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بازرگانی فولاد ملی
(تدین)

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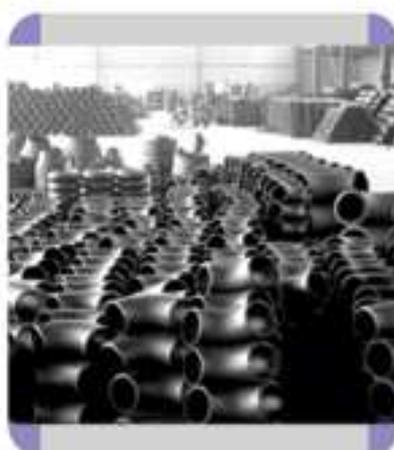
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اتصالات جوشی کربن استیل در آلیاژهای ASTM A234 Gr.WPB از فشار SGP to-XXS از ۱/۳" تا ۵۶" (زوبانی، ژاپنی، تایوانی و انواع فولادهای آلیاژی) موجود در انبار و با در کمترین زمان به صورت وارداتی امکان پذیر می باشد.

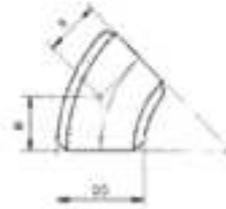




اتصالات استنلس استیل در آلیاژهای ASTM/ASME A403,A420 در رده‌های XXS - to- SGP از ۱/۲" تا ۵۶" موجود در انبار و با کمترین زمان به صورت وارداتی امکان پذیر میباشد



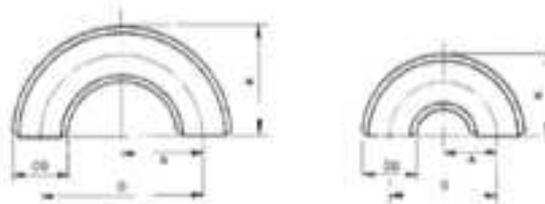
Long and Short Radius Elbows



ASME B16.9 B16.28
Standard 90°

Nominal Pipe Size (NPS)	Outside Diameter of Bevel OD	Center-to-End			
		Long Radius Elbow		Short Radius Elbow	
		90 Deg. A	45 Deg. B	90 Deg. A	45 Deg.* B
1/2	21.3	38.1	15.7	-	-
3/8	26.7	38.1	19.0	-	-
1	33.4	38.1	22.4	25.4	-
1-1/8	42.2	41.8	25.4	21.8	-
1-1/2	48.3	51.2	28.4	28.1	-
2	60.3	76.2	35.0	30.8	-
2-1/2	73.0	95.2	44.4	42.5	-
3	88.9	114.3	50.8	76.2	31.6
3-1/2	101.6	113.4	57.2	88.9	38.8
4	114.3	132.4	63.5	101.6	42.1
5	141.3	190.5	76.2	127.0	52.6
6	168.3	228.6	85.7	132.4	62.4
8	219.1	304.8	127.0	203.2	86.2
10	273.1	381.0	168.8	254.0	106.2
12	323.9	457.2	190.5	304.8	126.3
14	380.6	532.4	222.2	355.6	147.3
16	436.4	608.6	254.0	406.4	168.3
18	457.2	683.8	285.8	457.2	188.4
20	508.0	762.0	317.5	508.0	210.4
22	558.8	838.2	342.9	558.8	231.5
24	609.6	914.4	381.0	609.6	252.5
26	660.4	990.6	406.4	660.4*	273.5
28	711.2	1066.8	438.2	711.2*	294.4
30	762.0	1143.0	468.9	762.0*	315.4
32	812.8	1219.2	500.8	812.8*	336.1
34	863.6	1295.4	532.4	863.6*	357.7
36	914.4	1371.6	565.2	914.4*	378.8
38	965.2	1447.8	599.9	-	-
40	1016.0	1524.0	632.0	1016.0*	400.0
42	1066.8	1600.2	660.4	1066.8*	421.9
44	1117.6	1676.4	693.4	1117.6*	443.9
46	1168.4	1752.6	726.9	-	-
48	1219.2	1828.8	759.0	1219.2*	466.0
50*	1270.0	-	-	1270.0	487.1
54*	1371.6	2057.4	852.2	1371.6	568.1
56*	1422.4	2133.6	883.9	1422.4	589.2
60*	1524.0	2286.0	946.9	1524.0	631.3
66*	1676.4	2514.6	1041.6	-	-
72*	1828.8	2743.2	1137.9	-	-
80*	2032.0	-	-	2032.0	-

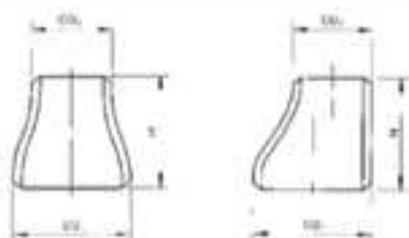
Long and Short Radius Elbows



ASME B16.9
ASME B16.28

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (OD)	Long Radius		Short Radius	
		Center-to- Center C	Back-to- Face K	Center-to- Center C	Back-to- Face K
1/2	21.3	36.2	47.8	-	-
3/4	26.7	36.2	50.8	-	-
1	32.4	36.2	55.9	50.8	41.1
1-1/8	42.2	95.2	69.9	63.5	52.3
1-1/2	48.3	114.2	82.8	76.2	62.9
2	60.3	132.4	106.4	101.6	81.9
2-1/2	73.0	190.5	131.8	127.0	106.7
3	88.9	229.4	158.6	152.4	129.7
3-1/2	101.6	266.7	184.2	172.8	150.7
4	114.3	304.8	209.6	203.2	164.8
5	141.3	361.9	261.9	254.0	194.9
6	168.3	437.2	312.7	304.8	236.9
8	219.1	609.4	414.3	406.4	322.7
10	273.1	762.9	517.6	508.0	390.7

Concentric and Eccentric Reducers

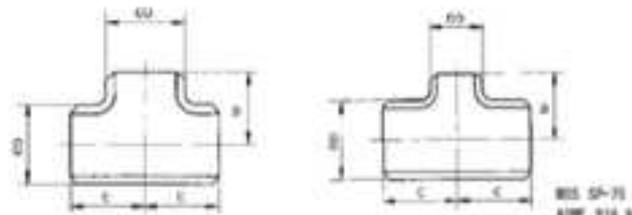


MS SP-75
ASME B16.9
*Standard Inch

Nominal Pipe Size (NPS)	Outside Diameter at Level		End-to-End H	Nominal Pipe Size (NPS)	Outside Diameter at Level		End-to-End H	Nominal Pipe Size (NPS)	Outside Diameter at Level		End-to-End H
	Large End OD	Small End OD			Large End OD	Small End OD			Large End OD	Small End OD	
3/4 x 1/2	26.7	21.3	26.1	10 x 8	273.1	219.1	177.8	34 x 32	343.8	312.9	406.5
3/8		17.3		6		166.3		30		762.0	
1 x 3/4	33.4	26.7	30.9	8		161.3		26		660.4	
1/2		21.3		4		114.3		24		609.6	
1-1/4 x 1	42.2	33.4	36.8	12 x 10	323.9	273.1	253.2	36 x 34	914.4	863.6	609.6
3/4		26.7		8		219.1		32		812.9	
1/2		21.3		6		166.3		30		762.0	
1-1/2 x 1-1/4	48.3	42.2	43.3	14 x 12	355.6	323.9	330.2	38 x 36	965.2	914.4	609.6
1		33.4		10		273.1		34		863.6	
3/4		26.7		8		219.1		32		812.9	
1/2		21.3		6		166.3		28		711.2	
2 x 1-1/2	60.3	48.3	56.2	16 x 14	406.4	355.6	350.6	40 x 38	1016.0	965.2	609.6
1-1/4		42.2		12		323.9		36		914.4	
1		33.4		10		273.1		34		863.6	
3/4		26.7		8		219.1		32		812.9	
2-1/2 x 2	73.0	60.3	68.9	18 x 16	457.2	406.4	381.6	42 x 40	1066.8	1016.0	609.6
1-1/2		48.3		14		355.6		38		965.2	
1-1/4		42.2		12		323.9		36		914.4	
1		33.4		10		273.1		34		863.6	
3 x 2-1/2	86.9	73.0	84.9	20 x 18	508.0	457.2	406.4	44 x 42	1117.6	1066.8	609.6
2		60.3		16		406.4		40		1016.0	
1-1/2		48.3		14		355.6		38		965.2	
1-1/4		42.2		12		323.9		36		914.4	
2-1/2 x 2	101.6	86.9	101.6	22 x 20	558.8	508.0	406.4	46 x 44	1168.4	1117.6	711.2
1-1/2		73.0		18		457.2		42		1066.8	
1-1/4		60.3		16		406.4		40		1016.0	
1		48.3		14		355.6		38		965.2	
4 x 3-1/2	114.3	101.6	101.6	24 x 22	609.6	558.8	406.4	48 x 46	1219.2	1168.4	711.2
3		86.9		20		508.0		46		1168.4	
1-1/2		73.0		18		457.2		44		1117.6	
1		60.3		16		406.4		42		1066.8	
3-1/2		60.3		14		355.6		40		1016.0	
6 x 4	141.3	114.3	121.9	26 x 24	660.4	609.6	406.4	48 x 46	1270.0	1219.2	711.2
3-1/2		101.6		22		558.8		46		1168.4	
3		86.9		20		508.0		44		1117.6	
1-1/2		73.0		18		457.2		42		1066.8	
1		60.3		16		406.4		40		1016.0	
8 x 6	168.3	141.3	139.7	28 x 26	711.2	660.4	406.4	48 x 46	1320.8	1270.0	711.2
4		114.3		24		609.6		46		1219.2	
3-1/2		101.6		22		558.8		44		1168.4	
3		86.9		20		508.0		42		1117.6	
1-1/2		73.0		18		457.2		40		1066.8	
8 x 6	219.1	168.3	162.4	30 x 28	762.0	711.2	406.4	48 x 46	1371.6	1320.8	711.2
6		141.3		26		660.4		46		1270.0	
4		114.3		24		609.6		44		1219.2	
3-1/2		101.6		22		558.8		42		1168.4	

Note (1) The shape of Reducer sizes 18" and larger may be manufactured to conical type without the taper.
(2) 48" and larger can be manufactured. Please contact us for size availability.

Straight and Reducing Tees

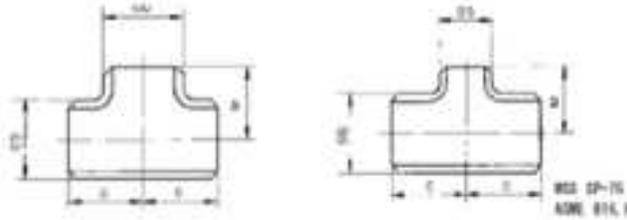


MSS SP-75
ASME B16.9
Standard 90°

Nominal Pipe Size (NPS)	Outside Diameter at Level		Center-to-End		Nominal Pipe Size (NPS)	Outside Diameter at Level		Center-to-End		
	Run	Outlet	Run C	Outlet M		Run	Outlet	Run C	Outlet M	
1/2 x 1/2	1/2	25.3	25.3	25.4	5 x 3	5	141.3	141.3	124.0	
	3/8		17.3	25.4		4		114.3	117.3	
	1/4		13.7	25.4		3-1/2		101.6	114.3	
3/4 x 3/4	3/4	26.7	26.7	26.4	3	3		88.9	111.3	
	1/2		21.3	26.4		2-1/2		75.0	108.0	
	3/8		17.3	26.4		2		60.3	104.8	
1 x 1	1	33.4	33.4	28.1	2-1/2	2-1/2		48.3		
	3/4		26.7	28.1		6 x 6	6	166.3	166.3	142.7
	1/2		21.3	28.1			5		141.3	136.7
1-1/4 x 1-1/4	1-1/4	42.2	42.2	41.6	4		4		114.3	130.0
	1		33.4	41.6		3-1/2		101.6	127.0	
	3/4		26.7	41.6		2		60.3	124.0	
1-1/2 x 1-1/2	1-1/2	46.3	46.3	43.7	2-1/2	2-1/2		75.0	120.4	
	1-1/4		41.7	43.7		8 x 8	8	216.1	216.1	171.8
	1		35.4	43.7			6		166.3	166.1
2 x 2	2	60.3	60.3	61.3	5		5		141.3	162.1
	1-1/2		46.3	61.3		4		114.3	155.4	
	1-1/4		41.7	61.3		3-1/2		101.6	152.4	
2-1/2 x 2-1/2	2-1/2	65.3	65.3	63.3	3	3		88.9		
	2		51.2	63.3		10 x 10	10	273.1	273.1	215.9
	1-1/2		37.1	63.3			8		216.1	203.2
3 x 3	3	88.9	88.9	85.9	6		6		166.3	193.0
	2-1/2		71.0	85.9		5		141.3	186.2	
	2		57.2	85.9		4		114.3		
3-1/2 x 3-1/2	3-1/2	95.0	95.0	91.3	12 x 12	12	323.9	323.9	254.0	
	3		80.3	91.3		10		273.1	241.3	
	2-1/2		65.3	91.3		8		216.1	226.4	
4 x 4	4	114.3	114.3	104.8	6	6		166.3	216.9	
	3-1/2		91.6	104.8		5		141.3	213.0	
	3		77.8	104.8		14 x 14	14	355.6	355.6	276.4
2-1/2		63.5	104.8	12			305.8	266.7		
2		49.5	104.8	10			273.1	257.0		
5 x 5	5	141.3	141.3	124.8	8	8		216.1	247.4	
	4-1/2		114.3	124.8		6		166.3	236.2	
	4		91.3	124.8		16 x 16	16	406.4	406.4	304.8
3-1/2		71.0	124.8	14			355.6	304.8		
3		57.2	124.8	12			323.9	295.1		
6 x 6	6	166.3	166.3	146.3	10	10		273.1	282.4	
	5-1/2		134.3	146.3		8		216.1	273.0	
	5		111.3	146.3		6		166.3	259.2	
8 x 8	8	216.1	216.1	181.3	18 x 18	18	457.2	457.2	342.9	
	7-1/2		171.8	181.3		16		406.4	330.2	
	7		141.3	181.3		14		355.6	320.2	
10 x 10	10	273.1	273.1	226.4	12	12		323.9	320.5	
	9-1/2		226.4	226.4		10		273.1	307.6	
	9		181.3	226.4		8		216.1	296.4	

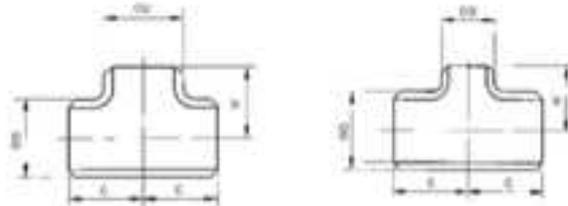
Note: (D) Outlet dimension "M" for NPS 36 and larger is recommended but not required.

Straight and Reducing Tees



Nominal Pipe Size (NPS)	Outside Diameter at Reveal (OD)		Center-to-End		Nominal Pipe Size (NPS)	Outside Diameter at Reveal (OD)		Center-to-End	
	Run (D)	Outlet (d)	Run (C)	Outlet (E)		Run (D)	Outlet (d)	Run (C)	Outlet (E)
20 x 20	306.0	306.0	381.9	381.9	20 x 12	162.0	323.9	306.8	472.9
18	457.2			368.3	10		273.1		465.2
16	406.4			353.6	22 x 22	612.6	612.6	594.9	594.9
14	355.6			338.9	30		762.0		584.2
12	303.9			323.2	38		711.2		573.5
10	273.1			308.5	26		660.4		573.5
8	219.1			293.8	24		609.6		562.8
22 x 22	564.8	564.8	459.1	459.1	22		558.8		546.1
20	508.0			446.4	20		508.0		533.4
18	457.2			433.7	18		457.2		525.7
16	406.4			421.0	16		406.4		508.0
14	355.6			408.3	14		355.6		508.0
12	303.9			395.6	34 x 34	863.4	863.4	835.8	835.8
10	273.1			382.9	32		812.6		827.3
24 x 24	609.6	609.6	491.8	491.8	30		762.0		808.6
22	558.8			479.1	28		711.2		796.9
20	508.0			466.4	26		660.4		784.2
18	457.2			453.7	24		609.6		773.5
16	406.4			441.0	22		558.8		762.8
14	355.6			428.3	20		508.0		751.1
12	303.9			415.6	18		457.2		740.4
10	273.1			402.9	16		406.4		728.7
26 x 26	863.4	863.4	695.2	695.2	36 x 36	914.8	914.8	873.1	873.1
24	812.6			682.5	34		863.4		860.4
22	762.0			669.8	32		812.6		847.7
20	711.2			657.1	30		762.0		835.0
18	660.4			644.4	28		711.2		822.3
16	609.6			631.7	26		660.4		810.6
14	558.8			619.0	24		609.6		800.9
12	508.0			606.3	22		558.8		790.2
28 x 28	914.8	914.8	726.7	726.7	38 x 38	966.2	966.2	911.2	911.2
26	863.4			714.0	36		914.8		900.5
24	812.6			701.3	34		863.4		889.8
22	762.0			688.6	32		812.6		879.1
20	711.2			675.9	30		762.0		868.4
18	660.4			663.2	28		711.2		857.7
16	609.6			650.5	26		660.4		847.0
14	558.8			637.8	24		609.6		836.3
12	508.0			625.1	22		558.8		825.6
30 x 30	1016.0	1016.0	804.8	804.8	40 x 40	1067.6	1067.6	1001.2	1001.2
28	964.8			792.1	38		1016.0		990.5
26	913.6			779.4	36		964.8		979.8
24	862.4			766.7	34		913.6		969.1
22	811.2			754.0	32		862.4		958.4
20	760.0			741.3	30		811.2		947.7
18	708.8			728.6	28		760.0		937.0
16	657.6			715.9	26		708.8		926.3
14	606.4			703.2	24		657.6		915.6
12	555.2			690.5	22		606.4		904.9

Straight and Reducing Tees

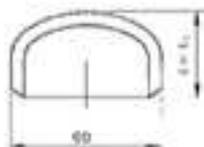


MS-SP-15
ASME B16.3

*Standard Unit

Nominal Pipe Size (NPS)	Outside Diameter at Bevel (OD)		Center-to-End		Nominal Pipe Size (NPS)	Outside Diameter at Bevel (OD)		Center-to-End	
	Run	Outlet	Run C	Outlet (1) M		Run	Outlet (2) M	Run C	Outlet (3) M
40 x 40	1016.0	1016.0	749.3	749.3	40 x 20	1102.4	609.4	850.9	726.5
38	965.2			749.3	24		609.6		723.9
36	914.4			736.6	22		609.8		721.9
34	863.6			723.9	20		609.9		720.9
32	812.8			711.2	40 x 40	1219.2	1219.2	889.9	826.2
30	762.0			698.5	40		1168.4		826.2
28	711.2			673.1	44		1117.6		826.2
26	660.4			673.1	42		1066.8		812.8
24	609.6			660.4	40		1016.0		812.8
22	558.8			647.7	38		965.2		812.8
20	508.0			635.0	36		914.4		797.4
18	457.2			622.3	34		863.6		787.4
					32		812.8		787.4
42 x 42	1066.8	1066.8	762.0	711.2	30		762.0		762.0
40		1016.0		711.2	28		711.2		762.0
38		965.2		711.2	26		660.4		762.0
36		914.4		711.2	24		609.6		736.6
34		863.6		711.2	22		558.8		726.6
32		812.8		711.2	20		457.2		716.6
30		762.0		711.2	18		406.4		
28		711.2		698.5					
26		660.4		698.5	32 x 32	1320.8	1320.8	945.3	914.4
24		609.6		660.4	40		1219.2		883.6
22		558.8		647.7	44		1117.6		812.8
20		508.0		635.0	42		1066.8		787.4
18		457.2		622.3	40		1016.0		762.0
16		406.4		609.6	38		965.2		736.6
					36		914.4		716.6
44 x 44	1117.6	1117.6	812.8	762.0	34		863.6		706.6
42		1066.8		762.0	32		812.8		686.6
40		1016.0		749.3	30		762.0		666.6
38		965.2		736.6	28		711.2		646.6
36		914.4		723.9	26		660.4		626.6
34		863.6		723.9	24		609.6		606.6
32		812.8		711.2	22		558.8		586.6
30		762.0		711.2	20		508.0		566.6
28		711.2		698.5	18		457.2		546.6
26		660.4		698.5	16		406.4		526.6
24		609.6		660.4					
22		558.8		647.7	40 x 40	1320.8	1320.8	1117.6	1016.0
20		508.0		635.0	44		1219.2		945.3
18		457.2		622.3	42		1168.4		883.6
					40		1117.6		826.2
46 x 46	1168.4	1168.4	850.9	800.1	38		1066.8		762.0
44		1117.6		800.1	36		1016.0		742.0
42		1066.8		787.4	34		965.2		722.0
40		1016.0		774.7	32		914.4		702.0
38		965.2		762.0	30		863.6		682.0
36		914.4		750.3	28		812.8		662.0
34		863.6		749.3	26		762.0		642.0
32		812.8		749.3	24		711.2		622.0
30		762.0		736.6	22		660.4		602.0
28		711.2		726.6	44 x 44	1422.4	1422.4	1219.2	1066.8

Caps



MSS SP-75
ASME B16.9 (mm)

Nominal Pipe Size (NPS)	Outside Diameter at Bevel OD	Length ⁽¹⁾ E	Limiting Wall Thickness for Length E	Length ⁽²⁾ E	Nominal Pipe Size (NPS)	Outside Diameter at Bevel OD	Length E
1/2	21.3	25.4	4.5	25.4	26	660.4	266.7
3/4	26.7	25.4	3.8	25.4	28	711.2	266.7
1	33.4	38.1	4.5	38.1	30	762.0	266.7
1-1/4	42.2	38.1	4.8	38.1	32	812.8	266.7
1-1/2	48.3	38.1	5.0	38.1	34	863.6	266.7
2	60.3	38.1	5.5	44.4	36	914.4	266.7
2-1/2	73.0	38.1	7.1	50.8	38	965.2	304.8
3	88.9	50.8	7.6	63.5	40	1016.0	304.8
3-1/2	101.6	63.5	8.1	70.2	42	1066.8	304.8
4	114.3	63.5	8.6	76.2	44	1117.6	342.9
5	141.3	76.2	9.6	88.9	46	1168.4	342.9
6	168.3	88.9	10.6	101.6	48	1219.2	342.9
8	219.1	101.6	12.7	127.0			
10	273.1	127.0	12.7	152.4			
12	323.9	152.4	12.7	177.8			
14	355.6	165.1	12.7	180.5			
16	406.4	177.8	12.7	203.2			
18	457.2	203.2	12.7	228.6			
20	508.0	228.6	12.7	254.0			
22	558.8	254.0	12.7	254.0			
24	609.6	266.7	12.7	304.8			

* Wall thickness for Caps up to and including 36" conform to ASME B31.10 Specifications; Caps 38" and larger conform to AS Specifications for wall thicknesses of 36". These are British Standards as no Internationally Recognized Standards have been set for such large size wall thickness.

(1) The shape of these caps shall be ellipsoidal and shall conform to the shape requirements as given in the ASME Boiler and Pressure Vessel Code.

(2) Length E applies for thickness not exceeding that given in column "Limiting wall Thickness for Length E".

(3) Length E₁ applies for thickness greater than that given in column "Limiting wall Thickness" for NPS 24 and smaller. For NPS 26 and larger, Length E₁ shall be by agreement between manufacturer and purchaser.

(4) 48" and larger can be manufactured. Please contact us for size capability.

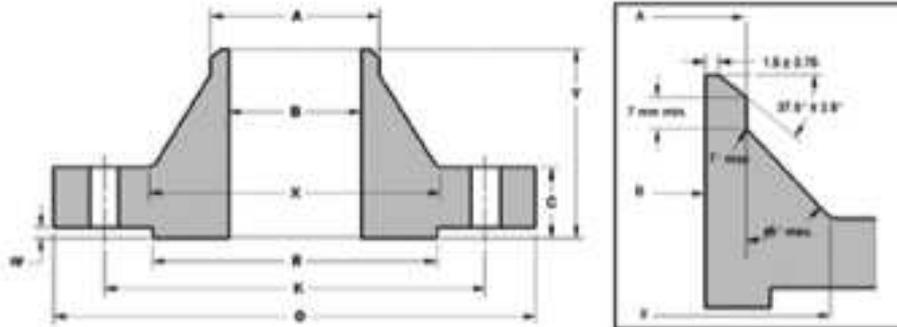


انواع فلنج های گلودار ، اسلیپون ، ساکت ولد ، کور ، دنده در کلاس های
 Pn10,Pn16,...150,300,600,...
 کربن استیل و استنلس استیل در ایلزهای
 (A105,A182 ,A350,...) در سایز های " ۱/۲ الی ۵۶ اینچ



WELDING NECK FLANGES

STD 150 Lbs
ANSI / ASME B 16.5

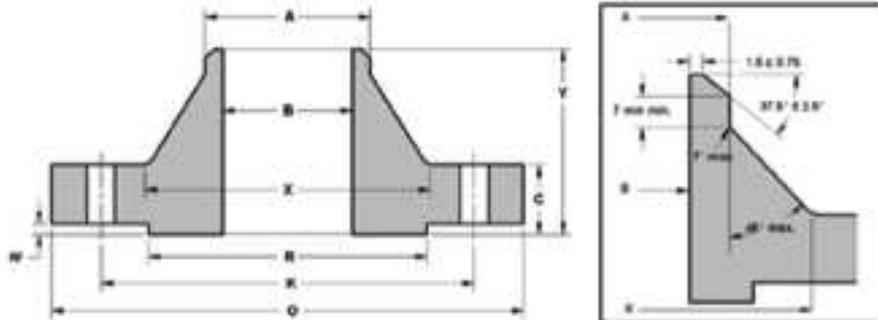


Dimensions are in mm.

Std.	DN	O	C	X	A	K	Y	RF	R	B STD	Ø FOR HOLES	N FOR HOLES	KG APPROX
WN18021	1/2	88.9	11.1	30.2	21.3	60.4	47.7	1.5	35.0	15.7	15.7	4	0.5
WN18027	3/4	98.0	12.7	38.1	26.0	69.0	52.3	1.5	42.9	20.0	15.7	4	0.7
WN18033	1"	107.0	14.2	46.2	33.6	79.2	65.6	1.5	50.8	26.6	15.7	4	1.1
WN18042	1 1/4	117.3	15.7	58.6	42.1	88.9	67.1	1.5	63.5	35.0	15.7	4	1.5
WN18048	1 1/2	127.0	17.5	65.0	48.2	98.5	61.9	1.5	73.1	40.8	15.7	4	1.8
WN18060	2"	152.4	19.0	77.7	60.4	120.0	63.5	1.5	91.8	52.4	19.0	4	2.7
WN18070	2 1/2	177.8	22.3	90.4	73.1	139.7	69.8	1.5	104.8	62.7	19.0	4	4.4
WN18088	3"	190.5	23.8	107.5	88.9	162.4	69.8	1.5	127.0	77.9	19.0	4	6.2
WN18114	4"	228.6	23.8	134.6	114.3	190.5	79.2	1.5	167.2	102.3	19.0	8	7.5
WN18141	5"	254.0	23.8	163.5	141.2	215.9	88.9	1.5	185.8	128.2	22.3	8	9.2
WN18168	6"	279.4	25.4	192.0	168.4	241.3	88.9	1.5	215.9	154.1	22.3	8	11.0
WN18219	8"	342.9	28.4	246.1	219.2	298.4	101.6	1.5	266.7	202.7	22.3	8	18.3
WN18270	10"	406.4	30.2	304.8	273.0	361.9	101.6	1.5	323.8	254.5	25.4	12	25.0
WN18320	12"	482.6	31.7	365.2	323.8	431.8	114.3	1.5	381.0		25.4	12	39.0
WN18350	14"	533.4	35.0	400.0	355.8	476.2	127.0	1.5	412.7		28.4	12	61.0
WN18400	16"	595.0	38.5	457.2	406.4	539.7	127.0	1.5	469.9		28.4	16	60.0
WN18450	18"	635.0	39.8	504.9	457.2	577.8	139.7	1.5	533.4		31.7	16	71.0
WN18500	20"	698.5	42.9	559.8	508.0	635.0	144.5	1.5	584.2		31.7	20	86.0
WN18600	24"	812.8	47.7	663.4	609.6	749.3	152.4	1.5	692.1		35.0	20	110.0

WELDING NECK FLANGES

STD 300 Lbs
ANSI / ASME B 16.5

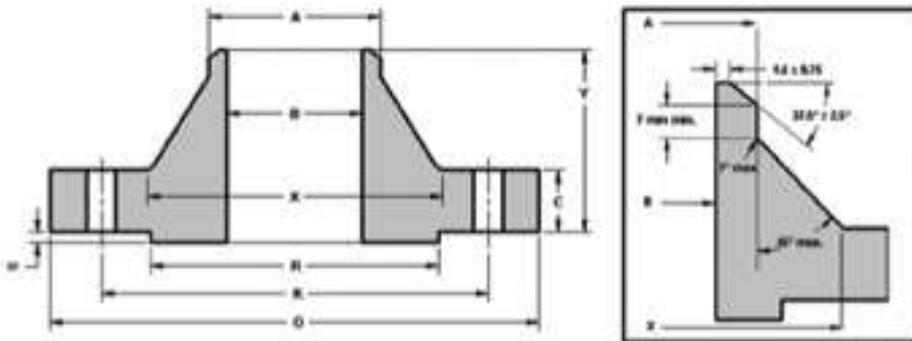


Dimensions are in mm

Code	DN	O	C	X	A	K	Y	RF	R	B STD	Ø FOR HOLES	N FOR HOLES	F ₀ APPROX
WN30021	1/2	95.2	14.2	38.1	21.3	65.5	52.3	1.5	35.0	15.7	15.7	4	89
WN30027	3/4	117.3	15.7	47.7	26.6	82.5	57.1	1.5	42.9	20.8	19.0	4	15
WN30033	1"	123.0	17.5	53.8	32.5	88.9	61.9	1.5	50.8	26.8	19.0	4	19
WN30042	1 1/4	133.3	19.0	63.5	42.1	95.5	65.0	1.5	63.5	35.0	19.0	4	28
WN30048	1 1/2	155.4	20.5	69.8	48.2	114.3	68.3	1.5	73.1	40.8	22.3	4	33
WN30060	2"	165.1	22.3	84.0	60.4	127.0	69.8	1.5	91.8	52.4	19.0	8	38
WN30073	2 1/2	190.5	25.4	100.0	73.1	149.3	76.2	1.5	104.0	62.7	22.3	8	54
WN30089	3"	209.5	28.4	117.3	88.9	168.1	79.2	1.5	127.0	77.9	22.3	8	74
WN30114	4"	254.0	31.7	146.0	114.3	200.1	85.8	1.5	157.2	102.3	22.3	8	110
WN30141	6"	279.4	35.0	177.8	141.2	234.9	96.5	1.5	185.6	128.2	22.3	8	160
WN30168	6"	317.5	38.5	208.2	168.4	269.7	98.5	1.5	215.9	154.1	22.3	12	202
WN30218	8"	381.0	41.1	260.3	219.2	330.2	111.2	1.5	269.7	202.7	25.4	12	210
WN30273	10"	444.5	47.7	320.5	273.0	387.3	117.3	1.5	323.8	254.8	28.4	16	443
WN30323	12"	520.7	50.8	374.8	323.8	460.8	130.0	1.5	381.0		31.7	16	640
WN30385	14"	584.2	53.8	425.4	355.6	514.3	142.7	1.5	492.7		31.7	20	880
WN30408	16"	647.7	57.1	482.6	406.4	571.5	148.0	1.5	469.8		35.0	20	1130
WN30465	18"	711.2	60.4	533.4	457.2	628.6	156.7	1.5	533.4		35.0	24	1340
WN30608	20"	774.7	63.5	587.2	508.0	685.8	162.0	1.5	584.2		35.0	24	1710
WN30660	24"	914.4	69.8	701.5	600.8	812.8	168.1	1.5	692.1		41.1	24	2380

WELDING NECK FLANGES

STD 600 Lbs
ANSI / ASME B 16.5

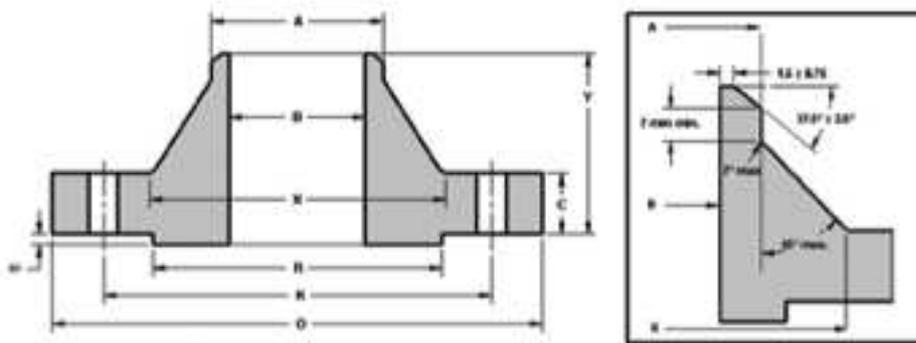


Dimensions are in mm

Code	DN	O	C	X	A	K	Y	RF	R	B STD	Ø FOR HOLES	N FOR HOLES	Kg APPROX
WN60021	1/2	86.2	14.2	35.1	21.2	66.5	52.3	6.3	35.0	15.7	15.7	4	0.9
WN60027	3/4	117.3	15.7	47.7	26.6	82.5	57.1	6.3	42.9	20.8	19.0	4	1.5
WN60033	1"	123.9	17.5	53.8	29.8	88.9	61.9	6.3	50.8	26.6	19.0	4	1.9
WN60042	1"1/4	133.3	20.5	63.8	42.1	98.5	66.6	6.3	63.5	35.0	19.0	4	2.6
WN60046	1"1/2	155.4	22.3	69.8	48.2	114.3	69.8	6.3	73.1	40.8	22.3	4	3.3
WN60060	2"	165.1	25.4	84.0	60.4	127.0	73.1	6.3	91.9	52.4	19.0	8	4.7
WN60072	2"1/2	180.5	28.4	100.0	73.1	149.3	79.2	6.3	104.8	62.7	22.3	8	6.5
WN60085	3"	209.5	31.7	117.3	88.9	169.1	82.5	6.3	127.0	77.9	22.3	8	9.7
WN60114	4"	273.0	38.1	152.4	114.3	215.9	101.6	6.3	157.2	102.3	25.4	8	18.1
WN60141	5"	330.2	44.4	188.9	141.2	266.7	114.3	6.3	185.6	128.2	28.4	8	30.5
WN60168	6"	355.6	47.7	222.2	168.4	292.1	117.3	6.3	215.9	154.1	28.4	12	36.2
WN60219	8"	419.1	55.8	273.0	219.2	349.2	133.3	6.3	266.7	202.7	31.7	12	56.5
WN60272	10"	509.0	63.5	342.9	273.0	431.8	152.4	6.3	322.8	254.5	35.0	16	91.0
WN60323	12"	558.8	66.5	405.0	323.8	488.9	155.4	6.3	381.0		35.0	20	105.0
WN60365	14"	603.2	69.8	431.8	355.6	527.0	165.1	6.3	412.7		38.1	20	127.0
WN60408	16"	685.8	76.2	495.3	408.4	603.2	177.8	6.3	480.9		41.1	20	178.0
WN60458	18"	742.0	82.5	545.1	457.2	654.0	184.1	6.3	533.4		44.4	20	216.0
WN60508	20"	812.8	88.9	609.6	508.0	723.9	190.5	6.3	584.2		44.4	24	288.0
WN60609	24"	919.8	101.6	717.5	609.6	838.2	203.2	6.3	692.1		50.8	24	360.0

WELDING NECK FLANGES

900 Lbs
ANSI / ASME B 16.5

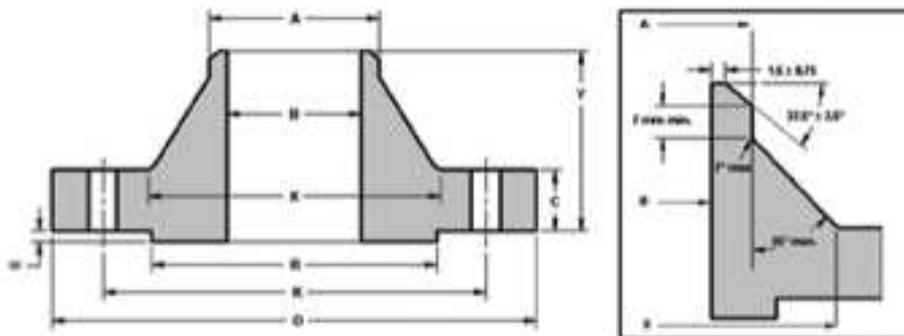


Dimensions are in mm

Code	DN	D	C	X	A	H	Y	RF	R	B	Ø FOR HOLES	N FOR HOLES	R ₂ APPROX
WN90021	1/2												
WN90027	3/4												
WN90033	1"												
WN90042	1" 1/4												
WN90048	1" 1/2												
WN90060	2"												
WN90073	2" 1/2												
WN90089	3"	241.3	38.1	127.0	88.9	190.5	101.6	6.3	127.0		25.4	8	15.0
WN90114	4"	282.1	44.4	158.7	114.3	234.9	114.3	6.3	157.2		31.7	8	24.0
WN90141	6"	349.2	50.8	190.5	141.2	279.4	127.0	6.3	185.6		35.0	8	37.0
WN90168	8"	381.0	55.8	234.9	168.4	317.5	139.7	6.3	215.9		31.7	12	50.0
WN90219	8"	403.0	63.5	288.4	219.2	393.7	162.0	6.3	269.7		38.1	12	65.0
WN90273	10"	546.1	69.6	368.3	273.0	489.9	184.1	6.3	323.8		38.1	16	127.0
WN90323	12"	609.6	79.2	419.1	323.8	533.4	200.1	6.3	381.0		38.1	20	170.0
WN90389	14"	641.3	85.8	453.8	355.8	588.8	212.8	6.3	412.7		41.1	20	168.0
WN90456	16"	704.8	88.9	508.0	406.4	615.9	215.9	6.3	489.9		44.4	20	204.0
WN90485	16"	787.4	101.6	585.1	457.2	685.8	228.0	6.3	533.4		60.8	20	300.0
WN90560	20"	857.2	107.9	622.3	508.0	749.3	247.6	6.3	584.2		63.8	20	374.0
WN90609	24"	1041.4	139.7	749.3	609.6	901.7	292.1	6.3	692.1		66.5	20	480.0

WELDING NECK FLANGES

1500 Lbs
ANSI / ASME B 16.5

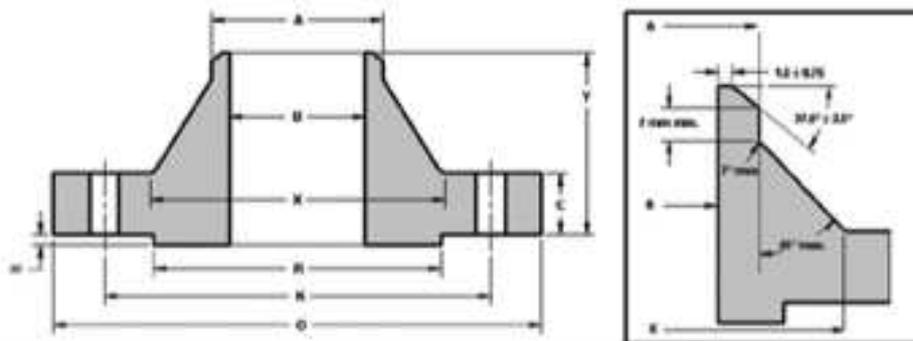


Dimensions are in mm

Coil	DN	O	C	X	A	K	Y	HF	R	B	Ø FORI HOLES	N. FORI HOLES	R _g APPROX
WN100021	1/2	120.6	22.3	38.1	21.3	87.5	60.4	6.3	35.0		22.3	4	19
WN100027	3/4	130.0	25.4	44.4	26.5	88.9	69.9	6.3	42.9		22.3	4	26
WN100033	1"	149.3	26.4	52.3	33.5	101.6	73.1	6.3	50.8		25.4	4	38
WN100042	1 1/4"	158.7	38.4	63.5	42.1	111.2	73.1	6.3	63.5		25.4	4	44
WN100048	1 1/2"	177.8	31.7	66.8	48.2	123.9	82.5	6.3	73.1		28.4	4	61
WN100060	2"	215.0	38.1	104.6	60.4	165.1	101.6	6.3	91.9		25.4	8	111
WN100073	2 1/2"	244.3	41.1	123.9	73.1	195.5	104.6	6.3	104.6		28.4	8	155
WN100089	3"	266.7	47.7	133.3	88.9	203.2	117.3	6.3	127.0		31.7	8	204
WN100114	4"	311.1	53.9	162.0	114.3	241.3	123.9	6.3	157.2		35.0	8	305
WN100141	5"	374.6	73.1	196.8	141.2	292.1	165.4	6.3	185.6		41.1	8	580
WN100168	6"	393.7	82.5	228.6	168.4	317.5	171.4	6.3	215.9		38.1	12	700
WN100219	8"	482.6	91.9	292.1	219.2	393.7	212.8	6.3	269.7		44.4	12	1250
WN100273	10"	504.2	107.9	368.3	273.0	482.6	254.0	6.3	323.8		50.8	12	2040
WN100323	12"	673.1	123.9	460.8	322.8	671.5	282.4	6.3	381.0		53.9	16	3030
WN100389	14"	749.3	133.3	495.3	355.0	835.0	298.4	6.3	412.7		60.4	16	4270
WN100406	16"	825.5	148.0	552.4	406.4	704.8	311.1	6.3	469.9		66.5	16	5700
WN100465	18"	914.4	162.0	596.9	457.2	774.7	327.1	6.3	533.4		73.1	16	7400
WN100508	20"	994.2	177.8	641.3	508.0	831.8	385.6	6.3	584.2		79.2	16	9350
WN100609	24"	1168.4	203.2	762.9	609.0	995.6	406.4	6.3	682.1		91.9	16	13150

WELDING NECK FLANGES

2500 Lbs
ANSI / ASME B 16.5



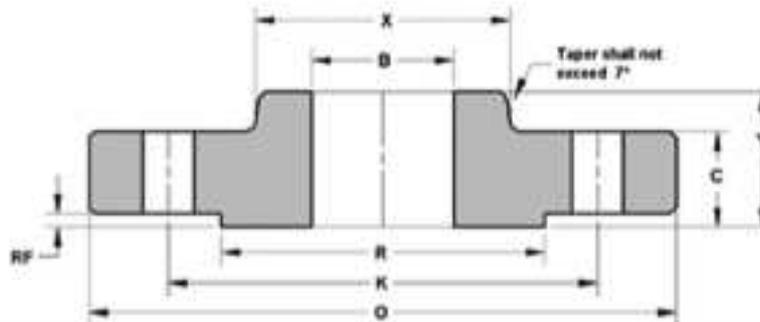
Dimensions are in mm

Code	DN	O	C	X	A	K	Y	RF	R	B	Ø FORI HOLES	N FORI HOLES	Kg APPROX
WN250021	1/2	133.0	30.2	42.9	21.3	88.9	73.1	6.3	35.0		22.3	4	3.6
WN250027	3/4	139.7	31.7	60.8	26.6	95.2	79.2	6.3	42.0		22.3	4	4.0
WN250033	1"	158.7	35.0	67.1	33.5	107.9	88.9	6.3	50.8		25.4	4	6.8
WN250042	1"1/4	184.1	38.1	73.1	42.1	130.0	95.2	6.3	63.5		28.4	4	9.0
WN250048	1"1/2	203.2	44.4	79.2	46.2	146.0	111.2	6.3	73.1		31.7	4	13.0
WN250060	2"	234.0	50.8	95.2	60.4	171.4	127.0	6.3	91.8		38.4	8	19.0
WN250072	2"1/2	266.7	57.1	114.3	73.1	190.8	142.7	6.3	104.8		31.7	8	24.0
WN250089	3"	304.8	66.8	133.3	88.9	228.6	168.1	6.3	127.0		35.0	8	43.0
WN2500114	4"	365.6	76.2	165.1	114.3	273.0	190.5	6.3	157.2		41.1	8	68.0
WN2500141	5"	419.1	91.9	203.2	141.2	323.8	228.6	6.3	185.6		47.7	8	111.0
WN2500168	6"	482.6	107.0	234.9	168.4	368.3	273.0	6.3	215.9		53.8	8	172.0
WN2500219	8"	552.4	127.0	304.8	219.2	438.1	317.5	6.3	269.7		53.8	12	281.0
WN2500279	10"	673.1	165.1	374.6	273.0	530.7	419.1	6.3	323.8		66.8	12	485.0
WN2500333	12"	762.0	184.1	441.4	323.8	619.2	483.5	6.3	381.0		73.1	12	730.0

SLIP ON FLANGES

150 Lbs

ANSI / ASME B 16.5



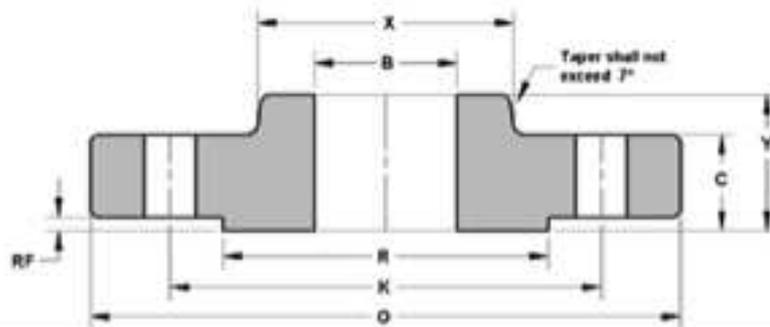
Dimensions are in mm

Coil	DN	O	C	X	K	Y	RF	R	B	Ø FOR HOLES	N FOR HOLES	Kg APPROX
SO18021	1/2	88.9	11.1	30.2	60.4	15.7	1.5	35.0	22.3	15.7	4	0.4
SO18027	3/4	98.5	12.7	39.1	69.8	15.7	1.5	42.9	27.6	15.7	4	0.7
SO18033	1"	107.9	14.2	49.2	79.2	17.5	1.5	50.8	34.5	15.7	4	0.8
SO18042	1 1/4"	117.3	15.7	58.6	88.9	20.5	1.5	63.5	43.1	15.7	4	1.1
SO18048	1 1/2"	127.0	17.5	65.0	98.5	22.3	1.5	73.1	48.5	15.7	4	1.4
SO18060	2"	152.4	19.0	77.7	120.6	25.4	1.5	91.9	61.9	19.0	4	2.2
SO18073	2 1/2"	177.8	22.3	90.4	139.7	28.4	1.5	104.8	74.6	19.0	4	3.6
SO18089	3"	190.5	23.8	107.9	152.4	30.2	1.5	127.0	90.8	19.0	4	4.1
SO18114	4"	228.6	23.8	134.8	190.5	33.2	1.5	157.2	116.8	19.0	8	9.6
SO18141	5"	254.0	23.8	163.5	216.8	36.5	1.5	185.8	143.7	22.3	8	8.3
SO18168	6"	279.4	25.4	192.0	241.3	39.8	1.5	215.9	170.6	22.3	8	7.5
SO18219	8"	342.9	28.4	240.1	298.4	44.4	1.5	269.7	221.4	22.3	8	12.6
SO18273	10"	406.4	30.2	304.8	361.9	49.2	1.5	323.8	276.3	25.4	12	18.5
SO18323	12"	482.6	31.7	365.2	431.8	55.0	1.5	381.0	327.1	25.4	12	28.0
SO18368	14"	533.4	35.0	400.0	476.2	57.1	1.5	412.7	359.1	28.4	12	36.0
SO18406	16"	595.9	36.5	457.2	530.7	63.5	1.5	469.9	410.4	28.4	16	46.0
SO18465	18"	635.0	36.6	504.9	577.8	68.3	1.5	533.4	461.7	31.7	16	50.0
SO18508	20"	690.5	42.0	565.8	635.0	73.1	1.5	584.2	513.6	31.7	20	64.0
SO18605	24"	812.8	47.7	663.4	749.3	82.5	1.5	692.1	615.9	35.0	20	89.0

SLIP ON FLANGES

300 Lbs

ANSI / ASME B 16.5



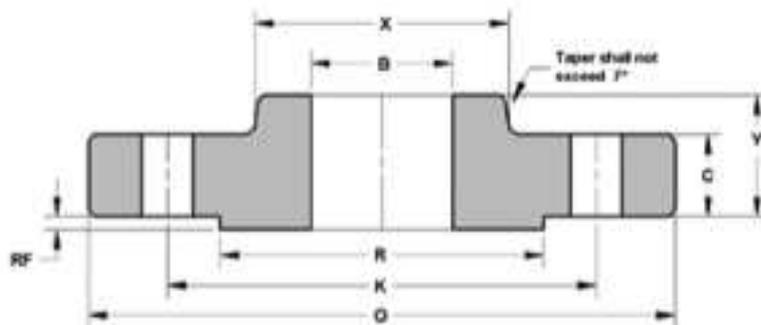
Dimensions are in mm.

Code	DN	O	C	X	K	Y	RF	R	B	Ø FORI HOLES	N FORI HOLES	Kg APPROX
SO30021	1/2	95.2	14.2	38.1	60.5	22.3	1.5	35.0	22.3	15.7	4	0.7
SO30027	3/4	117.3	15.7	47.7	62.5	25.4	1.5	42.0	27.6	19.0	4	1.1
SO30033	1"	123.9	17.5	53.8	69.0	26.8	1.5	50.8	34.5	19.0	4	1.4
SO30042	1"1/4	133.3	19.0	63.5	98.5	26.8	1.5	63.5	43.1	19.0	4	1.8
SO30048	1"1/2	155.4	20.5	69.8	114.3	30.2	1.5	73.1	49.5	22.3	4	2.6
SO30060	2"	165.1	22.3	84.0	127.0	33.2	1.5	81.9	61.9	19.0	8	3.4
SO30073	2"1/2	190.5	25.4	100.0	149.3	38.1	1.5	104.0	74.6	22.3	8	4.4
SO30088	3"	209.5	28.4	117.3	169.1	42.9	1.5	127.0	90.8	22.3	8	6.1
SO30114	4"	254.0	31.7	146.0	200.1	47.7	1.5	157.2	116.0	22.3	8	10.1
SO30141	6"	278.4	35.0	177.8	234.8	50.8	1.5	185.8	143.7	22.3	8	12.5
SO30168	8"	317.5	38.5	206.2	269.7	52.3	1.5	215.9	170.6	22.3	12	14.1
SO30218	8"	381.0	41.1	260.3	330.2	61.9	1.5	288.7	221.4	25.4	12	24.6
SO30273	10"	444.5	47.7	320.5	387.3	66.5	1.5	322.8	276.3	28.4	16	37.1
SO30323	12"	520.7	50.8	374.8	450.8	73.1	1.5	381.0	327.1	31.7	16	50.0
SO30355	14"	584.2	53.8	425.4	514.3	76.2	1.5	412.7	359.1	31.7	20	70.0
SO30405	16"	647.7	57.1	482.5	571.5	82.5	1.5	469.9	410.4	35.0	20	90.0
SO30455	18"	711.2	60.4	533.4	628.6	88.9	1.5	533.4	461.7	35.0	24	112.0
SO30505	20"	774.7	63.5	587.2	685.8	95.2	1.5	584.2	513.0	35.0	24	133.0
SO30605	24"	914.4	69.8	701.5	812.8	105.4	1.5	692.1	615.9	41.1	34	209.0

SLIP ON FLANGES

600 Lbs

ANSI / ASME B 16.5



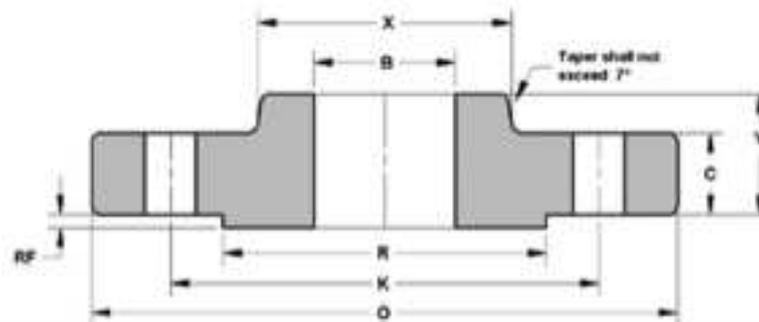
Dimensions are in mm

Code	DN	O	C	X	K	Y	RF	R	B	Ø FORI HOLES	N FORI HOLES	Kg APPROX
SO60021	1/2	95.2	14.2	38.1	60.5	22.3	6.3	35.0	22.3	15.7	4	0.8
SO60027	3/4	117.3	15.7	47.7	62.5	25.4	6.3	42.9	27.6	19.0	4	1.4
SO60033	1"	123.9	17.5	53.8	68.9	26.9	6.3	50.8	34.5	19.0	4	1.6
SO60042	1 1/4	133.3	20.5	63.5	98.5	28.4	6.3	63.5	42.1	19.0	4	2.1
SO60048	1 1/2	155.4	22.3	69.8	114.3	31.7	6.3	73.1	46.5	22.3	4	3.1
SO60060	2"	165.1	25.4	84.0	127.0	36.5	6.3	91.9	61.9	19.0	6	3.7
SO60073	2 1/2	190.5	26.4	100.0	149.3	41.1	6.3	104.6	74.6	22.3	8	5.4
SO60089	3"	209.5	31.7	117.3	168.1	45.9	6.3	127.0	90.6	22.3	8	7.3
SO60114	4"	273.0	39.1	152.4	215.9	53.8	6.3	157.2	116.0	25.4	8	15.8
SO60141	6"	330.2	44.4	188.0	266.7	60.4	6.3	185.6	143.7	28.4	8	24.5
SO60188	8"	355.6	47.7	222.3	292.1	66.5	6.3	215.9	170.6	28.4	12	29.5
SO60219	8"	419.1	55.8	273.0	349.3	76.2	6.3	260.7	221.4	31.7	12	43.0
SO60273	10"	506.0	63.5	342.9	431.8	85.8	6.3	323.8	276.3	35.0	16	70.0
SO60323	12"	556.8	66.5	400.0	488.9	91.9	6.3	381.0	327.1	35.0	20	86.0
SO60399	14"	603.2	69.8	431.8	527.0	93.7	6.3	412.7	359.1	38.1	20	100.0
SO60466	16"	685.8	76.2	495.3	603.2	106.4	6.3	469.9	410.4	41.1	20	142.0
SO60489	18"	742.9	82.5	546.1	654.0	117.3	6.3	533.4	461.7	44.4	20	175.0
SO60608	20"	812.8	88.9	609.6	723.9	127.0	6.3	584.2	513.0	44.4	24	232.0
SO60609	24"	939.6	101.6	717.5	838.2	139.7	6.3	692.1	615.9	50.8	24	330.0

SLIP ON FLANGES

900 Lbs

ANSI / ASME B 16.5



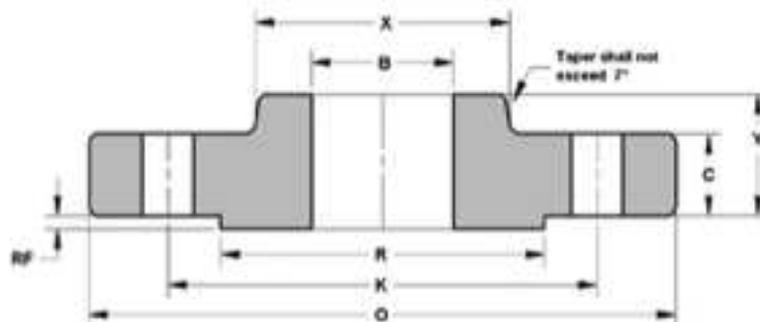
Dimensions are in mm.

Code	DN	D	C	X	K	Y	RF	R	B	Ø FOR 1 HOLES	K FOR 1 HOLES	K ₂ APPROX
SO90021	1/2											
SO90027	3/4											
SO90033	1"											
SO90042	1 1/4											
SO90048	1 1/2											
SO90060	2"											
SO90073	2 1/2											
SO90089	3"	241.3	38.1	127.0	190.5	53.8	6.3	127.0	90.8	25.4	8	11.8
SO90114	4"	292.1	44.4	158.7	234.9	69.3	6.3	157.2	116.0	31.7	8	19.8
SO90141	5"	349.2	50.8	190.5	279.4	79.2	6.3	185.6	143.7	35.0	8	32.0
SO90168	6"	381.0	55.8	234.9	317.5	85.8	6.3	215.9	170.8	31.7	12	41.2
SO90219	8"	489.9	63.5	298.4	393.7	101.6	6.3	269.7	221.4	38.1	12	78.0
SO90273	10"	546.1	69.8	368.3	469.0	107.9	6.3	323.8	276.3	38.1	16	110.0
SO90323	12"	609.6	79.2	419.1	533.4	117.3	6.3	381.0	327.1	38.1	20	149.0
SO90358	14"	641.3	85.8	459.8	558.8	130.0	6.3	412.7	359.1	41.1	20	181.0
SO90406	16"	704.8	88.9	509.0	615.0	133.3	6.3	469.9	419.4	44.4	20	194.0
SO90455	18"	787.4	101.6	565.1	685.8	152.4	6.3	533.4	481.7	50.8	20	274.0
SO90508	20"	857.2	107.9	622.3	749.3	158.7	6.3	584.2	513.0	53.8	20	332.0
SO90569	24"	1041.4	139.7	749.3	901.7	203.2	6.3	692.1	615.9	66.5	20	637.0

SLIP ON FLANGES

1500 Lbs

ANSI / ASME B 16.5



Dimensions are in mm.

Code	DN	O	C	X	K	Y	RF	R	B	B FOR HOLES	N FOR HOLES	Kg APPROX
SO150021	1/2	130.0	22.3	38.1	82.5	31.7	6.3	35.0	22.3	22.3	4	1.7
SO150027	3/4	130.0	25.4	44.4	88.9	35.0	6.3	42.0	27.6	22.3	4	2.3
SO150033	1"	149.3	28.4	52.3	101.6	41.1	6.3	50.8	34.5	25.4	4	3.4
SO150042	1 1/4"	158.7	28.4	63.5	111.2	41.1	6.3	63.5	43.1	25.4	4	3.9
SO150048	1 1/2"	177.8	31.7	69.8	123.9	44.4	6.3	73.1	49.5	28.4	4	5.4
SO150068	2"	215.0	38.1	104.6	165.1	67.1	6.3	91.0	61.0	25.4	8	9.8
SO150073	2 1/2"	244.3	41.1	123.9	196.5	63.5	6.3	104.6	74.6	28.4	8	13.7
SO150088	3"	266.7	47.7	133.3	203.2		6.3	127.0		31.7	8	18.0
SO1500114	4"	311.1	53.8	162.0	241.3		6.3	157.2		35.0	8	27.8
SO1500141	5"	374.0	73.1	196.9	292.1		6.3	185.0		41.1	8	52.0
SO1500168	6"	393.7	82.5	228.6	317.5		6.3	215.9		38.1	12	61.0
SO1500219	8"	482.6	91.9	292.1	393.7		6.3	269.7		44.4	12	104.0
SO1500272	10"	584.2	107.9	368.3	482.6		6.3	323.8		50.8	12	175.0
SO1500333	12"	673.1	123.9	450.8	571.5		6.3	381.0		53.0	16	204.0
SO1500388	14"	749.3	133.3	495.3	636.0		6.3	412.7		60.4	16	
SO1500406	16"	825.5	146.0	532.4	704.8		6.3	469.9		66.5	16	
SO1500458	18"	914.4	162.0	596.9	774.7		6.3	533.4		73.1	16	
SO1500508	20"	984.2	177.8	641.3	831.8		6.3	584.2		79.2	16	
SO1500609	24"	1168.4	203.2	762.0	990.8		6.3	692.1		91.9	16	

BLIND FLANGES

150 Lbs

ANSI / ASME B 16.5



Dimensions are in mm

Code	DN	O	C	K	RF	R	Ø FOR HOLES	N FOR HOLES	Kg APPROX
BL18021	1/2	89.0	11.1	90.4	1.5	30.0	15.7	4	0.4
BL18027	3/4	98.5	12.7	99.8	1.5	42.9	15.7	4	0.7
BL18033	1"	107.9	14.2	79.2	1.5	50.8	15.7	4	0.9
BL18042	1" 1/4	117.3	15.7	88.9	1.5	63.5	15.7	4	1.3
BL18048	1" 1/2	127.0	17.5	98.5	1.5	73.1	15.7	4	1.8
BL18060	2"	152.4	19.0	120.6	1.5	91.8	19.0	4	2.8
BL18073	2" 1/2	177.6	22.3	136.7	1.5	104.6	19.0	4	4.1
BL18089	3"	190.5	23.8	152.4	1.5	127.0	19.0	4	5.0
BL18114	4"	229.6	23.8	190.5	1.5	167.2	19.0	8	7.1
BL18141	6"	254.0	23.8	215.9	1.5	186.6	22.3	8	9.0
BL18180	8"	279.4	25.4	241.3	1.5	215.9	22.3	8	11.8
BL18219	8"	342.9	28.4	296.4	1.5	269.7	22.3	8	21.0
BL18273	10"	406.4	30.2	381.0	1.5	323.8	25.4	12	30.0
BL18323	12"	482.6	31.7	431.8	1.5	381.0	25.4	12	45.0
BL18385	14"	533.4	35.0	476.2	1.5	412.7	28.4	12	59.0
BL18406	16"	595.9	36.5	538.7	1.5	469.9	28.4	16	79.0
BL18485	18"	635.0	39.6	577.8	1.5	533.4	31.7	16	97.0
BL18508	20"	693.5	42.9	635.0	1.5	584.2	31.7	20	124.0
BL18609	24"	812.8	47.7	749.3	1.5	692.1	35.0	20	188.0

BLIND FLANGES

300 Lbs

ANSI / ASME B 16.5



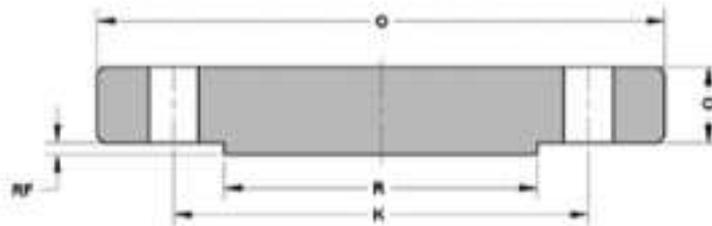
Dimensions are in mm.

Code	DN	O	C	K	RF	R	Ø FORI HOLES	N FORI HOLES	Kg. APPROX
BL30021	1/2	95.2	14.2	66.5	1.5	35.0	16.7	4	0.7
BL30027	3/4	117.3	16.7	82.5	1.5	42.0	19.0	4	1.2
BL30033	1"	123.9	17.5	88.9	1.5	50.8	19.0	4	1.5
BL30042	1 1/4	133.3	19.0	88.5	1.5	63.5	19.0	4	2.0
BL30048	1 1/2	155.4	20.5	114.3	1.5	73.1	22.3	4	2.9
BL30059	2"	165.1	22.3	127.0	1.5	91.9	19.0	8	3.4
BL30073	2 1/2	190.5	25.4	140.3	1.5	104.0	22.3	8	5.1
BL30089	3"	209.5	28.4	168.1	1.5	127.0	22.3	8	7.0
BL30114	4"	254.0	31.7	200.1	1.5	157.2	22.3	8	11.8
BL30141	5"	279.4	35.0	234.9	1.5	185.0	22.3	8	15.5
BL30189	6"	317.4	38.0	269.7	1.5	216.9	22.3	12	21.3
BL30219	8"	381.0	41.1	330.2	1.5	269.7	25.4	12	35.2
BL30273	10"	444.5	47.7	387.3	1.5	323.8	28.4	16	57.0
BL30323	12"	520.7	50.8	450.8	1.5	381.0	31.7	16	82.0
BL30389	14"	584.2	53.8	514.3	1.5	432.7	31.7	20	106.0
BL30436	16"	647.7	57.1	571.5	1.5	469.9	35.0	20	140.0
BL30485	18"	711.2	60.4	628.8	1.5	533.4	35.0	24	178.0
BL30558	20"	774.7	63.5	685.8	1.5	584.2	35.0	24	223.0
BL30639	24"	914.4	69.8	812.8	1.5	692.1	41.1	24	345.0

BLIND FLANGES

600 Lbs

ANSI / ASME B 16.5



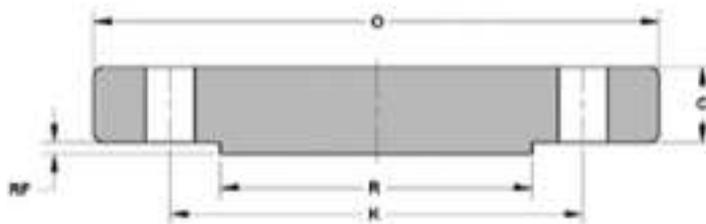
Dimensions are in mm

Cod.	DN	O	C	K	RF	H	Ø FOR HOLES	N FOR HOLES	Kg APPROX
BL60021	1/2	95.2	14.2	66.5	6.3	35.0	15.7	4	0.7
BL60027	3/4	117.3	15.7	82.5	6.3	42.9	19.0	4	1.2
BL60033	1"	123.9	17.5	88.9	6.3	50.8	19.0	4	1.5
BL60042	1 1/4"	133.3	20.5	98.5	6.3	63.5	19.0	4	2.0
BL60048	1 1/2"	155.4	22.3	114.3	6.3	73.1	22.3	4	3.2
BL60056	2"	165.1	25.4	127.0	6.3	91.9	19.0	8	4.3
BL60072	2 1/2"	190.5	28.4	149.3	6.3	104.6	22.3	8	6.0
BL60089	3"	209.5	31.7	168.1	6.3	127.0	22.3	8	8.0
BL60114	4"	273.0	38.1	216.9	6.3	157.2	25.4	8	18.0
BL60141	5"	330.2	44.4	266.7	6.3	185.6	28.4	8	28.5
BL60168	6"	365.6	47.7	292.1	6.3	216.9	28.4	12	35.5
BL60219	8"	419.1	55.6	340.3	6.3	269.7	31.7	12	58.0
BL60272	10"	508.0	63.5	431.8	6.3	323.8	35.0	16	98.0
BL60322	12"	558.9	66.5	488.9	6.3	381.0	35.0	20	129.0
BL60358	14"	603.2	69.8	527.0	6.3	412.7	38.1	20	151.0
BL60404	16"	685.8	78.2	603.2	6.3	489.9	41.1	20	215.0
BL60458	18"	742.9	82.5	654.0	6.3	533.4	44.4	20	287.0
BL60508	20"	812.9	88.9	723.9	6.3	584.2	44.4	24	366.0
BL60608	24"	939.9	101.6	838.2	6.3	692.1	50.8	24	532.0

BLIND FLANGES

900 Lbs

ANSI / ASME B 16.5



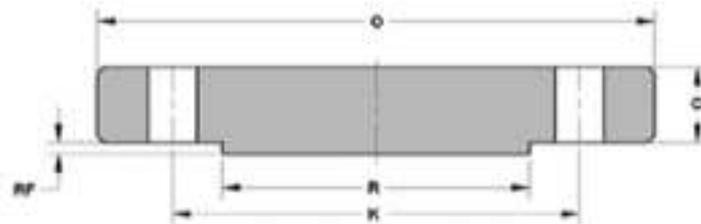
Dimensions are in mm

Code	DN	O	C	K	RF	R	Ø FOR HOLES	K FOR HOLES	kg APPROX
BL90021	1/2								
BL90027	3/4								
BL90033	1"								
BL90042	1 1/4								
BL90048	1 1/2								
BL90060	2"								
BL90073	2 1/2								
BL90089	3"	241.3	38.1	190.5	6.3	127.0	25.4	8	13.1
BL90114	4"	292.1	44.4	234.9	6.3	157.2	31.7	8	22.1
BL90141	5"	349.2	50.8	279.4	6.3	186.6	35.0	8	36.5
BL90166	6"	381.0	55.8	317.6	6.3	216.0	31.7	12	47.4
BL90219	8"	469.9	63.5	393.7	6.3	269.7	38.1	12	82.5
BL90273	10"	545.1	69.8	469.9	6.3	323.8	38.1	16	123.0
BL90323	12"	605.8	79.2	533.4	6.3	381.0	38.1	20	174.0
BL90386	14"	641.3	85.8	568.8	6.3	412.7	41.1	20	213.0
BL90466	16"	704.8	89.9	615.9	6.3	460.9	44.4	20	280.0
BL90466	18"	787.4	101.6	685.8	6.3	533.4	50.8	20	400.0
BL90606	20"	857.2	107.0	746.3	6.3	584.2	53.8	20	603.0
BL90609	24"	1041.4	129.7	901.7	6.3	692.1	66.5	20	950.0

BLIND FLANGES

1500 Lbs

ANSI / ASME B 16.5



Dimensions are in mm

Cod.	DN	O	C	K	RF	R	Ø FOR HOLES	K FOR HOLES	Kg APPROX
BL1500031	1/2	120.6	22.3	82.5	6.3	35.0	22.3	4	1.8
BL1500037	3/4	130.0	25.4	88.9	6.3	42.9	22.3	4	2.4
BL1500033	1"	149.3	25.4	101.6	6.3	50.8	25.4	4	3.6
BL1500042	1 1/4	168.7	28.4	111.2	6.3	63.5	25.4	4	4.1
BL1500048	1 1/2	177.8	31.7	123.9	6.3	73.1	28.4	4	5.9
BL1500066	2"	215.9	38.1	165.1	6.3	91.9	25.4	8	10.1
BL1500073	2 1/2	244.3	41.1	190.5	6.3	104.6	28.4	8	14.0
BL1500089	3"	266.7	47.7	203.2	6.3	127.0	31.7	8	19.0
BL1500114	4"	311.1	53.8	241.3	6.3	167.2	36.0	8	30.0
BL1500141	6"	374.6	73.1	292.1	6.3	185.6	41.1	8	58.0
BL1500168	6"	393.7	82.5	317.5	6.3	215.9	38.1	12	72.0
BL1500219	8"	482.6	91.9	393.7	6.3	269.7	44.4	12	122.0
BL1500272	10"	564.2	107.9	482.6	6.3	323.8	50.8	12	210.0
BL1500323	12"	673.1	123.9	571.5	6.3	381.0	53.8	16	315.0
BL1500386	14"	749.3	133.3	635.0	6.3	412.7	60.4	16	423.0
BL1500436	16"	825.5	146.0	704.9	6.3	469.9	66.5	16	590.0
BL1500486	18"	914.4	162.0	774.7	6.3	533.4	73.1	16	795.0
BL1500536	20"	984.2	177.8	831.8	6.3	584.2	79.2	16	1030.0
BL1500609	24"	1168.4	203.2	990.6	6.3	692.1	91.9	16	1660.0

BLIND FLANGES

2500 Lbs

ANSI / ASME B 16.5

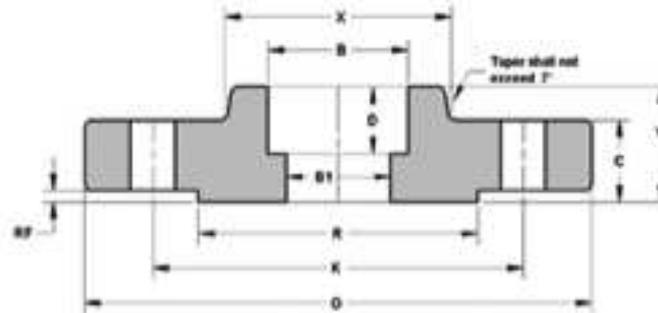


Dimensions are in mm

Code	DN	O	C	K	RF	R	Ø FOR HOLES	N FOR HOLES	Kg APPROX
BL2500021	1/2"	133.3	30.2	38.9	6.3	35.0	22.3	4	3.0
BL2500027	3/4"	139.7	31.7	95.2	6.3	42.8	22.3	4	4.5
BL2500033	1"	158.7	35.0	107.9	6.3	50.8	25.4	4	5.0
BL2500042	1 1/4"	184.1	38.1	130.0	6.3	63.5	28.4	4	8.0
BL2500048	1 1/2"	203.2	44.4	146.0	6.3	73.1	31.7	4	11.0
BL2500060	2"	234.9	50.8	171.4	6.3	91.9	28.4	8	17.0
BL2500070	2 1/2"	266.7	57.1	196.8	6.3	104.6	31.7	8	25.0
BL2500089	3"	304.8	60.5	228.6	6.3	127.0	35.0	8	39.0
BL2500114	4"	355.8	76.2	273.0	6.3	167.2	41.1	8	60.0
BL2500141	5"	419.1	91.9	323.8	6.3	185.8	47.7	8	101.0
BL2500168	6"	482.6	107.6	368.3	6.3	215.9	53.8	8	150.0
BL2500219	8"	582.4	127.0	438.1	6.3	269.7	53.8	12	242.0
BL2500270	10"	673.1	165.1	539.7	6.3	323.8	66.5	12	465.0
BL2500323	12"	762.0	184.1	619.2	6.3	381.0	73.1	12	665.0

SOCKET WELDING FLANGES

STD 150 Lbs
ANSI / ASME B 16.5



Dimensions are in mm

Code	DN	O	C	X	K	Y	RF	R	B	B1	D	Ø FOR HOLES	N FOR HOLES	kg APPROX
SW15021	1/2	88.9	11.1	30.2	60.4	15.7	1.5	35.0	22.3	15.7	9.8	15.7	4	0.4
SW15027	3/4	88.9	12.7	36.1	69.8	15.7	1.5	42.9	27.8	20.8	11.1	15.7	4	0.7
SW15033	1"	107.9	14.2	40.2	79.2	17.5	1.5	50.8	34.5	26.8	12.7	15.7	4	0.8
SW15042	1 1/4	117.3	15.7	50.8	89.9	20.5	1.5	63.5	43.1	35.0	14.2	15.7	4	1.1
SW15048	1 1/2	127.0	17.5	60.0	98.5	22.3	1.5	73.1	48.5	40.8	15.7	15.7	4	1.4
SW15060	2"	152.4	19.0	77.7	120.8	25.4	1.5	91.9	61.9	52.5	17.5	19.0	4	2.3
SW15073	2 1/2	177.8	22.3	90.4	139.7	28.4	1.5	104.8	74.8	62.7	19.0	19.0	4	3.6
SW15089	3"	190.5	25.8	107.9	152.4	30.2	1.5	127.0	90.8	77.9	20.5	19.0	4	4.1

SOCKET WELDING FLANGES

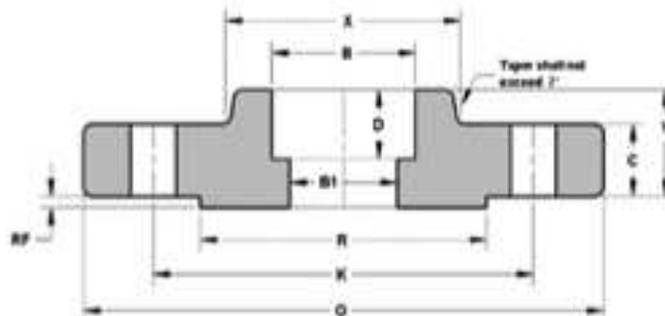
STD 300 Lbs
ANSI / ASME B 16.5

Code	DN	O	C	X	K	Y	RF	R	B	B1	D	Ø FOR HOLES	N FOR HOLES	kg APPROX
SW30021	1/2	85.2	14.2	38.1	66.5	22.3	1.5	35.0	22.3	15.7	9.8	15.7	4	0.7
SW30027	3/4	117.3	15.7	47.7	82.5	25.4	1.5	42.9	27.8	20.8	11.1	19.0	4	1.2
SW30033	1"	123.9	17.5	53.8	88.9	26.9	1.5	50.8	34.5	26.8	12.7	19.0	4	1.4
SW30042	1 1/4	133.3	19.0	63.5	98.5	26.9	1.5	63.5	43.1	35.0	14.2	19.0	4	1.9
SW30048	1 1/2	155.4	20.5	69.8	114.3	30.2	1.5	73.1	48.5	40.8	15.7	22.3	4	2.8
SW30060	2"	165.1	22.3	84.0	127.0	33.2	1.5	91.9	61.9	52.5	17.5	19.0	8	3.3
SW30073	2 1/2	190.5	25.4	100.0	149.3	36.1	1.5	104.8	74.8	62.7	19.0	22.3	8	4.6
SW30089	3"	209.5	28.4	117.3	168.1	42.9	1.5	127.0	90.8	77.9	20.5	22.3	8	6.3

SOCKET WELDING FLANGES

STD 600 Lbs

ANSI / ASME B 16.5



Dimensions are in mm

Cod.	DN	O	C	X	K	Y	RP	R	B	B1	D	Ø FOR HOLES	N FOR HOLES	Kg APPROX
SW60021	1/2	95.2	14.2	38.1	66.5	22.3	6.3	35.0	22.3	15.7	9.6	15.7	4	1.0
SW60027	3/4	117.3	15.7	47.7	92.5	26.4	6.3	42.9	27.6	20.9	11.1	19.0	4	1.6
SW60033	1"	123.8	17.3	53.8	98.9	26.9	6.3	50.8	34.5	26.6	12.7	19.0	4	1.8
SW60042	1" 1/4	133.3	20.0	63.5	98.5	28.4	6.3	63.5	43.1	35.0	14.2	19.0	4	2.6
SW60048	1" 1/2	151.4	22.3	69.8	114.3	31.7	6.3	73.1	49.5	40.6	15.7	22.3	4	3.3
SW60060	2"	165.1	25.4	84.0	127.0	36.5	6.3	91.9	61.9	62.5	17.5	19.0	8	3.9
SW60073	2" 1/2	190.5	28.4	100.0	149.3	41.1	6.3	104.8	74.6	62.7	19.0	22.3	8	6.0
SW60089	3"	209.5	31.7	117.3	188.1	45.9	6.3	127.0	99.8	77.9	20.6	22.3	8	7.4

SOCKET WELDING FLANGES

1500 Lbs

ANSI / ASME B 16.5

SW150021	1/2	120.6	22.3	38.1	92.5	31.7	6.3	35.0	22.3		9.6	22.3	4	1.7
SW150027	3/4	130.0	25.4	44.4	98.9	35.0	6.3	42.9	27.6		11.1	22.3	4	2.4
SW150033	1"	140.3	28.4	52.3	101.8	41.1	6.3	50.8	34.5		12.7	25.4	4	3.5
SW150042	1" 1/4	158.7	28.4	63.5	111.2	41.1	6.3	63.5	43.1		14.2	25.4	4	4.0
SW150048	1" 1/2	177.8	31.7	69.8	123.9	44.4	6.3	73.1	49.5		15.7	28.4	4	5.5
SW150060	2"	215.9	38.1	104.6	165.1	57.1	6.3	91.9	61.9		17.5	25.4	8	10.0
SW150073	2" 1/2	244.3	41.1	123.9	190.5	63.5	6.3	104.8	74.6		19.0	28.4	8	13.9
SW150089	3"	266.7	47.7	133.3	203.2		6.3	127.0				31.7	8	



استاد بولت (پیچ و مهره) در سایزها و آلیاژهای مختلف
با استانداردهای ... Din B7 و ... Astm A193



Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 150

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts
1/2	1/2	55	...	4	5	3/4	95	110	8
3/4	1/2	65	...	4	6	3/4	100	115	8
1	1/2	65	75	4	8	3/4	110	120	8
1.1/4	1/2	70	85	4	10	7/8	115	125	12
1.1/2	1/2	70	85	4	12	7/8	120	135	12
2	5/8	85	95	4	14	1	135	145	12
2.1/2	5/8	90	100	4	16	1	135	145	16
3	5/8	90	100	4	18	1.1/8	145	160	16
3.1/2	5/8	90	100	8	20	1.1/8	160	170	20
4	5/8	90	100	8	24	1.1/4	170	185	20
NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud Bolts:
 length to 12 inch tolerance = ± 1.6 mm
 length over 12 inch to 18 inch tolerance = ± 3.2 mm
 length over 18 inch tolerance = ± 6.4 mm.
- The length of the Stud Bolt does not include the height of the chamfers (points).

Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 300

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts
1/2	1/2	65	75	4	5	3/4	120	135	8
3/4	5/8	75	90	4	6	3/4	120	140	12
1	5/8	75	90	4	8	7/8	140	150	12
1.1/4	5/8	85	95	4	10	1	160	170	16
1.1/2	3/4	90	100	4	12	1.1/8	170	185	16
2	5/8	90	100	8	14	1.1/8	180	190	20
2.1/2	3/4	100	115	8	16	1.1/4	190	205	20
3	3/4	110	120	8	18	1.1/4	195	210	24
3.1/2	3/4	110	125	8	20	1.1/4	205	220	24
4	3/4	115	125	8	24	1.1/2	230	255	24
NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud bolts:
 - length to 12 inch tolerance = ± 1.6 mm
 - length over 12 inch to 18 inch tolerance = ± 3.2 mm
 - length over 18 inch tolerance = ± 6.4 mm
- The length of the Stud Bolt does not include the height of the chamfers (points).

Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 600

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts
1/2	1/2	75	75	4	5	1	165	165	8
3/4	5/8	90	90	4	6	1	170	170	12
1	5/8	90	90	4	8	1.1/8	190	195	12
1.1/4	5/8	95	95	4	10	1.1/4	215	215	16
1.1/2	3/4	110	110	4	12	1.1/4	220	220	20
2	5/8	110	110	8	14	1.3/8	235	235	20
2.1/2	3/4	120	120	8	16	1.1/2	255	255	20
3	3/4	125	125	8	18	1.5/8	275	275	20
3.1/2	7/8	140	140	8	20	1.5/8	285	290	24
4	7/8	145	145	8	24	1.7/8	330	335	24
NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud Bolts:
length to 12 inch tolerance = ± 1.6 mm
length over 12 inch to 18 inch tolerance = ± 3.2 mm
length over 18 inch tolerance = ± 6.4 mm
- The length of the Stud Bolt does not include the height of the chamfers (points).

Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 900

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts
1/2	3/4	110	110	4	6	1.1/8	190	195	12
3/4	3/4	115	115	4	8	1.3/8	220	220	12
1	7/8	125	125	4	10	1.3/8	235	235	16
1.1/4	7/8	125	125	4	12	1.3/8	255	255	20
1.1/2	1	140	140	4	14	1.1/2	275	280	20
2	7/8	145	145	8	16	1.5/8	285	290	20
2.1/2	1	160	160	8	18	1.7/8	325	335	20
3	7/8	145	145	8	20	2	350	360	20
4	1.1/8	170	170	8	24	2.1/2	440	455	20
5	1.1/4	190	190	8					
NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud Bolts:
 length to 12 inch tolerance = ± 1.6 mm
 length over 12 inch to 18 inch tolerance = ± 3.2 mm
 length over 18 inch tolerance = ± 6.4 mm
- The length of the Stud Bolt does not include the height of the chamfers (points).

Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 1500

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N ^o of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N ^o of bolts
1/2	3/4	110	110	4	6	1.3/8	260	265	12
3/4	3/4	115	115	4	8	1.5/8	290	300	12
1	7/8	125	125	4	10	1.7/8	335	345	12
1.1/4	7/8	125	125	4	12	2	375	385	16
1.1/2	1	140	140	4	14	2.1/4	405	425	16
2	7/8	145	145	8	16	2.1/2	445	470	16
2.1/2	1	160	160	8	18	2.3/4	495	525	16
3	1.1/8	180	180	8	20	3	540	565	16
4	1.1/4	195	195	8	24	3.1/2	615	650	16
5	1.1/2	250	250	8					
NPS	Diameter bolts (in)	Length RF	Length RTJ	N ^o of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N ^o of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud Bolts:
length to 12 inch tolerance = ± 1.6 mm
length over 12 inch to 18 inch tolerance = ± 3.2 mm
length over 18 inch tolerance = ± 6.4 mm
- The length of the Stud Bolt does not include the height of the chamfers (points).

Dimensions Stud Bolts for RF-RTJ flanges ASME B16.5 - Class 2500

Class 150 | 300 | 400 | 600 | 900 | 1500 | 2500

NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts
1/2	3/4	120	120	4	3	1.1/4	220	230	8
3/4	3/4	125	125	4	4	1.1/2	255	260	8
1	7/8	140	140	4	5	1.3/4	300	310	8
1.1/4	1	150	150	4	6	2	345	355	8
1.1/2	1.1/8	170	170	4	8	2	380	395	12
2	1	180	180	8	10	2.1/2	490	510	12
2.1/2	1.1/8	195	205	8	12	2.3/4	540	560	12
NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts	NPS	Diameter bolts (in)	Length RF	Length RTJ	N° of bolts

General notes:

- Dimensions are in millimeters unless otherwise indicated.
- Length dimensional tolerances for all Stud Bolts:
 length to 12 inch tolerance = ± 1.6 mm
 length over 12 inch to 18 inch tolerance = ± 3.2 mm
 length over 18 inch tolerance = ± 6.4 mm
- The length of the Stud Bolt does not include the height of the chamfers (points).



شیرآلات استنلس استیل فلنجدار و دنده ای
 شیرآلات استنلس استیل فلنجدار و دنده ای از کلاس ۱۵۰ # تا کلاس ۱۵۰۰ # (کشویی و سوزنی
 و خودکار صافی و بال ولو)

شیرآلات استنلس استیل کلاس ۸۰۰ و ۱۵۰۰
 شیرآلات فورج دنده ای و ساکت ولد (کشویی و سوزنی و خودکار و صافی و بال ولو)





شیرآلات کربن استیل فلنجدار و دنده ای
شیرآلات فلنجدار و دنده ای از کلاس ۱۵۰ تا کلاس ۱۵۰۰ (کشویی، سوزنی، خودکار، صاف و بال ولو)
شیرهای سوزنی اکزدنونی Pn16 و Pn40

شیرآلات کربن استیل کلاس ۸۰۰ و ۱۵۰۰
شیرآلات فوج دنده ای و ساکت ولد (کشویی و سوزنی و خودکار و صاف و بال ولو)

شیرآلات جدنی
انواع شیرآلات کشویی، سوزنی، خودکار درجه ای و خطی از سایز ۱/۲" الی ۱۴" در فشارهای ۱۶،۱۰ بار

شیرآلات برنجی
انواع شیرآلات کشویی، سوزنی، شیرهای خودکار درجه ای و سوپاپی از سایز ۱/۲" الی ۴" (دنده ای و فلنج دار)



CAST STEEL-GATE VALVE - CL 150

SPECIFICATIONS

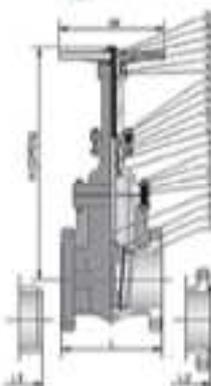
Design	ASME B16.34 / API600
Face to Face	ASME B16.10
End to End	ASME B16.10
End to Flange	ASME B16.5 / B16.47
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

FEATURES

- OS & Y, Rising Stem
- Bolted Bonnet
- Flexible Wedge (2" Solid)
- Extended Bonnet for Cryogenic Services
- By Pass on Request
- Locking Device Optional

MATERIALS OF CONSTRUCTION

ITEM	PART NAME	MATERIAL
1	Body	ASTMA216 GR.WCB
2	Seat Ring	ASTMA105+Stellite Faced
3	Oisc	ASTMA216 GR.WCB+13Cr Faced
4	Stem	ASTMA182 GR.F6
5	Gasket	Soft Iron+Graphite
6	Bonnet	ASTMA216 GR.WCB
7	Bonnet Bolt Nuts	ASTMA194 GR.2H
8	Bonnet Bolts	ASTMA193 GR.B7
9	Backseat Bushing	ASTMA276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTMA307 GR.B
13	Gland	ASTMA276 Type 410
14	Gland Flange	ASTMA216 GR.WCB
15	Eye Bolt Nuts	ASTMA194 GR.2H
16	Grease Nipple	Carbon Steel
17	Stem Nut	ASTMA439 GR.D-2
18	Resining Nut	Carbon Steel
19	Handwheel	Ductile Iron
20	Handwheel Nut	Carbon Steel
21	Screw	Carbon Steel
22	Yoke	ASTMA216 GR.WCB
23	Yoke Pan Bolt Nuts	ASTMA194 GR.2H
24	Yoke Pan Bolts	ASTMA193 GR.B7
25	Bearing	Steel



DIMENSIONS & WEIGHTS - Class 150

SIZE	in	2"	3.5"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
L	in	7.50	7.50	8.00	8.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	20.00	24.00	24.00	28.00
	mm	190	191	203	203	267	292	330	354	368	406	432	457	508	610	610	711
L1	in	8.00	9.00	11.12	12.00	15.00	16.00	18.00	19.75	22.00	24.00	26.00	28.00	32.00	36.00	36.00	40.00
	mm	216	241	283	305	403	419	457	502	572	610	666	711	813	914	914	1016
L2	in	7.50	8.00	8.50	9.50	11.00	12.00	13.50	14.50	16.50	17.50	18.50	20.50	-	-	-	-
	mm	191	203	216	241	279	305	343	368	394	419	445	470	521	-	-	-
H	in	16.51	17.25	19.00	23.83	28.59	36.59	45.67	54.72	61.22	71.30	82.00	95.55	102.72	130.88	141.87	165.88
	mm	419	439	490	605	727	925	1160	1390	1555	1811	2103	2300	2629	3327	3606	4243
W	in	8	8	10	14	14	14	18	22	24	25	27	30	34	34	34	34
	mm	200	200	250	350	350	350	450	540	560	600	640	760	810	810	810	810
Weight of	kg	17	23	29	47	80	129	192	287	410	571	720	1170	1466	1931	2380	3000

CAST STEEL GLOBE VALVE - CL 150

SPECIFICATIONS

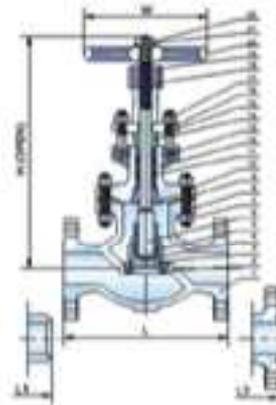
Design	ASME B16.34 / API600
Face to Face	ASME B16.10
End to End	ASME B16.10
End to Flange	ASME B16.5 / B16.47
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

FEATURES

OS & Y, Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass on Request
Locking Device Optional

MATERIALS OF CONSTRUCTION

Item	Part Name	Material
1	Body	ASTMA216 GR.WCB
2	Seat Ring	ASTMA105+Stellite Faced
3	Disc	ASTMA216 GR.WCB+13Cr Faced
4	Stem	ASTMA182 GR.F6
5	Gasket	Soft Iron+Graphite
6	Bonnet	ASTMA216 GR.WCB
7	Bonnet Bolt Nuts	ASTMA194 GR.2H
8	Bonnet Bolts	ASTMA193 GR.B7
9	Backseat Bushing	ASTMA276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTMA307 GR.B
13	Gland	ASTMA276 Type 410
14	Gland Flange	ASTMA216 GR.WCB
15	Eye Bolt Nuts	ASTMA194 GR.2H
16	Grease Nipple	Carbon Steel
17	Stem Nut	ASTMA439 GR.D-2
18	Retaining Nut	Carbon Steel
19	Handwheel	Ductile Iron
20	Handwheel Nut	Carbon Steel
21	Screw	Carbon Steel
22	Yoke	ASTMA216 GR.WCB
23	Yoke Fan Bolt Nuts	ASTMA194 GR.2H
24	Yoke Fan Bolts	ASTMA193 GR.B7
25	Bearing	Steel



DIMENSIONS & WEIGHTS - Class 150

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
L/L1	in	8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	20.00	23.00	26.00	28.00	45.00	55.00
	mm	218	241	283	305	403	419	457	502	508	584	660	711	1143	1397
L2	in	9.12	10.12	11.78	12.62	16.50	17.12	18.62	20.37	20.62	23.62	26.62	29.75	45.88	56.00
	mm	232	257	298	321	419	435	473	517	524	595	673	754	1165	1422
H	in	16.03	18.88	20.87	24.80	31.50	39.69	48.82	57.87	64.76	72.48	77.13	88.38	102.28	130.71
	mm	430	505	530	630	800	1008	1240	1470	1645	1841	1969	2194	2598	3320
W	in	8	10	10	10	14	16	18	20	24	24	24	24	24	24
	mm	200	250	250	250	350	400	450	500	600	600	610	610	610	610
Weight BF	kg	30	45	57	86	143	219	368	522	694	1080	1233	1655	2320	4930

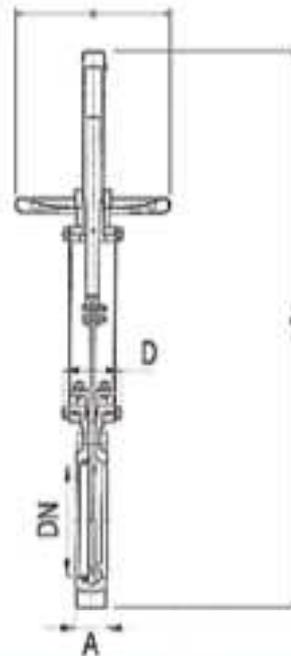
CAST IRON KNIFE GATE VALVE - PN16

SPECIFICATIONS

- Face-to-face dimensions Non-Standard
- Testing DIN3230
- Working temperature: NBR ≤ 80°C, EPDM ≤ 120°C

MATERIALS OF CONSTRUCTION

BODY	Cast Iron	SS304 / SS316
GATE	SS304 / SS316	SS304 / SS316
SEAL	NBR	EPDM
PACKING	PTFE	PTFE



DIMENSIONS (in mm)

DN		SIZE (mm)							WEIGHT
mm	inches	A	B	C	D	F	P	H	kg
50	2	40	240	124	83	1/4	80	412	8
65	2 1/2	40	265	139	83	1/4	80	458	9
80	3	50	290	154	83	1/4	80	502	10
100	4	50	335	174	83	1/4	100	562	13
125	5	50	373	189	93	1/4	25	642	18
150	6	60	424	220	93	1/4	125	718	23
200	8	60	533	275	108	1/4	160	882	39
250	10	70	625	326	108	1/4	200	1044	57
300	12	70	732	380	108	1/4	200	1164	74
350	14	96	835	438	290	1/2	250	1362	127
400	16	100	945	494	290	1/2	250	1542	138
450	18	106	1040	547	290	1/2	250	1677	176
500	20	110	1150	613	290	1/2	300	1842	209
600	24	110	1354	716	290	1/2	300	2147	250
700	28	110	1540	835	400	1/2	350	2542	410
800	32	110	1750	972	400	1/2	400	2852	562

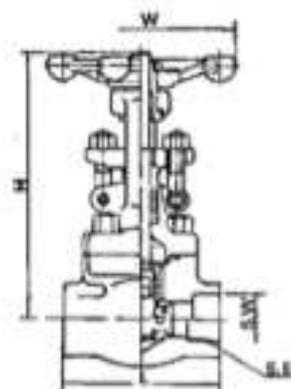
FORGED STEEL GATE VALVE - CL800/1500

SPECIFICATIONS

Design	ANSI B16.34/API 602
Test	API 598
Socket Weld End	ANSI B16.11
Screwed End	ANSI B1.20.1

MATERIALS OF CONSTRUCTION

PART NAME	STANDARD	NACE	LOW TEMP. NACE
Body	A105	A105	LF2
Bonnet	A105	A105	LF2
Stem	F6	F6	316
Disc	F6	F6	316
Seat Ring	F6-HFS	316-HFS	
Bonnet Bolt	B7	B7M	L7M
Gasket	304 + Graphite	316 + Graphite	
	316 Soft Steel Ring (Class 2500)		
Gland	F6	316	316
Packing	Graphite		
Gland Flange	WCB		
Gland Bolt	B7	B7M	L7M
Gland Bolt Nut	2H	2HM	2HM
Gland Bolt Pin	410	410	304
Sleeve	410		
Sleeve Washer	410		
Handwheel	A197		
Nameplate	Aluminium		
Handwheel Nut	A108-1020		



DIMENSIONS & WEIGHTS - Class 800

Nominal Diameter (ANSI/API)	15(N°)	20(N°)	25(1")	32(1 1/4")	40(1 1/2")	50(2")	65(2 1/2")	80(3")
Nominal Diameter (EN/ISO)	-	15(N°)	20(N°)	25(1")	32(1 1/4")	40(1 1/2")	50(2")	-
d (mm)	10	13.6	18	24	29	36.8	46.5	51
L (mm)	79	92	111	120	120	140	178	183
H (Open, mm)	166	169	193	230	246	283	330	359
W (mm)	100	100	125	160	160	180	200	200
Weight (kg)	2.1	2.3	4.0	5.9	6.9	11.2	15.8	20.0

DIMENSIONS & WEIGHTS - Class 1500

Nominal Diameter (ANSI/API)	15(N°)	20(N°)	25(1")	32(1 1/4")	40(1 1/2")	50(2")
Nominal Diameter (EN/ISO)	-	15(N°)	20(N°)	25(1")	32(1 1/4")	40(1 1/2")
d (mm)	13.6	13.6	18	24	29	36.8
L (mm)	111	111	114	120	140	162
H (Open, mm)	197	197	224	237	276	320
W (mm)	125	125	160	160	180	200
Weight (kg)	4.6	4.6	6.3	8.7	12.1	17.2

STAINLESS DUAL WAFER CHECK VALVE - CL150/300

SPECIFICATIONS

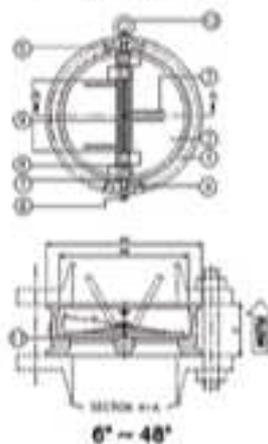
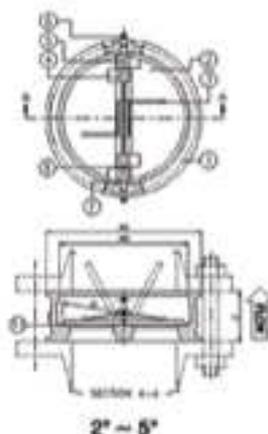
Investment casting from DN 50 to DN 100 for Stainless Steel only
 Free installing direction
 Metal to Metal (option)
 Test and Inspection to API 598

MATERIALS OF CONSTRUCTION

ITEM	PART NAME	MATERIAL
1	Body	ASTM A351-CF8M / 1.4408
		ASTM A216-WCB / 1.0619
		DUCTILE IRON
2	Plate	A210 WCB / A351 CF8
		A351 CF8M / A351 CF3M
3	Spring	SUS 316 WPA
4	Hinge Pin	SUS 304 / SUS 316
5	Stop Pin	SUS 304 / SUS 316
6	Plug	S25C
7	Body Bearing	Teflon
8	Plate Bearing	Teflon
9	Spring Bearing	Teflon
10	Eye Bolt	S541
11	Body Seat	NBR / EPDM / VITON
		Same materials as the Plate
		410SS Overlay / Stellite #6 overlay

DIMENSIONS & WEIGHTS

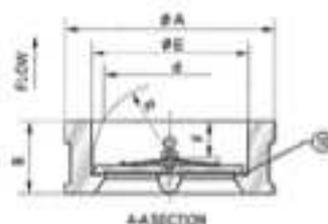
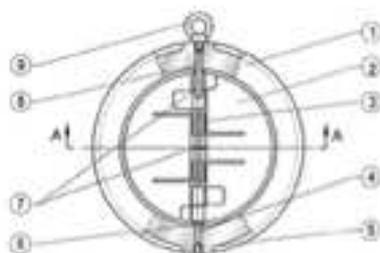
DN	A	B	C	D	Weight (kg)
50	109	60	54	32	3
65	129	73	54	32	4
80	144	89	57	45	5
100	164	114	64	53	6
125	194	141	70	67	9
150	220	168	76	79	10
200	275	219	95	105	19
250	331	273	108	123	31
300	388	324	143	155	56
350	446	356	184	170	71
400	498	406	191	195	99
450	558	457	203	219	118
500	620	508	213	244	180
600	737	610	222	292	238
700	807	711	321	337	380
800	914	813	356	397	526
900	1014	914	368	440	656
1000	1131	1016	419	495	1010
1200	1345	1216	524	603	1926



CAST IRON WAFER DUAL CHECK VALVE - PN16

SPECIFICATIONS

- Face-to-face dimensions B55351
- Testing DIN3230
- Working temperature: NBR ≤ 80°C, EPDM ≤ 120°C



MATERIALS OF CONSTRUCTION

Part N°	Name of Part	Material
1	Body	Cast Iron, Ductile Iron
2	Plate	Ductile Iron+Ni, CFB, CF8M, Bronze
3	Spring	Stainless Steel
4	Hinge Pin	Stainless Steel
5	Plug	Carbon Steel
6	Body Bearing	PTFE
7	Spring Bearing	PTFE
8	Stop Pin	Stainless Steel
9	Eye Bolt	Carbon Steel
10	Body Seat	NBR, EPDM, Viton, Neoprene

DIMENSIONS & WEIGHTS

SIZE		B	E	F	H	d	A		Weight (kg)
Inches	DN						DIN PN10/16	ANSI 150	
2	50	43	65	19	28.8	43.3	107	102	1.5
2½	65	46	80	20	36.1	60.2	127	121	2.4
3	80	64	94	28	43.4	66.4	142	133	3.6
4	100	64	117	27	52.8	90.8	162	171	5.7
5	125	70	145	30	65.7	116.9	192	193	7.3
6	150	76	170	31	78.6	144.6	218	210	9.0
8	200	89	224	33	104.4	198.2	273	276	17
10	250	114	265	50	127	233.7	328	336	26
12	300	114	310	43	148.3	283.9	378/382	406	42
14	350	127	360	45	172.4	332.9	436/442	448	55
16	400	140	410	52	197.4	381.0	488/495	511	75
18	450	152	450	58	217.8	419.9	538/555	546	107
20	500	152	505	58	241	467.8	592/617	603	111
24	600	178	624	73	295.4	572.6	695/734	714	172
28	700	229	720	98	354	688	809	828	219
32	800	241	825	100	398	770.5	916	936	316

STAINLESS BALL VALVE - 3 Piece Direct-Mount ISO5211 PI
SPECIFICATIONS - SERIES 77

Threads conform to:

ASME B1.20.1 (NPT)

DIN 2999 & BS 21 (BSP)

Investment Casting

Blow-out proof system

PTFE Seal

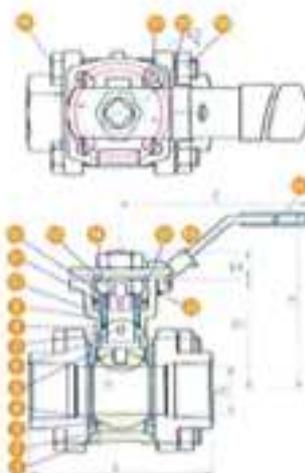
Full Body with ISO5211 Mountpad for actuator fitting

Test and Inspection to API598

Also available in Butt Weld and socket weld ends

MATERIALS OF CONSTRUCTION

#	Part Name	Material	Qty
1	Body	CF8M WCB	1
2	End Cap	CF8M WCB	2
3	Ball	SUS 316	1
4	Seat	RPTE	2
5	Joint Gasket	PTFE	2
6	Stem Seal	RPTE	1
7	Stem	SUS 316	1
8	Gland Packing	MOI241	2
9	Beehing	#	1
10	Gland Bush	SUS 304	1
11	Ballville Washer	SUS 301	2
12	Stop Washer	SUS 304	1
13	Stem Nut	SUS 304	2
14	Stem Washer	SUS 304	1
15	Handle	SUS 304	1
16	Locking Device	SUS 304	1
17	Handle Sleeve	Vinyl	1
18	Ball	SUS 304	-
19	Ball Nut	SUS 304	1
20	Ball Washer	SUS 304	1
21	Stop Pin	SUS 304	1
22	Pin Nut	SUS 304	1


BREAK AWAY TORQUE & CV VALUES

SIZE	BREAK AWAY TORQUE		CV U.S. GPM
	Nm	lb / ft.	
1/2"	3	27	8
3/4"	5	27	10
1"	3	27	12
1 1/4"	7	62	32
1 1/2"	12	104	56
2"	19	151	82
2 1/2"	20	177	120
3"	23	204	240
3 1/2"	35	310	320
4"	55	487	580
4"	85	713	1020



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*For 1/2" to 2" - 4 pcs of balls (single ended end, thread)

*For 2 1/2" to 3" - 8 pcs of balls (double ended end, thread)

*For 4" - 8 pcs of balls (double ended end, thread)

†For 1 1/2" to 2" - 4 pcs

†For 2 1/2" to 3" - 8 pcs

†For 4" - 12 pcs

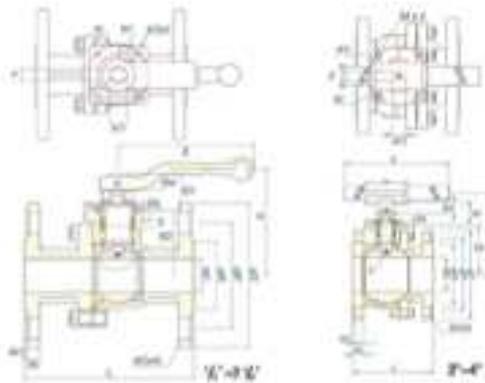
DIMENSIONS (in mm)

SIZE	BA	B1	B4	BC	D	E	EP	EG	H	H1	J	L	L1	L2	LE	LF	N	NP	OP	OT	W	W1	W1ng	ISO5211
1/2"	11.1	42.1	8.00	11.4	8.0	120	42	16.2	78	34	1.6	43.5	43.5	16	225	-	-	-	-	-	-	0.44	F03/F04	
3/4"	17.4	42.1	8.00	12.7	9.0	120	42	17.3	78	34	1.6	43.0	42.0	16	225	-	-	-	-	-	-	0.62	F03/F04	
1"	23.7	42.1	8.00	15.0	9.0	120	42	22.7	78	34	1.6	43.5	43.5	16	225	120	4	45	14	30	10	2	0.86	F03/F04
1 1/4"	31.3	48.0	8.40	20.0	9.0	120	42	27.3	83	36	1.6	76.2	76.2	13	225	150	4	75	14	105	18	2	0.83	F03/F04
1"	44.1	36.8	11.4	25.0	11.0	165	36	33.8	96	42	1.6	86.0	86.0	13	240	180	4	90	14	115	18	2	1.23	F04/F05
1 1/2"	42.8	60.9	11.4	32.0	11.0	165	36	42.0	106	42	1.6	102.8	102.8	13	255	180	4	100	14	143	18	2	1.89	F04/F05
2"	48.7	77.5	12.8	36.0	14.0	210	36	48.8	127	38	1.6	119.0	119.0	13	280	200	4	110	16	155	18	3	3.17	F05/F07
2"	61.8	83.2	12.8	35.0	14.0	210	36	61.1	133	38	1.6	121.4	121.4	16	275	230	4	125	18	165	20	3	4.44	F05/F07
2 1/2"	108.3	108.3	16.8	45.0	17.0	240	102	76.3	157	36	2	164.0	164.0	16	334	290	8	145	18	195	22	3	5.91	F07/F10
3"	80.0	117.7	17.8	50.0	17.0	240	102	80.0	176	36	2	182.5	182.5	16	354	310	8	160	18	200	24	3	11.76	F07/F10
4"	131.2	232.8	16.8	100	17.0	312	102	114.0	191	36	3.3	235.0	235.0	20	-	330	8	180	22	235	24	3	21.50	F07/F10

STAINLESS BALL VALVE - 2 Piece Flanged CL 150

SPECIFICATIONS - SERIES 90

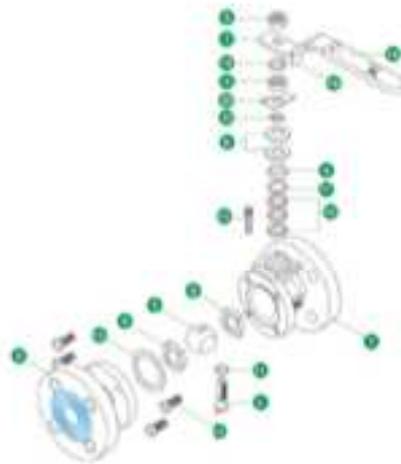
- Design to ANSI B16.34, BS 5301, DIN 3337
- Investment Casting
- Blow-out proof system, Anti-static device
- Full bore 2 piece body construction
- Test and inspection to API598



MATERIALS OF CONSTRUCTION

SP	Part Name	Material	Qty
1	Body	ASTM A301 Gr. CF8M	1
2	End Cap	ASTM A301 Gr. CF8M	1
3	Ball	SUS 316	1
4	Stem	SUS 316	1
5	Stem Nut	SUS 304	2
6	Set Screw Washer	SUS 301	2
7	Handle	SUS 304	1
8	Seal	RPTFE	2
9	Gland	SUS 304	1
10	Wiring Packing	PTFE	6
11	Stem Seal	RPTFE	1
12	Lark Saddle	SUS 304	1
13	Joint Gasket	PTFE	1
14	Bolt (Stud & Nut)	SUS 304	*
15	Stop Pin	SUS 304	1
16	Handle Sleeve	Vinyl	1
17	Gland Packing	21% RTFE	1
18	Washer	SUS 304	1
19	Locking Device	SUS 304	1
20	Locking Plate	SUS 304	1

*1/2" to 1" 1 set of wiring packing consists of 2 pieces of ring
 1" to 2" 1 set of wiring packing consists of 3 pieces of ring
 For 1/2" to 1" 1 set of bolt for 1/2" to 1" size of ball (stud)
 For 1" to 2" 1 set of bolt for 1" to 2" size of ball (stud)
 For 2" to 4" 1 set of bolt for 2" to 4" size of ball (stud)



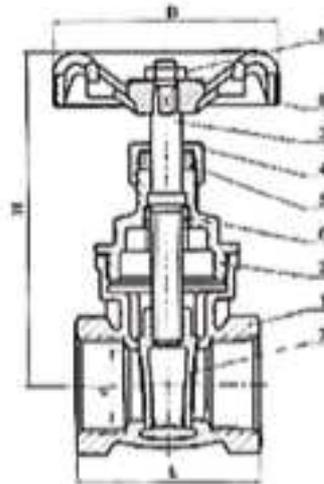
DIMENSIONS (in mm)

SIZE	W1	W2	W3	W4	W5	W6	E	F	H	W7	W8	L	M	N	W9	W10	W11	W12	ISO4211			
1/2"	23.8	34.5	1	9.8	15	11.1	165	6.0	66.8	62	30	104.2	M(19-24UNC)	4	65.3	16	33.1	66.9	11.2	1.6	1.66	F04
3/4"	21.4	41.1	1	8.8	20	11.1	165	6.0	67.21	62	30	117.3	M(19-24UNC)	4	69.0	16	42.0	66.4	11.1	1.5	2.1	F04
1"	26.8	46.5	2	9.6	25	16.3	200	6.7	82.0	60	35	127.0	M(1/2"-20UNC)	4	79.2	16	50.6	100	11.2	1.6	3.02	F00
1 1/2"	34.8	76.3	2	14.8	38	19.0	250	12.8	113.3	70	35	165.1	M(1/2"-18UNC)	4	86.6	16	73.2	127	14.3	1.6	6.17	F07
2"	34.8	86.4	2	14.8	38	19.0	250	12.8	123.4	70	35	178.3	M(1/2"-18UNC)	4	120.7	16	91.9	132.4	15.8	1.6	8.7	F07
2 1/2"	34.8	97.4	2	14.8	65	19.0	330	12.8	134.4	70	35	190.3	M(1/2"-18UNC)	4	138.7	16	104.8	177.8	17.6	1.6	13.02	F07
3"	46.0	107.4	2	21.8	80	24.0	330	15.8	176.3	102	76.0	203.3	M(1/2"-18UNC)	8	152.4	16	127	190.3	18.1	1.6	18.08	F10
4"	49.3	122.4	2	21.8	100	24.0	330	15.8	191	102	76.0	226.3	M(1/2"-18UNC)	8	190.1	16	157.2	228.6	23.0	1.6	28.5	F10

BRASS GATE VALVE - Screwed PN16

SPECIFICATIONS

Pressure Rating	:	PN16
Working Medium	:	Water, Oil, Steam
UK End Connection	:	BS21
US End Connection	:	NPT



DIMENSIONS (in mm)

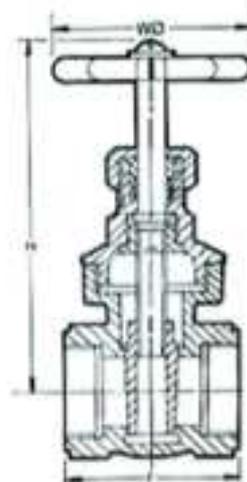
DN	d	L	H	D
15	12.7	43	72	55
20	17	45	77	55
25	21	52	87	60
32	25	55	95	60
40	32	66	110	72
50	38	76	124	80

MATERIALS OF CONSTRUCTION

Number	Description	Materials
1	Body	Brass CW617N
2	Bonnet	Brass CW617N
3	Stem	Brass CW617N
4	Packing Nut	Brass CW617N
5	Packing	PTFE
6	Stem Bush	Brass CW617N
7	Disc	Brass CW617N
8	Handwheel	Cast Iron
9	Handwheel Nut	Stainless Steel

BRONZE GATE VALVE - Screwed PN20

SPECIFICATIONS	TESTING & CERTIFICATION	
'SBM' bronze wedge gate valve	Body Test Pressure	300 Psig Hyd.
Inside screw	Seat Test Pressure	200 Psig Hyd.
Non-rising stem	APPLICATION	
Integral seats		
Screwed female ends (BSP)		
Handwheel operated	Water	
	Oil	



DIMENSIONS (in mm)			
Nominal Size	F ± 1.5	H	W
8	43	90	30
10	43	95	50
15	45	85	30
20	51	100	60
25	64	115	65
32	66	130	80
40	70	155	80
50	76	195	90
65	95	210	105
80	112	260	115
100	127	305	145

MATERIALS OF CONSTRUCTION		
Components	Material	Material Specification
Body, Bonnet, Wedge, Gland & Gland Nut	Leaded Tin Bronze	IS:318 Gr.LT82
Stem	Forged Brass	IS:4912 Gr.F1B
Gland Packing	Asbestos	IS:4687
Handwheel	Cast Iron / Steel	IS:210 Gr.FG200
Screw & Washer for Handwheel	Mild Steel	IS:226



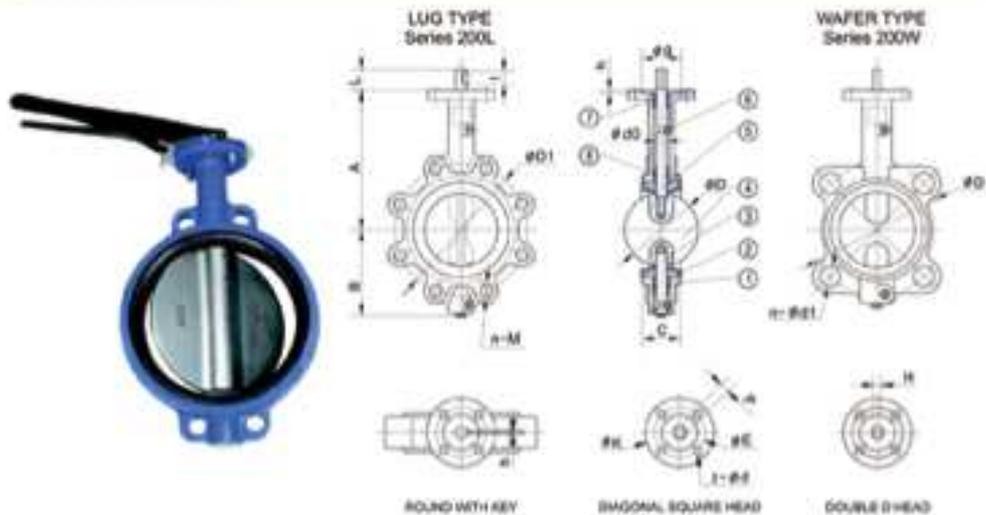
انواع شیرآلات پروانه ای تمام استیل (فلزرو فلز) چدنی (دیسک استیل، دیسک کروم،
 تقوونی) و UPVC در کلاسهای Pn16, Cl150, Cl300 و ...



CAST IRON WAFER BUTTERFLY VALVE - PN16

SPECIFICATIONS

Wafer or Lugged type
 Manufactured to BS 5155
 Flanges to BS, DIN, ANSI
 Mounting Pad Flange to ISO5211
 Working Pressure: PN16



DIMENSIONS (in mm)

SIZE	W	DN	A	B	C	D	L	d#	P	H	KEY	UPPER FLANGE			ANSI 150			DIN PN10/16			Weight (kg)			
												W1	K	E	a-d	b	h	D1	w-d1	M	D1	w-d1	M	Wafer
2	50	161	80	42	52.6	32	12.6	9	10	10	3x16	77	50	4-7	31	3	120.5	4-19	1/2"	125	4-18	M16	2.5	3.8
2 1/2	65	175	88	44.7	64.5	32	12.6	9	10	10	3x16	77	50	4-7	31	3	138	4-19	1/2"	145	4-18	M16	3.2	4.2
3	80	181	95	45.2	76.8	32	12.6	9	10	10	3x16	77	50	4-7	35	3	152.5	4-19	1/2"	160	1/2-18	M16	3.8	4.7
4	100	200	114	52.1	104	32	13.77	11	12	12	5x19	90	70	4-9	35	3	190.5	4-19	1/2"	180	4-18	M16	4.8	6.0
5	125	213	127	54.4	123.3	32	16.92	14	14	14	5x19	90	70	4-9	35	3	216	4-22	1/2"	210	4-18	M16	7	10.9
6	150	228	139	55.8	155.6	32	18.92	14	14	14	5x19	90	70	4-9	35	3	241.5	4-22	1/2"	240	4-23	M20	7.8	14.2
8	200	260	175	60.6	203.5	48	22.1	17	17	17	5x19	125	102	4-12	70	3.5	298.5	4-22	1/2"	295	1/2-23	M20	13.2	18.2
10	250	290	200	65.6	250.5	48	26.45	22	22	22	8x28	125	102	4-12	70	3.5	362	12-25	1/2"	350/355	12-25	M20/M24	19.2	26.8
12	300	337	242	76.5	301.6	48	31.6	22	24	24	8x28	140	102	4-12	70	3.5	432	12-25	1/2"	400/410	12-25	M20/M24	32.5	40

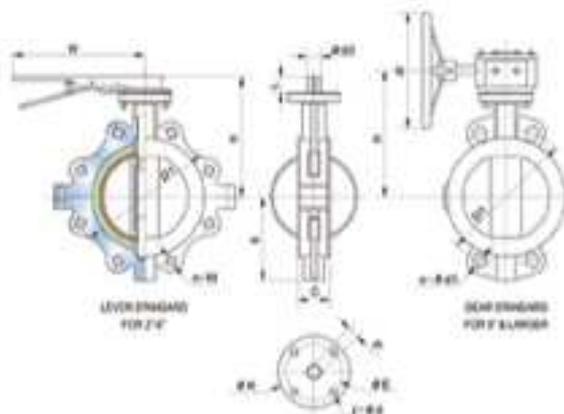
MATERIALS OF CONSTRUCTION

Item	Part Name	Material
1	Body	Cast Iron, Ductile Iron, Carbon Steel, Stainless Steel
2	Seat	NBR, EPDM, PTFE, Viton, Neoprene, Hypalon, Silicon
3	Lower Shaft	Stainless Steel 416, 316
4	Disc	Ductile Iron+Ni (Nylon/Epoxy), CF8, CF8+PTFE(PFA) CF8M, CF8M+PTFE(PFA), Bronze
5	Upper Shaft	Stainless Steel 416, 316
6	Locating Pin	Carbon Steel
7	Bushing	PTFE
8	O Ring	NBR, EPDM

STAINLESS STEEL WAFER BUTTERFLY VALVE - PN16

SPECIFICATIONS

Wafer or Lugged type
 Manufactured to BS 5155
 Flanges to BS, DIN, ANSI
 Mounting Pad Flange to ISO5211
 Working Pressure: PN16



DIMENSIONS (in mm)

SIZE	In	DN	C	B	W	H	L	d0	P	UPPER FLANGE					ANSI 150				DIN PN10/16		Weight (kg)	
										K	E	a-d	g	h	D1	a-d1	M	D1	a-d1	M	Wafer	Leg
1/4	40	40	75	270	150	52	12.6	9	90	70	4.9	55	4	96.5	4-15	1/2"	110	4-18	M16	2.5	3.7	
2	50	50	77	270	167	52	14.3	11	90	70	4.9	55	4	120.5	4-19	1/2"	125	4-18	M16	3.0	4.2	
2 1/2	65	65	91	270	170	52	14.3	11	90	70	4.9	55	4	139.5	4-19	1/2"	145	4-18	M16	3.0	4.2	
3	80	80	95	270	170	52	14.3	11	90	70	4.9	55	4	152.5	4-19	1/2"	160	4-18	M16	3.3	4.3	
4	100	100	121	270	181	52	15.77	11	90	70	4.9	55	4	190.5	4-19	1/2"	180	4-18	M16	4.8	7.8	
5	125	125	125	270	205	52	18.90	14	90	70	4.9	55	4	216	4-22	1/2"	210	4-18	M16	6.8	10.8	
6	150	150	130	270	219	52	18.90	14	90	70	4.9	55	4	241.5	4-22	1/2"	240	4-23	M20	8.0	13.8	
8	200	200	182	360	268	52	22.1	17	125	102	4-12	70	4	298.5	4-22	1/2"	295	4-23	M20	24.8	32.5	
10	250	250	226	300	284	45	26.45	22	125	102	4-12	70	4	362	12-25	1/2"	358/355	12-25	M20/M24	30.8	43.2	
12	300	300	260	300	337	45	31.6	22	140	102	4-12	70	4	432	12-25	1/2"	406/410	12-25	M20/M24	44.0	55.0	

MATERIALS OF CONSTRUCTION

Item	Part Name	Material
1	Body	WCB / CF8M
2	Stem	S5416 / S5316
3	Seat	PTFE
4	Disc	WCB+PTFE / CF8M+PTFE
5	O Ring	Viton

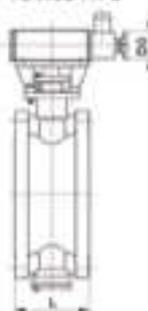
HIGH PERFORMANCE BUTTERFLY VALVE

SPECIFICATIONS

Pressure Rating	:	PN16, PN40
Working Medium	:	Water, Oil, Steam
End Connection	:	Wafer
Face to Face	:	BSS155



FLANGE TYPE



WAFER LUG TYPE



RESILIENT SEAL
(Double Elastomer)
Series 910



METAL SEAL
(Triple Elastomer)
Series 920

MATERIALS OF CONSTRUCTION - Series 910

ITEM	PART NAME	MATERIAL
1	Body	WCB/13Cr, CF8M
2	Bushing	CS+PTFE, 316+PTFE
3	Washer	Carbon Steel
4	Seal Ring	NBR, EPDM, PTFE, Viton
5	Stem	13Cr, 316
6	Plate	WCB, CF8M
7	Packing	Flexible Graphite
8	Gland	13Cr, 316
9	Gland Flange	WCB, CF8M
10	Gear	Cast Iron
11	Yoke	WCB
12	Pin	13Cr, 316

MATERIALS OF CONSTRUCTION - Series 920

ITEM	PART NAME	MATERIAL
1	Body	WCB/13Cr, CF8M
2	Bushing	CS+PTFE, 316+PTFE
3	Washer	Carbon Steel
4	Seal Ring	316+Graphite, 13Cr
5	Stem	13Cr, 316
6	Plate	WCB, CF8M
7	Packing	Flexible Graphite
8	Gland	13Cr, 316
9	Gland Flange	WCB, CF8M
10	Gear	Cast Iron
11	Yoke	WCB
12	Pin	13Cr, 316



موتورهای بادی و برقی (اکتیواتور)
 فرومن انحصاری ALPHAIR ایتالیا و Actreg اسپانیا تولید کننده محرک های پنوماتیک و نیوماتیک

انواع آبتویی، پوزیشنرهای (لینبر و روتاری) Flukon، YTC و ...
 انواع موتورهای برقی و مشر نامور 24 و 220 ولت با ملک های CenTork و Itork و ...

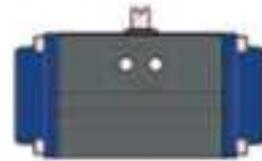




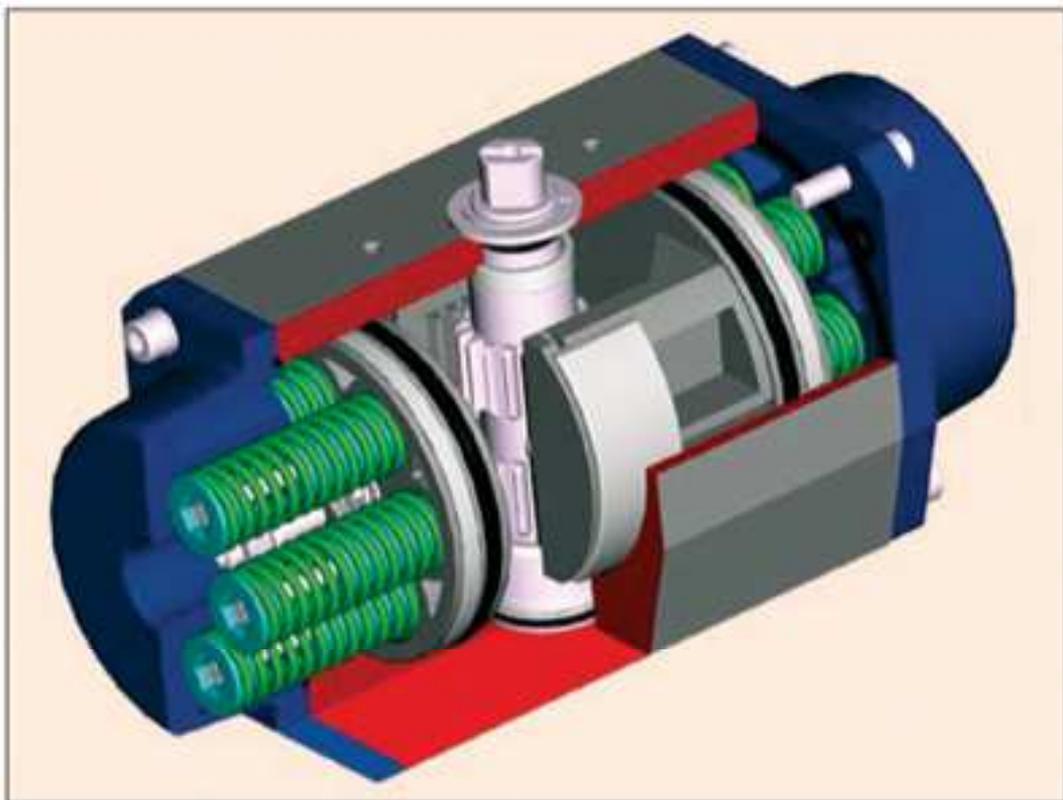
VDI/VDE 3845



ISO 5211/DIN 3337



NAMUR



VDI/VDE 3845	VDI/VDE 3845	VDI/VDE 3845	VDI/VDE 3845	VDI/VDE 3845	VDI/VDE 3845
STANDARD ALPHA S	TPO-TYPE TYP-TYPE L	TPO-TYPE TYP-TYPE D	TPO-TYPE TYP-TYPE H	TPO-TYPE TYP-TYPE V	TPO-TYPE TYP-TYPE W

VDI/VDE 3845



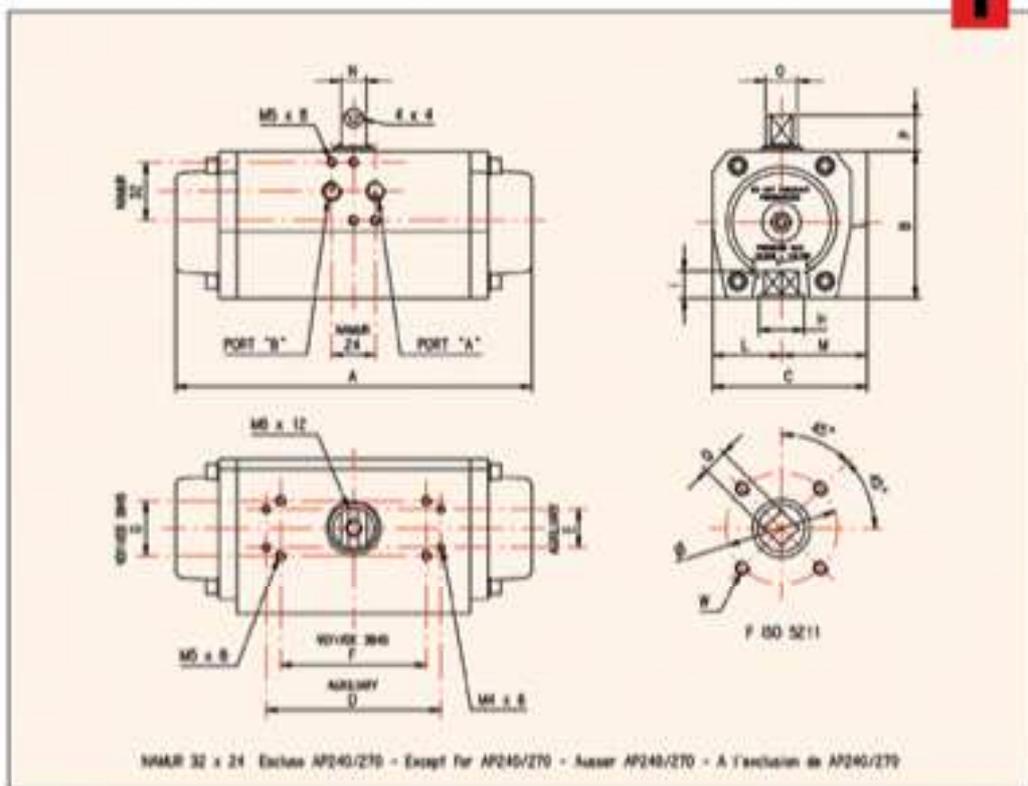
NAMUR



ISO 5211 - DIN 3337



CARATTERISTICHE TECNICHE ATTUATORI ALPHAIR 90° - TECHNICAL FEATURES OF ALPHAIR 90° ACTUATORS - TECHNISCHE DATEN
 DEN ALPHAIR 90° PNEUMATICHE ANTRIEBE - CARACTERISTIQUES TECHNIQUES DES ACTIONNEURS PNEUMATIQUES ALPHAIR 90°



MSURE EUROPEE mm - EUROPEAN SIZES mm - EUROPÄISCHE MAßE mm - MESURES EUROPEENNES mm

POSITION POSITION POSITION	TIPO DI ATTUATORE - ACTUATOR TYPE - ANTRIEB TYP - TYPE D'ACTIONNEUR																									
	AP032	A P042	AP050	AP063	AP075	AP085	AP100	AP115	AP125	AP140	AP160	AP180	AP200	AP240	AP270	AP300										
A	117	160	138	155.5	210	228	280.5	310	362	390	462	474	575	604	685	800										
B	45	57	67	83	100	110	125	142	155	175	190	220	240	268	332	414										
C	48	60.5	75	86	94	104	120	134	141	162	176	198	220	303	352	400										
MAXIMUM D x E	-						105 x 22			128 x 22				-												
MAXIMUM F x G	60 x 26		60 x 30						130 x 30																	
L	22.5	27	33.5	38	42.5	49	55	63.5	65.5	80	88	98	110	100	105	130										
M	25.5	33.5	41.5	45	54.5	55	65	70.5	71.5	83						210										
Port A Port B DN 200	1/8" GAS - NPT						1/4" GAS - NPT						1/2" GAS - NPT													
N x O	8 x 10				14 x 10				27 x 26				32 x 40		32 x 63		52 x 80									
P	20																									
Q x J	8 x 10		8 x 10 11 x 13		8 x 10 11 x 13		8 x 10 11 x 13 14 x 16		11 x 13 14 x 16 17 x 20		14 x 16 17 x 20 22 x 25		17 x 20 22 x 25 27 x 30		17 x 20 22 x 25 27 x 30		22 x 25 27 x 30 32 x 35		27 x 30 32 x 35 38 x 39		32 x 35 38 x 39 44 x 50		38 x 39 44 x 50 48 x 50		44 x 50 48 x 50 55 x 60	
F ISO 5211	F03 F04	F03/05 F04	F03 F04 F03/05 F05	F03/05 F04 F05	F04 F04/07	F05/07	F05/10 F05/10	F05/10	F05/10 F12	F10/12	F10/12	F10/12 F14	F10/12 F14	F14 F16	F14 F16	F16 F18	F16 F20									

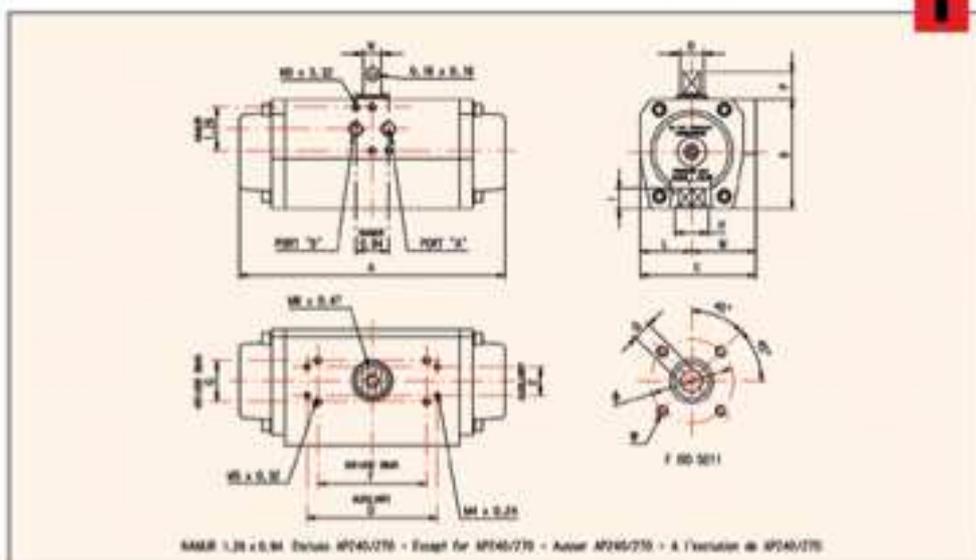
POSITION POSITION POSITION	F ISO 5211												
	F03	F04	F03/05	F04	F05/07	F5/10	F05/10	F10/12	F14	F16	F18	F20	
Ø (W)	36 (M4x8)	42 (M5x8)	36 (M4x8) 50 (M4x8)	50 (M5x8)	50 (M4x7) 70 (M4x12)	50 (M4x3) 70 (M4x12) 102 (M10x13)	70 (M4x12) 102 (M10x15)	102 (M10x15) 125 (M12x18)	125 (M12x18)	140 (M14x20)	160 (M16x25)	204 (M18x30) N°6	
H	25	30	25	35	35 AP085-40	40	55	65	AP140-70 AP160-75 AP180-85 AP200-85	75	100 (75-100)	130	200

VALORE VALUE WERT WALDR	TIPO DI ATTUATORE - ACTUATOR TYPE - ANTRIEB TYP - TYPE D'ACTIONNEUR															
	AP032	AP042	AP050	AP063	AP075	AP085	AP100	AP115	AP125	AP140	AP160	AP180	AP200	AP240	AP270	AP300
DA	0.370	0.380	0.370	0.380	0.510	0.380	0.380	0.380	0.380	0.380	0.380	0.380	0.380	0.380	0.380	0.380
SR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DA	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450
SR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Il volume interno totale per "DA" è inteso come approssimativo, per "SR" volume variabile in base al numero delle molle. Tempo di apertura e chiusura inteso come approssimativo con "SR" 12 molle. Peso "DA" inteso senza molle, peso "SR" inteso con 12 molle.
- Internal "DA" volume is intended as approximate. "SR" volume is changeable according to the number of springs. Opening and closing times are intended as approximate with "SR" 12 springs. "DA" weight is intended without springs, "SR" weight is intended with 12 springs.
- "DA" ungefähr gesamt in Mill, "SR" veränderlich in Mill gemäß Federanzahl. Öffnungs- und schließzeiten verstehen sich als ungefähre mit 12 Federn. "DA" gewicht ist ohne Federn, "SR" gewicht ist mit 12 Federn.
- Approximation du volume intérieur totale pour "DA", pour "SR" variable en fonction du nombre de ressorts. Les temps d'ouverture et de fermeture sont approximatifs avec 12 ressorts. Poids "DA" entendu sans ressorts. Pour "SR" poids entendu avec 12 ressorts.

1 Nm = 9.807 Kgm	1 Kgm = 9.81 Nm
1 Nm = 8.85 Lbs	1 Lbs = 0.113 Nm
1 Kgm = 98.8 Lbs	1 Lbs = 0.0113 Kgm
1 mm = 0.03937 inch	1 inch = 25.4 mm
1 BAR = 14.5 PSI	1 PSI = 0.068 BAR
1 BAR = 0.1 MPa	1 MPa = 10 BAR

TECHNICAL FEATURES OF ALPHAIR ACTUATORS - 90° = (I)



BRITISH AND AMERICAN SIZES inch

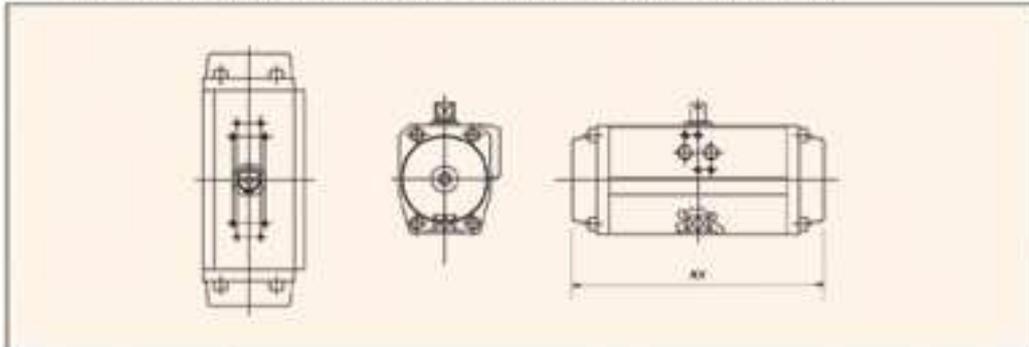
POSITIONE PORTATA STELLARE POSITION	TIPO DI ATTUATORE - ACTUATOR TYPE - ANTRIEB TYP - TYPE D'ACTIONNEUR															
	AP032	A P042	AP060	AP085	AP095	AP096	AP100	AP115	AP125	AP140	AP160	AP180	AP200	AP243	AP275	AP330
A	4.61	6.30	6.43	6.12	6.27	6.97	11.04	12.20	14.25	15.35	18.19	18.69	22.63	23.79	26.97	33.48
B	1.77	2.24	2.83	3.27	3.04	4.30	4.90	5.90	6.10	6.89	7.72	8.06	9.45	11.73	13.07	16.36
C	1.77	2.26	2.88	3.26	3.70	4.90	4.72	5.27	5.65	6.41	6.93	7.72	8.06	11.81	13.86	15.75
ANALOGHI D x E				4.13 x 0.87						5.07 x 0.87						
VERSIONI F x G	1.37 x 0.86		3.15 x 1.38						5.12 x 1.18							
L	0.89	1.26	1.30	1.50	1.67	1.93	2.46	2.60	2.74	3.14	3.48	3.96	4.33	5.31	5.93	7.48
M	1.06	1.32	1.83	1.89	2.03	2.17	2.36	2.78	2.81	3.27						8.27
Port A Port B ORBITA	1/2" GAS - NPT			1/4" GAS - NPT						1/2" GAS - NPT						
N x O	0.21 x 0.47			0.55 x 0.71			1.08 x 1.42			1.28 x 1.85			1.38 x 2.36		2.18 x 3.15	
P	0.79						1.18			1.87						
Q x I	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38	0.89x0.38
F ISO 5211	F02 F04	F0405 F04	F04 F06 F0607	F04 F06 F0607	F04 F06 F0607	F0407 F0607	F0710 F0710	F0710 F12	F1010 F12	F1010 F12	F1010 F12	F1010 F12	F1010 F12	F14 F14	F14 F16	F16 F20

POSITIONE PORTATA STELLARE POSITION	F ISO 5211												
	F02	F04	F0605	F06	F0607	F0710	F0710	F1010	F12	F14	F16	F20	
Q (N)	1.42 (M)	1.65 (M)	1.42 (M)	1.67 (M)	1.67 (M)	1.97 (M)	2.76 (M)	2.76 (M)	4.02 (M)	4.30 (M)	5.31 (M)	6.30 (M)	
M	0.98	1.16	1.18	1.36	1.38 (AP06=1.5)	1.67	2.17		AP10=2.76 AP16=3.36 AP20=3.36	2.86	3.34 (AP06=4.06)	5.12	7.67

**ATTUATORI PNEUMATICI ALPHAIR 120° - PNEUMATIC ACTUATORS ALPHAIR 120°
PNEUMATISCHE ANTRIEBE ALPHAIR 120° - ACTIONNEURS PNEUMATIQUES ALPHAIR 120°**

Y

Dimensioni tecniche a modello 90° ad eccezione della lunghezza totale "W" - Identical dimensions as 90° models except for the total length "W"
Mets dimansies nû desen der modelle 90°, außer der totale Länge "W" - Wélkes dimansies que les modèles 90°, à l'exception de la longueur totale "W"

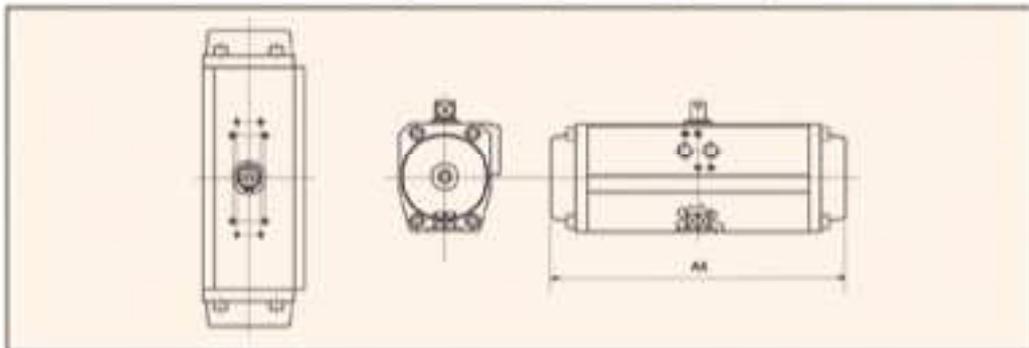


DA	TIPO DI ATTUATORE - ACTUATOR TYPE - ANTRIEB TYP - TYPE D'ACTIONNEUR																	
	AP 032		AP 042		AP 050		AP 062		AP 075		AP 085		AP 100		AP 115		AP 125	
AP	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
VOLUME - VOLUME VOLUMEN - VOLUME	l.	0.10	0.21	0.27	0.58	0.70	1.15	2.10	3.80	4.80	7.00	10.00	14.00	17.00	23.00	32.00	43.00	57.00
APERTO - OPEN OFFEN - OUVERT	Sei	0.60	0.80	0.70	0.75	0.75	0.75	1.00	1.10	1.40	1.60	2.10	2.40	3.00	3.40	4.50	5.20	6.80
CHIUSO - CLOSED GESCHLOSSEN - FERMÉ	Sei	0.60	0.80	0.70	0.85	0.85	1.00	1.10	1.30	1.80	2.00	2.60	3.00	3.60	4.00	5.00	5.80	7.60
PESO - WEIGHT GEWICHT - POIDS	Kg	0.55	1.00	1.30	1.60	2.00	2.50	3.50	4.50	6.00	7.00	9.00	10.50	13.50	15.50	19.50	23.00	29.00
F ISO 5211		F03	F05	F04	F06	F07	F07	F10	F11	F14	F16	F18	F20	F24	F26	F30	F34	F40

**ATTUATORI PNEUMATICI ALPHAIR 180° - PNEUMATIC ACTUATORS ALPHAIR 180°
PNEUMATISCHE ANTRIEBE ALPHAIR 180° - ACTIONNEURS PNEUMATIQUES ALPHAIR 180°**

X

Dimensioni tecniche a modello 90° ad eccezione della lunghezza totale "W" - Identical dimensions as 90° models except for the total length "W"
Mets dimansies nû desen der modelle 90°, außer der totale Länge "W" - Wélkes dimansies que les modèles 90°, à l'exception de la longueur totale "W"



DA	TIPO DI ATTUATORE - ACTUATOR TYPE - ANTRIEB TYP - TYPE D'ACTIONNEUR																	
	AP 032		AP 042		AP 050		AP 062		AP 075		AP 085		AP 100		AP 115		AP 125	
AX	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
VOLUME - VOLUME VOLUMEN - VOLUME	l.	0.15	0.30	0.38	0.75	1.00	1.50	2.80	4.50	6.00	7.00	9.00	10.50	13.50	15.50	19.50	23.00	29.00
APERTO - OPEN OFFEN - OUVERT	Sei	0.70	0.80	0.85	0.85	0.85	1.00	1.30	1.40	1.80	2.00	2.60	3.00	3.60	4.00	5.00	5.80	7.60
CHIUSO - CLOSED GESCHLOSSEN - FERMÉ	Sei	0.70	0.85	0.85	1.00	1.00	1.40	1.50	1.70	2.10	2.30	3.00	3.40	4.00	4.50	5.50	6.30	8.30
PESO - WEIGHT GEWICHT - POIDS	Kg	0.75	1.20	1.70	2.00	2.50	3.50	4.50	6.00	7.00	9.00	10.50	13.50	15.50	19.50	23.00	29.00	37.00
F ISO 5211		F03	F05	F04	F06	F07	F07	F10	F11	F14	F16	F18	F20	F24	F26	F30	F34	F40

TORSIONI ATTUATORI A DOPPIO EFFETTO IN Nm. - DOUBLE ACTING TORQUE RATINGS IN Nm.
TORSION DES ANTRIEBS MIT DOPPELLEFFEKT IN Nm. - TORSION D'ACTIONNEUR A' DOUBLE EFFET EN Nm.

**α = 90°
 γ = 120°
 β = 180°**

TPO - TYPE TYP - TYPE	ALIMENTAZIONE ARIA IN BAR - AIR SUPPLY IN BAR - LUFTSPERUNG IN BAR - ALIMENTATION D'AIR EN BAR									
	1	2	3	4	5	6	7	8	9	10
AP 030	-	-	-	5.0	6.3	7.8	8.8	12.0	11.4	12.6
AP 040	-	-	6.6	8.7	10.9	12.0	16.2	17.3	18.5	21.7
AP 050	3.0	6.1	9.2	12.3	15.4	18.5	21.5	24.6	27.7	30.8
AP 063	6.6	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5	55.0
AP 075	11.7	23.4	35.1	46.8	58.5	70.2	81.9	93.6	105.3	117.0
AP 085	17.6	35.2	52.8	70.4	88.0	105.6	123.2	140.8	158.4	176.0
AP 100	27.7	55.4	83.1	110.8	138.5	166.2	193.9	221.6	249.3	277.0
AP 115	45.7	91.5	137.2	183.0	228.7	274.5	320.2	366.0	411.7	457.5
AP 125	60.1	120.2	180.3	240.4	290.5	351.1	411.2	471.4	531.5	591.6
AP 140	86.7	173.4	260.1	346.8	433.5	520.2	606.9	693.6	780.3	867.0
AP 160	118.3	236.7	355.0	473.4	591.7	710.1	828.4	946.8	1065.1	1183.5
AP 180	159.7	319.4	479.1	638.8	798.5	958.2	1118.0	1277.6	1437.3	1597.0
AP 200	221.8	443.7	665.5	887.3	1109.1	1330.9	1552.7	1774.5	1996.3	2218.1
AP 240	372.5	745.0	1117.5	1490.0	1862.5	2235.0	2607.5	2980.0	3352.5	3725.0
AP 270	509.2	1018.4	1527.6	2036.8	2546.0	3055.2	3564.4	4073.6	4582.8	5092.0
AP 330	976.5	1953.0	2929.5	3906.0	4882.5	5859.0	6835.5	7812.0	8788.5	9765.0

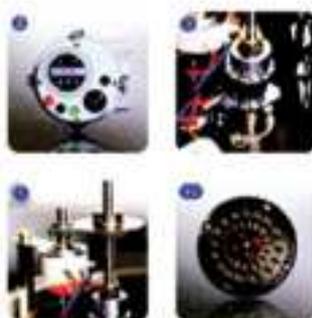
TORSIONI ATTUATORI A SEMPLICE EFFETTO IN Nm. - SINGLE ACTING TORQUE RATINGS IN Nm.
TORSION DES ANTRIEBS MIT ENFALCHEFFEKT IN Nm. - TORSION D'ACTIONNEUR A' SIMPLE EFFET EN Nm.

α = 90°

TPO - TYPE TYP - TYPE	NO. OF CYCLES TO BE RUN AT EACH ONE TORQUE RATING (APPROXIMATE VALUE)	ALIMENTAZIONE ARIA IN BAR - AIR SUPPLY IN BAR - LUFTSPERUNG IN BAR - ALIMENTATION D'AIR EN BAR													
		3		4		5		6		7		8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
AP 040	3	-	-	-	-	7.1	4.1	8.3	6.3	11.5	6.5	12.7	10.7	6.8	3.8
	4	-	-	-	-	8.1	5.1	9.2	7.2	12.4	7.4	13.6	11.6	7.7	4.7
	6	-	-	-	-	9.1	6.1	10.2	8.2	13.3	8.3	14.5	12.5	8.6	5.6
AP 060	3	5.7	6.5	8.9	6.8	12.3	9.8	15.1	12.7	18.1	15.7	21.2	18.8	9.7	5.5
	4	6.7	7.7	10.1	7.7	13.9	10.9	16.9	14.9	20.9	18.9	26.0	23.9	11.7	6.7
	6	7.7	8.7	11.1	8.7	15.5	12.5	18.5	16.5	22.5	20.5	27.6	25.6	13.7	7.7
AP 080	3	9.4	8.3	14.9	11.7	20.4	17.2	25.9	22.7	31.4	28.2	36.8	33.7	18.2	7.2
	4	10.4	9.3	16.5	13.3	22.0	18.8	28.5	25.3	34.9	31.7	40.3	37.1	19.2	8.2
	6	11.4	10.3	18.1	15.1	23.6	20.4	30.1	26.9	36.5	33.3	41.9	38.7	20.2	9.2
AP 075	3	10.6	10.8	14.2	14.4	18.0	18.1	22.7	22.8	28.3	28.4	33.8	33.9	12.6	12.6
	4	11.6	11.8	15.8	15.9	19.6	19.7	24.2	24.3	29.7	29.8	35.2	35.3	13.6	13.6
	6	12.6	12.8	17.2	17.4	21.2	21.4	25.8	25.9	31.3	31.4	36.8	36.9	14.6	14.6
AP 100	3	14.5	14.8	18.4	18.7	23.0	23.3	28.3	28.6	34.3	34.6	40.0	40.3	15.6	15.6
	4	15.5	15.8	19.9	20.2	24.5	24.8	29.5	29.8	35.2	35.5	40.6	40.9	16.6	16.6
	6	16.5	16.8	21.3	21.6	26.0	26.3	31.0	31.3	36.4	36.7	41.8	42.1	17.6	17.6
AP 115	3	16.5	16.8	22.4	22.7	27.2	27.5	33.3	33.6	39.1	39.4	45.8	46.1	17.6	17.6
	4	17.5	17.8	23.9	24.2	29.7	30.0	35.5	35.8	41.3	41.6	47.3	47.6	18.6	18.6
	6	18.5	18.8	25.3	25.6	31.1	31.4	36.9	37.2	42.7	43.0	48.7	49.0	19.6	19.6
AP 125	3	19.6	19.7	24.7	24.8	30.4	30.5	36.2	36.3	42.5	42.6	48.3	48.4	18.6	18.6
	4	20.6	20.7	26.2	26.3	31.9	32.0	37.7	37.8	44.0	44.1	49.8	49.9	19.6	19.6
	6	21.6	21.7	27.6	27.7	33.4	33.5	39.2	39.3	45.5	45.6	51.3	51.4	20.6	20.6
AP 140	3	21.6	21.7	27.6	27.7	33.4	33.5	39.2	39.3	45.5	45.6	51.3	51.4	20.6	20.6
	4	22.6	22.7	29.1	29.2	34.9	35.0	40.7	40.8	47.0	47.1	52.8	52.9	21.6	21.6
	6	23.6	23.7	30.5	30.6	36.4	36.5	42.2	42.3	48.5	48.6	54.3	54.4	22.6	22.6
AP 160	3	23.6	23.7	30.5	30.6	36.4	36.5	42.2	42.3	48.5	48.6	54.3	54.4	22.6	22.6
	4	24.6	24.7	32.0	32.1	37.9	38.0	43.7	43.8	49.9	50.0	55.8	55.9	23.6	23.6
	6	25.6	25.7	33.4	33.5	39.4	39.5	45.2	45.3	51.4	51.5	57.3	57.4	24.6	24.6
AP 180	3	25.6	25.7	33.4	33.5	39.4	39.5	45.2	45.3	51.4	51.5	57.3	57.4	24.6	24.6
	4	26.6	26.7	34.9	35.0	40.9	41.0	46.7	46.8	52.9	53.0	58.8	58.9	25.6	25.6
	6	27.6	27.7	36.3	36.4	42.4	42.5	48.2	48.3	54.4	54.5	60.3	60.4	26.6	26.6
AP 200	3	27.6	27.7	36.3	36.4	42.4	42.5	48.2	48.3	54.4	54.5	60.3	60.4	26.6	26.6
	4	28.6	28.7	37.8	37.9	43.9	44.0	49.7	49.8	55.9	56.0	61.8	61.9	27.6	27.6
	6	29.6	29.7	39.2	39.3	45.4	45.5	51.2	51.3	57.4	57.5	63.3	63.4	28.6	28.6
AP 240	3	30.6	30.7	39.2	39.3	45.4	45.5	51.2	51.3	57.4	57.5	63.3	63.4	28.6	28.6
	4	31.6	31.7	40.7	40.8	46.9	47.0	52.7	52.8	58.9	59.0	64.8	64.9	29.6	29.6
	6	32.6	32.7	42.1	42.2	48.4	48.5	54.2	54.3	60.4	60.5	66.3	66.4	30.6	30.6
AP 270	3	32.6	32.7	42.1	42.2	48.4	48.5	54.2	54.3	60.4	60.5	66.3	66.4	30.6	30.6
	4	33.6	33.7	43.6	43.7	49.9	50.0	55.7	55.8	61.9	62.0	67.8	67.9	31.6	31.6
	6	34.6	34.7	45.0	45.1	51.4	51.5	57.2	57.3	63.4	63.5	69.3	69.4	32.6	32.6
AP 330	3	34.6	34.7	45.0	45.1	51.4	51.5	57.2	57.3	63.4	63.5	69.3	69.4	32.6	32.6
	4	35.6	35.7	46.5	46.6	52.9	53.0	58.7	58.8	64.9	65.0	70.8	70.9	33.6	33.6
	6	36.6	36.7	47.9	48.0	54.4	54.5	60.2	60.3	66.4	66.5	72.3	72.4	34.6	34.6

استاندارد ایتا

ELECTRIC ACTUATOR



CONSTRUCTION

1 - MOTOR

the squirrel cage induction motor with thermostat embedded.

2 - POSITION INDICATOR

continuous type 0-100%

option: LCD display available for the model with which integral control unit is fitted.

3 - LIMIT SWITCH

easy setting, adjustable by screw driver.

4 - TORQUE SWITCH

automatically stops the motor when the torque bigger than the set value is applied to the valve shaft.

5 - POTENTIOMETER

slip mechanism is provided for easy setting of zero point adjustment by turning the potentiometer shaft with screw driver.

6 - INTEGRAL CONTROL UNIT

* non-intrusive push buttons are integrated with the actuator.

* the inner circuit is isolated from the remote command signals by the opto-isolator to withstand the surge.

* once the torque switch triggers, the actuator responds to no other command signals until the reset button pushed to protect motor and valve.

7 - MANUAL HANDLE

side mounted for easy handling.

8 - CHANGE LEVER

automatic disclutchable type

9 - TERMINAL BLOCK

9-1 basic type: located inside the actuator body.

9-2 integral control unit type: located at the integral control unit which is

double sealed with V-ring and gasket to prevent the ingress of foreign

materials when the terminal cover is removed for site hook-up

9-3 option for basic type: separate double sealed terminal block is available

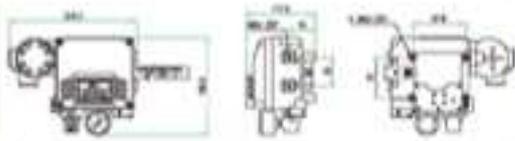
10 - SPACE HEATER

thermistor type (PTC - 3)

Electro-Pneumatic Positioner YT-1000L (Linear Type)

Ordering Symbols: YT-1000L

Model	Acting Type	Explosion Proof	Lever Type	Orifice Type	Connection Type	Ambient Temp
YT-1000L	Single Acting	ExdIBT5	10-40 mm	1/1	PT	-20°C~40°C
		ExdIBT6	10-70 mm	2/2	NPT	-20°C~+20°C
	Double Acting	ExdIBT6	60-100 mm	None		40°C~70°C
		Non-Explosion	100-150 mm			



Specifications

Item Type	Single	Double
Input Signal	4-20mA DC	
Impedance	250±15 Ohm	
Supply Pressure	1.4~7kgf/cm ² (20~100psi)	
Stroke	10~150mm	
Air Connection	PT (NPT) 1/4	
Gauge Connection	PT (NPT) 1/8	
Conduit	PF 1/2 (G1/2)	
Explosion Proof	Ex dIB T5	
	Ex dIB T6	
	Ex ia IIB T8	
Protection	IP66	
Ambient Temp	-20°C~70°C (Operating Temp.)	
	-20°C~60°C (Explosion Temp.)	
Linearity	±1% F.S.	±2% F.S.
Hysteresis	±1% F.S.	
Sensitivity	±0.2% F.S.	±0.5% F.S.
Repeatability	±0.5% F.S.	
Air Consumption	3LPM (Sup: 1.4kgf/cm ² , 20psi)	
Flow Capacity	60LPM (Sup: 1.4kgf/cm ² , 20psi)	
Material	Aluminum Diecasting	
Weight	2.7kg(5.9lb)	

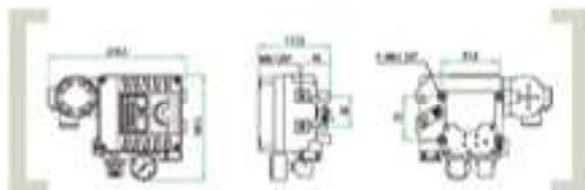
The Electro-Pneumatic Positioner YT-1000L is used for operation of pneumatic linear valve actuators by means of electrical controller or control system with an analog output signal of DC 4 to 20 mA or split Ranges.

- There is no resonance at 5~200Hz.
- The change of RA/DA Action is convenient, it is able to apply to single or double acting actuator.
- It is possible to prevent the hunting with orifice to the small size actuator.
- It is economical due to less air consumption.
- It is able to control the 1/2 split range with simple operation without replacement of parts.

Electro-Pneumatic Positioner YT-1000R (Rotary Type)

Ordering Symbols: YT-1000R

Model	Acting Type	Explosion Proof	Lever Type	Orifice Type	Connection Type	Ambient Temp	Option1	Option2
YT-1000R	Single Acting	Ex d IIB T5	MB-HLS	Ø1	PT	-20°C~40°C	NOVA/DA	None
	Double Acting	Ex d IIB T5	MB-HLS	Ø2	NPT	-20°C~120°C	Dose Over	PTM(Internal)
		Ex d IIB T5	MB-HLS	Ø3				PTM(External)
		Not Explosion	MB-HLS	Ø4				LS(Internal)
			MB-HLS				LS(External)	PTM(LS)(Internal)



Specifications

Item Type	Single	Double
Input Signal	4-20mA DC	
Impedance	250±15 Ohm	
Supply Pressure	1.4-7kg/cm ² (20~100psi)	
Stroke	0-90°	
Air Connection	PT (NPT) 1/4	
Gauge Connection	PT (NPT) 1/8	
Conduit	PF 1/2 (G1/2)	
Explosion Proof	Ex d IIB T5	
	Ex d IIC T5	
	Ex ia IIB T5	
Protection	IP65	
Ambient Temp	-20°C~70°C (Operating Temp.)	
	-20°C~60°C (Explosion Temp.)	
Linearity	±1% F.S.	±2% F.S.
Hysteresis	±1% F.S.	
Sensitivity	±0.2% F.S.	±0.5% F.S.
Repeatability	±0.5% F.S.	
Air Consumption	3LPM(Sup=1.4kg/cm ² , 20psi)	
Flow Capacity	80LPM(Sup=1.4kg/cm ² , 20psi)	
Material	Aluminum Diecasting	
Weight	2.8kg(6.2lb)	

The Electro-Pneumatic Positioner YT-1000R is used for operation of pneumatic rotary valve actuators by means of electrical controller or control systems with an analog output signal of DC 4 to 20mA or split ranges.

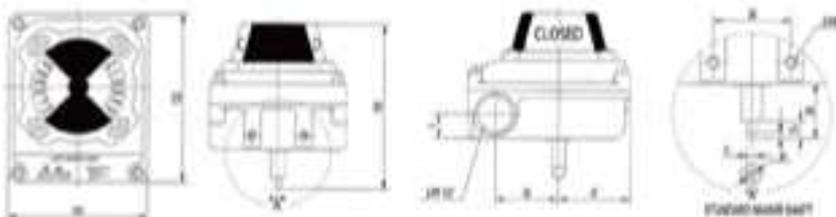
- There is no resonance at 5-200Hz.
- The change of RA/DA Acting is convenient, it is able to apply to single or double acting actuator.
- It is possible to prevent the hunting with orifice to the small size actuator.
- It is economical due to less air consumption.
- It is able to control the 1/2 split range with simple operation without replacement of parts.

LIMIT SWITCH



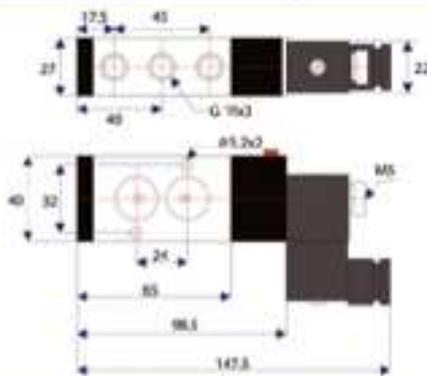
- Visual position indicator
- Quick-set cam
- Multipoint terminal strip
- Dual wire potting
- Captive cover bolts
- Easy mounting bracket (ISO3211)

Model	ALS10
Ambient Temperature	-20 ~ 85°C
Cable Entry	2 x 1/2" (PT) (NPT) (M20 x 1.5) (P)
Terminal Strip	8 Points
Position Indicator	0 ~ 90°C (Red for Close / Yellow for Open)
Switch Type	2 SPDT Mechanical switches (Proximity sensors)
Painting	Polyester Powder Coating with Black Color
Bracket	Plastic / Steel
Certificate	IP67

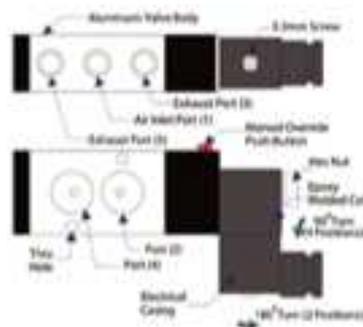


NAMUR SOLENOID

Dimensions (in mm) (Figure 1)



Description (Figure 2)



SPECIFICATIONS

Flow Media	Air (Filtered 40 Micron)
Movement	Internal Guiding Piston
Port & Position	Five ports, two pistons
Port Dimension	$G\frac{1}{2}$ for inlet and exhaust
Lubrication	not necessary
Operating Pressure	(1.5-8.0) kgf/cm ² (22-118) Psi
Maximum Pressure	10.5 kgf/cm ² 150 Psi
Operating Temperature	10°-50°C (32°-122°F)
Voltage Deviation	±10%
Power Consumption	AC (1.5 VA), DC (3W)
Anti-static Rating	Class F
Protection Class	Class IP65 (DIN40053)
Certification	CE
Maximum Frequency	3 per second
Minimum Discharge Time	0.05 second
Weight	335g

Model AllP65

NAMUR Version Solenoid Valve

- Weatherproof
- Epoxy molded coil with mounted fixed connector
- Coil with protection class IP65 and has been CE registered
- Electrical casing with cable gland

Available Coil Ratings:

DC 12 V

DC 24 V

AC 24 V 50/60 HZ

AC 110 V 50/60 HZ

AC 220 V 50/60 HZ

What is included?

Aluminum valve body, Epoxy molded coil, Electrical Casing

Optional Configuration

- Choice of DC or AC voltage ratings
- Epoxy molded coil can be rotated 90° for 4 different positions
- Electrical Casing can be rotated 180° for 2 different positions

Optional Accessories that are NOT included

- 2 O-rings to be fitted at Port 2 and 4
- 2 35mm hex bolt for attaching the solenoid valve to the actuator
- Muffer for port 3 and 5 for noise reduction
- Electric cable and End plug

Installing the Electrical Cable

Before the solenoid valve can be put into service, electrical cable with end plug must be connected to the electrical casing.

- (1) Remove the electrical casing from the rest of the valve. This is easily done by loosening the 3.3mm screw (see figure 2). Completely remove the 3.3mm screw from the casing
- (2) After the casing is detached a set of 3 narrow slots are revealed on the casing insert. Slots are identified by electrical symbols for "+" and ground. The metal base for attaching copper wire is on the other side of the insert.
- (3) Pop out the casing insert with a small screw driver. The metal base is revealed.
- (4) Attach copper wires accordingly.
- (5) Replace the casing insert and attach the electrical casing back to the rest of valve body

Air Filter Regulator YT-200, YT-205

Ordering Symbols: YT-200 / YT-205

Model	Adjustable Range	Connection Type	Gauge	Ambient Temp
YT-200	0-4.2kgf/cm ²	PT1/4	NONE	-20-70°C
YT-205	0-8.4kgf/cm ² 0-2.1kgf/cm ²	NPT1/4	4Kg/cm ² 10Kg/cm ²	-20-120°C



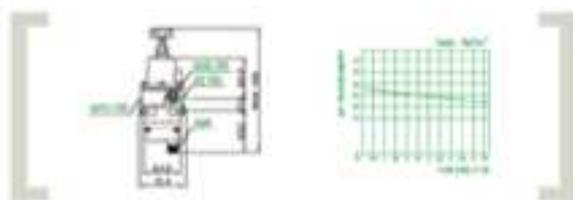
YT-200



YT-205

Specifications

Item Type	YT-200		YT-205
	A	B	C
Max. Supply Pressure	15kgf/cm ² (231psi)		
Max. Output Pressure	4.2kgf/cm ² (57psi)	8.4kgf/cm ² (126psi)	2.1kgf/cm ²
Air Connection	PT/NPT1/4		
Gauge Connection	PT/NPT1/4		
Ambient Temp	-20-70°C(-4-158°F)		
Min. Filtering Size	5micron		
Material	Aluminum Diecasting	Stainless Steel 316	
Weight	0.8kg(1.7lb)	1.4kg(3.0lb)	



Air filter regulator YT-200, YT-205 reduces the supply pressure of plant's main air line suitably and supplies valve positioner or control device.

- maintains the stable outlet pressure regardless of the fluctuation of inputting pressure or flow rate.
- It is easy to install and maintain due to light weight and small size.
- To filter minuteness particle is available with 5 micron filter.
- There is relief function which discharges to atmosphere if the outlet pressure is higher than setting pressure.
- YT-205 has relief function which discharges to atmosphere if the outlet pressure is higher than setting pressure.



واردات و پخش کلیه اتصالات فشارقوی کلاس ۲۰۰۰ و ۳۰۰۰ و ۴۰۰۰ دنده ای و ساکت ولد در
 آلیاژهای ... ASTM A105 A182 A350





انواع واشرهای کربن استیل و استنلس استیل ، نفلون ، لاستیکی ، کلینگریت ، منجیت دار و ... در
 سایزها و کلاسهای مختلف ، (تولید بر اساس نقشه و مشخصات مورد نظر)







انواع لوله و اتصالات پلی اتیلن تک جداره و دو جداره و کاروگیت از سایز ۱۶ الی ۴۰۰ میلیمتر در فشارهای ۱۶، ۱۰، ۶، ۴ اتمسفر در مارک نکاب اتصال
 انواع اتصالات پلی پروپیلن از سایز ۱۶ الی ۹۰ میلیمتر
 انواع اتصالات پلیکا از سایز ۱۶ الی ۴۰۰ میلیمتر در فشارهای ۱۰، ۶، ۴ بار





انواع لوله‌های بدون درز و درزدار کربن استیل و استنلس استیل در رده‌های (XXS, XS, 120, 80, ...) در آلیاژهای (A53, A106, A333, A694, ...) انواع ورق ، تیر آهن ، نبشی ، میلگرد ، پروفیل در آلیاژهای کربن استیل ، استنلس استیل ، آلومینیوم و ...



Figures based on austenitic steel

Nominal Pipe Size (Inches)	OD mm	10	20	30	STD	40	60	X5	80	100	120	140	160	XXS	5s	10s	40s	80s	Weight (kg/m ²)	
1/8	1.31				1.71 0.27	1.75 0.37		2.41 0.47	2.41 0.47								1.24 0.28	1.71 0.36	2.41 0.48	0.0041
1/4	13.75				2.24 0.63	2.24 0.63		3.02 0.80	3.02 0.80								1.80 0.51	2.24 0.64	3.02 0.82	0.0051
3/8	17.15				2.31 0.84	2.31 0.84		3.20 1.10	3.20 1.10								1.85 0.64	2.31 0.86	3.20 1.12	0.0052
1/2	21.30				2.77 1.27	2.77 1.27		3.37 1.62	3.37 1.62				4.78 1.95	7.47 2.85	1.65 0.62	2.11 1.01	2.77 1.26	3.75 1.65	0.0064	
3/4	26.70				2.87 1.69	2.87 1.69		3.91 2.20	3.91 2.20				5.56 2.90	7.82 3.64	1.65 1.64	2.11 1.31	2.87 1.31	3.91 2.34	0.0067	
1	33.40				3.38 2.50	3.38 2.50		4.55 3.21	4.55 3.21				6.35 2.24	9.09 5.65	1.85 1.23	2.77 2.13	3.38 2.50	4.55 3.20	0.0111	
1 1/4	42.20				3.50 3.20	3.50 3.20		4.85 4.47	4.85 4.47				6.35 5.61	9.70 7.77	1.85 1.63	2.77 2.70	3.50 3.40	4.85 4.38	0.0118	
1 1/2	48.30				3.60 4.05	3.60 4.05		5.08 5.41	5.08 5.41				7.14 7.25	10.10 9.36	1.85 1.85	2.77 3.17	3.60 4.12	5.08 5.31	0.0122	
2	60.30				3.91 3.44	3.91 3.44		5.54 5.45	5.54 5.45				8.74 11.11	11.87 13.44	1.85 2.48	2.77 4.01	3.91 5.34	5.54 7.63	0.0138	
2 1/2	73.00				5.16 0.63	5.16 0.63		7.01 11.41	7.01 11.41				9.83 14.92	14.82 22.97	2.11 3.26	3.90 8.81	5.16 8.81	7.01 11.84	0.0153	
3	88.90				5.49 11.29	5.49 11.29		7.62 15.27	7.62 15.27				11.13 21.35	15.24 27.68	2.11 4.60	3.90 8.59	5.49 11.52	7.62 15.19	0.0178	
3 1/2	101.60				5.74 13.37	5.74 13.37		8.89 19.63	8.89 19.63						2.11 3.29	3.90 7.65	5.74 13.84	8.89 19.61	0.0191	
4	114.30				6.07 16.67	6.07 16.67		9.56 21.72	9.56 21.72	11.13 26.12			13.49 31.54	17.12 41.63	2.11 5.96	3.90 8.52	6.07 16.49	9.56 22.72	0.0213	
5	141.30				6.55 21.77	6.55 21.77		9.51 30.87	9.51 30.87	12.79 40.28			16.88 48.11	19.88 57.43	2.77 9.57	3.40 11.82	6.55 22.28	9.51 31.89	0.0268	
6	168.30				7.11 28.28	7.11 28.28		10.97 42.56	10.97 42.56	16.97 54.25			18.26 57.36	21.98 79.22	2.77 11.58	3.40 14.13	7.11 26.83	10.97 43.42	0.028	
8	219.10		6.35 33.31	7.64 36.81	8.18 42.55	8.18 42.55	10.31 52.08	12.70 64.84	12.70 64.84	15.09 75.92	18.26 90.44	20.82 100.30	23.07 111.27	22.23 107.92	3.77 15.98	3.70 29.27	8.18 43.28	12.70 65.59	0.040	
10	273.10		6.35 41.77	7.64 51.03	8.27 68.21	8.27 68.21	12.70 81.55	12.70 81.55	15.09 96.01	18.26 114.75	21.44 132.06	25.40 155.15	28.09 172.31	25.40 155.15	3.40 23.38	4.19 26.34	8.27 51.52	12.70 83.18	0.054	
12	325.10		6.35 48.72	8.38 65.20	9.53 75.95	9.53 75.95	14.27 98.73	12.70 128.56	17.48 137.88	21.44 159.31	25.40 186.91	28.58 208.14	33.32 238.76	25.40 186.91	3.96 31.89	4.37 36.73	9.53 75.52	12.70 99.43	0.064	
14	361.60	6.35 34.62	7.64 57.96	8.53 81.33	9.53 81.33	11.13 84.83	12.70 126.71	15.09 187.49	15.09 187.49	18.26 224.65	21.44 252.58	25.40 281.70	31.78 359.25	25.40 359.25	3.96 35.26	4.78 42.14	11.13 99.43	12.70 126.71	0.078	
16	406.40	6.35 62.84	7.64 77.83	8.53 93.27	9.53 93.27	12.70 103.20	15.09 153.20	17.48 203.33	17.48 203.33	21.44 245.56	25.40 296.64	28.58 333.19	36.53 408.48	28.58 408.48	4.19 43.41	4.78 48.28	12.70 126.71	15.09 153.20	0.090	
18	457.00	6.35 70.97	7.64 87.75	9.53 120.28	11.13 120.28	12.70 150.36	15.09 180.74	17.48 224.65	17.48 224.65	21.44 253.04	25.40 288.25	28.58 325.37	38.67 428.25	28.58 428.25	4.19 47.77	4.78 56.48	12.70 126.71	15.09 153.20	0.108	
20	508.00	6.35 79.20	8.38 111.18	12.70 126.71	9.53 126.71	15.09 180.74	20.82 274.83	12.70 311.17	20.82 311.17	25.40 341.49	31.78 411.49	36.53 408.48	44.45 498.11	36.53 498.11	4.78 59.56	5.34 70.00	12.70 126.71	15.09 153.20	0.128	
22	559.00	6.35 87.54	8.38 126.13	12.70 171.31	9.53 171.31	15.09 224.25	23.23 274.25	12.70 372.83	23.23 372.83	28.58 451.62	31.78 517.02	36.53 600.82	47.63 672.02	36.53 672.02	4.78 66.57	5.34 77.88	12.70 126.71	15.09 153.20	0.152	
24	610.00	6.35 94.93	8.38 141.13	14.27 208.64	9.53 208.64	17.48 255.41	24.61 335.28	12.70 442.86	24.61 442.86	31.78 547.71	36.53 640.01	44.45 728.19	50.01 698.23	44.45 698.23	4.78 64.16	5.34 86.17	12.70 126.71	15.09 153.20	0.172	
26	661.00	7.64 127.36	12.70 202.72		9.53 152.87		12.70 282.72													0.198
28	711.00	7.64 137.32	12.70 218.69	15.09 275.21	9.53 275.21		12.70 318.69													0.228
30	761.00	7.64 147.28	12.70 234.67	15.09 292.18	9.53 292.18		12.70 354.67								6.35 129.72	7.64 136.36				0.258
32	811.00	7.64 157.24	12.70 250.64	15.09 312.15	9.53 312.15		12.70 390.64													0.288
34	861.00	7.64 167.20	12.70 266.62	15.09 332.12	9.53 332.12		12.70 426.62													0.318
36	911.00	7.64 177.16	12.70 282.60	15.09 352.09	9.53 352.09		12.70 462.60													0.348
38	961.00				9.53 372.07		12.70 502.07													0.378
40	1011.00				9.53 392.05		12.70 542.05													0.408
42	1061.00				9.53 412.03		12.70 582.03													0.438
44	1111.00				9.53 432.01		12.70 622.01													0.468
46	1161.00				9.53 452.00		12.70 662.00													0.498
48	1211.00				9.53 472.00		12.70 702.00													0.528



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