



These operating instructions apply to: **NTP 25**
NTP 32
NTP 48



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Scope of delivery

As a rule, the NTP are delivered with the following components:

- Pneumatic piston vibrator (NTP)
- Operating instructions
- Packaging

For changes to the scope of delivery please refer to the delivery note.

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

Information on the operating instructions

Use and storage of the operating instructions

Before using the pneumatic piston vibrators of the series NTP read this operating manual carefully. It is the basis for any action taken with regard to the NTP and may be used for training purposes. The operating manual should subsequently be stored near the NTP.

Target group

The target group for these operating instructions is qualified technical personnel from the mechanical engineering sector who have a basic knowledge of pneumatics and mechanics.

Installation, commissioning, maintenance, fault elimination and disassembly of the NTP piston vibrators must only be performed by persons who have been instructed in the proper handling of the units.

Persons who have not been instructed accordingly must not carry out any works on the NTP.

Copyright

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Limitation of liability

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






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 operating instructions
- improper use
- unauthorized repairs
- technical modifications
- use of inadmissible spare parts

Translations are made to the best knowledge. NetterVibration does not assume liability for translation errors, even if the translation was made by us or on our behalf. Only the original German version is binding.

The following instruction and warning symbols are used in this operating manual:

	DANGER	indicates a possible risk which can result in death, personal injury and/or material damage if the instruction is not followed.
	WARNING	indicates a possible risk which can result in personal injury and/or material damage if the instruction is not followed.
	WEAR EAR PROTECTORS	indicates a possible risk which can result in personal injury if the instruction is not followed.
	IMPORTANT	note with especially useful information and tips.
	ENVIRONMENTALLY FRIENDLY DISPOSAL	indicates the obligation of an environmentally friendly disposal.

Information on the NTPs

The pneumatic piston vibrators of the series NTP comply with the directive 2006/42/EC

In particular, the standard DIN EN ISO 12100 has been observed.

Special features

- Continuously adjustable
- High efficiency
- Starts in any position
- Long operating life

2 Safety

Designated use:

The piston vibrators are intended for incorporation in machines. These machines use piston vibrators to empty bins, as drives for conveyor troughs, sieves and vibrating tables and generally for loosening, conveying, compacting and separating bulk material and to reduce friction. Any other use is considered improper use. There are no built-in safety devices.

Qualification of the personnel:

Assembly, commissioning, maintenance and repair of the pneumatic piston vibrators must be performed only by authorized qualified personnel. Any handling of the piston vibrators lies within the responsibility of the operator.

Accessories which ensure the correct operation and safety must provide a protection type required for the specific use.



WARNING

Netter GmbH does not assume liability for damage or injury resulting from technical modifications to the product or failure to observe the instructions and warnings in this operating manual.



WARNING

Source of danger:

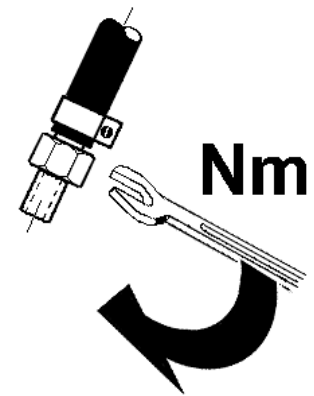
Faulty hose connections.

Possible consequences of non-observance:

A pressurized hose coming loose can cause severe injury.

Avoiding the danger:

The hose lines must be securely connected. This must be checked at regular intervals and the screw connections have to be retightened if necessary.



WARNING

Source of danger:

The NTP work with compressed air.

Possible consequences of non-observance:

A pressurized hose coming loose can cause severe injury.

Avoiding the danger:

Ensure that the compressed air is shut off from the supply lines when working on the NTP.





Source of danger:

Vibrators, parts of the construction and air inlet ports may become loose due to vibration.

Possible consequences of non-observance:

Falling parts can cause injury or material damage.

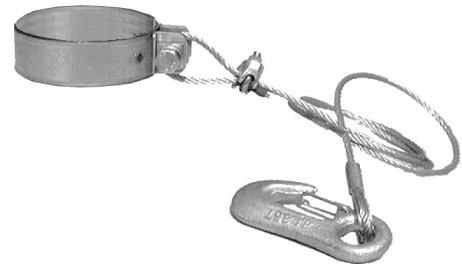
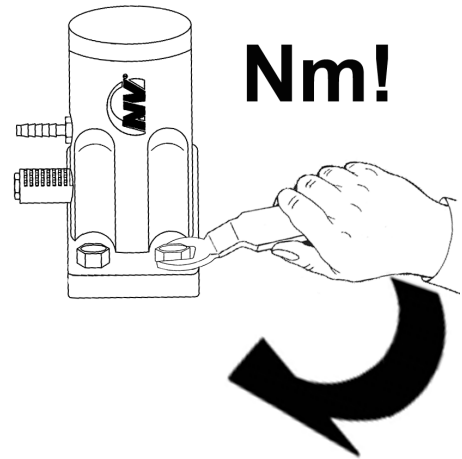
Avoiding the danger:

For fastening the NTP, Netter fastening sets (NBS) have to be used.

Screw locks and/or Loctite or equivalent must be used. Screwed connections and air inlet ports should be checked after 1 hour of operation and afterwards at regular intervals (generally once per month) and tightened if necessary.

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

Jan. / Feb. / ...



**WEAR EAR
PROTECTOR
S**

Source of danger:

Near the vibrator or close to the constructions connected with the vibrator the noise level can exceed 85 dB(A).

Possible consequences of non-observance:

Due to the high noise level a permanent impairment of hearing is possible.

Avoiding the danger:

When working in the noise area ear protection is absolutely required if the noise level exceeds 85 dB(A).



3 Technical Data

Type	Working moment [cmkg]			Nominal frequency [min ⁻¹]			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

The technical data are reference values and may vary depending on the application, further data available upon request. We recommend consultation with the Netter GmbH application engineers. Subject to technical changes.

Admissible operating conditions:

Drive medium:

Clean filter ($\leq 5 \mu\text{m}$, quality class 3 according to DIN ISO 8573-1)
Compressed air or nitrogen.

Operating pressure:

2 bar to 6 bar*

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

Lubrication:

NetterVibration recommends a mist lubricator for all vibrators.

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

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

When using dried compressed air or under extreme ambient conditions a mist lubricator is compulsory.



IMPORTANT

NTP L versions are suitable for the operation with oil-free, dried compressed air if the compressed air quality is complied with, filter $\leq 5 \mu\text{m}$, quality class 3 according to DIN ISO 8573-1.

Ambient temperature:

NTP with Al housing (black): 5°C to 60°C*

NTP L versions for oil-free operation 5°C to 60°C*

NTP NT versions for low temperatures: -32°C to 60°C*

NTP HT versions for high temperatures: 5°C to 160°C

The admissible ambient temperatures must not be exceeded or fallen short of.

Special version (stainless steel, bronze) on request.

Ambient conditions:

Operation in a dusty environment is possible. Preferably, the exhaust air should be discharged in a dusty environment.

For NTP B+C vibrators timed operation is mandatory.

(for example duty time 5 s, pause time 25 s).

Special versions (stainless steel, bronze) on request.

*) Higher operating pressures and temperatures are only permitted after consultation and written approval by the application technicians of Netter GmbH.

Type designations

NTP B+C is the standard version. An impact plate (elastomer disc) is inserted in the base plate, which creates a rubber hammer effect.

NTP B versions have no impact plates, the piston strikes against the cushion of air above the base plate.

NTP B+A are versions with a steel impact plate (hard-impacting with high noise level).



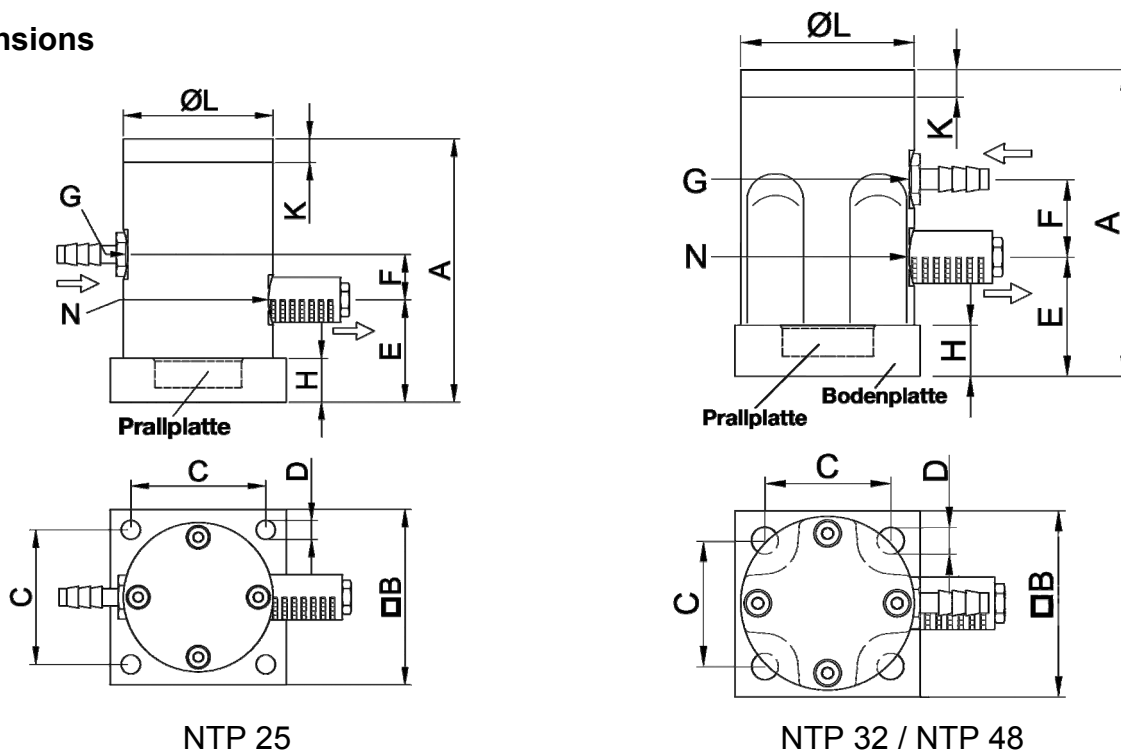
Operating time

Over the life span the technical performance data will change (wear).

Noise level

The sound emitted by the NTP can be dampened by a cover (upon request). This only makes sense if the impacted sheet metal is also dampened.

Dimensions



Typ	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

4 Design and Function

Pneumatic piston vibrators of the series NTP generate directional vibrations or shaking movements.

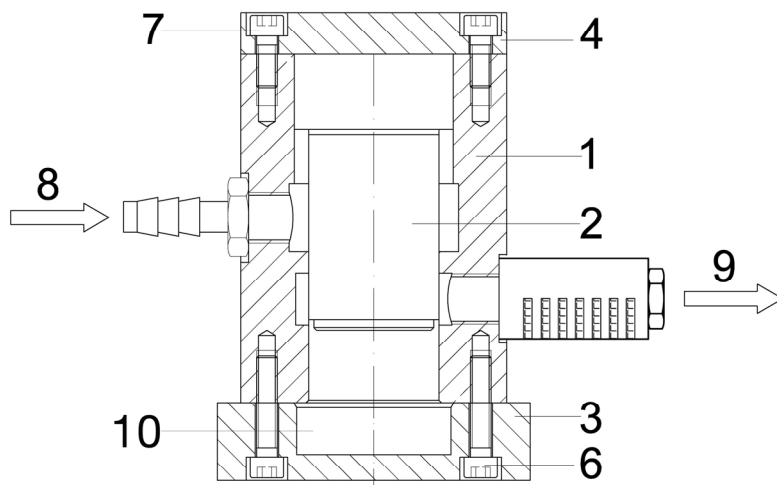
The vibration is generated by a freely swinging differential pressure piston **2**.

In the standard version NTP B+C the piston **2** strikes against an elastomer impact plate **10**, thus creating a rubber hammer effect.

Version B has no impact plate **10**, the piston **2** 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 **3** 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.



- 1 Housing
- 2 Piston
- 3 Base plate
- 4 Cover
- 6 Screw
- 7 Screw
- 8 Air inlet port
- 9 Air exhaust port
- 10 Impact plate

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.

Packaging

The vibrators are packed ready-to-install. The type label is attached to the vibrator. If lubricated compressed air is required, this is indicated at the air inlet port of the vibrator.

Accessories and add-on parts are delivered loosely, unless otherwise agreed. Particular transport conditions are not required.

The packaging protects the pneumatic piston vibrator from transport damage. The packaging material has been selected based on environment and disposal-friendly aspects and can be recycled.

Recycling of the packaging reduces raw material consumption and minimizes waste disposal.

Storage

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

NTP piston vibrators must be lubricated before restorage: pour machine oil into air inlet port and activate the NTP shortly while it is still installed. Subsequently it can be disassembled and stored).

The storage temperature can be -30°C to $+60^{\circ}\text{C}$. (This does not apply to the operating temperature).



Always use ear protectors when operating the pneumatic piston vibrators.

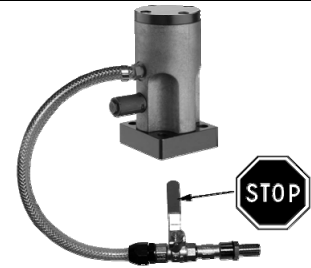


6 Installation



WARNING

Ensure that the compressed air supply is shut off during installation or when working at the vibrator.



The diagram on the right shows the possible applications:

A on vibrating tables for compacting, testing etc.

B on bins for emptying, on vibrating throughs and sieves.

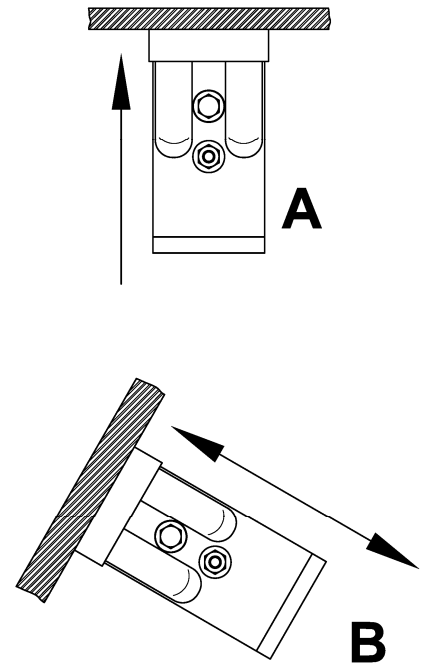
The housing of the piston vibrator has to be screwed to the mass to be vibrated.

The mounting surfaces must be absolutely level ($\pm 0.1\text{mm}$ flatness), so the 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 (= mass x distance) is determined by the amplitude.



Fastening:

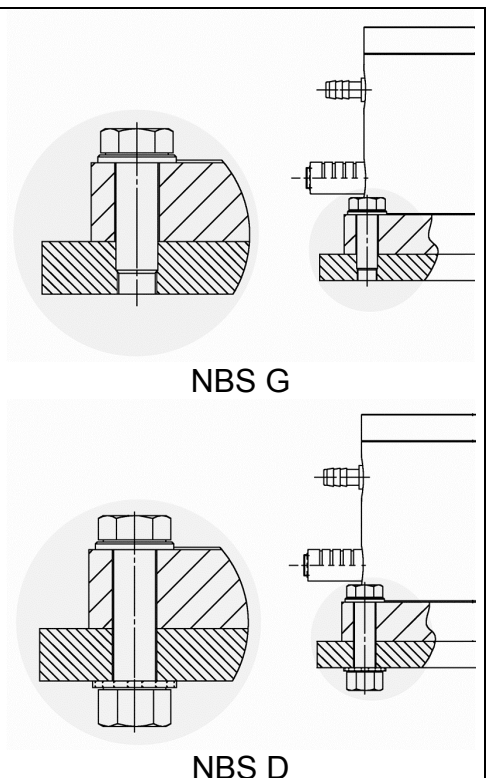
NetterVibration supplies appropriate fastening devices for the installation of the piston vibrators.

The piston vibrators are then mounted to these devices using NBS fastening sets.

The NBS fastening sets serve to fasten the piston vibrators safely and permanently.

The appropriate fastenings sets NBS can be supplied:

Piston vibrator	Fastening set G = for tapped hole, D = for through hole	Tightening torque [Nm]
NTP 25	NBS G 6/25 NBS D 6/40	10,4
NTP 32	NBS G 10/30 NBS D 10/50	51,0
NTP 48	NBS G 12/40 NBS D 12/60	87,0



Installation NTP

Only with a 3/2-way valve the piston vibrators NTP can start in any installation position. If the air supply is regulated by means of a 3/2-way valve, the piston vibrators come to an immediate standstill after being switched off.

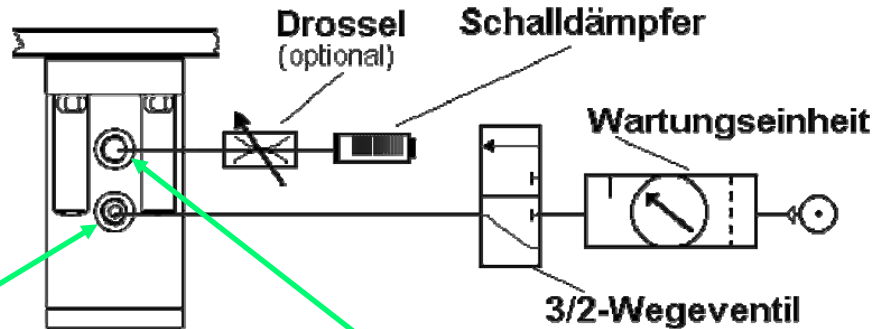
A maintenance unit is recommended for all installations. The maintenance unit should consist of filter, regulator and mist lubricator (see chapter 3 "Technical Data").



IMPORTANT

Connect hoses to the NTP as shown in the pneumatic diagram!

Standard installation:



Special diagrams on request

Air supply line:

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

Air discharge line:

The exhaust air can be discharged through a hose. The piston vibrator can only achieve full power, if the discharge hose has 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	Connection thread	Hose size	3/2-way valve
NTP 25	G 1/8	NW 4 or greater	G 1/4, NW 4 or greater
NTP 32	G 1/4	NW 6 or greater	G 1/4, NW 6 or greater
NTP 48	G 3/8	NW 9 or greater	G 3/8, NW 9 or greater

Check list for installation:

- 1) Observe the expected operating temperature.
- 2) Mount the maintenance unit (filter, mist lubricator, perhaps regulator), the way valve and the air lines.
- 3) Check if fastening screws are secured.
- 4) The base plate must lie absolutely flat, otherwise the housing will distort and the device will not start.
- 5) 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.
- 6) Ensure that no Teflon tape can enter the unit. This would cause seizure. The first two windings of the thread should remain free!
- 7) Observe the specified hose type, hose length and nominal width!
- 8) Secure the unit against falling down!

7 Start-Up / Operation



We recommend lubricated compressed air for the NTP vibrators.

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

Oil lubrication:

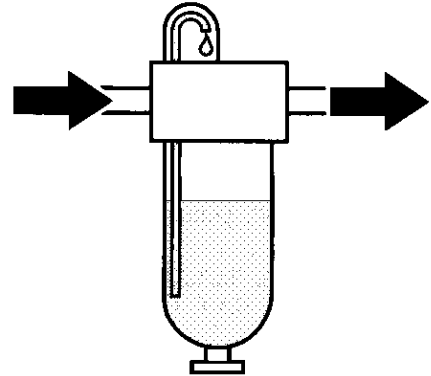
Fill the mist lubricator with acid-free and resin-free pneumatic oil, ISO viscosity class according to DIN 51519, VG 5 to VG 15.

NTP 25 *) approx. 1 drop/min

NTP 32 *) approx. 1-2 drops/min

NTP 48 *) approx. 2 drops/min

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



At temperatures below 0°C to -20°C the use of Klüber „ISOFLEX PDP 10“ is compulsory.
Compressed air quality class 3, DTP -20

KLUEBER ISOFLEX PDP 10
vorgeschrieben

At temperatures below -20°C the use of BREAK FREE® CLP is compulsory.
Compressed air quality class 2, DTP -40

BREAK FREE® CLP
vorgeschrieben

At temperatures above 60°C to 160°C the use of Aral Farolin is compulsory.

Aral Farolin
vorgeschrieben



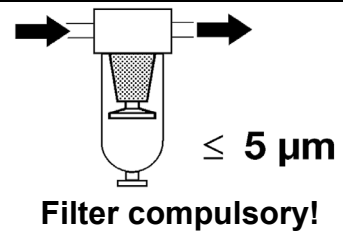
ATTENTION:

Adjust number of drops while unit is running.

Only after the mist lubricator has been adjusted and is functioning correctly, the unit is ready for operation.



NTP L versions are suitable for operation with oil-free, dried compressed air if the compressed air quality, filter $\leq 5 \mu\text{m}$, quality 3 in accordance with DIN ISO 8573-1 is complied with.





The NTP B+C vibrators must 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 (≤ 12 seconds) may be used with a pause factor of 5. (Example: 5 seconds duty – 25 seconds pause).

Regulation of amplitude:

The amplitude can be regulated by throttling the exhaust air (throttle installed 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 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, however, is more accurate.



IMPORTANT

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

Check list for start-up:

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



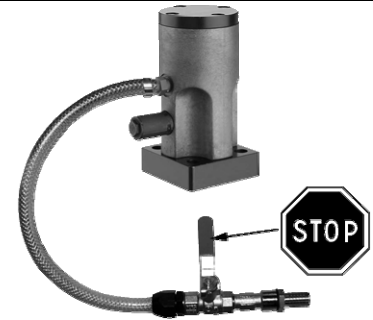
WARNING

- 5) After 1 hour of operation the air supply lines, the cover screws and fastening screws must be checked and retightened if necessary. After that, the compressed air supply lines, the cover screws and fastening screws have to be checked and -if necessary - retightened regularly (as a rule once a month).

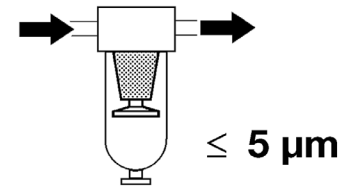
8 Service / Maintenance



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



The drive medium must be clean (filter $\leq 5 \mu\text{m}$, class 3). Unfiltered compressed air leads to high wear, clogging of silencers and to a complete failure of the vibrator. The maintenance intervals will become shorter.



Filter empfohlen

Maintenance schedule

Maintenance has to be performed every month.

through
DANGER

Screw connections	Screw connections must be checked and retightened if necessary and secured with Loctite after one hour of operation (after first commissioning) and subsequently at regular intervals.
Air supply lines	Check for free flow and kinks. If necessary, clean and remove kinks.
Silencer	Clean and check function.
Check vibration	Check function.
Mist lubricator	Ensure that mist lubricator is working correctly (content decreasing? Number of drops/h) Refill oil.
Filter of the maintenance unit	Replace filter insert, empty filter if necessary, clean (wash out) filter insert

Recommended average tightening torques for screws of strength class 8.8 on the cover and housing:



Piston vibrator	Thread	Tightening torques
NTP 25	M 4	3 Nm
NTP 32 and NTP 48	M 8	20 Nm



The service intervals are largely dependent on the operating time and the cleanliness of the drive medium.

Especially in the NTP L devices which are operated with non-lubricated and/or dried compressed air, higher abrasion can cause a coating that slows down the vibrator.

The maintenance intervals will become shorter in the course of the service life of the vibrator.

9 Troubleshooting

Fault	Possible cause	Fault search	Remedy
Vibrator will not start	Silencer		Clean silencer.
	Compressed air supply	Check pressure on device! Is enough pressure available? Check valve.	We recommend a 3/2-way valve to vent the supply line to the device.
	Cover loose	Check screws	An unsealed cover causes standstill. Tighten screws.
	Line cross-sections	Check line cross-sections	Observe minimum cross-sections. See specifications under "Installation".
	Line between valve and NTP too long	Check length of line	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	Check silencer (is air flow sufficient?)	Open up throttle. Clean silencer.
	Grommet thread too long	Check grommet	Can cause deformation of housing or piston (if this has already occurred, return device!)
	Distortion from mounting	Check if mounting surface is level.	
Rattling	Screws loose	Check fastening screws.	Tighten fastening screws.
Power drop	No lubrication	Check correct functioning of lubricator if lubricated compressed air is compulsory.	Adjust lubricator
	Unit soiled Wear	Disassemble Check device and piston for visible signs of wear	Remove coating. See information in chapter "Spare Parts".
	Specification	Check size of device. Has the correct size been selected?	Pay attention to line cross-sections (see chapter "Installation").
	Pressure too low	Check pressure at the device inlet during operation.	Increase pressure.

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 Accessories

The following accessories are available (upon request) for NTP piston 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)
Maintenance units	Filter, regulator with gauge, mist lubricator
Electronic timers	Electric or pneumatic, for interval operation
Brackets	For quick repositioning of vibrators on containers
Special versions:	Atex conform piston vibrators of the series NTP and devices with stainless steel housings are available. Units for extreme temperatures and for lubrication-free operation available upon request.

12 Disposal

The parts must be correctly disposed of depending on the material.

Material specifications:

	NTP 25	NTP 32	NTP 48
Stainless steel	Screws	Screws	Screws
Steel	Piston	Piston	Piston
Aluminium cast		Housing	Housing
Aluminium	Cover, base plate. housing	Cover, base plate	Cover, base plate
Plastic	Silencer, grommet, seals	Silencer, grommet, seals	Silencer, grommet, seals



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

13 Enclosures

Enclosure(s):
Declaration of Incorporation



**Additional information available upon request:
Brochure no. 26 (NTP) etc.**