

Lubrication pump P623M for multi-line lubrication systems

Assembly instructions
following machinery directive 2006/42/EC

EN



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Version 02

2020/03/26



EC Declaration of incorporation acc. to machinery directive 2006/42/EC

The manufacturer, SKF Lubrication Systems Germany GmbH, Walldorf Facilities, Heinrich-Hertz-Str. 2-8, DE - 69190 Walldorf, hereby declares that the partly completed machinery

Designation: Electrically driven pump to supply lubricant during intermittent operation within a centralized lubrication system
Types: P623M
Part number: 645-xxxx-x
Year of construction: See type identification plate

complies with the following basic health and safety requirements of Machinery Directive 2006/42/EC, annex I, marked as applicable and fulfilled in the appendix to the declaration of incorporation at the time when first being launched in the market.

The special technical documents were prepared following Annex VII part B of this directive. Upon justifiable request, these special technical documents can be forwarded electronically to the respective national authorities. Authorized representative of the technical documentation is the Manager Technical Standardization. See manufacturer's address. Furthermore, the following directives and standards were applied in the respective applicable areas:

2011/65/EU RoHS II
2014/30/EU Electromagnetic compatibility

EN ISO 12100:2010	EN 60204-1:2006/AC:2010	EN 61000-6-4:2007/A1:2011
EN 61131-2:2007	EN 809:1998+A1:2009/AC:2010	EN 60947-5-1:2004/A1:2009
EN 60947-5-2:2007/A1:2012	EN 61000-6-2:2005/AC:2005	
EN 50581:2012	EN 60034-1:2010/AC:2010	

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of machinery directive 2006/42/EC and any other applicable directives.

Walldorf, March 26, 2020

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Description of the essential health and safety requirements according to 2006/42/EC, Annex I, which have been applied and complied with. Any basic health and safety requirements not listed are not relevant to this product.

Number	Basic safety and health requirements	Applicable	Complied with
1.1.1	Definitions	YES	YES
1.1.2	Principles of safety integration	YES	YES
1.1.3	Materials and products	YES	YES
As to 1.1.3: Not fully complied with. The operator has to evaluate the hazards caused by the lubricant on the basis of the safety data sheet (SDS) and take protective measures, if necessary.			
1.1.5	Machine design with regard to the handling	YES	YES
1.1.6	Ergonomics	YES	YES
As to 1.1.6: Not fully complied with. The operator has to ensure that the pump is integrated into the superior machine in such a manner that operation and filling of the pump are ergonomically possible.			
1.2	Control units and commanding devices	YES	YES
1.2.1	Safety and reliability of control units	YES	YES
1.2.3	Commissioning	YES	YES
1.2.6	Power supply failure	YES	YES
1.3	Protective measures against mechanical hazards	YES	YES
1.3.1	Risk of the loss of stability	YES	YES
1.3.2	Risk of breakage during operation	YES	YES
As to 1.3.2: Not fully complied with. The operator has to secure the lubrication system against excessive pressure. For this purpose a pressure relief valve with max. 350 bar opening pressure must be provided on each pump element.			
1.3.4	Risks due to surfaces, edges or angles	YES	YES
1.3.7	Risks due to moving parts	YES	YES
1.3.9	Risk of uncontrolled movements	YES	YES
1.5	Risks from other hazards	YES	YES
1.5.1	Electricity supply	YES	YES
1.5.6	Fire	YES	YES
As to 1.5.6: Not fully complied with. For pumps without control unit, the operator has to take suitable measures to ensure that the relative duty cycle (see Technical Data) is complied with. Otherwise the motor may generate unacceptably high heat.			

Description of the essential health and safety requirements according to 2006/42/EC, Annex I, which have been applied and complied with. Any basic health and safety requirements not listed are not relevant to this product.

Number	Basic safety and health requirements	Applicable	Complied with
1.5.8	Noise	YES	YES
1.5.11	Radiation from the outside	YES	YES
1.5.13	Emission of hazardous materials and substances	YES	YES
1.5.15	Risk of slipping, tripping and falling	YES	YES
1.6	Upkeep works	YES	YES
1.6.1	Machinery maintenance	YES	YES
1.6.2	Access to operating stands and points of intervention for maintenance	YES	YES
As to 1.6.2: Not fully complied with. The operator has to ensure that the pump is integrated into the superior machine in such a manner that operation of the pump is possible without risk.			
1.6.4	Interventions by the operating personnel	YES	YES
1.7	Information	YES	YES
1.7.1	Information and warning labels on the machine	YES	YES
1.7.1.1	Information and information devices	YES	YES
1.7.2	Warning of residual risks	YES	YES
1.7.3	Marking of the machines	YES	YES
1.7.4	Operating instructions / Assembly instructions	YES	YES
1.7.4.1	General principles for the preparation of the Operating instructions / Assembly instructions	YES	YES
1.7.4.2	Contents of the Operating instructions / Assembly instructions	YES	YES
1.7.4.3	Sales brochures	YES	YES

Legal notice**Manufacturer**

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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.

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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, negligence or accidents
- Use of inappropriate lubricants
- Improper or late response to malfunctions
- Unauthorized modifications of the product
- the use of non-original
SKF spare parts

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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						
	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		
	Keep unauthorized persons away		Protective earth		Safety extra-low voltage (SELV)		Safe galvanic isolation (SELV)
	CE marking		Disposal, recycling		Disposal of waste electrical and electronic equipment		

	Warning level	Consequence	Probability	Symbol	Meaning
	DANGER	Death, serious injury	imminent	●	Chronological guidelines
	WARNING	Serious injury	possible	○	Lists
	CAUTION	Minor injury	possible	☞	Refers to other facts, causes, or consequences
	NOTICE	Property damage	possible		

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
etc.	et cetera	h	hour	in.	inch
poss.	possibly	s	second	psi	pounds per square inch
if appl.	if applicable	d	day	sq.in.	square inch
a.a.r.	as a rule	Nm	Newtonmeter	cu. in.	cubic inch
incl.	including	ml	millilitre	mph	miles per hour
min.	minimum	ml/d	millilitre per day	rpm	revolutions per minute
max.	maximum	cc	cubic centimetre	gal.	gallon
min.	minute	mm	millimetre	lb.	pound
etc.	et cetera	l	litre	hp	horse power
e.g.	for example	dB (A)	sound pressure level	kp	kilopound
kW	kilowatt	>	greater than	fpsec	feet per second
U	Voltage	<	less than	conversion factors	
R	resistance	±	plus/minus	Length	1 mm = 0.03937 in.
I	current	∅	diameter	Area	1 cm ² = 0.155 sq.in
V	volt	kg	kilogram	Volume	1 ml = 0.0352 fl.oz.
W	watt	rh	relative humidity		1 l = 2.11416 pints (US)
AC	alternating current	≈	about	Mass	1 kg = 2.205 lbs
DC	direct current	=	equal to		1 g = 0.03527 oz.
A	ampere	%	per cent	Density	1 kg/cc = 8.3454 lb./gal(US)
Ah	ampere hour	‰	per mille		1 kg/cc = 0.03613 lb./cu.in.
Hz	frequency [Hertz]	≥	greater than	Force	1 N = 0.10197 kp
nc	normally closed	≤	less than	Pressure	1 bar = 14.5 psi
no	normally open contact	mm ²	square millimetre	Temperature	°C = (°F-32) x 5/9
OR	logical OR	rpm ⁻¹	revolutions per minute	Output	1 kW = 1.34109 hp
&	logical AND			Acceleration	1 m/s ² = 3.28084 ft./s ²
				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 were 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.
- Unauthorized persons must be kept away.
- 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 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.
- Remedy occurring faults in the frame of responsibilities. Immediately inform your superior in the case of faults beyond your competence.
- Wear personal protective equipment.
- Never use parts of the centralized lubrication system or of the machine as standing or climbing aids.

1.3 Intended use

Supply of lubricants within a centralized lubrication system 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. It is expressly forbidden to be used:

- outside the indicated operating temperature range
- with non-specified means of operation.
- without adequate pressure control valve
- in continuous operation
- in areas with aggressive or corrosive materials (e.g. high ozone pollution). These may affect seals and painting.
- in areas with harmful radiation (e. g. ionising radiation)

- to supply, transport, or store hazardous substances and mixtures in accordance with annex I part 2-5 of the CLP regulation (EG 1272/2008) and 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 operating temperature.
- in an explosion protection zone.

1.5 Painting of plastic parts

Painting of any plastic parts or seals of the described products is expressly prohibited. Remove or tape plastic parts completely before painting the superior machine

1.6 Notes related to the CE marking

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

- 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 Low Voltage Directive 2014/35/EU

The protective regulations of Low Voltage Directive 2014/35/EU are fulfilled according to annex I (1.5.1) of Machinery Directive 2006/42/EC.

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) (i) and is therefore excluded from the scope of application of Pressure Equipment Directive 2014/68/EU following Article 4 (3).

1.7 Modifications of the product

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

1.8 Prohibition of certain activities

Due to potential sources of faults that may not be visible the following activities may be carried out by trained and authorized specialists only:

- Repairs or changes to the drive and to the power supply board
- Replacement of or changes on the pistons of the pump elements

1.9 Inspections prior to delivery

The following inspections were carried out prior to delivery:

- Safety and functional tests
- Electrical inspections following DIN EN 60204-1:2007 / VDE 0113-1:2007 (for electrically driven products).

1.10 Other applicable documents

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

- Operational instructions and approval rules
- Safety data sheet of the lubricant used

Where appropriate:

- Project planning documents
- Additional information on special versions of the pump. You will find these in the special system documentation.
- Any documents of other components required to set up the centralized lubrication system

1.11 Markings on the product



Warning of dangerous electrical voltage



Warning of spring-loaded components when opening the reservoir lid of pumps with follower plate



Warning of unintended intake by the stirring paddle with the reservoir lid being open



Marks the protective conductor connection

1.12 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.

Model: _____

P. No. _____

S. No. _____

(CW/YY) _____

Calendar week/year of construction

SKF Lubrication Systems Germany GmbH		LINCOLN
Model: P623M		CE
P. No.: 645-xxxx-x		
S. No.: xxxxxxxxxx		
pmax: xxx bar / xxxx psi		
U: 110-240 VAC / 50 - 60 Hz Phase 1		KW/JJ
P: 60 VA		
Made in Germany	_____	D-69190 Walldorf
S. No.: xxxxxxxxxx		

1.13 Persons authorized to operate the pump

1.13.1 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.

1.13.2 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.

1.13.3 Specialist in electrics

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

1.14 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.

1.15 Provision of personal protective equipment

The operator must provide suitable personal protective equipment for the respective location of operation and the purpose of operation.

1.16 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

1.17 Emergency stopping

In case of an emergency stop the pump station by:

- Interrupting the power supply to the pump
- Using measures determined by the operator, such as actuating the emergency stop switch of the superior machine.

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

- All relevant persons must be informed of the activity prior to starting any work. Observe the precautionary measures and work instructions provided by the operator.
- Carry out transport using suitable transport and hoisting equipment on suitable ways only.
- Maintenance and repair work can be subject to restrictions in 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. Observe all electrotechnical safety regulations.
- 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.
- Do not touch cables or electrical components with wet or damp hands.
- Fuses must not be bypassed Replace defective fuses always by fuses of the same type.
- To avoid potential differences, where applicable, use the potential connection of the pump.
- Adhere to any protective measures, e.g. connection of protective conductor, IP type of protection, safety distances.
- Undertake drilling at non-critical, non-load bearing parts only. Use any available boreholes. Do not damage lines and cables when drilling.
- Observe possible abrasion points. Protect the parts accordingly.

- All components used must be designed according to the maximum operating pressure and the maximum respectively minimum operating temperature.
- 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.

1.19 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

1.20 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.

1.21 Residual risks

Residual risk	Possible in life cycle										Prevention/ remedy
Personal injury/ material damage due to falling of raised parts	A	B	C				G	H	K		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				Observe the specified tightening torques. Fix the product only to components with sufficient load capacity. If no tightening torques are stated, apply tightening torques according to the screw size characteristics for 8.8 screws.
Personal injury/ material damage due to electric shock in case of damage to the connection cable		B	C	D	E	F	G	H			Check the connection cable with regard to damages before the first usage and then at regular intervals. Do not mount cable to moving parts or friction points. If this cannot be avoided, use spring coils respectively protective conduits.
Personal injury/ damage to material due to spilled or leaked lubricant		B	C	D		F	G	H	K		Be careful when filling the reservoir and when connecting or disconnecting lubricant feed 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.

Life phases:

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

2.2 Selection of lubricants

SKF considers lubricants to be 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 through damage to your machine or system 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, PU

2.4 Temperature characteristics

The lubricant used must be suitable for the specific operating temperature of the product. The viscosity required 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. Specified viscosities, 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.

You may request an overview of the lubricants tested by SKF.



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



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.

3. Overview, functional description

1 Reservoir

The lubricant is stored in the reservoir. Depending on the pump version there are different types of reservoirs and reservoir sizes.

1.1 Reservoir venting device

It provides air for the reservoir while the pump is operating and supplying lubricant. It vents the reservoir while the pump is filled via the filler fitting.

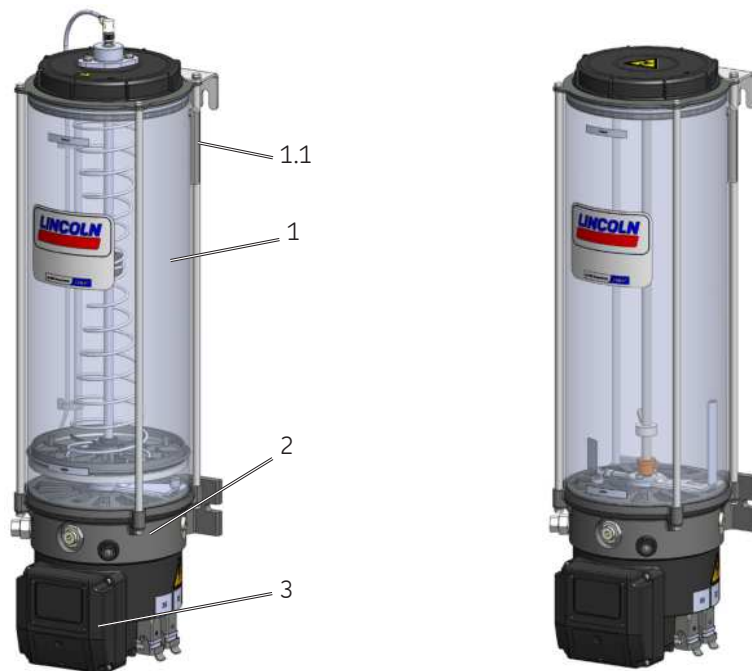
2 Pump housing

The pump housing accommodates the motor, the electrical connections, the pump elements and the return line connection.

3 Housing front cover

On the housing front cover there is the membrane keypad to operate and adjust the pump. Furthermore, if service is required, the housing front cover provides access to the inside electrical components.

Overview Fig. 1



4 Pump elements

The pump can be operated with up to 3 pump elements,

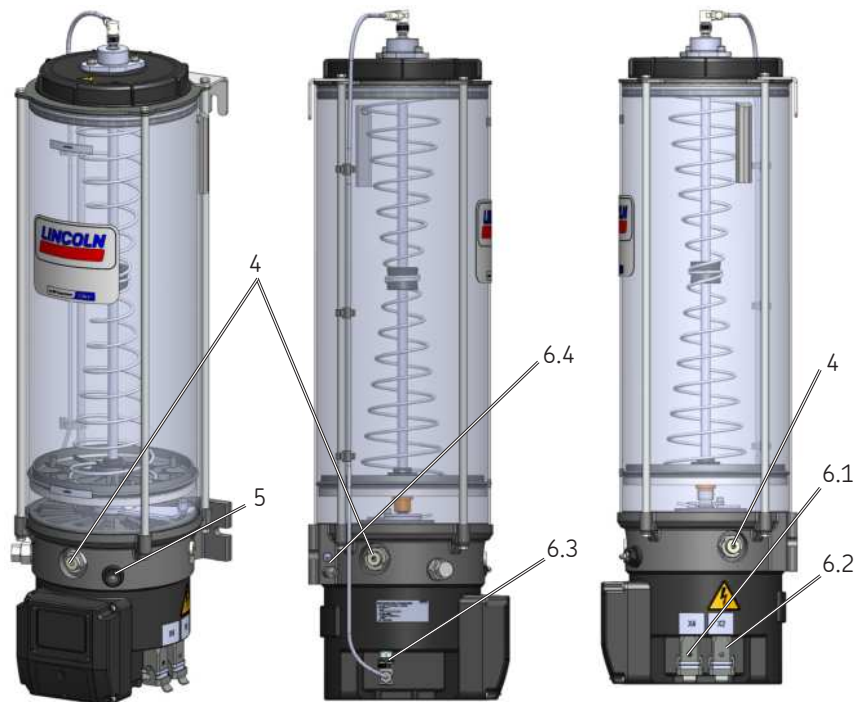
5 Filler fitting

It serves to fill the reservoir via a suitable filler pump with a corresponding connection.

6 Electrical connections

They serve for (6.1) signal connection (X4), for (6.2) power supply connection (X2) and for connection of the low-level indication (6.3) in case of pumps with follower plate. The equipotential bonding port (6.4) at the pump housing serves to connect an equipotential bonding conductor in order to avoid potential differences in case of long connection lines. In the pump housing the connection is positioned on PE of the operating voltage.

Overview Fig. 2



7 ProProtect indication

If the LED (7) is green, the ProProtect protection up to 8 kV is available.

If the LED (7) is off despite existing operating voltage, only the standard protection level (EN 61000-6-4) is available. However, the pump is still fully functional.

Overview Fig. 3



8 Follower plate (in case of pumps with follower plate)

The follower plate (8) rests on the lubricant and presses it down in the direction of the pump elements by spring force. As a result the suction behaviour of the pump improves.

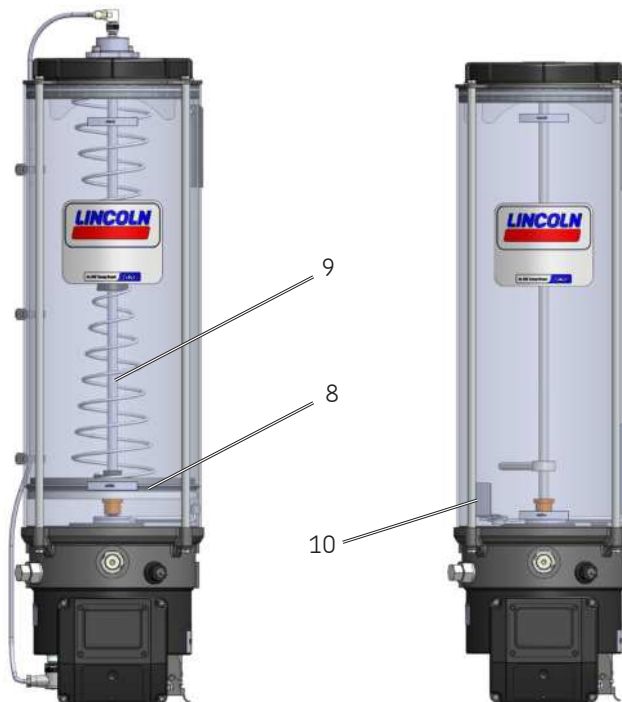
9 Contact rod

The contact rod (9) of the follower plate accommodates the reed contacts for the low-level function. In the follower plate there is a magnet that actuates the reed contact when reaching a certain switch point. The reed contact for the low-level indication is positioned at the lower switch point.

10 Stirring paddle (in case of pumps with stirring paddle)

While the pump operates, the stirring paddle homogenises and smoothens the lubricant. The stirring paddle's lower vertical part pushes the lubricant towards the pump elements thus improving the suction behaviour of the pump.

Overview Fig. 4



3.1 Functioning principle of the intermittent low-level indication

The intermittent low-level indication operates free of contact. Its main components are the following:

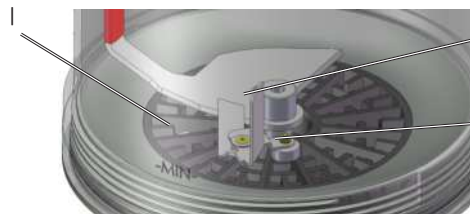
- o firmly positioned magnetic switch (I) inside of the reservoir bottom
- o flexible guide plate (II) connected to the stirring paddle with a magnet (III) and a control cam (IV)

If the reservoir is filled with a lubrication grease suitable for the intermittent low-level indication and the pump is operating, then the guide plate (II) is deflected by the resistance of the lubrication grease. As a consequence the magnet (III) connected to the guide plate (II) is moved on its inner circuit and does not trigger a pulse of the magnetic switch (I) with its magnetic field. A control cam (IV) positively guides the round magnet together with the pivoted guide plate towards the outside during each revolution. As soon as the guide plate leaves the control cam, the lubricant's resistance pushes the guide plate together with the magnet to the inside again.

As soon as the lubricant inside the reservoir has fallen to that level that the lubricant's resistance is no more sufficient to further deflect the guide plate (II), the magnet (III) remains on the outer circuit and triggers a pulse each time it slides across the magnetic switch (I). If during an operating cycle the magnet (III) slides across the magnetic switch (I) six times, a low-level signal is sent by the control printed circuit board of the pump.

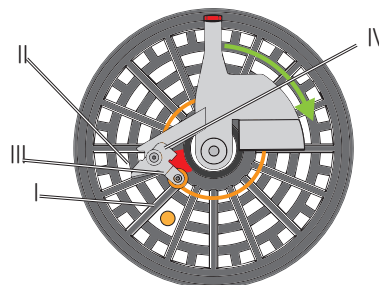
For programming of the external control of the pump, see corresponding chapter in these instructions.

Perspective representation

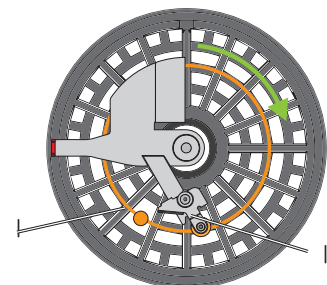


Schematic representation

Magnet on inner circuit



Magnet on outer circuit



4. Technical data

4.1 Mechanics

P623M

Admissible operating temperature range of the pump

-25 °C to +55 °C



The indicated operating temperature range of the pump presupposes the suitability of the lubricant used for the respective actually existing operating temperature. Using an unsuitable lubricant may result in malfunctions and even in a downtime of the lubrication system. Failure caused by lubricant may occur temporarily, e. g. if the application temperature stated for the lubricant for lubrication systems is exceeded or is not reached.

Lubricants

Lubrication greases up to and including NLGI II

Admissible operating pressure

300 bar max.

Installation position

vertical ¹⁾ i. e. reservoir on top, deviation max 5 °

Filling

with follower plate

without follower plate

filler fitting or

reservoir lid, filler fitting

filling connection (optional)

or filling connection (optional)

Number of pump elements

max. 3

Number of outlets (R1/4")

1

sound pressure level

< 70 dB (A)

IP type of protection (DIN EN 60529:2014) Harting connector

67

Weight of the empty pump

8 kg

10 kg

12 kg

14 kg

19 kg

Reservoir size (nominal volume)

4 l

8 l

10 l

15 l

20 l

¹⁾ Pumps with follower plate allow for a rotating installation as well, e. g. in wind turbine generators.

Maximum speed and maximum distance to the rotation axis on request.

4.2 Nominal output volumes

Pump element	K7
Nominal output per pump element and stroke	0.22 cc

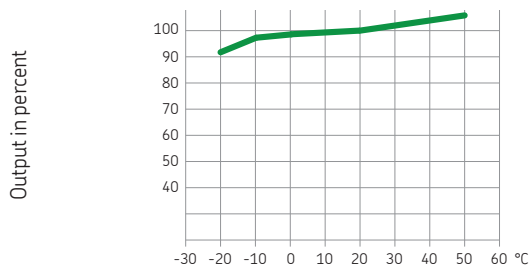
The stated nominal outputs per stroke refer to NLGI II lubricating greases at an operating temperature of + 20 °C and a backpressure of 100 bar on the pump element. Deviating operating conditions or deviating pump configuration result in a changed motor speed and thus in a change of the actual output per time unit. If as a consequence of the changed motor speed the output per time unit needs to be adapted, this will be done by adapting the lubrication and pause time settings of the pump.

4.2.1 Influencing variables on the actual output volume

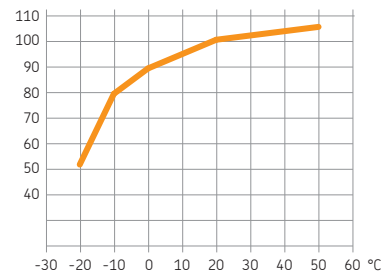
Operating temperature	> + 20 °C	↑	< + 20 °C	↓	Consistency class of lubricant	> NLGI 2	↓	< NLGI 2	↑
Number of pump elements	> 1 piece	↓			Back pressure	< 100 bar	↑	> 100 bar	↓

4.2.2 Output diagrams of typical NLGI 2 lubricants

Low temperature lubrication grease



High temperature lubrication grease



Example: high temperature grease

Nominal speed of the pump motor per minute x nominal output of the K7 pump element per stroke x efficiency in percent at an assumed operating temperature of -10 °C = 20 rpm x 0.22 cc x 80 % = 3.50 cc/min⁻¹.

4.3 Useable reservoir volume



Regarding the reservoir version without follower plate the useable reservoir volume mainly depends on the NLGI consistency class ^{1, 2, 3)} of the lubricant to be used and the operating temperature. In case of high consistency and low operating temperature normally more lubricant sticks to the inner surfaces of the reservoir and the pump and is thus no more available for being dispensed.

Reservoir volume (XN, XL, XNBO, XLBO)	4 l	8 l	10 l	15 l	20 l
Maximum useable reservoir volume	approx. 4 l	approx. 8 l	approx. 11 l	approx. 16 l	approx. 21 l

¹⁾ Lubricant consistencies of NLGI 000 lubricants at + 55 °C up to lubricant consistencies of NLGI 1.5 lubricants at + 20 °C.

²⁾ Lubricant consistencies of NLGI 2 lubricants at + 20 °C up to the maximum admissible lubricant consistency.

³⁾ When using lubricants of a relatively low consistency in pumps subjected to strong vibrations or tilting motions (e.g. construction and agricultural machinery), make sure to maintain a level that is about 15 mm below the MAX marking of the reservoir. This prevents lubricant from entering the reservoir vent. In case of very strong vibrations this value must be increased, for low vibrations it can be reduced. Changing the filling level by 10 mm corresponds to a volume change of about 0.34 litres (4 l).

4.4 Lubricant requirement for priming of an empty pump

To prime an empty pump up to the MAX marking of the reservoir, the following lubricant quantities are required.

Nominal volume	4 l	8 l	10 l	15 l	20 l
actually required lubricant quantity	approx. 6 l	approx. 9.5 l	approx. 12 l	approx. 18 l	approx. 23 l

The deviation between the lubricant quantity actually required for priming and the nominal volume of the reservoir results from the filling of the pump housing up to the MIN marking of the reservoir.

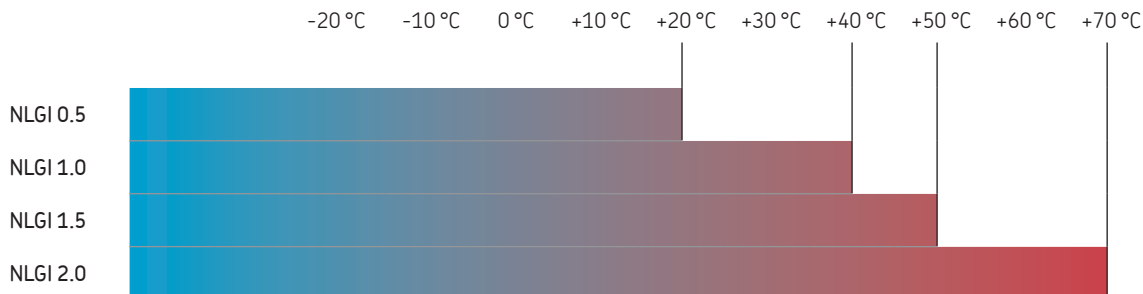
4.5 Limits of use of the intermittent low-level indication

The following lubricant consistencies have to be complied with in order to ensure the correct functioning of the intermittent low-level indication. Above the stated range of temperature a correct functioning of the intermittent low-level indication cannot be ensured.

The inferior temperature ranges require the suitability of the lubricant for the respective temperature range. Otherwise the too high consistency of the lubricant may result in malfunctions, e.g. interruption of the lubricant supply, or in damages to the pump (e. g. bending of the stirring paddle).



The intermittent low-level indication is not appropriate for lubrication grease of NLGI class ≤ 0 .




4.6 Tightening torques

The stated tightening torques must be adhered to.

Pump with supporting construction provided by the customer	25 Nm \pm 1,0 Nm
Pump element with pump housing	40 Nm \pm 2.0 Nm
Pressure control valve with pump element	08 Nm + 0.8 Nm
Housing front cover with pump housing	2.5 Nm + 0.1 Nm

4.7 Electrics:

Input	
Connection voltage and frequency range	110-240 VAC \pm 10%, 50-60 Hz \pm 5% Phase 1
Current consumption	typically 0.82 A at 230 VAC
Switch-on current limitation	< 40 A (cold start @25 °C)
Touch current	< 250 μ A
Leakage current	< 1 mA
Overvoltage resistance	Surge voltage pulse following EN 61000-4-5 (8kVpeak L-N and L/N-PE, criterion B) Rise time 1.2 μ s, time to half-value of the wave-tail 50 μ s) Surge voltage pulse following VDE 0160 (860 Vpeak L-N, criterion B, rise time 0.1ms, time to half-value of the wave-tail 1.3ms) Overvoltage 350 Vrms for t<200ms; criterion B Overvoltage 470 Vrms for t<30ms; criterion B
Specified back-up fuse	max. 6 A characteristic B
Protection class	Protection class 1, device with connection of protective conductor (PE) 
Output	
Output voltage	24 V DC \pm 2 % (PELV)
Output current limit	4 A
Overvoltage protection	< 60 V (PELV)
Ripple	< 50m Vpp (at a bandwidth of 20 MHz)
Resistance to reverse feed	max. 35 V DC

4.7.1 Motor

Operating voltage	24 V DC
Nominal motor speed	20 rpm
Max. admissible run time	20 min (with subsequent minimum pause time of 1 hour)

4.8 Processing of the low-level signals in case of external controller and monitoring of the pump

To avoid early low-level indication (e.g. caused by air inclusions or wave formation in the lubricant) in case of external controller or monitoring the following conditions have to be fulfilled by programming the external controller accordingly.

- After each operating cycle the pulses of the intermittent low-level indications have to be deleted.



Pulses must never be added up over several operating cycles. This will result in an early low-level indication.

Operating cycle ≥ 32 seconds:

- Each operating cycle requires at least 6 signals by the magnetic switch .

Operating cycle ≥ 24 seconds ≤ 32 seconds:

- Each operating cycle requires at least 4 signals by the magnetic switch .

Operating cycle ≤ 24 seconds:

- The number of required magnetic switch signals has to be adapted to the operating conditions to be expected.
To do so, contact our Customer Service.

4.8.1 Visualization of a low-level indication

The low-level signal is visualized via an external control light as shown in the connection diagram.

4.8.2 Remaining run time of pump in case of a low-level indication

The owner has to ensure that the pump is stopped by the external control unit latest 4 minutes after the low-level signal.

4.9 Type identification code

The type identification code facilitates identification of important equipment features of the product.
See type identification plate of the pump for specific pump type identification code.

Structure of the type identification code

P	6	2	3	M		-	4	X	L	B	O	-	1	K	7	-	A	C	-	H	1				Example A
P	6	2	3	M	X	-	1	5	X	L	F	-	2	K	7	-	A	C		H	1	.H	2		Example B
P	6	2	3	M	X	-	1	5	X	N		-	3	K	7	-	A	C		H	1	.H	3		Example C
A				B			C			D			E			F			G			H			

(A) Product designation
P623M

(B) Corrosion protection class
X C5M version

(C) Reservoir sizes
4 4 litres
8 8 litres
10 10 litres
15 15 litres
20 20 litres

(E) Possible reservoir versions
XN | XL | XNBO | XLBO | XLF

Legend:

X = reservoir for lubricating grease
N = reservoir without low-level indication
L = reservoir with low-level indication
BO = reservoir with filling from the top via the reservoir lid
LF¹ = reservoir with follower plate and low-level indication
¹ electrical connection of the low-level indication via square plug

(E) Number of pump elements

1 = 1 pump element
2 = 2 pump elements
3 = 3 pump elements

(F) Type of pump elements

K7 Pump element piston diameter Ø 7 mm

(G) Connection voltage

AC 110-240 VAC ± 10%, 50-60 Hz ± 5% with motor 24 V DC

(H) Electrical connections on the pump

H1 (X2) 5-pin Harting connector
H2 (X4) 7-pin Harting bushing
H3 (X4) 7-pin Harting connector
00 No signal connection

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 and rubber (embrittlement).

5.4 Storage temperature range

- In case of parts not primed with lubricant the admissible storage temperature range corresponds to that of the operating temperature of the pump (see Technical data).
- In case of parts primed 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 Special storage conditions for parts primed with lubricant

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

5.5.1 Storage period of up to 6 months

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

5.5.2 Storage period from 6 to 18 months

Pump

- Connect the pump electrically.
- Switch the pump on and let it run, e.g. by triggering an additional lubrication cycle, until about 4 cc of lubricant will leak from each pump element
- Switch the pump off and disconnect it from the electrical grid.
- Remove and dispose of leaked lubricant.

Metering device

- Remove all connection lines and closure screws, if any.
- Connect the pump primed with new lubrication grease suitable for the application purpose to the divider bar in such way that the opposite port of the divider bar remains open.
- Let the pump run until new lubricant leaks from the divider bar.
- Remove leaked lubricant.
- Reinstall closure screws and connection lines.

Lines

- Dismantle preassembled lines.
- Ensure that both line ends remain open.
- Prime 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

6.1 General information

Only qualified technical personnel may install the products described in these Instructions.

During assembly pay attention to the following:

- Other units must not be damaged by the assembly.
- The product must not be installed within the range of moving parts.
- The product must be installed at an adequate distance from sources of heat and coldness.
- Observe the product's IP type of protection.
- Adhere to safety distances and legal prescriptions on assembly and prevention of accidents.

- Possibly existing visual monitoring devices, e.g. pressure gauges, MIN/MAX markings or piston detectors, must be clearly visible.
- Observe prescriptions in the Technical data (chapter 4) regarding the installation position.

6.2 Place of installation

Protect the product against humidity, dust and vibrations and install it in an easily accessible position to facilitate other installation and maintenance works. Observe the IP protection class.

6.3 Mechanical connection

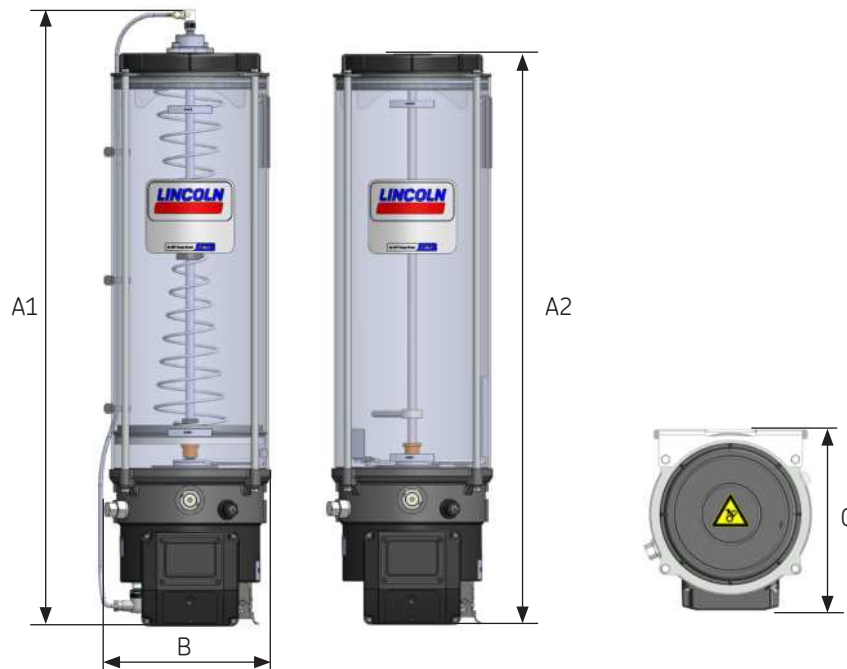
6.3.1 Minimum assembly dimensions

Ensure sufficient space for maintenance or repair work or for assembly of further components of the centralized lubrication system by leaving a free space of at least 100 mm into each direction in addition to the stated dimensions.

Minimum installation dimensions in mm

	4 l	8 l	10 l	15 l	20 l
A1	498	598	658	841	976
A2	439	539	599	782	917
B	220				
C	278				

Minimum assembly dimensions Fig. 5



6.3.2 Installation bores

Pumps with 4 l and 8 l reservoirs:

Are fastened at the two lower mounting points (A).

Pumps with 10 l, 15 l and 20 l reservoirs:

Are fastened at the two lower mounting points (14) and additionally at the two upper mounting points (15).

NOTICE

Risk of damage to the superior machine and to the pump

Drill the mounting bores on non-load-bearing parts of the superior machine only.

Fastening must not be done on two parts moving against one another (e. g. machine bed and machine assembly). Flatness of the upper and lower mounting faces to each other must not deviate by more than 1 mm.

Mounting bores in mm					
	4 l	8 l	10 l	15 l	20 l
A	11	11	11	11	11
B	180	180	180	180	180
C	177,5	177,5	177,5	177,5	177,5
D			10,4	10,4	10,4
E			160	160	160
F			367,5	550,5	685,5

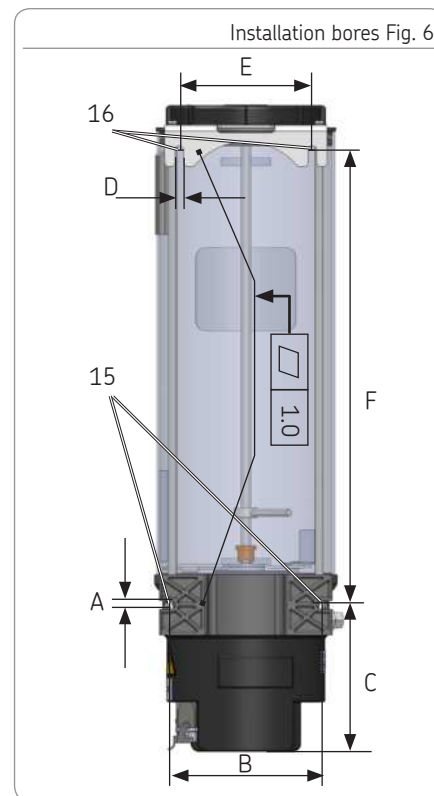
Fastening is done by means of:

2 resp. 4 screws M10 (8.8)

2 resp. 4 hexagon nuts M10 (8.8)

2 resp. 4 washers 10C

Tightening torque = 25 Nm ± 1 Nm



6.4 Electrical connection



WARNING



Electric shock

Make sure to disconnect the product from the power supply before carrying out any works on electrical components.

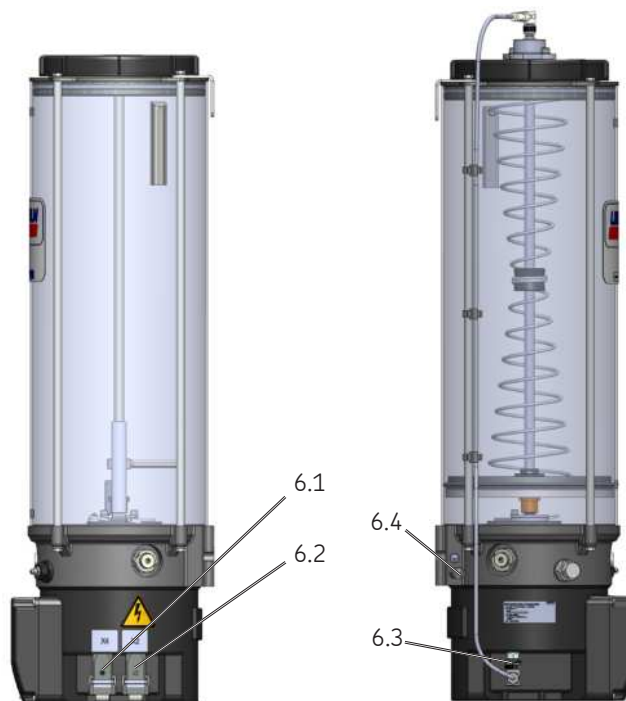


Connect the cables in such way that no mechanical forces are transferred to the product.



For connection proceed as follows:

- Connect and lock the plug (6.1) for the signal connection.
- Connect and lock the plug (6.2) for the voltage supply.
- Where applicable, connect the plug (6.3) for the low-level indication.
- If needed, connect the equipotential bonding connection on the housing (6.4) with the equipotential bonding connection of the superordinate machine.

Electrical connection, Fig. 7



6.5 Lubrication line connection

	 CAUTION
	Risk of falling Exercise care when dealing with lubricants. Immediately absorb and remove any leaked lubricant.



Connect lubrication lines in such way that no forces are transferred to the product (tension-free connection).

All components of the centralized lubrication system must be laid out for:

- the maximum arising pressure
- the admissible temperature range
- the output volume and the lubricant to be supplied



Protect the centralized lubrication system against too high pressure by means of a suitable pressure relief valve.

Observe the following installation instructions for safe and smooth operation.

- Use clean components and primed lubrication lines only.
- The main lubrication line should be laid preferably rising with a possibility to vent it at its highest point. Lubrication lines shall generally be laid in such way that there can never be created air pockets at any point.
- Mount the lubricant metering devices at the end of the main lubrication line in such way that the outlets of the lubricant metering devices show upwards.
- If lubricant metering devices have to be mounted below the main lubrication line, then this should not be done at the end of the main lubrication line.
- The lubricant flow should not be impeded by the installation of sharp elbows, angle valves, gaskets protruding to the inside, or cross-section changes (big to small). Provide unavoidable changes of the cross sections in the lubrication lines with as smooth transitions as possible.

6.5.1 Filling via filler fitting

- Place filling connection of the filler pump onto filler fitting R1/4 (5).
- Switch on filler pump and fill reservoir with lubricant until shortly below the MAX marking.
- Switch the filler pump off and remove it from the filler fitting (6) of the pump.

Filling via filler fitting Fig. 8



6.5.2 Filling via the reservoir lid in case of pumps without follower plate



WARNING



Crushing hazard on the rotating stirring paddle. Filling via the reservoir lid is allowed only after disconnecting the pump from the power supply by removing it from the connection (6.2).

- Unscrew the reservoir lid (1.2) anti-clockwise from the reservoir. Deposit the reservoir lid at a clean place. The reservoir lid must not be contaminated. Remove possible contaminations from the reservoir lid.
- Fill the reservoir from the top up to the MAX marking. Make sure to fill in the lubricant without air inclusions, if possible.
- Reinstall the reservoir lid (1.2) clockwise.

Filling via the reservoir lid Fig. 9



7. Initial start-up

In order to warrant safety and function, a person assigned by the operator must carry out the following inspections. Remedy detected defects before the initial start-up. Deficiencies may be remedied by an authorized and qualified specialist only.

Start-up check list		
7.1 Inspections prior to initial start-up	YES	NO
Electrical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical connection carried out correctly	<input type="checkbox"/>	<input type="checkbox"/>
Pump filled with the planned lubricant	<input type="checkbox"/>	<input type="checkbox"/>
The performance data of the previously indicated connections correspond to the specifications stated in the Technical data.	<input type="checkbox"/>	<input type="checkbox"/>
All components, such as lubrication lines and metering devices, have been correctly installed.	<input type="checkbox"/>	<input type="checkbox"/>
Product protected with adequate pressure relief valve	<input type="checkbox"/>	<input type="checkbox"/>
No visible damage, contamination and corrosion	<input type="checkbox"/>	<input type="checkbox"/>
Any dismantled protection and monitoring equipment has been reassembled and checked for correct function	<input type="checkbox"/>	<input type="checkbox"/>
Earth strap fully present, properly connected and electrically conductive	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Inspections during initial start-up		
No unusual noises, vibrations, accumulation of moisture, or odours present	<input type="checkbox"/>	<input type="checkbox"/>
No unwanted escape of lubricant from connections	<input type="checkbox"/>	<input type="checkbox"/>
Bearings and friction points to be lubricated are provided with the planned amount of lubricant.	<input type="checkbox"/>	<input type="checkbox"/>

8. Operation

SKF products operate automatically to the greatest possible extent.



Basically, activities during standard operation are limited to the control of the filling level and the timely refilling of lubricant as well as the outside cleaning of the product in case of contamination.

Furthermore it is possible to query the adjusted parameters in the query mode.

8.1 Refill lubricant

Description see corresponding chapter.

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. Use steam-jet cleaners or high-pressure cleaners only in accordance with the IP protection class of the pump. Otherwise electrical components may be damaged. 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



Make sure to keep the reservoir closed during the cleaning procedure.

- 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. Repairs



WARNING



Risk of injury

Before carrying out any repair work, take at least the following safety measures:



- Keep unauthorized persons away

- Mark and secure work area

- De-pressurize the product



- Disconnect the product from the power supply and secure it against being switched on

- Verify that no power is being applied

- Earth and short-circuit the product

- Where needed, cover neighbouring units that are live



The work described should possibly be done at room temperature. At low temperatures the work may be subject to restrictions.

10.1 Replace pump element and pressure control valve



The characteristics of the new pump element must correspond to the characteristics of the pump element to be replaced (see spare parts).

To replace the pump element, proceed as follows:

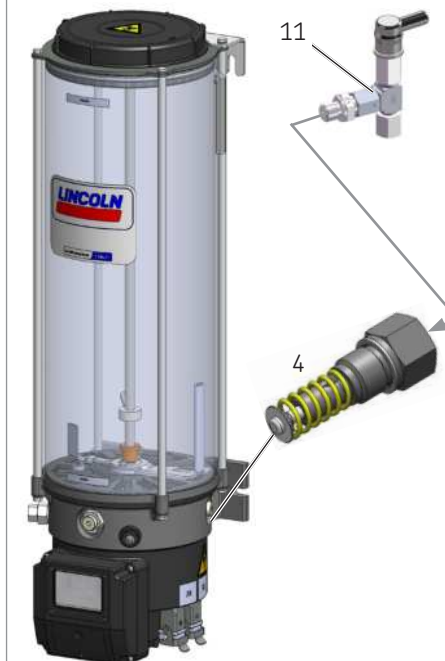
- Unscrew the defective pump element (4) at its hexagon out of the pump housing together with the pressure control valve (11).
- Screw the new pump element (4) into the pump housing together with a new gasket.

Tightening torque = $40 \text{ Nm} \pm 2.0 \text{ Nm}$

- Then screw a new pressure relief valve (11) into the pump element.

Tightening torque = $6 \text{ Nm} - 0.5 \text{ Nm}$

Replace pump element Fig. 10



10.2 Replace power supply board

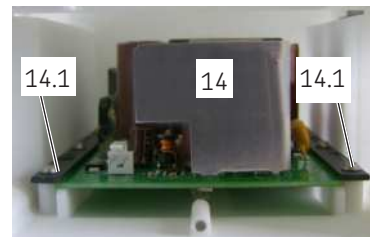
To replace the power supply board proceed as follows:

- Check the new power supply board for accordance with the documentation and the intended purpose.
- Implement the safety measures as specified in the warning notice at the beginning of this chapter.
- Take protection measures against electrostatic discharge.
- Unscrew the screws (3.1) from the housing front cover (3). Remove the housing front cover from the pump housing. Keep parts for further use.
- Carefully pull the power supply board (14) forward and out of the two lateral guide rails (14.1) and out of the housing.

Remove housing front cover Fig. 11



Power supply board Fig. 12



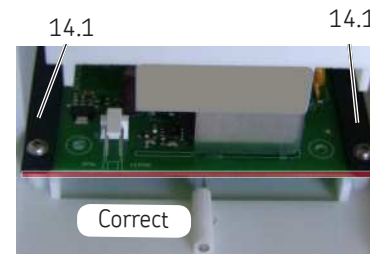
- Place new power supply board in the lateral guide rails (14.1) and push it into the housing until you notice resistance.
- Then push power supply board forward until the front edge of the power supply board fits flush with the guide rails. The power supply board is in the correct mounting position.
- Carry out the assembly in the reverse order to the disassembly.

Tightening torque of the screws of the housing front cover = 2.5 Nm + 0.1 Nm.

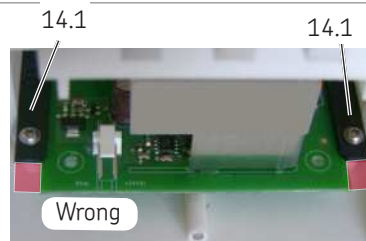
Removed power supply board Fig. 13



Power supply board mounted correctly Fig. 15



Power supply board mounted incorrectly Fig. 14



10.3 Tests after replacement of the power supply board

After replacement of the power supply board carry out an electrical test acc. to EN 60204-1 in the following order:

10.3.1 Visual check

- Housing front cover mounted properly.
No visible damages to the pump.

10.3.2 Electrical safety test

Use measuring equipment following EN 61557 for the mentioned electrical tests.

- Testing the protective conductor system with regard to conductivity.
- Insulation test (terminals L and N bridged against PE).

10.3.3 Electrical functionality test

The electrical function test must be carried out immediately after the repair following the protection class of the electrical apparatus to be tested. The electrical function test may be carried out by a trained electrician observing the statutory provisions and pertinent regulations.

Filing

After the replacement of the power supply board the scope and findings of the test have to be recorded in writing and handed over for filing to the person responsible for machine operation.

11. Shutdown and disposal

11.1 Temporary shutdown

Temporarily shut the system down by:

- Switching off the superior machine
- Disconnecting the product from the power supply

11.2 Final shutdown and disassembly

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

11.3 Disposal

Countries within the European Union

Disposal should be avoided or minimized wherever possible. Disposal of products contaminated with lubricant must be effected via a 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.

Dispose of or recycle electrical components following WEEE directive 2012/19/EU.



Parts made of plastic or metal 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.

12. Spare parts

The spare parts assemblies may be used exclusively for replacement of identical defective parts. Modifications with spare parts on existing products are not allowed.

12.1 Housing front cover, assy.

Designation	Qty.	Part number
Consisting of:	1	545-60167-1
1 x housing front cover		
1 x profile seal		
4 x screw with washer		
1 x black foil		

Fig. 16



12.2 Pump element K7

Designation	Qty.	Part number
Pump element K7 including gasket	1	645-29873-1

Fig. 17



12.3 Pressure control valve

Designation	Qty.	Part number
Pressure control valve SVET-350-G 1/4A-D6	1	624-29056-1
Pressure control valve SVET-350-G 1/4A-D8	1	624-29054-1



Fig. 18

12.4 Power supply board

Designation	Qty.	Part number
Consisting of:	1	545-60171-1
1 x power supply board		
1 x profile seal		
4 x screw with washer		

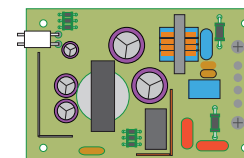


Fig. 19

13. Electrical connections

13.1 Cable colours following IEC 60757

Abbreviation	Colour	Abbreviation	Colour	Abbreviation	Colour	Abbreviation	Colour
BK	black	GN	green	WH	white	PK	pink
BN	brown	YE	yellow	OG	orange	TQ	turquoise
BU	blue	RD	red	VT	violet		

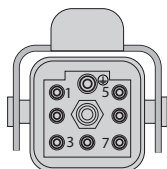
13.2 Wire allocation of the connectors

For wire allocation of the connectors see the corresponding circuit diagram of these instructions

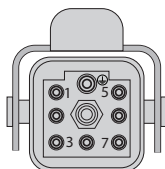
Connector H1 / X2
5/2 poles



Connector H2 / X4
7/5 poles



Connector H3
7/4 poles



13.3 Assignment of the circuit diagrams to the pump type identification code

Assignment of the circuit diagrams to a certain pump is done via the characteristics given in the type identification code (see type identification code in these instructions).

Characteristic A	Product designation
Characteristic E	Reservoir version
Characteristic H	Connection voltage
Characteristic K	Electrical connections

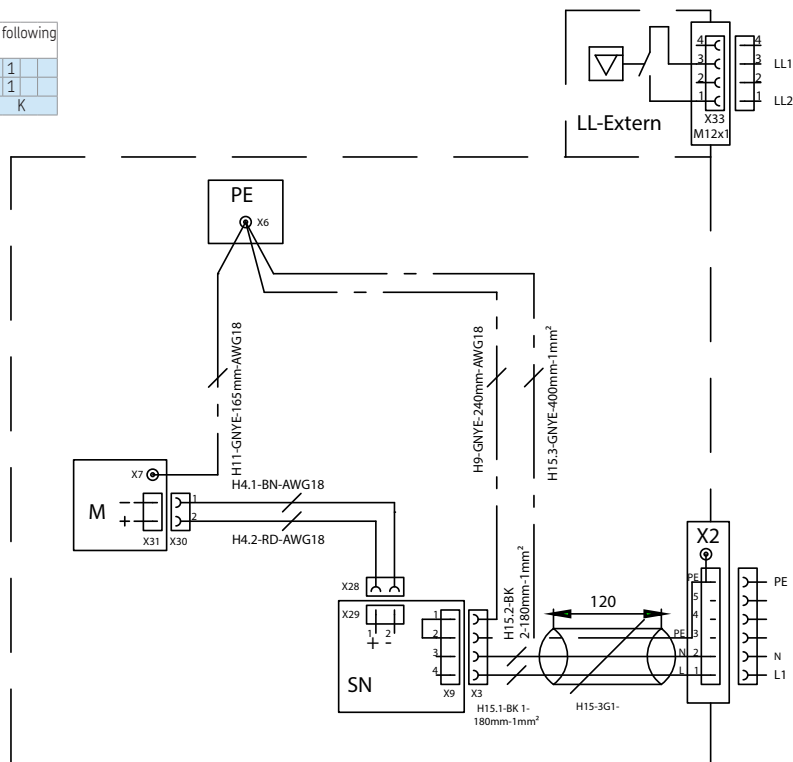
If the indications of the type identification code correspond to those of the circuit diagram, then the circuit diagram applies.
See type identification plate of the pump for specific pump type identification code.

13.4 Connection diagram P623M-AC-H1

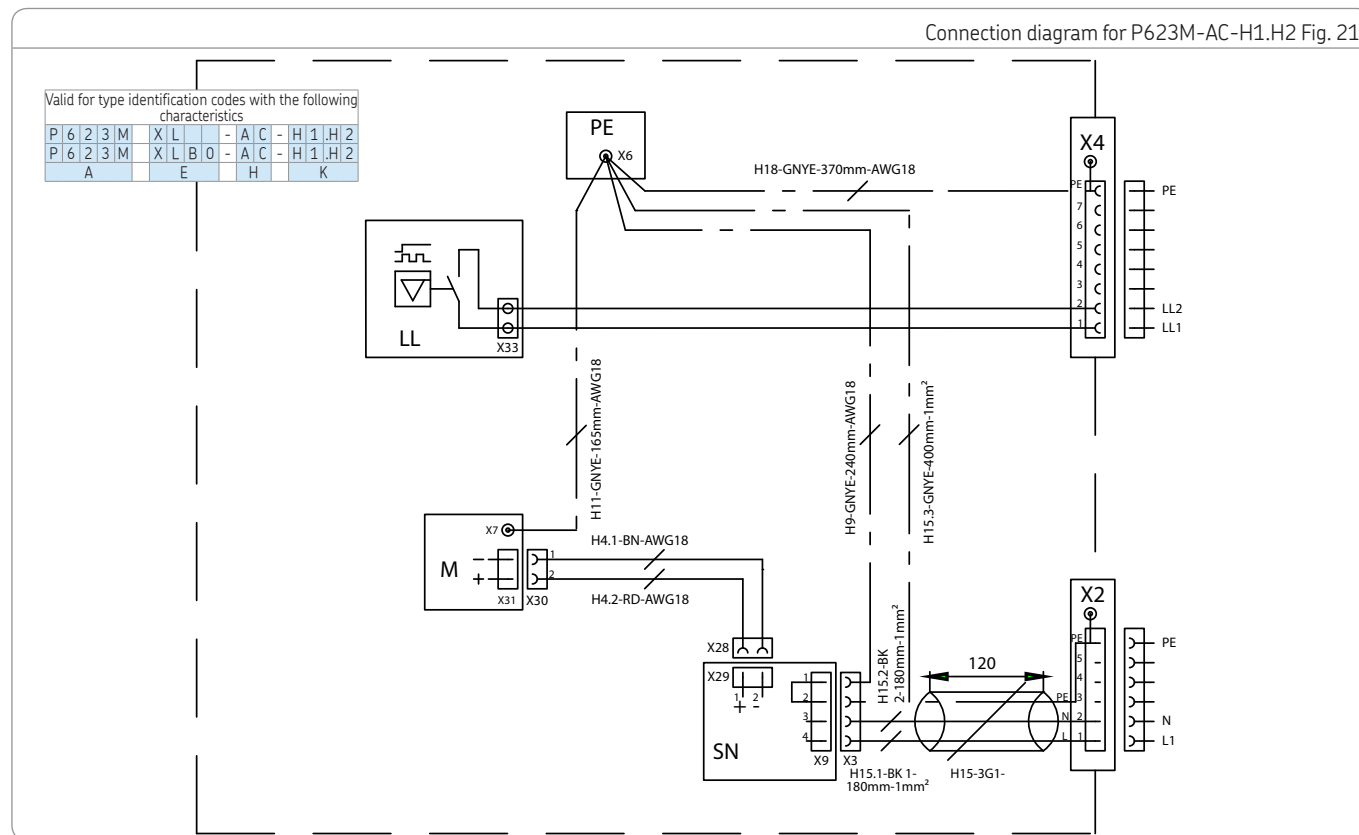
Connection diagram P623M-AC-H1 Fig. 20

Valid for type identification codes with the following characteristics

P	6	2	3	M	X	L		-	A	C	-	H	1	
P	6	2	3	M	X	L	B	O	-	A	C	-	H	1
A					E				H			K		



13.5 Connection diagram P623M-AC-H1.H2

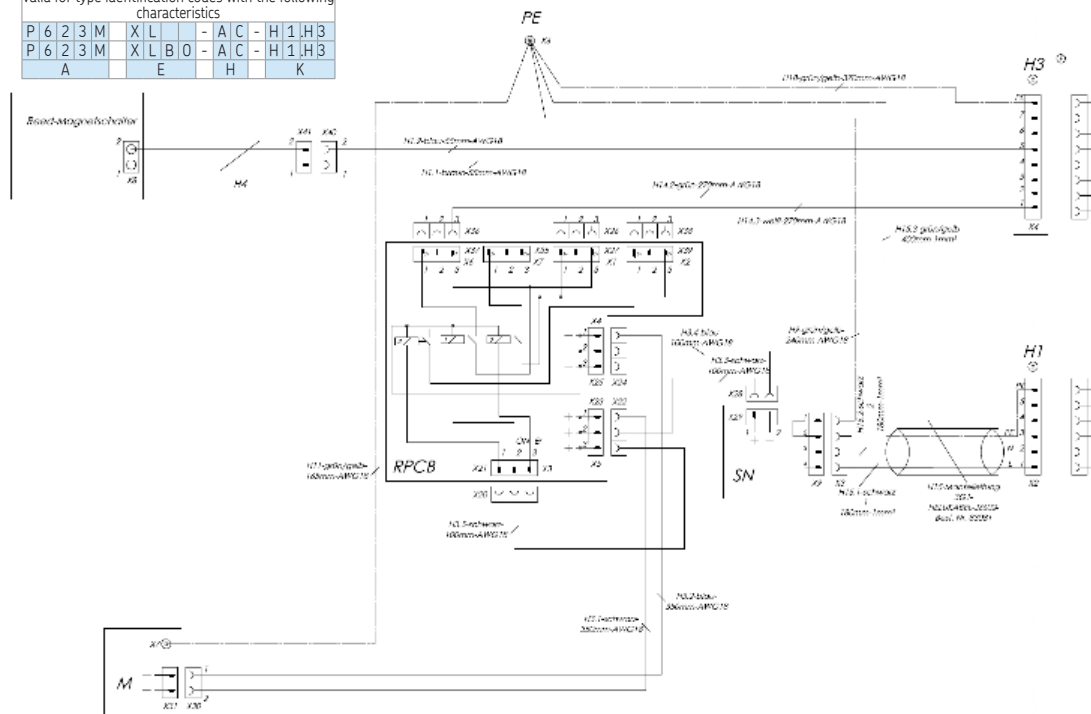


13.6 Connection diagram P623M-AC-H1.H3

Connection diagram P623M-AC-H1.H3 Fig. 22

Valid for type identification codes with the following characteristics

P 6 2 3 M	X L	- A C - H 1 H 3
P 6 2 3 M	X L B O	- A C - H 1 H 3
A	E	H K



This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are no margins, text, or other markings on the page.

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