



# Single-line Systems for Commercial Vehicles

For fluid grease, NLGI grades 000, 00



- Cut wear and tear
- Reduce downtime
- Lower maintenance costs with automatic lubrication

## System overview

Lubricant: Fluid grease, NLGI <sup>1)</sup> grades 000, 00			
Selection criteria	Max. connected load (cm <sup>3</sup> ) or max. number of lube points	80 cm <sup>3</sup>	
	Pump suitable for	Truck tractor Truck tractor with extra equipment Interconnected system/ semitrailer KFU units also for GGVS vehicles <sup>2)</sup> (with cable harness 997-000-374)	
	Type of drive	electric	
Type designation	Pump	Gear pump unit KFU2-40 KFUS2-64  page 12	KFU6-20 
Technical data	Operating pressure	38 bars	
	Reservoir capacity	2.7 liters	6 liters
Auxiliary equipment	Lubricant distribution	VN relubrication distributors	
	Control system	Electronic control unit IG502-2-E with or without monitoring function KFUS with integrated control unit IG490	
	Main line (connection: pump – distributor)	Mainly plastic tubing 10x1.5 diam., but also steel tubing 10x0.7 diam. hose SLH10-...	
	Secondary line (connection: distributor – lube point)	Mainly plastic tubing 4x0.85 diam.; in case of large movement between lubrication point and chassis: hose 734 ...	

1) For progressive systems for commercial vehicles up to NLGI grade 2, see leaflet 1-9430-EN

2) GGVS = Hazardous Goods Road Ordinance Germany

	36 cm <sup>3</sup>	36 cm <sup>3</sup>	approx. 20 lubrication points
	Truck tractor Truck tractor with small extra equipment also for GGVS vehicles <sup>1)</sup>	Trailer / semitrailer also for GGVS vehicles <sup>1)</sup>	Truck tractor with small number of lubrication points Truck tractor with extra equipment also for GGVS vehicles <sup>1)</sup>
	pneumatic	pneumatic	electric
	Piston pump PEF-90  page 15	Piston pump PEF-90-S14 PEF-90-S19 <i>for GGVS vehicles <sup>1)</sup></i>  page 18	Compact unit KFB(S)1  page 20
	22 to 50 bars	22 to 50 bars	38 bars
	3 liters	3 liters	1.4 liters
	VN relubrication distributors		VN relubrication distributors
	Electronic control unit IG502-2-E with or without monitoring function	with built-in electronic control unit IG476-2 <i>for PEF-90-S14</i> IG476-3 <i>for PEF-90-S19</i>	Electronic control unit IG502-2-E with or without monitoring function
			plastic tubing 10x1.5 diam.
			plastic tubing 4x0.85 diam.

## Gear pump units KFU2-40, KFU6-20, KFUS2-64 with reservoir, electrically operated

The gear pump unit consists mainly of a gear pump with relief valve, safety valve, DC motor, transparent lubricant reservoir, filler socket and angle bracket. The DC motor and filler socket are covered by a hood to protect them from dirt. The hood snaps into place on both sides of the reservoir lid.

### Function

The gear pump continuously supplies lubricant to the relubrication distributors via the main line network when the pump is in operation. As soon as the metering chambers of the distributors are full, the excess lubricant flows back into the reservoir via the safety valve.

At the end of the pump running time (start of the interval time), the pressure relief valve opens so that the pressure in the main line can drop to a residual pressure of 0.2 to 1.0 bar. The spring-loaded pistons of the distributors can now deliver lubricant from the metering chambers to the lubrication points.

Nearly every size of system on commercial vehicles, including superstructures, can be supplied by one single pump when a KFU2-40 or KFU6-20 pump unit is used.

Furthermore, the semitrailer or trailer can be connected using an interconnected system, but this is only advisable when the motor vehicle and semitrailer/trailer are rarely or never disconnected from each other.

The KFU units must be used with cable harness 997-000-374 on vehicles approved for the transport of hazardous goods by road (GGVS).

Associated cable harness for KFU, order No. 997-000-373;  
cable harness for KFUS2-64, order No. 997-000-750.

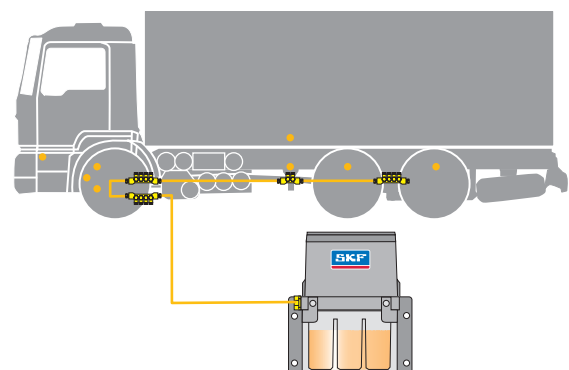
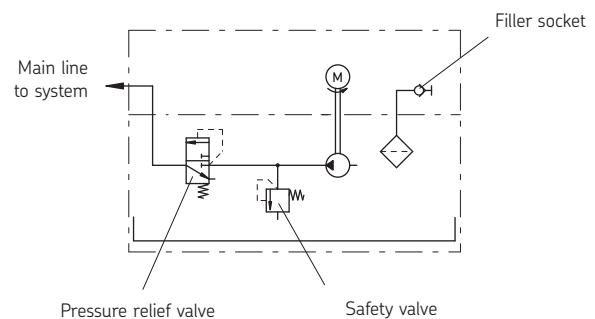
### Technical data

Order No. ....	KFU2-40 ....	KFU6-20 *)
Order No. ....	KFUS2-64	
Reservoir capacity .....	2.7 l .....	6 l
Weight (without lubricant) .....	≈ 5.5 kg .....	≈ 7.3 kg
Operating voltage .....	12 or 24 V DC	
Please quote required voltage when ordering.		
12 V fuse for KFU .....	7.5 A	
24 V fuse for KFU .....	7.5 A	
12 V fuse for KFUS .....	16 A	
24 V fuse for KFUS .....	8 A	
Flow rate .....	140 cm <sup>3</sup> /min	
at back pressure p = 38 bars and temperature t = 25 °C		
System capacity for singleline systems ..	max. 80 cm <sup>3</sup>	
Units with relief valve and safety valve		
Max. operating pressure .....	38 <sup>+2</sup> <sub>-3</sub> bars	
(corresponds to actual value of built-in safety valve)		
Permissible operating temperature .....	-25 °C to +75 °C	
Type of enclosure .....	IP 59 k	
Lubricant .....	fluid grease, NLGI grades 000, 00	

Associated control unit for KFU: IG502-2-E,  
KFUS unit with integrated control unit: IG490

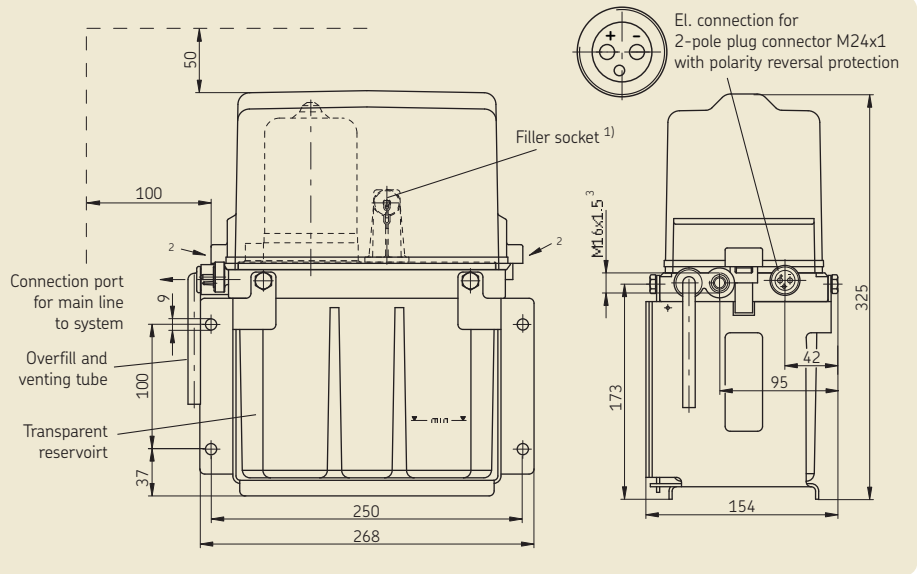
\*) This unit should only be used for systems with a minimum lubricant consumption of 6 l/year.

### Hydraulic layout

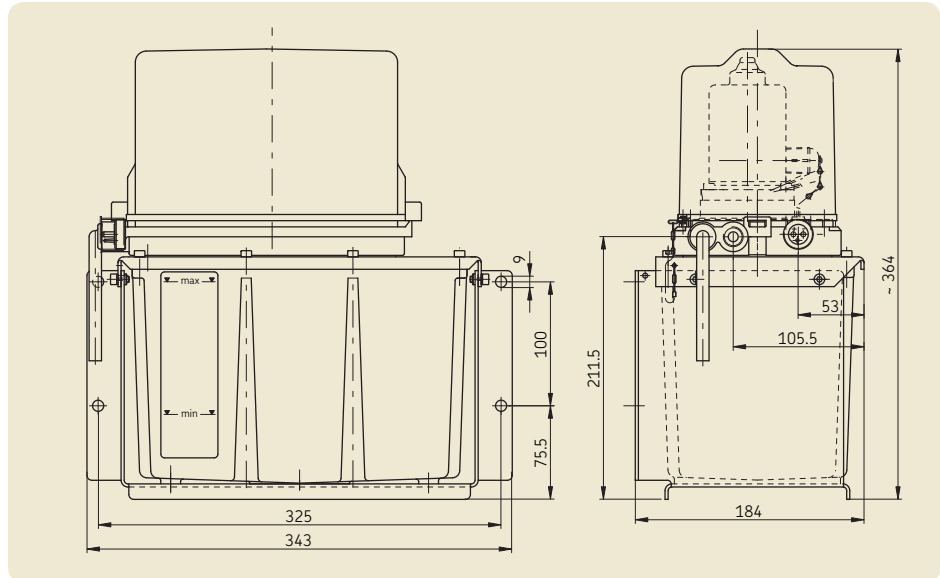


Single-line Systems for Commercial Vehicles for grease, NLGI grades 000, 00

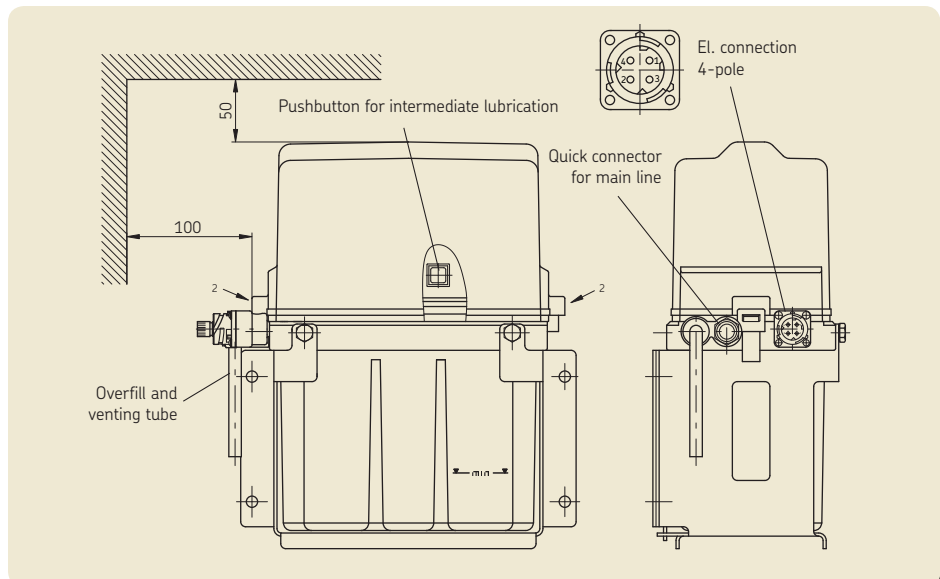
KFU2-40 with 2.7 l reservoir



KFU6-20 with 6 l reservoir



KFUS2-64 with 2.7 l reservoir



- 1) Coupling bush for filler socket, order No. 995-001-500 (please order separately).
- 2) The cover must be removed for filling. Press in cover with both hands at the positions marked and lift.
- 3) Ports tapped for solderless tube connection.

# Electronic control unit IG502-2-E

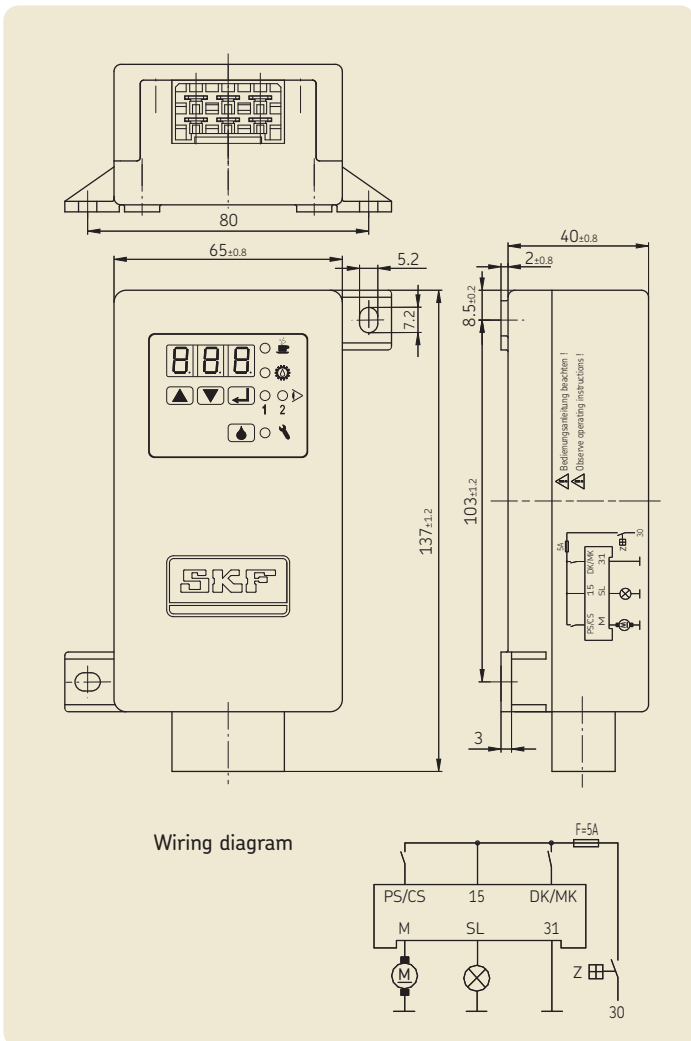


### Technical data

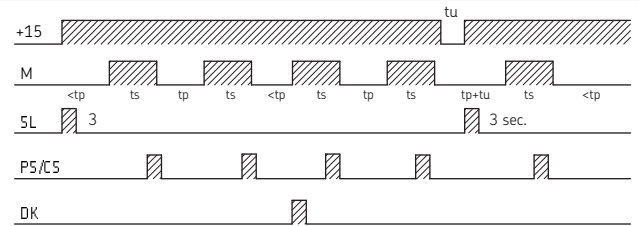
Order No	IG502-2-E
Associated cable harness	
for KFU2-40, KFU6-20, order No.	997-000-373
for vehicles with hazardous goods, order No.	997-000-374
for PEF-90, order No.	997-000-189
Control voltage <sup>1)</sup>	12 or 24 V DC
Max. contact load, terminal M	10 A
SL-output	4 W
Type of enclosure <sup>2)</sup>	IP 40, DIN 40050
Temperature range	-25 to +75 °C
Max. fusing	5 A
Programmable interval times	0.1 to 99.9 h
Programmable pump running time	0.1 to 99.9 min
Programmable pulses	1 to 999
Elapsed time, fault hours memory	0 to 99999.9 h

1) Please quote control voltage when ordering.

2) Warranted for vertical (plug-in connector pointing downward) and horizontal installation.



### Normal functional sequence



(time axis not to scale)

- tu = ignition interruption
- ts = contact time
- tp = interval time
- 30 = battery + / vehicle network
- 15 = operating voltage + / after ignition "ON"
- 31 = operating voltage -
- DK/MK = pushbutton / intermediate lubrication or pulsecounter input
- PS/CS = pressure switch / cycle switch
- M = pump motor
- SL = indicator light
- Z = ignition loc
- F = fuse 5 A



**LED PAUSE**  
lights in intervals.



**LED CONTACT**  
lights when pump running.



**LED CS**  
lights for monitoring with cycle switch function.



**LED PS**  
lights for monitoring with pressure switch function.



**LED FAULT**  
lights for fault monitoring (cycle or pressure switch).



**Pushbutton DK**

## Relubrication distributors, group VN



The distributors meter and distribute the lubricant from the pump to the individual lubrication points. They do so independent of each other.

Interchangeable metering nipples make it possible to adapt the quantity to the amount of lubricant required by the friction point.

The cycle number, i.e. the number of pump strokes per time unit of the lubrication system, also permits further coordination of the lubricant quantity with the friction point and entire system.

Lubricant is only delivered under spring pressure after the end of pump operation, i.e. after the pressure is relieved.

A collar (changeover valve) in the distributor closes the outlet to the lubrication point

during the delivery stroke, thus storing the lubricant beneath the piston. The changeover valve opens the outlet as soon as the pressure drops in the main line, i.e. when the pressure relief valve of the pump opens.

When installing a system, arrange the lines and distributors in such a way that any air entrained in the system can escape by itself via the lubrication points.

For this purpose, distributors with horizontal outlet ports or with outlet ports pointing upward must be installed at a position suitable for bleeding of the entire system.

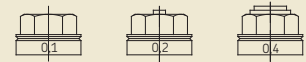
Assign only one lubrication point to each distributor outlet port.

Connect the secondary line (connection: distributor – lubrication point) to the lubrication

points only after bubble-free lubricant emerges from the tubing after the pump is repeatedly actuated. Fill long secondary lines beforehand if necessary.

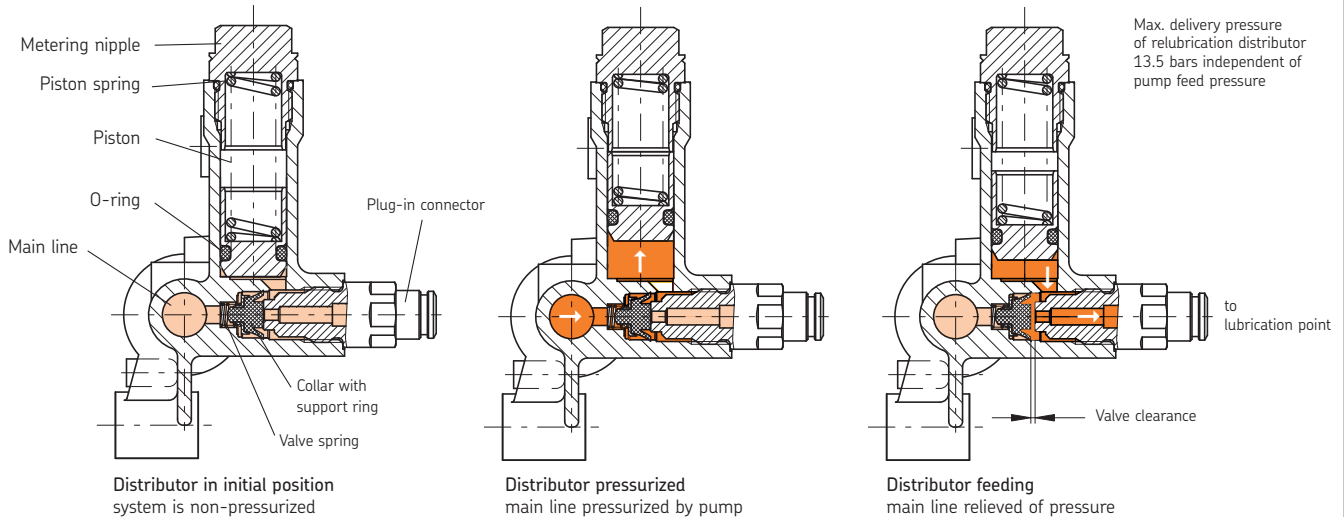
The metered quantity can be seen from the shape of the metering nipple and code number.

### Metering nipples



0,1      0,2      0,4 cm<sup>3</sup>

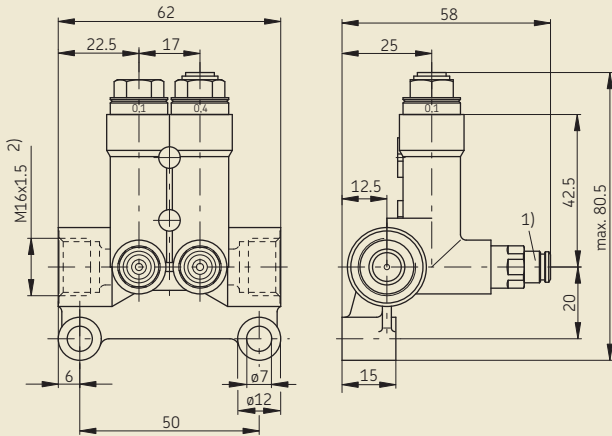
### Design and function



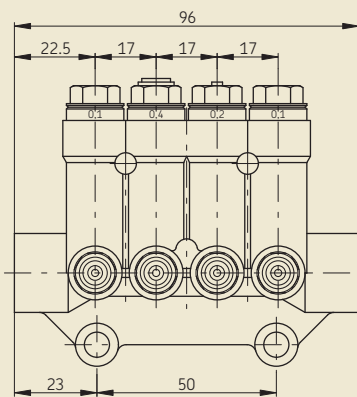


Relubrication distributors, group VN

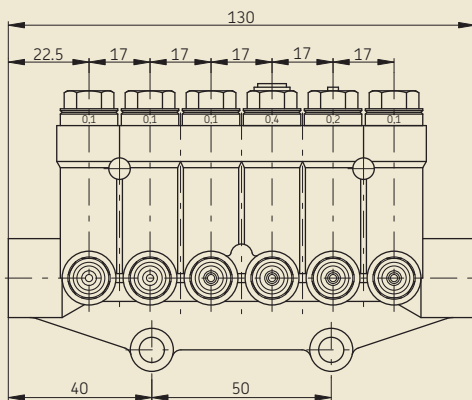
VN2... 2-port distributor



VN4... 4-port distributor



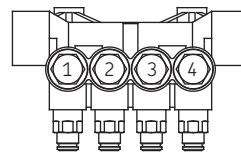
VN6... 6-port distributor



- 1) Quick connector connection for 4 mm diam. plastic tubing.
- 2) Ports tapped for solderless tube connection for 10 mm diam. tube

Piston distributors are only supplied with metering nipples fitted. Plug-in connectors permit timesaving installation of secondary lines without the use of tools (cf. page 27).

Order No.	Number of lubrication points
VN2 ...	2
VN4 ...	4
VN6 ...	6



When ordering distributors, please quote the desired metered quantities (0.1; 0.2; 0.4 cm<sup>3</sup>) in their respective order.

Metering nipples, with O-ring for metered quantity	Order No.
0.1 cm <sup>3</sup>	VKU010-K
0.2 cm <sup>3</sup>	VKU020-K
0.4 cm <sup>3</sup>	VKU040-K

Distributors are connected to manifolds with a connector, order No. VKR2.U2

Connector

5W17

If required:  
 ← screw plug 410-011  
 washer DIN7603-A16x20-CU

Individual distributor outlet can be closed with plug pin 450-204-002 and thus shut down. Other metered quantities will not be affected by this step.