

RS-52 (R-428A) TRIAL



Location: Nova Scotia Community College
Leed St. Halifax, Nova Scotia, Canada

Date: November 2006

Application: Simulated Supermarket Installation

System Equipment Specifications

Condensing Unit : CLW 283AA Maneurop
Water-cooled, 208/3/60
Refrigerant R-502

Display Case: Hussmann 4 door Frozen Food Case

Suction Line 150 Ft. 7/8" Pipe
Liquid Line 150 Ft. 3/8" Tubing
Vertical Suction lift: 10 Ft.

Controls: Case Thermostat controlling liquid line solenoid.
Sporlan 1 ton R-502 thermostatic expansion valve installed

Modifications to equipment before trial:

The receiver capacity of the condensing unit was increased from 10 Lbs to 20 Lbs to allow for the extended suction and liquid lines of the system.

No other modifications or retrofitting were done before conversion to RS-52

Notes: Installation of this system was similar to what might be found in typical small supermarkets and convenient stores in North America. A Water Cooled Condensing unit was used because of a lack of outside air available to the test site with-in the college campus buildings.

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	R-502	RS-52
Average Suction Pressure:	22 PSIG	23 PSIG
Average Suction Temperature	-5.7 F	+6 F
Average Discharge Pressure:	250 PSIG	250 PSIG
Average Discharge temperature	N/A	N/A
Average Space Temperature	1 F	1 F
Average Evaporator Air on Temperature	N/A	N/A
Average Evaporator Air off Temperature	N/A	N/A
Average Evap superheat	5 F	11 F
Average amperage	7.13 amps	7.7 amps
Average run time to pull down	144 minutes	77 minutes
Average oil level in glass	1/3	1/3
Average Cond. Water in temperature	46 F	43 F
Average Cond. Water out temperature	104 F	88 F

- Notes:**
1. Condensing Unit was equipped with a water regulating valve which was set to maintain 250 psig head pressure
 2. All readings are averages over several hours of operation
 3. During pull down TXV did appear to hunt more with RS-52 than R-502 but, once the desired space temperature was obtained, valve operation was similar to R-502 with a slightly higher superheat reading
 4. Pressures in PSIG
 5. Temperatures in degrees F.
 6. No adjustments were made to the equipment during the trial

General Observations:

- Oil return with RS-52 was similar to R-502
- Suction Pressures with RS-52 were similar to R-502
- Compressor amperage was similar with RS-52 to R-502
- Temperature Pull down time was much shorter with RS-52 than R-502.

Conclusions:

1. The hydrocarbon component of RS-52 provides the necessary oil return for typical supermarket low temp systems
2. Equivalent general operating performance was achieved on the conversion to RS-52
3. There appeared to be improved performance during initial temperature pull down operation.
4. Adjustments to the thermostatic expansion valve could further improve overall performance & energy usage



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