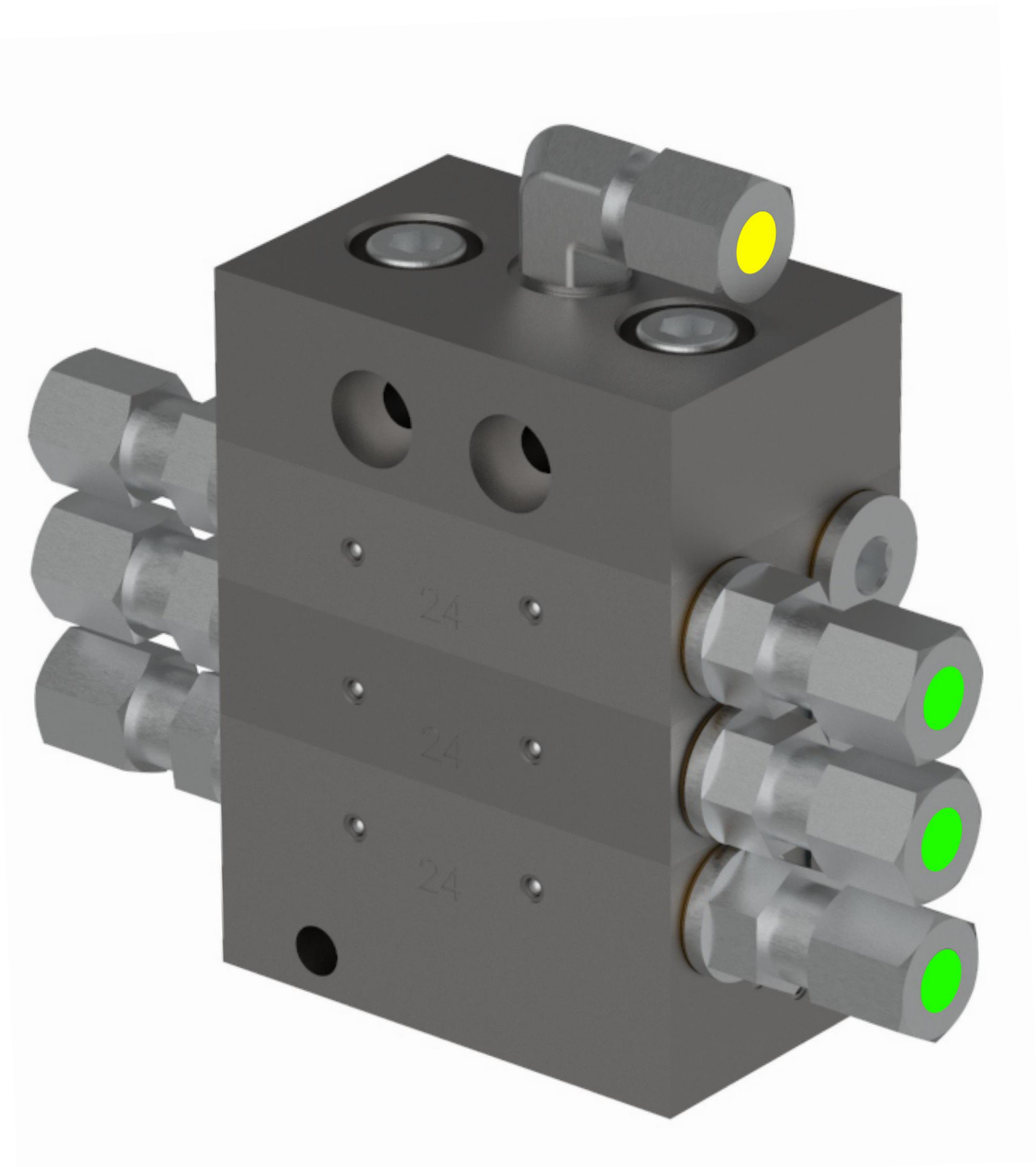
Product Manual

Progressive Lubrication Divider

JPQ1
JPQ1 _FKM



LUBMANN
Centralized Lubrication System

Index

Legal disclosure	3-4
Safety instructions	4
Delivery, returns and storage	5
Commissioning	6
Lubricant	7-8
Overview	9
Working principle	10
Assembly and components	11-19
Combination principle	20-22
Divider monitoring sensor	23-24
Divider accessories	25-26
Order key	27
Special version FKM (Viton seals)	28-30

Legal disclosure

Manufacturer

Lubmann GmbH
Add: Kleiner Johannes 21, 91257, Pegnitz, Germany
E-Mail: info@lubmann-gmbh.de
Website: www.lubmann-gmbh.de

Training courses

In order to provide a maximum of safety and economic viability, Lubmann GmbH carries out detailed training courses. It is recommended that the training courses are attended. For more information, please contact Lubmann GmbH.

Copyright

Warranty and extent of warranty

Inappropriate intervention will rule out your warranty claim!

Warranty regarding operational safety, reliability and performance of the lubricating pump is only accepted by the manufacturer under the following conditions:

- Assembly, connection, setting, maintenance and repair are carried out by authorized and specialized staff.
- The limits stipulated in the technical data must never be exceeded.
- Only original components or components approved by the manufacturer may be used for repair and maintenance work.

All guarantees and warranties expire for damages to central lubrication systems that are caused by operation with improper lubricants (e.g., piston wear, piston jamming, plugins, embrittled sealings).

Lubmann does not assume liability on damages caused by lubricants, even if these lubricants have been tested and released by laboratory tests, as damages caused by lubricants (e.g., by expired or improper stored lubricants, batch variations etc.) can not be retraced to their root cause in retrospect.

Service address

Kleiner Johannes 21, 91257, Pegnitz, Germany
Tel.: +49 9241 80 89 87 00

Disclaimer

The manufacturer shall not be held responsible for damages caused by:

- Non appropriate use faulty assembly, operation, setting, maintenance, repair or accidents
- Use of inappropriate lubricants
- Improper or late response to malfunctions
- Unauthorized modifications of the product
- Intent or negligence
- Use of non-original Lubmann spare parts
- Faulty planning or layout of the centralized lubrication system

Liability for loss or damage resulting from the use of our products is limited to the maximum purchase price. Liability for consequential damages of whatever kind is excluded.

The progressive piston dividers are divider devices with a hydraulic sequence control, the pistons of which are regulated by the supplied lubricant in a way that the lubricant inevitably and successively escapes at the individual outlets. In the case of malfunction during the flow of lubricant, e.g. plugging of lubricating line or lubricating points, the divider will block up.

The divider sensor are used for the monitoring of the distributors. In the case of manually operated pumps a virtually insurmountable counter pressure occurs during the blockage. In the case of automatic pumps such as e.g. the electrical pump ALP811/ALPA or ALPB the lubricant escapes at the safety valve.

The progressive JPQ1 dividers are manufactured in a variable chip construction, which offers the advantage that the divider can be extended or shortened at random according to the amount of lubrication points. Due to this chip construction, there is also the possibility of constructing
an overall progressive divider from individual distributor disks with different outputs per piston stroke.

The difference in output per piston stroke is created by different piston diameters. To get the correct functioning of a progressive divider a minimum of three pistons, i.e., a minimum of three output elements is a must.

Safety instructions

General information

Any safety-related faults must be eliminated without delay.

Below, please find fundamental instructions to be complied with, regarding assembly, operation and maintenance. The mechanical and the competent specialists / staff of the operating company must read the Operating Instructions on all accounts prior to starting assembly and commissioning. Moreover, the Operating Instructions must permanently be available on site.

Not only the safety instructions included under this item, but also the specific safety instructions appearing in other parts of this manual must be complied with.,

Explanation of symbols

Safety instructions which, if not complied with, may endanger persons, are marked specifically with the general hazard symbol:

This heading is used if inaccurate compliance or non-compliance with the Operating Instructions or specified work procedures etc. may result in damage

Points out Special Information

Delivery, Returns and Storage

Delivery

After receipt of the shipment, check the shipment for damage and completeness according to the shipping documents. Immediately report any transport damages to the forwarding agent. Keep the packaging material until any discrepancies are resolved. During in-house transport ensure safe handling.

Returns

Clean all parts and pack them properly (i.e., following the regulations of the recipient country) before returning them. Protect the product against mechanical influences such as impacts. There are no restrictions for land, sea or air transport.

Storage

Lubmann products are subject to the following storage conditions:

dry, dust- and vibration-free in closed premises
no corrosive, aggressive materials at the place of storage (e. g. UV rays, ozone)
protected against pests and animals (insects, rodents, etc.)
possibly in the original product packaging
shielded from nearby sources of heat and coldness
in case of high temperature fluctuations or high humidity take adequate measures (e. g. heater) to prevent the formation of condensation water

Storage conditions for parts filled with lubricant

The conditions mentioned in the following will have to be adhered to when storing products filled with lubricant,

Storage period of up to 6 months

The filled products can be used without having to take further measures.

Step for Storage period from 6 to 18 months

Remove all connection lines and closure screws
Connect the pump which has been filled with new lubrication grease suitable for the application purpose to the divider
Let the pump run until new lubricant leaks from the divider
Remove leaked lubricant
Reinstall closure screws and connection lines

Commissioning

Connect the pump properly to the designated connections. Check the device for functionality and the presence of safety features.

Ensure that all warning labels are present, undamaged, and clearly visible. If this not the case, they must be replaced immediately.

Deviating from Intended Use is strictly Prohibited

Please adhere to the technical specifications provided in the manual and do not exceed the specified limits.

Improper use is strictly prohibited. Only use lubricants intended for this purpose. Make sure to use the product exclusively within its designated area of use.

Accompanying Documents

In addition to this manual, the following documents must be considered by the respective target audience:

1) Operational instructions and release regulations

If applicable:

2) Safety data sheet for the lubricant used
3) Project documentation
4) Supplementary information regarding special configurations of the pump. These can be found in the specific system documentation.
5) Instructions for additional components for the assembly of the central lubrication system.

Lubricant

General

Lubricants are deliberately selected for their specific application. The selection is preferably made by the manufacturer or operator of the machine in collaboration with the lubricant supplier. If you have little or no experience in selecting lubricants for lubrication systems, please get in touch with us. We are ready to assist you in choosing suitable lubricants and components to build a lubrication system optimized for the particular application. Please consider the following points when selecting or using lubricants. This will help you avoid potential downtime and damage to the machine or lubrication system.

Material Compatibility

Lubricants must generally be compatible with the following materials:

• Plastics: ABS, CR, FPM, NBR, NR, PA, PET, PMMA, POM, PP, PS, PTFE, PU, PUR
• Metals: Steel, cast iron, brass, copper, aluminum

Temperature Properties

The lubricant used must be suitable for the specific ambient temperature of the product. The viscosity allowed for proper operation should not be exceeded at low temperatures or fall below at high temperatures. Refer to the permissible viscosity in the Technical Data section.

Aging of Lubricants

Depending on your experience with the lubricant used, it should be periodically checked at intervals determined by the operator to see if it needs to be replaced due to aging processes (bleeding). If there is doubt about the continued suitability of the lubricant, it should be replaced before recommencing operation. If you have no prior experience with the lubricant used, we recommend checking it after just one week.

Avoidance of Disruptions and Hazards

To avoid disruptions or hazards, please consider the following:

• When handling lubricants, be sure to follow the respective Safety Data Sheet (SDS) and, if applicable, the hazard labeling on the packaging.
• Due to the variety of additives, some lubricants that meet the requirements for pumpability mentioned in the manual may not be suitable for use in centralized lubrication systems.
• Do not mix lubricants. This can have unforeseen effects on the properties and usability of the lubricant. • Lubricants containing solid lubricants should only be used after technical clarification with lubricants manufacturer.
• The ignition temperature of the lubricant must be at least 50 Kelvin above the maximum surface temperature of the components.

Solid Lubricants

The use of solid lubricants is only allowed after prior consultation with the lubricant manufacturer. When using solid lubricants in lubrication systems, the following should be generally considered:

Graphite:

- Maximum graphite content 8%
- Maximum particle size 25 µm (preferably in lamellar form)

MoS2:

- Maximum MoS2 content 5%
- Maximum particle size 15 µm

Copper:

- Copper-containing lubricants tend to form deposits on pistons, bores, and mating surfaces. This can lead to blockages in the centralized lubrication system.

Calcium Carbonate:

- Lubricants containing calcium carbonate tend to cause severe wear on pistons, bores, and mating surfaces.

Calcium Hydroxide:

- Lubricants containing calcium hydroxide tend to harden significantly, which can lead to the failure of the centralized lubrication system.

PTFE, Zinc, and Aluminum:

- For these solid lubricants, no limits for use in lubrication systems have been established based on current knowledge and practical experience.

Overview

The progressive piston dividers are divider devices with a hydraulic sequence control, the pistons of which are regulated by the supplied lubricant in a way that the lubricant inevitably and successively escapes at the individual outlets. In the case of malfunction during the flow of lubricant, e.g. plugging of lubricating line or lubricating points, the divider will block up.

The divider sensor are used for the monitoring of the distributors. In the case of manually operated pumps a virtually insurmountable counter pressure occurs during the blockage. In the case of automatic pumps such as e.g., the electrical pump ALP81 or ALPB the lubricant escapes at the safety valve.

The progressive JPQ1 dividers are manufactured in a variable chip-type structure, which offers the advantage that the divider can be extended or shortened at random according to the amount of lubrication points. Due to this chip-type structure, there is also the possibility of constructing an overall progressive divider from individual distributor disks with different outputs per piston stroke.

The difference in output per piston stroke is created by different piston diameters. To get the correct functioning of a progressive divider a minimum of three pistons, i.e., a minimum of three output elements is a must.

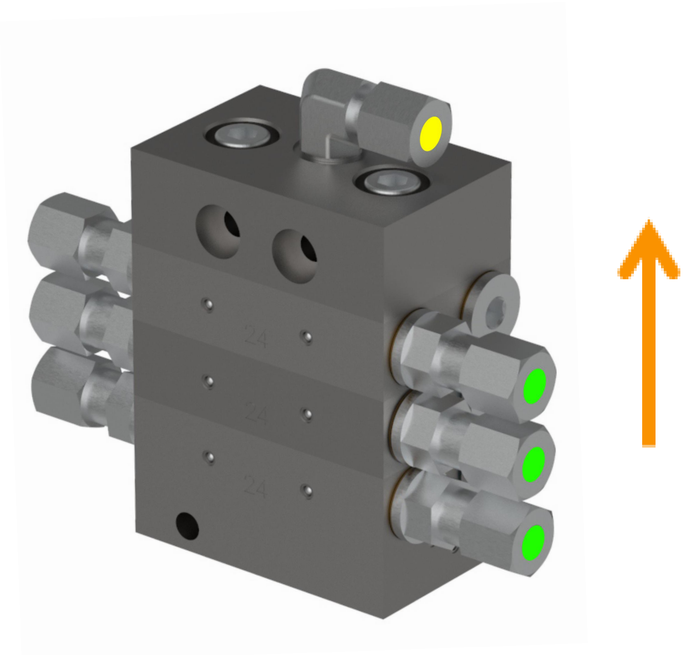
Technical data:

Operating pressure - Inlet:	max. 300 bar
Temperature range:	-35°C to +70°C
Carrier vehicle:	Oil - viscous oil - grease
In- / Outlet Thread:	M10x1

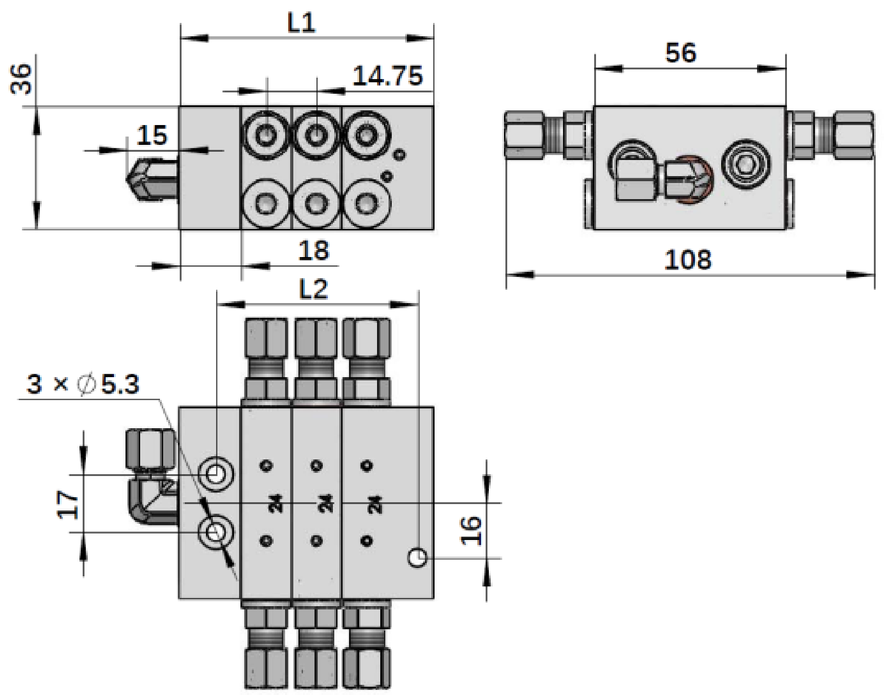
Number of elements:

Min.:	JPQ1 3/6 (3 output elements)
Max.:	JPQ1 9/18 (9 output elements)

Element	Delivery Quantity (mm³/Stroke)		Piston Dia. mm
	Per outlet	Per element	
ME 08	80	160	4.0
ME 16	160	320	5.7
ME 24	240	480	7.0
ME 32	320	640	8.0
EE 08	80	160	4.0
EE 16	160	320	5.7
EE 24	240	480	7.0
EE 32	320	640	8.0



Attention : *By installing the dividers, please make sure that the divider can always be mounted vertically like the arrow direction above.*

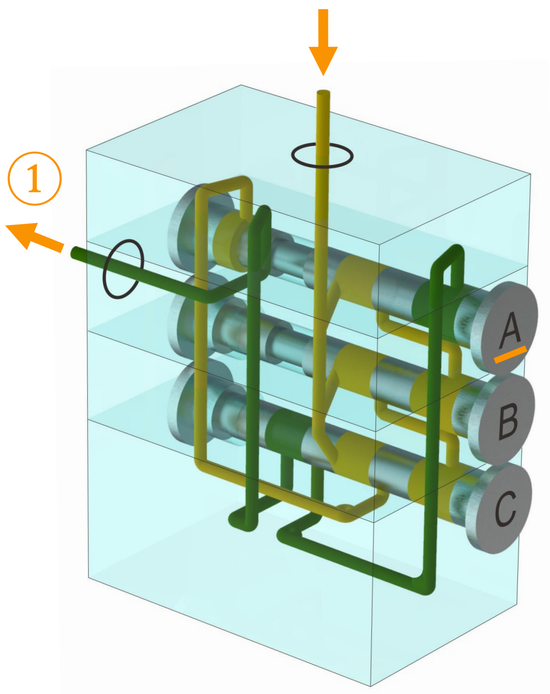


Outlets	6	8	10	12	14	16	18
L1 (mm)	74.5	89.3	104.0	118.8	133.5	148.3	163.5
L2 (mm)	59.0	73.8	88.5	103.3	118.0	132.8	147.6

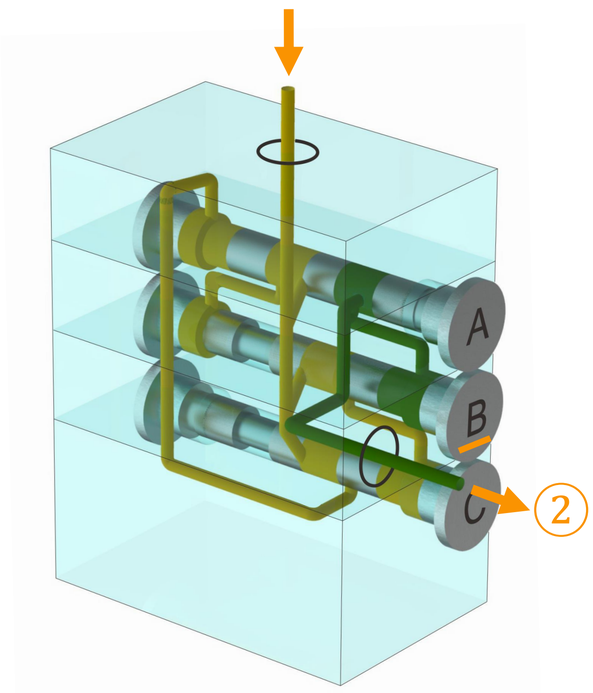
Working Principle

The progressive divider consist of the individual components start element SE (without piston), 2-7 mid element ME and end element EE, all of which are assembled in distributor blocks using tension rods (hexagon socket screws) with lock washers. The individual elements are sealed with O-rings between each other.

The lubricant flows via the inlet of the distributor through all distributor disks to the piston A. The piston (A) is shifted to the left and the lubricant is pressed from the left pressure range of the delivery piston to the outlet ① (*Dia. 10.1*).



Dia. 10.1 Step A

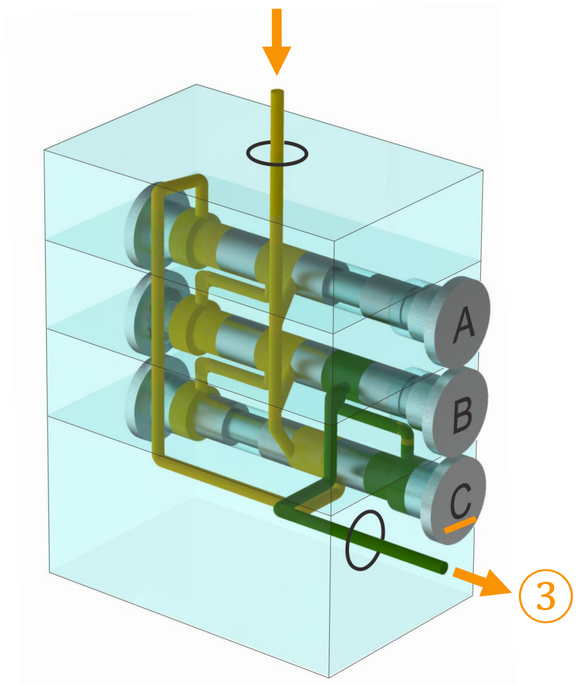


Dia. 10.2 Step B

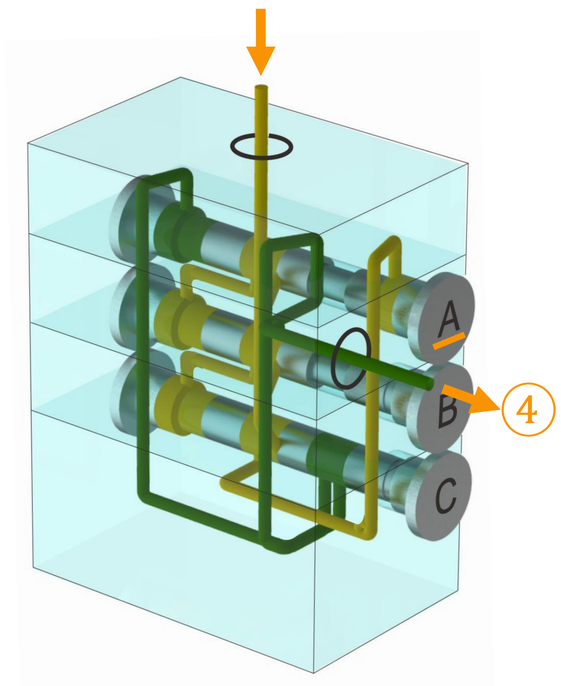
After that, the proportioning pistons B and C are progressively shifted and the lubricant is primed to the outlets ② (*Dia. 10.2*) and ③ (*Dia. 10.3*).

After the piston C has been shifted, the lubricant is directed to the left side of the delivery pi ston A (*Dia. 10.4*) and primed from the right pressure range of the delivery piston to the outlet ④.

Subsequently, the delivery pistons B and C are shifted and lubricant is pressed to the outlets ⑤ (*Dia. 10.5*) and ⑥ (*Dia. 10.6*).

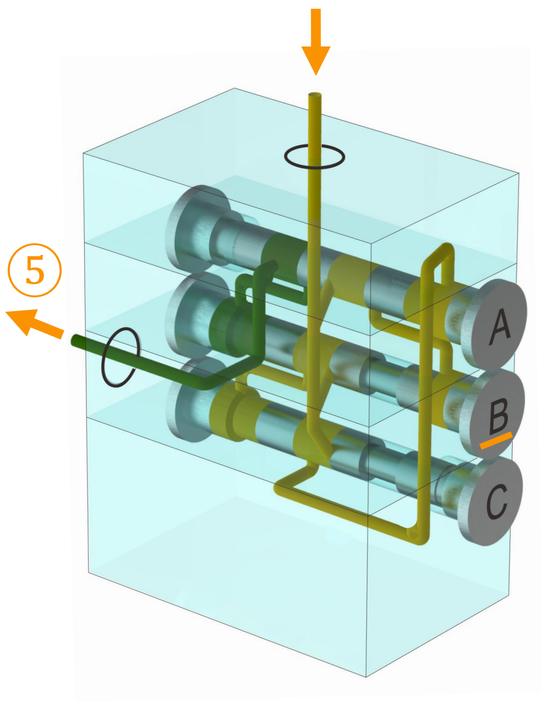


Dia. 10.3 Step C

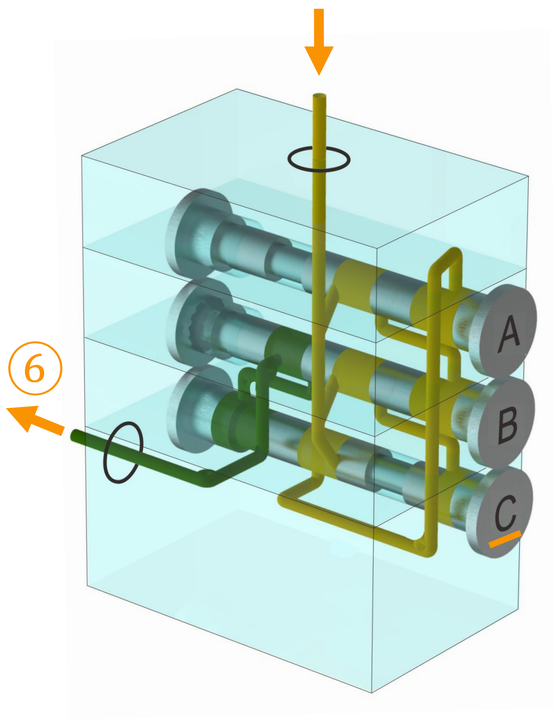


Dia. 10.4 Step D

After the delivery piston has been shifted, the lubricant is once more directed to the right side of the delivery piston (*Dia. 10.1*) and a new cycle of the progressive divider is initiated. The described function is repeated as long as lubricant is fed to the progressive divider.



Dia. 10.5 Step E



Dia. 10.6 Step F

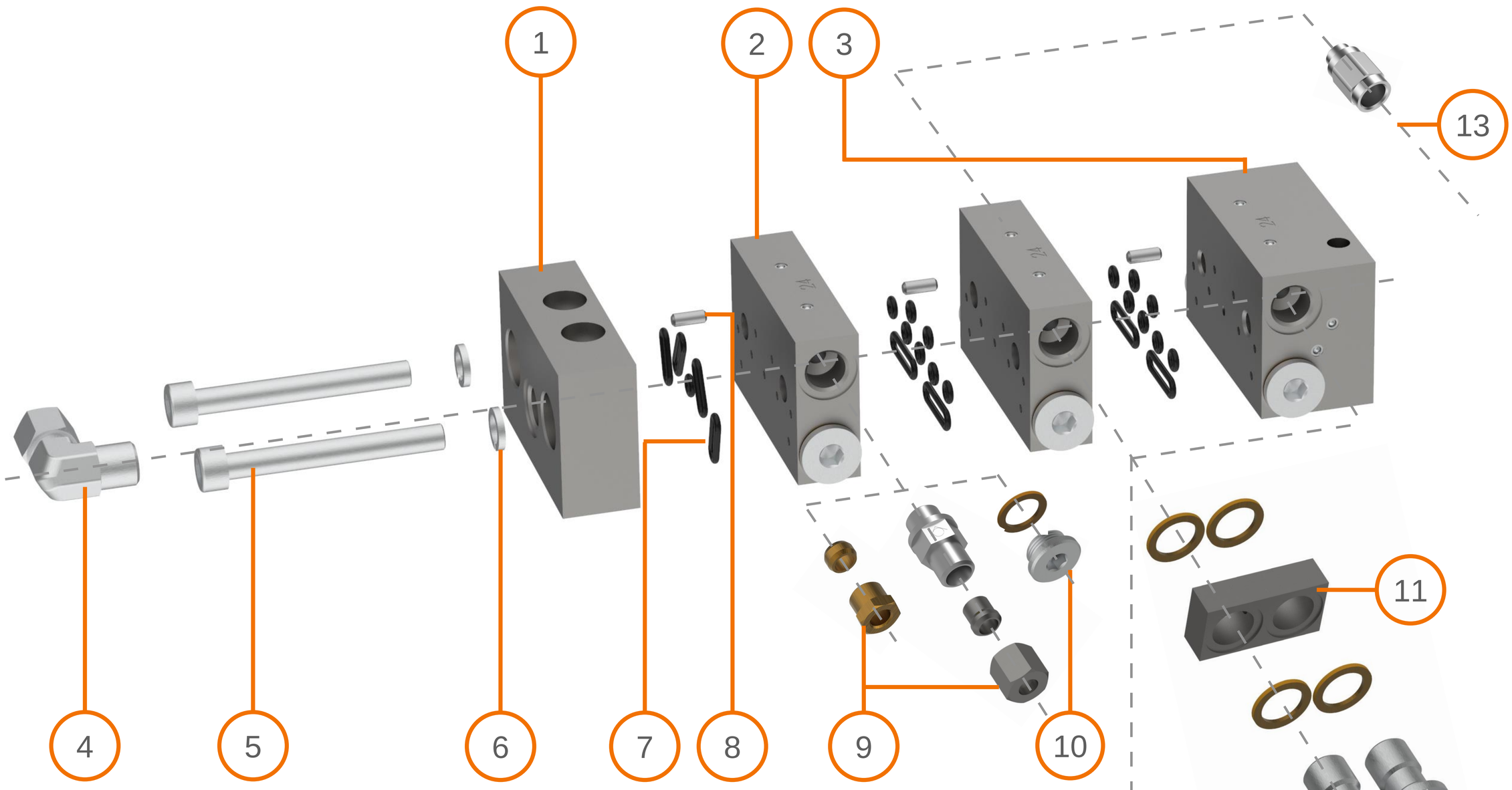
Assembly and Components

The divider is made of a series of at least 4 elements:

1x start element,
2x middle elements,
1x end element.

Always start with the largest delivery quantity of the distributor chip behind the start element!

With components e.g., bridge with outlet or blind plug, the divider can be built with multiple configurations to match the grease requests of the greasing points.



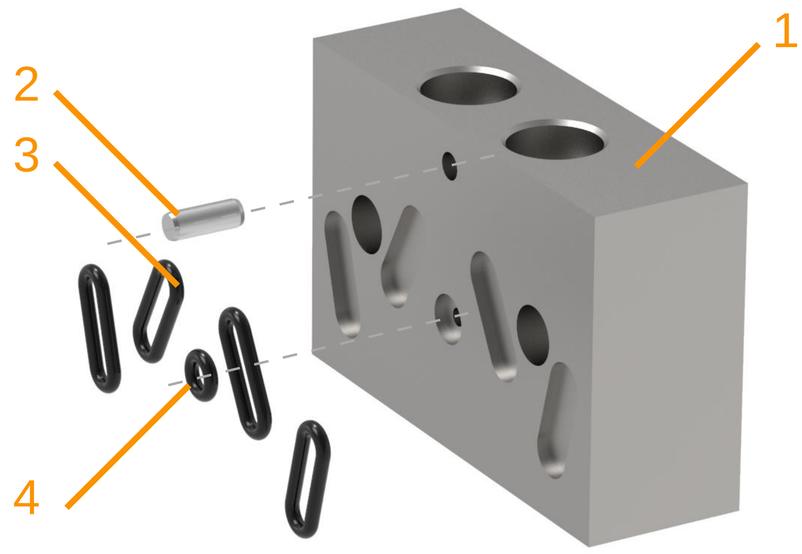
No.	Components	Page
1	Start Element (SE)	12
2	Middle Element (ME)	14
3	End Element (EE)	15
4	Inlet Screw Coupling	12-13
5	Connection Tie Rod	25
6	Spring Washer	25
7	O Ring	12, 14
8	Connecting Pin between Elements	12, 14
9	Outlet Screw Coupling	16-18
10	Outlet Blind Plug	18
11	Bridge with Outlet	19
12	Bridge without Outlet	19
13	Divider Monitoring Sensor	23-24

Dia. 11.1 Divider Components

Start Element (SE)

Start element is the element without outlets (*Dia. 12.1*).
Every divider must have a start element.

Description		Part No.
SE		2020520330
Spare Parts	Qty. per Set	
OR M 7.5x1.5mm	4	3021000239
OR S 2.5x1.5mm	1	3024000240
CP	1	3040100050



1- Start Element Body
2- (CP) Connection Pin
3- (OR) O Ring M 7.5x1.5mm
4- (OR) O Ring S 2.5x1.5mm

Dia. 12.1 (SE) Start Element

Inlet Screw Couplings

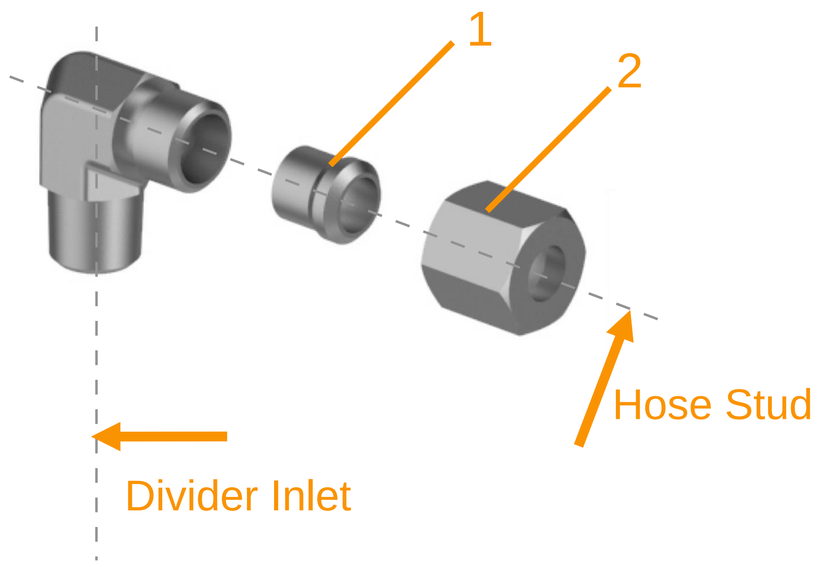
The JPQ1 progressive divider can be used as either a main divider or a secondary divider.

When used as a main divider, the pump and main divider are connected by a high-pressure hose and hose studs with outer diameter 6mm or 8mm. When used as a secondary divider, the main divider and secondary dividers are normally connected by a high-pressure hose and hose studs with outer diameter 6mm.

All screw couplings with M10x1k threads can be directly used for the inlet connection of the JPQ1 divider. All screw couplings with M10x1 threads can be used together with a copper ring (or ED sealed) for the input connection.

Elbow Inlet Screw Couplings (*Dia. 12.2*)

Description		Part No.
WE-ZN M10KD6		9900147
WE-ZN M10KD8		9900149
Spare Parts 1 – Cutting Ring for Cap Nut		
SR-ZN D6		9900209
SR-ZN D8		9900211
Spare Parts 2 – Cap Nut		
U-ZN D6		9900199
U-ZN D8		9900202



1- (SR-ZN) Cutting Ring for Cap Nut
2- (U-ZN) Cap Nut

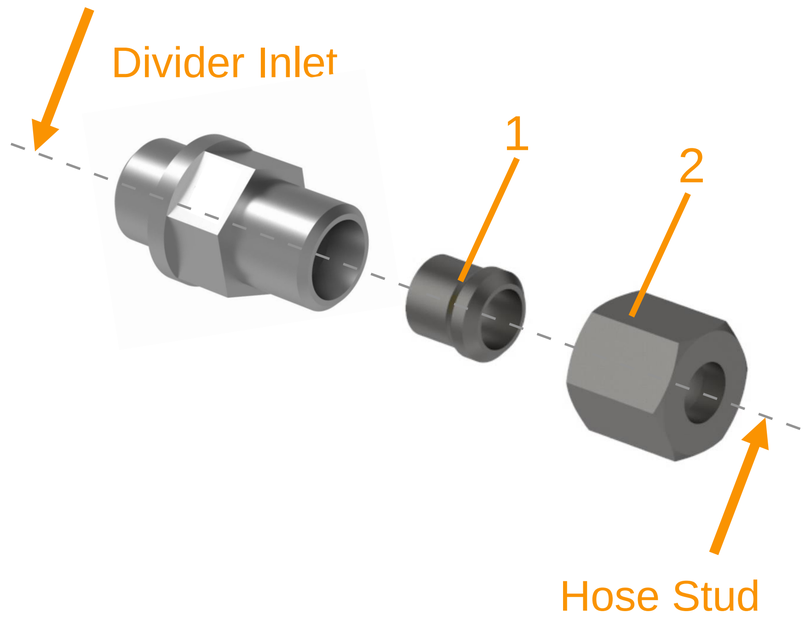
Dia. 12.2 (WE-ZN) Elbow Inlet Screw Coupling

Inlet Screw Couplings

Straight Inlet Screw Couplings (*Dia. 13.1*)

Description		Part No.
GE-ZN M10KD6*		9900111
GE-ZN M10KD8*		9900112
GE-ZN M10D6 (ED sealed)		3050100890
GE-ZN M10D8 (ED sealed)		3050104830
Spare Parts 1 – Cutting Ring for Cap Nut		
SR-ZN D6		9900209
SR-ZN D8		9900211
Spare Parts 2 – Cap Nut		
U-ZN D6		9900199
U-ZN D8		9900202

**** Part with "*" is standard part in our JPQ1 order key.***



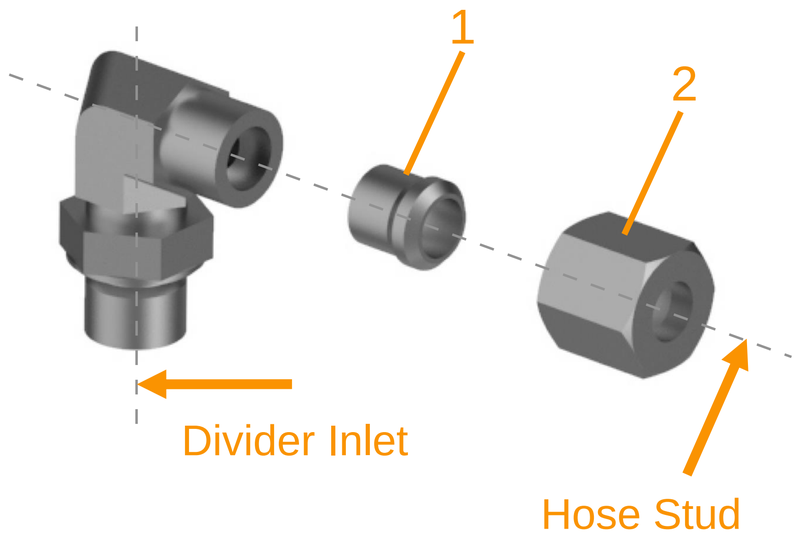
1- (SR-ZN)Cutting Ring for Cap Nut
2- (U-ZN)Cap Nut

Dia. 13.1 Straight Inlet Screw Coupling

Swivel Inlet Screw Couplings (*Dia. 13.2* and *Dia. 13.3*)

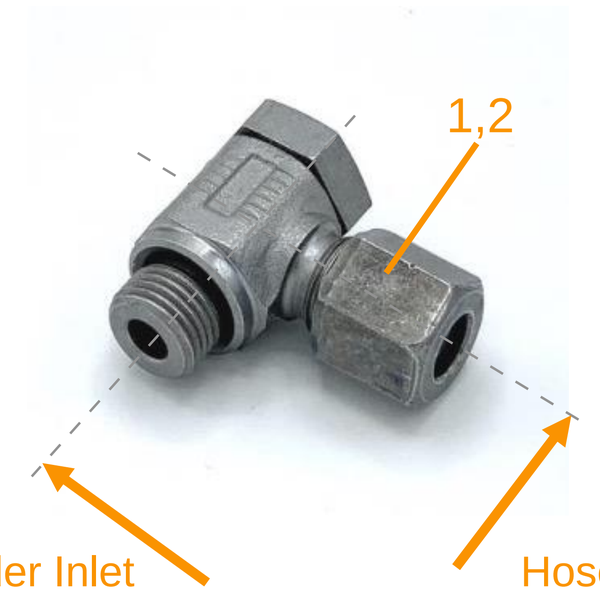
Description		Part No.
WSA-ZN M10D6 (ED sealed) Dia. 7.2		3050100620
WSA-ZN M10D8 (ED sealed) Dia. 7.2		3050105150
WS-ZN M10D6 (ED sealed) Dia. 7.3*		9900323
WS-ZN M10D8 (ED sealed) Dia. 7.3*		9900324
Spare Parts 1 – Cutting Ring for Cap Nut		
SR-ZN D6		9900209
SR-ZN D8		9900211
Spare Parts 2 – Cap Nut		
U-ZN D6		9900199
U-ZN D8		9900202

**** Part with "*" is standard part in our JPQ1 order key.***



1- (SR-ZN)Cutting Ring for Cap Nut
2- (U-ZN)Cap Nut

Dia. 13.2 Swivel Inlet Screw Coupling



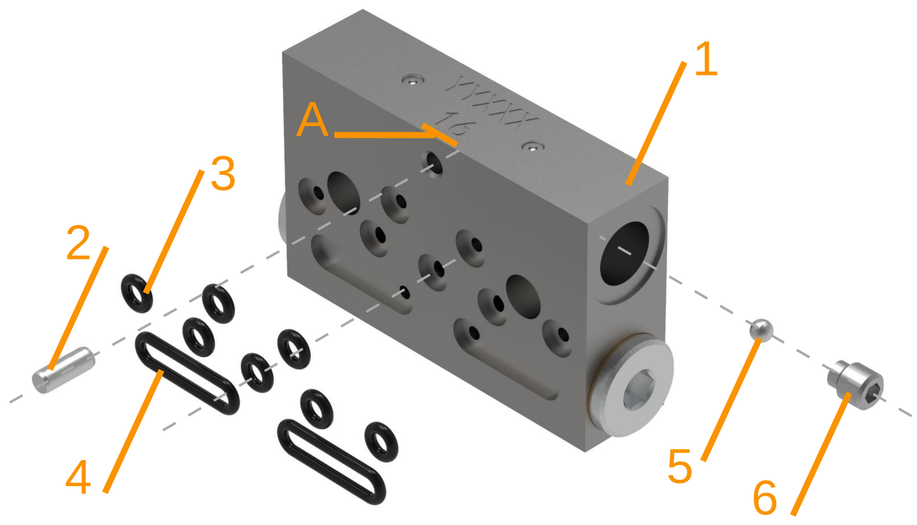
1- (SR-ZN)Cutting Ring for Cap Nut
2- (U-ZN)Cap Nut

Dia. 13.3 Swivel Inlet Screw Coupling

Middle Element (ME)

The middle element of JPQ1 divider has multiple output flow rates.

On the front side of the JPQ1 ME, the **Sign A** as in *Dia. 14.1* shows the flow rate for the single element:
08 = 80 mm^3 per outlet/stroke
16 or 16S = 160 mm^3 per outlet/stroke
24 or 24S = 240 mm^3 per outlet/stroke
32 or 32S = 320 mm^3 per outlet/stroke



1- Middle Element Body
2- (CP) Connection Pin
3- (OR) O Ring S 2.5x1.5mm
4- (OR) O Ring L11.5x1.5mm
5- Sealing Steel Ball D3
6- Sealing Screw M4

Dia. 14.1 (ME) Middle Element

The middle elements with **Sign A** 16S, 24S and 32S in *Dia. 14.2* have the possibility to be installed with a divider monitoring sensor (proximity switch) on both sides of the element. The divider monitoring sensor kit and cable must be ordered separately (Page 23)*.

**** More details for divider monitoring sensor please check in the following pages.***

Description*	Possibility to be installed with a divider monitoring sensor *	With in- and outlets connectors	Part No.
ME 08	No	No	2020520290
ME 16	No	No	2020520300
ME 24	No	No	2020520310
ME 32	No	No	2020520320
ME 16S	Yes	No	2111000219
ME 24S	Yes	No	2111000220
ME 32S	Yes	No	2111000221

**** For all middle elements Part No. in the above table include connecting pin, o rings, internal sealing screw set. For all middle elements with „S“ include a magnet pin for divider monitoring.***

Spare Parts - ME	Qty. per Set	Part No.
CP	1	3040100050
OR S 2.5x1.5mm	7	3024000240
OR L 11.5x1.5mm	2	3024000234
Sealing Screw M4*	1	3040102550
Sealing Steel Ball D3*	1	3049000450

**** The sealing screw and steel ball can only be taken out from the right-side outlet of the elements (Dia. 14.1). For more details of the function of sealing screw set please check page 20-22.***

Dia. 14.2 (ME) Middle Element XXS with Sensor

**** Please notice: ME XXS is without divider monitoring sensor. The divider monitoring sensor need be ordered separately.***

End Element (EE)

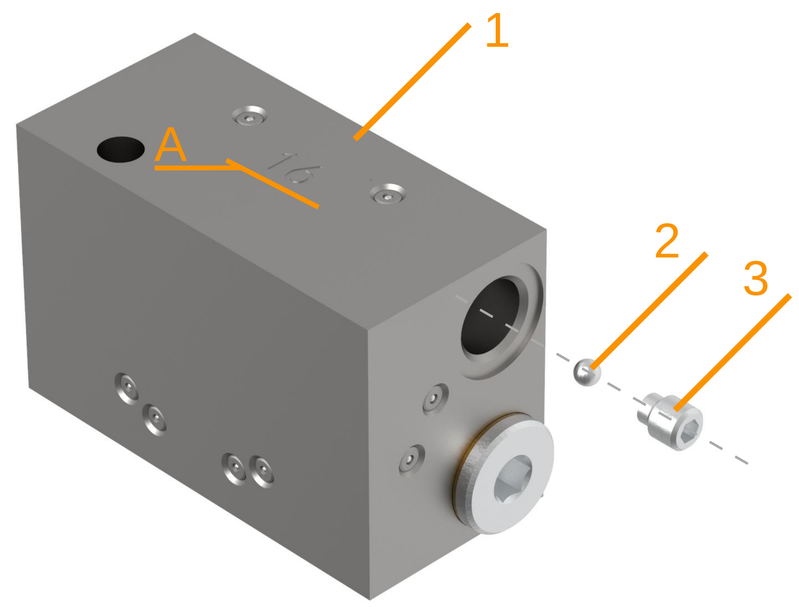
The end element of JPQ1 divider has multiple output flow rates. Every divider must have a end element.

On the front side of the JPQ1 EE, the **Sign A** as in *Dia. 15.1* shows the flow rate for the single element:

08 = 80 mm^3 per outlet/stroke
16 or 16S = 160 mm^3 per outlet/stroke
24 or 24S = 240 mm^3 per outlet/stroke
32 or 32S = 320 mm^3 per outlet/stroke

The end elements with **Sign A** 16S, 24S and 32S in *Dia. 15.2* have the possibility to be installed with a divider monitoring sensor (proximity switch) on both sides of the element. The divider monitoring sensor kit and cable must be ordered separately (Page 23 & 24).

**** More details for divider monitoring sensor, please check in the following pages.***



1- End Element Body
2- Sealing Steel Ball D3
3- Sealing Screw M4

Dia. 15.1 (EE) End Element

Description*	Possibility to be installed with a divider monitoring sensor *	With in- and outlets connectors	Part No.
EE 08	No	No	2020520260
EE 16	No	No	2020520270
EE 24	No	No	2020520280
EE 32	No	No	2020520520
EE 16S	Yes	No	2111000222
EE 24S	Yes	No	2111000223
EE 32S	Yes	No	2111000224

**** For all end elements Part No. in the above table include connecting pin, o rings, internal sealing screw set. For all end elements with „S“ include a magnet pin for divider monitoring.***

Spare Parts - EE	Qty. per Set	Part No.
Sealing Screw M4*	1	3040102550
Sealing Steel Ball D3	1	3049000450

**** The sealing screw and steel ball can only be taken out from the right- side outlet of the elements (Dia. 15.1). For more details of the function of sealing screw set please check page 20-22.***

Dia. 15.2 (EE) End Element XXS

**** Please notice: EE XXS is without divider monitoring sensor. The divider monitoring sensor need be ordered separately.***

Outlet Screw Couplings

The JPQ1 progressive divider can be used as either a main divider or a secondary divider.

From the main divider to the secondary divider, a screw coupling with non return valve is mainly used as the outlet fitting of the main divider for the connection with a high pressure hose and hose stud with outer diameter 6mm. From the secondary divider to the greasing points, a screw coupling without non return valve is mainly used as the outlet fitting of the secondary divider for the connection with a polyamide pipe with diameter 6x1.5mm or steel pipe with a diameter 6x1mm.

For construction machinery application like excavators, wheel loaders, please use non return valves for all divider outlets due to the high back pressure from the greasing points.

All screw couplings (including double cone socket union, non return valve and coupling without non return valve) with M10x1k threads can be directly used for the inlet connection of the JPQ1 divider. All screw couplings with M10x1 threads can be used together with a copper ring (or ED sealed) for the input connection.

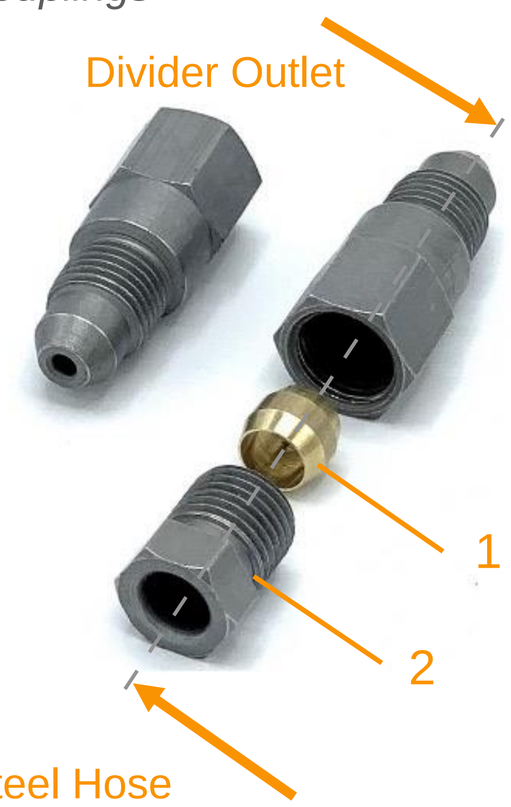
Type of Couplings*	Main Divider Outlet with High Pressure Hose with Hose Stud D6mm	Secondary Divider Outlet with High Pressure Hose with Hose Stud D6mm	Secondary Divider Outlet with PA Hose or Steel Pipe D6mm
RDGE	✗	✗	✓
RGE	✓	✓	✗
GE	✗	✓	✗
UDK	✗	✗	✓
PGE	✗	✗	✓

* *RDGE Rückschlagventile mit Doppelkegelring / Non Return Valves with Double Cone Drives*
RGE Rückschlagventile / Non-Return Valves
GE Gerade Einschraubverschraubungen / Straight Screw Couplings
UDK Überwurfschrauben für Doppelkegelring / Socket Unions for Double Cone Drives
PGE Push-in Gerade Einschraubverschraubungen / Straight Push-in Quick Couplings

Non-Return Valves with Double Cone Drives (Dia. 16.1)

Description		Part No.
RDGE-ZN M10D6 (double cone drive and socket union are **NOT** included in the PN)		9901653
Spare Parts 1 - Double Cone Drive		
DK-MS D6		9900226
Spare Parts 2 – Cap Screw		
UDK-ZN M10D6		9900223

**** Even RDGE has a M10x1 thread, the copper ring or ED sealed is not necessary here.***



1- (DK-MS) Double Cone Drive
2- (UDK-ZN) Cap Screw

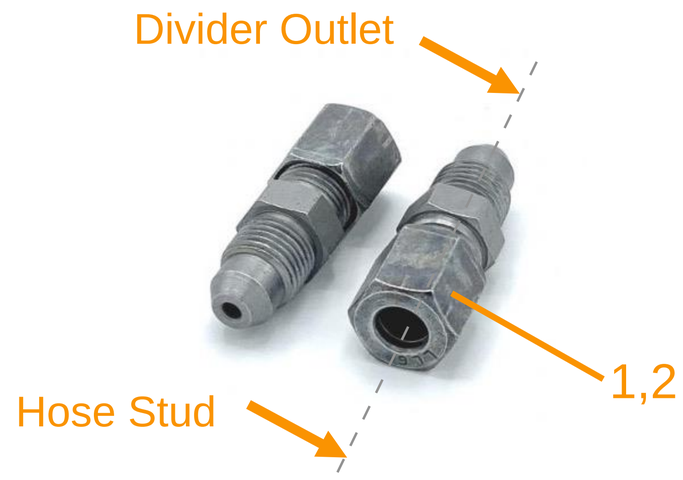
Dia. 16.1 (RDGE-ZN) Non-Return Valve with Double Cone Drive

Outlet Screw Couplings

RGE (*Dia. 17.1* and *Dia. 17.2*)

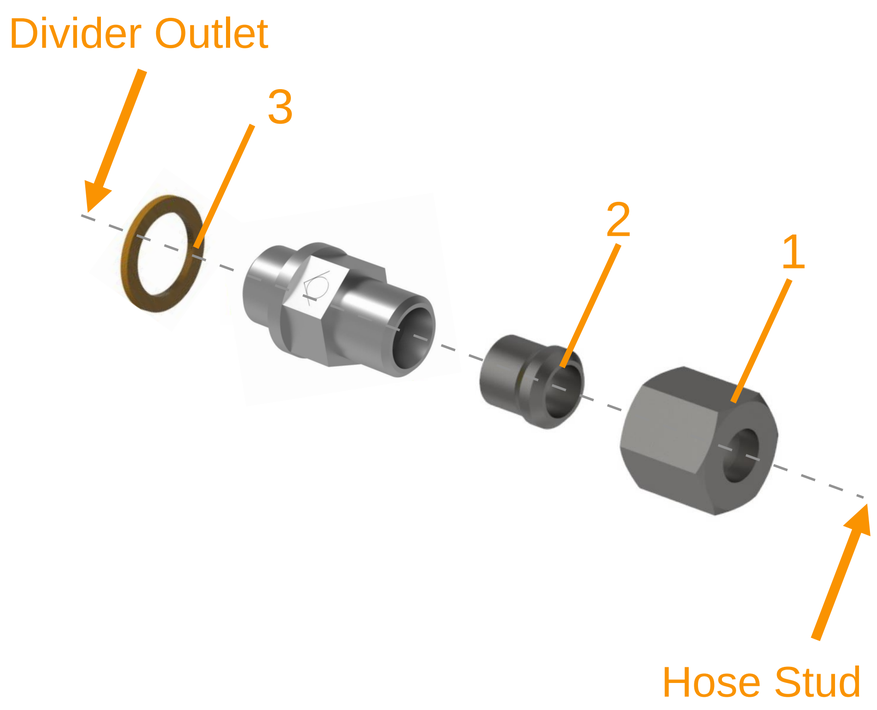
Description		Part No.
RGE-ZN M10D6 **(Dia. 17.1**)*		9901652
RGE-ZN M10D6A **(Dia. 17.2)**		3050101710
Spare Parts 1 – Cutting Ring for Cap Nut		
SR-ZN D6		9900209
Spare Parts 2 – Cap Nut		
U-ZN D6		9900199
Spare Parts 3 - Copper Ring		
CR 10-14x1		3010401930

**** Part with "*" is standard part in our JPQ1 order key.***



1- (SR-ZN) Cutting Ring for Cap Nut
2- (U-ZN) Cap Nut

Dia. 17.1 (RGE-ZN) Non-Return Valve



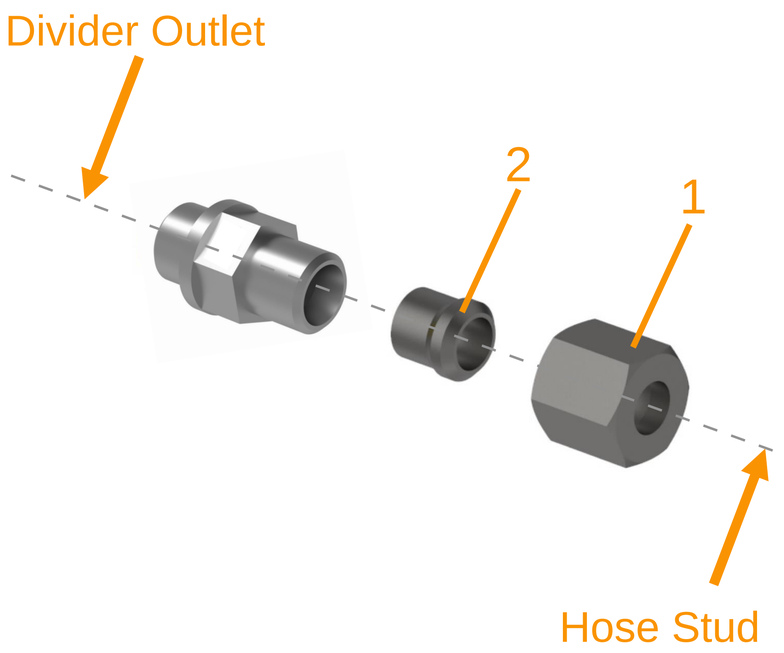
1- (U-ZN) Cap Nut
2- (SR-ZN) Cutting Ring for Cap Nut
3- (CR) Coppering Ring (not incl. in RGE Part No.)

Dia. 17.2 (RGE-ZN) Non-Return Valve with Copper Ring

GE (*Dia. 17.3*)

Description		Part No.
GE-ZN M10KD6*		9900111
GE-ZN M10D6 (ED sealed)		2020420350
Spare Parts – Cap Nut		
SR-ZN D6		9900209
Spare Parts – Cutting Ring for Cap Nut		
U-ZN D6		9900199

**** Part with "*" is standard part in our JPQ1 order key.***



1- (SR-ZN) Cutting Ring for Cap Nut
2- (U-ZN) Cap Nut

Dia. 17.3 (GE-ZN) Straight Screw Coupling

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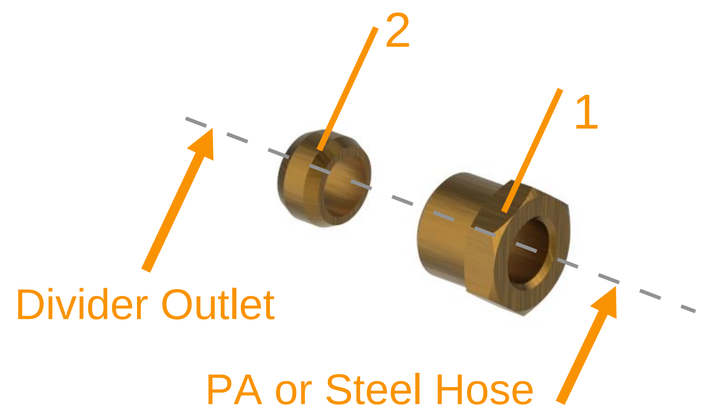
Outlet Screw Couplings

UDK (*Dia. 18.1*)

Description	Part No.
UDK-ZN M10D6	9900223
DK-MS D6	9900226

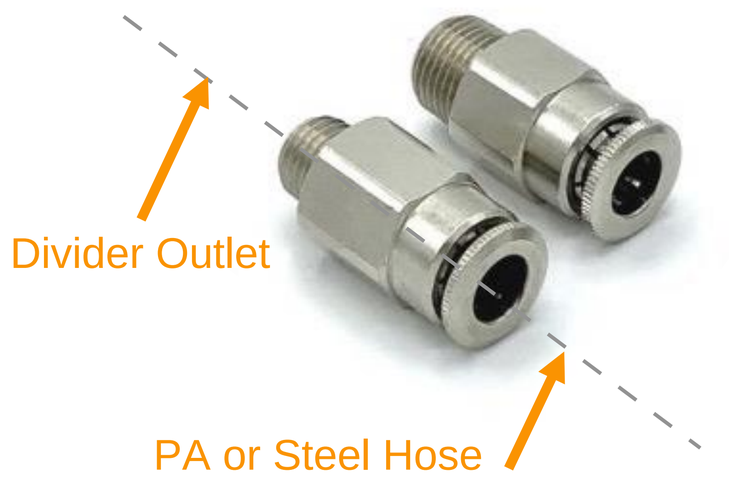


1- (UDK-ZN) Cap Screw
2- (DK-MS) Double Cone Drive

Dia. 18.1 (UDK) Socket Union with Double Cone Drive

PGE (*Dia. 18.2*)

Description	Part No.
PGE-MS M10KD6	9900233



Dia. 18.2 (PGE) Straight Push-in Quick Couplings

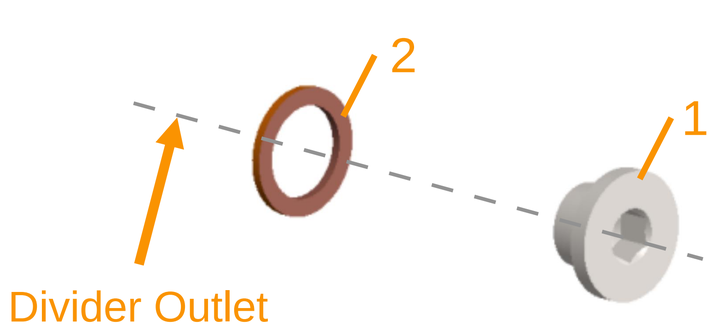
Outlet Blind Plug

The function of the blind plug of the JPQ1 divider outlet is to achieve a double flow rate by direct blinding one of the 2 sides on a same middle or end element.

To achieve this function, before the blinding, the sealing screw and sealing screw ball of the element must be taken out in advance, otherwise the divider will be blocked.

**** More details regarding the working principle please check on page 10.***

Description	Part No.
BP M10x1	3010401940
CR 10-14x1	3010401930



1- (BP) Blind Plug
2- (CR) Copper Ring

Dia. 18.3 (BP) Blind Plug of Outlet

Bridge with / without Outlet

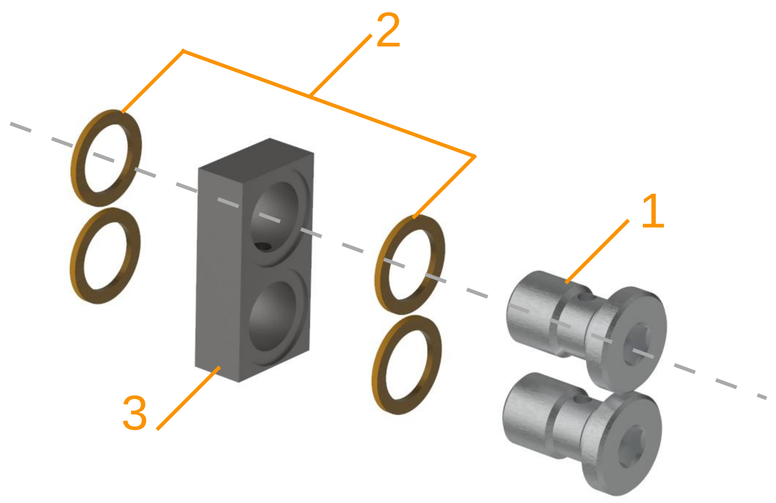
The function of the bridge with or without outlet of the JPQ1 divider is to achieve a combined flow rate by external blinding the outlets on the same side of 2 adjacent elements.

The sealing screw and sealing ball of the element can be taken out or kept depends on the configuration.

**** More details regarding the working principle please check on page 20-22.***

OB-0 Bridge without Outlet (*Dia. 19.1*)

Description		Part No.
OB-0		2090110380
Spare Parts	Qty. per Set	
BBP	2	3010402080
BB	1	3010402070
CR 10-14x1	4	3010401930

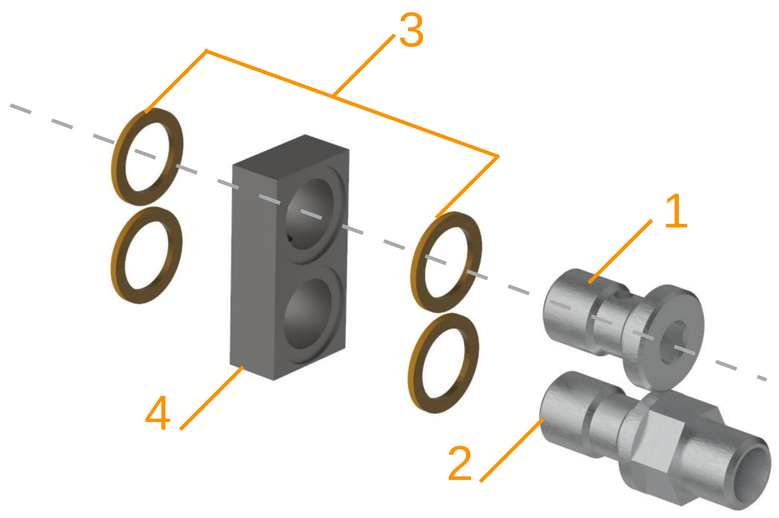


1- (BBP) Bridge Blind Plug
2- (CR) Copper Ring
3- (BB) Bridge Block

Dia. 19.1 (OB-0) Bridge without Outlet

OB-1 Bridge with Outlet and Non-Return Valve (*Dia. 19.2*)

Description		Part No.
OB-1		2090100160
Spare Parts	Qty. per Set	
BBP	1	3010402080
BO*	1	3010402580
BB	1	3010402070
CR 10-14x1	4	3010401930



1- (BBP) Bridge Blind Plug
2- (BO) Bridge Outlet
3- (CR) Copper Ring
4- (BB) Bridge Block

Dia. 19.2 (OB-1) Bridge with Outlet and Non-Return Valve

Extra OB Bridge Kits

Description	Part No.
OB-0, incl. Non-Return Valve	2020520550
OB-1 DC*, incl. Non-Return Valve	2020520560
OB-1 DC, excl. Non-Return Valve	2020520570
OB-1 SC*, excl. Non-Return Valve	2020520580

** DC = double cone, SC = cutting ring.*

Element Combination Principle

In order to meet the volume demand of the different greasing points under various application environment, even if the JPQ1 divider provides 4 different flow rate single element (8/16/24/32), sometimes it is still necessary to combine the outlets of the divider internally or externally to achieve more possibilities of the flow rate combination.

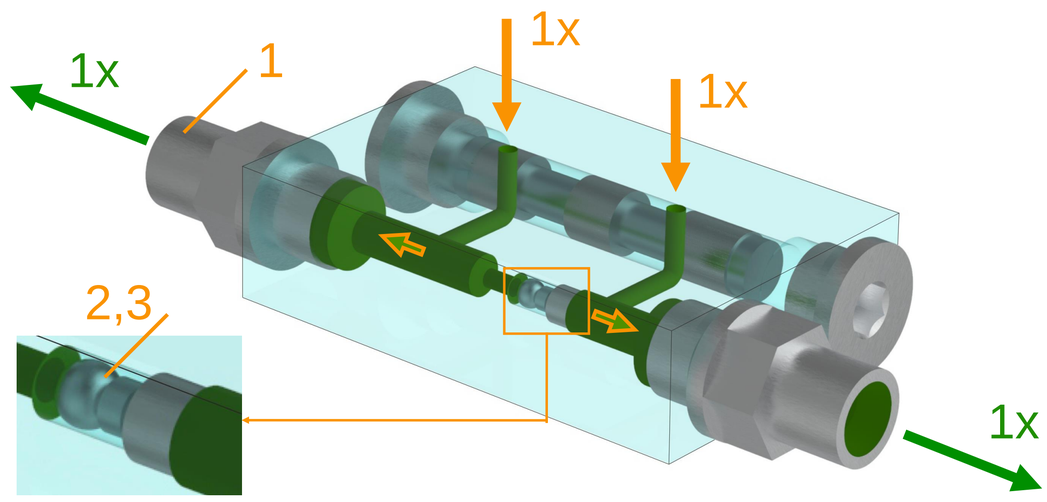
With the help of e.g. element internal bridge* - sealing screw and sealing ball, external bridge* - OB-0 and OB-1, JPQ1 divider can achieve these possibilities.

** Internal Bridge - the divider element bridged left and right*
External Bridge - the divider elements bridged up and down

Single Element without Combination

Dia. 20.1 shows the divider middle element with 2 separate outlets which have the same output flow rates. The grease channel has been separated by a sealing ball and sealing screw.

Description	Part No.
Divider Outlet Screw Coupling	Page 10-12
Sealing Steel Ball D3	3049000450
Sealing Screw M4 SW2	3040102550



1- Divider Outlet Screw Coupling
2- Sealing Steel Ball
3- Sealing Screw

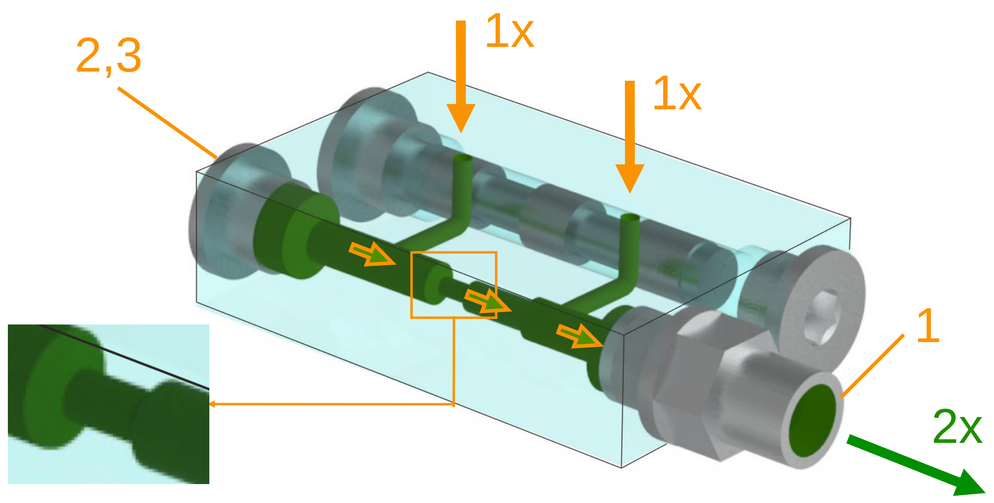
Dia. 20.1 Single Element without Combination

Single Element with Combination

Dia. 20.2 shows the divider middle element with 1 outlet (either on left side or on right side), which the other of the element has been locked by an outlet blind plug and removing the sealing steel ball and sealing screw. The flow rate of the left outlet is doubled.

Attention: In this case, the sealing steel ball and sealing screw must be removed, otherwise the divider blocks!

Description	Part No.
Divider Outlet Screw Coupling	Page 10-12
BP M10x1,5	3010401940
CR 10-14x1	3010401930



1- Divider Outlet Screw Coupling
2- BP - Blind Plug
3- CR - Copper Ring

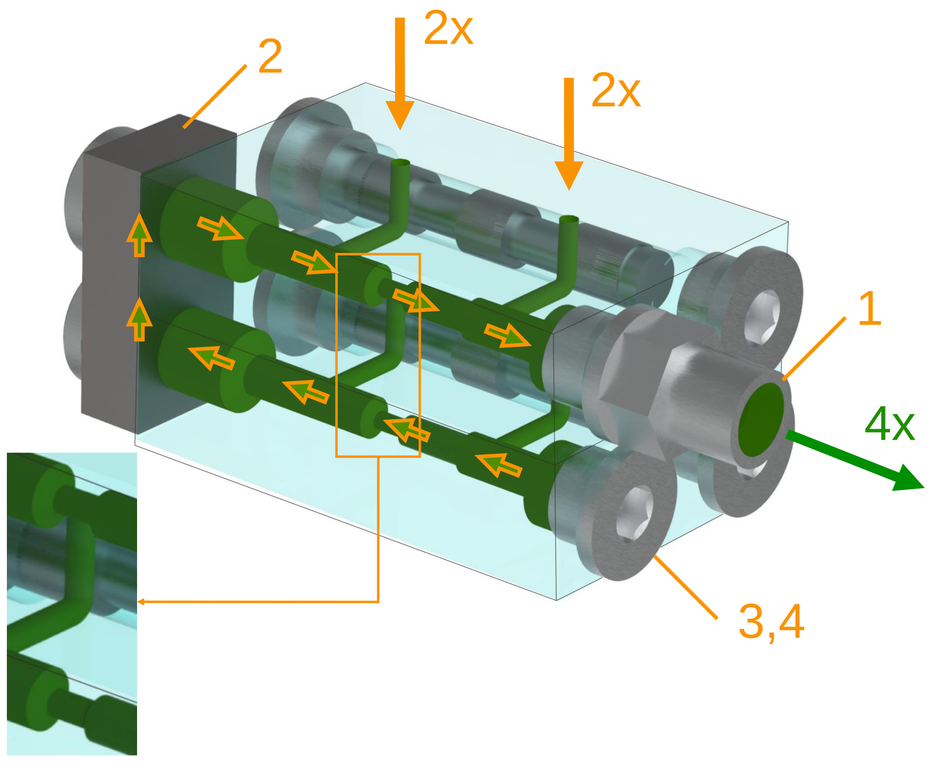
Dia. 20.2 Single Element with Combination

Element Combination Principle

Combination A with OB-0 (1 Outlet)

Dia. 21.1 shows the 2 divider elements are connected by an outlet bridge OB-0 on left side which bridges the outlets up and down. In the mean time, both element's middle sealing screws and steel balls are removed. In this case, all 4 outlets are bridged with each other.

Description	Part No.
Divider Outlet Screw Coupling	Page 16-18
OB-0	2090110380
BP M10x1,5	3010401940
CR 10-14x1	3010401930



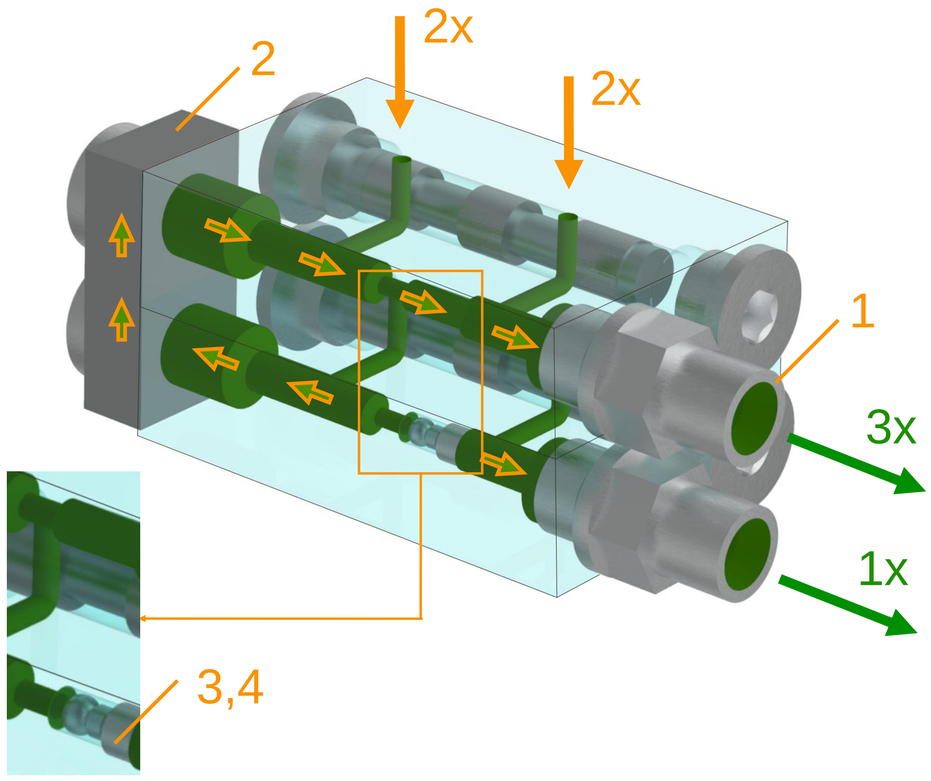
1- Divider Outlet Screw Coupling
2- BO-0 - Bridge without Outlet
3- BP Outlet Blind Plug
4- Copper Ring

Dia. 21.1 2 Divider Elements with OB-0 Combination A

Combination B with OB-0 (2 Outlets)

Dia. 21.2 shows the 2 divider elements are connected by an outlet bridge OB-0 on left side which bridges the outlets up and down. In the mean time, 1 of the 2 elements' middle sealing screw and steel ball is removed. In this case, the grease channel is separated by the sealing screw and steel ball, only 3 outlets are bridged with each other.

Description	Part No.
Divider Outlet Screw Coupling	Page 16-18
OB-0	2090110380
Sealing Screw M4	3040102550
Sealing Steel Ball D3	3049000450



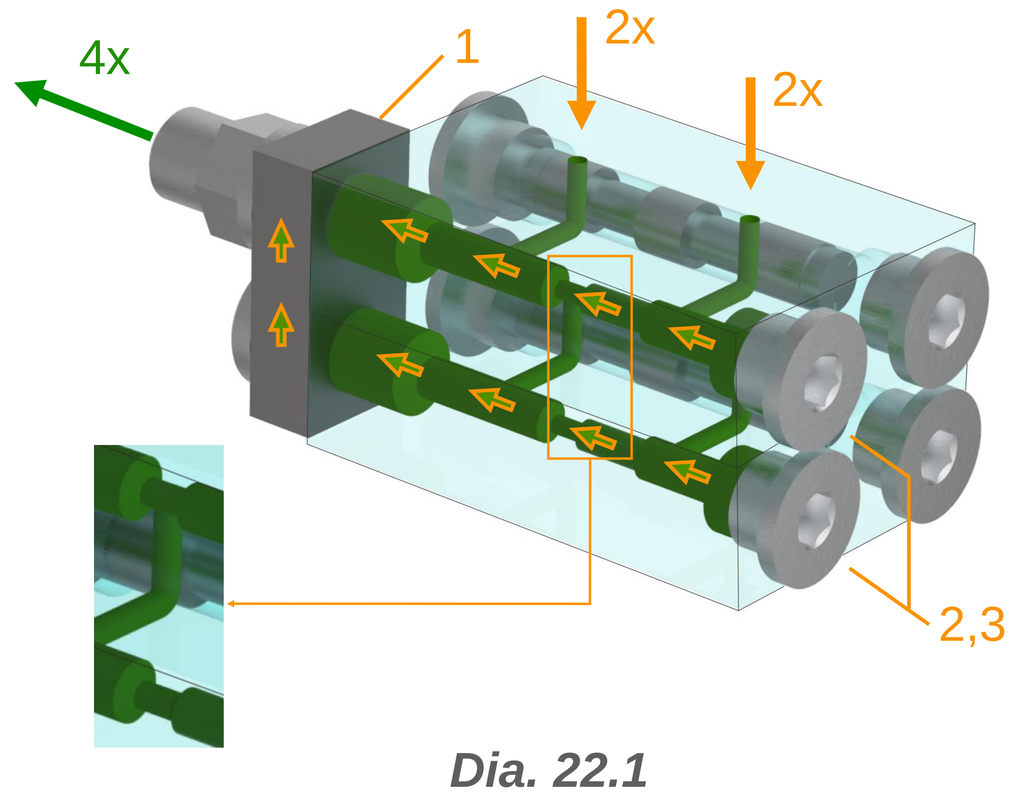
1- Divider Outlet Screw Coupling
2- BO-0 - Bridge without Outlet
3- Sealing Screw
4- Sealing Steel Ball

Dia. 21.2 2 Divider Elements with OB-0 Combination B

Element Combination Principle

Combination A with OB-1 (1 Outlet)

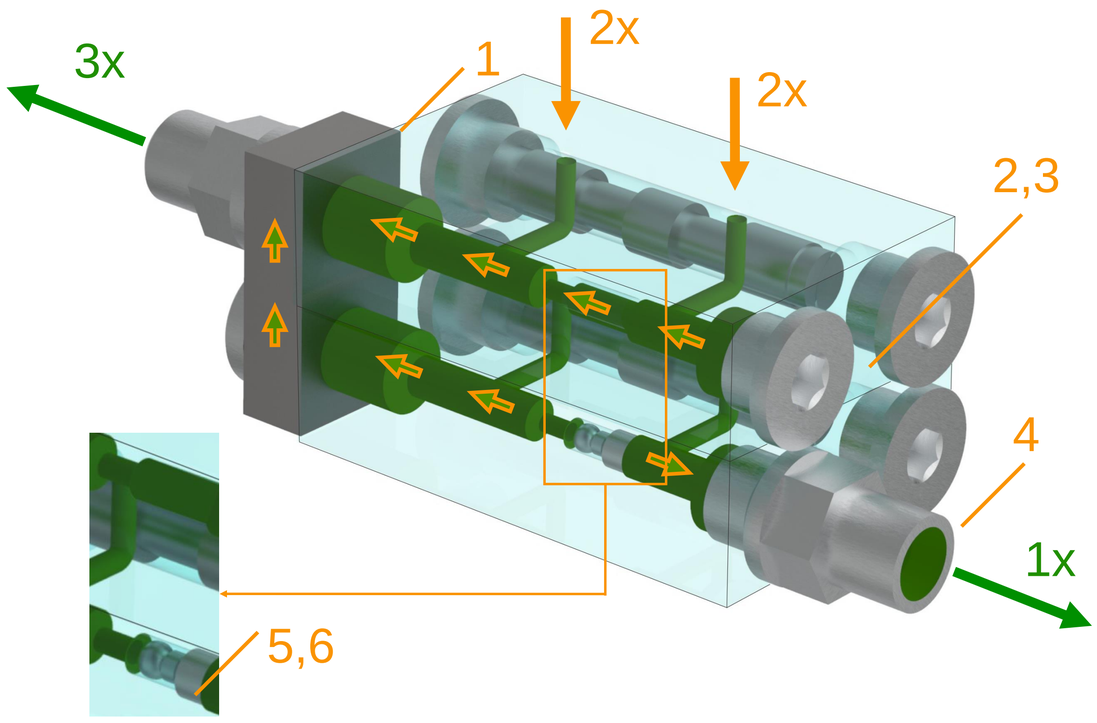
Dia. 22.1 shows the 2 divider elements are connected by an outlet bridge OB-1 on left side which bridges the outlets up and down. In the mean time, both element's middle sealing screws and steel balls are removed. In this case, all 4 outlets are bridged with each other.



Dia. 22.1

Combination B with OB-1 (2 Outlets)

Dia. 22.2 shows the 2 divider elements are connected by an outlet bridge on left side which bridges the outlets up and down. In the mean time, 1 of the 2 elements' middle sealing screw and steel ball is removed. In this case, the grease channel is separated in 2 ways by the sealing screw and steel ball, only 3 outlets are bridged with each other.

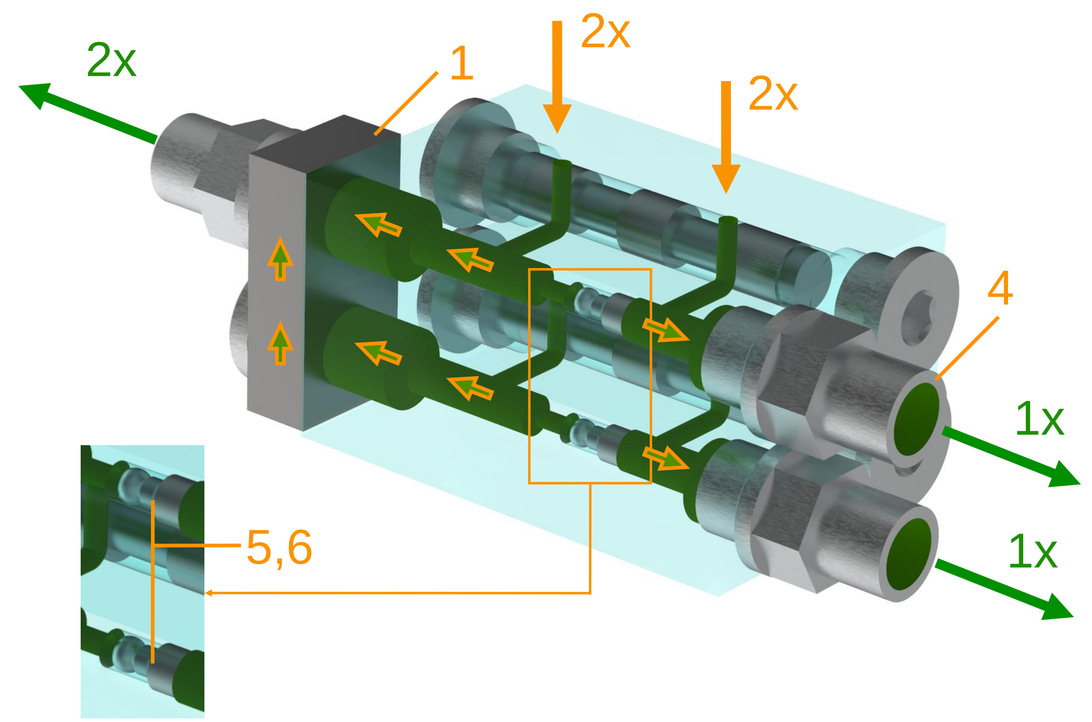


Dia. 22.2

Combination C with OB-1 (3 Outlets)

Dia. 22.3 shows the 2 divider elements are connected by an outlet bridge on left side which bridges the outlets up and down. In the mean time, both elements' middle sealing screws and steel balls keep in position. In this case, the grease channel is separated in 3 ways and only 2 outlets on left side are bridged.

Description	Part No.
Divider Outlet Screw Coupling	Page 10-12
OB-1	2090100160
BP M10x1,5	3010401940
CR 10-14x1	3010401930
Sealing Steel Ball D3	3040102550
Sealing Screw M4	3049000450



Dia. 22.3

1- BO-1 - Bridge with Outlet
2- Outlet Blind Plug
3- Copper Ring
4- Divider Outlet Screw Coupling
5- Sealing Screw
6- Sealing Steel Ball

Dia. 22 2 Divider Elements with OB-1 Combination A B C

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Divider Monitoring

Divider monitoring sensor kit

Thanks to the Hall effect, the divider monitoring sensor kit is designed to monitor the operation status of the divider with the magnet pin (Dia. 23.1). During the working time of the pump, the sensor checks the movement of the piston and send signal back to pump. Based on different working principles * (time-control or cycle-control) and parameter settings, the pump will discern whether the divider is working properly or not and apprise warning to pump or customized terminal if necessary.

Sensor type:

PNP: sensor signal is (+) positive. Normally open type contact can be used. ***Standard Version for ALPB / ALPB HSC Ver. / ALP81 BYN Ver.***

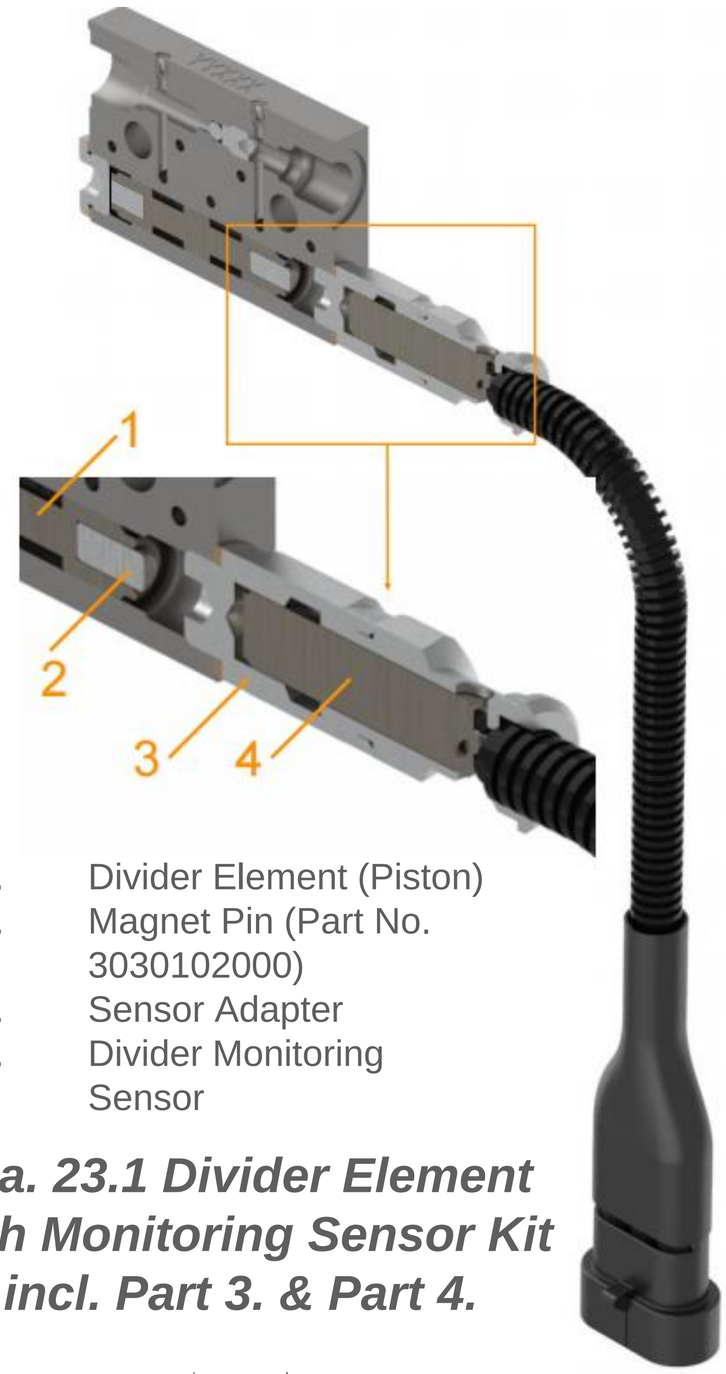
NPN: Sensor signal is (-) negative. Normally open type contact can be used. ***Only for external controller***

Attention: Only ME 16S/24S/32S and EE 16S/24S/32S are available for a divider monitoring sensor.

Part No. (Sensor Kit like in Dia. 23.1)*	EU Version	CN Version
NPN:	2020420500*	2020420480
PNP:	2020420510*	2020420490
Technical Data:		
Approval/Conformity:	cULus/CE/WEEE/EAC	
Connection with Divider:	M12x1 plug in	
Connection with Cable:	AMP Super Seal 1.5 SRS. 3P Tab	
Switching Output:	NPN /PNP	
Switching Distance:	>20 mm possible	
Operating Current Ie:	200 mA	
Operating Voltage ub:	10 to 30 V DC	
Temperature Range:	-25 ℃ to +85 ℃	
Function Display:	LED Yellow	LED Red
Housing Material:	Stainless Steel	
Protection Type:	IP 67	

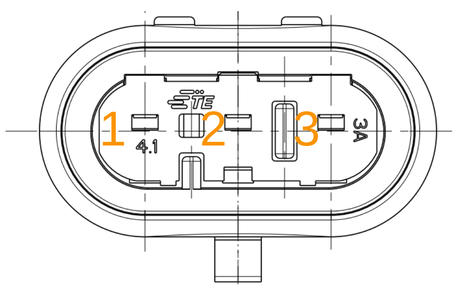
**** Attention: For the Part No. of divider monitoring sensor, the sensor connector, and magnet pin are included (Part 2,3 and 4 in Dia. 23.1). The connecting cable between sensor and pump, the divider element are NOT included (Part 1 in Dia. 23.1). More information for cables please check on the next page. Upon request, we provide the technical data from the manufacturer.***

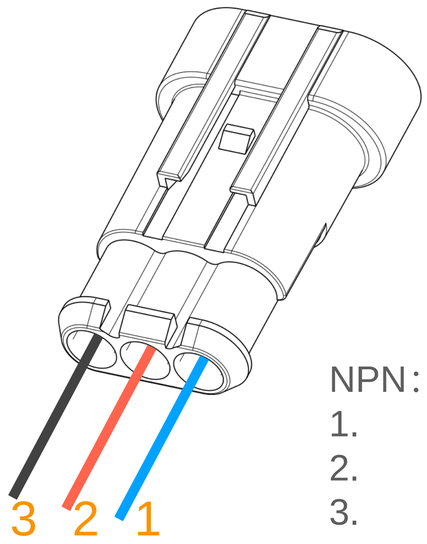
**** Part with "*" is standard part in our JPQ1 order key.***



1. Divider Element (Piston)
2. Magnet Pin (Part No. 3030102000)
3. Sensor Adapter
4. Divider Monitoring Sensor

Dia. 23.1 Divider Element with Monitoring Sensor Kit incl. Part 3. & Part 4.





NPN:
1. 0V DC
2. +10 to 30V DC
3. Signal

Dia. 23.2 Divider Monitoring Sensor Wiring Connection

Dia. 23.3 Divider Monitoring Sensor Adapter JPQ1 M10x1 - M12x1 SW14 L25 (Part No. 3050103160)

Divider Monitoring

Connecting cable - divider monitoring sensor

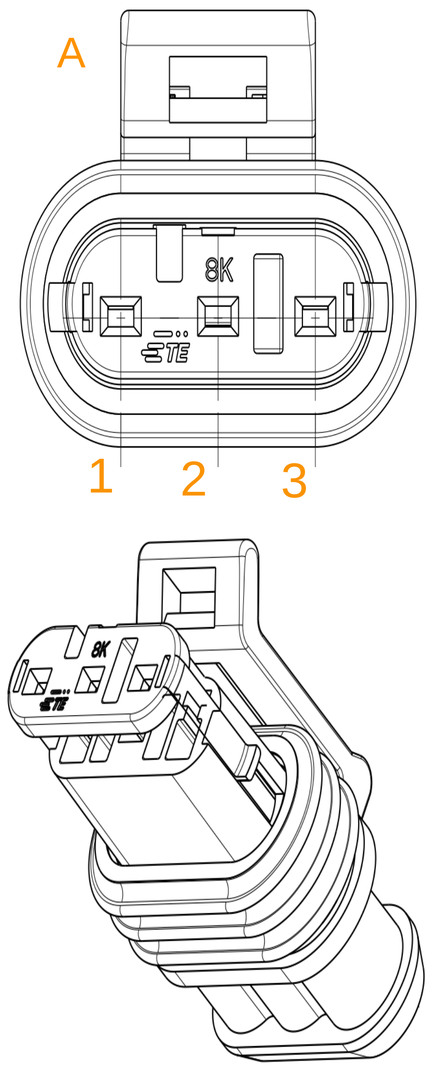
No mater in the part no. for ME XXS and EE XXS* with possibility to install a divider monitoring sensor on page 14 and 15, or the part no. for monitoring sensor kit on page 24, the sensor cable is **NOT** included.

Depends on the various application, the sensor cable need be ordered separately as following description.

**** XX = 16, 24 or 32***

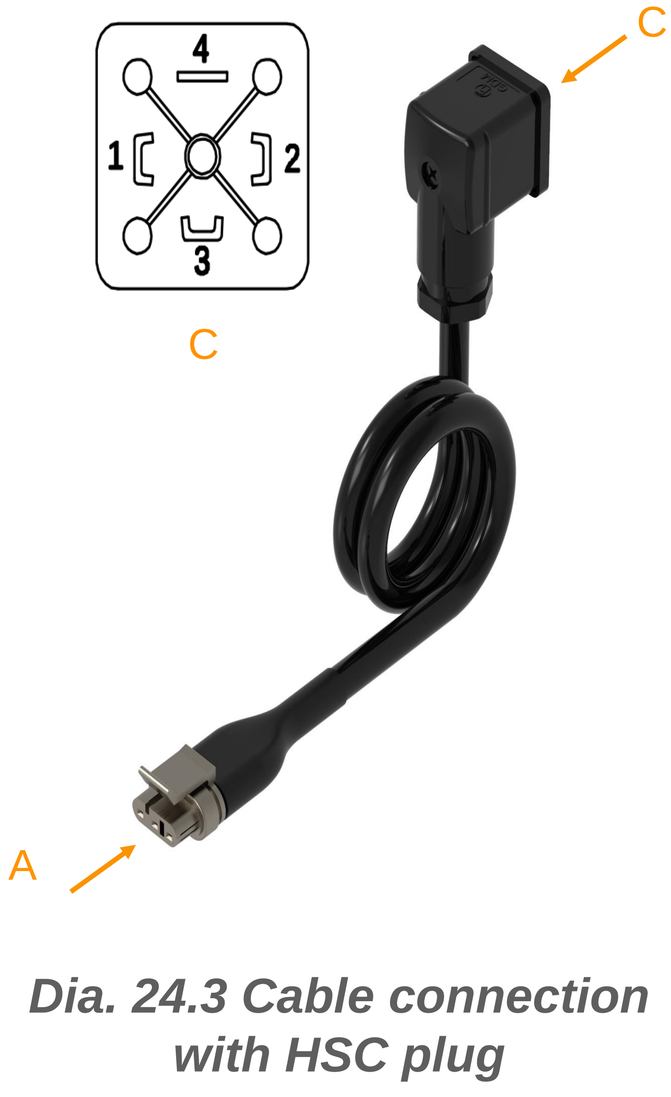
Part No. (Cable):	BD plug	HSC plug
Length 5m:	2110012410	2110010539
Length 7.5m:	2110012409	2110002734
Plug at divider side:	TE - AMP Super Seal 1.5 SRS. 3P plug connector (IEC 529 and ISO 20653)	
Plug at pump side:	RD24 Series 693	Type A EN 175301-803 (DIN 43650) / ISO 4400: Cable socket, self-assembly

**** For more detail regarding the Spec. please contact us.***



Dia. 24.1 Cable Connection at Divider

Dia. 24.2 Cable connection with BD plug



Dia. 24.3 Cable connection with HSC plug

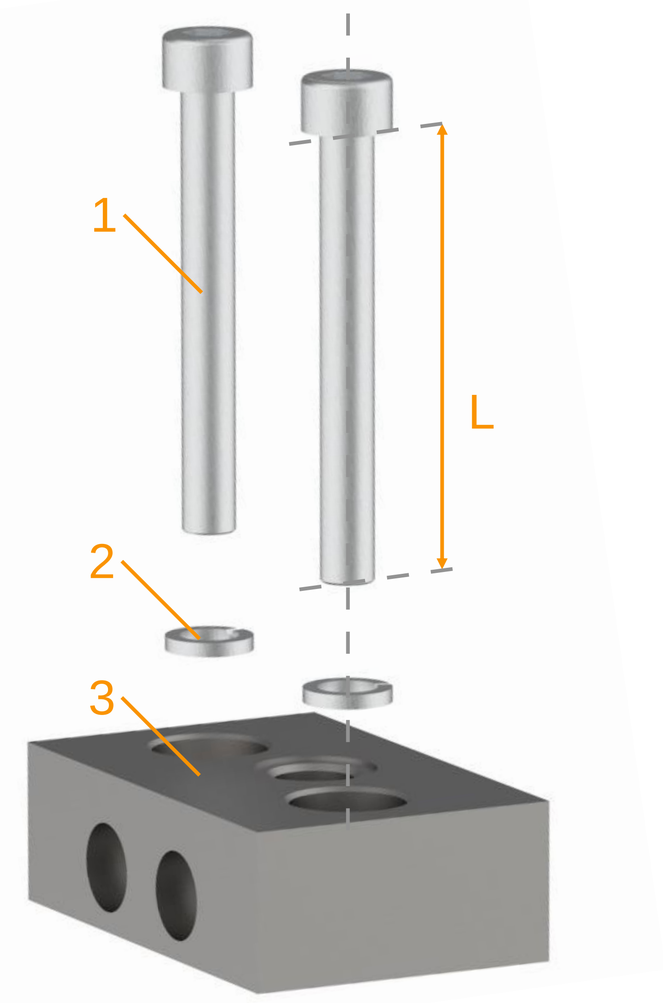
Divider Accessories

Divider tie rods

To mount the elements to a divider, the tie rods and spring washers are needed with a recommended torque value. The standard torque value setting of Lubmann pre-mounted divider is 12 +/- 1 N/m.

Divider type	Tie rod type (L=50 to 125))	Part no.
JPQ1 - 3/6	Inner hex screw M6 x 50	3040103160
JPQ1 - 4/8	Inner hex screw M6 x 65	3040103170
JPQ1 - 5/10	Inner hex screw M6 x 80	3040103180
JPQ1 - 6/12	Inner hex screw M6 x 95	3040103190
JPQ1 - 7/14	Inner hex screw M6 x 110	3040102940
JPQ1 - 8/16	Inner hex screw M6 x 125	3040102950
JPQ1 - 9/18	Inner hex screw M6 x 140	3040105480
JPQ1 – 10/20	Inner hex screw M6 x 155	3014001525

Part no.: Pos. 2 for spring washer D6: 3040100100



1- Tie rod

2- Spring washer - Part no. 3040100100

3- Start element

Dia. 25.1 Tie rods and spring washers for divider elements connection

Standard package for divider elements *

Description	Package size	Pieces per box	Part no.
SE	340mm x 200 mm x 145mm	60	2020520330
ME 08-N		70	2020520290
ME 16-N		70	2020520300
ME 24-N		70	2020520310
ME 32-N		70	2020520320
EE 08-N		40	2020520260
EE 16-N		40	2020520270
EE 24-N		40	2020520280
EE 32-N		40	2020520520

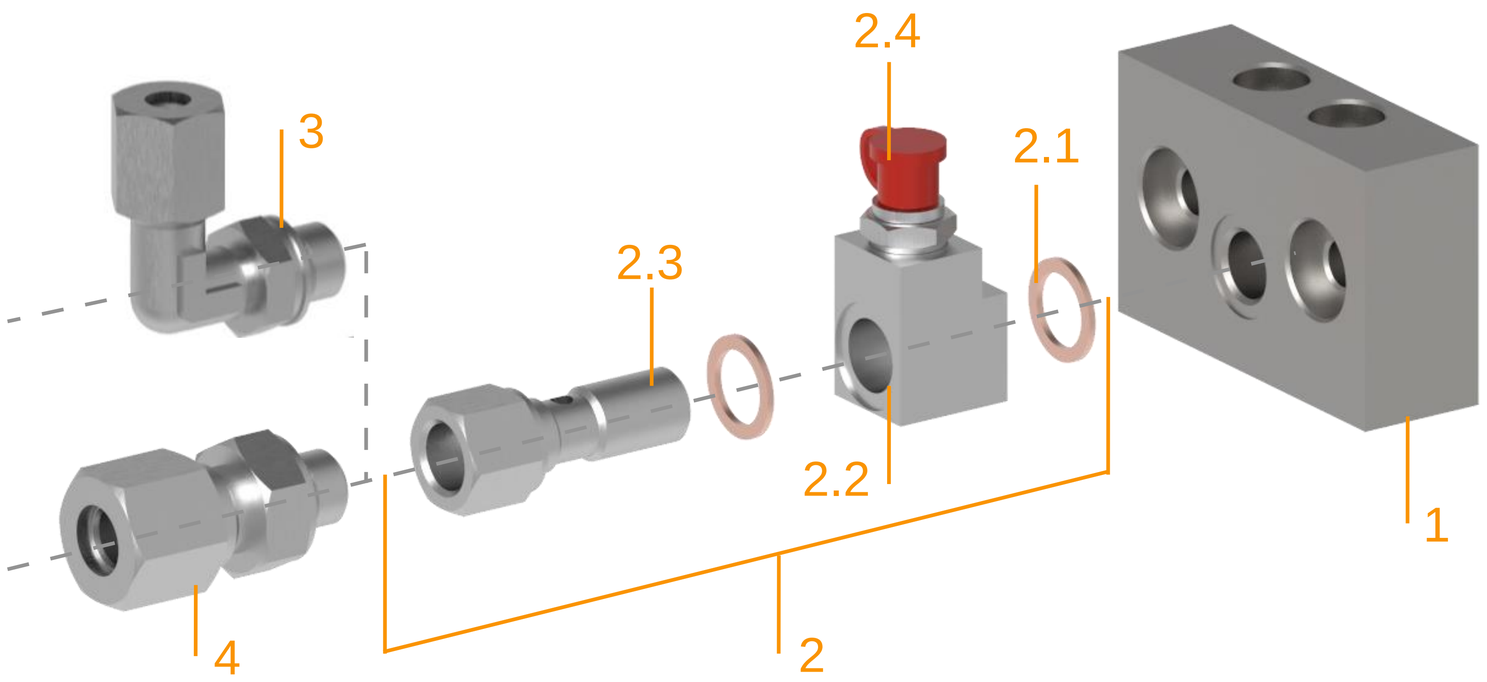
**** Only normal SE, ME and EE divider elements (without in/outlets, sensors or indication pins) can be ordered with a standard package.***

Divider Accessories

Manual emergency lubrication via banjo grease nipple

As an option, a banjo with grease nipple is provided to using a manual or hydraulic pump to refill the grease direct from the start element of the divider when the automatic lubrication pump does not work.

Attention: please check the hoses between the banjo and the pump outlet before starting refilling grease from the banjo!



1- Start element
2- Banjo grease nipple
 2.1- (CR) copper ring
 2.2- Banjo block body
 2.3- Extension coupling
 2.4- (GN-SR) Grease nipple
3- Swivel/Elbow inlet screw coupling
4- Straight inlet screw coupling

Dia. 26.1 (BGN) Manual emergency lubrication via banjo grease nipple

Description		Part no.
BJGN M10M10 (incl. parts 2.1, 2.2, 2.3, 2.4 in **Dia. 26.1**)		3050105240
Spare parts 2.1 - copper ring	Qty. per set	
CR 10-14x1	2	3010401930
Spare parts 2.4 – grease nipple		
GN-SR M10	1	5010000080

Order Key JPQ1

JPQ1 - 5 / 6 - 100 - 16*-8L0-8*-24*-24 - 000

No. of valid elements (ME+EE)	
3 = 2ME+1EE	6 = 5ME+1EE
4 = 3ME+1EE	7 = 6ME+1EE
5 = 4ME+1EE	8 = 7ME+1EE

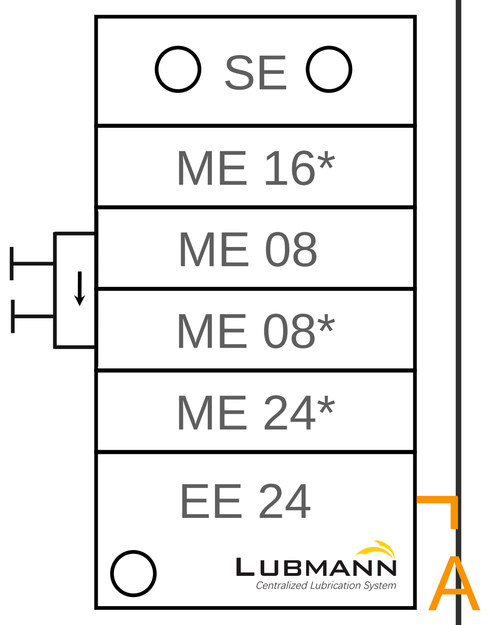
No. of valid outlets
X* = No. of valid outlets

** X <= ((number of middle piece+1)*2)*

Fittings in inlet and outlets							
Outlet \ Inlet	None	Straight D6mm	Straight D8mm	Elbow D6mm	Elbow D8mm	Swivel D6mm	Swivel D8mm
None	100	106	112	118	124	130	136
RDGE	101	107	113	119	125	131	137
RGE	102	108	114	120	126	132	138
GE	103	109	115	121	127	133	139
UDK	104	110	116	122	128	134	140
PGE	105	111	117	123	129	135	141

Type of -	Middle elements				End elements			
Normal (Without sensor or indication pin)	8	16	24	32	8	16	24	32
With sensor (NPN on side A in Dia. 22.1)	/	16N	24N	32N	/	16N	24N	32N
With sensor (PNP on side A in Dia. 22.1)	/	16P	24P	32P	/	16P	24P	32P
Without sealing ball and screw	XX*				XX*			
Combined element and outlet on left	XX*L				XX*L			
Combined element and outlet on right	XX*R				XX*R			
Bridged with next element with outlets on left	XX*L1 or XXL1				/			
Bridged with next element without outlets on left	XX*L0 or XXL0				/			
Bridged with next element with outlets on right	XX*R1 or XXR1				/			
Bridged with next element without outlets on right	XX*R0 or XXR0				/			

Customized code	
Standard version	000
Customized version	xxx



Dia. 27.1 Divider JPQ1 - 5/6 - 100 - 16* - 8L0 - 8*- 24* - 24

Special version FKM (Viton seals)

The JPQ1 Divider is also available with an FKM seal (Viton) between the start, middle and end elements. The functional description corresponds to the standard version JPQ1 in these instructions.

Technical data:

Operating pressure - Inlet:	max. 300 bar
Temperature range:	-35°C to +70°C
Carrier vehicle:	Oil - viscous oil - grease
In- / Outlet Thread:	M10x1

Number of elements:

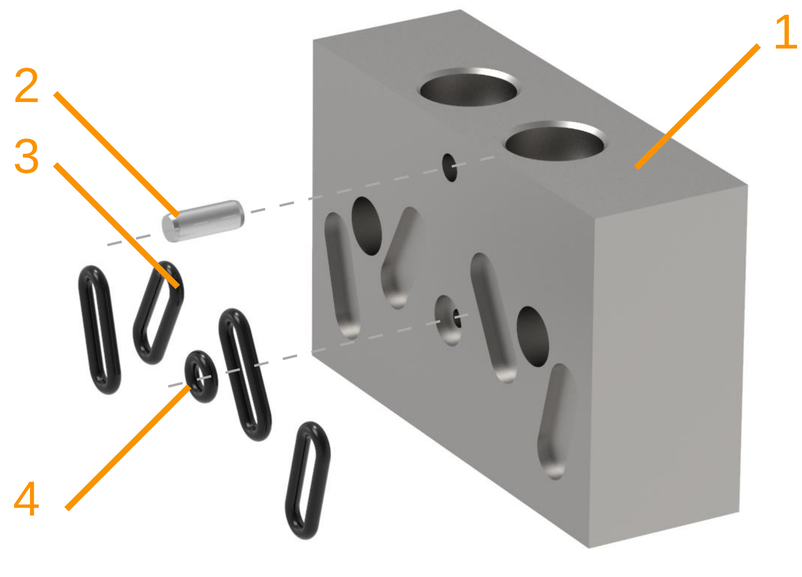
Min.:	JPQ1_FKM 3/6 (3 output elements)
Max.:	JPQ1_FKM 9/18 (9 output elements)

If required, please use the order numbers on the following pages.

Start Element (SE)

Start element is the element without outlets (*Dia. 28.1*).
Every divider must have a start element.

Description		Part No.
SE		15010014
Spare Parts	Qty. per Set	
OR M 7.5x1.5mm	4	15010015
OR S 2.5x1.5mm	1	15010016
CP	1	3040100050



1- Start Element Body
2- (CP) Connection Pin
3- (OR) O Ring M 7.5x1.5mm
4- (OR) O Ring S 2.5x1.5mm

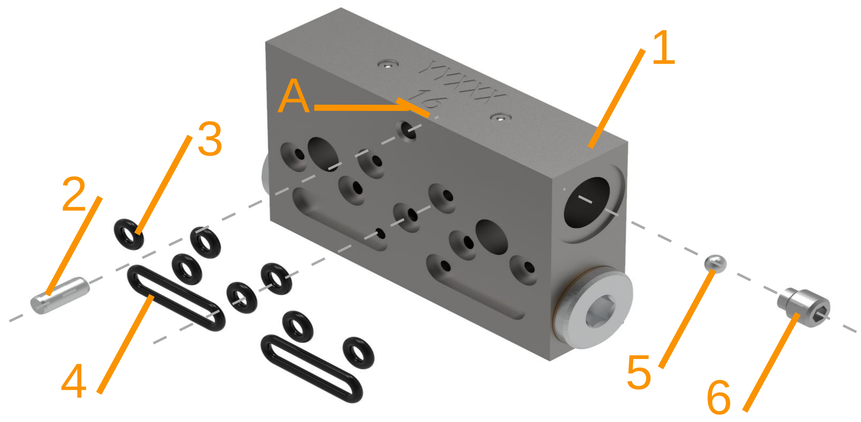
Dia. 28.1 (SE) Start Element

Special version FKM (Viton seals)

Middle Element (ME)

Description*	Possibility to be installed with a divider monitoring sensor *	With in- and outlets connectors	Part no.
ME 08	No	No	2020520290
ME 16	No	No	2020520300
ME 24	No	No	2020520310
ME 32	No	No	2020520320
ME 16S	Yes	No	2111000219
ME 24S	Yes	No	2111000220
ME 32S	Yes	No	2111000221

**** For all middle elements Part No. in the above table include connecting pin, o rings, internal sealing screw set. For all middle elements with „S“ include a magnet pin for divider monitoring.***



1- Middle Element Body
2- (CP) Connection Pin
3- (OR) O Ring S 2.5x1.5mm
4- (OR) O Ring L11.5x1.5mm
5- Sealing Steel Ball D3
6- Sealing Screw M4

Dia. 29.1 (ME) Middle Element

Spare Parts - ME	Qty. per Set	Part no.
CP	1	3040100050
OR S 2.5x1.5mm	7	3024000240
OR L 11.5x1.5mm	2	3024000234
Sealing Screw M4*	1	3040102550
Sealing Steel Ball D3*	1	3049000450

**** The sealing screw and steel ball can only be taken out from the right-side outlet of the elements (Dia. 14.1). For more details of the function of sealing screw set please check page 20-22.***

Packaging units PU of the individual distributor disks in a box

Description	Box dimensions	Qty. per box	Part no.
SE	340mm x 200 mm x 145mm	60	15010014
ME 08-N		70	15010017
ME 16-N		70	15010018
ME 24-N		70	15010020
ME 32-N		70	15010021

Only divider elements without inlet and outlet fittings and without sensor, can be supplied in a box.

Order Key JPQ1_FKM

JPQ1_FKM - 5 / 6 - 100 - 16*-8L0-8*-24*-24 - 000

No. of valid elements (ME+EE)	
3 = 2ME+1EE	6 = 5ME+1EE
4 = 3ME+1EE	7 = 6ME+1EE
5 = 4ME+1EE	8 = 7ME+1EE

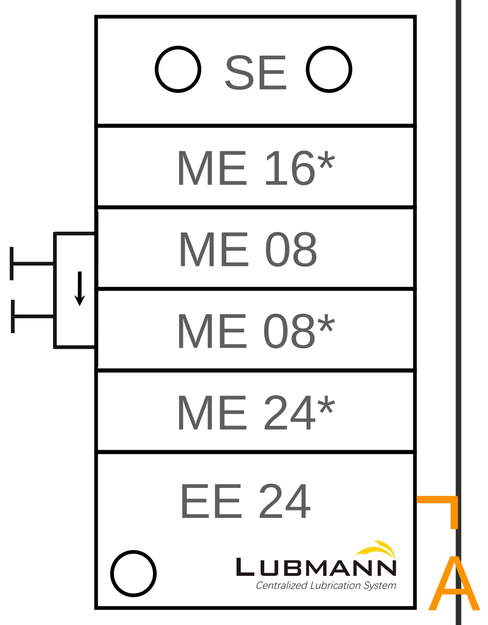
No. of valid outlets
X* = No. of valid outlets

** X <= ((number of middle piece+1)*2)*

Fittings in inlet and outlets							
Outlet \ Inlet	None	Straight D6mm	Straight D8mm	Elbow D6mm	Elbow D8mm	Swivel D6mm	Swivel D8mm
None	100	106	112	118	124	130	136
RDGE	101	107	113	119	125	131	137
RGE	102	108	114	120	126	132	138
GE	103	109	115	121	127	133	139
UDK	104	110	116	122	128	134	140
PGE	105	111	117	123	129	135	141

Type of -	Middle elements				End elements			
Normal (Without sensor or indication pin)	8	16	24	32	8	16	24	32
With sensor (NPN on side A in Dia. 29.1)	/	16N	24N	32N	/	16N	24N	32N
With sensor (PNP on side A in Dia. 29.1)	/	16P	24P	32P	/	16P	24P	32P
Without sealing ball and screw	XX*				XX*			
Combined element and outlet on left	XX*L				XX*L			
Combined element and outlet on right	XX*R				XX*R			
Bridged with next element with outlets on left	XX*L1 or XXL1				/			
Bridged with next element without outlets on left	XX*L0 or XXL0				/			
Bridged with next element with outlets on right	XX*R1 or XXR1				/			
Bridged with next element without outlets on right	XX*R0 or XXR0				/			

Customized code	
Standard version	000
Customized version	xxx



Dia. 30.1 Divider JPQ1_FKM - 5/6 - 100 - 16* - 8L0 - 8*- 24* - 24