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MAF01982/a

ACHTUNG!

Diese Betriebsanleitung enthält Hinweise, die für das sichere Arbeiten mit dieser Maschine wichtig sind. Lesen Sie deshalb unbedingt diese Betriebsanleitung.

WARNING!

These operating instructions contain important information on safe working practices for this machine. It is therefore essential that you read these operating instructions carefully.

ATTENTION !

Cette notice d'emploi contenant des indications importantes pour la sécurité du travail avec cette machine, veuillez donc la lire impérativement.

ATTENZIONE!

Le presenti istruzioni per l'uso contengono avvertenze importanti per lavorare con sicurezza con questa macchina. Per questo motivo è assolutamente necessario leggere le presenti istruzioni per l'uso con la dovuta accuratezza.

ATTENTIE!

Deze gebruiksaanwijzing omvat instructies die voor het veilige werken met deze machine belangrijk zijn. Lees vandaar in ieder geval deze gebruiksaanwijzing.

¡ATENCIÓN!

Lea atentamente este manual de instrucciones, que contiene la información necesaria para garantizar la seguridad en el trabajo con esta máquina.

HUOMIO!

Tämä käyttöohje sisältää ohjeita, jotka ovat tärkeitä koneen turvallisen käytön kannalta. Lue käyttöohje sen vuoksi huolellisesti!

OBSERVERA!

Denna bruksanvisning innehåller anvisningar, viktiga för säkert arbete med denna maskin. Läs därför denna bruksanvisning noga!

GIV AGT!

Denne driftsvejledning indeholder vigtige henvisninger om sikkerheden ved brug af maskinen. Læs driftsvejledningen omhyggeligt.

D - EG Konformitätserklärung

Wir bescheinigen hiermit, dass die Maschine ZSX TWIN-Ec den angeführten EU-Richtlinien entspricht. Bei Konstruktion und Bau wurden die gelisteten Normen angewendet.

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen: Mafell AG

GB - EC Declaration of Conformity

We herewith confirm that the machine ZSX TWIN-Ec complies with the EU directives quoted. The standards listed were used for design and construction.

Empowered person for the configuration of the technical documents: Mafell AG

F - Déclaration CE de conformité

Nous déclarons par la présente que la machine ZSX TWIN-Ec est conforme aux directives CE applicables comme suit. Lors de la construction, les règlements suivants ont été utilisés.

Plénipotentiaires pour l'assemblage des documentations techniques: Mafell AG

I - Dichiarazione di conformità CE

Con la presente certifichiamo che la macchina ZSX TWIN-Ec è conforme alle seguenti direttive CE applicabili. Nella progettazione e la costruzione sono state applicate le seguenti norme.

Responsabile per la composizione della documentazione tecnica: Mafell AG

NL - EG conformiteitsverklaring

Wij bevestigen hiermede dat de machine ZSX TWIN-Ec aan de vermelde EU-richtlijnen beantwoord. Bij constructie en bouw werden de vermelde normen toegepast.

Gemachtigde voor de samenstelling van de technische documenten: Mafell AG

E - Declaración de conformidad CE

Con la presente se certifica que la máquina ZSX TWIN-Ec cumple las directivas europeas mencionadas, las cuales forman la base tanto del diseño constructivo como de los procesos de fabricación.

Apoderado legal para la compilación de la documentación técnica: Mafell AG

FIN - EY vaatimustenmukaisuusvakuutus

Vakuutamme täten, että kone ZSX TWIN-Ec vastaa mainittujen EU-direktiivien vaatimuksia. Sen suunnittelussa ja valmistuksessa on sovellettu luettelossa ilmoitettuja standardeja.

Teknisten asiakirjojen laatimiseen valtuutettu henkilö: Mafell AG

S - EG Konformitetsförklaring

Vi intygar härmed att maskinen ZSX TWIN-Ec uppfyller angivna EU direktiv. De angivna normerna användes vid konstruktion och tillverkning.

Befullmäktigad för sammanställningen av den tekniska dokumentationen: Mafell AG

DK - EU overensstemmelseserklæring

Vi attesterer hermed, at maskinen ZSX TWIN-Ec opfylder de angivene EU-direktiver. Konstruktion og bygning er udført iht. de angivene standarder.

Person, der er befuldmægtiget til at sammenstille det tekniske materiale: Mafell AG



2006/42/EG
2004/108/EG

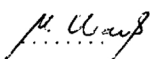
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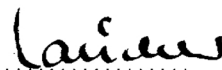
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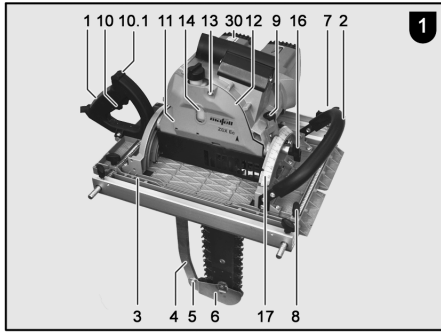
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Mafell AG

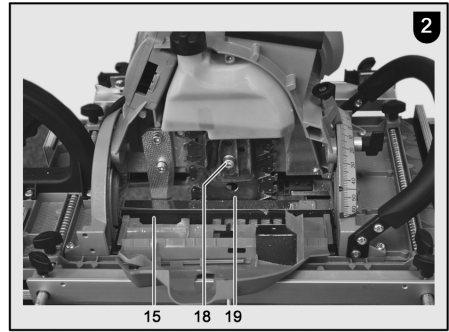
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Krauss

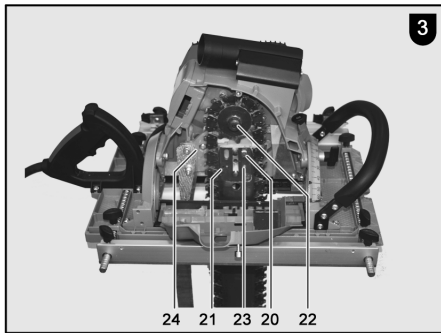

i. V. Dr. Lauckner



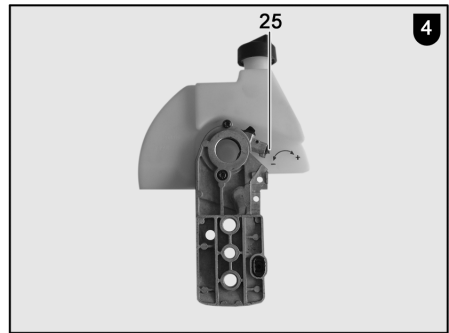
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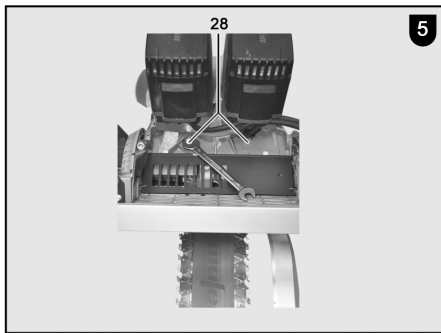
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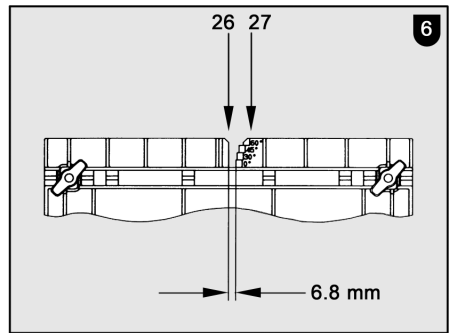
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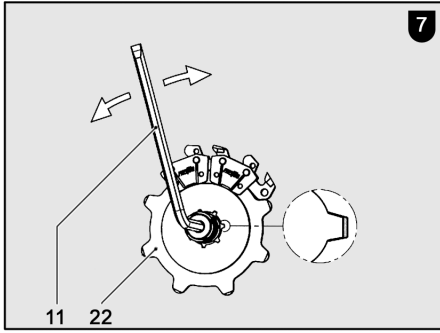
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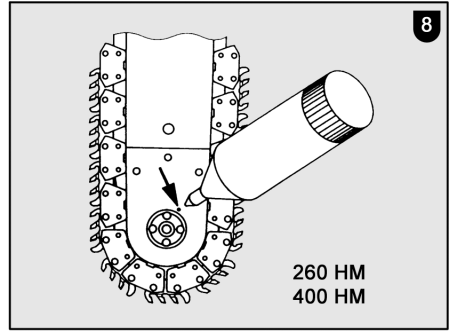
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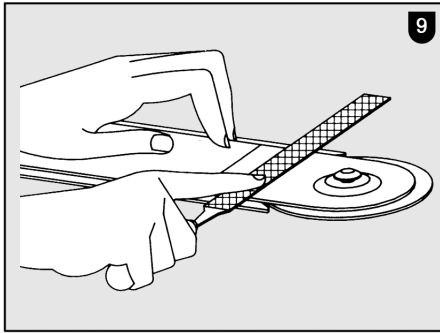
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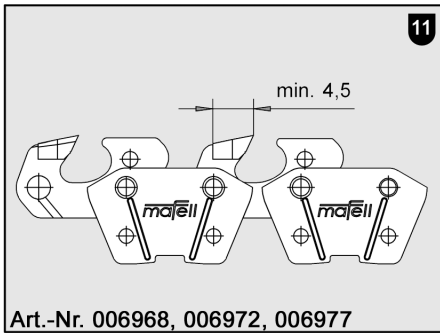
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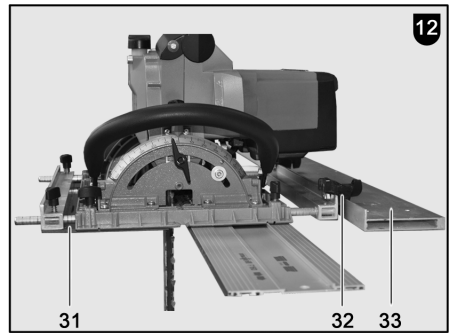


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1 Signs and symbols



This symbol appears at places where you will find instructions for your own safety.

Non-compliance with these instructions may result in very serious injuries.



This symbol indicates a potentially hazardous situation.

If this situation is not avoided, the product or objects in its vicinity may get damaged.



This symbol indicates tips for the user and other useful information.

2 Product information

for machines with product no. 961601, 961625

2.1 Manufacturer's data

MAFELL AG, Postfach 1180, D-78720 Oberndorf / Neckar, Phone +49 (0)7423/812-0, Fax +49 (0)7423/812-218

2.2 Machine identification

All details required for machine identification are available on the attached rating plate.



Protection class II



CE symbol to document compliance with the basic safety and health requirements according to Appendix I of the Machinery Directive.



For EU countries only

Do not dispose of electric tools together with household waste material!

In accordance with the European directive 2002/96/EC on waste electrical and electronic equipment and transposition into national law, obsolete electrical tools must be collected separately and recycled in an environmentally-compatible manner.



To reduce the risk of injury, please read the operating instructions.

2.3 Technical data

Tool (saw chain type)	400 HM
Number of drive links	40
Chain pitch	18 mm (23/32 in.)
Cutting width	6.8 mm (17/64 in.)
Cutting speed at normal load	13.5 – 16.4 m/s (44.3 – 53.8 ft/s)
Swivel range on both sides	60° / 15°
Cutting depth at 0°	400 mm (15 3/4 in.)
at 15°	386 mm (15 3/16 in.)
at 30°	346 mm (13 5/8 in.)
at 45°	282 mm (11 7/64 in.)
at 60°	199 mm (7 27/32 in.)
Chain set swivelling to the rear by 10°	
Machine dimensions Width x length x height	450 x 632 x 800 mm (17 11/16 x 24 7/8 x 31 1/2 in.)
Base plate	300 x 506 mm (11 13/16 x 19 15/16 in.)
Width without limit stop	415 mm (16 21/64 in.)
Height without tool and riving knife/splitter	312 mm (12 9/32 in.)
Weight without mains cable	24.2 kg (53.35 lbs)
Universal motor, radio and TV interference suppressed	230 V~, 50 Hz
Power input (nominal load)	2x3000 W
Current at nominal load	2x15.9 A
Idling speed	21000 rpm
Speed of the chain pinion	3600 rpm
	Idling
	Normal load
	3400 rpm

2.4 Noise emission specifications

The noise emission values were determined according to EN 60745-1 with the following deviation: The workpiece used was a fir wood beam as sawn with a thickness of 100 mm. The emission values amount to:

	Sound power level	Workplace-related emission value
Idling	111 dB (A)	100 dB (A)
Machining	108 dB (A)	97 dB (A)

The values stated are emission levels. Although there is a correlation between emission and imission level, it cannot be reliably derived from this whether additional precautions are necessary. Factors influencing the current imission level existing at the workplace comprise the duration of exposure, the room characteristic, other source of noise, etc. such as e.g. the number of machines and other adjacent machining operations. In addition, the permissible imission level may differ from country to country. This information is nevertheless suitable for providing the machine user with an improved assessment of the hazard and risk.

2.5 Vibration specifications

The typically assessed acceleration is 3.2 m/s².

2.6 Scope of supply

Carpenter's chain saw ZSX TWIN-Ec complete with:

Guide rail for saw chains		Special 400
Riving knife/splitter		400
Saw chains	1 x special 400 HM	18 mm
	1 x special 400 HM longitudinal cut	18 mm
1 connecting cable		
1 parallel guide fence		
1 glider		
2 operating tool		
1 trolley		
1 operating manual		
1 folder "Safety Instructions"		

2.7 Safety devices



Danger

These devices are required for the machine's safe operation and may not be removed or rendered inoperative.

The machine is equipped with the following safety devices:

- protective equipment above the base plate
- bottom deflection with guard plate
- special design of the saw chain
- riving knife/splitter
- large base plate and parallel stop
- handles
- index mechanism with lock and brake

2.8 Use according to intended purpose

The carpenter's chain saw is exclusively suited for longitudinal and cross cutting of solid wood up to a

maximum thickness of 400 mm (15 3/4 in.) exclusively using the special saw chain provided by MAFELL, with the machine having to rest on the workpiece with its base plate 3 (Fig. 1). The machine may be operated by one person only. At the same time, the machine must be held and guided by its two handles 1 and 2 provided for that purpose.

Any other use than described above is not permissible. The manufacturer cannot be held liable for any damage arising from such other use.

So as to use the machine as intended, comply with the operating, maintenance and repair instructions specified by Mafell.

2.9 Residual risks



Danger

Even if used in accordance with its intended purpose and despite conforming with the safety instructions, residual risks caused by the intended use will always remain.

- Touching the running saw chain below the base plate.
- Touching the standing saw chain below the base plate.
- Machine backlash if the blade gets stuck in the workpiece.
- Tearing of the saw chain.
- Touching live parts with the housing open and the mains plug not removed.
- Hearing can be impaired when working for long periods without ear protectors.
- Emission of harmful wood dusts during longer operation without extraction.

3 Safety instructions



Danger

Always observe the following safety instructions and the safety regulations applicable in the respective country of use!

General instructions:

- Children and adolescents must not operate this machine. This rule does not apply to young

persons receiving training and being supervised by an expert.

- Never work without the protection devices prescribed for the respective operating sequence and do not make any changes to the machine that could impair safety.
- When operating the machine outdoors, use of an earth-leakage circuit-breaker is recommended.
- Do not carry the machine by its cable and do not use the cable to pull the plug out of the socket outlet.
- Pay attention that the cable is protected against oil and heat and is not pulled across sharp edges.
- Damaged cables or plugs must be immediately replaced.
- Avoid sharp bends in the cable. Especially when transporting and storing the machine, do not wind the cable around the machine.
- Always check before beginning work, whether the protection and work equipment is safely attached and not damaged. Damaged protection devices and parts must be repaired or replaced appropriately.
- Consider environmental influences. Do not expose the machine to rain and avoid working in a damp or wet environment as well as near to combustible liquids or gases.
- Store the device in a dry, locked place outside the reach of children.

Instructions on the use of personal protective equipment:

- Always wear ear protectors during work.
- Always wear a dust mask during work.
- Always wear closely fitting work clothes and take off rings, wristbands, and watches.

Instructions on operation:

- Provide for an unobstructed and slip-proof location with adequate lighting.
- The power plug must be pulled before replacing tools, making adjustments and repairing malfunctions (this also comprises removing jammed splinters).

- Do not work on workpieces which are too small or too large for the capability of the machine.
- Whenever possible, secure the workpiece against slipping, e.g. with screw clamps.
- Only use original MAFELL saw chains. Commercial saw chains are not suitable for this machine. After every chain change, check the correct chain tension.
- The riving knife/splitter 4 (Fig. 1) including the guard plate for the bottom chain deflection 6 may not be removed.
- The machine is a one-man tool and may only be used for work during which the base plate 3 serves as workplate.
- Prior to carrying out any work, check whether the tank contains oil for the chain lubrication and whether the chain lubrication is working (see section 4.4).
- Keep a firm hold on the machine already before switching it on and support it. At the same time, rail and chain must stand unobstructed. Only begin cutting the workpiece when the saw chain has achieved its full speed. Pay attention to a secure footing.
- The switch may not be wedged in ON position.
- Never reach below the base plate or into the chip ejector during sawing.
- Never transport the machine with running saw chain and pay attention that, except for the workpiece, the running chain does not come in contact with adjacent objects.
- Never remove cover 12 (Fig. 1) covering the chain pinion with the machine running and only for a tool change and refit immediately afterwards.
- The machine can be connected to an extraction with a diameter of 54 mm (2 1/8 in.) (outside) or 49 mm (1 15/16 in.) (inside). When working without extraction, work may only be carried out outdoors or in adequately ventilated rooms.
- Once adopted, never change a cutting direction by force. The saw must be guided such that the pressure does not bring the chain to a stop.
- Examine the workpiece for foreign objects. Never attempt to cut into nails or other metal objects.
- Always lead the connecting cable away from the machine to the rear while sawing.
- Immediately pull the power plug in case of damaged or severed connecting cables.
- Match the feed speed during sawing to the material thickness. Feeding too fast results in an overload of the motor, rough saw cuts and faster blunting of the saw chain.
- Only remove the machine from the workpiece if the saw chain has come to a standstill.

Instructions on service and maintenance:

- Regular cleaning of the machine, in particular the setting mechanisms for tilting the guides for the parallel stop and the enclosure of the top and bottom chain deflection, constitutes an important safety factor. Pull the plug before starting this work.
- Only original MAFELL spare parts and accessories may be used. Otherwise, the manufacturer will not accept any warranty claims and cannot be held liable.

4 Setting / Adjustment

4.1 Mains connection

Prior to commissioning make sure that the supply voltage complies with the operating voltage stated on the machine's rating plate.

The machine must be connected to the three phase network. Because of the machine's internal wiring, each of the two motors is supplied with 230 V~.

Ensure that the assignment of the socket outlet is carried out according to standard. A wrong assignment may lead to destruction of the electronic system. The machine is totally insulated, therefore the earth contact inside the plug was removed.

4.2 Saw chain change



Danger

It is imperative to pull the power plug before replacing the saw chain.

Risk of injury even if the saw chain is standing still.

Proceed as follows to replace the saw chain:

- Unfasten cylinder head bolt 13 using combination screw driver 11 enclosed in the supply and fastened on cover 12 (Fig. 1) and fold down the cover.
- Open the spring-loaded bottom guard flap 15 (Fig. 2) downwards and fasten it with the cover in open position.
- Unscrew the hexagon socket head cap screw 18 (Fig. 2) and remove the Intermediate cover 19 including the oil tank.
- Unfasten the fastening screw 5 (Fig. 1) for the lower chain deflection protection and fold down the guard plate 6.
- Release the chain tension by turning the tensioning screw 20 (Fig. 3) to the left by means of combination screw driver 11.
- Pull off the guide rail 21 including the saw chain and chain wheel 22 to the front and remove the chain.
- Place a new or freshly sharpened saw chain onto the guide rail and the chain wheel. In the process, pay attention that the tooth cutting edges of the chain point in direction of the marking 24 for the direction of travel and that the chain fastening bolt 23 engages in the hole in the guide rail provided for that purpose. Using combination screw driver 11 (Fig. 7), twist the gear shaft such that chain wheel 22 with the fitted saw chain easily engages in the driving gear teeth.



Caution!

After installation of the saw chain set, immediately pull off combination screw driver 11.

- Slide open the intermediate cover 19 and slightly tighten the hexagon socket head cap screw 18. Using combination screw driver 11,

turn the clamping screw 20 (Fig. 3) that can be reached through the hole in the intermediate cover clockwise until the correct chain tension has been achieved (see section 4.3).

- Tighten the hexagon socket head cap screw 18. Fold up the protection for the bottom chain deflection and tighten it with screw 5 (Fig. 1).
- Unlock the bottom guard flap 15 (Fig. 2). Fold up the cover 12 and tighten the cylinder head bolt 13. Fasten combination screw driver 11 in the brackets inside the cover.

If a new saw chain has been fitted, it must be run in idling mode for approx. 2 to 3 minutes. Pay attention to adequate chain lubrication. After running-in, it may be necessary to correct the chain tension.

4.3 Chain tension

For a safe operation of the machine and for the life time of the entire chain set it is important that the correct chain tension is set. This must therefore be checked prior to start-up and once in a while during operation. The chain tension is set correctly if in a cold operating condition, the saw chain abuts on the guide rail and can be manually lifted by 3 to 4 mm (1/8 to 3/16 in.).

When heated to operating temperature, the saw chain elongates and starts to sag. If the elongation is that large that the chain links start to disengage from the guide at the rail, the saw chain must be retensioned.



Danger

Pull the power plug during all service work.

Proceed as follows to retension the saw chain:

- Open the spring-loaded bottom guard flap 15 (Fig. 2) downwards. Using combination screw driver 11 fastened on cover 12 (Fig. 1), slightly release the hexagon socket head cap screw 18 (Fig. 2) through the bottom opening in cover 12 and screw 5 (Fig. 1).
- Adjust the chain tensioning screw 20 through the top opening in the cover (see Fig. 1) using combination screw driver 11. Turning clockwise means increasing and turning anti-clockwise means decreasing the chain tension.

- Tighten the hexagon socket head cap screw 18. Fold up the protection for the bottom chain deflection and tighten it with screw 5 (Fig. 1).
- Open the spring-loaded bottom guard flap 15 (Fig. 2) downwards and fasten it with the cover in open position.

If the saw chain is retensioned after it has heated up, it is absolutely necessary to slacken it again once sawing has been completed. Failure to do so would cause very high shrinkage stresses due to the saw chain contracting when cooling down to ambient temperature, in particular if very low outside temperatures are prevailing.

Until it has elongated, a new saw chain must be retensioned more frequently than a saw chain that has already been used for a longer period of time.

4.4 Chain lubrication

Correct lubrication of the saw chain is of major importance for its life time. A dry running chain will quickly damage the entire chain set irreparably. Lubrication is adequate if a trail of oil is visible between saw chain and guide rail.

It is therefore important to check the chain lubrication function prior to the start of work and to check the oil level in the lubricant tank. It may not drop below the marking placed in cover 12 (Fig. 1) next to inspection window 14. Only use biodegradable oil for the refill. The oil tank filling quantity amounts to approx. 0.3 litres.



Danger

If any oil should get into your eyes during refilling, immediately rinse them with a copious amount of water. Spilled oil must be absorbed with commercial oil binders. Before adjusting the chain lubrication pull the power plug!

The flow rate of the built-in oil pump can be adjusted. A normal dosing rate has been set at the factory, which can be verified by the fact that an oil trace is visible between saw chain and guide rail. However, if necessary, the dosing rate can be changed. Proceed as follows:

- Unfasten cylinder head bolt 13 using combination screw driver 11 enclosed in the supply and fastened on cover 12 (Fig. 1) and fold down the cover.
- Unscrew the hexagon socket head cap screw 18 (Fig. 2) and remove the Intermediate cover 19 including the oil tank.
- Dosing screw 25 (Fig. 4) that is now accessible at the rear of the intermediate cover can be used to adjust the oil pump's flow rate. Turning the screw clockwise increases the flow rate, turning it anti-clockwise decreases the flow rate.
- Refit the intermediate cover 19 (Fig. 2) and tighten it with hexagon socket head cap screw 18.
- Unlock the bottom guard flap 15 (Fig. 2). Fold up the cover 12 (Fig. 1) and tighten the cylinder head bolt 13. Fasten combination screw driver 11 in the brackets inside the cover.
- Whether the flow rate now meets the requirements can now be checked by briefly switching on the machine.

4.5 Setting the parallel stop

The parallel stop 7 (Fig. 1) is used to execute parallel cuts along the outside edge of the workpiece from a cutting width of 175 mm (6 57/64 in.). For this purpose, the narrow edge of the stop must point downwards.

With adapter 32 (Fig. 12) and guide rail 33 (both available as special accessories), the stop can be used from a cutting width in excess of 190 mm (7 31/65 in.).

The stop can be used on both sides of the machine.

To adjust the cutting width or to use it on the other side of the machine, the two wing screws 8 (Fig. 1) are unfastened, the parallel stop is moved accordingly and then the wing screws are retightened well.

The base plate is equipped with reading edges at all four slide-in positions on which the markings applied to the guide rods of the parallel stop can be read off. In this manner, the parallel stop can be set exactly parallel to the chain set.

When using the parallel stop on the left-hand side of the machine, the cutting width is the direct measurement between the guide surface of the limit stop and the tracing edge 26 (Fig. 6). This

measurement is the same for all cutting angles! If the parallel stop is used on the right-hand side of the machine, the chain width must still be deducted from this measure (6.8 mm for a vertical cut). However, in this case it is recommended to determine the correct setting by executing a trial cut. If the right-hand side of the chain is used to saw at the marking, tracing edges 27 graduated according to cutting angle apply (Fig. 6).

4.6 Setting for angle cuts (bevel and jack rafter cuts)

In order to carry out bevel cuts and in both directions, to the right up to 60°, to the left up to 15°. To do so, the machine is placed onto the trolley such that the guide rail is free moving. After unfastening of the handle 16 (Fig. 1) and deactivating the locking lever by pulling and twisting the handle 9, the machine can be tilted. The cutting angle can be read of the angle scale 17.

If the locking lever is activated, this facilitates setting the 0° and 45°- positions.

Depending on the set cutting angle, the maximum cutting depths amount to:

	260 HM	400 HM	400 Q
- at 60°	130 mm (5 1/8 in.)	199 mm (7 7/8 in.)	199 mm (7 7/8 in.)
- at 45°	184 mm (7 1/4 in.)	282 mm (11 1/8 in.)	282 mm (11 1/8 in.)
- at 30°	225 mm (8 7/8 in.)	346 mm (13 5/8 in.)	346 mm (13 5/8 in.)
- at 15°	251 mm (9 7/8 in.)	386 mm (15 1/4 in.)	386 mm (15 1/4 in.)

After setting the cutting angle, retighten handle 16.

4.7 Setting the glider

Use the glider 31 (Fig. 12) if the machine is used on the guide rail F 80, 110, 160, 210, 310 to prevent it from tilting to the right. If the machine is inclined, you need to adjust the glider to the right.

5 Operation

5.1 Initial operation

Personnel entrusted to work with the machine must be made aware of the operating instructions, calling

particular attention to the chapter "Safety instructions".

5.2 Switching on and off



Danger

Before switching on the machine, pay attention that the guide rail and the saw chain are unobstructed. The workspace underneath the workpiece must be free of obstacles. Lead the connecting cable away to the rear. Hold the machine with both hands by the handles provided for that purpose.

- **Switching on:** First unlock the switch-on lock by pressing the locking lever 10.1 (Fig. 1) to the front. Then actuate the control lever 10. As this is a switch without locking device, the machine will only run for as long as this switch is pressed.

The carpenter's chain saw ZSX TWIN-Ec is equipped with an electronic speed control. The speed is set to 3600 rpm

The built-in electronic system provides for jerk-free acceleration when the machine is switched on and under load readjusts the speed to the fixed setting.

- **Switching off:** To switch off, release the switch trigger 10. The switch-on lock automatically takes effect again and secures the carpenter's chain saw against accidental switch-on.

5.3 Work instructions

Handling and layout of the carpenter's chain saw ZSX TWIN-Ec corresponds to a portable circular saw. The riving knife/splitter 4 prevents the saw chain from jamming and the safeguard of the bottom chain deflection a turning up of the machine. It is particularly suited for cross cuts and longitudinal cuts requiring a large cutting depth, in particular also for joining laminated timber.

Before switching on, place the machine with its base plate 3 such onto the workpiece that there is not yet any contact between saw chain and workpiece. Hold the machine by both handles 1 and 2 and after switching on, slide evenly forwards without canting. Therefore, if possible, always guide the machine with

the parallel stop either along the workpiece edge or along a guide rail that is available as special accessory (see section 4.5). The use of a guide rail achieves a clearly higher cut quality.

5.4 Large cutting lengths

For large cutting lengths (e.g. several beams in a row) the guide rail can be tilted to the rear by 10° (see Fig. 5). This makes it easier to guide the machine straight ahead, in particular at the transition from one workpiece to the next.



Danger

Pull the power plug during all service work.

For tilting, first of all the two set screws 28 (Fig. 5) are unfastened with the enclosed operating tool and the chain guide rail is swivelled up to the limit stop in the direction of the rear handle. Then tighten the set screws again.

6 Service and maintenance



Danger

Pull the power plug during all service work.

MAFELL machines are designed to be low in maintenance.

The ball bearings used are greased for life. When the machine has been in operation for a longer period of time, we recommend to hand the machine in at an authorised MAFELL customer service shop for inspection.

6.1 Machine

The machine must be regularly cleaned off deposited dust. When doing so, you should clean the ventilation openings on the motor with a vacuum cleaner.

Only use our special grease, order No. 049040 (1 kg tin) for all greasing points.

The chain sets used on the machine should be regularly deresinated, as clean tools improve the quality of the cut. Deresination is carried out by soaking the chain set in petroleum or a commercial deresination agent for 24 hours.

6.2 Guide rail of the chain set

This guide rail must be maintained regularly. This includes lubricating the chain deflection wheel and deburring the rail.

Lubricating the carbide guide rail - see Fig. 8

- Dismantle chain set (see section 4.2).
- Clean lubrication hole.
- Place guide rail onto a flat surface.
- Press the mouthpiece of the grease gun tightly into the lubrication hole and press until grease emerges at the deflection. Use a good, acid-free bearing grease for this purpose.
- Refit the chain set (see section 4.2).

Deburring - see Fig. 9

- Dismantle chain set (see section 4.2).
- Remove chain from the guide rail.
- Remove the burr using a flat file as shown in Fig. 9.
- Replace the chain and refit the chain set (see section 4.2).

6.3 Chain wheel

The stress on chain wheel 22 (Fig. 3) is particularly high. If it exhibits extremely visible grooves at the individual teeth (approx. 0.5 mm / 1/64 in.) it must be replaced without fail. MAFELL recommends to have this work carried out by an authorised customer service shop.

6.4 General sharpening information

Just as important as quality and care of the **machine** are quality and care of the **saw chain, guide rail and chain pinion**.

If the care of one of these «partners», which are acting jointly during sawing, is neglected, the consequences are frequently:

- Wear or destruction of other partners
- Lacking cutting performance
- Bad surface
- A possible safety risk



Caution

Nails or adhering sand will damage the saw chain. They must be removed from the cut surface.



These chains can only be reground at MAFELL via your appointed dealer.

Saw chains for:

ZSX TWIN-Ec (Item No. 006968, 006971, 006972, 006974, 006977)

6.5 Storage

If the machine is not used for a longer period of time, it has to be carefully cleaned. Spray bright metal parts with a rust inhibitor.

7 Troubleshooting



Danger

Determining the causes for existing defects and eliminating these always requires increased attention and caution. Pull the mains plug beforehand!

Some of the most frequent defects and their causes are listed in the following chart. In case of other defects, contact your dealer or the MAFELL customer service.

Defect	Cause	Elimination
Machine cannot be switched on	No mains voltage	Check power supply
	Mains fuse defective	Replace fuse
	Carbon brushes worn	Take the machine to a MAFELL customer service shop
Machine switches off automatically during idling or stops during cutting	Mains failure	Check pre-fuse
	Machine overloaded	Reduce feed speed
Saw chain jams as the machine is advanced	Feed rate too fast	Reduce feed speed
	Blunt saw chain	Release the switch immediately. Remove machine from the workpiece and replace saw chain or have it reground at an appointed MAFELL dealer. Only concerns item No. 006968, 006972 and 006977 Before regrinding, mind the minimum length of the carbide teeth see Fig. 11
Saw chain is running out or increased effort necessary during advancing	Blunt saw chain	Replace saw chain or have it reground at an appointed MAFELL dealer
Chip ejection blocked	Wood is too damp	
Saw chain is coasting a long time after it has been switched off	Automatic chain brake defective	Take the machine to a MAFELL customer service shop

8 Optional accessories

- Guide rail 260 Order No. 204581
 - Fine-cut saw chain - HM 260 Order No. 006968
 - Driving star wheel Order No. 204584
 - Splitting wedge 260 Order No. 204586

- Guide rail 400 Order No. 204582
 - Fine-cut saw chain - HM 400 Order No. 006972
 - longitudinal cut chain – HM 400 Order No. 006977
 - Driving star wheel Order No. 204584
 - Splitting wedge 400 Order No. 204587

- Guide rail 400 for 3/8" Order No. 204583
 - Saw chain - 3/8" 400 cross and longitudinal cut Order No. 006974
 - Driving star wheel 3/8" Order No. 204585
 - Splitting wedge 400 Order No. 204587

- Guide rail F 80, 800 mm (2.62 ft) long	Order No. 204380
- Guide rail F 110, 1100 mm (3.61 ft) long	Order No. 204381
- Guide rail F 160, 1600 mm (5.25 ft) long	Order No. 204365
- Guide rail F 210, 2100 mm (6.89 ft) long	Order No. 204382
- Guide rail F 310, 3100 mm (10.17 ft) long	Order No. 204383
- Rail connector F – VS	Order No. 204363
- Rail bag 160	Order No. 204626
- Rail bags set 2x1.6 + F-VS + 2 x F-SZ	Order No. 204805
- Rail bags set 1x0.8 + 1x1.6 + F-WA + F-VS	Order No. 204749
- End caps F-EK	Order No. 205400
- Adhesive profile F-HP 6.8 m	Order No. 204376
- Splinter guard F-SS 3.5 m	Order No. 204375
- Sliding bevel segment F-WA	Order No. 205357
- Universal guide (shift rail)	Order No. 202069
- Guide rail, one-part, complete 3 m (9.84 ft) long	Order No. 200672
- Guide rail, two-part, complete 3 m (9.84 ft) long	Order No. 037037
- Guide rail – extension 1.5 m (4.92 ft) long	Order No. 036553
- Pair of adapters for parallel stop for hooking into the guide rail	Order No. 037195
- Flat file	Order No. 076058
- Push type grease gun	Order No. 076158

9 Exploded drawing and spare parts list

The corresponding information in respect of spare parts can be found on our homepage: www.mafell.com