Sectional metering devices

Product series VP

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

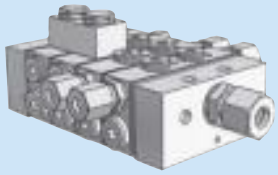
Fields of application

- Metal-forming machinery
- Vehicles
- Construction machinery
- Production systems in the automotive industry
- Packaging and printing machines

Advantages

- For universal use in continuous or intermittent operations
- Versatile – features metering sections with variable dosing amounts and internal and external consolidation of outlets
- Expandable by attaching flow limiters and directional solenoid valves
- Can be monitored using piston detectors or visual cycle indicators
- High function reliability due to standard equipped check valves
- Simple to service – separator plates feature vulcanized seals that cannot be detached
- Powerful – max. 20 outlets for volumetric flow of up to 1 000 cm^3/min
- Easy to install alternative outlets on top and side

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**

PUB LS/P2 15400 EN · 1-3016-EN

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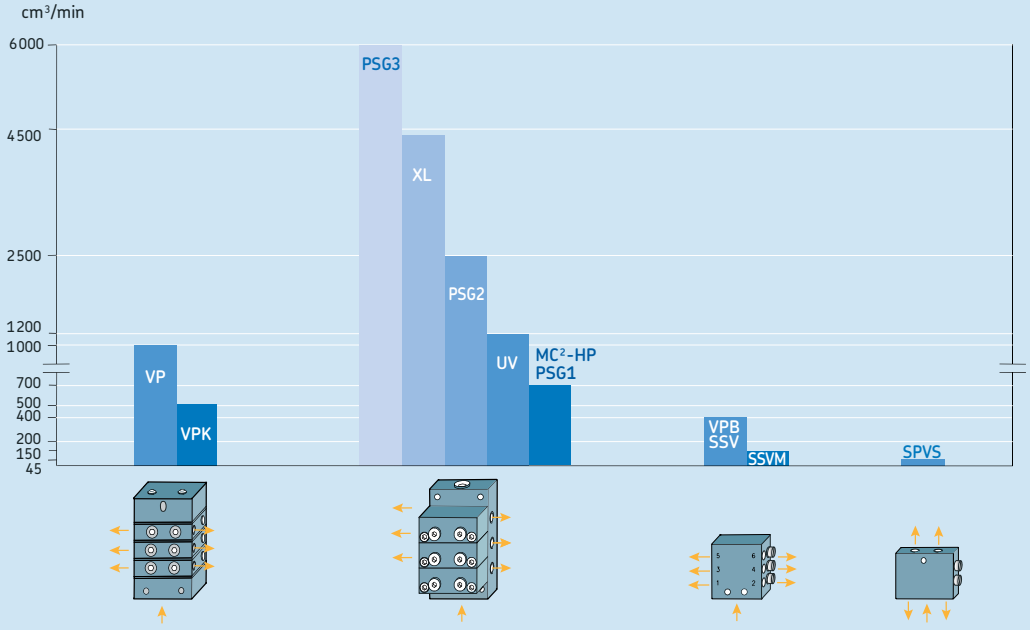

The maximum recommended flow rate values relate to lubricating oil at the highest selectable piston-stroke volume.

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Sectional metering device, product series VP

Product description

General

The sectional metering device VP, which belongs to the progressive feeder range, is available in the designs VPM (metric-threaded connectors) and VPG (inch-threaded connectors). With their metering sections, VPM and VPG cover a metering volume per outlet and cycle of 0.1 cm^3 (T- section) to 1.2 cm^3 (S-section). The inlet of the feeder is located at an inlet section and the outlets are at the downstream feeder sections. The delivery ducts are sealed by elastic seals. An end section is located downstream of the last feeder section. All sections are interconnected with tie-rods. They seal the feeder assembly.

The volumetric flow, which is sent via a tube, is forcibly distributed in a predetermined ratio to the outlets, i.e. to the lubrication points or the downstream progressive feeders. Pistons, which are 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 sectional metering device can be checked by monitoring **any** piston with a cycle indicator or a piston detector.

The standard add-on check valves offer high functional reliability (for high or different back pressures). They also provide an accurate feed and safe blocking behavior, even for internal combinations.

Operation (→ Fig. 1)

The task of the progressive feeder is to distribute consecutively specified portions of the pressure-fed lubricant (grease or oil) to the connected lubrication points.

The discharge of the lubricant continues as long as it is pressure-fed to the progressive feeder. The specified portions are generated through the piston movement. Two lubricant outlets on the two end positions of the piston travel are allocated to each piston.

The number of pistons within a feeder is from 3–10 variable. If lubricant is pressure-fed, the pistons of a feeder move in turn to their end position. The piston movement displaces a portion of the lubricant that is downstream of the piston to the downstream outlet. The movement of a piston can only start after the upstream piston has been moved to its end position. If all pistons are in their left or right end position, internal connecting bores in the feeder ensure a defined and continued running of the pistons.

When all pistons have been moved once to the left as well as to the right end position, all connected lubricant points have been supplied once with the preset lubricant quantity.

The portions for both outlets are determined by the diameter and the travel of the piston. The selection of the required portion is made during the design of the feeder.

A subsequent change of the portions is only possible through a modification of the feeder.

Information on the design

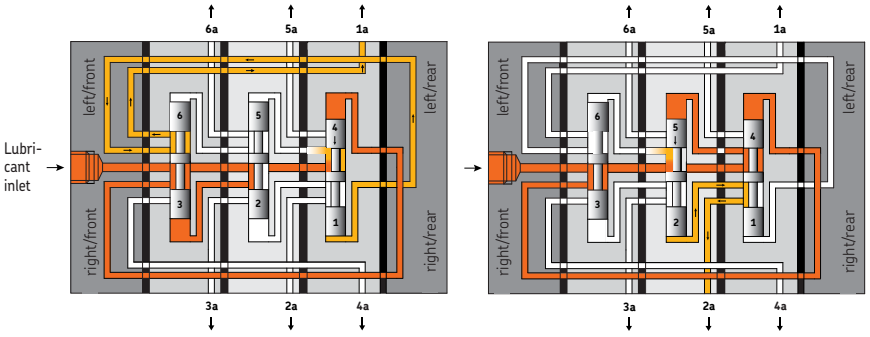
The general criteria for the design of progressive feeders also apply without restrictions to the sectional metering device VP. The most important criterion is the number of cycles (stroke rate). They should be held as low as possible by selecting high-volume feeders. Maximum value of 200 cycles/min should not be exceeded

Thus, pressure losses and noise level will also be reduced. In case of an installation on movable machine parts or in case of strong vibrations (e.g. on presses), the piston position of the feeder should not be the same as the direction of movement of the machine part.

For the VP feeder, the minimum number of feeder sections is 3 and the maximum number is 10.

Fig. 1

Section view



Piston side **4** is pressurized by the pump, piston side **1** has delivered lubricant to outlet **1a**. The connection between the main line and piston side **5** has become free due to the stroke of piston **1/4**.

Piston side **5** is pressurized and piston side **2** delivers the lubricant via outlet **2a**. Piston side **6** is the next to be pressurized, etc.

Sectional metering device, product series VP

Monitoring and attachments

Quantity distribution (→ Fig. 2)

Sectional metering devices distribute an amount delivered by a pump to several outlets while the feeder determines the volumetric ratio.

The different output quantities within a feeder are achieved by the use of various piston diameters or the joining of two or more outlets. The indicated lubricant quantities result from the piston diameter and the maximum travel of the piston. Depending on the system design, these capacities may vary by 40 percent.

For the sectional metering devices VPM and VPG, sections for two connections (**T** = twin) or for one connection (**S** = single) are available. In case of single sections, the two opposite outlets are connected internally, whereby one outlet is closed.

Each section is equipped with a lateral and an upper outlet per side. Only one outlet can be connected, the second one has to be blocked by either a plug or an overpressure-indicator. On demand, the crossporting also can be connected to the upper outlets.

Tightening torques

During the installation of the VP feeder, consisting of inlet section, inlet plate, twin and single sections, separator plates as well as end plate and end section, the following tightening torques have to be adhered to for the tie-rods and nuts:

Tightening torque		
Tie-rod (2x)	each	2,4 Nm
Nut for tie-rod M8 (2x)	each	12,0 Nm

Monitoring

All standard sections can be monitored directly by means of a piston detector. Furthermore, the piston movement can be monitored by visual stroke monitoring.

Both monitoring models can be used for oil as well as for grease.

Attachments

The modular structure of the sectional metering device becomes apparent when you consider the range of attachments. Optionally, the sectional metering device VP can be equipped with:

- upstream flow limiter for oil
- upstream directional solenoid valve for oil and grease

Consolidation of outlets (→ Fig. 3)

A later combination of two outlets for sectional metering devices is only possible with a crossporting bar that is screwed into the upper alternative outlets. Any odd number of outlets can be achieved with the help of S-sections without additional crossporting bars.

The crossporting bar is used to combine the lubricant outputs of two adjacent feeder sections via the alternative outlets on top of the feeder.

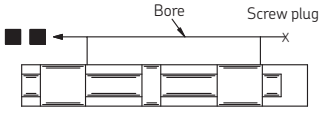
Fig. 2

Consolidations of capacities

T (Twin) = two outlet ports

Example: 2T = 0.2 cm³ per outlet (E) [1)]
3T = 0.3 cm³ per outlet (G) [1)]
6T = 0.6 cm³ per outlet (N) [1)]

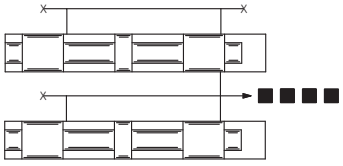
S (Single) = one outlet port



Example: 2S = 0.4 cm³ per cycle from one outlet (F) [1)]
3S = 0.6 cm³ per cycle from one outlet (H) [1)]
6S = 1.2 cm³ per cycle from one outlet (Q) [1)]

C (Crossporting)

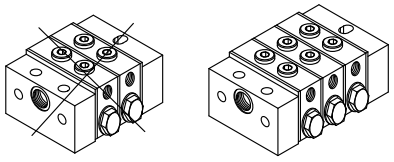
Combining four piston displacements of two sections to form one outlet port.

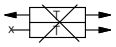


Example: 2S
2S = 0.8 cm³ per cycle from one outlet

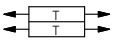
Fig. 3

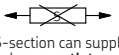
Consolidation of outlets



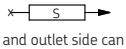


Second outlet port must **not be closed on T**-sections.



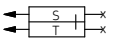


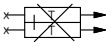
S-section can supply only **one outlet port exactly!**

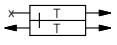


Plug and outlet side can be interchanged with each other.

This outlet port has to be closed since crossporting is involved!

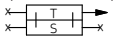




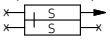


When two T-sections are connected by crossporting, one outlet must be **open** on the crossporting side!

Two external crossporting bars (**1T**, **1S**-section)



One external crossporting bar (**2S**-section)



If you want to combine 2 sections (4 outlets) to form **one** outlet port, you can do it

this way ..... but it's better **this way**!

[1)] → Order code choice 8

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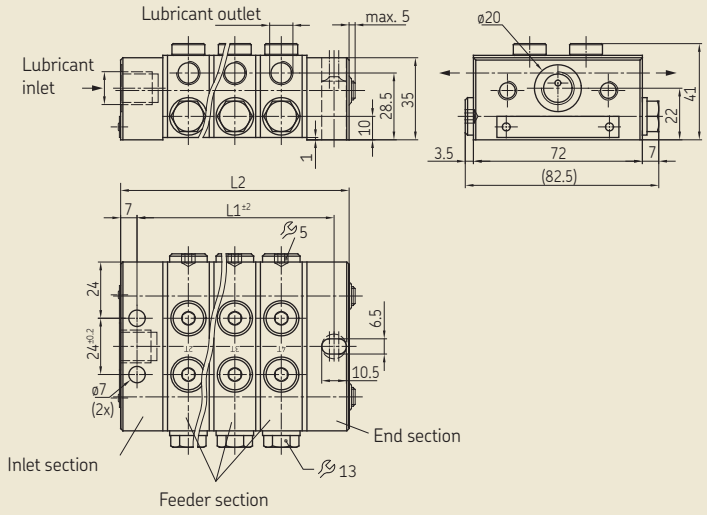
Sectional metering device, product series VP

Basic design for oil and grease

VP sectional metering device, basic design



Technical data

Type	Hydraulically controlled
Mounting position	Any[1]
Ambient temperature range	–25 to +90 °C
Feeder section	See table
Occupied outlets	1 to 20

Material

Inlet, separator and end section	Steel, galvanized, NBR
Sections	Steel, galvanized

Hydraulic system

Operating pressure, max.	Oil 200 bar, grease 300 bar
Volume per outlet and cycle	See table
Lubricant	Mineral oils, greases based on mineral oil, environmentally friendly and synthetic oils and greases
Operating viscosity	> 12 mm²/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.

Dimensions

Inlet: VPM = M14×1.5, VPG = G1/4 — Outlet: VPM = M10×1, VPG = G1/8

Typ	Number of feeder sections	Number of possible outlets	L1 [mm]	L2 [mm]	Weight [kg]
VPM-3 / VPG-3	3	6	84	98	1.73
VPM-4 / VPG-4	4	8	104	118	2.1
VPM-5 / VPG-5	5	10	124	138	2.47
VPM-6 / VPG-6	6	12	144	158	2.84
VPM-7 / VPG-7	7	14	164	178	3.21
VPM-8 / VPG-8	8	16	184	198	3.58
VPM-9 / VPG-9	9	18	204	218	3.95
VPM-10 / VPG-10	10	20	224	238	4.32

Selection of feeder sections

Quantity per cycle and outlet [cm³]	Number of outlets	Description of the sections	Identification letter/Order code
0.10	2	1T	C
0.20	2	2T	E
0.30	2	3T	G
0.40	2	4T	J
0.50	2	5T	L
0.60	2	6T	N
0.20	1	1S	D
0.40	1	2S	F
0.60	1	3S	H
0.80	1	4S	K
1.00	1	5S	M
1.20	1	6S	Q

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Sectional metering device, product series VP

Monitoring with piston detector and cycle indicator, for oil and grease

With piston detector

With cycle indicator

Technical data

Basis design → Technical data page 7

Piston detector, electrical [1)]

Internal thread	M12×1
Ambient temperature range	–25 to +80 °C
Operating pressure max.	300 bar
Weight	0.046 kg
Design	4-point LED
Rated voltage	10 to 36 V DC
Residual ripple (2-pin)	3 to 15 %
Residual ripple (3-pin)	≤ 10 %
Max. load current	100 mA
Protection class	IP67
Min. load current (2-pin)	4 mA
Outlet function (3-pin)	PNP contact

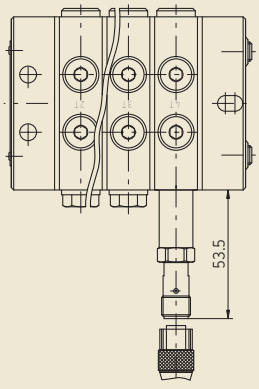
Cycle indicator, visual

Ambient temperature range	–15 to +75 °C
Operating pressure max.	300 bar
Weight	0.02 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.

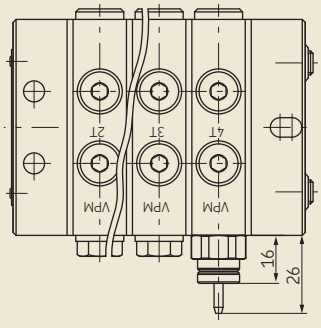
Sectional metering device VP with piston detector

For other dimensions, see VP basic design → **page 6**



Sectional metering device VP with visual cycle indicator

For other dimensions, see VP basic design → **page 7**



Note!
Electrical plug and socket connections are ordered separately → **page 15.**

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Sectional metering device, product series VP

with flow limiter SP/SMB8, for oil

Technical data

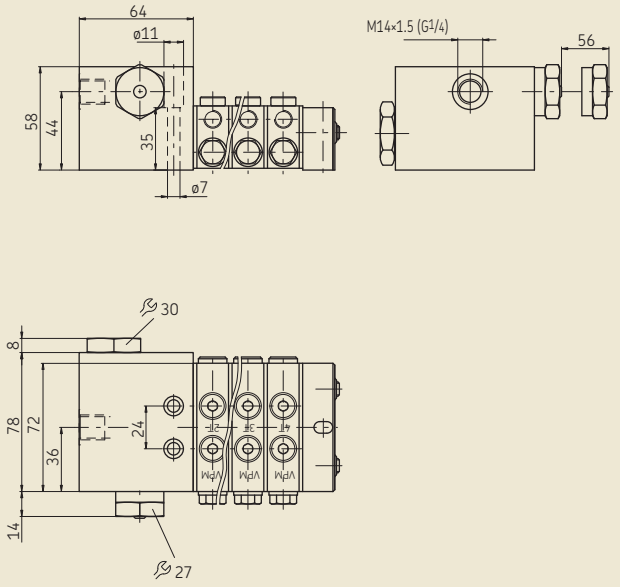
Basis design → Technical data page 7

Flow limiter SP/SMB8

Type	2-way flow limiter valve
Ambient temperature range	0 to +100 °C
Operating pressure max.	200 bar
Inlet volume	0.1 to 1.0 l/min
Lubricant	Mineral oils, environmentally friendly and synthetic oils
Operating viscosity	20 to 600 mm²/s
Weight	1.95 kg
Material	Steel, galvanized

Sectional metering device VP with flow limiter

For other dimensions, see VP basic design → **page 7**



Plug-in nozzles for flow limiter

Nominal volumetric flow up to 1.09 l/min [1)]

Nominal volume [l/min]	Nozzle-ø [mm]	Code
0.08	0.5	A
0.12	0.55	B
0.15	0.6	C
0.21	0.65	D
0.25	0.7	E
0.29	0.75	F
0.35	0.8	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)] 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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Sectional metering device, product series VP

with directional solenoid valve, for oil

With 4/2-directional solenoid valve

With 2/2-directional solenoid valve

Technical data

Basis design → Technical data page 7

4/2-directional solenoid valve

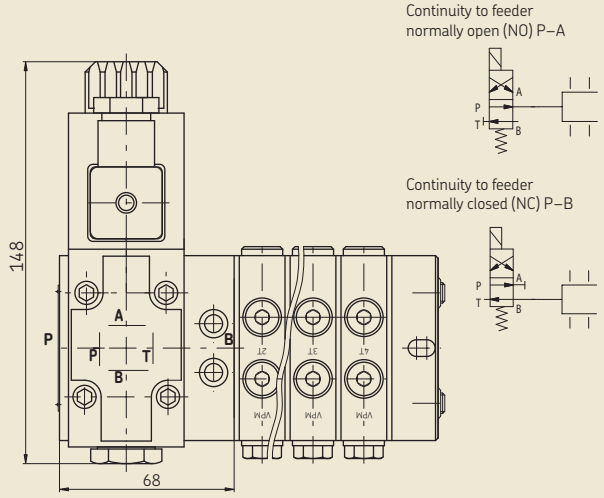
Ambient temperature range	–15 to +75 °C
Operating pressure max.	150 bar
Lubricant	Mineral oils, environmentally friendly and synthetic oils
Weight	2.91 kg
Electrical design	Pusher/solenoid
Electrical connection	DIN EN175301-803
System voltage	24 V DC
Design	Continuity to feeder normally closed (NC) or open (NO)

2/2-directional solenoid valve

Ambient temperature range	–15 to +75 °C
Operating pressure max.	150 bar
Lubricant	Mineral oils, environmentally friendly and synthetic oils
Weight	0,61 kg
Electrical connection	DIN EN175301-803
System voltage	24 V DC
Design	Continuity to feeder normally closed (NC)

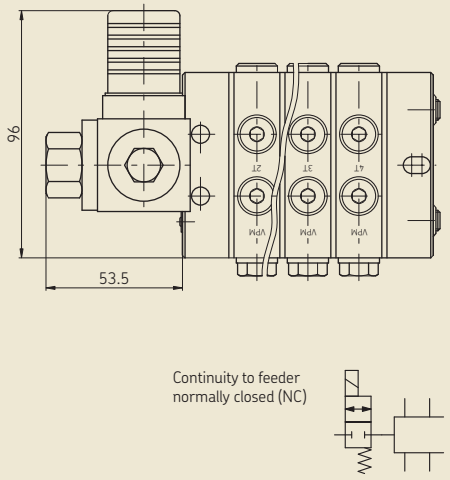
Sectional metering device VP with 4/2-directional solenoid valve

For other dimensions, see VP basic design → **page 7**



Sectional metering device VPG with 2/2-directional solenoid valve

For other dimensions, see VP basic design → **page 7**



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Sectional metering device, product series VP

with directional solenoid valve, for grease

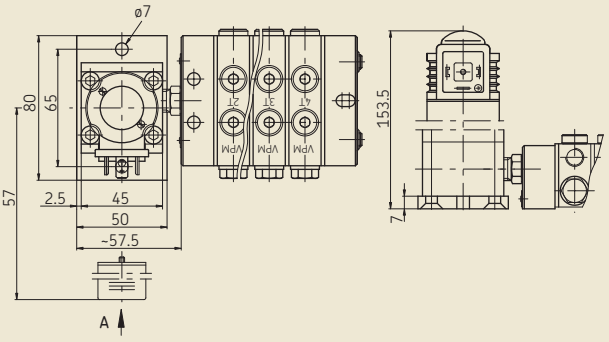
with 2/2-directional solenoid valve

Technical data

Basis design → Technical data page 7

Ambient temperature range	–25 to +80 °C
Operating pressure max.	300 bar
Lubricant	Greases up to NLGI Grade 2
Weight with housing	1.5 kg
Electrical design	Poppet valve
Electrical connection	DIN EN175301-803
System voltage	24 V DC
Design	Continuity to feeder normally closed (NC)

Sectional metering device VP with 2/2-directional solenoid valve



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Order Code

Sectional metering device of product series VP *)

Order code	VP	1	2	3	4	5	6	7	–		–		–		–		–		–		–		–	
		Feeder information								Choice 8/9/10: information on sections 1 to 10 as seen from inlet														

Order example: VPG3DXXEX-LDD-GDD-QHS-QSE (→ page 14)

1 Thread type

Inlet thread M14×1.5, outlet thread M10×1	M
Inlet thread G1/4, outlet thread G1/8	G

2 Selection of monitoring

none	X
Piston detector 2-pin, with M12×1 plug	2
Piston detector 3-pin, with M12×1 plug (wire breakage protection)	3
Cycle indicator, visual (plunger rod) [1]	Y

[1] The installation of the cycle indicator **is only** possible from feeder section 2T and 2S, respectively!

3 Selection of installation position for monitor

X none

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

4 Selection of attachments

	VPG	VPM
none	X	X
Flow limiter with nominal volume up to 1.09 l/min → Plug-in nozzles table **5**	A	A
4/2-directional solenoid valve for oil, continuity to feeder normally open (NO) P–A	B	B
4/2-directional solenoid valve for oil, continuity to feeder normally closed (NC) P–A	C	C
2/2-directional solenoid valve for oil, continuity to feeder normally closed (NC)	E	–
2/2-directional solenoid valve for grease, continuity to feeder normally closed (NC)	F	F

5 Plug-in nozzles for flow limiter [2]

Nominal volume [l/min]	Nozzle-ø [mm]		Nominal volume [l/min]	Nozzle-ø [mm]	
none		X	0.47	0.9	J
0.08	0.5	A	0.56	0.95	K
0.12	0.55	B	0.65	1	L
0.15	0.6	C	0.73	1.05	M
0.21	0.65	D	0.79	1.1	N
0.25	0.7	E	0.88	1.15	P
0.29	0.75	F	0.98	1.2	Q
0.35	0.8	G	1.09	1.25	R
0.41	0.85	H			

[2] 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***).

*) Online configurable under **skf-lubrication.partcommunity.com** (→ **page 14**).

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6 Selection of inlet screw union

	VPG	VPM
none	X	X
Straight connector for tube ø 6 mm [1], L	–	A
Straight connector for tube ø 6 mm [1], S	B	–
Straight connector for tube ø 8 mm [1], L	C	–
Straight connector for tube ø 8 mm [1], S	–	D
Straight connector for tube ø 10 mm [1], L	E	E
Straight connector for tube ø 12 mm [1], L	F	F
Straight connector, EO2 for tube ø 6 mm	G	G
Straight connector, EO2 for tube ø 8 mm	H	H
Straight connector, EO2 for tube ø 10 mm	J	J
Straight connector, EO2 for tube ø 12 mm	K	–
Quick connector for tube ø 6 mm	L	–
Elbow for tube ø 8 mm, tapered [1], L	M	–
Elbow for tube ø 10 mm, tapered [1], L	N	N
Banjo fitting for tube ø 6 mm [1], S	P	–
Banjo fitting for tube ø 8 mm [1], L	Q	–
Banjo fitting for tube ø10 mm [1], L	R	R

[1] Solderless pipe unions with cutting sleeve acc. to DIN 2353

7 Options

none	X
Blockage indicator on all open outlets (opening pressure)	
Open at 50 bar	R
Open at 100 bar	S
Open at 150 bar	T
Open at 200 bar	U

8 Selection of feeder sections

1st place section size [2] (seen from the inlet)

Number of outlets 2 (Twin) Volume per cycle and outlet [mm³] [3]	Designation of sections		Number of outlets 1 (Single) Volume per cycle and outlet [mm³] [3]	Designation of sections	
100	1T	C	200	1S	D
200	2T	E	400	2S	F
300	3T	G	600	3S	H
400	4T	J	800	4S	K
500	5T	L	1000	5S	M
600	6T	N	1200	6S	Q

[2] Smallest possible feeder size = 3 effective sections

[3] Data in cm³ → page 6

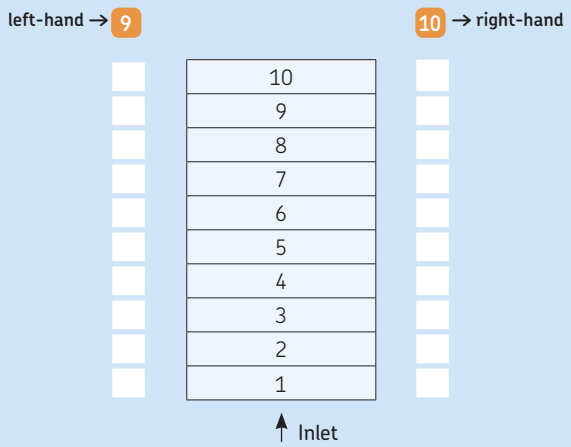
LL-series = extra light version, **L**-series = light version, **S**-series = heavy duty version
CV = Check valve

9 10 2nd place outlet screw union, left-hand side; 3rd place outlet screw union, right-hand side

	VPG	VPM
No outlet port, screw plug	S	S
Outlet port without screw unions	X	X
Outlet port with 4 mm outlet screw union [4], tapered, LL	–	A
Outlet port with 4 mm outlet screw union [4], LL	B	–
Outlet port with 6 mm outlet screw union [4], tapered, LL	–	C
Outlet port with 6 mm outlet screw union [4], L	D	D
Outlet port with 8 mm outlet screw union [4], tapered, LL	E	E
Outlet port with 10 mm outlet screw union [4], tapered, L	F	–
Outlet port with 4 mm outlet screw union, EO2 [4]	G	G
Outlet port with 6 mm outlet screw union, EO2 [4]	J	J
ø4 mm quick connector	K	K
ø4 mm quick connector, tapered	–	L
ø6 mm quick connector	M	M
ø6 mm quick connector, tapered	N	N
Outlet port with 4 mm outlet screw union, with CV	P	P
Outlet port with 6 mm outlet screw union, with CV	Q	Q
Outlet port with 8 mm outlet screw union, with CV	T	T
Outlet port with 10 mm outlet screw union, with CV	–	U
Outlet port with 4 mm banjo fitting [4], LL	W	–
Outlet port with 6 mm banjo fitting [4], L	Z	Z
Outlet port with 6 mm banjo fitting [4], LL	–	1
4 mm quick connector-banjo fitting	2	2
4 mm quick connector-banjo fitting, tapered	–	3
6 mm quick connector-banjo fitting	4	4
6 mm quick connector-banjo fitting, tapered	–	5
Crossporting forwards (seen from the inlet)	V	V
Crossporting backwards (seen from the inlet)	H	H

[4] Solderless pipe unions with cutting sleeve acc. to DIN 2353

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



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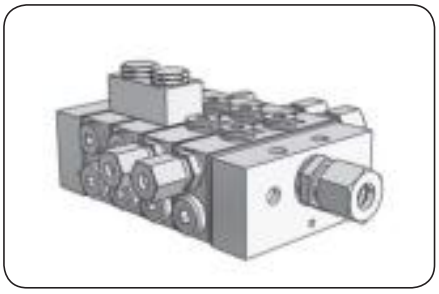
Order example

Sectional metering device of product series VP

We recommend that you enter your desired sectional metering devices in Cadenas at **skf-lubrication.partcommunity.com s**o that you can configure it quickly.

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

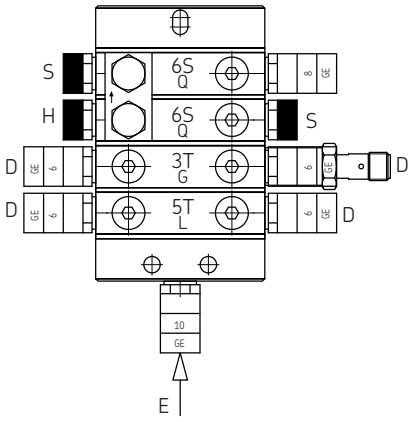


Order code: VPG3DXXEX-LDD-GDD-QHS-QSE

Designation

Description	Clarification
Progressive sectional metering device	**VP**
1 Thread type	**G** (inlet thread G1/4, outlet thread G1/8)
Feeder size	4 sections
2 Monitoring type	**3** (P3 piston detector 3-pin, with M12×1 plug)
3 Mounting position of the monitoring system	**D** (right-side, on 2nd section)
4 Attachments	**X** (without)
5 Plug-in nozzles for flow limiter attachment	**X** (without)
6 Inlet screw union	**E** (Straight connector for tube ø 10 mm, L)
7 Option	**X** (without blockage indicator)
1. Section	
8 Feeder section	**L** (5T – 0,50 cm³, 2 outlets)
9 left side of section	**D** (Straight connector for tube ø 6 mm, L)
10 right side of section	**D** (Straight connector for tube ø 6 mm, L)
2. Section	
8 Feeder section	**G** (3T – 0.30 cm³, 2 outlets)
9 left side of section	**D** (Straight connector for tube ø 6 mm, L)
10 right side of section	**D** (Straight connector for tube ø 6 mm, L)
3. Section	
8 Feeder section	**Q** (6S – 1.20 cm³, 1 outlet)
9 left side of section	**H** (Crossporting backwards)
10 right side of section	**S** (no outlet port, screw plug)
4. Section	
8 Feeder section	**Q** (6S – 1.20 cm³, 1 outlet)
9 left side of section	**S** (no outlet port, screw plug)
10 right side of section	**E** (Straight connector for tube ø 8 mm, tapered, LL)

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

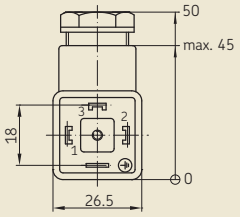
Circular connector M12x1

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, 5 m, 4×0,25 mm²

→ *Brochure 1-1730-EN*

Square connector 179-990-033

179-990-033



Circular connector M12×1

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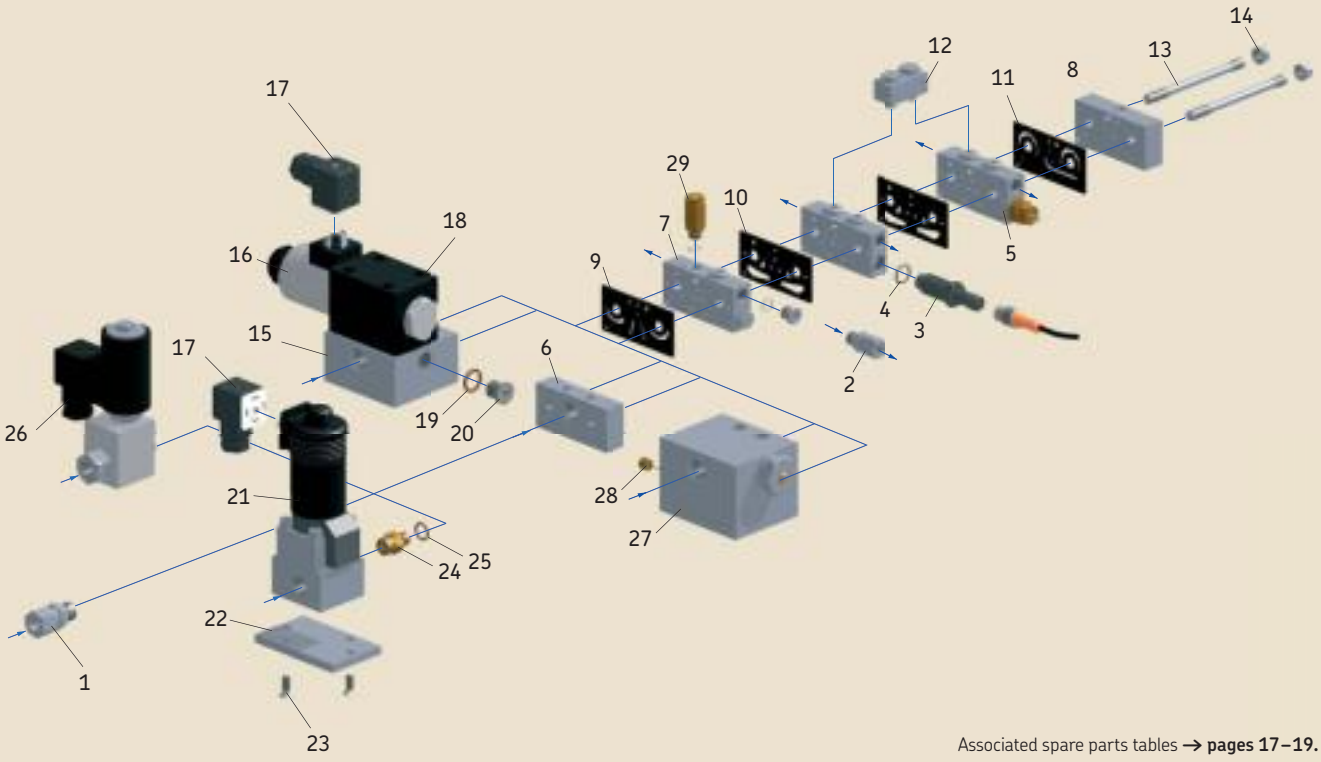
Exploded view



Associated spare parts tables → **pages 17–19.**

Spare parts

Spare parts table 1

Item	Description	VPG Order No.	VPM Order No.
	Inlet screw union		
1	Straight connector for tube ø 6 mm [1], L	–	406-413
	Straight connector for tube ø 6 mm [1], S	406-413W	–
	Straight connector for tube ø 8 mm [1], L	408-403W	–
	Straight connector for tube ø 8 mm [1], S	–	408-413
	Straight connector for tube ø 10 mm [1], L	410-403W	410-403
	Straight connector for tube ø 12 mm [1], L	412-423W	412-423
	Straight connector, EO2 for tube ø 6 mm	471-006-161	471-006-351
	Straight connector, EO2 for tube ø 8 mm	471-008-161	471-008-351
	Straight connector, EO2 for tube ø 10 mm	471-010-161	471-010-351
	Straight connector, EO2 for tube ø 12 mm	471-012-161	–
	Quick connector for tube ø 6 mm	406-054-VS	–
	Elbow for tube ø 8 mm, tapered [1], L	408-405W	–
	Elbow for tube ø 10 mm, tapered [1], L	410-405W	410-405
	Banjo fitting for tube ø 6 mm [1], S	445-516-061	–
	Banjo fitting for tube ø 8 mm [1], L	445-516-081	–
	Banjo fitting for tube ø 10 mm [1], L	445-516-101	445-535-101

[1] Solderless pipe unions with cutting sleeve acc. to DIN 2353

LL-series = extra-light version, **L**-series = light version, **S**-series = heavy-duty version

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SKF

Spare parts

Spare parts table 2

Outlet screw union

Item	Description	VPG Order No.	VPM Order No.
2	Straight connector for tube ø 4 mm [1], tapered, LL	–	404-403
	Straight connector for tube ø 4 mm [1], LL	404-403W	–
	Straight connector for tube ø 6 mm [1], tapered, LL	–	406-423
	Straight connector for tube ø 6 mm [1], L	406-403W	406-403
	Straight connector for tube ø 8 mm [1], tapered, LL	408-423W	441-008-511
	Straight connector for tube ø 10 mm [1], tapered, L	410-443W	–
	Straight connector for tube ø 4 mm, EO2 [1]	471-004-191	471-004-311
	Straight connector for tube ø 6 mm, EO2 [1]	471-006-192	471-006-311
	Quick connector for tube ø 4 mm	404-040-VS	404-006-VS
	Quick connector for tube ø 4 mm, tapered	–	451-004-518-VS
	Quick connector for tube ø 6 mm	456-004-VS	406-004-VS
	Quick connector for tube ø 6 mm, tapered	406-423W-VS	451-006-518-VS
	ø 4 mm outlet screw union, with CV	VPG-RV	VPM-RV4
	ø 6 mm outlet screw union, with CV	VPG-RV6	VPM-RV
	ø 8 mm outlet screw union, with CV	VPG-RV8	VPM-RV8
	ø 10 mm outlet screw union, with CV	–	VPM-RV10
	ø 4 mm banjo fitting [3], LL	445-519-041	–
	ø 6 mm banjo fitting [3], L	445-519-061	445-531-061
	ø 6 mm banjo fitting [3], LL	–	445-531-062
	ø 4 mm quick connector-banjo fitting	504-108-VS	504-102-VS
	ø 4 mm quick connector-banjo fitting, tapered	–	455-531-048-VS
	ø 6 mm quick connector-banjo fitting	506-108-VS	506-140-VS
	ø 6 mm quick connector-banjo fitting, tapered	–	455-531-068-VS

[1] Solderless pipe unions with cutting sleeve acc. to DIN 2353

LL-series = extra-light version, **L**-series = light version, **S**-series = heavy-duty version, **CV** = check valve

Spare parts table 4

Monitoring

Item	Description	VPG Order No.	VPM Order No.
3	Piston detector, 2-pin	177-300-091	177-300-091
	Piston detector, 3-pin	177-300-094	177-300-094
4	Associated washer	WVN501-12×1.5	WVN501-12×1.5

Spare parts

Spare parts table 4

Feeder Item	Description	VPG Order No.	VPM Order No.
5	Feeder section 2T with cycle indicator right	VPG-K-2T-ZY-R	VPM-K-2T-ZY-R
	Feeder section 3T with cycle indicator right	VPG-K-3T-ZY-R	VPM-K-3T-ZY-R
	Feeder section 4T with cycle indicator right	VPG-K-4T-ZY-R	VPM-K-4T-ZY-R
	Feeder section 5T with cycle indicator right	VPG-K-5T-ZY-R	VPM-K-5T-ZY-R
	Feeder section 6T with cycle indicator right	VPG-K-6T-ZY-R	VPM-K-6T-ZY-R
	Feeder section 2T with cycle indicator left	VPG-K-2T-ZY-L	VPM-K-2T-ZY-L
	Feeder section 3T with cycle indicator left	VPG-K-3T-ZY-L	VPM-K-3T-ZY-L
	Feeder section 4T with cycle indicator left	VPG-K-4T-ZY-L	VPM-K-4T-ZY-L
	Feeder section 5T with cycle indicator left	VPG-K-5T-ZY-L	VPM-K-5T-ZY-L
	Feeder section 6T with cycle indicator left	VPG-K-6T-ZY-L	VPM-K-6T-ZY-L
	Feeder section 2S with cycle indicator right	VPG-K-2S-ZY-R	VPM-K-2S-ZY-R
	Feeder section 3S with cycle indicator right	VPG-K-3S-ZY-R	VPM-K-3S-ZY-R
	Feeder section 4S with cycle indicator right	VPG-K-4S-ZY-R	VPM-K-4S-ZY-R
	Feeder section 5S with cycle indicator right	VPG-K-5S-ZY-R	VPM-K-5S-ZY-R
	Feeder section 6S with cycle indicator right	VPG-K-6S-ZY-R	VPM-K-6S-ZY-R
	Feeder section 2S with cycle indicator left	VPG-K-2S-ZY-L	VPM-K-2S-ZY-L
	Feeder section 3S with cycle indicator left	VPG-K-3S-ZY-L	VPM-K-3S-ZY-L
	Feeder section 4S with cycle indicator left	VPG-K-4S-ZY-L	VPM-K-4S-ZY-L
	Feeder section 5S with cycle indicator left	VPG-K-5S-ZY-L	VPM-K-5S-ZY-L
	Feeder section 6S with cycle indicator left	VPG-K-6S-ZY-L	VPM-K-6S-ZY-L
6	Inlet section	VPG-E	VPM-E
7	Feeder section 1T	VPG-K-1T-PS	VPM-K-1T-PS
	Feeder section 2T	VPG-K-2T-PS	VPM-K-2T-PS
	Feeder section 3T	VPG-K-3T-PS	VPM-K-3T-PS
	Feeder section 4T	VPG-K-4T-PS	VPM-K-4T-PS
	Feeder section 5T	VPG-K-5T-PS	VPM-K-5T-PS
	Feeder section 6T	VPG-K-6T-PS	VPM-K-6T-PS
	Feeder section 1S	VPG-K-1S-PS	VPM-K-1S-PS
	Feeder section 2S	VPG-K-2S-PS	VPM-K-2S-PS
	Feeder section 3S	VPG-K-3S-PS	VPM-K-3S-PS
	Feeder section 4S	VPG-K-4S-PS	VPM-K-4S-PS
	Feeder section 5S	VPG-K-5S-PS	VPM-K-5S-PS
	Feeder section 6S	VPG-K-6S-PS	VPM-K-6S-PS
8	End section	VPM-A	VPM-A
9	Inlet plate	VP2.07	VP2.07
10	Separator plate	VP2.08	VP2.08
11	End section	VP2.09	VP2.09
12	Crossporting bars	VP-C	VP-C
13	Tie rod for 3 feeder sections	VP.93	VP.93
	Tie rod for 4 feeder sections	VP.94	VP.94
	Tie rod for 5 feeder sections	VP.95	VP.95
	Tie rod for 6 feeder sections	VP.96	VP.96
	Tie rod for 7 feeder sections	VP.97	VP.97
	Tie rod for 8 feeder sections	VP.98	VP.98
	Tie rod for 9 feeder sections	VP.99	VP.99
	Tie rod for 10 feeder sections	VP.100	VP.100
14	Nut	DIN985-M8-6	DIN985-M8-6

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Spare parts

Spare parts table 5

Attachments

Item	Description	VPG Order No.	VPM Order No.
15	Start section for directional solenoid valve	44-0711-2265	44-0711-2266
16	4/2-directional solenoid valve, 24 V DC	161-140-050+924	161-140-050+924
17	Socket to DIN EN175301-803A	179-990-033	179-990-033
18	Fixing bolt for directional solenoid valve	DIN912-M5×45-8.8	DIN912-M5×45-8.8
19	Washer	508-108	DIN7603-A14×18-AL
20	Screw plug	DIN908-R1-4-5.8	DIN908-M14×1.5-5.8
21	2/2-directional solenoid valve for grease, 24 V DC	161-110-031+924	161-110-031+924
22	Adapter plate	44-1503-2366	44-1503-2366
23	Bolts for adapter plate	DIN963-M6×16-4.8	DIN963-M6×16-4.8
24	Screw joint	96-6013-0282	44-0159-2282
25	Washer	–	504-019
26	2/2-directional solenoid valve incl. square connector for oil, 24 V DC	VPG-VEN+924	VPM-VEN+924
27	Start section with flow limiter	24-1883-2272	24-1883-2273

Spare parts table 6

Plug-in nozzles for flow limiter

Item	Nominal volume [1] [l/min]	Index nozzle	Nozzle ø [mm]	Plug-in nozzle Order No.
28	0.08	050	0.50	24-0455-2574
	0.12	055	0.55	24-0455-2575
	0.15	060	0.60	24-0455-2576
	0.21	065	0.65	24-0455-2577
	0.25	070	0.70	24-0455-2578
	0.29	075	0.75	24-0455-2579
	0.35	080	0.80	24-0455-2580
	0.41	085	0.85	24-0455-2581
	0.47	090	0.90	24-0455-2582
	0.56	095	0.95	24-0455-2583
	0.65	100	1.00	24-0455-2584
	0.73	105	1.05	24-0455-2585
	0.79	110	1.10	24-0455-2586
	0.88	115	1.15	24-0455-2587
	0.98	120	1.20	24-0455-2588
	1.09	125	1.25	24-0455-2589

[1] based on a differential pressure of 20 bar and viscosity of 300 mm²/s.

Spare parts table 7

Blockage indicator

Item	Opening pressure	VPG Order No.	VPM Order No.
29	50 bar	VPG-UE50-3	VPM-UE50-3
	100 bar	VPG-UE100-3	VPM-UE100-3
	150 bar	VPG-UE150-3	VPM-UE150-3
	200 bar	VPG-UE200-3	VPM-UE200-3

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SKF Lubrication Systems Germany GmbH
Hockenheim Plant
2. Industriestrasse 4
68766 Hockenheim
Germany

Tel. +49 (0)6205 27-0
Fax +49 (0)6205 27-101

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