

# AP 500

## Automatic Port Opener



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# 0. ■ Introduction

Dear customer,

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

The AP500 manages the automatic opening and closing of a suction station, synchronous to the operation of a handpiece grinding unit.

Before connecting the AP500 to the power supply, please check if the voltage given on the type plate corresponds with your local voltage.

Due to the large number of different handpiece units, you will need to make some adjustments in most cases before the AP500 works proper with your handpiece unit.

We therefore ask you to read these instructions to allow the right setting for each workplace.

Thank you.

## 0.1 Declaration of conformity

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

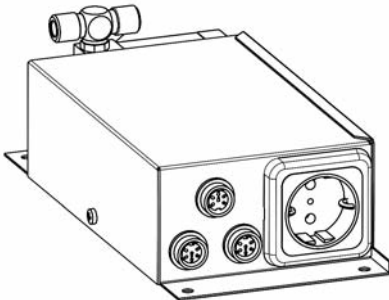
hereby declare, that the suction unit

### **AP500**

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In case of any changes being made to the product without our agreement, this statement is no longer valid.



A handwritten signature in black ink, appearing to read 'Kurt Zubler', written over a horizontal line.

Ulm, den 15. July 2005

Kurt Zubler  
Managing Director

## 0.2 Functions

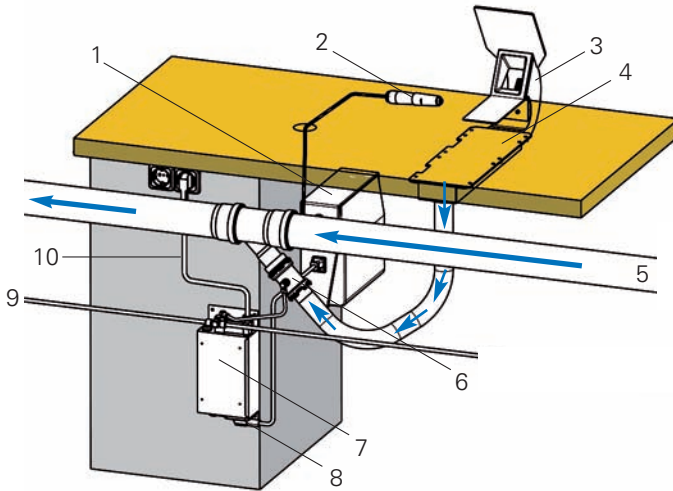


Abb. 1: Workstation Layout

- |    |   |
|----|---|
| 1  | handpiece control unit (knee control)   |
| 2  | handpiece                               |
| 3  | funnel                                  |
| 4  | rectangular pipe                        |
| 5  | pipe system                             |
| 6  | port valve                              |
| 7  | AP500 control unit                      |
| 8  | power socket for handpiece control unit |
| 9  | pressure connector 1 bar                |
| 10 | power cord                              |

### 0.2.1 The Control Unit

The automatic port opener AP500 consists of the control unit (7) and the port valve (6).

- By actuating the handpiece control unit (1) the handpiece (2) is rotating.
- The AP500 control unit (7) therefore opens the port valve (6).
- After stopping the handpiece the suction port remains open for another 3 seconds (run-out time) to vacuum dust which is still around.

## 0.2.2 The Port Valve

- The port valve (6) opens and closes the suction station.
- The port valve is closed by blowing up an internal rubber membrane.
- The port valve is opened again by releasing the compressed air.

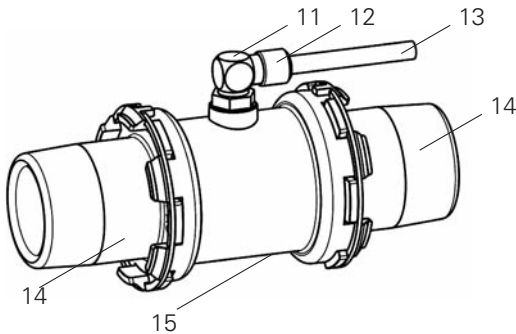
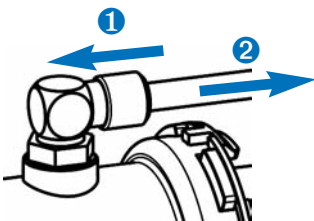


Abb. 2: The Port Valve

11 pressure connector
12 ring
13 pressure hose 6mm
14 suction line connector
15 valve body

### 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. ■ Installation

## 1.1 Mounting

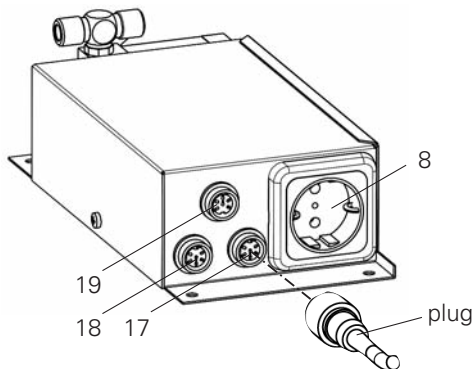


Abb. 3: Control Unit Front View

8 power socket for  
handpiece control unit

17 connector for  
direct coupling handpiece

18 connector for  
manual ON/OFF

19 connector for  
programming module

- Mount the AP500 control unit (7) underneath the table close to your handpiece control unit (1). Take care that the connectors for the programming module (19), direct coupling (17), manual (18) and the power socket (8) are accessible.
- Use the programming module to change basic settings like sensitivity and run-out time to suite your handpiece (see page 8).
- If changing the handpiece or handpiece control unit it may be necessary to change the settings.
- The programming module is not included with an AP500.

## 1.2 Connections

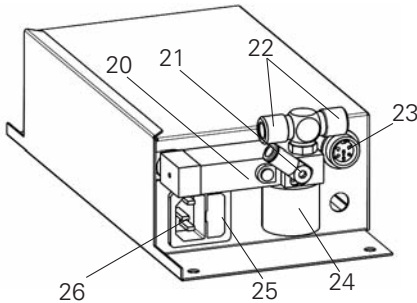


Abb. 4: Control Unit Back View

20	electromagnetic valve
21	pressure connector 6mm for port valve
22	pressure connector 8mm for pressure supply 1bar
23	connector (optional)
24	silencer
25	fuse holder
26	cold gear socket

- Connect the 6mm pressure connector (21) with the pressure connector (11) of the port valve (6).
- Check if the pressure supply is reduced to 1bar. Therefore use the preset pressure reducer DM01 (order.no 825/297).
- Connect the 8mm pressure connector (22) with the pressure supply 1bar. Take care, that the second connection of the T-connector is closed with a 8mm stopper or connected with another AP500.
- **Check if the voltage given on the type plate corresponds with your local voltage.** (see "Technical Data" on page 11)
- Connect the enclosed power cord with the cold gear socket (26) and plug the power cord into a nearby power socket.
- Plug the power cord of your handpiece control unit into the power socket (8) of the AP500 control unit.
- (optional) Connect the additional available accessories to the connectors. (see "Accessories" on page 11)



## 2. Setup

### 2.1 Programming Module

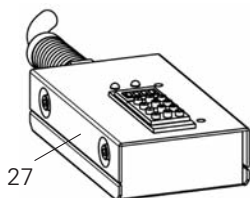


Abb. 6: Programming Module

With the programming module you can change settings of the AP500 control unit.

Plug the programming module (27) into the connector (19) of the AP500 control unit.

### 2.2 Load Predefined Settings

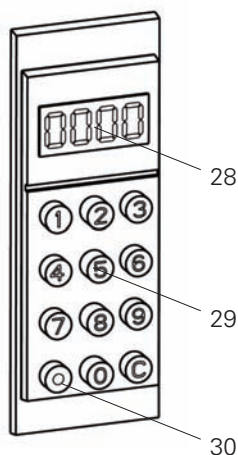


Abb. 7: Numeric Keyboard

28 display

29 numeric keyboard

30 enter (dot)

The AP500 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 ( <b>factory setting</b> )
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.



## 2.3 Automatic Sensitivity Setup

- Switch on the control unit of the handpiece (standby, handpiece NOT running !) and Insert C2 and press enter (dot) twice. The control unit automatically measures, calculates and saves the best sensitivity level for your device. Use the automatic sensitivity setup for all devices not listed or if Code 61-65 does not work proper.



- Now operate the handpiece with the lowest speed where the suction should be started. (e.g. 5000RPM) and Insert C3 and press enter (dot) twice.



## 2.4 Run-Out Time

- Press C7 and press enter (dot). Set the run-out time in seconds (0-250) for which the port valve is kept open to vacuum remaining dust after the handpiece is stopped.



- Insert the run-out time in seconds and press enter (dot). The factory setting is 3 seconds. For some appliances it may make sense to change the run-out time to bridge short breaks or to change tools depending on the user's wishes.



Example: 12 seconds

- Now the display shows:

-----

## 2.5 Load Factory Settings (Reset)

- Insert C60 and press enter (dot) twice.



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.

### 2.5.1 FZ1 Variomaster and FZ2 Variomatic

After resetting the AP 500 with Code 60, the following Code must be entered to enable the communication with the FZ1 Variomaster or FZ2 Variomatic.

## 3. ■ Trouble Shooting

Insert C59 and press enter (dot).



0000 <sup>°</sup>

Insert 11 and press enter (dot).



0011 <sup>°</sup>

Now the display shows:

----

- Handpiece control unit has no power :  
Check the fuse inside the fuse holder (25). Inside the fuse holder is a spare fuse.

- Suction port does not open when grinding.

Check if the power cord of the handpiece control unit is still plugged into the power socket (8). Adjust the sensitivity settings according to the manual. (page 8-10)

- Suction port does not close. Adjust the sensitivity settings according to the manual. (page 8-10)

A permanent noise of blowing air at the workstation may be caused by a defective port valve. The port valve should be exchanged asap. (see "Exchanging the port valve" on page 5)

- If the above suggestions may not solve your problems contact your local dealer or send the AP500 control unit to your service partner.

# 4. ■ Data

## 4.1 Technical Data:

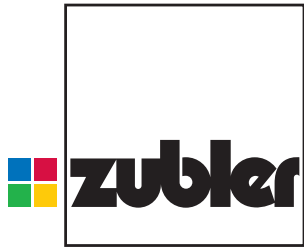
Length	235mm		
Width	125mm		
Height	75mm		
Weight	1,5kg		
Voltage	115V-60Hz	230V-50Hz	240V-50Hz
Total power draw	700W	1000W	1000W
Main fuse	T6,3A	T5A	T5A

## 4.2 Accessories:

		<b>Order. No.</b>
SL-1 switch Manual - "on"	2m	825 / 2565
SL-1 switch Manual - "on"	5m	825 / 2566
Switch for manual mode on/off, e.g. stirring of monomer		
SL-2 switch Auto - "off"	2m	825 / 2567
SL-2 switch Auto - "off"	5m	825 / 2568
Switch for automatic mode on/off, e.g. grinding precious metals		
SL-K control cable K-Control	1m	825 / 256K
SL-K control cable K-Control	2m	825 / 256L
SL-K control cable K-Control	5m	825 / 256U
Cable for connection with KaVo K-Control handpiece control unit		



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technical changes without notice!