

API 682 4th edition Category 1 Configurations



Mechanical seals



Piping plans



Seal supply systems



Configuration

2NC-CS

Product Line	Product Code	Product Name	Product Description	Product Features	Product Benefits
API 682	2NC-CS	API 682 4th edition Category 1 Configuration	Integral (internal) recirculation from the pump discharge seal chamber.	WEFG, WELG, SPTG WYFG, WELG, SPTG ZYAG WEFG, WELG, SPTG, ZYAG SPXG TSAG, TSBG Engineered TSAG, TSBG	

EagleBurgmann mechanical seals applicable for this configuration

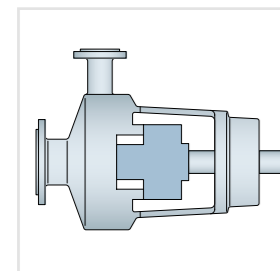
	Seal type A (Balanced pusher seals)	Seal type B (Metal bellows seals with O-Rings)	Seal type C (Metal bellows seals with flexible graphite)
ROTATING	■ H75LG4-C		
STATIONARY			

Engineered Seals

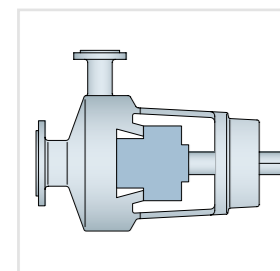
Beyond API specifications, EagleBurgmann offers a comprehensive range of engineered seals tailored to customer's specification. Please inquire.

API piping plans applicable for 2NC-CS configuration

Process side

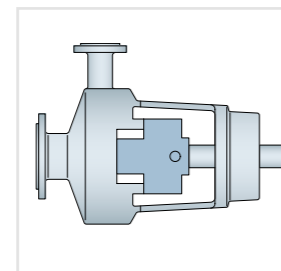


Plan 02
Dead-ended seal chamber with no recirculation of flushed fluid. Flush connections plugged.

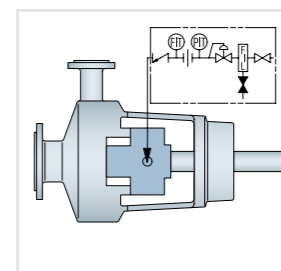


Plan 03
Circulation between the seal chamber and the pump created by the design of the seal chamber. Flush connections plugged.

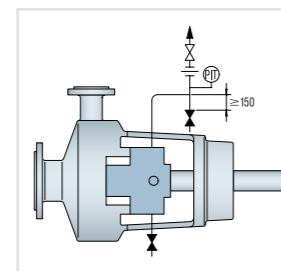
Between seals



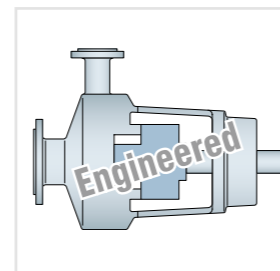
Plan 71
Tapped connections for the purchaser's use e. g., for future use of buffer gas.



Plan 72
Externally supplied buffer gas for arr. 2 unpressurized seals with dry a running containment seal (2CW-CS and 2NC-CS). Buffer gas is maintained at a pressure less than seal chamber pressure. The buffer gas pressure should not exceed 0.7 bar (10 PSI).



Plan 76
A containment seal chamber drain for non-condensing leakage on arrangement 2 unpressurized seals with containment seals (2CW-CS and 2NC-CS). Used if the pumped fluid does not condense at ambient temperatures.



Plan 99
Engineered piping plan not defined by other existing plans.

EagleBurgmann seal supply systems and components

Plans	Products
72	GSS6000 Gas supply system
76	SPP6 Leakage detection system
99	Engineered to customer's specifications

The API experts

EagleBurgmann is one of the leading international system providers of sealing technology. For more than 20 years we have been actively contributing our expertise to developing and implementing the API 682 standard for the selection and application of seals and supply systems in centrifugal and rotary pumps.

Solutions for more safety and productivity

The new 4th edition of API 682 is in line with the latest achievements and current developments. EagleBurgmann offers the widest portfolio of seals and seal supply systems acc. to API 682 4th edition, and consequently has the optimum product for each API-compliant requirement: technically mature, practical solutions that provide significantly greater safety and process reliability in refining technology, petrochemical, oil & gas and chemical industries.



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Important note

All the technical specifications are based on extensive tests and our many years of experience. However, the diversity of possible applications means that they can serve as guide values only.

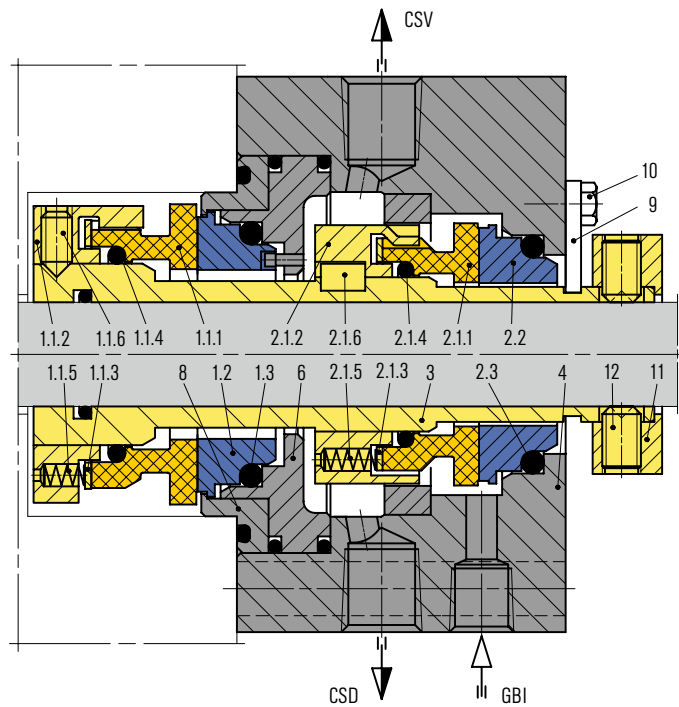
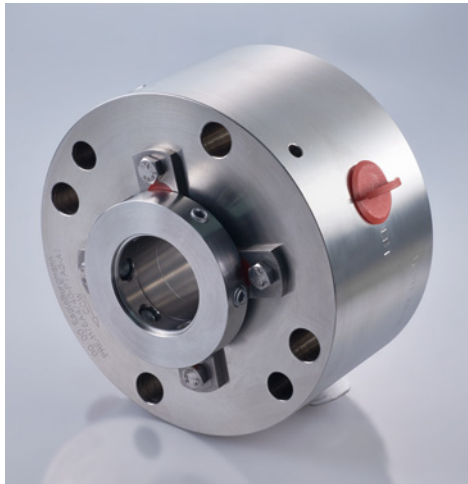
It should be noted that the extremal values of each operating parameter cannot be applied at the same time because of their interaction. Furthermore, the operating range of each specific product depends on the respective shaft diameter, materials used, mode of operation and on the medium to be sealed.

A guarantee can only be given in the individual case if the exact conditions of application are known and these are confirmed in a special agreement. When critical conditions of operation are involved, we recommend consulting with our specialist engineers.

Subject to change.

Seal type A

H75LG4-C



Features

- API 682 Category 2 und 3, Type A, Arrangement 2 seal
- Dual seal in face-to-back arrangement
- Cartridge unit
- Rotating multiple springs

Advantages

- Universally applicable both for retrofits or original equipment
- Efficient stock keeping due to standardized components
- Extended selection of materials
- Metal parts also in special materials available
- Designed for vaporizing media
- Operation close to vapor pressure

Recommended applications

- Refining technology
- Petrochemical industry
- Chemical industry
- Oil and gas industry
- Media with gaseous leakage
- API 610/ISO 13709 pumps
- Process pumps

Operating range (see note on page 3)

Shaft diameter: $d_1 = 20 \dots 110 \text{ mm}$ (0.79" ... 4.33")
 Pressure: $p_1 = 20 \text{ bar}$ (290 PSI)
 Temperature: $t = -40 \text{ °C} \dots +176 \text{ °C}$ (-40 °F ... +350 °F)
 Sliding velocity: $v_g = 4 \dots 23 \text{ m/s}$ (13 ... 76 ft/s)
 Axial movement: $\pm 1.0 \text{ mm}$

Materials

Seal rings: Blister resistant carbon, Silicon carbide SSiC (Q1), RBSiC (Q2)
 Mating rings: Silicon carbide SSiC (Q1), RBSiC (Q2)
 Secondary seals: EPDM (E), NBR (P), FKM (V), FFKM (K)
 Springs: Hastelloy® C-4 (M)* and C-276 (M5)
 Metal parts: CrNiMo steel 316 (G) or equivalent, optional materials on request.
 * EagleBurgmann standard

Recommended piping plans

Process side: 02, 03
 Between seals: 71, 72, 76

Item	Description
1.1.1, 2.1.1	Seal ring
1.1.2, 2.1.2	Driver
1.1.3, 2.1.3	Thrust ring
1.1.4, 1.3, 2.1.4, 2.3	O-Ring
1.1.5, 2.1.5	Spring
1.1.6, 12	Set screw
1.2, 2.2	Mating ring
2.1.6	Driver
3	Seal sleeve
4	Gland plate
6	Insert
8	Fixing ring
9	Setting device
10	Hexagon bolt
11	Set ring
CSV	Containment seal vent
CSD	Containment seal drain
GBI	Gas buffer IN



Features

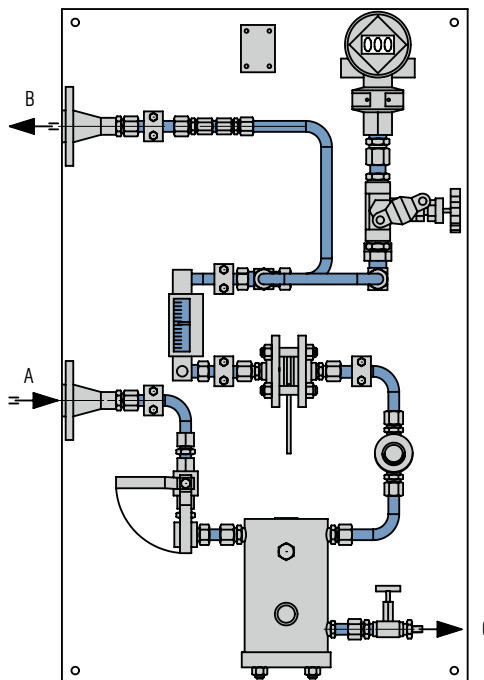
- Safe operation due to incorporated pressure regulator with upstream filter
- System mounted on a plate
- Easy wall or rack mounting

Advantages

- Coalescing filter with integrated sight-glass for monitoring liquid level to ensure safe operation even in case of poor gas quality.
- Rigid base frame for easy rack mounting.
- Wide range of flow monitoring to ensure utmost reliability of mechanical seals.

Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology



Functional description

Buffered, gas-lubricated mechanical seals may only be used in conjunction with adequately pressurized gas (e.g. from a closed circular nitrogen pipeline provided by the operator). The minimum pressure overlay level (Δp) is specified for the individual seal types.

Main GSS functions:

- Filtering of the buffer and flushing gas
- Flow monitoring

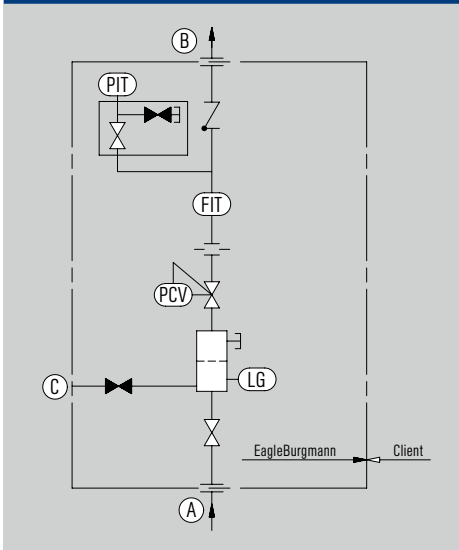
Typical tasks for the GSS:

- Gas flushing for single seals
- Gas supply for tandem seals

Notes

Design, calculation and production acc. to ASME VIII, Div. 1. 3rd party inspection and other certificates on request.

Installation



P&ID for GSS6000-A4 Gas supply system

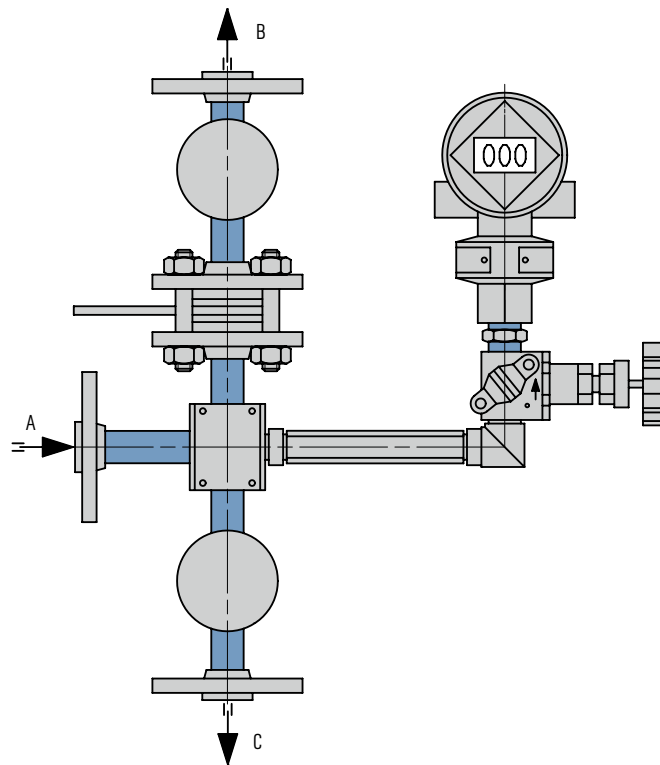
- A Gas IN
- B Gas OUT
- C Drain

Product variants

Designation	GSS6000A4M001-DO
Pressure Equipment Directive	ASME
Allowable pressure ¹⁾	40 bar (580 PSI)
Allowable temperature ¹⁾	-20 °C ... +50 °C (-4 °F ... +122 °F)
Metal parts	316L
Process connections	Flange 1/2", 600 lbs

Other versions on request.

¹⁾ Design data, permissible working values depend on the actual conditions of service.



Features

The EagleBurgmann leakage control systems of the SPP6000-A4 range consist of a pressure transmitter which is supplied together with a block and bleed valve as well as an orifice and drain valve.

Advantages

- Compact design
- Easy to integrate in existing piping systems

Recommended applications

- Refining technology
- Oil and gas industry
- Petrochemical industry
- Chemical industry
- Power plant technology

Functional description

The SPP6000-A4 leakage control system is used to detect leakage from single seals. In case of a seal failure, the SPP6000-A4 is required to monitor excessive leakage. If the seal leakage exceeds a certain value, the bushing/orifice will limit the amount of leakage leaving the seal gland. Consequently the pressure will increase on the upstream side of the inner bushing. The pressure is monitored by means of the transmitter which will provide information about seal performance and seal failure.

Item Description

- A From mechanical seal
- B To vapor collection system
- C Drain

Product variants

Designation	SPP6000-A4	SPP6000-A4
Process connections	Flange 3/4", 600 lbs	Flange 3/4", 600 lbs
Pressure range	0 ... 55 bar (0 ... 798 PSI)	0 ... 55 bar (0 ... 798 PSI)
Calibration range ¹⁾	0 ... 16 bar (0 ... 232 PSI)	0 ... 40 bar (0 ... 580 PSI)
Allowable temperature ¹⁾	-29 °C ... +120 °C (-20 °F ... +248 °F)	-29 °C ... +120 °C (-20 °F ... +248 °F)
Wetted parts	316L	316L

Other versions on request.

¹⁾ Design data, permissible working values depend on the actual conditions of service.

EagleBurgmann TotalSealCare Service

Our service modules

The modular seal service offered through TotalSealCare is as individual as are the demands of our customers. The range of services spans complete maintenance of all installed seals, through to stock management, as well as engineering, training and electronic data documentation.

Our TotalSealCare services consist of individual modules from which we assemble individualized service packages.

You can benefit from our many years of experience and expertise in all areas of seal technology, and our major store of practical knowledge.



Consulting & engineering

After establishing and analyzing all of the seals in a system, we work out standardization concepts based on the as-is status. The results we are hoping for are to reduce the number of seal types, sizes and materials used, and to improve the key figures of the system. We advise you relating to codes of practice and statutory regulations, and indicate what actions need to be taken.

Maintenance

In the plant or in the service center, qualified fitters and technicians look after all the aspects of seal maintenance: installation, startup, servicing, conversion, overhaul and repair. We record and document functionally relevant data (fault causes, measures for repair, costs). This means it is possible to assess seal operating times and maintenance costs on a continuous basis, thereby defining measures for extending service intervals.

On-site service

Our on-site service includes the components of an overhaul service, conversions and service container. We deploy a service unit directly on your premises: equipped with the basic suite of seals or a stock of seals discussed with you in advance, and staffed by qualified personnel. On-site, our work includes producing the necessary gaskets, ensuring that the documentation is complete and advising our customers on selecting and installing seals. Our range of services is rounded off by complete conversions (e. g. acc. to TA-Luft).

Inventory management

Based on your individual requirements and the applicable quality regulations, we develop a concept for inventory management of complete seals and spare parts. Furthermore, we optimize stocking on site or in the EagleBurgmann service center. In this way, you can reduce your administration overhead and concentrate on your key operations.

Seminars & training

We offer an extensive range of continuing education programs in seal technology. For service and maintenance personnel, skilled staff and engineers from various branches of industry such as refining, chemicals, power generation, foodstuffs, paper and pharmaceuticals. Our range includes group seminars, individual training and seminars specifically tailored to your requirements. At our premises or at a location of your choice.

Technical analysis & support

A team of seal specialists is responsible for rectifying process malfunctions or "bad actors". The latest methods such as thermography or data logging are used for diagnosing positions that are critical for the operation of the system and for working out measures to rectify them. In our research and development centers, we perform realistic tests on test rigs or in original pumps. The objective is to extend the MTBF and to increase system serviceability by individual and constructive solutions.

Service agreements

We offer our customers specific agreements that can be combined from the six service modules. Whether for individual seal systems, critical process elements, specific system areas or an extensive seal service for complete plants: the modular structure of our service makes it possible to satisfy individual requirements. With our tried-and-tested monitoring instrument, SEPRO, we can also record all data relevant for the seals for documentation and evaluation purposes.

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EagleBurgmann is one of the internationally leading companies for industrial sealing technology. Our products are used everywhere where safety and reliability are important: in the oil and gas industry, refining technology, the petrochemical, chemical and pharmaceutical industries, food processing, power, water, mining, pulp & paper, aerospace and many other spheres. Every day, more than 6,000 employees contribute their ideas, solutions and commitment towards ensuring that customers all over the world can rely on our seals. Our modular TotalSealCare service underlines our strong customer orientation and offers tailor-made services for every application.

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