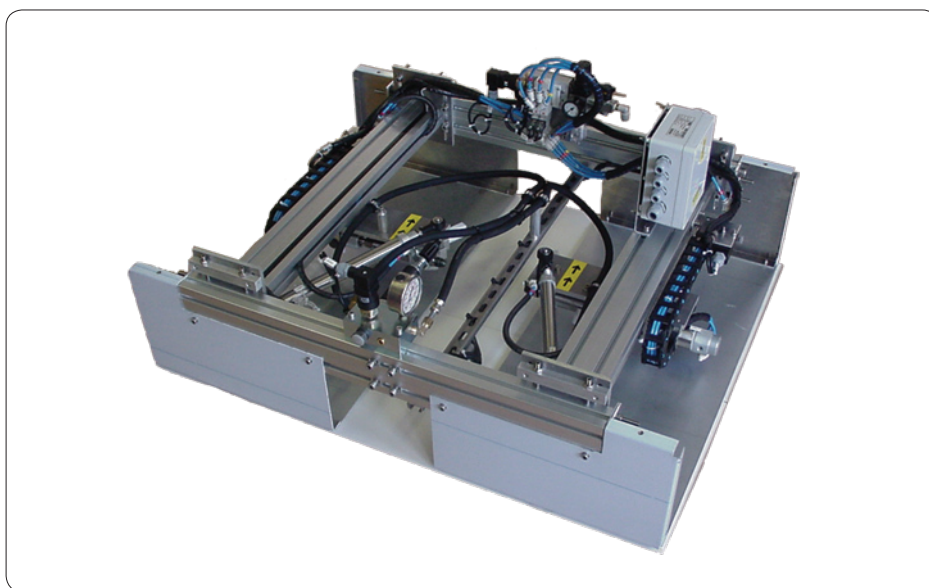


SKF Grease injection system

Grease injecting lubrication system type GVP
for moving conveyor chain pins and rollers



The grease injecting lubrication system GVP has been developed to carry out the conveyor chain lubrication. These chains are fitted with grease nipples. The lubrication process is automatically performed while the chain keeps moving. There is no production slow down.

The lubricant is injected under pressure directly into the chain pins and/or rollers. The injected volumetric metered quantity of lubricant is adjustable. It remains independent from lubricant viscosity and from any back pressure due to the pin or roller type.

There is a large range of conveyor chains and operating conditions are never the same. Therefore the GVP unit is often the result of a close collaboration – development, installation, commissioning – between the user and

SKF. This is the guarantee that the GVP unit meets perfectly the user's requirements.

GVP units are in use in many sectors of the industry around the world:

- car industry,
- food industry,
- iron and steel industry,
- surface treatment, sawmills, mines...

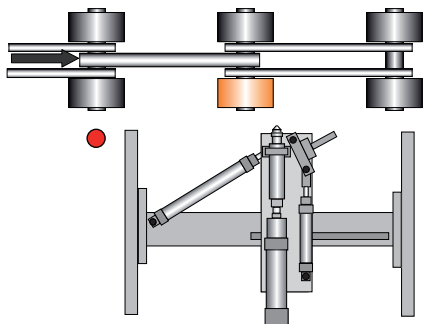
Advantages

- less conveyor downtimes and reduction of human intervention for maintenance tasks,
- longer service life of the chain,
- very easy installation thanks to its aluminium profile frame,

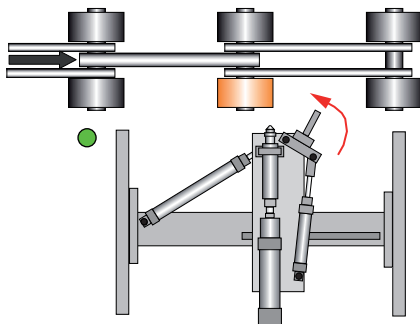
- reduction of environmental pollution, which was the result of an excessive lubricant consumption,
- controlled injection frequency,
- full automatic lubrication cycles with the programmable control and monitoring unit AEP2-GV,
- analysis of the chain state during the lubrication process with the software Visiolub.

Function principle of a GVP chain lubrication unit

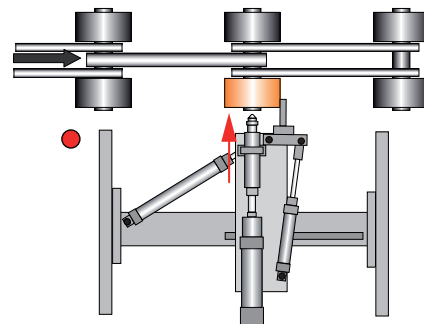
It is possible to describe the lubrication process as a 6 step cycle.



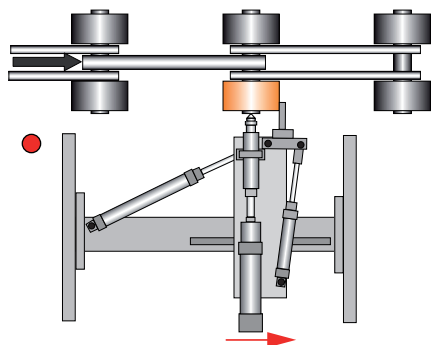
1 / The GVP unit is in its starting position. The pick-up system and the injection system are in their resting position on the carriage. A lubrication cycle will be initiated by a proximity switch.



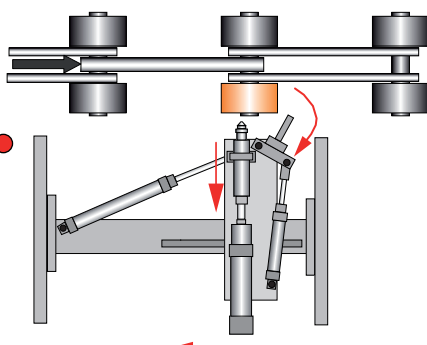
2 / The proximity switch detects the roller to be lubricated. A signal is sent to the control unit, which triggers an injection phase. The pick-up system moves forward to the roller to be lubricated.



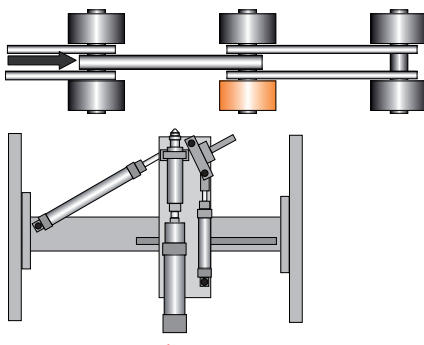
3 / The pick-up finger is in contact with the roller to be lubricated. The carriage is now moving exactly in parallel to the roller. The injection head moves simultaneously forward onto the roller to be lubricated.



4 / Lubrication phase. Contact time between the injection head and the lubrication point. The injection time has been previously set by the user with the control unit. The carriage keeps moving in parallel to the lubrication point.



5 / The injection time has elapsed. The injection head is pulled backwards. The pick-up finger leaves the chain. There is no more contact between the GVP unit and the chain.



6 / Return to the initial position. The injection system, followed by the pick-up system, are going back to their resting position on the carriage. The carriage also goes back to its initial position.

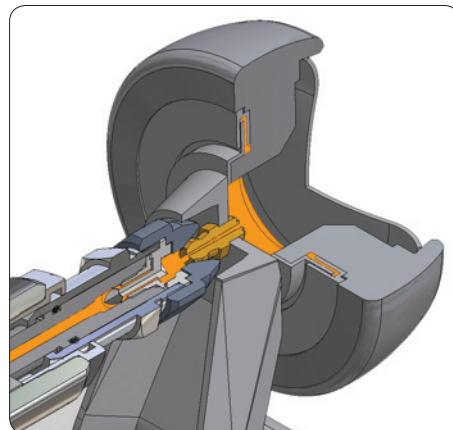
Lubricant injection directly into the roller

A volumetric metered quantity of lubricant is delivered by the injection head directly into the roller to be lubricated.

A piston supplies the lubricant to the lubrication point. Therefore the injected volumetric quantity is independent from any viscosity or operating temperature change (within the limit of the operating temperature). This principle ensures the accuracy of the injected volume.

As the injection is made directly into the roller, the lubricant, which has been consumed because of the bearing friction, is perfectly regenerated.

See important product usage information on the back cover.

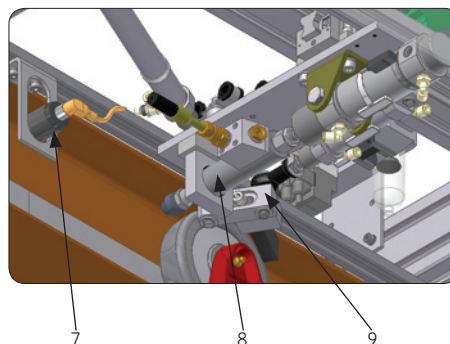
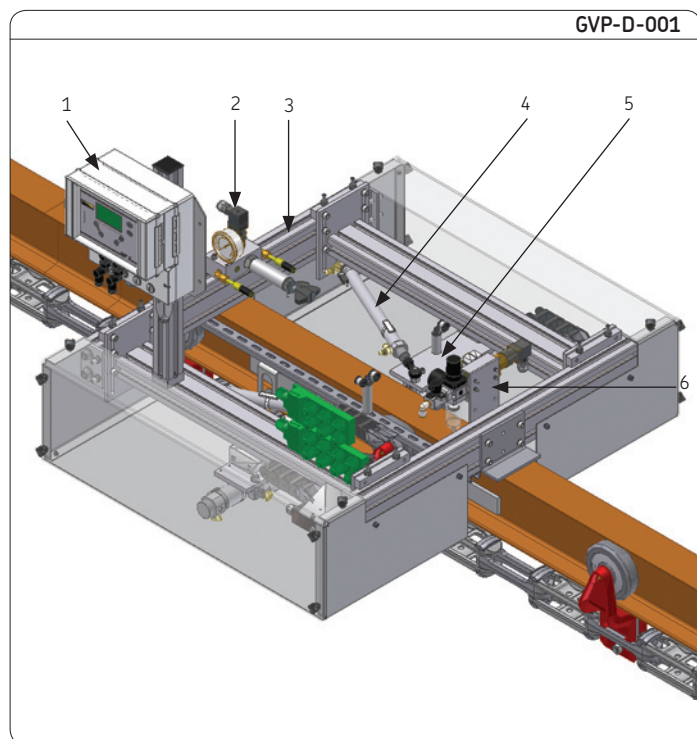


Example of a lubrication unit type GVP: GVP-D-001

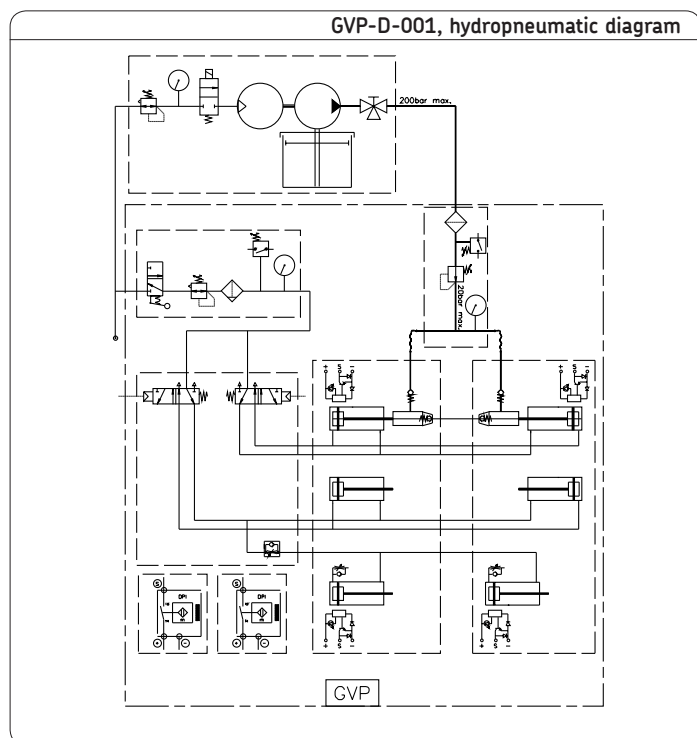
The chain lubrication unit GVP-D-001 can be used in many different industrial sectors, particularly in the automotive industry. It has been developed to lubricate conveyor chains type WEBB (3", 4" or 6" chains and others).

The GVP-D-001 unit has two injection heads, a roller proximity switch, an origin proximity switch (if option Visiolub) and a "stroke end" position switch. The lubricant is supplied to the GVP unit by a barrel pump.

The lubrication cycles are controlled and monitored by the electronic control unit AEP2-GV.



1. Electronic control unit AEP2
2. Grease regulating and control unit
3. Aluminium profile frame
4. Carriage return cylinder
5. Carriage with pick-up system and injection head
6. Air regulating and control unit
7. Roller proximity switch
8. Injector
9. Pick-up system



Technical data

Air inlet pressure	5 to 7 bars
Injection pressure	100 bars max.
Injection volume	0,37 / 0,5 / 0,75 or 1 cm ³ /stroke (factory setting 3 cm ³ /stroke)
Lubricant	grease NLGI grade 2 or oil
Operating temperature	5 to 50 °C
Max. chain speed	24 m/min
Air consumption	300 NI/min
Connection air inlet	tube OD 8
Electric (GVP unit only)	
Voltage	24 V DC
Consumption	28 W
Protection	IP 65

GVP unit examples

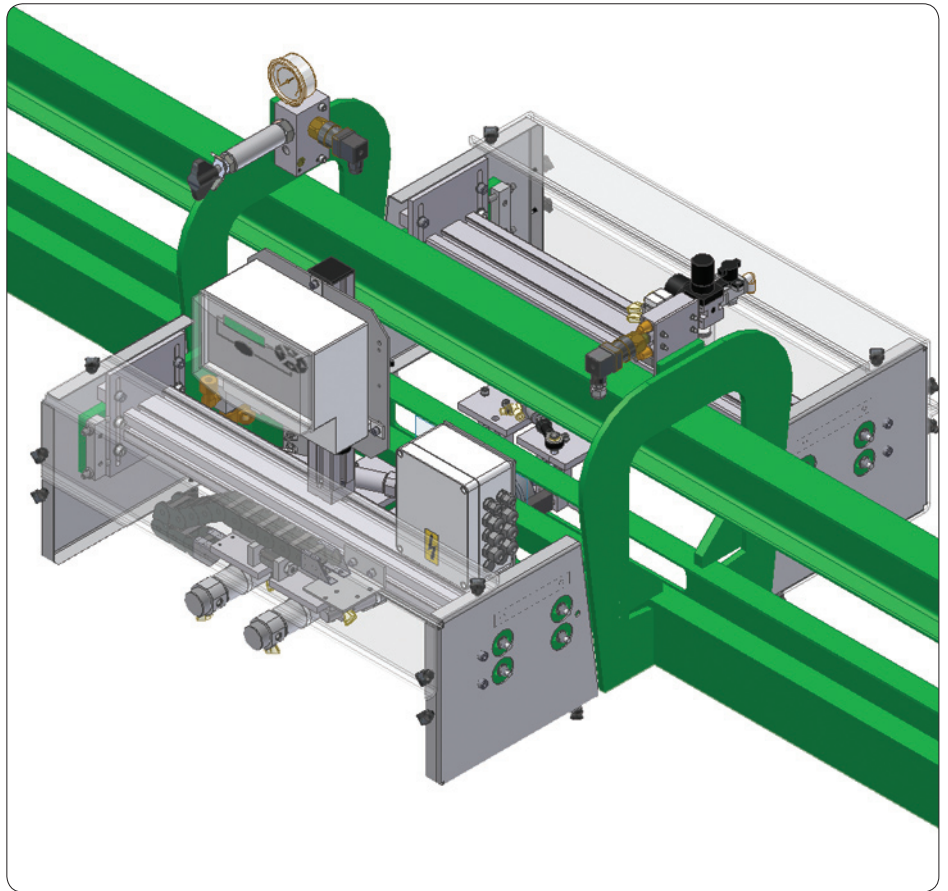
GVP “4 heads”

GVP lubrication unit with 4 injection heads. Possibility to lubricate 4 lubrication points simultaneously.

Only one lubrication cycle.

Aluminium profile frame.

This system has been developed for overhead and floor conveyors.

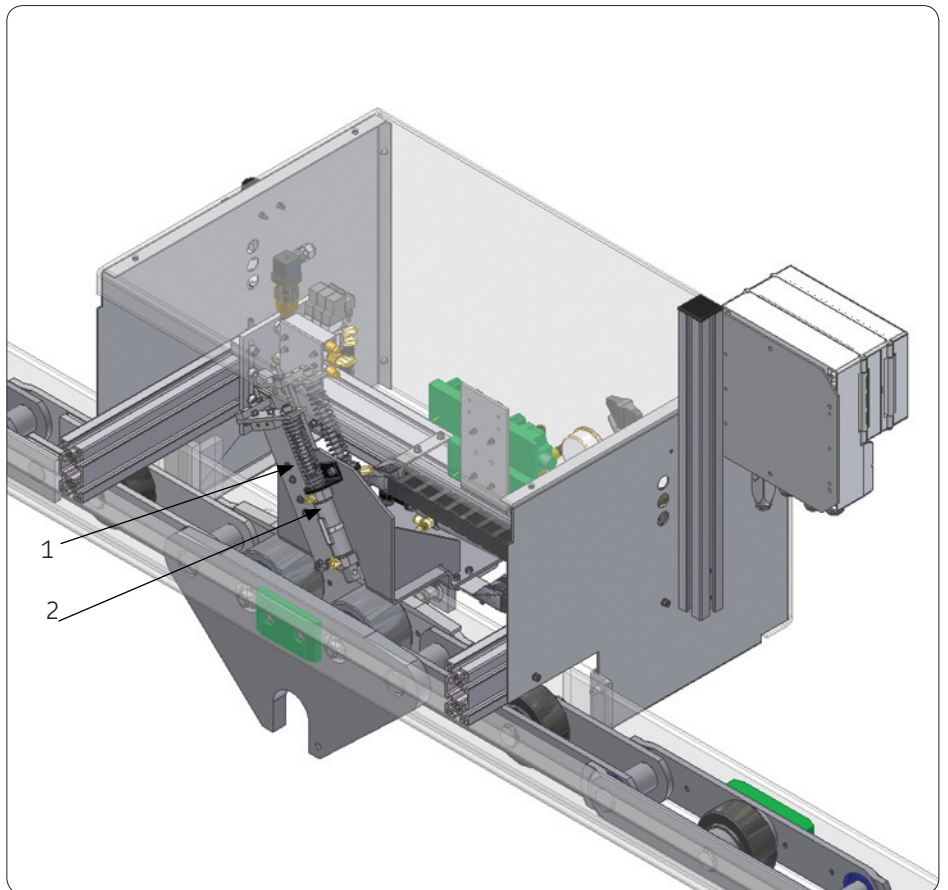


GVP lubrication unit with one injection head, two pick-up systems and one return cylinder. Two independent lubrication cycles for the greasing of the chain pins and rollers.

Aluminium profile frame.

This system has been mainly developed for the automotive industry.

1. Pick-up system for rollers
2. Pick-up system for pins

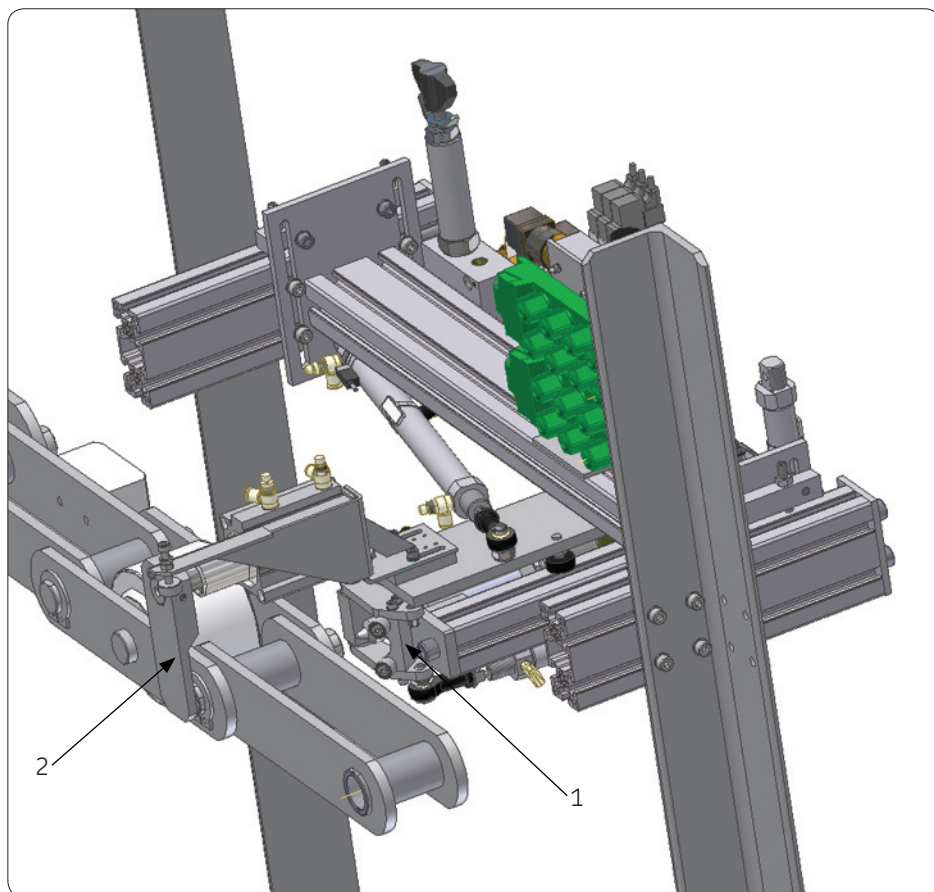


GVP lubrication unit with one injection head, one holding system, one pick-up system and one return cylinder. Three different lubrication cycles for the chain pins, the plastic rollers and the metallic rollers.

Aluminium profile frame.

This system has been mainly developed for the automotive industry.

1. Holding system
2. Injection head

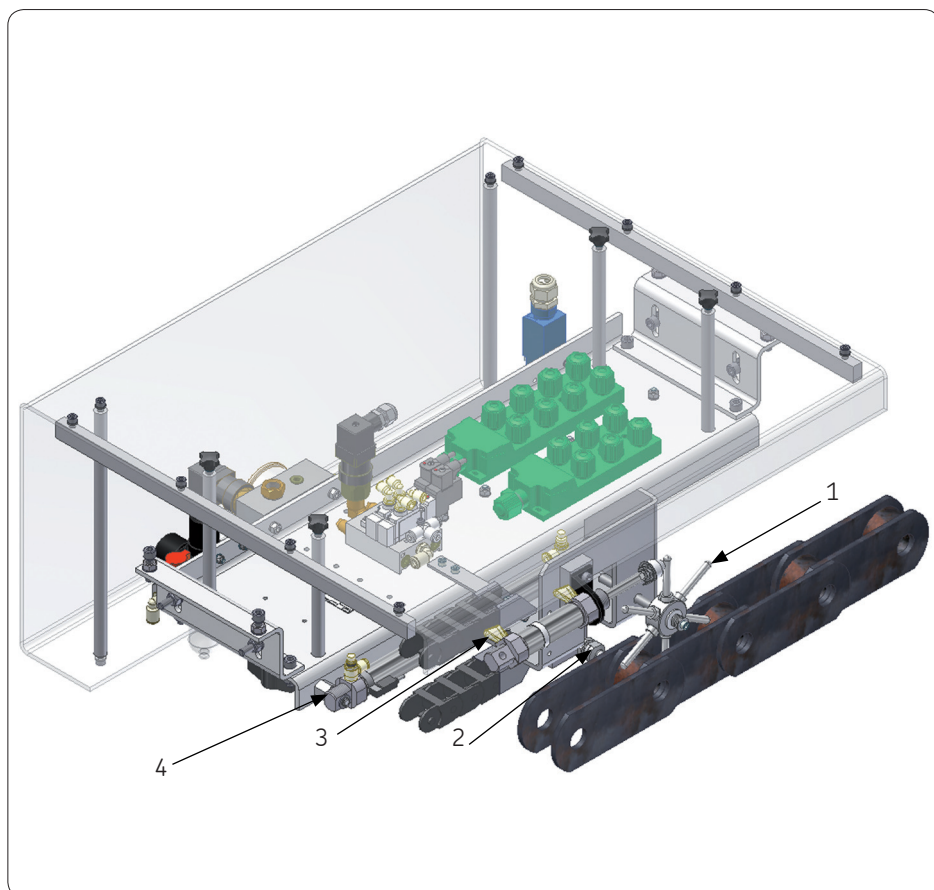


GVP lubrication unit with one injection head, one pick-up system with star wheel and one return cylinder.

Stainless steel frame.

This system has been especially developed for the food industry.

1. Star wheel (pick-up system)
2. Injection head
3. Pick-up cylinder
4. Return cylinder



AEP2-GV

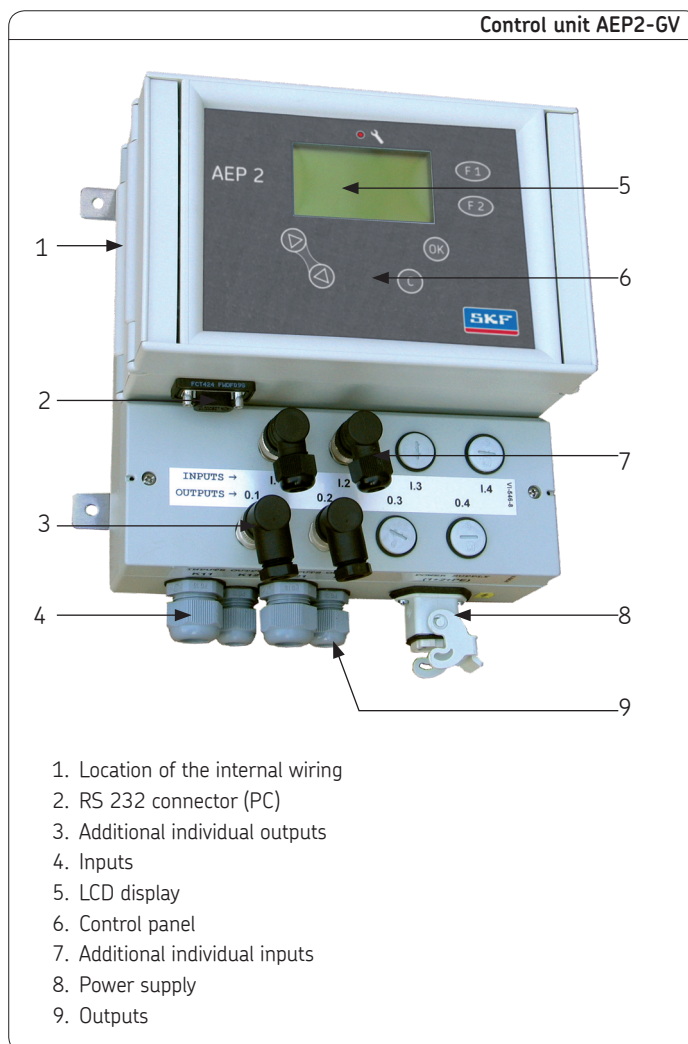
Electronic programmable control unit dedicated to the chain lubrication unit type GVP.

The AEP2-GV control unit has been especially developed by SKF to meet the automatization requirements of the lubrication process on industrial conveyor installations. The AEP2-GV unit can control and monitor a GVP lubrication unit, whatever its configuration is.

The main function of the AEP2-GV control unit is to trigger a lubrication cycle after a pause time has elapsed. This time has been set previously by the user. The AEP2-GV control unit can manage up to 4 different lubrication cycles. The user can independently set several main parameters for each cycle in regards with his needs.

- **Number of pins:** The user gives the exact pin number of the chain. Then the user can better manage the lubrication process and exactly identify every pin.
- **Lubrication:** The user chooses the lubrication frequency, which is calculated according to the pin number. It is possible either to lubricate all pins during a single chain lap or one pin every "x" number of pins. Thanks to this parameter it is getting easier to adjust the lubrication process to the chain speed.
- **Cycle type:** It can be a continuous or a cyclic lubrication process. For a cyclic lubrication, the pause period can be time-dependent (from 1 hour to 30 days) or load-dependent (up to 1 000 chain laps).
- **Injection time:** It indicates the time the injection head is in contact with the pin.

The control unit AEP2-GV is really user friendly thanks to its LCD display and the six keys. Messages appear on the display in the form of short texts (several languages available) or graphic symbols.



1. Location of the internal wiring
2. RS 232 connector (PC)
3. Additional individual outputs
4. Inputs
5. LCD display
6. Control panel
7. Additional individual inputs
8. Power supply
9. Outputs

Technical data

There are three different model of AEP2-GV. The designations 428, 429 and 924 indicate the operating voltage range (voltage code).

Rated input voltage Un	
version +428	100/120 V AC
version +429	200/240 V AC
version +924	20 ... 24 V DC
Input voltage range	
versions +428/+429	0,85 Un to 1,1 Un (58 ... 132 V / 170 ... 264 V)
version + 924	0,85 Un to 1,1 Un (17 ... 26,4 V)
Rated frequency	
versions +428/+429	50/60 Hz
Frequency range	
versions +428/+429	49 ... 61 Hz
version + 924	DC
Disengaging value	
versions +428/+429/+924	max. 10% of Un
Reclosing time	
versions +428/+429/+924	1 s
Residual ripple of input voltage	
versions +428/+429	not relevant
version + 924	DC: max. 5%
Max. fusing	
version + 924	4 A
Max. switching current	
versions +428/+429	2 A AC
version + 924	0,5 A DC or 2 A
Max. relay switching current	
versions +428/+429	250 V AC
version + 924	250 V AC / 24 V DC

(versions +428, +429 and +924)

Rated voltage of inputs		24 V DC
Input impedance		
– digital	1,8 K Ω \pm 10%	
– analog	15 Ω \pm 1%	
Input level, low (digital)		0 V ... 4 V
Input level, high (digital)		13 V ... 24 V
Output voltage for inputs and external consumers		24 V DC \pm 10% / –15%
Rated output current (sortie "+")		1A max.
included for external consumers		500 mA
Pulse input		
max. input frequency		30 Hz
Pulse duty factor		1:1
Protection		IP 65
Rated isolation voltage		250 V AC
Service temperature		0 to 60 °C
Storage temperature		–25 to +70 °C
Supply voltage / Relay contacts		1 780 V
Supply voltage / Electronics		2 830 V
Relay contacts / Electronics		2 830 V
EMC, noise emission		EN 500081-1

Visiolub

Productive maintenance software for chain lubrication systems.



Preventive maintenance

- Study of the conveyor chain state evolution

Active maintenance

- On site chain state analysis without production stop

The Visiolub software has been especially designed to meet operation quality requirements of the lubrication systems. Combined with the GVP lubrication system the Visiolub software controls and monitors in real time the state of the chain and prevents any production stop due to chain malfunctions (defective rollers or pins). Thanks to this prevention tool, the chain life is increasing significantly.

Visiolub is also very helpful for maintenance department. Information gathered by Visiolub is key to approving a new lubricant. The program also makes it easier to determine the correct amount of lubricant required for optimal lubrication.



Fig. 1

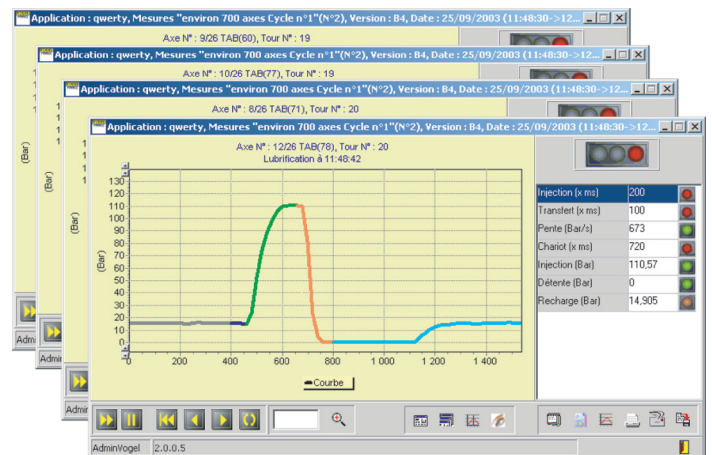


Fig. 2

Function principle

Visiolub is directly connected to the lubrication system control unit AEP2-GV via a computer. Thanks to a pressure sensor mounted on the injection head the pressure of each lubricant injection is measured.

The user sets the different parameters corresponding to the lubrication cycle of the chains – theoretic value, minimal and maximal values (fig.1). For each chain pin the user gets a succession of curves (fig. 2) representing the different grease injections made into this pin during a lubrication cycle. The analysis of these curves helps the user to find out possible malfunctions during the operation. At the end of the measure a report is edited and informs the user about the number of defective pins and identifies them precisely (fig. 3).

On the one hand the user can check the good operation of his greasing system, but on the other hand the user can also identify the defective link of the chain (pin broken, no ball in the nipple...) and undertake preventive maintenance measures in order to prevent a chain break.

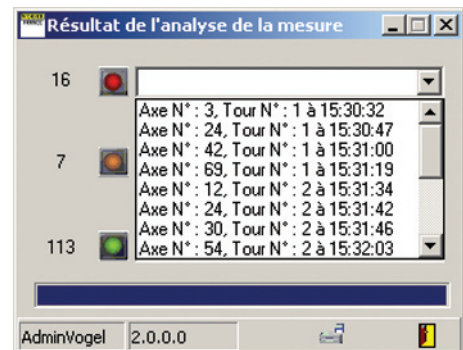


Fig. 3

Order No.: 1-4101-EN

Subject to change without notice! (04/2009)

Important product usage information

All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.

Not all lubricants are suitable for use in centralized lubrication systems.

SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbars) by more than 0,5 bar at their maximum permissible temperature.

Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Further brochures

1-9201-EN Transport of Lubricants in Centralized Lubrication Systems

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www.skf.com/lubrication

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