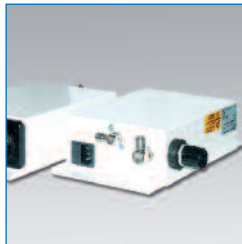


AP 501

Automatic Port Opener



en

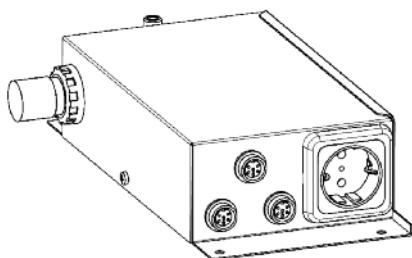


Inhalt

0. Introduction	Page 3
0.1 Declaration of conformity	
0.2 Scope Of Delivery	
0.3 Functions	
1. Installation	Page 7
1.1 The Control Unit	
1.2 The Port Valve	
1.3 Pneumatics and Power Supply	
1.4 Electrical connections	
2. Setup	Page 10
2.1 Sensitivity Setup	
2.1.1 Load Predefined Settings	
2.1.2 Automatic Sensitivity Setup	
2.1.3 Manual Sensitivity Setup	
2.1.4 Other Devices	
2.1.5 Sandblaster	
2.2 Run-out Time	
2.3 Reset	
2.4 Parameter Overview	
2.4.1. Enter Values	
2.4.2. Check Values	
2.4.3. Load Values	
3. Trouble Shooting	Page 16
4. Service	Page 18
4.1. Warranty	
4.2. Maintenance	
4.2.1. Port Valve	
4.2.2. Fuse	
5. Data	Page 11
4.1 Technical Data	
4.2 Accessories	

0. ■ Introduction

0.1 Declaration of conformity



Dear customer,

We congratulate you on your purchase of a suction system from our company and wish you much success with this product.

The AP501 manages the automatic opening and closing of a suction station, synchronous to the operation of a handpiece grinding unit. The electronics can be adjusted to suite many different handpiece control units with a max. power consumption of 500W.

Due to the large number of different units with different technical properties on the market, you will need to make some adjustments in most cases before the device works proper with your handpiece unit.

We would therefore ask you to read these instructions and make the best settings for each individual workplace.

Thank you.

We, Zubler Gerätebau GmbH
Buchbrunnenweg 26
D-89081 Ulm-Jungingen,

hereby declare, that the suction unit

AP501

is in compliance with the protective requirements in accordance with the provisions of the following directives:

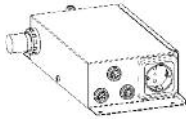
98/37/EG Machines Directive
73/23/EWG Low-Voltage Directive
89/336/EWG EMV Directive

In case of any changes being made to the product without our agreement, this statement is no longer valid.

Ulm, den 15. July 2005

Kurt Zubler
Managing Director

0.2 Scope Of Delivery



- (1) AP501 Control unit



- (2) Port valve



- (3) Suction control wire (start/stop)
SL-AP 5m



- (4) Power cord



- (5) Pressure hose 6mm
Port valve 2m



- (6) Pressure hose 8mm
Supply 2m



- (61) Quick connector male
NW7 for hose 8mm

0.3 Functions

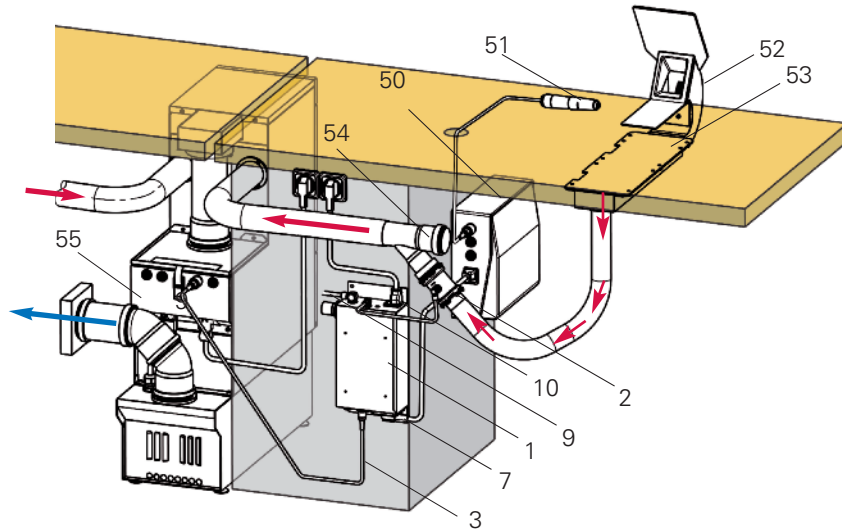


Abb. 1: Workstation Layout

1	AP501 control unit
2	port valve
7	power socket for handpiece control unit
9	pressure connector
10	power cord
50	handpiece control unit (knee control)
51	handpiece
52	funnel
53	rectangular pipe
54	pipe system

The automatic port opener **AP501** consists of the control unit (7) and the port valve (2).

- By actuating the handpiece control unit (50) the handpiece (51) is rotating.
- The AP501 control unit (1) therefore opens the port valve (2).
- After stopping the handpiece the suction port remains open for another 3 seconds (run-out time) to vacuum dust which is still around.

1. ■ Installation

1.1 The control unit

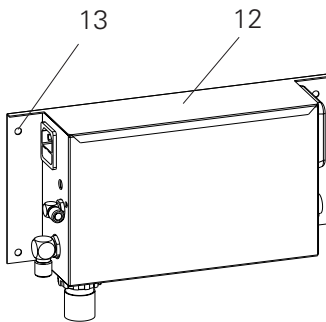
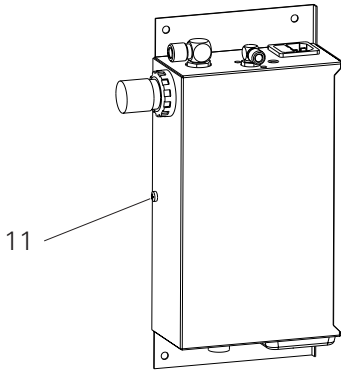


Abb. 2: Mounting Orientation

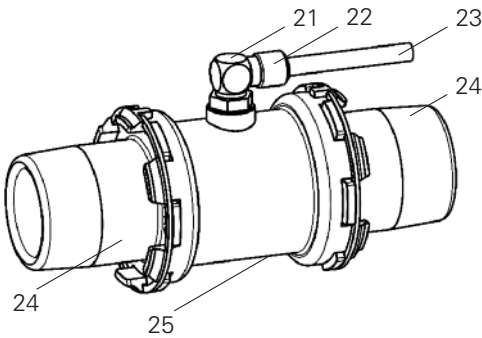
- 11 Screw
- 12 Ground plate
- 13 Mounting holes

We recommend to proceed as follows:

1. Place the suction system
2. Mount the AP501
3. Install the suction hose / pipe
4. Install pneumatic connections
5. Install electric connections
6. Clean up, wrap wires

- Mount the control unit (1) close to your workstation e.g. below the bench top. Therefore use the 4 mounting holes (13) of the ground plate (12).
- You can mount the control unit (1) either vertical or horizontal.
- The power sockets and programming connector (10) must still be accessible.
- The screw (11) should also be accessible to remove the housing without removing the ground plate (12)

1.2 The Port Valve



- The port valve (2) opens and closes the suction station.
- The port valve is closed by inflating an internal rubber membrane.
- The port valve is opened by releasing the compressed air.

Abb. 2: The Port Valve

21	pressure connector
22	ring
23	pressure hose 6mm
24	suction line connector
25	valve body

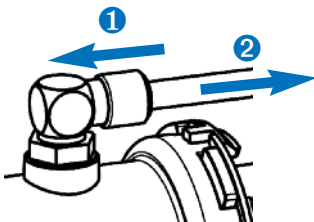


Abb. 3: Pressure Connector 6mm

Exchanging the Port Valve

- A permanent noise of blowing air at the workstation may be caused by a defective port valve. The port valve should be exchanged asap.
- Keep a new port valve (order.no. 752/065) ready.
- Remove the pressure hose (13) by pressing ring (12) and pull out the pressure hose simultaneously.
- Plug the pressure hose (13) into the connector of the new port opener and exchange it with the defective one in the suction line.

1.3 Pneumatics And Power Supply

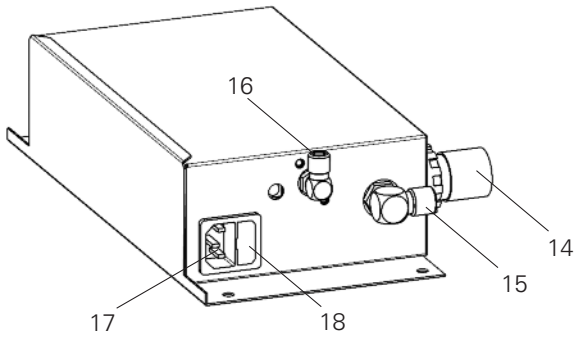


Abb. 4: Control Unit Back View



- 14 pressure reducer

- 15 compressed air supply 8mm

- 16 pressure connector 6mm port valve (2)

- 17 mains supply

- 18 fuse holder

- The pressure reducer is factory set to 1bar. Do NOT make any changes !
- The knob (14) is secured. Removing the tie wrap will void the warranty of the control unit and port valve.

1.4 Electrical Connections

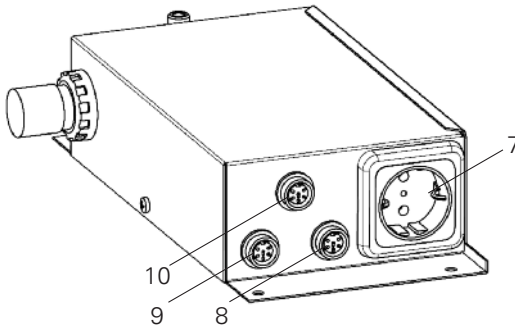


Abb. 5: Control Unit Front View

7 Socket for handpiece

8 Connector for external switches (optional)

9 Connector for suction control wire (3)

10 Connector for programming module

- Connect the 6mm pressure connector (16) with the pressure connector (21) of the port valve (2).
- Connect the 8mm pressure connector (15) with the pressure supply 1bar.
- Connect the enclosed power cord with the cold gear socket (17) and plug the power cord into a nearby power socket.
- Plug the power cord of your handpiece control unit into the power socket (7) of the AP501 control unit.
- (optional) Connect the additional available accessories to the connectors. (see "Accessories" on page 9)

■ Connector 8

To connect the following external switches (optional):

- SL1 Manual suction ON (suction without grinding)
- SL2 manual suction OFF (grinding without suction)
- SL-K connection KaVo K-Control (no sensitivity adjustment needed)
- LT air turbine (with pressure switch)

■ Connector 9

To connect the AP501 control unit (1) with the suction unit via the enclosed suction control wire (3)

■ Connector 10

To connect the programming module (30) which is needed to adjust the sensitivity and the run-out time (see page 10)

The programming module is included with the suction unit.

2. Setup

2.1 Sensitivity Setup

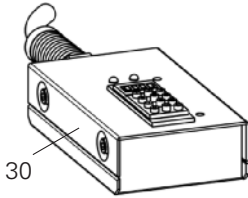


Abb. 6: Programming Module

With the programming module you can change the settings of the AP501 control unit.

Plug the programming module (30) into the connector (10) of the AP501 control unit.

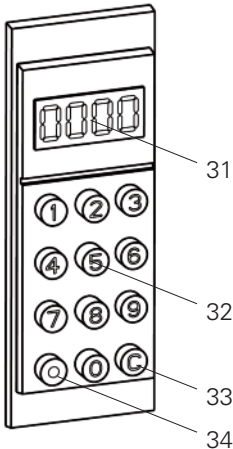


Abb. 7: Numeric Keyboard

28 display

29 numeric keyboard

30 enter (dot)

2.1.1 Load Predefined Settings

The AP501 is equipped with a list of predefined settings for some of the most common handpieces.

(The run-out time is always 3 seconds)

Code 61 Schick C2, C3, KaVo K11, K10 (**factory setting**)

Code 62 KaVo K-Control*, K9, K4

Code 63 NSK Ultimate 400, KaVo, SF

Code 64 Schick CN

Code 65 NSK Ultimate 500**, K9***, K4(3)

Example: Press as follows for KaVo K-Control:



* The setting for Kavo K-Control is independent of the handpiece used

** The device must first be switched to „suction coupled mode“ (see operating instructions)

*** Alternative setting with higher sensitivity as Code 62.

2.1.2 Automatic Sensitivity Setup

Use the automatic sensitivity setup, if the predefined settings (C61-C65) does not work proper.

The control unit measures the standby (C2) and the run value (C3) and calculates the sensitivity level (C1) automatically.

■ Switch ON the control unit of the handpiece. (handpiece may NOT run !)

Press C2 followed by two times dot.

Press:



Display:



e.g.

The display shows the value of C2



By pressing dot the value will be saved.

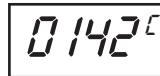
■ Operate the handpiece with the speed the suction should start (e.g. 5000rpm).

Press C3 followed by two times dot.

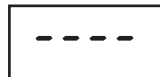
Press:



e.g.



The display shows the value of C3.



By pressing dot the value will be saved.

The sensitivity value (C1) is calculated and stored automatically. C1 is half way between C2 and C3.

In the above case the sensitivity value C1 is 0114.

2.1.3. Manual Sensitivity Setup

If the predefined settings or the automatic setup does not work or will cause a regular ON/OFF (ghosting) of the suction, a manual adjustment is necessary.

Therefore the actual sensitivity level C1 must be read out first. With C80 the parameters (C1-C7) can be checked.

Press:     Display:  The display shows the parameter which will be displayed next (C1)



e.g.  The display shows the value of C1

Press:    Displays C80 is finished.

If the suction is ghosting, the sensitivity value C1 must be increased about a min. of 5 points. (E.g. from 0114 to 0120)

If the suction does not open, C1 must be decreased accordingly.

You can change the value of C1 described as follows:

Press:    Display:  Ready to enter the new value of C1



e.g. 



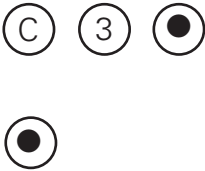
Displays C1 is finished.

2.1.4. Other Devices

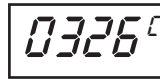
For the most devices without a standby mode, usually no sensitivity adjustment is needed. Machines with low power consumption or standby mode must be adjusted according to 2.1.2

To avoid ghosting or disturbances we recommend to enter the run parameter C3. Switch ON the machine and press C3 followed by two times dot.

Press:

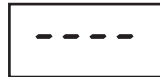


Display:



e.g.

The display shows the value of C3.



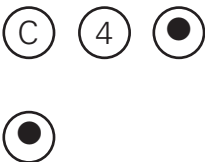
Displays C3 is finished.

2.1.5. Sandblaster

Some sandblasters are equipped with low power fluorescent tubes which will not work with the automatic or manual sensitivity setup.

Therefore set the value of C4 to 0. (C4 factory setting is 15)

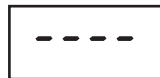
Press:



Display:



Ready to enter the new value of C4.



Displays C4 is finished.

2.2 Run-Out Time

The run-out time can be set from 0-250 seconds to remove dust clouds. (C7 factory setting is 3)

Press:



Ready to enter the new value of C7.



Displays C7 is finished.



Displays C7 is finished.

2.3 Reset

- Insert C60 and press enter (dot) twice.

Press:



In some cases a reset may be helpful. The factory settings can be loaded by pressing Code 60.

After that you have to set up the sensitivity for your handpiece using either the predefined codes (61-65) or use the automatic sensitivity setup.

2.4. Parameter Overview

2.4.1. Enter Values

Press the following to overwrite values:

Press:  Code-Nr.  Value 

1	Sensitivity level	0-1023
6	Damping	0-250
7	Run-out time	0-250 (sec)
59	Operating mode	10 central suction 11 FZ1 ,FZ2
72	Closing time delay	0-250 sec

2.4.2. Check Values

Press the following to check values:

Press:  Code-Nr.  By pressing "dot" you can scroll through the parameters.

80	Check sensitivity values	C1 bis C7
89	Check operational values	C59-C72
79	Display values permanent	on /off
99	Software version	e.g. 0107

2.4.3. Load Values

Press the following to load values:

Press:  Code-Nr.  

60	Reset	Factory setting C61
61-66	Predefined sensitivity settings	see 2.1.1

3. Troubleshooting

Suction starts running, but port valve does not open

Defect of electromagnetic valve

Replace the electromagnetic valve or send the the control unit to your local dealer for repair.

Port valve is open, but suction does not start.

Central suction mode

Change the operation mode to FZ1/FZ2 see 2.4.1

Port valve does not open and suction does not start

Tool not plugged into the AP501

Check the power supply

External switch SL2 is ON

Switch SL2 OFF, unplug SL2

AP501's software may be stuck

dis-/reconnect power supply

Sensitivity level too high

Adjust the sensitivity (see 2.)

Defect

Send the the control unit to your local dealer for repair.

Suction is running and port valve does not close

There are more than one handpiece / machine connected to the AP501

Do not use multiple socket

External switch SL1 is ON

Switch SL1 OFF, unplug SL1

AP501's software may be stuck

dis-/reconnect power supply

Sensitivity level too low

Adjust the sensitivity (see 2.)

Defect

Send the the control unit to your local dealer for repair.

Suction switches ON/OFF autonomous (ghosting)

Other lab equipment (e.g. furnace) may cause interferences

Turn the power plug of the AP501 about 180°

Sensitivity level too low

see 2.1.3

Suction only starts with higher RPMs or stops

Sensitivity level too high

Lower C1 manually see 2.1.3

Suction switches ON/OFF regular while working

Handpiece signal is pulsing

Increase the damping C6 to 10 see 2.4.1

Handpiece / machine has no power

Handpiece signal is pulsing

Check if the suction unit is switched ON and ready

AP501 has no power

Check the power supply and the fuse inside the mains socket see 4.2

Suction control wire (3) is not connected or defect

Check or replace the suction control wire (3)

Suction starts with other workstation

Compressed air is missing

Check if the compressor is working and the AP501 is connected to the compressed air supply

There is always some noise, even if the suction is OFF

The rubber membrane of the port valve (2) is damaged

Replace the port valve (2) or stop the leaking air

4. ■ Service

4.1 Warranty

For the control unit (1) we offer a warranty period of 2 years for daily commercial use. Furthermore we offer a free exchange of the port valve in case of a defect for the period of 3 years.

Please notice, that for the AP501 no on-site service is possible. The defect parts must be returned. To keep downtime short we usually send a replacement part which arrives before the defect part is sent.

4.2 Maintenance

The control unit of the AP501 (1) and the port valve (2) are maintenance free. In case of a defect the exchange is performed by lab personnel.

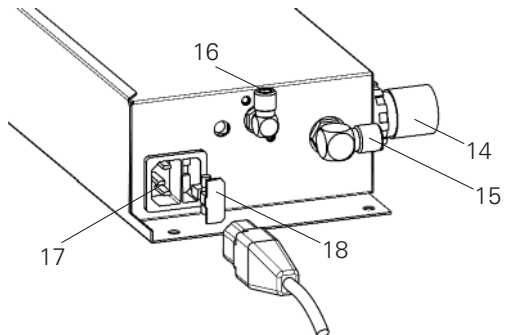
4.2.1. Port opener

The port valve (2) is a wear part. High numbers of open/close cycles will cause material fatigue of the membrane. By returning a defective port valve after the warranty period you will receive a new valve for an exchange price.

4.2.2. Fuses

The main fuse of the AP501 is located inside the mains socket (17). The fuse holder (18) holds two fuses of the same size, while just the back fuse is in use. The front fuse is a replacement.

- 14 pressure reducer
- 15 compressed air supply 8mm
- 16 pressure connector 6mm port valve (2)
- 17 mains supply
- 18 fuse holder



5. Daten

5.1 Technical Data:

Length	270mm
Width	140mm (with reducer 180mm)
Hight	70mm
Weight	2,0kg
Voltage	230 V ± 5% 50Hz
Total power draw	1000W
Main fuse	T 5A

5.2 Accessories:

		Part no.
SL-1 switch Automatic/ON	2m	825 / 2565
Switch ON manually		
E.g. mix monomer		
SL-2 switch Automatic/OFF	2m	825 / 2567
Switch OFF the automatic mode		
E.g. grinding precious metal		
SL-K control wire KaVo K-Control	1m	825 / 256K
Direct coupling wire		
KaVo K-Control - AP 501		
SL-AP suction control wire	5m	825 / 25641
SL-AP suction control wire	10m	825 / 25642
LT-01 pressure switch for air turbine	2m	825 / 256A
EM programming module	1m	825 / 294

B00070 / 07-2010



b01.039 AP500-en 07-2010
technical changes without notice!



www.zubler.de

Zubler Gerätebau GmbH
Buchbrunnenweg 26
D-89081 Ulm-Jungingen