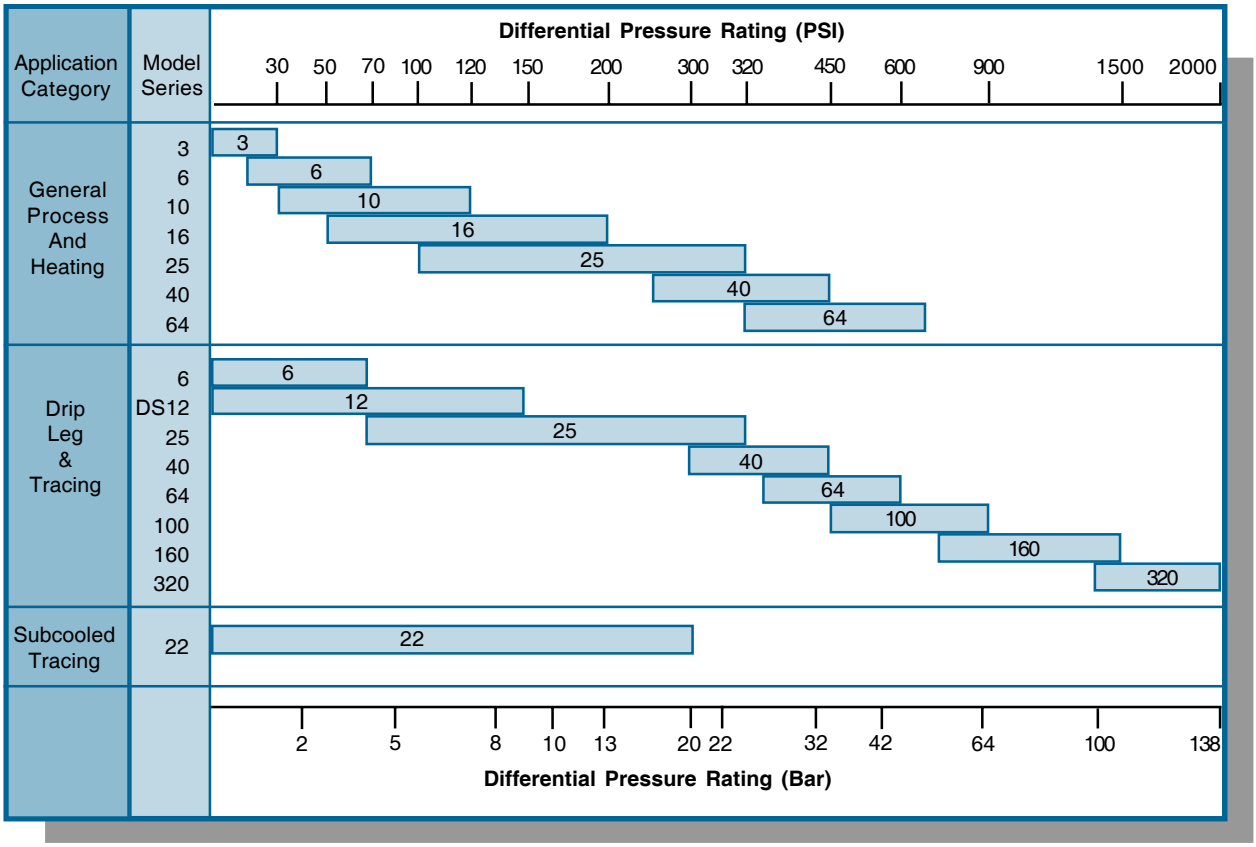
Considerations in the Sizing & Selection of Steam Traps

- **Safety Factors —** typically safety factors are applied to the sizing and selection of steam traps and are based on service pressure, application and trap technology. They are also based on standard industry practice and applied as a multiplier when calculating load. For example, with a Jacketed Kettle rated with a condensate load of 1000 pph, with a Delta Element trap, select a safety factor of 1.5 or 1500 pph. The safety factor provides a safety margin for variations in condensate load, differential pressure and differences in design and installation. Also, for fixed orifice type traps it allows for a reasonable start-up time. Note that Delta Element traps, by design, can provide greater start-up capacity over other trap technologies.
- **Subcooling —** is an important consideration and is defined as the average temperature below the saturation temperature at which the steam trap discharges condensate at rated flow. Please review *Subcooling Table* on back page.
- **Considerations —** the first step is to select the trap model series which best meets the differential pressure range for the specific application. Refer to the chart below. The second step is to select the steam trap based on the *Application Chart* on reverse page.



BESTOBELL STEAM
Steam Traps and Steam Specialties

3170 Wasson Road • Cincinnati, Ohio 45209 USA
Phone 513-533-5600 • Fax 513-871-0105
Toll-Free Phone: 800-543-7311
E-Mail: steam@richardsind.com

Application Chart

Application	1st Trap Choice	Safety Factor	2nd Trap Choice	Safety Factor	Comments
Dripleg					
Boiler Headers					
Saturated	Delta	1.5	IB	2	See sizing methods for condensate load from Headers
Superheated	Delta	1	None		
Steam Mains					
Saturated	Delta	1.5	IB	2	Use a Safety Factor of 3 before valves or end of main
Superheated	Delta	1	None		
Branch Lines	Delta	1.5	IB or Capsule	3	
Steam Operators	Delta	2	IB	3	
Flash Tanks	Delta	2	F & T or IB	3	
Tracer System					
Heat Tubing	Delta	1	IB, Disc or Capsule	2	
Subcooled Tracing	Delta 22 Series	1	None		Use BTU's of hot condensate for energy savings
Tracer Return Header	DM10E	1	None		Use to drain for freeze protection
Process Heating					
Shell & Tube Exchangers					
Constant Supply Pressure	Delta	2	F & T or IB	3	
Variable Supply Pressure	F & T	3	IB	3	See Note. Consider Delta on > 50 psi DP
Pipe & Embossed Coils					
Constant Supply Pressure	Delta	1.5	F & T or IB	2	
Variable Supply Pressure	F & T	3	IB	3	See Note
Jacketed Kettles	Delta	1.5	F & T, IB or Capsule	3	
Sterilizer & Autoclaves (jacketed)	Delta	1.5	IB	3	
Ovens (Direct Contact)	Delta	2	IB	3	Strainer required. A separate air vent may be required
Rotary Dryers					
Large < 24" dia.	F & T	5	IB	8	May require a "steam lock release" method
Small > 24" dia.	F & T	3	Delta	2	
Platen Mold Presses					
Large < 4 sq. ft.	Delta	2	IB	3	
Small > 4 sq. ft.	Disc	3	IB	3	
Laundry Equipment	Delta	1.5	F & T or IB	3	
Air Heating					
Unit Heater	Delta (or F & T)	1.5 (3)	F & T or IB	3	
Air Handling Units					
Freezing Locations	Delta	1.5	None		See Note. Install trap with flow vertically down
Non-Freezing Locations	Delta (or F & T)	1.5 (3)	F & T or IB	3	See Note
Process Air Heating					
Constant Supply Pressure	Delta	1.5	F & T or IB	2	
Variable Supply Pressure	F & T	3	F & T or IB	3	See Note

Note: For modulating pressures, apply the recommended safety factor to the calculated load and select trap that meets required capacity at 50% of the maximum expected differential pressure.

Subcooling Table

Technology	Application	Average Subcooling	Comments
Delta Element	Process	35°F	
	Dripleg	30°F	
	Tracing	30°F	
	Tracing (Subcooled)	75°F	
Capsule	ALL	20°F	
Inverted Bucket	ALL	None	By design use live steam and have little cooling
F & T	ALL	None	Varies on condensate load
Disc	ALL	None	By design passes live steam and has no subcooling