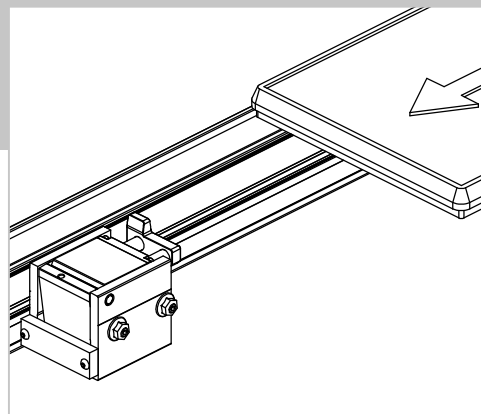


High-Value Stopper. Focused on the Essentials.

Stopper, damped, pneumatic, PND-250



Data Sheet

No. 44001142
Valid from 2024/08

The Wörner-Stopper. The original.

Stopper - damped, pneumatic, PND-250

Functional Description

The stopper places one or multiple pallets in a defined position and clears them individually for downstream transport
The stopping process is damped for a gentle deceleration.

Value

- gentle deceleration and stopping of the pallet through integrated damping system
- force of impact reduced by up to 95 % in comparison to undamped stoppers
- precise positioning of the pallet through reliable running into the final position and no opposing force in the end position
- wide range of applications thanks to simple and infinitely adjustable damping force
- an innovative product design and the focus on essential functions permit an excellent price-performance ratio

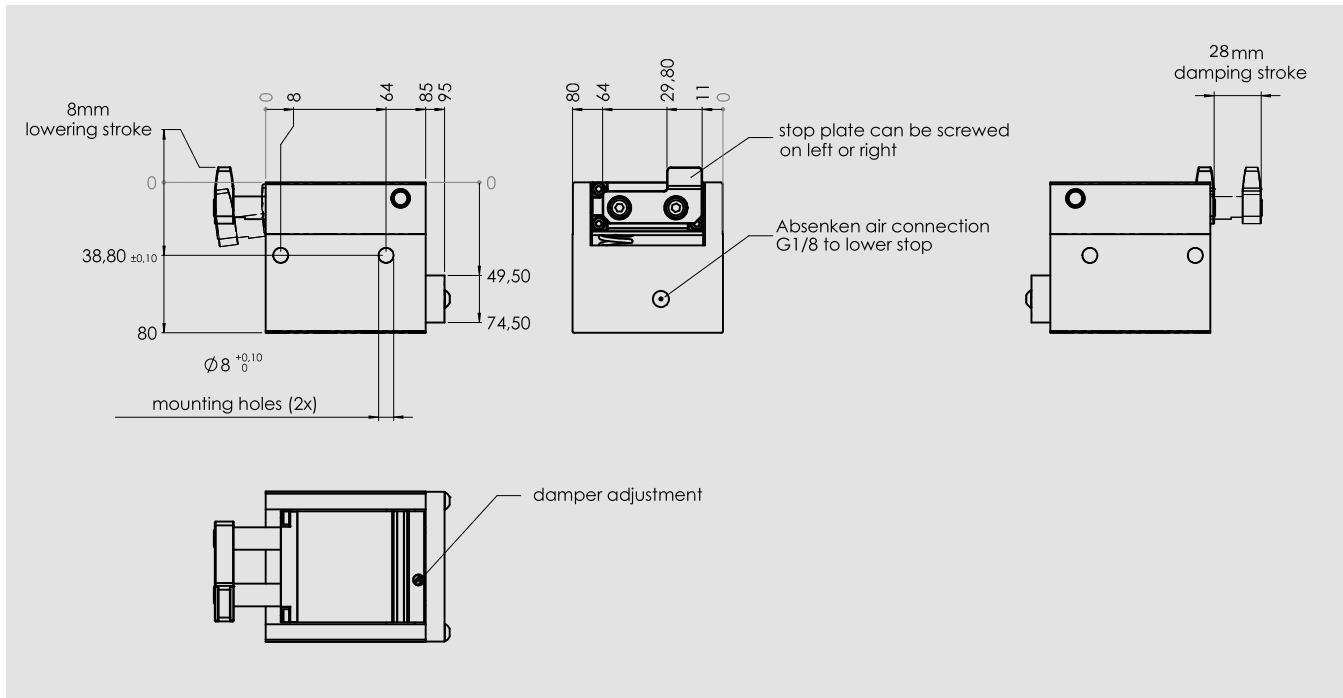
Scope of application

Min. propelling force: 5 N

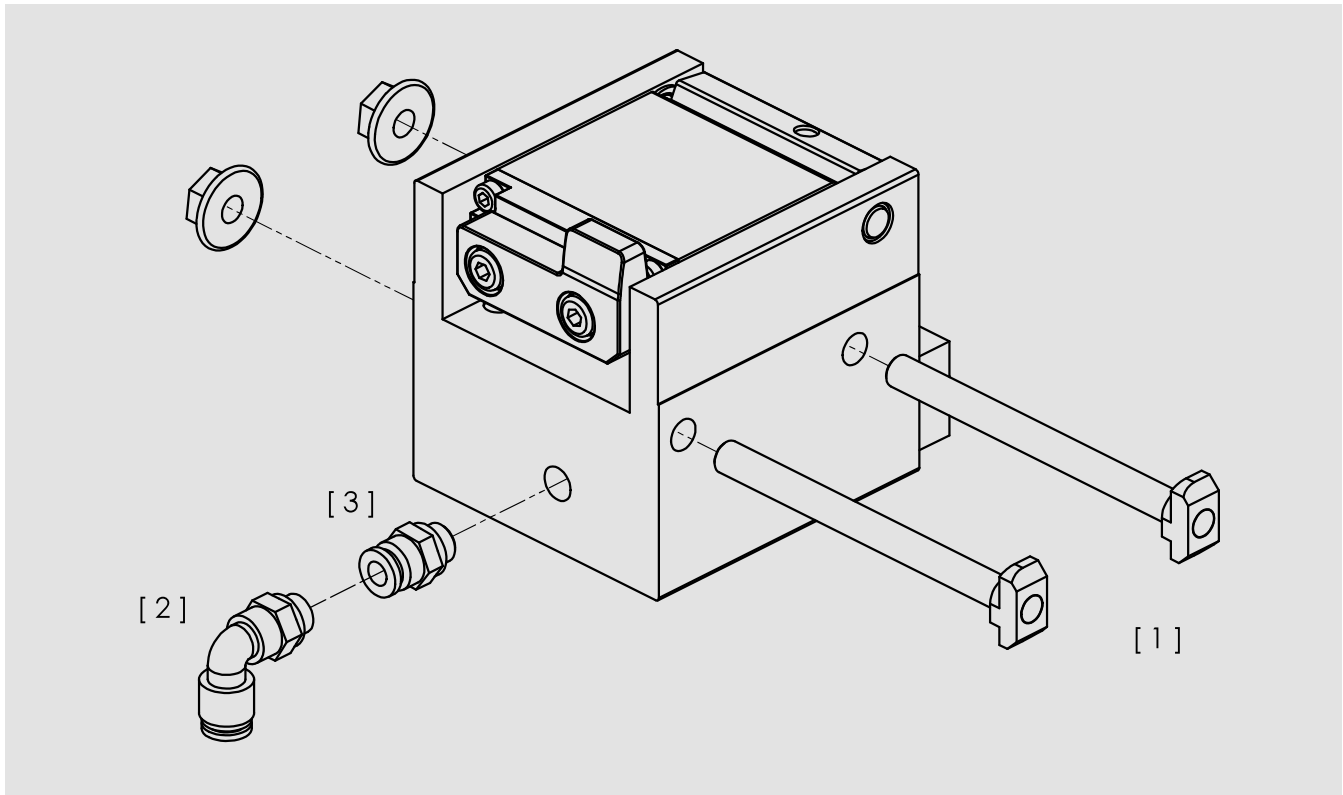
Max. propelling force: 190 N

Conveying speed	Pallet weight
6 m/min	10 – 250 kg
9 m/min	10 – 215 kg
12 m/min	10 – 185 kg
18 m/min	10 – 120 kg
24 m/min	10 – 75 kg
30 m/min	10 – 50 kg
36 m/min	10 – 30 kg

All specifications apply for a coefficient of friction between means of conveyance and pallet of $\mu = 0.07$ and a steel stop.
They are experimentally determined and confirmed in endurance and fatigue tests.



PND-250		
Type PND-250		
Lowering Stroke [mm] 08		
Function EW = single-acting		



Item no.	Product name	Description	Order no.
Assembly kit			
[01]	Assembly kit		44001137
Air connection			
[02]	Angular air connection	for external hose diameter Ø 6 mm	13539
[03]	Angular air connection	for external hose diameter Ø 6 mm	04520007

Temperature range: 0 °C up to + 60 °C

Warnings

Before installation, commissioning, maintenance and repair data sheet must be observed. The work must be performed only by trained, instructed personal.

Electrical connections must comply with the respective national regulations.

The power supply must always be switched off (main switch, etc.) before maintenance and repair work. In addition, measures are needed to prevent unintentional restart, for example to put a warning sign „repair work“ at the main switch.

Intended use

Stopping one or more accumulated pallets at a defined stop position.

- The stopper is designed to separate pallets in transfer systems.
- The stopper must not be used against the intended conveying direction.
- The stopper must not be used in locations exposed to the danger of explosions.
- The stopper must not be used as a safety switch.
- Depending on the installation situation, suitable protective measures have to be taken to prevent extremities from any damage. If necessary, the position of the stop is to be queried.

Warranty

In no event can the manufacturer accept warranty claims or liability for damages arising from improper use of the separating stop or from intervention in the appliance other than described in this data sheet. The manufacturer can accept no warranty claims if non-original spare parts have been used.

Environmental protection

Always dispose of changed parts in the correct manner when replacement work is completed.

Propelling force F_R

The propelling force is the friction force between the conveyor equipment and the pallet. It is a function of the coefficient of friction μ , the weight of the pallet m and acceleration due to gravity g :

$$F_R = \mu \times m \times g$$

If more than one pallet is accumulated, their number n must be taken into account: $F_R = n \times \mu \times m \times g$

The coefficient of friction μ characterizes the friction between conveyor and pallet.

Examples:

Belt/band: $\mu = 0.2$ to 0.3

Plastic modular belt: $\mu = 0.3$ to 0.5

Accumulation roller chain: $\mu = 0.01$ to 0.03

Deceleration force F_V

The deceleration force is required to decelerate the pallet to a halt. Under the simplifying assumption of a uniformly decelerated motion, it consists of the damping force $F_D = \frac{m \times v^2}{2 \times s}$ (whereas v is the conveying speed and s is the damping stroke) and the propelling force that is also effective during the damping process:

$$F_V = \frac{m \times v^2}{2 \times s} + \mu \times m \times g$$

Configuration of a stopping point

When configuring the stopping point, we recommend to consider the two basic functions (Stopping and Lowering) separately.

Basic function: Stopping

The scope of application of the various stoppers is indicated in the data sheets. Using these tables, it is easy to determine whether the intended stopper is able to damp the expected pallet weight at your required conveyor speed.

Please note that other combinations of the conveyor speed and pallet weight parameters are possible, or may indeed be required, at different coefficients of friction. This is true, in particular, when the propelling force F_R accounts for a high proportion of the deceleration force F_V , i.e. in systems with high levels of friction. You can obtain an initial estimation of these values using the formula above. The minimum propelling force $F_{R,min}$ must be exceeded so that the stop plate reliably reaches its end position.

Basic function: Lowering

The data sheets indicate the maximum propelling force against which the stopper can reliably lower during long-term operation. The propelling force in your system must be less than the specified value. Please note that other pallet weights can be reliably lowered at different coefficients of friction. Using the formula above, you can easily convert the maximum propelling force specified by us to other coefficients of friction.

Minimum propelling force $F_{R\ min}$ 5 N

Maximum propelling force $F_{R\ max}$ 190 N

Scope of application

06 m/min	10 – 250 kg
09 m/min	10 – 215 kg
12 m/min	10 – 185 kg
18 m/min	10 – 120 kg
24 m/min	10 – 75 kg
30 m/min	10 – 50 kg
36 m/min	10 – 30 kg

Air consumption (per stroke)

EW (single-acting) ca. 0.2 l air at 6 bar

Pressure range

Treated compressed air 4 – 6 bar

Air connection

G 1/8 thread for air connection

Product Weight

1.25 kg

Stopper function

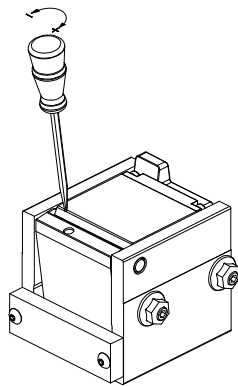
Single-acting (EW)

- open pneumatically
- close pneumatically/by spring force

Fine adjustment

Damping force and damping speed can be adjusted at the back of the stopper:

- + = increase damping force
- = decrease damping force



Maintenance

No maintenance is required. The compressed air has to be treated. The area around the stop must be clean and free of flakes to allow for an exact positioning of the pallet.

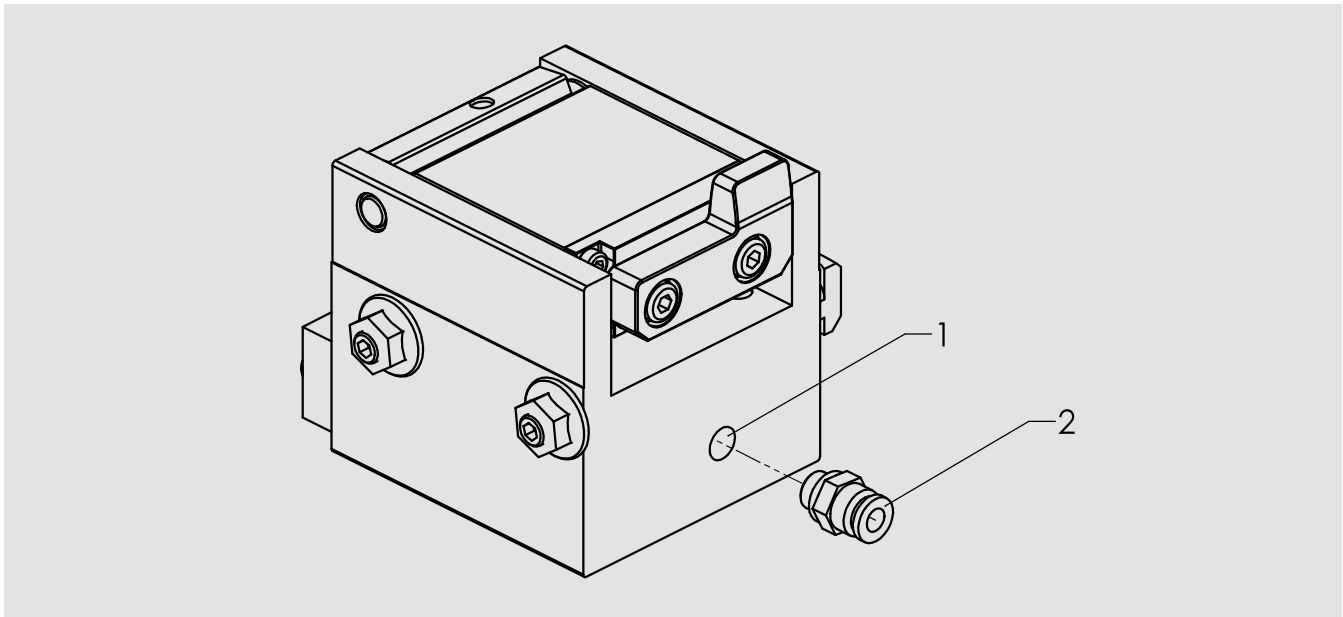
Weight data

Weight data refer to the total weight of the pallet and/or workpiece.

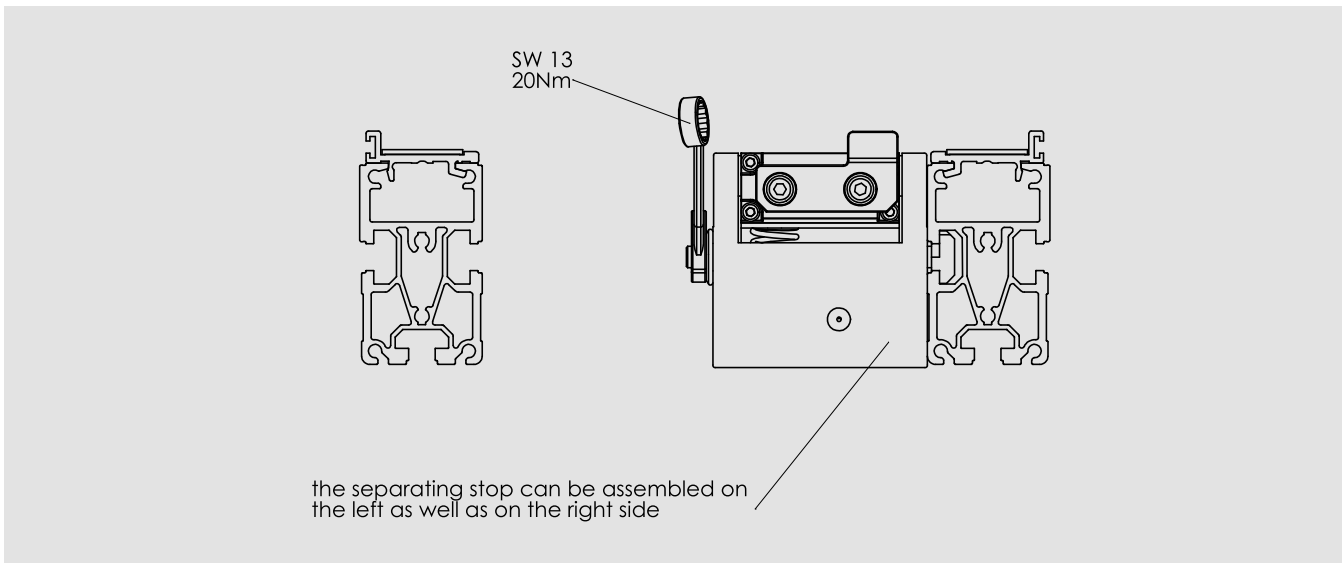
All specifications apply for a coefficient of friction between means of conveyance and pallet of $\mu = 0.07$ and a steel stop. They are experimentally determined and confirmed in endurance and fatigue tests.

Temperature Range

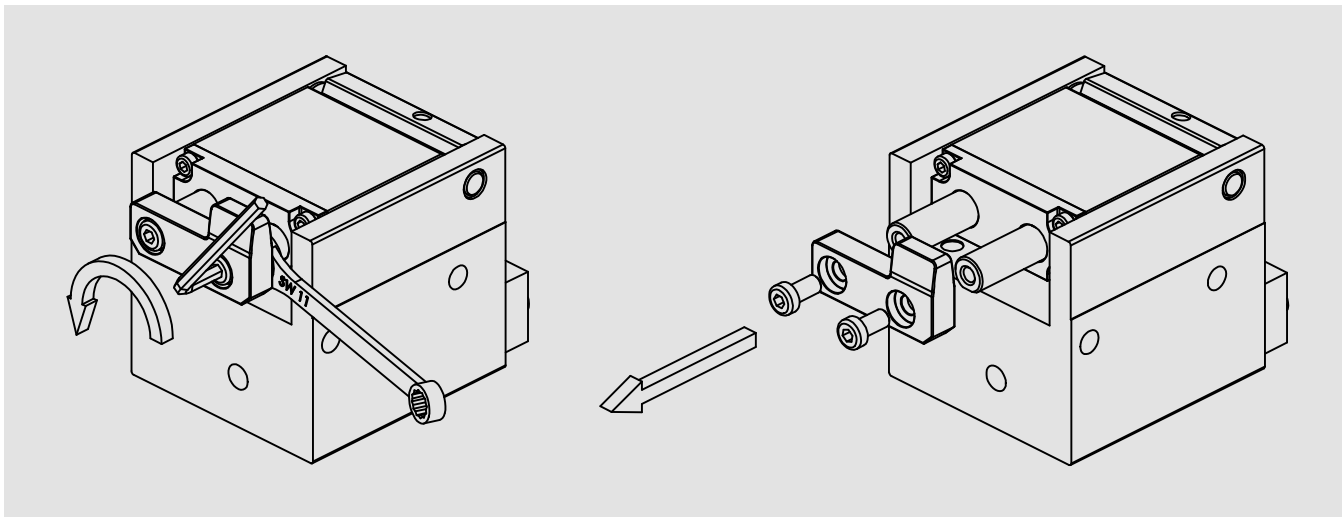
0 °C up to + 60 °C



Connect the compressed air connection (1) by means of the air connector (2) with the appropriate control valve.

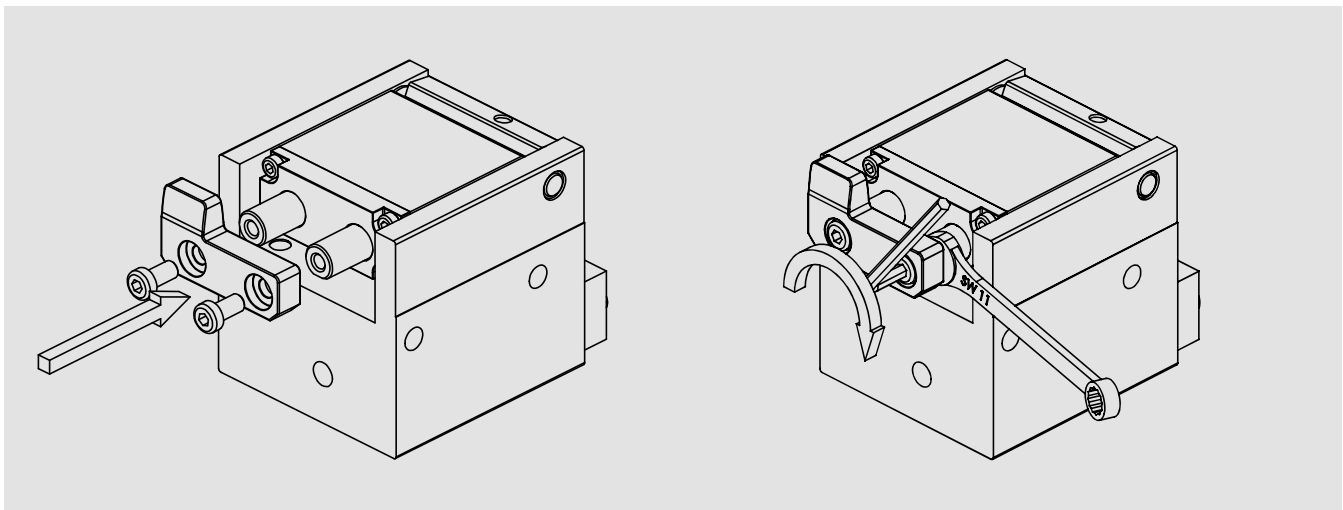


- Insert the T-head bolts into the mounting hole.
- Screw the collar nuts onto the T-head bolts and fasten to the profile with 20 Nm.
- Mount the separating stop in the T-notch of the profile.



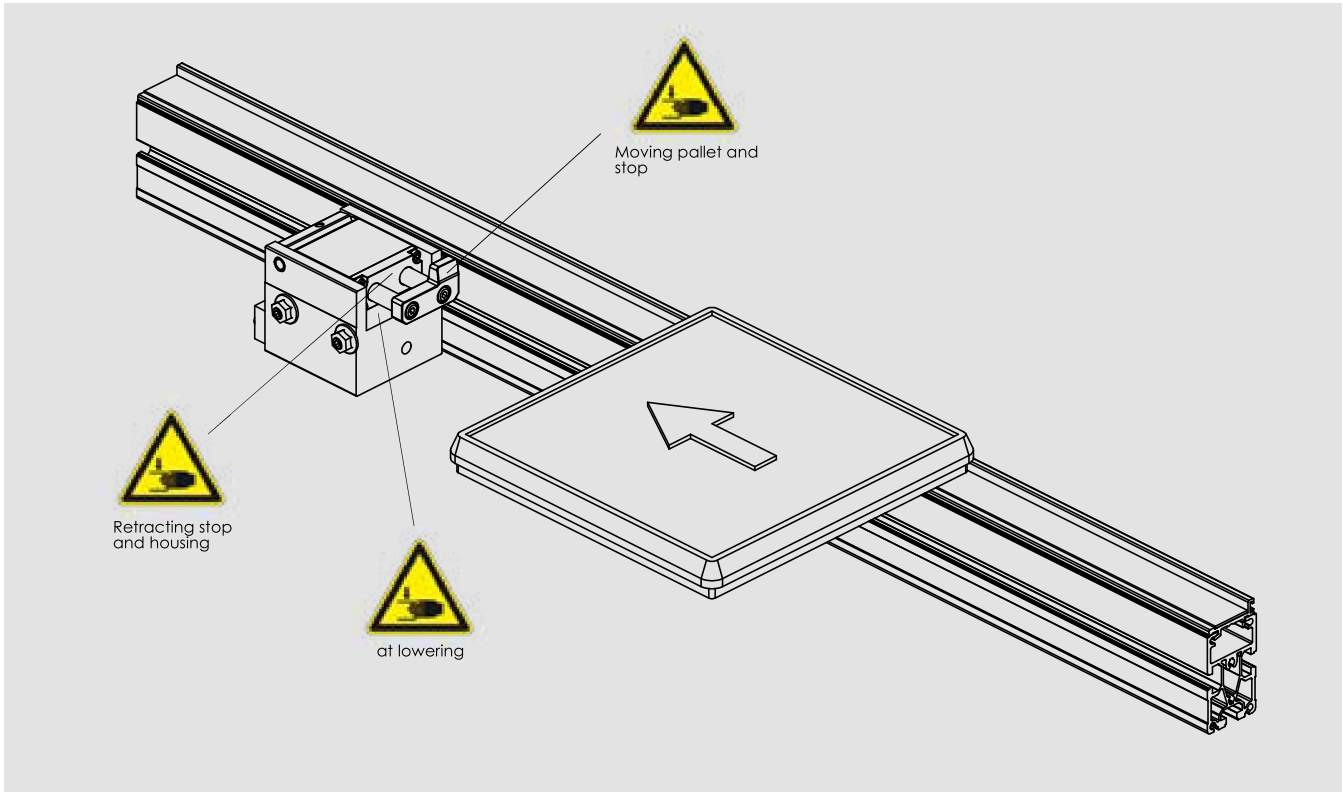
Step 1:
Block the piston rod with an open-end wrench and loosen the two M6 screws with an allen key. To do this, push the stop as far as possible into the housing.

Step 2:
Remove the screws and the stop plate. Then turn the stop plate by 180° (see the picture above).

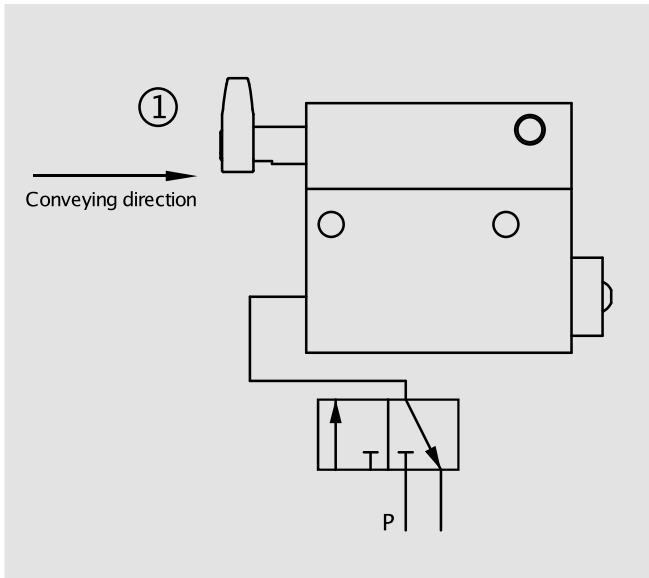


Step 3:
Make sure that the piston rods and the stop plate are clean.
Put the stop plate back on the piston rods.
Before screwing the screws, apply Loctite 243 thread locker to the threads.

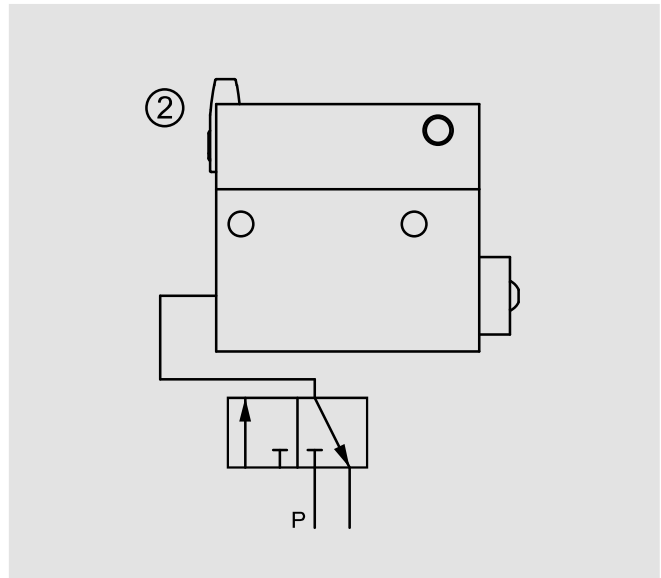
Step 4:
Tighten the screws again with a maximum of 9 Nm. Secure the piston rods with an open ended wrench.



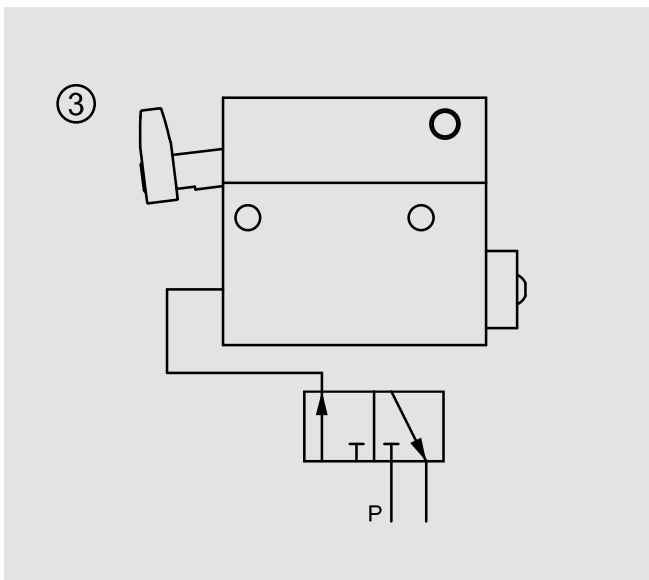
Double-acting



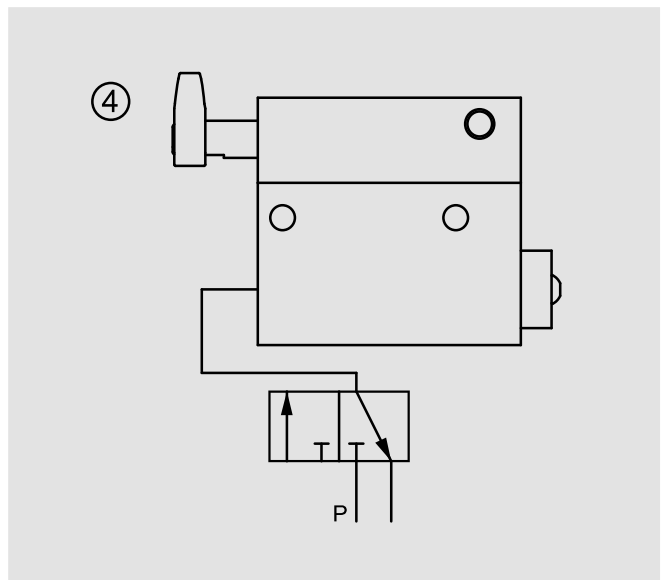
- Damped stopper in its initial position.



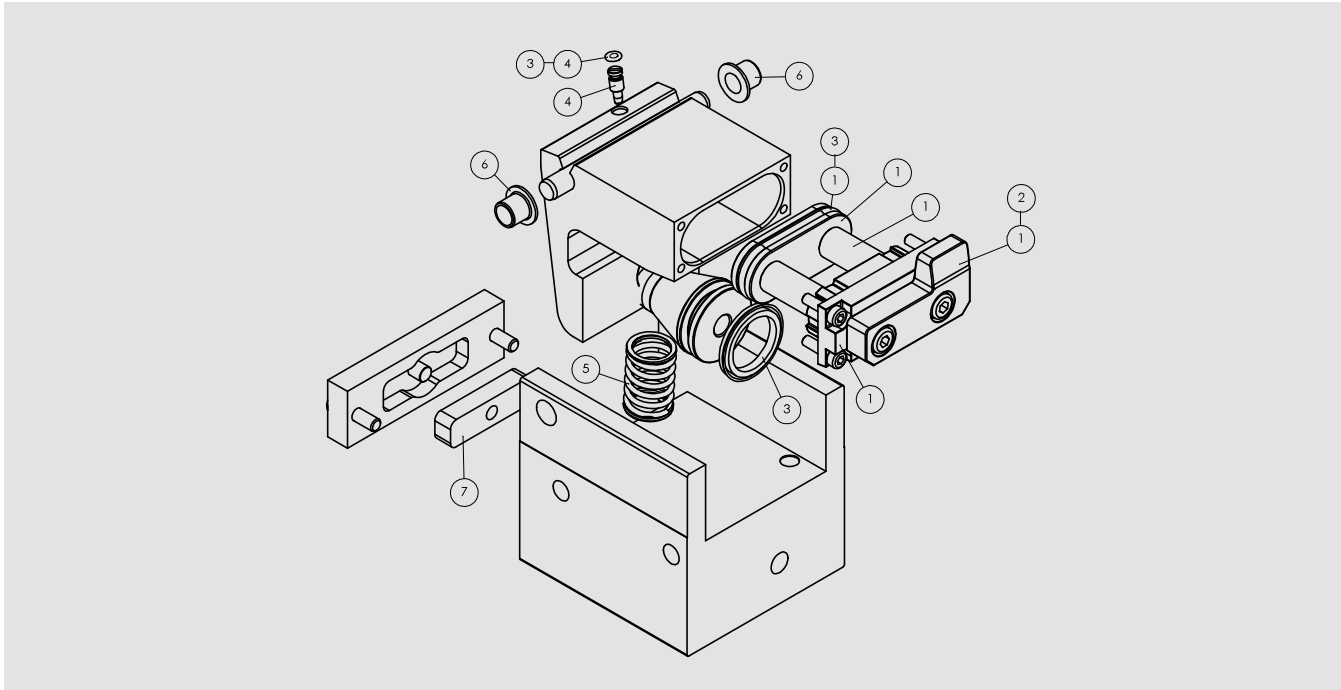
- Damped stopper has decelerated the pallet.



- Switching of a 3/2 directional control valve.
- The damping unit is lowered and the stop plate is moved out.



- Reverse switching of the 3/2 directional control valve.
- Damping unit is raised upwards.
- Damped stopper is back in its initial position (picture 1).



Item	Quantity	Order-no.	Spare part	Elements of spare part/product version	Quantity per unit
1	1	44001138	Damping unit	for PND-250-08-EW	
				Stop plate	1
				Screws M6 x 12	2
				Piston rod	2
				Piston rod guidance	1
				Screws M4 x 12	4
				Oval piston	1
				O-Ring 33 x 3,5	1
Grease	1				
2	1	45003249	Stop plate*	for PND-250-08-EW	1
3	1	44001139	Seal repair kit	for PND-250-08-EW	
				O-Ring 33 x 3,5	1
				O-Ring 3,2 x 1,4	1
				Piston seal repair kit 30 x 22 x 3	1
Grease	1				
4	1	44001140	Throttle screw repair kit	for PND-250-08-EW	1
5	1	03505071	Spring	for PND-250-08-EW	1
6	1	44001141	Bearing set	for PND-250-08-EW	1
7	1	45004589	Damping disc	for PND-250-08-EW	1

*When changing the stop plate, place the spanner on the wrench size of the piston rod to prevent twisting.
When exchanging the stop, please make sure to secure the mounting screws with Loctite 243.

Special fixtures may be required for some repair or maintenance work – please contact us.

Wörner Automatisierungstechnik GmbH

Rechbergstraße 50
73770 Denkendorf
Germany

Tel. +49 711 601 609 - 0
Fax +49 711 601 609 - 10

sales@woerner-gmbh.com
www.woerner-gmbh.com