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**Note:** Subject to alterations!
Progressive Central Lubrication Systems

Technical basics

System description

At progressive central lubrication systems is the lubricant progressively distributed to the lubrication points by the main and secondary distributors.

BEKA progressive systems are designed to deliver oil, fluid greases and multi-purpose greases up to NLGI-cl. 2.

The progressive system works with pressures of 10 to 300 bar, depending on the back pressure or the line- and distributor resistance.

Construction

A progressive system mainly consists of a central lubrication pump, the progressive distributors and a control unit.

Advantages

- simple design
- well-arranged construction and easy installation
- easy expansion, alteration or reduction of existing systems possible
- maintenance-free components
- exact metering due to a wide range of types
- economic supply of many lubrication points by one single pump
- simple electronic monitoring of the lubricant volume

Function

Progressive systems distribute the lubricant progressively via a follower piston control.

Because of this follower piston control a progressive system can easily be monitored with a pressure limitation valve. If one of the lubrication points is not lubricated, the follower piston control is stopped. The system blocks and the lubricant comes out of the pressure limitation valve.

The volume flow can additionally be monitored by a proximity switch at the distributor.

A central lubrication pump delivers the lubricant to one or several main distributors. These distributors bring the lubricant in the right quantity to one or several secondary progressive distributors and then to the individual lube points. An electronic control device regulates the break- and lubrication time of the pump.

Applications

The main application fields of progressive systems are presses and synthetic processing machines, printing- and paper processing machines, machine tools, packing machines, textile machines, wood- and metal working machines (non-cutting and cutting) as well as mobile machines.
System design
The drive is decisive for the selection of progressive system components.

You can select between manual, hydraulic, pneumatic and electrical actuation.

The choice of the lubrication metering components depends on the size and the number of the bearing points which have to be lubricated.

Different models of progressive distributors can be combined in one system. A system consisting of MX-F distributors can have a SXE-2 distributor as a main distributor, for example.

Design and installation of progressive systems
A scheme is created first, corresponding to the number and position of lubrication points and the drive of the pump.

The following example shows a progressive system with an electrically driven pump and integrated control.
Technical basics

Calculation of the main distributor
The main distributors transport the lubricant to the secondary distributors.

The metering volume of the individual secondary distributors is calculated by the metering volume code numbers. Those are added and related to each other.

See figure on the previous page:
Secondary distributor 1:
\[(25 + 45 + 75) \times 2 = 290\]

Secondary distributor 2:
\[(105+25+25+45+75) \times 2 = 550\]

Secondary distributor 3:
\[(25 + 45 + 25 + 75 + 25 + 45 + 25 + 75 + 25 + 45 + 75) \times 2 = 970\]

Secondary distributor 4:
\[(75 + 45 + 25 + 75 + 25 + 105 + 45 + 25 + 75) \times 2 = 990\]

The metering volume code numbers have to be multiplied with 2 as the distributor disks deliver on the left and on the right.

Relation Code-no. | Main distributor 1 (e. g. SXE-2) | Relation distributor
--- | --- | ---
290 = 1 | app. SXE-2 150 | app. 1
550 = 1,9 | app. SXE-2 150 \times 2 = 300 | app. 2
970 = 3,35 | app. SXE-2 500 | app. 3,33
980 = 3,4 | app. SXE-2 500 | app. 3,33

The relations do not have to correspond exactly. A tolerance of \(\pm 0.2\) is permissible.

Lines
The pump is connected with the main distributors, respectively the main distributors are connected with the secondary distributors by steel pipe, high pressure hose or polyamide pipe.

Use non-return valves in each outlet when higher bearing back-pressures have to be expected.

They are also necessary for the outlets of those main distributors which supply the secondary distributors.

Installation of the distributor
Caution:
Please always install the progressive distributors with the pistons in horizontal position.

The surface has to be even and free of anything that could possibly lead to tensions.
Selection criteria
- Drive (manual, hydraulic, pneumatic, electric)
- Lubricant (oil, fluid grease, grease)
- Metering volume
- Range of pressure, depending on the number and counter-pressure of the lubrication points, distributors and the line system.

Calculation of the pump operation time
The pump operation time is calculated with the metering volume code numbers of the secondary distributors and the pump’s metering volume per stroke or per minute (time control).

See figure of a calculation of the main distributor
Secondary distributor 1:
25 + 45 + 75 = 145 x 2 = 290 mm³

Secondary distributor 2:
105 + 25 + 45 + 75 = 275 x 2 = 550 mm³

Secondary distributor 3:
25 + 45 + 25 + 25 + 45 + 75 + 25 + 45 + 75 = 485 x 2 = 970 mm³

Secondary distributor 4:
75 + 45 + 25 + 75 + 25 + 105 + 45 + 25 + 75 = 495 x 2 = 990 mm³

Calculating a lubrication cycle
290 mm³/cycle + 550 mm³/cycle + 970 mm³/cycle + 990 mm³/cycle = 2800 mm³

Calculation of the output rate of the pump
(e.g. FKGM-EP with electrical drive and gear, with pump element PE 120)
Motor revolutions: 1400 r/min
Transmission of the gear: 80:1
(see data sheet)

1400 r/min ÷ 80 = 17,5 r/min

Metering volume of the pump element:
120 mm³/stroke

120 mm³/stroke x 17,5 r/min = 2100 mm³/min

Calculation of the pump operation time
2800 mm³ + 2100 mm³/min = 1,3 min
that is: 1 min 18 sec
**Functional description of distributors in plate construction.**

At distributors in disk construction, the lubricant is always supplied to the outlets of the distributor disk, in which the piston moves.

The progressive distributors consist of distributor disks, which are combined to distributor blocks by connecting rods (hexagon socket screws) and disks. O-rings seal the individual elements.

According to the functional description, the following distributors operate: MX-F, SX-1, SX-2, SX-3, UX.

The lubricant flows through all distributor disks to the piston (I) (fig. A). The piston (I) is shifted to the left and the lubricant of the piston’s left pressure chamber is directed to the outlets 2 and 3 by the progressive movement of the pistons (II and III). Then the lubricant is directed to the left side of the piston (I) (fig. C) and delivered out of the piston’s right pressure chamber to outlet 4.

After that, the lubricant is delivered to the outlets 2 and 3 by the progressive movement of the pistons (II and III). Then the lubricant is directed to the left side of the piston (I) (fig. C) and delivered out of the piston’s right pressure chamber to outlet 4.

After the piston III has been moved, the lubricant is directed to the piston’s right side again (fig. A) and a new cycle of the progressive piston distributor is effected. This function is repeated as long as lubricant is supplied to the progressive distributor.

---

**Figure B**

The pistons (II and III) are shifted and the lubricant is pushed to the outlets 5 and 6.

**Figure C**

After the piston III has been moved, the lubricant is directed to the piston’s right side again (fig. A) and a new cycle of the progressive piston distributor is effected. This function is repeated as long as lubricant is supplied to the progressive distributor.
**Functional description of distributors in segment construction**

At distributors in segment construction, the lubricant is always delivered to those outlets of the distributor disk, in which the piston moves.

The progressive distributors in segment construction consist of metering-, initial-, middle-, and end elements, which are fixed with hexagon socket screws. The disks are combined by connecting rods with washers and nuts. O-rings seal the individual elements.

According to the functional description as shown here, the following distributors operate: SXE-2, SXE-3, SXD.

**Figure A**

The lubricant flows to the second metering element's piston (II) (fig. A). The piston (II) is moved to the left and the lubricant is pushed out of the piston's left pressure chamber to outlet 2 (fig. B).

**Figure B**

Following, the metering piston (III) is moved progressively and the lubricant is supplied to outlet 3. After the piston (III) has been moved, the lubricant is directed to the left side of the metering piston (I) (fig. C) and delivered out of the metering piston's (I) right pressure chamber to outlet 4.

After that, the metering pistons (II and III) are shifted and the lubricant is pushed to outlet 5 and 6.

**Figure C**

After the metering piston (III) has been shifted is the lubricant directed to the metering piston's (I) right side (fig. D) and the metering volume of the metering piston's (I) left pressure chamber is directed to outlet 1.

**Figure D**

A new cycle starts. This is repeated as long as lubricant is supplied to the progressive distributor.
Functional description in sandwich construction
At distributors in sandwich construction, the lubricant always comes out of the previous outlet in the direction of the distributor inlet.

The progressive distributors SXW-1 and SXW-2 in sandwich construction, consists of a connecting plate and several metering elements. The metering elements are connected with the connecting plate by means of hexagon socket screws. The individual elements are sealed by O-rings.

Figure A
The supplied lubricant flows through the connecting through the ring groove of piston III to the left side of piston I and shifts it to the right side. The lubricant of the right pressure chamber of piston I flows to outlet 6.

Figure B
After that the way to piston II is free and the lubricant is directed to outlet 1.

Figure C
Then the way to piston III gets free and lubricant out of the right pressure chamber is directed to outlet 2.

Figure D
After piston III has been moved, the lubricant is led to the piston’s right side and shifts it to the left. The lubricant of the left pressure chamber of the piston I is supplied to outlet 3.
Figure E
The way to piston II is free and the lubricant of the left pressure chamber is directed to outlet 4.

Figure F
Then the way to piston III is free and the lubricant of the left pressure chamber is led to outlet 5.

After piston III has been shifted, the lubricant is led to the distributor’s left side again and a new cycle begins. This function of the distributor is repeated as long as the distributor is supplied with lubricant.

= pressure ducts
= current metering stroke
### Overview

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<th>max. revolutions/min</th>
<th>Pressure max. (bar)</th>
<th>No. of outlets</th>
<th>max. Connection inlet</th>
<th>max. Connection outlet</th>
<th>Material</th>
<th>Metering volume (mm³/stroke per outlet)</th>
<th>Metering medium</th>
<th>Features</th>
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<td>4010</td>
<td>180</td>
<td>300</td>
<td>24</td>
<td>M10x1</td>
<td>M10x1</td>
<td>steel, galvan.</td>
<td>25 - 105</td>
<td></td>
<td>- use in mobile range (on-/off-road vehicles, agricultural a. construction machinery etc.) - special coating for heaviest operating conditions</td>
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<tr>
<td>MX-I</td>
<td>3979</td>
<td>60</td>
<td>300</td>
<td>16</td>
<td>M10x1</td>
<td>M10x1</td>
<td>1.4404</td>
<td>45 - 105</td>
<td></td>
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<td>300</td>
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<td>M10x1</td>
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<td>oils and greases up to NLGI-cl. 2</td>
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<td>LX-3</td>
<td>3973</td>
<td>60</td>
<td>300</td>
<td>20</td>
<td>M10x1</td>
<td>M10x1</td>
<td>1.4404</td>
<td>200</td>
<td></td>
<td>- Perfect for applications, where VA is not really necessary, high corrosion protection - 100 % compatible dimensions and output rate to similar block distributors - identical to LX-2 - perfect for beverage- and packing industry - 100 % compatible dimensions and output rate to similar block distributors</td>
</tr>
<tr>
<td>SX-1</td>
<td>4000</td>
<td>180</td>
<td>300</td>
<td>20</td>
<td>G 1/8</td>
<td>G 1/8</td>
<td>steel, galvan.</td>
<td>68 - 430</td>
<td></td>
<td>- due to up positioned sealing washers, easy outlet combination without loosen the pipe lines and fittings - see SX-1 - increased volume due to compact design - the alternative for SX-2, but with V2A (1.4301) - especially suited for food industry and aggressive ambient</td>
</tr>
<tr>
<td>SX-2</td>
<td>3989</td>
<td>180</td>
<td>300</td>
<td>20</td>
<td>G 1/8</td>
<td>G 1/8</td>
<td>steel, galvan.</td>
<td>75 - 470</td>
<td></td>
<td>- large connection threads - especially suited for minery area</td>
</tr>
<tr>
<td>SX-3</td>
<td>4008</td>
<td>60</td>
<td>300</td>
<td>20</td>
<td>G 1/8</td>
<td>G 1/8</td>
<td>1.4301</td>
<td>75 - 470</td>
<td></td>
<td>- outlets are upwards positioned; easily detachable when using swivelling elbow fittings at connected pipe lines</td>
</tr>
<tr>
<td>SX-5</td>
<td>3983</td>
<td>180</td>
<td>300</td>
<td>20</td>
<td>G 3/8</td>
<td>G 1/4</td>
<td>steel, galvan.</td>
<td>75 - 470</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UX</td>
<td>4005</td>
<td>180</td>
<td>250</td>
<td>20</td>
<td>G 1/2</td>
<td>G 3/8</td>
<td>steel, galvan.</td>
<td>1130 - 2000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Overview

### Segment construction

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
<th>max. revolutions / min</th>
<th>Pressure max. / bar</th>
<th>No. of outlets max.</th>
<th>Connection inlet</th>
<th>Connection outlet</th>
<th>Material</th>
<th>Metering volume (mm³/stroke)</th>
<th>Metering medium</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>SXE-2</td>
<td></td>
<td>180</td>
<td>300</td>
<td>20</td>
<td>G 1/4</td>
<td>G 1/8</td>
<td>steel, galvan.</td>
<td>100 - 760</td>
<td></td>
<td>- designed for the use as main distributor for grease lubrication systems at construction machinery</td>
</tr>
<tr>
<td>SXE-3</td>
<td></td>
<td>180</td>
<td>300</td>
<td>20</td>
<td>G 3/8</td>
<td>G 1/4</td>
<td>steel, galvan.</td>
<td>100 - 760</td>
<td></td>
<td>- same characteristics as SXE-2</td>
</tr>
<tr>
<td>SXD</td>
<td></td>
<td>180</td>
<td>200</td>
<td>20</td>
<td>G 3/8</td>
<td>G 3/8</td>
<td>steel, galvan.</td>
<td>100 - 760</td>
<td></td>
<td>- same characteristics as SXE-2</td>
</tr>
<tr>
<td>SXW-1</td>
<td></td>
<td>180</td>
<td>150</td>
<td>20</td>
<td>G 1/4</td>
<td>G 1/4</td>
<td>steel, galvan. (conn. plate in Al)</td>
<td>100 - 760</td>
<td></td>
<td>- metering elements can be changed individual or complete with the intermediate plate</td>
</tr>
<tr>
<td>SXW-2</td>
<td></td>
<td>180</td>
<td>150</td>
<td>20</td>
<td>G 1/2</td>
<td>G 3/8</td>
<td>steel, galvan. (conn. plate in Al)</td>
<td>1000 - 3800</td>
<td></td>
<td>- metering elements can be changed individual or complete with the intermediate plate</td>
</tr>
</tbody>
</table>

### Sandwich construction

- Designed for use as main distributors for grease lubrication systems at construction machinery
- Use of dummy elements, which can be replaced by metering elements if necessary
- Same characteristics as SXE-2
- Suitable for a larger line diameter
- Conns. of outlets show downwards hence, perfect to be installed in a switch cabinet
- Use of dummy elements, which can be replaced by metering elements if necessary
- Metering elements can be changed individual or complete with the intermediate plate
- Use of dummy elements, which can be replaced by metering elements if necessary
- Suitable for oil circulation systems
- Especially designed for the automotive industry
Progressive Central Lubrication Systems
Progressive distributors MX-F

Technical description
Progressive distributors MX-F are built in a variable disk construction. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened. Because of the disk construction there is the possibility to join individual distributor disks (middle element, end element) with different metering volumes together to one complete progressive distributor.

The different metering volume per stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons.

Technical data
Operating pressure inlet: max. 300 bar
Temperature range: -30 °C to 80 °C
Metering medium: oil - fluid grease - grease up to NLGI-cl. 2
Revolutions: max. 180 r/min
Material: steel, galvanized
No. of elements:
- min. 3 piston elements: MX-F 3/6
- max. 12 piston elements: MX-F 12/24

Table metering volume:

<table>
<thead>
<tr>
<th>Designation piston element</th>
<th>Metering volume (mm³/stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p. outlet</td>
<td>p. element</td>
</tr>
<tr>
<td>MX-F 25</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>MX-F 45</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td>MX-F 75</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>MX-F 105</td>
<td>105</td>
<td>210</td>
</tr>
</tbody>
</table>

Progressive distributor MX-F with four piston elements (middle element, end element) and eight outlets:

Dimensional drawing
**Elements**

Progressive distributors MX-F have an initial element (without piston), two to eleven middle elements (with piston) and one end element (with piston).

The initial elements have a M10x1 thread connection at the distributor inlet as well as middle and end elements at all distributor outlets.

**Initial elements**

Initial elements can be delivered with and without inlet fitting.

**Initial elements without inlet fitting.**

- Distance of fastening drillings: 17 mm
- Diameter of fastening drilling: 5,3 mm
- **Order-no.**: 401094001 (standard)

All fittings with a connection thread M10x1 fit into an initial element without inlet fitting.

**Initial element with elbow screw fitting WE6 M10x1k.**

- Distance of fastening drillings: 17 mm
- Diameter of fastening drilling: 5,3 mm
- **Order-no.**: 401094002

**Middle elements**

Middle elements are delivered with union screw and olives for pipe Ø 6 mm

<table>
<thead>
<tr>
<th>Middle element</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-F 25</td>
<td>401095101</td>
</tr>
<tr>
<td>MX-F 45</td>
<td>401095102</td>
</tr>
<tr>
<td>MX-F 75</td>
<td>401095103</td>
</tr>
<tr>
<td>MX-F 105</td>
<td>401095104</td>
</tr>
</tbody>
</table>

**End element**

End elements are delivered with union screw and olives for pipe Ø 6 mm

<table>
<thead>
<tr>
<th>End element</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-F 25</td>
<td>401096101</td>
</tr>
<tr>
<td>MX-F 45</td>
<td>401096102</td>
</tr>
<tr>
<td>MX-F 75</td>
<td>401096103</td>
</tr>
<tr>
<td>MX-F 105</td>
<td>401096104</td>
</tr>
</tbody>
</table>
**Combination of outlets**
For larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor. The individual disks have two outlets.

**Combination of outlets at one distributor disk**
When two outlets are combined, the two outlets of one disk are connected. To this purpose, the sealing screw, which separates the two sides, is removed and a screw plug is screwed into the side to be closed. The metering volume of the locked side now comes out of the other side, i.e. the metering volume at the open side doubles.

1 outlet per distributor disk

**Combination of outlets**
Screw plug for closing outlets at the progressive distributor MX-F

**Order-no.:** 4010960050000

**Separation of outlets**
To separate combined outlets again, the sealing screw has to be screwed in again.

Sealing screw for separating outlets at progressive distributors:

**Order-no.:** 4010960060000
Combination of outlets at several distributor disks

When the total metering volume of the outlets combined in one disk should be insufficient, for very large bearing points or main distributors e.g., there is also the possibility to combine the outlets of several distributor disks.

The metering volume of all combined outlets is calculated of their metering volume code number.

Distributor bridge with outlet

With the help of distributor bridges with outlet two, three or four outlets can be connected at different adjacent distributor disks.

Order-no., complete:

| Hollow screw with outlet M10x1 AF 13 | 40109600 10012 |
| Hollow screw without outlet AF 5 |

Distributor bridge with outlet with non-return valve, order-no. total:

| Hollow screw with outlet AF 13 | 40109600 10018 |
| Hollow screw without outlet with non-return valve SW 13 |

Two outlets combined at two different distributor disks

When only two outlets at different, adjacent distributor disks are combined, the sealing screw must not be removed from none of the two distributor disks.

Both outlets’ metering volume then comes out of the distributor bridge’s outlet.

Three outlets combined at two different distributor disks

When three outlets shall be combined, the sealing screw has to be removed from one of the concerned distributor disks. The outlet opposite the distributor bridge of the distributor disk at which that sealing screw has been removed, must be locked with a screw plug.

All three outlets’ metering volume then comes out of the outlet of the distributor bridge.

Four outlets combined at two different distributor disks

When four outlets should be combined, the sealing screws have to be removed in both distributor disks and a screw plug has to be screwed into each of the two outlets opposite to the distributor bridge. All four outlets’ metering volume then comes out of the distributor bridge’s outlet.
Distributor bridges without outlet and pipe bridge
Distributor bridges without outlet have the same function as pipe bridges. With their help, three or four outlets at different, adjacent distributor disks can be combined.

Distributor bridge without outlet, Order-no., total: 40109600 10013
Hollow screw without outlet AF 5

Distributor bridge without outlet with non-return valve, Order-no., total: 40109600 10016
Hollow screw without outlet with non-return valve AF 13

When MX-F 3/2 is used where three outlets are combined, a distributor bridge without outlet with integrated non-return valve has to be used.

Pipe bridge order-no. total: 4010960010011
Consisting of:
Union screw ÜS4 M10x1
Order-no.: 0802000312
Olive DKR 4
Order-no.: 09038620013
Reduction Ø6 to Ø4
Order-no.: 0802000310
Pipe bridge Order-no.: F0409/14-00 001

Three outlets combined at two different distributor disks
When outlets are combined with a pipe bridge (standard) or with a distributor bridge without outlet, at least three outlets are always concerned, as the metering volume has to be directed through one of the disks of the progressive distributor. The sealing screw always has to be removed in one of the two combined distributor disks.

Four outlets combined at two different distributor disks
Also four outlets can be combined with a pipe bridge (standard) or a distributor bridge without outlet. To this purpose, the sealing screws have to be removed from both distributor disks and one of the two outlets opposite to the pipe bridge have to be closed with a screw plug.
Pipe bridges can also be ordered in component parts (see drawing on the left).
Elements with proximity switch
For monitoring the system or for the use of stroke controls for counting the piston strokes can MX-F proximity switches be attached to the progressive distributor.

Proximity switches can be delivered premounted to middle- and end elements MX-F 75, MX-F 105. The installation position of the proximity switch is on the right side as standard. Installation on the left side has to be indicated separately.

Middle or end elements with proximity switch have to be indicated when the order is placed, a later attachment of a proximity switch to an existing middle- or end element is only possible by replacing the concerned distributor disk.

The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory Progressive Distributor”).

As the terminal housing of the proximity switch sticks out at the distributor (see dimension drawing on the right), a mounting plate (see drawing) has to be put under distributors which are not attached with a welding plate or a mounting angle.

Middle- and end elements with proximity switches always have to be equipped with non-return valves at the distributor outlets to ensure a perfect function of these elements.

Technical data of the proximity switch:
Connection: M12x1 pluggable
Connection method: PNP NO
Load capacity: 200 mA
Possible voltage: 10-60 V DC
Per. ambient temperature: -40 °C to 85 °C
Function indicator: LED yellow
Housing material: stainless steel
Protection class: IP 67 / IP 69K

Terminal diagram:

<table>
<thead>
<tr>
<th>1</th>
<th>brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>+ 10 - 60 V DC</td>
</tr>
<tr>
<td>3</td>
<td>black</td>
</tr>
<tr>
<td>4</td>
<td>blue</td>
</tr>
</tbody>
</table>

| 1 | brown |
| 2 | Control inlet or PLC |
| 3 | GND |

L = left
R = right

Proximity switch M12x1
Spare part Order-no.: 100091865

Functional description:
A pin (2) is fixed at the piston (1) of middle- or end element. It approaches the proximity switch (3) with each piston stroke and initiates a signal. This signal can be evaluated differently, depending on control type and application case.

Installation dimensions

<table>
<thead>
<tr>
<th>Piston element with PS</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle element MX-F 75</td>
<td>401095123022*</td>
</tr>
<tr>
<td>Middle element MX-F 105</td>
<td>401095124022*</td>
</tr>
<tr>
<td>End element MX-F 75</td>
<td>401096123022*</td>
</tr>
<tr>
<td>End element MX-F 105</td>
<td>401096124022*</td>
</tr>
</tbody>
</table>

* Please indicate the installation position of the proximity switch: right (standard) or left
**Visual stroke control**

Elements of the progressive distributor MX-F can also be equipped with a visual stroke control. This function testing element does not provide read or print out data. However, the visual stroke control can any time be retrofitted to the distributor. For this purpose, the piston screw plug (1) is removed and the visual stroke control (2) is screwed in. This is only possible at middle- and end elements MX-F 75 and MX-F 105.

The max. permissible operating pressure for the outlet with visual stroke control is 50 bar.

**Order-no.:** 4350 00 105

**Note:** Please pay attention to utmost cleanness, when the attachment is made.

**Functional description:**

The stamp (3) is shifted outwards (in the shown example to the right) when the piston (4) is actuated, the control pin (5) becomes visible. The spring (6) pushes the control pin and the stamp back into their original position, when the piston is moved to the other side (see “Functional description in disk construction”).

**Pressure indicator**

The outlets or the distributor inlet of the MX-F can be equipped with a pressure indicator, i.e. too high pressure is indicated visually. This element does not provide read or print out data. The pressure indicator can be retrofitted any time, as it has only to be screwed into the distributor outlets between the middle- or end element (1) and the retaining screw (2) or into the distributor inlet between the threaded connection (3) and the initial element of the progressive distributor.

**Note:** Pay attention to utmost cleanness when the attachment is carried out!

**Functional description:**

Higher pressure means the pin (5) is pressurized and the bolt (6) is lifted visibly. When pressure is relieved, the spring (4) pushes the bolt (6) and the pin (5) back into their normal position.

See order numbers and installation dimensions under “Accessory progressive distributor”. Should the distributor’s function be ensured even with a closed distributor outlet, the distributor can be provided with a so-called blockade control. See “Accessory progressive distributor”.

**Installation dimensions**
Progressive Central Lubrication Systems

MX-F

Elements with indicator pin
The progressive distributors MX-F can also be equipped with an indicator pin.

The indicator pin cannot be attached later. Retrofitting an indicator pin is only possible by replacing a distributor disk.

The installation of an indicator pin is also only possible in middle elements as well as in end elements MX-F 75 and MX-F 105 and has to be indicated when the order is placed.

The indicator pin is attached on the right as a standard. An installation on the left has to be indicated separately.

Functional description:
At the indicator pin, the stamp (1) is directly connected to the progressive distributor’s piston (2). With each stroke, the stamp (1) is either compulsory pushed out or drawn back.

Installation dimensions

<table>
<thead>
<tr>
<th>Piston element with indicator pin</th>
<th>Outlet pipe-Ø (mm)</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle element MX-F 75</td>
<td>6</td>
<td>401095153*</td>
</tr>
<tr>
<td>Middle element MX-F 105</td>
<td>6</td>
<td>401095154*</td>
</tr>
<tr>
<td>End element MX-F 75</td>
<td>6</td>
<td>401096153*</td>
</tr>
<tr>
<td>End element MX-F 105</td>
<td>6</td>
<td>401096154*</td>
</tr>
</tbody>
</table>

* Please indicate the installation position of the indicator pin: on the right (standard) or on the left.

For the indicator pin it is possible to retrofit a proximity switch, if necessary.

Order-no. of the proximity switch for a later
Progressive Central Lubrication Systems

Progressive distributors

**Extension or shortening of distributors**
The MX-F distributors can any time be adapted to the application conditions because of their disk construction. If new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by mounting additional distributor disks or removing unnecessary ones.

**Description:**
- Remove the connecting rods (1), which keep the distributor together
- Separate the distributor at the desired point
- Add new distributor disks or remove the unnecessary ones
- Screw the distributor together again with the corresponding connecting rods and one tooth lock washer each (see table)

MX-F 5/7 distributor to which three additional distributor disks should be attached:

<table>
<thead>
<tr>
<th>Connecting rod</th>
<th>Order-no.:</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN 6912 - M6 - 8.8</td>
<td></td>
<td>10 ± 1 Nm</td>
</tr>
</tbody>
</table>

**Toothed lock washer DIN 6797 - A6.4 - FSt**
(for locking the connecting rod)
*Order-no.: 0906797003131*

**Caution:** Please pay attention to utmost cleanliness.

**Table order-no. for connecting rod (each 1 pcs):**

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-F 3/6</td>
<td>M6 x 50</td>
<td>090691201913</td>
</tr>
<tr>
<td>MX-F 4/8</td>
<td>M6 x 65</td>
<td>090691202213</td>
</tr>
<tr>
<td>MX-F 5/10</td>
<td>M6 x 80</td>
<td>090691202413</td>
</tr>
<tr>
<td>MX-F 6/12</td>
<td>M6 x 95</td>
<td>090691202613</td>
</tr>
<tr>
<td>MX-F 7/14</td>
<td>M6 x 110</td>
<td>090691202813</td>
</tr>
<tr>
<td>MX-F 8/16</td>
<td>M6 x 125</td>
<td>090691204823</td>
</tr>
<tr>
<td>MX-F 9/18</td>
<td>M6 x 140</td>
<td>090091205023</td>
</tr>
<tr>
<td>MX-F 10/20</td>
<td>M6 x 155</td>
<td>090091205123</td>
</tr>
<tr>
<td>MX-F 11/22</td>
<td>M6 x 170</td>
<td>090091211223</td>
</tr>
<tr>
<td>MX-F 12/24</td>
<td>M6 x 185</td>
<td>090091212223</td>
</tr>
</tbody>
</table>

**Note:** A MX-F distributor always has to consist of at least 3 piston elements and 12 as a maximum.

Should one of the O-rings, which are used for sealing the distributor between the individual elements be damaged and does not seal anymore, a set of seals can be ordered, containing all O-rings installed into the MX-F distributor.

**Set of seals for initial elements:**
*Order-no.: 4010960030002*

**Set of seals for middle elements:**
*Order-no.: 4010960030001*
Progressive Central Lubrication Systems

MX-F

Order key

**Distributor inlet**
The MX-F distributor can be delivered with or without fittings. If the inlet fitting shall already be installed in the distributor, indicate this by means of fitting type, pipe diameter and the series when order (see table).

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06LL</td>
<td>male stud coupling, pipe-Ø 6 or Ø 8, series LL</td>
</tr>
<tr>
<td>GE08LL</td>
<td>pipe-Ø 6 or Ø 8, series LL</td>
</tr>
<tr>
<td>WE06LL</td>
<td>elbow-screw fitting, pipe-Ø 6 or Ø 8, series LL</td>
</tr>
<tr>
<td>WE08LL</td>
<td>pipe-Ø 6 or Ø 8, series LL</td>
</tr>
<tr>
<td>WS06LL</td>
<td>elbow-screw fitting, pipe-Ø 6 or Ø 8, series LL</td>
</tr>
<tr>
<td>WS08LL</td>
<td>pipe-Ø 6 or Ø 8, series LL</td>
</tr>
</tbody>
</table>

When no indication concerning the fittings is made, the delivery is without fittings as standard!

**Distributor outlet**
The distributor outlet can be delivered with union screws, plug-in connections and two types of non-return valves (see table).

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>without fitting</td>
</tr>
<tr>
<td>US04</td>
<td>union screw, pipe-Ø 4 or pipe-Ø 6</td>
</tr>
<tr>
<td>US06</td>
<td>plug-in connection, pipe-Ø 4 or pipe-Ø 6</td>
</tr>
<tr>
<td>GS04</td>
<td>non-return valve, internal thread M10x1</td>
</tr>
<tr>
<td>GS06</td>
<td>(without olive and union screw)</td>
</tr>
<tr>
<td>RVA04</td>
<td>non-return valve, for pipe-Ø 4 or pipe-Ø 6</td>
</tr>
<tr>
<td>RVA06</td>
<td>(with olive and union screw)</td>
</tr>
<tr>
<td>RVB06</td>
<td>non-return valve, for pipe-Ø 6</td>
</tr>
<tr>
<td>RVS06</td>
<td>(with cutting ring and union nut)</td>
</tr>
<tr>
<td></td>
<td>non-return valve with plug connection,</td>
</tr>
<tr>
<td></td>
<td>for pipe -Ø 6</td>
</tr>
</tbody>
</table>

When the name of the fitting is missing, retaining screws Ø 6, or, for the installation of a proximity switch, non-return valves with cutting rings Ø 6 are delivered.

**Metering volume**
The metering code numbers 25 to 105 (see table “Technical description”) of the metering elements have to be indicated on each side of the distributor inlet in the order, in which the lubricant comes out and they have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

For combined outlets, the metering code numbers accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The sealing screw, which has to be removed, is marked with a star (*) in the drawing (see “Combination of outlets”).

Non-return valves in the distributor bridges are marked with RV behind the metering code number at the according outlet in the order key.

**Proximity switch**
Distributor elements to which a proximity switch should be attached, have to be marked with NS (proximity switch) after the number for the metering volume. Proximity switches can be attached to MX-F distributors on the right (standard) or on the left side. After the designation NS, the type of proximity switch

<table>
<thead>
<tr>
<th>NS</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NS M8x1 with 6 m cable, not pluggable</td>
</tr>
<tr>
<td>08</td>
<td>NS M8x1 pluggable</td>
</tr>
<tr>
<td>12</td>
<td>NS M12x1 pluggable (standard)</td>
</tr>
</tbody>
</table>

When the name of the fitting is missing, retaining screws Ø 6, or, for the installation of a proximity switch, non-return valves with cutting rings Ø 6 are delivered.
Order example

Assembly plate has to be ordered separately (see "elements with proximity switch")

Connection position
L = left
R = right

Proximity switch (cable see "accessory progressive distributor")

*= Sealing screw removed!

<table>
<thead>
<tr>
<th>Type</th>
<th>MX-F 04 / 04 - GE08LL / M10x1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of piston elements</td>
<td></td>
</tr>
<tr>
<td>No. of outlets</td>
<td></td>
</tr>
<tr>
<td>Inlet fitting</td>
<td></td>
</tr>
<tr>
<td>Outlet fitting</td>
<td></td>
</tr>
<tr>
<td>Connection positions</td>
<td></td>
</tr>
<tr>
<td>Metering code numbers at outlets</td>
<td></td>
</tr>
</tbody>
</table>

R --- RV + 95 / 150 / --- NS
L --- / 45 / --- /150
**Line break monitoring**

A line break monitoring can be installed at lubrication points for which a lubrication is absolutely necessary. The line break monitoring controls the pipe lines from the distributor outlet to the lubrication point for demolition or break.

**Function**

A line break element with pressure indication is screwed at the lube point of the distributor outlet that has to be monitored. The element is screwed together with flanges and plates (see next page) by means of cylinder screws and hexagon socket screws.

A pressure makeup valve with non-return valve with an opening pressure of 75 bar is screwed directly into the lube point. With this pressure, that always exists within the line, the actuation piston presses a button via the actuation lever in the element. Hence the electrical circuit is closed and the pin of the pressure indication is visible.

If pressure is reduced due to line break, the pin of the pressure indication becomes invisible and the electrical circuit is interrupted.

**Attention:** To ensure a reliable function, the value of the pressure loss in the connecting line between distributor outlet and preload valve may even under unfavourable conditions (e.g. deep temperature) not be higher than the operating pressure of the line rupture element (approx. 30 bar).
Progressive Central Lubrication Systems

Progressive distributors

MX-F

Dimensional drawing of line break monitoring:

* Dimensions depends at which distributor outlet the first or the last line break element is installed.

Technical data

Operating pressure inlet: max. 300 bar
Operating voltage: 10 - 55 V DC
Contact capacity: 50 mA DC
Connection: round plug connection M12,
Pin 1 = +Ub
Pin 4 = outlet (closing contact),
Contact opens at fault

Attention: Dimensions of distributor MX-F see description
MX-F dimensional drawing

<table>
<thead>
<tr>
<th>No. of line break elements or intermediate plates</th>
<th>Dim. “C” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>53,25</td>
</tr>
<tr>
<td>2</td>
<td>68,00</td>
</tr>
<tr>
<td>3</td>
<td>82,75</td>
</tr>
<tr>
<td>4</td>
<td>97,50</td>
</tr>
<tr>
<td>5</td>
<td>112,25</td>
</tr>
<tr>
<td>6</td>
<td>127,00</td>
</tr>
<tr>
<td>7</td>
<td>141,75</td>
</tr>
<tr>
<td>8</td>
<td>156,50</td>
</tr>
<tr>
<td>9</td>
<td>171,25</td>
</tr>
<tr>
<td>10</td>
<td>185,50</td>
</tr>
<tr>
<td>11</td>
<td>200,25</td>
</tr>
<tr>
<td>12</td>
<td>215,00</td>
</tr>
</tbody>
</table>

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Subject to alterations!
Table of order numbers of individual components of line break monitoring for MX-F (see figure above):

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inlet flange, plug M12x1</td>
<td>437501010100</td>
</tr>
<tr>
<td>2</td>
<td>Line break element</td>
<td>437502010100</td>
</tr>
<tr>
<td>3</td>
<td>Final plate</td>
<td>437506010000</td>
</tr>
<tr>
<td>4</td>
<td>Intermediate plate</td>
<td>437504010000</td>
</tr>
<tr>
<td>5</td>
<td>Connection cable</td>
<td>1000913864</td>
</tr>
<tr>
<td>6</td>
<td>Outlet flange, bush M12x1</td>
<td>437503010100</td>
</tr>
<tr>
<td>7</td>
<td>Connecting rod</td>
<td>see table</td>
</tr>
<tr>
<td>8</td>
<td>Washer DIN 125-B4,3</td>
<td>0900125006132</td>
</tr>
<tr>
<td>9</td>
<td>Nut, self locking DIN 986-M4</td>
<td>090704006131</td>
</tr>
<tr>
<td>10</td>
<td>Press. makeup valve straight</td>
<td>see table</td>
</tr>
<tr>
<td>11</td>
<td>Press. makeup valve swivelling</td>
<td>see table</td>
</tr>
<tr>
<td>12</td>
<td>Press. makeup valve angled</td>
<td>see table</td>
</tr>
</tbody>
</table>

Order number table for connecting rod (Pos. 7) for MX-F (1 pcs):

<table>
<thead>
<tr>
<th>Number of line break elements or intermediate plates</th>
<th>Connect. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 M4 x 70</td>
<td>4375/21-01 001</td>
<td></td>
</tr>
<tr>
<td>2 M4 x 85</td>
<td>4375/21-01 002</td>
<td></td>
</tr>
<tr>
<td>3 M4 x 100</td>
<td>4375/21-01 003</td>
<td></td>
</tr>
<tr>
<td>4 M4 x 115</td>
<td>4375/21-01 004</td>
<td></td>
</tr>
<tr>
<td>5 M4 x 130</td>
<td>4375/21-01 005</td>
<td></td>
</tr>
<tr>
<td>6 M4 x 144.5</td>
<td>4375/21-01 006</td>
<td></td>
</tr>
<tr>
<td>7 M4 x 159</td>
<td>4375/21-01 007</td>
<td></td>
</tr>
<tr>
<td>8 M4 x 174</td>
<td>4375/21-01 008</td>
<td></td>
</tr>
<tr>
<td>9 M4 x 188.5</td>
<td>4375/21-01 009</td>
<td></td>
</tr>
<tr>
<td>10 M4 x 203.5</td>
<td>4375/21-01 010</td>
<td></td>
</tr>
<tr>
<td>11 M4 x 218</td>
<td>4375/21-01 011</td>
<td></td>
</tr>
<tr>
<td>12 M4 x 233</td>
<td>4375/21-01 012</td>
<td></td>
</tr>
</tbody>
</table>
Order number table for pressure makeup valve, opening pressure 75 bar:

<table>
<thead>
<tr>
<th>Press. makeup valve</th>
<th>Thread G</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>straight</td>
<td>M8x1k</td>
<td>43750706A111</td>
</tr>
<tr>
<td></td>
<td>M10x1k</td>
<td>43750706A211</td>
</tr>
<tr>
<td>swivelling</td>
<td>M8x1k</td>
<td>43750706B111</td>
</tr>
<tr>
<td>makeup valve (Pos. 11*)</td>
<td>M10x1k (lang)</td>
<td>43750706B311</td>
</tr>
<tr>
<td></td>
<td>R 1/8”k</td>
<td>43750706B411</td>
</tr>
<tr>
<td></td>
<td>R 1/4”k</td>
<td>43750706B511</td>
</tr>
<tr>
<td></td>
<td>1/8-27NPT</td>
<td>43750706B611</td>
</tr>
<tr>
<td>elbow</td>
<td>M8x1</td>
<td>43750706C111</td>
</tr>
<tr>
<td>makeup valve (Pos. 12*)</td>
<td>M10x1</td>
<td>43750706C211</td>
</tr>
<tr>
<td></td>
<td>G 1/8</td>
<td>43750706C311</td>
</tr>
</tbody>
</table>

* see individual components of line break monitoring
Line break monitoring

Order example of line break monitoring with progressive distributor MX-F
Distributor outlets to which a line break monitoring should be installed have to be marked with LB after the metering code number.

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of piston elements</th>
<th>No. of outlets</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Connection position</th>
<th>Metering code-no. at outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MX-F 04 / 06 - GE08LL / M10x1</td>
<td>R 25 LB / --- / 75 LB / --- NS</td>
<td>L 25 / 90 LB / 75 / 150 LB</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assembly plate must be ordered separate (see documentation MX-F elements with proximity switch)
Progressive Central Lubrication Systems

Progressive distributors

**Technical description**

Progressive distributors MX-F are built in a variable disk construction. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened. Due to the disk construction there is the possibility to join individual middle elements (metering elements) with different metering volumes together to one complete progressive distributor.

The different metering volume per stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons i.e. at least three middle elements (metering elements)

**Technical data**

Operating pressure inlet: max. 300 bar

Temperature range: -30 °C to 80 °C

Lubricant: oil - fluid grease - grease up to NLGI-cl. 2

No. of revolutions: max. 60 revolutions/min

Material: V4A (1.4404)

No. of middle elements:

- min. 3 middle elements: MX-I 3/6
- max. 8 middle elements: MX-I 8/16

![Diagram of Progressive distributor MX-I with four middle elements and eight outlets](image)

**Table of metering volume:**

<table>
<thead>
<tr>
<th>Designation middle element</th>
<th>Metering volume (mm³/stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>p. outlet</td>
<td>p. element</td>
<td></td>
</tr>
<tr>
<td>MX-I 45</td>
<td>45</td>
<td>90</td>
</tr>
<tr>
<td>MX-I 75</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>MX-I 105</td>
<td>105</td>
<td>210</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of middle element</th>
<th>No. of outlets (max.)</th>
<th>Dim. “A” (mm)</th>
<th>Dim. “B” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>73,95</td>
<td>62,25</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>88,70</td>
<td>77,00</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>103,45</td>
<td>91,75</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>118.20</td>
<td>106,50</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>132.95</td>
<td>121,25</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>147,70</td>
<td>136,00</td>
</tr>
</tbody>
</table>
Progressive Central Lubrication Systems

Progressive distributors

MX-I

Elements
Progressive distributors MX-F have an initial element (without piston), three to eight middle elements (with piston) and one end element (with piston).

The initial elements have a thread connection M10x1 at the distributor inlet as well as middle elements at all outlets.

Initial element
Initial elements can be delivered with and without inlet fitting.

Initial element without inlet fitting
Distance of fastening drilling: 17 mm
Diameter of fastening drilling: 5,3 mm
Material: V4A (1.4404)
Order-no.: 3979A010 (Standard)

All fittings with a connection thread M10x1 fit into an initial element without inlet fitting.

Initial element with elbow screw fitting WE6 M10x1k
Distance of fastening drilling: 17 mm
Diameter of fastening drilling: 5,3 mm
Material Initial element: V4A (1.4404)
WE6 M10x1k: V4A (1.4571)
Order-no.: 3979A020

Middle element (metering element)
Middle elements are delivered with union screw and olive for pipe Ø 6 mm

End element
Material: V4A (1.4404)
Order-no.: 3979E000

Middle element

<table>
<thead>
<tr>
<th>Material</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-I 45</td>
<td>3979M120</td>
</tr>
<tr>
<td>MX-I 75</td>
<td>3979M220</td>
</tr>
<tr>
<td>MX-I 105</td>
<td>3979M320</td>
</tr>
</tbody>
</table>

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**Combination of outlets**
For larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor. The individual disks have two outlets.

**Combination of outlets at one distributor disk**
When two outlets are combined, the two outlets of one middle element are connected. For this purpose, the sealing screw, which separates the two sides, is removed and a screw plug with sealing ring is screwed into the side that has to be closed. The metering volume of the sealed side now comes out of the other side, i.e. the metering volume at the open side doubles.

**Order-no. complete:**
Screw plug M10x1 with sealing, material V4A (1.4571) with O-ring: 040301583013

**Separation of outlets**
In order to separate combined outlets the sealing screw has to be screwed in again.

Sealing screw for separating outlets at progressive distributors:

**Order-no.:**
Sealing screw: 0802000455
Progressive Central Lubrication Systems
Progressive distributors
MX-I

Combination of outlets at several middle elements
Should the total metering volume of the combined outlets at one middle element be insufficient, at very large bearing points or at main distributors e.g., there is the possibility to combine the outlets of two or more middle elements.

The metering volume is calculated of the metering volume code number of all combined outlets.

Distributor bridge with outlet
With the help of distributor bridges with outlet two, three or four outlets can be connected at different adjacent distributor disks.

Order-no. complete:
4096960010012
Material:
V4A(1.4404)

Banjo bolt with outlet M10x1
AF 13

Banjo bolt without outlet
AF 5

Sealing ring DIN 7603
A10x13,5x1,5 - A4

Material: V4A(1.4404)

Three outlets combined at two middle elements
To connect three outlets at two adjacent middle elements, the sealing screw of one middle element has to be removed and the outlet opposite the distributor bridge has to be closed with a screw plug and a sealing screw. The metering volume of all three outlets comes out of the outlet at the distributor bridge.

Four outlets combined at two middle elements
When four outlets should be connected at two adjacent middle elements, the sealing screws of both middle elements have to be removed and the outlets opposite the distributor bridge have to be closed with a screw plug and sealing ring. The metering volumes of the four outlets then come out of the outlet of the distributor bridge.

Two outlets combined at two middle elements
If only two outlets at two adjacent middle elements should be combined, the sealing screw of both middle elements must not be removed. The metering volume of both outlets comes out at the distributor bridge’s outlet.
Progressive Central Lubrication Systems

Progressive distributors

**Distributor bridges without outlet**
Three or four outlets at different adjacent distributor disks can be combined with the help of distributor bridges without outlets.

Order-no. complete: 4096960010013
Material: V4A (1.4404)

**Distributor bridge without outlet, with non-return valve**

Order-no. complete: 4096960010016
Material: V4A (1.4404)

When using a MX-I 3/2 that combines three outlets, a distributor bridge without outlet but with integrated non-return valve has to be used.

Three outlets combined at two middle elements
At least three outlets are concerned when combining outlets with a distributor bridge without outlet, as the metering volume of one middle element has to be directed through the middle element of a progressive distributor. The sealing screw of one middle element always has to be removed.

Four outlets combined at two middle elements
Four outlets at two adjacent middle elements can be combined by means of a distributor bridge without outlet. The sealing screws of both middle elements have to be removed and one outlet opposite the distributor bridge has to be closed with a screw plug and sealing ring.
Elements with proximity switch

For monitoring the system or for the use of stroke controls for counting the piston strokes MX-I proximity switches can be attached to the progressive distributor.

Proximity switches can be delivered premounted to middle elements MX-I 75, MX-I 105. The installation position of the proximity switch is on the right side as standard. Installation on the left side has to be indicated separately.

Middle elements with proximity switch have to be indicated when the order is placed, a later attachment of a proximity switch to an existing middle element is only possible by replacing the concerned distributor disk.

The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory Progressive Distributor”).

Middle elements with proximity switches always have to be equipped with non-return valves at the distributor outlets to ensure a perfect function of these elements.

As the terminal housing of the proximity switch jut out at the distributor (see dimensional drawing on the right) a mounting plate (see drawing) has to be put under distributors which are not attached with a welding plate or a mounting angle.

Technical data of proximity switch

Connection: M12x1 plugable
Connecting type: PNP NO
Load capacity: 200 mA
Possible voltage: 10 - 60 V DC
Per. ambient temperature: -40 °C to 85 °C
Function indication: LED yellow
Housing material: stainless steel
Protection class: IP 67 / IP 69K

Terminal diagram

Function description

A pin (2) is fixed at the piston’s (1) middle element. It approaches the proximity switch (3) with each piston stroke and initiates a signal. This signal can be evaluated differently, depending on control type and application case.

Order-no. table for middle elements with proximity switch (=NS) M12x1:

<table>
<thead>
<tr>
<th>Middle element</th>
<th>Instal.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-I 75</td>
<td>right</td>
<td>3979M230N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3979M230N20</td>
</tr>
<tr>
<td>MX-I 105</td>
<td>right</td>
<td>3979M330N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3979M330N20</td>
</tr>
</tbody>
</table>
Elements with indicator pin
The progressive distributors MX-I can also be equipped with an indicator pin.

The indicator pin cannot be attached later. Retrofitting an indicator pin is only possible by replacing a distributor disk.

The installation of an indicator pin is also only possible in middle elements MX-I 75 and MX-I 105 and has to be indicated when the order is placed.

The indicator pin is attached on the right as a standard. An installation on the left has to be indicated separately.

Function description
The stamp (1) is directly connected with the piston of the progressive distributor (2) at the control pin indication. With every stroke, the stamp (1) is

For the indicator pin it is possible to retrofit a proximity switch, if necessary.

Order-no. for proximity switch with terminal housing for retrofit:

* Please indicate the installation position of the indicator pin: on the right (standard) or on the left.
**Extension or shortening of distributors**

The MX-I distributors can, at any time, be adapted to the application conditions because of their disk construction. If new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by mounting additional middle elements or removing unnecessary ones.

**Description:**
- Remove the cylinder head cap screws that keep the distributor together
- Separate the distributor at the desired point
- Add new middle elements or remove the unnecessary ones
- Screw the distributor together again with the corresponding cylinder head cap screws and one tooth lock washer each (see table)

Order-no. table for cylinder head cap screw with hexagon socket DIN 912 - A4 (1 piece each):

<table>
<thead>
<tr>
<th>Distributor size</th>
<th>Cylinder screw</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX-I 3/6</td>
<td>M6 x 65</td>
<td>090091211671</td>
</tr>
<tr>
<td>MX-I 4/8</td>
<td>M6 x 80</td>
<td>090091204971</td>
</tr>
<tr>
<td>MX-I 5/10</td>
<td>M6 x 95</td>
<td>090091211871</td>
</tr>
<tr>
<td>MX-I 6/12</td>
<td>M6 x 110</td>
<td>090091205271</td>
</tr>
<tr>
<td>MX-I 7/14</td>
<td>M6 x 125</td>
<td>090091204871</td>
</tr>
<tr>
<td>MX-I 8/16</td>
<td>M6 x 140</td>
<td>090091205071</td>
</tr>
</tbody>
</table>

The following picture shows a MX-I 3/6 distributor that shall be extended by one middle element:

- Cylinder head cap screw with hexagon socket DIN 912 - M6 x XX - A4
- Order-no.: see table

- Tooth lock washer DIN 6798-A 6,4 - A4
- Order-no.: 0906798002211 (1 pcs.)

**Caution:** Please pay attention to utmost cleanness during this works.

**Note:** A MX-I distributor always has to consist of at least 3 middle elements and 8 as a maximum.

Should one of the O-rings, which are used for sealing the distributor between the individual elements be damaged and does not seal anymore, a set of seals can be ordered, containing all O-rings installed into the MX-I distributor.

- Set of seals for initial element, Order-no.: 3979D0001
- Set of seals for middle element, Order-no.: 3979D0002
Progressive Central Lubrication Systems

Progressive distributors

MX-I

Order key

Distributor inlet
The progressive distributor MX-I can be delivered with or without fittings. If the fittings should be delivered already installed into the distributor, then please indicate this with the type of fitting, the pipe diameter and the series.

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06L</td>
<td>Male stud coupling, Pipe-Ø 6, series L</td>
</tr>
<tr>
<td>WE06L</td>
<td>Elbow screw fitting, Pipe-Ø 6 or Ø 8, series L</td>
</tr>
<tr>
<td>WE08L</td>
<td>Elbow swivelling screw fitting, Pipe-Ø 6, series L</td>
</tr>
</tbody>
</table>

The fittings can also be ordered separately (see “accessory progressive distributor” or “fittings and accessory”).

When no indication concerning the fittings is made, the delivery is without fittings as standard!

Distributor outlet
The distributor outlet can be delivered with union screw, non-return valves or without fittings at the outlets.

<table>
<thead>
<tr>
<th>Outlets</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>Without fitting</td>
</tr>
<tr>
<td>US06</td>
<td>Union screw, pipe-Ø 6</td>
</tr>
<tr>
<td>RVA</td>
<td>Non-return valve, internal thread M10x1 (without olive and union screw)</td>
</tr>
<tr>
<td>RVA06</td>
<td>Non-return valve, pipe-Ø 6 (with olive and union screw)</td>
</tr>
<tr>
<td>RVB06</td>
<td>Non-return valve, pipe-Ø 6 (with cutting ring and union nut) Material: V2A (1.4305)</td>
</tr>
</tbody>
</table>

When the fitting detail is missing, union screws Ø 6, or, for the installation of a proximity switch, non-return valves Ø 6 are delivered as standard.

Metering volume
The metering code numbers 45 to 105 (see table “Technical description”) of the metering elements have to be indicated on each side of the distributor inlet in the order, in which the lubricant comes out and they have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

Non-return valves in the distributor bridges are to be indicated with RV.

For combined outlets, the metering code numbers accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The sealing screw, which has to be removed, is marked with a star (*) in the drawing (see “Combination of outlets”).

Proximity switch
Distributor elements to which a proximity switch should be attached, have to be marked with NS (proximity switch) after the number for the metering volume. Proximity switches can be attached to MX-I distributors on the right (standard) or on the left side.
Order example

Mounting plate has to be ordered separately (see "elements with proximity switch")

Connection position
L = left  R = right

Inlet fitting

Proximity switch (Cable see "Accessory progressive distributor")

* = Sealing screw removed!

<table>
<thead>
<tr>
<th>Type</th>
<th>MX-I 05 / 08 - GE06L / RVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of middle elements</td>
<td>R    --- + 255 / --- / 105 NS</td>
</tr>
<tr>
<td>No. of outlets</td>
<td>L  105 / --- / 90 / 105</td>
</tr>
</tbody>
</table>
**Technical description**

The progressive distributor LX-2 and LX-3 are identically constructed, only the material is different (see “technical data”).

The progressive distributor LX-2 and LX-3 are built in a variable disk construction. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened.

A progressive distributor needs at least three pistons for function, i.e. an initial and end element as well as a middle element for distributor LX-2 and LX-3.

**Technical data**

- **Operating pressure inlet:** max. 300 bar
- **Temperature range:** -30 °C to 80 °C
- **Metering medium:** oil - fluid grease - grease up to NLGI-cl. 2
- **Metering volume:** 200 mm³/stroke per outlet
- **Umlaufzahl:**
  - LX-2: max. 180 revol./min
  - LX-3: max. 60 revol./min
- **Werkstoff:**
  - LX-2: steel, zinc-nickel-coating
  - LX-3: V4A (1.4404 / 1.4401)
- **Number of piston elements:**
  - min. 3 piston elements: LX-2 or LX-3 3/6
  - max. 10 piston elements: LX-2 or LX-3 10/20

**Dimensional drawing of progressive distributor LX-2 or LX-3:**

<table>
<thead>
<tr>
<th>Number of piston elements</th>
<th>Number of outlets (max.)</th>
<th>Dim.“A” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>60,00</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>74,75</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>89,50</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>104,25</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>119,00</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>133,75</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>148,50</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>163,25</td>
</tr>
</tbody>
</table>
**Elements**

The progressive distributor LX-2 and LX-3 consists of one initial element, up to eight middle elements and one end element. All elements contain a piston.

The distributor inlet (at initial element) as well as all inlets (at initial-, middle and end element) are designed as threaded connections M10x1.

**Initial element**

For LX-2 order-no.: 3972970000
For LX-3 order-no.: 3973970000

**Middle element**

For LX-2 order-no.: 3972980000
For LX-3 order-no.: 3973980000

**End element**

For LX-2 order-no.: 3972990000
For LX-3 order-no.: 3973990000

All pipe fittings with suitable connection threads and nominal pressure can be screwed into the inlet of the initial element as well as into the outlets of all elements (see “accessories progressive distributor” or “fittings and accessories”).
**Combination of outlets**
For larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor. The individual disks have two outlets.

---

**Combination of outlets at one distributor disk**
When two outlets are combined, the two outlets of one disk are connected. To this purpose, the sealing screw, which separates the two sides, is removed and a screw plug is screwed into the side to be closed. The metering volume of the locked side now comes out of the other side, i.e. the metering volume at the open side doubles.

1 outlet per distributor disk

---

**Combination of outlets**
Screw plug M10x1 for closing outlets:

- **for LX-2**
  - AF 5

- **for LX-3**
  - AF 5

**Order number**
- for LX-2 (ZnNi): 3976960050000
- for LX-3 with sealing (1.4571): 040301583013

---

**Separation of outlets**
To separate combined outlets again, the sealing screw has to be screwed in again.

Sealing screw for separating outlets at progressive distributors:

- **AF 2**

**Order number**
- for LX-2 and LX-3 sealing screw: 0802000455
**Combination of outlets at several distributor disks**

When the total metering volume of the outlets combined in one disk should be insufficient, for very large bearing points or main distributors e.g., there is also the possibility to combine the outlets of several distributor disks. The metering volume of all combined outlets is calculated of their metering volume code number.

**Distributor bridge with outlet**

With the help of distributor bridges with outlet two, three or four outlets can be connected at different adjacent distributor disks.

**Order number total:**

for LX-2 (ZnNi): 3976960010012

---

**Three outlets combined at two different distributor disks**

When three outlets shall be combined, the sealing screw has to be removed from one of the concerned distributor disks. The outlet opposite the distributor bridge of the distributor disk at which that sealing screw has been removed, must be locked with a screw plug.

All three outlets’ metering volume then comes out of the outlet of the distributor bridge.

**Four outlets combined at two different distributor disks**

When four outlets should be combined, the sealing screws have to be removed in both distributor disks and a screw plug has to be screwed into each of the two outlets opposite to the distributor bridge. All four outlets’ metering volume then comes out of the distributor bridge’s outlet.
**Distributor bridges without outlet and pipe bridge**

Distributor bridges without outlet have the same function as pipe bridges. With their help, three or four outlets at different, adjacent distributor disks can be combined.

**Order number total:**
- for LX-2 (ZnNi): 3976960010013
- for LX-3 (V4A, 1.4404): 4096960010013

Hollow screw without outlet AF 5

15

29

USIT-ring 10,4x14,7x1,2 NBR stainless steel

O-ring DIN 3771 10x1 NBR

**Distributor bridge without outlet, with non-return valve**

**Order number total:**
- for LX-2 (ZnNi): 3976960010016
- for LX-3 (V4A, 1.4404): 4096960010016

Hollow screw without outlet with non-return valve AF 13

15

29

USIT-ring 10,4x14,7x1,2 NBR stainless steel

O-ring DIN 3771 10x1 NBR

**Three outlets combined at two different distributor disks**

When outlets are combined with a pipe bridge (standard) or with a distributor bridge without outlet, at least three outlets are always concerned, as the metering volume has to be directed through one of the disks of the progressive distributor. The sealing screw always has to be removed in one of the two combined distributor disks.

When LX-2 3/2 bzw. LX-3 3/2 are used where three outlets are combined, a distributor bridge without outlet but with integrated non-return valve has to be used.

**Four outlets combined at two different distributor disks**

Also four outlets can be combined with a pipe bridge (standard) or a distributor bridge without outlet. To this purpose, the sealing screws have to be removed from both distributor disks and one of the two outlets opposite to the pipe bridge have to be closed with a screw plug.
Progressive Central Lubrication Systems

Progressive distributor

LX-2 / LX-3

Proximity switch

For monitoring the system or when using stroke controls to count the piston strokes, proximity switches can be installed at the progressive distributors LX-2 and LX-3.

Proximity switches can be retrofit at all elements at any time. Remove the screw with O-ring and insert the proximity switch.

Attention: Take care of utmost cleanliness.

The proximity switches are delivered with a cable of 0,3 m and cable and plug M12x1. Depending on the application, bushes with different cable lengths can be connected to the plug, but those bushes must be ordered separate (see accessories progressive distributor).

Technical data of proximity switch

Connection: M12x1 plugable
Switch type: PNP NO contact
Operating voltage: 10 - 60 V DC incl. residual ripple
Current load, Duration: 100 mA
Current load, Short-term: 100 mA
Current consumption: < 15 mA
Permitted temperature (ambient): -25 °C to 70 °C
Function indication: LED yellow
Protection class: IP 67
Housing material: V4A(1.4571)
Threaded connection: M11x1

Circuit diagram

Order number
Proximit switch with 0,3 m cable and plug M12x1
1000912960
Progressive Central Lubrication Systems

Progressive distributor

Extension or shortening of distributors
The distributors LX-2 and LX-3 can any time be adapted to the application conditions because of their disk construction. If new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by mounting additional distributor disks or removing unnecessary ones.

Description:
- Remove the cylinder screws, which keep the distributor together
- Separate the distributor at the desired point
- Add new middle elements or remove the unnecessary ones
- Screw the distributor together again with the corresponding cylinder screws with internal hexagon socket and one tooth lock washer each (see table)

Table for order number for cylinder screws with hexagon socket DIN 912, in A4 (1.4401), (1 pcs):

<table>
<thead>
<tr>
<th>Distributor size</th>
<th>Cylinder screw</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LX-2 / LX-3 3/6</td>
<td>M6 x 40</td>
<td>090091204371</td>
</tr>
<tr>
<td>LX-2 / LX-3 4/8</td>
<td>M6 x 55</td>
<td>090091204671</td>
</tr>
<tr>
<td>LX-2 / LX-3 5/10</td>
<td>M6 x 70</td>
<td>090091203671</td>
</tr>
<tr>
<td>LX-2 / LX-3 6/12</td>
<td>M6 x 85</td>
<td>090091211371</td>
</tr>
<tr>
<td>LX-2 / LX-3 7/14</td>
<td>M6 x 100</td>
<td>090091212071</td>
</tr>
<tr>
<td>LX-2 / LX-3 8/16</td>
<td>M6 x 115</td>
<td>090091212171</td>
</tr>
<tr>
<td>LX-2 / LX-3 9/18</td>
<td>M6 x 130</td>
<td>090091216871</td>
</tr>
<tr>
<td>LX-2 / LX-3 10/20</td>
<td>M6 x 145</td>
<td>090091218871</td>
</tr>
</tbody>
</table>

Shown is a LX-2 3/6 or LX-3 3/6 distributor that is enlarged by a middle element:

Attention: Take care of utmost cleanness.

Note: ALX-2 and LX-3 distributor always has to consist of at least 3 piston elements and 10 as a maximum.

Should one of the O-rings, which are used for sealing the distributor between the individual elements be damaged and does not seal anymore, a set of seals can be ordered, containing all O-rings installed into the LX-2 or LX-3 distributors.

Set of seals for initial elements:
Order-no.: 397297D001

Set of seals for middle elements:
Order-no.: 397298D001

Cylinder screw with hexagon socket DIN 912 - M6 - A4 (1.4401)
Order-no.: see table
Torque $10 \pm 1$ Nm

Toothed lock washer DIN 6797-A 6.4 - stainless steel
Order-no.: 0906797003311 (1 pcs)
Order key

Distributor inlet
The LX-2 or LX-3 distributor can be delivered with or without fittings. If the inlet fitting shall already be installed in the distributor, indicate this by means of fitting type, pipe diameter and the series when order (see table).

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10x1</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06L</td>
<td>male stud coupling, pipe-Ø 6, series L</td>
</tr>
<tr>
<td>WE06L</td>
<td>elbow screw fitting, pipe-Ø 6, series L</td>
</tr>
<tr>
<td>WE08L</td>
<td>Attention: only possible for LX-3 elbow screw fitting, pipe-Ø 8, series L</td>
</tr>
<tr>
<td>WS06L</td>
<td>elbow swivelling screw fitting, pipe-Ø 6, series L</td>
</tr>
</tbody>
</table>

Fittings can also be ordered separate (see accessories progressive distributor or fittings and accessories).

When no indication concerning the fittings is made, the delivery is without fittings as standard!

Distributor outlet
The distributor outlet can be delivered with union screws, plug-in connections and two types of non-return valves.

When the description of the fitting is missing, the LX-2 is delivered without fittings and the LX-3 with union screw Ø 6.

Metering volume
The metering code number 200 of the elements have to be indicated on each side of the distributor inlet in the order, in which lubricant comes out and they have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

Non-return valves in the distributor bridges are marked with RV.

For combined outlets, the metering code numbers accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The sealing screw, which has to be removed, is marked with a star (*) in the drawing (see “Combination of outlets”).

Proximity switch
Distributor elements to which a proximity switch should be attached, have to be marked with NS (proximity switch) after the number for the metering volume.
### Progressive Central Lubrication Systems

**Progressive distributor**

**LX-2 / LX-3**

#### Order example

![Order example](image)

- **Type:** LX-2
- **Number of piston elements:** 04 / 05 - GE06L / RVB06
- **Inlet fitting:** L
- **Outlet fitting:** R
- **Connection position:** L = left, R = right
- **Distributor bridge:** without outlet with non-return valve
- **Proximity switch with 0.3 m cable Ø 5 mm and bush M12x1** (cable see accessories progressive distributor)

#### Table: Specification of Distributors

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of piston elements</th>
<th>Number of outlets</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Connection position</th>
</tr>
</thead>
<tbody>
<tr>
<td>LX-2</td>
<td>04 / 05 - GE06L / RVB06</td>
<td>L</td>
<td>R</td>
<td>L</td>
<td></td>
</tr>
</tbody>
</table>

* = Sealing screw removed
**Technical description**

Progressive distributors SX-1 are built in a variable disk construction. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened. Because of the disk construction, there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.

The different metering volume per stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons, i.e. at least three middle elements (metering elements).

**Technical data**

- Operating pressure inlet: max. 300 bar
- Temperature range: -30 °C to 80 °C
- Metering medium: oil - fluid grease - grease up to NLGI-cl. 2
- No. of revolutions: max. 180 r/min
- Material: steel, galvanized
- No. of middle elements (metering elements):
  - min. 3 middle elements: SX-1 3/6
  - max. 10 middle elements: SX-1 10/20

**Table metering volume:**

<table>
<thead>
<tr>
<th>Designation middle element</th>
<th>Metering volume (mm³/stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p. outlet</td>
<td>p. element</td>
</tr>
<tr>
<td>SX-1 05</td>
<td>68</td>
<td>136</td>
</tr>
<tr>
<td>SX-1 10</td>
<td>105</td>
<td>210</td>
</tr>
<tr>
<td>SX-1 15</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>SX-1 20</td>
<td>210</td>
<td>420</td>
</tr>
<tr>
<td>SX-1 25</td>
<td>275</td>
<td>550</td>
</tr>
<tr>
<td>SX-1 35</td>
<td>350</td>
<td>700</td>
</tr>
<tr>
<td>SX-1 45</td>
<td>430</td>
<td>860</td>
</tr>
</tbody>
</table>

Subject to alterations!
**Progressive Central Lubrication Systems**

**Progressive distributors**

**SX-1**

**Elements**
The progressive distributors SX-1 have an initial element (without piston), three to ten middle elements (with piston) and one end element (without piston).

All elements are delivered without fittings as standard and have a connection thread G1/8 at the distributor inlet (initial element) as well as all distributor outlets (middle elements).

**Initial element**
Order-no.: 4000970000

**End element**
Order-no.: 4000990000

**Middle element (metering element)**
Middle elements are available with seven different metering volumes. For lubrication points with a higher counter pressure also possible with an integrated non-return valve (=RSV).

<table>
<thead>
<tr>
<th>Middle element</th>
<th>Integrated RSV</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-1 05</td>
<td>without</td>
<td>40009810000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000981000001</td>
</tr>
<tr>
<td>SX-1 10</td>
<td>without</td>
<td>40009820000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000982000001</td>
</tr>
<tr>
<td>SX-1 15</td>
<td>without</td>
<td>40009830000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000983000001</td>
</tr>
<tr>
<td>SX-1 20</td>
<td>without</td>
<td>40009840000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000984000001</td>
</tr>
<tr>
<td>SX-1 25</td>
<td>without</td>
<td>40009850000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000985000001</td>
</tr>
<tr>
<td>SX-1 35</td>
<td>without</td>
<td>40009860000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000986000001</td>
</tr>
<tr>
<td>SX-1 45</td>
<td>without</td>
<td>40009870000</td>
</tr>
<tr>
<td></td>
<td>with</td>
<td>4000987000001</td>
</tr>
</tbody>
</table>

All pipe fittings with a suitable connection thread and a suitable nominal pressure can be screwed into the initial element’s distributor inlet as well as into the middle elements’ distributor outlets (see “Accessory progressive distributor” or “Fittings and accessories”).

Subject to alterations!

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**Combination of outlets**

In the case of larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor.

The middle elements have two outlets each.

**Separating combined outlets again**

To separate combined outlets at progressive distributors again, a new aluminum seal has to be laid in, the interchangeable seal washer has to be turned over and the washer attachment screw has to be screwed in again tightly.

Instead of the screw plug, an outlet fitting, respectively a distributor bridge has to be connected.

**Combination of two opposite outlets at one middle element**

When two opposite outlets at a middle element are combined, the aluminum seal is removed and the interchangeable seal washer, which separates the two outlets, is turned over. One of the two outlets is closed with a screw plug and a sealing ring. The metering volume of the closed side then comes out of the opposite outlet, i.e. the metering volume of the open side doubles.

---

**Spare parts:**

- **Screw plug G 1/8:**
  **Order-no.:** 090090800313

- **Sealing ring A10x13.5x1:**
  **Order-no.:** 090760303911

- **Washer attachment screw**
  **Order-no.:** 0802000300

- **Interchangeable seal washer**
  **Order-no.:** 0802000295

- **Aluminum seal**
  **Order-no.:** 0800820011

**Turning over the interchangeable seal washer when outlets are combined**

- Remove the washer attachment screw with a hexagon socket screwdriver A/F 6.
- Remove aluminum seal.
- Turn over the interchangeable seal washer.
- Screw in the attachment screw again.

**Note:** Please take care of utmost cleanliness when working at the distributor.
Progressive Central Lubrication Systems

Progressive distributors

**SX-1**

**Combination of adjacent outlets at several middle elements**

Should the total metering volume of the combined outlets at one middle element be insufficient, at very large bearing points or at main distributors e.g., there is the possibility to combine the outlets of two or more middle elements.

For this purpose, the outlets of two middle elements are on one side connected with a distributor bridge with or without outlet. Depending on the fact, if or in which element the interchangeable seal washer is turned over, two, three or four outlets are connected this way. The closed outlets' metering volume then comes out of one outlet.

The metering volume is calculated of the metering volume code number of all combined outlets.

**Distributor bridge with outlet**

Order-no. total: 4000980010011

**Four outlets combined at two middle elements**

To connect four outlets with a distributor bridge with outlet, the interchangeable seal washers of both concerned middle elements are not turned over. The metering volumes of the connected outlets come out of the distributor bridge’s outlet.

**Distributor bridge with outlet with non-return valve**

Order-no. total: 4000980010013

**Three outlets combined at two middle elements**

To connect three outlets with a distributor bridge with outlet, the interchangeable seal washer at one of the two concerned middle elements has to be turned over and the aluminum seal has to be removed. This middle element’s second outlet has to be closed with a screw plug and a sealing ring.

The metering volumes of both outlets of the middle element at which the interchangeable seal washer has been turned over and the metering volume of the other middle element's outlet now comes out together of the outlet of the distributor bridge.
Four outlets combined at two middle elements
When four outlets should be connected with one distributor bridge with outlet, the two outlets opposite to the distributor bridge each have to be closed with a screw plug with sealing ring. The interchangeable seal washers in both middle elements have to be turned over and the aluminum seal has to be removed.
The metering volumes of the four outlets then come out of the outlet of the distributor bridge.

For the distributor size SX-1 3/2, at which three outlets shall be combined, a distributor bridge with outlet and with integrated non-return valve is used.

Three outlets combined at two middle elements
As a middle element must not be closed on both sides without directing the lubricant to another outlet, at least three outlets have to be connected with distributor bridges without outlet. Therefore the interchangeable seal washer in one of the middle elements has to be turned over and the Al-sealing has to be removed.
The metering volumes of the three connected outlets then come out of the middle element's open outlet, at which the interchangeable seal washer has been turned over.

Distributor bridge without outlet
With the help of a distributor bridge without outlet at least three outlets can be connected.

Four outlets combined at two middle elements
When four outlets should be combined with one distributor bridge without outlet, the aluminum seals have to be removed at both middle elements and the interchangeable seal washers have to be turned over. The unnecessary outlet opposite to the distributor bridge has to be closed with a screw plug with sealing ring.

All four outlets’ metering volumes then come out of the remaining outlet opposite to the distributor bridge.
Progressive Central Lubrication Systems

Progressive distributors

SX-1

Elements with proximity switch

For monitoring the system, for the use of cycle controls or for counting the piston strokes, proximity switches can be attached to the SX-1 distributor for counting the piston strokes.

Proximity switches can be delivered preassembled to middle elements SX-1 25,SX-1 35 and SX-1 45. The installation position of the proximity switch is on the right side as a standard. Installation on the left side has to be indicated separately.

Middle elements with proximity switch have to be indicated when the order is placed, as it is not possible to attach them later.

The only possibility of retrofitting a proximity switch to an existing progressive distributor is to replace one middle element.

The proximity switch can be delivered with open or closed housing. A closed housing is used for an impure ambient. However an open housing is installed as standard.

The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory progressive distributor”).

Technical data of the proximity switch:

<table>
<thead>
<tr>
<th>Connection:</th>
<th>M12x1 pluggable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching method:</td>
<td>PNP NO</td>
</tr>
<tr>
<td>Load capacity:</td>
<td>200 mA</td>
</tr>
<tr>
<td>Voltage:</td>
<td>10-60V DC</td>
</tr>
<tr>
<td>Per. ambient temperature:</td>
<td>-40 °C to 85 °C</td>
</tr>
<tr>
<td>Function indicator:</td>
<td>LED yellow</td>
</tr>
<tr>
<td>Housing material:</td>
<td>stainless steel</td>
</tr>
<tr>
<td>Protection class:</td>
<td>IP 67 / IP 69K</td>
</tr>
</tbody>
</table>

Terminal diagram:

Functional description:

A pin (2) is fixed at the piston of the middle element (1). The pin (2) approaches the proximity switch (3) with each piston stroke and initiates a signal. This signal can be, depending on the type of control or the individual case, processed differently.

Installation dimensions:

Middle element without integrated non-return valve with proximity switch:

<table>
<thead>
<tr>
<th>Middle element with NS M12x1</th>
<th>Pos.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-1 25 NS</td>
<td>right left</td>
<td>4000985003 4000985004</td>
</tr>
<tr>
<td>SX-1 35 NS</td>
<td>right left</td>
<td>4000986003 4000986004</td>
</tr>
<tr>
<td>SX-1 45 NS</td>
<td>right left</td>
<td>4000987003 4000987004</td>
</tr>
</tbody>
</table>

Open housing with proximity switch installed on the right side

Proximity switch M12x1 as spare part order-no.: 100091865

Subject to alterations!
**Visual stroke control**

The progressive distributors SX-1 can be equipped with a visual stroke control. This function checking part does not provide read or print out data. The visual stroke control can any time be retrofitted. For this purpose the piston screw plug is removed and the visual stroke control is screwed in. This is possible at all middle elements.

The max. permissible operating pressure for an outlet with visual stroke control is 40 bar.

**Order-no.:** 435000110

**Note:** Please pay attention to utmost cleanliness when working at distributors.

**Functional description:**

When the piston (1) is actuated, the control pin (2) is shifted outwards (in the shown example to the left) and becomes visible. The control pin is pushed back into its original position by the spring (3) as soon as the piston is moved to the other side (see technical basics “Functional description for disk construction”).

![Diagram of progressive distributor SX-1]
**Special accessory solenoid valve**

A solenoid valve can be installed at progressive distributor SX-1.

The solenoid valve serves for the time-dependent control of the volume flow.

A lubricant volume flow of 0.5 l/min must not be exceeded.

The holder for the solenoid valve is in the initial element.

---

**Table order no. for connecting rods (1 piece):**

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-1 3/6</td>
<td>M7 x 176</td>
<td>002141016</td>
</tr>
<tr>
<td>SX-1 4/8</td>
<td>M7 x 196</td>
<td>002141017</td>
</tr>
<tr>
<td>SX-1 5/10</td>
<td>M7 x 216</td>
<td>002141018</td>
</tr>
<tr>
<td>SX-1 6/12</td>
<td>M7 x 236</td>
<td>002141019</td>
</tr>
<tr>
<td>SX-1 7/14</td>
<td>M7 x 256</td>
<td>002141020</td>
</tr>
<tr>
<td>SX-1 8/16</td>
<td>M7 x 276</td>
<td>002141021</td>
</tr>
<tr>
<td>SX-1 9/18</td>
<td>M7 x 296</td>
<td>002141022</td>
</tr>
<tr>
<td>SX-1 10/20</td>
<td>M7 x 316</td>
<td>002141023</td>
</tr>
</tbody>
</table>

---

When an initial element with solenoid valve is installed, other connecting rods are required (see table).
Progressive Central Lubrication Systems

Progressive distributors

SX-1

Extension or shortening of distributors
Progressive distributors SX-1 can any time be adapted to the application conditions because of their disk construction. When new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by the installation or removal of middle elements.

Description:
- screw off the cap nuts of both ends of the connecting rods (1) and take the connecting rods out
- separate the distributor at the desired point
- add the new middle elements or remove the unnecessary ones
- screw the distributor together with the connecting rods and the cap nuts (see table)

Note: A SX-1 distributor has to consist of at least three middle elements and ten middle elements as a maximum.

Should one of the O-rings which are used for sealing the distributor between the individual elements be damaged and does not seal any more, a set of seals can be ordered. It contains all O-rings that are installed in SX-1 distributors.

Set of seals for middle elements:
Order-no.: 4000 98 D000

Set of seals for initial elements:
Order-no.: 4000 97 D000

SX-1 4/8 distributor to which a distributor disk should be attached:

Connecting rods M7
Best.-Nr.: see table

Washer DIN 125 - B 7,4 - St
Order-no.: 0900125002132 (1 piece)

Protection hexagon nut
DIN 982 - M7 - St
Order-no.: 090098200113 (1 piece)

Note: Please pay attention to utmost cleanliness when working at the distributor.

Table order-no. for connecting rods (1 piece):

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-1 3/6</td>
<td>M7 x 117</td>
<td>002141013</td>
</tr>
<tr>
<td>SX-1 4/8</td>
<td>M7 x 136</td>
<td>002141014</td>
</tr>
<tr>
<td>SX-1 5/10</td>
<td>M7 x 156</td>
<td>002141015</td>
</tr>
<tr>
<td>SX-1 6/12</td>
<td>M7 x 176</td>
<td>002141016</td>
</tr>
<tr>
<td>SX-1 7/14</td>
<td>M7 x 196</td>
<td>002141017</td>
</tr>
<tr>
<td>SX-1 8/16</td>
<td>M7 x 216</td>
<td>002141018</td>
</tr>
<tr>
<td>SX-1 9/18</td>
<td>M7 x 236</td>
<td>002141019</td>
</tr>
<tr>
<td>SX-1 10/20</td>
<td>M7 x 256</td>
<td>002141020</td>
</tr>
</tbody>
</table>
**Pressure indicator**

The pressure indicator locates closed lubrication lines, respectively blocked progressive distributors.

The pressure indicator can be used in the distributor inlet as well as in the distributor outlets for blockade monitoring of individual lubrication points and series-connected progressive distributors (secondary distributors).

The pressure indication can be retrofitted any time.

### Functional description:

When the pressure increases, the pin (1) is pushed out and the indicator pin (3) becomes visible. When the pressure is reduced, the spring (2) pushes back the indicator pin (3).

### Installation:

The pressure indicator is screwed into a swivelling fitting (4) and then into the distributor. The connection fitting has to be screwed into the swivelling fitting.

See order numbers and installation dimensions under “Accessory progressive distributor”.

When the distributor’s function should be ensured even with a closed distributor outlet, the distributor can be provided with a so-called **blockade control**. See “Accessory progressive distributor”.

Screwed into the distributor inlet: pressure indicator (not pressurized)

Screwed into the distributor outlet: pressure indicator (pressurized)
Progressive Central Lubrication Systems
Progressive distributors

Order key
Distributor inlet
The progressive distributor SX-1 can be delivered with or without fittings. When the fittings shall be delivered already installed into the distributor, they have to be marked with the pipe diameter and the series. (see table)

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06LL</td>
<td>male stud coupling,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6 or 8,</td>
</tr>
<tr>
<td>GE06L</td>
<td>series L or LL</td>
</tr>
<tr>
<td>GE08LL</td>
<td>male stud coupling,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6 or 8,</td>
</tr>
<tr>
<td></td>
<td>series L or LL</td>
</tr>
</tbody>
</table>

The fittings can also be ordered separately (see “Accessories progressive distributor” or “Fittings and accessories”).

When there is no indication concerning the fittings, delivery is without fittings as standard!

Distributor outlet
The fitting type at the distributor outlets has to be indicated with the diameter and the series when the order is placed (see table):

<table>
<thead>
<tr>
<th>Outlets</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06LL</td>
<td>male stud coupling,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6 or 8,</td>
</tr>
<tr>
<td>GE06L</td>
<td>series L or LL</td>
</tr>
<tr>
<td>GE08LL</td>
<td>non-return valve,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6 or 8,</td>
</tr>
<tr>
<td></td>
<td>series L or LL</td>
</tr>
<tr>
<td>RGE06LL</td>
<td>non-return valve,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6 or 8,</td>
</tr>
<tr>
<td></td>
<td>series L or LL</td>
</tr>
<tr>
<td>RGE06L</td>
<td></td>
</tr>
<tr>
<td>RGE08LL</td>
<td></td>
</tr>
<tr>
<td>RGE08L</td>
<td></td>
</tr>
</tbody>
</table>

Note:
Without an indication of the series, a male stud coupling, respectively a non-return valve of the series L (cutting ring) is delivered as standard.

The progressive distributor SX-1 with installed solenoid valve as well as metering elements with integrated non-return valve, pressure indicator or visual stroke control have to be indicated separately.

Metering volume
The metering code numbers 05 to 45 (see table “Technical description”) of the metering elements have to be indicated for each side of the distributor inlet in the order in which the lubricant comes out and have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

The metering code numbers of combined outlets accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The interchangeable seal washer that has to be turned over is marked with a star (*) in the drawing (see “Combination of outlets”).

Proximity switches
Middle elements to which proximity switches should be attached, have to be marked with NS or NSg after the number for the metering volume. At SX-1 distributors, proximity switches can be installed on the left or on the right side, as desired. However the standard installation position is on the right side.

<table>
<thead>
<tr>
<th>NS</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSg</td>
<td>NS with open housing (standard)</td>
</tr>
<tr>
<td>NS</td>
<td>NS with closed housing</td>
</tr>
</tbody>
</table>

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Middle elements to which proximity switches should be attached, have to be marked with NS or NSg after the number for the metering volume. At SX-1 distributors, proximity switches can be installed on the left or on the right side, as desired. However the standard installation position is on the right side.
### Order example

<table>
<thead>
<tr>
<th>Type</th>
<th>SX-1 03 / 03 - GE06L / G1/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of middle elements</td>
<td></td>
</tr>
<tr>
<td>No. of outlets</td>
<td></td>
</tr>
<tr>
<td>Inlet fittings</td>
<td></td>
</tr>
<tr>
<td>Outlet fittings</td>
<td></td>
</tr>
<tr>
<td>Connection position</td>
<td></td>
</tr>
<tr>
<td>Metering code no. at outlets</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>20 / 25 / --- NS</td>
</tr>
<tr>
<td>L</td>
<td>--- / --- + 95</td>
</tr>
</tbody>
</table>

**Postion of the connections**

* = Interchangeable seal washer turned over!

**Diagram**

1. Distributor bridge with outlet G1/8
2. Screw plugs
3. Inlet fitting Ø6 L
4. Outlet G1/8
5. Proximity switch (cable see "accessory progressive distributor")

**Tables**

- **Type**: SX-1 03 / 03 - GE06L / G1/8
- **R**: 20 / 25 / --- NS
- **L**: --- / --- + 95

**Legend**

- **L**: Screw plug
- **R**: Outlet G1/8
- **RL**: Postion of the connections

**Notes**

- * = Interchangeable seal washer turned over!
Progressive Central Lubrication Systems

Progressive distributors

**Technical description**

Progressive distributors SX-2 and SX-3 are built in a variable disk construction. Therefore the distributors can be, depending on the number of lubrication points, extended or shortened. Because of the disk construction there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.

The different metering volume per piston stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons, i.e. at least three middle elements (metering elements).

**Technical data**

- Operating pressure-inlet: max. 300 bar
- Temperature range: -30 °C to 80 °C
- Lubricant: oil- fluid grease - grease up to NLGI-cl. 2
- Revol.: SX-2 max. 180 r/min
  - SX-3 max. 60 r/min
- Material: SX-2 steel, galvanized
  - SX-3 stainless steel

**Number of elements:**

- Min. 3 metering elements: SX-2 or SX-3 3/6
- Max. 10 metering elements: SX-2 or SX-3 10/20
  (max. up to 12 metering elements possible on enquiry)

<table>
<thead>
<tr>
<th>Designation middle element</th>
<th>Metering volume (mm³/stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p. outlet</td>
<td>p. element</td>
</tr>
<tr>
<td>SX-2 (SX-3) 07</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>SX-2 (SX-3) 11</td>
<td>117</td>
<td>234</td>
</tr>
<tr>
<td>SX-2 (SX-3) 17</td>
<td>170</td>
<td>340</td>
</tr>
<tr>
<td>SX-2 (SX-3) 23</td>
<td>230</td>
<td>460</td>
</tr>
<tr>
<td>SX-2 (SX-3) 30</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>SX-2 (SX-3) 38</td>
<td>380</td>
<td>760</td>
</tr>
<tr>
<td>SX-2 (SX-3) 47</td>
<td>470</td>
<td>940</td>
</tr>
</tbody>
</table>

**Dimension drawing:**

Progressive distributor SX-2/SX-3 with three metering elements and six outlets:

- Metering code number
- Initial element
- Middle elements (metering elements)
- Distributor inlet
- End element
- Distributor outlet

**Designation:**

- SX-2 with fillister head cap screw, or connecting rods
- SX-3 with connecting rods

see "Extension or shortening of distributors" (SX-2/SX-3)

<table>
<thead>
<tr>
<th>No. of middle elements</th>
<th>No. of outlets (max.)</th>
<th>Dim. “A” (mm)</th>
<th>Dim. “B” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>98,7</td>
<td>86,1</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>118,4</td>
<td>105,8</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>138,1</td>
<td>125,5</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>157,8</td>
<td>145,2</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>177,5</td>
<td>164,9</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>197,2</td>
<td>184,6</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>216,9</td>
<td>204,3</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>236,6</td>
<td>224,0</td>
</tr>
</tbody>
</table>
Progressive Central Lubrication Systems

Progressive distributors

**Elements**

The progressive distributors SX-2 and SX-3 always consist of one initial element (without piston), three to ten middle elements (with piston) and one end element (without piston).

All elements are delivered without fittings as standard and have a connection thread G 1/8 at the distributor inlet (initial element) as well as at all distributor outlets (middle elements).

**Initial element**

- For SX-2 order-no.: 3989 97 0000
- For SX-3 order-no.: 4008 97 0000

**Middle element (metering element)**

Middle elements can be delivered with seven different metering volumes:

Each middle element has two outlets.

**Middle elem. for SX-2**

<table>
<thead>
<tr>
<th>SX-2 07</th>
<th>3989981000</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-2 11</td>
<td>3989982000</td>
</tr>
<tr>
<td>SX-2 17</td>
<td>3989983000</td>
</tr>
<tr>
<td>SX-2 23</td>
<td>3989984000</td>
</tr>
<tr>
<td>SX-2 30</td>
<td>3989985000</td>
</tr>
<tr>
<td>SX-2 38</td>
<td>3989986000</td>
</tr>
<tr>
<td>SX-2 47</td>
<td>3989987000</td>
</tr>
</tbody>
</table>

**Middle elem. for SX-3**

<table>
<thead>
<tr>
<th>SX-3 07</th>
<th>4008981000</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-3 11</td>
<td>4008982000</td>
</tr>
<tr>
<td>SX-3 17</td>
<td>4008983000</td>
</tr>
<tr>
<td>SX-3 23</td>
<td>4008984000</td>
</tr>
<tr>
<td>SX-3 30</td>
<td>4008985000</td>
</tr>
<tr>
<td>SX-3 38</td>
<td>4008986000</td>
</tr>
<tr>
<td>SX-3 47</td>
<td>4008987000</td>
</tr>
</tbody>
</table>

*Material of middle element SX-3: V2A (1.4301)*

**End element**

- For SX-2 order-no.: 3989 99 0000
- For SX-3 order-no.: 4008 99 0000

All pipe fittings with a suitable connection thread and a suitable nominal pressure can be screwed into the initial element’s distributor inlet as well as middle elements’ distributor outlets (see “Accessory progressive distributor”, respectively “Fittings and accessories”).

Subject to alterations!

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Combination of outlets
For larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor.

The progressive distributor’s individual middle elements have two outlets.

Note: Please pay attention to utmost cleanness when working at the distributor.

Separating combined outlets again
To separate combined outlets at progressive distributors again, a new aluminum seal has to be laid in, the interchangeable seal washer has to be turned over and the washer attachment screw has to be screwed in again tightly.

Instead of the screw plug, an outlet fitting or a distributor bridge has to be connected.

Combination of two outlets at one middle element
When two opposite outlets are combined at a middle element, the aluminum seal is removed and the interchangeable seal washer, which separates the two outlets, is turned over. One of the two outlets is closed with a screw plug and a sealing ring. The metering volume of the closed side then comes out of the opposite outlet, i.e. the open side’s metering volume doubles.

Note: Please pay attention to utmost cleanness when working at the distributor.

Separating combined outlets again
To separate combined outlets at progressive distributors again, a new aluminum seal has to be laid in, the interchangeable seal washer has to be turned over and the washer attachment screw has to be screwed in again tightly.

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Turning over the interchangeable seal washer when outlets are combined
- Remove the washer attachment screw with a hexagon socket screwdriver A/F 6.
- Remove aluminum seal.
- Turn over the interchangeable seal washer.
- Screw the washer attachment screw in again.
Combination of outlets at several middle elements

Should the total metering volume of the combined outlets at one middle element be insufficient, at very large bearing points or main distributors e.g., there is the possibility to combine the outlets of two or more middle elements.

For this purpose, the outlets of two middle elements are on one side connected with a distributor bridge with or without outlet. Depending on the fact, if or in which element the interchangeable seal washer is turned over, two, three or four outlets are connected this way. The closed outlets' metering volume then comes out of one outlet.

The metering volume is calculated of the metering code numbers of all combined outlets.

Distributor bridge with outlet

Two adjacent outlets combined at two middle elements

To connect two outlets on one side, at different adjacent middle elements with a distributor bridge with outlet, the interchangeable seal washers of both concerned middle elements are not turned over. The metering volumes of the connected outlets come out of the outlet of the distributor bridge.

Three outlets combined at two middle elements

To connect three outlets with a distributor bridge with outlet, the interchangeable seal washer at one of the concerned middle elements has to be turned over and the aluminum seal has to be removed. The second outlet of this middle element has to be closed with a screw plug and sealing ring.

The metering volumes of both outlets of the middle element at which the interchangeable seal washer has been turned over and the aluminum seal has been removed now come out of the outlet of the distributor bridge.

Order-no. total for SX-2: 4000980010011
Order-no. for SX-3 (1.4305): 4008980010011
consisting of:
1 Distributor strip, order-no.: F0408/13-00
1 Hollow screw without outlet, Order-no.: F0408/15-00
1 Hollow screw with outlet
Order-no.: F0408/14-00
2 sealing rings, order-no. (1 piece) for
SX-2, A10x13,5x1,5-soot iron: 090760305121
SX-3, A10x13,5x1,5-1.4571: 090760305191
2 sealing rings, order-no. (1 piece) for
SX-2, A10x15x2-Cu: 090760301911
SX-3, A10x13,5x2-1.4571: 090760305291

Subject to alterations!

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Four outlets combined at two middle elements
When four outlets should be connected with one distributor bridge with outlet, the two outlets opposite to the distributor bridge each have to be closed with a screw plug with sealing ring. The interchangeable seal washers in both middle elements have to be turned over and the aluminum seal has to be removed. The metering volumes of the four outlets then come out of the distributor bridge’s outlet.

Three outlets combined at two middle elements
As a middle element must not be closed on both sides without directing the lubricant to another outlet, at least three outlets have to be connected with distributor bridges without outlet. Therefore the interchangeable seal washer in one of the middle elements has to be turned over and the Al-sealing has to be removed. The metering volumes of the three connected outlets then come out of the middle element’s open outlet, at which the interchangeable seal washer seal has been turned over.

Distributor bridge without outlet
With a distributor bridge without outlet, at least three outlets can be connected.

Four outlets combined at two middle elements
When four outlets should be combined with one distributor bridge without outlet, the aluminum seals have to be removed at both middle elements and the interchangeable seal washers have to be turned over. The unnecessary outlet opposite to the distributor bridge has to be closed with a screw plug with sealing ring. All four outlets’ metering volumes then come out of the remaining outlet opposite to the distributor bridge.
Elements with proximity switch

For monitoring the system, for the use of cycle controls or for counting piston strokes, proximity switches can be attached to the distributors SX-2 and SX-3.

Proximity switches can be delivered preassembled to middle elements SX-2(3) 30, SX-2(3) 38 and SX-2(3) 47. The installation position of the proximity switch is on the right side as a standard. Installation on the left side has to be indicated separately.

Middle elements with proximity switch have to be indicated when the order is placed, as it is not possible to attach them later.

The only possibility of retrofitting a proximity switch to an existing progressive distributor is to replace one middle element.

The proximity switch can be delivered with open or closed housing. A closed housing is used for polluted ambient. However an open housing is installed as standard.

The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory progressive distributor”).

Technical data of the proximity switch:

- Connection: M12x1 pluggable
- Switching method: PNP NO
- Load capacity: 200 mA
- Voltage: 10-60 V DC
- Per. ambient temperature: -40 °C to 85 °C
- Function indicator: LED yellow
- Housing material: stainless steel
- Protection class: IP 67 / IP 69K

Terminal diagram:

Functional description:

A pin (2) is fixed at the middle element’s piston (1). The pin (2) approaches the proximity switch (3) with each piston stroke and initiates a signal. This signal can be, depending on the type of control or the individual case, evaluated differently.

Installation dimensions:

Table order-no. for middle elements with proximity switch (=NS) M12x1

<table>
<thead>
<tr>
<th>Middle element w. NS</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-2 30 NS</td>
<td>39899850006*</td>
</tr>
<tr>
<td>SX-2 38 NS</td>
<td>39899860006*</td>
</tr>
<tr>
<td>SX-2 47 NS</td>
<td>39899870006*</td>
</tr>
<tr>
<td>SX-3 30 NS</td>
<td>40089850006*</td>
</tr>
<tr>
<td>SX-3 38 NS</td>
<td>40089860006*</td>
</tr>
<tr>
<td>SX-3 47 NS</td>
<td>40089870006*</td>
</tr>
</tbody>
</table>

* Please indicate the installation position of the proximity switch: right (standard) or left
**Visual stroke control** (only for SX-2)

The progressive distributors SX-2 can be equipped with a visual stroke control. This function checking part does not provide read or print out data. The visual stroke control can any time be retrofitted. For this purpose the piston screw plug is removed and the visual stroke control is screwed in. This is possible at all middle elements.

The max. permissible operating pressure for an outlet with visual stroke control is 40 bar.

Order-no.: 435000110

**Note:** Please take care of utmost cleanliness when working at distributors.

**Functional description:**

When the piston (1) is actuated, the control pin (2) is shifted outwards (in the shown example to the right) and becomes visible. The control pin is shifted back into its normal position by the spring (3) as soon as the piston is moved to the other side (see technical basics “Functional description for disk construction”).

![Diagram](image-url)
Extension or shortening of distributors
Progressive distributors SX-2 and SX-3 can any time be adapted to the application conditions because of their disk construction. When new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by the installation or removal of middle elements.

Description:
- Screw off the hexagon nuts (2, respectively 6) at the cylinder head cap screws (1), or at the connecting rods and take out the cylinder head cap screw or the connecting rods
- Separate the distributor at the desired point
- Add the new middle elements or remove the unnecessary ones
- Screw the distributor together with the corresponding cylinder head cap screws, respectively the connecting rods and the hexagon nuts (see tables)

Note: Please pay attention to utmost cleanness when working at distributors.

Tab. 1 order-no. for cylinder screw with internal hexagon socket DIN 6912 (1 pcs) for SX-2:

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Cylinder scr.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-2 3/6</td>
<td>M8 x 110</td>
<td>090691204223</td>
</tr>
<tr>
<td>SX-2 4/8</td>
<td>M8 x 130</td>
<td>090691204323</td>
</tr>
</tbody>
</table>

Tab. 2 order-no. for Zugstangen (1 Stück) for SX-2:

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-2 5/10</td>
<td>M8 x 166</td>
<td>0802000552</td>
</tr>
<tr>
<td>SX-2 6/12</td>
<td>M8 x 183</td>
<td>0802000553</td>
</tr>
<tr>
<td>SX-2 7/14</td>
<td>M8 x 203</td>
<td>0802000554</td>
</tr>
<tr>
<td>SX-2 8/16</td>
<td>M8 x 223</td>
<td>0802000555</td>
</tr>
<tr>
<td>SX-2 9/18</td>
<td>M8 x 242</td>
<td>0802000556</td>
</tr>
<tr>
<td>SX-2 10/20</td>
<td>M8 x 262</td>
<td>0802000557</td>
</tr>
</tbody>
</table>

Tab. 3 order-no. for conn. rods (1 pcs) for SX-3:

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-3 3/6</td>
<td>M8 x 124</td>
<td>0802000500</td>
</tr>
<tr>
<td>SX-3 4/8</td>
<td>M8 x 144</td>
<td>0802000501</td>
</tr>
<tr>
<td>SX-3 5/10</td>
<td>M8 x 166</td>
<td>0802000502</td>
</tr>
<tr>
<td>SX-3 6/12</td>
<td>M8 x 183</td>
<td>0802000503</td>
</tr>
<tr>
<td>SX-3 7/14</td>
<td>M8 x 203</td>
<td>0802000504</td>
</tr>
<tr>
<td>SX-3 8/16</td>
<td>M8 x 223</td>
<td>0802000505</td>
</tr>
<tr>
<td>SX-3 9/18</td>
<td>M8 x 242</td>
<td>0802000506</td>
</tr>
<tr>
<td>SX-3 10/20</td>
<td>M8 x 262</td>
<td>0802000507</td>
</tr>
</tbody>
</table>

The SX-2 distributors and from five middle elements on also the SX-3 distributors are assembled with connecting rods:

Distributor SX-2:
Pos. 1 Cylinder head cap screw with internal socket DIN 6912-M8-10.9, see order-no. in table 1
Pos. 2 Safety hexagon nut, DIN 980 - M8 - St
Order-no.: 090098000153 (1 piece)
Pos. 3 Washer DIN 125 - B 8.4 - St
Order-no.: 0900125004132 (1 piece)
Pos. 4 Connecting rods M8 - St, see order-no. in table 2
Pos. 5 Hexagon nut, self locking
DIN 982 - M8 - St
Order-no.: 090098200213 (1 piece)

Distributor SX-3:
Pos. 6 Connecting rods M8 - V4A, see order-no. in table 3
Pos. 7 Hexagon nut, self locking
DIN 985 - M8 - V4A
Order-no.: 090098500741 (1 piece)
Pos. 8 Washer DIN 125 - B8,4 - V4A
Order-no.: 0900125004612 (1 piece)
Progressive Central Lubrication Systems

Progressive distributors

SX-2 / SX-3

Note: SX-2 and SX-3 distributors always have to consist of at least three middle elements and up to ten as a maximum.

Should one of the O-rings, which are used for sealing the distributor between the individual elements be damaged and does not seal any more, a set of seals can be ordered containing all O-rings used in SX-2, respectively SX-3 distributors.

Set of seals for middle elements:
Order-no.: 3989 98 D000

Set of seals for initial elements:
Order-no.: 3989 97 D000

Pressure indicator (only for SX-2)
The pressure indicator locates closed lubrication points, respectively blocked progressive distributors.

The indicator can be used in the distributor inlet as well as in the distributor outlets for blockade monitoring of individual lubrication points and series-connected progressive distributors (secondary distributors).

The pressure indicator can any time be retrofitted.

Installation:
The pressure indicator is screwed into a swivelling fitting (4) and then into the distributor. The connection fitting has to be screwed into the swivelling fitting.

Functional description:
When pressure increases, the pin (1) is pushed out and the indicator pin (3) becomes visible. When pressure is reduced, the spring (2) pushes back the indicator pin (3).

See order numbers and installation dimensions under “Accessory progressive distributors”. When the distributor's function shall be ensured despite the locked distributor outlet, the distributor can be provided with a so-called blockade control.

See “Accessory progressive...
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**Progressive distributors**

**SX-2 / SX-3**

**Order key**

**Distributor inlet**
The progressive distributors SX-2 or SX-3 can be delivered with or without fittings. Should the fittings be delivered already installed into the distributor, they have to be marked with the pipe diameter and the series (see table):

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06LL</td>
<td>male stud coupling, pipe-Ø 6 or 8, series L or LL</td>
</tr>
</tbody>
</table>

Fittings can also be ordered separately (see “Accessory progressive distributors” or “Fittings and accessories”).

When there is no indication concerning the fittings, delivery is without fittings as a standard!

**Distributor outlet**
The fitting type at the distributor outlets has to be indicated with the diameter and the series, when the order is placed (see table):

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06LL</td>
<td>male stud coupling, pipe-Ø 6 or 8, series L or LL</td>
</tr>
<tr>
<td>GE06L</td>
<td>pipe-Ø 6 or 8, series L or LL</td>
</tr>
<tr>
<td>GE08LL</td>
<td>Non-return valve, pipe-Ø 6 or 8, series L or LL</td>
</tr>
<tr>
<td>RGE06LL</td>
<td>Non-return valve, pipe-Ø 6 or 8, series L or LL</td>
</tr>
<tr>
<td>RGE06L</td>
<td>pipe-Ø 6 or 8, series L or LL</td>
</tr>
<tr>
<td>RGE08LL</td>
<td>pipe-Ø 6 or 8, series L or LL</td>
</tr>
</tbody>
</table>

**Note:**
Without indication of the series, a straight fitting, respectively a non-return valve of the series L (cutting ring) is delivered.

**Metering volume**
The metering code numbers 07 to 47 (see table “Technical description”) of the metering elements have to be indicated for each side of the distributor inlet in the order in which the lubricant comes out and have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

The metering code numbers of combined outlets accumulate (see “combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The interchangeable seal washer that has to be turned over is marked with a star (*) in the drawing (see “Combination of outlets”).

**Proximity switch (=NS)**
Middle elements to which a proximity switch shall be installed, must be indicated by NS or NSg after the number of the metering volume (see table). Proximity switches can be installed left or right to the SX-2 or SX-3 distributors. The standard assembly is done on the right side.

<table>
<thead>
<tr>
<th>NS</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>NS with open housing (standard)</td>
</tr>
<tr>
<td>NSg</td>
<td>NS with closed housing</td>
</tr>
</tbody>
</table>
Order example

| Connection positions | Inlet fitting Ø 6 L | Outlet closed |

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of middle elements</th>
<th>No. of outlets</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Connection position</th>
<th>Metering code no. at outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-2 03 / 03 - GE06L / G1/8</td>
<td>R --- / 17 / 60 NS</td>
<td>L --- + 63 / ---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Interchangeable seal washer turned over!
Progressive Central Lubrication Systems

Progressive distributors

**Technical description**

Progressive distributors SX-5 are built in a variable disk construction. Therefore the distributors can be, depending on the number of lubrication points, extended or shortened. Because of the disk construction there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.

The different metering volume per piston stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons, i.e. at least three middle elements (metering elements).

**Technical data**

Operating pressure-inlet: max. 300 bar

Temperature range: -30 °C to 80 °C

Lubricant: oil - fluid grease - grease up to NLGI-cl. 2

Revolutions: max. 180 r/min

Material: steel, galvanized

No. of middle elements (metering elements):

- min. 3 middle elements: SX-5 3/6
- max. 10 middle elements: SX-5 10/20

**Dimensional drawing:**

![Progressive distributor SX-5 with three middle elements and six outlets](image)

![Progressive distributor SX-5 with three middle elements and six outlets](image)

![Progressive distributor SX-5 with three middle elements and six outlets](image)

![Progressive distributor SX-5 with three middle elements and six outlets](image)

**Table metering volume:**

<table>
<thead>
<tr>
<th>Designation middle element</th>
<th>Metering volume (mm³/ stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p. outlet</td>
<td>p. element</td>
</tr>
<tr>
<td>075 SX-5</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>117 SX-5</td>
<td>117</td>
<td>234</td>
</tr>
<tr>
<td>170 SX-5</td>
<td>170</td>
<td>340</td>
</tr>
<tr>
<td>230 SX-5</td>
<td>230</td>
<td>460</td>
</tr>
<tr>
<td>300 SX-5</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>380 SX-5</td>
<td>380</td>
<td>760</td>
</tr>
<tr>
<td>470 SX-5</td>
<td>470</td>
<td>940</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of middle elements</th>
<th>No. of outlets (max.)</th>
<th>Dim. “A” (mm)</th>
<th>Dim. “B” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>138,2</td>
<td>119,9</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>167,8</td>
<td>149,5</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>197,4</td>
<td>179,1</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>227,0</td>
<td>208,7</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>256,6</td>
<td>238,3</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>286,2</td>
<td>267,9</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>315,8</td>
<td>297,5</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>345,4</td>
<td>327,1</td>
</tr>
</tbody>
</table>

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**Elements**

The progressive distributor SX-5 always consist of one initial element (without piston), three to ten middle elements (with piston) and one end element (without piston).

All elements have a connection thread G 3/8 at the distributor inlet and a connection thread G 1/4 at the distributor outlet.

**Initial element**

Order-no.: 3983A01

**Middle element (metering element)**

Middle elements are equipped with integrated non-return valves and are suitable for lubrication points with different counter pressures.

Each middle element has two outlets.

<table>
<thead>
<tr>
<th>Middle element</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>075 SX-5</td>
<td>3983M110000</td>
</tr>
<tr>
<td>117 SX-5</td>
<td>3983M210000</td>
</tr>
<tr>
<td>170 SX-5</td>
<td>3983M310000</td>
</tr>
<tr>
<td>230 SX-5</td>
<td>3983M410000</td>
</tr>
<tr>
<td>300 SX-5</td>
<td>3983M510000</td>
</tr>
<tr>
<td>380 SX-5</td>
<td>3983M610000</td>
</tr>
<tr>
<td>470 SX-5</td>
<td>3983M710000</td>
</tr>
</tbody>
</table>

**End element**

Order-no.: 3983E00

All pipe fittings with a suitable connection thread and a suitable nominal pressure can be screwed into the initial element’s distributor inlet as well as middle elements’ distributor outlets (see “Accessory progressive distributor”, respectively “Fittings and accessories”).
Combination of outlets
For larger lubrication points it could be necessary to combine two or more outlets at the progressive distributor.
The progressive distributor’s individual middle elements have two outlets.

Combination of outlets at one distributor disk
When two outlets are combined, the two outlets of one middle element are connected. For this purpose, the sealing screw, which separates the two sides, is removed and a screw plug with sealing ring is screwed into the side that has to be closed. The metering volume of the sealed side now comes out of the other side, i.e. the metering volume at the open side doubles.

Combination of outlets
Screw plug with sealing ring for closing outlets:

Order-no.:
Screw plug G 1/4: 090090800513
Sealing ring A14x18x1,5: 090760300621

Separating outlets
In order to separate the combined outlets again, the sealing screw has to be screwed in again.

Sealing screw for separating outlets:

Order-no.:
Sealing screw: 0802000455
Progressive Central Lubrication Systems

Progressive distributors

Combination of outlets at several middle elements
Should the total metering volume of the combined outlets at one middle element be insufficient, at very large bearing points or at main distributors e.g., there is the possibility to combine the outlets of two or more middle elements.

The metering volume is calculated of the metering volume code number of all combined outlets.

Distributor bridge with outlet
With the help of distributor bridges with outlets, two, three or four outlets at different adjacent middle elements can be combined.

Order-no. total: 3985980010011

Three outlets combined at two middle elements
To connect three outlets at two adjacent middle elements, the sealing screw of one middle element has to be removed and the outlet opposite the distributor bridge has to be closed with a screw plug and a sealing screw. The metering volume of all three outlets comes out of the outlet at the distributor bridge.

Four outlets combined at two middle elements
When four outlets should be connected at two adjacent middle elements, the sealing screws of both middle elements have to be removed and the outlets opposite the distributor bridge have to be closed with a screw plug and sealing ring.

The metering volumes of the four outlets then come out of the outlet of the distributor bridge.

Two outlets combined at two middle elements
If only two outlets at two adjacent middle elements should be combined, the sealing screw of both middle elements must not be removed. The metering volume of both outlets comes out at the distributor bridge’s outlet.

Subject to alterations!
Distributor bridge without outlet
With the help of a distributor bridge without outlet three to four outlets at different adjacent middle elements can be combined.

Order-no. total: 3985980010010

Three outlets combined at two middle elements
At least three outlets are concerned when combining outlets with a distributor bridge without outlet, as the metering volume of one middle element has to be directed through the middle element of a progressive distributor. The sealing screw of one middle element always has to be removed.

Four outlets combined at two middle elements
Four outlets at two adjacent middle elements can be combined by means of a distributor bridge without outlet. The sealing screws of both middle elements have to be removed and one outlet opposite the distributor bridge has to be closed with a screw plug and sealing ring.
Elements with proximity switch

For monitoring the system, for the use of cycle controls or for counting the piston strokes, proximity switches can be attached to the SX-5 distributor. Proximity switches can be delivered preassembled to middle elements 170 SX-5 to 470 SX-5. The installation position of the proximity switch is on the right side as a standard. Installation on the left side has to be indicated separately.

Middle elements with proximity switch have to be indicated when the order is placed.

The only possibility of retrofitting a proximity switch to an existing progressive distributor is to replace one middle element. The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory progressive distributor”).

Due to the fact that the nuts of the proximity switch juts out the distributor (see drawing on the right side), an assembly plate has to be put under distributors that are not installed with welding plates or an assembly angle (see drawing).

Technical data of proximity switch

Connection: M12x1 pluggable
Switch type: PNP NO
Current load: 200 mA
poss. voltage: 10 - 60 V DC
Temperature range: -40 °C to 85 °C
Funktion indication: LED yellow
Material: stainless steel
Protection class: IP 67 / IP 69K

Terminal diagram

Table order-no. for middle elements with proximity switch (=NS)

<table>
<thead>
<tr>
<th>Middle element with NS M12x1</th>
<th>Position</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>170 SX-5</td>
<td>right</td>
<td>3983M310N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3983M310N20</td>
</tr>
<tr>
<td>230 SX-5</td>
<td>right</td>
<td>3983M410N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3983M410N20</td>
</tr>
<tr>
<td>300 SX-5</td>
<td>right</td>
<td>3983M510N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3983M510N20</td>
</tr>
<tr>
<td>380 SX-5</td>
<td>right</td>
<td>3983M610N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3983M610N20</td>
</tr>
<tr>
<td>470 SX-5</td>
<td>right</td>
<td>3983M710N10</td>
</tr>
<tr>
<td></td>
<td>left</td>
<td>3983M710N20</td>
</tr>
</tbody>
</table>
Elements with indicator pin
The progressive distributors SX-5 can be equipped with an indicator pin instead of a proximity switch.

The indicator pin can only be installed at the middle elements 170 SX-5 to 470 SX-5 on the right or left side and must be indicated separately when ordered.

The indicator pin can not be retrofitted. A retrofit is only possible by exchanging the middle element.

Functional description
A pin (2) is fastened at the piston of the middle element (1). This can be seen in the transparent cap (3) at each piston stroke.

The transparente cap (indicator pin cover) of the indicator pin can be ordered separately.

Order-no.: 4003000S003

Installation dimensions

Table order-no for middle element with indicator pin with cover:

<table>
<thead>
<tr>
<th>Middle elem. with indicator pin</th>
<th>Pos.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>170 SX-5 right</td>
<td>right</td>
<td>3983M310K10</td>
</tr>
<tr>
<td>170 SX-5 left</td>
<td>left</td>
<td>3983M310K20</td>
</tr>
<tr>
<td>230 SX-5 right</td>
<td>right</td>
<td>3983M410K10</td>
</tr>
<tr>
<td>230 SX-5 left</td>
<td>left</td>
<td>3983M410K20</td>
</tr>
<tr>
<td>300 SX-5 right</td>
<td>right</td>
<td>3983M510K10</td>
</tr>
<tr>
<td>300 SX-5 left</td>
<td>left</td>
<td>3983M510K20</td>
</tr>
<tr>
<td>380 SX-5 right</td>
<td>right</td>
<td>3983M610K10</td>
</tr>
<tr>
<td>380 SX-5 left</td>
<td>left</td>
<td>3983M610K20</td>
</tr>
<tr>
<td>470 SX-5 right</td>
<td>right</td>
<td>3983M710K10</td>
</tr>
<tr>
<td>470 SX-5 left</td>
<td>left</td>
<td>3983M710K20</td>
</tr>
</tbody>
</table>

A proximity switch can be retrofit at indicator pin.

Order-no complete: 4003000N002

The proximity switch is adjusted at the assembly. When retrofit a proximity switch the threaded pin must be screwed out and the cap of the indicator pin must be pulled off. Then the proximity switch is put on and the threaded pin can be screwed in.

Order-no: 090094002211
Screw plug M14x1 DIN 908
Order-no.: 090098081450
USIT-ring U18,7x14x1
Order-no.: 100150010148
Proxim. switch housing
Drawing-no.: FWZ01352-07
Thread sealing M12
Order-no.: 100150020284
Proximity switch M12x1 (10 - 60 V DC)
Order-nor: 100091865
**Extension or shortening of distributors**

Progressive distributors SX-5 can any time be adapted to the application conditions because of their disk construction. When new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by the installation or removal of middle elements.

**Description:**
- screw off the cap nuts of both ends of the connecting rods and take the connecting rods out
- separate the distributor at the desired point
- add the new middle elements or remove the unnecessary ones
- screw the distributor together with the connecting rods and the cap nuts and a washer (see table)

**Note:** A SX-5 distributor has to consist of at least three middle elements and ten middle elements (piston elements) as a maximum.

Should one of the O-rings which are used for sealing the distributor between the individual elements be damaged and does not seal any more, a set of seals can be ordered. It contains all O-rings that are installed in SX-5 distributors.

- Set of seal for initial element,
  - **Order-no.:** 3983D0001
- Set of seal for middle element,
  - **Order-no.:** 3983D0002

**Table order no. for connecting rod (1 piece):**

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-5 3/6</td>
<td>M8 x 147</td>
<td>0802000755</td>
</tr>
<tr>
<td>SX-5 4/8</td>
<td>M8 x 177</td>
<td>0802000756</td>
</tr>
<tr>
<td>SX-5 5/10</td>
<td>M8 x 206</td>
<td>0802000757</td>
</tr>
<tr>
<td>SX-5 6/12</td>
<td>M8 x 236</td>
<td>0802000758</td>
</tr>
<tr>
<td>SX-5 7/14</td>
<td>M8 x 265</td>
<td>0802000759</td>
</tr>
<tr>
<td>SX-5 8/16</td>
<td>M8 x 295</td>
<td>0802000760</td>
</tr>
<tr>
<td>SX-5 9/18</td>
<td>M8 x 325</td>
<td>0802000761</td>
</tr>
<tr>
<td>SX-5 10/20</td>
<td>M8 x 354</td>
<td>0802000762</td>
</tr>
</tbody>
</table>

A SX-5 3/6 distributor should be extended by a middle element.

**Note:** Please pay attention to utmost cleanliness when working at the distributor.

- Protective cap nut DIN 980 - M8
  - **Order-no.::** 090098000153 (1 pcs)
  - **Torque:** 20 Nm

- Washer DIN 125 - B 8,4
  - **Order-no.::** 0900125004132 (1 pcs)
Progressive Central Lubrication Systems

Progressive distributors

Order key

Distributor inlet

The progressive distributor SX-5 can be delivered with or without fittings. If the fittings should be delivered already installed into the distributor, then please indicate this with the type of fitting, the pipe diameter and the series (see table).

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06L</td>
<td>male stud coupling,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6, 8, 10, 12 or 15,</td>
</tr>
<tr>
<td></td>
<td>series L</td>
</tr>
<tr>
<td>GE08L</td>
<td></td>
</tr>
<tr>
<td>GE10L</td>
<td></td>
</tr>
<tr>
<td>GE12L</td>
<td></td>
</tr>
<tr>
<td>GE15L</td>
<td></td>
</tr>
</tbody>
</table>

The fittings can also be ordered separately (see “accessory progressive distributor” or “fittings and accessory”).

When no indication concerning the fittings is made, the delivery is without fittings as standard!

Distributor outlet

The distributor outlet can be delivered with union screw, non-return valves or without fittings at the outlets (see table).

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/4</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06L</td>
<td>male stud coupling,</td>
</tr>
<tr>
<td></td>
<td>pipe-Ø 6, 8, 10 or 12,</td>
</tr>
<tr>
<td></td>
<td>series L</td>
</tr>
<tr>
<td>GE08L</td>
<td></td>
</tr>
<tr>
<td>GE10L</td>
<td></td>
</tr>
<tr>
<td>GE12L</td>
<td></td>
</tr>
</tbody>
</table>

Metering volume

The metering code numbers 075 to 480 (see table “Technical description”) of the metering elements have to be indicated on each side of the distributor inlet in the order, in which the lubricant comes out and they have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

For combined outlets, the metering code numbers accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The sealing screw, which has to be removed, is marked with a star (*) in the drawing (see “Combination of outlets”).

Proximity switch

Distributor elements to which a proximity switch should be attached, have to be marked with NS (proximity switch) after the number for the metering volume. Proximity switches can be attached to SX-5 distributors on the right (standard) or on the left side.

The metering code numbers to (see table “Technical description”) of the metering elements have to be indicated on each side of the distributor inlet in the order, in which the lubricant comes out and they have to be separated by a slash (/). For distributor bridges, a plus (+) has to be indicated instead of the slash.

For combined outlets, the metering code numbers accumulate (see “Combination of outlets”).

Screw plugs and outlets which are closed with distributor bridges are marked with a line (---). The sealing screw, which has to be removed, is marked with a star (*) in the drawing (see “Combination of outlets”).

Proximity switch

Distributor elements to which a proximity switch should be attached, have to be marked with NS (proximity switch) after the number for the metering volume. Proximity switches can be attached to SX-5 distributors on the right (standard) or on the left side.
Order example

Distributor bridge without outlet

Proximity switch (Cable see “accessory progressive distributor”)

Assembly plate must be ordered separately (see “elements with proximity switch

* = Sealing screw removed!

Type
No. of middle elements
No. of outlets
Inlet fitting
Outlet fitting
Connection position
Metering code no. at outlets

<table>
<thead>
<tr>
<th>SX-5 03 / 03 - GE12L / GE10L</th>
<th>R 170 / --- + --- NS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L 170 / --- / 1360</td>
</tr>
</tbody>
</table>

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Progressive distributors

SX-5

Line break monitoring
A line break monitoring for distributor SX-5 can be installed at lubrication points for which a lubrication is absolutely necessary. The line break monitoring controls the pipe lines from the distributor outlet to the lubrication point for demolition or break.

Function
A line break element with pressure indication is screwed at the lube point of the distributor outlet that has to be monitored. The element is screwed together with flanges and plates (see next page) by means of cylinder screws and hexagon socket screws.

A pressure makeup valve with non-return valve with an opening pressure of 75 bar is screwed directly into the lube point. With this pressure, that always exists within the line, the actuation piston presses a button via the actuation lever in the element. Hence the electrical circuit is closed and the pin of the pressure indication is visible.

If pressure is reduced due to line break, the pin of the pressure indication becomes invisible and the electrical circuit is interrupted.

Attention: To ensure a reliable function, the value of the pressure loss in the connecting line between distributor outlet and preload valve may even under unfavourable conditions (e.g. deep temperature) not be higher than the operating pressure of the line rupture element (approx. 30 bar).
Progressive Central Lubrication Systems

SX-5

Dimensional drawing of line break monitoring:

<table>
<thead>
<tr>
<th>Number of line break elements or intermediate plates</th>
<th>Dim. “C” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>68,1</td>
</tr>
<tr>
<td>2</td>
<td>97,7</td>
</tr>
<tr>
<td>3</td>
<td>127,3</td>
</tr>
<tr>
<td>4</td>
<td>156,9</td>
</tr>
<tr>
<td>5</td>
<td>186,5</td>
</tr>
<tr>
<td>6</td>
<td>216,1</td>
</tr>
<tr>
<td>7</td>
<td>245,7</td>
</tr>
<tr>
<td>8</td>
<td>275,3</td>
</tr>
<tr>
<td>9</td>
<td>304,9</td>
</tr>
<tr>
<td>10</td>
<td>334,5</td>
</tr>
</tbody>
</table>

Attention: Dimension of distributor SX-5 see description of dimensional drawing SX-5

* Dimension depends at which outlet the first or the last line break element is installed.

Technical data

Operating pressure inlet: max. 300 bar
Operating voltage: 10 - 55 V DC
Contact capacity: 50 mADC
Connection: Round connector M12,
Pin 1 = +Ub
Pin 4 = outlet (NO contact), contact opens in case of fault

Subject to alterations!
Table of order numbers of individual components of line break monitoring for SX-5 (see figure above):

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inlet flange, plug M12x1</td>
<td>437501010100</td>
</tr>
<tr>
<td>2</td>
<td>Line break element</td>
<td>437502010100</td>
</tr>
<tr>
<td>3</td>
<td>Final plate</td>
<td>4375060100</td>
</tr>
<tr>
<td>4</td>
<td>Intermediate plate</td>
<td>4375040100</td>
</tr>
<tr>
<td>5</td>
<td>Connection cable</td>
<td>1000913864</td>
</tr>
<tr>
<td>6</td>
<td>Outlet flange, bush M12x1</td>
<td>437503010100</td>
</tr>
<tr>
<td>7</td>
<td>connecting rod</td>
<td>see table</td>
</tr>
<tr>
<td>8</td>
<td>Washer DIN 125-B4,3</td>
<td>0900125006132</td>
</tr>
<tr>
<td>9</td>
<td>Nut, self locking DIN 986 - M4</td>
<td>090704006131</td>
</tr>
<tr>
<td>10</td>
<td>Press. makeup valve straight</td>
<td>see table</td>
</tr>
<tr>
<td>11</td>
<td>Press. makeup valve swivelling</td>
<td>see table</td>
</tr>
<tr>
<td>12</td>
<td>Press. makeup valve angled</td>
<td>see table</td>
</tr>
</tbody>
</table>

Order number table for connecting rod (Pos. 7) for SX-5 (1 pcs):

<table>
<thead>
<tr>
<th>Number of line break elements or intermediate plates</th>
<th>Connect. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M4 x 85</td>
<td>F4375/21-01 002</td>
</tr>
<tr>
<td>2</td>
<td>M4 x 115</td>
<td>F4375/21-01 004</td>
</tr>
<tr>
<td>3</td>
<td>M4 x 144,5</td>
<td>F4375/21-01 006</td>
</tr>
<tr>
<td>4</td>
<td>M4 x 174</td>
<td>F4375/21-01 008</td>
</tr>
<tr>
<td>5</td>
<td>M4 x 203,5</td>
<td>F4375/21-01 010</td>
</tr>
<tr>
<td>6</td>
<td>M4 x 233</td>
<td>F4375/21-01 012</td>
</tr>
<tr>
<td>7</td>
<td>M4 x 263</td>
<td>F4375/21-01 013</td>
</tr>
<tr>
<td>8</td>
<td>M4 x 292,5</td>
<td>F4375/21-01 014</td>
</tr>
<tr>
<td>9</td>
<td>M4 x 322</td>
<td>F4375/21-01 015</td>
</tr>
<tr>
<td>10</td>
<td>M4 x 352</td>
<td>F4375/21-01 016</td>
</tr>
</tbody>
</table>

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**SX-5**

Order number table for pressure makeup valve, opening pressure 75 bar:

<table>
<thead>
<tr>
<th>Press. makeup valve</th>
<th>Thread</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>straight (Pos. 10*)</td>
<td>M8x1k</td>
<td>43750706A111</td>
</tr>
<tr>
<td></td>
<td>M10x1k</td>
<td>43750706A211</td>
</tr>
<tr>
<td>swivelling makeup valve</td>
<td>M8x1k</td>
<td>43750706B111</td>
</tr>
<tr>
<td>(Pos. 11*)</td>
<td>M10x1k</td>
<td>43750706B211</td>
</tr>
<tr>
<td></td>
<td>lang</td>
<td>43750706B311</td>
</tr>
<tr>
<td>elbow makeup valve</td>
<td>R 1/8&quot;k</td>
<td>43750706B411</td>
</tr>
<tr>
<td>(Pos. 12*)</td>
<td>R 1/4&quot;k</td>
<td>43750706B511</td>
</tr>
<tr>
<td></td>
<td>1/8-27NPT</td>
<td>43750706B611</td>
</tr>
<tr>
<td></td>
<td>M8x1</td>
<td>43750706C111</td>
</tr>
<tr>
<td></td>
<td>M10x1</td>
<td>43750706C211</td>
</tr>
<tr>
<td></td>
<td>G 1/8</td>
<td>43750706C311</td>
</tr>
</tbody>
</table>

* see individual components of line break monitoring

### Line break monitoring

Order example of line break monitoring with progressive distributor SX-5

Distributor outlets to which a line break monitoring should be installed have to be marked with LB after the metering code number.

Assembly plate must be ordered separately (see documentation SX-5 "elements with proximity switch")

* = Sealing screw removed

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Progressive distributors UX

**Technical description**

Progressive distributors UX are built in a variable disk construction. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened. Because of the disk construction there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.

The different metering volume per piston stroke is effected by different piston diameters.

A progressive distributor needs at least three pistons, i.e. at least three middle elements (metering elements).

**Technical data**

- **Operating pressure-inlet:** max. 250 bar
- **Temperature range:** -30 °C to 80 °C
- **Lubricant:** oil-fluid grease - grease
- **Revolutions:** max. 180 r/min
- **Material:** steel, galvanized

No. of middle elements (metering elements):
- min. 3 middle elements: UX 3/6
- max. 10 middle elements: UX 10/20

**Table metering volume:**

<table>
<thead>
<tr>
<th>Designation middle elem.</th>
<th>Metering volume (mm³/stroke)</th>
<th>Code no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 1000</td>
<td>1130 2260</td>
<td>1000</td>
</tr>
<tr>
<td>UX 1500</td>
<td>1540 3080</td>
<td>1500</td>
</tr>
<tr>
<td>UX 2000</td>
<td>2000 4000</td>
<td>2000</td>
</tr>
</tbody>
</table>

**Progressive distributor UX with three metering elements and six outlets:**

<table>
<thead>
<tr>
<th>No. of middle elements</th>
<th>No. of outlets (max.)</th>
<th>Dim. “A” (mm)</th>
<th>Dim. “B” (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>6</td>
<td>150</td>
<td>120</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>210</td>
<td>180</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>240</td>
<td>210</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>270</td>
<td>240</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>300</td>
<td>270</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>330</td>
<td>300</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>360</td>
<td>330</td>
</tr>
</tbody>
</table>
Elements
The progressive distributors UX always consist of one initial element (without piston), three to ten middle elements (with piston) and one end element (without piston).
As standard, all elements are delivered without fittings at the distributor inlet and at the outlet. The connection thread at the distributor inlet (initial element) is G 1/2 and at the distributor outlets (middle elements) G 3/8.

Initial element
Order-no.: 4005 97 0000

Middle element (metering element)
Middle elements can be delivered with three different metering volumes.

Each middle element has two outlets.

Table of order-no. for middle elements:

<table>
<thead>
<tr>
<th>Middle element</th>
<th>order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 1000</td>
<td>4005981000</td>
</tr>
<tr>
<td>UX 1500</td>
<td>4005981500</td>
</tr>
<tr>
<td>UX 2000</td>
<td>4005982000</td>
</tr>
</tbody>
</table>

End element
Order-no.: 4005 99 0000

All pipe fittings with a suitable connection thread and a suitable nominal pressure can be screwed into the initial element’s distributor inlet as well as the middle elements’ distributor outlets (see “Accessory progressive distributor”, respectively “Fittings and accessories”).
**Combination of two outlets at one middle element**

For lube points which need more lubricant, it could be necessary to combine two outlets at the progressive distributor. To this purpose, two outlets of one middle element are connected with a distributor bridge with outlet. The metering volumes of both outlets then come out of the distributor bridge’s outlet.

The metering volume is calculated of the combined outlets’ metering volume code number.

**Distributor bridge with outlet**

Consisting of:

- Pos. 1 1 Bridge strip, Order-no.: F0414/07-00
- Pos. 2 2 Hollow screws without outlet, Order-no.: 04033331306
- Pos. 3 2 Sealing rings A18x24x1.5, Order-no.: 090760301811 (1 piece)
- Pos. 4 2 Sealing rings A17x23x2, Order-no.: 090760306611 (1 piece)

---

**Combination of outlets at several middle elements**

It is not possible to combine the outlets of two neighboring middle elements with a distributor bridge. When necessary, we can drill the outlets in vertical direction. This cannot be changed any more.

**Two outlets combined at adjacent middle elements**

Of two neighboring middle elements, one outlet each is connected via a connection hole. Only BEKA may drill this hole. One of the two outlets has to be locked with a screw plug and a sealing ring.

For combining the outlets of adjacent middle elements later, the concerned middle element has to be replaced by one with a hole.

The metering volumes of the two connected outlets come out of the open outlet.
Screw plug and sealing ring for locking outlets
Order-no.:  
Screw plug G 3/8: 090090800713  
Sealing ring A17x21x1.5: 090760301711

Note: Outlets must not be locked without redirecting the lubricant to another outlet as otherwise the distributor blocks!

Three outlets combined at adjacent middle elements
Two outlets of a middle element are combined with a distributor bridge with outlet. The adjacent middle element’s third outlet is connected with an outlet of the first middle element via a connection hole. Only BEKA may drill the connection hole.

The combined outlet at the adjacent middle element has to be locked by a screw plug and a sealing ring.

For combining the outlets of adjacent middle elements later, the concerned middle element has to be replaced by one with a hole.

The metering volumes of the combined outlets come out of the distributor bridge’s outlet.

Four outlets combined at adjacent middle elements
Two outlets of a middle element are combined with a distributor bridge with outlet. Both outlets of the neighbored middle element are connected with the outlets of the first middle element via a connection hole.

The combined outlets of the neighbored middle element have to be locked by a screw plug and a sealing ring.

For combining the outlets at neighbored middle elements later, the concerned middle element has to be replaced by one with a hole.

The metering volumes of the four connected outlets come out of the distributor bridge’s outlet.
Elements with proximity switches

For monitoring the system, for the use of cycle controls or for counting the strokes, proximity switches can be attached to the UX distributor.

Three different types of proximity switches are available (see table). Without further indication, the proximity switch M12x1 is installed on the right side of the last element as standard. An assembly on the left side or of another proximity switch has to be indicated separately.

Middle elements with proximity switch have to be indicated when the order is placed, as it is not possible to attach them later.

The only possibility of retrofitting a proximity switch to an existing progressive distributor UX is to replace one middle element.

The proximity switch is delivered without cable, it has to be ordered separately (see “Accessory progressive distributor”).

### Functional description:

A pin (2) is fixed at the middle element’s piston (1). This pin approaches the proximity switch (3) with each piston stroke and initiates a signal. This signal can be, depending on the type of control or the individual case, evaluated differently.

At the M12x1 (see section) model, the pin (2) is led outside via a seal. At the model M18x1 / M30x1,5 the pin works leakage free in the medium.

### Table proximity switch:

<table>
<thead>
<tr>
<th>Size</th>
<th>M12x1 (standard)</th>
<th>M18x1 (special version)</th>
<th>M30x1,5 (special version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection</td>
<td>plugable M12x1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch type</td>
<td>PNP NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current load</td>
<td>200 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>10 to 60 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>perm. ambient</td>
<td>-40 °C to 85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>temperature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function indication</td>
<td>LED yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>stainless steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 67 / IP 69K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle elements</td>
<td>UX 1000 to UX 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order-no. spare part</td>
<td>100091865</td>
<td>1000912586</td>
<td>1000912587</td>
</tr>
</tbody>
</table>
Progressive Central Lubrication Systems

Progressive distributors

Dimensions for proximity switch M12x1:

Table of order-no. for middle element with proximity switch M12x1 (standard):

<table>
<thead>
<tr>
<th>Middle element with NS M12x1</th>
<th>Pos.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 1000 N12/24 R</td>
<td>right</td>
<td>4005981003</td>
</tr>
<tr>
<td>UX 1000 N12/24 L</td>
<td>left</td>
<td>4005981004</td>
</tr>
<tr>
<td>UX 1500 N12/24 R</td>
<td>right</td>
<td>4005981503</td>
</tr>
<tr>
<td>UX 1500 N12/24 L</td>
<td>left</td>
<td>4005981504</td>
</tr>
<tr>
<td>UX 2000 N12/24 R</td>
<td>right</td>
<td>4005982003</td>
</tr>
<tr>
<td>UX 2000 N12/24 L</td>
<td>left</td>
<td>4005982004</td>
</tr>
</tbody>
</table>

Installation dimensions for a proximity switch M18x1:

Table of order-no. for a metering element with proximity switch M30x1,5 (special model):

<table>
<thead>
<tr>
<th>Middle element with NS M30x1,5</th>
<th>Pos.</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 1000 N30/24 R</td>
<td>right</td>
<td>4005981008</td>
</tr>
<tr>
<td>UX 1000 N30/24 L</td>
<td>left</td>
<td>4005981009</td>
</tr>
<tr>
<td>UX 1500 N30/24 R</td>
<td>right</td>
<td>4005981508</td>
</tr>
<tr>
<td>UX 1500 N30/24 L</td>
<td>left</td>
<td>4005981509</td>
</tr>
<tr>
<td>UX 2000 N30/24 R</td>
<td>right</td>
<td>4005982008</td>
</tr>
<tr>
<td>UX 2000 N30/24 L</td>
<td>left</td>
<td>4005982009</td>
</tr>
</tbody>
</table>
**Elements with indicator pin**

The progressive distributors UX can also be equipped with an indicator pin.

The indicator pin cannot be attached later. Retrofitting an indicator pin is only possible by replacing a middle element.

Generally the attachment of an indicator pin is possible at all middle elements and has to be indicated when the order is placed.

The indicator pin is installed on the right side as standard. An assembly on the left side has to be indicated separately.

**Functional description:**

At the indicator pin, the pin (1) is directly connected to the piston (2) of the progressive distributor. With every stroke, the pin (1) is compulsory pushed out or drawn back.

It is also possible to assemble a proximity switch M12x1 to an indicator pin later.

**Order-no. for a proximity switch with housing for a later installation:** 4005960001

---

**Dimensions**

<table>
<thead>
<tr>
<th>Middle element with indicator pin</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 1000 HS</td>
<td>4005981001*</td>
</tr>
<tr>
<td>UX 1500 HS</td>
<td>4005981501*</td>
</tr>
<tr>
<td>UX 2000 HS</td>
<td>4005982001*</td>
</tr>
</tbody>
</table>

*Please indicate the installation position of the indicator pin: right (standard) or left
Progressive distributors

**Extension or shortening of distributors**

Progressive distributors UX can any time be adapted to the application conditions because of their disk construction. When new lubrication points should be added or some become unnecessary, the distributor can be extended or shortened by the installation or removal of middle elements.

**Description:**

1. Screw off the nuts (2) at both ends of the connecting rods (1) and take out the connecting rods
2. Separate the distributor at the desired point
3. Add the new middle elements or remove the unnecessary ones
4. Screw the distributor together with the corresponding connecting rods and nuts (see table)

**Note:**
A UX distributor always has to consist of at least 3 middle elements and 10 middle elements as a maximum.

Should one of the O-rings, which are used for sealing the distributor between the individual middle elements, be damaged and does not seal any more, a set of seals can be ordered, containing all O-rings used in an UX distributor.

| Set of seals for middle element: | Order-no.: | 4005D0002 |
| Set of seals for initial elements: | Order-no.: | 4005D0003 |

**Table of connecting rods (1 piece):**

<table>
<thead>
<tr>
<th>Distributor</th>
<th>Conn. rod</th>
<th>Order-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 3/6</td>
<td>M7 x 172</td>
<td>0802000442</td>
</tr>
<tr>
<td>UX 4/8</td>
<td>M7 x 202</td>
<td>0802000443</td>
</tr>
<tr>
<td>UX 5/10</td>
<td>M7 x 232</td>
<td>0802000444</td>
</tr>
<tr>
<td>UX 6/12</td>
<td>M7 x 262</td>
<td>0802000445</td>
</tr>
<tr>
<td>UX 7/14</td>
<td>M7 x 292</td>
<td>0802000446</td>
</tr>
<tr>
<td>UX 8/16</td>
<td>M7 x 322</td>
<td>0802000447</td>
</tr>
<tr>
<td>UX 9/18</td>
<td>M7 x 352</td>
<td>0802000448</td>
</tr>
<tr>
<td>UX 10/20</td>
<td>M7 x 382</td>
<td>0802000449</td>
</tr>
</tbody>
</table>

**Note:**
Please pay attention to utmost cleanness when working at the distributor.
Progressive Central Lubrication Systems

Progressive distributors

**Order-key**

**Distributor inlet**
The progressive distributor UX can be delivered with or without fittings. Should the fittings be delivered already installed into the distributor, they have to be marked with the diameter and the series (see table):

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1/2</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE08L</td>
<td>male stud coupling</td>
</tr>
<tr>
<td>GE10L</td>
<td>pipe-Ø 8, 10, 12, 15,</td>
</tr>
<tr>
<td>GE12L</td>
<td>series L</td>
</tr>
<tr>
<td>GE15L</td>
<td></td>
</tr>
</tbody>
</table>

The fittings can also be ordered separately (see “Accessory progressive distributor” or “Fittings and accessories”).

When there is no indication concerning the fittings, delivery is without fitting as standard!

**Distributor outlet**
The fitting type at the distributor outlets has to be indicated with the diameter and the series, when the order is placed (see table):

<table>
<thead>
<tr>
<th>Outlets</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3/8</td>
<td>without fitting</td>
</tr>
<tr>
<td>GE06L</td>
<td>male stud coupling, pipe-Ø 6, 8, 10, 12,</td>
</tr>
<tr>
<td>GE08L</td>
<td>series L</td>
</tr>
<tr>
<td>GE10L</td>
<td></td>
</tr>
<tr>
<td>GE12L</td>
<td></td>
</tr>
<tr>
<td>WS12L</td>
<td>elbow swivelling screw fitting, pipe-Ø 10 or 12,</td>
</tr>
<tr>
<td>WS10S</td>
<td>series L or S</td>
</tr>
<tr>
<td>RGE06L</td>
<td>non-return valve, pipe-Ø 6, 8, 10, 12,</td>
</tr>
<tr>
<td>RGE08L</td>
<td>series L</td>
</tr>
<tr>
<td>RGE10L</td>
<td></td>
</tr>
<tr>
<td>RGE12L</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Without an indication of the series, a straight fitting, respectively a non-return valve of the series L (cutting ring) are delivered as standard.

**Metering volume**
The metering code numbers 1000 to 2000 (see table “Technical description”) of the metering elements have to be indicated for each side of the distributor inlet in the direction in which the lubricant comes out and have to be separated with a slash (/). The outlets' union in vertical direction has to be indicated with a plus (+) instead of the slash.

The metering code numbers of combined outlets accumulate (see “Combination of outlets”).

Screw plugs and outlets that are closed with distributor bridges are marked with a line (−).

**Proximity switch**

Three different types of proximity switches are available:

<table>
<thead>
<tr>
<th>NS</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N12/24</td>
<td>proximity switch M12x1 (standard)</td>
</tr>
<tr>
<td>N18/24</td>
<td>proximity switch M18x1</td>
</tr>
<tr>
<td>N30/24</td>
<td>proximity switch M30x1,5</td>
</tr>
</tbody>
</table>

For other proximity switches, the thread diameter of the proximity switch has to be indicated after the code letter N and then after the slash (/), the proximity switch’s voltage.

The installation position has to be indicated after the metering code number of the metering element, to which the proximity switch shall be attached, with NS on the left or on the right side as requested.

R = right
L = left

When no installation position is indicated, the proximity switch is assembled on the right side of the last element as standard.
**Progressive Central Lubrication Systems**

**Progressive distributors**

**UX**

### Order example

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of middle elements</th>
<th>No. of outlets</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Thread diameter of proximity switch</th>
<th>Voltage</th>
<th>Connection position</th>
<th>Metering code no. of outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>UX 04 / 06 - G1/2 / G3/8 N12/24</td>
<td>R 4000 + --- / 1000 / 1500 NS</td>
<td>L --- / 2000 / 1000 / 1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Position of the outlets**
- **Proximity switch** (see cable under "Accessory progressive distributor")
- **Outlet closed with screw plug** (see "Combination of outlets")
- **Distributor bridge with outlet G 3/8**
- **Outlet G 3/8**
- **Inlet G 1/2**

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