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GENERAL CATALOGUE







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Gonvarri Industries is a leading company in the transformation of flat steel and aluminum, with more than 60 years of experience. We manufacture a range of different products under four business lines: Gonvarri Service Centers, Gonvarri Material Handling, Gonvarri Metal Structures & Gonvarri Precision Tubes.

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Gonvarri Precision Tubes

Gonvarri Precision Tubes manufactures high-precision carbon steel tubes and stainless tubes with the highest quality standards and state-of-the-art R&D.







Global presence









Flinsa was officially founded in **1975** as a carbon-steel cold rolling plant.

As cornerstone of the process, the company has had since the beginning a reversible 320 mm-wide cold rolling mill in four different heights, several slitting lines and top-hat furnaces. In **1988**, Flinsa took on the task of expanding their range of products thanks to the manufacture of high-frequency welded steel tubes. Among the reasons behind this decision, there is the fact that steel strips are the raw material for tube-making, and we had a huge technical experience in stripping for both the qualities supplied by the steel industry and those we could manufacture in our rolling mill process.

In **2007**, the works for the new plant, doubling the size of the company, started.

In **2011**, we started to manufacture our new range of stainless steel products, strips and tubes, under the Flinox® registered trademark, as well as laser cutting and drilling.

In **2013**, Gonvauto Asturias was established as a business unit focused on the automotive industry. As customer demands increased, in order to improve the quality and service of the old tube mills, Gonvarri Industries invested in state-of-the-art facilities to meet clients' expectations and expand operations.

In **2018**, Flinsa became part of the Gonvarri group and, together with Gonvauto Asturias, the new Gonvarri Precision Tubes division was established.

COVERRI PRECISION TUBES

Gonvarri Precision Tubes sell steel tubes in more than 25 countries



2 Range of

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diameters

and shapes

Gonvarri Precision Tubes

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 Range of grades

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Welded carbon steel tubes for precision applications

Cold calibrated and welded steel tubes for precision applications According to standard EN 10305-3/-5 and Supply condition +CR1/+CR2



Welded carbon steel tubes for precision applications

Gonvarri Precision Tubes has several tube manufacturing lines that use HF (High Frequency) induction welding technology. The high quality standard of the products manufactured by GPT is the result of 30 years of experience and has recognised prestige both nationally and internationally.

All our state-of-the-art cut-to-length lines give us the opportunity to offer a comprehensive service to GPT's clients. These processes are carried out using circular saw blade cutting systems and laser drilling. GPT is positioned as a leader in the hardened tube sector, due to the advanced technology used. Thanks to their electro-magnetic induction quenching facilities that provide a high degree of homogeneity to the product, GPT offers a tube that maintains excellent toughness with resistance greater than 1.400 MPa.



Range of grades

The table below shows the mechanical characteristics of the tubes manufactured by GPT, according to standard EN 10305-3/-5.

EN 10305-3/-5	Mechanical Properties						
Steel Grade	R _{eH} (MPa) mín.	R _m (MPa) mín.	A (%) mín.	Delivery condition			
E155	***	290	15				
E195	***	330	8				
E235	***	390	7	+LRI			
E275	***	440	6	32 11 33 11 34			
E355	***	540	5				
E190	190	270	26				
E220	220	310	23				
E260	260	340	21				
E290F(*)	290	380	20				
E320	320	410	19				
E360SKF(*)	360	415	6				
E370	370	450	15	52 // 53 // 54			
E420	420	490	12				
E460	460	510	11				
E500	500	540	10				
E550	550	590	8				
E600	600	640	6				
E700	700	740	5				
	Special ste	el grades not include	d at standard				
AHSS steel grades							
HCT590X	520	600	14				
HCT780X	650	800	8				
HDT760C	660	780	8	+CR2			
HCT980X	850	1000	6	52 // 53 // 54			
M1200-F	1050	1200	4	52,755,751			
M1300-F	1150	1300	3				
M1400-F	1250	1400	2				
Quenched steel grad	es						
22MnB5	1100	1450	5				
26MnB5	1200	1550	4	S2 // S3			
30MnB5	1300	1650	4				

(*) Own grades

We also offer the possibility of additional mechanical requirements on demand.



Square	tubes										 	•	
		Fli	nsa		Both fac	tories						⊢ B	
	Square tubes (mm.)												
R v H	Outsido diamotor		Wall thickness T (mm)										
		0,8	0,9		1,2	1,5		2,5	З	3,5		5	6
8 x 8													
10 x 10													
12 x 12													
14 x 14	± 0,20 mm.												
16 x 16													
18 x 18													
20 x 20													
21 x 21													
22 x 22													
25 x 25													
27 x 27	± 0.25 mm												
30 x 30	± 0,25 mm.												
35 x 35													
40 x 40													
50 x 50	± 0,30 mm.												
60 x 60													





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											·	Ţ
Rectangular	tubes										ļ	Ţ
			Flinsa		Botl	n factor	ies	Gonvo	iuto Ast	urias		- B→
		Recto	angula	r tube	es (mm.))						
IIIall thickness T (mm)												
	Outside diameter	0,8	0,9		1,2	1,5		2,5	3	3,5	5	6
16 x 10												
20 x 10	± 0,20 mm.											
20 x 15												
25 x 10	_											
25 x 15	-											
25 x 20	-											
30 x 10	-											
30 x 15	-											
30 x 20	-											
30 x 25	-											
35 x 15	-											
35 x 20	-											
35 x 25												
40 x 10	-											
40 x 15	-											
40 x 20												
40 x 25	-											
40 x 30	-											
40 x 35	-	-										
45 X 20		-										
45 X 25	± 0,25 mm.											
45 X 30	-											
45 X 55	-											
50 x 20	-	-										
50 x 20	-	-										
50 x 30	-	-										
50 x 40	-	-										
60 x 20												
62.3 x 25	-											
60 x 30	± 0,35 mm.											
60 x 40	-											
70 x 16,5												
70 x 20												
70 x 25	± 0,40 mm.											
70 x 30												
70 x 40												
80 x 30												
80 x 40												
80 x 50	± 0,50 mm.											
80 x 60					1							

Flat sided oval tubes



Special-shaped tubes

















Tolerances

EN 10305-3/-5	Dimensional Tolerances
THICKNESS: Thickness tolerance	
Wall thickness T (mm.)	Tolerances
≤ 1,50 mm.	T= ± 0,15 mm.
> 1,50 mm.	T= \pm 10 % of tube nominal wall thickness, not greater than \pm 0,35 mm.

SHAPE: Straightness tolerance

D Tube	Tolerances
< 15 mm.	Agreement with customer
≥ 15 mm.	f < 0,20 % of the tube length shall not exceed 3 mm/m.

INNER WELDING SEAM: Maximum seam height (**)

Tube shape	Wall thickness T (mm.)	Height (mm.)	
Pound	1,50	0,8	
Rouna	> 1,50	0,6 x thickness	
Square Normal	All thicknesses	As per agreement	
Rectangular Automotive	All thicknesses	0,6 x thickness	

(*) The dimensions stated, even straightness, must be verified at a distance >100 mm to the ends of the tube.

**) TUBE WITH SCARFED INNER WELDING SEAM: As per customer agreement.





State-of-the-art steel tubes

Advanced High Strength Steels (AHSS) are the latest generation of steels that offer an effective solution to optimising weights and strength in most demanded parts and those with high requirements in shock energy absorption, especially in the automotive sector. Their cost is offset by the possibility of mass reduction, which makes them a technologically highly competitive solution. Among the most remarkable grades we have: Dual Phase steels (DP), Complex Phase steels (CP), Martensitic steels (MS), TRIP, and TWIP.

Multi-phase steels are used to make tubes and parts that are structurally involved in many high range vehicles that Gonvarri Precision Tubes markets worldwide.

Structure of the back seats Structure of the front seats —

Bumpers



State-of-the-art steel tubes

Stress-deformation diagram in flat steel products



		Product Range			
Steel	grades	Type of tube	Dimensions range	Thickness range	
		Round	Ø10-Ø70	≤ 3 mm	
HCT590X CR330Y590T-DP		Square	16x16 - 50x50		
		Rectangular	16x10 - 80x30	≤ 2,5 mm	
		Oval	25x10 - 60x20		
		Round	Ø15 - Ø70	≤ 3 mm	
HCT780X (CR	440Y780T-DP)	Square	20x20 - 50x50		
HDT760C (HF	R660Y760T-CP)	Rectangular	25x15 - 80x30	≤ 2,5 mm	
		Oval	30x15 - 60x20		
		Round	Ø15 - Ø70		
НСТ	980X	Square	25x25 - 50x50		
CR590)	(980T-DP	Rectangular	20x15 - 80x30		
		Oval	30x20 - 50x25	(2,000	
		Round	Ø20 - Ø70	≤ ∠ 111111.	
DP1200M (CR	950Y1200T-MS)	Square	25x25 - 50x50		
DP1300M (CR1	.150Y1400T-MS)	Rectangular	30x20 - 80x30		
		Oval	35x25 - 50x25		
Chemical composition	According to Standards	EN 10338 y VDA239-:	100.		
Dimensional and thickness tolerance	According to Standard E	EN 10305-3/5.			
Straigthness	The tube with higher straightness level: · Normal straighness: 1,5 mm/m. · Restricted straighness: 1 mm/m.				
Flatness	Flatness in tubes: • Normal flatness: <0,5 mm/m. • Restricted flatness: <0,3 mm/m.				
Twisting	Twisting level of tubes: · Normal twisting: 1,5 mm/m. · Restricted twisting: 1 mm/m.				
Remarks	Further requirements t	o the above detailed	should be approved with a	feasibility study.	

•Tubes for hydroforming

We provide the best precision tubes, and we are specialists in tubes for hydroforming, one of the most demanded tubes on the market. Hydroforming is a very aggressive process to obtain complex shapes from round tubes. This aggressive process requires high-quality weld seams, without pinholes or microcracks. Therefore, the tubes are produced with the best possible welding conditions, where each reference has been tested to determine the optimal parameters of both rolling and welding.





Our capabilities to manufacture tubes for hydroforming encompass a wide range of grades, from basic steels to state-of-the-art steels.

Product Range							
Calidades de acero / Estándar	Tipo de tubo	Rango de dimensiones	Gama de espesores				
Aceros laminados en caliente	Redondo	Ø40-Ø130 mm					
(EN 10111 - EN 10025) Aceros HSS (EN 10149 - EN 10268)	Cuadrado	Co ostudio do vichilidad	≤ 4 mm				
Aceros AHSS (EN 10338)	Rectangular	ch estodio de Vidbilidad					

Welded carbon steel tubes

Hardened tubes

Induction quenching is based on heating the material by passing it through a high-density magnetic field. The heating penetration is a direct function of the working frequency. A precise control over this allows to ensure a perfect homogeneity of the quenching in the whole section. The use of Mn-B alloyed steels guarantees a high level of impact energy absorption, a property of vital importance in some parts, such as anti-intrusion reinforcements for vehicle doors.

	Product Range							
	Ø (OD)	Wall thickness	Length	Tolerance				
Range	18 - 40 mm	1,40 - 3,50 mm	250 - 1.250mm Tolerances: ±1mm (standard) (±0,50mm narrow) (±0,30mm precision)	1- According to standard required (EN 10305-3, NES M2022) or customer specification. 2- For raw material apply EN 10083-3, PSA B533830, Renault RNT 11-04-822, Nissan M2201				

Mechanical Properties on tube. Tensile test acc. ISO 6892-1								
Standard	Grade	Rp(0,2) MPa	Rm MPa	A(5)%	min. HRC(*)			
EN 10305-3	Tubo 22MnB5	≥1100	≥1450	≥ 5	46			
NES M2022	STAM 1470	≥ 1080	≥1470	≥ 5	46			
RNT 11-04-822	22MnB5F-RNT	1000-1250	1300-1650	≥ 4,5	43			
PSA B533830	22MnB5-PSA	≥ 950	≥1300	≥6	43			
EN 10305-3	Tubo 26MnB5	≥1200	≥1550	≥ 4	47			
EN 10305-3	Tubo 30MnB5	≥1300	≥1650	≥4	48			



*Based on EN 10083-3. Typical values from steel mill.

Surface condition	The surface is free from marks and scratches. Slightly oiled.				
Testing methods	Before quenching process: Eddy current ISO 10893-2 (NDT) only for weld seam Flattening test acc. ISO 8492 Drift-expanding test acc. ISO 8493.	After quenching process: Hardness test (HRC).			
Remarks	Further requirements to the above details should be appre	oved with a feasibility study.			

• Headrests

Product Range								
	Range diameter	Tolerance		Thickness range	Tolerance			
ø (OD)	12 - 16 mm.			1,00 to 1,25 mm	±0,05 mm			
		± 0,06 mm.	Wall thickness	1,26 to 1,50 mm	±0,06 mm			
				1,50 to 2,00 mm	±0,08 mm			
				2,00 mm or above	±0,10 mm			

ID (inner ø) tolerance

Total range of requested tolerance, will be 0,10 mm plus twice the wall thickness tolerance and in direct relation to OD and its tolerance

	Mechanical Properties . Tensile test acc. ISO 6892-1										
Standard	Grade	Rp(0,2)MPa	Rm MPa	A(5)%	Standard	Grade	Rp(0,2)MPa	Rm MPa	A(5)%		
	E235+CR1	≥ 235	≥ 390	≥7		HCT590X (CR330Y590T-DP)	≥ 650	≥ 700	≥12		
	E275+CR1	≥ 275	≥ 440	≥6	EN 10305-3	E600HRF	≥ 690	≥ 780	≥12		
	E320+CR2	≥ 690	≥ 780	≥19	(VDA 239-	E600HRF-ED®	≥610	≥ 700	≥14		
ED 10305-3	E370+CR2	≥ 370	≥ 450	≥15	100)		≥ 650	≥ 800	≥7		
CI1 T0000-0	E420+CR2	≥ 420	≥ 490	≥12		(CR4401/801-DP)					
	E500+CR2	≥ 500	≥ 540	≥10		STKM-470	≥ 275	≥470	≥10		
	5550×602		. 500	. 10	TOYOTA	STKM-650	≥ 500	≥650	≥10		
	E550+CR2	≥ 550	≥ 590	210	BSDG3156	STKM-750	≥ 600	≥750	≥10		
	E600+CR2	≥ 600	≥ 640	≥6		STKM-850	≥650	≥800	≥10		
	Delivery	condition: +	CR2			Delivery conditi	on: +CR2				
Chemical c	omposition	According	According standards.								
Surface condition		The surfa Roughnes	The surface free from marks and scratchs. Cut to length tube deburred and washed. Roughness Ra \leq 0,6µm (Rz \leq 4µm)								
Straigthness The type with higher straightness levely maximum bending of 1 mm/m											

Straightiess	The tobe with higher straightness level, maximum behang of 1 hillion.
Weld bead	Outer darker welding seam available, for computer vision tube positioning systems.
Testing methods	Eddy current ISO 10893-2 (NDT) only for weld seam. Flattening test acc. ISO 8492 Drift-expanding test acc. ISO 8493 Bening test (up to 180°) (only after feasibility study
Remarks	Further requirements to the above detailed, should be approved with a feasibility study.

Special grades

In our permanent objective of providing important technological improvements, the company as a whole is focused on R&D activities to develop new solutions and products.

"Normal" and "Extraductile" products are shown as a solution, given the perception that DP materials intended for headrests cause difficulties in the processes due to their limited plasticity.

These are the fruit of years of experience added to a lot of research, and thanks to the close and constructive collaboration we have with steel manufacturers. These products always exceed regulatory requirements.



Extraductile

E600HRF-ED

The Extraductile tube allows double bending with close bends and lower bending radii. The deformation and wall reduction are lower. The surface finishing maintains its quality. This means less wear on the tools and it behaves better when deforming it.

Normal E600 HRF

The Normal tube allows a bending of the tube with a medium radius and a minimum deformation, maintaining the quality of surface finishing and enough wall thickness.

⁷ Finitube[®]

GPT manufactures Finitube with great technical care from the beginning to the end of the process, using our knowledge acquired after more than 20 years manufacturing this type of tube.

The FINITUBE® range provides the best surface finishing for those products that, due to their functionality and final use, are intended for components of high aesthetic quality, such as chrome and nickel plating, metallic paint, etc.

The use of raw materials with suitable surfaces, hard metal rollers in the milling of the tube, special care from the reception of the coils to the hand-ling before dispatch... a lot of technical care that, added to the experience of GPT's manufacturing staff, makes FINITUBE® a product with exceptional finishing.



Surface conditions

 $\begin{array}{l} \mbox{Surface free from marks and scratchs.} \\ \mbox{Roughness: } Ra \leq 1 \ \mu m \ (Rz \leq 4 \mu m). \\ \mbox{Suitable for subsequent surface treatments such as chrome, nickel, metallic paints...} \end{array}$

Ductitube[®]

Based on our own technology, DUCTITUBE® offers a list of optimised mechanical properties that allows the user to replace other tubes (standard/annealed) guaranteeing the required level of conformability and obtaining a relevant cost reduction.

The DUCTITUBE® range of products, a trademark registered by Gonvarri Precision Tubes, is the result of a threeyear research project supported by the Spanish Ministry of Science and Technology through the Center for the Development of Industrial Technology (CDTI). The use of an exclusive raw material is the starting point complemented by the application of new forming and welding techniques that minimise hardness and the thermal effect. The internal scarfing option offers significant improvements in welding behaviour by reducing the stress caused by some forming operations.

	Product Range									
Dagag		Ø (OD)		wall thickness		length to		tolerances and others dimensions		
Kunge	18	- 35 n	nm.	up to 2 mm.		to 7.000 mm.		acc. EN 10305-3		
Inner welding seam			Inner Optio	o feasibility						
	Шe	echani	cal Propertie	s . Tensile test c	icc. ISO 6	892-1				
Standard	Grade	e	Rp(0,2) MPa	Rm MPa	A%	Equivalent EF	10305	Chemical composition		
	E195[E195DF		300 - 400	≥ 28	E195+N		acc. to ED 10305-3		
EN 10305-3	E235[235DF ≥ 2		340 - 480	≥ 25	E235+N				
DF: Ductitbe®	E275[DF	≥ 275	410 - 550	≥ 21	E275+	Π			
	E355[DF	≥ 355	490 - 630	≥19	E355+	Π			
Testing methods			Eddy curre Flattening Drift-expa Beading to	ent ISO 10893-2 I test acc. ISO 84 nding test acc. I est acc. to FLINS	? (NDT) or •92 SO 8493 A interna	nly for weld sear I procedure.	n.			
Remarks:		Furt	her requirer	nents to the ab	ove deta	iled, should be (approved	with a feasibility study.		

The DUCTITUBE® range of products, a trademark registered by Gonvarri Precision Tubes, is the result of a three-year research project supported by the Center for the Development of Industrial Technology (CDTI).

The use of exclusive raw materials is the starting point complemented by the application of new forming and welding techniques that minimise strain hardness and the thermal effect.







Rectangular tubes



Stainless steel tubes

We offer a wide range of tubular products made of ferritic, austenitic and duplex steels, welded using laser technology, which includes round tubes (EN 10269-2) with a diameter between 25 and 104 mm and their derivative square and rectangular shapes (EN 10305-5). The markets to which our stainless products are destined include the automotive industry, construction (structural and decorative elements), urban and metallic furniture, the food and the pharmaceutical sectors, etc. Within the automotive sector, we focus on pipes for exhaust systems.



Dimensional tolerances for round, square and rectangular tubes

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Stainless steel tubes

Round products

	Basic standards applicable to stainless steel tubular products							
Standard	Description							
EN 10296-2	Welded circular steel tubes for mechanical and general engineering purposes. Technical delivery conditions.							
EN10305-5	Steel tubes for precision applications. Technical delivery conditions. Welded and cold sized square and rectangular tubes.							
ISO 1127	Stainless steel tubes. Dimensions, tolerances and conventional masses per unit length.							
EN10219-2	Cold formed welded structural hollow sections of non-alloy and fine grain steels. Tolerances, dimen-sions and sectional properties.							

Material grades available for the manufacturing of continuous welded tube										
Grades EN	AISI	Rp 0,2 mín ⁽⁴⁾ (∏/mm²)	Rm mín (N/mm²)	ብ ₈₀ (% L ⁽²⁾	6) min T ⁽³⁾	Intergranular corrosion resistance				
1.4362	2304	400	600	20	-	Yes				
1.4462	2205	450	700	22	-	Yes				
1.4410	2507	500	800	15	-	Yes				
1.4301	304	195	500	40	35	Yes (1)				
1.4307	304L	180	470	40	35	Yes				
1.4401	316	205	510	40	30	Yes (1)				
1.4432	316L	190	490	40	30	Yes				
1.4541	321	200	500	35	30	Yes				
1.4016	430	240	430	20	18	Yes ⁽¹⁾				
1.4509	441	230	430	18	16	Yes				
1.4510	439	230	420	23	21	Yes				
1.4511	430Ti	240	430	20	18	Yes				
1.4512	409	210	380	25	23	По				

1 Normally, this requirement is not complied in sensitized condition or gross welding. 2 Lengthwise.

Surface finishes

Available surface finishes for square and rectangular tube						
Standard	Description					
Normal	Machine raw (gross welding seam).					
Machined	Outside welding seam removed.					
Satin finish	Belt grinded.					

³ Transverse. 4 Conventional yield limit.

• Stainless steel tubes



Square tube

1	Square tube (mm.)									
	đ	Toloranco		Wall thickness T (mm)						
┛	Ø	TOIEIGILE	0,8	1	1,2	1,5	2	2,5	3	4
	20x20	±0,20								
	25x25	±0,25								
	30x30	±0,25								
	40x40	±0,30								
	50x50	±0,30								
	60x60	±0,35								

Rectangular tubes

Τ

	Rectangular tubes (mm.)										
	Ø	Tolemore	Wall thickness T (mm)								
*	, p	roleronee	0,8	1	1,2	1,5	2	2,5	З	4	
	30x10	±0,25									
	30x20	±0,25									
	40x10	±0,30									
	40x20	±0,30									
	40x30	±0,30									
	50x20	±0,30									
	50x30	±0,30									
	60x20	±0,35									
	60x40	±0,35									
	80x40	±0,50									



Dimensional tolerances for round tubes

EN 10296-2 ISO 1127	Dimensional tolerances for round tube						
Туре	Range	Class	Values	Representation			
Outside diameter	Commonly obtained	D3	±0.75% 0.3 mm				
(168.3 mm)	Narrow	D4	±0.5% 0.10 mm				
	According to Standard	T3	±10% 0.20 mm				
Wall thickness	Commonly obtained	T4	±7.5% 0.15 mm				
	Under request and surcharge	e T5	±5% 0.10 mm				
Ovality	The same than outside diameter						
	5.5.5	Normal	0.0020 [.] L				
Straightness	33.7	Variada	0,0015 [.] L	e			
	Ø 33.7	-	As per agreement				
	Normalized	-	-0 +100 mm				
	Varied	-	As per agreement				
Length		L 6000 mm	-0 +5 mm	L			
	Exact	6000 < L 12000 mm	-0 +10 mm				
		L > 12000 mm	0 / + As per agreement				
		Normal	0,05T+0,1 mm				
Welding seam height T 8mm	Laser —	Rolled	0	Ac			
	TIG	Normal	0,10T+0,3 mm				

Dimensional tolerances for square and rectangular tubes

EN 10305-5 EN 10219-2 ISO 1127	Dimensior	Dimensional tolerances for square and rectangula				
Туре	Range	Values	Representation			
	T 1,5 mm	± 0,15				
Wall thickness	T > 1,5 mm	± 0,1*T o ±0,35, the smallest	→ T			
Straightooss	Side 30 mm	0,0025*L				
Straightness	Side > 30 mm	0,0015*L	¢			
Squareness of sides	-	±1°	e			
	B ó H 30 mm	3 mm				
Twist	B ó H > 30 mm	B/10 ó H/10				
	L = 6000 mm	-0 + 100 mm				
	500 mm	As per agreement				
Length	500 - 2000 mm	-0 + 3 mm	└──── ┝─────			
	2000 - 5000 mm	-0 + 5 mm				
	5000 - 8000 mm	-0 + 10 mm				
	> 8000 mm	As per agreement				
Welding seam height (laser)	T 2,5 mm	1,5T	Ac			
T 8mm	4,0 T > 2,5 mm	2,2T				
Corner radius	T 2,5 mm	1,5T	$ \xrightarrow{C_1} R \xrightarrow{C_2} C_2 $			
	4,0 T > 2,5 mm	2,2T				
Concavity	-	Included in the tolerances of B and H				

T

В

Т





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Our main objective is to continue expanding our range of precision welded steel tubes to help our clients grow in their projects, and provide global solutions for our clients. At Gonvarri Precision Tubes we are committed to offering our clients a comprehensive service, delivering the final part according to the specifications of each project.

Integrating new processes that add value to our product.



Deformation processes Page 34



Own-manufactured rolled strips Page 35



Circular saw blade cut-to-length									
Toler	ances	Length	Thicknesses	Ø (mm)					
Туре	Value (mm)	Range (mm).	Range (mm)	Range (mm)					
Wide / standard	±1,00	270 - 4000		12-65					
Narrow	±0,50	30 - 3000	0,6 - 4,0	8 - 70					
Precision	±0,20	30 - 2000		10-70					



Chnology Laser cutting and drilling

Ö 🔊

Laser cutting and drilling									
Tole	erances	Length	Thicknesses	Ø (mm)					
Туре	Value (mm)	Range (mm).	Range (mm)	Range (mm)					
Wide / standard	±0,70	5 - 3500							
Narrow	±0,30	5 - 2000	0,5 - 8,0	12 - 152					
Precision	±0,10	5 - 1000							

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Additional processes



We apply deformations in the tubes, either by reductions / expansions at the tube ends, or using dies and presses to directly supply to the assembly plant, without the need for additional processing.

Cold deformation pressing section, specially developed for sagging and other deformations of cross car beams and other parts.

Deformations on demand

The commitment of Gonvarri Precision Tubes is to satisfy all our clients to the fullest by offering the best possible service; that is why we are always willing to study any possibility of carrying out additional deformation processes with the aim of giving maximum support to our clients.

Expansion, reduction and pressing



Bending



Marking



Own-manufactured rolled strips Recalibration of strips

Despite the good tolerances currently achieved by the most advanced steel mills in hot-rolled steels, there are numerous applications where the requirements of high dimensional precision are paramount to obtain conforming parts, which is why they require more precise tolerances.

Gonvarri Precision Tubes offers recalibration processes for strips up to 6 mm thick in our rolling facilities, where our technology allows the following precision ranges to be guaranteed. The recalibration process offers the following advantages:

- Achieve a precise thickness tolerance.
- Achieve a slight surface hardening that eases cutting and stamping operations, which increases the fine cut area and reduces the sheer area. In this way, the notch effect in the stamping, which is produced by microcracks that leave an excessive sheer area, is minimised.
- Improve the surface appearance of pickled materials.

Ranges of accuracy				
Final thickness (mm)	Minimum tolerance			
1,5 ≤ t ≤ 2,5	±0,04 mm			
2,5 < t ≤ 4,5	±0,05 mm			
4,5 < t ≤ 6,0	±0,06 mm			

Rugosity - Ra				
Description	Value			
Rough	Ra > 1,0 µm			
Matte (comercial FINISH)	0,6 < Ra ≤ 1,0 µm			
Smooth	0,25 < Ra ≤ 0.6 µm			
Polished	Ra ≤ 0,25 µm			

Rounded edges in thicknesses from 1.5 - 5 mm and widths from 8 - 50 mm.

EN 10139		Cold rolled uncoated mild steel narrow strip for cold forming (<600 mm)										
Grade	Supply Condition	Symbol		Rm (N/mm²)	F A ₈₀ A	¶ (%) m I₅₀ L₀=5	in. 5′65√S₀	Max. vo C	ilue in t Mn	housa S	ndth % P	Equival. DIN 1624
DC01	Annealed	A	-	270÷390	28	30	32					St 2 G
	Skin passed	LC	≤ 280	270÷410	28	30	32					St 2 LG
		C290	200÷380	290÷430	18	20	24					St 2 K32
		C340	≥ 250	340÷490	-	-	-	120	600	45	45	
		C390	≥ 310	390÷540	-	-	-				-	St 2 K40
	Hardened	C440	≥ 360	440-590	-	-	-					
		C490	≥ 420	490÷640	-	-	-					St 2 K50
		C590	≥ 520	590÷740	-	-	-					St 2 K60
		C690	≥ 630	≥ 690	-	-	-					St 2 K70
DC03	Annealed	A	-	270÷370	34	36	37	100 4				St 3 G
	Skin passed	LC	≤ 240	270÷350	34	36	37			35	35	St 3 LG
	Hardened	C290	210÷355	290÷390	22	24	26		450			St 3 K32
		C340	≥ 240	340÷440	-	-	-					
		C390	≥ 330	390÷490	-	-	-					St 3 K40
		C440	≥ 380	440÷540	-	-	-					
		C490	≥ 440	490÷590	-	-	-					St 3 K50
		C590	≥540	≥ 590	-	-	-					St 3 K60
DCO4	Annealed	A	-	270÷350	38	40	40					St 4 G
	Skin passed	LC	≤ 280	270÷350	38	40	40					St 4 LG
	Hardened	C290	220÷325	290÷390	24	26	28					St 4 K32
		C340	≥ 240	340÷440	-	-	-	80	400	30	30	
		C390	≥ 350	390÷490	-	-	-					St 4 K40
		C440	≥ 400	440÷590	-	-	-					
		C490	≥ 460	490÷590	-	-	-				-	St 4 K50
		C590	≥ 560	590÷690	-	-	-					St 4 K60
DC05	Skin passed	LC	≤ 180	270÷330	40	42	42	60	350	25	25	



Steel grades used in Gonvarri Precision Tubes

Coils and strips from steel industry products						
STANDARD	Steel grodes	Description				
EN 10111	DD11 to DD14	Continuously hot rolled low carbon steel sheet and strip for cold forming				
EN 10025	S235JR - S2375JR - S355JR	Hot rolled products of structural steels				
EN 10132-3/-4	"C45E to C60E C55S to C85S"	Narrow cold steel strip for heat treatment. Steels for quenching and tempering				
EN 10149	S315MC to S700MC	Hot rolled flat products made of high yield stren steels for cold forming				
EN 10083-3	20MnB5 - 30MnB5	Mn-B alloyed steels for quenching and tempering				
EN 10130	DC01 to DC06	Cold rolled low carbon steel flat products for cold forming				
EN 10268	HC260LA to HC500LA	Cold rolled steel flat products with high yield strength steel for cold forming				
EN 10338 (EN 10346 for coated steels)	DUAL PHASE STEELS (X)					
	TRIP STEELS (T)	High-strength multiphase steels with high yield strength for cold forming				
	COMPLEX PHASE (C)					
	MARTENSITIC (M)					
	DX51D to DX54D	Continuously hot-dip coated steel flat products				
EN 10346	S220GD to S550GD	Continuously hot-dip coated steel flat products of structural steels				
	HX260LAD to HX550LAD	Continuously hot-dip coated steel flat products with hiegh yield strength for cold forming				
	"1.4310 - 1.4301 - 1.4307 1.4401 - 1.4432 - 14541"	Austenitic stainless steels				
ED 10000 2	"1.4512 - 1.4016 - 1.4511 1.4510 - 1.4509"	Ferritic stainless steels				
CI1T0088-5	1.4021 - 1.4116	Martensitic stanless steels				
	1.4362 - 1.4462 - 1.4410	Duplex stainless steel				

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Packaging

Tube bundle



Tube bundle on pallets



Plastic container





Cardboard box on pallets



Metallic container



Packaging on demand











Polígono Industrial Cancienes 33470 Corvera, Asturias. Spain T. +34 98 512 82 00 info@gonvarri.com www.gonvarri.com



Ctra. Ibi-Alicante, Km. 1,5 03440 IBI (Alicante) - Spain PO box 51 / Apdo. 51 T. +34 96 555 29 36 info@flinsa.com www.flinsa.com

