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### **Scope of Delivery:**



Check the packaging for possible signs of transport damage. In the event of damage to the packaging, check that the contents are complete and undamaged. If there is any damage, inform the shipping agent. Compare the scope of the delivery with the delivery note.

## 1 General Notes

Netter pneumatic piston vibrators series NTP comply with the EC machine directive 98/37/EG. Standards DIN EN ISO 12100 part 1 and part 2 have been particularly observed.

Series NTP pneumatic piston vibrators generate linear vibrations or shaking movements.





These vibrators are used to empty hoppers and to drive conveyor troughs, sieves and vibrating tables. General applications are loosening, feeding, compaction and separation of bulk materials and the reduction of friction.

The drive medium is compressed air or nitrogen, at a pressure of 1 bar to 6 bar.

Series NTP pneumatic piston vibrators can be used for food production and in wet areas, provided the corresponding company operating regulations are observed.

The frequency can be continuously regulated by means of pressure regulators or throttles built into the air supply lines and the amplitude can be continuously reduced by means of throttles in the air discharge lines.

The following instruction and warning symbols are used in these operating instructions.

	Note on important procedures		Warning of a danger spot
	Important note on procedures to be especially observed		Environmentally friendly disposal

## 2 Technical Data



### Drive medium:

Clean (5 µm filter), lubricated compressed air or lubricated nitrogen  
**Unfiltered compressed air will lead to breakdown of the vibrators.**

### Operating pressure:

2 bar to 6 bar

The operating pressures must not be exceeded or fallen short of.

Timed operation is compulsory for NTP B+C vibrators  
 (e.g. duty time 5 s, pause time 25 s).

### Ambient temperature:

Standard 5°C to 60°C

The operating temperatures must not be exceeded or fallen short of.

Special designs available upon request

Series NTP piston vibrators are available in sizes 25, 32 und 48. In the standard version NTP B+C, an impact plate (elastomer disc) is inserted in the base plate, which creates a rubber hammer effect.

In version B, the impact plate is removed and the piston strikes

against a cushion of air above the base plate.

The elastomer insert can be replaced by a steel impact plate (hard-impacting, with high noise level).

An additional hard-impacting alternative is to mount the vibrator without a base plate.

### Technical Data at 2 - 4 - 6 bar

Type	Working moment [cmkg]			Nominal frequency [min <sup>-1</sup> ]			Centrifugal force [N]			Air consumption [l/min]	Noise level [dB(A)]
	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar - 6 bar	2 bar - 6 bar
NTP 25 B+C	0,144	0,163	0,196	5.848	7.000	8.784	269	438	830	33 - 108	68 - 82
NTP 25 B	0,488	0,613	0,686	2.645	3.159	3.602	190	341	487	23 - 92	64 - 73
NTP 32 B+C	0,602	0,665	0,665	2.959	4.080	5.040	289	607	926	50 - 198	71 - 86
NTP 32 B	1,080	1,365	1,449	1.824	2.221	2.614	197	369	543	37 - 143	64 - 77
NTP 48 B+C	2,081	1,992	1,992	2.618	3.456	4.320	782	1.305	2.039	96 - 336	78 - 90
NTP 48 B	4,718	6,188	6,641	1.328	1.603	1.963	456	872	1.403	67 - 295	65 - 80

B + C = soft-impacting (impact plate in base plate)

B = without base plate (quiet, due to air cushion)

The technical data are reference values and may vary depending on the application, further data available upon request.

We recommend consultation of the Netter GmbH application engineers. Subject to technical changes.

### Noise Level

The noise level of an NTP is dependent on the surface upon which it is mounted. As a rule, the noise level of the NTP 25 B (with silencer), at an operating pressure of 6 bar, lies below 80 dB(A).

For NTP 32 B and 48 B, the noise level at an operating pressure of 4 bar also lies below 80 dB(A).

At higher air pressures or with an elastomer insert C installed, the peak

pressure may exceed 85 dB(A), depending on the mounting surface and the pressure.

For hard-impacting installations (without base plate), the noise level lies considerably above 85 dB(A).

**Duration of Operation:**

Long periods of operation will change the technical performance data (wear).



**Please note when planning:**

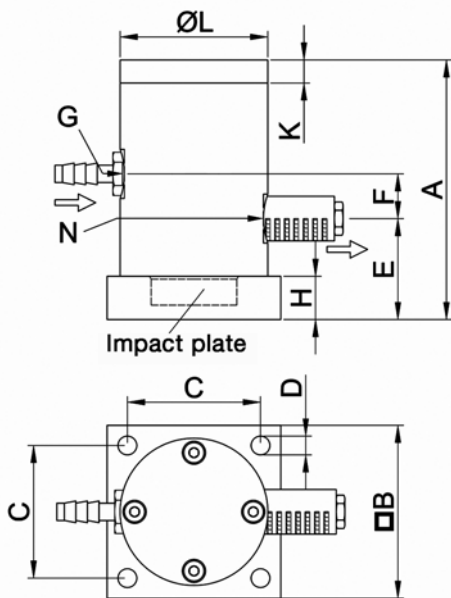
NTP B E piston vibrators will only start in every mounting position if a 3/2 way valve is fitted. If the air supply is regulated by means of a 3/2 way valve, the piston vibrators will come to a standstill immediately after switching off.

The use of filtered compressed air is compulsory for all devices.

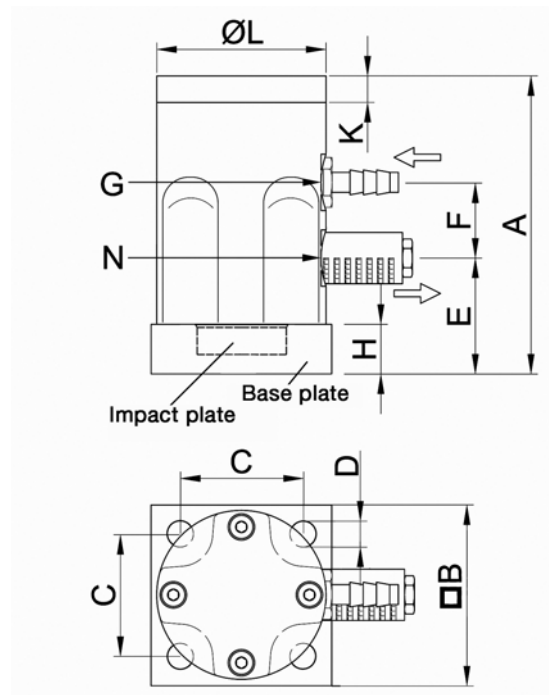
Lubrication-free operation is possible.

The use of an oil-mister increases the machine life.

**Dimensions**



NTP 25



NTP 32 / NTP 48

Type	A [mm]	B [mm]	C [mm]	ØD [mm]	E [mm]	F [mm]	G	H [mm]	K [mm]	ØL [mm]	N	Weight [kg]
NTP 25	90	60	46	6,5	36	14,5	G1/8	15	8	51	G1/8	0,61
NTP 32	140	75	51	11	48	32	G1/4	20	10	70	G1/4	1,47
NTP 48	194	100	78	13	60	51	G3/8	25	15	95	G3/8	3,95

### 3 Design and Function

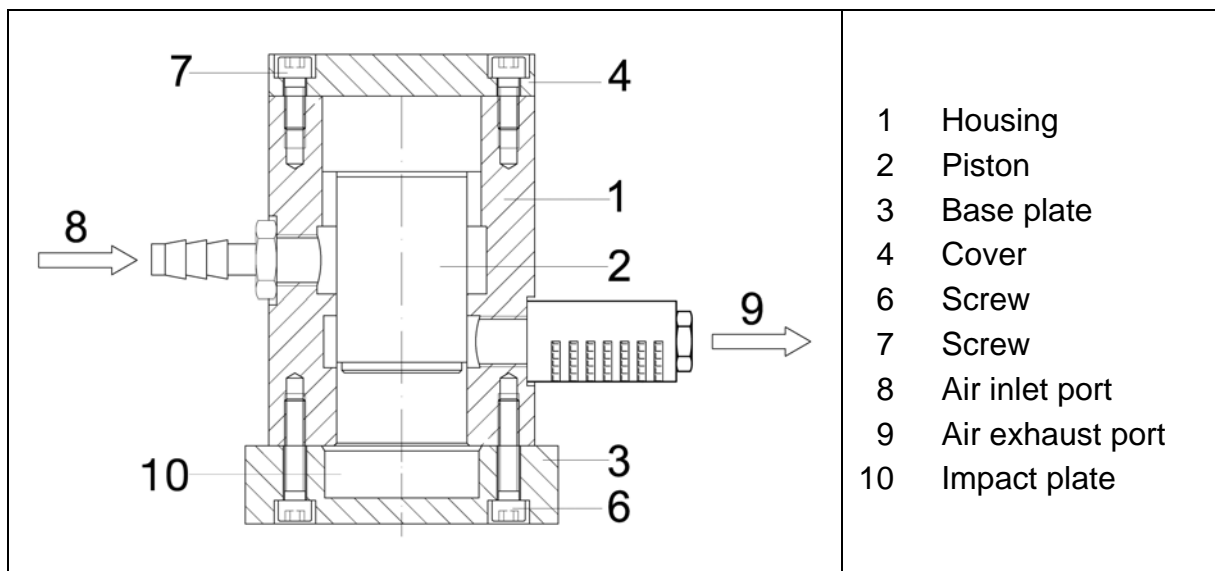
The vibration is generated by a freely oscillating differential pressure piston.

In the basic version NTP B+C, the piston strikes against an elastomer impact plate, creating a rubber hammer effect.

Version B has no impact plate; the piston swings noiselessly against a cushion of air.

If the device is required to produce hard impacts, either a steel plate is inserted into the base plate or the base plate is completely removed. This results in hard impacts against the surface to which the device is attached.

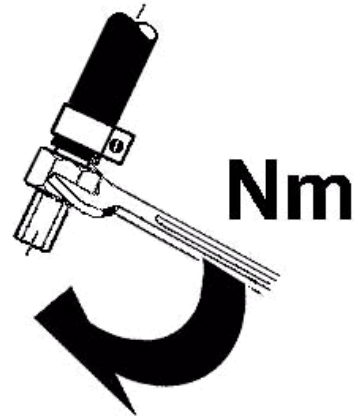
The frequency can be continuously adjusted via the operating pressure, the amplitude is set by throttling the exhaust air.



## 4 Safety



NTP vibrators operate using compressed air at a pressure of up to 6 bar. All hoses must therefore be securely connected. If a pressurized hose becomes loose it can cause injury. The compressed air must therefore be shut off before performing installation work.

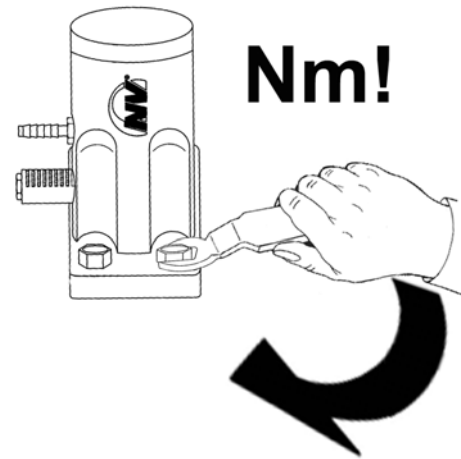


Vibrators and parts of the construction may become loose, due to vibration. Falling parts can cause material damage or injury. Screw locks and/or Loctite or equivalent must therefore be used.

Screwed connections should be checked after 1 hour of operation and then at regular intervals (generally once per month) and tightened, if necessary.

In critical installation situations, it is necessary to secure the vibrator with a steel safety rope.

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### **Silencer:**

Operation without a silencer should be avoided, so that the environment is not subject to unnecessarily high noise levels.



### **Modifications:**

Modifications to the device can alter the characteristics of the NTP or destroy the device, and result in the rejection of all warranty claims. Failure to comply with the operating instructions will also result in the rejection of all warranty claims.



NTP B+C vibrators may only be operated in timed mode (e.g. duty time 5 s, pause time 25 s).



NTP vibrators may also be operated in dusty or wet environments – even under water, if the exhaust air is dissipated.



**Drive medium:**

Clean (5 µm filter), lubricated compressed air or lubricated nitrogen

**Unfiltered compressed air will lead to breakdown of the vibrators.**

**Operating pressure:**

2 bar to 6 bar

The operating pressures must not be exceeded or fallen short of.

**Ambient temperature:**

Standard 5°C to 60°C

The operating temperatures must not be exceeded or fallen short of.

Special versions available upon request

## 5 Transport and Storage



Check the packaging for possible signs of transport damage. In the event of damage to the packaging, check that the contents are complete and undamaged. If there is any damage, inform the shipping agent.

The vibrators are packed ready-to-install.

The type label is attached to the vibrator.

Accessories and add-on parts (grommets, silencers) are delivered loosely, unless otherwise agreed.

Special transport conditions are not specified.

The units should be stored in a clean, dry environment.

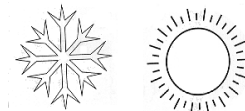
NTP piston vibrators must be oiled before going back into storage (pour machine oil into air inlet port and activate shortly).

It is recommended that dirty devices are cleaned (disassemble, rub deposits off using oil if necessary, wipe clean, reassemble).



The storage temperature should be between -40 °C and 60 °C.

(This does not apply to the operating temperature; compare with chapter 4 **SAFETY** “Permissible Operating Conditions”).



## 6 Installation



During installation, the safety regulations in chapter 4 and the safety prevention rules must be strictly observed! Ensure that the compressed air supply is shut off during installation or when working on the vibrator and air supply lines.



### Mounting the Vibrator:

The housing of the piston vibrator is screwed to the mass to be vibrated.

The mounting surfaces must be absolutely level ( $\pm 0.1\text{mm}$  flatness), so that vibrator has full area contact and the housing does not distort when the fixing screws are tightened. The surfaces should also be free of any paint residues or weld burns. Tension in the housing can cause mechanical damage.

Directional vibrations are generated.

The working moment of the free-swinging piston ( $M = \text{mass} \times \text{distance}$ ) is determined by the amplitude.

In the standard version NTP B+C, the piston strikes against an elastomer

impact plate, creating a rubber hammer effect.

Version B has no impact plate,; the piston swings noiselessly against a cushion of air.

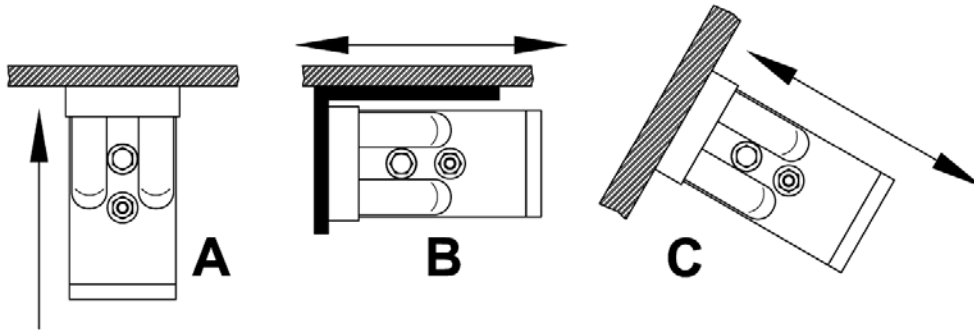
If the device is required to produce hard impacts, either a steel plate is inserted into the base plate or the base plate is completely removed. This results in hard impacts against the surface to which the device is attached.



Please consider during installation: The permissible temperature range must not be exceeded or fallen short of during operation. Versions for other temperature ranges available upon request.



In critical installation situations, it is necessary to secure the vibrator with a safety rope.



The above diagram illustrates the possible applications:

- A** On vibration tables, for compaction, testing, etc.
- B** Under tables, on filters, for shaking, etc.
- C** On hoppers, for emptying, on vibrating troughs and sieves.



Use lock screws and nuts and a liquid adhesive (e.g. Loctite) to prevent loosening.



The tightening torques are to be taken from the following table. Higher tightening torques can lead to the fracturing of screws or tearing of threads. Incorrect attachment of screws can lead to detachment of the device. This can result in personal injury and damage to material!



**Retightening:**

Screwed connections should be retightened after 1 hour of operation (after initial start-up) and then checked at regular intervals (generally once per month) and tightened, if necessary.



Please consider during installation:

The permissible temperature range must not be exceeded or fallen short of during operation, see **Chapter 4 “Safety – Permissible Operating Conditions”**.

Versions for other temperature ranges available upon request.

**Recommended Average Tightening Torques for Screws Property Class 8.8 on NTP Housings (Screws as delivered, with no additional lubrication):**

Type	Thread	Tightening Torque
NTP 25	M 6	10.4 Nm
NTP 32	M 10	51 Nm
NTP 48	M 12	87 Nm

Always use a torque wrench and tighten the screws diagonally.

### Air Supply Line:

The air resistance increases with the length of the hose. The nominal widths shown in the chart apply for hose lengths of up to 3 m. Longer supply lines require a larger cross-section.

### Air Discharge Line:

The exhaust air can be discharged through a hose.

In order for the piston vibrator to achieve full power, the discharge hose must have a greater nominal width than the supply hose. A silencer must be fitted to the free end.

### Minimum Cross-Sections for Valves and Hoses:

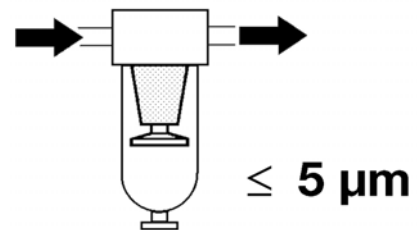
TYPE	Conn. Thread	Hose Size	3/2 Way Valve
NTP 25	G 1/8	from NW 4	G 1/4, from NW 4
NTP 32	G 1/4	from NW 6	G 1/4, from NW 6
NTP 48	G 3/8	from NW 9	from G 3/8, from NW 9



- 1) Never use longer connecting threads than specified for the air supply line (e.g. no tubes with male thread). The housing may deform – the piston will then seize.
- 2) Ensure that no Teflon tape can enter the unit. This would cause seizure. The first two windings of the thread should remain free!
- 3) The base plate must lie absolutely flat, otherwise the housing will distort and the device will not start.



The drive medium must be clean (filtered). Dirt causes vibrators to break down.



**Filter recommended**



Lubricated compressed air can be used for all vibrators.

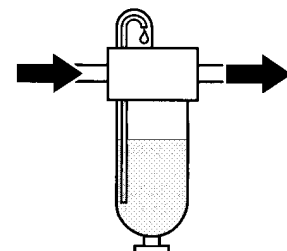
Oil lubrication:

Fill the oil-mist lubricator with acid-free and resin-free pneumatic oil, ISO viscosity class according to DIN 51519, VG 5 to VG 15.

- NTP 25 \*) 0-1 drop/min
- NTP 32 \*) 1-2 drops/min
- NTP 48 \*) 1-2 drops/min

Recommendation: Klüber „AIRPRESS 15“ for temperatures up to 60°C.

\*) lubrication-free operation possible



**Öl:**  
**ISO VG5 = 5 cSt/40°C**  
**(Shell Tellus C5)**

## Checklist for Installation

- 1) Consider the expected operating temperature.
- 2) Mount the unit. Secure fastening screws.
- 3) Install the service unit (filter, mist lubricator, regulator, as required), valve and supply line.

## 7 Start-Up / Operation

The start-up of the vibrators is possible immediately after correct installation.

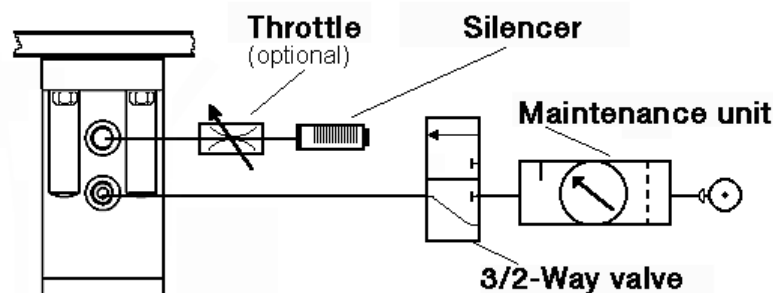
After filling the mist lubricator with oil, the vibrator can be started and the required drops/min set on the lubricator. We recommend Klüber

„AIRPRESS 15“ oil for operating temperatures of up to 60°C.

**Attention:** Reduced cross sections cause throttling (pay attention to nominal widths).

### Standard Installation

Detailed drawings are available upon request.



**Die NTP B+C vibrators may only be operated in timed mode.**

A 60 second (max.) duty time must be followed by a 60 second (min.) pause. Alternatively, short duty times ( $\leq 12$  seconds) may be used with a pause factor of 5. (Example: 5 seconds duty – 25 seconds pause).



Mist lubricator: Adjust the number of drops with the vibrator running

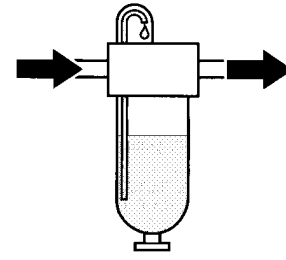
NTP 25: 0-1 drop/min

NTP 32: 1-2 drops/min

NTP 48: 1-2 drops/min



When using dried compressed air and under extreme environmental conditions, the installation of an upstream mist lubricator is compulsory.



### Regulation of Amplitude:

The amplitude can be regulated by throttling the exhaust air (throttle fitted in air discharge line).

This reduces the centrifugal force.

The frequency remains approximately constant.

Recommendation: Only reduce amplitude by up to approx. 50%. Lower values can cause start-up problems.

### Regulation of Frequency:

The frequency can be regulated by reducing the air pressure before it enters the NTP.

This also reduces the centrifugal force. The amplitude remains approximately constant.

The pressure reduction can be achieved using a throttle with a constant pre-pressure; a pressure regulator is however more accurate.

### Checklist for Start-Up:

- 1) Check hose connections before opening the compressed air supply.
- 2) Adjust the mist lubricator, if necessary.
- 3) Set the desired frequency on the pressure regulator, if necessary.
- 4) Set the desired amplitude by throttling the discharged air, if necessary.



The vibrator attachment screws must be checked after 1 hour of operation and tightened, if necessary.

## 8 Service, Maintenance



Please observe the safety regulations in chapter 4 when servicing the device.



### Retightening:

Screwed connections should be retightened after 1 hour of operation (after initial start-up) and then checked at regular intervals (generally once per month) and tightened, if necessary. The specified torque must be observed (see chapter 6).

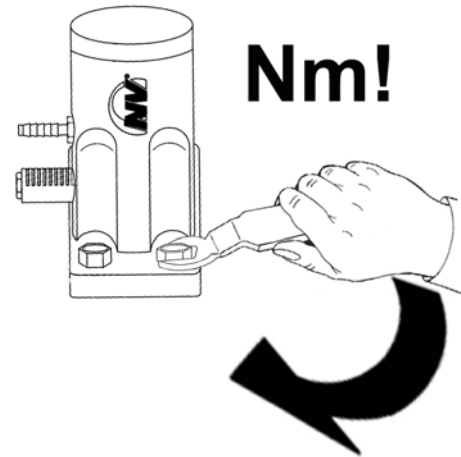


Before starting inspection or service work, shut off the compressed air supply and protect it against unwanted activation!



Regularly check the attachment of the vibrator, the compressed air supply and upstream service unit, as well as the silencer – preferably at monthly intervals.

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Nm!

**Mist Lubricator:** For devices with an upstream mist lubricator, ensure that the lubricator works correctly (does oil content fall? Number of drops/min.?). Refill oil.

**Filter:** Empty the filter as required, clean the filter insert (wash out).

**Cleaning:** All NTP vibrators can be externally cleaned using pressure water, when the exhaust air is being discharged or the exhaust opening is closed. Pressure water must not enter the piston chamber via the silencer.

**Silencer:** A blocked silencer causes the vibrator to lose power. In extreme cases it may even stop. The silencer should therefore be regularly serviced and replaced, if necessary.

The service intervals are largely dependent on the cleanliness of your drive medium.

Additional notes can be found in chapter 9 “Troubleshooting”.

## 9 Troubleshooting

Fault	Possible Cause	Remedy
Will not start	Silencer	Clean silencer
	Compressed air supply	Check pressure on device! Is enough pressure available? Check valve. A 3/2 way valve is compulsory, so that the supply line to the device is vented.
	Cover loose	An unsealed cover causes standstill Tighten screws.
	Line cross-sections	Observe minimum cross-sections. See specifications under "Installation".
	Line between valve and NTP B E too long	Causes slow starting and possibly standstill of piston in mid-position. If necessary, install a pilot-controlled 3/2 way valve in front of the vibrator.
	Exhaust over-throttled	Open up throttle. Check silencer (is air clearance sufficient?).
	Grommet thread too long	Can cause deformation of housing (if this has already occurred, return device!).
	Distortion from mounting	Check mounting surface is level.
Rattling	Screws loose	Check the fastening screws.
Power drop	No lubrication	Check that lubricator is working correctly.
	Unit soiled	Return device!
	Wear	Check device and piston for visible signs of wear (if wear is evident, return device!) See also notes in chapter 10 "Spare Parts".
	Specification	Check size of device. Has the correct size been selected?
	Pressure too low	Check pressure at the device inlet (!) during operation. Increase pressure, if necessary. Are the line cross-sections OK?

## 10 Spare Parts

When ordering spare parts, please give the following details:

1. Type of unit
2. Description of spare part
3. Required quantity



Please note: Piston and housing are matched to each other and can only be delivered together.

## 11 Appendix

### 11.1 Accessories

The following accessories are available (upon request) for piston NTP vibrators:

Description	Remark
Hose material and fittings	For air supply and discharge, in various grades and dimensions
3/2 way valves	For electric, pneumatic and manual activation
Throttle valves	For amplitude regulation, manually adjustable or pneumatically controllable (for remote control)
Service units	Filter, regulator, lubricator
Duty/pause controls	Electric or pneumatic, for interval operation
Brackets	For quick repositioning of vibrators on containers
Special versions:	Atex conform Series NTP piston vibrators and devices with stainless steel housings are available. Units for extreme temperatures and for lubrication-free operation available upon request.

### 11.2 Disposal

The parts are to be correctly disposed of, according to the material.

#### Material Specifications:

All parts of the vibrators can be recycled.

Housing:	Aluminium
Cover :	Aluminium
Piston:	Steel
Srews:	Stainless steel



All devices can be disposed of through Netter GmbH.  
The applicable disposal prices are available upon request.

### 11.3 Enclosures



#### Enclosure(s):

- Declaration of Conformity

Additional information available upon request:

- Brochure No 26 (NTP)
- Tips for building extraction troughs with piston vibrators, and much more.