



# CENA

**BUTT  
WELDING  
FITTINGS**  
VIRGILIO CENA  
E FIGLI S.P.A.

**CENA will have fun:**

providing a challenging and supportive environment in which people are motivated to succeed together;

becoming a preferred supplier in all butt welding fitting markets worldwide, renowned for providing technically superior, cost-effective products;

developing sustainable and profitable partnerships with all its key customers and suppliers globally.

**BUTT  
WELDING  
FITTINGS**  
VIRGILIO CENA  
E FIGLI S.P.A.



## CORPORATE NAME

Virgilio Cena & figli S.p.A.

## ESTABLISHED IN

1957

## ADDRESS

via Oberdan 39 25128 Brescia Italy  
t. +39.030.398561 f. +39.030.398646

## PRODUCTION CAPACITY

15.000 ton/year

## AREA

total area 60.000 m<sup>2</sup>  
covered area 27.750 m<sup>2</sup>  
offices 800 m<sup>2</sup>

# VIRGILIO CENA E FIGLI S.P.A.

## HISTORY

Founded in 1957, VIRGILIO CENA & FIGLI S.p.a. is specialized in the manufacturing of BW fittings from seamless and welded carbon and alloy steel pipes. With a total area of 60.000m<sup>2</sup> of which 27.750m<sup>2</sup> covered, the production capacity is 15.000 ton/year. CENA operates primarily in Europe with an increasing collaboration on international markets. Certifications obtained in the petrol-chemical, refinery, oil & gas fields, power stations and heat and energy generation sectors permit us to better service our clients.

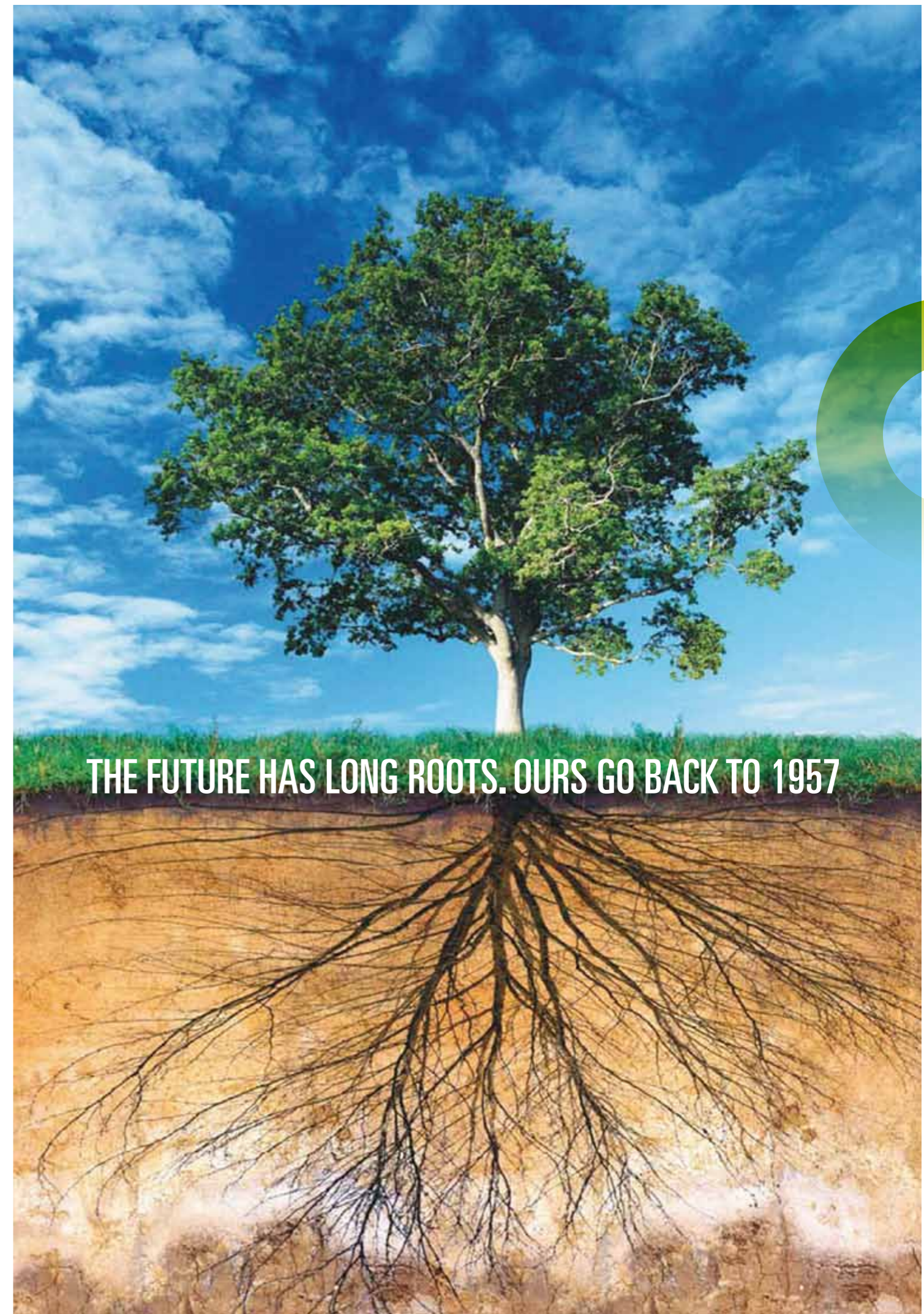
## STORIA

Fondata nel 1957, la società VIRGILIO CENA & FIGLI S.p.a. è specializzata nella fabbricazione di raccordi BW ricavati da tubo senza saldatura e saldato in acciaio al carbonio e basso legati. Con un'area totale di 60.000m<sup>2</sup> di cui 27.750 m<sup>2</sup> coperti, la capacità produttiva è di 15.000 ton/anno. La CENA opera principalmente in Europa con collaborazioni crescenti sui mercati internazionali. Le certificazioni ottenute nei settori petrolchimici, raffinerie, oil & gas e di generazione di calore e d'energia ci permettono di meglio servire i nostri clienti.



## ENVIRONMENTAL COMPANY

VIRGILIO CENA & FIGLI S.p.a. produces more energy than it uses thereby assuring a zero environmental impact.  
(Updated to 2009)



THE FUTURE HAS LONG ROOTS. OURS GO BACK TO 1957



# AMERICAN STANDARD

## ASME B16.9



MATERIAL RANGE	8
PRODUCT RANGE	9
SHORT RADIUS ELBOWS	10
LONG RADIUS ELBOWS	11
ELBOWS 2.5D	14
ELBOWS 3D	15
ELBOWS 5D	16
CONCENTRIC REDUCERS	17
ECCENTRIC REDUCERS	19
EQUAL TEES	21
REDUCING TEES	23
CAPS	25
BUTTWELDING ENDS	26
PRESSURE EQUIPMENT DIRECTIVE (PED)	27
CERTIFICATIONS	27
STEEL GRADES FOR PIPES MOSTLY USED BY CENA TO PRODUCE SEAMLESS ELBOWS	49
GENERAL SALES CONDITIONS	50

# MATERIAL ASTM/ASME

## ASTM/ASME A/SA 234

WPB WPC WP1 WP11 WP12 WP22 WP5

## MSS SP75/ASTM A 860

WPHY42 WPHY52 WPHY60 WPHY65 WPHY70

## ASTM/ASME A/SA 420

WPL6

## ASTM/ASME A/SA 234

WP9 WP91

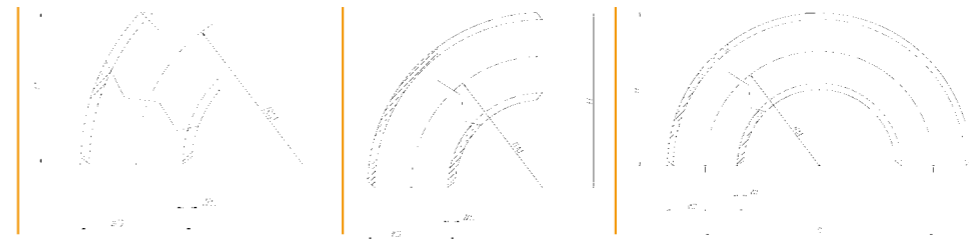
MORE EXTENSIVE RANGE UPON REQUEST



SHORT RADIUS ELBOWS 1" – 24"  
LONG RADIUS ELBOWS 1" – 28"  
3D ELBOWS 1" – 16"  
5D ELBOWS 1" – 16"



SHORT RADIUS ELBOWS 1" – 8"  
LONG RADIUS ELBOWS 1" – 8"  
3D ELBOWS 1" – 8"



# ASTM/ASME PRODUCTION RANGE SUMMARY

## ASME ELBOW RANGE

** *	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						
26																						
27																						
28																						
29																						
30																						
31																						
32																						
33																						

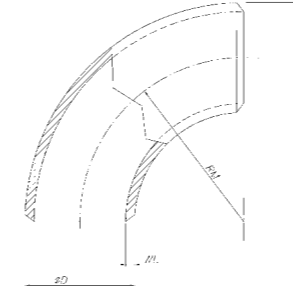
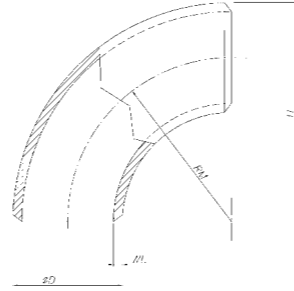
\* Diameter (" and mm) \*\* Wall thickness (mm)

Legend: Yellow = 1D, 1.5D; Orange = 1D, 1.5D, 3D; Red = 1D, 1.5D, 3D, 5D

## ASME FITTING RANGE

	FROM	TO
<b>Concentric Reducers</b>	3/4" x 1/2" (WT 2.87 x 2.77)	24" x 20" (WT 12.70 x 12.70)
<b>Eccentric Reducers</b>	1" x 3/4" (WT 3.38 x 2.87)	24" x 20" (WT 12.70 x 12.70)
<b>Equal Tee</b>	1/2" x 1/2" (WT 2.77 x 2.77)	24" x 24" (WT 12.70 x 12.70)
<b>Reduced Tee</b>	1/2" x 3/4" (WT 2.87 x 2.77)	24" x 20" (WT 12.70 x 12.70)
<b>Caps</b>	1" (WT 3.38)	24" (WT 12.7)

**SHORT RADIUS SEAMLESS ELBOWS**  
(RADIUS = 1)  
ASME B16.9

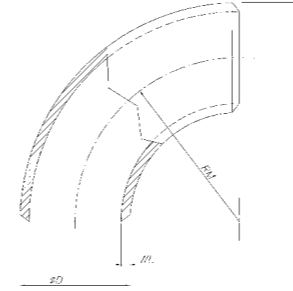
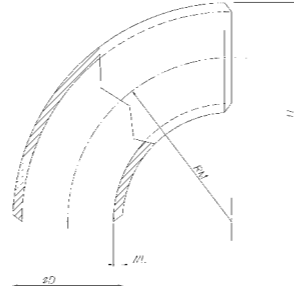


**LONG RADIUS SEAMLESS ELBOWS**  
(RADIUS = 1.5)  
ASME B16.9

D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.
1"	Std	33,40	3,38	32,60	35,00	2,96	25	41	0,10
1.1/4"	Std	42,40	3,56	41,60	44,00	3,12	32	52	0,17
1.1/2"	Std	48,30	3,68	47,50	49,90	3,22	38	62	0,24
2"	Std	60,30	3,91	59,50	61,90	3,42	51	81	0,44
	Xs		5,54			4,85			0,60
	160		8,71			7,62			0,89
2.1/2"	Std	73,10	5,16	72,30	74,70	4,52	64	100	0,86
3"	Std	88,90	5,49	90,50	87,30	4,80	76	121	1,35
	Xs		7,62			6,67			1,83
	160		11,13			9,74			2,55
4"	Std	114,30	6,02	115,90	112,70	5,27	102	159	2,57
	Xs		8,56			7,49			3,56
	120		11,13			9,74			4,54
	160		13,49			11,80			5,37
5"	Std	141,30	6,55	139,70	143,70	5,73	127	197	4,34
	Xs		9,53			8,34			6,17
6"	Std	168,30	7,11	166,70	170,70	6,22	152	237	6,77
	Xs		10,97			9,60			10,20
	120		14,27			12,49			12,95
	160		18,24			15,96			16,12
8"	20	219,10	6,35	217,50	221,50	5,56	203	313	10,60
	30		7,04			6,16			11,70
	Std		8,18			7,16			13,60
	Xs		12,70			11,11			20,60
10"	20	273,00	6,35	269,80	277,00	5,56	254	391	16,70
	30		7,80			6,83			20,30
	Std		9,27			8,11			24,10
	Xs		12,70			11,11			32,50
12"	20	323,90	6,35	320,70	327,90	5,56	305	467	23,80
	30		8,38			7,33			31,20
	Std		9,53			8,34			35,30
	40		10,31			9,02			38,20
14"	Xs	355,60	12,70	352,40	359,60	11,11	356	533	46,70
	10		6,35			5,56			30,60
	20		7,92			6,93			37,90
	Std		9,53			8,34			45,40
16"	Xs	406,40	12,70	403,20	410,40	11,11	406	610	60,00
	10		6,35			5,56			40,00
	20		7,92			6,93			50,00
	Std		9,53			8,34			59,50
24"	10	609,60	6,35	606,40	613,60	5,56	610	914	90,50
	Std		9,53			8,34			135,00
	Xs		12,70			11,11			179,00

D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.
1/2"	Std	21,3	2,77	20,5	22,9	2,42	38	48	0,08
	Xs		3,73			3,26			0,10
	160		4,75			4,16			0,12
	XXs		7,47			6,54			0,15
3/4"	Std	26,7	2,87	25,9	28,3	2,51	29	43	0,09
	Xs		3,91			3,42			0,11
	160		5,54			4,85			0,12
	XXs		7,82			6,84			0,17
1"	Std	33,4	3,38	32,6	35	2,96	38	56	0,15
	Xs		4,55			3,98			0,20
	160		6,35			5,56			0,26
	XXs		9,09			7,95			0,33
1.1/4"	Std	42,4	3,56	41,6	44	3,12	48	70	0,26
	Xs		4,85			4,24			0,34
1.1/2"	Std	48,3	3,68	47,5	49,9	3,22	57	83	0,37
	Xs		5,08			4,45			0,49
	160		7,14			6,25			0,65
	XXs		10,16			8,89			0,86
2"	Std	60,3	3,91	59,5	61,9	3,42	76	106	0,65
	Xs		5,54			4,85			0,90
	160		8,71			7,62			1,33
	XXs		11,07			9,69			1,61
2.1/2"	Std	73,1	5,16	72,3	74,7	4,52	95	132	1,29
	Xs		7,01			6,13			1,71
	160		9,53			8,34			2,23
	XXs		14,02			12,27			3,06
3"	20	88,9	3,96	87,3	90,5	3,47	114	159	1,50
	Std		5,49			4,80			2,03
	Xs		7,62			6,67			2,74
	160		11,13			9,74			3,83
3.1/2"	XXs	101,6	15,24	100	103,2	13,34	133	184	4,97
	Std		5,74			5,02			2,85
	Xs		8,08			7,07			3,91
	20		4,37			3,82			2,92
4"	Std	114,3	6,02	112,7	115,9	5,27	152	210	3,85
	Xs		8,56			7,49			5,35
	120		11,13			9,74			6,78
	160		13,49			11,80			8,03
	XXs		17,12			14,98			9,82

# LONG RADIUS SEAMLESS ELBOWS (RADIUS = 1.5)



# LONG RADIUS SEAMLESS ELBOWS (RADIUS = 1.5) ASME B16.9

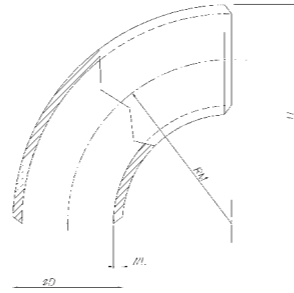
D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.
5"	Std	141,3	6,55	139,7	143,7	5,73	190	262	6,52
	Xs		9,53			8,34			9,26
	120		12,70			11,11			12,00
	160		15,88			13,90			14,70
	XXs		19,05			16,67			17,20
6"	20	168,3	4,78	166,7	170,7	4,18	229	313	6,50
	Std		7,11			6,22			10,20
	Xs		10,97			9,60			15,30
	120		14,27			12,49			19,50
	160		18,24			15,96			24,30
8"	XXs	219,1	21,95	217,5	221,5	19,21	305	414	28,50
	20		6,35			5,56			16,00
	30		7,04			6,16			17,60
	Std		8,18			7,16			20,40
	60		10,31			9,02			25,40
	Xs		12,70			11,11			30,90
	100		** 15,06			13,18			** 43,30
	120		18,24			15,96			43,30
	140		** 20,62			18,04			** 53,30
	XXs		** 22,23			19,45			** 53,30
10"	160	273,0	23,01	269,8	277	20,13	381	518	53,30
	20		6,35			5,56			24,99
	30		7,80			6,83			30,53
	Std		9,27			8,11			36,08
	Xs		12,70			11,11			48,79
	80		15,06			13,18			57,44
	100		** 18,24			15,96			** 79,60
	120		21,41			18,73			79,60
	140/XXs		** 25,40			22,23			** 103,10
	160		28,58			25,01			103,10
12"	20	323,9	6,35	320,7	327,9	5,56	457	619	35,70
	30		8,38			7,33			46,80
	Std		9,53			8,34			53,00
	40		10,31			9,02			57,30
	Xs		12,70			11,11			70,00
	60		14,27			12,49			78,20
	80		17,45			15,27			94,80
100	** 21,41	18,73	** 134,00						
12"	120/XXs	323,9	25,40	320,7	327,9	22,23	457	619	134,00
	140		** 28,58			25,01			** 171,00
	160		33,32			29,16			171,00

\*\* tapered from higher schedule

D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.						
14"	10	355,6	6,35	352,4	359,6	5,56	533	711	45,80						
	20		7,92			6,93			56,90						
	Std		9,53			8,34			68,10						
	40		** 11,13			9,74			** 90,00						
	Xs		12,70			11,11			90,00						
	80		19,05			16,67			132,00						
	100		** 23,80			20,83			** 187,91						
	120		27,76			24,29			187,91						
	140		** 31,75			27,78			** 235,86						
	160		35,71			31,25			235,86						
16"	10	406,4	** 6,35	403,2	410,4	5,56	610	813	74,58						
	20		7,92			6,93			74,58						
	Std		9,53			8,34			89,20						
	Xs		12,70			11,11			118,00						
	60		16,66			14,58			153,00						
	80		21,41			18,73			195,00						
	100		** 26,19			22,92			274,51						
	120		30,94			27,07			274,51						
	140		** 36,53			31,96			350,00						
	160		40,46			35,40			350,00						
18"	10	457,0	** 6,35	453,8	461	5,56	686	914	** 113,00						
	20		** 7,92			6,93			** 113,00						
	Std		9,53			8,34			113,00						
	30		** 11,13			9,74			** 150,00						
	Xs		12,70			11,11			150,00						
	40		14,27			12,49			168,00						
	60		19,05			16,67			197,15						
	80		23,80			20,83			243,63						
	20"		10			508,0			** 6,35	503,2	514,4	5,56	762	1016	** 140,00
			Std						9,53			8,34			140,00
Xs		12,70	11,11	186,00											
40		15,06	13,18	219,00											
60		** 20,62	18,04	** 372,00											
80		26,19	22,92	372,00											
Std		9,53	8,34	170,00											
22"	Xs	558,8	12,70	554	565,2	11,11	838	1118	225,00						
	10		** 6,35			5,56			** 202,00						
	Std		9,53			8,34			202,00						
24"	Xs	609,6	12,70	604,8	616	11,11	914	1219	268,00						
	30		** 14,27			12,49			** 366,00						
	40		17,48			15,30			366,00						
	60		24,59			21,52			634,00						
	80		30,94			27,07			634,00						
28"	10	711,0	7,92	706,2	717,4	6,93	1067	1423	230,00						
	Std		9,53			8,34			276,00						
	Xs		12,70			11,11			366,00						
30"	Std	762,0	9,53	757,2	768,4	8,34	1143	1524	317,00						
	Xs		12,70			11,11			421,00						
32"	Std	812,8	9,53	808	819,2	8,34	1219	1625	361,00						
	Xs		12,70			11,11			472,00						

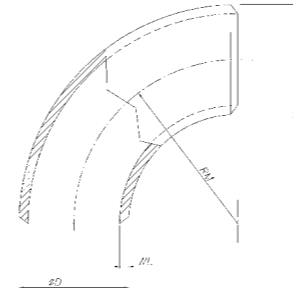
\*\* tapered from higher schedule

**R=2.5 D  
SEAMLESS  
ELBOWS  
ASME B16.9**



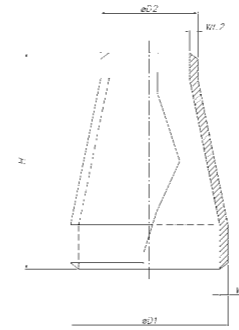
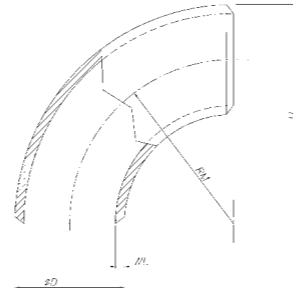
D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.				
1"	Std	33,4	3,38	32,6	35	2,96	72,5	89	0,28				
	Xs		4,55			3,98			0,37				
1.1/4"	Std	42,4	3,56	41,6	44	3,12	92,5	114	0,50				
	Xs		4,85			4,24			0,65				
1.1/2"	Std	48,3	3,68	47,5	49,9	3,22	107,5	132	0,68				
	Xs		5,08			4,45			0,91				
2"	Std	60,3	3,91	59,5	61,9	3,42	135	165	1,15				
	Xs		5,54			4,85			1,59				
3"	20	88,9	3,96	87,3	90,5	3,47	205	250	2,67				
	Std		5,49			4,80			3,64				
	Xs		7,62			6,67			4,92				
3.1/2"	Std	101,6	5,74	100,0	103,2	5,02	237	288	5,05				
	Xs		8,08			7,07			6,94				
	20		4,37			112,7			115,9	3,82	270	327	5,02
4"	Std	114,3	6,02	112,7	115,9	5,27	270	327	6,82				
	Xs		8,56			7,49			9,47				
	20		4,78			166,7			170,7	4,18	390	474	11,81
6"	Std	168,3	7,11	166,7	170,7	6,22	390	474	17,31				
	Xs		10,97			9,60			26,07				
	20		6,35			217,5			221,5	5,56	510	619	26,69
8"	30	219,1	7,04	217,5	221,5	6,16	510	619	29,49				
	Std		8,18			7,16			34,09				
	60		10,31			9,02			42,53				
10"	Xs	273,0	12,70	269,8	277	11,11	650	786	51,79				
	20		6,35			269,8			277	5,56	650	786	42,64
	30		7,80			269,8			277	6,83	650	786	52,09
12"	Std	323,9	9,27	320,7	327,9	8,11	775	937	61,56				
	Xs		12,70			11,11			83,24				
	20		6,35			320,7			327,9	5,56	775	937	60,54
14"	30	355,6	8,38	352,4	359,6	7,33	850	1028	79,38				
	Std		9,53			8,34			89,94				
	40		10,31			9,02			97,06				
16"	Xs	406,4	12,70	403,2	410,4	11,11	970	1173	118,65				
	10		6,35			403,2			410,4	5,56	970	1173	95,46
	20		7,92			403,2			410,4	6,93	970	1173	118,59
18"	Std	463,5	9,53	459,9	467,1	8,34	1067	1300	142,12				
	Xs		12,70			11,11			187,88				
	20		6,35			459,9			467,1	5,56	1067	1300	95,46

**R=3D  
SEAMLESS  
ELBOWS  
ASME B16.9**



D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.
2"	Std	60,3	3,91	59,5	61,9	3,42	152	182	1,30
	Xs		5,54			4,85			1,79
3"	20	88,9	3,96	87,3	90,5	3,47	229	278	2,98
	Std		5,49			4,80			4,06
	Xs		7,62			6,67			5,49
4"	20	114,3	4,37	112,7	115,9	3,82	305	362	5,68
	Std		6,02			5,27			7,70
	Xs		8,56			7,49			10,69
6"	20	168,3	4,78	166,7	170,7	4,18	457	541	13,84
	Std		7,11			6,22			20,29
	Xs		10,97			9,60			30,55
8"	20	219,1	6,35	217,5	221,5	5,56	610	720	31,92
	30		7,04			6,16			35,28
	Std		8,18			7,16			40,77
10"	60	273,0	10,31	269,8	277	9,02	762	898	50,87
	Xs		12,70			11,11			61,94
	20		6,35			269,8			277
12"	30	323,9	7,80	320,7	327,9	6,83	914	1078	61,06
	Std		9,27			8,11			72,17
	Xs		12,70			11,11			97,58
14"	20	355,6	6,35	352,4	359,6	5,56	1067	1245	91,67
	30		7,80			6,83			113,82
	Std		9,27			8,11			136,32
16"	40	406,4	11,13	403,2	410,4	9,74	1219	1422	158,47
	Xs		12,70			11,11			180,00
	10		6,35			403,2			410,4
18"	20	463,5	7,92	459,9	467,1	6,93	1300	1575	149,03
	Std		9,53			8,34			178,60
	Xs		12,70			11,11			236,11

**R=5D  
SEAMLESS  
ELBOWS  
ASME B16.9**

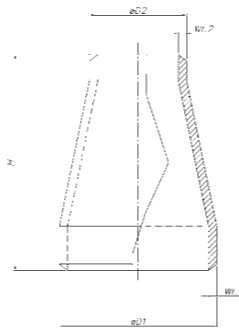


**SEAMLESS  
CONCENTRIC  
REDUCERS  
ASME B16.9**

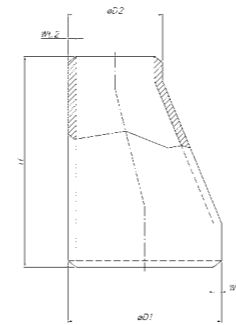
D O.D. INCHES	WT WT SCH.	D O.D. MM	WT WT MM	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	RADIUS MM.	H QUOTE	THEORETICAL WEIGHT 90° KG.	
2"	Std	60,3	3,91	59,5	61,9	3,42	254	284	2,17	
	Xs		5,54						4,85	2,99
3"	20	88,9	3,96	87,3	90,5	3,47	381	426	4,96	
	Std		5,49						4,80	6,76
	Xs		7,62						6,67	9,14
4"	20	114,3	4,37	112,7	115,9	3,82	508	565	9,45	
	Std		6,02						5,27	12,83
	Xs		8,56						7,49	17,81
6"	20	168,3	4,78	166,7	170,7	4,18	762	846	23,07	
	Std		7,11						6,22	33,83
	Xs		10,97						9,60	50,95
8"	20	219,1	6,35	217,5	221,5	5,56	1016	1126	53,17	
	30		7,04						6,16	58,76
	Std		8,18						7,16	67,91
	60		10,31						9,02	84,72
	Xs		12,70						11,11	103,17
10"	20	273,0	6,35	269,8	277	5,56	1270	1407	83,30	
	30		7,80						6,83	101,77
	Std		9,27						8,11	120,28
	Xs		12,70						11,11	162,64
12"	20	323,9	6,35	320,7	327,9	5,56	1524	1686	119,04	
	30		8,38						7,33	156,10
	Std		9,53						8,34	176,87
	40		10,31						9,02	190,87
	Xs		12,70						11,11	233,33
14"	10	355,6	6,35	352,4	359,6	5,56	1778	1956	152,75	
	20		7,92						6,93	189,66
	Std		9,53						8,34	227,16
	40		11,13						9,74	264,07
16"	10	406,4	6,35	403,2	410,4	5,56	2032	2235	199,96	
	20		7,92						6,93	248,42
	Std		9,53						8,34	297,72
	Xs		12,70						11,11	393,58

D O.D. INCHES	WT WT SCH.	D1 O.D. (1) MM	WT O.D. (2) MM	WT1 W.T. (1) MM	WT1 W.T. (2) MM	H HEIGHT MM.	THEORETICAL WEIGHT 90° KG.
1" x 3/4"	Std	33,40	26,70	3,38	2,87	51	0,14
	Xs			4,55	3,91		0,17
1.1/4" x 3/4"	Std	42,40	26,70	3,56	2,87	51	0,20
	Xs			4,85	3,91		0,23
1.1/4" x 1"	Std	42,40	33,40	3,56	3,38	51	0,20
	Xs			4,85	4,55		0,24
1.1/2" x 3/4"	Std	48,30	26,70	3,68	2,87	64	0,22
	Xs			5,08	3,91		0,30
1.1/2" x 1"	Std	48,30	33,40	3,68	3,38	64	0,24
	Xs			5,08	4,55		0,31
1.1/2" x 1.1/4"	Std	48,30	42,40	3,68	3,56	64	0,26
	Xs			5,08	4,85		0,33
2" x 1"	Std	60,30	33,40	3,91	3,38	76	0,37
	Xs			5,54	4,55		0,45
2" x 1.1/4"	Std	60,30	42,40	3,91	3,56	76	0,39
	Xs			5,54	4,85		0,53
2" x 1.1/2"	Std	60,30	48,30	3,91	3,68	76	0,41
	Xs			5,54	5,08		0,54
2.1/2" x 1.1/2"	Std	73,10	48,30	5,16	3,68	89	0,68
	Xs			7,01	5,08		0,86
2.1/2" x 2"	Std	73,10	60,30	5,16	3,91	89	0,73
	Xs			7,01	5,54		0,94
3" x 1.1/2"	Std	88,90	48,30	5,49	3,68	89	0,86
	Xs			7,62	5,08		0,99
3" x 2"	Std	88,90	60,30	5,49	3,91	89	0,91
	Xs			7,62	5,54		1,18
3" x 2.1/2"	Std	88,90	73,10	5,49	5,16	89	0,98
	Xs			7,62	7,01		1,29
4" x 2"	Std	114,30	60,30	6,02	3,91	102	1,44
	Xs			8,56	5,54		1,78
4" x 2.1/2"	Std	114,30	73,10	6,02	5,16	102	1,52
	Xs			8,56	7,01		1,90
4" x 3"	Std	114,30	88,90	6,02	5,49	102	1,59
	Xs			8,56	7,62		2,13
5" x 3"	Std	141,30	88,90	6,55	5,49	127	2,60
	Xs			9,53	7,62		3,55
5" x 4"	Std	141,30	114,30	6,55	6,02	127	2,72
	Xs			9,53	8,56		3,78
6" x 3"	Std	168,30	88,90	7,11	5,49	140	3,63
	Xs			10,97	7,62		5,04
6" x 4"	Std	168,30	114,30	7,11	6,02	140	3,72
	Xs			10,97	8,56		5,45
6" x 5"	Std	168,30	141,30	7,11	6,55	140	3,93
	Xs			10,97	9,53		5,72

**SEAMLESS  
CONCENTRIC  
REDUCERS**  
ASME B16.9



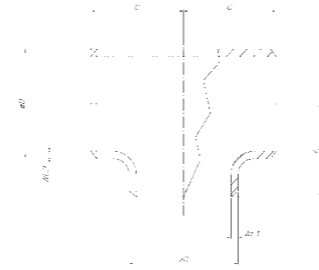
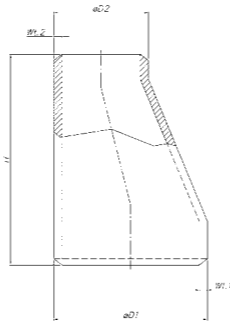
O.D. INCHES D	WT SCH.	O.D. (1) MM D1	O.D. (2) MM D2	WT. (1) MM WT1	WT. (2) MM WT2	HEIGHT MM. H	THEORETICAL WEIGHT 90° KG.					
8" x 4"	Std	219,10	114,30	8,18	6,02	152	5,95					
	Xs			12,70	8,56		8,44					
8" x 5"	Std	219,10	141,30	8,18	6,55		178	6,08				
	Xs			12,70	9,53			8,88				
8" x 6"	Std	219,10	168,30	8,18	7,11			203	6,31			
	Xs			12,70	10,97				9,26			
10" x 6"	Std	273,00	168,30	9,27	7,11				330	10,10		
	Xs			12,70	10,97					13,50		
10" x 8"	Std	273,00	219,10	9,27	8,18					356	10,50	
	Xs			12,70	12,70						14,20	
12" x 8"	Std	323,90	219,10	9,53	8,18						381	14,60
	Xs			12,70	12,70							17,00
12" x 10"	Std	323,90	273,00	9,53	9,27	508						15,20
	Xs			12,70	12,70							19,80
14" x 10"	Std	355,60	273,00	9,53	9,27		508					27,40
	Xs			12,70	12,70							36,10
14" x 12"	Std	355,60	323,90	9,53	9,53			508				28,80
	Xs			12,70	12,70							37,70
16" x 10"	Std	406,40	273,00	9,53	9,27				508			33,10
	Xs			12,70	12,70							43,70
16" x 12"	Std	406,40	323,90	9,53	9,53					508		34,30
	Xs			12,70	12,70							45,00
16" x 14"	Std	406,40	355,60	9,53	9,53						508	35,20
	Xs			12,70	12,70							46,30
18" x 12"	Std	457,00	323,90	9,53	9,53	508						40,50
	Xs			12,70	12,70							53,60
18" x 14"	Std	457,00	355,60	9,53	9,53		508					41,30
	Xs			12,70	12,70							54,50
18" x 16"	Std	457,00	406,40	9,53	9,53			508				42,70
	Xs			12,70	12,70							55,80
20" x 12"	Std	508,00	323,90	9,53	9,53				508			60,80
	Xs			12,70	12,70							79,90
20" x 14"	Std	508,00	355,60	9,53	9,53					508		61,30
	Xs			12,70	12,70							81,30
20" x 16"	Std	508,00	406,40	9,53	9,53						508	62,60
	Xs			12,70	12,70							82,60
20" x 18"	Std	508,00	457,00	9,53	9,53	508						64,50
	Xs			12,70	12,70							84,40
24" x 14"	Std	609,60	355,60	9,53	9,53		508					72,60
	Xs			12,70	12,70							95,80
24" x 16"	Std	609,60	406,40	9,53	9,53			508				72,60
	Xs			12,70	12,70							95,80
24" x 18"	Std	609,60	457,00	9,53	9,53				508			74,00
	Xs			12,70	12,70							97,60
24" x 20"	Std	609,60	508,00	9,53	9,53					508		75,80
	Xs			12,70	12,70							99,90



**SEAMLESS  
ECCENTRIC  
REDUCERS**  
ASME B16.9

O.D. INCHES D	WT SCH.	O.D. (1) MM D1	O.D. (2) MM D2	WT. (1) MM WT1	WT. (2) MM WT2	HEIGHT MM. H	THEORETICAL WEIGHT KG.					
1" x 3/4"	Std	33,40	26,70	3,38	2,87	51	0,14					
	Xs			4,55	3,91		0,17					
1.1/4" x 3/4"	Std	42,40	26,70	3,56	2,87		51	0,20				
	Xs			4,85	3,91			0,23				
1.1/4" x 1"	Std	42,40	33,40	3,56	3,38			64	0,20			
	Xs			4,85	4,55				0,24			
1.1/2" x 3/4"	Std	48,30	26,70	3,68	2,87				64	0,22		
	Xs			5,08	3,91					0,30		
1.1/2" x 1"	Std	48,30	33,40	3,68	3,38					76	0,24	
	Xs			5,08	4,55						0,31	
1.1/2" x 1.1/4"	Std	48,30	42,40	3,68	3,56						89	0,26
	Xs			5,08	4,85							0,33
2" x 1"	Std	60,30	33,40	3,91	3,38	89						0,37
	Xs			5,54	4,55							0,45
2" x 1.1/4"	Std	60,30	42,40	3,91	3,56		89					0,39
	Xs			5,54	4,85							0,53
2" x 1.1/2"	Std	60,30	48,30	3,91	3,68			89				0,41
	Xs			5,54	5,08							0,54
2.1/2" x 1.1/4"	Std	73,10	42,40	5,16	3,56				102			0,39
	Xs			7,01	4,85							0,53
2.1/2" x 1.1/2"	Std	73,10	48,30	5,16	3,68					102		0,68
	Xs			7,01	5,08							0,86
2.1/2" x 2"	Std	73,10	60,30	5,16	3,91						102	0,73
	Xs			7,01	5,54							0,94
3" x 1"	Std	88,90	33,40	5,49	3,38	127						0,86
	Xs			7,62	4,55							0,99
3" x 1.1/2"	Std	88,90	48,30	5,49	3,68		127					0,86
	Xs			7,62	5,08							0,99
3" x 2"	Std	88,90	60,30	5,49	3,91			127				0,91
	Xs			7,62	5,54							1,18
3" x 2.1/2"	Std	88,90	73,10	5,49	5,16				127			0,98
	Xs			7,62	7,01							1,29
4" x 2"	Std	114,30	60,30	6,02	3,91					140		1,44
	Xs			8,56	5,54							1,78
4" x 2.1/2"	Std	114,30	73,10	6,02	5,16						140	1,52
	Xs			8,56	7,01							1,90
4" x 3"	Std	114,30	88,90	6,02	5,49	140						1,59
	Xs			8,56	7,62							2,13
5" x 3"	Std	141,30	88,90	6,55	5,49		140					2,60
	Xs			9,53	7,62							3,55
5" x 4"	Std	141,30	114,30	6,55	6,02			140				2,72
	Xs			9,53	8,56							3,78
6" x 3"	Std	168,30	88,90	7,11	5,49				140			3,63
	Xs			10,97	7,62							5,04
6" x 4"	Std	168,30	114,30	7,11	6,02					140		3,72
	Xs			10,97	8,56							5,45
6" x 5"	Std	168,30	141,30	7,11	6,55						140	3,93
	Xs			10,97	9,53							5,72

**SEAMLESS  
ECCENTRIC  
REDUCERS**  
ASME B16.9

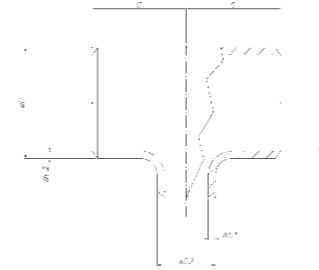
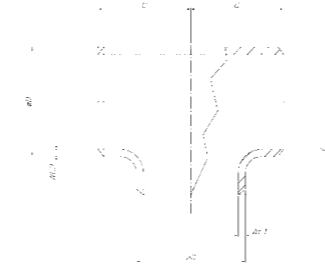


**SEAMLESS  
EQUAL  
TEES**  
ASME B16.9

O.D. INCHES D	WT WT SCH.	O.D. (1) MM D1	O.D. (2) MM D2	WT. (1) MM WT1	WT. (2) MM WT2	HEIGHT MM. H	THEORETICAL WEIGHT KG.					
8" x 4"	Std	219,10	114,30	8,18	6,02	152	5,95					
	Xs			12,70	8,56		8,44					
8" x 5"	Std	219,10	141,30	8,18	6,55		178	6,08				
	Xs			12,70	8,53			8,88				
8" x 6"	Std	219,10	168,30	8,18	7,11			203	6,31			
	Xs			12,70	10,97				9,26			
10" x 5"	Std	273,00	141,30	9,27	6,55				330	9,90		
	Xs			12,70	9,53					13,00		
10" x 6"	Std	273,00	168,30	9,27	7,11					356	10,10	
	Xs			12,70	10,97						13,50	
10" x 8"	Std	273,00	219,10	9,27	8,18						381	10,50
	Xs			12,70	12,70							14,20
12" x 6"	Std	323,90	168,30	9,53	7,11	508						14,10
	Xs			12,70	10,97							18,40
12" x 8"	Std	323,90	219,10	9,53	8,18		508					14,60
	Xs			12,70	12,70							17,00
12" x 10"	Std	323,90	273,00	9,53	9,27			508				15,20
	Xs			12,70	12,70							19,80
14" x 8"	Std	355,60	219,10	9,53	8,18				508			26,00
	Xs			12,70	12,70							34,90
14" x 10"	Std	355,60	273,00	9,53	9,27					508		27,40
	Xs			12,70	12,70							36,10
14" x 12"	Std	355,60	323,90	9,53	9,53						508	28,80
	Xs			12,70	12,70							37,70
16" x 10"	Std	406,40	273,00	9,53	9,27	508						33,10
	Xs			12,70	12,70							43,70
16" x 12"	Std	406,40	323,90	9,53	9,53		508					34,30
	Xs			12,70	12,70							45,00
16" x 14"	Std	406,40	355,60	9,53	9,53			508				35,20
	Xs			12,70	12,70							46,30
18" x 12"	Std	457,00	323,90	9,53	9,53				508			40,50
	Xs			12,70	12,70							53,60
18" x 14"	Std	457,00	355,60	9,53	9,53					508		41,30
	Xs			12,70	12,70							54,50
18" x 16"	Std	457,00	406,40	9,53	9,53						508	42,70
	Xs			12,70	12,70							55,80
20" x 12"	Std	508,00	323,90	9,53	9,53	508						60,80
	Xs			12,70	12,70							79,90
20" x 14"	Std	508,00	355,60	9,53	9,53		508					61,30
	Xs			12,70	12,70							81,30
20" x 16"	Std	508,00	406,40	9,53	9,53			508				62,60
	Xs			12,70	12,70							82,60
20" x 18"	Std	508,00	457,00	9,53	9,53				508			64,50
	Xs			12,70	12,70							84,40
24" x 14"	Std	609,60	355,60	9,53	9,53					508		72,60
	Xs			12,70	12,70							95,80
24" x 16"	Std	609,60	406,40	9,53	9,53						508	72,60
	Xs			12,70	12,70							95,80
24" x 18"	Std	609,60	457,00	9,53	9,53	508						74,00
	Xs			12,70	12,70							97,60
24" x 20"	Std	609,60	508,00	9,53	9,53		508					75,80
	Xs			12,70	12,70							99,90

O.D. INCHES D	WT WT SCH.	O.D. MM D	WT WT. MM	MIN. O.D. TOLERANCE	MAX. O.D. TOLERANCE	MIN. WT. TOLL.	C-MM	C+C-MM	THEORETICAL WEIGHT KG.
1/2"	Std	21,30	2,77	20,50	22,90	2,42	25	50	0,12
	Xs		3,73						
3/4"	Std	26,70	2,87	25,90	28,30	2,51	29	58	0,16
	Xs		3,91						
1"	Std	33,40	3,38	32,60	35,00	2,96	38	76	0,30
	Xs		4,55						
1 1/4"	160	42,40	6,35	41,60	44,00	5,56	48	96	0,42
	Std		3,56						
1 1/2"	160	48,30	6,35	47,50	49,90	5,56	57	114	0,90
	Std		3,68						
2"	160	60,30	7,14	59,50	61,90	6,25	64	128	1,07
	Std		3,91						
2 1/2"	160	73,10	8,74	72,30	74,70	7,65	76	152	2,27
	Std		5,16						
3"	160	88,90	9,53	87,30	90,50	8,34	86	172	3,63
	Std		5,49						
4"	160	114,30	11,13	112,70	115,90	9,74	105	210	6,19
	Std		6,02						
5"	160	141,30	13,49	139,70	143,70	11,80	124	248	11,80
	Std		6,55						
6"	160	168,30	15,88	166,70	170,70	13,90	143	186	19,90
	Std		7,11						
6"	120	168,30	10,97	166,70	170,70	9,60	143	186	17,21
	Std		14,27						
6"	120	168,30	18,24	166,70	170,70	15,96	143	186	31,10
	Std		7,11						

**SEAMLESS  
EQUAL  
TEES**  
ASME B16.9

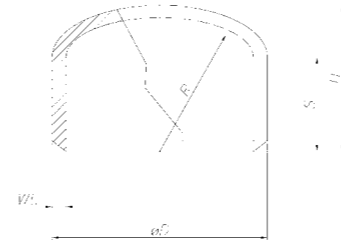
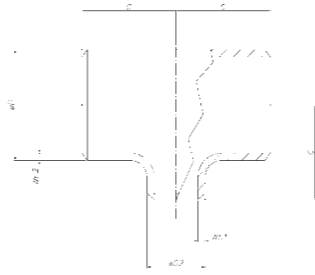


**SEAMLESS  
REDUCING  
TEES**  
ASME B16.9

O.D. INCHES D	WT SCH.	O.D. MM D	WT	MIN. O.D. TOLERANCE	MAX. O.D. TOLERANCE	MIN. WT. TOLL.	C-MM	C+C-MM	THEORETICAL WEIGHT KG.
8"	20		6,35			5,56			20,70
	30		7,04			6,16			22,14
	Std	219,10	8,18	217,50	221,50	7,16	178	356	20,45
	Xs		12,70			11,11			29,48
	120		18,24			15,96			44,55
10"	160		23,01			20,13			63,50
	20		6,35			5,56			31,23
	30		7,80			6,83			36,00
	Std	273,00	9,27	269,80	277,00	8,11	216	432	33,86
	Xs		12,70			11,11			44,15
12"	80		15,09			13,20			60,75
	120		21,41			18,73			83,70
	160		28,58			25,01			118,00
	20		6,35			5,56			39,06
	30		8,38			7,33			50,94
14"	Std	323,90	9,53	320,70	327,90	8,34	254	508	45,00
	Xs		10,31			9,02			63,45
	40		12,70			11,11			78,70
	60		14,27			12,49			85,50
	80		17,48			15,30			103,50
16"	120		25,40			22,23			135,00
	160		33,32			29,16			155,00
	20		7,92			6,93			75,60
	Std	355,60	9,53	352,40	359,60	8,34	279	558	72,60
	Xs		12,70			11,11			96,70
18"	20		7,92			6,93			90,00
	Std	406,40	9,53	403,20	410,40	8,34	305	610	90,30
	Xs		12,70			11,11			120,00
20"	Std	457,00	9,53	453,80	461,00	8,34	343	686	131,00
	Xs		12,70			11,11			139,00
24"	Std	508,00	9,53	503,20	514,40	8,34	381	762	151,20
	Xs		12,70			11,11			220,50
24"	Std	609,60	9,53	604,80	616,00	8,34	432	864	216,00
	Xs		12,70			11,11			315,00

O.D. INCHES D	WT SCH.	O.D. (1) MM D1	O.D. (2) MM D2	WT. (1) MM WT1	WT. (2) MM WT2	C-MM.	C+C-MM.	THEORETICAL WEIGHT KG.
3/4" x 1/2"	Std			2,87	2,77			0,16
	Xs	26,70	21,30	3,91	3,73	29	58	0,20
1" x 1/2"	Std			3,38	2,77			0,30
	Xs	33,40	21,30	4,55	3,73	38	76	0,37
1" x 3/4"	Std			3,38	2,87			0,30
	Xs	33,40	26,70	4,55	3,91			0,38
1.1/4" x 1/2"	Std			3,56	2,77			0,54
	Xs	42,40	21,30	4,85	3,73			0,68
1.1/4" x 3/4"	Std			3,56	2,87			0,54
	Xs	42,40	26,70	4,85	3,38	48	96	0,68
1.1/4" x 1"	Std			3,56	2,87			0,54
	Xs	42,40	33,40	4,85	3,38			0,69
1.1/2" x 3/4"	Std			3,68	2,87			0,77
	Xs	48,30	26,70	5,08	3,91			0,98
1.1/2" x 1"	Std			3,68	3,38			0,77
	Xs	48,30	33,40	5,08	4,55	57	114	1,02
1.1/2" x 1.1/4"	Std	48,30	42,40	3,68	3,56			0,77
	Xs			5,08	4,85			1,02
2" x 1"	Std			3,91	3,38			0,98
	Xs	60,30	33,40	5,54	4,55	64	51	1,32
2" x 1.1/4"	Std			3,91	3,56			1,04
	Xs	60,30	42,40	5,54	4,85			1,44
2" x 1.1/2"	Std			3,91	3,68			1,06
	Xs	60,30	48,30	5,54	5,08		60	1,44
2.1/2" x 1.1/4"	Std			5,16	3,56			1,72
	Xs	73,10	42,40	7,01	4,85	76	64	2,14
2.1/2" x 1.1/2"	Std			5,16	3,68			1,72
	Xs	73,10	48,30	7,01	5,08		67	2,14
2.1/2" x 2"	Std			5,16	3,91			1,72
	Xs	73,10	60,30	7,01	5,54		70	2,24
3" x 1"	Std			5,49	3,38			2,45
	Xs	88,90	33,40	7,62	4,55	86	70	2,80
3" x 1.1/4"	Std			5,49	3,56			2,45
	Xs	88,90	42,40	7,62	4,85		70	2,80
3" x 1.1/2"	Std			5,49	3,68			2,45
	Xs	88,90	48,30	7,62	5,08		73	3,05
3" x 2"	Std			5,49	3,91			2,48
	Xs	88,90	60,30	7,62	5,54		76	3,09
3" x 2.1/2"	Std			5,49	5,16			2,91
	Xs	88,90	73,10	7,62	7,01		83	3,50
4" x 2"	Std			6,02	3,91			4,12
	Xs	114,30	60,30	8,56	5,54		89	5,08
4" x 2.1/2"	Std			6,02	5,16			4,48
	Xs	114,30	73,10	8,56	7,01		95	5,96
4" x 3"	Std			6,02	5,49			4,56
	Xs	114,30	88,90	8,56	7,62		98	6,13
5" x 3"	Std			6,55	5,49			7,60
	Xs	141,30	88,90	9,53	7,62		111	8,85
5" x 4"	Std			6,55	6,02			7,10
	Xs	141,30	114,30	9,53	8,56	124	117	9,90
6" x 3"	Std			7,11	5,49			10,22
	Xs	168,30	88,90	10,97	7,62		124	13,33
6" x 4"	Std			7,11	6,02			10,25
	Xs	168,30	114,30	10,97	8,56	143	130	14,26
6" x 5"	Std			7,11	6,55			11,13
	Xs	168,30	141,30	10,97	9,53		137	15,04

# SEAMLESS REDUCING TEES ASME B16.9

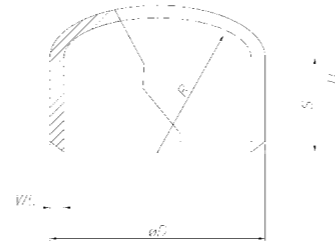


# CAPS ASME B16.9

O.D. INCHES D	WT SCH.	O.D. (1) MM D1	O.D. (2) MM D2	WT		C MM.	C+C MM.	THEORETICAL WEIGHT KG.
				WT (1) MM WT1	WT (2) MM WT2			
8" x 4"	Std	219,10	114,30	8,18	6,02	178	156	16,77
	Xs			12,70	8,56			24,59
8" x 5"	Std	219,10	141,30	8,18	6,55	178	162	17,36
	Xs			12,70	9,53			24,59
8" x 6"	Std	219,10	168,30	8,18	7,11	178	168	17,96
	Xs			12,70	10,97			28,27
10" x 4"	Std	273,00	114,30	9,27	6,02	216	184	26,93
	Xs			12,70	8,56			35,11
10" x 6"	Std	273,00	168,30	9,27	7,11	216	194	26,93
	Xs			12,70	10,97			35,11
10" x 8"	Std	273,00	219,10	9,27	8,18	216	203	28,35
	Xs			12,70	12,70			36,97
12" x 6"	Std	323,90	168,30	9,53	7,11	254	219	40,50
	Xs			12,70	10,97			75,20
12" x 8"	Std	323,90	219,10	9,53	8,18	254	229	40,50
	Xs			12,70	12,70			75,20
12" x 10"	Std	323,90	273,00	9,53	9,27	279	241	43,00
	Xs			12,70	12,70			75,20
14" x 10"	Std	355,60	273,00	9,53	9,27	279	257	87,84
	Xs			12,70	12,70			98,60
14" x 12"	Std	355,60	323,90	9,53	9,53	279	270	91,80
	Xs			12,70	12,70			103,50
16" x 10"	Std	406,40	273,00	9,53	9,27	305	283	95,85
	Xs			12,70	12,70			144,00
16" x 12"	Std	406,40	323,90	9,53	9,53	305	295	99,00
	Xs			12,70	12,70			147,60
16" x 14"	Std	406,40	355,60	9,53	9,53	305	305	99,00
	Xs			12,70	12,70			150,30
18" x 10"	Std	457,00	273,00	9,53	9,27	343	308	116,10
	Xs			12,70	12,70			138,60
18" x 12"	Std	457,00	323,90	9,53	9,53	343	321	121,50
	Xs			12,70	12,70			147,60
18" x 14"	Std	457,00	355,60	9,53	9,53	343	330	121,50
	Xs			12,70	12,70			171,00
18" x 16"	Std	457,00	406,40	9,53	9,53	343	330	121,50
	Xs			12,70	12,70			171,00
20" x 10"	Std	508,00	273,00	9,53	9,27	381	333	147,15
	Xs			12,70	12,70			192,60
20" x 12"	Std	508,00	323,90	9,53	9,53	381	346	147,15
	Xs			12,70	12,70			192,60
20" x 14"	Std	508,00	355,60	9,53	9,53	381	356	147,15
	Xs			12,70	12,70			192,60
20" x 16"	Std	508,00	406,40	9,53	9,53	381	356	151,20
	Xs			12,70	12,70			196,20
20" x 18"	Std	508,00	457,00	9,53	9,53	381	368	151,20
	Xs			12,70	12,70			196,20
24" x 12"	Std	609,60	323,90	9,53	9,53	432	397	155,25
	Xs			12,70	12,70			220,50
24" x 16"	Std	609,60	406,40	9,53	9,53	432	406	188,10
	Xs			12,70	12,70			234,00
24" x 18"	Std	609,60	457,00	9,53	9,53	432	419	188,10
	Xs			12,70	12,70			234,00
24" x 20"	Std	609,60	508,00	9,53	9,53	432	432	198,00
	Xs			12,70	12,70			252,00

O.D. INCHES D	WT SCH.	O.D. MM D	WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN WT. TOLL.	THEORETICAL WEIGHT KG.
1"	Xs	4,55	3,98	0,13			
	160	6,35	5,56	0,15			
1.1/4"	Std	42,4	3,56	41,6	44,0	3,12	0,14
	1.1/4"		Xs			4,85	4,24
160			6,35			5,56	0,23
1.1/2"	Std	48,3	3,68	47,5	49,9	3,22	0,20
	1.1/2"		Xs			5,08	4,45
160			7,14			6,25	0,30
2"	Std	60,3	3,91	59,5	61,9	3,42	0,25
	2"		Xs			5,54	4,85
160			8,74			7,65	0,55
2.1/2"	Std	73,1	5,16	72,3	74,7	4,52	0,35
	2.1/2"		Xs			7,01	6,13
160			9,53			8,34	0,90
3"	Std	88,9	5,49	87,3	90,5	4,80	0,70
	3"		Xs			7,62	6,67
160			11,13			9,74	1,45
4"	Std	114,3	6,02	112,7	115,9	5,27	1,10
	4"		Xs			8,56	7,49
120			11,13			9,74	2,50
4"	160	13,49	11,80	2,75			
	5"	Std	141,3	6,55	139,7	143,7	5,73
5"		Xs		9,53			8,34
	120	12,70		11,11			4,00
5"	160	15,88	13,90	5,00			
	6"	20	4,78	166,7	170,7	4,18	2,01
Std		7,11	6,22			3,00	
6"	Xs	168,3	10,97	9,60	4,40		
			120	14,27	12,49	6,00	
6"	160	18,24	15,96	7,50			
	8"	20	6,35	217,5	221,5	5,56	4,50
30		7,04	6,16			5,00	
8"	Std	219,1	8,18	7,16	5,50		
			60	10,31	9,02	7,00	
8"	Xs	219,1	12,70	11,11	8,35		
			120	18,24	15,96	12,27	
8"	160	23,01	20,13	19,49			
	10"	20	6,35	269,8	277,0	5,56	6,00
30		7,80	6,83			8,00	
10"	Std	273,0	9,27	8,11	9,00		
			Xs	12,70	11,11	13,60	
10"	80	273,0	15,06	13,18	16,25		
			120	21,41	18,73	24,74	
160	28,58	25,01	32,98				

# CAPS ASME B16.9



O.D. INCHES	WT. SCH.	O.D. MM	WT. MM	MIN. O.D. TOLERANCE	MAX. O.D. TOLERANCE	MIN. WT. TOLL.	THEORETICAL WEIGHT KG.
12"	20	323,9	6,35	320,7	327,9	5,56	10,00
	30		8,38			7,33	13,00
	Std		9,53			8,34	15,00
	40		10,31			9,02	19,00
	Xs		12,70			11,11	22,50
	60		14,27			12,49	25,50
	80		17,45			15,27	29,50
	120		25,40			22,23	41,00
14"	20	355,6	7,92	352,4	359,6	6,93	14,00
	Std		9,53			8,34	16,00
	Xs		12,70			11,11	27,00
16"	20	406,4	7,92	403,2	410,4	6,93	18,00
	Std		9,53			8,34	21,00
	Xs		12,70			11,11	31,50
18"	20	457,0	7,92	453,8	461,0	6,93	22,00
	Std		9,53			8,34	26,00
	Xs		12,70			11,11	36,00
20"	Std	508,0	9,53	503,2	514,4	8,34	32,00
	Xs		12,70			11,11	42,00
24"	Std	609,6	9,53	604,8	616,0	8,34	46,00
	Xs		12,70			11,11	60,00

# BUTTWELDING ENDS ASME B16.25

WALL THICKNESS INCHES / (MM)	DESIGNATION	DETAILS
From 0.12"(3mm) to 0.88"(22mm)	Fig 2.a	
Greater than 0.88"(22mm)	Fig 3.a	
From 0.38"(10mm) to 1"(25mm)	Fig 5.a	

# CERTIFICATION

# PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC

**CERTIFICATE OF APPROVAL**

This is to certify that the Quality Management System of:  
**Virgilio Cena & Figli S.p.A.**  
 Via Oberdan, 39  
 25128 Brescia - Italia

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:  
**ISO 9001:2008**

The Quality Management System is applicable to:  
**Manufacture of carbon and low alloy steel bends, elbows, (made from seamless and welded pipes in standard and heavy wall thickness) and concentric reducers, stockholding, procurement and supply of pipe fittings and adaptor to suit all kind of pipe material. Dimensional range from 1/4" a 32". Carbon steel and low alloy material range as per ASTM/ASME: WPB, WPC, WP1, WP11, WP12, WP22, WP5, WP9, WP91 as per ASTM/ASME A/SA 234 - ASME B 16.9 WPHY42, WPHY52, WPHY60, WPHY65, WPHY70. As per MSS SP75 / ASTM A 860 WPL6 as per ASTM/ASME A/SA 420 - ASME B 16.9. As per EN 10253-2: P235TR2, P265TR2, P235GH, P265GH, 16Mo3, 10CrMo5-5, 13CrMo4-5, 10CrMo9-10, X11CrMo5, X11CrMo9-1, X10CrMoVNB9-1, P355N, P355NL1, P215NL, P265NL, L290NB, L360NB, L360QB, L415NB, L415QB, L450QB. As per DIN 2609: St35.8/l, St35.8/III, St37.0, St37.4, 13CrMo44, 16Mo3. The System satisfy the requirements of Annex I Sect. 4.3 of directive 97/23/EC.**

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: LRC 0160142/QMS      Original Approval: 7<sup>th</sup> July 1993  
 Current Certificate: 26<sup>th</sup> December 2009  
 Certificate Expires: 23<sup>rd</sup> April 2011

Issued by: Lloyd's Register Quality Assurance Italy Srl  
 for and on behalf of Lloyd's Register Quality Assurance Limited

This document is subject to the provision on the reverse  
 Registered Office: Piazza della Vittoria 6/1 - 15121 Genova - Tel: Genova 1802731988 - C.C.A.A. Genova 256347  
 This approval is carried out in accordance with the IFA assessment and certificate procedures and monitored by UKCA.  
 The use of the UKCA Accreditation Mark is subject to the terms and conditions of the Accreditation Certificate Number 011  
 Marked Revision 12

The European Pressure Equipment Directive 97/23/CE fixes the requirements for security of the pressure equipment. The producer of wrought butt welded fittings must operate with a Quality Management System according to ISO-9001:2000. Such system must be certified based on the specific evaluation of the materials produced by a competent operating organism in the European Community.

VIRGILIO CENA & FIGLI S.p.a. has achieved the following certification:

**LLOYD's** Register n° LRC 0160142/QMS dated December 26, 2009 approval certification according to ISO 9001:2008 with the specific note that the Quality System satisfies the requirements indicated in Annex I Sect. 4.3 of the European Directive 97/23/EC.

**TÜV** n° 24/2002/MUC dated April 27, 2009 approval certification specifying that the Quality System is in accordance with the Pressure Equipment Directive 97/23/EC Annex I, Par 4.3 (PED).

VIRGILIO CENA & FIGLI S.p.a. can supply product and documentation conformed to the PED, according to EN 10253-2. These conditions are nonetheless open to technical and commercial discussions to be defined by the parties officially in the purchase order.

**CERTIFICATE**

The company  
**Virgilio Cena & Figli S.p.A.**  
 Via Oberdan, 39  
 I-25128 Brescia

has been audited and approved as manufacturer according to  
**AD 2000-Merkblatt W0 / HP 100 R**

The scope of the audit and other relevant data are detailed in our report No. 1308361.

The company  
 - has facilities permitting manufacturing and inspection in compliance with the current technical standards,  
 - operates a quality system which guarantees that manufacturing and inspection of the products stated in our report are in conformity with the technical rules and standards,  
 - employs qualified supervisory and inspection personnel.

The certificate expires in April 2011.

Munich, April 27<sup>th</sup>, 2009

TUV SÜD Industrie Service GmbH  
 Zertifizierungsstelle für Druckgeräte  
 (H. Müller)  
 Notified Body, No. 0036

TUV SÜD Industrie Service GmbH, Abteilung Werkstatt- und Schweißtechnik  
 Weidenstrasse 195, 80665 München

**CERTIFICATE**

The Certification Body - 0036 - of  
**TUV SÜD Industrie Service GmbH**

certifies that  
**Virgilio Cena & Figli S.p.A.**  
 Via Oberdan, 39  
 I-25128 Brescia

has implemented, operates and maintains a  
**Quality Assurance System in accordance with the Pressure Equipment Directive 97/23/EC (PED) Annex I, Paragraph 4.3**

as Material Manufacturer for the scope of  
 butt welding fittings of ferritic steels.

The scope of the approval is described in this annex to this certificate.

The manufacturer is, therefore, authorized to issue certificates of specific product control within the scope of the assessed quality system and in accordance with the Pressure Equipment Directive 97/23/EC and applied technical specifications. Possible additional requirements - specific to applied technical specifications to meet PED Annex I - are not affected.

This certificate is valid through April 2011.

The validity of this certificate is connected to a valid certification in accordance with ISO 9001:2000.

Certificate No.: 24/2002/MUC  
 Munich, April 27<sup>th</sup>, 2009

TUV SÜD Industrie Service GmbH  
 Zertifizierungsstelle für Druckgeräte  
 (H. Müller)  
 Notified Body, No. 0036

TUV SÜD Industrie Service GmbH, Abteilung Werkstatt- und Schweißtechnik  
 Weidenstrasse 195, 80665 München

REFERENCE LIST AVAILABLE AT [www.cenafittings.com](http://www.cenafittings.com)

# EUROPEAN STANDARD

## EN 10253.2

MATERIAL RANGE	30
PRODUCT RANGE	31
SEAMLESS ELBOWS	
MODEL 2S (RADIUS 1)	32
MODEL 3S (RADIUS 1.5)	33
MODEL 5S (RADIUS 2.5)	37
MODEL 10S (RADIUS 5)	38
WELDED ELBOWS	39
SEAMLESS CONCENTRIC REDUCERS	40
SEAMLESS EQUAL AND REDUCING TEES	41
DISHED ENDS	42
END FINISHING	42
PRESSURE EQUIPMENT DIRECTIVE (PED)	43
CERTIFICATIONS	43
PRESSURE FACTOR OF ELBOWS TYPE A	44
WALL THICKNESS ON THE INTRADOS OF ELBOWS TYPE B	46
STEEL GRADES FOR PIPES MOSTLY USED BY CENA TO PRODUCE SEAMLESS ELBOWS	49
GENERAL SALES CONDITIONS	50

# MATERIAL

## EN 10253.2

P235GH P265GH 16M03 10CRM05-5  
 13CRM045 10CRM09-10 X11CRM05  
 P355N P355NL1 P265NL L290NB  
 L360NB L360QB L415NB L415QB L450QB

## DIN 2609

ST35.8/I ST35.8/III ST37.0 ST37.4  
 16M03 13CRM044

## EN 10253.2

X11CRM09-1 X10CRM0VNB9-1

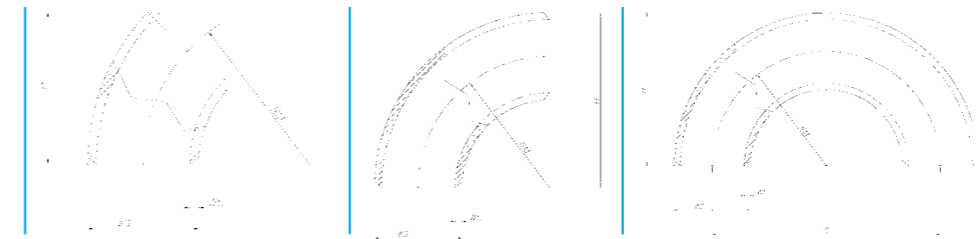
MORE EXTENSIVE RANGE UPON REQUEST



MODEL 2 ELBOWS 1" – 24"  
 MODEL 3 ELBOWS 1" – 28"  
 MODEL 5,10 ELBOWS 1" – 16"

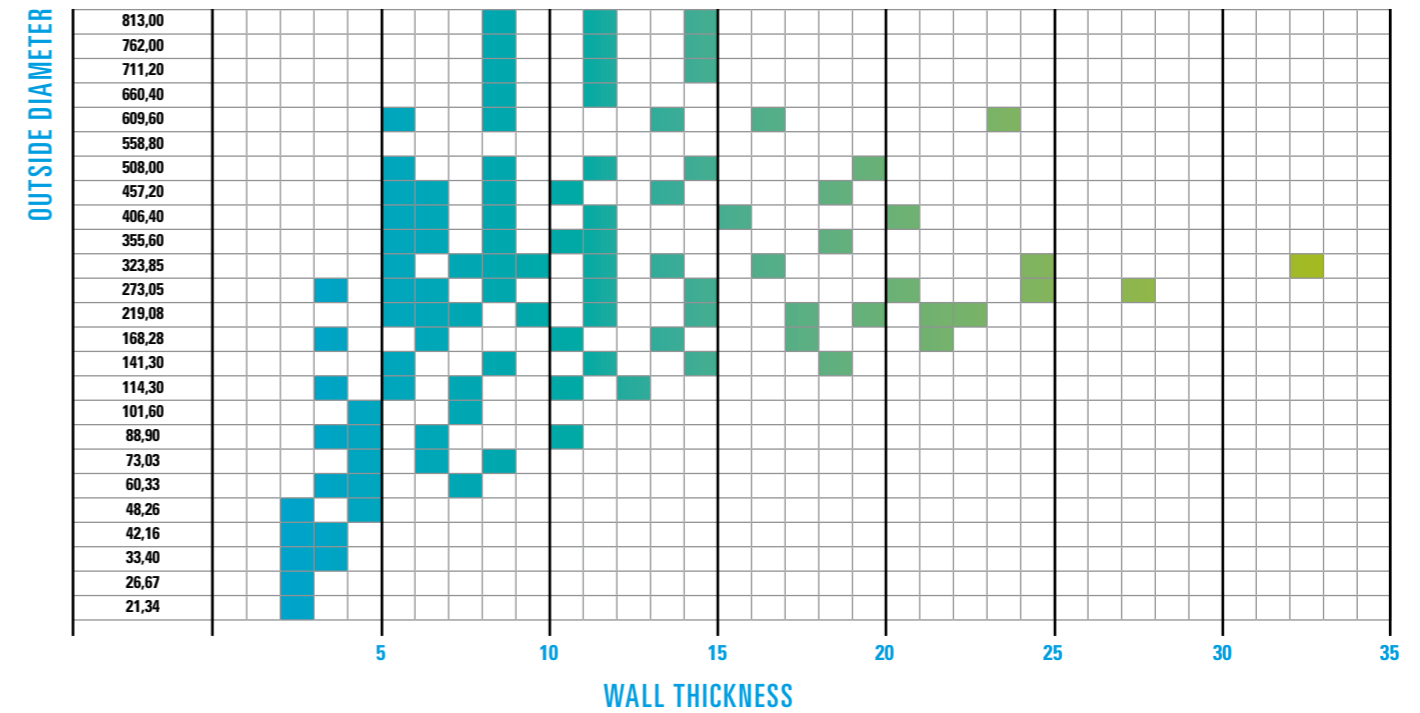


MODEL 2 ELBOWS 1" – 8"  
 MODEL 3 ELBOWS 1" – 8"  
 MODEL 5,10 ELBOWS 1" – 8"



# EN 10253.2 PRODUCTION RANGE SUMMARY

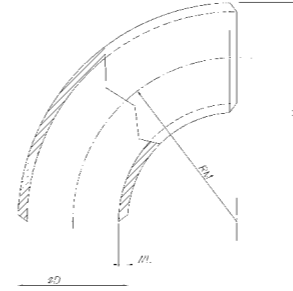
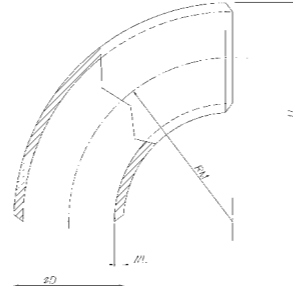
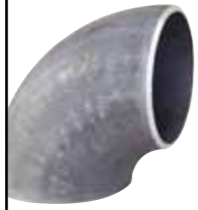
## EU ELBOW RANGE



## EU FITTING RANGE

	FROM	TO
<b>Concentric Reducers</b>	33.7 x 26.9 (WT 2.6 x 2.3)	406.4 x 323.90 (WT 8.8 x 7.1)
<b>Equal Tee</b>	21.30 (WT 2.00)	355.6 (WT 8.0)
<b>Reduced Tee</b>	26.9 x 21.30 (WT 2.3 x 2.0)	355.60 x 323.90 (WT 8.0 x 7.1)
<b>Caps</b>	33.7 (WT 2.6)	406.4 (WT 8.8)

**R=1 D  
SEAMLESS  
ELBOWS  
EN-10253-2**

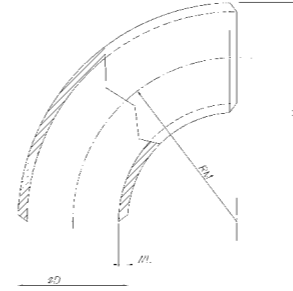
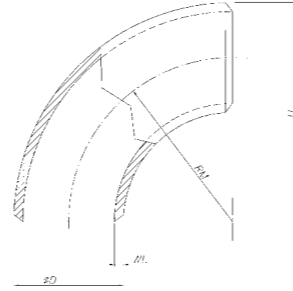


**R=1,5 D  
SEAMLESS  
ELBOWS  
EN-10253-2**

MODEL	OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM RM	H	THEORETICAL WEIGHT 90° KG.
2	26,90	2,30	26,40	27,40	2,01	2,76	25,0	39,0	0,06
2	33,70	2,30	33,20	34,20	2,01	2,76	25,0	42,0	0,08
2		2,60			2,28	3,12		0,10	
2	42,40	2,60	41,90	42,90	2,28	3,12	32,0	53,0	0,15
2	48,30	2,60	47,80	48,80	2,28	3,12	38,0	62,0	0,18
2	60,30	2,90	59,70	60,90	2,54	3,48	51,0	81,0	0,36
2	76,10	2,90	75,34	76,86	2,54	3,48	63,0	102,0	0,50
2	88,90	3,20	88,01	89,79	2,80	3,84	76,0	121,0	0,88
2	114,30	3,60	113,16	115,44	3,15	4,32	102,0	159,0	1,62
2		6,30			5,51	7,56		2,77	
2	133,00	4,00	131,67	134,33	3,50	4,80	125,0	192,0	2,50
2	139,70	4,00	138,30	141,10	3,50	4,80	127,0	197,0	2,79
2	168,30	4,50	166,62	169,98	3,94	5,40	152,0	237,0	4,43
2		7,10			6,21	8,52		6,87	
2	219,10	6,30	216,91	221,29	5,51	7,56	203,0	313,0	10,90
2		8,00			7,00	9,60		13,70	
2	273,00	12,50	270,27	275,73	10,94	15,00	254,0	391,0	21,00
2		6,30			5,51	7,56		16,50	
2	323,90	8,80	320,66	327,14	7,70	10,56	305,0	467,0	22,90
2		7,10			6,21	8,52		26,60	
2	355,60	8,00	352,04	359,16	7,00	9,60	356,0	533,0	38,20
2	406,40	8,80	402,34	410,46	7,70	10,56	406,0	610,0	55,10

MODEL	OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM RM	H	THEORETICAL WEIGHT 90° KG.
3	17,00	2,00	16,50	17,50	1,75	2,40	20,0	29,0	0,02
3	21,30	2,00	20,80	21,80	1,75	2,40	28,00	39,00	0,04
3		2,90			2,54	3,48			0,06
3	26,90	3,20	26,40	27,40	2,80	3,84	28,5	42,0	0,06
3		3,60			3,15	4,32			0,07
3		4,00			3,50	4,80			0,08
3	30,00	2,30	29,50	30,50	2,01	2,76	33,50	48,00	0,06
3		2,90			2,54	3,48			0,08
3	31,80	2,60	31,30	32,30	2,28	3,12	35,00	51,00	0,09
3		2,90			2,54	3,48			0,10
3	33,70	3,20	33,20	34,20	2,80	3,84	38,00	55,00	0,11
3		3,60			3,15	4,32			0,12
3	38,00	4,00	37,50	38,50	3,50	4,80	45,00	64,00	0,15
3		2,30			2,01	2,76			0,11
3	42,40	2,60	41,90	42,90	2,28	3,12	48,00	69,00	0,12
3		3,20			2,80	3,84			0,15
3	44,50	3,60	44,00	45,00	3,15	4,32	51,00	73,00	0,16
3		4,00			3,50	4,80			0,18
3	48,30	4,50	47,80	48,80	3,94	5,40	57,00	81,00	0,20
3		5,00			4,38	6,00			0,21
3	51,00	6,30	50,49	51,51	5,51	7,56	63,50	88,00	0,26
3		2,60			2,28	3,12			0,16
3	54,00	2,90	53,46	54,54	2,54	3,48	72,50	100,00	0,18
3		2,60			2,28	3,12			0,19

**R=1,5 D  
SEAMLESS  
ELBOWS  
EN-10253-2**

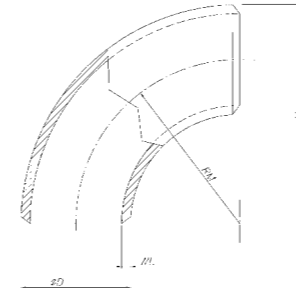
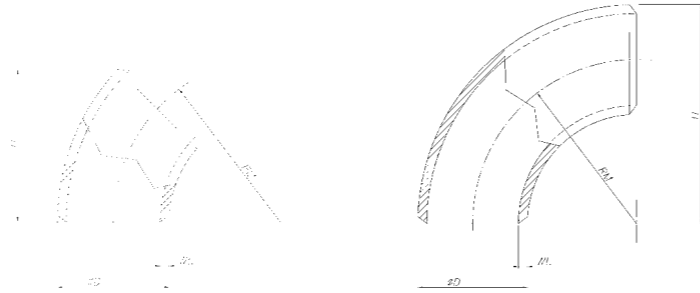


**R=1,5 D  
SEAMLESS  
ELBOWS  
EN-10253-2**

MODEL 3	OUTSIDE DIAMETER D	WALL THICKNESS	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM. RM	QUOTE H	THEORETICAL WEIGHT 90° KG.					
3	57,00	2,90	56,43	57,57	2,54	3,48	72,00	100,00	0,44					
3		3,20			2,80	3,84			0,48					
3	60,30	2,90	59,70	60,90	2,54	3,48	76,00	106,00	0,49					
3		3,20			2,80	3,84			0,54					
3		3,60			3,15	4,32			0,60					
3		4,00			3,50	4,80			0,67					
3		4,50			3,94	5,40			0,74					
3		5,00			4,38	6,00			0,82					
3		5,60			4,90	6,72			0,90					
3		6,30			5,51	7,56			1,00					
3		7,10			6,21	8,52			1,11					
3		8,00			7,00	9,60			1,23					
3		8,80			7,70	10,56			1,34					
3	10,00	8,75	12,00	1,48										
3	11,00	9,63	13,20	1,60										
3	63,50	2,90	62,87	64,14	2,54	3,48	82,50	114,00	0,56					
3	70,00	2,90	69,30	70,70	2,54	3,48	92,00	127,00	0,70					
3		3,20			2,80	3,84			0,76					
3	76,10	2,90	75,34	76,86	2,54	3,48	95,00	133,00	0,78					
3		3,20			2,80	3,84			0,86					
3		3,60			3,15	4,32			0,96					
3		4,00			3,50	4,80			1,06					
3		4,50			3,94	5,40			1,19					
3		5,00			4,38	6,00			1,31					
3		5,60			4,90	6,72			1,46					
3		6,30			5,51	7,56			1,62					
3		7,10			6,21	8,52			1,81					
3		8,00			7,00	9,60			2,07					
3		8,80			7,70	10,56			2,31					
3	10,00	8,75	12,00	2,58										
3	11,00	9,63	13,20	2,87										
3	12,50	10,94	15,00	3,24										
3	82,50	3,20	81,68	83,33	2,80	3,84	107,50	149,00	1,06					
3		3,60			3,15	4,32			1,19					
3		4,00			3,50	4,80			1,31					
3		4,50			3,94	5,40			1,46					
3		5,00			4,38	6,00			1,62					
3	88,90	5,60	88,01	89,79	4,90	6,72	114,50	159,00	2,07					
3		6,30			5,51	7,56			2,31					
3		7,10			6,21	8,52			2,58					
3		8,00			7,00	9,60			2,87					
3		8,80			7,70	10,56			3,24					
3		10,00			8,75	12,00			3,61					
3		11,00			9,63	13,20			4,08					
3		12,50			10,94	15,00			4,65					
3		101,60			3,60	100,58			102,62	3,15	4,32	133,50	184,00	1,83
3					4,00					3,50	4,80			2,02
3					4,50					3,94	5,40			2,26
3	5,00		4,38	6,00	2,50									
3	5,60		4,90	6,72	2,78									

MODEL 3	OUTSIDE DIAMETER D	WALL THICKNESS	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM. RM	QUOTE H	THEORETICAL WEIGHT 90° KG.					
3	108,00	3,60	106,92	109,08	3,15	4,32	142,50	196,00	2,08					
3		4,00			3,50	4,80			2,30					
3		4,50			3,94	5,40			2,57					
3		5,00			4,38	6,00			2,85					
3		5,60			4,90	6,72			3,17					
3	114,30	3,60	113,16	115,44	3,15	4,32	152,50	210,00	2,36					
3		4,00			3,50	4,80			2,61					
3		4,50			3,94	5,40			2,92					
3		5,00			4,38	6,00			3,23					
3		5,60			4,90	6,72			3,60					
3		6,30			5,51	7,56			4,02					
3		7,10			6,21	8,52			4,50					
3		8,00			7,00	9,60			5,03					
3		8,80			7,70	10,56			5,49					
3		10,00			8,75	12,00			6,21					
3		11,00			9,63	13,20			6,78					
3	133,00	4,00	131,67	134,33	3,50	4,80	181,00	247,00	3,62					
3		4,50			3,94	5,40			4,06					
3		5,00			4,38	6,00			4,49					
3		5,60			4,90	6,72			5,00					
3		6,30			5,51	7,56			5,61					
3		7,10			6,21	8,52			6,28					
3		8,00			7,00	9,60			7,03					
3		8,80			7,70	10,56			7,86					
3		10,00			8,75	12,00			8,83					
3		139,70			4,00	138,30			141,10	3,50	4,80	190,40	260,00	4,01
3					4,50					3,94	5,40			4,49
3	5,00		4,38	6,00	4,97									
3	5,60		4,90	6,72	5,54									
3	6,30		5,51	7,56	6,20									
3	7,10		6,21	8,52	6,95									
3	8,00		7,00	9,60	7,78									
3	8,80		7,70	10,56	8,69									
3	10,00		8,75	12,00	9,77									
3	159,00		4,50	157,41	160,59		3,94	5,40		216,00	294,00			5,82
3			5,00				4,38	6,00						6,45
3		5,60	4,90			6,72	7,19							
3		6,30	5,51			7,56	8,05							
3		7,10	6,21			8,52	9,03							
3		8,00	7,00			9,60	10,10							
3		8,80	7,70			10,56	11,27							
3		10,00	8,75			12,00	12,54							
3		168,30	4,50			166,62	169,98	3,94	5,40			228,50	313,00	6,53
3			5,00					4,38	6,00					7,23
3			5,60					4,90	6,72					8,07
3	6,30		5,51	7,56	9,04									
3	7,10		6,21	8,52	10,10									
3	184,00	8,00	177,60	181,60	7,70	10,56	252,00	333,00	12,40					
3		8,80			7,70	10,56			13,40					
3		10,00			8,75	12,00			14,50					
3		11,00			9,63	13,20			15,70					
3	219,00	12,50	216,25	220,75	10,94	15,00	297,00	400,00	17,20					
3		14,00			12,25	16,00			18,20					

**R=1,5 D  
SEAMLESS  
ELBOWS  
EN-10253-2**



**R=2,5 D  
SEAMLESS  
ELBOWS  
EN-10253-2**

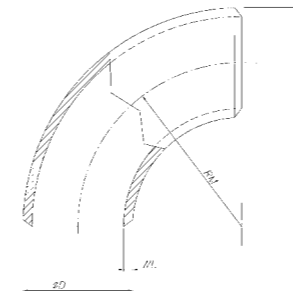
MODEL 3	OUTSIDE DIAMETER D	WALL THICKNESS	MIN. O.D. TOLERANCE	MAX. O.D. TOLERANCE	MIN. W.T. TOLERANCE	MAX. W.T. TOLERANCE	RADIUS RM	H	THEORETICAL WEIGHT 90° KG.
3	193,70	5,60	191,76	195,64	4,90	6,72	270,00	367,00	11,00
3		6,30			5,51	7,56			12,40
3		7,10			6,21	8,52			13,90
3		8,00			7,00	9,60			15,50
3		8,80			7,70	10,56			17,00
3	219,10	6,30	216,91	221,29	5,51	7,56	305,00	415,00	15,80
3		7,10			6,21	8,52			17,80
3		8,00			7,00	9,60			20,00
3		8,80			7,70	10,56			21,90
3		10,00			8,75	12,00			24,70
3	244,50	12,50	242,06	246,95	10,94	15,00	340,00	462,00	30,50
3		6,30			5,51	7,56			19,80
3		7,10			6,21	8,52			22,20
3		8,00			7,00	9,60			24,90
3		8,80			7,70	10,56			27,30
3	267,00	10,00	264,33	269,67	8,75	12,00	373,00	507,00	38,20
3		12,50			10,94	15,00			38,20
3		6,30			5,51	7,56			23,70
3		7,10			6,21	8,52			27,90
3		8,00			7,00	9,60			31,30
3	273,00	8,80	270,27	275,73	7,70	10,56	381,00	517,00	34,30
3		10,00			8,75	12,00			38,80
3		12,50			10,94	15,00			48,10
3		7,10			6,21	8,52			39,80
3		8,00			7,00	9,60			44,70
3	323,90	8,80	320,66	327,14	7,70	10,56	457,00	619,00	49,10
3		10,00			8,75	12,00			55,60
3		12,50			10,94	15,00			68,90
3		8,00			7,00	9,60			57,50
3		8,80			7,70	10,56			63,10
3	355,60	10,00	352,04	359,16	8,75	12,00	533,50	711,00	71,40
3		12,50			10,94	15,00			88,60
3		8,00			7,00	9,60			57,50
3		8,80			7,70	10,56			63,10
3		10,00			8,75	12,00			71,40
3	368,00	12,50	364,32	371,68	10,94	15,00	552,00	736,00	88,60
3		8,00			7,00	9,60			59,00
3		8,80			7,70	10,56			82,60
3		10,00			8,75	12,00			93,60
3		12,50			10,94	15,00			116,00
3	406,40	10,00	402,34	410,46	8,75	12,00	609,50	813,00	119,00
3		12,50			10,94	15,00			148,00
3		10,00			8,75	12,00			119,00
3		12,50			10,94	15,00			148,00
3		11,00			9,63	13,20			161,00
3	457,00	12,50	452,43	461,57	10,94	15,00	686,00	914,00	183,00
3		11,00			9,63	13,20			161,00
3		12,50			10,94	15,00			183,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3	508,00	12,50	502,92	513,08	10,94	15,00	762,00	1.016,00	260,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3	558,80	12,50	553,21	564,39	10,94	15,00	838,00	1.118,00	260,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3	609,60	12,50	603,50	615,70	10,94	15,00	914,00	1.219,00	260,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00
3		12,50			10,94	15,00			222,00

MODEL 5	OUTSIDE DIAMETER D	WALL THICKNESS	MIN. O.D. TOLERANCE	MAX. O.D. TOLERANCE	MIN. W.T. TOLERANCE	MAX. W.T. TOLERANCE	RADIUS RM	H	THEORETICAL WEIGHT 90° KG.
5	21,30	2,00	20,80	21,80	1,75	2,40	42,50	53,00	0,07
5		2,90			2,54	3,48			0,09
5		3,60			3,15	4,32			0,11
5		2,30			2,01	2,76			0,13
5		2,90			2,54	3,48			0,16
5	26,90	2,90	26,40	27,40	2,54	3,48	57,50	71,00	0,16
5		4,00			3,50	4,80			0,21
5		2,60			2,28	3,12			0,23
5		3,60			3,15	4,32			0,31
5		4,50			3,94	5,40			0,37
5	33,70	2,60	33,20	34,20	2,28	3,12	72,50	89,00	0,31
5		3,60			3,15	4,32			0,37
5		4,50			3,94	5,40			0,37
5		2,60			2,28	3,12			0,37
5		3,60			3,15	4,32			0,50
5	38,00	2,60	37,50	38,50	2,28	3,12	82,50	101,00	0,30
5		3,60			3,15	4,32			0,50
5		5,00			4,38	6,00			0,67
5		2,60			2,28	3,12			0,50
5		3,60			3,15	4,32			0,67
5	42,40	3,60	41,90	42,90	3,15	4,32	92,50	114,00	0,50
5		5,00			4,38	6,00			0,67
5		2,60			2,28	3,12			0,50
5		3,60			3,15	4,32			0,67
5		5,00			4,38	6,00			0,90
5	48,30	2,60	47,80	48,80	2,28	3,12	107,50	132,00	0,50
5		3,60			3,15	4,32			0,67
5		5,00			4,38	6,00			0,90
5		2,90			2,54	3,48			0,87
5		4,00			3,50	4,80			1,18
5	60,30	4,00	59,70	60,90	3,50	4,80	135,00	165,00	1,18
5		5,60			4,90	6,72			1,60
5		2,90			2,54	3,48			1,21
5		2,90			2,54	3,48			1,44
5		5,00			4,38	6,00			2,41
5	70,00	7,10	75,34	76,86	6,21	8,52	175,00	213,00	3,32
5		3,20			2,80	3,84			2,18
5		5,60			4,90	6,72			3,71
5		8,00			7,00	9,60			5,14
5		3,60			3,15	4,32			3,25
5	101,60	5,60	100,58	102,62	4,90	6,72	237,50	288,00	4,95
5		8,00			7,00	9,60			6,89
5		3,60			3,15	4,32			3,68
5		3,60			3,15	4,32			4,17
5		6,30			5,51	7,56			7,12
5	108,00	8,80	113,16	115,44	7,70	10,56	270,00	327,00	9,71
5		4,00			3,50	4,80			6,25
5		4,00			3,50	4,80			6,94
5		6,30			5,51	7,56			10,80
5		10,00			8,75	12,00			16,60
5	139,70	4,50	138,30	141,10	3,94	5,40	330,00	400,00	10,10
5		4,50			3,94	5,40			11,10
5		7,10			6,21	8,52			17,30
5		11,00			9,63	13,20			26,10
5		5,60			4,90	6,72			17,90
5	159,00	5,60	157,41	160,59	4,90	6,72	375,00	454,00	10,10
5		5,60			4,90	6,72			11,10
5		7,10			6,21	8,52			17,30
5		11,00			9,63	13,20			26,10
5		5,60			4,90	6,72			17,90
5	168,30	5,60	166,62	169,98	4,90	6,72	390,00	474,00	17,30
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90
5	193,70	5,60	191,76	195,64	4,90	6,72	455,00	552,00	17,90
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90
5		5,60			4,90	6,72			17,90

# SEAMLESS ELBOWS EN-10253-2



MODEL	OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM. RM	H QUOTE	THEORETICAL WEIGHT 90° KG.
5	219,10	6,30	216,91	221,29	5,51	7,56	510,00	619,00	26,50
5		8,00			7,00	9,60			33,40
5		12,50			10,94	15,00			51,00
5	244,50	6,30	242,06	246,95	5,51	7,56	580,00	702,00	33,70
5		6,30			5,51	7,56			42,30
5		10,00			8,75	12,00			66,20
5	273,00	12,50	270,27	275,73	10,94	15,00	650,00	786,00	82,00
5		7,10			6,21	8,52			67,50
5		10,00			8,75	12,00			94,20
5	323,90	12,50	320,66	327,14	10,94	15,00	775,00	937,00	117,00
5		8,00			7,00	9,60			91,60
5		10,00			8,75	12,00			114,00
5	355,60	12,50	352,04	359,16	10,94	15,00	850,00	1.028,00	141,00
5		8,80			7,70	10,56			132,00
5		10,00			8,75	12,00			149,00
5	406,40	12,50	402,34	410,46	10,94	15,00	970,00	1.173,00	185,00
5		10,94			15,00				



# R=1,5 D WELDED ELBOWS EN-10253-2

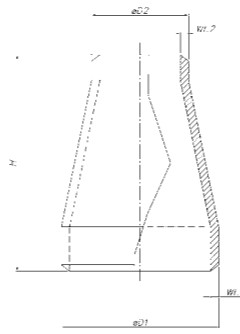
MODEL	OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM. RM	H QUOTE	THEORETICAL WEIGHT 90° KG.
3	26,90	2,30	26,40	27,40	2,01	2,76	29	43	0,06
3	33,70	2,60	33,20	34,20	2,28	3,12	38	56	0,12
3	42,40	2,60	41,90	42,90	2,28	3,12	48	69	0,19
3	48,30	2,60	47,80	48,80	2,28	3,12	57	82	0,26
3	60,30	2,90	59,70	60,90	2,54	3,48	76	106	0,49
3	76,10	2,90	75,34	76,86	2,54	3,48	95	133	0,78
3	88,90	3,20	88,01	89,79	2,80	3,84	114	159	1,22
3	101,60	3,60	100,58	102,62	3,15	4,32	134	184	1,83
3	108,00	3,60	106,92	109,08	3,15	4,32	143	196	2,08
3	114,30	3,60	113,16	115,44	3,15	4,32	152	210	2,36
3	133,00	4,00	131,67	134,33	3,50	4,80	181	247	3,62
3	139,70	4,00	138,30	141,10	3,50	4,80	190	260	4,00
3	159,00	4,50	157,41	160,59	3,94	5,40	216	294	5,80
3	168,30	4,50	166,62	169,98	3,94	5,40	229	313	6,50
3	193,70	5,60	191,76	195,64	4,90	6,72	270	367	11,00
3	219,10	4,50	216,91	221,29	3,94	5,40	305	414	11,40
3		6,30			5,51	7,56			15,80
3	273,00	5,00	270,27	275,73	4,38	6,00	381	518	19,80
3		6,30			5,51	7,56			24,80
3	323,90	5,60	320,66	327,14	4,90	6,72	457	619	31,60
3		7,10			6,21	8,52			39,80
3	355,60	5,60	352,04	359,16	4,90	6,72	533	711	40,50
3	406,00	6,30	401,94	410,06	5,51	7,56	610	813	67,00
3	457,20	6,30	452,63	461,77	5,51	7,56	686	914	84,90
3	508,00	6,30	502,92	513,08	5,51	7,56	762	1.016	105,00
3	609,60	6,30	603,50	615,70	5,51	7,56	914	1.219	152,00
3		7,10			6,21	8,52			152,00
3	711,00	7,10	703,89	718,11	6,21	8,52	1.067	1.422	232,00
3		8,00			7,00	9,60			232,00
3	813,00	8,00	804,87	821,13	7,00	9,60	1.219	1.626	299,00

# SEAMLESS ELBOWS EN-10253-2

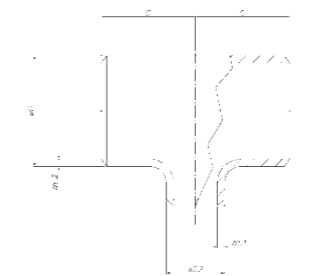
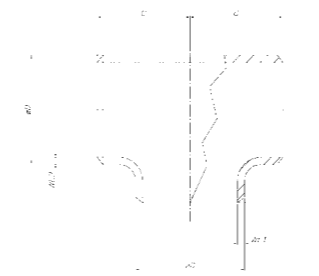


MODEL	OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	RADIUS MM. RM	H QUOTE	THEORETICAL WEIGHT 90° KG.
10	48,30	2,60	47,80	48,80	2,28	3,12	190,00	214,00	0,87
10		3,60			3,15	4,32			1,18
10	60,30	2,90	59,70	60,90	2,54	3,48	254,00	284,00	1,64
10		4,00			3,50	4,80			2,22
10	88,90	3,20	88,01	89,79	2,80	3,84	381,00	425,00	4,05
10		5,60			4,90	6,72			6,88
10	114,30	3,60	113,16	115,44	3,15	4,32	508,00	565,00	7,84
10		6,30			5,51	7,56			13,39
10	168,30	4,50	166,62	169,98	3,94	5,40	762,00	846,00	21,76
10		7,10			6,21	8,52			33,78
10	219,10	6,30	216,91	221,29	5,51	7,56	1.016,00	1.126,00	52,76
10		8,00			7,00	9,60			66,47
10	273,00	6,30	270,27	275,73	5,51	7,56	1.270,00	1.407,00	82,66
10		8,80			7,70	10,56			114,38
10	323,90	6,30	320,66	327,14	5,51	7,56	1.524,00	1.686,00	118,13
10		8,80			7,70	10,56			163,70
10	355,60	10,00	352,04	359,16	8,75	12,00	1.956,00	2.136,00	185,32
10		7,92			6,93	9,50			208,65
10	406,40	9,50	402,34	410,46	8,31	11,40	2.235,00	2.438,00	249,13
10		7,92			6,93	9,50			273,24
10		9,50			8,31	11,40			326,45

**SEAMLESS  
CONCENTRIC  
REDUCERS  
EN-10253-2**



D1 O.D. (1) MM.	D2 O.D. (2) MM.	WT1 WT. (1) MM.	WT2 WT. (2) MM.	H HEIGHT MM.	THEORETICAL WEIGHT KG.
33,70	26,90	2,60	2,30	50	0,09
42,40	26,90	2,60	2,30	50	0,13
	33,70	2,60	2,60		0,14
48,30	26,90	2,60	2,30	64	0,19
	33,70	2,60	2,60		0,20
	42,40	2,60	2,60		0,20
60,30	33,70	2,90	2,60	76	0,31
	42,40	2,90	2,60		0,32
	48,30	2,90	2,60		0,33
76,10	42,40	2,90	2,60	90	0,47
	48,30	2,90	2,60		0,48
	60,30	2,90	2,90		0,49
	48,30	3,20	2,60		0,61
88,90	60,30	3,20	2,90	90	0,62
	76,10	3,20	2,90		0,63
101,60	88,90	3,60	3,20	100	0,88
108,00	60,30	3,60	2,90	100	0,90
	76,10	3,60	2,90		0,90
	88,90	3,60	3,20		0,90
114,30	60,30	3,60	2,90	100	0,98
	76,10	3,60	2,90		1,00
	88,90	3,60	3,20		1,00
133,00	88,90	4,00	3,20	127	1,50
	108,00	4,00	3,60		1,50
	114,30	4,00	3,60		1,50
139,70	76,10	4,00	2,90	127	1,70
	88,90	4,00	3,20		1,74
	108,00	4,00	3,60		1,74
	114,30	4,00	3,60		1,76
159,00	108,00	4,50	3,60	140	2,30
	114,30	4,50	3,60		2,30
	133,00	4,50	4,00		2,30
168,30	139,70	4,50	4,00	140	2,30
	88,90	4,50	3,20		2,70
	114,30	4,50	3,60		2,82
	139,70	4,50	4,00		2,94
219,00	114,30	6,30	3,60	152	5,03
	139,70	6,30	4,00		5,12
	159,00	6,30	4,50		5,18
	168,30	6,30	4,50		5,18
273,00	168,30	6,30	4,50	178	7,40
	219,10	6,30	6,30		7,55
323,90	219,10	7,10	6,30	203	11,50
	273,00	7,10	6,30		11,90
	273,00	8,00	6,30		23,00
355,60	323,90	8,00	7,10	330	23,50
	273,00	8,80	6,30		31,40
406,40	273,00	8,80	6,30	355	31,40
	323,90	8,80	7,10		32,20

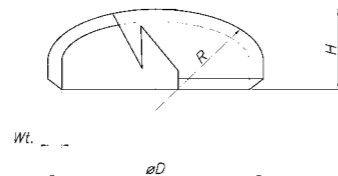


**SEAMLESS  
EQUAL AND  
REDUCING TEES  
EN-10253-2**

D1 DIAMETER 1	D2 DIAMETER 2	WT1 WALL THICKNESS 1	WT2 WALL THICKNESS 2	C C MM.	C+C C+ C MM.	THEORETICAL WEIGHT KG.
21,30	21,30	2,00	2,00	25	50	0,09
26,90	26,90	2,30	2,30	29	58	0,15
	33,70	2,60	2,60			0,25
33,70	21,30	2,60	2,00	38	76	0,25
	26,90	2,60	2,30			0,25
	42,40	2,60	2,60			0,47
42,40	26,90	2,60	2,30	48	96	0,47
	33,70	2,60	2,60			0,47
	48,30	2,60	2,60			0,68
48,30	26,90	2,60	2,30	57	114	0,68
	33,70	2,60	2,60			0,68
	42,40	2,60	2,60			0,68
	60,30	2,90	2,90			1,10
60,30	33,70	2,90	2,60	64	128	1,10
	42,40	2,90	2,60			1,10
	48,30	2,90	2,60			1,10
76,10	76,10	2,90	2,90	76	152	1,50
	42,40	2,90	2,60			1,50
	48,30	2,90	2,60			1,50
	60,30	2,90	2,90			1,50
88,90	88,90	3,20	3,20	86	172	2,20
	48,30	3,20	2,60			2,20
	60,30	3,20	2,90			2,20
	76,10	3,20	2,90			2,20
114,30	114,30	3,60	3,60	105	210	4,30
	60,30	3,60	2,90			4,30
	76,10	3,60	2,90			4,30
	88,90	3,60	3,20			4,30
139,70	139,70	4,00	4,00	124	248	6,20
	76,10	4,00	2,90			6,20
	88,90	4,00	3,20			6,20
	114,30	4,00	3,60			6,20
168,30	168,30	4,50	4,50	143	286	9,00
	88,90	4,50	3,20			8,80
	114,30	4,50	3,60			8,80
	139,70	4,50	4,00			9,00
219,10	219,10	6,30	6,30	178	356	19,70
	88,90	6,30	3,20			19,70
	114,30	6,30	3,60			19,70
	139,70	6,30	4,00			19,70
273,00	168,30	6,30	4,50	216	432	19,70
	273,00	6,30	6,30			26,20
	168,30	6,30	4,50			26,20
	219,10	6,30	6,30			26,20
323,90	323,90	7,10	7,10	254	508	49,00
	219,10	7,10	6,30			47,00
	273,00	7,10	6,30			47,00
355,60	355,60	8,00	8,00	279	558	68,00

# DISHED ENDS

EN-10253-2  
S235



OUTSIDE DIAMETER D	WALL THICKNESS WT	MIN O.D. TOLERANCE	MAX O.D. TOLERANCE	MIN W.T. TOLERANCE	MAX W.T. TOLERANCE	INTERNAL HEIGHT MIN. H	THEORETICAL WEIGHT KG.
26,90	2,30	26,40	27,40	2,01	2,76	11	0,02
33,70	2,60	33,20	34,20	2,28	3,12	11	0,03
42,40	2,60	41,90	42,90	2,28	3,12	11	0,05
48,30	2,60	47,80	48,80	2,28	3,12	12	0,06
60,30	2,90	59,70	60,90	2,54	3,48	17	0,10
76,10	2,90	75,34	76,86	2,54	3,48	19	0,16
88,90	3,20	88,01	89,79	2,80	3,84	23	0,22
101,60	3,60	100,58	102,62	3,15	4,32	25	0,34
108,00	3,60	106,92	109,08	3,15	4,32	26	0,39
114,30	3,60	113,16	115,44	3,15	4,32	26	0,39
133,00	4,00	131,67	134,33	3,50	4,80	32	0,56
139,70	4,00	138,30	141,10	3,50	4,80	36	0,63
159,00	4,50	157,41	160,59	3,94	5,40	43	0,93
168,30	4,50	166,62	169,98	3,94	5,40	45	1,06
193,70	5,40	191,76	195,64	4,73	6,48	56	1,87
219,10	6,30	216,91	221,29	5,51	7,56	69	2,82
244,50	6,30	242,06	246,95	5,51	7,56	75	3,41
273,00	6,30	270,27	275,73	5,51	7,56	90	5,00
323,90	7,10	320,66	327,14	6,21	8,52	99	6,32
355,60	8,00	352,04	359,16	7,00	9,60	106	10,14
406,40	8,80	402,34	410,46	7,70	10,56	125	10,94

# END FINISHING EN 10253-2

TYPE	WALL THICKNESS MM	DESIGNATION	DETAILS
1	Up to 3	I - bevel	
22	Up to 16	V - bevel	
3	Above 12	U - bevel	
4	Above 12	UV Compound bevel	
	From 4.66 to 21.56	Plain bevel	
	Above 21.56	Compound bevel	

# CERTIFICATION

## PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC

**CERTIFICATE OF APPROVAL**

This is to certify that the Quality Management System of:  
**Virgilio Cena & Figli S.p.A.**  
Via Oberdan, 39  
25128 Brescia - Italia

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:  
**ISO 9001:2008**

The Quality Management System is applicable to:  
**Manufacture of carbon and low alloy steel bends, elbows, (made from seamless and welded pipes in standard and heavy wall thickness) and concentric reducers, stockholding, procurement and supply of pipe fittings and adaptor to suit all kind of pipe material. Dimensional range from 1/4" a 32". Carbon steel and low alloy material range as per ASTM/ASME: WPB, WPC, WP1, WP11, WP12, WP22, WPS, WP9, WP91 as per ASTM/ASME A/S A 234 - ASME B 16.9 WPHY42, WPHY52, WPHY60, WPHY65, WPHY70. As per MSS SP75 / ASTM A 860 WPL6 as per ASTM/ASME A/S A 420 - ASME B 16.9. As per EN 10253-2: P235TR2, P265TR2, P235GH, P265GH, 16Mo3, 10CrMo5-5, 13CrMo4-5, 10CrMo9-10, X11CrMo5, X11CrMo9-1, X10CrMoVNB9-1, P355N, P355NL1, P215NL, P265NL, L290NB, L360NB, L360QB, L415NB, L415QB, L450QB. As per DIN 2609: St35.8/l, St35.8/III, St37.0, St37.4, 13CrMo44, 16Mo3. The System satisfy the requirements of Annex I Sect. 4.3 of directive 97/23/EC.**

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: LRC 0160142/QMS      Original Approval: 7<sup>th</sup> July 1993  
Current Certificate: 26<sup>th</sup> December 2009  
Certificate Expires: 23<sup>rd</sup> April 2011

Issued by: Lloyd's Register Quality Assurance Italy Srl  
for and on behalf of Lloyd's Register Quality Assurance Limited

This document is subject to the provision on the reverse  
Registered Office: Piazza della Vittoria 8/11 - 10121, Torino - Tel. Centrali 1802731/898 - C.C.A.A. Genova 256347  
This approval is carried out in accordance with the IFA assessment and certificate procedures and monitored by UKCA.  
The use of the UKCA Accreditation Mark is subject to the terms and conditions of the Accreditation Certificate Number 011  
March 2010/11

The European Pressure Equipment Directive 97/23/CE fixes the requirements for security of the pressure equipment. The producer of wrought butt welded fittings must operate with a Quality Management System according to ISO-9001:2000. Such system must be certified based on the specific evaluation of the materials produced by a competent operating organism in the European Community.

VIRGILIO CENA & FIGLI S.p.a. has achieved the following certification:

**LLOYD's** Register n° LRC 0160142/QMS dated December 26, 2009 approval certification according to ISO 9001:2008 with the specific note that the Quality System satisfies the requirements indicated in Annex I Sect. 4.3 of the European Directive 97/23/EC.

**TÜV** n° 24/2002/MUC dated April 27, 2009 approval certification specifying that the Quality System is in accordance with the Pressure Equipment Directive 97/23/EC Annex I, Par 4.3 (PED).

VIRGILIO CENA & FIGLI S.p.a. can supply product and documentation conformed to the PED, according to EN 10253-2. These conditions are nonetheless open to technical and commercial discussions to be defined by the parties officially in the purchase order.

**CERTIFICATE**

The company  
**Virgilio Cena & Figli S.p.A.**  
Via Oberdan, 39  
I-25128 Brescia

has been audited and approved as manufacturer according to  
**AD 2000-Merkblatt W0 / HP 100 R**

The scope of the audit and other relevant data are detailed in our report No. 1308361.

The company  
- has facilities permitting manufacturing and inspection in compliance with the current technical standards,  
- operates a quality system which guarantees that manufacturing and inspection of the products stated in our report are in conformity with the technical rules and standards,  
- employs qualified supervisory and inspection personnel.

The certificate expires in April 2011.

Munich, April 27<sup>th</sup>, 2009

TUV SÜD Industrie Service GmbH  
Zertifizierungsstelle für Druckgeräte  
  
(H. Müller)  
Notified Body, No. 0036

TUV SÜD Industrie Service GmbH, Abteilung Werkstoff- und Schweißtechnik  
Westerndorferstrasse 199, 80685 München

**CERTIFICATE**

The Certification Body - 0036 - of  
**TUV SÜD Industrie Service GmbH**

certifies that  
**Virgilio Cena & Figli S.p.A.**  
Via Oberdan, 39  
I-25128 Brescia

has implemented, operates and maintains a  
**Quality Assurance System in accordance with the Pressure Equipment Directive 97/23/EC (PED) Annex I, Paragraph 4.3**

as Material Manufacturer for the scope of  
butt welding fittings of ferritic steels.

The scope of the approval is described in the annex to this certificate.

The manufacturer is, therefore, authorized to issue certificates of specific product control within the scope of the assessed quality system and in accordance with the Pressure Equipment Directive 97/23/EC and applied technical specifications. Possible additional requirements - specific to applied technical specifications to meet PED Annex I - are not affected.

This certificate is valid through April 2011.

The validity of this certificate is connected to a valid certification in accordance with ISO 9001:2000.

Certificate No.: 24/2002/MUC  
Munich, April 27<sup>th</sup>, 2009

TUV SÜD Industrie Service GmbH  
Zertifizierungsstelle für Druckgeräte  
  
(H. Müller)  
Notified Body, No. 0036

TUV SÜD Industrie Service GmbH, Abteilung Werkstoff- und Schweißtechnik  
Westerndorferstrasse 199, 80685 München

REFERENCE LIST AVAILABLE AT [www.cenafittings.com](http://www.cenafittings.com)

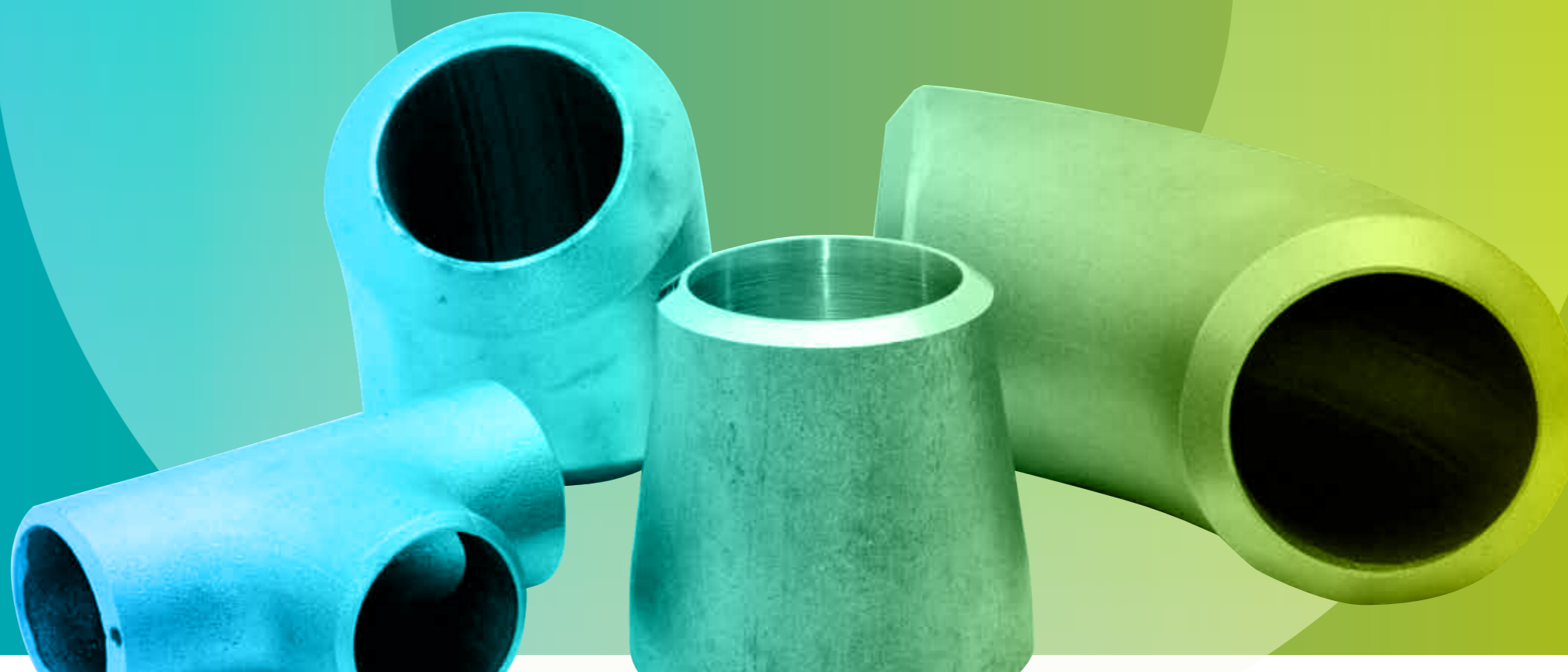
Model		1				2				3				4				5				6				7				8			
DN	D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D	T	2D	3D	5D
			X	X	X		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X
15	21,3	-	-	-	-	2,0	76	85	87	2,6	76	85	87	3,2	77	86	88	-	-	-	-	5,0	80	88	89	7,1	84	90	91				
20	26,9	-	-	-	-	2,3	67	80	87	2,6	67	80	88	3,2	68	81	88	4,5	70	82	89	5,6	72	83	89	8,0	77	86	91				
25	33,7	-	-	-	-	2,6	55	74	87	3,2	55	74	88	4,0	57	75	88	5,6	60	77	89	6,3	61	77	89	8,8	66	80	90				
32	42,4	-	-	-	-	2,6	55	73	87	3,6	55	74	88	4,0	56	74	88	5,0	58	75	88	6,3	60	76	89	8,0	62	78	89	10,0	65	79	90
40	48,3	-	-	-	-	2,6	57	74	88	3,6	57	75	88	4,0	58	75	88	5,0	59	76	88	6,3	61	77	89	8,0	63	78	89	10,0	65	79	90
50	60,3	-	-	-	-	2,9	61	76	88	3,6	61	76	88	4,0	61	77	88	5,6	62	77	88	7,1	64	78	89	8,8	65	79	89	11,0	67	80	90
65	76,1	-	-	-	-	2,9	59	76	88	3,6	59	76	88	5,6	60	77	88	7,1	61	77	88	8,0	62	77	89	10,0	63	78	89	14,2	67	80	90
80	88,9	-	-	-	-	3,2	60	76	88	4,0	60	76	88	5,6	61	77	88	8,0	63	78	89	8,8	63	78	89	11,0	65	79	89	16,0	68	80	90
100	114,3	-	-	-	-	3,6	62	77	88	4,5	62	77	88	6,3	63	78	88	8,8	64	78	89	11,0	65	79	89	14,2	67	80	89	17,5	68	80	90
125	139,7	-	-	-	-	4,0	63	78	88	5,0	63	78	88	6,3	64	78	88	10,0	65	79	89	12,5	66	79	89	16,0	67	80	89	20,0	68	81	89
150	168,3	4,0	62	78	88	4,5	63	78	88	5,6	63	78	88	7,1	63	78	88	11,0	64	79	88	14,2	65	79	88	17,5	66	80	89	22,2	67	80	89
200	219,1	4,5	63	78	88	6,3	64	78	88	7,1	64	78	88	8,0	64	78	88	12,5	65	79	88	16,0	66	79	88	17,5	66	80	89	22,2	67	80	89
250	273,0	5,0	64	78	88	6,3	64	78	88	8,8	64	78	88	10,0	64	79	88	12,5	65	79	88	16,0	65	79	88	22,2	66	80	89	30,0	68	80	89
300	323,9	5,6	64	78	88	7,1	65	78	88	8,8	65	79	88	10,0	65	79	88	12,5	65	79	88	17,5	66	79	88	25,0	67	80	89	32,0	68	80	89
350	355,6	5,6	67	80	88	8,0	67	80	88	10,0	67	80	88	12,5	68	80	88	16,0	68	80	88	20,0	68	81	88	28,0	69	81	89	36,0	70	82	89
400	406,4	6,3	67	80	88	8,8	67	80	88	10,0	67	80	88	12,5	67	80	88	17,5	68	80	88	22,2	68	81	88	30,0	69	81	89	40,0	70	82	89
450	457,0	6,3	67	80	88	10,0	67	80	88	11,0	67	80	88	12,5	67	80	88	17,5	68	80	89	22,2	68	81	89	32,0	69	81	89	45,0	70	82	89
500	508,0	6,3	67	80	88	10,0	67	80	88	11,0	67	80	88	12,5	67	80	88	17,5	68	80	89	25,0	68	81	89	36,0	69	81	89	50,0	70	82	89
600	610,0	6,3	67	80	89	10,0	67	80	89	12,5	67	80	89	17,5	67	80	89	25,0	68	80	89	30,0	68	81	89	45,0	69	81	89	60,0	70	82	90
700	711,0	7,1	67	80	89	10,0	67	80	89	12,5	67	80	89	25,0	68	80	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
800	813,0	8,0	67	80	88	10,0	67	80	89	12,5	67	80	89	25,0	67	80	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

**PRESSURE FACTORS  
OF ELBOWS  
TYPE A**  
ACCORDING TO EN 10253-2 2007



Model		1				2				3				4				5				6				7				8			
DN	D	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint	T	2D Tint	3D Tint	5D Tint				
15	21,3	-	-	-	-	2,0	2,7	2,4	2,4	2,6	3,5	3,1	3,1	3,2	4,3	3,8	3,7	4,0	5,3	4,7	4,7	-	-	-	-	5,0	6,5	5,9	5,8	7,1	9,0	8,3	8,1
20	26,9	-	-	-	-	2,3	3,5	2,9	2,7	2,6	3,9	3,3	3,0	3,2	4,8	4,0	3,7	4,0	5,9	5,0	4,6	4,5	6,5	5,6	5,2	5,6	8,0	6,9	6,4	8,0	11,0	9,8	9,1
25	33,7	-	-	-	-	2,6	4,7	3,6	3,0	3,2	5,7	4,4	3,7	4,0	6,9	5,4	4,6	4,5	7,7	6,1	5,2	5,6	9,2	7,5	6,4	6,3	10,2	8,4	7,2	8,8	13,5	11,4	10,0
32	42,4	-	-	-	-	2,6	4,7	3,6	3,0	3,6	6,4	4,9	4,2	4,0	7,0	5,5	4,6	5,0	8,5	6,8	5,8	6,3	10,4	8,4	7,2	8,0	12,8	10,6	9,1	10,0	15,4	13,1	11,4
40	48,3	-	-	-	-	2,6	4,6	3,5	3,0	3,6	6,2	4,9	4,1	4,0	6,8	5,4	4,6	5,0	8,4	6,7	5,7	6,3	10,3	8,4	7,2	8,0	12,7	10,5	9,1	10,0	15,4	13,0	11,3
50	60,3	-	-	-	-	2,9	4,8	3,9	3,3	3,6	5,9	4,8	4,1	4,0	6,5	5,3	4,6	5,6	8,9	7,3	6,4	7,1	11,1	9,2	8,1	8,8	13,5	11,4	10,0	11,0	16,5	14,1	12,5
65	76,1	-	-	-	-	2,9	5,0	3,9	3,3	3,6	6,1	4,8	4,1	5,6	9,2	7,4	6,4	7,1	11,5	9,3	8,1	8,0	12,8	10,5	9,1	10,0	15,7	13,0	11,4	14,2	21,5	18,2	16,1
80	88,9	-	-	-	-	3,2	5,3	4,2	3,7	4,0	6,6	5,3	4,6	5,6	9,1	7,3	6,4	8,0	12,7	10,4	9,1	8,8	13,9	11,4	10,0	11,0	17,0	14,2	12,5	16,0	23,9	20,4	18,1
100	114,3	-	-	-	-	3,6	5,8	4,7	4,1	4,5	7,2	5,9	5,1	6,3	9,9	8,2	7,2	8,8	13,7	11,3	10,0	11,0	16,9	14,1	12,5	14,2	21,4	18,1	16,1	17,5	25,9	22,1	19,8
125	139,7	-	-	-	-	4,0	6,4	5,2	4,6	5,0	7,9	6,5	5,7	6,3	9,9	8,1	7,2	10,0	15,4	12,8	11,4	12,5	19,0	15,9	14,2	16,0	24,0	20,3	18,1	20,0	29,5	25,2	22,6
150	168,3	4,0	6,4	5,2	4,6	4,5	7,2	5,8	5,2	5,6	8,9	7,2	6,4	7,1	11,2	9,1	8,1	11,0	17,1	14,1	12,5	14,2	21,7	18,1	16,1	17,5	26,5	22,2	19,9	22,2	33,0	28,0	25,1
200	219,1	4,5	7,1	5,8	5,2	6,3	9,8	8,1	7,2	7,1	11,1	9,1	8,1	8,0	12,4	10,2	9,1	12,5	19,1	15,9	14,2	16,0	24,3	20,3	18,1	17,5	26,4	22,1	19,8	22,2	33,1	28,0	25,1
250	273,0	5,0	7,9	6,4	5,7	6,3	9,9	8,1	7,2	8,8	13,7	11,2	10,0	10,0	15,5	12,8	11,4	12,5	19,2	15,9	14,2	16,0	24,4	20,3	18,1	22,2	33,4	28,0	25,1	30,0	44,4	37,7	33,9
300	323,9	5,6	8,7	7,2	6,4	7,1	11,0	9,1	8,1	8,8	13,6	11,2	10,0	10,0	15,4	12,7	11,4	12,5	19,2	15,9	14,2	17,5	26,6	22,1	19,8	25,0	37,4	31,5	28,3	32,0	47,3	40,1	36,1
350	355,6	5,6	8,4	7,0	6,4	8,0	11,9	10,0	9,1	10,0	14,8	12,5	11,4	12,5	18,5	15,6	14,2	16,0	23,5	19,9	18,1	20,0	29,2	24,8	22,6	28,0	40,4	34,6	31,6	36,0	51,5	44,4	40,6
400	406,4	6,3	9,4	7,9	7,2	8,8	13,1	11,0	10,0	10,0	14,9	12,5	11,4	12,5	18,5	15,6	14,2	17,5	25,7	21,8	19,8	22,2	32,5	27,6	25,1	30,0	43,5	37,1	33,9	40,0	57,3	49,3	45,1
450	457,0	6,3	9,4	7,9	7,2	10,0	14,9	12,5	11,3	11,0	16,3	13,7	12,4	12,5	18,5	15,6	14,1	17,5	25,8	21,8	19,8	22,2	32,5	27,6	25,0	32,0	46,4	39,6	36,0	45,0	64,4	55,5	50,6
500	508,0	6,3	9,4	7,9	7,2	10,0	14,9	12,5	11,3	11,0	16,4	13,8	12,4	12,5	18,6	15,6	14,1	17,5	25,8	21,8	19,8	25,0	36,6	31,1	28,2	36,0	52,2	44,6	40,5	50,0	71,6	61,6	56,2
600	610,0	6,3	9,4	7,9	7,1	10,0	14,9	12,5	11,3	12,5	18,6	15,6	14,1	17,5	25,9	21,8	19,7	25,0	36,8	31,1	28,1	30,0	43,9	37,3	33,7	45,0	65,1	55,7	50,5	60,0	85,9	74,0	67,3
700	711,0	7,1	10,6	8,9	8,0	10,0	14,9	12,6	11,4	12,5	18,6	15,6	14,1	25,0	36,9	31,1	28,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800	813,0	8,0	12,0	10,0	9,0	10,0	15,0	12,6	11,4	12,5	18,6	15,6	14,1	25,0	37,0	31,2	28,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**WALL THICKNESS ON  
THE INTRADOS OF ELBOWS  
TYPE B**  
ACCORDING TO EN 10253-2 2007



# STEEL GRADES FOR PIPES MOSTLY USED TO PRODUCE CENA SEAMLESS ELBOWS



USE	EN 10253-2	ASME B16.9	DIN 2609	ASTM/ASME
Use in pressure Room temperature	P235TR2		St37.0 <sup>(2)</sup>	
	P265TR2		St44.0 <sup>(2)</sup>	
Use in pressure High temperature			St35.8/III <sup>(2)</sup>	
	P265GH	WPB WPC	St45.8 <sup>(2)</sup>	A 106 Gr.B <sup>(3)</sup>
	16Mo3	WP1	15Mo3 <sup>(1)</sup>	A 335 P1 <sup>(3)</sup>
	13CrMo5-5	WP11		A 335 P11 <sup>(3)</sup>
	13CrMo4-5	WP12	13CrMo4-4 <sup>(1)</sup>	A 335 P12 <sup>(3)</sup>
	10CrMo9-10	WP22	10CrMo9-10 <sup>(1)</sup>	A 335 P22 <sup>(3)</sup>
	X11CrMo5	WP5		A 335 P5 <sup>(3)</sup>
	X11CrMo9-1	WP9		A 335 P9 <sup>(3)</sup>
Use in pressure Low temperature	X10CrMoVNb9-1	WP91		A 335 P91 <sup>(3)</sup>
	P215NL			
	P265NL	WPL6	TstE285 <sup>(2)</sup>	A 333 Gr.6 <sup>(3)</sup>
	12Ni14		10Ni14 <sup>(1)</sup>	
Use in pressure Combustible fluids	X10Ni9			
	L290NB	WPHY42	StE290.7 <sup>(1)</sup>	API 5L X42 <sup>(3)</sup>
	L360NB	WPHY52	StE360.7 <sup>(1)</sup>	API 5L X52 <sup>(3)</sup>
	L360QB			
	L415NB			
	L415QB	WPHY60		API 5L X60 <sup>(3)</sup>
L450QB	WPHY65		API 5L X65 <sup>(3)</sup>	

(1) Equivalent steel according DIN

(2) Equivalent steel but not according to DIN

(3) Equivalent steel but not according to ASME/ASTM

## 1. DEFINITIONS

- 1.1. "CENA" here after refers to VIRGILIO CENA & FIGLI S.p.a. located at Via Oberdan, 39, 25128 - Brescia – Italy.
- 1.2. "Purchaser" here after refers to the company indicated on the Purchase Order as Purchaser of the Products.
- 1.3. "Products" here after refers to the products indicated on the Purchase Order.
- 1.4. "INCOTERMS 2000" here after refers to the official rules of the interpretation of commercial terms of the Chamber of International Commerce, published in 2000.
- 1.5. "Parties" here after refers to both CENA and the Purchaser.
- 1.6. "Purchase Order" here after refers to the document which contains the objective elements of a possible sale of the Products between the Purchaser and CENA, which becomes a sales contract following the explicit or tacit acceptance by the Order Confirmation (as outlined here under).
- 1.7. "Order Confirmation" here after refers to the form sent by CENA to the Purchaser, referring to the present General Sales Conditions and which, if not refused within 2 working days of reception (proof of e-mail or fax sent by CENA), render the Purchasing Order binding between the Parties as a sales contract and subject to the present General Sales Conditions.
- 1.8. "Services" here after refers to the services to be rendered according to the Purchase Order.
- 1.9. "General Sales Conditions" here after refers to the present General Sales Conditions.

## 2. SOLE AGREEMENT

- 2.1. The present General Sales Conditions constitute the only sales conditions and the sole agreement between the Parties regarding the sale of the Products and substitutes any and all other related preceding agreements. The reception of the Order Confirmation by the Purchaser without any written objection within 2 working days following its reception results in the acceptance of the present General Sales Conditions on behalf of the Purchaser. No other declaration will be considered to have been made outside of those indicated in these General Sales Conditions.
- 2.2. Any issues conflicting with the present General Sales Conditions, indicated in any written document (including correspondence between the Purchaser and CENA), are null and only the present General Sales Conditions will be applied unless otherwise officially communicated by CENA and signed by the legal representatives of both Parties.
- 2.3. Should any individual aspect of these General Sales Conditions be void, wholly or partially, the remainder will continue to be valid and fully effective.

## 3. APPLICABILITY

- 3.1. The present General Sales Conditions apply to any and all Purchase Orders stipulated with CENA from the date of their acceptance, unless otherwise officially indicated in writing by CENA.

## 4. DELIVERY

- 4.1. CENA will deliver the Products in conformity to the INCOTERMS 2000, agreed upon by the Parties and indicated in the Purchase Order. CENA will respect the delivery terms agreed upon in the Order Confirmation. In case the delivery of the Products were to become impossible respecting the agreed upon terms for substantial production problems, the Parties will do their utmost to agree on new delivery terms keeping the above mentioned problems in consideration.
- 4.2. The delivery times and dates of delivery are only approximate. CENA shall endeavour to respect these. At any rate, CENA shall be entitled, even if binding dates of delivery have been agreed upon, to extend the delivery time sufficiently without being obligated to pay any compensation or penalty, if unforeseen circumstances, acts of God, interruption of work and particularly strikes or delay in the arrival of necessary material should occur. If in such a case it were found that by such interruptions it is impossible for CENA to fulfil the contract, CENA shall be entitled to withdraw from the contract without being liable to pay any damages whatsoever.
- 4.3. Should for any reasons whatsoever, especially if it is impossible for CENA to fulfil the contract, the latter be cancelled, the assertion of claims for damages in respect of compensation for any indirect or direct loss will be excluded.
- 4.4. It will be to CENA's discretion to effect partial shipment if it should be necessary. Each partial shipment can be invoiced separately.
- 4.5. When the Purchaser is notified of the Products being ready for despatch, the Purchaser must retrieve the Products immediately. Should the Purchaser fail to do so or should there be no possibility of shipping the Products, CENA shall be entitled to store the Products at CENA's discretion and at the Purchaser's risk and expense and to charge the Products as delivered ex works thereby entitling CENA to invoice the Products. The Purchaser cannot refuse any shipment or any partial shipment.

## 5. RESERVATION OF THE TRANSFER OF PROPERTY

- 5.1. The propriety of the Products will pass to the Purchaser only upon complete payment of the relative Invoice on behalf of the Purchaser, according to Article 7 of the present General Sales Conditions. CENA will remain proprietor of the Products sold and eventually delivered until the complete payment on behalf of the Purchaser. Therefore, all CENA sales are always stipulated with the above stated reserve of propriety of the Products. The Purchaser, on the other hand, assumes all risks and responsibilities relative to the Products as indicated in the Purchase Order as well as in the INCOTERMS 2000 and, therefore, must be insured against these risks and responsibilities.
- 5.2. The presentation of a letter of credit or other commercial documentation does not constitute complete payment.
- 5.3. Until the property of the Products passes to the Purchaser, the Purchaser will hold the Products as trustee holder of CENA, but will have the faculty of using the Products for his normal commercial activities.
- 5.4. The Purchaser will have to stock the Products sold by CENA until their complete payment, in a way that they remain clearly identified as property of CENA, and cannot remove, hide or modify stickers or marks present of the Products which permit the identification of the Products as being property of CENA. Furthermore, the Purchaser will allow CENA to access its stores with the scope of inspecting the Products.
- 5.5. If the Products not yet completely paid for are non identifiable and are stocked with other Products of the same type supplied by CENA, it will be assumed that those Products are the unpaid Products and object of reservation of property of CENA.
- 5.6. In the case of non payment, and without any prejudice for the interests of these General Sales Conditions, CENA can request the restitution of the Products at the Purchaser's risk and cost.
- 5.7. In case the Purchaser were not to return the Products immediately, the Purchaser can be obligated to do so coercively resorting

to judicial intervention, which authorizes CENA to take possession back of the Products, for which CENA continues to reserve the property, at the Purchaser's address or elsewhere, all at the Purchaser's expense. It is the Purchaser's obligation to assure that this clause be imposed and applied to respect the spirit of this clause in case the Products were in a country that does not apply this specific clause.

- 5.8. CENA reserves the copyright to any and all documentation created by CENA. All details or documentation pertaining to CENA offers or Order Confirmations will remain property of CENA. No extract or information supplied by CENA may be copied, communicated, sent or made available to third parties.

## 6. RISKS

- 6.1. The Purchaser is responsible for all risk of loss or damage to the Products from the delivery of the Products in conformity to Article 4 of the present General Sales Conditions until the complete payment of the Products as per Article 7 of the present General Sales Conditions.

## 7. PAYMENTS

- 7.1. Unless otherwise agreed upon, CENA will produce an invoice for the Purchaser at the moment of dispatch of the Products in conformity to the present General Sales Conditions and the Purchaser will effect the payment according to the terms indicated in the invoice.
- 7.2. Unless otherwise clearly indicated, all payments are to be considered in advance.
- 7.3. Unless otherwise clearly indicated, all payments are to be made by bank transfer.
- 7.4. In any moment, CENA has the faculty to request guarantee of payment to the Purchaser, if CENA feels it to be necessary.
- 7.5. All sums overdue are subject, at CENA's faculty to renounce, to interests to be calculated daily on a yearly rate of 700 base points (7.00%) plus the ECB rate, as of the overdue date which will be due without the request by CENA. Upon overdue payments, CENA will have the faculty to resolve all or part of the Purchase Orders with the Purchaser and/or completely or partially suspend deliveries to the Purchaser of the Products based on Purchase Orders. The Purchaser will have 5 working days to respond to a communication of this faculty as of the date of reception of this written position made by CENA.
- 7.6. In any case, any claim or legal action undertaken by the Purchaser for any reason will not entitle the Purchaser to any retention or compensation right of any nature whatsoever.
- 7.7. Unless otherwise clearly indicated, all prices indicated by CENA are in EURO and are considered ex works Brescia, Italy without packaging included, VAT excluded and without any tests or special supply characteristics.

## 8. WARRANTEE

- 8.1. CENA warrants, for a period of 12 months from the delivery date, that the Products supplied or produced by CENA are conform. CENA also warrants that the Products are conform to the specifications outlined in the Purchase Order. CENA does not warrant that the Products are appropriate for the use and scopes specified in any way.
- 8.2. The Purchaser must inform CENA within 5 days of the discovery of an occult defect, or 5 days from the date in which a diligent purchaser should have known the occult defect and within 15 days of the delivery of the Products in the case of an obvious defect. The lack of a written communication from the Purchaser to CENA within these lead times relieves CENA from any responsibility of any nature.
- 8.3. CENA's responsibility following this warrantee will only be limited to the substitution or reimbursement of the purchasing price of the defective Product.
- 8.4. Any legal action of any nature is to be taken within 12 months from the date of delivery of the Products by the Purchaser.
- 8.5. CENA only responds for the Products and not for any other supplies or Services from other companies.
- 8.6. CENA's warrantee obligations are not applicable to any Products or parts of these which (i) are normally consumed during the use, (ii) have a normal life time inferior to the above stated warrantee, (iii) were not correctly stocked, installed, used, maintained or repaired or differently modified from the instructions indicated by CENA or without having obtained CENA's approval, (iv) have undergone any kind of non correct use or dangerous exposure, or were part of a dangerous event of which CENA cannot absolutely be responsible for.

## 9. RESOLUTIONS

- 9.1. In case the Purchaser were in financial difficulties, becomes insolvent, or declares bankruptcy, CENA will have the faculty to resolve all Purchase Orders immediately with the Purchaser.

## 10. LIMITATION AND EXCLUSION OF RESPONSIBILITY

- 10.1. CENA's responsibility for any damage, cost, expense or loss of any nature whatsoever, resulting from the execution or non execution of a Purchase Order will be limited to the compensation for direct or indirect damages, costs, expenses and losses for the total amount no greater than twenty-five per-cent (25%) of the value of the Purchase Order and nevertheless no greater than one hundred thousand EURO (100.000 euro).
- 10.2. None of the Parties will be responsible to the other for loss of profitability, of turnover, of sales, or for any indirect damage (for example loss of production, cost of productive structure, labour costs, general administration and management expenses).
- 10.3. Any right non expressly indicated in these General Sales Conditions will not be taken into consideration and is to be considered non applicable.

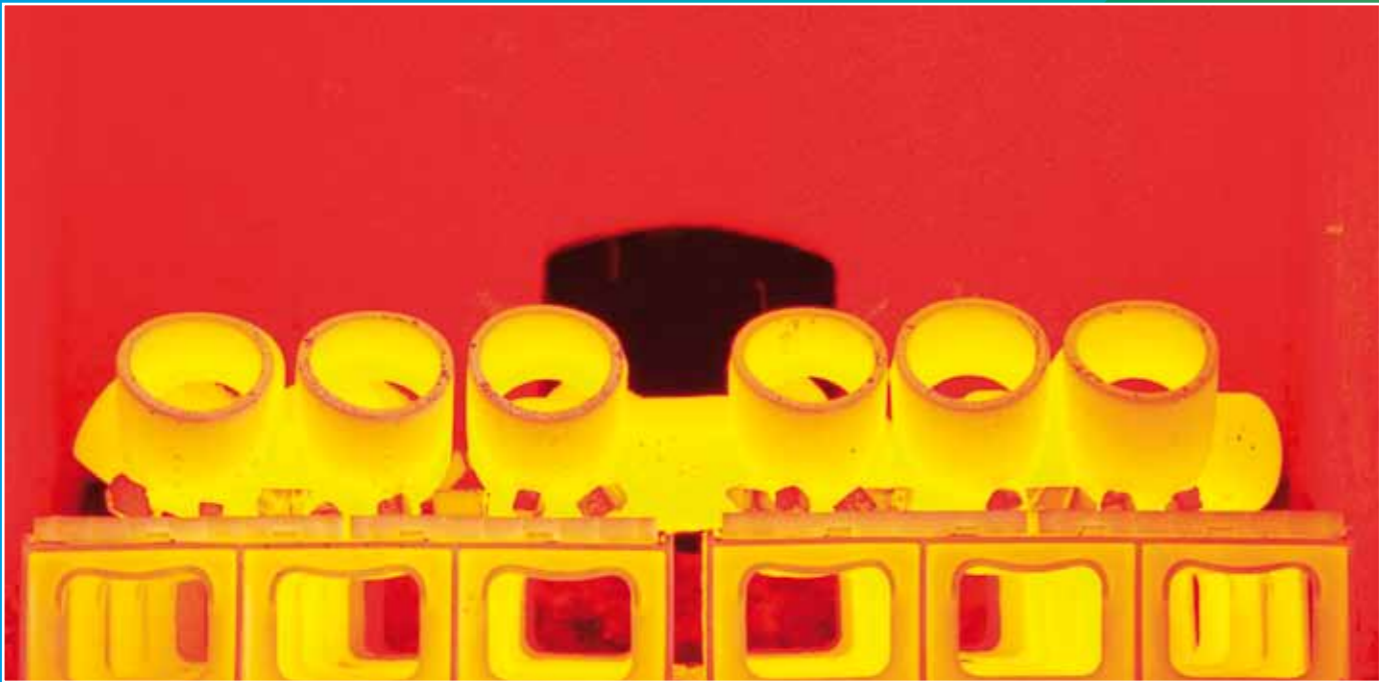
## 11. RESPONSIBILITY OF RESPECT OF THE LAW RELATIVE TO THE USE OF THE PRODUCTS

- 11.1. The Purchaser will have to respect the laws and regulations relative to the use of the Products.

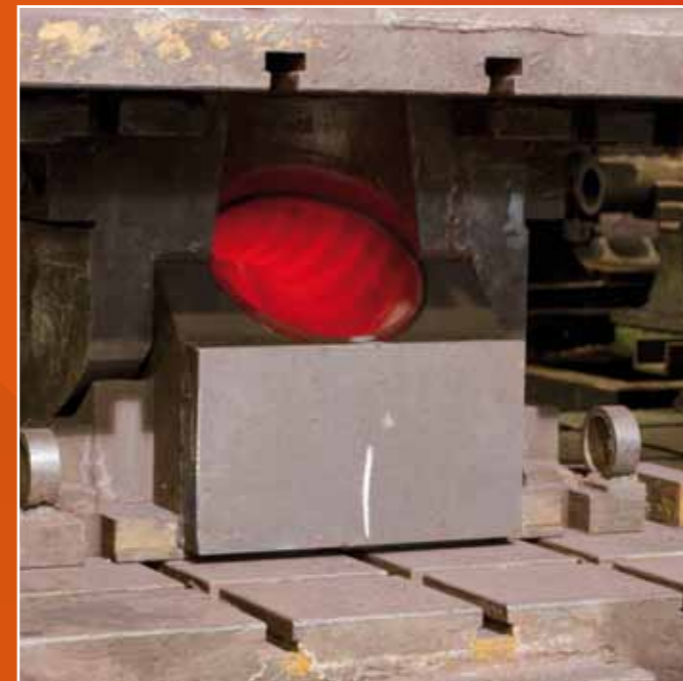
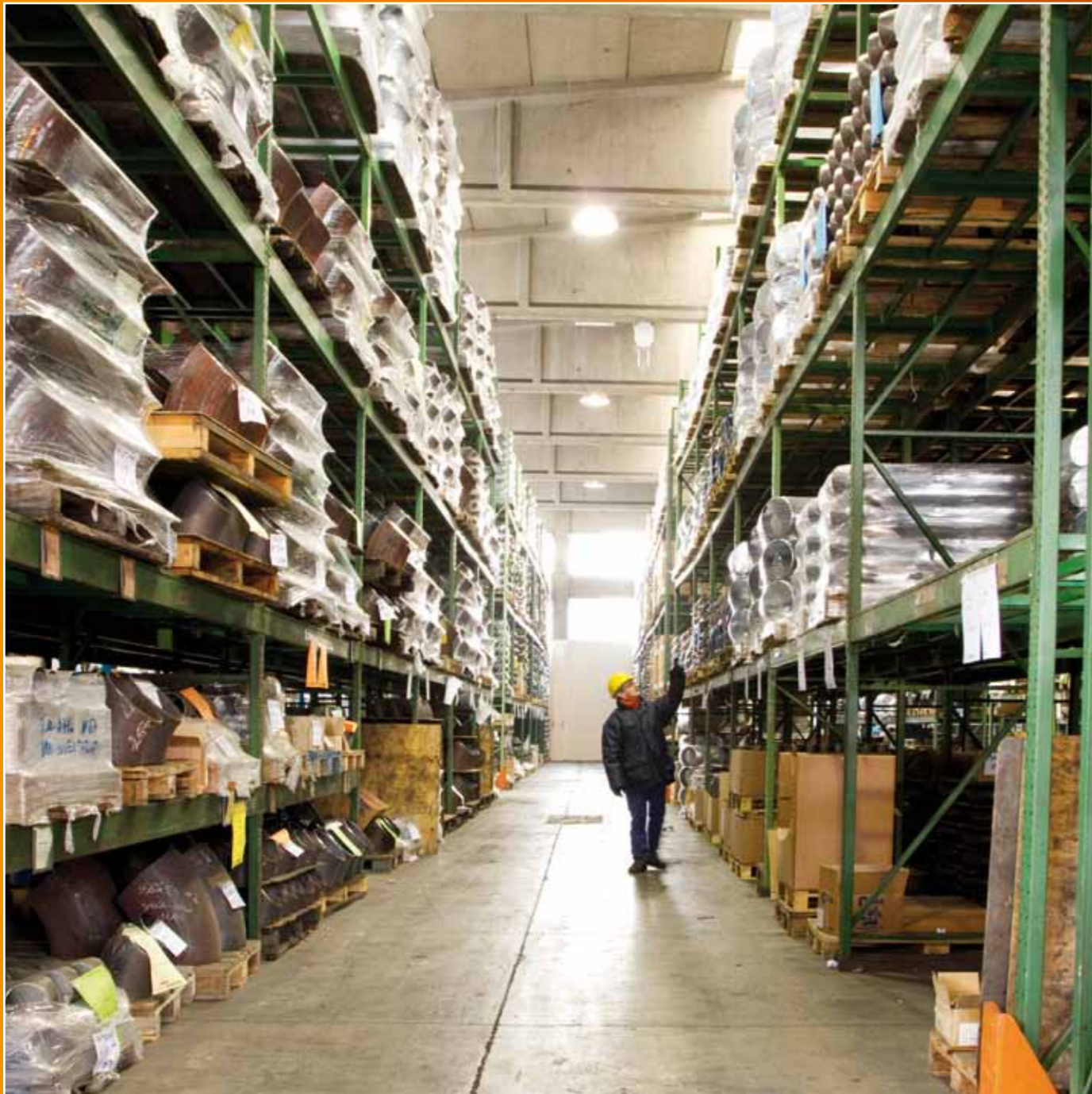
## 12. APPLICABLE LAWS

- 12.1. The Purchase Order is regulated in any and every aspect by the Italian law.
- 12.2. Any controversy rising from the Purchase Order and/or these General Sales Conditions, including its validity, interpretation, execution and resolution will be dealt with in legal forum of Brescia Italy.

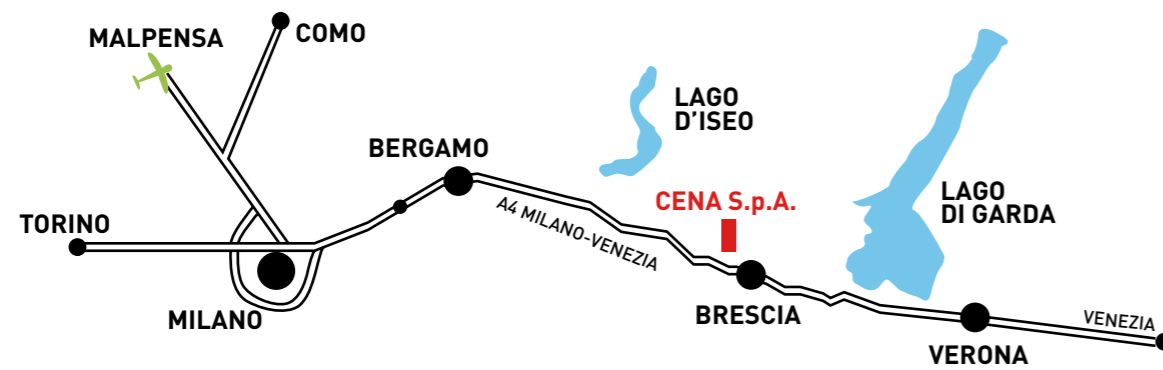
PRODUCTION



# PRODUCTION



## HOW TO REACH US



## VIRGILIO CENA E FIGLI S.P.A.

via Oberdan 39 25128 Brescia Italy  
t. +39.030.398561 f. +39.030.398646  
[www.cenafittings.com](http://www.cenafittings.com)

Gruppo Poligrafica S.Faustino S.p.A.  
The Solution Network

## CREDITS

This catalogue is fruit of the direct collaboration of many people in CENA from the sales, administration, accounting, engineering, quality, production, maintenance, purchasing, IT, human resources, shipping and stock departments.  
All photos were produced by Marco Guerrini.

All rights reserved.  
Values in this catalogue are non binding.

**VIRGILIO CENA  
E FIGLI S.P.A.**

via Oberdan 39, 25128 Brescia, Italy  
t. +39.030.398.561 f. +39.030.398.646  
export@cenafittings.com  
www.cenafittings.com