

Technical description

Progressive distributors MX-F are built in a variable disk design. Therefore the distributor can be, depending on the number of lubrication points, extended or shortened. Because of the disk design 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

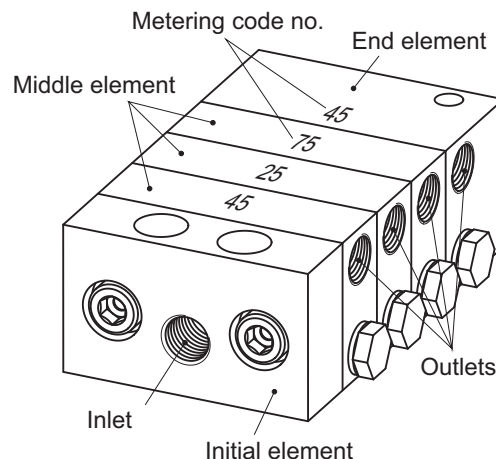
Material: steel,
corrosion protection category corresponds to a
protection period of up to 720 h red rust resistance

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

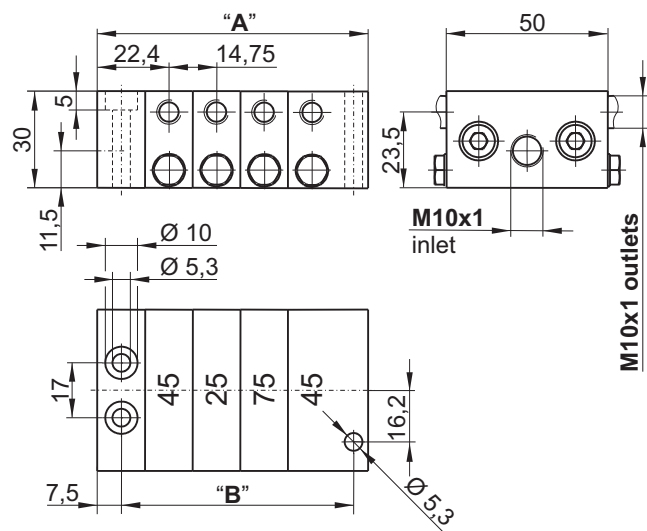
Table metering volume:

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

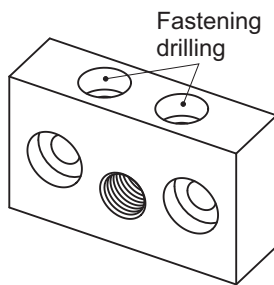
Initial elements can be delivered with and without inlet fitting.

Initial elements without inlet fitting,

Distance of fastening drillings: 17 mm

Diameter of fastening drilling: 5,3 mm

Article-no.: 10112690 (standard)



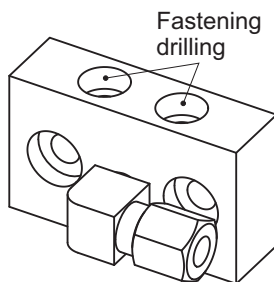
All fittings with a connection thread M10x1 fit into an initial element without inlet fitting.

Initial element with elbow screw fitting WE6 M10x1k,

Distance of fastening drillings: 17 mm

Diameter of fastening drilling: 5,3 mm

Article-no.: 10129880



Initial element with solenoid valve

Distance of fastening drills: 17 mm

Diameter of fastening drills: 5,3 mm

Solenoid valve: closed in idle mode

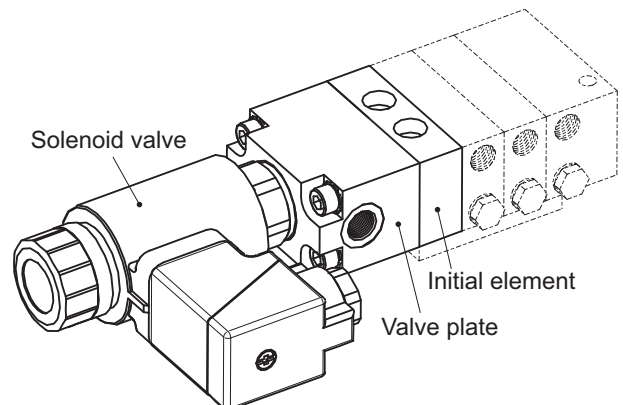
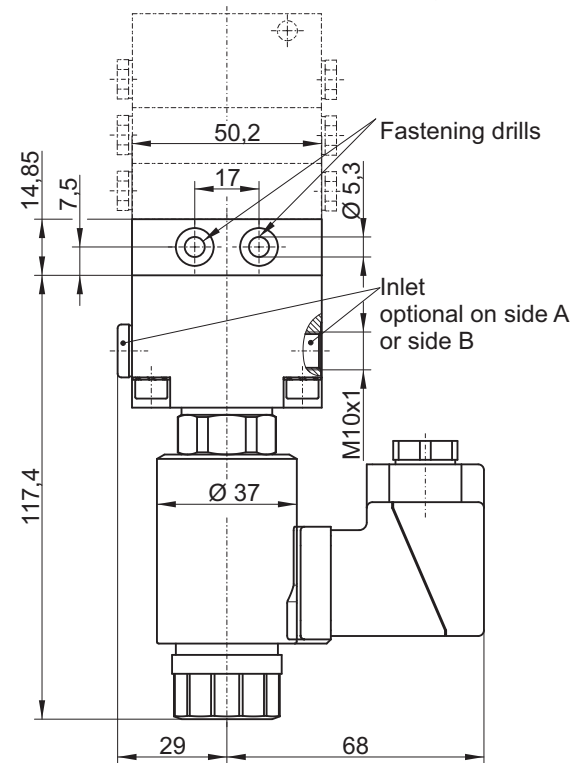
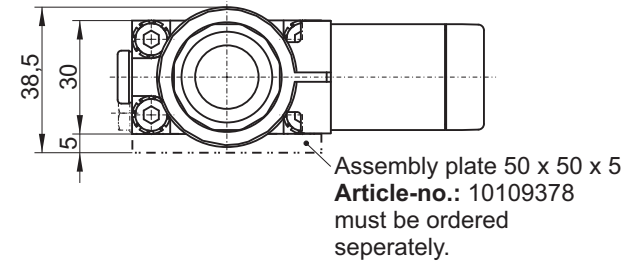
Magnet voltage: 24 V DC

Protection class: IP 65

Nominal power: ca. 30 W

Article-no.: 10130157

(initial element, valve plate and solenoid valve)

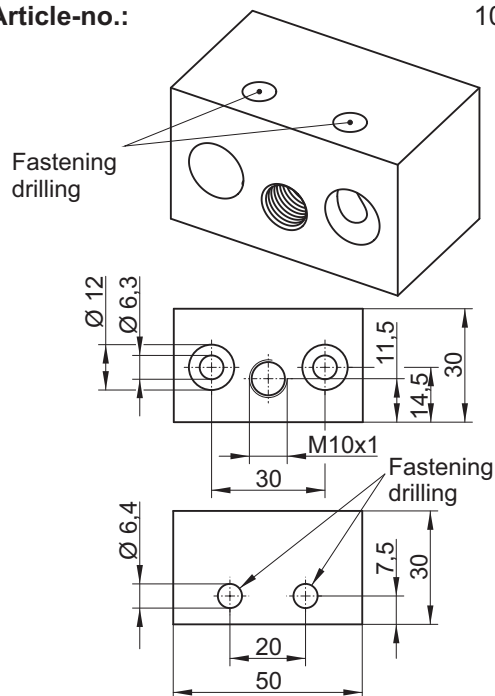


Initial element without inlet fitting,

Distance of fastening drilling: 20 mm

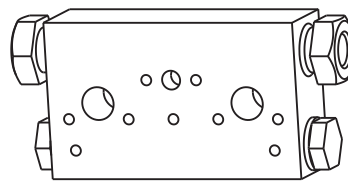
Diameter of fastening drilling: 6,4 mm

Article-no.: 10129920



Middle elements

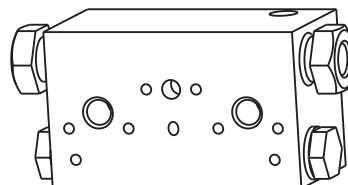
Middle elements are delivered with union screw and olives for pipe Ø 6 mm



Middle element	Article-no.
MX-F 25	10105062
MX-F 45	10105076
MX-F 75	10105079
MX-F 105	10105081

End element

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

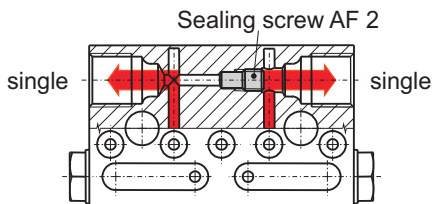


End element	Article-no.
MX-F 25	10124394
MX-F 45	10124396
MX-F 75	10124397
MX-F 105	10124398

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



Combination of outlets

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



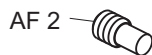
Article-no.:

10100237

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:



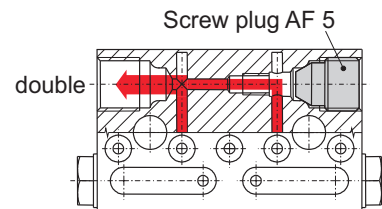
Article-no.:

10100756

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 at several distributor disks

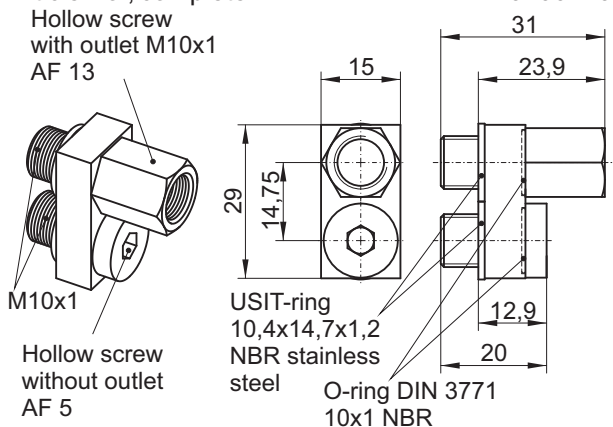
When the total metering volume of the outlets combined in one disk should be insufficient, for very large bearing points or main distributors e.g., there is also the possibility to combine the outlets of several distributor disks.

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

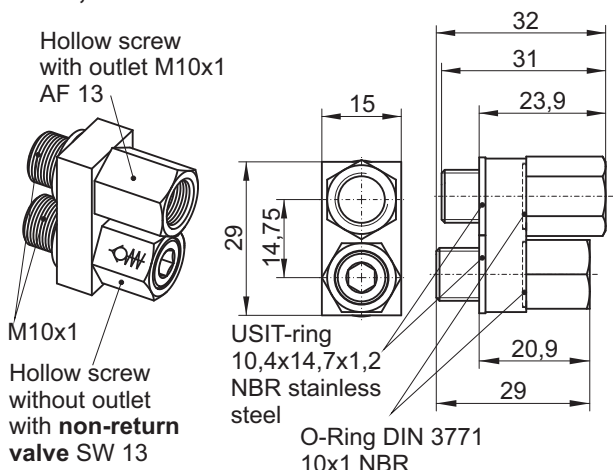
Distributor bridge with outlet

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

Article-no., complete:



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

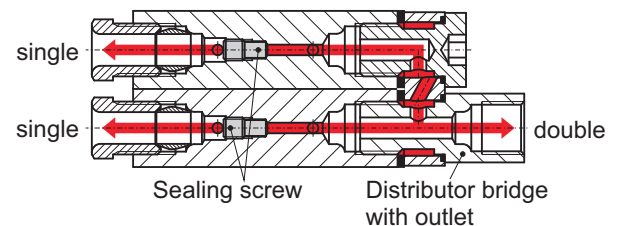


Two outlets combined at two different distributor disks

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.

Progressive distributor MX-F

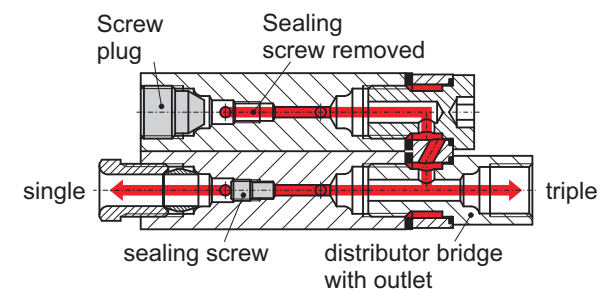
Both outlets' metering volume then comes out of the distributor bridge's outlet.



Three outlets combined at two different distributor disks

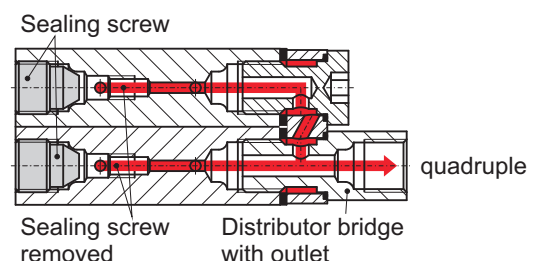
When three outlets shall be combined, the sealing screw has to be removed from one of the concerned distributor disks. The outlet opposite to the distributor bridge of the distributor disk at which that sealing screw has been removed, must be locked with a screw plug.

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.



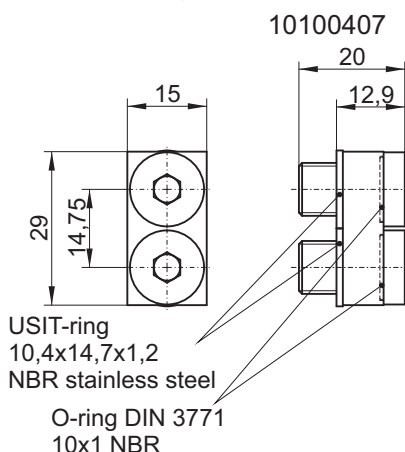
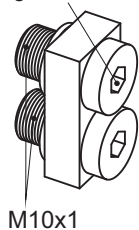
Distributor bridges without outlet and pipe bridge

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,

Article-no., total:

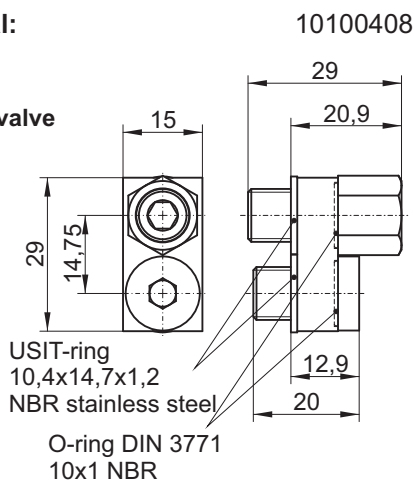
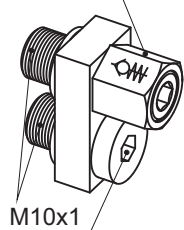
Hollow screw
without outlet
AF 5



Distributor bridge without outlet with non-return valve,

Article-no., total:

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

article-no. total:

Consisting of:

Union screw ÜS4 M10x1

Article-no.: 10106500

Olive DKR 4

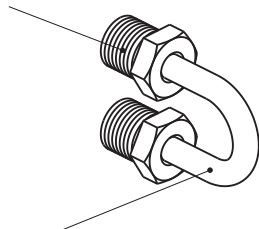
Article-no.: 10100656

Reduction Ø6 to Ø4

Article-no.: 10100242

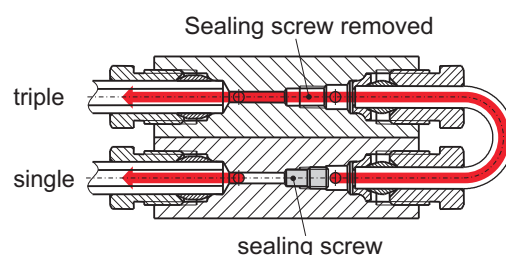
Pipe bridge

Article-no.: 10100230



Three outlets combined at two different distributor disks

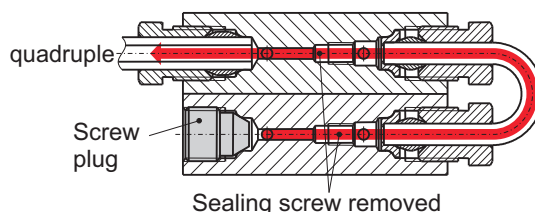
When outlets are combined with a pipe bridge (standard) or with a distributor bridge without outlet, at least three outlets are always concerned, as the metering volume has to be directed through one of the disks of the progressive distributor. The sealing screw always has to be removed in one of the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



Middle elements 00 with proximity switch

There is the possibility to install a middle element 00 with proximity switch into the MX-F progressive distributor for monitoring purposes or for counting the piston strokes when clock cycle control is used.

The middle element 00 has only one piston for signalling. Lubricant dosing is not possible with this middle element.

The middle element 00 can be placed at any point of the distributor, also later and when the distributor has already been used. The only thing to observe is, that a MX-F 75 or MX-F 105 middle or end element must follow up to a middle element 00.

The proximity switch can be delivered either with the distributor outlet on side A or B. The side has to be determined in the order (see table).

The proximity switch will be delivered with a cable of 0.3 m and with a M12x1 connector. Depending on the intended use, bushings with different cable length can be used for the connector. Those have to be ordered separately (see „Accessory progressive distributors“).

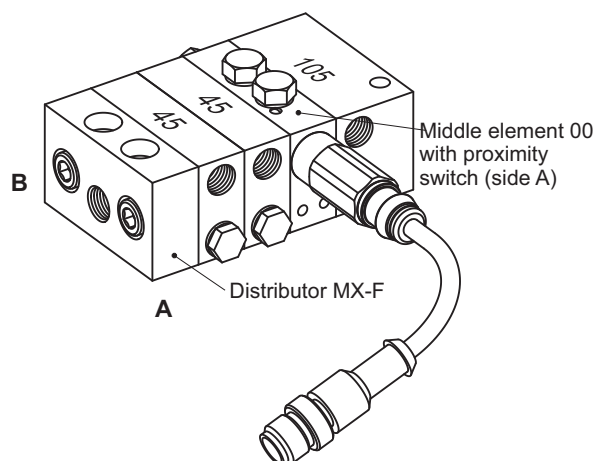


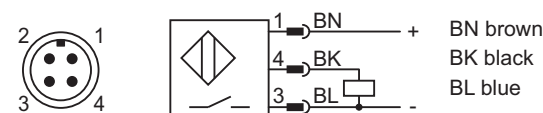
Table of article-no. for middle element 00 with proximity switch (= NS):

Middle element 00 with NS	Side	Article-no.
MX-F 00	A	10113282
	B	10113273

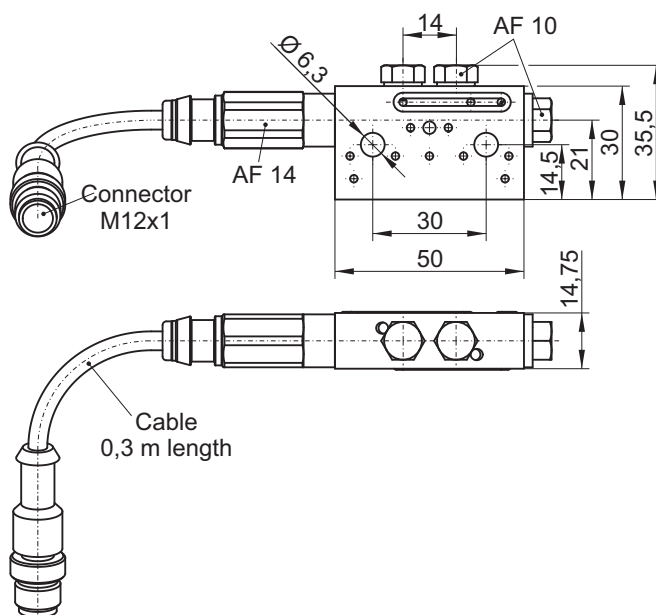
Technical data of the proximity switch

Connection:	M12x1 pluggable
Thread connect. (at middle element):	M11x1
Switching type:	PNP N/O contact
Operational voltage:	10 - 60 V DC
	einschl. Restwelligkeit
Load capacity,	permanent: 100 mA
	short-term: 100 mA
Current consumption:	< 15 mA
Ambient temperature:	-25 °C to 70 °C
Function display:	yellow LED
Degree of protection:	IP 67
Housing material:	V4A(1.4571)

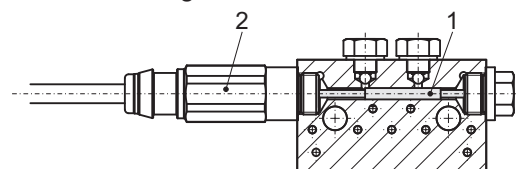
Wiring diagram



Installation dimensions:



Sectional drawing:



Functional description

The piston (1) of the middle element 00 is moved by the lubricant, which flows through. The piston approaches the proximity switch (2) and a signal is released. This signal can be evaluated differently, depending on control type or application.

Elements MX-F 75 and MX-F 105 with proximity switch

Also middle and end elements MX-F 75 and MX-F 105 can be delivered with a proximity switch premounted. The position of the proximity switch is standardly on the distributor outlet on side A. Therefore installation on the distributor outlet on side B 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").

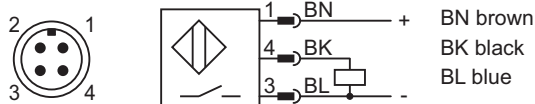
Middle and end elements with proximity switch always have to be equipped with non-return valves at the outlets in order to ensure proper function of these elements.

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.

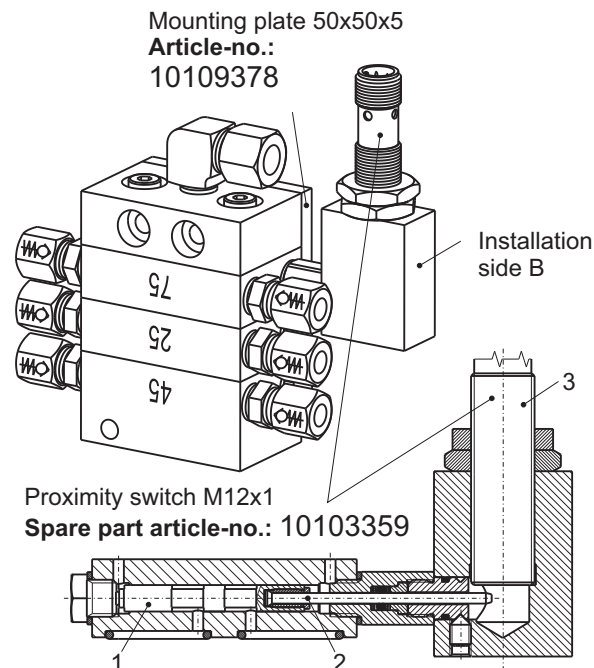
Technical data of the proximity switch:

Connection:	M12x1 pluggable
Connection method:	PNP N/O
Load capacity:	200 mA
Operational voltage:	10-60 V DC
Ambient temperature:	-40 °C to 85 °C
Function indicator:	LED yellow
Housing material:	stainless steel
Degree of protection:	IP 67 / IP 69K

Terminal diagram:



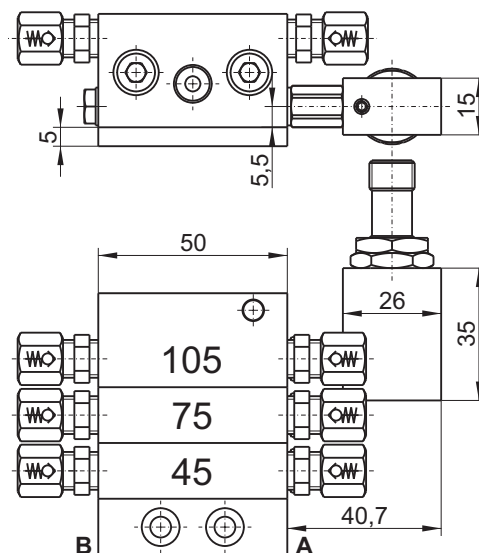
Progressive distributor with installed proximity switch:



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 NS	Article-no.
Middle element MX-F 75 NS	10129813*
Middle element MX-F 105 NS	10129822*
End element MX-F 75 NS	10129829*
End element MX-F 105 NS	10129828*

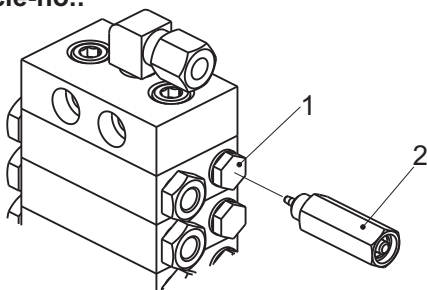
* Please indicate the installation position of the proximity switch: side A (standard) or side B

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 40 bar.

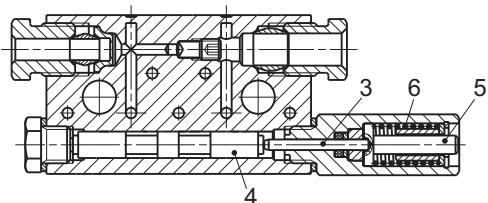
Article-no.: 10119500



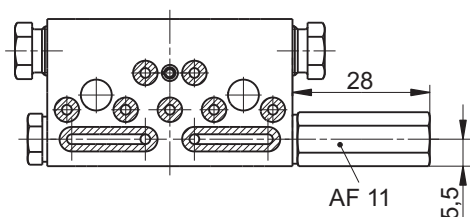
Note: Please pay attention to utmost cleanness, when the attachment is made.

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 design").

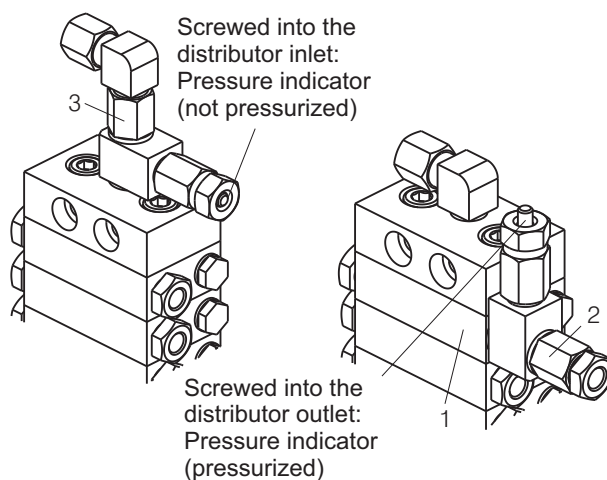


Installation dimensions



Pressure indicator

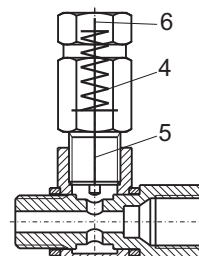
The outlets or the distributor inlet of the MX-F can be equipped with a pressure indicator, i.e. too high pressure is indicated visually. This element does not provide read or print out data. The pressure indicator can be retrofitted any time, as it has only to be screwed into the distributor outlets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

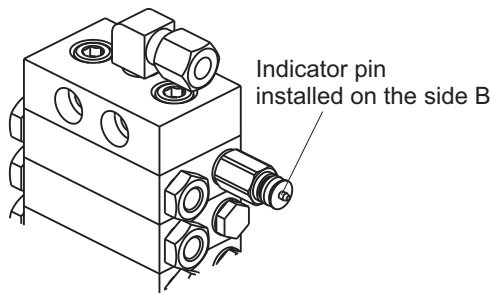
Elements with indicator pin

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.

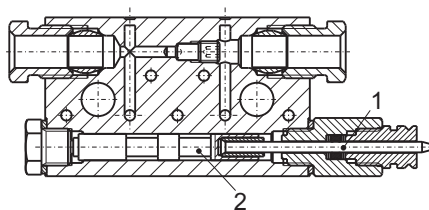
The installation of an indicator pin is also only possible in middle elements as well as in end elements MX-F 75 and MX-F 105 and has to be indicated when the order is placed.

The indicator pin is attached on the side A as a standard. An installation on the side B has to be indicated separately.

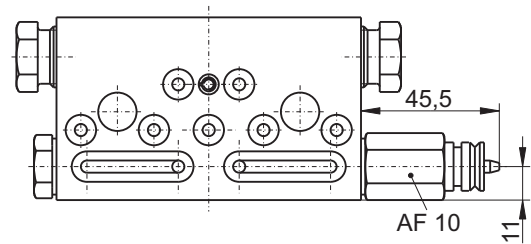


Functional description:

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



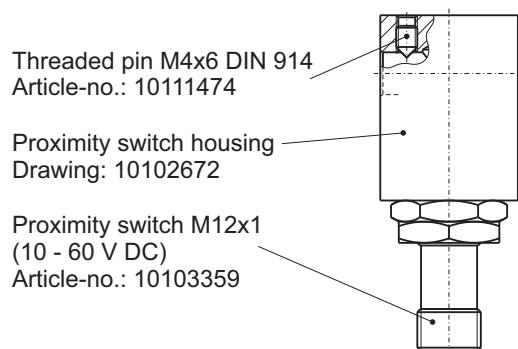
Piston element with indicator pin	Outlet pipe-Ø (mm)	Article-no.
Middle element MX-F 75	6	10129833*
Middle element MX-F 105	6	10129837*
End element MX-F 75	6	10129841*
End element MX-F 105	6	10129851*

* Please indicate the installation position of the indicator pin: on the side A (standard) or on the side B.

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

Article-no. complete:

10114743



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 design. 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.

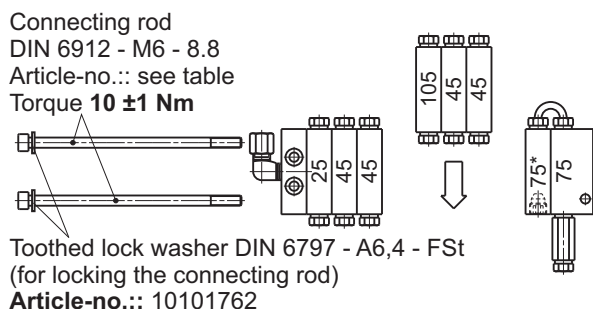
Set of seals for initial elements:

Article-no.: 10129924

Set of seals for middle elements:

Article-no.: 10129927

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



Caution: Please pay attention to utmost cleanliness.

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

Distributor	Conn. rod	Article-no.
MX-F 3/6	M6 x 50	10100852
MX-F 4/8	M6 x 65	10101463
MX-F 5/10	M6 x 80	10101465
MX-F 6/12	M6 x 95	10101466
MX-F 7/14	M6 x 110	10102189
MX-F 8/16	M6 x 125	10101451
MX-F 9/18	M6 x 140	10102340
MX-F 10/20	M6 x 155	10101447
MX-F 11/22	M6 x 170	10101452
MX-F 12/24	M6 x 185	10114516

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, pipe-Ø 6 or Ø 8, series LL or L
GE08LL	
GE06L	
WE06LL	elbow screw fitting, pipe-Ø 6 bzw. Ø 8, series LL or L
WE08LL	
WE06L	
WS06LL	elbow screw fitting, pipe-Ø 6 or Ø 8, series LL or L
WS08LL	
WS06L	

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

Outlet fittings

The fitting type at the outlets has to be indicated with diameter and series when ordering (see table).

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

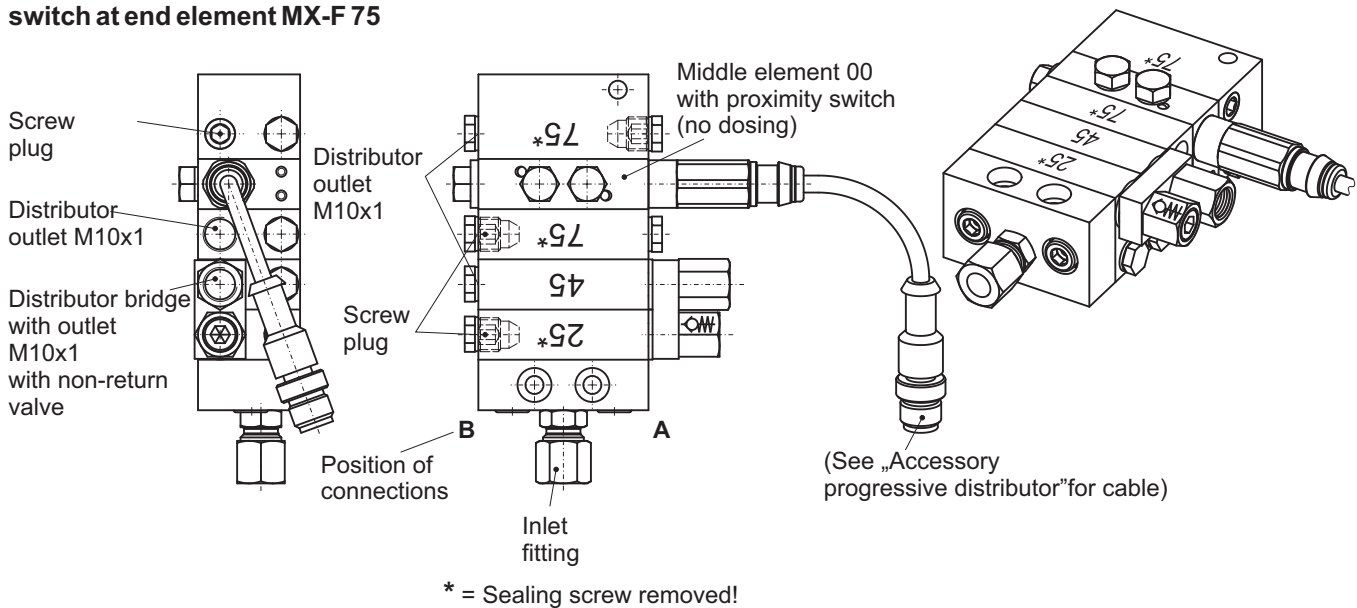
At the MX-F progressive distributor, the proximity switch is either attached to the middle element 00 (standard) or to the MX-F 75 and MX-F 105 middle and end elements.

If you wish the middle element 00 with proximity switch to be installed, please mark the desired position in the distributor (between the corresponding metering code numbers) with **00 NS**.

MX-75 and MX-F 105 middle or end elements, to which a proximity switch should be attached, have to be marked with **NS** after the number for the metering volume.

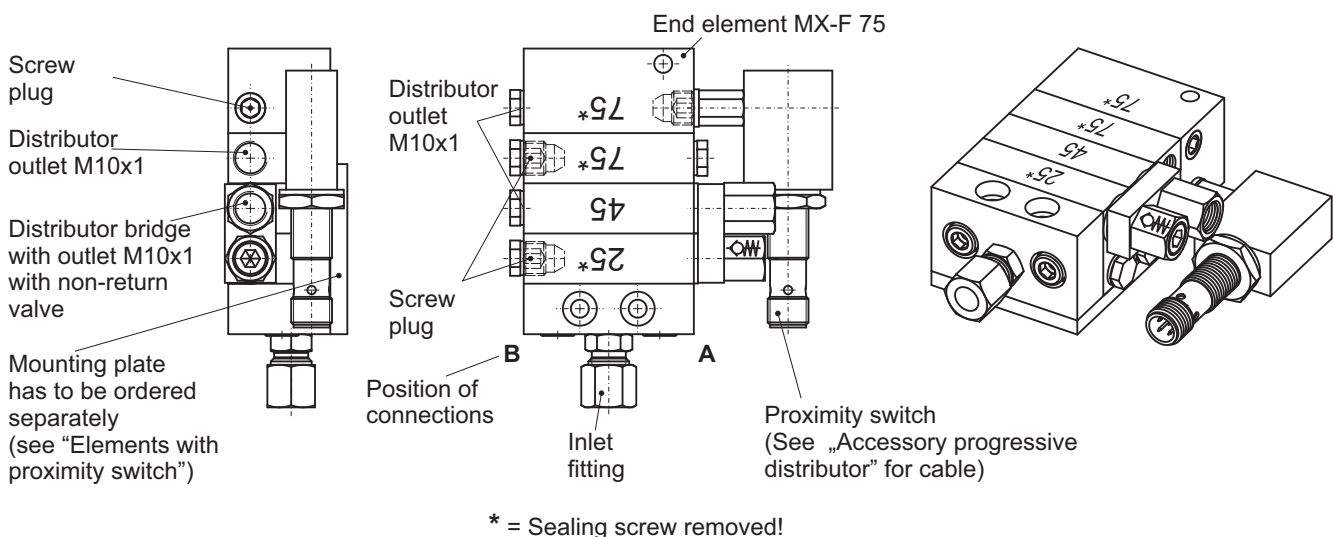
Proximity switches can either be installed on the side A (standard) or on the side B of MX-F distributors.

Order examples of two distributors, one with proximity switch at middle element 00 and one with proximity switch at end element MX-F 75



Type	MX-F 05 / 04 - GE08LL / M10x1	A	---	RV	+	95	/	150	/	00	NS	/	---
No. of piston elements		B	---		/	45	/	---	/	---	/	150	
No. of outlets													
Inlet fitting													
Outlet fittings													
Pos. of connections													
Dosage code-numbers at the outlets													

Example: Proximity switch installed into end element MX-F 75



Type	MX-F 04 / 04 - GE08LL / M10x1	A	---	RV	+	95	/	150	/	---	NS		
No. of piston elements		B	---		/	45	/	---	/	150			
No. of outlets													
Inlet fitting													
Outlet fittings													
Pos. of connections													
Dosage code-numbers at the outlets													

Line rupture monitoring

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

Precharge valve
e.g. straight

2 monitored
lube points

to press.
makeup
valve

brown
black

Connection cable
control outlet / inlet

Connection
cable from
distributor
to distributor

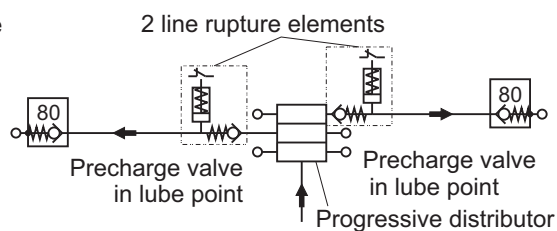
Precharge valve
e.g. straight

4 monitored
lube points

2 monitored
lube points

Precharge valve
e.g. straight

Hydraulic diagram



Pressure indicator

pin is visible = OK
pin is invisible = line break

transparent
cap

Function

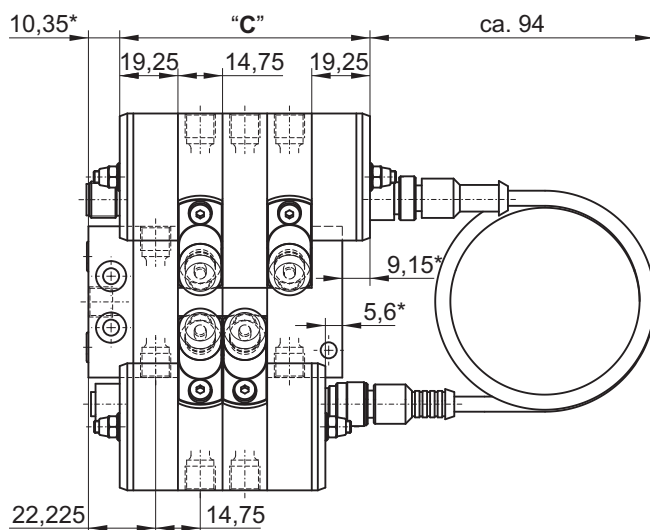
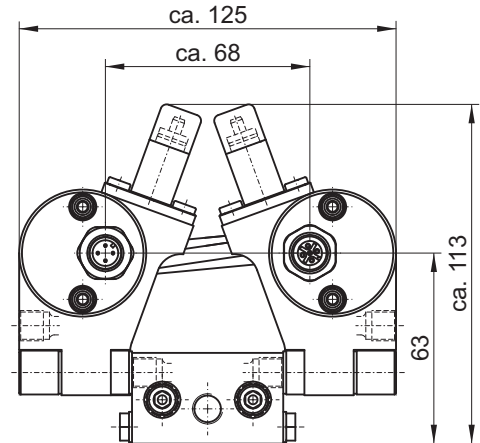
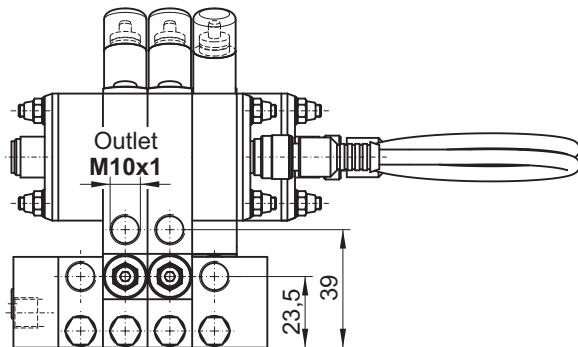
A line rupture element with Pressure indicator is screwed at the lube point of the distributor outlet that has to be monitored. The element is screwed together with flanges and plates (see next page) by means of cylinder screws and hexagon socket screws.

A precharge valve with non-return valve with an opening pressure of 50 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 indicator is visible.

If pressure is reduced due to line break, the pin of the Pressure indicator 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 precharge valve may even under unfavourable conditions (e.g. deep temperature) not be higher than the operating pressure of the line rupture element (approx. 25 bar).

Dimensional drawing of line rupture monitoring:



No. of line rupture 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

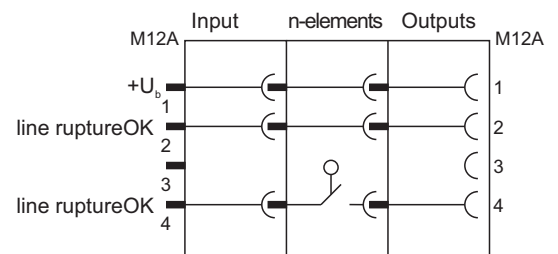
Attention: Dimensions of distributor MX-F see description MX-F dimensional drawing

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

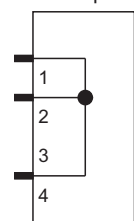
Technical data

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 2 = line rupture
 Pin 4 = outlet (closing contact),
 Contact opens at fault

Circuit diagram



Final piece



line rupture monitoring

**Individual groups of
line rupture monitoring**

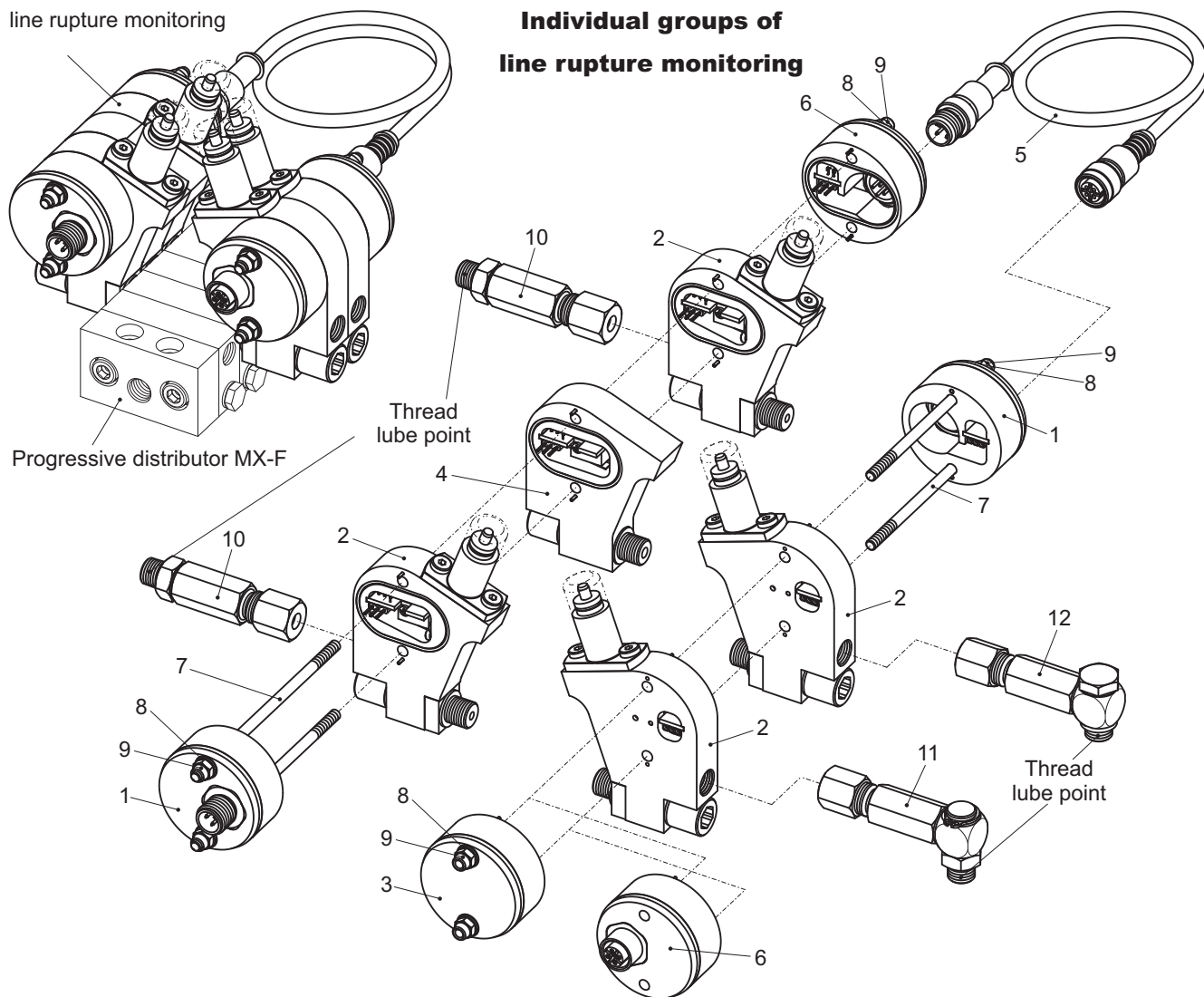


Table of article numbers of individual components of line rupture monitoring for **MX-F** (see figure above):

Position	Designation	Article-no.
1	Inlet flange, plug M12x1	10108142
2	Line rupture element	10127167
3	Final plate	10108155
4	Intermediate plate	10127248
5	Connection cable	10108031
6	Outlet flange, bush M12x1	10108148
7	Connecting rod	see table
8	Washer DIN 125-B4,3	10102665
9	Nut, self locking DIN 986-M4	10101454
10	Press. makeup valve straight	see table
11	Press. makeup valve swivelling	see table
12	Press. makeup valve angled	see table

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

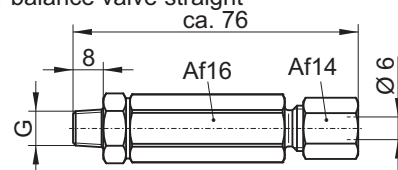
Number of line rupture elements or intermediate plates	Connect. rod	Article-no.
1	M4 x 70	10107269
2	M4 x 85	10107272
3	M4 x 100	10107279
4	M4 x 115	10107282
5	M4 x 130	10107283
6	M4 x 144,5	10107285
7	M4 x 159	10107287
8	M4 x 174	10107288
9	M4 x 188,5	10107290
10	M4 x 203,5	10107293
11	M4 x 218	10107305
12	M4 x 233	10107308

Article number for counter balance valve, opening press. 50 bar:

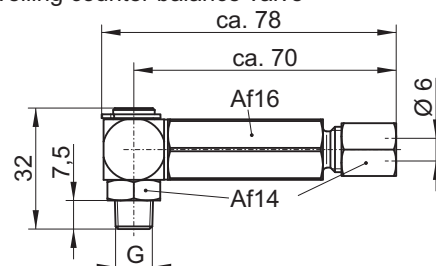
Counter balance valve	Thread G	Article-no (steel, ZnNi)	Article-no (1.4571)
straight (Pos. 10*)	M8x1k	10105528	10105543
	M10x1k	10105533	10105534
	R 1/4"k	10105416	10105417
Swivelling counter balance valve (Pos. 11*)	M8x1k	10105580	10105581
	M10x1k	10105573	10105574
	M10x1k (lang)	10105571	10105572
	R 1/8"k	10105544	10105545
	R 1/4"k	10105521	10105542
	1/8-27NPT	10105552	10105556
Elbow swivel. counter bal. valve (Pos. 12*)	M8x1	10105582	10105586
	M10x1	10105592	10105599
	G 1/8	10105606	10105608

* see individual components of line rupture monitoring

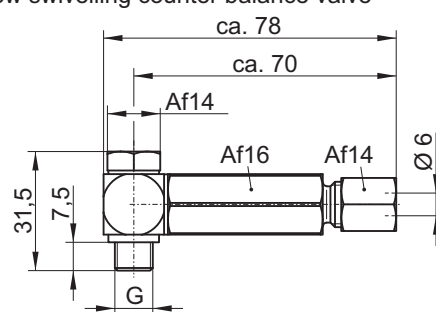
Counter balance valve straight



Swivelling counter balance valve



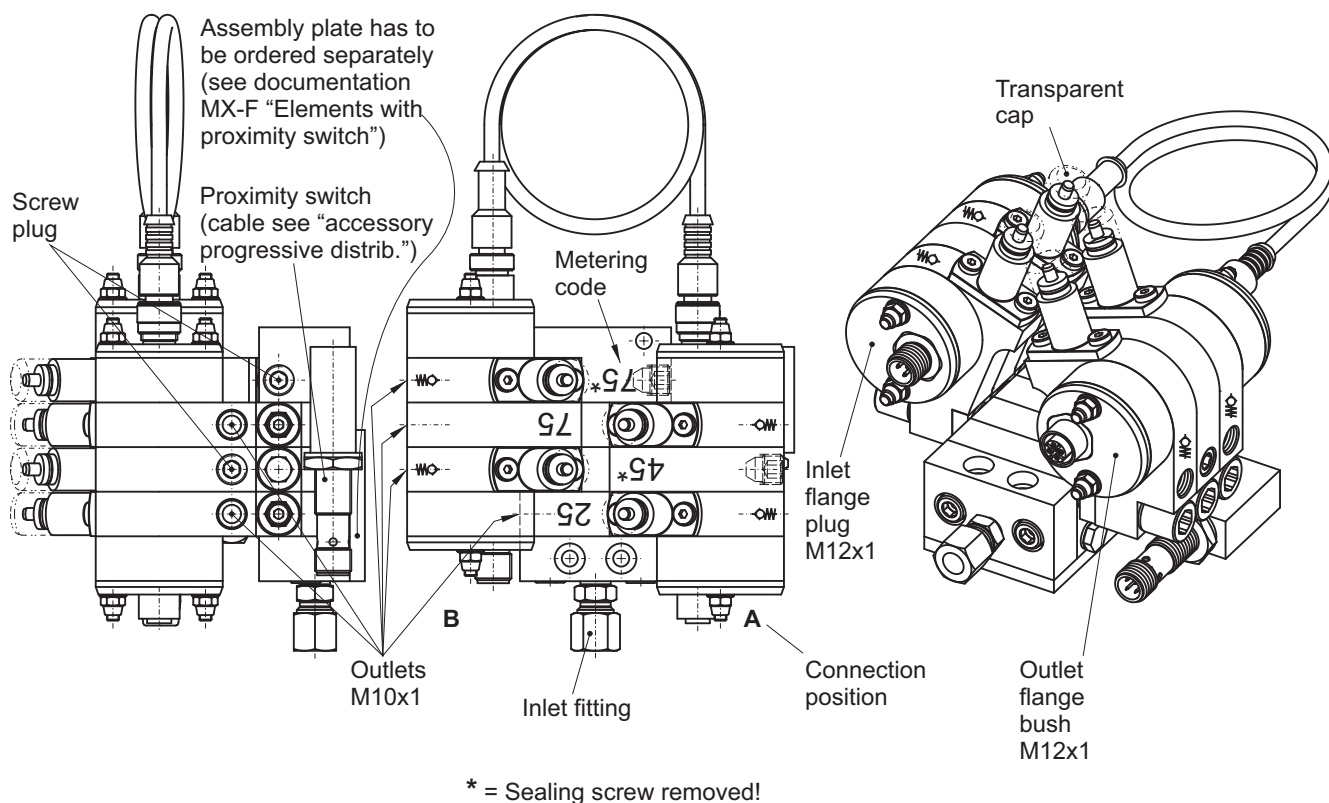
Elbow swivelling counter balance valve



Line rupture monitoring

Order example of line rupture monitoring with progressive distributor MX-F

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



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