

Quicklub - Progressive Metering Devices for Grease and Oil

***Model SSV and SSV M, Planning and Layout
of Progressive Centralized Lubrication Systems***



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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 236-13857-1 - Variant H ¹⁾
- Printed-Circuit Board 236-13862-1 - Variant V10 - V13 ¹⁾
- Printed-Circuit Board 236-13870-1 - Variant M 08 - M 15 ¹⁾
- Printed-Circuit Board 236-13870-1 - Variant M 16 - M 23 ¹⁾
- Installation Instructions
- Parts Catalogue

¹⁾ The model designation of the printed-circuit board is part of the pump model designation indicated on the pump nameplate.
 Example: P 203 - 2XN - 1K6 - 24 - 1A1.10 - **V10**

Introduction

Explanation of Symbols Used

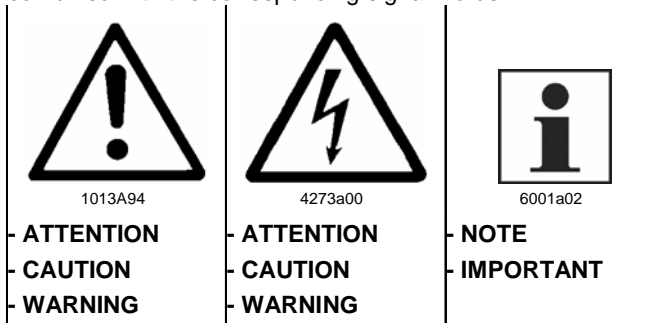
The following description standards are used in this manual:

Safety Instructions

Structure of safety instructions:

- Pictogram
- Signal word
- Danger text
 - Danger note
 - How to avoid danger

The following pictograms are used in this manual and are combined with the corresponding signal words:



The signal words give the seriousness of danger if the following text is not observed:

ATTENTION	refers to faults or damages on machines.
CAUTION	refers to bad damages and possible injuries.
WARNING	refers to possible dangerous injuries.
NOTE	indicates improved operation of the device.
IMPORTANT	indicates special operating features of the device.

Example:



ATTENTION!

When making use of other than the tested spare parts, serious damage may affect your device.

Therefore, for the operation of your device always use original spare parts made by Lincoln GmbH & Co. KG.

Furthermore, you will find the following text symbols in this manual:

- Listing of applicable statements
 - Subpoint of applicable statements
- 1. Determination of the number or sequence of contents
- ➔ Procedural instruction

User's Responsibility

To ensure the safe operation of the unit, the user is responsible for the following:

1. The pump / system shall be operated only for the intended use (see next chapter "Safety Instructions") and its design shall neither be modified nor transformed.
2. The pump / system shall be operated only if it is in a proper functioning condition and if it is operated in accordance with the maintenance requirements.
3. The operating personnel must be familiar with this Owner Manual and the safety instructions mentioned within and observe these carefully.

The correct installation and connection of tubes and hoses, if not specified by Lincoln GmbH & Co. KG, is the user's responsibility. Lincoln GmbH & Co. KG will gladly assist you with any questions pertaining to the installation.

Environmental Protection

Waste (e.g. used oil, detergents, lubricants) must be disposed of in accordance with relevant environmental regulations.

Service

The personnel responsible for the handling of the pump / system must be suitably qualified. If required, Lincoln GmbH & Co. KG offers you full service in the form of advice, on-site installation assistance, training, etc. We will be pleased to inform you about our possibilities to support you purposefully. In the event of inquiries pertaining to maintenance, repairs and spare parts, we require model specific data to enable us to clearly identify the components of your pump / system. Therefore, always indicate the part, model and series number of your pump / system.

Safety Instructions

Appropriate Use

Use the SSV and SSV M lubricant metering devices only for dispensing lubricants in centralized lubrication systems.

Suitable Lubricants

- The progressive metering devices model SSV can be used for dispensing
 - mineral oils of at least 40 mm²/s (cST) or
 - greases up to the penetration class NLGI 2



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IMPORTANT

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.

General Safety Instructions

- The progressive centralized lubrication system connected to the Quicklub pump model 203 must always be secured with a pressure relief valve.
- Lincoln SSV and SSV M 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 assembled 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 Catalogue) 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.



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CAUTION!

Danger of injury in the case of serious corrosion of metering device surfaces: An increasing corrosion of the surfaces will cause the balls pressed in to lose their hold. Under pressure, they may suddenly burst out and cause injuries. For applications in corrosive environments, use metering devices in stainless steel version only.

Operation, Repair and Maintenance

Authorized and instructed personnel who are familiar with the centralized lubrication systems should only perform repair.

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.

When the push-in type fittings are used, note the following:

- For the metering **device inlet** use only **push-in type fittings** (R 1/8) with **reinforced collar** and sealing ring.
- For the **outlet tube fittings** of the **SSV divider valve** (M 10x1) depending on the design of the lubricant line, for example
 - high-pressure plastic hose (ø 4.1 x 2.3) use valve bodies with reinforced collar only, or,
 - pressure plastic tube (ø 6 x 1.5) use valve bodies with knurled collar only
- For the **outlet fittings** of the **SSV M divider** divider valve (M 8x1) pressure plastic tube (ø 4 x 1) use valve bodies with knurled collar only.



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NOTE

In the case of construction machines or agricultural machines use high pressure plastic hoses for the lubricant feed lines. In such cases the outlet fittings of the secondary metering devices and the connection fittings to the lubricant points must have a reinforced collet.

- Use only the main and feed lines specified by Lincoln and adhere to the specified system pressures.

Installation

Tube Fittings, Screw-Type

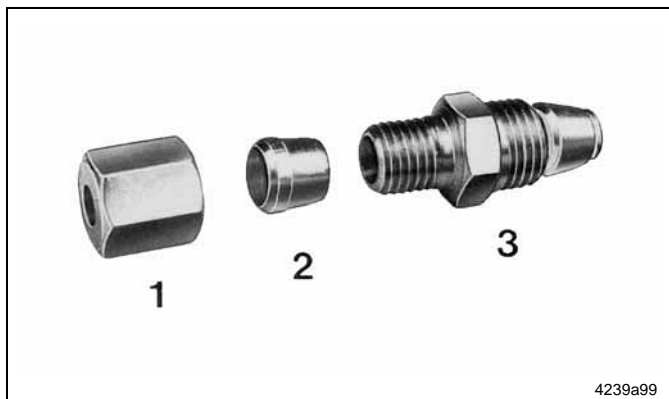


Fig. 1 Single parts of the check valve

Main- and secondary Metering devices

Inlet tube fittings, straight and 90°

As inlet fitting use only tube fittings R1/8" thread.

Check valves

Install one complete check valve in each outlet borehole which will be used.

Install one closure plug in each outlet borehole which will be not used. Exception: outlet bore hole 1 and/or 2 on SSV 6 to SSV 22. In both boreholes check valves have to be installed.

Check valves for tube dia. 4 mm and 6 mm are available.

- | | |
|------------------|---|
| 1 - coupling nut | 3 - valve body with seal and clamp ring |
| 2 - ferrule | |

Tube Fittings, Push-in Type

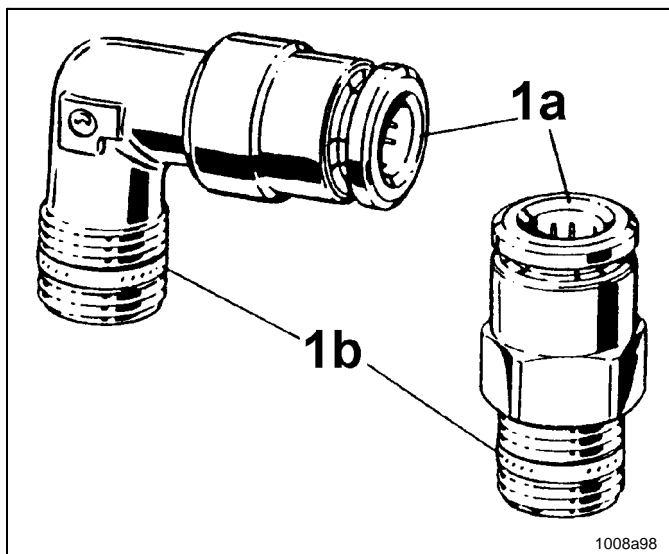


Fig. 2 Inlet fittings

Metering Devices

Inlet tube fittings, straight and 90°



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IMPORTANT

For the inlet fittings use only tube fittings with reinforced collet 1a (Fig. 2) and sealing ring 1b at the thread.

- 1a - Collet
- 1b - Sealing ring

Check valves

- Main metering device
Use check valves type A, Fig.3 with reinforced collet 1a and smooth flange (Part no. 226-14091-4).
- Secondary metering device
Use check valves type B, Fig. 3 with standard collet 2a and knurled flange (Part no. 226-14091-2).



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NOTE

On construction machines or agricultural machines use high-pressure hoses. In such cases the check valves of the secondary metering devices must have a reinforced collet and smooth flange.

- A - Check valve with reinforced collet
- B - Check valve with knurled collet
- 1a - reinforced collet
- 2a - knurled collet

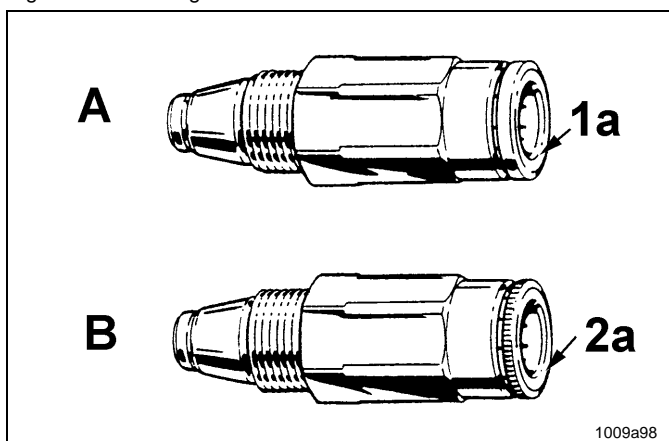


Fig. 3 The different types of check valve

Installation, continuation

Tube Fittings, Push-in Type, continuation

Connection of the High-pressure Hose and the Pressure Plastic Tube



Fig. 4 Check valve with reinforced collet and hose stud

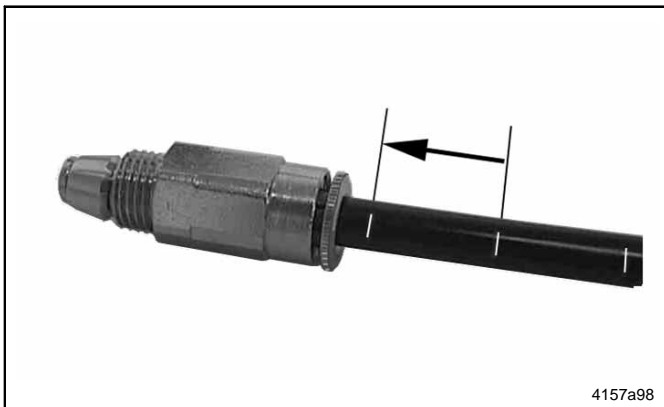


Fig. 5 Check valve with knurled collet and pressure plastic tube

High-pressure range (main metering device)



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IMPORTANT

Connect only high-pressure hoses (\varnothing 4.1 x 2.3 mm) with threaded sleeve and hose studs may be connected to the inlet fitting and to the check valves with reinforced collar.

Low-pressure range (secondary metering device)

Connect the pressure plastic tube (\varnothing 6 x 1.5 mm) to the check valve with standard collet (knurled collet) and to the inlet fittings towards the lubrication point (knurled collet).



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NOTE

Exceptionally the high-pressure hose (\varnothing 4.1 x 2.3 mm) with threaded sleeve and hose stud may also be used for the low-pressure section. Applications for construction machines or agricultural machines, however, require the use of check valves and inlet fittings (towards the lubrication point) with reinforced collet for the low-pressure range. Refer to Parts Catalog.

- The pressure plastic tubes are marked with white lines (Fig. 5) as an installation aid.
- ➡ Cut the pressure plastic tube off at one of the white lines before it is mounted. Then insert the plastic pressure tube into the fitting up to the next white mark. This will ensure a correct installation of the pressure plastic tube in the threaded tube fitting.



Fig. 6 Push-in type fitting with protection cap

Protection Cap for Push-in Type Fittings

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

Installation, continuation

Pressure Plastic Tubes and High-pressure Hoses

Pressure Plastic Tube Ø 6 x 1.5 mm

- Use the pressure plastic tubes 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.

High-pressure hose Ø 4.1 x 2.3 mm

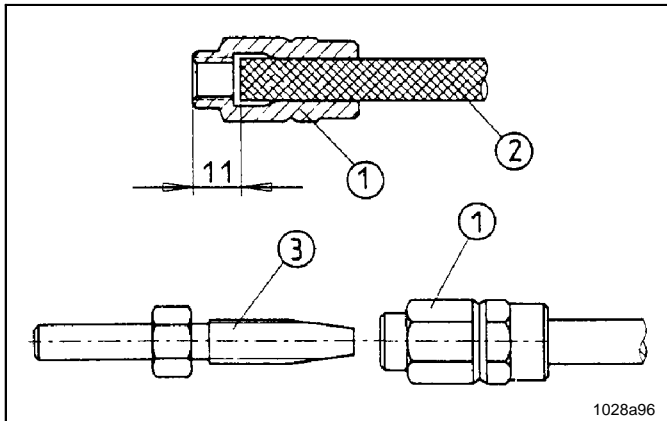


Fig. 7 Preassembly of the threaded sleeves and hose studs on the high pressure hose

- 1 - Threaded sleeve
- 2 - High-pressure hose Ø 4.1 x 2.3 mm
- 3 - Hose stud

- Use the high-pressure hose 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.

Installing the threaded sleeves and hose studs on the high pressure hose

- Screw the threaded sleeve, item 1 Fig. 30, counter clockwise 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.



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IMPORTANT

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

NOTE

The outside diameter of the high-pressure 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 hose so that it becomes oval in shape (1 to 2 mm). This will prevent the high-pressure hose from being pushed out of the sleeve when the hose stud is screwed.

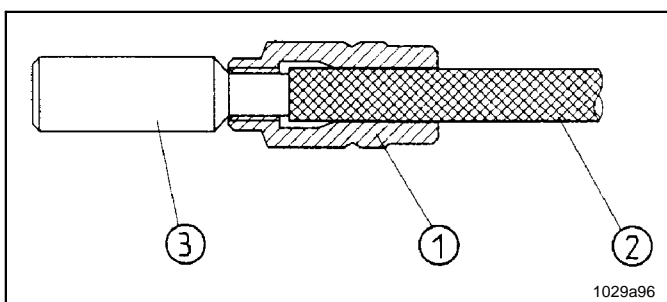


Fig. 8 Preassembly of the threaded sleeve by means of an adjusting gauge

- 1 - Threaded sleeve
- 2 - High-pressure hose Ø 4.1 x 2.3 mm
- 3 - Adjusting gauge 432-23077-1



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NOTE

When using the special adjusting gauge 432-23077-1 (see Parts Catalogue) screw the threaded sleeve counter clockwise onto the high pressure hose until the gauge inserted in the sleeve begins to rise.

Description

Progressive Metering Devices Model SSV and SSV M

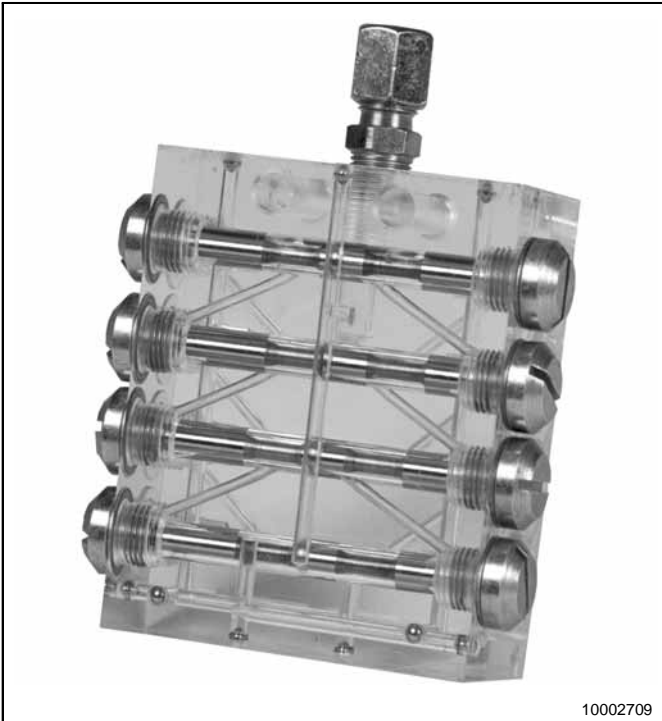


Fig. 9 Metering device type SSV 8 shown as a demonstration model

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;
 - **model SSV** have a **lubricant output of 0.2 cm³** per outlet and piston stroke;
 - **model SSV M** have a **lubricant output of 0.07 cm³** per outlet and piston stroke;
 - when one or more outlets are closed (see "Combining outlets") they can dispense a double or multiple lubricant quantity;
 - 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.
 - meter the supplied lubricant into predetermined single quantities.
 - can be monitored visually (SSV and SSV M) or electronically (only SSV).
- Any blockage in a lubrication circuit is indicated by grease leaking from the respective pressure relief valve.

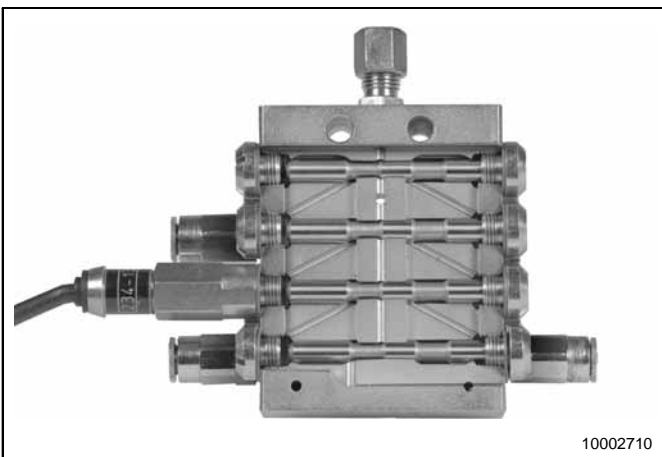


Fig. 10 Sectional view of a SSV 8 metering device

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.

Description, continuation

Progressive Metering Devices Model SSV M and SSV M, continuation

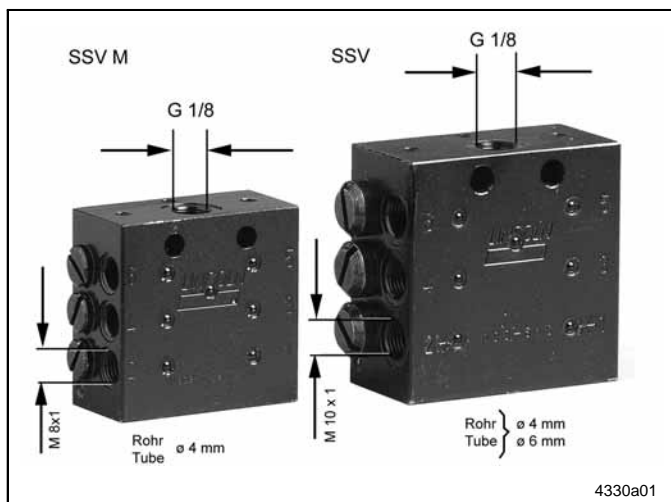


Fig. 11 Differences between SSV M and SSV

Different of Features from SSV M - SSV

- Progressive divider valves **SSV M** and **SSV** operate in **the same way**. Apart from their outer dimensions (see below dimensions) they also differ in the following data (also see fig. 11).

SSV

Lubricant output per outlet and per stroke 0.2cm³
 Max. operating pressure 350 bar
 Min. operating pressure 20 bar
 Max. differential pressure between two outlets 100 bar
 Outlet connection for tube Ø 4 and 6 mm

SSV M

Lubricant output per outlet and per stroke 0.07cm³
 Max. operating pressure 200 bar
 Min. operating pressure 20 bar
 Max. differential pressure between two outlets 40 bar
 Outlet connection for tube Ø 4 mm

Operation

Applications

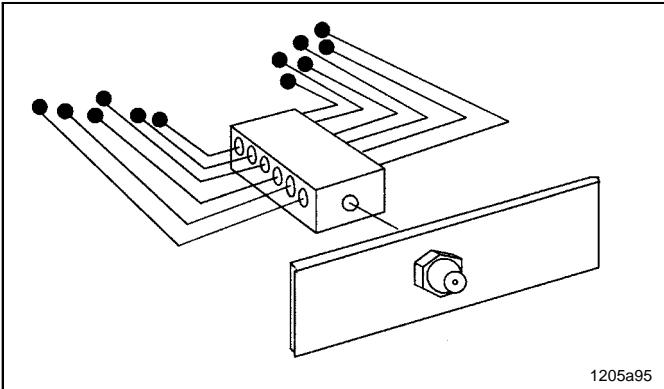


Fig. 12 Central lubrication point

- 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. 12, which illustrates this basic feature.

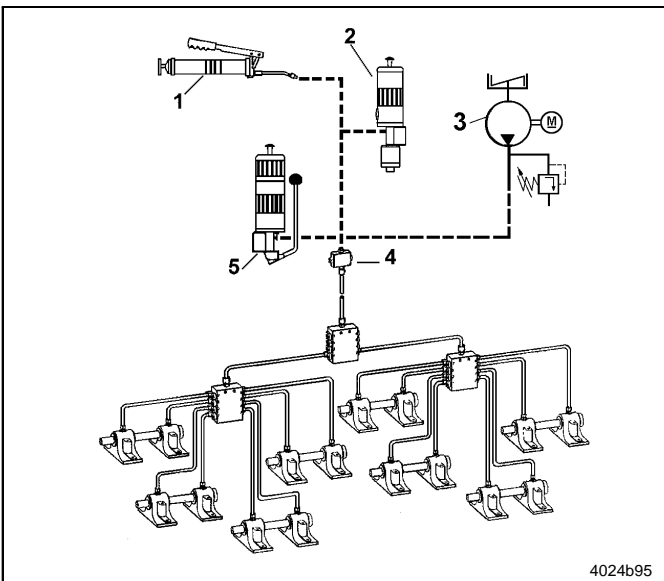


Fig. 13 Possible pump connections

- 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. 13.

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

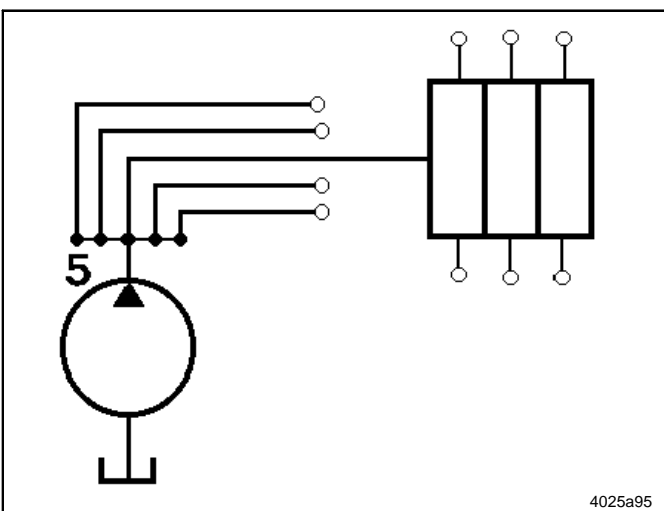


Fig. 14 Multiline pump expanded by a progressive metering device

Subject to modifications

Operation, continuation

Applications, continuation

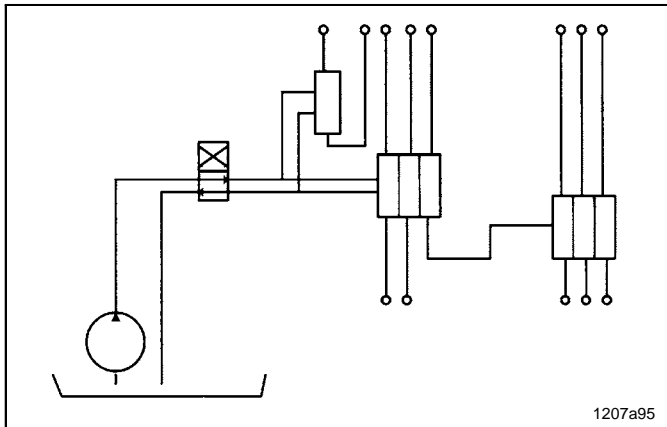


Fig. 15 Two-line system expanded by a progressive metering device

- 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. 12 to 16) also as secondary metering devices in large and small oil circulating systems.

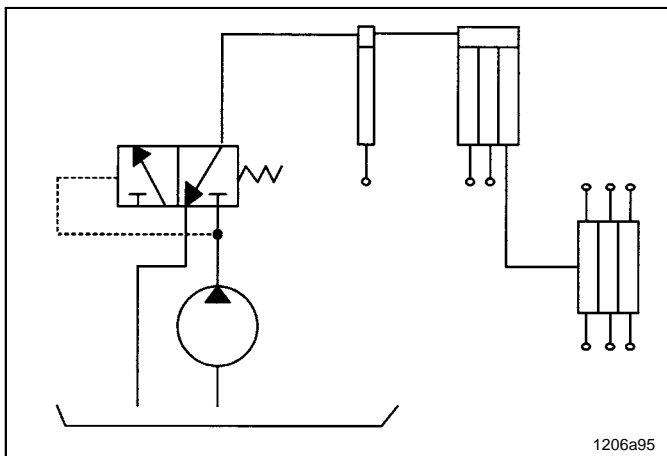


Fig. 16 Single-line system expanded by a progressive metering device

Operation, continuation

Lubricant Distribution within the metering Device

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

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.



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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.

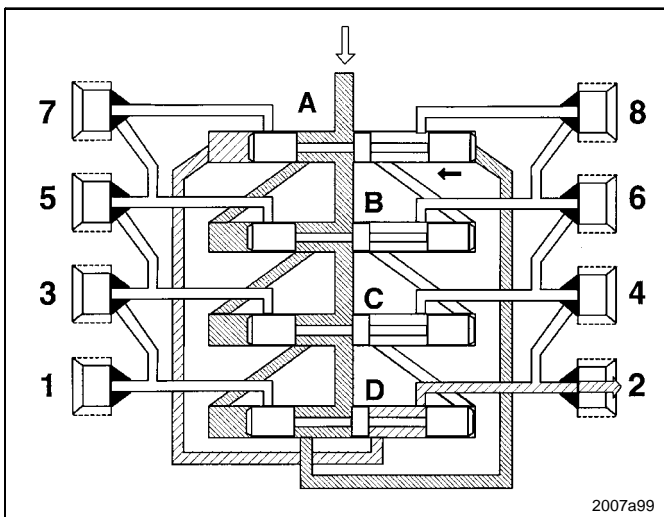


Fig. 17 Phase 1

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).

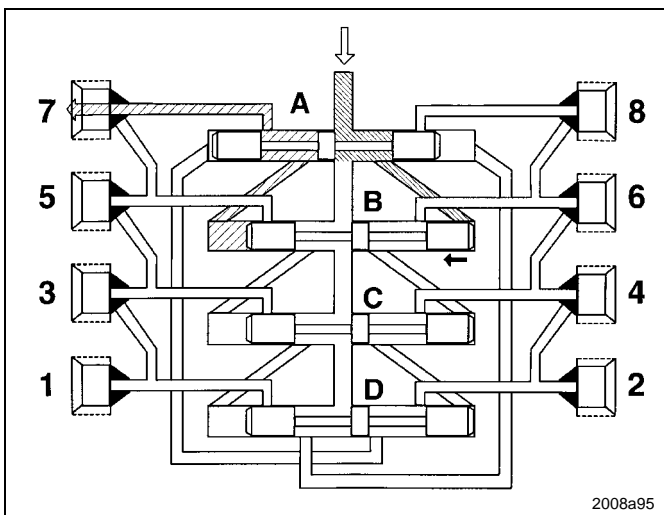
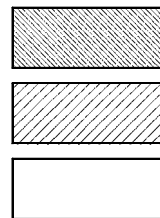
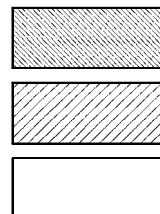


Fig. 18 Phase 2

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).



Operation, continuation

Lubricant Distribution within the Metering Device, continuation

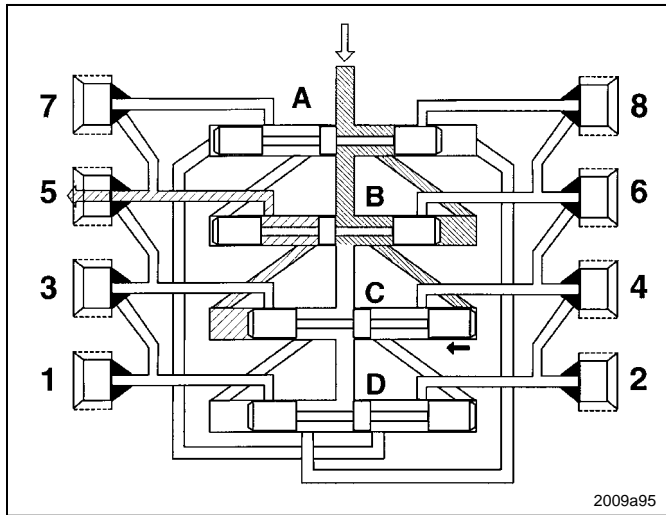


Fig. 19 Phase 3

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).

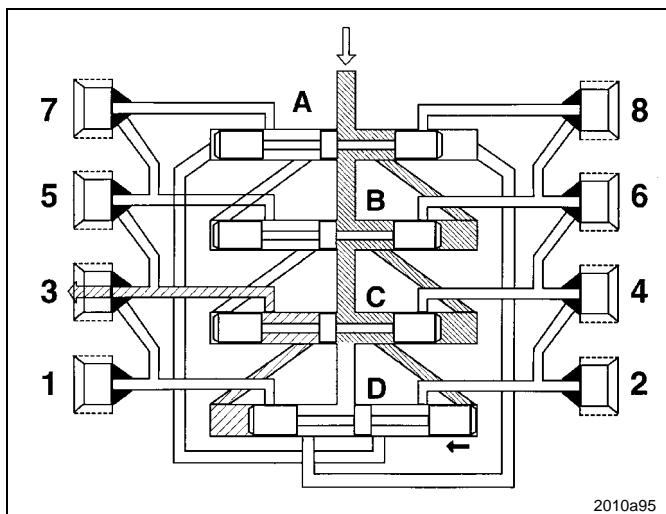
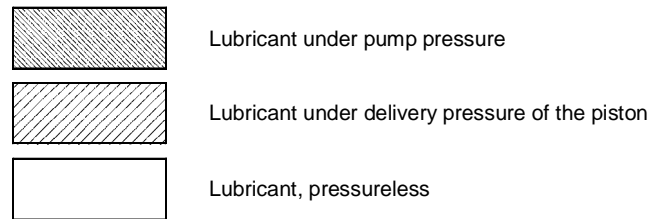


Fig. 20 Phase 4

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).

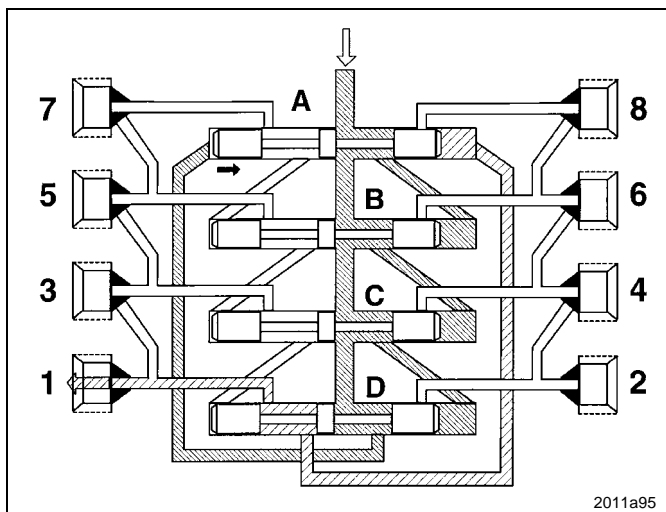
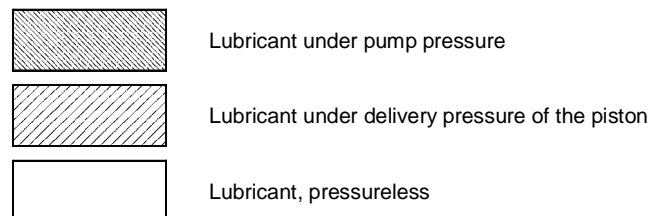
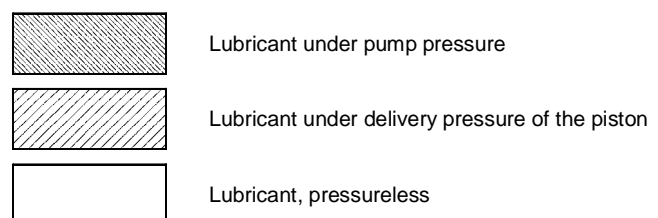


Fig. 21 Phase 5

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.



Subject to modifications

Operation, continuation

Monitoring of the Operation

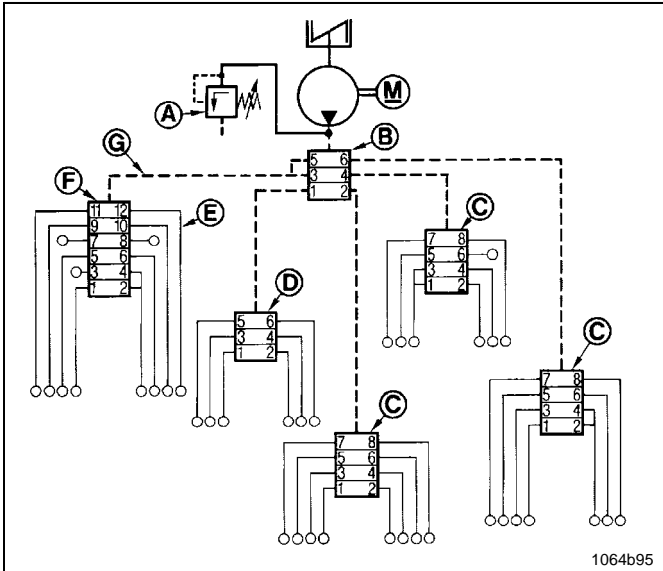


Fig. 22 Example of a lubrication system

System-dependent monitoring

- The main metering device (B, Fig. 23) and the secondary metering devices are connected by a high-pressure 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.

- | | |
|-------------------------------------|--------------------------------------|
| A - pressure relief valve | B - Main metering device SSV 6 |
| C - Secondary metering device SSV 8 | D - Secondary metering device SSV 6 |
| E - Pressure plastic tube | F - Secondary metering device SSV 12 |
| | G - High pressure plastic hose |

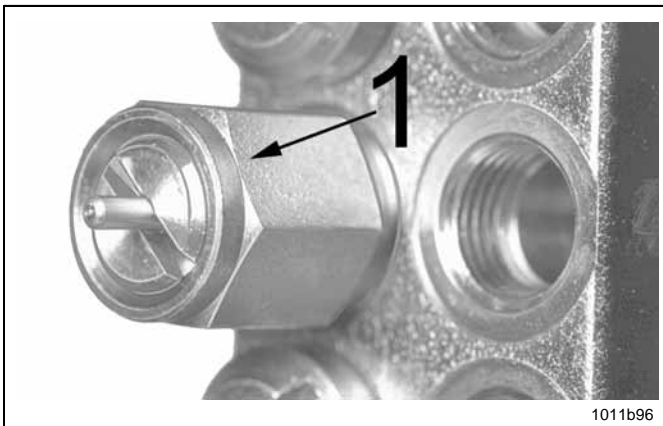


Fig. 23 Indicator pin installed on metering device

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.



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NOTE

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

Components of the control pin tube fitting

Closure plug M 11x1x5 MS, assy. (pos. 1) 519-32123-1

Operation, continuation

Monitoring of the Operation, continuation

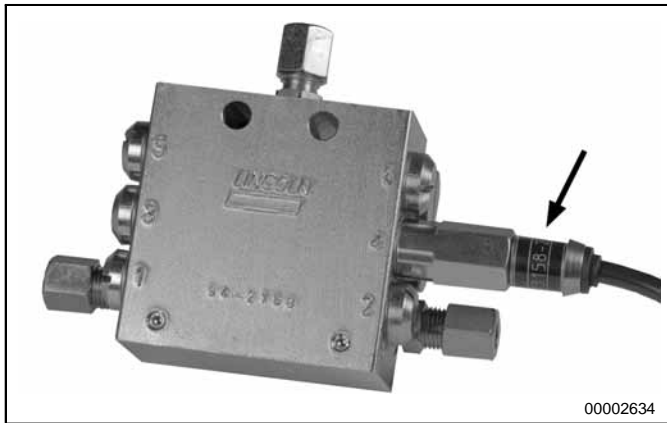


Fig. 24 Piston detector installed on the metering device

Electrical monitoring (microprocessor control)

- A **piston detector** (initiator) which has been installed on a metering device instead of a piston closure plug (M 11 x 1) 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.



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NOTE

*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 Catalogue.*

- 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.

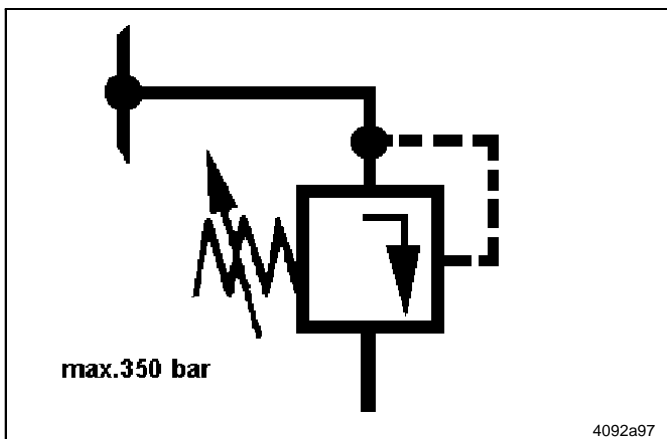


Fig. 25 Pressure relief valve

Pressure relief valve

- 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.



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IMPORTANT

*In the case of the progressive metering devices models SSV 6 - 22 the **outlets 1 and/or 2 must never be closed**, otherwise the system would block owing to the structure of the metering device.*

Operation, continuation

Determining the Lubricant Output by Combining Outlets

Tube Fittings, Screw-Type

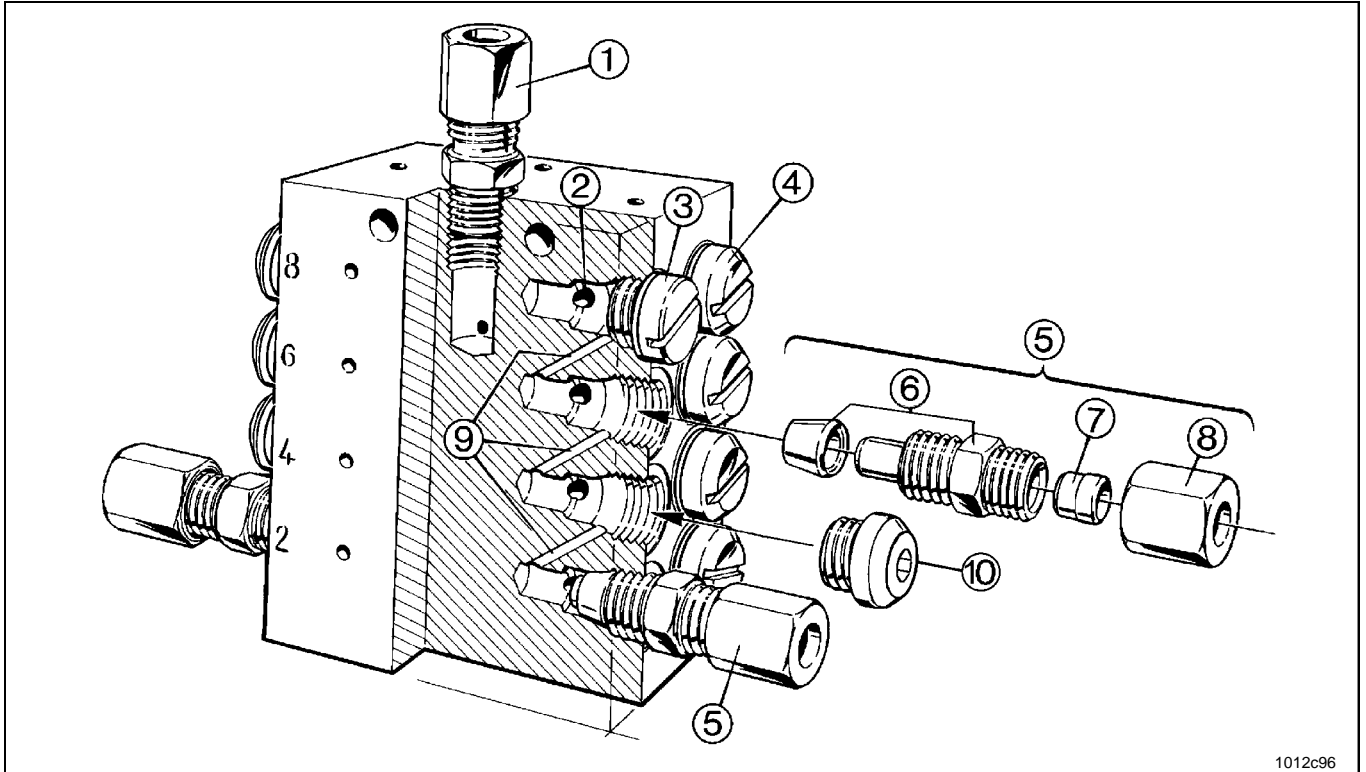


Fig. 26 Install the outlet fittings and closure plugs in accordance with the dosage

- | | | |
|--|--|---|
| 1 - Inlet fitting | 4 - Closure plug (M 11 x 1), piston (with chamfered) | 8 - Coupling nut |
| 2 - Delivery hole of the piston | 5 - Outlet fitting assembly | 9 - Junction channel |
| 3 - Closure plug, installed with copper washer | 6 - Valve body with clamping ring (brass) | 10 - New closure plug with hex. socket head, replacement for pos. 3 |
| | 7 - Cutting ring | |

- The output quantities can be raised by closing outlet boreholes.
- Install an outlet fitting assembly 5 (M 10x1) in each outlet borehole which will be used. Refer to Fig. 26, 27, 28.
- **Never remove closure plug 4** (M 11x1 chamfered) on the piston side or remove it only for installing a piston detector.



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NOTE

Never use closure plug 3 (M 10 x 1, Fig. 20, 21) as a piston closure plug 4 (G 1/8) on older models of metering devices.

IMPORTANT

Always use valve body (Fig. 26) in conjunction with clamping ring.

- Clamping ring (Fig. 26) closes the junction channels 9 to the other outlet channels.



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NOTE

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

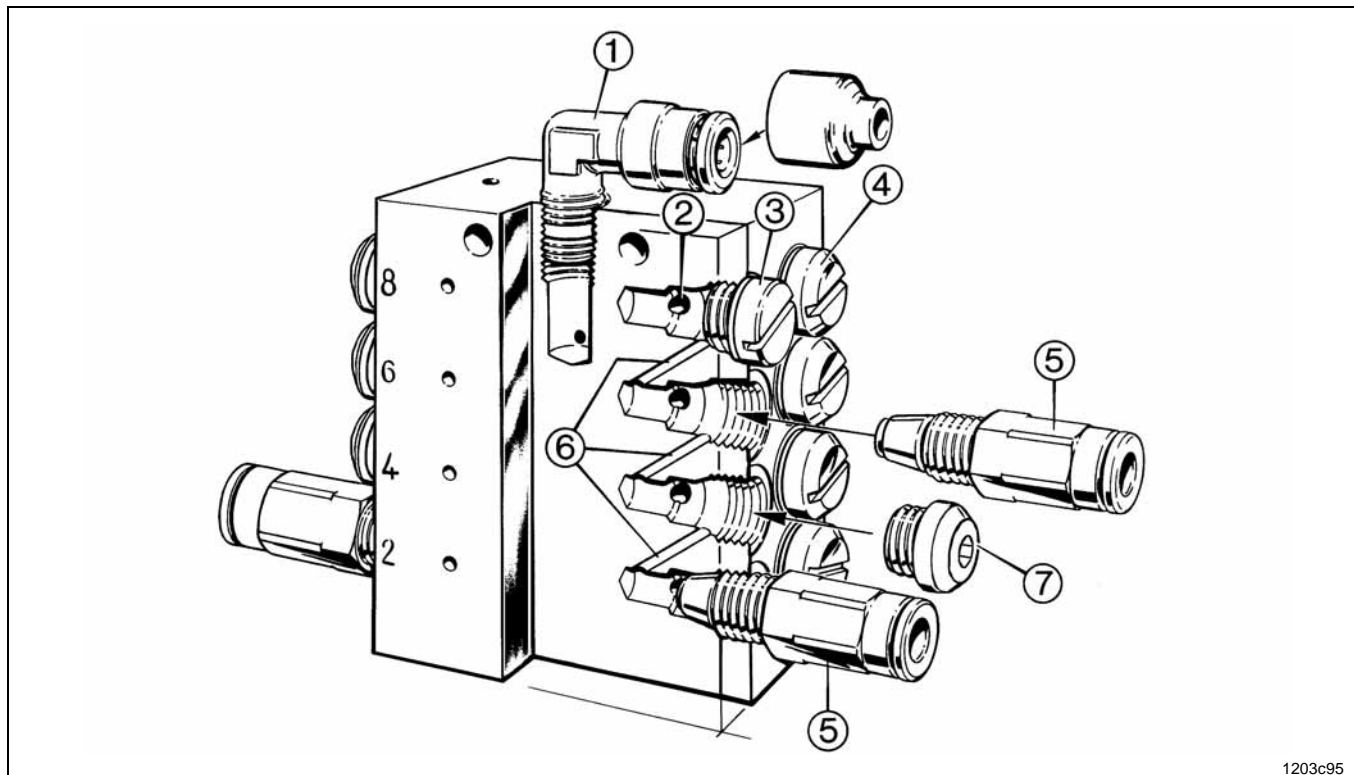
IMPORTANT

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

Operation, continuation

Determining the Lubricant Output by Combining Outlets , continuation

Tube Fittings, Push-in-Type (main metering device)



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Fig. 27 Install the push-in type outlet fittings and the closure plugs in accordance with the dosage

- | | | |
|---|--|---|
| 1 - Inlet fitting (optionally with protective cap ¹⁾) | 3 - Closure plug with copper washer installed in outlet borehole | 6 - Junction channels |
| 2 - Delivery borehole of the piston | 4 - Closure plug (M 11x1), piston, (chamfered) | 7 - New closure plug with hex. socket head and sealing edge, outlet borehole replacement for pos. 3 |
| ¹⁾ on demand | 5 - Valve body assembly (with reinforced collar) | |



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NOTE

In the case of construction, machines or agricultural machines use high-pressure hoses for the lubricant feed lines. In this case, secondary metering devices (see Fig. 26, page 17) must also be equipped with check valves with reinforced collet.

Operation, continuation

Determining the Lubricant Output by Combining Outlets, continuation

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

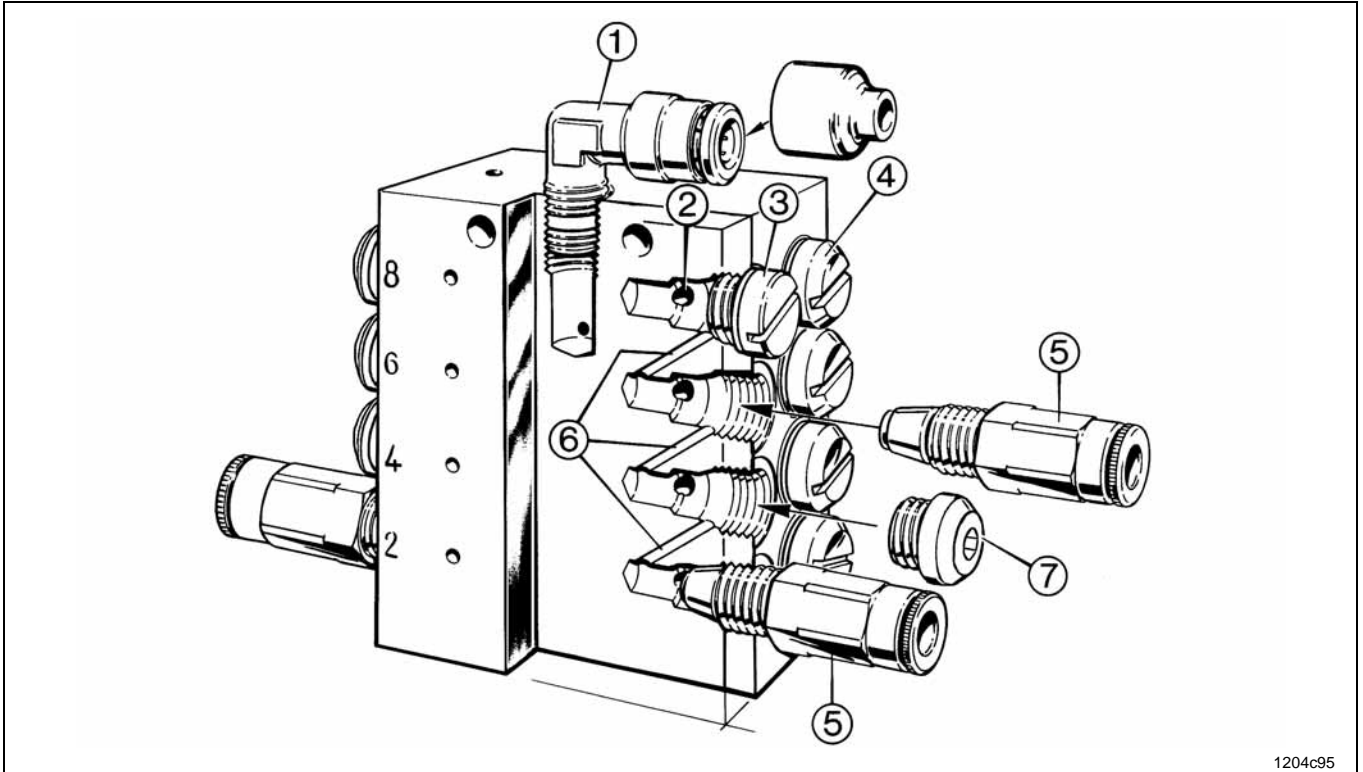


Fig. 28 Install the push-in type outlets fittings and closure plugs in accordance with the dosage

- | | | |
|-------------------------------------|--|--|
| 1 - Inlet fitting | 3 - Closure plug installed in outlet borehole with copper washer | 6 - Junction channels |
| 2 - Delivery borehole of the piston | 4 - Closure plug (M11x1), piston (chamfered) | 7 - New closure plug with hex. socket head and sealing edge, outlet borehole, replacement for pos. 3 |
| | 5 - Valve body assembly (with knurled collar) | |

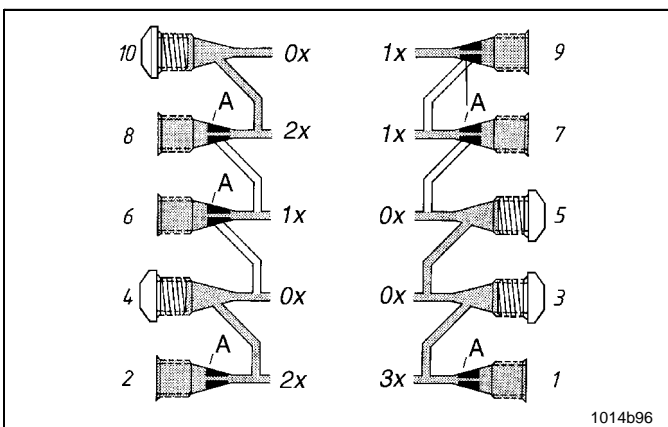


Fig. 29 Single, double and triple lubricant output

- ... x - Outlet quantity (1x: single, 2x: double, etc.)
1 .. 10 - Outlet numbers
A - Clamping ring (brass)

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 on SSV and 0.07 cm³ on SSV M.**

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. 29, 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. 29.

Planning and Layout

Instructions for Quicklub Progressive Systems

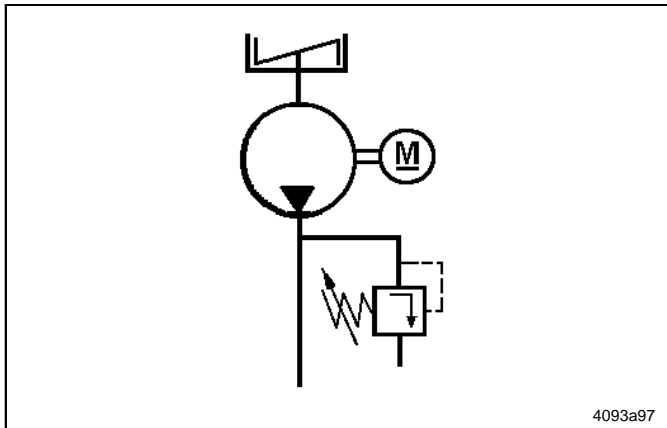


Fig. 30 Selecting the pumps

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 pump model 203 or 4-l, 8-l, 10-l or 30-l pump model 215)
- Adhere to the supply voltage of the drive motor.
- Select the printed circuit board or timer in accordance with the application. Note the application possibilities for the metering device monitoring.
- Protect the pump with an according pressure relief valve (see Parts Catalogue).

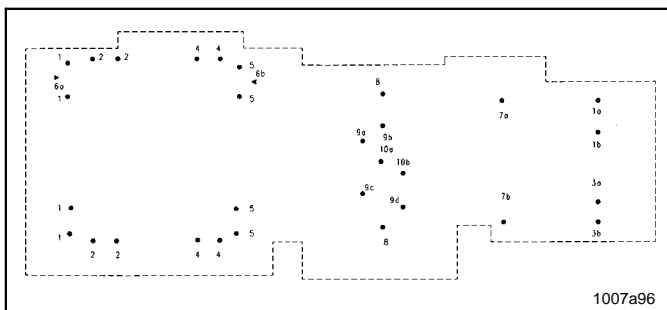


Fig. 31 Determining the number of lubrication points

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.

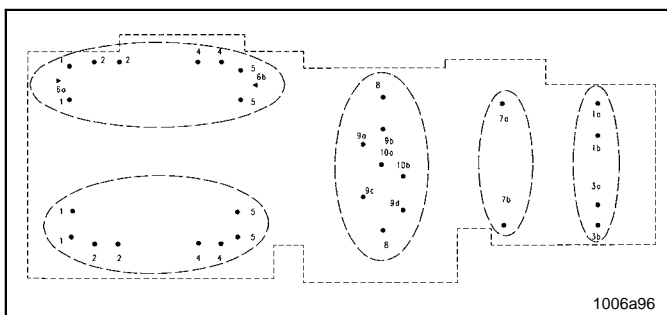


Fig. 32 Combining the lubrication points into groups

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.

Planning and Layout, continuation

Instructions for Quickclub Progressive Systems, continuation

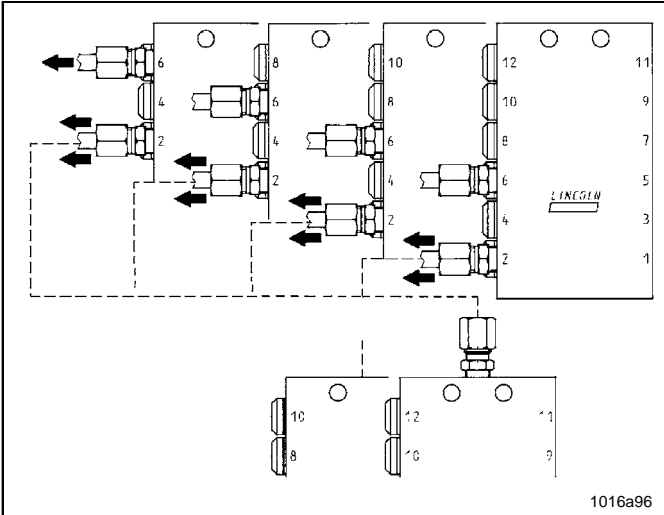


Fig. 33 Adapting the lubricant quantities

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.

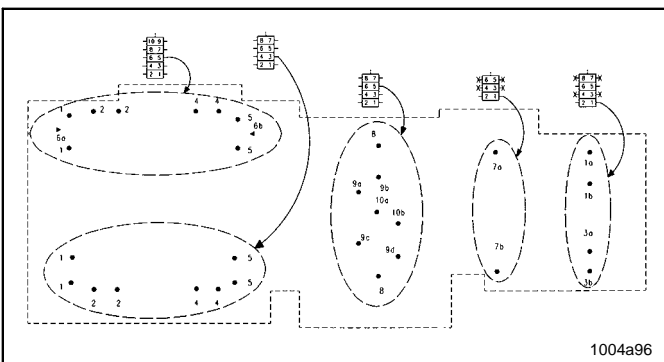


Fig. 34 Allocating the metering devices

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 special cases up to 22 outlets are possible.



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NOTE

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

- 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.

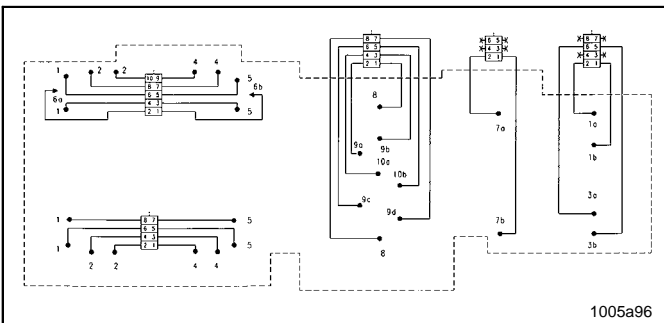


Fig. 35 Connecting the metering device to the lubrication points

6. Connecting the metering device outlets with the lubrication points to be connected



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CAUTION!

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.

Planning and Layout, continuation

Instructions for Quickclub Progressive Systems, continuation

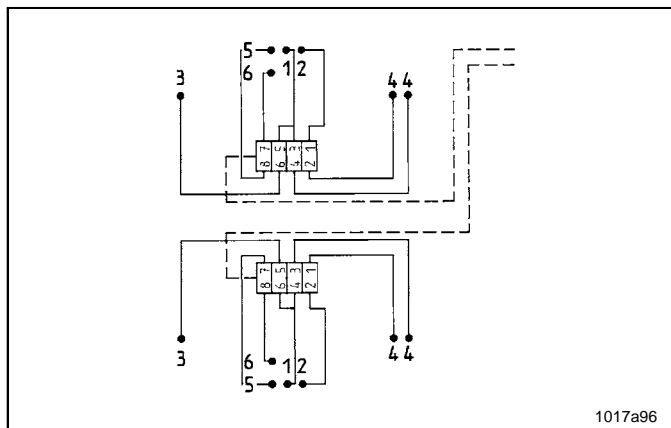


Fig. 36 Allocating the lubrication points

- 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. 36, 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.

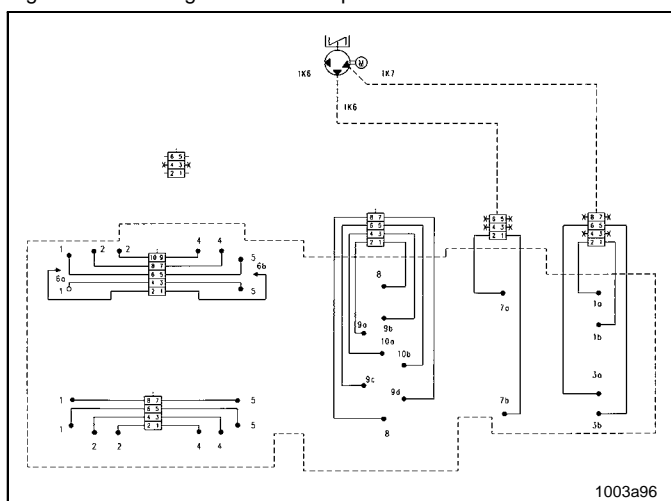


Fig. 37 Determining the size of the main metering device

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. 37.
- If necessary, modify the allocation of the lubrication points.
- Maximum size of the main metering device: SSV 12



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NOTE

In special cases, also bigger SSV dividers (up to 22 outlets) may be used as main dividers.

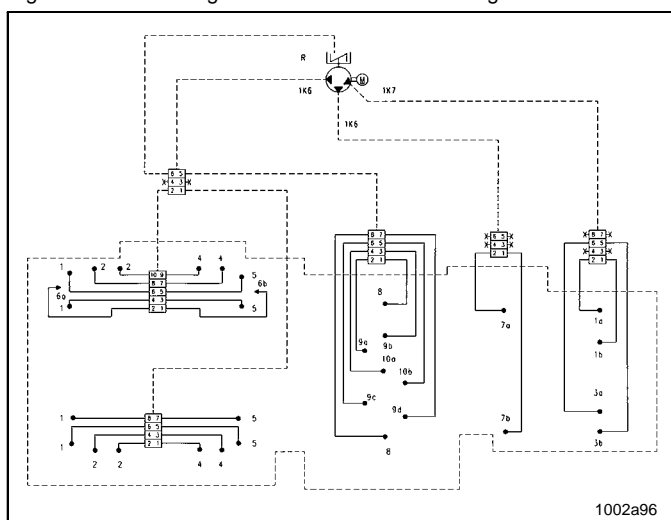


Fig. 38 Divided lubricant quantity

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. 38. Also see the calculation example in Fig. 39.
- Connect the outlets of the main metering device which are not used to the pump via a return line R.

Planning and Layout, continuation

Instructions for Quickclub Progressive Systems, continuation

9. Lubricant output of the pumps 203* and 205**

- at 100 bar backpressure
- at 20°C
- at 24 V rated voltage *

Pump element K5..... **2 cm³/min***; **0.10 cm³/stroke****

Pump element K6..... **2.8 cm³/min***; **0.15 cm³/stroke****

Pump element K7..... **4 cm³/min***; **0.22 cm³/stroke****

Adjustable pump element K7 **0.04 - 0.18 cm³/stroke* ****

Lubricant output of the pump 215

• Max. number of outlets.....15

Lubricant output per piston stroke:

Pump element piston dia. 6 mm **0.10 cm³**

Pump element piston dia. 7 mm **0.23 cm³**

Adjusting range..... **25% to 100%**

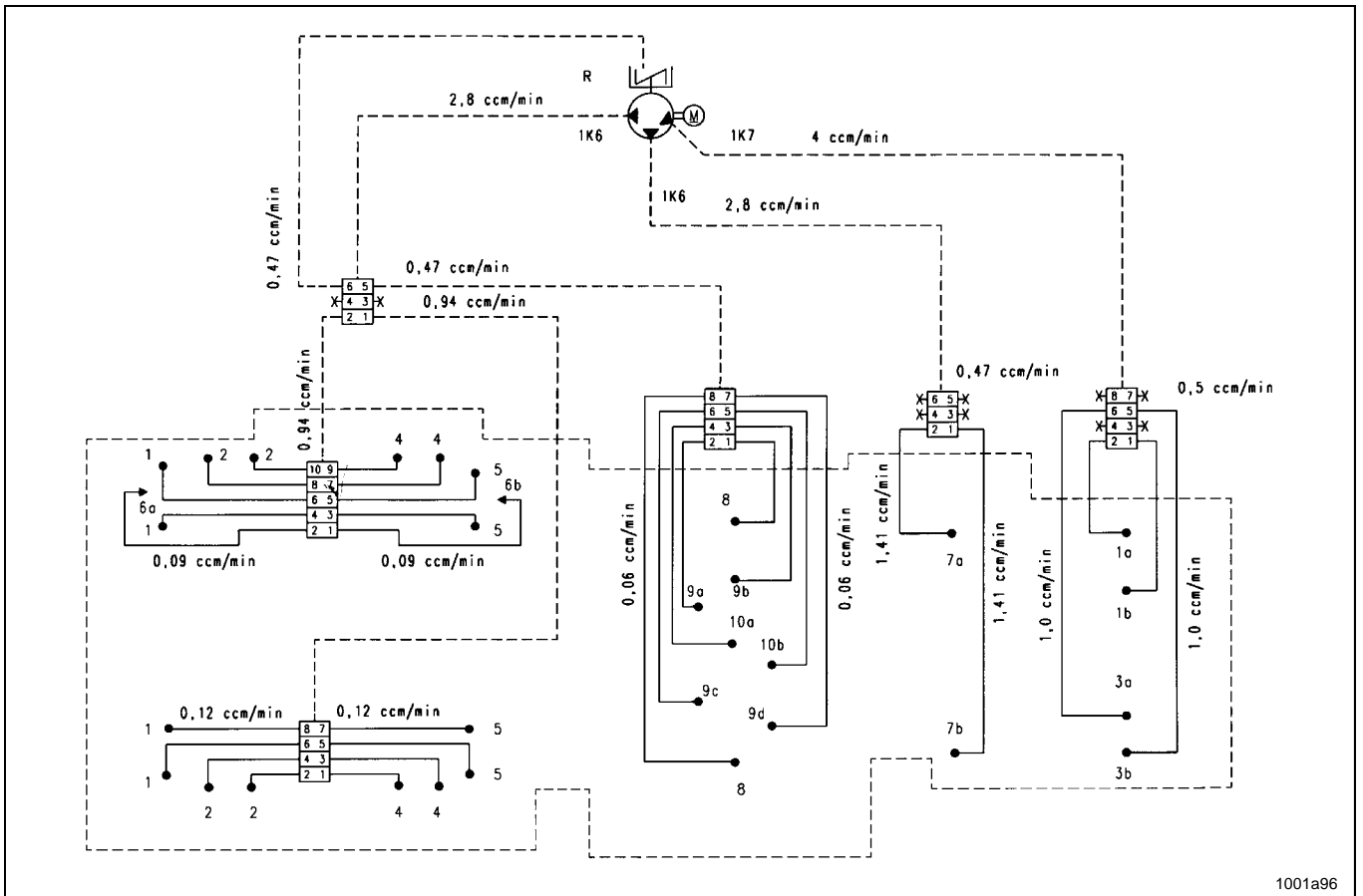


Fig. 39 Dividing the lubricant quantity - Calculation example

Planning and Layout, continuation

Instructions for Quicklub Progressive Systems, continuation

10. Adjusting the running time (lubricating 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**.
- For the running time of a system select the time for the biggest secondary metering device, as a function of the main metering device used.
- If the time mentioned below cannot be preselected, take the next larger time value.

Required minimum running times (pump element K6)								
Main metering device	SSV 6		SSV 8		SSV 10		SSV 12	
Lubricant output of the main metering device	Single	Double	Single	Double	Single	Double	Single	Double
Secondary metering device								
SSV 6	3 min		4 min		5 min		6 min	
SSV 8	4 min		5,5 min		6,5 min		8 min	
SSV 10	5 min	2,5 min	6,5 min	3,5 min	8,5 min	4,5 min	10 min	5 min
SSV 12	6 min	3 min	8 min	4 min	10 min	5 min	12 min	6 min

- During the lubricating 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.

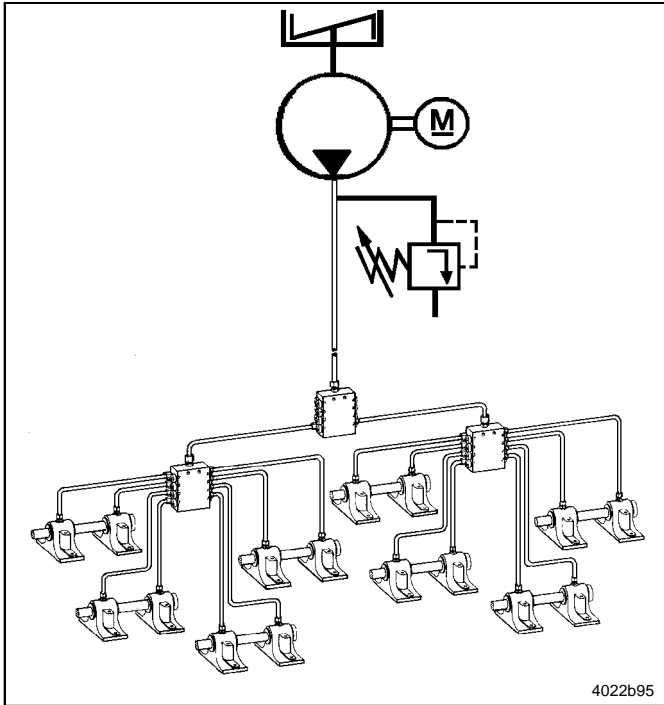
It is **important** to take care that the lubricant is renewed or topped up within a predetermined time of application of the machine or vehicle so that there is no damage to the bearings.

If **normal or larger bearings** are connected to the secondary metering devices model SSV 10 or SSV 12 or up to SSV 22, these metering devices must receive **the double or multiple quantity**.

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

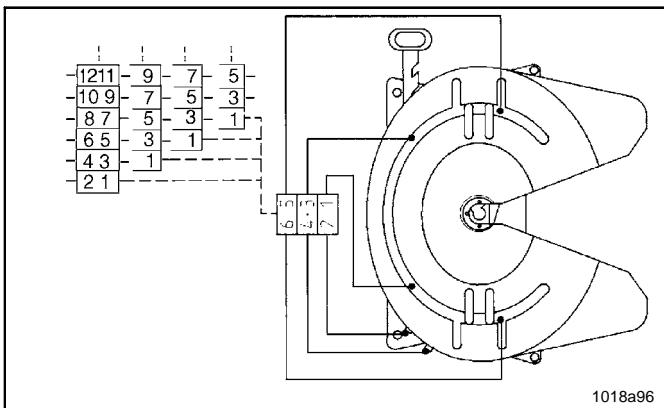
Planning and Layout, continuation

Instructions for Quickclub Progressive Systems, continuation



11. Connecting machine bearings

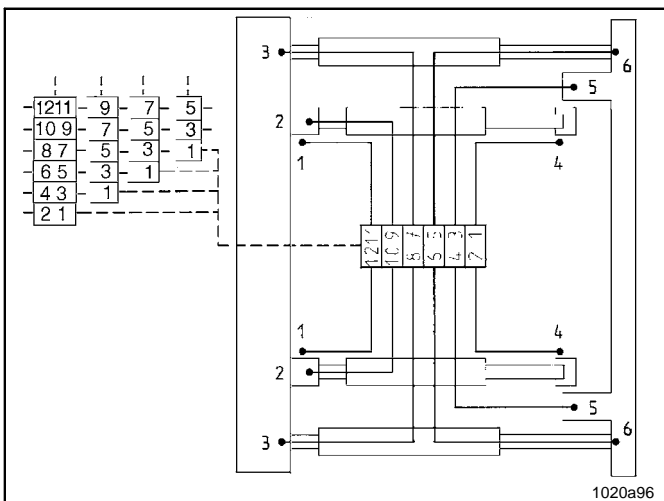
Fig. 40 Example of connection for machine bearings



12. Connecting a fifth-wheel

- Fifth-wheels must be supplied from the main metering device with a **double quantity**.

Fig. 41 Fifth-wheel with 6 lubrication points



13. Connecting a liftgate

Fig. 42 Liftgate with 12 lubrication points

Subject to modifications

Planning and Layout, continuation

Instructions for Quicklub Progressive Systems, continuation

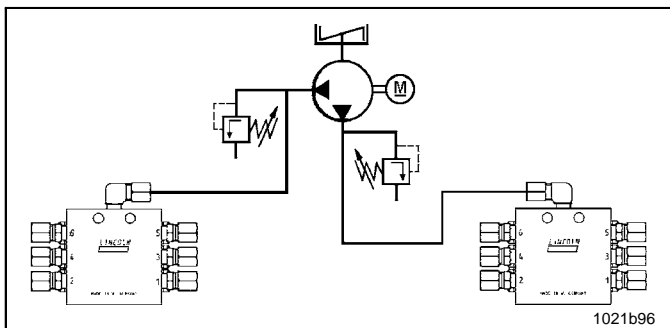


Fig. 43 System using two pump elements

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.



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IMPORTANT

Each pump element must be equipped with a pressure relief valve.

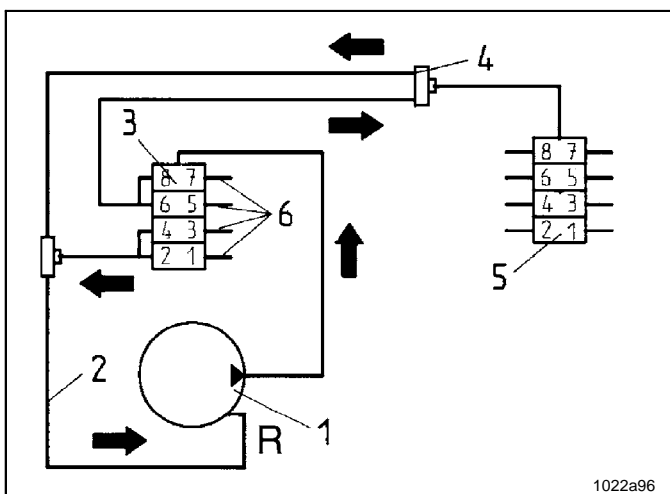


Fig. 44 Using a quick coupling with integrated return line

15. Using quick coupling 504-36804-1

- For detachable bodies, e.G. loading cranes use a detachable quick coupling with integrated return line.



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NOTE

*If instead of the quick coupling a simple coupling (**to be coupled under pressure**) is used, after disconnecting the body the feed line must be connected to a **return line** to the pump as otherwise **the system will block**.*

- 1 - Pump
- 2 - Return line
- 3 - Progressive metering device (main)
- 4 - Clutch
- 5 - Progressive metering device (secondary)
- 6 - Lines to the secondary metering device

Planning and Layout, continuation

Instructions for Quickclub Progressive Systems, continuation

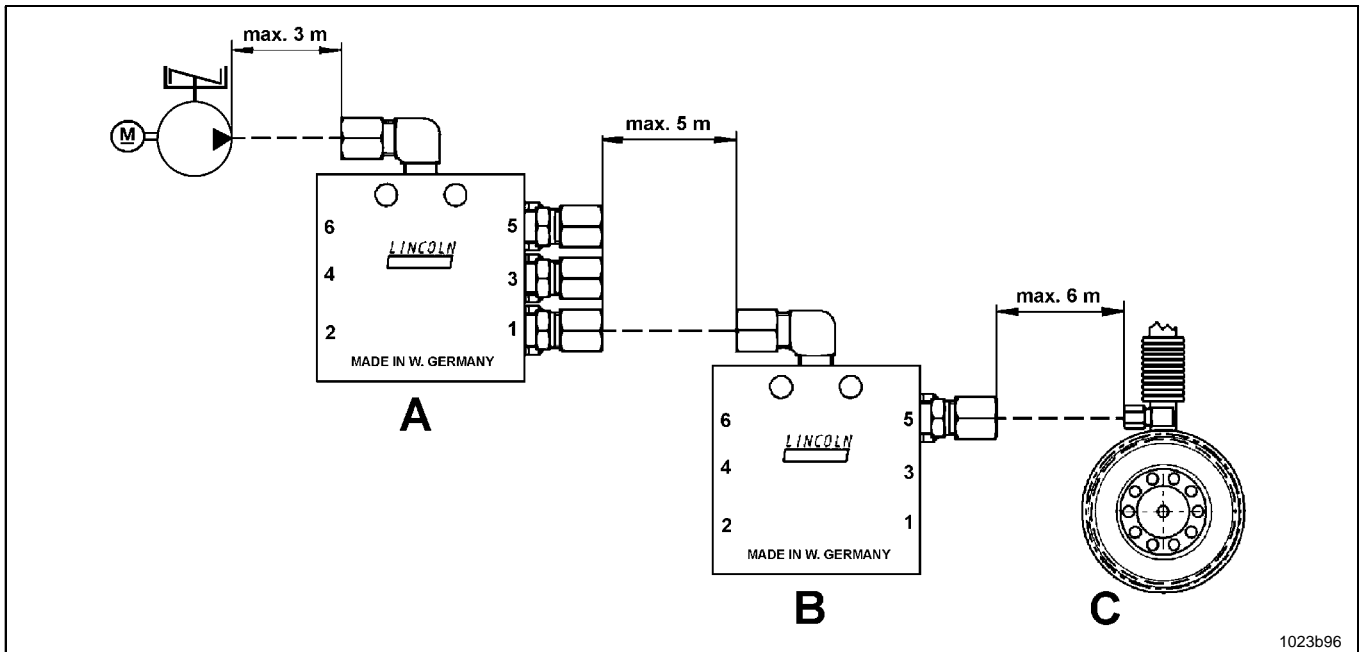
16. Maximum Line Lengths



IMPORTANT

The lubricant division should be made only via 2 steps of metering devices, i.e. **main metering device - secondary metering device - lubrication point.**

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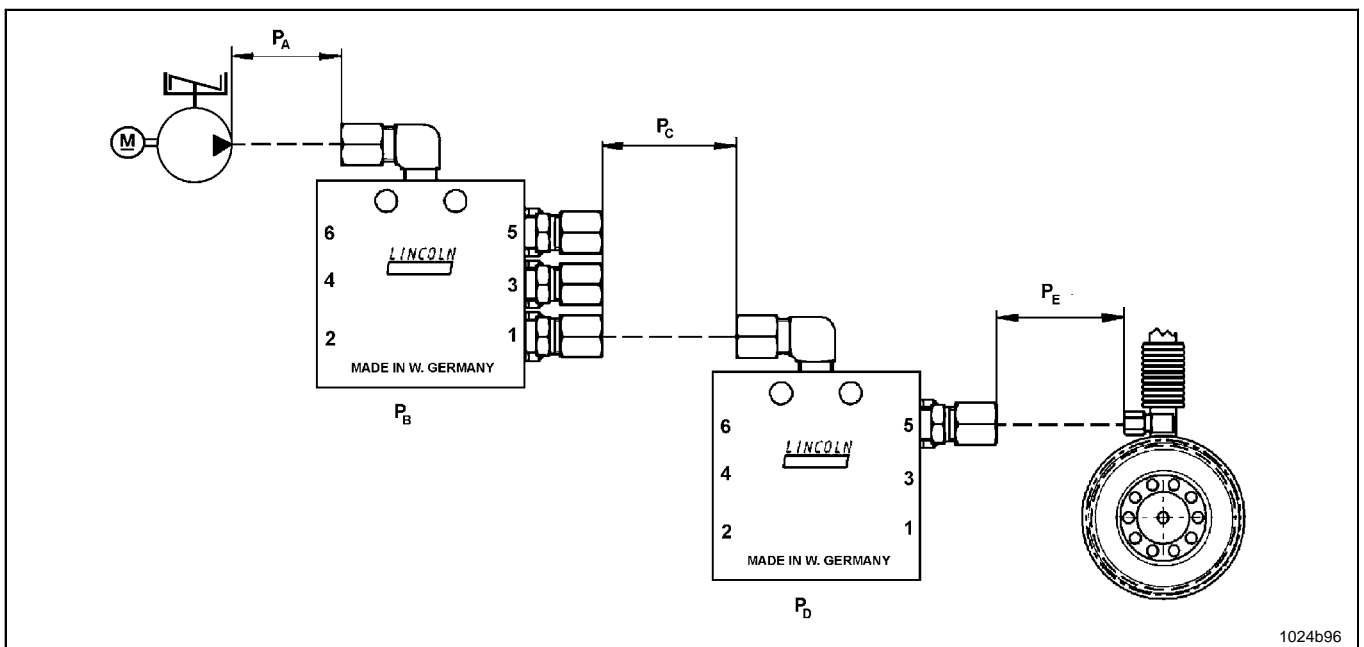
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Fig. 45 Maximum line lengths

A - Main metering device
C - Lubrication point

B - Secondary metering device

17. Pressure losses



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Fig. 46 Pressure losses in the metering devices or tube lines

P_A - Pressure loss, high pressure hose
P_D - Pressure loss, secondary metering device

P_B - Pressure loss, main metering device
P_E - Pressure loss, lubricant feed line

P_C - Pressure loss, high pressure hose between main and secondary metering device

Subject to modifications

Planning and Layout, continuation

Instructions for Quicklub Progressive Systems, continuation

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.

	Maximum pressure loss with tube 6x1,5 mm (NW 3 mm)		
Lubricant penetration class			
Temperatur	0° C	15° C	25° C
NLGI 0	5 bar/m	4 bar/m	2,5 bar/m
NLGI 1	8 bar/m	7 bar/m	5 bar/m
NLGI 2	12 bar/m	8 bar/m	6 bar/m
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



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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.

Troubleshooting

Fault: Blockage in the downstream progressive system

Cause:

- Bearing, lines or metering device clogged.
- In the case of the metering devices SSV 6 through 22 the outlet boreholes 1 and/or 2 are closed. In the case of the assembled 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 pressure relief 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

Correction:

- ➔ Find out which is the cause of the blockage and rectify it in accordance with the following example:
- ➔ Allow pump to run (see "To trigger an additional lubrication cycle").
- ➔ Loosen all high pressure hose connections G one after the other from the main metering device (B, Fig. 47) 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.



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NOTE

If there is a blockage in the downstream system, the main lines are under pressure. In such a case, it is difficult to detach the push-in type connecting parts of the main line. Relieve the system by removing the closure plug on the push-in type pressure relief valve or, if any, by removing the filling nipple.

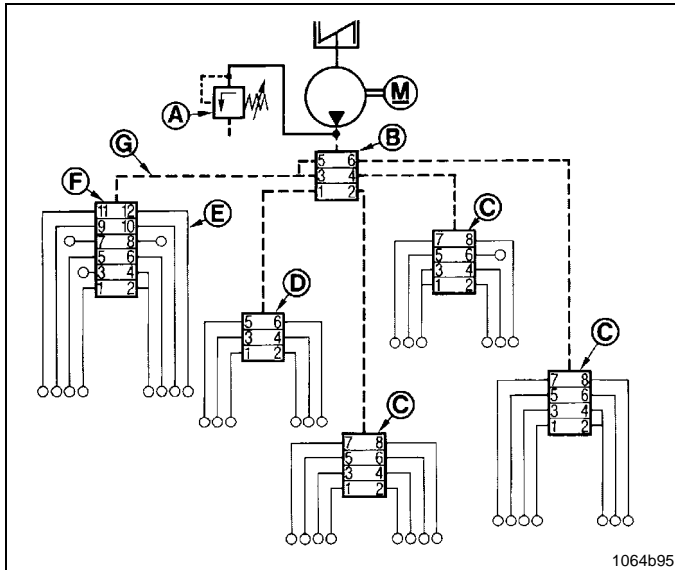


Fig. 47 Example of a lubrication system

- | | |
|-------------------------------------|--------------------------------------|
| A - pressure relief valve | B - Main metering device |
| C - Secondary metering device SSV 8 | D - Secondary metering device SSV 6 |
| E - Pressure plastic tubes | F - Secondary metering device SSV 12 |
| | G - High-pressure plastic hose |

- ➔ 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.



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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 pressure relief valve A. Replace it, if necessary.

Tab. 1 Troubleshooting

Troubleshooting, continuation

Fault: Blockage in the downstream progressive system, continuation

Cause:

- Metering device blocked

Correction:

- 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 (\varnothing smaller than 6 mm; 0.24 in.).



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IMPORTANT

he 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 (\varnothing 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

Cause:

- Lubricant metering not correct
- Respective valve body has been assembled without clamping ring
- Setting of the pause time or lubricating time incorrect

Correction:

- 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

Cause:

- Setting of the lubricating time or pause time incorrect

Correction:

- Check the time setting at the printed circuit boards. Refer to the corresponding setting in the respective "Operating Instructions".

Tab. 1 Troubleshooting, continuation

Technical Data

Metering Devices

Metering Device Model SSV

Lubricant output per outlet and per stroke	0.2cm ³
Max. operating pressure.....	350 bar
Min. operating pressure.....	20 bar
Max.differential pressure between two outlets.....	100 bar
Outlet connection for tube	Ø 4 and 6mm
Inlet connection	G 1/8
Outlet connection	M 10x1
Operating temperature	- 25° C to 70°C

Metering Device Model SSV M

Lubricant output per outlet and per stroke	0.07cm ³
Max. operating pressure.....	200 bar
Min. operating pressure.....	20 bar
Max.differential pressure between two outlets.....	40 bar
Outlet connection for tube	Ø 4mm
Inlet connection	G 1/8
Outlet connection	M 8x1
Operating temperature	- 25° C to 70°C

Tightening torques

Metering Device Model SSV

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
Control pin in metering device	12 Nm
Piston detecteur in metering device	12 Nm
KN - switch on metering device	12 Nm
Install metering device.....	10 Nm
- dry	10 Nm
- oiled	7,5 Nm

Lines

High-pressure hose (Ø 4.1 x 2.3 mm)

Min. bursting pressure (in connection with hose clamp, screwed)	600 bar
Min. bending radius.	35 mm
Min. temperature.....	- 40° C

Pressure plastic hose (Ø 6 x 1.5 mm)

Min. bending radius.....	50 mm
Bursting pressure at 20° C	approx. 210 bar
Min. temperature.....	- 40° C

Screw-Type and Push-inType 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

Metering Device Model SSV M

Closure plug (piston) in metering device.....	6 Nm
Closure plug (outlets) in metering device.....	6 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 outlet fitting, screw-type	
- plastic tube.....	5 Nm
- steel tube	10 Nm
Control pin in metering device.....	10 Nm
Install metering device	
- dry	6 Nm
- oiled	4,5 Nm

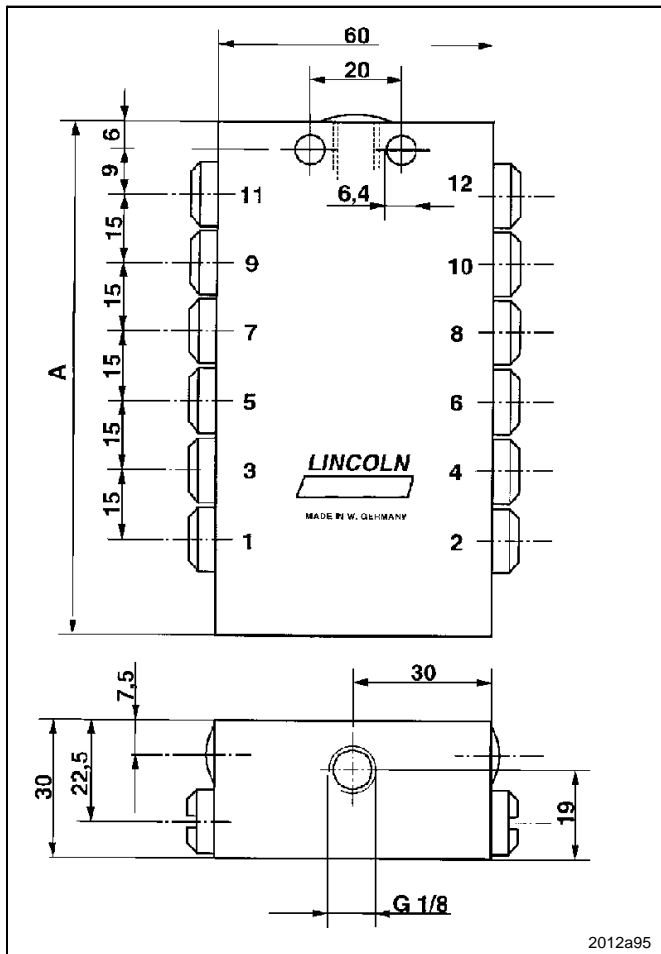
Metering device type SSV M flange

Install metering device	6 Nm
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Technical Data, continuation

Dimensions

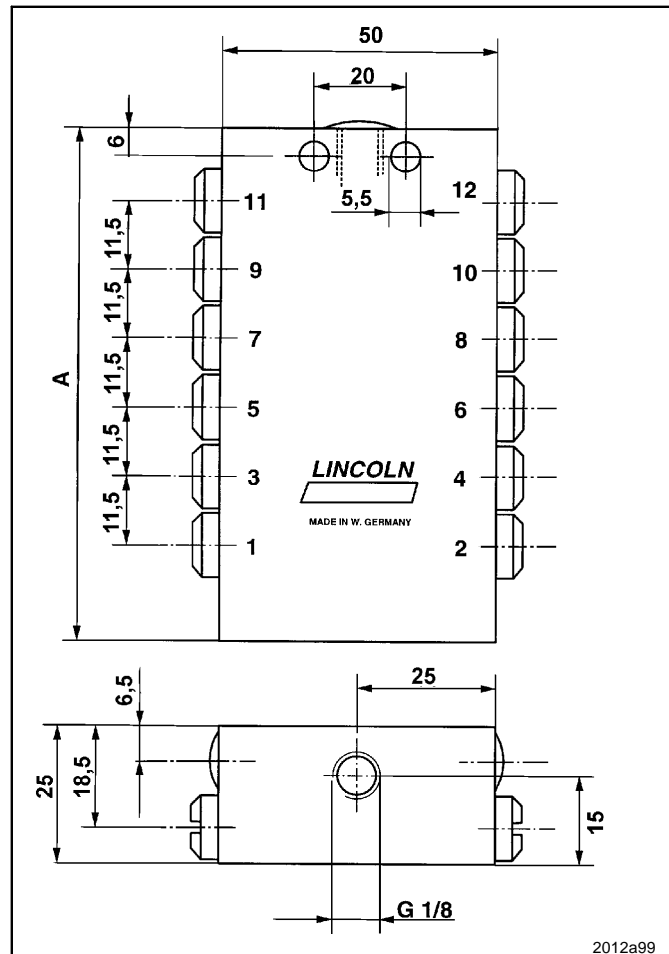
Metering Devices Model SSV 6 to SSV 22



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Fig. 48 Metering Devices Model SSV 6 to SSV 22

Metering Devices Model SSV M 6 to SSV M 12



2012a99

Fig. 49 Metering Devices Model SSV M 6 to SSV M 12

Model SSV	Dimensions A in mm
6	60
8	75
10	90
12	105
14	120
16	135
18	150
20	165
22	180

Model SSV	Dimensions A in mm
6	48,5
8	60
10	71,5
12	83

Lincoln List of Lubricants



6001a02

IMPORTANT

Absolute cleanliness is essential when handling lubricants. Impurities will remain suspended in the lubricant and cannot settle. This will result in damage to the lubrication system and thus to the bearing.

The Quicklub pump can dispense commercial greases up to NLGI grade 2 or mineral oils of at least 40 mm²/s (cST) at operating temperature.

The **proven lubricants** (see following tables) have been tested by us with regard to their transportability and bleeding behavior. We can recommend them for an application up to the indicated **minimum delivery temperature** in Quicklub lubrication systems by Lincoln & Co. KG. During the tests these lubricants did not cause any damage due to incompatibility with the material used by us. The composition of the lubricants, their behavior during the transport and their compatibility with other material are not known to us.

The **lubricants we recommend** on the basis of the manufacturer's data sheet (see following tables) can be used in our lubrication systems up to the indicated **minimum delivery temperature**.



6001a02

IMPORTANT

Use lubricants with solid matter additives only after having consulted the manufacturer of the system!

Lubricant recipes may change. In case of doubt, send your request for more information to the manufacturer of the centralized lubrication system. This refers in particular to lubricants with more than 3% graphite that are transportable in lubrication systems only conditionally.

The lubricants released by us have not been tested with regard to their long-term behavior.



6001a02

IMPORTANT

The manufacturer of the centralized lubrication system can accept no liability for:

- damages due to the use of greases that are not or only conditionally transportable in centralized lubrication systems.
- damages on parts of the centralized lubrication system caused by chemical or biological changes of the lubricant used.
- damages due to the incompatibility with other materials.

The liability is limited to transportable lubricants in centralized lubrication systems.

Proven lubricants

Manufacturer	Designation	Thickener	Min. delivery temperature
AGIP AUTOL	Universal grease	Li-12-OH-stearat	-15 °C
ARAL	Long-term grease H	Li-12-OH-stearat	-15 °C
AUTOL	Top 2000	Ca-complex	-10 °C
AUTOL	Top 2000 W	Ca-complex	-20 °C
BP	C1 Multipurpose grease	Ca	-20 °C
BOSCH-REXROTH	Dynalub 510	Li	-15 °C
BOSCH-REXROTH	Dynalub 520	Li	-20 °C
ELKALUB	GLS 135/N2	Li	-15 °C
FUCHS-LUBRITECH	Stabil Eco EP2	Li/Ca	-25 °C
FUCHS	Renocal FN 745	Ca-12-OH-stearat	-25 °C
FUCHS	Renocal FN3	Ca	-20 °C
FUCHS	Renolit LZR 2 H	Li	-20 °C
FUCHS	Renolit HLT 2	Li	-25 °C
MOBIL	Mobilith SHC 100	Li-complex	-25 °C
MOLYKOTE	TTF 52	inorganic thickener	-30 °C
OPTIMOL	Longtime PD 2	Li-12-OH-stearat	-20 °C
OPTIMOL	Olit CLS	Li/Ca	-15 °C
RHENUS	Norlith KSP 2	Li + Li-12-OH-stearat	-15 °C
RHENUS	Norlith MZN 2	Li	-15 °C
SHELL	Retinax EPL 2	Li-12-OH-stearat	-10 °C
SHELL	Retinax CSZ	Li/Ca	-35 °C
WESTFALEN	Gresalit ZSA 2	Li-12-OH-stearat	-15 °C

Subject to modifications

Lincoln List of Lubricants, continuation



IMPORTANT

Use lubricants with solid matter additives only after having consulted the manufacturer of the system!

6001a02

Lubricant recommendations based on the manufacturer's data sheet

Manufacturer	Designation	Thickener	Min. delivery temperature
AGIP	F1 Grease 24	Ca	-15 °C
ARAL	Multipurpose grease	Li-12-OH-stearat	-15 °C
ARAL	Multipurpose grease ZS 1/2	Li/Ca	-20 °C
AVIA	Avialith 2 EP	Li-12-OH-stearat	-15 °C
BP	Energrease LC 2	Li-complex	-15 to -10 °C
BP	Energrease MP-MG 2	Ca-complex	-5 °C
CASTROL / TRIBOL	Molub Alloy 6780	Li-12-OH-stearat	-30 to -25 °C
CASTROL	CLS - Grease	Li/Ca	-25 °C
CASTROL	Olista Longtime 2	Li	-20 °C
CASTROL	Optimol Olit 2 EP	Li	-20 °C
DEA	Glissando 20	Li-12-OH-stearat	-15 to -10 °C
ESSO	Ronex Extra Duty 2	Li-complex	5 °C
ESSO	Ronex MP2	Li-complex	-5 °C
ESSO	Beacon EP2	Li	-5 °C
ESSO	Cazar K2	Ca	-15 °C
FIAT LUBRIFICANTI	Comar 2	Li	-25 °C
KLÜBER	Centoplex 1 DL	Li/Ca	-20 °C
KLÜBER	Isoflex NBU 15	Ba	-25 °C
KLÜBER	Klüberplex BEM 34-132	Ca-complex	-20 °C
KLUEBER	Klüberplex BEM 41-141	Li-complex	-25 °C
KLÜBER	Petamo GHY 133 N	Polycarbamide	-15 °C
MOBIL	Mobilgrease XHP 221	Li-complex	-10 °C
MOBIL	Mobilgrease XHP 461	Li-complex	-10 °C
MOBIL	Mobilgrease XHP 222	Li-complex	-5 °C
MOBIL	Mobilith SHC 220	Li-complex	-20 °C
SHELL	Alvania EP(LF) 1	Li-12-OH-stearat	-15°C +/- 5°C
SHELL	Alvania EP(LF) 2	Li-12-OH-stearat	-10°C +/- 5°C
SHELL	Alvania RL2	Li-12-OH-stearat	-15°C +/- 5°C
SHELL	Malleus GL	Gel	GL205 -20 °C, GL300 -10 °C GL400 0 °C, GL500 +5 °C
SHELL	Retinax CS	Li	-20 °C
SHELL	Retinax LX 2	Li	-5°C +/- 5°C
SHELL	Retinax HDX 2	Li/Ca	-10°C +/- 5°C
TEXACO	Premium RB	Li	-20 °C
TOTAL	Ceran AD	Ca-complex	- 15 °C
TOTAL	Ceran LT	Ca-complex	-20 °C
TOTAL	Ceran WR2	Ca-complex	-10 °C
ZELLER & GMELIN	Divinol Lithogrease G 421	Li-complex	-15 °C

Lincoln List of Lubricants, continuation



IMPORTANT

Use lubricants with solid matter additives only after having consulted the manufacturer of the system!

6001a02

Biodegradable lubricants

Proven lubricants:

Manufacturer	Designation	Thickener	min. delivery temperature
ARAL	Aralub BAB EP 2	Li/Ca	-25 °C
BP	Biogrease EP 2	Li/Ca	-25 °C
FUCHS-LUBRITECH	Stabyl ECO EP 2	Li/Ca	-25 °C

Lubricant recommendations based on the manufacturer's data sheet:

Manufacturer	Designation	Thickener	min. delivery temperature
AUTOL	Top Bio 2000	Ca	-25 °C
AVIA	Biogrease 1	Li	up to 0 °C
DEA	Dolon E 2	Li	-15 °C
FUCHS	Plantogel 2 S	Li/Ca	-15 °C
KLÜBER	Klüberbio M72-82	Polycarbamide	-20 °C

Lubricants for the food & beverage industry

Lubricant recommendations based on the manufacturer's data sheet:

Manufacturer	Designation	Thickener	min. delivery temperature
ARAL EURAL	Grease EPF 2	Al-complex	-5 °C
BREMER & LEGUIL	Rivolta F.L.G 4 – 2	Al-complex	-20 °C
ELKALUB	GLS 364	organic thickener	-10 °C
ELKALUB	GLS 367/N2	inorganic thickener	-5 °C
ELKALUB	GLS 380/N1	Al-complex	-10 °C
ELKALUB	GLS 380/N2	Al-complex	-5 °C
FUCHS	Renolit G 7 FG 1	Bentonite	-5 °C
FUCHS-LUBRITECH	Gleitmo 585 M (KTW-drinking water release)	Li	-10 °C
INTERFLON	Fin Food Grease EP	Al-complex	-5 °C
KLUEBER	Paraliq GA 343	Al-complex	-10 °C
KLUEBER	Kluebersynth UH1 14-151	Al-complex	-20 °C
MOBIL	Mobilgrease FM 462	Al-complex	-15 °C
Nordischer Maschinenbau BAADER	Special grease GLS 380/N3	Al-complex	-5 °C
OKS	470	Li-12-OH-stearat	-15 °C
OPTIMOL	Obeen UF 1	Al-complex	-15 °C
OPTIMOL	Obeen UF 2	Al-complex	-10 °C
RHENUS NORPLEX	AFD 2	Al-complex	-5 °C
RHENUS NORPLEX	AFP 2	Al-complex	-5 °C
RHENUS NORPLEX	AFS 2	Al-complex	-25 °C
RHENUS NORPLEX	AFW 2	Al-complex	-5 °C
SHELL	Cassida Grease EPS 1	Al-complex	-15 °C
SHELL	Cassida Grease EPS 2	Al-complex	-10 °C
TOTAL	Lubriplate FGL 2	Al-complex	-5 °C
TRIBOL MOLUB-ALLOY	FoodProof 823-2 FM	Al-complex	-15 °C
TRIBOL MOLUB-ALLOY	9830 high-temperature grease	PTFE	0 °C

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