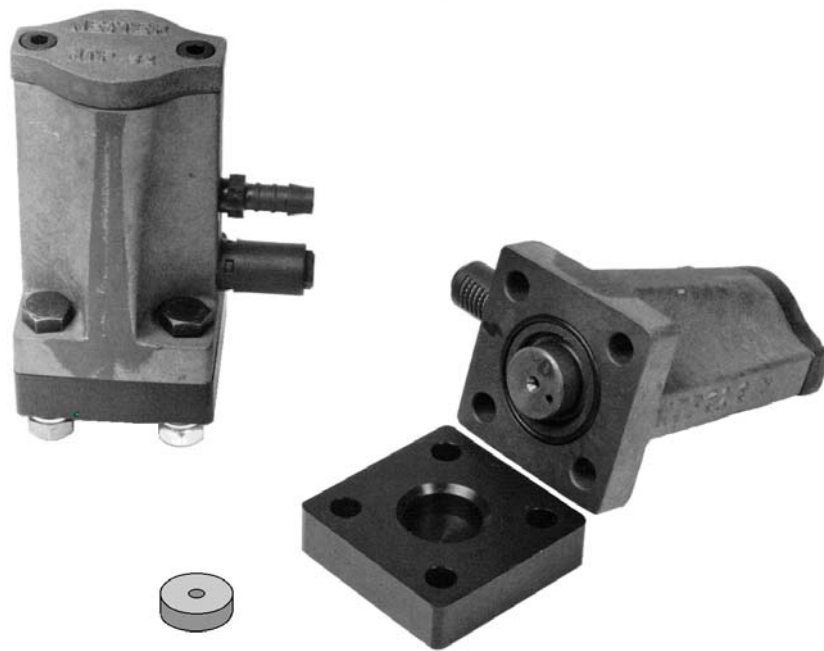


**Operating manual for
Netter pneumatic piston vibrators
"NTP" series from 1994 models onwards**

June 1999
BA No. 270 E
1/12

This manual is valid for:

- NTP 25**
- NTP 32**
- NTP 48**



Important note:

Netter GmbH assumes no responsibility for damage to people and property arising from technical alterations to the product or from failure to comply with the instructions and information given in this manual.

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Delivery:



Check the packaging for any transportation damage. If the packaging is damaged, check that the contents are complete and undamaged. Inform the carrier in the event of any damage. Compare the delivery to the information on the delivery note.

1 General Information

Netter pneumatic piston vibrators series NTP comply with the EC directives for machines 89/392 EEC. The standards DIN EN 292, parts 1 & 2 are especially adhered to.

Series NTP pneumatic piston vibrators produce directional oscillations or shaking motions. These vibrators are used to empty bunkers, as driving mechanisms for shaking conveyors, sieves and vibrating tables etc., and in general to loosen, transport, compress and separate bulk materials and to reduce friction.

The vibrators are driven by compressed air or nitrogen at pressures of 1-6 bar.

In compliance with the relevant operating instructions, NTP vibrators can be used in the production of foodstuffs and in EX and wet areas.

The frequency can be regulated using pressure regulators or throttles mounted in the incoming air line, and the height of stroke can be continuously reduced by the addition of throttles in the outgoing air line.

2 Technical Data



Maximum operating pressure:

The maximum operating pressure is 6 bar.

Ambient temperatures:

During operation the temperature must not exceed or fall below the permissible range. +5°C to +80°C.

The piston vibrators series NTP are available in different series 25, 32 and 48.

The model B, vibrator with bottom plate, is oscillating against air cushions.

Model C is equipped with an additional elastomer inlay to produce a rubber hammer effect. Series 32 and 48 can be used also without bottom plate. The piston is then hard knocking on the mounting plate.

Technical Data with 2 - 4 - 6 bar

Type NTP	Frequency [min ⁻¹]			Centrifugal Force [N]			Working Moment [cmkg]			Air Consumption [l/min]		
	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar	2 bar	4 bar	6 bar
25 B	2.640	3.240	3.840	65	165	263	0,17	0,29	0,33	17	55	120
25 B+C	4.800	6.960	8.400	131	311	503	0,104	0,117	0,13	24	70	158
32 B	2.100	2.500	2.900	265	471	618	1,10	1,33	1,35	34	95	173
32 B+C	2.900	3.500	4.000	265	471	618	1,10	1,33	1,35	43	110	215
48 B	1.200	1.500	1.700	275	760	1.130	3,48	5,69	6,79	77	291	492
48 B+C	1.700	2.100	2.400	275	760	1.130	3,48	5,69	6,79	96	361	610

B = with base plate (quiet through air-cushioning)

Model C (baffle plate in the base plate B).

Noise level

With the silencer and the distance plate, this is under 85 dB(A) with 4 bar and usually also with 6 bar.

With hard-hitting installations, the noise level is much greater than 85 dB(A).

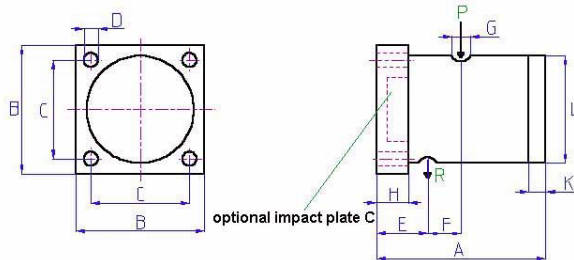
With the distance plate and the elastomer disc C, the noise level can be over 85 dB(A), according to the mounting table and pressure used.



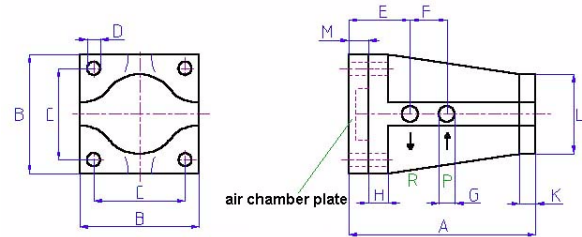
Please note when planning:
NTP B can be retooled at any time through the addition or removal of the elastomer disk C.

With 3/2-way valves, piston vibrators NTP start in any fitting position.
A 3/2-way valve should also be

used with all NTPs if an immediate halt is to be achieved when the machine is turned off. Regulations state that filtered and oiled compressed air must be used for NTP 32 B and NTP 48 B. Oil-free devices are available as a special model.



NTP 25 B



NTP 32 B / NTP 48 B

Type NTP	A [mm]	B [mm]	C [mm]	Ø D [mm]	E [mm]	F [mm]	G	H [mm]	K [mm]	Ø L [mm]	M [mm]	weight [kg]
25 B	90	60	46	6,5	35	15,5	1/8"	15	8	51	—	0,61
32 B	142	75	51	11	48	32	1/4"	18	11	50	20	1,42
48 B	199	104	78	13	60	51	3/8"	27	20	70	25	4,32

3 Construction and Function

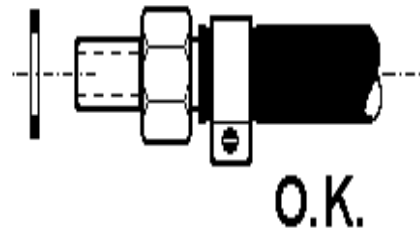
Vibration is produced by a free-swinging differential pressure piston. In the basic model, the piston hits the base the housing is mounted to. If the distance plate **B** (optional) is mounted

between the base and the housing, the piston vibrates silently in an air cushion. An elastomer disc **C** can be inserted into the distance plate to achieve a rubber hammer effect.

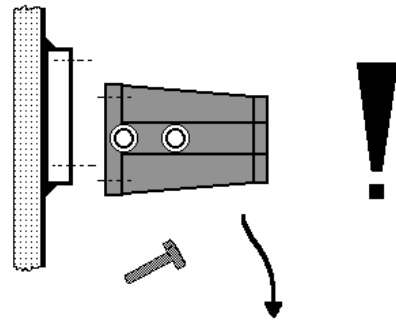
4 Safety



NTP vibrators work with compressed air of up to 6 bar. Therefore, tubing must be well secured. A tube which is under pressure and which works itself loose can cause injury. Compressed air should thus be turned off before assembly is begun.



Vibrators and parts of the construction can work themselves loose through vibration. Parts which break loose can cause damage to people and materials. Screw locking devices and/or Loctite (or a similar product) must be used. Bolt connections should be tightened after one hour of operation.



Alterations:

Alterations to the device can change the properties of the NTP or destroy the device; all claims then become extinct.



Permissible Environmental Conditions:

NTP vibrators may be operated in dusty and wet environments and under water when the outgoing air is extracted. The surface is physiologically perfect (with the exception of the special models). The permitted temperature range may not be exceeded in either direction during operation:

Permissible ambient temperatures: + 5 to + 80 °C
(other temperature ranges are possible; please ask)

5 Transportation and Storage

The devices are packed ready for mounting. The nameplate is on the vibrator. If oiled compressed air is required, the necessary information is given next to the air inlet on the device. Accessories and fittings (nozzle, silencer) are packed separately, unless otherwise arranged.

There are no special stipulated transportation requirements. The devices should be stored in a dry, clean environment.

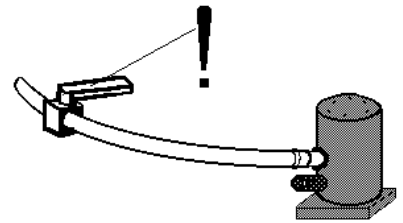
Piston vibrators NTP must be oiled before storage after use (put some machine oil in the air inlet and briefly operate the vibrator). Cleaning is recommended if the device is dirty (disassemble, clean off any deposit with oil, rub clean, reassemble).

Storage temperatures can be between -40 and $+150$ °C. (This does not refer to operating temperatures. See "Safety, Permissible Environmental Conditions").

6 Mounting



Ensure that the compressed air is turned off while mounting the device or carrying out any work on the vibrator and supply tubes.



Mounting the Vibrator

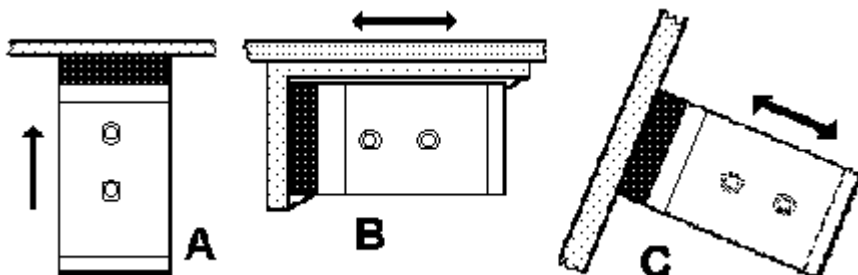
The piston vibrator housing is bolted down to the vibrating mass. Directional oscillations are produced. The working moment of the free-swinging piston (mass x displacement) determines the height of stroke.

If the device is used without the distance plate **B**, the surface the device is bolted down to is repeatedly hit hard. The distance plate prevents the piston hitting the surface. A rubber mallet effect is obtained by inserting an elastomer disc **C** into the plate.



Please observe the following when mounting:

The permitted temperature range may not be exceeded in either direction during operation. Information on models suited to other temperature ranges are available on request.



The above picture illustrates possible applications:

- A. on vibrating tables for compressing, testing, etc.
- B. under tables, on filters etc. for shaking
- C. on bunkers for emptying, on shaking conveyors and sieves



Use nuts and bolts which have been well-secured. Use a suitable fluid to lock bolts (e.g. Loctite).

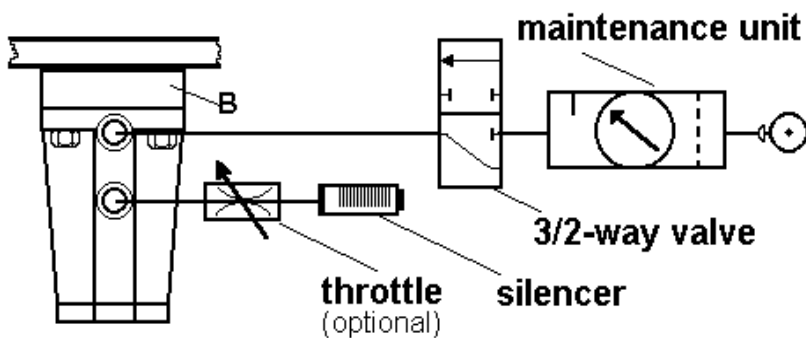
When tightening bolts, use torques in accordance with the following table. Higher torques can cause bolts to break or threads to be stripped. Incorrect bolt connections can cause devices to work loose through vibration. This can lead to damage to people and materials!

Recommended average torques for 8.8 quality bolts on NTP housings (bolts as delivered without extra lubrication or oiling):

Type	thread	torque
NTP 25 B	M 6	10,4 Nm
NTP 32 B	M 10	51 Nm
NTP 48 B	M 12	87 Nm

Standard Installation:

Special plans on request



Here, the frequency can be set and regulated with the pressure regulator in the maintenance unit.

The height of stroke can be regulated with a throttle mounted in the outgoing air line.

Minimum Cross Sections for Valves and Tubing:

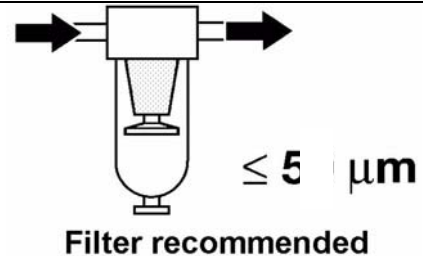
Type	Connection Thread	Tube Size	3/2-Way Valves
NTP 25	R 1/8"	from NW 4	R 1/4", from NW 4
NTP 32	R 1/4"	from NW 6	R 1/4", from NW 6
NTP 48	R 3/8"	from NW 9	from R 3/8", from NW 9



- 1) Under no circumstances should longer screw threads be used than those stipulated (e.g. no pipes with outside threads). The housing could become deformed and the piston will jam.
- 2) Ensure that no Teflon tape gets into the device. The device could seize. Leave the first 2 gears free!



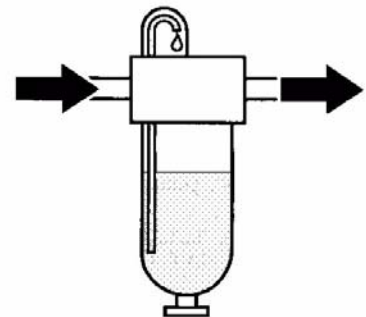
Clean filtered compressed air is required.
Non-filtered air will damage the vibrator.



Lubrication is required for all vibrators.
See note at the air intake. Special vibrators for lubrication-free operation are available on request.

Lubrication: (Oil: ISO VG5 = 5 cSt/40°C)
NTP 25 B *) 0-1 drops/min
NTP 32 B 1-2 drops /min
NTP 48 B 1-2 drops /min
Recommendation: Klüber „AIRPRESS 15“
for temperatures bis 60°C.

*) lubrication-free operation permitted



Oil
ISO VG5 = 5 cSt/40°C
(Shell Tellus C5)

Checklist for Mounting

- 1) Observe the expected operational temperature.
- 2) Affix the maintenance unit, valve, supply tube.
- 3) Mount the device. Secure the holding down bolts.

7 Initial Operation/Operation

Fill the lubricator with SAE 5 - SAE 20. Recommendation: Klüber "AIRPRESS 15" for temperatures of up to 60 °C. The height of stroke can be regulated by throttling the outgoing air (by mounting a throttle in the outgoing air). This can also reduce the centrifugal-

force. The frequency remains approximately constant. By reducing the air pressure before the NTP, the frequency can be reduced. This also reduces the centrifugal force. The height of stroke remains approximately constant.



With elastomer insert C, vibrator must be used at intermittent operation.



Set the number of drops **while the device is running**(NTP 25 B: 0-1 drops/min, NTP 32 B: 1-2 drops /min, NTP 48 B: 1-2 drops /min). **The device is only operable after the lubricator has been set up and is functioning without any problems.**

Checklist for Initial Operation:

- 1) Set the lubricator.
- 2) Check the tubing connections before turning on the compressed air.
- 3) If necessary, set the required frequency on the pressure regulator.
- 4) If necessary, set the required height of stroke by throttling the outgoing air.

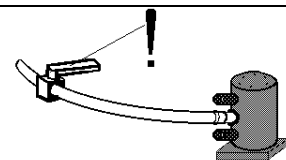


- 5) The holding down bolts should be tightened and checked after one hour of operation.

8 Maintenance



Turn off the compressed air before any checks or maintenance work are carried out and ensure it cannot be turned on accidentally!



Lubricator: For devices with an additional lubricator, ensure that this is functioning properly (are the contents decreasing? No. of drops/min.?). Refill with oil.

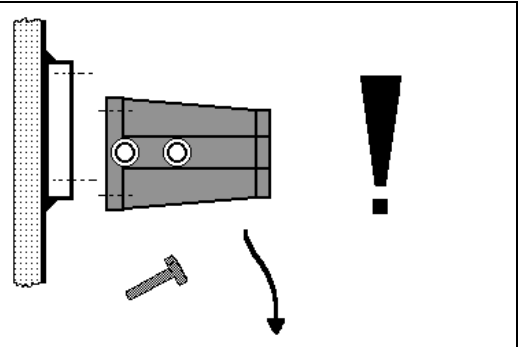
Filter: Empty the filter if necessary and clean the filter insert (rinse).

Cleaning: All NTPs can be externally cleaned with compressed water when the outgoing air is extracted or the

exhaust outlet is sealed. Compressed water must not be allowed to enter the piston area via the silencer.



Vibrators and parts of the construction can work themselves loose through vibration. Parts which break loose can cause damage to people and materials. Screw locking devices and/or Loctite (or a similar product) must be used. Bolt connections should be tightened after one hour of operation.



Observe the safety instructions when carrying out maintenance work on the device.

9 Trouble-Shooting

Fault	Possible Cause	Remedy
Device does not start	Silencer	Clean the silencer
	Air supply	Check if the device is pressurized! Enough pressure? Check the valve. A 3/2-way valve is recommended so that the supply tube to the device is deventilated.
	Cover is loose	A loose cover can stop operation. Tighten the bolts.
	Outgoing air over-throttled	Open up the throttle.
	Nozzle thread too long	This can cause damage to the housing and the piston (if this has happened, send in the device!).
Rattling	Loose bolts	Check the holding down bolts
Reduced performance	Lack of lubrication	Check that the lubricator is functioning properly, if oiled compressed air is stipulated.
	Device is dirty	Dismantle, remove any deposit.
	Wear	Check the device and piston for any wear (see instructions under "Spare Parts").
	Model	Check the size of the device. Have you chosen the correct size? Refer to the cross sections for valves and tubing (see "Mounting")
	Pressure too low	Check the pressure near the device inlet during operation. Increase the pressure.

10 Spare Parts

When you order spare parts, please include the following information:

1. Model of the device
2. Item and description of the part (see the list below)
3. Required quantity



Please note that housing and piston can only be delivered together, as the piston has to be ground in.

List of Spare Parts

Item	Description	NTP 25 B	NTP 32 B / NTP 48 B
1	Housing		
2	O-Ring cover side		
3	O-Ring for piston *		
4	Piston **		
5	Cover		
6	Hexagon socket screw for cover		
7	O-Ring for screwdown side		
8	Base plate B		
9	Hose connector		
10	Silencer		
11	Baffle plate C		
12	Hexagon socket screw for Base plate ***		

*) Only NTP 32 B and 48 B.

**) Piston and housing can only be delivered together, as the piston has to be ground in.

***) Only NTP 25 B.

11 Appendix

11.1 Accessories

The following accessories and fittings are available for piston vibrators NTP (details on request):

Description	Notes
Tubing and screw fittings	For air inlet and outlet; in various qualities and sizes.
3/2-way valves	Electrical, pneumatic, manual
Throttle valves	For regulating the height of stroke; can be adjusted manually or by pneumatic remote control
Maintenance units	Filter, regulator with manometer, lubricator
Work time / rest-time control	Electrical or pneumatic; for intermittent operation
Mountings	For quick transfer to containers etc.
Special models:	Type NTP 32 is available (standard) for temperatures of up to 250 °C as NTP 32 GA (without baffle plate)

11.2 Disposal

The parts must be disposed off according to valid regulations, depending on the materials.

Specification of Materials:

All housings: aluminum
 All covers: plastic (POM)
 All Pistons: steel
 All bolts: stainless steel

All units can be disposed off through Netter GmbH. The valid waste disposal prices are available on request.

11.3 Attachment(s):



Attachment(s):	Further information available on request:
<ul style="list-style-type: none"> • Certificate of conformity 	<ul style="list-style-type: none"> • Brochure No. 26 (NTP) • Information on how to build shaking conveyors with piston vibrators etc.