

# DIMENSIONAL TOLERANCES



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## ANSI FLANGES

NOMINAL SIZE	ALL TYPES OF FLANGES								WELD NECK FLANGES	LONG NECKS	SLIP-ON & LAP JOINT FLANGES	THREADED FLANGES	
	OUTSIDE DIAMETER	DIAMETER OF CONTACT FACE	DIAMETER OF BOLT CIRCLE	BOLT HOLE SPACING	BOLT CIRCLE ECCENTRICITY WITH BORE	FLANGE THICKNESS	OVERALL HEIGHT	OUTSIDE DIAMETER AT POINT OF WELD	HUB THICKNESS AT POINT OF WELD	INSIDE DIAMETER	OUTSIDE DIAMETER OF NECK	INSIDE DIAMETER	DIAM. OF COUNTER-BORE
1/2 - 5	±1/16" FOR FLANGES WITH O.D. OF 24" OR LESS	±1/32" FOR 1/16" HEIGHT RAISED FACES ±1/64" FOR 1/4" HGT. RAISED FACES, TONGUE, GROOVE, MALE & FEMALE FACES	±1/16" FOR SPECIAL DRILLING	±1/32" FOR SPECIAL DRILLING	1/32" MAX.	+1/8"	±1/16"	+3/32"	NOT LESS THAN 87 1/2% OF NOMINAL THICKNESS OF PIPE TO WHICH FLANGE IS TO BE WELDED	±1/32"	+3/32"	+1/32"	+1/32"
6 - 10						-0"		-1/32"			-0"		
12 - 18						+1/8"		+5/32"			+1/16"	+1/16"	
20 - 24						+3/16"		+5/32"			+1/16"	+1/16"	

## FORGED THREADED & SOCKET WELD FITTINGS

NOMINAL SIZE	ALL FITTINGS						ELLS, TEES, & LATERALS	COUPLINGS	HALF-COUPLINGS
	INSIDE DIAMETER OF SOCKET	SOCKET WALL THICKNESS	BORE DIAMETER OF FITTING	FITTING WALL THICKNESS	CONCENTRICITY OF BORES	COINCIDENCE OF AXES	CENTER TO BOTTOM OF SOCKET	BOTTOM TO BOTTOM OF SOCKETS	BOTTOM OF SOCKET TO OPPOSITE FACE
1/8 - 1/4	+ .010" - .000"	NOT LESS THAN 125% OF NOMINAL PIPE THICKNESS NOR LESS THAN 1/8"	± .015"	NOT LESS THAN NOMINAL PIPE WALL THICKNESS	SOCKET AND FITTING BORES WITHIN ± .030	MAXIMUM VARIATION IN ALIGNMENT OF SOCKET AND FITTING BORES 1/16" IN 12"	± 0.03"	± 0.06"	± 0.03"
3/8 - 3/4	+ .010" - .000"		± .015"				± 0.06"	± 0.12"	± 0.06"
1 - 2	+ .010" - .000"		± .015"				± 0.08"	± 0.16"	± 0.08"
2 1/2 - 3	+ .015" - .000"		± .030"				± 0.10"	± 0.20"	± 0.10"

## BUTT WELD FITTINGS

NOMINAL SIZE	ALL FITTINGS				90°/45° ELLS TEES	REDUCERS, LAP JOINT STUB ENDS	180° RETURNS			CAPS	LAP JOINT STUB ENDS			
	OUTSIDE DIAM. AT BEVEL		INSIDE DIAMETER AT END	WALL THICKNESS	CENTER-TO-END	OVERALL LENGTH	CENTER-TO-CENTER	BACK TO FACE	ALIGNMENT OF ENDS	OVERALL LENGTH	OUTSIDE DIAMETER OF LAP	THICKNESS OF LAP	FILLET RADIUS OF LAP	OUTSIDE DIAMETER OF BARREL
	SCHEDULES 5S & 10S & TUBE O.D.	SCHEDULES HEAVIER THAN SCH. 10S												
1/2 - 1 1/2	+ 1/64 - 1/32	+ 1/16 - 1/32	± 1/32	NOT LESS THAN 87 1/2% OF NOMINAL THICKNESS	± 1/16	± 1/16	± 1/4	± 1/4	± 1/32	± 1/8	+ 0 - 1/32	+ 1/16 - 0	+ 0 - 1/32	TOLERANCES ASSURE SLIP FIT INTO LAP JOINT FLANGE OF MINIMUM PERMISSIBLE INSIDE DIAMETER
2 - 2 1/2	± 1/32	+ 1/16 - 1/32	± 1/32		± 1/16	± 1/16	± 1/4	± 1/4	± 1/32	± 1/8	+ 0 - 1/32	+ 1/16 - 0	+ 0 - 1/32	
3 - 3 1/2	± 1/32	± 1/16	± 1/16		± 1/16	± 1/16	± 1/4	± 1/4	± 1/32	± 1/8	+ 0 - 1/32	+ 1/16 - 0	+ 0 - 1/32	
4	± 1/32	± 1/16	± 1/16		± 1/16	± 1/16	± 1/4	± 1/4	± 1/32	± 1/8	+ 0 - 1/32	+ 1/16 - 0	+ 0 - 1/16	
5 - 8	+ 1/16 - 1/32	+ 3/32 - 1/32	± 1/16		± 1/16	± 1/16	± 1/4	± 1/4	± 1/32	± 1/4	+ 0 - 1/32	+ 1/16 - 0	+ 0 - 1/16	
10 - 12	+ 3/32 - 1/32	+ 5/32 - 1/8	± 1/8		± 3/32	± 3/32	± 3/8	± 1/4	± 1/16	± 1/4	+ 0 - 1/16	+ 1/16 - 0	+ 0 - 1/16	
14 - 18	+ 3/32 - 1/32	+ 5/32 - 1/8	± 1/8		± 3/32	± 3/32	± 3/8	± 1/4	± 1/16	± 1/4	+ 0 - 1/16	+ 1/16 - 0	+ 0 - 1/16	
20 - 24	+ 1/8 - 1/32	+ 1/4 - 3/16	± 3/16		± 3/32	± 3/32	± 3/8	± 1/4	± 1/16	± 1/4	+ 0 - 1/16	+ 1/16 - 0	+ 0 - 1/16	