



B3

STANDARD DOUBLE CUTTING EDGE RING ASSEMBLED ON ALL CAST
PRODUCTION ASSURES SEALING AND SAFETY

MANUFACTURED IN CARBON AND STAINLESS STEEL

THEORY OF OPERATION

The Cast fitting, manufactured according to ISO 8434-1/DIN 2353 norm is a mechanical fitting of deformable and cutting edge type ring with double stapling on the tube.

The ring helps fast assembly of removable tubes, avoids welding, tapping and flaring, thus assuring maximum simplicity of complex oleo-dynamic systems.

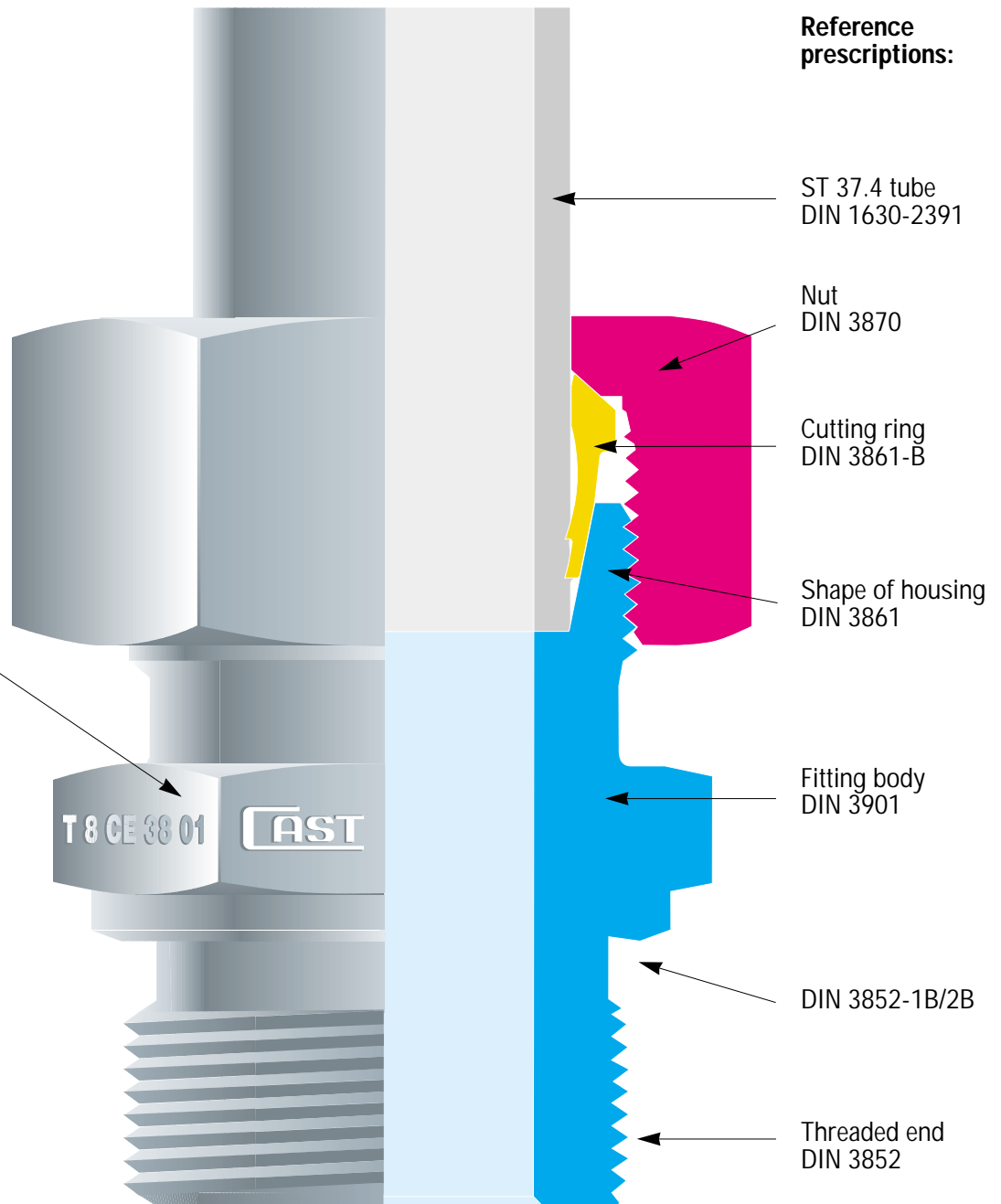
During tightening by the nut, the ring deforms according to the bore of the 24° cone of the fitting and bites into the steel tube, producing two deep cuts the first of which is visible due to lifting of an outer edge on the diameter of the tube, allows the water tightness and anti-unthreading of the ring, the second groove (invisible) balances the forces on the whole ring, prevents vibrations to reach the first groove and stops the stapling of the tube at a predetermined value.

COUPLING SYSTEM TO DIN 2353

Traceability decoding

CAST =
Manufacturer

- T =
Production plant
- 8 =
Year manufactured
- CE =
Made in EEC
- 38 =
Type of steel used
- 01 =
Heat number of the steel used



TECHNICAL CHARACTERISTICS

The Cast fitting assures a perfect seal, independently from the fluid used, provided that no corrosive fluids be employed and the nominal pressures be not trespassed. Fittings are manufactured in three ranges to be chosen according to the required working conditions.

"LL" extra light range, suitable for low and medium working pressures and for circuits not subjected to water hammering up to 100 bar.

"L" light range, suitable for medium/high pressure plants however not over 315 bar.

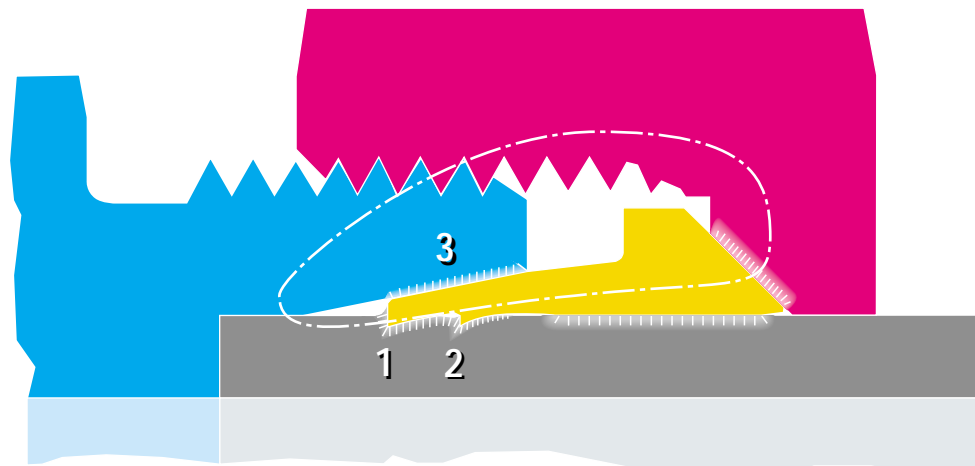
"S" heavy range, for severe conditions, with high pressures, water hammering, high temperatures and a maximum pressure of 630 bar.

Vibrations according to the rules, don't change the fitting's performance that even at max values keeps its characteristics of fitting with absolute reliability.

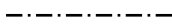
Before assembly on the metal tube



After assembly on the metal tube



Field of force after assembly



Pressure surfaces after assembly



Sealing points

1 - 2 - 3

GENERAL INSTRUCTIONS FOR B3 AND B4 RINGS

- Before starting the preassembly make sure that the pierce of the machine and the hardened blocks are in perfect working order. Further inspections are necessary during the preassembly (every 30-50 tightenings). For this purpose we advise to use a control buffer 1000... pierce and block out of tolerance must be replaced.
- Over the whole tightening phase the tube must be in touch with the inner part of the body of the fitting. If this does not happen, the ring will advance with the tube without indenting it, so the coupling would not be functional and it would be necessary to do the operation again. The tube must not turn with the nut during the tightening phase; the capability of the ring to rotate, once the preassembly is done, is not a deficiency but is a consequence of the right elasticity of the ring. Always check that the tube be correctly indented. If the indentation does not cover 70% of the ring front side then the indentation is not functional and must be done again. Indicated pressures are for steel tubes only.
- In case thin wall tubes are used, especially malleable tubes, or tubes in Rilsan or similar, the assembling is possible, but a suitable reinforcement must be inserted into the end of the tube that is going to be tightened. Without the reinforcement it is not possible to operate with the above mentioned materials.
- Before assembling the preassembled tube to the equipment it is necessary to check that the tube and the fitting are aligned. The fitting should neither be used to correct a wrong alignment nor to be a support for the tube. Extremely long tubes or tubes undergoing high stress have absolutely to be fixed by using some support to avoid excessive vibrations that could cause damage to the system.
- The proper lubrication of components involved in the tightening is basic for good working. We advise to use mineral oils for carbon steel fittings and anti-seizing compound (Nickel basis) for Stainless steel fittings.
- The fittings and the valves in this technical catalogue may be used for fluidodynamic connections only.
- Is not allowed to mix carbon and stainless steel components.

UTILIZATION STANDARDS FOR B3 AND B4 RINGS

CARBON STEEL FITTINGS

- High quality tubes must be employed to assure correct use and related technical performance of carbon steel fitting. Use of tubes without the aforementioned characteristics may seriously impair the efficiency of the fitting. We recommend use of the following tubes only: ST 37.4 steel seamless tubes complying with DIN 1630, inner and outer diameter tolerances as per DIN 2391, maximum permissible hardness 75 HRB.
- All carbon steel tubes with a diameter of more than 10 mm must be pre-assembled using the specific pre-assembly machine. If this is not available, hardened blocks, to be clamped in vice for manual pre-assembly, must be used. Remember to oil the thread, nut and ring. If hardened pre-assembly blocks are not available, normal fittings obtained from bars can be used. The fitting used must be replaced at each tightening. During pre-assembly, pay particular attention to parts such as reducing standpipes and nipples as these are made of raw materials characterized, therefore, by higher resistance compared with the cuts made on annealed tubes. These parts must always be pre-assembled on hardened 24° cones (for all diameters).

STAINLESS STEEL FITTINGS

- High quality tubes must be employed to assure correct use and related technical performance of stainless steel fitting. Use of tubes without the aforementioned characteristics may seriously impair the efficiency of the fitting. We recommend use of the following tubes only:
COLD DRAWN SEAMLESS TUBE 1.4571 as per DIN 17458-2391 or ASTM A 269-81.
The maximum permitted hardness, measured on the outer diameter of the tube, is 85 HRB. Electrically welded tubes may be used provided they comply with the mechanical tolerances of the aforementioned standards and related hardness values.
- All stainless steel tubes must be pre-assembled using the specific pre-assembly machine. If this is not available, hardened blocks must be used for manual pre-assembly. In this case, make sure that the bench and vice in which the block is clamped are firmly fastened to prevent any possibility of movement caused by the twisting moment applied to the nut during the pre-assembly phase. Assembly or pre-assembly operations directly on the fitting are not allowed.

QUALITY ASSURANCE ACCORDING TO UNI EN ISO 9001

The Quality Assurance System complies with UNI EN ISO 9001, certificate (N°90/94) issued by the RINA certification authority recognised by IQNET at European level.

At the customer's request, our Quality Service will issue certificates of origin for the materials used to manufacture the products delivered.

Our Quality Experts are always ready to provide customers with advice, to guide them around our facilities as to provide documentation on the traceability system applied.

TESTING

In addition to the normal dimensional checks carried out during machining, percentage inspections of the finished product, practical tightness and fatigue tests, coupling tests between the various parts are also carried out on all CAST fittings. At the customer's request, our Product Test and Inspection Service issues the certificate of the tests carried out: dimensional and geometrical tests, checking of static seal at low and high pressure, dynamic seal at high pressure (maximum operating pressure + 33% as per DIN 3859).

If required by the customer, tests can be carried out by various Third Party Authorities including: RINA-DVGW-Lloyd's Register of Shipping-Det Norske Veritas-Germanischer Lloyd - American Bureau of Shipping (to be specified on the order).

SAFETY FACTORS

- B3 and B4 rings provides the right answer to safety problems so that absolute functional reliability between the ring, the steel tube and the fitting body is guaranteed by the double clinching and automatic locking of the cuts on the steel tube (assured by the particular shape of the ring).

- If, on one hand, the use of the "B4" improves the safety of the fastening, on the other hand a precise mechanical limitation is imposed on the cut in the tube, thus assuring correct functioning even in the case of excessive closing of the coupling. Obviously, the reliability of our products is guaranteed only if the connections are made entirely with CAST products.

- CAST's product range fully complies with the construction parameters of reference standards. Operating temperature is between -20°C and +100°C.

The nominal operating pressures (bar) given in the catalogue indicate the maximum permissible pressures (including pressure peaks). The safety factor is 4:1 and is intended with static load and with the temperature at the values indicated as per DIN 3861 (24° cone) for tube connection elastomeric seal.

For stud couplings with conical or parallel threads with metal to metal seal the safety factor is 2,5:1.



Destructive testing with 28x2 carbon steel tube

The tube burst at 650 bar without any leaks or sweating from the sealing points.

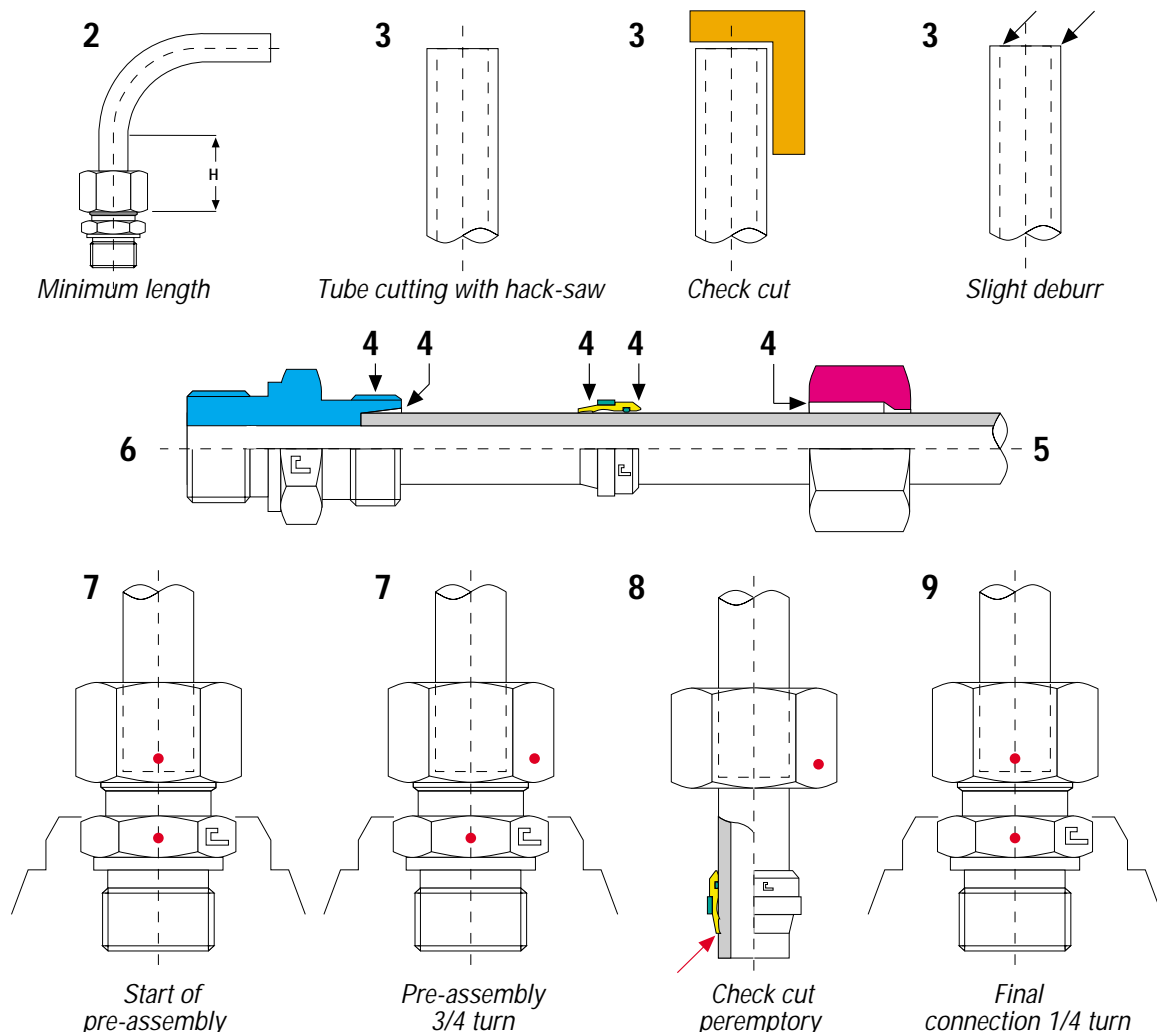
PRODUCT LIABILITY PRESIDENTIAL DECREE 224-EC 85/374

CAST declines any responsibility in the case in which the user fails to comply strictly and entirely with the RULES FOR USE-ASSEMBLY INSTRUCTIONS-OPERATING PRESSURES INDICATED.

Failure to comply with these prescriptions may affect the functional safety of the products and result in voiding of the user's warranty rights.

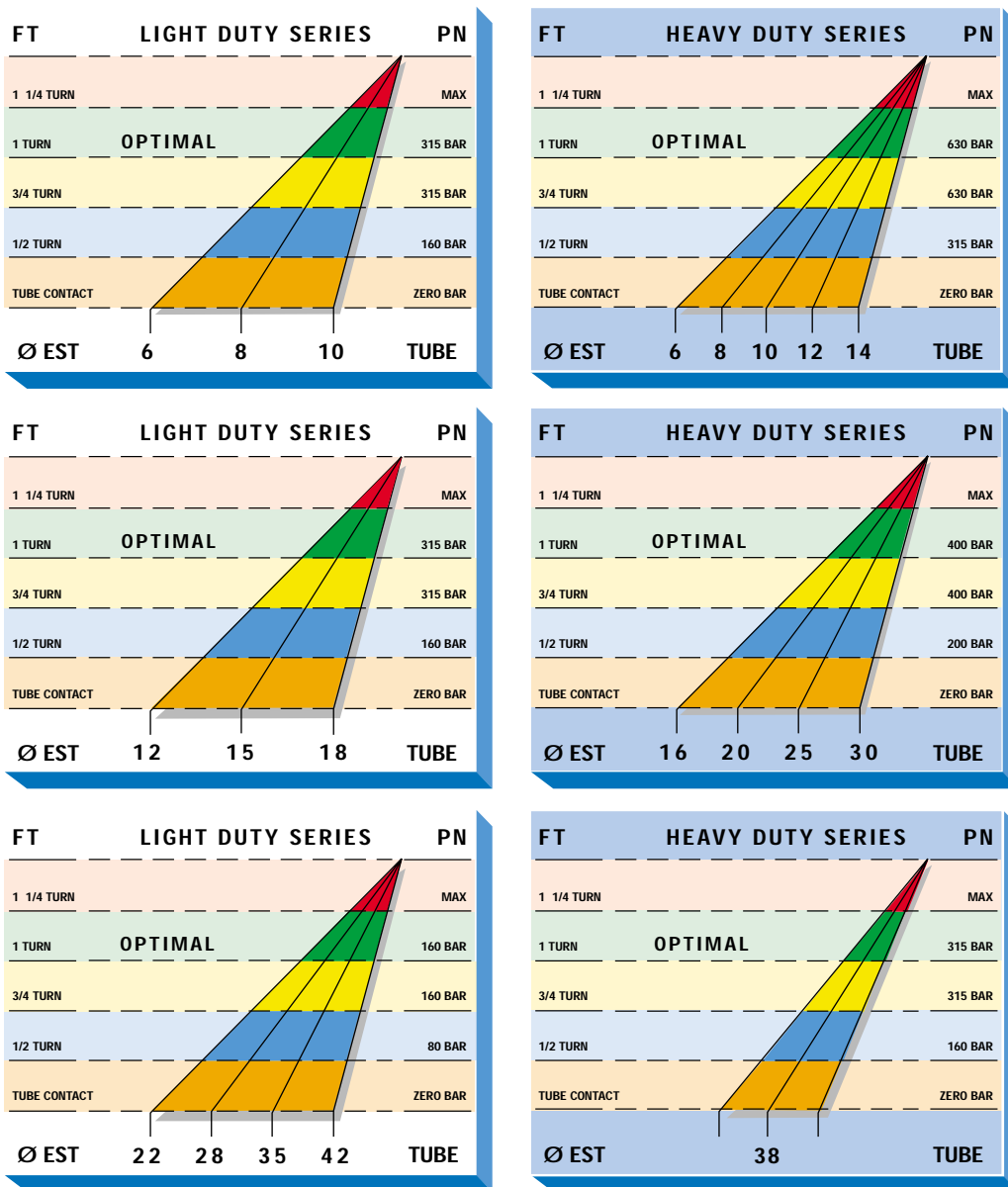
ASSEMBLY INSTRUCTIONS ACCORDING TO DIN 3859-2 FOR B3 - B4

1. Before pre-assembly, make sure that all the tools to be used are in perfect working order. Replace any inefficient tools.
2. The segment of tube to be pre-assembled must have a straight section at least twice the length of the nut (length H). Roundness must comply with DIN 2391.
3. 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.
4. Oil the 24° cone, the thread of the body, the cutting ring and the nut with suitable products. = →
5. Fit the nut and the cutting ring on the tube as shown. The larger diameter of the cutting ring must face the nut.
6. Insert the tube on the 24° cone until it comes into contact with the stop. Tighten the nut by hand until the cutting ring rests firmly on the nut. Then tighten the nut with a wrench until the cutting edge of the ring is in contact with the tube and prevents rotation of this.
7. Holding the tube against its stop and making it sure it does not rotate, tighten the nut by 3/4 of a turn. This way, the cutting edge of the nut cuts into the outer part of the tube for the necessary depth and raises an edge in front of its cutting edge while the second cutting edge clinches the tube at the same time.
8. Loosen the nut and check that there is a clearly raised edge all round the tube. The edge must cover 70% of the front of the cutting ring. This check is peremptory for the safety of all concerned!!! If the raised edge is not satisfactory, pre-assembly must be repeated.
9. If pre-assembly has been carried out correctly, fit the tube on the machine, close with a wrench until a certain resistance is encountered and then tighten for a further 1/4 turn with wrench to wrench contrast.
10. All the preassembly of stainless steel fittings must be performed with preassembly tool (blocks or machines).



The assembly of B3 and B4 rings must be done with the same procedures and tools. The two rings are completely interchangeable with Italian and foreign products under the same norm. Assembly of the system may be repeated without damage to the parts involved.

OPERATING PRESSURES - TORQUE DIAGRAM - TWISTING FACTOR



- 1) Assembly on the fitting according to DIN 3859 P.II P.2.4 1 1/2 turn from blocking by hand.
- 2) Assembly on the hardened block according to DIN 3859 P.II P.3.5 1 1/4 turn from blocking by hand.
- 3) CAST assembly instructions respect in full the above norm as 1/2 turn is used for the clearances recuperation and from 3/4 to 1 turn for the tightening of the tube.

- Area not to be used.
- Final tightening area.
- Pre-assembly area.
- Tightening start area.
- Clearances recuperation area.

STEELS USED ON ALL SERIES

Carbon steel rings	CF9SMnPb36 - CF9SMnPb28 - CF9SMn36 - CF9SMn28 - UNI 4838
Carbon steel nuts	CF9SMnPb36 - CF9SMnPb28 - CF9SMn36 - CF9SMn28 - UNI 4838
Carbon steel body	CF9SMnPb36 - CF9SMnPb28 - CF9SMn36 - CF9SMn28 - UNI 4838
Carbon steel forged body	CF9SMn36 - CF9SMn28 - UNI 4838
Stainless steel rings	X10CrNiMoTi1810 (1.4571) - X5CrNiMo 1810 (1.4401) - DIN 17440
Stainless steel nuts	X10CrNiMoTi1810 (1.4571) - X2CrNiMo 1810 (1.4404) - DIN 17440
Stainless steel body	X10CrNiMoTi1810 (1.4571) - X5CrNiMo 1810 (1.4401) - DIN 17440
Stainless steel forged body	X10CrNiMoTi1810 (1.4571) - X5CrNiMo 1810 (1.4401) - DIN 17440

ALLOWED WORKING TEMPERATURES

Carbon Mild Steel -20° to + 120° degrees Celsius, according to ISO 8434-1
Stainless steel -60° to + 200° degrees Celsius, according to ISO 8434-1

PRESSURE RATE REDUCTION

The allowed working pressure for stainless steel fittings manufactured with 1.4571 must be reduced according to the working registered temperature according to ISO 8434-1. In case of multi-components systems all the parameters must be calculated on the weakest component used.

Type of steel	Working temperature	Lowered percentage
1.4571	+ 50° C	- 4%
1.4571	+ 100° C	- 8%
1.4571	+ 150° C	- 12%
1.4571	+ 200° C	- 16%

GASKETS

The gaskets used on valves and fittings are normally manufactured in Vulkolan-Polisophrene, while those used on the stud ends are in NBR. All have a working temperature of -35° to +100° degrees Celsius with a hardness of 85 ± 5 shores. For higher temperatures Viton seals are suggested with working temperatures between -25° to + 200° degrees Celsius. All the items that are assembled with gaskets or seal of any kind must be handled according to the DIN 7716 norm (requisites for the stocking of rubber product).

SEAL ON THREADED ENDS

To obtain the maximum performance, the taper male thread is to be matched with the taper female thread. The cylindrical male thread is to be matched with the cylindrical female thread. It is possible to match a taper male thread with a cylindrical female thread, but this combination is technically valid only in pipings where medium/low performances are required and is never to be used where high pressures are applied. In case of matching of a cylindrical thread with relatively soft material, it is advisable to use the plain gasket type that guarantees a perfect seal even with a relatively low tightening torque.

FINISH TREATMENT CARBON

All fittings and valves are zinc-plated according to UNI ISO 2081 and 4520. The parts after treatment appear of bronze like yellow colour. The plating thickness is 8 ÷ 12 microns and the resistance in saline fog with standard salt concentration is 96 hours before the protective layer begins to wear off. Due to this treatment the parts may be used also in external exposure provided that the environment be not very aggressive. The cutting ring, after heat treatment to harden the surface, passivation treatment and ecological zinc-plating, follows a bath which facilitates the assembly.

FINISH TREATMENT INOX

All the fittings and valves are treated with steel spheres which eliminate all oxides and burrs due to the machining phase, without altering or damaging the product. After this, follows a bath to clean the product and take away the last impurities, if any. The piece at the end of the treatment looks real bright, very indicated for industrial applications where this type of steel is normally requested. On request different treatments can be performed. The cutting ring, after heat treatment to harden the surface, follows a bath which facilitates the assembly, protects the hardened film and improves the appearance of the ring.

ALLOWED TUBES ON ALL SERIES

- For steel tubes in mild carbon steel we advise to use calibrated seamless cold drawn without welding tubes ST 37.4 as per DIN 1630.

- Maximum allowed hardness on the outside diameter of the tube 75 HRB.

- The indicated pressures are to be intended on a constant pressure rate and with temperatures between -20° and +120° degrees Celsius.

- For steel tubes in stainless steel we advise to use calibrated seamless cold drawn without welding tubes 1.4571 as per DIN 17458 or ASTM A 269

- Maximum allowed hardness on the outside diameter of the tube 85 HRB.

- The indicated pressures on the below chart are intended on constant pressure rate and with temperature between -60° and + 200° degrees Celsius.

- The not sufficient thickness of the tube walls, or the too low longitudinal resistance of the tubes (particularly mild soft steel) may create problems of cutting of the ring with the according losses of seals and the drastical decrease of the safety factor. While choosing the tube this aspect must be considered. Is good rule to pick tubes so that the internal flare (decreasing on the internal diameter) do not exceed the 3/10 of a millimeter up to outside diameter of 16 mm and 4/10 of a millimeter on higher diameters.

COMMONLY USED THICKNESSES

Series	Ø Tube Metric	Maximum working pressure tube bar	Maximum working pressure fitting bar	Serie	Ø Tube Metric	Maximum working pressure tube bar	Maximum working pressure fitting bar
LL	4x0,5	350	100	S	6x1,5	400	630
	4x1	430			6x2	630	
	6x1	315			8x1,5	400	
	8x1	250			8x2,5	630	
L	6x1	315	10x1,5		315		
	8x1	250	10x3		630		
	8x1,5	400	12x2		380		
	10x1	160	12x3,5		630		
	10x1,5	315	14x2		315		
	12x1,5	315	14x4		630		
	15x1,5	160	16x2		315		
	15x2	315	16x3		400		
	18x1,5	160 *	20x2,5		250		
	18x2,5	315	20x3,5		400		
L	22x2	160 *	25x3	250			
	22x2,5	200	25x4,5	400			
	28x2	160 *	30x3,5	260			
	28x3	200	30x4	400			
	35x3	160	38x4	160			
	42x3	160	38x5	315			
			160				400
							315

* = Tubes that need pipe insert

- The thickness of the tube walls must be high enough to be able to sustain the maximum working pressure allowed with a safety factory of 4:1, and with dimensions and tolerances according to DIN 2391/1.

TIGHTENING TORQUES OF STUD ENDS AND RINGS

TIGHTENING TORQUES FOR STUDS

Threads: Gas - metric - UN - UNF

METAL TO METAL SEAL					ELASTOMERIC SEAL					
Ø Tube metric	Thread Gas	Torque Nm	Thread metric	Torque Nm	Thread Gas	Torque Nm	Thread metric	Torque Nm	Thread UN-UNF	Torque Nm
6L	1/8	20	10x1	20	1/8	20	10x1	20	7/16-20	20
8L	1/4	50	12x1,5	30	1/4	50	12x1,5	30	1/2-20	25
10L	1/4	50	14x1,5	50	1/4	50	14x1,5	55	1/2-20	25
12L	3/8	80	16x1,5	70	3/8	80	16x1,5	60	9/16-18	30
15L	1/2	150	18x1,5	90	1/2	100	18x1,5	80	3/4-16	50
18L	1/2	150	22x1,5	150	1/2	100	22x1,5	140	3/4-16	50
22L	3/4	200	26x1,5	210	3/4	200	26x1,5	200	1 1/16-12	95
28L	1	380	33x2	380	1	380	33x2	380	1 5/16-12	150
35L	1 1/4	600	42x2	550	1 1/4	500	42x2	500	1 5/8-12	200
42L	1 1/2	700	48x2	700	1 1/2	600	48x2	600	1 7/8-12	210
6S	1/4	60	12x1,5	45	1/4	60	12x1,5	45	1/2-20	35
8S	1/4	60	14x1,5	60	1/4	60	14x1,5	60	1/2-20	35
10S	3/8	100	16x1,5	90	3/8	90	16x1,5	80	9/16-18	50
12S	3/8	100	18x1,5	120	3/8	90	18x1,5	100	9/16-18	50
14S	1/2	170	20x1,5	170	1/2	140	20x1,5	140	3/4-16	70
16S	1/2	170	22x1,5	190	1/2	140	22x1,5	150	3/4-16	70
20S	3/4	320	27x2	320	3/4	200	27x2	200	1 1/16-12	170
25S	1	380	33x2	450	1	380	33x2	380	1 5/16-12	270
30S	1 1/4	600	42x2	600	1 1/4	510	42x2	500	1 5/8-12	290
38S	1 1/2	800	48x2	800	1 1/2	600	48x2	600	1 7/8-12	370

TIGHTENING TORQUES FOR RINGS

DIN 3861 cone Stainless and carbon steel

Ø Tube metric	Nut Thread	Manual Carb.Nm	Manual Inox Nm	Machine Carb.Kg	Machine Inox Kg
6L	12x1,5	15	30	1200	1400
8L	14x1,5	35	55	1400	1700
10L	16x1,5	40	85	2000	2200
12L	18x1,5	60	120	2100	2400
15L	22x1,5	80	130	2400	3300
18L	26x1,5	95	220	2500	3600
22L	30x2	160	320	2600	3800
28L	36x2	250	500	3000	6900
35L	45x2	340	970	5500	10000
42L	52x2	390	1110	6700	12500
6S	14x1,5	20	45	1200	1400
8S	16x1,5	30	55	1400	1700
10S	18x1,5	50	90	2000	2200
12S	20x1,5	80	105	2100	2400
14S	22x1,5	90	150	2400	3300
16S	24x1,5	105	180	2500	3600
20S	30x2	160	340	2600	6400
25S	36x2	240	530	5000	9300
30S	42x2	290	610	5500	10000
38S	52x2	390	850	6700	12500

Notes:

All the values reported in the above tightening tables are mere indication, and come from a series of practical tests carried out in the technical laboratory of Volpiano (TO). These may vary according to the materials and of the tolerances of the employed components.

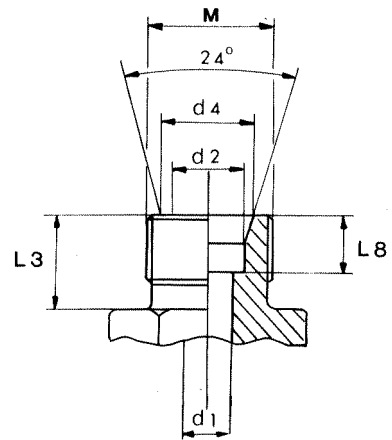
All the values that are express in Newton Meters (Nm) for the tightening torques of the stud threads represent the torquing moment necessary to have the correct blocking of the thread itself so to obtain a perfect sealing of the joint.

All the values express in Newton Meters (Nm) for the tightening torques on the cone DIN 3861 threads represent the torquing moment necessary to have the correct incision of the pre-assembly of the tube, lifting the required 70% of the front of the edge of the cutting ring. All the values expressed in Kilograms (Kg) for the linear push on the pre-assembly machine, represent the right strength necessary to have the correct incision of the pre-assembly lifting the required 70% of the front of the edge of the cutting ring.

Once done properly the pre-assembly and checked that all the components are conforming to the requirements of the system, finish the assembly on the system itself, first closing by wrench until you feel a certain resistance, and then doing the last 1/4 of a turn to close the fitting completely.

**DEFINITION OF CONE SIZE
TO DIN 3861 STANDARDS
THREAD DIAMETERS
TO DIN 3853 STANDARDS**

Allowed for B3 and B4 rings



Series	Bar	Ø Tube	Ø Threads	d ₁	d ₂ ^{B11}	d ₄ ^{+0,1}	L3	L8 ^{+0,3}
LL	100	4	M 8x1	3	4	5	8	4
		6	M 10x1	4,5	6	7,5	8	5,5
		8	M 12x1	6	8	9,5	9	5,5
L	250	6	M 12x1,5	4	6	8,1	10	7
		8	M 14x1,5	6	8	10,1	10	7
		10	M 16x1,5	8	10	12,3	11	7
		12	M 18x1,5	10	12	14,3	11	7
		15	M 22x1,5	12	15	17,3	12	7
	160	18	M 26x1,5	15	18	20,3	12	7,5
		22	M 30x2	19	22	24,3	14	7,5
	100	28	M 36x2	24	28	30,3	14	7,5
		35	M 45x2	30	35	38	16	10,5
		42	M 52x2	36	42	45	16	11
S	630	6	M 14x1,5	4	6	8,1	12	7
		8	M 16x1,5	5	8	10,1	12	7
		10	M 18x1,5	7	10	12,3	12	7,5
		12	M 20x1,5	8	12	14,3	12	7,5
		14	M 22x1,5	10	14	16,3	14	8
	400	16	M 24x1,5	12	16	18,3	14	8,5
		20	M 30x2	16	20	22,9	16	10,5
		25	M 36x2	20	25	27,9	18	12
	250	30	M 42x2	25	30	33	20	13,5
		38	M 52x2	32	38	41	22	16

PRESCRIPTIONS TO COMPLY WITH ON ALL SERIES

In order to make easier the utilization of our products, hereafter you'll find a short summarize of the most important prescription to follow so to obtain safety, sealing, and functionality.

- Use only CAST S.p.A. parts
- Apply completely the General Instruction
- Apply completely the Utilization Norms
- Apply completely the Assembly Instruction
- Apply integrally the Working Pressures indicated
- Respect the working temperature rates
- Respect the tightening values on DIN 3859
- Lubricate all the components with specific products
- All tubes must be properly pre-assembled or flared
- All stainless steel parts must be assembled on hardened tools
- Use only high quality stainless and carbon steel tubes
- Use strengthening ferrules on thin tubes walls
- Is not allowed to mix different materials
- Always check the correct alignment of the system
- Always check the correct incision on the tube
- In case of doubt always refer to the prudence concept
- Is not allowed, in any case, to use non conform tubes or fittings

Not following these prescription may alter greatly the functionality of the products causing problems to the system, and the loss of all products guarantees.



B4

NEW SIX-SEALS CUTTING RING. INTERNATIONAL INDUSTRIAL PATENT PENDING AT THE DELIBERATIVE AGENCY.

AVAILABLE IN STAINLESS STEEL AND CARBON STEEL FLANKS AND DOES NOT REPLACE THE STANDARD RING CURRENTLY IN USE

THEORY OF OPERATION

The "B4" is a highly innovative, deformable, double clinching, double edge ring with double elastomer seal that is assembled according to well-known techniques and is perfectly interchangeable with all types of rings used on fittings with 24° cone complying with the ISO 8434-1/DIN 2353 standards.

The ring helps fast assembly of removable tubes, avoids welding, tapping and flaring, thus assuring maximum simplicity of complex oleo-dynamic systems.

During tightening by the nut, the ring deforms according to the bore of the 24° cone of the fitting and bites into the steel tube, producing two deep cuts one of which is visible due to lifting of an outer edge on the diameter of the tube.

COUPLING SYSTEM TO DIN 2353

Traceability decoding

CAST =
Manufacturer

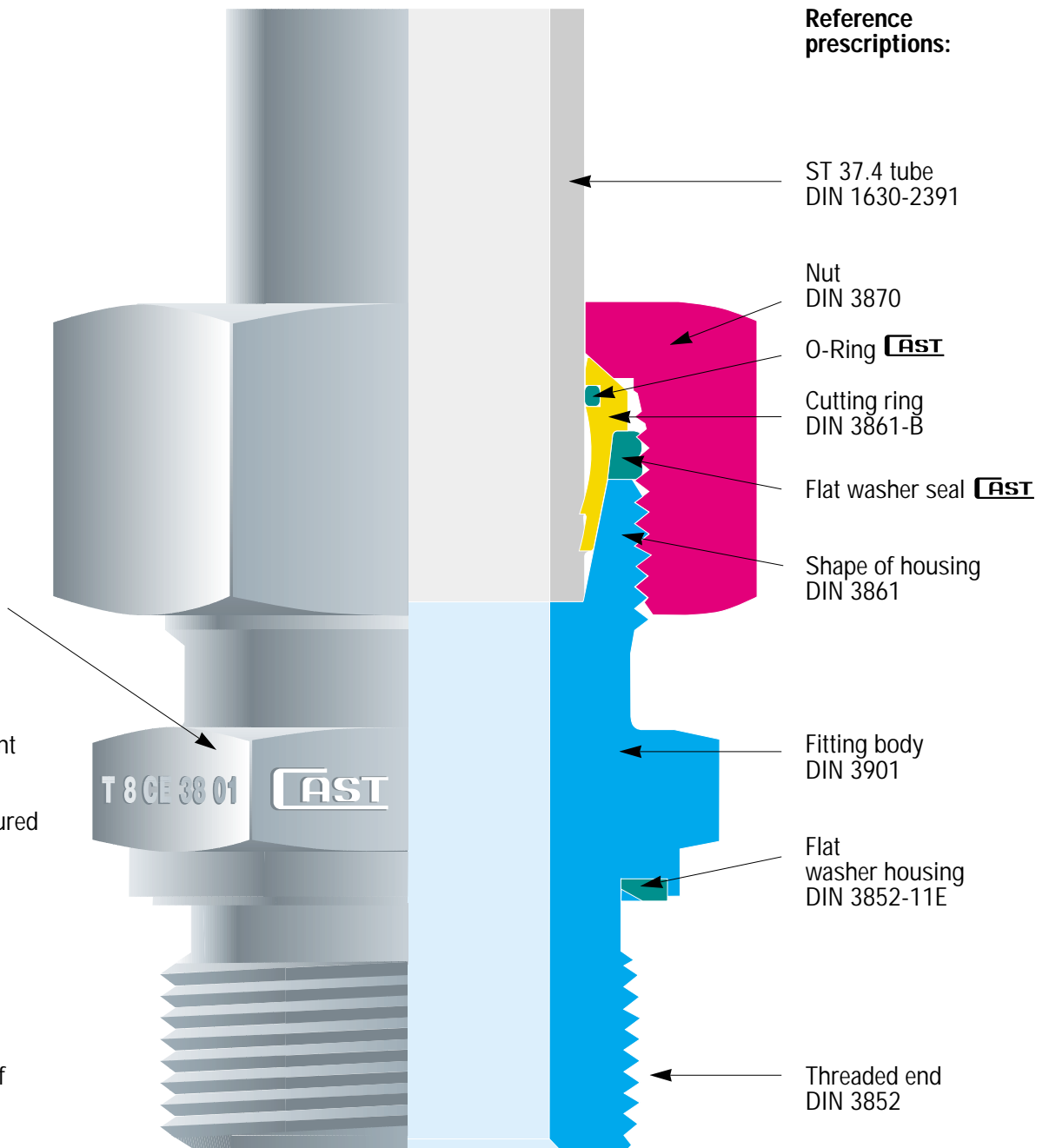
• T =
Production plant

• 8 =
Year manufactured

• CE =
Made in EEC

• 38 =
Type of steel used

• 01 =
Heat number of the steel used



Reference prescriptions:

ST 37.4 tube
DIN 1630-2391

Nut
DIN 3870

O-Ring **CAST**

Cutting ring
DIN 3861-B

Flat washer seal **CAST**

Shape of housing
DIN 3861

Fitting body
DIN 3901

Flat
washer housing
DIN 3852-11E

Threaded end
DIN 3852

TECHNICAL CHARACTERISTICS

The "B4" ring assures perfect tightness of the circuit regardless of the fluid used provided that corrosive fluids are avoided and the nominal pressures of the fittings are complied with. The fittings on which the "B4" rings are mounted are manufactured in two series that are used according to the operating conditions.

"L" light duty series for applications characterized by medium high pressures, maximum 315 bar.

"S" heavy duty series for harsh applications characterized by high temperatures and a maximum pressure of 630 bar.

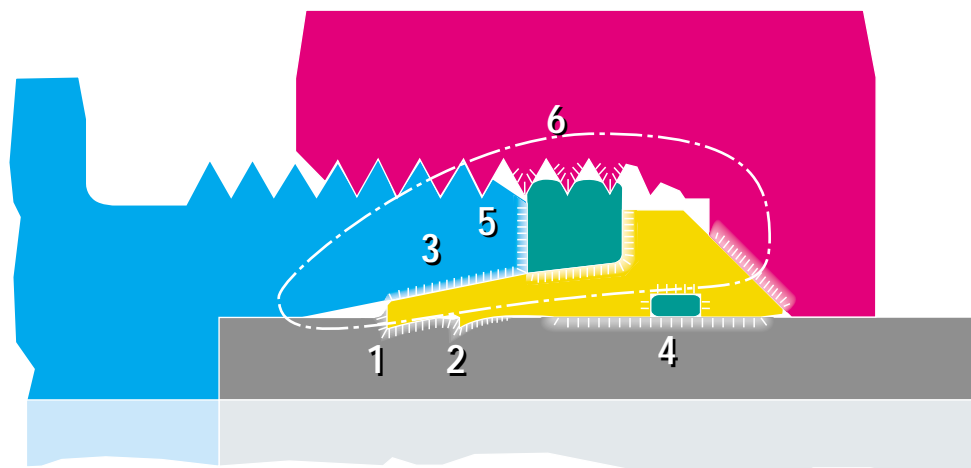
"B4" performance is not affected by vibrations within normal limits and the product maintains its optimal characteristics, as an absolutely safe ring, even at maximum values.

When the fitting, ring, nut, tube system is assembled, the flat seal is compressed between the head of the cutting ring and the front of the fitting body. The mechanical pressure applied to the flat seal causes flexure towards the outside, with a consequent increase in diameter. The deformation causes the compressed material of the seal to fill the turns of the thread of the nut free from the closing coupling with the fitting body, assuring locking of the nut and preventing any vibration-induced loosening of this.

Before assembly on the metal tube



After assembly on the metal tube



Field of force after assembly



Pressure surfaces after assembly



Sealing points

1 - 2 - 3 - 4 - 5 - 6

INNOVATIVE CONTENTS

For many years now, there has been an increasing imperative market demand for fluid system components able to guarantee three main factors: SAFE KEYING, EASE OF ASSEMBLY, LEAKAGE-FREE TIGHTNESS. These elements, now considered essential for safety of the working environment (Law 626/94), product liability (Presidential Decree 224-EEC 85/374) and for the entire environmental protection system have promoted the development of the new "B4" ring as an effective response to all the above-mentioned problems.

The most innovative aspect of this ring is that it integrates two types of seal in a single component. The first type of seal, metal on metal, is that widely known and used at the moment. The second, completely new, consists in inserting two soft elastomer seals on the same component.

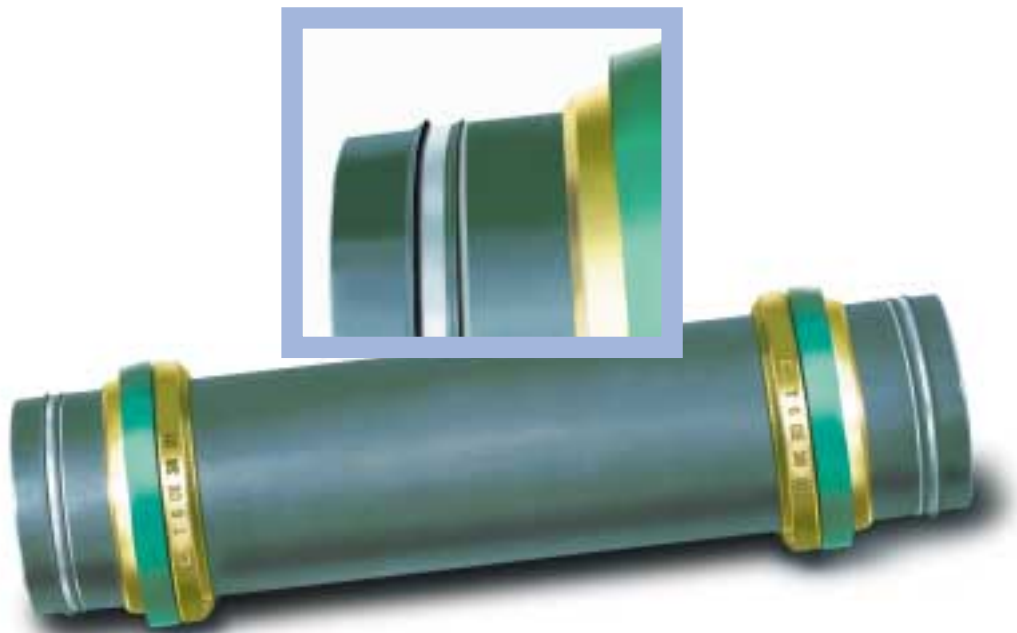
This way, the current three points of metal-on-metal coupling have been increased to no less than six of which three with elastomeric seal with, therefore, complete tightness.

ORIGINALITY OF THE PRODUCT

The most original aspect of the product is that the structure of the existing ring has been used, inserting an O-Ring in the inside part to obtain another seal on the tube used and a flat seal on the outer diameter to obtain another two seals.

The main idea behind the development of the "B4" was to design a new cutting ring able to go one step beyond the known techniques and to solve the problem of minor losses of tightness, leaks sweating and slipping of the system fastening nut.

With this new ring, double clinching of the steel tube is still possible and also, for obvious reasons of safety, visual inspection of correct coupling between the ring and the steel tube, also maintaining the current, perfectly functional system of assembly that is now widely known to product users.



TIGHTNESS

"B4" solves the problem of absolute tightness in the following way:

- On the outer diameter of the steel tube, with the double cut and with an O-Ring placed inside the ring that provides a first seal with an elastomer material that didn't exist before.
- In the 24° cone of the fitting body, with an increase in the metal-on-metal contact area and with a flat seal, placed statically on the outer diameter of the cutting ring which, when compressed between the head of the ring and the front of the fitting body, provides a second seal with an elastomeric material that didn't exist before.
- In the thread of the system fastening nut, with a flat seal. When this is compressed between the head of the ring and the front of the fitting body, it fills the threads of the nut that are not engaged in clinching the coupling system, thus providing a third seal with an elastomeric type material that didn't exist before.
- Basically, the "B4" provides six points of seal of which three metal-on-metal and three by means of two soft elastomeric seals (the flat seal assures two points of seal) thus obtaining a product able to assure complete tightness without any possibility of leakage even in particularly harsh operating conditions.