

Delta Element Steam Traps

Models: M6A, GM6

CRN: Canadian Registration Number Available

FOR PROCESS AND HEATING SYSTEMS

3 Year No Live Steam Loss Guarantee

A series of steam traps designed for low condensate capacity needs, yet incorporate a forged carbon steel body and "Y" type strainer. The M6A/GM6 utilizes thermostatic and thermodynamic forces for steam-tight shutoff for greater energy efficiency and extended seat life, with no live steam loss.

- **Maximum differential pressure** – 70 psig (4,8 bar)
- **Single blade element** – offers long-term, trouble-free service because it's not prone to dirt build-up as encountered with many other bimetal designs
- **Stainless Steel internals** – leads to longer service life since materials are highly resistant to fatigue and corrosion
- **Modulating discharge** – automatically adjusts to operating pressure and load
- **Integral strainer and check valve** – strainer protects trap from dirt while check valve prevents backflow during shutdown
- **Continuous air and CO2 venting** – maximizes heat transfer while minimizing corrosion



ORDERING SCHEMATIC

| MODEL | | | | | 6 | 7 | 8 |
|-------|---|---|---|---|---|---|---|
| M | 0 | 0 | 6 | A | | | |

| MODEL | | | | | 6 | 7 | 8 |
|-------|---|---|---|---|---|---|---|
| G | M | 0 | 0 | 6 | 4 | 1 | 0 |

| 6 | SIZE |
|---|--------------|
| 1 | 3/8" (6A) |
| 2 | 1/2" (All) |
| 3 | 3/4" (All) |
| 4 | 1" (GM6) |
| 5 | 1-1/4" (GM6) |
| 6 | 1-1/2" (GM6) |
| 7 | 2" (GM6) |

| 7 | CONNECTIONS |
|---|-------------|
| 1 | NPT |
| 2 | FSW* |
| 3 | 150# Flange |
| 4 | 300# Flange |
| 8 | BSPT |
| 9 | BSPP |

| 8 | SPECIALITIES |
|---|--------------------|
| 0 | None |
| 1 | DTC* |
| 3 | Integral Blowdown* |

* Not available on 2" GM3

FOR PROCESS AND HEATING SYSTEMS
SPECIFICATIONS (M6A & GM6 1/2" - 1-1/2" SIZES)

Maximum Differential Pressure: 70 psi (4,8 bar)

Maximum Allowable Pressure: 750 psig (51,7 bar)

Maximum Allowable Temperature: 750°F (399°C)

MATERIALS

Body & Cover: Forged Carbon Steel A105

Valve Seat & Stem: Stainless Steel 303 & 17-4

Bi-Metal: Stainless Steel

Strainer: Stainless Steel 304

Bolts: ASTM-A193, B7

Gasket: Flexible Graphite

Options: Double Threaded Strainer Cap (DTC) for blowdown valve attachment; selection of integral blowdown valves

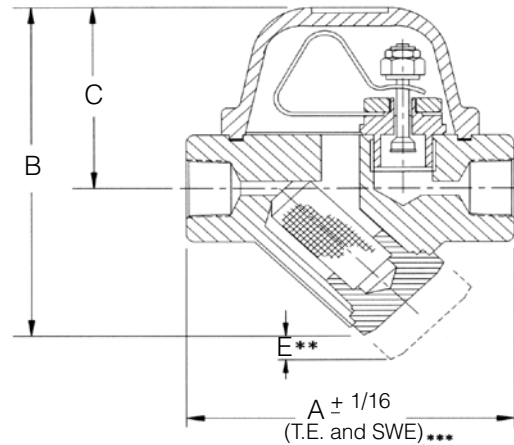
Mounting: From horizontal to vertical (see Installation & Maintenance Instructions). Self-Draining and freeze-resistant when mounted in vertical position.

Line Sizes:

Model GM6: 1/2", 3/4", 1", 1-1/4", 1-1/2"

Model M6A: 3/8", 1/2", 3/4"

End Connections: Threaded NPT, BSPT, BSPP, SW, Raised Face Flanges (ANSI 150, 300, DIN)



| Model GM6 | | | | | | |
|------------------|-------|------|-------|-------|-------|---------|
| 1/2"-3/4" | A | B | C | D | E | Wt |
| inches | 4 | 6 | 3.625 | 4 | 2.625 | 8.4 lbs |
| mm | 102 | 152 | 92 | 102 | 67 | 3,8 kgs |
| 1" | A | B | C | D | E | Wt |
| inches | 5 | 6.75 | 3.625 | 4 | 3.50 | 9.9 lbs |
| mm | 127 | 171 | 92 | 102 | 89 | 4,5 kgs |
| 1-1/4", 1-1/2" | A | B | C | D | E | Wt |
| inches | 7.125 | 9.50 | 5.875 | 6 | 4.375 | 33 lbs |
| mm | 181 | 241 | 149 | 152 | 67 | 15 kgs |
| Model M6A | | | | | | |
| 3/8", 1/2", 3/4" | A | B | C | D | E | Wt |
| inches | 4 | 5 | 3.25 | 3.125 | 2.25 | 5.5 lbs |
| mm | 102 | 127 | 83 | 80 | 57 | 2,5 kgs |

Notes: dimension D is overall width; ** dimension E is withdrawal distance for strainer, ***dimensions shown are for threaded or socket weld ends, contact factory for other dimensions

CAPACITY CHARTS: CONDENSATE CAPACITY AT OPERATING PRESSURE

| Model GM6 | | For smaller loads to 30 psid, consider Model M3A | | | | | | |
|-----------------|----------------------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|
| Size | Operating Pressure, psi (bar) | 10 (0,69) | 20 (1,38) | 30 (2,07) | 40 (2,76) | 50 (3,45) | 60 (4,14) | 70 (4,83) |
| 1/2" | Cold start-up, lbs/hr | 1800 | 3000 | 3800 | 4650 | 5200 | 5800 | 6200 |
| | Hot (Dripleg), lbs/hr | 580 | 700 | 760 | 820 | 860 | 880 | 900 |
| 3/4" | Cold start-up, Kg/hr | 813 | 1360 | 1723 | 2109 | 2358 | 2630 | 2812 |
| | Hot (Dripleg), Kg/hr | 263 | 317 | 344 | 371 | 390 | 399 | 408 |
| 1" | Cold start-up, lbs/hr | 3500 | 6400 | 8100 | 8900 | 9400 | 9600 | 9800 |
| | Hot (Dripleg), lbs/hr | 1100 | 1340 | 1520 | 1590 | 1650 | 1700 | 1750 |
| | Cold start-up, Kg/hr | 1587 | 2903 | 3674 | 4037 | 4263 | 4354 | 4445 |
| | Hot (Dripleg), Kg/hr | 498 | 607 | 689 | 721 | 748 | 771 | 793 |
| 1-1/4" & 1-1/2" | Cold start-up, lbs/hr | 8000 | 14000 | 18000 | 21000 | 23000 | 25000 | 26000 |
| | Hot (Dripleg), lbs/hr | 3100 | 3350 | 3550 | 3700 | 3800 | 3850 | 3900 |
| | Cold start-up, Kg/hr | 3628 | 6350 | 8164 | 9525 | 10432 | 11340 | 11793 |
| | Hot (Dripleg), Kg/hr | 1406 | 1519 | 1610 | 1678 | 1723 | 1746 | 1769 |
| Model M6A | | Consider "GM10" Series traps in this range | | | | | | |
| Size | Differential Pressure, psi (bar) | 10 (0,69) | 20 (1,38) | 30 (2,07) | 40 (2,76) | 50 (3,45) | 60 (4,14) | 70 (4,83) |
| 3/8" | Cold start-up, lbs/hr | 1200 | 1900 | 2500 | 2900 | 3300 | 3800 | 4000 |
| | Hot (Dripleg), lbs/hr | 130 | 160 | 190 | 200 | 210 | 220 | 230 |
| 1/2" | Cold start-up, Kg/hr | 544 | 861 | 1134 | 1315 | 1496 | 1723 | 1814 |
| | Hot (Dripleg), Kg/hr | 58 | 72 | 86 | 90 | 95 | 99 | 104 |

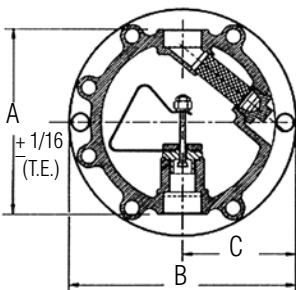
Note: Flow rates are based on discharge to atmospheric pressure, valid for back pressure up to 20% of inlet pressure. Higher back pressure requires reset of control element to obtain these capacities. Consult factory for details.

FOR PROCESS AND HEATING SYSTEMS
SPECIFICATIONS (GM6 2" SIZE)

Maximum Differential Pressure: 70 psi (4,8 bar)
 Maximum Allowable Pressure: 120 psig (8,3 bar)
 Maximum Allowable Temperature: 450°F (232°C)

MATERIALS

Body: Ductile Iron A395
 Cover: Carbon Steel A516 Gr. 70
 Valve Seat & Stem: Stainless Steel 303 & 17-4
 Bi-Metal: Stainless Steel NiCr
 Strainer: Stainless Steel 304
 Bolts: ASTM-A193, B7
 Gasket: Flexible Graphite
 Options: Double Threaded Strainer Cap (DTC) for blowdown valve attachment; blowdown valve to fit 3/8" DTC for in-line strainer blowdown
 Mounting: From horizontal to vertical (see Installation & Maintenance Instructions). Self-draining and freeze-resistant when mounted in vertical position.
 Line Sizes: 2"
 End Connections: Threaded (NPT), ANSI 150 & 300 raised face flange

DIMENSIONS


| Model GM6 (2") | | | | | | |
|----------------|------|------|------|------|--------|--|
| 2 | A | B | C | D | Wt | |
| inches | 10.9 | 13.4 | 6.75 | 4.56 | 70 lbs | |
| mm | 277 | 340 | 171 | 116 | 32 kgs | |

Notes: dimension D is overall width

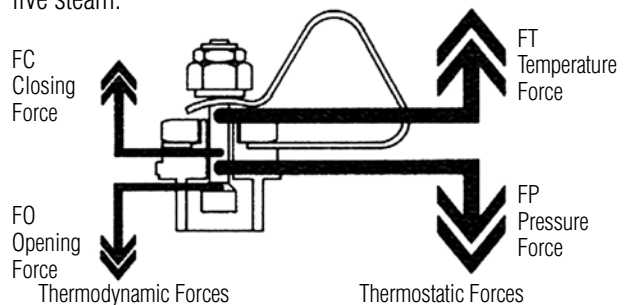
CAPACITY CHARTS: CONDENSATE CAPACITY AT OPERATING PRESSURE

| Size | Differential Pressure, psi (bar) | Model GM6 | | | | | | |
|------|----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 10 (0.69) | 20 (1.38) | 30 (2.07) | 40 (2.76) | 50 (3.45) | 60 (4.14) | 70 (4.83) |
| 2" | Cold start-up, lbs/hr | 15000 | 25000 | 31000 | 36000 | 42000 | 44000 | 46000 |
| | Hot (Dripleg), lbs/hr | 4400 | 6000 | 7200 | 8000 | 8500 | 8900 | 9200 |

Note: Flow rates are based on discharge to atmospheric pressure, valid for back pressure up to 20% of inlet pressure. Higher back pressure requires reset of control element to obtain these capacities. Consult factory for details.

PRINCIPLES OF OPERATION

At the heart of every Bestobell steam trap is the unique delta-shaped element, a rugged single blade bimetal formed from high grade stainless steels. Coupled with the valve seat and stem, the element forms a single moving part that is unaffected by dirt and wear. The design provides a sophisticated force balanced valve that utilizes both *thermostatic* and *thermodynamic* forces to provide modulating discharge, and prevent the loss of live steam.



The *thermostatic* effect combines a temperature closing force (FT) generated by the element, and a pressure opening force (FP) generated by the differential pressure across the seat. When condensate temperature approaches that of saturated steam, bimetal expansion raises the stem to close the control valve. Lower temperature condensate, however, relaxes the bimetal to open the valve. With this valve opening, the system differential pressure acts on the diameter of the plug providing an increase in opening force and discharge capacity.

The *thermodynamic* forces are introduced through a three stage orifice containing an expansion chamber forced between the seat and the skirt of the valve stem. The controlled generation of flash steam within this chamber increases the intermediate pressure and resultant opening force (FO) on the valve to increase hot discharge capacity. When the temperature increases, and discharge decreases, the flashing takes place closer to the seat at the entrance to the expansion chamber. A sudden reduction in the opening force allows the closing force (FC) to take over and pull the valve tightly onto the seat. This assures tight shutoff preventing loss of live steam.