These operating instructions apply to: Electronic Timers Type AP 117

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Contents

Scope of delivery

Please refer to the delivery note for the scope of delivery.
Check the packaging for possible transport damage. In the event of damage to the packaging, check the contents for completeness and possible damage. Inform the carrier in the case of damage.

Designation

The Electronic Timers Type AP 117 are hereafter referred to as "AP".

Version of document

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1 General information

Use and storage

Before installing the AP read these instructions carefully. It is the basis for any action when dealing with the AP, and may be used for training purposes. The instructions should be subsequently stored at the operation site.

Target group

The target group for these instructions is technical staff, who have basic knowledge in electrics and mechanics.

Only complying technical staff may work on the AP.

The AP may only be installed, put into operation, maintained, troubleshot and disassembled by persons authorised by the operator.

Copyright

Limitation of liability

All technical information, data and instructions for installation, operation and maintenance in these instructions are based on the latest information available at the time of printing and take our past experience to the best of our knowledge into account.

No claims can be derived from the information, illustrations and descriptions in these operating instructions.

The manufacturer does not assume liability for damages resulting from:

- failure to observe the instructions,
- improper use,
- unauthorised repairs,
- technical modifications,
- use of non-permissible spare parts.

Translations are made to the best of our knowledge.

Netter*Vibration* does not assume liability for translation errors, even if the translation was made by us or on our behalf. Only the original German text remains binding.

Directives / standards observed

The Electronic Timers Type AP 117 are build according to the following directives:

- 2014/35/EU - Low Voltage Directive
- S.I. 2016:1101 - Electrical Equipment (Safety) Regulations 2016 (UK)
- 2014/30/EU - Electromagnetic Compatibility Directive
- S.I. 2016:1091 - Electromagnetic Compatibility Regulations 2016 (UK)

The main standards observed are indicated in the CE declaration of conformity.

The rules and regulations of the local associations for electrical engineering apply (e. g. IEC, VDE, OEVE, SEV, etc.).

Instruction and warning symbols

The following instruction and warning symbols are used in these instructions:

Personal injuries

⚠ DANGER	
	indicates an immediate danger. Disregard of this notice will result in death or severe personal injuries.

⚠ WARNING	
	indicates a potential danger. Disregard of this notice can result in death or severe personal injuries.

⚠ CAUTION	
	indicates a potentially dangerous situation. Disregard of this notice can result in minor or moderate personal injuries.

Material damages

NOTICE
indicates potential material damage. Disregard of this notice can result in material damage.

Notes

IMPORTANT
indicates actions, methods or notes that are not relative to safety, e.g. useful information and tips.

	**Environmentally safe disposal** indicates the obligation of environmentally safe disposal.

2 Safety

Intended use

The AP are controllers intended for the clocked actuation of vibrators. The AP enable the switching on and off of electric vibrators, pneumatic vibrators, pneumatic impactors and other drives with second precision.

Any other use is considered improper.

Qualification of qualified personnel

Installation, commissioning, maintenance and troubleshooting of the AP may only be performed by authorised qualified personnel, who have basic knowledge in electrics and mechanics.

All handling of the AP is the responsibility of the operator.

Safety rules

⚠ DANGER

Electric shock

An electric shock will result in serious injury or even death. The AP must be free of voltage during assembly, start-up, maintenance and trouble-shooting.

Observe the following five safety rules:

1. Disconnect the AP from the mains supply.
2. Secure the AP against re-activation.
3. Establish that the AP has no voltage.
4. Earth and short-circuit the power supply of the AP.
5. Cover adjacent live parts or fence them off.

High voltage

⚠ DANGER

Risk of electric shock due to high voltage

Live parts can cause severe injuries or even death.

- ➢ Installation, connection, commissioning, maintenance and disassembly of the AP may only be carried out by authorized qualified personnel.
- ➢ The housing of the AP must not be opened when live.
- ➢ Installation, connection, maintenance and disassembly may only be carried out in a voltage-free state.
- ➢ When handling the AP the provisions and regulations of the local electrical engineering associations (e.g. VDE) and the accident prevention regulations must be observed.
- ➢ Perform all work only with insulated tools suitable for the application.

Electric shock

⚠ DANGER

Danger of electric shock due to incorrect or wrongly laid electrical cables

Incorrect or improperly laid electrical wiring can cause an electric shock and result in serious injury or even death.

- ➢ Lay electrical cables carefully. Make sure that electrical cables are not worn through vibrating parts or sharp edges.
- ➢ Protect the electrical lines from high temperatures and lubricants.
- ➢ Only use suitable, flexible feed cables to connect the AP. The conductors in the supply cable must be temperature-resistant and have a sufficiently large cross-section matched to the cable length.
- ➢ Check the perfect condition of the electric cables and plugs regularly. Detected errors must be eliminated immediately.

Automatic start-up

⚠ WARNING

Risk of injury due to automatic start-up

If the mains connection is supplied with voltage again after a voltage interruption, the next cycle always starts with the set working time. The output of the AP is immediately energized. Automatically starting vibrators and drives can lead to serious personal injury.

- ➢ Check that the vibrators or drives can start up without danger before applying voltage to the mains connection.

3 Technical data

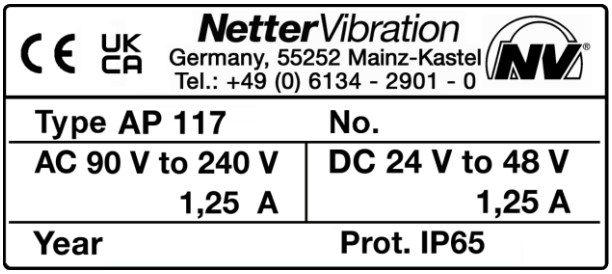
Permissible operating conditions

Parameter	Value
Duty time (RUN)	exact to the second, up to max. 99 h 59 min 59 s
Clock duty time	exact to the second, from 0 to max. 59 s
Clock pause time	exact to the second, from 0 to max. 59 s
Pause time (PAUSE)	exact to the second, up to max. 99 h 59 min 59 s
Own consumption	2 VA in operation, 0,25 VA standby
Operating voltage AC	90 V to 240 V
Switching current AC	1,25 A
	or
Operating voltage DC	24 V to 48 V ± 5 %, protected against reverse polarity
Switching current DC	1,25 A
Switching current DC	at 24 V and max. 40 °C to ≤ 2 A
Ambient temperature	-20 °C to +60 °C
Degree of protection	IP 65, RFI suppressed
Cable diameter	4,5 mm to 10 mm

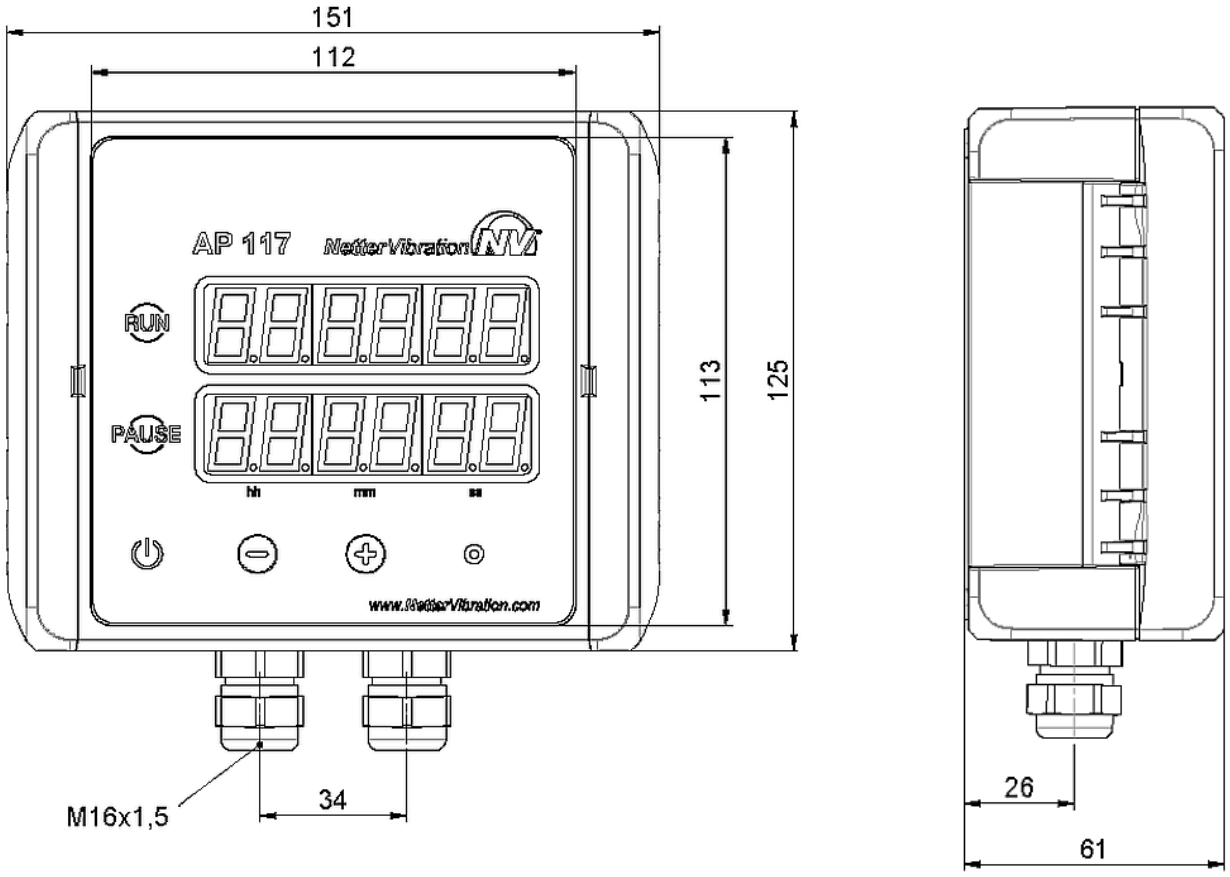
The technical data of your AP can be found on the type plate.

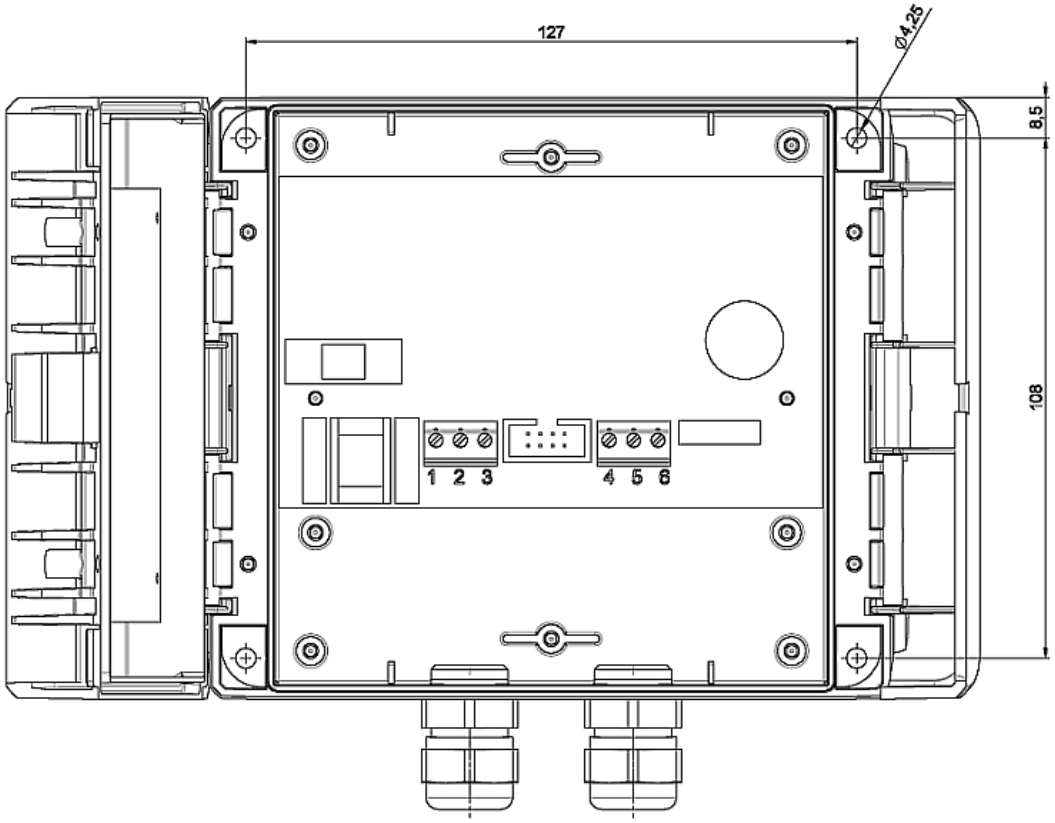
Type plate

Example:



Dimensions


151
112
AP 117
NetterVibration
RUN
PAUSE
hh
mm
ss
www.NetterVibration.com
113
125
M16x1,5
34
26
61

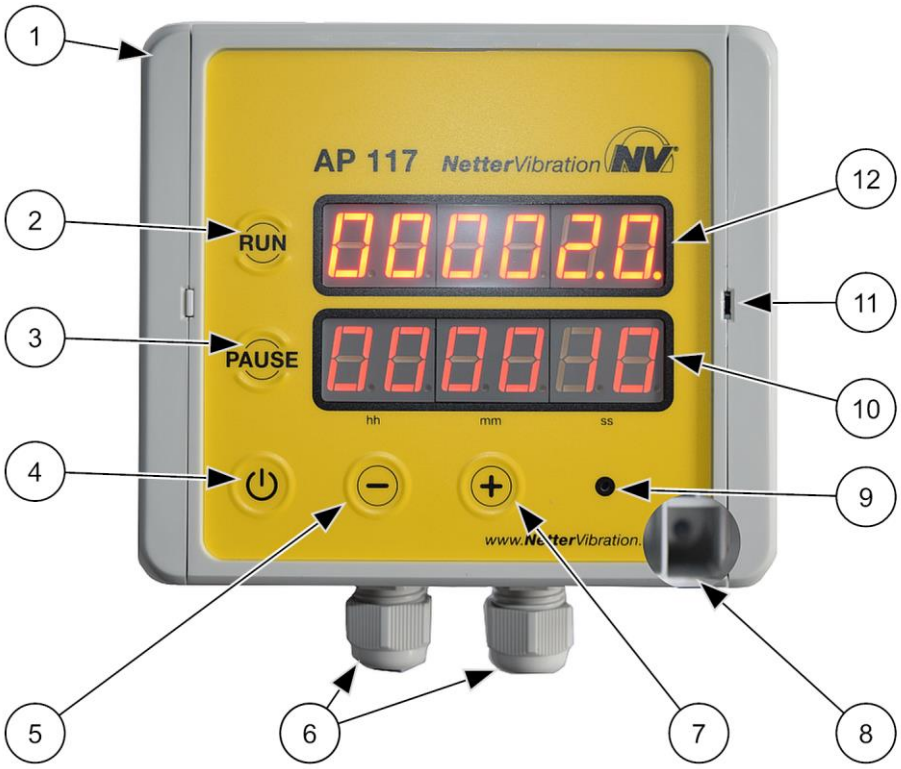

127
Ø4,25
8,5
108
1 2 3
4 5 6

4 Design and function

Design

The AP consist of the following two basic components:

- power supply with electronic switching unit
- display unit with operating elements



No.	Element	Function
1	Housing	Contains and protects the internal components.
2	Button RUN	Adjust duty time.
3	Button PAUSE	Adjust pause time.
4	Button ON/OFF	Switch the AP on or off (standby).
5	Button –	Decrease selected time value / set the clock duty time.
6	Cable gland	Connecting the electrical lines.
7	Button +	Increase selected time value / set the clock pause time.
8	Mounting bores	For attaching the AP to a mounting surface.
9	LED	Flashes red in standby mode. Lights up red when active buttons are touched in adjusting or operating mode.
10	Display	Display the pause time / clock pause time.
11	Slit	To open the housing.
12	Display	Display the duty time / clock duty time.

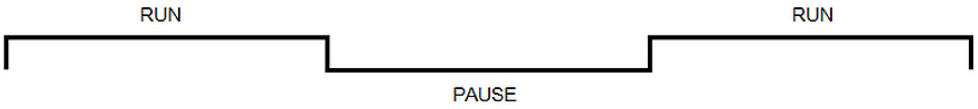
Function

The AP have the following functions:

- Function standard
- Function cascade / interval / pulse mode

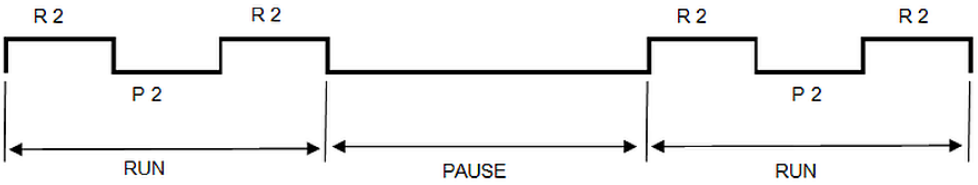
Function standard

The sequence begins with the duty time (RUN), which is adjustable from 1 s to 99 h. During this time, the supply voltage is applied to the timer output.
After the end of the duty time, the pause time (PAUSE) runs from 1 s to 99 h, then the duty time runs again, etc.



Function cascade / interval / pulse mode

The sequence starts with the duty time, which can be set from 1 s to 99 h. The duty time starts with the clock duty time (pulses), which can be set from 0 to 59 s. After the end of the clock duty time the clock pause time of 0 to 59 s runs, than the clock duty time again, etc. until the duty time ends. After that the pause time runs.



RUN = duty time

PAUSE = pause time

R 2 = clock duty time

P 2 = clock pause time

The display shows the elapsing time. The active time digits light up brightly.

5 Transport and storage

Transport conditions

Special conditions of transport are not required.

When transporting, ensure that the AP is not exposed to strong impacts or vibrations.

Packaging

The AP are packed ready for installation.

The packaging protects the AP from transport damage. The packaging material has been selected from an environmentally safe and technically disposable point of view and is therefore recyclable.

The return of packaging to the material cycle conserves raw materials and reduces the amount of waste.

Storage

- Store the AP in a dry and clean environment.
- The permissible storage temperature is between 0 °C and +40 °C.
- The permissible relative humidity is max. 60 %.
- Do not store the AP outdoors. The electrical components are not protected against corrosion.

6 Installation

Observe the safety instructions in chap. Safety, starting on page 5.

Open housing/ mount AP

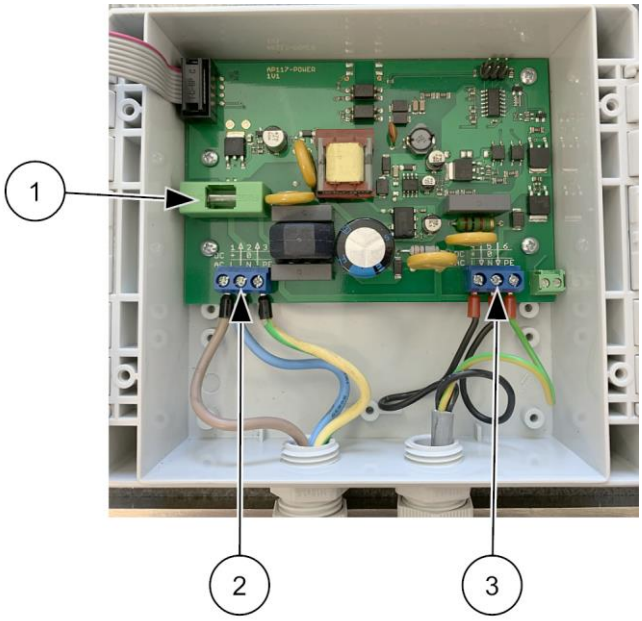
The AP can be mounted in any position.
Four mounting holes are provided inside the housing for fastening.
The dimensions can be found in the chapter Technical data, on page 8.

1. Disconnect the AP from the power supply before opening the housing!
2. Insert a slotted screwdriver into the opening slot. Turn it carefully until the housing cover can be opened.

3. Flip the cover to the left.
4. Screw the AP via the mounting holes onto a clean and flat mounting surface (± 0.1 mm flatness) using suitable screws.

Connect AP

Open the housing cover as described in the previous section.
The AP is connected via the terminal strips.



1 AC/DC fuse (1,25 A slow blow)
2 Terminals 1-3 - Power supply connections (AC/DC mains supply)
3 Terminals 4-6 - Output voltage connections (AC/DC output)

The voltage level of input and output voltage is always the same.

Direct current (DC):

If DC voltage is present at terminals 1 and 2, DC voltage is also present at terminals 4 and 5.

Alternating current (AC):

If AC voltage is present at terminals 1 and 2, AC voltage is also present at terminals 4 and 5.
When connecting AC voltage, always connect the protective earth conductor PE (terminals 3 and 6).

Connection plan

	Connecting terminals					
	1	**2**	**3**	**4**	**5**	**6**
DC	+	0		+	0	
AC	L	N	PE	L	N	PE

7 Start-up and operation

Observe the safety instructions in chap. Safety, starting on page 5.

Permissible operating conditions

Please refer to chap. Technical data, page 7 for permissible operating conditions.

Regulations

Installation work as well as operation of the system are to be carried out taking the valid accident prevention regulations into account.

The operator is responsible for the proper condition of the system.

Measures

Carry out the following measures before start-up:

1. Check the mains voltage and the grid feed-in.
2. Check that the system is in perfect electrical condition.
3. Check that all protective measures on the system have been observed.
4. Check that the cables are undamaged and laid according to the known regulations and standards.
5. Eliminate possible errors.

Adjusting duty time/ pause time

WARNING:

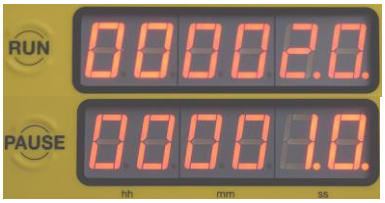
When switched on the AP starts immediately with the stored values. The connected vibrators start immediately. The output is immediately energized.

The keys of the AP react to light touch and not to pressure.

When switched off, the outputs (terminals 4-5) are de-energised.

1. If not switched on, touch the key “ON/OFF” until the displays are illuminated. The AP starts immediately with the stored time values.

2. Touch the keys “RUN” or “PAUSE” until two additional illuminated points appear in the display (adjusting mode). The outputs (terminals 4-5) are de-energized.



3. Touch the keys “RUN” or “PAUSE” to switch between duty time or pause time.

4. Touch the keys “RUN” or “PAUSE” and select the position of the points to adjust seconds, minutes or hours by touching the keys “+” or “–”.

5. To increase or decrease the time value touch “+” or “–”. Do not touch the “RUN” or “PAUSE” keys.

6. To save the changed time value, touch the keys “RUN” or “PAUSE” for at least 3 seconds. The values are saved when the points are extinguished.

The outputs (terminals 4-5) are energised during the duty time and de-energised during the pause time.

Adjusting clock duty time/clock pause time

WARNING:

When switched on the AP starts immediately with the stored values. The connected vibrators start immediately. The output is immediately energized.

The keys of the AP react to light touch and not to pressure.

When switched off, the outputs (terminals 4-5) are de-energised.

1. If not switched on, touch the key “ON/OFF” until the displays are illuminated. The AP starts immediately with the stored time values.

2. Touch the keys “+” or “–” until two additional illuminated points appear in the display (adjusting mode). The cascade adjusting mode is indicated by the “P” preceding the value. The outputs (terminals 4-5) are de-energized.

3. Touch the keys “RUN” or “PAUSE” to switch between clock duty time or clock pause time.

4. Change the time value with the keys “+” or “–”. Do not touch the “RUN” or “PAUSE” keys.

5. To save the changed time value, touch the keys “RUN” or “PAUSE” for at least 3 seconds. The values are saved when the points are extinguished.

Important: If the value for the clock duty time or the clock pause is “0”, the values will not be saved and cascade mode will not be activated.

The outputs (terminals 4-5) are energized while the clock duty time is running.

A cycle must consist of at least two clock duty times and one clock pause time.
The total sum of the clock duty time and the clock pause time corresponds to the working time. If the clock duty times and the clock pause times are selected in such a way that the working time cannot correspond to the total duty time, the duty time is rounded up automatically.

Example:

clock duty time = 5 s / clock pause time = 3 s /
selected duty time = 11 s

The duty time is rounded up to 5 + 3 + 5 = 13 s.

8 Maintenance and servicing

Observe the safety instructions in chap. Safety, starting on page 5.

Maintenance plan

Maintenance of the AP must be carried out as follows:

Interval	Action
Every 6 month	Check proper condition of connecting cables and plugs. When the AP is exposed to constant weather influences: Check the seal in the cover and the electrical cables for porosity. Replace porous seal and leads.
At least every 4 years	Check proper condition of electrical systems and stationary electrical equipment.

9 Troubleshooting

Observe the safety instructions in chap. Safety, starting on page 5.

Expertise and regulations

Electrical faults may only be processed by a qualified electrician. Work on the AP may only be carried out by authorised persons.

In the case of unauthorised intervention in the AP there is no longer any warranty claim. Interventions of any kind are to be agreed upon with ***Netter****Vibration*.

Malfunctions and causes

In the case of malfunctions of the AP proceed as follows:

Malfunction	Possible causes	Corrective action
AP does not turn on	Phase interruption	Check fuse and connection cables and replace if necessary.
	Mains voltage too low	Adjust mains voltage. Check cables and replace if necessary.
	Cable cores are connected with reversed polarity	Connect cable cores in correct polarity.
AP fails during operation (RUN)	Voltage drop under load	Check mains voltage. Set the correct mains voltage.

10 Disposal

Disposal

	All parts of the AP must be disposed of properly according to the material specifications.
	Do not dispose the electrical and electronic components of the AP in the normal household waste, but in a special collection point for the environmentally friendly disposal of electrical equipment. Observe the national regulations for disposal.

The AP consist of electronic parts and components and a polycarbonate housing.

11 Annex

The declaration of conformity can be found at: www.***Netter****Vibration*.com