

## Pulse Generator

# Productseries SP/SFE 30/3003

compliant with ATEX Directive 94/9/EC

for oil and grease lubrication systems  
designed to consume 0,1 to 50 cm<sup>3</sup>/min

Pulse Generator SP/SFE 30/3003



## General remarks

Group SP/SFE 30/3003 pulse generators are used to monitor oil and grease volumetric flow rates of 0,1 to 50 cm<sup>3</sup>/min at a maximum permissible operating pressure of 600 bars.

Group SP/SFE 30/3003 pulse generators are mainly used on metal-forming machines and for the lubrication of cylinders and compressors.

The pulse generator, a mechanical device, does not have any potential ignition source. The built-in floating contact can be used as a simple electrical device in intrinsically safe circuits in accordance with DIN EN 60079-11, Section 5.7.

The pulse generator can be used in zone 1 and 21 (intrinsically safe) with an Ex i certificated electric power supply.

The limit values for the switching contact can be found on page 3 in "Technical Data => Electrical System" and must not be exceeded.

# Pulse Generator SP/SFE 30/3003

## How it works

The lubricant flows from the inlet port through duct  $K_R$  into outlet chamber  $D_4$  (→ Fig. 1). Piston  $K_1$  moves to the left. The control bolt with balls  $E_1$  locks piston  $K_2$ . The lubricant in outlet chamber  $D_1$  is pressed through the right-hand annular groove of piston  $K_2$  to the outlet port. When piston  $K_1$  reaches the end position on the left, the locking of piston  $K_2$  is terminated.

The lubricant flows from the inlet port through duct  $K_{ML}$  into outlet chamber  $D_2$  (→ Fig. 2). Piston  $K_2$  moves to the right. The control bolt with balls  $E_1$  locks piston  $K_1$ . The lubricant in outlet chamber  $D_3$  is pressed through the right-hand annular groove of piston  $K_1$  to the outlet port. When piston  $K_2$  reaches the end position on the right, the locking of piston  $K_1$  is terminated.

The lubricant flows from the inlet port through duct  $K_L$  into outlet chamber  $D_1$ . Piston  $K_1$  moves to the right. The control bolt with balls  $E_1$  locks piston  $K_2$ . The lubricant in outlet chamber  $D_4$  is pressed through the left-hand annular groove of piston  $K_2$  to the outlet port. When piston  $K_1$  reaches the end position on the right, the locking of piston  $K_2$  is terminated.

The lubricant flows from the inlet port through duct  $K_{MR}$  into outlet chamber  $D_3$  (→ Fig. 1,  $K_1$  position right). Piston  $K_2$  moves to the left. The control bolt with balls  $E_1$  locks piston  $K_1$ . The lubricant in outlet chamber  $D_2$  is pressed through the lefthand annular groove of piston  $K_1$  to the outlet port.

The sequence described above is repeated as long as the lubricant flows.

After the procedure described above is completed, reed contact  $S_1$  in the switch part is closed once and opened once by the ring magnet affixed to piston  $K_1$ . The switching pulses are generated at a rate proportional to the volumetric flow. They are fed to the connected pulse evaluator and monitored by the built-in timer. If the switching period is longer than the set monitoring time, a fault is signaled.

Fig. 1

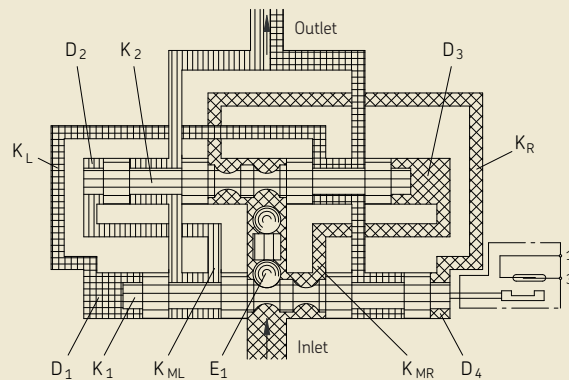


Fig. 2

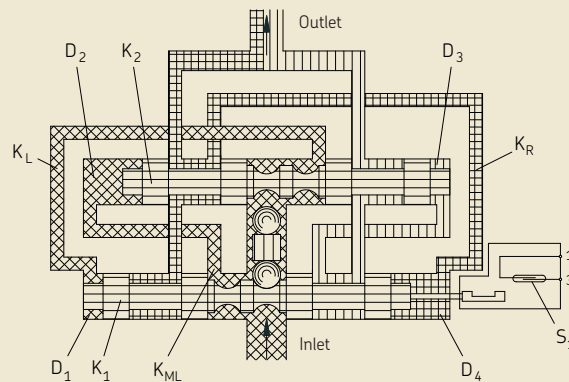
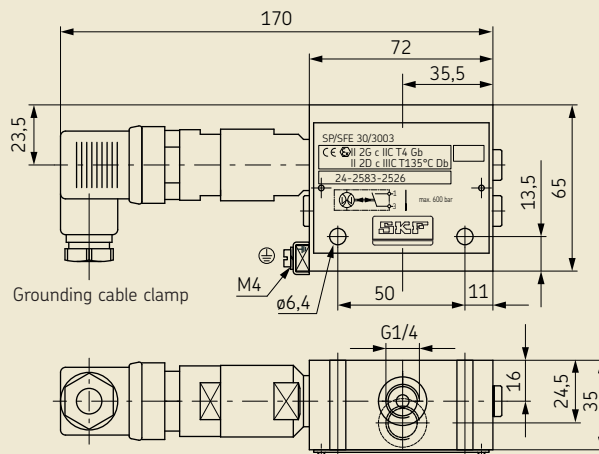


Fig. 3

Dimension drawing of pulse generator SP /SFE 30/3003



# Pulse Generator SP/SFE 30/3003

## Technical data

### Pulse generator SP/SFE 30/3003

#### General information

Type of enclosure . . . . . II 2G c IIC T4 Gb  
 II 2D c IIIC T135°C Db

Mounting position . . . . . any  
 Ambient temperature range . . . . . -20 to +40 °C  
 Lubricant temperature range . . . . . -15 to +70 °C  
 Vibration resistance . . . . . 4 x g  
 Weight . . . . . 1,1 kg

#### Hydraulic system

Operating pressure . . . . . 4 to 600 bars  
 Control pressure loss. . . . . approx. 4 bars  
 Lubricant . . . . . mineral, synthetic and  
 ecofriendly oils, grease  
 based on mineral oil

Service viscosity . . . . . > 12 mm<sup>2</sup>/s  
 Worked penetration . . . . . > 260 <sup>1</sup>/<sub>10</sub> mm  
 Volumetric flow range . . . . . 0,1 to 50 cm<sup>3</sup>/min  
 Volume/pulses. . . . . 0,34 cm<sup>3</sup> <sup>1</sup>) <sup>2</sup>)

#### Electrical system

Type of contact . . . . . reed contact  
 Voltage U<sub>i</sub>. . . . . 30 V DC  
 Current I<sub>i</sub>. . . . . 100 mA  
 Capacity C<sub>i</sub>. . . . . 1 nF  
 Inductivity L<sub>i</sub>. . . . . 5 μH

#### Connection

Type of connection. . . . . plug, DIN 43 650-A  
 Plug. . . . . 3 +PE

<sup>1</sup>) One pulse comprises the opening or closing of the reed contact.  
<sup>2</sup>) Volume/pulse = 0,68 cm<sup>3</sup> when a pulse monitoring unit is used  
 (opening till reopening or closing to reclosing of reed contact).



#### Note!

The customer must comply with the specific requirements for the necessary cable section area (4 mm<sup>2</sup>) and the kind and length of the grounding cable to be connected to the pulse generator.

#### For the connection of the grounding cable, ATEX regulations must be followed!

The switching of a pulse counter must be supplied by an intrinsically safe circuit, e.g. through the installation of an ATEX-compliant isolating switch by the customer. During maintenance work, it is only permissible to use tools intended for use in explosive areas, or a non-explosive atmosphere must be assured. The user must make sure through their choice of the lubricant to be delivered that no chemical reactions capable of serving as ignition sources will occur in conjunction with the explosive atmosphere expected.

### Order No.

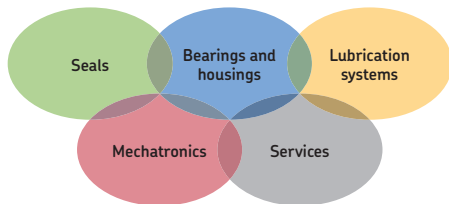
Designation	Order No.
SP/SFE 30/3003 pulse generator	24-2583-2526

### Accessories

Designation	Order No.
Straight connector G 1/4" for Ø 6 mm tubing	406-411
Straight connector G 1/4" for Ø 8 mm tubing	96-1108-0058

### CAUTION

For all systems described in this brochure, see important product usage information on the back cover.



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Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

#### Important information on product usage

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems. SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

#### Additional brochures for further information:

1-3009-EN Pulse generator SP/SFE 30/5, SP/SFE 30/6 GL  
 1-1700-5-EN Pulse monitoring unit

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