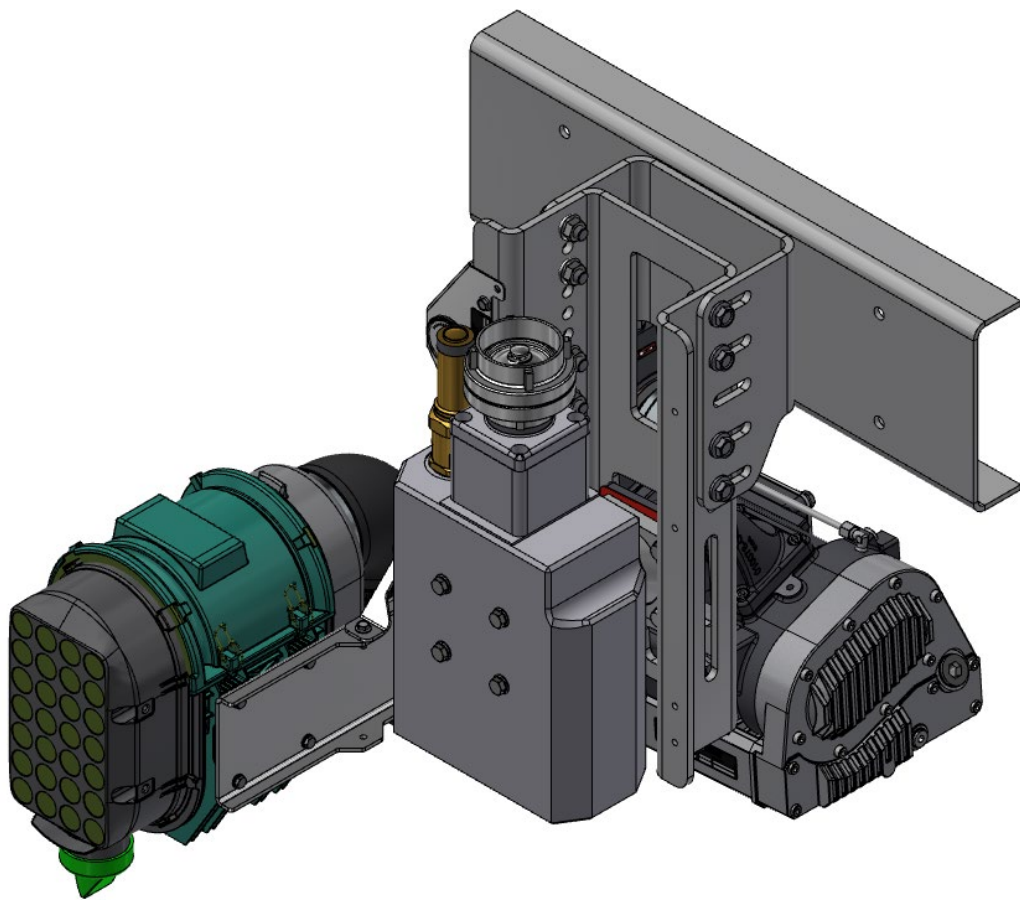


Operating instructions

Silo Compressor Light Unit SKL 1200 C



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The operating instructions must be read by the operator of the compressor unit and before start-up!

Translation of the original operating manual

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1 About these instructions

1.1 Information regarding the operating instructions

These operating instructions provide important information on handling the silo compressor light unit SKL 1200 C.

A precondition for safe operation is the observance of all safety and handling instructions specified in these operating instructions. Furthermore, all local accident prevention regulations and general safety regulations valid for the application area of the compressor unit must be observed.

Carefully read the operating instructions before starting any work! It is a product component and must be kept in direct proximity of the compressor unit, well accessible to the personnel at all times.

When passing the compressor unit on to third parties, the operating instructions must also be handed over.

In addition to these operating instructions, see also 5112-BA "Operating Instructions SKL1200C".

1.2 Limitation of Liability

All specifications and notes in these operating instructions were compiled with consideration to the valid standards and regulations, the state of the art as well as to our long-standing knowledge and experience.

The manufacturer is not liable for damages caused by:

- Non-observance of the operating instructions
- Improper use
- Deployment of non-trained personnel
- Arbitrary modifications
- Technical changes
- Use of non-approved spare and wear parts

The actual scope of supply may differ from the explanations and illustrations described in this manual in case of special designs, if additional order options are made use of, or due to latest technical changes.

Incidentally, the responsibilities agreed upon in the delivery contract, the general terms and conditions as well as the manufacturer's conditions of delivery and the statutory provisions valid at the time of contract conclusion shall apply.

About these instructions

Warranty

The manufacturer guarantees the correct functioning of the applied process technology and the performance parameters identified.

The warranty period commences on the date the compressor unit is delivered to the customer.

Components are exempted from the warranty and from claims for defects as far as wear and tear damage is concerned.

→ Also see maintenance instructions.

1.3 Copyright protection

Surrendering the operating instructions to third parties without written permission of the manufacturer is not permitted.



NOTE!

Content details, texts, drawings, pictures and other illustrations are protected by copyright and are subject to industrial property rights. Any improper use shall be liable to prosecution.

Any type and form of duplication, also of extracts, as well as the exploitation and/or communication of the contents are not permitted without the manufacturer's written declaration of consent.

1.4 Scope of delivery and goods receiving

Immediately check the delivery after receipt for completeness and transport damages. The scope of delivery is indicated on the delivery note.

Proceed as follows in the case of outwardly recognisable transport damage:

- Do not accept the delivery or only under reserve.
- Note the extent of damage on the transport documents or on the delivery note of the forwarder.
- Lodge complaint.



NOTE!

Lodge a complaint for each defect, as soon as it is recognised. Compensation claims can only be submitted within the valid complaint periods.

1.5 Spare parts

⚠ WARNING!



WARNING!

Risk of injury by incorrect spare parts!

Incorrect or defective spare parts can result in damage, malfunctions or total failure and also impair safety.

Therefore:

- Use only the manufacturer's original spare parts.

Procure spare parts from authorised dealers or directly from the manufacturer. Refer to page 2 for address.

We recommend that you stock a maintenance kit.

Maintenance parts (depending on type)

Oil filter

Air suction filter

Gear oil

Customer Service

In case of queries regarding the product, spare part orders, repairs, replacement SiloKing and dispatch of fitters, please contact our customer service: Phone: +49 (0)7623 71741-31

1.6 Warranty conditions

For warranty conditions refer to the "General Terms and Conditions".

If the compressor unit is operated under non-intended conditions, the manufacturer's warranty and/or liability is excluded.

1.7 Customer Service

Our customer service can be contacted for any technical advice. Information about the responsible contact person can be retrieved by telephone, fax, E-mail or via the Internet at any time, refer to manufacturer's address on page 2.

Safety

2 Safety

2.1 Intended use

The compressor as compressed air generator is suitable for pneumatic transport of bulk materials and for installation on a truck (silo vehicle).

The silo compressor light unit SKL 1200C is, due to the oil-free compression of atmospheric air and the power/weight ratio, exclusively intended for installation on silo vehicles for the pneumatic transport of bulk materials such as flour, sugar, salt, animal feed, powdered chemicals, dry granulates, soda, cement, sand, lime, gypsum, and others.

Compression of gases other than oil-free air is not permitted.

Other uses require consultation with CVS. Compressor units may not be operated under conditions other than those listed here without the approval of CVS.

Modification and alterations to the compressor unit are not permitted.

The compressed air heats up due to the compression process. If flammable substances are transported with the compressor unit, it must be ensured that the self-ignition temperature of the resulting dust/air mixture is not achieved.

The downstream compressed air supply must have a nominal compressive strength that is at least equal to the nominal pressure of the compressor unit.

Do not operate the unit in areas where flammable gases are used.

Intended use also includes observing the instructions in these instructions and complying with the usage conditions specified on the component, acceptance certificates and drawings as well as the locally applicable accident prevention and environmental protection regulations.

Only use the compressor unit for its intended purpose.
 All specifications in these operating instructions must be strictly adhered to (technical data, operating data, permissible working range), refer to chapter 3 in this regard.

All types of claims due to damage arising from improper use are excluded. The operator alone shall be responsible for any damage arising from improper use.

2.2 Pictogram explanation

Warning notes

Warning notes are characterised by pictograms in these operating instructions. The warning notes are marked by signal words expressing the extent of the hazard.

It is absolutely essential to observe the notes and to proceed with caution in order to prevent accidents as well as bodily injuries and property damage.

DANGER!



DANGER!

... points to an immediately dangerous situation, which can lead to death or serious injuries if it is not avoided.

WARNING!



WARNING!

... points to an immediately dangerous situation, which can lead to death or serious injuries if it is not avoided.

CAUTION!



CAUTION!

... points to a potentially dangerous situation, which can lead to minor or light injuries if it is not avoided.

Safety

ATTENTION!



ATTENTION!

... points to a potentially dangerous situation, which may lead to property damage if it is not avoided.

Hints and recommendations



NOTE!

... highlights useful hints and recommendations as well as information for an efficient and trouble-free operation.

2.3 Operator's responsibility

The compressor unit is used for industrial purposes.

The operator of the compressor unit is therefore subject to the legal obligations concerning occupational safety.

The provisions valid at the place of installation as well as the safety and accident prevention regulations of the Institution for statutory accident insurance and prevention must be observed. The operator must in particular:

- inform himself on the valid industrial safety regulations.
- determine the additional hazards that arise from the special working conditions at the machine's place of installation by means of a hazard assessment.
- implement the necessary rules of conduct for operation of the machine at the place of installation by means of user instructions.
- check at regular intervals during the machine's entire period of use whether the user instructions correspond to the current state of the body of rules and regulations.
- adapt the operation instructions, if necessary, to the new regulations, standards, and operating conditions.
- clearly regulate the responsibilities for installing, operating, maintaining and cleaning the device.
- ensure that all employees working on or with the machine have read and understood the operating and maintenance instructions. In addition he must at regular intervals train the employees in how to deal with the machine and inform them about potential hazards.

In addition, it is the operator's responsibility to ensure that:

- is always in a technically perfect condition.
- is maintained in accordance with specified maintenance intervals.
- all safety equipment is regularly checked for completeness and correct functioning.

2.4 Safety regulations

When installing the component, ensure compliance with the applicable accident prevention regulations. The safety regulations relevant for the installation, operation and maintenance of air compressors are contained in the following publications:

Regulations of the Institution for statutory accident insurance and prevention, in particular:

- **DGUV 214-004** – Muster-Betriebsanweisung für den Betrieb von Fahrzeugbehältern für körnige oder staubförmige Güter (Silofahrzeugbehälter) [Sample operating instructions for the operation of vehicle containers for granular or powdery goods (silo vehicle containers)]

Standards, in particular:

- **DIN EN 12100** – Safety of machinery
- **DIN EN 1012-1** – Compressors and vacuum pumps – Safety requirements

The latest valid editions of these regulations shall be authoritative. If special legal rules and regulations, in particular safety regulations, apply in your company or due to local conditions, these must also be observed.

In the event of competing provisions, the more stringent provisions shall apply. In addition, observe the national regulations applicable in the respective country of installation.

2.5 Specialised staff and qualification

⚠ WARNING!



WARNING!

Risk of injury in case of inadequate qualification!

Improper handling can lead to considerable bodily injuries and property damage.

Therefore:

- Have any activities only performed by the individuals designated for that purpose.

The operating instructions specify the following qualification requirements for the different fields of activity:

■ **Instructed persons**

have been instructed during instructions provided by the operator with regard to the work assigned to them and possible hazards arising from improper conduct.

■ **Specialists**

are due to their technical training, knowledge and experience and their knowledge of the pertinent regulations able to carry out the work assigned to them and to independently recognize potential hazards.

Installation work on the compressor unit may only be performed by authorised, trained and qualified persons who are familiar with the applicable safety regulations.

Repairs or modifications may only be performed by authorised personnel.

2.6 Personal protective equipment

When handling the compressor unit, it is necessary to wear personal protective equipment, in order to minimise health hazards.

- Before performing any work, properly don the necessary protective equipment such as gloves, safety goggles, etc. and wear during work.

2.7 Occupational safety and special risks

The remaining risks that result from the hazard analysis are specified in the following section.

Observe the safety notes listed here and the warning notes in the other chapters of these instructions to reduce health hazards and to avoid dangerous situations.

Danger pictograms on the device

The relevant dangerous spots on the machine are identified by these pictograms:

⚠ DANGER!



DANGER!

Mortal danger due to electric current!

... identifies life threatening situations caused by electric current. Non-observance of the safety instructions can result in severe injuries or death. Necessary work must only be performed by an electrical specialist.

⚠ DANGER!



DANGER!

General danger pictogram!

... denotes general dangerous situations for individuals. Non-observance of the safety instructions can result in severe injuries or death.

⚠ DANGER!



DANGER!

Danger of burns!

... denotes the presence of a hot surface.

Safety

Hazard notes and occupational safety

For your own safety and that of the compressor unit, the following information must be observed and complied with:

Improper operation

DANGER!



DANGER!

Danger due to improper operation!

- Only use compressor unit in a perfect technical condition. Malfunctions that are relevant for safety have to be promptly eliminated
- Conversions of the compressor unit are not permissible and can impair safety.
- Before carrying out regular maintenance, cleaning and repair work, switch off power supply and secure compressor unit against restarting (switch off drives).
- Never bridge any safety equipment or put it out of operation.
- Any work on the compressor unit and/or on electrical equipment must be carried out by specialised staff.
- Repair and maintenance work must only be performed when the compressor is stationary. The compressor unit must be secured against restarting!
- The compressor unit may not be under pressure or in a state of vacuum while work is being carried out on it.
Close shut-off valve on the vehicle side and vent the pipe between compressor unit and shut-off valve or manually relieve excess pressure at safety valve.
Observe the display on the pressure gauge!
- The drive's protective equipment may only be removed when the compressor unit is stationary and has to be correctly refitted after completion of work.
- Only dismantle accidental contact protection after compressed air system and pressure pipe have cooled down.
- It is an environmental protection requirement that any liquids arising during maintenance work (e.g. oil) must be collected and disposed of in an environmentally compatible manner.

⚠ DANGER!



DANGER!

Danger to hearing due to noise!

Noise can permanently damage hearing. Therefore:

- Measures against noise must be taken by the operator!
- Wear hearing protection when operating the machine!

⚠ DANGER!



DANGER!

Danger of burns!

There is a risk of burns on hot surfaces. Therefore:

- When operating the machine, keep a minimum distance (> 1 m) from the machine!
- Observe warning signs on the machine!
- Wear personal protective equipment!

⚠ DANGER!



DANGER!

Risk of injury! Danger of property damage!

If compressor units are operated under non-intended conditions, the safety of the operators or other persons is compromised. Serious injuries and considerable property damage may occur. Therefore:

- The operation of the unit in disregard of the usage conditions specified in these instructions is forbidden by the manufacturer!

Safety

Moving components

⚠ WARNING!



WARNING!

Risk of injury by moving components!

Powered rotating components can cause the most serious injuries!

Therefore during operation:

- It is absolutely forbidden for persons to stay in the hazard area or in the immediate vicinity!
- Do not put safety devices and/or functions out of operation and do not render them inoperative or bypass them.
- Never reach into open outlets and inlets or into running equipment.

Before entering the hazard area:

- Switch off power supply and secure against restarting.
- Wait for standstill of lagging components.
- Wait for automatic dissipation and/or discharge of residual energies (compressed air).

Compressed air

⚠ WARNING!



WARNING!

Risk of injury due to compressed air!

Pneumatic energies can cause the most serious injuries.

In the case of damage to individual components, air can be discharged under high pressure and injure e.g. the eyes. Therefore:

- Before starting any work, first depressurise pressurised components. Pay attention to accumulators. Accumulator pressure must also be completely relieved.

Signage

⚠ WARNING!



WARNING!

Risk of injury by illegible pictograms!

Labels and signs can become dirty or unrecognisable in the course of time.

Therefore:

- Always keep safety, warning and operating instructions in a well legible condition.
- Immediately replace damaged or obliterated signs or labels.

Improper transport

⚠ DANGER!



Danger!

Danger by falling down or tilting of the compressor unit!

The weight of the compressor unit may injure a person and cause serious bruising!

Therefore:

- Use a pallet or transport box suitable for the size and dead weight of the compressor unit on which the compressor unit can be moved with a forklift.
- During transport, only use load handling devices that are suitable for the weight load.
- For lifting the compressor unit, use suitable lifting gear (slings, eye bolts etc.) that is designed for the weight of the compressor unit.
- When putting the slings in position, take care to avoid putting stress on individual components.
- Only use the intended transport bores.

Maintenance and troubleshooting

⚠ WARNING!



WARNING!

Risk of injury due to improper maintenance and troubleshooting!

Improper maintenance and troubleshooting can lead to serious bodily injuries or property damage.

Therefore:


- Maintenance work and troubleshooting work must only be performed by sufficiently qualified and instructed personnel.
- Secure compressor unit against restarting, switch off drives!
- Before starting any work, provide for sufficient space and freedom of movement during assembly.
- Pay attention to tidiness and cleanliness in the assembly area! Loosely stacked or scattered components and tools are accident sources.

If components must be replaced:

- Pay attention to correct installation of spare parts.
- Properly reassemble all fastening elements.
- Observe screw tightening torques.
- Before restarting, ensure that all covers and protective devices are correctly installed and function correctly.
- After completion of maintenance work and troubleshooting, check correct functioning of safety equipment.

Safety

2.8 Safety signs on the compressor unit

Sign	Description
	<p>Read and understand the installation, operating and maintenance instructions before installation, commissioning and maintenance!</p>
	<p>Noise is generated during operation. For this reason, hearing protection must be worn!</p>
	<p>Do not enter the machine!</p>
	<p>Danger of crushing and loss of extremities! The shaft drive is protected by a cover plate, nevertheless keep a safety distance!</p>
	<p>Risk of burns from hot machine parts! For this reason, protective gloves must be worn during operation and maintenance! In addition, keep a safety distance from the hot surfaces.</p>

3 Technical data

3.1 Dimensions

3.1.1 Installation dimensions

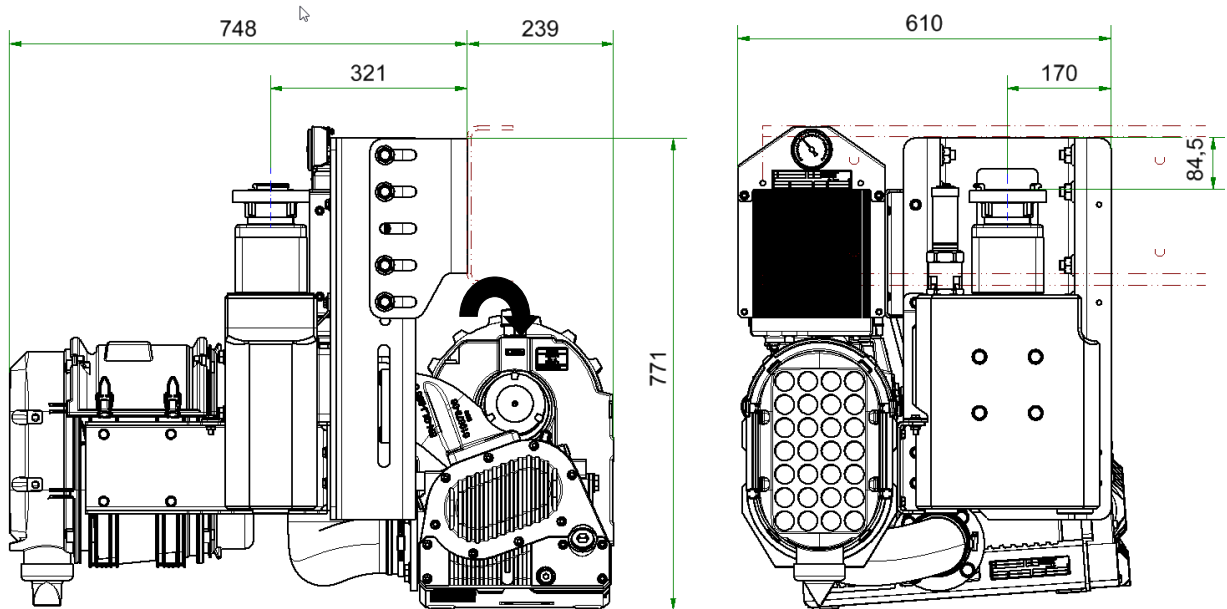


Fig. 1: Installation dimensions and connections (example)

3.2 Technical data

Description	Unit	Value
Drive speed of unit (standard version direct drive)	[min ⁻¹]	1000 -1800
Maximum operating pressure	[bar]	2.5
Intake volume flow with free passage	[m ³ /h]	620 - 1170
Intake volume flow at 2.5 bar operating overpressure	[m ³ /h]	480 – 1045
Coupling power	[kW]	10 – 64.5
Connecting flange	–	D-100 / 6-hole
Compressor oil filling	[Litres]	4.8
Oil specification	–	SAE 10 W 40 CVS Lube 2000
Weight	[kg]	215

Tab. 1: Technical data

Functional description

4 Functional description

The compressor unit is supplied as a ready-to-connect unit installed on a mounting bracket.

4.1 Design

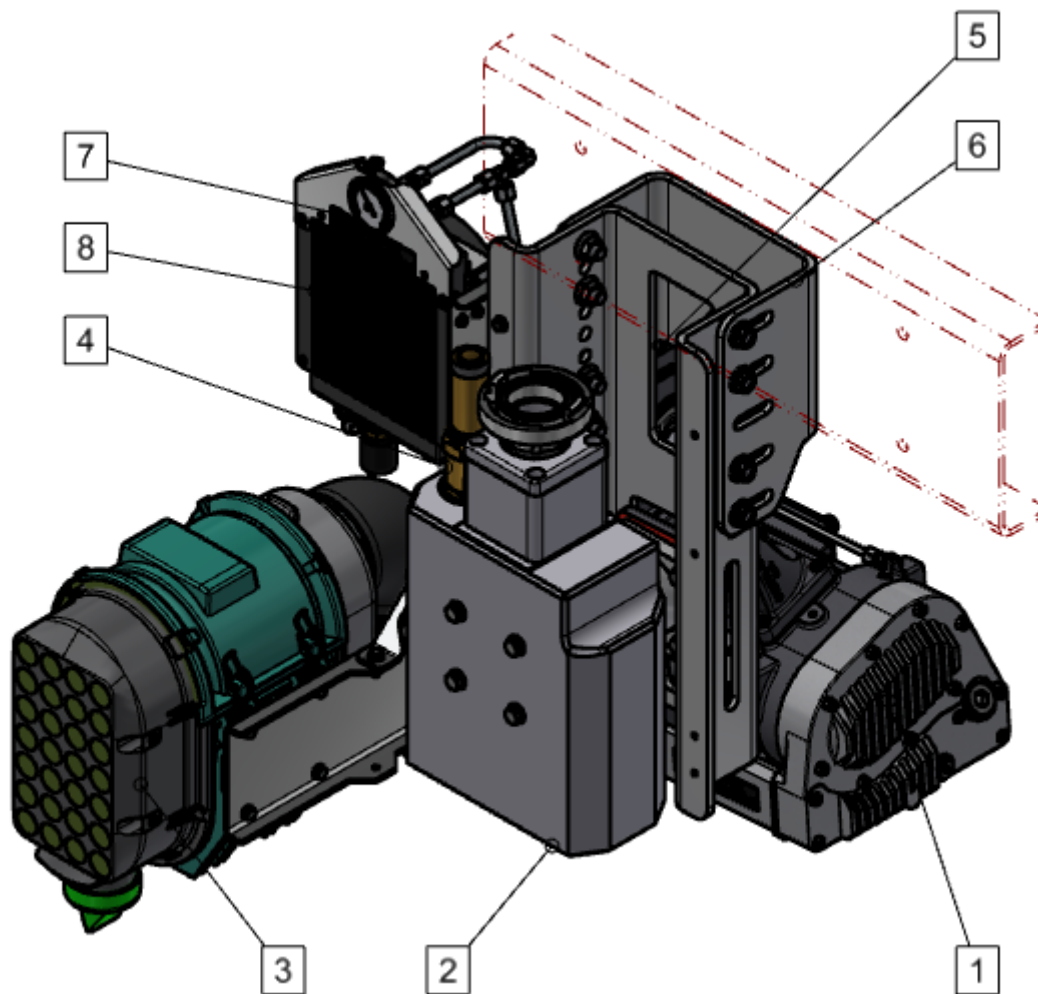


Fig. 2: Design of compressor unit SKL700/1100 IC-PTO-L

1	Compressor CVS SiloKing 1200C	5	Oil dip stick
2	Pressure silencer (muffler)	6	Mounting bracket
3	Air suction filter	7	Rating plate
4	Safety valve R1.5" / 2.5 bar	8	Oil cooler

4.2 Function

The compressor units are available in different designs and versions (with/without oil cooler/air filter, silencer variants, mounting side (right/left) of air filter and oil cooler).

The drive is exclusively via a cardan shaft.

The compressor as compressed air generator is suitable for pneumatic transport of bulk materials and for installation on a truck (silo vehicle).

Compression of gases other than oil-free air is not permitted!

4.3 Safety and monitoring function

The compressor is equipped with the following safety and monitoring functions:

- Safety valve on the pressure silencer.
- Oil pressure gauge.
- Filter monitor.

Transport and storage

5 Transport and storage

5.1 Safety notes for transport

Improper transport

⚠ DANGER!



Danger!

Danger by falling down or tilting of the compressor unit!

The weight of the compressor unit may injure a person and cause serious bruising!

Therefore:

- Depending on the dead weight and size of the compressor unit, use a pallet on which the compressor unit can be moved by means of a fork lift.
- For lifting the compressor unit, use suitable lifting gear (slings etc.) that is designed for the weight of the SiloKing.
- When putting the slings in position, take care to avoid putting stress on individual components.
- Only use the provided attachment points with eye bolts.

5.2 Transport

The compressor unit fastened on a baseplate must be transported by means of a fork lift or suitable straps. The lifting gear must be designed for the weight of the compressor unit.

For future transports:

- Seal all open connections with protective caps (prevents penetration of dirt and water)
- Secure against vibrations
- Drain gear oil
- Securely fasten the compressor unit prior to transport (e.g. screw it onto a pallet)
- Transport and put down the compressor unit with a fork lift or secure with straps and lift with suitable lifting gear.

5.3 Storage

Storage of packages

Store packages under the following conditions:

- Do not store outdoors.
- Store dry and dust free.
- Do not expose to aggressive media.
- Protect against solar irradiation.
- Avoid mechanical vibrations.
- Storage temperature: -10...+60 °C
- Relative humidity: max. 95%, non-condensing
- If storage lasts longer than 3 months, regularly check the general condition of all parts and of the packaging.

Installation to the truck chassis

6 Installation to the truck chassis

6.1 Safety

Electrical system

DANGER!



DANGER!

Mortal danger due to electric current!

There is mortal danger in case of contact with live components.

Activated electrically driven components can start to move uncontrolled and cause severest injuries.

Therefore:

- Switch off the electric power supply before commencing any work and secure against re-starting.
- Work on the electrical system, on individual electrical components and on the connections may only be carried out by electrical specialists.

Installation

DANGER!



DANGER!


Risk of injury due to improper installation!

Improper installation can lead to serious personal injuries or property damage. Therefore:

- The compressor unit may only be installed by qualified personnel.

Dirt and lying about items

⚠ CAUTION!



CAUTION!
Risk of tripping from dirt and objects lying around!

Contamination and discarded items can lead to slipping and tripping, resulting in substantial injuries.

Therefore:

- Always keep the working area clean.
- Remove objects that are not required.
- Mark tripping points with yellow-and-black tape.

Also observe all safety instructions in chapter 2.

6.2 Checking the usage conditions

Check the space required for truck installation on the right-hand side of the vehicle in driving direction and compare it with the dimensions of the compressor unit.

Check the direction of rotation of the vehicle power take-off/PTO.

If the direction of rotation of the power take-off/PTO-L is **anti-clockwise**, the light unit **SKL1200C** must be installed on the **right** side.

If the direction of rotation of the power take-off/PTO-R is **clockwise**, the light unit **SKL1200C** must be installed on the **left** side.

Installation to the truck chassis

6.3 Cardan shaft and couplings

The length of the articulated shaft must be determined taking the installation dimensions into account. Only balanced articulated shafts with length compensation may be used.

The flanges of the power take-off/PTO and the compressor unit should be as plane-parallel as possible, see chapter 0 "Installation instructions for the mounting bracket". The total angle of inclination of the articulated shaft should not exceed 12°. In exceptional cases, 15° are permissible.

With regard to the installation of the compressor unit and the articulated shaft, the installation guidelines of the respective vehicle manufacturer and the technical information of the articulated shaft manufacturer regarding fastening, flange parallelism and angle of inclination of the articulated shaft must be observed.



NOTE!

Basically, the manufacturer's installation guidelines for the respective vehicle and the technical information of the cardan shaft manufacturer regarding fastening, flange parallelism and inclination angle of the articulated shaft must be observed.

The available shear bolts and slip clutches are used for overload protection of the drive train.

1. Insert the key into the compressor drive shaft.
2. Slide the coupling flange over the key onto the compressor drive shaft and secure it with the hexagon socket screw.
3. Fasten the shear bolt or slip overload clutch to the clutch flange with hexagon head screws M8×20.
→ Tightening torque (M8): 28 Nm



NOTE!

The drive flange must not be driven onto the compressor drive shaft with a hammer. If necessary, heat the drive flange to approx. 80°C and, wearing suitable protective gloves, push it quickly onto the compressor drive shaft until it reaches the desired position.

6.4 Installation instructions for the mounting bracket

The bracket is bolted directly to the truck frame. It is essential to observe and follow the further assembly recommendations of the respective manufacturer.

The bracket is bolted to the truck with M14 hexagon head screws in the holes provided for this purpose in the vehicle frame. The supplied washers must be placed under the hexagon head screw and hexagon nut.

The M14 hexagon head screws are screwed on with the following tightening torque:

M14 – strength class 10.9: 140 Nm

The complete compressor unit is correctly positioned and aligned on the vehicle frame using a lifting device (forklift, lift truck, or similar). The correct position of the mounting bracket is determined with a right angle: Make sure that the measurement is not distorted by dirt or varnish tears.

With the correct installation of the mounting bracket, a flange alignment of approx. 3° is achieved, which ensures proper running of the articulated shaft (flange of power take-off and compressor unit should be aligned as parallel as possible).

Now the positions of the existing holes in the vehicle frame can be transferred to the mounting bracket of the compressor unit. At least 6 holes must be marked for this purpose.

The compressor unit can then be placed back on the floor and the holes drilled in the mounting bracket.

This prepares the compressor unit for installation and it can be screwed on as described above.

The next step is to install the articulated shaft.

Installation to the truck chassis

Screw the articulated shaft to the auxiliary drive flange on the vehicle side and to the connection flange of the compressor unit.

Tightening torque for pressure silencer (M12):	85 Nm
Tightening torque for articulated shaft (M8):	30 Nm

Installation to the truck chassis**NOTE!**

Always observe the installation guidelines of the respective vehicle type with regard to the parallelism of the drive flange of the power take-off on the vehicle motor and the drive flange on the unit.

**NOTE!**

*Do not weld on the vehicle frame.
If holes have to be drilled in the vehicle frame, this must be done in accordance with the instructions in the manufacturer's installation guidelines.*

**NOTE!**

Some vehicle frames must be reinforced in the compressor unit installation area in accordance with the manufacturer's installation guidelines.

**NOTE!**

Compensate for any existing frame chamfer, frame offset or underframe by using a shim or shim wedges.

6.6 Attachment options accessories

The compressor unit accessories can be installed in different ways depending on the operating conditions and the space available.

The oil pressure gauge can also be installed on both sides.

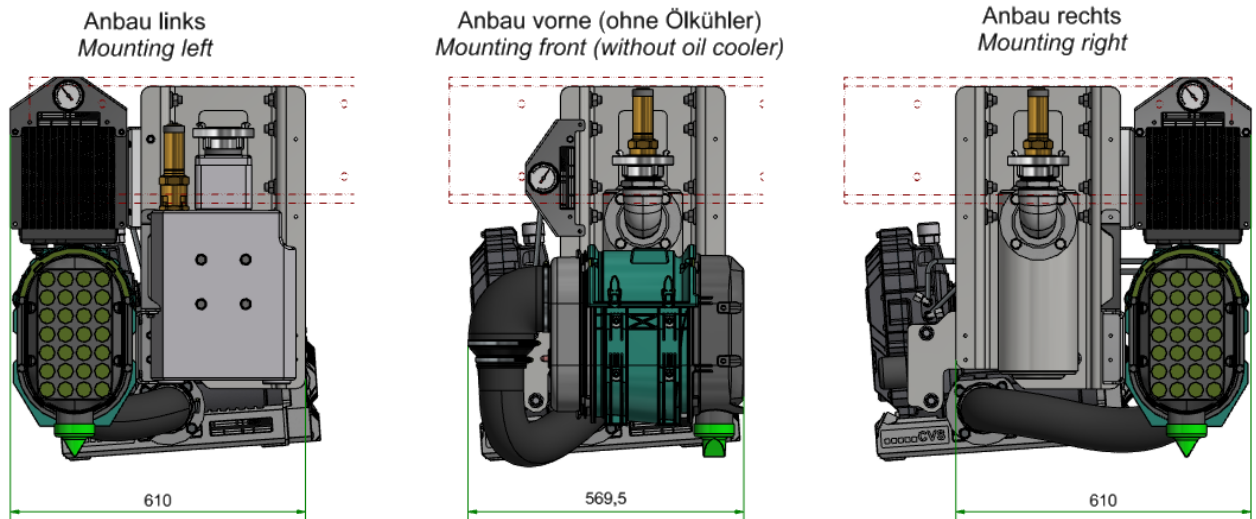


Fig. 4: Attachment options accessories

Usage conditions

7 Usage conditions

7.1 Installing the vehicle

The vehicle should be parked as horizontally as possible when operating the compressor unit. The maximum permissible inclined positions of the compressor unit are:

- in driving direction 10° forwards or backwards in each case
- diagonally to the driving direction 10° to the left or right in each case

7.2 Lubricant

Description	Value
Gear oil specification:	API CD/SF or higher
SAE viscosity class:	10W40
Oil pressure SiloKing	min. 0.5 bar (excess pressure)
Gear oil quantity ¹⁾ SiloKing: 1200C	4.8 litres
Recommended gear oils:	CVS Lube 2000 ²⁾ CVS Food Grade Other gear oil grades on request.

¹⁾ When connecting a gear oil cooler, the oil quantity must be increased respectively.

²⁾ The use of CVS Lube 2000 doubles the oil change intervals to: 1 year or 1000 operating hours (see chapter 9.2 and the CVS operating instructions for the compressor) and the warranty period is extended to 2 years. Observe the instructions in the compressor operating instructions.

7.3 Temperatures

With a max. final overpressure of 2.5 bar at the pressure flange, the permissible temperature range of the suction temperature is -10°C to +40°C.



NOTE!

Due to the increase in temperature when compressing the air, the compressor unit heats up and should not be touched without protection, as there is a risk of burns.

After operation, a cool-down phase must be allowed.

8 Initial operation

8.1 Safety during start-up

→ see chapter 2 Safety!

Personal protective equipment

→ see chapter 2.6.

Start-up, operation

⚠ WARNING!



WARNING!

Risk of injury due to improper start-up and operation

Improper start-up and operation can lead to serious bodily injuries or property damage.

Therefore:

- Have all work during initial operation exclusively performed by the manufacturer's employees or by his authorised representatives or by trained personnel.
- Start-up and operation must only be performed by adequately specialised staff that has been authorised and instructed by the operator.
- Before the start of any work, ensure that all covers and protective devices are correctly installed and function correctly.
- Never override any protective equipment during operation.
- Pay attention to tidiness and cleanliness in the working area! Loosely stacked or scattered components and tools are accident sources.

Initial operation

8.2 Initial operation

ATTENTION!



ATTENTION!

The SiloKing must always be filled with sufficient oil - see chap. 7.2.

- Observe the instructions for installing the vehicle (chap. 7.1) and the permissible temperature range (chap. 7.3).
- Fill the compressor unit with oil as prescribed (see chapter 7.2 and operating instructions of the compressor).
- Check all safety-relevant components for proper function (e.g. installation of the contact protection, correct fit of the attachment screws, etc.).
- To prevent corrosion, the screw compressor is provided with a corrosion inhibitor ex works. During initial start-up, the corrosion inhibitor evaporates due to the heating of the screw compressor and is blown off. Do not start transport until the corrosion inhibitor of the screw compressor has evaporated.
- During initial operation, check the direction of rotation, the speed and the proper functioning of the safety equipment.
- Start the compressor unit only when it is completely depressurised. Never operate against any possibly present counter pressure.
- The oil pressure must not fall below 0.5 bar. The oil pressure is displayed on the oil pressure gauge. If the oil pressure does not build up after a short time, switch off the compressor unit. Check oil level or clean oil intake strainer (see compressor operating instructions).
- Do not switch off the compressor unit when there is counter pressure! If there is counter pressure, take appropriate measures to depressurise before shutting down.

9 Maintenance

9.1 Safety during maintenance work

See chapter 2.7 Safety!

Maintenance and troubleshooting

⚠ WARNING!



WARNING!

Risk of injury due to compressed air!

Pneumatic energies can cause the most serious injuries.

During maintenance work, air can be discharged under high pressure and injure e.g. the eyes.

Therefore:

- Maintenance work must only be performed with the unit switched off and depressurised. The systems downstream of the unit must also be depressurised.

⚠ DANGER!



DANGER!

Risk of burns from hot machine parts!

There is a risk of burns on hot machine parts.

Therefore:

- Wear protective gloves during operation and maintenance!
- Keep away from hot surfaces.

Personal protective equipment

The following must be worn during all maintenance work:

- Safety working clothing
- Protective gloves
- Safety shoes
- Safety goggles

Maintenance

Environmental protection

Observe the following information with regard to environmental protection during maintenance:

- Remove emerging, used or excessive grease at all lubricating points that are manually supplied with lubricant and dispose of in accordance with valid local regulations.
- Collect exchanged oil in suitable containers and dispose of in accordance with valid local regulations.

After use, operating materials and components must be disposed of properly and in an environmentally friendly manner.

9.2 Maintenance schedule

All service and maintenance work listed here is explained in detail below.

Maintenance interval	Measure	see
After the first 2 hours of operation	Check screw connections	Chapter 0
Daily	Check oil level	Chapter 9.3.3
Weekly	Clean air suction filter	Chapter 9.3.1
	Check safety valve for function	Chapter 9.3.2
	Check oil level	Chapter 9.3.3
Quarterly	Check non-return valve	Chapter 9.3.5
Half-yearly or every 500 h	Change gear oil	Chapter 9.3.4
	Change oil filter	Chapter 9.3.4
Yearly or every 1000 h	Change gear oil	Chapter 9.3.4
when using CVS Lube oil	Change oil filter	Chapter 9.3.4

* Observe manufacturer's recommendations

Tab. 2: Maintenance schedule

9.3 Performance of maintenance work

9.3.1 Air suction filter

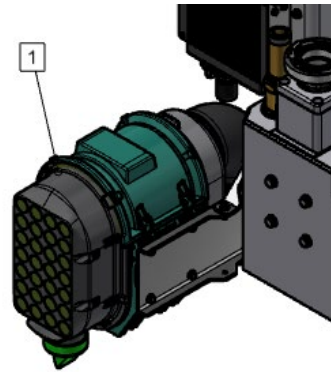


Fig. 5: Air suction filter

- 1 Air suction filter

The filter may only be changed when the machine is at a standstill.

After opening the housing, the main filter and, if necessary, the safety filter are dismantled first and replaced as required. The assembly is performed in reverse sequence.

9.3.3 Oil level

ATTENTION!



ATTENTION!

To check the oil level, the vehicle must be level. The inclined position of the compressor specified by the installation is harmless.

⚠ DANGER!



DANGER!

Risk of burns from hot machine parts!

There is a risk of burns on hot machine parts.

Therefore:

- Wear protective gloves!

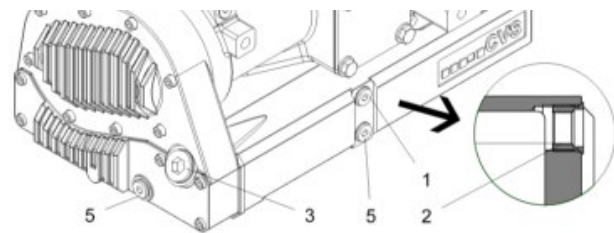


Fig. 7: Oil level

Check oil level

1. Unscrew the upper screw plug (1) from the oil pan and check whether the oil reaches the lower edge of the threaded hole (2) (see magnification).
2. Correct oil level if necessary. If the oil level is too high: The oil flows out of the control bore. Collect oil and dispose of in accordance with legal regulations.
3. If the oil level is too low: Top up with oil. To do this, either unscrew the higher of the two filling screws (3) or the vent plug (4) and slowly fill in the oil until the oil reaches the lower edge of the threaded hole (2).

ATTENTION!



ATTENTION!

When filling via the bore of the vent plug (4), the oil level changes only after a time delay due to the oil flowing in.

9.3.5 Checking the non-return valve

The non-return valve is integrated in the compressed air outlet opening of the pressure silencer. In accordance with the high operational requirements, it is designed for extreme loads.

The removal and installation of the non-return valve must be performed in the following steps.

Unscrew the discharge head and remove the non-return valve. Check the non-return valve for smooth running. If necessary, replace the non-return valve. The assembly is performed in reverse sequence. Ensure that the non-return valve is installed in the correct position.

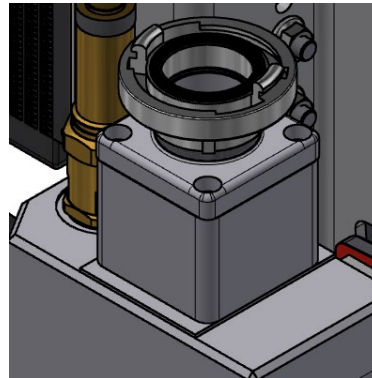


Fig. 9: Integrated non-return valve

10 Corrective measures in the case of malfunctions

This chapter describes possible causes of malfunctions and troubleshooting measures.

10.1 Safety during troubleshooting

→ see chapter 2 Safety!

Personal protective equipment

→ see chapter 2.6.

Environmental protection

Observe the following information with regard to environmental protection during troubleshooting:

- Remove emerging, used or excessive grease at all lubricating points that are manually supplied with lubricant and dispose of in accordance with valid local regulations.
- Collect exchanged oil in suitable containers and dispose of in accordance with valid local regulations.

Never restart the compressor unit or the compressor after it has been shut off due to a malfunction without checking the cause and remediating the error.

Contact the manufacturer in case of malfunctions that cannot be repaired with the aid of the following information (address → page 2)!

Observe chapter 8 "Initial operation" when recommissioning after corrective action!

Corrective measures in the case of malfunctions

10.2 Malfunction table

Malfunction	Possible cause	Corrective action
Oil pressure at operating temperature below 0.5 bar	Drive speed too low	Check drive speed
	Oil filter soiled	Clean oil filter screen
	Wrong oil type	Drain the oil completely – fill with permissible oil
	Oil filling too low	Fill up with oil
Oil pressure fluctuates	Oil filling too low	Fill up with oil. Note the oil type!
Oil foams	Oil type incorrect	Drain the oil completely – fill with permissible oil
	Water in the oil	Drain the oil completely – fill with permissible oil
	Oil level too high	Reduce oil level
Oil leakage	Leaking screw connection	Check screw connections
Air volume not sufficient	Speed too low	Check drive speed
	Air suction filter clogged	Replace filter elements
Air pressure too high	Speed too high	Check drive speed
	Non-return valve defective	Replace non-return valve
	Air pressure line with nominal width too small	Re-route air pressure line with larger nominal width
	Safety valve does not blow off	Check safety valve, replace if necessary
Vacuum display at 65 mbar	Air suction filter clogged	Clean filter elements or Replace filter elements
	Speed too high	Check drive speed Reset filter monitor

Tab. 3: Troubleshooting

11 Decommissioning and disposal

A compressor unit that is no longer usable should not be recycled as complete unit, but disassembled into individual components and recycled according to material types. Non-recyclable materials have to be disposed of in an environmentally compatible manner.

- Prior to decommissioning and disposal of the compressor unit, it must be completely separated from the surrounding units.
- The disassembly and disposal of the compressor unit may only be carried out by specialised staff.
- The compressor unit has to be disposed of in accordance with the respective country-specific regulations.

12 EC Declaration of conformity

EC Declaration of conformity

Declaration of Conformity according to the EC Machinery Directive 2006/42/EC, Annex II 1A

Manufacturer: CVS engineering GmbH
Großmattstraße 14
D-79618 Rheinfelden

*Authorised person
for compilation of the relevant technical
documents:* Manfred Wagner
Großmattstraße 14
D-79618 Rheinfelden

Product: Silo Compressor Light Unit SKL1200C

We hereby declare that the above product complies with all relevant provisions of the machinery directive 2006/42/EC.

The following harmonised standards have been applied:

- DIN EN 1012-1:20114-02
Compressors and vacuum pumps – Safety requirements – Part 1: compressors
- DIN EN ISO 12100:2011-03
Safety of machinery – General principles for design, risk assessment and risk reduction
- DIN EN ISO 13857:2020-04
Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs

Rheinfelden, 27.05.2020



Fabian Blum
Head of Development and Design

EC Declaration of conformity

Revision index

Change date	Chapter	Page	Change	Reason for change
16/02/2022	–	–	Initial version	–

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