

Operating Instruction Manual

Profile Cutterheads with Serrated Knives



These operating instructions are part of your product and are intended for all persons who perform work with this tool. They must be read and understood before the initial operation of the tool and must always be stored in an accessible manner.

Always use original spare parts from OERTLI Werkzeuge AG.



Translation of the original instructions

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1. Description

The profile cutterhead with serrated knives has two clamping systems (MAN and MEC) for profile knives which allows the user to cut various wood profiles using the same tool body. The profiled limitors allow a smooth kickback-free operation when working with manual feed (MAN). The knives are clamped firm and secure.

1.1. Appropriate Application

Profile cutterheads with serrated knives are used exclusively for wood-cutting applications such as profiling under consideration of suitable operating conditions.

Materials to be cut are:

- Softwoods
- Hardwoods
- Exotic woods

Place and mode of application:

- Woodworking machinery
- NOT for combined planing- and pre-planing machines
- primarily for profile applications
- Feed systems: Manual feed or Mechanical feed, according to tool inscription
- Speed range (RPM), respectively max. speed according to tool inscription

1.2. Design variants

1.2.1. Hydro Clamping

Profile cutterheads with serrated knives may be equipped with an Hydro clamping system. The system can be directly integrated into the tool body or it is achieved by a separate Hydro clamping sleeve. Please refer to the separate instruction manual for Hydro clamping.

1.2.2. Knife

The knives are only available in one quality:

- HS (high alloy high speed steel)

Different knives are used for MAN or MEC design as follow:

Knives for MAN have on the underside a step which allows only one clamping position. A radial displacement is not possible with this design.

Knives for MEC do not have a step on the underside thereby allowing multiple radial displacement up to the minimum clamping length of 15 mm (see Fig. 3).

The maximum allowable profile depth for both systems is 35 mm.

1.2.3. Knife width

Knife lengths are available from 30 to 310 mm.

1.2.4. Standard design without Hydro clamping system

Cutting diameter [mm]	Bore diameter [mm]	Width [mm]	Number of teeth	Type of feed
122	40	60	4	MEC
122	40	80	4	MEC
122	40	100	4	MEC
122	40	130	4	MEC
122	40	150	4	MEC
122	40	180	4	MEC
122	40	230	4	MEC
130	40	80	2	MAN
130	40	100	2	MAN
130	40	130	2	MAN
137	50	60	4	MEC
137	50	80	4	MEC
137	50	100	4	MEC
137	50	130	4	MEC
137	50	150	4	MEC
137	50	180	4	MEC
137	50	230	4	MEC

1.2.5. Standard design with integrated Hydro clamping system

Cutting diameter [mm]	Bore diameter [mm]	Width [mm]	Number of teeth	Type of feed
137	40	60	4	MEC

Cutting diameter [mm]	Bore diameter [mm]	Width [mm]	Number of teeth	Type of feed
137	40	80	4	MEC
137	40	100	4	MEC
137	40	130	4	MEC
137	40	150	4	MEC
137	40	180	4	MEC
150	50	60	4 / 6	MEC
150	50	80	4 / 6	MEC
150	50	100	4 / 6	MEC
150	50	130	4 / 6	MEC
150	50	150	4 / 6	MEC
150	50	180	4 / 6	MEC
150	50	230	4 / 6	MEC
150	50	260	4 / 6	MEC
150	50	310	4 / 6	MEC

1.2.6. Special versions

Further variants for the diameter range from 122 to 150 mm and a cutting length up to 325 mm are possible.

1.2.7. Chip limiter

Limitors on MAN-Tools are like reflected profile knives, but with a difference of maximum 1.1 mm below the profile contour.

1.2.8. Blank pieces

In order to mount small profile knives into a large cutterhead, it is necessary to mount blank pieces into the not used part of the knife seat. With such blank pieces the knife seat can be filled-up to the original width. All screws in the knife seat must be tightened to the required tightening torque.

For the profile cutterhead with mechanical feed (MEC) having four or six knife grooves, it is possible to mount only two profile knives. The unused knife seats must however be filled-up with blank pieces and tightened with the required tightening torque.

1.3. General warranty conditions

The warranty services only include the repair or replacement of defective tools and clamp-

ing devices made by OERTLI that are subject to manufacturing or material faults. The warranty period starts with the date of purchase and is specified in the general conditions of business.

2. Security Advice

Our clamping devices and tools correspond to the state of the art and were produced in accordance with EN 847-1 and the subsequent European Standards.

The regulations of the machine manufacturer must be adhered to for safe use of the clamping device or tool. The relevant regulations are provided in the respective operating instructions of the wood processing machine used.

Obtain information regarding the location and function of the safety devices required for your wood processing machine before using the tool.

Work may only be performed by appropriately trained specialist staff familiar with handling wood processing tools and machines as well as the relevant clamping devices.

This tool or clamping device may only used for the purpose described under "appropriate use" and in compliance with the following safety instructions.

2.1. Signal words

NOTICE

The "NOTICE" signal word indicates risks that might result in damage to goods.

⚠ CAUTION

The "CAUTION" signal word indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

⚠ WARNING

The "WARNING" signal word indicates a hazardous situation

which, if not avoided, could result in death or serious injury.

⚠ DANGER

The "DANGER" signal word indicates a hazardous situation which, if not avoided, will result in death or serious injury.

The following Signal words refer to the different levels of danger:

2.2. General sources of risk

2.2.1. Injuries due to contact with cutting parts

Source of risk	Contact with cutting parts on the tool.
Consequences	Cutting, piercing and crushing injuries.
Probability	Contact with the tool always poses a risk of injury.
Avoidance	Wear safety gloves that were tested according to EN 388.
In emergencies	Perform first aid. Consult a doctor.

2.2.2. Falling parts

Source of risk	Damage to persons or goods due to falling parts.
Consequences	Crushing, bruises in the foot area and/or damaged tool.
Probability	Always during transport or inappropriate storage.
Avoidance	Transport in suitable packaging or device. Wear suitable safety shoes.
In emergencies	Perform first aid.

Contact the supplier/manufacturer.

2.2.3. Defective parts or elements

Source of risk	Worn or wrongly mounted parts that may cause eccentricity or reduce the clamping force.
Consequences	Damage to the tool.
Probability	During installation and removal work and after prolonged use or storage.
Avoidance	By regular, visual inspection. Only use original parts.
In emergencies	Check the tool for damage. Have the tool promptly checked by the manufacturer when damage has occurred.

2.2.4. Fastening torque

Source of risk	Tightening screws that have been fastened with too low or too high fastening torque.
Consequences	Damage to the tool due to reduced clamping force of the clamping system.
Probability	When the tool has not been used for a prolonged time.
Avoidance	Fasten all screws using a low-recoil torque wrench. Check tightening screws that have not been loosened for a prolonged period (e.g. after preservation).
In emergencies	Immediately deactivate the tool and have it inspected by the manufacturer as required when the tightening screws can

no longer be fastened with the fastening torque specified.

2.2.5. Modification of OERTLI products

Source of risk	Unauthorised modifications of tools and clamping devices by the user.
Consequences	Severe damage to persons and/or goods.
Probability	Always in case of unauthorised modifications by the user.
Avoidance	Only have modifications performed directly by the OERTLI company or with their approval. Always use original spare parts.
In emergencies	Perform first aid. Contact the supplier/ manufacturer.

2.3. Protective equipment required

Any additional protective equipment that may be required is specified in the operating instructions of the machine manufacturer..



Safety shoes

Safety shoes are used to protect the feet against dropping objects.



Hearing protection

Hearing protection protects the ears from increased noise exposure during wood processing.



Safety gloves

Safety gloves protect against cutting and piercing injuries while touching, mounting or removing the tool. Only use safety gloves that



Protective goggles

Protective goggles protect the eyes against flying particles during wood processing and against possible splashes of liquid during tool cleaning.

3. Start Up

3.1. Unpacking/Transportation

WARNING



Very sharp cutting edges pose a risk of cutting and piercing when touching the tool.

Be cautious when unpacking or packing as well as when handling.

Do not touch tools at the cutting edges.

Wear appropriate protective gloves (according to EN 388).

NOTICE

Damage to the clamping adaptor and to the tool due to strike against foreign material.

Be cautious when unpacking or packing as well as when handling.

Always put tools on soft supports.

Transport clamping adaptors and tools only in a suitable packing.

Always use the original packing for transport.

3.2. Installation/Assembly

NOTICE

Clamping adaptors with steep cone shank require a holding bolt. Without it, the tool is not held in the spindle.

Damage to the clamping adaptor and the tool due to not mounting a holding bolt.

Mount the corresponding holding bolt into the steep cone shank before the tool is put onto the machine.

NOTICE

Damage to the tool, to the cutting edges and to the knife clamping systems as well as to the clamping adaptors due to loss of clamping forces.

All clamping surfaces must be free from dirt, oil, grease and water.

Regularly check all clamping devices for damage and immediately replace damaged devices.

Do not use fibre materials, such as cotton waste for cleaning.

DANGER



Risk of cutting, crushing and mortal danger due to unintentional machine start during tool or cutter exchange.

Disconnect the power supply to the machine.

Ensure that the machine cannot be switched on by third parties during operation.

Mount and secure the clamping adaptors and the tools according to instructions of the machine manufacturer! Consider necessary information from the instruction manual of the woodworking machine in use.

4. Attendance/Operation

WARNING



Danger of injuries or danger of crushing by the rotating tool.

Do not touch the rotating tool.

Do not slow down the tool by lateral pressure against the tool body.

Do not work without necessary safety guard.

4.1. Prior to operation

Check the clamping adaptors and the tools for damage and check the seats of the clamping elements as well as the condition of the cutting edges.

For maintenance work on damaged or dull cutting edges refer to chapter "Maintenance/Cleaning" of the corresponding wood working tool.

For proceeding with respect to preservation and storage, refer to chapter "Preservation/Storage" in this maintenance manual.

WARNING



Tool breakage or cutting edge breakage by overload. Cutting injuries, crushing injuries or danger of life due to fly-away parts.

Do not re-install neither damaged or modified clamping adaptors and tools nor clamping adaptors and tools with corroded screw connections.

Maintenance work on damaged clamping adaptors and tools to be carried-out only by the manufacturer of clamping adaptors and tools.

Applicable machine parameters such as speed, direction of rotation and feed to be checked and verified with the parameters of the clamping adaptor and tool.

For compound tools (tipped tools), the rest height or rest thickness of the attached cutting plate is not to be less than 1 mm.

Check screw connections for corrosion after transport or after a longer storage time, respectively after a longer unused time. Corroded screws must be replaced. Threaded holes must be checked for correct tolerances and strength.

⚠ WARNING

Due to transport, strong working vibrations or long storage times, alternatively parts not being used for a long time, so called resting-effects may occur due to vibrations and temperature differences on screw connections. As a result, screw clamping forces are considerably lost.

Danger of cutting injuries, crushing injuries or danger of life due to fly-away parts.

Tighten all screws to the required torque before each use.

Protect clamping adaptors and tools with screw connections from vibrations.

Store clamping adaptors and tools at mostly constant temperatures.

4.2. Possible Feed Systems

Single-part tools may be assembled to a tool set or to a tool combination. Tools from such sets or combinations which are not suitable for hand feed will be equipped with a pin in the hub area to avoid using them as single-part tool.

⚠ WARNING

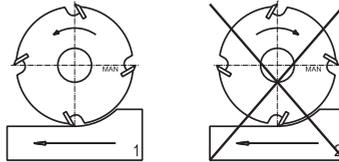


For manual feed exists danger of injuries, danger of crushing or danger of life by tool kick-back.

Manual feed requires working only against the feed.

Do not use individual -with pins secured- tools for manual feed.

The tool inscription indicates whether your tool is suitable for manual feed or for mechanical feed:

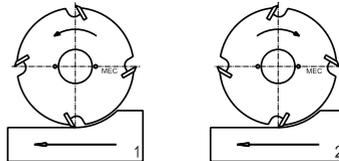


Marking MAN:

=> suitable for manual feed

Operation:

=> only against the feed (1)



Marking MEC:

=> suitable for mechanical feed

Operation:

=> against the feed (1) or with the feed (2)

Ensure that the correct machine parameters have been set before starting work.

4.3. Allowable range of spindle RPM

⚠ WARNING

Tool breakage due to overload. Cutting injuries, crushing injuries or danger of life by fly-away parts.

Some clamping adaptors are allowed to be used only for one direction of rotation. Check a possibly pretended direction of rotation of the clamping adaptor with that of the tool as well as with that of the machine.

For shank type tools and tools with bore, for example on clamping bushes:

Check the maximum permissible

speed of the clamping adaptor with that of the used tools. The respective **smallest** value is the maximum admissible speed of the corresponding tool combination. Do not exceed the **smallest** maximum speed of all participating clamping adaptors and tools.

For tools with bore, for example on CNC-clamping shafts:

Tools with bore on CNC-clamping shafts with for example HSK- or Steep Taper Cones are not allowed to be operated without checking the strength.

The operating speed must be checked separately for each tool combination. Whether the calculation for the corresponding tool combination has been made, can be seen on the customer drawing. If no customer drawing is available for a tool combination, the operational stability has to be checked.

⚠ WARNING



For manual feed exists danger of injuries, danger of crushing or danger of life by kick-back of the workpiece, if the allowed range of speed falls short of.

Do not fall short of the allowed range of speed for manual feed.

4.3.1. Marking of tools and tool sets

OERTLI ← A
 XX XXXXXXXX XXX ← B
 D x B x d ← C
 MEC
 n max. 10100 ← D

- A: Brand name / manufacturer
- B: Item / tool number
- C: Dimension [mm] and MAN/MEC marking
- D: Maximum rotation speed or permitted rotation speed [1/min] e.g. n max. 10100

Markings of tools are on the tool body and markings of tool sets are on the clamping device.

4.4. Application parameters

⚠ WARNING

Tool breakage due to overload. Cutting injuries, crushing injuries or danger of life by fly-away parts.

Make sure that operating vibrations are as small as possible.

As required, adjust feed rate, speed and cutting depth.

Improve clamping stability of the work-piece.

4.5. Reasons for a possible knife -, resp. tool rupture

The following reasons may lead to a knife rupture:

- Grinding cracks or change of the cutting geometry due to improper sharpening
- Jerking movements of the work-piece
- Jam of the tool by a waste piece (especially by cut-out work)
- Overheating by friction due to too small feed rate or too small cutting depth as well as due to dull cutting edges
- Too high feed rate
- Too large cutting depth
- Insufficient clamping of the tool
- Vibrations of the machine

NOTICE

High advance during processing may cause damage to the tool.

Check all processing data and adapt or reduce the values as required before each use of the tool.

5. Maintenance/Cleaning

Clamping adaptor quality and tool quality as well as work safety are only guaranteed, if the

clamping adaptor and the tool is checked and cleaned before used.

Required tightening torques to be exactly maintained when screws are tightened (use proper torque wrench). Only by this manner sufficient clamping is guaranteed.

⚠ WARNING

Tool- or knife rupture due to imbalance of not mounted reversible- or inserted knives.

Cutting injuries, crushing injuries or danger of life by fly-away parts.

Do not mount unsymmetrically reversible knives and inserted knives.

Always use the same screws and clamping parts per cutting system.

⚠ WARNING

Tool- or knife rupture due to corroded screw connections.
Cutting injuries, crushing injuries or danger of life by fly-away parts.

Damaged or corroded screws and clamping parts must be replaced. In addition corresponding threaded holes must be checked for accuracy and strength.

⚠ WARNING

Tool- or knife rupture due to overload from worn -or damaged knife cutting edges.

Cutting and crushing injuries as well as mortal danger during operation due to flying parts.

Use only original spare parts from OERTLI Werkzeuge AG.

For reversible knives or inserted knives:

- Do not re-sharpen, but replace in time
- Do consider thereby the instruction manual for changing

knives for the corresponding knife system

For compound tools and single-part tools such as saw blades, diamond tipped cutters or tungsten carbide tipped cutters, solid tungsten carbide spiral cutters:

- Re-sharpen or replace
- Do consider thereby the corresponding information in chapter "Maintenance work"

Dull or damaged cutting edges must be sharpened or replaced, if:

- the wear-out part of the cutting edges are greater than 0.2 mm (consider especially the main wear-out parts!)
- Break-outs on the cutting edge are visible
- Burns on the wood are visible
- the surface on the work piece does not comply anymore with the desired requirements
- the power requirement of the machine increases considerably (more than 10%)

5.1. Maintenance Work

⚠ WARNING

Tool- or knife rupture due to imbalance or overload.

Cutting injuries, crushing injuries or danger of life due to fly-away parts.

The gibs of opposite knife seats should not be off-set laterally more than 1 mm to each other.

Do not put into operation large MEC-cutterheads with small profile knives or unused knife seats without blank pieces.

It is prohibited on MAN-cutterheads to mount blind pieces into the aerea of knives and chip-limitors.

The weight difference of opposite mounted knives, chip-limitors and blind pieces should not be more than 0.5 grams.

Profile knives and chip-limitors are marked on the 0-point side of the contour by a marking. Always use the marked side for laterally positioning of the profile knife.

5.1.1. Application Concept for Serrated Knife Cutterheads

NOTICE

Damage to the knife seat due to not mounting serrated knives.

Do not put into operation MEC-cutterheads without knives or blank pieces.

On MAN-tools, it is unconditionally necessary to use the specific MAN-knives.

Use only suitable chip-limitors for corresponding profile knives (profile-set).

If the cutting edges are dull or damaged, follow the steps as described below:

- Replace or displace radial (only for MEC possible) all knives in the cutterhead. Please follow thereby the instructions for knife change.
- Regrind or joint all cutting edges in the cutterhead. Please refer thereby to the separate OERTLI instruction manual for profile cutterheads with serrated knives.

5.1.2. Instructions for knife change on MAN serrated knife cutterhead

(see Fig. 1)

New serrated knives and limitors are always packed in pairs in order the weight difference

is less than 0.5 grams. Always mount serrated knives (2) and limitors (3) from the same packing unit into opposite knife grooves! Always mount gibs (1) into the same knife seat they were removed from!

1. Clean the tool first.
2. Align cutterhead in such a way that the screws (4) per knife can be loosened. If available, use our tool holder (Art. no. TA633005).
3. Loosen the screws with an Allen key only so far until the gib can be pushed down.
4. Pull-out laterally the serrated knife together with the gib and limitor.
5. Clean the knife seat and all components that go with it. Make sure that all clamping surfaces are free from dirt, oil, grease and water. Further make sure that the serrations of tool body, knife and limitor are completely cleaned.
6. Push-in laterally on the lowest serrated position the serrated knife together with the gib and limitor into the corresponding knife seat (see Fig. 1). Make sure that serrated knife and gib with marked sides are flush with the 0-point position of the tool body. To achieve this use a flat bar or vernier scale to position flush the marked sides of knives and limitors with the 0-point side of the tool body.
7. Make sure that the profile knife and limitor belong to the same profile set. Make also sure that the gibs are not more than 1 mm displaced to each other.
8. Check that the maximum over stand of the profile knife to the limitor is not more than 1.1 mm.
9. If more than two screws per knife seat are to be tightened, the clamping screws must be tightened with the required torque in the sequence from center to outside.
10. Now tighten the screws to the required tightening torque of 20 Nm.

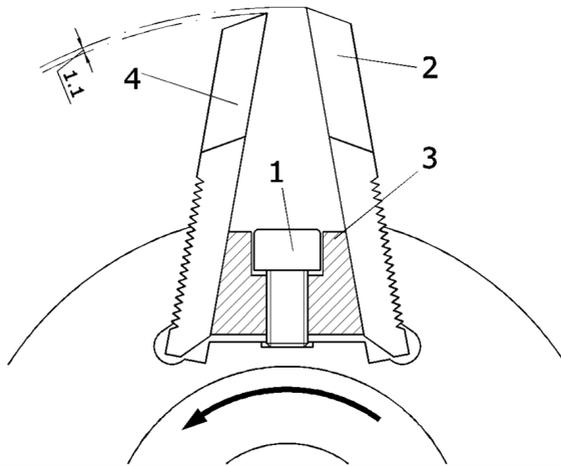


Fig. 1

5.1.3. Instructions for knife change on MEC serrated knife cutterhead

(see Fig. 2 and 3)

New serrated knives are always packed in pairs, in order the weight difference is less than 0.5 grams. Mount serrated knives (2) from the same packing unit into opposite knife grooves! Mount the gibs (1) always into the same knife seat from which they were removed from!

1. Clean the tool first.
2. Align cutterhead in such a way that the screws (3) per knife can be loosened. If available, it is recommended to use our tool holder (Art. no. TA633005).
3. Loosen the set screws with an Allen key only so far until gib and serrated knife can be pulled-out laterally from the knife seat.
4. Remove gib and serrated knife from the knife seat.
5. Clean the knife seat and all components that go with it. Make sure that all clamping surfaces are free from dirt, oil, grease and water. Further, make sure that the serrations in tool body and knives are completely cleaned.
6. Push-in laterally the serrated knife with suitable gib into the corresponding knife seat. Do consider the minimum clamping

length of 15 mm (see Fig. 3). Make sure that the knives on the marked side are flush with the 0-point side of the tool body. To achieve this use a flat bar or vernier scale to position flush the marked side of knives and to the 0-point of the tool body.

7. In case not all knife seats of the tool body are used, fill-up the empty knife seats with blank pieces. If in a large tool body small profile knives are used, it is necessary to fill-up the unused portion of the knife seat with blank pieces.
8. Make sure that the gibs are laterally not more than 1 mm displaced to each other.
9. If more than two screws per knife seat are to be tightened, the clamping screws must be tightened to the required torque in the sequence from center to outside.
10. Now tighten the screws to the required tightening torque of 25 Nm.

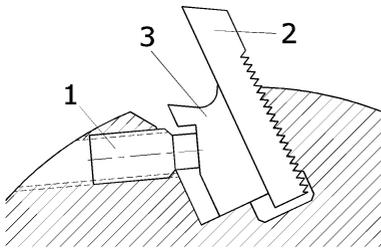


Fig. 2

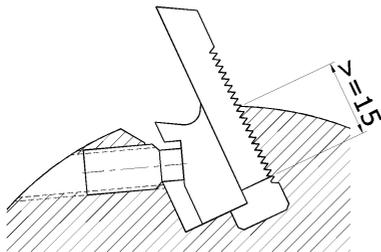


Fig. 3

5.1.4. Re-sharpening of cutting edges

An unqualified re-sharpening of a tool may lead to break-outs on cutting edges or even to rupture of the tool! Therefore we basically recommend to carry-out all sharpening work by OERTLI Werkzeuge AG or by an authorized service station.

5.1.5. Sharpening instructions

Only qualified personal is allowed to carry-out sharpening work. After sharpening, the tool must comply to all valid regulations and standards.

This is especially true for:

- Projection of knives
- Rest thickness of knives
- Chip gullet width
- Rest imbalance
- Tool inscription

Inform yourself by the tool manufacturer about sharpening services in your neighbourhood.

5.1.6. Quantity of screws per knife

Profile cutterhead with serrated knives for mechanical feed (MEC):

Knife width [mm]	Quantity of screws per knife
40 to 80	2
80 to 100	3
100 to 120	4
120 to 150	5
150 to 180	6
180 to 200	7
200 to 230	8
230 to 280	9
280 to 310	10

Profile cutterhead with serrated knives for hand feed (MAN):

Knife width [mm]	Quantity of set screws per knife
80	2
100	2
130	3

5.1.7. Tightening torques

⚠ WARNING

Insufficient clamping, screw breakage or damage due to overload. Risk of injuries and mortal danger during operation due to flying parts.

Use a recoil-free torque spanner.

Do not mount tools or clamping devices in a heated or undercooled state.

The fastening screws must be tightened in a sequence from the middle towards the outside applying the appropriate torque, when more than two screws per clamping unit have to be fastened.

Screws M8 with cylindrical head = 20 Nm

Set screws M10 with hexagon head
5 mm = 25 Nm

5.1.8. Behaviour after a tool collision



DANGER

After a tool collision or after high working vibrations, the strength of the brittle cutting edge material and the hardened clamping adaptor is not guaranteed anymore. High vibrations or a collision of the tool act like blows on the cutting edges. For very high loads due to high cutting speeds in woodworking, such pre-damaged tools and clamping adaptors may lead to tool rupture. Ruptured tool parts act like bullets at high working speeds!
Danger of cutting injuries, danger of crushing or danger of life due to fly-away ruptured tool parts!

Do not re-use damaged tools or deformed tools and clamping adaptors.

Repair work and maintenance work on tools and clamping adaptors to be carried-out only by the tool manufacturer.

Tool and clamping adaptor to be checked for micro-damages. In addition, verify the tool connection of the machine.

5.1.9. Cleaning

NOTICE

To achieve highest precision and best performance, it is important to clean tools and clamping adaptors regularly as required according to application.
Damage of the tool, the cutting edge and the knife clamping system as well as the clamping adaptor due to loss of the clamping force.

All surfaces used for clamping must be free from dirt, oil, grease and water.

Rinse and dry tools after cleaning with a solvent.

Do not use fibrous materials, such as cotton waste, for cleaning.

6. Preservation/Storage/Disposal

6.1. Preservation/Storage

NOTICE



Danger of corrosion by storing unconverted tools and clamping adaptors.

Always conserve tools and clamping adaptors, if not in use.

Do not put into operation tools and clamping adaptors with corroded screw connections. Corroded screws must be replaced.
Threaded holes must be checked for accuracy as well as for strength.

If the tool or clamping adaptor is not being used for a longer period of time (> 6 months), it should be prepared for storage as follow:

- With the exception of fix screwed Hydro-clamping components, tool sets or tool combinations must be first dismantled into single tools.
- Clean well the single tools and clamping adaptors such as for example bushes, shafts, collets and chucks. For details, please refer to chapter "Cleaning" of the corresponding maintenance manual.
- For tools with inserted knives or reversible knives, all knife clamping systems must be dismantled and cleaned. Please refer to chapter "Cleaning" of the corresponding maintenance manual.
- Make sure that all clamping- and contact surfaces are free from dirt, oil, grease and water.
- For tools with inserted knives or reversible knives, the knives can now be re-mounted. Please refer therefore to chap-

ter "Maintenance work" in the corresponding operating manual.

- Treat the dried single tools and clamping adaptors with a customary available preservation oil.
- Single tools and clamping adaptors may now be re-assembled.
- Store the conserved tools and clamping adaptors in a room, which is not exposed to large temperature fluctuations (20°C +/- 10°C).

6.2. Disposal

Dispose of tools and clamping devices in accordance with the local and national environmental regulations in your country.

Please take note of the disposal instructions of the cleaning agent manufacturer when disposing of the cleaning agent.

7. Accessories

Tool holder for cutterhead with serrated knives, Art. no. TA633005.

8. Contacts/Addresses

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9. Glossary

9.1. Technical terms

Deflector

Protruding safety component that limits the clamping thickness.

Bore cutter (also bore tool)

A tool with a bore in the centre that is used to fasten the tool to the clamping device.

Pressure jaw

A clamping element that creates contact pressure to fasten a cutter to a tool.

Clamping eccentricity

Radial inaccuracy that results when a tool is clamped.

One-piece tools

Solid tools that are completely made of the same material.

Cutting circle diameter

Diameter range of the cutting edge and therefore largest outer diameter of the cutter.

Up-cut milling

During up-cut milling, the cutting movement of the tool proceeds against the relative advance movement of the work piece. The tool edge always enters the work piece by scraping and pressing.

Climb milling

Only suitable for mechanical advance. During climb milling, the cutting movement of the tool proceeds in the same direction as the relative advance movement of the work piece. The tool edge enters the work piece by cutting.

Helicoil

A Helicoil (brand name) is a wire thread insert for internal threads.

Cutter seat

Area in the support body that holds the cutters, which are fastened inside it by clamping elements.

Mean chip thickness

The mean chip thickness is the average thickness of a chip.

Resharpener

Sharpening the cutting edges of pre-used, blunt cutters.

Residual imbalance

Permitted imbalance range of the tool after balancing.

Recoil (also tool recoil)

Uncontrolled flinging away of the work piece or of work piece parts against the advance direction.

Shaft cutter

Single-part or compound tools that have cutters immediately next to the shaft (clamping area).

Grinding cracks

Grinding cracks are small micro-cracks that may occur during sharpening of cutters.

Cutter overhang

This is the radial distance between cutting edge and the circumference of the cutter body.

Cutter exchange

Replacement of blunted cutters with new cutters without complete removal of the tool.

Cutting speed

This is the speed at which the tool cutting edge moves in the cutting direction through

the material to be processed. The cutting speed is specified in metres per second.

SP-Technik or HPC/HPC+

Tools with SP-Technik or HPC/HPC+ are connected free of clearance on the clamping device. They form a functional unit which can be operated at much higher process parameters.

Chip breaker

This is a clamping element that is used between the pressure jaw and the cutter. A chip breaker ensures optimal chip breakage during the milling process.

Chip gap width

Tangential distance from the cutter edge to the deflector or circumference of the support body.

Clamping screw

The clamping screw (fastening element) produces the retaining force required by the pressure jaw to retain the cutter.

Service life

The service life is the duration that a tool can work without interruption until considerable signs of wear occur and the tool has to be replaced.

Support body

Basic body that carries the cutters.

Compound tools

Tipped tools that consist of a support body and firmly attached (not removable) cutters.

Precutter

Cutter part that can cut at the circumference as well as the front edge. It extends past the main cutter in a radial and possibly also in an axial direction.

Advance speed

Speed in meters per minute at which the tool processes the wood.

Exchangeable cutters

These are removable cutters that can be exchanged for new ones once they have reached the end of their service life.

Reversible cutters

These are cutters that can be reversed and can therefore be used several times.

Tool quality

Quality level of the tool.

Tool set

This is a combination of several individual tools that are jointly clamped onto one shaft or one bushing.

Tooth feed

Distance between two subsequent cutting surfaces in the advance direction.

Composite tool

Tool consisting of a support body, cutting edges and fastening elements that together form a unit.

9.2. Item numbering structure

An OERTLI item number has the following structure:



9.2.1. A - prefix

The prefix always has two characters and includes the following abbreviations:

TA = Standard parts
TB = Standard parts
TE = Tool set (special tools)
TO = Individual tool (special tools)
TV = Various special parts

KC = Profile knife
KP = Profile knife
KX = Profile knife
KW = WIN knife
KG = Straight knife
KN = Groove knife
KF = Format knife
KR = Serrated knife

Example:
TA469720 = Standard part

9.2.2. B - number part

This is a 6 or 10 digit number between the prefix and the suffix and accurately identifies the item.

9.2.3. C - suffix

This suffix may contain the following information:

Cutter quality:

H8 = Standard hard-metal quality
H6 = Hard hard-metal quality
C01 = Coating Type 1
C02 = Coating Type 2
HS = High-alloy high-speed steel
HW = Hard metal
DP = Diamond

Only the H8 hard metal quality is an exception, as it is used as standard by the OERTLI company. Item numbers for hard metal quality H8 do not have a suffix.

Examples:

KP171300 = H8 (hard metal quality)
KP171300H6C02 = H6 with coating

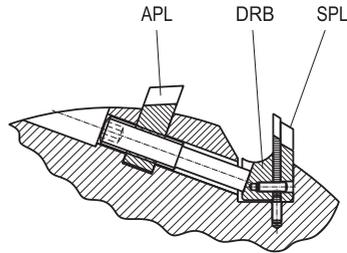
Profiled clamping parts:

Individual clamping parts carry their own marking when they are used in clamping systems for profiled clamping parts. This allows for easier identification of the individual clamping parts.

Description types:

APL = Deflector
PI/PA = Protect
SPL = Support plate
DRB = Profiled pressure jaw

Example:



KP171300 = Cutter
KP171300SPL = Support plate
KP171300DRB = Profiled pressure jaw
KP171300APL = Deflector

Shortened standard cutters:

Standard cutters that were individually shortened have the following suffix:

L + shortened length in millimetres

Example:

TA469720L195 (shortened to 195 mm)

9.3. Drawing numbers

The drawing numbers of the OERTLI company are structured like the following example:

TE 1511199 001 01 A
A B C D E

A: Drawing type (prefix)
B: Project number
C: Running number
D: Version number
E: Change index (alphabetically increasing)

9.4. Symbols



Use of damaged tools prohibited



Warning of rotating tool



Warning of cutting injuries



Warning of recoil



Warning of caustic substances



Read the operating instructions



Wear safety gloves



Wear protective goggles



Wear hearing protection



Wear safety shoes

9.5. Unit

9.5.1. Table of units

Parameter	Unity	Translation
Length	[mm]	x 0.03937 = [inch]

Parameter	Unity	Translation
Length	[m]	x 39.370 = [inch]
Weight	[g]	x 0.035 = [oz]
Weight	[kg]	x 2.2046 = [lb]
Force	[N]	x 0.22481 = [lbf]
Force	[kN]	x 101.9716 = [kp]
Torque	[Nm]	x 0.738 = [lbf ft]
Pressure	[bar]	x 14.504 = [PSI]
Temperature	[°C]	(°C x 1.8) + 32 = [°F]
Rotation speed	[1/min]	---
Density	[kg/m³]	---