DuPont Refrigerants

U.S. GENERAL REPLACEMENT GUIDE

R-22 REPLACEMENTS

ISCEON® MO29
R-422D

HFC
Retrofit

Lubricant
MO
AB
POE

Evaporator Temp
Medium
Low

Applications
Refrigeration:
Commercial
Industrial

ISCEON® MO79
R-422A

HFC
Retrofit

Lubricant
MO
AB
POE

Evaporator Temp
Low

Applications
Refrigeration:
Commercial
Industrial

ISCEON® MO59
R-417A

HFC
Retrofit

Lubricant
MO
AB
POE

Evaporator Temp
High

Applications
AC:
Commercial
Residential

Suva® 410A
R-410A

HFC
New Equipment Only
Designed for R-410A

Lubricant
POE

Evaporator Temp
High
Medium

Applications
AC:
Commercial
Heat Pumps
Residential

Suva® 407C
R-407C

HFC
New Equipment
Retrofit

Lubricant
POE

Evaporator Temp
High
Medium

Applications
AC:
Commercial
Lt Commercial
Residential
Refrigeration:
Commercial

R-12 REPLACEMENTS (Suva® MP39, MP66, R409A)

ISCEON® MO49*Plus*™
R-437A

HFC
Retrofit

Lubricant
MO
AB
POE

Evaporator Temp
Medium
Low

Applications
Refrigeration:
Commercial
Industrial

ISCEON® 39TC®
R-423A

HFC
Retrofit

Lubricant
POE
single lubricant change

Evaporator Temp
High
Medium

Applications
Centrifugal
Chillers

Suva® 134a
R-134a

HFC
New Equipment
Retrofit

Lubricant
POE
PAG (auto AC)

Evaporator Temp
High
Medium
(Above +20°F /-7°C)

Applications
Commercial
Refrigeration:
Appliances
Chillers
Automotive AC

R-503, R-13 REPLACEMENTS

Suva® 95
R-508B

PFC
New Equipment
Retrofit (for R-503)

Lubricant
POE

Evaporator Temp
Very Low Temp (VLT)
Below -40°F

Applications
Refrigeration:
Cascade Systems

Freon® 23
R-23

HFC
New Equipment
Retrofit (for R-13)

Lubricant
POE

Evaporator Temp
Very Low Temp (VLT)
Below -40°F

Applications
Refrigeration:
Cascade Systems

SUGGESTED OIL GUIDE

ISCEON® Refrigerant	Recommended Lubricant	Alternate Lubricant
ISCEON® MO29 (R-422D)	MO	AB - POE
ISCEON® 39TC® (R-423A)	POE (single lubricant change)	
ISCEON® MO49*Plus*™ (R-437A)	MO	AB - POE
ISCEON® MO59 (R-417A)	MO	AB - POE
ISCEON® MO79 (R-422A)	MO	AB - POE

ISCEON® 9 Series Refrigerants - Oil Change Guidelines

- ISCEON® 9 Series Refrigerants are compatible with traditional and new lubricants – mineral oil, alkylbenzene and polyol ester; in most cases no change of lubricant type during retrofit is needed.
- Oil return is determined by a number of operating and design conditions; in some systems with complex piping configurations, POE may need to be added.
- Field experience has shown that ISCEON® MO29, MO49*Plus*™, MO59 and MO79 will work successfully with the existing mineral oil in most systems. In systems where oil return is a potential concern, such as flooded evaporators or in systems where the suction line accumulator acts as a low pressure receiver, replacement of all, or part (~25%) of the compressor oil charge with an OEM approved polyol ester is recommended.
- ISCEON® 39TC® requires one lubricant change to POE during retrofit. ISCEON® 39TC® tolerates high residual levels of mineral oil; therefore no system flushing is required after changing the original lubricant to POE.

Suva® Refrigerant	Recommended Lubricant	Alternate Lubricant
Suva® 134a	POE/PAG (Auto AC)	
Suva® MP39 (R-401A)	AB	MO
Suva® 409A	AB	MO
Suva® MP66 (R-401B)	AB	MO
Suva® 95 (R-508B)	POE	
Suva® 404A	POE	
Suva® 507	POE	
Suva® HP80 (R-402A)	AB	MO
Suva® 408A	AB	MO
Suva® HP81 (R-402B)	AB	MO
Suva® 407C	POE	
Suva® 410A	POE	
Suva® 123	MO	AB

Suva® Refrigerants - Oil Change Guidelines

- Where possible, use OEM-recommended oil type, charge size, and viscosity.
- When converting many CFC systems to an HCFC service refrigerant (Suva® MP39, 409A, MP66, HP80, 408A, or HP81), AB is the recommended lubricant for optimum oil return. One compressor oil change to AB will typically remove between 50 and 80% of the existing MO which satisfies the recommendations/requirements of most compressor manufacturers.
- When converting a CFC or HCFC system to an HFC refrigerant such as Suva® 134a or 95, POE is the recommended lubricant. At least 95% of the MO or AB should be replaced with POE of similar viscosity. This typically requires multiple oil changes.

MO = Mineral Oil AB = Alkylbenzene POE = Polyol Ester

Performance Comparison of Replacement Refrigerants

Refrigerant	Compared to	Discharge Pressure (psi) LT*	Discharge Pressure (psi) MT**	Discharge Temp (°F) LT*	Discharge Temp (°F) MT**	Est. Cooling Capacity (%) LT*	Est. Cooling Capacity (%) MT**	Est EER (%) LT*	Est EER (%) MT**
R-22 HFC Replacements									
ISCEON® MO29	R-22	+10	+12	-31	-66	+8	-5	+13	Same
ISCEON® MO79	R-22	+45	+53	-40	-70	+29	Same	+13	-8
ISCEON® MO59	R-22	-19	-23	-25	-62	-5	-13	+12	-1
R-502 HFC Replacements									
ISCEON® MO79	R-502	+3	+30	-13	-19	-1	Same	-4	Same
Suva® 404A	R-502	+1	+27	Same	-10	+1	+1	-2	-3

*Low Temperature: -25°F (-32°C) evaporator, 105°F (41°C) condensor, 65°F (18°C) return gas, 10°F (6°C) subcooling
**Medium Temperature: 20°F (-7°C) evaporator, 120°F (49 °C) condensor, 65 °F (18 °C) return gas, 10°F (6°C) subcooling
R-22 assumes demand cooling with discharge temp of 275°F (135°C)

Refrigerant	Compared to	Discharge Pressure (psi)	Discharge Temp (°F)	Est. Cooling Capacity (%)	Est. EER(%)
R-12 HFC Replacements (Chillers)					
ISCEON® 39TC®	R-12	Same	-20	0 to -5	
ISCEON® MO49*Plus*™	R-12	+30 to +39	-28 to -16	+4 to +10	-3 to-4
Suva® 134a	R-12	+10	-10	-15**	
R-503, R-13 Replacements					
Suva® 95	R-503	+2	-40	-2	
Freon® 23	R-503	-26	+53	-26	
Freon® 13	R-503	-41	-27	-29	
Service Refrigerants*					
Suva® MP39	R-12	+20	+25	+10	
Suva® MP66	R-12	+30	+30	+15	
Suva® 409A	R-12	+25	+30	+10	

Performance data based on normal application conditions and is intended to serve as a guide; actual performance will vary depending on system design and conditions.
+ is increase - is decrease
*HCFCs are subject to phase-out under the Montreal Protocol
**Capacity loss can be determined by performing an engineered retrofit. Contact DuPont for details.

PRESSURE CONTROL SETTINGS GUIDE

(approximate)

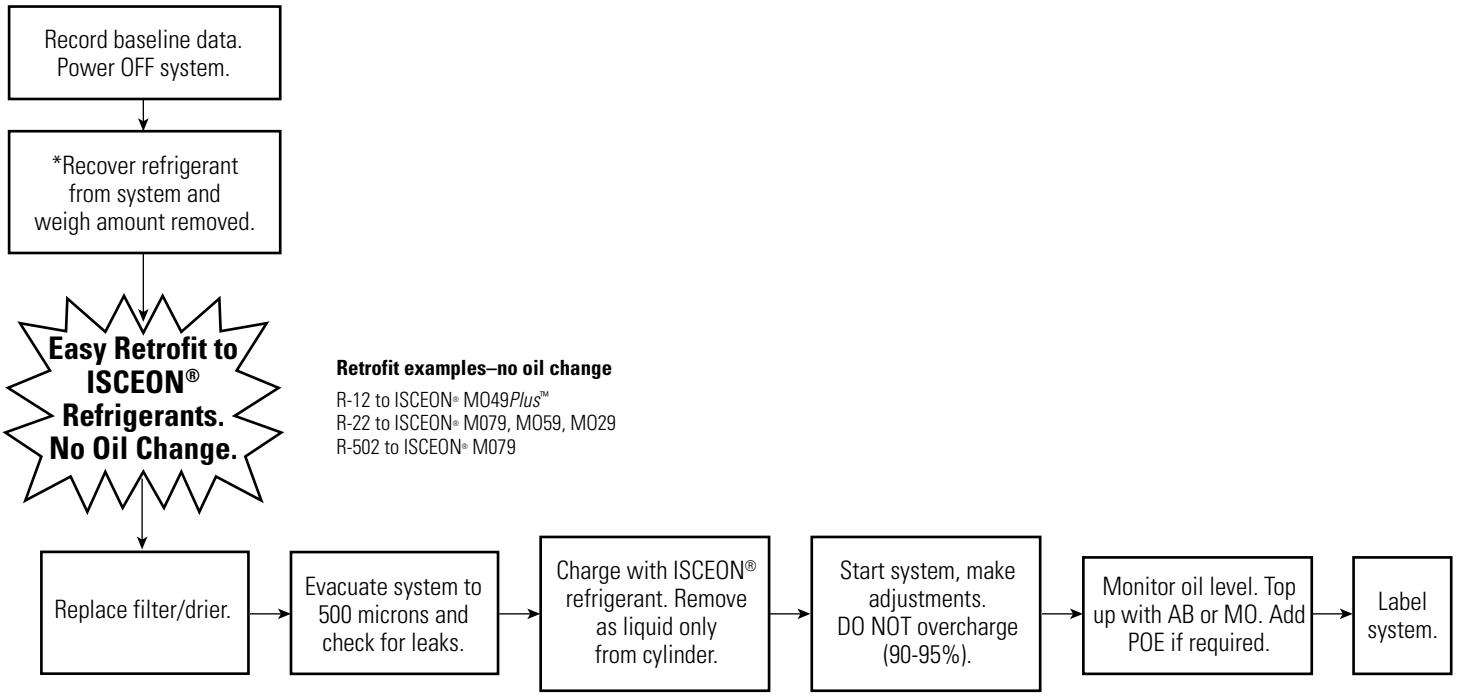
SUPERMARKET REFRIGERATION RETROFITS

This pressure control setting guide provides you with **approximate** settings that can be used as starting points to help you **optimize** your system. Recognize that the values expressed can vary with specific conditions, such as actual relative humidity, pressure drop, store layout, equipment location and design. If your current settings for R-22 vary from the baseline values given below, the alternative refrigerant settings will vary proportionally. For more information on supermarket retrofits, go to www.supermarkets.refrigerants.dupont.com

Application	Temp Range (°F)	Evap ΔT (°F)	Refrigerant													
			R-22		ISCEON® MO29		ISCEON® MO79		R-404A		R-507		HP80 (R-402A)		R-502	
			Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In
Beverage Cooler	35 to 38	15	41	66	42	69	52	82	53	82	56	86	59	91	50	78
Floral Cooler																
Produce Cooler																
Smoked Meat Cooler	32 to 35	15	38	62	39	64	49	77	49	77	52	82	55	86	47	73
Meat Reach Thru																
Service Deli																
Seafood																
Multi-Deck Fresh Meat	26 to 29	15	32	54	33	56	42	69	42	68	45	72	47	76	40	65
Frozen Glass Door	-10 to 0	10	9	24	9	23	14	32	15	33	16	35	37	48	31	41
Frozen Glass Walk-In																
Frozen Ice Cream	-30 to -20	10	0	10	0	10	4	15	4	16	5	18	6	20	3	15
Frozen Food - Open Type																

GENERAL RETROFIT GUIDE

For detailed information, please see our retrofit guidelines at www.refrigerants.dupont.com.



* For retrofit to HFC multiple oil changes, DO NOT remove CFC refrigerants until AFTER oil flushing is complete.

DuPont Refrigerants

U.S. GENERAL REPLACEMENT GUIDE

R-502 REPLACEMENTS (Suva® HP80, HP81, R-408A)

ISCEON® MO79	Suva® 404A	Suva® 507
R-422A	R-404A	R-507
HFC Retrofit	**HFC** New Equipment	**HFC** New Equipment
Lubricant MO AB POE	**Lubricant** POE	**Lubricant** POE
Evaporator Temp Medium Low	**Evaporator Temp** Medium Low	**Evaporator Temp** Medium Low
Applications Refrigeration: Commercial Industrial	**Applications** Refrigeration: Commercial Industrial	**Applications** Refrigeration: Commercial Industrial

R-11 REPLACEMENTS

Suva® 123
R-123

HCFC
New Equipment
Retrofit

Lubricant
MO

Evaporator Temp
High
Medium

Applications
Centrifugal
Chillers

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