Central lubrication pump PICO

Function sequence:

The PICO central lubrication pump is an electrical driven lubrication pump which can deliver grease up to NLGI-class 2. It can be used on both progressive systems as well as multi-line systems. These two systems can also be combined for use.

The PICO unit can be equipped with a maximum of 10 outlets with two outlets connected to a progressive system and eight outlets to the direct connection to the lubrication point.

Two different pump elements are available when the system is used as a progressive pump. They can be used in outlet numbers four and ten:

- Pump element PE-120 F (120 mm³ / revolutions)
- Pump element PE-120 FV (adjustable delivery quantity from 40 to 120 mm³ / revolutions)

Five different pump elements are available for use as a multiple-line unit. They can be used in outlet numbers one to three and five to nine.

- Pump element PE-5 (5 mm³ / revolutions)
- Pump element PE-10 (10 mm³ / revolutions)
- Pump element PE-15 (15 mm³ / revolutions)
- Pump element PE-25 (25 mm³ / revolutions)
- Pump element PE-50 (50 mm³ / revolutions)

The pump is standardly equipped with an electrical fullness level alarm. To prevent air from being sucked into the system, the pump switches off when the minimum grease level has been reached.

Types of pump controls:
1. Execution without control
   (external control e. g. SPS)
2. Execution with integrated controls PICO S-EP 4
   (Controls with permanent power supply
   e. g. ignition voltage in a vehicle)
   (refer description PICO S-EP4)
3. Execution with integrated controls PICO-tronic T1
   (Controls without permanent power supply,
   e. g. trailers or semi-trailers)
   (refer description PICO-tronic T1)
4. Execution with integrated controls PICO-T2
   (Controls with power supply via break light
   e. g. trailers or semi-trailers)
   (refer description PICO-T2)
Central lubrication pump PICO
Method of operation

Operation:

A dc motor (1) (12 or 24 V) drives the eccentric shaft (3) via a worm gear pair (2). The pistons (4) of the pump elements are pushed into the piston outlet threaded joint (5) by rotation and eccentricity (= delivery stroke). The plunger return spring resets the delivery plungers (6) to their initial position (priming).

The check valves integrated into the pump elements prevent previously delivered material from being sucked back inside. An agitator blade (8) is located above the grease sieve (7) on the eccentric shaft and is attached to it. The function of the agitator blade (8) is to push the grease toward the pump elements. There is a secondary piston (10) in the grease reservoir (9) which is impinged with a cone head coil spring (11). Its function is to push the grease evenly to the agitator blade and to the pump elements. The horizontal pump assembly is not absolutely necessary due to the secondary piston.

If the content of the pump is delivered empty, the secondary piston (10) exerts pressure on a tracer pin (12). This sends a signal to the control system (pump empty).

Filling occurs via the cone headed lubrication nipple located above the pump housing. In order to prevent the pump from being over-filled, an over-flow safety device (13) is integrated into the pump housing.
Central lubrication pump PICO
Technical data, Dimension plans, Terminal diagram, Replacement cable

Operating temperature: -25°C to +70°C
Lubrication medium: Grease up to consistency-cl. 2
Number of outlets (Pump elements): max. 10
Stirrer direction: clockwise motion
Fitting position: any
Protection type: IP 65
Drive type: 12 V respectively 24 V DC
n = 15 rpm

Current consumption at 280 bar back pressure and -25°C:
max. 3.8 A at 24 V DC
max. 7.5 A at 24 V DC
Size of reservoir: 1.2 kg
Fullness level monitoring: integrated into pump

Replacement cable:
If the connection cable must be replaced, e.g. after a cable break, a replacement cable (length: 10 m) can be ordered.

Order-no.: FAZ02499-19

Terminal diagram:
Connection to existing signal transmitter e.g. onboard computer or SPS control.

Filling level OK green (No. 1)
Filling level empty red (No. 2)
Ignition, terminal 15 black (No. 3)
Ground, terminal 31 brown (ye/gr)
(no. ...) = Cable-no. at uncolored cables

Dimension plan:
Front view

Top view:
Type with bayonet connector:

Pipe connection dia. 6

Dimension plans:
Front view
Top view:
Type with bayonet connector:

Terminal diagram:
Connection to existing signal transmitter e.g. onboard computer or SPS control.

Filling level OK green (No. 1)
Filling level empty red (No. 2)
Ignition, terminal 15 black (No. 3)
Ground, terminal 31 brown (ye/gr)
(no. ...) = Cable-no. at uncolored cables
Central lubrication pump PICO
Terminal diagrams

Connection to brake light with external pump shut-off (grease empty - pump off) = type for trailers or semi-trailers.

Relay motor shut-off:

Terminal diagram:

Connection configuration for PICO-pump:

Low level relay:

<table>
<thead>
<tr>
<th>Order-no.</th>
<th>Output voltage</th>
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<tbody>
<tr>
<td>4460.0100</td>
<td>12 V</td>
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<tr>
<td>4460.0200</td>
<td>24 V</td>
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</tbody>
</table>

Connection to an external control unit S-EP 6:

Order-No. or EDP-No. and function cf. operation manual or description control unit S-EP 6.

(No. ...) = Cable-no. at uncolored Cables

Central lubrication pump PICO
Pump element for connection to a progressive system

PE-120 F

Technical data:
- Delivery quantity: 0,12 cm³ / stroke or revolutions
- Order-no. / EDP-no.: 2185.99061.0000

PE-120 FV

The PE-120 FV pump element has a delivery quantity regulator. This allows the pump to be adjusted for lubrication areas of various sizes.

Technical data:
- All pump elements are set to full stroke ex works
- Delivery quantity 0,04 to 0,12 cm³ / stroke
- Reduction 0,013 cm³ per stop notch = 1/2 revolution
- Element with piston 6 mm
- Order-no.: 2158.99063.0000

Adjustment of delivery quantity:
- Remove lock screw with a hexagon socket screw key (X 5)
- The adjusting screw (2) is screwed into place with a screw driver
- Turning clockwise reduces the delivery quantity
- Maximum stroke of adjusting screw is 2,4 mm = 6 notches.
- Tighten the lock screw including conical nipple

Delivery quantity (cm³)

<table>
<thead>
<tr>
<th>Notches</th>
<th>Revolutions</th>
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<tr>
<td>0,12</td>
<td>0</td>
</tr>
<tr>
<td>0,11</td>
<td>0,5</td>
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<tr>
<td>0,10</td>
<td>1</td>
</tr>
<tr>
<td>0,09</td>
<td>1,5</td>
</tr>
<tr>
<td>0,08</td>
<td>2</td>
</tr>
<tr>
<td>0,07</td>
<td>2,5</td>
</tr>
<tr>
<td>0,06</td>
<td>3</td>
</tr>
<tr>
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<td>0,04</td>
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</tr>
<tr>
<td>0,03</td>
<td>4,5</td>
</tr>
<tr>
<td>0,02</td>
<td>5</td>
</tr>
<tr>
<td>0,01</td>
<td>5,5</td>
</tr>
</tbody>
</table>

PE - 120F
Pressure relief valve fixed at 280 bar

M 20 x 1.5
Pipe connection dia. 6

PE - 120FV

Delivery piston
SW 24
Pressure relief valve
fixed at 280 bar

M 20 x 1.5
Pipe connection dia. 6
approx. 118
Central lubrication pump PICO
Pump elements for connection to a multi-line system

Description of pump elements PE - 5/10/15/25/50

A maximum of eight PE-5 or 10/15/25/50 pump elements can be installed onto the PICO electrical pump. They are connected directly to the lubrication points. The pump should be installed in such a way that the length of the individual pipe lines of 8 m is not exceeded.

The PE-5 or 10/15/25/50 pump elements can be supplied in five different delivery quantities per stroke:

- PE-5 = 5 mm³ / stroke or revolutions
- PE-10 = 10 mm³ / stroke or revolutions
- PE-15 = 15 mm³ / stroke or revolutions
- PE-25 = 25 mm³ / stroke or revolutions
- PE-50 = 50 mm³ / stroke or revolutions

Ordering key for pump elements PE-5 to PE-50:

Note: Pump elements PE-5 or 10/15/25/50 must be ordered separately!

These pump elements can be supplied with five different connectors:

- With pipe connection dia. 6 with cap screw and double cone olive: (Standard)

- With threaded joint M10x1:

- With plug connection straight for pipe-dia. 6:

- With plug connection 90° for pipe-dia. 6:

- With pipe connection dia. 4 with cap screw and double cone olive:
Central lubrication pump PICO
Installation of the pump elements

The PE-120 F and PE-120 FV pump elements to connect to a progressive system can be installed interchangeably in output positions 4 and 10.

The pump elements PE-5 to PE-50 can be installed interchangeably in output positions 1 to 3 and 5 to 9.

- Remove blanking screw and sealing ring
- Screw on pump element

If a pump element has to be disassembled, the outlet must be locked in with a corresponding blanking screw and a conical nipple.

Electric pump PICO without pump elements:

Blanking screw and sealing ring for outlet-no. 4 and 10:
Sealing ring dia. 28 x dia. 21
Order-no.: 100150010149

Blanking screw M20x1,5
Order-no.: 090090800850

Blanking screw and sealing ring for outlet-no. 1 to 3 and 5 to 9:
Sealing ring dia. 14 x dia. 18
Order-no.: 100150010148

Blanking screw M14x1
Order-no.: 090090801450
Central lubrication pump PICO
Special accessories pressure relief valve with microswitch

The microswitch located on the pressure relief valve on pump elements PE-120 F or PE-120 FV (Mounting position 4 or 10) is used to monitor the maximum operating pressure in the central lubrication system. If a malfunction occurs in the system, the microswitch is triggered. The microswitch signal can be processed by any signal encoder already present, e.g. an on-board processor, or by an external or integrated controller.

Technical data:
- Operating voltage: 10 to 60 V DC
- Max. current load: I = 1.7 A
- Contact type: 1 changeover switch
- Temperature range: -25°C to +85°C
- Protection type: IP 67
- Connection: Cable, length 0.5 m, heat-sealed

Pressure relief valve with microswitch for PE-120 F:
Order-no.: 2152 99100

Pressure relief valve with microswitch for PE-120 FV:
Order-no.: 2152 99101

Terminal diagram to connecting the microswitch to a external control unit:

- Apparent ohmic resistance:
  - black
  - blue
  - brown
- NO (normally open contact)
- NC (normally closed contact)
Central lubrication pump PICO
Filling the pump

Filling methods

The PICO central lubrication pump is filled with a standard grease pump (lever type hand greasing gun) through the filling nipple on the pump housing. It is also possible to fill the pump through a rapid fill coupling with a drum pump.

Note: When filling, care should be taken to keep the area clean. Do not fill the pump beyond the maximum fullness level because the over-fill safety device will respond and excess grease will spill out.

a) Standard filling method through conical lubricating nipple with hand-operated or pneumatic grease press:

b) Filling through filler coupling:

c) Filling with filling press:

We have developed the PICO FILL Filling Set as an easy and fast way to fill the grease container. In PICO FILL the fill connection and the filling press are a set.

Order-no.: 208103027

To fill, unscrew the dust cap from the fill connection and insert the filling press nozzle into the fill connection until it reaches the catch. Press in the grease until the maximum grease level has been reached.
Central lubrication pump PICO
Ordering key

<table>
<thead>
<tr>
<th>Construction type:</th>
<th>2185 . 3 . 1 . 1 . 10 . 0000</th>
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</thead>
<tbody>
<tr>
<td>Motor voltage</td>
<td></td>
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<tr>
<td>with bayonet connector</td>
<td>12 V 24 V</td>
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<tr>
<td>Code</td>
<td>3 4</td>
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<tr>
<td>Pump elements</td>
<td>Outlet-no.</td>
</tr>
<tr>
<td>PE-120 F</td>
<td>1 2 3</td>
</tr>
<tr>
<td>PE-120 FV</td>
<td>4 5 6</td>
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<td>PE-120 F +</td>
<td>X X</td>
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<tr>
<td>PE-120 FV</td>
<td>X X</td>
</tr>
<tr>
<td>Size of reservoir</td>
<td>1.2 kg</td>
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<tr>
<td>Code</td>
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<td>Controller</td>
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<tr>
<td>Code</td>
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<tr>
<td>Controller</td>
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<td>Code</td>
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<td>PICO S-EP4</td>
<td>Cycle time range</td>
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<tr>
<td>Period of lubrication</td>
<td>0.5 h to 8 h</td>
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<tr>
<td>I 1 min. to 16 min.</td>
<td>Z</td>
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<tr>
<td>II 2 min. to 32 min.</td>
<td>T</td>
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<tr>
<td>PICO tronic-T1</td>
<td>Cycle time range</td>
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<tr>
<td>Period of lubrication</td>
<td>0.5 h to 8 h 2 min. to 32 min. 2 h to 32 h</td>
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<tr>
<td>I 1 min. to 16 min.</td>
<td>1 A J</td>
</tr>
<tr>
<td>II 2 min. to 32 min.</td>
<td>2 B K</td>
</tr>
<tr>
<td>III 2 sec. to 32 sec.</td>
<td>3 C L</td>
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<tr>
<td>PICO-T2</td>
<td>Period of lubrication</td>
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<td>1 sec. to 1 min.</td>
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<td>Special types</td>
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</table>

Note: Pump elements PE-5 or 10/15/25/50 must be ordered separately!