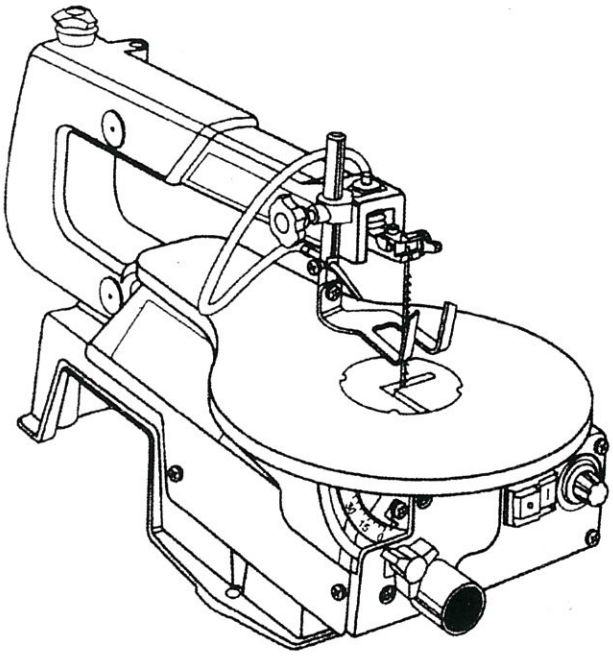
16" Variable Speed Scroll Saw



SAVE THIS MANUAL FOR FUTURE REFERENCE

1. INTRODUCTION

Your saw incorporates many features to enable you to get the best results. Safety, performance and reliability have been given top priority in the design of this saw, making it easy to maintain and operate.

NB: Please read the user manual thoroughly and ensure that you understand it before using your saw. Pay close attention to the safety instructions, warnings and cautions. To enjoy years of safe, reliable service, use your saw correctly and only for the purpose for which it is designed.

WARNING:-
Look for this symbol which indicates important safety precautions. It is used to attract your attention. Your safety is at stake.

Wear goggles

Wear ear-muffs

Wear a breathing mask

2. SCROLL SAW

PRODUCT SPECIFICATIONS:

Throat Depth	16 in. (406 mm)
Blade Length	5 in. (127 mm)
Max. Cutting Depth	2 in.(50mm)
No Load Speed	400-1600 Strokes Per Minute
Net Weight	30.8 lbs. (14 kg)
Tilting table	0° to 45° to the left

3. SAFETY INSTRUCTIONS

The following safety symbols are used to draw your attention to possible risks. Pay careful attention to these safety symbols and accompanying paragraphs and make sure you understand them. The safety warnings do not in themselves eliminate any danger and are not substitutes for proper accident prevention measures.

SYMBOL	MEANING
⚠	**SAFETY WARNING SYMBOL:** Indicates a risk, warning or caution. May be used in conjunction with other symbols or icons.
⚠	**DANGER:** Failure to obey a safety warning will result in serious injury to yourself or to others. Always follow the safety instructions rigorously to reduce the risk of fire, electric shock and personal injury.
⚠	**WARNING:** Failure to obey a safety warning can result in serious injury to yourself or to others. Always follow the safety precautions rigorously to reduce the risk of fire, electric shock and personal injury.
⚠	**CAUTION:** Failure to obey a safety warning may result in damage to property or injury to yourself or to others. Always follow the safety precautions rigorously to reduce the risk of fire, electric shock and personal injury.
NB:	Gives you essential information or instructions about the operation or maintenance of the equipment.

WARNING:
Do not attempt to use this saw until you have fully read and understood all the instructions and safety rules contained in this manual. Failure to comply with these rules and instructions can result in accidents such as fire, electric shock or serious personal injury. Keep this user manual in a safe place and refer to it frequently to work safely and to instruct others who may use this tool.

Safe operation of this power tool requires that you read and understand this user's manual and all labels affixed to the tool. Safety is a combination of common sense, staying alert, and knowing how your scroll saw works.

READ ALL THE INSTRUCTIONS

- **KNOW YOUR POWER TOOL.** Read the user manual carefully. Find out about the tool's applications and its limitations as well as the potential hazards associated with the tool.
- **KEEP GUARDS IN PLACE** and in good working order.
- **ALWAYS REMOVE ADJUSTING KEYS AND SPANNERS.** Get into the habit of checking that all adjusting keys and spanners have been removed from the tool before turning it on.

WARNING: Only manufacturer's original replacement parts must be used. Using any other spare part may be dangerous or damage your tool.

- **KEEP WORK AREA CLEAN.** Cluttered work areas and workbenches invite accidents.
- **DO NOT USE IN DANGEROUS ENVIRONMENTS.** Do not use power tools near petrol or other flammable liquids, in damp or wet conditions, or expose them to rain.
- **NEVER USE YOUR TOOL IN AN EXPLOSIVE ATMOSPHERE.** The sparks produced by the motor could ignite flammable liquids, gases or vapours.
- **KEEP CHILDREN AND VISITORS AWAY.** All visitors should wear safety glasses and be kept at a safe distance from the work area. Do not let visitors touch the tool or the extension cable when the tool is operating.
- **ENSURE THAT THE WORKSHOP IS SAFE FOR CHILDREN** by using padlocks and master switches or removing on/off keys.
- **NEVER FORCE THE TOOL.** The tool will be more efficient and safer when used at the speed for which it was designed.
- **USE THE RIGHT TOOL.** Do not force the tool or attachment to do a job it was not designed for. Do not use them for any purpose other than those intended by the manufacturer.
- **USE AN APPROPRIATE EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one with adequate wattage rating. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.
- **USE THE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. If in doubt, use a heavier gauge.
- **USE OUTDOOR EXTENSION CORDS.** When the tool is used outdoors, use only earthed extension cords that are approved for outdoor use and marked as such.
- **WEAR PROPER CLOTHES.** Do not wear loose clothing, gloves, ties, rings, bracelets or other jewellery. They can get caught in the tool and draw you into the moving parts, possibly resulting in serious injury. Rubber gloves and non-skid footwear are recommended when working outdoors. If you have long hair, tie it back and wear protective hair covering to keep it from being drawn into the ventilation slots.
- **ALWAYS WEAR SAFETY GLASSES WITH SIDE SHIELDS.** Ordinary glasses have only impact-resistant lenses; they are **NOT** safety glasses.
- **PROTECT YOUR LUNGS.** Wear a face mask or dust mask if the work generates dust.
- **PROTECT YOUR EARS.** During extended periods of operation, wear proper hearing protection to dampen the sound pressure level.
- **SECURE YOUR WORKPIECE PROPERLY** before starting your tool. Whenever possible, use clamps or a vice to hold your workpiece. **NEVER** hold the workpiece in your hand or between your legs.
- **KEEP YOUR BALANCE.** Always keep well balanced. Do not use your tool while standing on a ladder or any other unstable support. Always secure your tool and remain aware of what is underneath you when working in elevated positions.
- **MAINTAIN THE TOOL IN GOOD WORKING CONDITION.** For optimum safety and best results, keep your tool sharp and clean at all times. Follow the instructions for lubricating and changing accessories.
- **DISCONNECT ALL TOOLS.** When not in use, during maintenance operations or when changing attachments (blades, bits, cutters, etc.) all tools should be disconnected.
- **AVOID ACCIDENTAL STARTING.** Make sure the switch is in the "off" position or locked when you plug in your tool.
- **CHECK DAMAGED PARTS AND ACCESSORIES.** If a tool part or accessory is damaged, check that it can continue to work and perform its function correctly before continuing to use the tool. Check the alignment of the moving parts and make sure they move freely. Check that no part is broken. Check the assembly and anything else that might affect the operation of the tool. A guard or other part or accessory that is damaged must be properly repaired or replaced by a qualified technician to avoid risk of personal injury.

- **NEVER LEAVE THE TOOL RUNNING UNATTENDED. SWITCH IT OFF.** Do not walk away from the tool until it comes to a complete stop.
- **KEEP THE POWER CABLE IN GOOD CONDITION.** Never pull the cable to disconnect the tool. Keep the cable away from sources of heat, oil and sharp edges.
- **DO NOT USE THE TOOL IF THE ON/OFF SWITCH DOES NOT TURN IT ON AND OFF.** Have defective switches replaced by a qualified technician at an Authorised Ryobi Service Centre.
- **KEEP THE TOOL DRY AND CLEAN (FREE FROM OIL AND GREASE).** Always use a clean cloth to clean your tool. Never use brake fluid, petroleum-based products or solvents to clean your tool.
- **DO NOT OPERATE TOOLS WHILE UNDER THE INFLUENCE OF DRUGS OR ALCOHOL OR IF YOU ARE TAKING MEDICATIONS.**
- **STAY ALERT AND REMAIN IN CONTROL AT ALL TIMES.** Do not let familiarity (gained from frequent use of the tool) lead to carelessness. Always remember that a moment of inattention is sufficient to inflict severe injury. Watch what you are doing and use common sense. Do not operate the tool when you are tired. Do not rush.
- **MAKE SURE THE WORK AREA IS WELL LIT** so that you can clearly see what you are doing and that there are no hazards **BEFORE** you start using your tool.
- **PUT YOUR TOOL AWAY AFTER USE.** When not in use, the tool should be stored in a dry place which is high enough to be out of children's reach or under lock.
- **NEVER TOUCH MOVING PARTS** when the tool is operating. Never start a tool when one of its moving parts is in contact with the work place.
- **GUARD AGAINST ELECTRIC SHOCK BY AVOIDING BODY CONTACT WITH GROUNDED SURFACES.** E.g.: pipes, radiators, cookers or refrigerators.
- **ALWAYS PUT THE TOOL IN THE "OFF" POSITION** before disconnecting it, to avoid accidental starting when you plug the tool back in.
- **DO NOT** leave tools or pieces of wood on the saw while it is in operation.
- **USE THE RECOMMENDED ACCESSORIES.** The use of accessories or attachments other than those recommended in these instructions might present a hazard.
- **NEVER STAND ON THE SAW.** You could suffer serious injury if the saw tips over or if you accidentally touch the blade.
- **FIRMLY CLAMP OR BOLT** your saw to a stable, level workbench or table. The most comfortable table height is approximately waist height.
- **USE ONLY CORRECT BLADES.** Use blades of the right size, type and cutting speed for the material and type of cut. Blade teeth should point down toward the table.
- **KEEP HANDS AWAY FROM THE CUTTING AREA** and saw blade. Do not reach under the workpiece or around or under the blade while the blade is rotating. Do not hold pieces so small that your fingers have to go under the blade guard. Do not attempt to remove offcuts while the blade is moving.

⚠ **WARNING:** The blade coasts for a little while after turn off.

- **INSPECT THE POWER CABLE REGULARLY** and, if it is damaged, have it replaced by a qualified technician at an Authorised Ryobi Service Centre. Always keep track of the position of the cable and keep it well away from the blade when it is rotating.
- **ALWAYS SUPPORT LONG WORKPIECES** to minimise the risk of blade pinching and kickback and to prevent the sliding of the saw when cutting long or heavy boards.
- **BEFORE STARTING A CUT, ENSURE THAT THE SAW IS CORRECTLY SET.**
- **GUARD AGAINST KICKBACK.** Kickback occurs when the saw jams up suddenly and the workpiece is driven back towards the operator. Your hand can be pulled towards the blade resulting in serious personal injury. Keep away from the path of the blade and switch off your saw immediately if the blade binds or jams up.
- **AVOID CUTTING WORKPIECES WITH NAILS.** When cutting wood, check for nails and remove them.
- **NEVER START A TOOL WHEN THE BLADE IS IN CONTACT WITH THE WORKPIECE.** Allow the motor to reach full speed before starting to cut.
- **AVOID AWKWARD OPERATIONS AND POSITIONS** where a sudden slip could cause your hand to move into the blade. **ALWAYS** make sure you have good balance. Never use your saw on the floor or in a crouching position.
- **NEVER** stand or put any part of your body in the blade path.
- **DIRECTION OF FEED.** Always feed the workpiece into the blade against the direction or rotation of the blade.
- **ALLOW THE MOTOR TO REACH FULL SPEED** before starting a cut to avoid blade binding or jamming.
- **DO NOT FEED THE MATERIAL TOO QUICKLY.** Do not force the workpiece against the blade.
- **DO NOT REMOVE JAMMED OFFCUTS** until the blade has come to a full stop.
- **BEFORE MAKING ADJUSTMENTS, REMOVING COVERS, GUARDS, OR BLADES,** unplug the saw.

- **KEEP BLADES CLEAN, SHARP, AND CORRECTLY SET**. Sharp blades reduce the risk of jamming and kickback.
- **SAVE THESE INSTRUCTIONS.** Refer to them frequently and use them to instruct others who may use this tool. If you lend this tool to someone, lend them these instructions as well.

WARNING: Dust caused by power sanding, sawing, grinding, drilling and other building work may contain compounds that may cause cancer, birth defects or infertility, for example:
- lead from lead-based paints,
- crystalline silica from bricks, cement and other masonry products,
- arsenic and chromium from chemically-treated timber.

The risks from these compounds depend on the type of work and the exposure to the compounds.
To reduce the risks, work in a well ventilated area and use approved safety equipment, such as dust masks designed to filter out microscopic particles.

SAVE THESE INSTRUCTIONS.

4. ELECTRICAL REQUIREMENTS

4.1 EXTENSION CORDS

When using a powerful tool at a considerable distance from the power source, use an extension cord heavy enough to carry the current that the tool will draw. An undersized extension cord will cause a drop in line voltage, resulting in a loss of power and causing the motor to overheat. When working with the tool outdoors, use an extension cord that is designed for outside use.

Before using an extension cord, inspect it for exposed wires and cut or worn insulation.

CAUTION:
Keep the cord away from the cutting area and position the cord so that it will not get caught on lumber, tools, or other objects during cutting.

4.2 ELECTRICAL CONNECTION

Your Ryobi Scroll Saw is powered by an electric motor. It should be connected to a **power socket that is 230 volts, 50Hz, AC only (normal household current).** Do not operate this tool on direct current (DC). A substantial voltage drop will cause a loss of power and the motor will overheat. If the saw does not operate when plugged into an outlet, double check the power supply.

4.3 GROUNDING INSTRUCTIONS

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local regulations.

Contact a qualified electrician or an Authorised Ryobi Service Centre if you do not fully understand the grounding instructions, or if in doubt as to whether the tool is properly grounded.

Repair or replace a damaged or worn cord immediately.

5. GLOSSARY OF WOODWORKING TERMS

Bevel Cut
A cutting operation made with the saw table at any angle other than 90° to the blade.

Compound Mitre Cut
A compound mitre cut is a mitre cut with a bevel.

Crosscut
Cut made across the grain or width of the workpiece.

Freehand (for scroll saw)
Performing a cut without the workpiece being guided by a fence or mitre gauge. The workpiece must be supported by the table.

Gum
A sticky, sap based residue of wood products.

Kerf
The material removed by the blade in a through cut or the slot produced by the blade in a non-through or partial cut.

KickBack
Projection of the workpiece. Sudden recoil of the workpiece usually due to the workpiece not being against the fence, hitting the blade or being accidentally pushed against the blade instead of a kerf being sawn in the workpiece.

Leading End
The end of the workpiece pushed into the cutting tool first.

Non-ferrous Metal or Alloy
Metal or alloy that does not contain iron, such as aluminium, brass or copper.

Push Stick
A device which is used to feed the workpiece through the saw blade during narrow ripping operations and which helps keep the operator's hands well away from the blade.

Resaw
A cutting operation to reduce the thickness of the workpiece to make thinner pieces.

Resin
A sticky, sap-based substance that has hardened.

Ripping
A cutting operation along the length of the workpiece.

Saw Blade Path
The area directly in line with the blade (over, under, behind, or in front of it). As it applies to the workpiece, the area which will be, or has been, cut by the blade.

Set
Operation which consists in setting the tip of the saw blade teeth to the right or left to improve clearance and make it easier for the body of the blade to penetrate the material.

SPM
Strokes per minute. Used in reference to blade movement.

Through cut
Any cutting operation where the blade cuts through the entire thickness of the workpiece.

Workpiece
The item which is being cut. The surfaces of a workpiece are commonly referred to as faces, ends, and edges.

Worktable
The surface on which the workpiece rests during a cutting or sanding operation.

6. UNPACKING

WARNING:
To prevent accidental starting or electrical shock that could cause serious personal injury, mount all saw parts before connecting the saw to the power supply. The saw should never be connected to the power supply when you attach parts, make adjustments, lubricate or clean the saw, install or remove blades, or when the saw is not in use.

- Carefully lift the saw from the carton and place it on a level work surface.
- Remove the package of extra blades from the carton.

WARNING:
If any part is missing, do not operate this tool until the missing part has been replaced and correctly installed at an Authorised Ryobi Service Centre. Failure to do so could result in serious personal injury.

- Do not discard the packing materials until you have carefully inspected the saw, identified all parts, and operated your new saw.

Your scroll saw comes completely assembled. A package of extra blades and this user's manual are included with your saw.

7. ACCESSORIES

See Figures 1 and 2.

Check all accessories from the box with the list below. Assemble according to the instructions on the following pages.

- 4 mm Hex Key
- Blade(s)

Fig. 1
A. 4 mm HEX KEY

Fig. 2
A. BLADE

8. TOOLS NEEDED

See Figure 3.

The following tools (not included) are needed for adjustment and alignment:

- Combination Square
- Phillips Screwdriver
- Slotted Screwdriver

Fig. 3
A. PHILLIPS SCREWDRIVER
B. SLOTTED SCREWDRIVER
C. COMBINATION SQUARE

9. FEATURES

KNOW YOUR SCROLL SAW

Before attempting to use your saw, familiarise yourself with all the operating features and safety requirements of your scroll saw. *See Figure 4.*

This versatile, variable speed scroll saw is great for making toys, puzzles, games, artwork, and jewellery. It is a handy do-it-yourself tool. It cuts wood, particleboard, plastic, and other fibrous materials up to 2 in. (51 mm) thick. It also cuts non-ferrous metals (aluminium, brass, copper).

Bevel Scale
The bevel scale shows you the degree at which the saw table is tilted.

Blade Clamp Screws
Blade clamp screws are used to tighten and loosen the blade clamps when changing saw blades.

Blade Tension Knob
To loosen or tighten blade tension, turn the blade tension knob.

Drop Foot
This foot should always be lowered until it just rests on top of the workpiece to prevent it from lifting, yet not so much as to make the workpiece drag.

Drop Foot Lock Knob
This knob allows you to raise or to lower the drop foot and lock it in the required position.

Sawdust Blower
Keeps the line of cut on the workpiece clean for more accurate scroll cuts. For best results, always direct the air flow at the blade and the workpiece.

Sawdust outlet
This feature will allow you to attach any 1-1/4 in. (32 mm) vacuum hose for easy sawdust collection.

Saw Table with Throat Plate
Your scroll saw has an saw table with tilt control for maximum accuracy. The red throat plate, inserted in the saw table, allows for blade clearance.

Speed Selector
Turn the knob to adjust the speed from 400 to 1,600 strokes per minute.

Switch
Your scroll saw has an easy access power switch.
O = OFF I =ON

Table Lock Knob
Allows you to tilt the table and lock it at the desired angle (up to 45°).

Fig. 4
A. SAWDUST BLOWER
B. SAW BLADE
C. THROAT PLATE
D. SWITCH
E. TABLE LOCK KNOB
F. BEVEL SCALE
G. DROP FOOT
H. BLADE CLAMP SCREWS
I. DROP FOOT LOCK KNOB
J. BLADE TENSION KNOB
K. MOTOR
L. SPEED SELECTOR
M. SAWDUST EXHAUST
N. SAW TABLE

10. ASSEMBLY

Attach one end of the plastic tubing to the back of the sawdust blower and the other to the pump mechanism.
Apply a coat of hydrophobic grease to the saw table surface to allow the workpiece to slide easily. Wipe the saw table thoroughly with a dry cloth to remove excess grease.

10.1 MOUNTING THE SCROLL SAW ONTO A WORKBENCH

See Figure 5.

WARNING:
To avoid serious personal injury from unexpected tool movement, securely mount the scroll saw onto a workbench.

If the scroll saw is to be used in a specific location, we recommend that you secure it to a workbench in a permanent way. For this purpose, holes should be drilled through the supporting surface of the workbench.

- Each hole in the base of the saw should be bolted securely using machine bolts, washers, and nuts (not included). Bolts should be long enough to accommodate the saw base, washers, nuts, and the thickness of the workbench.
- Place the scroll saw on the workbench. Using the saw base as a pattern, locate and mark the holes where the scroll saw is to be mounted.
- Drill four holes through the workbench.
- Place the scroll saw on the workbench aligning the holes in the saw base with the holes drilled in the workbench.
- Insert all four bolts (not included) and tighten securely with washers and nuts (not included).

Note: All bolts should be inserted from the top. Fit the washers and nuts from the underside of the bench.

The supporting surface where the scroll saw is mounted should be examined carefully after mounting to insure that no movement will occur while cutting. If any tipping or walking is noted, secure the workbench or supporting surface before beginning cutting operations.

Reducing Noise and Vibration:
You may wish to place a foam pad or piece of carpet between the saw base and the workbench to help reduce noise and vibration. If a foam pad or piece of carpet is used, do not overtighten the mounting bolts.
The size of the padding material should be approximately 24 in. x 12 in. x 1/2 in. (610 mm x 305 mm x 13 mm).

Fig. 5
A. C-CLAMP
B. SAW BASE
C. C-CLAMP
D. WORKBENCH
E. MOUNTING BOARD

10.2 CLAMPING THE SCROLL SAW TO THE WORKBENCH

See Figure 5.

If the scroll saw is to be used in several different places, it is recommended that you fasten it permanently to a mounting board that can easily be clamped to a workbench or other supporting surface. The mounting board should be large enough to prevent the saw from tipping while in use. Any good grade plywood or chipboard with a 3/4 in. (19 mm) thickness is recommended.

- Mount the saw onto the board using the holes in the saw base as a template for the hole pattern. Locate and mark the holes on the board.
- Follow the last three steps in the previous section called **Mounting the Scroll Saw onto a Workbench.**

If lag bolts are to be used, make sure they are long enough to go through the holes in the saw base, the board on which the saw is mounted, and the washers and nuts.
If machine bolts are to be used, make sure they are long enough to go through the holes in the saw base, the board on which the saw is mounted, and the washers and nuts.

Note: It may be necessary to countersink the washers and nuts on the bottom side of mounting board.

11. ADJUSTMENTS

WARNING:
To prevent accidental starting that could cause serious injury, turn off the saw and unplug it from the power source before making any adjustments.

11.1 DROP FOOT

See Figure 6.

To prevent the workpiece from lifting, the drop foot should be adjusted so it just rests on top of the workpiece. The drop foot should not be adjusted so tightly that the workpiece drags. Always retighten the drop foot lock knob after each adjustment has been made.

- Loosen the drop foot lock knob.
- Lower or raise the drop foot to the desired position.
- Retighten the drop foot lock knob.

The two prongs at the front of the drop foot act as a blade guard to prevent the user from accidentally touching the blade.

Fig. 6
A. DROP FOOT LOCK KNOB
B. PUMP MECHANISM
C. DROP FOOT
D. SAWDUST BLOWER
E. PLASTIC TUBING

11.2 SAWDUST BLOWER

See Figure 6.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

The sawdust blower is designed and preset to direct air to the most effective point on the cutting line. Make sure the drop foot is properly adjusted to secure the workpiece and direct air at the cutting surface.

- The plastic tubing should be connected to the pump mechanism before starting the saw.

11.3 SQUARING THE SAW TABLE TO THE BLADE

See Figure7.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

- Loosen the drop foot lock knob and move the drop foot rod all the way up. Retighten the drop foot lock knob.
- Loosen the table lock knob and tilt the saw table until it is approximately at right angles to the blade.
- Place a small square on the saw table next to the blade.
- Loosen the screw holding the scale indicator. *See Figure 8.* Move the indicator to the 0° mark and securely tighten the screw. Remember, the bevel scale is a convenient guide but should not be relied upon for precision. Make practice cuts on scrap material to determine if your angle settings are correct.
- Adjust the drop foot to the desired position and securely retighten the drop foot lock knob.

Fig. 7
A. DROP FOOT ROD
B. DROP FOOT
C. TABLE LOCK KNOB
D. SMALL COMBINATION SQUARE
E. DROP FOOT LOCK KNOB

11.4 SETTING THE TABLE FOR HORIZONTAL OR BEVEL CUTTING

See Figure 8.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

A bevel scale is located under the saw table as a convenient guide for setting the approximate saw table angle for bevel cutting. When greater precision is required, make practice cuts on scrap material and adjust the saw table as necessary for your requirements.

Note: When cutting bevels, the drop foot should be tilted so it is parallel to the saw table and rests flat on the workpiece. To tilt the drop foot, loosen the screw, tilt the drop foot to the proper angle, then retighten the screw.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

Fig. 8
A. BEVEL SCALE
B. SCREW
C. TABLE LOCK KNOB
D. SCALE INDICATOR

11.5 ADJUSTING THE DROP FOOT

- Loosen the drop foot lock knob. *See Figure 4.*
- Position the drop foot so the saw blade is in its centre.
- Tighten the drop foot lock knob.

11.6 ADJUSTING BLADE TENSION

See Figure 9.

- Turn off and unplug the saw from the power source.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

- Turning the blade tension knob counterclockwise decreases (or loosens) blade tension.
- Turning the blade tension knob clockwise increases (or tightens) blade tension.

Note: You can adjust blade tension at any time.

Check tension by the sound the blade makes when plucked like a guitar string. This method of setting blade tension requires good knowledge of your scroll saw.

- Pluck the back straight edge of the blade while turning the tension adjusting knob. The sound should be a musical note. The sound becomes less flat as tension increases. The sound level decreases with too much tension.

Note: Be careful not to adjust the blade too tight. Too much tension may cause the blade to break as soon as you start cutting. Too little tension may cause the blade to bend or break before the teeth wear out.

Fig. 9
A. TO RELEASE
B. BLADE TENSION KNOB
C. TO TIGHTEN

11.7 FITTING BLADES

Scroll saw blades wear out quickly and must be replaced frequently for optimum cutting results. Expect to break some blades while you learn to use and adjust your saw. Blades usually become dull after 1/2 hour to 2 hours of cutting, depending on the type of material and speed of operation.

Removing the Saw Blade:

- Turn off the saw and unplug it from the power source.

WARNING:
To avoid accidental starting which could result in serious injury, turn the saw off, and unplug the saw from the power source.

- Turn the blade tension knob counterclockwise to decrease (or loosen) blade tension. *See Figure 4.*
- Pushing up from under the saw table, remove the throat plate.
- Loosen both the upper and lower blade clamp screws with the T-handle hex key or by hand.
- Pull up on the blade and push down on the saw arm to disengage the upper pins from the V-notch of the upper blade holder. Pull the blade downward to disengage the lower pins from the V-notch of the lower blade holder.
- Remove the blade.

Replacing the Saw Blade:

- Place the new blade through the opening in the saw table with the teeth to the front of the saw and pointing down towards the saw table. The pins on the blade fit into the V-notch of the lower blade holder.
- Pull up on the blade and press the upper arm down to position the pins of the blade in the V-notch in the upper blade holder.

- Securely tighten the upper and lower blade clamps with the T-handle hex key or by hand.
- Turn the blade tension knob clockwise until the blade has the desired amount of tension.
- Replace the throat plate.

Note: If the blade touches the drop foot on either side, then the drop foot must be adjusted. See section on **Adjusting the Drop Foot.**

12. OPERATION

12.1 BASIC OPERATION OF THE SCROLL SAW

Before starting a cut, turn the saw on and listen to the sound it makes. If you notice excessive vibration or an unusual noise, stop the saw immediately and unplug it. Do not restart the saw until you have located and corrected the problem.

Note: After the saw is turned on, a hesitation before blade movement is normal.

12.2 CUTTING INSTRUCTIONS

- There is a learning curve for each person who wants to use this saw. During that period of time it is expected that some blades will break until you learn how to use and adjust the saw correctly.
- Plan the way you will hold the workpiece from start to finish.
- Keep your hands away from the blade. Do not hand hold pieces so small that your fingers would have to go under the drop foot.
- Hold the workpiece firmly against the saw table.
- The blade teeth cut the workpiece only on the down stroke.
- Use gentle pressure and both hands when feeding the workpiece into the blade. **Do not** force the cut.
- Guide the workpiece into the blade slowly because the blade teeth are very small and can only remove material on the down stroke.
- Avoid awkward operations and hand positions where a sudden slip could cause serious injury from contact with the blade. Never place your hands in the blade path.
- For accurate wood cuts, compensate for the blade's tendency to follow the wood grain as you are cutting.
- Use extra supports (table, blocks, etc.) when cutting large, small or awkward workpieces.
- Never use another person as a substitute for a table extension or as an additional support for a workpiece that is longer or wider than the basic saw table.
- When cutting irregularly shaped workpieces, plan your cut so the workpiece will not pinch the blade. Workpieces must not twist, rock or slip while being cut.

12.3 JAMMING OF SAW BLADE AND WORKPIECE

When backing out the workpiece, the blade may bind in the kerf (cut). This is usually caused by sawdust clogging the kerf or by the blade coming out of the blade holders. If this happens:

- Place the switch in the OFF position.
- Wait until the saw has come to a full and complete stop.
- Unplug the saw from the power source.
- Remove the blade and the workpiece, see section on **Removing the Saw Blade.**
- Wedge the kerf open with a flat screwdriver or wooden wedge then remove the blade from the workpiece.

WARNING:
Before removing offcuts from the table, turn the saw off and wait for all moving parts to come to a full stop to avoid serious personal injury.

12.4 AVOIDING INJURY

- Make sure the saw is level and does not rock. The saw should always be on a firm, level surface with plenty of room for handling and properly supporting the workpiece.
- Bolt the saw to the support surface to prevent slipping, walking or sliding during operations like cutting long, heavy boards.
- Turn the saw off, and unplug the cord from the power source before moving the saw.
- Do not remove jammed offcuts until the blade has come to a full and complete stop.
- Choose the right size and type of blade for the material and type of cut you plan to make.
- Use only recommended accessories.
- Before turning the saw on, clear everything off the saw table except for the workpiece and clamps.
- Properly support round materials such as dowel rods or tubing because they have a tendency to roll during cutting, causing the blade to "bite". To avoid this, always use a "V" block or clamp the workpiece to a mitre gauge.

- Before removing offcuts from the saw table, turn the saw off and wait for all moving parts to stop.

12.5 CHOOSING THE RIGHT BLADE AND SPEED

The scroll saw accepts a wide variety of blade widths and thicknesses for cutting wood and other fibrous materials. Your saw uses 5 in. (127 mm) long blades of either the pin end or the plain end type. The blade width and thickness and the number of teeth per inch or centimetre are determined by the type of material and the size of the radius being cut.

Note: As a general rule, always select narrow blades for intricate curve cutting and wide blades for straight and large curve cutting.

Teeth/Inch	Teeth/cm	Width	Thickness	Speed (Strokes Per Minute)	Material Cut
10	4	.0110 in. (2.8 mm)	.020 in. (.5 mm)	1200-1600	Popular size for cutting hard and soft woods 3/16 in. (4.8 mm) up to 2 in. (51 mm) Plastics, paper, felt, bone, etc.
15	6	.110 in. (2.8 mm)	.020 in. (.5 mm)	600-1200	Wood, plastics, extremely thin cuts on materials 3/32 in. (2.4 mm) to 1/2 in. (13 mm) thick.
18	7	.095 in. (2.4 mm)	.010 in. (.3 mm)	400-600	For tight radius work in thin materials 3/32 in. (2.4 mm) to 1/8 in. (3 mm) such as wood, veneer, bone, fibre, ivory, plastic, etc.

12.6 BLADE INFORMATION

- Scroll saw blades wear out and must be replaced frequently for optimum cutting results. Scroll saw blades generally become dull after 1/2 hour to 2 hours of cutting, depending on the type of material and speed of operation.
- When cutting wood, best results are achieved with pieces less than one inch (25 mm) thick.
- When cutting wood thicker than one inch (25 mm), the user must guide the workpiece very slowly into the blade and take extra care not to bend or twist the blade while cutting.
- When choosing a blade, carefully consider the following:
  - Very fine, narrow blades should be used to scroll cut in thin material 1/4 in. (6 mm) thick or less.
  - Most blade packages state the size or thickness and type of material which the blade is intended to cut. The package should also state the radius or size of curve that can be cut with that blade.
  - Wider blades cannot cut curves as tight or as small as thinner blades.
- Main causes of blade wear:
  - Cutting plywood, hardwood, and other laminates.
  - Cutting material thicker than 3/4 in. (19 mm).
  - Side pressure on the blade.

12.7 SPEED SETTING

See Figure 10.

- By turning the speed selector, the saw's speed may be adjusted from 400 to 1,600 SPM (Strokes Per Minute).
- To increase the strokes per minute, turn the speed selector clockwise.
- To decrease the strokes per minute, turn the speed selector counterclockwise.

WARNING:
To avoid serious injury from accidental starting, always turn the saw off and unplug the saw from the power source before removing or replacing the blade.

Fig. 10
A. TO INCREASE B. TO DECREASE

12.8 SCROLL CUTTING

In general, scroll cutting consists in following the pattern lines by pushing and turning the workpiece at the same time. Once you have started a cut, do not try to turn the workpiece without pushing it - the workpiece could bind or twist the blade.

WARNING:
To prevent serious personal injury, never leave the saw unattended until the blade has come to a complete stop.

12.9 INTERIOR SCROLL CUTTING

See Figure 11.

- One feature of a scroll saw is that it can be used to make scroll cuts within a workpiece without breaking or cutting through the edge or perimeter of the workpiece.
- To make interior cuts in the workpiece, remove the scroll saw blade as explained in the section on Installing Blades.
- Drill a 1/4 in. (6 mm) hole in the workpiece.
- Place the workpiece on the saw table with the drilled hole over the hole in the table.
- Fit the blade, feeding it through the hole in the workpiece; then adjust the drop foot and blade tension.
- When finished making the interior scroll cut, simply remove the blade from the blade holders as described in the section on Installing Blades, and remove the workpiece from the saw table.

Fig. 11
A. DRILL HOLE
B..INTERIOR CUT
C. WORKPIECE

12.10 STACK CUTTING

See Figure 12.

Once you have become well acquainted with your saw through practice and experience, you may wish to try stack cutting. Stack cutting may be used when several identical shapes need to be cut. Several workpieces may be stacked one on top of the other and secured to each other before cutting. Pieces of wood may be joined together by placing double sided tape between each piece or by wrapping tape around the corners or ends of the stacked wood. The stacked pieces must be attached to each other in such a way that they can be handled on the table as a single workpiece.

WARNING:
To avoid serious personal injury, do not cut several workpieces at a time unless they are properly attached to each other

WARNING:
Do not let familiarity with your saw make you careless. Remember that a careless fraction of a second is sufficient to inflict severe injury.

Fig. 12
A. WOOD PIECES
B. TAPE

13. MAINTENANCE

WARNING:
When replacing parts, use only identical replacement parts. The use of any other spare parts may create a hazard or damage your saw.

13.1 GENERAL MAINTENANCE

- Keep your scroll saw clean.
- After an initial cleaning, apply a thin coat of hydrophobic grease to the table top so the wood slides easily while cutting.
- Do not allow pitch to accumulate on the saw table. Clean it with gum and pitch remover.

13.2 ARM BEARINGS

See Figure 13.

Lubricate the arm bearings after the first 10 hours of use. Oil them every 50 hours of use or whenever there is a squeak coming from the bearings.

- Carefully place the saw on its side as shown in Figure 15. Remove the rubber cap from the upper and the lower arm of the saw.
- Squirt a few drops of oil on the end of the shaft and arm bearings. Leave the saw in this position overnight to let the oil soak in.

Note: Lubricate the bearings on the other side of the saw in the same manner.

WARNING:
If the power cord is worn, cut, or damaged in any way, have it replaced immediately by a qualified service technician. Failure to do so could result in serious personal injury.

Fig. 13
A. ARM BEARINGS

13.3 CARBON BRUSHES

See Figure 14.

Your saw has externally accessible carbon brushes that should be checked periodically for wear. When one of the two brushes becomes worn, replace both brushes.

- Unplug the saw from the power source.
- Carefully place the saw on its side exposing the underside of the saw housing.
- Using a flat blade screwdriver, remove the bottom brush assembly cap through the access hole in the base and the top brush assembly cap from the top of the motor. Gently pry the brush assemblies out using a small screwdriver, the pointed end of a nail, or a paper clip.
- If one of the brushes is worn down shorter than 1/4 in. (6 mm), replace both brushes. **Do not** replace one brush without replacing the other. Make sure the curvature at the end of the brushes matches the curvature of the motor and that each carbon brush moves freely in its brush holder. Use the blunt end of something thin (e.g. eraser end of a pencil) to push the carbon brush into its holder until it is in place.
- Make sure the brush cap is positioned correctly (straight). Tighten the carbon brush cap using a hand powered screwdriver only. Do not overtighten.

WARNING:
To prevent accidental starting that could cause serious personal injury, turn off and unplug the saw before carrying out any maintenance work on your scroll saw.

WARNING:
Failure to unplug your saw could result in accidental starting causing serious injury.

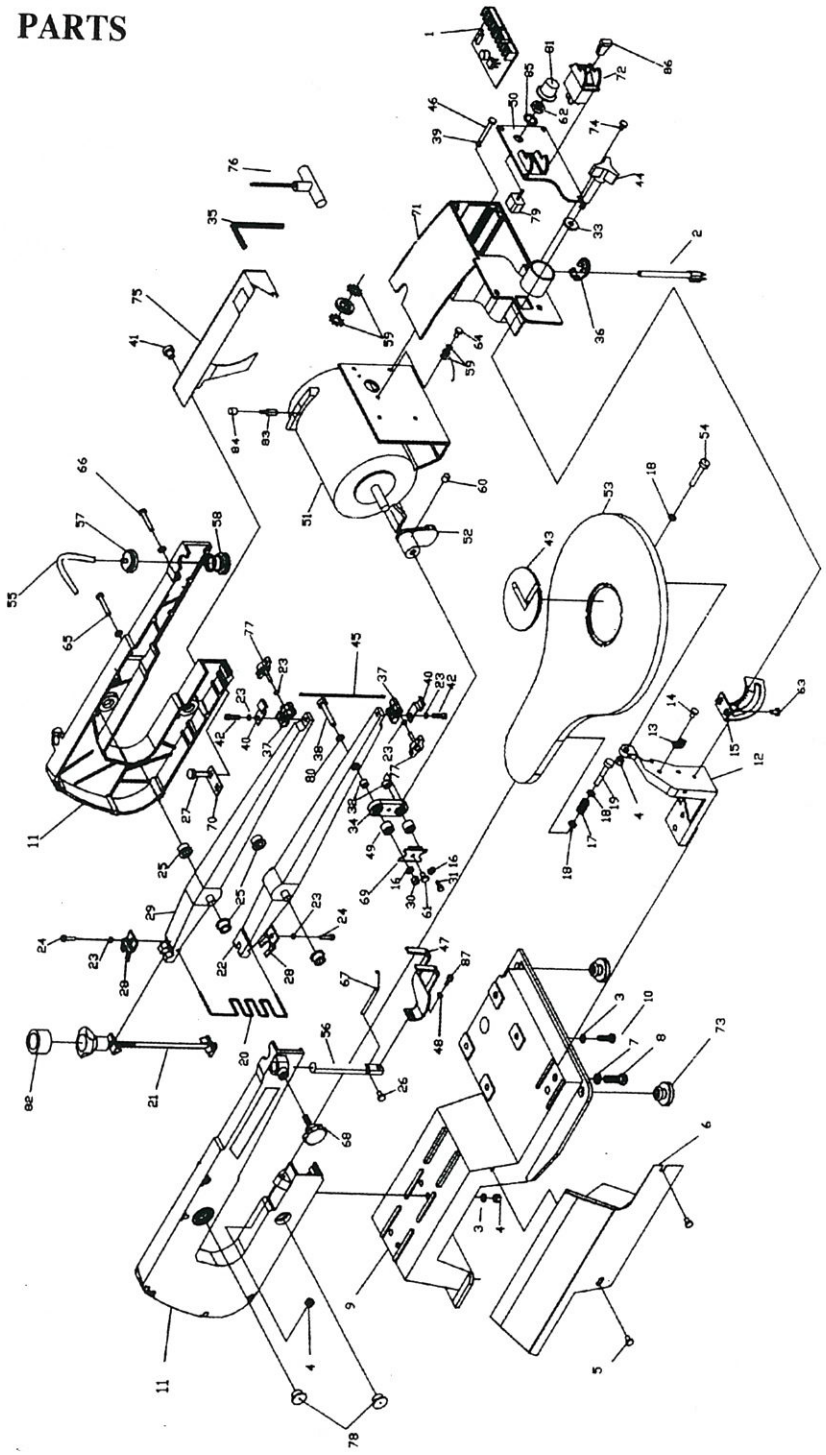
Fig. 14
A. BRUSH CAP B. CARBON BRUSH

14. TROUBLESHOOTING

WARNING: For your own safety, turn your saw OFF and unplug it from the power outlet before carrying out any adjustments on it.

PROBLEM	CAUSE	SOLUTION
Motor will not run.	1. Problem with ON-OFF switch, power cord, or outlet.	- Have worn parts replaced before using your scroll saw again. Have a proper outlet installed by a qualified electrician.
	2. Motor defective.	- Do not attempt any repair. Have it repaired by a qualified service technician.
Blades breaking.	1. Too much tension.	- Adjust tension.
	2. Feeding too quickly.	- Reduce feed rate.
	3. Wrong blade.	- Narrow blades for cutting thin wood or tight corners and curves, wide blades for thicker wood or wide curves.
	4. Blade twisting in wood.	- Reduce side pressure on blade, check blade tension.
Vibration (there is always a certain amount of vibration when the saw is running.	1. Improper mounting of saw.	- Check mounting.
	2. Improper bracing.	- Check saw mounting instructions
	3. Loose table or table resting against motor.	- Tighten table lock knob.
	4. Loose motor mounting	- Tighten motor mounting screws
Blade runout (blade not properly aligned with arm motion).	1. Blade holders out of line.	- Realign blade holders and blade.

PARTS



PARTS LIST

No.	Description	No.	Description
1	PC Board	45	Blade
2	Power Cord	46	Cross Recessed Pan Head Screw M4x16
3	Spring Washer 6	47	Drop Foot
4	Hex Nut M6	48	Tooth Washer 5
5	Cross Recessed Pan Head Screw M5x10	49	Bearing
6	Plate Cover	50	Swtich Plate
7	Spring Washer 8	51	Motor
8	Bolt M8x25	52	Eccentric
9	Base	53	Saw Table
10	Bolt M6x16	54	Hex Socket Cap Head Screw M6x35
11	Arm Housing Set	55	Plastic Tubing
12	Support Table	56	Adjustment Level
13	Scale Indicator	57	Bellows Lock
14	Cross Recessed Pan Head Screw M6x12	58	Bellows
15	Bevel Scale	59	Tooth Washer 4
16	Spring Washer 5	60	Hex Socket Set Screw M8x8
17	Spring	61	Pan Head Tapping Screw ST4.2x8
18	Washer 6	62	Hex Nut M10
19	Hex Socket Cap Head Screw M6x40	63	Cross Recessed Pan Head Screw M5x8
20	Spring	64	Cross Recessed Pan Head Screw M4x6
21	BladeTension Set	65	Cross Recessed Pan Head Screw M5x35
22	Arm Lower	66	Cross Recessed Pan Head Screw M5x30
23	Spring Washer 4	67	Saw Dust Blower
24	Hex Socket Cap Head Screw M4x10	68	Drop Foot Lock Knob
25	Oil Bushing	69	Bearing Retainer
26	Cross Recessed Pan Head Screw M5x6	70	Bolt Retainer
27	Cup Head Square Neck Bolt M6x25	71	Swtich Box
28	Retainer	72	On/Off Switch
29	Arm Upper	73	Rubber Foot
30	Hex Nut M5	74	Pan Head Tapping Screw ST4.2x13
31	Hex Socket Cap Head Screw M5x20	75	Back Plate Cover
32	Spacer	76	3mm T-handle Hex Key
33	Large Washer 6	77	Blade Clamp Screw
34	Link	78	Arm Bearing Cover
35	4mm Hex Key	79	Potentiometer
36	Strain Relief	80	Washer 5
37	Blade Adapter	81	Variable Speed Knob
38	Hex Socket Cap Head Screw M5x25	82	Bushing
39	Washer 4	83	Carbon Brush
40	Plate Chip	84	Carbon Brush Cover
41	Pan Head Tapping Screw ST4.2x10	85	Lock washer 10
42	Hex Socket Cap Head Screw M4x16	86	Switch Key
43	Throat Plate	87	Hex Socket Cap Head Screw M5x10
44	Table Lock Knob		

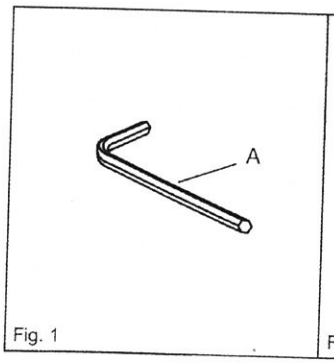


Fig. 1

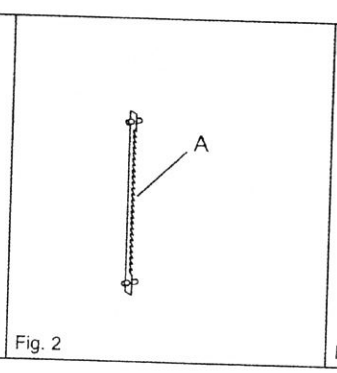


Fig. 2

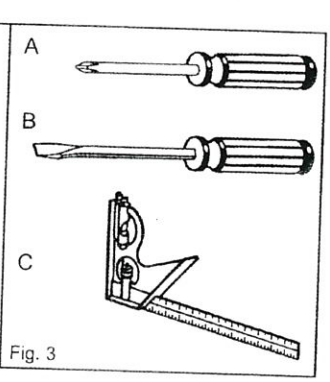


Fig. 3

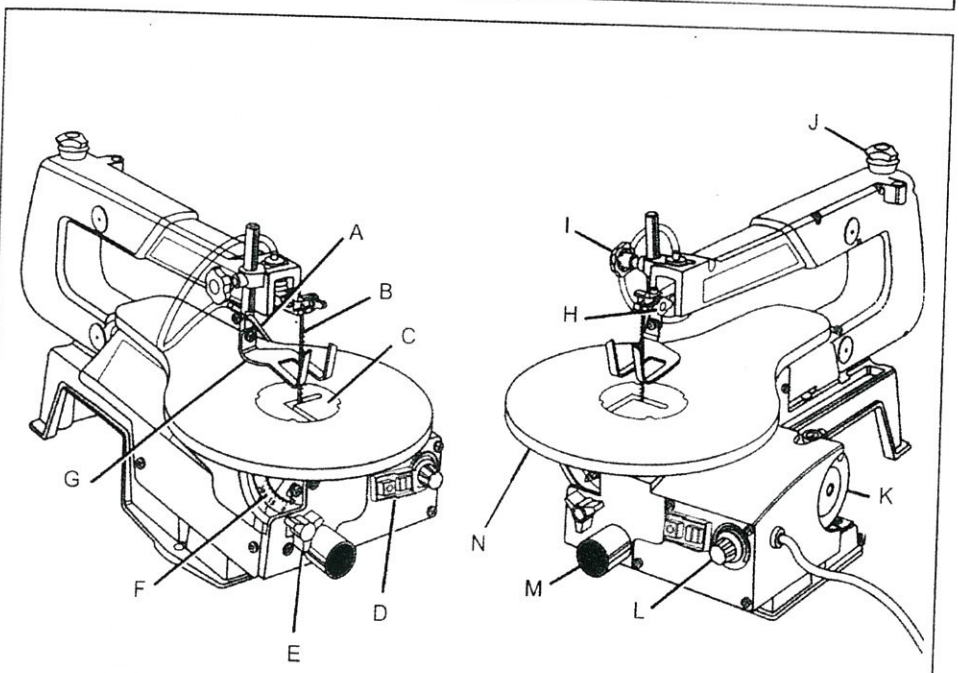


Fig. 4

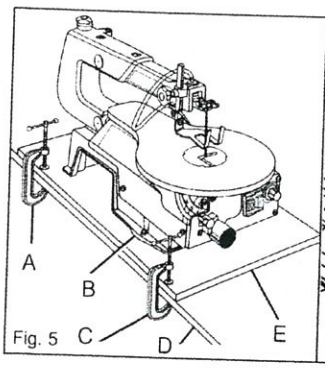


Fig. 5

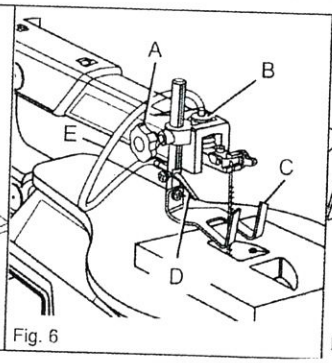
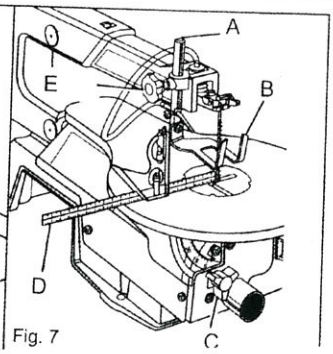


Fig. 6



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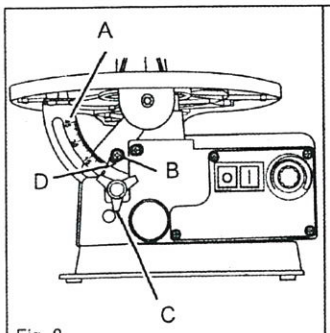

Fig. 8

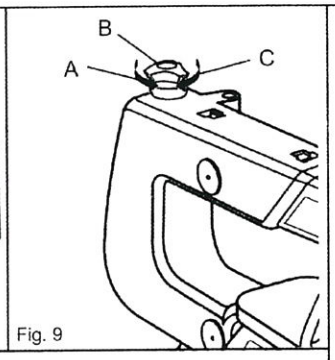

Fig. 9

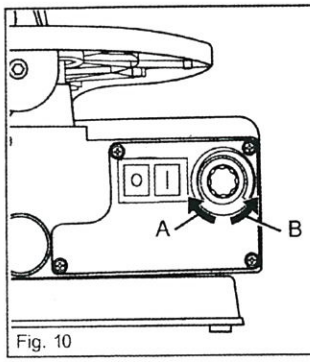

Fig. 10

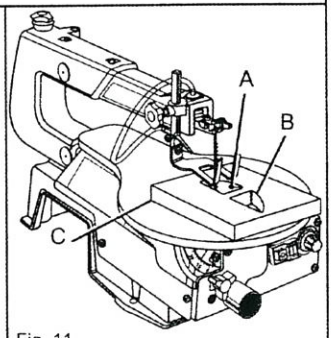

Fig. 11

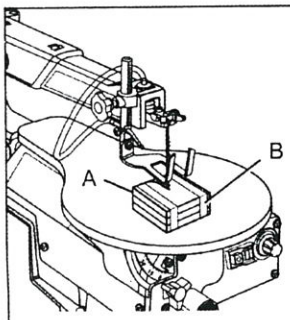

Fig. 12

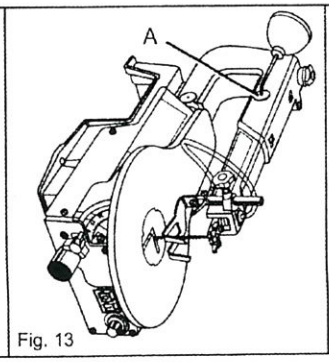

Fig. 13

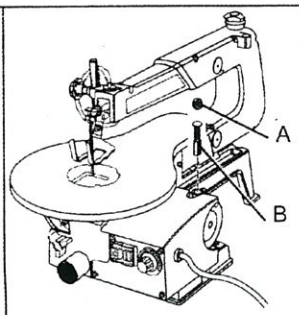

Fig. 14