QUICKLUB
Progressive Metering Devices
for Grease and Oil

Typ SSV

Planning and Layout of Progressive Centralized Lubrication Systems
Safety Instructions

Appropriate Use
• Use the SSV lubricant metering devices only for dispensing lubricants in centralized lubrication systems.

General Safety Instructions
• The progressive centralized lubrication system connected to the QUICKLUB pump model 203 must always be secured with a safety valve.
• LINCOLN SSV lubricant metering devices are state of the art.
• Incorrect use may result in bearing damage caused by poor or over-lubrication.
• Each outlet which will be used must be equipped with a check valve.
• In the case of the metering devices model SSV 6 - 12 the outlets 1 and/or 2 must never be closed. In the case of the metering devices model SSV 14 - 22, the two outlets with the highest numbers must never be closed.
• Unauthorized modifications or changes to an installed system are not admissible. Any modification must be subject to prior consultation with the manufacturer of the lubrication system.
• Use only original LINCOLN spare parts (see Parts Catalog) or the parts approved by LINCOLN.

Regulations for Prevention of Accidents
• Adhere to the regulations for prevention of accidents which are effective in the country where the system is to be used.

Operation, Repair and Maintenance
• Repair should only be performed by:
  - authorized and
  - instructed personnel
who are familiar with the centralized lubrication systems.

Installation
• Install the metering devices at a suitable location in accordance with the lubrication diagram.
• It is recommended that the metering devices be installed in such a way that the outlets are not close to the chassis or the attaching plate. This will facilitate troubleshooting in the case the system is blocked.
• The main metering devices with indicator pin must be installed in such a way that the indicator pin is easily visible.
• For the metering device inlet use only push-in type fittings with reinforced collar and sealing ring.
• For the outlet fittings of the main metering device use only valve bodies with reinforced collar.
• Use only the main and feed lines specified by LINCOLN and adhere to the specified system pressures.
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Further information can be found in the following manuals:

- Technical Description QUICKLUB Pump 203
- Technical Description for "Electronic Control Units" of pump 203:
  - Printed-Circuit Board 236-13856-1 - Model F *
  - Printed-Circuit Board 236-13862-1 - Model V00 - V03*
  - Printed-Circuit Board 236-13857-1 - Model H *
  - Printed-Circuit Board 236-13870-1 - Models M 00 - M 15*
  - Printed-Circuit Board 236-13870-1 - Models M 16 - M 23*
- Installation Instructions
- Parts Catalog

* The design of the printed circuit board is indicated by the model designation which is part of the pump type identification code mentioned on the pump nameplate. Example: B : P 203-2XN - 1K6 - 24 - 1A1.10 - V00
Progressive Metering Devices Model SSV

Suitable Lubricants
- The progressive metering devices model SSV can be used for dispensing:
  - mineral oils with min. 40 mm²/s (cST) or
  - greases up to the penetration class NLGI 2

Note: It must nevertheless be ensured that the oils or greases used do not alter their consistency significantly in the course of time or under the influence of temperature or pressure.

Progressive Plunger Metering Devices - General

- The progressive metering devices are piston-operated metering devices;
- automatically (progressively) dispense the lubricant fed by the pump to the connected lubrication points;
- have a lubricant output of 0.2 cm³ per outlet and piston stroke;
- are available with 6 to 12 outlets or up to 22 outlets;
- offer the option of combining several lubrication points into one centralized lubrication point.
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Each lubrication circuit is equipped with a pressure relief valve (safety valve) which limits the pressure to the maximum admissible value.

Any blockage in a lubrication circuit is indicated by grease leaking from the respective pressure relief valve.

Suitable Lubricants

Progressive Plunger Metering Devices - General

Features of a Progressive Metering Device

- The term "progressive" refers to the special features of the lubricant distribution within the metering devices, e.g.:
  - the successive movements of the individual pistons within the metering device due to the supplied lubricant being under pressure;
  - the pistons move in a predetermined order and the cycles are repeated constantly;
  - each piston must have completed its movement fully before the next piston can be moved, no matter whether the lubricant is dispensed continuously or intermittently;
  - the pistons operate interdependently of one another;
  - no lubrication point which is connected to the system is omitted.

Fig. 2: Metering device type SSV 8 shown as a model

Fig. 3: Sectional view of a SSV 8 metering device
Applications

QuickLub progressive metering devices offer the option of combining several lubrication points on a machine to one or more central lubrication points, as shown in Fig. 4 which illustrates this basic feature.

- When they are used in connection with hand-operated pumps, pneumatic or electric pumps the progressive metering devices are a simple and low-cost centralized lubrication system. See Fig. 5.

1 - Hand-operated pump  
2 - Pneumatically operated pump  
3 - Electrically operated pump  
4 - Lubrication fitting block  
5 - Hand-operated filling pump

Progressive metering devices can be used in two-line or single-line centralized lubrication systems in order to increase the number of outlets of multiline pumps or to subdivide the single metering devices and measuring valves (Fig. 4 - 8) also as secondary metering devices in large and small oil circulating systems.
Lubricant Distribution Within the Metering Device

- The 5 following illustrations show how the lubricant distribution is made to the individual outlets.

Note: To simplify the description we only show the lubricant distribution for outlets 2, 7, 5, 3 and 1. The remaining distribution operations are derived from the logical pumping sequence.

**Phase 1**
- The lubricant enters the metering device from above (white arrow) and flows to the right-hand end of piston A.
- Piston A (black arrow) is moved to the left under the pressure of the lubricant, causing the lubricant ahead of the left-hand end of piston A to be dispensed to outlet 2 (dashed arrow).

\[\text{Lubricant under pump pressure}\]
\[\text{Lubricant under delivery pressure of the piston}\]
\[\text{Lubricant, pressureless}\]

**Phase 2**
- Once piston A has reached its left-hand final position, the junction channel to the right-hand end of piston B is opened.
- The lubricant which arrives from above (white arrow) also moves piston B (black arrow) to the left, causing the lubricant quantity ahead of the left-hand end of piston B to be dispensed to outlet 7 (dashed arrow).

\[\text{Lubricant under pump pressure}\]
\[\text{Lubricant under delivery pressure of the piston}\]
Phase 3
- Once piston B has reached its left-hand final position, the junction channel to the right-hand end of piston A is opened.
- The lubricant which flows from above (white arrow) moves piston C (black arrow) to the left, causing the lubricant quantity ahead of the left-hand end of piston C to be dispensed to outlet 5 (dashed arrow).

![Phase 3 Diagram]

Lubricant under pump pressure
Lubricant under delivery pressure of the piston

Phase 4
- The channel to the right-hand end of piston D is now open (black arrow).
- The lubricant which is fed from above (white arrow) moves piston D to the left, causing the lubricant quantity ahead of the left-hand end of piston D to be dispensed out of the metering device via outlet 3 (dashed arrow).

![Phase 4 Diagram]

Lubricant under pump pressure
Lubricant under delivery pressure of the piston

Phase 5
- In phase 4, piston D had opened the junction channel to the left-hand end of piston A.
- The lubricant flowing in (white arrow) moves piston A to the right (black arrow), causing the lubricant quantity to be dispensed to outlet 1 (dashed arrow).
- In the subsequent distribution sequence, pistons B - D are moved from the left to the right one after the other.
- A complete distribution sequence is finished and a new cycle can begin.

![Phase 5 Diagram]

Lubricant under pump pressure
Lubricant under delivery pressure of the piston

When the lubricant supply is interrupted
- the pistons come to a halt;
- the lubricant is no longer dispensed to the lubrication point.
- When the lubricant is fed again to the metering device, the cycle begins from the point where it had been interrupted.
System-dependent monitoring

- The main metering device (B, Fig. 14) and the secondary metering devices are connected by a high pressure plastic hose G. This feature automatically causes the linkage of the progressive system connected downstream of the pump.
- If only one piston does not move in any metering device or if the metering device can no longer dispense any lubricant via its outlets, this metering device will block itself.
- If one of the secondary metering devices is blocked, the main metering device is also blocked. The whole progressive system installed downstream of the pump stops operating.
- The fundamental internal structure of the progressive metering device guarantees the self-monitoring of the sequence within the metering device.
- The linkage makes it possible to monitor the operation of the whole system.

Visual monitoring

- The metering devices can be equipped with an indicator pin which is connected to the piston and moves back and forth during lubricant distribution.
- If there is a blockage in the system, the indicator pin stops moving.

Note: It is also possible to indicate the movements of the indicator pin or any blockage in the system by means of a control switch (KS) or a proximity switch (KN).

Electrical monitoring (microprocessor control)

- A piston detector (initiator) which has been installed on a metering device instead of a piston closure plug monitors the pump operating time and brings it to a close after all the pistons of this metering device have dispensed their lubricant quantity.
- If there is a blockage in the system or if the pump reservoir is empty, the piston detector can no longer record the piston movements. The switching off signal is not transmitted to the control unit. A fault signal occurs.

Important! For the system monitoring it is recommended that one SSV metering device with pre-assembled piston detector be used per lubrication circuit. These special metering devices must be ordered separately for each lubrication system. Refer to the Parts Catalog.
- The pre-assembled metering devices have the designation SSV ... - N (they are available for SSV 6, 8, 10 and 12). They must be installed in the system instead of a normal metering device.
• The whole system can be monitored visually via the pressure relief valve. If lubricant is leaking at the pressure relief valve during the distribution sequence, this indicates that there is a blockage in the system.

Important: In the case of the progressive metering devices models SSV 6 - 12 the outlets 1 and/or 2 must never be closed. In the case of the progressive metering devices model SSV 14 - 22, the two outlets with the highest numbers must never be closed, otherwise the system would block owing to the structure of the metering device.

Determining the Lubricant Output by Combining Outlets

Tube Fittings, Screw-Type

Fig. 18: Install the outlet fittings and closure plugs in accordance with the dosage
• The output quantities can be raised by closing outlet boreholes.
• Install an outlet fitting assembly in each outlet borehole which will be used. Refer to Fig. 18, 19, 20.
• Never remove closure plug 4 (chamfered) on the piston side.
• Never use closure plug 12 (Fig. 18) or 7 (Fig. 19, 20) as a piston closure plug 4.

Important: Always use valve body 7 (Fig. 18) in conjunction with clamping ring 6.

• Clamping ring 6 (Fig. 18) closes the junction channels 10 to the other outlet channels.

Note: In the case of push-in type fittings the clamping ring is always a firm component part of the valve body.

Important: In the case of the progressive metering devices model SSV 6 - 12 the outlets 1 and/or 2 must never be closed. In the case of the progressive metering devices model SSV 14 - 22, the two outlets with the highest numbers must never be closed, otherwise the system would block due to the structure of the metering device.

**Tube Fittings, Push-In-Type (main metering device)**

![Diagram of tube fittings](image)

**Fig. 19 - Install the push-in type outlet fittings and the closure plugs in accordance with the dosage**

1 - Inlet fitting with protective cap *
2 - Delivery borehole of the piston
3 - Closure plug installed in outlet borehole
4 - Closure plug (chamfered), piston
5 - Valve body assembly (with reinforced collar)
6 - Junction channels
7 - Closure plug, outlet borehole
8 - Copper washer

* on request
**Tube Fittings, Push-in Type (secondary metering devices)**

**Fig. 20** Install the push-in type outlets fittings and closure plugs in accordance with the dosage.

1. Inlet fitting
2. Delivery borehole of the piston
3. Closure plug installed in outlet borehole
4. Closure plug (chamfered), piston
5. Valve body assembly (with knurled collar)
6. Junction channels
7. Closure plug, outlet borehole
8. Copper washer

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**Single lubricant output**

- The simple lubricant output is the lubricant quantity dispensed by a piston per stroke and per outlet borehole to one lubrication point. It amounts to 0.2 cm³.

**Double or multiple lubricant output**

- If one or more lubrication points require a double or a multiple lubricant amount, this can be performed by closing one or more outlets.
- As shown in Fig. 21, outlet borehole 10 has been closed. The lubricant quantity supplied by this outlet flows out of the metering device via outlet 8.
- Total quantity at outlet 8:
  - is the quantity of outlet 8
  - plus the lubricant quantity of outlet 10.
- If a triple quantity is needed (at outlet 1), close the outlet borehole located above the discharge borehole. Refer to outlets 3 and 5 on Fig. 21.

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**Fig. 21** Single, double and triple lubricant output.

- Outlet quantity (1x: single, 2x: double, etc.)
- 10 Outlet numbers
- A - Clamping ring (brass)
Lubricant Metering Devices SSV 14 up to SSV 22

- The lubricant metering devices model SSV 14 to SSV 22 function in the same way as the metering devices model SSV 6 to SSV 12 and are combined from the basic metering devices SSV 6 to SSV 12.

- The following differences must, however, be noted:
  - the outlet numbers of the metering devices SSV 14 to SSV 22 are marked in the opposite direction to those of the SSV 6 to SSV 12 metering devices. Outlets 1 and 2 are close to the inlet borehole.
  - the two outlets - right-hand and/or left-hand - with the highest numbers must never be closed, otherwise the system would be blocked.
  - if, for example, outlet 8 is closed, the lubricant quantity dispensed to this outlet flows out of the metering device via outlet 10, etc. Refer to item “Double or multiple lubricant output” above.

Inlet tube fittings, straight and 90°
As inlet fitting only tube fittings R 1/8” thread.

Check valve
Install one complete check valve in each outlet borehole which will be used. Check valves for tube dia. 4 mm and 6 mm are available.

1 - coupling nut
2 - ferrule
3 - valve body
4 - seal and clamping
**Tube Fittings, Push-in Type**

**Metering Devices**

Inlet tube fittings, straight and 90°

**Important!** For the inlet fittings use only tube fittings with reinforced collet 1 (Fig. 23) and sealing ring 2 at the thread.

1 - Collet  
2 - Sealing ring

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**Fig. 23: Inlet fittings**

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**Check valves**

- **Main metering device**
  Use check valves type 1 with reinforced collet and smooth flange (Part no. 226-14091-4).

- **Secondary metering device**
  Use check valves type 2 with standard collet and knurled flange (Part no. 226-14091-2).

**Note:** In the case of construction and agriculture machinery, high pressure plastic hose to be used for the plastic tubes. In these cases for secondary metering devices, use check valves type 1 with reinforced collet.

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**Connection of The Feed and Main Line**

**High-pressure range (main metering device)**

Important! Only main lines (Ø 8.4 x 2.3 mm) with threaded sleeve and hose studs may be connected to the inlet fitting and to the check valves with reinforced collet.

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**Fig. 24: The different types of check valve**

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**Low-pressure range (secondary metering devices)**

Only the feed line (Ø 6 x 1.5 mm) can be connected to the check valves with knurled collet and to the inlet fittings.

**Protection Cap for Push-in Type Fittings**

Note: In special cases, high-pressure plastic hose (dia. 8.6 x 2.3 mm) with threaded sleeve and hose stud can also be used for the low pressure range. However, for the construction and agriculture machinery, check valves and inlet tube fittings with reinforced collets must be used also for the low-pressure range, see Parts Lists.

To prevent dirt from entering the system, the push-in type fittings, check valves and safety valves can be equipped with protective caps.

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**Fig. 25: Push-in type fitting with protection cap**
Feed Line and Main Line

Plastic tube Ø 6 x 1.5 mm
Note: The plastic tube are filled with grease in the factory.

• Use the feed lines only in the low pressure area, i.e. between the secondary metering devices and the lubrication point.
• Adhere to the pressures and bending radiuses mentioned in the chapter "Technical Data" when installing the parts.

Installing the threaded sleeves and hose studs on the main line

• Screw the threaded sleeve, item 1 Fig. 26, counterclockwise onto the high pressure plastic hose 2 until the illustrated dimension of 11 mm is reached. Then screw the hose stud 3 into the threaded sleeve 1.

Important: Before screwing the parts 1 and 3, rub them with oil.

Note: The outside diameter of the high pressure plastic hose may show variations in dimension. In such a case, press the threaded sleeve 1 at the end where it will be screwed onto the high pressure plastic hose so that it becomes oval in shape (1 to 2 mm). This will prevent the high pressure plastic hose from being pushed out of the sleeve when the hose stud is screwed.

High pressure plastic hose Ø 8.6 x 2.3 mm
Note: The high pressure plastic hose are filled with grease in the factory.

• Use the main lines in the high-pressure area, i.e. between the pump, main metering device and secondary metering devices.
• Adhere to the pressures and bending radiuses mentioned in the chapter "Technical Data" when installing the parts.

Note: When using the special adjusting gauge 432-23077-1 (see Parts Catalog) screw the threaded sleeve counterclockwise onto the high pressure plastic hose until the gauge inserted in the sleeve begins to rise.
## Troubleshooting

**Fault: Blockage in the downstream progressive system**

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<th>Cause:</th>
<th>Remedy:</th>
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<td>Bearing, lines or metering device clogged. In the case of the metering devices SSV 6 through 12 the outlet boreholes 1 and/or 2 are closed. In the case of the metering devices SSV 14 through 22 the two outlet boreholes with the highest numbers are closed. The fault can be identified by: a) grease leaking at the safety valve; b) the fact that the indicator pins installed on the metering devices (if any) no longer move; c) the fault signal of the signal lamp (if any) or LED display.</td>
<td>Find out which is the cause of the blockage and rectify it in accordance with the following example: • Allow pump to run (see &quot;To trigger an additional lubrication cycle&quot;). • Loosen all high-pressure plastic hose connections G one after the other from the main metering device (B, Fig. 19) leading to the secondary metering devices. If f. ex. grease or oil emerges under pressure from outlet 1 of main metering device B, the blockage will be found in the lubrication circuit of the secondary metering device D. Note: If there is a blockage in the downstream system, the high-pressure plastic hoses are under pressure. In such a case, it is difficult to detach the push-in type connecting parts of the high-pressure plastic hose. Relieve the system by removing the closure plug on the push-in type safety valve or, if any, by removing the filling nipple. • Let the pump run. • Disconnect all lubricant feed lines E from secondary metering device D one after the other. If f. ex. grease or oil emerges under pressure from outlet 3 of metering device D, the blockage will be found in the line of outlet 3 or in the connected bearing. • Pump the blocked bearing or line through by means of a manual pump. Note: When checking the individual outlets, keep each outlet loosened for quite a while because per each motor revolution there is only one piston stroke. A complete cycle of all metering devices requires several strokes. • Check safety valve A. Replace it, if necessary.</td>
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![Diagram](image1.png)  
**Fig. 28: Example of a lubrication system**

- A - Safety valve
- B - Main metering device
- C - Secondary metering device SSV 8
- D - Secondary metering device SSV 6
- E - Lubricant plastic tube
- F - Secondary metering device SSV 12
- G - High-pressure plastic hose
### Fault: Blockage in the downstream progressive system (continued)

<table>
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<th>Cause:</th>
<th>Remedy:</th>
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| Metering device blocked | - Replace the metering device or clean it in accordance with the following procedure:  
  - Remove all tube fittings.  
  - Unscrew the piston closure plugs.  
  - If possible, try to eject the piston using a smooth drift (Ø smaller than 6 mm; 0.24 in.).  
  - **Important:** The pistons are precision-fitted into the holes. Mark the pistons with regard to their installation position and direction after they have been removed. They must not be exchanged.  
  - Thoroughly clean the metering device bodies in fat-dissolving washing agent, blow them through with compressed air.  
  - Press free the slant ducts (Ø 1.5 mm; 0.59 in.) at the thread ends of the piston holes using a pin.  
  - Clean the metering devices again and blow them through.  
  - Reassemble the metering devices.  
  - Replace the copper washers.  
  - Before the tube fittings are reassembled, the metering devices should be pumped with oil several cycles by means of a manual pump. Check that the pressure in the metering device does not exceed 25 bar (362.8 psi).  
  - If the pressure is higher, replace the metering device. |

### Fault: Differing lubricant amounts at the lubrication points

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<th>Remedy:</th>
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| Lubricant metering not correct  
  - Respective valve body has been assembled without clamping ring  
  - Setting of the pause time or operating time incorrect | - Check the lubricant metering acc. to the lubrication chart  
  - Remove the valve body and install a clamping ring  
  - Check the time setting. Refer to the corresponding setting in the respective “Operating Instructions”. |

### Fault: Over- or underlubrication of the lubrication points

<table>
<thead>
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<th>Remedy:</th>
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<tbody>
<tr>
<td>Setting of the operating time or pause time incorrect</td>
<td>- Check the time setting at the printed circuit boards. Refer to the corresponding setting in the respective “Operating Instructions”.</td>
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To achieve the appropriate planning and layout of a system, you should observe the following rules:

1. Selecting the pump
   - Select the pump in accordance with its application and lubricant requirement (2-l, 4-l or 8-l reservoir)
   - Adhere to the supply voltage of the drive motor (12 VDC or 24 VDC).
   - Select the printed circuit board in accordance with the application. It can be used for both 12 VDC and 24 VDC pumps. Note the application possibilities for the metering device monitoring.

2. Determining the number of lubrication points to be connected
   Exception: High-speed rotating parts. Also consider the lubrication points on auxiliary units or other superstructures.

3. Combining the lubrication points into groups
   - A group should contain not more than 12 lubrication points, if possible fewer.
   - If possible, also combine the lubrication points according to their lubricant requirement.
4. Determining the lubricant requirement of the combined lubrication points
   - The lubricant requirement depends on the design and operating conditions of the individual bearings.
   - The lubricant quantities can be adapted to the requirement of the respective lubrication points by closing outlets (exception: outlet 1 or 2) of the metering blocks.
   - Small bearings with or without sealing rings must always be supplied with a single lubricant quantity.
   - Bigger bearings without sealing rings (length > 70 mm) or heavy duty bearings shall be supplied with a double or multiple lubricant quantity.

5. Allocating a metering device with the appropriate number of outlets to each group
   - It is recommended that metering devices with 6, 8, 10 or 12 outlets be used.
   - In the case of a monitored system, check where the metering device with the pre-assembled piston detector is to be used (as a main metering device or as a secondary metering device). The condition for this is that each lubrication point receives lubricant at least once per lubrication cycle.

   Note: Metering devices with up to 22 outlets can be used in the case of special superstructures.

6. Connecting the metering device outlets with the lubrication points to be connected
   **Attention:** In the case of the metering devices model SSV 6 to SSV 12 the outlets 1 and 2 must always be connected to a lubrication point.

   In the case of the metering devices SSV 14 to SSV 22 the two outlets with the highest numbers (examples: 21 and 22 in the case of SSV22) must always be connected to a lubrication point.
If there is an odd number of lubrication points or if the lubrication points require a large lubricant quantity, select the next larger metering device.

Close the outlets which are not required (see Fig. 35, outlet 5 or 6), except for outlets 1 and 2.

Outlets whose lubricant output is higher due to the closing of preceding outlets must be connected to the lubrication points with an increased lubricant requirement.

7. Determining the size of the main metering device
   - First, allocate one outlet of the main metering device to each secondary metering device.
   - If possible, supply the same lubricant quantities to similar lubrication points.
   - Check whether one or more secondary metering devices require larger lubricant quantities. See direct connection of the metering device to respectively one single pump element, example Fig. 36.
   - If necessary, modify the allocation of the lubrication points.
   - Maximum size of the main metering device: SSV 12

8. Dividing the lubricant quantity
   - Each lubrication point should be supplied with lubricant at least once every day, at the latest on the next day.
   - Avoid overlubrication, i.e. too much lubricant per day and per lubrication point.
   - Avoid underlubrication, i.e. too little lubricant per day and per lubrication point.
   - To fulfill these conditions, adhere to the following:
     - Adjust the operating time in such a way that the pump supplies lubricant to the lubrication points at least once a day. See "Determining the operating time of the pump".
     - Adjust the pause time in such a way that the frequency of the lubricant supply meets the operating or application conditions of the machine or vehicle.
   - Divide the lubricant quantities as shown in the example Fig. 35. Also see the calculation example in Fig. 36.
   - Connect the outlets of the main metering device which are not used to the pump via a return line R.
9. Lubricant output of the pump model 203
- at 100 bar backpressure
- at 20°C
- at 24 V rated voltage

Pump element K5 ...................................................... 2 cm³/min
Pump element K6 ................................................... 2.8 cm³/min
Pump element K7 ...................................................... 4 cm³/min

Lubricant output of pump model 215
- Max. number of pump elements: 15
Lubricant output per piston stroke:
pump element piston dia 6 mm .................................. 0.16 cm³
pump element piston dia. 7 mm .............................. 0.23 cm³
setting range ....................................................... 25% to 100%

10. Adjusting the running time (operating time) of the pump (not for pumps with microprocessor control)
- The chart below shows the required pump operating times in the case of various combinations of the main metering device and the biggest secondary metering device.
- With the indicated times each lubrication point receives lubricant at least once a day.

<table>
<thead>
<tr>
<th>Main metering device</th>
<th>SSV 6</th>
<th>SSV 8</th>
<th>SSV 10</th>
<th>SSV 12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
<td>Double</td>
<td>Single</td>
<td>Double</td>
</tr>
<tr>
<td>Lubricant output of the main metering device</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary metering device</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSV 6</td>
<td>3 min</td>
<td>-</td>
<td>4 min</td>
<td>-</td>
</tr>
<tr>
<td>SSV 8</td>
<td>4 min</td>
<td>-</td>
<td>5.5 min</td>
<td>-</td>
</tr>
<tr>
<td>SSV 10</td>
<td>5 min</td>
<td>2.5 min</td>
<td>6.5 min</td>
<td>3.5 min</td>
</tr>
<tr>
<td>SSV 12</td>
<td>6 min</td>
<td>3 min</td>
<td>8 min</td>
<td>4 min</td>
</tr>
</tbody>
</table>
• During the operating time (pump running time) the used lubricant is renewed or topped up in the bearings.
• The frequency of renewal/topping up and the quantity which must be supplied to a single lubrication point depends on several factors, e.g.:
  - bearing size
  - kind of bearing - open or closed bearing, rolling bearing or friction bearing
  - frictional force
  - bearing loads
  - adjustable running times of the pump, etc.
• The required quantity may be very different as a result of the above mentioned factors.

It is important to take care that the lubricant is renewed or topped up within a predetermined time of application of the machine or vehicle so that there is no damage to the bearings.

If normal or larger bearings are connected to the secondary metering devices model SSV 10 or SSV 12, these metering devices must receive the double quantity.

In the case of smaller bearings with a small lubricant requirement the SSV 10 or SSV 12 will receive a single lubricant quantity.

11. Connecting machine bearings

12. Connecting a fifth-wheel
• Fifth-wheels must be supplied from the main metering device with a double quantity.
13. Connecting a liftgate

Fig. 42: Liftgate with 12 lubrication points

14. Using a second pump element (2nd lubrication circuit)

- If the vehicle chassis or the machine is already equipped with a centralized lubrication system and if a superstructure (e.g. crane) or an auxiliary unit must be connected subsequently, this superstructure or auxiliary unit can be supplied from a specially installed pump element.

**Important:** Each pump element must be equipped with a safety valve.

Fig. 43: System using two pump elements
15. Using quick coupling 504-36804-1
For removable superstructures, i.e. loading cranes, use a removable quick coupling with integrated return line.

Important: If a simple coupling (which can be coupled under pressure) is used instead of a quick coupling, the lubricant line must be connected to the pump via a return line after the superstructure has been uncoupled, otherwise the system will be blocked.

16. Maximum line lengths

Important: The lubricant division should be made only via 2 steps of metering devices, i.e. main metering device - secondary metering device - lubrication point.
17. Pressure losses

The following chart serves as a reference when calculating the maximum size of a QUICKLUB system, under consideration of the lubricant sorts and ambient temperature.

<table>
<thead>
<tr>
<th>Lubricant penetration class</th>
<th>Maximum pressure loss with tube 6x1,5 mm (NW 3 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temperature</td>
</tr>
<tr>
<td>NLGI 0</td>
<td>5 bar/m</td>
</tr>
<tr>
<td>NLGI 1</td>
<td>8 bar/m</td>
</tr>
<tr>
<td>NLGI 2</td>
<td>12 bar/m</td>
</tr>
</tbody>
</table>

Maximum pressure loss through each SSV 6 to SSV 12

| NLGI 0 | 20 bar | 15 bar | 10 bar |
| NLGI 1 | 25 bar | 20 bar | 15 bar |
| NLGI 2 | 30 bar | 25 bar | 20 bar |

Note: The data relating to the pressure loss per metering device refer to metering devices with 6, 8, 10 and 12 outlets, namely the main and secondary metering devices.

- The sum of all pressures, from PA to PE plus 5 bar for the rolling bearings (lubrication point) or plus 15 bar for friction bearings must not exceed 80% of the recommended working pressure of the pump.
- All the values mentioned in the tablet are average values based on real test results.
- The NLGI class of the grease only indicates the statistical density. It does not indicate the dynamic pumpability of the grease. The flow properties of greases of the same NLGI class may be very different.
Technical Data

**Metering Device Model SSV**

- **Lubricant output per outlet and per stroke**: 0.2 cm³
- **Max. operating pressure**: 350 bar
- **Min. operating pressure**: 20 bar
- **Max. differential pressure between two outlets**: 100 bar
- **Outlet connection for tube**: Ø 6 mm
- **Operating temperature**: -25°C to 70°C

**Push-in-Type Tube Fittings**

- **High pressure range, p max.**: 350 bar
- **Inlet tube fittings of the metering devices**
- **Outlet fittings, main metering device**
- **Low-pressure range, p max.**: 250 bar
- **Outlet fittings, secondary metering devices**

**Inlet fittings to the lubrication point**

**Lines**

- **High-pressure plastic hose**
  - **Min. bursting pressure (in connection with hose clamp, screwed)**: 600 bar
  - **Min. bending radius**: 50 mm
  - **Min. temperature**: -40°C

- **Plastic tube**
  - **Min. bending radius**: 30 mm
  - **Bursting pressure at 20°C**: approx. 250 bar
  - **Min. temperature**: -40°C

**Tightening torques**

- **Closure plug (piston) in metering device**: 10 Nm
- **Closure plug (outlets) in metering device**: 10 Nm

**Inlet fitting in metering device**

- **screw-type**: 17 Nm
- **plug-type**: 10 Nm

**Outlet fitting in metering device**

- **screw-type**: 10 Nm
- **plug-type**: 8 Nm

**Compression nut onto inlet fitting**: 10 Nm

**Compression nut onto outlet fitting, screw-type**

- **plastic tube**: 5 Nm
- **steel tube**: 10 Nm

**Installation of metering device**: 10 Nm
Dimensions

Metering Devices Model SSV 6 to SSV 12

<table>
<thead>
<tr>
<th>Model SSV</th>
<th>Dimensions A in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>8</td>
<td>75</td>
</tr>
<tr>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>12</td>
<td>105</td>
</tr>
</tbody>
</table>

Dimensions A in mm

Metering devices SSV 14 ... 22

<table>
<thead>
<tr>
<th>Model SSV</th>
<th>Dimensions A in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>135</td>
</tr>
<tr>
<td>16</td>
<td>150</td>
</tr>
<tr>
<td>18</td>
<td>165</td>
</tr>
<tr>
<td>20</td>
<td>180</td>
</tr>
<tr>
<td>22</td>
<td>195</td>
</tr>
</tbody>
</table>
2.2A-10001-A96

**Lubricants**

The QUICKLUB pump 203 can dispense greases up to NLGI class 2 or mineral oils with min. 40 mm²/s (cST) at 40°C. **Important:** Absolute cleanliness is essential when handling lubricants. Impurities will remain suspended in the lubricant and cannot settle. This will block the delivery channels causing damage to the bearings.

Recommended grease for QUICKLUB systems down to -25 °C

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Type</th>
<th>Base soap</th>
<th>Min. delivery temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGIP</td>
<td>F1 Grease 24</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>ARAL</td>
<td>Multipurpose grease ZS 1/2</td>
<td>Ca/Li</td>
<td></td>
</tr>
<tr>
<td>AUTOL</td>
<td>Top 2000</td>
<td>Ca</td>
<td>-10 °C</td>
</tr>
<tr>
<td>BP</td>
<td>Lubricating grease</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>C1 lubricating grease</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>CASTROL</td>
<td>CL - Grease</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>ESSO</td>
<td>Cazar K2</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>ESSO</td>
<td>High-pressure grease</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>FIAT LUBRICANTII</td>
<td>Comar 2</td>
<td>Li</td>
<td></td>
</tr>
<tr>
<td>FUCHS</td>
<td>FN 745</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>FUCHS</td>
<td>LZR 2</td>
<td>Li</td>
<td>-20 °C</td>
</tr>
<tr>
<td>FUCHS</td>
<td>Renocal FN3</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>FUCHS</td>
<td>Renolit HLT 2</td>
<td>Li</td>
<td></td>
</tr>
<tr>
<td>MOBIL</td>
<td>Mobilgrease</td>
<td>Li</td>
<td></td>
</tr>
<tr>
<td>MOLYKOTE</td>
<td>TTF 52</td>
<td>anorg. Verd.</td>
<td></td>
</tr>
<tr>
<td>OPTIMOL</td>
<td>Longtime PD 2</td>
<td>Li</td>
<td>-20 °C</td>
</tr>
<tr>
<td>OPTIMOL</td>
<td>OLIT CLS</td>
<td>Li/Ca</td>
<td>-15 °C</td>
</tr>
<tr>
<td>SHELL</td>
<td>Retinax C</td>
<td>Ca</td>
<td></td>
</tr>
<tr>
<td>ZELLER &amp; GMELIN</td>
<td>ZG 450</td>
<td>Li</td>
<td></td>
</tr>
<tr>
<td>ZELLER &amp; GMELIN</td>
<td>ZG 736</td>
<td>Li</td>
<td></td>
</tr>
</tbody>
</table>

**Biodegradable greases**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Type</th>
<th>Base-soap</th>
<th>Min. delivery temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAL</td>
<td>BAB EP 2</td>
<td>Li/Ca</td>
<td></td>
</tr>
<tr>
<td>AUTOL</td>
<td>Top 2000 Bio</td>
<td>Ca</td>
<td>-25°C</td>
</tr>
<tr>
<td>AVIA</td>
<td>Biogrease 1</td>
<td>Li</td>
<td>to 0 °C</td>
</tr>
<tr>
<td>DEA</td>
<td>Dolon E 2</td>
<td>Li</td>
<td></td>
</tr>
<tr>
<td>FUCHS</td>
<td>Plantogel S2</td>
<td>Li/Ca</td>
<td></td>
</tr>
</tbody>
</table>