

Operating Instruction
**Switching
device SG-A**

INDEX

	Page
1. General	2
2. Safety	2 – 4
A Type	4
B Switching pressure difference	4
C Inspection	4
D Accessories	4
3. Design	5
4. Principle of operation	6
5. Specification	6
6. Start-up	7
7. Installation	8
8. Maintenance	9
9. Operating troubles and their reasons	9
10. Plates	9



1. General

Prior to start up, we recommend to read these operating instructions carefully as we do not assume any liability for damages and operating troubles which result from the nonobservance of these operating instructions!

Any use beyond the applications described in these operating instructions is considered to be not in accordance with the product's intended purposes. The manufacturer is not to be held responsible for any damages resulting from this: the user alone bears the corresponding risk.

As to figures and indications in these operating instructions we reserve the right to make technical changes which might become necessary for improvements.

The copyright on these operating instructions is kept reserved to the company DELIMON. These operating instructions are intended for the erecting, the operating and supervising personnel. They contain regulations and drawings of technical nature which must not – completely or partially - be distributed nor used nor communicated to others without authorization for competition purposes.

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2. Safety

These operating instructions contain fundamental instructions which are to be observed during erection, operation and maintenance. Therefore it is absolutely necessary for the fitter and the competent qualified staff/user to read these operating instructions before installation and start-up. The operating instructions must be available at all times at the place of use of the machine/system.

Not only the general safety instructions stated under this main point "safety" are to be observed, but also the other specific safety instructions stated under the other main points.

2.1 Identification of safety warnings in the operating instructions

The safety warnings contained in these operating instructions which, if not observed, may cause dangers to people, are specially marked with general danger symbols



safety sign according to DIN 4844, warning about a danger spot ,

in case of warning about electric voltage with



safety sign according to DIN 4844, warning about dangerous electric voltage.

In case of safety instructions which, if not observed, may cause damage to the machine and its function, the word

ATTENTION

is inserted.

Instructions that are directly attached to the machine, as for example

- rotational direction arrow
- identifications for fluid connections

must be observed at all events and maintained in a fully legible condition.

- Note: There is an increased skid risk in case of spilled/leaked out lubricants. They are to be removed at once properly.



Safety sign according to DIN 4844, warning about skid risk.

2. Safety (continuation)

2.2 Personnel qualification and training

The operating, maintaining, inspecting and erecting personnel must have the appropriate qualification for such work. Area of responsibility, competence and supervision of the personnel have to be regulated by the user. If the personnel do not have the necessary knowledge, they have to be trained and given instructions. This can be effected, if necessary, by the manufacturer/supplier on behalf of the user of the machine. Furthermore, the user has to make sure that the contents of the operating instructions are fully understood by the personnel.

2.3 Dangers in case of nonobservance of the safety instructions

The nonobservance of the safety instructions may result in hazards to persons, to the environment and to the machine. The nonobservance of the safety instructions may lead to the loss of any claims for damages.

In detail, the nonobservance may for instance lead to the following hazards:

- Failure of important functions of the machine/system
- Failure of prescribed methods for maintenance and repair
- Hazard to persons by electrical, mechanical and chemical influences
- Hazard to the environment by the leakage of dangerous substances

2.4 Safety conscious working

The safety instructions stated in these operating instructions, the existing national regulations as to the accident prevention as well as possible internal working, operating and safety rules of the user are to be observed.

2.5 Safety instructions for the user/operator

- If hot or cold machine parts lead to dangers, these parts have to be protected against touch.
- Protection against touch for moving parts (e. g. coupling) must not be removed when the machine is in operation.
- Leakages (e. g. from the shaft seal) of hazardous goods to be delivered (e. g. explosive, toxic, hot) are to be removed in such a way that there is no danger to persons and environment. Legal rules are to be observed.
- Hazards caused by electrical power are to be excluded (for details please refer for instance to the rules of the VDE and the local power supply companies).

2.6 Safety instructions for maintenance, inspection and installation work

The user has to take care that all the maintenance, inspection and installation work is executed by authorized and qualified skilled personnel who have informed themselves adequately by thoroughly studying the operating instructions.

Basically, work on the machine is only to be carried out during shut-down. It is obligatory to observe the shut-down procedure described in the operating instructions.

Pumps or pump aggregates that deliver media being hazardous to health have to be decontaminated. Immediately after completion of the work, all safety and protective equipments have to be reinstalled and/or reactivated.

- Advice: When working with compressed air, do wear glasses.



(DIN 4844 – Use breathing mask)

- Advice: Observe EC-Safety Data Sheet for materials of consumption and additives used and use personal protective equipment.



(DIN 4844 – Use breathing mask)

Before recommissioning, observe the points stated in section “initial start-up”.

2.7 Unauthorized conversion and manufacture of spare parts

Conversion or modifications to the machine are only permitted when agreed with the manufacturer. Original spare parts and accessories authorized by the manufacturer serve to ensure safety. The use of other parts may render the liability for consequential losses null and void.

2. Safety (continuation)

2.8 Unacceptable modes of operation

The operational reliability of the machine supplied is only guaranteed if the machine is used in accordance with its intended purposes as per section 1 - General - of the operating instructions. The limiting values specified in the data sheet must on no account be exceeded.

2.9 Guidelines & standards

1., 2. and 3. guideline (see data sheet: R&N_2009_1_GB)

3.0 Notes on environmental protection and waste disposal

In correct operation with lubricants, the components are subject to the special requirements set by environmental legislation.

The general requirements for lubricants are specified in the respective safety data sheets.

Used lubricants are hazardous forms of waste and therefore require special supervision in the sense of § 41 paragraph 1 sentence 1 and paragraph 3 no. 1 of KrW-/AbfG (Closed-Loop Waste Management Act).

Used oils must be handled in compliance with AltölV (Waste Oil Ordinance).

The devices or components contaminated with lubricant must be disposed of by a certified waste management company.

Records of proper waste management must be filed in conformance to NachwV (Ordinance on Waste Recovery and Disposal Records).

GENERAL PRODUCT CHARACTERISTICS

- with ram, enclosed
- Switching pressure difference 50 or 100 bar
- Working pressure 400 bars

A. TYPE SGA

B. SWITCHING PRESSURE DIFFERENCE

50 bars
100 bars

C. INSPECTION

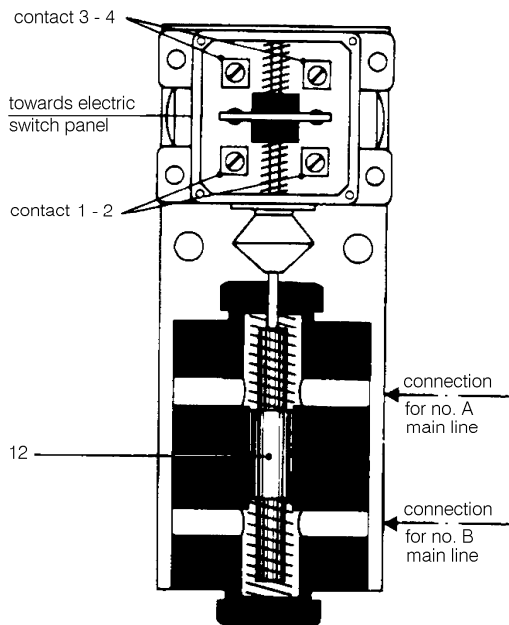
Stage A

D. ACCESSORIES

without

4. Principle of operation

With lubricating cycle 1, lubricant is supplied to main line A. Main line B is relieved. Due to the pressure build-up in main line A, the piston is displaced downwards against the springiness of the lower compression spring. When the differential pressure between the two main lines is approx. 50 bar and/or 100 bar, the contacts 1 and 2 are closed via the piston at the limit switch. Due to this pulse, the 4/2-way valve is reversed via the electric control of the system.



The reversion of the 4/2-way valve causes lubricating cycle no. 2 to start, and lubricant is supplied to main line B while main line A is relieved. Due to the pressure build-up in main line B, the piston is displaced upwards against the springiness of the upper compression spring. When the pressure difference between the two main lines is approx. 50 bar and/or 100 bar, the contacts 3 and 4 are closed via the piston at the limit switch, and a new reversion process is initiated.

5. Specification

Switching pressure difference :	50 or 100 bar
Working pressure :	max. 400 bar
Output volume :	0.7 mm ³
Rated voltage :	max. AC 240 V
Contact rating :	min. 10 mA at DC 24 V
Contact rating :	max. 3 A
Power rating at 500 V :	max. 7500 VA
Protective system :	IP 65
Compatible lubricants on mineraloil basis :	

Lubricant greases NLGI-class 000 up to 3 DIN 51818 (51825)

Oils with a viscosity from 190 mm²/s at operating temperature

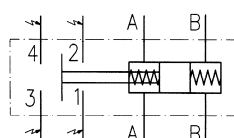
Synthetic lubricants upon request

Ambient temperature : between -20°C and +80°C

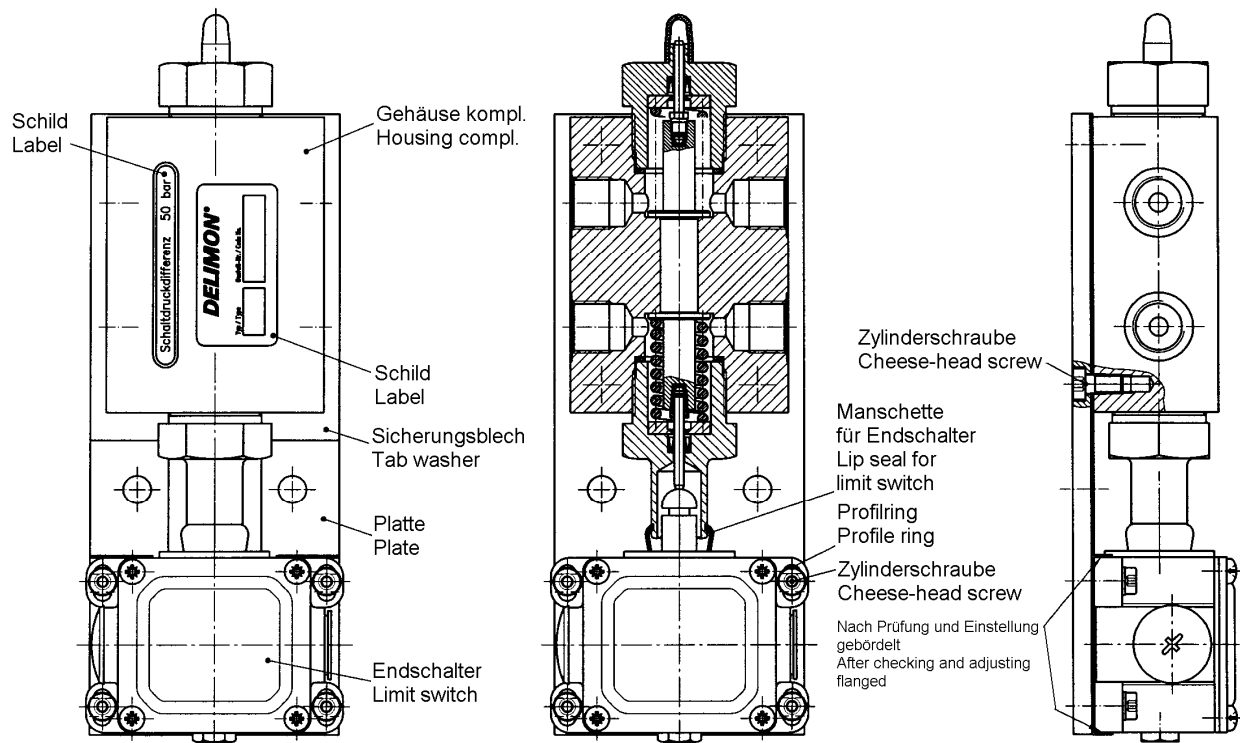
Installation position : optional

Weight : 3 kg

Switching diagram:



6. Start-up



The switching device SG-A is arranged before the lubricant distributor, which is the last to be reached by the pressure build-up in the main lines. Normally, this is the lubricant distributor having the greatest distance to the 4/2-way valve.

- The switching device is fixed with 2 screws M8. It can be installed in any position desired.



- The electric connection of the differential switch are to be effected by qualified staff only. The local electric instructions must be observed.

ATTENTION

- Take care that the lubricant lines are clean and free from chips or other impurities. Dirt particles are the most frequent reason for failures and damages.



- The switching device must not be pressurized with a service pressure exceeding 400 bar.
- Prior to commissioning of the system, the switching device should be deaerated.

7. Installation

The user has to take care that all kinds of maintenance inspectional and assembly works are carried out by authorized and qualified specialists who have informed themselves sufficiently by studying the operating instructions thoroughly.



For all kinds of works to be carried out at the machine or system, the machine or system must imperatively be out of operation. The procedure for stopping the machine or system described in the operating instructions must by all means be observed.

ATTENTION

During disassembly and assembly of the switching devices SG-A, take at all events care for cleanliness because dirt particles might casue failures and damages.

Take care that the housing and the limit switch are adjusted to a switching pressure of 50 and/or 100 bar by the safety plate. To avoid a modification of an adjustment, never remove the housing and the limit switch simultaneously from the plate.

If it necessary to exchange pieces, which affect the adjustment, e.g. limit switch, compression spring or housing, the switching pressure has to be adjusted anew to be fixed by bending up the tongues of a new safety plate.



- Shut down machine or system according to the relevant instructions.



- Protect differential switch against unintended actuation and disconnect it electrically by qualified staff.
- Remove differential switch from the machine and/or the system.
- Loosen cheese-head screws and remove disks with limit switch.
- Loosen plugs and take off seal rings, ring, compression spring with disks.
- Remove groove ring from plug.
- Pull piston out of the housing.
- Clean parts in naphtha or petroleum ether.
- Check parts for damages.
- Exchange damaged parts and old sealings by new ones.
- Assemble differential switch in reverse order.

ATTENTION

- If the limit switch is exchanged by compression springs, the switching device has to be adjusted anew. Bend down the tongues of the safety plate for the adjustment of the limit switch. Fix the limit switch with the cheese-head screws in such a way that the contact bridge is located right in the middler between the contacts 1-2 and 3-4. Then refix the position of the limit switch anew by bending up the tongues of the safety plate.
- Mount differential switch to the machine and/or the system.



- Make electric connection of differential switch by qualified staff and remove protection against unintended actuation.

ATTENTION

- Actuate the system and/or the machine until lubricant comes air bubble-free out of the connections of the main lines behind the switching device. Only then tighten the union pieces of the main lines (not before).



Dispose of oil remnants and cleanser according to rule.

8. Maintenance

The differential switch requires maintenance only, and these are no further measures required to maintain the differential switch ready for operation.

The following points should be observed:

- Do not use aggressive media to clean the differential switch. Use Naphtha or petroleum ether only.
- Use clean lubricant only to fill the lubricant pump. Avoid all kinds of impurities as dirt particles are the most frequent reason for failures and damages.
- Different kinds of lubricant must not be mixed.

9. Operating troubles and their reasons

Early wear of the mobile parts and the sealings is mainly caused by polluted lubricant.

Failures within the system can above all occur if the lubricant lines are not deaerated perfectly.

10. Plates

Type plate 26 x 52mm

