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NOTE: Please read

Qualified air-conditioning personnel must oversee all repairs, maintenance, and installations. All installations must have the Rencool Commissioning sheet filled out and returned to Rencool within 30 days of purchase to obtain a full warranty.

Please read instructions completely before beginning work.

MODEL MD-6101 ROOFTOP AIR CONDITIONER INSTALLATION INSTRUCTIONS

A. Mounting the unit on the cab roof.

1. Remove the headliner or loosen enough to drop the center portion (Disregard if no headliner).
2. Determine the most suitable location for mounting the air conditioning unit.
 - a. Mark the front-to-rear centerline of the cab on the outside of the cab roof.
 - b. Place the mounting template on the roof using the centerline as a guide.
 - c. Consider the position of the horn(s) and marker lights.
 - d. Ensure that air flow to the unit is not obstructed.
 - e. Do not mount the unit with the front lower than the rear, as this will prohibit water drainage.
 - f. Avoid cutting roof stiffeners if possible. If stiffeners are cut or roof is weakened due to the cut-out, reinforcement.

may be required.

3. Tape the template to the roof at the desired location. Mark the mounting hole location and the roof cut-out area (punch

or scribe the roof).

4. Cut the roof where marked and drill the ½" mounting holes. Remove burrs and sharp edges.

5. Temporarily install the headliner and trace the cut-out onto it from the cab roof. Remove the headliner and cut out the

area marked. Use caution and do not cut the headliner opening larger than the roof opening (check against template if

in doubt).

6. Should roof reinforcement be required, fabricate and install at this time.

7. Clean the outside roof area around the cut-out and mounting holes using a mild solvent.

8. Apply a thin film of adhesive 1" wide around upper surface of roof cut-out and mounting holes. Apply sealer to the face.

of the sealing ring on the unit. See Figure 1.

9. Set unit on cab. Make sure that drain tube is not pinched and roof brace is installed, if required.

10. Select spacers as required to level and support unit. See Figure 2.

11. Apply adhesive to the faces of all spacers and locate over mounting holes.

12. Tighten the four cap screws provided evenly until the spacers take the load and just begin to "bulge" slightly. Do not.

overtighten. The bottom of unit and roof may distort and cause water leakage.

B. Electric compressor installation

MD Requirement

Rencool MD Series 12 & 24 DC Voltage Compressors and Units

- Rencool DC voltage HVAC systems are designed to work from the Engine Alternator and/or from other power sources such as Batteries, Solar, and Wind Turbines producing DC Voltage power from 12 to 48 VDC. Below is only a guideline for amp draw (Power Consumption) of the HVAC system using 12 / 24-VDC.
- Amp draw is dependent on head pressure, ambient temperatures, and heat load with-in the cabin. Below figures are based on the ambient temperature of +35 Degree C – using a HVAC system rated at 4KW.
- **Note:** Head Pressure effects Amp Draw: The below are only estimates.

Cooling capacity from 1KW to 4KW.

- 12 VDC: Minimum requirement of power input of 10 VDC and max of 16 VDC.
- 24 VDC: Minimum requirement of power input of 20 VDC and max of 31 VDC
- 18cc @12 VDC @ 2000 rpm to 4000 rpm = 30 amps to 55 amps @ 12VDC – 1-3KW
- 18cc @24 VDC @ 2000 rpm to 6000 rpm = 15 amps to 50 amps @ 24 VDC – 1-3KW
- 24cc @24 VDC @ 2000 to 6000 rpm = 18 amps to 65 amps @ 24 VDC – 1- 4.2KW

Complete Systems with Rencool DC Voltage Compressor:

- The Rencool system's current draws are dependent on three main factors, DC Compressor, Evaporator Blower/Fan, and Condenser Thermostat Fan/ AMP drawer. Calculate your evaporator and condenser fans with the compressor's current consumption for an estimation of your total amp draw. Most common fans run an average of 3 to 8 amps @ 24 VDC.

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Connecting Power Cables to DC Compressor

- A minimum of 2B&S copper insulated cabling MUST BE used. Failing to use the recommended cabling could result in high current consumption, high resistance, and overall poor performance from the DC voltage HVAC system. Length of cabling MUST BE calculated so resistance is kept to a minimum.
- **Both Positive and negative leads must go to the battery.**
- **Do not rely on chassis connections.**

Working with Electric Compressor systems

- **Do not use test lights or analogue meters to test circuits, these can cause voltage shifts. which can cause damage to the control circuit of the Compressor. Use Digital Meters only.**
- Conduct regular general inspections of the condition and ensure there are no broken or damaged items.
- Electronics do not like excessive heat. Please do not mount the compressor to where it will be operating in temperatures of 70°C or above.
- Ensure airflow back to the compressor is achieved to provide the cooling airflow to the compressor to maintain optimal conditions.

Refrigerant Charge

- Charge the system refrigerant at the high-pressure service port with the desired quantity of refrigerant for leak test and to switch the safety pressure switch to activate the run circuit.
- It is recommended to Vapor fill the system to avoid any liquid compression in the compressor, as this WILL cause damage. If vapor feed is not available then, pressurize with liquid to leak test and let sit for 10 minutes, liquid feed while the compressor is running with pressure no HIGHER than 50-60PSI at the feed-in.
- While the system is running up Assess for exchange heat across the condenser and the evaporator in the airflow Gassing

C. Drain Hose Installation

1. Locate 2 long drain hoses and install them on rear facing drain tubes. Make sure drain tubes are routed with a vertical run in.

them. Secure drain tubes with tie wraps. Do not overtighten tie wraps as this could cause inadequate drainage.

2. Locate 2 short drain hoses and install forward facing drain tubes.

MODEL MD-6101 ROOFTOP AIR CONDITIONER INSTALLATION INSTRUCTIONS

3. Inspect to be sure that drain hoses are not kinked or squished, especially at the back of the cab.

E. Air Diffuser Plenum

1. Install headliner (if it was removed). Make sure that wire loom exits plenum and is not pinched.

2. Install four M5 x 0.8 x 75 in the plenum assembly and secure with provided retainers. If you have a thin roof and thin or

no headliner you may want to use the four M5 x 0.8 x 50.

3. Place one gasket in plastic plenum assembly. Two foam gaskets may be required if the headliner is over 1" thick. If a

second gasket is required you can order it (RD-2-1297-0). The two gaskets can be glued together for ease of installation.

4. Place plenum in place and start one M5 screw.

5. Attach the switch and thermostat to the plenum with three 7/16-28 nuts (two with the switch and one with the thermostat).

6. Start the remaining screws and tighten plenum screws evenly until the plenum fits snugly against the headliner. NOTE:

Do not use an impact wrench to tighten these bolts. Do not exceed 30 in-lb (3.4 Nm) torque for plenum bolts.

7. Align D-flats on the knobs and push them on.

General Operational Assessment

- Run the engine when testing.
- Ensure Alternator is charging above 12VDC or 24VDC depending on system voltage while the unit is turned on.
- Ensure Internal fan working at all speeds.
- Ensure the Thermostat turning on to full cold.
- Assess the Condenser fans working?
- Our units have a voltage cut out at low voltage and will cut out with quick voltage drops.
 - To Assess this "a voltage Assessment" should be performed, if it is a 24VDC system. the voltage must always be above for a 24VDC fully loaded or the battery will not charge.
 - If the battery is not charged enough the system will cut out the main current drawer, in this case, the compressor will stop working, however, the rest of the system will still work, therefore no cooling but the fans are working.
 - the power draw of the system may be more than the charging circuit can provide. To see if the supply is enough the engine needs to be running and the charging voltage assessed. If the charge is not OK fix the charging circuit, so it is at the

MODEL MD-6101 ROOFTOP AIR CONDITIONER INSTALLATION INSTRUCTIONS

required level. If the charge level is OK, then turn the unit on and see if the voltage is above the required level.

- If there is insufficient voltage, assess belts for slippage or wear, if OK, the Power supply may not be enough, and action needs to be taken to get the power source to the required level.
- Note: power cables to the Alternator should be at least the size of the cabling to support the full current rating of the alternator to the battery circuit to avoid voltage drop.
- Other things to consider if performance is unsatisfactory:
 - Assess all fuses.
 - Assess all plug connections.
 - Assess for gas leaks (look for fresh oil marks)
 - Condenser fans not working.
 - Assess for physical obstruction (sticks etc.)
 - Assess all system fans are working.
 - Assess relays.
 - Assess terminal connections.
- Ensure airflow back to the compressor is occurring and keeping the Compressor cool and operating in optimal conditions.
- Continual running the compressors on full cooling is **not** the best way to make your compressor last, to achieve less wear to your unit set the cooling to the most energy-efficient thermostat setting.

Electronics do not like excessive heat. Please do not mount the compressor where it will be working in temperatures above 70°C.

MODEL MD-6101 ROOFTOP AIR CONDITIONER INSTALLATION INSTRUCTIONS

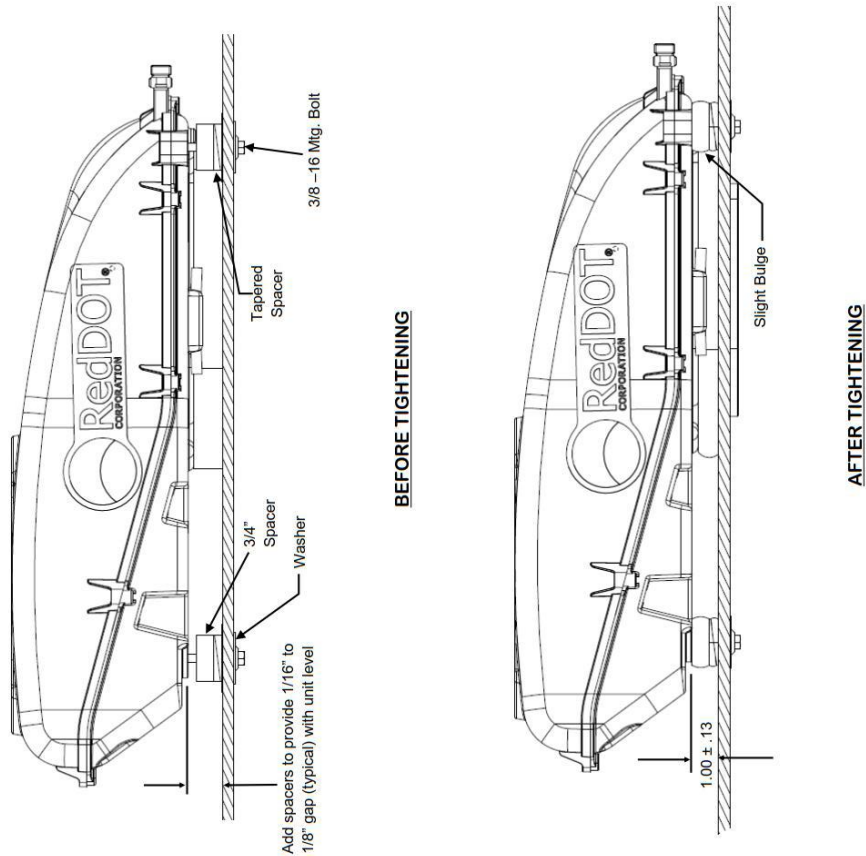


Figure 2

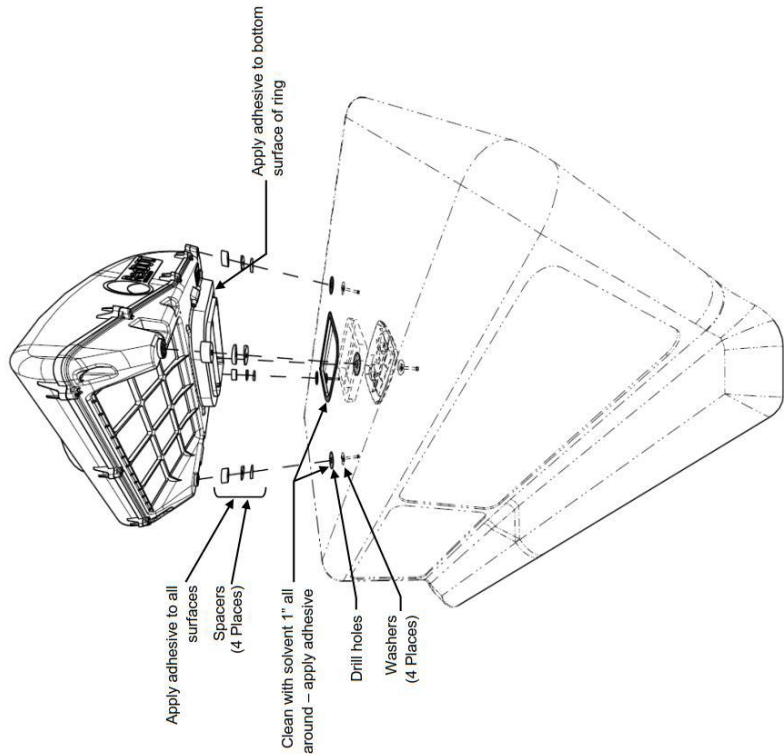
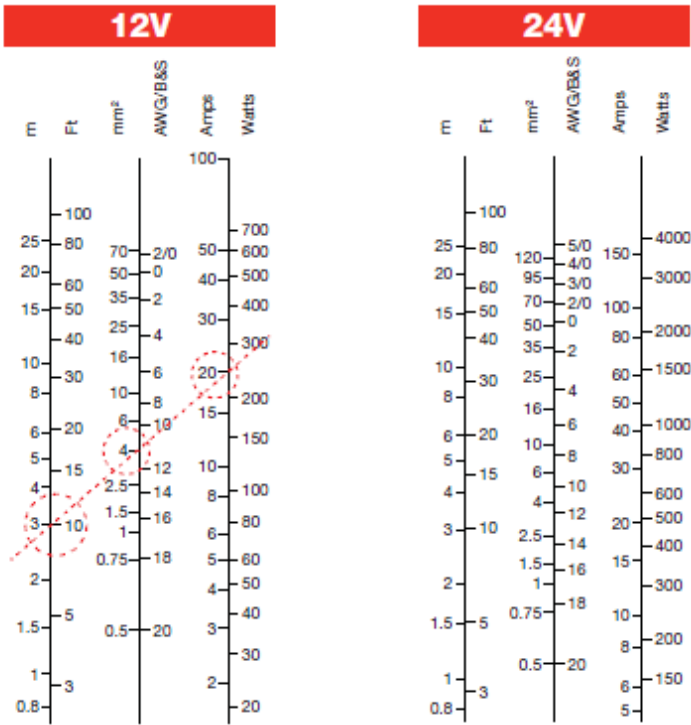


Figure 1

Annex A - Cable guide

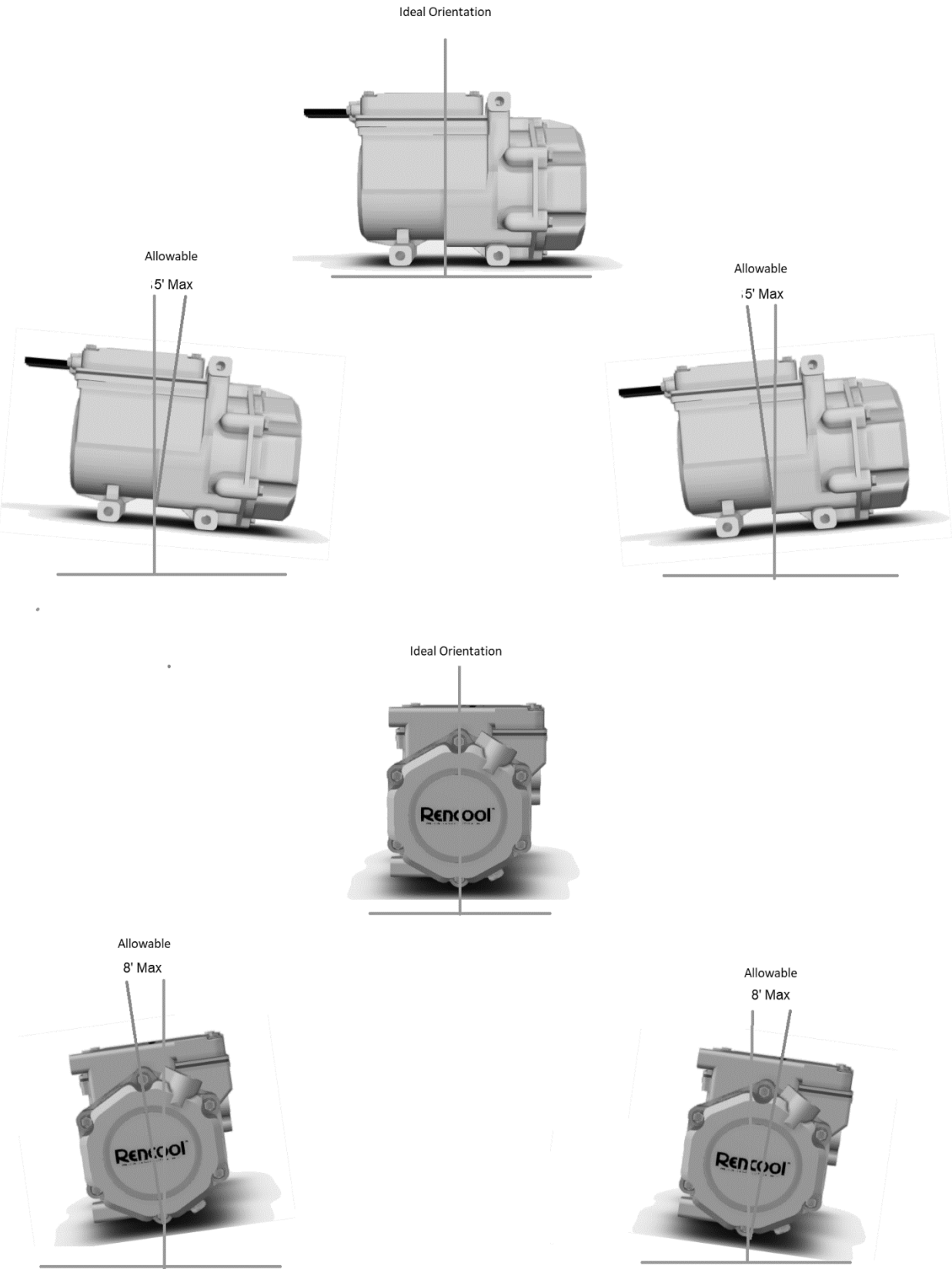
The below diagram will advise the minimum required wire gauge for a given cable length and the current draw or wattage. Simply draw a line from the required cable length (meters or feet), to the required current draw or wattage figure. Where the line passes through the gauge column will indicate the required wire gauge.

The example shows a BCDC1220 install with a total cable length of 3 metres. The chart suggests a 4mm² cross sectional area to handle the 20A maximum current draw.



Annex B - Mount Compressor

Mount Compressor with the controller to the top.



MODEL MD-6101 ROOFTOP AIR CONDITIONER INSTALLATION INSTRUCTIONS

Annex B - Commissioning Sheet

Disclaimer

Please Note:

Rencool takes no liability for improper calculation on power inputs from alternators or any other such power supplies including **AC** (Alternating Current) to supply to any Rencool DC HVAC compressor and/or full complete for units containing our MD or DRK7/& 8 series compressors on complete unit systems.

Your alternator must be above 100 amps on @12 VDC and 24 VDC and able to cope with your calculated other power consumptions on the truck, machine, Van, or any type of vehicle mobile or stationary, etc. used while in use must be sufficient to do all is required to run the truck, machine, Van or any type of vehicle mobile or stationary, etc. We recommend always best to consult Auto-Electrician for these calculations. Original power cables, the electrical system installed on the truck, machine, Van, or any type of vehicle mobile or stationery, etc. must also be sufficient to handle the extra load from the Rencool compressor and/or complete system.

Rencool staff will share any information on our systems they need answering regards to the compressor and/or complete system/s you are considering purchasing so you or your Electrician/s can be sure of the calculations are correct.

The design of the installation is the responsibility of the installer and Rencool will not be held responsible for incorrect or mishandled installations.

Rencool DC HVAC Systems

A better shade of green

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RENCOOL COMMISSIONING AND CERTIFICATION SHEET

DATE ARC AU NO. (For gassing only)

SERIAL NO OF COMPRESSOR.....

FLEET /REGO/ Unit ID NO.....

COMPANY

TECHNICIAN

EMAIL PHONE

R134A CHARGE (WEIGHT)

Comments:

SUCTION PRESSURE (LOW SIDE) DISCHARGE PRESSURE (HIGH SIDE)

INPUT VOLTAGE (A)ENGINE OFF..... (B)ENGINE RUNNING..... (C)FULL ELECTRICAL LOAD ENGINE RUNNING.....

CURRENT CONSUMPTION(A)ENGINE OFF.....(B)ENGINE RUNNING..... (C)FULL LOAD WHILE RUNNING.....

AMBIENT AIR TEMPERATURE

RETURN EVAP AIR TEMPERATURE

AIR EVAP OUTLET TEMPERATURE

CONDENSER AIR OFF TEMPERATURE

This form is to be returned within 30 days of purchase, if not returned warranty will be reduced to a 30-day basis.

I HAVE TESTED AND CHECKED OVER THE HVAC SYSTEM AND BATTERY/CHARGING CIRCUIT AND ALL CERTIFY IT TO BE WORKING CORRECTLY. I HEREBY AGREE THAT THE AIR CONDITIONING SYSTEM HAS BEEN COMMISSIONED AND TESTED AND ALL INFORMATION IS TRUE AND CORRECT
THE SIGNATURE BELOW CERTIFIES THE AIR CONDITIONING SYSTEM OPERATIONAL.

SIGN

DATE

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Wiring schematic

