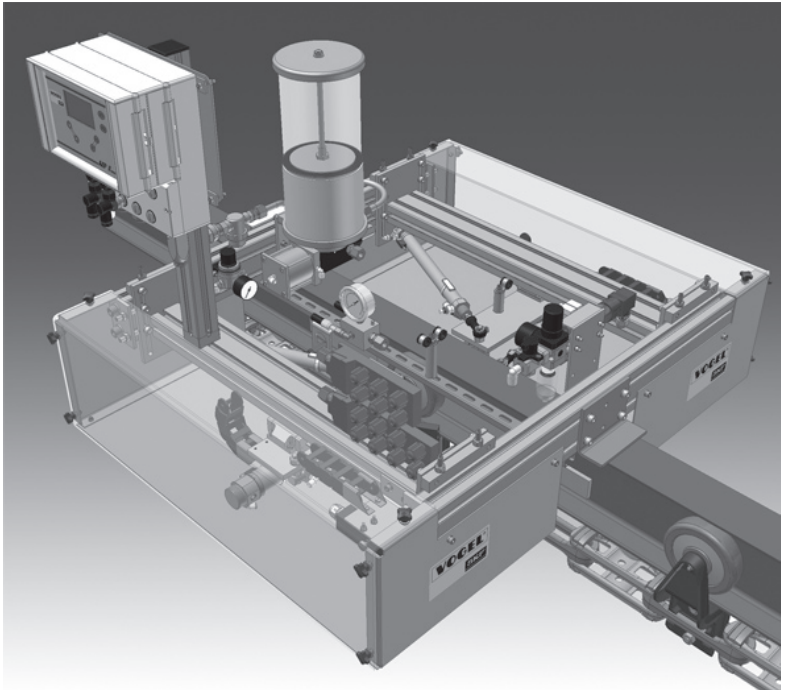
GVP-D-001
GVP-D-002



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

US

Operating manual

VOGEL®

SKF

Imprint

The operating manual is part of the scope of supply of the VOGEL chain lubrication systems GVP-D-001 and GVP-D-002.

The manual has been edited in conformity with applicable standards and rules for technical documentation.

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Introduction

The VOGEL chain lubrication systems GVP are remarkable in their operational reliability and long service lives. These systems are made in conformity with the generally recognized rules of technology and the applicable safe working practices and the rules for accident prevention. Still hazards may be involved in their use, which can lead to injury of operators or other persons or damage to the machine or other property.

To ensure trouble-free operation and prevent hazard, we kindly ask you to read the present manual carefully and observe the notes contained in it.

Notes on the operating manual

Text marked with this sign alerts to special hazards or work that must be performed with caution.

Text marked with this sign gives additionnal information for an optimal use of the GVP system.

Keep the operating manual in a safe place so that it is always available wherever the system is in use.

This operating manual is a part of the system, and it must be given to the operating company upon sale of the system.

Safety Instructions

Please comply with the following safety instructions in order to prevent possible damage and to ensure that the Vogel chain lubrication system GVP works properly.

Use the units only in technically perfect condition for their intended use. Be aware of hazards and observe the operating manual.

Especially errors that could affect safety must be resolved without delay.

Safety measures corresponding to the parameters of the lubricant supplied must be stipulated.

The safety mechanisms must not be damaged, dismantled, or in any way made inoperable, nor must they be replaced by parts, which have not been expressly approved of by VOGEL.

The electrical connection and all interventions such as repairs, component replacement, etc. may be carried out only by properly qualified and instructed personnel.

If devices are improperly connected, substantial material and personal damage may be the consequence.

Repair work must only be performed after a trained specialist has disconnected the unit from power.

Working on systems under electrical voltage could lead to personal injury.

The GVP unit may be under pressure. Before extension work, changes, repairs etc. it must be depressurised.

Working on systems under pressure could lead to personal injury.

Unauthorized modifications to the GVP unit and the use of unauthorized spare parts and aids are prohibited and disqualify the warranty.

Worn-out systems must be made inoperable and disposed of properly.

Applications

All products of Willy Vogel AG may be used only in compliance with regulations and according to the stipulations of the respective operating manual.

We expressly emphasize that dangerous materials of any type, especially materials which are classified as dangerous according to EC directive 67/548/EWG article 2, paragraph 2, may be stored and transported and/or distributed with VOGEL central lubrication systems and components only after consulting Willy Vogel AG and receiving their written consent.

None of the products manufactured by VOGEL are approved for application in connection with hot gases, liquefied gases, pressurized gases, steams or fluids that will reach a steam pressure of more than 0.5 bar above the normal atmospheric (1013 mbar) pressure in the admissible application temperature range.

The grease injecting lubrication system GVP has been developed to carry out the lubrication of moving conveyor chain pins and rollers. Other use or use beyond this purpose is considered unintended. VOGEL will not accept liability for damages resulting from such unintended use.

Only authorized lubricants for the pump type may be supplied. Unsuitable lubricants could lead to the pump failing and possibly severe property damage and personal injury.

Lubricants

GVP units can supply lubricants with the following NLGI grade:

- Greases up to NLGI grade 2

A list of authorized viscous lubricants can be found on the Internet at www.vogelag.com. The lubricants recommended correspond in their composition to customary safety regulations, and they are suitable for use in chain lubrication systems.

Whenever using other lubricants, keep in mind that there are lubricants which, although within the authorized limits, nevertheless are unsuitable for chain lubrication systems because of their characteristics. Consult the manufacturer of your pump.

Keep in mind that lubricants are environmentally unfriendly substances and that their transport, storage and processing require that special safety measures be taken.

Design

GVP-D-001

The GVP-D-001 system is a double lubrication system – chain left hand side and right hand side – with two grease injectors.

Every injector is equipped with a cylinder mounted on a carriage, so that it can move toward the lubrication point. The injector follows the movement of the lube point (chain motion) thanks to a pick-up system. At the end of the lubrication phase, another cylinder pulls back the injection unit to its initial position.

The user's pneumatic network supplies the GVP unit with compressed air and a lubricant drum pump with grease. Two regulation systems make it possible to monitor and regulate the air and lubricant inlets.

A control unit AEP2-GV – integrated or not – controls and monitors the function of the GVP system.

1 Lubricant inlet
2 Control unit AEP2-GV
3 Electric connection of the control unit
4 Monitoring and regulation of the lubricant pressure
5 Compressed air inlet
6 Fixing bracket
7 Monitoring and regulation of the air pressure

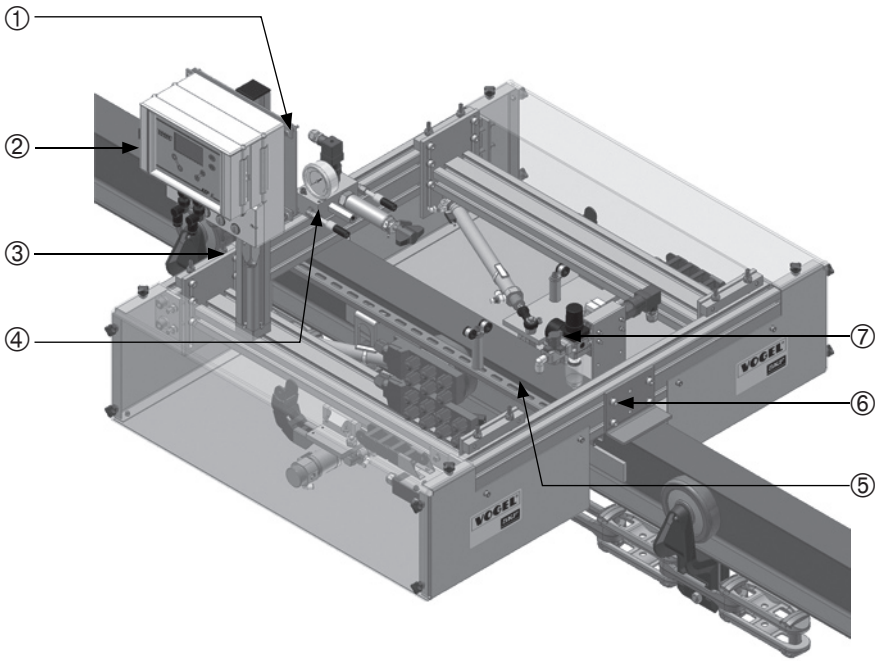
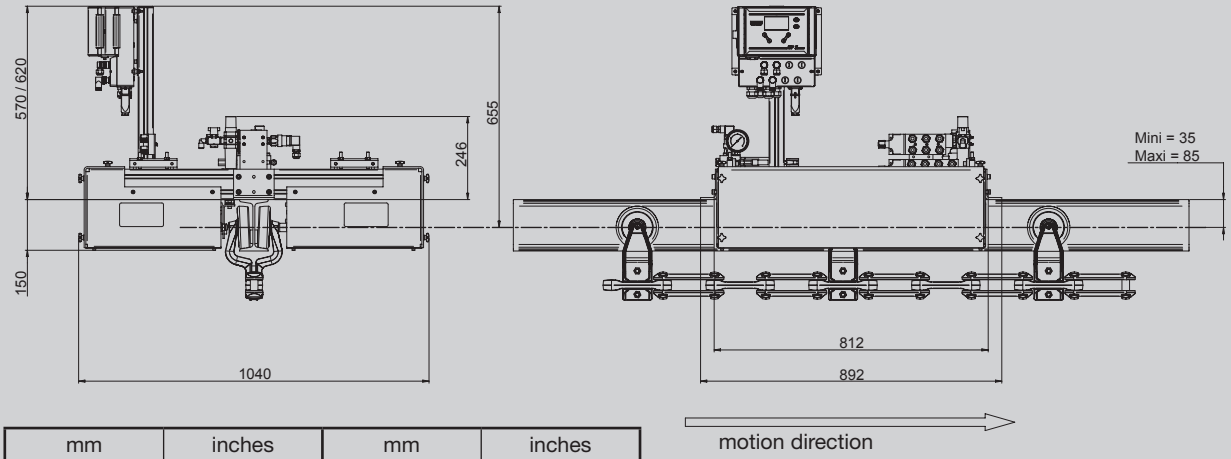


Fig. 1 GVP-D-001



mm	inches	mm	inches
35	1” 3/8	655	25” 3/4
85	3” 3/8	812	32”
150	5” 7/8	892	35” 1/8
246	9” 5/8	1040	41”
570/620	22” 1/2 - 24” 3/8		

When installing the GVP unit pay the greatest attention to the motion direction of the conveyor chain.

Fig. 2 GVP-D-001 overall sizes

GVP-D-002

The GVP-D-002 system is a double lubrication system – chain left hand side and right hand side – with two grease injectors.

Every injector is equipped with a cylinder mounted on a carriage, so that it can move toward the lubrication point. The injector follows the movement of the lube point (chain motion) thanks to a pick-up system. At the end of the lubrication phase, another cylinder pulls back the injection unit to its initial position.

The user's pneumatic network supplies the GVP unit with compressed air and a pneumatic pump with reservoir is directly mounted on the GVP unit for grease supply. Two regulation systems make it possible to monitor and regulate the air and lubricant inlets.

A control unit AEP2-GV – integrated or not – controls and monitors the function of the GVP system.

1 Pneumatic pump with reservoir
2 Control unit AEP2-GV
3 Electric connection of the control unit
4 Monitoring and regulation of the lubricant pressure
5 Compressed air inlet
6 Fixing bracket
7 Monitoring and regulation of the air pressure

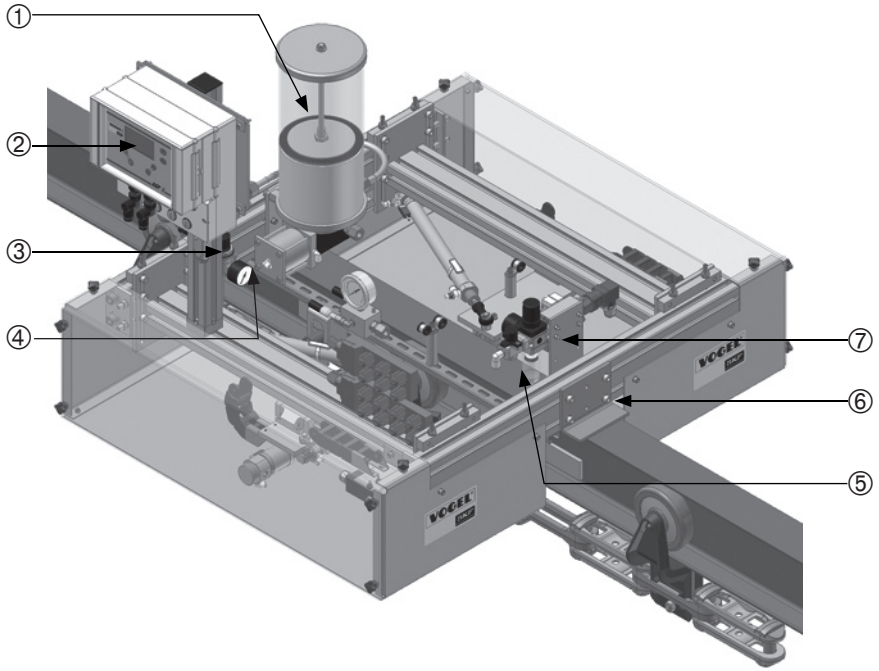
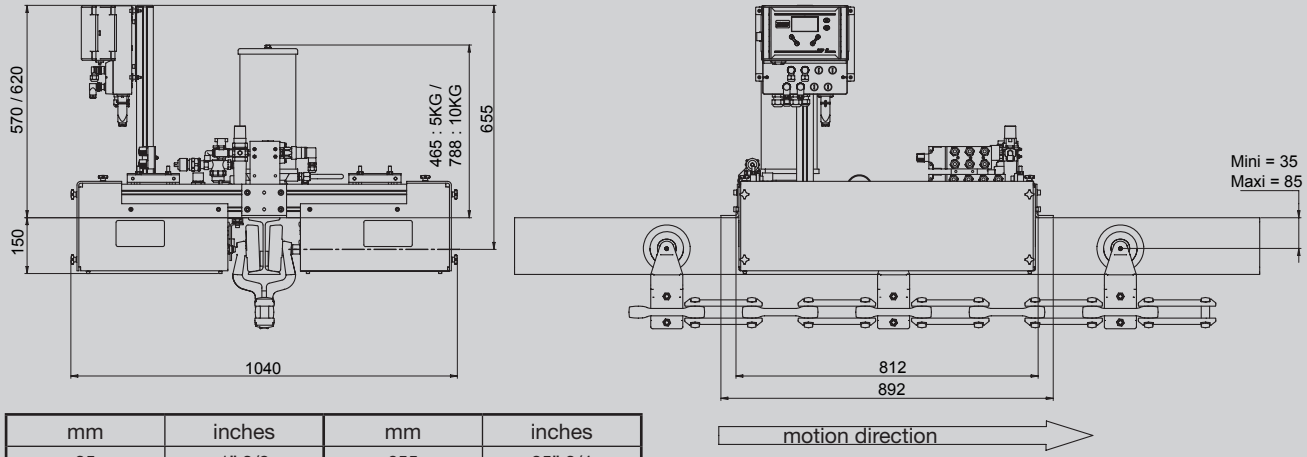


Fig. 3 GVP-D-002



mm	inches	mm	inches
35	1” 3/8	655	25” 3/4
85	3” 3/8	788	30” 7/8
150	5” 7/8	812	32”
246	9” 5/8	892	35” 1/8
465	18” 1/4	1040	41”
570/620	22” 1/2 - 24” 3/8		

When installing the GVP unit pay the greatest attention to the motion direction of the conveyor chain.

Fig. 4 GVP-D-002 overall sizes

Function principle

A. The GVP unit is in its waiting position. The pick-up system and the injection system are in their waiting position on the carriage. A lubrication cycle will be initiated by a proximity switch.
B. The proximity switch detects the roller to be lubricated. A signal is sent to the control unit, which triggers a lubrication phase. The pick-up system moves forward to the roller to be lubricated.
C. The pick-up finger is in contact with the roller to be lubricated. The carriage is now moving exactly in parallel to the roller. An injection order has been given.
The injection head moves simultaneously forward onto the roller to be lubricated.
D. 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.
E. The injection time, which has been previously set, **has elapsed**. The injection head is pulled backwards and leaves the lubrication point. The pick-up finger leaves the chain. There is no more contact between the GVP unit and the chain.
F. Return to the initial position.
The injection system, followed by the pick-up system, are going back to their waiting position on the carriage. The carriage also goes back to its initial position.

Function principle of a GVP chain lubrication unit

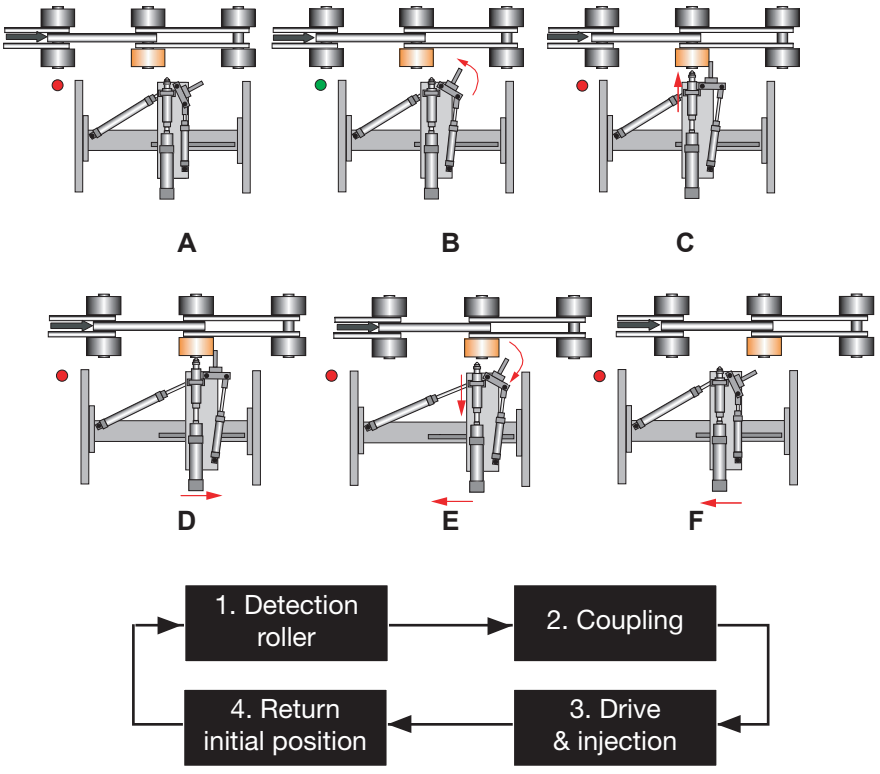


Fig. 5 Function principle of a GVP (roller lubrication)

Installation

Setup

Before installing the GVP unit, remove the packaging material as well as any transport safety devices (e.g. sealing plug in the open outlet).

All adjustments on the unit must be performed exclusively by qualified personnel. Qualified personnel has been trained, instructed and specifically ordered by the owner to perform the work.

Before installing the GVP unit check the rail has been correctly equipped according to the drawing GVP-BR-01. The equipment consists generally in fixing flanges, which have been mounted and welded on the rail.

- Remove the transparent housings from the GVP unit
- Position the GVP unit on the rail between the fixing flanges (1)
- Screw in and tighten the fixing screws (2)
- Connect the different lines – pneumatic, hydraulic and electric – to the GVP unit.

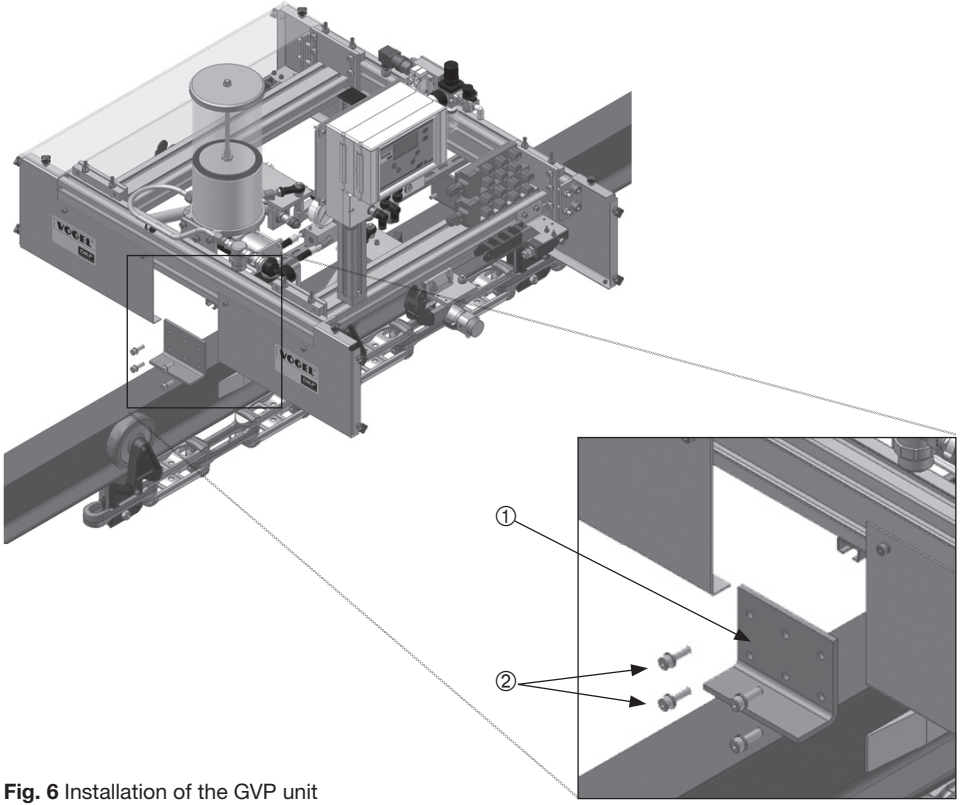


Fig. 6 Installation of the GVP unit

Connections

Pneumatic connection

The maximum inlet pressure specified for operating the GVP unit must not be exceeded.

The GVP unit and the drum pump are connected to the user's pneumatic network with a tube OD 8 mm.

Hydropneumatic drawings:

- GVP with drum pump GVPD-222
- GVP with PVP.3 pump GVPD-222-PVP3

Electric connection

Please refer to the technical sheet AEP2-500-12 to connect the supply line and the control line.

The supply voltage on site must agree with the information on the name-plate. Check the fusing of the circuit. Use only the original fuse with the required ampere value. If other fuses are used, damage to property or personal injury may be the consequence.

Hydraulic connection

Only for the use of a drum pump.

- The pump unit has to be located close by the GVP unit: max. length of the lubricant line 10 meters.
- Grease network: a hose, with a grease filter at the end, is delivered with the GVP unit. Connect the GVP with the high-pressure hose delivered with.
- Set the pressure with the pressure regulator in order to get a grease pressure of 15 MPa.

Setting

During the mechanical adjustment of the unit, the chain of the conveyor has to be off! Any intervention on the unit while the chain keeps running may lead to serious personnel injuries and material dammages.

The GVP unit must be disconnected from the electric voltage supply by properly qualified and instructed personnel before undertaking any work on it.

Work on GVP units which have not been disconnected from power supply can lead to injury of persons.

The GVP unit – cylinders and eventually the pneumatic pump - must be depressurized before any extension work, changes or repairs.

Working on systems under pressure can lead to personal injury.

The mechanical adjustment, vertical and horizontal, have to be carried out for every injector, the one after the other, and on each frame..

Vertical adjustment

The vertical adjustment has to be made on each side.

- Loosen the four fastening screws (1).
- With the two screws for vertical adjustment (2) place the injection head at the height of the greaser of the roller.
- Check the injection head stays in position during the linear movement of the unit.
- Tighten the locknuts.

Horizontal adjustment

The horizontal adjustment has to be made on each side.

- With the two screws for horizontal adjustment (3) place the injection head at a max. distance of 20 mm from the greaser.
- Tighten the locknuts.
- Tighten the fastening screws (1).

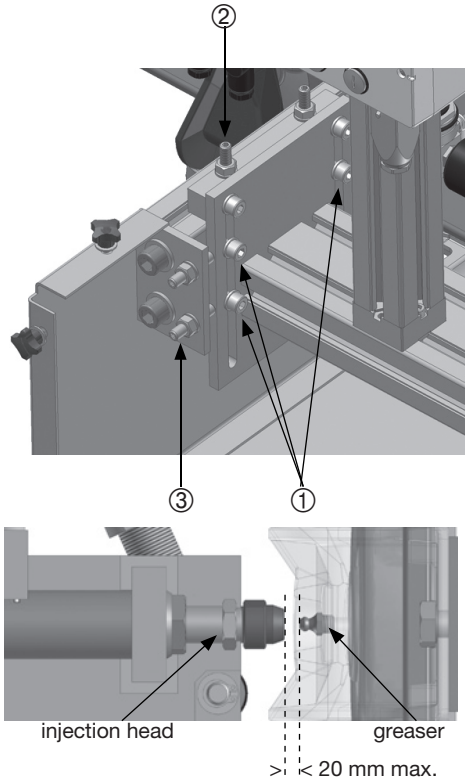


Fig. 6 and 7 Vertical and horizontal adjustments

Pick-up system

- Loosen the locking screw (5).
- Couple the injection head (3) to a greaser of the chain (1).
- Manually operate the pick-up system (4).
- Position the pick-up finger (7) against the roller (2). The finger (7) has to be at a distance of ca. 0.5 mm from the roller when the injection head (3) is in contact with the greaser (1).
- If necessary unscrew the cylinder rod (8) to adjust the setting.
- Tighten the nut (6) and **fold down** the tab of the lockwasher
- Tighten the locking screw (5).

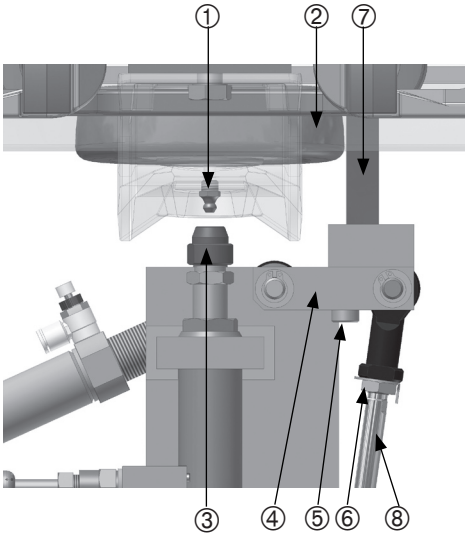


Fig. 8 Adjustment of the pick-up system

Roller proximity switch

The roller proximity switch D1 signals to the control unit AEP2 the lubrication point. When receiving this signal the control unit triggers a lubrication phase.

- Adjust the position of the roller proximity switch D1 so that the system anticipates the coming of the lubrication point.
- Position the proximity switch at a distance of 5 to 10 mm from the point to be detected.

Check that no mechanical piece comes in contact with the proximity switch, when the chain is on.

Origin point proximity switch

The origin point proximity switch signals to the control unit AEP2 the origin point of the chain. The origin point is generally a mechanical piece, which has been mounted on the chain. When receiving the signal, the control unit can count the lubrication points of the chain and precisely indentify them.

- Position the proximity switch at a distance of 5 to 10 mm from the point to be detected.

Commissionning

Before starting the GVP unit, check that all outer connections (reservoir, air supply, electric connections...) have been correctly mounted and tightened.

The commissioning of a GVP unit is a two-stage procedure:

- start up when the chain is off
- start up when the chain is on

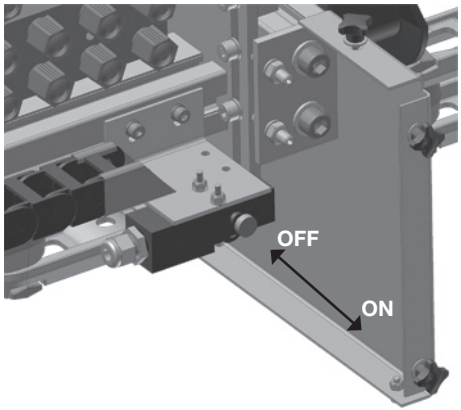


Fig. 9 End switch

Start up – Chain off

All components mentioned in the following procedure are indentified on the GVP unit with labels.

- If a control switch has been connected, remove the connector from the control unit AEP2.
- Remove the connector of the injector control solenoid valve **EVG**.
- Check that the safety end switches are not on postion OFF. If they are, pull to bring them to the position ON (fig. 9).
- Open the air inlet.

When the compressed air inlet is opened, the cylinder are free to operate. Therefore previously check that no object could obstruct the movement of the cylinders.

- Check the inlet pressure, which should be between 0.5 and 0.7 MPa.
- Switch on the control unit AEP2
- Check that the LEDs of the following proximity switches light on:
  - return cylinder **S01** and **S02**
  - injection cylinder **S03** and **S04**

Function of the proximity switches

- Go to the menu ‘Reset’ of the AEP2*.
- Select ‘general reset’.
- Select ‘restart lube phase’.
- Bring a metal item in the front of the origin point proximity switch **DOC** (if one) : the LED must light on.
- Bring a metal item in the front of the proximity switch **D1**: the pick-up systems must come out.
- Slightly push a carriage.
- Slightly push the second carriage.

To prevent any accident, take rapidly your hands off from the system.

- After the lubrication phase, the pick-up systems come back and the carriages are pulled back to their initial position.

The lubrication phase starts when the cylinder are actuated. The lubrication phase time is set with the AEP2 (factory setting 0.1 second) and ends when the injection cylinders are back to their initial position (information given by the proximity switches S03 and S04).

**) Please see the operating manual of the control unit AEP2-GV, No. 951-130-420*

Start up – Chain on

- Reconnect the control switch if necessary.
- Reconnect the solenoid valve **EVG**.
- Go to the menu ‘Reset’ of the AEP2.
- Select ‘general reset’.
- Select ‘restart lube phase’ (factory setting 11 lubrication impulses).
- After a lubrication cycle, adjust the height of the injection heads if necessary.
- If everything works correctly set the parameters of the control unit AEP2 according to your lubrication needs.
- Go to the menu ‘Reset’ of the AEP2.
- Select ‘general reset’.

Technical data

Material	frame aluminium	
Compressed air line	tube Ø8	
Air inlet	0.5 to 0.7 MPa	72.5 to 101.5 PSI
Air consumption at 0.7 MPa	300 NL/minute	
Lubricant pressure		
Injector inlet	1.5 to 2 MPa	217.5 to 290 PSI
Drum pump outlet	15 MPa	2175.5 PSI
Injection pressure	10 MPa max.	1450.5 PSI max.
Injection volume	0.37 to 1 cm^3 – factory setting 0.5 cm^3	0.023 to 0.06 in^3 - 0.03 in^3
Lubricant	grease up to NLGI grade 2	
Operating temperature	5 to 50 °C	41 to 122 °F
Chain speed	24 m/minute max. (for higher speed please contact us)	79 ft/minute
Weight	50 Kg	110.23 lb

Electric data

Connection AEP2	115 V 50/60 Hz
	230 V 50/60 Hz
Devices (solenoid valves, proximity switches…)	24 V DC
Consumption	
With a drum pump	25W
Without a drum pump	15W
Protection	IP65

Maintenance

A GVP unit is for the most part maintenance free. A regular visual checking for damages (oxidation, shocks...) or clogging due to particular operating conditions is recommended.

In order to ensure the good function of the GVP unit take the following instructions into account:

Component	Task			Instructions / Observations
	Checking	Replacing	Frequency	
Greasing system	●		6 months	Trigger from the control unit AEP2 a lubrication cycle in order to check the movement of the different components.
Cylinder	●		6 months	Visual checking (seals) and hearing checking (leakage)
Injector	●		monthly	Check the state of the injection nozzle
Lines	●		6 months	Visual checking (seals) and hearing checking (leakage)
Air filter	●		monthly	Check the cleanliness of the filter
Pump	●		weekly	Check the pressure on the manometer
Grease drum	●	●	according to the lubrication frequency	Visually check the lubricant level (follower plate) Replace the drum if necessary
Linear guide	●		6 months	Life lubricated Check the state and function
Pick-up systems	●		6 months	Check the state of the driven roller (driven roller wear)

Vogel worldwide service

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