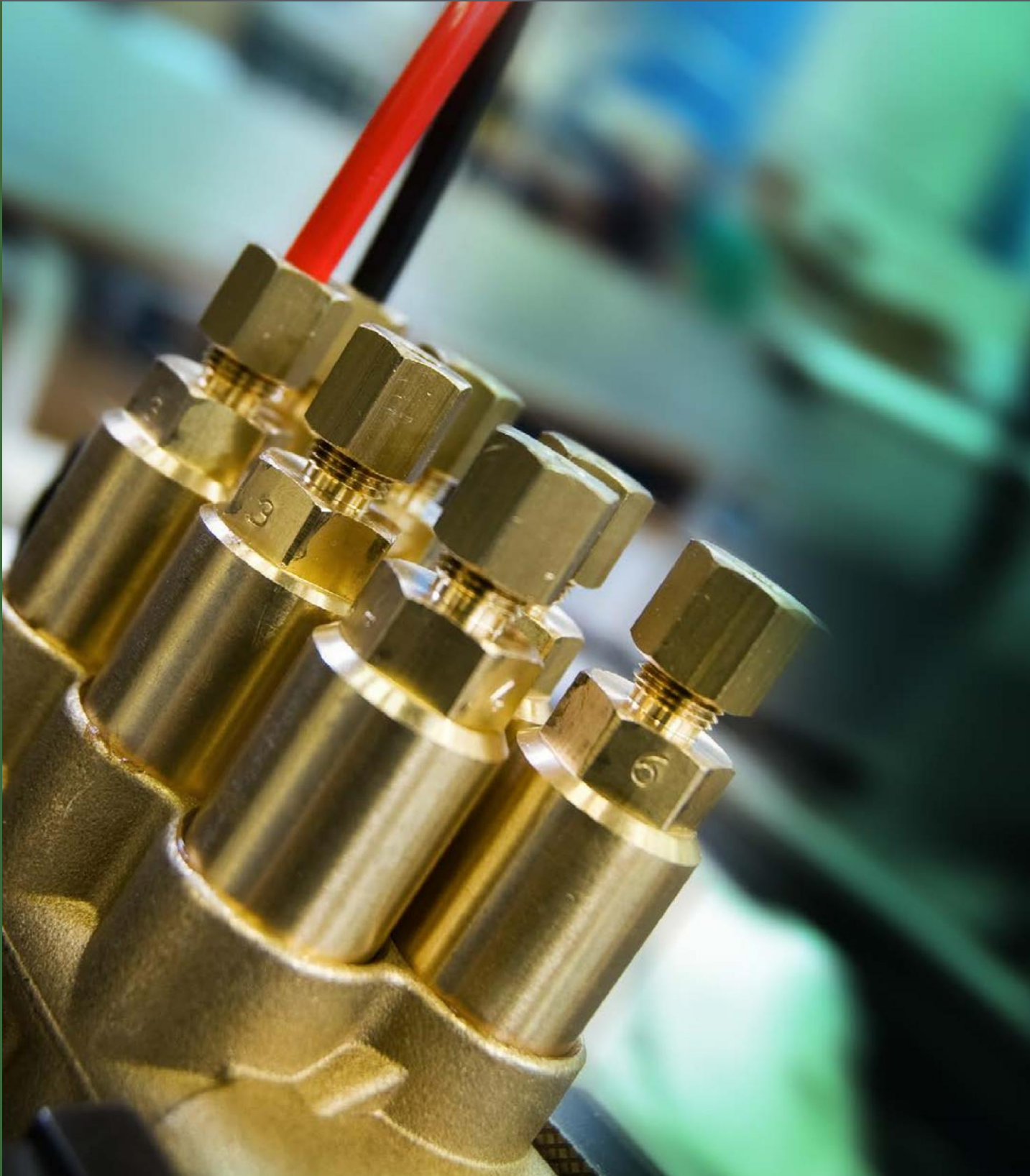


Twin Line Systems

For the most demanding applications



The benefits

The benefits of automatic lubrication are clear: better greasing of critical components, no time wasted on manual lubrication and the certainty that the equipment will always be greased independent of weather conditions, time schedules or operators. All resulting in significant cost savings.

Reduced man-hours required to lubricate.

- Improved availability of personnel for technical activities.
- Reduced lubricant spillage that occurs with manual lubrication.

Higher equipment productivity

Reduced equipment downtime by ca. 15% resulting from:

- Lubrication taking place during normal machine operation.
- Better and uniform greasing of all critical components because bearings and pins and bushings are in motion when lubrication takes place, resulting in less wear and tear of machinery.

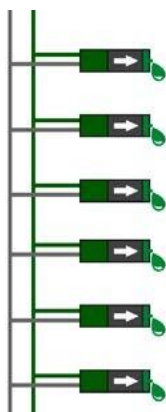
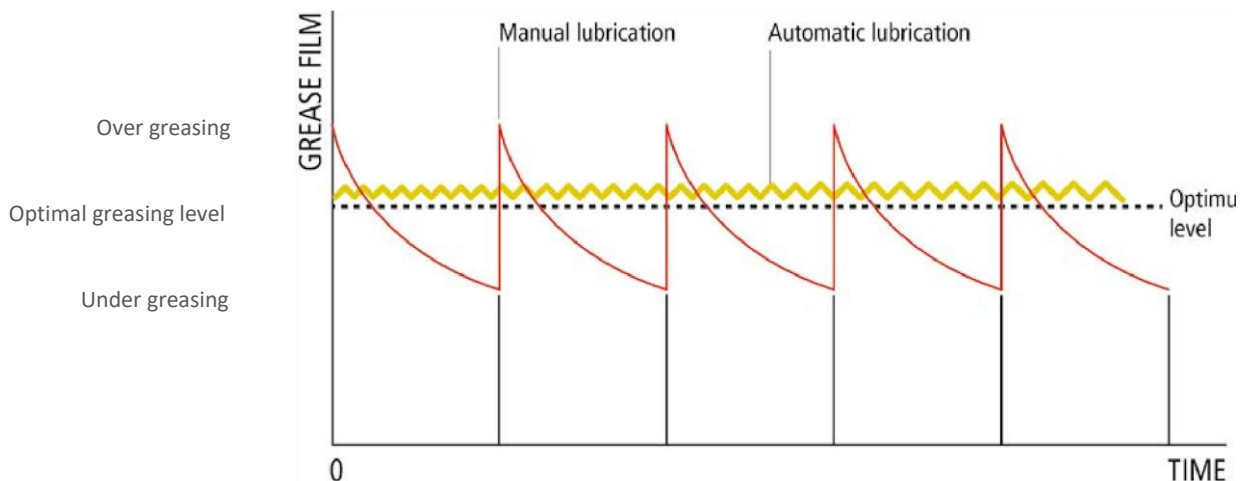
Decreased maintenance

- With manual lubrication, grease will follow the path of least resistance due to the fact that greasing has to take place under static conditions. So, the grease is not equally distributed around the lubrication point. Automatic greasing avoids this, as lubrication will take place during operation, reducing wear of critical components.
- Reduced replacement rate of components and bearings up to 50%.
- Decreased machine labour costs by ~ 50%.

Improved safety

- No climbing on and around machinery or inaccessible areas.

Effectiveness of Automatic Lubrication



Twin line systems

A twin line parallel system is similar to the single line parallel system in that it uses pressure to cycle adjustable valves to dispense measured shots of lubricant. It has 2 main supply lines which are alternatively used as pressure / vent lines.

The advantage of a twin line system is that it can handle hundreds of lubrication points from a single pump station over longer line lengths using significantly smaller tubing or lines.

Groeneveld's Twin dual line automatic lubrication systems are used on the most demanding applications all over the world.

Twin line systems for all kinds of applications



Wheeled loaders



Articulated dump trucks



Rigid dump trucks



Excavators



Dozers & Graders



Forage harvesters & Combines



Reachstackers & Telehandlers

Groeneveld Twin



Groeneveld Twin

Unique product features make the Twin the best solution for larger machines that are often used under extreme conditions. The system works under relatively low pressure, which means that the structure – and therefore the quality – of the grease is preserved.

The dual-line system with its patented metering units ensures that all lubrication points are always optimally lubricated. This is made possible due to precise metering and lubrication intervals, also in case of extremely low or high ambient temperatures and large distances between pump and lubrication points. In addition, it is easy to expand the system to detachable equipment pieces. This makes the system extremely suitable for larger machines such as large wheel loaders and dump trucks, but also for spreaders and heavy haulage trailers.

- Grease output and grease delivery independently of ambient temperature and grease viscosity
- Thanks to the relatively low work pressure, the quality of the grease is preserved
- Modern pump with real-time clock, memory, CAN-Bus connection and follower plate
- High quality metering units and distribution blocks
- Standard with in-cab display
- Available with reservoir volumes ranging from 2 to 200 litres
- Easy to programme, install and extend
- The filling coupling with filter prevents contamination during filling
- Easily extended to grippers, excavation buckets and other equipment pieces through quick couplers • Suitable for biodegradable grease

System overview



Follower plate

The follower plate ensures that all the grease in the reservoir is used. This means that the reservoir wall remains clean, allowing you to check the grease level visually. Ageing of the grease as a result of oxidation is also prevented.

Reservoir

Twin is available with reservoir volumes of 3, 4, 6 and 8 litres.

Filler coupling with filter

The filling coupling with grease filter prevents contamination of the grease during filling.

Pump housing

The pump is made of hard anodised aluminium and nylon reinforced - containing the control unit, memory database and minimum level indicator.



Twin XL & Twin barrel pump

Specifically for larger applications, the Groeneveld range includes the Twin XL with an extra-large reservoir of 20 litres. An automatic lubrication system with a higher grease delivery and an extra-large reservoir, made of sturdy and coated material.

For machines and vehicles with an extremely high grease demand, such as mining equipment, Groeneveld supplies a barrel pump with reservoir volumes from 40 to 200 litres.

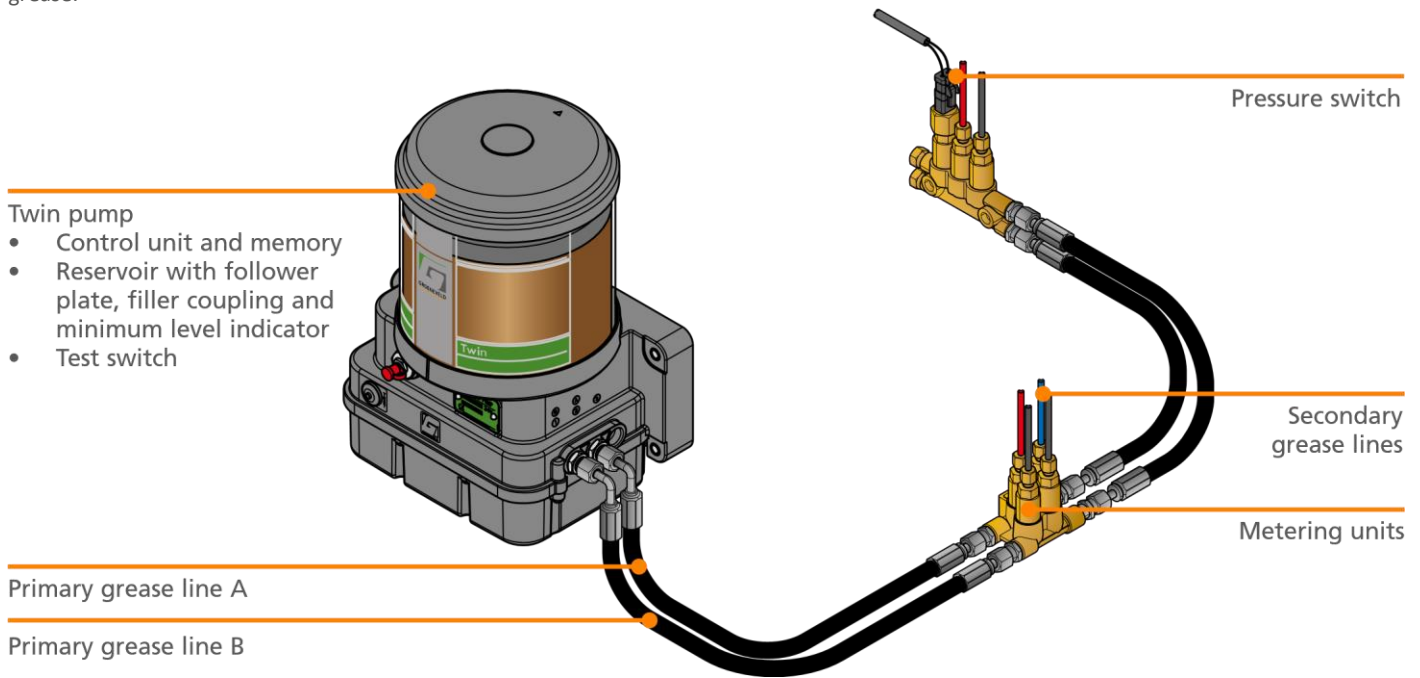
The major benefit will be that the user rarely needs to refill the reservoir.

Twin XL

Groeneveld Twin

Working principle

A Twin system consists of a pump with grease reservoir, a main line network to the distribution blocks with metering units and a secondary line network to the lubrication points. The grease is pumped to the distribution blocks via a double main line network. The metering units supply the exact right amount of grease to each of the lubrication points. The pump switches off once the pressure in all metering units is at least 100 bar. As a result, always the right amount of grease is provided at each lubrication point, independent of counter-pressure, temperature or viscosity of the grease.



Twin In-cab display

In order to check the status of the system, the driver or operator does not have to leave the cabin. The in-cab display will show system messages in the cabin. This will allow an easy and fast diagnosis of the system, as well as remote assistance.





Groeneveld Twin

Technical information | Twin pump

Pump type	Electric piston pump
No. of outputs	1
Maximum number of lubrication points	200*
Grease delivery Twin	12 cc/min.
Grease delivery Twin XL	20 cc/min.
Grease delivery Twin barrel pump	60 cc/min.
Maximum operating pressure	250 bar (3625 psi)
Grease class	NLGI-2
Temperature range	-20 up to +70 °C (-4 up to 158 °F)

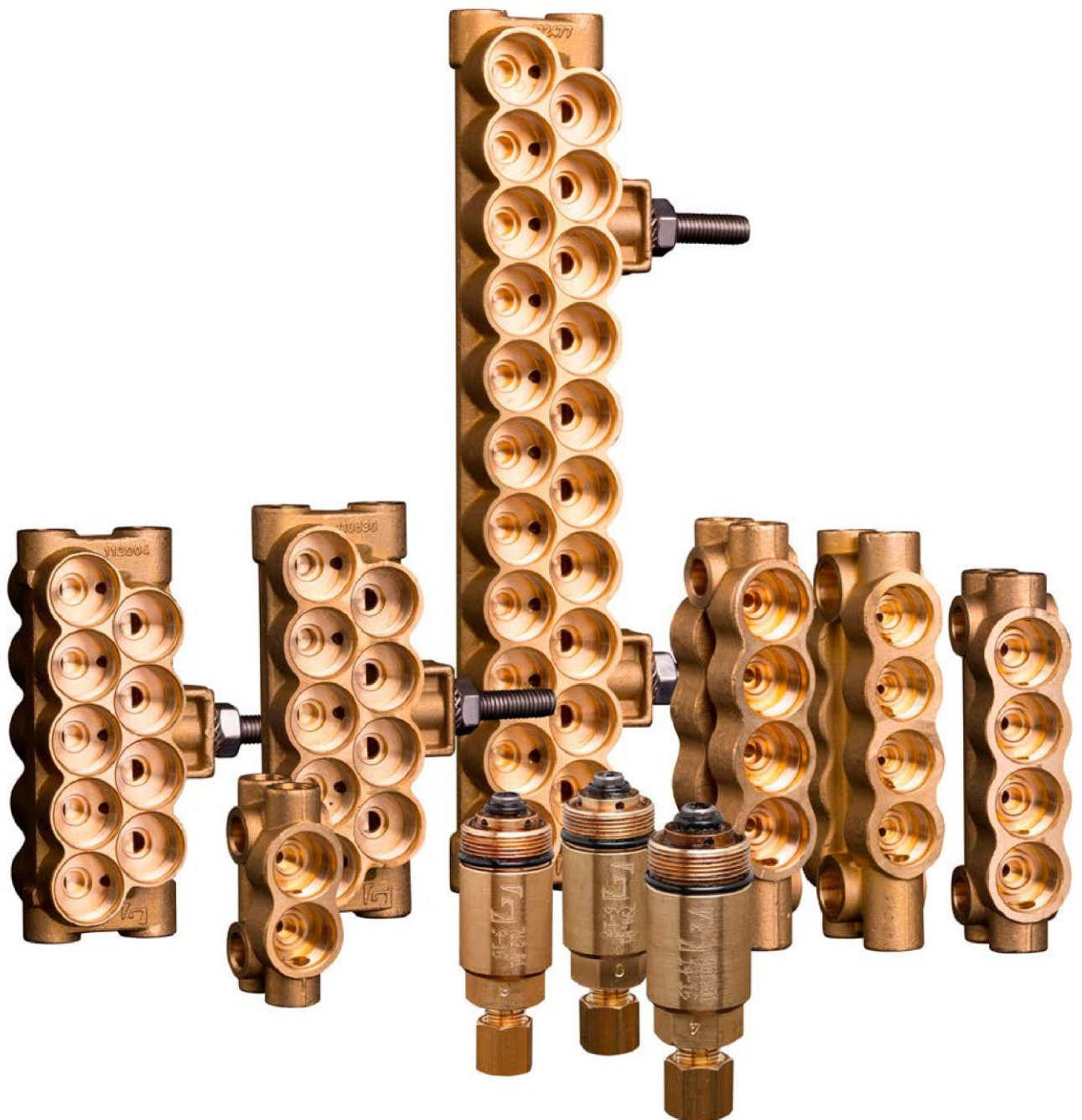
Supply voltage	12 or 24 Vdc
Protection class	IP67 (for pump unit)
Regulations / EMC	Automotive directive 72/245/EC, as last amended by directive 2006/28/EC. Earth Moving Machinery standard; ISO 13766

**Depending on system resistance, grease delivery and tubing length*

Technical information | Twin display

Supply voltage	9 - 32 Vdc
Maximum operating current	220 mA
Temperature range	-25 up to +70 °C (-13 up to 158 °F)
Protection class	IP54
Regulations / EMC	Off road ISO 13766-2006 Road transport 2004/104/EC Industrial equipment 2004/108/EC

Twin line distribution blocks & metering units



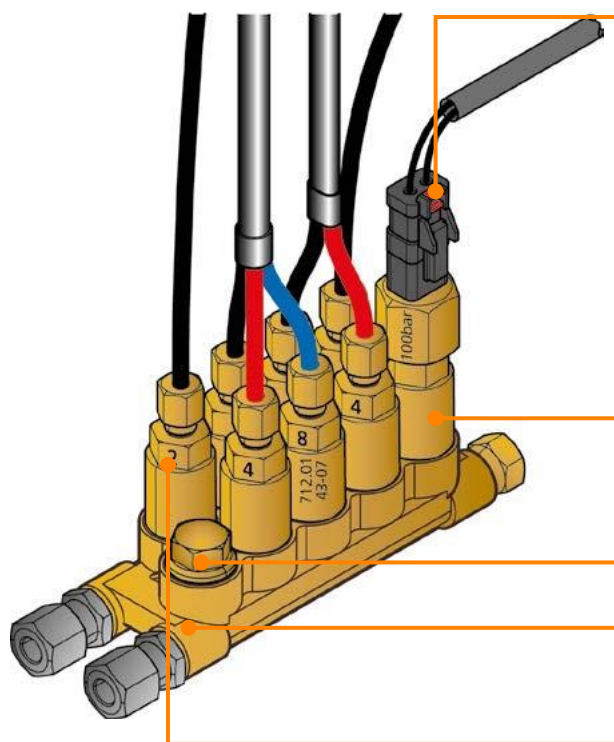
Twin line distribution blocks & metering units

Various types of distribution blocks and metering units are available for the Groeneveld-BEKA dual line systems. Each grease point can receive the correct dose of grease per greasing cycle by a careful choice of the type of metering unit, which all have a different grease output.

Dual line distribution blocks are built by combining a distribution block with different metering units. Unused ports on the distribution block are sealed with a blind plug. A pressure switch can also be mounted into one of the ports. The metering units deliver the lubricant under pressure via secondary lines directly to the lubrication points.

A distribution block with metering units forms a closed structure and can therefore be fitted in a moist or dirty environment without problems. Both distribution blocks and metering units are available in brass and stainless steel. Brass is always used as standard. When it is known that part of the machine will be operating in an aggressive environment (e.g. salt, fertiliser, unslaked lime, acids, etc.) it is recommended to use stainless steel for that part of the lubrication installation.

System overview



Pressure switch

The pressure switch notifies the control unit that sufficient pressure has been built up during the pumping phase and stops the pump. When the required pressure is not reached, the pumping phase is only ended after reaching the set maximum pumping time.

Preferably the pressure switch is mounted on the distribution block, located the farthest from the pump. This is done to be sure that the required grease pressure of 100 bar also reaches the last distribution block. When for practical considerations the switch is placed somewhere in the middle or at the beginning of the greasing system, a switch with a higher switch-pressure is applied. Pressure switches are delivered with switch-pressures of 100, 125, 150 or 175 bar.

Metering unit

The various metering units are distinguished from each other using numbers. Metering units are available from 0.025 up to 4.000 cc/ cycle. The metering units are available in brass or stainless steel.

Blind plug

Distribution block

The distribution blocks are deliverable with 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 18, 20, 21 or 22 ports (exits).

Metering unit number

Distribution blocks & metering units

Secondary lines

The lines create the connection between the metering units and the lubrication points. From flexible hoses to very strong steel lines. Groeneveld-BEKA has the correct line for any application.



Kits

For the most common applications, Groeneveld-BEKA supplies ready-made kits. These kits contain all necessary components for installation. This allows Groeneveld-BEKA to offer an expert and quick solution for each machine.



Types of distribution blocks

Groeneveld-BEKA offers different types of distribution blocks:

- Flat distribution blocks, with the metering units in one line made out of brass or stainless steel
- Distribution blocks with threaded studs, fitted with a double row of metering units made out of brass or stainless steel



Flat distribution blocks Distribution blocks with threaded stud **Type of metering units**

The metering units are available with different grease outputs and are distinguished from each other using numbers. If the largest dosing rate does not deliver sufficient grease to a grease point, then it is possible to connect metering units together.

Metering unit	cc per cycle
0	0.025 cc
1	0.050 cc
2	0.100 cc
3	0.150 cc
4	0.200 cc
5	0.250 cc
6	0.300 cc
7	0.350 cc
8	0.400 cc
8.5	0.700 cc
9	1.000 cc
10	2.000 cc
11	4.000 cc



