

# flexible hoses and fittings for AC&R



G O M A X<sup>®</sup>



QUADRA: SYSTEM



the preferred flexible choice for all pressure switch, manometer and oil line connections



**the market leading  
brand of thermoplastic  
hose and fittings  
designed specifically  
for Air Conditioning and  
Refrigeration systems**



**G O M A X<sup>®</sup>**

**QUADRA<sup>®</sup> SYSTEM**

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**Check latest technical updates on our website [www.gomax.it](http://www.gomax.it)**

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# VISUAL INDEX

DN2

1/4 SAE Straight Female Fitting



1/4 SAE Straight Female Fitting + Valve Opener



1/4 SAE Female Elbow 90° Fitting



Elbow Fitting 90°



"T" fitting



"T" fitting with One Female 1/4 SAE



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DN2

"T" Fitting With One Female 1/4 SAE



"T" Fitting With 2 Females 1/4 SAE At 90°



"T" Fitting With 2 Females 1/4 SAE At 180°



Cross Fitting



Cross Fitting With One Female 1/4 SAE



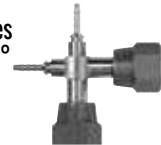
Cross Fitting With 2 Females 1/4 SAE At 180°



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DN2

Cross Fitting With 2 Females 1/4 SAE At 90°



Cross Fitting With 3 Females 1/4 SAE



1/4 SAE Straight Male

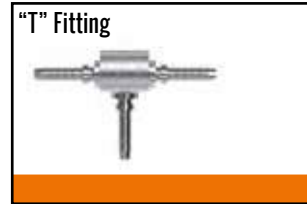
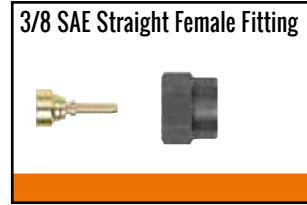


Copper Brazing Fitting (4 X 6 X 100 mm)



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DN4



PAGE 39

DN4



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DN6



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# The Company

Transfer Oil S.p.A., with more than 35 years of experience, are today one of the major independent manufacturers of thermoplastic and PTFE hose, catering for numerous applications within the medium, high and very high pressure hydraulic and industrial markets.

Since its founding all products manufactured by Transfer Oil are designed, developed and produced in state of the art Production facilities Headquartered in Colorno, Italy, With a total capacity of more than 13 million meters (42 million feet) per year.

Long standing cooperation with the industries most prominent global suppliers ensure a responsive network of distribution partners extending through over 65 countries across the globe. Providing quick availability and technical support for whatever the demands may be.

The GOMAX<sup>®</sup> business division of the company is committed to the manufacturing and marketing of thermoplastic hose and fitting solutions for air conditioning and refrigeration industry. GOMAX products are composed by three main product ranges (ZERO | INFINITY | QUADRA) that are used for suction and

discharge lines as well as for pressure switches, manometers and oil lines connection thanks to the world recognized QUADRA Capillary hose system.

Hoses made by Transfer Oil are made to the highest internal standards which have been accredited by ISO 9001:2008 TÜV certification. Engineered integrity is maintained throughout the manufacturing process that ensures that the critical dimensions can be continuously controlled and maintained throughout the production cycle.

All hoses conform and perform, where applicable, to the relevant RoHS - WEEE - REACH - ISO - CE - EN standards.

Transfer Oil - one of the first companies in the industry to obtain the ISO 9001 certification in 1993 - has developed its own quality system to guarantee customer's satisfaction by using computerized control production systems to which all processes of both production facilities are connected.



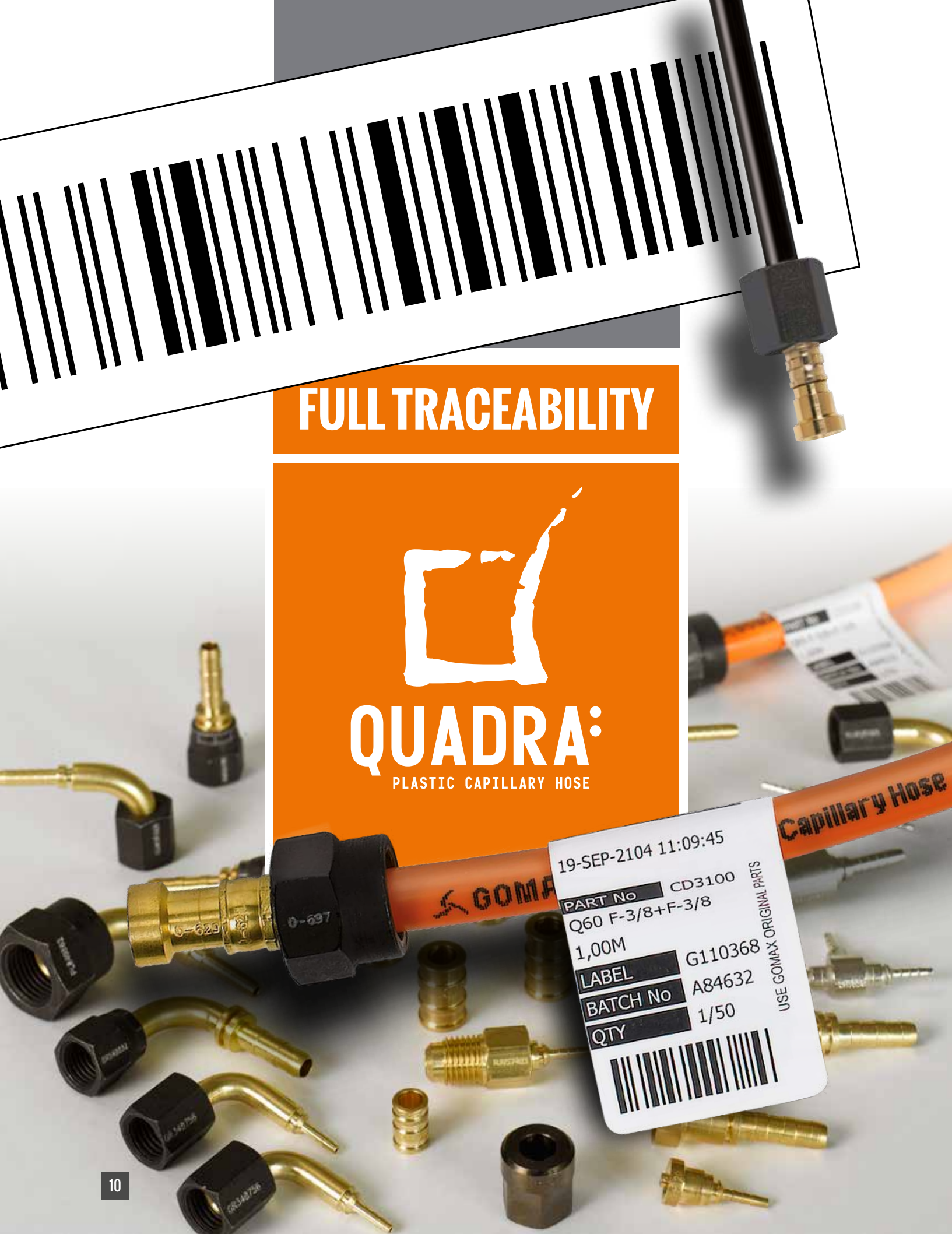




The market leading brand of thermoplastic hose and fittings designed specifically for Air Conditioning and Refrigeration systems. The preferred flexible choice for all pressure switch, manometer and oil line connections.







**FULL TRACEABILITY**



**QUADRA:**  
PLASTIC CAPILLARY HOSE

19-SEP-2104 11:09:45

PART No CD3100  
Q60 F-3/8+F-3/8

1,00M

LABEL G110368

BATCH No A84632

QTY 1/50

USE GOMAX ORIGINAL PARTS



## GRANTED TRACEABILITY

In every industry, the importance of a full traceability is growing every day, and it is furthermore a prerequisite of ISO 9001 world recognized quality standard.

GOMAX hoses, fittings and assemblies from their early days offer a state of the art traceability system, based on the batch number and barcode that is printed on the hose, and on every label that follows the fitting boxes and assemblies bags.

## RELIABILITY

Although this system has proven its reliability in more than 20 years of successful and certified service, we decided to introduce this year a remarkable improvement adding a traceability number permanently marked on every individual fitting and component.

In fact, although the batch number we print today on labels is more than enough to allow us to conduct a detailed back-in-time traceability search if requested by a partner, we are aware that often our customers lose track of this number once the fitting, the component, or the assembly, is taken out of the box and assembled on the unit.

## TRACE-BACK ANALYSIS

The lack of a batch number unavoidably makes the trace-back analysis nearly impossible, generating wide areas of uncertainty when, in case of a technical issue or a quality review, the end user would be in need to exactly identify a component and its history.

Not to mention if the source of the components are mixed, for example when an OEM is sourcing GOMAX parts both directly and from authorized GOMAX distributors.

## GOMAX'S ANSWER

GOMAX definitive answer to this issue consists of a unique traceability number marked on each component. This number is linked to the batch number printed on the label on the box. So, for example, if you installed on your unit a GOMAX hose, but you forgot to keep track of the batch number indicated on the box of the fitting used, thanks to the GOMAX FULL TRACEABILITY SYSTEM,

just reporting the number that you will be able to read on each component of the fitting used, we will be able to fully rebuild the history of that part.

Once again, GOMAX sets a new standard in its industry offering a unique feature that guarantees to its users an even greater peace of mind granted by this extraordinary traceability system, joined with the world known superior quality and unbeaten performances of the GOMAX products.



The thermoplastic capillary hose started the replacement of capillary copper pipe many years ago, introducing some advantages, like elimination of problems caused by vibrations as well as easier and quicker installation.

Technical specification UNI EN1736 was developed in order to clarify and specify on this issue and explain a clear method how to measure the permeability of an hose assembly.

QUADRA flexible hoses match the most stringent class today available (CLASS 1).



# PERMEABILITY



# Permeability classification

according to the European Standard EN 1736:2008 for non metallic tubes used in air conditioning and refrigeration systems

Low permeability



CLASS 1

CLASS 1

CLASS 2

CLASS 3

High permeability

TEST DATA		Test temperature		
		+32 °C	+100 °C	
R404A	<b>Test pressure</b>	14.0	60.0	bar
	QUADRA™ DN2 permeability rate	0.12	8.20	g/m <sup>2</sup> /year
	QUADRA™ DN4 permeability rate	0.19	9.10	g/m <sup>2</sup> /year
	QUADRA™ DN6 permeability rate	0.13	6.50	g/m <sup>2</sup> /year
R407C	<b>Test pressure</b>	13.3	60.0	bar
	QUADRA™ DN2 permeability rate	0.11	7.63	g/m <sup>2</sup> /year
	QUADRA™ DN4 permeability rate	0.17	8.46	g/m <sup>2</sup> /year
	QUADRA™ DN6 permeability rate	0.11	6.05	g/m <sup>2</sup> /year
R410A	<b>Test pressure</b>	18.8	60.0	bar
	QUADRA™ DN2 permeability rate	0.14	7.13	g/m <sup>2</sup> /year
	QUADRA™ DN4 permeability rate	0.22	7.92	g/m <sup>2</sup> /year
	QUADRA™ DN6 permeability rate	0.15	5.66	g/m <sup>2</sup> /year
R134a	<b>Test pressure</b>	7.1	60.0	bar
	QUADRA™ DN2 permeability rate	0.06	8.45	g/m <sup>2</sup> /year
	QUADRA™ DN4 permeability rate	0.10	9.37	g/m <sup>2</sup> /year
	QUADRA™ DN6 permeability rate	0.07	6.69	g/m <sup>2</sup> /year

Figures indicated are average of all the highest obtained values converted from Helium to refrigerant leak rate, as specified within EN 1736:2008.

Test report: BO-TI S- 219890 -TUV- 01- 03- 12 issued by TÜV Italia

The test method and procedures have been verified by TÜV Italia as third party.

As a result of the assessment and inspection of the characteristics and performance of the permeability test machine, of the test procedures utilized, carried out at the premises of Transfer Oil S.p.A. - Italy, TÜV Italia confirms that it meets the requirements of EN 1736:2008

Transfer Oil declare that all GOMAX® QUADRA™ flexible hoses are fully compliant to the normative.

Measurement of permeability have been conducted using leak detector mass spectrometer for the measurement of sniffing helium as specified within EN 1736:2008.

Tests results for all GOMAX® QUADRA™ flexible hoses, when calculated according to EN 1736:2008, achieves CLASS 1 both at 32°C and 100 °C. CLASS 1, as indicated on Normative reference table, is the most stringent permeability category today recognized by the standard.

In reality all GOMAX QUADRA flexible hose are, on average, approximately 95% less than the maximum value allowed as specified by CLASS 1 classification within EN1736:2008.

All QUADRA capillary hoses and fittings (DN2, DN4 and DN6 included), can be used with HCFC (R22), HFC (R134a, R404A, R407A, R407B, R407C, R410A, R507), **but**

**also CO<sub>2</sub> up to 120 bar/1740 psi from -45° C up to +130° C/ from**

**-49° F up to +266° F, enabling installations onto machines operating in transcritical system.**



Possibility of supplying laid out capillary circuits to customer specification especially designed for pressure test points, gauges, pressure switches including the oil return circuits and oil level equalization, for air conditioning and refrigeration units of each type and size

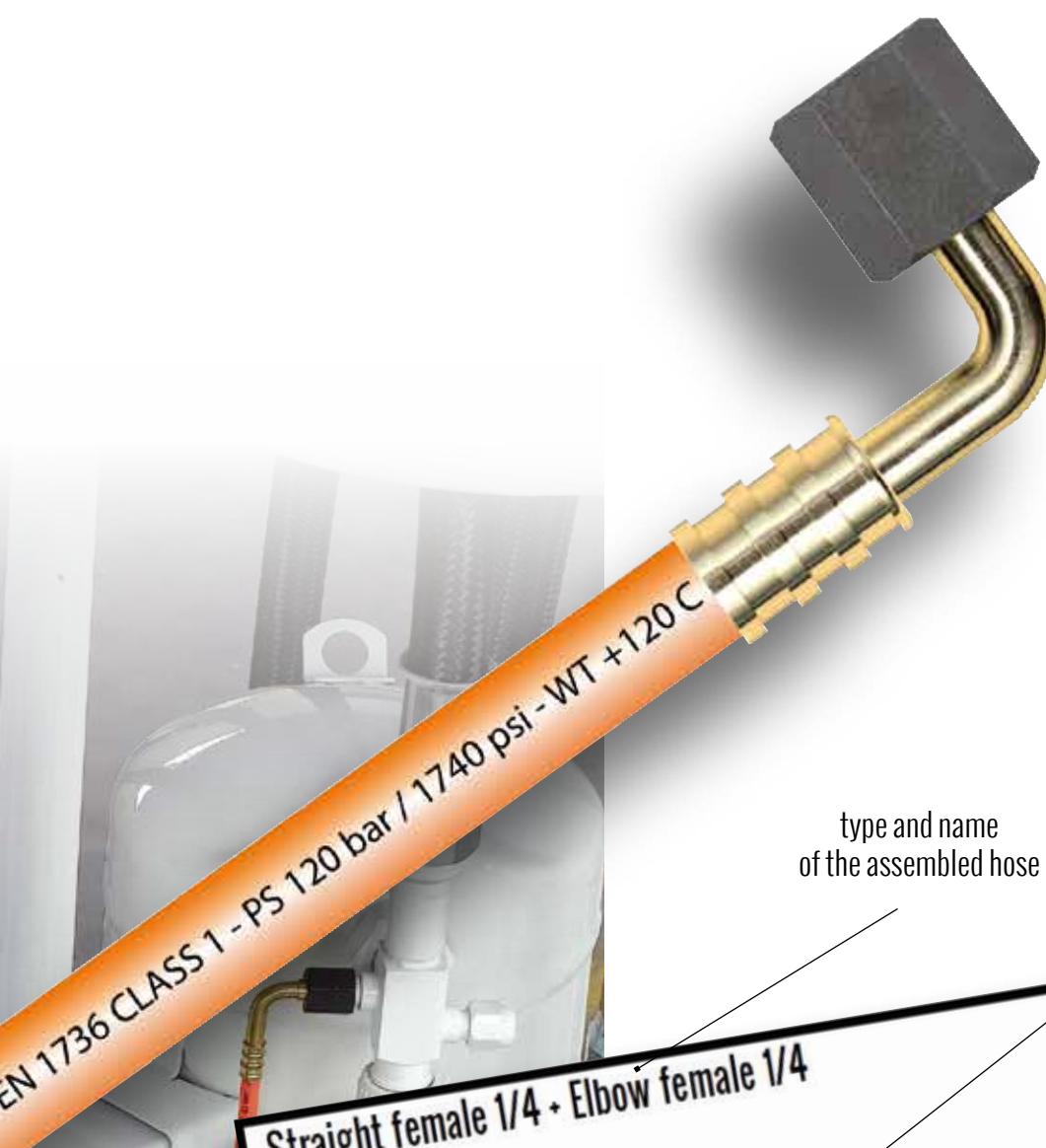
## CUSTOM MADE HOSE ASSEMBLY



**QUADRA:**  
PLASTIC CAPILLARY HOSE

QUADRA Capillary Hose - 0789 - DN4 - AC&R - UNI F





XXX - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)

type and name of the assembled hose

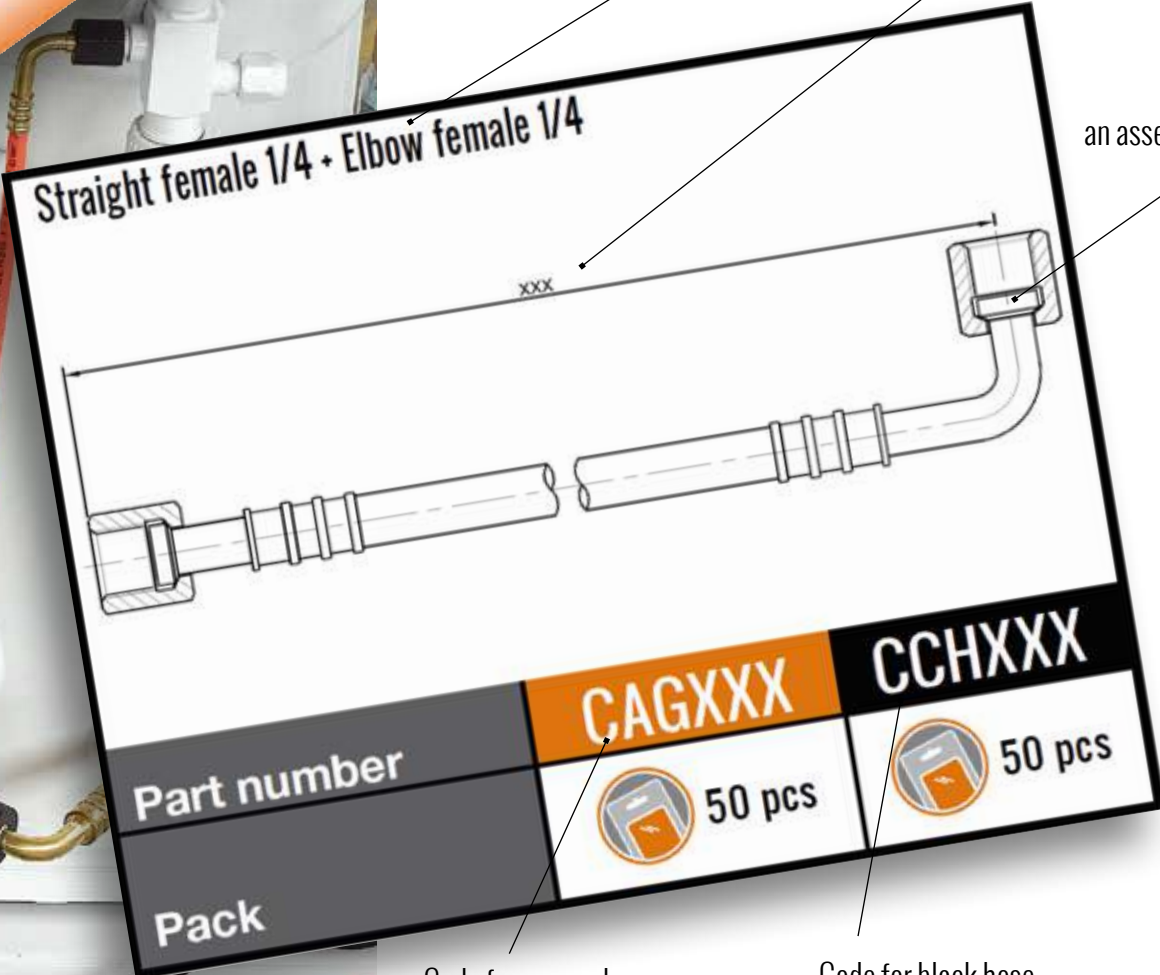


image of an assembled hose

Code for orange hose

Code for black hose

The kitting service that we offer is of specific interest to the Original Equipment Manufacturer particularly those with standardized production models, line side feeding systems and modular construction.

Through one single part number the customer can now order all the capillary components of a specific unit instead of multiple part numbers from the bill of material (BOM), effectively reducing inventory control and associated costs.

The kit is delivered in a box and consists of all assemblies in lengths and configurations specified for the particular location.

This allows the operator to optimize the assembly line schedule and restocking requirements.

## OEM's KIT

### Equipment



### SERVICE

Service technicians also have the benefit of ordering tailor made kits to be forwarded directly to site, ready to install without the need of dedicated tools and unnecessary inventory. All the known time consuming activities of cutting, brazing and crimping are eradicated.

The operator is just called to set up the unit dedicating himself to one unique activity without losing time.

In every box, linked to a specific unit, the operator will only find the assemblies associated to that unit. The set up of the unit will result in an easier, faster, worry free installation.

The same box can be delivered worldwide in case of service contracts, as spare parts for forecasted planned maintenance of any given unit.



The QUADRA system - comprising of thermoplastic flexible capillary hose, fittings in brass and dedicated tooling - gives quick production, in a few simple steps, with superior quality connections to the pressure test points, gauges, and pressure switches including the oil return circuits and oil level equalization, for air conditioning and refrigeration units of each type and size.

## QUADRA SYSTEM



**QUADRA:**  
PLASTIC CAPILLARY HOSE

## MORE SECURITY:

The use of QUADRA flexible hose eliminates the problems caused by the effect of vibrations that is associated with copper tubing, reducing sound levels and vibration transmission significantly and at the same time eliminating the risk of rupture and leak of refrigerant.

## MORE SPEED:

The possibility of choosing between QUADRA hose already assembled at the factory in standard configurations, or to the customers own design, and the flexibility for the customer to be able to make on the spot their own QUADRA hose assemblies in the preferred configuration using the selection of fittings, components and tools of the QUADRA system, allows to reduce the time required to make circuits when compared to using rigid copper tubing.

## MORE SIMPLICITY:

The complete system of fittings, accessories and tooling, the multi lingual instructions and the great intuitiveness of the QUADRA system make the operation of assembly and connections not only faster but, above all, more simple and consequently more secure. In contrast to the brazing or bending operations that are necessary for rigid copper tubing, installation and connection of QUADRA flexible hose does not need any particular specialization so making the connecting operation within anyone's ability.

The large fitting range available and the dedicated assembly tooling for the QUADRA hose allows the operator to assemble the machine, or carry out maintenance and to work quickly, flexibly and securely, reducing to a minimum or eliminating completely the need of brazing operations.

### Inner tube material

1

Thermoplastic polymer.

### Reinforcing material

2

Polyester braid of high tensile strength with high modulus.

### Cover material (black - orange)

3

Thermoplastic polymer.

The materials used to build the hose and fittings make both the DN2, DN4 and DN6 QUADRA capillary hoses compatible with all refrigerant fluids in the HCFC, HFC families.

Meets and exceeds UNI EN 1736 standards.



### Directive 2011/65/EU

"Restriction of the use of certain hazardous substances in electrical and electronic equipment"

All QUADRA products meet the minimum requirements of the RoHS directive.



## 200 hrs UV TEST

The test was made using a specific equipment called "Solar Box ERICHSEN mod. S1D (Xenon Lamp)". The duration of the test has been 200 hours in total.

The evaluation is based on the observation of the grey tones of the samples: the samples should not change their grey scale.

The evaluation is expressed on a scale from 1 to 5, where 1 is very bad and 5 is excellent.

▶ The orange sample achieved rating 4 (good).

▶ The black sample achieved rating 5 (excellent).

▶ Hence it follows that for all applications where the hoses are exposed to direct and frequent sunlight, black Quadra hoses are to be preferred.

Transfer Oil S.p.A, more than 20 years ago, was one of the first companies in its sector to achieve certification of its Quality Management System in accordance with the internationally recognised standard ISO 9001. With awareness that environment and environmental sustainability are fundamental core values for both society and for the future expansion of our company, Transfer Oil has strived for, and achieved, another important goal, the certification of our Environmental Management System in accordance with the internationally recognised environmental standard ISO 14001.

# QUALITY SYSTEM



# QUADRA:

PLASTIC CERTIFICATE

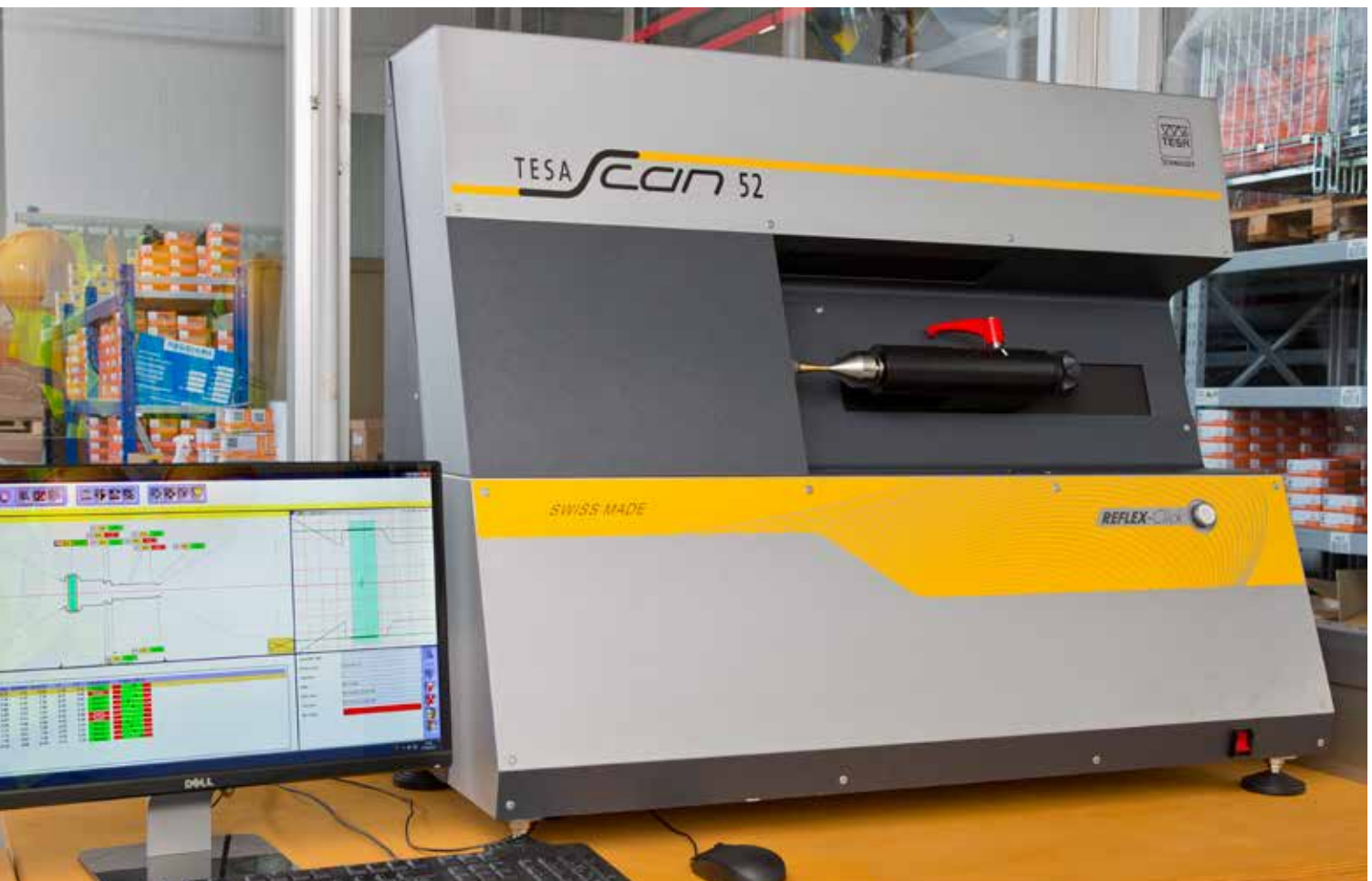




Proof pressure test stand able to pressurize hose assemblies up to 6.000 bar (87000 psi)

Burst test stand capable of performing burst tests on hose assemblies up to 10.000 (145000 psi)

Special anti-humidity cardboard mounted on a ISPM 15 compliant Wooden Euro pallet 80 cm x 120 cm, in order to offer more reliable boxes during shipment both sea shipment and truck delivery.



The accuracy of measurement of the dimensions of the inserts and ferrules are essential for the proper use and operation of the QUADRA System. The measuring device we added to pursue this improvement in accuracy is a laser-scanner. With this equipment you get accurate and precise measurements of the fittings.

The instrument has an accuracy of up to several microns and will result in benefits such as greater accuracy in measurements with a guarantee to provide exact informations and detect measurements that are impossible to get manually.

The addition of this new instrument comes under the innovative Transfer Oil: investments in new technologies to provide an avant-garde service and maximum efficiency to customers.

# APPLICATIONS



QUADRA: DN2  
QUADRA: DN4  
QUADRA: DN6  
QUADRA: PACKAGES  
QUADRA: ACCESSORIES



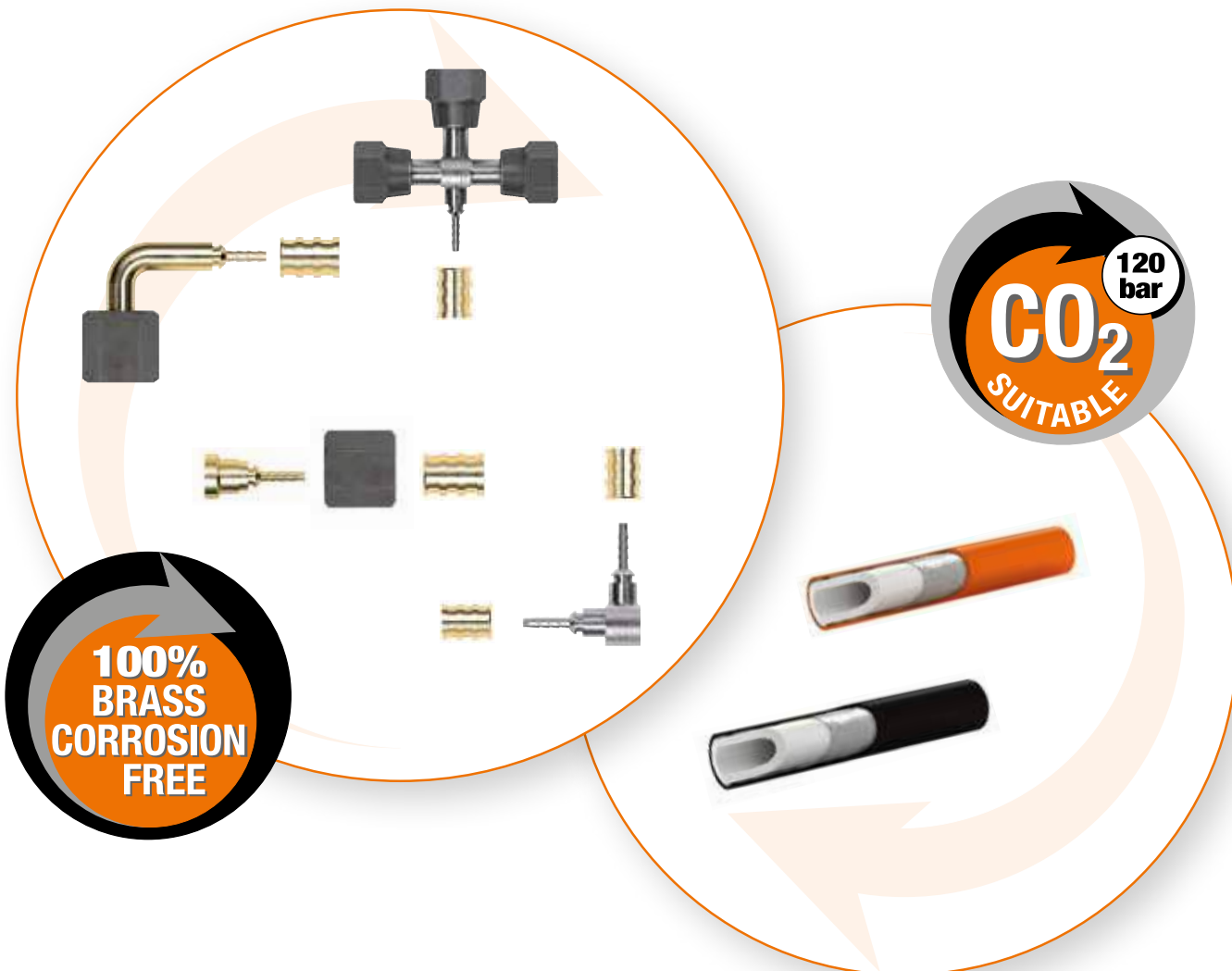
The **QUADRA DN2** flexible thermoplastic capillary hose, in two colors orange and black, represent the most efficient and developed system for the connection of pressure gauges, pressure switches and pressure test points.

Transfer Oil advice the standardization of use of the **QUADRA DN2** hose, choosing the orange color for the high pressure circuits and the black color for the low pressure circuits, so identifying in an unambiguous way the two parts of the circuit.

This reduces the possibilities of misconnections of the two pressure lines of the machine during production and maintenance.

The extraordinary number of **QUADRA DN2** fittings covers all possible types of installations, making the need of copper rigid tubes and capillaries unnecessary.

**QUADRA DN2** hoses and fittings can be easily assembled using the specific QUADRA hand pliers RXA007, or the all new QUADRA CRIMP RXA006-RXA008.



# TECHNICAL DATA

## PERFORMANCE and condition of use

part number	pack	DN	OD	WP			BP			WT		BEND RADIUS	CRIMPING DIAMETER	CRIMPING DIAMETER	CRIMPING DIAMETER
				bar	MPa	psi	bar	MPa	psi	min°C	max°C	mm	Ø mm	Ø mm	Ø mm
<b>0780C</b> <b>0780BC</b>	50 m	DN2	6,1	120	12,0	1740	600	60	8700	-45°	+130°	10	7±0,1	NA	7±0,15
<b>0780K</b> <b>0780BK</b>	10 m														

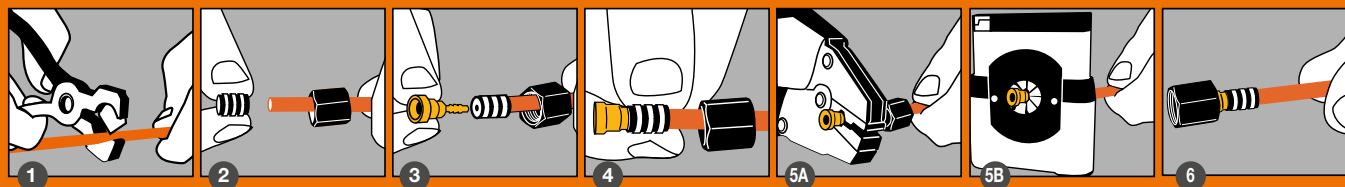
### Classification of QUADRA capillary hoses according to Directive 97/23/CE

PART NUMBER	CLASSIFICATION
0780C 0780BC 0780K 0780BK	paragraph 3 article 3

### PERMITTED FLUIDS

Type of Gas	Type of Oil
HFC (R134a, R404A, R407A, R407B, R407C, R410A, R507)	polyol ester based
HCFC (R22)	mineral oils
CO <sub>2</sub>	polyol ester based

### Assembly instructions for crimping fittings for QUADRA DN2 capillary hose



Cut the QUADRA capillary hose to the required length using the special WXA004 cutter.

Slip the nut over the hose (depending on fitting type). Ensure that the threaded side is pointing towards the end of the hose that needs assembling.

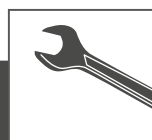
When pushing the ferrule over the hose end, ensure its correct positioning, in line with the hose end. Push the insert into the hose end you want to assemble.

Pay attention not to move the components already fitted and slide the ferrule over the hose towards the insert.

Crimp the ferrule with our hand pliers type RXA007, up to the limit stop of the pliers: once the optimal deformation has been achieved the pliers will open automatically.

Crimp the ferrule with our crimping tool RXA006-RXA008. Keep the lever pulled. Once the optimal deformation has been achieved the crimping tool will stop automatically.

The assembling is finished and the eventual nut can easily slide over the ferrule: check the correct positioning of the components and make sure the entire surface of the ferrule has been swaged.



### Note:

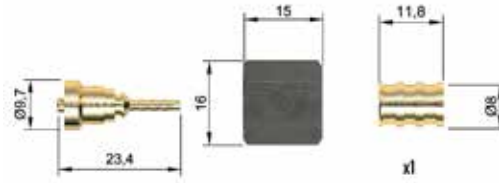
ATTENTION: Once the hose assembly connected to the machine, do not move or rotate it, otherwise you risk loosening the nut or damaging the fitting by compromising its tightness. In case you have to modify the orientation of the coupling, unscrew the nut, position the hose assembly, then tighten the nut again respecting the torque value of 16/18 N·m, max 20 N·m.

## 1/4 SAE Straight Female Fitting



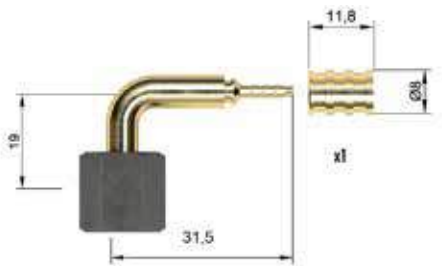
Part number	<b>XBA02C</b>	<b>WBA02C</b>	<b>KBA02C</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			

## 1/4 SAE Straight Female Fitting + Valve Opener



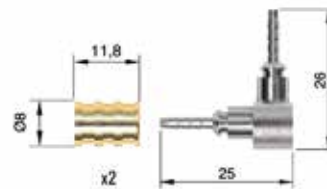
Part number	<b>XBB02C</b>	<b>WBB02C</b>	<b>KBB02C</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			

## 1/4 SAE Female Elbow 90° Fitting



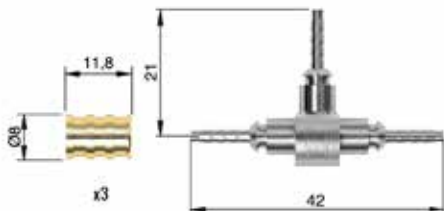
Part number	<b>XCA02C</b>	<b>WCA02C</b>	<b>KCA02C</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			

## Elbow Fitting 90°



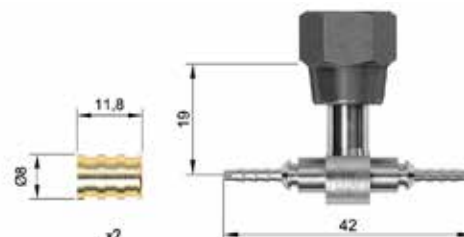
Part number		<b>WPD2C1</b>	<b>KPD2C1</b>
Pack		50 pcs	10 pcs
Copper gasket			

## "T" fitting



Part number		<b>WPBOC1</b>	<b>KPBOC1</b>
Pack		50 pcs	10 pcs
Copper gasket			

## "T" fitting with One Female 1/4 SAE

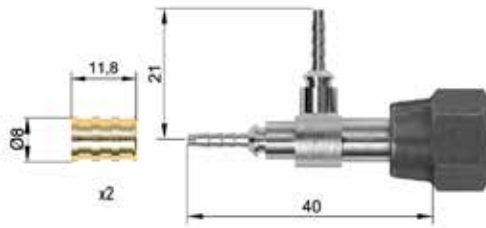


Part number	<b>XPBOC2</b>	<b>WPBOC2</b>	<b>KPBOC2</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			



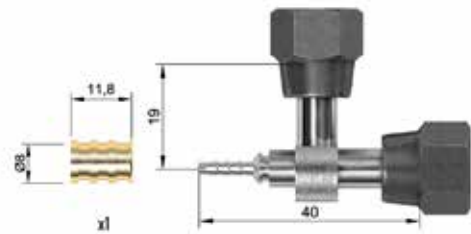
# QUADRA DN2 fittings

“T” Fitting With One Female 1/4 SAE



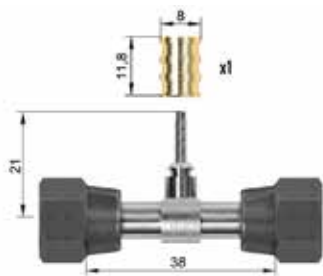
Part number	<b>XPB2C4</b>	<b>WPB2C4</b>	<b>KPB2C4</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

“T” Fitting With 2 Females 1/4 SAE At 90°



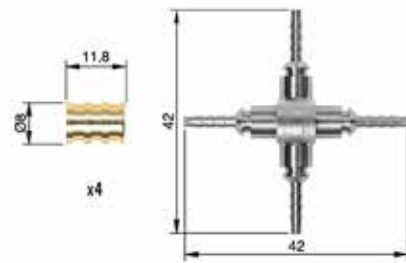
Part number	<b>XPB2C7</b>	<b>WPB2C7</b>	<b>KPB2C7</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

“T” Fitting With 2 Females 1/4 SAE At 180°



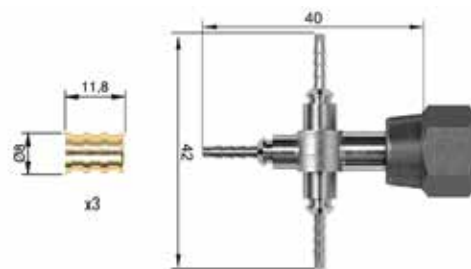
Part number	<b>XPB2C3</b>	<b>WPB2C3</b>	<b>KPB2C3</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

Cross Fitting



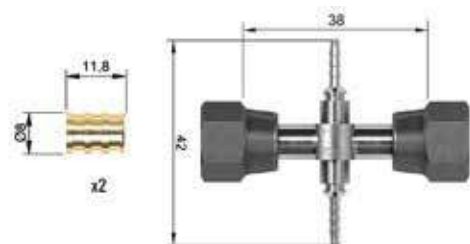
Part number		<b>WPA2C1</b>	<b>KPA2C1</b>
Pack		50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

Cross Fitting With One Female 1/4 SAE



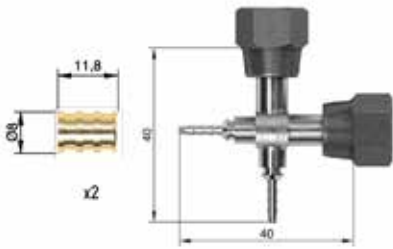
Part number	<b>XPA2C2</b>	<b>WPA2C2</b>	<b>KPA2C2</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

Cross Fitting With 2 Females 1/4 SAE At 180°



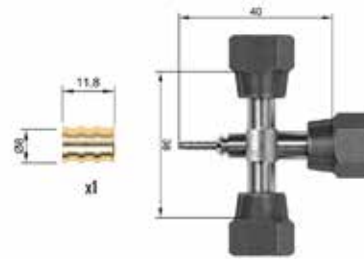
Part number	<b>XPA2C3</b>	<b>WPA2C3</b>	<b>KPA2C3</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

Cross Fitting With 2 Females 1/4 SAE At 90°



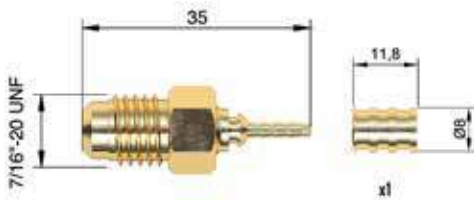
Part number	<b>XPA2C4</b>	<b>WPA2C4</b>	<b>KPA2C4</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			

Cross Fitting With 3 Females 1/4 SAE



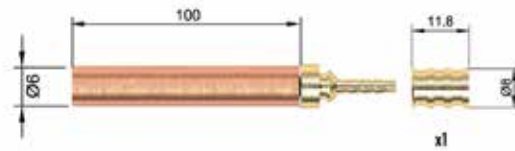
Part number	<b>XPA2C5</b>	<b>WPA2C5</b>	<b>KPA2C5</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket			

1/4 SAE Straight Male



Part number		<b>WDN22C</b>	<b>KDN22C</b>
Pack		50 pcs	10 pcs
Copper gasket			

Copper Brazing Fitting (4x6x100 mm)



Part number		<b>WZE2C1</b>	
Pack		50 pcs	
Copper gasket			

QUADRA: DN2

QUADRA: DN4

QUADRA: DN6



QUADRA: PACKAGES



QUADRA: ACCESSORIES

## NEW QUADRA NUT

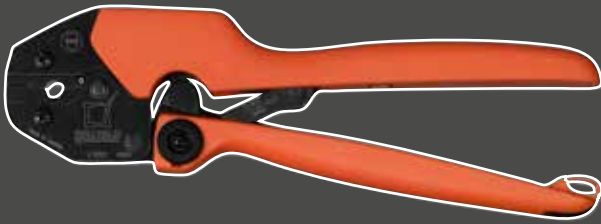


### NEW NUT - 100% BLACK BRASS CORROSION FREE

Further great news for the **QUADRA** range, the backbone of the **GOMAX** product line, is the introduction of a revised swivel nut design for the SAE inserts. The new swivel nut is fully machined from solid brass and its hexagon is inscribed in the circumference ensuring superior mechanical strength in the same compact envelope. The end result is an **extremely solid, corrosion-resistant component**, characterized by a distinctive look distinguished by the jet black finish that makes **QUADRA** products installed on the best units in over 60 countries around the world, immediately recognizable.



**HAND PLIERS**



Part number	<b>RXA007</b>
Pack	1 pcs

**CUTTER AND BLADES**

Cutter



Cutter blades



Part number	<b>WXA004</b>	<b>WXB004</b>
Pack	1 pcs	2 pcs

**VALVE OPENER, GASKET AND NUT CAPS**

Removable valve opener



Copper gasket 1/4



QUADRA 1/4 fitting plugs



Part number	<b>WTD2Z1</b>	<b>WRP502</b>	<b>WRW912</b>
Pack	50 pcs	50 pcs	50 pcs

**QUADRA-CRIMP**

details on page 56



Part number	<b>RXA006</b> <b>RXA008</b>
Pack	1 pcs

**QUADRA CASE**

Empty

Complete



- 10 m. ref. 0780K
- 10 m. ref. 0780BK
- 20 ref. WBA02C
- 20 ref. WBB02C
- 10 ref. WCA02C
- 10 ref. WPB0C1
- 10 ref. WPB0C2
- 50 ref. WRP502
- 50 ref. WTD2Z1
- 1 ref. RXA007
- 1 ref. WXA004
- 2 ref. WXB004

Part number	<b>MRO43</b>	<b>W00001</b>
Pack	1 pcs	1 pcs

QUADRA: DN2

QUADRA: DN4

QUADRA: DN6



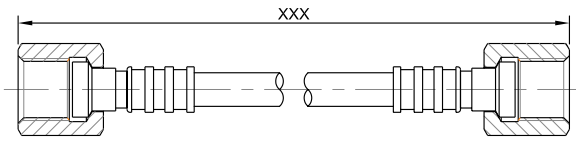
QUADRA: PACKAGES



QUADRA: ACCESSORIES

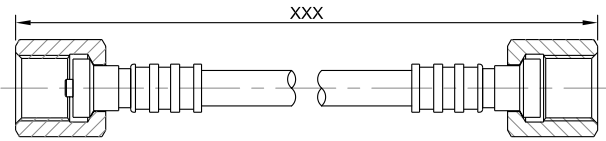
# QUADRA DN2 assembled capillary hoses

1/4 Straight Female + 1/4 Straight Female



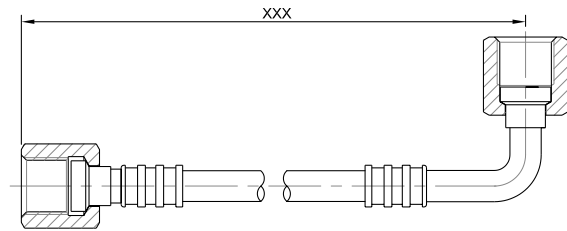
Part number	<b>CAAXXX</b>	<b>CCBXXX</b>
Pack	 50 pcs	 50 pcs

Female 1/4 + Female 1/4 + Valve Opener



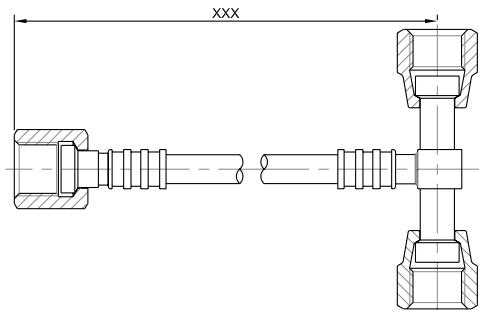
Part number	<b>CCJXXX</b>	<b>CEQXXX</b>
Pack	 50 pcs	 50 pcs

1/4 Straight Female + 1/4 Elbow Female



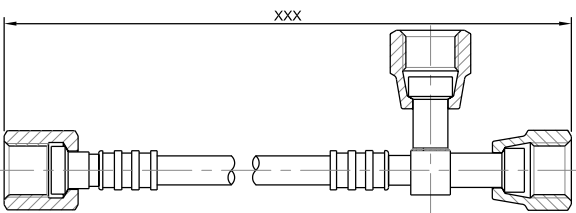
Part number	<b>CACXXX</b>	<b>CCDXXX</b>
Pack	 50 pcs	 50 pcs

Straight Female 1/4 + "T" with 2 Females 1/4 at 180°



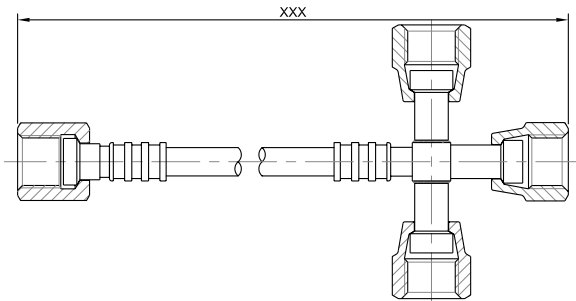
Part number	<b>CETXXX</b>	<b>CEUXXX</b>
Pack	 50 pcs	 50 pcs

Straight Female 1/4 + "T" with 2 Females 1/4 at 90°



Part number	<b>CEVXXX</b>	<b>CEWXXX</b>
Pack	 50 pcs	 50 pcs

Straight Female 1/4 + Cross with 3 Females 1/4



Part number	<b>CEXXX</b>	<b>CEYXXX</b>
Pack	 50 pcs	 50 pcs

 - QUADRA orange

 - QUADRA black

XXX - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)



# QUADRA DN2 assembled capillary hoses

QUADRA:  DN2

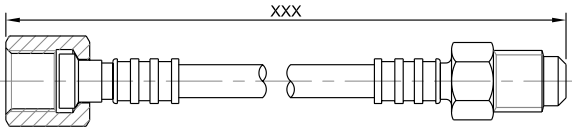
QUADRA:  DN4



QUADRA:  DN6

QUADRA:  PACKAGES

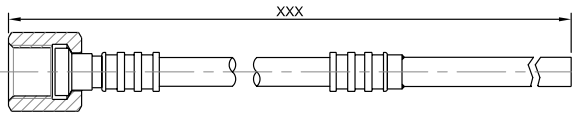
QUADRA:  ACCESSORIES



**Straight Female 1/4 + Male 1/4**



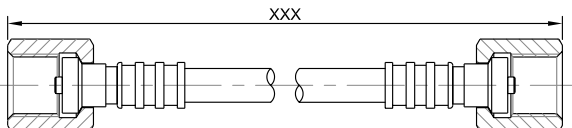
Part number	<b>CERXXX</b>	<b>CESXXX</b>
Pack	 50 pcs	 50 pcs



**Straight Female 1/4 + Copper brazing tube**



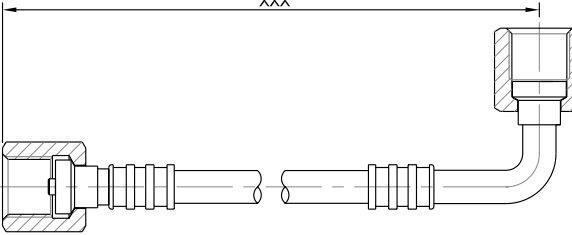
Part number	<b>CEZXXX</b>	<b>CFAXXX</b>
Pack	 50 pcs	 50 pcs



**1/4 Straight Female + 1/4 Straight Female (All With Valve Opener)**



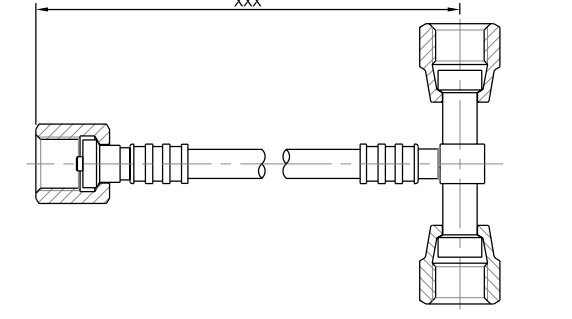
Part number	<b>CABXXX</b>	<b>CCCXXX</b>
Pack	 50 pcs	 50 pcs



**1/4 Straight Female (With Valve Opener) + 1/4 Elbow Female**



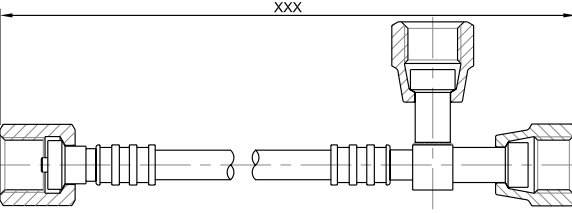
Part number	<b>CADXXX</b>	<b>CCEXXX</b>
Pack	 50 pcs	 50 pcs



**1/4 Straight Female (With Valve Opener) + T With 2 Female 1/4 at 180°**



Part number	<b>CFDXXX</b>	<b>CFEXXX</b>
Pack	 50 pcs	 50 pcs

**Straight Female 1/4 With Valve Opener + T With 2 Females 1/4 at 90°**



Part number	<b>CFFXXX</b>	<b>CFGXXX</b>
Pack	 50 pcs	 50 pcs

# QUADRA DN2 assembled capillary hoses

**Straight Female 1/4 With Valve Opener + Cross With 3 Females 1/4**

Part number	<b>CFHXXX</b>	<b>CFIXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 With Valve Opener + Male 1/4**

Part number	<b>CFBXXX</b>	<b>CFCXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 With Valve Opener + Copper Brazing Tube**

Part number	<b>CFJXXX</b>	<b>CFKXXX</b>
Pack	50 pcs	50 pcs

**1/4 Elbow Female + 1/4 Elbow Female**

Part number	<b>CAEXXX</b>	<b>CCFXXX</b>
Pack	50 pcs	50 pcs

**Elbow Female 1/4 + T With 2 Females 1/4 at 180°**

Part number	<b>CFPXXX</b>	<b>CFQXXX</b>
Pack	50 pcs	50 pcs

**Elbow Female 1/4 + T With 2 Females 1/4 at 90°**

Part number	<b>CFRXXX</b>	<b>CFSXXX</b>
Pack	50 pcs	50 pcs

- QUADRA orange    - QUADRA black

XXX - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)

# QUADRA DN2 assembled capillary hoses

QUADRA:  DN2

QUADRA:  DN4

QUADRA:  DN6

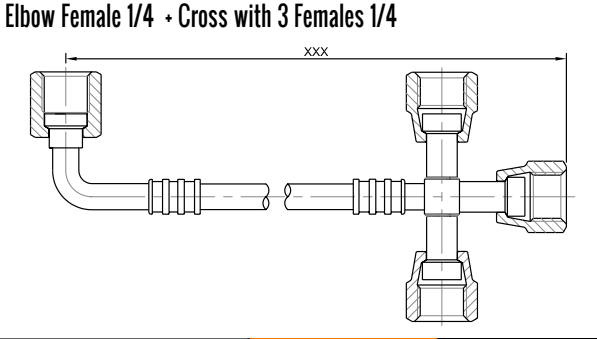




QUADRA:  PACKAGES



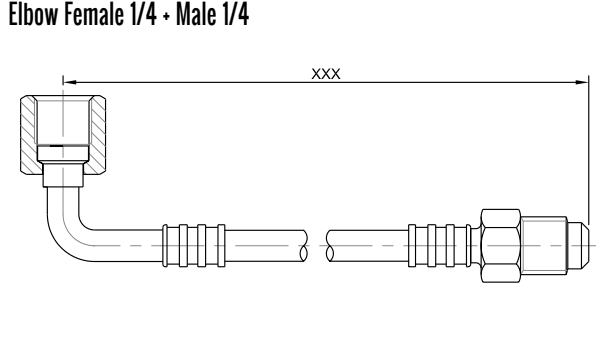
QUADRA:  ACCESSORIES



Elbow Female 1/4 + Cross with 3 Females 1/4



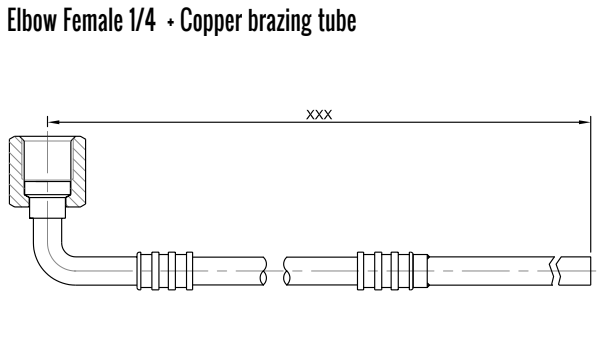
Part number	<b>CFTXXX</b>	<b>CFUXXX</b>
Pack	 50 pcs	 50 pcs



Elbow Female 1/4 + Male 1/4



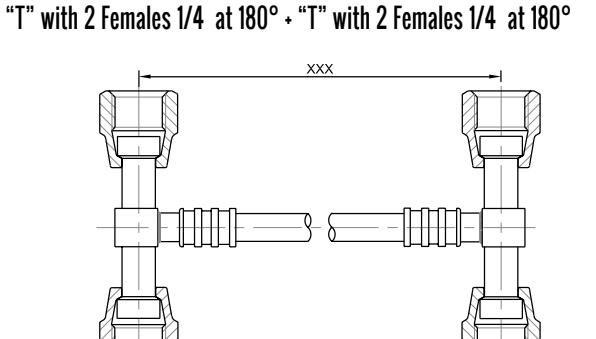
Part number	<b>CFNXXX</b>	<b>CFOXXX</b>
Pack	 50 pcs	 50 pcs



Elbow Female 1/4 + Copper brazing tube



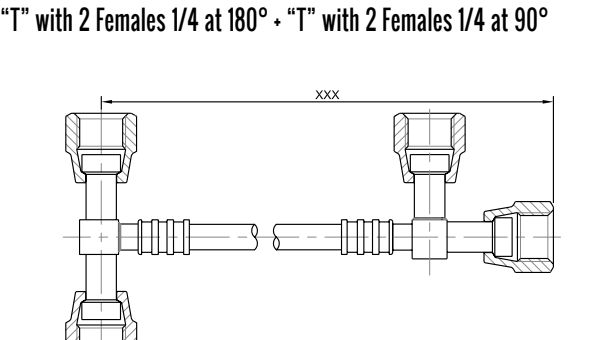
Part number	<b>CFVXXX</b>	<b>CFWXXX</b>
Pack	 50 pcs	 50 pcs



"T" with 2 Females 1/4 at 180° + "T" with 2 Females 1/4 at 180°



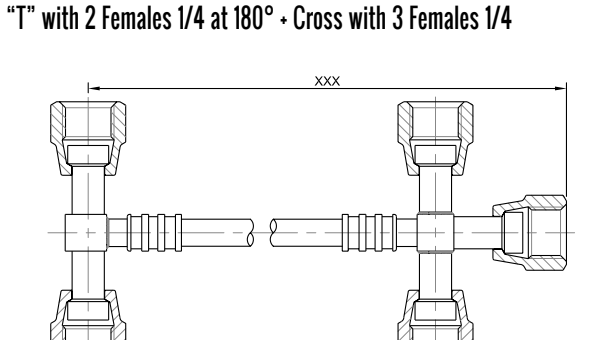
Part number	<b>CGHXXX</b>	<b>CGIXXX</b>
Pack	 50 pcs	 50 pcs



"T" with 2 Females 1/4 at 180° + "T" with 2 Females 1/4 at 90°



Part number	<b>CGJXXX</b>	<b>CGKXXX</b>
Pack	 50 pcs	 50 pcs

"T" with 2 Females 1/4 at 180° + Cross with 3 Females 1/4



Part number	<b>CGLXXX</b>	<b>CGMXXX</b>
Pack	 50 pcs	 50 pcs

# QUADRA DN2 assembled capillary hoses

Male 1/4 + "T" With 2 Females 1/4 at 180°

Part number	<b>CFZXXX</b>	<b>CGAXXX</b>
Pack	50 pcs	50 pcs

"T" With 2 Females 1/4 at 180° + Copper Brazing Tube

Part number	<b>CGNXXX</b>	<b>CGOXXX</b>
Pack	50 pcs	50 pcs

"T" With 2 Females 1/4 at 90° + "T" With 2 Females 1/4 at 90°

Part number	<b>CGPXXX</b>	<b>CGQXXX</b>
Pack	50 pcs	50 pcs

"T" With 2 Females 1/4 at 90° + Cross With 3 Females 1/4

Part number	<b>CGRXXX</b>	<b>CGSXXX</b>
Pack	50 pcs	50 pcs

Male 1/4 + "T" With 2 Females 1/4 at 90°

Part number	<b>CGBXXX</b>	<b>CGCXXX</b>
Pack	50 pcs	50 pcs

"T" With 2 Females 1/4 at 90° + Copper Brazing Tube

Part number	<b>CGTXXX</b>	<b>CGUXXX</b>
Pack	50 pcs	50 pcs

- QUADRA orange - QUADRA black

XXX - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)

# QUADRA DN2 assembled capillary hoses

QUADRA:  DN2

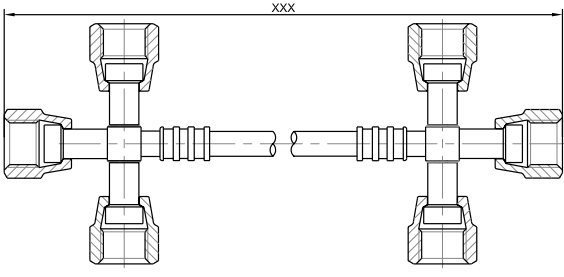
QUADRA:  DN4



QUADRA:  DN6

QUADRA:  PACKAGES

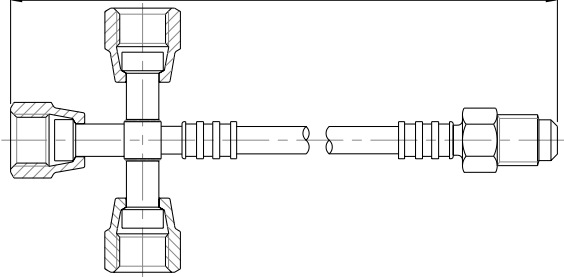
QUADRA:  ACCESSORIES



Cross with 3 Females 1/4 + Cross with 3 Females 1/4



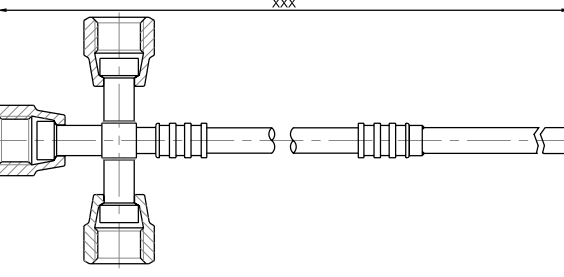
Part number	<b>CGVXXX</b>	<b>CGWXXX</b>
Pack	 50 pcs	 50 pcs



Male 1/4 + Cross with 3 Females 1/4



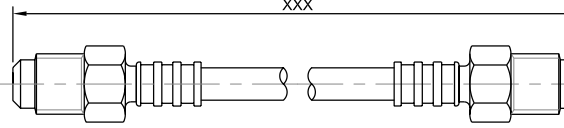
Part number	<b>CGDXXX</b>	<b>CGEXXX</b>
Pack	 50 pcs	 50 pcs



Cross with 3 Females 1/4 + Copper brazing tube



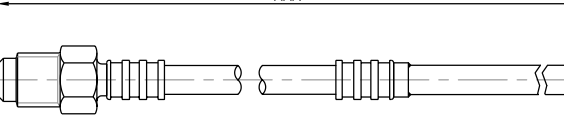
Part number	<b>CGXXX</b>	<b>CGYXXX</b>
Pack	 50 pcs	 50 pcs



Male 1/4 + Male 1/4



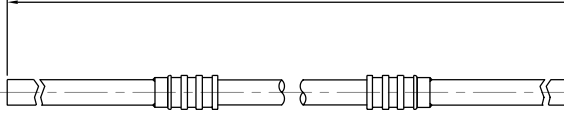
Part number	<b>CFXXX</b>	<b>CFYXXX</b>
Pack	 50 pcs	 50 pcs



Male 1/4 + Copper brazing tube



Part number	<b>CGFXXX</b>	<b>CGGXXX</b>
Pack	 50 pcs	 50 pcs

Copper brazing tube + Copper brazing tube



Part number	<b>CGZXXX</b>	<b>CHAXXX</b>
Pack	 50 pcs	 50 pcs

# APPLICATIONS



The **QUADRA DN4** flexible thermoplastic capillary hose, in two colors orange and black, are the ideal solution for equalizing and oil return lines.

The **QUADRA DN4** hoses have an internal diameter of 4 mm and therefore they can substitute copper rigid tubing of OD 6 mm or 1/4".

The **QUADRA DN4** hoses can be easily assembled with suitable fittings and crimped using the specific hydraulic crimper RXA005, or the all new QUADRA CRIMP RXA006-RXA008, otherwise a possible alternative is to use special reusable fittings where there are installations where special crimping tools are not available.

The **QUADRA DN4** hose can also be used, at the choice of the user, also for connection to the pressure gauges, pressure switches and test points as with QUADRA DN2.



# TECHNICAL DATA

## PERFORMANCE and condition of use

part number	pack	DN	OD	WP			BP			WT		BEND RADIUS	CRIMPING DIAMETER	CRIMPING DIAMETER	CRIMPING DIAMETER
				bar	MPa	psi	bar	MPa	psi	min°C	max°C	mm	Ø mm	Ø mm	Ø mm
<b>0789C</b> <b>0789BC</b>	50 m	DN4	8,30	120	12,0	1740	600	60	8700	-45°	+130°	25	NA	9,8±0,1	10±0,15
<b>0789K</b> <b>0789BK</b>	10 m														

### Classification of QUADRA capillary hoses

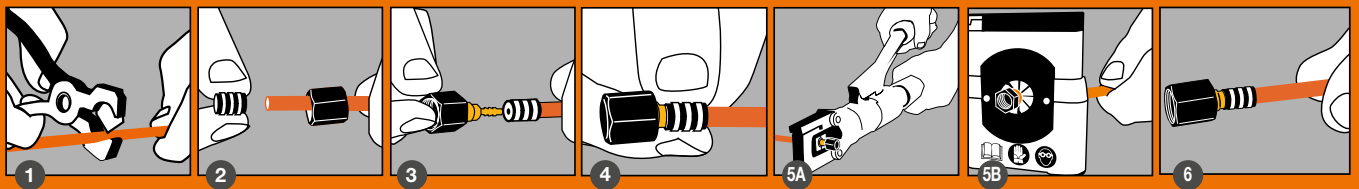
according to Directive 97/23/CE

PART NUMBER	CLASSIFICATION
0789C 0789BC 0789K 0789BK	paragraph 3 article 3

### PERMITTED FLUIDS

Type of Gas	Type of Oil
HFC (R134a, R404A, R407A, R407B, R407C, R410A, R507)	polyol ester based
HCFC (R22)	mineral oils
CO <sub>2</sub>	polyol ester based

### Assembly instructions for crimping fittings for QUADRA DN4 capillary hose



1 Cut the QUADRA capillary hose to the required length using the special WXA004 cutter.

2 Slip the nut over the hose (depending on fitting type). Ensure that the threaded side is pointing towards the end of the hose that needs assembling.

3 Assemble the insert together with the nut onto the hose end.

4 Pay attention not to move the components already fitted and slide the ferrule over the hose towards the insert positioning it in line with the insert.

5A Crimp the ferrule with our hand pliers type RXA005, up to the limit stop of the pliers: once the optimal deformation has been achieved the pliers will open automatically.

5B Crimp the ferrule with our crimper RXA006-RXA008. Keep the lever pulled. Once the optimal deformation has been achieved the crimper will stop automatically.

6 The assembling is finished and the eventual nut can easily slide over the ferrule: check the correct positioning of the components and make sure the entire surface of the ferrule has been swaged.

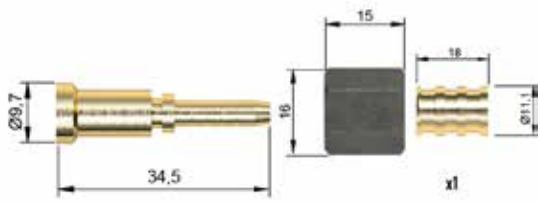


### Note:

ATTENTION: Once the hose assembly connected to the machine, do not move or rotate it, otherwise you risk loosening the nut or damaging the fitting by compromising its tightness. In case you have to modify the orientation of the coupling, unscrew the nut, position the hose assembly, then tighten the nut again respecting the torque value of 16/18 N·m, max 20 N·m.

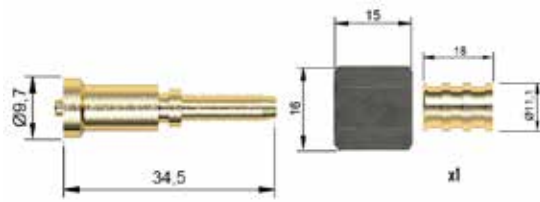


**1/4 SAE Straight Female Fitting**



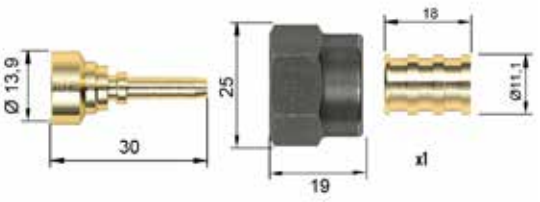
Part number	<b>XBA02M</b>	<b>WBA02M</b>	<b>KBA02M</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**1/4 SAE Straight Female Fitting + Valve Opener**



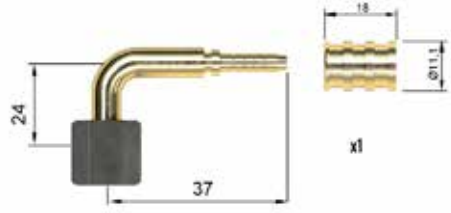
Part number	<b>XBB22M</b>	<b>WBB22M</b>	<b>KBB22M</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**3/8 SAE Straight Female Fitting**



Part number	<b>XBA04M</b>	<b>WBA04M</b>	<b>KBA04M</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**1/4 SAE Elbow Female 90°**



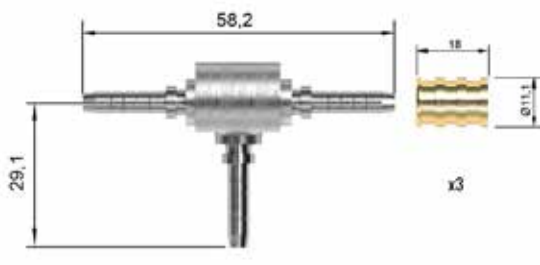
Part number	<b>XCA02M</b>	<b>WCA02M</b>	<b>KCA02M</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**3/8 SAE Elbow Female 90°**



Part number	<b>XCA04M</b>	<b>WCA04M</b>	<b>KCA04M</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

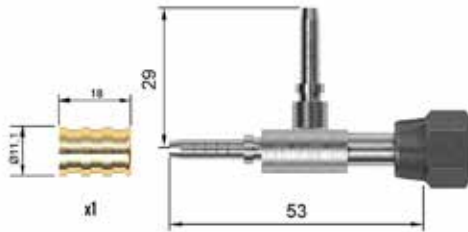
**"T" fitting**



Part number		<b>WPB0M1</b>	<b>KPB0M1</b>
Pack		50 pcs	10 pcs
gasket		<del></del>	<del></del>

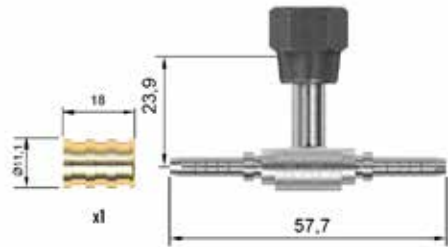
# QUADRA DN4 fittings

“T” Fitting With One Female 1/4 SAE



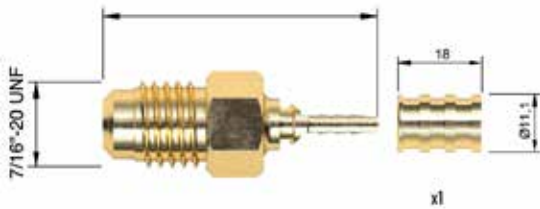
Part number	<b>XPB2M4</b>	<b>WPB2M4</b>	<b>KPB2M4</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

“T” Fitting With One Female 1/4 SAE



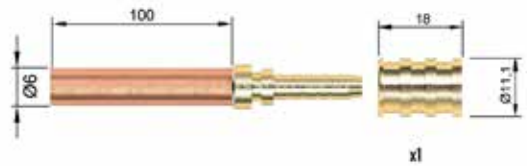
Part number	<b>XPB2M2</b>	<b>WPB2M2</b>	<b>KPB2M2</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

1/4 SAE Straight Male Fitting



Part number		<b>WDN22M</b>	<b>KDN22M</b>
Pack		50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

Copper Brazing Fitting (4x6x100 mm)



Part number		<b>WZE2M1</b>	
Pack		50 pcs	
Copper gasket		<del></del>	

# accessories for **QUADRA DN4** hoses

## HYDRAULIC PLIERS



Part number	<b>RXA005</b>
Pack	1 pcs

## CUTTER AND BLADES

Cutter



Cutter blades



Part number	<b>WXA004</b>	<b>WXB004</b>
Pack	1 pcs	2 pcs

## VALVE OPENER, GASKET AND NUT CAPS

Removable valve opener



Copper gasket 1/4



Copper gasket 3/8



QUADRA 1/4 fitting plugs



QUADRA 3/8 fitting plugs



Part number	<b>WTD2Z1</b>	<b>WRP502</b>	<b>WRP504</b>	<b>WRW912</b>	<b>WRW914</b>
Pack	50 pcs	50 pcs	50 pcs	50 pcs	50 pcs

## QUADRA-CRIMP

details on page 56



Part number	<b>RXA006</b> <b>RXA008</b>
Pack	1 pcs

## QUADRA CASE

Empty



Part number	<b>MRO43</b>
Pack	1 pcs

QUADRA: DN2

QUADRA: DN4

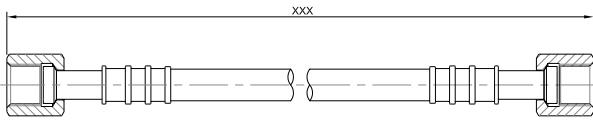
QUADRA: DN6

QUADRA: PACKAGES

QUADRA: ACCESSORIES

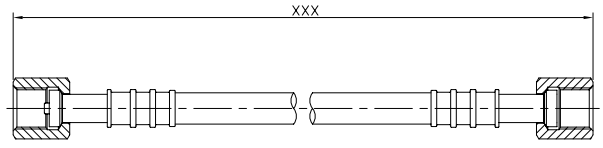
# QUADRA DN4 assembled capillary hoses

Straight female 1/4 + Straight female 1/4



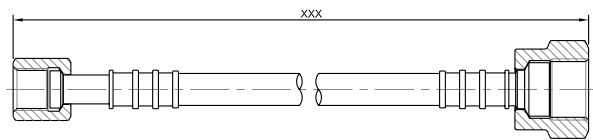
Part number	<b>CAFXXX</b>	<b>CCGXXX</b>
Pack	 50 pcs	 50 pcs

Straight Female 1/4 + Straight Female 1/4 + Valve Opener



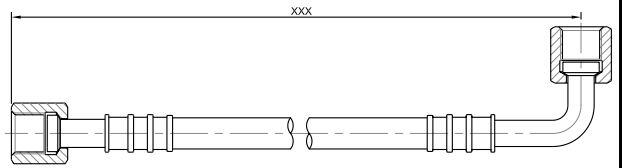
Part number	<b>CHVXXX</b>	<b>CHWXXX</b>
Pack	 50 pcs	 50 pcs



Straight female 1/4 + Straight female 3/8



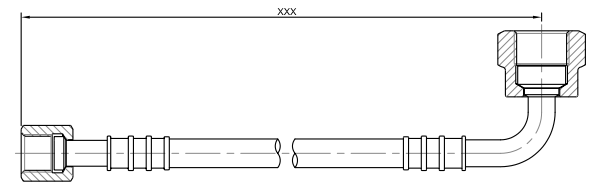
Part number	<b>CCMXXX</b>	<b>CCNXXX</b>
Pack	 50 pcs	 50 pcs

Straight female 1/4 + Elbow female 90° 1/4



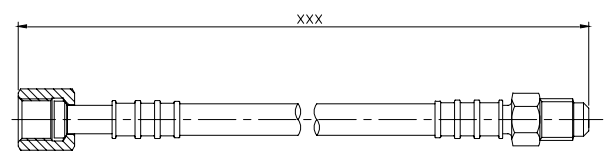
Part number	<b>CAGXXX</b>	<b>CCHXXX</b>
Pack	 50 pcs	 50 pcs

Straight female 1/4 + Elbow female 90° 3/8



Part number	<b>CDSXXX</b>	<b>CDWXXX</b>
Pack	 50 pcs	 50 pcs

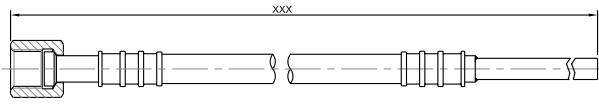
Straight Female 1/4 + Male 1/4



Part number	<b>CIRXXX</b>	<b>CISXXX</b>
Pack	 50 pcs	 50 pcs

# QUADRA DN4 assembled capillary hoses

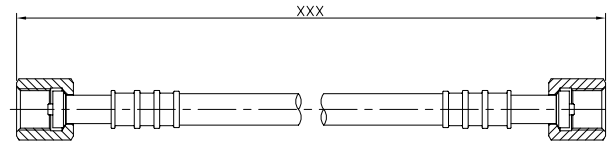
Straight female 1/4 + Copper brazing tube



Part number **CHBXXX** **CHCXXX**

Pack  50 pcs  50 pcs

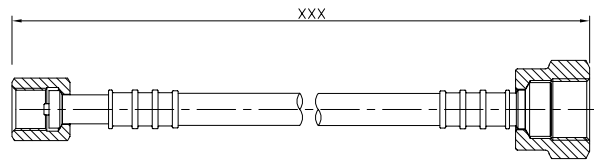
1/4 Straight Female + 1/4 Straight Female (all with Valve Opener)



Part number **CHZXXX** **CIAXXX**

Pack  50 pcs  50 pcs

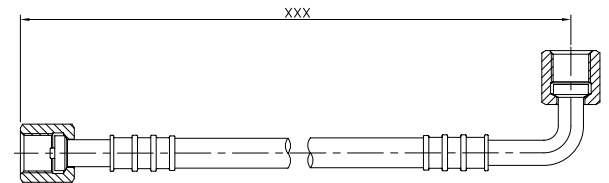
1/4 Straight Female (Valve Opener) + 3/8 Straight Female



Part number **CIFXXX** **CIGXXX**

Pack  50 pcs  50 pcs

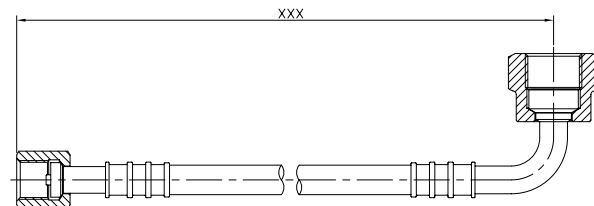
1/4 Straight Female (Valve Opener) + 1/4 Elbow Female



Part number **CIBXXX** **CICXXX**

Pack  50 pcs  50 pcs

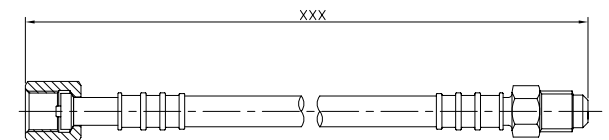
1/4 Straight Female (Valve Opener) + 3/8 Elbow Female



Part number **CIDXXX** **CIEXXX**

Pack  50 pcs  50 pcs

1/4 Straight Female (Valve Opener) + 1/4 Male



Part number **CHXXX** **CHYXXX**

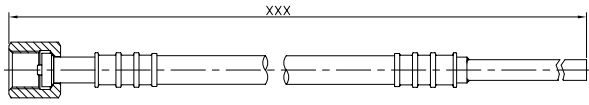
Pack  50 pcs  50 pcs

 - QUADRA orange  - QUADRA black  
**xxx** - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)



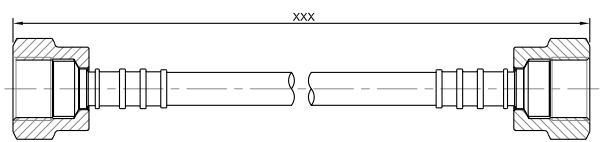
# QUADRA DN4 assembled capillary hoses


1/4 Straight Female (Valve Opener) + Copper Brazing Tube



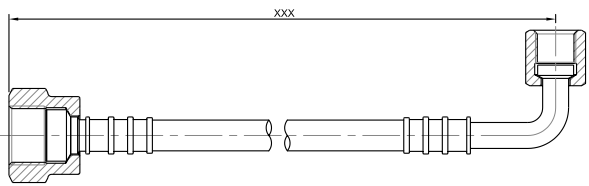
Part number	<b>CIHXXX</b>	<b>CIIXXX</b>
Pack	 50 pcs	 50 pcs

Straight Female 3/8 + Straight Female 3/8



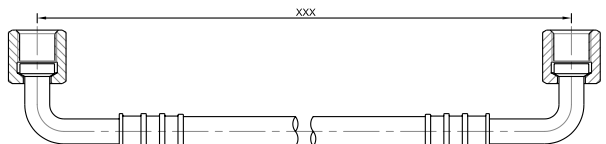
Part number	<b>CCKXXX</b>	<b>CCLXXX</b>
Pack	 50 pcs	 50 pcs

Elbow Female 1/4 + Straight Female 90° 3/8



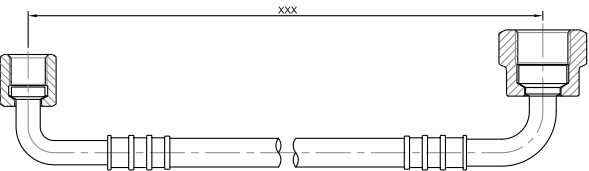
Part number	<b>CCPXXX</b>	<b>CCQXXX</b>
Pack	 50 pcs	 50 pcs

Elbow Female 90° 1/4 + Elbow Female 90° 1/4



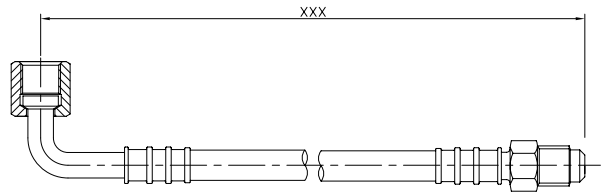
Part number	<b>CAHXXX</b>	<b>CCIXXX</b>
Pack	 50 pcs	 50 pcs

Elbow Female 90° 1/4 + Elbow Female 90° 3/8



Part number	<b>CDTXXX</b>	<b>CDXXXX</b>
Pack	 50 pcs	 50 pcs

Elbow Female 90° 1/4 + Straight Female 3/8



Part number	<b>CIJXXX</b>	<b>CIKXXX</b>
Pack	 50 pcs	 50 pcs

# QUADRA DN4 assembled capillary hoses

QUADRA:  DN2

QUADRA:  DN4

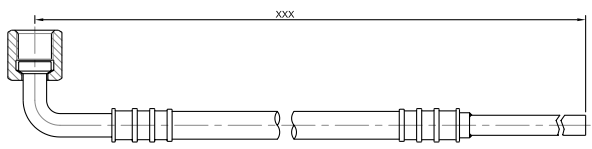
QUADRA:  DN6





QUADRA:  PACKAGES

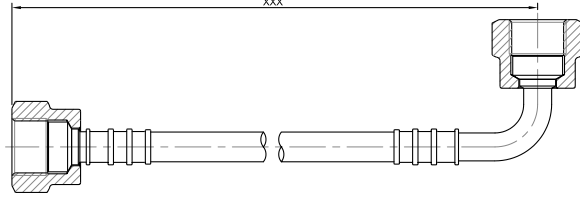
QUADRA:  ACCESSORIES



**Elbow Female 90° 1/4 + Copper brazing tube**



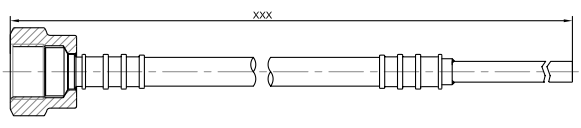
Part number	<b>CHFXXX</b>	<b>CHGXXX</b>
Pack	 50 pcs	 50 pcs



**Straight Female 3/8 + Elbow Female 90° 3/8**



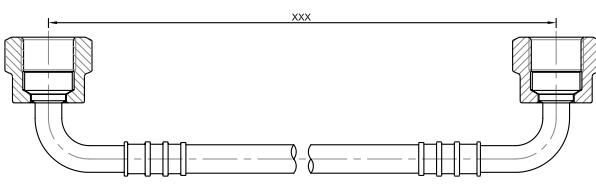
Part number	<b>CDRXXX</b>	<b>CDVXXX</b>
Pack	 50 pcs	 50 pcs



**Straight Female 3/8 + Copper brazing tube**



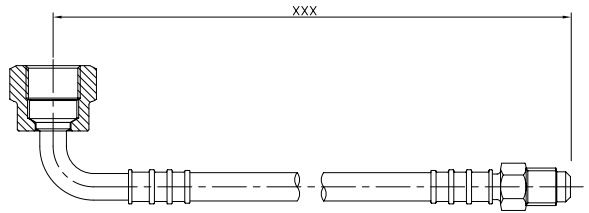
Part number	<b>CHDXXX</b>	<b>CHEXXX</b>
Pack	 50 pcs	 50 pcs



**Elbow Female 90° 3/8 + Elbow Female 90° 3/8**



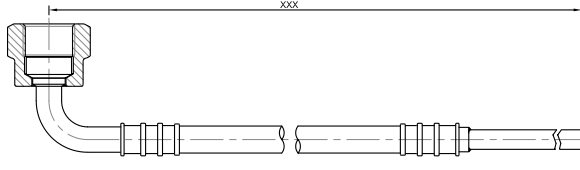
Part number	<b>CDUXXX</b>	<b>CDYXXX</b>
Pack	 50 pcs	 50 pcs



**Elbow Female 90° 3/8 + 1/4 Male**



Part number	<b>CILXXX</b>	<b>CIMXXX</b>
Pack	 50 pcs	 50 pcs

**Elbow Female 90° 3/8 + Copper Brazing Tube**





Part number	<b>CHHXXX</b>	<b>CHIXXX</b>
Pack	 50 pcs	 50 pcs



 - QUADRA orange     - QUADRA black  
 XXX - total length of QUADRA capillary hose in cm (multiple lengths of 10 cm)

# QUADRA DN4 assembled capillary hoses



1/4 Male + 1/4 Male

Part number	<b>CINXXX</b>	<b>CIOXXX</b>
Pack	 50 pcs	 50 pcs

1/4 Male + Copper brazing tube

Part number	<b>CIPXXX</b>	<b>CIQXXX</b>
Pack	 50 pcs	 50 pcs

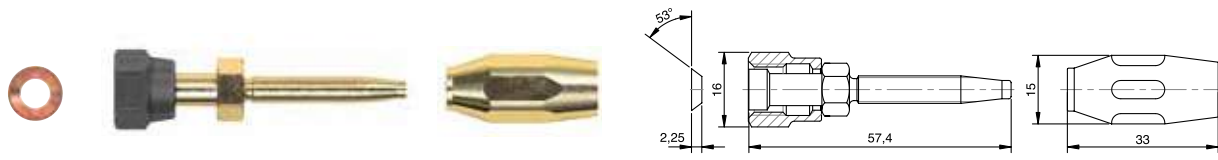
Copper Brazing Tube + Copper Brazing Tube







Part number	<b>CHJXXX</b>	<b>CHKXXX</b>
Pack	 50 pcs	 50 pcs



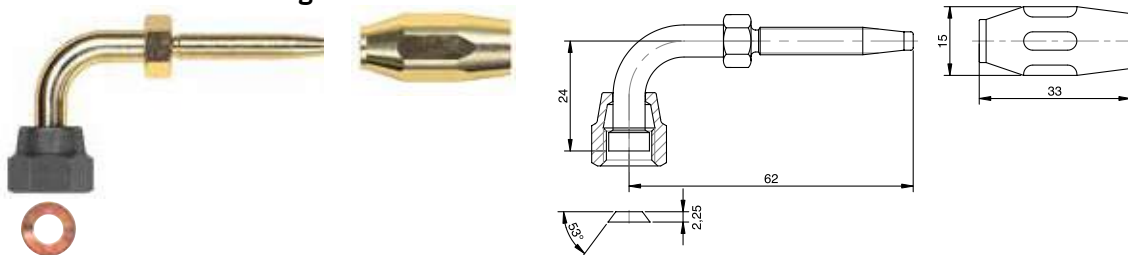








## 1/4 SAE Straight Female Fitting



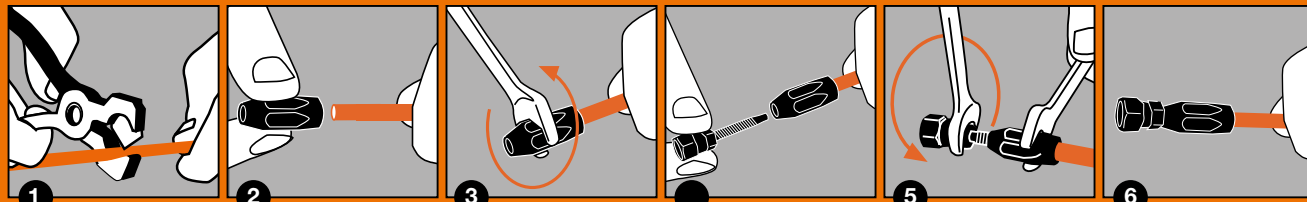
Part number	XIAO2M	WIAO2M	KIAO2M
Pack	 50 pcs	 50 pcs	 10 pcs
Copper gasket			

## 1/4 SAE Elbow Female 90° Fitting



Part number	XJAO2M	WJAO2M	KJAO2M
Pack	 50 pcs	 50 pcs	 10 pcs
Copper gasket			

## Assembly instructions for reusable fittings for QUADRA DN4 capillary hose



**1** Cut QUADRA DN4 capillary hose to the required length using our cutter for capillary hoses type WXAO04.

**2** Push the ferrule over the hose end you want to assemble. To make the operation easier we advise that you lubricate the components with refrigeration oil.

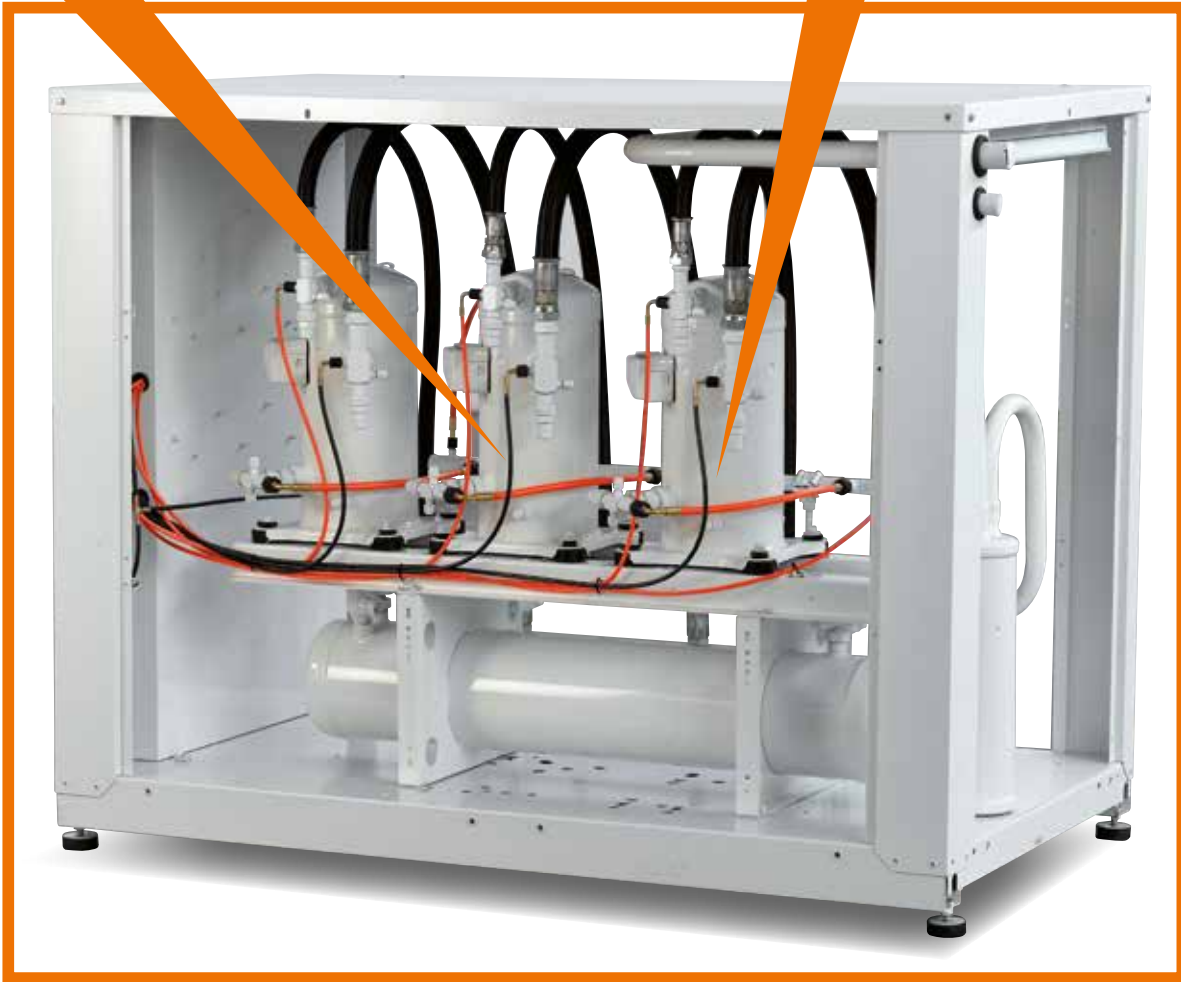
**3** Screw counter clockwise, by hand, the first turns of the thread of the ferrule. A suitable wrench screw counter clockwise until the ferrule is in line with the hose.

**4** Place the insert into the hose end you want to assemble. To make the operation easier we advise that you lubricate the components with refrigeration oil.

**5** Screw clockwise, by hand, the first turns of the thread of the insert into the ferrule previously fitted on the hose. Screw clockwise the fitting into the ferrule until they are in line with each other by using a wrench and a counter wrench.

**6** After checking the correct positioning of the components, the assembling is finished.

# APPLICATIONS



The **QUADRA DN6** flexible thermoplastic hose is the latest QUADRA development in the world of flexible hoses for air conditioning and refrigeration systems.

The **QUADRA DN6** is characterized by an internal diameter of 6 mm, and therefore they can substitute copper rigid tubing of OD 8 mm or 5/16". The larger internal diameter reduces the pressure drop and makes the use of this hose possible on larger systems for the oil return lines and for the oil equalization systems.

The crimping fittings for the **QUADRA DN6** hose are available with connections of 1/4" SAE and 3/8" SAE and can be connected to the hose using the same hydraulic pliers RXA005 as used with the QUADRA DN4 hose. For large scale production it is now possible to use the new worktop crimper RXA006-RXA008 which easily crimps the fittings for QUADRA DN2, DN4 e DN6 hoses.



# TECHNICAL DATA

## PERFORMANCE and condition of use

<b>part number</b>	<b>pack</b>	<b>DN</b>	<b>OD</b>	<b>WP</b>			<b>BP</b>			<b>WT</b>		<b>BEND RADIUS</b>	<b>CRIMPING DIAMETER</b>	<b>CRIMPING DIAMETER</b>	<b>CRIMPING DIAMETER</b>
				bar	MPa	psi	bar	MPa	psi	min°C	max°C	mm	Ø mm	Ø mm	Ø mm
<b>0786C</b> <b>0786BC</b>	50 m	DN6	10,9	120	12,0	1740	600	60	8700	-45°	+130°	35	NA	12,4±0,1	12,4±0,2
<b>0786K</b> <b>0786BK</b>	10 m														

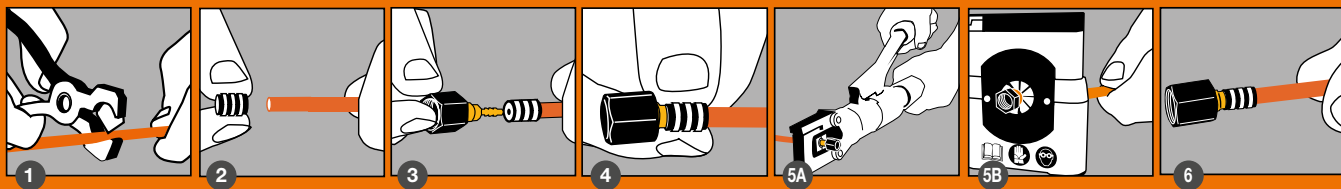
### Classification of QUADRA capillary hoses according to Directive 97/23/CE

PART NUMBER	CLASSIFICATION
0786C 0786BC 0786K 0786BK	paragraph 3 article 3

### PERMITTED FLUIDS

Type of Gas	Type of Oil
HFC (R134a, R404A, R407A, R407B, R407C, R410A, R507)	polyol ester based
HCFC (R22)	mineral oils
CO <sub>2</sub>	polyol ester based

### Assembly instructions for crimping fittings for QUADRA DN6 capillary hose



1 Cut the QUADRA capillary hose to the required length using the special WXA004 cutter.

2 Slip the nut over the hose (depending on fitting type). Ensure that the threaded side is pointing towards the end of the hose that needs assembling.

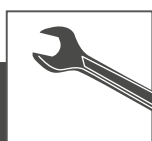
3 Assemble the insert together with the nut onto the hose end.

4 Pay attention not to move the components already fitted and slide the ferrule over the hose towards the insert positioning it in line with the insert.

5A Crimp the ferrule with our hand pliers type RXA005, up to the limit stop of the pliers: once the optimal deformation has been achieved the pliers will open automatically.

5B Crimp the ferrule with our crimper RXA006-RXA008. Keep the lever pulled. Once the optimal deformation has been achieved the crimper will stop automatically.

6 The assembling is finished and the eventual nut can easily slide over the ferrule: check the correct positioning of the components and make sure the entire surface of the ferrule has been swaged.

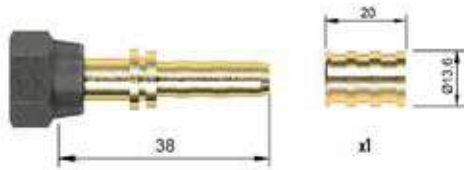


### Note:

ATTENTION: Once the hose assembly connected to the machine, do not move or rotate it, otherwise you risk loosening the nut or damaging the fitting by compromising its tightness. In case you have to modify the orientation of the coupling, unscrew the nut, position the hose assembly, then tighten the nut again respecting the torque value of 16/18 N·m, max 20 N·m.

QUADRA: DN2  
 QUADRA: DN4  
 QUADRA: DN6  
 QUADRA: PACKAGES  
 QUADRA: ACCESSORIES

**1/4 SAE Straight Female Fitting**



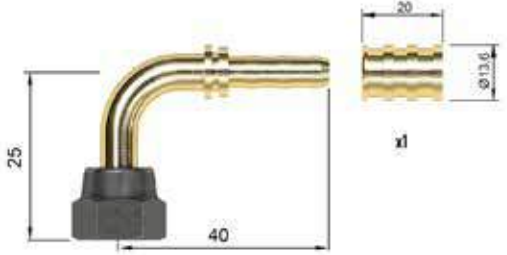
Part number	<b>XBA02N</b>	<b>WBA02N</b>	<b>KBA02N</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**3/8 SAE Straight Female Fitting**



Part number	<b>XBA04N</b>	<b>WBA04N</b>	<b>KBA04N</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**1/4 SAE Elbow Female 90°**



Part number	<b>XCA02N</b>	<b>WCA02N</b>	<b>KCA02N</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket		<del></del>	<del></del>

**3/8 SAE Elbow Female 90°**



Part number	<b>XCA04N</b>	<b>WCA04N</b>	<b>KCA04N</b>
Pack	50 pcs	50 pcs	10 pcs
Copper gasket	<del></del>	<del></del>	<del></del>

**Copper Brazing Fitting (6x8x100 mm)**



Part number	<b>WZE2N1</b>
Pack	50 pcs
Copper gasket	

# accessories for **QUADRA DN6** hoses

## HYDRAULIC PLIERS



Part number	<b>RXA005</b>
Pack	1 pcs

## CUTTER AND BLADES

Cutter



Cutter blades



Part number	<b>WXA004</b>	<b>WXB004</b>
Pack	1 pcs	2 pcs

## VALVE OPENER, GASKET AND NUT CAPS

Copper gasket 1/4



Copper gasket 3/8



QUADRA 1/4 fitting plugs



QUADRA 3/8 fitting plugs



Part number	<b>WRP502</b>	<b>WRP504</b>	<b>WRW912</b>	<b>WRW914</b>
Pack	50 pcs	50 pcs	50 pcs	50 pcs

## QUADRA-CRIMP

details on page 56



Part number	<b>RXA006</b> <b>RXA008</b>
Pack	1 pcs

## QUADRA CASE

Empty



Part number	<b>MRO43</b>
Pack	1 pcs

# QUADRA DN6 assembled capillary hoses

**Straight Female 1/4 + Straight Female 1/4**

Part number	<b>CDZXXX</b>	<b>CEAXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 + Straight Female 3/8**

Part number	<b>CD4XXX</b>	<b>CEEXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 + Elbow Female 90° 1/4**

Part number	<b>CD1XXX</b>	<b>CEBXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 + Elbow Female 90° 3/8**

Part number	<b>CD7XXX</b>	<b>CEHXXX</b>
Pack	50 pcs	50 pcs

**Straight Female 1/4 + Copper brazing tube**

Part number	<b>CHLXXX</b>	<b>CHMXXX</b>
Pack	50 pcs	50 pcs

**Elbow Female 90° 1/4 + Elbow Female 90° 1/4**

Part number	<b>CD2XXX</b>	<b>CECXXX</b>
Pack	50 pcs	50 pcs

**Elbow Female 90° 1/4 + Elbow Female 90° 3/8**

Part number	<b>CD8XXX</b>	<b>CEIXXX</b>
Pack	50 pcs	50 pcs

**Elbow Female 90° 1/4 + Copper brazing tube**

Part number	<b>CHPXXX</b>	<b>CHQXXX</b>
Pack	50 pcs	50 pcs

QUADRA: DN2  
 QUADRA: DN4  
 QUADRA: DN6  
 QUADRA: PACKAGES  
 QUADRA: ACCESSORIES





## THE NEW QUADRA PACKAGES

Born to make life easier for the retailer and the customer alike, the new Quadra packages widen the range, making it even more functional and adaptable in any sales context and any kind of use.

Not all customers are interested in purchasing large quantities of materials, and the chance to buy smaller product quantities makes the Quadra range appealing even for installers and small builders.

The products are also available in new blister packs, bags and boxes.






The new packaging is not only easy to use but are also very attractive.

The graphics and colours used make them very effective.

Their high impact graphics make them easily recognizable and identifiable.

The new packages are perfect for putting on display, clearly displaying the products to the public.

## KEY PACKAGES QUADRA PRODUCTS

HOSES	
 50 m	QUADRA hose <b>LOOSE</b> in 50 m roll
 10 m	QUADRA hose <b>PACKAGED IN BAGS</b> 10 m roll
FITTINGS	
 50 pcs	QUADRA fittings <b>PACKAGED IN BOXES</b> 50 pieces
 10 pcs	QUADRA fittings <b>PACKAGED IN BLISTER PACKS</b> 10 pieces
ACCESSORIES AND ASSEMBLED HOSES	
 n. pcs	QUADRA accessories and assembled hoses <b>PACKAGED IN BAGS</b>



## THE NEW PROFESSIONAL QUADRA-CRIMP

### QUADRA-CRIMP

QUADRA™ CRIMP is the new professional bench crimper that is both simple to use and versatile. The heart of the machine is a central control mechanism for greater accuracy during the crimping operation with immediate release of the dies when exact crimping diameter has been achieved. QUADRA™ CRIMP simplifies the steps to obtain a correct assembly of QUADRA™ products, which can be summarized as follows:

- 1** Connect the machine to an outlet of compressed air, through the adapter (female 1/4"), with the pneumatic quick coupling which is supplied together with the crimper.
- 2** Insert into the crimping head the dies (held in place magnetically) that is suitable for capillary that will be assembled. (supplied with the crimper, Q2-Q4-Q6 is embossed to better distinguish the set of punches to be used for capillaries™ QUADRA DN2-DN4 or DN6).
- 3** Insert the capillary hose to be crimped into the head.
- 4** Move the knob to the right until it reaches the limit. The machine is set to stop automatically when the correct crimping specification is achieved. You can also use the machine through a foot operated pedal so that you have free use of both hands during pressing operations.
- 4 b** After having switched the command to the pedal, push the back of the pedal all the way down with your heel to start the crimping then, after the hose is crimped, push the front of the pedal all the way down to open the dies.



QUADRA CRIMP  
RXA006-RXA008

## THE CRIMPER IS SUPPLIED IN A PACKAGE THAT INCLUDES:

- ▶ Hydraulic crimper.
- ▶ Carter ABS with internal air-hydraulic pump.
- ▶ Adapter (1/4" female) for quick pneumatic coupler.
- ▶ 3 series of dies (Q2-Q4-Q6).
- ▶ Control pedal kit (optional when purchasing the sole crimper RXA006).
- ▶ Instruction Manual.

## QUADRA™ CRIMP

has a protective outer body that protects the operator and the machine from inappropriate use of the crimper and, thanks to the carrying handles, the crimper can be easily moved. The crimping head swivels 360° to allow the best working position for the operator. The functioning of both the crimper and the pedal is by compressed air connection 500 ÷ 800 kPa [5 ÷ 8 bar, 72 ÷ 116 psi] (via convenient quick coupling connections). To help operation and maintenance of the machine there has been added an oil level inspection cap, with dipstick, indicating MIN MAX. There are stickers explaining the functioning of all parts of the machine.

Attached to the machine is a detailed instruction manual with extensive descriptions of the operation and maintenance.

Note: The optional foot pedal RXB008 can be installed only on the new version of the crimping unit provided with a central internal control which is missing in the old version of the crimper.

### Available Version

## QUADRA™ CRIMP

is available in two versions:

- ▶ **RXA008** with foot operated pedal to have free use of both hands during pressing operations.
- ▶ **RXA006** without foot pedal.



# ACCESSORIES FOR QUADRA HOSES

## COR-SAFE PF



050



### Abrasion and chemical resistant corrugated hose protector / conduit



part number	hose size		ID		OD		weight	
	DN	inch	mm	inch	mm	inch	g/m	lbs/ft
059A	DN16	5/8	16,0	0,630	21,6	0,850	60	0,040
059B	DN22	7/8	22,3	0,878	28,5	1,122	110	0,074
059C	DN29	1-1/8	29,2	1,150	36,0	1,417	130	0,087
059D	DN39	1-1/2	39,6	1,559	46,6	1,835	160	0,108
059E	DN55	2-1/8	55,2	2,173	64,0	2,520	280	0,188

### ABRASION AND CHEMICAL RESISTANT CORRUGATED HOSE PROTECTOR / CONDUIT

A hose and cable protector system with a large temperature range and exceptional wear and chemical resistance features for the hardest applications, while still maintaining a high degree of flexibility through the corrugated design.

The polyester material (high performance engineering polymer) makes it the ideal choice for hose and cable systems that operate in low temperature environment without losing the flexibility of the hose assembly. If the entire length of hose or bundles needs to be protected from outside possible hazardous substances.

#### CUTTER AND BLADES

Cutter



Cutter blades



Part number

WXA004

WXB004

Pack



#### HAND PLIERS



Part number

RXA007

Pack



# ACCESSORIES FOR QUADRA HOSES

## QUADRA-CRIMP FOR DN2-DN4-DN6 HOSES



Part number	<b>RXA006 RXA008</b>
Pack	 1 pcs

## HYDRAULIC PLIERS FOR DN4-DN6 HOSES



Part number	<b>RXA005</b>
Pack	 1 pcs

## VALVE OPENER, GASKET AND NUT CAPS

Removable valve opener



Copper gasket 1/4



Copper gasket 3/8



QUADRA 1/4 fitting plugs

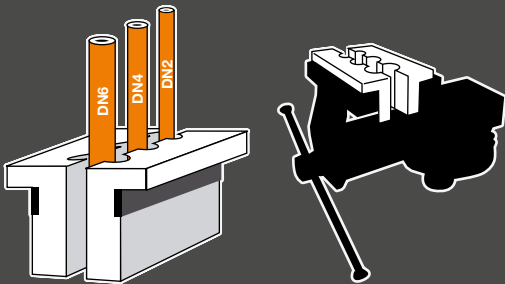


QUADRA 3/8 fitting plugs



Part number	<b>WTD2Z1</b>	<b>WRP502</b>	<b>WRP504</b>	<b>WRW912</b>	<b>WRW914</b>
Pack	 50 pcs	 50 pcs	 50 pcs	 50 pcs	 50 pcs

## QUADRA-CLAMPS FOR DN2-DN4-DN6 HOSES



Part number	<b>RXB007</b>
Pack	 1 pcs

## QUADRA CASE



- 10 m. ref. 0780K
- 10 m. ref. 0780BK
- 20 ref. WBA02C
- 20 ref. WBB02C
- 10 ref. WCA02C
- 10 ref. WPB0C1
- 10 ref. WPB0C2
- 50 ref. WRP502
- 50 ref. WTD2Z1
- 1 ref. RXA007
- 1 ref. WXA004
- 1 ref. WXB004

Part number	<b>MRO43</b>	<b>W00001</b>
Pack	 1 pcs	 1 pcs

QUADRA:  DN2

QUADRA:  DN4

QUADRA:  DN6



QUADRA:  PACKAGES



QUADRA:  ACCESSORIES

# THERMOPLASTIC HOSE INSTALLATION FACTORS

## THERMOPLASTIC HOSE INSTALLATION FACTORS

The specifications and particular conditions of use also determine the limits for the correct use of GOMAX products. Accordingly, Transfer Oil can neither declare nor guarantee that any item will be suitable for a given application: it is the business of users to apply their knowledge of the relevant details and carry out such tests as may be needed to ensure the selection of the item best suited for the particular requirements, eliminating risks to themselves, to the product, and to third parties. Users are strongly advised in their own interest, before making any final decision on the item, to consult the full range of information supplied in the Transfer Oil technical literature, catalogues and appendixes. To eliminate any element of doubt, the Transfer Oil sales department will obviously be at the customer's disposal to provide further information and respond to any request for clarification.

### IMPORTANT NOTE FOR USERS

Hose assemblies require caution in use not only to provide long service life but also to guard against potentially dangerous failure. Serious injury, death and destruction of property can result from the rupture or blowing-apart of a hose assembly that is damaged, worn out, badly assembled or installed incorrectly. Users should follow good maintenance practices. Avoid expensive downtime by establishing a program of inspection, testing and replacement of hose assemblies before failure occurs: taking into account factors including: severity of application, frequency of equipment use, past performance of hose assemblies. Document your maintenance, inspections and testing. Only properly trained persons should inspect, test or service hose assemblies and this training should be updated regularly. Users should carefully observe the precautions listed below as well as following closely our recommendations for the selection of hose and couplings. In addition, care should be taken not to go below the minimum bend radius listed for each hose size and type. Maximum operating pressure and temperature should not exceed the pressures listed. Instruction for assembling fittings to different hoses should be followed carefully to ensure the safe performance of the complete assembly. By following the recommendations on hose assembly routing and installation, improved safety and longer service life of any hose installation will result. Gas and/or oil under pressure can be potentially dangerous! An explosive burst or stream of escaping gases or oils can cause damage to equipment as well as serious injury to persons nearby.

### SALIENT INFORMATION

Highly pressurized gas and/or oil escaping from a small pinhole can be almost invisible and, yet, exert extreme force capable of penetrating the skin and other body tissues, causing possible severe injury. Hot gases / oils or chemicals can cause severe burns. Pressurized gases or oils, if released uncontrolled, can exert a tremendous explosive force. Some gas and/or oil are highly flammable.

### PRECAUTIONS

Always position a shield between you and any pressurized lines when working next to them or shut the pressure off. Wear safety glasses. Do not use your hands to check for leaks. Do not touch a pressurized hose assembly with any part of your body, if fluid punctures the skin, even if no pain is felt, a serious emergency exists. Obtain medical assistance immediately. Failure to do so can result in loss of the injured body part or death. Stay out of hazardous areas while testing hose assemblies under pressure. Use proper safety protection. If an injury or reaction occurs, get medical attention right away. GOMAX hose and fitting (ZERO, INFINITY and QUADRA) are designed, engineered and tested to be used together in an assembly. The use of GOMAX fittings on other manufactures hose or the use of GOMAX hose with other manufactures fittings may result in the production of unreliable or unsafe assemblies. Hose (and hose assemblies) has a limited life dependent on service conditions to which it is applied. Subjecting hose (and hose assemblies) to conditions more severe than the recommended limits significantly reduce service life. Exposure to combinations of recommended limits (i.e. continuous use at maximum rated working pressure, maximum recommended operating temperature and minimum bend radius) will also reduce service life.

### PRESSURE

After determining the system pressure for a system, hose selection must be made so that the recommended maximum operating pressure specified by a

given hose, is equal or greater than the maximum system pressure. Continuous use at maximum temperatures together with maximum pressures should always be avoided. Continuous use at or near the maximum temperature rating will cause a deterioration of physical properties of the tube and cover of most hose. This deterioration will reduce the service life of the hose. Pressure surges which exceed the maximum working pressure (pressure relief valve setting) affect the service life of system components, including a hose assembly and therefore need to be taken into consideration. Hoses used for suction lines must be selected to ensure the hose will withstand the potential negative pressure of the system.

### BURST PRESSURE

These are test values only and apply to hose assemblies that have not been used and have been assembled for less than 30 days.

### HIGH PRESSURE GAS

High pressure gaseous systems especially over 15 bar or 250 psi are very hazardous and should be adequately protected from external shock and mechanical or chemical damage. They should also be suitably protected to prevent whiplash action in the event of failure. TRANSFER OIL Thermoplastic hose is not recommended for high pressure pure oxygen charging applications.

### TEMPERATURE

Care must be taken to ensure that the operating temperature of the gas and/or oil being conveyed and ambient temperatures do not exceed the limitations of the hose. Special care must be taken when routing near hot manifolds or molten metal.

### INSULATION

Where the fittings of a QUADRA capillary hose can possibly be subject to permanent condensation or icing (for example on a suction line or an evaporator), we recommend to include the hose fitting within the insulation, in order to avoid unnecessary corrosion over time.

Insulate the capillary hose up to 5 cm (2 inches) from the end of the ferrule with a rubber type insulation hose or insulation tape.

### GAS AND OILS COMPATIBILITY

Hose selection must assure compatibility of the hose tube, cover, reinforcement, and fittings with the gas and/or oil used. Additional caution must be observed in hose selection for gaseous applications. Some fire resistant fluids require the same hose as petroleum oil. Some use a special hose.

### PERMEATION

Permeation (that is, seepage through the hose) will occur from inside the hose to outside when hose is used with gases, liquid and gas fuels, solvents and other media, and refrigerants (including but not limited to such materials such as helium, fuel oil, natural gas or refrigerant gas). This permeation may result in high concentrations of vapours which are potentially flammable, explosive, or toxic, and in loss of gas and/or oil. Even though the gas and/or oil compatibility is acceptable, you must take into account the fact that permeation will occur and could be hazardous. Permeation of moisture from outside the hose to inside the hose will also occur. If this moisture permeation would have detrimental effects (particularly but not limited to refrigeration and air conditioning systems), incorporation of sufficient drying capacity in the system or other appropriate system safeguards should be selected and used.

### ROUTING

Attention must be given to optimum routing to minimise inherent problems. Restrain, protect or guide hose with the use of clamps if necessary to minimise risk or damage due to excessive flexing, whipping or contact with other moving parts or corrosives. Determine hose lengths and configurations that will result in proper routing and protection from abrasion, snagging or kinking and provide leak resistant connections.

### ENVIRONMENT

Care must be taken to ensure that the hose and fittings are either compatible with or protected from the environment to which they are exposed. Environmental conditions including but not limited to ultraviolet light, heat, ozone, moisture, water, salt water, chemicals, and air pollutants can cause degradation and premature failure and, therefore, must be considered.

## REFRIGERANT GASES

Special care should be taken when working with refrigeration systems. Sudden escape of refrigerant gases can cause blindness if the escaping gases contact the eye and can cause freezing or other severe injuries if it contacts any other part of the body.

## ATOMIC RADIATION

Atomic radiation affects all materials used in hose assemblies. Since the long-term effects may be unknown, do not expose hose assemblies to atomic radiation.

## MECHANICAL LOADS

External forces can significantly reduce hose life. Mechanical loads which must be considered include excessive flexing, twist, kinking, tensile or side loads, bend radius, and vibration. Use of swivel type fittings or adaptors may be required to ensure no twist is put into the hose. Unusual applications may require special testing prior to hose selection.

## EXTERNAL PRESSURE

In certain applications, such as in autoclaves or under water, the external environmental pressures may exceed the gas and/or oil pressure inside the hose. In these applications, consider the external pressures, and, if necessary, consult the manufacturers.

## ABRASION

While a hose is designed with a reasonable level of abrasion resistance, care must be taken to protect the hose from excessive abrasion which can result in erosion, snagging, and cutting of the hose cover. Exposure of the reinforcement will significantly accelerate hose failure.

## PROPER END FITTING

GOMAX hoses (QUADRA, INFINITY and ZERO) have been designed to be used exclusively with genuine GOMAX fittings, accessories and tools.

Using third party fittings, accessories or tools may cause malfunctioning of GOMAX hoses, with consequent risk of leakages of gas and/or oil, as well as damage to equipment and serious injury to persons nearby.

In the same way GOMAX fittings, accessories and tools are designed to be used exclusively with GOMAX hoses. Using GOMAX fittings, accessories and tools with third party hoses may cause malfunctioning, gas and/or oil leakages, as well as damage to equipment as well as serious injury to persons nearby.

## HOSE-ASSEMBLY FABRICATION

Persons fabricating hose assemblies should be trained in the proper use of equipment and materials. The manufacturers' instructions must be followed. Properly assembled fittings are vital to the integrity of a hose assembly. Improperly assembled fittings can separate from the hose and may cause serious injury or property damage from whipping hose, or from fire or explosion of vapour expelled from the hose.

## LENGTH

When establishing proper hose length, motion absorption, hose length changes due to pressure, as well as hose and machine tolerances must be considered.

## SPECIFICATIONS AND STANDARDS

When selecting hose and fittings, government, industry and manufacturer's specifications and recommendations must be reviewed as applicable.

## STATIC-ELECTRIC DISCHARGE

Gas and/or oil passing through hose can generate static electricity resulting in the possibility of static-electric discharge. This may create sparks that can puncture hose. If this potential exists, than adequate measures should be taken to insulate the product from potential earthing points that may contact the exterior surface of the hose.

## MINIMUM BEND RADIUS

Installation of a hose at less than the minimum listed bend radius may significantly reduce the hose life. Particular attention must be given to avoid sharp bending at the hose/fitting juncture.

## TWIST ANGLE AND ORIENTATION

Hose installations must be such that relative motion of machine components does not produce twisting.

## SECUREMENT

In many applications, it may be necessary to restrain, protect, or guide the hose to protect it from damage by unnecessary flexing, pressure surges, a contact with other mechanical components. Care must be taken to ensure such restraints do not introduce additional stress or wear points.

## PROPER CONNECTION OF PORTS

Proper physical installation of the hose requires a correctly installed port connection while ensuring that no twist or torque is transferred to the hose.

## EXTERNAL DAMAGE

Proper installation is not complete without ensuring that tensile loads, side loads, kinking, flattening, potential abrasion, thread damage, or damage to sealing surfaces are corrected or eliminated.

## UNINTENDED USES

Hose assemblies are primarily designed for the internal forces of conducted gas and/or oil. Do not pull hose or use it for purposes that may apply external forces for which the hose or fittings were not designed.

## HOSE AND FITTING MAINTENANCE INSTRUCTIONS

Even with proper selection and installation, hose life may be significantly reduced without a continuing maintenance program. Frequency should be determined by the severity of the application and risk potential. A maintenance program must be established and followed to include the following as a minimum:

### VISUAL INSPECTION HOSE/FITTING

Any of the following conditions require immediate shut down and replacement of the hose assembly: Damaged, cut or abraded cover (any reinforcement exposed). Hard, stiff, heat cracked, or charred hose. Cracked, damaged, or badly corroded fittings. Leaks at the fitting or in the hose. Kinked, crushed, flattened or twisted hose. Blistered, soft, degraded, or loose cover.

### VISUAL INSPECTION ALL OTHER

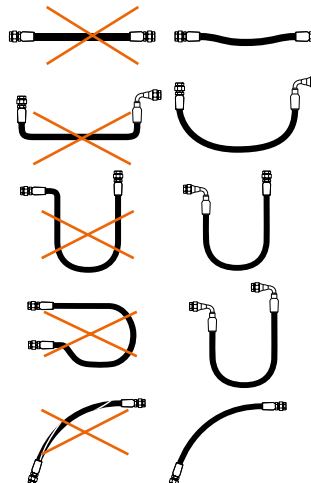
The following items must be tightened, repaired or replaced as required: Leaking port conditions. Clamp, guards, shields. System fluid level, fluid type and any air entrapment. Remove excess dirt build - up.

### REPLACEMENT INTERVALS

Specific replacement intervals must be considered based on previous service life, government or industry recommendations, or when failures could result in unacceptable downtime, damage, or injury risk.

## CORRECT ASSEMBLY INSTALLATION

Satisfactory performance and appearance depend upon proper hose installation. Excessive length destroys the trim appearance of an installation and adds unnecessarily to the cost of the equipment. Hose assemblies of insufficient length to permit adequate flexing, expansion or contraction will cause poor power transmission and shorten the life of the hose. The diagrams below offer suggestions for proper hose installations to obtain the maximum in performance and economy.



Since hose may change in length under the surge of high pressure, provide sufficient slack for expansion and contraction.

Hose should exit coupling in a straight position rather than side loaded. The minimum bend radius must not be exceeded to avoid kinking of hose and flow restriction.

Where the radius falls below the required minimum, an angle adapter should be used to avoid sharp bends in hose.

Avoid sharp twist or bend in hose by using proper angle adapters.

Hose is weakened when installed in twisted position. Also, pressure pulses in twisted hose tend to fatigue wire and loosen fitting connections. Design so that machine motion produces bending rather than torsion.

# GENERAL TERMS OF SALE

## General introduction

The following terms of sale will be applied to every contract concluded through a purchase order placed via the Internet, telefax, electronic mail and ordinary mail, and relating to the standard products listed in the site or in the Transfer Oil catalogues, at the appropriate page. Any different and specific terms and every order relating to personalised products may/must be the subject of a different, separate agreement. In the event of a contrast between these standard terms and any special term agreed to between the parties, the special term will take priority, but without prejudice to all the other general terms, as per the points below, wherever compatible. The general introduction forms an integral part of every purchase and sale contract concluded through the sending of the order form, whether by e-mail, by post or by telefax.

1. Preamble. Transfer Oil, hereafter also referred to as the Seller, sells the products listed and described in the "Products" page that can be found in official Transfer Oil web site or in one of the Transfer Oil catalogues, hereafter also referred to as the Products, which may be purchased under the terms as per the clauses below.

2. Conclusion of the contract. The purchase order on the Internet site must be compiled by the Purchaser according to the instructions in the appropriate "Orders" WEB page. The sending of the order form on the site, compiled as per the instructions, shall imply acceptance on the part of the purchaser of all the clauses outlined below. The sale and purchase contract, also in the event that the order is sent by the purchaser via telefax, e-mail or post, will in any case be considered as concluded and complete with the dispatch, on the part of Transfer Oil, of the due acceptance of the purchase order by telefax or electronic mail.

3. Cancellation and/or modification of orders. Penalty. Any cancellations, reductions and/or modifications of orders already accepted by Transfer Oil may be made within and not later than five days from the date of the order, by means of a written communication to be sent via fax or by registered letter with advice of receipt to the seller party. Any cancellation and/or modification notified after the above indicated period, or by other means different from those provided for in the previous paragraph shall imply a penalty of 10% of the price of the already ordered goods. The penalty referred to in the above paragraph will be invariably equal to 50% of the price should the object of the sale be personalised products according to the purchaser's wishes and requirements.

4. The Products. The Products that may be purchased, and the order of which implies - if accepted - total agreement with the general terms of sale, are those listed in the appropriate WEB page in the official Transfer Oil site, or in one of the Transfer Oil catalogues. The availability on stock of the above mentioned products is not guaranteed. In consideration of the particular applications of some products, the acceptance of the order can be subjected to a quantity equal to the economic batch of production in use at the moment of the order. In the event that the subject of the sale are personalised products according to the purchaser's wishes and requirements, having as a result different characteristics from standard products, these general terms of sale shall be equally applicable and binding, but without prejudice to any different, special condition that shall take priority should it be the subject of specific, separate agreement. Should the purchaser's offer or the seller's acceptance make reference to a specific sample, the product which is the subject of the relative sale, except in the event of a different written agreement, is binding with respect to the sample characteristics only within the limits of reasonable approximation.

5. Price and payment. The price shall be fixed according to the products chosen by the purchaser on the date of dispatch of the order and shall remain unchanged, except with reference to the provisions of the following clause, also if the delivery is deferred by agreement but nevertheless within six months from the date of the order. The customer has the right to the price relating to the products effectively collected with reference to that order for a period of six months. The seller has the right to revise the prices of the products on the basis of the price dynamics of raw materials, labour and packaging, but must notify the purchaser about new prices at least 30 days before their application, and in such cases, the purchaser has the right to withdrawal. Payment must categorically be made following the methods specified by Transfer Oil in the completed order form and according to the terms therein prescribed.

6. Express resolutive clause. In accordance and by the effects of art. 1456 of the civil code (c.c.), in the event of breach on the part of the purchaser of the obligations referred to in art. 5 (Price and payment), the seller shall have the right to cancel the contract/s already concluded, by means of a registered letter with advice of receipt, in which it declares to have made recourse to this clause, without prejudice, however, to any possible action for compensation for damages. Any change in the purchaser's balance sheet situation such as to endanger the correct fulfilment of the obligation of payment of the price, shall give the seller, in accordance with art. 1461 c.c., the right to suspend deliveries already agreed, and to cancel the contract by means of a simple written notice, without prejudice, however, to the payment of the amounts due for services already carried out. Equally, any incorrect or failed

compliance with the obligations relating to the payment of the price shall give the seller the right to suspend deliveries already agreed, also those not relating to the breach in question, in accordance with art. 1460 c.c. It should be understood, in particular, that:

7. Delivery. The sale is considered as Ex-Works, and as a result, the costs of transport are fully borne by the purchaser. Transfer Oil shall arrange to deliver the Products sold to the carrier indicated by the purchaser in the order form.

8. Cancellation. The seller may cancel the contract and not fulfil the obligation to deliver whenever, by reason of force majeure and in any case of unforeseen and extraordinary events, the execution of the delivery service becomes excessively onerous or in any case impossible.

9. Quality. Transfer Oil carries out a random check of its products on each production batch. Any technical modifications will be subject to acceptance by the purchaser for orders in progress.

10. Warranty. Transfer Oil guarantees the conformity of the products supplied to the characteristics expressly indicated in the relative WEB page and in its catalogues. The warranty for defects in the products is categorically limited only to manufacture defects attributable to the seller. The warranty has a limited duration of twelve months, starting from the date of delivery, and is dependent on the regular reporting of the defect by the purchaser in accordance with the following paragraphs, as well as on the express written request to the seller to take action under the warranty. As a consequence of the aforementioned request, the seller may, at its own choice and alternatively: a) supply ex-works free of charge to the purchaser, products of the same type and quantity as those found to be defective or non-conforming to what was agreed; b) declare the cancellation of the contract in writing, offering the return of the price against restitution of the supplied products. Except in the event of malice or gross negligence on the part of the seller, any possible compensation for damages to the purchaser may not in any case exceed the invoice price for the disputed products. The warranty here agreed to assimilates and replaces legal guarantees for defects and deformities, and excludes any other liability on the part of Transfer Oil in any way arising from the supplied products; specifically, the purchaser may not make other requests for compensation for damages, a reduction in the price or the cancellation of the contract. Once the duration of the warranty has elapsed, no claim may be made against the seller. The seller may not be held liable with respect to the purchaser for any loss of profit, non-use, loss of production, loss of contracts or any other indirect or consequential damage, but only for proven damages to persons or things, attributable to the sold products, in the event of its proven gross negligence and/or incompetence in their manufacture.

11. Claims. Claims relating to quantity, colour, or to quality faults and defects or to non-conformity that the purchaser may detect as soon as they come into possession of the goods, must be made by the purchaser in writing by means of a registered letter with advice of receipt, on penalty of forfeiture, not later than eight days from the moment in which the products arrive at their place of destination. Should the claim turn out to be unfounded, the purchaser shall be bound to reimburse the seller all costs borne by the latter for carrying out checks (any travel costs, expert opinions, etc.).

12. Interpretations. Any reference made to general terms, list prices, various attachments or to other material of the seller or of third parties, must be considered as referring to the terms and documents applied upon the conclusion of the contract.

13. Applicable law and competent court. These General terms of Sale, together with the Contract to which they refer, shall be regulated by Italian laws. The Court of Parma shall be the exclusive competent court for any dispute relating to, or deriving from, the Contract.







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Transfer Oil S.p.A. - via sacca, 64 - 43052 - colorno (parma) - italy info@gomax.it - www.gomax.it