to be charged
E6	Condensing coil fan failure or air circulation	Short circuit of motor, poor contact of plug
E7	Motor phase lost	Compressor terminals burnt out or compressor short circuit
E9/PER	Pressure switch protection	Pressure switch may be damaged and needs replacement
OPE	Bad temperature sensor.Open circuit	Check is plug disconnected or the wire is broken or damaged
LU	Low voltage	
SHr	Temperature sensor short circuit	Replacement of temperature sensor
AC	Cooling failure	Check if system refrigerant is low or the compressor electronic fan has stopped
CS	Defrost	Defrost necessary





TROUBLESHOOTING NOTES

If refrigeration failure occurs this is due to the inlet(return) and outlet (supply) air temperature being less than 5 for more than 3 minutes. Indicating that cooling is not taking place. If this occurs shut the compressor and evaporator fan off.

Clear the fault and restart the unit.

Defrosting temperatures: Defrost error will occur if temperature of the air outlet(supply) is lower than 2 which will cause the compressor to stop functioning. The unit will resume functioning once the temperature is above 6, and the defrost fault will disappear resuming normal working mode afterwards.

LOW VOLTAGE FAULT AND UNDERVOLTAGE VALUE ADJUSTMENT

The undervoltage value can be adjusted between the range of 9-28 volts. When the battery voltage is lower than the under-voltage protection values the system will stop working and the error code "LU" will be displayed on the main display.

To clear the undervoltage error power the unit off then power back on.

STEPS TO ADJUST UNDERVOLTAGE PROTECTION VALUE

- 1. Power on unit and locate the button on the display.
- 2. Press and hold the button for 6 seconds at which point the unit will enter the undervoltage adjustment mode with the current setting flashing on the screen.
- 3. To adjust the undervoltage value. Press the temperature ↑ button to increase the under-voltage value by 0.1V. To decrease the value, press the temperature ↓ button to decrease the undervoltage value by 0.1V each press.
- 4. To save the settings press the button and the system will exit the undervoltage adjustment mode



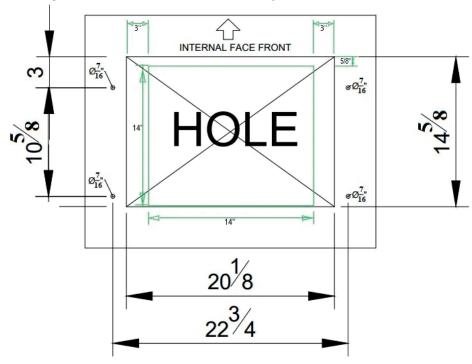


INSTALLATION INSTRUCTIONS FOR 12V/24V ROOF-TOP AC UNIT

To see the step-by-step video of the installation process, click on the link below or search for Mabru RVSC on YouTube Channel.

https://www.youtube.com/watch?v=Xst1ugqDAd4

1 / The unit can be installed in an existing 14 "x 14" "standard size" opening with a bit of disassembly / assembly or, if you want to be simpler and not perform this disassembly / assembly, you can choose to cut a hole using the template provided with your unit.



DIMENSIONS IN INCHES

NOTE: The green square is a 14 x 14 inches hole used in case you have a previous air extractor hole in the roof. You can also decide to open the gap opening and fit the unit.

If you want to install the unit in an existing 14 "x 14" "standard size" opening, review the following steps:

A / Remove the inner plastic cover and then remove the styrofoam airflow director shown in the photo below.







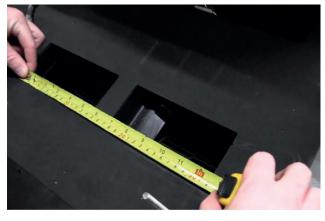
B / Position the unit on your ceiling aligned with your existing 14 "x 14" ceiling penetration so that the airflow openings on the bottom of the air conditioning unit are "above" the cutout area of your ceiling. You should be able to see each of these openings on the bottom of the air conditioning unit from inside your truck.

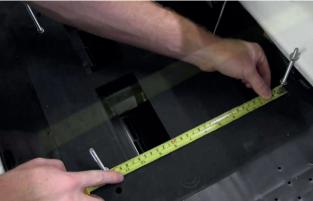
These provide airflow in and out of the unit, so they cannot be blocked by your van's roof sheet. See below photos showing:





the area at the bottom of the air conditioning unit with these openings. Area is approximately 10 3/4 "long by 12 1/2" wide





C / You can now insert the unit and reinstall the Styrofoam airflow director and interior plastic trim and continue with the standard installation procedure.

If you choose not to perform this disassembly / assembly, use the 20 1/8 "x 14 1/2 template, note that cutting the hole may require



If you choose to not perform this disassembly/reassembly ant to use the template 20 1/8" x 14 1/2, note that cutting the hole may require power driven tools and should only be done by trained professionals.



2 / Once a hole is cut, you must smooth the edges and paint it with anti-rust paint.

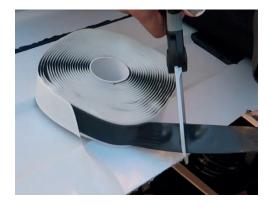








Then, clean the surface thoroughly of any debris and dirt. Once the surface is clean the next step is to apply the foam gasket provided foam gasket that is installed on the roof to create a seal between the roof and the AC unit. If your roof is not flat and have cantrails, fill in between the roof reinforcement with bully tape to get a plan surface.





Install all shock absorbers on the foam gasket.





And apply the strip around the edge of the clean debris free hole. Ensure an even application of the waterproofing strip and that there are no gaps in the seal between the metal and the weatherproofing strip.



You can use additional seal as Proflex or 5200 if you want make sure of the waterproof of the seal.

C/ Once the weather proofing is installed, the unit may be installed.

Ensure that a gap of 25mm is present between the mounting plate and the outside roof to allow for adequate ventilation for the outside portion of the rooftop AC.

D/ Once in position the unit is ready to be mounted to the roof using the 4 securing screws and the bracket. Tighten the screws no more than





15mm deep into the roof. Driving the screws any further may result in damage to the roof or the unit securing plate.

E/ The unit is now properly secured and you can choose to put in place the "outer trim panel" with the LED lights or not.

If you design and decide to create your own return grill trim on the interior as below, you will need to keep enough air flow and take care to not have any restriction to avoid any problems (evaporator frozen, ...)



If you keep the outer trim panel with the 4 LED lights, you will fix it with bolts under the LED lights, and the interior LED lights may be installed using the wiring harnesses included in the Rooftop AC kit.





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Once the lights are installed and the unit is connected to a power source. The unit may be turned on.



ELECTRICAL INSTALLATION INSTRUCTIONS WITH HOUSE BATTERY BANK, DC TO DC CHARGER, AND VEHICLE ALTERNATOR IF APPLICABLE

Once your unit is installed you will need to connect the unit and electrical system properly.

Components required for a battery bank installation include a DC-to-DC charger, 100 Amp Breaker or in-line fuse (not recommended), Lithium Iron batteries, and 4-gauge wire positive and negative for connections ample length to reach the unit and alternator.

A/ Mount your DC-to-DC charger and Lithium Iron batteries in the desired location securely. Then connect your positive and negative terminals to the engine battery or alternator and run them to the positive and negative terminals of the DC-to-DC charger.







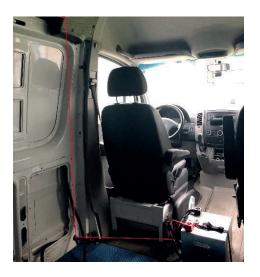
B/ From the DC-to-DC charger you will run the cables to a breaker. Ideally that breaker will be 100 Amps to protect that circuit from potential over voltage.

C/ You will run your wires from your breaker to the Lithium Iron batteries.









D/ Once the batteries are securely connected you may connect the Rooftop Unit using the wiring harnesses that are installed on the unit.

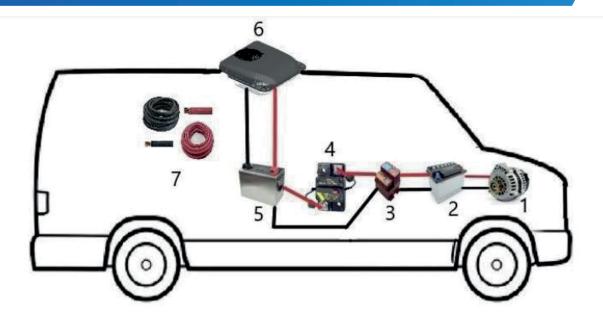


Lastly, once all connections are made, verify that all the connections are tight and secure. Failure to do so may result in equipment damage, injury, or fire. Once verified, you may power on the system and begin operating your rooftop air conditioner.



WIRING DIAGRAM

12/24V ROOFTOP AC WIRING DIAGRAM

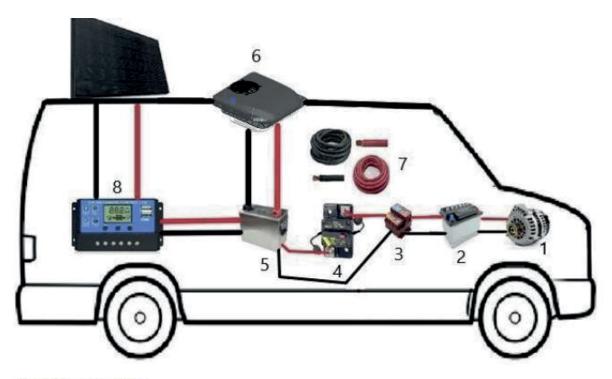


- 1. Alternator
- 2. Engine Battery
- 3.DC to DC charger 100Amp
- 4.100Amp Breaker
- 5.Mabru Lithium House Battery 250AH
- 6.Mabru Rooftop RVSC DC 12V aIR Conditoner
- 7.4 AWG Cables





12/24V ROOFTOP AC WIRING DIAGRAM

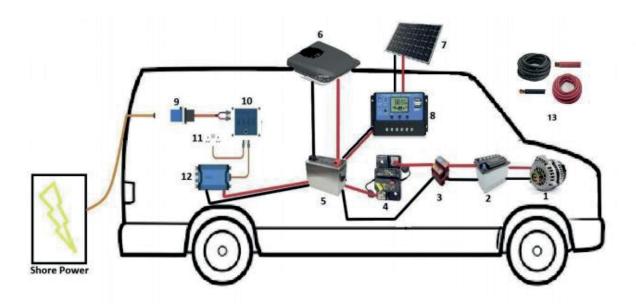


- 1. Alternator
- 2. Engine Battery
- 3.DC to DC charger 100Amp
- 4.100Amp Breaker
- 5.Mabru Lithium House Battery 250AH
- 6.Mabru Rooftop RVSC DC 12V aIR Conditoner
- 7.4 AWG Cables
- 8. Solar Charge Controller
- 9.Solar Panel





12/24V ROOFTOP AC/SOLAR/SHORE POWER WIRING DIAGRAM



- 1. Alternator
- 2. Engine Battery
- 3.DC to DC charger 100Amp
- 4.100Amp Breaker
- 5.Mabru Lithium House Battery 250AH
- 6.Mabru Rooftop RVSC DC 12V aIR Conditoner
- 7.4 AWG Cables
- 8. Solar Charge Controller
- 9.Solar Panel
- 10.Breaker Panel
- 11.Optional Power Outlet
- 12.AC to DC Converter



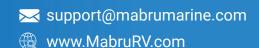
INSTALLATION REMINDERS AND NOTES

A/ For proper installation of the rooftop unit the waterproofing strip and shock dampening strip must be applied to protect the interior of the vehicle from weather elements and serves as a shock absorber to protect the unit from damaged caused by the vehicle's movements.B/ Additionally, the rubber pad shock absorber reduces noise from the rooftop A/C during normal operation enabling the system to operate at lower decibels. C/ Ensure that the waterproofing seal is installed, failure to do so may result in leaks and debris entering the cooling space.

DISCLAIMERS

- 1. Mabru Power Systems provides installation video our YouTube page at https://www.youtube.com/user/aamabru. Users must strictly follow the video and its instructions. If the user fails to install the Rooftop 12V/24V Air Conditioning unit according to steps provided in the user manual and installation video the results could lead to equipment failure, damage, injury, or death. The user will bear full responsibility for such incidents, and Mabru Power Systems will not be held liable for damages that occur with the unit. Lastly, Mabru Power Systems is not responsible for maintenance or material cost of the Rooftop 12V Air conditioning unit.
- 2. The user is responsible for all safety concerns during the installation process, if an accident does occur Mabru Power Systems shall bear no responsibility, and all liability will fall to the user.
- 3. If the Rooftop 12V/24V AC unit and any of the associated parts are manipulated by the user with after-market items or operated in any fashion no prescribed in the manual. Issues such as equipment damage, or injury may occur, and Mabru Power Systems will bear no responsibility and warranty will be voided.
- 4. The user agrees to this disclaimer after purchasing the product.





WARRANTY & RETURNS

You may return most new, unopened items within 30 days of delivery for a full refund. We'll also pay the return shipping costs if the return is a result of our error (you received an incorrect or defective item, etc.).

You should expect to receive your refund within four weeks of giving your package to the return shipper. However, in many cases you will receive a refund more quickly. This time period includes the transit time for us to receive your return from the shipper (5 to 10 business days), the time it takes us to process your return once we receive it (3 to 5 business days), and the time it takes your bank to process our refund request (5 to 10 business days).

If you need to return an item, simply login to your account, view the order using the 'Complete Orders' link under the My Account menu and click the Return Item(s) button. We'll notify you via e-mail of your refund once we've received and processed the returned item.

OWNER'S LIMITED WARRANTY POLICY

This Warranty is made to a purchaser ("owner" or "you"), who acquires the Mabru Power Systems, Inc. ("Mabru") -manufactured product or component (the "Mabru product") for his or her own use. 1. WHAT'S COVERED What does the Limited Warranty cover? The Mabru products under this limited warranty are to be free from defects in material and workmanship at the time of sale and under normal use. If Mabru determines to its satisfaction that a Mabru product contains such a defect during the applicable Warranty Periods set out within Section 4 COVER-AGE PERIOD AND TABLE OF WARRANTY PERIODS, then Mabru shall, at Mabru's sole discretion, repair or replace the Mabru product, or refund the original purchase price. Note: Where labor is included for a particular Mabru product covered under this Limited Warranty (See Section 4 COVERAGE PERIOD AND TABLE OF WARRANTY PERIODS), Mabru is not responsible for additional labor charges associated with the removal, reinstallation, or replacement of any equipment or furnishings beyond the particular covered Mabru product. This Mabru Limited Warranty allows up to 1.0 (One) hour for the Servicing Dealer's travel time. Any additional travel time is the owner's sole responsibility. This Limited Warranty is made in lieu of all other express warranties, obligations, or liabilities on the part of Mabru. In those instances, in which Mabru chooses to make a cash refund of the original purchase price, such refund shall affect the cancellation of the contract of sale without reservation of rights on the part of the owner. Such refund shall constitute full and final satisfaction of all claims which the owner has or may have against Mabru resulting from any actual or alleged breach of warranty, either express or implied. IN NO EVENT SHALL MABRU BE LIABLE FOR EITHER INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS INCLUDES ANY DAMAGE TO ANOTHER PRODUCT OR PRODUCTS RESULTING FROM SUCH A DEFECT.





SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. ANY IMPLIED WARRANTY, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR ANY PURPOSE, IS LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES SPECIFIC LEGAL RIGHTS, YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. Mabru reserves the right to improve or change the design of any Mabru product without notice and with no obligation to make corresponding changes in Mabru products previously manufactured.

2. WHAT'S NOT COVERED What does this Limited Warranty not cover? This Warranty Shall Not Apply to: 1. Failures resulting from improper or faulty installation, installation that does not comply with Mabru's instructions or otherwise, installation that does not comply with any American Boat and Yacht Council ("ABYC") standards, and any damage resulting from such. 2. Failures resulting from abuse, misuse, accident, fire, submergence, improper application or use contrary to instructions. 3. Failures resulting from lack of regular preventative maintenance as outlined within the Operator's Manual specific to your Mabru product. 4. Any Mabru product, which has been altered so as to impair its original characteristics. 5. Items not manufactured by Mabru. 6. Mabru products used by or applied by the owner as an integral part of products not manufactured by Mabru. 7. Additional labor charges associated with the removal, reinstallation, or replacement of any equipment or furnishings beyond the particular covered Mabru product. The original installer or OEM is responsible for the accessibility of the Mabru product. 8. The Servicing Dealer's travel costs in excess of 1.0 (one) hour. 9. Pumps with cracked heads or pumps that have been run dry, are water damaged or have blown freeze plugs. 10. Gauge instrument calibration. 11. Exterior corrosion. 12. Water damage, including specifically to the following components: blowers, logic boards and displays heads. 13. Incorrect programming of displays. 14. Dirty Condensers and/or Evaporators. 15. Failures due to improper winterization. 16. Mabru product damage as a result of improper return packaging or other freight damage. 17. Replacement of refrigerant with substitute without Mabru preauthorization. 18. Environmental and/or Recovery Fees. 19. Welding and Nitrogen Fees. Installation and application of Mabru products are not warranted by Mabru unless installation was performed in house because Mabru has no control or authority over the selection, location, application, or installation of Mabru products.

3. GETTING SERVICE How do you get service? Please read the following Warranty Procedure: In order to obtain the benefits of this Warranty, the owner needs to first submit the Mabru Warranty Claim form, which may be obtained by requesting from our claims department by emailing support@mabrumarine.com. Upon approval of the claim, the owner has the following three options during the applicable Warranty Coverage Period: 1) Preferred option: Have a Mabru authorized Servicing Dealer perform the work needed. The customer needs to contact the Mabru Customer Service Department for a recommendation as to the closest authorized Servicing Dealer.





If the customer already knows of an authorized Servicing Dealer, the Servicing Dealer should be contacted directly. 2) Second option: If the customer contacts the Mabru Customer Service Department for an authorized Servicing Dealer and there are none in the particular area, Mabru may authorize the use of a local Servicing Dealer, in which event Mabru will work with the local Servicing Dealer to assist in any way possible. 3) Third option: The customer may send the Mabru product back to the factory to have the repair work done. Mabru will make every effort to return the equipment to the customer within a three-week time period. If the claim represents a valid warranty issue, Mabru will pay the freight both ways. Mabru prefers option one first, option two second, and option three only if option one or two are not available. Refer to the Mabru Customer Service Department section below for contact information. Any Mabru product returned in the manner described above will be examined by the Servicing Dealer and/or by Mabru. If it is found that the returned item was defective in material and workmanship at the time of sale, the Servicing Dealer will contact Mabru for Warranty coverage. Mabru shall, at Mabru's sole option, repair or replace the Mabru product, or refund the original purchase price. If Mabru determines that repairs to the Mabru product are to be made, then only authorized Mabru parts will be used. Mabru does not authorize any person or company to create any Warranty obligations or liability on its behalf. No action to enforce this Warranty shall be commenced later than ninety (90) days after the expiration of the applicable Warranty Coverage Period as set out within Section 4 COVERAGE PERIOD AND TABLE OF WARRANTY PERIODS. Claims must be submitted in writing to the Mabru Marine Division Warranty Department.

4. COVERAGE PERIOD AND TABLE OF WARRANTY PERIODS What is the Warranty Coverage Period? The Mabru product's Warranty Coverage Period begins from the date of possession of the boat by the original owner (if OEM installed) or from the date of installation (if the Mabru product is installed by a dealer). However, as outlined in the below TABLE OF WARRANTY PERIODS, the Warranty Coverage Period will not exceed the specified time period from date of manufacture. The Warranty is transferable and will carry any remaining warranty Coverage Period based on the above. The Warranty Coverage Period does not restart following any repair or replacement of the Mabru product. All Mabru products bear a data plate, which includes the Mabru product model and serial numbers. The serial number is date coded. To determine whether any Mabru product is covered under this Warranty, proceed as follows: 1. Determine the manufacture date of the Mabru product from the serial number found on the data plate. If you are not familiar with the date code, write or call the Mabru Customer Service Department to obtain the Mabru product manufacture date. 2. It is possible that there might exist a considerable time lag between the date a Mabru product is manufactured and the date it is put in service. For proof of the date that the Mabru product was put in service, Mabru will require a copy of the bill of sale from the Mabru product installer or a copy of the bill of sale showing the date of delivery from the new boat dealer to the original owner. Therefore, you should retain a copy of the dated bill of sale as evidence of the date of purchase or date of delivery.





5. TABLE OF WARRANTY PERIODS Limited Warranty Periods MARINE AIR CONDITIONING MABRU – Direct Expansion SC Series Self Contained units OEM or Dealer Installed W/ included control 2 Year Warranty 1st Year parts and labor, 2nd Year parts only. Not to exceed three (3) years from date of production. MABRU – Air Handlers Chilled Water Systems OEM or Dealer Installed 2 Year Warranty 1st Year parts and labor, 2nd Year parts only. Not to exceed three (3) years from date of production. IMPORTANT NOTES: 1. Warranty periods begin from the date of possession of the boat by the first owner if OEM installed or date of installation if dealer installed, but not to exceed three (3) years from date of production. The warranty is transferable and will carry the remainder of the original owner's warranty based on the original date of purchase or date of installation. 2. Proof of purchase or installation may be required to verify warranty coverage. 3. Any unit or replacement part installed due to a warranty failure carries the remainder of the original warranty. Warranty coverage does not start over from the repair/replacement date. 4. Warranty coverage shall not exceed three (3) years from the date of production. 5. These warranty periods are effective January 15, 2020.

MABRU – REPLACEMENT/MISCELLANEOUS PARTS Product Sale Type Warranty Coverage Pumps - 1 Year warranty, parts only Compressors Aftermarket sales 1 Year warranty, parts, only Replacement parts and components Aftermarket sales 90 Day warranty parts, only MARINE BATTERY CHARGERS Product Sale Type Warranty Coverage All sales types 1 Year Warranty, parts and labor Not to exceed three (3) years from date of manufacture. MABRU LITHIUM BATTERIES Standard Lithium – 2-year warranty Military Lithium – 3 Year warranty 6. MABRU CUSTOMER SERVICE DEPARTMENT Use the following information to contact Mabru Marine Customer and Technical Support. Telephone: +1 888 818 2814 or +1 954-467-1770 Email: sales@mabrumarine.com Mailing Address: Mabru Power Systems Warranty Department 1105 Old Griffin Road, Dania Beach, Fl 33004 For all other areas visit our website to find your nearest distributor at www.mabrumarine.com We are open from 8:00



