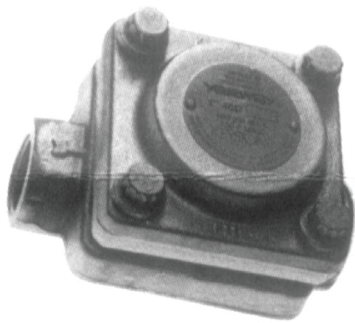




# YARWAY SERIES 40 IMPULSE® STEAM TRAPS

## INSTRUCTION, OPERATION AND MAINTENANCE MANUAL

Before installation these instructions must be fully read and understood



### 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.

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 Figure 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.

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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.

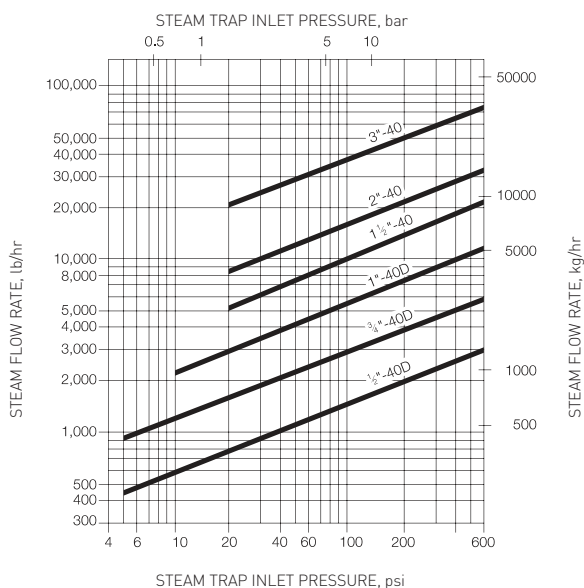
9. If discharge is to closed return system, install test tee and test valve for checking trap operation. See Figure 1, (a) and (b). Use gate valves in line to and from the trap for strainer blow down and test tee. All valves to be same pipe size as steam trap.

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 Figure 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 ensure 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.

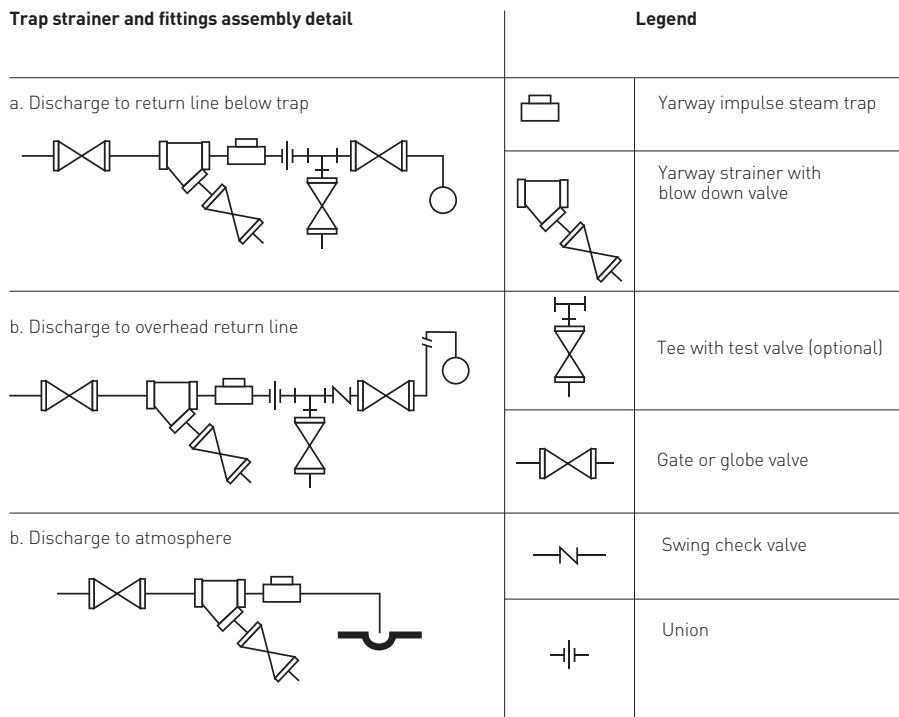
DISCHARGE CAPACITY -  
lb per hour (kg/hr) (Near steam temperature).



### WARNING

Hot discharge from this product may cause severe burns. Discharge must be piped away or directed so that persons in the vicinity are not endangered. This product must be isolated, vented and cool to the touch before repairing or inspecting.

FIGURE 1



# YARWAY SERIES 40 IMPULSE® STEAM TRAPS

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### 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.

The standard body material for Series 40 and 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 maybe 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.

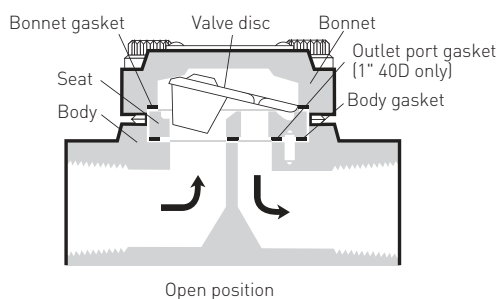
On heavy loads, valve remains wide open, discharges a heavy, continuous flow of condensate.

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 maybe 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 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.
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.



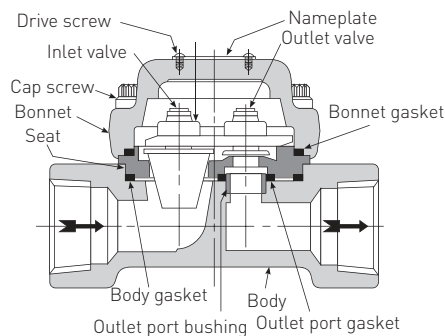
# YARWAY SERIES 40 IMPULSE® STEAM TRAPS

## INSTRUCTION, OPERATION AND MAINTENANCE MANUAL

### TORQUE TABLE

Trap size	Specifications	
	ft/lb	N-m
1/2	6.2 - 9.3	8.4 - 12.6
3/4	12.9 - 19.3	17.5 - 26.2
1	42.5 - 63.5	57.6 - 86.1
1 1/2	90.0 - 100.0	122.0 - 135.0
2	125.0 - 135.0	169.0 - 183.0
3	280.0 - 300.0	380.0 - 407.0

### SERIES 40



### RENEWAL PARTS

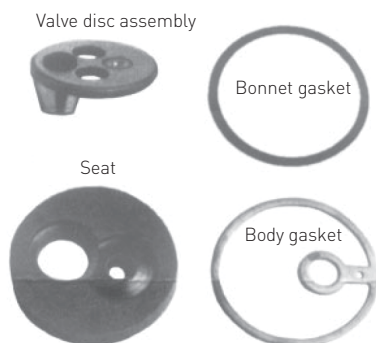
Renewal kits for Series 40 Impulse Steam Traps consist of valve-disc assembly, seat and all required gaskets. These parts are factory-assembled and tested, ready for use. Renewal kits are sold as complete assemblies of matched parts, and individual parts are not interchangeable. When ordering renewal 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

- Remove cap screws and bonnet.  
Discard old valve-disc assembly, seat and all gaskets.
- 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)



### SPARE PARTS

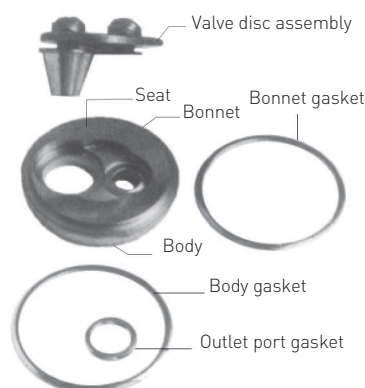
To cover a one year service period it is recommended that one (1) spare Renewal kit be stocked for every four (4) traps installed of same size and figure number. (Minimum number of kits = 1).

#### How to order

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

#### TYPICAL RENEWAL KIT

1 1/2", 2" and 3" Series 40



# YARWAY SERIES 40 IMPULSE® STEAM TRAPS

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### NOTE

Any malfunction of this product must be reported to the service department.  
Repair made to the product by unauthorized personnel will void the warranty.

### RIGHT TO KNOW LAWS AND OSHA STANDARD 29CFR (1910.1200)

Material Safety Data Sheets on the following Yarway products:  
Valves, Steam traps and Strainers

The OSHA Hazard Communication Standard 29CFR 1910.1200, states that the standard does not apply to "articles." The standard defines an article as:  
"A manufactured item formed to a specific shape or design for a particular use which does not release or otherwise expose an employee to a hazardous chemical under normal conditions of use."  
The above named products fall within the definition of an "article", no Material Safety Data Sheets are available or are required. Our product is manufactured as an "end product."

If the product is a weld end the following applies.

### WARNING

*Materials used in manufacture of Yarway products are considered in a stable condition when shipped. However, under certain conditions purchasers could create potential hazardous conditions by their future operations.*

### CAUTION

*Welding, cutting, burning, machining or grinding of this product can generate toxic dust and fumes of potentially hazardous ingredients. The dust or fumes can cause irritation of the respiratory tract, nose, throat, skin and eyes. It may cause temporary or permanent respiratory disease in a small percentage of exposed individuals. Use moderate ventilation when grinding or welding. Avoid breathing dust, fumes or mist. Avoid prolonged skin contact with dust or mist. Maintain dust levels below OSHA and ACGIH levels. Use protective devices. Wash hands thoroughly after contact with dust before eating or smoking.*

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