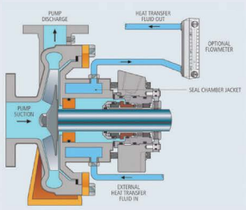
CHESTERTON®
Global Solutions, Local Service.

MECHANICAL SEAL PIPING PLANS

PUMP η SEAL AUSTRALIA
We find a way

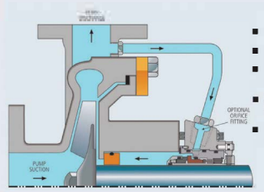
SINGLE SEAL

PIPING PLAN 2
Pump Jacket



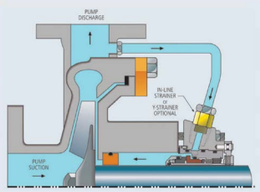
- Use with single seal or dual seal to control seal chamber temperature
- Maintains or elevatesbox temperature to prevent product solidification with polymers, resins, tars
- Lowers seal chamber temperature in hot environments
- Common heat trans fer fluids:
  – Water – Thermaloils
  – Steam
- Close tolerance throatbushing is required for optimum efficiency

PIPING PLAN 11
Discharge Recirculation



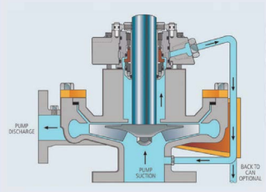
- Use with single seal or dual seal
- Increases circulation
- Increases pressure in seal chamber
- Clean fluids only
  – Solids can erode seal
- An orifice can can be used to reduce flow and pressure

PIPING PLAN 12
Discharge Recirculation with Strainer



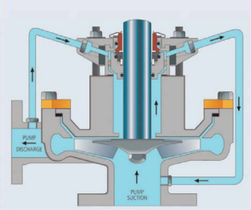
- Use with single seal
- Cools seal
- Increases pressure in seal chamber
  – Throat bushing optional
- Clean fluids only
  – Solids can erodeseal
  – Solids can clog seal when bushing is used
- An orifice can be usedto reduce flow and pressure

PIPING PLAN 13
Suction Recirculation



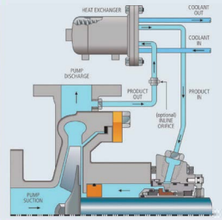
- Vents air and prevents dry run
- Prevents clogging
- Lowers pressure in seal chamber
- Cools seal
- Reducesseal generatedheat
- Use caution withlo wvapor pressure liquids

PIPING PLAN 14
Suction and Discharge Recirculation (Vertical)



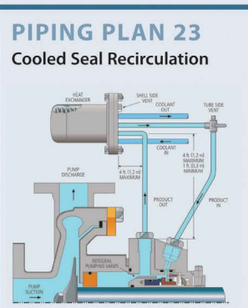
- Vents air and prevents dryrun
- Use with singleseal or dual seal
- Prevents clogging
- Cools seal
- Promotes flo w
- Reduces seal generated heat
- Use caution with lo w vapor pressure liquids

PIPING PLAN 21
Cooled Discharge Recirculation



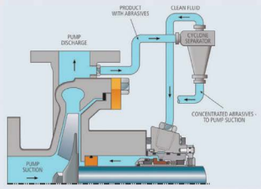
- Use with a singleseal
- Cools hot, volatile fluids
- Cools seal
- Increases seal chamber pressure
- An orifice can be used to control flo w and reduce pressure
- Use with close tolerance throat/restriction bushing

PIPING PLAN 23
Cooled Seal Recirculation



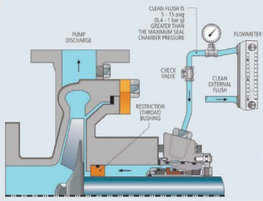
- Use with a single sealand pump mechanism
- Minimizes heat exchanger size and coolant water usage
- Cools seal while pumping hot and/or volatile fluids
- Use withclose tolerance throatrestriction bushing
- Venting is important

PIPING PLAN 31
Discharge Recirculation with Cyclone Separator



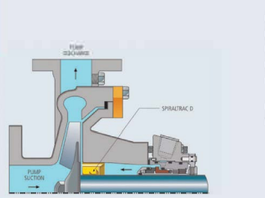
- Use with a single seal where fluid contains some abrasives
- Cools seal
- Increases seal chamber pressure
- Density of solids must be significantly greater than fluid
- Use caution with high viscosity fluids
- Requires pressured ifferential
- Will not removemicron size particles

PIPING PLAN 32
Clean Flush



- Use with a single seal
- Provides clean fluid to seal
- Prevents clogging
- Acceptable flush fluids
  – Clean, compatible fluid
  – Water, if compatible
  – Clean product
  – Downstream additive
  – Carrier solvent

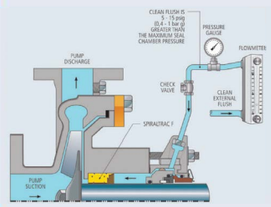
PIPING PLAN 33H
SpiralTrac™ Version D Type I



- Use with a singleseal
- Removes solids
- Seal runsin clean fluid
- Prevents clogging
- Removes vapor from seal chamber
- Prevents dry running
- No flush required

SpiralTrac is a trademark of EnweoSeal Engineering Products Limited.

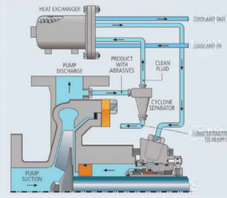
PIPING PLAN 33S
SpiralTrac™ Version F Type S



- Use with a single seal
- Removes solids
- Seal runs in clean fluid
- Prevents clogging
- Prevents dry running

SpiralTrac is a trademark of EnweoSeal Engineering Products Limited.

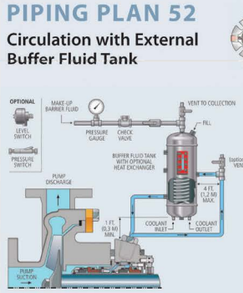
PIPING PLAN 41
Cooled Discharge Recirculation with Cyclone Separator



- Use with a single seal where fluid contains some abrasives
- Cools seal
- Increasesseal chamber pressure
- Supplies cleaner fluid
- Reducesclogging potential
- Density of solids must be significantly greater than fluid
- Use caution with high viscosity fluids
- Requires pressure differential
- Will not remove micron size particles

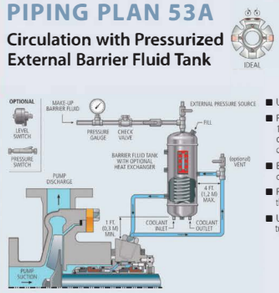
DUAL SEAL

PIPING PLAN 52
Circulation with External Buffer Fluid Tank



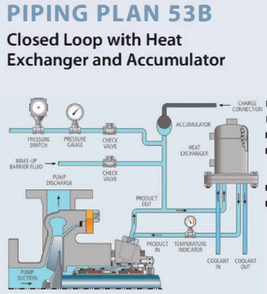
- Use with a dual seal
- low pressure buffer fluid, 10 psig (0, 7 barg) minimum
- Buffer fluid shouldbe clean, compatible and lubricating
- Buffer fluid pressure lower than seal chamber pressure
- Seal venting is important
- Use long sweeps in tubing bends

PIPING PLAN 53A
Circulation with Pressurized External Barrier Fluid Tank



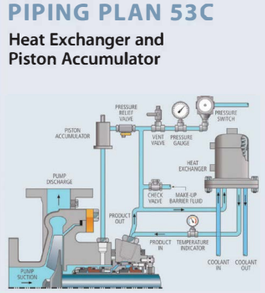
- Use with a dual seal
- Pressurize barrier fluid 15 - 30 psig (1 - 2 bar g) over maximum seal chamber pressure
- Barrier fluid should be clean, compatible and lubricating
- Provides clean fluid to the inboard seal faces
- Use long sweeps in tubing bends

PIPING PLAN 53B
Closed Loop with Heat Exchanger and Accumulator



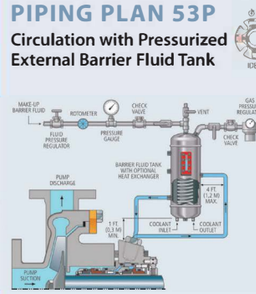
- Use with dual seals
- Optional thermocouple
- No foaming
- Heat is removed by an air-cooled or water-cooled heat exchanger
- Accumulator sizing crucial
- Maintains constant pressure on the circulation system

PIPING PLAN 53C
Heat Exchanger and Piston Accumulator



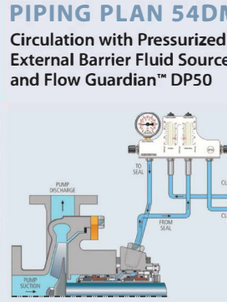
- Optional thermocouple
- No foaming
- Heat is removed by an air-cooled or water-cooled heat exchanger
- Tracks product pressure in seal chamber
- Maintains constant pressure on the circulation system

PIPING PLAN 53P
Circulation with Pressurized External Barrier Fluid Tank



- Maintains constant pressure and liquid supply to the dual seal
- External water pressure isset at 30 psig (2 bar g) over maximum seal chamber pressure
- Initial tank level issetthrough the external water pressure line
- Pressurize tank to 25 psig (1,7 bar g) over maximum seal chamber pressure with a regulated gas pad, then isolate gas pressure
- Tank is then charged with regulated external water pressure
- System operates with a constant external water pressure

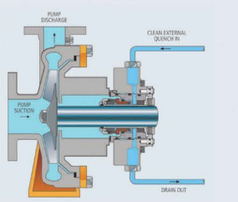
PIPING PLAN 54DM
Circulation with Pressurized External Barrier Fluid Source and Flow Guardian™ DP50



- Use with a dual seal
- Pressurize barrier fluid 15 - 30 psig (1 - 2 barg) over maximum seal chamber pressure
- DP50 provides inboard seal leak detection, pressure regulation and flo w control
- Barrier fluid should be clean, compatible and lubricating
- Provides clean fluid to inboard seal faces

QUENCH

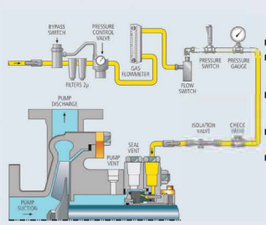
PIPING PLAN 62
Quench



- Use with a single seal
- Prevents coking, crystallization
- Low pressure only
- Cleans atmospheric side of seal faces
- Common quench fluids:
  – steam
  – water
  – nitrogen

GAS

PIPING PLAN 74
Externally Supplied Barrier Gas



- Use with a no nvolatile gas
- Provide gas at 25 psig (1, 7 barg) above seal chamber pressure
- Venting of the seal chamber maybe required prior to start-up
- Use Nitrogen, Carbon Dioxide or Compressed Air
- Zero emmissions and leakage to atmosphere

4400 GAS SEAL IN GLAND CONTROL SYSTEM

442 SPLIT MECHANICAL SEAL

S10 SINGLE AND S20 DUAL STREAMLINE™ CASSETTE SEALS

180 HEAVY DUTY SINGLE SEAL

280 HEAVY DUTY DUAL SEAL

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