

SEAL PLAN SUMMARY



Title	Similar API682 Plan	Application	Construction	How it works
Standard (Non Lubricated)	-	No concern about duty or media such as toxicity or lubrication.	Comprises a primary seal stack with no seal plan.	-
Forced Lubrication (3 Feed)	-	Media unable to lubricate the seals sufficiently Also used in high pressure and speed applications.	Comprises primary and secondary (unloaded) seal stacks separated by a lantern ring. A Mechanical Lubricator injects low pressure oil into the Lantern Ring to lubricate the seals.	Mineral oil is injected into the lantern ring chamber. Exploiting surface imperfections oil migrates along the plunger. During the suction stroke the packing relaxes and lubricant is drawn into contacting surfaces.
Barrier Fluid	53	RESTRICTS fugitive emissions of toxic media.	Comprises primary, secondary (loaded) and tertiary (unloaded) seal stacks separated by lantern rings. Barrier fluid is circulated through the first lantern ring at a higher pressure than discharge. Barrier fluid will be compatible with the pumped media.	Barrier fluid injection pressure is higher than the discharge stroke. Consequently barrier fluid migrates across the seals towards the front of the stuffing box rather than the rear, thus blocking media escape. Packing condition is critical to this process.
Sealed Rod Box	-	BLOCKS fugitive emissions of toxic media.	The Distance Piece Chamber (containing the stuffing boxes) features a solid metal cover. A gastight gasket with 'O' rings and Flexiseals prevent any media escape to atmosphere. PSV, drain and nitrogen purge connections are provided. Any accumulated fluid leakage is detected by level switch	By sealing the Distance Piece Chamber with static seals ALL gaseous and fluid emissions that occur from the stuffing boxes are fully contained. Any fluid leakage is safely collected and safely piped to plant disposal. A Nitrogen purge facility removes toxic media prior to maintenance.
Return to Suction	13	Directs main leakage to suction where fugitive emissions are of no concern. Also used to feed lubrication to primary seals.	Comprises primary and secondary (unloaded) seal stacks separated by a Lantern Ring. Any leakage escaping the primary seal returns back to suction via the Lantern Ring. A check valve prevents back flow.	Any leakage that migrates past the primary seal stack collects in the lantern ring chamber. As the leakage pressure builds up it relieves into the suction line.
Packing Monitoring	65	Used where packing integrity is critical to reduce emissions. For predictive maintenance in remote applications and/or trigger safe shutdown	Comprises a primary and secondary (unloaded) seal stacks separated by a Lantern Ring. Any leakage escaping the primary seal enters the Lantern Ring and is directed to a drain line. Instruments in this line monitor/report the leakage flow rate.	Should the packing leakage flow rate increase beyond an acceptable level an alert is triggered to indicate that the primary seals are worn and require replacement.
External Flush	32	Media may crystallise where it leaks from the stuffing box.	Comprises primary and secondary (unloaded) seal stacks separated by a Lantern Ring. Clean (plant sourced) media is directed through the Lantern Ring to flush the Stuffing Box, the system includes inlet and discharge connections.	Clean media (normally non saline water) is injected into the Lantern Ring chamber with a high flow rate. Any media migrating past the primary seals is diluted and carried to the discharge of the flush.
Seal Heating/Cooling	-	Cooling: Protects seals in high temperature applications. Reduces cavitation risk of near gas media. Heating: Protects seals in cryogenic applications. Reduces risk of media solidifying.	Comprises a sleeve installed around the stuffing boxes with galleries to accommodate heating/cooling fluid. The system includes Inlet and discharge connections only. External closed loop system and/or heat exchanger are excluded.	Heating/cooling fluid is introduced into the sleeve with a certain flow rate to provide the appropriate heat transfer.
Discharge Flush (piped externally)	11	Used to decrease seal leakage.	Comprises primary and secondary (unloaded) seal stack separated by a Lantern Ring. External piping directs a small amount of discharge media to the Lantern Ring.	Use of primary and secondary seals reduces leakage. The flush from discharge provides extra lubrication and cooling to the secondary seals increasing reliability.
Discharge Flush (Internal galleries)	01	As above but internal galleries easier to heat in cold ambient temperature conditions.	Comprises primary and secondary (unloaded) seal stack separated by a Lantern Ring. Internal galleries direct a small amount of discharge media to the Lantern Ring.	Same as above.