Grease lubrication system for single external roller chains

GIS system for grease lubrication of conveyor chains
GIS system

Description

For two-chain conveyors, GIS (Grease Injection System) lubrication system inject grease inside the external rollers through the original greaser while the conveyor is running.

These systems adapt to various conveyor configurations and applications while considering sizes and components.

With GIS systems for external rollers it is possible to lubricate simultaneously both chains.

Applications

- **Metal industry**
  - Aluminum foundry lines
  - Manufactured product transport lines
- **Food and beverage industry**
  - Diffusers/Conveyors in sugar industry
- **Automotive industry**
  - Tightness control lines

Operation principle

The GIS lubrication system only works when the conveyor is running.

During the lubrication phase, when the roller passes in front of the unit, the pick-up system is triggered to let the injection head couple mechanically with the roller. It follows the chain motion while injecting the correct quantity of grease.

At the end of the injection cycle, the head and pick-up system move backwards. The unit returns to its initial position and is ready for a new injection cycle on the next roller.

Customized solutions

Each industrial conveyor chain is specific due to its design, field of application, conditions of use, etc.

The SKF teams have thorough knowledge of the fields of application, combined with numerous years of experience. Many GIS systems are already in service in various industrial sectors throughout the world and have proven their worth.

As a result, SKF teams are capable of satisfying various requests, either by modifying an existing solution or by developing a completely new system. Therefore, the lubrication solution proposed is therefore perfectly adapted to the customer’s needs and unique requirements.

This brochure provides a general description of the GIS lubrication system. Please contact SKF for more detailed information.
One system, two lubrication units

SKF offers two different lubrication units for lubrication of single external roller chains: COBRA and GVP.

COBRA

GIS system with COBRA unit is the simple solution for lubrication of single external roller chain, in particular in heavy industry and harsh environment. The movements required for the injection cycle are mechanically and pneumatically driven. With the standard system version activation is manual. But some versions with electrically automated activation are available. It is also possible to add several monitoring functions.

GVP

GIS system with GVP unit is the advanced solution for lubrication of single external roller chain. This solution manages and controls lubrication cycles automatically. GIS system adapts to a broad range of chain speeds as well as various conveyor configurations and roller positions.

**COBRA unit**
- Sturdy design
- Manual activation
- System automation in option
- Possibility to add monitoring functions
- Easy installation
- Easy to use
- Pneumatic system
- Volumetric metering

**GVP unit**
- Fully automated system
- Configurable control of lubrication cycles
- Injection frequency adaptable to chain speed
- Operation check
- Failure notification
- Electropneumatic system
- Volumetric metering
GIS system with COBRA unit

**Coupling**
- Lubrication point in front of COBRA unit
- Pick-up cylinder extension with fingers

1. Chain movement direction
2. Pick-up finger movement
3. Roller

**Injection**
- Pick-up fingers in contact with roller
- Oscillating arms swivel driven, by roller
- Injection head comes into contact with roller grease nipple
- Grease injection into roller

4. Chain movement direction
5. Pick-up fingers blocked against roller
6. Oscillating arms swivel
7. Injection head moves towards roller grease nipple

**Return**
- Metered quantity of grease injected into roller
- Injection head removed from roller
- Pick-up fingers retract
- Oscillating arms return to initial positions under return spring force

8. Chain movement direction
9. Retraction of pick-up fingers
10. Spring traction direction
11. Oscillating arms swivel
12. Withdrawal of injection head
GIS system with GVP unit

**Coupling**
- Lubrication point in front of GVP unit
- Pick-up cylinder extends and pick-up fingers swivel

1 Chain movement direction
2 Pick-up finger movement
3 Roller

**Injection**
- Pick-up fingers in contact with roller
- Injection carriage moves in parallel with chain, driven by roller
- Injection cylinder extension
- Injection head comes into contact with roller grease nipple
- Grease injection into roller

4 Chain movement direction
5 Injection cylinder extension and injection head moves towards roller grease nipple

**Return**
- Metered quantity of grease injected into roller
- Pick-up fingers swivel and disengage carriage from roller
- Injector moves back
- Return cylinder pulls back injection carriage to its start position

6 Chain movement direction
7 Retraction of pick-up fingers
8 Injector moves back
9 Return cylinder movement
## GIS systems technical data

### General specifications

<table>
<thead>
<tr>
<th></th>
<th>COBRA unit</th>
<th>GVP unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start/Stop</td>
<td>manual or automatic</td>
<td>automatic</td>
</tr>
<tr>
<td>Lubrication cycle</td>
<td>according to option</td>
<td>automatic</td>
</tr>
<tr>
<td>Time configurable</td>
<td>according to option</td>
<td>1 min to 365 d</td>
</tr>
<tr>
<td>Pulse configurable (chain laps)</td>
<td>according to option</td>
<td>1 lap to 999 laps</td>
</tr>
<tr>
<td>Volume injected</td>
<td>0,2 to 2 cm³ * (factory setting 0,5 cm³)</td>
<td>0,33 ; 0,5 ; 0,75 and 1 cm³ * (factory setting 0,5 cm³)</td>
</tr>
<tr>
<td>Max. injection frequency</td>
<td>1/8</td>
<td>1/8</td>
</tr>
<tr>
<td>Max. distance between injection head and nipple</td>
<td>36,5 mm horizontal</td>
<td>max. 20 mm horizontal</td>
</tr>
<tr>
<td>Chain position</td>
<td>horizontal</td>
<td>18 **</td>
</tr>
<tr>
<td>Max. chain speed [m/min]</td>
<td>± 25 mm horizontal; ± 1,5 mm vertical</td>
<td>± 5 mm horizontal; ± 1 mm vertical</td>
</tr>
<tr>
<td>Max. variation of the chain position</td>
<td>5 °C to 60 °C (41 °F to 140 °F)</td>
<td>5 °C to 55 °C (41 °F to 131 °F)</td>
</tr>
<tr>
<td>Ambient temperature limits</td>
<td>5,5 to 6 bar (80 to 87 psi)</td>
<td>4 to 8 bar (58 to 116 psi)</td>
</tr>
<tr>
<td>Compressed air</td>
<td>DIN ISO 8573-1</td>
<td>quality class 5 according to standard</td>
</tr>
<tr>
<td>Power supply</td>
<td>N/A</td>
<td>DIN ISO 8573-1</td>
</tr>
</tbody>
</table>

### Operating checks

<table>
<thead>
<tr>
<th></th>
<th>COBRA unit</th>
<th>GVP unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic supply pressure</td>
<td>according to option</td>
<td>yes</td>
</tr>
<tr>
<td>Grease supply pressure</td>
<td>according to option</td>
<td>yes</td>
</tr>
<tr>
<td>Chain displacement during the lubrication phase</td>
<td>according to option</td>
<td>yes</td>
</tr>
<tr>
<td>Carriage departure/return</td>
<td>according to option</td>
<td>yes</td>
</tr>
<tr>
<td>Injector departure/return</td>
<td>according to option</td>
<td>yes</td>
</tr>
<tr>
<td>Monitoring and display of injection pressure</td>
<td>no</td>
<td>according to option</td>
</tr>
</tbody>
</table>

### Construction

<table>
<thead>
<tr>
<th></th>
<th>COBRA unit</th>
<th>GVP unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main materials</td>
<td>steel, aluminum</td>
<td>steel, aluminum</td>
</tr>
<tr>
<td>Dimensions</td>
<td>460 × 700 × 350 mm</td>
<td>1,100 × 950 × 350 mm</td>
</tr>
<tr>
<td>Attachment support</td>
<td>not included</td>
<td>included</td>
</tr>
<tr>
<td>Protection cover</td>
<td>not included</td>
<td>1, 2, 3 or 4</td>
</tr>
<tr>
<td>Number of injection heads</td>
<td>1</td>
<td>pneumatic</td>
</tr>
<tr>
<td>Injection head drive</td>
<td>mechanical/pneumatic</td>
<td></td>
</tr>
</tbody>
</table>

### Lubricant supply

<table>
<thead>
<tr>
<th></th>
<th>COBRA unit</th>
<th>GVP unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease</td>
<td>up to NLGI grade 2</td>
<td>up to NLGI grade 2</td>
</tr>
<tr>
<td>Pressure required</td>
<td>120 to 240 bar (1 740 to 3 480 psi)</td>
<td>150 to 350 bar (2 175 to 5 076 psi)</td>
</tr>
<tr>
<td>Grease flow rate required</td>
<td>120 cm³/min</td>
<td>60 cm³/min</td>
</tr>
<tr>
<td>Grease supply</td>
<td>external with drum pump</td>
<td>external with drum pump</td>
</tr>
<tr>
<td>Grease supply connection</td>
<td>G 3/8</td>
<td>integrated with reservoir pump</td>
</tr>
</tbody>
</table>

*) The maximal injected volume of lubricant depends on chain speed and pitch, lubricant type, system configuration and surrounding conditions

**) The maximal admissible chain speed depends on injected volume, chain pitch, lubricant type, system configuration and surrounding conditions

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**NOTE**
The technical specifications are as general as possible and are provided only as a guide.

Since each COBRA and GVP unit meets the specific requirements of the application, these specifications may vary.
SKF VisioLub
Option for GVP with AEP3

With the SKF VisioLub program, lubricant pressure inside the injector can be monitored in real time during lubrication. The aim is to identify possible anomalies on the lubrication system or at the lubrication points (chain pins and/or rollers) by analyzing the pressure changes during the injection phase.

AEP3 control unit
GVP standard

- Configurable control of lubrication and pause phases (time, pulse, lubrication ratio)
- Depending on the version, up to three separate lubrication cycles for three different chain lubrication points
- Operation control
- Failure history
- Multilingual touch screen
- VisioLub (option)

AEP3 main technical specifications

- Operating voltage: 110 V AC and 230 V DC
- Protection class: IP 65
- Operating temperature: -10°C to +60°C (32°F to 140°F)
- Fault output:
  - Chain stopped
  - Air pressure
  - Lubricant pressure
  - Chain start/stop
  - Lubrication point identification
  - Trolley departure and return
  - Injector departure and return
- Lubrication phase: in laps or time
- Pause phase: in laps or time

Lubrication phase in laps or time
Pause phase in laps or time

Drum pump
COBRA and GVP

The GIS unit can be supplied with grease by an SKF transfer pump or other pump adapted for standard commercially available drums.

This pump requires the minimum technical specifications shown in the table opposite.

Drum pump specifications required

- Air pressure: 3 to 7 bar (44 to 103 psi)
- Lubricant outlet pressure: 150 to 350 bar (2 176 to 5 078 psi)
- Minimum flow rate: 100 g/min
- Grease type: NLGI 1 and 2
- Drum volume: 25 kg (standard) or 50 kg according to supplier’s delivery
- Electrical level switch: min. (option)

LMC2 control unit
COBRA option

- Control of lubrication and pause phases (pulse)
- Operation check
  - Hydraulic and pneumatic pressures
  - Lubricant level

LMC2 main technical specifications

- Operating voltage: 24 V AC / 230 V DC
- Current: 10 A / 4 A
- Protection class: IP 64
- Operating temperature: -10°C to +70°C (10°F to 158°F)
- Fault output:
  - Chain running contact
  - Air pressure
  - Lubrication point sensor
  - Left system fault
  - Right system fault
- Lubrication phase: in laps
- Pause phase: in laps

COBRA option

- Control of lubrication and pause phases (pulse)
- Operation check
  - Hydraulic and pneumatic pressures
  - Lubricant level

COBRA and GVP

The GIS unit can be supplied with grease by an SKF transfer pump or other pump adapted for standard commercially available drums.

This pump requires the minimum technical specifications shown in the table opposite.

Drum pump specifications required

- Air pressure: 3 to 7 bar (44 to 103 psi)
- Lubricant outlet pressure: 150 to 350 bar (2 176 to 5 078 psi)
- Minimum low rate: 100 g/min
- Grease type: NLGI 1 and 2
- Drum volume: 25 kg (standard) or 50 kg according to supplier’s delivery
- Electrical level switch: min. (option)