p Selection Guide

, Spirax Sarco recognizes that no two steam trapping trap applications with inherently different characteristics, s difficult. Waterhammer, superheat, corrosive conden- ully affect performance of a steam trap. With over 80 ommitted to helping it's customers design, operate and t!

	2nd Choice						
on	Inverted Bucket	Float & Thermostatic	Thermo-Dynamic®	Balanced Pressure	Bimetallic	Liquid Expansion	Inverted Bucket
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The Formation of Flash Steam

When hot condensate under pressure is released to a lower pressure, its temperature must very quickly drop to the boiling point for the lower pressure as shown in the steam tables. The surplus heat is utilized by the condensate as latent heat causing some of it to re-evaporate into steam. Commonly referred to as "flash steam", it is in fact perfectly good useable steam even at low pressure.

Table 12: Percent Flash

Steam Pressure psig	Atmosphere 0	Flash Tank Pressure 2	5	10	15	20	30	40	60	80	100
5	1.7	1.0	0								
10	2.9	2.2	1.4	0							
15	4.0	3.2	2.4	1.1	0						
20	4.9	4.2	3.4	2.1	1.1	0					
30	6.5	5.8	5.0	3.8	2.6	1.7	0				
40	7.8	7.1	6.4	5.1	4.0	3.1	1.3	0			
60	10.0	9.3	8.6	7.3	6.3	5.4	3.6	2.2	0		
80	11.7	11.1	10.3	9.0	8.1	7.1	5.5	4.0	1.9	0	
100	13.3	12.6	11.8	10.6	9.7	8.8	7.0	5.7	3.5	1.7	0
125	14.8	14.2	13.4	12.2	11.3	10.3	8.6	7.4	5.2	3.4	1.8
160	16.8	16.2	15.4	14.1	13.2	12.4	10.6	9.5	7.4	5.6	4.0
200	18.6	18.0	17.3	16.1	15.2	14.3	12.8	11.5	9.3	7.5	5.9
250	20.6	20.0	19.3	18.1	17.2	16.3	14.7	13.6	11.2	9.8	8.2
300	22.7	21.8	21.1	19.9	19.0	18.2	16.7	15.4	13.4	11.8	10.1
350	24.0	23.3	22.6	21.6	20.5	19.8	18.3	17.2	15.1	13.5	11.9
400	25.3	24.7	24.0	22.9	22.0	21.1	19.7	18.5	16.5	15.0	13.4

Percent flash for various initial steam pressures and flash tank pressures.

Proportion Of Flash Steam Released

The amount of flash steam which each pound of condensate will release may be calculated readily. Subtracting the sensible heat of the condensate at the lower pressure from that of the condensate passing through the traps will give the amount of heat available from each pound to provide Latent Heat of Vaporization. Dividing this amount by the actual Latent Heat per pound at the Lower Pressure will give the proportion of the condensate which will flash off. Multiplying by the total quantity of condensate being considered gives the weight of Low Pressure Steam available.

Thus, if for example, 2000 lb/h of condensate from a source

To simplify this procedure we can use Table 12 to read off the percentage of flash steam produced by this pressure drop. An example would be if we had 100 PSIG saturated steam/condensate being discharged from a steam trap to an atmospheric, gravity flow condensate return system (0 psig), the flash percentage of the condensate would be 13.3% of the volume discharged.

Conversely, if we had 15 psig saturated steam discharging to the same (0 psig) atmospheric gravity flow return system, the percentage of flash steam would be only 4% by volume. These examples clearly show that the

depends upon the difference between the pressures upstream and downstream of the trap and the corresponding temperatures of those pressures in saturated steam. The higher the initial pressure and the lower the flash recovery pressure, the greater the quantity of flash steam produced.

It must be noted here that the chart is based upon saturated steam pressure/temperature conditions at the trap inlet, and that the condensate is discharged as rapidly as it appears at the trap. Steam traps that subcool the condensate, such as balanced pressure thermostatic and bimetallic traps, hold condensate