

Manual

PH 260 Planer/Moulder



⚠ Warning: If used incorrectly, PH 260 can cause serious injury.

❗ For your own safety, read this manual before starting to use this equipment.



 **LOGOSOL**

Swedish wood processing products

Thank you for choosing a machine from LOGOSOL.

Logosol has manufactured small-scale sawmills since 1988. Our most renowned product is the *LOGOSOL SAWMILL*, the world's best selling sawmill in all categories.

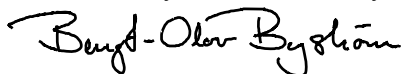
Logosol has a wide range of equipment for small-scale wood processing, covering machines and aids that enables you to control the entire process single-handed, from felling to finished product.

Logosol also manufactures cutting equipment for industrial production: the *RIP SAW ASSISTANT*, a cutting aid that is mounted above the circular saw blade, the *CIRCULAR RESAW*, and the *STACK CUTTER*.

Contact Logosol, and we will send you information about the entire range of products. If you are interested in a specific product, we have films that show the machines in action. On our website you can see short versions of the films, but if you want the longer, more detailed versions, we send you those (on videotape or DVD) by post. This is, of course, free of cost.

You have bought *PH 260*, a 4-sided planer/moulder that has many good qualities. If you have any questions about your *PH 260*, do not hesitate about contacting us at Logosol. Our aim is to make you yet another satisfied owner of one of our products.

We wish you the best with your new machine!



Bengt-Olov Byström

MD and founder of Logosol



Printed on chlorine-free, recyclable paper, using inks based on vegetable oil.

LOGOSOL is constantly developing its products. For that reason we reserve the right to make changes in the design and construction of our products.

Text: Mattias Byström and Anna Olsgren Byström

Translation: Anna Olsgren Byström

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Illustrations: Mattias Byström, Bo Mårtensson and Bo Hellborg

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Knives and Accessories

There is a wide range of accessories for PH 260, such as chip extractors, hoses, in-and out-feed tables, and other useful items. Besides the broad selection of standard knives, Logosol has developed a line of knives that are especially suitable for planing with the PH 260.

All this is presented in Logosol's Moulding Knives Catalogue (ref. no. 7005-000-0520) which can be ordered free of charge from Logosol.

A selection of accessories is also presented under the section Accessories on page 23.

Safety Instructions



For your own safety, do not begin working with the machine before having read and understood the entire manual. Do not let anyone who has not read the instructions use the equipment.



Risk of cutting injuries. Use protective gloves when handling the knives. It is especially important that you wear gloves when loosening or tightening the lock screws for the knives and the fences (as there is a risk that you slip with the spanner).



Use approved hearing protectors. Hearing can be impaired after only a short exposure to high-frequency sounds. Use approved eye protectors. Splinters and wood pieces can be hurled out with great force.




Warning! Cutting tools. Never stick hands or tools above or beneath the machine table or in the chip outlets while the machine is running.



This symbol means "WARNING". Pay extra attention when this symbol appears in the text.



This symbol is followed by an admonition. Pay extra attention when this symbol appears in the text.

 **If used incorrectly, the PH 2660 can cause serious injury.** Always be focused and careful when using the machine.

Never stand behind the work piece when it is being fed into the machine. The board can be hurled out of the machine. Also knots, splinters or pieces of steel can be hurled out with great force. Always stand at the side of the in-feed table.

Only one work piece at a time may be fed through the machine. The work piece must be of a length of at least 600 mm (24 inches).

Make sure that the machine is set up so that the feed rollers (3*) take a firm hold of the work piece. Do not feed into the machine work pieces that are so conical that the feed rollers risk losing hold.

Never place your hands or tools above or beneath the machine table while the machine is running.

Before starting the machine:

- Make sure that no other person besides the operator is within the safety distance (see p.5).
- Make sure that all cutters can rotate freely, and that no tools or loose parts are left inside the machine.
- Make sure that all knobs, screws, nuts, fences, knife clamping gibs, cutter heads, knives, protective covers, in- and out-feed tables, etc. are firmly tightened/attached.

- Make sure that the machine runs in the correct direction: seen from the left side of the machine the in-feed roller should rotate clockwise. If the machine is not running in the correct direction, change the direction by rotating the white plastic disc in the connection plug with a flat screwdriver.
- Make sure that the cover is properly closed, that all chip hoses are mounted, and that you have switched on the chip extractor.

In this manual, the phrase "**disconnect the power**" means that you shall stop the machine, pull out the power cable with the CEE plug, which supplies the machine with electricity, and place it so that no unqualified operator can connect it to the machine. The cable shall also be placed so that you cannot tread or trip on it.

Disconnect the power to the machine by pulling out the plug, and wait for the cutter heads to stop before:

- opening the cover to change planing/moulding knives, or to clean or carry out any other operation above or beneath the machine table.
- replacing belts or performing any other servicing or cleaning.
- moving the machine.
- leaving the machine unsupervised.

Risk of fire and dust emission when collecting wood debris. Chip hoses and a chip extractor **must** be connected to the chip outlets of the machine, and be fastened in a reliable way, e.g. with hose clamps. Take necessary measures to prevent fire in the chip collecting equipment.

The machine **must** be equipped with in- and out-feed tables of a length of at least 1 metre (3.28 ft) each.

Do not wear loose-fitting clothing or anything else that can get caught in the machine's moving parts. If you have long hair you should put it up in a reliable way.

Never use the machine in poor visibility conditions. Always work in good lighting.

Do not use the machine under the influence of alcohol or other drugs.

Keep the work site tidy. Do not leave anything you can trip over lying on the ground.

Never put your hands or any tools on the machine table while the machine is running.

Never stick your hands or any tools in the chip outlets until you have made sure that the power to the machine is disconnected and the cutters have stopped.

Do not climb onto the machine.

Do not tread on the machine's power cable. The cable should be secured off the ground.

Place the machine so that the emergency stop is not blocked.

For the greatest electrical safety, a **residual circuit breaker** should be fitted.

**Numbers within parentheses refer to the list of components and the overall view on pp.7-9.*

If a castor set is fitted to the machine: Make sure the floor is flat and level. Make reliable barriers between the machine and differences in floor level or inclined floor surfaces, to prevent the machine from accidentally beginning to move due to gravity.

The machine must not be modified or added to. Only use original parts from Logosol. **After servicing, the machine must be restored to its original condition.**

The machine may not be used in temperatures below 0°C (32°F).

The machine's warning labels are there for everyone's safety. Damaged or illegible labels must be replaced.

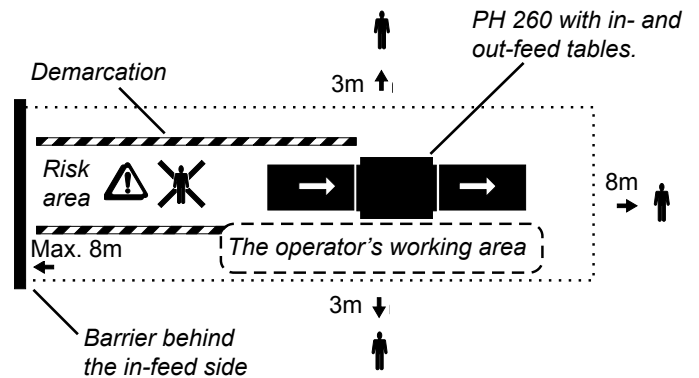
Moving the machine: The machine must not be lifted manually. In the upper edge of the machine chassis there are four 32 mm holes intended for lifting straps. The machine can also be lifted with a fork-lift truck or a pallet lift. In this case the machine should stand on and be strapped to a Euro pallet. For moving the machine on flat and level floors Logosol can as accessory provide a castor set (ref. no. 7500-000-1025) to be fitted under the chassis. If the castor set is fitted to the machine, reliable barriers must be made between the machine and differences in floor level, such as stairs or inclined floor surfaces, to prevent the machine from accidentally beginning to move due to gravity.

⚠ Risk of kickbacks.

- ❗ Never stand behind the work piece when it is being fed into the machine. The board can be hurled out of the machine. Also knots, splinters or pieces of steel can be hurled out with great force. Always stand at the side of the in-feed table.
- ❗ Minimum length of the work piece: 600 mm (24").
- ❗ Acquaint yourself with all functions and setting possibilities before starting to use the machine.

! Safety Distance

The safety distance for persons other than the operator is 3 m (10 ft) from the sides of the machine or 8 m (26 ft) from the in- and out-feed sides during operation. Use some kind of demarcation so that no one can unintentionally come within the risk area.

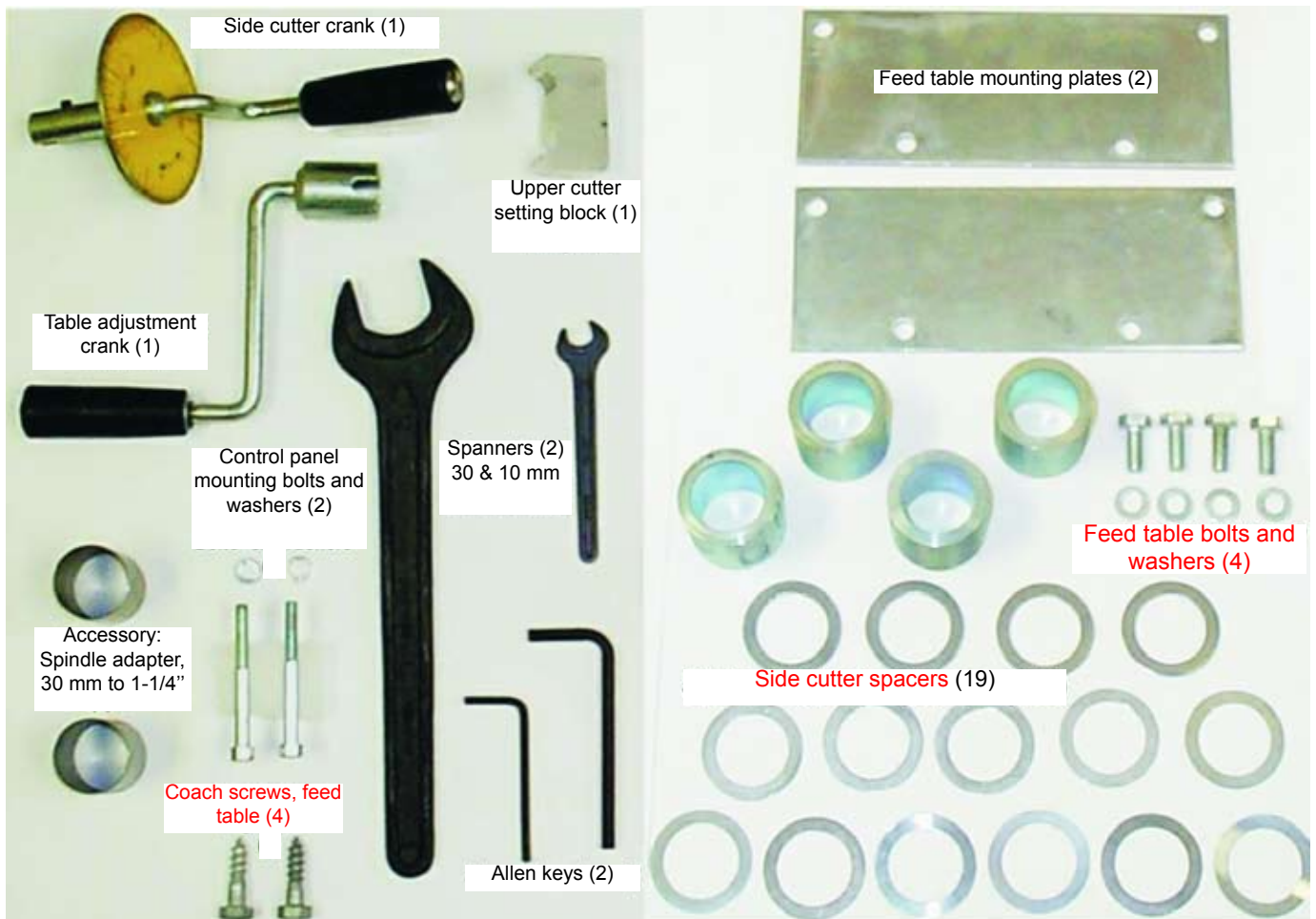


Tools Needed

- 30 mm spanner (supplied)
- 10 mm spanner (supplied)
- 4 mm Allen key (supplied)
- 6 mm Allen key (supplied)
- 13 mm ring spanner
- 10 mm ring spanner
- Adjustable spanner
- Vernier calliper
- Ruler 30-50 cm (12-20")



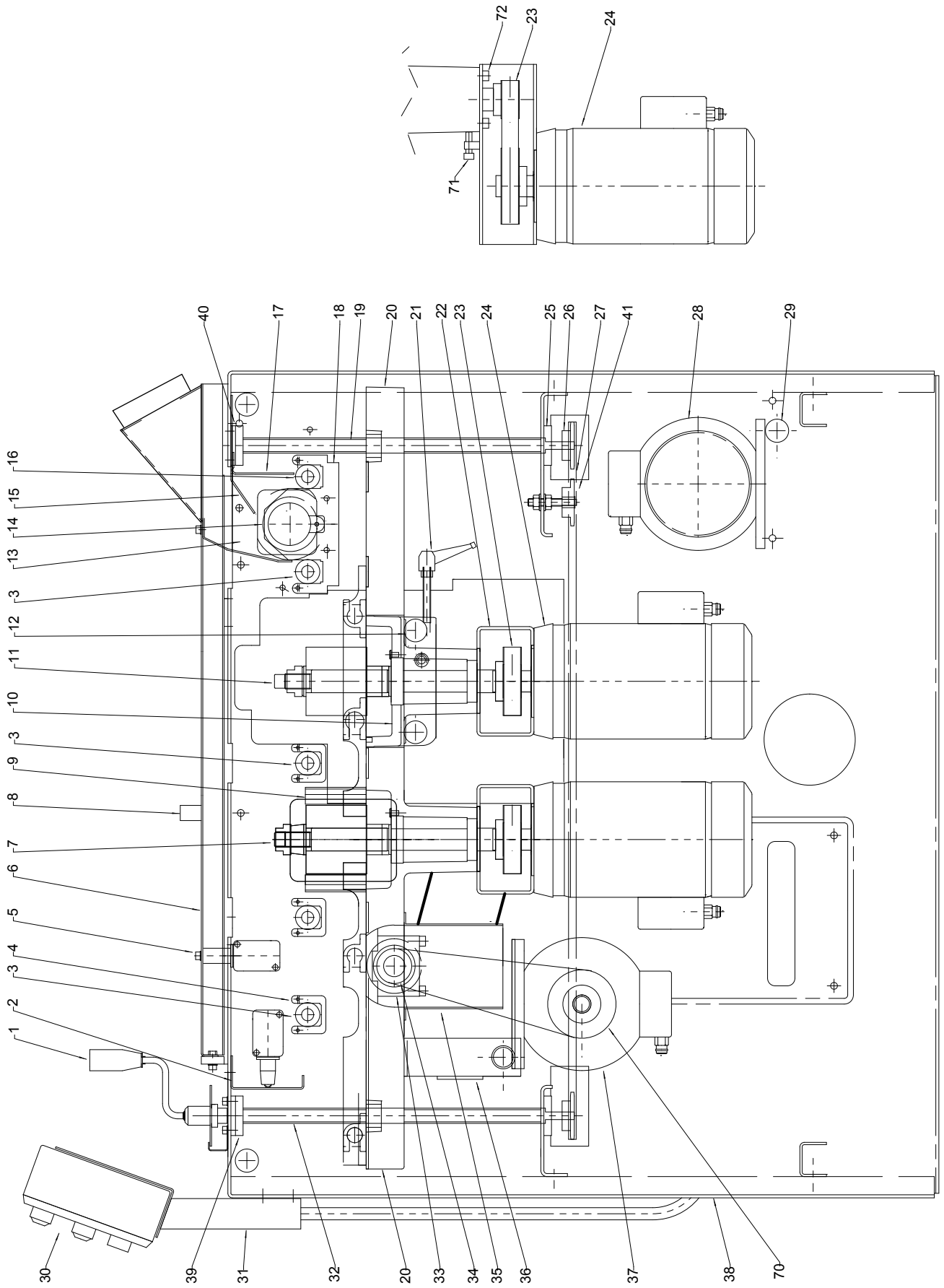
TIP! Make a tool board for the tools you use, and place it near the planer so that you can easily reach it. Look at the tool board before starting the machine in order to make sure that no tool is missing. Perhaps there is a tool left inside the machine!

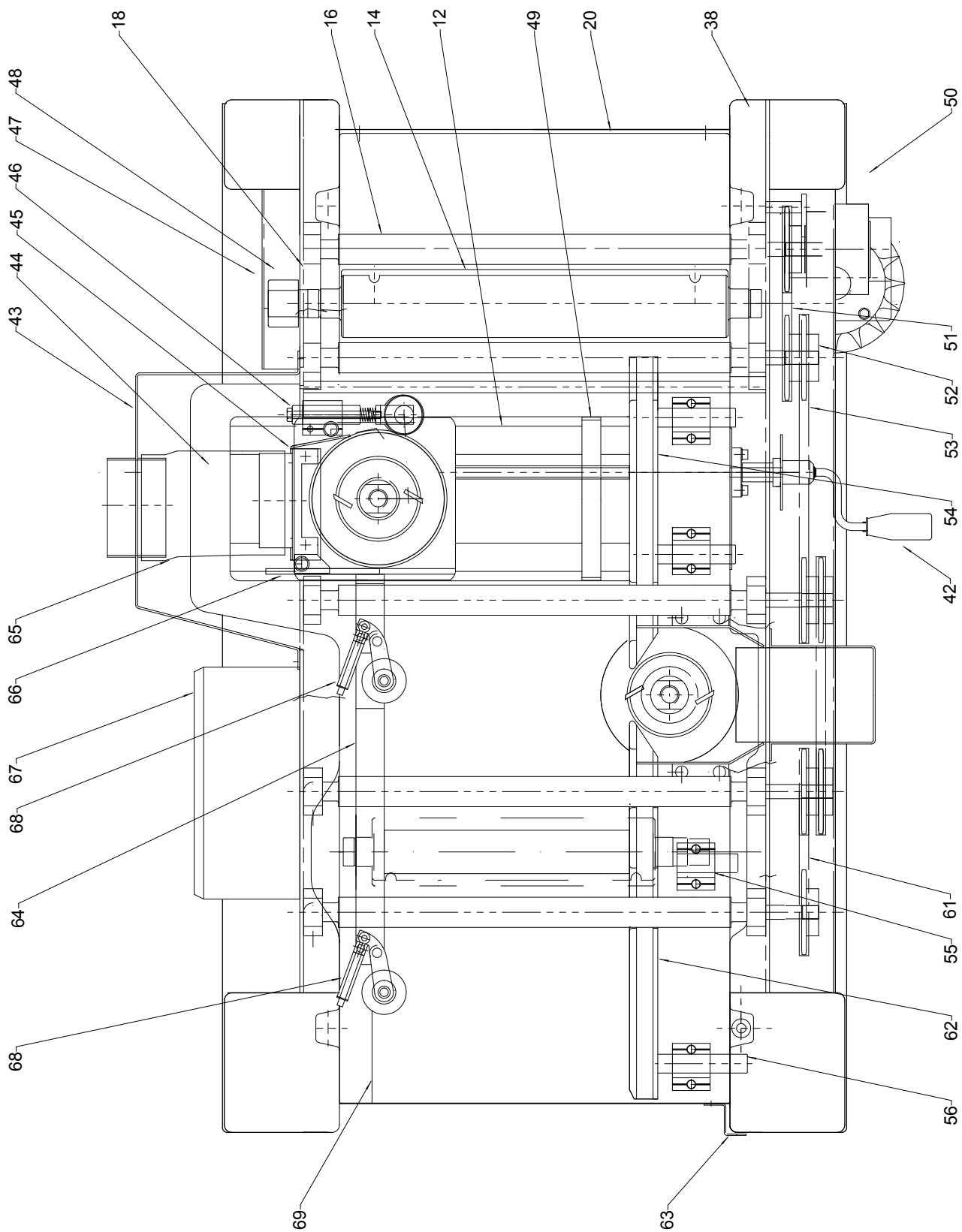


List of Components

Pos.	Description	Ref. no.	Pos.	Description	Ref. no.
1	Crank for machine table, compl.	7502-001-0210	28	Electric motor, upper horiz. cutter	7502-001-0340
	Crank	7502-001-1221	29	Motor support	7502-001-0122
2	Protective plate, in-feed	7502-001-0007	30	Control panel	
3	Feed roller, grooved (4)	7502-001-0370		Control box	7502-001-0124
	Bearing seat, compl. (10)			Control box cover (lid)	7502-001-0126
4	Bearing holder (8)			Emergency stop	7502-001-0128
5	Switch pin	7502-001-0022		Control button, ON, black	7502-001-0132
	Main switch	7502-001-0024		Lamp holder with cap	7502-001-0134
6	Cover	7502-001-0480		Lamp	7502-001-0138
	Plexiglas	7502-001-0026	31	Control box bracket	7502-001-0147
	Aluminium front piece		32	Trapezoidal thread bar with crank	7502-001-0144
	hinge		33	Bearing bracket	7502-001-0146
	Sealing strip	7502-001-0032	34	Lower horizontal cutter, 300	7502-001-0500
	Handle	7502-001-0034		Planing knife, 300	7000-002-8300
	Locking handle, compl.	7502-001-0036		Chip breaker, 300	7502-001-0150
7	Cutter 2			Track bearing	7502-001-0152
	Vertical cutter spindle, right thread	7502-001-0000	35	Chip outlet, lower horizontal cutter	7502-001-0156
	Spindle nut, right thread	7502-001-0010	36	Motor support bracket	
	Set of spacers	7502-001-0230		Motor support	7502-001-0158
	Universal cutter	7000-000-9092	37	Electric motor, lower horiz. cutter	7502-001-0340
	Upper track bearing	7502-001-0052	38	Case	7502-001-0162
	Lower track bearing	7502-001-0152	39	Upper bearing washer (2)	7502-001-0164
	Track ring, sga30	7502-001-0048	40	Upper bearing washer (3)	7502-001-0166
8	Cover support	7502-001-0056	41	Chain tensioner, compl.	7502-001-0168
9	Chip deflector, cutter 2	7502-001-0058	42	Crank for carriage, cutter 3	7502-001-1220
10	Carriage, cutter 3	7502-001-0062		Threaded bar, carriage, cutter 3	7502-001-0174
11	Cutter 3		43	Chip outlet, cutter 3	7502-001-1172
	Vertical cutter spindle, left thread	7502-001-0020	45	Inner chipoutlet, cutter 3	7502-001-0176
	Spindle nut, left thread	7502-001-0030	46	Pressure roller	7502-001-0178
	Set of spacers	7502-001-0230	47	Cover for belt drive	7502-001-0173
	Universal cutter	7000-000-9092	48	Belt pulley, upper horizontal cutter	7502-001-0300
	Upper track bearing	7502-001-0052	49	Support, carriage opening	
	Lower track bearing	7502-001-0152	50	Worm gear, motor	7502-001-0190
	Track ring, sga30	7502-001-0048		Strut, feeder motor	7502-001-0197
12	Carriage shaft (2)	7502-001-0410	51	Feed chain 4	7502-001-0391
13	Chip outlet, upper section	7502-001-0064	52	Feed chain sprocket (8)	7502-001-0392
14	Upper horizontal cutter, 410	7502-001-0066	53	Feed chain 3	7502-001-0180
	Planing knife, 410	7000-002-8410	54	Fence 2	7502-001-0100
	Chip breaker, 410	7502-001-0140	55	Fence bracket	7502-001-0080
	Track bearing	7502-001-0152	56	Fence axle	7502-001-0196
15	Chip outlet, lower section	7502-001-0068	57	Cover for feed roller chain	7502-001-0198
16	Feed roller, rubber	7502-001-0380	58	Chip channel, cutter 2	7502-001-1390
	Bearing seat, compl.	7502-001-0075	59	Chain 2	7502-001-0202
17	Protective plate, exit	7502-001-0074	60	Chip deflector, cutter 2	7502-001-0204
18	Bearing bracket	7502-001-0076	61	Chain 1	7502-001-0391
19	Trapezoidal thread bar	7502-001-0082	62	Fence 1	7502-001-0090
20	Table	7502-001-0084	63	Pointer, height adjustment scale	7502-001-0206
	Plastic runners (4)			Scale	7502-001-0208
21	Carriage locking handle	7502-001-0092	64	L bracket	7502-001-0070
22	Belt gear housing, cutter 2 and 3	7502-001-0096	65	Flexi hose, cutter 3	7502-001-0240
23	Belt gear, cutter 2 and 3		66	Bracket	7502-001-0212
	Poly V belt pulley, motor	7502-001-0300	67	Electric box	7502-001-0214
	Poly V belt pulley, spindle	7502-001-0154	68	Side roller	7502-001-0228
	Poly V belt	7500-001-2005	69	Adjusting plate 1 mm	7502-001-0310
24	Electric motor, cutter 2 and 3	7502-001-0350		Adjusting plate 1 mm	7502-001-0320
25	Lower bearing washer (4)	7502-001-0142		Adjusting plate 2 mm	7502-001-0330
	Bronze bushing	7502-001-0112	70	Belt gear, lower cutter	
26	Chain sprocket, trapezoidal			Poly V belt pulley, motor	7502-001-0300
	thread bar (4)	7502-001-0114		Poly V belt pulley, spindle	7502-001-0154
27	Chain, table	7502-001-0116		Poly V belt	7500-001-2007
	Chain lock	7502-001-0118	71	Screw for belt tensioning	7502-001-0232
			72	Screw for locking the belt tension	

Overall View





Machine Description

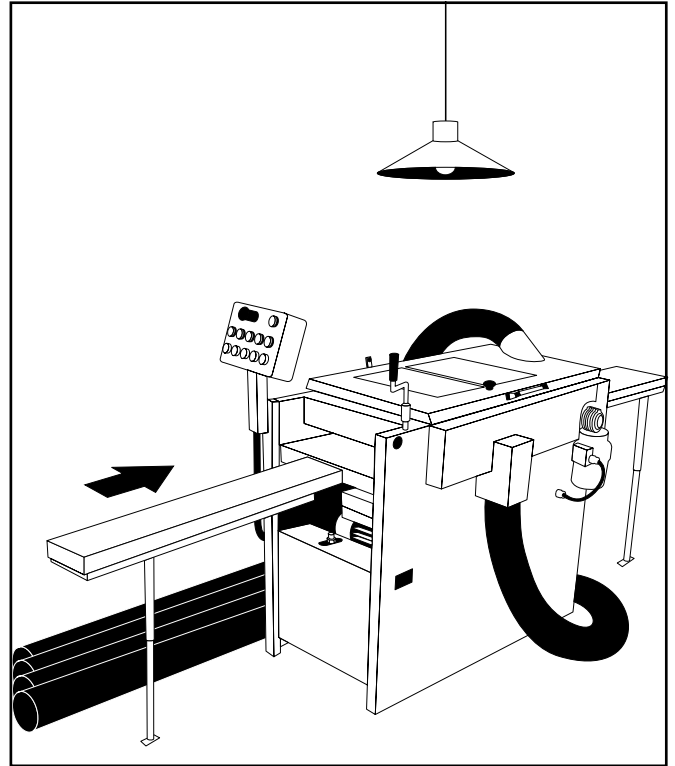
PH 260 is a panel planer/moulder that processes the work piece on four sides.

The machine is enclosed in a sturdy frame made of 4 mm (0.15") sheet steel. The machine table and the carriage for the moveable side cutter are made of cast iron.

Supported by the machine table, the work piece is fed through the machine by three feed rollers and one out-feed roller. These feed rollers are run via a chain transmission with a separate motor. The work piece is laterally guided by adjustable fences and pressure rollers.

The machining of the wood is made by an upper cutter and a lower cutter that are suspended at both ends, and two side cutters that are fitted in the machine table. All the cutters are run by separate motors via belt transmission.

The cutters and the feed rollers are covered by a raisable protective cover with clear plastic windows. The protective cover is equipped with a safety switch. An additional safety switch is placed behind the upper edge of the safety flap on the in-feed side. Each of the cutter heads has a 100 mm (4") duct for chip extraction.



Setting up the PH 260

Inspect your *PH 260* immediately on reception. Any transport damage must be notified immediately to the freight company.

As most of the machine's structure is protected against rust, it can stand in unheated storage spaces. However, extra maintenance is then required in the form of lubrication of parts that are not rust protected (see *Maintenance*).

- Place *PH 260* on a firm and level floor. If a castor set is not used, the machine should preferably be screwed to the floor through the holes in the bottom of the chassis.
- Make sure that there is free room on the in- and out-feed side for the longest boards that are to be planed, and that there is space provided for servicing and board stacks.
- Connect the four chip hoses, and fasten them with hose clamps both on the planer end and the chip extractor end.
- Fix the machine's power cable to the ceiling or protect it in some other way. Never tread on the cable. The machine should be connected via a residual circuit breaker.
- Ensure the lighting is first-class. You should have good main lighting, and also have a powerful lamp above the machine. Ensure that there is no risk of being dazzled by the light.

Planer Shavings Collection

PH 260 must be connected to a chip extractor with a capacity of at least 2500 m³/h. Logosol has a suitable 400 V, 3-phase chip extractor of 3 kW with a no-load flux of 4000 m³/h (ref. no. 7000-000-2030). This extractor has four inlets with a diameter of 100 mm (4"), and an outlet of 200 mm (8"). The chip extractor has no chip collection bag, since such a bag should get full too quickly. Instead you should build a chip pocket, or blow the wood debris directly into a trailer or the like. Bear in mind that there has to be an air outlet in your chip container (e.g. a fine-meshed net, or a filter if you collect the wood debris indoors). Poor extraction capacity is often due to a too limited air flow out of the chip container. If you keep the machine in a heated room, the chip extractor will soon cool the room if you do not direct the air back into the facility.

Dust emission and risk of fire have to be taken into consideration when collecting wood debris.

⚠ Risk of fire and dust emission when collecting wood debris.

- ❗ Consult your local authority about the regulations in your district.
- Connect the chip hoses, and fasten them with hose clamps both at the planer end and the chip extractor end. Use the Flexi Hose from Logosol (length: 3 m, ref. no. 7000-000-1015), which has a smooth inside improving the flow.
- If you want to convey the wood debris a long way, you should place the chip extractor close to the planer so that you can use as short hoses as possible. Convey the wood debris in a sheet metal pipe, which reduces resistance for the air flow.
- ❗ Place the chip extractor so that its power switch is easily accessible.

In- and Out-Feed Tables

Logosol can supply ready-made in- and out-feed tables made of aluminium (1 feed table, ref. no. 7500-000-1000). You can also make your own feed tables. To ensure that no knife marks will be left on the ends of work pieces, it is vital that the in-feed table, the machine table, and the out-feed table are exactly level with each other.

Behind the front and rear edges of the machine table (20) there are two threaded holes (M8). If you have made your own in- and out-feed tables, those holes are intended for fastening the screw plates (supplied) on which the feed tables are to be mounted. Let the outer ends of the feed tables be supported by trestles that are vertically adjustable. This way you get a good support that can be adjusted when the height of the machine table is changed. We recommend, however, that you use Logosol's feed tables to get the best results (see below).

Instructions for mounting feed tables PH 260

(These instructions are not complete. More detailed instructions come with the feed tables).

The in- and out-feed tables are mounted the same way. The instructions below describe mounting of the in-feed table. This procedure is facilitated if you have someone that helps you.

Place a straight board in the machine and let it protrude over the in-feed table. Secure the board by raising the machine table. Loosen the screws and press the feed table up against the board. Tighten. Loosen the screws and adjust the angle of the table.

- Fit the upper angle iron with screws in the threaded holes behind the front edge of the machine table (two M8 washers, two M8x20 screws).
- Fit the feed table iron angle to the upper iron angle (four M8 washers, two M8x20 screws, two M8 nuts).
- Fit the lower iron angle to the machine chassis, using the M6 Allen screws that already are screwed in the holes in the chassis.
- Fit the two forks in the lower angle iron's oval holes (two M8 washers, two M8 nuts).

- Fit the table support in the forks (four special nuts, two threaded bars).
- Fit the struts to the outer sides of the table support (four special nuts, two M8 washers, two threaded bars).
- Lift up the table support so that its rounded support surface comes on a level with the machine table. If you are mounting the feed tables single-handed: prop up the table support in a reliable way, e.g. with boards. Place the feed table on the table support and fold up the struts so that they reach the feed table angle iron on the inner side of the feed table. Fasten the struts and the feed table to the feed table iron angle (two special nuts, two M8 washers, two M8x12 screws).

Instructions for basic setting of feed tables PH 260

- Loosen the screws holding the feed table iron angle (in front of the machine table) just so much that the feed table can move vertically.
- Place a level object on the adjusting plates in front of the lower cutter, and adjust the whole front edge of the feed table upwards until it is on a level with the adjusting plates, then tighten the screws. (When adjusting the out-feed table: measure against the machine table behind the upper cutter.)
- Loosen the nuts holding the forks, so that the forks can move. NB! Crush hazard when the screws are loosened. Remove the boards propping up the table support, if you have used such.
- Move the forks outwards, from the machine chassis, until the outer edge of the feed table is on a level with the machine table. To facilitate this adjustment you can use wooden wedges, shims, or the like, between the forks and the machine chassis. This helps pushing the forks from the chassis until the desired feed table height is obtained. Make sure that the forks are aligned with the table support. Tighten the nuts.

Readjustment of feed tables PH 260

In some cases it can be of benefit that the outer ends of the feed tables are somewhat higher (1-10 mm or 0.04-0.4") than the machine table, to diminish the occurrence of in- and out-feed snipes on the work pieces. This is especially important when thin or soft work pieces are processed. The outer ends of the feed table should never be lower than the machine table.

The in-feed table has to be adjusted when the cutting depth of the lower cutter has been changed by adding or removing adjusting plates.

Tip: The special nuts and Allen screws that hold the feed table angle iron can be replaced by M10 nuts and M10 screws after you have adjusted the feed table. When these screws are tightened, the lateral play of the feed table will be reduced. This can be of interest if, for instance, a longer (own-made) fence for jointing operation with the first side cutter is to be mounted on the in-feed table. (Logosol supplies a ready-made fence for jointing operation, which you fit in the machine's fence screw plates, see *Accessories*.)



In- and out-feed tables, hoses, chip extractors, and many other accessories are available from Logosol.

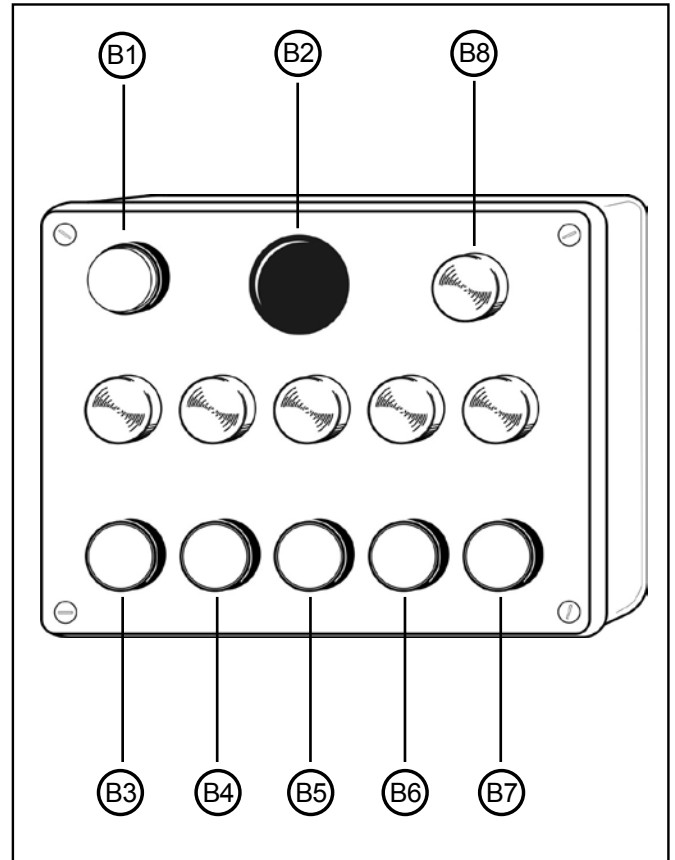
Control Panel

The control panel is not mounted when you receive the machine, but lies inside the machine on the machine table. The control panel is to be mounted on the in-feed side of the machine. In the parts box, which also lies on the machine table, there are two bolts that should be used for mounting the panel.

- B1 Red: Stop button
- B2 Red: Emergency stop button
- B3 Black: Start button, lower cutter
- B4 Black: Start button, right side cutter
- B5 Black: Start button, left side cutter
- B6 Black: Start button, upper cutter
- B7 Black: Start, feed rollers
- B8 Control lamp: Power connected

The red button B1 is a circuit breaker for all the motors. The red button B2 is an emergency stop, and this button also stops all the motors. When the emergency stop button has been activated, you have to turn it 90° to be able to start the machine again. Next to the emergency stop button there is a lamp indicating that the power supply is connected. The lower button row starts the machine's motors. Above each button there is a lamp indicating that the motor started by that button is running.

- ❗ After every stop: wait at least 10 seconds before restarting the machine, otherwise the fuse on the brake card will blow or, in the worst case, you will damage the brake card.



Lower Horizontal Cutter

- ❗ Before opening the planer's cover (6), ensure that the power is disconnected and that the cutter heads are not rotating. Use protective gloves. This is especially important when you are loosening screws that are tightly screwed, or when you are tightening the screws (see *Safety Instructions*). Be careful of the planing knives. You can easily get cut by those, even when touching them lightly.

The lower cutter is located in the machine table on the in-feed side of the machine. On delivery, two planing knives are mounted in two of the cutter head's knife slots (planing knife 300 mm HSS, ref. no. 7000-002-8300). Two additional planing knives, or moulding knives, can be mounted in the two empty knife slots.

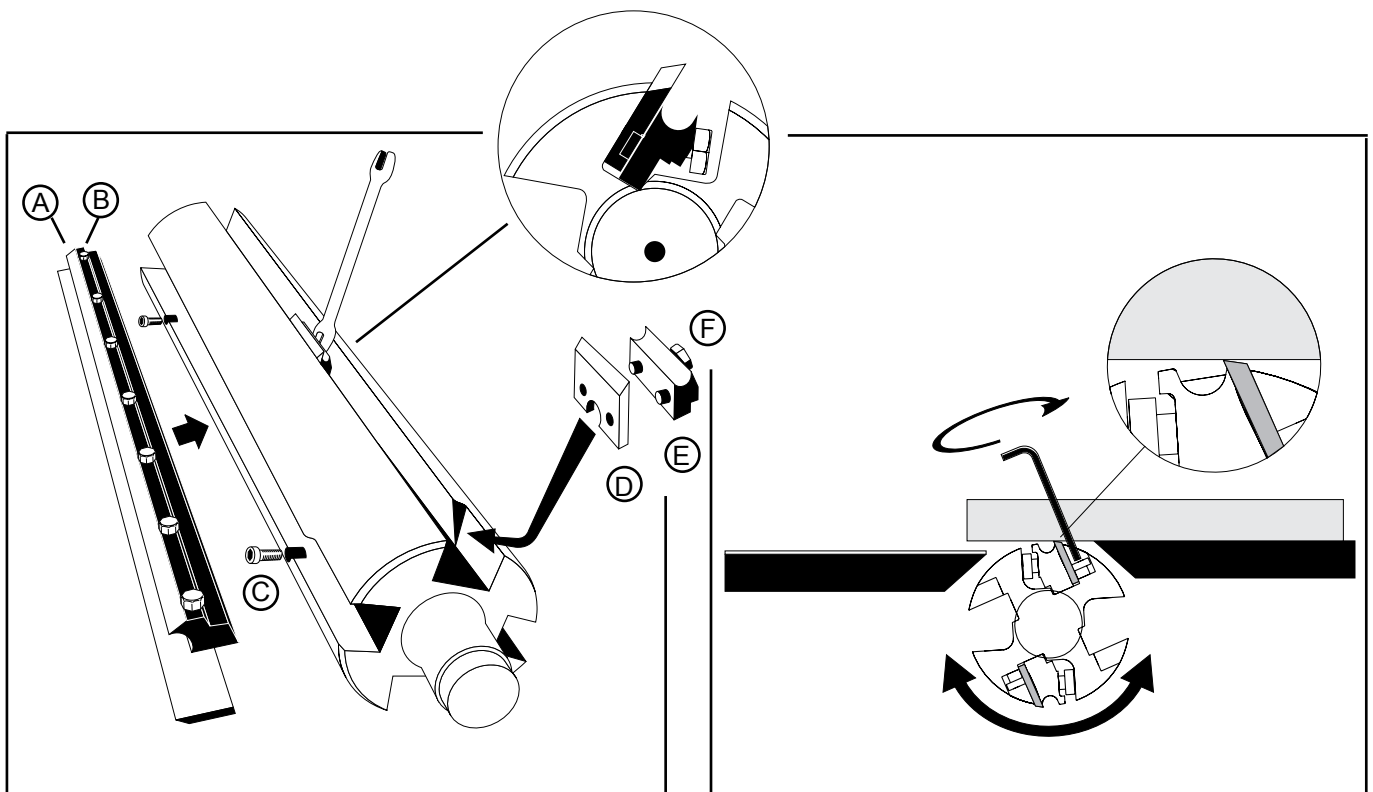
After you have adjusted or replaced planing knives or moulding knives:

- ❗ Make sure that there are no tools left inside the machine.
- ❗ Make sure that all screws are reliably tightened.
- ❗ Make sure that the cutter heads can rotate freely before closing the protective cover.
- ❗ Do you remember the safety instructions on pp.4-5?

Adjusting the lower horizontal cutter

The planing knives in the lower horizontal cutter should be set so that they are level with and parallel to the machine table.

- Using a 10 mm spanner (supplied), loosen the chip breaker's lock screws (B), which are in the track between the chip breaker (A) and the cutter head. After this the knife can be raised or lowered with the help of the two recessed adjusting screws (4 mm Allen) (C) next to the cutter's knife slot. Use a 4 mm Allen key (supplied). The knives should protrude 1 mm in order to fit against moulding knives from Logosol.
- Check the knife level in the cutter head by placing a piece of a planed board on the machine table behind the cutter. The knives should then touch the board (see the picture below). You can also use a magnetic adjuster (magnetic adjuster, lower cutter, ref. no. 7500-001-0051): Loosen the chip breaker's lock screws, and screw down the knife's adjusting screws a couple of turns. Rotate the cutter head so that the planing knife comes in its uppermost position. Place the magnetic adjuster flat and shaped as a 'V' on the machine table behind the cutter, so that the edge of the knife comes directly under the magnets of the magnetic adjuster. Screw up the adjusting screws until the knife is lifted by the magnet and by this gets the right height. Tighten the lock screws and then carefully screw down the adjusting screws so that they fix the knife in this position.
- Tighten the lock screws (which fix the knives) anticlockwise. Tighten carefully at first. Start from the sides, and move to the next until you reach the middle, then retighten all screws the same way.
- Carefully tighten the adjusting screws until they touch the bottom of the indentations of the knives. If these screws are screwed too tight, the knife will crack.



Adjusting the takeoff of the lower cutter

The takeoff of the lower cutter is set by adding or removing takeoff adjusting plates on the machine table in front of the lower cutter.

There are three different takeoff adjusting plates:

- 2 mm with conical holes.
- 1 mm with conical holes.
- 1 mm with cylindrical holes.

The machine is supplied with the 2 mm thick adjusting plate, which also is the basic setting.

The adjusting plates are held in place by countersunk Allen screws. Use the 4 mm Allen key to replace or remove adjusting plates.

- **4 mm** takeoff: use no adjusting plate.
- **3 mm** takeoff: use the 1 mm adjusting plate with conical holes.
- **2 mm** takeoff: use the 2 mm adjusting plate.
- **1 mm** takeoff: use the 1 mm adjusting plate with cylindrical holes + the 2 mm adjusting plate.
- **0 mm** takeoff: use the 1 mm adjusting plate with conical holes + the 1 mm adjusting plate with cylindrical holes + the 2 mm adjusting plate.

The bent 2 mm adjusting plate is always mounted at the top. When moulding knives that cut deep profiles are mounted in the lower cutter, usually for making grooves (knife: 94219), the plates can, if needed, be filed off where they meet the tracks in the machine table. This makes it possible for the cutter to rotate freely

Removing planing knives

The planing knives are removed by loosening the lock screws (B) of the chip breaker (A). Then you raise the knives by loosening the adjusting screws (C) (see above).

Mounting planing knives

Before mounting knives, you should thoroughly clean the knives, the chip breakers, and the cutter head. Place the chip breaker in the slot. Position the planing knife so that the heads of the adjusting screws are in the indentations in the side of the knife, and screw the knife down with the adjusting screws.

Tighten the chip breaker's lock screws loosely, so that the knife can be adjusted vertically. When the height adjustment is made, tighten the lock screws a little at a time, until all screws are properly tightened. Finally, carefully screw the adjusting screws down until they meet resistance. Do not overtighten. This will cause the knife to crack.

Grinding planing knives

Always grind the knives in pairs. This is to ensure that they have the same width (min. 15 mm, or 0.6"). If they do not have the same width, vibrations can arise in the cutter head. The grinding angle should be 38°. You can order a grinding machine from Logosol for regrinding planing and moulding knives (Tormek grinder ref. no. 7010-000-1000, Jig for *planing knives* ref. no. 7010-000-1005).

Upper Horizontal Cutter

⚠ Before opening the planer's cover, ensure that the power is disconnected and that the cutter heads are not rotating. Use protective gloves. This is especially important when you are loosening screws that are tightly screwed, or when you are tightening the screws (see *Safety Instructions*). Be careful of the planing knives. You can easily get cut by those, even when touching them lightly.

The upper horizontal cutter is located in the chassis above the machine table, and suspended at both ends. The machine is supplied with two planing knives in two of the upper cutter's knife slots (planing knives 300 mm HSS, ref. no. 7000-002-8300). Two additional planing knives, or moulding knives, can be mounted in the two empty slots.

After you have adjusted or replaced planing knives or moulding knives:

- ⚠ Make sure there are no tools left inside the machine.
- ⚠ Make sure that all screws are reliably tightened.
- ⚠ Make sure that the cutter heads can rotate freely before closing the protective cover.
- ⚠ Do you remember the safety instructions on pp.4-5?

Adjusting the upper horizontal cutter

The upper horizontal cutter should be parallel to the machine table. This is set from factory, but the setting can be misadjusted by rough handling during transport or by the machine being subject to impact. If necessary, adjust this setting as follows:

- Loosen the screws of the bearing housings a couple of turns (two M6, and two M8 on each side).
- Place an absolutely level block on the machine table directly under the cutter head.
- Turn the cutter head so that the block will not press against the knives or the knife slots.
- Turn the crank that adjusts the machine table height, so that the block slightly lifts the cutter head.
- Tighten the screws of the bearing housings.

- ❗ If there is not enough play in the bearing housings for the cutter to be adjusted, the machine table has to be adjusted (see p.22).

Adjust the planing knives so that they are on a level and protrudes 1 mm (0.04"). This is done with the help of the setting block of aluminium (ref. no. 7500-000-1020), which is found in the parts box that lies on the machine table when you receive the machine.

Loosen the chip breaker's lock screws, and pass the setting block sideways over the planing knife. Raise or lower the knife until it just touches the setting block when the block is passed over the knife. (The protrusion of the planing knives can also be adjusted with a magnetic adjuster for the upper cutter, ref. no. 7500-001-0050. See the instructions that come with the magnetic adjuster.)

- ❗ Tighten the chip breakers' lock screws properly when the adjustment is made. Screw down the adjusting screws until they touch the bottom of the indentations of the knives.
- ❗ When the bearing housings of the upper cutter have been adjusted, or when the takeoff of the planing knives has been changed, the position of the rotating scale must be calibrated. Possibly, the height scale's indicator on the front side of the machine has to be adjusted too.

Adjusting the takeoff of the upper cutter

The takeoff of the upper horizontal cutter is set by using the crank (1) on the right upper corner of the machine. This crank raises or lowers the machine table via a chain transmission. Set by the scale on the front side of the machine, which indicates the thickness of the processed work piece. By moving the indicator upwards or downwards, the scale can be calibrated to match the takeoff of the upper cutter. There is also a circular scale on the crank. This scale indicates that each turn of the crank raises or lowers the machine table 4 mm. Also this scale can be calibrated. Loosen the Allen screw under the scale, and rotate it into the correct position.

Always raise the table upwards to reduce any play in the threaded bars. If the table is to be lowered, first lower it 2 mm more (half a turn with the crank) than the desired height and then raise the table into the correct height.

The chain that raises and lowers the machine table should not be slack, but be so tensioned that it does not connect wrong with the sprockets. The tension is adjusted with a nut that is in the chassis under the machine table on the out-feed side.

- ❗ Do not adjust the chain tension as long as the raising and lowering of the table works. An incorrect tension can cause the chain to jump off the sprocket.

Removing, mounting, and grinding planing knives

See the section *Lower Horizontal Cutter* above.

Moulding Knives in the Lower and Upper Cutter

- ❗ Before opening the planer's cover, ensure that the power is disconnected and that the cutter heads are not rotating. Use protective gloves. This is especially important when you are loosening screws that are tightly screwed, or when you are tightening the screws (see *Safety Instructions*). Be careful of the planing knives. You can easily get cut by those, even when touching them lightly.

Moulding knives can be mounted both in the lower and the upper cutter. The moulding knives must always be mounted in pairs and in the same lateral position in the opposite slots of the cutter head. A certain degree of lateral deviation between the moulding knives can, however, be accepted, as long as the cutter head stays balanced.

⚠ Warning! Lack of balance in the cutter head creates vibrations that can damage the machine and cause personal injury.

- ❗ The moulding knives must always be mounted in pairs so that the cutter head stays balanced.

After mounting of moulding knives:

- ❗ Make sure there are no tools left inside the machine.
- ❗ Make sure that all screws are reliably tightened.
- ❗ Make sure that the cutter heads can rotate freely before closing the protective cover.
- ❗ Do you remember the safety instructions on pp.4-5?

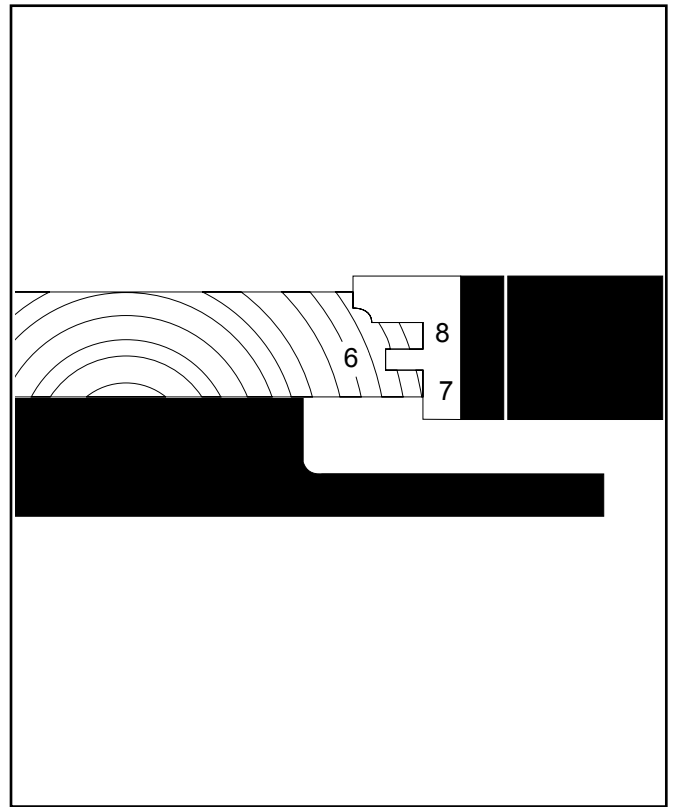
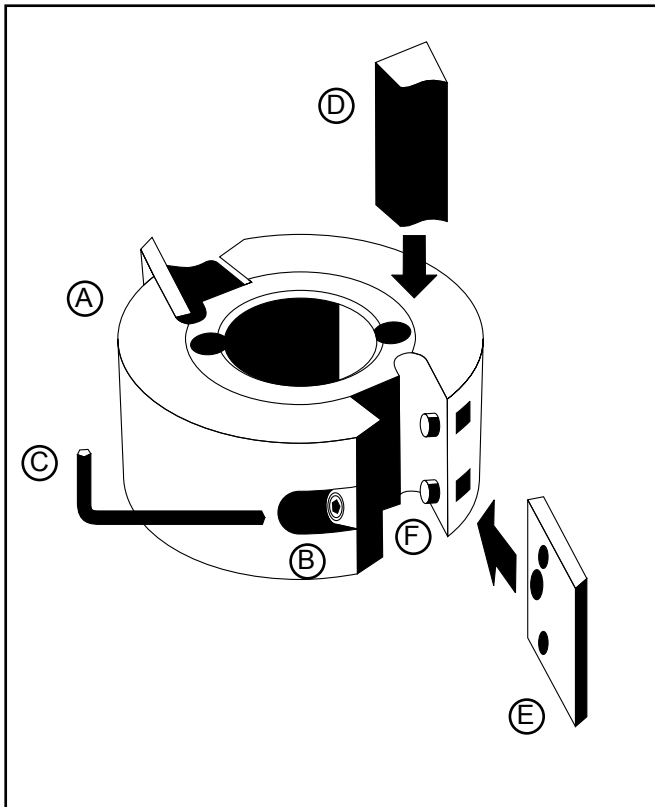
Mounting moulding knives

The lower and the upper cutter have four knife slots each. As mentioned above, the machine comes with two mounted planing knives in each horizontal cutter. In the two empty slots you can mount moulding knives of different sizes and profiles.

- ❗ If back relief knives are mounted in the lower cutter, these should be laterally positioned in such a way that they can pass through the tracks in the machine table.

- ❗ Screwed to the chassis, above the machine table on the in-feed side, there is a limiting plate that, when it is turned up-side-down, limits the maximum takeoff of the upper cutter. This plate must be used when moulding knives are mounted in the upper cutter. **If a work piece that is too thick is fed through the machine, the feed rollers can be pressed upwards so that they come in contact with the moulding knives.**

- Assemble the knife clamping gib (chip breaker) (D) and the moulding knife (E). (See p.13.)
- Insert the gib and the moulding knife in the wide end of the slot in the cutter head.
- Push the knife and the gib along the slot, and then fasten them by turning the screw (F) on the back of the gib anticlockwise so that it presses against the side of the slot.
- ❗ The lock screw must be fixed in the narrow part of the slot. It must not be fixed in the wide end of the slot.
- Measure the lateral position of the knife, and fit an identical knife in exactly the same position on the opposite side of the cutter head.



Side cutters

- ❗ Before opening the planer's cover, ensure that the power is disconnected and that the cutter heads are not rotating. Use protective gloves. This is especially important when you are loosening screws that are tightly screwed, or when you are tightening the screws (see *Safety Instructions*). Be careful of the planing knives. You can easily get cut by those, even when touching them lightly.

The side cutters are located at the sides of the machine table. The spindle axles are 30 mm (1.2") in diameter, which is a standard dimension. On delivery, the machine is equipped with two universal cutter heads with planing knives, which can readily be replaced by moulding knives. For safety reasons, the cutters use conventional milling, i.e. the work piece is fed against the rotation direction of the cutter. Due to this, the lock nut and the spindle of the movable side cutter have to be left-hand threaded.

After mounting of the side cutters:

- ❗ Make sure there are no tools left inside the machine.
- ❗ Make sure that all screws are reliably tightened.
- ❗ Make sure that the cutter heads can rotate freely before closing the protective cover.
- ❗ Do you remember the safety instructions on pp.4-5?

Removing the side cutters

Cutter 2 (right side, stationary cutter): Using a 30 mm spanner (supplied) and an adjustable spanner, loosen the nut on the spindle. Screw off the nut and remove the cutter and spacers, if any.

Cutter 3 (left side, movable cutter): Turn the crank so that the cutter comes to its front position. The nut is loosened in the same way as on cutter 2, with the only difference that the nut of cutter 3 is left-hand threaded and therefore screwed in the opposite direction.

Tip: Loosen the nuts on the side cutters by screwing them in the same direction as their respective cutter rotate.

Replacing knives

Loosen the lock screw (B) with a 4 mm Allen key (C) (supplied), and remove the chip breaker (D). Remove the knife (E) from the dowel pins (F). Insert a new knife, and screw the lock screws tight.

- ❗ Make sure that the knives are turned the right way when mounting them in the cutter head. The edge should be turned towards the chip breaker.
- ❗ Make sure that the rust protected chip deflector before the movable cutter does not run the risk of getting bent by the unplanned edge of the work piece and due to this comes in contact with the cutter. Be extra cautious when work pieces of various widths are being processed.
- ❗ Make sure that the cutter head can rotate freely, and that there is a space of approx. 5 mm (0.2") between the outermost cutting diameter of the cutter and the chip deflector that works as a chip barrier behind the movable cutter.

Height adjustment

The height of the side cutters is set by adding or removing the spacers you find in the parts box that comes with the machine.

Spacer sizes:

Spacer, 40 mm	ref. nr. 7502-001-0038
Spacer, 20 mm	ref. nr. 7502-001-0042
Spacer, 10 mm	ref. nr. 7502-001-0044
Spacer, 5 mm	ref. nr. 7502-001-0046
Set of spacers (0.1 – 2.0 mm)	ref. nr. 7502-001-0230

❗ When straight planing, you just have to ensure that the knives are processing the full side of the work piece.

To remove the planing knives from the side cutters, you loosen the knives' lock screws, which are recessed in the cutter heads. Use a 4 mm Allen key (supplied).

Height adjustment for tongue and groove: When you are going to produce tongue and groove it is important that the tongue and groove are facing each other, i.e. they are at the same height measured from the machine table.

- Remove the cutter head from the spindle (see above under the heading *Removing the side cutters*).
- Decide on the size and location of tongue and groove, e.g. a 6 mm wide groove, 8 mm from the upper side of the board, and 7 mm from the lower side of the board (see picture to the left).
- Mount the moulding knives and firmly tighten the Allen screws holding the knives.
- Refit the cutter head on the spindle without using spacers.
- Measure the distance between the upper edge of the knife and the machine table.

If the knife is 40 mm and the groove (6 mm in this example) is centred on the knife edge, the knife's height above the groove is 17 mm. When the cutter is set up the knife's height *above the machine table* should be 30 mm ($7 + 6 + 17 = 30$ mm). If the knife's height above the table is 15.2 mm, for instance, the cutter should be raised 14.8 mm ($15.2 + 14.8 = 30$ mm). Proceed as follows:

- Remove the cutter head.
- Take the amount of spacers needed for the calculated height (14.8 in this example) and place them on the spindle.
- Fit the cutter head on the spindle, screw on the lock nut and tighten it firmly. Make sure that the cutter head can rotate freely.

- Carry out the points described above on the cutter head that holds the tongue knives, so that it comes at the same height above the machine table.
- Run a short test board through the machine, and make sure that the tongue and groove appear at the correct height in relation to each other.

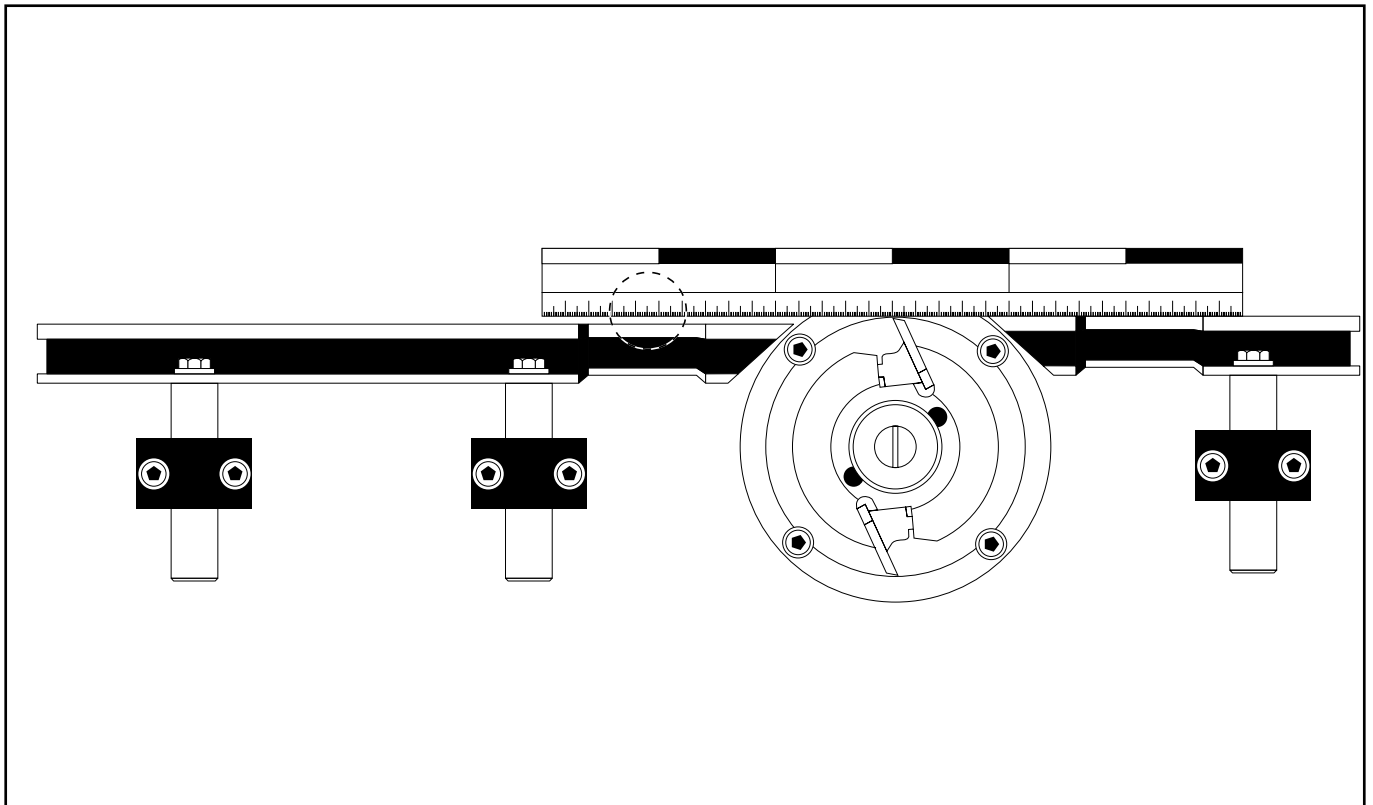
Alternatively, the knives can be set haphazardly, after which a short test board is run through the machine. Measure the test board and adjust the height of the knives.

❗ Spacers must also be placed over the cutter head so that the cutter head can be fixed on the spindle. Use some of the spacers that are not utilized for the height adjustment, placing the thickest spacer on top so that it extends a couple of millimetres over the lowest threads on the threaded bar. Then, screw on the nut on the threaded bar and tighten it firmly.

Grinding

To get the knives sharp again, you can regrind the flat side of the knives. This way the knife pair keeps the same profile. Always regrind the knives in pairs, so that they keep the same weight, otherwise vibrations can appear in the cutter head. You can order a grinding machine from Logosol for regrinding planing and moulding knives (Tormek grinder ref. no. 7010-000-1000, jig for *moulding knives* ref. no. 7010-001-1012).

If the knives' profile is damaged, the regrinding should be carried out by a professional.



Adjusting the fences at cutter 2

The stationary cutter has two fences, the front fence (62) and the back fence (54). The front fence decides how much the cutter should take off, and the back fence serves as a support for the work piece when it has passed cutter 2 and is just about to be processed by cutter 3.

The two fences should be parallel with each other, but the front fence should be set slightly more to the right (see the picture above). This way, the back fence will support the work piece when it has been processed by cutter 2 (the work piece is then somewhat narrower).

The fences are held in place by 13 mm hexagonal screws on the fence brackets (55) (see the picture above). The screws that lock the fence lengthways are found in the U channel of the fence.

Method 1:

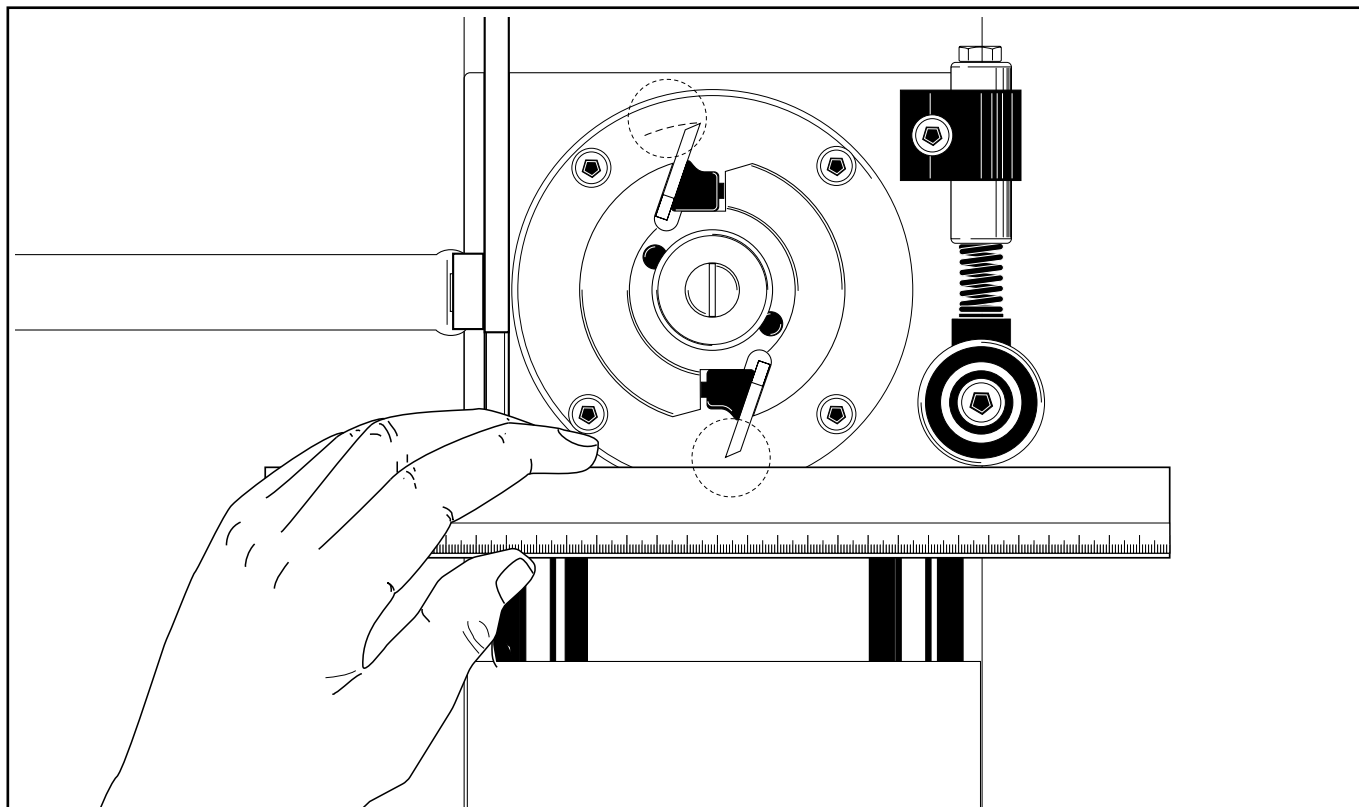
Logosol's setting rule (art. no. 7502-001-0405) facilitate adjustments of the stationary cutter's fences.

- Loosen all screws holding the fences.
- By using the magnets of the setting rule, fit it to the carriage of the movable cutter, then adjust it into the correct angle by using its two screws. After this, the setting rule is adjusted so that it is level with the outermost cutting diameter of the cutter. Now the fences can be set against the setting rule. The takeoff will be 2 mm. If you want more or less takeoff, you can e.g. use the spacers as shims when adjusting.

⚠ Make sure that all screws that hold the fences are firmly tightened, and that the cutter head can rotate freely.

Method 2:

- Move the back fence towards the chassis until it is not in operation, and then secure it in that position. (Make sure that the cutter head can rotate freely.)
- Set the front fence straight and in a position that gives you the desired takeoff. Tighten the screws that secure the fence.
- Close the protective cover and take the steps needed for starting the machine (see p.4).
- Start the lower cutter, both the side cutters and the feeding, and then feed the machine with an approx. 1 meter (3.28 ft) long test board. When the board reaches the movable cutter (cutter 3), you stop the machine.
- Set the back fence up against the planed part of the board.
- Check that the test board has contact with both fences, and tighten the lock nuts of the back fence.
- ⚠ Make sure that all screws that hold the fences are firmly tightened, and that the cutter head can rotate freely.



Tip: If the board does not follow the fences, the cause may be that the back fence is not on the right level with the cutter, that the fences are not parallel to each other, or that the fences are not positioned straight in the machine. If you have difficulties in getting the fences positioned straight in the machine, it is better that they are angled slightly to the left, in the direction of cutter 3. Then the feed rollers will press the work piece up against the fences. If the fences are angled slightly to the right, away from cutter 3, the feed rollers will pull the work piece away from the fences, which will lead to incorrect measurements and a planed surface that is below par.

Adjusting cutter 3 (the movable cutter)

Loosen the locking handle (21), which is located on the carriage under the machine table. Using the crank (42) at the side of the machine, move the cutter in or out to the desired planing width. One turn on the crank represents 4 mm (ca. 0.2"). Using a vernier calliper, measure the distance between the cutter and the back fence. This measurement represents the width of the processed board. Fix the cutter in this position by tightening the locking handle under the machine table.

Setting the pressure rollers and the chip deflector at the movable cutter

In front of the movable cutter there are two pressure rollers (68), which press the work piece up against the fences. By adjusting these you determine how wide a work piece the machine can be fed with. These pressure rollers are mounted on an aluminium L bracket (64) that is attached to the movable cutter's carriage, which makes them move with the cutter when it is being adjusted.

To set the pressure rollers, you loosen the Allen screw (using a 6 mm Allen key) that secures the L bracket on the carriage of the movable cutter. Adjust the L bracket so that the pressure rollers are pressed in approx. 5 mm when the work piece is fed into the machine.

In front of the movable cutter you can mount a chip deflector (supplied) between the L bracket and its vertical screw plate. The chip deflector has oval holes, which enable the deflector to be moved in or out from the work piece. The chip deflector serves as a chip guide, but also as a fence in front of the cutter, which lowers the risk of long splinters being produced from the work piece, when the cutter takes off a lot of wood.

Adjust the chip deflector so that it will be pressed in a couple of millimetres by the part of the work piece that is not yet processed.

⚠ When you are processing boards of various widths, make sure that the chip deflector does not run the risk of being pressed in so much that it comes in contact with the cutter knives. When the deflector is pressed in, there should be a safety margin of at least one centimetre (0.4") between the deflector and the cutter knives.

Behind the movable cutter there is an additional pressure roller (46), which presses the work piece up against the back fence. Set this pressure roller so that it extends approx. 1-3 mm (0.04-0.1") past the cutter's innermost cutting diameter at the level of the pressure roller.

Belt Transmissions

- ❗ Ensure that the power is disconnected before opening any protective covers or carrying out any servicing on the machine.

All the cutters are run by 3 kW motors. The number of revolutions is geared up by so-called Poly-V belt transmissions. The belts have to be tensioned or replaced after some time of use. When the belts have the correct tension, they should squeal just as the motor starts, but not when the machine is running.

Belt transmissions, side cutters:

Replacing belt, cutter 2

- Loosen the inspection cover on the right side of the machine.
- Loosen the four Allen screws (72) that hold the protective cover of the belt transmission (23) to the cast iron cylinder under the machine table.
- Slacken the belt with the tensioning screw (71) on the top of the belt transmission's protective cover.
- Replace and then tighten the belt. Tighten the four Allen screws holding the protective cover of the belt transmission.
- Remount the inspection cover and test run the cutter.

Replacing belt, cutter 3

All screws are accessible from the opening on the back of the machine, but an easier method is to remove the cover of the chip outlet for cutter 3.

- Loosen the four Allen screws (72) that hold the protective cover (23) of the belt transmission to the cast iron cylinder under the machine table.
- Using the crank, move the cutter to its outermost position.
- Now the tensioning screw (71) on the top of the protective cover can be reached from above, through the opening in the table.
- Slacken and then replace the belt.
- Tighten the belt and then screw tight the four Allen screws holding the belt transmission's protective cover.
- Tighten all screws, remount the chip outlet's cover, and then test run the cutter.

Belt transmissions, lower and upper cutter:

The motor of the upper cutter is suspended on a metal pipe (29). Most of the belt tension is produced by the weight of the motor. The pipe is fixed in the chassis by bolts that goes through its ends. The bolts deform the pipe ends by making them oval in the holes of the chassis where the pipe is suspended.

By turning the pipe, the belt can be slackened or tightened.

The belt tension of the lower cutter is also produced by the weight of the motor. This motor is fixed by a bracket that is screwed to a support. In one corner of the support there is a track, which makes it possible to move the motor bracket upwards or downwards to get the correct tension.

Replacing belt, cutter 1 (the lower cutter)

- Loosen the belt's protective cover, which is held by two Allen screws (6 mm).
- Loosen the three screws that fix the tension.
- Slightly press the motor upwards in the tension track in the motor support, and retighten the screws before removing the belt. Press with your hand under the motor and pull off the belt.

⚠ **Warning! Crushing risk.**

- ❗ Never loosen the fixing screws when no belt is fitted.
- When the new belt is fitted, loosen the screws and let the weight of the motor tension the belt.
- Tighten the screws and restore the machine to its original condition.

Replacing belt, cutter 4 (the upper cutter)

- Loosen the protective cover at the bottom of the back of the machine.
- Loosen the belt's protective cover on the side of the machine.
- Loosen the bolts in the ends of the pipe supporting the motor.
- Then, slightly press the motor upwards and retighten the bolts before removing the belt.

⚠ **Warning! Crushing risk.**

- ❗ Never loosen the bolts when no belt is fitted.
- When the new belt is fitted, loosen the bolts and let the weight of the motor tension the belt.
- Tighten the bolts and restore the machine to its original condition.

Feeder

The feeder of the machine consists of a three-phase motor that runs the out-feed roller via a planetary gear. The planetary gear and the motor are suspended on the out-feed roller. This can cause the motor and the gear to move slightly during operation, but that is only normal. Through the out-feed roller, in the centre of the planetary gear, there is a shear pin that drives round the out-feed roller. The out-feed roller runs the other feed rollers via a chain transmission. The sprockets are secured with screws on the rollers. The chains for this transmission must not be tightened too much, as this can hinder the vertical movement of the rollers. The chains can be separated by chain locks.

Risk of a planetary gear breakdown.

- ❗ Never turn the adjustment knob of the planetary gear unless the feed motor is running.

Feed Rollers

PH 260 has five feed rollers, which feed the work pieces through the machine. Four of these rollers are of ribbed metal and the last one has a rubber coating so that the surface of the work piece will not be marked when it exits the machine.

The feed rollers are run by a separate motor with a planetary gear. The rubber roller goes into the planetary gear. On the rubber roller there is a sprocket, which on its part runs the other four feed rollers via chain transmission.

Adjusting the feed roller pressure

On each end of the feeding rollers, there is a spring mounted bearing housing. Under the bearing housing there is a spring on a threaded bar. The pressure the feed rollers apply to the work piece can be adjusted by turning the nut on the bottom of each threaded bar. Make sure the pressure is the same at both ends of the feed rollers.

Lubricate the bearing housings of the feed rollers with oil after each work session.

The rubber roller should also be adjusted so that it applies just the right pressure to the work piece. Remember that this feed roller should be set by the thickness the work piece has when leaving the cutters.

- ❗ Wood debris can accumulate under the feed rollers' spring mounted bearings. This impairs the feeding and increases the risk of the work piece being hurled out of the machine. Check these areas and, if necessary, remove the wood debris that has accumulated there.

Adjusting the feeding speed

The stepless feeding speed can be adjusted by turning the knob on the planetary gear. If the knob is turned clockwise the feeding speed is increased; if it is turned anticlockwise the feeding speed is lowered.

- ❗ Do not adjust the feeding speed if the motor of the feed rollers is not running.

The optimum feeding speed varies depending on what sort of wood you are machining, the moisture content of the wood, and what type of moulding knives you have mounted in the machine.

On the standard version of the machine the feeding speed can be adjusted from 2 m/min. to 12 m/min. As an option you can replace the motor and the planetary gear to obtain a feeding speed of 4-24 m/min. (ref. no. 7000-000-2001).

Levelling the machine table

❗ Levelling the machine table is a serious and complicated operation. Ensure that this operation is really necessary before beginning any adjustments.

The machine table is already levelled from factory, but the table can have changed its position by rough handling during transport or by the machine being subject to impact.

Indications that the machine table is not level:

1. The upper cutter cannot be adjusted so that it is parallel to the machine table (see p.14).
2. The crank for raising and lowering the table is difficult or impossible to turn.
3. The chain that connects the trapezoidal threaded bars that holds the machine table, has come off or has moved incorrectly on a sprocket.

Instructions for levelling the machine table:

- Set the both bearing housings of the upper cutter in their lowest position (see *Adjusting the upper horizontal cutter* on p.14).
- Place an absolutely level block on the machine table directly under the cutter head.
- Turn the cutter so that you can measure against the cutter head (not against the knives or the knife slots).
- If possible, turn the machine table crank until the block comes very close to the cutter. If it is impossible to raise the table, you later have to take the measurement between the table and the cutter head instead of using the block. This operation is slightly more difficult.
- Loosen the chain for the machine table by opening the chain lock (take the opportunity to clean and lubricate the chain).

- Turn each of the threaded bars until the cutter head touches the block along its entire length (alternatively, measure between the table and the cutter head). Each threaded bar has to be turned a little at a time to avoid the table getting locked due to angular misalignment. Do not use force.
 - When you are satisfied with the table adjustment, i.e. the table's lateral position, also check the table's position lengthways in the machine by measuring its height against the upper edge of machine frame, and level the table in this direction as well.
 - Make sure that all the threaded bars are easy to turn. If any of the threaded bars is difficult to turn, it is due to angular misalignment of the table. Adjust this by slightly turning the difficult bar, even if this results in the table being not completely level. This deviation is taken care of by fine-tuning the position of the *upper cutter* (see *Adjusting the upper horizontal cutter*).
 - Make sure that the table cannot be wobbled diagonally.
 - Place the chain on the sprockets and tension the chain using the chain tensioner on the out-feed side of the machine.
- ❗ When the bearing housings of the upper cutter have been adjusted, or when the take-off of the planing knives has been altered, the rotating scale has to be calibrated. Possibly, the pointer on the height scale on the front side of the machine also has to be adjusted.

Accessories

Logosol has a wide range of accessories for PH 260. The accessories are also presented in *Logosol's Moulding Knives Catalogue* and *Product Catalogue*.

In- and out-feed tables

Made of sheet steel. They follow the machine table when it is raised or lowered. See the section *In- and out-feed tables*.



Ref. no. 7500-000-1000

Castor set

Four turnable and lockable double castors. Diameter 75 mm.



Ref. no. 7500-000-1025

Chip extractor

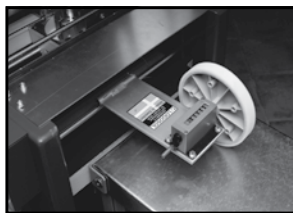
We strongly recommend that Logosol's 3 kW chip extractor with an air flow rate of 4000 m³/h is used. This chip extractor is well tried and has proven to be very reliable. You can count on getting chip handling problems if using a chip extractor that is too small.



Ref. no. 7000-000-2030

Metre counter

It is good to know when you have machined enough boards for your project, or what amount you should charge your customers. The metre counter is screwed to the frame on the back side of the machine. With its mechanical counter it continuously shows the number of machined metres starting from the latest resetting. Due to a quick coupling, the metre counter can easily be mounted and dismantled.



Ref. no. 7500-000-1040

Setting rule

The setting rule significantly facilitates the adjustment of the side fences, and it saves time when you have mounted new moulding knives in the machine. You can read about how to use the setting rule in the section *Adjusting the fences at cutter 2*.

Ref. no. 7502-001-0405

Magnetic adjuster

Well-tried equipment for quick and accurate adjustment of planing knives in the upper and lower cutter. The magnetic adjuster comes in a nice wooden box together with detailed instructions.

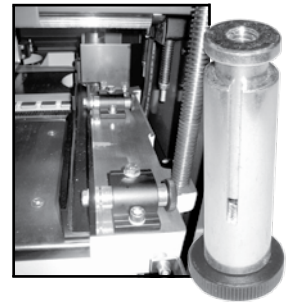


For the lower cutter: Ref. no. 7500-001-0051

For the upper cutter: Ref. no. 7500-001-0050

Micro adjustment

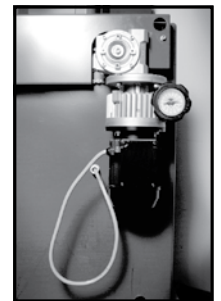
Facilitates the adjustment of the side fences. When using the micro adjustment, you first make a rough adjustment by moving the axle in its holder. After this, you fine-tune the position of the fence by turning the knob on the back of the micro adjustment. When doing this, the clamping plate holding the micro adjustment should be lightly tightened. When the fine-tuning is done, the clamping plate is firmly tightened so that the micro adjustment is fixed.



Ref. no. 7502-001-0098

Stepless feeder (4-24 m/min.)

PH 260 comes with a stepless feeder with a speed of 2-12 m/min. When planing boards to size, for instance, it can be of advantage to increase the feeding speed. To make it possible to feed up to 24 m/min. more power is required. So, to obtain this speed both the motor and the planetary gear have to be replaced. The assembly is simple.



Ref. no. 7000-000-2001

Jointer fence

With an extra-long fence in front of the stationary side cutter, your machine becomes a jointer. For jointing workpieces that are up to 90 cm (35") long.



Ref. no. 7502-001-0102

Tormek grinder

For grinding planing and moulding knives and other tools. 220 V. It comes with a 147 page hardback with good instructions. As accessories there are two jigs, one for planing knives and one for moulding knives. The jig for moulding knives, invented by Mattias Byström, Logosol, works like this: A frame that is vertically adjustable, is placed over the grindstone. The moulding knife is fitted in a magnetic holder, which is moved on the frame over the grindstone until the entire moulding knife is ground on its underside and it has a new cutting edge with unchanged profile.

Tormek grinder: Art.nr. 7010-000-1000

Jig for planing knives: Ref. no. 7010-000-1005

Jig for moulding knives: Ref. no. 7010-001-1012



Machine cleaner

Unbeatable product for cleaning wood processing machines. Particularly aggressive to resin.

Ref. no. 7500-001-5000



Low friction agent

Apply the low friction agent to the machine table and the feed tables to enhance the feeding through the machine. The low friction agent also prevents resin and chips from sticking to the table.

Ref. no. 7500-001-5050

Moisture meter

Measure the moisture level in your timber before planing it. Logosol is constantly looking for the product that offers the most for the money. Due to this, the design and price can vary.

Ref. no. 9999-000-0012



Different types of side cutter heads

PH 260 comes with cutter heads for replacable moulding knives. There are also other types of cutter heads, for example solid cutter heads. See Logosol's *Moulding Knives Catalogue*.

Different types of planing knives

PH 260 comes with solid HSS planing knives. There are also other types of planing knives, for example TCT knives. See Logosol's *Moulding Knives Catalogue*.



Line laser

Logosol can supply a line laser that facilitate the lining up of the workpiece before it is fed through the machine. The machine must then be fixed to the floor. The lser can be fitted to the ceiling in the room. Laser technology is developing rapidly. Due to this, the design of the line laser can vary. Contact Logosol to get information about current price and design.

Additional spacers for height adjusting the side cutters

No matter how many you have, it can always be good to have some more. For instance, you can save the set used for a special moulding: If you have produced a moulding on the left and the right side of a board, e.g. tongue and groove, you can keep the spacers together with the knives used for that moulding. When you are going to make the same moulding again, the setting of the cutters height is already calculated. It is a smart way to save time! Spacers for setting the height of the side cutters: 2X5 spacers of the sizes 0,1; 0,2; 0,5; 1,0 and 2,0.

Ref. no. 7502-001-0230



Maintenance

⚠ Risk of serious injury if maintenance is neglected.

PH 260 is easy to maintain since most of the machine's structure is protected against rust. All cutter bearings and motors are maintenance free. Necessary maintenance is set out below.

⚠ Ensure that the machine's power supply has been disconnected before opening the cover of the machine or removing a protective cover.

Tip: Compressed air can be very useful for blowing the machine clean each time you open the machine's cover.

When the machine is being used:

- Clean the machine from wood debris. Especially ensure that wood debris has not accumulated under the machine. This can interfere with the cooling of the motors and lead to a motor breakdown or, at worst, fire. Furthermore, the belt under cutter 4 can be slackened if wood debris accumulates under its motor.
- Make sure that all chip outlets are connected to the chip extractor.
- Make sure that all feed rollers can move vertically.
- The machine table should regularly be cleaned and treated with a lubricant, for example low-viscosity oil or wax. Logosol's Low Friction Agent (ref. no. 7500-001-5050) is especially suited for wood processing machines. Avoid getting lubricant on the feed rollers.

After each working session:

- Clean the machine from wood debris. Also check the chip outlets and the hoses. Remove wood debris that has accumulated under the machine.
- Clean the cutters and the feed rollers from resin and accumulated wood debris. Use white spirit.
- Make sure that wood debris has not accumulated behind the right side bearing housing of the upper cutter. If that is the case, clean away the debris using a flat tool, for instance a metal ruler.
- Make sure that wood debris has not accumulated in the springs under the bearing housings of the feed rollers. In that case, clean them. Sometimes the spring has to be removed from the threaded bar to be cleaned. Note the setting of the spring before removing it.
- Clean the machine table and treat it with a lubricant (see above, *When the machine is being used*).
- Clean and lubricate the three pressure rollers so that they can move easily.
- Check the tension of the belts.

- Make sure that all screws and bolts are tight.
- Make sure that all cables and connections are in good condition.
- Check the lamps by pressing down the emergency stop button and then the start button of the feeder.
- ⚠ Wood debris can accumulate under the spring mounted bearings of the feed rollers. This impairs the feeding and increases the risk of kickbacks.

Ensure that following parts are well lubricated. Preferably use chain oil ISO VG 68:

- The bearings of the feed rollers and the springs.
- The trapezoidal threaded bars (32, 19), the chain (27) and sprocket for height adjusting the table. (Also check the tension of the chain, 41.)
- The carriage (44) of the movable cutter.
- The chain transmission (51, 53, 61) of the feed rollers.
- Knives, spacers, pressure rollers and side rollers (46, 68).
- ⚠ If the movable cutter is set in the same position for a longer time (e.g. when producing long series of the same moulding) it can get rusted up. Set the cutter so that it is in its outermost and innermost position one or two times every month, and lubricate the threaded bar of the crank and the bars of the carriage.

If the machine is not being used during a long period of time:

- Disconnect the power.
- Clean the entire machine extra thoroughly, and perform the same maintenance as after each working session. DO not forget the lubrication points.
- Remove knives, chip breakers and pressure rollers. Keep these well lubricated and at room temperature.
- Cover the machine with a tarpaulin.

Other maintenance:

The out-feed roller, i.e. the rubber roller, will wear down and should be replaced when it does not work as it should due to wear and tear. Increased presence of out-feed marks on the workpiece, or boards that are not being fed out of the machine, can be signs of wear and tear on the out-feed roller.

Knives; Planing/Moulding with LOGOSOL PH 260

This section contains important information about your planer/moulder and the knives that you mount in it.

The manufacturing process of Logosol's moulding knives

Both standard and custom-made knives are manufactured with a technique that is called wire cutting. A 0.25 mm thick brass wire with pulsating high voltage is fed through the steel. It makes an exactly 0.32 mm wide cut. The accuracy is within 0.003 mm, which makes the edge of the knife really sharp. The entire knife is made in one single computer-driven process. The advantages of this are many.

1. The repeatability is 100%. All profiles become identical every time they are made. This is also the case when it comes to custom-made knives. If you want to place an order for the same profile, it will be cheaper the second time, and you will get an exact copy of the original profile.
2. It is just as easy to cut all qualities of steel. When it comes to custom-made knives, this means that you e.g. can make a prototype in alloyed tool steel and then order the same profile in TCT.
3. The edge becomes stronger than one that is made of traditionally ground steel. This is due to the fact that the temperature effect, which changes the hardening of the material, is less when wire cutting, thanks to the process being made under water.

When choosing traditional grinding, which is the most common method, you do not have these possibilities. A ground knife can, however, feel sharper when it is new. This due to the fact that in some cases the knife actually is sharper at first, but also that the edge has microscopic scratches and roughnesses. This edge will, however, lose its sharpness since the material in the top layer of the edge is damaged by the heat.

Grinding

When a knife loses its sharpness, or better, before you notice that it starts to lose its sharpness, it can be ground sharp again. You can either use a fine grindstone, a diamond grinding sheet or a Tormek grinder with moulding knife jig (ref. no. 7010-000-1000 and 7010-001-1012). This kind of grinding is a cold process and does not damage the material. The knife is ground on the flat side that lies against the chip breaker. This way the shape of the profile is not affected. Normally, a knife can be sharpened as long as 90 % of its original thickness remains.

Which knife quality should be used?

SP, tool steel, also called carbon-steel, is hardened by heating and cooling. *SP* is used when you are going to mould only a small amount of boards. It is cheap, but can lose its sharpness already after 50-300 linear metres (160-980 linear feet). Among other things, it is the heat which is produced when moulding that makes the knife dull. *SP* can stand 300°C (572°F) before it is damaged. The cheap knives that can be found in various catalogues and in hardware stores are made of tool steel and should not be compared with *HSS*.

HSS, high speed steel or cobalt steel. In most cases, this is the quality of steel that we recommend. It is about twice as expensive as *SP* but, on the other hand, it keeps its sharpness for at least 2000 linear metres (6560 linear feet), which makes it cheaper in the long run. *HSS* can stand 700°C (1292°F) without being damaged.

TCT, tungsten carbide, also called *HW*, cormant and carbide, is the most durable type of knife. The hardness of the tungsten carbide makes it brittle like glass, and it has to be handled with care. Always place the knives on a soft bedding. *TCT* costs three times more than *HSS*, but it stays sharp for upto 10 000-20 000 linear metres (32 800-65 600 linear feet). *TCT* can stand 1000°C (1832°F) without being damaged. Tungsten carbide can only be sharpened with wire cutting, i.e. by the same method they were originally made, or with mechanical diamond grinding.

Some special cases:

Pine: Use *HSS* eller *SP*.

Hardwood: Use *HSS* or *TCT*.

MDF board: Use *TCT*.

Teak: Use *TCT*.

HSS 6% and 18%

HSS is available in two types of qualities. Traditionally, knives consisting of 6 % tungsten carbide have been used for wood processing, and knives consisting of 18 % for metal processing. The trend goes towards having 18 % of tungsten carbide in all cutting *HSS* tools. Logosol has for a long time used planing knives consisting of 18 % tungsten carbide and, due to customers asking for this, we are gradually changing to 18 % in the side cutter knives too. We have for a long time been opposed to this, since it does not have a significant effect on the durability of the edge, on the contrary it makes the knives more brittle. When mouldings with deep profiles are being made, it can be necessary to make the knives 5.5 mm thick instead of 4.4 mm. The harder knives are also harder to grind by hand. However, when processing hardwood an increased life of the knife can be noticed due to the fact that the knife stands higher temperatures. In certain contexts the two qualities are called *M2* and *M4*, where the latter is the harder material.

Fragile knife profiles

The longer and thinner protrusion of the knife, the more careful you have to be when using it. It is not sure that all knife profiles can stand the same feeding speed. Be extra careful when machining hardwood or wood with a lot of knots. Use common sense, but as a rule of thumb the knife is very fragile if the depth of the cut is twice as much as the width of it (e.g. a 10 mm wide groove that is 20 mm deep). In this case you have to handle the knife with care so that it does not break. A depth of cut that is of the same measurement as the width should be handled with a certain degree of care, and knives with a cutting depth that is less than half of the width it cuts (e.g. a 10 mm wide groove that is 5 mm deep) can stand rather hard treatment. If you design your own knife profiles using Logosol's form for custom-made moulding knives, you have to consider the vertical position of the knife pattern in order to make the knife as strong as possible. N.B. Dull knives increase the risk of the knives breaking and by that also the risk of personal injuries!

Grind the knife before it becomes dull

If you grind the knife before it becomes dull the grinding gets easier. Otherwise the edge can be damaged by, among other things, the heat. If you notice that the knife is dull (one indication is that the quality of the cut degrades) you must stop the work immediately. The side cutter knives and the knives in the lower cutter most often wear down quickest on the point where they go over the edge of the unprocessed, often dirty surface. Generally, the upper cutter knives are spared the longest, since the sides of the board are already machined when the board reaches the upper cutter.

Pattern protrusion

Maximum protrusion of the side cutter knives:

SP, 4 mm thick:	17 mm
HSS 4 mm thick:	21 mm
TCT 4 mm thick:	11 mm
SP 5.5 mm thick:	25 mm
HSS 5.5 mm thick:	25 mm
TCT 5.5 mm thick:	21 mm

TCT 1 mm thick + holder 3 mm: 11 mm

Maximum pattern protrusion in the upper cutter PH 260:
10 mm

Maximum pattern protrusion in the lower cutter PH 260:
5 alternatively 10 mm

Mounting moulding knives

Keep the knives and the cutter heads absolutely clean. The slightest presence of wood debris or resin that get into contact with the knife when it is being mounted can cause the knife to break. The surfaces must be completely plane against the knife. If a knife breaks there is a great risk that the cutter head is damaged. The slightest unevenness on the cutter or the surface of the chip breaker means that this component must be replaced.

Side cutter heads

Logosol's planer/moulders have a 30 mm axle in the side cutter heads. This is a standard dimension, which makes it possible to use a great selection of cutter heads in the machines (max. Φ 140 mm, max. height 120 mm).

The TB90 cutter is available with two or four knives. Standard knives are available in the heights of 40, 50 or 60 mm. You can place a second cutter head on top of the first in order to obtain a height of max. 120 mm. Logosol offers a wide range of standard knives, and custom-made knives can be ordered.

A cutter head and serrated back knives in HSS or TCT are available in optional heights. Maximum height is 120 mm.

Logosol also has solid cutter heads (in HSS or TCT), suitable for producing different combinations of, for instance, tongued and grooved boards using only a few cutters, or for obtaining a deeper cut than what is possible with the TB90. Solid cutter heads should also be used when high precision is required.

Upper and lower cutter

Logosol's planer/moulders come with HSS planing knives in the upper and lower cutter (410 resp. 300 mm). These are also available in TCT.

The lower and upper cutterhead can also be equipped with holders for replaceable thinner knives, called reversible cutters, made of HSS or TCT.

Moulding knives can be mounted in the upper and lower cutter together with the planing knives, which enables the machine to plan and mould in one single operation. There are a wide selection of 40-130 mm moulding knives that can be combined to produce the moulding you desire. Custom-made knives can be ordered.

Pressure marks

Sometimes light spots can appear on the machined surface. These are pressure marks caused by wood debris around the edge of the knife. The wood debris is then pressed between the machined board and the back of the edge. This depends on what sort of wood you are machining, but it can also be due to the chip extractor of the upper cutter having too low capacity. (Some have reached good results by mounting a nozzle blowing compressed air along the back of the cutter.)

Planing and moulding

A planer/moulder is not a jointer, it only dimensions and moulds the workpiece. For this reason, the cutting parts in the machine should be as close to each other as possible to avoid jointing operation. Panelling and other mouldings are normally not machined in a jointer.

A jointer makes the sides of the workpiece straight, but does not dimension it. A jointer has long tables that guide the workpiece straight over the cutter. After that the board has to be run through a planer, dimensioning planer or a moulder to get the correct width and height. Usually, only shorter work pieces are machined in jointers, workpieces that will be used for cabinet-making or producing windows, for instance.

These two types of machines should not be confused with each other. They each have their own functions.

Wood

Wood shrinks when drying. Most of the shrinkage happens when the wood is drying from 25% moisture content to 10%. To get a fine surface you should not plane timber that has more moisture content than 20%, and that is about as dry wood can get when drying outdoors. Preferably, the timber should be kept indoors before it is machined.

Along the board, in the direction of the fibres, the wood shrinks very little. In most cases you do not have to take this shrinkage into consideration. Along the annual growth rings the wood shrinks about 8% and across the rings about 5%. Consequently, it is better to have standing annual growth rings in the boards.

In the course of time, boards warp and crack. To avoid such problems as far as possible the timber should, in most cases, be turned so that the heartwood side is facing outwards.

When making vertical siding, you should let the heartwood side of the outer boards face outwards and the inner boards should be turned the opposite way in order to make the wall as tight and close as possible.

The result

Hard materials gets a better surface than soft. Small indentations that look like light blotches, are caused by wood debris surrounding the edge that is then pressed down in the wood. This phenomenon increases when the knives lose their sharpness.

Visible lines from the cutter strokes in the machined timber are most often due to the knives not being set at the same height or to the workpiece not being pressed hard enough against the table or the fence when it is being processed. If the feeding speed is too high it can also lead to visible cutter strokes.

Keep the feed rollers clean from wood debris. The out-feed roller is especially important, since wood debris on this roller can make marks in the planed surface of the workpiece.

Boards that are too warped should be run through a jointer or be dimension planed in the PH260, the DH410 or the SH230 before the final machining.

How do you know the material of the knife?

If you want to test a knife, you can hold it against a rotating grinding disc for a short while. If the sparks it produces are white, the material of the knife is soft. If the sparks are red, the material is hard. Compare it to a material you are sure of, for instance a Logosol HSS knife.

The angle of the edge

Logosol's knives have a 38 degrees angle and are angled 20 degrees in the cutter heads. Some claim that a sharper angle is more suited for hardwood. This cannot, however, be considered as proved. On the contrary, a sharper angle of the edge gives a worse surface on the workpiece.

Planing/moulding tips

- You can experiment yourself by adjusting the pressure of the feed rollers. If you lower the machine table you can easily access the nuts that supports the springs. Note the original setting before you start screwing the nuts, so that you can later find back to that setting. Normally, the springs should be tightened harder on the side of the stationary cutter, especially when thin workpieces are to be machined. The feed roller should be parallel to the workpiece, and not press one side down more than the other.
- Never run the machine without starting the chip extractor. Chips accumulate quickly in outlets and hoses. Always adjust all chip deflectors. Otherwise the entire machine will be filled with chips and you will get a degraded result.
- If you have a board that is cut incorrectly into size, or if you for any other reason want to plane away a lot of wood, you set the machine so that it only takes away as much as it can handle. Run the board several times through the machine until you can set the machine to the correct board dimension. This technique cannot be used when moulding knives are mounted in the upper and the lower cutter.
- Try to avoid machining timber that is too warped; planing it will not make it much straighter. However, planing warped timber usually present no problems.
- A certain degree of jointing operation is reached if the first feed roller is set so that its pressure is somewhat lower than the pressure of the feed roller behind cutter 1. The board must then be positioned so that the convex side is turned upwards.
- If the knives in the upper cutter protrude too much, the last feed roller will not take hold of the workpiece. Recommended protrusion is 1 mm.
- The machine emits a lot of wood debris. If you want to blow the wood debris out of a heated room, build a chip pocket so that you can recycle the warm air. Otherwise the room will quickly become cold.

- Be careful when adjusting the side fences. The back fence is to be level with the outermost cutting diameter of the cutter. The two fences should be parallel with each other and set so that the board is fed slightly diagonally (totally about 5 mm towards the left) through the machine. By this the feed rollers will press the board against the fences.
- If you are going to produce a large amount of a moulding there is an additional locking screw to secure cutter 3. The locking screw is recessed in a hole on the top of the carriage.
- Use in- and out-feed tables. Ensure that they are mounted exactly at the same height as the machine table. Set the out-feed table so that it slants upwards a couple of degrees. By this the board will be pressed down against the table when reaching the last cutter, which reduces the risk of out-feed marks.
- Reduce the air flow in the chip hose at cutter 2 when this cutter is to take off little wood from the work piece. This will increase the air flow at the other cutters.
- If you want to keep a roughly sawn surface on one side of the board, e.g. when making outdoor siding that is to be painted, you let that side face the machine table and do not start the lower cutter.
- If you want to produce thinner three-sided mouldings than the machine is designed to make, you can place a flat board on the machine table which will make the workpiece come in a higher position in the machine.
- Sometimes, it can be advantageous if the board is placed on its edge when being machined, for instance when you want an extra fine surface or when you want to have deeper cuts than the lower cutter can make. In that case, you should make extra high guides, preferably with ball bearings, that are screwed to the cast iron table or the fences to keep the workpiece in position when machining it.
- The pressure springs of the feed rollers are to be set so that the feed rollers balance on the workpiece. If the feed rollers lie diagonally over the workpiece they can pull askew and, in addition, the grooves in the rollers will make deep marks in the workpiece. Balancing the feed rollers is extra important when thin workpieces are machined. When changing from the 2-12 m/min. feeder to the 4-24 m/min. feeder, the pressure of the last feed roller has to be adjusted due to the weight of the planetary gear.
- Knives for the lower cutter (300 mm) may well be used in the upper cutter too. They are cheaper and you can exchange knives between the upper and the lower cutter.

Saving a moulding pattern

If you have produced a moulding that you know you will produce in the future, it can be wise to take some measures before removing the mounted knives. This will ensure that you can quickly set the machine for making the same moulding again.

1. Save a 0.5 (1.6 ft) long piece of the machined moulding.
2. Keep the spacers you have used together with the knives for the right and the left side cutter respectively.
3. Note the setting of the height scale of the table and the rotating scale on the height adjusting crank, i.e. exactly note to what height the machine table is set. Also measure the machined moulding. Note the measurements of the saved piece of moulding.

Quick mounting:

1. Mount the moulding knives and the spacers on the side cutters.
2. Adjust the side fences using the setting rule.
3. Place the saved piece of moulding in the machine and set the side cutter against the moulding.
4. Make sure the moulding piece lies against the side fence, and push it in under the upper cutter. Raise the machine table so that the planing knives touch the moulding piece. Insert the moulding knives in the upper cutter and adjust them laterally so that they fit in the moulding pattern.
5. Fine-tune the height of the machine table by setting the rotating scale according to the notes you have made.

Troubleshooting

The troubleshooting table is divided into two categories:

1. The results of the machine
2. Mechanical or electrical problems

1. PROBLEMS WITH RESULTS OF THE MACHINE

Problem	Possible Cause	Remedy
In- and out-feed marks.	<ol style="list-style-type: none"> 1. Incorrectly adjusted in- and out-feed tables. 2. The workpieces are not butted when being fed into the machine. 3. The feeding pressure of the feed rollers is incorrectly adjusted. 4. The workpiece is bent or warped. 5. There is play in the suspension of the machine table. 	<ol style="list-style-type: none"> 1. Adjust the in- and out-feed tables so that they are set to the same height as the machine table. The tables must also be in line with the machine table or somewhat higher at the outer ends. (see p.11). 2. Butt the workpieces end to end when feeding them into the machine. This will eliminate the variations of the feeding pressure that can occur the moment the feed rollers grab the workpiece. 3. Make sure that the feeding pressure is sufficient and that the rollers are balancing horizontally over the workpiece. (See p.21) 4. Slightly lift the back end of the workpiece when it is being fed into the machine. This will make it possible for the feed rollers to press the workpiece flat against the machine table. 5. By using little force, check if the machine table can be wobbled in any direction. If this is the case, read <i>Levelling the machine table</i> (p.22).
The entire surface is fuzzy.	<ol style="list-style-type: none"> 1. The workpiece has high moisture content. 2. The knives have lost their sharpness. 	<ol style="list-style-type: none"> 1. Dry the timber before machining it. 2. Grind the knives. It is especially important that the knives are sharp when soft or moist wood is being machined.
Fuzzy surface around knots, where the direction of the fibres can vary.	<ol style="list-style-type: none"> 1. The workpiece has high moisture content. 2. The knives have lost their sharpness. 3. The workpiece is of a too soft sort of wood. 	<ol style="list-style-type: none"> 1. Dry the timber before machining it. 2. Grind the knives. It is especially important that the knives are sharp when soft or moist wood is being machined. 3. Choose another material, or sand the workpiece after it has been machined.
The thickness of the board does not correspond to the setting of the scale.	<ol style="list-style-type: none"> 1. The takeoff of the knives in the upper cutter are set incorrectly. 2. The pointer of the height scale is set incorrectly. 	<ol style="list-style-type: none"> 1. Set the takeoff of the planing knives to 1 mm, using Logosol's setting block (ref. no. 7500-000-1020) or a magnetic adjuster for the upper cutter (ref. no. 7500-001-0050). 2. Machine a test board, measure it and set the pointer to this measurement. Fine-tuning of measurements should always be done using the rotating scale of the height-adjusting crank, which can easily be reset. The scale shows 1 mm every quarter of a turn.

Problem	Possible Cause	Remedy
The edges of the molding knives are visible in the machined moulding profile.	<ol style="list-style-type: none"> 1. The planing knives do not cut away enough wood. 2. The moulding knives are ground incorrectly. 	<ol style="list-style-type: none"> 1. Set the takeoff of the planing knives to 1 mm (or, if necessary, some tenth of a millimetre more) using Logosol's setting block (ref. no. 7500-000-1020) or a magnetic adjuster for the upper cutter (ref. no. 7500-001-0050). 2. Regrind the moulding knives so that their edges do not protrude over the level of the planing knives, or use adjustable, short knife clamping gibs (ref. no. 7000-000-9506) to adjust the moulding knives correctly.
The planing knives cut away the highest points of the moulding pattern.	<ol style="list-style-type: none"> 1. The planing knives cut away too much wood. 2. The moulding knives are ground incorrectly. 	<ol style="list-style-type: none"> 1. Set the takeoff of the planing knives to 1 mm (or some tenth of a millimetre less) using Logosol's setting block (ref. no. 7500-000-1020) or a magnetic adjuster for the upper cutter (ref. no. 7500-001-0050). 2. Use adjustable short knife clamping gibs (ref. no. 7000-000-9506) to adjust the moulding knives correctly.
The width of the machined board differs.	<ol style="list-style-type: none"> 1. The workpiece moves away from the side fences. 2. The locking handle of the movable cutter has not been tightened. 3. The pressure rollers are set incorrectly. 4. The spring mechanism of the pressure rollers is stiff. 5. The workpiece is too small for the measurement the machine is set to. 6. The stationary side cutter cuts away too much wood. 	<ol style="list-style-type: none"> 1. The right-side fences are set incorrectly. Adjust them according to the instructions on p.18. 2. Pull the handle tight before planing/ moulding. 3. Adjust the L bracket on which the first two pressure rollers are mounted and also adjust the pressure roller behind cutter 3. (See p.19.) 4. Clean and lubricate the spring mechanisms of the three pressure rollers. 5. Choose a wider workpiece or set the machine to less width. 6. Decrease the feeding speed or the takeoff of the stationary cutter.
The surface of the workpiece's right side is below par.	<ol style="list-style-type: none"> 1. The locking handle of the movable side cutter has not been tightened. 	<ol style="list-style-type: none"> 1. Pull the handle tight before planing/ moulding.
Splinters are being battered out of the workpiece when it reaches the movable side cutter.	<ol style="list-style-type: none"> 1. Too much takeoff. 2. The chip deflector is incorrectly mounted. 	<ol style="list-style-type: none"> 1. Plane the workpiece into size before the final machining. 2. Mount the chip deflector so that it presses against the workpiece in front of the cutter (see p.19).

2. MECHANICAL OR ELECTRICAL PROBLEMS

Problem	Possible Cause	Remedy
None of the motors can be started.	<ol style="list-style-type: none"> 1. The cover is not entirely closed. 2. The emergency stop button is pressed down. 3. No power is supplied to the machine. 4. One of the motors is overheated. 5. Fault in the electrical system of the machine. 6. A fuse has blown in the electric box of the machine. 7. Wood debris has accumulated in the cover's safety switch. 	<ol style="list-style-type: none"> 1. Firmly tighten the locking knob on the cover. You can hear a soft click when the safety switch is activated. 2. Reset the emergency stop button by pulling it outwards. 3. Check the residual circuit breaker and the fuses in the building. Also check the connecting cable. 4. Wait until the overheating protection of the motor automatically resets (see the point <i>The motor is overheating</i>). 5. The electrical system may only be opened by a qualified electrician: First of all, check the safety hold circuit. This circuit includes, among other things, the emergency stop button and the overheating protections in the connection block on each motor. 6. The machine has one or two automatic fuses. Reset the fuse that has blown. If the problem recurs, let a qualified electrician find the cause of the problem and, if necessary, replace the fuse. 7. The electrical system may only be opened by a qualified electrician: Open and clean the safety switch from wood debris.
The workpiece is fed poorly or not at all through the machine.	<ol style="list-style-type: none"> 1. The shear pin in the out-feed roller is broken. 2. Wood debris and resin have accumulated in the grooves of the feed rollers and on the out-feed roller. 3. The pressure of the feed rollers is too low. 4. The vertical movement of the feed rollers is obstructed by wood debris that has got stuck in the vertically movable bearing housings of the feed rollers or in the springs under these. 5. Wood debris has accumulated around the upper cutter. 6. The machine table is covered with resin or rust. 7. The sliding strips under the feed rollers are defect. 8. One (or several) of the sprockets in the chain transmission of the feeder has come loose from the shaft. 	<ol style="list-style-type: none"> 1. Remove the planetary gear and replace the broken shear pin. 2. Clean the feed rollers with Logosol's Machine Cleaner (ref. no. 7500-001-5000). 3. Increase the feeding pressure and make sure the feed rollers are balancing horizontally over the workpiece. (See p.21.) 4. Clean the bearing housings of the feed rollers, especially check the movable part of the bearing housing. Remove wood debris that has got stuck in the springs of the feed rollers. 5. Remove the wood debris and increase the air flow in the chip extractor of the upper cutter. 6. Clean the table with Logosol's Machine Cleaner (ref. no. 7500-001-5000) and lubricate it with Logosol's Low Friction Agent (ref. no. 7500-001-5050). 7. Replace the sliding strips and fasten the new ones with double coated tape, if necessary in several layers, so that the the sliding strips are about 0.5 mm above the surface of the machine table. 8. Check the locking screws of the sprockets and tighten them against the flat part of the shaft.

Problem	Possible Cause	Remedy
The upper cutter rotates a long time after the machine has been shut off (the deceleration should be max. 10 seconds).	<ol style="list-style-type: none"> 1. The fuse on the brake card has blown. 2. The brake card is defect. 	<ol style="list-style-type: none"> 1. Replace the glass fuse on the card. 2. Replace the defect brake card. On the new brake card there is a potentiometer that has to be adjusted (about 1/4 turn from 0).
One of the motors will not start.	<ol style="list-style-type: none"> 1. Defect contactor. 2. Defect motor. 3. A cable to the contactor or to the motor is loose. 	<ol style="list-style-type: none"> 1. The electrical system may only be opened by a qualified electrician: Replace the defect contactor. 2. The electrical system may only be opened by a qualified electrician: Replace the defect motor. 3. The electrical system may only be opened by a qualified electrician: Ensure that all cables are correctly connected.
The workpiece is fed jerkily through the machine.	<ol style="list-style-type: none"> 1. The machine table is covered with resin or rust. 2. One of the feed rollers has been bent. 	<ol style="list-style-type: none"> 1. Clean the table with Logosol's Machine Cleaner (ref. no. 7500-001-5000) and lubricate it with Logosol's Low Friction Agent (ref. no. 7500-001-5050). 2. Replace the bent feed roller.
The machine runs for a while but then stops.	<ol style="list-style-type: none"> 1. One of the motors, in most cases the motor of the upper cutter, gets overheated. 	<ol style="list-style-type: none"> 1. See the point <i>The motor gets overheated</i>.
The motor gets overheated.	<ol style="list-style-type: none"> 1. Wood debris has accumulated in the chassis of the machine or around the cooling fans of the motors. 2. Dull knives. 3. Too low voltage in the power supply. 4. Loose or bad connection in the power supply to the machine or in the electrical system of the machine. 5. The upper cutter removes too much wood. 6. The feeding speed is too high. 	<ol style="list-style-type: none"> 1. Make sure that wood debris has not accumulated in the machine, and that the cooling fans of the motors have free flow. If the motors are kept clean they will be cooled more efficiently. 2. Grind or replace the knives. 3. The electrical system may only be opened by a qualified electrician: Check that you have the correct voltage on all phases. 4. The electrical system may only be opened by a qualified electrician: First of all, check that the connecting cable has the correct current and voltage during operation. Also check that all wires are correctly connected in the electrical system and motors of the machine. 5. If the workpiece is too wide, of a hard sort of wood or of varying oversizes: plane it into size before the final machining. 6. Decrease the feeding speed.
Play in the adjusting crank of the movable side cutter.	<ol style="list-style-type: none"> 1. The bronze bearing in the bearing housing of the crank is defect. One reason for this can be that the crank has been turned when the locking handle of the carriage is tightened. 	<ol style="list-style-type: none"> 1. Replace the bronze bearing and remember to open the locking handle under the table before adjusting the side cutter.
Vibration or rumble in the side cutter.	<ol style="list-style-type: none"> 1. The moulding knives are incorrectly mounted. 2. The moulding knives are incorrectly ground. 3. Defect bearing. 4. The spindle shaft has been bent due to overloading. 5. The belt transmission is defect. 	<ol style="list-style-type: none"> 1. Demount the cutter head, and clean and mount the knives and the chip breakers correctly. Identical knives should be mounted on opposite sides of the cutter. 2. Grind the knives in pairs so that they are identical on the opposite sides of the cutter. 3. Replace the bearing. 4. Replace the spindle shaft. 5. Clean the belt pulleys and replace the Poly V belt.

Problem	Possible Cause	Remedy
Rumbling or vibration in the upper or the lower cutter.	<ol style="list-style-type: none"> 1. The moulding knives are incorrectly mounted. 2. The moulding knives or the planing knives are incorrectly ground. 3. The bearing is defect. This can be due to wood debris that has accumulated on the back of the bearing housing, which leads to overheating. 4. The belt transmission is defect. 	<ol style="list-style-type: none"> 1. Clean the cutter and mount the knives and the chip breakers correctly. Identical knives should be mounted on opposite sides of the cutter without any, or with only slightly horizontal deviation. 2. Grind the knives in pairs so that they are identical on opposite sides of the cutter. 3. Clean the bearing housing and replace the ball bearing. 4. Clean the belt pulleys and replace the Poly V belt.
It is difficult to adjust the height of the machine table.	<ol style="list-style-type: none"> 1. The trapezoidal thread bars, on which the table is suspended, are dirty and not lubricated. 2. Faulty chain transmission. 3. The machine has been subject to impact which has spoiled the setting of the table. 	<ol style="list-style-type: none"> 1. Clean and lubricate the trapezoidal thread bars with oil. 2. Make sure that the chain runs correctly on the sprockets. Clean and lubricate the chain. 3. Adjust the table. (See <i>Levelling the machine table</i> p.22.)

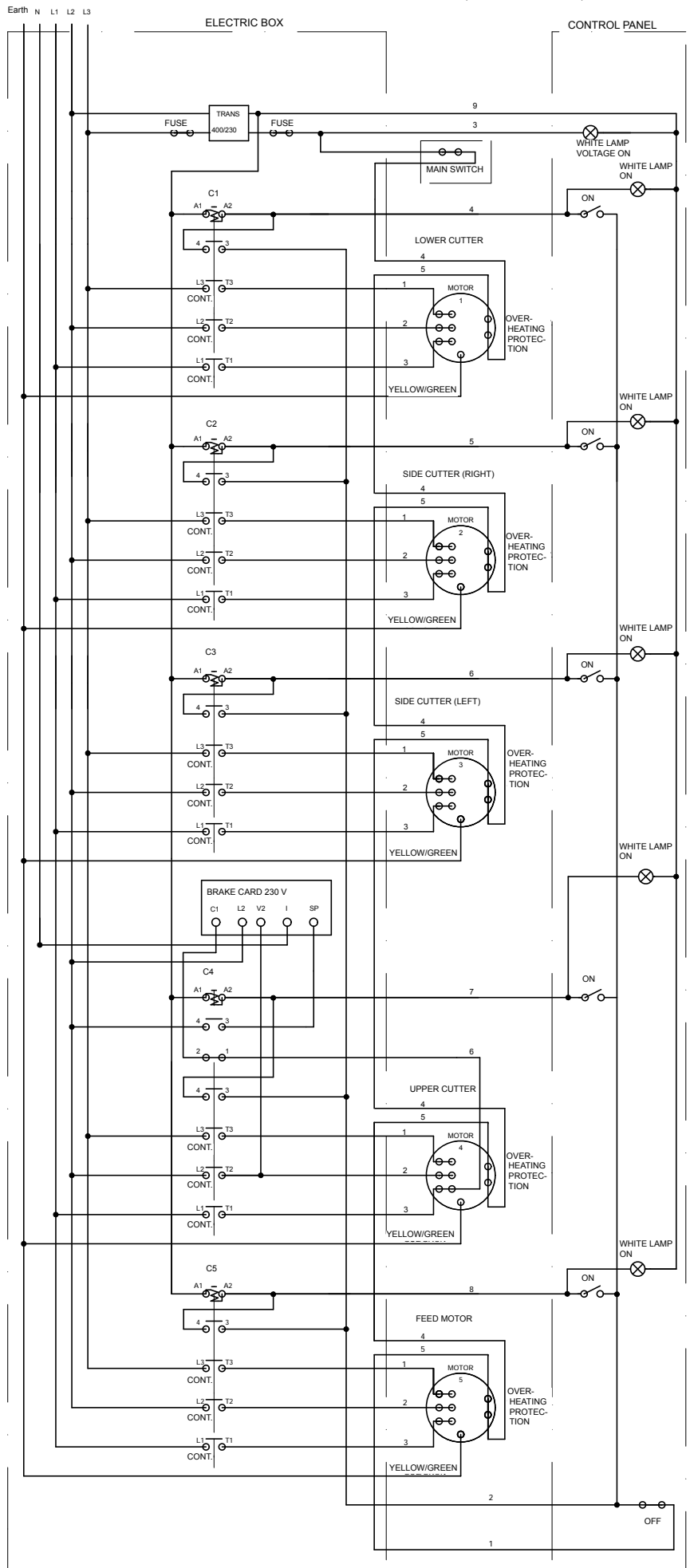
Circuit diagram 400 V 3-phase

CIRCUIT DIAGRAM PLANER/MOULDER, 240 V 3-PHASE, NO 424-

⚠ Lethal voltage! Faulty connection can result in a fatal accident.

⚠ Note that only qualified electricians are authorized to open/access the electrical equipment.

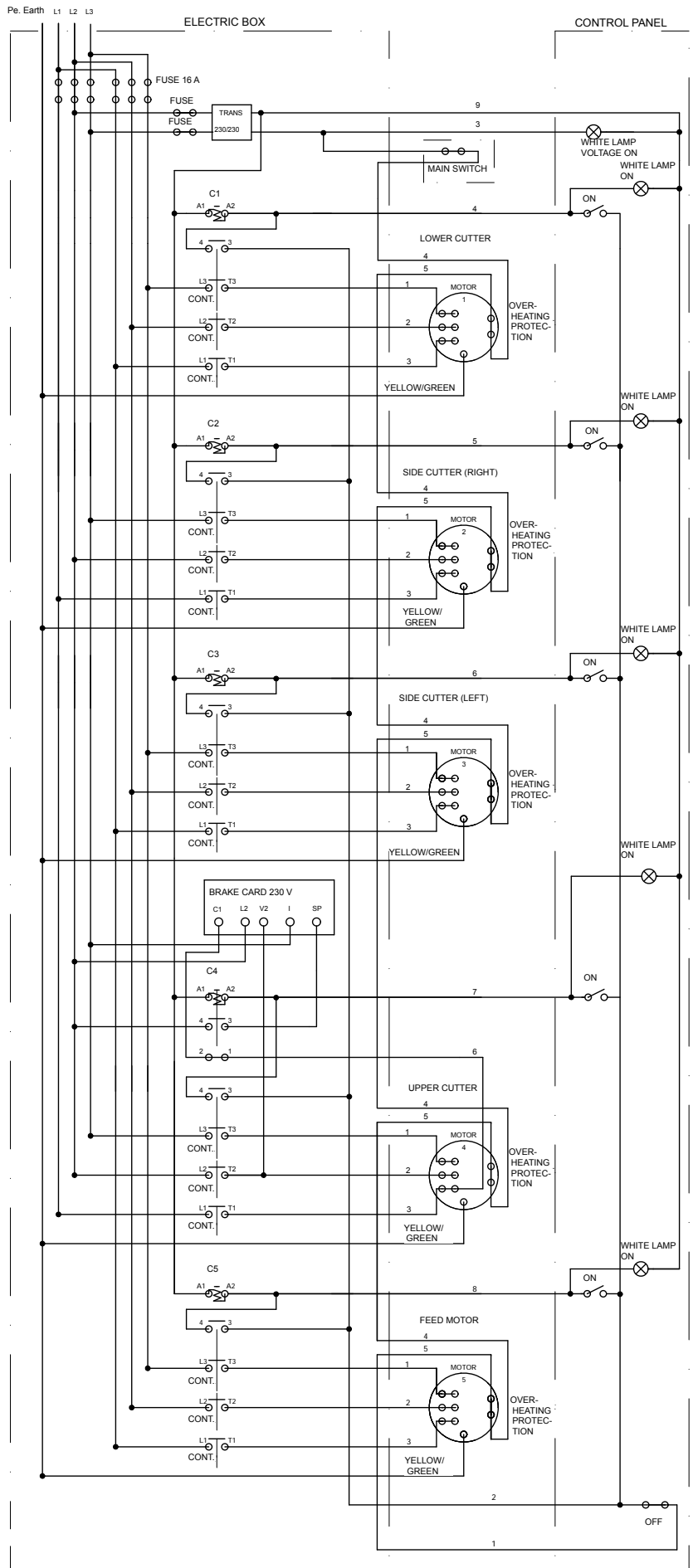
⚠ Ensure that the power is disconnected before opening the electrical system.



Circuit Diagram 230 V 3-phase

CIRCUIT DIAGRAM PLANER/MOULDER, 230 V 3-PHASE, NO 424-

- ⚠ Lethal voltage! Faulty connection can result in a fatal accident.
- ⚠ Note that only qualified electricians are authorized to open/access the electrical equipment.
- ⚠ Ensure that the power is disconnected before opening the electrical system.



Total continuous output 12.4 kW
 Rated input 32 Amp (at 32 Amp the maximum output cannot be drawn from all motors simultaneously).
 The power supply must be connected to a safety cut-out.

Technical data

Dimensions and weight

Length	1170 mm (46")
Height	1200 mm (47")
Width	850 mm (33.5")
Weight	350 kg (772 lb)

Timber dimensions

Moulder

Max. width	260 mm (10")
Height	10 to 80 mm (0.4" to 3")

Planer

Max. width x height	410 x 230 mm (16" x 9")
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Cutter 1, horizontal lower cutter

Diameter	72 mm (3")
Width	300 mm (12")
Continuous output	3 kW
Speed of rotation	6000 rpm
Chip thickness	4 mm
Max. knife pattern protrusion	4+15 mm

Cutter 2 and 3, vertical cutters

Spindle diameter	30 mm (1")
Max. cutter height*	80 mm (3")
Max. cutter diameter	140 mm (5.5")
Continuous output	3 kW
Speed of rotation	6000 rpm
Chip thickness approx.:	30 mm

Cutter 4, horizontal upper cutter

Diameter	72 mm (3")
Width	410 mm (16")
Continuous output	3,0 kW
Speed of rotation	6000 rpm
Chip thickness approx.:	10 mm
Max. knife pattern protrusion	10+10 mm

*With certain limitations 100mm (4").

Feeder

5 rollers run by a 0.18 kW motor via a chain transmission with the speed of approx. 6 m/min. (20 ft/min.).

As an accessory Logosol offers a planetary gear that makes it possible to adjust the feeding speed steplessly.

Standard equipment

2 knives for each horizontal cutter.
2 vertical cutters with 50 mm planing knives.
Tools for adjusting the knives and cutters.

Electrical system

CCA 16A 400V 50Hz 3-phase (alt. 230V 3-phase 25A)
Coupled enclosure, degree of protection IP54.
Thermal cut-out on each motor.
0-tension release.
Protective cover equipped with safety switch.

Sound levels

Empty machine, 73.2 dB(A), in operation 99.6 dB(A).
Addition for measuring accuracy K=4 dB(A). Values measured in workshop environment.



Declaration of conformity

Machine Directive 89/392/EEG

Amendment 2, section A

AFS 1994:48, Amendment 2, section A

The manufacturer, MOReTENs AB, M10, Lungviksvägen 147, S-831 52 ÖSTERSUND, hereby declares that the planer/moulder Logosol PH260 is manufactured in accordance with AFS 1994:48 Machines and Other Technical Contrivances, or corresponding national directives in other countries within EES that corresponds to the Machinery Directive: (89/392/EEG with the amendments 91/44/EEG, 91/368/EEG and 93/68/EEG).

The manufacturer also declares that Logosol PH260 is manufactured in accordance with (parts of) the following harmonized standards: EN 292-2

Östersund 1997

Bo Mårtensson, MD

 **LOGOSOL**
Swedish wood processing products

LOGOSOL Sverige

Industrigatan 13 SE-871 53 HÄRNÖSAND
Telefon: 0611-182 85 Telefax: 0611-182 89

LOGOSOL Norge

Nedre-Steinstan, Röra NO-7670 Inderoy
Telefon: 741 55 251 Telefax: 741 54 712

LOGOSOL USA

116 Solleftea Drive Madison MS 391 30
Phone: 601-856 18 89 Fax: 601-856 95 35

LOGOSOL GmbH Deutschland

Mack Strasse 12 DE-88348 Bad Saulgau
Tel: 07581-506460 Fax: 07581-506462

LOGOSOL UK

The Sawmill Abbey St. Bathans
Duns Berwickshire TD11 3TX
Phone 01361-840251 Fax: 01361-840389

info@logosol.se

<http://www.logosol.se>