A reducer. depending on the mach number

A reducer is the pipe fitting component in a pipe line that reduces the pipe size from a bigger to smaller diameter.

Typically the length of reduction is the average of larger and smaller pipe diameters. There are two varieties of Reducers are employed in pipe lines, they are (1) Concentric reducer (2) Eccentric reducer. Depending on the Mach Number of the flow reducer is used as Diffuser or as Nozzle. Design guidelines and operational manuals mostly prescribe the choice or selection of reducer. A reducer permits for a modification in pipe size to satisfy hydraulic flow requirements of the system, or to adapt to existing piping of a different size. Usually we have a tendency to use concentric reducer however eccentric reducer are used once there is requirement to maintain the same-top or bottom of pipe level. These are manufactured in inches and metric units too.

You can refer to this link for check the reducer size based on ANSI B 16. 9. Generally in pumps the suction line is larger than inlet nozzle and also the delivery nozzle is smaller or same size as delivery line. Therefore, a reducer is needed in both suction and delivery lines. However some folks generally confuse that what kind of reducer is used? Concentric or eccentric? and within which position? During this topic we will share our experience concerning what kind of reducer is used. we hope it will assist you a lot. Concentric Reducer or Conical Reducer : Concentric reducer is also known as Conical reducer. Concentric reducers are used to join pipe or tube sections whose ends are on same axis.

It maintain the center line elevation. When larger pipe and smaller pipe center lines to be maintained on same axis therein case we use Concentric reducers. Uses of Concentric reducer: 1.

Concentric reducers facilitate in transporting slurries and abrasive liquids. 2. They’re helpful in the service of cavitation. 3. Within the discharge lines of pumps Concentric reducers are used.

Eccentric Reducer : In Eccentric reducers fittings the center of both ends is not on the same axis. Unlike concentric reducers, these have an edge that is parallel to the connecting line. This parallel edge leads to the two pipes having offset center lines. For eccentric expander or increaser same fitting is employed in reverse. Horizantal liquid reducers are always eccentric, having top flat (unless on control set, same as PV, TV, HV, LV) or pipe rack, that prevents the build up of air bubbles within the system. Eccentric reducers are used at the suction side of the pumps to make sure air does not accumulate within the pipe. The gradual accumulation of air in a concentric reducer might lead to a large bubble that might eventually cause the pump to stall or cause cavitation when drawn into the pump. Horizontal gas reducers are always eccentric, bottom flat set, that permits condensed water or oil to drain at low points.

Reducers in vertical lines are typically concentric unless the layout dictates otherwise. Uses of Concentric reducer: 1. In this systems less turbulence or material entrapment2. Absorbs pipe wall and fluid borne noise and vibrations3.

These are used with flat side up in pump suction to avoid cavitation. IMAGE SOURCE : GOOGLEEccentric reducers installation instructions: Case 1: When the source of supply is present below the pump, the eccentric reducers should be placed with the flat side at the top and vice versa. Eccentric reducers installation when source of supply is below or above the pump suction nozzle — Source: http://www. enggcyclopedia. comCase 2: Within the case of horizontal pipe runs, air pockets are avoided by installing the eccentric reducer with the flat side up and contrarivise. Eccentric reducers installation in case of long horizontal pipe runs — Source: http://www. enggcyclopedia. comSources: 1.

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