Pamphlet M2000-5

TLV®

BYPASS BLOWDOWN STEAM TRAPS

MBT3N
BT3N

Shorten Start-up and Batch Cycles;

One of the most effective ways to improve productivity and reduce costs of steam equipment operation is to automate the systems that control processes — from steam supply to condensate discharge. The MBT3N (motorized) and BT3N (hand-operated) bypass blowdown steam traps increase efficiency of production equipment.

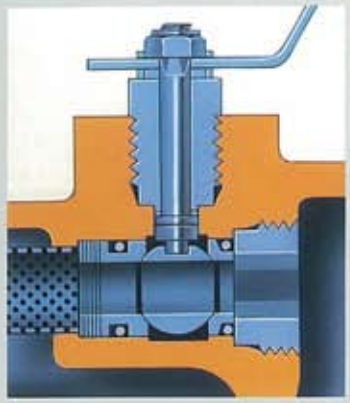
FEATURES

1 Condensate, air, steam and cooling water blowdown operations are automated (motorized), resulting in increased equipment productivity and cost reductions.

The MBT3N, in combination with an MC-COS automatic multi-control valve or various types of sensors, permits automation of the rapid blowdown in a variety of situations, such as when heating patterns for the equipment are changed.

2 Use of a special tight-sealing ball valve as the bypass valve.

A 10mm ball valve ensures immediate response for blowdown operations. Features easy confirmation of whether the valve is open or closed.

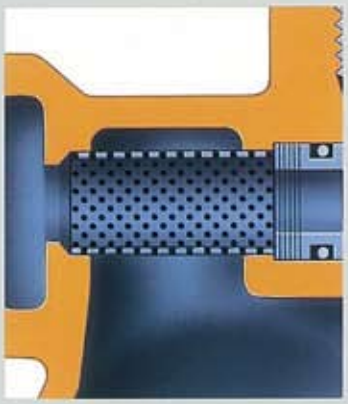


3 Use of a unique "free-float" trap increases the flow.

The highly durable "free-float" trap enables continuous condensate discharge, and the 3-point seating design ensures seal-tight shutoff even under no-load conditions. The bimetal allows the automatic discharge of air even during normal operation.

4 Built-in strainer allows blowdown of rust and scale.

Rust, scale and other impurities which have collected in the strainer will be flushed to the secondary side when the bypass valve is open.



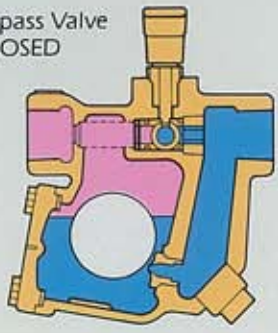
OPERATION

Condensate Air Steam

1 Bypass Valve OPEN

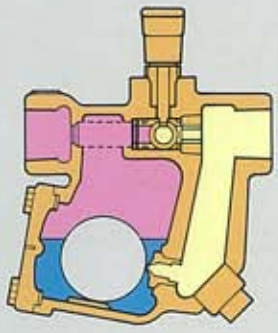
At start-up, the bypass blowdown valve can be opened to allow a large quantity of condensate to be rapidly discharged, minimizing the time required for the unit to warm up. The bimetal holds the float away from the orifice so that initial air in the trap chamber is also discharged.

2 Bypass Valve CLOSED



After the blowdown operation ends, the bimetal strip retracts and the valve closes, the float automatically adjusts the valve opening in response to the fluctuation in load, and the condensate is continuously discharged — no condensate will accumulate ahead of the steam trap.

3

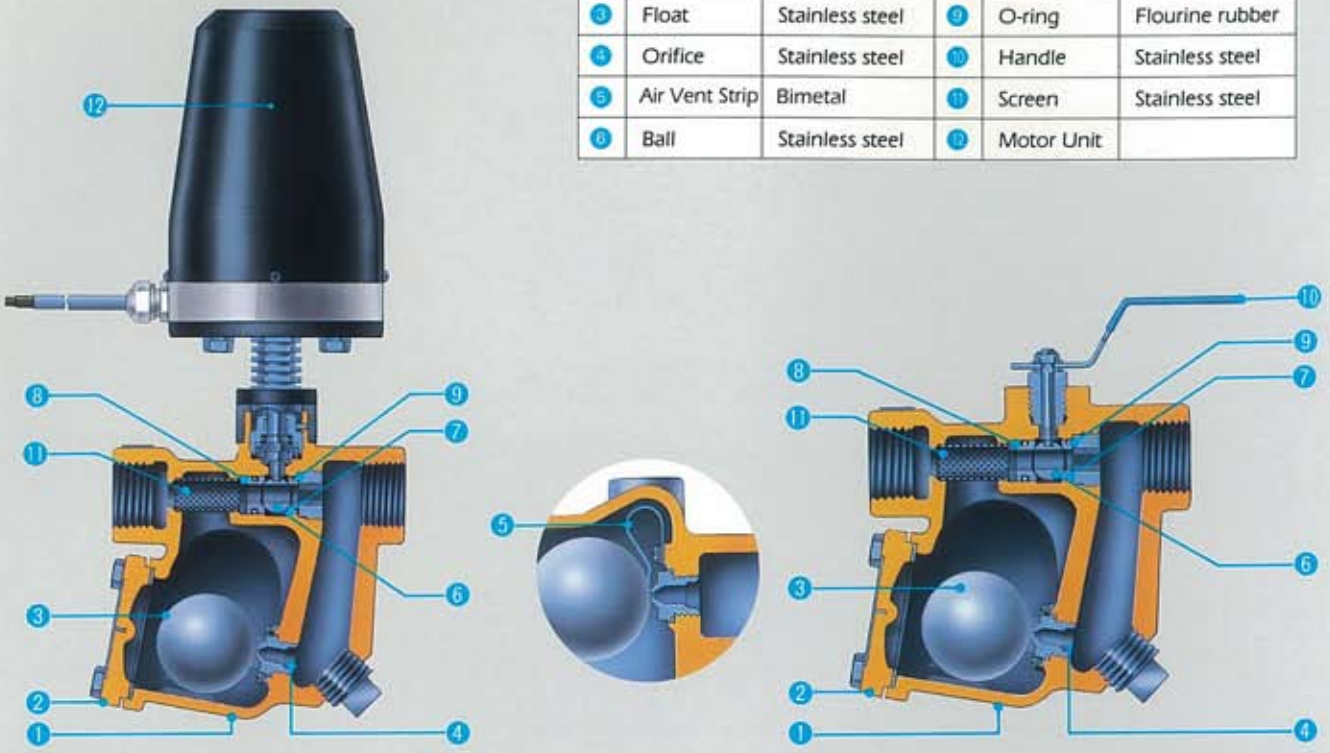


When the amount of condensate flowing into the chamber decreases, the float gradually closes the orifice. Steam leakage is prevented through the use of a 3-point seating design and the water sealing of the valve. Normally the bimetal remains retracted and has no effect on the operation of the float, but if air should accumulate in the trap and the temperature drops, it extends, forcing the float up and the air is automatically vented.

Systemize Bypass Blowdown

CONSTRUCTION

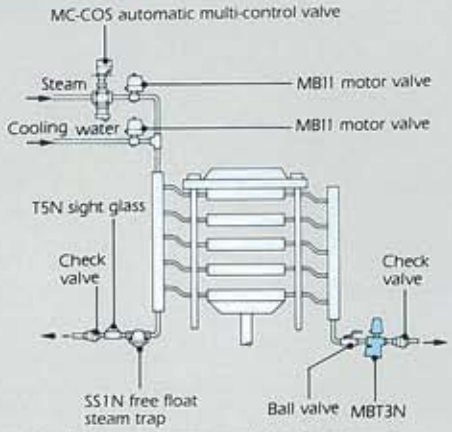
No.	Part Name	Material	No.	Part Name	Material
1	Body	Cast iron	7	Valve Seat	Fluorine Resin
2	Cover	Cast iron	8	Disc Spring	Stainless steel
3	Float	Stainless steel	9	O-ring	Flourine rubber
4	Orifice	Stainless steel	10	Handle	Stainless steel
5	Air Vent Strip	Bimetal	11	Screen	Stainless steel
6	Ball	Stainless steel	12	Motor Unit	



APPLICATION

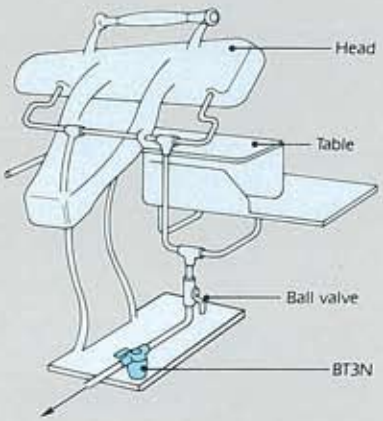
TO REDUCE START-UP TIME

For multi-platen presses, roll heaters.



Automates the discharge of large quantities of condensate during start-up and the flow of cooling water during the cooling process — reducing batch processing times on presses.

For garment presses, dryers, double boilers.

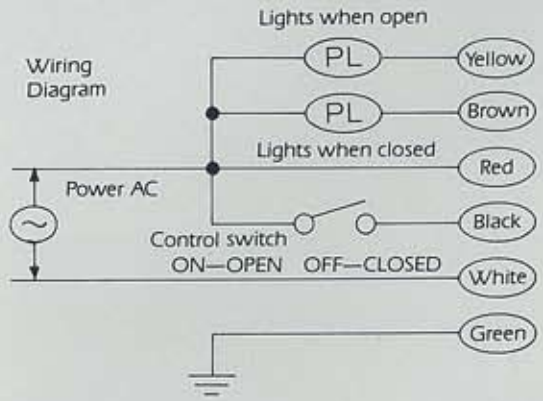


Allows quick-start of the blowdown operation to discharge large quantities of condensate from the chamber during start-up, either automatically (MBT3N) or by hand (BT3N) — shortening the time required to start up the unit.

WIRING • USAGE LIMITS OF MBT3N

WIRING

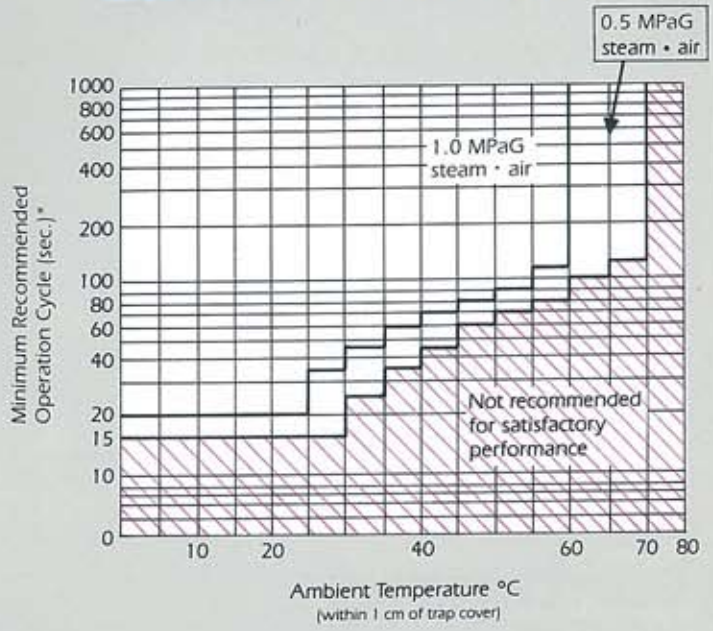
1. Connect an ON/OFF control switch as follows:
   When the control switch is on, the valve will open; when it is off, the valve will close.



2. Connect the yellow and brown wires to OPEN/CLOSE indicator lamps.
   If connected to the yellow wire, a pilot lamp will light when the valve is open; if to the brown, a pilot lamp will light when the valve is closed.

3. Always be sure the power is OFF before doing any electrical work.

AMBIENT TEMPERATURE RANGE AND RECOMMENDED OPERATION CYCLES

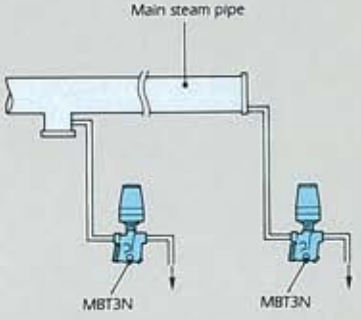


* "Operation cycle" means the interval between the motor stop at the end of one open or close operation and the motor start at the beginning of the next.

1 MPa = 10.197 kg/cm²

TO PREVENT WATER HAMMER

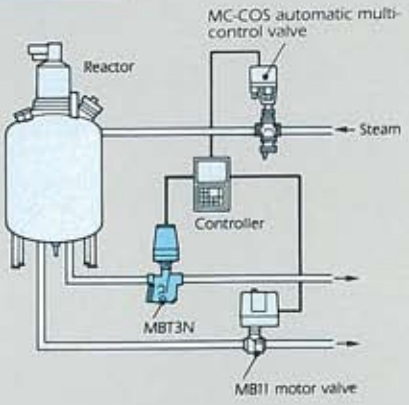
For steam mains, air conditioning units.



The use of a bypass valve is the best way to prevent water hammer. As soon as the equipment is turned on, an MBT3N bypass blowdown trap attached to a temperature sensor will start an automatic blowdown to discharge large quantities of condensate from the chamber — shortening the time required to drain the system and eliminating water hammer.

TO IMPROVE BATCH CYCLE OPERATION

For reactors, steam kettles, vulcanizers.

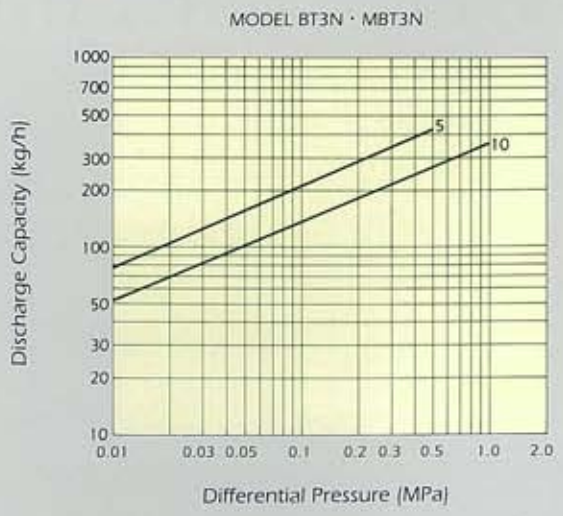


The most effective way to increase the number of batch cycles per unit/time is to shorten the start-up and automate a forced rapid blowdown after each cycle.

DISCHARGE CAPACITY

When Bypass valve is CLOSED

TLV STEAM TRAP CAPACITY CHART

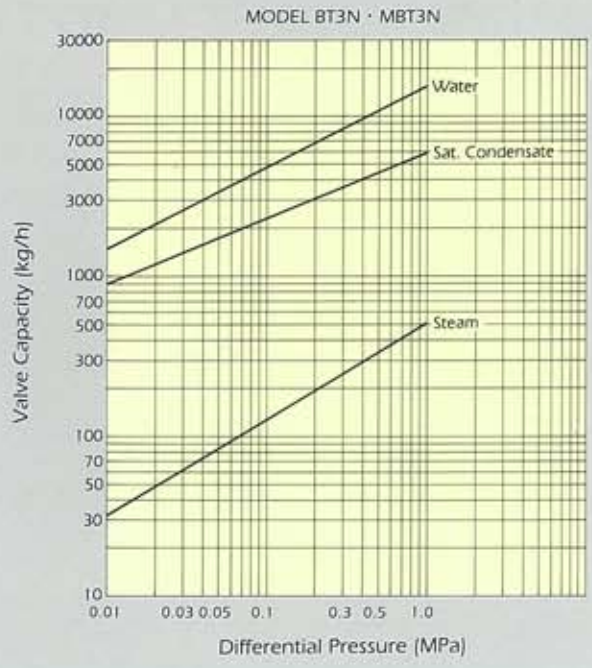


1. Differential pressure is the difference between the inlet and outlet pressure of the trap.
2. Capacities are based on continuous discharge of condensate 6°C below saturated steam temperature.

VALVE CAPACITY

When Bypass valve is OPEN

TLV VALVE CAPACITY CHART



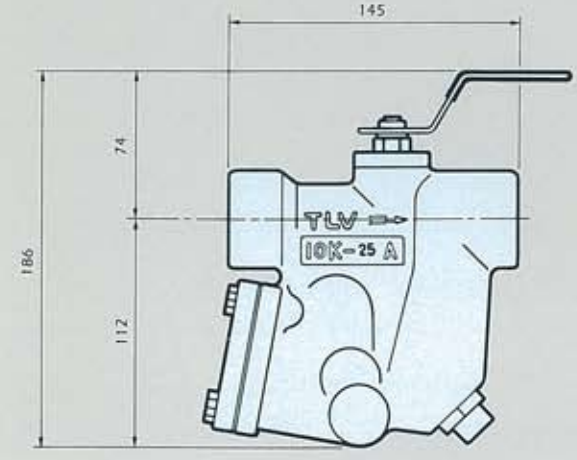
SPECIFICATIONS

Main Unti		
Body material	Cast iron	
Connection	PT,BSPT,NPT	
Size	25 mm	
Orifice No.	5	10
Operating pressure range	0.01～0.5MPaG	0.01～1.0MPaG
Maximum operating temperature	185°C	

Drive Unit (on MBT3N only)	
Motor model	Reversible motor (condenser run type single-phase induction motor)
Start-up current	0.52A (100/110V), 0.31A (200/220V)
Control system	ON-OFF (fully open/fully closed)
Overload protection	Built-in thermal protector 120±5°C
Direction of rotation	90° reciprocating
Open/close time	Approx. 3.5 sec./90° rotation
Water resistance	Rain-resistant

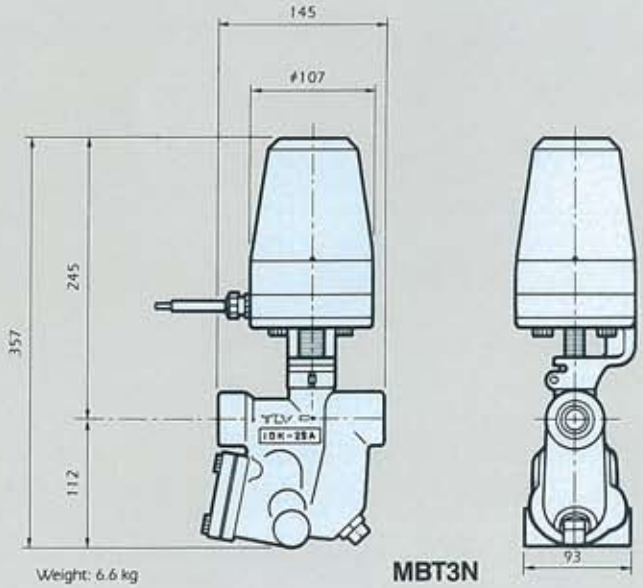
1 MPa = 10.197 kg/cm²

DIMENSIONS



Weight: 3.6 kg

BT3N



Weight: 6.6 kg

MBT3N

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ISO 9001/ISO 14001