

These operating instructions apply to:

NTP 18
NTP 25

NTP 32
NTP 48



Use and storage

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

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1 General information

Designation	The pneumatic linear vibrators series NTP are hereafter referred to as "NTP".
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.
Target group	The target group for these instructions is technical staff, who have basic knowledge in pneumatics and mechanics. Only complying technical staff may work on the NTP. The NTP may only be installed, put into operation, maintained, troubleshot and disassembled by persons authorised by the operator.
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: <ul style="list-style-type: none">• 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. NetterVibration 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.
Use and storage	Before installing the NTP read these instructions carefully. It is the basis for any action when dealing with the NTP, and may be used for training purposes. The instructions should be subsequently stored at the operation site.
Copyright	This documentation is protected by copyright. NetterVibration reserves all rights such as translations, reprinting and reproduction of the instructions, as well as parts thereof.
Directives / standards observed	The pneumatic linear vibrators series NTP comply with the EC Machinery Directive 2006/42/EC. In particular, the standard EN ISO 12100 has been observed.

2 Safety

Intended use

The NTP are intended for generating linear vibrations.

General applications are: loosening, conveying, sorting, compacting, separating bulk materials and reducing friction. NTP are used for emptying bunkers, as drives for conveyor troughs, sieves and vibrating tables.

The NTP are designed for installation in machines and may only be put into operation, if it has been assured that the complete machine complies with the regulations of the machinery directive.

The NTP may also be used outdoors and in dusty and humid environments. The NTP may not be submerged in bulk materials or in liquids.

The NTP B+C may only be operated clocked.

Any other use is considered improper.

Qualification of qualified personnel

Installation, commissioning, maintenance and troubleshooting of the NTP may only be performed by authorised qualified personnel.

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

WARNING

Falling parts

The NTP, construction parts as well as fastening screws can come loose due to vibration. Falling parts lead to severe personal injuries.

- Check the fastening screws after one hour of operation and thereafter at regular intervals (generally monthly).
- Retighten the fastening screws, if necessary.
- A safety device with a safety cable is mandatory for critical mounting situations.

WARNING

Compressed air

A loosened hose which is under pressure can lead to personal injuries.

- Screw the hose lines on carefully.
- Check the hose lines and connections after one hour of operation and thereafter regularly (generally monthly).
- Retighten the hose lines, if necessary.
- Ensure that the compressed air is disconnected from the supply lines during all work on the NTP.
- Prevent the NTP from being switched back on during all work.

WARNING

Sound level

Near the NTP or in the vicinity of the constructions connected with the NTP, the sound pressure level may exceed 80 dB(A). The human ear can be permanently damaged by the high sound level.

- When working in the noise area, use ear protection if 80 dB(A) is exceeded.

3 Technical data

Permissible operating conditions

Drive medium	NTP must be operated with clean, lubricated compressed air or lubricated nitrogen according to the following specification, according to ISO 8573-1 :	
	[5 :	6 :
	Filter ≤ 5 µm	Humidity, Pressure dew point ≤ +10 °C
	4] Total oil content ≤ 5 mg/m ³	
Ambient temperature *	NTP L versions are suitable for operation with oil-free compressed air according to the following specification, according to ISO 8573-1 :	
	[5 :	6 :
	2]	
Operating pressure *	Standard and NTP L-versions	5 °C to 60 °C
	NT-version	-20 °C to 60 °C
	HT-version	5 °C to 160 °C
Operating pressure *	2,0 to 6,0 bar	

* Higher operating pressures and temperatures are only permitted after consultation with and the written consent of application engineers from **NetterVibration**.

Lubrication	ISO viscosity class according to DIN ISO 3448, VG 5 to 15. Fill the mist lubricator with acid- and resin-free compressed air oil.	
	A mist lubricator is recommended by NetterVibration for all NTP (except NTP L).	
	Recommendation for temperatures from 0 °C to 60 °C: Klüber "AIRPRESS 15"	Specification for temperatures from 0 °C to -20 °C: Klüber "ISOFLEX PDP 10"
	Specification for temperatures below -20 °C with NT-versions: BREAK FREE® CLP	Specification for temperatures above 60 °C with HT-versions: Aral „Farolin“
	Number of drops for the mist lubricator:	
	Type NTP	Drops
	18, 25	1-2 drops/2 minutes
	32	1-2 drops/minute
48	2 drops/minute	

Further technical data of the NTP can be found in the brochure on www.NetterVibration.com.

IMPORTANT

NTP B + C may only be operated clocked.

A duty time of max. 60 s must be followed by a pause of at least 60 s. Alternatively, with a short duty time (≤ 12 s) a pause factor of 5 may be used (e.g.: duty time 5 s - pause time 25 s).

Connection data

Type: NTP ...	Mounting thread or hole*	Tighten- ing torque [Nm]	Air supply line		Air discharge line	
			Connection thread [inch]	Hose size**	Connection thread [inch]	Hose size**
18	M5	6	M5	DN 4	M5	DN 6
25	G 1/8	10	G 1/8	DN 4	G 1/8	DN 6
32	G 1/4	50	G 1/4	DN 6	G 1/4	DN 8
48	G 3/8	87	G 3/8	DN 9	G 3/8	DN 10

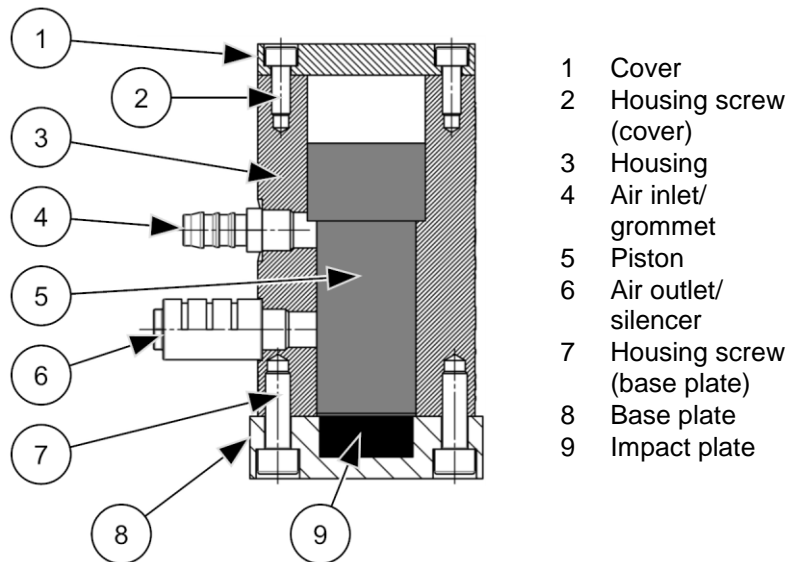
* = Mounting hole

** DN = Diameter nominal (inner diameter)

Service life The technical performance data changes over the service life (wear and contamination).

Sound level reduction The sound emitted by the NTP can be dampened by covers. The sound pressure level is reduced only with simultaneous insulation of the applied sheets.

4 Design and function



The vibration of the NTP is generated by a freely oscillating, automatically reversing piston. Both masses, on the one hand the piston (5), on the other hand, the housing (3) with the mass attached thereto, oscillate in relation to their total weights against each other.

The compressed air enters the housing at the air inlet (4) and is alternately passed through the supply air and the control bores in the piston (5) above or below the piston. The alternating pressure in these chambers drives the piston.

The respective non-pressurised chamber vents via the air outlets (6). As soon as the piston passes the air outlets, the air can not escape - an air cushion is created. This prevents an impact between piston and cover (1) or base plate (8). The centrifugal force transmitted and the generated impulse act in the vibrator's axis. The direction of vibration is linear.

The space of the air cushion can be filled with an elastomer impact plate (9). This version is called "B+C", in contrast to the standard version "B".

The product of piston mass and vibration amplitude is the unbalance. The amplitude is set by throttling the exhaust air. The frequency is adjustable via the operating pressure.

5 Transport and storage



Observe the safety instructions in chap. Safety, from page 3 on.

Transport conditions

Special conditions of transport are not required.

Storage conditions

Storage in a dry and clean environment, protected from UV-exposures, weather and ozone. Storage temperature: -20 °C to 60 °C.

Preserve all NTP apart from the NTP L before storage:

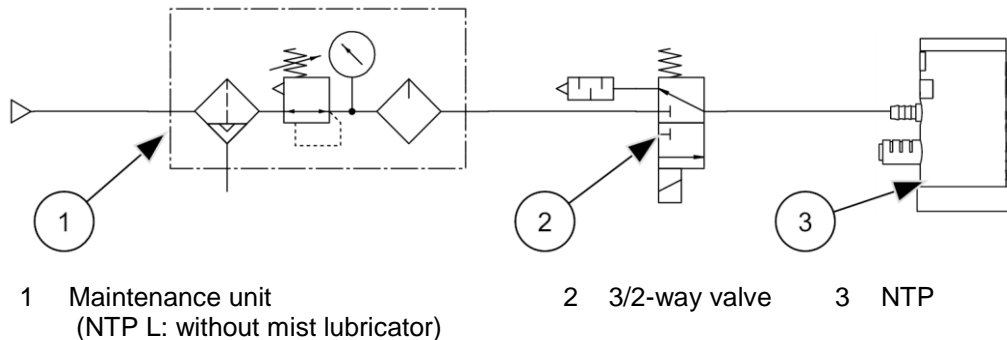
Add anti-corrosion oil to the air inlet. Actuate the NTP briefly when mounted. Close all openings afterwards.

6 Installation



Observe the safety instructions in chap. Safety, from page 3 on.

Standard installation



- Notice:** The NTP must lie completely on the surface. The mounting surface has to be flat (± 0.1 mm flatness) and clean with no paint residues or burn-ins.
NetterVibration recommends mounting the NTP on a weld-on console or a glueing console. For operation a 3/2-way valve (minimal valve function) has to be used.
- Mount the NTP on the console with the fastening screws and suitable safety washers. If necessary, additionally use a medium-strength liquid safety agent to secure the screw connections. Observe the recommended values for screw sizes and tightening torques.
NetterVibration recommends NBS fastening kits for secure and permanent fastening.
- Fasten the compressed air supply securely. Observe the recommended cross-sections for valves and hoses. For the air supply, use screw connections with integrated flat seal or liquid sealant.
Notice: Screw-in threads that are too long can lead to machine damage.
The air resistance increases with the hose length. The specified nominal diameters apply to hose lengths up to 3 m. Longer supply lines require larger cross-sections.
Discharge the escaping air through a hose if necessary (e. g. in dusty environments). To achieve full performance, the exhaust hose must have a larger nominal size than the supply hose.
- Mount the silencer/silencers.

7 Start-up and operation



Observe the safety instructions in chap. Safety, from page 3 on.

Observe the permissible operating conditions in chap. Technical data, page 4.

Starting pressure at low temperatures or after prolonged storage

At ambient temperatures ≤ 10 °C or after prolonged storage higher starting pressures (≥ 2 bar) may be required. Start the NTP with a higher pressure of approx. 5 bar and then reduce to 2 bar.

Setting the frequency

The frequency of the NTP is set with the pressure regulator of the maintenance unit. The frequency is reduced by lowering the air pressure before the NTP. The centrifugal force is hereby also reduced. At the same time the amplitude remains almost constant.

Adjustment of amplitude

If required, install a throttle valve in the exhaust air line in order to adjust the amplitude of the NTP by throttling the exhaust air. By throttling the exhaust air, the centrifugal force is reduced. The frequency hereby remains almost constant.

Important: Reduced cross-sections already throttle (observe the nominal diameter). Reduce the amplitude only up to approx. 50 %. This can cause start-up problems if below.

Setting mist lubricator

Set the mist lubricator to the recommended number of drops while the NTP is running.

Notice: The NTP is ready for operation only after adjustment and correct functioning of the mist lubricator.

8 Maintenance and servicing



Observe the safety instructions in chap. Safety, from page 3 on.

Maintenance intervals

The maintenance intervals depend essentially on the operating conditions, the service life and how clean the drive medium is. Unfiltered compressed air leads to high wear, silencer clogging or complete failure of the NTP.

Maintenance plan

Interval	Action
After one hour of operation after initial start-up	Check fastening screws.*
	Check hose screw connections and hose fittings, retighten if necessary.
Monthly	Check fastening screws.*
	Check hose screw connections and hose fittings, retighten if necessary.
	Check hose supply connections for permeability and kinks. If necessary, clean and remove kinks.
	Check the silencer for contamination. Clean silencer.

Interval	Action
Monthly	Check the function of the NTP.
	Check the function of the mist lubricator. Refill oil if necessary (except for the NTP L).
	Clean the filter of the maintenance unit and replace, if necessary.
If necessary	Clean the surface of the NTP with a wet cloth to remove dust deposits.

* Observe the tightening torques (see Chap. Technical data, from page 4 on).

Loss of performance

If you notice loss of performance or standstill of the NTP then have the NTP checked at **NetterVibration**.

9 Troubleshooting



Observe the safety instructions in chap. Safety, from page 3 on.

Malfunction	Possible cause	Corrective action
No start	Silencer polluted	Clean silencer.
	Compressed air supply	Check if there is enough pressure at the NTP. Check valve. A 3/2-way valve is strictly required, so that the supply line to the NTP is vented.
	Cover loose	A leaky cover leads to standstill of the NTP. Tighten screws.
	Line cross-sections	Observe recommended cross-sections (see Chap. Technical data).
	Line between valve and NTP > 3 m	Leads to a slow start and an eventual standstill of the piston in the middle position. If necessary, put a controlled 3/2-way air valve before the NTP.
	Exhaust air throttled too much	Open the throttle valve further. Clean silencer.
	Thread of compressed air connection is too long	Check if the housing is deformed. In case of deformed housing, have the NTP checked by NetterVibration .
	Tension during installation	Ensure a flat contact surface.
	Temperature below 5 °C	Use NT-Version..
	Missing ventilation of the housing	Use a 3/2-way valve with adequate cross section.
Rattling	Screws loose	Check fastening screws.
Power loss	Lubrication is missing	Check the function of the mist lubricator.
	NTP polluted	Disassemble NTP and clean it.
	Wear	Check piston and housing for visible wear. If wear is found, send the NTP to NetterVibration or replace it. Check mist lubricator.
	Operating pressure too low	Check the pressure at the inlet of NTP during operation. If necessary, increase the pressure. Check line cross-sections.

10 Spare parts and accessories

Ordering of spare parts

Please provide the following details when ordering spare parts:

- type of NTP
- description and position of spare part
- required amount

IMPORTANT

Please observe: Piston and housing are produced pairwise and can only be delivered together.

Possible accessories

The following accessories are available for the NTP:

Component	Description
Hose material and hose screw connections	For air supply or discharge, available in various qualities and dimensions
3/2-way valves	For electrical, pneumatic or manual activation
Throttle check valves	For setting the amplitude
Maintenance units	Filter, regulator and mist lubricator
Netter electronic timers	Electric or pneumatic, for interval operation
Fixing devices	For temporary or permanent fixing of the NTP
NBS fastening kit	Recommended for secure and permanent attachment of the NTP

Special models

Following accessories are available:

- NTP L for oil-free operation,
- NTP E for ATEX area,
- NTP HT for high temperature applications,
- NTP NT für low temperature applications,
- NTP BK with bronze piston,
- NTP S as stainless steel versions.

11 Disposal

All parts of the NTP must be properly disposed of according to the material specifications. The NTP can be properly disposed by **NetterVibration**. The valid disposal prices are available on request.

Depending on the type, the following materials are built into the NTP:

Steel/stainless steel, aluminium, bronze (NTP BK), brass (NTP HT), copper (NTP HT), plastics.

12 Annex

The Declaration of Incorporation can be found at: www.nettervibration.com