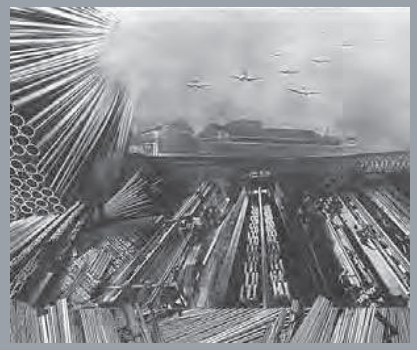
2024
TUBES LINE

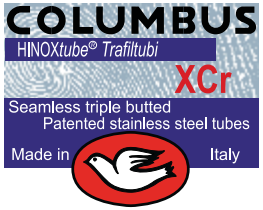
COLUMBUS

The Soul of Cycling since 1919

#ColumbusTubing
#Steelisreal



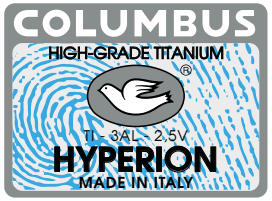
In 1919, as Europe emerged from the ashes of the Great War, a twenty-seven year old Angelo Luigi 'A.L.' Colombo signed the lease on a small factory and so began the production of steel tubes. With demand for bicycles running high, their makers were amongst his first customers – Edoardo Bianchi, Umberto Dei, Atala, Giovanni Maino. With his tubing well-proven in the bicycle industry, Angelo Luigi saw strength in creativity and diversity and was soon supplying material for the tubular frames of seaplanes and road vehicles, as well as for furniture and ski-poles.
Italy was at the forefront of aviation in the 1920s, and Colombo enjoyed a strong relationship with Caproni, manufacturing the tubing that formed the backbone of their famous aircraft. In 1927 Colombo became part of aviation history, with De Pinedo and Balbo's transatlantic planes having airframes constructed from Colombo tubing – the same tubing that was, at that time, used to fabricate race-winning Moto Guzzi motorcycle chassis.
To give increased strength and reduced weight, Colombo began experimenting with 'butted' tubes – with variable wall thickness along their lenght.
Three years later, in 1930, Angelo Luigi created the brand name 'Columbus', which was initially only associated with tubular chromed-steel furniture. After an initial trial period, in which Columbus exhibited at the VI Triennale in Milan, Angelo Luigi obtained exclusivity of supply to EMBRU for the production of Marcel Breuer's iconic furniture designs. Shortly afterwards, Columbus furniture was in high demand – for offices, universities and schools as well as homes. The best rationalist architects of the time - Figini, Pollini, Terragni, Pagano, Pucci, Faccioli - crafted designs for Columbus, bringing innovation to the furniture industry and further reinforcing the reputation of Columbus as leaders in modernist design. Later in the 1930s, the Columbus name, along with 'Aelle' and 'Tenax' was first applied to special sets of bicycle tubes – the Columbus tubes being drawn from Chrome Molybdenum steel and the fork blades being elliptical, laying down standard characteristics that remain commonplace to this day. Never satisfied, Colombo worked to the maxim "Curiosity is a prelude to knowledge" and continued to experiment in the fields of mechanics and metallurgy.
Colombo even designed and built their own butting machines to manufacture the tubes with tapering wall thickness – reinforcing the tubes at the joints where stresses are greatest.
Colombo supplied tubes for racing car chassis, and Colombo's son, Gilberto, designed chassis for the immortal Italian manufacturers Lancia, Maserati and Ferrari. Fangio ('El Maestro'), Ascari and 'Gigi' Villoresi were carried to victory on Colombo chassis. Some of the tube profiles created at this time will find their application onto bicycle frames in the following years.
'Columbus', a new company dedicated to the development and production of specialist tubes for bicycle frames, is formed in 1977. Antonio Colombo, youngest son of Angelo Luigi, leaves his position as President of A.L. Colombo to devote himself entirely to the new-born Columbus. Extensive experience gained from cycle, aircraft and automobile testing was the driving force of the business: Columbus, reinforced by the fact that the Italian artisans who use Columbus tubes are admired and known all over the world, were determined to conquer international markets. Since that time continuous uninterrupted research, highlighting the parts of the frame subjected to the highest stress, has helped to improve stiffness and strength and increase resistance to deformation and breakage. Among the notable innovations are the taper-gauge elliptical fork blades, the conical helix tube butting, 'Air' – the first fully-aerodynamic tube set, and 'Max' – offering the advantages of differing oversize tube profiles to bicycle designers and riders. Parallel to an increasingly diverse production line, manufacturing 900 different types of tubes all of controlled origin and guaranteed quality, comes a growing competitive sector. For record attempts on the track, Columbus have developed super-light tube sets for the greatest champions: Coppi, Anquetil, Baldini, Rivière, Bracke, Ritter, Merckx, Moser, Oersted. The doctrine of intelligent experimentation and technological progress continues to be themain focus of the new Columbus, independent from A.L. Colombo since 1978. From research conducted in collaboration with the most prestigious research institutions, and through sophisticated tests carried out on the road and in the laboratory, Columbus continues to develop new materials and designs; new tube sets used by the top riders: from Gimondi to Merckx, Hinault to Argentin, Lemond and Roche, till nowadays new-generation hi-performance oveersized steel tube-sets and carbon fibre monocoque forks, frames and components.



XCr

Stainless, Seamless, Performance

- The jewel of the crown, top-range tubeset
- The only biphasic stainless seamless tube family available in the cycling industry
- Tripled & Double butted tube reinforces
- High corrosion resistance in long-term periods in every use and weather condition
- Seamless-technology, improved stiffness and mechanical properties
- Reduced thickness, up to 0.4mm for an extremely reduced weight
- Exceptional resistance to Stress Corrosion Cracking
- No need to be painted or clear-coated after polishing
- Ultra smooth surface (Ra<0,4)
- Excellent weldability
- Made in Italy



HYPERION

The New Era of Titanium

- Triple butted Grade 3Al - 2,5V alloy
- Cold-Drawn Seamless Grade 9
- Columbus' cold-drawing technology improves the mechanical properties of Hyperion tubes compared to other Titanium tubes available on the market, with a +22% increase in UTS relative to non-butted tubes
- Higher UTS compared to non internally-butted Ti tubes
- Wide range of special shapes and bends, from the Columbus new and old archives of custom sections
- Columbus' special proprietary drawing-lubricant provides extra-clean tubes out "of the box", without residual oils. This allows builders to prepare tubes for welding more quickly
- Made in Italy

SPIRIT HSS

High Strength Shaped

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Exceptional mechanical properties
- Special HSS shaping, designed to optimize tube strength according to the orientation of its local solicitations
- High tensile strength, superior resilience and incredible fatigue resistance
- Visual Quality Control inspection and hand marking of each tube
- Unpaired strength/weight ratio
- Made in Italy

SPIRIT

Top-Performance Road-Race

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Reduced thickness, up to 0.38mm
- Exceptional mechanical characteristics
- High tensile strenght, superior resilence and incredible fatigue resistance
- Excellent tube-surface finishing and highly controlled alloy-composition, regular and close to nominal, for an excellent weld bead
- Visual Quality Control inspection and marking of each tube
- Incomparable strength/weight ratio
- Made in Italy

LIFE

Oversize, Lightness, Resistance

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Wide range and great freedom in frame-design & tubeset-composition
- Excellent resistance/weight ratio, wide range of shapes & bends
- Over-sized tubes available for the DT (Ø42mm) and the ST (Ø35mm)
- Exceptional mechanical characteristics
- High breaking load, superior tenacity and incredible fatigue endurance
- Wide range of specifications: road-race, gravel, urban and mtb
- Made in Italy

MAX

The Revolutionary Tubeset

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- The very first and only original patented non-round tubeset of the cycling history
- Tubes shapes oriented according to localized specific stress-direction
- Elliptical and oriented oversized sections for an increased momentum of inertia
- Maximized stiffness, reduced thickness, weight and power-dispersion
- Made in Italy

SL

Super Leggera - The 'Soul of Cycling'

- Double butted OMNICROM alloy
- The most famous Columbus round set
- Hi-performance, imperial dimensions
- Exclusive laminated tapered fork blades swaged on shaped-mandrels for an improved structure and lightness
- Wide range with multiple diameters and thicknesses and reinforces
- Meets both lugged and Tig-welded frame needs
- Evergreen specifications updated to new technologies and alloys
- Double butted seamless tubes, cold worked and stress relieved
- Made in Italy

ZONA

All-Purpose Hi-Resistance tubes family

- Triple / Double butted 25CroMo4 alloy seamless tubeset
- Moderate weight and high strenght
- Multiple possible shapes, triangle & stays
- Increased wall-thicknesses and butted lenghts in strategic tube areas
- Perfect solution for offroad and training purpose
- Great to mix with lighter Columbus sets for an improved resistance
- Good resistance to heating during welding process
- Great reliability and fatigue life
- Made in Italy

Tubesets


COLUMBUS
TUBI SPECIALI RINFORZATI
ACCIAIO CrMo
CROMOR OR
DOPPIO SPESSORE
TUBI SPECIALI RINFORZATI DSB
ACCIAIO NIVACROM
CYBER
TUBI PROFILATI RINFORZATI
ACCIAIO CrMo CYCLEX
GILCO MS DESIGN
DOPPIO SPESSORE
7005 ALLOY
AIRPLA
Triple Butted Tubes
HINOXtube® Trafiltubi
Seamless triple butted
Patented stainless steel tubes
Italy
ACCIAIO NIVACROM
NIVA OR
DOPPIO SPESSORE
NIOBIUM STEEL ALLOY
SPIRIT KEIRI
Progressive Butted H.S.L.A.
Fine Grain Niobium Doped
ACCIAIO CrMo
BRAIN
ACCIAIO NIVACROM
MAX
ACCIAIO CrMo
OFF ROAD
TRIPLO SPESSORE
7005 ALLOY
ALUTHRU
Seamless Drawn Tubes
T6 Hardening
THERMACROM
ULTI
Triple Butted Tubes H.T.C.
High Temperature Conditions
CYCLEX ALLOY
BRAIN
Double Butted Tubes
HINOXtube® Trafiltubi
XCr
Seamless triple butted
Patented stainless steel tubes
Made in
Italy
6000 ALLOY
STARSHI
Hyperlite Triple Butted Tubes
Stress Corrosion Resistant
ACCIAIO CrMo CYCLEX
SL
DOPPIO SPESSORE
NIVACROM ALLOY
GEN
Double Butted Tubes D.S.
Differential Shape
ALLUMINIO
ALTEC OR
NIOBIUM STEEL ALLOY
SPIRIT KEIRIN
Progressive Butted H.S.L.A.
Fine Grain Niobium Do
THERMACROM ALLOY
FOCO KEI
Triple Butted Tubes H.T.C.
NIVACROM® ZONA ALLOY
SSP
SPIRIT SUPER PISTA
Niobium Steel
Made in Italy
TUBI SPECIALI SUPERBUTTED
SLX
ACCIAIO NIVACROM
EXTRA EL LEGGERI
DOPPIO SPESSORE
7005
NIOBIUM STEEL ALLOY
Triple Butted H.S.L.A.
Fine Grain Niobium Doped
Made in
7000 ALLOY
STARSHI
Hyperlite Triple
Limite
TUBI RINFORZATI GARANTITI
SPECIALE
ALTEC
Triple Butted Tubes
Italy

COLUMBUS XCr

XCr è un acciaio speciale inossidabile dalla formulazione innovativa.
Caratteristica esclusiva ed unica nel settore del ciclo della nuova serie XCr Columbus, sono i tubi inossidabili senza saldatura, realizzati partendo da una billetta forata meccanicamente e trafilata a freddo innumerevoli volte fino ad ottenere ridottissimi spessori finali. In questo modo le elevate caratteristiche meccaniche dei tubi sono uniformi e costanti su tutta la sezione circolare del tubo.
Grazie alla particolare composizione chimica di questa nuova lega, la struttura cristallina non viene alterata durante il processo di saldatura del telaio, garantendo le massime prestazioni anche nei punti di giunzione.
Caratteristiche meccaniche: UTS=1450MPa, Ys=1000MPa, Ap5: >10%
Materiale d'apporto suggerito per saldatura TIG: APX4S
Materiale d'apporto per saldobrasatura: T99 (Ag 56% Cu 22% - Zn 17%)

XCr is an innovative, high grade, stainless seamless steel tubing set.
Exclusive and unique characteristic for the whole bike industry of the new Columbus XCr set, is that the stainless steel tubes are seamless, made starting from a solid billet, machine-perforated and cold drawn countless times, to obtain the final required thickness.
In this way the very high mechanical characteristics are uniform and constant in the whole round section of the tube.
Thanks to the special chemical composition of this new alloy, the grain structure is not altered by welding during the frame construction.
The maximum characteristics are granted also in the joint areas.
Mechanical characteristics: UTS=1450MPa Ys=1000MPa, Ap5: >10%
Suggested filler material for TIG welding: APX4S
Suggested material for brazing: T99 (ag 56% Cu 22% - Zn 17%)

COLUMBUS Omnicrom

NEW!

A distanza di 30 anni dagli studi fatti da Columbus e l'Istituto di Saldatura di Parigi che portarono a brevettare le leghe Cyclex e Nivacrom, siamo oggi ad un nuovo traguardo nella storia degli acciai ad alta prestazione, siamo oggi pronti per presentare OMNICROM.

Le performance del telaio in acciaio sono direttamente influenzate dalle caratteristiche e qualità dei materiali e componenti utilizzati: senza sottovalutare la bontà della geometria e del progetto, grande importanza e' da attribuirsi alla qualità dei tubi e della saldatura, con speciale riferimento alle ripercussioni che essa ha sui tubi utilizzati.

Columbus da sempre presta particolare attenzione alla resistenza dei propri tubi agli stress termici e alle trasformazioni che avvengono durante la fase di saldatura.
Con l'introduzione di OMNICROM, Columbus inaugura una nuova era del tubo in acciaio: prestazioni senza precedenti e grandissima capacità di lavorazione.

OMNICROM e' il punto di arrivo di un lungo percorso.
Tutto parte dalle più aggiornate leghe di acciaio al Cromo-Molibdeno con basso tasso di Carbonio, utilizzate nel moderno ambito aeronautico, figlie delle prime ricerche delle acciaierie AL Colombo.
Dall'esperienza sviluppata negli anni da Columbus nel campo delle competizioni motor e ciclo con leghe cromolly, OMNICROM si arricchisce dei benefici del Vanadio e di un accurato controllo del processo produttivo: la miglior scelta per il rider, la miglior scelta per il telaista.

Caratteristicha distintiva di OMNICROM sono la strettissima tolleranza nella composizione della lega, affinata e rifusa per garantire la regolarità della struttura, la resistenza allo snervamento, l'ottima saldabilità e l'elevata resilienza.

La purezza dell'acciaio OMNICROM si traduce in assenza di inclusioni, tramite un attento controllo degli elementi del metallo, annullando eventuali comportamenti anomali della lega, dovuti ad impurità ed irregolarità presenti nella struttura del cristallo.

30 years have passed since Columbus and The Institute of Welding of Paris collaborated on a research study which lead to obtaining patents on Cyclex and Nivacrom alloys. Today marks a new milestone in the history of high-performance alloys. Today we present OMNICROM.

The performance of a steel frame is, undoubtedly, directly influenced by the characteristics and quality of the materials and components used: in combination with the quality of the geometries and the project, big importance belongs to the quality of the material and of the welds, with particular attention paid to the effect they have on the tubes used for the realization of the frame.

Columbus has always paid particular attention to the resistance the tubes have to the thermal stress and transformations they are typically exposed during the welding phase. With the introduction of OMNICROM, Columbus ushers forth a new era of steel tubing; unprecedented performance and excellent processing capacity.

OMNICROM is the culmination of a long journey.
It all starts with the latest low-carbon Chromium-Molybdenum Steel alloys used today in the aerospace industry, descendants of the first research done at AL Colombo's steel mill.
Putting to use all the experience Columbus has gained within the competitive motorcycle and cycling industry developing Chromoly alloys, OMNICROM benefits from being enriched with Vanadium combined with a highly controlled production process: the best choice for riders, the best choice for framebuilders.

OMNICROM's distinctive feature are the strict tolerance of the alloycomposition, refined and re-fused to grant the regularity of the structure, an increased yield strength, excellent weldability and elevated resilience.

OMNICROM's purity translates into excluding inclusions, through careful control of the metal elements, eliminating any abnormal behavior of the alloy caused by these impurities and consequently irregularities within the crystal structure.

COLUMBUS Omnicrom

La centenaria esperienza di Columbus nei processi di trafilatura a freddo, assieme alle straordinarie proprietà di OMNICROM, permettono di raggiungere un'elevata regolarità della struttura cristallina del metallo. Il controllo della lega sin dal momento della solidificazione in colata, si traduce in maggiore capacità di assorbire il calore e lo stress della saldatura e mantenere stabili e inalterate le proprietà meccaniche anche dopo saldatura.

OMNICROM si lavora con grande facilità, ha un comportamento regolare e prevedibile durante la saldatura, si presta a realizzazioni TIG, saldo-brasatura fillet e a congiunzioni, grazie all'elevata temperatura di transizione (Ac3=980°) che ne preserva inalterata struttura e performance anche dopo le lavorazioni piu' esasperate.

Le prestazioni di OMNICROM sono superiori agli acciaio sino ad oggi brevettati da Columbus, grazie alla speciale composizione della lega, e all'innalzamento delle proprietà meccaniche ottenuto tramite la maggior deformabilità a freddo del tubo, realizzata per trafilatura, ottenuta grazie alle qualità di questa speciale lega.

Caratteristiche meccaniche:
UTS=1300MPa, Ys≥920 MPa, Ap5>15%.
Materiale d'apporto per TIG:
OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Materiale d'apporto per saldobrasatura:
Castoline Silver Alloy 38230

Columbus OMNICROM è utilizzato nei triangoli Spirit, Spirit HSS, Max, SL e Life.

The extraordinary properties of OMNICROM and a century of experience in cold drawing steel allows Columbus to achieve an elevated degree of crystal structure regularity. The crystal structure is controlled since casting solidification and grants a greater capacity to absorb the heat and stress of the welding process, maintaining the tube's mechanical properties stable and unaltered.

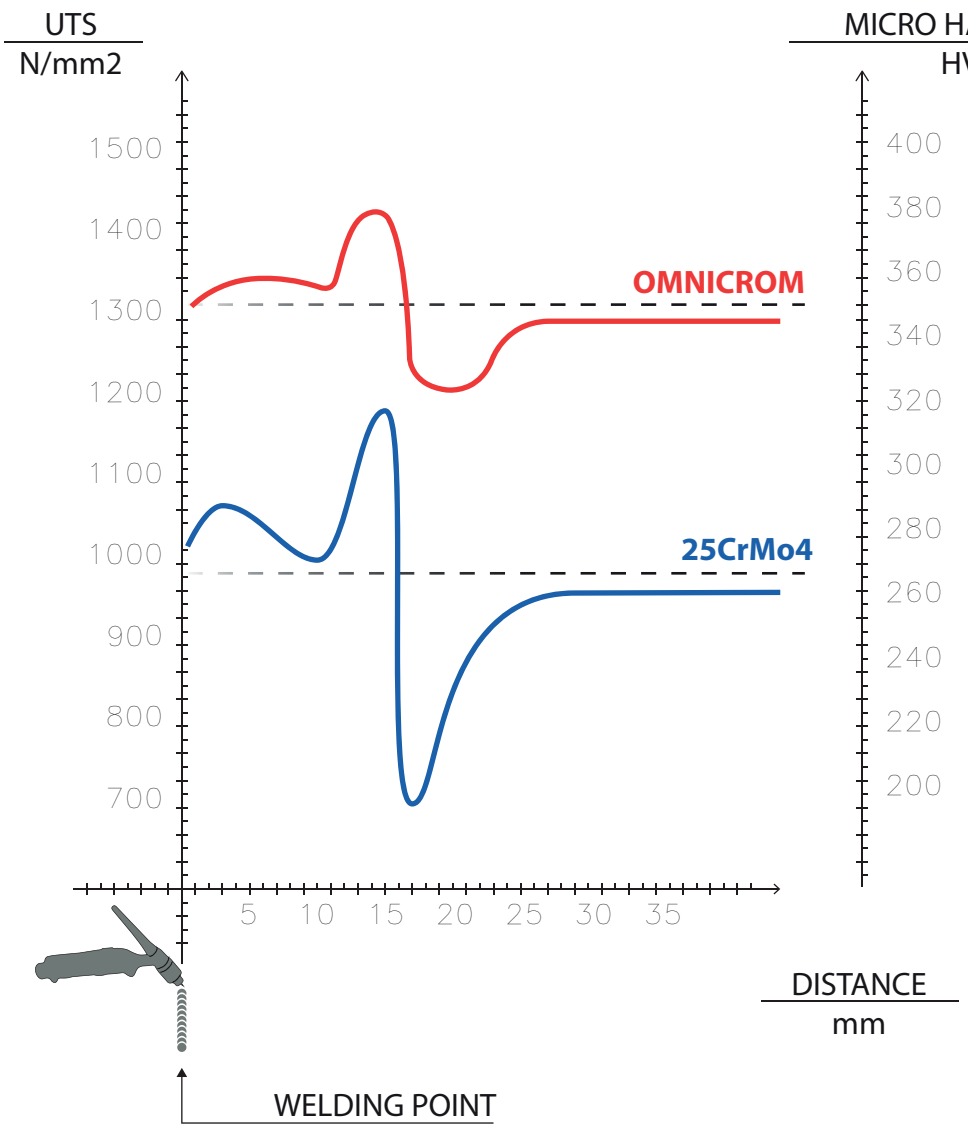
Thanks to its high transition temperature (Ac3=980°), OMNICROM is easy to work with. It has a smooth, predictable behavior during welding and lends itself perfectly to TIG welding, as well as fillet and lug brazing maintaining an unaltered structure and performance even after undergoing the most extreme processes.

OMNICROM's performance is superior to steel alloys patented up to this day by Columbus. This superior performance is thanks to the special alloy composition and improved mechanical properties, which are obtained through the increased plastic deformation of the tubing achieved through cold-drawing, made possible thanks to a special alloy formula.

Mechanical characteristics: UTS=1300MPa, Ys≥920 MPa, Ap5>15%.
Suggested material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230

Columbus OMNICROM is utilized for the production of the Spirit, Spirit HSS, Max, SL and Life main-triangles.

COLUMBUS Omnicrom



MECHANICAL CHARACTERISTICS COMPARISON OF COLUMBUS TUBES

- XCR
- OMNICROM
- NIOBIUM
- 25CRMO4
- CROMOR

THE VALUES ARE FOR HOMOGENEOUS SECTIONS OF COLD-DRAWN STRESS-RELIEVED TUBING FROM THE MAIN TRIANGLE

	N/mm²
XCR	**1450**
OMNICROM	**1300**
NIOBIUM	**1250**
25CRMO4	**900**
CROMOR	**750**

The new Omnicrom alloy will soon be featured on all the Columbus top-range main-triangles, including Spirit, Spirit HSS, SL, MAX, and Life tubesets.

COLUMBUS 25CrMo4

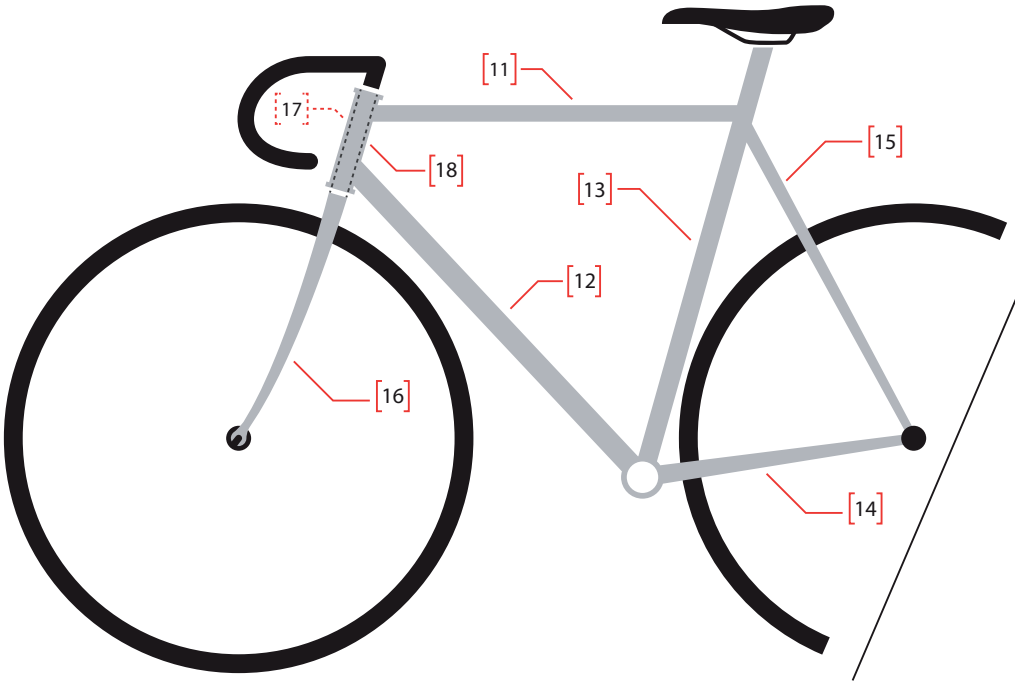
Acciaio 25CrMo4 senza saldatura: grazie al Cromo l'acciaio resiste egregiamente al surriscaldamento dovuto alla saldatura, infatti, i grani non si ingrossano e le prestazioni meccaniche non vengono alterate. Brasatura o saldatura sono dunque ben sopportate. Questo acciaio, allo stato crudo malleabile, garantisce elevate caratteristiche meccaniche.
Caratterisitche meccaniche: UTS=900MPa, Ys=800MPa, Ap5 =12%
Materiale d'apporto per saldatura TIG: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Materiale d'apporto per saldobrasatura: Castoline Silver Alloy 38230
Columbus 25CrMo4 è utilizzato nelle serie tubi Zona, 29r e FAT.

25CrMo4 seamless steel: the chemical composition of this steel, specifying a higher percentage of Chromium, gives to the material good resistance properties to overheating. The formation of carbides prevents the grain enlargement: the steel maintains its properties during brazing and welding, even in the malleable raw state it features excellent mechanical characteristics.
Mechanical characteristics: UTS=900MPa, Ys=800MPa, Ap5 =12%
Suggested filler material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230
Columbus 25CrMo4 is utilized for the production of the Zona, 29r and FAT tubesets.

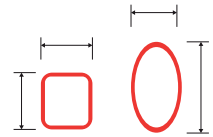
COLUMBUS Cromor

Columbus Cromor e' un acciaio 25CrMo4, saldato e trafilato a freddo su mandrini sagomati a spessore variabile.
Cromor e' prodotto partendo da uno sbozzato calibrato che ha già a sua volta subito due passaggi di trafilatura, prima di essere rinforzato a spessore variabile.
Caratteristiche meccaniche: UTS=750MPa, Ys=700MPa, Ap5 ≥ 12%
Materiale d'apporto per saldatura TIG: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Materiale d'apporto per saldobrasatura: Castoline Silver Alloy 38230

Columbus Cromor is a 25CrMo4 steel, seamed and cold drawn, butted to variable thicknesses using shaped mandrills. Cromor steel is produced starting from a calibrated tube which has already received two drawing processes, before being reinforced in all the possible variable thickness offered by the range.
Mechanical characteristics: UTS=750MPa, Ys=700MPa, Ap5 ≥ 12%
Suggested material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230



Columbus Bicycle Steel Tubes are hi-precision tubes manufactured using a cold-drawing hardening process, subject to a final stress-relieve heat treatment in order to release the internal tensions and optimize the crystalline structure of the alloy and its elements.



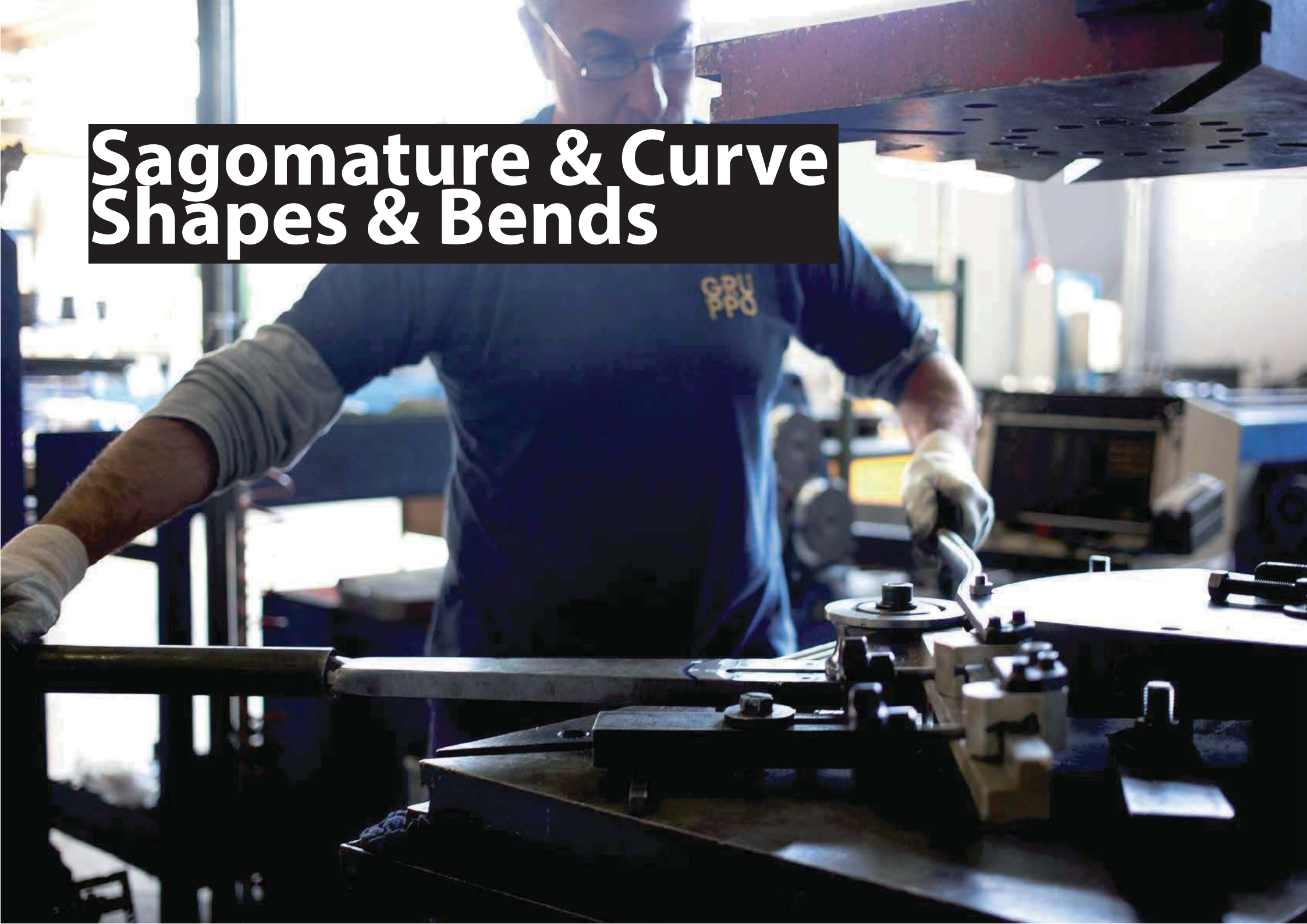
Diameter Variations | Length | Shape

[SLF][L][13][635][112][A]

Family | ITA | ENG | Variations

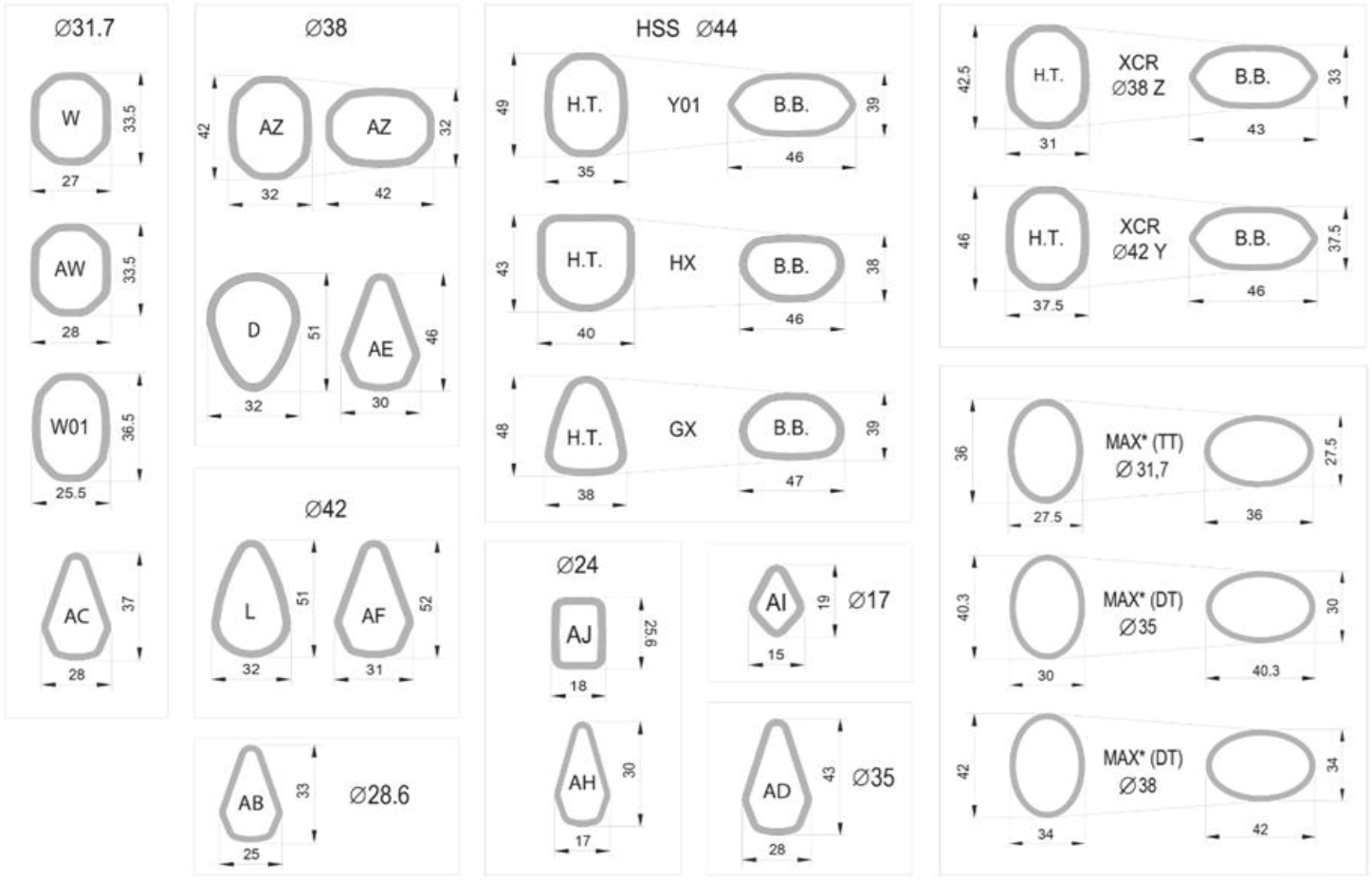
Family		ITA	ENG
XCR	XCr	11 - TO	11 - TT
SP	Spirit	12 - TQ	12 - DT
SL	HSS/SL	13 - TV	13 - ST
SLF	Life/HSS	14 - PO	14 - CS
ZON	Zona	15 - PV	15 - SS
CR/CX	Cromor	16 - FF	16 - FB
FBR	Disc Blade	17 - CN	17 - FS
		18 - ST	18 - HT

COLUMBUS
TUBE-CODE LEGEND



Sagomature & Curve Shapes & Bends

SHAPES


Ø31.7
W
33.5
27
AW
33.5
28
W01
36.5
25.5
AC
37
28
Ø38
AZ
42
32
AZ
32
42
D
51
32
AE
46
30
Ø42
L
51
32
AF
52
31
AB
33
25
Ø28.6
HSS Ø44
H.T.
49
35
Y01
B.B.
39
46
H.T.
43
40
HX
B.B.
38
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H.T.
48
38
GX
B.B.
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AJ
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18
AH
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17
AI
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28
Ø35
H.T.
42.5
31
XCR
Ø38 Z
B.B.
33
43
H.T.
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37.5
XCR
Ø42 Y
B.B.
37.5
46
36
27.5
MAX* (TT)
Ø 31,7
27.5
36
40.3
30
MAX* (DT)
Ø35
30
40.3
42
34
MAX* (DT)
Ø38
34
42