



# BESTOBELLSTEAM

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## TT4 Series

### *Installation & Maintenance Instructions for Bestobell Steam TT4 Series Total Trap® Stations*

Warning: Bestobell Steam products must only be used, installed and repaired in accordance with these Installation & Maintenance Instructions. Observe all applicable public and company codes and regulations. In the event of leakage or other malfunction, call a qualified service person; continued operation may cause system failure or a general hazard. Prior to servicing equipment, disconnect, shut off, drain and/or bypass all pressurized fluids.

## Please Read These Instructions

The Total Trap® 4 Series will provide you with long, trouble-free service if it is correctly installed and maintained. A few minutes of your time spent reading these instructions may save hours of trouble and downtime later.

### Ideal Installation

1. To protect the trap from grit, scale, metal chips, and other foreign matter, ALL pipelines and piping components should be blown out and thoroughly cleaned before the trap is installed.
2. In preparing welded connections, care should be exercised to prevent debris, fluids or compound from getting into pipe lines.
3. The flow arrow on the trap body must be pointed in the direction of flow. Ideally, the trap should be installed in the lowest horizontal line of downcomer piping to provide for maximum drainage of condensate and to obtain a faster response by the disc trap.
4. The trap should be installed horizontally with disc trap cap on top. The outlet of the blowdown valve on the bottom of the trap should be connected to blowdown piping to adequately route high temperature/pressure steam away from personnel and other equipment that could be damaged. The vent on the back of the trap should similarly be oriented away from personnel and other equipment that could be damaged.
5. Piping should be the same material and sized appropriately for the hub end connections. Inlet and outlet piping should be the same size.
6. A full-ported shutoff valve upstream is recommended to allow isolation for servicing. A shutoff valve downstream will protect against back flow from the return line during servicing. Alternately, the isolation valves built into the trap can be used to adequately isolate the disc trap assembly for maintenance purposes provided the trap is isolated upstream and/or the system is in a cold iron state, i.e. shutdown.
7. The downcomer piping should be sloped to and from the trap to ensure adequate flow and freeze protection.

## Start and Initial Warm-Up

1. Fully open the inlet and outlet isolation valves.
2. Fully close the freeblow/vent, strainer blowdown, and bypass valves.
3. Slowly apply system pressure to steam trap and bring system up to operating conditions per customer usual start-up procedures.

### Caution!

**The strainer blowdown valve achieves maximum sealing properties when heated up. A slight amount of steam leak-by during start-up from the blowdown valve may be noticed until the valve packing heats enough, at which point leak-by should cease.**

## Maintenance

### Warning!

**Hot discharge from the trap may cause severe burns. Shut off steam supply and make sure that the trap is cool to the touch before conducting maintenance or inspection.**

### Caution!

**Do not remove the flush plug above the steam inlet hub unless the system is shut-down, the trap is cool to the touch, and the intent is to clean the disc trap assembly through back flushing. If debris has not been allowed to enter the steam system, cleaning of the disc trap assembly and removal of the flush plug should not be necessary.**

1. The trap can be maintained without disturbing the piping connections. Ensure that the trap is isolated - upstream and downstream - before attempting any maintenance involving disassembly of the disc trap. ALLOW THE TRAP TO COOL BEFORE DISASSEMBLY.

2. The disc trap can be cleaned without disassembly. Once the system is shutdown and the trap is cool to the touch, remove the flush plug above the inlet hub with a 1/4" Allen wrench. Open the freeblow valve and close all other valves. Flush the disc trap using high pressure water in the reverse direction by connecting the water supply to the vent port and flushing out the flush port plug. The disc trap may also be flushed with high pressure air (not to exceed 200 psig). Apply Grafoil tape and reinstall flush plug (refer to torque values below).
3. If the disc trap must be disassembled, see the Disc Trap Disassembly Procedure below. Dirt and deposits can cause erratic operation. If the disc trap cannot be fully cleaned via flushing, the disc trap cap, disc and cartridge can be removed for inspection, and sealing surfaces can be wiped with a cleaning solvent. Periodic cleaning of the disc and cartridge will facilitate trouble-free performance. **DO NOT USE ABRASIVES / CORROSIVE MEDIA FOR CLEANING.** If the disc surface is scratched or worn, replace with a new factory-lapped disc. Only the disc and cartridge seat are subject to wear. Both the disc and cartridge can be replaced if necessary; however, a slight disc and seat wear can be corrected by resurfacing on a lap plate in a straight line, back and forth direction, for 20 - 30 seconds.
4. If large quantities of air and other non-condensable gases are suspected at equipment start-up, venting via the freeblow valve may reduce the time it takes for the disc trap to achieve steady state operation.
5. Periodically use the strainer blowdown valve to blow down the internal strainer of debris. Routine blow-down will prevent dirt and debris from entering the disc trap.
6. The Total Trap® 4 has been properly assembled, correct valve torques applied, hydro- and leak-tested at high pressures, so no steam leakage should be observed. If steam leakage is detected around the valve packing, use a 7/8" open end wrench to loosen the packing lock-nut, make minor tightening adjustments of the packing until leakage ceases, and then retighten the packing lock-nut. Similarly, if steam leakage is detected around the valve bonnet seating surfaces with the body, use a 1 1/8" open end wrench to make minor tightening adjustments to the valve bonnets until steam leakage ceases.

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## Disc Trap Disassembly Procedure

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1. Using a 3/8" Allen wrench, evenly loosen the disc trap cap bolts in a criss-cross pattern and remove.
2. **DO NOT ROTATE THE CAP BACK AND FORTH.** Using a small, thin tipped, straight screw driver, insert and lightly and evenly pry alternate sides up, lifting approximately the same amount each time first one set of alternate sides, then the other. When the gap between the cap and trap body is big enough, a

large screw driver may then be used in the same manner. After a small amount of lifting in this fashion the cap will be able to be lifted straight up and removed by hand.

3. Remove the cap flexitallic seal and set the cap and seal aside.
4. Remove the disc.
5. **USING ONLY YOUR HANDS**, remove the internal cartridge, being very careful to not lose or damage the metal seal rings which seal the bottom cartridge cavities to the raised sealing surfaces at the bottom of the disc trap port. Remove the seal rings and set aside. **DO NOT USE PLIERS OR ANY OTHER TOOLS AS THESE MAY DAMAGE THE SEALING SURFACES OF THE DISC TRAP PARTS OR INTERNAL SURFACES OF THE TRAP.**

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## Disc Trap Reassembly Procedure

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1. Carefully blow the disc trap port out of any debris using low pressure air. Clean disc trap parts as described in the maintenance section above.
2. Apply a small coating of Dow Corning 111 Valve Lubricant and Sealant Compound to the cartridge metal seal rings and insert into their respective grooves on the bottom of the disc trap cartridge ensuring they are seated correctly. The purpose of this compound is to ensure the seal rings remain in their grooves when the cartridge is turned upside and inserted into the disc trap port in the trap body.
3. **USING ONLY YOUR HANDS**, carefully and slowly insert the cartridge into the disc trap port in the trap body ensuring the metal seal rings remain in place on the bottom of the cartridge. **DO NOT USE PLIERS OR ANY OTHER TOOLS AS THESE MAY DAMAGE THE SEALING SURFACES OF THE DISC TRAP PARTS OR INTERNAL SURFACES OF THE TRAP.**
4. Center disc on top of cartridge, groove side down.
5. Ensure the surface area around the disc trap port is clean of debris and place the disc trap cap flexitallic seal on the spot faced ring surface around the disc trap port, centering the inside diameter around the port.
6. Apply Loctite Silver Grade Anti-Seize Compound to the outside face of the portion of the disc trap cap cylinder that will be inserted into the disc trap port on the trap body. This will aid in the cap smoothly sliding down into the port when inserted.
7. Align the bolt holes, center the cap over the disc trap port on the trap body, and slowly push straight down on the cap, evenly, until it will not go further. Ensure the cap is inserted all the way prior to inserting the disc trap cap bolts. Lightly tapping the top of the disc trap cap with a rubber mallet is permissible if necessary to ensure the cap is inserted and seated fully in the port.

8. Apply Loctite Silver Grade Anti-Seize Compound to the disc trap cap bolts and insert into the bolt holes. Start the threads by hand, evenly, in a criss-cross pattern, until the head of each bolt just touches the disc trap cap. Using a 3/8" Allen wrench, evenly tighten the bolts in a criss-cross pattern to the minimum torque values given on next page.

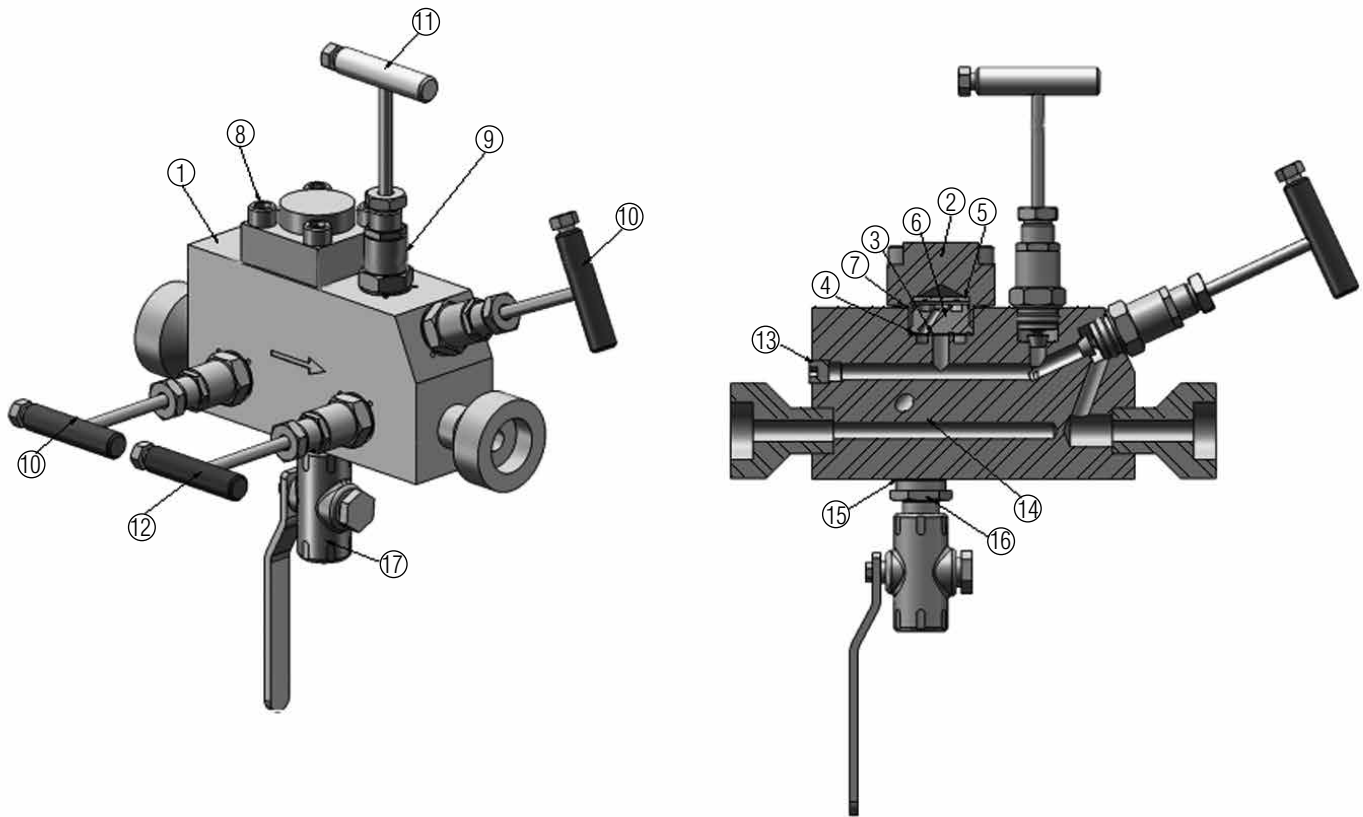
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### Torque Values

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Part	Torque	Sealing Compound
Disc Trap Cap Bolts	320 in-lbs	Anti-Seize
Hex Valve Bonnets	135 ft-lbs	Anti-Seize
Strainer Cap	65 ft-lbs	Anti-Seize with Flexitallic Seal
Flush Plug	Wrench tight	Grafoil Tape
Blow Down Valve	Wrench tight	Grafoil Tape

## Illustration and Parts List



Item No	Part Number	Description	Quantity
1		Body with FSW Hubs	1
2	50520-177	Cap	1
3	50521-147	Inner Seal Ring	1
4	50522-147	Outer Seal Ring	1
5	50523-242	Disc	1
6	50519-242	Cartridge	1
7	25625-631	Gasket	1
8	25637-464	HX-SCHS 7/16-20x2"	4
9	07015-9214	Bonnet Assembly with Ext. Stem	4
10	05024-001-TP4	Red Powder Coated Handle	2
11	05024-001-TP6	Yellow Powder Coated Handle	1
12	05024-001-TP5	Blue Powder Coated Handle	1
13	93849-177	Flush Plug	1
14	55058	Strainer	1
15	25626-631	Gasket	1
16	55059-177	Strainer Cap	1
17	50637	Blowdown Valve	1

**Notes:**

1. Total Trap<sup>®</sup> designed and manufactured in accordance with ASME B31.1

TT4-1: P/N 52063-333 (1" FSW Hubs)

TT4-2: P/N 52064-333 (1/2" FSW Hubs)