



Refrigerant Solutions Ltd

## **RS-24 AUTOMOTIVE AIR CONDITIONING FIELD TRIAL**

R12 was replaced by RS-24 in the automotive air conditioning system of a 1987 Toyota Camry saloon in a field trial carried out by Refrigerant Services Inc, Canada between June and November 1999.

### **SYSTEM SPECIFICATIONS:**

Vehicle 2: 1987 Toyota Camry  
Engine: 2.0 l  
Refrigerant charge: 0.68 kg R12

### **MODIFICATIONS TO SYSTEM**

No modifications were made to the system.

### **PROCEDURES**

1. Recovered existing charge of R12 and evacuated system to 300 microns.
2. Recharged with exact weight R12 as recommended by vehicle manufacturer.
3. Installed temperature sensors on suction line, discharge line, evaporator air outlet, and conditioned space.
4. Installed suction and discharge gauges.

Note: oil levels were not recorded as compressors were not equipped with oil sight-glasses.

### **STAGE 1 OF AUTO AIR CONDITIONING TRIAL**

Recorded baseline data on system using R12 at idle conditions and again at 2000 rpm.

Baseline data included: suction pressure, discharge pressure, suction temperature, discharge temperature, evaporator leaving air temperature, conditioned space temperature, ambient temperature and engine rpm.

## STAGE 2 OF AUTO AIR CONDITIONING TRIAL

Recovered R12 and evacuated system to 300 microns.

Charged with RS-24 equal to 90% of the original charge.

Recorded baseline data similar to stage 1.

## AUTOMOTIVE AIR CONDITIONING FIELD TRIAL RESULTS

### VEHICLE: 1987 TOYOTA CAMRY

	RECORDED DATA			
	R12		RS-24	
	1000 RPM	2000 RPM	1000 RPM	2000 RPM
Suction pressure	1.33	1.24	1.38	1.19
Suction temperature	-3	-5	0	-3
Discharge pressure	8.39	11.03	9.88	11.72
Discharge temperature	47	69	49	78
Supply air temperature	4	5	5	3
Space temperature	9	7	7	7
Ambient temperature	9	11	10	10

#### NOTES:

Pressures are in bars

Temperatures are in Celcius

## OBSERVATIONS

### STAGE 1 AND 2 (REFER TO TABLE 3)

1. Discharge pressures were on average higher than R12.
2. Oil return was not a problem.
3. Reliable capacity comparisons could not be made because of low ambient temperatures at time of trials.
4. There was nonegative impact on the system operation or components.

## **CONCLUSION**

RS-24 installed as a Drop-in replacement for R12 in this automotive air conditioning application operated satisfactorily, appeared to provide similar capacity and there were no immediate negative effects on the equipment or operation.