

SM 2186

SM 2055 E

Operator's Manual



Please read these instructions carefully and make sure you understand them before using the one-man sawmill.

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INTRODUCTION

Introduction

This operator's manual describes in detail how the one-man sawmill is used and maintained and how servicing is to be carried out. It also describes the measures to be taken for maximum safety and how the safety features are designed and function, as well as how they are inspected, maintained, and repaired if necessary.

NOTE! The section dealing with safety must be read and understood by all those who install, use, or repair the sawmill.

The operator's manual comprises installation, usage, and the different maintenance procedures that can be performed by the operator. More comprehensive servicing or troubleshooting should be performed by the dealer's service personnel.

The operator's manual describes all the requisite safety features and should be read and understood by the user before the sawmill is assembled.

Symbols and warning signs shown on the next page can be found in this operator's manual and on the one-man sawmill. If a decal on the sawmill has been damaged or is worn, a new warning decal must be applied as soon as possible in order to ensure the greatest possible safety when using the sawmill.

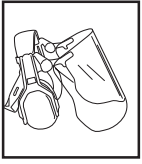
The one-man sawmill shall only be used to cut boards and planks from logs.

The one-man sawmill should be used outdoors and not in enclosed spaces.

KEY TO SYMBOLS

Symbols

The symbols below are used in this operator's manual.



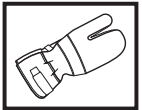
Eye protection and hearing protection should be used.



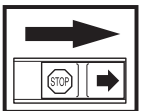
Boots or work shoes with steel toe caps and non-slip soles should be worn.



Eye protection should be used.



Protective gloves should be worn.
Switch off the engine by moving



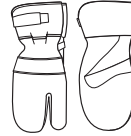
the stop switch to the STOP position before carrying out any checks or maintenance.

Warning Signs

The decal with the symbols below is found on the one-man sawmill.



Eye protection and hearing protection should be used.



Protective gloves should be worn.



Boots or work shoes with steel toe caps and non-slip soles should be worn.



Read this manual carefully and make sure you understand it before attempting to use the one-man sawmill.



Exercise caution.

SAFETY REGULATIONS

Safety Regulations



WARNING!
A one-man sawmill can be a dangerous tool that can cause serious or fatal injury if used incorrectly or carelessly. It is very important that the person using the one-man bandsaw reads and understands the content of this manual.

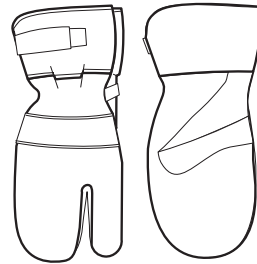
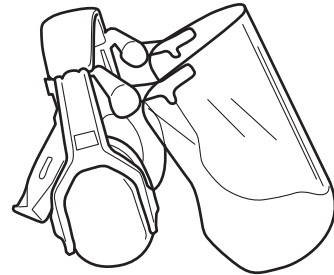


WARNING!
Always ensure good ventilation. Exhaust fumes and sawdust can cause injury or allergies.

Personal Protective Equipment

The person or persons using the one-man sawmill or remaining in its close proximity must be equipped with the personal equipment as set out below:

1. Hearing protection.
2. Eye protection.
3. Approved protective gloves.
4. Boots or work shoes with steel toecaps and non-slip soles.
5. First aid kit.



SAFETY REGULATIONS

The One-man Sawmill Safety Equipment



WARNING!
The one-man sawmill must never be used if any of the safety devices or guards is damaged or does not work.

There are a number of safety devices and guards in order to prevent accidents when using the sawmill. These are described in the sawmill's general description. See page 15.

The safety devices and guards also require regular inspection and maintenance. Measures and intervals are documented in the section Maintenance. See page 29-32.

Fuel Safety



WARNING!
The fuel used in the one-man sawmill has the following hazardous properties:

1. The fluid, its vapour, and its exhaust fumes are poisonous.
2. Can cause skin irritation.
3. Is highly inflammable.

Special safety regulations apply to the fuel used with the one-man sawmill. These are documented in the section Fuel Handling on page 21.

Risk Zone

The risk zone is evident from the picture to the right. No unauthorised persons may be present in the risk zone.

The risk zone should also be kept free of foreign objects and the ground within the risk zone should be flat so that the operator avoids stumbling.

Personnel

The following apply to personnel using the one-man sawmill:

1. Shall have read and understood the content of this operator's manual.
2. Must not be under the influence of alcohol or medication, nor suffering from tiredness.
3. Good lighting is required when using the sawmill outside daylight hours.
4. Shall not be a minor.
5. Earthed circuit breaker recommended.

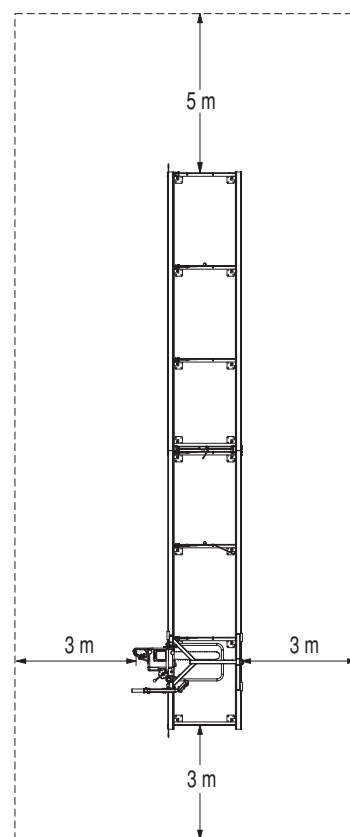
Safety During Use

The safety regulations that apply while using the one-man sawmill are documented in their respective areas under the section Use on page 25-28.

The operator should observe the following safety measures before and during use:

1. Check that all safety devices and guards are fitted and undamaged.
2. Check that no fuel has been spilt on the outside of the tank or on the ground.
3. Ensure that there are no people or animals within the one-man sawmill's risk zone.
4. The stopping and locking devices required to fasten the log shall be used in the intended manner. See pages 25-28.
5. Adjust the scale and check that the bandsaw moves freely over the short and long log supports by the red markings on the scale. See page 19, FIG. 34.

FIG. 1



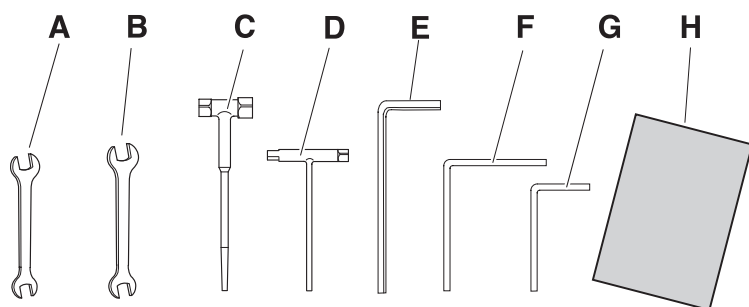
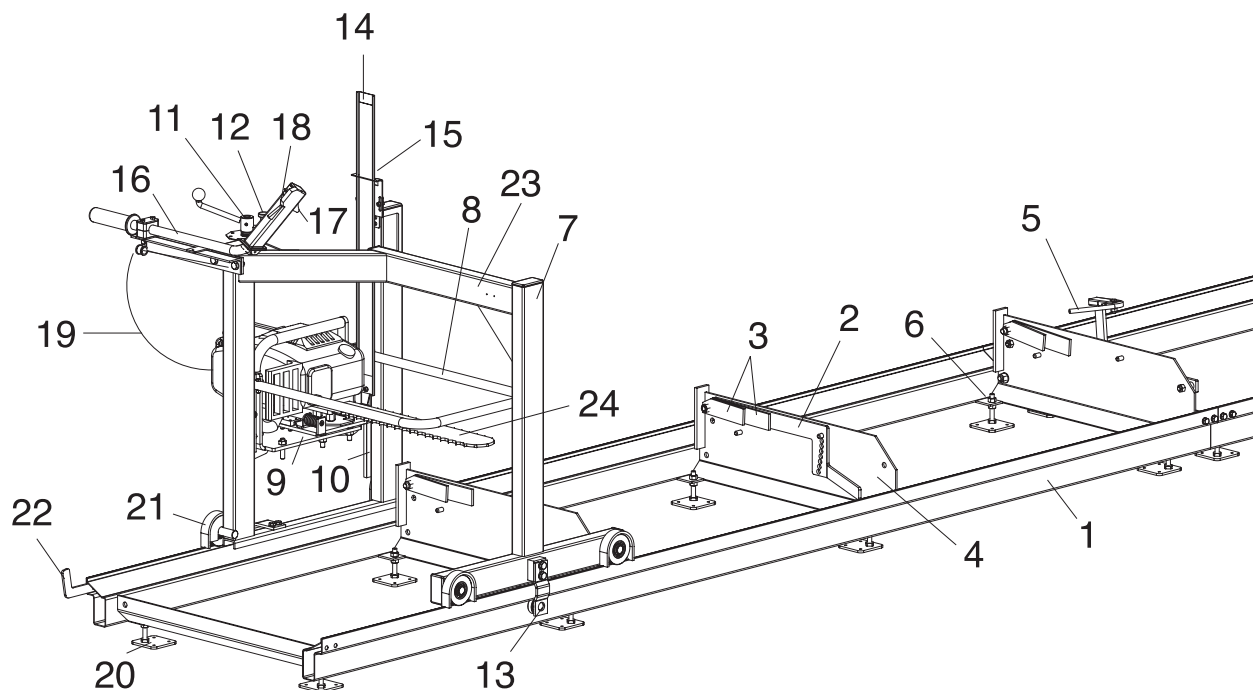
DESCRIPTION

One-man sawmill chain saw engine

The one-man sawmill consists of two main parts:

- The carriage with engine and saw
- Rails

- | | |
|---|------------------------------|
| 1. Rail sections (2) | 13. Underlying support wheel |
| 2. Log lifter | 14. Scale pointer with scale |
| 3. Timber supports (short and long) | 15. Indicator |
| 4. Log bolster | 16. Handlebars |
| 5. Log lock | 17. Throttle |
| 6. Adjustment nut | 18. Throttle lock |
| 7. Saw carriage | 19. Throttle cable |
| 8. Protective loop | 20. Support foot |
| 9. Vibration damping plate | 21. Scraper |
| 10. Skid rail | 22. Rail stop |
| 11. Idler adjustment screw for saw height | 23. Machine plate |
| 12. Height setting lock | 24. Bar and chain |



Tools and operator's manual

- A. Open ended spanner 13-15 mm
- B. Open ended spanner 17-19 mm
- C. Socket spanner
- D. Combination spanner 13-19
- E. Combination spanner
- F. Allen key 6 mm
- G. Allen key 4 mm
- H. This operator's manual

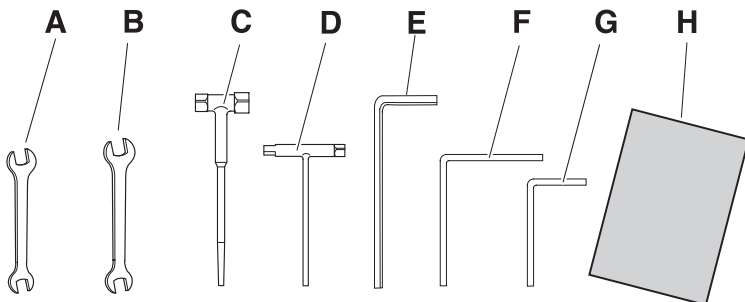
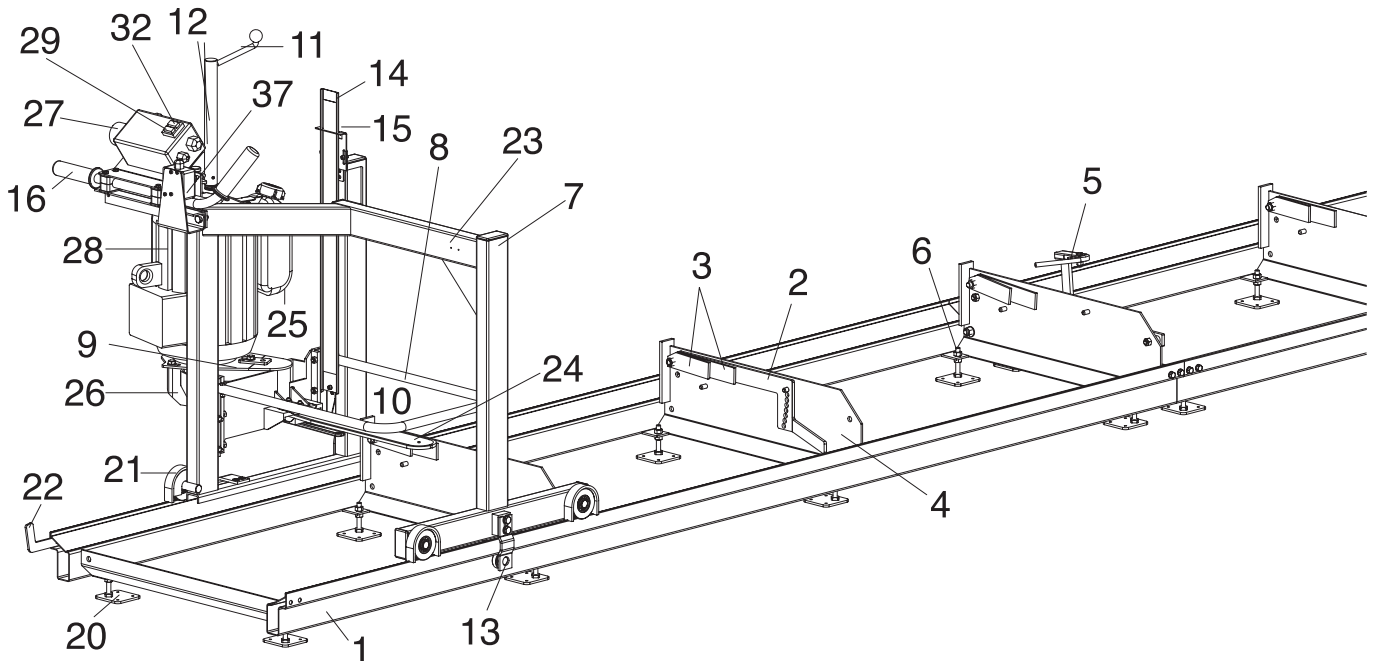
DESCRIPTION

One-man Sawmill Electric Motor

The one-man sawmill consists of two main parts:

- The carriage with motor and saw
- Rails

- | | |
|---|-----------------------------------|
| 1. Rail sections (2) | 16. Handlebars |
| 2. Log lifter | 20. Support foot |
| 3. Timber supports (short and long) | 21. Scraper |
| 4. Log bolster | 22. Rail stop |
| 5. Log lock | 23. Machine plate |
| 6. Adjustment nut | 24. Bar and chain |
| 7. Saw carriage | 25. Oil tank |
| 8. Protective loop | 26. Motor console |
| 10. Skid rail | 27. Connector with phase inverter |
| 11. Idler adjustment screw for saw height | 28. Electric motor |
| 12. Height setting lock | 29. Start button electric motor |
| 13. Underlying support wheel | 32. Stop button electric motor |
| 14. Scale pointer with scale | 37. Safety switch |
| 15. Indicator | |



Tools and operator's manual

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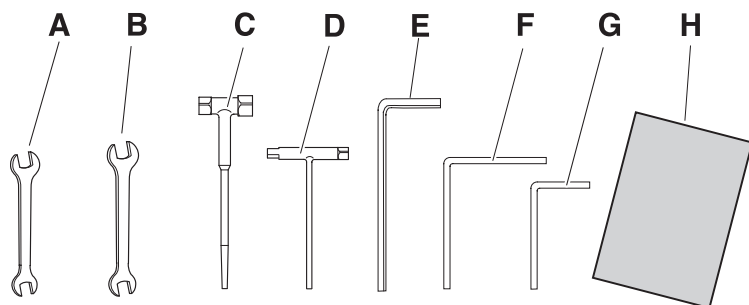
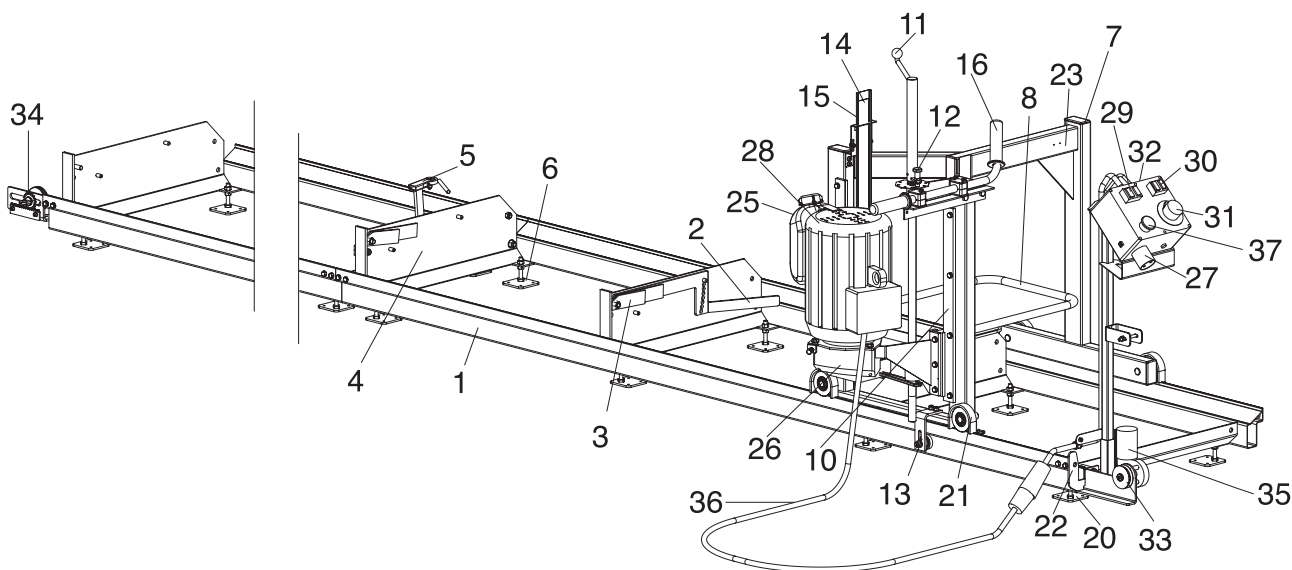
DESCRIPTION

One-man sawmill with electric motor and feed

The one-man sawmill consists of three main parts:

- The carriage with motor and chain
- Feed unit
- Rails

- | | |
|---|-----------------------------------|
| 1. Rail sections (2) | 21. Scraper |
| 2. Log lifter | 22. Rail stop |
| 3. Timber supports (short and long) | 23. Machine plate |
| 4. Log bolster | 25. Oil tank |
| 5. Log lock | 26. Motor console |
| 6. Adjustment nut | 27. Connector with phase inverter |
| 7. Saw carriage | 28. Electric motor |
| 8. Protective loop | 29. Start button electric motor |
| 10. Skid rail | 30. Start button feed |
| 11. Idler adjustment screw for saw height | 31. Control for variable feed |
| 12. Height setting lock | 32. Stop button electric motor |
| 13. Underlying support wheel | 33. Feed wheel with cable |
| 14. Scale pointer with scale | 34. Cable adjustment |
| 15. Indicator | 35. Feed motor |
| 16. Handlebars | 36. Electric cable with connector |
| 20. Support foot | 37. Safety switch |



Tools and operator's manual

- A. Open ended spanner 13-15 mm
- B. Open ended spanner 17-19 mm
- C. Socket spanner
- D. Combination spanner 13-19
- E. Combination spanner
- F. Allen key 6 mm
- G. Allen key 4 mm
- H. This operator's manual

DESCRIPTION

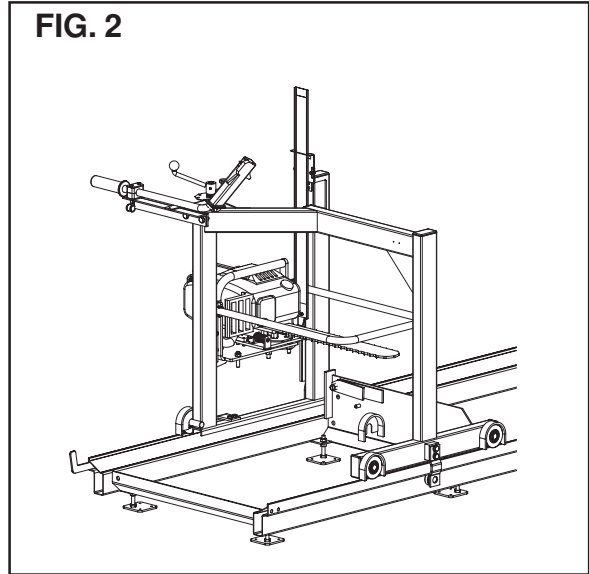
Saw carriage (FIG. 2)

The saw carriage in the same version for all one-man sawmill models and comprises the following parts:

- Steel structure with runner wheels against the rails and guides for the saw's up and down movement.
- One screw for the saw's vertical adjustment. The screw is operated by a crank and is equipped with an index plate.
- Handle with operating mechanism.
- Vibration damping plate (One-man sawmill with chain saw engine)
- Motor console (One-man sawmill with electric motor)
- Bar and chain
- Chain oil tank for the chain (One-man sawmill with electric motor)

A suitable chain saw is also installed on the saw carriage.

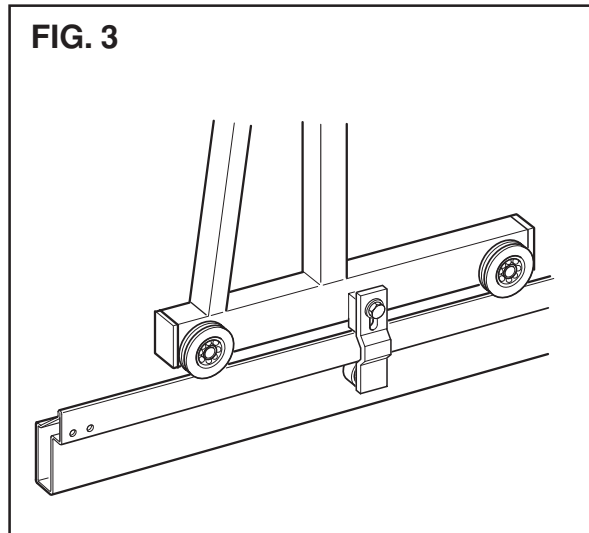
FIG. 2



Frame (FIG. 3) and (FIG. 4)

The carriage frame consists of welded square tubing with requisite corner reinforcement for stability during cutting. The console is installed in the saw carriage for the saw unit's up and down movement. On the underside of the frame are four runners, fitted with bearings, with slots for securing and smooth running along the rails. The carriage is equipped with two adjustable bearings, which run against the underside of the rails, to prevent it from lifting.

FIG. 3



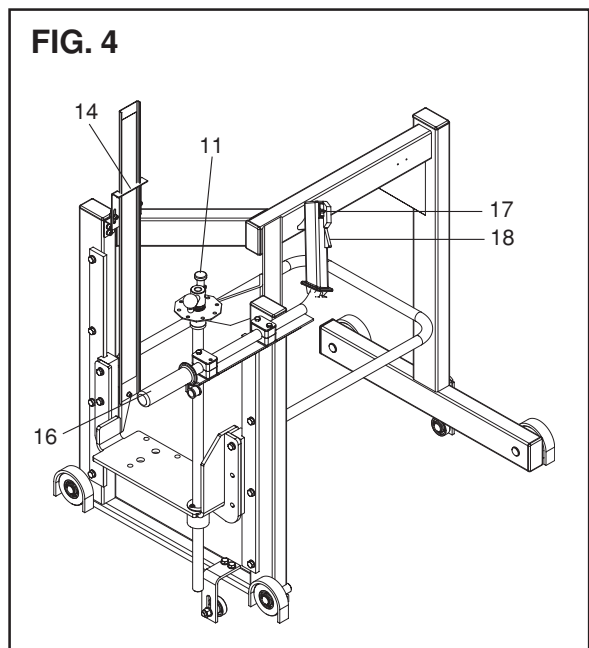
Height Setting (FIG. 4)

The saw unit is secured vertically by a screw. A crank (11) is fitted on the top section of the screw, and is used to set the exact dimension of the timber thickness. One turn of the crank moves the bandsaw blade 5 mm. The height of the bar above the rails' cross members is read on the scale (14). There are two red markings on the scale that indicate the lowest saw height with the timber support raised, one red line for the long timber support and one red line for the short one. CAUTION! Sawing under the respective markings will damage the chain and there will be a risk of sparking.

Handlebars (FIG. 4)

The saw carriage is operated and moved forwards using handlebars (16), which are located on the left-hand side of the saw carriage. The handlebars are equipped with a throttle for start lock (17, 18). On the one-man sawmill with feed, the handlebars are used for feeding when you want to approach the end of the log to calculate the saw yield.

FIG. 4

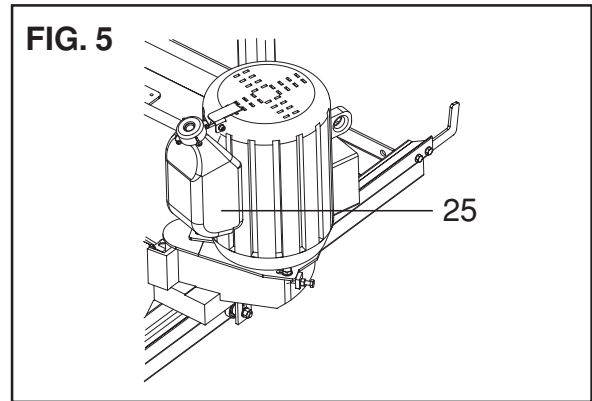


DESCRIPTION

Chain oil tank (FIG. 5)

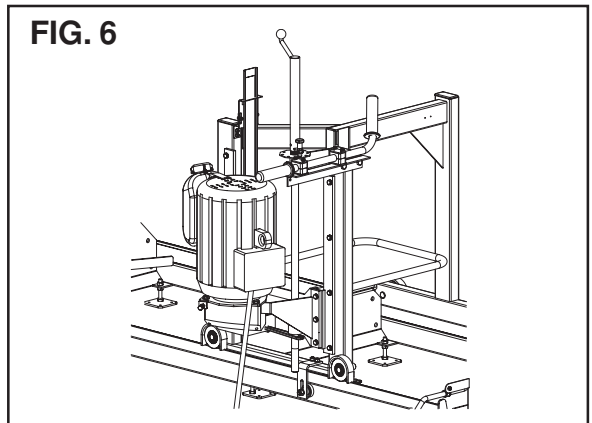
Chain sawmill with electric motor

On the saw carriage for sawmills that are fitted with an electric motor, the oil tank (25) for chain oil is located on the electric motor. The chain oil is pumped via a hose by a chain oil pump that is installed under the clutch drum in the console. The pump supplies the bar with chain oil when the sawmill is running.



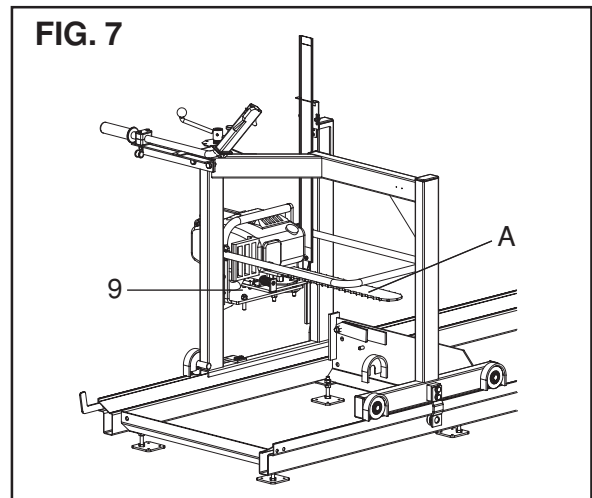
Motor console for electric motor (FIG. 6)

The chain sawmill with electric motor is fitted with a console in which the motor, transmission and bar are installed. The console is installed in the saw carriage and is adjusted vertically with the idler adjustment screw. The console runs on skid rails with adjustable plastic guides.



Vibration damping plate for the chain saw (FIG. 7)

The chain saw is secured in a vibration-free plate (9) that is screwed into the saddle. The vibration-free plate is supplied with an adjustment option, where the position of the saw in relation to the rails can be adjusted. The saddle is installed in the saw carriage and is adjusted vertically with an idler adjustment screw.

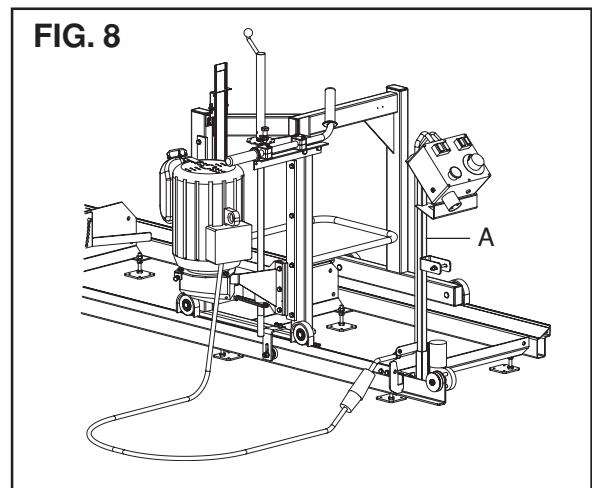


Bar and chain (FIG. 7)

The bar and chain (A) are installed on the engine console (electric sawmill) and installed on the chain saw in accordance with the chain saw's operator's manual. The bar has the same mounting on both the sawmill with the chain saw and the electric saw mill.

Feed unit for chain sawmill with electric motor (FIG. 8)

The feed unit (A) is installed in the left-hand end of the rail profile and is connected to the saw carriage by a cable. The chain is started from the feed unit and the feeding speed can be controlled variably.

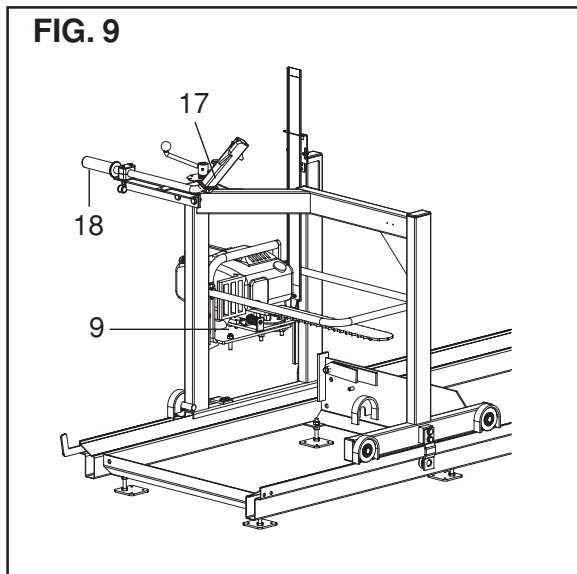


DESCRIPTION

Motors

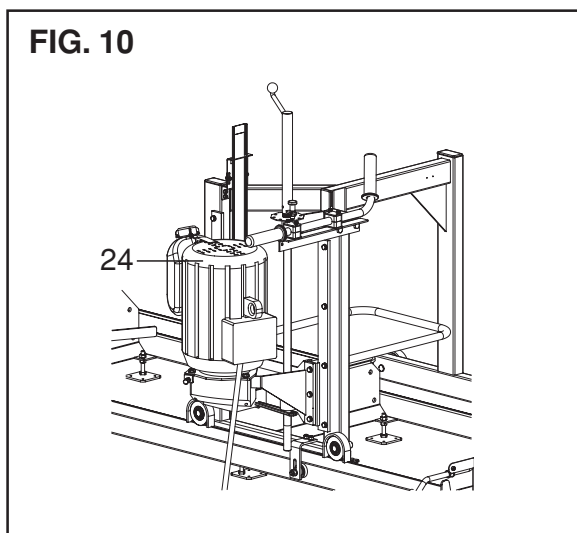
Chain saw engine (FIG. 9)

The one-man sawmill is powered by a standard chain saw ranging from 65 cm³ up to 95 cm³. The chain saw is mounted on a vibration-free plate (9), where it is screwed into the bar mounting with two spacers and screws (15). The saw's speed is controlled from the throttle (17) on the handlebar (18), which is connected by a cable to the chain saw. The cable is secured in a special mounting that is screwed onto the saw. For a further description of the chain saw, see the enclosed operator's manual for the chain saw.



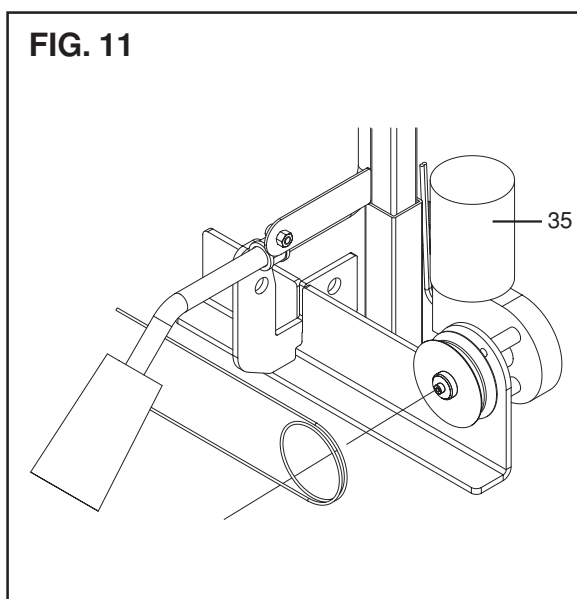
Electric Motor (FIG. 10)

The one-man saw is powered by a 3-phase motor (21). The motor is started and stopped with the start and safety switches on the distribution box, which has built-in motor protection. There is also a connection for an electric cable with single phase inversion.



Electric motor feed unit (FIG. 11)

The feed unit is powered by a 42 volt DC motor (35). The speed of the motor is controlled variably from the control box.



DESCRIPTION

Rails

The rails consist of two sections (standard delivery). Each section is 3 m. The sections are aligned and bolted together into a track for the carriage. The rail sections are bolted together and fastened using M12 bolts with nuts, which assures stability and ensures that the carriage runs straight.

The rails also have a number of transverse log bolsters, designed to provide a stable support for the log to be cut or the planks to be trimmed.

The rails' transverse log bolsters are equipped with:

- Folding stop for the log
- Log lock
- Height adjustment of one end of the log

The rails are also fitted with stops at both ends for the saw carriage, as well as adjustable jointing plates on the section joints.

FIG. 12

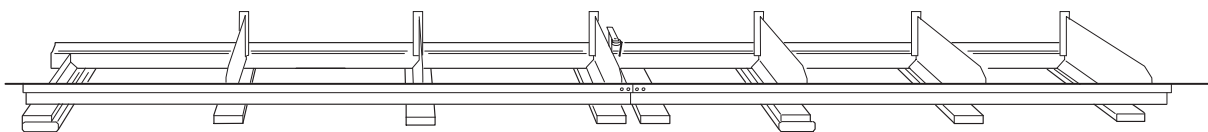
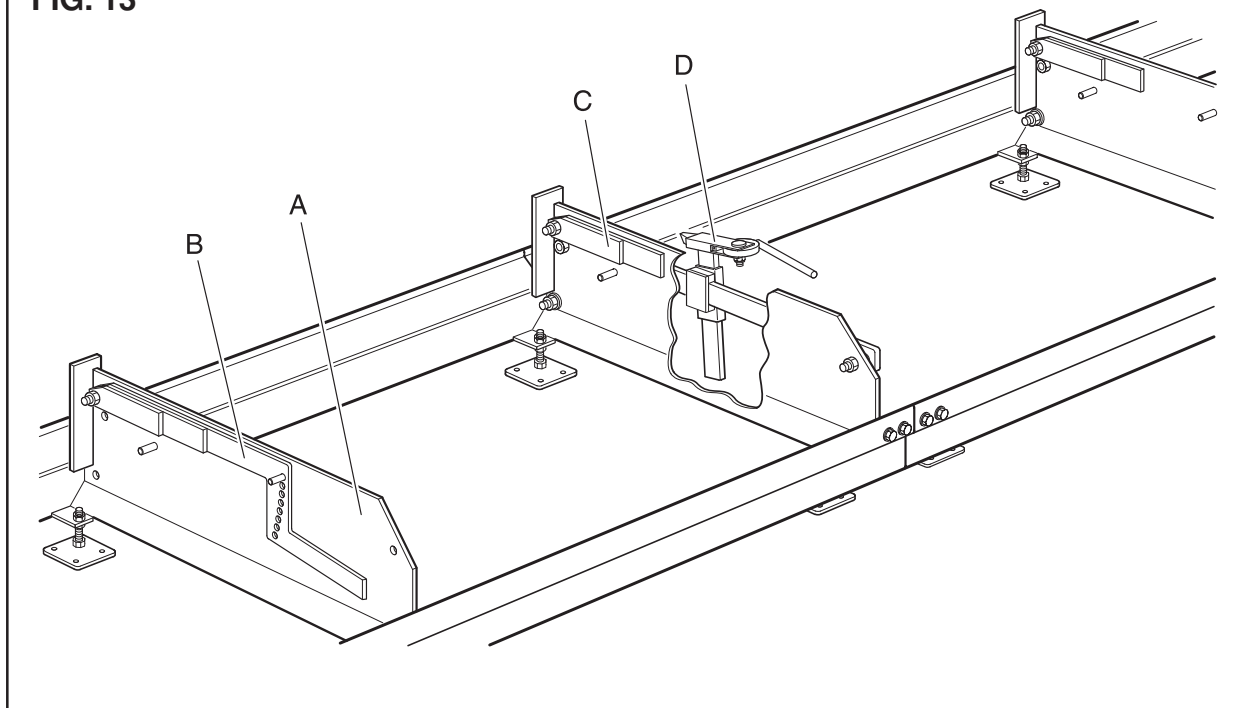


FIG. 13



Log Bolsters (A)

The rails have a number of transverse log bolsters that provide a stable support for the log to be cut or the planks to be trimmed.

Height Adjustment (B)

The height adjustment is designed to raise the small end of the log, so that the core becomes horizontal.

Folding Stops (C)

There are a number of folding stops for the log on the left-hand side of the rails. To increase usability, the stops come in two different lengths.

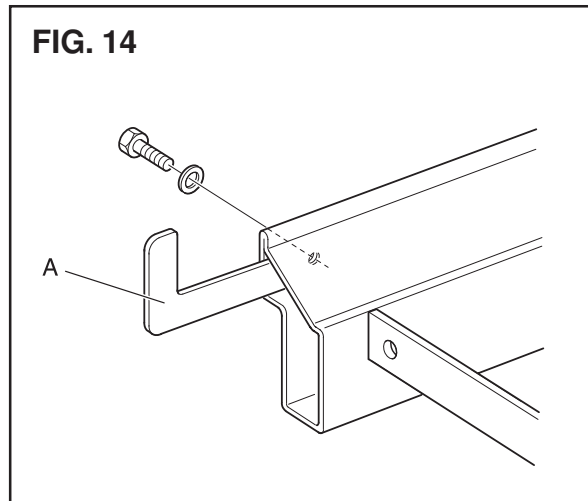
Log Locks (D)

The log locks consist of a cam with handle, housed in a moveable unit. The locks are used to secure the log against the folding stops.

DESCRIPTION

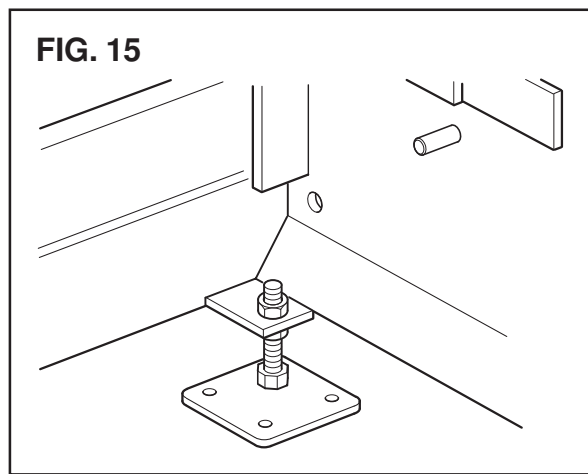
Rail Stop

Rail stops are fitted at the ends of the rails (A). The stop is mounted using a bolt from the side of the rail.



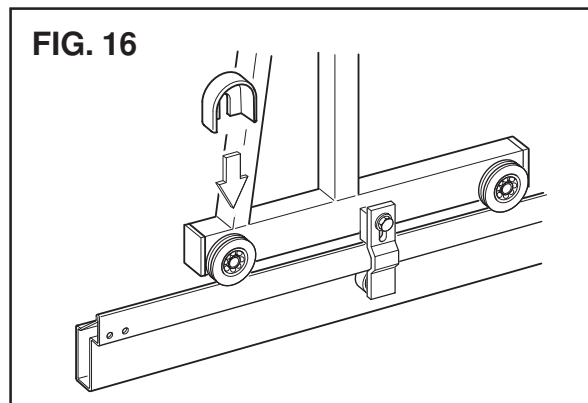
Adjustable Support Feet

Adjustable support feet are mounted by each log bolster. You can fine tune the rails' adjustment using the support feet.



Rail Guard

The saw carriage is equipped with four rail guards that run above the rails. The rail guards have the tasks of keeping the rails clean and preventing crush injuries between the runner wheels and rails.



DESCRIPTION

Safety Devices

The one-man sawmill is fitted with a number of safety devices, which are described under the headings below.



WARNING!
The one-man sawmill must not be started if any of the safety devices have been removed, are defective, or are not working.

Saw chain guard (FIG. 17)

A protective loop (8) is installed as a guard over the saw chain.

Chain brake (FIG. 17)

The chain is started with a centrifugal clutch on both the sawmill with the chain saw engine and the electric sawmill. As soon as the engine speed drops, the chain is disengaged and then stops.

Starter electric motor (FIG. 18)

The electrically powered sawmill is equipped with a main switch (A), connector with phase inverter (27) as well as a start button (29) with safety switch (37) and stop button (32). The sawmill stops as soon as the safety switch is released. The starter, which is located on the handlebar (16), is equipped with a 0-volt trigger. This means that the sawmill's electric motor must be restarted after a power outage.

Stop button chain saw engine (FIG. 19)

On the chain saw engine there is a stop button on the engine body, see the chain saw operator's manual.

Starter electric motor with feed (FIG. 20)

The starter is equipped with a safety switch (37) and start button (29), with which the saw motor is started. The safety switch must be activated throughout the entire cutting process, as the saw motor and hence the feed stop as soon as the safety switch is released. The feed starts when the start button (30) is activated and controlled variably with the control (31). The saw carriage can be returned by activating the start button, as soon as the saw motor has stopped. The feed then changes direction and returns. The speed is controlled variably with the control (31). The starter is equipped with a phase inverter (27) in the connector.

FIG. 17

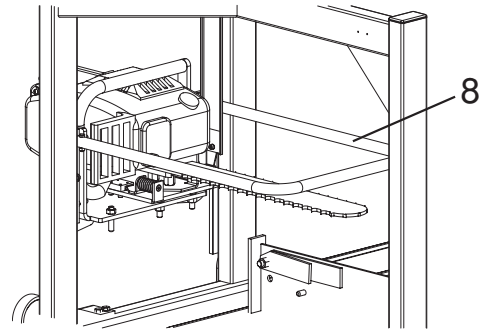


FIG. 18

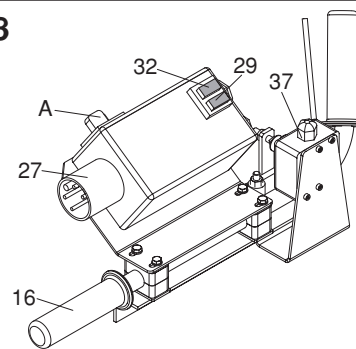


FIG. 19

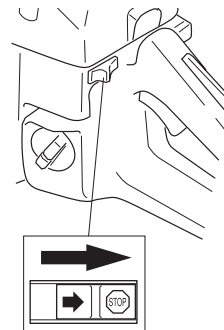
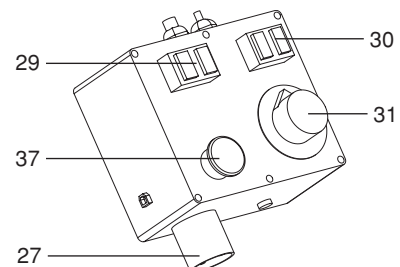


FIG. 20



INSTALLATION

Unpacking

Unpack the one-man sawmill and check that the delivery is complete. Check that no parts are damaged. If any part is damaged, report this to the carriers.

The operator's manual includes detailed instructions about safety, assembly, use, and maintenance of the one-man sawmill.

Parts that are included are pictured in the Description section on page 7-9 . Component parts are packed according to the following:

1. Rail sections (quantity according to the order)
2. Saw carriage
3. Feed unit
4. 4 rail guards
5. Bar and chain
6. Assembly components

Installation

Installation Site

The one-man sawmill with petrol engine should be installed outdoors.

There should be space to lay out timber and sawn wood.

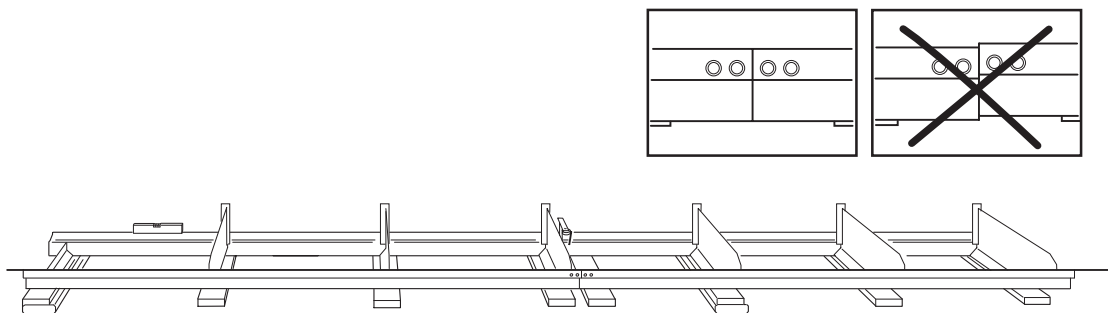
Rails

Place the rail sections after each other on the transverse wooden beams, which are placed under each log bolster, and an extra transverse wooden beam by the joints between the sections.

Continue as follows:

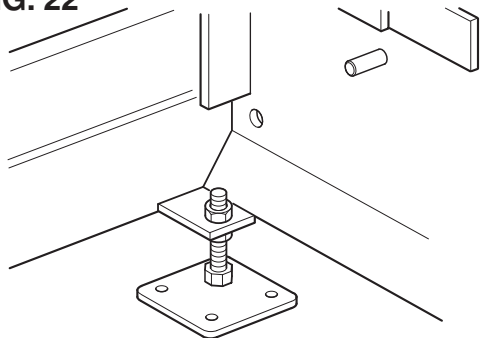
1. Assemble the adjustable feet under each of the 16 log bolsters. Adjust, by using the adjustable feet and the rails' bedding, until the rail sections form a straight line and the rails sit firmly on each wooden beam. See FIG. 21.
2. Loosely bolt together the rail sections using the supplied jointing plates and M12 nuts and bolts. See FIG. 23.
3. Finely adjust the rails and tighten all the bolts. Tighten the bolted joints to 5-10 Nm. See FIG. 21.
4. Fit the stops to the ends of the rails (see page 14, FIG. 11), as well as the folding stops, log lift, and log lock (see page 13, FIG. 10).
5. Load the rails above each wooden beam and check that the rails do not move.

FIG. 21



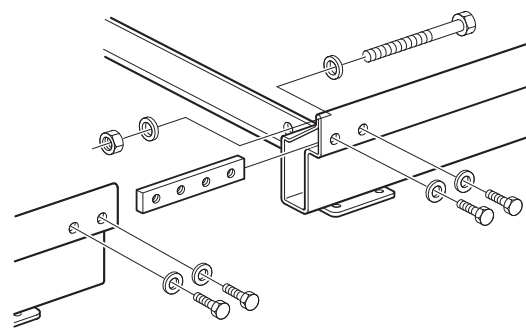
Aligning the rails

FIG. 22



Adjustable foot

FIG. 23



Bolted joint

INSTALLATION

Setting up the Saw Carriage (FIG. 24)



WARNING!
The saw carriage is heavy. Two persons are required when setting up. Always wear boots with steel toecaps.

CAUTION!

Do not drop the saw carriage onto the rails or any other hard surface too heavily. This will result in permanent damage to the saw carriage's bearings.
Do not place the saw carriage directly on the ground so that dirt and unnecessary contamination can come into contact with the saw carriage's wheels.

Place the saw carriage on the rails and make adjustments as follows:

1. Two persons take hold of the saw carriage, one on each side. Hold the saw carriage as follows: **The right-hand side:** under the engine console (A) on the electric sawmill or under the saddle on the chain saw sawmill. **The left-hand side:** in the sawmill chassis (B).
2. Lift and place the saw carriage so that the grooves in its wheels are positioned above their respective rails (FIG. 25). Carefully lower the saw carriage onto the rails.

FIG. 24

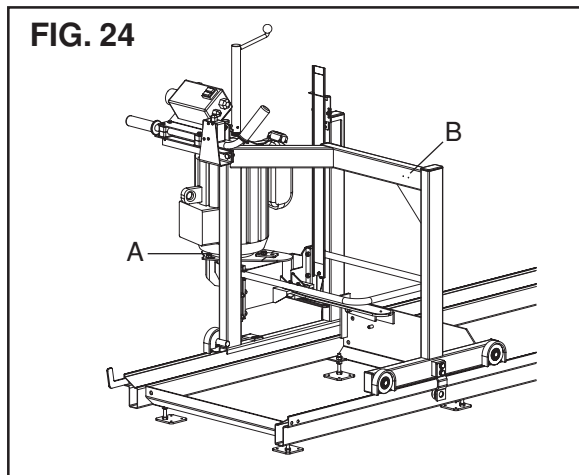
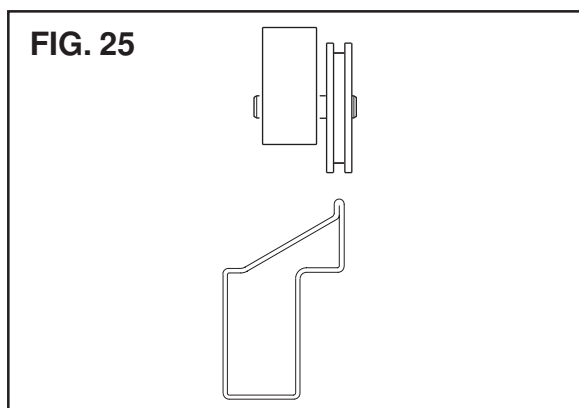


FIG. 25



Saw Carriage Adjustment (FIG. 26)

The saw carriage is aligned on the rails by fitting its lower guide wheels and rail guards. The lower guide bearings have the task of preventing the saw carriage from tilting and the rail guards keep the rails and the saw carriage's wheels free from dirt and the like.

Assembled on the saw carriage are:

- Two lower guide wheels
- Four rail guards.

Assembly is done as follows:

1. Fix the guide wheel's bracket in place with a screw. Place a 0.2 mm feeler gauge between the bearing and rail (FIG. 26).
2. Press the bearing against the rail and tighten the bearing bracket screw. Tightening torque: 40-50 Nm. Now remove the feeler gauge.
3. Carry out 1-2 above for the remaining guide wheels.
4. Position the four rail guards (FIG. 27) above the wheel.

FIG. 26

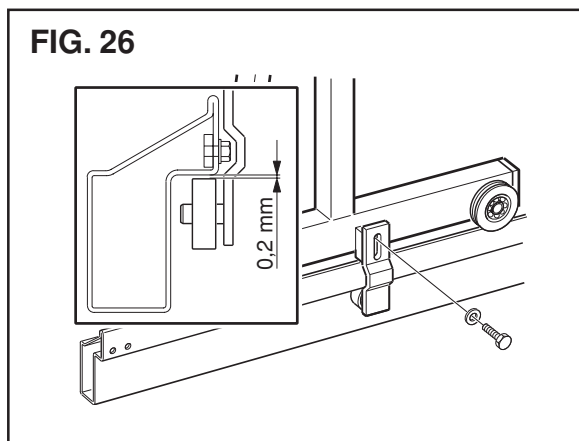
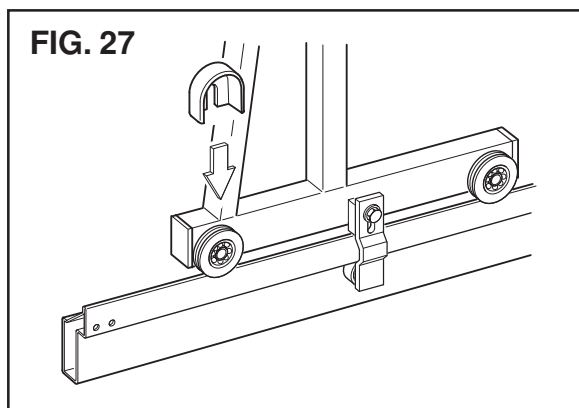


FIG. 27



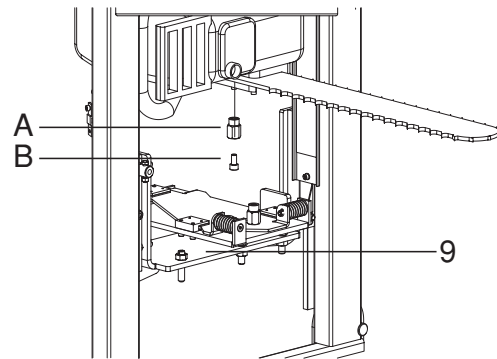
INSTALLATION

One-man sawmill with chain saw engine

Install chain saw and bar (FIG. 28)

1. Install the chain and bar on the chain saw, see the chain saw operator's manual. Replace the saw's bar nuts with two extended bar nuts (A).
2. Screw in the Allen screws (B) a little way into the bar nuts.
3. Screw the nuts onto the three bolts on the underside of the vibration damping plate (9).
4. Install the vibration damping plate in the saddle on the saw carriage using a nut on each side of the hole. Adjust the position of the saw with the nuts.
5. Lift the saw into position on the vibration damping plate and align the Allen screws in the 'keyholes' on the vibration damping plate (9).
6. Tighten the Allen screws with an Allen key.

FIG. 28



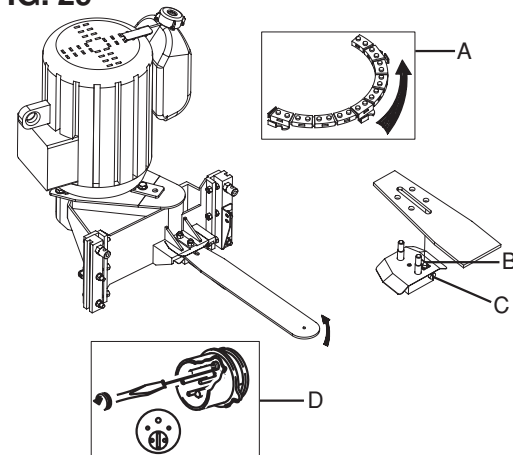
One-man sawmill with electric motor

Install the bar (FIG. 29)

Install the chain and bar on the motor unit as follows:

1. Secure the chain around the motor unit's sprocket. Ensure that its teeth correspond with the direction of rotation according to the arrow (A).
2. Position the bar and thread the chain around the bar. CAUTION! Ensure that the tip of the tension screw's nut (B) fits into the hole on the bar.
3. Install the guide (C) and loosely tighten the two bar bolts (just so that there is no play on the bar).
4. Adjust the chain using the tension screw. Tighten to a torque of 30 Nm.
5. The direction of rotation is changed using the phase inverter (D).

FIG. 29



One-man sawmill with electric motor and feed (FIG. 30)

Install the control unit and electric motor as follows.

1. Install the feed unit at the end of the rails.
2. Insert the cable with the connecting nipple through the profile by the feed unit.
3. Route the cable around the adjuster pulley (A) at the other end and route it back to the saw carriage.
4. Wind the cable once around the wheel (FIG. 31 E) on the feed motor.
5. Connect the cable in the connector (FIG. 31 B).
- CAUTION! The spring must be facing the feed unit.
6. Connect the connector in the saw carriage (FIG. 31 C).
7. Tension the cable and lock the adjuster pulley (FIG. 31 D) so that the spring stretches approximately 5 mm.

FIG. 30

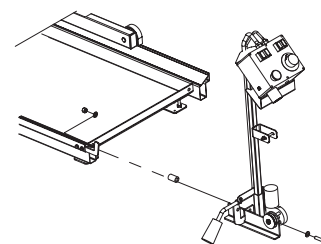
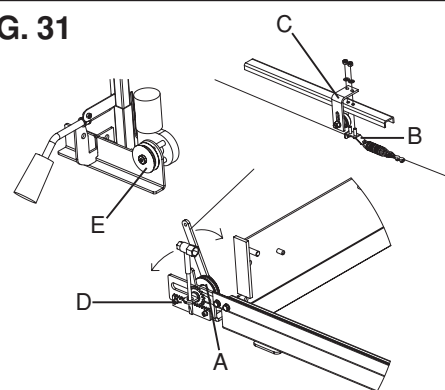


FIG. 31



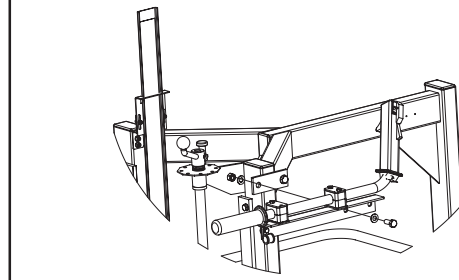
INSTALLATION

One-man sawmill with chain saw engine

Install the handlebar (FIG. 32)

The handlebar with the throttle is installed on the saw carriage using two bolts.

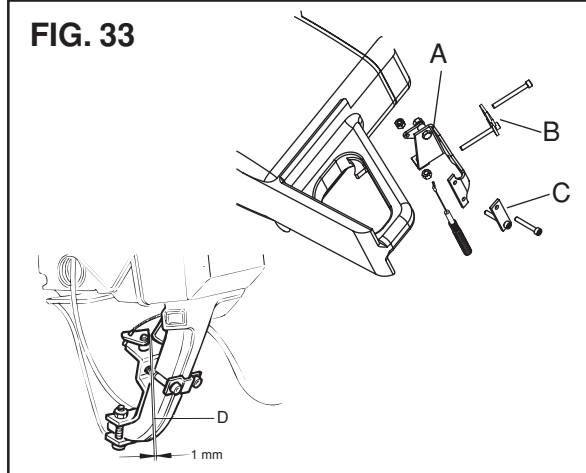
FIG. 32



Install throttle and cable (FIG. 33)

The throttle and lever are installed in the chain saw's handle. The loop (A) is positioned inside the handle. The washers (B and C) are screwed into position. When the throttle's mounting is installed, the throttle lock on the saw is pressed in. Connect the cable from the handlebar into the lever and adjust it using the screw nipple. When the throttle on the handlebar is not activated, the play between the throttle on the saw and the lever (D) should be approximately 1 mm.

FIG. 33

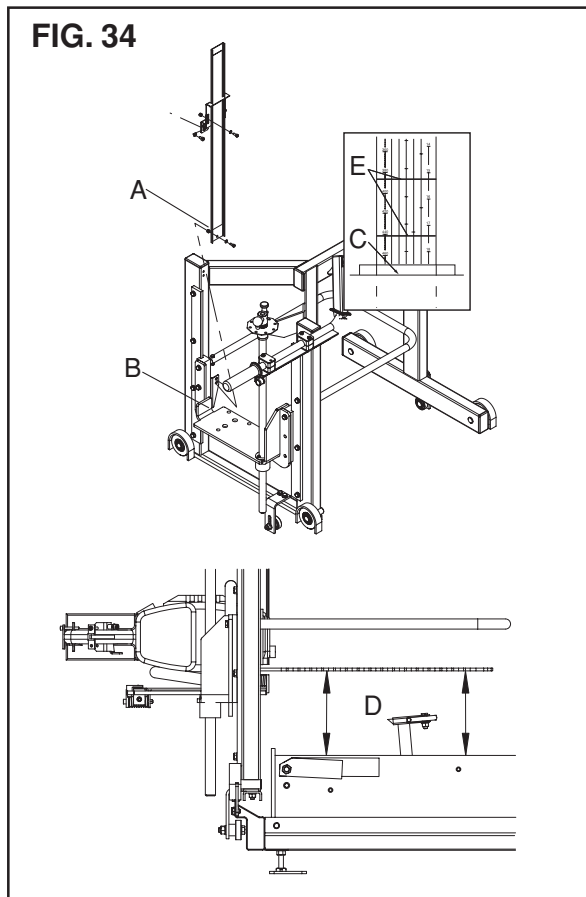


Install scale pointer and scale (FIG. 34)

Install the scale pointer and scale as follows:

1. The scale pointer is installed using two self-tapping screws (A).
2. Insert the scale through the scale pointer from above. The scale's greatest value should point downwards. Screw the scale into the saw carriage (B).
3. Measure the distance between the lower part of the saw chain (D) and the log bolster. Set the scale pointer so that the scale has the same value.
4. Bolt on the scale pointer.
5. Check that the saw chain moves freely over the long (E) and short (C) log supports when the red mark can be read on the scale.

FIG. 34



INSTALLATION

One-man sawmill with chain saw engine

Adjusting the bar

The bar must be adjusted so that it is parallel with the log bolsters and with the rails. This is done using the nuts under the vibration damping plate. Set the bar so that it is parallel with the rails by positioning a straight ruler measuring approximately 1 m across the bar. Then place a board between the log bolsters on the rails. Adjust with the two inner adjustment nuts, so that the distance between the board and the ruler is the same. Using the nuts under the vibration damping plate, the ruler (FIG. 35) can be adjusted so that it is parallel (has the same dimensions at both ends).

Then adjust the bar so that it is parallel with the log bolsters (FIG. 36). Adjust using the outer adjustment nut until the distance between the log bolsters and the bar is the same along the entire length of the bar. Then tighten the locking nuts. Check the setting once more. To achieve the optimum result, it is very important to ensure that these settings are performed accurately. This prevents the timber being at an angle or the bar catching.

FIG. 35

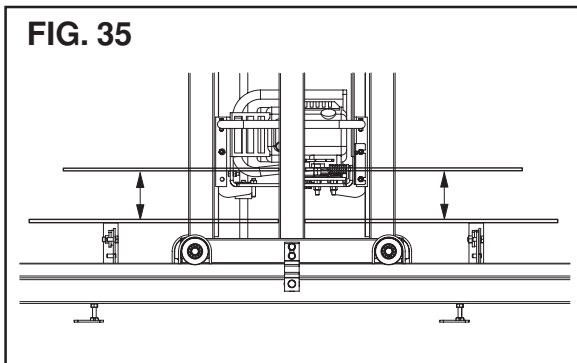
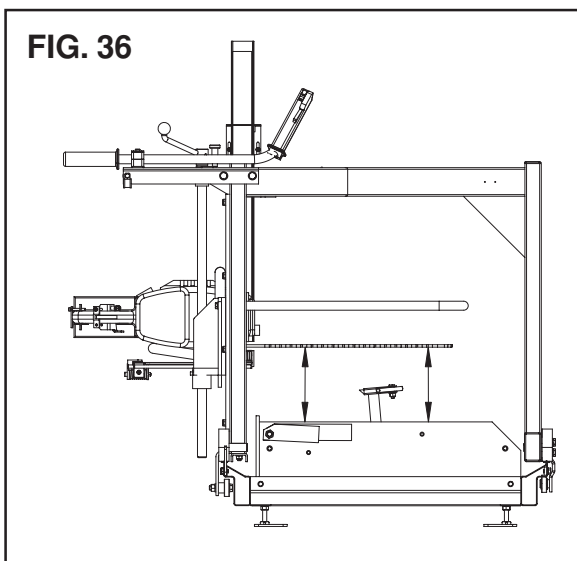


FIG. 36

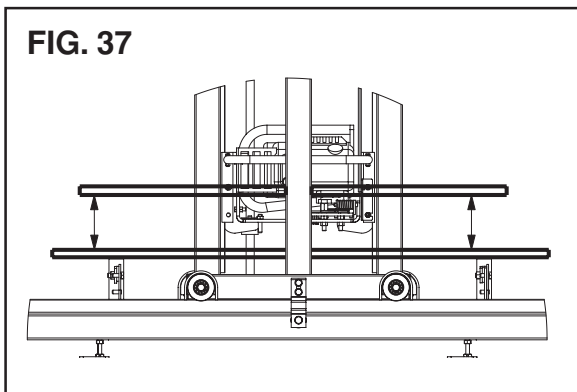


One-man sawmill with electric motor

Checking the bar

On a one-man sawmill with electric motor, the parallelism of the bar is set in the factory. To ensure that this setting has not been altered during transport and installation, the setting (FIG. 37) should be checked when the sawmill has been installed in accordance with the instructions for the one-man sawmill with chain saw engine. Adjust the bar using the adjustment screws on the console's plastic guides.

FIG. 37



FUEL HANDLING

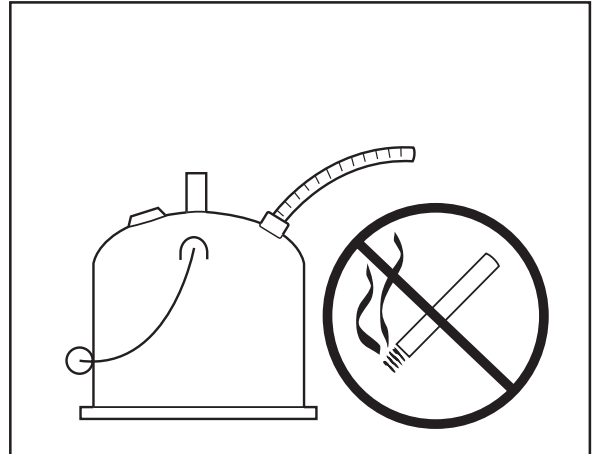
Fuel chain saw engine

Fuel Safety



WARNING!
The fuel used in the one-man sawmill has the following hazardous properties:

1. The fluid, its vapour, and its exhaust fumes are poisonous.
2. Can cause skin irritation.
3. Is highly inflammable.



The following are absolutely forbidden when fuelling:

- **Smoking.**
- **To have flames or hot objects in close proximity.**
- **To have the engine running.**

Petrol

CAUTION! The one-man sawmill, which is equipped with a two-stroke engine, must always be run on a mixture of petrol and two-stroke engine oil. It is important to accurately measure the amount of oil to be mixed to ensure that the correct mixture is obtained. When mixing small amounts of fuel, even small inaccuracies can drastically affect the ratio of the mixture.



Always provide for good ventilation when handling fuel.

Use good quality unleaded or leaded petrol. The lowest octane recommended is 90. If you run the engine on a lower octane grade than 90 so-called, knocking can occur. This gives rise to a high engine temperature, which can result in serious engine damage.

FUEL HANDLING

Two-stroke oil

- For the best results use JONSERED two-stroke oil, which is especially developed for chain saws. Mixing ratio 1:50 (2%).
- If JONSERED two-stroke oil is not available, you may use another two-stroke oil of good quality that is intended for air cooled engines. Contact your dealer when selecting an oil. Mixing ratio 1:33 (3%)-1:25 (4%).
- Never use two-stroke oil intended for water cooled outboard motors, so-called, outboard oil.
- Never use oil intended for four-stroke engines.



Mixing

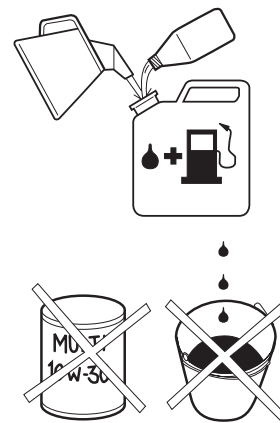
- Always mix the petrol and oil in a clean container intended for fuel.
- Always start by filling half the amount of the petrol to be used. Then add the entire amount of oil. Mix (shake) the fuel mixture. Add the remaining amount of petrol.
- Mix (shake) the fuel mixture thoroughly before filling the saw's fuel tank.
- Do not mix more than max. one month's supply of fuel.
- If the saw is not used for some time the fuel tank should be emptied and cleaned.

Fuelling

1. Clean around the fuel cap.
2. Open the fuel cap slowly so that any excess pressure is released.
3. Tighten the fuel cap carefully after fuelling.

Clean the fuel tank regularly. The fuel filter should be changed at least once a year. Contamination in the fuel tanks causes malfunction. Make sure the fuel is well mixed by shaking the container before fuelling.

 Gasolin Benzin Essence Gasolina Lit.	 Oil • Öl Huile • Aceite Lit.		
	2%(1:50)	3%(1:33)	4%(1:25)
5	0,10	0,15	0,20
10	0,20	0,30	0,40
15	0,30	0,45	0,60
20	0,40	0,60	0,80
US gallon	US fl. oz.		
	2%(1:50)	3%(1:33)	4%(1:25)
1	2 1/2	3 3/4	5 1/8
2 1/2	6 1/2	9 3/4	12 7/8
5	12 7/8	19 1/4	25 3/4



STARTING AND STOPPING



WARNING!
Observe the following before starting the engine:

- The engine must be mounted in the sawmill before starting. Otherwise the clutch can come loose and cause personal injuries.
- Keep people and animals well away from the risk zone.

Starting a cold chain saw engine (FIG. 38)

A cold engine is started as follows:

1. Read through the operator's manual for the chain saw carefully and make sure you understand it before attempting to start the chain saw.
2. Set the stop button to the start position.
3. Pull out the choke. When the choke is pulled out the throttle valve is automatically set in the start throttle position.
4. For other operation, see the chain saw operator's manual.

Stopping the chain saw engine (FIG. 39)

The engine is stopped by setting the stop button to the stop position.

FIG. 38

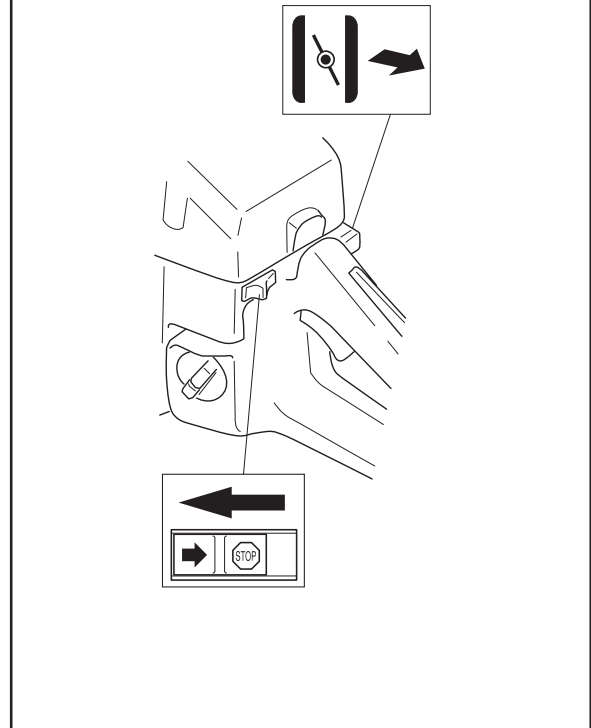
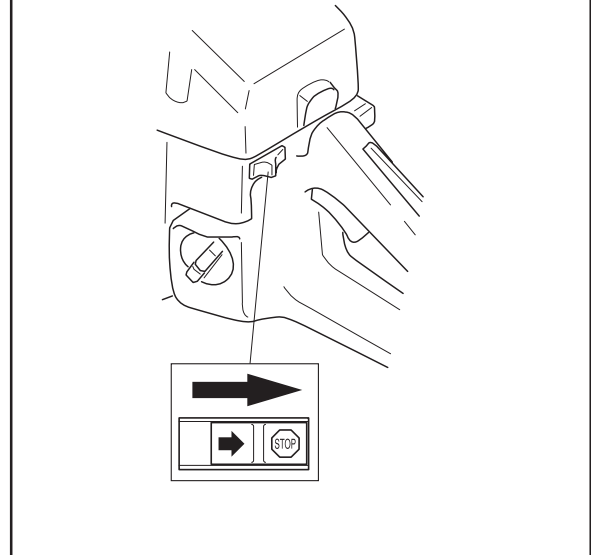


FIG. 39



STARTING AND STOPPING

Starting the electric sawmill (FIG. 41)



WARNING

The sawmill must not be started until the appropriate current and voltage have been connected. Use suitable personnel trained in the country in question.

NOTE! The first time the sawmill is started or when it has been moved to another power outlet:

- Test start the sawmill in accordance with the starting instructions.
- Check the chain direction. If the chain runs in the wrong direction, there is a phase inverter on the power connector (FIG. 40). The phase is inverted with the aid of a screwdriver, as illustrated in FIG. 40.

1. Check that the power cable is connected correctly.
2. Keep the green start button (29) pressed in using your left hand. Now press in the start/stop handle (B) with your right hand and the sawmill will start. The sawmill stops as soon as the handle is not activated. The sawmill can also be stopped using the red stop button (32).
3. Check the chain direction, see FIG. 29.

FIG. 40

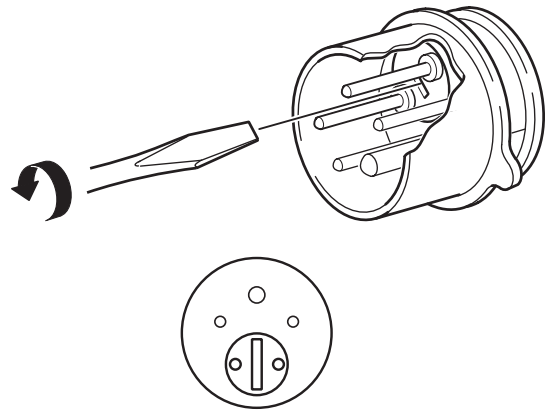
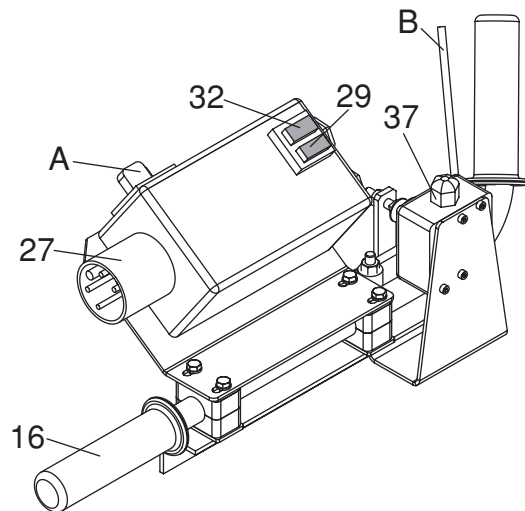


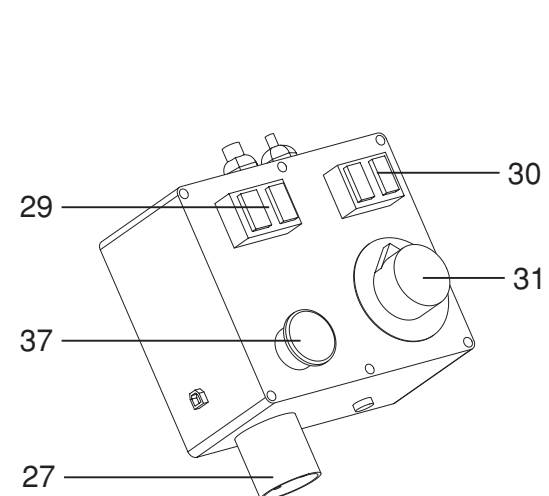
FIG. 41



Starting the electric sawmill with feed (FIG. 42)

1. Check that the power cable is connected correctly.
2. Keep the green start button (29) pressed in using your right hand. Then press the black safety switch (37) using your left hand. When the sawmill has started, the safety switch must be held in during sawing.
3. Start feeding with the white start button (30) using your right hand. Ensure that the control (31) is in position "0".
4. Then increase the speed with the variable control so that the saw carriage starts moving. Then adjust to the desired feed speed. **CAUTION!** There is variable adjustment for feeding, so overloading is possible depending on the width of the saw cut. In the event of overloading, the current to the saw motor is broken.
5. The sawmill stops as soon as the safety switch is not activated.
6. Return feeding is started with the white start button (30) and the speed is controlled with the variable control. Return feeding only starts when the saw motor is switched off.

FIG. 42



Securing the Log



WARNING!
Exercise care during all log handling. Heavy lift! Wear boots or shoes fitted with steel toecaps.

1. Fold up the stops (C) on the left-hand side of the rails.
2. Roll the log up against either the long or the short log support, depending on the timber dimensions.
 - than 300 mm to the end of the rails
 - than 500 mm to the start of the rails

This means that when using two rail sections, the maximum log length is 5200 mm.
3. Raise the log using the log lifter (B) so that the log's core is horizontal.
4. Lock the log in position with the log lock (D).

FIG. 43

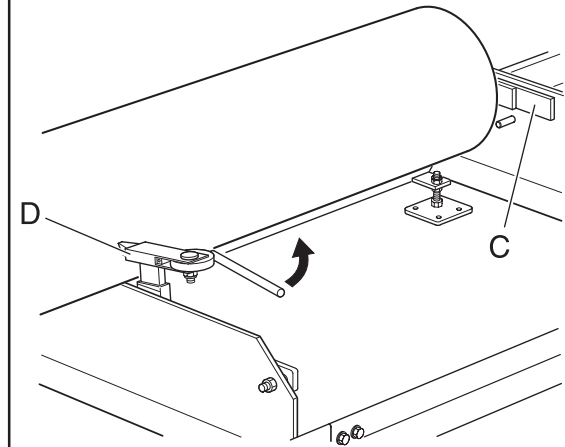
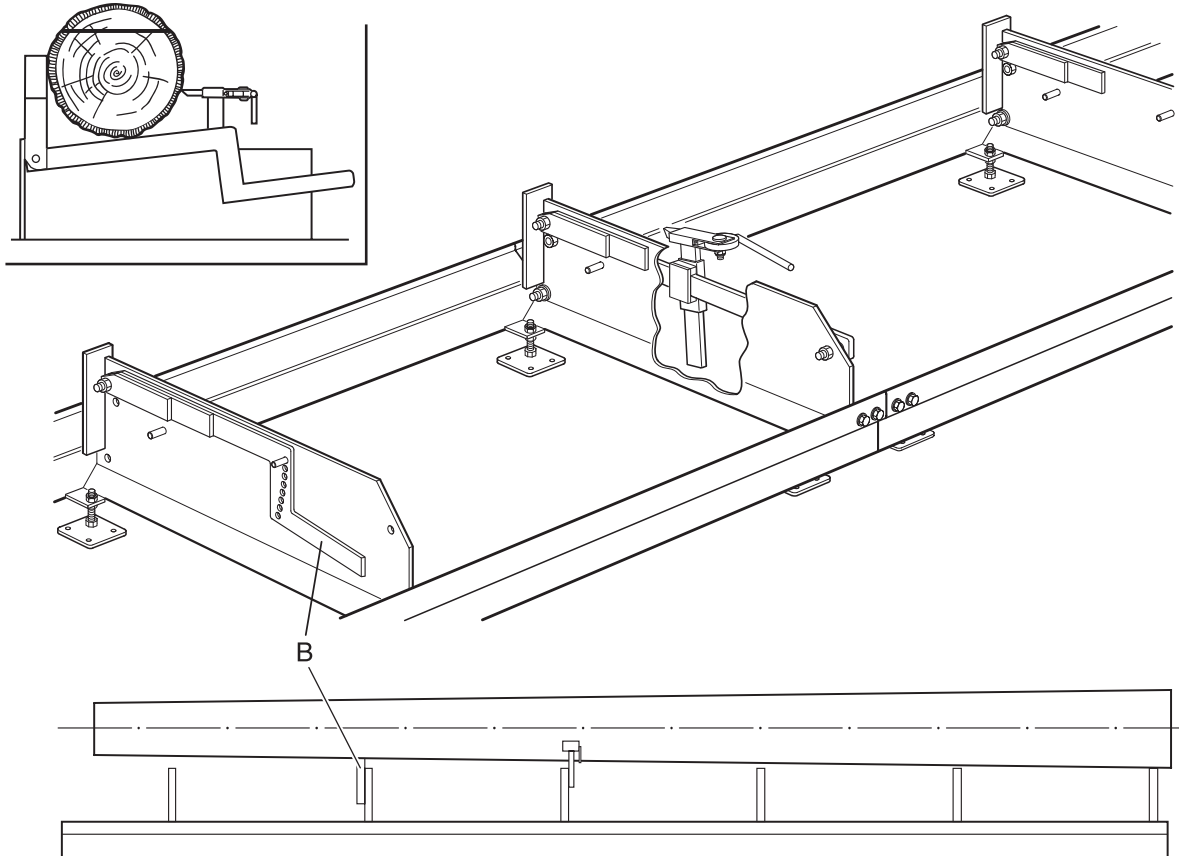


FIG. 44

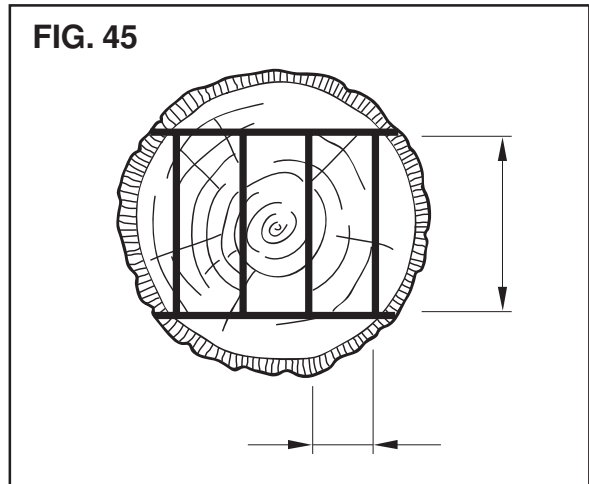


Calculating the Yield

Measure the log's top end and determine how the log should be utilised for the timber in question. Include the thickness of the saw cut in the calculation.

The saw cut thickness = 7 mm.

FIG. 45



Sawing



WARNING!
Use the following protective equipment when sawing:

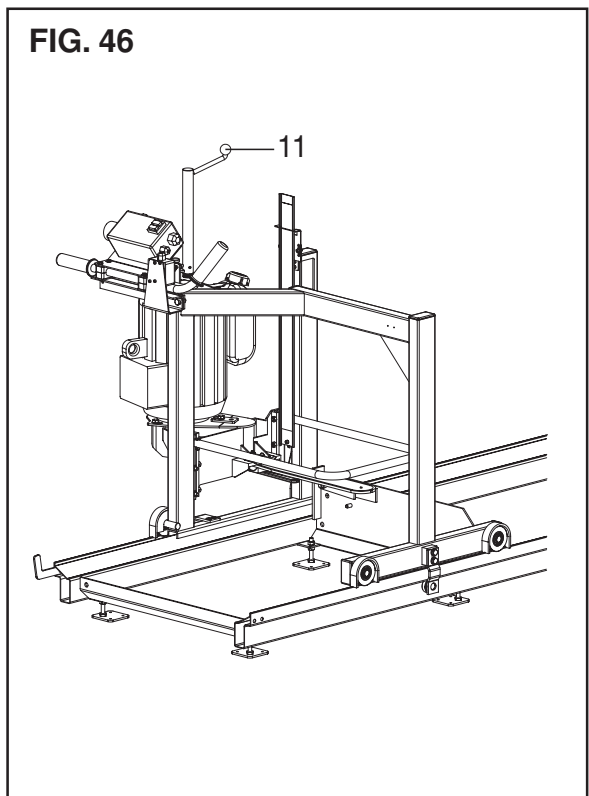
- Boots or shoes fitted with steel toecaps.
- Hearing protection.
- Eye protection.
- Always have a first aid kit nearby.

Before starting the engine, check that:

- All guards are fitted and undamaged.
- No unauthorised personnel are within the risk zone.

1. Place the log on the rails facing the folding log supports (FIG. 44).
2. Set the height of the bandsaw blade using the crank (11).
3. Clean any sand from the log, if necessary. This results in less wear.
4. Check and if necessary top up the chain oil tank with chain oil on each sawmill.
5. Check the fuel tank and fill with fuel if necessary, see page 22.
6. Check that the chain runs in the right direction, see page 18.

FIG. 46



USE



WARNING!
Check during sawing that the chain does not hit the folding stops or log lock.



WARNING!
The saw carriage must not be moved backwards while the chain is in motion. The log could come loose and cause personal injury.

Starting the Petrol Engine

1. Start the engine. See page 23.

Starting the Electric Motor

1. Start the electric motor. See page 24.

Sawing

2. Move the saw carriage forwards and cut off the sapwood.
3. Remove the sapwood.
4. Loosen the log, turn it 180°, lower the height adjuster (B), and secure the log.
5. Set the required cutting height using the height adjustment crank (11). This determines the width of the board.
6. Cut off the sapwood on the other side. See p 2 and 3.

FIG. 47

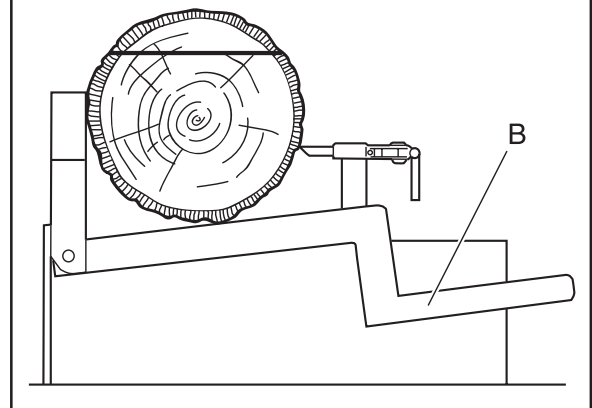
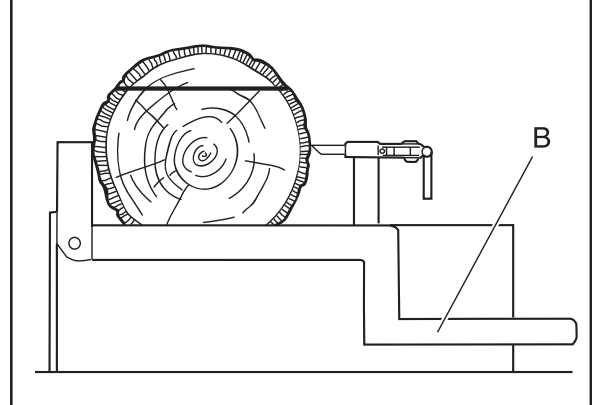


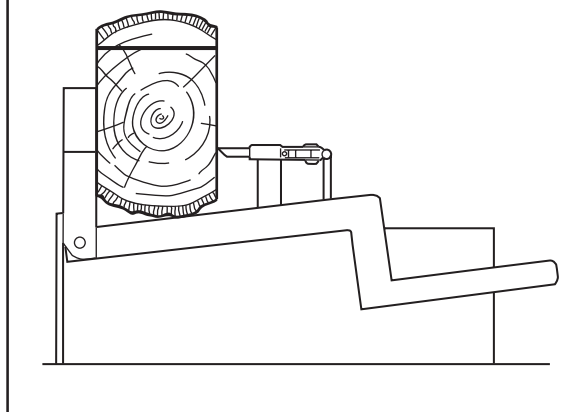
FIG. 48



USE

- Loosen the log and turn it 90°.
- Adjust the top end of the log using the height adjuster and secure the log with the flat surface tightened against the stop.

FIG. 49



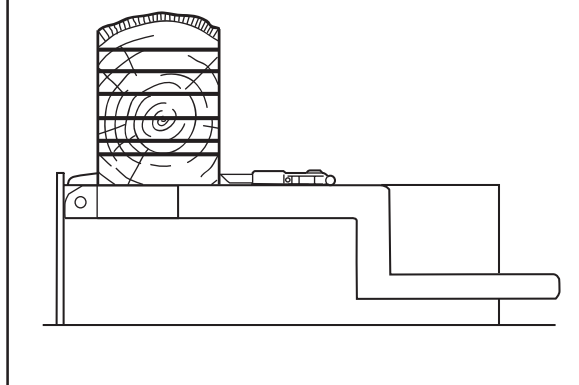
- Cut off the upper sapwood.
- Loosen the log, turn it 180°, lower the height adjuster, and secure the log.
- Cut the block according to the previous instructions. Remember to compensate for the thickness of the bandsaw blade for each adjustment of the bandsaw blade's height.

Data for the height adjustment crank:

- 1 turn = 5 mm.

The scale can also be used for varying standard dimensions.

FIG. 50

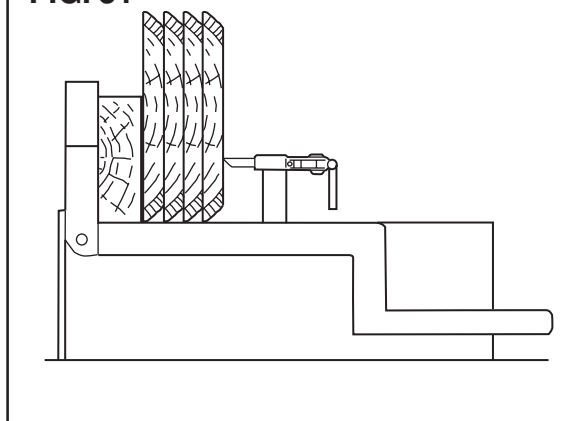


Edging (FIG. 51)

Several boards can be edged simultaneously by clamping them against the stop.

Place a batten between the boards and the stop in order to keep the boards still during cutting. The batten should be at least 50 x 100 mm.

FIG. 51



MAINTENANCE



WARNING!
The one-man sawmill must be disconnected from power during all maintenance work. Always use personal protective equipment.

Clutch drum

When replacing the clutch drum on the chain saw, see the chain saw operator's manual.

The clutch drum on the chain sawmill with electric motor has a setscrew installed in the end of the drive shaft. The task of the screw is to prevent the clutch drum from unscrewing in the event the sawmill is started in the wrong direction. **CAUTION!** The screw and its washer must be unscrewed before the clutch drum can be removed. The clutch drum has left-hand threads.

The clutch drum is equipped with ring sprockets (replaceable). The clutch drum has a needle bearing on the output shaft, which has to be greased regularly (once a week). **CAUTION!** Use only high quality bearing grease.

FIG. 52

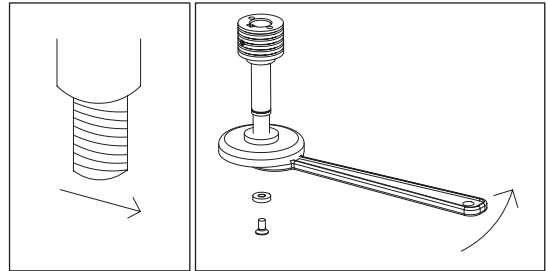
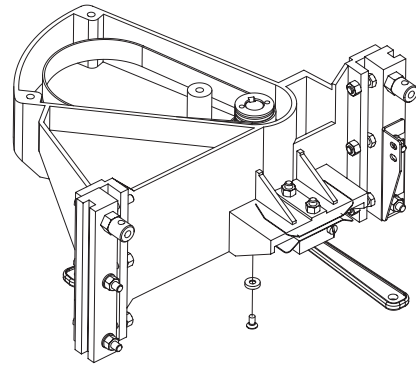
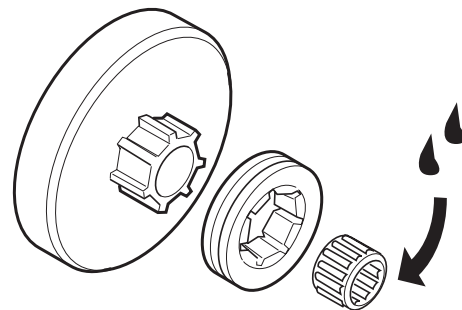
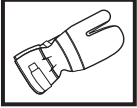


FIG. 53



MAINTENANCE

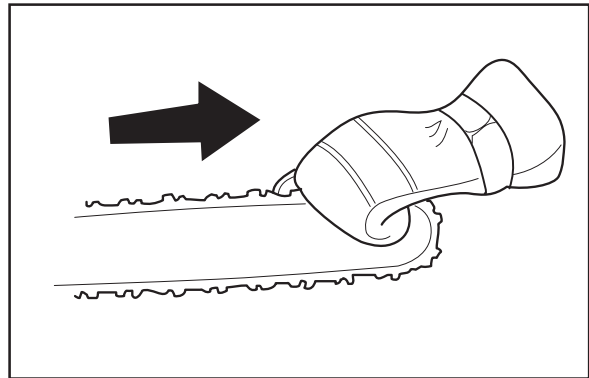
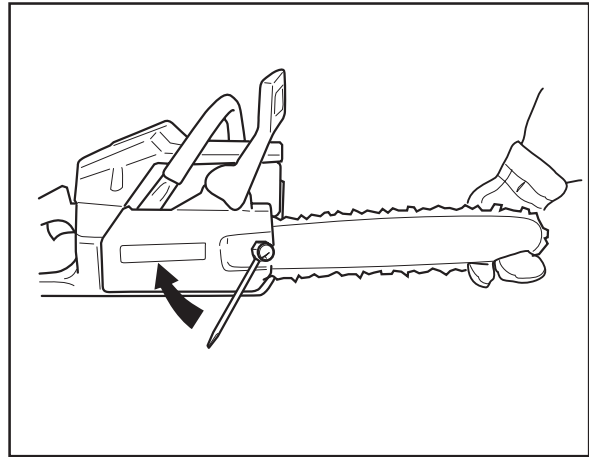
Saw chain



WARNING!
The chain is sharp and can cause cuts. It can cause personal injury when handled carelessly. Always wear protective gloves when working with the saw chain.

The chain is correctly tensioned when there is no slack on the underside of the bar, but it can still be turned easily by hand. Hold up the bar tip and tighten the bar nuts with the combination spanner. When fitting a new chain, the chain tension has to be checked frequently until the chain is run-in. Therefore check the chain tension regularly. A correctly tensioned chain means good cutting performance and a long lifetime.

The chain should be sharpened regularly to give optimal performance. During normal sawing of most species of wood this should be done at intervals of approximately 2 hours effective cutting time (i.e. the time that the saw chain is actually working). The chain should be sharpened more frequently when cutting those species of wood with a high sand content. A special file gauge (article no. 504 98 16-78) is available as an accessory for sharpening the saw chain. The file gauge may be ordered from your dealer.



Adjusting the bar

When replacing the bar and chain, the position of the bar may be altered. In order to eliminate poor cutting results, the adjustment of the bar should be checked (see Adjusting the bar, page 20).

FIG. 53

 PITCH = $\frac{D}{2}$	 D	 Ø	 $\frac{1}{5}$	 85°	 5°	 10°	, 0,65."/> 0,025"/0,65	 L
Type	Inch	Inch/mm	Inch/mm	Degree	Degree	Degree	Inch/mm	Inch/cm: dl
95R	.325"	.050"/1,3	3/16" /4,8	85°	5°	10°	0,025"/0,65	16"/40:82 20"/50:82

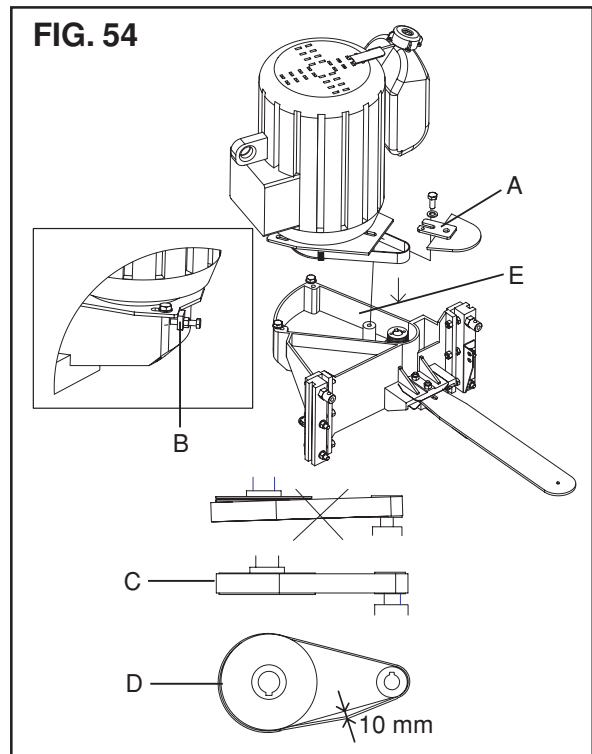
MAINTENANCE

Drive belt

Chain sawmill with electric motor (FIG. 54)

The drive belt becomes worn as the sawmill is used. The belt should be replaced after 200 hours of operation to avoid a belt failure during operations. If the drive slips or the belt needs to be adjusted frequently, this is a sign that the belt needs to be replaced. Replace the belt as follows:

1. Disconnect the connector from the distribution box.
2. Disconnect the belt guard (A).
3. Completely remove the belt adjuster (B).
4. Disconnect the electric motor by loosening the screws.
5. Carefully lift up the motor and replace the belt.
6. Ensure that the belt is correctly positioned in the tracks (C) on both pulleys.
7. Screw the motor into position and tension the belt with the tension screw (B). Check the belt tension with your thumb (D) and install the belt guard (A).



The saw unit's height adjustment

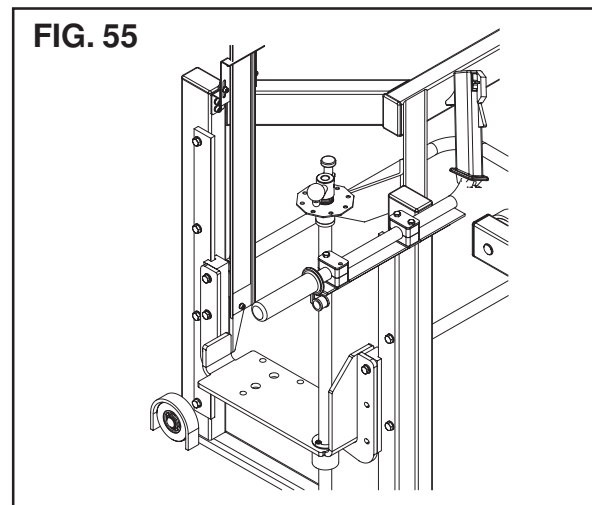
Maintenance procedures on the components listed below are necessary in order to assure the saw chain's vertical adjustment.

Runners

The guides that locate the saw saddle should be wiped clean and moistened with oil as required.

Height adjustment screw

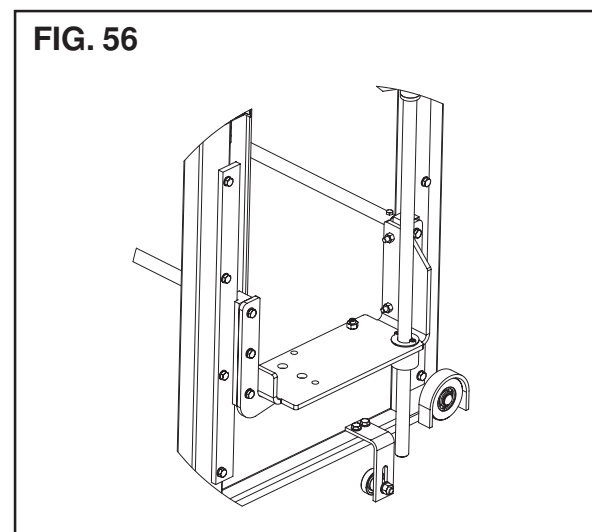
The screw must be wiped clean and lubricated if necessary.



Adjusting the saw saddle

The saw saddle's plastic guides may need to be adjusted after a few hours of use. This is done as follows:

1. Slacken off the three mounting nuts.
2. Screw in the two adjustment screws until there is no play, then tighten the nuts.
3. Check the position of the bar in relation to the log bolsters and adjust if required, see page 20.



MAINTENANCE

Maintenance

The maintenance described in this section refers to measures that can be carried out by the user. If faults are detected that cannot be rectified in accordance with this operator's manual, contact your nearest authorised service representative.

Daily maintenance

1. Check that nuts and screws are tight.
2. Height adjustment mechanism: Clean the height adjustment screw and guides, see page 31.
3. Clean any sawdust from the bar.
4. Check that all safety devices are undamaged and work. Check:
 - Start/stop devices
 - Electrical contacts
 - Band wheel guards
 - Rail stops
 - Rail guards
 - Electrical cables and electrical connections
5. Sharpen the chain if necessary. When cutting timber with a normal sand content and hardness, these actions should be carried out after about 2 hours of sawing (time for adjustments, timber handling, etc., is not included). See page 30.
6. For the chain saw's daily maintenance, see the chain saw operator's manual. See also weekly and monthly maintenance for the chain saw.

Weekly maintenance

1. For chain saw maintenance, see the chain saw operator's manual.
2. Check the belt tension and adjust if required. See page 31.
3. Clean around the rails. Remove sawdust, bark and wood chips to facilitate handling of the chain sawmill.

Monthly maintenance

1. Check the clutch function, see page 29.
2. Check cables and connections.
3. Check that the saw carriage runs easily and that no binding is felt which can indicate bearing damage. Replace the wheels if needed. See page 17.
4. Adjust the play on the bearings that run on the underside of the rails, see page 17.
5. Check the bolted joints on the rail sections, see page 16.
6. Check that the rails rest against all contact points on the wooden beams.

Storage

If the chain sawmill needs to be stored for a long period without being used the following applies:

1. Empty and clean the chain saw's fuel tank.
2. Dismantle the chain and bar.
3. Remove the saw carriage and unbolt the rail sections.
4. Oil all parts.
5. Store the chain sawmill in a dry location.
6. After a period of one year the following measures apply:
 - Oil all parts.

TECHNICAL DATA

Technical data

Chain saw engine

See information under the heading Technical data in the chain saw operator's manual.

Electric motor

Power 380-420 V y-connection:	50 Hz 5,5 kW, 2855 r/min
Ampere:	11,0 – 11,1 A
Power 220-240 V delta connection:	50 Hz 5,5 kW, 2855 r/min
Ampere:	18,9 – 19,0 A
Electric motor feed 42 volt.	Direct current

Weights

Saw carriage, chain saw engine, kg	40
Saw carriage, electric motor, kg	70
Electric feed unit, kg	22
Two rail sections, kg	115

Cutting equipment

Chain:

Chain type	95R
Pitch, inches	0,325
Track width, inches/mm	0,050/1,3
Drive links	16" 68 20" 82
Part no. chain 16"	503 30 70-68
Part no. chain 20"	503 30 70-82

Bar:

Part no. bar 16"/40	501 96 16-68
Part no. bar 20"/50	501 96 16-82

Capacity

Max. log height, mm:	500
Max. log width, mm:	500
Max. log length, mm: (2 rail sections)	5100
Chain speed chain saw engine, m/s:	21,5
Chain speed, electric motor, m/s:	22,5

Setting options

Height adjustment crank/turns, mm:	0,325"/ 5
Index plate, resolution, mm:	0,5

TECHNICAL DATA

Noise Levels

Equivalent noise intensity at operator's ear during sawing, measured according to ISO 7917, dB(A)

Petrol engine:	104,9
Electric motor:	89,8

Equivalent noise level measured according to EN 1807 and ISO 7960, dB(A)

Petrol engine:	112,9
Electric motor:	102,3

Vibration Levels

Vibration level in the handle, during sawing, according to international standards, m/s²

	Left	Right
Petrol engine:	5	5
Electric motor:	1,8	1,8

EU Declaration of Conformity (only applies to Europe)

Directive 98/37/EC, Appendix 2 A

Lennartfors AB, Lennartfors 1, SE-672 92 ÅRJÄNG, hereby guarantees that the one-man sawmills **Jonsered SM 2055 EL and SM 2186**, with serial numbers 02 100001 – 02 5200100, meet the standards prescribed in the COUNCIL'S DIRECTIVES:

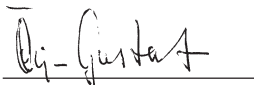
- of 22 June 1998 "relating to machinery" **98/37/EC**, appendix IIA.
- of 3 May 1989 "relating to electromagnetic compatibility" **89/336/EEC**, and applicable supplements.
- of 19 February 1973 "relating to electrical equipment", **73/23/EEC**.

For information regarding noise emissions, see the Technical Data chapter.

The following harmonised standards have been applied: **EN292-1, EN 60204:1**.

SMP Svensk Maskinprovning AB, Fyrisborgsgatan 3, SE-754 50 Uppsala, Sweden, has carried out voluntary type approval for Lennartfors AB. The certificates are numbered: **SEC/95/248** – SM2186 and **SEC/95/249** – SM 2055 EL. The supplied one-man sawmill conforms with the example that underwent EU type approval.

Årjäng, 23 October 2003



Örjan Gustafsson, Product Manager, Lennartfors AB



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