API 682 – Plan 23

Enjoy the Flopac performance and treat your equipment by selecting the Flopac® series SPX-23_ seal flushing units.

The range of Flopac® SPX seal flushing units include plan 23 seal flushing units that are typically used with arrangement 1 contacting wet seals (1CW-FX, 1CW-FL), or, with arrangement 2 contacting wet seals (2CW–CW) in combination with plan 52. Plan 23 seal flushing units are intended to cool and lubricate the (inner) seal and reduce the product vapour pressure at the seal chamber.

Flopac seal support systems; for reliable seal performance and optimal process efficiency.

Advantages:

- Not just a cooler but a complete (API 682) compliant package
- Including vent- and drain valve
- Engineered to offer an optimal user experience
- To your preference, air or liquid cooled
- Quick delivery program for our competitively priced standard range
- Fully engineered package available

Technical Specification API 682 – Plan 23

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Plan 21 Description

Purpose

A plan 23 provides a cool flush to the seal in order to improve the lubrication properties of the product and to improve the seal operating conditions by lowering the vapour pressure.

Operation

A Plan 23 uses an (internal) circulating device to recirculate a limited amount of pump product through a closed-loop cooler and the seal chamber. The product in the seal chamber is isolated from that in the impeller area of the pump by a throat bushing. A plan 23 may be needed to improve the margin to vapour formation, to meet secondary sealing element temperature limits, to reduce coking or polymerizing, or to improve lubricity (as in hot water).

Plan 23 uses pump product for seal flushing liquid. Circulation of the seal flushing liquid is preferably established by an internal circulating device. For those applications where an internal circulating device is not possible, Flopac has available a range of magnetically driven seal circulation pumps.

A properly designed Plan 23 operates self-reliant, provided it is properly vented.

Heat exchangers

A plan 23 may be equipped with a liquid (water) cooler or an air fin cooler. The preferred method for cooling is by means of a natural air draught cooling section, yet for higher heat loads a water cooler or forced air blast cooler may be needed. Flopac can provide all. Please have a look at our cooler section to check our standard availability. Tailored solutions available as well.

For our air coolers Flopac uniquely uses full contact laser-welded cooling fins in a SS316Ti quality, suitable for the most aggressive industrial atmospheres including offshore.

Instrumentation

A plan 23 is equipped with a temperature gauge to monitor the seal flush supply temperature. It could be considered to use transmitters iso gauges. There is no need for pressure instruments.

Notes/recommendations

Flopac provides a complete API 682 compliant package, including support and vent- and drain valve.

Given the industry's negative experiences with cooler plugging and/or the often excessive cooler sizing requirements a plan 23 is recommended over a plan 21. A plan 23 would be our first choice unless you want to avoid the added seal complexity and cost imposed by a Plan 23.

Please contact Flopac for a more detailed advice on all topics related to Flopac® seal support system plan 23. We will gladly assist.

Plan 23 Features

Plan 23 – main features

- Improves the lubricity of the product
- Reduces vapour pressure at seal chamber
- Operates self-reliant
- High energy efficiency
- Circulation device needed

Benefits of the Flopac Plan 23

- Wetted parts all SS316
- Full contact laser-welded SS316Ti cooling fins
- Flexible designs all properly engineered
- Reliable performance
- Little to no operating cost
- Complete (API 682/ISO 21049) compliant Package (not just a loose cooler)
- Vent- and drain valves included
- Compact and lightweight configuration
- Directly from the manufacturer

Options

- Alternative material selections for specific services like HF and H_2S (NACE) services.
- The addition of a Flopac magnetically driven seal liquid circulation pump unit.
- The use of Smart transmitters instead of gauges for remote control functions
- High pressure designs (ANSI 600# / 1500#) for static designs up to 200 barg
- Additional pressure-, temperature- or flow instruments to enhance monitoring facilities
- The addition of a temperature gauge, make Badotherm, skin type TG18 -/-20/+120°C, dial 100mm, made from SS316/SS304. Other makes/types and ranges on request.

Mechanical seal system SPX-230

A complete and fully packaged Plan 23 system for arrangement 1 wet single seals (or the wet inner seal of an arrangement 2 unpressurized dual seal) in accordance with API 682 or ISO 21049 latest edition. Including support.

Standard configuration

Design ASME VIII, div. 1/not stamped and/or the European legislation (CE) such as PED 2014/68/EU and the ATEX 114 / 2014/34/EU – Zone 2 II/A T1-T3.
Suitable for general oil/water service – Non-hazardous.

Design 40 barg @ -15/+90°C / ANSI 300#-sch.40s.
Wetted parts AISI 316(L) / with SS 316Ti full contact laser-welded fins. SS304 studbolts.

To- and from seal connections ANSI 3/4" 300# RF smf,
Vent and drain connections ANSI 1/2" 300# RF smf.

Engineering units: SI units, Bar/°C.
NDE: Visual-/hydrostatic and leaktesting.
Surface preparation: Flopac std 3 layer epoxy system.

For heat loads up to 1.5 KW.

Available at request:

- Designs for higher heat loads
- High pressure designs (ANSI 600# / 1500#) for static designs up to 200 barg.
- High temperature designs
- Extended NDE packages to include inspections such as X-ray, LPE and P(A)MI.
- Refer to the section ‘options’ below.

SPX-230 Configuration

Main components

One heat exchanger

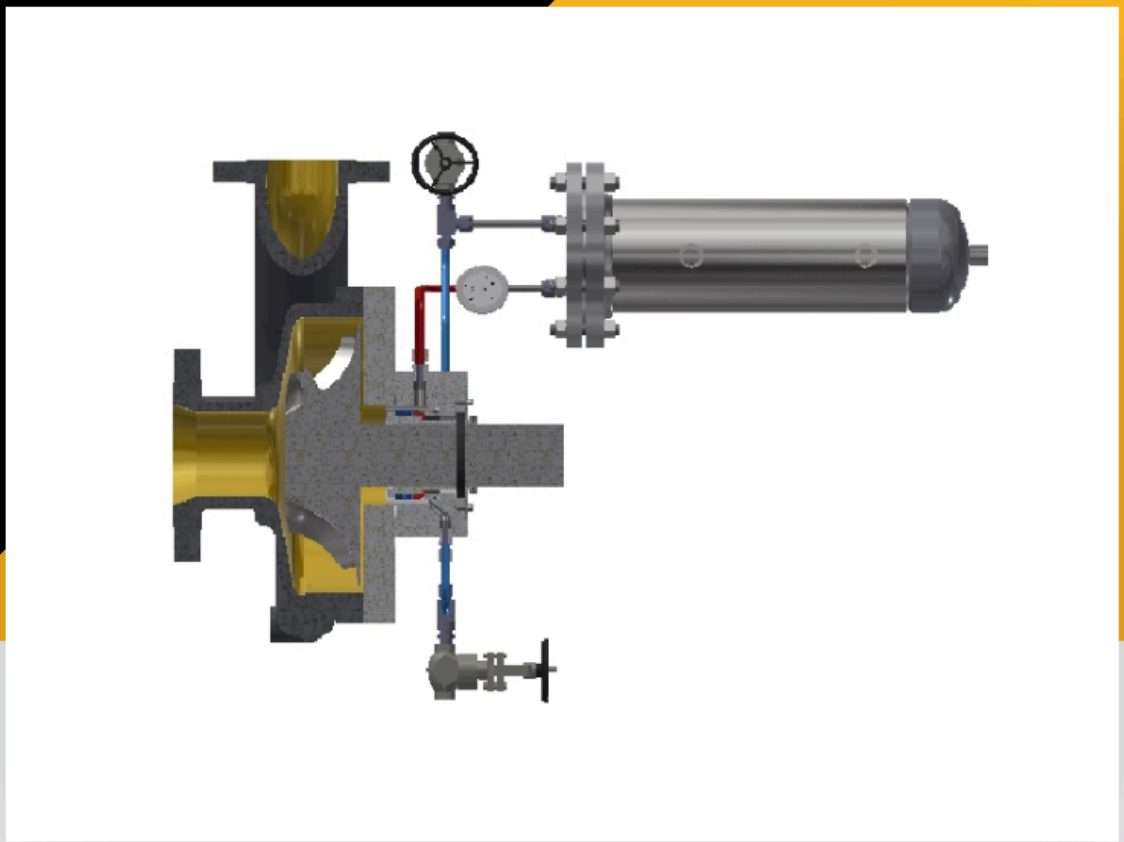
As appropriate, refer to the section coolers.

Appendages

Vent- and drain valves as appropriate; API 602 forged gate type.

One temperature gauge

Make Badotherm, skin type TG18 -/-20/+120°C, dial 100mm, made from SS316/SS304. Other makes/types and ranges on request.



Options

- Iternative material selections for specific services like HF and H2S (NACE) services
- The addition of Flopac refill / make-up units and quick connectors to accommodate these units.
- These units can be tailored to all your specific demands.
- The use of Smart pressure transmitters instead of switches for alarm/control functions.
- High pressure designs (ANSI 600# / 1500#) for static designs up to 200 barg.
- Additional pressure-, temperature- or flow instruments to enhance monitoring facilities.
- The addition of a temperature gauge, make Badotherm, skin type TG18 -/-20/+120°C, dial 100mm, made from SS316/SS304. Other makes/types and ranges on request.

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