

CLARKE[®] WOODWORKER



400mm (16") SCROLL SAW

Model No. CSS400B

Part No. 6462150

**Operating and Maintenance
Instructions**



0107



SPECIFICATIONS

Motor	Voltage:	230V, 50Hz, 1 phase.
	Rating:	85 Watts
Maximum thickness of cut at 90°:		50mm (2")
Maximum thickness of cut at 45°:		15mm (5/8")
Throat:		400mm (16")
Blade Size:		133x2.6x0.25mm
Strokes per minute:		1458
Machine dimensions:		546x255x317mm
Table tilt:		0° - 45° left
Blade Type:		Pin (plain type optional)
Gross / Net weight:		17 / 18kg

Please note that the details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice. Always consult the machine's data plate

PARTS & SERVICE CONTACTS

For Spare Parts and Service, please contact your nearest dealer,
or CLARKE International, on one of the following numbers.

PARTS & SERVICE TEL: 020 8988 7400

PARTS & SERVICE FAX: 020 8558 3622

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com



Thank you for purchasing this CLARKE 400mm (16") Scroll Saw, ideal for DIY applications and the hobbyist...for modelling etc.

Before operating this machine, please read this leaflet thoroughly and follow the instructions carefully. In doing so you will ensure the safety of yourself and that of others around you, and you can look forward to the Scroll Saw giving you long and satisfactory service.

GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

CONTENTS

Page

Specifications	2
Parts and Service Contacts	2
Safety Precautions General	4
Additional precautions for Scroll Saws	5
Electrical Connections	6
Principle Parts	7
Assembly	7
Installation	7
Mounting	7
Blade HoOlder Alignment	8
Bevel Alignment	8
Blade Installation/Renewal	9
Blade renewal	9
Saw Blade Notes	9
Operating Characteristics	10
Straight Line Cutting	10
Cutting Intricate patterns	10
Maintenance	11
Trouble Shooting	11
Parts Diagram	12
Parts list	13
Declaration of Conformity	15

SAFETY PRECAUTIONS

GENERAL SAFETY RULES FOR OPERATING MACHINERY

WARNING:

As with all machinery, there are certain hazards involved with their operation and use. Exercising respect and caution will considerably lessen the risk of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

- ✓ **ALWAYS** read and become familiar with the entire operating manual. Learn the machines' applications and limitations as well as the specific potential hazards peculiar to it.
- ✓ **ALWAYS** ensure that adequate lighting is available. A minimum intensity of 300 lux should be provided. Ensure that lighting is placed so that you will not be working in your own shadow.
- ✓ **ALWAYS** check for damage. Before using the machine, any damaged part, such as a guard etc., should be checked to ensure that it will operate properly, and perform its intended function. Check for alignment of moving parts, breakage of parts, mountings, and any other condition that may affect the machines' operation. Any damage should be properly repaired or the part replaced. If in doubt, do not use the machine. consult your local dealer.
- ✓ **ALWAYS** disconnect the machine from the power supply before servicing and when changing accessories such as blades, etc.
- ✓ **ALWAYS** keep guards in place and in working order.
- ✓ **ALWAYS** wear safety goggles, manufactured to the latest european safety standards and also use face or dust mask if cutting operation is dusty. Everyday eyeglasses do not have impact resistant lenses, they are not safety glasses.
- ✓ **ALWAYS** keep work area clean. Cluttered areas and benches invite accidents.
- ✓ **ALWAYS** wear ear protectors/defenders.
- ✓ **ALWAYS** remove adjusting keys and wrenches. Form the habit of checking to see that keys and adjusting wrenches are removed from the machine before switching on.
- ✓ **ALWAYS** use recommended accessories. The use of improper accessories could be hazardous.
- ✓ **ALWAYS** remove plug from the electrical outlet when adjusting, changing parts, or working on machine.
- ✓ **ALWAYS** earth all machines. If the machine is equipped with three-pin plug, it should be plugged into a three-pin electrical socket. **NEVER** remove the earth pin.
- ✓ **ALWAYS** avoid dangerous environment. Don't use power machines in damp or wet locations or expose them to rain. Keep your work area well illuminated. Do not use in explosive atmosphere (around paint, flammable liquids etc).
- ✓ **ALWAYS** keep children away. All visitors should be kept a safe distance from the work area, especially whilst operating the unit.
- ✓ **ALWAYS** maintain machine in top condition. Keep tools sharp and clean for the best and safest performance. Follow maintenance instructions.
- ✓ **ALWAYS** wear proper apparel. Loose clothing or jewellery may get caught in moving parts. Wear protective hair covering to contain long hair.
- ✓ **ALWAYS** make workshop childproof. cover the saw adequately when not in use, to prevent children from damaging themselves by tampering with it.
- ✓ **ALWAYS** handle with extreme care whenever transporting or installing machinery, and always use a lifting tool.
- ✓ **ALWAYS** avoid accidental starting. ensure the switch is off before plugging in to mains.
- ✓ **ALWAYS** be aware that accidents are caused by carelessness due to familiarity. Always concentrate on the job in hand, no matter how trivial it may seem.

- ✗ NEVER force the machine. It will do a better and safer job at the rate for which it was designed.
- ✗ NEVER operate machine while under the influence of drugs, alcohol or any medication.
- ✗ NEVER leave machine running unattended. Turn power off. Do not leave machine until it comes to a complete stop.
- ✗ NEVER overreach. Keep your proper footing and balance at all times. For best footing, wear rubber soled footwear. Keep floor clear of oil, scrap wood, etc.
- ✗ NEVER stand on the machine. Serious injury could occur if the machine is tipped or if a cutting tool is accidentally contacted. Do not store materials above or near a machine, such that it is necessary to stand on the machine to reach them.

ADDITIONAL SAFETY INSTRUCTIONS FOR SCROLL SAWS

1. Wear safety goggles as protection against flying wood chips and saw dust. In many cases, a full face shield is even better protection. A dust mask is also recommended to keep saw dust out of your lungs.
2. The scroll saw must be bolted securely to a stand or workbench. If the saw has a tendency to move during certain operations, bolt the stand or workbench to the floor.
3. A solid wood workbench is stronger and more stable than a workbench with a plywood table.
4. This scroll saw is for indoor use only.
5. Do not cut pieces of material which are too small to be held by hand.
6. Clear the work table of all objects except the workpiece (tools, scraps, rulers etc.) before turning the saw on.
7. Make sure the blades' teeth are pointing down, toward the table, and that the blade tension is correct.
8. When cutting a large piece of material, support it at the height of the table.
9. Do not feed the workpiece through the blade too fast. Feed only as fast as the blade will cut.
10. Keep your fingers away from the blade. Use a push stick as you near the end of the cut.
11. Take care when cutting a workpiece which is irregular in cross section. Moulding for example must lie flat, and not 'rock' on the table as it is being cut. A suitable support must be used.
12. Take care when 'backing off' a workpiece from the blade, as the blade may bind in the 'kerf'. In this event, switch OFF the machine and disconnect from the supply. Wedge open the kerf, and withdraw the workpiece.
13. Switch off the saw, and make sure the blade has come to a complete stop before clearing sawdust or off-cuts from the table.
14. Make sure there are no nails or foreign objects in the part of the workpiece to be sawn.
15. Be extra cautious with very large or small, or irregularly shaped workpieces.
16. Set up the machine and make all adjustments with the power OFF, and disconnected from the supply.
17. **DO NOT** operate the machine with the covers off. They must all be in place and securely fastened when performing any operation.
18. Be sure to use the correct blade size and type.
19. Use ONLY approved replacement saw blades. Contact your local CLARKE dealer for advice. The use of inferior blades may increase the risk of injury.

ELECTRICAL CONNECTIONS

Connect the mains lead to a standard, 230 Volt (50Hz) electrical supply through an approved 13 amp BS 1363 plug, or a suitably fused isolator switch.



WARNING! THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in the mains lead are coloured in accordance with the following code:

Green & Yellow	-	Earth
Blue	-	Neutral
Brown	-	Live

As the colours of the flexible lead of this appliance may not correspond with the coloured markings identifying terminals in your plug proceed as follows:

- Connect GREEN & YELLOW coloured cord to plug terminal marked with a letter "E" or Earth symbol "⏏" or coloured GREEN or GREEN & YELLOW.
- Connect BROWN coloured cord to plug terminal marked with a letter "L" or coloured RED.
- Connect BLUE coloured cord to plug terminal marked with a letter "N" or coloured BLACK.

If this appliance is fitted with a plug which is moulded onto the electric cable (i.e. non-rewirable) please note:

1. The plug must be thrown away if it is cut from the electric cable. There is a danger of electric shock if it is subsequently inserted into a socket outlet.
2. Never use the plug without the fuse cover fitted.
3. Should you wish to replace a detachable fuse carrier, ensure that the correct replacement is used (as indicated by marking or colour code).
4. Replacement fuse covers can be obtained from your local dealer or most electrical stockists.

FUSE RATING

The fuse in the plug must be replaced with one of the same rating (**5 amps**) and this replacement must be ASTA approved to BS1362.

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PRINCIPAL PARTS OF THE SCROLL SAW

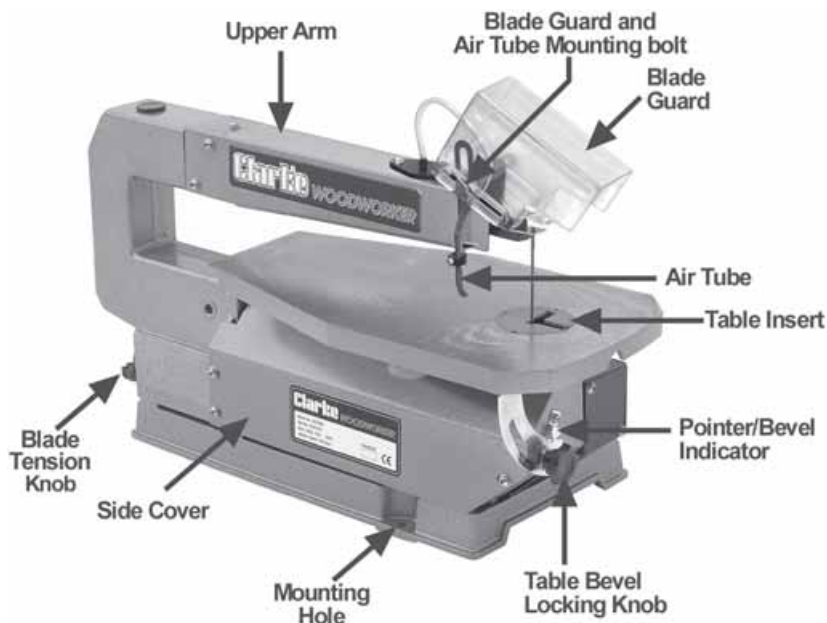


Fig. 1

ASSEMBLY

Your Scroll Saw is fully assembled, except for the Blade Guard, and the Air tube. To attach these components, proceed as follows:

Position the Blade guard and Air Tube in the manner shown in Fig1a, i.e. with the Air Tube Bracket on the inside of the Blade Guard, at the LEFT side of the guard - looking at the front. (See also Fig.1 above)

Slide the pivot bolt through the slotted holes in the Guard and Bracket, then through the mounting on top of the Upper Arm. Thread on the Flat Washer and M6 Nyloc nut and nip up sufficient so as not to crush the Guard, but to allow it to pivot easily.

NOTE that the bolt head should sit snugly, and bottom out in the slotted hole in the blade guard (arrowed in Fig. 1a). This prevents the bolt from turning when threading on the Nyloc nut.



Fig. 1a

INSTALLATION

Plan your installation. Ensure adequate space is available, with good lighting and ventilation, and an adequate electrical supply is close at hand.

1. MOUNTING

Your Scroll Saw is provided with 3 mounting holes, and it is strongly recommended that you mount the machine on a solid surface. A pad between the saw and the workbench is further recommended. The best dimensions being - 21" x 12" x 1/2". Ensure you use flat washers between the bolt head and the mounting hole, and do not over tighten the bolts.

2. BLADE HOLDER ALIGNMENT

It is important that the blade holders are checked for alignment before use. Misaligned holders will cause the blade to wander, and reduce the blades life expectancy.

To check the alignment,

- 2.1 Visually check to ensure the upper Blade holder is perfectly in line with the upper arm.

If it is not (as indicated in Fig. 2), firstly slacken the tension on the blade by turning the blade tension knob (19), two full turns anticlockwise, then slacken off the blade holders hex. socket head securing screw, sufficiently to move the holder. Tighten securely when the holder is directly in line with the arm.

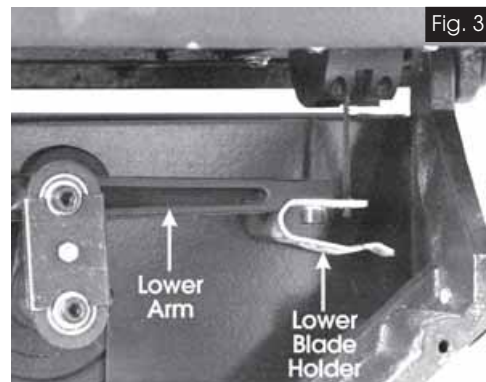
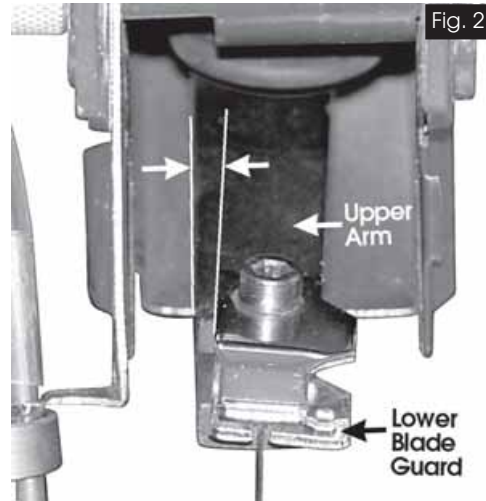
- 2.2 Remove the side cover (5), by unscrewing the three retaining screws, to give access to the lower holder.

- 2.3 Visually check to ensure the blade holder is perfectly in line with the Lower Arm.

If it is not, slacken off the holders single hex. socket head securing screw, sufficiently to move the holder. Tighten securely when the holder is directly in line with the arm.

On completion, replace the side cover and table insert then retension the blade by turning the tensioner until the blade is felt to be firm.

NOTE: If the blade tends to wander during use, the blade may be too loose or re-check this adjustment as it may take one or two attempts to get it right. Also see page 11 - Straight Line Cutting, for other causes of blade wander.



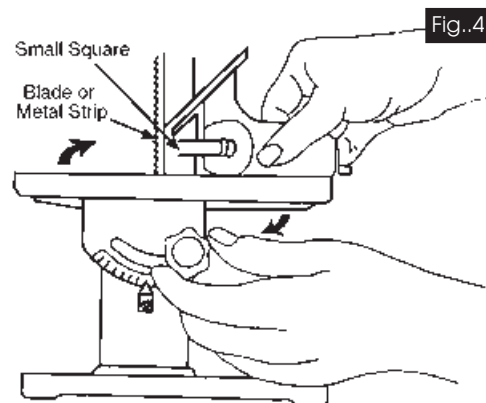
3. BEVEL ALIGNMENT (see fig. 4)

To align the bevel indicator, loosen the table bevel lock knob (63), and level the table until it is at right angles to the blade. Use a small square to be sure that the angle between blade and table is 90°.

When the table is perpendicular to the blade, tighten the bevel lock knob.

Loosen the screw holding the pointer (66), adjust the pointer to 0°, then retighten the screw.

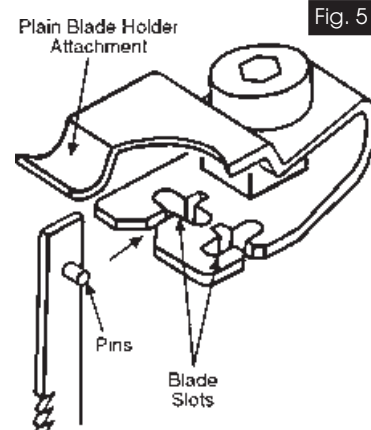
The bevel scale is a convenient indicator, but it is not guaranteed to be 100% accurate. Where absolute accuracy is required, always double check with a protractor before starting a cut.



4. BLADE INSTALLATION / RENEWAL

4.1 Before installing or removing blades, ensure the saw is switched OFF and disconnected from the power supply. Remove the blade as follows:

- a. Slacken off blade tension by turning the tensioner anticlockwise at least two turns.
- b. Very carefully prise out the Table insert.
- c. Remove the side cover - 3 screws.
- d. Apply a slight downward pressure on the upper arm whilst holding the blade firmly, allowing the pins at the top of the blade to be disengaged from the recesses in the upper blade holder. It is now a simple matter to disengage the blade pins from the lower blade holder and lift the blade out through the access hole in the table.



NOTE:

Whilst the blade is out of the housings, look at the blade housings closely. You will observe that the blade slots and pin recesses are made so you can position the blade for cutting from the front, or from the side (see fig. 5). Cutting from the side is necessary when your workpiece is over 16" long.

IMPORTANT: Side cutting can only be performed when the bevel is set at 0°.

- 4.2 With the blade teeth pointing DOWNWARDS, slot the new blade into the lower housing so that the pins on the end of the blade, engage in the recess in the holder. Holding the blade firmly, apply downward pressure to the upper arm, whilst slotting the pins in the upper end of the blade into the slot in the upper holder, again, making sure the blade pins correctly engage in the recess in the holder.
- 4.3 Replace the table insert and side cover, then re-tension to the blade, by turning the tension knob (19) clockwise until you feel the blade is firm. Check to ensure that the blade pins are properly seated, top and bottom.

NOTES ON SAW BLADES

BLADES BREAK FOR FIVE PRINCIPAL REASONS:

1. Too much tension or too little tension on the blade.
2. Overworking the blade by feeding the workpiece too fast.
3. Twisting or bending the blade by feeding the workpiece off-centre.
4. Over use - the blade has reached the end of its useful life.
5. Feeding too much material into the saw, - more than the maximum 2" depth for which it was designed.

HOW TO DETERMINE THE RIGHT BLADE FOR THE JOB

This scroll saw accepts a wide variety of blade widths and thicknesses. The width of the blade, the thickness of the blade, and the number of teeth per inch (TPI) are determined by the type of material and size of the radius being cut. Here are several examples:

TPI	WIDTH	THICKNESS	MATERIAL	NOTE
10	2.8mm 0.11"	0.5mm 0.020"	Medium curves on 1/4" to 1-3/4" wood, wallboard, hardboard.	As a general rule, select the narrowest blades recommended for intricate curve cutting and widest blades for straight and large curve operations.
15	2.8mm 0.11"	0.5mm 0.020"	Same as above, plus wood 1/8" to 1-1/2" thick	
18	2.4mm 0.095"	0.25mm 0.011"	Extra thin cuts on soft woods to 1/4" and parquetry	

SCROLL SAW OPERATING CHARACTERISTICS

The scroll saw's unique ability is cutting intricate curves which other saws cannot do. A scroll saw can also be used for straight line cutting such as cross cuts, ripping and bevels,

The following is a list of points to remember when using a Scroll Saw.

1. The saw does not cut wood by itself. You feed the workpiece into the blade, letting the blade cut the wood as you move the piece forward.
2. You must guide the wood into the blade **SLOWLY**, because the teeth are very small, and cut **ONLY** on the down stroke. If you push the wood into the blade too rapidly, you can easily break the blade.
3. Although the capacity of the saw accepts wood up to 2" thick, better results are obtained with wood no more than 1" thick. For wood thicker than 1", you must guide the wood into the blade **very slowly**, taking care not to bend or twist the blade.
4. The teeth on the blade will wear out sooner or later. The blade must therefore be replaced often to obtain the best cutting results. A blade will stay sharp for ½ hour to 2 hours of continuous running, depending on the material being cut.
5. Be aware that the blade has a tendency to follow the grain of the wood - the line of least resistance. You can compensate for this by watching the grain carefully and **guiding** the wood past the saw blade.
6. If you are not familiar with scroll saws, there will naturally be a learning period - a period to learn the saw itself, and a period to learn how the wood and saw work together. Expect some blade breakages, Scroll Saw blades are fairly fragile - not the same types of blade you find on a handsaw or circular saw.

STRAIGHT LINE CUTTING

A little practice will be necessary in order to create a straight line cut. This is due to the very design and nature of the machine itself. The saw blade is quite fragile and due to several different influences, will tend to wander off line. These influences include the following:

1. Blade tension. A slack blade will naturally wander off line.
2. Condition of the blade. A dull blade requires a greater effort to guide it through the work, thereby tending to force it off line.
3. Blade holders misaligned. The holders are secured with a single hex. socket head screw. Slacken the screw and adjust the holder so as to align correctly. The blade should be in line with the table, and not twisted.

CUTTING INTRICATE PATTERNS

One capability a scroll saw has that other saws do not, is cutting intricate patterns **inside** a workpiece. To do this, you should adopt the following procedure.

1. Drill a 1/4" hole in the middle of the workpiece, in a area which will not be a part of the finished object.
2. Switch off and unplug the machine from the supply.
3. Remove the blade from the machine.
4. Place the workpiece on the table, with the 1/4" hole over the access hole in the table.
5. Replace the blade, through the hole in the workpiece, (teeth downwards), and Re-tension the blade.
6. Plug the saw back in. Check to ensure that the workpiece is not touching the blade before switching ON.

When you are finished, switch off the saw and disconnect it from the supply, remove the blade, remove the workpiece, and reinstall the blade

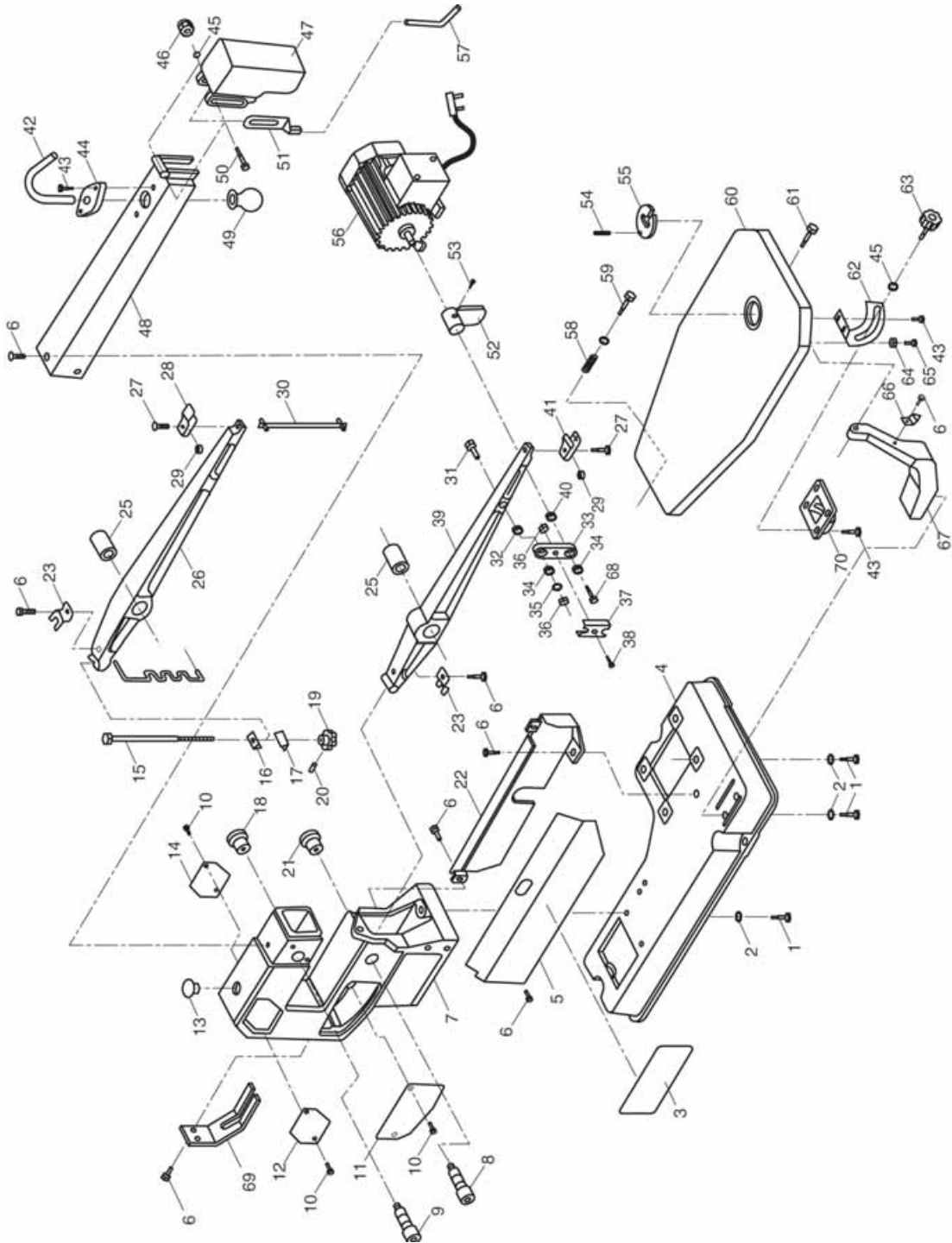
MAINTENANCE

- A. Apply a thin coat of paste wax on the work table from time to time. This will help the wood glide across the table more smoothly.
- B. The motor is permanently lubricated. Do not try to oil the motor bearings or service any internal parts of the motor. If the power cable is worn, frayed, cut or damaged, replace it. Do not try to patch it up with electrical tape as this could lead to more trouble.

TROUBLESHOOTING

PROBLEM	PROBABLE CAUSES	SUGGESTED REMEDY
Breaking Blades.	<ol style="list-style-type: none"> 1. Incorrect tension. 2. Overworked (worn out) blade. 3. Wrong blade being used. 4. Twisting blade in wood. 	<ol style="list-style-type: none"> 1. Adjust blade tension. 2. Reduce feed rate or replace blade. 3. Use narrow blades for thin wood, wider blades for thicker wood. 4. Avoid side pressure on blade.
Motor Will Not Run.	<ol style="list-style-type: none"> 1. Defective cord, plug or outlet. 2. Defective motor. 	<ol style="list-style-type: none"> 1. Unplug saw, replace defective parts. 2. Repairs MUST be made by a qualified technician. Call Clarke Service dept. for advice.
Excessive Vibration (Some vibration is inevitable when the saw and motor are running)	<ol style="list-style-type: none"> 1. Improper mounting of saw. 2. Unsuitable mounting surface. 3. Loose table or table rubbing against motor. 4. Motor mount is loose. 	<ol style="list-style-type: none"> 1. See proper mounting instructions (p7) 2. Replace plywood workbench surface with solid lumber surface. 3. Tighten table adjuster knob. 4. Tighten motor mount screws.
Blade Runout	<ol style="list-style-type: none"> 1. Blade holders not aligned. 2. Insufficient Blade tension 3. Dull Blade causing excessive force to be used at workpiece 	<ol style="list-style-type: none"> 1. Loosen screws holding blade holder to rocker arms. Adjust position of blade holders. Retighten holder screws 2. Increase Blade tension 3. Renew Blade and correctly tension.

PARTS DIAGRAM



PARTS LIST

No.	Description	Qty	Part No.	No.	Description	Qty	Part No.
1	Bolt		HT400B01	36	Nut		HT400B36
2	Spring Washer		HT400B02	37	Clamp Plate		HT400B37
3	Warning Label		HT400B03	38	Screw		HT400B38
4	Base		HT400B04	39	Lower Arm		HT400B39
5	Left Cover		HT400B05	40	Bearing Washer (B)		HT400B40
6	Screw		HT400B06	41	Lower Blade Holder		HT400B41
7	Frame		HT400B07	42	Plastic Tube		HT400B42
8	Pin Upper		HT400B08	43	Screw		HT400B43
9	Pin Lower		HT400B09	44	Air bag Base		HT400B44
10	Screw		HT400B10	45	Washer		HT400B45
11	Label (A)		HT400B11	46	M6 Nyloc Nut		HT400B46
12	Label (B)		HT400B12	47	Blade Guard		HT400B47
13	Plastic Cap		HT400B13	48	Top Protecting Cover		HT400B48
14	Label		HT400B14	49	Air Bag		HT400B49
15	Draw Bolt		HT400B15	50	Bolt		HT400B50
16	Tension Block (B)		HT400B16	51	Housing		HT400B51
17	Tension Block (A)		HT400B17	52	Cam		HT400B52
18	Small Insert (B)		HT400B18	53	Screw		HT400B53
19	Knob		HT400B19	54	Spring Pin		HT400B54
20	Pin		HT400B20	55	Table Insert		HT400B55
21	Small Insert (A)		HT400B21	56	Motor		HT400B56
22	Right Cover		HT400B22	57	Copper Tube		HT400B57
23	Pressure Plate		HT400B23	58	Tension Spring		HT400B58
24	Spring		HT400B24	59	Screw		HT400B59
25	Bush		HT400B25	60	Table		HT400B60
26	Top Arm		HT400B26	61	Screw		HT400B61
27	Screw		HT400B27	62	Bevel Scale Housing		HT400B62
28	Upper Blade Holder		HT400B28	63	Table Locking Knob		HT400B63
29	Spacer		HT400B29	64	Nut		HT400B64
30	Blade		see below	65	Screw		HT400B65
31	Screw		HT400B31	66	Bevel Pointer		HT400B66
32	Bearing Washer (A)		HT400B32	67	Bracket		HT400B67
33	Plate		HT400B33	68	Screw		HT400B68
34	Bearing		HT400B34	69	Protecting Plate		HT400B69
35	Spring Washer		HT400B35	70	Protection Cover		HT400B70

Replacement Blades (Packs of 10)

10tpi Part No. 6470067

15tpi Part No. 6460110

20tpi Part No. 6470072

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This is an important document, and should be retained.



DECLARATION OF CONFORMITY

We declare that this product complies to the following standards/directives:

- **98/37/EC**
- **EN 61029-1:2000**

Product Description: **400mm SCROLL SAW**

Model Number: **CSS400B**

Serial (Batch) No: **See product Data Plate**

Signed 
Engineering Manager

Clarke INTERNATIONAL
Hemnal Street, Epping, Essex CM16 4LG

Clarke International is a trading style of Clarke International Limited

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POWER TOOLS

Angle grinders, cordless drill sets, saws and sanders.

STARTER/CHARGERS

All sizes for car & commercial use.



ClarkeTM INTERNATIONAL

For spare parts and servicing, please contact your nearest dealer, or Clarke International on

020 - 8988 - 7400

e-mail: Parts@clarkeinternational.com e-mail: Service@clarkeinternational.com