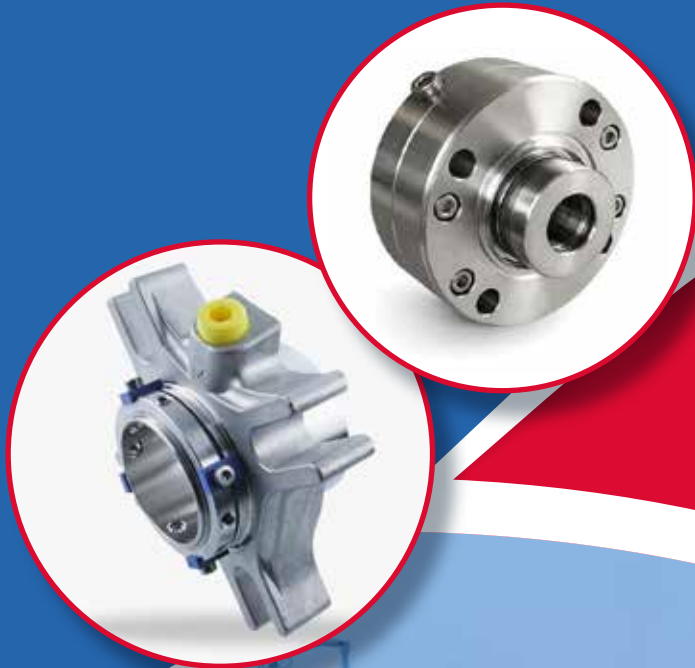


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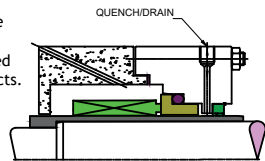


MECHANICAL SEAL & SEAL SUPPORT SYSTEM



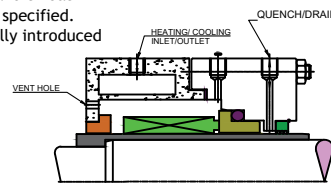
FLUSHING PLANS AS PER API - 682

Plan 01 is a recirculation from pump discharge area of the pump into the seal chamber. Recommended for clean pumpage only. This flush plan should only be used for clean products as dirty products.



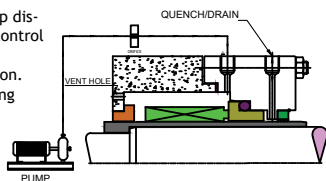
PLAN 01

Plan 02 is a non recirculating flush. Jacketed stuffing box and throat bushing required when specified. Solids are not continually introduced into the seal chamber.



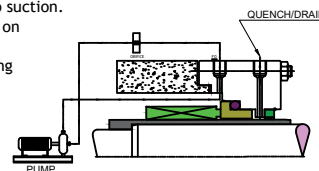
PLAN 02

Plan 11 is the most common flush plan in use today. Recirculation from pump discharge through a flow control orifice to the seal. No product contamination. Connection FI for flushing inlet.



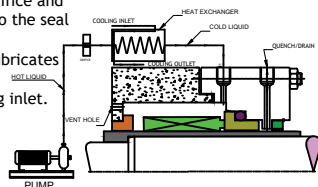
PLAN 11

Recirculation from pump seal chamber through a flow control orifice and back to pump suction. Typically plan 13 is used on vertical pump. Connection FO for flushing outlet.



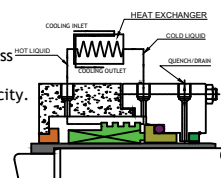
PLAN 13

Recirculation from pump discharge through a flow control orifice and heat exchanger, then into the seal chamber. Process fluid cools and lubricates the seal. Connection FI for flushing inlet.



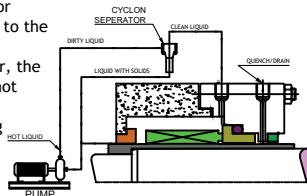
PLAN 21

Recirculation from pumping ring in the seal chamber through a heat exchanger and back into the seal chamber. More efficient than a plan 21 and less chance of heat exchanger fouling. Reduce temperature improves lubricity. Connection FI for flushing inlet.

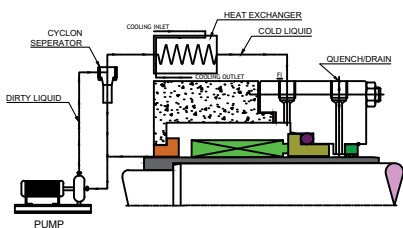


PLAN 23

Recirculation from pump discharge through a cyclon separator delivering the clean fluid to the seal chamber. Unlike a strainer or filter, the abrasive separator does not require cleaning. Connection FI for flushing inlet.



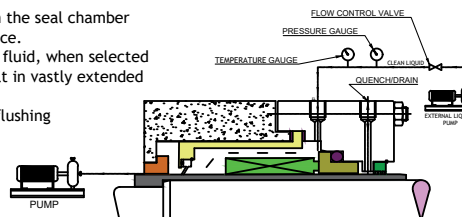
PLAN 31



Recirculation from pump discharge through a cyclon separator delivering the clean fluid to a heat exchanger cooler and then to the seal chamber. Solids are removed and product temperature is reduced to enhance the seal's environment. Connection FI for flushing inlet.

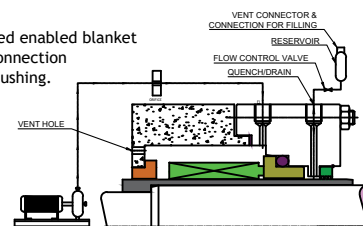
PLAN 41

Flush is injected in the seal chamber from external source. The external flush fluid, when selected properly, can result in vastly extended seal life. Connection FI for flushing inlet.



PLAN 32

External reservoir providing a ded enabled blanket for the fluid to quench of the connection of the gland connection FI for flushing.

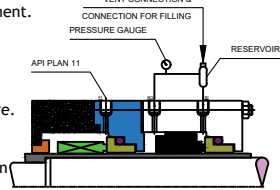


PLAN 51



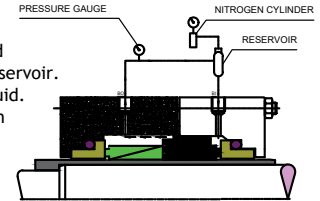
FLUSHING PLANS AS PER API - 682

This plan uses an external reservoir to provide buffer fluid for the outer seal of an unpressurized dual seal arrangement. In comparison to single seals, dual unpressurized seals can provide reduced net leakage rates as well as redundancy in the event of a primary seal failure. Cooling coils in the reservoir are available for removing heat from the buffer fluid. This plan is often used where process fluid contamination can not be tolerated.



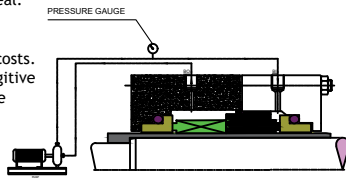
PLAN 52

Clean & pressurized external fluid provided to seal chamber from reservoir. Pumping ring circulate internal fluid. Barrier fluid pressure is more than stifing box pressure.



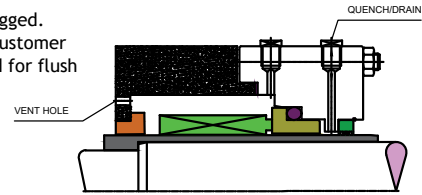
PLAN 53

Plan 54 utilizes an external source to provide a clean pressurized barrier fluid to a dual seal. Can provide pressurized flow to multiple seal installations to reduce costs. Positively eliminates fugitive emissions to atmosphere. Plan 54 systems can be custom. Engineered to suit application or specific plant requirements.



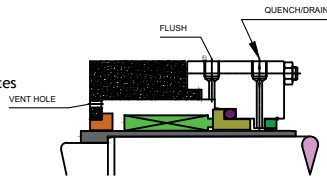
PLAN 54

All connection are plugged. This plan used when customer not providing any fluid for flush & quench



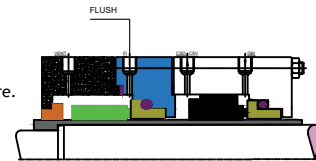
PLAN 61

This plan is a common plan to improve the environment on the atmospheric side of single seals by quenching with steam, nitrogen or water. This plan is a low cost alternative to tandem seals. The quench prevents or retards product crystallization or coking. Quenches can also provide some cooling. Typical applications include; steam quenches on hot services to retard coking; nitrogen quenches on cold or cryogenic service to prevent icing.



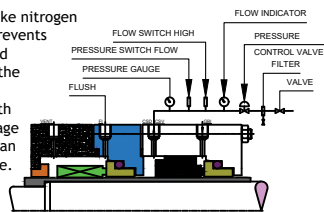
PLAN 62

Connections are trapped. Customer may use in future.



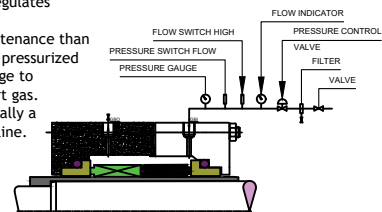
PLAN 71

This plan for secondary containment uses an external low pressure buffer gas, usually nitrogen, regulated by a control panel that injects it into the outer seal cavity. Introduction of a buffer gas like nitrogen reduces fugitive emissions, prevents icing on cold applications, and provides for some cooling to the outboard seal. This plan is normally used with Plan 75 for primary seal leakage that is condensing, or with Plan 76 for non-condensing leakage.



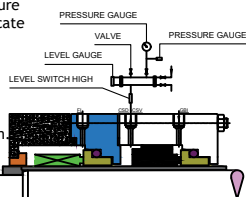
PLAN 72

This plan provides a pressurized gas, typically nitrogen, to dual gas seals through the use of a control panel that removes moisture, filters the gas, and regulates the barrier pressure. Lower costs and maintenance than systems used on dual pressurized liquid systems. Leakage to atmosphere is an inert gas. The barrier gas is usually a pressurized nitrogen line.



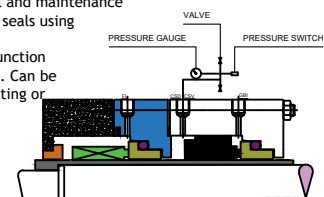
PLAN 74

This plan is a collection system used with secondary containment seals for process fluid that will condense at lower temperatures or is always in a liquid state. The collection reservoir contains a pressure gauge and a high pressure switch to indicate a build up in pressure from excessive primary seal leakage or failure. This plan can be used in conjunction with a gas purge from Plan 72. Typically dry-running, contacting secondary containment seals are used with this plan

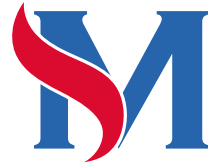
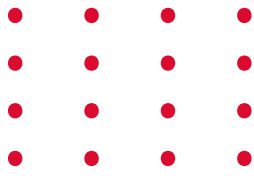


PLAN 75

This plan is a system to divert non-condensing primary seal leakage to a flare or vapor recovery system. Lower initial and maintenance costs than dual unpressurized seals using a Plan 52. This plan can be used in conjunction with a gas purge from Plan 72. Can be used with dry-running, contacting or non-contacting secondary containment seals.



PLAN 76



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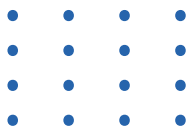
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