



# Shandilya Mechanical Seal Support System.

## API Plan 53C for Mechanical Seal Support System

### Design Features

The Shandilya Modified Plan 53C is a constant differential pressure barrier fluid sealing system. All units comply with and exceed API 682 Plan 53C requirements.

- Designed per ASME Section VIII, Division L
- Meets requirements of the European Pressure Equipment Directive 97/ 23/EC.
- Available with 20 liters (5 gallon) a universal range for all seal size.
- Can be supplied for new pumps or retrofitted to existing pumps from any pump manufacturer.
- Offers a proven history in improving seal life, particularly under varying suction pressure.
- Provides an excellent mechanical sealing environment in the most demanding process conditions.

### How It Works..?

Shandilya Plan 53C is a dual pressurized system that eliminates the use of gas for pressurization through the use of a **Metal Bellow Tracker**. Barrier liquid is stored on the outside of the Bellow. The seal chamber is connected to the bottom of the Bellow Tracker. Bellow design is such that slightly higher pressure (about 1 to 2 kg/cm<sup>2</sup>) is generated at the top of the accumulator. The top portion of accumulator is connected into the seal loop.

A pumping ring circulates the barrier fluid through a loop that includes a seal cooler and other instrumentation. The leakage is detected by change in level.

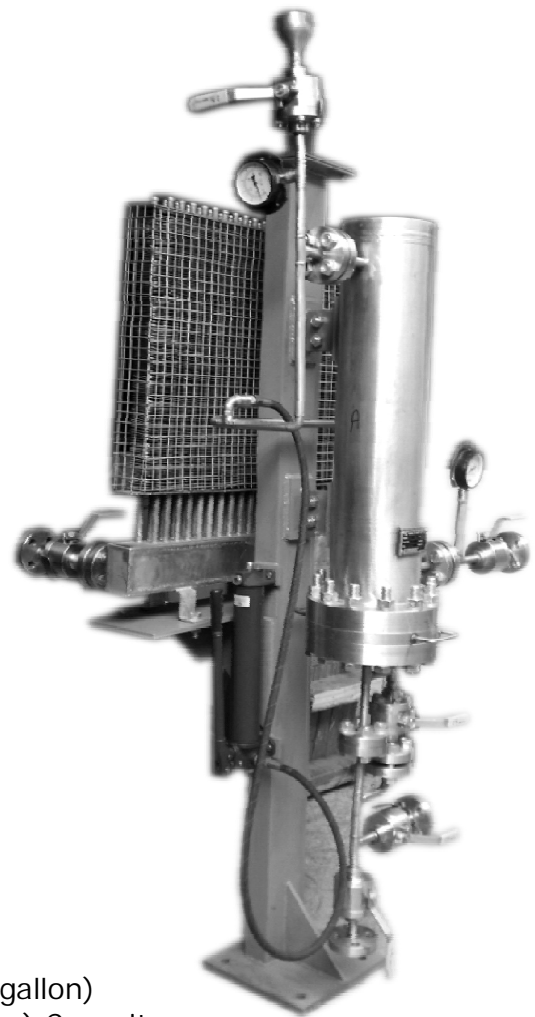
This system is ideal for applications that have fluctuating pressures.

### Minimum Design Features:

- Liquid Volume at NLL (Normal Liquid Level): 20 liters (5 gallon)
- Reservoir Construction: 8" Sch 40 Pipe for 20 liter (5 gallon) Capacity.
- Metal Bellow Tracker System in SS316L
- Magnetic Level Indicator with Liquid level transmitter.
- 316L Stainless Steel Construction for reservoir and any Piping/Components welded directly to reservoir.
- Natural Draft Air Finned Cooling System.
- No sluggish movement of the piston, can work even for the small differential pressure.

### Advantages

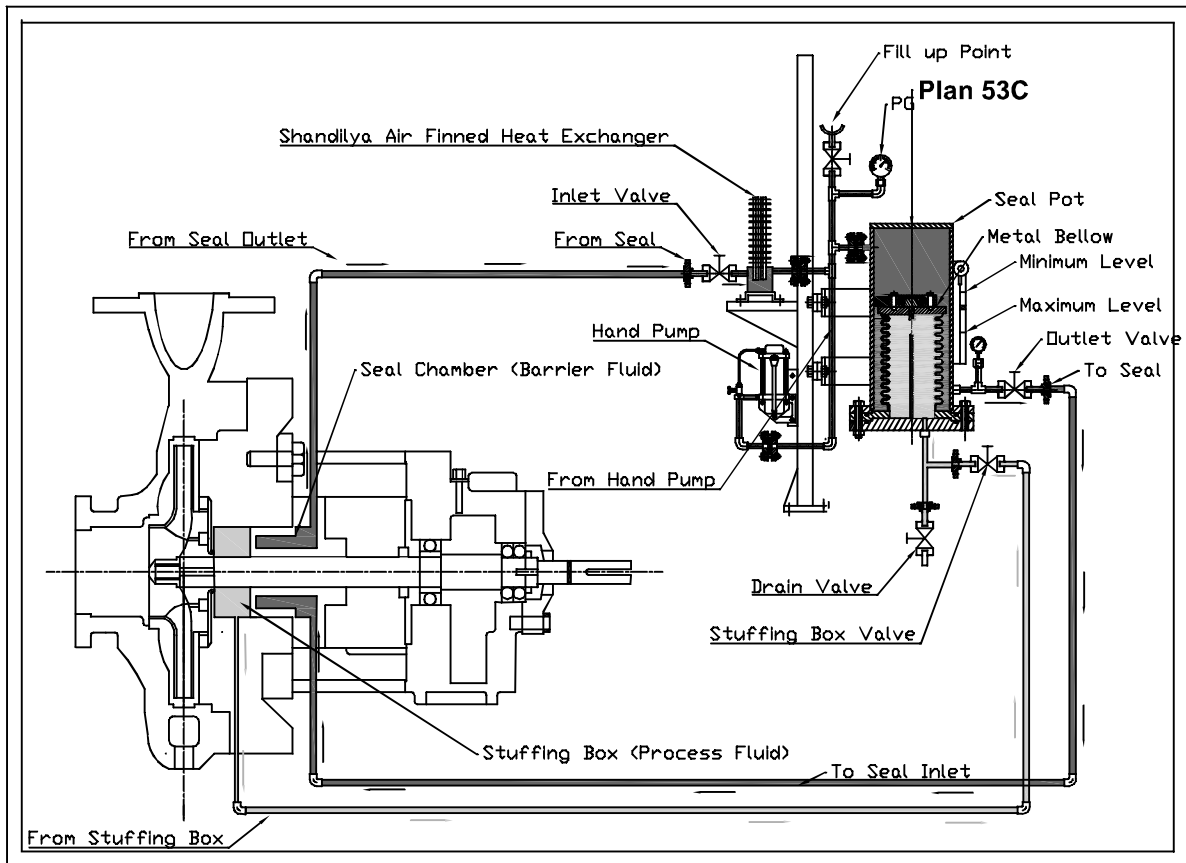
- Operating limits up to 200 bar /400°C: suitable for a wide range of demanding operating conditions.
- No Nitrogen Requirement to maintain the pressure.
- Barrier Liquid pressure always maintained nearer to stuffing box pressure.
- Magnetic Level indicator Visual level indication to 100 ft (30 m)
- Dismantling and cleaning of the pot is possible.



## Design Feature Summary

Design Features	API Plan 53A	API Plan 53B	API Plan 53C	Shandilya Plan 53C
Need to evaluate stuffing box pressure	Yes	Yes	No	No
Barrier fluid pressure	Maximum stuffing box pressure + 2 kg/cm <sup>2</sup>	Maximum stuffing box pressure + 2 kg/cm <sup>2</sup>	stuffing box pressure + 1 - 2 kg/cm <sup>2</sup>	stuffing box pressure + 1 - 2 kg/cm <sup>2</sup>
Differential pressure between barrier fluid and stuffing box fixed	No	No	Partial	Partial
Barrier fluid pressure automatically changes with varying stuffing box pressure	No	No	Yes	Yes
Suitable for use with low suction pressure	Yes	Yes	No	Yes
Nitrogen Gas required	Yes	Yes	No	No
Nitrogen absorption into barrier fluid	Yes	No	No	No
Instrumental requirement	More	More	less	less
Suitability for low variation in stuffing box pressure	Yes	Yes	No	Yes
Large amount of useable seal barrier fluid	Yes	No	No	Yes
Thermal degradation of working fluid	Slow	Fast	Fast	Slow
Magnetic level indicator	No	No	Yes	Yes
Flow restriction of barrier liquid due to extra cooler	No	Yes	Yes	Less
Power consumed by Mechanical Seals	More	More	Less	Less
Can work when inboard seal is not reversed balanced	No	No	Yes	Yes
Effect of Solar Radiation	Yes	Yes	No	No

## Schematic Installation Diagram



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