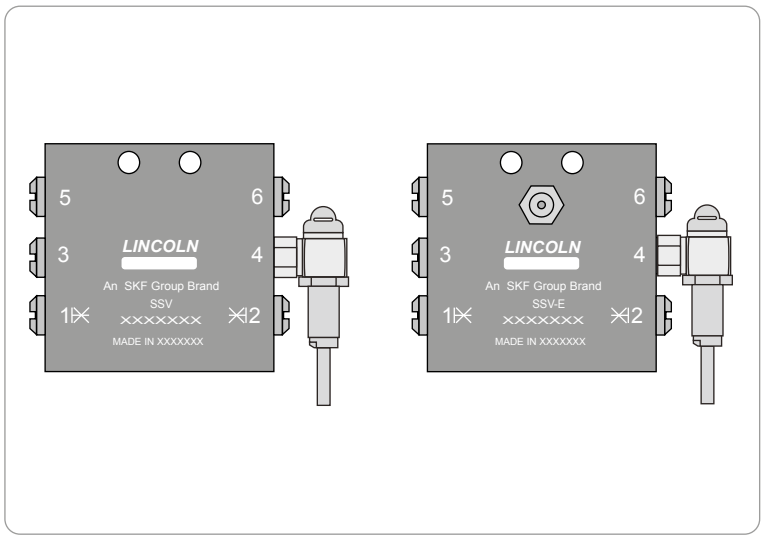
Progressive metering devices of series SSV...EEX, SSV-E...EEX, SSVD...EEX, SSVD-E...EEX, SSVL...EEX, SSVDL...EEX

Operating Instructions
following ATEX directive 2014/34/EU

EN



951-181-026-EN
Version 05
04.07.2024

EU Declaration of conformity following ATEX directive 2014/34/EU, annex X

The manufacturer, SKF Lubrication Systems Germany GmbH, Walldorf Facilities, Heinrich-Hertz-Str. 2-8, DE - 69190 Walldorf hereby declares under sole responsibility that the device

Designation:	Lubricant metering device for lubricant provision of lubrication points in progressive lubrication systems within an explosion protection zone
Types:	SSV...EEX, SSV-E...EEX, SSVD...EEX, SSVD-E...EEX, SSVL...EEX, SSVDL ...EEX
Part numbers:	619-xxxxx-x 649-xxxxx-x 6190-xxxxx-x 6490-xxxxx-x

complies with all essential safety and health requirements of the ATEX Directive 2014/34/EU at the time of placing on the market.

The technical documents according to:

- ATEX directive 2014/34/EU annex VIII (2) has been compiled and filed with the conformity assessment body (CE0123).

Furthermore, the following directives and harmonized standards were applied in the respective applicable areas:

Directives

2014/30/EU	EMC Directive	(only products with electrical components)
2011/65/EU	RoHS II	

Standards

EN ISO 80079-36:2016	EN IEC 60947-5-2:2020
EN 1127-1:2019	EN 60947-5-6:2000
EN IEC 63000:2018	

The device must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the previsions of ATEX directive 2014/34/EU and any other applicable directives.

Walldorf, 24.11.2022

Jürgen Kreutzkämper
Manager R&D Germany

Stefan Schürmann
Manager PD Germany South

UK Declaration of Conformity following to Regulation the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (2016 No. 1107)

The manufacturer, SKF Lubrication Systems Germany GmbH, Walldorf Plant, Heinrich-Hertz-Str. 2- 8, DE - 69190 Walldorf hereby declares, under its sole responsibility, conformity of the device

Designation:	Lubricant metering device for lubricant provision of lubrication points in progressive lubrication systems within an explosion protection zone
Types:	SSV...EEX, SSV-E...EEX, SSVD...EEX, SSVD-E...EEX, SSVL...EEX, SSVDL ...EEX
Part numbers:	619-xxxxx-x 649-xxxxx-x 6190-xxxxx-x 6490-xxxxx-x

complies with all essential safety and health requirements of the regulation The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 No. 1107at the time of placing on the market.

The technical documents according to:

- The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 No. 1107 has been compiled and filed with the conformity assessment body (CE0123).

The following regulations and standards were applied in the applicable areas:

Regulations

- Electromagnetic Compatibility Regulations 2016 No. 1091 (only products with electrical components)
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 No. 3032

Standards

EN ISO 80079-36:2016	EN IEC 60947-5-2:2020
EN 1127-1:2019	EN 60947-5-6:2000
EN IEC 63000:2018	

The device must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 (2016 No. 1107) and all other applicable regulations

Walldorf, 24.11.2022

Jürgen Kreutzkämper
Manager R&D Germany

Stefan Schürmann
Manager PD Germany South

Manufacturer
SKF Lubrication Systems Germany GmbH
Email: Lubrication-germany@skf.com
www.skf.com/lubrication

Berlin Plant
Motzener Strasse 35/37
12277 Berlin
Germany
Tel. +49 (0)30 72002-0
Fax +49 (0)30 72002-111

Walldorf Plant
Heinrich-Hertz-Strasse 2-8
69190 Walldorf, Germany
Germany
Tel.: +49 (0) 6227 33-0
Fax: +49 (0) 6227 33-259

Training courses
In order to provide a maximum of safety and economic viability, SKF carries out detailed training courses. It is recommended that the training courses are attended. For more information please contact the respective SKF Service address.

Authorized local distributors
Great Britain
SKF (U.K.) Limited,
2 Canada Close, Banbury, Oxfordshire,
OX16 2RT, GBR.

North America
SKF Lubrication Business Unit
Lincoln Industrial
5148 North Hanley Road, St. Louis,
MO. 63134 USA

South America
SKF Argentina Pte. Roca 4145,
CP 2001 Rosario, Santa Fe

Warranty
The instructions do not contain any information on the warranty. This can be found in our general terms and conditions.

Disclaimer
The manufacturer shall not be held responsible for damages caused by:

- Non appropriate use
  faulty assembly, operation, setting, maintenance, repair or accidents
- Use of inappropriate lubricants
- Improper or late response to malfunctions
- Unauthorized modifications of the product
- Intent or negligence
- Use of non-original SKF spare parts
- Faulty planning or layout of the centralized lubrication system

Liability for loss or damage resulting from the use of our products is limited to the maximum purchase price. Liability for consequential damages of whatever kind is excluded.

Table of contents

Explanation of symbols, signs and abbreviations

The following abbreviations may be used within these instructions. Symbols within safety notes mark the kind and source of the hazard.

General warning	Dangerous electrical voltage	Risk of falling	Hot surfaces
Unintentional intake	Crushing hazard	Pressure injection	Suspended load
Electrostatically sensitive components	Potentially explosive atmosphere	Keep unauthorized persons away	
Wear personal protective equipment (goggles)	Wear personal protective equipment (face shield)	Wear personal protective equipment (gloves)	Wear personal protective equipment (protective clothes)
Wear personal protective equipment (safety shoes)	Disconnect product from mains	General obligation	
Protective conductor (protection class I)	Protection y double or reinforced insulation (protection class II)	Protection by extra low voltage (protection class III)	Safe galvanic isolation (protection class III)
CE marking	Disposal, recycling	Disposal of waste electrical and electronic equipment	

Warning level	Consequence	Probability
DANGER	Death, serious injury	imminent
WARNING	Death, serious injury	possible
CAUTION	Minor injury	possible
NOTICE	Property damage	possible

Symbol	Meaning
●	Chronological guidelines
○	Lists
☞	Refers to other facts, causes, or consequences

Fig. 1 Abbreviations and conversion factors

re.	regarding	°C	degrees Celsius	°F	degrees Fahrenheit
approx.	approximately	K	Kelvin	Oz.	ounce
i.e.	that is	N	Newton	fl. oz.	fluid ounce
poss.	possibly	h	hour	in.	inch
if appl.	if applicable	s	second	psi	pounds per square inch
incl.	including	d	day	sq. in.	square inch
min.	minimum	Nm	Newtonmeter	cu. in.	cubic inch
max.	maximum	ml	millilitre	mph	miles per hour
min.	minute	ml/d	millilitre per day	rpm	revolutions per minute
etc.	et cetera	cm^3	cubic centimetre	gal.	gallon
e.g.	for example	mm	millimetre	lb.	pound
kW	kilowatt	l	litre	hp	horse power
U	Voltage	dB (A)	sound pressure level	kp	kilopond
R	resistance	>	greater than	fpsec	feet per second
I	current	<	less than	conversion factors	
V	volt	±	plus/minus	Length	1 mm = 0.03937 in.
W	watt	Ø	diametre	Area	1 cm^2 = 0.155 sq.in
AC	alternating current	kg	kilogram	Volume	1 ml = 0.0352 fl.oz.
DC	direct current	rh	relative humidity		1 l = 2.11416 pints (US)
A	ampere	≈	approximately	Mass	1 kg = 2.205 lbs
Ah	ampere hour	=	equal to		1 g = 0.03527 oz.
Hz	frequency [Hertz]	%	per cent	Density	1 kg/cc = 8.3454 lb./gal.(US)
nc	normally closed contact	‰	per mille		1 kg/cc = 0.03613 lb./cu.in.
no	normally open contact	≥	greater than	Force	1 N = 0.10197 kp
N/A	not applicable	≤	less than	Pressure	1 bar = 14.5 psi
ft.	feet	mm^2	square millimetre	Temperature	°C = (°F-32) x 5/9
		rpm	revolutions per minute	Output	1 kW = 1.34109 hp
		↑	Increases a value	Acceleration	1 m/s^2 = 3.28084 $ft./s^3$
		↓	Reduces a value	Speed	1 m/s = 3.28084 fpsec.
					1 m/s = 2.23694 mph

1. Safety instructions

1.1 General safety instructions

- The owner must ensure that safety information has been read by any persons entrusted with works on the product or by those persons who supervise or instruct the before-mentioned group of persons. In addition, the owner must also ensure that the relevant personnel are fully familiar with and have understood the contents of the Instructions. It is prohibited to commission or operate the product prior to reading the Instructions.
- These Instructions must be kept for further use.
- The described products are manufactured according to the state of the art. Risks may, however, arise from a usage not according to the intended purpose and may result in harm to persons or damage to material assets.
- Any malfunctions which may affect safety must be remedied immediately. In addition to these Instructions, general statutory regulations for accident prevention and environmental protection must be observed.

1.2 General behaviour when handling the product

- The product may be used only in awareness of the potential dangers, in proper technical condition, and according to the information in these instructions.
- Familiarize yourself with the functions and operation of the product. The specified assembly and operating steps and their sequences must be observed.
- Any unclear points regarding proper condition or correct assembly / operation must be clarified. Operation is prohibited until issues have been clarified.
- Keep unauthorized persons away.
- Wear personal protective equipment always.
- Precautionary operational measures and instructions for the respective work must be observed.
- Responsibilities for different activities must be clearly defined and observed. Uncertainty seriously endangers safety.
- Safety-related protective and safety equipment must not be removed, modified or affected otherwise in its function and is to be checked at regular intervals for completeness and function.
- If protective and safety equipment has to be dismantled, it must be reassembled immediately after finishing the work, and then checked for correct function.
- Remedy occurring faults in the frame of responsibilities. Immediately inform your superior in the case of faults beyond your competence.
- Never use parts of the centralized lubrication system or of the machine as standing or climbing aids.

1.3 Intended use

Providing lubrication points with lubricant in progressive lubrication systems following the specifications, technical data and limits stated in these Instructions.
Usage is allowed exclusively for professional users in the frame of commercial and economic activities.

1.4 Foreseeable misuse

Any usage differing from the one stated in these Instructions is strictly prohibited, particularly a usage:

- outside the indicated ambient temperature range.
- with non-specified means of operation.
- with contaminated lubricants or lubricants with air inclusions.
- of C3 versions (black chromate-treated surface) in areas with aggressive and corrosive materials.
- in areas with harmful radiation (e. g. ionising radiation).
- with lubricants the temperature of which exceeds the maximum admissible ambient temperature.
- to supply, transport, or store hazardous substances and mixtures in accordance with annex I part 2-5 of the CLP regulation (EG 1272/2008) or HCS 29 CFR 1910.1200 marked with GHS01-GHS06 and GHS08 hazard pictograms.
- to feed, forward, or store gases, liquefied gases, dissolved gases, vapours, or fluids whose vapour pressure exceeds normal atmospheric pressure (1013 mbar) by more than 0.5 bar at the maximum permissible ambient temperature.
- to feed, forward, or store lubricants containing volatile solvents.
- in explosive gas and vapour atmospheres, the ignition temperature of which is smaller than 125 % of the maximum surface temperature.
- in explosive dust atmospheres, the minimum ignition and glow temperature of which is smaller than 150 % of the maximum surface temperature.
- in a different, more critical potentially explosive atmosphere than stated on the type identification plate
- with incorrect painting carried out subsequently. The painting must comply with the standards valid for ATEX.
- with closure screws different from those stated in these instructions.
- With inlet and outlet fittings different from those stated in these Instructions.
- with metering screws for adjustable metering devices different from those stated in these instructions.

1.5 Modifications of the product

Unauthorized conversions or modifications may result in unforeseeable impacts on safety. Therefore, any unauthorized conversions or modifications are expressly prohibited.

1.6 Prohibition of certain activities

Due to potential sources of faults that may not be visible or due to legal regulations the following activities may be carried out only by manufacturer specialists or persons authorized by the manufacturer:

- Replacement of or changes to the pistons of the metering devices
- Changes to the proximity switch

1.7 Other applicable documents

In addition to these instructions, the following documents must be observed by the respective target group:

- The instructions of the pump that is used
- Operational instructions and approval rules
- Safety data sheet of the lubricant used

Where appropriate:

- Project planning documents
- Any documents of other components required to set up the centralized lubrication system

1.8 Notes related to the type identification plate

The type identification plate states important characteristics such as type designation, order number, and regulatory characteristics.

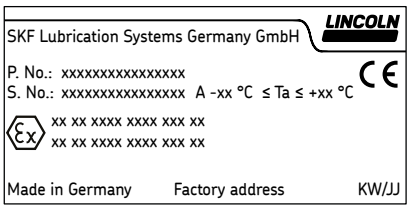
To ensure that the loss of data due to an illegible type identification plate is avoided, the characteristics should be entered in the Instructions.

P. No.: _____

S. No.: _____

Year of construction (KW/YY) _____

_____°C ≤ Ta ≤ _____°C



1.9 Notes related to the CE marking

CE marking is effected following the requirements of the applied directives:

- 2014/34/EU
  Directive relating to equipment and protective systems for use in explosive atmospheres (ATEX)
- 2014/30/EU Electromagnetic compatibility
- 2011/65/EU (RoHS II) Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Reference on Pressure Equipment Directive 2014/68/EU

Because of its performance data the product does not achieve the limit values defined in Article 4 (1) (a) (ii) and is therefore excluded from the scope of application of Pressure Equipment Directive 2014/68/EU following Article 1 (2) (f).

1.10 Notes related to the UKCA marking

UK CA The UKCA conformity marking confirms the product's conformity with the applicable legal provisions of Great Britain.

1.11 Explosion protection marking according to ATEX directive 2014/34/EU

The ignition hazard analysis carried out in accordance with EN ISO 80079-36 / -37:2016 has shown that the metering devices without electrical attachments described in these instructions have no potential ignition sources of their own. They therefore do not fall within the scope of Directive 2014/34/EU and do not have any explosion protection marking. The combination of the described metering devices with the electrical Ex components specified in these instructions does not create any additional ignition source. The explosion protection marking on these metering devices is based exclusively on the mounted electrical Ex component.

1.12 Persons authorized to operate the pump

1.12.1 Operator

A person who is qualified by training, knowledge and experience to carry out the functions and activities related to normal operation. This includes avoiding possible hazards that may arise during operation.

1.12.2 Specialist in mechanics

Person with appropriate professional education, knowledge and experience to detect and avoid the hazards that may arise during transport, installation, start-up, operation, maintenance, repair and disassembly.

1.12.3 Specialist in electrics

Person with appropriate professional education, knowledge and experience to detect and avoid the hazards that may arise from electricity.

Specialist for maintenance and repairs in potentially explosive atmospheres

A person who is qualified by training, knowledge and experience to identify and assess possible risks and hazards during work on the machine or partial components in potentially explosive areas and to initiate suitable measures to prevent such risks. The specialist has knowledge of the different ignition protection types, installation procedures and zone divisions. He is familiar with the rules and regulations relevant for his activities and explosion protection, in particular with ATEX directives 2014/34/EU and 1999/92/EC.

Briefing of external technicians

Prior to commencing the activities, external technicians must be informed by the operator of the company safety provisions, the applicable accident prevention regulations to be maintained, and the functions of the superordinate machine and its protective devices.

1.13 Provision of personal protective equipment

The operator must provide suitable personal protective equipment for the respective location of operation and the purpose of operation. For work in potentially explosive atmospheres this also includes ESD clothing and ESD tools.

1.14 Operation

The following must be observed during commissioning and operation:

- Any information within this manual and the information within the referenced documents
- All laws and regulations to be complied with by the user

1.15 Emergency stopping

In case of an emergency stop the pump station by:

- Switching off the superior lubrication pump or machine, in which the product has been integrated.
- If need by by actuating the emergency stop switch of the superior machine.

1.16 Transport, installation, maintenance, malfunctions, repair, shutdown, disposal

- All relevant persons must be informed of the activity prior to starting any work. Observe the precautionary operational measures and work instructions.
- Carry out transport using suitable transport and hoisting equipment on suitable ways only.
- Maintenance and repair work can be subject to restrictions at low or high temperatures (e.g. changed flow properties of the lubricant). Therefore, where possible, try to carry out maintenance and repair work at room temperature.
- Prior to performing work, the product and the machine, into which the product will be integrated, must be depressurized and secured against unauthorized activation.
- Ensure through suitable measures that movable or detached parts are immobilized during the work and that no limbs can be caught in between by inadvertent movements.
- Assemble the product only outside of the operating range of moving parts, at an adequate distance from sources of heat or cold. Other units of the machine or vehicle must not be damaged or impaired in their function by the installation.
- Dry or cover wet, slippery surfaces accordingly.
- Cover hot or cold surfaces accordingly.
- Work on electrical components must be carried out by electrical specialists only. Observe any waiting periods for discharging, if necessary. Carry out works on electrical components only while the system is depressurized and use voltage isolated tools suitable for electrical works only.

- Carry out electrical connections only according to the information in the valid wiring diagram and taking the relevant regulations and the local connection conditions into account.
- Fuses must not be bypassed Replace defective fuses always by fuses of the same type.
- Do not touch cables or electrical components with wet or damp hands.
- Ensure proper grounding of the product.
- Ensure proper connection of the protective conductor.
- Undertake drilling only at non-critical, non-load bearing parts of the operator's machine/ infrastructure. Use any available boreholes. Do not damage lines and cables when drilling. Changes to SKF products are prohibited. This includes all drilling, welding, flame-cutting, and grinding work.
- Observe possible abrasion points. Protect the parts accordingly.
- All components used must be designed for:
  - maximum operating pressure
  - maximum / minimum ambient temperature
  - the lubricant to be supplied
  - the ATEX zone required
  - the operating / ambient conditions at the place of usage
- No parts of the centralized lubrication system may be subjected to torsion, shear, or bending.
- Check all parts prior to their usage for contamination and clean, if necessary.
- Lubricant lines should be primed with lubricant prior to installation. This makes the subsequent ventilation of the system easier.
- Observe the specified tightening torques. When tightening, use a calibrated torque wrench.
- When working with heavy parts use suitable lifting tools.
- Avoid mixing up or wrong assembly of dismantled parts. Mark these parts accordingly.

1.17 Initial commissioning / daily start-up

Ensure that:

- All safety devices are completely available and functional
- All connections are correctly connected
- All parts are correctly installed
- All warning labels on the product are present completely, highly visible and undamaged
- Illegible or missing warning labels are to be replaced without delay

1.18 Cleaning

- Risk of fire and explosion when using inflammable cleaning agents Only use non-flammable cleaning agents suitable for the purpose.
- Do not use aggressive cleaning agents.
- Thoroughly remove residues of cleaning agents from the product.
- Do not use steam jet and high pressure cleaners. Electrical components may be damaged. Observe the IP type of protection of the pump.
- Cleaning work may not be carried out on energized components.
- Mark damp areas accordingly.

1.19 Safety-related protective and emergency devices must

- Safety-related protective and emergency devices must not be removed, modified or affected otherwise in their function and are to be checked at regular intervals for completeness and function.
- If protective and safety equipment has to be dismantled, it must be reassembled immediately after finishing the work, and then checked for correct function.

1.20 Special safety instructions regarding explosion protection

- Always behave so that explosion hazards are avoided.
- A written work approval from the operator is required prior to working in potentially explosive areas. Keep unauthorized persons away
- There must be no indications that parts of the explosion protection are missing or are not working. Should such indications become apparent, switch off the machine and inform a superior without delay.
- Measures for explosion protection must never be deactivated, modified or bypassed.
- Transport damages can result in the loss of the explosion protection. If transport damages can be seen, do not assemble the product nor put it into operation.
- It is forbidden to bring in ignition sources such as sparks, open flames and hot surfaces in potentially explosive areas.
- Check the machine at regular intervals in line with the operating conditions for damage which may represent an ignition risk as well as with regard to correct functioning. An inspection must be carried out every 12 months at the latest.
- The ignition temperature of the ambient explosive gas and vapour atmospheres must be greater than 125 % of the maximum surface temperature.
- The minimum ignition and glow temperature of the ambient explosive dust atmospheres must be greater than 150 % of the maximum surface temperature
- The limits of use related to explosion protection are clearly defined by the device categories, gas and dust groups as well as temperature classes stated in the explosion protection marking. In any case, also if dust group IIIC is specified, light-metal dusts as explosive ambient media are prohibited
- An emergency lubrication via the lubrication fitting for SSV-E, SSVD-E metering devices may only be carried out if the pump is earthed to the same potential or if it is ensured that no explosive atmosphere is present.
- The product may be cleaned only, if there is no potentially explosive atmosphere
- The ignition temperature of the lubricant must lie at least 50 K over the maximum surface temperature of the components.
- In case of products without electrical filling level control make sure to check the lubricant filling level at regular intervals
- Only use tools and clothing which are permitted for use in potentially explosive areas (ESD).

- Transport, installation, repairs and work on electrical components may only be carried out, if it has been ensured that the atmosphere is not potentially explosive.
- Repairs or modifications to machines which are protected against explosions may be carried out only by the manufacturer or by a workshop recognized by a named institution and confirmed in writing. If the work is not carried out by the manufacturer, the repairs must be approved by a named expert and confirmed in writing. The repairs are to be marked by a repair sign on the machine, stating the following:
  - Date
  - Executing company
  - Type of repair
  - If applicable, expert's code
- All parts of the earthing concept must be correctly available and connected with the superordinate machine.
- If transport lugs are dismantled after set-up, the threaded bores must be permanently sealed in accordance with the protection class.
- Handle the materials so that no sparks generated by tilting, falling, sliding, rubbing, impacting, etc. If needed, cover materials with suitable means.
- Never disconnect plug-in connections when energized. Secure plug-in connections against inadvertent manual disconnection with the safety clips.
- When mounting the metering devices at the place of use, the equipotential bonding must be ensured by a conductive, sufficiently large metallic contact with the add-on parts and the superior machine.
- Avoid dust accumulation and remove dust immediately. Dust accumulations have a thermally insulating effect and, if whirled up, generate the formation of a potentially explosive atmosphere.
- The product must be integrated in the operator's lightning protection concept.
- All parts are to be checked regularly for corrosion. Replace the affected parts.
- Terminal boxes must be firmly closed and the cable breakthroughs correctly sealed.
- Additional electrical monitoring devices must be firmly connected and correctly adjusted.

1.21 Expiry of the ATEX approval

The ATEX certificate for this product expires through:

- Inappropriate usage
- Unauthorized modifications
- Use of non-original SKF spare parts
- non-observance of these instructions and other applicable documents.
- Use of non-specified lubricants
- Non-observance of the specified maintenance and repair intervals
- Operation with damaged or lacking ATEX painting or ATEX painting done wrongly later on and not complying with the standards applicable for ATEX

1.22 Operation in explosion-protected areas

Operation is permitted only, if in compliance with:

- All information given in these instructions or stated in the referenced documents.
- All laws and regulations to be complied with by the user.
- Information on explosion protection according to directive 1999/92/EC (ATEX 137).
- ATEX approval.

1.23 Explosion protection marking

The explosion protection marking is found in chapter "Technical data" and on the type identification plate of the pump.

1.24 Markings and conventions

The following markings and conventions should be observed:

Possible markings

1-22	Outlet numbering
xxxxxxxxx	Production code
⟷	Outlets drilled with each other
⋈ ⋈	Outlets that must not be closed
Made in xxxx	Country of origin

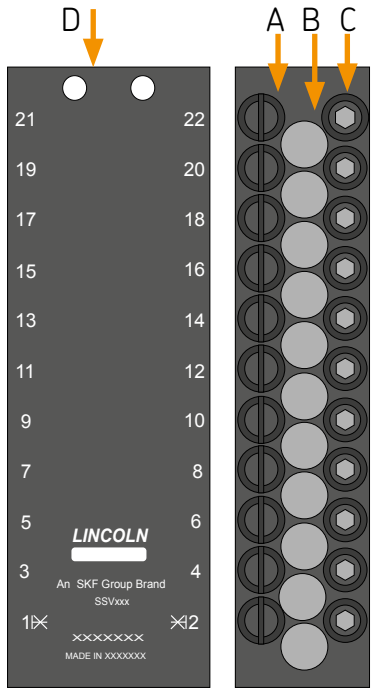
SSVxxx	-A	=	NPTF thread
	-VA	=	Stainless steel 1.4305
	-VAMO	=	Stainless steel 1.4571
	-ZnNi	=	nickel-plated
	no indication	=	black galvanized

Conventions

A	=	Outlet level
B	=	Metering-piston level (in case of doseable metering devices)
C	=	Control-piston level
D	=	Inlet level

Further to the findings of the workplace risk evaluation the operating company has to attach additional markings like warnings (e. g. hot surface), signs giving orders, prohibition signs or labelling as specified by GHS, where appropriate.

Fig. 2 Markings and conventions



1.25 Residual risks

Residual risk	Possible in life cycle									Prevention/ remedy
	A	B	C			G	H	K		
Personal injury/ material damage due to falling of raised parts										Keep unauthorized persons away. No people may remain under suspended loads. Lift parts with adequate lifting devices.
Personal injury/ material damage due to tilting or falling of the product because of non-observance of the stated tightening torques		B	C			G		K		Observe the specified tightening torques. Fix the product only to components with sufficient load capacity. Adhere to the tightening torques stated in these instructions.
Personal injury or damage to material due to leaked lubricant		B	C	D	E	F	G		K	Be careful when connecting or disconnecting lubrication lines. Always use suitable hydraulic screw connections and lubrication lines for the stated pressures. Do not mount lubrication lines to moving parts or friction points. If this cannot be avoided, use spring coils respectively protective conduits.
Tearing or damaging of lubrication lines when installed on moving machine parts			C	D						If possible, do not install on moving parts. If this cannot be avoided, use flexible lubrication lines
Lubricant spraying out due to faulty component fitting or lubrication line connection			C	D		F	G			Use suitable hydraulic screw connections and lubrication lines for the stated pressures. Check these prior to commissioning for correct connection and damage.
Injury of persons because of loosening of the impressed balls when using metering devices with black galvanized surface (C3 version) in a strongly corrosive environment.				D	E	F	G	H		In corrosive environments there may be used metering devices in C5 version (stainless steel or chemically nickel-plated) only.

Life phases:
A = transport, B = installation, C = initial start-up, D = operation, E = cleaning, F = maintenance, G = fault, repair, H = shutdown, K = disposal

1.26 Residual risks ATEX

Residual risk							Prevention/ remedy
Usage in a potentially explosive atmosphere without testing the equipotential bonding with regard to electrical continuity	C	D			G		Check the equipotential bonding with regard to electrical continuity before the initial start-up, after each repair and additionally at regular intervals to be determined by the operator.
Operation with painting done wrongly later on and not complying with the standards applicable for ATEX	C	D	E	F	G		Before the first start-up and later at regular intervals check the painting done later on and let it be renewed by authorized personnel, where appropriate
Heat-up of non-lubricated lubrication points in the area of ignition temperature through undetected faults within the centralized lubrication system.	C	D			G		The operator must check critically whether an operation without corresponding detection options might lead to a new risk potential (e.g. through heat-up of non-lubricated bearing points on the machine up to the ignition temperature range). If this cannot be excluded with certainty, provide adequate countermeasures.
Heat-up of components in the area of ignition temperature or formation of a potentially explosive atmosphere through whirling up of dust.	C	D	E	F	G		Avoid dust accumulation and remove dust immediately. Select a location of installation with as little dust as possible.

Life cycle: A = transport, B = installation, C = initial start-up, D = operation, E = cleaning, F = maintenance, G = fault, repair, H = shutdown, K = disposal

Residual risk							Prevention/ remedy
Generation of electrostatic charges and sparks through dropping parts.		C	D	E	F	G	Secure parts against falling. Where appropriate, cover parts in order to avoid the formation of sparks.
Bringing catalytic, unstable or pyrophoric substances into a potentially explosive area.		C	D	E	F	G	Ensure that none of these substances gets into the potentially explosive area. Have all substances approved by the operator first.
Using a lubricant not suitable for low temperatures. In case of low temperatures too high lubricant viscosity may result in a functional failure		C	D		F	G	Only use lubricants suitable for the respective actual ambient temperature

Life cycle: A = transport, B = installation, C = initial start-up, D = operation, E = cleaning, F = maintenance, G = fault, repair,
H = shutdown, K = disposal

2. Lubricants

2.1 General information

Lubricants are used specifically for certain application purposes. In order to fulfil their tasks, lubricants must fulfil various requirements.

The most important requirements for lubricants are:

- Reduction of abrasion and wear
- Corrosion protection
- Noise minimisation
- protection against contamination or penetration of foreign objects
- Cooling (primarily with oils)
- longevity (physical/ chemical stability)
- economic and ecological aspects

Only lubricants specified for the product (see chapter Technical data) may be used. Unsuitable lubricants may lead to a failure of the product.

Preferably do not mix lubricants. This may have unforeseeable effects on the usability and therefore on the function of the centralized lubrication system.

When handling lubricants the relevant safety data sheets and hazard designations, if any, on the packaging have to be observed.

Due to the multitude of possible additives, individual lubricants, which according to the manufacturer's data sheets fulfil the necessary specification, may not, in fact, be suitable for use in centralized lubrication systems (e. g. incompatibility between synthetic lubricants and materials). In order to avoid this, always use lubricants tested by SKF.

2.2 Selection of lubricants

Lubricants are an element of system design. A suitable lubricant is selected already when designing the machine and forms the basis for the planning of a centralized lubrication system.

The selection is made by the manufacturer or operator of the machine, preferably together with the lubricant supplier based on the requirement profile defined.

Should you have little or no experience with the selection of lubricants for centralized lubrication systems, please contact SKF.

If required we will be glad to support customers to select suitable components for feeding the selected lubricant and to plan and design their centralized lubrication system.

You will avoid possible downtimes due to a damage to your machine or damage to the centralized lubrication system.

2.3 Material compatibility

Lubricants must generally be compatible with the following materials:

- steel, grey iron, brass, copper, aluminium
- NBR, FPM, ABS, PA, PUR

2.4 Temperature characteristics

The lubricant used must be suitable for the specific ambient temperature of the product. The consistency/ viscosity suitable for proper operation of the product must be adhered to and must not be exceeded in case of low temperatures nor fall below specification in case of high temperatures. For information see chapter Technical data.

2.5 Ageing of lubricants

After a prolonged downtime of the machine, the lubricant must be inspected prior to re-commissioning as to whether it is still suitable for use due to chemical or physical ageing. We recommend that you undertake this inspection already after a machine downtime of 1 week.

If doubts arise as to a further suitability of the lubricant, please replace it prior to re-commissioning and, if necessary, undertake initial lubrication by hand.

It is possible for lubricants to be tested in the company's laboratory for their suitability for being pumped in centralized lubrication systems (e.g. "bleeding").

Please contact SKF. if you have further questions regarding lubricants.

2.6 Solid lubricants in lubrication greases

With regard to the different solid lubricants, please observe the following:

Graphite
max. graphite content 8 %
max. particle size 25 µm
(possibly in in lamellar structure)

MoS_2
max. MoS_2 content 5 %
max. particle size 15 µm

Copper
Lubricants containing copper are likely to result in a layer formation on pistons, bores and mating surfaces. This may cause blockages in the centralized lubrication system.

Calcium carbonate
Lubricants containing calcium carbonate are likely to cause a very strong wear on pistons, bores and mating surfaces.

Calcium hydroxide
Lubricants containing calcium hydroxide are likely to harden strongly, what may result in a downtime of the centralized lubrication system

PTFE, zinc and aluminium
Due to the findings and practical experiences gained so far, no limit values can be set for these solid lubricants yet.

2.6.1 Chisel pastes

NOTICE

Damage to the superior machine
Chisel pastes must not be used as a lubricant for bearings.

NOTICE

Damage of the centralized lubrication system
Chisel pastes may be supplied by pump element C only. Hereby the maximum operating pressure must not exceed 200 bar, as otherwise the solid lubricants contained in the chisel paste may cause increased wear.

3. Overview, functional description

3.1 General information

The described metering devices are piston metering devices which serve to supply lubricant to lubrication points in progressive lubrication systems. Lubricant is dispensed as long as lubricant is fed to the metering device under pressure by the lubrication pump.

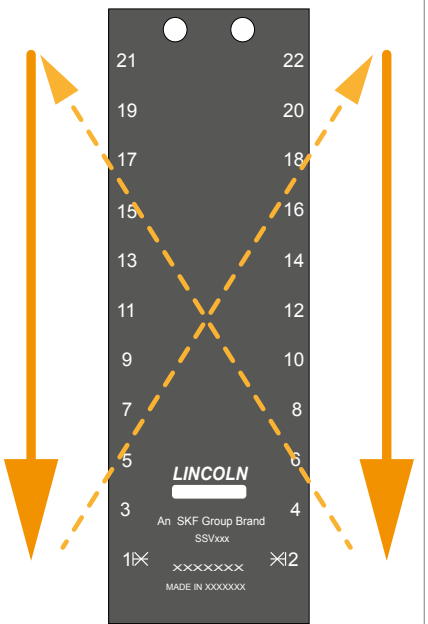
The pressurized lubricant moves the pistons in the metering device subsequently from their initial position into their final position, whereby the lubricant in front of the piston is displaced to the connected lubrication point/ secondary metering device.

A piston will move only when the previous piston has reached its end position. Whenever all pistons have moved from their initial position into their final position and back into their initial position again, a lubrication circuit has been completed and all connected lubrication points/secondary metering devices have been provided with lubricant.

The metering order of each piston is shown adjacently and can start or stop at any point.

Depending on the specific metering device version, the lubricant quantity required for the respective lubrication point/ secondary metering device can be increased by internal or external cross-porting of outlets and can be modified by means of metering screws in case of measurable metering devices.

Fig. 3 Metering order



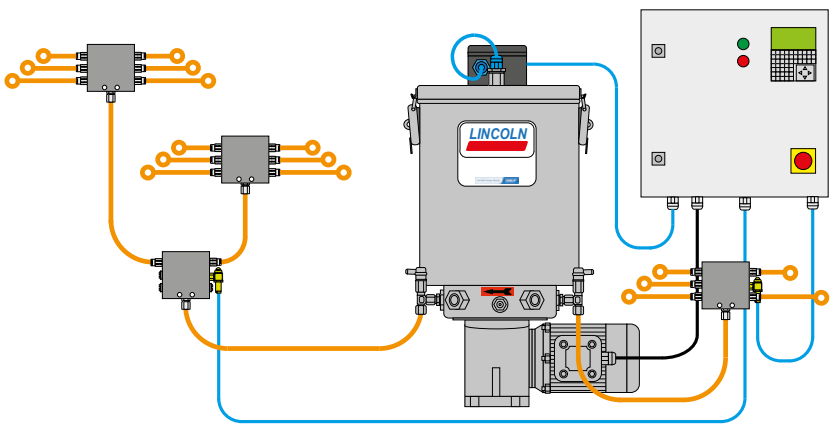
3.2 Typical fields of application

SSV metering devices can be used for almost all types of applications within a progressive lubrication system.

Typical fields of application:

- Plants in the chemical industry
- Petrochemical plants
- Mills
- Oil rigs

Fig. 4 Example of a progressive lubrication system with SSV metering devices



3.3 Function monitoring

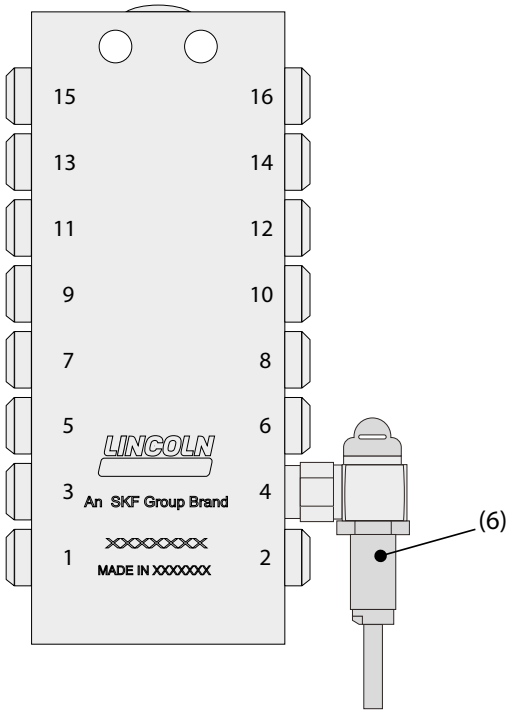
The described metering devices offer the following function monitoring respectively controlling option.

3.3.1 Function monitoring via proximity switch

The proximity switch (6) detects the movement of the indicator pin/metering piston. Proximity switches are used in combination with an external control unit to monitor and, if necessary, terminate the lubrication time.

The function monitoring requires an adequate processing of the signal by an external control unit.

Fig. 5 Function monitoring via proximity switch



3.4 Course of the lubricant in the SSV metering device

The SSV 8 metering device is used as an example to show the order of the lubricant output to the individual outlets.

Only the piston movements from the right to the left end position are shown. As the lubrication pump continues to supply the pistons move in the same order again from the left to the right end position and one metering device cycle is completed.

Phase 1

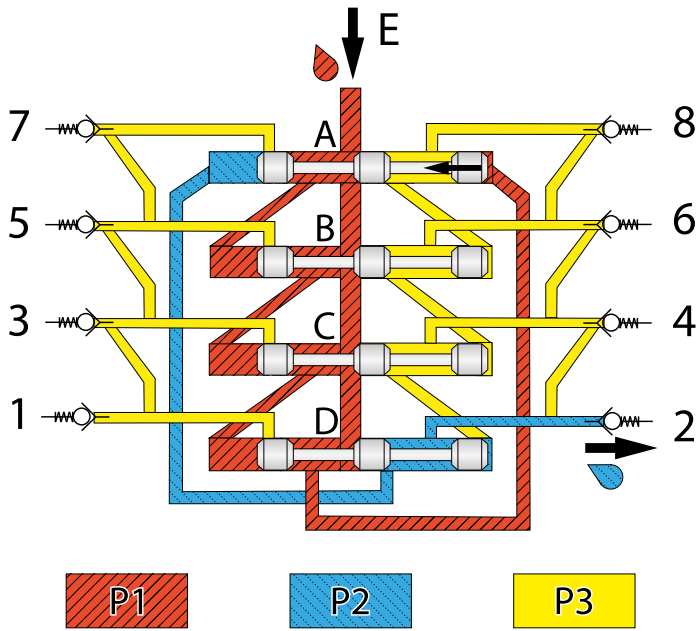
The lubricant P1 supplied by the pump flows through the inlet E into the metering device. By doing so piston A is moved into its left end position. As a consequence the lubricant volume of P2 corresponding to the piston stroke is supplied to outlet 2.

P1 = Lubricant supplied by the lubrication pump

P2 = Lubricant displaced by the piston of the metering device

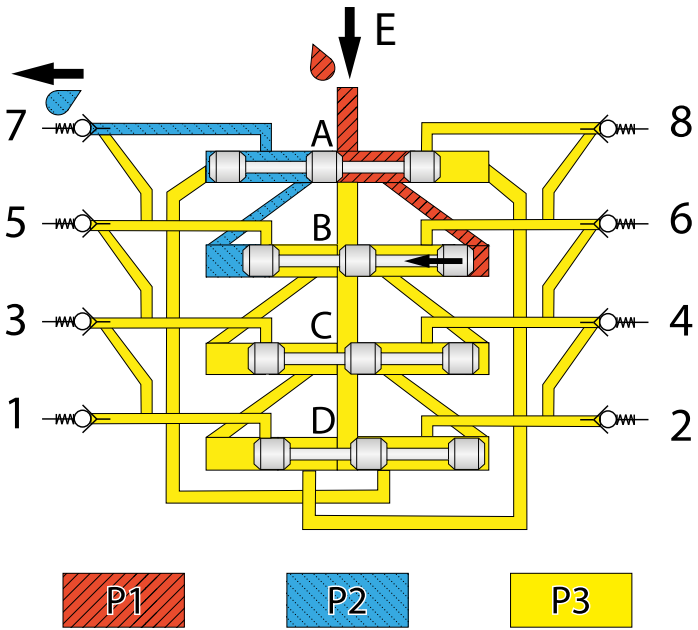
P3 = Lubricant not being moved

Fig. 6 Lubricant supply sequence illustrated by means of an SSV-8 metering device phase 1



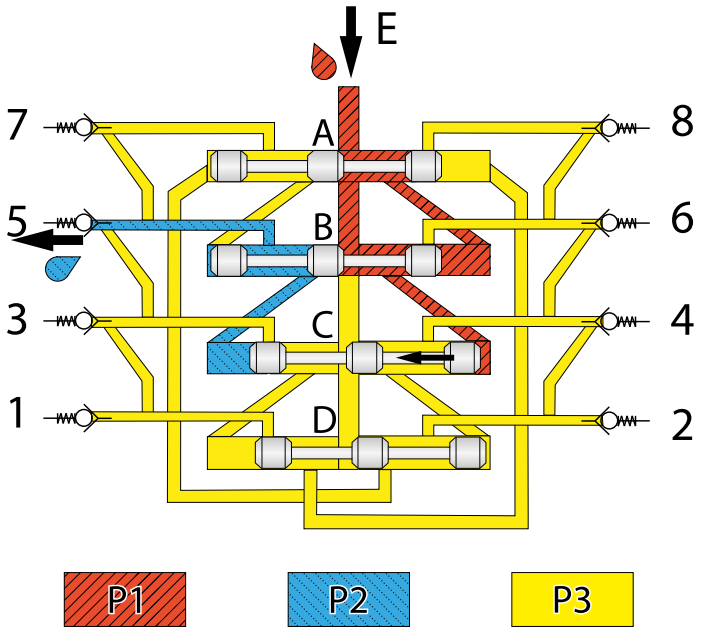
Phase 2
When piston A reaches its left end position, it opens the connection duct to the right end of piston B. As a consequence lubricant P1 supplied by the pump flows to the right end of piston B and piston B moves to its left end position. By doing so the lubricant volume P2 corresponding to the piston stroke is displaced to outlet 7.

Fig. 7 Course of the lubricant illustrated by means of an SSV-8 metering device Stage 2



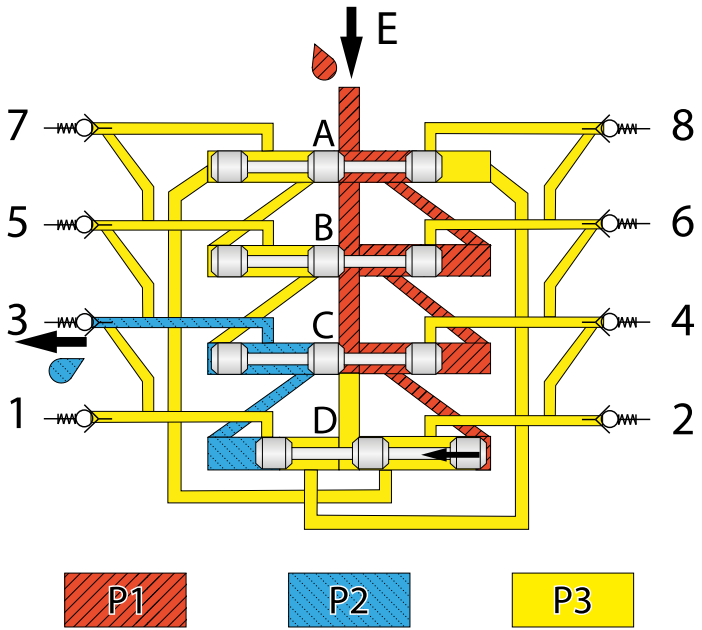
Phase 3
When piston B reaches its left end position, it opens the connection duct to the right end of piston C. As a consequence lubricant P1 supplied by the pump flows to the right end of piston C and piston C moves to its left end position. By doing so the corresponding lubricant volume P2 is displaced to outlet 5.

Fig. 8 Course of the lubricant illustrated by means of an SSV-8 metering device phase 3



Phase 4
When piston C reaches its left end position, it opens the connection duct to the right end of piston D. As a consequence lubricant P1 supplied by the pump flows to the right end of piston D and piston D moves to its left end position. By doing so the corresponding lubricant volume P2 is displaced to outlet 3.

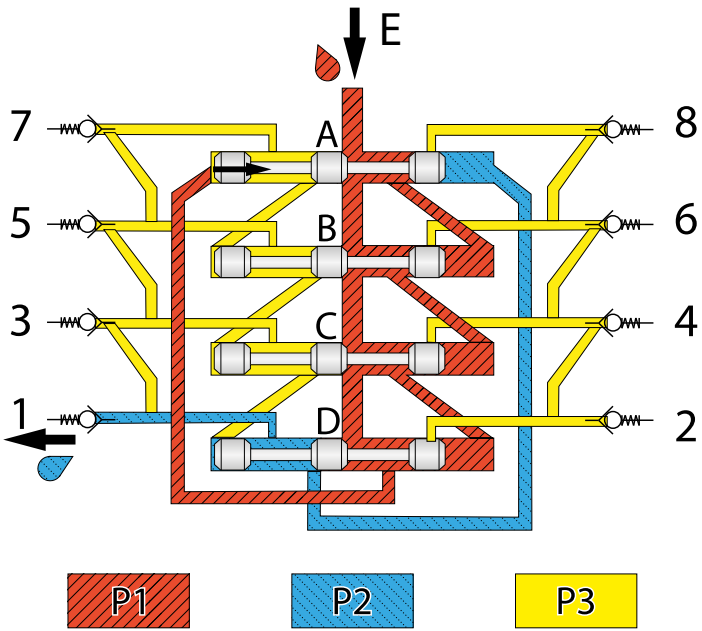
Fig. 9 Course of the lubricant illustrated by means of an SSV-8 metering device phase 4



Phase 5
When piston D reaches its left end position, it opens the connection duct to the right end of piston A. As a consequence lubricant P1 supplied by the pump flows to the right end of piston A and piston A moves to its left end position. By doing so the corresponding lubricant volume P2 is displaced to outlet 1.

Phases 6 - 8
In Phases 6 to 8 the lubricant movement follows the same principle as in phases 1 to 5 and lubricant is supplied from the outlets 8, 6 and 7 (phases 6, 7 and 8). If the supply continues after phase 8, the cycle starts from the beginning again.

Fig. 10 Course of the lubricant in the metering device phase 5



3.5 Course of the lubricant in the SSVD metering device

The SSVD 6 metering device is used as an example to show the piston movements and the lubricant supply to the individual outlets.

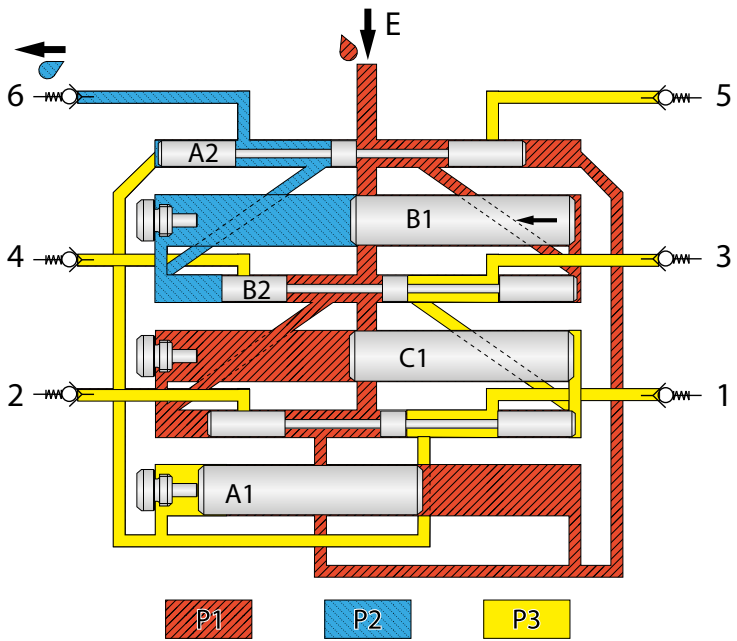
Phase 1
The lubricant P1 supplied by the pump flows through the inlet E into the metering device. By doing so metering piston B1 is moved into its left end position. As a consequence the corresponding lubricant volume P2 is supplied to outlet 6.

P1 = Lubricant supplied by the lubrication pump

P2 = Lubricant displaced by the piston of the metering device

P3 = Lubricant not being moved

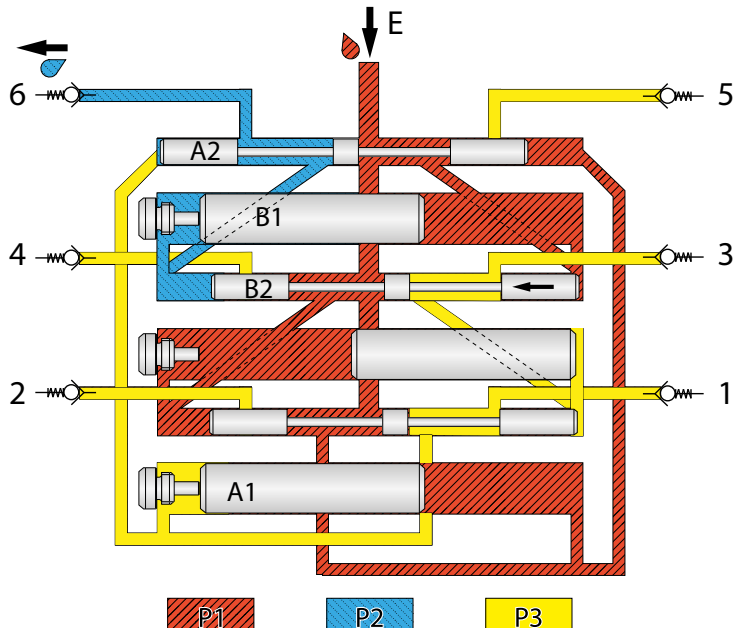
Fig. 11 Course of the lubricant illustrated by means of an SSVD-6 metering device phase 1



Phase 2
As soon as metering piston B1 reaches its left end position, the pressurized lubricant P2 moves the control piston B2 leftward and additionally displaces the lubricant in front of control piston B2 to outlet 6.

The total output of outlet 6 corresponds to the output of metering piston B1 and control piston B2.

Fig. 12 Course of the lubricant illustrated by means of an SSV-8 metering device Stage 2

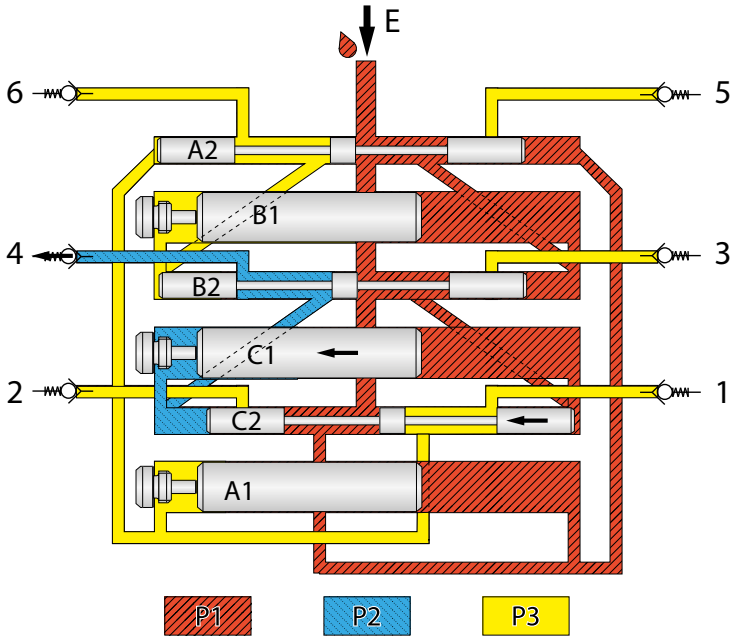


Phase 3
The control piston B2 has reached its left end position. Thereby it opens the connection duct to the right end of control piston C2 and metering piston C1. The pressurized lubricant P1 is now located at the right end of control piston C2 and metering piston C1 and first moves metering piston C1 to the left due to its larger cross-section and then displaces the lubricant enclosed on the left side of metering piston C1 to outlet 4.

Phase 4
As soon as metering piston C1 reaches its left end position, the pressurized lubricant P2 moves the control piston C2 leftward and additionally displaces the lubricant in front of control piston C2 to outlet 4.

The total output of outlet 4 corresponds to the output of metering piston C1 and control piston C2.

Fig. 13 Course of the lubricant illustrated by means of an SSV-8 metering device phases 3 and 4

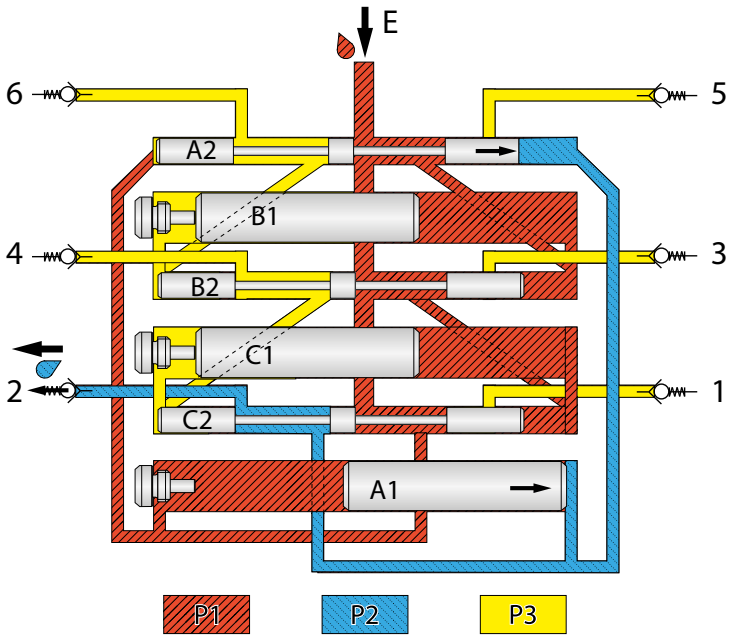


Phase 5
The control piston C2 has reached its left end position. Thereby it opens the connection duct to the left end of control piston A2 and metering piston A1. The pressurized lubricant P1 is now located at the left end of control piston A2 and metering piston A1. Due to its larger cross-section lubricant P1 first moves metering piston A1 to the right and then displaces the lubricant enclosed on the right side of metering piston A1 to outlet 2.

Phase 6
As soon as metering piston A1 reaches its right end position, the pressurized lubricant P1 moves the control piston A2 (black arrow) rightward and additionally displaces the enclosed lubricant in front of control piston C2 to outlet 2.

The total output of outlet 2 corresponds to the output of metering piston A1 and control piston A2.

Fig. 14 Course of the lubricant illustrated by means of an SSV-8 metering device phases 5 and 6

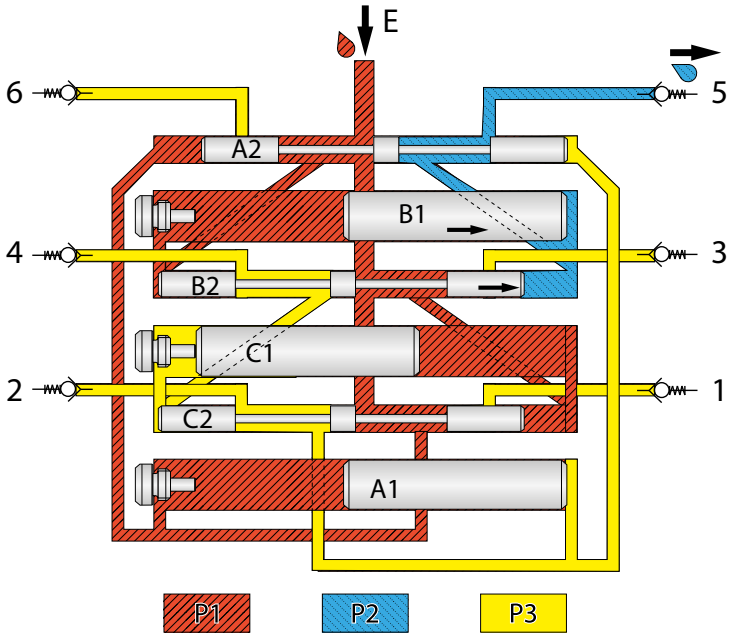


Phase 7
Control piston A2 has reached its right end position. Thereby it opens the connection duct to the left end of control piston B2 and metering piston B1. The pressurized lubricant P1 is now located at the left end of control piston B2 and metering piston B1. Due to its larger cross-section lubricant P1 first moves metering piston B1 to the right and then displaces the lubricant enclosed on the right side of metering piston B1 to outlet 5.

Phase 8
As soon as metering piston B1 reaches its right end position, the pressurized lubricant P1 moves the control piston A2 (black arrow) rightward and additionally displaces the enclosed lubricant in front of control piston C2 to outlet 5.

The total output of outlet 5 corresponds to the output of metering piston B1 and control piston B2.

Fig. 15 Course of the lubricant illustrated by means of an SSV-8 metering device phases 7 and 8

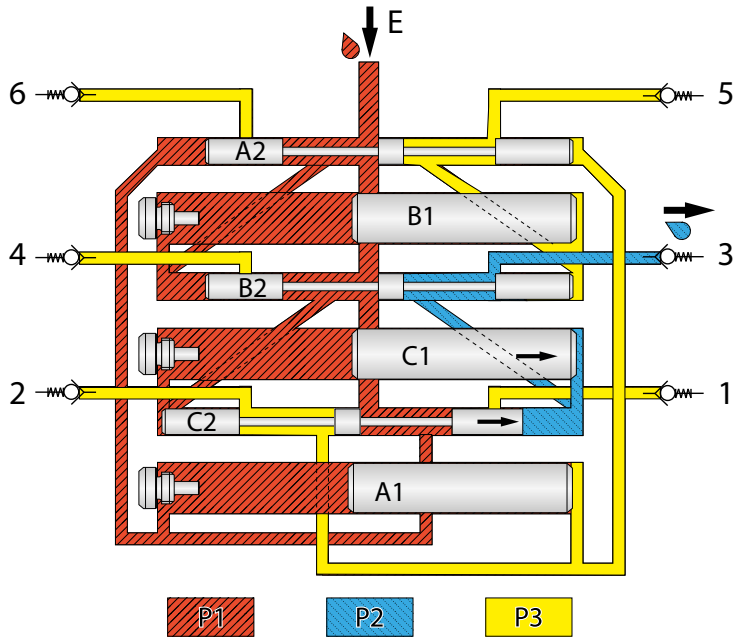


Phase 9
The control piston B2 has reached its right end position. Thereby it opens the connection duct to the left end of control piston C2 and metering piston C1. The pressurized lubricant P1 is now located at the left end of control piston C2 and metering piston C1. Due to its larger cross-section lubricant P1 first moves metering piston C1 to the right and then displaces the lubricant enclosed on the right side of metering piston C1 to outlet 3.

Phase 10:
As soon as metering piston C1 reaches its right end position, the pressurized lubricant P1 moves the control piston C2 (black arrow) rightward and additionally displaces the enclosed lubricant in front of control piston C2 to outlet 3.

The total output of outlet 3 corresponds to the output of metering piston C1 and control piston C2.

Fig. 16 Course of the lubricant illustrated by means of an SSV-8 metering device phases 9 and 10



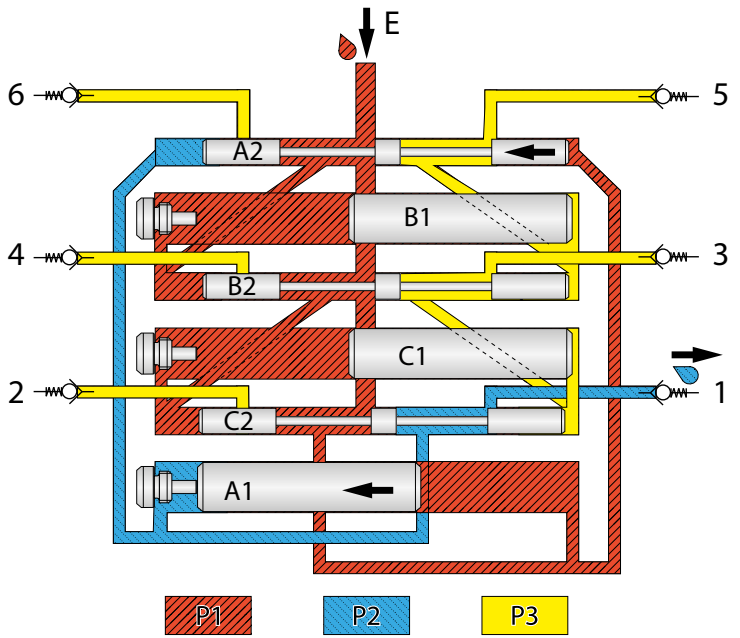
Phase 11
The control piston C2 has reached its right end position. Thereby it opens the connection duct to the right end of control piston A2 and metering piston A1. The pressurized lubricant P1 is now located at the left end of control piston A2 and metering piston A1. Due to its larger cross-section lubricant P1 first moves metering piston A1 to the left and then displaces the lubricant enclosed on the left side of metering piston A1 to outlet 1

Phase 12
As soon as metering piston A1 reaches its left end position, the pressurized lubricant P1 moves the control piston A2 leftward and additionally displaces the enclosed lubricant on the left side of control piston A2 to outlet 1.

The total output of outlet 1 corresponds to the output of metering piston A1 and control piston A2.

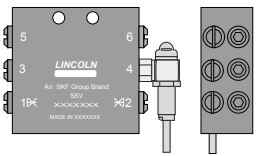
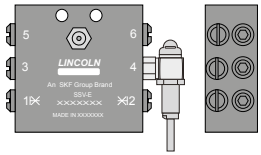
Now a full cycle of the metering device has been completed.

Fig. 17 Course of the lubricant illustrated by means of an SSV-8 metering device phases 11 and 12



4. Technical data

4.1 Technical data SSV...EEX / SSV-E...EEX

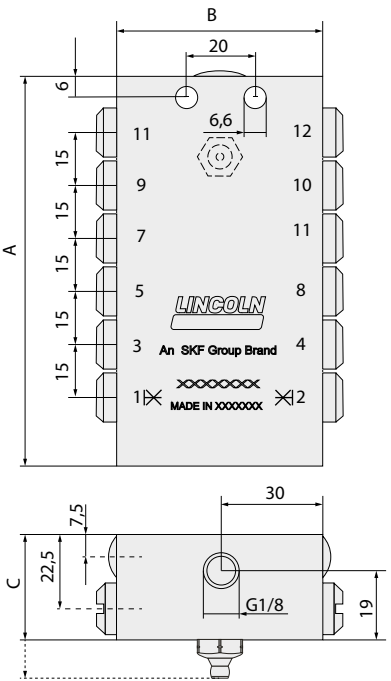
		SSV...EEX	SSV-E...EEX
			
Maximum operating pressure	bar	350	350
Minimum operating pressure	bar	20	20
[5] Max. differential pressure between 2 outlets	bar	100	100
Number of outlets		6-22	6-22
Installation position		any	any[1]
Inlet thread		G1/8	G1/8
Outlet thread		M10 x 1	M10 x 1
Connectable lubrication lines	mm	Ø 4 | Ø 6	Ø 4 | Ø 6
[2] Metering volume per stroke and outlet	cm^3	0.2	0.2
Possible material versions		Steel, black zinc-coated Stainless steel 1.4305 (V2A) Stainless steel 1.4571 (V4A)	Steel, black zinc-coated Stainless steel 1.4305 (V2A)
[3] Function monitoring		proximity switch	
[4] Ambient temperature range with electrical component	°C	see Technical data of the respective electrical component	
Suitable lubrication grease consistencies		Lubrication greases up to and including NLGI 2	
Suitable lubrication oil viscosities		Lubrication oils of at least 40 mm^2/s at ambient temperature	

[1] Installation position limited by the emergency lubrication fitting.
[2] When using function monitoring devices K, KA, KN, the metering volume on those outlets provided with lubricant by a piston via indicator pin is reduced as follows: SSV, SSV-E by about 35%
[3] Also see chapter Function monitoring options
[4] The stated ambient temperature range assumes the transportability of the lubricant applied and the use of fittings and lubrication lines suitable for the respective existing temperature.
[5] The maximum differential pressure must not be exceeded and can be reduced by selecting the right length and diametre of the line.

4.1.1 Construction sizes, dimensions and weights SSV...EEX/ SSV-E...EEX

SSV/ SSV-E	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)
6	60	60	30/45*	0.8
8	75	60	30/45*	1.0
10	90	60	30/45*	1.2
12	105	60	30/45*	1.4
14	120	60	30/45*	1.6
16	135	60	30/45*	1.8
18	150	60	30/45*	2.0
20	165	60	30/45*	2.2
22	180	60	30/45*	2.4

SSV...EEX / SSV-E...EEX



* SSV-E...EEX: Depth including emergency lubrication fitting

4.1.2 Tightening torques SSV...EEX / SSV-E...EEX

Piston level		Nm
6	proximity switch	7 ± 1.0
P	Closure screw	18-2

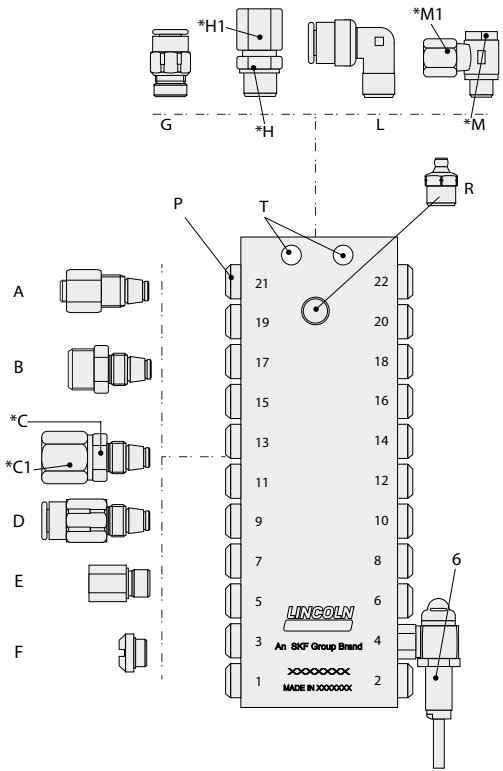
Outlet level		Nm
A/B/C/D/E		11 ± 0.5
C1		10 ± 0.5
F	Closure screw	15 ± 1.5

Inlet level		Nm
G/L		10 ± 1.0
H		17 ± 1.7
M		15 ± 1.5
H1/M1	for plastic tube	10 ± 1.0
H1/M1	for steel tube	11 ± 1.0

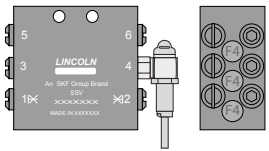
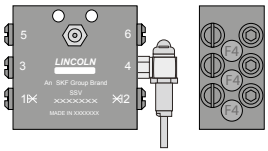
Emergency lubrication fitting (SSV-E)		
R		14 ± 0.7

Fastening screws		
T	M 6 x .... (8.8) dry	10 ± 1.0
	M 6 x .... (8.8) oiled	7.5 ± 0.8

Secure all lubrication fittings and all screw fittings without sealing edges with a medium-strength screw lock (e.g. Loctite 274).
*In case of an oiled assembly reduce the stated tightening torques by 20%.



4.2 Technical data SSVD...EEX / SSVD-E...EEX

		SSVD...EEX	SSVD-E...EEX
			
Maximum operating pressure	bar	350	350
Minimum operating pressure	bar	20	20
[2] Max. differential pressure between 2 outlets	bar	100	100
Number of outlets		6-22	6-22
Installation position		any	any[1]
Inlet thread		G1/8	G1/8
Outlet thread		M10 x 1	M10 x 1
Connectable lubrication lines	mm	Ø 4 | Ø 6	Ø 4 | Ø 6
[2] Metering volume per stroke and outlet		The metering volume is adjusted via metering screws and amounts to a maximum of 1.8 cm^3 per stroke	
Possible material versions		Steel, black zinc-coated	Steel, chemically nickel-plated
[3] Function monitoring		proximity switch	
[4] Ambient temperature range with electrical component	°C	see Technical data of the respective electrical component	
Suitable lubrication grease consistencies		Lubrication greases up to and including NLGI 2	
Suitable lubrication oil viscosities		Lubrication oils of at least 40 mm^2/s at ambient temperature	

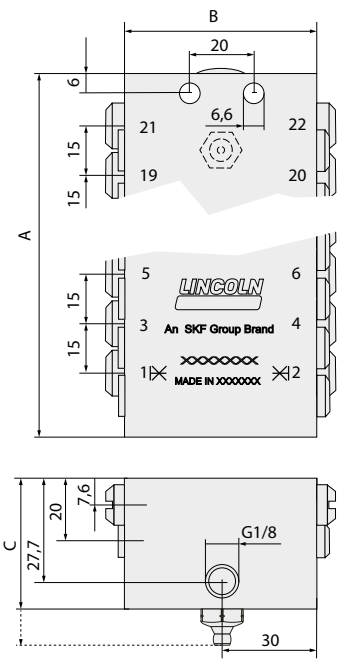
[1] Installation position limited by the emergency lubrication fitting.
[2] When using indicator pins, the output volume of the outlets equipped with indicator pins is reduced by about 10%.
[3] Also see chapter Function monitoring options
[4] The stated ambient temperature range assumes the transportability of the lubricant applied and the use of fittings and lubrication lines suitable for the respective existing temperature.
[5] The maximum differential pressure must not be exceeded and can be reduced by selecting the right length and diametre of the line.

4.2.1 Construction sizes, dimensions and weights SSVD...EEX / SSVD-E...EEX

SSVD/ SSVD-E	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)
6	70	60	40/55*	1.2
8	85	60	40/55*	1.4
10	100	60	40/55*	1.7
12	115	60	40/55*	2.0
14	130	60	40/55*	2.2
16	145	60	40/55*	2.4
18	160	60	40/55*	3.7
20	175	60	40/55*	3.9
22	190	60	40/55*	3.2

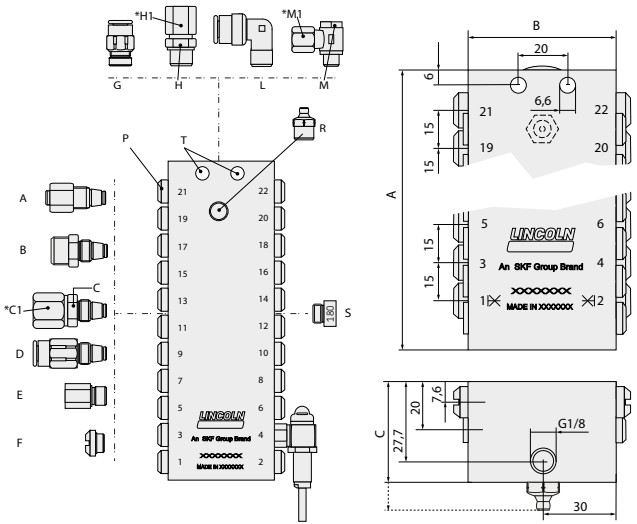
* SSVD-E...EEX: Depth including emergency lubrication fitting

SSVD...EEX / SSVD-E...EEX



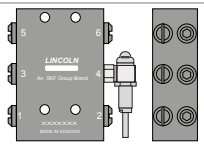
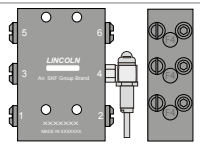
4.2.2 Tightening torques SSVD...EEX / SSVD-E... EEX

Piston level		Nm
6	proximity switch	7 ± 1.0
P	Closure screw	18-2
Outlet level		**Nm**
A/B/C/D/E		11 ± 0.5
C1		10 ± 0.5
F	Closure screw	15 ± 1.5
Inlet level		**Nm**
G/L		10 ± 1.0
H		17 ± 1.7
M		15 ± 1.5
H1/M1	for plastic tube	10 ± 1.0
H1/M1	for steel tube	11 ± 1.0
Emergency lubrication fitting (SSVD-E)		
R		14 ± 0.7
Metering screws (SSVD)		
S		15 ± 1.0
Fastening screws		
T	M 6 x .... (8.8) dry	10 ± 1.0
	M 6 x .... (8.8) oiled	7.5 ± 0.8



Secure all lubrication fittings and all screw fittings without sealing edges with a medium-strength screw lock (e.g. Loctite 274).
*In case of an oiled assembly reduce the stated tightening torques by 20%.

4.3 Technical data SSVL...EEX / SSVDL...EEX

		SSVL...EEX	SSVDL...EEX
			
Maximum operating pressure	bar	350	350
Minimum operating pressure	bar	20	20
[5] Max. differential pressure between 2 outlets	bar	100	100
Number of outlets		6-14	6-14
Installation position		any	any[1]
Inlet thread		G1/4	G1/4
Outlet thread		R1/4“	R1/4“
Connectable lubrication lines	mm	Ø8 | Ø 10 | Ø 12	Ø8 | Ø 10 | Ø 12
[2] Metering volume per stroke and outlet		0.2 cm^3	The metering volume is adjusted via metering screws and amounts to a maximum of 1.8 cm^3 per stroke
Possible material versions		Steel, black zinc-coated	
[3] Function monitoring		proximity switch	
[4] Ambient temperature range with electrical components		see Technical data of the respective electrical component	
Suitable lubrication grease consistencies		Lubrication greases up to and including NLGI 2	
Suitable lubrication oil viscosities		Lubrication oils of at least 40 mm^2/s at ambient temperature	

[1] Installation position limited by the emergency lubrication fitting.
[2] When using indicator pins, the output volume of the outlets equipped with indicator pins is reduced by about 10%.
[3] Also see chapter Function monitoring
[4] The stated ambient temperature range assumes the transportability of the lubricant applied and the use of fittings and lubrication lines suitable for the respective existing temperature.
[5] The maximum differential pressure must not be exceeded and can be reduced by selecting the right length and diametre of the line.

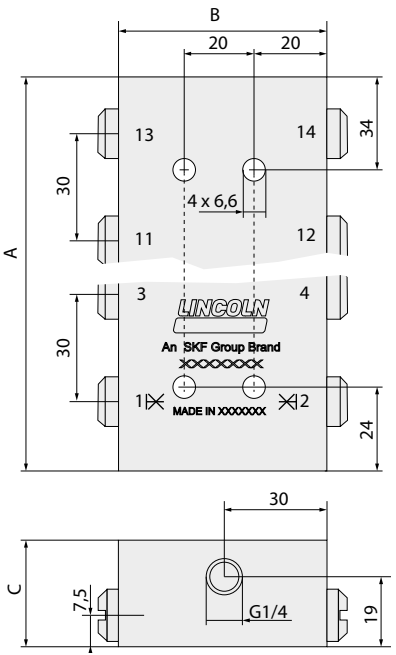
4.3.1 SSVL...EEX / SSVDL...EEX

SSVL	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)
6	90	60	40	1.5
8	120	60	40	2.1
10	150	60	40	2.6
12	180	60	40	3.3
14	210	60	40	3.9

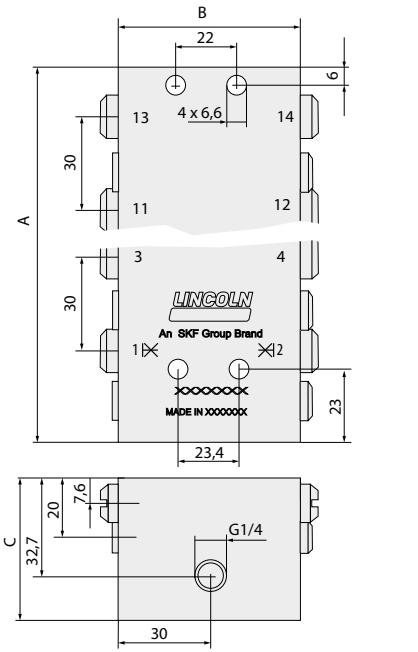
SSVDL	A Height (mm)	B Width (mm)	C Depth (mm)	Weight (kg)
6	110	60	50	2.6
8	140	60	50	3.3
10	170	60	50	4.0
12	200	60	50	4.7
14	230	60	50	5.4

When using a metering device with monitoring additional free space may be required.

SSVL...EEX



SSVDL...EEX



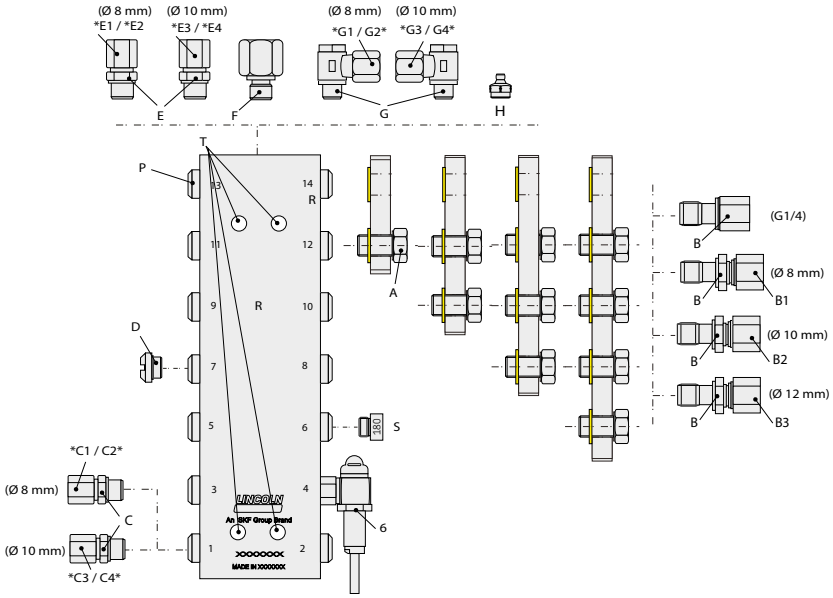
4.4 Tightening torques SSVL...EEX, SSVDL...EEX

Piston level		Nm
6	proximity switch	7 ± 1.0
P	Closure screw	18-2

Outlet level		Nm
A/B		35 + 5
B1/C1	for steel tube Ø 8 x 1 mm	25 + 2.5
C3	for steel tube Ø 8 x 2 mm	30 + 3.0
B2/C2	for steel tube Ø 10 x 1 mm	35 + 3.0
C4	for steel tube Ø 10 x 2 mm	40 + 4.0
B3	for steel tube Ø 12 x 1 mm	45 + 4.0
	for steel tube Ø 12 x 1.5 mm	55 + 5.0
C/D		30 ± 3.0

Inlet level		Nm
E/F		30 ± 3.0
G		40 ± 4.0
E1/G1	for steel tube Ø 8 x 1 mm	25 + 2.5
E2/G2	for steel tube Ø 8 x 2 mm	30 + 3.0
E3/G3	for steel tube Ø 10 x 1 mm	35 + 3.0
E4/G4	for steel tube Ø 10 x 2 mm	40 + 4.0
H		15 + 2.0

Metering screws (SSVDL only)		
S		15 ± 1.5
Fastening screws		
T	M 6 x .... (8.8) dry	10 ± 1.0
	M 6 x .... (8.8) oiled	7.5 ± 0.8



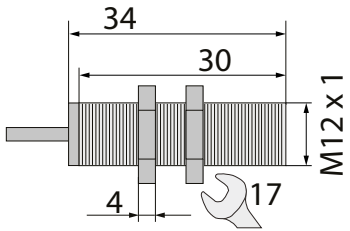
Secure all lubrication fittings and all screw fittings without sealing edges with a medium-strength screw lock (e.g. Loctite 274).
*In case of an oiled assembly reduce the stated tightening torques by 20%.

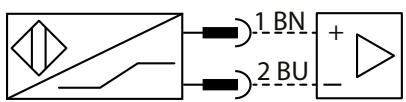
4.5 Technical data of proximity switch 234-13134-1 (Turck without LED)

Explosion protection marking	II 1G Ex ia IIC T6 Ga | II 1D Ex ia IIIC T135°C Da	
Ambient temperature	[°C]	-25 ....+ 70
Rated operating distance Sn	[mm]	2
Secured switching distance Sa	[mm]	≤ (0.81 x Sn)
Hysteresis	[% of Sa]	1- 10 %
Current consumption, not activated	[mA]	≤ 1.2
Current consumption, activated	[mA]	≥ 2.1
Operating voltage U_B	[VDC]	8.2
Connection voltage	[VDC]	7.5 – 30
Switching frequency	[kHz]	≤ 5
Switching function		NAMUR two-wire
Switching status display		No indication
Cable cross section	[mm²]	2 x 0.34
Length of cable	[mm]	2000 LifYY, PVC
Degree of protection	[IP]	67
Size	[mm]	34
Materials		Metal, CuZn, chromate treated Active surface PA12-GF30
MTTF	[years]	6198 years according to SN29500 (Ed. 99) 40 °C
Type of installation		flush

Connection only to certified intrinsically safe circuits

Dimensional drawing



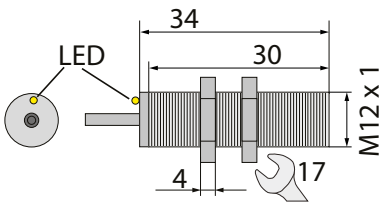


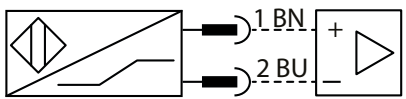
4.6 Technical data of proximity switch 234-13165-7 (Turck with LED)

Explosion protection marking	II 1G Ex ia IIC T6 Ga | II 1D Ex ia IIIC T135°C Da	
Ambient temperature	[°C]	-25 ....+70
Rated operating distance Sn	[mm]	2
Secured switching distance Sa	[mm]	≤ (0.81 x Sn)
Hysteresis	[% of Sa]	1 - 10
Current consumption, not activated	[mA]	≤ 1.2
Current consumption, activated	[mA]	≥ 2.1
Operating voltage U_B	[VDC]	8.2
Max. connection voltage	[VDC]	20
Switching frequency	[kHz]	≤ 5
Switching function		NAMUR two-wire
Switching status display		LED, yellow
Cable cross section	[mm²]	2 x 0.34
Length of cable	[mm]	10000 LifYY, PVC
Degree of protection	[IP]	67
Size	[mm]	34
Materials		Metal, CuZn, chromate treated Active surface PA12-GF30
Type of installation		flush

Connection only to certified intrinsically safe circuits

Dimensional drawing



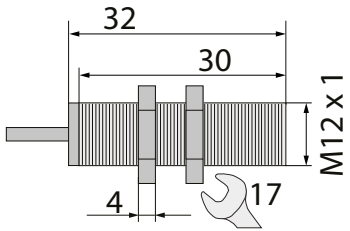


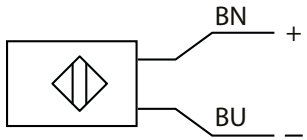
4.7 Technical data of proximity switch 234-11150-3 (ifm)

Explosion protection marking	II 1G Ex ia IIC T6 Ga | II 1D Ex ia IIIC T90°C Da	
Ambient temperature	[°C]	-20 ....+80
Rated operating distance Sn	[mm]	2
Secured switching distance Sa	[mm]	2 ± 10%
Hysteresis	[% of Sa]	1 - 15
Current consumption, not activated	[mA]	≤ 1.0
Current consumption, activated	[mA]	≥ 2.1
Operating voltage U_B	[VDC]	8.2; (1k Ω)
Connection voltage	[VDC]	7.5 – 30
Switching frequency	[kHz]	1.2
Switching function		NAMUR two-wire (nc contact)
Switching status display		No indication
Cable cross section	[mm²]	2 x 0.34
Length of cable	[mm]	2000 PVC
Degree of protection	[IP]	67
Size	[mm]	32
Materials		Special coated brass, active surface: PC
MTTF	[years]	5096
Type of installation		flush

Connection only to certified intrinsically safe circuits

Dimensional drawing



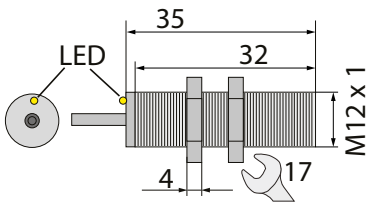


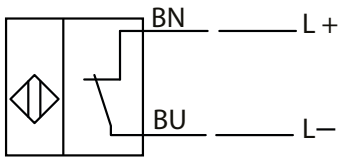
4.8 Technical data of proximity switch 234-13195-2 (Pepperl + Fuchs)

Explosion protection marking	II 1G Ex ia IIC T6....T1 Ga | II 1D Ex ia IIIC T135°C Da	
Ambient temperature	[°C]	Depending on the isolating switching device used and on the temperature class
Rated operating distance Sn	[mm]	2
Secured switching distance Sa	[mm]	0 ....1.62
Hysteresis	[% of Sa]	1- 10 (typ. 3%)
Reverse polarity protection	[mA]	YES
Short-circuit protection	[mA]	YES
Operating voltage	[VDC]	8
Current consumption: measuring plate detected	[mA]	≥ 3
Current consumption: measuring plate not detected	[mA]	≤1
Switching frequency	[Hz]	0....1000
Switching function		NAMUR two-wire (nc contact)
Switching status display		LED, yellow
Cable cross section	[mm²]	2 x 0.34 mm²
Length of cable	[m]	10000 PVC
Degree of protection	[IP]	67
Size	[mm]	35
Materials		Stainless steel 1.4305 / AISI 303 (V2A) / active surface PBT
Type of installation		flush

Connection only to certified intrinsically safe circuits

Dimensional drawing





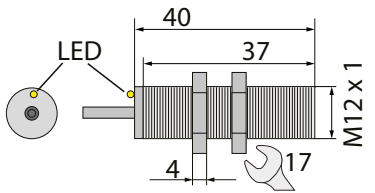
4.8.1 Special conditions for proximity switch 234-13195-2

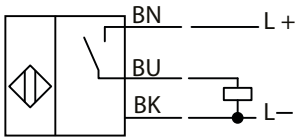
- When used at temperature ranges > -20 °C the sensor must be protected against impacts by being installed in an additional housing.
- Electrostatic charges of the metal housing parts must be avoided. Dangerous electrostatic charges of the metal housing parts can be avoided by including these parts in the equipotential bonding.

4.9 Technical data of proximity switch 234-10292-1 up to +40 °C (Pepperl + Fuchs)

Explosion protection marking	II 3G Ex nA IIC T6 Gc | II 3D Ex tc IIIC T80°C Dc	
Ambient temperature	[°C]	-25 ....+70
Rated operating distance Sn	[mm]	2
Secured switching distance Sa	[mm]	0 / 1.62
Hysteresis	[% of Sa]	1- 10 (typ. 3 %)
Reverse polarity protection		Yes
Short-circuit protection		Clocking
Operating voltage U_B	[VDC]	10 / 30
Operating current I_L	[mA]	0....200
Switching frequency	[Hz]	0...1000
Switching function		PNP normally open contact
Switching status display		LED, yellow
Cable cross section	[mm²]	3 x 0,34 mm²
Length of cable	[mm]	2000 PVC
Degree of protection	[IP]	67
Size	[mm]	40
Materials		Stainless steel 1.4305 / AISI 303 (V2A) / active surface: PBT
MTTF	[years]	1590
Type of installation		flush

Dimensional drawing





4.9.1 Special conditions for proximity switch 234-10292-1

- Electrostatic charges of the metal housing parts must be avoided. Dangerous electrostatic charges of the metal housing parts can be avoided by including these parts in the equipotential bonding.
- The connection line must be protected against tensile and torsional stress.
- Sensor and connection line must be protected against harmful UV radiation. This can be achieved by indoor use.
- Do not expose the sensor to any mechanical hazards.
- The load current is limited to a maximum of 150 mA, the operating voltage to a maximum of 30 V. Tolerances are not permitted. Higher load currents and load short-circuits are admissible.

5. Delivery, returns, and storage

5.1 Delivery

After receipt of the shipment, check the shipment for damage and completeness according to the shipping documents. Immediately report any transport damages to the forwarding agent.

Keep the packaging material until any discrepancies are resolved. During in-house transport ensure safe handling.

5.2 Returns

Clean all parts and pack them properly (i.e. following the regulations of the recipient country) before returning them.

Protect the product against mechanical influences such as impacts. There are no restrictions for land, sea or air transport.

Mark returns on the packaging as follows.

5.3 Storage

SKF products are subject to the following storage conditions:

- dry, dust- and vibration-free in closed premises
- no corrosive, aggressive materials at the place of storage (e. g. UV rays, ozone)
- protected against pests and animals (insects, rodents, etc.)
- possibly in the original product packaging
- shielded from nearby sources of heat and coldness
- in case of high temperature fluctuations or high humidity take adequate measures (e. g. heater) to prevent the formation of condensation water

Before application inspect the products with regard to possible damages occurred during their storage. This particularly applies for parts made out of plastic (embrittlement).

5.4 Storage temperature range

- In case of parts not filled with lubricant the admissible storage temperature corresponds to that of the admissible ambient temperature range of the lubrication pump (see Technical data)
- In case of parts filled with lubricant the admissible storage temperature range is:

min.	+	5 °C
max.	+	35 °C

If the storage temperature range is not adhered to, the following work steps for replacing the lubricant may not in all cases lead to the desired result.

5.5 Storage conditions for parts filled with lubricant

The conditions mentioned in the following will have to be adhered to when storing products filled with lubricant,

5.5.1 Storage period of up to 6 months

The filled products can be used without having to take further measures.

5.5.2 Storage period from 6 to 18 months

Lubrication pump

- Connect the lubrication pump electrically
- Switch the lubrication pump on and let it run, e.g. by triggering an additional lubrication, until about 4 cm^3 of lubricant will leak from each pump element
- Disconnect the lubrication pump from the power supply
- Remove and dispose of leaked lubricant

Metering device

- Remove all lubrication lines and closure screws, if any
- Connect the lubrication pump primed with new lubrication grease suitable for the application purpose to the metering device
- Let the lubrication pump run until new lubricant leaks from the outlets of the metering device/lubrication lines
- Remove leaked lubricant
- Reinstall closure screws

Feed lines

- Dismantle preassembled lubrication lines
- Ensure that both lubrication line ends remain open
- Entirely prime lubrication lines with new lubricant

5.5.3 Storage period exceeding 18 months

To avoid dysfunctions consult the manufacturer before commissioning. The general procedure to remove the old grease filling corresponds to that of a storage period from 6 to 18 months.

6. Installation

When mounting the metering devices at the place of use, the equipotential bonding must be ensured by a conductive, sufficiently large metallic contact with the add-on parts and the superior machine.

6.1 Prior to installation

Prior to installation observe the following points:

- Remove packaging material and closure plug, if any
- Install the metering device at a suitable place following the lubrication plan
- Mount the metering device together with the indicator pin in such way that the indicator pin is easily visible

6.2 Place of installation

Install the product protected against humidity and vibration and easily accessible to ensure all other installations can be carried out without any problem.

6.3 Prerequisites for the correct functioning of the metering devices

The following points must be observed during installation to ensure correct functioning and a trouble-free operation.

- The metering devices must be configured and mounted correctly
- All lubrication lines must be routed and mounted to the metering device correctly
- Each open outlet on the metering device must be secured by a suitable check valve.
- Metering devices with emergency lubrication fitting (SSV-E, SSVD-E) must additionally be secured at the inlet by a suitable check valve, as otherwise in case of an emergency lubrication (e.g. in case of a defective lubrication pump) the lubricant would first flow towards the lubrication pump due to the pressure conditions.
- Use adequate lubricant without contaminations only
- There must not be present any blockage in the progressive lubrication system or in the lubrication points
- Adhere to the stated tightening torques.
- In case of attached electrical components also observe the relevant IP types of protection
- A correct electrical function monitoring requires an adequate processing of the signal by a lubrication pump with control PCB or by an external control unit.
- The minimum operating pressure must be reached
- The maximum differential pressure must not be exceeded

6.4 Changing the output volume internally

6.4.1 SSV...EEX and SSV-E...EEX metering devices

Closing unneeded outlets with closure screws (3) increases the output of the next lower open outlet on the same side by the lubricant volume of the upper closed outlets.

Approx. 0.2 cm^3 of lubricant (SSV and SSV-E) are supplied per stroke and outlet.

NOTICE

Damage to the superior machine

may be caused by a reduced supply volume or by a loss of the functionality. The supply volume at an outlet provided with an indicator pin reduces by about 10%. Outlets marked with the following symbols must not be closed.

Maximum number of outlets that can be crossported internally:

Metering device size 6 = 3
Metering device size 12 = 6
Metering device size 16 = 8
Metering device size 18 = 9
Metering device size 20 = 10
Metering device size 22 = 11

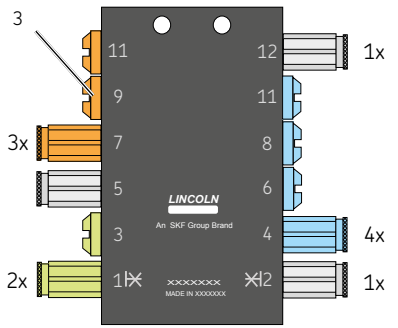
Further increasing of the output per outlet is possible only by an external combining, e.g. by means of a T-piece or by using metering devices with bypass bores.

NOTICE

Risk of damage to the superior machine and to the metering device

Closure screws on piston level must not be removed to change the output volume.

Fig. 18 Internal cross-porting



6.4.2 Metering devices with bypass bores

Metering devices with bypass bores are preferably used when an impair number of outlets is needed. In case of metering devices with bypass bores outlet numbers 1 and 2 are internally cross-ported (drilled with each other). By doing so and different from metering devices without bypass bores the output volume on metering device level 1-2 can be doubled at the opposite open outlet by closing one outlet (1 or 2).

Metering devices with bypass bore are marked with a double arrow.

Example SSV

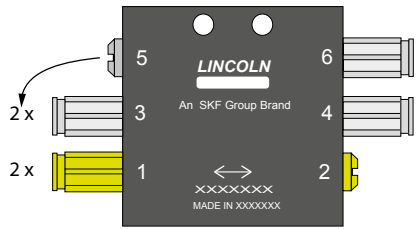
Outlets 5 and 3 internally cross-ported by a closure screw:

➔ Double lubricant volume on the same side at the next lower open outlet

Outlets 1 and 2 drilled with each other, outlet 2 closed:

➔ Double lubricant volume at the opposite side at outlet 1.

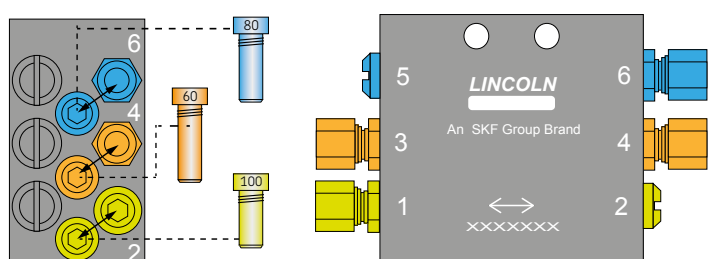
Fig. 19 Example SSV



Example SSVD

Outlet:	Metered volume
6 [open]	0.8 cm^3
5 [closed]	0.8 cm^3 to outlet 3
4 [open]	0.6 cm^3
3 [open]	1.4 cm^3 (0.6 cm^3 + 0.8 cm^3 from outlet 5)
2 [closed]	1.0 cm^3 to outlet 1
1 [open]	2.0 cm^3 (1.0 cm^3 + 1.0 cm^3 from outlet 2)

Fig. 20 Example SSVD



6.4.3 SSVD...EEX, SSVD-E...EEX and SSVDL...EEX metering devices

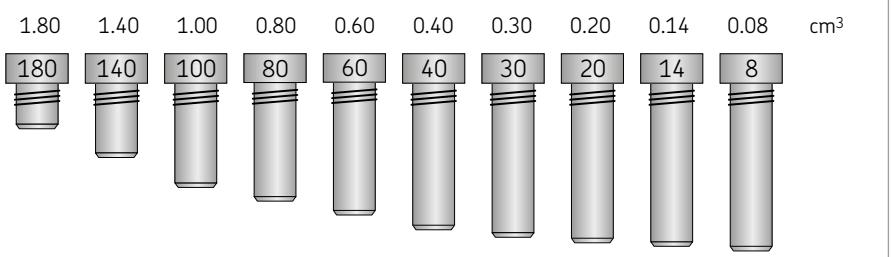
The output of the SSVD...EEX, SSVD-E... EEX and SSVDL...EEX metering devices can be adapted by using different metering screws. An additional adaptation is possible by closing unneeded outlets with closure screws in case of SSVD and SSVD-E or by using connection bars in case of SSVDL metering devices.

To change the output with metering screws proceed as follows:

- Remove protective caps from the metering device
- Screw the required metering screw into the corresponding outlet
- Repeat the procedure for all other outlets.

Tightening torques, see corresponding table in these instructions.

Fig. 21 Metering screws



6.5 External cross-porting of the output for SSVL...EEX and SSVDL...EEX

NOTICE

Risk of damage to the superior machine due to poor supply

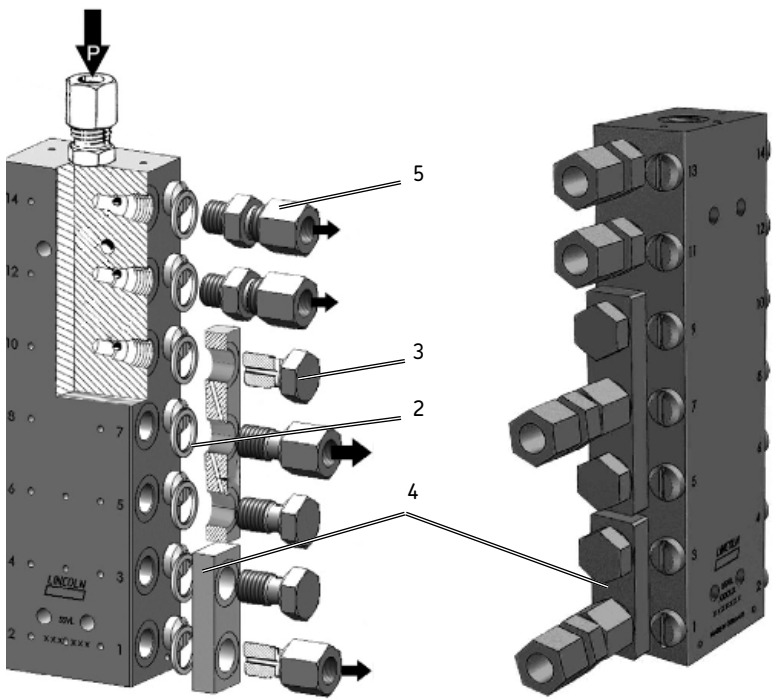
In case of SSVDL...EEX metering devices the outlets must not be closed directly at the metering device housing. Excepted from this are the SSVDL...EEX metering devices where outlets 1 and 2 are drilled with each other.

The external combination is realized via connecting bars (4). Connecting bars are available for the 2, 3, 4 and 5 times the output per outlet.

For external combination of the output, proceed as follows:

- If necessary, screw closure screws (3) or outlet fittings (5) out of the metering device.
- Select the required connecting bars and install them together with the USIT gaskets (2), closure screws (3) and check valves.

Fig. 22 SSVL metering devices with double and triple output



6.6 Fixation of the metering device at the place of installation

It is recommended to provide a free space of about 80 mm around the metering device for inspection and connection purposes. The described metering devices are fixed to 2 or 4 mounting bores.

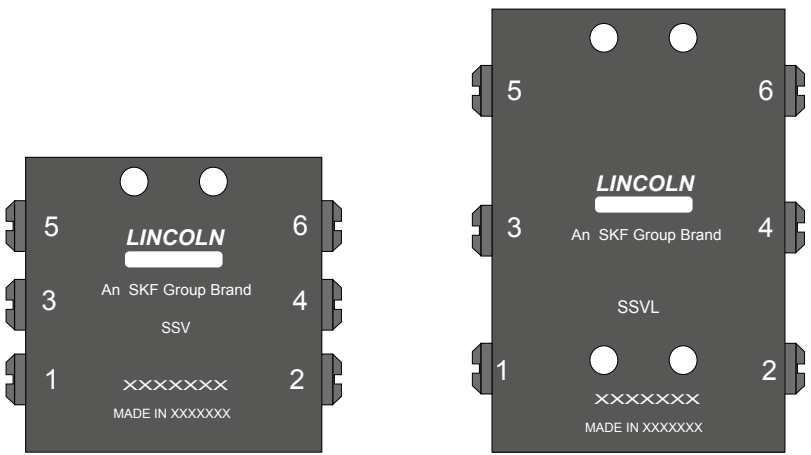
For measures see table Size, dimensions and weights of the respective metering device.

Proceeding

Position the metering device to be mounted at the place of installation. Transfer the drill pattern and then make the corresponding bores.

Tightening torques, see corresponding table in these instructions

Fig. 23 Fixation of the metering device at the place of installation



6.8 Optional fixing angles

The optional fixing angles facilitate an additional fixation of:

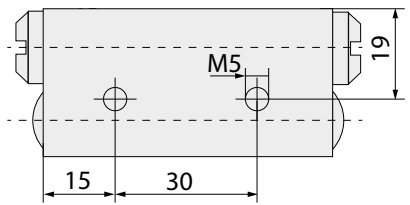
- SSV, SSV-E metering devices as of size 14
- SSVD, SSVD-E metering devices as of size 12

on the bottom side.

For this purpose the metering devices have two threaded bores on the bottom side. Fixation is done by means of two screws M5 x 8 (8.8) and the corresponding washers. Tightening torque corresponding to screw size.

The fixing angles can be found in the corresponding SKF spare parts catalogue.

Fig. 24 Additional fixation points



6.7 Venting of the SSV metering devices and the progressive lubrication system

- First of all configure the main metering device completely.
- Connect the main lubrication line from the lubrication pump to the main metering device.
- Let the lubrication pump run until lubrication grease leaks from all open outlets of the main metering device free from bubbles.
- Mount the lubrication lines filled with lubrication grease from the main metering device to the completely configured secondary metering device.
- Let the lubrication pump run until lubrication grease leaks from all open outlets of the secondary metering device free from bubbles.
- Repeat the procedure on all other secondary metering devices.
- Remove and dispose of leaked lubricant.

7. Initial start-up

The start-up is effected in the frame of the initial start-up of the fully and correctly mounted progressive lubrication system.

8. Operation

SKF products operate automatically to the greatest possible extent. Basically, activities during standard operation of a progressive lubrication system are limited to the control of the filling level of the lubrication pump in use and the timely refilling of lubricant.

9. Cleaning

	WARNING
	Electric shock Carry out cleaning works only on depressurized products that have been disconnected from the power supply. Do not touch cables or electrical components with wet or damp hands. Performance of cleaning, required personal protective equipment, cleaning agents and devices following the valid operational regulations of the operator.

9.1 Cleaning agents

Cleaning agents compatible with the material may be used only. (Materials, see chapter 2.3).

Thoroughly remove residues of cleaning agents from the product and rinse off with clear water.

9.2 Exterior cleaning

- Mark and secure wet areas
- Keep unauthorized persons away
- Thorough cleaning of all outer surfaces with a damp cloth

9.3 Interior cleaning

Normally, interior cleaning is not required.

Should incorrect or contaminated lubricant have been filled, inside cleaning of the product will be required.

To do so, contact the SKF Customer Service.

10. Maintenance

Regular and appropriate maintenance is a prerequisite to detect and clear faults in time. The specific time lines have to be determined, verified at regular intervals and adapted, if necessary, by the operator based on the operating conditions. If needed, copy the table for regular maintenance activities.

Fig. 25 Maintenance check list

Activity to be done	YES	NO
All components, such as e.g. lubrication lines and adapters, have been correctly installed	☐	☐
No visible damage, contamination and corrosion	☐	☐
Any dismantled protection and monitoring equipment has been reassembled and checked for correct function	☐	☐
No unusual noises, vibrations, accumulation of moisture, or odours present	☐	☐
No unwanted escape of lubricant (leakages) from connections	☐	☐
Bearings and friction points are provided with the planned amount of lubricant	☐	☐

11. Troubleshooting

Fig. 26 Fault table 1

In addition to the indications regarding troubleshooting stated here, observe all indications regarding troubleshooting stated in the lubrication pump instructions. To check the individual outlets you may have to run the lubrication pump for a longer period of time as the single outlets are provided with lubricant one after the other and thus there may be required several cycles of the upstream metering device. If the fault cannot be determined and remedied, contact our Customer Service.

Fault	Possible cause	Remedy
Poor or excessive lubrication of all lube points	○ Wrong setting of lubrication time or pause time on the lubrication pump	○ Check and, if necessary, correct lubrication and pause times
Poor or excessive lubrication of individual lubrication points	○ Wrong output setting on the metering device	○ Check the output settings for compliance with the specifications. If needed, correct the output settings.
Poor lubrication of individual lubrication points	○ Wrong output setting on the metering device ○ No check valve mounted to the metering device outlet	○ Check and, if necessary, mount check valve or replace defective check valve. ○ Check the output settings for compliance with the specifications. If needed, correct the output settings.

Fig. 27 Fault table 2

Fault	Possible cause	Remedy
○ Poor lubrication of all lubrication points	○ Blockade upstream of the main metering device	○ Loosen the lubrication line to the main metering device. If after loosening the lubrication line there is no lubricant output from the line, then the problem is located either in the lubrication line to the main metering device or in the lubrication pump.
○ Poor lubrication of all lubrication points	○ Main metering device clogged	○ Loosen the lubrication lines from the main metering device to the secondary metering devices one after the other. If after loosening the lubrication lines there is no lubricant output from the main metering device, then the problem is located either in the main metering device or in its feed line. Clean and, if necessary, replace the proximity switch.
○ Poor lubrication of individual lubrication points	○ Secondary metering device clogged.	○ Loosen the lubrication lines from the main metering device to the secondary metering devices one after the other. If after loosening a lubrication line there leaks lubricant from the outlet of the main metering device, then the problem is located in the corresponding lubrication circuit of the secondary metering device. Clean and, if necessary, replace the secondary metering device.
○ Poor lubrication of individual lubrication points	○ Blockade on a lubrication point	○ Loosen the lubrication lines from the secondary metering device to the lubrication points one after the other. If after loosening a lubrication line there leaks lubricant from the outlet of the secondary metering device, then the problem is located in the corresponding lubrication point or lubrication line of the secondary metering device.

12. Repair

12.1 Remedying a blockade

NOTICE

Damage to the superior machine
Make sure to eliminate any blockades. Until elimination switch off the machine or, if possible:

- Use a grease gun to provide lubrication points with sufficient lubricant
- If the blockade is positioned upstream to the secondary metering devices, you may carry out an emergency lubrication (SSV-E and SSVD-E).

Blockades in a progressive lubrication system can be detected as follows:

- Lubricant leaking from the pressure control valve of the lubrication pump.
- Fault indication/fault message of the proximity switch at the external control unit

To remedy a blockade proceed as described in chapter Troubleshooting.

After remedying the fault check the progressive lubrication system with regard to safety and function.

13. Shutdown and disposal

13.1 Temporary shutdown

Temporarily shut the system down by:

- Switching off the superior machine

13.2 Final shutdown and disassembly

The final shutdown and disassembly of the product must be planned and carried out by the operator in a professional manner and in compliance with all regulations to be observed.

13.3 Disposal

Countries within the European Union
Disposal should be avoided or minimized wherever possible. Disposal of products contaminated with lubricant must be effected via licensed waste disposal contractor in accordance with environmental requirements and waste disposal regulations as well as local authority requirements.

The specific classification of the waste is in the waste producer's responsibility, as the European Waste Catalogue provides different waste disposal codes for the same type of waste but of different origin.

Electrical components
have to be disposed of or recycled following WEEE directive 2012/19/EU.

Plastic or metal parts
can be disposed of with the commercial waste.

Countries outside the European Union
The disposal has to be done according to the valid national regulations and laws of the country where the product is used.

14. Spare parts

For spare parts and accessories to set up a progressive lubrication system as described in these instructions, see the corresponding SKF spare parts catalogue. You will find the part numbers of the admitted proximity switches in these instructions.

15. Annex

15.1 Declaration of conformity of proximity switch make Turck

EU-Konformitätserklärung Nr. 5021-1M
EU Declaration of Conformity No.:

TURCK

Wir/ We HANS TURCK GMBH & CO KG
WITZLEBENSTR. 7, D – 45472 MÜLHEIM A.D. RUHR

erklären in alleiniger Verantwortung, dass die Produkte
declare under our sole responsibility that the products

Zweidraht Näherungsschalter Typ ...-....-Y1.-....../.... (gemäß EN 60947-5-6 NAMUR)
Two Wire Proximity Sensors Type ...-....-Y1.-....../.... (according to EN 60947-5-6 NAMUR)

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der folgenden Normen genügen:
to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following standards:

EMV – Richtlinie / EMC Directive EN 60947-5-6:2000	2014 / 30 / EU	26. Feb. 2014
Richtlinie / Directive ATEX EN 60079-0:2012/A11:2013 EN 60079-11:2012	2014 / 34 / EU	26. Feb. 2014

Weitere Normen, Bemerkungen
additional standards, remarks

Zusätzliche Informationen:
Supplementary information:

Angewandtes ATEX-Konformitätsbewertungsverfahren / ATEX - conformity assessment procedure applied:
Modul B + Modul D / E / module B + module D / E

EU-Baumusterprüfbescheinigung (Modul B) KEMA 02 ATEX 1090 X / EU-type examination certificate (module B):
ausgestellt von / issued by: DEKRA Certification B.V., Kenn-Nr. / number 0344,
Utrechtseweg 310, NL-6812 AR Arnhem

Zertifizierung des QS-Systems gemäß Modul D durch:
certification of the QS-system in accordance with module D by:
Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102,
Bundesallee 100, D-38116 Braunschweig

Mülheim, den 27.01.2017

i.V. Dr. M. Linde, Leiter Zulassungen / Manager Approvals

Ort und Datum der Ausstellung / Place and date of issue

Name, Funktion und Unterschrift des Befugten / Name, function and signature of authorized person

15.2 Declaration of conformity of proximity switch make ifm

ifm electronic

EU – Konformitätserklärung

EU declaration of conformity

Déclaration de conformité UE

ifm electronic gmbh
Friedrichstraße 1
45128 Essen
Germany

Telefon: +49 (0)201 / 24 22 - 0
Telefax: +49 (0)201 / 24 22 - 1200
Internet: www.ifm.com

Die EU-Konformitätserklärung gilt für folgende Geräte:	The EU declaration of conformity applies to the following units:	La déclaration de conformité UE s'applique aux appareils suivants:
	Induktive Sensoren der Produktfamilie **Inductive sensors of the product family** **Détecteurs inductifs de la famille de produits** **I.....N/../1D/1G**	
Wir bestätigen die Übereinstimmung mit den wesentlichen Anforderungen der europäischen Richtlinie(n):	We confirm the conformity to the essential requirements of the European directive(s):	Nous confirmons la conformité aux exigences essentielles de la (des) directive(s) européenne(s):
2014/30/EU **2014/34/EU** **2011/65/EU**	**2014/30/EU** **2014/34/EU** **2011/65/EU**	**2014/30/UE** **2014/34/UE** **2011/65/UE**
Folgende Norm(en) wurde(n) angewandt:	The following standard(s) was (were) applied:	La (Les) norme(s) suivante(s) a (ont) été appliquée(s):
EN 60947-5-6 : 2000 **EN 60079-0 : 2012 /A11 : 2013** **EN 50581 : 2012**		**EN 60079-11 : 2012** **EN 60079-26 : 2007**
Kennzeichnung	Marking	Marquage
	II 1G Ex ia IIC T6 Ga **II 1G EX ia IIC T5 Ga** **II 1D Ex ia IIIC T90° C Da** **II 1D Ex ia IIIC T100° C Da**	
EU-Baumusterprüfbescheinigungen:	EU type test certificate:	Certificat d'examen UE de type:
	BVS 04 ATEX E 153 DEKRA EXAM GmbH / Dinnendahlstr. 9 / 44809 Bochum / Germany (Notified body No. 0158) **PTB 02 ATEX 2191** Physikalisch Technische Bundesanstalt / Bundesallee 100 / 38116 Braunschweig / Germany (Notified body No. 0102)	
Produktion zertifiziert durch:	Production certified by:	Production certifiée par:
	DEKRA EXAM GmbH / Dinnendahlstr. 9 / 44809 Bochum / Germany **(Notified body number: 0158)**	

Tettnang, 19.06.2017
(Ort und Datum der Ausstellung)
(Place and date of issue)
(Lieu et date de l'établissement)

i.V. R. Fiedl
(Unterschrift) i.V. Rolf Fensterle
(Signature) Head of Development
(Signature)

Dokument-Nr.:8002138

Artikel - Nr.: 80263800

EU-Declaration of conformity

EU-Konformitätserklärung

en/de

Pepperl+Fuchs GmbH
Lilienthalstraße 200
68307 Mannheim
Germany
Phone +49 621 776-0
Fax +49 621 776-1000

No. / *Nr.*: DOC-4120
Date / *Datum*: 2018-08-23

PEPPERL+FUCHS

Declaration of conformity / *Konformitätserklärung*

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

*Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.*

Products / *Produkte*

Product / *Produkt*	**Item number**	**Description** / *Beschreibung*
NCB2-12GM40-E2-3G-3D	310840	Inductive sensor

Directives and Standards / *Richtlinien und Normen*

EU-Directive *EU-Richtlinie*	**Standards** *Normen*
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-15:2010-05 EN 60079-31:2014-07
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12
RoHS 2011/65/EU (L174/88–110)	EN 50581:2012-09

Affixed CE Marking / *Angebrachte CE-Kennzeichnung*

CE

Signatures / *Unterschriften*

Mannheim, 2018-08-23

i.V. Ulrich Ehrenfried
Head of Innovation Unit Electromagnetic Sensors

i.V. Tobias Dittmer
Global Product Manager

ANNEX ATEX

Marking and Certificates / *Kennzeichnung und Zertifikate*

Marking *Kennzeichnung*	Certificate *Zertifikat*	Issuer ID *Aussteller ID*
II 3 G	PF15CERT3754X	PF
II 3 D	PF15CERT3774X	PF

Key for Issuer ID / *Schlüssel zur Aussteller ID*

ID	**Issuer** / *Aussteller*
PF	Pepperl+Fuchs Lilienthalstrasse 200 68307 Mannheim Germany

EU-Declaration of conformity

en/de

EU-Konformitätserklärung

Pepperl+Fuchs GmbH
Lilienthalstraße 200
68307 Mannheim
Germany
Phone +49 621 776-0
Fax +49 621 776-1000

No. / *Nr.*: DOC-1490B
Date / *Datum*: 2017-02-15

PEPPERL+FUCHS

Declaration of conformity / *Konformitätserklärung*

We, Pepperl+Fuchs GmbH declare under our sole responsibility that the **products** listed below are in conformity with the listed **European Directives** and **standards**.

*Die Pepperl+Fuchs GmbH erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten **Produkte** den genannten **Europäischen Richtlinien** und **Normen** entsprechen.*

Products / *Produkte*

Product / *Produkt*	**Item number**	**Description** / *Beschreibung*
NCB2-12GM35-N0	181094	Inductive sensor
NCB2-12GM35-N0-5M	181096	Inductive sensor
NCB2-12GM35-N0-10M	181097	Inductive sensor
NCB2-12GM35-N0-21M	181098	Inductive sensor

Directives and Standards / *Richtlinien und Normen*

EU-Directive *EU-Richtlinie*	**Standards** *Normen*
ATEX 2014/34/EU (L96/309-356)	EN 60079-0/A11:2013-11 EN 60079-0:2012-08 EN 60079-11:2012-01 EN 60079-31:2014-07
EMC 2014/30/EU (L96/79-106)	EN 60947-5-2/A1:2012-11 EN 60947-5-2:2007-12

Affixed CE Marking / *Angebrachte CE-Kennzeichnung*

CE 0102

Signatures / *Unterschriften*

Mannheim, 2017-02-15

ppa. Wolfgang Helm
Director Business Unit Sensors

i.V. Tobias Dittmer
Global Product Manager

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems
Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / *Kennzeichnung und Zertifikate*

Marking *Kennzeichnung*	Certificate *Zertifikat*	Issuer ID *Aussteller ID*
Ex II 3 D	PF15CERT3774X	PF
Ex II 3 G	PF13CERT2895X	PF
Ex II 1 D Ex II 1 G	PTB 00 ATEX 2048 X	0102

Key for Issuer ID / *Schlüssel zur Aussteller ID*

ID	**Issuer** / *Aussteller*
PF	Pepperl+Fuchs Lilienthalstrasse 200 68307 Mannheim Germany
0102	Physikalisch Technische Bundesanstalt Bundesallee 100 38116 Braunschweig Germany

Special conditions for the installation in zone 2 and zone 22 / *Besondere Bedingungen für den Einsatz in Zone 2 und Zone 22*

The special conditions for use of the device in zone 2 and zone 22 according to the datasheet and instruction manual, available under http://www.pepperl-fuchs.com must be considered.

Die besonderen Bedingungen für den Einsatz des Betriebsmittels in Zone 2 und Zone 22 laut Datenblatt und Betriebsanleitung, verfügbar unter http://www.pepperl-fuchs.com müssen beachtet werden.

Notes

SKF Lubrication Systems Germany GmbH
Walldorf Facilities
Heinrich-Hertz-Straße 2-8
D - 69190 Walldorf
Tel:+49 (0) 6227 33-0
Fax: +49 (0) 6227 33-259
e-mail: Lubrication-germany@skf.com
www.skf.com/lubrication

951-181-026-EN
Version 05
04.07.2024