

The dimensions of elbows for 125 lb. cast iron flange fittings are shown in Table 6.

Testing Pipe

Pressure tests of pipe are commonly made in order to show the presence of flaws or other defects in the weld or body of the pipe. Wrought pipe,

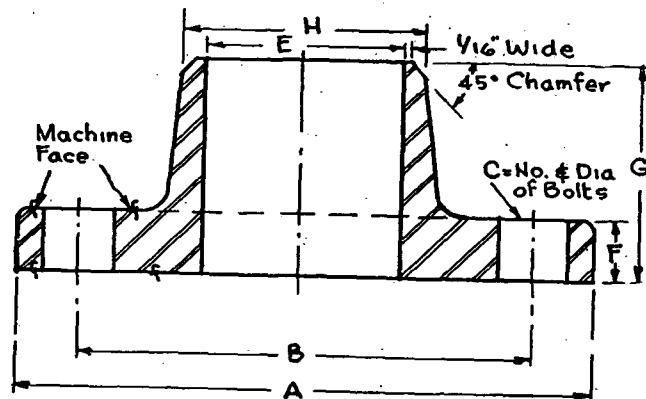


TABLE 7. DIMENSIONS OF WELDING NECK FLANGES FOR STANDARD PIPE^b

NOMINAL PIPE SIZE	A	DRILLING		E STANDARD PIPE	F	G	H
		B	C				
2	6	4 3/4	4-5/8	2 1/16	5/8	2 1/2	2 1/2
2 1/2	7	5 1/2	4-5/8	2 15/32	1 1/16	2 3/4	3
3	7 1/2	6	4-5/8	3 1/16	3/4	2 3/4	3 5/8
4	9	7 1/2	8-5/8	4 1/32	15/16	3	4 5/8
5	10	8 1/2	8-3/4	5 1/16	15/16	3 1/2	5 1/16
6	11	9 1/2	8-3/4	6 1/16	1	3 1/2	6 3/4
8	13 1/2	11 3/4	8-3/4	8	1 1/8	4	8 3/4
10	16	14 1/4	12-7/8	10	1 5/16	4	10 7/8
12	19	17	12-7/8	12	1 3/4	4 1/2	12 7/8
14 O.D.	21	18 3/4	12-1	a	1 3/8	5	14 3/16
16 O.D.	23 1/2	21 1/4	16-1	a	1 7/16	5	16 1/4
18 O.D.	25	22 3/4	16-1 1/8	a	1 9/16	5 1/2	18 1/4

All dimensions given in inches.

^aOrders or inquiries should specify diameter of bore "E" required.

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as distinguished from seamless tubing, is either butt- or lap-welded; sizes up to and including 1 1/4 in. being made by the former, and those 1 1/2 in. and larger by the latter process. Lap-welded pipe, 1 1/2 in. diameter, may safely be tested to 2,500 lb. per square inch cold hydraulic pressure, while 12 in. diameter pipe should not be tested to more than 300 lb. per square inch. The makers vary the test pressure in accordance with the diameter so as to produce approximately the same fiber stress in each size of pipe.

CHAPTER 19

PUMPS AND TRAPS

Boiler Feed Pumps; Automatic Pumps and Receivers; Centrifugal Pumps; Vacuum Heating Pumps.

THE pumps used in connection with heating and ventilating installations may be classified as follows:

1. Boiler Feed Pumps.
2. Condensation Return Pumps.
3. Return Line Vacuum Heating Pumps.
4. Forced Circulation Hot Water Heating Pumps.
5. Circulating Pumps for Water, Brine, etc.
6. Refrigeration Pumps and Compressors.

BOILER FEED PUMPS

Boiler feed pumps may be (1) direct acting steam-driven reciprocating pumps; (2) power driven reciprocating pumps; (3) centrifugal pumps; (4) screw or other similar type pumps.

Capacities

The capacity of a boiler feed pump should be based on 34.5 lb. of water per hour per maximum boiler horsepower served, with a slippage allowance of 10 per cent in the water cylinders and a factor of safety allowance of two for intermittently operating pumps and one and one-half for continuously operating pumps, to provide for unusual conditions, such as low water in boilers, drop in steam pressure or excessive loads.

Piston Speeds and Efficiencies

For reciprocating boiler feed pumps the speed should not exceed 10 times the square root of the number of inches in the length of stroke of the water pistons.

Direct-acting reciprocating steam-driven or power-driven boiler feed pumps are generally more efficient for smaller installations, especially with widely fluctuating loads as efficiencies of centrifugal boiler feed type drop off very rapidly for the smaller sizes of pumps and for low-load conditions. For this reason centrifugal pumps are not usually employed for installations of less than 1,000 boiler horsepower.

The capacities and pressures at which screw pumps will operate is almost infinite. They may be used with good economy for small capacities. Efficiencies range from 60 to 70 per cent.

The volumetric displacement rate of water pistons should not be less than twice the maximum rate of flow of the condensate to be handled.