

Operations and Maintenance Manual for Strainers

1. Section –A: List of Equipment's

Equipment: Strainer

2. Section-B: Equipment or System Descriptions

Suction Diffusers incorporate the functions of a strainer, flow straightener, elbow and Pipe reducer in one compact unit thereby reducing installation costs. It is designed to remove any foreign matter that may be hazardous to the pump or other system components, while providing the proper flow conditions to the pump

3. Section-C: Preventive Maintenance Schedule and Maintenance Instructions

Preventive Maintenance for Strainer / Suction Diffuser:

- *It is very important to follow the Strainer preventive Maintenance procedures to protect the Strainer as well as downstream equipment's.*
- *Foreign matter that builds up inside the Strainer, including ice, can cause damage to the Strainer and the downstream Equipment.*
- *When foreign matter builds up inside the Strainer, it can cause Pressure to build up inside the Strainer.*
- *This pressure can cause the Strainer screen to rupture. Foreign matter can then enter the downstream equipment's.*
- *The following Strainer preventive maintenance procedures will keep your Strainer functioning properly, keep Strainer repair costs to a minimum, and insure the protection of your downstream equipment.*

- *Plant designer should ensure enough space to take screen out of strainer body for cleaning.*
- *Use expansion pipe joints in order to reduce influence of pipeline thermal expansion.*
- *Before plant start up, especially after repairs carried out, flush out the pipeline.*

8. Section -H: Storage and Handling Requirements

Storage Procedure for Strainer / Suction Diffuser:

- *Upon receipt, check both the Strainer and the packing case for any transit damage. Any damage to the Strainer should be reported immediately to Procedyne Engineers.*
- *Any damage to the packing container should be rectified to prevent the ingress of dust or water, prior to placing the Strainer into storage.*
- *Check the information contained on the identification plate/tag plate and documentation and return the Strainer to its packing with protective covers in place.*
- *For short term storage, up to 6 months duration, no additional preservation measures are necessary.*
- *Retain the Strainer in its original packing in a clean, dry indoor location. If outdoor storage is unavoidable, then the packing case should be enclosed in a waterproof cover.*
- *For long term storage, use only a dry indoor location. Apply a Cosmo line type grease to machined faces.*
- *Retain the Strainer in its original packing and inspect at 3 monthly intervals to ensure that no deterioration has occurred.*
- *Before placing the Strainer into service, inspect all components, seals etc., to ensure correct functioning. Follow the installation procedure.*

7. Section-G: Installation Instructions

Strainer Installation Instructions

- *Evaluate before installation if the strainers were not damaged during the transport or storage*
- *Make sure that strainers are suitable for working conditions and medium used in the plant.*
- *Take off dust caps if the strainers are provided with them*
- *Ensure all machined surfaces are free of defects and that the inside of the strainer is free of foreign objects.*
- *For horizontal pipelines, the strainer should be installed such that the blow-down connection is pointed downwards.*
- *For flanged end strainers, the flange bolting should be tightened gradually in a back and forth clockwise pattern. Threaded end Strainers should use an appropriate sealant.*
- *Once installed, increase line pressure gradually and check for leakage around joints.*
- *If the strainer is supplied with a start-up screen, monitor pressure drop carefully.*
- *Steam pipelines should be fitted in such a way to avoid condensate collection.*
- *Protect the strainers during welding jobs against splinters.*
- *Pipeline where the strainers are fitted should be conducted and assembled in such a way that the strainer body is not subjected to bending moment and stretching forces.*
- *Bolted joints on the pipeline must not cause additional stress resulted from excessive tightening, and fastener materials must comply with working conditions of the plant.*
- *Assembly the strainer in such a way that flow direction comply with an arrow placed on the body.*
- *Strainer body throat with a screen must be put downwards in order to prevent pollution return to the pipeline.,*
- *In the case of water hammer risk caused by condensate formation, strainer body throat should be assembled in horizontal position.*

6. Section-F: Methods for Trouble Shooting

Fault	Probable Cause	Solution
High Pressure drop across the Strainer or loss of flow rate.	<p>Probable Cause:1 Strainer basket screen is partially blocked by foreign material such as dried material or salted out solid particles due to drying.</p> <p>Probable Cause: 2 Inner mesh of the strainer basket is not properly sized for viscosity of the product.</p>	<p>Solution:1 Properly clean the strainer housing as outlined in the Maintenance section.</p> <p>Solution: 2 Replace the strainer basket with a basket correctly suited for the product.</p>
Leaking at the strainer basket cover	<p>Probable Cause:1 The seals are allowing product to leak. This is caused by a damaged O-ring or gasket seal, or reusing a PTFE seal after strainer Maintenance</p> <p>Probable Cause: 2 Dirty areas that are preventing the seals from making complete contact.</p>	<p>Solution:1 Replace the damaged seals. Replace PTFE seals if they were reused even if they are in good condition</p> <p>Solution:2 Clean the strainer housing as outlined in the Maintenance section. Remember to replace PTFE seals and never to reuse them</p>
No Flow	Flange dust cap were not removed	Remove dust cap on the flanges

Newly Installed or Repaired Systems:

- *Check the Strainer daily during the first 100 hours of operation or until no more debris is found in the Strainer.*
- *New or repaired piping can be the source of welding slag or other foreign particles that can block or rupture the Strainer screen.*
- *Once a system is cleaned out, the Strainer should be checked several times every season. The frequency depends on the specific service conditions, through put and product cleanliness.*

4. Section-D: Dismantling and Assembly Procedure

- *Before dismantling and taking up any service jobs make sure that medium supply to the pipeline is cut off, pressure is decreased to ambient pressure & medium is removed from the pipeline by opening the vent and the drain of the strainer and the equipment is cooled down.*
- *Remove the body cover bolts by unscrewing, take the screen out for cleaning or replacement. Strainer screen impurities are cleaned by using strong water stream without using metal tools.*
- *Before strainer reassembly remember to replace body – cover gasket.*
- *Precautions should be taken when touching gasket between body and strainer cover. The gasket contains stainless steel strips that may cause injury.*
- *Tighten hexagon nuts of cover bolts evenly and crosswise by torque wrench.*
- *In order to assure safe performance, each strainer (especially rarely used) should be surveyed on regular basis.*
- *Inspection frequency should be laid down by user, but not less than one time per month.*

5. Section-E: Cleaning and Conservation Procedures

- *For long term storage, use only a dry indoor location. Apply a Cosmo line type grease to machined faces.*
- *Retain the Strainer in its original packing and inspect at 3 monthly intervals to ensure that no deterioration has occurred.*
- *Before placing the Strainer into service, inspect all components, seals etc., to ensure correct functioning. Follow the installation procedure.*