



Lehnhoff® Variolock® System.

It's worth it: fully automatic changing of attachments with Variolock®.

- ▶ Increased efficiency by saving time and manpower
- ▶ More efficient working - tool changes are viable even for short working cycles
- ▶ Cutting costs by treating machinery, attachments and hydraulic hoses with care
- ▶ More safety and comfort for the operator
- ▶ Less contamination of the hydraulic system, environmentally friendly
- ▶ Prevention of hydraulic hose failure
- ▶ Fast - efficient - profitable

Existing backhoes with Lehnhoff adapter can still be used!

All types of buckets and attachments with original Lehnhoff adapters without hydraulic function can still be used. In this case, only a slight modification is required to ensure the protection of the valve block on the quick coupler.

Valve block protection for backhoe buckets and tools without hydraulics



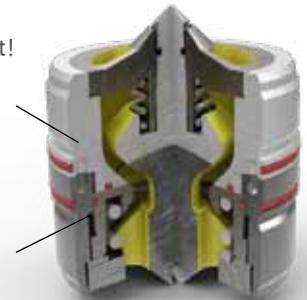
Lehnhoff short stroke valves KV!

These have been specifically designed for excavators and attachment tools with maximum oil flow. Maximum flow rate means:

- ▶ No dynamic pressure
- ▶ Less heat development
- ▶ Lower fuel consumption
- ▶ Environmentally friendly
- ▶ More power - More profit!

Valve plug S-Block

Sleeve valve A-Block



Flow-optimised Lehnhoff short-stroke valves

System Variolock®.

- ▶ Compatible with all Lehmatic attachments such as backhoes, rippers etc.
- ▶ Safely integrated into the proven Lehnhoff quick coupler system
- ▶ Accurate hydraulic connection through patented valve clamping technology
- ▶ Minimal pressure loss and less heat development with high oil flow rates
- ▶ Robust, easy to clean and maintain
- ▶ All Lehnhoff quick coupler systems are Euro Test certified



Technical specification

| Excavator class | Mini excavators | Compact excavators | Hydraulic excavators | | | Large excavators | | | |
|---|-----------------|--------------------|----------------------|--------|--------|------------------|--------|--------|---------|
| Weight | 1,5-6t | 5-12t | 10-19t | 18-28t | 28-40t | 35-55t | 50-70t | 70-90t | 90-130t |
| Variolock quickcoupler | VL30 | VL80 | VL100 | VL210 | VL250 | VL400 | VL700 | VL800 | VL1000 |
| Lehnhoff short stroke valves | | | | | | | | | |
| Type | | | | | | | | | |
| Size | | | | | | | | | |
| Flow rate (l/min) | | | | | | | | | |
| KV1 > DN12 \triangleq ½" 110 | 5 | 3 | 3 | 2 | 2 | 6 | 6 | 6 | 6 |
| KV2 > DN16 \triangleq 5/8" 160 | | 2 | | | | | | | |
| KV3 > DN20 \triangleq ¾" 240 | | | 2 | 1 | 1 | 1+* | 1+* | 1+* | 1+* |
| KV4 > DN25 \triangleq 1" 550 | | | | 2 | 2 | | | | |
| AV6 > DN38 \triangleq 1½" 750 | | | | | | 2 | 2 | 2+* | 2+* |
| Automatic tool recognition* | – | ● | ● | ● | ● | ● | ● | ● | ● |
| Electric power supply* | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Tool Data Management (TDM)* | – | ● | ● | ● | ● | ● | ● | ● | ● |

* Option for increased median flowrates

● Optional extra equipment

Lehnhoff® Variolock® for Mini and Compact excavator.

VL30 / VL80

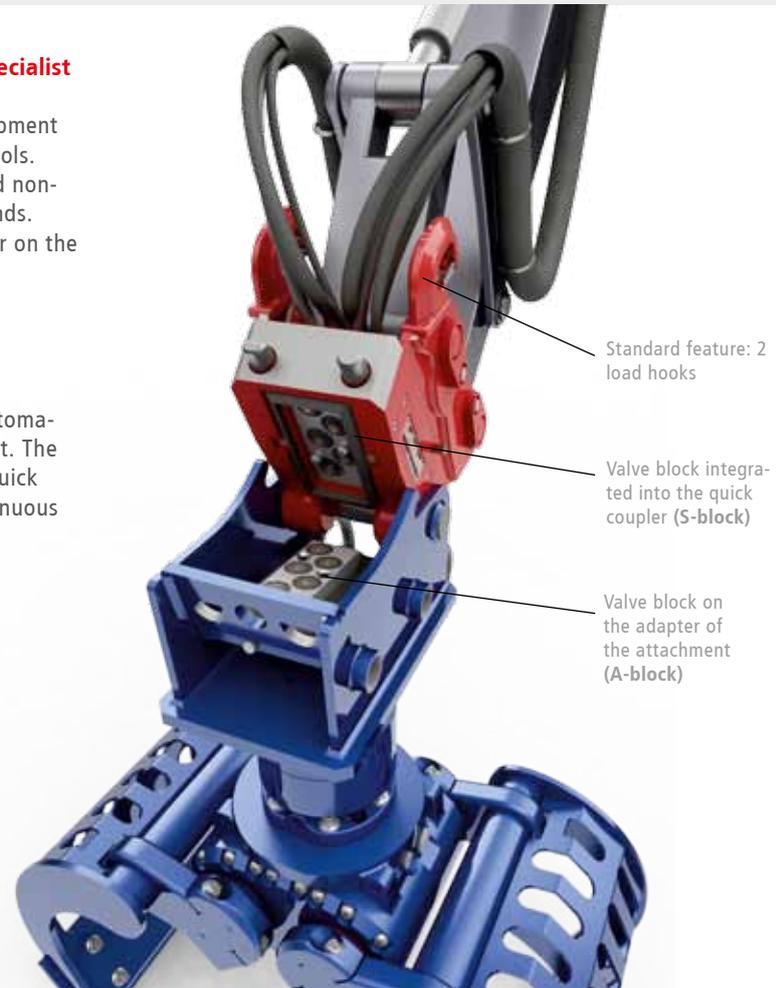
Variolock turns your hydraulic excavator into an all-round specialist

The hydraulic excavator has developed into a multi-purpose equipment carrier that makes it necessary to perform frequent changes of tools. With the Variolock quickcoupler system, all types of hydraulic and non-hydraulic attachments can be changed safely in a matter of seconds. This will lead to more efficient working practices and reduce wear on the attachments due to it being able to be used more efficiently.

5 short stroke valves for all tools all functions including oil leakage pipe

When locking the quick coupler to the adapter, the valves are automatically opened and kept pressurised by an active clamping support. The extreme short stroke of 0 - 3.5mm now allows full oil flow. The quick coupler is always locked securely and without play by using continuous pressure.

| Variolock type | VL30 | VL80 |
|---------------------|---------|----------------|
| Excavator cat. [t] | 1,5 - 6 | 5 - 12 |
| Length [mm] | 295 | 400 |
| Width [mm] | 200 | 290 |
| Weight approx. [kg] | 50 | 90 |
| Adapter size | SW 03 | SW 08 |
| Valves | 5x KV1 | 3x KV1, 2x KV2 |





S-block: Valve block in the quickcoupler

The S-block is flexibly and centrally mounted on the underside of the quickcoupler and consists of 5 short stroke valves which connect all the hydraulic circuits of the attachments securely and leak-free with the working hydraulics of the excavator.

A-block: Valve block on the adapter/ attachment

The A-block which is attached to the adapter of the working tool can be optimally adapted to the respective tool functions with up to five valves. The Lehnhoff short stroke valve forms a plane surface with the surface of the block and is easy to maintain.



Symlock® tilt bucket

Thanks to symmetric valve geometry, you can also use hydraulic tilt buckets as shovel buckets with the help of a Symlock adapter.

Examples of hydraulic attachments that are ready for use with your mini-excavator in a matter of seconds:



... Tilt bucket Sorting grab Hydraulic hammer Plate compactor Paving stone grab Cone splitter Mulcher Stump grinder...

Lehnhoff® Variolock® for Hydraulic excavators from 10-40 tonnes.

VL100 / VL210 / VL250

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5 short stroke valves for all tools all functions including oil leakage pipe

When locking the quick coupler to the adapter, the valves are automatically opened. Immediately after locking, the upper valve block (S-block) and lower valve block (A-block) are automatically coupled together by integrated clamping cylinders. The extreme short stroke of the valves of 0-4.8mm now allows full flow of oil.

| Variolock type | VL100 | VL210 | VL250 |
|---------------------|----------------|------------------------|---------------------------|
| Excavator cat. [t] | 10 - 19 | 18 - 28 | 28 - 40 |
| Length [mm] | 295 | 400 | 400 |
| Width [mm] | 395 | 495 | 600 |
| Weight approx. [kg] | 220 | 350 | 450 |
| Adapter size | SW 10 | SW 21/25 | SW 21/25 |
| Valves | 3x KV1, 2x KV3 | 2xKV1, 1xKV3, 2xKV4 | 2x KV1, 1x KV3, 2x KV4 |

Standard feature: 2 load hooks

Valve block integrated into the quick coupler (S-block)

Automatic tool recognition
Electric power supply (optional)

Valve block on the adapter of the attachment (A-block)

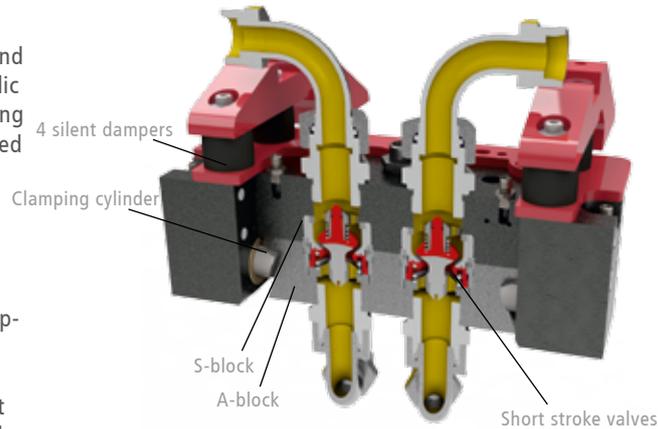


S-block: Valve block on the quickcoupler

The S-block is flexibly mounted on the quickcoupler and contains a total of 5 short stroke valves which ensure a safe and leak-free connection between the hydraulic circuits of the attachments and the working hydraulics of the excavator. Two integrated clamping cylinders securely clamp both valve blocks together.

A-block: Valve block on the adapter/ attachment

The A-block which is attached to the adapter of the working tool can be optimally adapted to the respective tool functions with up to five valves. The Lehnhoff short stroke valve forms a plane surface with the surface of the block and is easy to maintain.



Clamping cylinder

The hydraulic connection is flexibly supported by 4 silent dampers with anti-vibration mounts. The patented clamping cylinders absorb the resulting expansion forces between the valve blocks and ensure a safe connection. Wear and tear and the risk of down-times are reduced.

Examples of hydraulic attachments that are ready for use with your hydraulic excavator in a matter of seconds:



... Sorting grab

Tilting bucket

Hydraulic hammer

Suspended grab

Drum cutter

Recycler

Pipe trench compactor

Ditch roller...

Lehnhoff® Variolock® for large excavators 35 to 130 tonnes.

VL400 / VL700 / VL800 / VL1000

Variolock quickcoupler for heavy duty use

The „large“ Lehnhoff Variolock quickcouplers enable the cost-effective and efficient use of large-scale hydraulic attachments under even the harshest conditions in the mining industry, in heavy demolition work, recycling and road construction. The heaviest of equipment such as hydraulic hammers, shears, crushers and concrete crushers with weights of up to 24,000 Kilos can be exchanged quickly, safely and in an environmentally friendly manner by the machine operator alone in his cabin.

Maximum Performance - actively driven valves (AV)

Two valve blocks – protected and integrated symmetrically in housing – contain the required number of actively driven, patented flat valves (AV6). With their extremely high oil flow of 720 litres/minute with a minimal loss of pressure ($\Delta p < 8$ bar), they provide efficient and powerful operation for all tools.

2 protected and integrated valve blocks in the quick coupler (S-blocks)

2 valve blocks on the adapter of the attachment (A-blocks)



| Variolock type | VL400 | VL700 | VL800 | VL1000 |
|---------------------|--------------------------|--------------------------|--------------------------------|--------------------------------|
| Excavator cat. [t] | 35 - 55 | 50 - 70 | 70 - 90 | 90 - 130 |
| Length [mm] | 760 | 760 | 1100 | 1100 |
| Width [mm] | 750 | 750/800 | 1000 | 1000 |
| Weight approx. [kg] | 700 | 870 | 1400 | 1750 |
| Adapter size | SW 40 | SW 40 | SW 100 | SW 100 |
| Valves | 6x KV1, 1x KV3 2x AV6 | 6x KV1, 1xKV3, 2x AV6 | 6x KV1, 1x KV3, min. 2x AV6 | 6x KV1, 1x KV3, min. 2x AV6 |

