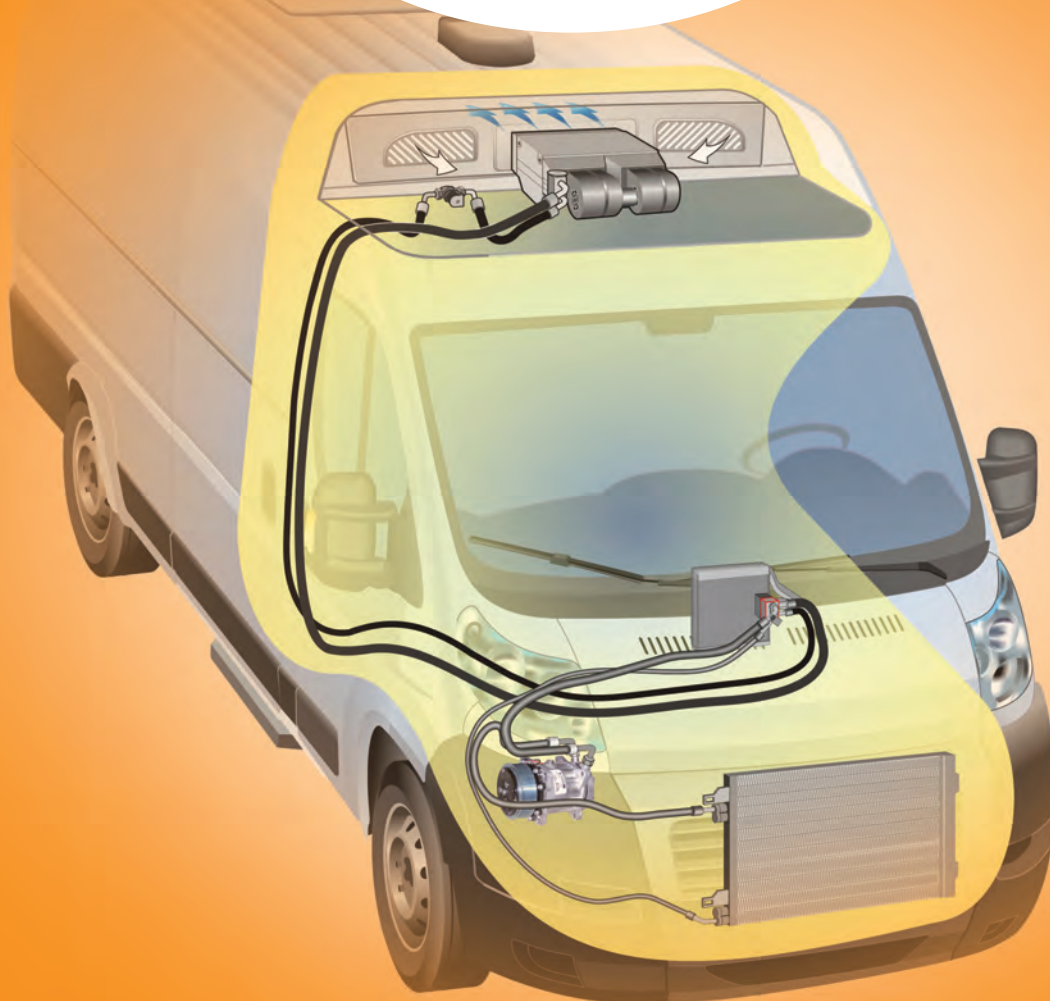


# REFRIGERATION

products & services



 **the manufacturer**  
at your doorstep

**flui**  **nnecto**<sup>®</sup>  
— by *manuli*<sup>®</sup> —

Manuli Hydraulics

MADE IN  
manuli

85 years of experience  
in the design and manufacturing of hoses & fittings.

compatibility with modern refrigerants  
in mobile refrigeration and air conditioning, we have you covered

low permeability and high flexibility  
expect high performance in low and high external temperatures

### Manuli – The Refrigeration Product Range Compatible with any Refrigerant and Oil

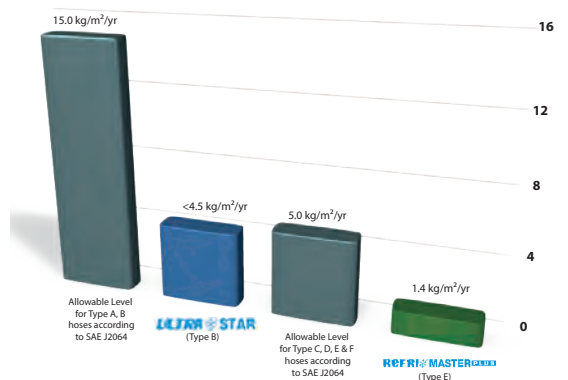
Refrigerant gases were subject to several evolutions over the years. Those evolutions were driven by the Refrigeration & Air Conditioning Technology development, and by the Environmental Protocols (Montreal 1987, Kyoto 1997) which required chemical engineers to study new challenging solutions. As a consequence, new gases were developed to protect the ozone layer.

Manuli has addressed these issues by conducting new research on Molecular Barrier compounds.

As the graph on the right presents, the result are hoses fully compatible both with old and modern refrigerants (including the new HFO1234yf that is a probable candidate for R134a replacement) ensuring a **PERMEABILITY LEVEL** which **EXCEED** the most demanding specification (type E of SAE J2064) with a cost effective construction (type B with no PA barrier layers).

This new product range is also **FULLY COMPATIBLE** with all the relevant Lubricants used for those applications (PAG & POE).

Comparison of Refrigerant Permeation Through Hoses



# Hoses & fittings

## REFRI<sup>®</sup> MASTER PLUS

TYPE E - SAE J2064



Textile braid reinforcement

Synthetic rubber outer cover made from an improved EPDM based compound

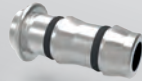
Synthetic rubber inner tube with a thermoplastic (PA) veneer

### Fittings

#### FRIGOCLIC™ SYSTEM

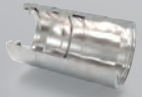
##### INSERT

one insert - 2 solutions  
39 different insert varieties: straight, angle, with valves, adaptors, connectors and other.



##### FERRULE - CRIMPED SOLUTION

designed for maximum robustness and service life; allows repeatable and controlled crimping in workshop conditions.



##### CLAMP - CLAMPED SOLUTION

designed for field maintenance; easy hose assembly; facilitates complex hose routings.



Universal, compact (Type E - SAE J2064) hose with high flexibility and exceptional permeability performance.

- Suitable for refrigeration and climate control
- 2 hose assembly options: machine crimped and field attachable solution (clamps)
- Excellent compatibility with common refrigerant gases - R134a, R404a, R407C, R401A & HFO1234yf
- Extremely low permeability rate - average of 1.4kg/m<sup>2</sup>/yr across all sizes
- Improved flexibility and minimum bending radius
- High temperature resistance - up to +140°C
- Great resistance to kinking and collapse

REFRIMASTER PLUS is compatible with the refrigerant of the future - HFO1234YF. It has been tested & approved by the manufacturer - Manuli Hydraulics.



PART.REF.	HOSE SIZE			R.O.D.		O.D.		W.P.		BURST PRESSURE		MIN.BEND		WEIGHT		FITTINGS	
	DN	dash	inch	mm	inch	mm	inch	bar	psi	bar	psi	mm	inch	g/m	lb/ft	FRIGO-CLIC	FRIGO-CLIC
H09071008*	8	- 6	5/16"			12.9	0.51	35	500	250	3620	40	1.57	80	0.05	FC+C00700-06	FC+C01000-06
H09071010*	10	- 8	13/32"			16.2	0.64	35	500	250	3620	50	1.97	140	0.09	FC+C00700-08	FC+C01000-08
H09071013*	13	- 10	1/2"			20.6	0.81	35	500	150	2170	70	2.76	235	0.16	FC+C00750-10	FC+C01050-10
H09071016*	16	- 12	5/8"			24.0	0.94	35	500	150	2170	80	3.15	285	0.19	FC+C00750-12	FC+C01050-12
H09071022*	22	- 16	7/8"			31.0	1.22	35	500	150	2170	120	4.72	405	0.27	FC+C00750-16	FC+C01050-16



#### CONTINUOUS SERVICE TEMPERATURE

-40°C / 125°F  
-40°F / 257°F

#### TUBE

High temperature resistant thermoplastic (PA) veneer

#### APPLICABLE SPECS

SAE J2064 Type E Class I



#### MAX OPERATING TEMPERATURE

140°C / 284°F

#### COVER

High temperature and environmental resistant synthetic rubber (EPDM)

#### REINFORCEMENT

One textile braid

# Hoses & fittings

## ULTRA STAR

TYPE B - SAE J2064



Wire braid reinforcement

High temperature resistance, synthetic rubber outer cover

Unique molecular barrier compound made from synthetic rubber (IIR)

### Fittings

#### STAR-CRIMP™ Crimped solution

The factory standard crimped fitting solution designed for controlled and repeatable crimping operations; includes over 25 insert designs and a dedicated ferrule



#### STAR-FIT™ Screw-type solution

Reusable and field attachable fitting solution designed to reduce maintenance costs and time both in the factory and in the field includes over 35 insert designs with a special screw-type ferrule



**A hydraulic style (Type B - SAE J2064), rubber hose with superior permeability performance.**

- Suitable for refrigeration and climate control applications
- 2 hose assembly solutions: crimped and reusable (screw type) fitting
- Excellent structural strength
- Unique compound allows superb performance <math><4.5 \text{ kg/m}^2/\text{yr}</math> - giving a Type B hose performance in excess of Type C, D, E & F requirements (SAE J2064)
- Excellent flexibility and low minimum bend radius

**ULTRASTAR is compatible with the refrigerant of the future - HFO1234YF. It has been tested & approved by the manufacturer - Manuli Hydraulics.**



PART.REF.	HOSE SIZE			R.O.D		O.D.		W.P.		BURST PRESSURE		MIN.BEND		WEIGHT		FITTINGS	
	DN	dash	inch	mm	inch	mm	inch	bar	psi	bar	psi	mm	inch	g/m	lb/ft	Std1	Std2
H01133005*	5	- 4	3/16"	11.2	0.44	13.0	0.51	35	500	150	2170	85	3.35	217	0.15	SC+C00300-04	SF+K00400-04
H01133008*	8	- 6	5/16"	15.4	0.61	17.2	0.68	35	500	150	2170	85	3.35	336	0.23	SC+C00300-06	SF+K00400-06
H01133010*	10	- 8	13/32"	17.5	0.69	19.3	0.76	35	500	150	2170	95	3.74	385	0.26	SC+C00300-08	SF+K00400-08
H01133012*	12	- 10	1/2"	21.6	0.85	23.4	0.92	35	500	150	2170	115	4.53	533	0.36	SC+C00300-10	SF+K00400-10
H01133016*	16	- 12	5/8"	25.5	1.00	27.3	1.07	35	500	150	2170	135	5.31	676	0.45	SC+C00300-12	SF+K00400-12
H01133022*	22	- 16	7/8"	29.5	1.16	31.4	1.24	35	500	150	2170	100	3.94	724	0.49	SC+C00300-16	SF+K00400-16
H01133028*	28	- 20	1.1/8"	36.1	1.42	38.0	1.50	35	500	150	2170	120	4.72	874	0.59	SC+C00300-20	SF+K00400-20
H01133035*	35	- 24	1.3/8"	42.8	1.69	44.8	1.76	35	500	150	2170	120	4.72	1214	0.82		SF+K00400-24



**CONTINUOUS SERVICE TEMPERATURE**  
-40°C / 125°C  
-40°F / 257°F

**TUBE**  
Unique molecular barrier compound made from synthetic rubber (IIR)

**APPLICABLE SPECS**  
SAE J2064 Type B Class I



**MAX OPERATING TEMPERATURE**  
140°C / 284°F

**COVER**  
High temperature and environmental resistant synthetic rubber

**APPROVALS**  
GOST-R

**REINFORCEMENT**  
One steel wire braid

# Accessories

## Hoses & filters

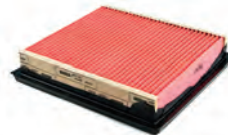
hot air hose  
santoprene



hot air hose  
fiber glass



air filters



air dryers



## Tools & machines

manual  
crimper



small  
bench -top crimper



medium  
bench -top crimper



hose cleaning  
equipment



manual  
pipe bending tool



specific dies  
for refrigeration fittings



hose cutting  
tool



clamp tool for  
FrigoClic fittings



## Hose covers

elastomeric thermal  
insulating sleeve



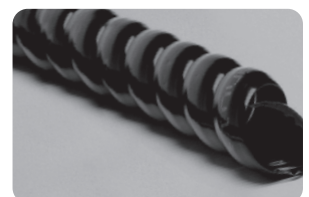
metal thermal shield



thermoplastic  
thermal shield



protection spring



# Services



**Installation**  
of hose assemblies



**Kitting**  
of hoses in sets



**Custom fittings**  
made to order



**Hose tagging**  
with individual codes



**Tube bending**  
made to order



**Testing**  
for pressure resistance



**Delivery**  
at your doorstep



**Repair**  
of refri hose assemblies



## Why is it beneficial to work with us

- refrigeration hoses
- crimped & field clamped solution for field assembly
- rigid connections
- air dryers, filters
- machines & tools
- accessories

### PRODUCTS DIRECTLY FROM THE MANUFACTURER

- MH offers hoses, inserts and ferrules or clamped solutions as well as assembly equipment to provide a leak-proof hose assembly



### Manuli Integrated System

### DURABLE AND LEAK-PROOF HOSE ASSEMBLY

- Hydrosshops
- Service On-Site VAN 24H
- safety stock
- fast delivery
- technical support

### SPEED & FLEXIBILITY OF WORKING WITH US

- all hoses compatible with HFO-1234yf refrigerant
- constant product development in R&D centers
- 80 years of Manuli experience
- references of industry leaders

### QUALITY AND EXPERIENCE YOU CAN TRUST

- kitting services for machine manufacturers
- rigid connections made to order
- hose assembly testing
- custom fittings
- hose tagging with individual codes

### SERVICES FOR MACHINE MANUFACTURERS

## **BUY ALL**

from one supplier

## **SAVE TIME**

& improve aftersales

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