NetterVibration

CE

Assembly and Operating Instructions for Netter Pneumatic Linear Vibrators

July 2015
BA No. 1378E

These operating instructions apply to:

- NTK 8 AL
- NTK 15 x
- NTK 16
- NTK 18 AL
- NTK 25 AL
- NTK 25
- NTK 28 AL
- NTK 40 AL
- NTK 40
- NTK 55 AL
- NTK 55
- NTK 85
- NTK 110

Serving industry with vibration

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Table of Contents

Scope of delivery

The NTK units are supplied as standard with the following components:

- Pneumatic linear vibrator (NTK)
- Operating Instructions
- Packaging

Please refer to your delivery note for any changes in the scope of delivery.

Check the packaging for any damage in transit.
In the event of damage to the packaging, inspect the contents for completeness and any damage. In the event of damage, inform the carrier. Compare the contents of the delivery packaging with the delivery note.

1 General instructions

Information about the operating instructions

Using and storing the operating instructions

Before using the NTK series pneumatic linear vibrators, you must read these operating instructions carefully. They are the basis for all actions concerning the NTK and can also be used for training purposes. The operating instructions must then be stored in the vicinity of the product.

Target group

These operating instructions are aimed at technical specialist personnel in mechanical engineering with basic knowledge of pneumatics and mechanics.
The NTKs may only be installed, operated, serviced, have faults rectified and be dismantled by persons who have been instructed in the correct use of the devices.
Personnel who have not been thus instructed are not permitted to work on the NTKs.

Copyright

Limitation of Liability

At the time of going to press, all the technical information, data and instructions given in these operating instructions for installation, operation and maintenance are up to date and based on our experience and the best of our knowledge.
No claims may result from the information, illustrations and descriptions in these operating instructions.

The manufacturer does not accept any liability for damages due to:

- Non-compliance with the operating instructions
- Use other than the intended use
- Unauthorised repairs
- Technical modifications
- Use of unauthorised spare parts

Translations are implemented to the best of our knowledge. ***Netter****Vibration* does not accept any liability for translation errors, even if the translation has been carried out by us or on our behalf. Only the original German text is binding.

The following information and hazard symbols are used in these operating instructions.

	**DANGER**	indicates a possible danger that can lead to death, physical injury and/or damage to property if this instruction is not complied with.
	**WARNING**	indicates a possible danger that can lead to physical injury and/or damage to property if this instruction is not complied with.
	**IMPORTANT**	Instruction with particularly useful information and tips.
	**ENVIRONMENTALLY FRIENDLY DISPOSAL**	refers to the obligation of environmentally-friendly disposal.

Information about the NTK

The NTK series pneumatic linear vibrators comply with
EC Machinery Directive 2006/42/EC.

They comply with the
DIN EN ISO 12100 standard in particular.

Special features

- directed oscillation
- variable oscillating masses
- frequency and amplitude controllable separately

2 Safety

Correct use:
The linear vibrators are intended for installation into machines. These machines use linear vibrators for discharging hoppers, as drives for conveying troughs, sieves and vibration tables.
All other uses are deemed to be improper use.
No independent safety equipment is present.

Qualification of the authorised technical staff:
The linear vibrators may only be installed, put into operation, serviced and faults rectified by authorised, qualified specialists. Responsibility for handling the pneumatic linear vibrators lies with the operator.

Accessories that guarantee correct operation and safety must have the appropriate protection type for the specific purpose.

WARNING

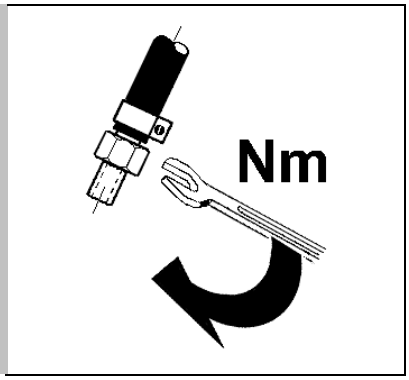
Netter GmbH accepts no liability for damage to property or personal injury if technical modifications are made to the product or the instructions and specifications in these operating instructions are not observed.

WARNING

Source of danger:
Faulty hose connections

Possible consequences of disregarding:
A hose coming loose when under pressure can cause injuries.

Avoiding the danger:
The hose lines must be securely connected. The connections must be regularly checked and the screw connections tightened where necessary.



WARNING

Source of danger:
NTK linear vibrators work with compressed air.

Possible consequences of disregarding:
A hose coming loose when under pressure can cause injuries.

Avoiding the danger:
When working on the NTK, ensure that the compressed air to the inlet pipes is switched off.

DANGER

Source of danger:
Vibrators and parts of the construction can become loose due to the vibrations.

Possible consequences of disregarding:
Falling parts can lead to damage to persons and equipment.

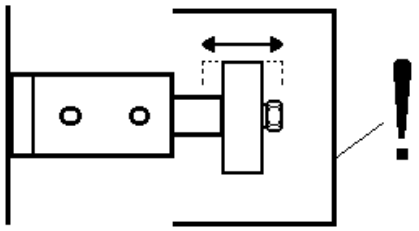
Avoiding the danger:
Screw locking media and/or Loctite, etc. must be used.
Screw connections must be inspected and, if necessary, re-tightened after 1 hour of operation and thereafter regularly (as a rule monthly).
Securing with a steel cable is stipulated for critical installation situations.

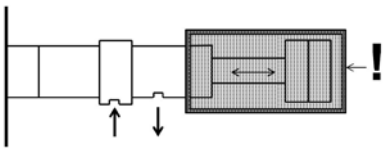
WARNING

Source of danger:
NTK vibrators have moving parts.

Possible consequences of disregarding:
Injuries for example bruises and crush injuries may be caused.

Avoiding the danger:
Direct contact with an oscillating part must be prevented on site by structural measures for example by shielding.
For the NTK 8 AL type a cover sleeve can be supplied.
The piston with swing mass SM 8/1 is covered with this.



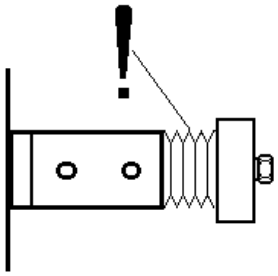


WARNING

Source of danger:
NTK vibrators have moving parts.

Possible consequences of disregarding:
Crushing can be caused between bolted-on weights and vibrator housing or between housing and structure.

Avoiding the danger:
Bellows can be supplied. These protect from injuries and at the same time protect the piston rods from dust deposits.



WARNING

NTK vibrators must not be used in a dusty environment without a dust protection cover (bellows or other).

WARNING

Source of danger:
If used without silencer the noise level may exceed 85 dB(A).

Possible consequences of disregarding:
The human ear can be permanently damaged by the high noise level.

Avoiding the danger:
Ear protection is required when working in noisy areas where 85 dB(A) is exceeded. It is preferable to fit the NTKs with silencers.

3 Technical data

Type		Mass [kg]	Working torque [cmkg]	Rated frequency [min^{-1}]	Centrifugal force [N]	Air consumption [l/min]
NTK 8 AL*	SW 1	0.030	0.05 - 0.06	2,440 - 3,657	15 – 44	7 - 32
(P+SM 8-2)	SW 3	0.088	0.15 - 0.21	1,380 - 2,080	15 – 50	6 - 25
NTK 15 x*	SW 1	0.135	0.29 - 0.29	1,745 - 2,544	49 - 104	17 - 72
(P+SM 16-2)	SW 3	0.675	1.69 - 1.69	758 - 1,152	53 - 123	14 - 54
NTK 16	SW 1	0.15	0.27 - 0.34	1,680 - 2,400	42 - 106	14 - 58
	SW 2	1.33	4.90 - 4.50	600 - 923	96 - 210	8 - 39
NTK 18 AL*	SW 1	0.21	0.29 - 0.36	1,600 - 2,350	41 - 109	19 - 68
(P+SM 16-1)	SW 3	0.53	1.18 - 1.41	972 - 1,572	61 - 191	13 - 58
NTK 25 AL*	SW 1	0.420	1.18 - 1.24	1,289 - 1,986	107 - 269	34 - 149
(P+SM 25-3)	SW 3	1.655	6.88 - 6.55	686 - 1,080	177 - 419	22 - 115
NTK 25	SW 1	0.47	1.12 - 1.32	1,440 - 2,270	127 - 374	38 - 156
	SW 2	2.60	9.10 - 9.82	690 - 1,067	237 - 612	24 - 102
NTK 28 AL*	SW 1	0.59	2.10 - 2.10	1-488 -1,818	255 - 381	38 - 135
	SW 3	0.91	2.89 - 3.06	1,230 - 1,602	254 - 407	32 - 133
NTK 40 AL*	SW 1	1.240	2.88 - 2.16	1,231 - 2,094	239 - 519	54 - 220
(P+SM 25-3)	SW 3	2.475	6.72 - 7.44	900 - 1,389	298 - 787	36 - 210
NTK 40 (HF)	SW 1	1.27	2.90 - 2.53	1,857 - 2,475	548 - 851	40 - 151
(NF)	SW 2	4.20	19.48 - 16.36	600 - 1,108	385 - 1,100	34 - 161
NTK 55 AL*	SW 1	2.10	3.62 - 2.66	1,500 - 2,400	447 - 839	98 - 398
(P+SM 85-1)	SW 3	3.43	7.25 - 6.28	1,113 - 1,768	492 - 1,077	83 - 384
NTK 55 (HF)	SW 1	2.10	2.49 - 2.49	1,760 - 2,836	423 - 1,099	65 - 295
(NF)	SW 2	5.90	14.4 - 13.47	884 - 1,467	617 - 1,588	64 - 330
NTK 85 (HF)	SW 1	5.20	3.01 - 3.88	2,520 - 3,800	1,047 - 3,075	118 - 431
(NF)	SW 2	12.10	13.59 - 13.11	1,200 - 1,838	1,073 - 2,428	148 - 532
NTK 110	SW 1	8.00	6.03 - 7.87	2,133 - 3,040	1,505 - 3,986	210 - 652
	SW 2	16.60	13.48 - 15.93	1,447 - 2,133	1,548 - 3,974	207 - 634

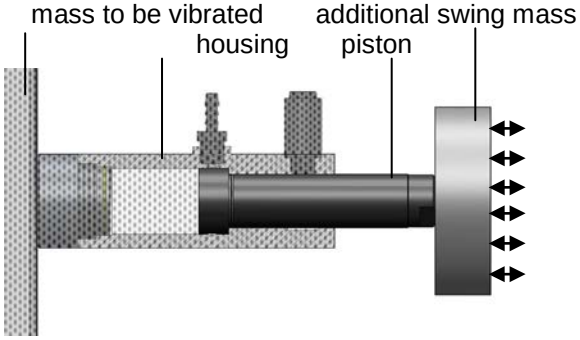
The technical data are reference values and may vary depending on the particular application, further data on request.
*Oil-free operation possible after written guidance by the application technicians at Netter GmbH.

In the table are given the technical data for the freely oscillating piston (**SW 1**) and for the freely oscillating housing (**SW 2**), for 2 bar and 6 bar respectively. Intermediate values can be set by changing the pressure.

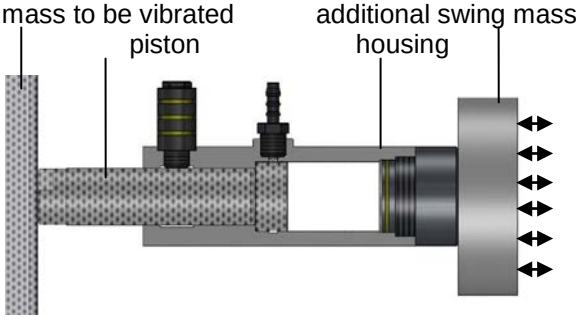
In some types the weight of the piston and the housing differs only marginally. In these cases the data for the freely oscillating piston is given with a usual swing mass SM (**SW 3**). The designation of the swing mass SM is given in brackets (P + SM 8-2; i.e. piston P plus swing mass SM 8-2).

Examples of fastening:

The housing is screwed to the mass to be vibrated.
The piston oscillates freely.



The piston is screwed to the mass to be vibrated.
The housing oscillates freely.



Permitted operating conditions:

Drive medium:

Clean (filter ≤ 5 µm DIN ISO 8573-1 Quality Class 3)
compressed air or nitrogen

Operating pressure:

2 bar to 6 bar*
Pressure must not fall below or exceed operating pressures.

Lubrication:

A mist lubricator is recommended by ***Netter****Vibration* for all vibrators.

Fill mist lubricators with acid-free and resin-free compressed air oil,
ISO viscosity class to DIN 51519, VG 5 to VG 15.
Recommendation: Klüber "AIRPRESS 15" for temperatures up to 60 °C.

The devices NTK 8 AL, NTK 15 x, NTK 18 AL, NTK 25 AL, NTK 28 AL, NTK 40 AL and NTK 55 AL can be operated oil-free after written guidance by the application technicians of ***Netter****Vibration*.


IMPORTANT

The use of a mist lubricator is compulsory:
for the devices NTK 16, NTK 25, NTK 40, NTK 55, NTK 85, NTK 110,
if additional swing masses are used,
when NTK vibrators are used as impactors,
if dried compressed air is used,
under extreme environmental conditions

NTK L versions are suitable for operation with oil-free, dried compressed air complying with the compressed air quality, filter ≤ 5 µm, DIN ISO 8573-1 quality class 3.

Ambient temperature:

NTK 15 x with plastic housing:	5°C to 60°C*
NTK with Al housing (black):	5°C to 60°C*
NTK with steel housing (orange):	-10°C to 60°C*
NTK NT are low temperature versions:	-32°C to 60°C
NTK HT are high temperature versions:	5°C to 160°C

The temperature must not fall below or exceed the allowed ambient temperatures.

Ambient conditions:
When operated oil-free or in a dusty environment, NTK vibrators must **not** be used **without bellows** or other dust protection.

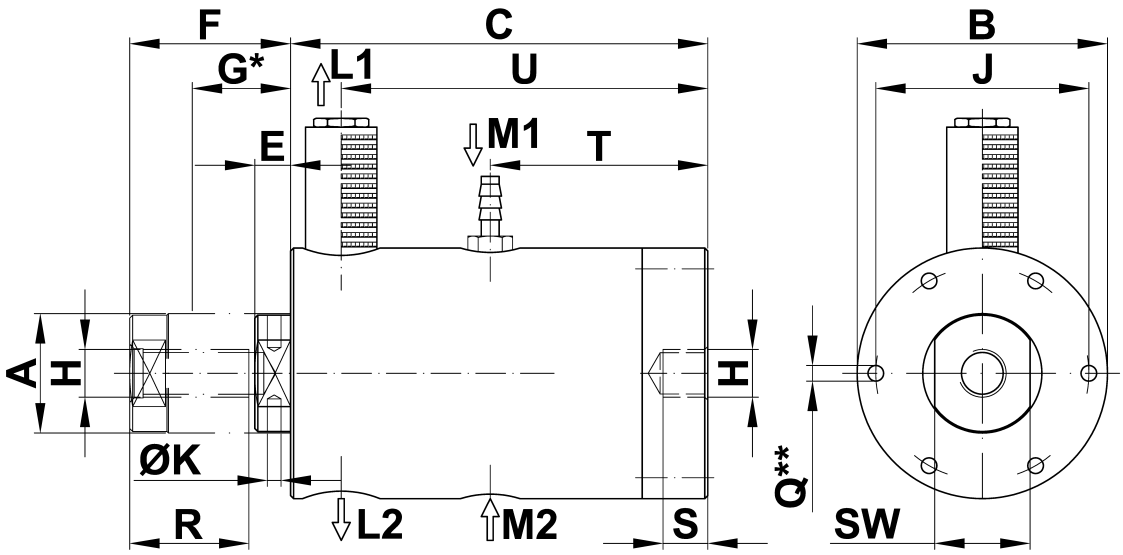
Special versions (stainless steel, bronze) on request.

*) Operation at higher pressures and temperatures is only possible after guidance and written consent by the application technicians at Netter GmbH.

Noise level:
Depending on type (with silencer) and 6 bar air pressure, the noise level is 64-79 dB(A), with lower air pressure below that.

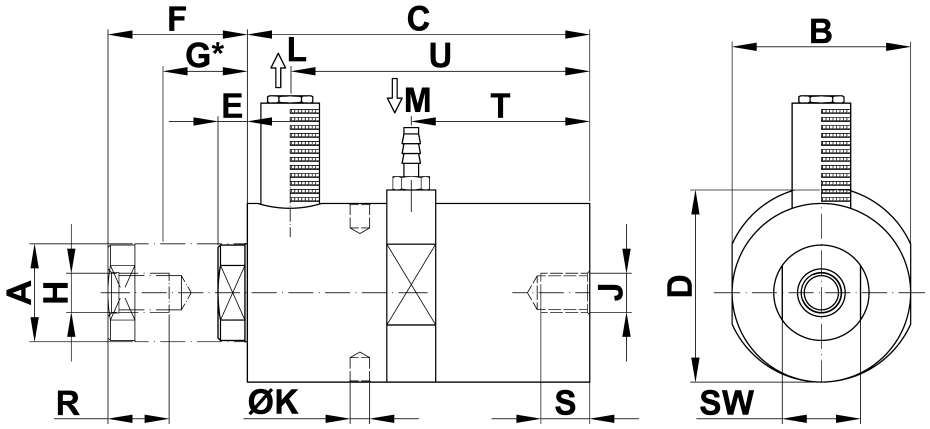
Service life:
The technical performance data change over long operating times (wear).

Dimensions [mm]



Type	A	B	C	E	F	G*	H	J	K	L	M	Q**	R	S	T	U	SW
NTK 15 x	15	50	114	9	38	23.5	M 10	—	—	G 1/8	G 1/8	—	20	10	55	99	13
NTK 16	16	49	111	5	38	21.5	M 10	—	—	G 1/8	G 1/8	—	21	10	57	96	14
NTK 18 AL	18	49	116	8	42	25.0	M 10	—	—	G 1/8	G 1/8	—	21	10	62	101	16
NTK 25	25	64	138	9	52	30.5	M 16	—	—	G 1/4	G 1/4	—	25	10	73	125	22
NTK 40	40	84	140	[1]12	54	33.0	M 16	—	—	G 3/8	G 1/4	—	40	15	73	123	32
NTK 55NF	55	110	125	19	55	38.0	M 20	96	—	G 3/8	G 3/8	4×8.5	40	30	60	108	46
NTK 55HF	55	110	115	29	65	47.0	M 20	96	—	G 3/8	G 3/8	4 × 8.5	40	30	50	98	46
NTK 85NF	85	160	122	20	45	32.5	M 20	143	12.8	2 × G 3/8	G 3/8	6×10.5	40	20	57	105	—
NTK 85HF	85	160	112	30	55	42.5	M 20	143	12.8	2 × G 3/8	G 3/8	6×10.5	40	20	47	95	—
NTK 110	110	200	122	22	55	38.5	M 20	182	12.8	2 × G 1/2	2 × G 3/8 ***	8×12.5	40	25	57	105	—

[1]Version NTK 40 HF: 22 mm
*middle position of oscillation
**additional fastening option from NTK 55
***optionally M_1 or M_2



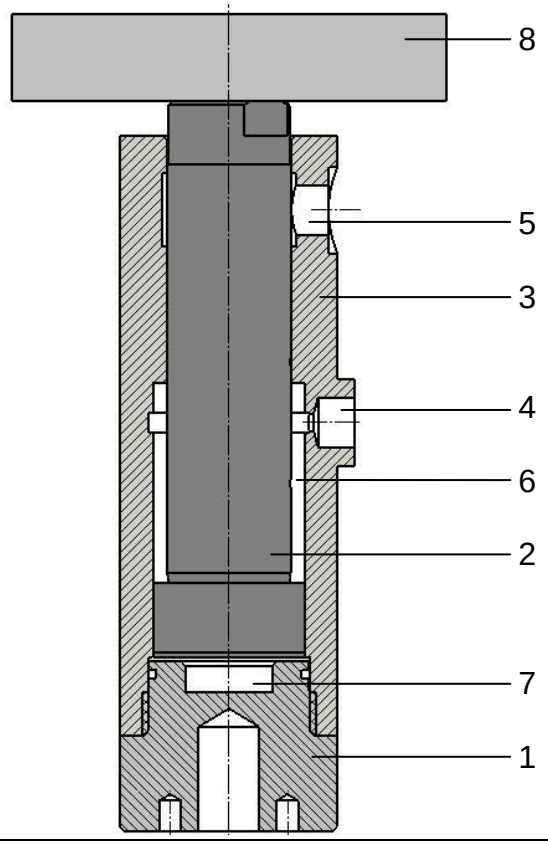
Type	A	B	C	D	E	F	G*	H	J	K	L	M	R	S	T	U	SW
NTK 8 AL	8.0	17	91	22	5	32	18.5	M 5	M 6	—	M 5	M 5	15	7	47	76.5	7
NTK 25 AL	25.0	50	138	54	7	52	29.5	M 16	M 16	—	G 1/4	G 1/4	25	18	72	120.5	22
NTK 28 AL	28.5	50	160	54	15	53	31.5	M 10	M 16	—	G 1/4	G 1/4	20	22	94	143.0	24
NTK 40 AL	40.0	73	140	79	12	57	34.5	M 16	M 16	8	G 3/8	G 1/4	25	20	73	122.5	32
NTK 55 AL	55.0	98	133	109	20	58	38.5	M 20	M 20	10	G 3/8	G 3/8	40	35	66	115.0	46

*middle position of oscillation

4 Structure and Mode of Operation

The vibration is generated by a freely oscillating self-reversing piston.
Both masses, on the one hand the piston with swing weight, on the other the housing and the mass fastened to it, oscillate against each other in proportion to their total weights.
If the vibration amplitude of the mass to be vibrated becomes larger, a larger swing weight is simply bolted on to the piston.
To keep the weight of the mass to be vibrated low, (with steel housings) the piston can also be connected to it whereby then the housing oscillates freely, if necessary with additional swing weight.

The compressed air is always applied at air intake **4** while air is alternately fed into and removed from chamber **6** through the control holes. As the surface at **7** charged with pressure is twice as large as at **6**, the piston is pushed out or towards the cover.
On venting air from **6** the process then runs in reverse.
As the piston is reversed again each time before the stop, only a noise from the exhaust muffled by a silencer is produced.



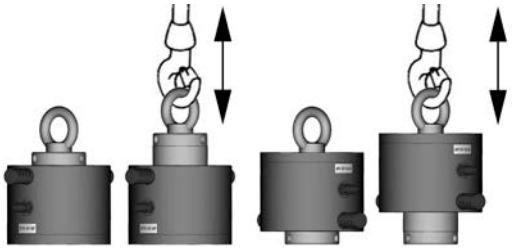
1 Cover
2 Piston
3 Housing
4 Air intake
5 Air outlet
6 Air chamber
7 Air chamber
8 Additional swing mass

5 Transport and storage

DANGER

For transporting the vibrators NTK 85 and NTK 110 suitable lifting gear must be used.
For lifting a transport lug can be screwed into the piston or the housing (thread M 20).
Lifting and lowering is to be started carefully as the piston moves in and out of the housing.

Take care when lifting and lowering!



IMPORTANT

Check the packaging for any damage in transit.
In the event of damage to the packaging, inspect the contents for completeness and any damage. In the event of damage, inform the carrier.

Packaging

The devices are packed ready for installation. The identification mark is on the impactor.
Accessories and attachments are supplied separately unless otherwise agreed. Special transport conditions are not stipulated.
With new devices the piston may stick because of the paint. Turn the piston slightly to release.

The packaging protects the compressed air piston vibrators against transport damage. The packaging materials have been selected according to criteria of environmental compatibility and ease of disposal and are therefore recyclable.
Returning the packaging to the materials cycle saves raw materials and reduces the level of waste.

Storage

Storage should be in a dry, clean environment. Equipment with steel housing must be oiled on being placed back into storage (feed machine oil into air intake and outlet and move piston in and out by hand while turning a few times).

It can be stored at a temperature of between -10°C and +25°C. (This does not apply to the operating temperature).

6 Installation

WARNING

Ensure that the compressed air is switched off during installation or any work on the vibrator and the supply lines.

Do not use thread pieces longer than intended for compressed-air connections.

Under no circumstances must parts of Teflon sealing tape get into the vibrator.

Installing the vibrator:

WARNING

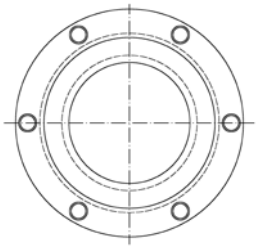
Depending on purpose NTK 8 AL to NTK 40 can be bolted either with the housing or the piston.

Housing fixing

Piston fixing

WARNING

For the devices NTK 55, NTK 85 and NTK 110 use at least 4 of the holes to be found in the housing for fastening the housing on to the mass to be vibrated.



For the bolts the following torques apply:

Type	Thread	Torque [Nm]
NTK 55	M 8	23
NTK 85	M 10	51
NTK 110	M 12	87

WARNING

Use nuts that are self-locking to prevent them coming loose or use a liquid securing agent e.g. Loctite 270. Also secure the air supply hoses with suitable securing agents.
Apply tightening torques according to the table below.
Higher tightening torques may lead to broken screws or stripping of threads. Incorrect screw connections may lead to the devices working loose as a result of vibration. This can cause damage to persons and equipment!

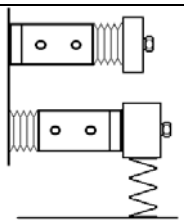
Recommended average tightening torques for screws in strength class 8.8 on NTK housings and pistons (screws in state as supplied, not additionally lubricated or oiled):

Type	Thread*	Torque
NTK 8 AL	M 6 (Housing)	10 Nm
NTK 8 AL	M 5 (Piston)	6 Nm
NTK 15 x	M 10	18 Nm
NTK 16, NTK 18 AL	M 10	48 Nm
NTK 25, NTK 25 AL, NTK 28 AL, NTK 40, NTK 40 AL	M 16	190 Nm
NTK 55, NTK 55 AL, NTK 85, NTK 110	M 20	380 Nm

* use total thread length

IMPORTANT

With horizontal installation and large swing weights (weight of the freely oscillating part larger than SW_{spring} - see table below) the weights must be supported with a spring (drawings on this on request).



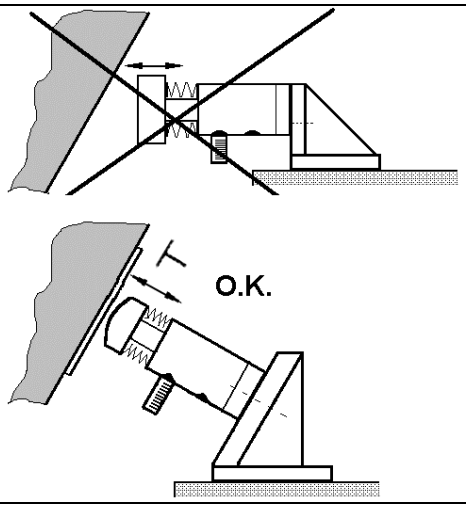
SW_{spring}= piston or housing weight + swing weight

Type	SW_{spring} [kg]
NTK 8 AL	0.15
NTK 15 x	0.70
NTK 16	1.00
NTK 18 AL	0.75
NTK 25 AL	1.60
NTK 25	3.00
NTK 28 AL	1.70

Type	SW_{spring} [kg]
NTK 40 AL	3.5
NTK 40	5.0
NTK 55 AL	6.5
NTK 55 NF	9.5
NTK 85 NF	18.0
NTK 110	20.0

IMPORTANT

Using vibrators as impactors is possible. Prior consultation is recommended.
The piston must strike against a surface standing ⊥ vertically to the vibrator.
For this application oiled compressed air is stipulated.



WARNING

When operated oil-free or in a dusty environment, NTK vibrators must **not** be used **without bellows** or other dust protection.

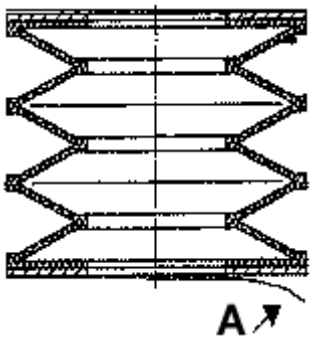
IMPORTANT

Fitting the bellows:

Clean (degrease) the contact surfaces on the vibrator and on the weight. Remove the protective foil (**A**), push the bellows over the piston and glue the bellows to the vibrator.

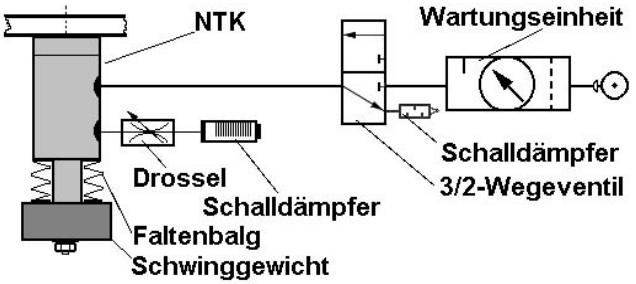
Hold the piston on the wrench flats with a wrench and fasten the weight with a strength class 8.8 screw. Secure the screw. Remove the protective foil on the weight side of the bellows and press the adhesion surface on to the weight.

The bellows can be released again at any time (hook-and-loop fastener).



Standard Installation

Special plans on request



Air supply hose:

Air resistance increases with the length of the hose. The following recommendations refer to hose lengths of max. 3 m up to the next sized hose diameter. For longer supply hoses larger diameters are recommended.

Air outlet hose:

For discharging the air coming out, the outlet hose must have a larger nominal bore than the inlet hose.

Caution: reduced diameters (observe NB) throttle already and the vibration amplitude is reduced.

Minimum diameters for valves and hoses:

Type	Connection thread	Hose size	3/2-way valve
NTK 8 AL	M 5	NB 4	M 5 or G 1/8, NB 2
NTK 15 x	G 1/8	NB 4	G 1/8, NB 4
NTK 16, NTK 18 AL	G 1/8	NB 6	G 1/8, NB 4
NTK 25	G 1/4	NB 6	G 1/4, NB 6
NTK 25 AL, NTK 28 AL	G 1/4	NB 6	G 1/4, NB 6
NTK 40, NTK 40 AL	G 1/4	NB 6 - 9	G 1/4, NB 6
NTK 55, NTK 55 AL	G 3/8	NB 9 - 12	G 3/8-1/2, NB 9-12
NTK 85, NTK 110	G 3/8	NB 12	G 1/2, NB 12

1) Observe expected operating temperature.
2) Fit the maintenance unit (filter, mist lubricator, if nec. control unit), the directional control valve and the air lines.
3) Check the security of the fixing screws.
4) If necessary, attach extra weight to piston or housing - if need be support with spring.
5) If necessary fit bellows (dust, risk of trapping).
6) Glue in air supply hose.
7) Observe the hose type, hose length and nominal bore specifications.
8) Secure device against falling down!

7 Start-up/operation

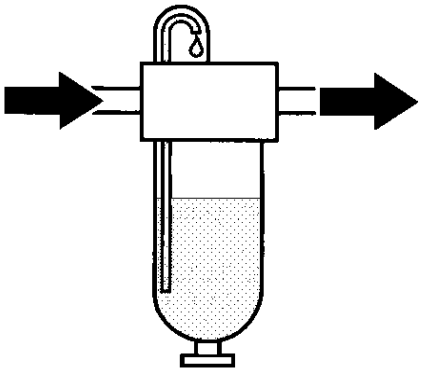
For the NTK vibrators oiled compressed air is recommended.

When using dried compressed air and in extreme environmental conditions upstream connection of a mist lubricator is essential.

For the devices NTK 16, NTK 25, NTK 40, NTK 55, NTK 85 and NTK 110 oiled compressed air or oiled nitrogen is essential.

Oil lubrication:
Fill mist lubricators with acid-free and resin-free compressed air oil, ISO viscosity class per DIN 51519, VG 5 to VG 15.
Recommendation: Klüber “AIRPRESS 15” for temperatures up to 60 °C.

NTK 8 AL	approx. 1 drop/3 min
NTK 15 x	approx. 1 drop/3 min
NTK 18 AL	approx. 1 drop/3 min
NTK 25 AL	approx. 1 drop/min
NTK 40 AL	approx. 2 drops/min
NTK 55 AL	approx. 2 drops/min



NTK 16	approx. 1 drop/min
NTK 25	approx. 1 drop/min
NTK 40	approx. 2 drops/min
NTK 55	approx. 2 drops/min
NTK 85	approx. 3 drops/min
NTK 110	approx. 3 drops/min

IMPORTANT

For application under 0°C to –20°C the use of Klüber “ISOFLEX PDP 10” is stipulated.
Compressed air quality class 3, DTP –20

IMPORTANT

For application under –20°C the use of BREAK FREE ® CLP is stipulated.
Compressed air quality class 2, DTP –40

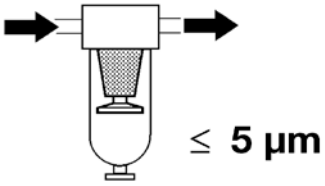
For application above 60°C to 160°C the use of Aral Farolin is stipulated.

IMPORTANT

CAUTION:
Set the drop count while the device is running.
The device is not ready for operation until it has been adjusted and the mist lubricator is running correctly.

IMPORTANT

NTK L versions are suitable for operation with oil-free, dried compressed air complying with the compressed air quality, filter ≤ 5 µm, DIN ISO 8573-1 quality class 3.



Filter compulsory!

Choice of vibration amplitude:
By attaching additional swing masses on the piston or on the housing you can change the amplitude and frequency.
Small or no weight = low amplitude, higher frequency.
Larger weight = large amplitude, lower frequency.

Controlling the vibration amplitude:
With a throttle fitted into the exhaust hose the amplitude can be controlled and the centrifugal force reduced. The frequency remains roughly constant.

Controlling the Frequency:
With the pressure regulator of the maintenance unit the frequency can be set or controlled.
Use a 3/2-way valve!
The frequency can be down-regulated by reducing the air pressure in front of the NTK.
The centrifugal force is likewise reduced by this.
The vibration amplitude remains roughly constant.

Checklist for start-up:

1) Check hose connections before applying the compressed air.
2) Set the desired frequency on the pressure regulator (if required).
3) Set the desired vibration amplitude by throttling the exhaust air (if required).
4) Set mist lubricator.

WARNING

5) Retighten or check the compressed air supply hoses, the locking and the fixing screws after one hour of operation. Then the compressed air supply hoses, the locking and the fixing screws must be checked regularly (as a rule monthly) and if necessary retightened.

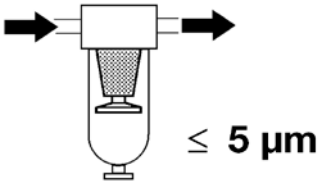
8 Maintenance, servicing

WARNING

Shut off the compressed air before any inspection or maintenance work and secure the machine to prevent it being turned on accidentally!

IMPORTANT

The drive medium must be clean (filter ≤ 5 µm, class 3).
Unfiltered compressed air causes higher wear and tear, congestion of the silencer and the complete failure of the impactor. The servicing intervals become shorter.



Filter empfohlen

Maintenance schedule

The maintenance must be carried out monthly.

DANGER

Screw connections	**After one hour of operation (after the initial start-up)** and thereafter on a regular basis, **screw connections must be checked** tightened and secured with Loctite where necessary.
Air supply hoses	Check for permeability and kinks. If necessary, clean and remove kinks.
Silencer	Clean and check it is working.
Mist lubricator	Ensure that mist lubricator is working correctly (contents going down? Drop count/hr?). Top up the oil.
Maintenance unit filter	If necessary, replace filter element, empty filter and clean filter insert (wash it out).
Check for not visible wear:	Because of the tight fit a small degree of wear can already lead to a reduction in performance. Pull the piston with a jerky movement out of the device (possibly remove the O-ring on the piston beforehand). Nevertheless no metallic stop must take place otherwise the air cushion is no longer effective (reduction of performance, incipient wear).

IMPORTANT

The maintenance intervals essentially depend on the operating time and the purity of the drive medium.
In particular in the devices operated with oil-free and/or dried compressed air a film can build up from increased wear that can slow down the function.
If this is identified (loss of performance, possibly even stopping) the vibrators are to be cleaned and if necessary the sealing rings replaced.
The servicing intervals become shorter with the life of the vibrator.

Cleaning the vibrators:
During cleaning of the vibrators the piston must be dismantled. The film must be removed with an oiled rag from inside the housing as well as from the piston. Alternatively, maintenance, repair and major overhaul can be carried out by ***Netter*** *Vibration*.

9 Troubleshooting

Fault	Possible causes	Troubleshooting	Remedial Action
Does not start	Connected wrong way round.	See illustrations under Chap. 4 “Structure and Mode of Operation”	the air intake is on the cover side, the output on the piston side.
	Air supply	Check whether enough pressure is present. Check valve.	It must be a 3/2-way valve so that the inlet to the device is vented.
	Cover loose.	A leaky cover causes the device to stop.	Tighten screws.
	Pipe diameters	Observe minimum diameters	see details under "Installation"
	Piping between valve und NTK too long.	Results in slow start-up and possible stopping of the piston in centre position.	If necessary place actuated 3/2-way valve in front of the vibrator.
	Exhaust air throttled too much. Piston hangs in extended position	Throttle and silencer O-ring on the piston missing or too small, Start-up pressure too low	Open throttle wider. Clean silencer. Fit correct O-ring, Use starting control.
	Piston braked in centre position.	Ensure that the piston can oscillate freely.	The piston must not be positioned in the centre position by external influences.
Rattling	Screw loose.	Screws on piston and housing	Check the screws on piston and housing.
Drop in performance	Lack of lubrication	Check function of the lubricator	Set lubricator if oiled compressed air is stipulated.
	Device contaminated.	Film	Dismantle, remove film.
	Wear	Check device and piston for visible wear.	Replace component parts or device.
	Configuration	Has the correct size been chosen?	Change device size.
	Pressure too low	Check pressure at the device intake during operation.	Increase pressure if necessary.

10 Spare parts

When ordering spare parts please give the following details:

1. Type of device
2. Description and position of replacement part
3. Quantity required

Please note: piston and housing come as a set and can only be supplied together.

11 Accessories

The following accessories are available (on request) for NTK linear vibrators:

Description	**Comment**
SM swing weights	for all devices in various sizes
NFB bellows	for all devices except NTK 8 AL - for the NTK 8 AL - a screw-on cover sleeve is available.
Hose material and screws/screw connectors	for air supply or outlet hoses, in various grades and sizes
3/2-way valves	for electrical, pneumatic and manual operation
Throttle valves	for vibration amplitude control, manually adjustable or pneumatically controllable (for remote control)
Maintenance units	Filter-control-lubricator or filter control (for oil-free NTK)
Duty-pause time controllers	Electric or pneumatic, for interval operation
Mounting brackets	for rapidly moving vibrators on tanks
Special versions:	NTK vibrators are available for extreme temperature ranges, in complete stainless steel version for use in aggressive atmosphere, for higher frequency range (HF versions) as well as in shorter installation lengths. Information on request.

12 Disposal

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

Material specifications:

	NTK (except NTK 110), NTK AL, NTK AL-K, NTK AL-V2	**NTK X, NTK X-K, NTK X-Df**	**NTK LF+HF and NTK 110**
Stainless steel		Piston	
Steel	Piston, cover		Piston and screws
Cast iron			Cover orange painted housing
Aluminium	black coated housing and lid (only NTK AL+K+V2)	Cover (only NTK 15 X-K)	
Galvanised steel	Screws	Screws	Screws
Plastics, nickel-plated brass, aluminium	Valves, seals	Cover, housing, valves, seals	Valves, seals

All devices may be disposed of via ***Netter****Vibration*.
You will be given the applicable disposal prices on request.

13 Appendices

Appendix (appendices):
Installation declaration

Further information available on request:
Brochure no. 24 (NTK),
Tips for constructing small conveying troughs with NTK vibrators etc.