

Conexiones: Codos, Tes, Reducciones y Tapones Capa



Conexiones, Parte de una Solución Integral



Campo de Aplicación

En Oil Metal S.A ofrecemos conexiones de acero al carbono sin costura para aplicaciones de presión y temperatura moderadas.

Algunas de estas aplicaciones son:

- Conducción de gases
- Conducción de hidrocarburos
- Calderas
- Industria de la construcción

Análisis Químico y Propiedades Mecánicas

A continuación se presentan las tablas de composición química y de propiedades mecánicas de las conexiones.

ANÁLISIS QUÍMICO

ASTM	GRADO DE ACERO	COMPOSICIÓN QUÍMICA								
		C% Máx	Mn%	P% Máx	S% Máx	Si%	Cr%	Mo%	Ni%	Otros
A-234	WPB	0.300	0.290-1.060	0.050	0.058	0.100 min	0.400	0.150	0.400	Cu 0.400%
										V 0.800%
										Cb 0.020%

PROPIEDADES MECÁNICAS

ASTM	GRADO DE ACERO	PROPIEDADES MECÁNICAS			
		FLUENCIA MPA	RESISTENCIA MPA	ELONGACIÓN MÍN% EN 2"	
				LONGITUDINAL	TRANSVERSAL
A-234	WPB	415 - 585	240	30	20

Dimensiones

En las tablas 1, 2, 3 y 4 se incluyen las listas de las medidas con las dimensiones finales.

CODOS, TES Y TAPONES CAPA									
NPS	DIÁMETRO EXTERNO D	CENTRO A CARA A	CENTRO A CARA A1	CENTRO A CENTRO O	CENTRO A CENTRO O1	CENTRO A CARA B	LONGITUD E*		CENTRO A EXTREMO C - M
							< =XS	XS >	
1/2"	21.34	38.00	19.00	76.00	36.00	16.00	25.00	25.00	25.00
3/4"	26.67	38.00	18.00	76.00	36.00	11.00	25.00	25.00	29.00
1"	33.40	38.00	25.00	76.00	51.00	22.00	38.00	38.00	38.00
1 1/4"	42.16	48.00	32.00	95.00	64.00	25.00	38.00	38.00	48.00
1 1/2"	48.26	57.00	38.00	114.00	76.00	29.00	38.00	38.00	57.00
2"	60.32	76.00	51.00	152.00	102.00	35.00	38.00	44.00	64.00
2 1/2"	73.02	95.00	64.00	191.00	127.00	44.00	38.00	51.00	76.00
3"	88.90	114.00	76.00	229.00	152.00	51.00	51.00	64.00	86.00
3 1/2"	101.60	133.00	89.00	267.00	178.00	57.00	64.00	16.00	95.00
4"	114.30	152.00	102.00	305.00	203.00	64.00	64.00	76.00	105.00
5"	141.30	190.00	127.00	381.00	254.00	79.00	76.00	89.00	124.00
6"	168.27	229.00	152.00	457.00	305.00	95.00	89.00	102.00	143.00
8"	219.07	305.00	203.00	610.00	406.00	127.00	102.00	127.00	178.00
10"	273.05	381.00	254.00	762.00	508.00	159.00	127.00	152.00	216.00
12"	323.85	475.00	305.00	914.00	610.00	190.00	152.00	178.00	254.00
14"	355.60	533.00	356.00	1,067.00	711.00	222.00	165.00	191.00	279.00
16"	406.40	610.00	406.00	1,219.00	813.00	254.00	178.00	203.00	305.00
18"	457.20	686.00	457.00	1,372.00	914.00	286.00	203.00	229.00	343.00
20"	508.00	762.00	508.00	1,524.00	1,016.00	318.00	229.00	254.00	381.00
22"	558.80	838.00	559.00	1,676.00	1,118.00	343.00	254.00	254.00	419.00
24"	609.60	914.00	610.00	1,829.00	1,219.00	381.00	267.00	305.00	432.00
26"	660.40	991.00	660.00			406.00	267.00	267.00	495.00
28"	711.20	1,067.00	711.00			438.00	267.00	267.00	521.00
30"	762.00	1,143.00	762.00			470.00	267.00	267.00	559.00
32"	812.80	1,219.00	813.00			502.00	267.00	267.00	597.00
34"	863.60	1,295.00	864.00			533.00	267.00	267.00	635.00
36"	914.40	1,372.00	914.00			565.00	267.00	267.00	673.00

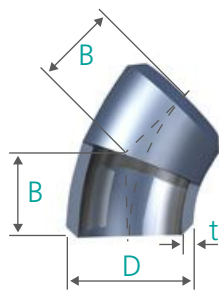
Tabla 1

Todas las dimensiones se expresan en milímetros, excepto las de NPS que se expresan en pulgadas.

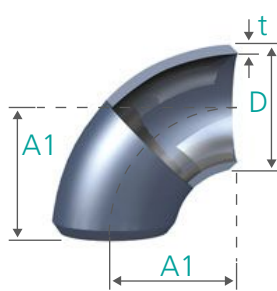
* El dato indicado en la columna de la izquierda se refiere a tapones capa con espesor menor o igual a cédula XS. El dato indicado en la columna de la derecha se refiere a tapones capa con espesor mayor a cédula XS.

Dimensiones bajo las normas ASME B 16.9 y ASME B 16.28

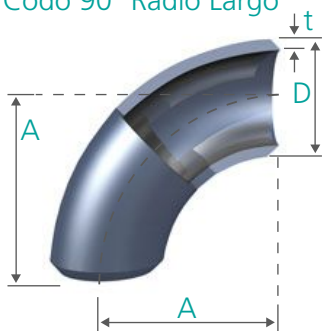
Codo 45° Radio Largo



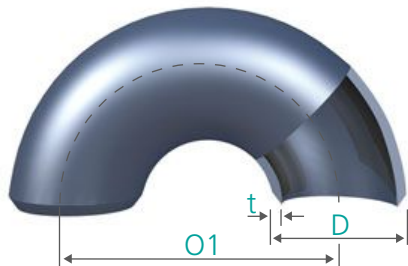
Codo 90° Radio Corto



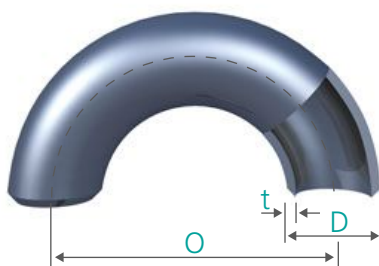
Codo 90° Radio Largo



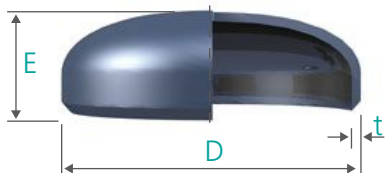
Codo 180° Radio Corto



Codo 180° Radio Largo



Tapón Capa



Tolerancias

En la tabla 5 se observan las tolerancias dimensionales, según especificación ASME B16.9-2001 y ASME B16.28-2001.

DIMENSIONALES								
NPS	TODAS LAS CONEXIONES		CODO 90° Y 45°; TES	REDUCCIONES	TAPÓN CAPA	RETORNOS 180°		
	DIÁMETRO EXTERIOR AL BISEL (1)	DIÁMETRO INTERIOR AL EXTREMO (2)	CENTRO A EXTREMO A-B-C-M	LONGITUD TOTAL H	LONGITUD E	CENTRO A CENTRO	HOMBRO A CARA	ALINEACIÓN DE EXTREMOS
1/2" a 2 1/2"	+1.6 -0.8	± 0.8	± 2.0	± 2.0	± 3.0	± 6.0	± 6.0	± 1.0
3" a 3 1/2"	±1.6	± 1.6	± 2.0	± 2.0	± 3.0	± 6.0	± 6.0	± 1.0
4"	±1.6	± 1.6	± 2.0	± 2.0	± 3.0	± 6.0	± 6.0	± 1.0
5" a 6"	+2.4 -1.6	± 1.6	± 2.0	± 2.0	± 6.0	± 6.0	± 6.0	± 1.0
8"	+2.4 -1.6	± 1.6	± 2.0	± 2.0	± 6.0	± 6.0	± 6.0	± 1.0
10"	+4.0 -3.2	± 3.2	± 2.0	± 2.0	± 6.0	± 10.0	± 6.0	± 2.0
12" a 18"	+4.0 -3.2	± 3.2	± 2.0	± 2.0	± 6.0	± 10.0	± 6.0	± 2.0
20" a 24"	+6.4 -4.8	± 4.8	± 2.0	± 2.0	± 6.0	± 10.0	± 6.0	± 2.0
26" a 30"	+6.4 -4.8	± 4.8	± 3.0	± 5.0	± 10.0			
37" a 48"	+6.4 -4.8	± 4.8	± 5.0	± 5.0	± 10.0			

Tabla 5

Todas las dimensiones se expresan en milímetros, excepto las de NPS que se expresan en pulgadas.

Espesor de pared no menor al 87.5% del espesor nominal.

(1) Es la suma de los valores absolutos mas la tolerancia mínima.

(2) El diámetro interno al extremo y el espesor nominal deberán ser especificados por el cliente.

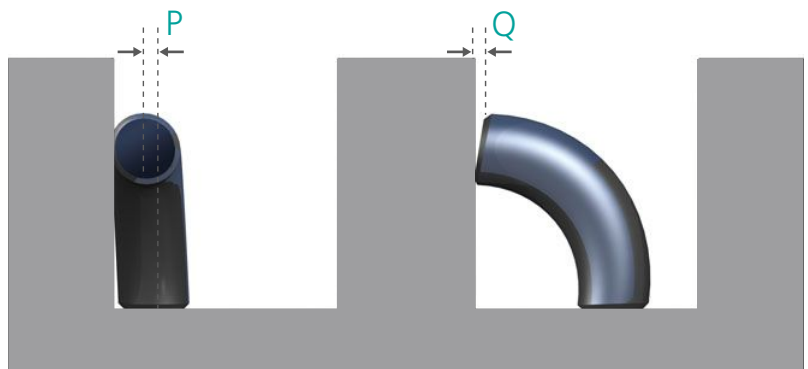
Revisadas conforme a norma ASME B16.9-2001

En la tabla 6 se observan las tolerancias angulares.

ANGULARES		
NPS	Fuera de Plano P	Fuera de Ángulo Q
1/2" a 4"	± 0.8	± 1.6
5" a 8"	± 1.6	± 3.1
10" a 12"	± 2.4	± 4.8
14" a 16"	± 2.4	± 6.4
18" a 24"	± 3.1	± 9.6
26" a 30"	± 4.8	± 9.6
32" a 42"	± 4.8	± 12.7
44" a 48"	± 4.8	± 19.0

Tabla 6

Todas las dimensiones se expresan en milímetros, excepto las de NPS que se expresan en pulgadas.

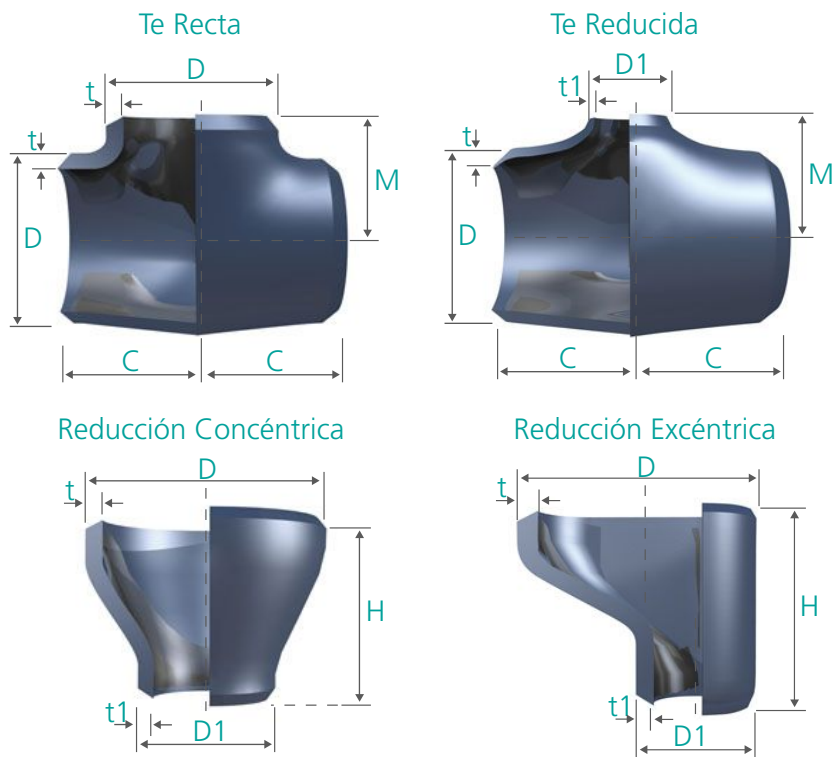


En la tabla 2 se observa el espesor de pared según especificación ASME B 36.10 y ASME 36.19.

ESPESOR DE PARED																		
NPS	DIÁMETRO EXTERNO	NORMA ASME B 36.10 ESPESOR DE PARED NOMINAL (t)													NORMA ASME B 36.19 ESPESOR DE PARED NOMINAL (t)			
		CÉDULA													CÉDULA			
		10	20	30	STD	40	60	XS	80	100	120	140	160	XXS	5S	10S	40S	80S
1/2"	21.34				2.77	2.77		3.73	3.73				4.78	7.47	1.65	2.11	2.77	3.73
3/4"	26.67				2.87	2.87		3.91	3.91				5.56	7.82	1.65	2.11	2.87	3.91
1"	33.40				3.38	3.38		4.55	4.55				6.35	9.09	1.65	2.77	3.38	4.55
1 1/4"	42.16				3.56	3.56		4.85	4.85				6.35	9.70	1.65	2.77	3.56	4.85
1 1/2"	48.26				3.68	3.68		5.08	5.08				7.14	10.16	1.65	2.77	3.68	5.08
2"	60.32				3.91	3.91		5.54	5.54				8.74	11.07	1.65	2.77	3.91	5.54
2 1/2"	73.02				5.16	5.16		7.01	7.01				9.52	14.02	2.11	3.05	5.16	7.01
3"	88.90				5.49	5.49		7.62	7.62				11.13	15.24	2.11	3.05	5.49	7.62
3 1/2"	101.60				5.74	5.74		8.08	8.08						2.11	3.05	5.74	8.08
4"	114.30				6.02	6.02		8.56	8.56		11.13		13.49	17.12	2.11	3.05	6.02	8.56
5"	141.30				6.55	6.55		9.52	9.52		12.70		15.88	19.05	2.77	3.40	6.55	9.52
6"	168.27				7.11	7.11		10.97	10.97		14.27		18.26	21.95	2.77	3.40	7.11	10.97
8"	219.07		6.35	7.04	8.18	8.18	10.31	12.70	12.70	15.09	18.26	20.62	23.01	22.22	2.77	3.76	8.18	12.70
10"	273.05		6.35	7.80	9.27	9.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	3.40	4.19	9.27	12.70
12"	323.85		6.35	8.38	9.52	10.31	14.27	12.70	17.48	21.44	25.40	28.58	33.32	25.40	3.96	4.57	9.52	12.70
14"	355.60	6.35	7.92	9.52	9.52	11.13	15.09	12.70	19.05	23.83	27.79	31.75	35.71		3.96	4.77		
16"	406.40	6.35	7.92	9.52	9.52	12.70	16.66	12.70	21.44	26.19	30.96	36.53	40.49		4.19	4.77		
18"	457.20	6.35	7.92	11.13	9.52	14.27	19.05	12.70	23.83	29.36	34.93	39.67	45.24		4.19	4.77		
20"	508.00	6.35	9.52	12.70	9.52	15.09	20.62	12.70	26.19	32.54	38.10	44.45	50.01		4.77	5.54		
22"	558.80	6.35	9.52	12.70	9.52	15.88	22.22	12.70	28.58	34.92	41.28	47.63	53.98		4.77	5.54		
24"	609.60	6.35	9.52	14.27	9.52	17.48	24.61	12.70	30.96	38.89	46.02	52.37	59.54		5.54	6.35		
26"	660.40	7.92	12.70		9.52			12.70										
28"	711.20	7.92	12.70	15.88	9.52			12.70							6.35	7.92		
30"	762.00	7.92	12.70	15.88	9.52			12.70										
32"	812.80	7.92	12.70	15.88	9.52	17.48		12.70										
34"	863.60	7.92	12.70	15.88	9.52	17.48		12.70										
36"	914.40	7.92	12.70	15.88	9.52	19.05		12.70										

Tabla 2

Todas las dimensiones se expresan en milímetros, excepto las de NPS que se expresan en pulgadas.



REDUCCIONES					
NPS	DIMENSIONES				
	DIÁMETRO EXTERIOR	DIÁMETRO EXTERIOR	CENTRO A EXTREMO	CENTRO A EXTREMO	LONGITUD
	D	D1	C	M	H
3/4" x 3/8"	27.00	17.00	29.00	29.00	38.00
3/4" x 1/2"	27.00	21.00	29.00	29.00	38.00
1" x 1 1/2"	33.00	21.00	38.00	38.00	51.00
1" x 1 3/4"	33.00	27.00	38.00	38.00	51.00
1 1/4" x 1/2"	42.00	21.00	48.00	48.00	51.00
1 1/4" x 3/4"	42.00	27.00	48.00	48.00	51.00
1 1/4" x 1"	42.00	33.00	48.00	48.00	51.00
1 1/2" x 1/2"	48.00	21.00	57.00	57.00	63.00
1 1/2" x 3/4"	48.00	27.00	57.00	57.00	63.00
1 1/2" x 1"	48.00	33.00	57.00	57.00	63.00
1 1/2" x 1 1/4"	48.00	42.00	57.00	57.00	63.00
2" x 3/4"	60.00	27.00	64.00	44.00	76.00
2" x 1"	60.00	33.00	64.00	51.00	76.00
2" x 1 1/4"	60.00	42.00	64.00	57.00	76.00
2" x 1 1/2"	60.00	48.00	64.00	60.00	76.00
2 1/2" x 1"	73.00	33.00	76.00	57.00	89.00
2 1/2" x 1 1/4"	73.00	42.00	76.00	64.00	89.00
2 1/2" x 1 1/2"	73.00	48.00	76.00	67.00	89.00
2 1/2" x 2"	73.00	60.00	76.00	70.00	89.00
3" x 1 3/4"	89.00	42.00	86.00	70.00	89.00
3" x 1 1/2"	89.00	48.00	86.00	73.00	89.00
3" x 2"	89.00	60.00	86.00	76.00	89.00
3" x 2 1/2"	89.00	73.00	86.00	83.00	89.00
3 1/2" x 1 1/2"	102.00	48.00	95.00	79.00	102.00
3 1/2" x 2"	102.00	60.00	95.00	83.00	102.00
3 1/2" x 2 1/2"	102.00	73.00	95.00	89.00	101.00
3 1/2" x 3"	102.00	89.00	95.00	92.00	101.00
4" x 1/2"	114.00	48.00	105.00	86.00	102.00
4" x 2"	114.00	60.00	105.00	89.00	102.00
4" x 2 1/2"	114.00	73.00	105.00	65.00	102.00
4" x 3"	114.00	89.00	105.00	98.00	102.00
4" x 3 1/2"	114.00	102.00	105.00	102.00	102.00
5" x 2"	141.00	60.00	124.00	105.00	127.00
5" x 2 1/2"	141.00	73.00	124.00	108.00	127.00
5" x 3"	141.00	89.00	124.00	111.00	127.00
5" x 3 1/2"	141.00	102.00	124.00	114.00	127.00
5" x 4"	141.00	114.00	124.00	117.00	127.00
6" x 2 1/2"	168.00	73.00	143.00	121.00	140.00
6" x 3"	168.00	89.00	143.00	124.00	140.00
6" x 3 1/2"	168.00	102.00	143.00	127.00	140.00
6" x 4"	168.00	114.00	143.00	130.00	140.00
6" x 5"	168.00	141.00	143.00	137.00	140.00
8" x 3 1/2"	219.00	102.00	178.00	152.00	152.00
8" x 4"	219.00	114.00	178.00	156.00	152.00
8" x 5"	219.00	141.00	178.00	162.00	152.00
8" x 6"	219.00	168.00	178.00	168.00	152.00
10" x 4"	273.00	114.00	216.00	184.00	178.00
10" x 5"	273.00	141.00	216.00	191.00	178.00
10" x 6"	273.00	168.00	216.00	164.00	178.00
10" x 8"	273.00	219.00	216.00	203.00	178.00
12" x 5"	324.00	141.00	254.00	216.00	203.00
12" x 6"	324.00	168.00	254.00	219.00	203.00
12" x 8"	324.00	219.00	254.00	229.00	203.00
12" x 10"	324.00	273.00	254.00	241.00	203.00
14" x 6"	356.00	168.00	279.00	238.00	330.00
14" x 8"	356.00	219.00	279.00	248.00	330.00
14" x 10"	356.00	273.00	279.00	257.00	330.00

Tabla 3
Dimensiones bajo las normas ASME B 16.9 y ASME B 16.28
Todas las dimensiones se expresan en milímetros, excepto las de NPS que se expresan en pulgadas.

REDUCCIONES					
NPS	DIMENSIONES				
	DIÁMETRO EXTERIOR	DIÁMETRO EXTERIOR	CENTRO A EXTREMO	CENTRO A EXTREMO	LONGITUD
	D	D1	C	M	H
16" x 6"	406.00	168.00	305.00	264.00	356.00
16" x 8"	406.00	219.00	305.00	273.00	356.00
16" x 10"	406.00	273.00	305.00	283.00	356.00
16" x 12"	406.00	324.00	305.00	295.00	356.00
16" x 14"	406.00	356.00	305.00	305.00	356.00
18" x 8"	457.00	219.00	343.00	298.00	381.00
18" x 10"	457.00	273.00	343.00	308.00	381.00
18" x 12"	457.00	324.00	343.00	321.00	381.00
18" x 14"	457.00	356.00	343.00	330.00	381.00
18" x 16"	457.00	406.00	343.00	330.00	381.00
20" x 8"	508.00	219.00	381.00	324.00	508.00
20" x 10"	508.00	273.00	381.00	333.00	508.00
20" x 12"	508.00	324.00	381.00	346.00	508.00
20" x 14"	508.00	356.00	381.00	356.00	508.00
20" x 16"	508.00	406.00	381.00	356.00	508.00
20" x 18"	508.00	457.00	381.00	368.00	508.00
22" x 10"	559.00	273.00	419.00	359.00	508.00
22" x 12"	559.00	324.00	419.00	371.00	508.00
22" x 14"	559.00	356.00	419.00	381.00	508.00
22" x 16"	559.00	406.00	419.00	381.00	508.00
22" x 18"	559.00	457.00	419.00	394.00	508.00
22" x 20"	559.00	508.00	419.00	406.00	508.00
24" x 10"	610.00	273.00	432.00	384.00	508.00
24" x 12"	610.00	324.00	432.00	397.00	508.00
24" x 14"	610.00	356.00	432.00	406.00	508.00
24" x 16"	610.00	406.00	432.00	406.00	508.00
24" x 18"	610.00	457.00	432.00	419.00	508.00
24" x 20"	610.00	508.00	432.00	432.00	508.00
24" x 22"	610.00	559.00	432.00	432.00	508.00
26" x 18"	660.00	457.00	495.00	444.00	610.00
26" x 20"	660.00	508.00	495.00	457.00	610.00
26" x 22"	660.00	559.00	495.00	470.00	610.00
26" x 24"	660.00	610.00	495.00	483.00	610.00
28" x 18"	711.00	457.00	521.00	470.00	610.00
28" x 20"	711.00	508.00	521.00	483.00	610.00
28" x 22"	711.00	559.00	521.00	495.00	610.00
28" x 24"	711.00	610.00	521.00	508.00	610.00
28" x 26"	711.00	660.00	521.00	521.00	610.00
30" x 18"	762.00	457.00	559.00	495.00	610.00
30" x 20"	762.00	508.00	559.00	508.00	610.00
30" x 22"	762.00	559.00	559.00	521.00	610.00
30" x 24"	762.00	610.00	559.00	533.00	610.00
30" x 26"	762.00	660.00	559.00	546.00	610.00
30" x 28"	762.00	711.00	559.00	546.00	610.00
32" x 20"	813.00	508.00	597.00	533.00	610.00
32" x 22"	813.00	559.00	597.00	546.00	610.00
32" x 24"	813.00	610.00	597.00	559.00	610.00
32" x 26"	813.00	660.00	597.00	572.00	610.00
32" x 28"	813.00	711.00	597.00	572.00	610.00
32" x 30"	813.00	762.00	597.00	584.00	610.00
34" x 20"	864.00	508.00	635.00	559.00	610.00
34" x 22"	864.00	559.00	635.00	572.00	610.00
34" x 24"	864.00	610.00	635.00	584.00	610.00
34" x 26"	864.00	660.00	635.00	597.00	610.00
34" x 28"	864.00	711.00	635.00	597.00	610.00
34" x 30"	864.00	762.00	635.00	610.00	610.00
34" x 32"	864.00	813.00	635.00	622.00	610.00

Tabla 4
Dimensiones bajo las normas ASME B 16.9 y ASME B 16.28



OIL METAL