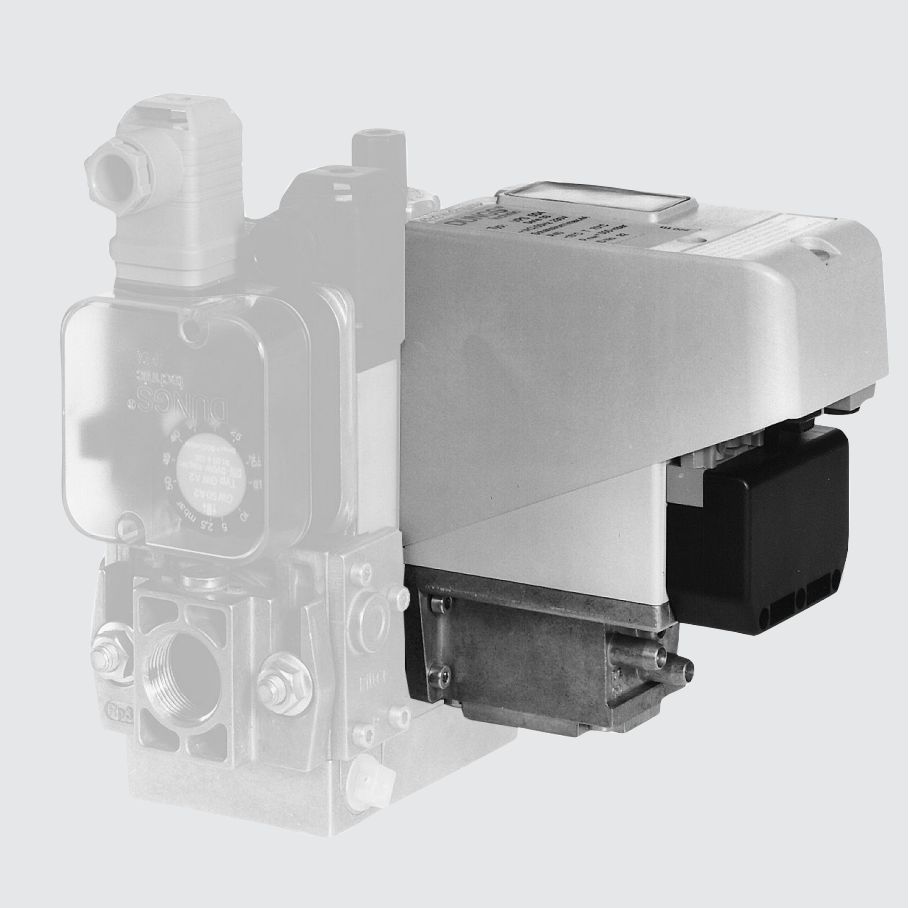
Valve testing system
VPS 508
for multiple actuators

8.13

DUNGS®
Combustion Controls



Technical description
The VPS 508 is the valve proving system for DUNGS multiple actuators. The valve proving system complies with EN 1643:
- Equipment operates independent of residual pressure in the range of the permissible operating range.
- Test volume ≤ 8 l
- Setting work not necessary on site
- Short test period: min. 10 s, max. 48 s
- Tightness or leaks are displayed by an LED
- External fault display possible
- Electrical connection at screw terminals via PG 13.5 cable entry

Application
Valve proving system for DUNGS single valves, DMV double solenoid valve and GasMultiBloc MB.
The VPS 508 can also be used for monitoring the DUNGS solenoid valves, with and without bypass connection.
24 VDC design for gas motors.
Suitable for gases of gas families 1, 2, 3 and other neutral gaseous media.

Approvals
EC type testing certificate as per:
- EC-Gas Appliances Regulation
- EC-Pressure Equipment Directive

Approvals in other important gas consuming countries.

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VPS 508 Valve proving system for automatic shutoff valves as per EN 161, Class A and Class B
The VPS 508 may be used with any other valve whose tightness in counter-flow direction excludes by construction a leakage in flow direction.
The VPS 508 is suitable for all DUNGS valves according to EN 161 Classes A and B.

Specifications

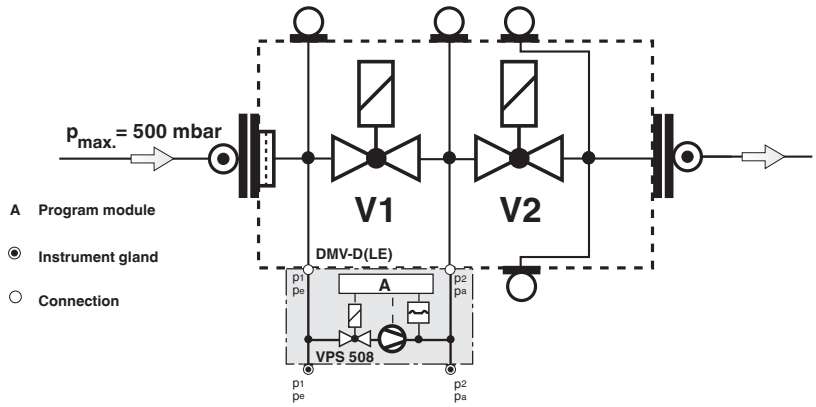
Operating pressure	max. 500 mbar (50 kPa)
Test volume	≥ 1.5 l ≤ 8.0 l
Pressure increase by motor pump	≈ 20 mbar
Nominal voltage, Frequency	refer to type overview page 7
Rating requirement	During pumping time approx. 60 VA, in operation 17 VA
Prefuse (provided by customer)	10 A quick-acting or 6.3 A slow-acting fuse
Fuse installed in housing cover, replaceable	Microfuse 6.3 slow-blow L 250 V; IEC-127-2/III (DIN 41 662)
Switching current	Operating output VPS 508 S04, S05: max. 4 A Refer to motor startup current! Interference output VPS 508 S04, S05: max.1A
Degree of protection	VPS 508 S04, S05: IP 54
Ambient temperature	~ (AC) 50 Hz 230 V: -15 °C bis +70 °C other: -15 °C to +60 °C
Operational attitude	Suitable for use up to 2000 m above sea level Operating altitudes > 2000 m on request
Release time	Approx. 10 - 48 s, depending on test volume **and** input pressure
Sensitivity limit	max. 50 l/h At inlet pressures of < 50 mbar, limit pressure rates well below 50 l of air per hour occur due to the mode of operation. This allows for applications involving low inlet pressures.
Switch-on duration of control	100 % ED
Max. number of test cycles	10/h. Wait for at least 2 minutes after carrying out more than 3 consecutive test cycles.
Installation position	vertical, horizontal, not upside down
Media	Gas families 1, 2, 3, sewage gas, and biogas (dry, H2S < 0.1 % by volume) and other gaseous media H_2 bis ≤ 20 % For gases having a butane content of < 60 %

Functional description

The VPS 508 operates depending on pressure build-up.
The program module starts to function when heat is requested.
Test is performed depending on the burner functional procedure:

Check **prior to** burner start or
Check **during** pre-purge period or
Check **after** burner shut-down

Function principle



Release period t_F

Period which a VPS requires to perform a complete operation procedure. The release period of the VPS 508 depends on **test volume and input pressure**:

t_F max. ≈ 48 s

Test period t_{test}

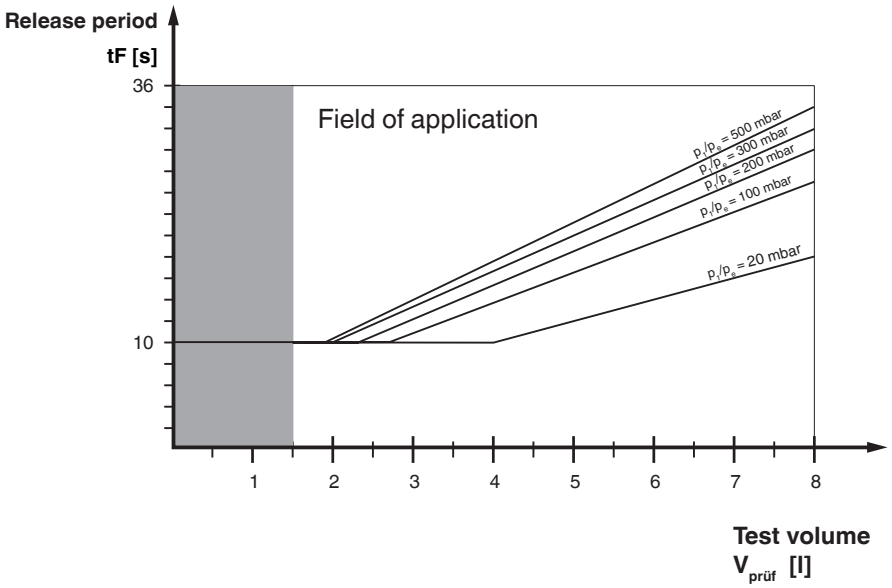
Pumping time of motor pump.

Test volume V_{Test}

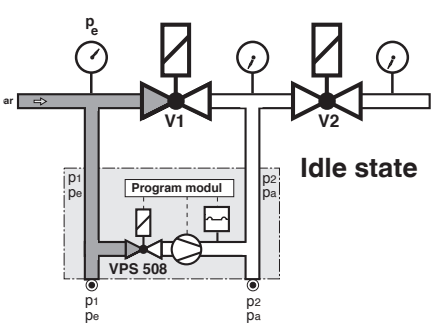
Volume between V1 output-side and V2 input-side and the intermediate tube pieces.

$V_{test\ min./\ VPS\ 508}$ = 1,5 l

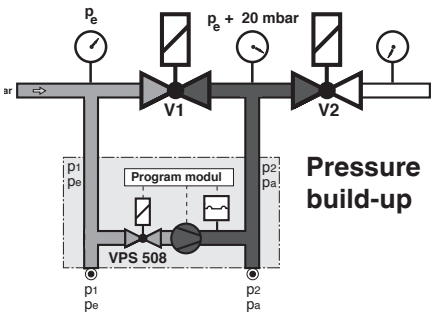
$V_{test\ max./\ VPS\ 508}$ = 8 l



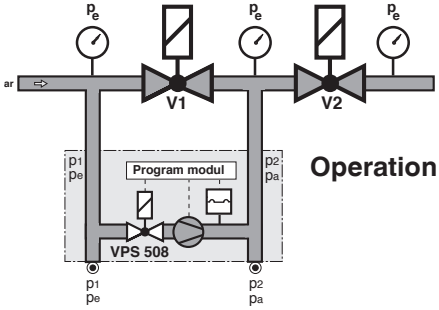
Program sequence



Idle state



Pressure build-up

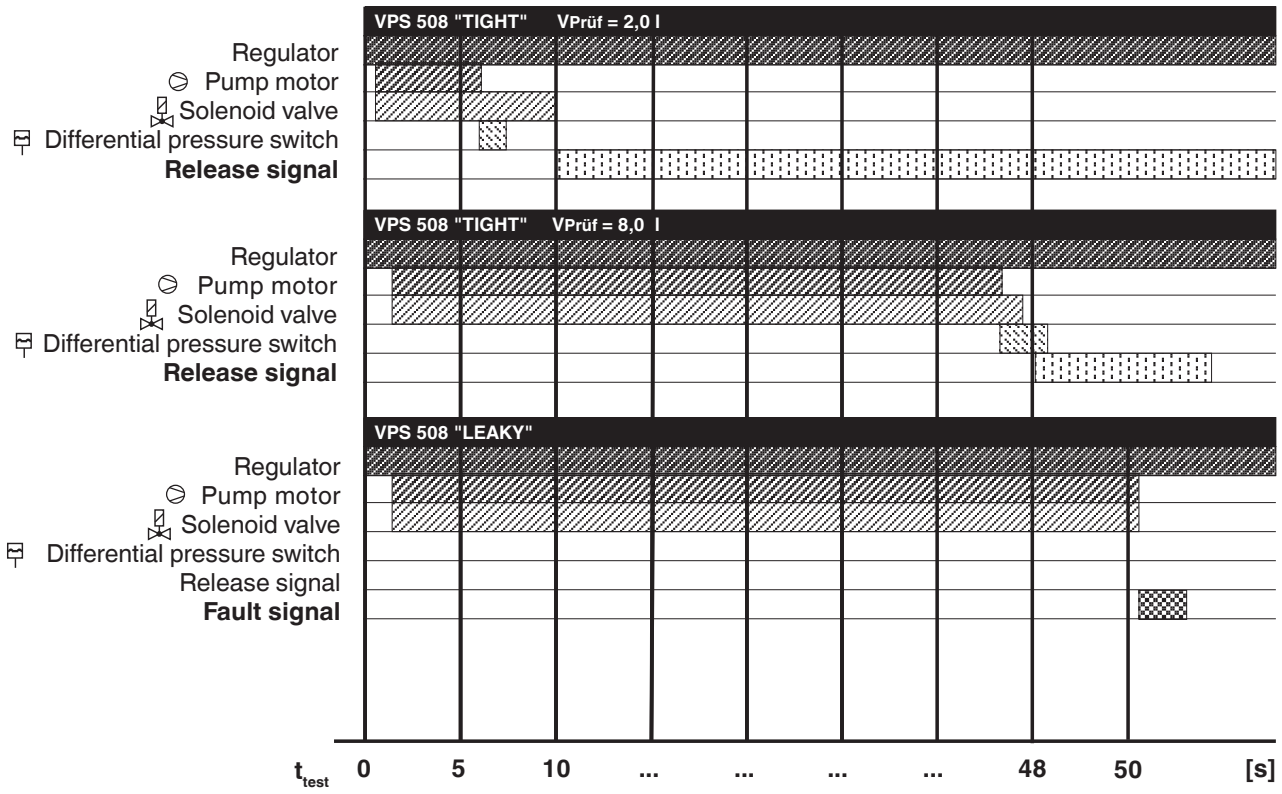


Operation

Idle state: Valves 1 and 2 are closed.
Pressure build-up: The internal motor pump increases the gas pressure in the test section by approx. 20 mbar compared to the input-side pressure applied to valve V1.
During the test period, the installed differential pressure switch monitors the test section for leakage. If the test pressure is attained, the motor pump is switched off (end of test period). The release time (10-48 s) depends on the test volume (max. 8.0 l) and input pressure (max. 500 mbar). If the test section is tight, the contact is released to the automatic burner control after max. 48 s - the yellow signal lamp lights up.
If the test section is leaky or if the pressure increase by + 20 mbar is not attained during the test period (max. 48 s), the VPS 508 switches to fault. The red signal lamp lights as long as the contact release by the regulator or thermostat is present (heat requirement).
If there is a short power failure during the test or burner operation, the test is started again automatically.
If the pumping time < approx. 10 s, the pressure difference between the testing system and the inlet pressure is balanced after pumping is finished.

Operation: The internal valve of the VPS 508 is closed.

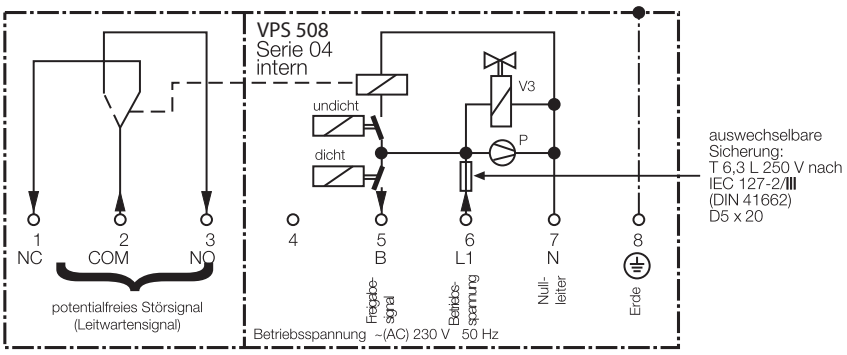
Program flowchart



Electrical connection
VPS 508 S04

PG 13.5 cable duct and connection to screw terminals below cover in housing (see Dimensions VPS 508 S04, S05).

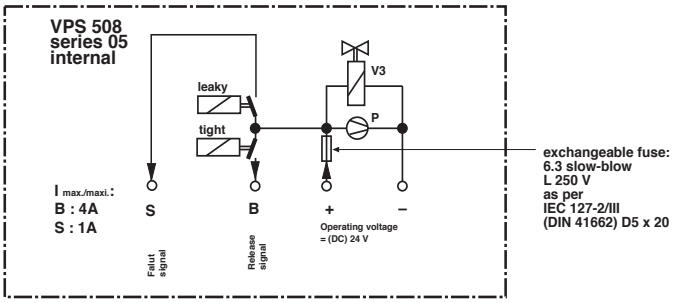
⚠ Floating control room signal may only be used for signalling, never for burner release.



Electrical connection
VPS 508 S05

PG 13.5 cable duct and connection to screw terminals below cover in housing see “Dimensions VPS 508 S05”.

⚠ Operating voltage range 20 V - 30 V DC. Refer to motor startup current!



Test volume of DUNGS **multiple actuators DMV-..., MBC-...**

Type	Rp/DN	Test volume [l]	Type	Rp/DN	Test volume [l]
DMV-D(LE) 5080/11	DN 80	1,47 l	**MBC 1900**	DN 65	1,47 l
DMV-D(LE) 5100/11	DN 100	2,28 l	**MBC 3100**	DN 80	2,28 l
DMV-D(LE) 5125/11	DN 125	3,56 l	**MBC 5000**	DN 100	3,55 l
DMV-D(LE) 5065/12	DN 65	1,47 l	**MBC 7000**	DN 125	6,00 l
DMV-D(LE) 5080/12	DN 80	2,28 l	**MBE...**		
DMV-D(LE) 5100/12	DN 100	3,55 l	**VB 125/5**	DN 125	5,35 l
DMV-D(LE) 5125/12	DN 125	6,00 l	**VB 150/6**	DN 150	7,00 l

Use of VPS 508 at DUNGS single valves.
Determining the test volume.

When mounting the VPS 508 on single valves DN 40-DN 100, the adapter set is required, **Ordering No. 222 740.**

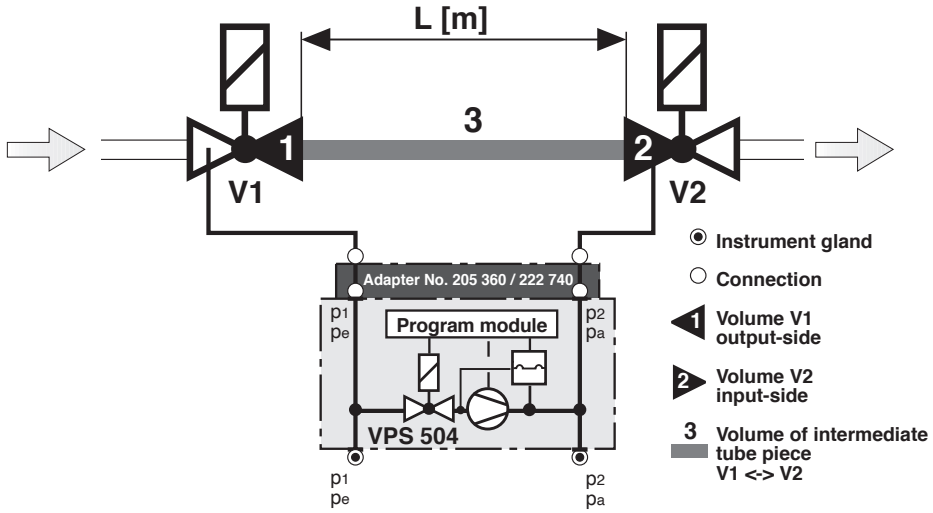
Determining the test volume V_{test}

1. Determine the output volume of V1 (refer to table).
2. Determine the input volume of V2 (refer to table).
3. Determine the volume of the intermediate pipe part 3 (refer to table).
4. V_{test} = Volumen $_{valve\ 1}$ + Volumen $_{intermediate\ pipe\ part}$ + Volumen $_{valve\ 2}$

The max. test volume of 8 l must not be exceeded.

V_{Test} = **Valve volume** V1 outlet+ V2 inlet + **Volume of pipeline**

Demetering test volume V_{Test}

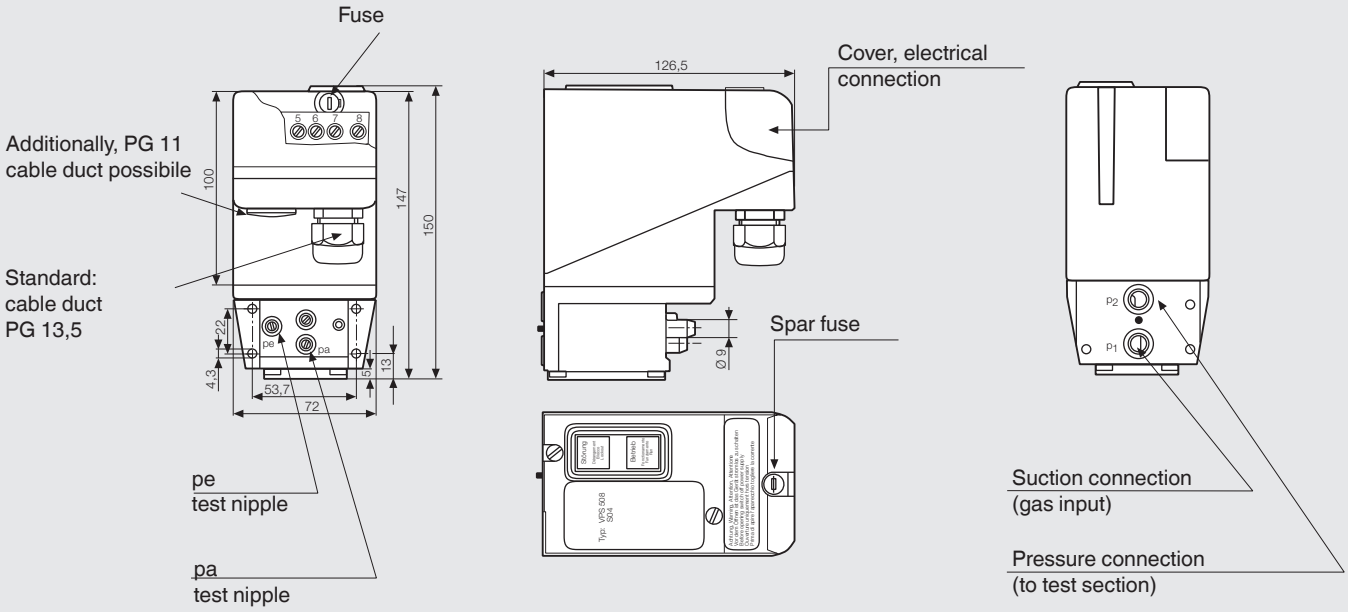


Rp / DN	Valve - Volume [l] V1 $_{outlet}$ + V2 $_{inlet}$		Test volume [l] = Volume V1 $_{outlet}$ + V2 $_{inlet}$ + Pipeline length Pipeline lengths between individual valves L [m]							
			0,5 m		1,0 m		1,5 m		2,0 m	
	Rp	DN	Rp	DN	Rp	DN	Rp	DN	Rp	DN
Rp 3/8	0,01 l		0,06 l		0,11 l		0,16 l		0,21 l	
Rp 1/2	0,07 l		0,17 l		0,27 l		0,37 l		0,47 l	
Rp 3/4 (DN 20)	0,12 l		0,27 l		0,42 l		0,57 l		0,72 l	
Rp 1 (DN 25)	0,20 l		0,45 l		0,70 l		0,95 l		1,20 l	
Rp 1 1/2 / DN 40	0,50 l	0,70 l	1,10 l	1,35 l	1,70 l	2,00 l	2,20 l	2,65 l	2,80 l	3,30 l
Rp 2 / DN 50	0,90 l	1,20 l	1,90 l	2,20 l	2,90 l	3,20 l	3,90 l	4,20 l	4,90 l	5,50 l
DN 65		2,0 l		3,7 l		5,30 l		7,00 l		8,60 l
DN 80		3,8 l		6,3 l		8,80 l		11,30 l		13,80 l
DN 100		6,5 l		10,5 l		14,40 l		18,40 l		22,3 l
DN 125		12,0 l		18,2 l		24,3 l		30,50 l		36,6 l
DN 150		17,5 l		26,5 l		35,2 l		44,10 l		52,9 l
DN 200		46,0 l		61,7 l		77,4 l		93,10 l		108,9 l

——— VPS 504 $0,1\ l \le V_{prüf} \le 4,0\ l$
------- VPS 508 $1,5\ l \le V_{prüf} \le 8,0\ l$
— — — VDK $0,4\ l \le V_{prüf} \le 20,0\ l$
····· DSLC Testvolume adjustable

$1\ l = 1\ dm^3 = 10^{-3}\ m^3$

Dimensions [mm]
VPS 508 S04, S05



VPS 508 type overview / accessories / order data

Version **VPS 508 Series …**	
VPS 508 S04 230 V -15 % +10 % 50 Hz	**278451**
VPS 508 S04 110 V -15 % +10 % 50 Hz	**251005**
VPS 508 S05, 20-30 VDC	**251008**
Accessories/spare parts	
Adapter kit VPS 504 for solenoid valves	**222740**
Adapter kit VPS / VDK for solenoid valves	**223470**
Mounting kit housing flange 7 mm (4 x M4 x 16, 2 x O-Ring, 2 x filter insert)	**221503**
Mounting kit housing flange 11 mm (4 x M4 x 20, 2 x O-Ring, 2 x filter insert)	**292210**
Appliance fuse link (5 pieces)	**231780**
Spare parts set VPS filter	**243801**

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We reserve the right to make any changes in the interest of technical progress.

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