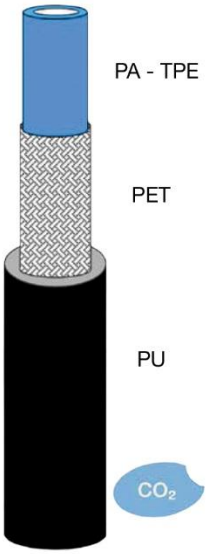
Capillary Hoses and Connection Fittings

EC Freon LFR5 thermoplastic hose is used in refrigeration systems for both the fixed plants, and the automotive[1] industry. The intense research on new materials has allowed to develop a product that can substitute traditional copper piping, offering the advantage of flexibility and ease assembly, while maintaining excellent strength and low permeability to refrigerant gases (including CO2).

1) Service stations for the recharge of refrigerant gas and the maintenance of A/C systems.



DATA SHEET - FREON FR5 HOSES

HOSE TYPE	CODE	OUTSIDE DIAM.	INSIDE DIAM.	CORE		CORE MATERIAL	BRAID TYPE	COVER MATERIAL	BURST PRESSURE	WORKING PRESSURE	MIN BEND
				OUTSIDE DIAM.	INSIDE DIAM.						
DN2	LFR557210100	6.0 mm	2.1 mm	4.6 mm	2.2 mm	Elastomerized polyamide	Reinforcement braid in polyester fiber	Antiabrasion polyurethane	600 bar	120 bar	15 mm
		0.24 in	*(1/12) in*	*0.18 in*	*0.09 in*				*8702 psi*	*1740 psi*	*0.59 in*
DN4	LFR510100	8.2 mm	4.0 mm	6.8 mm	4.1 mm				600 bar	120 bar	30 mm
		0.32 in	*(5/32) in*	*0.27 in*	*0.16 in*				*8702 psi*	*1740 psi*	*1.18 in*
DN5	LFR520100	10.1 mm	4.8 mm	8.0 mm	5.0 mm				600 bar	120 bar	50 mm
		0.40 in	*(3/16) in*	*0.31 in*	*0.20 in*				*8702 psi*	*1740 psi*	*1.97 in*
DN6	LFR530100	11.9 mm	6.4 mm	9.6 mm	6.6 mm				600 bar	120 bar	75 mm
		0.47 in	*(1/4) in*	*0.38 in*	*0.26 in*				*8702 psi*	*1740 psi*	*2.95 in*

Technical features

- LETT Freon LFR5 thermoplastic hoses represent an innovative alternative to the traditional copper tubing for applications in refrigeration plants and automotive industry. Flexibility, light weight, vibration damping and ease assembly are the main features of these thermoplastic hoses.
- The research in the field of plastics has produced a particular alloy of polyamide (PA) and thermoplastic elastomers (TPE). This innovative material combines the excellent mechanical properties and low gas permeability of polyamides, with the high flexibility of elastomers, without having recourse to plasticizing additives. Despite of its low density, the elastomerized polyamide provides an excellent barrier to refrigerant gases (R-22, R-134a, R-404a, R-407c, R-410a, R-507, R-600a, R-744) and an excellent chemical resistance to lubricating oils, typically mixed with the refrigerant (e.g. PAG oils, mainly used in automotive industry, or POE oils, spread in fixed installations).
- "F-Gas" directives (2006/40/EC and 2006/842/CE) require the use of refrigerants with low environmental impact (GWP <150, Global Warming Potential). Carbon dioxide used as refrigerant (R-744) has a GWP = 1, it is non-flammable, has low toxicity, is readily available and low cost. However, CO2 requires pressures about 10 times higher than a conventional refrigerant gas. LETT Freon LFR5 thermoplastic hoses have been developed to work with CO2, providing a working pressure up to 120 bar, with a safety ratio of 1:5.
- Internal core of LETT Freon LFR5 hoses is made of elastomerized polyamide. Reinforcing braid in high tenacity polyester yarn (PET) and micro-perforated cover in antiabrasion polyurethane (PU) provide hose a high resistance to pressure and surface abrasion, ensuring performances in accordance with UNI EN 1736 standard.
- Working temperature of LETT Freon LFR5 hoses is in the range -45°C to +130°C. Furthermore the directives REACH (2006/1907/EC) and RoHS (2002/95/EC) are met.

PERMEABILITY TEST*

REFRIGERANT GAS	PERMEABILITY PER SQUARE METER OF HOSE					LEAKAGE RATE CLASS*
	UNIT	PRESSURE 60 BAR		PRESSURE 120 BAR		
		TEMPERATURE 32°C	TEMPERATURE 100°C	TEMPERATURE 32°C	TEMPERATURE 100°C	
R-12	g/year m2	327	1894	373	2108	3
R-134a		301	1745	343	1942	3
R-404a		294	1700	335	1892	3
R-407c		273	1579	311	1757	3
R-410a		254	1473	290	1640	3
R-600a		224	1300	256	1447	3
R-744 (CO2)		-	-	51**	290**	-

(*) In compliance with UNI EN 1736 standard.
(**) CO2 at 120 bar is in supercritic zone and in this phase some fluid characteristics are gas-like and other liquid-like. The permeability of CO2 at 120 bar is evaluated considering a factor of about 512 for the gas/liquid conversion.

LFR5 SERIES CAPILLARY HOSES TECHNICAL SPECIFICATIONS

Technical-constructive features:
Internal core in polyamide, reinforcement with a polyester fiber, exterior covering in micro perforated polyurethane antiabrasion.

Applications:
CAPILLARY LFR5 series hoses have been created for the through flow of R22, R134A, R404, R407, R410, R507 refrigerants and CO^2 and relevant POE oils lubricants.

Utilization temperature:
From -45°C to +130°C

Specification:
Standards UNI EN 1736,
Regulation "REACH" (EC n° 1907/2006),
European Directive n° 2002/95/EC "RoHS".

Model No	Type	inch	In. Diameter	Out. Diameter	Working Pressure	Working Pressure	Min. Bending Diameter	Weight	Ring Code
			mm	mm	*(bar)*	*(Psi)*	*(mm)*	*(g/m)*	
LFR557210100	DN2	1/12"	2.1	6	60	870	15	28	LBP112FR5ALN
LFR510100	DN4	5/32"	4	8.2	120	870	30	43	LBP532FR5AL
LFR520100	DN5	3/16"	4,8	10,1	60	870	50	69	LBP316R7
LFR530100	DN6	1/4"	6,4	11,8	60	870	75	86	LBP14R7
LFR540100	DN8	5/16"	8,1	14,2	60	870	89	120	LBP516R7V
LFR550100	DN10	3/8"	9,7	15,6	60	870	100	134	LBP38R7V
LFR560100	DN12	1/2"	12,9	19,3	60	870	125	180	LBP12R7V
LFR570100	DN16	5/8"	16,0	22,3	40	580	165	209	LBP58R7
LFR580100	DN20	3/4"	19,ⁿ	25,3	40	580	250	257	LBP34R7
LFR590100	DN25	1"	25,4	32,3	40	580	300	344	LBP1R7

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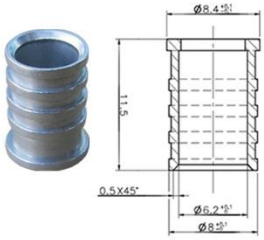
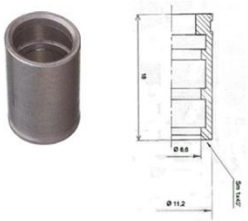
LFR5 SERIES FITTINGS FOR THERMOPLASTIC CAPILLERY HOSES

Aluminium Ring
DN2



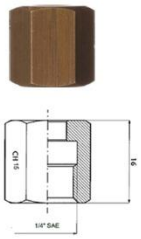
code LBP112FR5ALN

Aluminium Ring
DN4

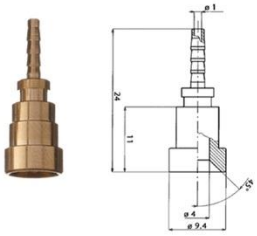


code LBP532FR5AL

Union Nut DN2
1/4" SAE

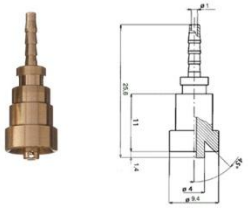


Pressed Type Union
DN2 1/4" SAE



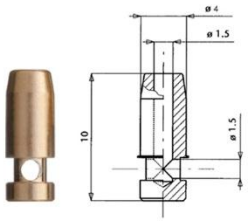
code LRPFD716J112FR5

Pressed Type Union DN2
1/4" SAE WITH DEPRESSOR



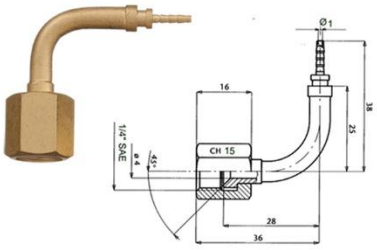
code LRPFD716J112FR5V

DEPRESSOR



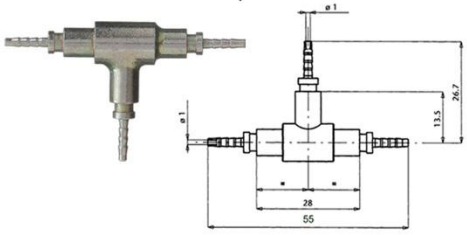
code LVFR5DN2

Elbow 90° DN2 1/4" SAE



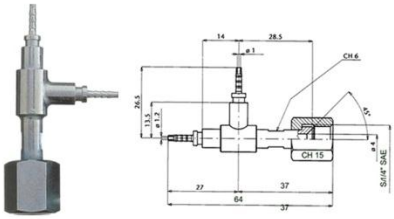
code LRPF90716J112FR5

TEE DN2 With Three Connection
Pipe



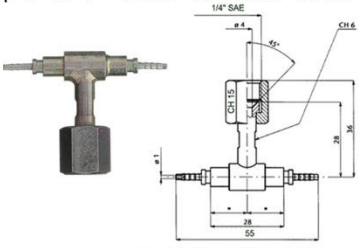
code LRFR51120012

TEE DN2 With Two Connection
Pipe 1/4" SAE Side Nut



code LRFR51120118

TEE DN2 With Two Connection
Pipe 1/4" SAE Center Nut



code LRFR51120117

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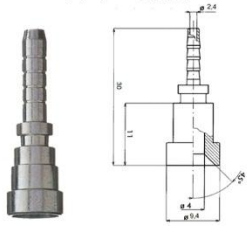
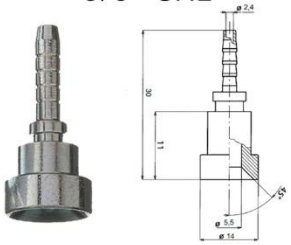
LFR5 SERIES FITTINGS FOR THERMOPLASTIC CAPILLERY HOSES

Pressed Type Union DN4
1/4" SAE



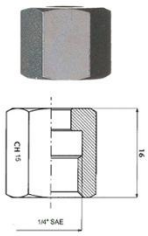
code LRPFD14SAE532FR5

Pressed Type Union DN4
3/8" SAE

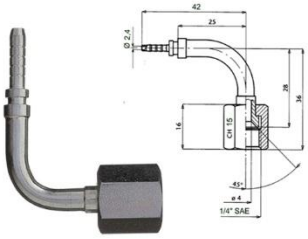


code LRPFD38SAE532FR5

Union Nut DN4
1/4" SAE

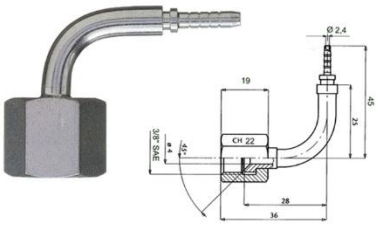


Elbow 90° DN4 1/4" SAE



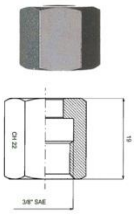
code LRPF9014SAE532FR5

Elbow 90° DN4 3/8" SAE



code LRPF9038532FR5

Union Nut DN4
3/8" SAE



Capillary Hose Cutter

code LPZP1

DN2 Hose Connection
Pressing Pincer

code LPZFR5DN2

DN4 Hose Fittings Pincer

code LPZFR5DN4