

SM 2196

SM 2155 E

Operator's Manual



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

TABLE OF CONTENTS

Introduction	3
Symbols	4
Warning Signs	4
Safety Regulations	5
Description	7
Installation	16
Fuel Handling	23
Starting and Stopping	24
Use	26
Maintenance	30
Technical Data	36

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.

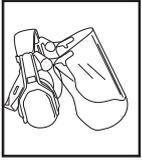
The one-man sawmill shall only be used to cut boards and planks from logs.

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.



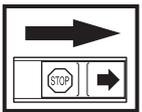
Boots or work shoes with steel toecaps and non-slip soles should be worn.



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.



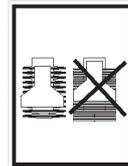
Boots or work shoes with steel toecaps and non-slip soles should be worn.



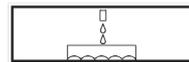
Read this manual carefully and make sure you understand it before attempting to use the one-man sawmill.



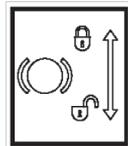
Exercise caution.



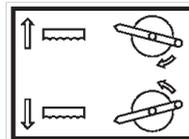
Bandsaw blade tension



Bandsaw blade cleaning on tank



Bandsaw start/stop and brake



Height setting



Arrow for bandsaw blade direction



Danger

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.

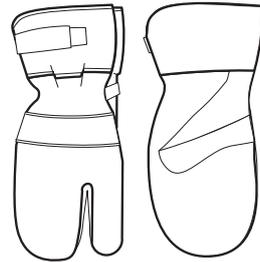
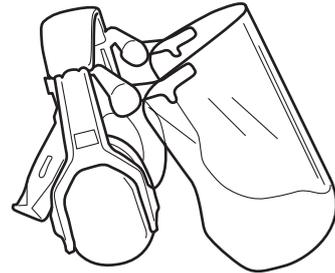


WARNING!
Always ensure good ventilation. Exhaust fumes and sawdust can cause injury or allergies.

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 30-35.

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 23.

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.

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.

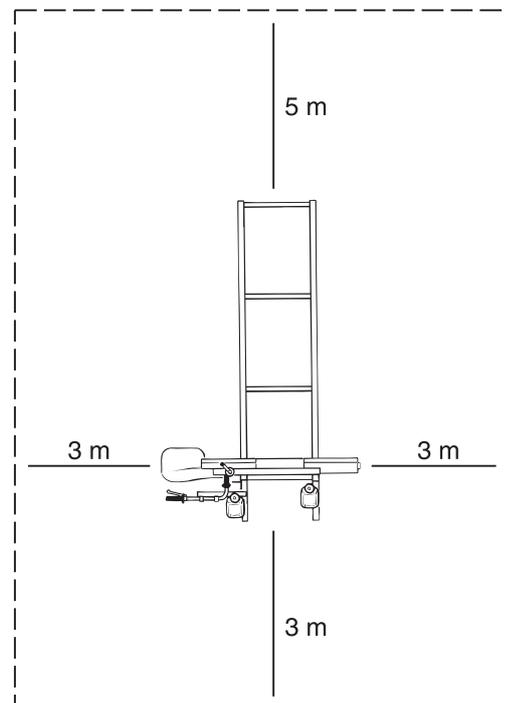
Safety During Use

The safety regulations that apply while using the one-man sawmill are documented in their respective areas under the section Use on page 26-29.

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 26-28.
5. Adjust the bandsaw guide so that it is as close to the log as possible. See page 27.
6. 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 22.

FIG. 1



DESCRIPTION

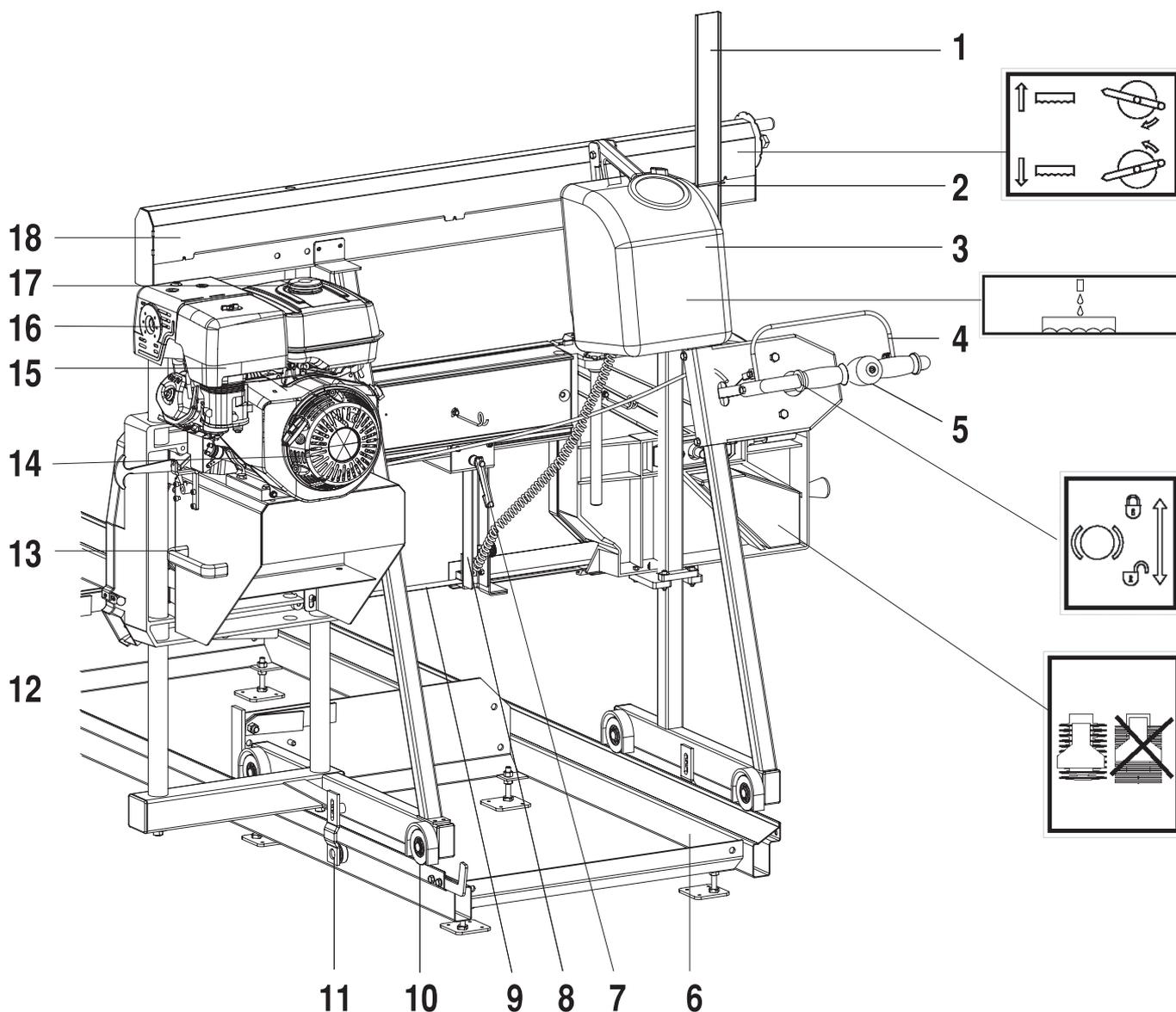
One-man Sawmill Petrol Engine

The one-man sawmill consists of two main parts:

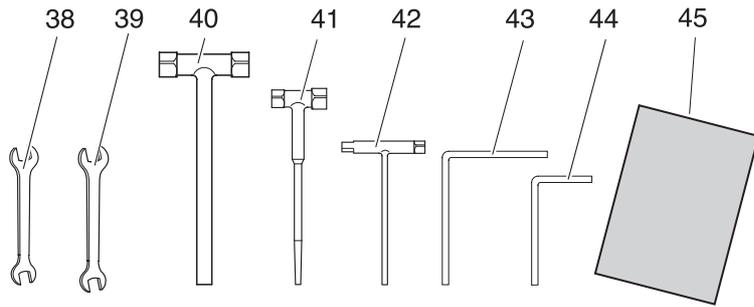
- The carriage with engine and saw
- Rails

The carriage consists of the following:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Scale 2. Scale pointer 3. Bandsaw blade cleaning fluid tank 4. Start/stop control 5. Handlebars 6. Rails 7. Adjustable band guide lock 8. Adjustable band guide 9. Bandsaw blade 10. Rail guard 11. Support wheels 12. Runners 13. Lifting handle | <ol style="list-style-type: none"> 14. Stop switch 15. Petrol engine 16. Exhaust system with muffler 17. Fuel tank 18. Chain guard 19. Height setting screw 20. Upper bandsaw blade guard 21. Band wheel guard 22. Safety switch 23. Bandsaw blade guard 24. Scraper 25. Frame 26. Band wheel 27. Band tension crank 28. Band wheel adjuster 29. Height setting crank 30. Index plate |
|--|--|

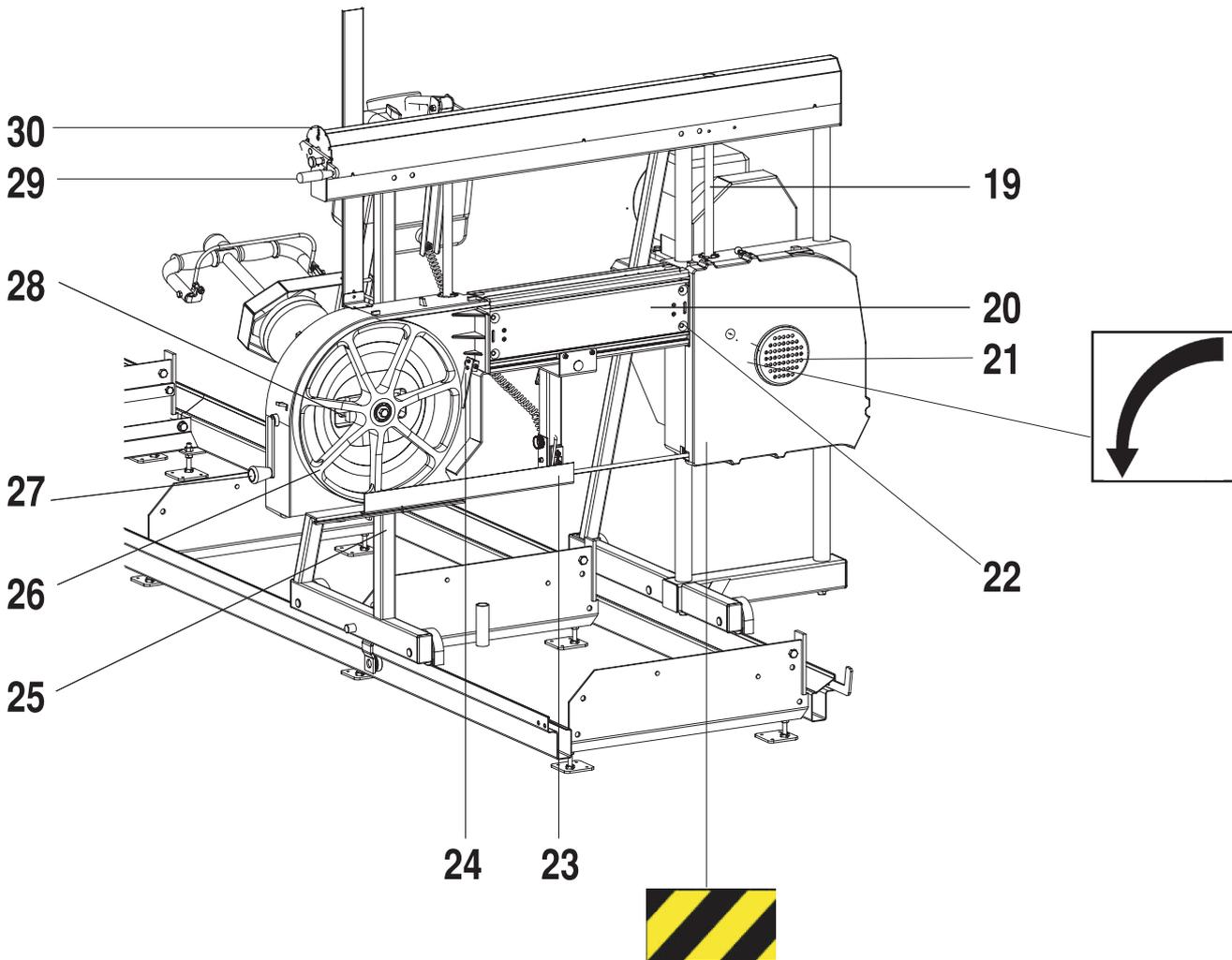


DESCRIPTION



Tools and operator's manual

- 38. Open ended spanner 13-15 mm
- 39. Open ended spanner 17-19 mm
- 40. Socket spanner
- 41. Combination spanner 13-19
- 42. Combination spanner
- 43. Allen key 4 mm
- 44. Allen key 5 mm
- 45. This operator's manual



DESCRIPTION

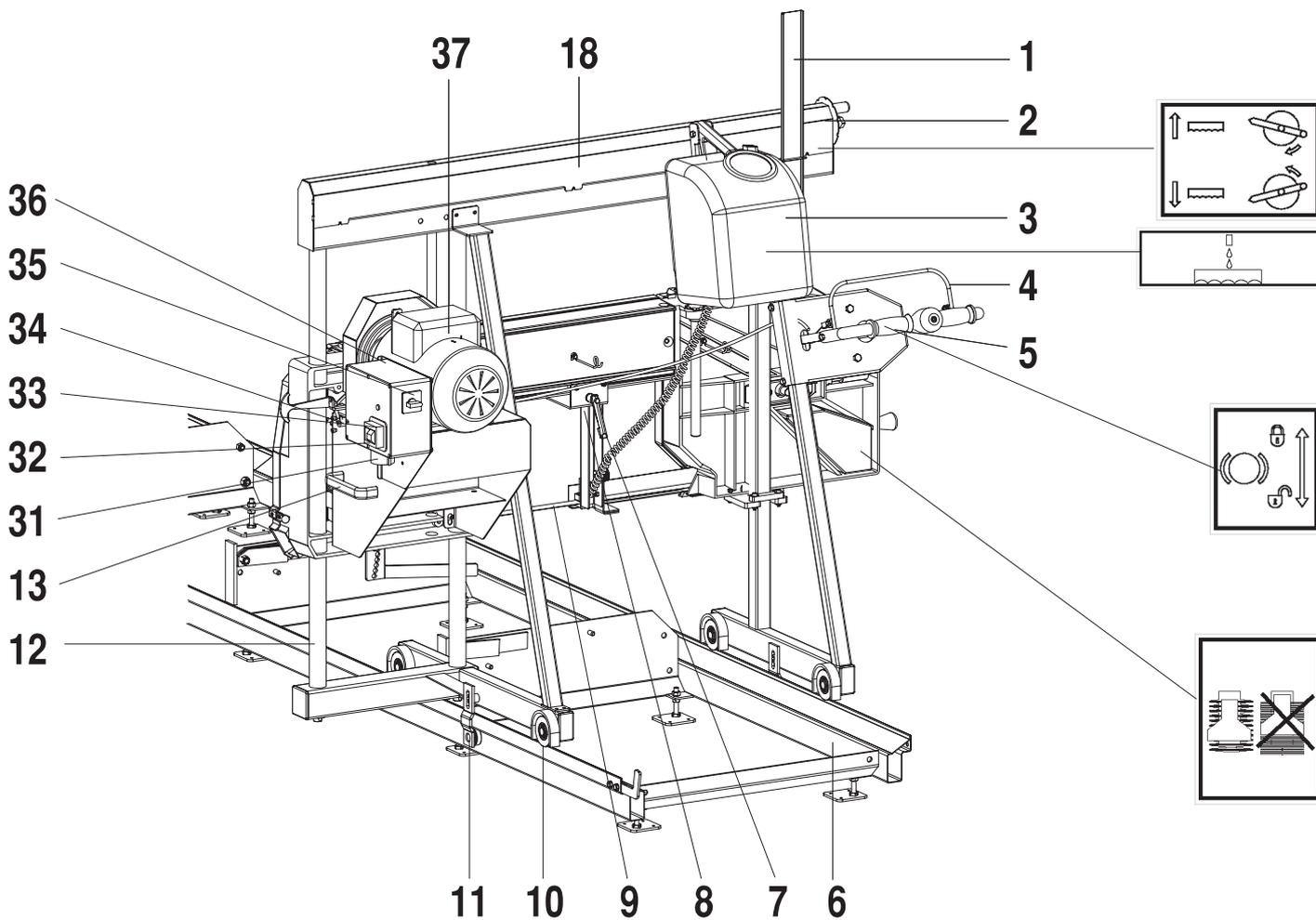
One-man Sawmill Electric Motor

The one-man sawmill consists of two main parts:

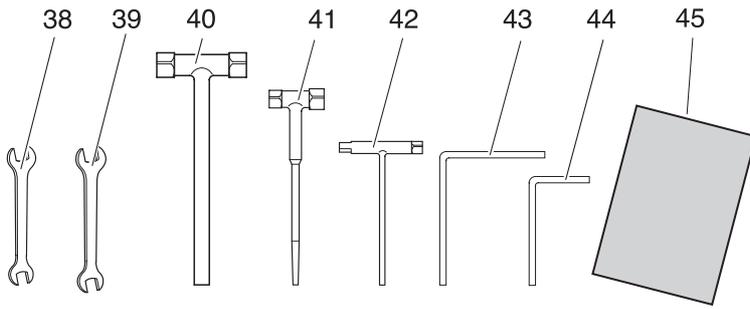
- The carriage with motor and saw
- Rails

The carriage consists of the following:

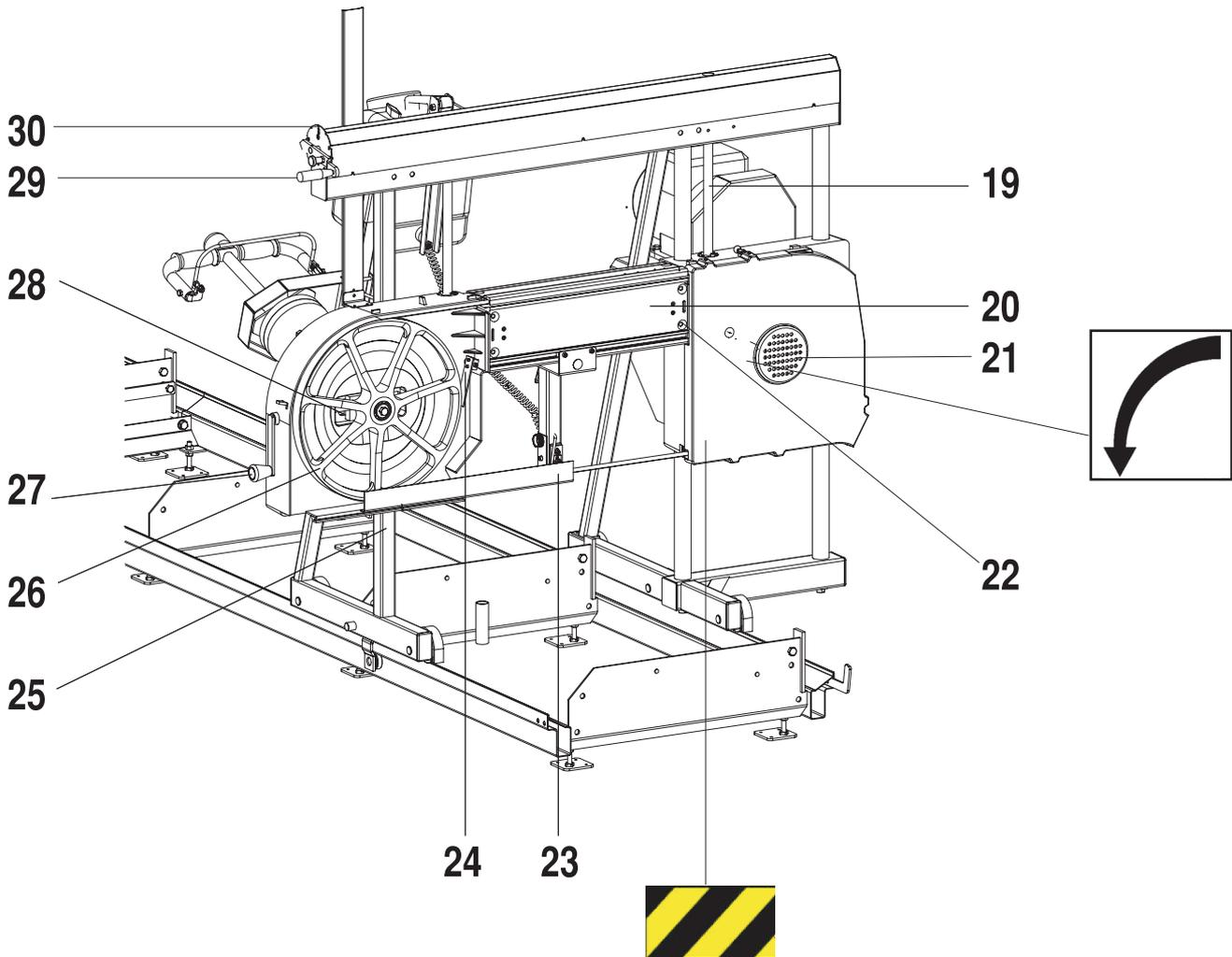
1. Scale
2. Scale pointer
3. Bandsaw blade cleaning fluid tank
4. Start/stop control
5. Handlebars
6. Rails
7. Adjustable band guide lock
8. Adjustable band guide
9. Bandsaw blade
10. Rail guard
11. Support wheels
12. Runners
13. Lifting handle
18. Chain guard
19. Height setting screw
20. Upper bandsaw blade guard
21. Band wheel guard
22. Safety switch
23. Bandsaw blade guard
24. Scraper
25. Frame
26. Band wheel
27. Band tension crank
28. Band wheel adjuster
29. Height setting crank
30. Index plate
31. Connector with polarity reversal
32. Stop switch
33. Start switch
34. Safety switch connector
35. Main switch
36. Distribution box
37. Electric motor



DESCRIPTION



- Tools and operator's manual**
- 38. Open ended spanner 13-15 mm
 - 39. Open ended spanner 17-19 mm
 - 40. Socket spanner
 - 41. Combination spanner 13-19
 - 42. Combination spanner
 - 43. Allen key 4 mm
 - 44. Allen key 5 mm
 - 45. This operator's manual

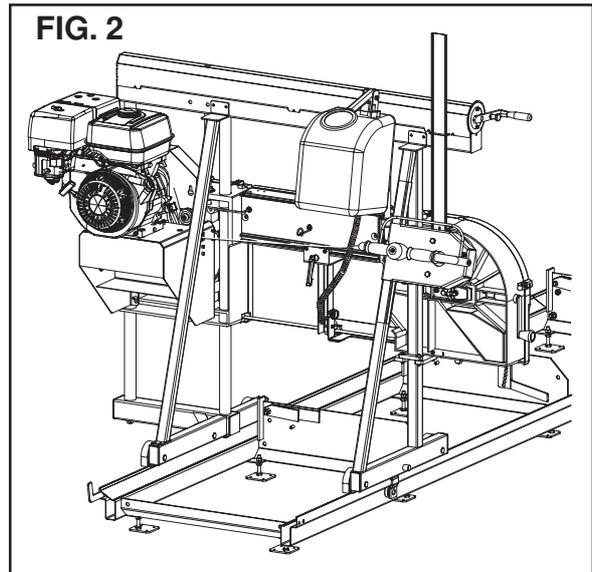


DESCRIPTION

Carriage (FIG 2)

The carriage consists of the following parts:

- Steel structure with runner wheels against the rails and guides for the saw's up and down movement.
- Two screws for the saw's vertical adjustment. The screws are connected to a chain and are operated by a crank, equipped with an index plate.
- Handle with operating mechanism
- Saw unit with the following parts:
 - Engine.
 - Adjustable band wheels.
 - Bandsaw blade.
 - Adjustable support for optimal bandsaw blade guiding.
 - Fuel tank (petrol engine) for petrol. See the Fuel Handling section.
 - Cleaning fluid tank for the bandsaw blade.
 - Muffler (petrol engine).



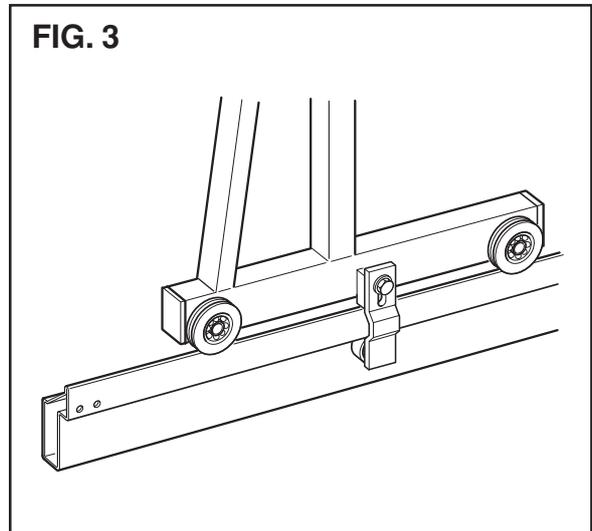
Frame (FIG. 3) and (FIG. 4)

The carriage frame consists of welded square tubing with requisite corner reinforcement for stability during cutting.

The frame is equipped with two round runners for the saw unit's up and down movement. The guides transfer the saw carriage's lateral forces to the frame.

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.



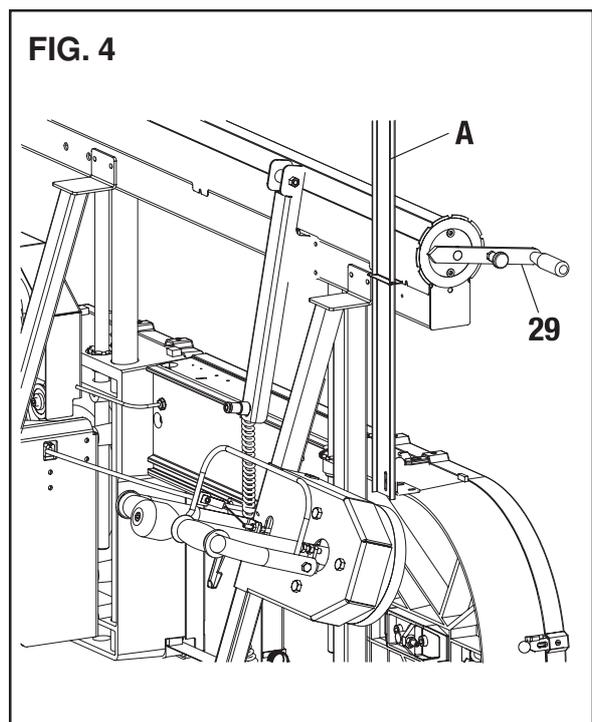
Height Setting (FIG. 4)

The saw unit is secured vertically by two interacting screws. The screws are connected to a chain for precise and simultaneous movement.

A crank (29) is fitted on the top section of one of the screws, 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 bandsaw blade above the rails' cross members is read on the scale (1).

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 bandsaw.



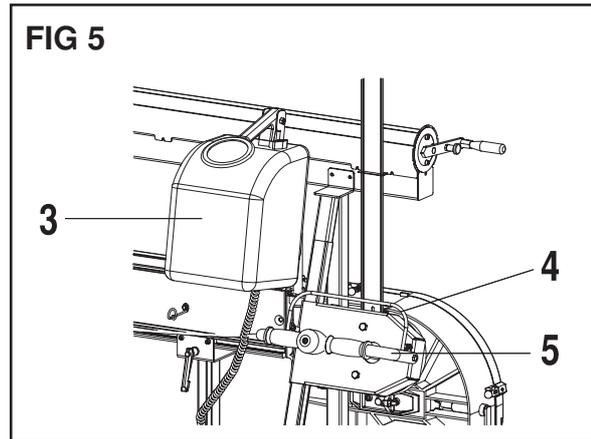
DESCRIPTION

Handlebars (FIG. 5)

The saw carriage is operated and moved forward with a vibration-free steering handlebar (5), located on the carriage's right hand side. The handlebar is equipped with start and stop controls (4) for the bandsaw.

Cleaning Tank (FIG. 5)

The saw carriage is equipped with a cleaning tank (3). The tank is located beside the handlebars. Cleaning fluid is applied to the blade by opening the tank valve.

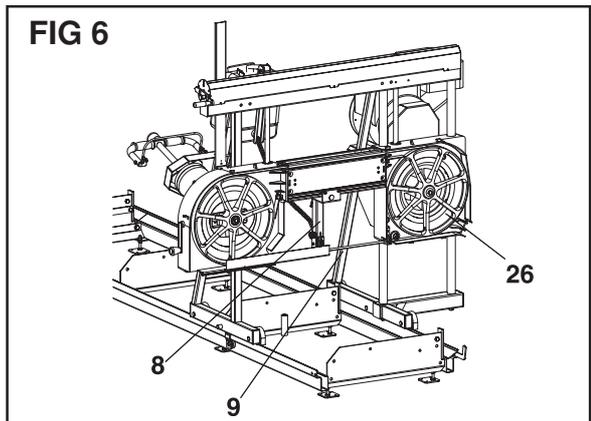


Band Wheels (FIG 6)

The bandsaw blade runs over two band wheels (26), which are made of cast aluminium and are balanced to provide smooth operation. The band wheels are equipped with bearings, and are adjustable, partly to tension the bandsaw blade and partly to adjust the correct alignment of the bandsaw blade.

The band wheels are fitted with scrapers so that sawdust and the like does not penetrate between the bandsaw blade and the band wheel.

One of the band wheels is powered by the engine/motor via an adjustable belt.



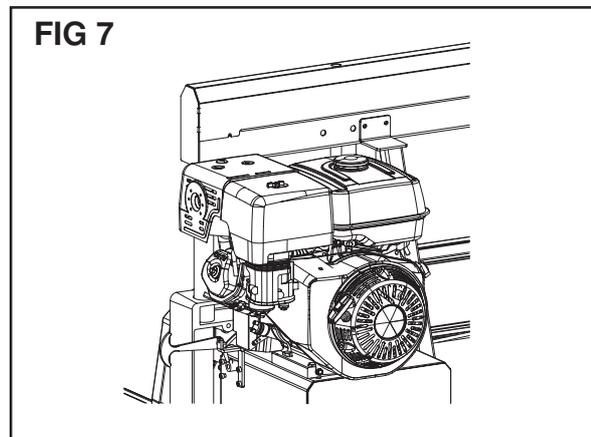
Bandsaw and Band Guide (FIG 6)

Two band guides (8) are used to keep the bandsaw blade (9) in the correct position during cutting. One of the band guides is placed in front of the powered band wheel and ensures correct entry onto the wheel. The other band guide is adjustable and is positioned above the bandsaw blade before it runs onto the log. This band guide absorbs the forces from the log and prevents the bandsaw blade from shifting.

Propulsion

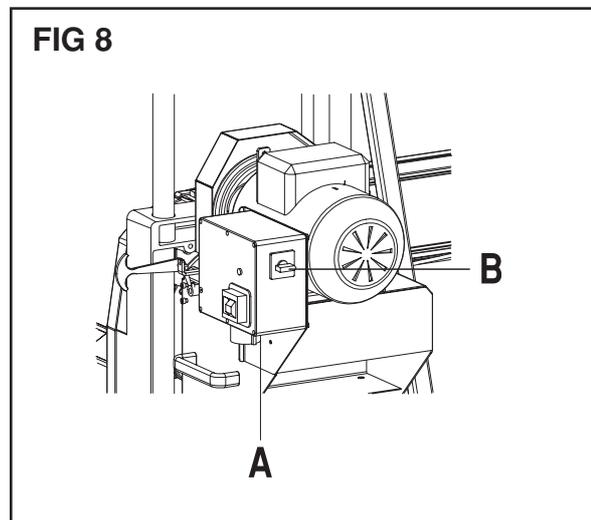
Petrol Engine (FIG. 7)

The one-man saw is run with an air-cooled four-stroke engine (15). A clutch is located on the engine's drive axle that starts, stops, and brakes the bandsaw blade. The speed of the engine is regulated with the operating control on the handlebars. See the enclosed manual for a description of the engine.



Electric Motor (FIG. 8)

The one-man saw is powered by a 3-phase motor (37). The motor is started and stopped with the start and stop buttons on the distribution box, which has built-in motor protection. There is also a connection for an electric cable with single polarity reversal (FIG. 8A), and a main switch (FIG. 8B.). A clutch is located on the motor's axle and starts, stops, and brakes the bandsaw blade.



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. 9

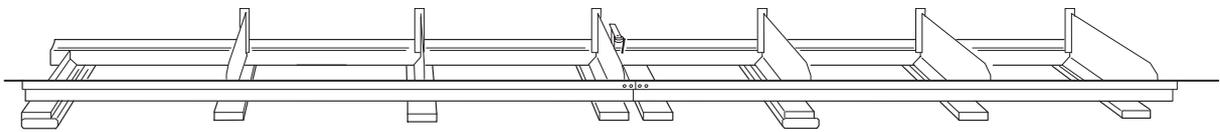
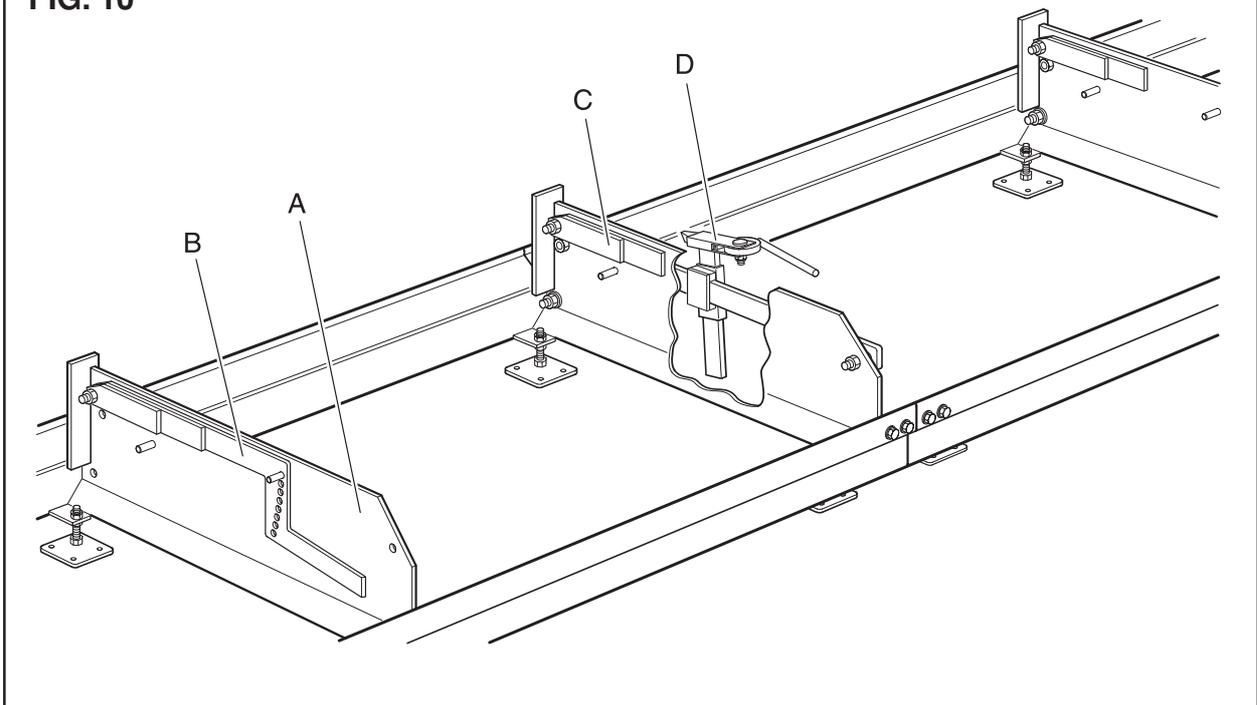


FIG. 10



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.

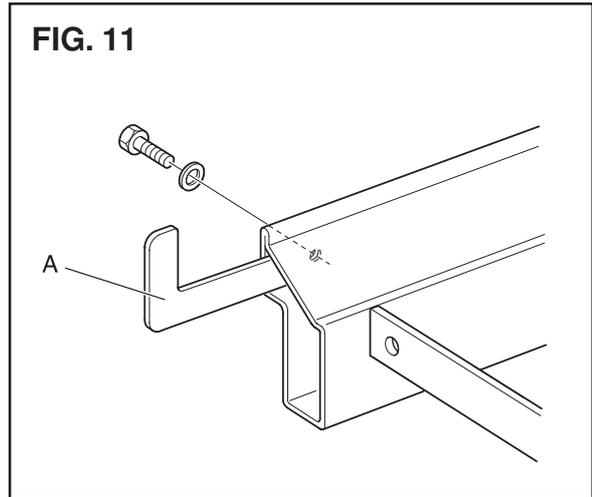
Log Locks (D)

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

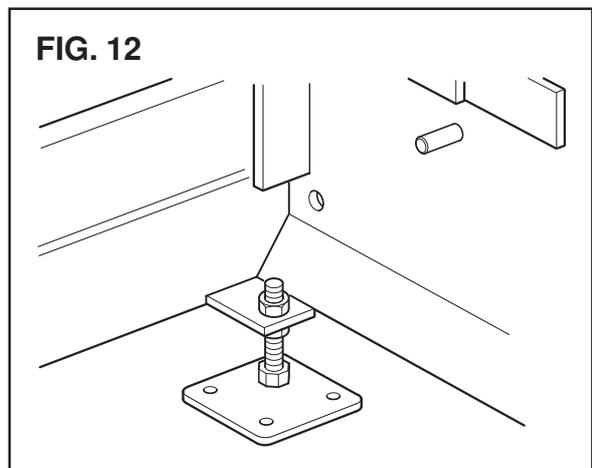
Rail Stop

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



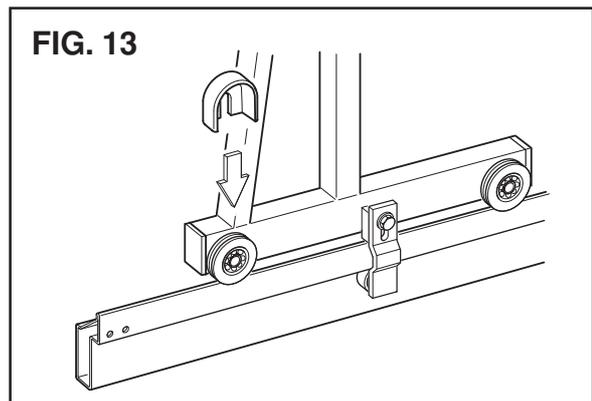
Adjustable Support Feet

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. 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 saw is fitted with a number of safety devices, which are described under the headings below.



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

Band Wheel Guard (21)

The band wheels are protected from contact by a cover on each side. Each cover is equipped with a safety key that cuts the mains power to the start switch for units with an electric motor and short-circuits the petrol engine when the covers are removed. There are 3 rubber straps on the guard to allow easy dismantling and assembly when changing the bandsaw blade. The safety key activates a safety switch when the covers are fitted. The rail stop (FIG. 14A) prevents the bandsaw carriage from rolling off the rails.

Bandsaw Blade Guard (upper) (20)

The upper section of the bandsaw blade runs in a slot.

Bandsaw Blade Guard (lower) (23)

The part of the bandsaw blade that is not in the log when cutting should be covered by the adjustable guard.

Bandsaw Blade Brake (FIG. 16)

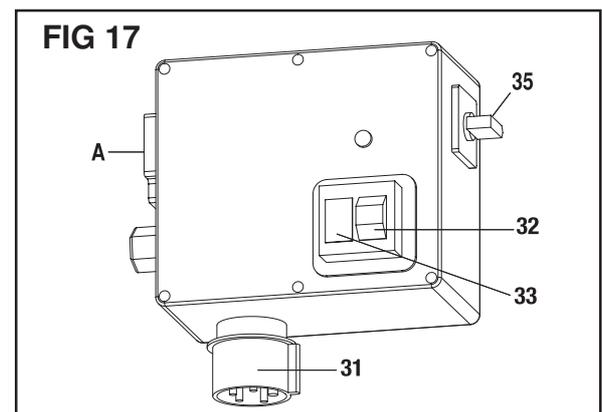
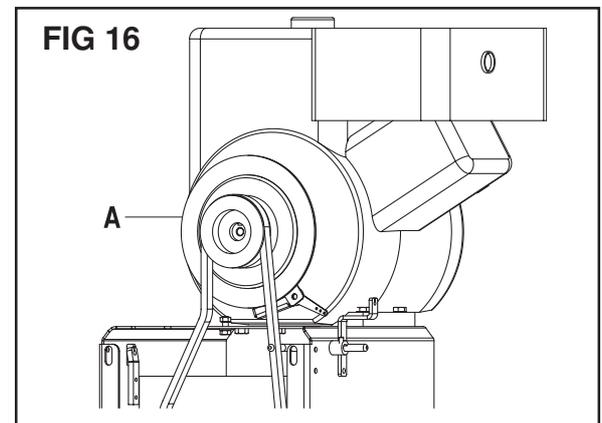
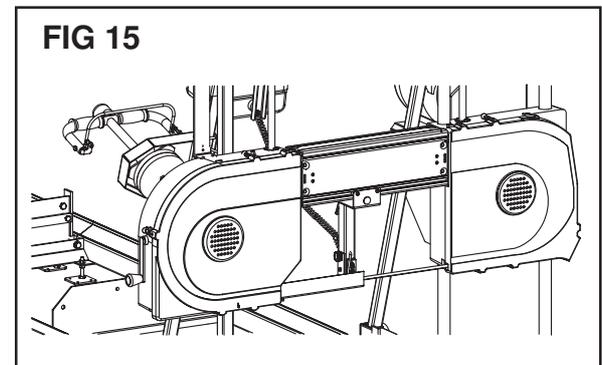
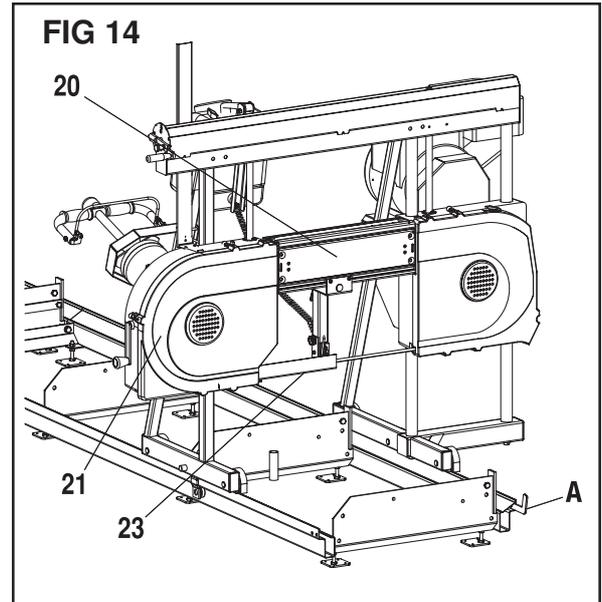
The bandsaw is equipped with an integrated brake/clutch (A) that stops the band wheel in order to quickly stop the band wheel when the handlebar controls (4) are released.

Starter, Electric Motor (FIG. 17)

The electrically powered saw is equipped with a main switch (35), safety switch connector with phase inverter (31), contact for safety switch (A), and start switch (33). The motor is started with the green start switch and stopped with the red stop switch (32). The electric motor stops when not in use for longer periods or when sawing is completed. The starter is equipped with a 0-volt trigger. This means that the sawmill's electric motor must be restarted after a power outage.

Stop Switch, Petrol Engine (14)

On the petrol engine, the stop switch is located on the engine body and with electric start the engine is stopped with the key.



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 7-10. Component parts are packed according to the following:

1. Rail sections (quantity according to the order).
2. Split saw carriage with engine/motor.
3. 4 rail guards.
4. Bandsaw blade.
5. Tanks with hoses.
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.

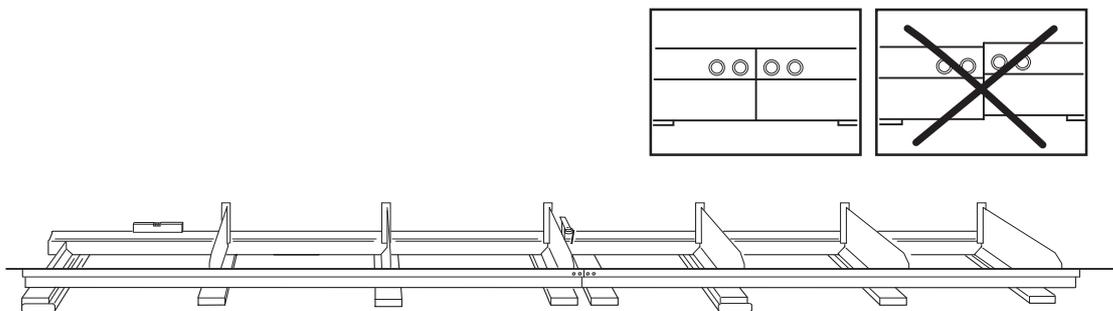
Rails

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:

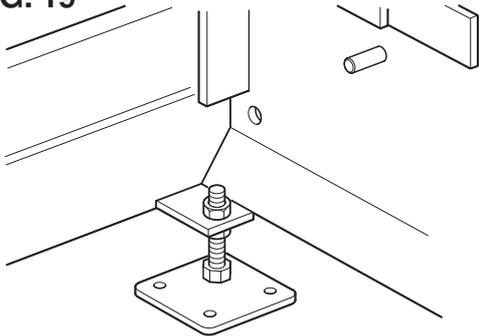
1. Assemble the adjustable feet under each of the 16 log bolsters. Adjust, by using the adjustable feet and the rails' bedding, until the rail sections form a straight line and the rails sit firmly on each wooden beam. See FIG. 18.
2. Loosely bolt together the rail sections using the supplied jointing plates and M12 nuts and bolts. See FIG. 20.
3. Finely adjust the rails and tighten all the bolts. Tighten the bolted joints to 5-10 Nm. See FIG. 18.
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. 18



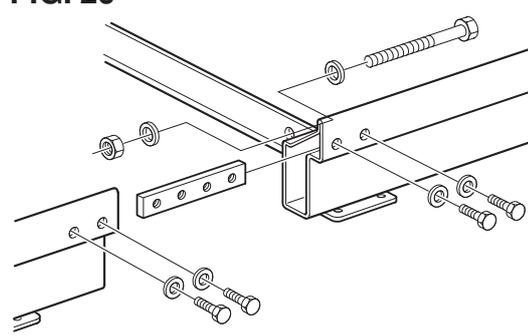
Aligning the rails

FIG. 19



Adjustable foot

FIG. 20



Bolted joint

INSTALLATION

Saw Carriage

Assembling the Saw Carriage

The wheel fixture is assembled in the packaging, where the sides are disassembled.

1. Crank the height adjustment crank (29) so that the runner (12) reaches outside the packaging.
2. Attach the wheel fixture (FIG 21B) to the runner (12).
3. Attach the stabilising stay (FIG 21A)
4. Loosely attach the frame (25) to its fixture and guide.

Setting up the Saw Carriage



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

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:** by the bandsaw blade tension crank and under the band wheel's protective cover.
 - The left-hand side:** by the handle (13) on the motor/engine console.
2. Lift and place the saw carriage so that the grooves in its wheels are positioned above their respective rails. Carefully lower the saw carriage onto the rails.
3. The one-man sawmill can be fitted with a wheel kit (FIG. 22) and a handle (Part no. 531 01 95-93) to make handling the saw carriage easier. The wheel kit is inserted into the steel structure by the saw carriage's runner wheels on the left-hand side. The handle is attached to the wheel housing on the right-hand side of the sawmill. When using the wheel kit and handle, the sawmill can be moved and placed on the rails by one person.

FIG. 21

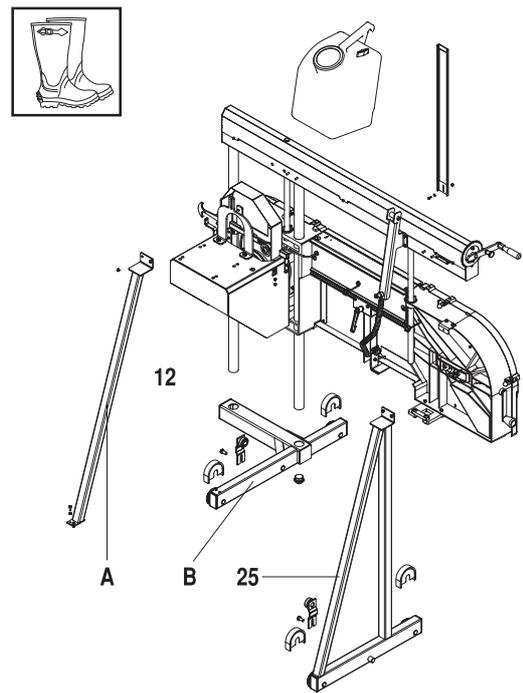
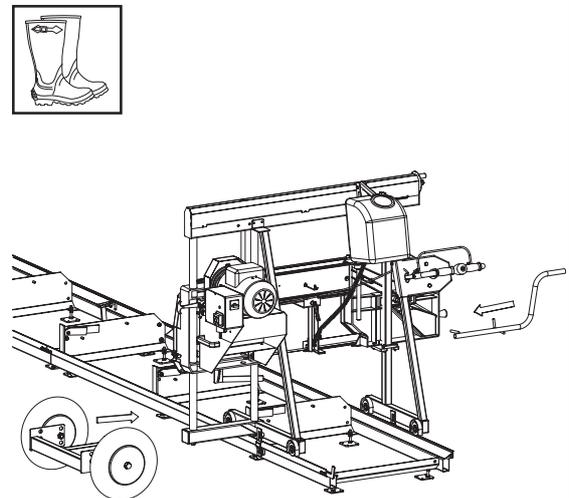


FIG. 22



INSTALLATION

Saw Carriage Adjustment

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.
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 above the wheel.
5. Adjust and screw into place the frame (25) and guide FIG. 26 A.

FIG. 23

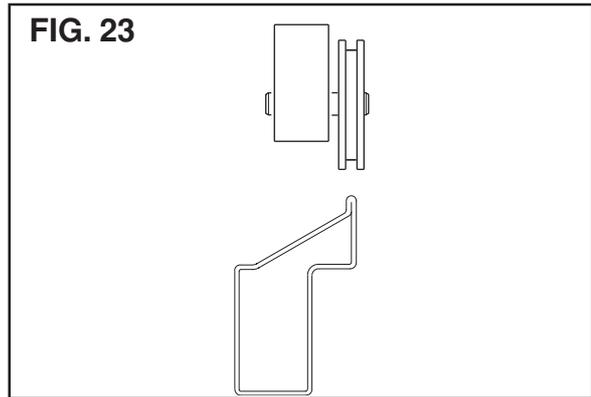


FIG. 24

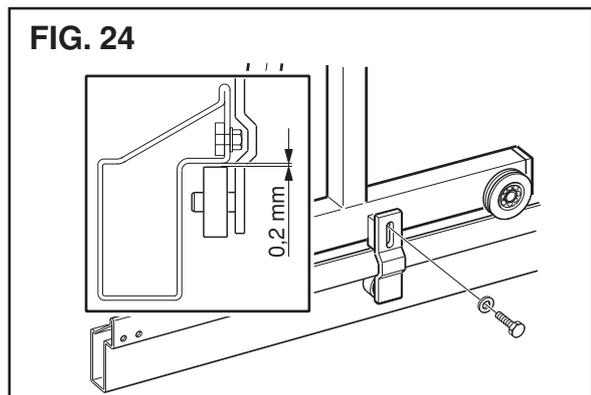


FIG. 25

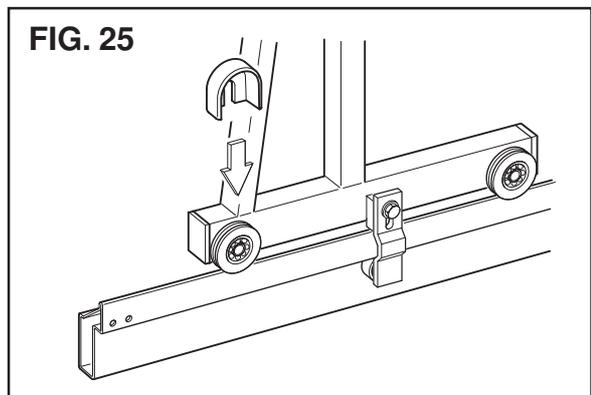
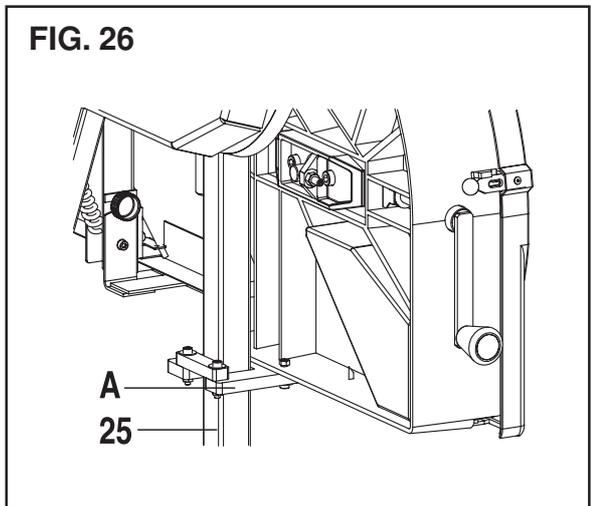


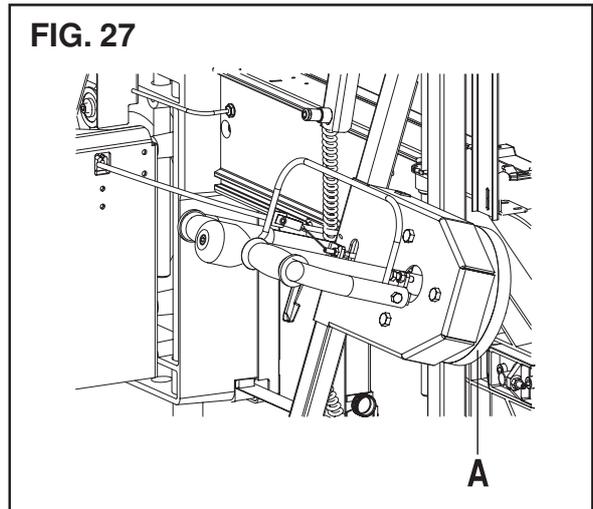
FIG. 26



INSTALLATION

Handlebars (FIG. 27)

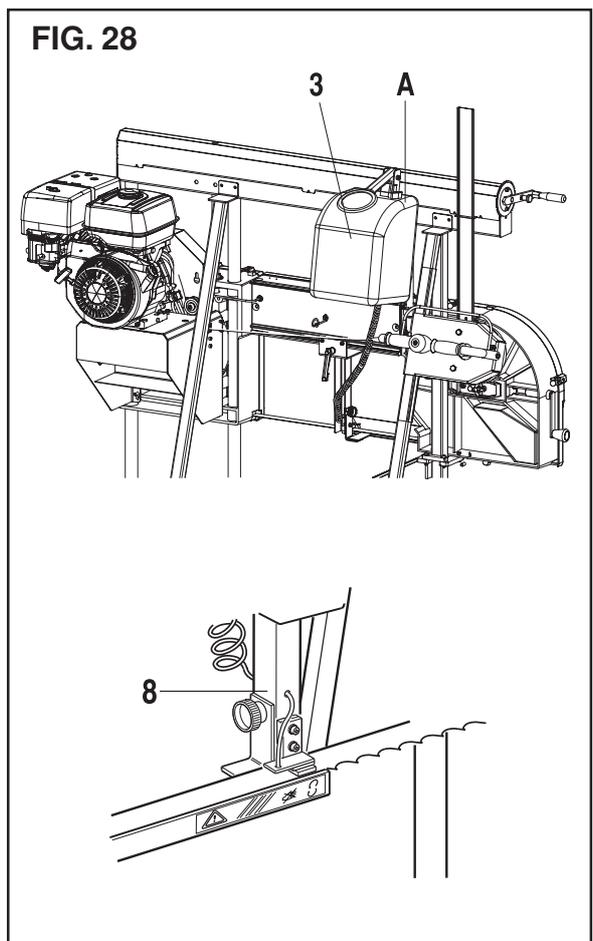
Attach the handlebars with the start lever (5) at a suitable height on the right-hand frame (25) and tighten the screws to 10 Nm. Attach the weight (A) to the rear end of the handlebars.



Band Cleaning Tank (FIG. 28)

The tank (3) is placed on the mounting located on the right-hand side of the sawmill. The band cleaning fluid flow is regulated with a continuously variable manual valve on the tank (FIG. 28A).

The tank (3) can be easily removed from the sawmill. The spiral hose is inserted through the hole in the band guide (8) and is connected in the hole on the plate mounted on the adjustable band guide. The fluid can then run down and clean the bandsaw blade.



INSTALLATION

Propulsion

1. Place the engine/motor on the engine/motor console and attach the drive belt.
2. Bolt the engine/motor (petrol or electric) onto the engine/motor console.
3. Connect the cable to the clutch control arm (A).
4. Attach the mounting for the drive disc (B), so that the clutch does not rotate.
5. Tighten the belt with the belt tension device (FIG. 31 A). A correctly adjusted belt can be moved 0.5 cm with one finger (FIG. 31 B). If necessary, adjust the engine/motor console mounted in the lengthways slot to attain the correct belt tension.
6. Connect the cable to the start lever (FIG. 30 E), check that the clutch is activated. When the start lever (FIG 30 F) is activated, the spring in the control arm on the clutch shall be lightly compressed.

Wire adjustment

The wire that engages the clutch must be adjusted so that there is no pressure on the clutch arm that is connected to the clutch. The easiest way to do this is to adjust the wire so that it is completely slack when the clutch is not engaged. Adjustment is by means of the adjuster nipples on the starter yoke and the engine bracket (FIG 30 G and FIG X A).

It is also important that the attachment to the clutch is able to swing (FIG X B). The spring in the fastener prevents excessive leverage being applied to the clutch arm.

On saw mills with four-stroke engines, the wire connected to the engine is adjusted using nipple (FIG X), so that the throttle lever is activated by the swinging motion (FIG X B) of the wire fastener near the clutch and therefore increases the engine speed before the clutch is engaged.

Petrol Engine

Connect the cable from the covers' safety switch (22) to the contact (FIG. 29 D) on the engine.

Electric Motor

Connect the cable from the covers' safety switch to the contact on the distribution box (FIG. 32 A). The contact for the electrical cable for the electric motor has polarity reversal (31). Make sure that the main switch (34) is set to 0.



WARNING!
Check that the main switch is set to 0, and be sure to invert the phase if the sawmill runs in the wrong direction.

FIG 29

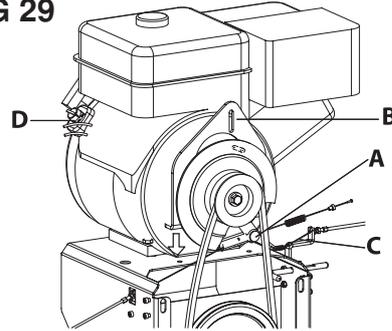


FIG 30

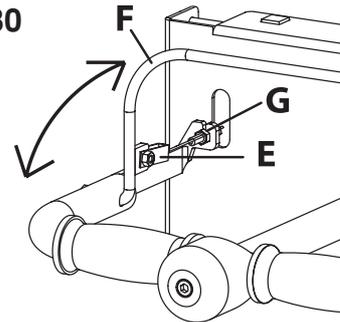


FIG X

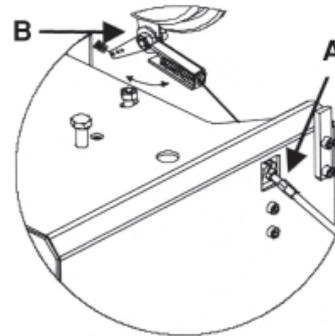


FIG 31

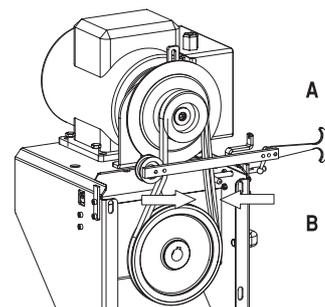
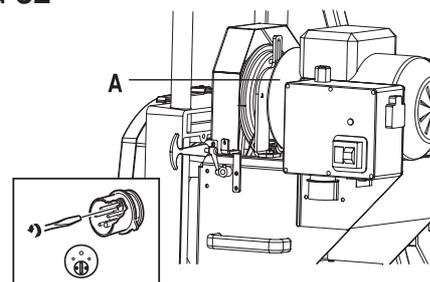


FIG 32



INSTALLATION

Bandsaw Blade



WARNING!
Wear protective gloves whenever you handle the bandsaw blade! On delivery a new bandsaw blade is rolled up and is in a state of high mechanical tension. Carefully unpack the bandsaw blade so that it does not fly out and cause physical injury!

Only bandsaw blades with the part number 531 0194-65 may be used.

Fit the bandsaw blade as follows:

1. Remove the guards over the band wheels. The guards are attached by three rubber straps, one upper, one lower, and one in the middle.
2. Crank the band tension crank (27) anticlockwise so that the distance between the band wheels is as small as possible.
3. Loosen the crank (FIG. 33A), drop the band guard (23), and attach the bandsaw blade with the teeth facing. Make sure that the bandsaw blade enters the adjustable band guide (8) and the fixed band support (FIG. 33B).
4. Release the belt tensioner by loosening the belt idler from the engine/motor. See FIG. 34.
5. Tension the bandsaw blade using the crank (27) until the spring washers are correctly compressed. See FIG. 36A. Turn the bandsaw wheels a few turns by hand, so that the bandsaw blade centres on the band wheels. **CAUTION!** It is important that the bandsaw blade is not tensioned too much so that the washers are completely compressed. See FIG. 36B. The washers should have a degree of springiness to take up variations in band tension. Incorrect band tension (too hard or too loose) means that the bandsaw blade runs a risk of roaming and coming loose from the band wheel.
6. Tension the belt FIG. 35 by pulling the handle so that the idler tightens the drive belt. Lock it. A correctly adjusted belt can be moved 0.5 cm with one finger.
7. Adjust the band guide's blocks by loosening the bolts 1 and 2 (FIG. 33). Adjust the blocks from both directions so that they lie lightly against the band.
8. Fold up the band guard (23).
9. Position the guards over the band wheels and secure them with the rubber straps. Ensure that the safety keys are in the tracks.

FIG. 33

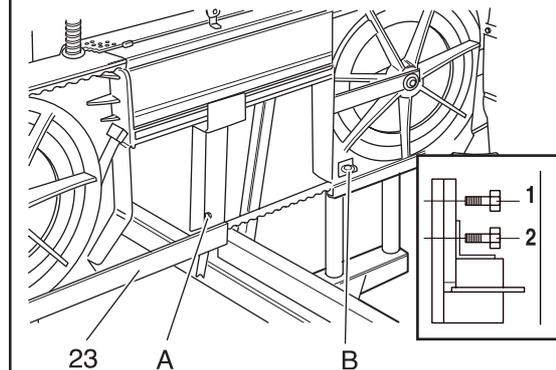


FIG. 34

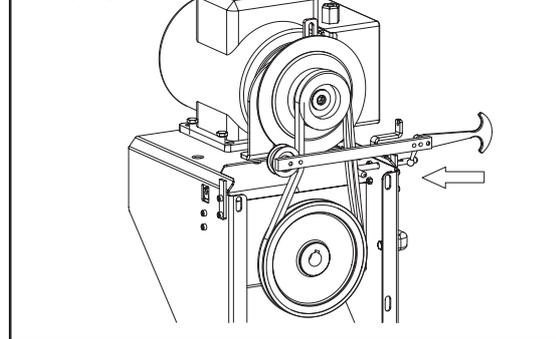


FIG. 35

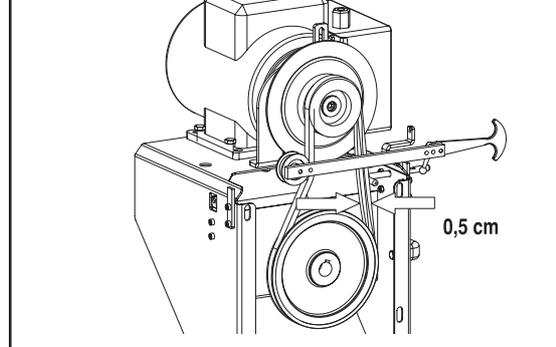
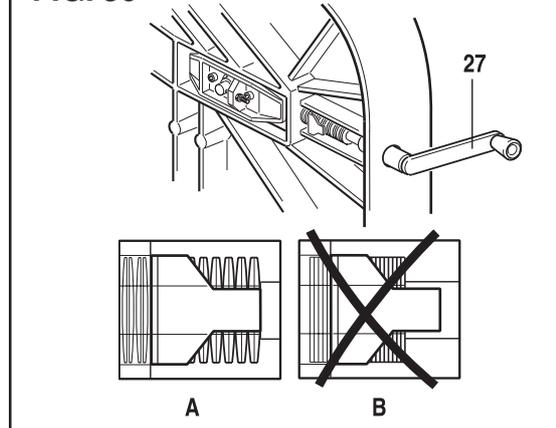


FIG. 36

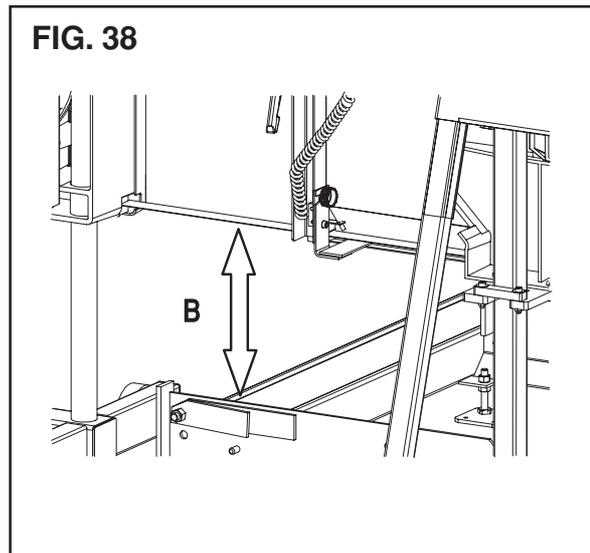
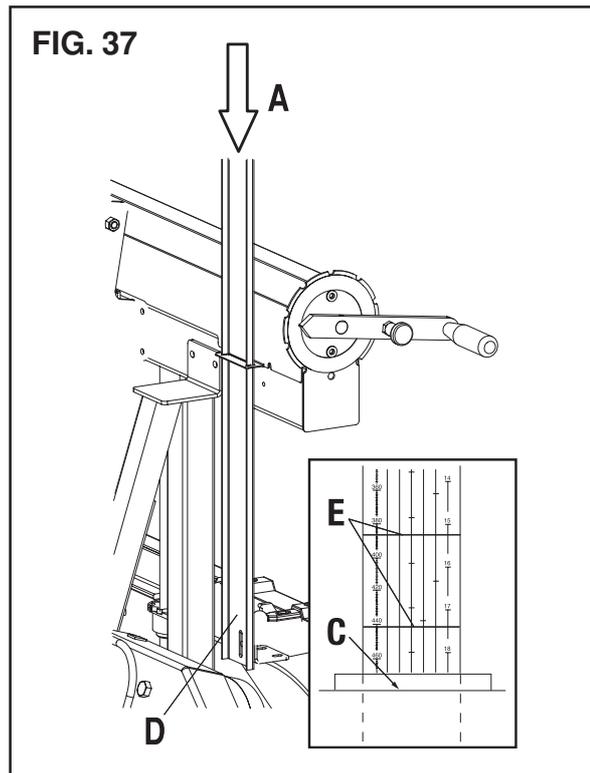


INSTALLATION

Scale (FIG 37)

Fit the ruler on the bandsaw blade's upper guard as follows:

1. Insert the ruler through the top of the scale pointer FIG. 37 A. The greatest value on the ruler shall face downwards.
2. Measure the distance between the underside of the bandsaw blade and the log bolster's upper section FIG. 38 B. NOTE! During this procedure the bandsaw blade should be tensioned and adjusted.
3. Set the scale so that the scale pointer has the same value and can be read on the scale FIG. 37 C.
4. Bolt the scale to the wheel housing FIG. 37 D.
5. Check that the bandsaw blade moves freely over the long and short log supports when the red mark can be read on the scale pointer. FIG. 37 E

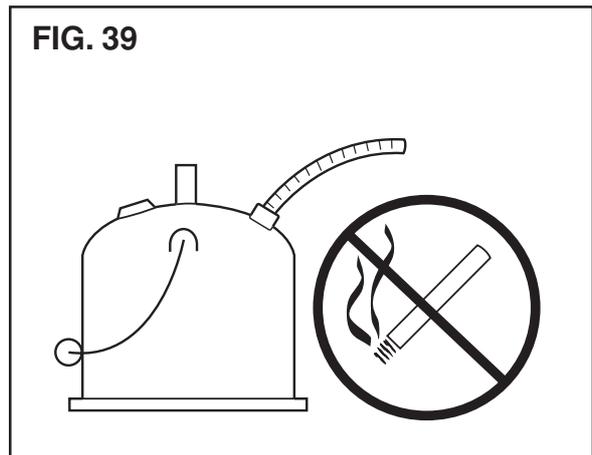


FUEL HANDLING

Fuel

Fuel Safety

	<p>WARNING! The fuel used in the one-man sawmill has the following hazardous properties:</p> <ol style="list-style-type: none">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

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

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.

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 Petrol Engine

A cold engine is started as follows:

1. Open the fuel tap (A).
2. Set the stop switch to the start position (B).
3. Activate the choke. (C)

CAUTION!

Do not pull out the starter cord fully and do not release the starter handle from the fully extended position. This damages the starter.

4. Slowly pull out the starter handle (D) until you feel some resistance (the starter pawls grip). Now pull quickly and firmly.
5. When the engine starts, return the choke control.

Stopping a Petrol Engine

The engine is stopped by moving the stop switch (B) to the stop position. Close the fuel tap (A).

Starting a Warm Petrol Engine

A warm engine is started in the same way as a cold engine, except for the following:
The choke is not used on a warm engine.

Starting instructions can also be found in the Manual for the engine.

Starting and Stopping the Bandsaw Blade

The blade is started and stopped using the control handle (4) on the sawmill's handlebars (5). Moving the starter handle towards the handlebars activates the clutch and the bandsaw starts. When the control handle is released, the bandsaw blade is braked and stops.

FIG. 40

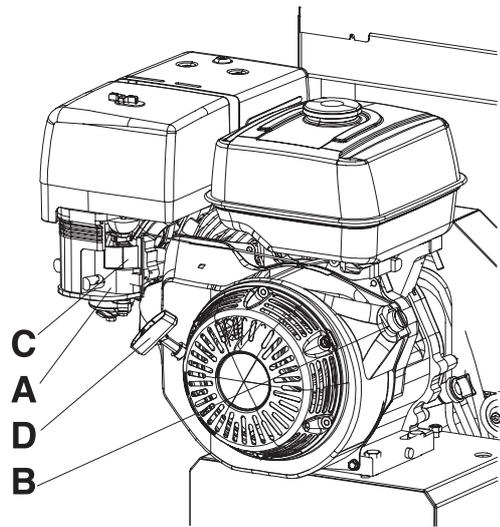
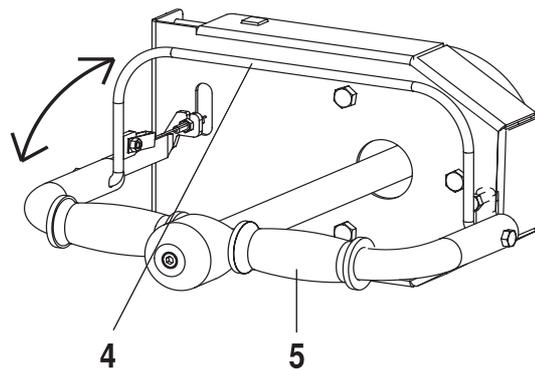


FIG. 41



STARTING AND STOPPING

Starting the Electric Sawmill



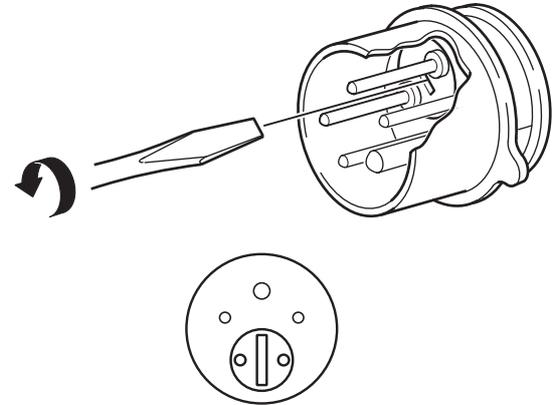
WARNING!
The sawmill must not be started until the appropriate current and voltage has been connected. Use suitable personnel trained in the country in question.

CAUTION!

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 direction of the bandsaw blade. If the bandsaw blade runs in the wrong direction, there is a phase inverter on the power connector (FIG. 42). The phase is inverted with the aid of a screwdriver, as illustrated in FIG. 42.

FIG. 42



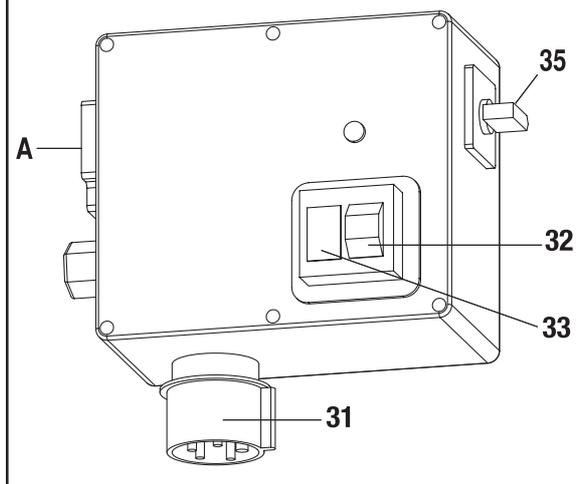
Starting the Electric Motor

1. Check that the power cable is connected correctly.
2. Set the main switch (35) to 1.
3. Start the motor with the green start button (33). The motor starts.

Stopping the Electric Motor

1. The electric motor is stopped with the raised red button (32).
2. Set the main switch (35) to 0.

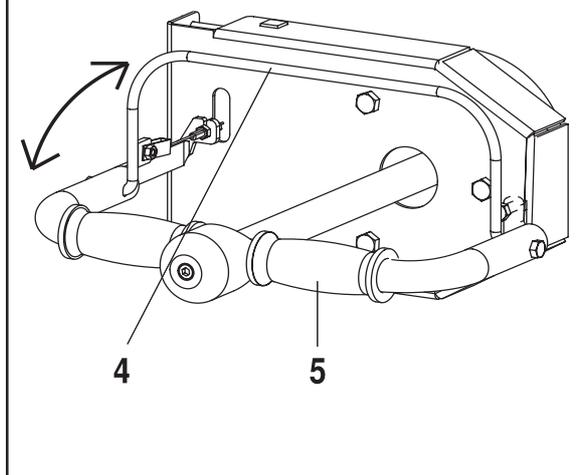
FIG. 43



Starting and Stopping the Bandsaw Blade

The blade is started and stopped using the control handle (4) on the sawmill's handlebars (5). Moving the starter handle towards the handlebars activates the clutch and the bandsaw starts. When the control handle is released, the bandsaw blade is braked and stops.

FIG. 44



Securing the Log



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

1. Fold up the stops (C) on the left-hand side of the rails.
2. Roll the log up against the stops (C). The log must not come closer:
 - 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 height adjuster (B) so that the log's core is horizontal.
4. Lock the log in position with the log lock (D).

FIG. 45

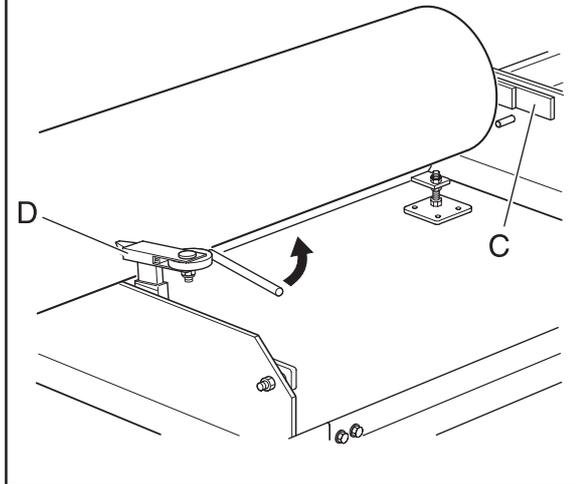
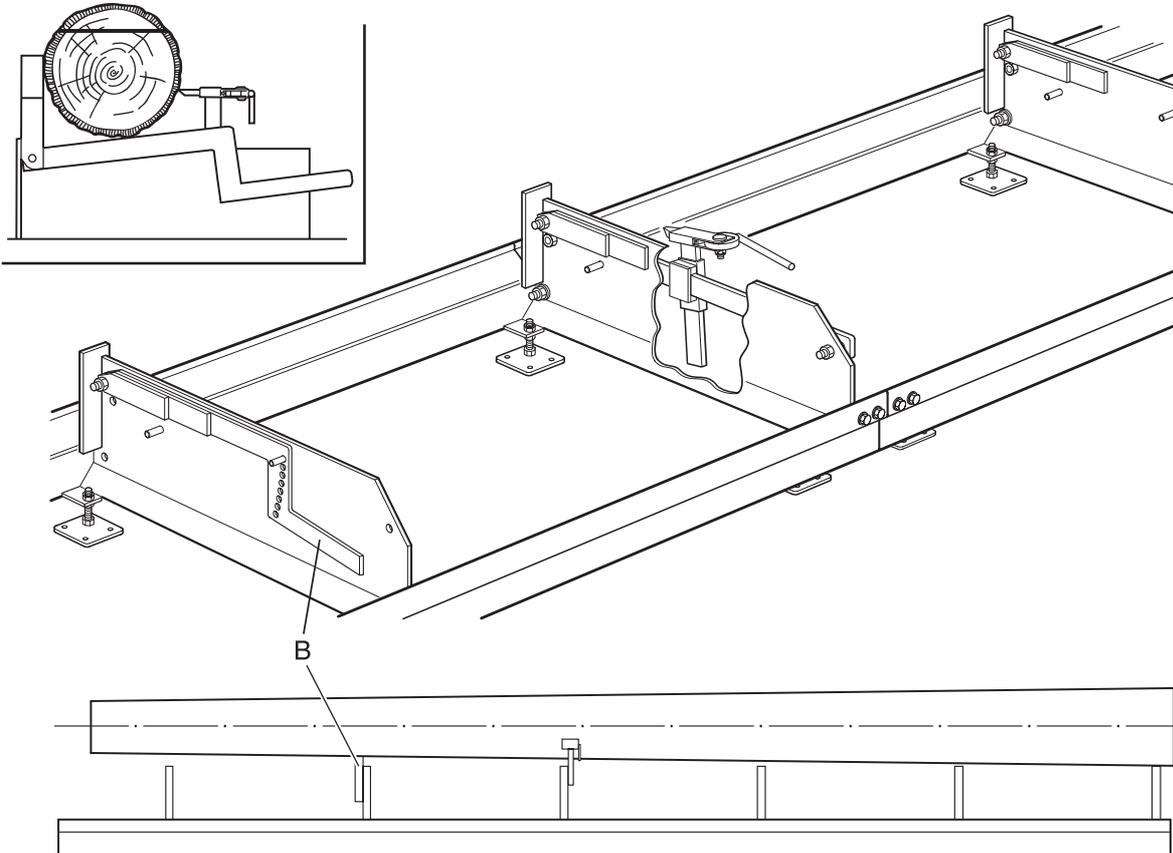


FIG. 46

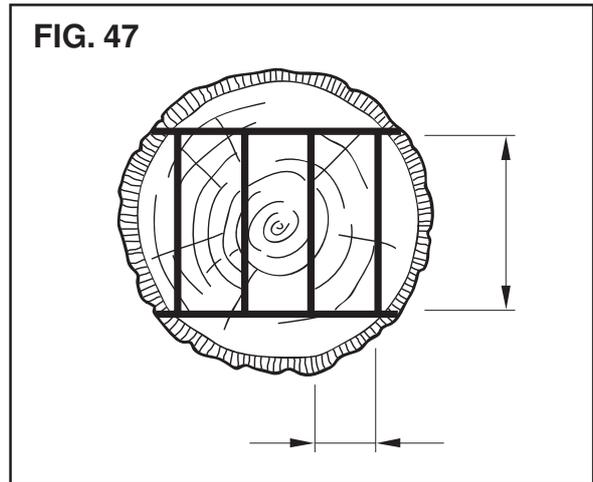


Calculating the Yield

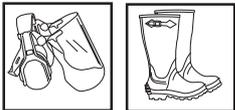
Measure the log's top end and determine how the log should be utilised for the timber in question. Include the thickness of the saw cut in the calculation.

The saw cut thickness = 2 mm.

FIG. 47



Sawing



WARNING!
Use the following protective equipment when sawing:

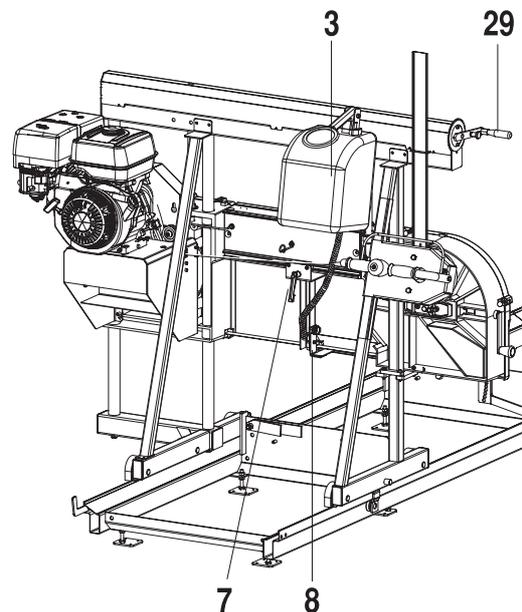
- Boots or shoes fitted with steel toe-caps.
- Hearing protection.
- Eye protection.
- Always have a first aid kit nearby.

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. 46).
2. Set the height of the bandsaw blade using the crank (29).
3. Clean any sand from the log, if necessary. This results in less wear.
4. Place the band guide (8) as close as possible to the log without the log and band guide touching each other. Lock the band guide using the lever (7).
5. Check the cleaning fluid tank (3) and fill with cleaning fluid if necessary. Use a cleaning fluid with lubricating properties, for example, water and detergent. The mixture should be made up of 80% water and 20% detergent. Wintertime: add windscreen washer fluid.
6. Check the fuel tank (17) and fill with fuel if necessary. See page 23.

FIG. 48



USE



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



WARNING!
The saw carriage must not be moved backwards while the bandsaw blade is in motion. Otherwise the bandsaw can jump off and cause personal injury.

Starting the Petrol Engine

1. Start the engine. See page 24.

Starting the Electric Motor

1. Start the electric motor. See page 25.

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 (B). This determines the width of the board.
6. Set the band guide as close as possible to the log without the log and band guide touching each other. Lock the band guide using its lever.
7. Cut off the sapwood on the other side. See p 2 and 3.

FIG. 49

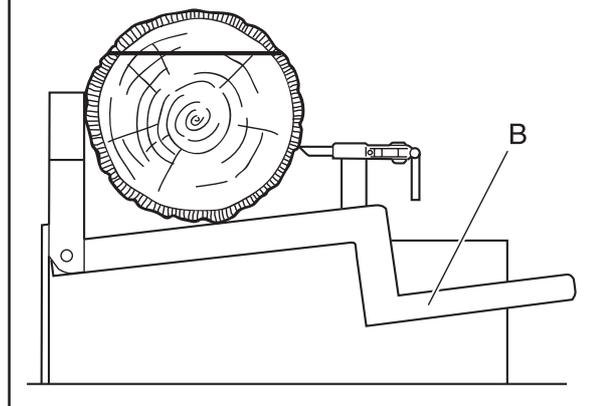
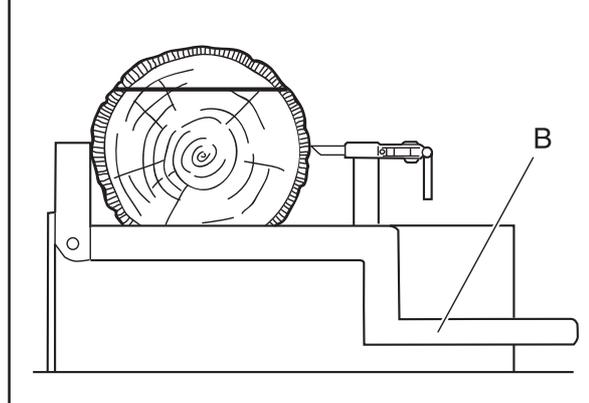
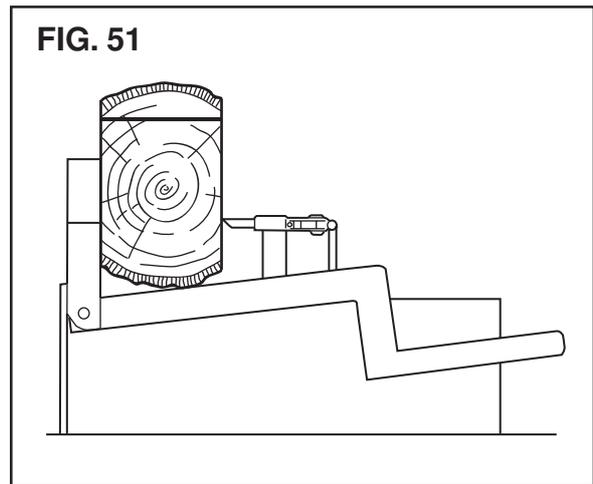


FIG. 50



USE

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

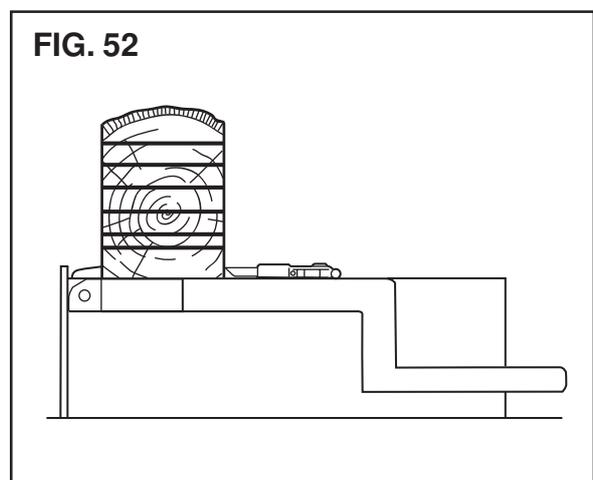


10. Cut off the upper sapwood.
11. Loosen the log, turn it 180°, lower the height adjuster, and secure the log.
12. Cut the block according to the previous instructions. Remember to compensate for the thickness of the bandsaw blade for each adjustment of the bandsaw blade's height.

Data for the height adjustment crank:

- 1 turn = 5 mm.

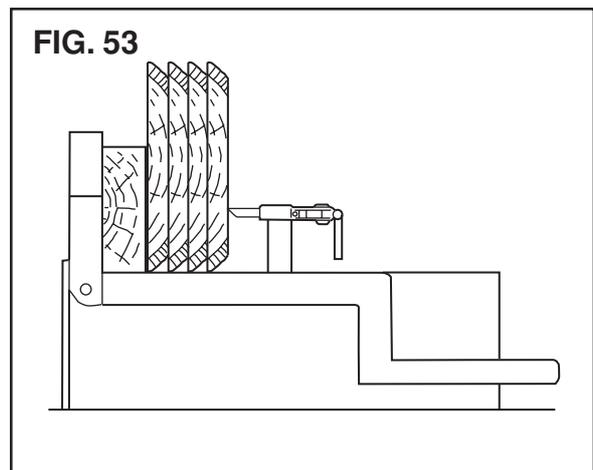
The scale can also be used for varying standard dimensions.



Edging

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.



MAINTENANCE

Bandsaw Blade



WARNING!
The bandsaw blade is sharp and can cause cuts. Warning for personal injury. Wear protective gloves whenever you handle the bandsaw blade.

The bandsaw blade should be set and sharpened regularly to give optimal performance. During normal sawing of most species of wood this should be done at intervals of approx. 2 hours of **effective cutting time**. Effective cutting time refers to only the time that the bandsaw blade actually works. The bandsaw blade should be sharpened more frequently when cutting those species of wood with a high sand content. For blade sharpening, see the separate instructions for the Grindlux bandsaw blade grinder.

Dismantling

Dismantle the bandsaw blade as follows:

1. Remove the guards over the band wheels. See page 21.
2. Loosen the right-hand band wheel by cranking about 10 turns counter-clockwise.
3. Carefully remove the bandsaw blade.

Cleaning and inspection

Clean sawdust and any coating from the bandsaw blade. Now check whether there are any cracks (A) in the gullets. Small cracks can be ground away when sharpening the bandsaw blade. If the cracks are so large that they cannot be ground away, the bandsaw blade should be discarded. Cracks in the gullets are the most common cause of bandsaw blade breakage. The bandsaw blade can be ground to a minimum width of 24 mm. See FIG. 54. A new bandsaw blade is 32 mm wide. The bandsaw blade should be discarded once any part of it reaches the minimum width.



WARNING!
Never use a damaged bandsaw blade.

Setting the Saw

The bandsaw blade's teeth should be set to the dimensions shown in the adjoining figure. Every third tooth should remain unset. The teeth should be set as follows:

- B=Set to the right, 0.4-0.5 mm.
- C=Set to the left, 0.4-0.5 mm
- D=Not set.

The more accurate the set is made, the straighter and smoother the bandsaw blade runs when cutting the log. The bandsaw blade should be set, at a minimum, after every third sharpening.

FIG. 54

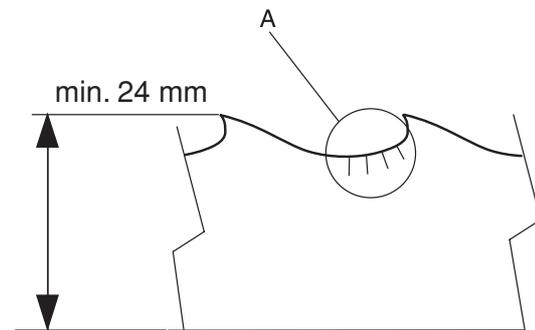
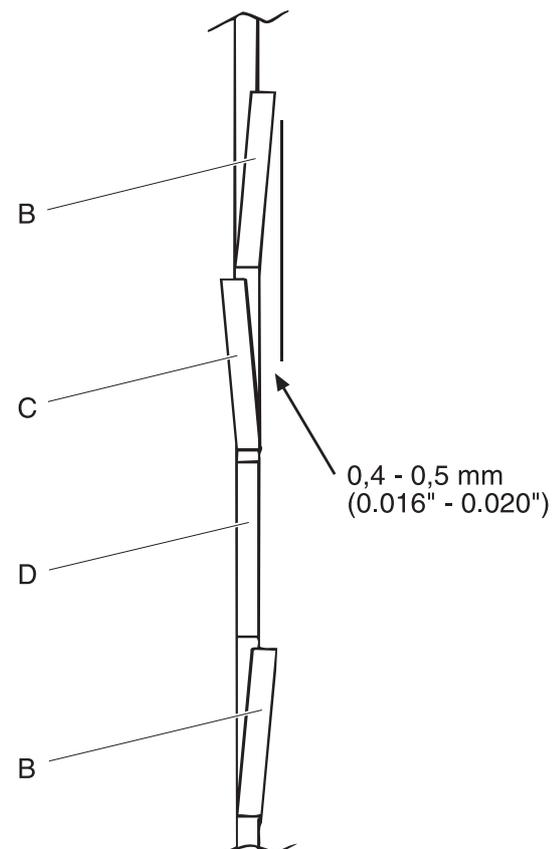


FIG. 55



MAINTENANCE

Saw Setting Pliers



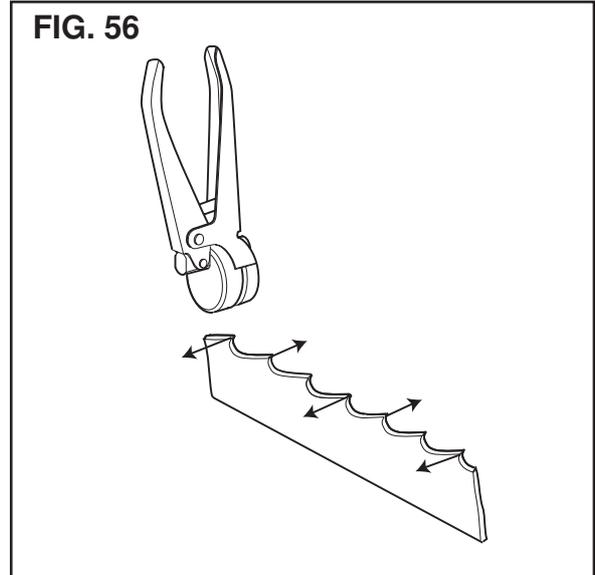
For optimal results the bandsaw blade should be set using the saw setting pliers as described on page 30.

The saw setting pliers are adjusted to the correct setting size.

Place the saw setting pliers over the saw tooth so that the pliers' fixing angles rest on the two closest teeth.

Activate the pliers and the saw tooth will be set away from the operator.

FIG. 56



MAINTENANCE

Sharpening



WARNING!
The bandsaw blade is sharp and can cause cuts. Warning for personal injury. Wear protective gloves whenever you handle the bandsaw blade.

After sharpening, the bandsaw blade should be set as described in the instructions on the previous page.

The more accurate the sharpening, the straighter and smoother the bandsaw blade runs when cutting the log.

Radii

The radius in the area (A) should be 1-3 mm. A radius under 1 mm increases the risk of cracking.

A radius over 3 mm means that the chips are not broken.

Angles

The clearance angle should be 10-12° and the cutting angle (F) varies depending on the species of wood as follows:

Hardwoods or frozen timber	7°
Medium hardwoods	10°
Softwoods	14°

Before sharpening, the bandsaw blade's teeth should be set using the saw setting pliers.

The rake angle should be 90°. See the figure to the right.

Shape of the Tooth

As the bandsaw blade is sharpened it is important that the teeth and tooth valleys keep their original shape.

For optimal results, the bandsaw blade should be sharpened with the grinder. The procedure is described on the following pages.

On delivery, the grinder is adjusted for the correct angles and tooth shape.

FIG. 57

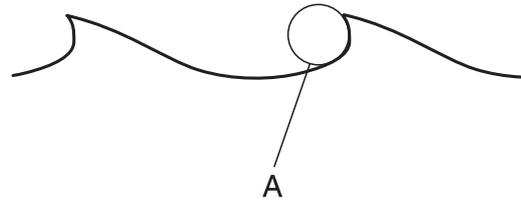


FIG. 58



FIG. 59

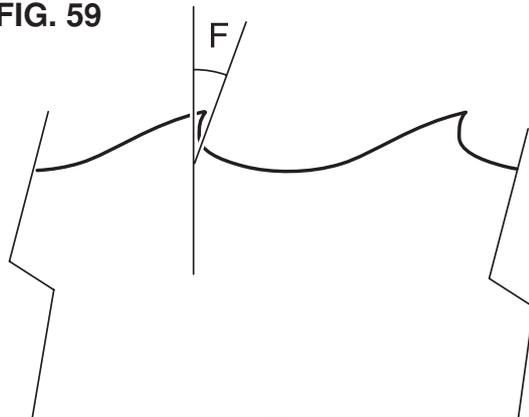
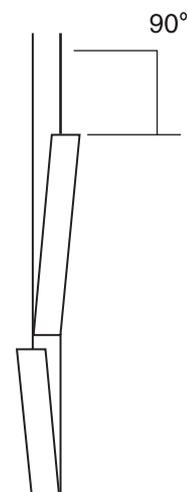


FIG. 60



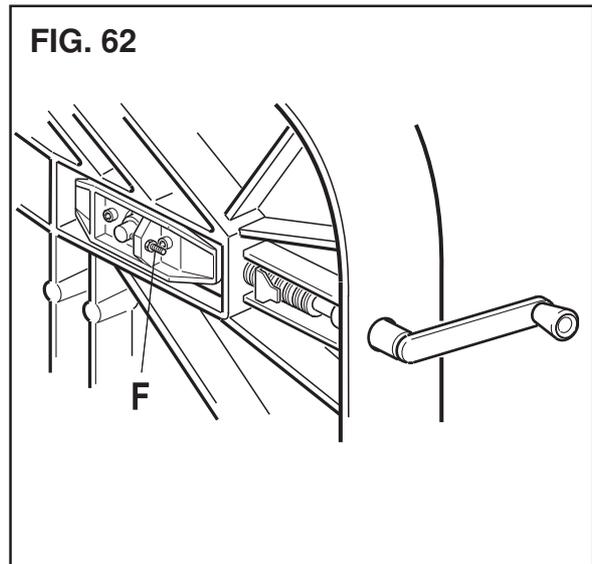
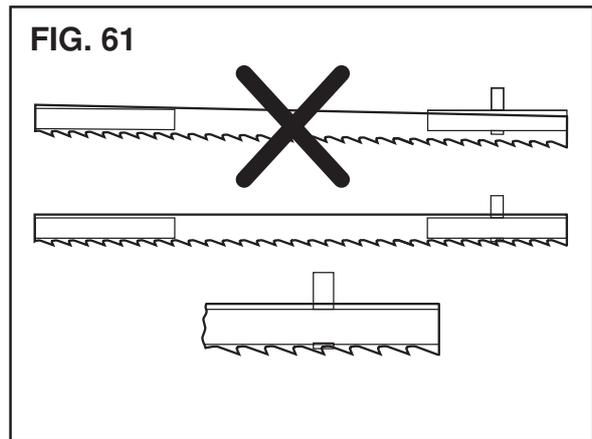
MAINTENANCE

Band Wheel Adjustment

After the one-man saw has been used for a long period, the band wheel bearings will start to wear and change position. Meanwhile, the foundation's working geometry will have stabilised. This means the parallelism of the band wheels may need to be adjusted.

Adjustment is performed as follows:

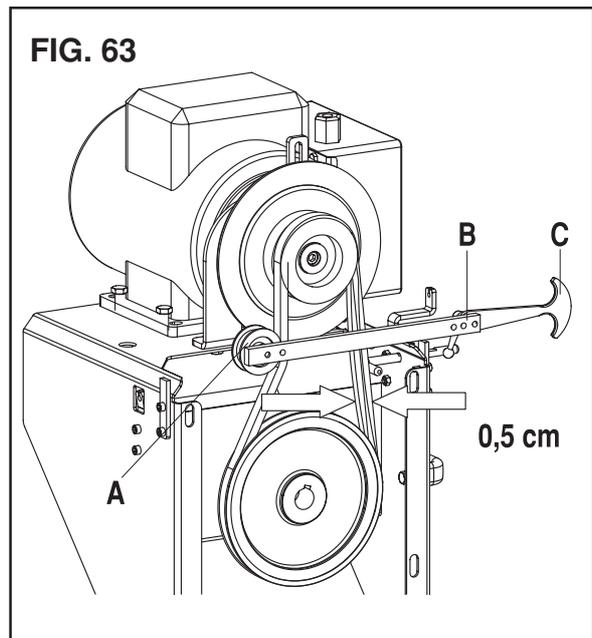
1. Ensure that the electric power has been disconnected. Unplug the electrical contact or short-circuit the petrol engine.
2. Loosen the belt tension by releasing the idler to the V-belt, so that the band wheel is free and can be rotated by hand.
3. The bandsaw blade should be fitted and adjusted.
4. Adjust the right-hand band wheel using the screw (F). The screw is locked with a lock nut, which should be loosened during adjustment.
5. Check the alignment of the bandsaw blade after adjustment by rotating the band wheel by hand.
6. See FIG. 61 for the correct position.
7. If the bandsaw blade is not aligned, adjust the right band wheel with the spacer located on the outside of the band wheel. The wheel is dismantled and the spacer is placed on the innermost part of the wheel axle and the wheel is then re-mounted. Repeat steps 2 to 5 until the bandsaw blade is aligned.



Drive Belt (FIG. 63)

The drive belt wears as the saw is used. The belt should be replaced after 200 hours of operation to avoid belt failure during operation. If the drive slips or the belts need to be frequently adjusted, this is a sign that the belts need to be replaced. To replace the belt, proceed as follows:

1. Unplug the electrical contact from the distribution box or short-circuit the petrol engine.
2. Loosen the belt guard.
3. Loosen the idler (A) completely with the locking lever (B).
4. Change the belt and then tighten the belt by pulling the handle (C) and tightening the idler (A) and locking the idler with the locking lever (B). When the belt is correctly tensioned, it should be possible to move it about 0.5 cm in each direction using one finger.
5. Attach the belt guard.



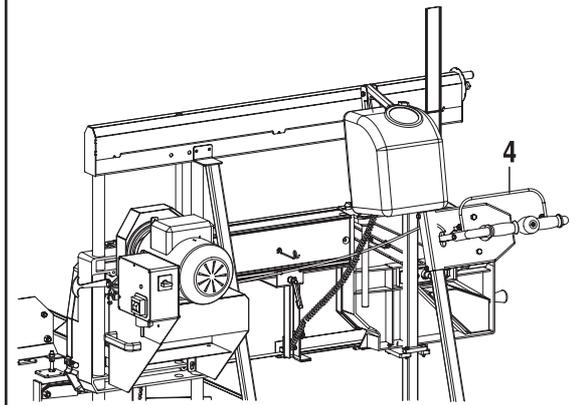
MAINTENANCE

Checking the Braking Function

For the one-man saw to meet safety requirements, the braking function must be checked at least once per week. Check the braking function in the following way:

1. Start the sawmill motor/engine.
2. Start the bandsaw blade with the control unit (4).
3. Release the control unit and the bandsaw should stop within 5 seconds.
4. If the bandsaw blade does not stop within the prescribed time, the unit is not to be used until the braking function clutch is repaired. Contact your local dealer.
5. Check the Safety Switch Function.

FIG. 64



The Saw Unit's Height Adjustment

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

Runners (12)

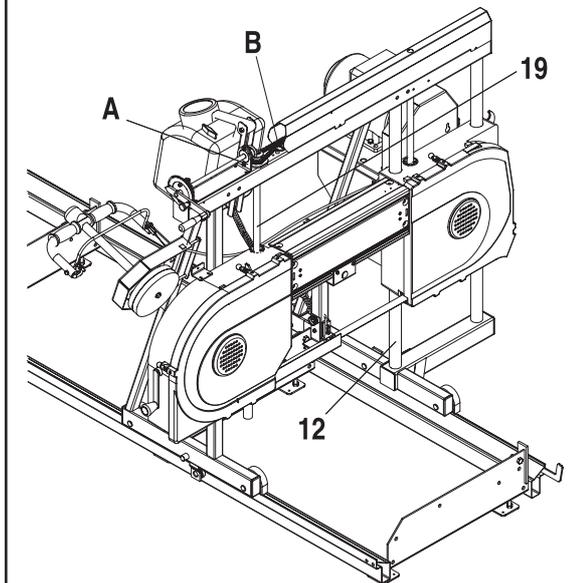
The guides that locate the saw unit should be wiped clean and moistened with oil as required.

Screws (19), sprocket (A), and chain (B)

The screws should be wiped clean as required.

The drive chain that links both the height adjustment screws should be oiled once a year. To oil the chain proceed as follows: Loosen the cover on the short side of the chain guard. Crank back and forth, about 20 turns in each direction, while spraying oil on the chain. Use a cloth to wipe up any excess oil.

FIG. 65



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 both the screws and the guides. See page 34.
3. Adjust the bandsaw blade tension. See page 21.
4. Check that the bandsaw blade's cleaning system works. If the cleaning fluid is depleted on an ongoing basis, then the cleaning system works.
5. Clean any sawdust from the bandsaw blade guides.
6. Check that all safety devices are undamaged and work. Check:
 - Start/stop devices
 - Electrical contacts
 - Band wheel guards
 - Safety switch for the band guards
 - Rail stop
 - Rail guards
 - Belt guard
 - Electrical cables and electrical connections
7. Set and sharpen the bandsaw blade as required. When cutting timber with a normal sand content and hardness, these actions should be carried out after about 1 hour of sawing (time for adjustments, timber handling, etc are not included). See pages 30-32.

Weekly Maintenance

1. Petrol Engine Maintenance (see the engine manual).
2. Clean the bandsaw blade scrapers.
3. Clean the height adjustment screws, guides, and chain. See page 34.
4. Check the belt tension and adjust if required. See page 33.
5. Clean around the rails. Remove sawdust, bark, and wood chips to facilitate handling of the one-man saw.

Monthly Maintenance

1. Checking the Clutch Function. See page 34.
2. Clean the inside of the bandsaw's cleaning fluid tank.
3. Check cables and connections.
4. 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 18.
5. Adjust the play on the bearings that run against the underside of the rails. See page 18.
6. Check the bolted joints on the rail sections. See page 16.
7. Check that the rails rest against all contact points on the wooden beams.

Storage

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

1. Empty and clean the fuel tank.
2. Empty and clean the bandsaw's cleaning fluid tank.
3. Remove the bandsaw blade.
4. Spray preservative oil in the spark plug hole and carburettor while turning the engine over with the starter handle.
5. Remove the saw carriage and unbolt the rail sections.
6. Oil all parts.
7. Store the one-man saw in a dry location.
8. After a period of one year the following measures apply:
 - Spray preservative oil in the spark plug hole and carburettor while turning the engine over with the starter handle.
 - Oil all parts.

TECHNICAL DATA

Petrol Engine

Cylinder displacement, cm ³ :	389
Idle speed, rpm:	1 400 + 150
Max. speed during running in, rpm:	2 800
Power, kW/rpm:	9.6 / 3 600
Max. torque:	2.7 kg-m / 2 500 revs

Fuel:	Petrol, 95-98 octane
Volume, fuel tank:	6.5 litres
Fuel consumption:	230 g/Hpg
Cooling system:	Fan cooled
Ignition system:	Transistor
Axle rotation:	Anti-clockwise

Electric Motor

Power 380-420 delta connection:	50 Hz 5.5 kW, 2855 rpm
Ampere:	10.50
Power 220-240 delta connection:	50 Hz 5.5 kW, 2855 rpm
Ampere:	18.20
Power 220 delta connection:	50 Hz 5.5 kW, 2855 rpm
Ampere:	19.90

Bandsaw Blade Cleaning

Volume, cleaning fluid tank, litres:	16 litres
Cleaning fluid:	Detergent and water. In winter, mixed with windscreen washer fluid

Weights

The saw carriage, petrol engine, kg:	182
The saw carriage, electric motor, kg:	184
Two rail sections, kg:	115

Bandsaw Blade

Bandsaw blade speed, petrol engine, m/s:	35
Bandsaw blade speed, electric motor, m/s:	35
Pitch, mm:	25
Width, mm:	35
Thickness, mm:	1 + set
Length, mm:	3 570
Part number:	531 01 94-85

Sawing

Max. log height, mm:	700
Max. log width, mm:	500
Rec. speed when sawing with petrol engine, rpm:	2 800 / 2 900
The log length is determined by the number of available rail sections.	
Height adjustment crank/turns, mm:	5
Index plate, resolution, mm:	1

TECHNICAL DATA

Noise Levels

Equivalent (see note 1) noise intensity at operator's ear during sawing, measured according to relevant international standards, dB(A)

Petrol engine:	97.2
Electric motor:	95.6

Equivalent (see note 1) noise level measured according to relevant international standards, dB(A)

Petrol engine:	112.8
Electric motor:	107.4

Vibration Levels

(See note 2)

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

Petrol engine:	2.2
Electric motor:	0.7

Note 1: Equivalent noise level is, according to ISO 7182 and ISO 9207, calculated as the time-weighted energy total for noise levels under various working conditions with the following time distribution: 1/2 idling, 1/2 full load.

Note 2: Equivalent vibration level is, according to ISO 7505, calculated as the time-weighted energy total for vibration levels under various working conditions with the following time distribution: 1/2 idling, 1/2 full load.

EC Declaration of Conformity (Only applies to Europe)

Directive 98/37/EC, Annex 2 A.

Lennartsfors Verkstads AB, Lennartsfors 1, SE-672 92 ÅRJÄNG, hereby guarantees that the bandsaws Jonsered SM 2055 EL and SM 2196, with serial numbers 02 100001 – 02 5200100, meet the standards prescribed in the COUNCIL'S DIRECTIVES:

- of June 22, 1988 "relating to machinery" **98/37/EC**, annex IIA.
- of May 3, 1989 "relating to electromagnetic compatibility" **89/336/EEC**, and applicable supplements.
- of February 19, 1973 "concerning electrical equipment", **73/23/EEC**

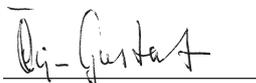
For information regarding noise emissions, see the Technical Data chapter.

The following harmonised standards have been applied: **EN292-1, EN 1807:1999, 60204:1**

Registered body: 0404, SMP Svensk Maskinprovning AB, Fyrisborgsgatan 3, SE-754 50 Uppsala, Sweden, has carried out EU type approval in accordance with article 8, section 2c. The EU type approval certificate is numbered 404/02/854.

The supplied bandsaw conforms with the example that underwent EU type approval.

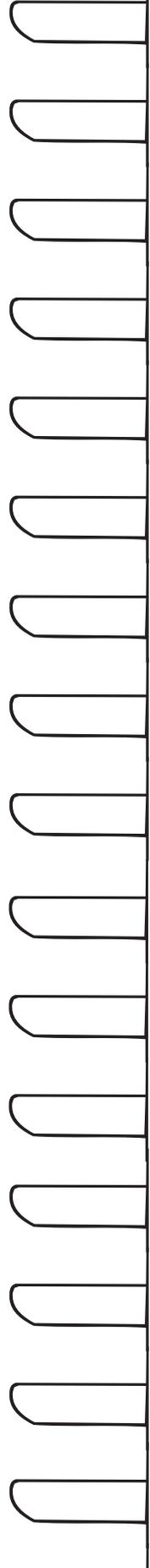
Årjäng February 14, 2002



Lennartsfors Verkstads AB
Örjan Gustafsson, Product Manager

TECHNICAL DATA

Templates for Dressing the Grinding Disc



NOTES

.Jonsered

108 89 05-26



2003W36