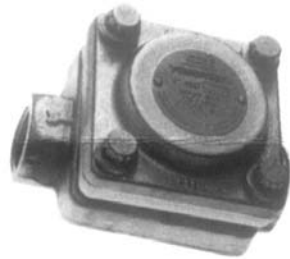


how to install and service series 40 impulse[®] steam traps

RATING

Series 40 traps are set at the factory to operate on pressures up to 600 psi (42 bar) and temperatures up to 750°F (400°C). Back pressure limitation at trap *outlet* is 40% of pressure at trap *inlet*, based on absolute pressures.

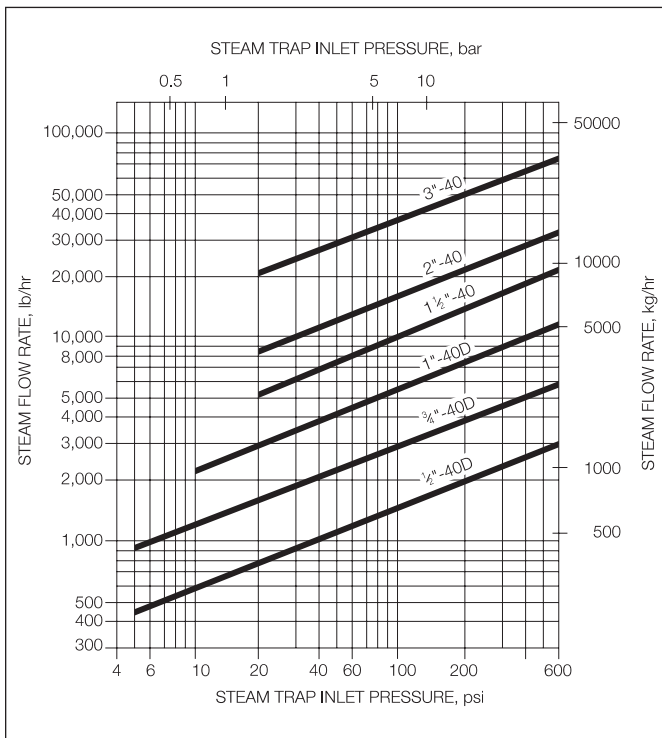


Trap Sizing

Determine trap capacity required by multiplying the maximum calculated condensate load by a *safety load factor* (typical safety factor is 2). Then select the trap having this rated capacity for the gauge pressure, psig (bar) at the trap inlet.

DISCHARGE CAPACITY, lb per hour (kg/hr)

(Near steam temperature).



Recommended Minimum Operating Pressures:

1/2", 3/4" and 1" sizes = 10 psi

1-1/2" through 3" sizes = 20 psi

Trap Setting

Series 40 traps are factory-set to operate over full pressure range. *Field adjustment is not required and should not be attempted.*

INSTALLATION

Blow out piping thoroughly before installing trap, to remove dirt, scale and metal chips.

1. Install trap close to and at least 12" (305 mm) below the equipment being drained so condensate can flow to trap by gravity.
2. When trap must be above the equipment it is draining, provide a U-shaped lift fitting or water seal at bottom of riser before the trap.
3. Mount trap horizontally, bonnet on top. *Be sure arrow on body agrees with direction of flow.*
4. Where freezing can occur: pitch lines forward for gravity drainage. Trap is normally freezeproof when piping is pitched to drain by gravity. Trap can be installed in a sloping line within the limits tabulated below.

Maximum angle of inclination of Series 40 Traps (Sloping downward toward trap outlet):

1/2"	40D = 40°	1-1/2"	40 = 25°
3/4"	40D = 40°	2"	40 = 20°
1"	40D = 40°	3"	40 = 15°

Install strainer as described on last page, discharge trap directly to atmosphere or through a short line pitched downward.

5. Follow typical piping arrangement as shown in Fig. 1.
6. Inlet piping should be at least equal to trap size.
7. Discharge piping should be amply sized to handle condensate and flash steam simultaneously: discharge piping less than 6 feet (1.8 M) in length should be at least equal to trap size; longer lines at least one size larger.

WARNING—Hot discharge from this device can cause severe burns. Discharge must be piped or directed away so no one will be endangered. This device must be isolated, vented and cool to the touch before repairing or inspecting.

8. If several traps discharge to a manifold or common return line, size the line to prevent excessive back pressures during simultaneous discharge of all traps.
9. If discharge is to closed return system, install test tee and test valve for checking trap operation. See Fig. 1, (a) and (b).

Use gate valves in line to and from the trap for strainer blow down and test tee. All valves to be same pipe size as steam trap.

Install swing check valves beyond trap where necessary to prevent back flow to equipment on shutdown or at foot of lift when discharging to overhead return line. See Fig. 1 (b).

Dirt legs are suggested in outlet piping from equipment where scale or core sand may be present in large quantities.

Install strainers ahead of all traps to insure proper operation and increase life of trap. See back of sheet for installation instructions. Use same pipe size as steam trap.

Bypasses are not normally recommended since Yarway traps are readily serviced "on the line". Provide bypass valve for critical equipment requiring continuous condensate drainage; install additional trap in bypass.

The standard body material for series 40 & 40D traps is ASTM A182 GR F22, except the 3" series 40 which is ASTM A217 GR WC9 with controlled carbon to .15% MAX.

Note: It is not necessary to disassemble the trap prior to welding, but avoid subjecting the internals to temperatures higher than 500F.

Before Starting Trap—Blow Piping Out

If trap malfunctions when first put into service, cause may be scale or dirt on main seat or valve disc. (See "Trap Maintenance" for disassembly, cleaning and reinstallation of trap parts.)

TROUBLESHOOTING

1. Check for proper trap operation by one of the following methods:
 - a. Hold screw driver or metal rod against base of bonnet. Listen for characteristic clicking of valve as it opens and closes.
 - b. Use test valve downstream of trap to observe discharge.
2. Trap Cold: If trap does not open—first check and clean the strainer. Also, the trap internals may be clogged by scale or dirt. Disassemble and clean as described in "Trap Maintenance" section.
3. Trap Hot: Normal Discharge Characteristics are as follows. On heavy loads, valve remains wide open, discharges a heavy, continuous flow of condensate. On medium to light loads, valve opens frequently and discharges a heavy flow. There is a light flow of condensate from the control orifice when a valve is closed between main discharges.

If trap remains wide open, discharging condensate continuously it may be undersized for the load. Check trap sizing and safety factor for the actual operating conditions.

If trap does not reclose properly scale, dirt or worn parts may be the cause.
4. Excessive back pressures may cause trap malfunction; see limits under "Ratings". High back pressures may be due to overloaded returns, open or leaking bypasses or malfunctioning traps. Check for cause and correct.
5. Air Venting, Vacuum Prevention: Air handling capacity of Yarway traps normally requires no additional venting provision. To relieve pocketed air that will not flow to trap for discharge, install thermostatic air vent at high point opposite steam inlet. To prevent vacuum formation after steam is shut-off in equipment with large steam space, use vacuum breaker at high point.

TRAP, STRAINER AND FITTINGS ASSEMBLY DETAIL	LEGEND	
<p>a. Discharge to return line below trap.</p>		Yarway Impulse Steam Trap
		Yarway Strainer with Blow Down Valve
<p>b. Discharge to overhead return line.</p>		Tee with Test Valve (optional)
		Gate or Globe Valve
<p>c. Discharge to atmosphere.</p>		Swing Check Valve
		Union

FIG. 1

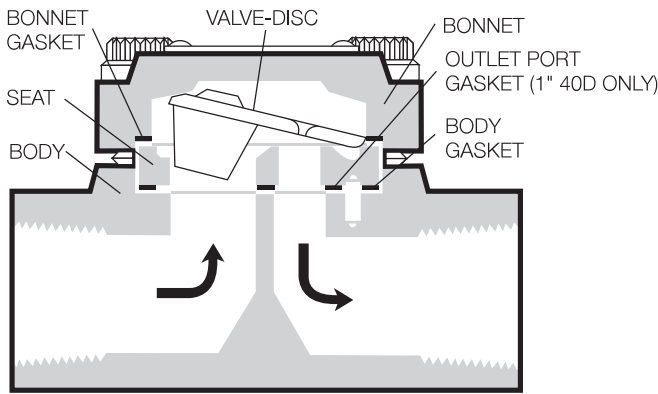
WELDING

Socket welding or seal welding of this trap body to the piping should be completed according to applicable Codes, Standards and Procedures.

DO NOT make electrical welding connections to the trap body or any other part of the trap to prevent internal arcing. Electrical ground should be made to the pipe and not the trap.

TRAP MAINTENANCE

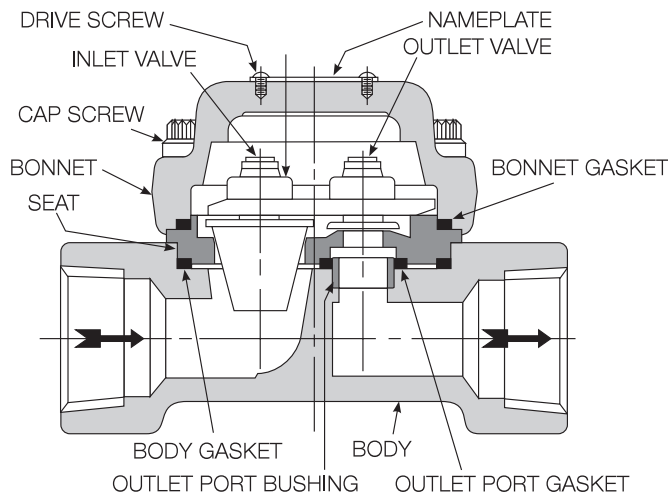
1. Remove cap screws and bonnet.
2. Remove valve-disc, seat and gaskets.
3. Wipe parts clean with a rag. If not adequate, soak parts in a cleaning solvent. Do not use crocus cloth or tools to clean parts. *If valve or seats are worn from service, install a new renewal kit.*



OPEN POSITION

4. Wipe body recesses clean. Install new *body* and *outlet port* gaskets. (In 1/2" and 3/4" 40D traps, body and outlet port gasket is a one-piece unit.)
5. Insert seat and place new *bonnet gasket* on seat.
6. Install *valve-disc assembly* on seat so that large inlet valve (plug type) freely enters large inlet port.
7. Clean *bonnet* gasketing surface and replace *bonnet*.
8. Clean, lubricate and tighten down cap screws finger tight. Compress gaskets evenly by tightening diagonally opposite cap screws with an Allen Wrench.

Trap Size	Torque Specifications	
	ft/lb	N·m
1/2	6.2 to 9.3	8.4 to 12.6
3/4	12.9 to 19.3	17.5 to 26.2
1	42.5 to 63.5	57.6 to 86.1
1-1/2	90 to 100	122 to 135
2	125 to 135	169 to 183
3	280 to 300	380 to 407



Series 40

RENEWAL PARTS

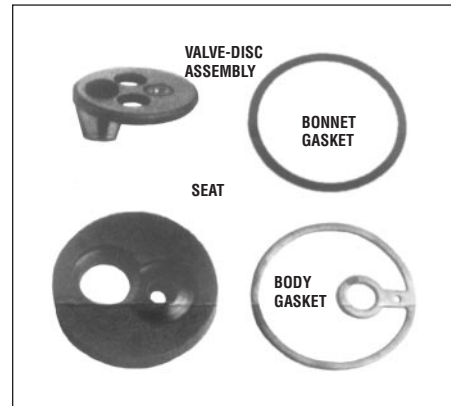
Renewal kits for Series 40 Impulse Steam Traps consist of valve-disc assembly, seat and all required gaskets. These parts are factory-assembled and tested, ready for use.

Renewal kits are sold as complete assemblies of matched parts, and individual parts are not interchangeable.

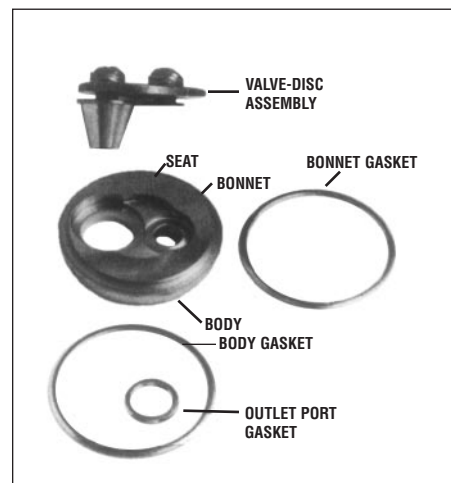
When ordering renewal kits be sure to specify trap size and *full figure number* from nameplate. (*Renewal Kits for 1/2" No. 40 and 3/4" No. 41 Traps are not interchangeable with new 1/2", 3/4" and 1" Series 40D Renewal Kits.*)

Installing Renewal Kit

- a. Remove cap screws and bonnet. Discard old valve-disc assembly, seat and all gaskets.
- b. Install new parts as described in "Trap Maintenance" section.



TYPICAL RENEWAL KIT—1/2", 3/4" and 1" SERIES 40D (Body and Outlet Gaskets for 1" 40D separate as in 1-1/2" and 3" sizes)



TYPICAL RENEWAL KIT—1-1/2", 2" and 3" SERIES 40

SPARE PARTS

To cover a one year service period it is recommended that one (1) spare Renewal Kit be stocked for every four (4) traps installed of same size and figure number. (Minimum number of kits = 1).

HOW TO ORDER

Specify "(Qty.) Renewal Kits for (Size), (Fig. No.) Yarway Impulse Steam Trap."

installing and servicing strainers

INSTALLATION

1. Strainers should be installed ahead of steam traps, control or pressure reducing valves and other pipe line equipment to protect against dirt, chips, scale or other foreign matter.
2. Fit strainer with nipple and blow down valve to facilitate frequent inspection and cleaning of strainer.
3. Fig. 1A shows a Yarway Strainer installed in a horizontal line ahead of a steam trap. Fig. 2A shows the strainer installed in a vertical down-flow line. Be sure to install the strainer with the arrow in direction of flow.
4. **Prevent freezing** by installing strainer on its side in horizontal lines or in vertical downward flow piping. Both strainer and blow down valve will drain completely and therefore be freezeproof on shut down.

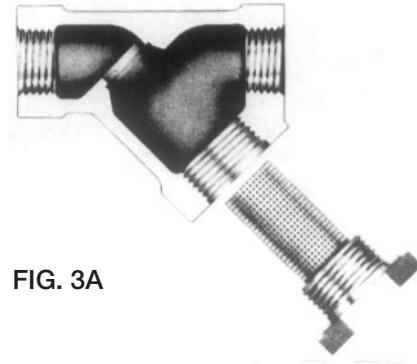
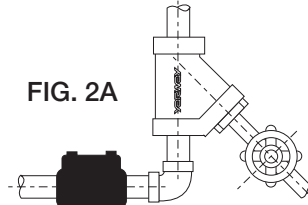
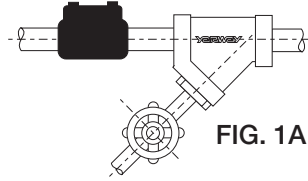


FIG. 3A

- cap. Clean the screen with compressed air, steam, or wash with a rust removing solvent. Keep spare screens on hand to reduce maintenance time.
3. **To Reassemble.** Clean the gasket surfaces on the cap and body and install a new gasket on the cap shoulder. Place the screen in the cap recess and secure the cap assembly to the strainer body.
4. Same maintenance procedure applies to bolted cover strainers.

SPARE PARTS

For one year service the following parts are recommended for *each* strainer installed:

- (2) Screen Cap Gaskets
- (1) Screen

To order gaskets or screens: Specify "(Qty.) screen cap gasket for (Size), (Fig. No.) Yarway Strainer." "(Qty.), (Perforation or mesh size), (Material) Screen for (Size), (Fig. No.) Yarway Strainer."

SERVICING

1. Regular inspection and blowing down of the strainer (by removing cap plug or opening blow down valve) will help to keep the strainer free of debris.
2. **To Clean.** Valve off the strainer and remove the screen cap. The screen and cap gasket will come out with the



www.tycoflowcontrol.com