

MD18 DC ELECTRIC COMPRESSOR

RENCOOL HVAC SYSTEMS

QUALITY

Australian owned and operated company providing durable high quality Air Conditioning systems for distribution into the worlds marketplace.



PROVEN TESTING GROUND

Automotive, Trucking and Transport industry, Mining, Construction, Rail, Marine, Civil aviation, Defense Sector.



ENVIROMENTALLY FREINDLY

We aim to provide products that have little impact on the environment, our DC air-con systems produce no carbon monoxide.



ElectricAircon
YOUR SPECIALIST IN DC HVAC SYSTEMS

A division of: **STREET** 
MOTORSPORT

UNIVERSAL SOLUTIONS

WORLD LEADING DC AIRCON PRODUCTS

BRINGING COOL

WHEN YOU NEED IT MOST

DC AIRCON PRODUCT SPECIALISTS

We can supply and deliver systems to suit a wide range of applications, we specialize in full DC voltage systems that operate without the need for a engine driver compressor.

Our products are Australian owned and manufactured giving the durability and quality to survive the toughest of climates, Whether you need a system for your E-type Jag, Can no longer fit a belt driven compressor or 1.2km into the largest open cut mine. Our systems are made for you.



Rencool have released their new series DC Voltage Compressor to suit the Automotive market. Rencool manufactures DC Voltage Compressors up to 8Kw @ 24 Volt for Mining, Military and Heavy Construction Industries.

The MD-18 Series is a DC Electric Air Conditioning Compressor unit Powered by 12 & 24 Volts.

With only 18cc to 24cc displacement capacity the unit can achieve higher rpm to obtain optimal cooling capacity with conservative power consumption. 2000 to 6000 rpm available depending on the application. The Compressor BLDC controller is mounted internally within the main housing and cooled by the suction flood back to the compressor, This also cools the internal brushless motor to operate the internal drive system.

The unit is compact in design and suits endless applications including Automotive.

Fits Australian standard MIOR fittings to Suction & Discharge ports for Automotive Air Conditioners.



SPECIFICATIONS

- ✓ MD-18 actual measured value of cop more than 2.75.
- ✓ MD-18 suits many types of HVAC systems, from automotive, mining, transport, military, recreational.
- ✓ MD-18 compressor rotated speed range from 2000 to 6000 RPM
- ✓ The MD-18 compressor has (smart protection function), when abnormal conditions occur it will prevent compressor damage.
- ✓ Soft starting function prevents high current impact during start-up
- ✓ MD-18 adopts double protection, capability of dustproof and waterproof (IP68)

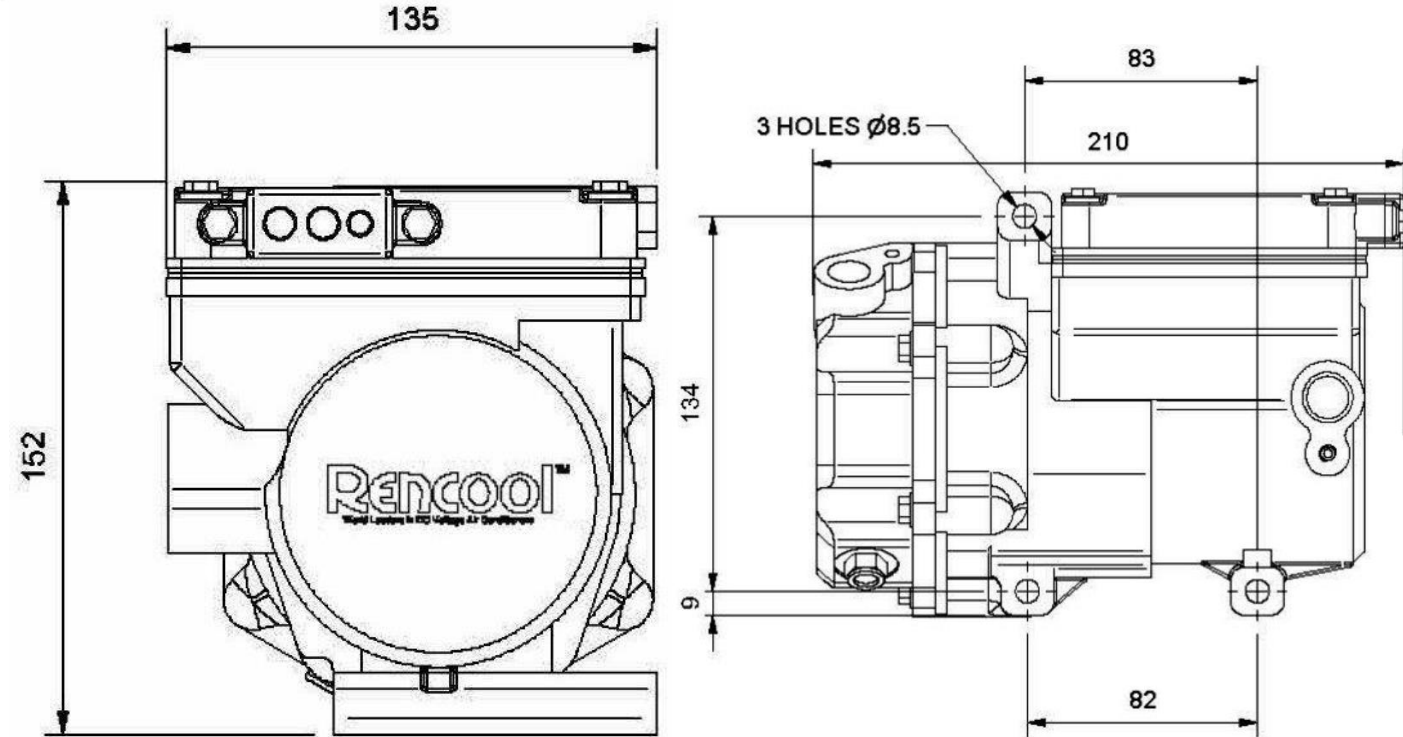


When Size Matters

The unit is compact in design and suits endless applications, when space is the issue the MD18 is designed to suit.

Dimensions (Metric): 210 x 152 x 135mm

Dimensions (Imperial): 8.27 x 5.98 x 5.31"



Electronics do not like excessive heat, mounting the unit in locations where it will be working in continual excess of 70°C or above should be avoided.



Optimal Cooling

With only 18cc to 24cc displacement capacity we can achieve higher rpm to obtain optimal cooling capacity with conservative power consumption. 2000 to 6000 rpm available depending on the application. The Digital controller is mounted internally within the main housing and remains cooled by the suction flood back to the compressor, This also cools the internal brushless motor to operate the internal drive system.

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 40 volt.



MD18 Technical Parameters (Cooling)

	(KW / (K Btu/hr))			(KW)			(COP)		
	Refrigerating Capacity			Input Power			Coefficient of Performance		
	3,000 RPM	4,000 RPM	6,000 RPM	3,000 RPM	4,000 RPM	6,000 RPM	3,000 RPM	4,000 RPM	6,000 RPM
MD18-4 (24V)	1.38 / 4.7	1.89 / 6.4	2.90 / 9.9	0.17	0.98	1.56	1.85	1.90	1.85
MD18-2 (12V)	1.38 / 4.7	2.15 / 7.3*	/	0.74	1.15*	/	1.80	1.85*	/

Model MD18 Series - Test done using R134A gas charge - Oil charge 100cc

Above data test condition (cooling)
Suction pressure: 0.196MPa
Discharge pressure: 1.47MPa
Super-heating: 10°C
Super-cooling: 5°C



MD18 Technical Parameters (Cooling)

	Displacement	Rated Voltage	Rated Current	Rotated Speed Range	Noise	Refrigerant		Net Weight	External Dimensions	Voltage Range
	(CC/REV)	DC (V)	(A) (6,000 RPM)	(RPM)	(dB) (A) (6,000 RPM)	R134a	R404a	(KG)	L X W x H	DC (V)
MD18-4 (24V)	18	24V	65.0	1,500 – 6,000	75	○	○	5.5	192X135X153	20-31
MD18-2 (12V)	18	12V	96*	1,500 - 4,500	70*	○	○	5.5	192X135X153	10-16

Model MD18 Series - Test done using R134A gas charge - Oil charge 100cc



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YOUR SPECIALIST IN DC HVAC SYSTEMS

Basic Power Requirements

This is only a guide line for amp draw (Power Consumption) of the HVAC system using 12 and 24 volt Direct Current.

Amp draw is dependent on head pressure, ambient temperatures and heat load with-in the cabin.

Below figures are based on ambient temperature of +35 Degree C – using a HVAC systems rated at 4 & 6Kw

Note: Head Pressure = Amp Draw: are only estimates

Complete Systems with Rencool DC Voltage Compressor

Rencool systems, either Rooftop, Split systems or aftermarket self-made systems power consumption is dependent on three main factors, DC Compressor, Evaporator Blower/Fan and Condenser Thermo Fan/s AMP draw. Calculate your evaporator and condenser fans with the compressor current consumption for an estimation on your total amp draw. Most common fans run an average of 5-10 amps @12 volt and 3 to 8amps @ 24 volt.

MD Series DC Voltage Compressors requirements:

Cooling capacity from 1Kw to 4.2Kw

12 volt: Minimum requirement of power input of 10 volts and max of 16 volts.

24 volt: Minimum requirement of power input of 20 volts and max of 31 volts

18cc @12 volt @ 2000rpm to 4000rpm = 30 amps to 55 amps @ 12volt – 1-3Kw

18cc @24 volt @ 2000rpm to 6000rpm = 15 amps to 50 amps @ 24 volt – 1-3Kw

24cc @24 volt @ 2000 to 6000rpm = 18 amps to 65 amps @ 24 volt – 1- 4.2Kw

Minimum Battery requirements for No Engine Run: 2 x 125 Amp hr. (AGM) “Century” Battery’s
(Dependent on run time needed)



MD18 (Test Data)

Part Number	MD18 – 2 (12V)	MD18 – 4 (24V)
Voltage Range	10V-16V	20V-31V
Displacement	18cc	18cc
RPM / Amp draw	2000rpm / 30A	2000rpm / 15A
	4000rpm / 55A	4000rpm / 42A
	6000rpm / 96A	6000rpm / 65A

Test condition (cooling)
Suction pressure: 0.196MPa
Discharge pressure: 1.47MPa
Super-heating: 10°C
Super-cooling: 5°C

Model MD18 Series - Test done using R134A gas charge - Oil charge 100cc

NB: For all DC voltage components – the power source requirement needs to be calculated for individual applications and is dependent on the compressor rpm and ambient conditions. Please refer individual component specifications.

*The total amp draw of a system can be calculated by adding the amp draw of the evaporator and condenser fans with that of the DC electric compressor. Most common fans run an average of **10-12 amps @12V** and **8-12 amps @24V**.*

*A minimum of 2B&S copper insulated cabling **MUST BE** used. Failing to use the recommended cabling will result in high current consumption, high resistance and overall poor performance from the entire DC voltage HVAC system. Length of cabling **MUST BE** calculated so resistance is kept to a minimum.*

It is important to note the amperage draw of each unit.



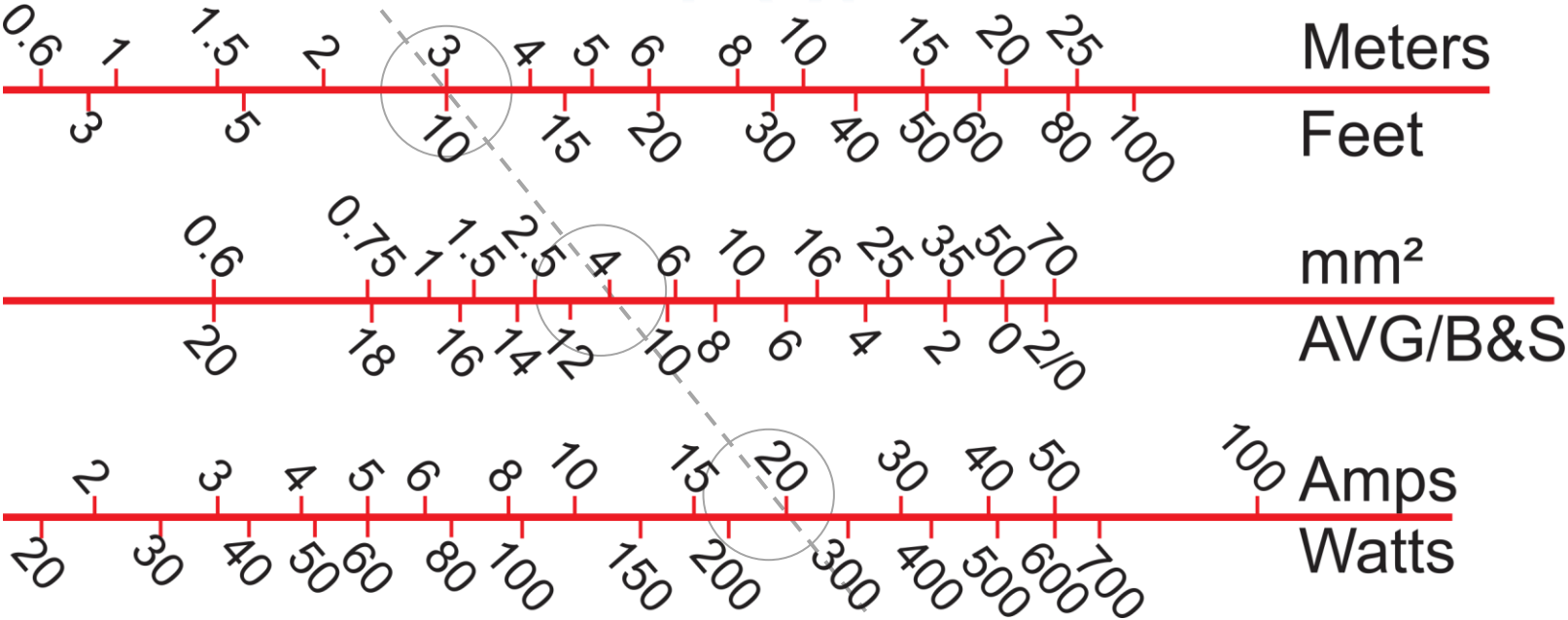
MD18 Technical Parameters (Cooling)

12V

The following diagrams 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 meters. The chart suggest a 4mm² cross sectional area to handle the 20A maximum current draw.

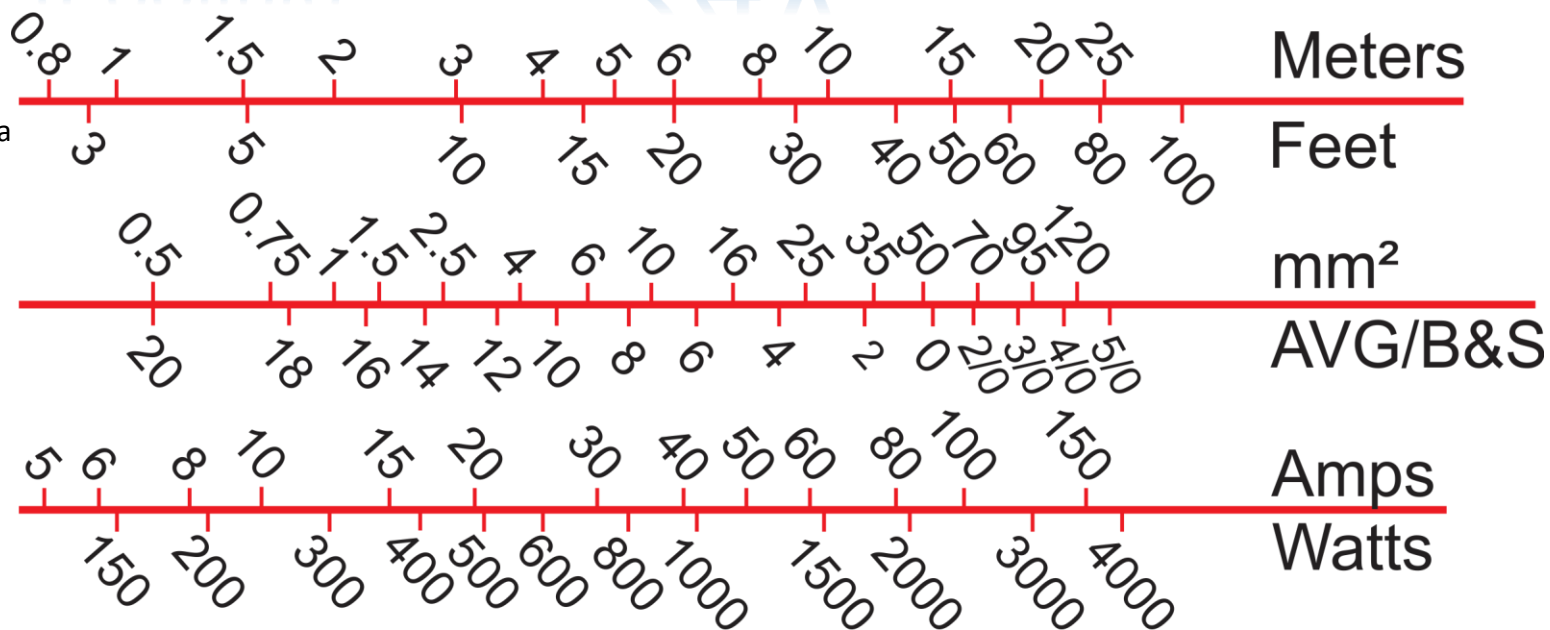


MD18 Technical Parameters (Cooling)

24V

The following diagrams will advise the minimum required wire gauge for a given cable length and the current draw or wattage.

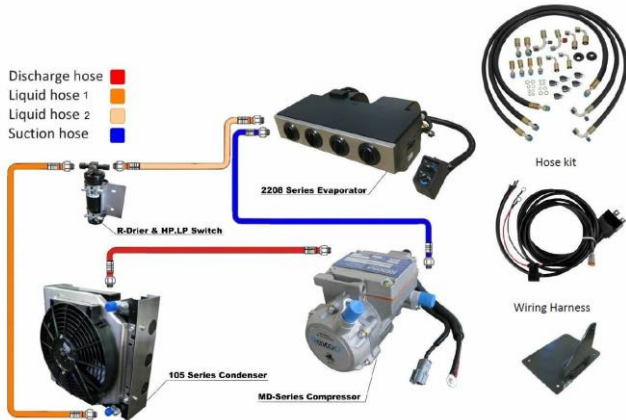
Simply draw a line from the required cable length (meters or feet), to the required current draw or wattage figure. Where the line passes through the gauge column will indicate the required wire gauge.



WHEN A COMPRESSOR JUST ISN'T ENOUGH!

We can supply anything from a Condenser, Blower, Receiver Dryer to a complete ALL-IN-ONE Solution DCSS Kit, whether your just out of room for that belt driven compressor or your application requires a complete install.

RENCOOL Day Cab Sleep System DCSS
Complete Electric Air-condition System Kit



RENCOL EV-2208 Dual Thermostat 5
Port Evaporator Unit



EV2208 Evaporator

RENCOL RNC105 - 18000 BTU
capacity Remote Electric Air Conditioning
Condenser



Items sold separately

Additional Components

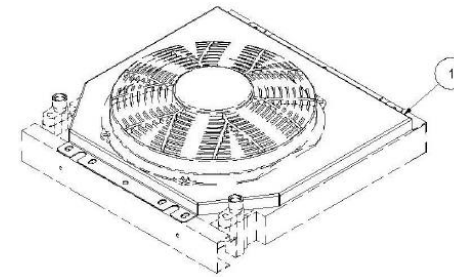
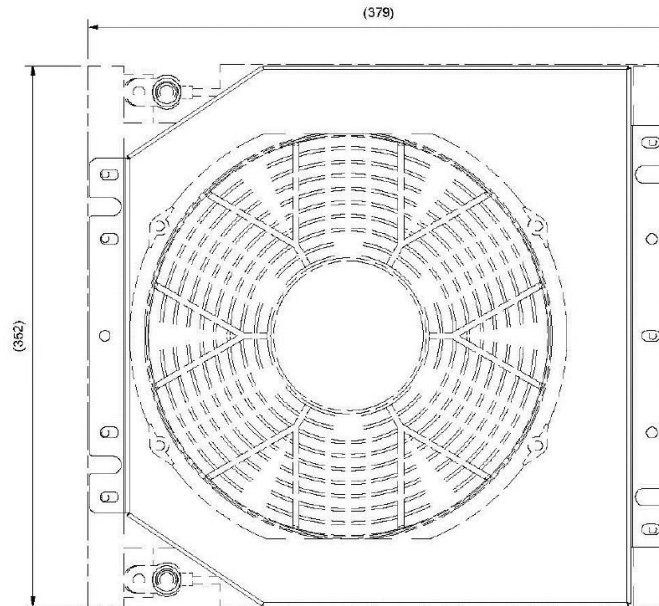
RNC105 - 18000 BTU CAPACITY REMOTE ELECTRIC AIR CONDITIONING CONDENSER

To suit Universal Applications Heavy Duty with fan shroud

- ✓ 18 000 Btu/5Kw
- ✓ Flush Mounting Brackets Included
- ✓ Optional in 304 Stainless Ste
- ✓ FA0023 – 12V Fan
- ✓ FA0006 – 24V Fan

Type	Serpentine
Fittings	No. 6 MIOR / No. 8 MIOR
Drier No.	N/A

Length	379mm
Height	354mm
Thick	44mm



Items sold separately

Additional Components

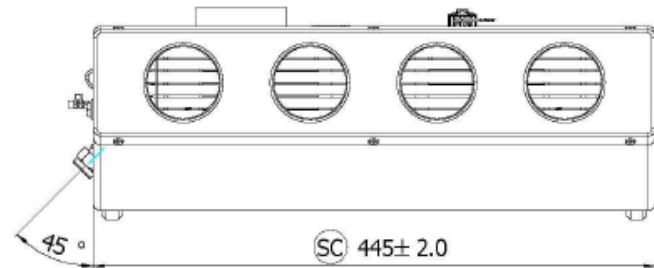
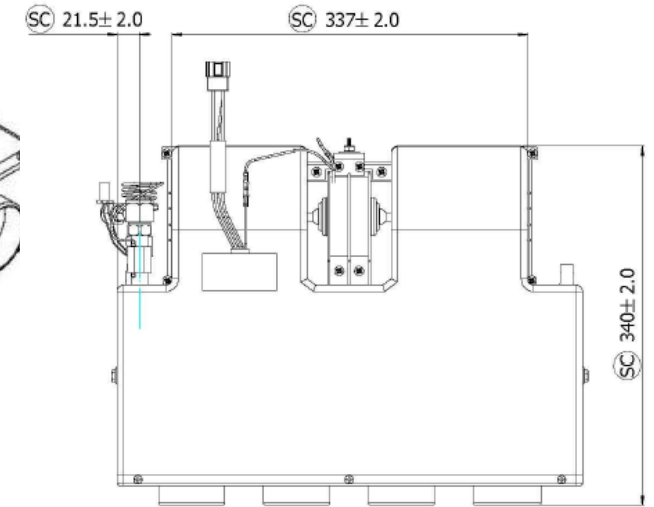
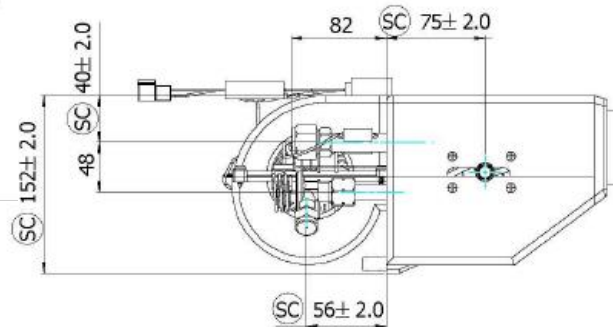
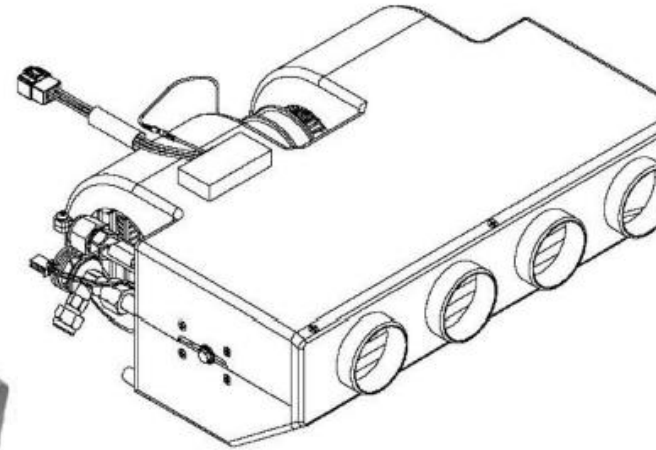
EV-2208 DUAL THERMOSTAT 5 PORT EVAPORATOR UNIT

Old School Evaporator but very effective. One of the most popular under dash systems in the past 20 years.

Remote Temp control harness can be mounted up to 6m away to suit the application. Complete with dual thermostats, one adjustable and the other internal for (De-ice) to prevent Ice up's on long runs.

- ✓ Slim Design
- ✓ 5Kw Cooling Power
- ✓ Light weight and easy to mount
- ✓ 4 eye ball out let
- ✓ Limited Servicing required

- EV2208 – 12V Conceal Type
- EV2029 – 24V Conceal Type



BTU's	18000
K/Cal	4536
Air Flow	310 CFM

Width	445mm
Depth	360mm
Height	145mm



Additional Components

COMPLETE DCSS INSTALLATION KIT

Items sold separately

The Rencool DCSS kit is designed for multipurpose use. The system is made into 3 primary pieces to maximize the kits ability for easy installations when size may be a problem. The system has a cooling capability of up to 4.2Kw and is available in both 12 & 24 volt versions.

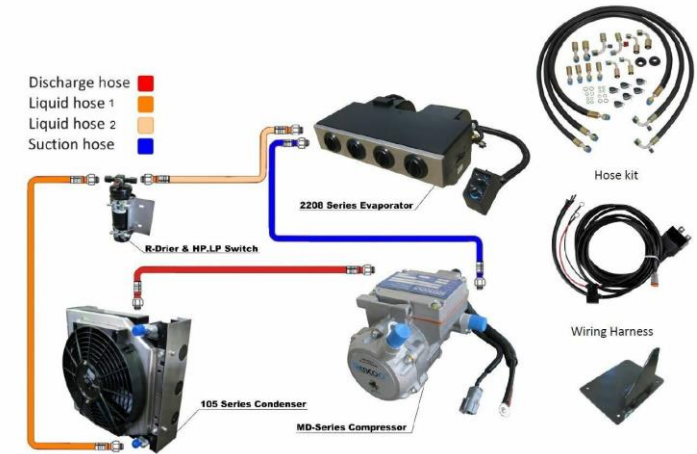
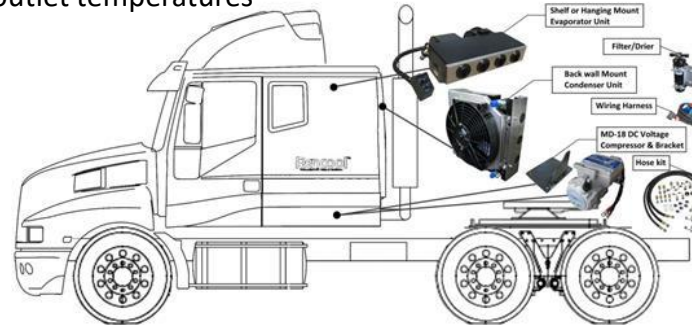
Perfect applications may be camper trailers, dog floats, motor-home bedrooms, small machine cabs, truck sleeper cabins, Motorsport vehicles. With only 18cc displacement capacity we can achieve higher rpm to obtain optimal cooling capacity with conservative power consumption. 2000 to 6000 rpm available depending on the application, Vent outlet temperatures regulate between +6 to + 10 degrees C @ +40 Deg Ambient

- ✓ Operate while driving or parked
- ✓ 2 – 3-5Kw Cooling Power
- ✓ Adjustable Compressor RPM available to conserve power
- ✓ No Vibration – No engine operation
- ✓ Limited Servicing Required
- ✓ Fuel Saving while operating vehicle

- ✓ MD Series compressor
- ✓ MD series mount bracket
- ✓ Compressor Port fittings
- ✓ Condenser assembly
- ✓ 12" thermo fan with brackets
- ✓ Temp/Fan speed control switches

- ✓ EV2208 Evaporator assembly
- ✓ Wiring harness – relays / fuses
- ✓ Hose Crimper tool
- ✓ Receiver drier and bracket
- ✓ H.P.L.P safety switch

- ✓ Hoses and fittings
- ✓ O-rings & oil
- ✓ EVA foam wraps
- ✓ Maxie fuse & Holder
- ✓ Water drain hose
- ✓ Saddles & fasteners



Product Weights (Individual)

ALL WEIGHTS ARE APPROXIMATE AND NOT EXACT

MD18 Compressor

Item	(Kg)
MD18 Compressor	6.5
Compressor Bracket	3.5
Compressor Mounts	
Compressor Pad Fittings	

EV-2208 Evaporator

Item	(Kg)
Evaporator	6
Bracket	
Vents	
Drain Hose	
Flapper Value	
Evaporator Controller	

RNC-105 Condenser

Item	(Kg)
Condenser / with Shroud	4
Condenser Fan	1
Condenser Brackets	.85

Receiver / Drier

Item	(Kg)
Receiver / Drier	.9
Receiver / Drier Bracket	.1
Pressure Switch	.05

Hoses & Fittings

No# 6

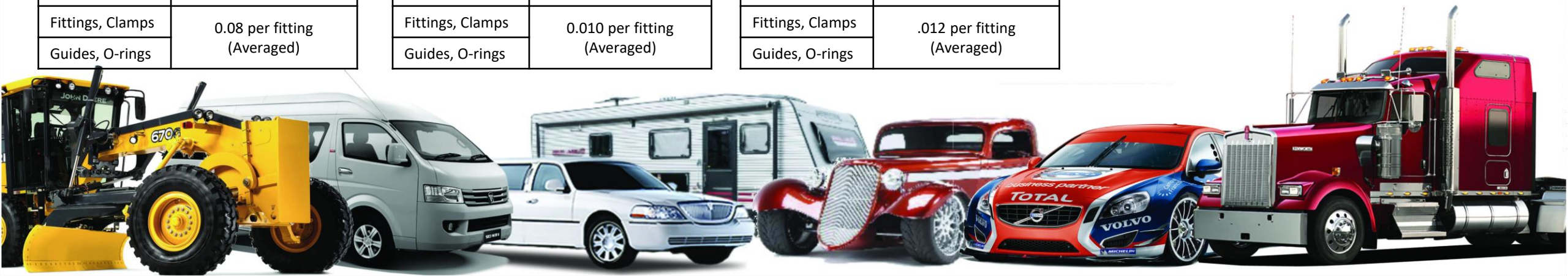
Item	(Kg)
Hose	0.15 per meter
Fittings, Clamps	0.08 per fitting (Averaged)
Guides, O-rings	

No# 8

Item	(Kg)
Hose	0.17 per meter
Fittings, Clamps	0.010 per fitting (Averaged)
Guides, O-rings	

No# 10

Item	(Kg)
Hose	0.2 per meter
Fittings, Clamps	.012 per fitting (Averaged)
Guides, O-rings	



FAQ

➤ Pad Fittings

- ✓ Compressor

AF0076	ALUMINIUM	5/8" – 18	#6
AF0077	ALUMINIUM	3/4" – 16	#8

- ✓ Condenser

AF9011	ALUMINIUM	3/4" – 16	#8
AF9012	ALUMINIUM	7/8" - 14	#10

➤ Average Power Consumptions

- ✓ Condenser Fan RNC105 Average 4-5 Amps @ 24V DC
- ✓ Evaporator EV Unit: Average 5 Amps @ 24V DC
- ✓ Relays Average 1 Amp @ 24V DC



FAQ cont.

➤ Is The Compressor Able to be Mounted within Engine Bay?

- ✓ Ideally the controller should not be located within the engine bay due to excessive heats, the compressor is able to withstand 100°C but 70°C should be considered due to external factors and residual heat.

If mounting within the engine bay heat shielding is required including the suction lines. Careful consideration should be taken prior to mounting in this location as the unit's life expectancy may shorten.

➤ Can the Compressor be side mounted?

- ✓ The Compressor must be mounted upright with the controller towards the top, Operating the compressor mounting on its side or upside down may cause a critical failure to the unit.

➤ Can the Compressor be run at a lower speed value?

- ✓ The compressors rely on the cold flood back from the refrigerant to cool down the controller to keep it in check. Special Builds can be requested or controllers can be purchased to complete your own tests.



FAQ cont.

➤ Type of Power Cables Required?

- ✓ A minimum of 2B&S copper insulated cabling MUST BE used. Failing to use the recommended cabling will result in high current consumption, high resistance and over all poor performance from the entire DC voltage HVAC system. Length of cabling MUST BE calculated so resistance is kept to a minimum.

➤ Do I have to Upgrade my Alternator?

- ✓ Your alternator must be above 100 amps on @12 volt and 24 volt and able to cope with your calculated other power consumption 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, electrical system installed on the truck, machine, Van or any type of vehicle mobile or stationary etc must also be sufficient to handle the extra load from the Rencool compressor and/or complete system.

➤ What Connector Types are included with the compressor?

- ✓ DTM4 Plugs (kit) and a 2 pole power connector for the battery leads are included with each compressor.



FAQ cont.

➤ When the required 100amp output is not achievable

- ✓ In a small area you can run the speed down on the compressor but you will sacrifice the cooling capacity. There is generally a 10Amp difference between each speed. So depending on the conditions if you current draw is 45A on low then mid will be 55 and high will be 65 . The lower your head pressure the lower your amp draw.
- ✓ Some have been successful by increasing the size of their battery for compensation when the idle is down.
- ✓ Dual battery option is a patch fix, it can work however there will always be the situation where the alternator is not able to charge and supply the power needed to the vehicle at the same time, This may overwork your alternator and lead to component failure. Careful consideration would be needed to ensure you are able to recharge the batteries.

➤ Can the compressor support dual evaporate units for large cabin areas

- ✓ This would lead to poor oil return and poor floor back to the compressor, which will reduce the life of the compressor itself, in belt driven compressors this has been possible when there is a lot of reserve capacity , but even then performance levels can vary.
- ✓ Upgrading to a rooftop RedDOT system may elevate this need.

Details for this unit can be found at www.electricalaircon.com.au



FAQ cont.

➤ Compressor Oil Type

- ✓ POE 68 or if special arrangement is made prior Ester 68 can be used.

100ml will be in the compressor on it's arrival to you.

➤ Horizontal Condenser Mounting?

- ✓ Theoretically It is recommended that a minimum of a 30' slope of the condenser, this will assist with the gravitational collection of the oil, also with the collection of the liquified gas, which will carry that oil through the system. Though bespoke options can be available which we can certainly assist you with, If required we can offer tube condensers but not in a wide variety of sizes with limited mounting options. Alternatively options can be an oil separator to introduce into the system which will incorporate 2-3 new fittings and an oil return line.



Disclaimer Please Note:

Eletricaircon / StreetFX / Rencool and all affiliates 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 DC HVAC compressor and/or full complete units containing our MD or DRK7/& 8 series compressors on complete unit systems.

Your alternator must be **above** 100 amps on @12 volt and 24 volts and able to cope with your calculated other power consumption's 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, electrical system installed on the truck, machine, Van or any type of vehicle mobile or stationary etc must also be sufficient to handle the extra load from the Rencool compressor and/or complete system.

Staff will share any information on our systems that may 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.





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division of **STREETFX**
MOTORSPORT

MD18 DC ELECTRIC COMPRESSOR

RENCOOL HVAC SYSTEMS

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