

Waste and Vent Systems

All open type sterilizers, *i.e.*, those in which the articles to be sterilized are more or less immersed in water which is in turn heated by the steam must have waste connections similar to plumbing fixtures. With the exception of the bedpan sterilizer in which the trap is part of the fixture, traps on these waste lines must be provided in the plumbing work, the sterilizer equipment merely including a valve on the waste line and pipe to floor or wall, as may be required.

Waste connections are seldom more than $\frac{3}{4}$ in. at the fixture, however, as the usual sanitary fittings for plumbing work are not standard in sizes less than $1\frac{1}{4}$ in. it is customary to provide traps and connections of that size from the wall or floor line, as the case may be, to the waste piping of the plumbing system.

Waste connections from bedpan sterilizers are uniformly made 3 in. and trap is part of fixture, connected to floor or wall as required. This sterilizer waste should be connected up to the drainage system similar to a slop sink or water closet.

Vent connections are also necessary on such sterilizers to avoid the nuisance of steam and vapor in large quantities escaping into the room when a sterilization is finished and the sterilizer opened. Such connections usually take the form of a combined overflow and vent, connected into the back side of the chamber near top. This combined connection is usually carried as one horizontal pipe to a suitable location, as close to the sterilizer as possible, where the vent is taken upward as directly as possible to atmosphere and the overflow and condensation waste taken from the bottom through a suitable trap and connected to the waste lines of the plumbing system or connected to the waste from the body of the sterilizer between trap and sterilizer.

The usual sizes of combination overflow and vent connections to open sterilizers are as follows: utensil sterilizers $1\frac{1}{4}$ in. up to 16 in. x 15 in. x 20 in. size and 2 in. for larger sizes; instrument sterilizers $1\frac{1}{4}$ in. for all sizes; milk pasteurizers and sterilizers $1\frac{1}{4}$ in. up to 72 bottle size and 2 in. for larger sizes and for bedpan sterilizers 2 in. Vents to atmosphere are same size as combination overflow and vent. The overflow connection to plumbing waste pipes from the combination vent and overflow is $1\frac{1}{4}$ in. in all sizes of all sterilizers and is generally connected to the waste from sterilizer body between trap and sterilizer.

Where practicable it is well to run the vents from sterilizer equipment through the roof separate from other plumbing vent lines and to make them extra heavy galvanized pipe for the large amount of condensation in them often destroys standard weight piping in the smaller sizes rather quickly. A 2 in. vent line will carry a half dozen sterilizers but in climates where freezing weather often occurs it is necessary to carry them at least 4 in. in size through the roof to avoid frosting over.

Care must be taken to see that the bases or heels of vent lines from sterilizer equipment are drained through a suitable trap into the waste lines of the plumbing system to take care of condensation in such lines which might otherwise cause a nuisance by draining back into sterilizer at the bottom of the line.

Closed, or pressure type, sterilizers, both jacketed and otherwise, re-

quire a vent to atmosphere connected to the chamber and provided with a valve. The relief valve, with which every closed sterilizer must be provided, is usually connected to this vent line on the line side of the control valve. These vents are made, generally $\frac{3}{4}$ in. from each sterilizer, but for reasons heretofore explained the vent lines, after wall or floor is reached, are made $1\frac{1}{4}$ in.; the bases or heels of vent pipes must be dripped into the plumbing system and the vents should be carried through the roof separately and often 4 in. or larger pipe is required through the roof for same reasons as in case of open sterilizers.

Sterilizer Data

Sterilizer data is given in tabular form and while this is not standard for all manufacturers it is intended to give a general idea of the various requirements. The dimensions of sterilizers of various manufacturers vary and likewise the capacity in cubic inches. The pounds of steam per sterilization would not be materially different for different makes of sterilizers of approximately the same size. The watts required in case of electric sterilizers would not be materially different for the combined requirements of an installation as a whole, but the electrical requirements of individual sterilizers of same kind and size vary considerably with the different manufacturers. For instance a 12 x 20 in. dressing sterilizer of one manufacturer is rated for 3500 watts and the same sterilizer of another at 6000 watts. Obviously the one at 6000 watts would heat up more quickly and more work could be done with it. If the 3500 watt sterilizer was connected on a line designed for 6000 watts no harm would result but some useless copper would have been used but if the converse were permitted disaster would result. So in layouts for electric sterilizers the actual requirements of the sterilizer to be used must be investigated.

Frequently, both open and closed sterilizers of all kinds, are provided with *condenser exhausts* which consist of a special ejector, manipulated by a valve, throwing a stream of cold water into the ejector.

Cylindrical Dressing Sterilizers

SIZES IN IN.	INTERNAL CAPACITY CU. IN.	POUNDS OF STEAM PER STERILIZATION	WATTS REQUIRED IN WIRING
10" x 20"	1571	10	4000
12" x 20"	2260	12	6000
14" x 22"	3388	14	6000
16" x 24"	4824	18	6000
16" x 36"	7236	24	6000
16" x 48"	9648	31	12000
16" x 60"	12060	39	12000
20" x 28"	8792	30	12000
20" x 36"	11304	37	12000
20" x 48"	15072	47	12000

Rectangular Dressing Sterilizers

SIZES IN IN.	INTERNAL CAPACITY CU. IN.	POUNDS OF STEAM PER STERILIZATION	WATTS REQUIRED IN WIRING
24" x 24" x 36"	20736	Approx. 55	Not standard
24" x 24" x 48"	27648	Approx. 70	Not standard
24" x 24" x 60"	34560	Approx. 88	Not standard