



LEMKEN

**Mounted reversible ploughs
EurOpal and VariOpal**



Perfect engineering

Reliable turnover mechanism



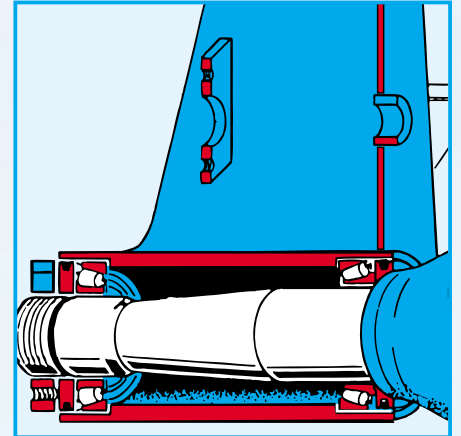
All LEMKEN mounted ploughs feature the modern UNITURN hydraulic turnover mechanism with double-acting ram and integrated lock valve. This means precise on quick turnover action and no readjustment of the plough angle during ploughing, even when there's leakage or loss of pressure in the tractor hydraulics.

The turnover ram



The change over valve is positioned in a protected location, firmly attached alongside the ram. This positioning means the valve units can be rapidly replaced and extended. With an oil return flow connection to the tractor oil reservoir, LEMKEN mounted reversible ploughs can also be used on tractors with single acting spool valve.

Turnover shaft and pivot linkage



The short and strong turnover shaft in the plough headstock is not weakened through any welded joints and can withstand hard shock loads. The durable shaft runs on taper roller bearings which are centrally greased. The pivot linkage is specially protected against wear, made of special quality steel for immense strength and long working life.



Better work quality

Height-adjustable drawbar



The height-adjustable drawbar can be adjusted for all conditions allowing optimum setting of lower links. The drawbar can be rapidly and easily exchanged to match other linkage categories. Tractor and implement are protected because the elastic drawbar acts as shock absorber.

Separate plough angle adjustment



The plough angle for each plough side is individually adjustable by cap nuts. The cap nuts are easy to turn and at the same time stop dirt getting into the threads. Setting up the plough angle is thus always an easy task.

Toolboxes in the headstock



LEMKEN ploughs are service-friendly. Tools, shear bolts and other bits and pieces are right at hand at any time.



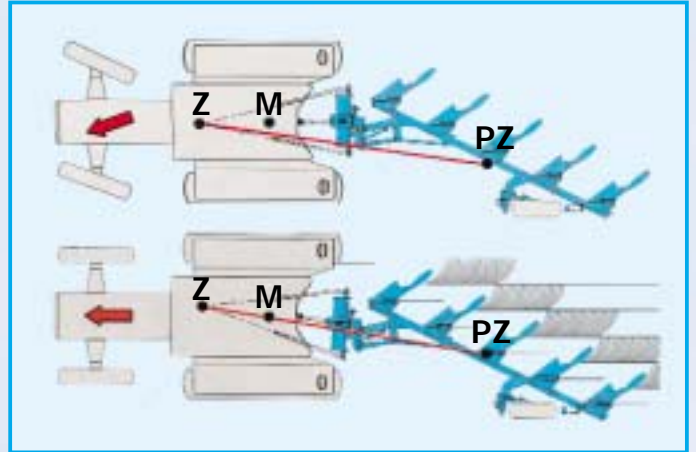
Optiquick for precise plough setting

The EurOpal Optiquick (Trulign) adjustment centre



The unbeatable Optiquick system means the plough is easier than ever to pull. Front furrow width and tractor-plough alignment are simply and quickly adjustable.

Front furrow and draught point adjustment



The front furrow width is set by the outer turnbuckle. The tractor is still affected by side draught because the tractor-plough alignment (the line joining points Z and PZ) does not cross the tractor rear axle in the middle (M). The side draught is removed by turning the inner turnbuckle. Now, the tractor-plough alignment crosses the tractor rear axle at point M and side draught is reduced to zero. Despite the draught point being changed, front furrow width remains the same.



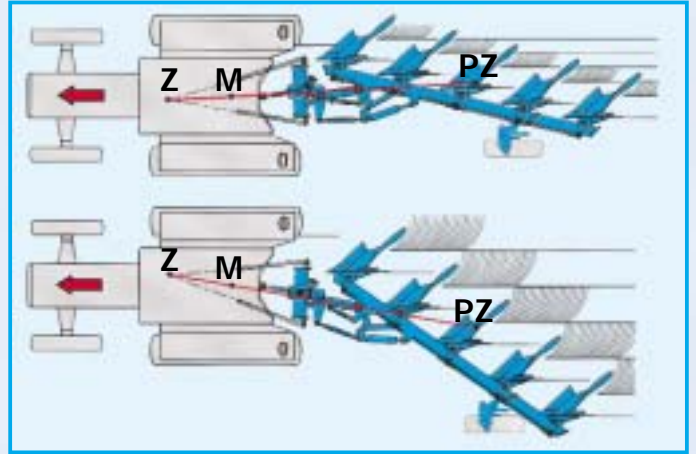
No side draught - whatever the working width

The VariOpal Optiquick adjustment centre



All pivot points of the Optiquick adjustment centre feature wear-resistant bushes, hardened bolts, and can be lubricated, guaranteeing immense strength and long working life.

Automatic adaption to different working widths



After altering the working width an automatic adaption of front furrow width as well as optimum tractor/plough alignment take place so what one get with every working width adjustment is a tractor-plough alignment that passes right through the middle of the tractor rear axle.



VariOpal for wide or narrow furrows

Optimum ploughing quality

The different ploughing demands can be met perfectly by the LEMKEN VariOpal.

Good quality ploughing is closely associated with the precision of furrow width and depth produced by the individual bodies.

Stepless adjustment of working width

Soil type, moisture content, ploughing for immediate sowing (seed furrows) or for good weathering over winter all have different demands on the plough setting – and this is why the simple and quick adjustment of furrow width during the actual ploughing operation is so important.

All tools like skimmers and dises automatically readjust, as does the depth wheel, when furrow width is altered.

Furrows for every situation

The narrow seed furrow: improved crumbling effect, simple seedbed preparation, less working bouts.

The wide winter furrow: broken, cloddy surface, good frost tilth, higher area performance.

The VariOpal allows easy ploughing-out of irregular field ends, straightening of curved areas and ploughing round poles or trees. These ploughs mean you can always exploit your tractor power to the full.



Easily adjustable

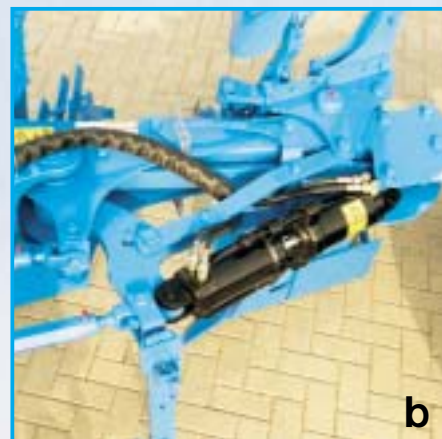
Turnbuckle and hydraulic cylinder

With standard models, working width is adjusted manually with a turnbuckle. Special equipment includes stepless adjusting of furrow width with double-acting hydraulic ram (a).

Memory cylinder

The memory ram (b) is recommended with ploughs for four or more furrows. As well as hydraulic adjustment of working width, this offers an additional function: during turnover the frame is swung inward to give the necessary ground clearance at the depth wheel. The memory ram guarantees that the working width set before the turnover procedure is in each case automatically re-established. An easily readable scale shows the tractor driver the working width setting (c).

The VariOpal adjustment system



Strong frame construction

Box section frame



The strong, thick-walled box section frame of micro-alloy fine-grain special steel gives the solid basis for this new frame construction. The frames can be extended to take another pair of plough bodies. Special features: low weight combined with a long working life.

Adjustable leg brackets



The EurOpal leg brackets are firmly bolted to the frame and this gives immense strength.

Following loosening of the central bolt, four different working widths between 30 and 50 cm can be quickly and easily selected. Other equipment such as skimmers and disc coulters are automatically adjusted at the same time.

Interbody clearance



Large interbody clearances, plough bodies which are attached laterally to the frame and the new shape of the plough legs all work together to give unusually large interbody clearances. This means that blockages are avoided, even at close settings for narrow furrows.

Plough legs come with double-cut shearbolts as standard. Their progressive action ensures safe working and guarantees no twisting of plough legs.



VariOpal working width adjustment

The frame plates



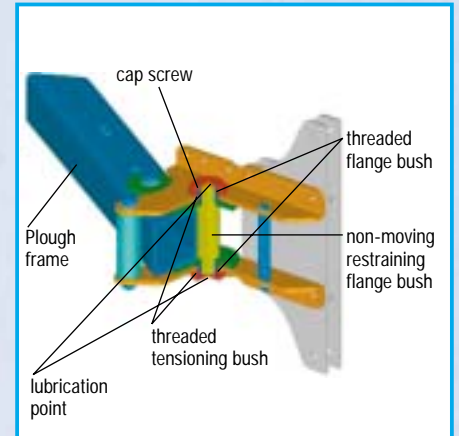
The frame plates for the mounting of the adjustable brackets and main link are bolted to the frame. This gives immense strength, increased durability and a high degree of constructional precision.

The pivot points



The pivot of each pivot bracket which is located laterally to the frame aligns closely with the centre of effort of the plough body. This means only limited stresses are applied at the pivot point and associated components. All pivot points feature wear-resistant bushes, hardened pins and lubrication points guaranteeing highest durability and long working life.

The Vari pivot brackets

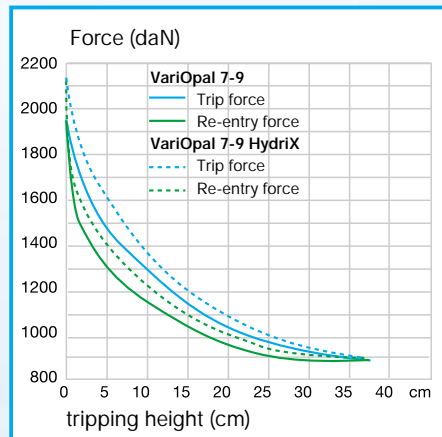


The main pivot pin of the Vari pivot brackets are equipped with bushes locked securely with the frame plates. Each Vari pivot bracket is also fitted with tight-locking bushings. In this way the two lubricated bushes running one within the other guarantee long working life for the furrow width adjustment pivot points, even under toughest conditions. Each component can be separately replaced in case of wear.



Tandem overload safety system

The forces at the share point



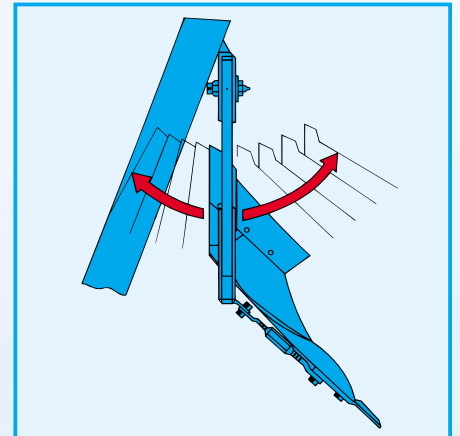
The plough body is tripped without shock loads through the double coil spring system or hydraulic ram. A patented roller system ensures that the force at the point decreases gradually when tripping, increasing progressively with the body re-entering the soil. High trip and re-entry forces provide firm guidance of the plough body and Non-Stop ploughing on stony ground.

The tripping characteristics



Neither at trip or re-entry does any significant amount of frictional resistance occur at the spacing roller between the tandem beams. This means that force losses at re-entry of a plough body are reduced to a minimum. The result is a consistent tripping characteristic: gentle and shock-free followed by powerful, rapid re-entry of the plough body.

Reaction at obstacles

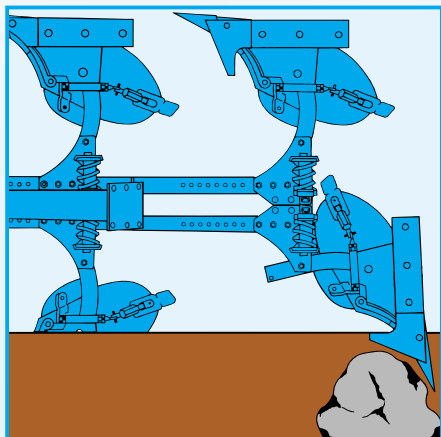


When the plough makes contact with an obstacle the elastic, high quality tempered spring-steel beams and plough legs are able to „side-step“ to an unusual degree. During this movement each beam is firmly guided so that there is no way it can spring out of its mounting. Both leg bracket and beam with the roller are bolted and not welded. This means great strength and long life for the units of the overload safety system.



HydriX hydraulic overload safety system

Overload security



Even where the share point is firmly caught under a stone, tree root or rock ridge, all LEMKEN ploughs are protected against damage by an additional shear bolt device as standard. A new shear bolt is quickly and easily replaced and the work can restart as easily as that.

Variable pressure adjustment



Trip force is easily adjusted – and this is important, especially when ploughing in stony conditions with rapidly changing types of soil. With the LEMKEN HydriX hydraulic version, the pressure in the hydraulic system can be adjusted individually: in light soil conditions ploughing takes place with trip forces as low as possible so that stones are left under the soil surface. Changing to heavier soils or harder ground conditions the tractor driver increases the pressure with the tractor controls so that the plough bodies are firmly kept at working depth.

Adjustment range and maintenance



The adjustment range, controlled by handwheel on the control block, is between 50 and 140 bar.

- Individual limits for specific areas can be set at the plough control block and activated through the controls from the tractor seat.
- Readjustments with manometer observations are not necessary.
- The firm connection between beam and frame enables low system pressures to be applied with the HydriX overload safety system.



The economic plough body

The Dural body



The frog is hardened and tempered and thus immensely strong. The plough body is adjustable for pitch and thus always allows good entry into the soil. The smooth transition from share to mouldboard and the low-resistance shape make the plough even lighter to pull.

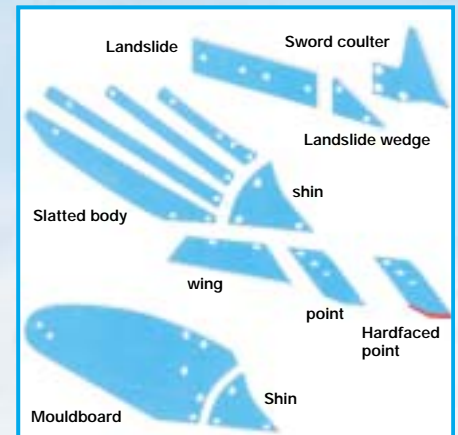
The mouldboard is made of hardened special steel with a low-wear shape and no bolts in the main wear zones. The extra large mouldboard shin is a separate component and thus cost-efficiently replaceable.

Slatted body



The slats of the slatted body are of thick, completely hardened, special steel and individually exchangeable. The securing bolts are deeply countersunk to guarantee that slats still remain firmly attached after extremely long usage. Slatted bodies and normal mouldboards are based on the same frog. The share components are separate and of micro-alloyed boron steel. Their overlapping attachment avoids snagging of roots or other foreign bodies. High material density and strong attachment guarantee low wear and resistance against breakages. The available wearing zones on the wing are considerably larger than with common shares.

Plough body construction



Low wear and good entry characteristics are guaranteed for the replaceable share points through their strength, material and form. The extra broad landslides and large soil contact area ensure a more positive plough guidance and these can be turned four ways to give maximum possible wear life. The sword coultter offers a substantially greater proportion of wearing area for optimum utilisation. The attachment area lies in the „shadow“ of the cutting edge and so is protected from wear and damage. Through the angling of the cutting edge to the rear and above there's no opportunity for stones, roots, or other objects, to jam.

A special hard metal coating on the share points gives an up until now unbeatable working life and substantially higher cost-effectiveness. The points are hardfaced on one side from below, producing a self-sharpening effect.

Safe and secure on field and road

Depth wheel



The special construction enables a large ground clearance allowing safe and shock-free pivoting of the wheel during the turning procedure. The system also ensures the optimum working position for the wheel. The wheel is so positioned on the frame that, depending on the number of furrows and the working width, ploughing can continue right up to the edge of ditches, fences or field edges, etc. Ploughing depth can be adjusted quickly and easily via pin adjuster. Readjustment of the wheel takes place automatically when working width is changed.

Uni-wheel



Recommended for ploughs of four furrows and more is the uni-wheel = the combined depth and transport wheel. This so-called uni-wheel is easily moved from working to transport position and back again. Without having to raise the wheel, working depth is rapidly set via pin adjuster.

The plough is transported in half-turn position. The uni-wheel also runs backwards for easy reversing of tractor and plough. When using the uni-wheel the frame is locked in the middle in transport position. The locking system is easy to operate, requires no effort and is easily accessible. The locking pin slips automatically into its position.

Hydraulic adjustment

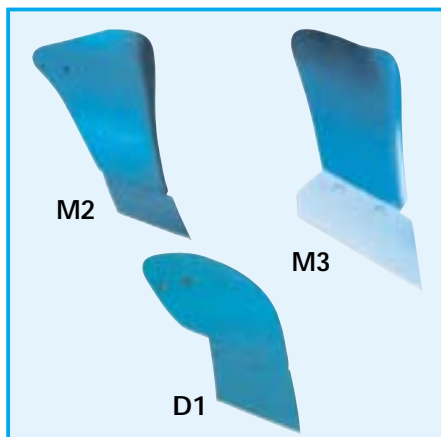


For optimum ploughing the working depth must be maintained at a constant level through adjustments to cope with different soil conditions. The depth and transport wheel for mounted reversible ploughs enables hydraulic adjustment of ploughing depth from the tractor seat. Even where there are changes within a single bout between light and heavy soil conditions the hydraulic adjustment system ensures ploughing continues at constant depth. Nor does the driver have to leave the cab for any adjustments for the shallower finishing bout.

The wheel can be optimally positioned for working depth using a double-acting hydraulic spool valve. A clearly visible scale shows the driver the actual working depth. The corresponding hydraulic ram is integrated into the frame-work of the wheel and thus well protected from being dirtied or damaged. An automatic lock valve ensures that set working depth is maintained even when there are leaks in the tractor hydraulic system. The scraper on the wheel prevents blockages through sticking of soil or vegetation.

Ready for action in tough conditions

The skimmers



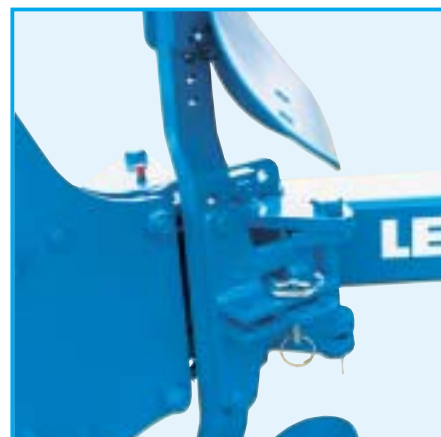
The special D1, M3 und M2 skimmers ensure a clean ploughed surface even when there's a lot of surface trash. Their working depth is quickly and easily set by pins adjuster with the row of holes in the skim stalk enabling exact and consistent setting for uniform quality of work from all skimmers. D1 and M2 skimmers can be ordered equipped with tailpieces.

The flat stalk



Fitting the skimmer onto a flat stalk avoids danger of them twisting. All shares and mouldboard variants can be exchanged without any problem because the frog is the same. For ploughing without skimmers these can be quickly removed because only two bolts have to be loosened in each case.

The angle adjustment



The EurOpal and the VariOpal with shear bolt device are available with individual quick adjustment system for the skimmer angle. This allows precise aiming of the trash flow.

The working depth

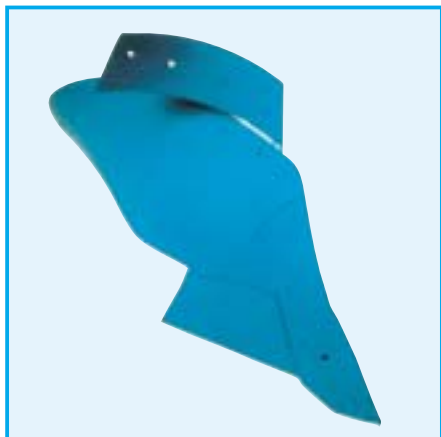


With EurOpal and VariOpal ploughs with automatic overload safety systems the skimmers can be moved along the beams. Working depth adjustment is made with pins and therefore no-tool are required. For the ability to adjust the angle, round stalks are available.



No-tool rapid adjustment

Trash boards



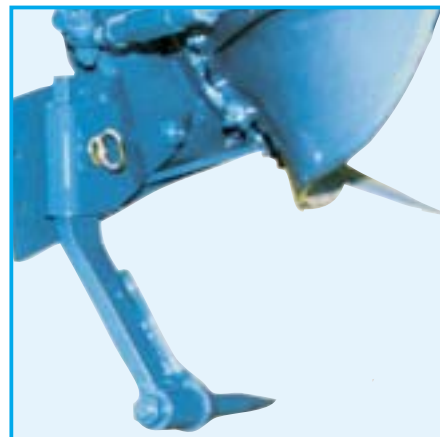
The trash boards are fitted directly to the mouldboards and are multiple adjustable. These enable blockage-free work and clean incorporation of plant material.

Disc coulters



The plain 500 mm diameter disc coulters feature side mouldings which encourage the disc to keep revolving even when cutting through a lot of organic material. Depth adjustment is through vertical swivelling of each coulters arm which is screw-locked into a toothed bracket. The adjustable bearings, fitted with plain side towards the ploughed land, are double sealed against dirt ingress.

Subsoilers



Their special shape gives a very good loosening effect. The subsoilers are adjustable for depth without any tools and can also be easily removed where required. All wearing parts can be individually exchanged. The tine protection prevents wear on the tines.



Electronic plough control

The LEMKEN terminal



The increasing adjustment possibilities on modern mounted reversible ploughs require more and more attention from the operator.

For simplifying VariOpal mounted reversible ploughing, all the plough functions can be activated and monitored from the tractor seat via operating terminal and job-computer.

The hydraulics



The necessary sensors and hydraulic control blocks are integrated in the turning and front furrow adjustment ram and thus represent a compact unit. Continuous control of the ploughing positions is possible through monitoring the cylinder positions.



Operator comfort and reliable function

ISOBUS



ISOBUS standardisation of the on-board computer means our mounted reversible ploughs are compatible with the terminals supplied by all leading tractor manufacturers. This means the plough being used can be monitored and controlled without additional LEMKEN operating terminal. Should the tractor not have an ISO-BUS standard terminal, operating can still take place through a LEMKEN operating terminal.

The operational functions



The electronic plough control offers many operational functions:

With the function 90° the plough can be brought into the ideal position for mounting or demounting, the drawbar being parallel to the ground surface. The adjustment of the front furrow width takes place in percentage graduations in association with the tractor inner track measurement. The plough angle can be adjusted to point or wing in fine graduations. Working width can be adjusted per body in graduations of 1 cm. The depth wheel adjustment for deeper or shallower ploughing and furrow press detachment are further functions that can be carried out electronically. Even the turning of the plough, including the VariOpal memory function can be activated by the press of a button.



Ploughing onland and in-the-furrow

Onland



Onland ploughing with the EurOpal OF / VariOpal OF is particularly protective of soil structure in that there is no compaction risk from tractor wheels running in the plough furrow.

Dual wheels can be applied, allowing consistent, soil-protecting power transfer. Side draught can be overcome with a well-ballasted tractor.

Cross-slope downhill ploughing is also possible as is ploughing close to field or other physical borders with both onland or in the furrow systems.

In-the-furrow



These ploughs allow rapid hydraulic adjustment from onland to in-the-furrow mode, for instance for ploughing-in the last furrows. Ploughing can also carry on in unfavourable conditions, e.g. on wet ground, with a change to the in-furrow mode.

All the advantages offered by the Vari technology can be used with both onland and in-the-furrow configuration.



The VarioPack 80 und 110 furrow presses

The furrow press VarioPack

	Single-row furrow press		Single-row furrow press		Double-row furrow press		Double-row furrow press	
	Ø 700 mm		Ø 900 mm		Ø 700 mm		Ø 900 mm	
	Ring profile		Ring profile		Ring profile		Ring profile	
	30°	45°	30°	45°	30°	45°	30°	45°
Light soils		△		△		▲		▲
Light up to medium soils		△		△	△	▲		▲
Medium soils	△		△	△	▲	△	△	▲
Medium up to heavy soils			△		△		△	△
Heavy soils			△		△		▲	△

Various models of the VarioPack furrow presses are on offer:

- as single row press or double row press
- with ring diameters of 700 mm or 900 mm
- with ring profiles of 30° or 45°.

The press can be matched to plough working width through simple mounting or demounting of press rings.

The furrow press arm



The EurOpal and VariOpal furrow press arm can be simply and precisely adjusted through hole plate and pins.





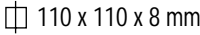
Following the picking-up of the furrow press, the press arm swings from pick-up position to working position. This guides the press closer to the plough and thus minimises pressure on the landside.



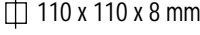
Alterations can simply and quickly be made for ploughing with or without press or for road transport.







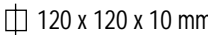
The VariOpal press arm adjusts automatically to the working width set for the plough. In this way the press is picked up reliably whatever the working width.


















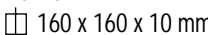
Technical data

Box section								
frame	EurOpal 5	VariOpal 5	EurOpal 5	VariOpal 5	EurOpal 5	VariOpal 5	EurOpal 5	VariOpal 5
 110 x 110 x 8 mm	2	2	2 + 1	2 + 1	3	3	3 + 1	3 + 1
Working width (apprx. cm)	60-100	44-100	90-150	66-150	90-150	66-150	120-200	88-200
Weight (apprx. kg)	552	567	715	794	707	727	870	950
Max. kW/hp	52/70	44/60	59/80	59/80	59/80	59/80	74/100	74/100
Interbody clearance (cm)	90/100	100	90/100	100	90/100	90/100	90/100	90/100
Auto Reset option*	x	x	x	x	x	x	x	x

Strengthened box				
section frame	EurOpal 6	VariOpal 6	EurOpal 6	VariOpal 6
 110 x 110 x 8 mm	4	4	4 + 1	4 + 1
Working width (apprx. cm)	120-200	88-200	150-250	110-250
Weight (apprx. kg)	907	1.067	1.070	1.290
Max. kW/hp	81/110	81/110	96/130	96/130
Interbody clearance (cm)	90/100	90/100	90/100	90/100
Auto Reset option*	x	x	x	x

Box section												
frame	VariOpal 7	VariOpal 7	EurOpal 7	VariOpal 7	EurOpal 7	VariOpal 7	EurOpal 7	VariOpal 7	EurOpal 7	VariOpal 7	EurOpal 7	VariOpal 7
 120 x 120 x 10 mm	2	2 + 1	3	3	3 + 1	3 + 1	4	4	4 + 1	4 + 1	4 + 1	4 + 1
Working width (apprx. cm)	44-110	66-165	90-150	66-165	120-200	88-220	120-200	88-220	150-250	110-275	150-250	110-275
Weight (apprx. kg)	605	875	753	852	959	1.118	949	1.107	1.155	1.373	1.155	1.373
Max. kW/hp	52/70	74/100	74/100	74/100	96/130	96/130	96/130	96/130	118/160	118/160	118/160	118/160
Interbody clearance (cm)	100	100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100
Auto Reset option*	-	-	x	x	x	x	x	x	x	x	x	x

Box section														
frame	VariOpal 8	VariOpal 8	EurOpal 8	VariOpal 8	EurOpal 8	VariOpal 8	EurOpal 8	VariOpal 8	EurOpal 8	VariOpal 8	EurOpal 8	VariOpal 8	EurOpal 8	VariOpal 8
 140 x 140 x 10 mm	3	3 + 1	4	4	4 + 1	4 + 1	5	5	5 + 1	5 + 1	5 + 1	5 + 1	6 ***	6 ***
Working width (apprx. cm)	75-165	100-220	120-200	100-220	150-250	125-275	150-250	125-275	180-300	150-330	180-300	150-330	180-300	180-300
Weight (apprx. kg)	1.124	1.399	1.210	1.378	1.425	1.653	1.410	1.628	1.625	1.903	1.610	1.903	1.610	1.610
Max. kW/hp	88/120	118/160	118/160	118/160	140/190	140/190	140/190	140/190	169/230	169/230	169/230	169/230	169/230	169/230
Interbody clearance (cm)	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100
Auto Reset option*	x	x	x	x	x	x	x	x	x	x	x	(x)**	-	-

Box section														
frame	VariOpal 9	VariOpal 9	EurOpal 9	VariOpal 9	EurOpal 9	VariOpal 9	EurOpal 9	VariOpal 9	EurOpal 9	VariOpal 9	EurOpal 9	VariOpal 9	EurOpal 9	VariOpal 9
 160 x 160 x 10 mm	3	3 + 1	4	4	4 + 1	4 + 1	5	5	5 + 1	5 + 1	5 + 1	5 + 1	6 ***	6 ***
Working width (apprx. cm)	75-165	100-220	120-200	100-220	150-250	125-275	150-250	125-275	180-300	150-330	180-300	150-330	180-300	180-300
Weight (apprx. kg)	1.257	1.551	1.280	1.510	1.510	1.800	1.495	1.767	1.725	2.057	1.710	2.057	1.710	1.710
Max. kW/hp	110/150	132/180	132/180	132/180	155/210	155/210	155/210	155/210	184/250	184/250	184/250	184/250	184/250	184/250
Interbody clearance (cm)	100	100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100	90/100
Auto Reset option*	x	x	x	x	x	x	x	-	x	-	-	-	-	-

* Approx. 15% weight addition in the case of the X-model (with automatic Non-Stop overload security system)

** Only with 90 cm interbody clearance

*** EurOpal 8/9, 6-furrow also available as flanged version

All EurOpal and VariOpal ploughs are available with 75 or 80 cm frame heights.

All information, measurements and weights are subject to continuous technical further development and are therefore non obligatory. Information regarding weights always refers to the basic model. The right is reserved to make alterations.



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