Mode of Operation

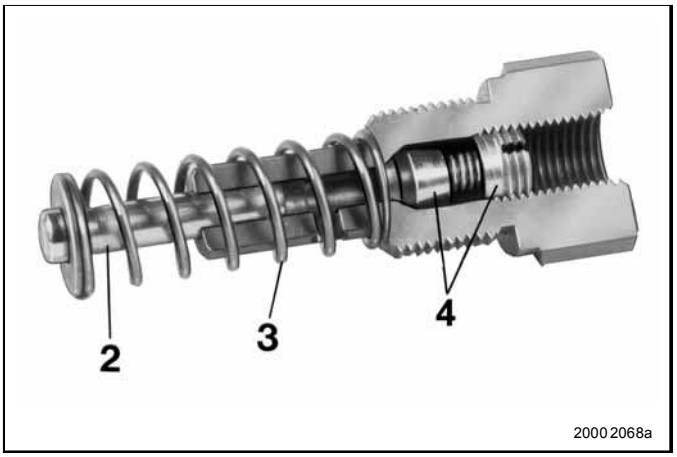

Fig. 2-1 Pump element

2 - Piston
3 - Return spring
4 - Check valve

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[1] **NOTE**

Pump elements with piston diameter C 7 must be used for supplying of chisel paste. The design and the mode of operation are the same as those of the pump elements with piston diameter K 7.

Pump elements with fixed lubricant output

- The electric motor drives the eccentric 1 (fig. 2-2 and 2-3).
- During the lubricating time:
  - piston 2 sucks in lubricant from the reservoir (fig. 2-2).
  - piston 2 dispenses the lubricant to the connected lubrication points via the metering device (fig. 2-3).
- The following designs are available:
  - Piston diameter, K5 ..... 5 mm
    Lubricant output ..... approx. 2 ccm/min
  - Piston diameter K6 (standard) ..... 6 mm
    Lubricant output ..... approx. 2.8 ccm/min
  - Piston diameter, C7 [1], S7 [2], K7 ..... 7 mm
    Lubricant output ..... approx. 4 ccm/min
  - Piston diameter, B7 ..... 7 mm
    Lubricant output ..... approx. 2 ccm/min

[2] suitable for lubricants containing silicone

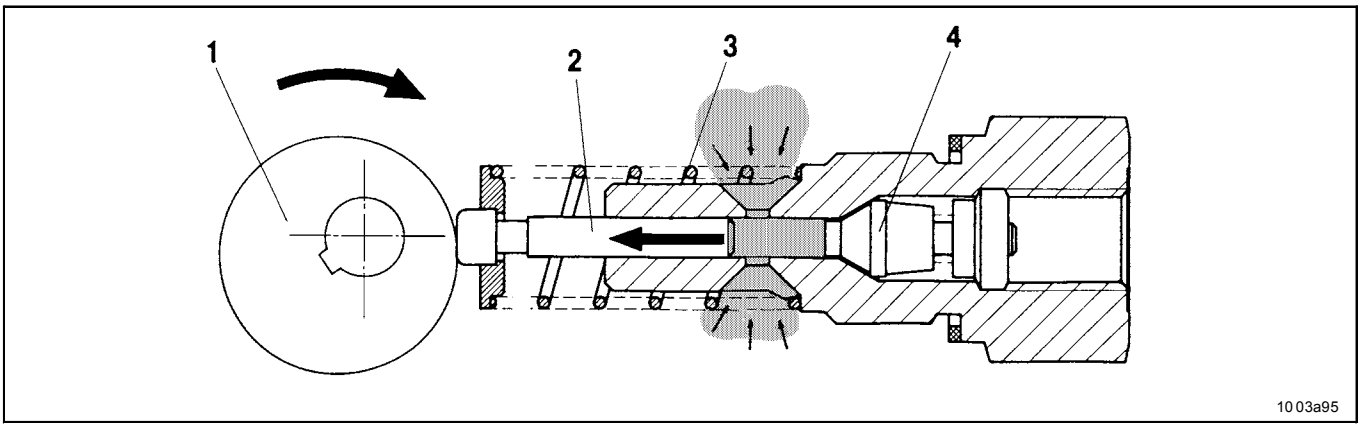

Fig. 2-2 The pump element sucks in lubricant

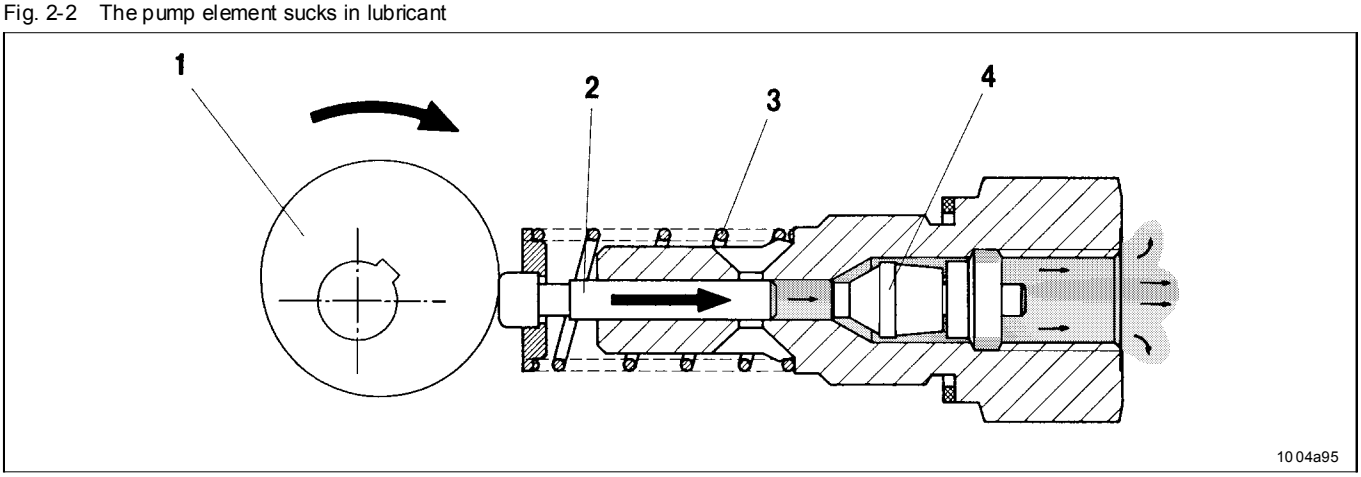

Fig. 2-3 The pump element dispenses lubricant

1 - Eccentric
2 - Piston
3 - Spring
4 - Check valve

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Mode of Operation, continuation

Pump elements with fixed lubricant output, continuation

Pump element B7 with bypass check valve

Fig. 2-4 Pump element B7

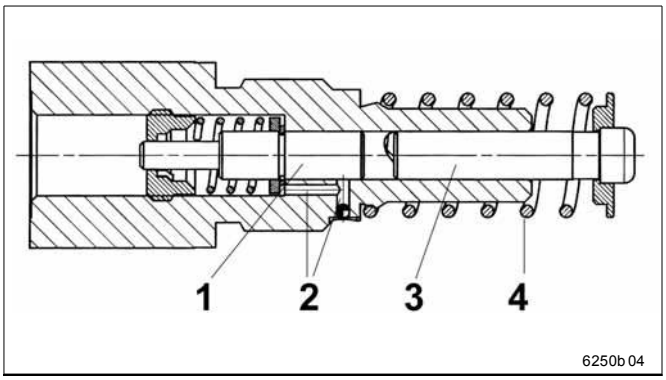

Fig. 2-5 Sectional diagram - pump element B7

- Pump element B7 suits especially applications in contaminated environments as the supplied lubricant is passing through a bypass bore 2 (fig. 2-5) on the check valve 1.
- The output is 2 cm³/min.

1 - Check valve
2 - Bypass
3 - Pump piston
4 - Return spring

Check valve

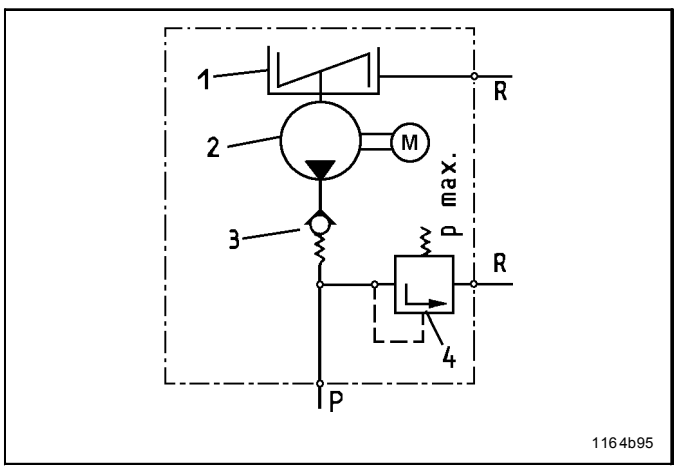

Fig. 3-1 Hydraulic diagram of the pump

- The check valve:
  - closes the pressure line during suction stroke.
  - prevents the lubricant from flowing back to the housing or reservoir.

Arrangement of the pump elements

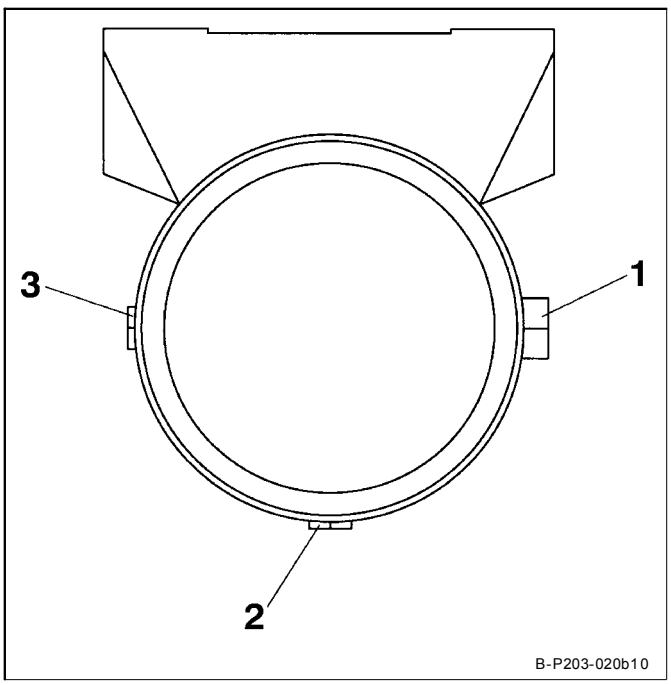

Fig. 3-2 Arrangement of the pump elements

- If several pump elements are to be installed, the installation arrangement shown in fig. 3-2 must be adhered to.
- If there is only one pump element , it can be installed in any position. Standard position is no. 3.
- If there are two elements, install one in position 3 and the other in position 1.

1 - Reservoir with stirring paddle
2 - Pump
3 - Check valve, spring-loaded
4 - Pressure relief valve
R - Return line
P - Pressure line

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Mode of Operation, continuation

Pump element with adjustable lubricant output

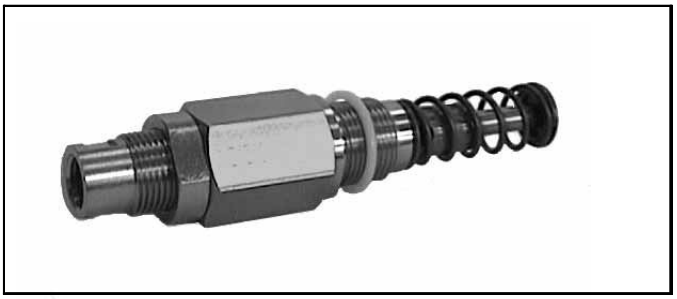

Fig. 4-1 Adjustable pumpelement

- The mode of operation (suction and supply phase) is the same as that of the pump elements with an invariable lubricant output.
- The lubricant outputs are adjustable from 0.04 to 0.18ccm/stroke, or 0.7 to 3 ccm/min.
- The pump elements are factory-adjusted to the maximum lubricant output; the adjusting dimensions "S" should be 29 ± 0.1 mm (see fig. 4-2).

Adjustment of the lubricant output

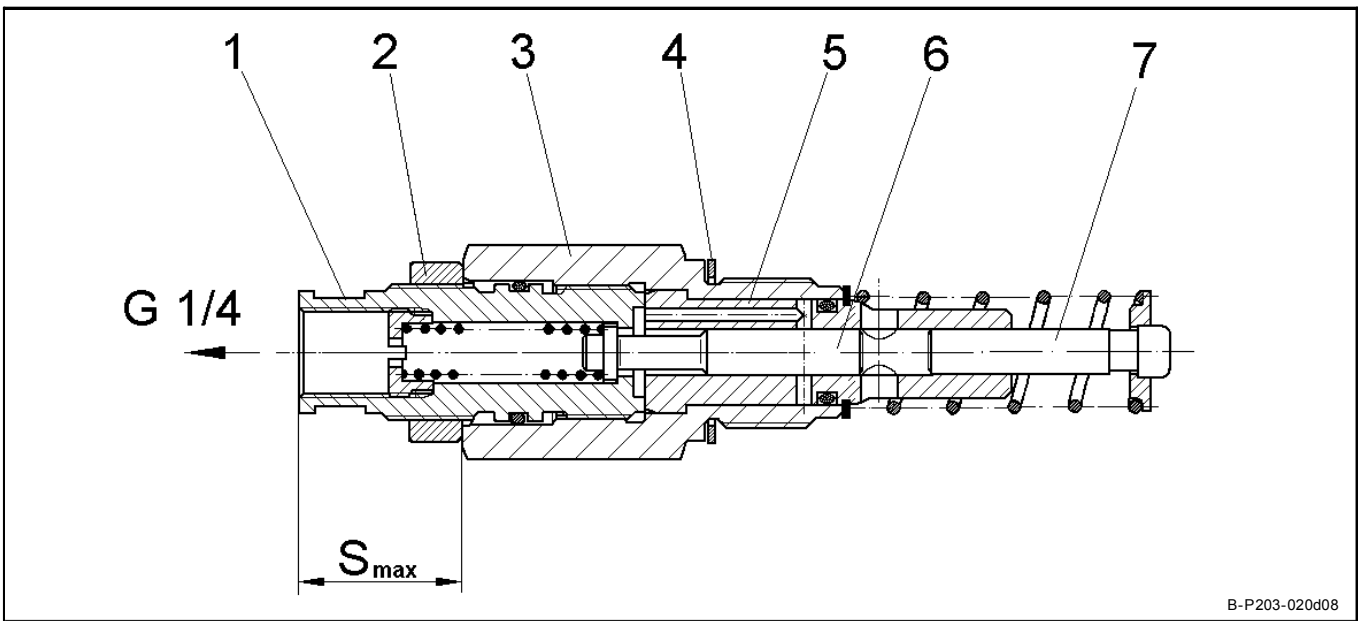

Fig. 4-2 Sectional view: adjustable element

1 - Adjusting spindle SW 16 (width over flats)
2 - counternut SW 24
3 - pump element body SW 27
4 - gasket
5 - pump cylinder
6 - control piston
7 - delivery piston
S_{max} - max. adjusting measure of the adjusting spindle

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IMPORTANT

Before adjusting the output volume exactly, determine the maximum adjusting measure "S_{max}".

Determine deviation for maximum adjusting measure "S_{max}":

- ➲ Loosen counternut 2 (fig. 4-2).
- ➲ Unscrew adjusting spindle 1 out of pump element body 3.
- ➲ Screw counternut 2 completely onto the adjusting spindle 1.
- ➲ Determine and note down maximum adjusting measure "S_{max}". Deviation = S_{max} – 29 mm

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IMPORTANT

The determined deviation must be considered for each adjusting measure:
max. adj. measure "S_{max}", e.g. ….. 29.5 mm
- deviation ……..……..…….. + 0.5 mm
required output volume, e.g. 0.14 ccm/stroke
- adjusting measure "S" (fig. 4-3) ….. 28 mm

$S_{0,14}$ = S + deviation

Adj. measure "$S_{0,14}$" …. 28 + 0,5 = 28,5 mm

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Mode of Operation, continuation

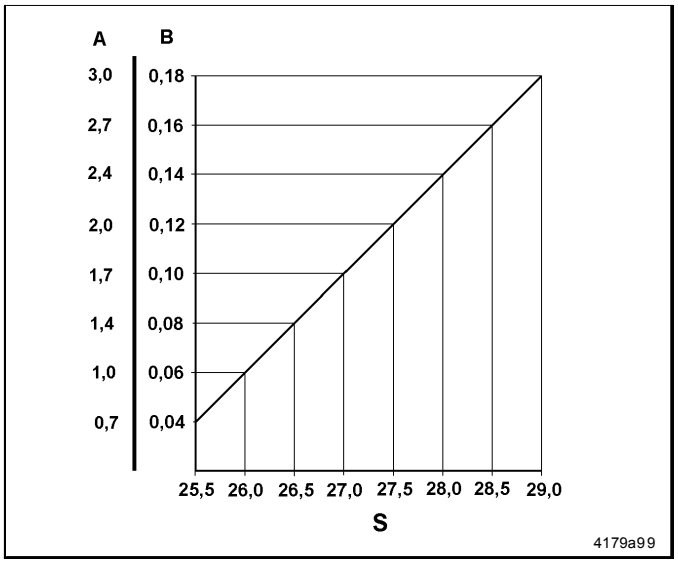

Fig. 4-3 Lubrication output diagram

A - Lubrication output cm^3/min
B - Lubrication output cm^3/stroke
S - Adjusting measure in mm (without deviation)

Adjustment of the lubrication output:

- ➲ Remove pressure relief valve from pump element KR.
- ➲ Determine adjusting measure S (including deviation) for the required output volume by means of the output diagram (fig. 4-3).
- ➲ Loosen counter nut 3 (fig. 4-2) while holding in position pump element body 2.
- ➲ Adapt adjusting measure S at the adjusting spindle 1.
  - Increase “S“ …….. increase output
  - Reduce “S“ …….. reduce output
- ➲ Fix pump element body 3 and secure position of adjusting spindle with counternut 2.

Pressure relief valve …

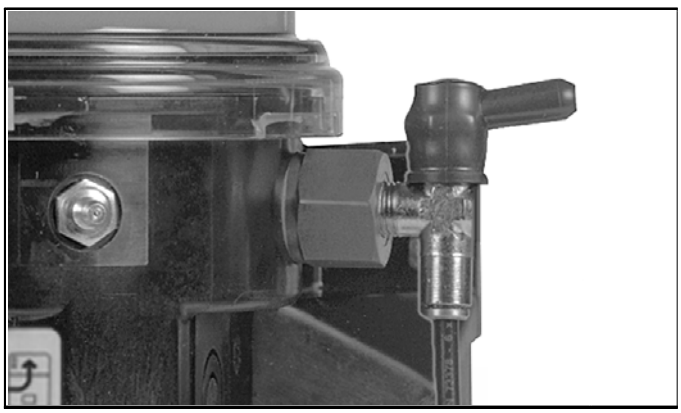

Fig. 5-1 Pressure relief valve

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… without grease return

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IMPORTANT

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

The pressure relief valve is not contained in the scope of supply of the pump.

- The pressure relief valve
  - limits the pressure build-up in the system.
  - opens, if the specific overpressure is reached.
  - is to be selected according to the requirements to the lubrication plant (see “Parts Catalogue”, different opening pressures: 200, 270, 350 bar).
- If lubricant is leaking at the pressure relief valve, this indicates that the system or a lubricating point is malfunctioning.
- Despite existing fault monitoring devices a regular visual and function control must be carried out on the lubrication system.

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Mode of Operation, continuation

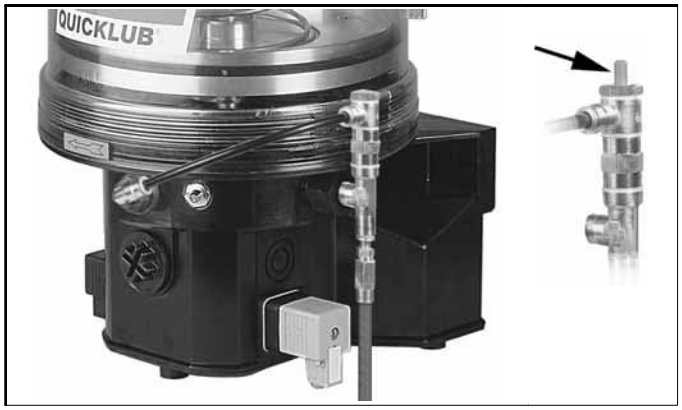

Fig. 5-2 Pressure relief valve with grease return

T-P203Fp-020d08
B-P603M-030e08

... with grease return (optional)

- If the system is blocked, grease will leak from the pressure relief valve. This grease quantity is returned to the reservoir.
- In the case of a blockage in the system, the grease pushes out the red pin at the pressure relief valve, thus indicating that there is a fault.

➲ Afterwards the fault has been removed the pin has to be pressed back to its starting position.

Return Line Connection

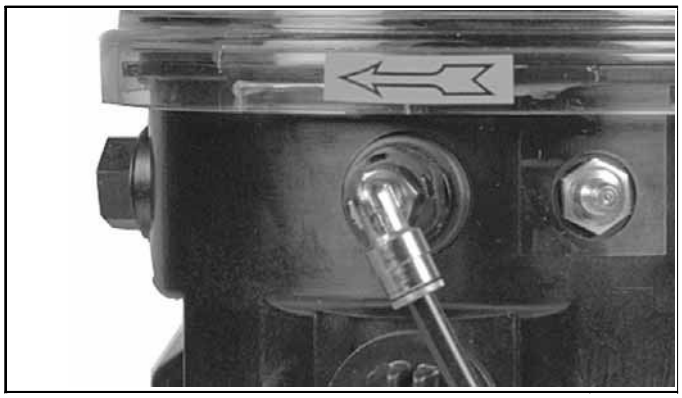

Fig. 6-1 Return Line Connection

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- The lubricant quantities which cannot be dispensed by the metering device must be returned to the pump via the return line connection.

Control Units

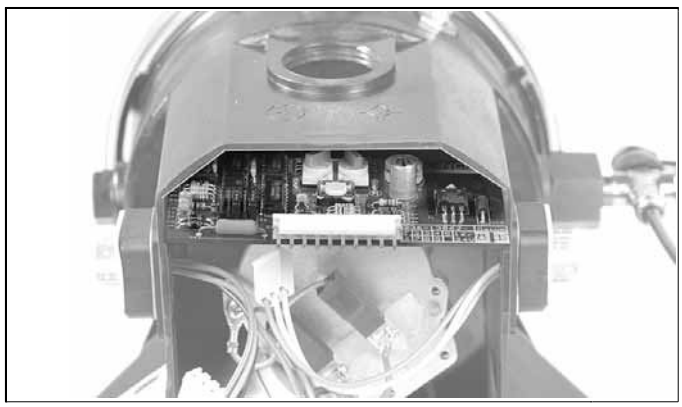

Fig. 7-1 Printed circuit board integrated in the housing

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NOTE

The present User Manual describes the pump without control unit Information concerning the design and operation of the individual control units (V10-V13, M08-M23, H) can be found in the respective User Manual.

- If the pump is to be equipped with a control unit, it is possible to use an integrated printed circuit board or an external control unit.

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