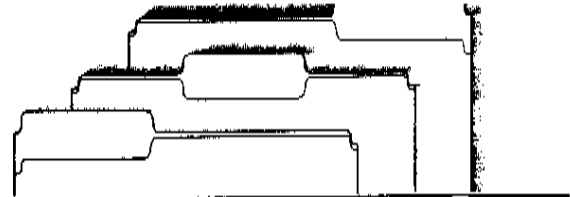


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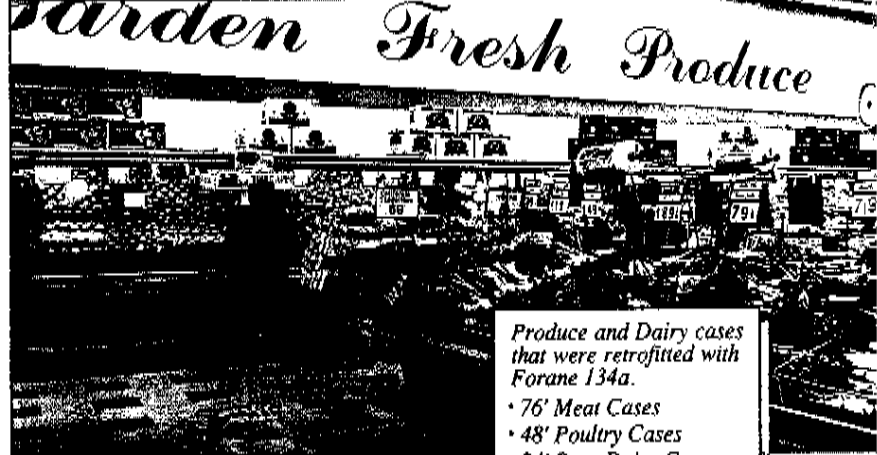
Refrigeration Case History Forane® 134a



New England Supermarket Retrofits Complete Refrigeration System from R-12 to Forane® 134a

*No System Component Modification
or Replacement Was Required,
Nor Was Business Interrupted.*

Customer	<i>Market Basket Woburn, Massachusetts</i>
Contractor	<i>Excel Refrigeration Tewksbury, Massachusetts</i>
Wholesaler	<i>Day Supply, 9 Branches in New England (Elf Atochem Distributor for 25 years)</i>



*Produce and Dairy cases
that were retrofitted with
Forane 134a.*

- 76' Meat Cases
- 48' Poultry Cases
- 24' Rear Dairy Cases
- 2 Deli Coolers
- Meat Cooler
- 32' Service Deli
- Meat Prep Room
- 56' 5D Dairy Front
- 44' 5D Dairy Middle
- Poultry Cooler
- Island Produce Cases
- Fish Cooler
- 3 Door Reach In
- Old Dairy Cooler
- Produce Cooler
- Wall Produce Cases

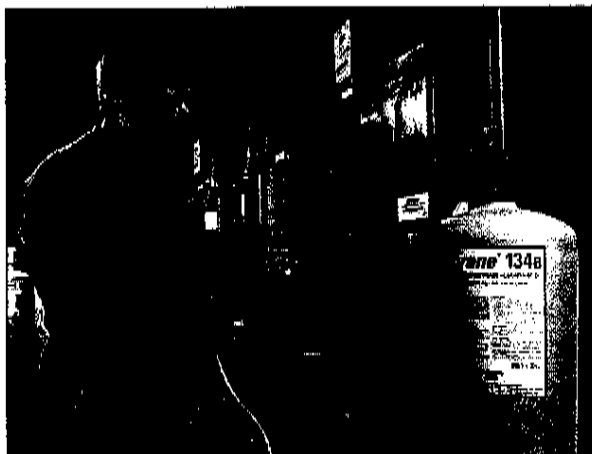
Market Basket, an aggressive chain of 51 supermarkets in the New England area, with 4 more planned by the end of 1993, has retrofitted the complete refrigeration system in their Woburn, Massachusetts store from R-12 to Forane 134a, Elf Atochem's single component replacement for CFC 12 that has zero ozone depletion potential.

In a model of efficiency, the retrofit of 2 - 1000 lb. systems and 1 - 300 lb. system was completed over a 5-day period during times when the store was closed at the end of the business day. The actual replacement of R-12 by Forane 134a refrigerant was accomplished in 10 hours. The additional retrofit time was consumed in the process of flushing mineral oil from the system. In addition to 2300 lbs. of Forane

134a refrigerant, only new lubricant and a new set of filter driers were required. No system modification or component replacement took place. The expansion valves and crank-case pressure regulator valves were not changed.

A simple flushing procedure using the new polyolester lubricant was used by the contractor, Excel Refrigeration, Tewksbury, Massachusetts. This reduced the mineral oil content to acceptable levels prior to recharging the system with Forane 134a refrigerant.

Today the system is running efficiently and the customer reports no significant cost increases in energy. Market Basket now plans to convert all refrigeration units in all its stores to Forane 134a refrigerant as soon as practicable.



Excel, the contractor, is charging the system with Forane 134a.

Refrigerant Required	2,300 lbs. of Forane 134a
Systems	2 Large Systems 1000 lbs. ea. 1 Small System 300 lb.
Refrigerated Cases	8 Product Cases on each 1000 lb. system 25'-30' Suction Temp. Range
Compressors	2-20 hp semi-hermetic on each large system 1-10 hp semi-hermetic on small system

*Elf Atochem North America, Inc.
Fluorochemicals
2000 Market Street
Philadelphia, PA 19103
1-800-245-5858*

elf atochem



Follow this step-by-step guide to retrofitting from CFC 12 to the new

1. *Initial system baseline data check with R-12*

- Check existing performance
- Record overall operating characteristics
- This data is used to optimize Forane 134a system in Step 8
- Leak check system thoroughly

2. *Compatibility check of system components, Forane 134a and Planetelf® ACD Polyolester Lubricant*

- Compressor seals and gaskets
- Desiccants: solid core or compacted bead type recommended
- Expansion devices: TEV super heat adjustment may be required

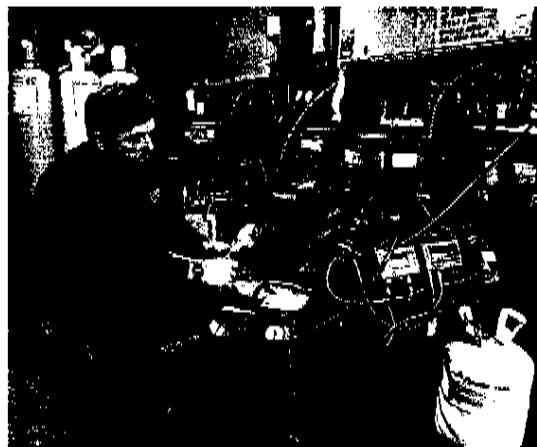


3. *Removal of mineral oil from system*

- Drain mineral oil from compressor and other accessible oil traps
- Replace with equivalent Planetelf ACD polyolester lubricant
- Controls - remove mineral oil, check pressure differentials
- Operate system with R-12 and Planetelf lubricant approximately 24 hours (this procedure insures adequate miscibility of the two lubricants and facilitates the removal of mineral oil from the system)
- Test for mineral oil level; if less than 5% proceed to next step, if not repeat step 3

4. *Recover R-12 from system*

- Use recovery equipment manufacturers' guidelines to recover R-12
- Remove Planetelf from system
- Change filter drier



complete supermarket refrigeration system forane[®] 134a refrigerant

5. Replace system components if required

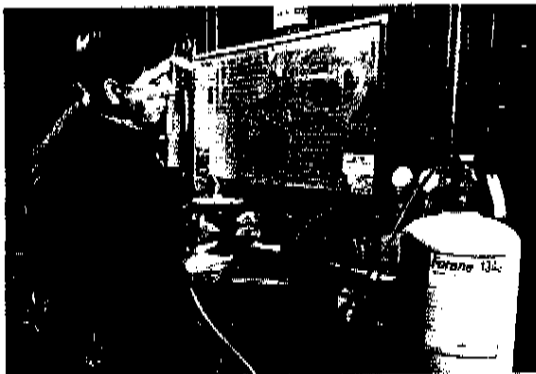
- Use component manufacturers' guidelines
 - Repair leaks as required
-

6. Evacuate system

- A minimum evacuation to 1500 microns is required
 - Lower levels are desired for most applications
 - Evacuate from both high and low sides
-

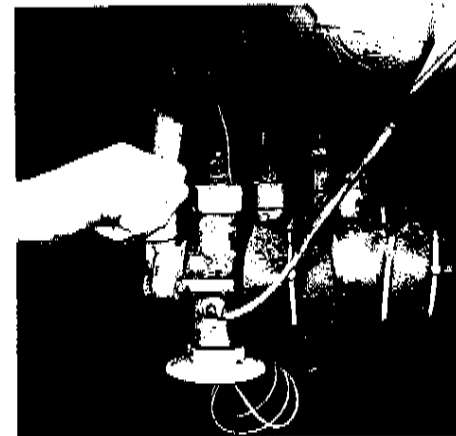
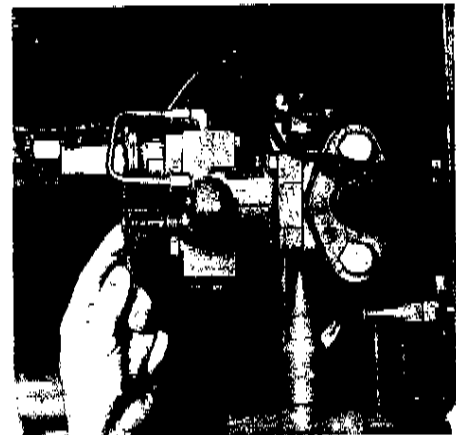
7. Charge system with Forane 134a and Planetelf ACD lubricant

- Generally the new Forane 134a charge will be approximately 91% of the original R-12 charge (use pressure/temperature chart)
- Identify system with proper R-134a and polyolester lubricant labels
- Leak check system thoroughly



8. Start system and check for proper operation

- Reset controls as necessary
- Suction pressures normally operate 5-7% less than R-12 systems
- Discharge pressures normally operate 5-8% higher than R-12 systems



For up-to-the-minute technical advice call 1-800-RETRO94.
If our guidelines differ from Original Equipment Manufacturer's (OEM) guidelines, follow OEM guidelines.