

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

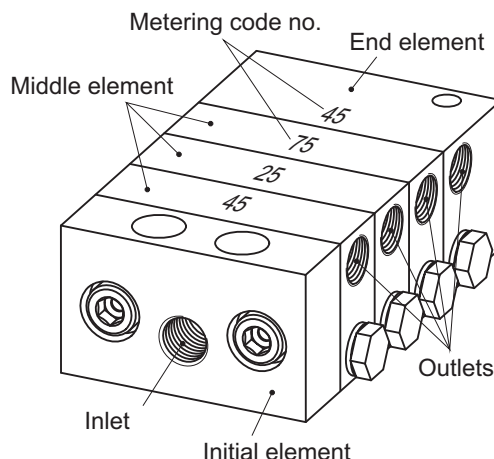
Material: steel, galvanized

No. of elements:
 min. 3 piston elements: MX-F 3/6
 max. 12 piston elements: MX-F 12/24

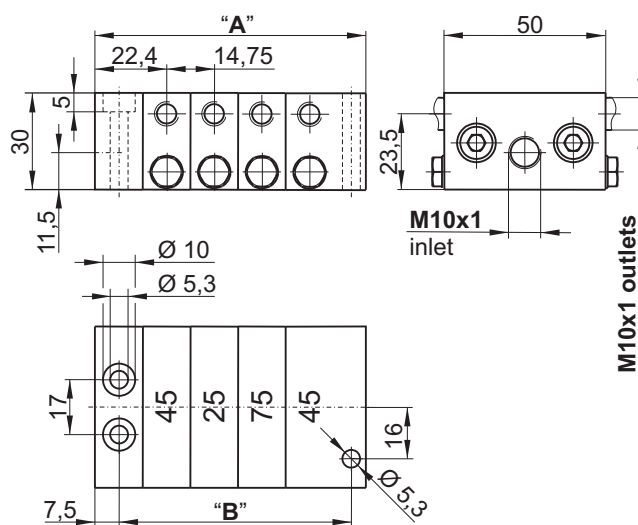
Table metering volume:

Designation piston element	Metering volume (mm ³ /stroke)		Code no.
	p. outlet	p. element	
MX-F 25	25	50	25
MX-F 45	45	90	45
MX-F 75	75	150	75
MX-F 105	105	210	105

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



Dimensional drawing



No. of piston elements	No. of outlets (max.)	Dim. "A" (mm)	Dim. "B" (mm)
3	6	69,20	57,2
4	8	83,95	72,0
5	10	98,70	86,7
6	12	113,45	101,5
7	14	128,20	116,2
8	16	142,95	131,0
9	18	157,70	145,7
10	20	172,45	160,5
11	22	187,20	175,2
12	24	201,95	190,0

Elements

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

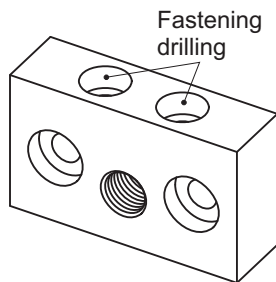
The initial elements have a M10x1 thread connection at the distributor inlet as well as middle and end elements at all distributor outlets.

Initial elements

Initial elements can be delivered with and without inlet fitting.

Initial elements without inlet fitting,

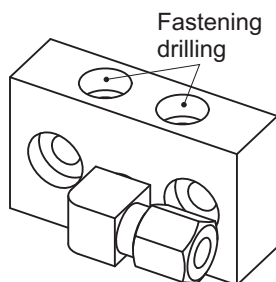
Distance of fastening drillings: 17 mm
 Diameter of fastening drilling: 5,3 mm
Order-no.: 401094001 (standard)



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

Initial element with elbow screw fitting WE6 M10x1k,

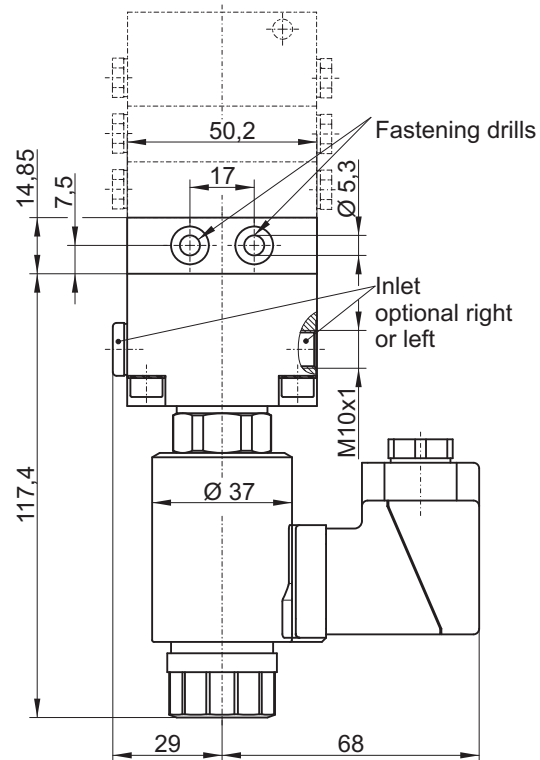
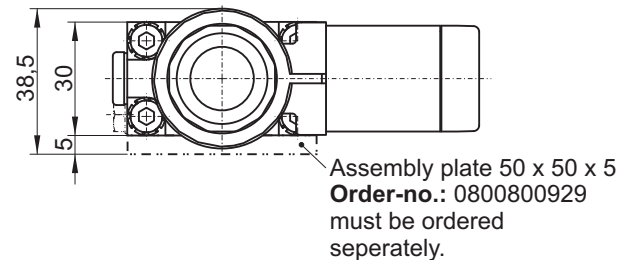
Distance of fastening drillings: 17 mm
 Diameter of fastening drilling: 5,3 mm
Order-no.: 401094002



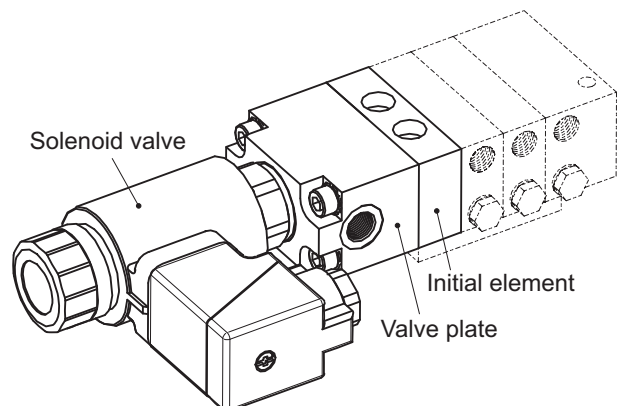
Initial element with solenoid valve

Distance of fastening drills: 17 mm
 Diameter of fastening drills: 5,3 mm
 Solenoid valve: closed in idle mode
 Magnet voltage: 24 V DC
 Protection class: IP 65
 Nominal power: ca. 30 W

Order-no.: 401094010
 (initial element, valve plate and solenoid valve)



FAZ02394_12



Subject to alterations!

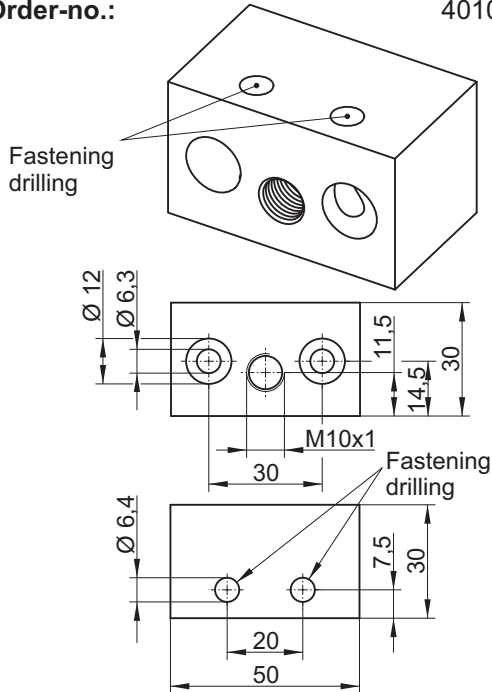
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Initial element without inlet fitting,

Distance of fastening drilling: 20 mm

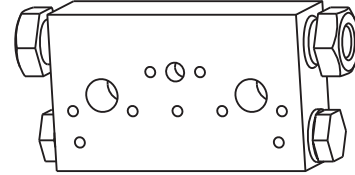
Diameter of fastening drilling: 6,4 mm

Order-no.: 401094001L



Middle elements

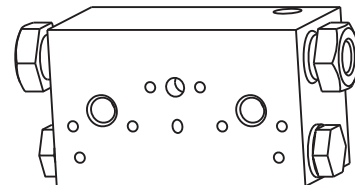
Middle elements are delivered with union screw and olives for pipe Ø 6 mm



Middle element	Order-no.
MX-F 25	401095101
MX-F 45	401095102
MX-F 75	401095103
MX-F 105	401095104

End element

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

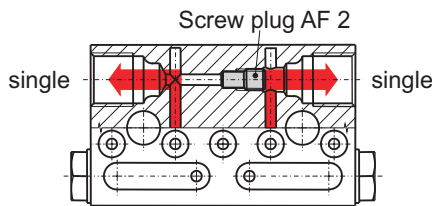


End element	Order-no.
MX-F 25	401096101
MX-F 45	401096102
MX-F 75	401096103
MX-F 105	401096104

Combination of outlets

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

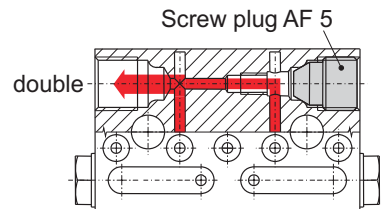
The middle and end element of a MX-F distributor have always 2 outlets.



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

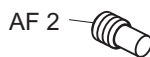


Order-no.: 4010960050000

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

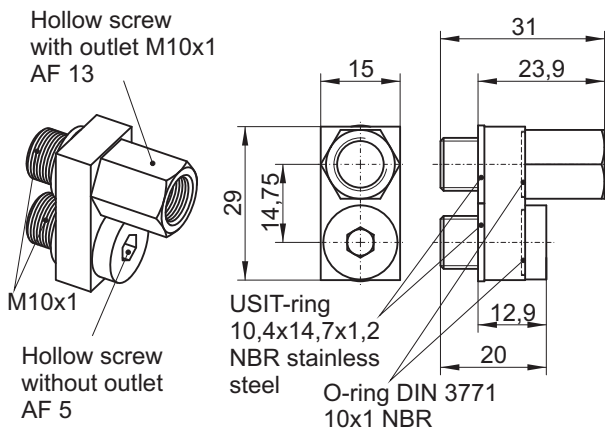
When the total metering volume of the outlets combined in one disk should be insufficient, for very large bearing points or main distributors e.g., there is also the possibility to combine the outlets of several distributor disks.

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

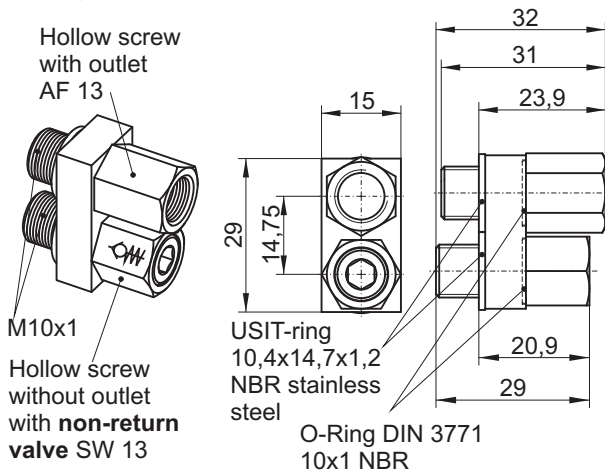
Distributor bridge with outlet

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

Order-no., complete: 4010 9600 10012



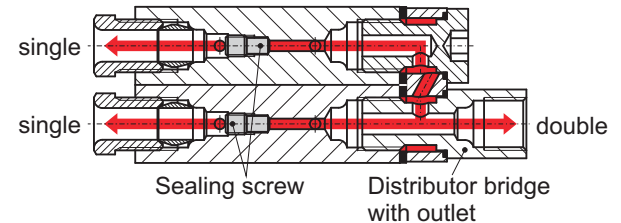
Distributor bridge with outlet with non-return valve, order-no. total: 4010960010018



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.

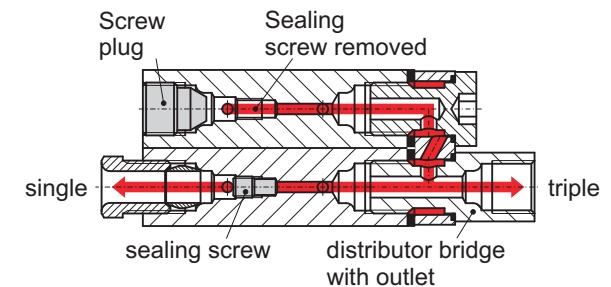
Both outlets' metering volume then comes out of the distributor bridge's outlet.



Three outlets combined at two different distributor disks

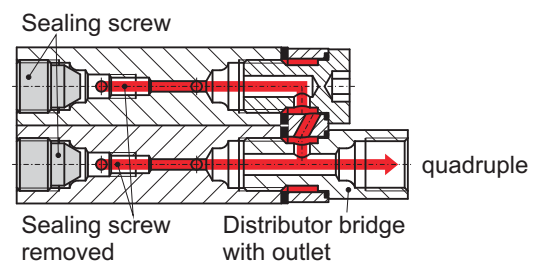
When three outlets shall be combined, the sealing screw has to be removed from one of the concerned distributor disks. The outlet opposite the distributor bridge of the distributor disk at which that sealing screw has been removed, must be locked with a screw plug.

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.



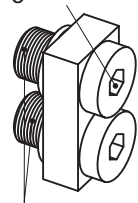
Distributor bridges without outlet and pipe bridge

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.

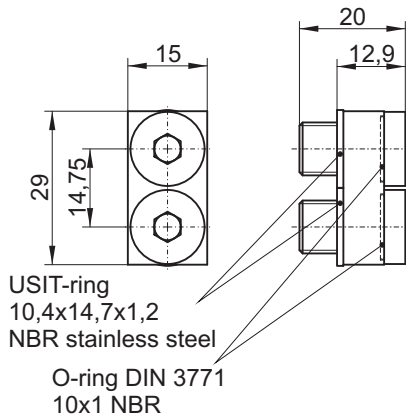
Distributor bridge without outlet,

Order-no., total: 4010 9600 10013

Hollow screw without outlet AF 5



M10x1



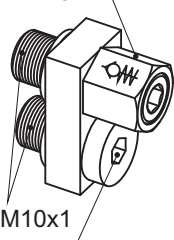
USIT-ring 10,4x14,7x1,2
NBR stainless steel

O-ring DIN 3771
10x1 NBR

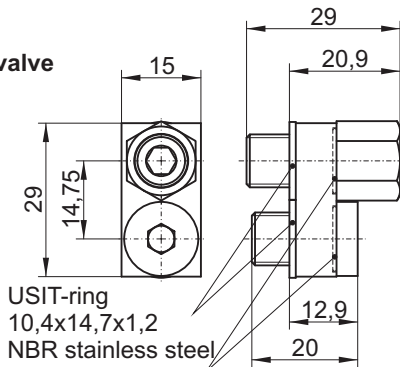
Distributor bridge without outlet with non-return valve,

Order-no., total: 4010 9600 10016

Hollow screw without outlet with non-return valve AF 13



M10x1



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

O-ring DIN 3771
10x1 NBR

Hollow screw without outlet AF 5

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

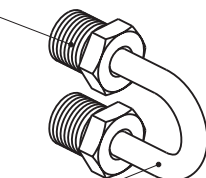
Reduction Ø6 to Ø4

Order-no.: 0802000310

Pipe bridge

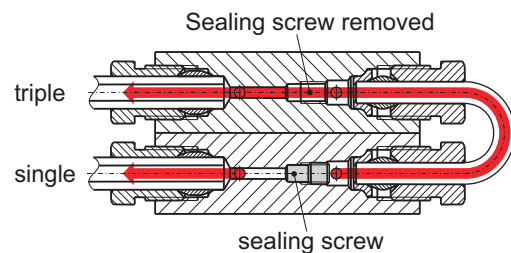
Order-no.: F0409/14-00 001

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Three outlets combined at two different distributor disks

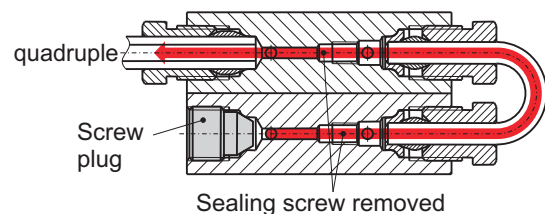
When outlets are combined with a pipe bridge (standard) or with a distributor bridge without outlet, at least three outlets are always concerned, as the metering volume has to be directed through one of the disks of the progressive distributor. The sealing screw always has to be removed in one of the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

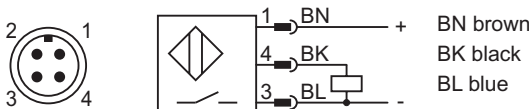
As the terminal housing of the proximity switch sticks out at the distributor (see dimension drawing on the right), a mounting plate (see drawing) has to be put under distributors which are not attached with a welding plate or a mounting angle.

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.

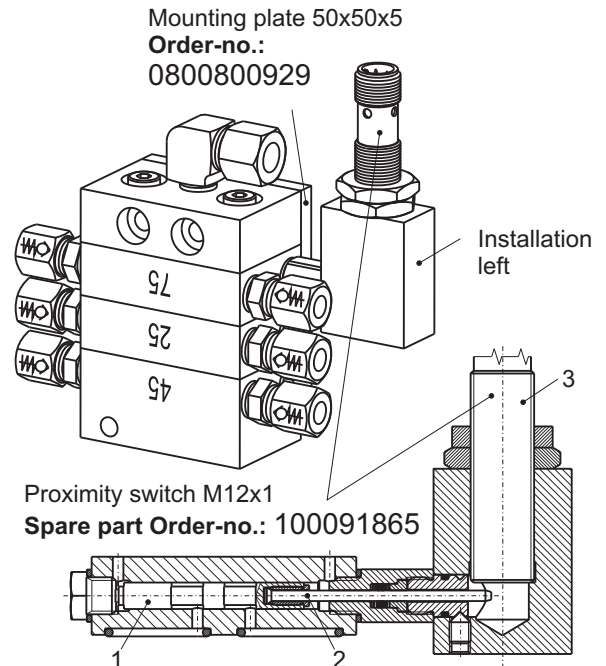
Technical data of the proximity switch:

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

Terminal diagram:



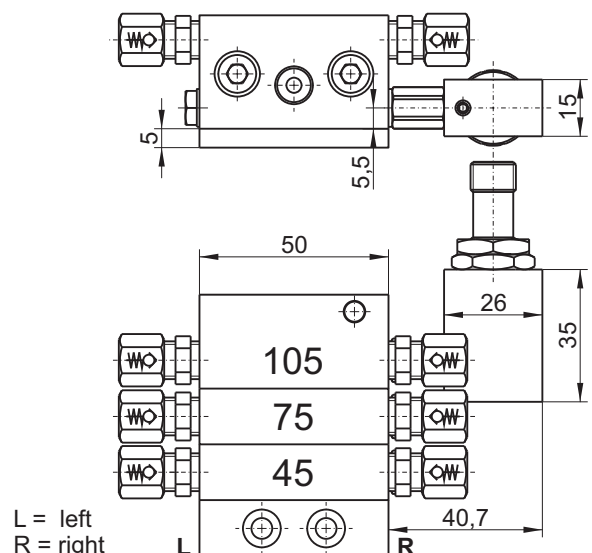
Progressive distributor with installed proximity switch:



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



Piston element with PS	Order-no.
Middle element MX-F 75	401095123022*
Middle element MX-F 105	401095124022*
End element MX-F 75	401096123022*
End element MX-F 105	401096124022*

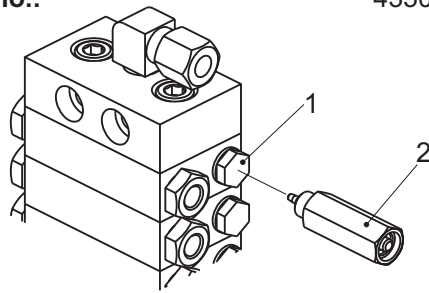
* Please indicate the installation position of the proximity switch: right (standard) or left

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.

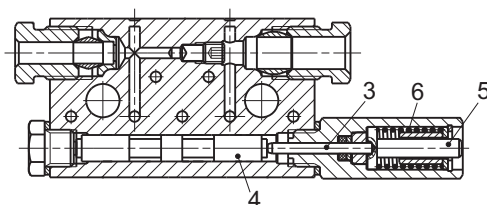
Order-no.: 4350 00 105



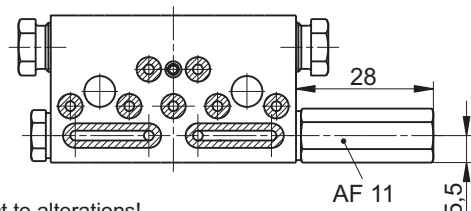
Note: Please pay attention to utmost cleanness, when the attachment is made.

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").



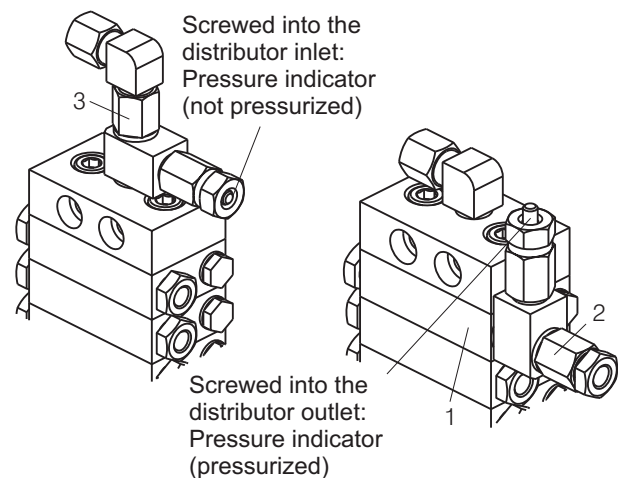
Installation dimensions



Subject to alterations!

Pressure indicator

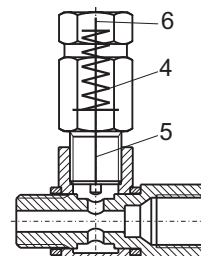
The outlets or the distributor inlet of the MX-F can be equipped with a pressure indicator, i.e. too high pressure is indicated visually. This element does not provide read or print out data. The pressure indicator can be retrofitted any time, as it has only to be screwed into the distributor outlets 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".

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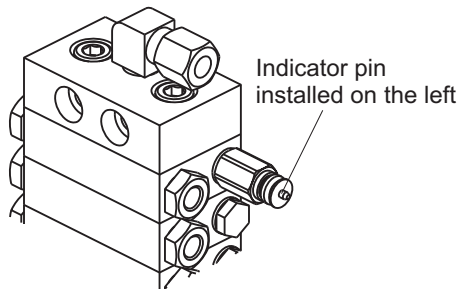
Elements with indicator pin

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.

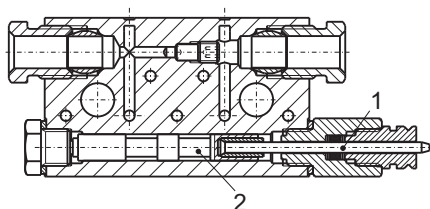
The installation of an indicator pin is also only possible in middle elements as well as in end elements MX-F 75 and MX-F 105 and has to be indicated when the order is placed.

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

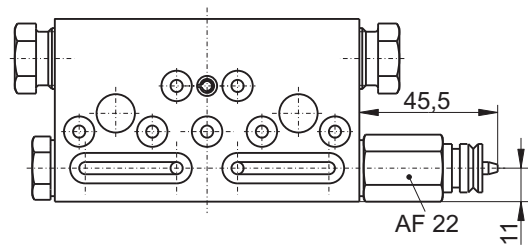


Functional description:

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

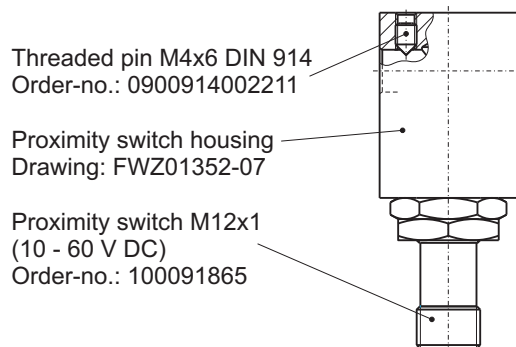


Piston element with indicator pin	Outlet pipe-Ø (mm)	Order-no.
Middle element MX-F 75	6	401095153*
Middle element MX-F 105	6	401095154*
End element MX-F 75	6	401096153*
End element MX-F 105	6	401096154*

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

A proximity switch can be retrofit at the indicator pin if necessary.

Order-no. complete: 4010960090017



Threaded pin M4x6 DIN 914
Order-no.: 0900914002211

Proximity switch housing
Drawing: FWZ01352-07

Proximity switch M12x1
(10 - 60 V DC)
Order-no.: 100091865

FAZ03168_03

The proximity switch is preadjusted during the assembly. For the retrofit installation of a proximity switch the switch must be put on and the threaded pin must be screwed in.

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)

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:

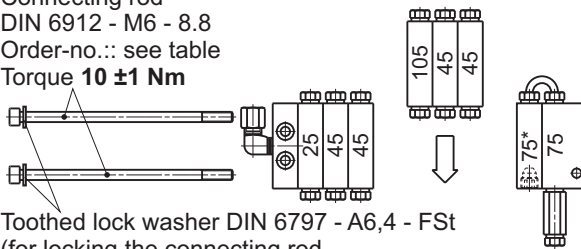
Order-no.: 4010960030002

Set of seals for middle elements:

Order-no.: 4010960030001

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

Connecting rod
DIN 6912 - M6 - 8.8
Order-no.: see table
Torque **10 ±1 Nm**



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):

Distributor	Conn. rod	Order-no.
MX-F 3/6	M6 x 50	090691201913
MX-F 4/8	M6 x 65	090691202213
MX-F 5/10	M6 x 80	090691202413
MX-F 6/12	M6 x 95	090691202613
MX-F 7/14	M6 x 110	090691202813
MX-F 8/16	M6 x 125	090091204823
MX-F 9/18	M6 x 140	090091205023
MX-F 10/20	M6 x 155	090091205123
MX-F 11/22	M6 x 170	090091211223
MX-F 12/24	M6 x 185	090091212223

Subject to alterations!

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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).

Inlet	Designation
M10x1	without fitting
GE06LL	male stud coupling,
GE08LL	pipe-Ø 6 or Ø 8, series LL
WE06LL	elbow-screw fitting,
WE08LL	pipe-Ø 6 or Ø 8, series LL
WS06LL	elbow-screw fitting,
WS08LL	pipe-Ø 6 or Ø 8, series LL

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).

Outlet	Designation
M10x1	without fitting
ÜS04	union screw, pipe-Ø 4 or
ÜS06	pipe-Ø 6
GS04	plug-in connection, pipe-Ø 4 or
GS06	pipe-Ø 6
RVA	non-return valve, internal thread M10x1 (without olive and union screw)
RVA04	non-return valve, for pipe-Ø 4 or
RVA06	pipe-Ø 6 (with olive and union screw)
RVB06	non-return valve, for pipe-Ø 6 (with cutting ring and union nut)
RVS06	non-return valve with plug connection, for pipe -Ø 6

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").

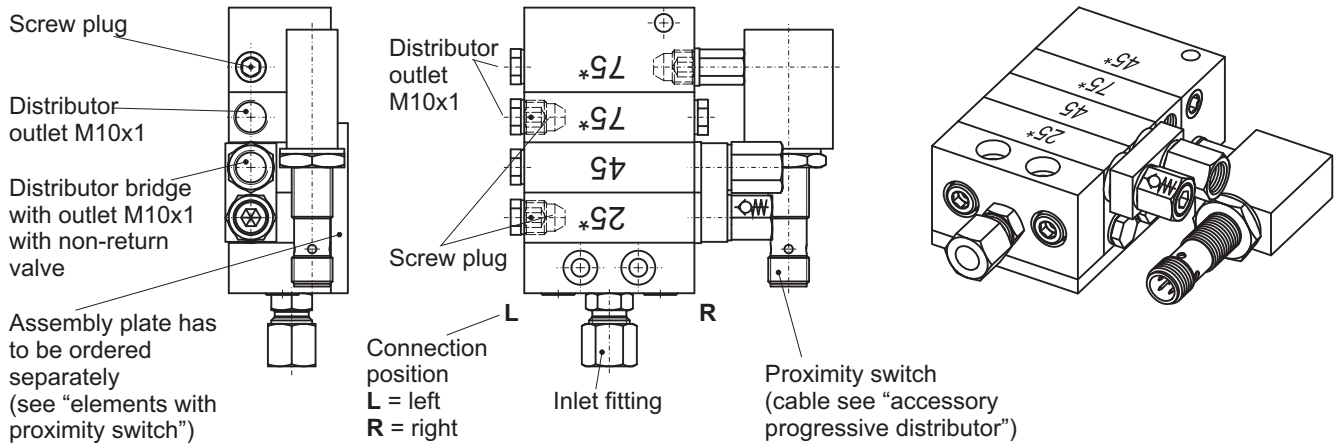
Non-return valves in the distributor bridges are marked with **RV** behind the metering code number at the according outlet in the order key.

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 has to be indicated.

NS	Designation
NS A	NS M8x1 with 6 m cable, not plugable
NS 08	NS M8x1 plugable
NS 12	NS M12x1 plugable (standard)

Order example

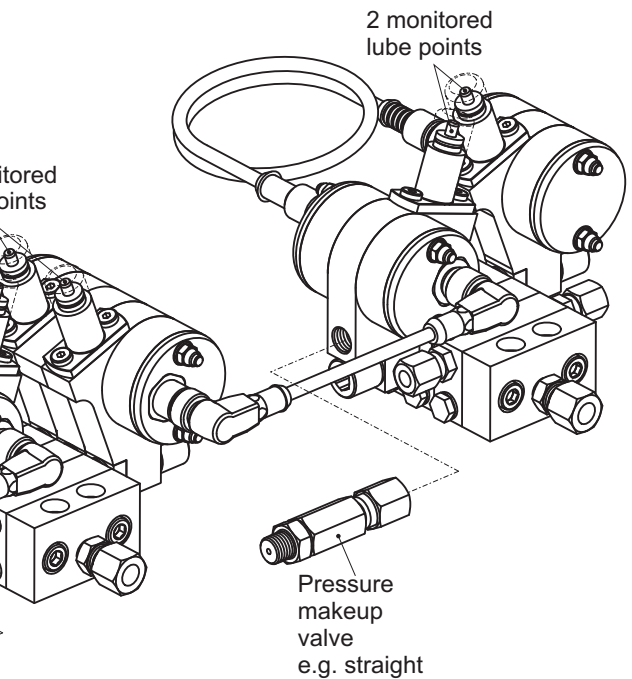
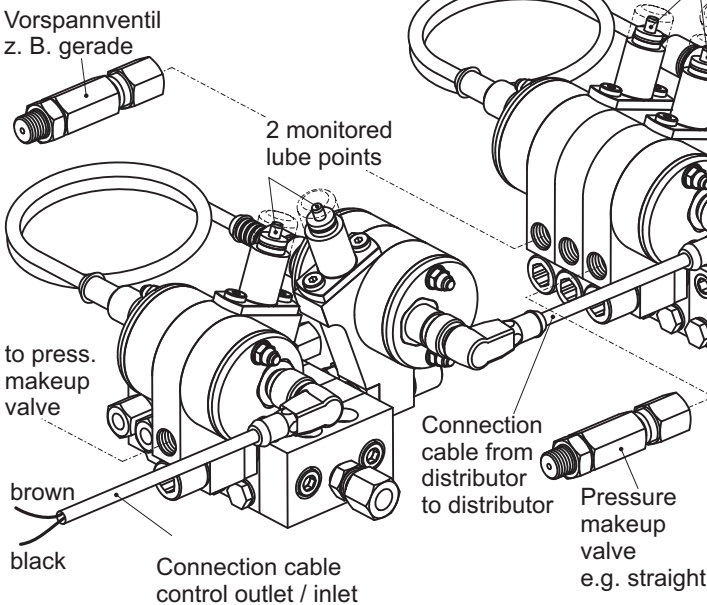


* = Sealing screw removed!

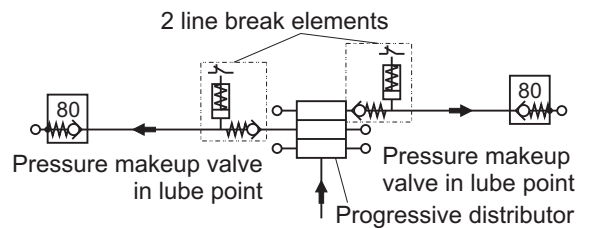
Type	MX-F 04 / 04 - GE08LL / M10x1	R	---	RV + 95 / 150 / ---	NS
No. of piston elements		L	---	/ 45 / ---	/ 150
No. of outlets					
Inlet fitting					
Outlet fitting					
Connection positions					
Metering code numbers at outlets					

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.



Hydraulic diagram



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.

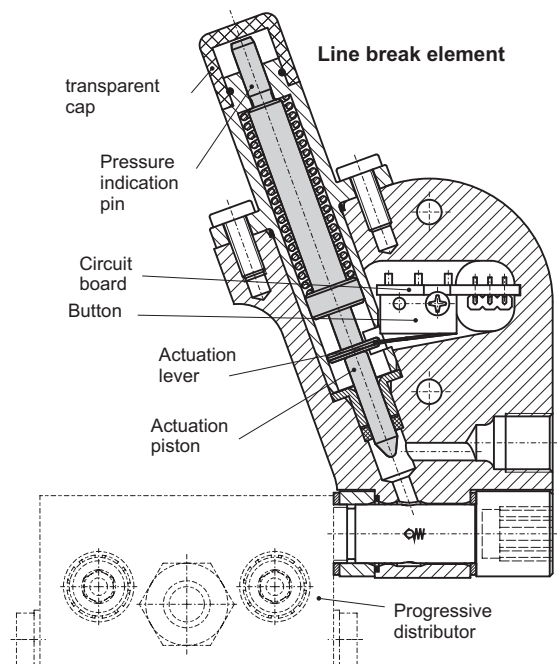
A pressure makeup valve with non-return valve with an opening pressure of 75 bar is screwed directly into the lube point. With this pressure, that always exists within the line, the actuation piston presses a button via the actuation lever in the element. Hence the electrical circuit is closed and the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

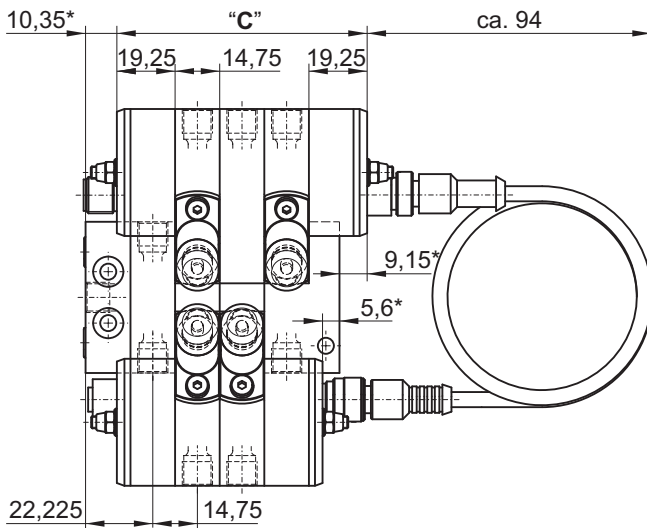
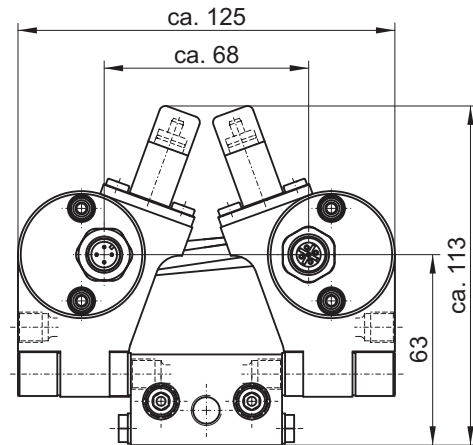
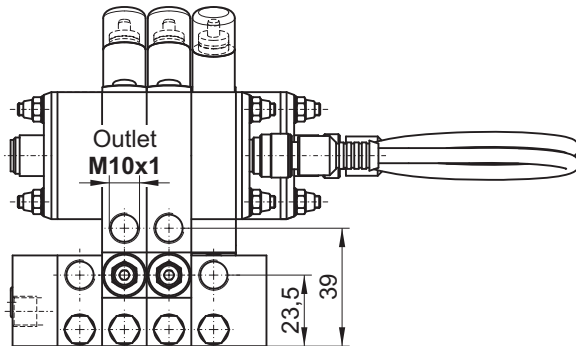
Attention: To ensure a reliable function, the value of the pressure loss in the connecting line between distributor outlet and preload valve may even under unfavourable conditions (e.g. deep temperature) not be higher than the operating pressure of the line rupture element (approx. 30 bar).

Pressure indicator

pin is visible = OK
pin is invisible = line break



Dimensional drawing of line break monitoring:



No. of line break elements or intermediate plates	Dim. "C" (mm)
1	53,25
2	68,00
3	82,75
4	97,50
5	112,25
6	127,00
7	141,75
8	156,50
9	171,25
10	185,50
11	200,25
12	215,00

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

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

Technical data

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

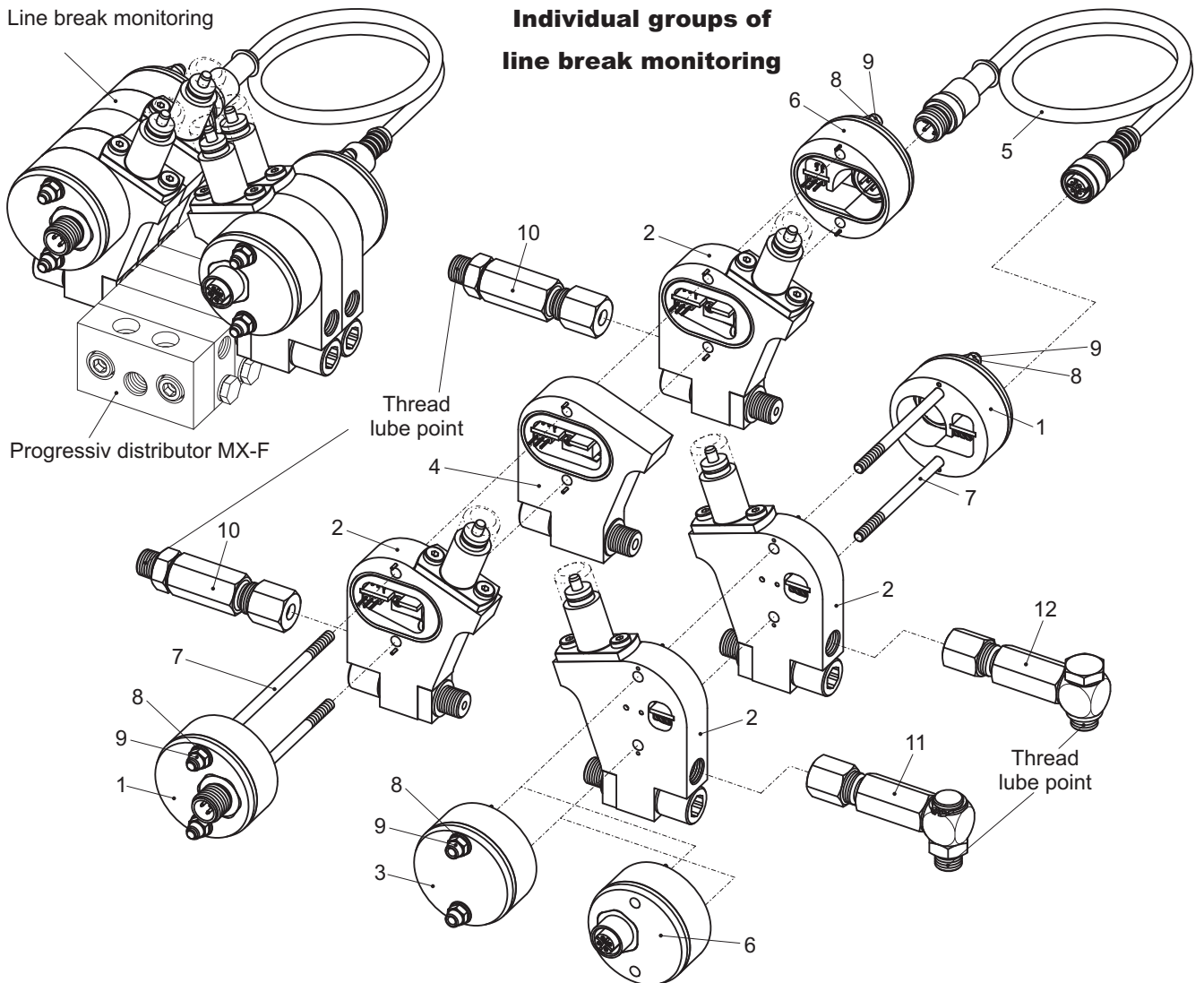


Table of order numbers of individual components of line break monitoring for **MX-F** (see figure above):

Position	Designation	Order-no.
1	Inlet flange, plug M12x1	437501010100
2	Line break element	437502010100
3	Final plate	4375060100
4	Intermediate plate	4375040100
5	Connection cable	1000913864
6	Outlet flange, bush M12x1	437503010100
7	Connecting rod	see table
8	Washer DIN 125-B4,3	0900125006132
9	Nut, self locking DIN 986-M4	09i0704006131
10	Press. makeup valve straight	see table
11	Press. makeup valve swivelling	see table
12	Press. makeup valve angled	see table

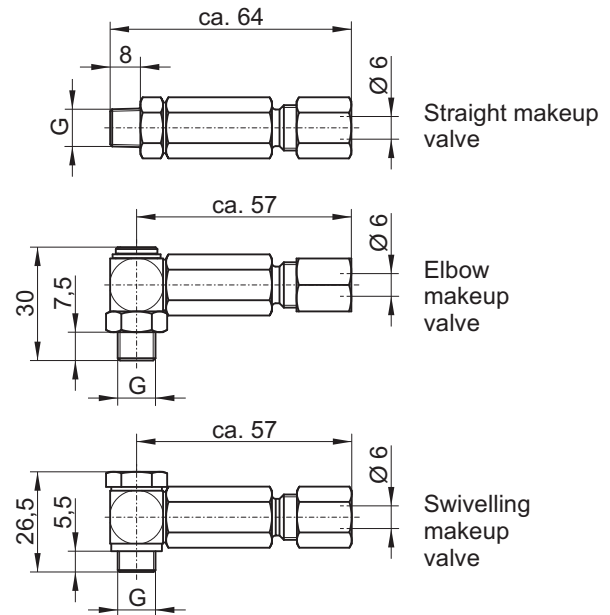
Order number table for connecting rod (Pos. 7) for **MX-F** (1 pcs):

Number of line break elements or intermediate plates	Connect. rod	Order-no.
1	M4 x 70	F4375/21-01 001
2	M4 x 85	F4375/21-01 002
3	M4 x 100	F4375/21-01 003
4	M4 x 115	F4375/21-01 004
5	M4 x 130	F4375/21-01 005
6	M4 x 144,5	F4375/21-01 006
7	M4 x 159	F4375/21-01 007
8	M4 x 174	F4375/21-01 008
9	M4 x 188,5	F4375/21-01 009
10	M4 x 203,5	F4375/21-01 010
11	M4 x 218	F4375/21-01 011
12	M4 x 233	F4375/21-01 012

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

Press. makeup valve	Thread G	Order-no.
straight (Pos. 10*)	M8x1k	43750706A111
	M10x1k	43750706A211
swivelling makeup valve (Pos. 11*)	M8x1k	43750706B111
	M10x1k	43750706B211
	M10x1k (lang)	43750706B311
	R 1/8"k	43750706B411
	R 1/4"k	43750706B511
	1/8-27NPT	43750706B611
elbow makeup valve (Pos. 12*)	M8x1	43750706C111
	M10x1	43750706C211
	G 1/8	43750706C311

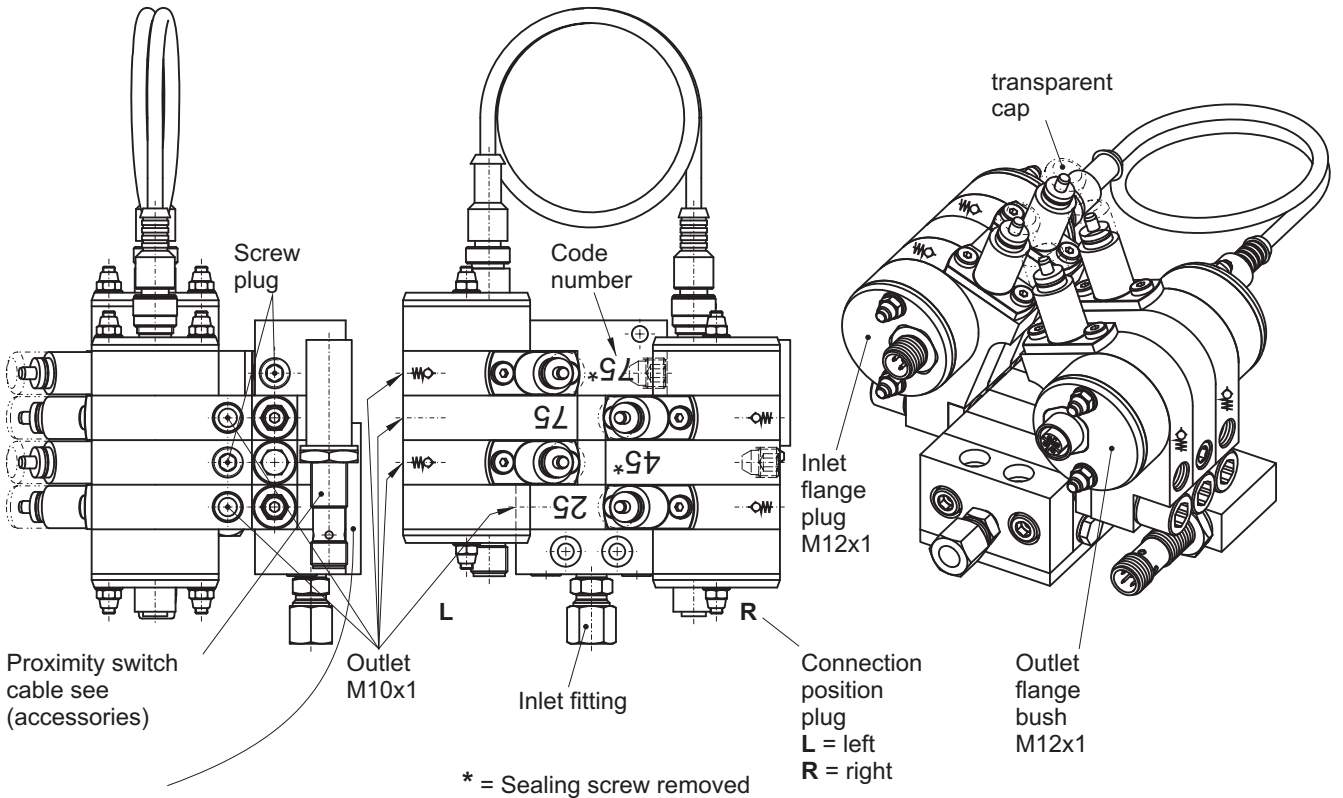
* see individual components of line break monitoring



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.



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

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