# REFRIGERAZIONE / *REFRIGERATION*

Tubi termoplastici e raccordi per la refrigerazione
*Thermoplastic Hoses and Fittings for Refrigeration Systems*

ZED®
THERMOPLASTIC TUBING AND HOSES
REFRIGERATION

THERMOPLASTIC TUBING AND HOSES

REFRIGERATION

# Indice / *Index*

**Azienda / *Company*** 04

Qualità / *Quality*....06

Imballi / *Packaging*....07

Area assemblaggio / *Assembly Area*....07

Etichettatura e tracciabilità / *Labelling and Traceability*....07

**Le soluzioni ZEC per la refrigerazione / *ZEC Solutions for Refrigeration Systems*** 08

**Tubi termoplastici e raccordi per la refrigerazione / *Thermoplastic Hoses and Fittings for Refrigeration Systems*** 09

Tubi capillari FR5T / *FR5T Capillary Hoses*....10
Applicazioni / *Applications*
Dati Tecnici / *Technical Data*

Raccordi per tubo capillare FR5T DN2 / *FR5T DN2 Capillary Hose Fittings*....12

Istruzioni di assemblaggio FR5 DN2 / *Assembly Instructions FR5 DN2*....13

Raccordi per tubo capillare FR5T DN4 / *FR5T DN4 Capillary Hose Fittings*....14

Istruzioni di assemblaggio FR5 DN4 / *Assembly Instructions FR5 DN4*....15

Accessori per tubi capillari / *Accessories for Capillary Hoses*....16

Tubi FR5T / *FR5T Hoses*....17
Applicazioni / *Applications*
Dati Tecnici / *Technical Data*

Raccordi per tubo FR5T / *FR5T Hose Fittings*....19

Tubi FR5A / *FR5A Hoses*....20
Applicazioni / *Applications*
Dati Tecnici / *Technical Data*

Raccordi per tubo FR5A / *FR5A Hose Fittings*....22

Tubi TLP / *TLP Charging Hoses*....23

**Indicazioni di montaggio / *Installation Instructions*** 26

## ZEC S.p.A.: Flessibilità per scelta

ZEC S.p.A., fondata nel 1961 da Eugenio Zantelli a Colorno, in provincia di Parma, produce tubi termoplastici per applicazioni a bassa, media, alta e altissima pressione.

A partire dal 1990 le attività commerciali sul mercato domestico sono estese all'espansione sui mercati internazionali.
Investimenti in risorse umane particolarmente qualificate, impianti di produzione tecnologicamente avanzati, attività di ricerca e sviluppo e la presenza commerciale favoriscono l'espansione sui mercati globali, dove ZEC S.p.A. oggi è presente in più di 90 paesi.

La considerevole crescita in tutte le aree è stata accompagnata da una gamma di prodotti sempre più ampia, dedicata a numerosi settori applicativi, quali oleodinamica, pneumatica, lubrificazione, automotive, alimentare, navale, refrigerazione, petrochimico-offshore, etc.
La gamma di prodotti di ZEC S.p.A. comprende tubi termoplastici standard o customizzati singoli, multipli e spiralati, con caratteristiche tecniche da 2mm a 40mm di diametro interno, pressioni di lavoro da 5bar a 1280bar e temperature di esercizio da -200°C a +260°C.

Tutti i tubi termoplastici di ZEC S.p.A. sono prodotti di materie prime di primaria qualità accuratamente selezionate.
Ogni fase del ciclo produttivo è soggetta a severi controlli qualitativi.
La produzione avviene esclusivamente all'interno dei ns. stabilimenti a Colorno, Italia.
I prodotti finiti sono conformi alle principali normative internazionali dei rispettivi settori applicativi, quali SAE, EN, ISO e DIN.
ZEC S.p.A. opera in regime di qualità UNI EN ISO 9001-2015.

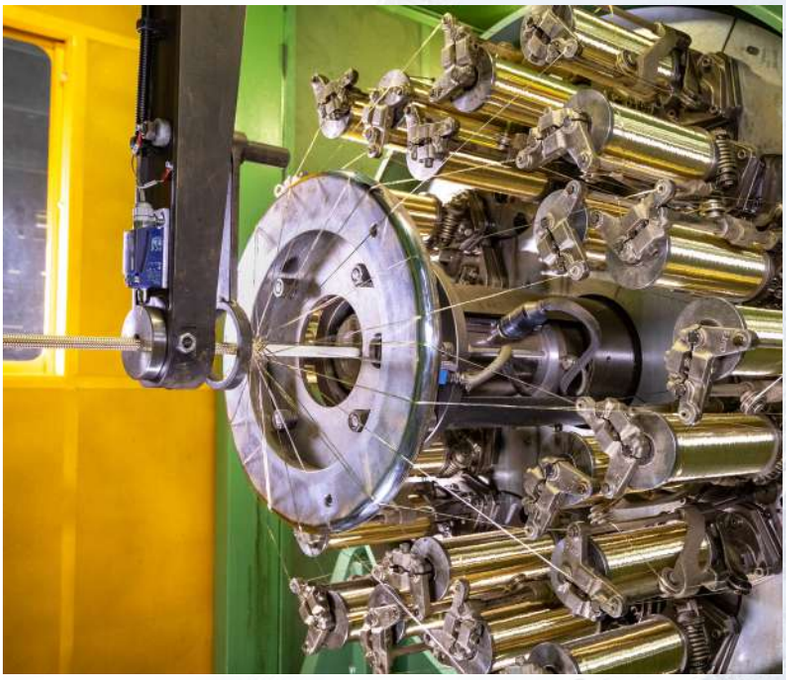
## *ZEC S.p.A.: Flexibility for Choice*

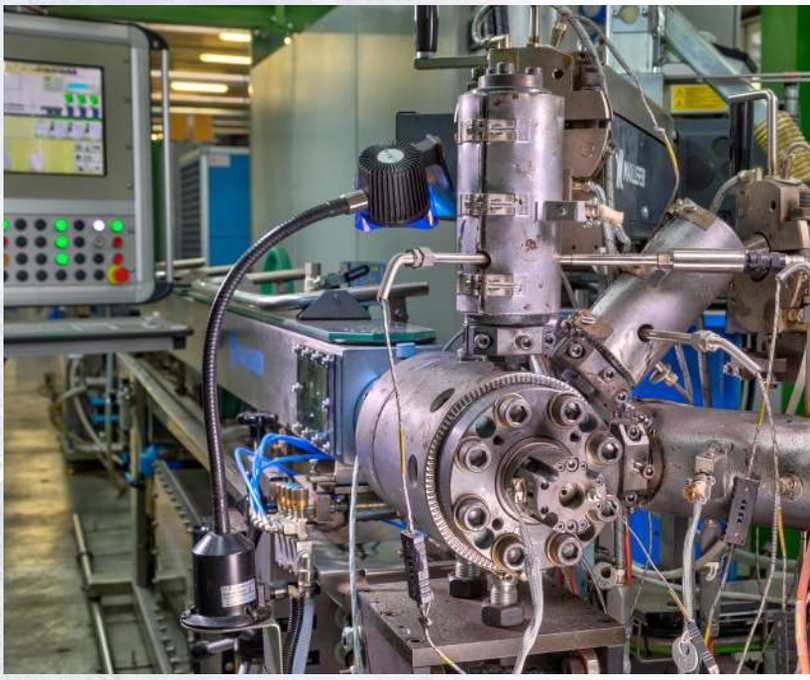
*ZEC S.p.A., founded in 1961 by Mr. Eugenio Zantelli in Colorno, Province of Parma, Italy, manufactures thermoplastic hoses for low, medium, high and very high pressure applications.*

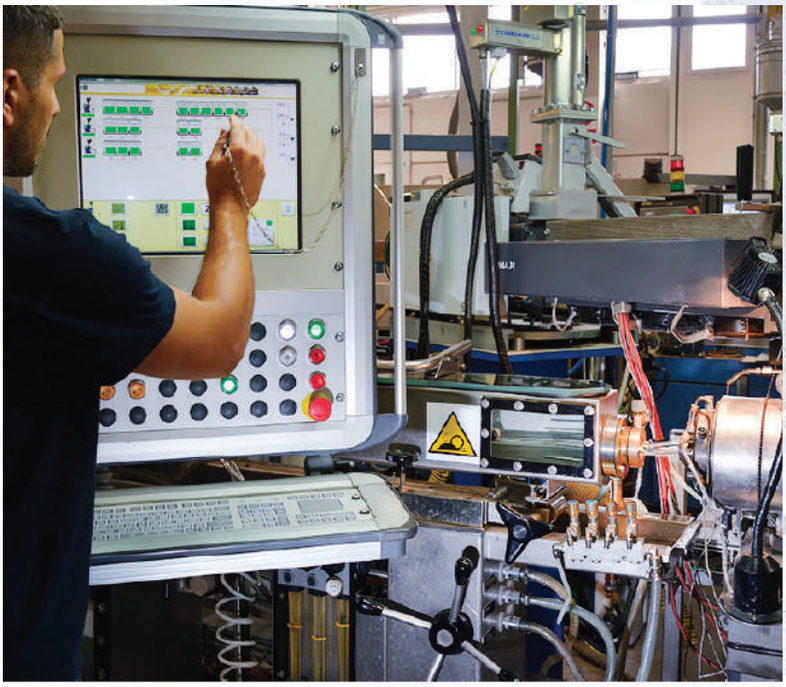
*Since 1990, the artisan approach to the production has been boosted by an international breakthrough. Investments in special skilled human resources, manufacturing, product innovations and commercial presence elevates ZEC S.p.A. meanwhile into the global market, covering more than 90 countries world wide.*

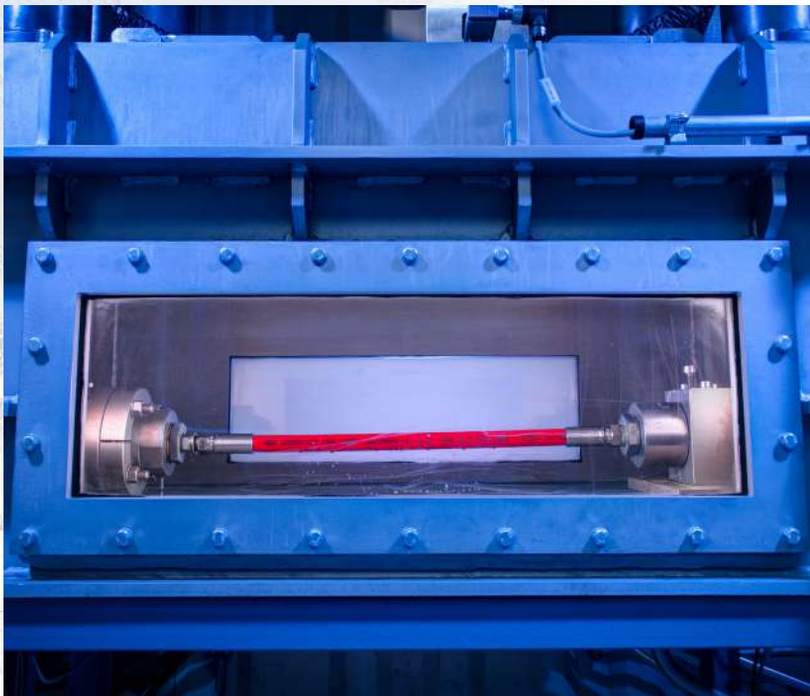
*The global expansion of the Company has been accompanied with the costant development of the product range dedicated to a large portfolio of applications such as fluid power, pneumatics, lubrication, automotive, food processing, marine, refrigeration, petrochemical-offshore, and so on.*
*The ZEC S.p.A. product range includes standard or customized single, multiple and coiled thermoplastic hoses, with technical characteristics within the range of 2mm to 40mm inner diameter, working pressures from 5bar to 1280bar and operating temperatures from -200°C to +260°C.*

*All products manufactured by ZEC S.p.A. are of top quality and carefully selected raw materials. Manufacturing processes are continuously multiple controlled.*
*The entire production takes place in our facilities located in Colorno, Italy.*
*End products comply strictly with major international standards such as SAE, EN, DIN & ISO.*
*All company sectors and activities are qualified and operate according to UNI EN ISO 9001-2015 quality system.*









## Qualità

I tubi sono conformi o superiori alle norme **UNI EN 1736, ISO 13971** e **UL 1963**, alle normative **SAE J2196** e **SAE J2888**, al **Regolamento "REACH"(2006/1907/CE)**, alla **Direttiva Europea "RoHS" (2011/65/UE).**

Il sistema di qualità certificato **ISO 9001:2015 di ZEC** assicura il continuo e costante controllo del processo di produzione, garantendo il rispetto delle buone pratiche di fabbricazione.

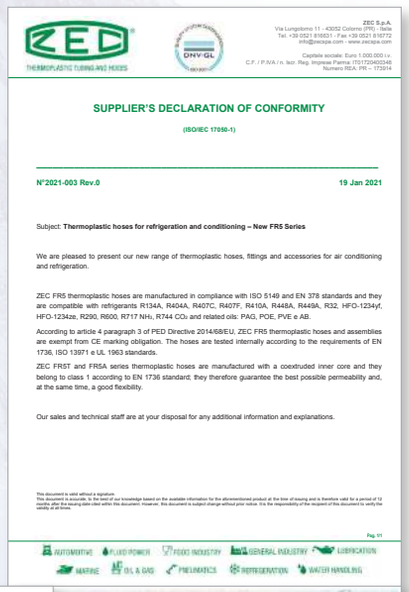
Queste ed altre certificazioni su prodotti specifici, dichiarazioni di conformità varie di prodotto e di materiali, documenti tecnici, manuali ed istruzioni, moduli vari sono disponibili in Area Riservata: www.zecspa.com/it/area-riservata

## *Quality*

*The hoses meet or exceed **UNI EN 1736**, **ISO 13971** and **UL 1963** standards, **SAE J2196** and **SAE J2888**, **"REACH" Regulation (2006/1907/EC)**, **"RoHS" European Directive (2004/65/EU).***

*The certified **ISO 9001:2015 ZEC** quality system ensures a continuous and constant control of the production process, guaranteeing compliance with Good Manufacturing Practices.*

*These and other certifications on specific products, as well as declarations of conformity, together with other technical documents, manuals and instructions, various forms are available in our Reserved Area: www.zecspa.com/en/reserved-area*



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Capitale sociale: Euro 1.000.000 i.v.
C.F. / P.IVA / n. iscr. Reg. Imprese Parma: IT01720400346
Numero REA: PR – 173914

SUPPLIER'S DECLARATION OF CONFORMITY

(ISO/IEC 17050-1)

N°2021-003 Rev.0 — 19 Jan 2021

Subject: **Thermoplastic hoses for refrigeration and conditioning – New FR5 Series**

We are pleased to present our new range of thermoplastic hoses, fittings and accessories for air conditioning and refrigeration.

ZEC FR5 thermoplastic hoses are manufactured in compliance with ISO 5149 and EN 378 standards and they are compatible with refrigerants R134A, R404A, R407C, R407F, R410A, R448A, R449A, R32, HFO-1234yf, HFO-1234ze, R290, R600, R717 $NH_3$, R744 $CO_2$ and related oils: PAG, POE, PVE e AB.

According to article 4 paragraph 3 of PED Directive 2014/68/EU, ZEC FR5 thermoplastic hoses and assemblies are exempt from CE marking obligation. The hoses are tested internally according to the requirements of EN 1736, ISO 13971 e UL 1963 standards.

ZEC FR5T and FR5A series thermoplastic hoses are manufactured with a coextruded inner core and they belong to class 1 according to EN 1736 standard; they therefore guarantee the best possible permeability and, at the same time, a good flexibility.

Our sales and technical staff are at your disposal for any additional information and explanations.

This document is valid without a signature.
This document is accurate, to the best of our knowledge based on the available information for the aforementioned product at the time of issuing and is therefore valid for a period of 12 months after the issuing date cited within this document. However, this document is subject change without prior notice. It is the responsibility of the recipient of this document to verify the validity at all times.

Pag. 1/1

AUTOMOTIVE · FLUID POWER · FOOD INDUSTRY · GENERAL INDUSTRY · LUBRICATION · MARINE · OIL & GAS · PNEUMATICS · REFRIGERATION · WATER HANDLING

DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: CERT-04120-00-AQ-BOL-ENCERT — Initial certification date: 05 March 1998 — Valid: 07 June 2021 – 06 June 2024

This is to certify that the management system of
**ZEC S.p.A. - Sede Legale e Operativa**
Via Lungolomo, 11 - 43052 Colorno (PR) - Italy
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
**ISO 9001:2015**

This certificate is valid for the following scope:
**Design, manufacture and sale of thermoplastic hoses for low, medium and high pressure. Trade of fitting for flexible hoses. (IAF: 14)**

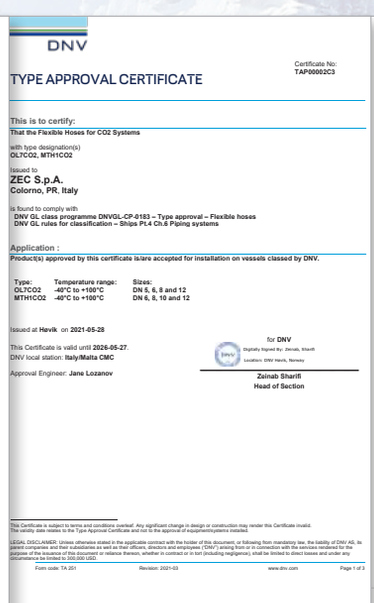
We declare that the procedures for carrying out the sampling activities for the determination of the "verified gross mass of the contents" (VGM) according to Method 2 provided for by the amendments to Chapter VI Rule 2 of the SOLAS 74 Convention as amended, are included in the quality management and is subject to periodic verification by the certification body.

Place and date: Vimercate (MB), 21 May 2021

For the issuing office: DNV - Business Assurance, Via Energy Park, 14 - 20871 Vimercate (MB) - Italy

Luca Beltrami, Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance Italia S.r.l., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy - TEL. +39 68 99 905. www.dnvgl.it



DNV

TYPE APPROVAL CERTIFICATE

Certificate No: TAP00002C3

This is to certify:
That the Flexible Hoses for CO2 Systems
with type designation(s)
OLTCO2, MTHTCO2
Issued to
ZEC S.p.A.
Colorno, PR, Italy
is found to comply with
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :
Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

| Type: | Temperature range: | Sizes: |
|---|---|---|
| OLTCO2 | -40°C to +100°C | DN 5, 6, 8 and 12 |
| MTHTCO2 | -40°C to +100°C | DN 6, 8, 10 and 12 |

Issued at Hovik on 2021-05-28

This Certificate is valid until 2026-05-27.
DNV local station: Italy/Malta CMC

Approval Engineer: Jane Lozanov

for DNV
Digitally signed by: Zeinab, Sharifi
Location: DNV Hovik, Norway
Zeinab Sharifi
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent, subsidiaries and affiliated companies and their respective officers, employees or agents are individually and collectively limited to the exclusive remedies for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Form code: TA 201 — Revision: 2021-03 — www.dnv.com — Page 1 of 3

Lloyd's Register

Type Approval Certificate Extension

This is to certify that Certificate No. 11/ 00008(E2) for the undersided products is extended and renumbered as shown.

This certificate is issued to:

| | |
|---|---|
| PRODUCER | ZEC SpA |
| PLACE OF PRODUCTION | Via Lungolomo 11 43052 Colorno (PR) Italy |
| DESCRIPTION | Thermoplastic hose consisting of an inner core of thermoplastic polymer, polyester fibre reinforcement and a polyurethane outer cover, with end fittings. |
| TYPE | OLT series |
| APPLICATION | As short joining lengths of flexible hose to accommodate relative movements between permanent pipes in $CO_2$ fire fighting systems; As short joining lengths of flexible hose to accommodate relative movements between permanent pipes in hydraulic oil systems, in locations where a source of ignition cannot present. |
| SPECIFIED STANDARDS | Lloyd's Register's Rules and Regulations for the Classification of Ships. SAC 2017/2010 |

| | |
|---|---|
| Certificate No. | 11/ 00008(E2) |
| Issue Date | 18 October 2019 |
| Expiry Date | 7 August 2021 |
| Sheet | 1 of 2 |

M H M Hill
Southampton Technical Support Office
Marine & Offshore Lloyd's Register

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ 0559643

Срок действия: с 20.12.2016 по 19.12.2021

Руководитель органа — Эксперт

Сертификат не применяется при обязательной сертификации

## Imballi - Kit tubi e raccordi capillari

Le scatole di cartone per tubi (10m e 50m) e per raccordi (25pz e 50pz) garantiscono l'integrità dei prodotti e consentono uno stoccaggio adeguato, sia sullo scaffale di rivendita che dopo l'apertura della confezione.
Soluzione ideale per il mercato della distribuzione.

## *Packaging - Capillary Hoses and Fittings Kits*

*Cardboard boxes for hoses (10m and 50m) and for fittings (25pcs and 50pcs) preserve the product's integrity and allow proper storage, on the resale shelf and after package's opening.*
*An ideal solution for the retail market.*

## Area assemblaggio e Tubi raccordati

L'area di assemblaggio dedicata garantisce precisione e rapidità di esecuzione per soddisfare anche i costruttori di impianti più esigenti.

## *Assembly Area and Hose Assemblies*

*The dedicated assembly area ensures precision and fast execution to satisfy even the most demanding system manufacturers.*

## Etichettatura e tracciabilità

Qualità tracciabile e possibilità di personalizzazione.
La personalizzazione delle etichette e l'utilizzo di QR code forniscono al cliente la totale tracciabilità dei componenti nonchè la garanzia del prodotto finito.

## *Labeling and Traceability*

*Total traceability is assured by means of a resistant QR code label and automated code scanning system. Customization of the labels is available on request.*

## Le soluzioni ZEC per la refrigerazione

I tubi termoplastici ZEC per la refrigerazione trovano impiego nei sistemi di refrigerazione per il settore impiantistico industriale e per quello commerciale, sostituendosi alle tubazioni in rame.

### CARATTERISTICHE E BENEFICI

- soluzione flessibile e di facile installazione
- bassa permeabilità ai gas refrigeranti (compresa la $CO_2$)
- eliminazione perdite a causa di vibrazioni / movimenti del sistema
- elevata compatibilità chimica e resistenza rispetto ad agenti atmosterici
- riduzione dei processi di saldatura / brasatura

### APPLICAZIONI

- sistemi di controllo di pressione (pressostati) dei gas refrigeranti attraverso tubi capillari
- gestione gas refrigeranti su impianti commerciali (vetrine, frigoriferi espositori, cantinette, dispenser, ecc.)
- impianti refrigeranti (chillers) applicati su macchine utensili in genere
- sistemi di condizionamento industriale
- sistemi di raffreddamento per il trasporto refrigerato
- impianti di ricarica di gas refrigerante per i sistemi di condizionamento del settore automotive

## *ZEC Solutions for Refrigeration Systems*

*ZEC hoses are specifically designed for industrial and commercial applications to replace the traditional copper tubes.*

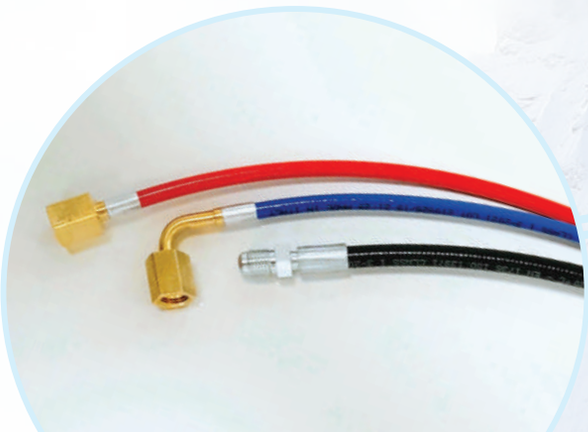
### *FEATURES AND BENEFITS*

- *flexible and easy to install*
- *low permeability to refrigerant gases (including $CO_2$ and ammonia)*
- *elimination of leakages caused by vibrations / movements of the system*
- *high chemical compatibility and resistance against atmospheric agents*
- *reduction of welding / brazing processes*

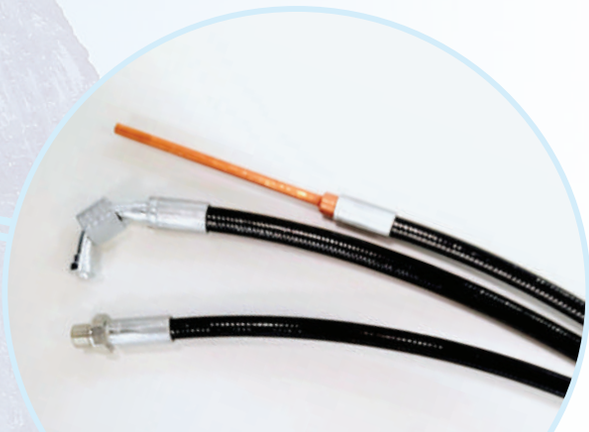
### *APPLICATIONS*

- *pressure control systems (pressure gauges) of the refrigerant gases through capillary hoses*
- *management of refrigerant gases on commercial equipment (display cabinets, display refrigerators, wine cellars, dispensers, etc.)*
- *cooling systems (chillers) applied on tooling machines in general*
- *industrial conditioning systems*
- *cooling systems for refrigerated transport*
- *refrigerant gas recharging systems for automotive air conditioning systems*

## Tubi termoplastici e raccordi per la refrigerazione
## *Thermoplastic Hoses and Fittings for Refrigeration Systems*



**Tubi capillari FR5T**
***FR5T Capillary Hoses***



**Tubi FR5A per la $CO_2$**
***FR5A Hoses for $CO_2$ lines***

**Conformi alla normativa EN 1736 CLASSE 1, i tubi ZEC FR5 garantiscono una bassa permeabilità ai gas refrigeranti.**

***Developed in compliance with EN 1736 CLASS 1, all ZEC FR5 hoses assure the lowest permeability to refrigerant gases.***

**Tubi FR5T per gli impianti split**
***FR5T Hoses for split systems***

## Tubi capillari FR5T

I capillari ZEC rappresentano la soluzione più efficiente per il collegamento di manometri, pressostati e per le linee di ritorno dell'olio.
Flessibili e particolarmente resistenti alle alte pressioni, i capillari ZEC riducono in maniera significativa le vibrazioni dell'intero sistema.

I capillari ZEC sono disponibili nelle colorazioni nera, rossa e blu, permettendo di distinguere i circuiti a bassa ed alta pressione.

I nostri capillari possono essere facilmente assemblati utilizzando la pinza PZFR5DN2 e la pressa portatile PZFR5DN4.

## *FR5T Capillary Hoses*

*ZEC capillary hoses are the most efficient solution for the connection of manometres, pressure gauges and for oil return lines. Flexible and highly pressure resistant, ZEC capillaries significantly reduce vibrations of the entire system.*

*The capillaries are available in black, red and blue colours, defining the phases of refrigeration circuits (high and low pressure).*

*ZEC capillaries can be easily assembled with the specific ZEC hand pliers PZFR5DN2 and ZEC crimping tool PZFR5DN4.*

# TUBI CAPILLARI FR5T
# *FR5T CAPILLARY HOSES*

## Caratteristiche tecniche

- **Caratteristiche tecnico-costruttive:**
Tubi capillari DN2 e DN4 coestrusi treccia tessile con interno liscio.
- **Temperature di utilizzo:**
Da -40°C a +120°C
Temperatura di picco max. 130°C
- **Pressioni d'esercizio:**
Rapporto di sicurezza superiore ai requisiti della EN 1736 e ISO 13971
- **Valore max. di vuoto:** 5 mbar
- **Specifiche:**
Conformi alle norme EN 1736 e ISO 13971 classe 1, requisiti della norma UL1963.

## *Technical Features*

- ***Technical-constructive features:***
*Smooth bore coextruded textile braid capillary hoses DN2 and DN4.*
- ***Working temperatures:***
*From -40°C to +120°C from -40°F to +248°F*
*Max. peak temperature 130°C / 266°F*
- ***Working pressure:***
*Safety ratio exceeding EN 1736 and ISO 13971 requirements*
- ***Vacuum rating:*** *5 mbar*
- ***Specifications:***
*Compliant with EN 1736 and ISO 13971 class 1, meet UL1963 requirements.*

## Scheda tecnica - *Datasheet*

| | ID | | | OD | | WP | | R MIN | | g | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *CODICE / CODE* | *inch* | *mm* | *DN* | *inch* | *mm* | *bar* | *psi* | *mm* | *inch* | *g/m* | *lbs/ft* |
| FR5T170 | 1/12" | 2.1 | 2 | 0.236 | 6.0 | 130 | 1885 | 15 | 0.590 | 27 | 0.018 |
| FR5T270 | 5/32" | 4.0 | 4 | 0.323 | 8.2 | 130 | 1885 | 30 | 1.181 | 45 | 0.030 |

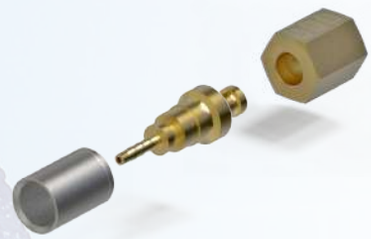
| *Tipo / Type* | *Codice / Part Nr.* | *Colore / Colour* | *Descrizione / Description* |
|---|---|---|---|
| **DN2 - TUBI / HOSES** | FR5T170N | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T1NR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T1NR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |
| | FR5T170R | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T1RR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T1RR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |
| | FR5T170B | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T1BR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T1BR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |
| **DN4 - TUBI / HOSES** | FR5T270N | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T2NR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T2NR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |
| | FR5T270R | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T2RR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T2RR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |
| | FR5T270B | ● | ROTOLO LIBERO / *FREE COIL* |
| | FR5T2BR010 | ● | SCATOLA 10 M / *10M CARTON BOX* |
| | FR5T2BR050 | ● | SCATOLA 50 M / *50M CARTON BOX* |

## Raccordi per tubo capillare FR5T DN2 / *FR5T Capillary Hose Fittings DN2*

### FEMMINA DIRITTA 1/4'' SAE
*1/4" SAE STRAIGHT FEMALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001AA | 1 |
| FR5T1K025AA | 25 |
| FR5T1K050AA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA7160TM | DADO 7/16" SAE OTTONE / *NUT 7/16" SAE BRASS* |
| YFDLSAOC7161120T | FEMM. D. 1/4" SAE / *S. FEM. 1/4" SAE* |
| BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

### FEMMINA DIRITTA 1/4" SAE CON DEPRESSORE
*1/4" SAE STRAIGHT FEMALE WITH DEPRESSOR*

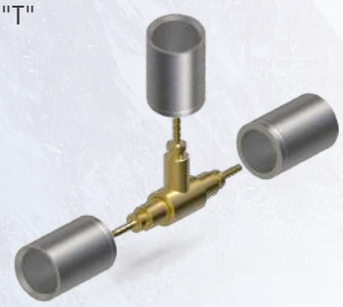


| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001GA | 1 |
| FR5T1K025GA | 25 |
| FR5T1K050GA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA7160TM | DADO 7/16" SAE OTTONE / *NUT 7/16" SAE BRASS* |
| YFDLSADOC7161120T | FEMM. D. 1/4" SAE DEP. / *S. FEM. 1/4'' SAE WITH DEP.* |
| BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

### FEMMINA 90° 1/4" SAE
*1/4" SAE 90° FEMALE*

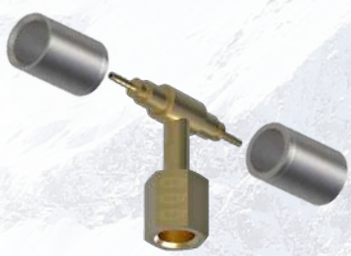
| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001BA | 1 |
| FR5T1K025BA | 25 |
| FR5T1K050BA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RPF914SAE112FR5 | FEMM. 90° 1/4" SAE / *90° FEM. 1/4" SAE* |
| BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

### RACCORDO A "T"
*"T" FITTING*



| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001T | 1 |
| FR5T1K025T | 25 |
| FR5T1K050T | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR51120012 | Raccordo a "T" / *"T" FITTING* |
| 3X BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

### RACCORDO A "T" CON DADO CENTRALE
*"T" FITTING WITH CENTRAL NUT*



| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001TC | 1 |
| FR5T1K025TC | 25 |
| FR5T1K050TC | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR51120117 | RACCORDO A "T", DADO CENTRALE 1/4'' SAE / *1/4'' SAE "T" FITTING, CENTRAL NUT* |
| 2X BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

### RACCORDO A "T" CON DADO LATERALE
*"T" FITTING WITH SIDE NUT*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001TL | 1 |
| FR5T1K025TL | 25 |
| FR5T1K050TL | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR51120118 | RACCORDO A "T", DADO LATERALE 1/4'' SAE / *1/4'' SAE "T " FITTING, SIDE NUT* |
| 2X BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

MASCHIO DIRITTO 1/4" SAE
*1/4" SAE STRAIGHT MALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T1K001CA | 1 |
| FR5T1K025CA | 25 |
| FR5T1K050CA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RPMD14SAE112FR5 | MASCHIO D. 1/4" SAE / *ST. MALE 1/4" SAE* |
| BP112FR5AA | BOCCOLA IN ALLUMINIO PER TUBO DN2 / *DN2 ALUMINIUM FERRULE* |

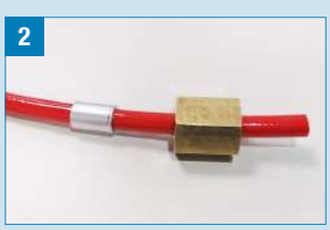
## ISTRUZIONI DI ASSEMBLAGGIO FR5T DN2 / *ASSEMBLY INSTRUCTIONS FR5T DN2*

1

Tagliare il tubo della lunghezza voluta usando le apposite pinze taglia tubo. Il taglio deve essere perfettamente perpendicolare.

*Cut the hose at the required length using the proper hose cutter. The cut must be perpendicular to the hose's longitudinal axis.*

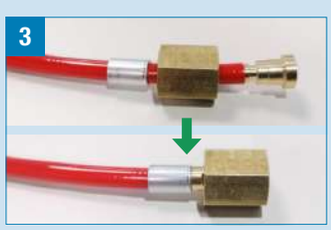
2



Inserire la boccola con l'intaglio rivolto verso il lato appena tagliato. Spingere la boccola lungo il tubo. Inserire il dado con il filetto rivolto verso il lato tagliato.

*Insert the ferrule with the incision on the side of the cut hose. Move the ferrule along the hose. Insert the nut with the thread on the side of the cut.*

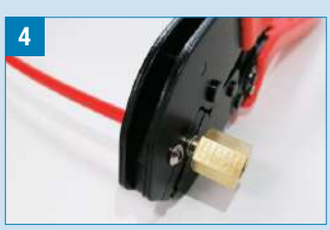
3



Inserire l'inserto all'interno del tubo fino in battuta e far scorrere il dado. Far scorrere anche la boccola fino in battuta contro l'inserto. Non ci deve essere spazio tra la boccola e l'inserto.

*Push the fitting insert into the hose all way down and slide the nut. Slide also the ferrule until it stops against the insert. There must be no space between the ferrule and the insert.*

4



Pressare la boccola con le pinze manuali. Le ganasce della pinza devono stringere la boccola in tutta la sua lunghezza. Tenere le pinze serrate per almeno 10 secondi.

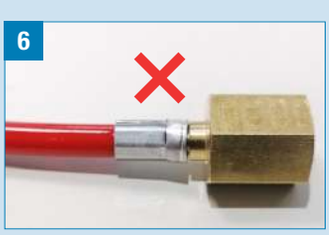
*Crimp the ferrule with the manual crimping pliers. The pliers' die must cover the whole ferrule length. Keep the pliers completely tight for 10 seconds at least.*

5

Ruotare la boccola di 90° e pressare nuovamente. Ispezionare quindi il tubo pressato: la boccola deve essere pressata uniformemente lungo tutta la lunghezza.

*Turn the ferrule of 90° and crimp again. Make a visual inspection of the fittings after the crimping: the ferrule must be uniformly crimped.*

6



Ispezionare il tubo pressato. La boccola deve essere pressata uniformemente lungo tutta la lunghezza. Nel caso la raccordatura non sia stata eseguita correttamente, tagliare il tubo e riprovare con un nuovo raccordo.

*Make visual inspections of the fittings after the crimping. The ferrule must be uniformly crimped. In case of an incorrect crimping you have to cut the hose and retry with a new ferrule.*

7

Controllare il diametro di pressatura, facendo la media tra due misurazioni a 90° e verificare che corrisponda con i dati riportati sulla Tabella di Pressatura ZEC.

*Check the crimping diameter by averaging two measurements at 90° and verify that it corresponds with the data shown on the ZEC Crimping Table.*

8

Se dopo diversi utilizzi il diametro di pressatura tende ad aumentare, regolare l'ingranaggio della pinza.

*If after several uses the measured crimping diameter tends increases, adjust the gear of the plier.*

## Raccordi per tubo capillare FR5T DN4 / *FR5T Capillary Hose Fittings DN4*

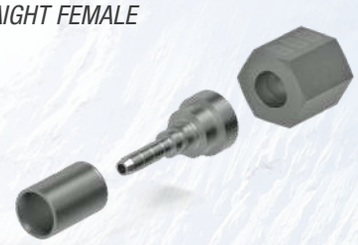
### FEMMINA DIRITTA 1/4" SAE
*1/4" SAE STRAIGHT FEMALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001AA | 1 |
| FR5T2K025AA | 25 |
| FR5T2K050AA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA716OTM | DADO 7/16" SAE OTTONE / *NUT 7/16" SAE BRASS* |
| YFDLSAFR716532 | FEMM. D. 1/4'' SAE / *S. FEM. 1/4'' SAE* |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

### FEMMINA DIRITTA 1/4" SAE CON DEPRESSORE
*1/4" SAE STRAIGHT FEMALE WITH DEPRESSOR*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001GA | 1 |
| FR5T2K025GA | 25 |
| FR5T2K050GA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA716OTM | DADO 7/16" SAE OTTONE / *NUT 7/16" SAE BRASS* |
| YFDLSADOC716532 | FEMM. D. 1/4'' SAE CON DEP. / S. FEM. 1/4'' SAE DEP. |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

### FEMMINA DIRITTA 3/8" SAE
*3/8" SAE STRAIGHT FEMALE*



| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001AC | 1 |
| FR5T2K025AC | 25 |
| FR5T2K050AC | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA58M | DADO 3/8" SAE ACCIAIO / *NUT 3/8" SAE STEEL* |
| YFDLSAFR58532 | FEMM. D. 3/8" SAE / *S. FEM. 3/8" SAE* |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

### FEMMINA 90° 1/4" SAE
*1/4" SAE 90° FEMALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001BA | 1 |
| FR5T2K025BA | 25 |
| FR5T2K050BA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RPF914SAE532FR5 | FEMM. 90° 1/4" SAE / *90° FEM. 1/4" SAE* |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

### FEMMINA 90° 3/8" SAE
*3/8" SAE 90° FEMALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001BC | 1 |
| FR5T2K025BC | 25 |
| FR5T2K050BC | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| YDLSA58M | DADO SAE 3/8" ACCIAIO / *NUT SAE 3/8" STEEL* |
| YF90LSAFR58532 | FEMM. 90° 3/8" SAE / *90° FEM. 3/8" SAE* |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

### RACCORDO A ''T''
*''T'' FITTING*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001T | 1 |
| FR5T2K025T | 25 |
| FR5T2K050T | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR54112 | RACCORDO A ''T '' / *''T'' FITTING* |
| 3X BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

## RACCORDO A ''T'' CON DADO CENTRALE
*''T'' FITTING WITH CENTRAL NUT*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001TC | 1 |
| FR5T2K025TC | 25 |
| FR5T2K050TC | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR54117 | RACCORDO A ''T'', DADO CENTRALE 1/4'' SAE / *''T'' FITTING, CENTRAL NUT 1/4'' SAE* |
| 2X BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

## RACCORDO A T CON DADO LATERALE
*T FITTING WITH SIDE NUT*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001TL | 1 |
| FR5T2K025TL | 25 |
| FR5T2K050TL | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RFR54118 | RACCORDO A ''T'', DADO LATERALE 1/4'' SAE / *''T'' FITTING, SIDE NUT 1/4'' SAE* |
| 2X BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

## MASCHIO DIRITTO 1/4" SAE
*1/4" SAE STRAIGHT MALE*

| Codice / Part Nr. | Pezzi / Pcs |
|---|---|
| FR5T2K001CA | 1 |
| FR5T2K025CA | 25 |
| FR5T2K050CA | 50 |
| **Codice / Part Nr.** | **Descrizione / Description** |
| RPMD14SAE532FR5 | MASCHIO D.1/4" SAE / *S. MALE 1/4" SAE* |
| BP532FR5 | BOCCOLA IN ACCIAIO PER TUBO DN4 / *DN4 CARBON STEEL FERRULE* |

## ISTRUZIONI DI ASSEMBLAGGIO FR5T DN4 / *ASSEMBLY INSTRUCTIONS FR5T DN4*

**1**

Tagliare il tubo della lunghezza voluta usando le apposite pinze taglia tubo. Il taglio deve essere perfettamente perpendicolare.

*Cut the hose at the required length using the proper hose cutter. The cut must be perpendicular to the hose's longitudinal axis.*

**2**

Inserire la boccola con l'intaglio rivolto verso il lato appena tagliato.

*Insert the ferrule with the incision on the side of the cut hose.*

**3**

Inserire l'inserto provvisto di dado fino in battuta.

*Insert the fittings with his nut until the stop.*

**4**

Far scorrere la boccola in direzione del dado fino in battuta. Non ci deve essere più spazio tra la boccola e l'inserto.

*Slide the ferrule until it stops. There must be no more space between the ferrule and the insert.*

**5**

Pressare la boccola usando le ganasce PZFR5DN4. Chiudere le ganasce fino all'apertura automatica delle stesse. Le ganasce della pinza devono stringere la boccola in tutta la sua lunghezza.

*Crimp the ferrule using the die set PZFR5DN4. Close the die until they automatically open. The pliers' die must cover the whole ferrule length.*

**6**

Ruotare la boccola di 90° e pressare nuovamente.

*Turn the ferrule of 90° and crimp again.*

**7**

Ispezionare il tubo pressato. La boccola deve essere pressata uniformemente lungo tutta la lunghezza. Nel caso la raccordatura non sia stata eseguita correttamente, tagliare il tubo e riprovare con un nuovo raccordo.

*Make visual inspections of the fittings after the crimping. The ferrule must be uniformly crimped. In case of an incorrect crimping you have to cut the hose and retry with a new ferrule.*

**8**

Controllare il diametro di pressatura, facendo la media tra due misurazioni a 90° e verificare che corrisponda con i dati riportati sulla Tabella di Pressatura ZEC.

*Check the crimping diameter by averaging two measurements at 90° and verify that it corresponds with the data shown on the ZEC Crimping Table.*

## Accessori serie FR5T / *FR5T Series Accessories*

### TAPPO DI PROTEZIONE
*PROTECTIVE PLASTIC PLUG*

| Codice / Part Nr. | Pezzi / Pcs | SAE |
|---|---|---|
| TAPPOPE14SAEKC | 50 | 1/4" |
| TAPPOPP38SAEKC | 50 | 3/8" |

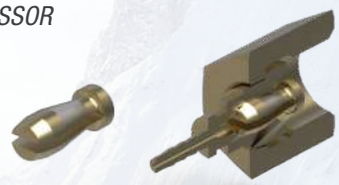
### GUARNIZIONE CONICA IMBUTO IN RAME
*CONIC FUNNEL COPPER WASHER*

| Codice / Part Nr. | Pezzi / Pcs | SAE |
|---|---|---|
| GCICU14FR5KC | 50 | 1/4" |

### GUARNIZIONE CONICA IN RAME
*CONIC COPPER WASHER*

| Codice / Part Nr. | Pezzi / Pcs | SAE |
|---|---|---|
| GCCU14FR5KC | 50 | 1/4" |
| GCCU38FR5KC | 50 | 3/8" |

### PREMISPILLO RACCORDO IN OTTONE
*BRASS DEPRESSOR*



| Codice / Part Nr. | Pezzi / Pcs | SAE |
|---|---|---|
| VFR5DN2TKC | 50 | 1/4" |

### PINZE TAGLIA TUBO
*HOSE CUTTER*

| Codice / Part Nr. | Descrizione / Description |
|---|---|
| PZG1 | Taglia-tubi per diametro esterno fino a 28.0 mm. / *Cutter up to a maximum external diameter of 28.0 mm.* |
| PZP1 | Taglia-tubi per diametro esterno fino a 12 mm. / *Cutter up to a maximum external diameter of 12 mm.* |

### PINZA A CRIMPARE PER BOCCOLA DN2
*CRIMPING TOOL FOR DN2 FERRULE*

| Codice / Part Nr. |
|---|
| PZFR5DN2 |

### PINZA A CRIMPARE PER BOCCOLA DN4
*CRIMPING TOOL FOR DN4 FERRULE*

| Codice / Part Nr. |
|---|
| PZFR5DN4 |

### UTENSILE OLEODINAMICO PER CRIMPAGGIO BOCCOLE DN2-4-6
*FLUID POWER CRIMPING TOOL FOR DN2-4-6 FERRULES*

| Codice / Part Nr. |
|---|
| PZBCFR5 |

| MATRICI / DIE SET | Diametro tubo / Hose diameter |
|---|---|
| MPZBCFR5DN2 | DN2 |
| MPZBCFR5DN4 | DN4 |
| MPZBCFR5DN6 | DN6 |

Istruzioni di assemblaggio per serie FR5T Capillari e Tubo FR5T disponibili su www.zecspa.com/it/supporto-tecnico.

*Assembly instructions for FR5T Capillary and FR5T Hose availables on www.zecspa.com/en/technical-support.*

## Tubi FR5T

I tubi ZEC per gli impianti split ad uso domestico ed industriale sono stati specificatamente progettati per lo scarico, l'aspirazione e per collegare l'evaporatore all'unità motocondensante, riducendo in maniera significativa i tempi di installazione.
Disponibile anche in versione pre-isolata.

## *FR5T Hoses*

*ZEC hoses for split systems have been developed specifically for discharge, suction and to connect the evaporator to the condensing units in domestic and industrial air conditioning, reducing significantly the installation time.*
*Available also in pre-insulated version.*

# TUBI FR5T
# *FR5T HOSES*

## Caratteristiche tecniche

- **Caratteristiche tecnico-costruttive:**
Tubi coestrusi treccia tessile con interno liscio.
Soluzione sviluppata per impianti refrigeranti e idonea anche per impianti Aria Condizionata per uso domestico ed industriale.
- **Temperature di utilizzo:**
Da -40°C a +120°C
Temperatura di picco max. 130°C
Con isolamento massima temperatura +110°C (230°F)
- **Pressioni d'esercizio:**
Rapporto di sicurezza superiore ai requisiti della EN 1736 e ISO 13971
- **Valore max. di vuoto:** 5 mbar
- **Specifiche:**
Conformi alle norme EN 1736 e ISO 13971 classe 1, requisiti della norma UL1963.

## *Technical Features*

- ***Technical-constructive features:***
*Smooth bore textile braid coextruded hoses.*
*Designed solution for refrigeration systems and for domestic and industrial HVAC applications.*
- ***Working temperatures:***
*From -40°C to +120°C from -40°F to +248°F*
*Max. peak temperature 130°C / 266°F*
With insulation maximum temperature limited to +110°C (230°F)
- ***Working pressure:***
*Safety ratio exceeding EN 1736 and ISO 13971 requirements*
- ***Vacuum rating:*** *5 mbar*
- ***Specifications:***
*Compliant with EN 1736 and ISO 13971 class 1, meet UL1963 requirements.*

## Scheda tecnica - *Datasheet*

| | ID | | | OD | | WP | | R MIN | | g | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *CODICE / CODE* | *inch* | *mm* | *DN* | *inch* | *mm* | *bar* | *psi* | *mm* | *inch* | *g/m* | *lbs/ft* |
| FR5T390N | 1/4" | 4.8 | 5 | 0.366 | 9.3 | 120 | 1740 | 50 | 1.968 | 55 | 0.036 |
| FR5T490N | 5/16" | 6.4 | 6 | 0.460 | 11.7 | 120 | 1740 | 75 | 2.952 | 80 | 0.053 |
| FR5T590N | 3/8" | 8.1 | 8 | 0.555 | 14.1 | 120 | 1740 | 90 | 3.543 | 105 | 0.071 |
| FR5T690N | 1/2" | 11.1 | 11 | 0.669 | 17.7 | 120 | 1740 | 100 | 3.937 | 150 | 0.101 |
| FR5T790N | 5/8" | 13.9 | 14 | 0.811 | 20.6 | 120 | 1740 | 125 | 4.921 | 190 | 0.128 |
| FR5T890N | 3/4" | 17.0 | 17 | 0.944 | 24.9 | 120 | 1740 | 165 | 6.496 | 270 | 0.181 |

## Scheda tecnica - *Datasheet* *( Versione preisolata / Pre-insulated version )*

| | ID | | | OD | | WP | | R MIN | | g | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *CODICE / CODE* | *inch* | *mm* | *DN* | *inch* | *mm* | *bar* | *psi* | *mm* | *inch* | *g/m* | *lbs/ft* |
| FR5T390NI | 1/4" | 4.8 | 5 | 1.074 | 27.3 | 120 | 1740 | 50 | 1.968 | 85 | 0.057 |
| FR5T590NI | 3/8" | 8.1 | 8 | 1.263 | 32.1 | 120 | 1740 | 90 | 3.543 | 130 | 0.087 |
| FR5T690NI | 1/2" | 11.1 | 11 | 1.393 | 35.4 | 120 | 1740 | 100 | 3.937 | 200 | 0.134 |
| FR5T790NI | 5/8" | 13.9 | 14 | 1.519 | 38.6 | 120 | 1740 | 125 | 4.921 | 250 | 0.168 |
| FR5T890NI | 3/4" | 17.0 | 17 | 1.692 | 43 | 120 | 1740 | 165 | 6.496 | 335 | 0.225 |

## Raccordi per tubo FR5T / *FR5T Hose Fittings*

FEMMINA DIRITTA
*STRAIGHT FEMALE FITTING*

| Tubo / *Hose* | Codice / *Part Nr.* | Descrizione / *Description* | Pezzi / *Pcs* |
|---|---|---|---|
| FR5T390N | FR5T3K001AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 1 |
| | FR5T3K025AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 25 |
| FR5T490N | FR5T4K001AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 1 |
| | FR5T4K025AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 25 |
| | FR5T4K001AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 1 |
| | FR5T4K025AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 25 |
| FR5T590N | FR5T5K001AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 1 |
| | FR5T5K025AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 25 |
| FR5T690N | FR5T6K001AD | RAC. FEM. DRITTA 1/2" SAE / STRAIGHT FEM. FIT. 1/2" SAE | 1 |
| | FR5T6K025AD | RAC. FEM. DRITTA 1/2" SAE / STRAIGHT FEM. FIT. 1/2" SAE | 25 |
| FR5T790N | FR5T7K001AE | RAC. FEM. DRITTA 5/8" SAE / STRAIGHT FEM. FIT. 5/8" SAE | 1 |
| | FR5T7K025AE | RAC. FEM. DRITTA 5/8" SAE / STRAIGHT FEM. FIT. 5/8" SAE | 25 |
| FR5T890N | FR5T8K001AF | RAC. FEM. DRITTA 3/4" SAE / STRAIGHT FEM. FIT. 3/4" SAE | 1 |
| | FR5T8K025AF | RAC. FEM. DRITTA 3/4" SAE / STRAIGHT FEM. FIT. 3/4" SAE | 25 |

FEMMINA 90°
*90° FEMALE FITTING*

| Tubo / *Hose* | Codice / *Part Nr.* | Descrizione / *Description* | Pezzi / *Pcs* |
|---|---|---|---|
| FR5T390N | FR5T3K001BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 1 |
| | FR5T3K025BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 25 |
| FR5T490N | FR5T4K001BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 1 |
| | FR5T4K025BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 25 |
| | FR5T4K001BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 1 |
| | FR5T4K025BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 25 |
| FR5T590N | FR5T5K001BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 1 |
| | FR5T5K025BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 25 |
| FR5T690N | FR5T6K001BD | RAC. FEM. 90° 1/2" SAE / 90° FEM. FIT. 1/2" SAE | 1 |
| | FR5T6K025BD | RAC. FEM. 90° 1/2" SAE / 90° FEM. FIT. 1/2" SAE | 25 |
| FR5T790N | FR5T7K001BE | RAC. FEM. 90° 5/8" SAE / 90° FEM. FIT. 5/8" SAE | 1 |
| | FR5T7K025BE | RAC. FEM. 90° 5/8" SAE / 90° FEM. FIT. 5/8" SAE | 25 |
| FR5T890N | FR5T8K001BF | RAC. FEM. 90° 3/4" SAE / 90° FEM. FIT. 3/4" SAE | 1 |
| | FR5T8K025BF | RAC. FEM. 90° 3/4" SAE / 90° FEM. FIT. 3/4" SAE | 25 |

## Tubi FR5A

Dall'impegno di ZEC nella ricerca di soluzioni eco-sostenibili per i sistemi di refrigerazione e aria condizionata nasce una gamma speciale di tubi per la $CO_2$ (R744).
La serie FR5A, realizzata con una treccia di rinforzo in acciaio, resiste ad una pressione di 130 bar ed una temperatura di picco di 130°C massimizzando le prestazioni dell'intero sistema.

## *FR5A Hoses*

*ZEC has conducted an intensive research into sustainable and energy-efficient solutions for HVAC.*
*Recognizing the shift toward ecological responsibility, ZEC has developed a special hose series a steel reinforcement braiding. The FR5A hoses resist to a pressure of 130 bar and a peak temperature of 130°C, optimizing the performance of the entire system.*

# TUBI FR5A
# *FR5A HOSES*

## Caratteristiche tecniche

- **Caratteristiche tecnico-costruttive:**
Tubi coestrusi treccia acciaio. Soluzione ideale per utilizzo CO2 su impianti di refrigerazione industriale e commerciale.
- **Temperature di utilizzo:**
Da -40°C a +120°C
Temperatura di picco max. 130°C
- **Pressioni d'esercizio:**
Rapporto di sicurezza superiore ai requisiti della EN 1736 e ISO 13971
- **Valore max. di vuoto:** 5 mbar
- **Specifiche:**
Conformi alla norme EN 1736 e ISO 13971 classe 1, requisiti della norma UL1963.

## *Technical Features*

- ***Technical-constructive features:***
*Steel braid coextruded hoses. Designed solution for CO2 systems on industrial and commercial refrigeratin systems.*
- ***Working temperatures:***
*From -40°C to +120°C from -40°F to +248°F*
*Max. peak temperature 130°C / 266°F*
- ***Working pressure:***
*Safety ratio exceeding EN 1736 and ISO 13971 requirements*
- ***Vacuum rating:*** *5 mbar*
- ***Specifications:***
*Compliant with EN 1736 and ISO 13971 class 1, meet UL1963 requirements.*

## Scheda tecnica - *Datasheet*

| | ID | | | OD | | WP | | R MIN | | g | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *CODICE / CODE* | *inch* | *mm* | *DN* | *inch* | *mm* | *bar* | *psi* | *mm* | *inch* | *g/m* | *lbs/ft* |
| FR5A430N | 5/16" | 6.4 | 6 | 0.468 | 11.9 | 130 | 1885 | 40 | 1.574 | 130 | 0.087 |
| FR5A530N | 3/8" | 8.1 | 8 | 0.551 | 14.0 | 130 | 1885 | 50 | 1.968 | 200 | 0.134 |
| FR5A630N | 1/2" | 11.1 | 11 | 0.685 | 17.4 | 130 | 1885 | 80 | 3.149 | 255 | 0.171 |
| FR5A730N | 5/8" | 13.9 | 14 | 0.791 | 20.1 | 130 | 1885 | 120 | 4.724 | 320 | 0.215 |

## Raccordi per tubo FR5A / *FR5A Hose Fittings*

FEMMINA DIRITTA
*STRAIGHT FEMALE FITTING*

| Tubo / *Hose* | Codice / *Part Nr.* | Descrizione / *Description* | Pezzi / *Pcs* |
|---|---|---|---|
| FR5A430N | FR5A4K001AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 1 |
| | FR5A4K025AA | RAC. FEM. DRITTA 1/4" SAE / STRAIGHT FEM. FIT. 1/4" SAE | 25 |
| | FR5A4K001AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 1 |
| | FR5A4K025AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 25 |
| FR5A530N | FR5A5K001AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 1 |
| | FR5A5K025AC | RAC. FEM. DRITTA 3/8" SAE / STRAIGHT FEM. FIT. 3/8" SAE | 25 |
| FR5A630N | FR5A6K001AD | RAC. FEM. DRITTA 1/2" SAE / STRAIGHT FEM. FIT. 1/2" SAE | 1 |
| | FR5A6K025AD | RAC. FEM. DRITTA 1/2" SAE / STRAIGHT FEM. FIT. 1/2" SAE | 25 |
| FR5A730N | FR5A7K001AE | RAC. FEM. DRITTA 5/8" SAE / STRAIGHT FEM. FIT. 5/8" SAE | 1 |
| | FR5A7K025AE | RAC. FEM. DRITTA 5/8" SAE / STRAIGHT FEM. FIT. 5/8" SAE | 25 |

FEMMINA 90°
*90° FEMALE FITTING*

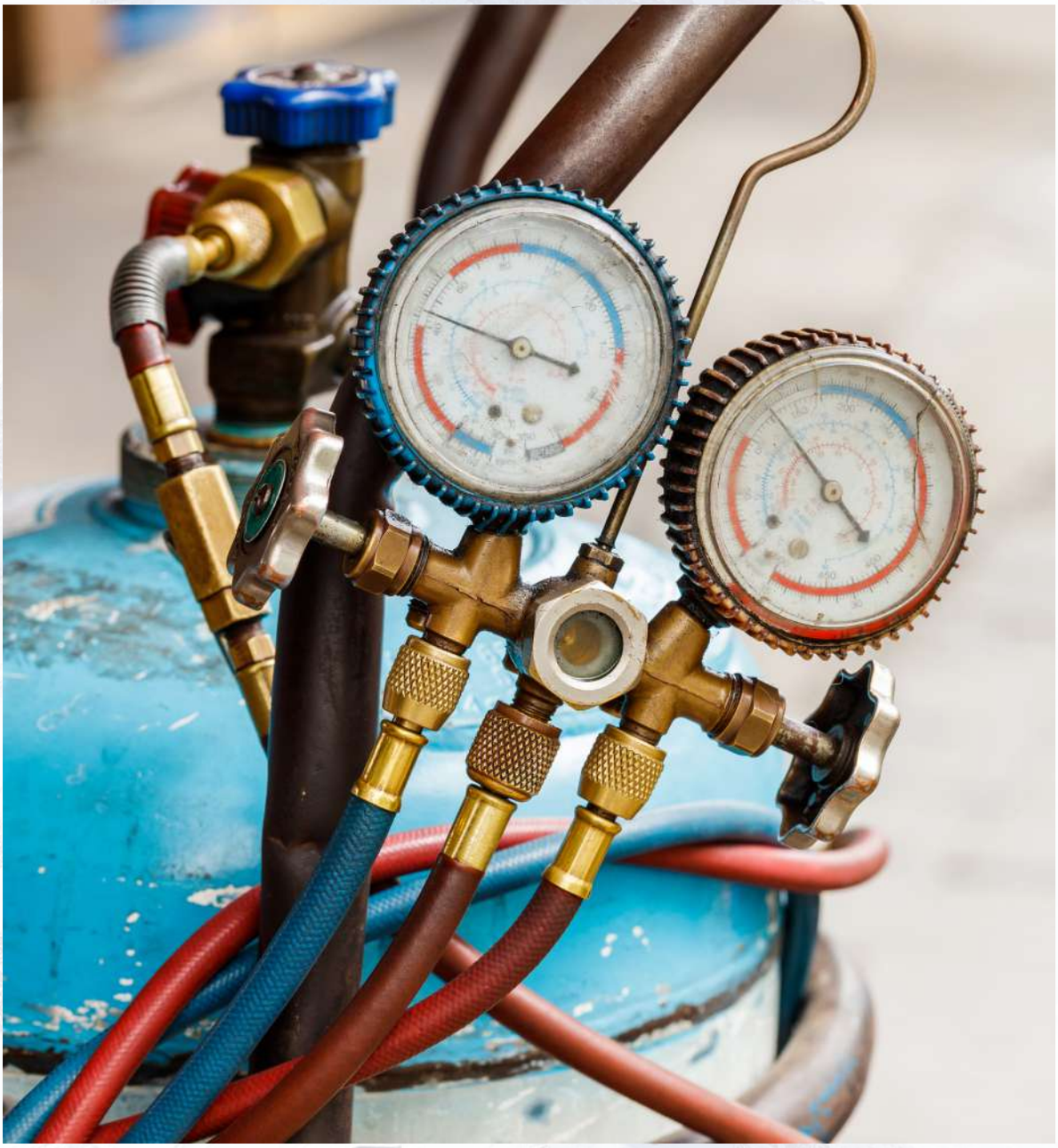
| Tubo / *Hose* | Codice / *Part Nr.* | Descrizione / *Description* | Pezzi / *Pcs* |
|---|---|---|---|
| FR5A430N | FR5A4K001BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 1 |
| | FR5A4K025BA | RAC. FEM. 90° 1/4" SAE / 90° FEM. FIT. 1/4" SAE | 25 |
| | FR5A4K001BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 1 |
| | FR5A4K025BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 25 |
| FR5A530N | FR5A5K001BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 1 |
| | FR5A5K025BC | RAC. FEM. 90° 3/8" SAE / 90° FEM. FIT. 3/8" SAE | 25 |
| FR5A630N | FR5A6K001BD | RAC. FEM. 90° 1/2" SAE / 90° FEM. FIT. 1/2" SAE | 1 |
| | FR5A6K025BD | RAC. FEM. 90° 1/2" SAE / 90° FEM. FIT. 1/2" SAE | 25 |
| FR5A730N | FR5A7K001BE | RAC. FEM. 90° 5/8" SAE / 90° FEM. FIT. 5/8" SAE | 1 |
| | FR5A7K025BE | RAC. FEM. 90° 5/8" SAE / 90° FEM. FIT. 5/8" SAE | 25 |

## Tubi carica TLP

I tubi carica ZEC TLP sono appositamente sviluppati per le stazioni di carica di gas refrigerante.
Presentano un'ottima flessibilità, pur conservando un'altrettanto elevata resistenza allo schiacciamento.
Sono caratterizzati da un basso valore di raggio minimo di curvatura ed una conseguente superiore resistenza all'effetto ''kinking'', se confrontati con i tradizionali tubi in elastomero di equivalenti prestazioni.

## *TLP Charging Hoses*

*TLP charging hoses are specifically developed for refrigerant gas recharging stations.*
*TLP charging hoses feature low values of minimum bending radius and, consequently, higher resistance to kinking, if compared with traditional elastomeric hoses of equivalent performance.*



# TUBI CARICA TLP
# *TLP CHARGING HOSES*

## Caratteristiche tecniche

- **Caratteristiche tecnico-costruttive:**

L'anima interna dei tubi carica TLP è realizzata in una speciale lega costituita da poliammide (PA) ed elastomero termoplastico (TPE). Oltre a conferire una grande flessibilità al tubo, questo materiale garantisce una bassa permeabilità al refrigerante, riducendo al minimo le fughe di gas attraverso il tubo.

- **Temperature di utilizzo:**

La temperatura di esercizio dei tubi carica TLP è compresa nel range tra -30°C e +95°C.

- **Specifiche:**

Conformi alle normative SAE J2196 e SAE J2888.

## *Technical Features*

- ***Technical-constructive features:***

*The inner core of TLP charging hoses is made of a special alloy composed of polyamide (PA) and thermoplastic elastomer (TPE). In addition to making the hose extremely flexible, this material ensures low permeability to refrigerants, thus minimizing gas leaks through the hose.*

- ***Working temperatures:***

*The working temperature of TLP charging hoses is in the range from -30°C to +95°C.*

- **Specifications:**

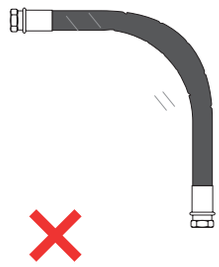
*Compliant with SAE J2196 and SAE J2888.*

## Scheda tecnica - *Datasheet*

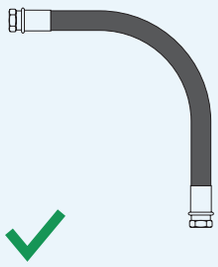
| | | ID | | OD | | 1:4 WP | | R MIN | |
|---|---|---|---|---|---|---|---|---|---|
| *CODICE / CODE* | Colore / *Colour* | *inch* | *mm* | *inch* | *mm* | *bar* | *psi* | *mm* | *inch* |
| TLP1085312102 | ● | 0.209 | 5.3 | 0.425 | 10.8 | 60 | 870 | 30 | 1.18 |
| TLP1085312104 | ● | 0.209 | 5.3 | 0.425 | 10.8 | 60 | 870 | 30 | 1.18 |
| TLP1125712100 | ● | 0.209 | 5.3 | 0.425 | 10.8 | 60 | 870 | 30 | 1.18 |
| TLP1125712102 | ● | 0.224 | 5.7 | 0.441 | 11.2 | 60 | 870 | 30 | 1.18 |
| TLP1125712104 | ● | 0.224 | 5.7 | 0.441 | 11.2 | 60 | 870 | 30 | 1.18 |
| TLP1125712105 | ● | 0.224 | 5.7 | 0.441 | 11.2 | 60 | 870 | 30 | 1.18 |
| TLP1125712100 | ● | 0.224 | 5.7 | 0.441 | 11.2 | 60 | 870 | 30 | 1.18 |

LP
HP

## Indicazioni di montaggio / *Installation Instructions (SAE J1273 - ISO 8331)*

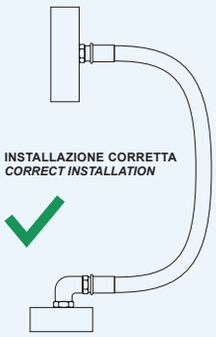


INSTALLAZIONE ERRATA
*WRONG INSTALLATION*



INSTALLAZIONE CORRETTA
*CORRECT INSTALLATION*

INSTALLAZIONE ERRATA
*WRONG INSTALLATION*



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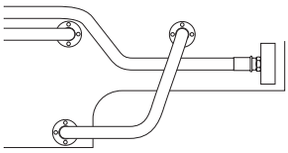
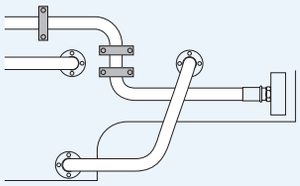
*CORRECT INSTALLATION*



INSTALLAZIONE ERRATA
*WRONG INSTALLATION*



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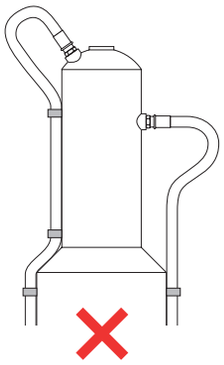
*CORRECT INSTALLATION*



INSTALLAZIONE ERRATA
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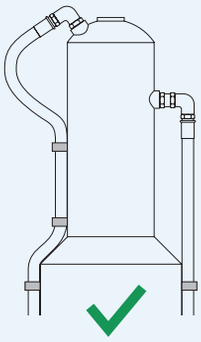
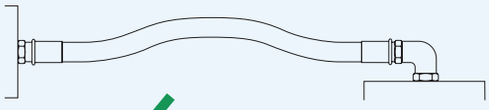


INSTALLAZIONE CORRETTA
*CORRECT INSTALLATION*

INSTALLAZIONE ERRATA
*WRONG INSTALLATION*



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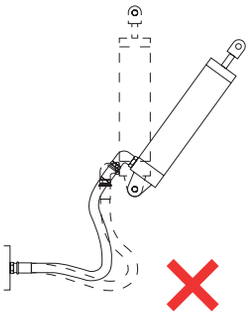
*CORRECT INSTALLATION*



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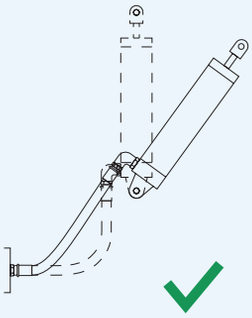
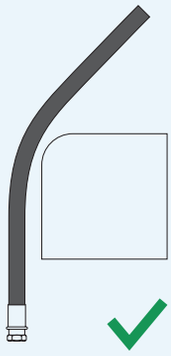
*WRONG INSTALLATION*



INSTALLAZIONE CORRETTA
*CORRECT INSTALLATION*



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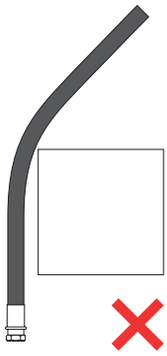
*CORRECT INSTALLATION*



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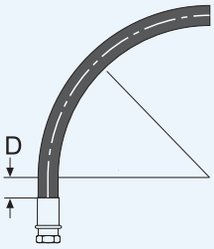
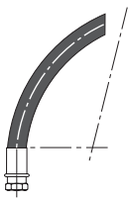



INSTALLAZIONE CORRETTA
*CORRECT INSTALLATION*



INSTALLAZIONE ERRATA
*WRONG INSTALLATION*

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**È responsabilità del cliente verificare che i tubi e i raccordi siano adatti alla propria applicazione e soddisfino le specifiche e gli standard richiesti.**

Per condizioni di vendita: www.zecspa.com/it/condizioni-generali-di-vendita

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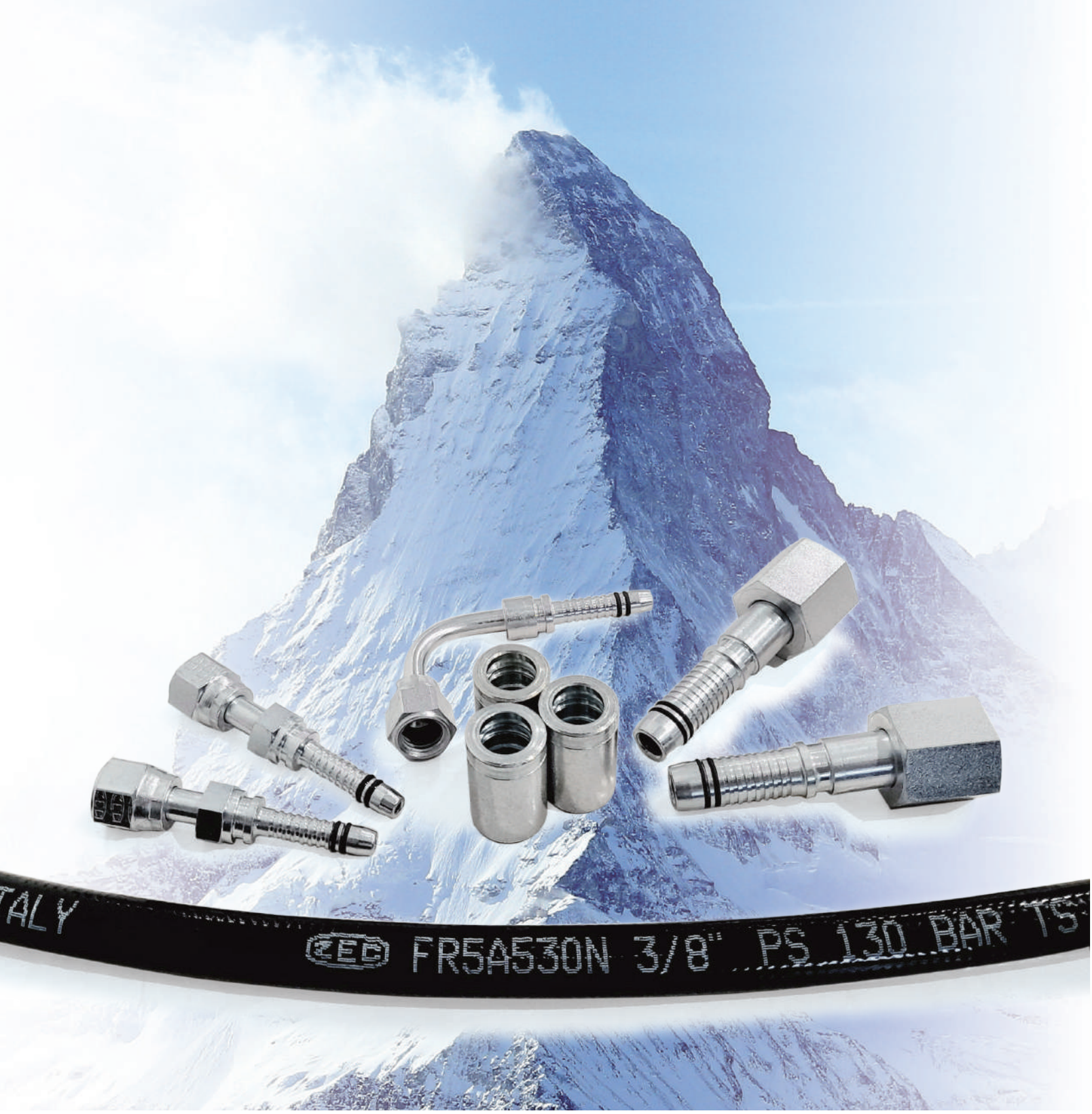
*Therefore we recommend to consult our website www.zecspa.com for the latest version of the technical data sheets.*

***It's the Customer's responsibility to check that hoses and fittings are suitable for his application and meet the required specifications and standards.***

*For Terms of Sale please refer to www.zecspa.com/en/general-conditions-of-sale*

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THERMOPLASTIC TUBING AND HOSES

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