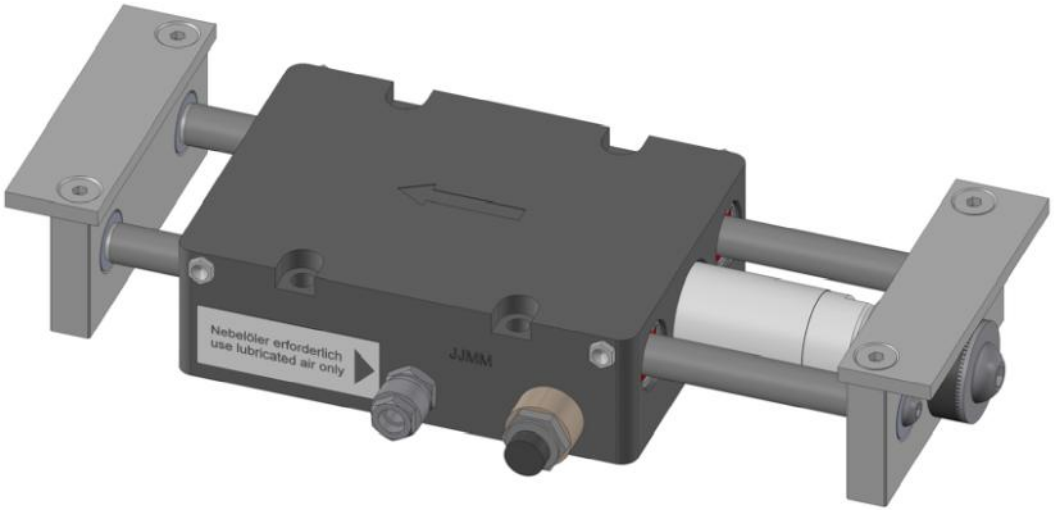
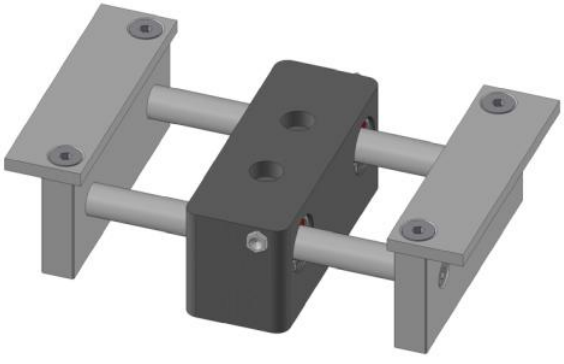
NetterVibration

Operating instructions for Conveyor Systems series *Line*Drive

August 2025
No. 2263E

These operating instructions apply to: ***Line*Drive Conveyor Systems**
NLD 25
NLD 25 L
NLD 25 A





Serving industry with vibration

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Contents

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.

Designation

The Conveyor systems LineDrive are hereafter referred to as "NLD".

Version of document

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Version no.	1
Date of issue	August 2025

1 General information

Use and storage

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

Target group

The target group for these instructions is technical staff, who have basic knowledge in mechanics and pneumatics.

Only complying technical staff may work on the NLD.

The NLD may only be installed, put into operation, maintained, troubleshot and disassembled by persons authorised by the operator.

Copyright

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:

- 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.

Netter*Vibration* 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.

Directives / standards observed

The Conveyor systems LineDrive comply with the EC Machinery Directive 2006/42/EC.

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

Instruction and warning symbols

The following instruction and warning symbols are used in these instructions:

Personal injuries

⚠ WARNING	
	indicates a potential danger. Disregard of this notice can result in death or severe personal injuries.

⚠ CAUTION	
	indicates a potentially dangerous situation. Disregard of this notice can result in minor or moderate personal injuries.

Material damages

NOTICE
indicates potential material damage. Disregard of this notice can result in material damage.

Notes

IMPORTANT
indicates actions, methods or notes that are not relative to safety, e.g. useful information and tips.

	**Environmentally safe disposal** indicates the obligation of environmentally safe disposal.

2 Safety

Intended use

NLD are used as drives for conveyor troughs for horizontal conveying of bulk materials in confined spaces.
The conveyor system ***Line**Drive* works with a pneumatic linear drive that allows the bulk material to glide along a conveyor trough. The machine is intended for mounting on a suitable mounting surface provided by the customer or an optional base plate and may only be operated when fully assembled.

The machine may only be operated within the permissible operating conditions. The machine may not be used outdoors or in a humid environment.

Any other use is considered improper.

Qualification of qualified personnel

Installation, commissioning, maintenance and troubleshooting of the NLD may only be performed by authorised qualified personnel, who have basic knowledge in mechanics and pneumatics.

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

Compressed air

⚠ 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 NLD.
- ➢ Prevent the NLD from being switched back on during all work.

Vibration energy

⚠ WARNING

Health damage from vibration energy

Vibrating whole bodies or body parts will cause health damage.

- ➢ Keep a sufficient safety distance while operating the NLD.
- ➢ Do not touch any vibrating parts during operation.
- ➢ Never use any vibrating part as a stepping or sitting surface.

Machine movement

⚠ WARNING

Risk of injury due to uncontrolled machine movement

If fastening screws become loose due to vibration, there is a risk of injury due to uncontrolled machine movements.

- ➢ Check fastening screws regularly and retighten if necessary.
- ➢ Switch off the NLD immediately if you notice any irregularities during operation. Eliminate the fault before switching on again.

Danger of crushing

⚠ CAUTION

Crushing hazard on moving parts

There is a risk of fingers and hands being crushed and irreversibly injured between the mounting plates and the housing during operation.

- ➢ Direct access to the vibrating part of the NLD must be prevented on site by suitable protective measures, e.g. covers.

Maximum load

NOTICE

Damage of the machine due to too high load

Exceeding the maximum load can lead to damage to the machine.

- ➢ Observe the specifications for the maximum load in the enclosed technical data sheet.

Cable and hose lines

NOTICE

Damage to cable and hose lines

Vibrating parts can chafe through cable and hose lines.

- ➢ Lay cable and hose lines during assembly so that they do not touch any vibrating parts.

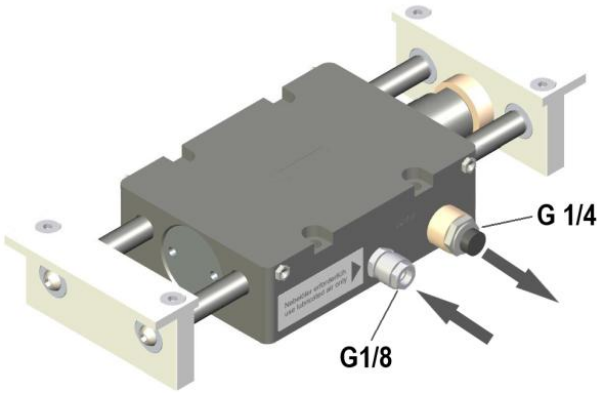
3 Technical data

Permissible operating conditions

<table>
<tr><td>Drive medium</td><td>NLD must be operated with clean, lubricated compressed air or lubricated nitrogen according to the following specification (according to ISO 8573-1):
<table>
<tr><th>[5 :</th><th>6 :</th><th>4]</th></tr>
<tr><td>Filter ≤ 5 µm</td><td>Humidity, pressure dew point ≤ +10 °C</td><td>Total oil content ≤ 5 mg/m³</td></tr>
</table>
NLD 25 L are suitable for operation with oil-free compressed air according to the following specification (according to ISO 8573-1:
<table>
<tr><th>[5 :</th><th>6 :</th><th>2]</th></tr>
</table></td></tr>
<tr><td>Lubrication</td><td>The use of a mist lubricator is mandatory.
ISO viscosity class according to DIN ISO 3448, VG 5 to 15
Fill the mist lubricator with acid- and resin-free compressed air oil.
Recommendation: Klüber "AIRPRESS 15" / 1-2 drops/minute</td></tr>
<tr><td>Ambient temperature</td><td>5 °C to 60 °C</td></tr>
<tr><td>Operating pressure</td><td>2,0 to 6,0 bar</td></tr>
<tr><td>Maximum load</td><td>Depending on the length of the conveyor trough.
Max. 30 kg, see chapter Installation.</td></tr>
<tr><td>Air consumption</td><td>10 l/min to 25 l/min</td></tr>
<tr><td>NLD 25 A (support)</td><td>The support is required for longer conveyor troughs (> 2 m) or larger loads.</td></tr>
</table>

Valves / hoses

A 3/2-way valve must be provided for actuation to ensure a perfect start. ***Netter****Vibration* recommends the following cross-sections for 3/2-way valve and hoses:

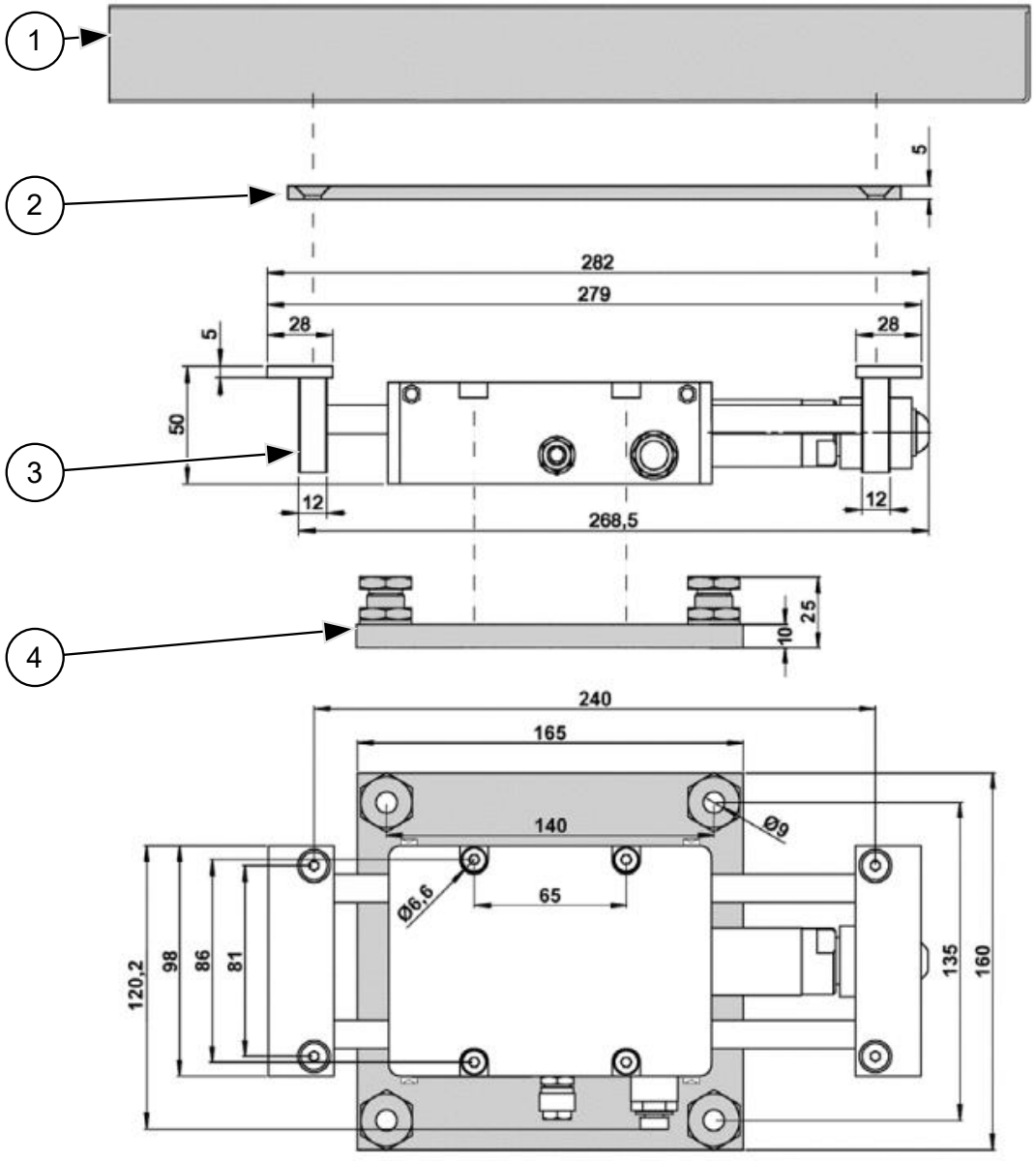


Air supply line		Air discharge line	
Connection thread [inch]	Hose size *	Connection thread [inch]	Hose size *
G 1/8	DN 6	G 1/4	DN 8

** DN = nominal diameter (inner diameter)*

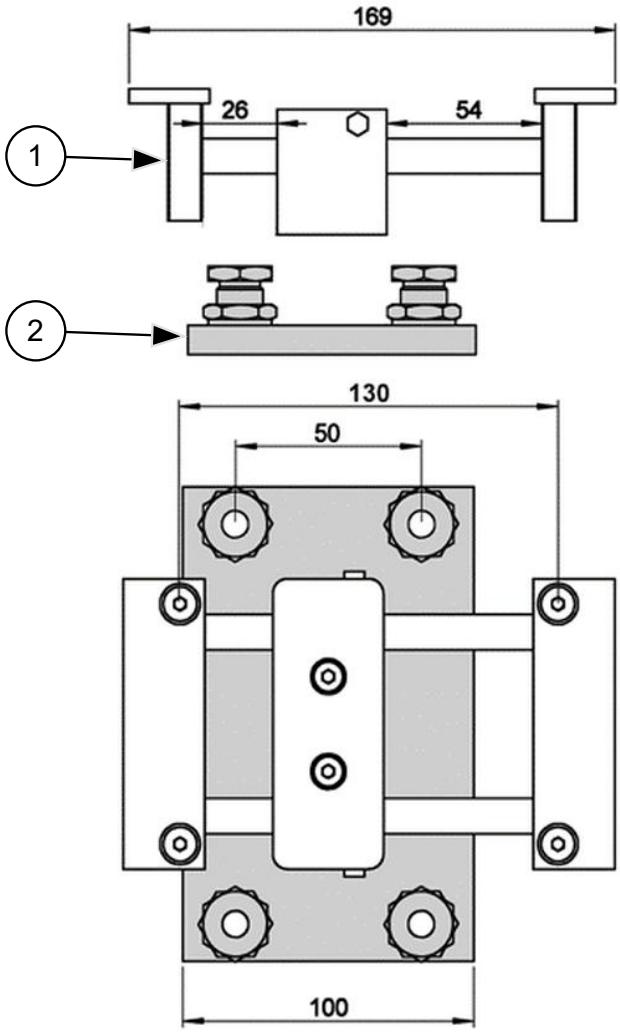
Dimensions NLD 25 / NLD 25 L

1. Conveyor trough (optional)
2. Mounting plate (optional)
3. Drive unit NLD 25 / NLD 25 L
4. Ground plate (optional)



Dimensions NLD 25 A

1. Support NLD 25 A
2. Ground plate (optional)



Tightening torques

NetterVibration recommends the following tightening torques for fastening screws and nuts:

Thread	Tightening torque [Nm]	
	Steel strength class 8.8 (sliding friction coefficient 0.14)	**Stainless steel** strength class 70 (sliding friction coefficient 0.1 - 0.2)
M6	10	6 - 9

Always use a torque wrench and tighten screws crosswise.

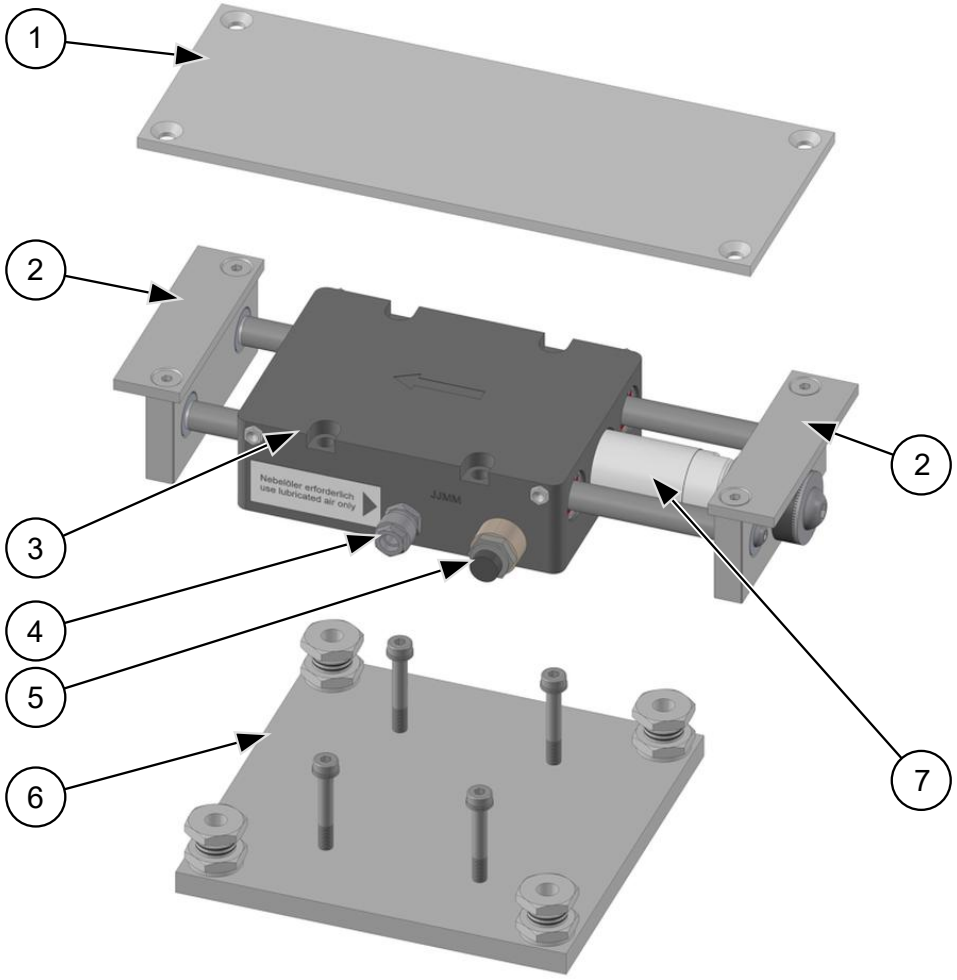
Higher tightening torques can lead to breaking of the screws or tearing of the threads.

For stainless steel screws, always use an anti-seize assembly paste to lubricate the internal and/or external thread to prevent the screws from seizing.

4 Design and function

Design

Drive unit NLD 25 / NLD 25 L:



No.	Element	Function
1	Mounting plate (optional)	For mounting (bolt) an optional conveyor trough.
2	Mounting brackets	For mounting (glue) an optional conveyor trough.
3	***Line**Drive*	Drive unit NLD 25 or NLD 25 L.
4	Compressed air connection	Compressed air inlet.
5	Silencer with exhaust air throttle	Compressed air outlet. The silencer reduces noise emissions. The exhaust air throttle is used to regulate the conveying speed (oscillation width).
6	Ground plate (optional)	For mounting the NLD on uneven surfaces (> 0,1 mm).
7	Pneumatic Linear Vibrator	The vibrator generates the movement that is transferred to the mounting brackets and thus to the conveyor trough.

Function

The ***Line****Drive* conveyor system is suitable for the rapid construction of conveyor troughs. It basically consists of a modified pneumatic piston vibrator of the series NTK.
The piston of the vibrator performs horizontal oscillatory movements. The different speeds of the piston, i.e. a slow forward and a fast backward movement, cause the lifting of the static friction and the movement of the material on the conveyor trough. The material is moved in the direction of the piston entering the housing.

For operation, the NLD must be screwed onto a suitable mounting surface or optional base plate and must be supplied with conditioned compressed air. The conveyor trough (manufactured by the customer or according to customer specifications) is mounted on the mounting brackets or the optional mounting plate.

The conveyor output (volume of conveyed material / time) is determined by regulation of the frequency and amplitude. Both can be adjusted separately. The frequency can be adjusted with the pressure regulator of an optional maintenance unit. The maintenance unit provides the vibrator with clean (lubricated) compressed air.
The conveying speed (oscillation width) can be adjusted by controlling the exhaust air via the silencer with exhaust air throttle.

An optional 3/2-way valve must be provided for actuation in order to ensure a perfect start. This valve also ensures an immediate standstill when switching off.

5 Transport and storage

Transport and storage conditions

The conveyor systems are supplied packaged ready for installation. Accessories and attachments are supplied loose unless otherwise agreed.

The NLD must not be subjected to shocks or vibrations during transport. Note the weight of approx. 3 kg during handling.

Store the NLD in a dry and clean environment. Protect the NLD from strong UV radiation, weather and ozone.
The permissible storage temperature is 5 °C to 40 °C.
The maximum relative humidity is 60%.
The maximum storage period is 2 years.
Netter*Vibration* recommends storage at a constant storage temperature and humidity.

Delivery units and Packaging

The NLD are delivered packed as a unit.

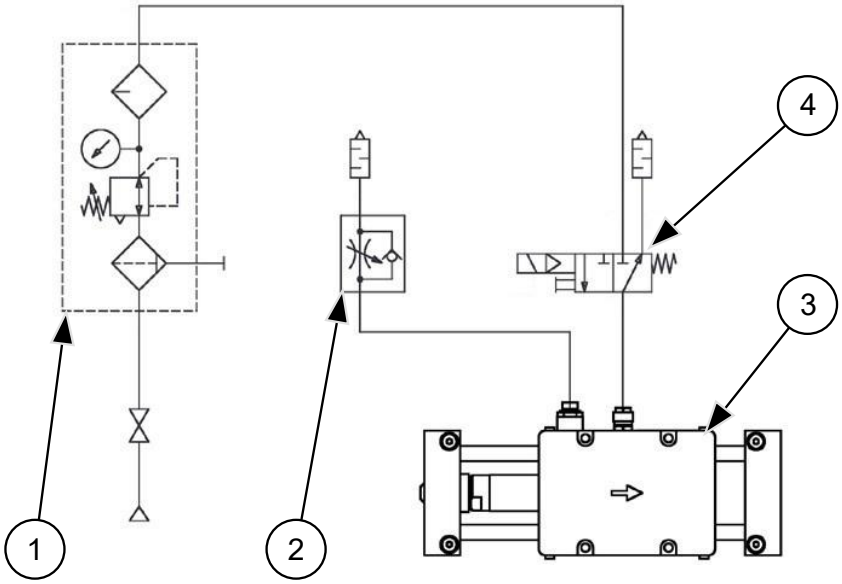
The packaging protects the NLD from transport damage. The packaging material has been selected from an environmentally safe and technically disposable point of view and is therefore recyclable.

The return of packaging to the material cycle conserves raw materials and reduces the amount of waste.

6 Installation

Observe the safety instructions in chap. Safety, starting on page 5.

Standard installation



1 Maintenance unit (additionally required)
With lubricator for NLD 25, without lubricator for NLD 25 L.

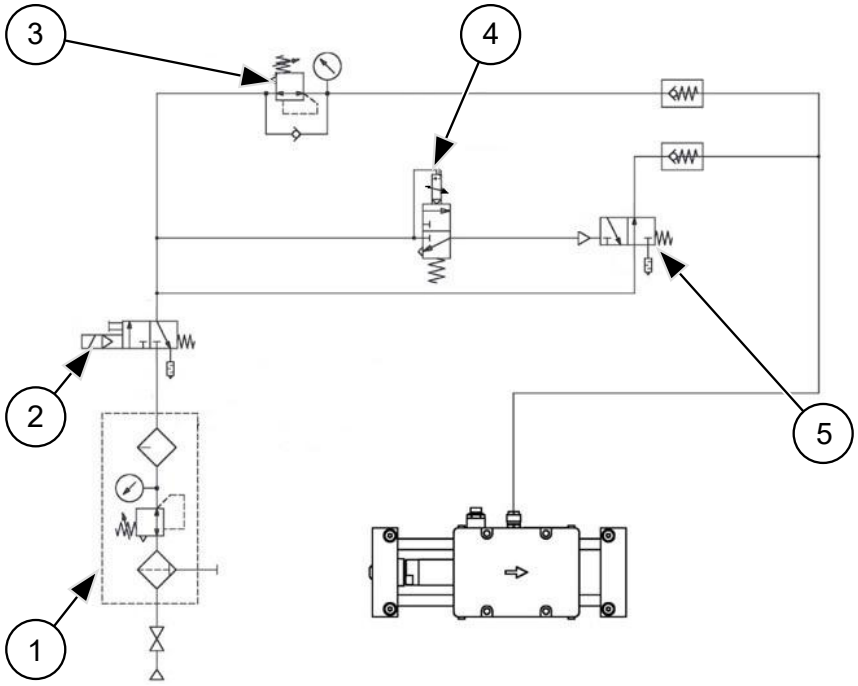
2 Exhaust air throttle valve with silencer

3 NLD

4 3/2-way valve (additionally required)

Typical installation (example)

Installation with timer and controller for heavy loads.



1 Maintenance unit with pressure regulator – system pressure/starting pressure, e.g. 6 bar.

2 3/2-way valve

3 Pressure regulator - operating pressure, e.g. 3 bar

4 Timer for switching between starting and operating pressure.

5 3/2-way valve

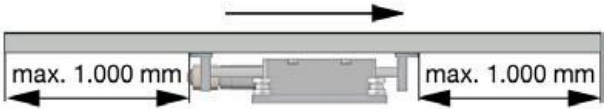
Procedure

1. **Caution:** The mounting surface must be a clean and flat surface (± 0.1 mm flatness). The NLD must lie flat over the entire surface so that no tension in the housing occurs when tightening the fastening screws, which could cause mechanical damage. Use the optional base plate with adjusting screws for uneven surfaces. Attach the NLD to the floor or to a counterweight that is at least 5 times heavier than the total weight of the NLD with conveyor trough. The conveying behaviour is improved by using the largest possible counterweight.
2. Mount the NLD on the mounting surface using suitable fastening screws and lock washers. Observe the recommended values for screw sizes and tightening torques.
   Netter*Vibration* recommends the use of NBS screw connections for secure fastening.
3. Glue the conveyor trough onto the mounting supports or screw the conveyor trough onto the mounting supports using the optional mounting plate. Note the conveying direction (arrow on the housing).
4. Connect the maintenance unit, the 3/2-way valve and the compressed air supply line.

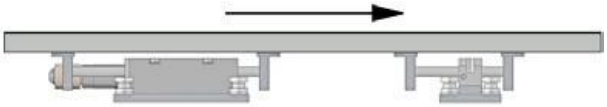
5. Important when installing several NLD drive units and additional supports:
   Mount the drive units and supports exactly parallel one behind the other. Level out unevenness and different heights with the optional base plates.

Mounting the conveyor trough

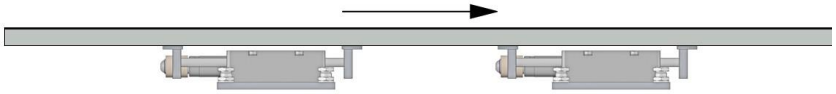
f the overhanging trough length is 1.000 mm or more, the trough must be attached centrally on the drive unit.



If the length of the trough is 2.300 mm or more, an additional support (NLD 25 A) must be used.

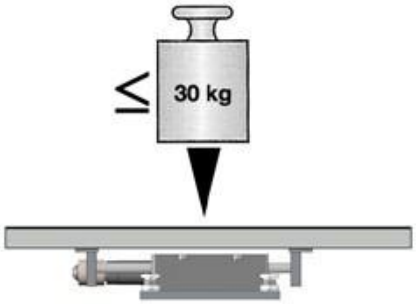


Very long troughs can be driven by coupling several NLD units:

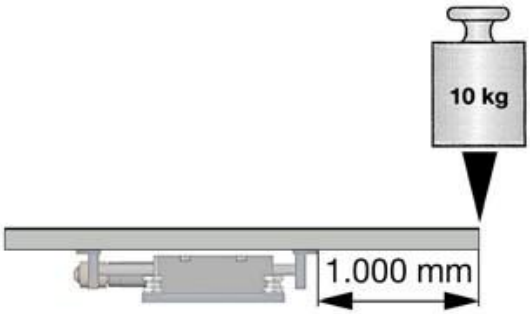


Load

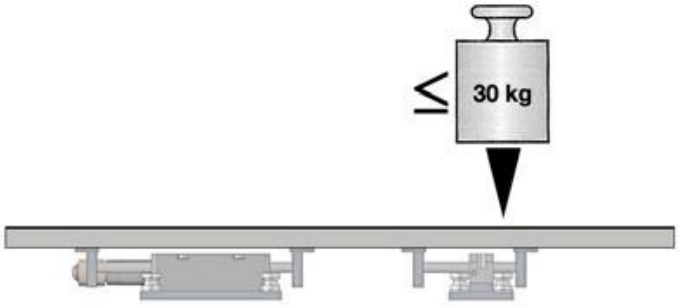
The maximum permissible load per drive unit is 30 kg.



The maximum permissible load for an overhanging trough length of 1,000 mm without supports is 10 kg.



Larger loads are possible with a support (NLD 25 A).
The maximum permissible load of 30 kg must not be exceeded



Loads of over 30 kg are possible, but the maximum load per drive unit must not exceed 30 kg.

Checklist Installation

Check that the following steps have been carried out:

- Permissible operating conditions observed? ☐
- NLD securely fastened according to instructions? ☐
- Conveyor trough installed according to instructions? ☐
- Conveyor trough freely movable? ☐
- Maintenance unit and compressed air supply line installed? ☐
- 3/2-way valve connected? ☐

7 Start-up and operation

Observe the safety instructions in chap. Safety, starting on page 5.

Permissible operating conditions

Please refer to chap. Technical data, page 7 for permissible operating conditions.

Regulations

Installation work as well as operation of the system are to be carried out taking the valid accident prevention regulations into account.

The operator is responsible for the proper condition of the system.

Measures

Carry out the following measures before start-up:

1. Check whether all permissible operating conditions are fulfilled.
2. Check that all protective measures on the conveyor system have been observed.
3. Check that the compressed air lines are undamaged and have been laid in accordance with the operating instructions.
4. Check that the maintenance unit is correctly installed and connected. To start up the maintenance unit, observe the specifications in the operating instructions for the maintenance unit.
5. Check that all components of the conveyor system have been correctly assembled.
6. Check that the conveyor system is correctly attached to the installation surface.
7. Loosen mechanical blockages (e.g. transport clamps).
8. Visually check the conveyor system. Make sure that the can move freely and that no compressed air lines can come into contact with vibrating parts.
9. Eliminate possible errors.

Start-up

Carry out the following measures:

1. Open the compressed air supply.
2. Check whether there is a pressure of 6 bar at the maintenance unit.
3. Set the compressed air regulator for the NLD to 2 bar.
4. Start the NLD using the 3-2-way valve.
5. Fill the with the desired material. Observe the maximum permissible load.
6. Observe the running behaviour of the material.
   If necessary, change the frequency with the pressure regulator of the maintenance unit.

7. Adjust the conveying speed using the exhaust air throttle valve.
   If the throttle valve is set smaller, less air can escape. This reduces the vibration amplitude, the air consumption and thus the conveying speed.
8. In the event of irregularities or malfunctions, switch off the conveyor system and eliminate the malfunction, see chap. Troubleshooting, page 20.
9. Stop the NLD using the 3-2-way valve.

The start-up has been successfully completed. The NLD is ready for operation.

Checklist start-up

Check that the following steps have been carried out:

Maintenance unit connected?	☐
Pressure regulator set?	☐
Mist lubricator set? (not necessary for NLD 25 L)	☐
Hose connections checked?	☐
Desired conveying speed set by throttling the exhaust air?	☐
After one hour of operation: Hose supply connections as well as fastening screws checked, retightened, if necessary? Then follow the maintenance plan.	☐

Operation

Procedure:

1. Fill the conveyor trough with the desired material. Observe the maximum permissible load.
2. Start the NLD.
3. Observe the movement of the material. If necessary, change the frequency (pressure regulator) and the conveying speed (exhaust air throttle valve).
   In the event of irregularities or malfunctions, switch off the machine and eliminate the malfunction, see chap. Troubleshooting, page 20.
4. Stop the NLD at the end of the vibration process.

The NLD are designed for continuous operation.

Screw connections must be checked after 1 hour of operation (after initial start-up) and then regularly (usually monthly) and, if necessary, tightened with the specified torques.

8 Maintenance and servicing

Observe the safety instructions in chap. Safety, starting on page 5.

Maintenance plan

Maintenance of the NLD must be carried out as follows:

Interval	Action
Monthly	Check fastening screws, tighten if necessary.
	Empty the filter of the maintenance unit if necessary. Clean the filter insert (wash out) and replace it if necessary, see operation instructions of the maintenance unit.
	Check the function of the optional mist lubricator. Refill oil if necessary, see operation instruction of the maintenance unit.
	Check the function of the silencer and clean the silencer.
	Relubricate the guides on the NLD. Recommended lubricant: Multi-purpose grease, such as ‘OKS 476’.
Every 6 months	Check proper condition of compressed air lines.
If necessary	Clean the NLD with a damp cloth. No water must enter the guide bushings or the vibrator via the silencer. If the exhaust air is discharged or the exhaust air outlet is closed, the NLD can be cleaned externally with water. After cleaning, the NLD must be briefly activated.

Maintenance intervals depend primarily on the operating conditions, operating time, and the purity of the drive medium. Especially during oil-free operation of the NLD 25 L, increased abrasion can cause a deposit to form, slowing down the operation. Maintenance intervals shorten with the NLD's service life.

9 Troubleshooting

Observe the safety instructions in chap. Safety, starting on page 5.

Expertise and regulations

Work on the NLD may only be carried out by authorised persons.

In the case of unauthorised intervention in the NLD there is no longer any warranty claim.

Interventions of any kind are to be agreed upon with ***Netter****Vibration*.

Malfunction	Possible cause	Corrective action
No start	Silencer polluted	Clean silencer.
	Compressed air supply	Check if there is enough pressure at the NLD. Check valve. A 3/2-way valve is strictly required, so that the supply line to the NLD is vented.
	lubricant supply	Check that the mist lubricator in the maintenance unit is working properly. Check the oil level and top up if necessary. Set the correct drip rate (1-2 drops/min).
	Line cross-sections	Observe recommended cross-sections (see Ch. Technical data, from page 7 on).
	Line too long between valve and NLD	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 NLD.
	Exhaust air throttled too much	Open the throttle valve further. Clean silencer.
	Tension during installation	Ensure a flat surface or use the optional base plate.
	No 3/2-way valve or wrong cross section	Use a 3/2-way valve with adequate cross section.
Rattling	Screws loose	Check housing and fastening screws.
Power loss	Lubrication is missing	Check the function of the mist lubricator.
	NLD polluted	Clean NLD.
	Wear	Check piston and housing for visible wear. If wear is detected, replace individual parts or NLD. Check the function of the mist lubricator.
	Operating pressure too low	Check the pressure at the inlet of the NLD 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 NLD
- description and position of spare part
- required amount

Requirements for exchange

The spare parts for the NLD must be installed by an authorised specialist. This specialist must be familiar with the protective measures.

Defective parts must be replaced by parts of the same type.

If you need to replace components of the NLD, then contact ***Netter****Vibration*.

11 Disposal

Prices

All parts of the NLD must be properly disposed of according to the material specifications. The valid disposal prices of the NLD are available on request.

Material specifications

All parts of the NLD can be recycled.

Material	Part
Aluminium	Housing, mounting plate, ground plate
Stainless steel	Guides, compression spring, screws
Plastic	O-rings, silencer with throttle valve