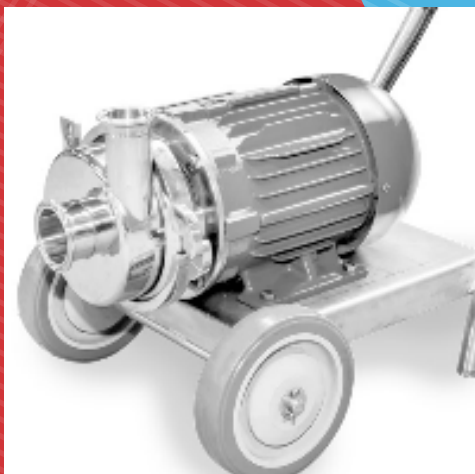


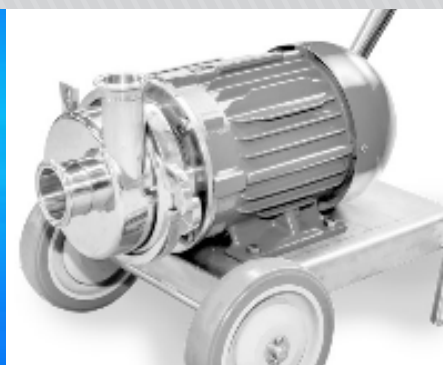
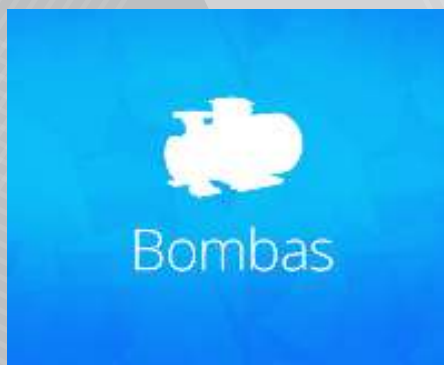
esferaval

VÁLVULAS E CONEXÕES



válvulas . conexões . bombas . acessórios

Veranópolis . RS





A Esferaval Válvulas e Conexões é uma empresa especializada na fabricação de válvulas, conexões, bombas centrífugas e demais acessórios da linha sanitária. Localizada na cidade de Veranópolis - RS, a Esferaval possui uma produção seriada de seus produtos, resulta no baixo custo industrial permitindo o fornecimento a distribuidores, revendas e fabricantes de equipamentos do ramo. Oferecendo além de qualidade, pontualidade na entrega e preços competitivos, sempre visando excelência e satisfação do cliente.

Todo o processo de fabricação é cuidadosamente controlado, desde certificação da matéria prima até o processo de acabamento, assegurando as condições necessárias para o fornecimento de material as mais exigentes empresas do ramo alimentício, químico e farmacêutico.

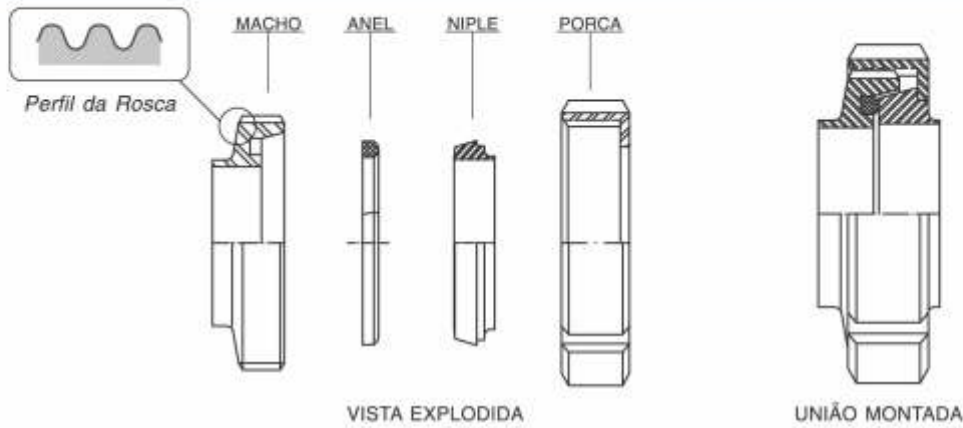


A Esferaval dispõe de uma ampla linha de bombas sanitárias, utilizadas em diversas aplicações, onde todas as peças que entram em contato com o produto, são produzidas em aço inox 304, 316 e 316L, com várias possibilidades de conexões, para melhor atender nossos clientes, consulte nossos vendedores

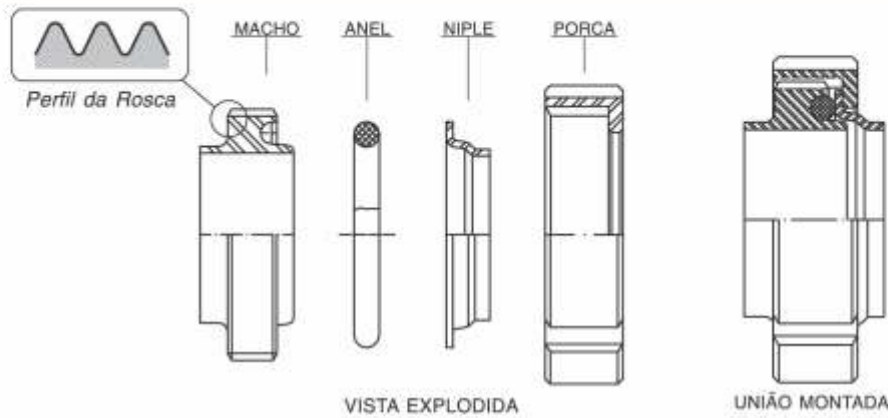


UNIÕES ROSCADAS (NORMALIZADAS PADRÃO INTERNACIONAL)

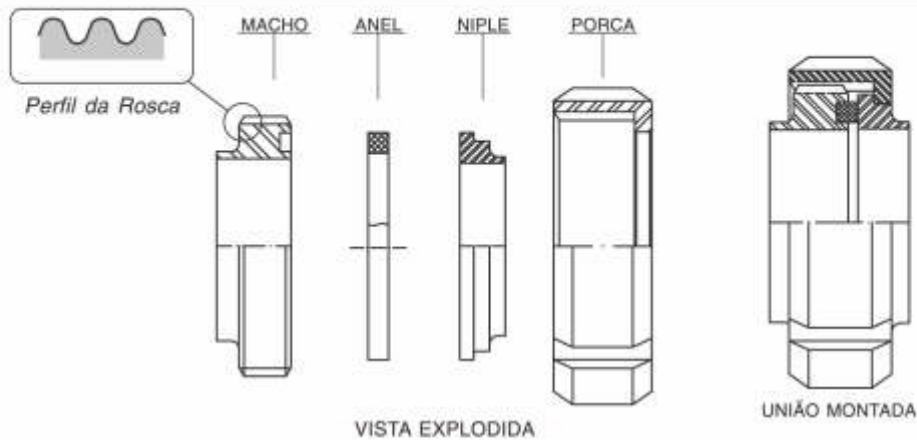
DIN (Norma 11851)



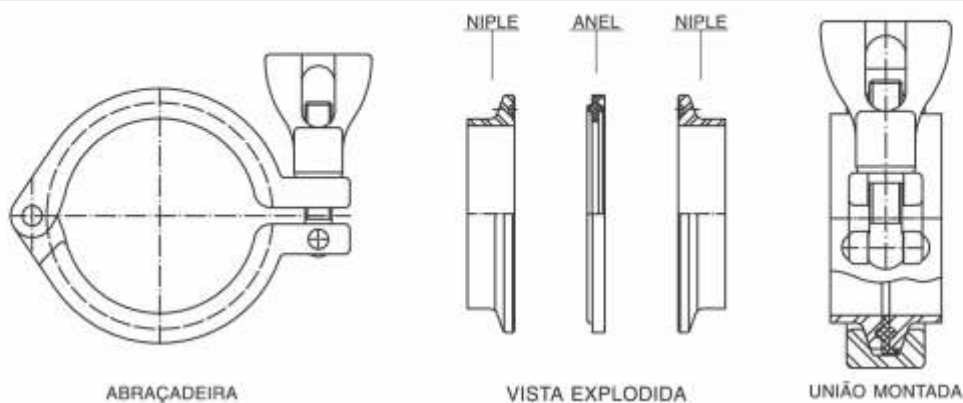
RJT (Norma BS1864)



SMS (Norma 1145)

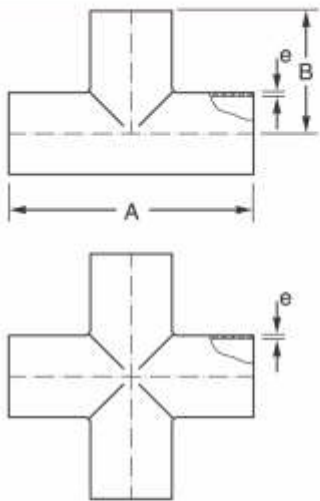


TC (Norma ISO 2852)



CONEXÕES TUBULARES SOLDADA

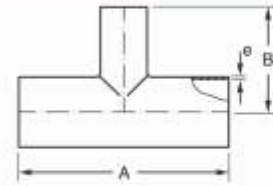
Te reto solda / Cruzeta solda



Bitola	A	B	e
1"	100,0	50,0	1,5
1½"	114,0	57,0	1,5
2"	150,4	75,2	1,5
2½"	170,0	85,0	2,0
3"	170,0	85,0	2,0
4"	217,0	108,5	2,0
6"	370,0	185,0	2,0

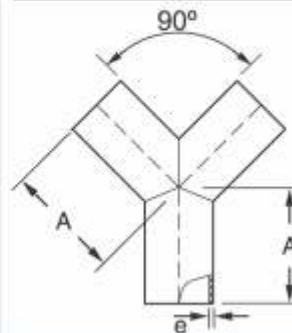
* Outras bitolas sob consulta.

Te reto de redução solda



Bitola	A	B	e	Bitola	A	B	e
1½"x1"	114,0	57,0	1,5	3"x1½"	170,0	85,0	2,0
2"x1"	150,4	75,2	1,5	3"x2"	170,0	85,0	2,0
2"x1½"	150,4	75,2	1,5	3"x2½"	170,0	85,0	2,0
2½"x1"	170,0	85,0	2,0	4"x1"	217,0	108,5	2,0
2½"x1½"	170,0	85,0	2,0	4"x1½"	217,0	108,5	2,0
2½"x2"	170,0	85,0	2,0	4"x2"	217,0	108,5	2,0
3"x1"	170,0	85,0	2,0	4"x3"	217,0	108,5	2,0

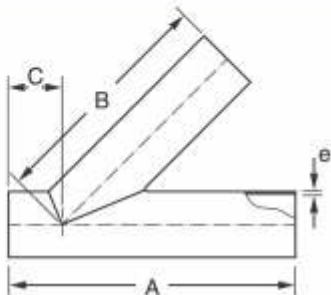
Te tipo "Y" Solda



Bitola	A	e
1"	45,0	1,5
1½"	65,0	1,5
2"	85,0	2,0
2½"	95,0	2,0
3"	100,0	2,0
4"	135,0	2,0

* Outras bitolas sob consulta.

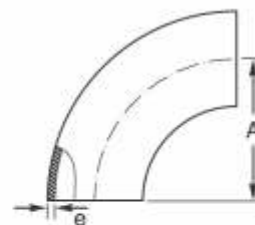
Te 45° solda



Bitola	A	B	C	e
1"	152,4	127,0	25,8	1,5
1½"	187,3	157,1	30,4	1,5
2"	222,2	180,9	41,5	2,0
2½"	254,0	215,7	43,0	2,0
3"	276,0	225,2	47,8	2,0
4"	325,4	263,4	62,0	2,0

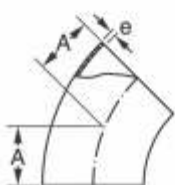
* Fornecemos também com outros ângulos e na opção de redução

Curva 90° solda



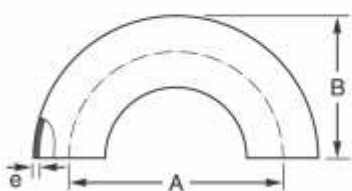
Bitola	A	e
1"	38,1	1,5
1½"	57,2	1,5
2"	76,2	1,5
2½"	95,3	2,0
3"	114,3	2,0
4"	152,4	2,0
6"	228,6	3,0

Curva 45° solda



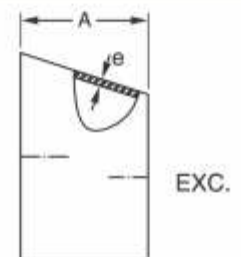
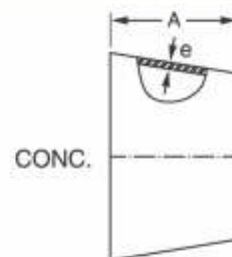
Bitola	A	e
1"	14,9	1,5
1½"	22,3	1,5
2"	29,7	1,5
2½"	37,2	2,0
3"	44,6	2,0
4"	59,6	2,0
6"	89,2	3,0

Curva 180° solda



Bitola	A	B	e
1"	76,2	50,8	1,5
1½"	114,3	76,2	1,5
2"	152,4	101,6	1,5
2½"	190,5	127,0	2,0
3"	228,6	152,4	2,0
4"	304,8	203,2	2,0
6"	457,2	304,8	3,0

Redução cônica Concêntrica/Excêntrica



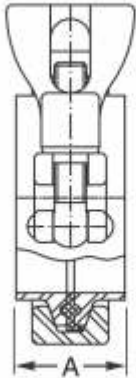
Bitola	CONC./EXC.		Bitola	CONC./EXC.	
	A	e		A	e
1½"x1"	42,0	2,0	3"x2"	82,0	2,0
2"x1"	78,0	2,0	3"x2½"	42,0	2,0
2"x1½"	42,0	2,0	4"x1"	247,0	2,0
2½"x1"	123,0	2,0	4"x1½"	211,0	2,0
2½"x1½"	87,0	2,0	4"x2"	169,0	2,0
2½"x2"	45,0	2,0	4"x2½"	129,0	2,0
3"x1"	161,0	2,0	4"x3"	87,0	2,0
3"x1½"	124,0	2,0			

* Outras bitolas sob consulta

* Dimensões em milímetros (mm).

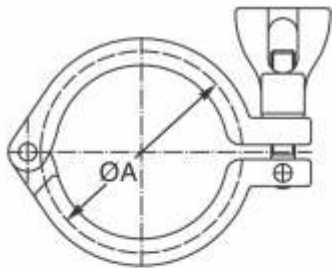
CONEXÕES TERMINAIS E ACESSÓRIOS TC

União TC



Bitola	CURTA LONGA	
	A	
½"	27,0	45,0
¾"	27,0	45,0
1"	27,0	45,0
1½"	27,0	45,0
2"	27,0	45,0
2½"	27,0	45,0
3"	27,0	45,0
4"	34,0	59,0
6"	45,0	59,0
8"	53,0	65,0

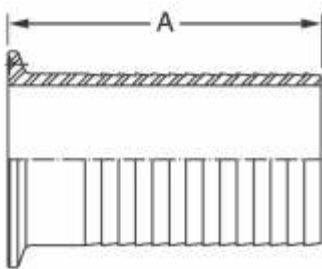
Abraçadeira TC



Bitola	normal	Pressão de Serviço
	OA	(kgf/cm²)
½"	30,0	40,0
¾"	30,0	40,0
1"	54,0	34,0
1½"	54,0	34,0
2"	67,0	28,0
2½"	81,0	26,0
3"	94,0	22,0
4"	122,0	12,0
6"	172,0	8,0

*As pressões acima referem-se à t = 20°C.
Para t = 120°C reduzi-las em 40%.

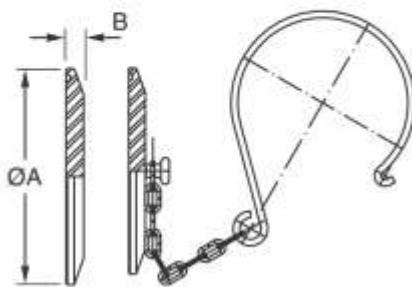
Niple adaptador TC x Mangueira



Bitola	A
1"	73,0
1½"	93,0
2"	93,0
2½"	113,0
3"	113,0
4"	116,0
6"	142,0

*É fornecido também com redução.

Tampão TC



Bitola	OA	B
	1"	50,0
1½"	50,0	6,4
2"	64,0	6,4
2½"	77,0	6,4
3"	91,0	6,4
4"	119,0	7,9
6"	167,0	7,9

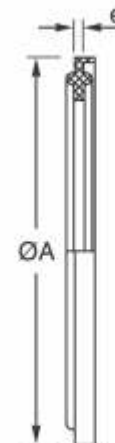
TAMPÃO TAMPÃO C/ CORRENTE

Niple solda TC



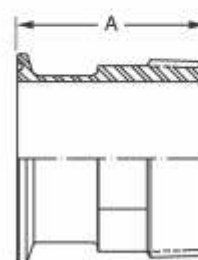
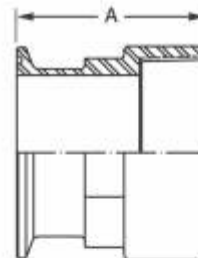
Bitola	CURTO	LONGO
	OA	B
½"	25,0	12,7 21,5
¾"	25,0	12,7 21,5
1"	50,0	12,7 21,5
1½"	50,0	12,7 21,5
2"	64,0	12,7 21,5
2½"	77,0	12,7 21,5
3"	91,0	12,7 21,5
4"	119,0	15,9 28,6
6"	167,0	21,5 28,6
8"	220,6	25,4 31,8

Anel de vedação TC



Bitola	OA	e
½"	22,0	4,5
¾"	22,0	4,5
1"	52,0	1,8
1½"	52,0	1,8
2"	66,0	1,8
2½"	79,0	1,8
3"	93,0	1,8
4"	121,0	1,8
6"	169,0	1,8
8"	223,0	1,8

Niple adaptador TC x BSP/NPT tipo L/N

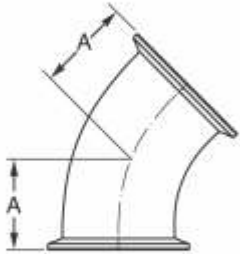


Bitola	TIPO L		TIPO N	
	BSP	NPT	BSP	NPT
	A			
1"	60,0	60,0	60,0	60,0
1½"	65,0	62,0	65,0	62,0
2"	70,0	64,0	70,0	64,0
2½"	75,0	72,0	75,0	72,0
3"	80,0	76,0	80,0	76,0
4"	91,0	81,0	89,0	81,0

* Dimensões em milímetros (mm).

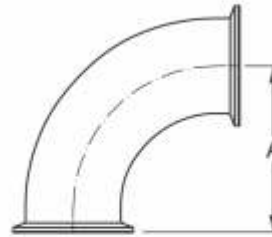
CONEXÕES TUBULARES TC

Curva 45° 2TC



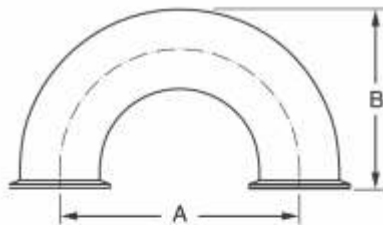
Bitola	A
1"	28,0
1½"	35,0
2"	42,0
2½"	50,0
3"	57,0
4"	76,0
6"	111,0

Curva 90° 2TC



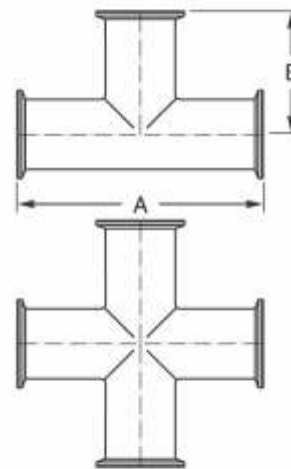
Bitola	A
1"	51,0
1½"	70,0
2"	89,0
2½"	108,0
3"	127,0
4"	168,0
6"	250,0

Curva 180° 2TC



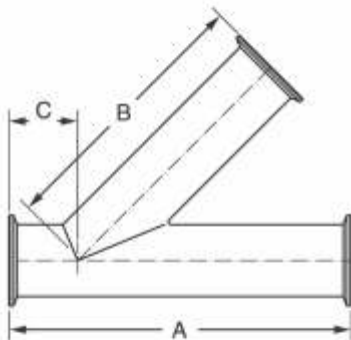
Bitola	A	B
1"	76,2	64,0
1½"	114,3	89,0
2"	152,4	114,0
2½"	190,5	140,0
3"	228,6	165,0
4"	304,8	219,0
6"	457,2	326,0

Te reto 3TC / Cruzeta 4TC



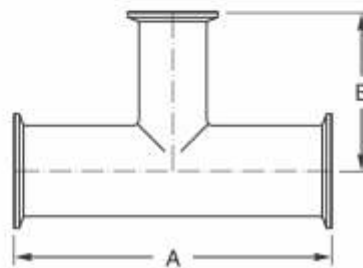
Bitola	A	B
1"	125,4	62,7
1½"	139,4	69,7
2"	175,8	87,9
2½"	195,4	97,7
3"	195,4	97,7
4"	248,8	124,4
6"	413,0	206,5

Te 45° 3TC



Bitola	A	B	C
1"	178,0	140,0	39,0
1½"	213,0	170,0	43,0
2"	248,0	194,0	54,0
2½"	279,0	228,0	56,0
3"	301,0	238,0	61,0
4"	357,0	279,3	78,0

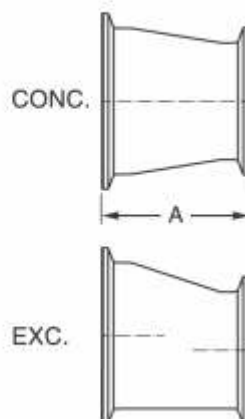
Te redução 3TC



Bitola	A	B
1½"x1"	139,4	69,7
2"x1"	175,8	87,9
2"x1½"	175,8	87,9
2½"x1"	195,4	97,7
2½"x1½"	195,4	97,7
2½"x2"	195,4	97,7
3"x1"	195,4	97,7
3"x1½"	195,4	97,7

Bitola	A	B
3"x2"	195,4	97,7
3"x2½"	195,4	97,7
4"x1"	248,8	124,4
4"x1½"	248,8	124,4
4"x2"	248,8	124,4
4"x2½"	248,8	124,4
4"x3"	248,8	124,4
6"x4"	413,0	206,5

Redução cônica Concêntrica/Excêntrica 2TC



Bitola	A
1½"x1"	67,4
2"x1"	103,4
2"x1½"	67,4
2½"x1"	148,4
2½"x1½"	112,4
2½"x2"	70,4
3"x1"	186,4
3"x1½"	149,4
3"x2"	107,4
3"x2½"	67,4

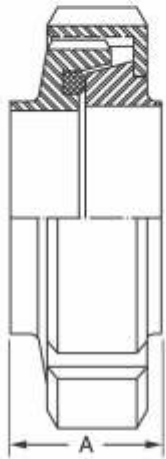
Bitola	A
4"x1"	275,6
4"x1½"	239,6
4"x2"	197,6
4"x2½"	157,6
4"x3"	115,6

* Outras bitolas sob consulta

* Dimensões em milímetros (mm).

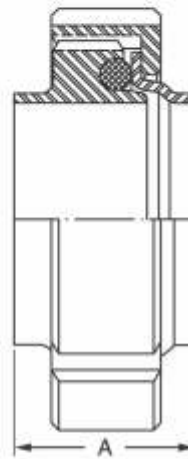
CONEXÕES TERMINAIS ROSCADAS

União solda DIN



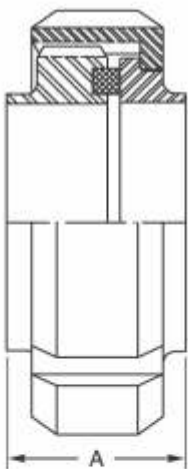
Bitola	A
½"	34,0
¾"	34,0
1"	38,0
1½"	38,0
2"	39,0
2½"	40,0
3"	49,0
4"	50,0
5"	62,0
6"	70,0

União solda RJT



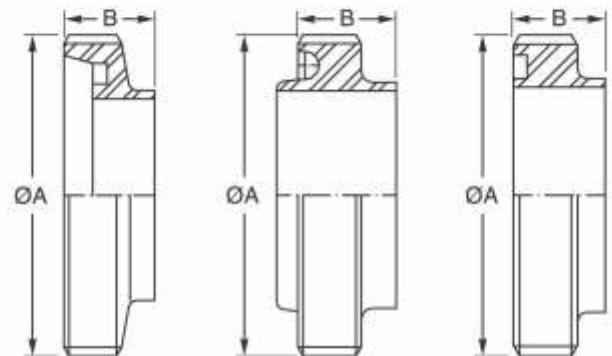
Bitola	A
1"	36,0
1½"	36,0
2"	36,0
2½"	36,0
3"	36,0
4"	36,0
6"	48,0

União solda SMS



Bitola	A
1"	30,5
1½"	30,5
2"	31,5
2½"	35,5
3"	39,5
4"	54,5

Macho solda



DIN

RJT

SMS

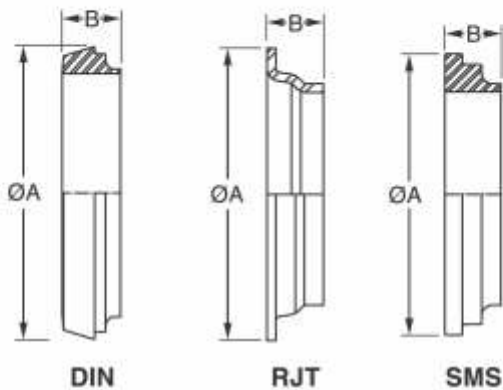
Bitola	DIN		RJT		SMS	
	ØA	B	ØA	B	ØA	B
1"	52,0	22,0	45,0	22,0	40,0	15,0
1½"	65,0	22,0	58,0	22,0	60,0	20,0
2"	78,0	22,0	72,0	22,0	70,0	20,0
2½"	95,0	26,0	85,0	22,0	85,0	24,0
3"	109,0	30,0	98,0	22,0	98,0	24,0
4"	129,0	30,0	123,0	27,0	132,0	35,0
5"	170,0	46,0	*	*	*	*
6"	190,0	50,0	175,0	27,0	*	*

* Sob consulta

* Dimensões em milímetros (mm).

CONEXÕES TERMINAIS ROSCADAS

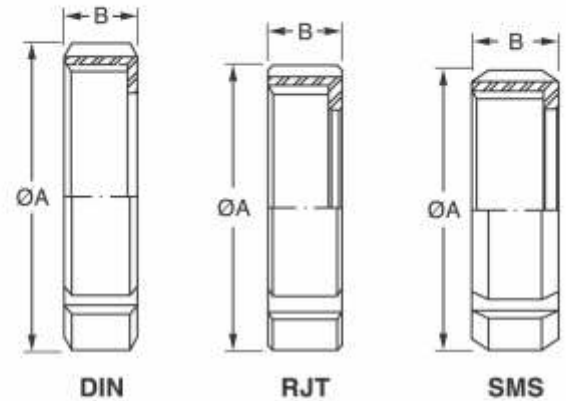
Niple solda



Bitola	DIN		RJT		SMS	
	ØA	B	ØA	B	ØA	B
1"	44,0	18,0	41,0	13,0	36,0	13,0
1½"	56,0	20,0	54,0	13,0	55,0	13,0
2"	69,0	20,0	67,0	14,0	65,0	13,0
2½"	86,0	24,0	80,0	14,0	80,0	13,0
3"	100,0	24,0	93,0	16,0	93,0	13,0
4"	120,0	27,0	118,0	16,0	127,0	17,0
5"	150,0	28,0	*	*	*	*
6"	176,0	37,0	168,0	20,0	*	*

* Sob consulta

Porca circular

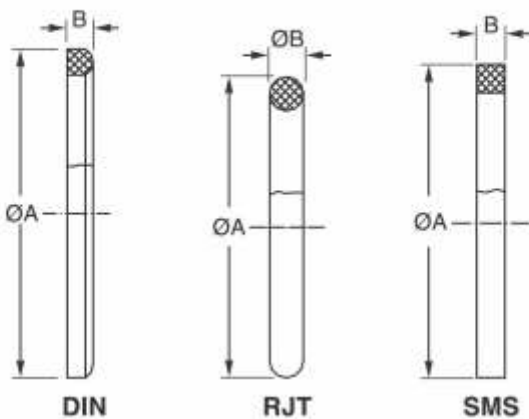


Bitola	DIN		RJT		SMS	
	ØA	B	ØA	B	ØA	B
1"	63,0	21,0	59,0	22,0	51,0	20,0
1½"	78,0	21,0	72,0	22,0	74,0	25,0
2"	92,0	22,0	86,0	22,0	84,0	26,0
2½"	112,0	25,0	98,0	22,0	100,0	30,0
3"	127,0	29,0	111,0	22,0	114,0	32,0
4"	148,0	31,0	136,0	22,0	154,0	45,0
5"	178,0	35,0	*	*	*	*
6"	210,0	40,0	225,0	26,0	*	*

* Sob consulta

* Fornecemos também Porca Tampão e Porca Tampão com corrente.

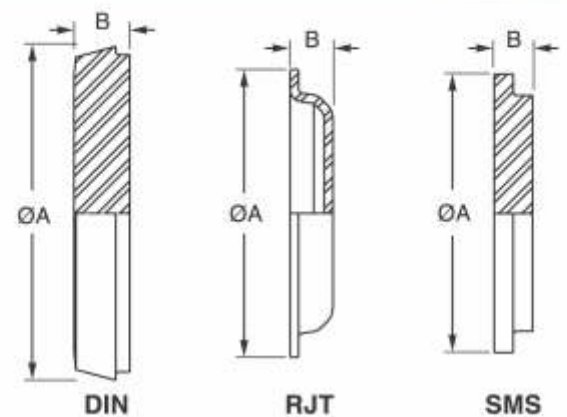
Anel de vedação



Bitola	DIN		RJT		SMS	
	ØA	B	ØA	ØB	ØA	B
1"	40,0	5,0	40,0	6,6	32,0	5,5
1½"	52,0	5,0	53,0	6,6	48,0	5,5
2"	64,0	5,0	65,0	6,6	61,0	5,5
2½"	81,0	5,0	78,0	6,6	73,5	5,5
3"	95,0	5,0	91,0	6,6	86,0	5,5
4"	114,0	6,0	116,0	6,6	103,5	5,5
5"	141,0	7,0	*	*	*	*
6"	169,0	7,5	158,0	6,6	*	*

* Sob consulta

Tampão plano



Bitola	DIN		RJT		SMS	
	ØA	B	ØA	B	ØA	B
1"	44,0	10,0	42,0	8,0	36,0	8,0
1½"	56,0	13,0	54,0	8,0	55,0	8,0
2"	69,0	15,0	67,0	9,0	66,0	8,5
2½"	86,0	16,0	80,0	10,0	80,0	9,0
3"	100,0	16,0	93,0	10,0	94,0	9,0
4"	121,0	20,0	118,0	10,0	127,0	9,0
5"	150,0	17,0	*	*	*	*
6"	176,0	24,0	168,0	10,0	*	*

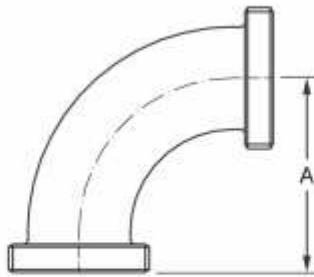
* Fornecemos também Tampão com corrente.

* Sob consulta

* Dimensões em milímetros (mm).

CONEXÕES TUBULARES ROSCADAS

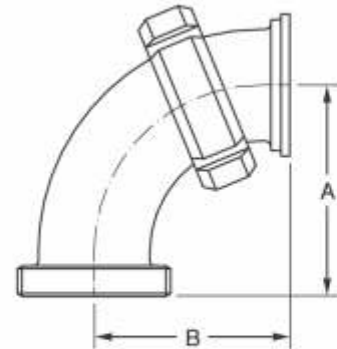
Curva 90° 2M



Bitola	DIN	RJT	SMS
	A		
1"	60,0	60,0	53,0
1½"	79,0	79,0	77,0
2"	98,0	98,0	96,0
2½"	121,0	118,0	119,0
3"	144,0	137,0	138,0
4"	182,0	179,0	187,0
5"	237,0	*	*
6"	279,0	256,0	*

* Sob consulta

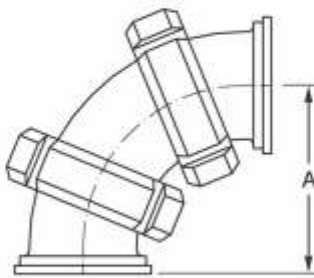
Curva 90° MNP



Bitola	DIN		RJT		SMS	
	A	B	A	B	A	B
1"	60,0	58,0	60,0	51,0	53,0	51,0
1½"	79,0	77,0	79,0	70,0	77,0	70,0
2"	98,0	96,0	98,0	90,0	96,0	89,0
2½"	121,0	119,0	118,0	109,0	119,0	108,0
3"	144,0	138,0	137,0	130,0	138,0	127,0
4"	182,0	180,0	179,0	168,0	187,0	169,0
5"	237,0	219,0	*	*	*	*
6"	279,0	266,0	255,0	249,0	*	*

* Sob consulta.

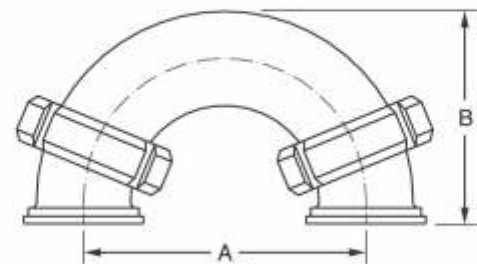
Curva 90° 2NP



Bitola	DIN	RJT	SMS
	A		
1"	58,0	51,0	51,0
1½"	77,0	70,0	70,0
2"	96,0	90,0	89,0
2½"	119,0	109,0	108,0
3"	138,0	130,0	127,0
4"	180,0	168,0	169,0
5"	219,0	*	*
6"	266,0	249,0	*

* Sob consulta

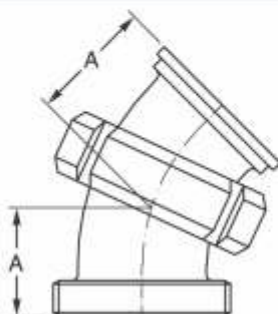
Curva 180° 2NP



Bitola	DIN	RJT	SMS
	A	B	
1"	76,0	69,0	64,0
1½"	114,0	96,0	89,0
2"	152,0	122,0	115,0
2½"	191,0	151,0	140,0
3"	229,0	176,0	165,0
4"	305,0	230,0	220,0
5"	381,0	282,0	*
6"	457,0	342,0	325,0

* Sob consulta.

Curva 45° MNP



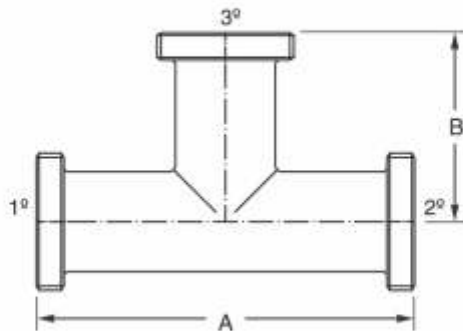
Bitola	DIN		RJT		SMS	
	A	B	A	B	A	B
1"	37,0	33,0	37,0	28,0	30,0	28,0
1½"	44,0	42,0	45,0	35,0	42,0	35,0
2"	52,0	50,0	52,0	44,0	50,0	43,0
2½"	63,0	61,0	59,0	51,0	61,0	50,0
3"	75,0	69,0	67,0	61,0	69,0	58,0
4"	90,0	87,0	87,0	76,0	93,0	77,0
6"	139,0	126,0	116,0	109,0	95,0	*

* Sob consulta.

* Dimensões em milímetros (mm).

CONEXÕES TUBULARES ROSCADAS

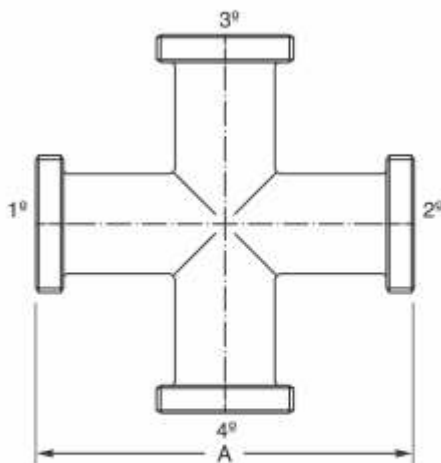
Te reto 3M



Bitola	DIN		RJT		SMS	
	A	B	A	B	A	B
1"	144,0	72,0	144,0	72,0	130,0	65,0
1½"	158,0	79,0	158,0	79,0	154,0	77,0
2"	194,4	97,2	194,4	97,2	190,4	95,2
2½"	222,0	111,0	214,0	107,0	218,0	109,0
3"	230,0	115,0	214,0	107,0	218,0	109,0
4"	277,0	138,5	271,0	135,5	287,0	143,5

* Outras bitolas sob consulta.

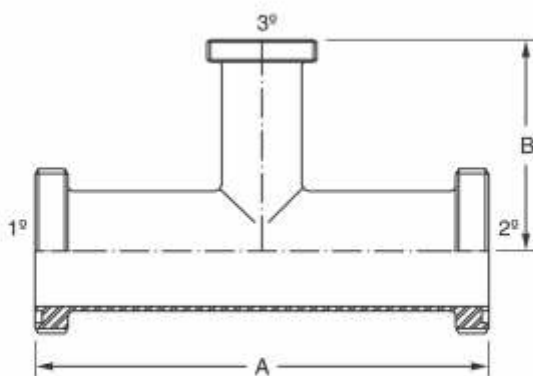
Cruzeta 4M



Bitola	DIN	RJT	SMS
	A		
1"	144,0	144,0	130,0
1½"	158,0	158,0	154,0
2"	194,4	194,4	190,4
2½"	222,0	214,0	218,0
3"	230,0	214,0	218,0
4"	277,0	271,0	287,0

* Outras bitolas sob consulta.

Te de redução 3M



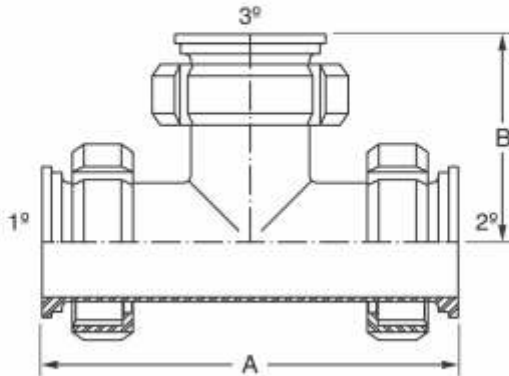
Bitola	DIN		RJT		SMS	
	A	B	A	B	A	B
1½"x1"	158,0	79,0	158,0	79,0	154,0	77,0
2"x1"	194,4	97,2	194,4	97,2	190,4	95,2
2"x1½"	194,4	97,2	194,4	97,2	190,4	95,2
2½"x1"	222,0	111,0	214,0	107,0	218,0	109,0
2½"x1½"	222,0	111,0	214,0	107,0	218,0	109,0
2½"x2"	222,0	111,0	214,0	107,0	218,0	109,0
3"x1"	230,0	115,0	214,0	107,0	218,0	109,0
3"x1½"	230,0	115,0	214,0	107,0	218,0	109,0
3"x2"	230,0	115,0	214,0	107,0	218,0	109,0
3"x2½"	230,0	115,0	214,0	107,0	218,0	109,0
4"x1"	277,0	138,5	271,0	135,5	287,0	143,5
4"x1½"	277,0	138,5	271,0	135,5	287,0	143,5
4"x2"	277,0	138,5	271,0	135,5	287,0	143,5
4"x2½"	277,0	138,5	271,0	135,5	287,0	143,5
4"x3"	277,0	138,5	271,0	135,5	287,0	143,5

* Outras bitolas sob consulta.

* Dimensões em milímetros (mm).

CONEXÕES TUBULARES ROSCADAS

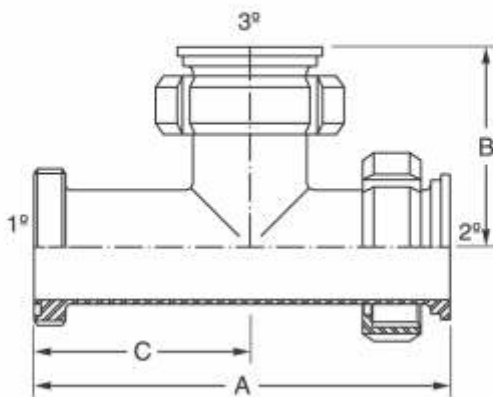
Te 3NP



Bitola	DIN		RJT		SMS	
	A	B	A	B	A	B
1"	136,0	68,0	126,0	63,0	126,0	63,0
1½"	154,0	77,0	140,0	70,0	140,0	70,0
2"	190,4	95,2	178,4	89,2	176,4	88,2
2½"	218,0	109,0	198,0	99,0	196,0	98,0
3"	218,0	109,0	202,0	101,0	196,0	98,0
4"	271,0	135,5	249,0	124,5	251,0	125,5

* Outras bitolas sob consulta.

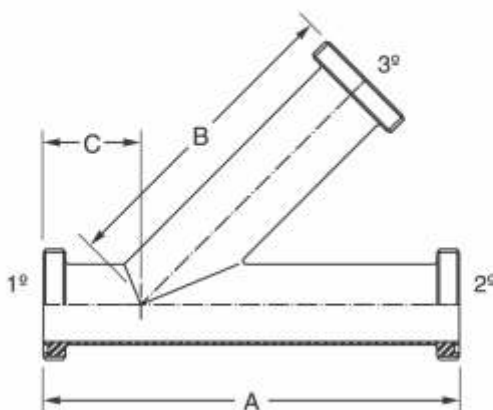
Te MNPNP



Bitola	DIN			RJT			SMS		
	A	B	C	A	B	C	A	B	C
1"	140,0	68,0	72,0	135,0	63,0	72,0	128,0	63,0	65,0
1½"	156,0	77,0	79,0	149,0	70,0	79,0	147,0	70,0	77,0
2"	192,4	95,2	97,2	186,4	89,2	97,2	183,4	88,2	95,2
2½"	220,0	109,0	111,0	206,0	99,0	107,0	207,0	98,0	109,0
3"	224,0	109,0	115,0	208,0	101,0	107,0	207,0	98,0	109,0
4"	274,0	135,5	138,5	260,0	124,5	135,5	269,0	125,5	143,5

* Outras bitolas sob consulta.

Te 45° 3M



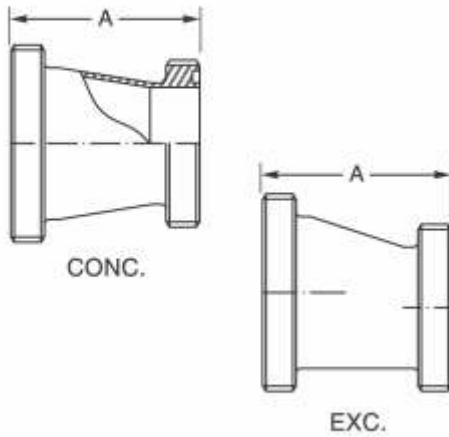
Bitola	DIN			RJT			SMS		
	A	B	C	A	B	C	A	B	C
1"	196,0	149,0	48,0	197,0	149,0	48,0	182,0	142,0	41,0
1½"	231,0	179,0	52,0	232,0	179,0	53,0	227,0	177,0	50,0
2"	266,0	203,0	64,0	267,0	203,0	64,0	262,0	201,0	62,0
2½"	306,0	242,0	69,0	298,0	238,0	65,0	302,0	240,0	67,0
3"	336,0	255,0	78,0	320,0	247,0	70,0	324,0	249,0	72,0
4"	323,0	303,0	82,0	317,0	300,0	79,0	333,0	308,0	87,0

* Outras bitolas sob consulta.

* Dimensões em milímetros (mm).

CONEXÕES TUBULARES ROSCADAS

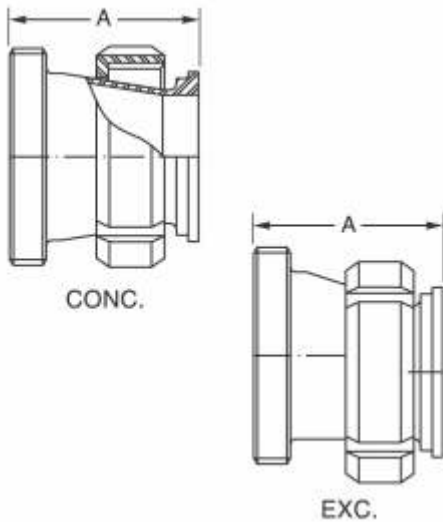
Redução cônica 2M



Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
1½"x1"	86,0	86,0	77,0
2"x1"	122,0	122,0	113,0
2"x1½"	86,0	86,0	82,0
2½"x1"	171,0	167,0	162,0
2½"x1½"	135,0	131,0	131,0
2½"x2"	93,0	89,0	89,0
3"x1"	213,0	200,0	200,0
3"x1½"	176,0	168,0	168,0

Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
3"x2"	134,0	126,0	126,0
3"x2½"	98,0	86,0	90,0
4"x1"	299,0	296,0	297,0
4"x1½"	263,0	260,0	266,0
4"x2"	221,0	218,0	224,0
4"x2½"	185,0	178,0	188,0
4"x3"	147,0	136,0	146,0

Redução cônica MNP

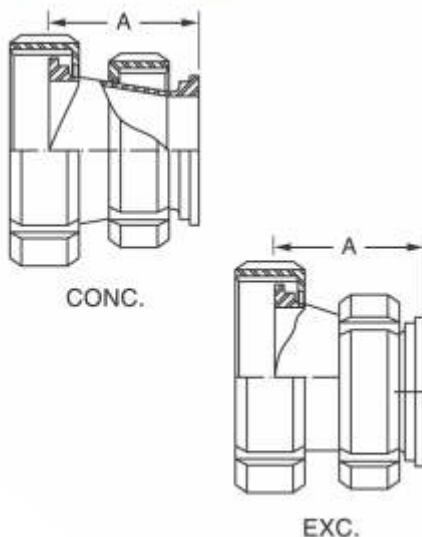


Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
1½"x1"	82,0	77,0	75,0
2"x1"	118,0	113,0	111,0
2"x1½"	84,0	77,0	75,0
2½"x1"	167,0	158,0	160,0
2½"x1½"	133,0	122,0	124,0
2½"x2"	91,0	81,0	82,0
3"x1"	209,0	96,0	198,0
3"x1½"	174,0	159,0	161,0

Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
3"x2"	132,0	118,0	119,0
3"x2½"	96,0	78,0	79,0
4"x1"	295,0	287,0	295,0
4"x1½"	261,0	251,0	259,0
4"x2"	219,0	210,0	217,0
4"x2½"	183,0	170,0	177,0
4"x3"	141,0	130,0	135,0

* Fornecemos também na ordem de soldagem NPM.

Redução cônica 2NP



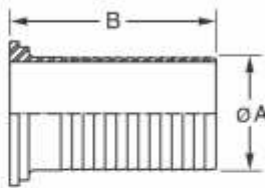
Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
1½"x1"	80,0	68,0	68,0
2"x1"	116,0	105,0	104,0
2"x1½"	80,0	69,0	68,0
2½"x1"	165,0	150,0	149,0
2½"x1½"	131,0	114,0	113,0
2½"x2"	89,0	73,0	71,0
3"x1"	203,0	190,0	187,0
3"x1½"	168,0	153,0	150,0

Bitola	DIN	RJT	SMS
	CONC./EXC.	CONC./EXC.	CONC./EXC.
	A		
3"x2"	126,0	112,0	108,0
3"x2½"	90,0	72,0	68,0
4"x1"	292,0	276,0	277,0
4"x1½"	258,0	240,0	241,0
4"x2"	216,0	199,0	199,0
4"x2½"	180,0	159,0	159,0
4"x3"	183,0	119,0	117,0

* Dimensões em milímetros (mm).

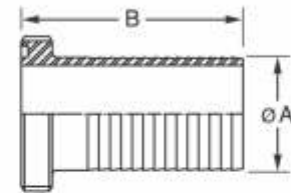
CONEXÕES ROSCADAS

Niple adaptador para mangueira



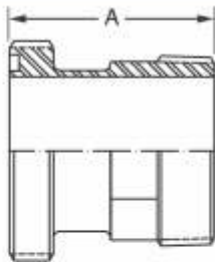
Bitola (Pol.)	ØA (mm)	DIN	RJT	SMS
		B		
1"	25,4	78,0	73,0	73,0
1½"	38,1	100,0	93,0	93,0
2"	50,8	100,0	94,0	93,0
2½"	63,5	124,0	114,0	113,0
3"	76,2	124,0	116,0	113,0
4"	101,6	127,0	116,0	117,0

Macho adaptador para mangueira



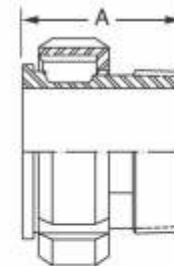
Bitola (Pol.)	ØA (mm)	DIN	RJT	SMS
		B		
1"	25,4	82,0	82,0	75,0
1½"	38,1	102,0	102,0	100,0
2"	50,8	102,0	102,0	100,0
2½"	63,5	126,0	122,0	124,0
3"	76,2	130,0	122,0	124,0
4"	101,6	130,0	127,0	135,0

Macho adaptador tipo N



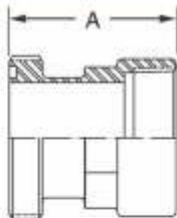
Bitola	DIN		RJT		SMS	
	BSP	NPT	BSP	NPT	BSP	NPT
	A					
1"	69,0	69,0	69,0	69,0	63,0	63,0
1½"	74,0	71,0	74,0	71,0	72,0	69,0
2"	79,0	73,0	79,0	73,0	77,0	71,0
2½"	88,0	85,0	84,0	81,0	86,0	83,0
3"	97,0	93,0	89,0	85,0	91,0	87,0
4"	103,0	95,0	100,0	92,0	111,0	103,0

Niple porca adaptador tipo N



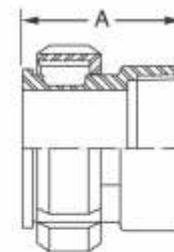
Bitola	DIN		RJT		SMS	
	BSP	NPT	BSP	NPT	BSP	NPT
	A					
1"	67,0	67,0	60,0	60,0	60,0	60,0
1½"	72,0	69,0	65,0	62,0	65,0	62,0
2"	77,0	71,0	71,0	65,0	70,0	64,0
2½"	86,0	83,0	76,0	73,0	75,0	72,0
3"	91,0	87,0	83,0	79,0	80,0	76,0
4"	101,0	93,0	89,0	81,0	90,0	82,0

Macho adaptador tipo L



Bitola	DIN		RJT		SMS	
	BSP	NPT	BSP	NPT	BSP	NPT
	A					
1"	69,0	69,0	69,0	69,0	63,0	63,0
1½"	74,0	71,0	74,0	71,0	72,0	69,0
2"	79,0	73,0	79,0	73,0	77,0	71,0
2½"	88,0	85,0	84,0	81,0	86,0	83,0
3"	97,0	93,0	89,0	85,0	91,0	87,0
4"	105,0	95,0	102,0	92,0	113,0	103,0

Niple porca adaptador tipo L



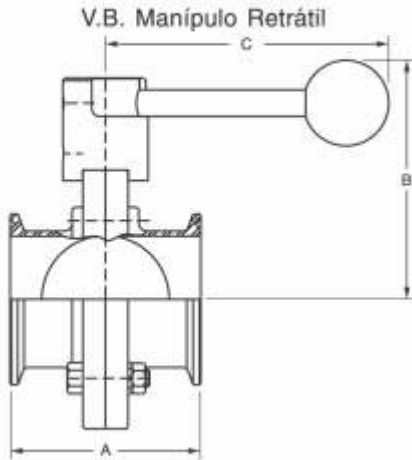
Bitola	DIN		RJT		SMS	
	BSP	NPT	BSP	NPT	BSP	NPT
	A					
1"	67,0	67,0	60,0	60,0	60,0	60,0
1½"	72,0	69,0	65,0	62,0	65,0	62,0
2"	77,0	71,0	71,0	65,0	70,0	64,0
2½"	86,0	83,0	76,0	73,0	75,0	72,0
3"	91,0	87,0	83,0	79,0	80,0	76,0
4"	103,0	93,0	91,0	81,0	92,0	82,0

* Todos os adaptadores podem ser fornecidos com redução.

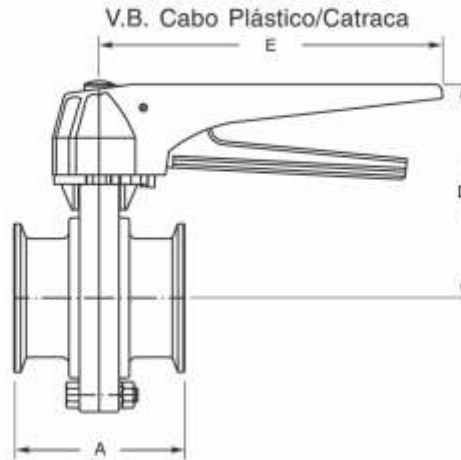
* Dimensões em milímetros (mm).

VÁLVULAS BORBOLETA

Manual



Esta válvula possui uma posição intermediária de 45° (entre fechamento e abertura), permanecendo assim, ela permite esta regulagem de fluxo.



Esta válvula possui várias posições, incluindo fechamento e abertura.

• **Pressão de teste hidrostático:**

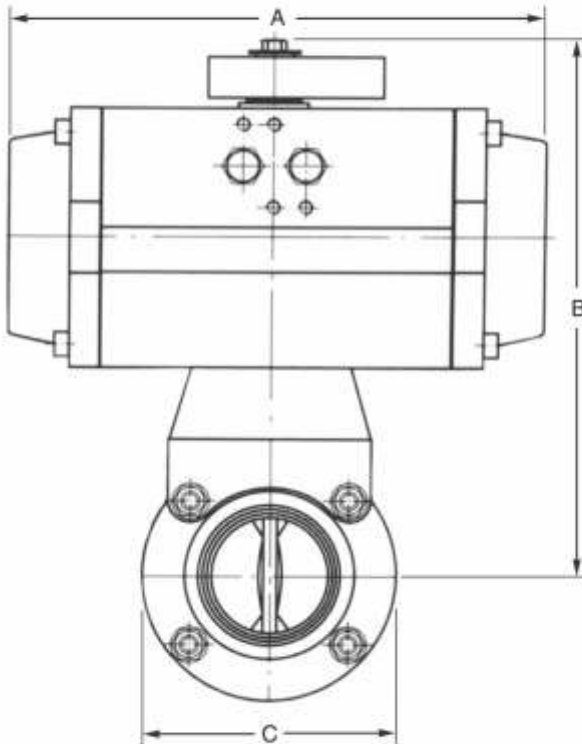
1" à 3" • 13 kgf/cm² a 22° C
4" • 6 kgf/cm² a 22° C

• **Temperatura máxima de trabalho:**

EPDM • 90° C
Silicone • 140° C
Viton • 250° C

Bitola	DIN		RJT		SMS		V.B. Manípulo Retrátil		V.B. Cabo Plástico/Catraca			
	Sol	2TC	2M	MNP	2M	MNP	2M	MNP	B	C	D	E
	A											
1"	48,0	73,0	92,0	88,0	92,0	83,0	78,0	76,0	73,0	115,0	79,0	148,0
1½"	48,0	73,0	92,0	90,0	92,0	83,0	88,0	81,0	80,0	115,0	86,0	148,0
2"	48,0	73,0	92,0	90,0	92,0	84,0	88,0	81,0	87,0	115,0	94,0	148,0
2½"	52,0	77,0	104,0	102,0	96,0	88,0	100,0	89,0	95,0	115,0	101,0	148,0
3"	52,0	77,0	112,0	106,0	96,0	90,0	100,0	89,0	100,0	167,0	106,0	148,0
4"	64,0	96,0	124,0	121,0	118,0	107,0	134,0	116,0	116,0	167,0	120,0	148,0

Pneumática



Para operações automatizadas a Válvula Borboleta pode ser fornecida com Atuador pneumático com acionamento por AR retorno por AR ou acionamento por AR e retorno por Mola, assumindo a posição NF (normalmente fechada) ou NA (normalmente aberta).

• **Acessórios**

- Uma ou duas chaves de fim de curso (microswitches) para indicação remota da posição da válvula (alternativa também disponível na Válvula Manual).
- Válvula Solenóide para controle do ar no Atuador.
- E outros como caixa de sinalização.

• **Torque da Válvula Borboleta**

Bitola	1"	1½"	2"	2½"	3"	4"
Torque kgf/m	0,6	1,0	1,5	1,5	1,9	2,5

• **Ar Comprimido**

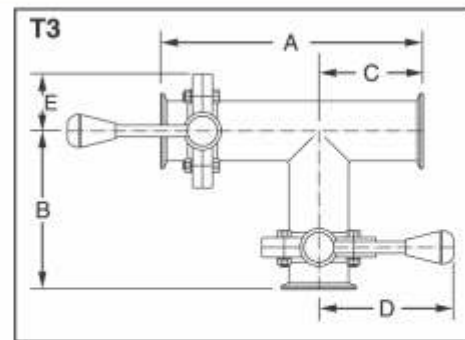
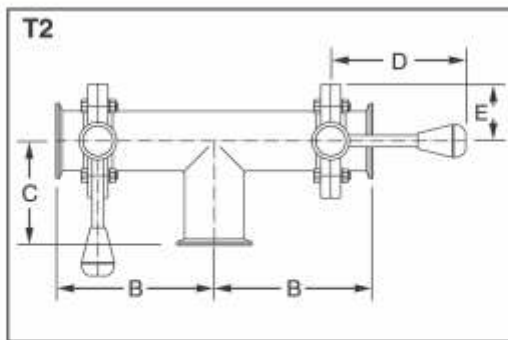
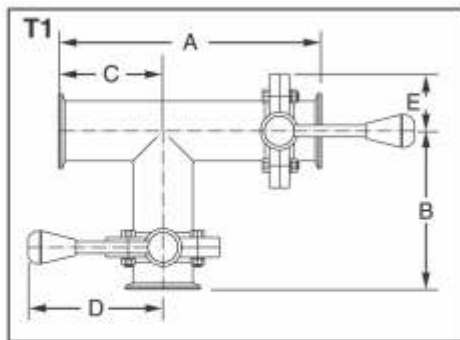
- Pressão mínima recomendável: 6,0 kgf/cm².
- Pressão máxima recomendável: 10,0 kgf/cm².

Bitola	Atuador Ar/Ar		Atuador Ar/Mola		C
	A	B	A	B	
1"	130,0	147,0	232,0	166,0	69,0
1½"	130,0	157,0	232,0	176,0	81,0
2"	144,0	181,0	270,0	203,0	98,0
2½"	144,0	185,0	270,0	207,0	111,0
3"	162,0	225,0	297,0	234,0	127,0
4"	162,0	240,0	332,0	268,0	150,0

* Dimensões em milímetros (mm).

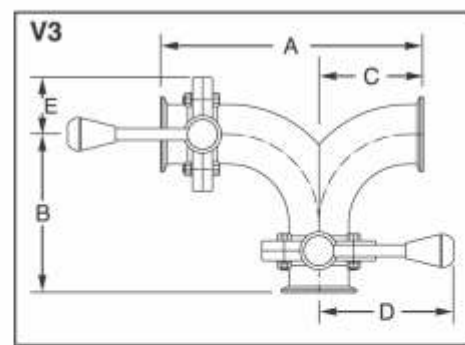
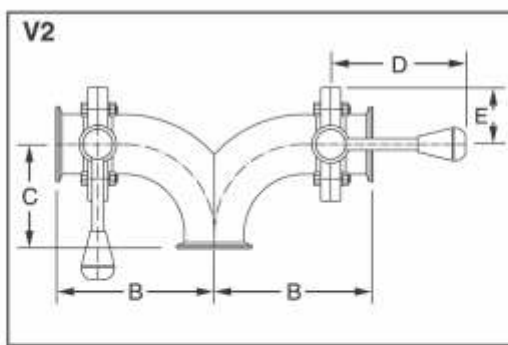
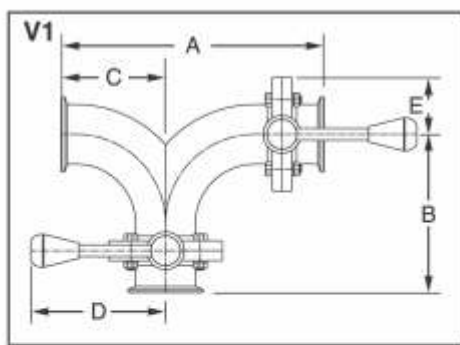
VÁLVULAS BORBOLETA

Multivias tipo: T e Multivias tipo: V



Tipo:
T1, T2 e T3

Bitola	A					B					C					D	E
	Solda	TC	DIN	RJT	SMS	Solda	TC	DIN	RJT	SMS	Solda	TC	DIN	RJT	SMS		
1"	148,0	173,4	192,0	192,0	178,0	98,0	110,7	120,0	120,0	113,0	50,0	62,7	72,0	72,0	65,0	115	35
1½"	162,0	187,4	206,0	206,0	202,0	105,0	117,7	127,0	127,0	125,0	57,0	69,7	79,0	79,0	77,0	115	41
2"	198,4	223,8	242,4	242,4	238,4	123,2	135,9	145,2	145,2	143,2	75,2	87,9	97,2	97,2	95,2	115	49
2½"	222,0	247,4	274,0	266,0	270,0	137,0	149,7	163,0	159,0	161,0	85,0	97,7	111,0	107,0	109,0	115	56
3"	222,0	247,4	282,0	266,0	270,0	137,0	149,7	167,0	159,0	161,0	85,0	97,7	115,0	107,0	109,0	167	61
4"	281,0	312,8	341,0	335,0	351,0	172,5	188,4	202,5	199,5	207,5	108,5	124,4	138,5	135,5	143,5	167	75

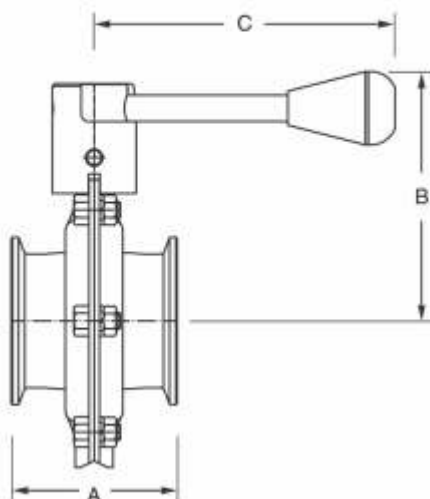


Tipo:
V1, V2 e V3

Bitola	A					B					C					D	E
	Solda	TC	DIN	RJT	SMS	Solda	TC	DIN	RJT	SMS	Solda	TC	DIN	RJT	SMS		
1"	124	150	168	169	154	86	99	108	108	101	38	51	60	60	53	115	35
1½"	162	188	206	207	202	105	118	127	127	125	57	70	79	79	77	115	41
2"	200	226	244	245	240	124	137	146	146	144	76	89	98	98	96	115	49
2½"	243	268	295	287	291	147	160	173	170	171	95	108	121	118	119	115	56
3"	281	306	341	325	329	166	179	196	189	190	114	127	144	137	138	167	61
4"	369	401	429	423	439	216	194	246	243	251	152	168	182	179	187	167	75

* Para as normas DIN, RJT e SMS foram considerados terminais tipo macho. As Válvulas Multivias tipos T e V também permitem acionamento pneumático.
* Outro tipo de multivias (conforme necessidade do cliente) que difere dos tipos: T1; T2; T3; V1; V2 e V3, sob consulta.

Válvula borboleta estampada



- Estampada em chape de aço inoxidável (AISI 304), resistente à ambientes úmidos (corrosão) e agressivos (ataques químicos).
- Baixa Pressão, até 6 kgf/cm²
- Baixa Perda de carga.
- Anel de vedação (elastômero).
- Leve e econômica referente a espaço.
- Utilizada em saída de tanques e outros.
- Qualidade assegurada pela inspeção (verificação do polimento; e funcionamento) e teste hidrostático.
- Acabamento: Polido externo e principalmente interno com grau de acabamento liso, facilitando a limpeza através do processo CIP (Clean In Place) que não possibilita os pontos de acúmulo de produtos.
- Conexões: estas válvulas são fornecidas para soldagem ou acopladas à terminais conforme as normas aqui descritas neste catálogo.

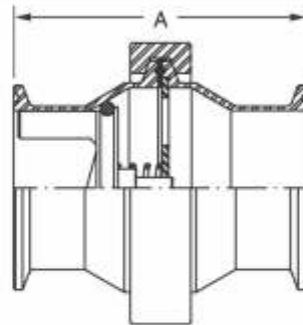
Bitola	Sol	TC	DIN		RJT		SMS		B	C
			2M	MNP	2M	MNP	2M	MNP		
2"	36	61	80	78	80	72	76	69	97	115

* Outro material sob consulta.

* Dimensões em milímetros (mm).

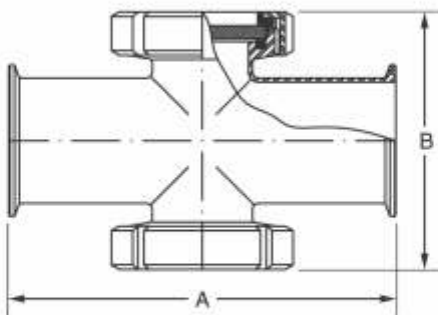
VÁLVULAS E VISORES

Válvula de retenção



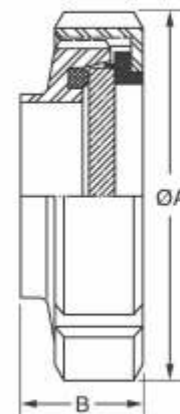
Bitola	DIN				RJT		SMS		Pressão Máxima de Trabalho (kgf/cm ²)	Pressão Mínima de Abertura (kgf/cm ²)
	Solda	2TC	2M	MNP	2M	MNP	2M	MNP		
	A									
1"	78,0	103,0	122,0	118,0	122,0	113,0	108,0	106,0	34,0	0,01
1½"	96,0	121,0	140,0	138,0	140,0	131,0	136,0	129,0	34,0	0,02
2"	96,0	121,0	140,0	138,0	140,0	132,0	136,0	129,0	28,0	0,02
2½"	102,0	127,0	154,0	152,0	146,0	138,0	150,0	139,0	26,0	0,02
3"	102,0	127,0	162,0	156,0	146,0	140,0	150,0	139,0	22,0	0,03
4"	146,0	178,0	206,0	203,0	200,0	189,0	216,0	198,0	12,0	0,03

Visor de linha tipo cruzeta



Bitola	DIN					B
	Solda	2TC	RJT	SMS	A	
1"	100,0	125,4	144,0	144,0	130,0	91,0
1½"	114,0	139,4	158,0	158,0	154,0	105,0
2"	150,4	175,8	194,4	194,4	190,4	121,0
2½"	170,0	195,4	222,0	214,0	218,0	137,0
3"	170,0	195,4	230,0	214,0	218,0	162,0
4"	217,0	248,8	277,0	271,0	287,0	194,0

Visor de linha tipo macho

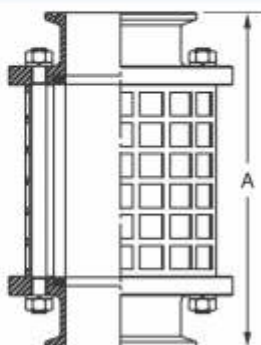


Bitola	ØA	B	Pressão Máx. (kgf/cm ²)
1"	63	31	15
1½"	78	31	11
2"	92	31	10
2½"	112	35	10
3"	127	40	8
4"	148	41	6
5"	178	57	5

* Outras bitolas sob consulta.

* Para as normas DIN, RJT e SMS foram considerados terminais tipo macho.

Visor de linha tubular



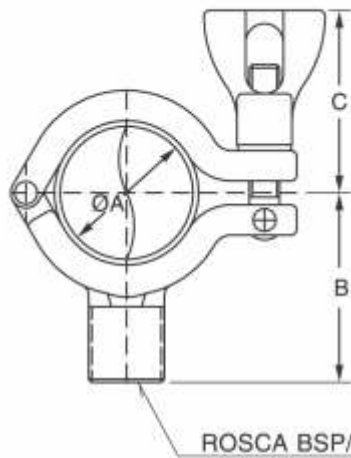
Bitola	DIN				RJT		SMS	
	Solda	2TC	2M	MNP	2M	MNP	2M	MNP
	A							
1"	145,0	170,0	189,0	185,0	189,0	180,0	175,0	173,0
1½"	145,0	170,0	189,0	187,0	189,0	180,0	185,0	178,0
2"	145,0	170,0	189,0	187,0	189,0	181,0	185,0	178,0
2½"	149,0	174,0	201,0	199,0	193,0	185,0	197,0	186,0
3"	153,0	178,0	213,0	207,0	197,0	191,0	201,0	190,0
4"	171,0	203,0	231,0	228,0	225,0	214,0	241,0	223,0

* Os visores acima possuem vidros temperados de alta resistência a ataques químicos, tolera choques térmicos (variações baixas e altas de temperatura) no máximo 265°C e suporta a temperatura máxima 320°C.

* Dimensões em milímetros (mm).

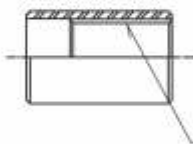
ACESSÓRIOS

Abraçadeira suporte para tubo



Bitola	ØA	B	C
1"	25,4	38,0	
1½"	38,1	44,0	
2"	50,8	50,0	54,0
2½"	63,5	57,0	
3"	76,2	63,0	
4"	101,6	76,0	

Luva para abraçadeira



ROSCA BSP/L (Fêmea) 1/2"

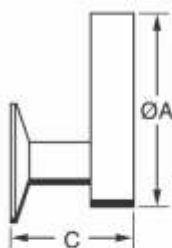
* Esta Luva geralmente acompanha Abraçadeira Suporte para Tubo (vide ilustração da Abraçadeira Suporte p/ Tubo)

Guia para corte de tubo



Bitola
1"
1½"
2"
2½"
3"
4"

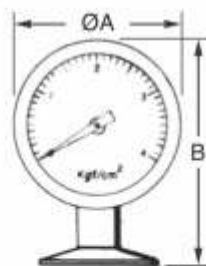
Manômetro



Angular

*Diafragma Sanitário
*Enchimento com glicerina p/ trabalho em tubulação sob efeito de vibrações.

Escala (kgf/cm²)
0 - 2
0 - 4
0 - 7
0 - 10

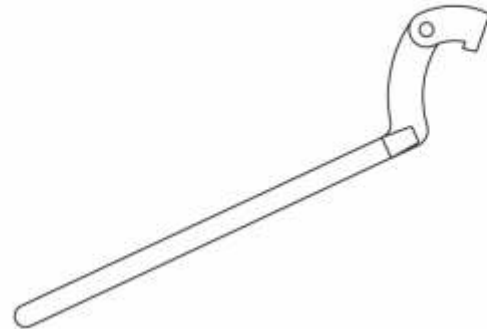


Reto

Bitola	ØA	B	C
2"	100,0	145,0	86,0

* Dimensões em milímetros (mm).

Chaves articuladas para porcas circulares



Bitola
1"
1½"
2"
2½"
3"
4"

* Para adquirir esta chave, nos informar a Bitola.

Expandidor



Bitola	Torque p/exp kgf/m
1"	2,0
1½"	4,0
2"	8,0
2½"	14,0
3"	17,0

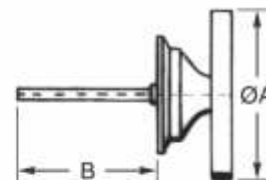
Morsa e bloco de expansão



Bitola
1"
1½"
2"
2½"
3"

*Para adquirir a Morsa e ou Bloco de Expansão, nos informar a Norma e Bitola.

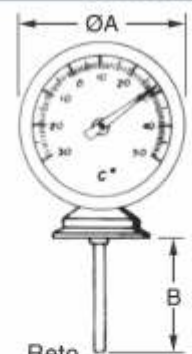
Termômetro



Angular

Bitola	ØA	B
2"	100,0	130,0

*Com selo bimetalico sanitário

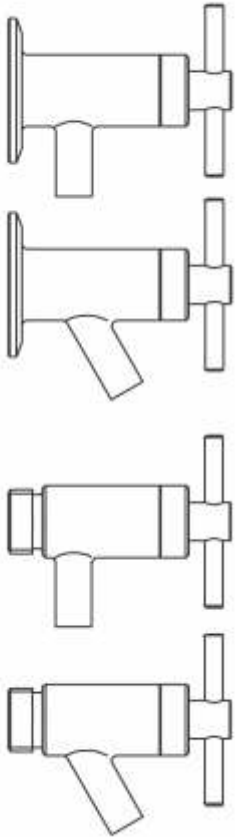


Reto

Escala
0 + 120° C
-30 + 50° C

ACESSÓRIOS

Torneira de amostra



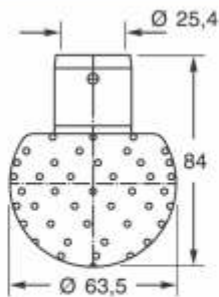
Terminais

Solda	½" e ¾"
TC	½" e ¾"
TC	1" e 1½"

Roscas (tipo Macho)

BSP	½"
BSP	¾"
NPT	½"
NPT	¾"

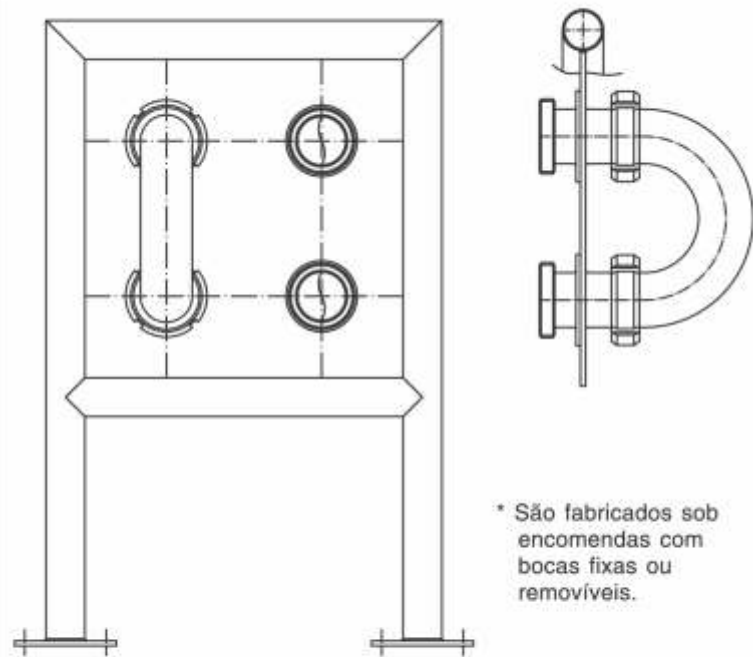
Aspersor "Spray-Ball"



Padrão	Ø furo	Vazão a 2 kgf/cm² m³/h	Ø do leque m
360°	3/32"	16	4,0
	1/16"	10	3,8
270° superior	3/32"	15	4,0
	1/16"	09	3,8
270° inferior	3/32"	15	4,0
	1/16"	09	3,8
180° superior	3/32"	10	3,9
	1/16"	08	3,7
180° inferior	3/32"	08	4,1
	1/16"	05	3,9
150° lateral	3/32"	09	2,0
150° superior	3/32"	09	4,2
150° inferior	3/32"	12	3,8

* Pode ser fornecido com outras dimensões.

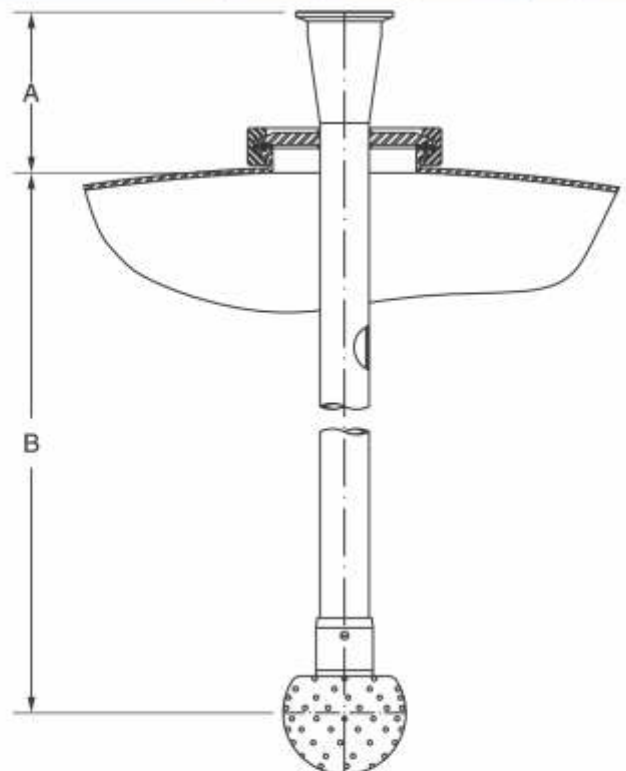
Painel de distribuição de fluxo



* São fabricados sob encomendas com bocas fixas ou removíveis.

* São fabricados somente com bocas fixas.

Adaptador para aspersor "Spray-Ball"



Bitola	TC	DIN	RJT	SMS	B
	A				
1"	92,0	102,0	102,0	96,0	800,0
1½"	92,0	102,0	102,0	100,0	800,0
2"	128,0	138,0	138,0	136,0	800,0
2½"	165,0	178,0	174,0	176,0	800,0

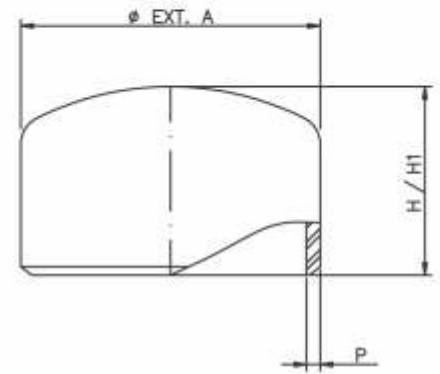
* Pode ser fornecido com outras dimensões.

* Dimensões em milímetros (mm).

CONEXÕES SCH SOLDA

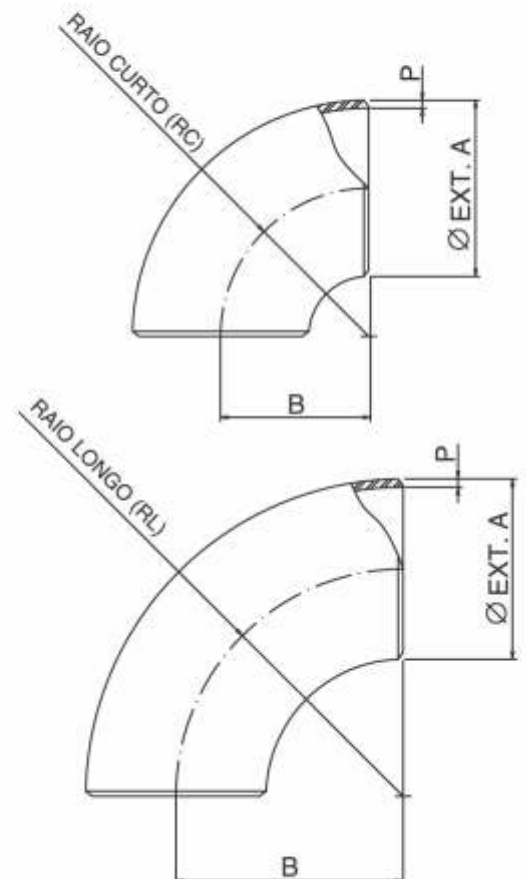
Caps

Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	H	H1	Espessura de Parede P		
				SCH 5-S	SCH 10-S	SCH 40-S
1/2"	21,3	25,4	25,4	1,65	2,11	2,77
3/4"	26,7	25,4	25,4	1,65	2,11	2,87
1"	33,5	38,1	38,1	1,65	2,77	3,38
1.1/4"	42,2	38,1	38,1	1,65	2,77	3,56
1.1/2"	48,3	38,1	38,1	1,65	2,77	3,68
2"	60,5	38,1	44,5	1,65	2,77	3,91
2.1/2"	73,2	38,1	50,8	2,11	3,05	5,16
3"	88,9	50,8	63,5	2,11	3,05	5,49
3.1/2"	101,6	63,5	76,2	2,11	3,05	5,74
4"	114,3	63,5	76,2	2,11	3,05	6,02
5"	141,2	76,2	88,9	2,77	3,40	6,55
6"	168,2	88,9	101,6	2,77	3,40	7,11
8"	219,0	101,6	127,0	2,77	3,76	8,18
10"	273,1	127,0	152,4	3,40	4,19	9,27
12"	323,9	152,4	177,8	3,96	4,57	9,53
14"	355,6	165,1	190,5	3,96	4,78	11,13
16"	406,4	177,8	203,2	4,19	4,78	12,70
18"	457,2	203,2	228,6	4,19	4,78	14,27
20"	508,0	228,6	254,0	4,78	5,54	15,09



Curva 90°

Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	Centro a Face B		Espessura de Parede P		
		Raio Curto (R.C.)	Raio Longo (R.L.)	SCH 5-S	SCH 10-S	SCH 40-S
1/2"	21,3	-----	38,1	1,65	2,11	2,77
3/4"	26,7	-----	28,4	1,65	2,11	2,87
1"	33,5	25,4	38,1	1,65	2,77	3,38
1.1/4"	42,2	31,8	47,6	1,65	2,77	3,56
1.1/2"	48,3	38,1	57,2	1,65	2,77	3,68
2"	60,5	50,8	76,2	1,65	2,77	3,91
2.1/2"	73,2	63,5	95,3	2,11	3,05	5,16
3"	88,9	76,2	114,3	2,11	3,05	5,49
3.1/2"	101,6	88,9	133,4	2,11	3,05	5,74
4"	114,3	101,6	152,4	2,11	3,05	6,02
5"	141,2	127,0	190,5	2,77	3,40	6,55
6"	168,2	152,4	228,6	2,77	3,40	7,11
8"	219,0	203,2	304,8	2,77	3,76	8,18
10"	273,1	254,0	381,0	3,40	4,19	9,27
12"	323,9	304,8	457,2	3,96	4,57	9,53
14"	355,6	355,6	533,4	3,96	4,78	11,13
16"	406,4	406,4	609,6	4,19	4,78	12,70
18"	457,2	457,2	685,8	4,19	4,78	14,27
20"	508,0	508,0	762,0	4,78	5,54	15,09

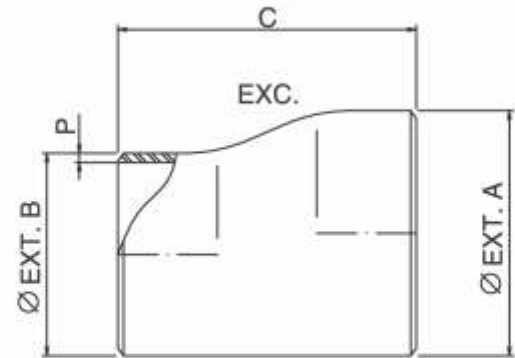
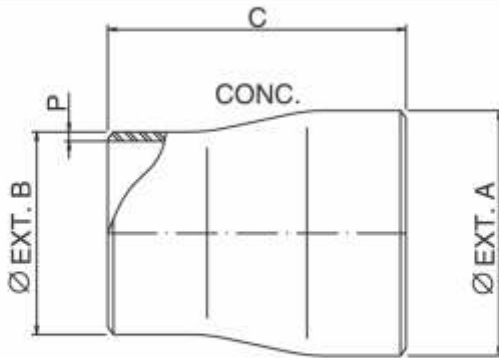


* Norma ANSI B 16.9

* Dimensões em milímetros (mm).

CONEXÕES SCH SOLDA

Redução Cônica Concêntrica/Excêntrica



Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	Diâmetro Externo em milímetros ØB	C
3/4"x1/2"	26,7	21,3	38,1
1"x1/2"	33,5	21,3	50,8
1"x3/4"	33,5	26,7	50,8
1.1/4"x1/2"	42,2	21,3	50,8
1.1/4"x3/4"	42,2	26,7	50,8
1.1/4"x1"	42,2	33,5	50,8
1.1/2"x1/2"	48,3	21,3	63,5
1.1/2"x3/4"	48,3	26,7	63,5
1.1/2"x1"	48,3	33,5	63,5
1.1/2"x1.1/4"	48,3	42,2	63,5
2"x1/2"	60,5	21,3	76,2
2"x3/4"	60,5	26,7	76,2
2"x1"	60,5	33,5	76,2
2"x1.1/4"	60,5	42,2	76,2
2"x1.1/2"	60,5	48,3	76,2
2.1/2"x1/2"	73,2	21,3	88,9
2.1/2"x3/4"	73,2	26,7	88,9
2.1/2"x1"	73,2	33,5	88,9
2.1/2"x1.1/4"	73,2	42,2	88,9
2.1/2"x1.1/2"	73,2	48,3	88,9
2.1/2"x2"	73,2	60,5	88,9
3"x1/2"	88,9	21,3	88,9
3"x3/4"	88,9	26,7	88,9
3"x1"	88,9	33,5	88,9
3"x1.1/4"	88,9	42,2	88,9
3"x1.1/2"	88,9	48,3	88,9
3"x2"	88,9	60,5	88,9
3"x2.1/2"	88,9	73,2	88,9
3.1/2"x1.1/4"	101,6	42,2	101,6
3.1/2"x1.1/2"	101,6	48,3	101,6
3.1/2"x2"	101,6	60,5	101,6
3.1/2"x2.1/2"	101,6	73,2	101,6
3.1/2"x3"	101,6	88,9	101,6
4"x1"	114,3	33,5	101,6
4"x1.1/4"	114,3	42,2	101,6
4"x1.1/2"	114,3	48,3	101,6
4"x2"	114,3	60,5	101,6
4"x2.1/2"	114,3	73,2	101,6
4"x3"	114,3	88,9	101,6
4"x3.1/2"	114,3	101,6	101,6
5"x1.1/4"	141,2	42,2	127,0
5"x1.1/2"	141,2	48,3	127,0
5"x2"	141,2	60,5	127,0
5"x2.1/2"	141,2	73,2	127,0
5"x3"	141,2	88,9	127,0
5"x3.1/2"	141,2	101,6	127,0
5"x4"	141,2	114,3	127,0
6"x2"	168,2	60,5	139,7

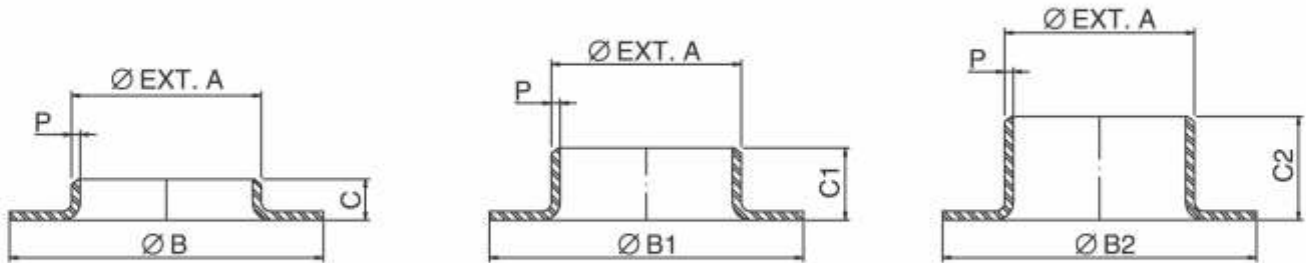
Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	Diâmetro Externo em milímetros ØB	C
6"x2.1/2"	168,2	73,2	139,7
6"x3"	168,2	88,9	139,7
6"x3.1/2"	168,2	101,6	139,7
6"x4"	168,2	114,3	139,7
6"x5"	168,2	141,2	139,7
8"x3"	219,0	88,9	152,4
8"x3.1/2"	219,0	101,6	152,4
8"x4"	219,0	114,3	152,4
8"x5"	219,0	141,2	152,4
8"x6"	219,0	168,2	152,4
10"x3"	273,1	88,9	177,8
10"x4"	273,1	114,3	177,8
10"x5"	273,1	141,2	177,8
10"x6"	273,1	168,2	177,8
10"x8"	273,1	219,0	177,8
12"x4"	323,9	114,3	203,2
12"x5"	323,9	141,2	203,2
12"x6"	323,9	168,2	203,2
12"x8"	323,9	219,0	203,2
12"x10"	323,9	273,1	203,2
14"x5"	355,6	141,2	330,2
14"x6"	355,6	168,2	330,2
14"x8"	355,6	219,0	330,2
14"x10"	355,6	273,1	330,2
14"x12"	355,6	323,9	330,2
16"x6"	406,4	168,2	355,6
16"x8"	406,4	219,0	355,6
16"x10"	406,4	273,1	355,6
16"x12"	406,4	323,9	355,6
16"x14"	406,4	355,6	355,6
18"x8"	457,2	219,0	381,0
18"x10"	457,2	273,1	381,0
18"x12"	457,2	323,9	381,0
18"x14"	457,2	355,6	381,0
18"x16"	457,2	406,4	381,0
20"x8"	508,0	219,0	508,0
20"x10"	508,0	273,1	508,0
20"x12"	508,0	323,9	508,0
20"x14"	508,0	355,6	508,0
20"x16"	508,0	406,4	508,0
20"x18"	508,0	457,2	508,0

* Norma ANSI B 16.9

* Dimensões em milímetros (mm).

CONEXÕES SCH SOLDA

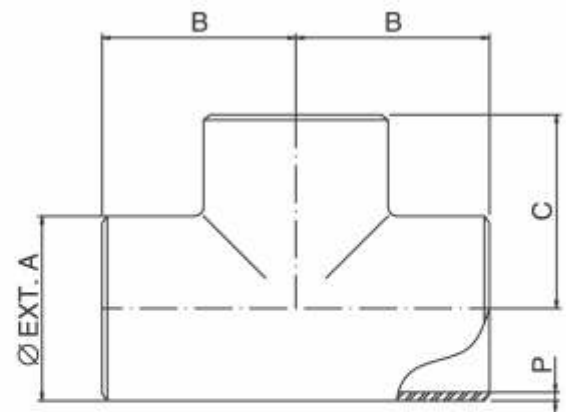
Pestanas



Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	Pestana Curta		Pestana MSS - SP 43		Pestana ANSI B 16.9		Espessura de Parede P		
		B	C	B1	C1	B2	C2	SCH 5-S	SCH 10-S	SCH 40-S
1/2"	21,3	45	7	35,0	50,8	35,0	76,2	1,65	2,11	2,77
3/4"	26,7	55	8	43,0	50,8	43,0	76,2	1,65	2,11	2,87
1"	33,5	62	10	50,8	50,8	50,8	101,6	1,65	2,77	3,38
1.1/4"	42,2	72	12	63,5	50,8	63,5	101,6	1,65	2,77	3,56
1.1/2"	48,3	80	12	73,0	50,8	73,0	101,6	1,65	2,77	3,68
2"	60,5	100	14	92,5	63,5	92,5	152,4	1,65	2,77	3,91
2.1/2"	73,2	118	14	104,8	63,5	104,8	152,4	2,11	3,05	5,16
3"	88,9	130	15	127,0	63,5	127,0	152,4	2,11	3,05	5,49
3.1/2"	101,6	150	16	139,7	76,2	139,7	152,4	2,11	3,05	5,74
4"	114,3	162	18	157,2	76,2	157,5	152,4	2,11	3,05	6,02
5"	141,2	190	20	185,8	76,2	185,8	203,2	2,77	3,40	6,55
6"	168,2	216	24	215,9	88,9	215,9	203,2	2,77	3,40	7,11
8"	219,0	274	26	259,9	101,6	269,9	203,2	2,77	3,76	8,18
10"	273,1	333	26	323,9	127,0	323,9	254,0	3,40	4,19	9,27
12"	323,9	389	28	381,0	152,4	381,0	254,0	3,96	4,57	9,53
14"	355,6	420	30	412,8	152,4	412,8	304,8	3,96	4,78	11,13

Te Reto 90°

Diâmetro Nominal em Polegadas (DN)	Diâmetro Externo em milímetros ØA	Centro a Face B		Espessura de Parede P		
		B	C	SCH 5-S	SCH 10-S	SCH 40-S
1/2"	21,3	25,4	25,4	1,65	2,11	2,77
3/4"	26,7	28,5	28,5	1,65	2,11	2,87
1"	33,5	38,1	38,1	1,65	2,77	3,38
1.1/4"	42,2	47,8	47,8	1,65	2,77	3,56
1.1/2"	48,3	57,2	57,2	1,65	2,77	3,68
2"	60,5	63,5	63,5	1,65	2,77	3,91
2.1/2"	73,2	76,2	76,2	2,11	3,05	5,16
3"	88,9	85,9	85,9	2,11	3,05	5,49
3.1/2"	101,6	95,3	95,3	2,11	3,05	5,74
4"	114,3	104,7	104,7	2,11	3,05	6,02
5"	141,2	130,0	130,0	2,77	3,40	6,55
6"	168,2	142,8	142,8	2,77	3,40	7,11
8"	219,0	177,8	177,8	2,77	3,76	8,18
10"	273,1	215,9	215,9	3,40	4,19	9,27
12"	323,9	254,0	254,0	3,96	4,57	9,53
14"	355,6	279,4	279,4	3,96	4,78	11,13
16"	406,4	304,8	304,8	4,19	4,78	12,70
18"	457,2	342,9	342,9	4,19	4,78	14,27
20"	508,0	381,0	381,0	4,78	5,54	15,09



* Norma ANSI B 16.9

* Dimensões em milímetros (mm).

TUBOS DE AÇO INOXIDÁVEL (com costura)

ø externo (mm)	Denominação	Peso teórico (Kg/m)	Norma ASTM			Aplicações típicas	Qualidades											
			A-312	A-269	A-249		Tubulação padrão "OD" - Outside Diameter (diâmetro externo)				Tubulação padrão "Sch" (Schedule) ou nominais. São os mesmos diâmetros dos tubos de aço carbono (preto), galvanizado e PVC.							
							Pressão máx. em PSI (lb/pol ²)		Tubulação exposta a temp. cheia (°C)		304		304L		316		316L	
8.00x1.00	----	0.175	B	A	B	diversas	A	A	A	A	4002	4002	4002	3786	3546	3353	3293	3185
9.53x0.89	3/8" - OD	0.196	B	A	B	diversas	A	A	A	A	3020	3020	3020	2830	2650	2510	2460	2380
9.53x1.00	3/8" - OD	0.213	B	A	B	diversas	A	A	A	A	3340	3340	3340	3150	2949	2789	2740	2650
9.53x1.20	3/8" - OD	0.257	B	A	B	diversas	A	A	A	A	4080	4080	4080	3840	3590	3290	3340	3233
12.70x1.00	1/2" - OD	0.292	B	A	B	diversas	A	A	A	A	2450	2450	2450	2304	2156	2041	2003	1940
12.70x1.20	1/2" - OD	0.355	B	A	B	diversas	A	A	A	A	3120	3120	3120	2880	2696	2552	2504	2424
12.70x1.50	1/2" - OD	0.420	B	A	B	diversas	A	A	A	A	3810	3810	3810	3600	3370	3190	3130	3030
15.87x1.00	5/8" - OD	0.374	B	A	B	diversas	A	B	A	B	1930	1930	1930	1810	1700	1610	1575	1530
15.87x1.20	5/8" - OD	0.454	B	A	B	diversas	A	B	A	B	2450	2450	2450	2245	2080	1970	1930	1870
15.87x1.50	5/8" - OD	0.539	B	A	B	diversas	A	B	A	B	2980	2980	2980	2800	2597	2456	2412	2333
17.15x1.65	3/8" sch - 10	0.643	A	B	B	diversas	A	A	A	A	3014	3014	3014	2851	2670	2525	2480	2398
17.15x2.31	3/8" sch - 40	0.860	A	B	B	diversas	A	A	A	A	4345	4345	4345	4110	3849	3041	3375	3458
19.05x1.00	3/4" - OD	0.454	B	A	A	diversas	A	B	A	B	1600	1600	1600	1514	1418	1341	1317	1274
19.05x1.20	3/4" - OD	0.554	B	A	A	diversas	A	A	A	A	2020	2020	2020	1915	1793	1696	1666	1611
19.05x1.50	3/4" - OD	0.660	B	A	A	diversas	A	A	A	A	2449	2449	2449	2317	2169	2052	2015	1948
19.05x2.00	3/4" - OD	0.854	B	A	A	diversas	A	A	A	A	3340	3340	3340	3152	2950	2790	2740	2650
21.34x1.65	1/2" sch - 5	0.816	A	B	B	diversas	A	A	A	A	2400	2400	2400	2290	2144	2028	1992	1926
21.34x2.11	1/2" sch - 10	1.02	A	B	B	diversas	A	A	A	A	3104	3104	3104	2936	2749	2600	2554	2470
21.34x2.77	1/2" sch - 40	1.29	A	B	B	diversas	A	A	A	A	4712	4712	4712	3946	3696	3495	3433	3320
22.2X1.00	7/8" - OD	0.53	B	A	B	diversas	A	B	A	B	1360	1360	1360	1267	1136	1120	1100	1062
22.2X1.24	7/8" - OD	0.658	B	A	B	diversas	A	B	A	B	1680	1680	1680	1584	1420	1400	1376	1328
22.2X1.50	7/8" - OD	0.780	B	A	B	diversas	A	B	A	B	2830	2830	2830	2653	2371	2345	2304	2304
25.40x1.00	1" - OD	0.613	B	A	A	diversas	A	B	A	B	1180	1180	1180	1130	1060	1000	980	950
25.40x1.20	1" - OD	0.759	B	A	A	diversas	A	B	A	B	1490	1490	1490	1430	1340	1265	1240	1200
25.40x1.50	1" - OD	0.901	B	A	A	diversas	A	A	A	A	1810	1810	1810	1730	1620	1530	1500	1450
25.40x2.00	1" - OD	1.176	B	A	A	diversas	A	A	A	A	2450	2450	2450	2345	2200	2074	2037	1970
26.67x1.65	3/4" sch - 5	1.030	B	A	A	diversas	A	A	A	A	1820	1820	1820	1715	1610	1520	1500	1450
26.67x2.11	3/4" sch - 10	1.300	B	A	A	diversas	A	A	A	A	2447	2447	2447	2315	2168	2050	2013	1947
26.67x2.87	3/4" sch - 40	1.710	B	A	A	diversas	A	A	A	A	3400	3400	3400	3216	3012	2849	2798	2706
31.75x1.00	1 1/4" - OD	0.769	B	A	A	diversas	A	B	A	B	933	933	933	883	827	782	768	743
31.75x1.20	1 1/4" - OD	0.947	B	A	A	diversas	A	B	A	B	1180	1180	1180	1110	1040	984	966	935
31.75x1.50	1 1/4" - OD	1.136	B	A	A	diversas	A	B	A	B	1416	1416	1416	1339	1254	1186	1165	1127
31.75x2.00	1 1/4" - OD	1.500	B	A	A	diversas	A	B	A	B	1909	1909	1909	1866	1692	1600	1571	1520
33.40x1.65	1" sch - 5	1.316	A	B	B	diversas	A	A	A	A	1435	1435	1435	1357	1271	1202	1180	1142
33.40x2.77	1" sch - 10	2.132	A	B	B	diversas	A	A	A	A	2572	2572	2572	2433	2279	2155	2117	2047
33.40x3.38	1" sch - 40	2.540	A	B	B	diversas	A	A	A	A	3182	3182	3182	3110	2819	2666	2618	2532
38.10x1.00	1 1/2" - OD	0.934	B	A	A	diversas	A	B	A	B	783	783	783	741	694	656	644	623
38.10x1.20	1 1/2" - OD	1.144	B	A	A	diversas	A	B	A	B	984	984	984	930	872	825	810	783
38.10x1.50	1 1/2" - OD	1.376	B	A	A	diversas	A	B	A	B	1186	1186	1186	1122	1051	994	978	944
38.10x2.00	1 1/2" - OD	1.809	B	A	A	diversas	A	B	A	B	1596	1596	1596	1510	1414	1337	1314	1270
42.16x1.65	1 1/4" sch - 5	1.670	A	B	B	diversas	A	A	A	A	1132	1132	1132	1070	1003	949	932	901
42.16x2.77	1 1/4" sch - 10	2.730	A	B	B	diversas	A	A	A	A	2012	2012	2012	1903	1782	1686	1655	1601
42.16x3.56	1 1/4" sch - 40	3.457	A	B	B	diversas	A	A	A	A	2622	2622	2622	2480	2323	2197	2157	2087
44.5X1.24	----	1.306	B	A	B	diversas	A	A	A	A	806	806	806	763	714	696	664	642
48.26x1.65	1 1/2" sch - 5	1.930	A	B	B	diversas	A	A	A	A	991	991	991	937	878	830	815	788
48.26x2.77	1 1/2" sch - 10	3.160	A	B	B	diversas	A	A	A	A	1747	1747	1747	1653	1548	1464	1437	1390
48.26x3.68	1 1/2" sch - 40	4.110	A	B	B	diversas	A	A	A	A	2353	2353	2353	2226	2085	1972	1936	1873
50.80x1.00	2" - OD	1.251	B	A	A	diversas	A	B	A	B	614	614	614	580	542	514	505	488
50.80x1.20	2" - OD	1.560	B	A	A	diversas	A	B	A	B	702	702	702	665	622	590	578	559
50.80x1.50	2" - OD	1.830	B	A	A	diversas	A	B	A	B	877	877	877	830	777	735	722	698
50.80x2.00	2" - OD	2.440	B	A	A	diversas	A	B	A	B	1178	1178	1178	1114	1040	987	968	937
60.33x1.65	2" sch - 5	2.423	A	B	B	diversas	A	A	A	A	817	817	817	773	724	685	610	651
60.33x2.77	2" sch - 10	3.990	A	B	B	diversas	A	A	A	A	1395	1395	1395	1301	1234	1168	1142	1109
60.33x3.91	2" sch - 40	5.541	A	B	B	diversas	A	A	A	A	2001	2001	2001	1890	1771	1674	1638	1591
63.50x1.20	2 1/2" - OD	1.871	B	A	B	diversas	A	B	A	B	615	615	615	585	550	520	500	485
63.50x1.50	2 1/2" - OD	2.330	B	A	B	diversas	A	B	A	B	703	703	703	665	623	589	576	560
63.50x2.00	2 1/2" - OD	3.100	B	A	B	diversas	A	B	A	B	944	944	944	893	836	791	774	751
73.03x2.11	2 1/2" sch - 5	3.750	A	B	B	diversas	A	A	A	A	868	868	868	817	795	724	708	687
73.03x3.05	2 1/2" sch - 10	5.330	A	B	B	diversas	A	A	A	A	1257	1257	1257	1189	1113	1053	1034	1000
73.03x5.16	2 1/2" sch - 40	8.750	A	B	B	diversas	A	A	A	A	2172	2172	2172	2054	1924	1819	1747	1728

Aplicações: condução de produtos alimentícios em geral, papel e celulose, açúcar e álcool, instrumentação, trocadores de calor, estruturas metálicas, móveis, estética, condução diversas. **Legenda:** A = Padrão de estoque B = Sob consulta
 Atenção - O uso em linha de alimentos (leite, refrigerantes, cerveja, água mineral, sucos, etc) - Tubos devem ser polido/sanitário por dentro e por fora - PI/PE

TUBOS DE AÇO INOXIDÁVEL (com costura)

Ø externo (mm)	Denominação	Peso teórico (Kg/m)	Norma ASTM			Aplicações típicas	Qualidades											
			A-312	A-269	A-249		304				304L				316			
							316L	38	93	149	204	260	316	343	399			
<small>Tubulação padrão "OD" - Outros Diâmetros (diâmetro externo) Tubulação padrão "Sch" (Schedule) ou nominais. São os mesmos diâmetros dos tubos de aço carbono (puro), galvanizado e PVC.</small>																		
<small>Pressão int. máx. em PS (lb./pol²) Tubulação exposta a temp. abaixo (°C)</small>																		
76.20x1.20	3" - OD	2.253	B	A	B	diversas	A	B	A	B	535	535	535	513	480	450	435	420
76.20x1.50	3" - OD	2.801	B	A	B	diversas	A	B	A	B	585	585	585	553	518	490	479	465
76.20x2.00	3" - OD	3.740	B	A	B	diversas	A	B	A	B	782	782	782	740	693	655	644	622
88.90x2.11	3" sch - 5	4.580	A	B	B	diversas	A	A	A	A	707	707	707	668	626	592	579	562
88.90x3.05	3" sch - 10	6.540	A	B	B	diversas	A	A	A	A	1027	1027	1027	971	910	860	845	817
88.90x5.49	3" sch - 40	11.45	A	B	B	diversas	A	A	A	A	1886	1886	1886	1784	1670	1580	1552	1501
101.60x1.50	4" - OD	3.830	B	A	B	diversas	A	B	A	B	436	436	436	413	386	365	357	347
101.60x2.00	4" - OD	4.986	B	A	B	diversas	A	B	A	B	616	616	616	583	546	517	505	490
114.30x2.11	4" sch - 5	5.920	A	B	B	diversas	A	A	A	A	547	547	547	518	484	458	448	435
114.30x3.05	4" sch - 10	8.480	A	B	B	diversas	A	A	A	A	794	794	794	751	704	666	654	632
114.30x6.02	4" sch - 40	16.300	A	B	B	diversas	A	A	A	A	1598	1598	1598	1511	1415	1338	1314	1271
152.40x1.50	6" - OD	5.750	B	B	B	diversas	A	B	A	B	289	289	289	273	256	242	237	230
152.40x2.00	6" - OD	7.670	B	B	B	diversas	A	B	A	B	387	387	387	366	343	324	317	308
168.28x2.77	6" sch - 5	11.470	A	C	C	diversas	A	B	A	B	486	486	486	460	431	408	400	387
168.28x3.40	6" sch - 10	14.030	A	C	C	diversas	A	B	A	B	599	599	599	566	530	502	493	476
168.28x7.11	6" sch - 40	28.650	A	C	C	diversas	A	B	A	B	1272	1272	1272	1203	1127	1066	1047	1012
203.00x2.00	8" - OD	10.200	sem norma			Papel e celulose	A	B	A	B	289	289	289	273	256	243	238	231
203.00x2.50	8" - OD	12.800	sem norma			Papel e celulose					363	363	363	343	322	304	297	288
219.08x2.77	8" Sch - 5	15.000	-			Condução					373	373	373	352	330	312	307	287
219.08x3.76	8" Sch - 10	20.240	-			Condução					507	507	507	480	450	425	418	404
219.08x8.18	8" Sch - 40	43.120	-			Papel e celulose					1120	1120	1120	1059	992	938	922	891
254.00x2.00	10" - OD	12.800	sem norma			Papel e celulose					231	231	231	219	205	194	190	184
254.00x2.50	10" - OD	16.000	sem norma			Condução					289	289	289	273	258	242	237	230
273.05x3.40	10" Sch - 5	22.940	-			Condução					367	367	367	347	325	307	302	292
273.05x4.20	10" Sch - 10	28.170	-			Condução					454	454	454	430	402	381	374	361
273.05x9.27	10" Sch - 40	60.300	-			Papel e celulose					1016	1016	1016	961	900	851	836	808
305.00x2.00	12" - OD	15.400	sem norma			Papel e celulose					192	192	192	182	170	161	157	153
305.00x2.50	12" - OD	19.200	sem norma			Papel e celulose	A	B	A	B	241	241	241	228	213	202	198	192
323.85x3.96	12" Sch - 5	31.690	sem norma			Condução					380	380	380	341	319	302	296	287
323.85x4.57	12" Sch - 10	36.500	-			Condução					416	416	416	384	369	349	343	331
323.85x9.52	12" Sch - 40	74.850	sem norma			Condução					877	877	877	829	777	735	721	698
355.60x2.00	14" - OD	17.900	sem norma			Papel e celulose					164	164	164	155	146	138	134	131
355.60x2.50	14" - OD	22.300	sem norma			Papel e celulose	A	B	A	B	207	207	207	196	183	173	170	165
355.60x3.96	14" Sch - 5	34.400	sem norma			Condução					328	328	328	310	290	275	270	261
365.60x4.78	14" Sch - 10	41.300	sem norma			Condução					396	396	396	375	351	332	326	315
406.40x2.50	16" - OD	25.600	sem norma			Papel e celulose					180	180	180	170	159	151	147	143
406.40x4.20	16" Sch - 5	41.500	sem norma			Condução					303	303	303	287	269	254	250	241
406.40x4.78	16" Sch - 10	47.300	sem norma			Condução					346	346	346	328	307	290	285	276
457.20x2.50	18" - OD	28.800	sem norma			Papel e celulose					160	160	160	151	141	133	131	127
457.20x4.20	18" Sch - 5	46.800	sem norma			Condução					269	269	269	255	239	226	222	214
457.20x4.75	18" Sch - 10	53.200	sem norma			Condução					305	305	305	289	271	256	251	243
508.00x2.50	20" - OD	32.000	sem norma			Papel e celulose					144	144	144	136	127	120	118	114
508.00x4.78	20" Sch - 5	59.300	sem norma			Condução					277	277	277	262	245	232	228	220
508.00x5.54	20" Sch - 10	68.600	sem norma			Condução					321	321	321	304	284	269	264	255

Aplicações: condução de produtos alimentícios em geral, papel e celulose, açúcar e álcool, instrumentação, trocadores de calor, estruturas metálicas, móveis, estética, condução diversas. **Legenda:** A = Padrão de estoque B = Sob consulta
 Atenção - O uso em linha de alimentos (leite, refrigerantes, cerveja, água mineral, sucos, etc) - Tubos devem ser polido/sanitário por dentro e por fora - PI/PE

TUBOS QUADRADOS DE AÇO INOXIDÁVEL (uso geral - aço inox 304)

Dimensões (mm)	Peso/mt (Kg)	Dimensões (mm)	Peso/mt (Kg)	Dimensões (mm)	Peso/mt (Kg)	Dimensões (mm)	Peso/mt (Kg)	Dimensões (mm)	Peso/mt (Kg)
20 x 20 x 1.00	0.613	30 x 30 x 1.50	1.380	35 x 35 x 1.50	1.619	50 x 50 x 2.00	3.091	80 x 80 x 2.00	5.006
20 x 20 x 1.20	0.730	30 x 30 x 2.00	1.840	35 x 35 x 2.00	2.134	50 x 50 x 3.00	4.561	80 x 80 x 3.00	7.554
20 x 20 x 1.50	0.901	30 x 30 x 3.00	2.640	35 x 35 x 3.00	3.128	60 x 60 x 1.20	2.262	90 x 90 x 1.50	4.270
20 x 20 x 2.00	1.176	32 x 32 x 1.00	1.034	40 x 40 x 1.00	1.251	60 x 60 x 1.50	2.816	90 x 90 x 2.00	5.949
25 x 25 x 1.00	0.779	32 x 32 x 1.20	1.235	40 x 40 x 1.20	1.496	60 x 60 x 2.00	3.729	90 x 90 x 3.00	8.527
25 x 25 x 1.20	0.929	32 x 32 x 1.50	1.533	40 x 40 x 1.50	1.858	60 x 60 x 3.00	5.519	100 x 100 x 1.20	3.760
25 x 25 x 1.50	1.150	32 x 32 x 2.00	2.018	40 x 40 x 2.00	2.453	70 x 70 x 1.50	3.295	100 x 100 x 1.50	4.689
25 x 25 x 2.00	1.508	32 x 32 x 3.00	2.952	40 x 40 x 3.00	3.604	70 x 70 x 2.00	4.368	100 x 100 x 2.00	6.228
30 x 30 x 1.00	0.932	35 x 35 x 1.00	1.092	50 x 50 x 1.20	1.879	70 x 70 x 3.00	6.580	100 x 100 x 2.50	7.753
30 x 30 x 1.20	1.113	35 x 35 x 1.20	1.304	50 x 50 x 1.50	2.337	80 x 80 x 1.50	3.773	100 x 100 x 3.00	9.567

CANTONEIRAS DE AÇO INOXIDÁVEL

(peso estimado por metro)

Designação	Massa linear	Designação	Massa linear
25.40 x 25.40 x 3.18	1.27	38.10 x 38.10 x 6.35	3.48
25.40 x 25.40 x 4.76	1.73	50.80 x 50.80 x 3.18	2.50
25.40 x 25.40 x 6.35	2.22	50.80 x 50.80 x 4.76	3.63
31.75 x 31.75 x 3.18	1.50	50.80 x 50.80 x 6.35	4.75
31.75 x 31.75 x 4.76	2.20	63.50 x 63.50 x 4.76	4.57
31.75 x 31.75 x 6.35	2.86	63.50 x 63.50 x 6.35	6.10
38.10 x 38.10 x 3.18	1.83	76.20 x 76.20 x 6.35	7.30
38.10 x 38.10 x 4.76	2.68	101.60 x 101.60 x 6.35	10.00

BARRAS DE AÇO INOXIDÁVEL (peso estimado por metro)

Pol.	mm	●	⬡	■
1/8	3.17	0.062	0.068	0.079
5/32	9.97	0.097	0.107	0.120
3/16	4.76	0.149	0.154	0.178
7/32	5.55	0.189	0.209	0.242
1/4	6.35	0.250	0.270	0.320
9/32	7.14	0.314	0.346	0.400
5/16	7.93	0.390	0.430	0.490
3/8	9.53	0.560	0.620	0.710
7/16	11.11	0.760	0.840	0.970
1/2	12.70	0.990	1.100	1.270
9/16	14.28	1.260	1.390	1.600
5/8	15.87	1.550	1.710	1.980
11/16	17.46	1.880	2.070	2.390
3/4	19.05	2.240	2.460	2.850
13/16	20.63	2.620	2.890	3.340
7/8	22.22	3.040	3.350	3.870
15/16	23.81	3.490	3.850	4.440
1	25.40	3.970	4.380	5.060
1 1/16	26.97	4.490	4.950	5.710
1 1/8	28.57	5.030	5.550	6.400
1 3/16	30.16	5.600	6.180	7.140
1 1/4	31.75	6.210	6.850	7.910
1 5/16	33.34	6.850	7.550	8.720
1 3/8	34.92	7.510	8.290	9.570
1 7/16	36.51	8.210	9.060	10.460
1 1/2	38.10	8.840	9.860	11.390
1 9/16	39.69	9.700	10.700	12.350
1 5/8	41.27	10.490	11.570	13.360
1 3/4	44.45	12.170	13.420	15.500
1 7/8	47.62	13.910	15.410	17.790
2	50.80	15.900	17.530	20.240
2 1/16	52.39	16.910	18.640	21.520
2 1/8	53.97	17.950	19.790	22.850
2 3/16	55.56	19.020	20.970	24.210
2 1/4	57.15	20.120	22.190	25.620
2 5/16	58.73	21.250	23.440	27.060
2 3/8	60.33	22.420	24.720	28.540
2 7/16	61.91	23.610	26.030	30.600
2 1/2	63.50	24.840	27.380	31.620
2 5/8	66.68	27.380	30.190	34.870
2 3/4	69.85	30.050	33.140	38.270
2 7/8	73.03	32.050	36.220	41.820
3	76.20	35.770	39.430	45.540
3 1/8	79.30	38.810	42.790	49.410
3 1/4	82.55	41.880	46.340	53.440
3 3/8	85.73	45.27	49.98	57.63
3 1/2	85.90	48.68	53.74	61.98
3 5/8	92.08	52.22	57.66	66.49
3 3/4	95.25	55.88	61.69	71.15
3 7/8	98.43	60.67	65.88	75.96
4	101.60	63.58	70.26	80.97
4 1/8	104.78	67.62	74.65	86.10
4 1/4	107.95	71.78	79.24	91.39
4 3/8	111.13	76.06	83.98	96.85
4 1/2	114.30	80.47	88.84	102.46
4 5/8	117.48	85.01	93.85	108.23
4 3/4	120.65	89.66	98.98	114.16
4 7/8	123.83	94.44	104.27	120.25

Pol.	mm	●	⬡	■
5	127.00	99.80	109.68	126.50
5 1/4	133.36	109.50	120.94	140.50
5 1/2	139.71	120.20	132.73	154.20
5 3/4	146.06	131.40	145.7	168.53
6	152.40	143.10	157.93	183.48
6 1/4	158.76	155.20	171.39	199.12
6 1/2	165.11	167.90	185.38	215.36
6 3/4	171.46	181.10	199.91	232.25
7	177.81	194.70	214.99	249.77
7 1/4	184.16	209.70	230.62	267.93
7 1/2	190.51	223.80	246.80	286.72
7 3/4	196.85	238.90	263.50	306.12
8	203.20	254.60	280.77	326.12
8 1/4	209.55	270.70	298.59	346.90
8 1/2	215.90	287.40	316.97	368.24
8 3/4	222.25	304.60	335.88	390.22
9	228.60	322.10	355.35	412.84
9 1/4	234.95	340.30	375.37	436.09
9 1/2	241.30	359.00	395.93	459.98
9 3/4	247.65	378.10	417.05	484.51
10	254.00	397.80	438.71	509.67
10 1/2	266.70	438.50	483.67	561.92
11	279.40	481.20	530.83	616.71
11 1/2	292.70	526.00	582.58	676.82
12	304.80	572.70	631.74	733.93
13	330.20	672.60	741.42	861.35
14	335.60	779.70	859.87	998.96
15	381.00	894.90	987.09	1146.77
16	406.40	1017.30	1123.09	1304.77
17	431.80	1148.50	1267.87	1472.96
18	457.20	1287.60	1421.42	1651.35
20	508.00	1589.50	1754.83	2038.70

CHAPAS DE AÇO INOXIDÁVEL (peso estimado por metro)

ESPESSURAS			DIMENSÕES						
mm	Pol.	Nº U.S.G.	Kg/m ²	2m x 1 (kg)	2m x 1,20 (kg)	3m x 1 (kg)	3m x 1,20 (kg)	3m x 1,50 (kg)	6m x 1,5 (kg)
0.30	-	30	2.47	4.9	5.9	7.4	8.9	11.1	22.2
0.40	1/64	28	3.30	6.6	7.9	9.9	11.9	14.8	29.6
0.50	-	26	4.12	8.2	9.9	12.4	14.8	18.5	37.0
0.60	-	24	4.94	9.9	11.9	14.8	17.8	22.2	44.4
0.80	1/32	22	6.59	13.2	15.8	19.8	23.7	29.6	59.2
1.00	-	20	8.24	16.5	19.8	24.7	29.7	37.1	74.2
1.20	-	18	9.89	19.8	23.7	29.7	35.6	44.5	89.0
1.50	1/16	16	12.36	24.7	29.7	37.1	44.5	55.6	111.2
2.00	5/64	14	16.48	33.0	39.6	49.4	59.3	74.2	148.4
2.50	-	13	20.60	41.2	49.4	61.8	74.2	92.7	185.4
2.75	7/64	12	22.66	45.3	54.4	68.0	81.6	102.0	204.0
3.00	1/8	11	24.72	49.4	59.3	74.2	89.1	111.2	222.4
3.50	9/64	10	28.84	57.7	69.2	86.5	103.8	129.8	259.6
4.00	5/32	9	32.96	65.9	79.1	98.9	118.7	148.3	296.6
4.50	11/64	8	37.08	74.2	89.0	111.2	133.5	166.8	333.6
4.76	3/16	7	39.22	78.4	94.1	117.7	141.2	176.5	353.0
5.00	-	6	41.20	82.4	98.9	123.6	148.3	185.4	370.8
5.50	7/32	5	45.32	90.6	108.8	136.0	163.2	203.9	407.8
6.00	-	4	49.44	98.9	118.7	148.3	178.0	222.5	445.0
6.35	1/4	3	52.32	104.6	125.6	157.0	188.4	235.4	470.8
7.93	5/16	0	65.34	130.7	156.8	196.0	235.2	294.0	588.0
10.00	3/8		82.40	164.8	197.8	247.2	296.6	370.8	741.6
12.70	1/2		104.65	209.3	251.2	313.9	376.7	470.9	941.8
16.00	5/8		131.84	263.7	316.4	395.5	474.6	593.3	1186.6
19.00	3/4		156.56	313.1	375.7	469.7	563.6	704.5	1409.0
22.00	7/8		181.28	362.6	435.1	543.8	652.6	815.7	1631.4
25.40	1		209.30	418.6	502.3	627.9	753.5	941.8	1883.6
32.00	1 1/4		263.68	527.4	632.8	791.0	949.2	1186.5	2373.0
38.10	1 1/2		313.94	627.9	753.5	941.8	1130.2	1412.7	2825.4
45.00	1 3/4		370.80	741.6	889.9	1112.4	1334.9	1668.6	3337.2
50.80	2		418.59	813.2	1004.6	1255.8	1506.9	1883.6	3767.2
							2410.2	4820.4	

BARRAS CHATAS DE AÇO INOXIDÁVEL

(peso estimado por metro)

LARGURA	ESPESSURA			DIMENSÕES					
	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
1/2"	0.320	0.470	0.630	0.790	-	-	-	-	-
5/8"	0.400	0.590	0.790	0.990	1.190	-	-	-	-
3/4"	0.470	0.710	0.950	1.185	1.420	1.900	-	-	-
7/8"	0.550	0.830	1.110	1.383	1.660	2.210	-	-	-
1"	0.630	0.950	1.270	1.581	1.900	2.530	3.160	3.790	-
1 1/4"	0.790	1.190	1.580	1.978	2.370	3.160	3.950	4.740	6.320
1 1/2"	0.950	1.430	1.900	2.371	2.850	3.790	4.740	5.690	7.590
1 3/4"	1.110	1.660	2.220	2.767	3.320	4.430	5.540	6.640	8.860
2"	1.270	1.900	2.530	3.170	3.800	5.060	6.330	7.590	10.120
2 1/4"	1.420	2.130	2.850	3.570	4.270	5.690	7.120	8.540	11.390
2 1/2"	1.580	2.370	3.160	3.950	4.740	6.330	7.910	9.490	12.650
2 3/4"	1.740	2.610	3.480	4.350	5.220	6.960	8.700	10.440	13.920
3"	1.900	2.850	3.800	4.750	5.700	7.600	9.490	11.390	15.180
3 1/4"	2.050	3.080	4.110	5.140	6.170	8.222	10.280	12.330	16.440
3 1/2"	2.210	3.320	4.420	5.530	6.640	8.860	11.070	13.280	17.710
3 3/4"	2.370	3.560	4.740	5.930	7.120	9.490	11.860	14.230	18.970
4	2.540	3.800	5.060	6.330	7.590	10.120	12.650	15.180	20.240
4 1/4"	2.652	4.030	5.380	6.710	8.075	10.760	13.440	16.140	21.500
4 1/2"	2.850	4.270	5.690	7.110	8.540	11.390	14.230	17.080	22.770
5"	3.170	4.750	6.330	7.910	9.490	12.650	15.810	18.980	25.300
5 1/2"	3.480	5.220	6.960	8.700	10.440	13.920	17.390	20.810	27.830
6"	3.790	5.690	7.500	9.490	11.390	15.180	18.970	22.770	30.360