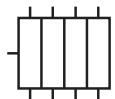




Progressive distributor

VPA-I



Connecting plate and proportioning block of sea-water resistant bronze

Use:

In progressive mode based central lubrication systems.

The main features of **WOERNER** progressive distributors are as follows:

- **Accurate proportioning volumes.**
- Clear and precise arrangement of control channels in **spite of small-size construction.**
- **Modular system construction.**
Quick fault remedy possible without having to loosen the pipeline.
- **9 different proportioning volumes** selectable in accordance with the lubricant required.
- **Extremely long service life** due to refined sliding surfaces.
- **Pluggable monitoring elements** can be replaced during operation.
- **No proportioning decrease at the piston monitored.**

Technical data:

Proportioning volume per cycle: 0,1 ... 0,9 cm³

Operating pressure at max.: 150 bar

Throughput volume:
Oil at max.: 2500 cm³/min
Grease at max.: 250 cm³/min

Delivery medium:
Oil-viscosity: >6 cP
Grease up to: NLGI-category 2

Material:
Proportioning block and connecting plate: sea-water resistant bronze
Internal parts: Steel

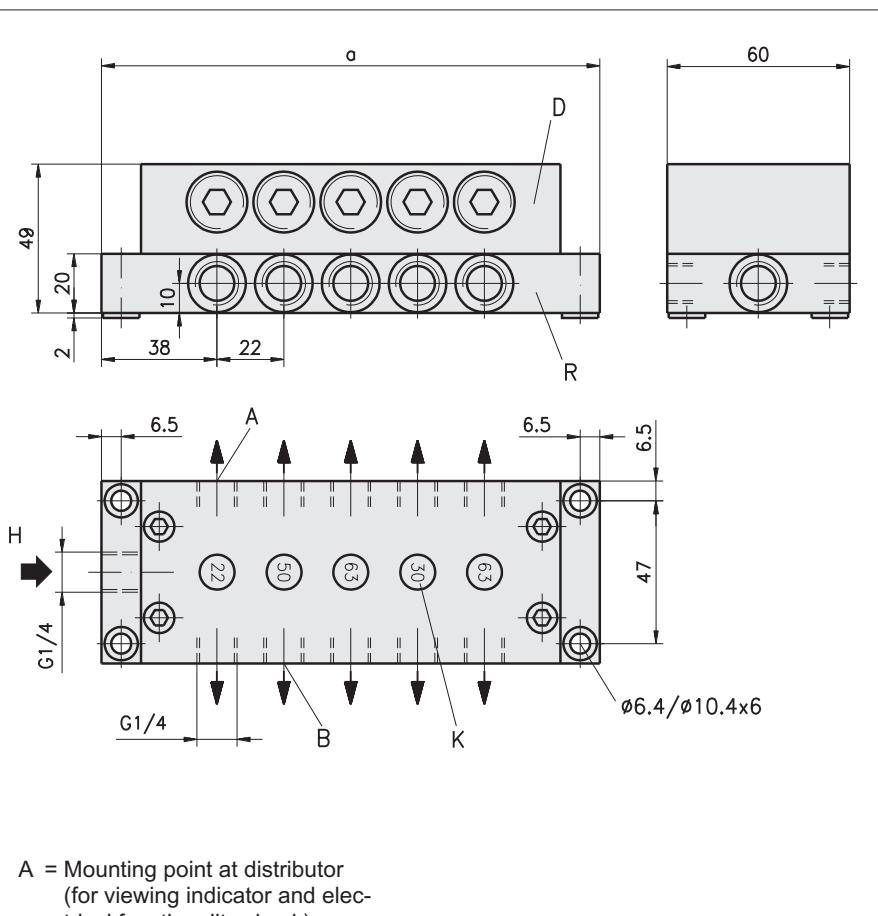
Temperature range: -20 ... +80 °C

Mounting position: usually as needed
Note: In case of heavy vibration or shock load, install the distributor such that piston axes are situated vertically to the main direction of shock impact.

An optimum ventilation of the whole lubrication system is the precondition for its functionally safe operation.

For quicker ventilation, the flow direction from bottom to top in the distributor is of advantage (inlet on bottom side).

The distributor must not be "distorted". Therefore, when mounting it, always be careful that the supporting surface is level.



A = Mounting point at distributor
(for viewing indicator and electrical functionality check)

B = Mounting point for viewing indicator
at distributor (if point A is occupied)

D = Proportioning block DPA-I

H = Main line

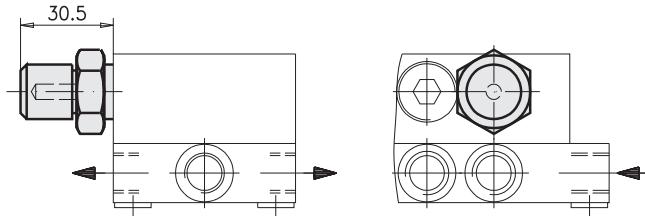
K = Proportioning volume distinctive number

R = Connecting plate APA-I

Number of outlets	Length "a"
6	120
8	142
10	164



Visual check



Functional checks:

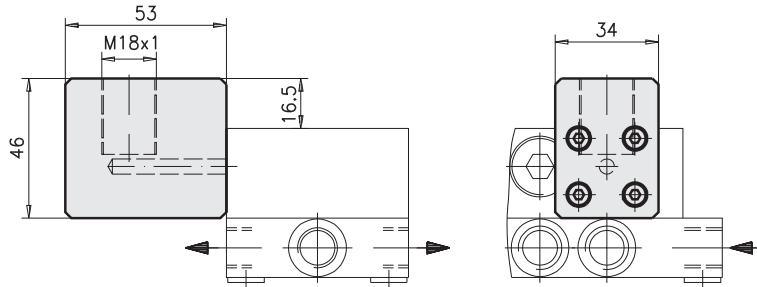
Visual check:

In a translucent polyamide casing, a red pin being fixed to the piston shows the piston's movement.

Casing material: Polyamide, translucent
Ambient temperature: -10 ... +80 °C
Weight: 0,35 kg
Mounting point at distributor: A or B

Electrical check with initiator:

Casing for initiator



Casing for initiator:

A pin being connected with the piston attenuates an initiator once per cycle.

Version "D":

Casing material: Polyamide, translucent
(Piston movement is visible)
for initiators with a
switching distance of: ≥8 mm

Version "W":

Casing material: Polyamide, black
for initiators with a
switching distance of: ≥5 mm

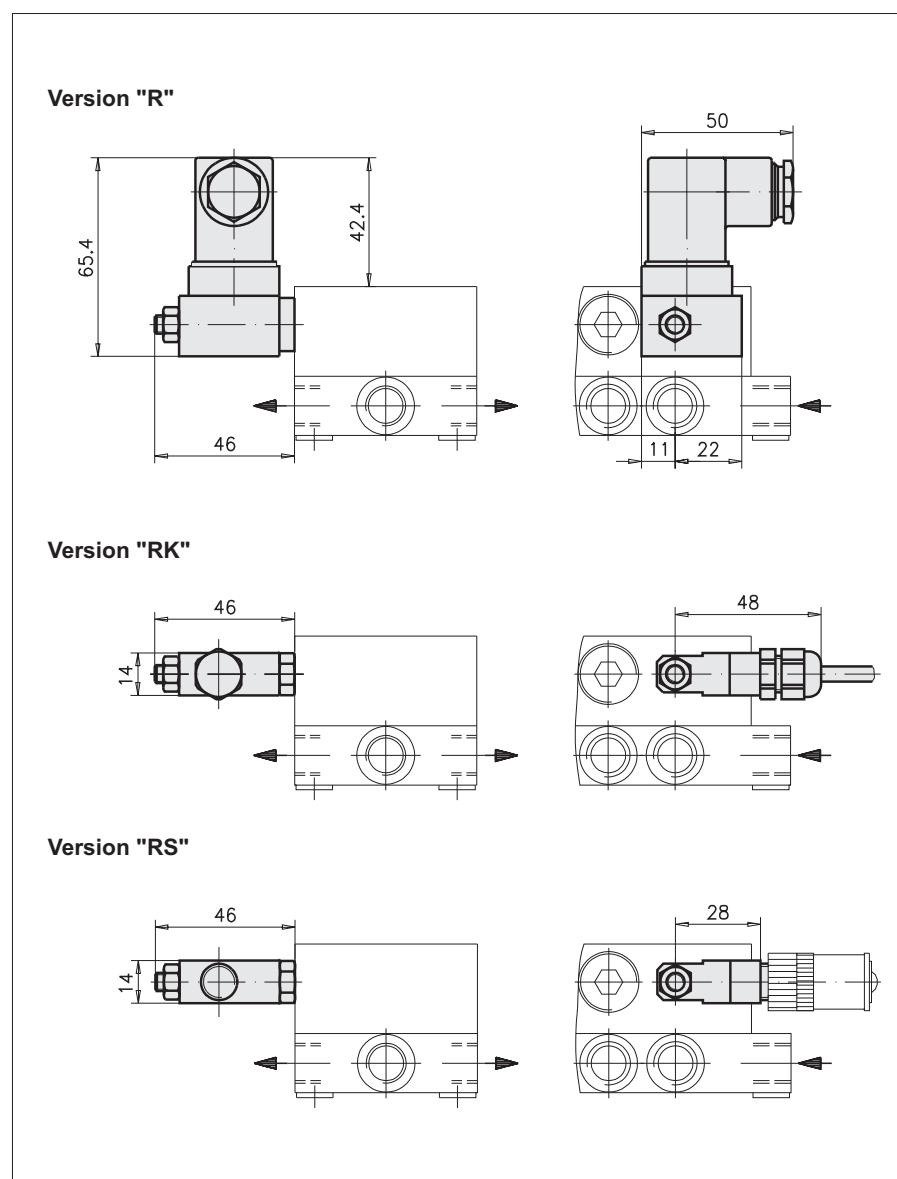
Use initiator with M18x1 thread!

(When using other initiators than those depicted below, such initiators must be checked for suitability.)

- Subject to modifications -

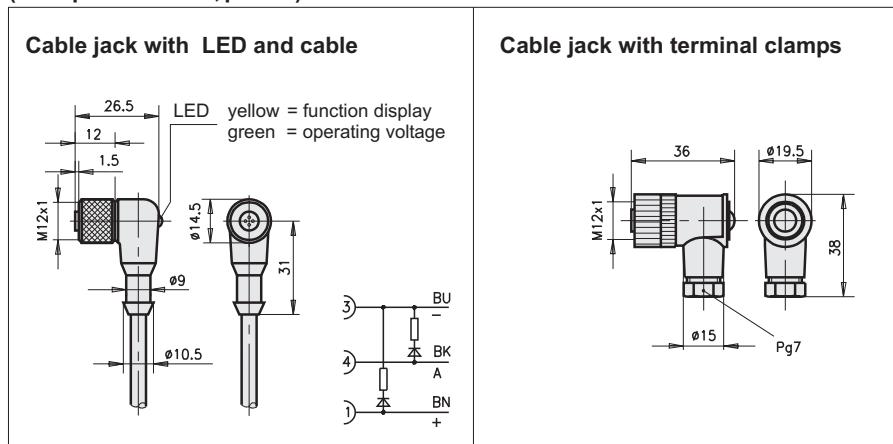
Choice of initiators:

Designation / Purchase-no.	Initiator "C" 913.900-03	Initiator "F" 913.900-11	Initiator "N" 913.900-21	Initiator "I" 913.900-14	Initiator "2" 979.044-88
Suits for	Casing "W" Switching dist.≥5mm	Casing "D" and "W" Switching dist.≥8mm	Casing "D" and "W" Switching dist.≥8mm	Casing "W" Switching dist.≥5mm	Casing "W" Switching dist.≥5mm
Dimension drawing:					
Connection diagram:					
Operating voltage:	10 ... 30 VDC	20 ... 250 VUC	10 ... 30 VDC	10 ... 30 VDC	10 ... 30 VDC
Residual ripple:	≤ 10%		≤ 15%	≤ 15%	≤ 15%
Load current at max.:	250 mA	500 mA	130 mA	200 mA	130 mA
Protection system:	IP67	IP67	IP67	IP67	IP67
Power connection:	Cable 3 m	Cable 3 m	Unit plug (see accessories, page 3)		
Length "A":	60 mm	62 mm	45 mm	100 mm	65 mm



- Subject to modifications -

Accessories:
Cable jack for functionality check "RS" and initiator
(state purchase-no., please)



Electrical check with reed contact:

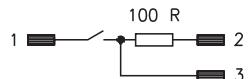
A magnet connected with the piston switches the reed contact once per cycle.

Switching voltage: 10 ... 36 VUC
Switching current at max.: 25 mA
Switching power at max.: 0.9 VA
Ambient temperature: -5 ... +80 °C
Mounting point at distributor: A
IP65

Version "R" with plug-in connection DIN 43650A:

Material (casing): sea-water resistant bronze or 1.4305
System of protection: IP65

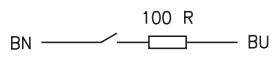
Connection diagram:



Version "RK" with cable:

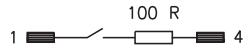
Material (casing): PA or 1.4305
System of protection: IP65
Cable
Length: 10 m
Cross section: 2x0.75 mm²
Material: Oelflex

Connection diagram:



Version "RS" with unit plug 4 pin (M12): (for matching cable jack see accessories)

Material (casing): PA or 1.4305
Connection diagram:



Cable jack with LED and cable:

Purchase-no.: 913.404-19
Operating voltage: 10 ... 30 VDC
Cable
Cross section: 3x0.34 mm²
Length: 5 m
System of protection: IP68

Cable jack with terminal clamps: (without LED)

Purchase-no.: 913.404-24
Connection type: Screws
Connection cross section:
Cable diameter: at max. 0.75 mm²
System of protection: 4 ... 6 mm
IP67



Purchase-designation: Progressive distributor



Number of outlets	Functionality check			Proportioning volume per piston stroke and outlet [cm³] distinctive no.	Gasket material
	Visual check	electrical check	Initiator		
6 ... 10 increasing by 2 outlets each	without 0	without 0	without 0	0,10 (10) 0,50 (50)	NBR (Perbunan) P
		Reed contact		0,15 (15) 0,63 (63)	
		translucent initiator casing D switching distance ≥ 8mm	(N) (F)	0,22 (22) 0,75 (75)	
	with S	reinforced initiator casing W switching distance ≥ 5mm	(N) (I) (2) (C) (F)	0,30 (30) 0,90 (90)	FPM (Viton) V
				0,40 (40)	

Purchase-designation: Proportioning block



Purchase-designation: Connecting plate



Note:
When a functionality checking device is to be added on, the proportioning volume must be 0,22 cm³ at least at the last point!

Purchase-example:

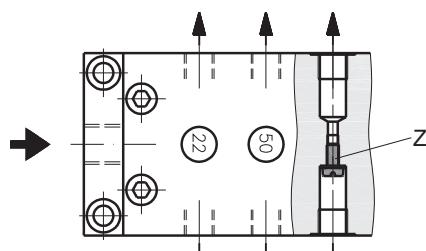
Purchase-designation:

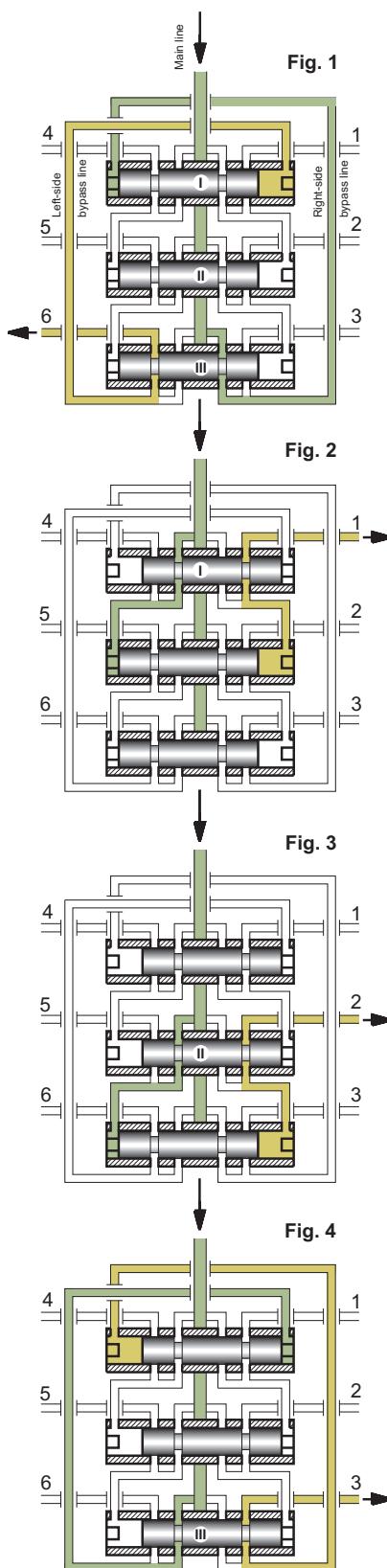
Progressive distributor with 10 outlets, without visual check "0", with casing for initiator "W" and initiator "C", proportioning distinctive numbers "50", "63", "30", "30", "63", gasket material "P".

VPA-I / 10 / 0 / W / C / 50 / 63 / 30 / 30 / 63 / P

Combination of outlets,
doubling the proportioning volume at an outlet:

Connect opposing outlets by removing the "Z" screw.
Close the not needed outlet with the lock screw.
Without removal of the "Z" screw, no outlet must be locked.





Functional process fig. 1 ... 4:

The lubricant flows from the main line through the right-side ring groove of piston III as well as the bypass line (right) and to the left side of piston I and moves it into its home position. The lubricant displaced by piston I is ejected via the left bypass line through outlet no. 6.

Monitoring of progressive distributors:

As for instance due to soiling, the flow through a lubricant point line may be prevented. This will cause a piston to get blocked. By virtue of the forced control as depicted in figures 1 up to 4, the other pistons will be stopped as well.

Due to this configuration, the proportioning at all outlets of the distributor can be monitored by means of a sensor at one piston only.

Mounting note:

The pistons are provided with an extremely small fitting clearance. Therefore, the pistons, after the dismantling of a distributor, must never be interchanged.

Formula for calculating the lubricant available for lubrication point:

A progressive distributor allocates the delivered lubricant to the individual lubrication points in forced order. Due to the functional process as described herein, a safe proportioning is ensured.

The lubricant q_i delivered to a lubrication point i can be calculated as follows

$$q_i = \frac{K_i}{2 * (K_1 + K_2 + K_3 + \dots)} * Q$$

Q = lubricant delivered to the distributor,

K_i = distinctive number of the outlet i

After shifting of piston II, lubricant flows to the left side of piston III and pushes it into its right-side home position. The displaced lubricant is ejected via outlet no. 2. The continuation of that process is evidenced in the scheme depicted.