Progressive distributor SXE-2

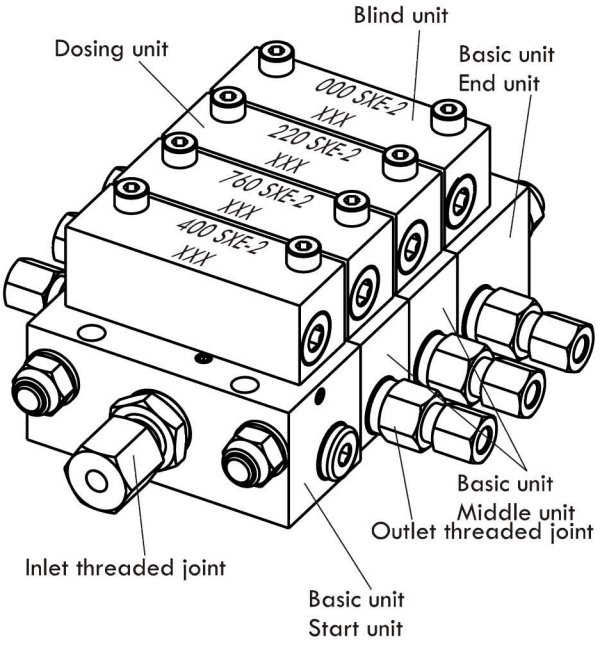
The progressive piston distributors SXE-2 are distribution units with hydraulic sequence control, whose pistons are controlled by the lubricant supply so that the lubricant is forced in sequence through the individual outlets. If faults occur in the lubricant flow, e.g. blockage of lubricant lines or lubricant points, this will block the distributor. This blocking is used to monitor the distributor. A strong counter-pressure that is difficult to overcome occurs in manually operated pumps if there is a blockage. In automatic pumps, the lubricant escapes via the pressure-relief valve.

The progressive distributors SXE-2 are produced in variable modular formats. This has the advantage that the distributor, i.e. the number of lubricant points and their volumes can be changed as required without too much outlay.
The progressive distributor SXE-2 consists mainly of distributor panels. These consist of a basic unit and a dosing unit or a blind unit. Basic units are divided into start units, middle units and end units.
This modular design means that both the delivery rate of individual outlets and the number of outlets themselves can be modified.
The various delivery rates per piston stroke are achieved by the different piston diameters of the dosing units, which can be exchanged as required. A blind unit can be used to reduce the number of lubricant points in an existing distributor or a basic unit with dosing unit can be removed. The distributor can be expanded at any time by adding another basic unit with dosing unit.
A progressive distributor requires at least three dosing units for good functionality.

Technical data:

Operating pressure: - Input:		max. 300 bar
Temperature range:		-35°C to +100°C
Delivery media:		Oil - liquid grease - grease
Size:		
Min.	SXE-2 3/6	(3 distributor panels)
Max.	SXE-2 10/20	(10 distributor panels)

Progressive distributor SXE-2 with 4 distributor panels and six outlets:

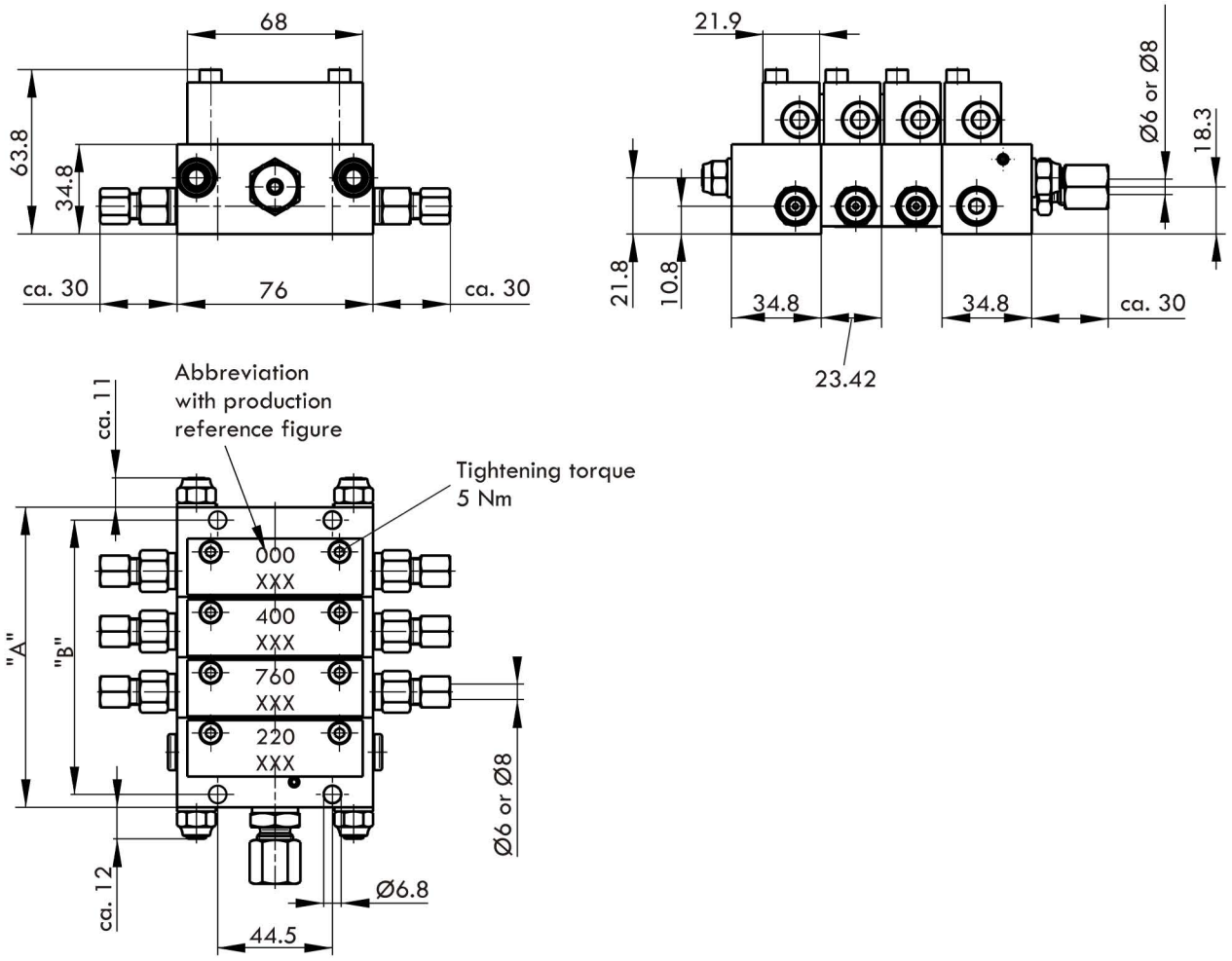


Dosing unit designation	Delivery rate		Piston Ø
	Per outlet	Per unit	
000 SXE-2	---	---	---
100 SXE-2	0.10 cm³	0.20 cm³	4 mm
150 SXE-2	0.15 cm³	0.30 cm³	5 mm
220 SXE-2	0.22 cm³	0.44 cm³	6 mm
300 SXE-2	0.30 cm³	0.60 cm³	7 mm
400 SXE-2	0.40 cm³	0.80 cm³	8 mm
500 SXE-2	0.50 cm³	1.00 cm³	9 mm
620 SXE-2	0.62 cm³	1.24 cm³	10 mm
760 SXE-2	0.76 cm³	1.52 cm³	11 mm

PU400300090 2GB

Progressive distributor SXE-2

Dimension drawing:



Number units	3	4	5	6	7	8	9	10
Max. outlets	6	8	10	12	14	16	18	20
Dimensions	"A" 93.0	116.5	139.9	163.3	186.7	210.1	233.5	257.0
Dimensions	"B" 83.0	106.5	129.9	153.3	176.7	200.1	223.5	247.0

Progressive distributor SXE-2
Functional description

The progressive distributor is based on distributor panels that are connected together by tie rods with washers and nuts to form distributors. The dosing units are screwed onto the basic units with Allen screws. Individual units are sealed with O rings.

The lubricant flows through the distributor inlet to the second dosing unit and piston (II) (Fig. A). The piston (II) is pushed to the left and the lubricant is pushed to outlet 2 (Fig. B) from the left pressure chamber of the delivery piston.
Subsequently, the dosing piston (III) is progressively pushed and the lubricant delivered to outlet 3. After the piston is pushed (II), the lubricant is moved to the left side of the delivery piston (I) (Fig. C) and moved from the right pressure chamber of the delivery piston (I) to outlet 4.

Subsequently, the delivery pistons (II) and (III) are pushed and the lubricant delivered to outlets 5 and 6.

After the delivery piston is pushed (III), the lubricant is moved to the right side of the delivery piston (I) (Fig. D) pushing the lubricant out of the left pressure chamber of the delivery piston (I) to outlet 1.

A new progressive piston distributor cycle then begins. The described function repeats itself as long as lubricant is supplied to the progressive distributor.

= Pressure ducts
= Already conveyed
= Subsequent delivery stroke

Figure A:

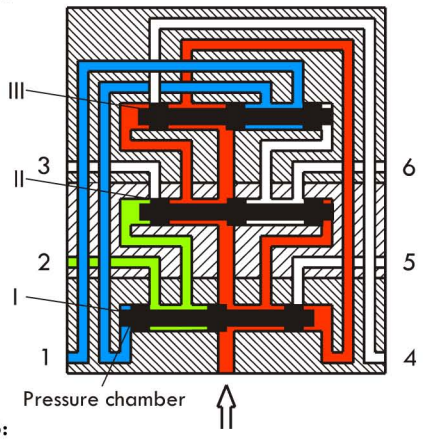


Figure B:

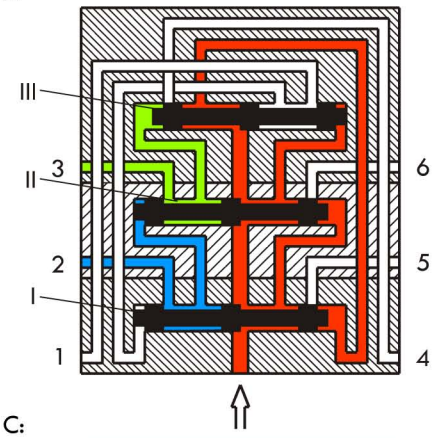


Figure C:

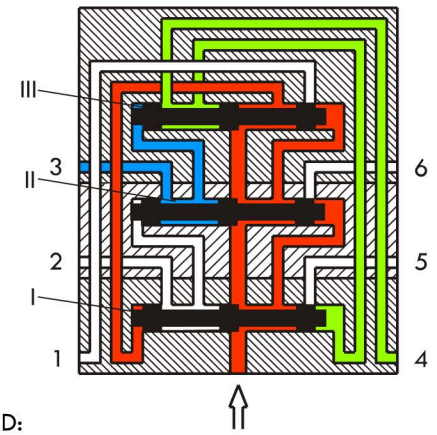
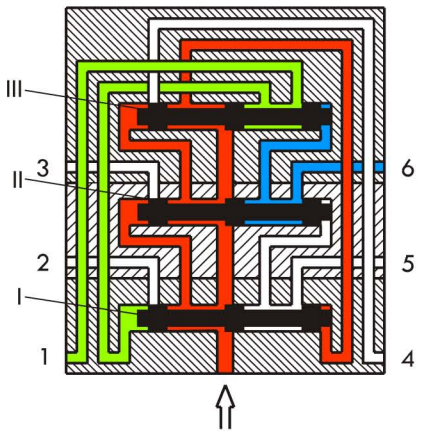


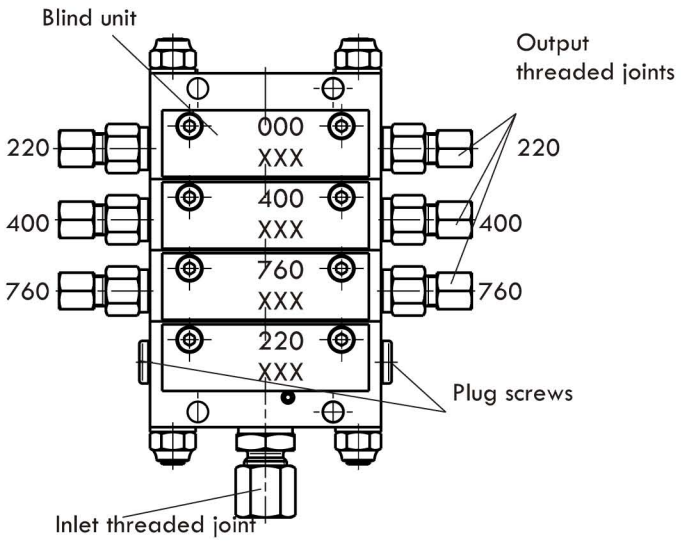
Figure D:



Progressive distributor SXE-2
Blind unit

To reduce the number of lubricant points in an existing distributor if no longer required or to have outlets available on a distributor for future additional lubricant points, two outlets can be closed on the basic unit and a blind unit installed in place of a dosing unit.
A blind unit does not have delivery pistons so lubricant is not dosed.
If a distributor is fitted with a blind unit, the outlets of the downstream basic unit, seen from the distributor inlet, must be sealed off. The lubricant that would normally come out of these sealed outlets on the basic unit will then escape from the outlets of the basic unit under the blind unit.

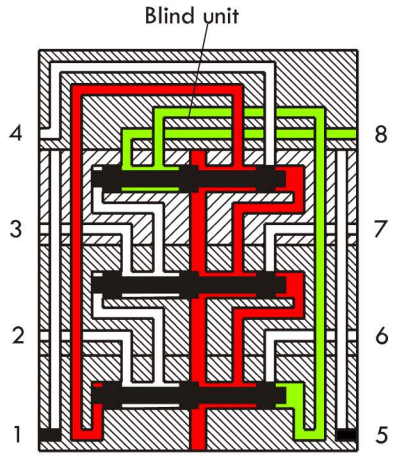
Blind unit installed over end unit:



When fitting a blind unit, the distributor must consist of at least 4 basic units, three dosing units and a blind unit as at least three pistons are required to ensure the correct function of the distributor.

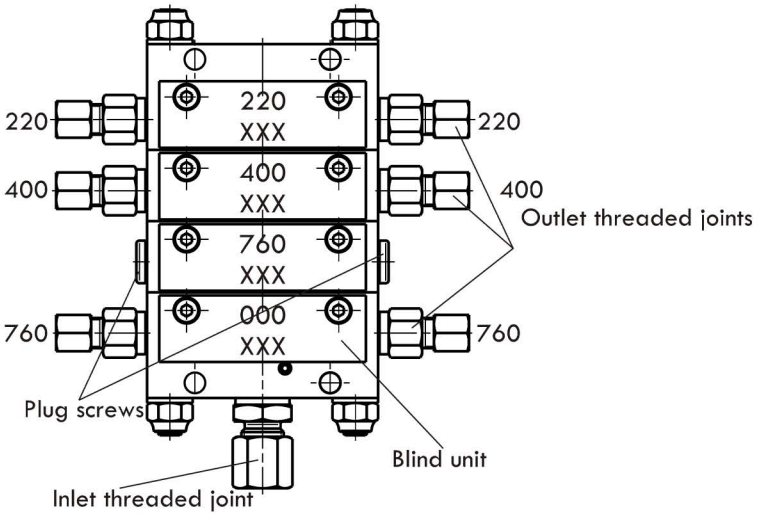
Example of blind unit installed over end unit:
The start unit outlets (1 and 5) are sealed and the lubricant that would normally come out of the start unit outlets is forwarded to the end unit outlets (4 and 8).

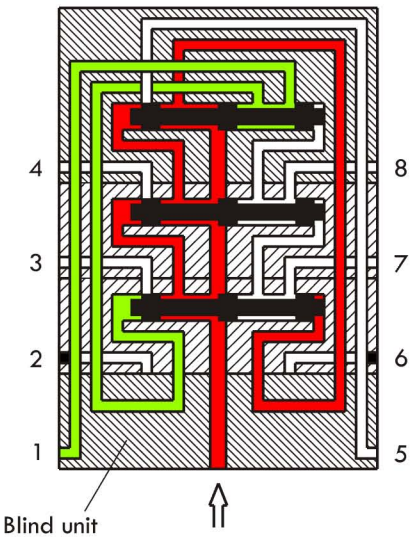
Operation diagram:



Example of blind unit installed over start unit:
The first middle unit outlets (2 and 6) are sealed and the lubricant that would normally come out of the first middle unit outlets is forwarded to the start unit outlets (1 and 5).

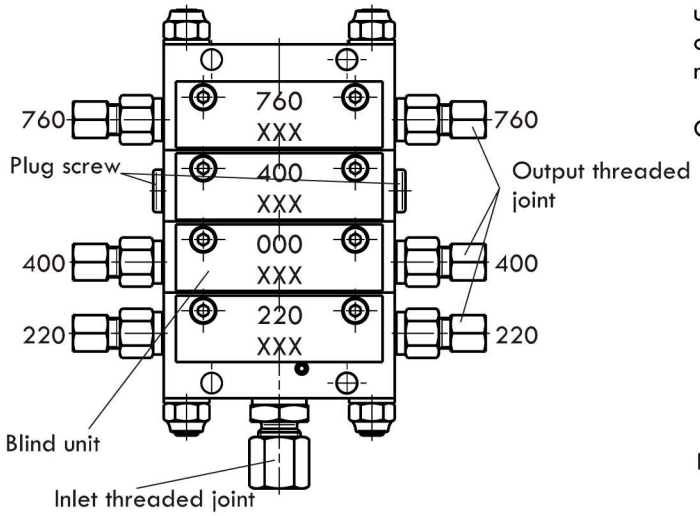
Operation diagram:





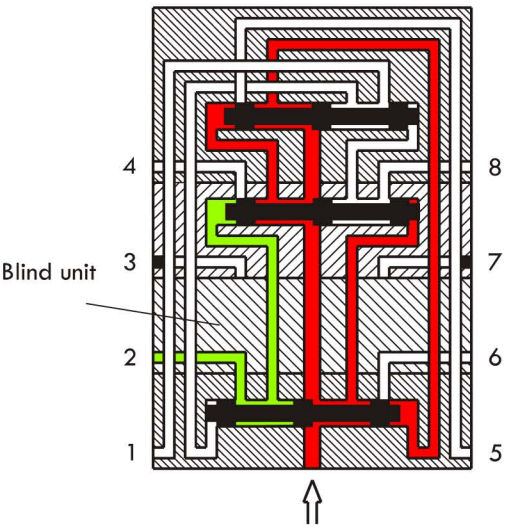
Progressive distributor SXE-2
Blind unit

Blind unit installed over first middle unit:



Example of blind unit installed over first middle unit:
The second middle unit outlets, i.e. the downstream middle unit, are sealed and the lubricant that would normally come out of these outlets comes out of the outlets of the first middle unit that is equipped with the blind unit.

Operation diagram:



Progressive distributor SXE-2
Basic units

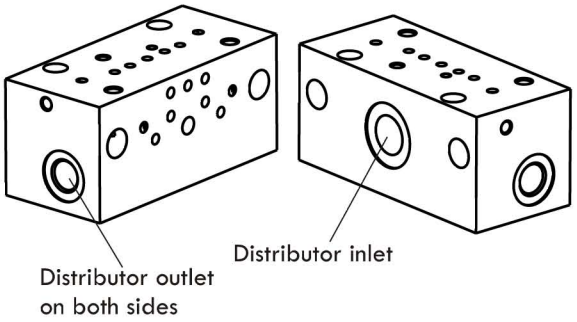
One "panel" of the progressive distributor SXE-2 always consists of a basic unit (without piston) and a dosing unit (with piston) or a blind unit.
Three delivery units are always required for correct functionality of a progressive distributor SXE-2, i.e. each distributor must have at least three dosing units. Blind units do not contain pistons and are therefore not counted.
Basic units are divided into start units, middle units and end units. Each dosing or blind unit fits every basic unit.
Each distributor must consist of a start unit, one to eight middle units and an end unit.

The units are sealed with O rings, which have to be installed in the middle and end units. The O rings are delivered already installed in each unit. The necessary O rings can be re-ordered in sets:

O-ring set for basic units:
Order No.: 4003000D005

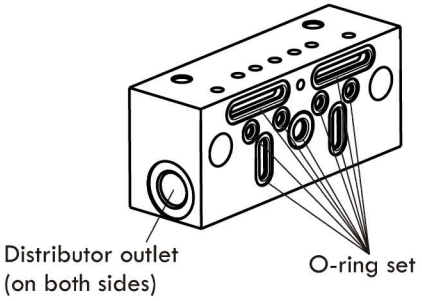
Attention: Absolute cleanliness is essential when working on the distributors.

Start unit:
Order No.: 4003970000
(O rings not required)

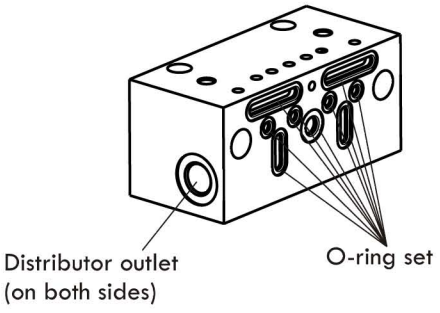


Any of the inlet threaded joints depicted on Pages 9 and 10 can be screwed into the distributor inlet of the start unit. The outlet threaded joints depicted on Page 11 can be screwed into the distributor outlets.

Middle unit:
Order No.: 4003980000



End unit:
Order No.: 4003990000



Progressive distributor SXE-2
Dosing units

The progressive distributor SXE-2 dosing units are responsible for the precise distribution of the lubricant supply. They contain pistons with various diameters that are used to achieve the required delivery rates.
The dosing units are screwed onto the distributor units. The dosing and basic units are sealed with O rings.

The necessary O rings can be re-ordered in sets.
O-ring set for dosing units:
Order No.: 4003000D006

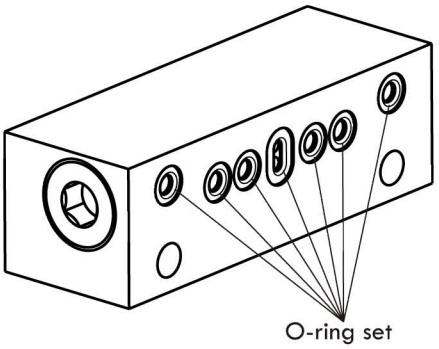
Dosing units are screwed onto the basic units with two Allen screws M5x35 and a tightening torque of 5 Nm.

Connection screws M5x35,
Order No.: 090091202123

Blind unit:
A blind unit can be used if a lubricant point in the system is no longer required or distribution outlets are added for future additional lubricant points. This unit does not have a piston, therefore the distributor must consist of at least 4 distributor panels, i.e. a start unit, at least two middle units, an end unit and three dosing units. Joints are sealed with O rings like the dosing units. The O ring set used for dosing units can also be used in this case. The blind units, like dosing units, are screwed onto the basic units with two Allen screws M5x35 and a tightening torque of 5 Nm.

Attention: Absolute cleanliness is essential when working on the distributors.

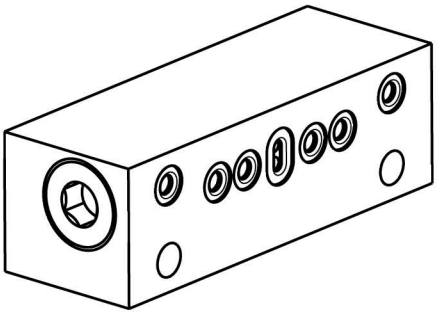
Dosing unit :



Dosing units can be delivered with 8 different delivery rates, i.e. with 8 different piston diameters.

Dosing unit Abbreviation	Delivery rate per piston stroke	Order No.
100 SXE-2	0.10cm³	4003981001
150 SXE-2	0.15cm³	4003982001
220 SXE-2	0.22cm³	4003983001
300 SXE-2	0.30cm³	4003984001
400 SXE-2	0.40cm³	4003985001
500 SXE-2	0.50cm³	4003986001
620 SXE-2	0.62cm³	4003987001
760 SXE 2	0.76cm³	4003988001

Blind unit: 000 SXE-2
Order No.: 400398B001



Progressive distributor SXE-2
Combining outlets

It may be necessary to combine two or more outlets on the progressive distributor for larger lubricant points.

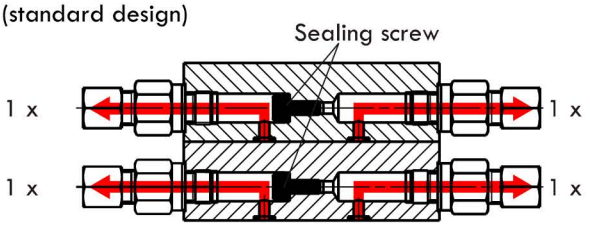
Each basic unit in the progressive distributor has two outlets.

It is possible to combine the delivery rate of two outlets from the same basic unit or the delivery rates of outlets from two different, but neighbouring, basic units.

To combine the delivery rates from two outlets on the same basic unit, the two outlets are joined by removing the sealing screw between the outlet sides and plugging one outlet with a plug screw. The delivery rate from the sealed side is now forced through the open side, i.e. the delivery rate of the open side doubles.

To separate combined outlets on the progressive distributor, reinsert the sealing screw and sealing ring.

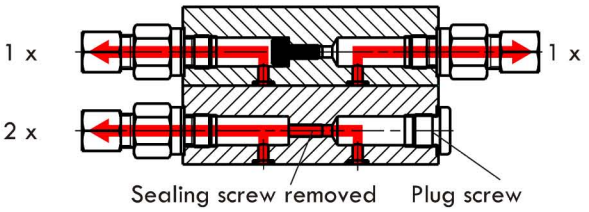
2 outlets per distributor unit:
(standard design)



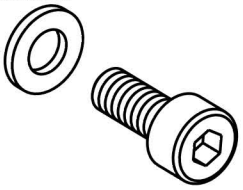
Combining 2 outlets:
In general, sealing screws with sealing rings are required to combine outlets:

Order No.: Plug screw: 090090800313
Sealing ring: 090760303911

2 outlets of a distributor unit combined:



Separating outlets:
Sealing screws and rings for separating outlets on progressive distributors:



Order No.: Sealing screw: 090091200223
Sealing ring: 090760301211

Progressive distributor SXE-2
Combining outlets

If the overall delivery rate of a distribution panel in the progressive distributor is still insufficient with combined outlets, e.g. with very large lubricant points or main distributors, it is possible to combine the outlets of several distribution panels.

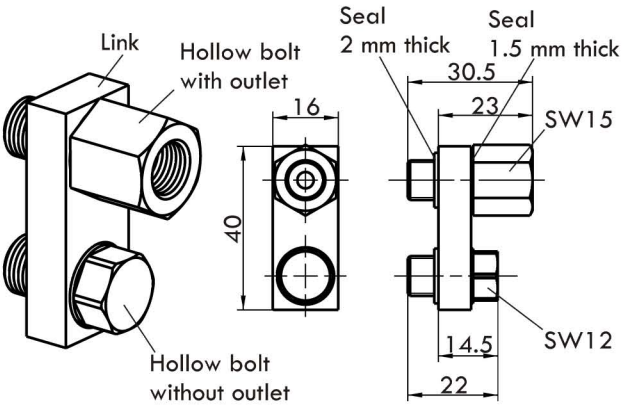
Two, three or four outlets of different, but neighbouring, distributor panels can be combined together with the aid of distributor links.

The delivery rates of two outlets on different distributor panels can be combined with the aid of a distributor link with outlet. The outlet threaded joints of the two outlets being combined are removed and a distributor link with outlet inserted in their place. The sealing screws located between the outlets of each individual distributor unit must remain in place. The delivery rates from the outlets of the two distributor panels are now forced through the distributor link outlet, i.e. the delivery rate figures of the two distributor panels are added together.

If three outlets are combined, one of the sealing screws on one of the two basic units concerned must be removed. A distributor link with outlet replaces, on one side, the outlet threaded joints of the neighbouring distributor panels whose outlets are being combined. When the sealing screw is removed from the outlet on the basic unit opposite the distributor link, it must be replaced by a plug screw. The delivery rates of all three outlets are then forced through the distributor link outlet.

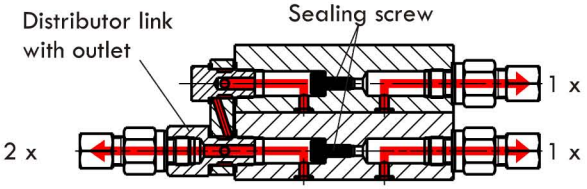
If four outlets are combined, the sealing screws in both basic units must be removed and a plug screw inserted in both outlets opposing the distributor link. The delivery rates of all four outlets are then forced through the distributor link outlet.

Distributor link with outlet:
Order No.: 4003980010011

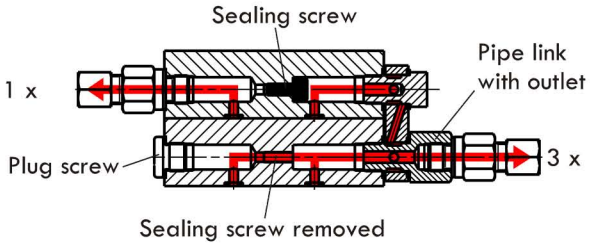


Comprising:
1 link unit, Order No.: F0365/41-00
1 unit hollow bolt without outlet,
Order No.: F0408/15-00
1 unit hollow bolt with outlet,
Order No.: F0408/14-01
2 sealing rings A10x13.5x1.5,
Order No.: 090760305121
2 sealing rings A10x15x2,
Order No.: 090760301911

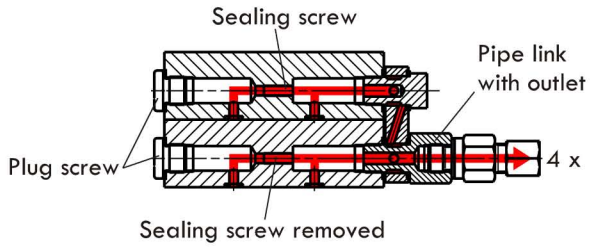
2 outlets of two different distributor panels combined:



3 outlets combined with a distributor link with outlet:



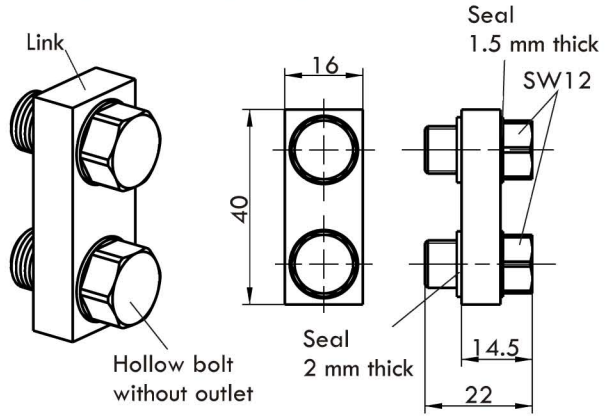
4 outlets combined with a distributor link with outlet:



Progressive distributor SXE-2
Combining outlets

Three or four outlets of different, but neighbouring, distributor panels can be combined together with the aid of distributor links without outlets.

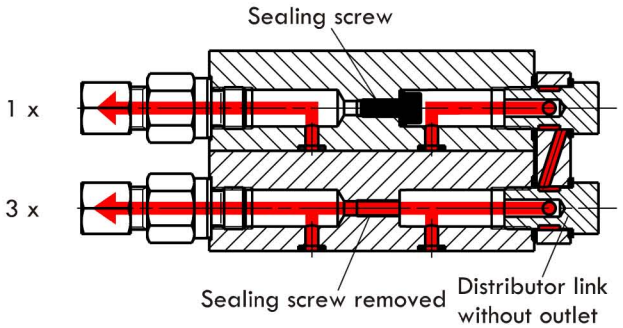
Distributor link without outlet:
Order No.: 4003980010010



Comprising:
1 link unit, Order No.: F0365/41-00
2 units hollow bolt without outlet,
Order No.: F0408/15-00
2 sealing rings A10x13.5x1.5,
Order No.: 090760305121
2 sealing rings A10x15x2,
Order No.: 090760301911

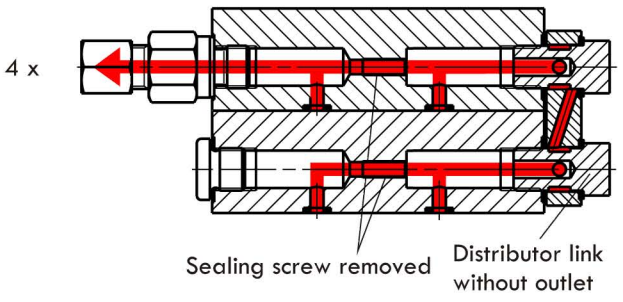
If three outlets are combined, one of the sealing screws on one of the two basic units concerned must be removed. A distributor link replaces, on one side, the outlet threaded joints of the neighbouring distributor panels whose outlets are being combined. The outlet opposite the distributor link on the basic unit where the sealing screw has been removed is now the outlet for all delivery rates of all combined outlets.

3 outlets combined with a distributor link without outlet:



If four outlets are combined, the sealing screws of both basic units concerned must be removed. The outlet threaded joints on the distributor panels being combined are replaced on one side with a distributor link without outlet. One of the outlets opposite the distributor link must be sealed with a plug screw. The other outlet then serves as the outlet for all combined delivery rates from the outlets of the distributor panels concerned.

4 outlets combined with a distributor link without outlet:



The distributor links can be combined together to combine five or more outlets. The procedure is as described above.

Progressive distributor SXE-2
Inlet threaded joints

The progressive distributor SXE-2 is generally used as a main distributor. The pump-main distributor connection is generally a high pressure hose. The pipe joints used to connect the high pressure hose can be directly screwed into the inlet threaded joint of the progressive distributor.
Three different joint models with 2 different pipe diameters each are available.

A) Straight threaded joints:

Order No.:
Pipe-Ø6S: 04012001006
Pipe-Ø8L: 04012021006

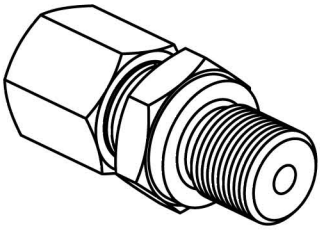
PipeøD	G	L1	L2	ca. L3	S1	S2	D
6	G1/4"	12	25	40	19	17	18
8	G1/4"	12	22	37	19	17	18

B) Angled threaded joints:

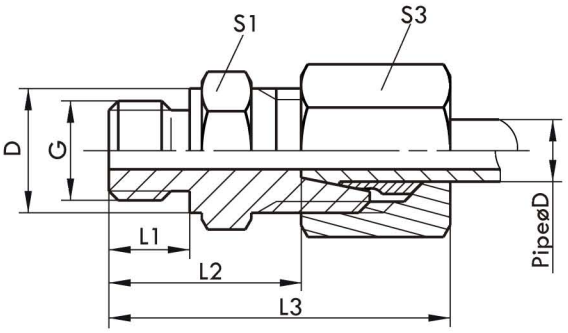
Order No.:
Pipe-Ø6S: 04012200806
Pipe-Ø8L: 04012220806

PipeøD	G	L1	ca. L2	L3	S1	S2
6	R1/4"k	16	31	27	14	17
8	R1/4"k	14	29	27	14	17

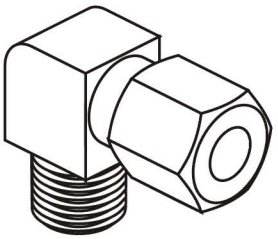
Straight threaded joint:



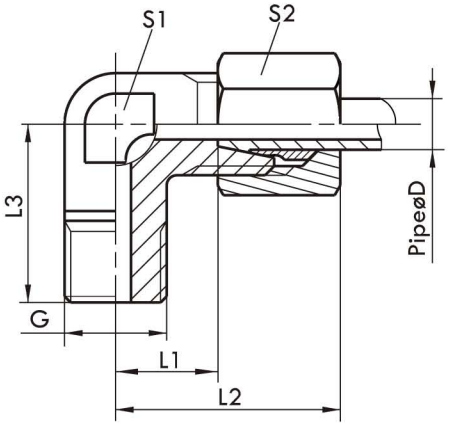
Dimensions diagram:



Angled threaded joint:



Dimensions diagram:

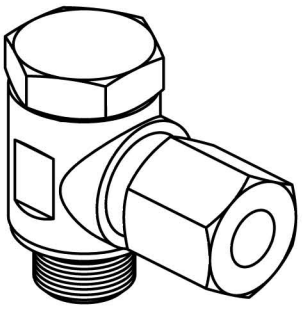


Progressive distributor SXE-2
Inlet threaded joints

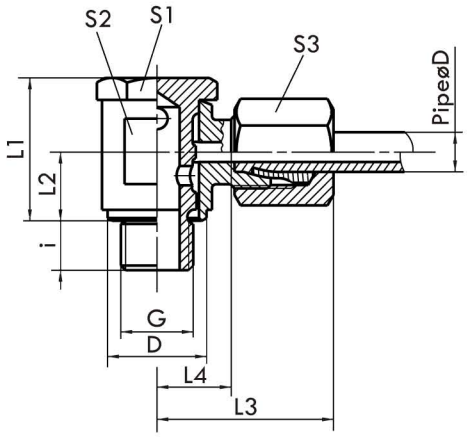
C) Angled swivel joints:

Order No.:
Pipe-Ø 6S: 04013201006
Pipe-Ø 8L: 04013221006

Angled swivel joint:



Dimensions diagram:



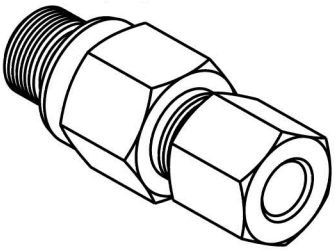
PipeØD	G	L1	L2	ca. L3	L4	I	S1	S2	S3	D
6	G1/4"	26	12.5	29	14.5	9	19	19	17	18
8	G1/4"	26	12.5	28	13	9	19	19	17	18

Progressive distributor SXE-2
Outlet threaded joints

The progressive distributor SXE-2 is generally used as a main distributor, therefore a high pressure hose can be connected to each distributor outlet. Three non-return valves are available for this purpose. The pipe joints used to connect the high pressure hose can be directly connected with the non-return valve of the distributor.

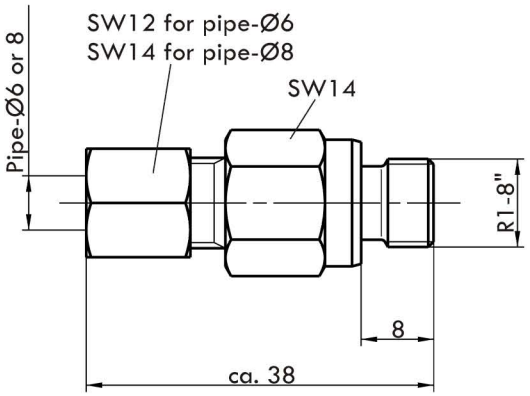
The non-return valves, series LL, can be delivered for pipe diameters 6 or 8.

Non-return valve for progressive distributor SXE-2:



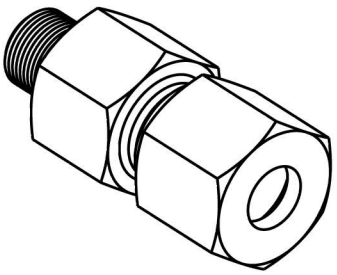
Order No.: for pipe-Ø6LL: 0438000064
for pipe-Ø8LL: 0438000063

Dimensions diagram:



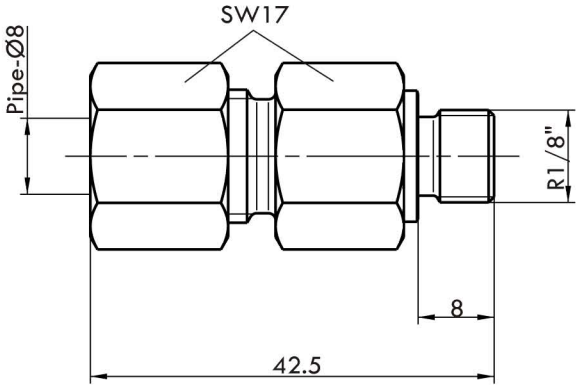
The non-return valves, series L, can be delivered for pipe diameter 8.

Non-return valve for progressive distributor SXE-2:



Order No.: for pipe-Ø8L: 0438000148

Dimensions diagram:



Progressive distributor SXE-2
Units with proximity sensor

A proximity sensor can be installed in any position on a dosing unit 400 SXE-2 to 760 SXE-2 in the progressive distributor SXE-2.

Dosing units with proximity sensors must be ordered separately, retrofitting a proximity sensor onto an existing dosing unit is not possible.

Proximity sensors can be retrofitted in a progressive distributor only by replacing the dosing unit concerned (see Page 16).

Distributors with proximity sensors are used to monitor the system or, with sequencers, to count the piston strokes of the distributor.

Function description:
A pin (2) is attached to the piston of the dosing unit (1). This approaches the proximity sensor (3) during each piston stroke and triggers a signal. This signal can be processed in various ways depending on the controller type or application.

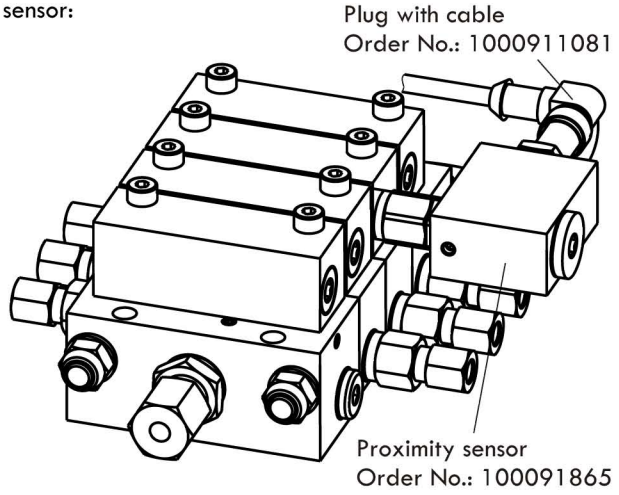
Technical data - Proximity sensor:

Voltage:	10-30 V DC
Mains socket with 10 m cable:	detachable
Perm. ambient temperature:	-30°C to +70°C
Enclosure material:	Aluminium
Protection class:	IP 65

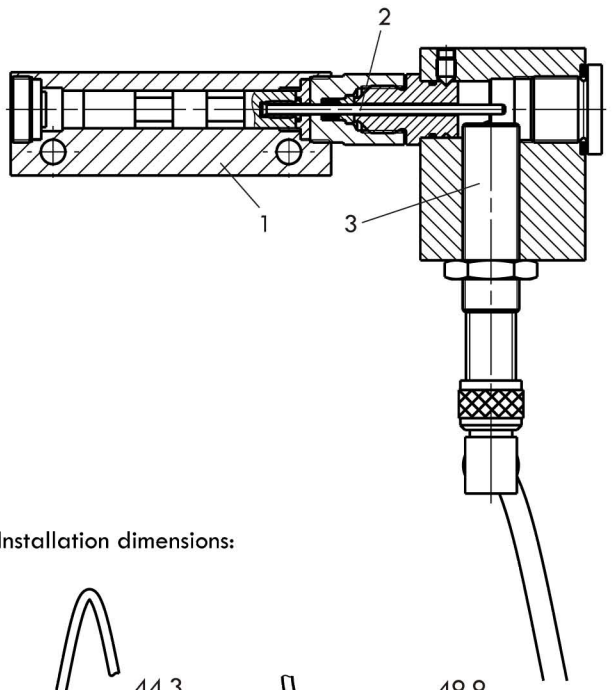
Dosing units with proximity sensors must be ordered separately:

Dosing unit Abbreviation	Delivery rate per piston stroke	Order No.
400 SXE-2 NS	0.40cm³	40039851N1
500 SXE-2 NS	0.50cm³	40039861N1
620 SXE-2 NS	0.62cm³	40039871N1
760 SXE-2 NS	0.76cm³	40039881N1

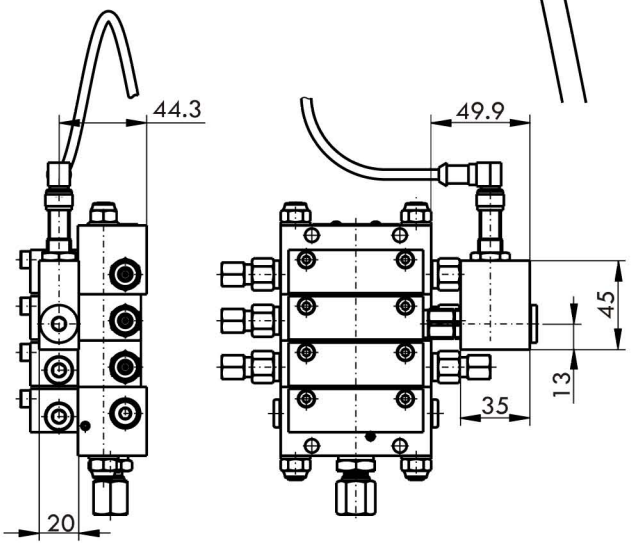
Progressive distributor SXE-2 with integrated proximity sensor:



Proximity sensor built onto a dosing unit:



Installation dimensions:



Progressive distributor SXE-2
Units with optical stroke monitoring

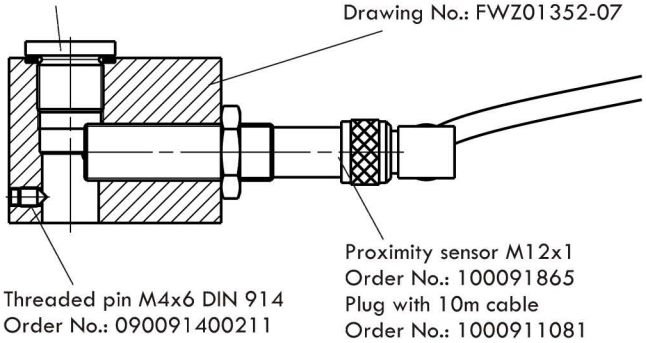
An optical stroke monitor can be installed on the progressive distributor SXE-2 instead of a proximity sensor. This can only be installed on dosing units 400 SXE-2 to 769 SXE-2. Retrofitting is not possible, therefore optical stroke monitoring must be requested when ordering.

The transparent cap (switching pin cover) for the stroke monitor can be ordered separately.
Order No.: 4003000S003

It is possible to retrofit a proximity sensor onto a dosing unit with optical stroke monitoring.

Proximity sensor for retrofitting:
Order No.: 4003000N002

Plug screw M14x1 DIN 908
Order No.: 090090801450
USIT ring U18.8x14x1
Order No.: 100150010148

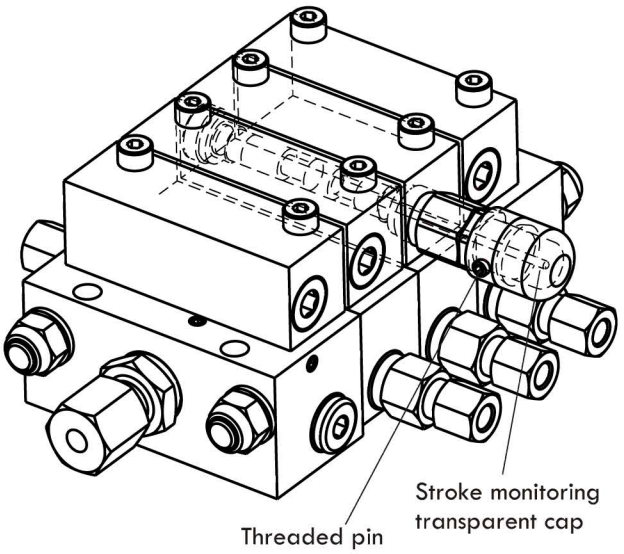


The proximity sensor is already pre-set during installation!

Dosing units with stroke monitoring must be ordered separately:

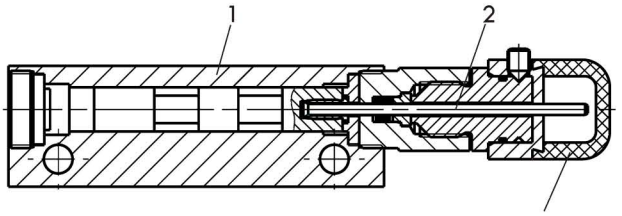
Dosing unit Abbreviation	Delivery rate per piston stroke	Order No.
400 SXE-2 HS	0.40cm³	40039852N1
500 SXE-2 HS	0.50cm³	40039862N1
620 SXE-2 HS	0.62cm³	40039872N1
760 SXE-2 HS	0.76cm³	40039882N1

Progressive distributor SXE-2 with stroke monitor:

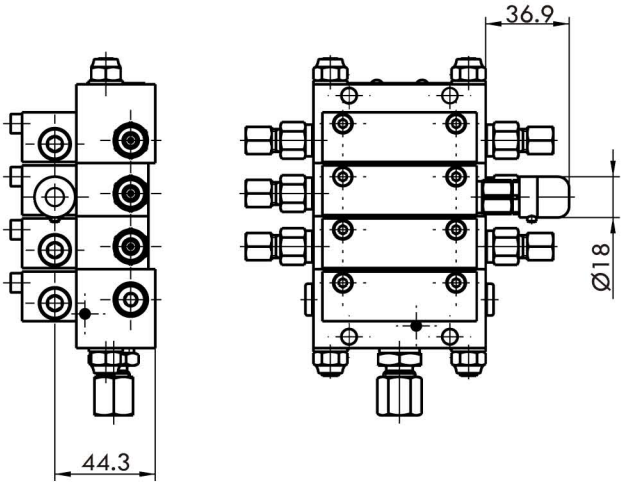


To retrofit a proximity sensor, the threaded pin must be unscrewed and the stroke monitor removed. The proximity sensor can then be installed and the threaded pin screwed back in.

Function description:
A pin (2) is attached to the piston of the dosing unit (1). This appears during every piston stroke in the transparent cap (3).



Installation dimensions:



Progressive distributor SXE-2
Extending or shortening distributors

The progressive distributors SXE-2 can be adapted to application conditions at any time due to their modular configuration. If lubricant points are to be added or removed, the distributor can be extended or shortened by the installation/removal of distributor panels or distributor outlets can be sealed using blind units.

Each panel of a progressive distributor SXE-2 consists of a basic unit (see Page 12) and a dosing unit or blind unit (see Page 13).

The dosing rates of an existing distributor can be modified by replacing dosing units.

Description:
- Undo connection screws.
- Remove existing dosing or blind unit.
- Insert new dosing or blind unit into basic unit.
- Screw connections screws back in (5 Nm).

The distributor panels should be pre-assembled before being inserted into the distributor. To do this, connect a dosing unit with a distributor unit as described above.
The new panels can then be installed in the existing distributor.

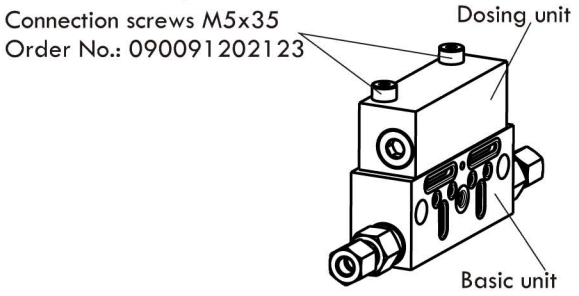
- Description:
- Remove the tie pins (1) that hold the distributor together.
- Separate the distributor at the required point.
- Add the new distributor panels or remove the unwanted distributor panels.
- Reconnect the distributor with the appropriate tie rods, nuts and washers (see table).

Attention: Absolute cleanliness is essential during this operation.

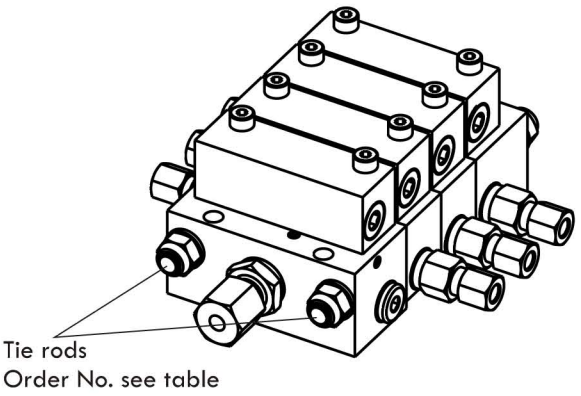
Note: An SXE-2 distributor must always consist of at least 3 dosing units and a maximum of 10 such units.

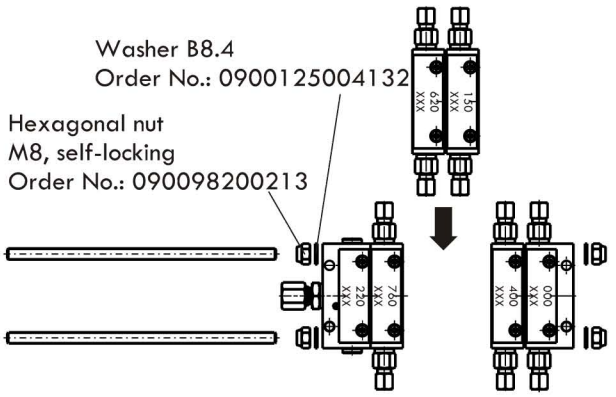
If one of the O rings used for sealing the distributor between the individual units is damaged and no longer seals correctly, they can be re-ordered in sets for basic units (see Page 12) and for dosing units (see Page 13).

SXE-2 distributor panel:



SXE distributor 4/6:





Tie rod table:

Distributor size	Tie rod size	Order number
SXE-2 3/6	M8 x 117	0802 000 400
SXE-2 4/8	M8 x 140	0802 000 401
SXE-2 5/10	M8 x 163	0802 000 402
SXE-2 6/12	M8 x 187	0802 000 403
SXE-2 7/14	M8 x 210	0802 000 404
SXE-2 8/16	M8 x 234	0802 000 405
SXE-2 9/18	M8 x 257	0802 000 406
SXE-2 10/20	M8 x 280	0802 000 407

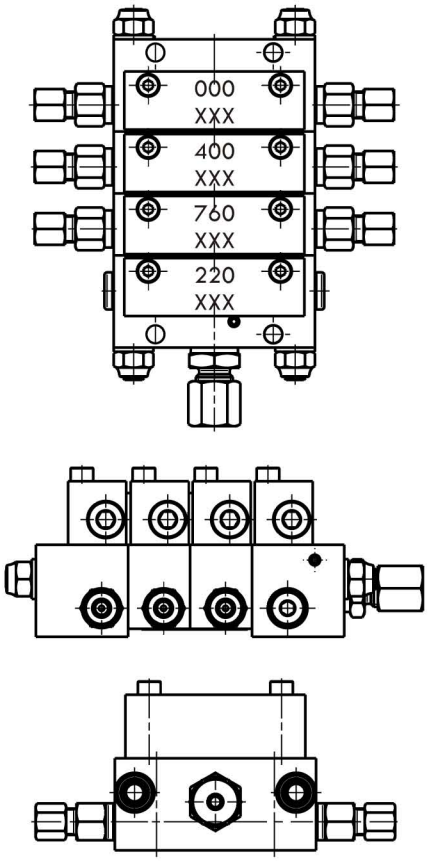
Progressive distributor SXE-2
Installation

Installation:
When installing the distributor ensure that the distributor piston is positioned horizontally.

The installation area must be flat and be free of obstacles.

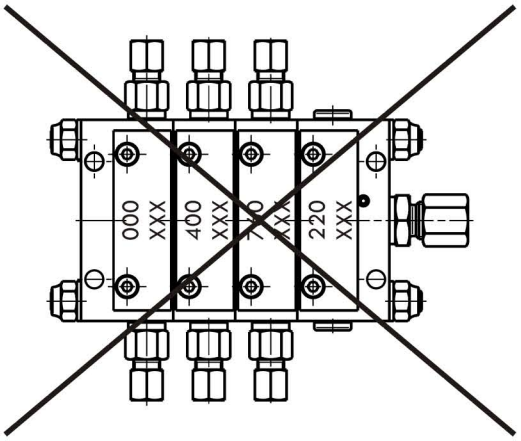
Distributor mounting position:

Correct:



Distributor mounting position:

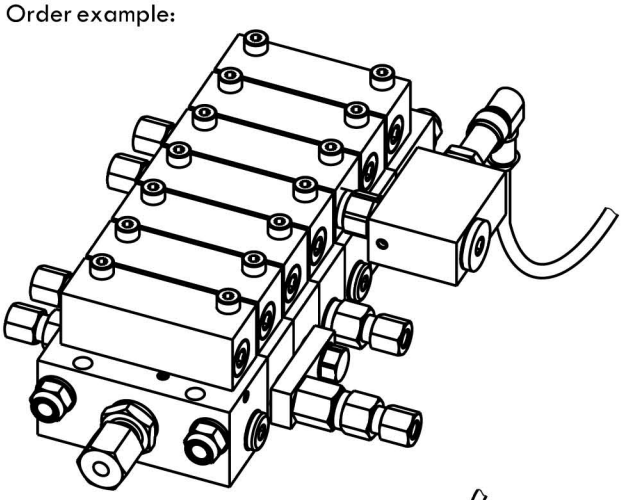
Incorrect:

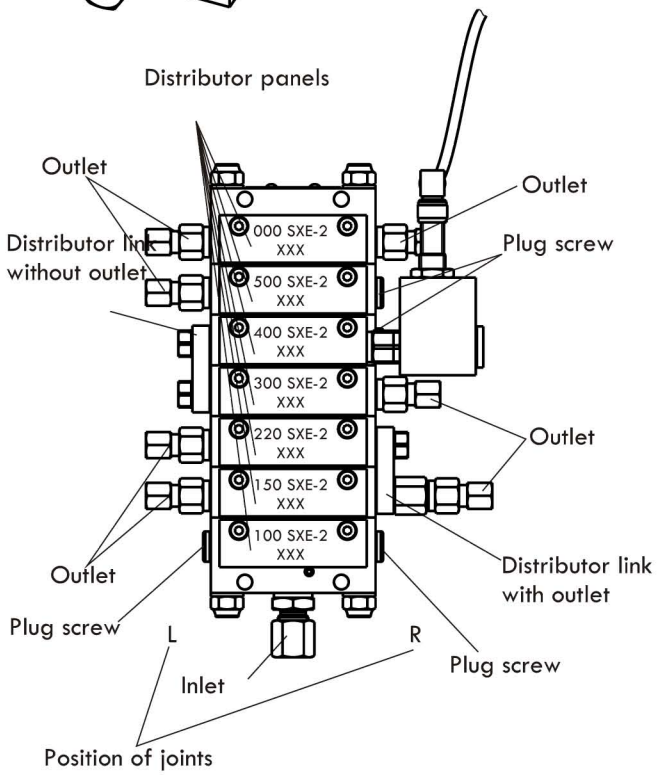


Progressive distributor SXE-2
Order code

Distributor inlet:
The progressive distributor SXE-2 can be delivered with a straight, angled or angled-swivel threaded joint. This must be specified when ordering before the diameter data.
GE for straight threaded joint
WE for angled threaded joint
WS for angled swivel joint
If the joint designation is omitted or forgotten, a straight threaded joint will be delivered as standard.
Distributor outlet:
The distributor outlet can be delivered with a LL or L series non-return valve. This must be specified when ordering before the diameter data for the distributor outlet.
LL for LL series non-return valves
L for L series non-return valves
If the series designation is omitted or forgotten, a LL series non-return valve will be delivered as standard.
Delivery rate data:
The dosing rates of the dosing units must be entered for each side from the distributor inlet in the direction of the distributor end, regardless of the outlet the lubricant exits from.
The delivery rates are identified by the short code 100 to 760 specified on Page 13 (omitting SXE-2). Blind units are identified by 000. With combined outlets, the delivery rate identifiers are added together (see Pages 6 to 8). No identifier is required for plug screws on blind units.
Plug screws and outlets sealed by distributor links are identified by a dash. The sealing screws to be removed for distributor links must be identified by a star.
Dosing units on which a proximity sensor is to be installed must be identified with NS. Please note that proximity sensors can only be installed on the right-hand side of the distributor. If a proximity sensor is incorrectly indicated as being on the wrong side of the distributor, it will automatically be delivered installed on the right-hand side of the distributor.

Order example:





Design	SXE-2	
Number of distributor panels	7	
Number of outlets	7	
Inlet threaded joints	GE6	
Outlet threaded joints	RV6LL	
Position of joints	R	100 / 370 / ---- / 1400* / --NS* / ------- / 000
	L	100 / 150 / 220 / -----* / ------* / 1000 / 000
Dosing rates		