SAE-J514

JIC

AVAILABLE IN CARBON AND STAINLESS STEEL

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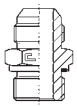
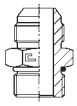
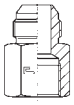
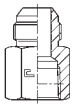
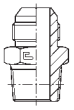
Type: 2001.. 	Type: 2002.. 	Type: 2003...3 BSPP Type: 2004...3 Metric paral. 	Type: 2005...3 UNF/UN-2A 	Type: 2006...3 BSPP 	Type: 2007...3 NPTF 	Type: 2008...3 BSPT Type: 2009...3 NPTF 
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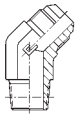
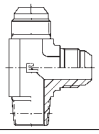
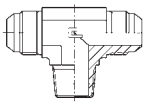
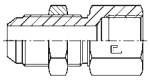
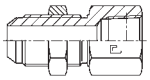
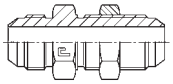
Type: 2010...3 BSPT Type: 2011...3 NPTF 	Type: 2012...3 BSPT Type: 2013...3 NPTF 	Type: 2014...3 BSPT Type: 2015...3 NPTF 	Type: 2016...3 BSPT Type: 2017...3 NPTF 	Type: 2018...3 BSPP 	Type: 2019...3 NPTF 	Type: 2020...3 
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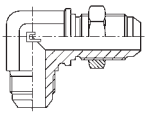
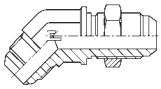
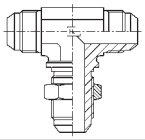
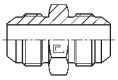
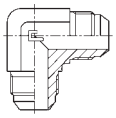
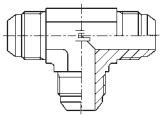
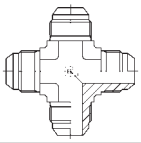
Type: 2021...3 	Type: 2022...3 	Type: 2023...3 	Type: 2024...3 	Type: 2025...3 	Type: 2026...3 	Type: 2027...3 
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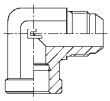
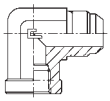
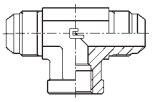
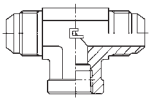
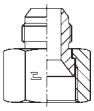
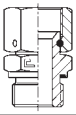
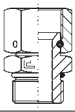
Type: 2028...3 BSPP 	Type: 2029...3 NPTF 	Type: 2032...3 BSPP 	Type: 2033...3 NPTF 	Type: 2034...3 	Type: 2035.. BSPP Type: 2036.. Metric paral. 	Type: 2037.. UNF/UN-2A 
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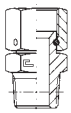
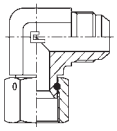
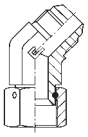
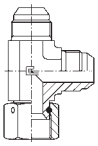
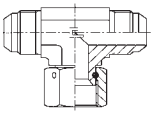
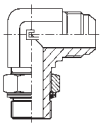
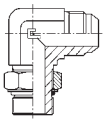
Type: 2038.. BSPT Type: 2039.. NPTF 	Type: 2040...3 	Type: 2041...3 	Type: 2042...3 	Type: 2043...3 	Type: 2044...3 BSPP Type: 2045...3 Metric paral. 	Type: 2046...3 UNF/UN-2A 
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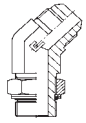
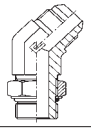
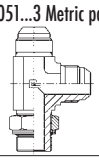
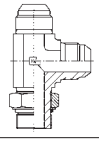
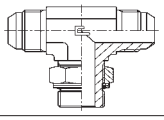
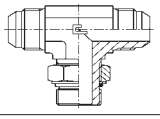
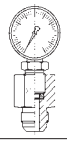
Type: 2047...3 BSPP Type: 2048...3 Metric paral. 	Type: 2049...3 UNF/UN-2A 	Type: 2050...3 BSPP Type: 2051...3 Metric paral. 	Type: 2052...3 UNF/UN-2A 	Type: 2053...3 BSPP Type: 2054...3 Metric paral. 	Type: 2055...3 UNF/UN-2A 	Type: 2056...3 BSPP 
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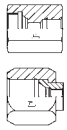
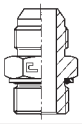
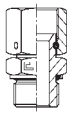
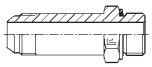
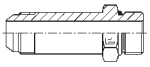
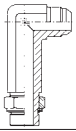
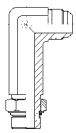
Type: 2057.. UNF/UN-2A 	Type: 2058...3 BSPP Type: 2059...3 Metric paral. 	Type: 2060.. BSPP Type: 2061.. Metric paral. 	Type: 2062...3 BSPP Type: 2063...3 Metric paral. 	Type: 2064...3 UNF/UN-2A 	Type: 2065...3 BSPP Type: 2066...3 Metric paral. 	Type: 2067...3 UNF/UN-2A 
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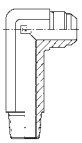
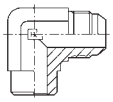
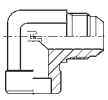
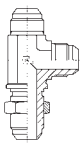
Type: 2068...3 NPTF 	Type: 2069...3 	Type: 2070...3 	Type: 2071...3 	Type: 2072...3 	Type: 2073.. 	Type: 2074...3 
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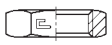
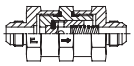
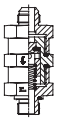
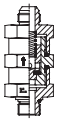
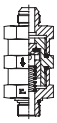
Type: 2075.. UNF/UN-2A 	Type: 2076.. 	Type: 5014...3 	Type: 5015...3 BSPP Type: 5016...3 Metric paral. 	Type: 5017...3 BSPP Type: 5018...3 Metric paral. 	Type: 5019...3 UNF/UN-2A 	Type: 5020...3UNF/UN-2A 
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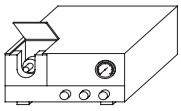
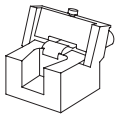
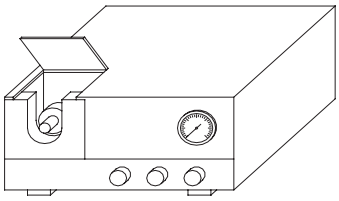
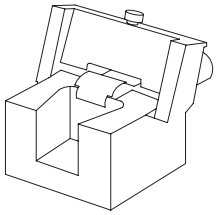
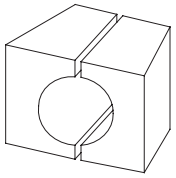
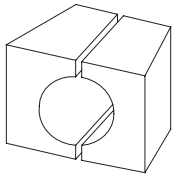
Type: 100000 	Type: 200000 	Type: 2000.. 	Type: 2000.. 	Compatible fluids table		
Page 101	Page 101	Page 101	Page 101	Page 325-356	Page	Page

ATTREZZATURE SERIE SAE J514 - ISO 8434-2

TUBE FLARING MACHINE	37° FLARING BLOCK	METRIC	INCHES
			

Series	Ordering Machine	Ordering 37° flaring block	Ø Tube	Ordering metric	Ø Tube	Ordering inches
UNIVERSAL	100000	200000	6	200001	1/4	200021
			8	200002	5/16	200022
			10	200003	3/8	200023
			12	200004	1/2	200024
			16	200005	5/8	200025
			20	200006	3/4	200026
			25	200007	1	200027
			32	200008	1.1/4	200028
			38	200009	1.1/2	200029
			14	200010		
			15	200011		
			18	200012		
			30	200013		

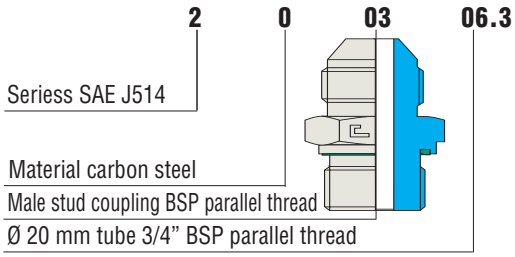
ORDERING EXAMPLES (Carbon steel)

ORDERING EXAMPLES (Stainless steel)

SAE

• If you require a male stud coupling for a Ø 20 mm tube with 3/4" BSP parallel thread made of carbon steel with elastomeric NBR seal on the thread, order 200306.3

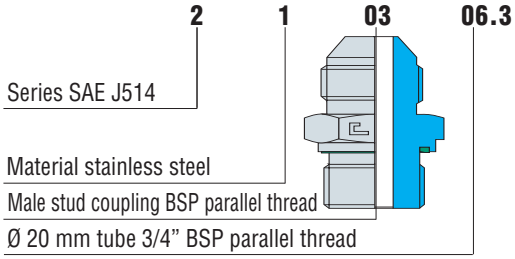
• If you require the VITON® seal, add "V" at the end.



SAE

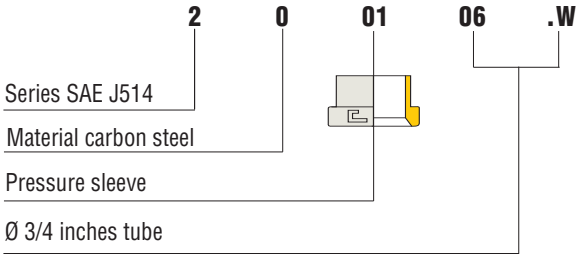
• If you require a male stud coupling for a Ø 20 mm tube with 3/4" BSP parallel thread made of stainless steel with elastomeric VITON® seal on the thread, order 210306.3

• If you require the NBR seal, add ".N" at the end.



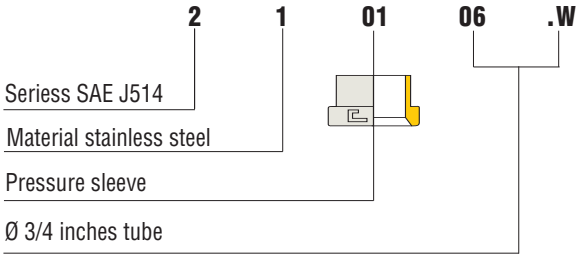
SAE

• If you wish to use a carbon steel tube with inch measurements, add the letter ".W" to the code of the pressure sleeve to order: 200106.W



SAE

• If you wish to use a stainless steel tube with inch measurements, add the letter ".W" to the code of the pressure sleeve to order: 210106.W



DELIVERIES

• Cast S.p.A. fittings are delivered in the configurations shown in the tables of this catalogue.
• Available on scheduled orders only: it means that the article is slow moving and will be delivered within 90 days.
• Available on request only: it means that the article is not commonly in stock; please contact our offices for further delivery details.

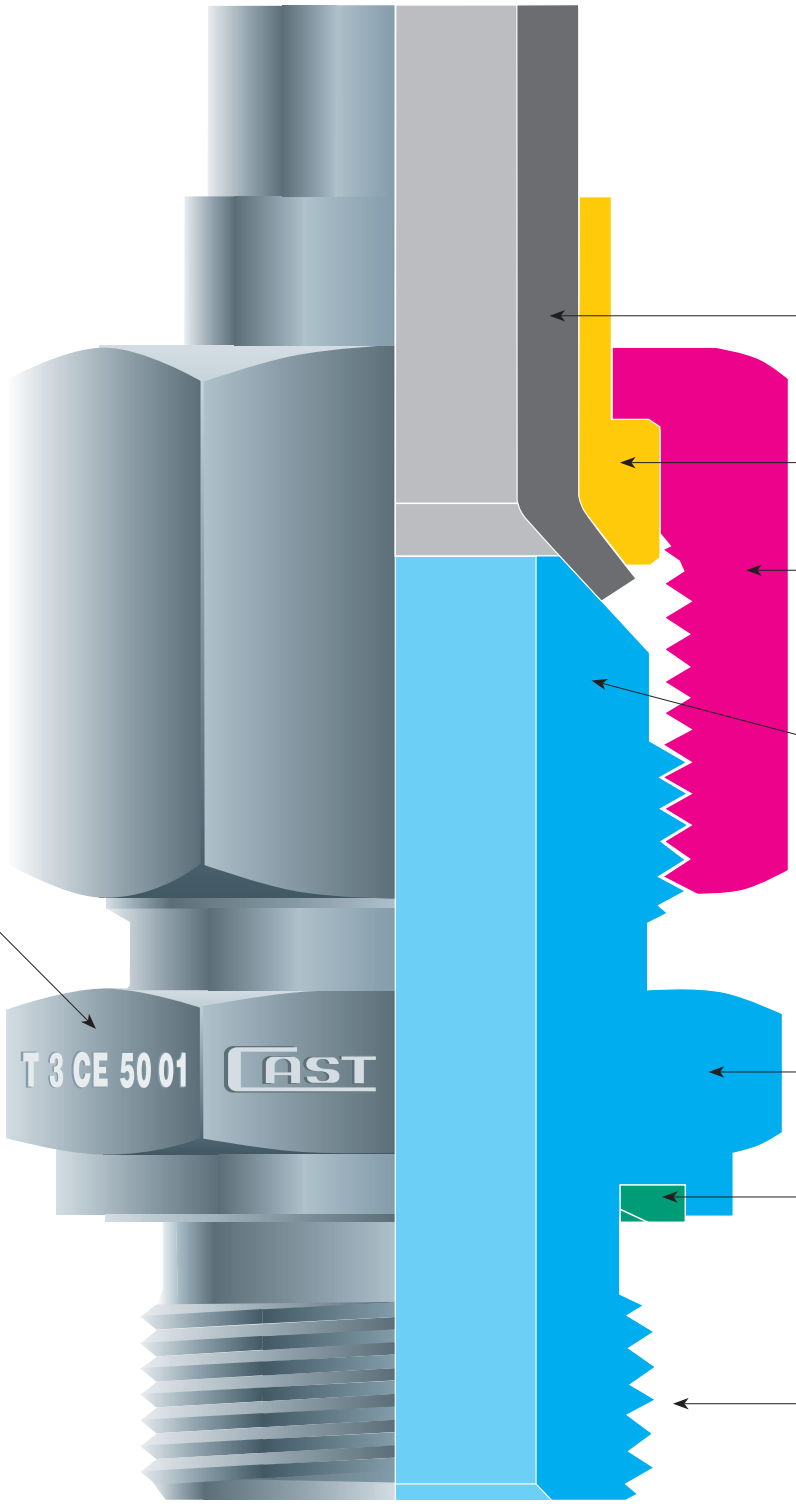
VITON® is a DuPont Dow Elastomers Trade Mark

THEORY OF OPERATION

The CAST fitting, manufactured according to ISO 8434-2/SAE J514, is a mechanical fitting traditionally used for high pressure fluid-dynamic systems. The seal is made by the contact between two conical surfaces, the first created on the fitting body and the second obtained on the cold drawn seamless tube, through flaring obtained with special tools.

The coupling between the body of the fitting and the 37° flared tube is guaranteed by the tightening nut and by the pressure sleeve on the inside. It helps fast assembly of removable tubes, avoids welding and tapping, thus assuring maximum simplicity for complex oleo-dynamic systems. Repeated assemblies do not alter the performance of the coupling.

COUPLING SYSTEM SAE J514



Reference prescriptions:

Tube E235
EN 10305-4

Pressure sleeve
ISO 8434-2/SAE J514

Nut
ISO 8434-2/SAE J514

Cone 37°

Fitting body
ISO 8434-2

Flat washer housing
ISO 1179-2

Threaded end
ISO 1179-2

Traceability decoding:

CAST = Logo of the Manufacturer

- T = Production plant
- 3 = Year of manufacture
- CE = Made in EEC
- 50 = Type of steel used
- 01 = Heat number of the steel used

TECHNICAL CHARACTERISTICS

CAST 37° fittings assure perfect seal regardless of the fluid used, provided that no corrosive fluids are employed, the nominal pressures of the fittings and the indicated temperatures are respected and the prescriptions of the manufacturer are followed scrupulously.

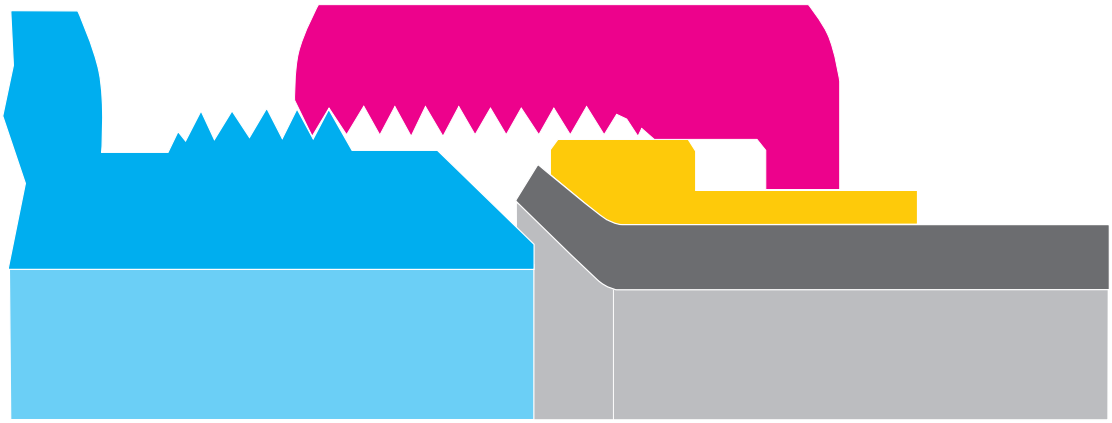
These fittings are manufactured in a single series defined “UNIVERSAL” since the fitting body and the tightening nut remain the same also when switching from a metric tube at an inches sized tube. There are no doubles of diameters with different working pressures.

Normal vibrations do not alter the functionality of this type of fitting, also at the top quoted values. Therefore the fitting maintains its best characteristics of absolute guarantee, safety and reliability. For these specific reasons this fitting may be used in hard working conditions and where high safety parameters apply to the system.

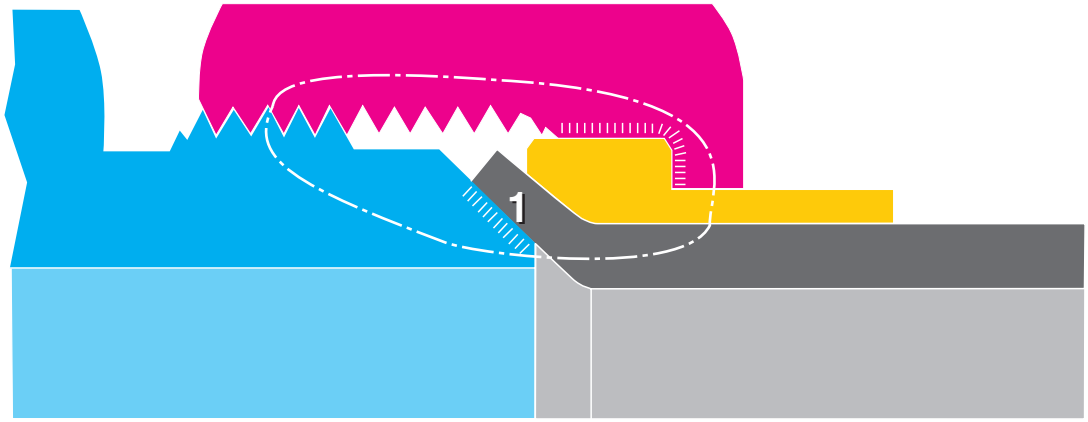
Under the mechanical strength given by the tightening of the nut on the fitting body, the part of the 37° flared tube couples with the 37° conical part of the fitting body to provide a very effective, repeated, safe and easy to make metal to metal seal.

The pressure sleeve housed inside the tightening nut ensures the self-alignment of the flared tube to the axis of the fitting body, supports the tube during operation, lowers the vibrations and avoids damage to the tube while tightening.

Before assembly on the metal tube



After assembly on the metal tube



Field of force

Pressure surfaces

Sealing points

1

PRODUCT MATURITY

For many years now there has been an increasing imperative market demand for fluid system components that guarantee three main factors: SAFE ANCHORING, FUNCTIONAL ASSEMBLY, LEAKAGE-FREE TIGHTNESS.
These elements, now considered essential for a safe working environment (Leg. Decree 81/2008), product liability (Presidential Decree 224-EEC 85/374) and for the entire environmental protection system, make the 37° fitting manufactured by CAST S.p.A. a reliable and consolidated product.

GENERAL INSTRUCTIONS

• Before starting to flare the tubes, please check that all the tools to be used in the process conform to the standards. Carefully check the tools every 30-50 flarings.
• Before connecting the preassembled tube to the equipment it is necessary to check that the tube and the fitting are aligned. Fittings should never be used to correct a wrong alignment or to be a support for the tube. Extremely long tubes or tubes undergoing high stress must be fixed by using some support to avoid excessive vibrations. A poor alignment could damage the operation of the system.
• The proper lubrication of the components involved in the tightening is essential for good system operation. We advise the use of mineral oils or torquen tension for carbon steel fittings, consisting of anti-seizing compound (Nickel based), Chesterton or similar, for stainless steel fittings.
• The fittings and the valves in this technical catalogue may be used for fluid-dynamic connections only. Indicated pressures are for steel tubes only.
• Mixing carbon and stainless steel components is not allowed.

UTILISATION STANDARDS

CARBON STEEL FITTINGS

• High quality tubes must be employed to assure correct use and related technical performance of the carbon steel fitting. The use of tubes without the aforementioned characteristics may seriously impair the efficiency of the fitting. CAST S.p.A. recommends using the following tubes only: calibrated and polished, cold drawn seamless tubes, normalised with inert gas, in E235 material according to EN 10305-4 (ST 37.4 according to DIN 1630 I DIN 2391). The maximum hardness allowed on the outside diameter of the tube is 75 HRB.

• The flaring of the tube must be made with the flaring machine model 200000 and not with simple punches, which are hard to use and make the correct axiality of the 37° flaring complicated to obtain. It is important that the flaring is concentric and perpendicular to the tube and ferrule.

• In order to obtain a curve of the tube as close to the tightening point as possible (fitting body), the structural constructing ties that are typical of the 37° universal fittings must be considered. This product forces the user to leave a part of the ending section of the tube perfectly straight. This part must be used during the flaring operation to block the tube. Please refer to the “C” quote in the table for the measurements.

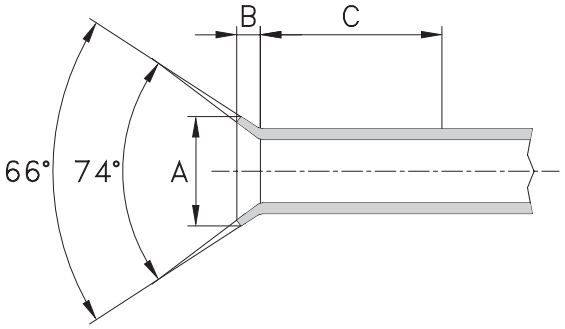
STAINLESS STEEL FITTINGS

High quality tubes must be employed to assure correct use and related technical performance of stainless steel fittings. The use of tubes without the aforementioned characteristics may seriously impair the efficiency of the fitting. CAST S.p.A. recommends using the following tubes only: calibrated and polished, cold drawn seamless tubes 1.4571 as per UNI EN 10216-5 or ASTM A 269; the maximum permitted hardness, measured on the outer diameter of the tube, is 85 HRB.

• The flaring of the tube must be made with the flaring machine model 200000 and not with simple punches, which are hard to use and make the correct axiality of the 37° flaring complicated to obtain. It is important that the flaring is concentric and perpendicular to the tube and ferrule.

• In order to obtain a curve of the tube as close to the tightening point as possible (fitting body), the structural constructing ties that are typical of the 37° universal fittings must be considered. This product forces the user to leave a part of the ending section of the tube perfectly straight. This part must be used during the flaring operation to block the tube. Please refer to the “C” quote in the table for the measurements.

TECHNICAL DATA FOR THE FLARING OF 37° TUBES



Ø Metric tube	Ø Inch tube	Ø Flaring A min	Ø Flaring A max	B	Blocking C
6x1	1/4x0,89	8,6	9,1	2,5	32
6x1,5	1/4x1,65	8,9	9,1	2,7	
8x1	5/16x0,89	10,2	10,9	2,3	35
8x1,5	5/16x1,65	10,2	10,9	2,5	
10x1	3/8x0,89	11,7	12,4	2	40
10x1,5	3/8x1,65	11,7	12,4	2,2	
12x1	1/2x0,89	16	16,8	3,7	45
12x1,5	1/2x1,65	16	16,8	3,9	
12x2	1/2x2,1	16	16,8	4,1	
14x1,5	-	19,3	20,1	4,8	45
14x2	-	19,3	20,1	5,1	
15x1,5	-	19,3	20,1	4,1	45
15x2	-	19,3	20,1	4,3	
16x1,5	5/8x1,65	19,3	20,1	3,4	45
16x2	5/8x2,1	19,3	20,1	3,6	
16x2,5	5/8x2,41	19,3	20,1	3,8	
18x2	-	23,4	24,1	5,1	50
18x2,5	-	23,4	24,1	5,3	
20x2	3/4x2,1	23,4	24,1	3,6	50
20x2,5	3/4x2,41	23,4	24,1	3,8	
20x3	3/4x3,05	23,4	24,1	4,1	
25x2	1x2,1	29,7	30,5	4,6	60
25x3	1x3,05	29,7	30,5	5,1	
30x2	-	37,6	38,4	6,7	60
30x3	-	37,6	38,4	7,2	
32x2	1 1/4x2,1	37,6	38,4	5,3	60
32x3	1 1/4x3,05	37,6	38,4	5,7	
38x3	1 1/2x3,05	43,2	43,9	5,4	70
38x4	1 1/2x4,05	*	*	5,8	

* For further inFormtion on the flaring diameter please contact CAST S.p.A. directly

TIGHTENING TORQUES TUBE SIDE AND ON THE CONE (For carbon and stainless steel)

Series	Ø Metric tube	Ø Inch tube	Thread UNF/UN-2A	Tube $^{+10\%}_{0}$ side torque (Nm)	Torque $^{+10\%}_{0}$ swivel cone (Nm)
UNIVERSAL	6	1/4	7/16-20 UNF-2A	10	20
	8	5/16	1/2-20 UNF-2A	20	25
	10	3/8	9/16-18 UNF-2A	25	35
	12	1/2	3/4-16 UNF-2A	45	60
	14-15-16	5/8	7/8-14 UNF-2A	75	85
	18-20	3/4	1 1/16-12 UN-2A	115	140
	25	1	1 5/16-12 UN-2A	160	230
	30-32	1 1/4	1 5/8-12 UN-2A	240	380
	38	1 1/2	1 7/8-12 UN-2A	400	460

Notes:

The values in the tightening tables are approximate and derive from practical tests run at the laboratory in Casalgrasso (CN), which may vary based on the materials and tolerances of the components used. Thus an awareness of the controls to be performed is required.

All the values expressed in Newton Meters (Nm) for the tightening torques tube side on the SAE J514 cone represent the torquing moment, calculated on the maximum thickness of the usable tube, needed to obtain the correct tightness.

All the values expressed in Newton Meters (Nm) for the tightening torques on the SAE J514 swivel cone represent the torquing moment needed to obtain the correct tightness.

ASSEMBLY INSTRUCTIONS SAE J514

1. Before starting the 37° tube flaring and assembly operations, please check that all the tools to be used are in perfect working order. Substitute those not complying to the requirements.
2. Cut the tube square by using an appropriate hack-saw (do not use roller type tube cutters). Check that the cut is properly made at 90°. Remove any internal and external burrs.
3. Check for any leakage line and other structural defects that may impair the seal on the cone of the fitting body. Reject any non complying tube.
4. Thoroughly clean the part of the tube to be flared and lubricate it with appropriate products.
5. Assemble the nut and pressure sleeve on the tube as shown below, taking care that the open part of the nut faces the end of the tube to be flared; likewise, the end of the tube to be flared must face the greater diameter of the pressure sleeve.
6. To obtain the desired length of the tube please add the B quote to the desired length of the tube available in the technical data for tube flaring. This lengthening will be entirely absorbed during the assembly phase by the overlap created by the flared tube on the cone of the fitting.
7. Flare the tube using the appropriate flaring machine, carefully respecting all the indications reported in the table to the side. The drawing indicates the quotes that must be considered.
8. Check that the flaring of the tube has been done correctly and that no peeling of the material appears inside it.
9. Clean the nut, fitting and tube and lubricate with the suggested products.
10. Couple the flared tube on the cone of the fitting and tighten by hand the nut on the body of the fitting to check the correct alignment of the parts; using a wrench, tighten until reaching the contact of the metal to metal conical parts.
11. Repeated assembly and disassembly will not alter the functionality of the system which, each time is closed, will always provide an immediate seal, which will last over time.
12. Please refer to the table on page 106 for the correct tightening torques to be applied.