Modular feeder

# PSG product series

For oil and grease
For use in SKF ProFlex progressive and SKF CircOil circulating centralized lubrication systems

PSG1 PSG2 PSG3

Fields of application

- Metal-forming machinery (presses)
- Tunnel boring machinery
- Paper machinery
- General mechanical engineering applications

Advantages

- Easy to service thanks to outlets located in the baseplate; tubes do not need to be removed during repair work; between 1 and 20 outlets
- Flexible due to replaceable metering sections
- Expandable by attaching flow limiters, flow controllers, gear-type flow indicators, and directional solenoid valves.Efficient due to low pressure loss
- Can be monitored using piston detectors or visual cycle indicators
- Adjustable by consolidating outlets internally and externally
- 3 sizes for ranges up to 0.8, 2.5, and 6 l/min
- Increased functional reliability due to check valve installed standard (PSG2 and PSG3)
- Increased metering accuracy due to placement of integrated check valves immediately following metering piston (PSG2 and PSG3)
- Increased corrosion resistance due to special design with anodized baseplate and chemically nickel-plated sections (basic design PSG2 and PSG3)

# PSG product series

## Excerpt from product overview

### PSG1

Basic design

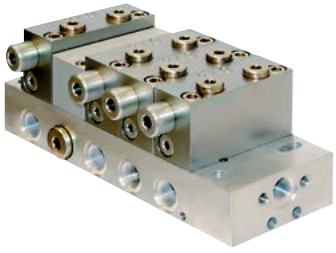
Piston detector

Visual cycle indicator

Visual cycle indicator with housing
(for attaching a sensor provided by customer)

### PSG2

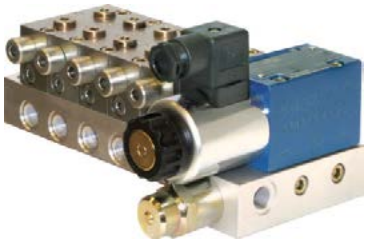
Basic design



Piston detector

Proximity switch

Directional solenoid valve



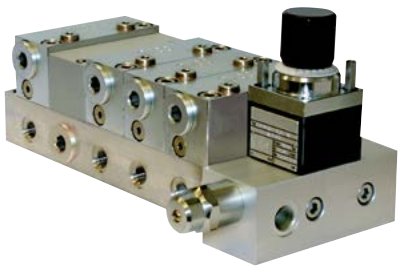
### PSG3

Basic design

Piston detector

Gear-type flow indicator

Flow controller



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# PSG product series

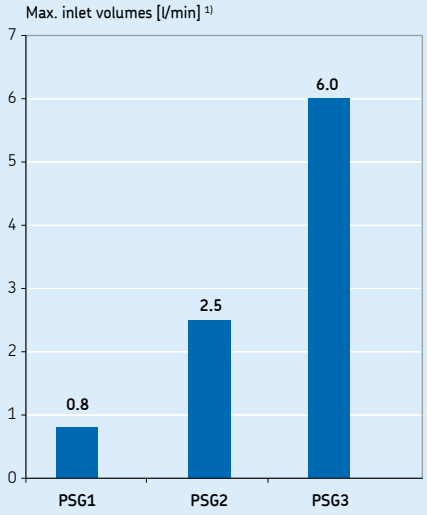
## Product overview

Product selection

| Product series | Lubricant Oil | Lubricant Grease | Max. inlet volume flow[1)2)] [l/min] | Monitoring: Piston detector | Monitoring: Cycle indicator optical | Monitoring: Cycle indicator with housing | Monitoring: Proximity switch | Supported attachments: Flow controller | Supported attachments: Flow limiter | Supported attachments: Gear-type type flow indicator | Supported attachments: Directional solenoid valve 4/2 | Supported attachments: Directional solenoid valve 2/2 | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PSG1 | • | • | 0.8 | • | • | • | • | – | – | – | – | – | 6-8 |
| PSG2 | • | • | 2.5 | • | • | • | • | • | • | • | • | • | 9-15 |
| PSG3 | • | • | 6.0 | • | • | • | • | • | • | • | • | – | 16-22 |
| PSG2 [3)] (corrosion-resistant) | • | • | 2.5 | • | – | – | – | – | – | – | – | – | – |
| PSG3 [3)] (corrosion-resistant) | • | • | 6.0 | • | – | – | – | – | – | – | – | – | – |

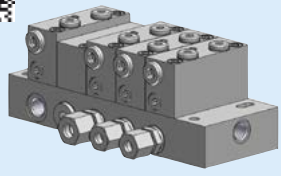
[1)] Depending on the number and size of metering pistons.
[2)] Other inlet volumes available on request.
[3)] Corrosion-resistant design available on request.

Overview of inlet volumes




[1)] On feeder configuration with largest piston capacity

**Important information on product usage**
SKF and Lincoln lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.



CAD models for the products shown in this brochure can be downloaded at:
skf-lubrication.partcommunity.com

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# PSG product series

## Product description

### General

SKF modular feeders of product series PSG (progressive feeders) can be used for an inlet volumetric flow of up to 0.8, 2.5, or 6.0 l/min depending on the design. The inlet and all outlets of the feeder are located in the common baseplate. The metering sections are attached to the baseplate and can be replaced without loosening the tubing.

The volumetric flow fed via **one** tube is forcibly distributed in a predetermined ratio to the outlets, i.e., to the lubrication points or downstream progressive feeders. Pistons aligned in series meter the lubricant for two opposite outlets each and control the function of the neighboring piston. This way, the function of the modular feeder can be checked by monitoring **any** piston (with a cycle indicator or piston detector) or the inlet volumetric flow (with gear-type flow indicator, only for PSG2 or PSG3) can be monitored.

The check valves that are installed standard (only on PSG2 and PSG3) offer high functional reliability at high or differing back pressures. They provide accurate metering and safe blocking behavior even for internal and external combinations.

#### Operation († Figure 1)

Observation of the movements begin the moment that all three pistons (A, B, C) on the left end stop show that the lubricant and operating pressures reach from the inlet through the through-duct in the middle to the pistons C-right, B-right and A-left; that is, while pistons C and B retain their positions, the A piston is pushed right. The lubricant volume specified by the piston diameter and stroke is pressed into a duct on the end (**outlet 4**) the same quantity exits. This stroke movement of piston A opens or closes multiple control ducts. Control duct 2, through which the lubricant reaches piston B-left and shifts it right, is now open. The corresponding metering volume is pressed into the outlet duct and exits at **outlet 2**. The stroke movement of piston B has now closed or opened control ducts. Control duct 3 is now open. The lubricant pressure moves piston C to the right, pushing the corresponding metering volume into the duct to **outlet 3**. This movement of piston C opens, among others, the reversing duct that reconnects the through-duct with piston A-right. Analogous to the piston movement just described, pistons A, B and C now move consecutively back to the left.

#### Consolidation of outlets († Figure 2)

The volumetric flow of an outlet can be doubled by internal consolidation of two opposite outlets. To do this, the setscrew G in the baseplate (the right outlet as seen from the feeder inlet) must be unscrewed. The outlet in the baseplate that is no longer needed is to be closed using a washer D and a screw plug V.

Adjacent outlets can be consolidated using external bridges (crossporting). A bridge can consolidate up to three outlets on the PSG1 and up to four outlets on the PSG2 and PSG3. Bridges are available with or without an outlet and with or without a check valve.

For PSG1 modular feeders, we recommend outlet screw unions with a check valve.

### Dummy section

Dummy and functional sections can be varied as desired within the frame size. A minimum of three functional sections are required per feeder. If dummy sections are installed, two lubricant outlets each must be closed in the baseplate (under the dummy section). Increased pressure loss must be expected if two dummy sections are installed side-by-side or if dummy sections are used as the start or end section.

#### Information on the design

The general criteria for the design of progressive feeders also apply without restrictions to the modular feeders. The stroke rate is the most important criterion. It should be kept as low as possible by selecting high-volume sections (guideline value for feeder stroke rate ≤ 200 rpm). This also reduces pressure losses and noise levels. In case of an installation on moving machine parts or in case of strong vibrations (e.g., on pressing machines), the piston position of the feeder **must not** match the direction of movement of the machine part.

A metering element with a larger stroke than the inlet element should preferably be selected to provide reliable and fast self-venting.

Figure 1

Section view of PSG

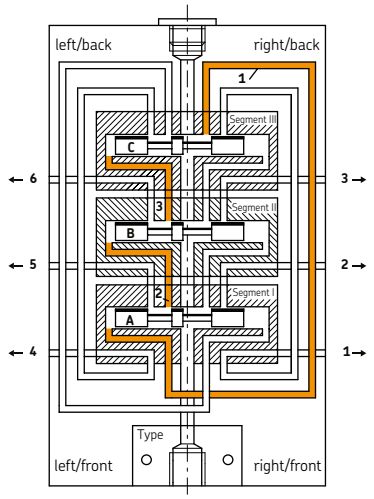
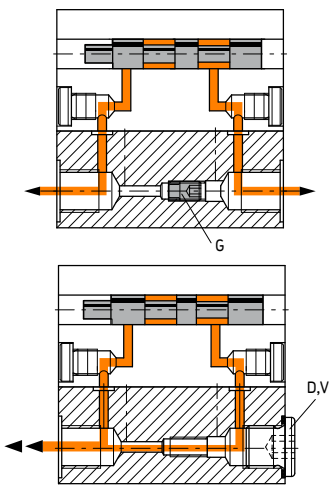



Figure 2

Consolidation of outlets

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# PSG product series

## Monitoring and attachments

### Monitoring

All standard sections can be monitored directly or retrofitted with a piston detector. However, if the piston movement will be monitored by a cycle indicator (visual stroke monitoring) or a proximity switch, the appropriate sections must be used.

### Attachments

The modular structure of the modular feeders is particularly apparent in the range of available attachments. Depending on frame size, it can be equipped with the following upstream equipment:

- Flow limiter
- Flow controller
- 4/2-directional solenoid valve
- 2/2-directional solenoid valve

If the inlet volumetric flow is to be monitored both visually and electrically, an upstream gear-type flow indicator can be employed.

**Note**
This page shows possible designs of the modular feeder.
See pages 28–29 for the feeder configuration.

The modular feeders can also be configured using Cadenas.

PSG Basic Design

Monitoring via cycle indicator (visual only)

Monitoring via piston detector

Monitoring via cycle indicator and proximity switch

4/2-directional solenoid valve

Monitoring via gear-type flow indicator

2/2-directional solenoid valve

Flow controller

Flow limiter

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# PSG1 Modular Feeder

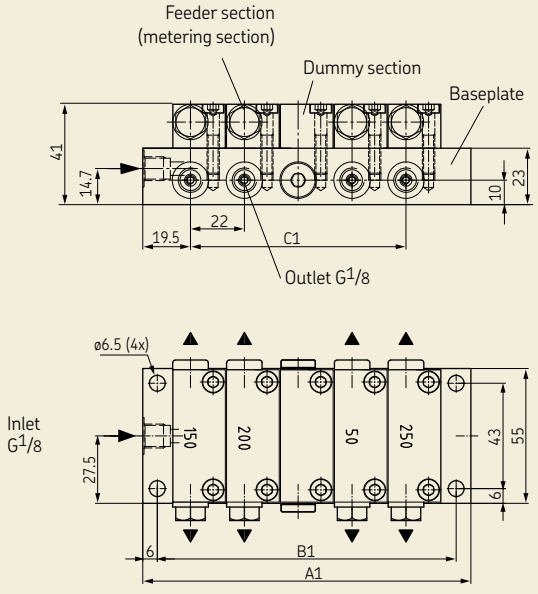
## Basic design for oil and grease

**Technical Data**

| | |
|---|---|
| Type | Hydraulically controlled |
| Mounting position | Any[1)] |
| Ambient temperature range | -15 to +110°C |
| Baseplate with | 6, 8, 10, 12, 14, 16, 18, 20 outlets |
| Tightening torque feeder section | 6 Nm |
| **Material** | |
| Baseplate | Aluminum alloy |
| Sections | Free-cutting steel, galvanized |
| Seals | FKM (FPM) |
| **Hydraulic system** | |
| Operating pressure, max. | 200 bar[2)] |
| Inlet volumetric flow | Up to 0.8 l/min [6)] |
| Volume per outlet and cycle[3)] | 50, 100, 150, 200, 250 mm$^3$ |
| Division ratio | 1:1 to 1:10[4)] |
| Pressure loss with oil | 5 to 15 bar[5)] |
| Lubricant | Mineral oils, greases based on mineral oil, environmentally friendly and synthetic oils and greases |
| Operating viscosity | > 12 mm$^2$/s |
| Worked penetration | ≥ 265 x 0.1 mm (up to NLGI Grade 2) |

1) In case of installation on moving machine parts or in case of strong vibrations (e.g., on pressing machines), the piston position of the feeder must not match the direction of movement of the machine part; instead, it must be at a 90° angle to the force of the machine.
2) The maximum operating pressure on designs with monitoring or upstream attachments may be lower; see the Technical Data for monitoring and attachments.
3) When designing the feeder, also ensure that the max. piston stroke rate of 200/min is not exceeded.
4) Larger division ratios are possible when outlets are consolidated.
5) Depending on volume index, viscosity, and volumetric flow.
6) Grease available on request.

PSG1 modular feeder, basic design




**Dimensions**

| | Number of sections | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A1 [mm] | 90 | 112 | 134 | 156 | 178 | 200 | 222 | 244 |
| B1 [mm] | 78 | 100 | 122 | 144 | 166 | 188 | 210 | 232 |
| C1 [mm] | 44 | 66 | 88 | 110 | 132 | 154 | 176 | 198 |
| Complete weight [kg] | 0.77 | 1.00 | 1.23 | 1.46 | 1.69 | 1.92 | 2.15 | 2.39 |

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# PSG1 Modular Feeder

## Monitoring via piston detector, 3-pin, M12x1 plug and cycle indicator for oil and grease

With piston detector, 3-pin

With cycle indicator

Technical Data

Basic design † see Technical Data, page 6

**Piston detector, electrical 1)**

| | |
|---|---|
| Ambient temperature range | –15 to +80°C |
| Operating pressure, max. | 200 bar |
| Weight | 0.12 kg |
| Design | 4-point LED |
| Rated voltage | 10 to 36 V DC |
| Residual ripple | ≤10% |
| Max. load current | 100 mA |
| Protection class | IP67 |
| Outlet function | PNP contact |

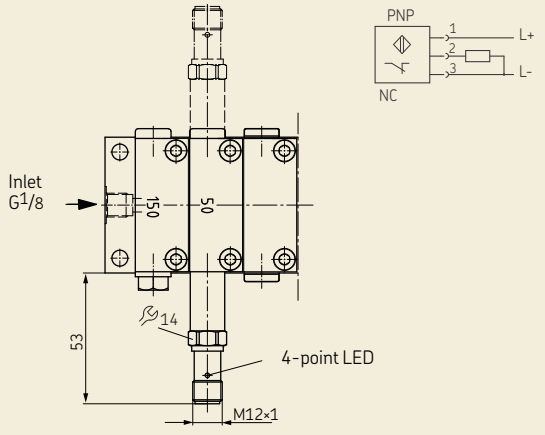
**Cycle indicator, visual 2)**

| | |
|---|---|
| Ambient temperature range | -15 to +75°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.05 kg |

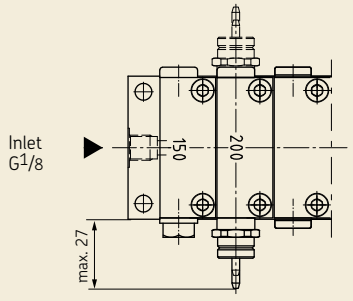
1) The piston detector is designed for a service life of approx. 10-15 million cycles. This value may be significantly exceeded depending on the application, external environmental influences, medium, pressure, and cycle speed. Please contact the manufacturer if in doubt.
2) Attach only to the 200 and 250 mm³ feeder sections (metering sections).

**Note**
Attach either to the left or right side of the feeder sections (metering section).
It is factory-mounted **on the right**.

PSG1 modular feeder with piston detector
For other dimensions, see "PSG1 Basic Design," **page 6**




PSG1 modular feeder with visual cycle indicator
For other dimensions, see "PSG1 Basic Design," **page 6**




**Note**
Electrical plug and socket connections to be ordered separately, † **page 29**.

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# PSG1 Modular Feeder

## Monitoring via proximity switch and visual cycle indicator with housing for oil and grease

With proximity switch

Visual cycle indicator with housing
(for attaching a sensor provided by customer)

Technical Data

Basic design † Technical Data, page 6

**Proximity switch M12×1, electrical**

| | |
|---|---|
| Ambient temperature range | –15 to +70°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.039 kg |
| Design | PNP with LED |
| Rated voltage | 10 to 30 V DC |
| Max. load current | 130 mA |
| Protection class | IP67 |
| Outlet function | NO-contact |

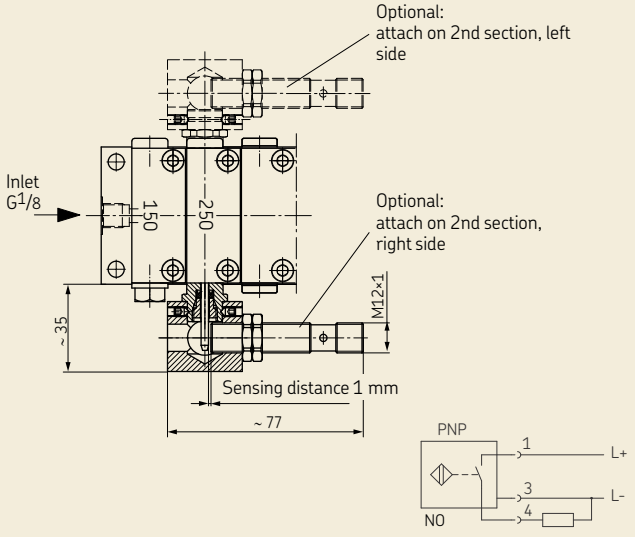
**Cycle indicator with housing** [1)2)]

| | |
|---|---|
| Ambient temperature range | -15 to +75°C |
| Operating pressure, max. | 150 bar[1)] |
| Weight | 0.062 kg |

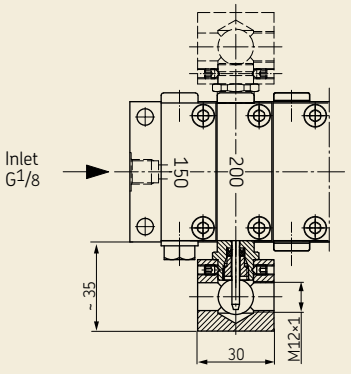
[1)] Attach only to the 200 and 250 mm³ feeder sections (metering sections).
[2)] Observe the temperature range of the sensor used!

**Note**
Attach either to the left or right side of the 200 and 250 mm³ feeder sections (metering sections). It is factory-mounted **on the right.**
Always attach from the second section to the second-to-last section.

PSG1 modular feeder with proximity switch
For other dimensions, see "PSG1 Basic Design," page 6




PSG1 modular feeder with visual cycle indicator with housing
For other dimensions, see "PSG1 Basic Design," page 6




**Note**
Electrical plug and socket connections to be ordered separately, † page 29.

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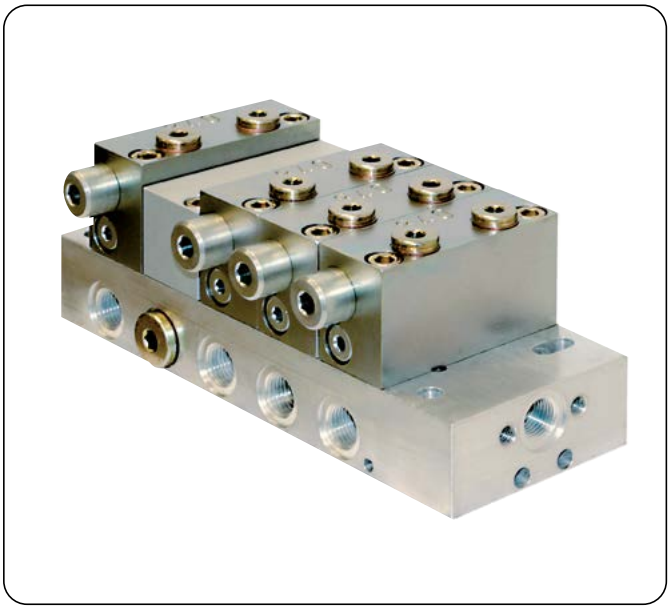
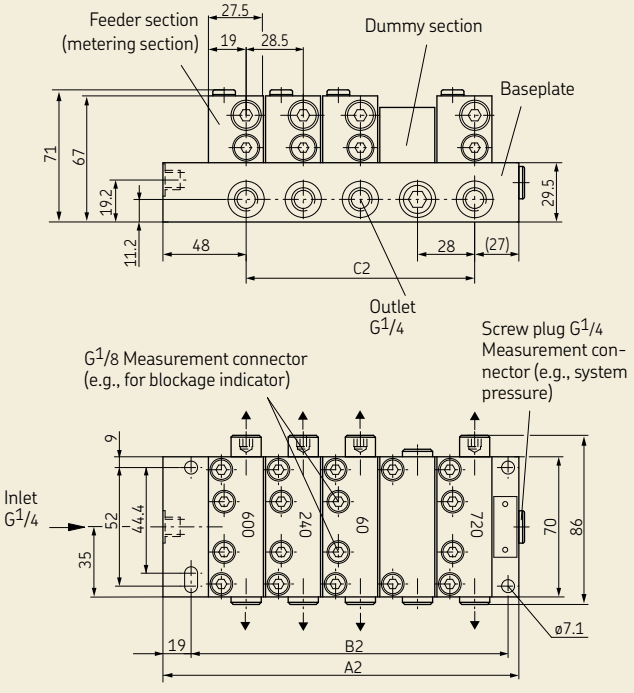
# PSG2 Modular Feeder

## Basic design for oil and grease



PSG2 modular feeder, basic design




### Technical Data

| | |
|---|---|
| Type | Hydraulically controlled |
| Mounting position | Any[1)] |
| Ambient temperature range | -15 to +110°C |
| Baseplate with | 6, 8, 10, 12, 14, 16, 18, 20 outlets |
| Tightening torque feeder section | 10 Nm |
| **Material** | |
| Baseplate | Aluminum alloy |
| Sections | Free-cutting steel, galvanized |
| Seals | FKM (FPM) |
| **Hydraulic system** | |
| Operating pressure, max. | 200 bar[2)] |
| Inlet volumetric flow | Up to 2.5 l/min [6)] |
| Volume per outlet and cycle[3)] | 60, 120, 240, 360, 480, 600, 720, 840 $mm^3$ |
| Division ratio | 1:1 to 1:28[4)] |
| Pressure loss with oil | 5 to 15 bar[5)] |
| Lubricant | Mineral oils, greases based on mineral oil, environmentally friendly and synthetic oils and greases |
| Operating viscosity | > 12 $mm^2/s$ |
| Worked penetration | ≥ 265 x 0.1 mm (up to NLGI Grade 2) |

1) In case of installation on moving machine parts or in case of strong vibrations (e.g., on pressing machines), the piston position of the feeder must not match the direction of movement of the machine part; instead, it must be at a 90° angle to the force of the machine.
2) The maximum operating pressure on designs with monitoring or upstream attachments may be lower; see the Technical Data for monitoring and attachments.
3) When designing the feeder, also ensure that the max. piston stroke rate of 200/min is not exceeded.
4) Larger division ratios are possible when outlets are consolidated.
5) Depending on volume index, viscosity, and volumetric flow.
6) Grease available on request.

### Dimensions

| | Number of sections | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A2 [mm] | 131 | 159 | 187 | 215 | 243 | 271 | 299 | 327 |
| B2 [mm] | 103 | 131 | 159 | 187 | 215 | 243 | 271 | 299 |
| C2 [mm] | 56 | 84 | 112 | 140 | 168 | 196 | 224 | 252 |
| Complete weight [kg] | 2.24 | 2.85 | 3.49 | 4.10 | 4.78 | 5.42 | 6.06 | 6.73 |

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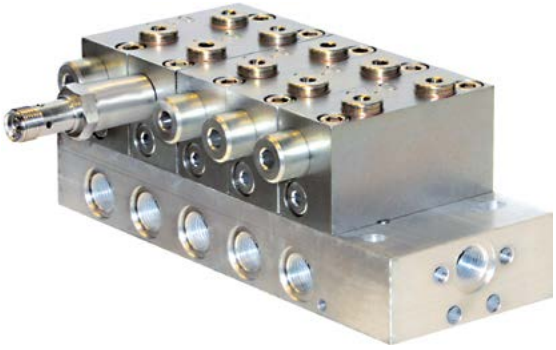
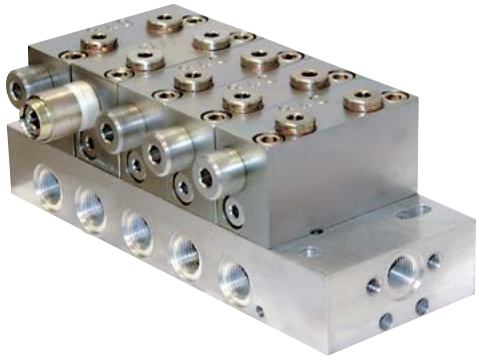
# PSG2 Modular Feeder

## Monitoring via piston detector, 3-pin, M12x1 plug and cycle indicator for oil and grease

With piston detector



With cycle indicator



Technical Data

Basic design † Technical Data, page 9

**Piston detector, electrical 1)**

| | |
|---|---|
| Ambient temperature range | –15 to +80°C |
| Operating pressure, max. | 200 bar |
| Weight | 0.12 kg |
| Design | 4-point LED |
| Rated voltage | 10 to 36 V DC |
| Residual ripple | ≤10% |
| Max. load current | 100 mA |
| Protection class | IP67 |
| Outlet function | PNP contact |

**Cycle indicator, visual 2)**

| | |
|---|---|
| Ambient temperature range | -15 to +90°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.05 kg |

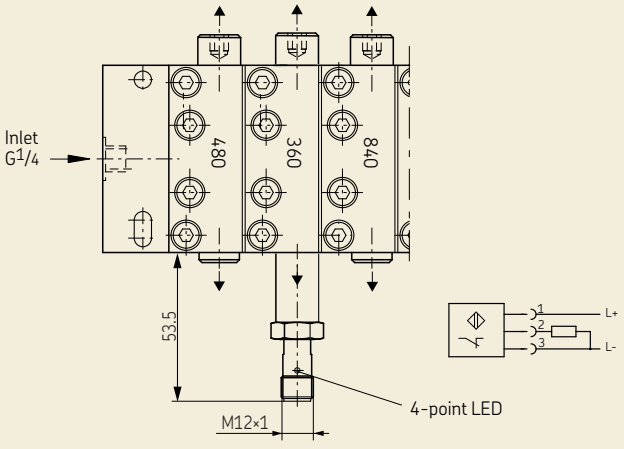
1) The piston detector is designed for a service life of approx. 10-15 million cycles. This value may be significantly exceeded depending on the application, external environmental influences, medium, pressure, and cycle speed. Please contact the manufacturer if in doubt.

2) The 60 mm³ metering section cannot be equipped with visual monitoring.

**Note**
Attach either to the left or right side of the feeder sections (metering sections).
It is factory-mounted **on the right**.

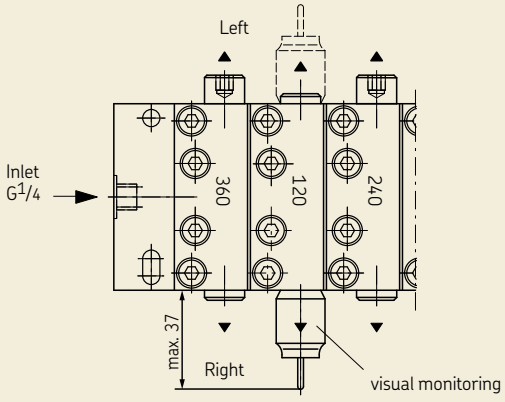
PSG2 modular feeder with piston detector

For other dimensions, see "PSG2 Basic Design," **page 9**




PSG2 modular feeder with cycle indicator

For other dimensions, see "PSG2 Basic Design," **page 9**




**Note**
Electrical plug and socket connections to be ordered separately, † page 29.

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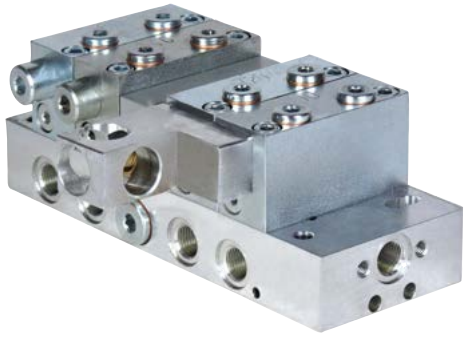
# PSG2 Modular Feeder

## Monitoring via proximity switch and via cycle indicator with housing for oil and grease

With proximity switch



Visual cycle indicator with housing
(for attaching a sensor provided by customer)

Technical Data

Basic design † Technical Data, page 9

**Proximity switch M18×1, electrical**

| | |
|---|---|
| Ambient temperature range | -15 to +70°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.093 kg |
| Design | PNP with LED |
| Rated voltage | 10 to 30 V DC |
| Max. load current | 130 mA |
| Protection class | IP67 |
| Outlet function | NO-contact |

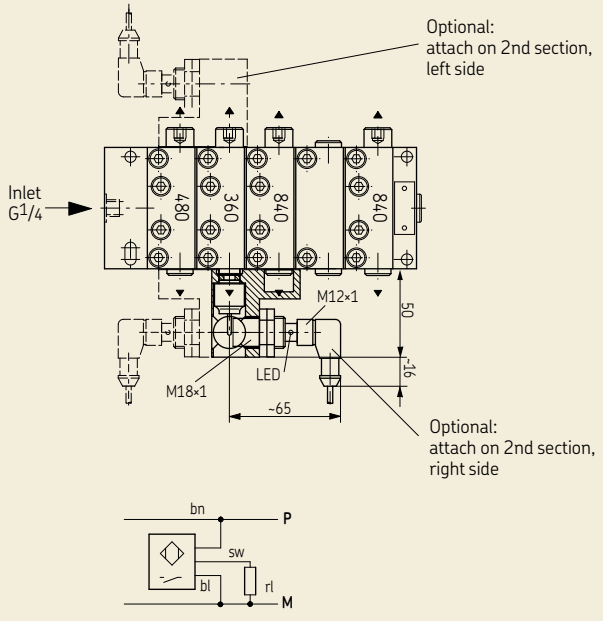
**Cycle indicator with housing** [1)]

| | |
|---|---|
| Ambient temperature range | -15 to +90°C |
| Operating pressure, max. | 150 bar[1)] |
| Weight | 0.062 kg |

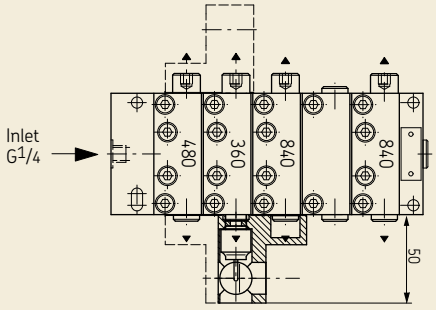
[1)] Observe the temperature range of the sensor used!

**Note**
Attach either to the left or right side of the feeder sections (metering sections).
It is factory-mounted **on the right.**
Always attach from the second section to the second-to-last section.

PSG2 modular feeder with proximity switch
For other dimensions, see "PSG2 Basic Design," **page 9**




PSG2 modular feeder with cycle indicator with housing
For other dimensions, see "PSG2 Basic Design," **page 9**




**Note**
Electrical plug and socket connections to be ordered separately, † page 29.

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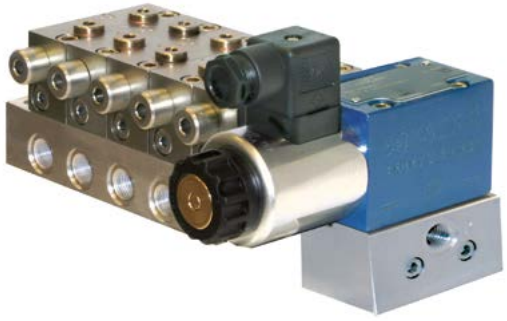
# PSG2 Modular Feeder

## with solenoid valve for oil (4/2-directional) or oil and grease (2/2-directional)

With 2/2-directional solenoid valve for oil and grease

With 4/2-directional solenoid valve for oil



Technical Data

Basic design † Technical Data, page 9

**4/2-directional solenoid valve**

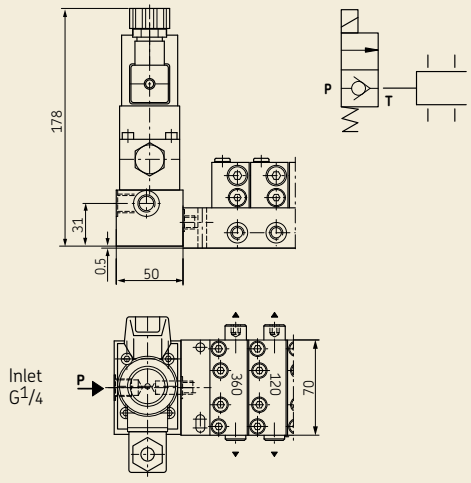
| | |
|---|---|
| Ambient temperature range | -15 to +75°C |
| Operating pressure, max. | 150 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Weight with housing | 1.6 kg |
| Electrical design | NG6 |
| Connection dimensions | DIN 24340 |
| System voltage | 24 V DC |
| Designs | Continuity to feeder normally closed (NC) or open (NO) |

**2/2-directional solenoid valve**

| | |
|---|---|
| Ambient temperature range | -15 to +75°C |
| Operating pressure, max. | 200 bar |
| Lubricant | Greases and oils based on mineral oil as well as environmentally friendly and synthetic oils and greases |
| Weight with housing | 1.94 kg |
| Electrical design | NG6 |
| Connection dimensions | DIN 24340 |
| System voltage | 24 V DC |
| Designs | Continuity to feeder normally closed |

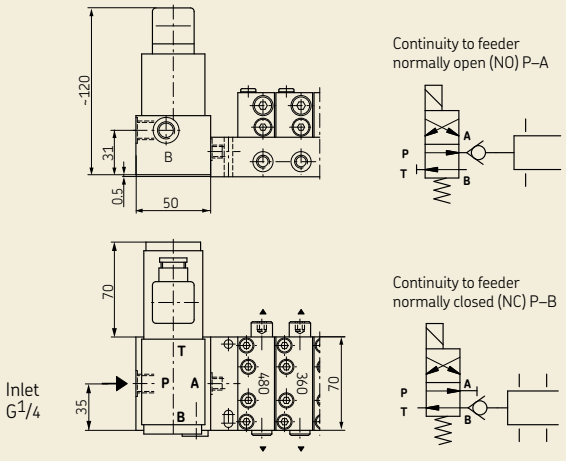
PSG2 modular feeder with 2/2-directional solenoid valve

For other dimensions, see "PSG2 Basic Design," page 9




PSG2 modular feeder with 4/2-directional solenoid valve

For other dimensions, see "PSG2 Basic Design," page 9

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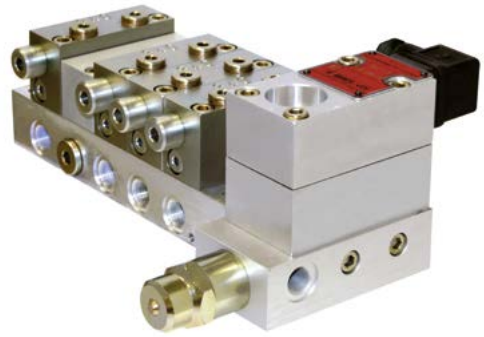
# PSG2 Modular Feeder

## with gear-type flow indicator and interchangeable strainer for oil



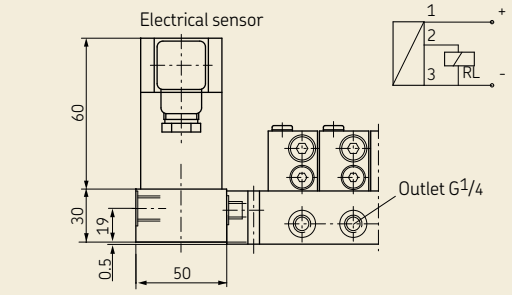
Technical Data

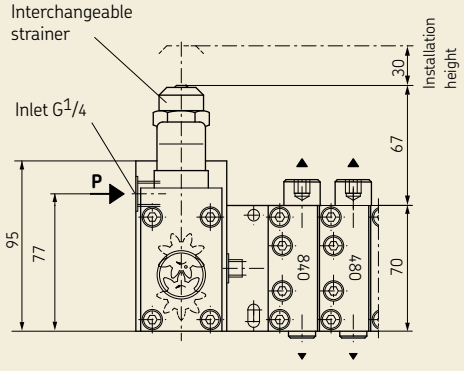
For basic design, see Technical Data, page 9

**Gear-type flow indicator**

| | |
|---|---|
| Ambient temperature range | -15 to +70°C |
| Operating pressure, max. | 85 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Operating viscosity | 20 to 1000 $mm^2/s$ |
| Filter rating / interchangeable strainer | 0.3 mm |
| Weight | 0.9 kg |
| Design of electrical sensor | Hall sensor (PNP technology) |
| Rated voltage | 24 V DC |
| Residual ripple | ≤10% |
| Protection class | IP65 |
| Proportionality factor | 4.6 $cm^3$/pulse |

PSG2 modular feeder with gear-type flow indicator
For other dimensions, see "PSG2 Basic Design," page 9




Specific volume 4.6 $cm^3$/R

**Note**
Electrical plug and socket connections to be ordered separately, † page 29.

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# PSG2 Modular Feeder

## with flow controller for oil

Technical Data

Basic design † Technical Data, page 9

**Flow controller**

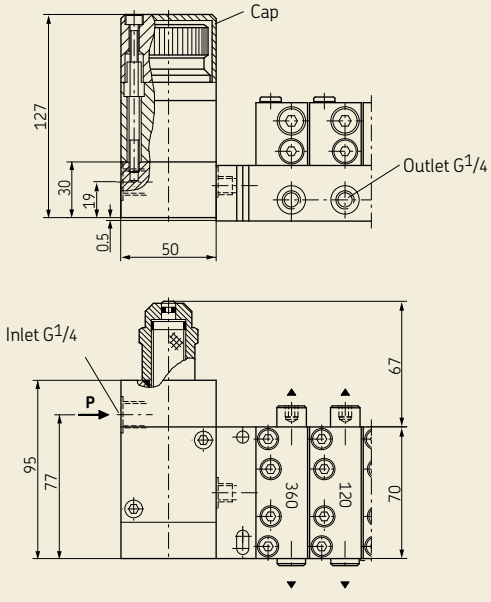
| | |
|---|---|
| Type | 2-directional flow control valve |
| Ambient temperature range | -15 to +75°C |
| Adjustment range | 0.1 to 2.5 l/min |
| Weight | 1.4 kg |
| Flow controller designs | Up to 0.6 l/min<br>Up to 1.6 l/min<br>Up to 2.5 l/min |

**Hydraulic system**

| | |
|---|---|
| Operating pressure, max. | 200 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Filter rating / interchangeable strainer | 0.3 mm |
| Operating viscosity | 12 to 350 mm²/s |
| Filter rating / interchangeable strainer | 0.3 mm |
| Scale graduation | 1-10 |

PSG2 modular feeder with flow controller

For other dimensions, see "PSG2 Basic Design," page 9

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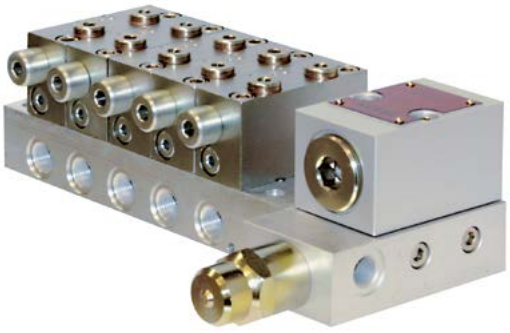
# PSG2 Modular Feeder

## with SP/SMB8 flow limiter for oil



Technical Data

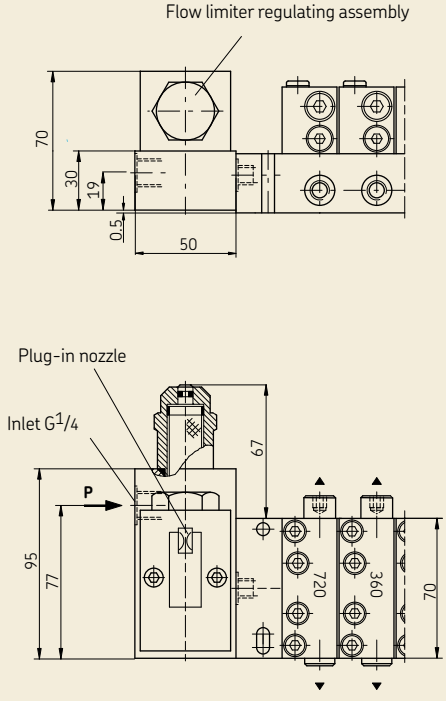
Basic design † Technical Data, page 9

Flow limiter SP/SMB8

| | |
|---|---|
| Type | 2-directional flow control valve |
| Ambient temperature range | -15 to +100°C |
| Operating pressure, max. | 200 bar |
| Inlet volumetric flow | 0,1 to 2,5 l/min |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Operating viscosity | 20 to 600 mm²/s |
| Filter rating / interchangeable strainer | 0.3 mm |
| Weight | 0.41 kg |

PSG2 modular feeder with flow limiter

For other dimensions, see "PSG2 Basic Design," page 9




Plug-in nozzles for flow limiter

| Nominal volumetric flow up to 1.56 l/min [1] | | | Nominal volumetric flow from 1.67 l/min | | |
|---|---|---|---|---|---|
| Nominal volume [l/min] | Nozzle ø [mm] | Code | Nominal volume [l/min] | Nozzle ø [mm] | Code |
| 0.08 | 0.5 | A | 1.67 | 1.5 | A |
| 0.12 | 0.55 | B | 1.79 | 1.55 | B |
| 0.15 | 0.6 | C | 1.92 | 1.6 | C |
| 0.21 | 0.65 | D | 2.07 | 1.65 | D |
| 0.25 | 0.7 | E | 2.21 | 1.7 | E |
| 0.29 | 0.75 | F | 2.36 | 1.75 | F |
| 0.35 | 0.8 | G | 2.52 | 1.8 | G |
| 0.41 | 0.85 | H | | | |
| 0.47 | 0.9 | J | | | |
| 0.56 | 0.95 | K | | | |
| 0.65 | 1 | L | | | |
| 0.73 | 1.05 | M | | | |
| 0.79 | 1.1 | N | | | |
| 0.88 | 1.15 | P | | | |
| 0.98 | 1.2 | Q | | | |
| 1.09 | 1.25 | R | | | |
| 1.18 | 1.3 | S | | | |
| 1.30 | 1.35 | T | | | |
| 1.43 | 1.4 | U | | | |
| 1.56 | 1.45 | V | | | |

[1] The values in the table are based on a differential pressure of 20 bar and viscosity of 300 mm²/s. Other differential pressures or viscosities result in slightly different delivery rates. These can be determined precisely using the charts for delivery rates and correction factors for the pressure (→ brochure 1-3028-EN).

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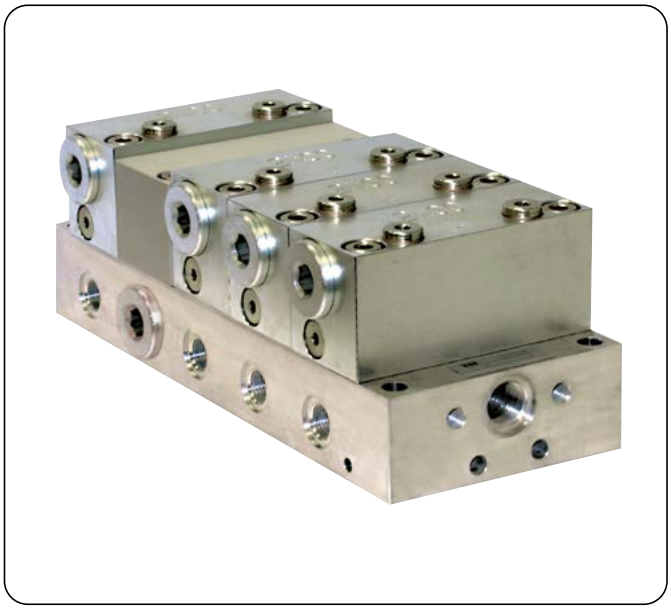
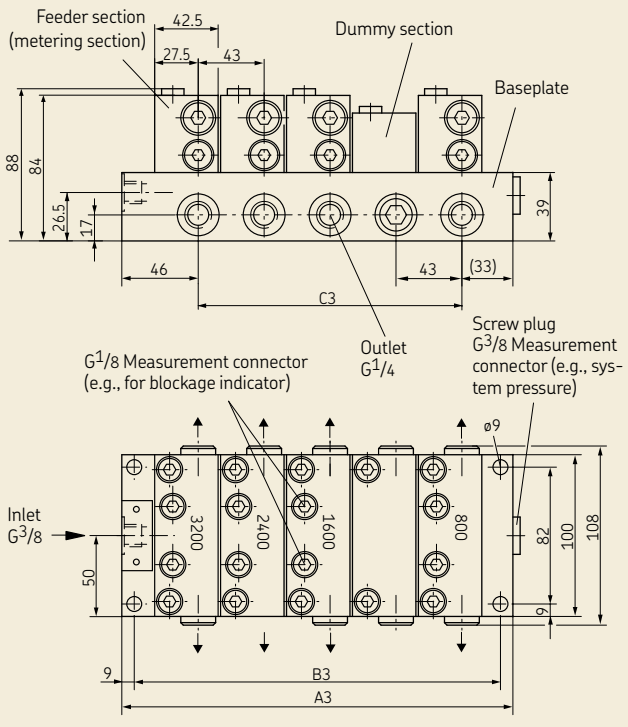
# PSG3 Modular Feeder

## Basic design for oil and grease



PSG3 modular feeder, basic design




### Technical Data

| | |
|---|---|
| Type | Hydraulically controlled |
| Mounting position | Any[1)] |
| Ambient temperature range | -15 to +110°C |
| Baseplate with | 6, 8, 10, 12, 14, 16, 18, 20 outlets |
| Tightening torque feeder section | 23 Nm |

**Material**

| | |
|---|---|
| Baseplate | Aluminum alloy |
| Sections | Steel, galvanized |
| Seals | FKM (FPM) |

**Hydraulic system**

| | |
|---|---|
| Operating pressure, max. | 200 bar[2)] |
| Inlet volumetric flow | Up to 6 l/min [6)] |
| Volume per outlet and cycle[3)] | 800, 1200, 1600, 2400, 3200 $mm^3$ |
| Piston stroke rate | max. 200/min |
| Division ratio | 1:1 to 1:8[4)] |
| Pressure loss with oil | 5 to 15 bar[5)] |
| Lubricant | Mineral oils, greases based on mineral oil, environmentally friendly and synthetic oils and greases |
| Operating viscosity | > 12 $mm^2/s$ |
| Worked penetration | ≥ 265 x 0.1 mm (up to NLGI Grade 2) |

[1)] In case of installation on moving machine parts or in case of strong vibrations (e.g., on pressing machines), the piston position of the feeder must not match the direction of movement of the machine part; instead, it must be at a 90° angle to the force of the machine.

[2)] The maximum operating pressure on designs with monitoring or upstream attachments may be lower; see the Technical Data for monitoring and attachments.

[3)] When designing the feeder, also ensure that the max. piston stroke rate of 200/min is not exceeded.

[4)] Larger division ratios are possible when outlets are consolidated.

[5)] Depending on volume index, viscosity, and volumetric flow.

[6)] Grease available on request.

### Dimensions

| | Number of sections | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A3 [mm] | 165 | 208 | 251 | 294 | 337 | 380 | 423 | 466 |
| B3 [mm] | 147 | 190 | 233 | 276 | 319 | 362 | 405 | 448 |
| C3 [mm] | 86 | 129 | 172 | 215 | 258 | 301 | 344 | 387 |
| Complete weight [kg] | 6.83 | 8.55 | 10.27 | 11.99 | 13.71 | 15.43 | 17.15 | 18.87 |

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# PSG3 Modular Feeder

## Monitoring via piston detector, 3-pin, M12x1 plug and cycle indicator for oil and grease

PSG3 with piston detector

PSG3 with cycle indicator

Technical Data

Basic design † Technical Data, page 16

**Piston detector, electrical 1)**

| | |
|---|---|
| Ambient temperature range | –15 to +80°C |
| Operating pressure, max. | 200 bar[2)] |
| Weight | 0.12 kg |
| Design | 4-point LED |
| Rated voltage | 10 to 36 V DC |
| Residual ripple | ≤10% |
| Max. load current | 100 mA |
| Protection class | IP67 |
| Outlet function | PNP contact |

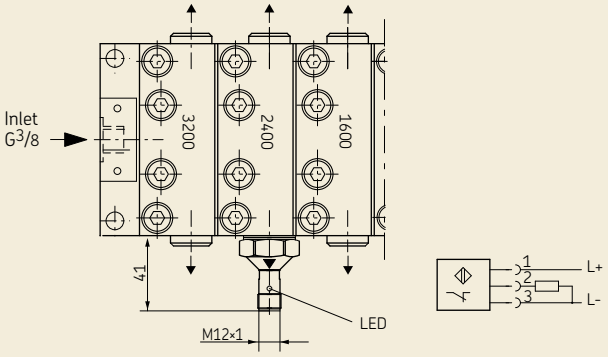
**Cycle indicator, visual**

| | |
|---|---|
| Ambient temperature range | -15 to +90°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.05 kg |

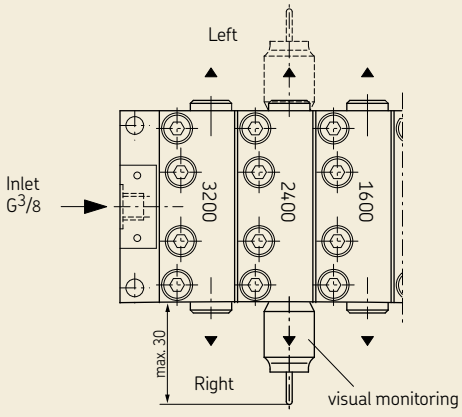
1) The piston detector is designed for a service life of approx. 10-15 million cycles. This value may be significantly exceeded depending on the application, external environmental influences, medium, pressure, and cycle speed. Please contact the manufacturer in case of doubt.

**Note**
Attach either to the left or right side of the feeder sections (metering sections).
It is factory-mounted **on the right**.

PSG3 modular feeder with piston detector
For other dimensions, see "PSG3 Basic Design," **page 16**




PSG3 modular feeder with cycle indicator
For other dimensions, see "PSG3 Basic Design," **page 16**




**Note**
Electrical plug and socket connections to be ordered separately, † page 29.

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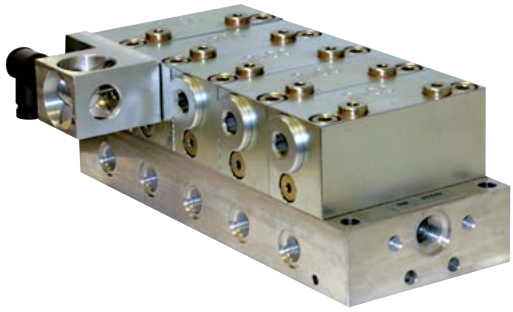
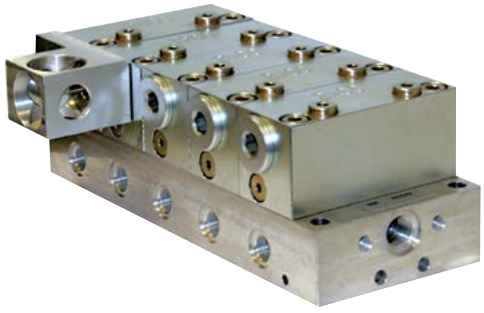
# PSG3 Modular Feeder

## Monitoring via proximity switch and via cycle indicator with housing for oil and grease

With proximity switch



Visual cycle indicator with housing
(for attaching a sensor provided by customer)



Technical Data

Basic design † Technical Data, page 16

**Proximity switch M18×1, electrical**

| | |
|---|---|
| Ambient temperature range | -15 to +70°C |
| Operating pressure, max. | 150 bar |
| Weight | 0.151 kg |
| Design | PNP with LED |
| Rated voltage | 10 to 30 V DC |
| Max. load current | 130 mA |
| Protection class | IP67 |
| Outlet function | NO-contact |

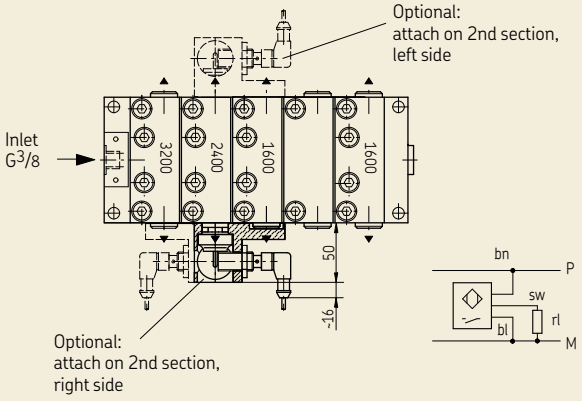
**Cycle indicator with housing** [1)]

| | |
|---|---|
| Ambient temperature range | -15 to +90°C |
| Operating pressure, max. | 150 bar[1)] |
| Weight | 0.062 kg |

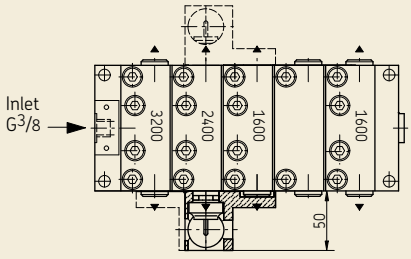
[1)] Observe the temperature range of the sensor used!

**Note**
Attach either to the left or right side of the feeder sections (metering sections).
It is factory-mounted **on the right**.
Always attach from the second to second-to-last section.

PSG3 modular feeder with proximity switch
For other dimensions, see "PSG3 Basic Design," **page 16**




PSG3 modular feeder with cycle indicator with housing
For other dimensions, see "PSG3 Basic Design," **page 16**

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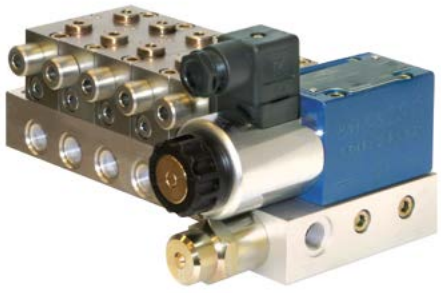
# PSG3 Modular Feeder

## with solenoid valve for oil (4/2-directional)

With 4/2-directional solenoid valve for oil



Technical Data

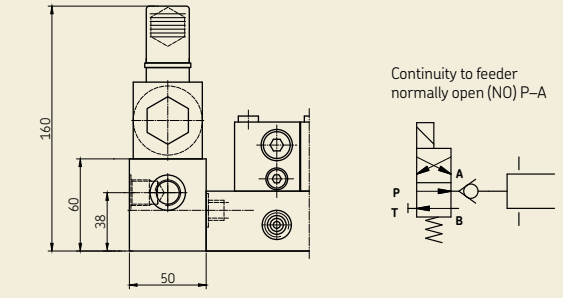
For basic design, see Technical Data, page 16

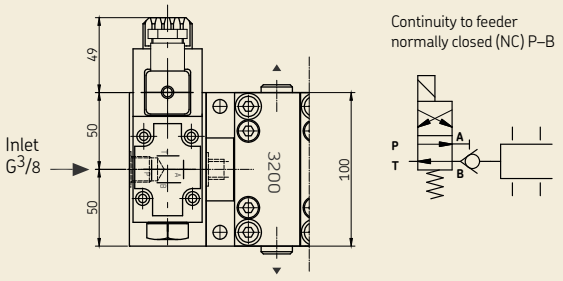
4/2-directional solenoid valve

| | |
|---|---|
| Ambient temperature range | -15 to +75°C |
| Operating pressure, max. | 150 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Weight with housing | 1.6 kg |
| Electrical design | NG6 |
| Connection dimensions | DIN 24340 |
| System voltage | 24 V DC |
| Designs | Continuity to feeder normally closed (NC) or open (NO) |

PSG3 modular feeder with 4/2-directional solenoid valve

For other dimensions, see "PSG3 Basic Design," page 16

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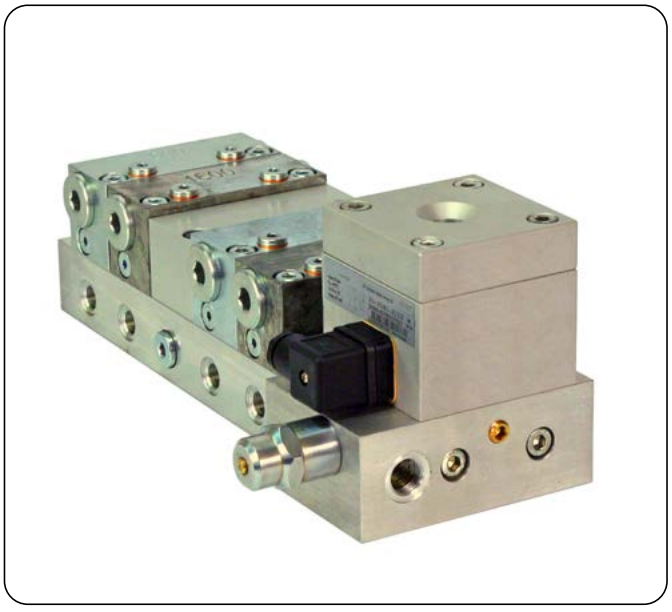
# PSG3 Modular Feeder

## with gear-type flow indicator and interchangeable strainer for oil



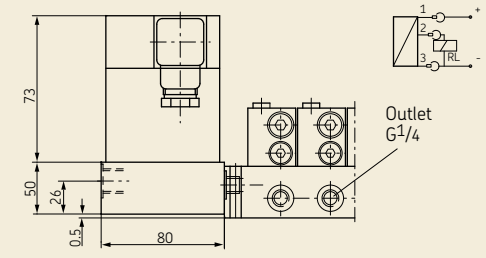
Technical Data

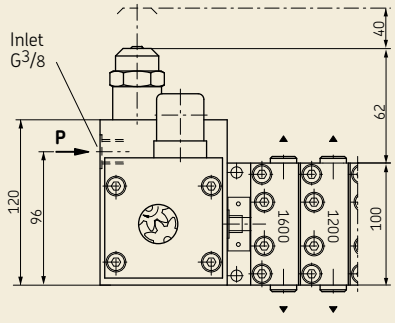
Basic design † Technical Data, page 16

**Gear-type flow indicator**

| | |
|---|---|
| Type | Gear-type flow indicator |
| Ambient temperature range | -15 to +70°C |
| Operating pressure, max. | 85 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Operating viscosity | 20 to 600 mm²/s |
| Filter rating / interchangeable strainer | 0.3 mm |
| Weight | 0.9 kg |
| Design of electrical sensor | Hall sensor (PNP technology) |
| Rated voltage | 24 V DC |
| Residual ripple | ≤10% |
| Protection class | IP65 |
| Proportionality factor | 4.6 cm³/pulse |

PSG3 modular feeder with gear-type flow indicator
For other dimensions, see "PSG3 Basic Design," page 16

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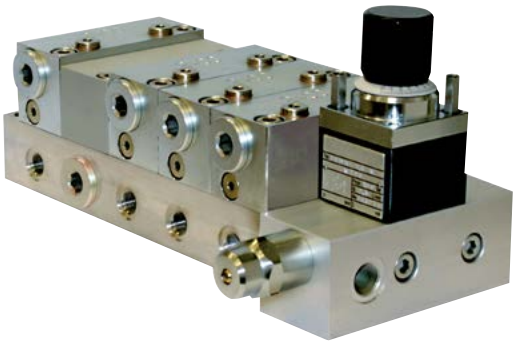
# PSG3 Modular Feeder

## with flow controller for oil



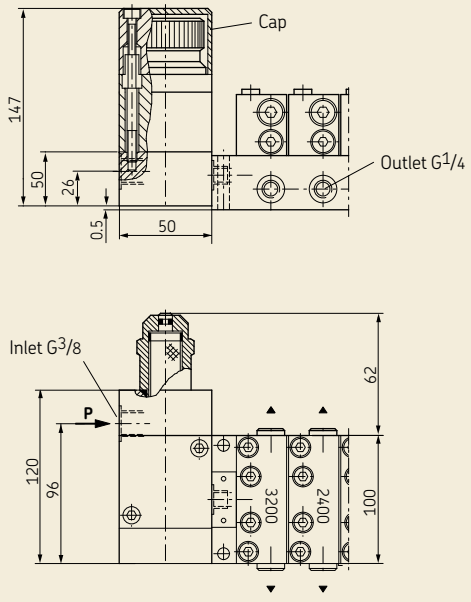
Technical Data

Basic design † Technical Data, page 16

| | |
|---|---|
| **Flow controller** | |
| Type | 2-directional flow control valve |
| Ambient temperature range | -15 to +75°C |
| Adjustment range | 0.6 to 6 l/min |
| Weight | 1.4 kg |
| Flow controller designs | Up to 0.6 l/min<br>Up to 1.6 l/min<br>Up to 2.5 l/min<br>Up to 4 l/min<br>Up to 6 l/min |
| **Hydraulic system** | |
| Operating pressure, max. | 200 bar |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Operating viscosity | 12 to 350 $mm^2/s$ |
| Filter rating / interchangeable strainer | 0.3 mm |
| Scale graduation | 1-10 |

PSG3 modular feeder with flow controller

For other dimensions, see "PSG3 Basic Design," page 16

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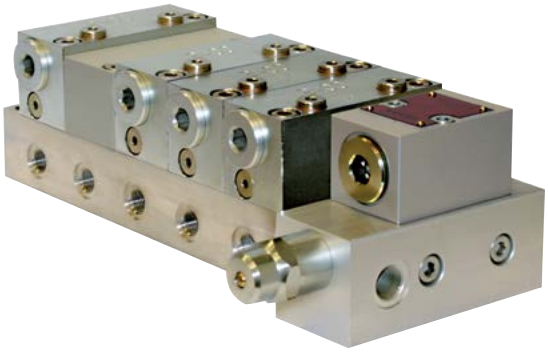
# PSG3 Modular Feeder

## with SP/SMB8 flow limiter for oil



Technical Data

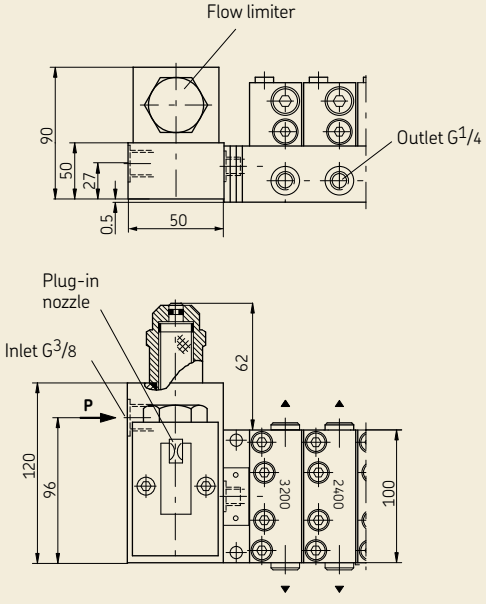
Basic design † Technical Data, page 16

Flow limiter SP/SMB8

| | |
|---|---|
| Type | 2-directional flow control valve |
| Ambient temperature range | -15 to +90°C |
| Operating pressure, max. | 200 bar |
| Inlet volumetric flow | 1,7 to 6 l/min |
| Lubricant | Mineral oils, environmentally friendly and synthetic oils |
| Operating viscosity | 20 to 600 mm²/s |
| Filter rating / interchangeable strainer | 0.3 mm |
| Weight | 0.863 kg |

PSG3 modular feeder with flow limiter

For other dimensions, see "PSG3 Basic Design," page 16




Plug-in nozzles for flow limiter

| Nominal volumetric flow up to 1.56 l/min [1] | | | Nominal volumetric flow from 1.67 l/min | | |
|---|---|---|---|---|---|
| Nominal volume [l/min] | Nozzle ø [mm] | Code | Nominal volume [l/min] | Nozzle ø [mm] | Code |
| 0.08 | 0.5 | A | 1.67 | 1.5 | A |
| 0.12 | 0.55 | B | 1.79 | 1.55 | B |
| 0.15 | 0.6 | C | 1.92 | 1.6 | C |
| 0.21 | 0.65 | D | 2.07 | 1.65 | D |
| 0.25 | 0.7 | E | 2.21 | 1.7 | E |
| 0.29 | 0.75 | F | 2.36 | 1.75 | F |
| 0.35 | 0.8 | G | 2.52 | 1.8 | G |
| 0.41 | 0.85 | H | 2.67 | 1.85 | H |
| 0.47 | 0.9 | J | 2.8 | 1.9 | J |
| 0.56 | 0.95 | K | 2.98 | 1.95 | K |
| 0.65 | 1 | L | 3.16 | 2 | L |
| 0.73 | 1.05 | M | 3.3 | 2.05 | M |
| 0.79 | 1.1 | N | 3.43 | 2.1 | N |
| 0.88 | 1.15 | P | 3.58 | 2.15 | P |
| 0.98 | 1.2 | Q | 3.79 | 2.2 | Q |
| 1.09 | 1.25 | R | 3.98 | 2.25 | R |
| 1.18 | 1.3 | S | 4.18 | 2.3 | S |
| 1.30 | 1.35 | T | 4.37 | 2.35 | T |
| 1.43 | 1.4 | U | 4.57 | 2.4 | U |
| 1.56 | 1.45 | V | 4.8 | 2.45 | V |
| | | | 5.77 | 2.7 | W |
| | | | 5.99 | 2.75 | Y |
| | | | 6.22 | 2.8 | Z |

[1] The values in the table are based on a differential pressure of 20 bar and viscosity of 300 mm²/s. Other differential pressures or viscosities result in slightly different delivery rates. These can be determined precisely using the charts for delivery rates and correction factors for the pressure (→ brochure 1-3028-EN).

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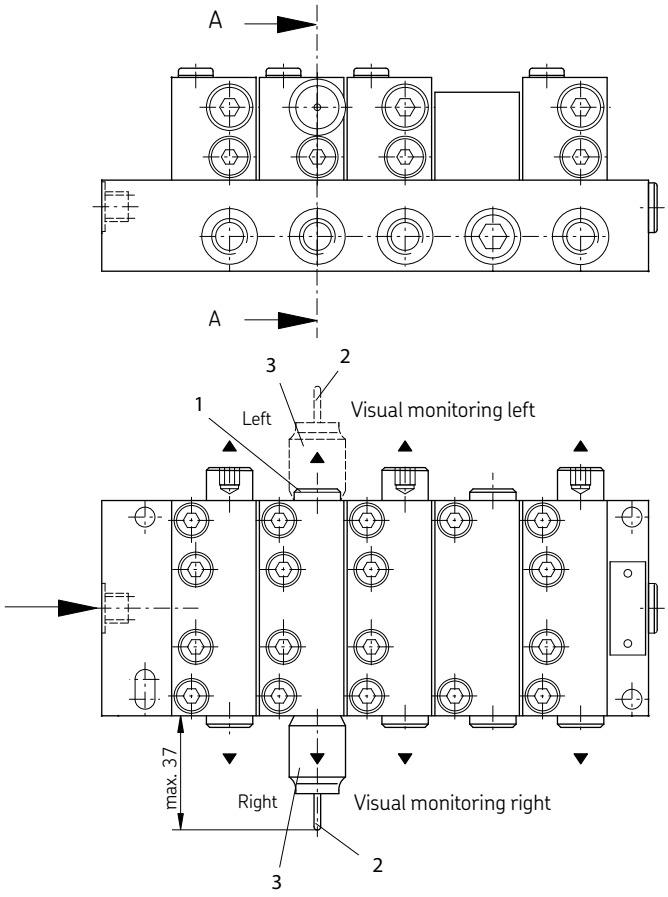
# PSG Modular Feeder

## Retrofitting instructions for cycle indicator

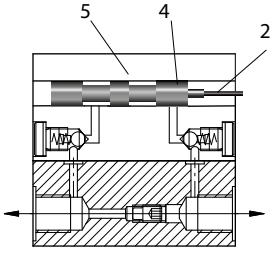
- Loosen and remove the screw plug (1) on the left
- Push the plunger rod (2) of visual stroke monitor (right) into plunger rod housing (3) using your finger.
- Carefully remove the piston (4) with plunger rod (2) from the left side of the section housing (5).
- Loosen and remove the plunger rod housing (hexagon socket screw WAF 4) (3) and install in left side.
- Do not bend during the subsequent installation of the piston (4) and plunger rod (2); do not shear O-rings!
- Turn the piston (4) with plunger rod (2) 180° and carefully install on the right side of section housing (5).
- Carefully insert the plunger rod (2) into the plunger rod housing (3).
- Install the screw plug (1) on the right side.

**Note**
Pressure must not be applied to the feeder section (metering section) during the retrofitting described here. The feeder section should therefore be retrofitted from a right plunger rod design to a left plunger rod design before mounting the feeder section on the baseplate.

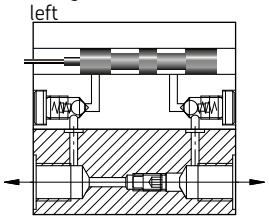
Cycle indicator retrofitting



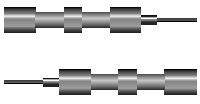

View A-A
plunger rod attached right




View A-A
Plunger rod attachment left



Piston position (4)
plunger rod (2) right



Piston position (4)
plunger rod (2) left

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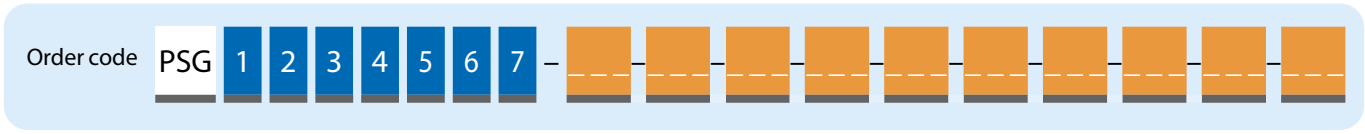
# Order Code

## Modular Feeders of Product Series PSG[1)]




Feeder information

Choice 8/9/10 : information on sections 1 to 10 as seen from inlet

## Order example: PSG23HFQDX–KCC–KSC–JHC–MMC–KDS († page 28)

### 1 Selection of frame size (please mark)

| | |
|---|---|
| PSG1<br>Inlet volumetric flow max. 0.8 l/min | 1 |
| PSG2<br>Inlet volumetric flow max. 2.5 l/min | 2 |
| PSG3<br>Inlet volumetric flow max. 6 l/min | 3 |

### 2 Selection of monitoring

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| none | X | X | X |
| Piston detector 3-pin, M12x1 plug | 3 | 3 | 3 |
| Cycle indicator, visual (plunger rod) [2)3)4)] | Y | Y | Y |
| Cycle indicator with bracket and proximity switch [2)3)4)] | S | S | S |
| Cycle indicator with bracket for proximity switch (without proximity switch) [2)3)4)] | G | G | G |

[2)] On frame size 1, only on 200 and 250 mm³ section sizes.
[3)] Not for frame size 2 with 60 mm³ section size.
[4)] Installation on first or last section is not recommended.

### 3 Selection of installation position for monitor [5)]

X without

| left-hand side | | right-hand side |
|---|---|---|
| U | 10 | V |
| S | 9 | T |
| Q | 8 | R |
| N | 7 | P |
| L | 6 | M |
| J | 5 | K |
| G | 4 | H |
| E | 3 | F |
| C | 2 | D |
| A | 1 | B |

Inlet

[5)] Installation on first or last section is not recommended.

### 4 Selection of attachments

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| none | X | X | X |
| Flow controller, 0.6 l/min | – | A | A |
| Flow controller, 1.6 l/min | – | B | B |
| Flow controller, 2.5 l/min | – | C | C |
| Flow controller, 4 l/min | – | – | D |
| Flow controller, 6 l/min | – | – | E |
| SP/SMB8 flow limiter with nominal volume up to 1.56 l/min | – | F | F |
| SP/SMB8 flow limiter with nominal volume from 1.67 l/min | – | G | G |
| 4/2-directional solenoid valve, continuity to feeder normally open P–A | – | H | H |
| 4/2-directional solenoid valve, continuity to feeder normally closed P–B | – | J | J |
| Gear-type flow indicator | – | K | K |
| 2/2-directional solenoid valve, normally closed | – | L | – |

### 5 Selection of plug-in nozzle for flow limiter

(Please enter the key for the corresponding nozzle; PSG2 † page 15, PSG3 † page 22.)

| | | |
|---|---|---|
| without X | | |
| PSG2 | Nozzle ø 0.5 to 1.45 mm at nominal volumetric flow up to 1.56 l/min | |
| | Nozzle ø 1.5 to 1.8 mm at nominal volumetric flow from 1.67 l/min | |
| PSG3 | Nozzle ø 0.5 to 1.45 mm at nominal volumetric flow up to 1.56 l/min | |
| | Nozzle ø 1.5 to 2.8 mm at nominal volumetric flow from 1.67 l/min | |

[1)] See also the note on Cadenas on page 3.

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## 6 Selection of baseplate inlet screw union [1]

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| none | X | X | X |
| Tube ø6 mm | A | A | – |
| Tube ø8 mm | B | B | B |
| Tube ø10 mm | C | C | C |
| Tube ø12 mm | – | D | D |
| Tube ø15 mm | – | – | E |
| Tube ø16 mm | – | – | F |

[1] Solderless pipe union with cutting sleeve per DIN 2353

## 7 Options

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| none | X | X | X |
| Feeder design with surface finishing (chem. nickel) | – | B | B |
| Blockage indicator only for design with gas thread | | | |
| Open at 50 bar | – | R | R |
| Open at 100 bar | – | S | S |
| Open at 150 bar | – | T | T |
| Open at 200 bar | – | U | U |

## 8 Selection of section sizes

Volume per outlet and cycle [mm³]

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| Dummy section | X | X | X |
| 50 [3] | A | – | – |
| 100 | B | – | – |
| 150 | C | – | – |
| 200 | D | – | – |
| 250 | E | – | – |
| 60 [3] | – | F | – |
| 120 | – | G | – |
| 240 | – | H | – |
| 360 | – | J | – |
| 480 | – | K | – |
| 600 | – | L | – |
| 720 | – | M | – |
| 840 | – | N | – |
| 800 [3] | – | – | P |
| 1200 | – | – | Q |
| 1600 | – | – | R |
| 2400 | – | – | S |
| 3200 | – | – | T |

Enter selected key here [2]

| | |
|---|---|
| | 10 |
| | 9 |
| | 8 |
| | 7 |
| | 6 |
| | 5 |
| | 4 |
| | 3 |
| | 2 |
| | 1 |

↑ Inlet

**Note that at least 3 active metering sections must be selected!**

[2] The volume per section is equal on both sides.

[3] If possible, do not place in first position when designing feeder.

## 9 10 Selection of outlet screw union for all outlet ports, check valves (CV)

| | PSG1 | PSG2 | PSG3 |
|---|---|---|---|
| No outlet port, screw plug (i.e., grub screw is removed) | S | S | S |
| Outlet port without screw unions | X | X | X |
| Outlet port with 6 mm outlet screw union [4], without CV | – | B | B |
| Outlet port with 8 mm outlet screw union [4], without CV | – | C | C |
| Outlet port with 10 mm outlet screw union [4], without CV | – | D | D |
| Outlet port with 12 mm outlet screw union [4], without CV | – | E | E |
| Outlet port with 4 mm outlet screw union [4], with CV | F | – | – |
| Outlet port with 6 mm outlet screw union [4], with CV | G | G | G |
| Outlet port with 8 mm outlet screw union [4], with CV | – | J | J |
| Outlet port with 10 mm outlet screw union [4], with CV | – | K | K |
| Outlet port with 12 mm outlet screw union [4], with CV | – | L | L |
| ø4 mm plug connector with CV | N | – | – |
| ø6 mm plug connector with CV | P | – | – |
| Attachment of crossporting, † note on pages 26–27 | | | |
| Crossporting forwards, without CV | V | V | V |
| Crossporting backwards, without CV | H | H | H |
| Crossporting forwards, with CV | R | R | R |
| Crossporting backwards, with CV | Q | Q | Q |
| Middle crossporting | M | M | M |
| Crossporting end without outlet port | Z | Z | Z |

[4] Solderless pipe union with cutting sleeve per DIN 2353

## Selection of outlet ports (indicate selections 9 and 10!)

left-hand † 9 — 10 † right-hand

| | | |
|---|---|---|
| | 10 | |
| | 9 | |
| | 8 | |
| | 7 | |
| | 6 | |
| | 5 | |
| | 4 | |
| | 3 | |
| | 2 | |
| | 1 | |

↑ Inlet

**Note!**
Note permissible crossporting configurations:
2-bridge, 3-bridge, with and without outlet port, with and without check valve on PSG1, PSG2, and PSG3,
4-bridge, with outlet port, with check valves only on PSG2 and PSG3

Special designs are available on request.

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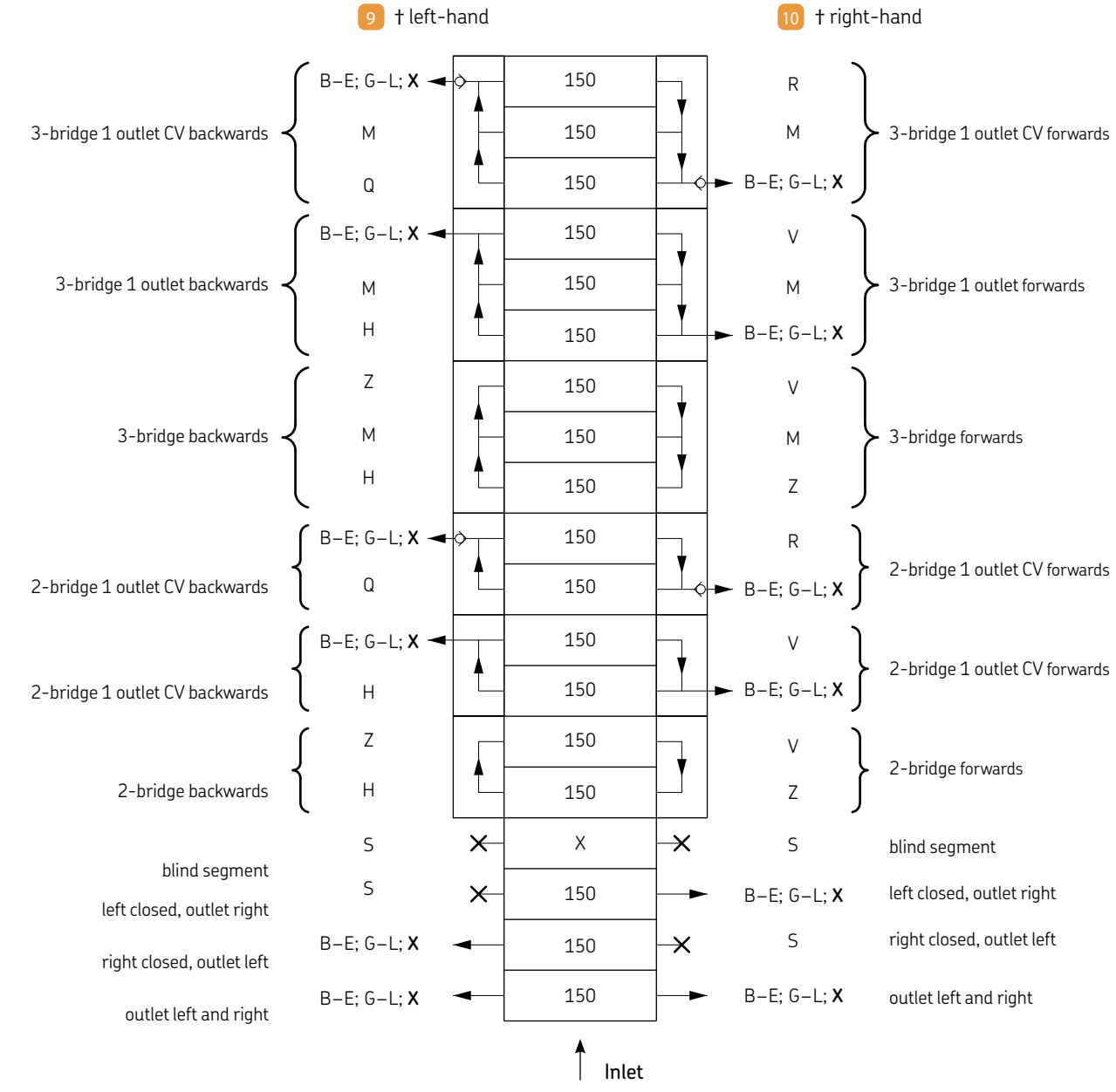
# Crossporting

## for modular feeders of product series PSG1

Selection of Crossporting




x without outlet screw union

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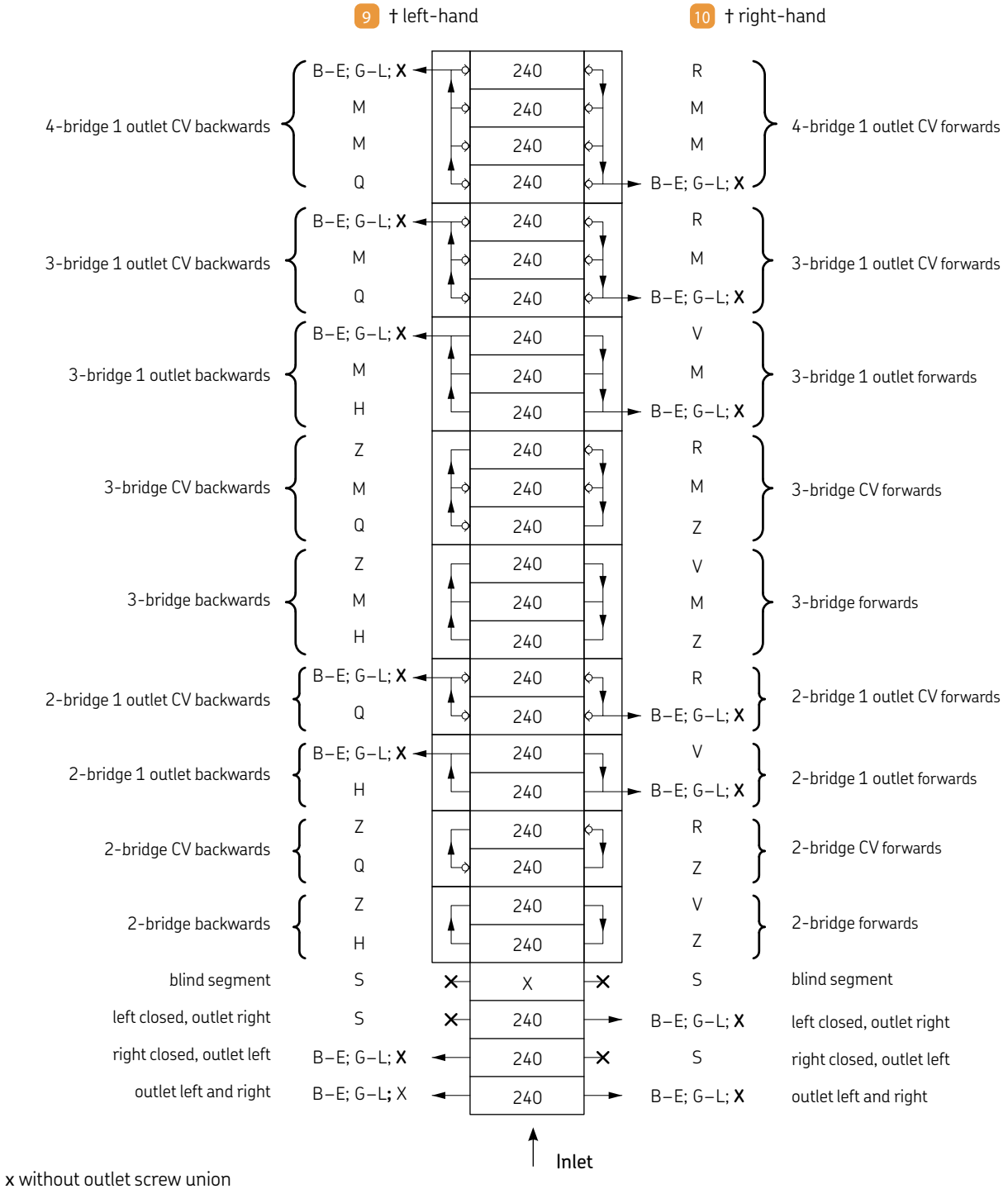
# Crossporting

## for modular feeders of product series PSG2 and PSG3

Selection of Crossporting




x without outlet screw union

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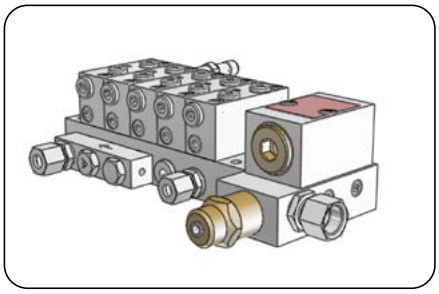
# Order example

## Modular feeders of product series PSG2

We recommend that you enter your desired modular feeder in Cadenas at **skf-lubrication.partcommunity.com** so that you can configure it quickly.

You will receive:
- A 3D drawing
- A 2D drawing
- A dimensioned drawing
- A complete order code
- A legend

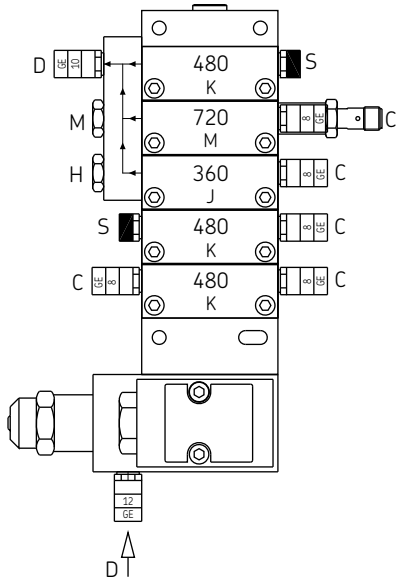


## Order code: PSG23HFQDX–KCC–KSC–JHC–MMC–KDS

Designation

| Description | Clarification |
|---|---|
| Progressive modular feeder | PSG |
| 1 Frame size | 2 (max. 2.5 l/min) |
| Size of baseplate | 5 sections |
| 2 Monitoring type | 3 (P3 piston detector 3-pin, M12×1 plug) |
| 3 Installation position of the monitoring system | H (right side, on 4th section) |
| 4 Attachments for frame sizes | F (with SP/SMB8 flow limiter with nominal volume up to 1.56 l/min) |
| 5 Plug-in nozzles for flow limiter attachment | Q (0.98 l/min; nozzle ø 1.2 mm) |
| 6 Inlet thread (baseplate inlet) | D (G1/4 for tube ø 12) |
| 7 Option | X (without) |
| **1. Section** | |
| 8 Section size | K (480 mm³) |
| 9 left side of section | C (outlet port with 8 mm outlet screw union, without CV) |
| 10 right side of section | C (outlet port with 8 mm outlet screw union, without CV) |
| **2. Section** | |
| 8 Section size | K (480 mm³) |
| 9 left side of section | S (no outlet port, screw plug) |
| 10 right side of section | C (outlet port with 8 mm outlet screw union, without CV) |
| **3. Section** | |
| 8 Section size | J (360 mm³) |
| 9 left side of section | H (crossporting backwards, without CV) |
| 10 right side of section | C (outlet port with 8 mm outlet screw union, without CV) |
| **4. Section** | |
| 8 Section size | M (720 mm³) |
| 9 left side of section | M (middle crossporting) |
| 10 right side of section | C (outlet port with 8 mm outlet screw union, without CV) |
| **5. Section** | |
| 8 Section size | K (480 mm³) |
| 9 left side of section | D (outlet port with 10 mm outlet screw union, without CV) |
| 10 right side of section | S (no outlet port, screw plug) |

Order example diagram

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# Accessories

## Electrical plug-in connections

Square connector

| Order No. | Designation |
|---|---|
| 179-990-033 | Square connector per DIN EN 175301-803A, cable diameter 6–10 mm, 3-pin +PE, max. 1.5 mm² |

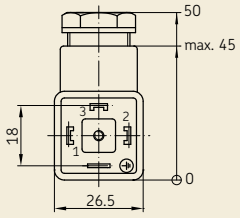
Circular connector M12x1

| | |
|---|---|
| 179-990-371 | Straight circular connector (A), cable diameter –6 mm, 4-pin, max. 0.75 mm² |
| 179-990-600 | Straight circular connector (B), 4-pin with integrally extruded cable, 5 m, 4×0,25 mm² |
| 179-990-372 | Angled circular connector (C), cable diameter 4–6 mm, 4-pin, max. 0.75 mm² |
| 179-990-601 | Angled circular connector (D), with integrally extruded cable, 5m, 4×0,25 mm² |

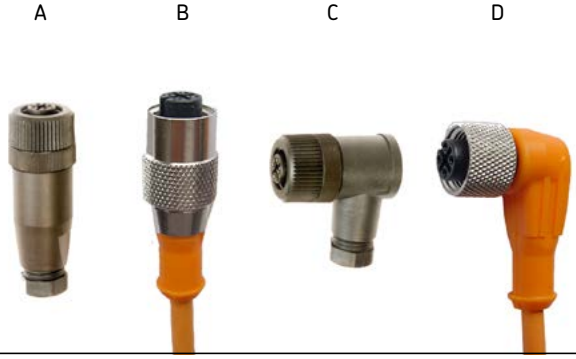
See also leaflet 1-1730-EN

Square connector 179-990-033

179-990-033



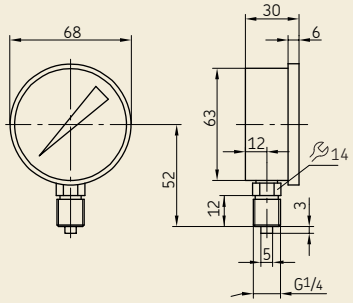

Circular connector M12×1



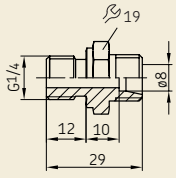

## Pressure gauge and screw union for PSG2/PSG3

| Order No. | Designation |
|---|---|
| 24-1207-2158 | Pressure gauge 160 bar |
| | screw union |
| 95-5080-3901 | Straight screw-in gland |
| 96-0308-0060 | Pressure gauge screw connection |
| 96-3120-0058 | Reduction fitting for PSG3 |

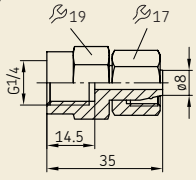
24-1207-2158




95-5080-3901




96-0308-0060



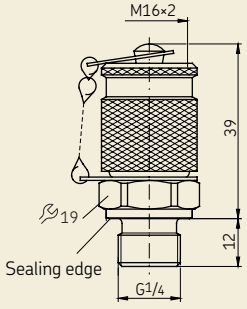

## Measurement connector and screw union PSG2/PSG3

| Order number | Designation |
|---|---|
| 24-2105-2405 | Measurement connector |

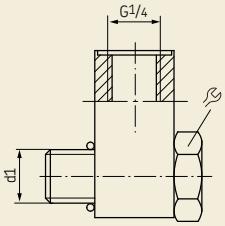
Measurement connector screw union

| Order number | d1 | | |
|---|---|---|---|
| 24-2151-4115 | G1/4 | 19 | for PSG2 |
| 24-2151-4116 | G3/8 | 22 | for PSG3 |

24-2105-2405




24-2151-4115, 24-2151-4116

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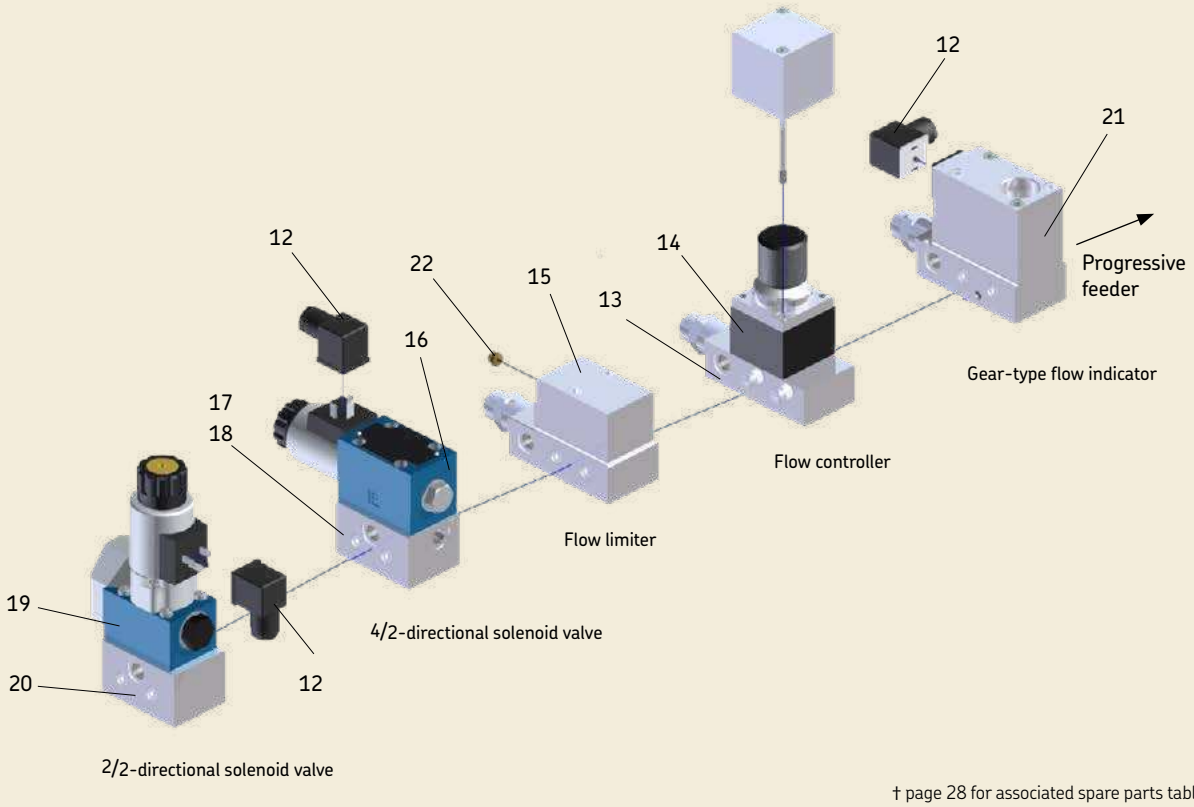
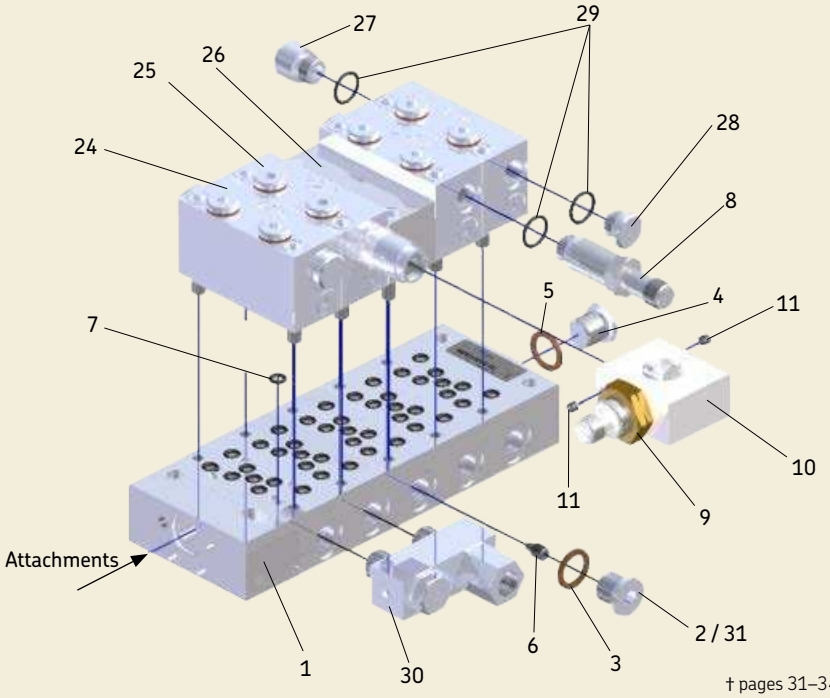
# Exploded view

Attachments




† page 28 for associated spare parts table 3.

Progressive feeder




† pages 31–34 for associated spare parts tables.

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# Spare parts

† page 30 for associated exploded view.

Spare parts table 1

Baseplate

| Item | Description | Number of sections | PSG1 Inlet Outlet | PSG1 Order No. | PSG2 Inlet Outlet | PSG2 Order No. | PSG2 Corrosion-resistant [1] Order No. | PSG3 Inlet Outlet | PSG3 Order No. | PSG3 Corrosion-resistant [1] Order No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Baseplate complete | 3 | | 24-0714-3400 | | 24-0714-3300 | 24-0714-3320 | | 24-0714-3310 | 24-0714-3330 |
| | | 4 | | 24-0714-3401 | | 24-0714-3301 | 24-0714-3321 | | 24-0714-3311 | 24-0714-3331 |
| | | 5 | | 24-0714-3402 | | 24-0714-3302 | 24-0714-3322 | | 24-0714-3312 | 24-0714-3332 |
| | | 6 | G1/8 | 24-0714-3403 | G1/4 | 24-0714-3303 | 24-0714-3323 | G3/8 | 24-0714-3313 | 24-0714-3333 |
| | | 7 | G1/8 | 24-0714-3404 | G1/4 | 24-0714-3304 | 24-0714-3324 | G1/4 | 24-0714-3314 | 24-0714-3334 |
| | | 8 | | 24-0714-3405 | | 24-0714-3305 | 24-0714-3325 | | 24-0714-3315 | 24-0714-3335 |
| | | 9 | | 24-0714-3406 | | 24-0714-3306 | 24-0714-3326 | | 24-0714-3316 | 24-0714-3336 |
| | | 10 | | 24-0714-3407 | | 24-0714-3307 | 24-0714-3327 | | 24-0714-3317 | 24-0714-3337 |
| 2 | Screw plug for baseplate outlet | | | 466-419-001 (incl. washer) | | DIN908-R1-4-5.8 | 99-0014-0908 | | DIN908-R1-4-5.8 | 99-0014-0908 |
| 3 | Washer for screw plug, item 2 | | | – | | 508-108 | 99-1423-7603 | | 508-108 | 99-1423-7603 |
| 4 | Screw plug for measurement connector | | | – | | DIN908-R1-4-5.8 | 99-0014-0908 | | DIN908-G3-8A-5.8 | 44-1821-2917 |
| 5 | Washer for screw plug, item 4 | | | – | | 508-108 | 99-1423-7603 | | DIN7603-A17×21-CU | 99-1823-7603 |
| 6 | Setscrew for feeder baseplate | | | DIN915-AM5×8-45H | | 95-0610-0915 | 95-0610-0915 | | 95-0812-0915 | 95-0812-0915 |
| 7 | O-ring on baseplate | | | WVN532-3.5×1.5 (7 pieces/section) | | WVN532-3.5×1.5 (9 pieces/section) | | | 96-9026-0062 (9 pieces/section) | |

[1] Baseplate anodized aluminum, metering sections chemically nickel-plated.

Spare parts table 2

Monitoring

| Item | Description | PSG1 Order No. | PSG2 Order No. | PSG3 Order No. |
|---|---|---|---|---|
| 8 | Piston detector (associated washer, item 29) | 177-300-095 | 177-300-094 | 24-1884-2469 |
| 9 | Proximity switch | 24-1884-2597 | 24-1884-2316 | 24-1884-2316 |
| 10 | Proximity switch housing | VPKM.13 | 44-0711-2592 | 44-0711-2593 |
| 11 | Setscrew for housing | DIN914-M4×6-45H (2 pieces/bracket) | – | – |

Spare parts table 3

Attachments

| Item | Description | PSG2 Order No. | PSG3 Order No. |
|---|---|---|---|
| 12 | Cable socket for solenoid valves | 179-990-033 | 179-990-033 |
| 13 | Flow controller: Baseplate | 24-1883-2228 | 24-1883-2238 |
| 14 | Flow controller: Flow controller up to 0.6 l/min | 24-1883-2211 | 24-1883-2211 |
| 14 | Flow controller: Flow controller up to 1.6 l/min | 24-1883-2201 | 24-1883-2201 |
| 14 | Flow controller: Flow controller up to 2.5 l/min | 24-1883-2024 | 24-1883-2024 |
| 14 | Flow controller: Flow controller up to 4.0 l/min | – | 24-1883-2025 |
| 14 | Flow controller: Flow controller up to 6.0 l/min | – | 24-1883-2083 |
| 15 | Flow limiter with baseplate G1/4 | 24-1883-2220 | – |
| 15 | Flow limiter with baseplate G3/8 | – | 24-1883-2230 |
| 16 | Directional solenoid valve: 4/2-directional solenoid valve, normally open P–A, 24 V DC (NO) | 24-1254-2396 | 24-1254-2396 |
| 17 | Directional solenoid valve: assoc. housing | 24-1883-2223 | 24-1883-2233 |
| 16 | Directional solenoid valve: 4/2-directional solenoid valve, normally closed P–B, 24 V DC (NC) | 24-1254-2396 | 24-1254-2396 |
| 18 | Directional solenoid valve: assoc. housing | 24-1883-2222 | 24-1883-2232 |
| 19 | Directional solenoid valve: 2/2-directional solenoid valve | 24-1254-2500 | – |
| 20 | Directional solenoid valve: assoc. housing | 24-1883-2241 | – |
| 21 | Gear-type flow indicator with baseplate | 24-1883-2224 | 24-1883-2234 |

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# Spare Parts

Spare parts table 4

Plug-in nozzles for flow limiter

| Item | Nominal volumetric flow [1] [l/min] | Nozzle index | Nozzle ø [mm] | PSG2/PSG3 Plug-in nozzle Order No. | Nominal volumetric current [l/min] | Nozzle index | Nozzle ø [mm] | PSG2/PSG3 Plug-in nozzle Order No. |
|---|---|---|---|---|---|---|---|---|
| 22 | 0.08 | 050 | 0.50 | 24-0455-2574 | 1.67 | 150 | 1.50 | 24-0455-2594 |
| | 0.12 | 055 | 0.55 | 24-0455-2575 | 1.79 | 155 | 1.55 | 24-0455-2595 |
| | 0.15 | 060 | 0.60 | 24-0455-2576 | 1.92 | 160 | 1.60 | 24-0455-2596 |
| | 0.21 | 065 | 0.65 | 24-0455-2577 | 2.07 | 165 | 1.65 | 24-0455-2597 |
| | 0.25 | 070 | 0.70 | 24-0455-2578 | 2.21 | 170 | 1.70 | 24-0455-2598 |
| | 0.29 | 075 | 0.75 | 24-0455-2579 | 2.36 | 175 | 1.75 | 24-0455-2599 |
| | 0.35 | 080 | 0.80 | 24-0455-2580 | 2.52 | 180 | 1.80 | 24-0455-2600 |
| | 0.41 | 085 | 0.85 | 24-0455-2581 | 2.67 | 185 | 1.85 | 24-0455-2601 |
| | 0.47 | 090 | 0.90 | 24-0455-2582 | 2.80 | 190 | 1.90 | 24-0455-2602 |
| | 0.56 | 095 | 0.95 | 24-0455-2583 | 2.98 | 195 | 1.95 | 24-0455-2603 |
| | 0.65 | 100 | 1.00 | 24-0455-2584 | 3.16 | 200 | 2.00 | 24-0455-2604 |
| | 0.73 | 105 | 1.05 | 24-0455-2585 | 3.30 | 205 | 2.05 | 24-0455-2605 |
| | 0.79 | 110 | 1.10 | 24-0455-2586 | 3.43 | 210 | 2.10 | 24-0455-2606 |
| | 0.88 | 115 | 1.15 | 24-0455-2587 | 3.58 | 215 | 2.15 | 24-0455-2607 |
| | 0.98 | 120 | 1.20 | 24-0455-2588 | 3.79 | 220 | 2.20 | 24-0455-2608 |
| | 1.09 | 125 | 1.25 | 24-0455-2589 | 3.98 | 225 | 2.25 | 24-0455-2609 |
| | 1.18 | 130 | 1.30 | 24-0455-2590 | 4.18 | 230 | 2.30 | 24-0455-2610 |
| | 1.30 | 135 | 1.35 | 24-0455-2591 | 4.37 | 235 | 2.35 | 24-0455-2611 |
| | 1.43 | 140 | 1.40 | 24-0455-2592 | 4.57 | 240 | 2.40 | 24-0455-2612 |
| | 1.56 | 145 | 1.45 | 24-0455-2593 | 4.80 | 245 | 2.45 | 24-0455-2613 |
| | | | | | 5.00 | 250 | 2.50 | 24-0455-2614 |
| | | | | | 5.19 | 255 | 2.55 | 24-0455-2615 |
| | | | | | 5.37 | 260 | 2.60 | 24-0455-2616 |
| | | | | | 5.55 | 265 | 2.65 | 24-0455-2617 |
| | | | | | 5.77 | 270 | 2.70 | 24-0455-2618 |
| | | | | | 5.99 | 275 | 2.75 | 24-0455-2619 |
| | | | | | 6.22 | 280 | 2.80 | 24-0455-2620 |

[1] At an operating viscosity of 300 $mm^2/s$ and 20 bar differential pressure

Spare parts table 5

Inlet screw union

| Item | Description | PSG1 Inlet | PSG1 Order No. | PSG2 Inlet | PSG2 Order No. | PSG3 Inlet | PSG3 Order No. |
|---|---|---|---|---|---|---|---|
| 23 | Tube ø6 mm | G 1/8 | 406-403W | G 1/4 | 96-0204-0058-EO | G 3/8 | – |
| | Tube ø8 mm | G 1/8 | 408-423W | G 1/4 | 96-0208-0058-EO | G 3/8 | 96-0209-0058-EO |
| | Tube ø10 mm | G 1/8 | 410-443W | G 1/4 | 96-0210-0058-EO | G 3/8 | 96-0211-0058-EO |
| | Tube ø12 mm | G 1/8 | – | G 1/4 | 96-0213-0058-EO | G 3/8 | 96-0212-0058-EO |
| | Tube ø15 mm | G 1/8 | – | G 1/4 | – | G 3/8 | 96-0217-0058-EO |
| | Tube ø16 mm | G 1/8 | – | G 1/4 | – | G 3/8 | 96-1117-0058-EO |

† page 30 for associated exploded view.

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# Spare Parts

Spare parts table 6

Metering section

| Item | Description | PSG1 Volumetric flow per outlet and cycle [mm³] | PSG1 Order No. | PSG2 Volumetric flow per outlet and cycle [mm³] | PSG2 Order No. | PSG2 Corrosion-resistant [1] Order No. | PSG3 Volumetric flow per outlet and cycle [mm³] | PSG3 Order No. | PSG3 Corrosion-resistant [1] Order No. |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Feeder section (metering section) complete for piston detector mounting | 50 | 24-2151-4590 | 60 | 24-2151-4500 | 24-2151-4260 | 800 | 24-2151-4240 | 24-2151-4274 |
| | | 100 | 24-2151-4591 | 120 | 24-2151-4501 | 24-2151-4261 | 1200 | 24-2151-4244 | 24-2151-4278 |
| | | 150 | 24-2151-4592 | 240 | 24-2151-4502 | 24-2151-4262 | 1600 | 24-2151-4241 | 24-2151-4275 |
| | | 200 | 24-2151-4593 | 360 | 24-2151-4503 | 24-2151-4263 | 2400 | 24-2151-4242 | 24-2151-4276 |
| | | 250 | 24-2151-4594 | 480 | 24-2151-4504 | 24-2151-4264 | 3200 | 24-2151-4243 | 24-2151-4277 |
| | | | | 600 | 24-2151-4505 | 24-2151-4265 | | | |
| | | | | 720 | 24-2151-4506 | 24-2151-4310 | | | |
| | | | | 840 | 24-2151-4507 | 24-2151-4311 | | | |
| 25 | Feeder section (metering section) complete with plunger rod right [2] (attach from the 2nd to second-to-last section) | 200 | 24-2151-4664 | 120 | 24-2151-4230 | – | 800 | 24-2151-4250 | – |
| | | 250 | 24-2151-4665 | 240 | 24-2151-4231 | – | 1200 | 24-2151-4258 | – |
| | | | | 360 | 24-2151-4232 | – | 1600 | 24-2151-4251 | – |
| | | | | 480 | 24-2151-4233 | – | 2400 | 24-2151-4252 | – |
| | | | | 600 | 24-2151-4234 | – | 3200 | 24-2151-4253 | – |
| | | | | 720 | 24-2151-4300 | – | | | |
| | | | | 840 | 24-2151-4301 | – | | | |
| 26 | Complete dummy section without screw plug for baseplate | | 24-2151-4595 | | 24-2151-4210 | 24-2151-4266 | | 24-2151-4211 | 24-2151-4212 |
| 27 | Piston stop screw, pin side | | VPKM.18 | | 44-1855-2144 | 44-1855-2155 | | 44-1855-2106 | 44-1855-2108 |
| 28 | Piston stop screw, opposite pin side | | VPJ.14 | | 44-1855-2143 | 44-1821-2913 | | 44-1855-2106 | 44-1855-2108 |
| 29 | Washer for items 27, 28, 8 | | 96-9120-0062 | | WVN532-12×1.5 | WVN532-12×1.5 | | 44-0411-2046 (only for item 8) | 44-0411-2046 (only for item 8) |

[1] Baseplate anodized aluminum, metering sections chemically nickel-plated.
[2] Feeder section (metering section) with cycle indicator is supplied in the "plunger rod right" design.

Spare parts table 7

Bridges (crossporting) [3]

| Item | Description | PSG1 Outlet | PSG1 Order No. | PSG2 Outlet | PSG2 Order No. | PSG3 Outlet | PSG3 Order No. |
|---|---|---|---|---|---|---|---|
| 30 | Without outlet port and without check valve | | | | | | |
| | 2-bridge | G1/8 | 24-2151-3760 | G1/4 | 24-2151-3730 | G1/4 | 24-2151-3734 |
| | 3-bridge | | 24-2151-3761 | | 24-2151-3731 | | 24-2151-3735 |
| | With outlet port and without check valve | | | | | | |
| | 2-bridge | G1/8 | 24-2151-3762 | G1/4 | 24-2151-3732 | G1/4 | 24-2151-3736 |
| | 3-bridge | | 24-2151-3763 | | 24-2151-3733 | | 24-2151-3737 |
| | With outlet port and with check valve | | | | | | |
| | 2-bridge | G1/8 | 24-2151-3764 | G1/4 | 24-2151-3394 | G1/4 | 24-2151-3396 |
| | 3-bridge | | 24-2151-3765 | | 24-2151-3395 | | 24-2151-3738 |
| | 4-bridge | | – | | 24-2151-3739 | | On request |
| | Without outlet port and with check valve | | | | | G1/4 | |
| | 3-bridge | G1/8 | – | G1/4 | 24-2151-3397 | | 24-2151-3393 |
| | 2-bridge | | – | | 24-2151-3390 | | 24-2151-3392 |

[3] The bridges listed are approved for a maximum operating pressure of 100 bar.

† page 30 for associated exploded view.

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# Spare parts

Spare parts table 8

Outlet screw union

| Item | Description | Outlet | PSG1 Order No. | Outlet | PSG2 Order No. | Outlet | PSG3 Order No. |
|---|---|---|---|---|---|---|---|
| 31 | Tube ø6 mm, without check valve | | – | G1/4 | 96-1106-0058-EO | G1/4 | 96-1106-0058-EO |
| | Tube ø8 mm, without check valve | | – | G1/4 | 96-0208-0058-EO | G1/4 | 96-0208-0058-EO |
| | Tube ø10 mm, without check valve | | – | G1/4 | 96-0210-0058-EO | G1/4 | 96-0210-0058-EO |
| | Tube ø12 mm, without check valve | | – | G1/4 | 96-0213-0058-EO | G1/4 | 96-0213-0058-EO |
| | Tube ø4 mm, with check valve | G1/8 | 24-2103-2933 | | – | | – |
| | Tube ø6 mm, with check valve | G1/8 | 24-2103-2927 | G1/4 | 96-9606-0058-EO | G1/4 | 96-9606-0058-EO |
| | Tube ø8 mm, with check valve | | – | G1/4 | 96-9008-0058-EO | G1/4 | 96-9008-0058-EO |
| | Tube ø10 mm, with check valve | | – | G1/4 | 96-9010-0058-EO | G1/4 | 96-9010-0058-EO |

† page 30 for associated exploded view.

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| *1-0103-EN* | *Fittings and Accessories* |
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| *1-1700-5-EN* | *Pulse Monitors* |
| *1-1730-EN* | *Electric Plug and Socket Connectors* |
| *1-3028-EN* | *Flow Limiter SP/SMB8* |

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