

1.0 SCOPE / PURPOSE

1. Provide an efficient, safe procedure for changing out a Mine Air Remote Condensing Unit (RCC).
2. Scenarios #1 and #2 can easily be followed by qualified persons with a Refrigerant Handling License. Scenario #3 does not require the said license.
3. The procedure is designed to minimize equipment downtime to 45 minutes or less once the decision has been made to change out the RCC.
4. The procedure is open to various scenarios that may present themselves in the field. These scenarios are presented below and offer a unique solution to each.

2.0 RCC CHANGEOUT SCENARIO #1

The compressor is not pumping to full capacity. However, it does operate. The gauge pressures will be a high suction pressure and a low discharge pressure. Example: 75 suction, 85 discharge. It will be quicker to change out the RCC for a new one than it would be to repair it in place.

1. With the RCC not running, install a set of refrigeration gauges on the high and low side ports on the suction and liquid line at the exterior of the RCC. Make sure the lid is on the RCC.
2. Using a large adjustable wrench, undo the liquid quick disconnect on the outside of the RCC.
3. Turn power on to the RCC.
4. The compressor will now pump the entire refrigerant charge that is in the liquid line/evaporator/suction line, into the condenser and receiver on the inside of the RCC.
5. The suction and liquid line pressure will drop and the compressor will attempt to pump the suction and liquid line into a vacuum. **DO NOT** pump the suction or liquid into a vacuum. Shut off power to the RCC when there is approximately 1-2 PSIG on the suction side.
6. The suction and liquid line pressure may rise up at this point. If they do, wait until they equalize and then repeat step 5 as many times is necessary to achieve 1-2 PSIG.
7. You have now "pumped down" the system.
8. De-energize the RCC and lockout the machine.
9. Using a large adjustable wrench, undo the suction quick disconnect on the outside of the RCC.
10. Undo the main 24VDC power cable cannon plug and the clutch cable cannon plug from the outside of the RCC.
11. Using a ¾ in socket, undo the six mounting bolts that fasten the RCC to the mounting plate.
12. Remove the RCC using an overhead crane.
13. Make note of the tag on the lifting lug of the new RCC. It states how much refrigerant is contained in the unit.
14. Using the same crane, lift a new RCC onto the mounting plate and bolt it down.
15. Using a large adjustable wrench re-connect the suction and liquid line quick disconnects to the outside of the new RCC.
16. Re-connect the 24 VDC and clutch power cables to the front of the new unit.
17. Using a weigh scale and new R134A refrigerant, weigh in the required amount of new refrigerant. This amount depends on what the RCC is installed on. Generally, the charge is 3 ½ - 4 lbs. If you are unsure of the charge, contact your Mine Air Representative. **Add refrigerant in liquid form into the liquid line only.** Should the bottle have insufficient pressure too completely charge the system, the bottle can be carefully heated with a heat gun to increase the bottle pressure. . Do not increase the bottle pressure beyond 100 psig.
18. Remove your lock from the machine and re-energize the RCC.
19. Observe the RCC for proper operation.

3.0 RCC CHANGEOUT SCENARIO #2

The RCC is not operating due to a faulty compressor or controller. The compressor can't be started. Spare parts are not available at this time.

1. De-energize the RCC and lockout the machine.
2. Install a set of refrigeration gauges on the high and low side ports on the suction and liquid line at the exterior of the RCC.
3. Hook up a portable refrigerant recovery unit and recovery cylinder to the refrigeration gauges.
4. Recover the system refrigerant into the recovery cylinder; however **DO NOT** recover the system below 1-2 PSIG.
5. Shut the recovery unit off and close off the refrigeration gauges.
6. Observe the refrigeration gauges. The suction and liquid line pressure may rise up at this point. If they do, wait until they equalize and then repeat step 3 and 4 as many times is necessary to achieve 1-2 PSIG.
7. Using a large adjustable wrench disconnect the self-sealing refrigerant quick connects ensuring not to get dirt or debris into the fittings.
8. Undo the main 24VDC power cable cannon plug and the clutch cable cannon plug from the outside of the RCC.
9. Using a ¾ in socket, undo the six mounting bolts that fasten the RCC to the mounting plate.
10. Remove the RCC using an overhead crane.
11. Make note of the tag on the lifting lug of the new RCC. It states how much refrigerant is contained in the unit.
12. Using the same crane, lift a new RCC onto the mounting plate and bolt it down.
13. Using a large adjustable wrench re-connect the suction and liquid line quick disconnects to the outside of the new RCC.
14. Re-connect the 24 VDC and clutch power cables to the front of the new unit.
15. Using a weigh scale and new R134A refrigerant, weigh in the required amount of new refrigerant. This amount depends on what the RCC is installed on. Generally, the charge is 3 ½ - 4 lbs. If you are unsure of the charge, contact your Mine Air Representative. **Add refrigerant in liquid form into the liquid line only.** Should the bottle have insufficient pressure too completely charge the system, the bottle can be carefully heated with a heat gun to increase the bottle pressure. Do not increase the bottle pressure beyond 100 psig.
16. Remove your lock from the machine and re-energize the RCC.
17. Observe the RCC for proper operation.

4.0 RCC CHANGEOUT SCENARIO #3

Follow RCC service SOP to determine unit failure. If it has been determined that the refrigerant charge is not an issue and a licensed technician is not available, this method can be utilized to get the A/C back into service under most circumstances. If the RCC is changed out in this manner, the refrigerant charge may have to be checked and adjusted by a licensed technician at the earliest convenience to ensure optimal performance. This method can be accomplished in ½ hour or less.

1. De-energize the RCC and lockout the machine.
2. Undo the main 24VDC power cable cannon plug and the clutch cable cannon plug from the outside of the RCC.
3. Using a large adjustable wrench disconnect the self-sealing refrigerant quick connects ensuring not to get dirt or debris into the fittings.
4. Unbolt the six mounting bolts.
5. Following local lifting safety procedures to remove the failed unit (49 kg / 108 lbs) from the equipment and replace with a new or rebuilt RCC (pre-charged with R134a to 10 ounces).
6. Reinstall mounting bolts
7. Using a large adjustable wrench re-connect the suction and liquid line quick disconnects to the outside of the new RCC.
8. Re-connect the 24 VDC and clutch power cables to the front of the new unit.
9. Remove your lock from the machine and re-energize the RCC.
10. Observe the RCC for proper operation.

5.0 RCC CHANGEOUT VS COMPONENT REPLACEMENT

At some point during the troubleshooting process, the decision must be made to either change out the RCC unit completely, or to replace failed components with new ones if available. Below is a list of RCC components and their approximate change out times to help the technician in this decision.

- Compressor replacement – 3 hours due to pressure test and evacuation time
- Condenser replacement – 3 hours due to pressure test and evacuation time
- Refrigeration hose – 3 hours due to pressure test and evacuation time
- Drier replacement – 3 hours due to pressure test and evacuation time
- Refrigeration fitting – 3 hours due to pressure test and evacuation time
- Binary switch – 20 minutes
- Solenoid – 20 minutes
- Condenser fan relay – 20 minutes
- Condenser fan – 30 minutes
- Condenser fan breaker – 20 minutes
- Compressor Controller – 1 hour