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Professionals in Steam Utilization

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Steam Trap Management Program

LA REFINERY

STEAM TRAP CHECKING & REPAIR

"Steam Trap Champions"

For Technical Assistance Contact:

Pat Greaney (323) 268-3581

bp

Steam Trap Management Program

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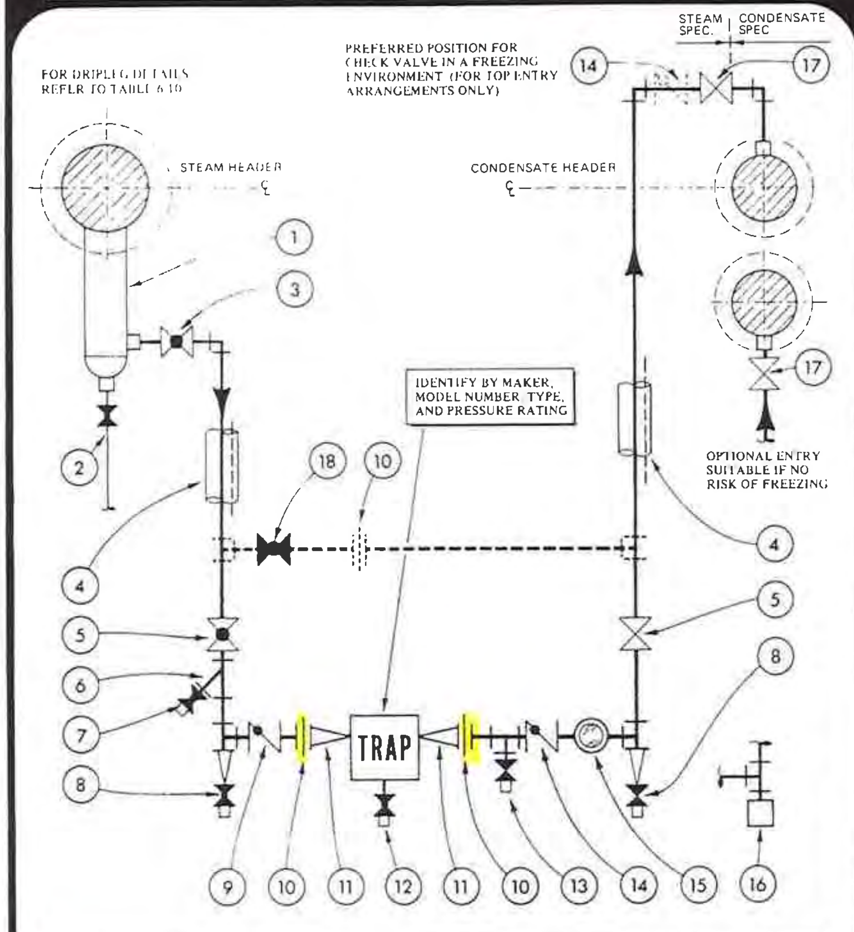
STEAM TRAP CHECKING & REPAIR

"Steam Trap Champions"

STEAM-TRAP PIPING

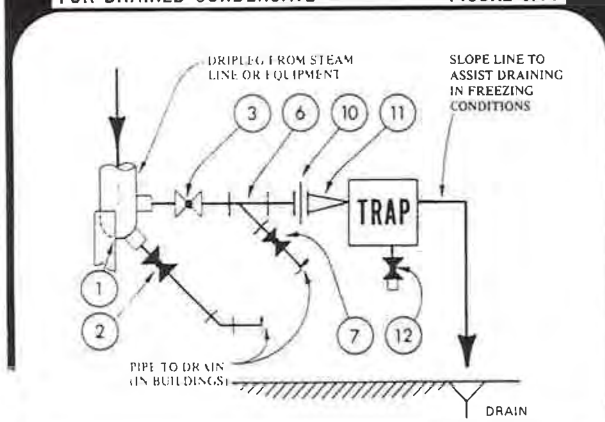
FOR COLLECTED CONDENSATE

FIGURE 6.43

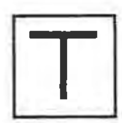


FOR DRAINED CONDENSATE

FIGURE 6.44



SYMBOL



Pipe, fittings and valves within shaded areas in figures 6.43 and 6.44 are shown on drawings by the above

KEY

FIGURES 6.43 & 6.44 SHOW EQUIPMENT WHICH CAN BE USED IN TRAP PIPING ARRANGEMENTS. ONLY ITEMS OF EQUIPMENT NECESSARY FOR ECONOMIC & SAFE DESIGN NEED BE USED. THE FOLLOWING NOTES WILL AID SELECTION

(1) DRIPLEG FROM STEAM HEADER, OR LINE TO EQUIPMENT, OR LINE FROM STEAM-FED EQUIPMENT

(2) DRIPLEG VALVE FOR PERIODICALLY BLOWING DOWN SEDIMENT. FOR SAFETY, VALVE SHOULD BE PIPED TO A DRAIN OR TO GRADE

(3) ISOLATING VALVE TO BE LOCATED CLOSE TO DRIPLEG

(4) ★ INSULATION. NEEDED IN A COLD ENVIRONMENT IF THERE IS A RISK OF CONDENSATE FREEZING AS A RESULT OF SHUTDOWN OR INTERMITTENT OPERATION. IN EXTREME COLD, TRACING MAY ALSO BE REQUIRED—IF STEAM IS NOT CONSTANTLY AVAILABLE FOR THIS PURPOSE, ELECTRIC TRACING WOULD BE NECESSARY

(5) ★ ISOLATING VALVE. REQUIRED ONLY IF VALVES (3) AND (17) ARE OUT OF REACH, OR IF A BYPASS IS USED—SEE NOTE (18)

(6) STRAINER. NORMALLY FITTED IN LINES TO TRAPS OF LESS THAN 2-INCH SIZE. A STRAINER MAY BE AN INTEGRAL FEATURE OF THE TRAP

(7) ★ VALVE FOR BLOWING STRAINER SEDIMENT TO ATMOSPHERE. PLUG FOR SAFETY

(8) ★ MANUALLY-OPERATED DRAIN VALVE FOR USE IN FREEZING CONDITIONS WHEN THE TRAP IS POSITIONED HORIZONTALLY — SEE NOTE (16)

(9) ★ CHECK VALVE. PRIMARILY REQUIRED IN LINES USING BUCKET TRAPS TO PREVENT LOSS OF SEAL WATER IF DIFFERENTIAL PRESSURE ACROSS TRAP REVERSES DUE TO BLOWING DOWN THE LINE OR STRAINER UPSTREAM OF THE TRAP

(10) UNIONS FOR REMOVING TRAP, ETC

(11) ★ SWAGES FOR ADAPTING TRAP TO SIZE OF LINE

(12) ★ BLOWDOWN VALVE FOR A TRAP WITH A BUILT-IN STRAINER (ALTERNATIVE TO (6))

(13) ★ TEST VALVE SHOWS IF A FAULTY TRAP IS PASSING STEAM. SOMETIMES, BODY OF TRAP HAS A TAPPED PORT FOR FITTING THIS VALVE

(14) ★ CHECK VALVE PREVENTS BACKFLOW THRU TRAP IF CONDENSATE IS BEING RETURNED TO A HEADER FROM MORE THAN ONE TRAP. IN THE LOWER POSITION, THE VALVE HAS THE ASSISTANCE OF A COLUMN OF WATER TO HELP IT CLOSE AND TO GIVE IT A WATER SEAL. REQUIRED IF SEVERAL TRAPS DISCHARGE INTO A SINGLE HEADER WHICH IS OR MAY BE UNDER PRESSURE

(15) ★ SIGHT GLASS ALLOWS VISUAL CHECK THAT TRAP IS DISCHARGING CORRECTLY INTO A PRESSURIZED CONDENSATE RETURN LINE, BUT IS SELDOM USED BECAUSE THE GLASS MAY ERODE, PRESENTING A RISK OF EXPLOSION

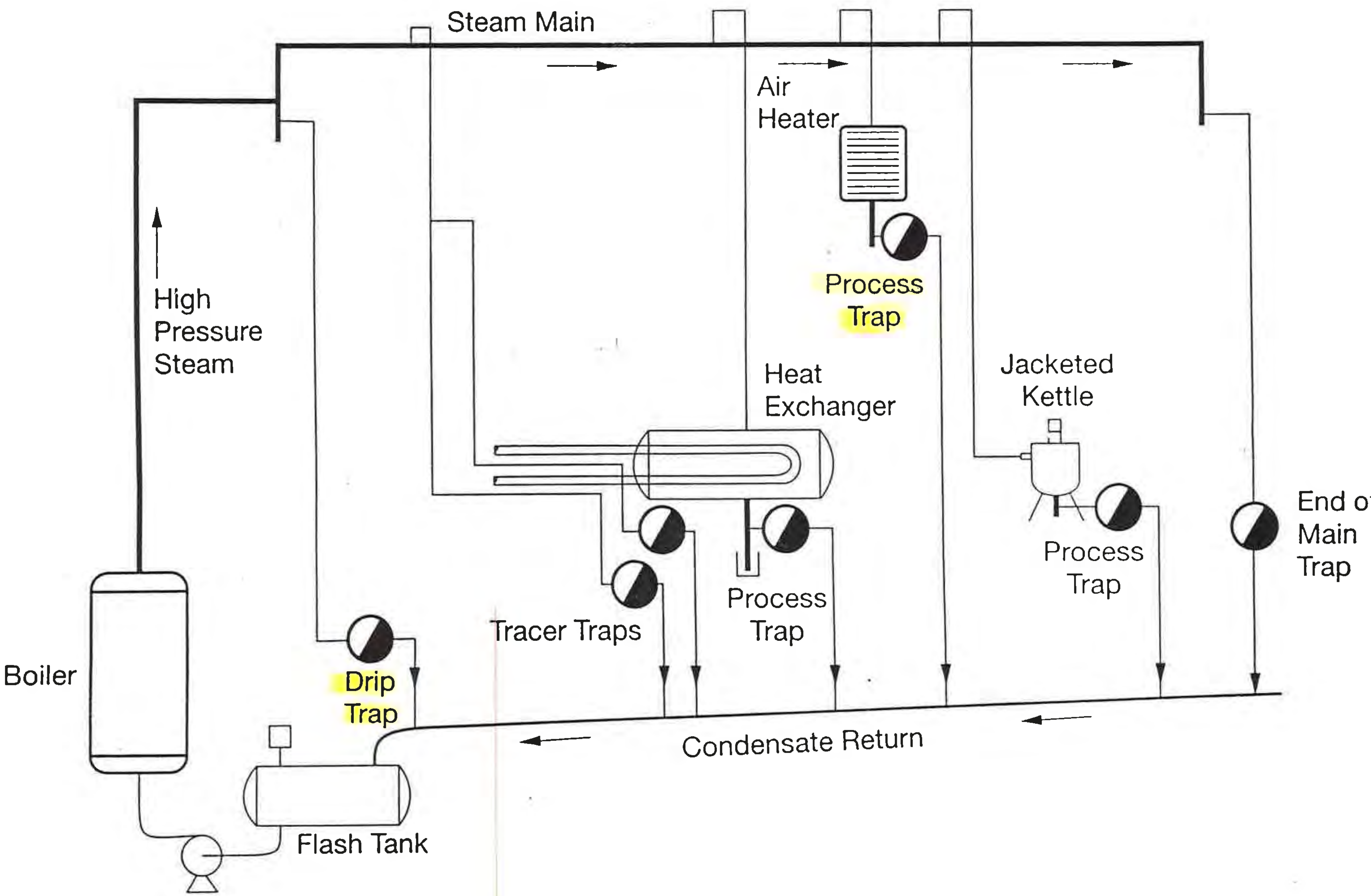
(16) ★ TEMPERATURE-SENSITIVE (AUTOMATIC) DRAIN ALLOWS LINE TO EMPTY, PREVENTING DAMAGE TO PIPING IN A COLD ENVIRONMENT (SEE NOTE (4)). IF VALVE (14) IS OVERHEAD, THE AUTOMATIC DRAIN MAY BE FITTED TO THE TRAP — SOME TRAP BODIES PROVIDE FOR THIS

(17) ISOLATING VALVE AT HEADER

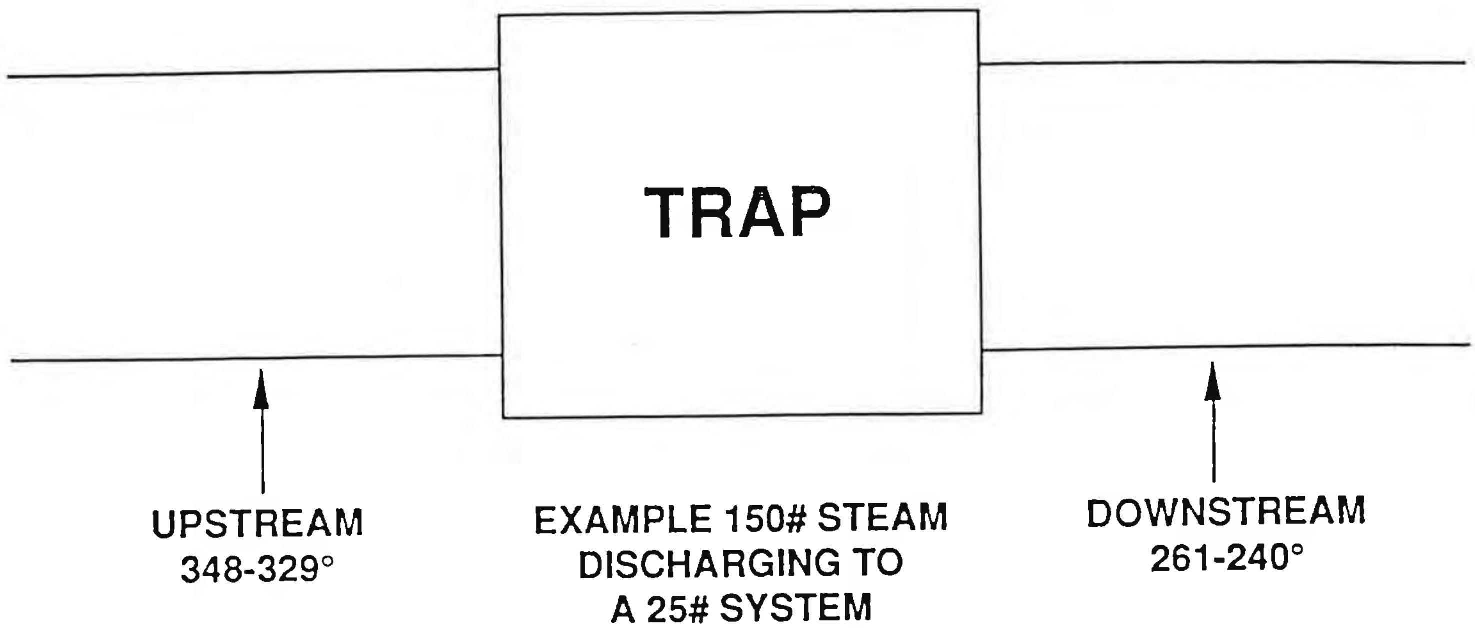
(18) ★ BY-PASS. NOT RECOMMENDED AS IT CAN BE LEFT OPEN. IT IS BETTER TO PROVIDE A STANDBY TRAP

□□□□□□□□□

★ ASTERISK INDICATES THAT THE EQUIPMENT IS OPTIONAL AND IS NOT ESSENTIAL TO THE BASIC TRAP PIPING DESIGN


Steam Main
Air
Heater
Process
Trap
High
Pressure
Steam
Heat
Exchanger
Jacketed
Kettle
End of
Main
Trap
Process
Trap
Process
Trap
Tracer Traps
Boiler
Drip
Trap
Condensate Return
Flash Tank

USING PYROMETER ON STEAM TRAPS



- Place probe on pipe as close to trap as you can get.
- Avoid if possible placing probe on unions, flanges, pipe threads.
- Get pipe as clean as possible.
- Measure upstream and downstream temperatures.
- Use table below.
- Due to factors such as the different thickness of pipe, corrosion, scale, and distances from the boiler you may not always read exactly like the table. You are looking for temperature differential.
- If you read temperatures way over or under the tables check for errors in tagging, blocked strainers, etc.

Steam Pressures (psig)	Steam Temperature (F)	Pipe Surface Temperature Range (F)
15	250	238-225
50	298	283-268
100	338	321-304
150	366	348-329
200	388	369-349
450	460	437-414
600	489	450-435

YARWAY

KEYSTONE
INTERNATIONAL, INC

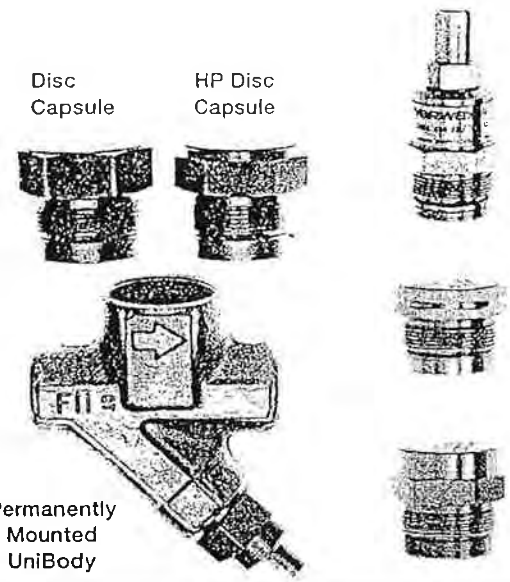
how to install and service UniBody Plus steam traps

series 711/721, 731/741, 746 and 751/761

The UniBody Plus line of steam traps has minimized the time-consuming chore of trap maintenance by packaging four different types of traps (disc, piston, orifice, filled thermal element-FTE) in interchangeable capsules which fit a body common to all four types.

The trap body acts merely as a holder for the capsule. Once the body is piped into the line it stays there.

To renew the trap merely remove the capsule from the body and install a new one of the same type — or a different type if the requirements of the application have changed.



RATINGS AND SPECIFICATIONS

SPECIFICATION	SERIES			
	711/721(HP)	731/741	746	751/761 (HP)
Operating Principle	Thermodynamic	Thermodynamic	Thermodynamic	Thermostatic
Type	Disc	Piston	Orifice	Filled Thermal Element
Design Class, ANSI	600	600	600	600
Operating Pressure, psi	4 to 300 HP = 150 to 600	L = 20 to 300 H = 40 to 600	20 to 600	5 = 4 to 300 40 = 4 to 300 HP = 4 to 600
Design Temperature, F	750	L = 450 H = 750	750	5 = 440 HP = 750
Flow, Nominal lb/hr at 100 psi near saturation (unless otherwise noted)	350 HP = 250 @ 150 psi	A = 600 B = 1000 C = 1800 E = 2200	28	5 = 450 HP = 450 40 = 450 (45F subcooled)
Max. Back Pressure % of inlet, psia	80%	L = 40% H = 25% *55% with split washer removed	90%	N.A.
Min. Differential, psig				4

* Operation 10 to 20 psig (1.7 to 2.4 bar); or back pressures up to 55% of inlet pressure. **First cool trap.** Remove cap nut, turn threaded stem and lock nut counterclockwise. Use pliers to remove split washer. Then turn stem and lock nut clockwise until lock nut (without washer) seats tightly, without jamming on top of bonnet. Lubricate thread. Replace gasket and cap nut. Trap is ready for operation.

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.

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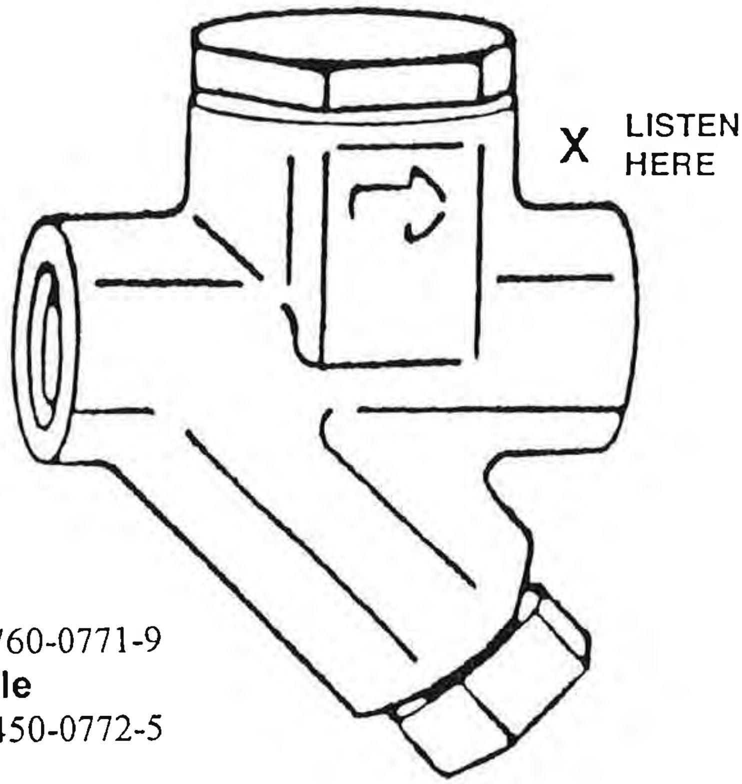
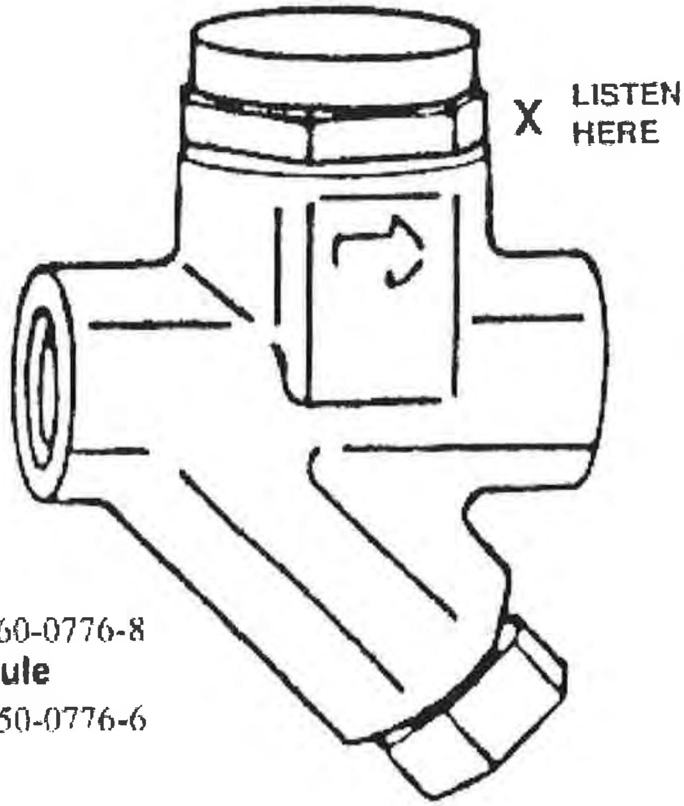
DISC TRAP



Series 721 Trap
Arco Stock Code 55-760-0771-9
721 Repair Capsule
Arco Stock Code 55-450-0772-5

- Best suited for 150# steam.
- Listen for clicking sound.
- 3-5 cycles per minute is normal - can cycle up to 30 times per minute.
- Over 30 cycles or pitched whistle of steam - failed open trap.
- If no sound use water bottle to squirt water on top of the trap.
  Trap should start to cycle immediately.
- Still no cycle or you have a warm trap open blow off valve.
- Designed to fail open.
- In-line repairable.

FTE™ thermostatic trap

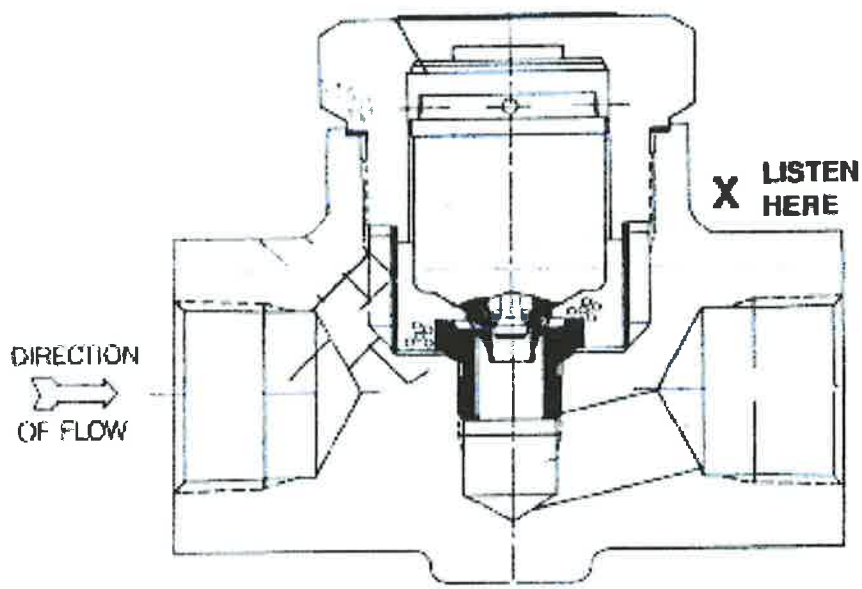


Series 761-5 Trap
BP Arco Stock Code 55-760-0776-8
761-5 Repair Capsule
BP Arco Stock Code 55-450-0776-6

- Used on 25# steam.
- Listen for clicking sound.
- Use 761-40 where condensate is dumped to the pad.
- In-line repairable.
- Designed to fail open.

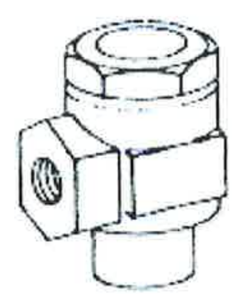
Series 761-40 Trap
BP Arco Stock Code 55-450-0779-2
761-40 Repair Capsule
BP Arco Stock Code 55-450-0779-0

HIGH CAPACITY PROCESS TRAP



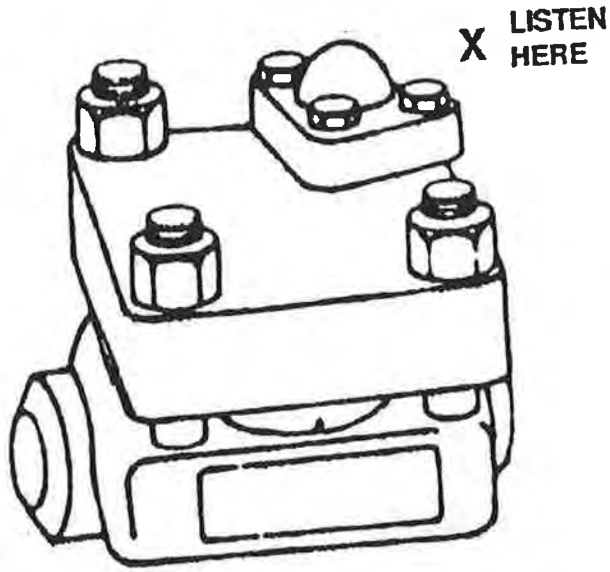
Series 151-I Trap
BP Arco Stock Code 5576007271
Series 151-I Repair Kit
BP Arco Stock Code 5545007279

- Used on 25# and 150# systems.
- Listen for "flushing" noise. Depending on condensate load cycle can vary.
- Must have a strainer with blow off valve ahead of trap.
- Pyrometer can also be used.
- In-line repairable.
- Designed to fail open.



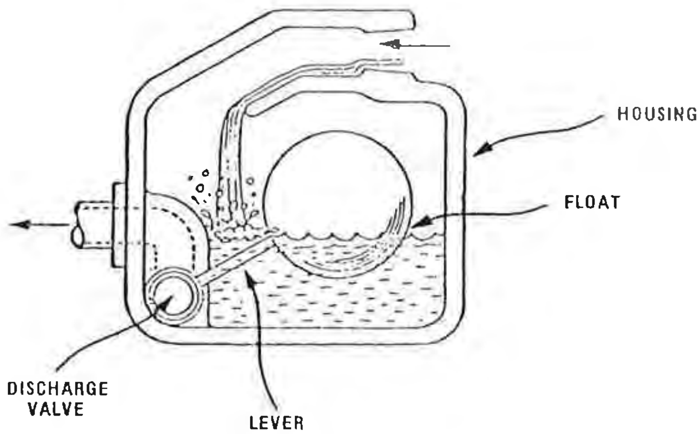
RIGHT ANGLE MODEL

HIGH PRESSURE
piston trap

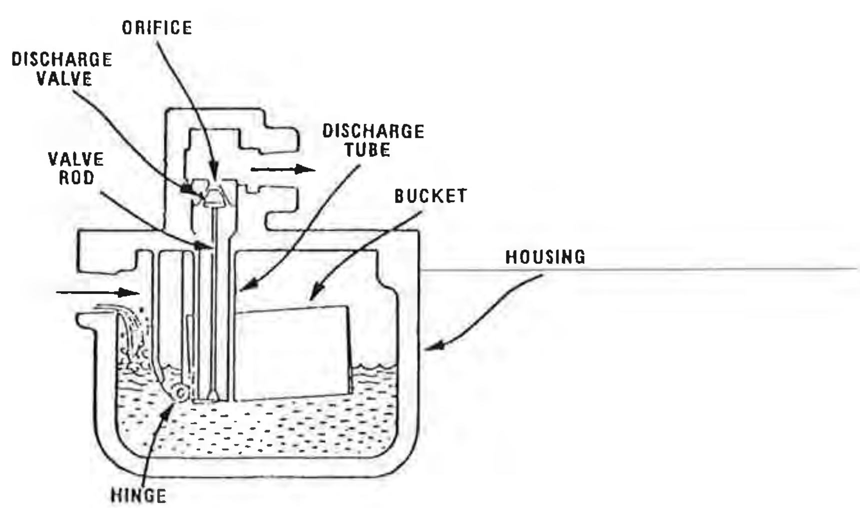


Series 460A Trap
BP Arco Stock Code 5576007480

- Used on 600# system.
- Stethoscope used to determine fail open condition only.
  A high-pitched sound will indicate steam blowing through. The pyrometer is best method of checking this trap.
- Trap is fail open design.
- In-line repairable.
- Must have a strainer with blow off valve ahead of trap.



FLOAT TRAP



OPEN BUCKET TRAP

Fig. P006.4 Mechanical Steam Traps

2.400 STEAM TRAPS

Steam traps are one of the most frequently used specialty items. Whenever steam is used for heating, a steam trap is needed. Steam is an expensive commodity and is not to be wasted if an efficient and profitable plant is to be operated. Improper installation and subsequent improper maintenance of steam traps will result in poor operation and high steam costs. There is a lot you must know about steam traps. There are various types of traps and you must know how each type works. You must know how to install a trap so that it can operate efficiently, and you must be able to troubleshoot a trap installation when difficulties arise. Because of their importance, considerable time will be spent on steam traps in this study.

Why steam traps are needed. Suppose we have a process tank that has a steam jacket on its bottom and side which is used to apply heat to the liquid in the tank. As steam enters this jacket, its heat is transferred to the liquid in the tank, raising the temperature of the liquid or maybe bringing it up to a boil, depending on the process requirement. In giving up its heat to the liquid in the tank, the steam turns back into water, or as we call it, ***condensate.***

Now if we would allow this condensate to remain in the jacket, the jacket would soon fill up and there would be no space left for the hot steam to enter and heat the tank.

It is very plain to see that we must get rid of the condensate as soon as it is formed, so that the jacket can do its job efficiently. How can we do this? There are two possibilities. First, we could simply attach a discharge pipe to the bottom of the jacket. Now, the condensate could drain out, but so could the live steam. This waste of steam would be very costly. Another method we could use would be to install a valve in the discharge line. By partially opening or "cracking" this valve, we could control the condensate discharge somewhat. The difficulty here is to determine just how much to open the valve. If it is open too wide, live steam will be lost, if not open wide enough, condensate will back up into the jacket. This method would require far too much of the operator's time.

All this leads us to realize that a device is needed which will act as an ***automatic valve to let the condensate out and hold back the steam.*** This device is the ***steam trap.***

What a steam trap must do. We have another problem in conjunction with condensate removal. This problem is the elimination of air and gas that are present along with the condensate. Air can enter the system either by the boiler feed water makeup, or it can enter the system when the equipment is shutdown. Non-condensible gas, such as carbon dioxide (CO_2), may also be present in the steam system. These gasses are formed in varying amount by chemical action taking place in the boiler water as it is converted to steam.

Now, in summary we can say that a steam trap has three major functions:

- It must let out the condensate but hold back the steam.
- It must let out all air and gas quickly, particularly on startup after the equipment has been idle.
- It must accomplish the removal of condensate, air and gas by prompt response to conditions in the line.

Types of steam traps. Steam traps divide into three general types:

- Mechanical - These types operate on the change of state of the fluid entering - whether it is water or steam. They open to water or condensate but close to steam.

- Thermostatic - These types are actuated by the temperature of the liquid flowing into the trap. They open on cool condensate and close near the steam temperature.

- Thermodynamic % These types use the difference in thermodynamic energy that is available from steam and hot condensate.

Mechanical traps - how they are made and how they operate. Float trap. This is one of the oldest types of steam traps, and is shown on Figure P006.4 "Mechanical Steam Traps". This trap depends entirely on the liquid level within the housing for its operation. The float B is attached to the end of the lever C. The opposite end of the lever is attached to a discharge valve D. When sufficient condensate enters the trap, the float rises and gradually opens the discharge valve. Increasing amounts of condensate opens the valve wider, thus adjusting it to suit the condensate load and maintaining a proper condensate level within the housing.

The float trap is a reliable one, but for a given condensate load, it is considerably larger and bulkier than the newer types.

Open bucket trap. This another old model trap. It consists of an open top bucket A operating within a housing B. The bucket pivots about a hinge C. A valve rod D is attached to the bucket and extends through the discharge tube E. At the top of the valve rod is a discharge valve F which seats in the orifice G.

When condensate comes into this trap, it gradually fills up the body and floats the bucket, thus causing the bucket to rise and close the valve. As more condensate comes in, it spills over the top rim of the bucket and the bucket sinks. This opens the valve and the pressure inside the trap forces the condensate up through the discharge tube and out the valve orifice. As soon as the bucket is emptied sufficiently, it floats again and the cycle is repeated.

In the earlier models of both the float and open bucket traps the acculumation of air becomes a problem. The first method used to overcome this difficulty was to install a hand operated pet cock or valve in the top of the trap body. This required an operator to go around the plant at regular intervals to bleed the air out of all the traps. Later models were equipped with an automatic vent, usually a thermostatic bellows. As air is cooler than steam, the thermostatic bellows opens to let out the air, and closes when steam tries to get out.

What flash steam is. When hot condensate under pressure, is released to a lower pressure, part of it is re-evaporated, becoming what is knows as ***flash steam.*** This is illustrated at A in Figure P006.7 "Flash Steam".

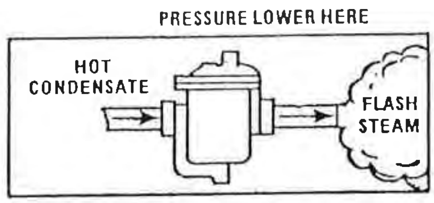
Why is it important? This flash steam is important because it contains heat units which can be utilized for economy of plant operation - and which are otherwise wasted. In order to take advantage of flash steam, it is necessary to know how it is formed and how much will be formed under given conditions.

How flash steam is formed.When water is heated at atmospheric pressure, its temperature rises until it reaches 212°F, the highest temperature at which water can exist at this pressure. Further addition of heat does not raise the temperature, but converts the water to steam.

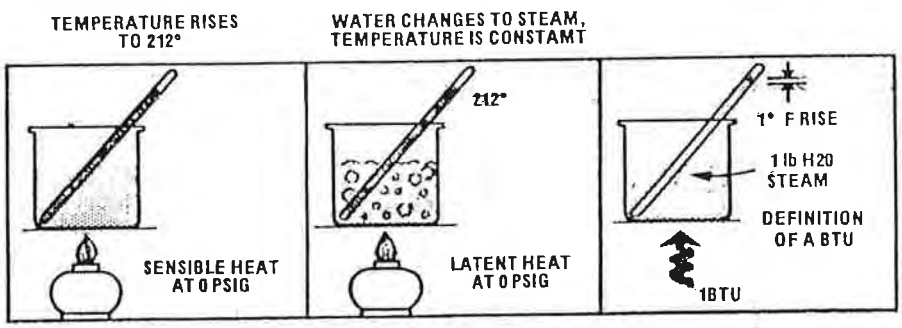
The heat absorbed by the water in raising its temperature to boiling point is called "sensible heat". The heat required to convert water at boiling point to steam at the same temperature, is called "latent heat". The unit of heat is the British Thermal Unit (btu) which is the amount of heat required to raise the temperature of one pound of water 1°F at atmospheric pressure. See illustration B in Figure P006.7.

If water is heated under pressure, however, the boiling point is higher than 212°F, so the sensible heat required is greater. For every pressure there is a corresponding boiling point temperature, and at this temperature the water contains a fixed and known amount of heat. See Figure P006.8 "Table Of Properties Of Saturated Steam". The higher the pressure, the higher the boiling temperature and the higher the heat content. If the pressure is reduced, heat content is reduced and water temperature falls to the boiling temperature at the new pressure. This means that a certain amount of sensible heat is released. This excess heat will be absorbed in the form of latent heat, causing part of the water to "flash" into steam. An example of this is the discharge of condensate from steam traps and the discharge of boiler water when flowing down.

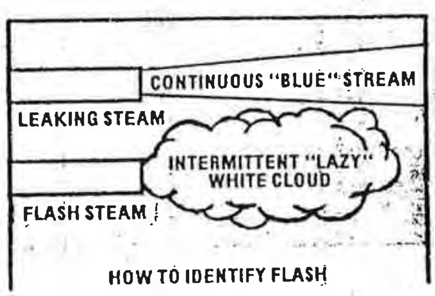
How to identify flash steam. Steam trap users often confuse flash steam with leaking steam. Here's how to tell the difference. If steam blows out continuously in a colorless to blue steam, it is live steam. If the steam "floats" or billows out intermittently (each time the trap discharges) in a white cloud, it is flash steam. See illustration C on Figure P006.7.



A



B



C

Fig. P006.7 Flash Steam

Maintenance of this trap is very minimal. If the disk should become work or grooved, a new disk can be installed by unscrewing the bonnet from the body of the trap. If the two seating surfaces in the body become grooved or wire drawn, the trap must be replaced.

Steam trap installation. In order for a steam trap to do its job of draining condensate from a piece of equipment it must be installed in the proper manner. Very often when sufficient heat is not being applied to manner. Very a vessel, the steam trap is immediately blamed, whereas it well might be that the trap is improperly installed. Let's see how a trap should be installed to give proper service.

1. Install the trap in a place where it will be accessible for inspection and maintenance.
2. Condensate must be drained from the lowest point of the steam user.
3. Whenever possible, the trap should be installed below the point where the condensate leaves the equipment.
4. Bucket traps ***must*** be installed in a horizontal pipe run.
5. Locate the trap as close as it is convenient to the equipment.
6. Avoid the use of a trap by-pass.
7. Include shutoff valves to isolate the trap.
8. Include unions to permit trap removal.
9. Include a line strainer ahead of trap (if trap itself does not have an integral strainer).
10. Include a test valve for checking the trap operation.
11. Include a check valve if trap discharge is elevated.
12. Each steam user must have its own trap.
13. Slope the condensate lines to drain to the trap.
14. Make provision for draining condensate lines when equipment is shut down. This is to prevent freezing during shutdown.

Routine maintenance. The operation of each trap should be checked once a week. This is a simple matter and will pay for itself in steam cost. To check a trap, close the downstream shutoff valve and ***carefully open the test valve.*** Stand off to the side so you will not get a burst of steam or hot water on your hands or body. Observe the discharge.

- An intermittent discharge indicates the trap is functioning properly.
- A dribble or semi-continuous discharge means that the trap is functioning properly but has air mixed with steam or a light condensate load.
- Continuous steam blow indicates trouble. Refer to the troubleshooting section.
- No flow - indicates possible trouble. Refer to the troubleshooting section.

If the trap is working OK, it is also a good practice to clean the strainer. To do this, open the blowoff valve on the strainer for about thirty seconds. This should clean off any dirt or scale deposit on the screen of the strainer.

Troubleshooting steam traps. Before you jump into the conclusion that the trap is at fault, it is wise to check a few other things first. These are:

- Is the steam pressure and temperature at the inlet of the equipment up to the required amounts?
- Is the condensate being taken off at the lowest point and the line sloped toward the trap without dips or pockets?
- Is the back pressure in the trap discharge line higher than it should be?
- If there is a check valve in the condensate discharge line, does it have enough capacity and is it free to operate properly?

After you are assured that none of the above situations exist, then you may proceed to investigate, using the following as a guideline:

Cold trap - no discharge.

1. Pressure too high (bucket traps) - trap fails to open.
   a. Orifice too large for pressure. Replace with proper size.
   b. Orifice enlarged by wear. Replace worn parts.
   c. Pressure reducing valve set too high. Readjust.
   d. Pressure gage reads too low.

2. Condensate not reaching trap.
   a. Strainer clogged. Blow out screen or replace.
   b. Broken valve in line to trap.
   c. Plugged pipe line or fittings.

3. Trap clogged.
   a. Clean out internals or replace if worn.
   b. Bucket vent filled with dirt (inverted bucket traps).
   c. Bucket hung up on guide pins (inverted bucket traps). Replace worn guide pin assembly.

Continuous flow.

1. Trap is probably too small. Open the strainer blowoff to assist trap. If this permits trap to cycle properly, a larger trap is necessary.
2. Strainer may be partly plugged, reducing flow and pressure to trap. Clean out strainer.
3. Trap may be partially clogged with dirt. Clean out internal parts.
4. Abnormal load on trap due to boiler priming or foaming. This throws large quantities of water into the steam lines. Install a separation if necessary.
5. In the case of bucket traps, a high pressure trap with a small orifice may have been installed on a low pressure application. Change to a larger orifice and valve.
6. In the case of a thermostatic trap, the bellows may have been overstressed, partially closing the orifice. Replace the bellows.

Blowing line steam.

1. Valve stuck open with scale or dirt. Clean out.
2. Worn valve or disk mechanism. Replace.
3. Trap may have lost its prime (bucket traps).
   a. Close the outlet valve for a few minutes to allow condensate to collect. Then gradually open. If the trap catches its prime, chances are that the trap is OK.
   b. If still inoperative, check valve and seat for wear.
   c. Sudden pressure changes may cause bucket traps to lose prime. Install an internal check valve valve in trap.
4. Ruptured bellows (thermostatic). Replace.
5. Back pressure too high (thermodynamic traps). This may be due to one or more traps blowing open and discharging into the same return system.
   a. Check for faulty trap or traps stuck open.
   b. Check for traps with worn parts that prevent disks or valves from seating.
   c. Make sure that return lines and receiver are large enough.

2.500 STRAINERS

As you already have learned, the inside of pipe lines is subject to erosion and corrosion, and as a result are anything but clean on the inside. Small bits of scale, rust and other foreign matter can generally be found in most pipe lines. This can very easily damage seals, valve seats, trap mechanism and the like. If nothing else, they accumulate and build up to reduce the internal pipe diameter or plug the line completely.

The most simple way to eliminate these unwanted solids in a pipe line is the use of a Y-type strainer. Figure P006.11 "Y-Type Strainers" shows how these are made. At A you see a screwed type, steel body strainer. The screen sets into machined surfaces in the chamber, and a plug is screwed in to hold the screen in place. The plug is tapped in the center for a blowdown connection.

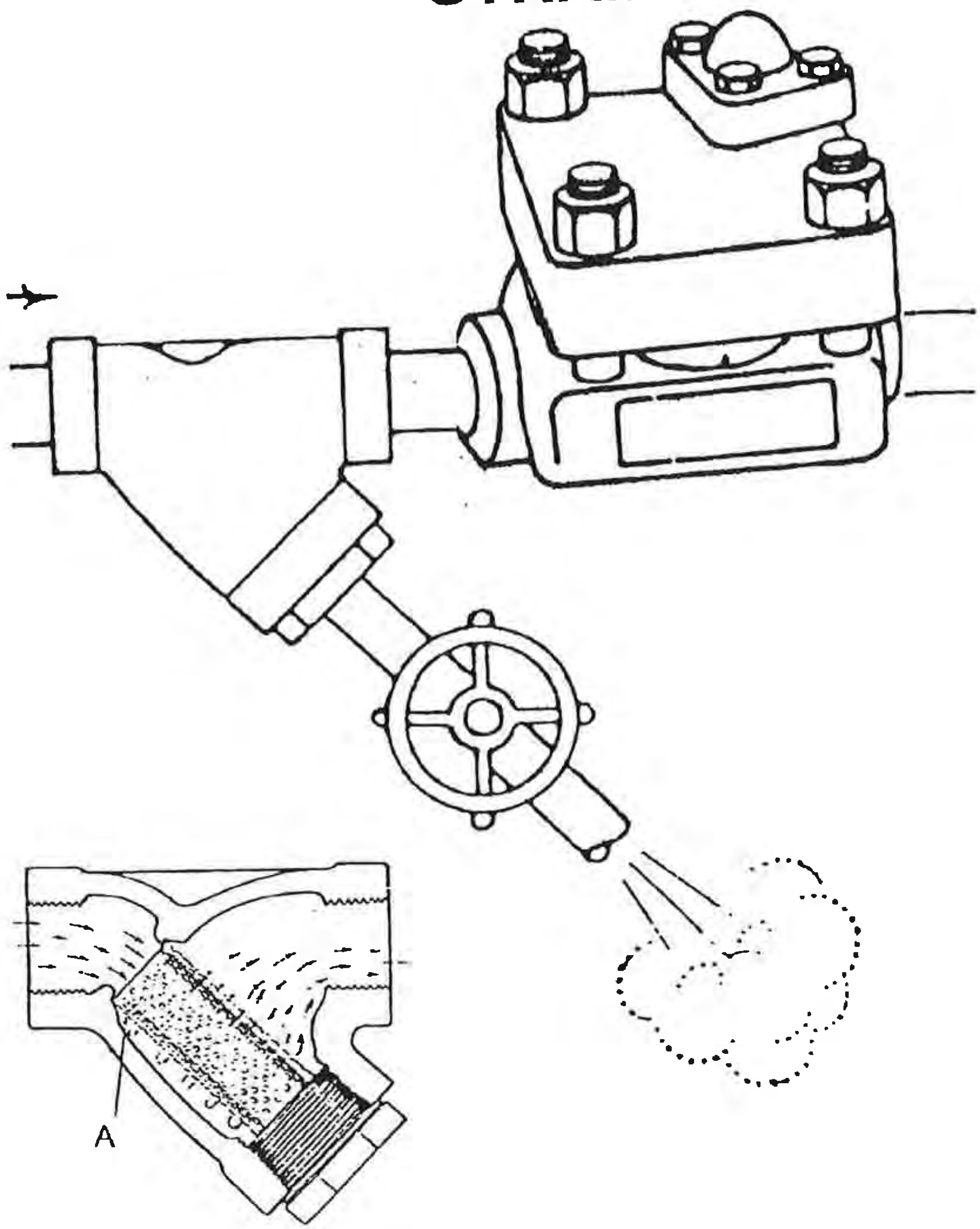
In operation, steam or fluids enters from the left side and must go down and through the screen to leave the strainer on the right side. In this manner, any foreign material larger than the openings in the screen are deposited on the inside of the screen. If this material is allowed to build up on the inside of the screen, flow is restricted and eventually blocked. To overcome this situation, a short nipple and a gate valve are screwed into the plug of the strainer. Opening this gate valve permits the steam or fluid to flush out the inside of the screen while the line is in operation. A good practice is to remove the screen when the line is shut down and wire brush the screen thoroughly inside and outside. A corroded or damaged screen should be replaced.

Screens for the Y-type strainers are available in many types and construction. At D on Figure P006.11 you see the kind of screen that is commonly used for steam service. This is a perforated sheet type screen. At E is shown a woven wire type screen that is used to separate lumps or larger particles from a liquid stream. At F is shown a finely woven wire cloth used for fine particle separation. This type of screen must be supported by a backup screen which is shown at G.

Y-type strainers in sizes above 2" have the blowoff connection off center, as you see at B. This is to permit complete flushing of all material inside these larger diameter screens. At C is shown a flanged body strainer.

Always remember, that a strainer cannot be installed in a line and then forgotten. This is far worse than having no strainer. Periodic blow off is necessary to keep the screen clean, and only experience will dictate how often this is necessary. It may be necessary several times a day or only once per week. The screen should be removed for cleaning and inspection about once per month if possible.

STRAINERS



- Strainers are the number one method of removing dirt and debris from the steam system.
- If a strainer does its job the screen (item "A") will plug up.
- The strainer is designed to blow down the dirt while the system is running.
- Depending on the amount of dirt in the system, a monthly blowdown is recommended.

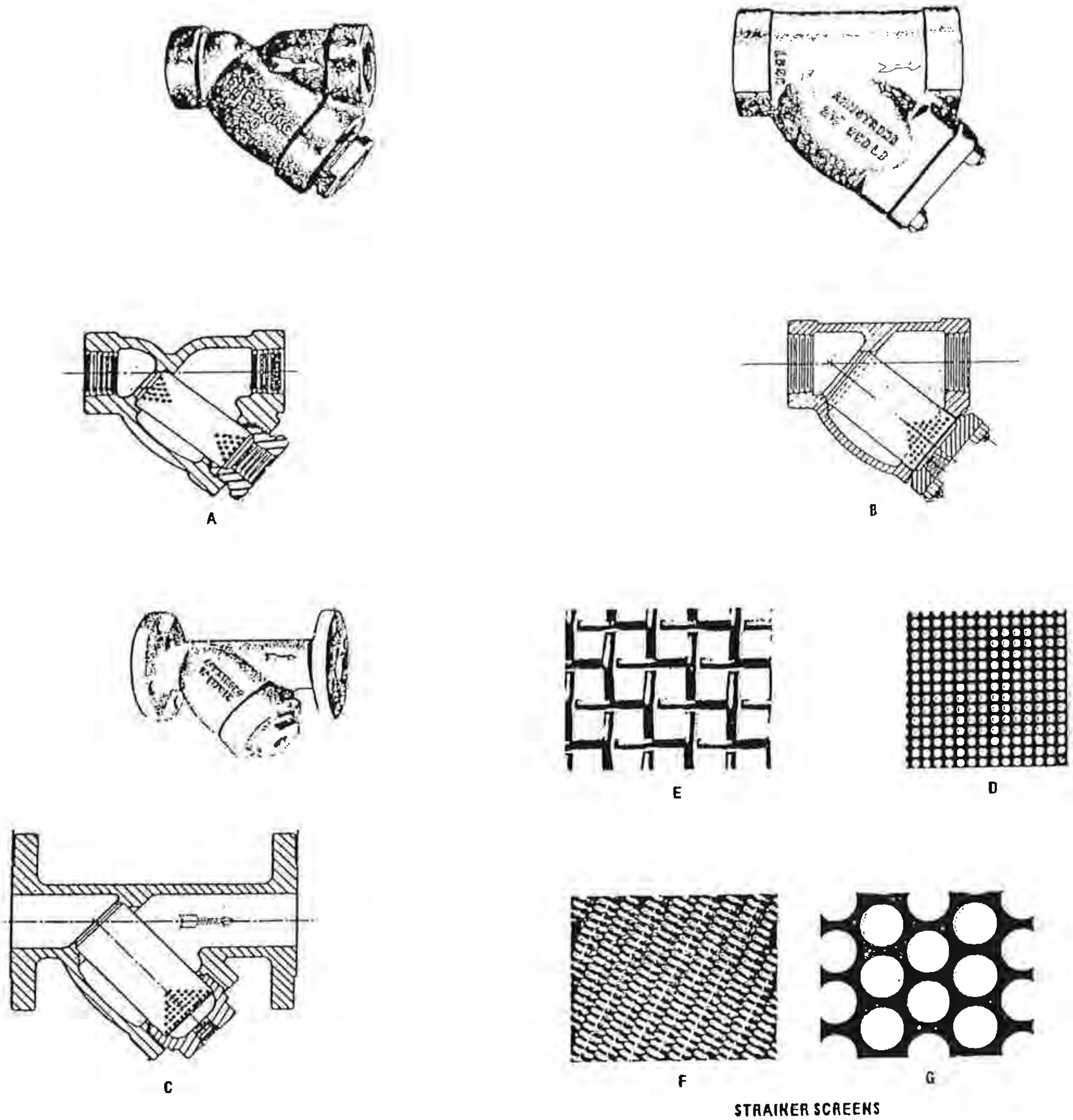


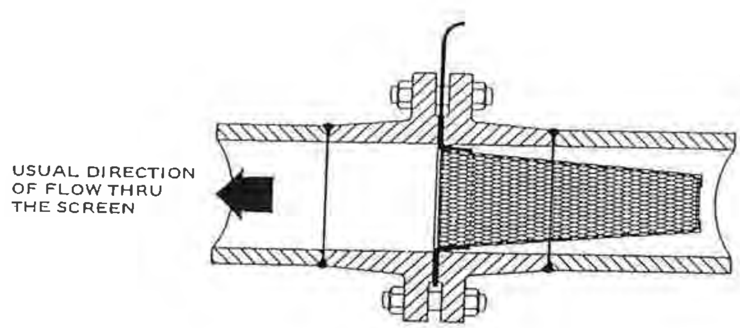
Fig. P006.11 Y-Type Strainers

SCREENS

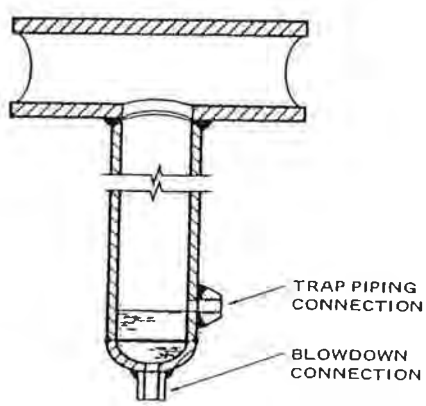
Simple temporary strainers made from perforated sheet metal and/or wire mesh are used for startup operations on the suction side of pumps and compressors, especially where there is a long run of piping before the unit that may contain weld spatter or material inadvertently left in the pipe. After startup, the screen usually is removed.

It may be necessary to arrange for a small removable spool to accommodate the screen. It is important that the flow in suction lines should not be restricted. Cone-shaped screens are therefor preferred, with cylindric types as second choice. Flat screens are better reserved for low-suction heads.

SCREEN BETWEEN FLANGES FIGURE 2.69



DRIPLEG CONSTRUCTION FIGURE 2.70



DRIPLEGS

Often made from pipe and fittings, the dripleg is an inexpensive means of collecting condensate. Figure 2.70 shows a dripleg fitted to a horizontal pipe.

P11 - TYPICAL CONDENSATE LEG

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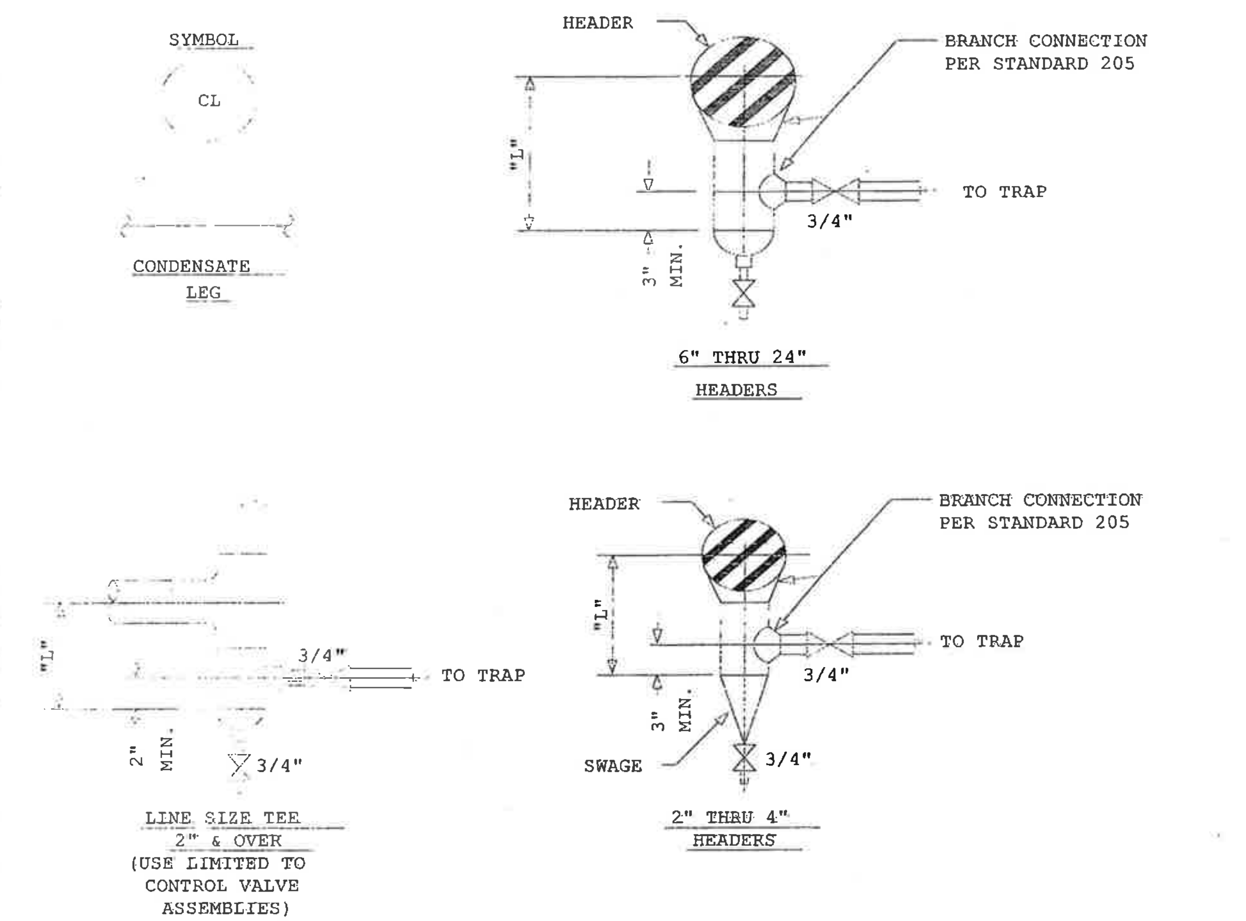

NOTE:
FOR ORIENTATION OF STEAM TRAP CONNECTION SEE PIPING PLAN DWG'S.

FOR CHERRY POINT USE ONLY

HEADER SIZE	2	3	4	6	8	10	12	14	16	18	20	24
BOOT SIZE	2	2	3	4	6	8	10	12	14	16	18	20
"L" DIMENSION	28	28	28	28	28	28	28	28	28	28	30	36

LA 0100-92

BY | CK | APP. | REV | DATE | DESCRIPTION | BY | CK | APP.

TYPICAL CONDENSATE LEG

ARCO Products Company

APCO_DWG_P_11 (10/91)