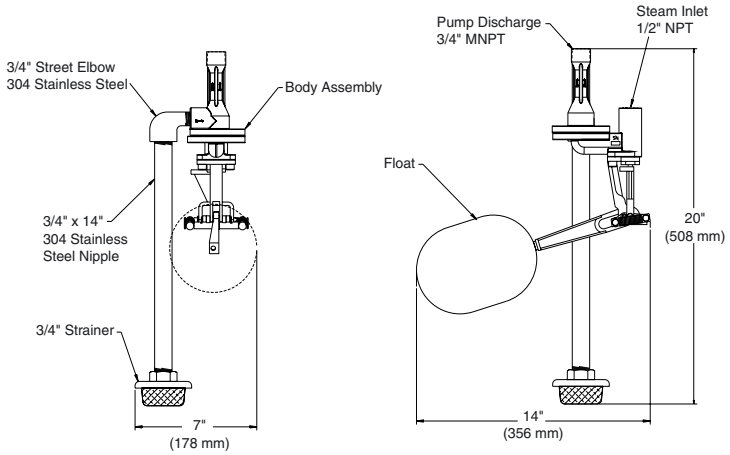
Armstrong
Stainless Steel Sump Ejector
Installation, Operation and Maintenance

This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the Stainless Steel Sump Ejector. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or your local Representative if further information is required.

The maximum operating pressure for the Armstrong Stainless Steel Sump Ejector is 175 psig (12 bar). The maximum discharge pressure for the Stainless Steel Sump Ejector is 20 psig (1.4 bar). The Stainless Steel Sump Ejector weighs 10 lb (3.7 kg). Maximum water temperature to be pumped should not exceed 140°F (60°C).



3/4" Stainless Steel Sump Ejector

Note: The Stainless Steel Sump Ejector will only operate while using a steam motive.
Do not use air as the motive pressure.

Stainless Steel Sump Ejector Operation

1. At start-up, the float on the mechanism lies at its lowest point and the inlet motive valve is closed.

2. As liquid enters the steam pit, tunnel or enclosed space, the float becomes buoyant and starts to rise.

3. Continued rising of the float increases spring tension until the float reaches its upper tripping point. Energy is then released instantly from the springs, causing the linkage to snap upwards over center. This upward motion opens the motive valve and allows the motive steam to enter the body of the Stainless Steel Sump Ejector.

4. Steam enters the body and flows through the integral ejector causing a venturi effect, which creates lower pressure inside the ejector. This allows the water, which is at atmospheric pressure to force its way through the suction piping and into the body of the Stainless Steel Sump Ejector where it is entrained with the motive steam and carried through to discharge.

5. The discharge cycle will lower the float increasing spring tension until the float reaches it lower tripping point. Energy is then released instantly from the springs, causing the linkage to snap over center downward. This downward motion closes the motive inlet valve.

Suggested Installation of Accessories

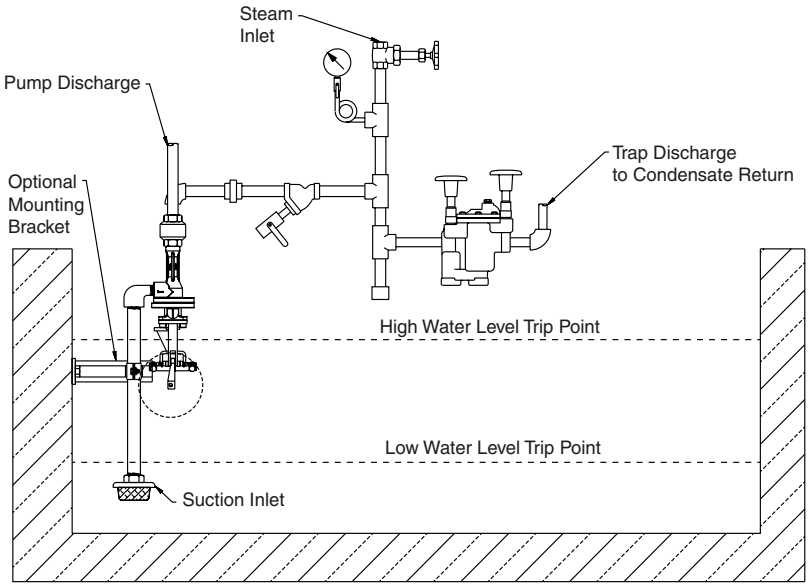
Optional Mounting Bracket:
The optional mounting bracket will be needed of the Stainless Steel Sump Ejector is to be attached to the side or wall of the steam pit, tunnel or enclosed space. To secure the Stainless Steel Sump Ejector to the wall, the following accessories will be needed:

- One (1) FH2142 stainless steel strut support channel
- Two (2) FH2143, ½" x 2-3/4" stainless steel concrete, brick and block wall anchor
- One (1) FH2144, ¾" stainless steel strut channel mounting clamp or
  One (1) FH2144-1, 1-1/2" stainless steel strut channel mounting clamp.

Check Valves:
It is recommended that an optional ¾" or 1-1/2" NPT stainless steel in-line check valve be attached to the discharge of the Stainless Steel Sump Ejector. You may also install the check valve in the discharge piping as an alternative.

- One (1) Armstrong model FH2126 ¾" in-line stainless steel check valve
- One (1) Armstrong model A13686 1-1/2" in-line stainless steel check valve

Suggested Installation and Application



Operating Dimensions:
The stainless steel sump ejector requires a minimum diameter steam pit, tunnel or enclosed space. The ¾" sump ejector requires an 18" diameter opening, 22" if optional support channel is used. The 1-1/2" sump ejector requires a 22" diameter opening, 26" if optional support channel is used. It is recommended that the Stainless Steel Sump Ejector be placed at a level where the suction screen is **no less** than six (6) inches from the bottom of the pit.

Remote Linkage Option (RL):
The minimum pit requirement for the Remote Linkage (RL) option is 12" x 12" x 24" for the ¾" unit and 16" x 16" x 24" for the 1-1/2" unit. See Page 4 for more detailed information.

Motive Inlet Piping:
Connect the steam motive piping to the inlet connection on the Stainless Steel Sump Ejector. Proper piping and trapping of the motive supply line must include a strainer, check valve, a properly sized drip leg and a drip steam trap. The motive steam connection size ½" NPT.

Check Valves:
For proper function of the Stainless Steel Sump Ejector, a ¾" or 1-1/2" stainless steel in-line type check valve should be either:

- Attached to the ¾" or 1-1/2" NPT connection on the Stainless Steel Sump Ejector or,
- Piped into the discharge piping

This check valve will eliminate back flow into the sump ejector body and subsequently down the suction piping and back into the pit. Back flow could occur when pump cycle is complete.

Maximum operating pressure for the Stainless Steel Sump Ejector is 175 psi (12 bar).
A pressure reducing valve (PRV) must be used in pressures exceeding 175 psi (12 bar). The piping arrangement for the PRV should include a strainer, check valve, properly sized drip leg and trap.

Maximum discharge pressure for the Stainless Steel Sump Ejector is 20 psi (1.4 bar).
Note: For Stainless Steel Sump Ejector capacities please refer to the "Condensate Recovery Equipment" section in Catalog 326.

Maximum water temperature to be pumped should not exceed 140°F (60°C). Temperatures in excess of 140°F (60°C) will greatly reduce the capacity of the unit.

Start-Up

1. Slowly open the motive steam force supply to the Stainless Steel Sump Ejector providing pressure to the inlet valve. If applicable, check for proper operation of drip trap on the motive line.

2. Open any isolation valves down stream of the Stainless Steel Sump Ejector discharge.

3. Proper operation will include the following:
    a. Steam pit, tunnel or enclosed space will fill with unwanted water. The float will become buoyant and rise until the spring assisted mechanism reaches its upper tripping point. At that time the mechanism will "snap" over upward and open the motive valve allowing the motive steam to enter the Stainless Steel Sump Ejector body.

    b. As the unwanted water is evacuated from the pit, tunnel or enclosed space, the float will drop until reaches the mechanisms lower tripping point. At that time the mechanism will "snap" over downward closing the motive steam valve ending the pump cycle.

Maintenance

1. Close the isolation valves to the motive supply line and discharge line.

2. Break inlet connection and remove motive seat. Inspect seat for debris or wear.

3. Inspect the mechanism for freedom of movement. Remove any dirt or scale inhibiting the motion of the mechanism.

4. Check the condition of the springs. If defective, replace the springs.

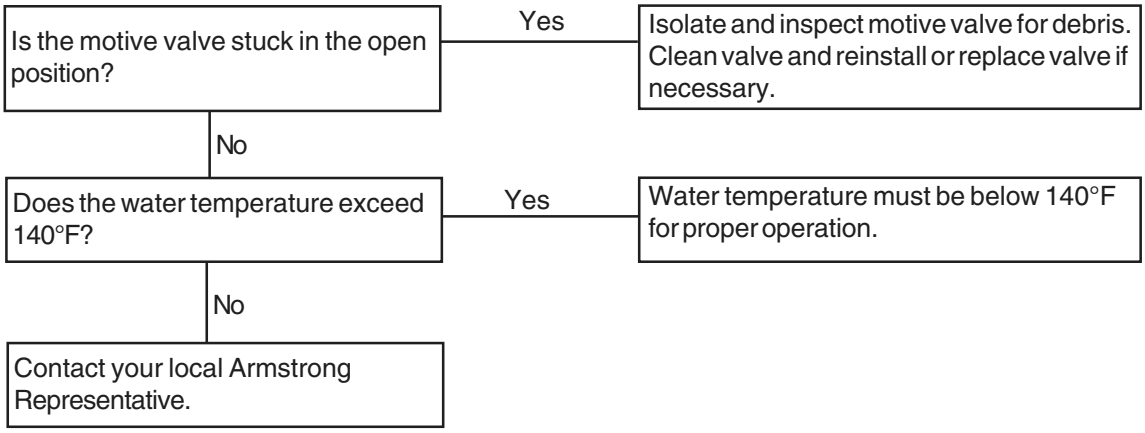
5. Check the float for pinhole leaks, dents or corrosion. Immerse in hot water and look for air bubbles to detect pinhole leaks.

6. Check suction screen and inspect for debris.

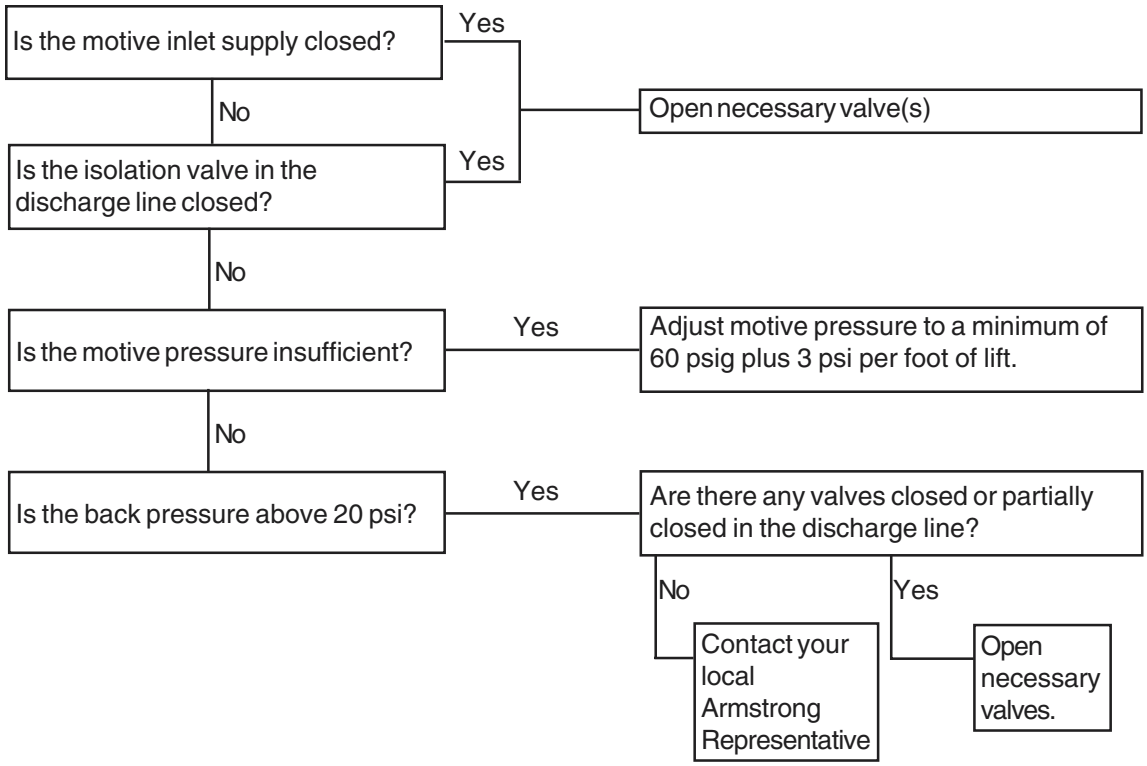
Troubleshooting Flow Charts

For Safety of Personnel – All piping should be isolated prior to breaking any connections. Water may still run out of connection when piping is broken. Care should be taken to avoid danger to personnel.

1. Excessive Flash Steam Passed Through Discharge

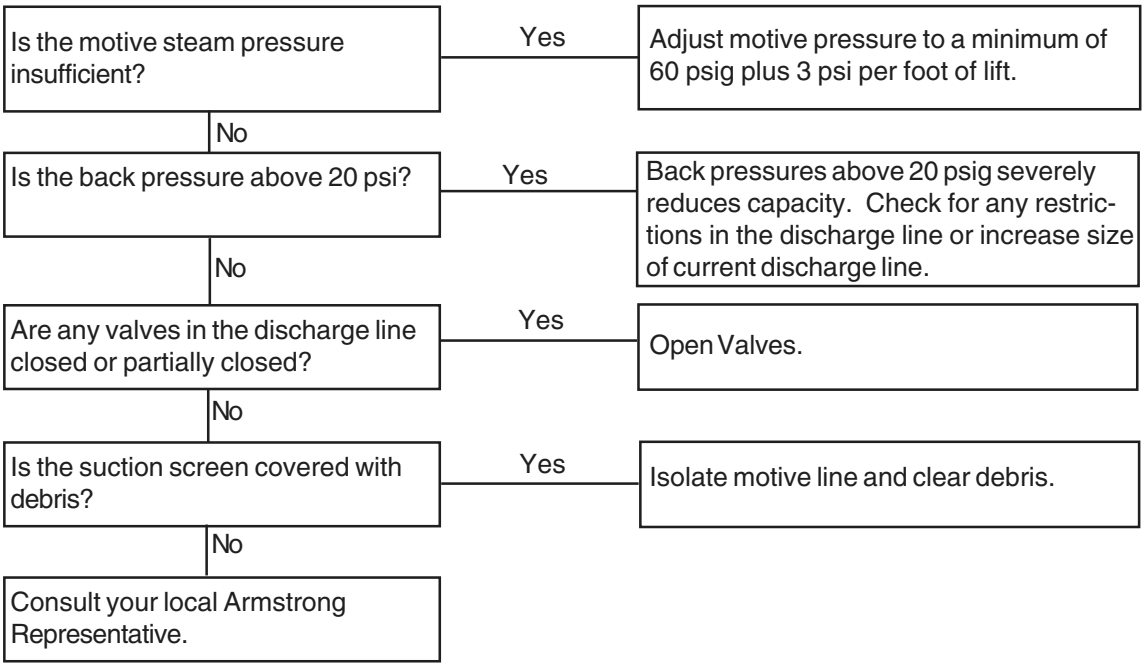


2. Stainless Steel Sump Ejector Does Not Operate During Start-Up

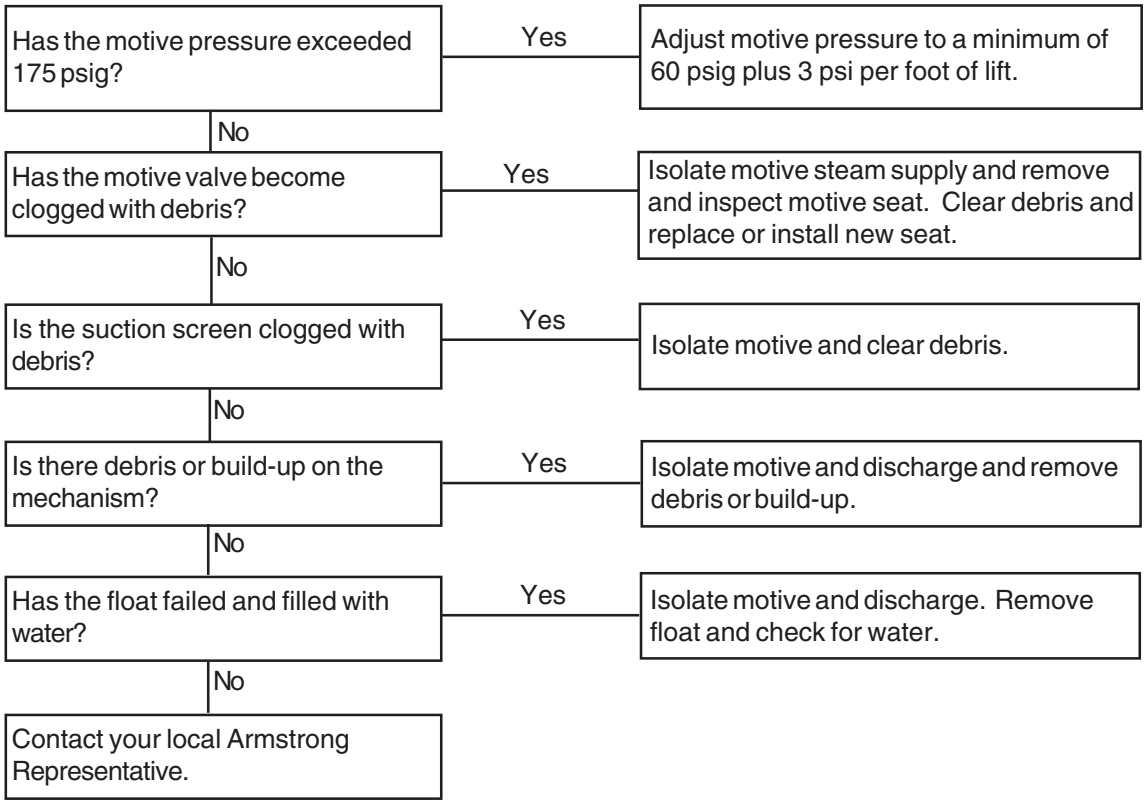


3. Stainless Steel Sump Ejector Cycling but Slow Discharge

Note: Under certain circumstances the Stainless Steel Sump Ejector will have a slow pump down cycle. Higher water temperatures, higher back pressures or insufficient motive steam pressure may attribute to a slower pump cycle.



4. Stainless Steel Sump Ejector Stops Cycling



Limited Warranty and Remedy

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Armstrong Steam and Condensate Group, 221 Armstrong Blvd., Three Rivers, MI 49093 - USA Ph: (269) 279-3601 Fax: (269) 279-3150