



Modelo DC-WS300

TROMPO DE 1/2", 3/4" y 1"



MANUAL DE USUARIO

D'Castro Importadores de Norteamérica S.A. de C.V.

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GENERAL & SPECIFIC SAFETY INSTRUCTIONS

KNOW YOUR TOOL

- 1 Read and understand the owners manual and labels affixed to the tool. Learn its application and limitations as well as its specific potential hazards.
- 2 **GROUND THE TOOL.** This tool is equipped with an approved 3-conductor cord and a 3-prong grounding type plug to fit the proper grounding type receptacle. The green conductor in the cord is the grounding wire. NEVER connect the green wire to a live terminal.
- 3 **KEEP GUARDS IN PLACE.** Keep in good working order, properly adjusted and aligned.
- 4 **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
- 5 **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents. Make sure the floor is clean and not slippery due to wax and sawdust build-up.
- 6 **AVOID DANGEROUS ENVIRONMENT.** Don't use power tools in damp or wet locations or expose them to rain. Keep work area well lit and provide adequate surrounding work space.
- 7 **KEEP CHILDREN AWAY.** All visitors should be kept a safe distance from work area.
- 8 **MAKE WORKSHOP CHILD-PROOF.** Use padlocks, master switches or remove starter keys.
- 9 **USE PROPER SPEED.** A tool will do a better and safer job when operated at the proper speed.
- 10 **USE RIGHT TOOL.** Don't force the tool or the attachment to do a job for which it was not designed.
- 11 **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties or jewelry (rings, watch) because they could get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Roll up long sleeves above the elbows.
- 12 **ALWAYS WEAR SAFETY GLASSES.** Always wear safety glasses (ANSI Z87.1). Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses. Also use a face or dust mask if cutting operation is dusty.
- 13 **DON'T OVER REACH.** Keep proper footing and balance at all times.
- 14 **MAINTAIN TOOL WITH CARE.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- 15 **DISCONNECT TOOLS.** Before servicing, when changing accessories or attachments.
- 16 **AVOID ACCIDENTAL STARTING.** Make sure the switch is in the "OFF" position before plugging in.
- 17 **USE RECOMMENDED ACCESSORIES.** Consult the manual for recommended accessories. Follow the instructions that accompany the accessories. The use of improper accessories may cause hazards.
- 18 **NEVER STAND ON TOOL.** Serious injury could occur if the tool tips over. Do not store materials such that it is necessary to stand on the tool to reach them.
- 19 **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other parts that are damaged should be carefully checked to ensure that they will operate properly and perform their intended function. Check for alignment of moving parts, break age of parts, mounting, and any other conditions that may affect its operation. A guard or other parts that are damaged should be properly repaired or replaced.
- 20 **NEVER LEAVE MACHINE RUNNING UNATTENDED.** Turn power "OFF". Don't leave any tool running until it comes to a complete stop.

SPECIFIC SAFETY INSTRUCTIONS FOR SHAPERS

- 1 DO NOT OPERATE THIS MACHINE UNTIL it is assembled and installed according to the instructions.
- 2 OBTAIN ADVICE from your supervisor, instructor, or another qualified person if you are not familiar with the operation of this machine.
- 3 USE THE GUARDS WHENEVER POSSIBLE. Check to see that they are in place, secured, and working correctly.
- 4 KEEP ARMS, HANDS AND FINGERS away from the cutter.
- 5 NEVER START THE MACHINE with the workpiece contacting the cutter.
- 6 KEEP CUTTERS SHARP and free from rust and pitch.
- 7 PROPERLY SECURE THE CUTTERS before starting the machine.
- 8 DO NOT PERFORM ANY OPERATION FREE-HAND. Use the fence for straight-shaping, a miter gauge for end-shaping and rub collars for curve-shaping.
- 9 DO NOT FEED A WORKPIECE that is warped, contains knots, or is embedded with foreign objects (nails, staples, etc.).
- 10 NEVER RUN A WORKPIECE between the fence and the cutter.
- 11 USE A MITER GAUGE and a clamp attachment for end shaping a work piece whenever possible. Remove the fence during this operation.
- 12 FEED WORKPIECE against cutter rotation (Fig. 1).
- 13 TURN THE MACHINE "OFF" AND DISCONNECT THE MACHINE from the power source before installing or removing accessories, before adjusting or changing setups, or when making repairs.
- 14 FOLLOW ALL WIRING CODE and recommended electrical connections.
- 15 NEVER TURN THE MACHINE "ON" before clearing the table of all objects (tools, scraps of wood, etc.).
- 16 AVOID AWKWARD OPERATIONS AND HAND POSITIONS where a sudden slip could cause a hand to move into the cutter.
- 17 ADJUST THE FENCE HALVES so that the cutter opening is never more than is required to clear the cutter.
- 18 LOCK THE FENCE hardware after making fence adjustments.
- 19 NEVER PERFORM LAYOUT, assembly or set-up work on the table/work area when the machine is running.
- 20 NEVER REACH UNDER THE TABLE while the machine is running.
- 21 NEVER ADJUST THE FENCE while the machine is running.



FIGURE 1

ELECTRICAL INFORMATION & SPECIFICATIONS

WARNING!

ALL ELECTRICAL CONNECTIONS MUST BE DONE BY A QUALIFIED ELECTRICIAN. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY! ALL ADJUSTMENTS OR REPAIRS MUST BE DONE WITH THE MACHINE DISCONNECTED FROM THE POWER SOURCE. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY!

KC-351S POWER SUPPLY(220V-1 PHASE) WARNING: YOUR KC-351S (220V) MUST BE CONNECTED TO A 220V, 20-AMP, BRANCH CIRCUIT. FAILURE TO CONNECT IN THIS WAY CAN RESULT IN INJURY FROM SHOCK OR FIRE.

220V OPERATION

As received from the factory, your shaper is wired for 220V operation. This shaper is intended for use on a circuit that has an outlet and a plug which looks like the one illustrated in Fig.2. (220V Plug not included).

GROUNDING

This shaper must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current, to reduce the risk of electric shock. This shaper must be equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. Not all outlets are properly grounded. If you are not sure if your outlet is properly grounded, have it checked by a qualified electrician.

WARNING: IF NOT PROPERLY GROUNDED, THIS SHAPER CAN CAUSE ELECTRICAL SHOCK, PARTICULARLY WHEN USED IN DAMP LOCATIONS. TO AVOID SHOCK OR FIRE, IF THE POWER CORD IS WORN OR DAMAGED IN ANY WAY, HAVE IT REPLACED IMMEDIATELY.

WARNING: TO MAINTAIN PROPER GROUNDING OF YOUR SHAPER, DO NOT REMOVE OR ALTER THE GROUNDING PRONG IN ANY MANNER. WARNING: DO NOT USE A TWO-PRONG ADAPTOR FOR THEY ARE NOT IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES. NEVER USE IN CANADA.

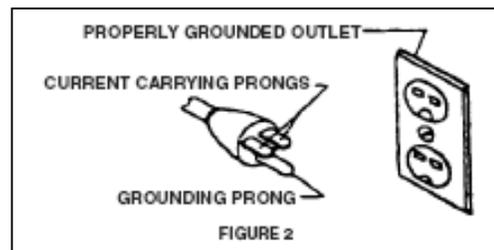
220V Plug A 220V plug is not supplied with this shaper and must be purchased at your local hardware store. The 220V plug must be a CS A listed plug suitable for 220V operation. This plug is illustrated in Fig.2. Contact your authorized service center or qualified electrician to install the plug. The shaper must comply with all local and national codes after the 220V plug is installed.

EXTENSION CORDS

The use of any extension cord will cause some loss of power. Use the following table to determine the minimum wire size (A.W.G.-American Wire Gauge) extension cord. Use only extension cords which accept the tool's plug. For circuits that are further away from the electrical circuit box, the wire size must be increased proportionately in order to deliver ample voltage to the motor. Refer to Fig.3 for wire length and size.

SHAPER SPECIFICATIONS

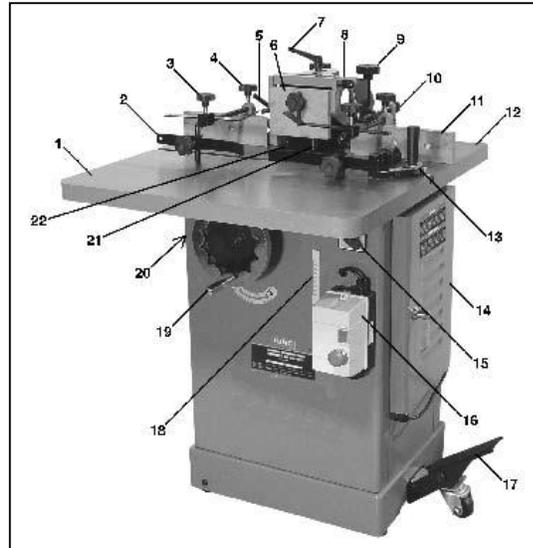
Spindle diameter	1/2", 3/4"
Spindle speed	8,000 & 10,000 RPM
Table size	28" x 30"
Spindle openings on table	1 5/8", 3", 3-1/2", 7"
Spindle length	(1/2") 4", (3/4") 4-5/8"
Spindle Travel	3"
Under nut capacity	(1/2") 3", (3/4") 3"
Dust chute diameter	4"
Table height	34"
Motor	15 Amp.
Voltage	220V, 1 phase, 60 Hz
Dimensions (LxWxH)	31" x 30" x 46"
Weight	342 Lbs.



GETTING TO KNOW YOUR SHAPER& UNPACKING

GETTING TO KNOW YOUR SHAPER

- 1) Extension table
- 2) Hold-down
- 3) Hold-down lock knob
- 4) Hold-down support lock knob
- 5) Fence adjusting ratchet
- 6) Adjustable front guard
- 7) Front guard casting lock knob
- 8) 4" Dust chute
- 9) Hold-down and fence assembly lock knob
- 10) Fence adjustment worm shaft/knob
- 11) Fence
- 12) Work table
- 13) Miter gauge (placed in T-slot)
- 14) Side access door to the motor
- 15) Forward/Reverse switch
- 16) Magnetic safety switch
- 17) Built-in mobile base system
- 18) Spindle depth scale
- 19) Spindle raising/lowering handwheel
- 20) Spindle height lock knob (left side of cabinet)
- 21) Spindle installed
- 22) Table inserts (3)



Accessories included;

1/2" Spindle

3/4" Spindle

1/4" Router bit adaptor

1/2" Router bit adaptor Optional accessories available;

SETTING UP This shaper is shipped in a wooden crate and weighs approximately 375 pounds.

Do not overexert yourself while unpacking or moving this machine.

The shaper is bolted to the base of the crate, remove hex. bolts and 90° plates and use a forklift or heavy-duty pallet truck to lift the shaper off the base of the crate.

Once placed on a level floor, the shaper can easily be moved from workplace to workplace by lowering the pedal of the built-in mobile base system (#17 above).

All the unpainted surfaces and a few painted ones are coated with a preservative oil called cosmolene, which prevents rust and corrosion during shipping.

This coating must be removed with paint thinner (mineral spirits) and a good supply of paper towels. **DO NOT** use gasoline, lacquer thinner, acetone or any other highly-flammable solvents.

They increase the risk of fire or explosion and they don't work any better.

Do not use chlorinated solvents, such as perchloroethylene.

These will lift the paint and ruin the shaper's finish.

Any solvent that cuts grease should not be used to clean rubber or plastic parts.

Don't forget to remove the entire fence assembly and clean under it, to do so, unscrew and remove hold-down and fence assembly lock knobs (#9 above).

Clean in a well ventilated area and dispose of soiled towels in a proper manner to avoid fire and environmental damage.

It is recommended to set your shaper on a level surface capable to take a uniform distributed load of 100 pounds per square foot.

Concrete floors and commercial hardwood floors should be satisfactory, but lighter residential wood floors may require some reinforcement to handle the load.

ASSEMBLY AFTER UNPACKING

Assembling Extension Table

The cast iron extension table extends your work surface area to provide support for larger work pieces. Follow the instructions below to ensure your extension table is flush and level with the shaper work table.

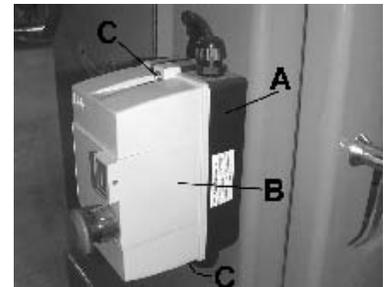
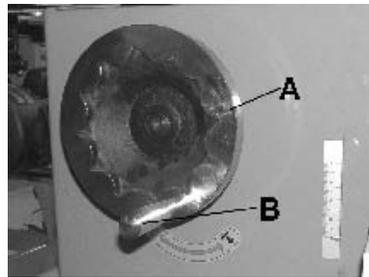
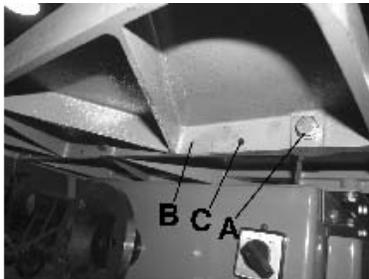
- 1) Make sure the contact surfaces are clean, free of dirt or grit.
- 2) Put three bolts with spring washers and washers (A) Fig.4 through the extension table (B) and thread them into the tapped holes at the front of the shaper. Leave them loose for now.
- 3) Raise the extension up on one side and make sure it's flush with the table edge. Tighten the first bolt.
- 4) By raising or lowering the far end of the extension, locate the center of the extension flush with the table. Tighten the center bolt.
- 5) The end of the extension table at the last bolt is probably not flush with the surface of the table. Don't be alarmed. Make sure the extension table is flush with the first two bolts and that they are tight.
- 6) Now adjust the extension table, either up or down, at the last bolt. If necessary, use a clamp and a couple of blocks to align the two surfaces. Tighten the final bolt when the two surfaces are flush.
- 7) Once you've secured the extension table, inspect your results. If the extension table is slightly tilted either up or down, adjustments can be made to level both tables. This can be done by using set screws (C) located next to the three mounting bolts. Place a straight edge on both the table and extension table, adjust the set screws until the extension table is level with the straight edge on the working table. Turn set screw clockwise to lift the table and counter clock wise to lower the table. You may have to loosen the table mounting bolts slightly.

Assembling Hand wheel Handle

The front mounted hand wheel (A) Fig.5 comes without the steel handle (B) installed, remove steel handle from loose items box and thread it to the hand wheel and secure.

Assembling Magnetic Switch to Front of Cabinet

The magnetic switch comes uninstalled to protect it during transport and needs to be mounted to the front of the cabinet. To install;1) The magnetic switch (A) Fig.6 gets installed to the right side of the cabinet, below the forward/reverse switch.2) First the magnetic switch cover (B) must be removed by unscrewing the two Phillips head special screws (C). Note: These two specially designed Phillips head screws are designed not to be removed. Unscrew them until the cover comes off.3) Secondly, open the cabinet right side access door, undo the hex. nuts at the back of the magnetic switch, place magnetic switch against the cabinet and align the screws with the mounting holes.4) Insert screws into cabinet holes and secure from the inside of the cabinet using the removed hex. nuts from step 3.5) Once the magnetic switch housing is secured to the cabinet, reposition the cover and tighten the two Phillips head special screws.6) It is recommended to pull all the electrical wires from the magnetic switch inside the cabinet.



ADJUSTMENTS & OPERATION

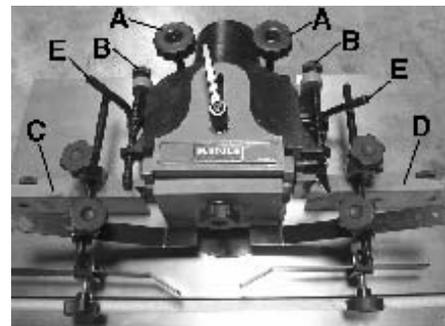
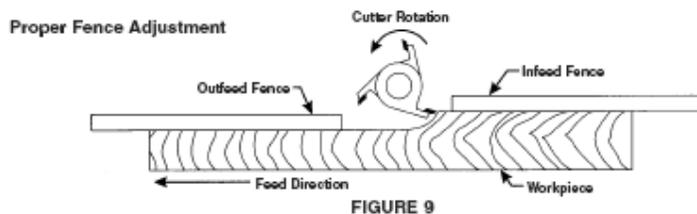
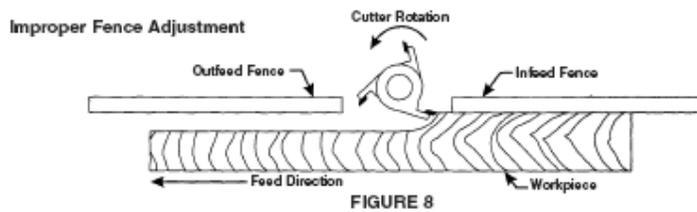
WARNING! ALL ADJUSTMENTS MADE TO THIS SHAPER MUST BE DONE WITH THE POWER CORD DISCONNECTED FROM THE POWER SOURCE. Adjusting the Fence Assembly

The fence assembly comes assembled to the shaper table and should be removed upon delivery, in order to clean the table top under it. The fence assembly can be removed from the table by undoing the 2 fence assembly lock knobs (A) Fig.7. Once the table top is clean, it is important to set the fence in line with the miter T-slot. It is recommended to clamp a 2x4 with jointed edge inline with the miter T-slot and to adjust the fence assembly accordingly. The fence assembly includes a two-piece adjustable fence system. Each fence is independently adjustable to compensate for different cutting thicknesses and special shaping applications. One full turn of the micro-knob (B) moves the split fence approximately $5/64''$ (.078").

When removing material from the whole face of your work piece, the out feed fence (C) should be adjusted to the proper offset to provide support for the work piece as it passes over the cutter, see Fig.9. To adjust both split fences; 1) Adjust the in feed fence (D) by loosening the lock ratchet (E) and then turning the micro-knob (B) so the cutter will remove the desired amount of stock. Retighten ratchet (E) after the adjustment. 2) Make a test and inspect the results. 3) Adjust the out feed fence (C) to support the new profiled edge. 4) Lock the out feed ratchet and re-test. See Fig.8 & 9 for improper and proper out feed fence positioning.

Resurfacing the Fence

Occasionally the fence assembly needs resurfacing to ensure that the fence is parallel with itself and square with the table. Align one or both fence halves so they are in close alignment. Micro-adjust and check the alignment using a straight edge. If the fences are not co-planar with each other, resurfacing is necessary. This operation can be performed by placing the entire fence assembly on a jointer. Once the fences have been passed on a jointer, use a straight edge to check squareness. Note: If the jointer is not set up properly, the results will not be satisfactory.



ADJUSTMENTS & OPERATION

Changing Spindles

This shaper comes with a 1/2" and 3/4" spindle assemblies as standard accessories. Please note that 1" (model: KW-088) and 1-1/4" (model: KW-089) spindle assemblies are available as optional accessories. A spindle assembly (A) gets locked in a tapered seat (B) Fig.10 at the top of the spindle housing and is held in place with a threaded draw bar (C) and draw bar nut (D) below the spindle housing (B) Fig.11. To change a spindle, proceed as follows;

- 1) To loosen the spindle, place a wrench on the flat (E) Fig.10 on top of the spindle and another wrench on the draw bar nut (A) Fig.11. Unscrew the draw bar nut a few turns only until there are no more threads visible at the end, tap the draw bar nut gently upwards with a wooden block.
- 2) Now that the spindle popped out of the tapered seat, remove the draw bar nut and pull the spindle assembly out of the spindle housing.

When reinstalling a spindle, make sure the draw bar is secure into the bottom of the spindle. When placing spindle assembly into the spindle housing, make sure the spindle seats snugly and the keyway slots align. Also make sure there is enough drawbar nut threaded into the bottom of the draw bar to safely secure the spindle in place.

Installing/Changing Cutter

Your shaper operates at speeds of 8,000 and 10,000 RPM. Keep in mind that larger cutters (3-1/2" or larger) must be operated at the lowest speed (8,000 RPM). Always use the largest spindle size possible. DO NOT use a cutter that is not specifically design for use on shapers. Make sure all spacers/collars/cutters are clean and not damaged before installing them on a spindle.

To install/change a cutter, proceed as follows;

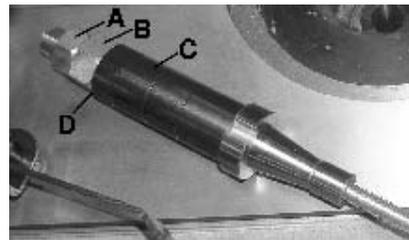
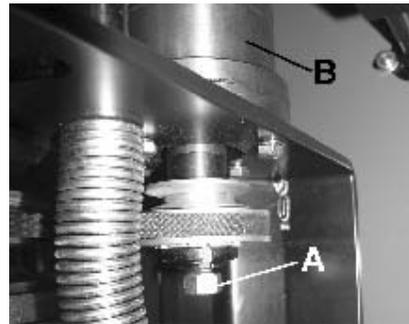
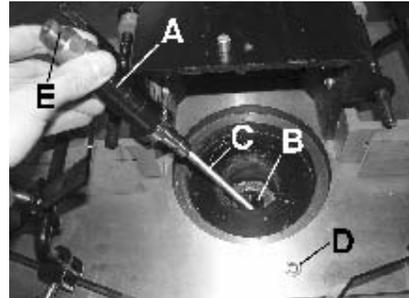
- 1) Select the appropriate spindle size, undo the top locknut (A) Fig.12 (left hand thread) followed by the regular hex. nut (B) below it by placing wrench on the spindle flat and a wrench on nut. Remove the spacers (C) from the spindle.
- 2) Place the appropriate spacer or rub collar at the base of the spindle for support.
- 3) Place the desired cutter on the spindle, make sure the rotation is correct for your application.
- 4) Place spacers on spindle in order to reach the thread (D) of the regular hex. nut. Secure spacer(s)/rub collar(s) and cutter with regular hex. nut and finally secure using the locknut. Use a wrench to secure using the flat of the spindle to assist you.

Rub Collars

Rub collars are used when shaping curved or irregular workpieces, such as arched doors or round tables tops. They also allow you to perform freehand work. There are two types of rub collars; solid and ball bearing. Don't confuse spacers with solid rub collars. Spacer are rarely machined to close tolerances and not all ball bearings can be used as rub collars. The illustrations on the following page (Fig13-15) show different methods and arrangements for spindle stacking. These illustrations are for general reference only. Generally rub collars can be installed below, above or between two cutters and can be used with patterns. These illustrations are shown with the guard removed for clarity. Do NOT attempt to operate the shaper without guards or protective devices in place.

Collars are used to limit the depth of your cuts and are particularly useful when doing pattern work or irregular shaping. The amount of wood to be removed from the workpiece is determined by the diameter of the rub collar and the cutting circle of the cutter. Here are a few hints for the selection of rub collars.

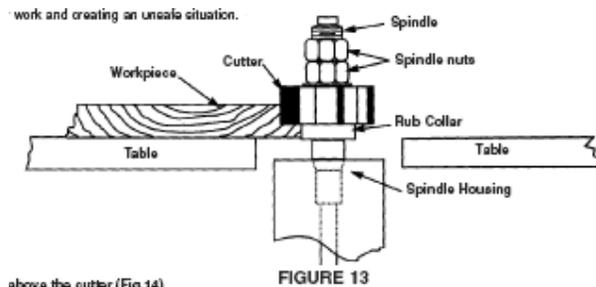
- 1) Select the appropriate shaper cutter to match the your desired profile.
- 2) Determine if you will be working with a pattern or if the workpiece will rub against the rub collar.
- 3) Determine how much wood must be removed to achieve the desired profile.



ADJUSTMENTS & OPERATION

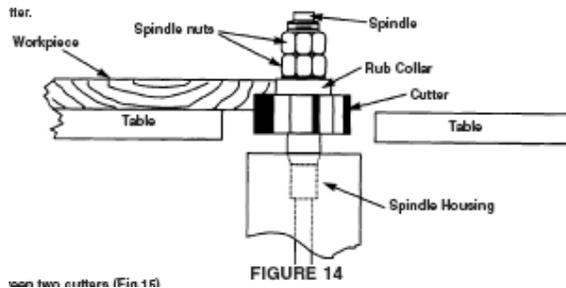
1- Rub Collar below the cutter (Fig.13)

When a rub collar is used below the cutter, pay attention to any unintentional movement which may lift the workpiece into the cutter, damaging your work and creating an unsafe situation.



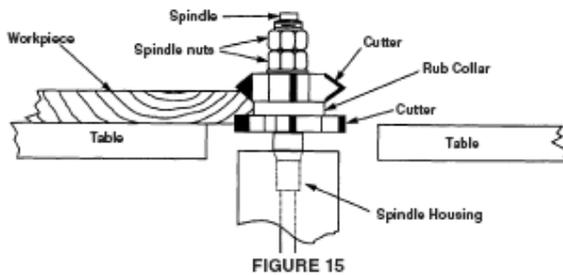
2) Rub Collar above the cutter (Fig.14)

When a rub collar is used above the cutter, the cut can not be seen. This stacking arrangement is considerably safer because the workpiece covers the entire cutter.



3) Rub Collar between two cutters (Fig.15)

Using a rub collar between two cutters has the distinct advantage of performing two cuts at once or eliminating the need to change cutters for two different operations.

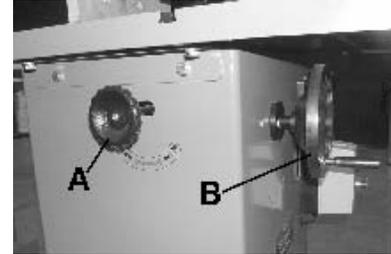
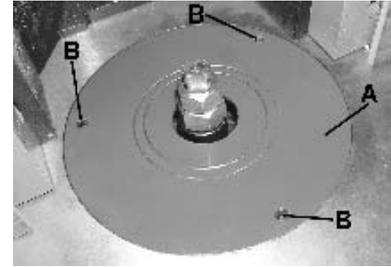


Adjusting Table Inserts

This shaper comes with 3 table inserts (A) Fig.16 which give you four possible opening diameters in the shaper table surface. Use the smallest opening that a particular cutter will allow. This offers more support for the workpiece and reduces the amount of chips that can fall down into the machine. The correct spindle opening will also allow any unused portion of the cutter to remain below the table surface, increasing operator safety.

Table inserts must be flush with the top of the table. To adjust the table inserts, proceed as follows;

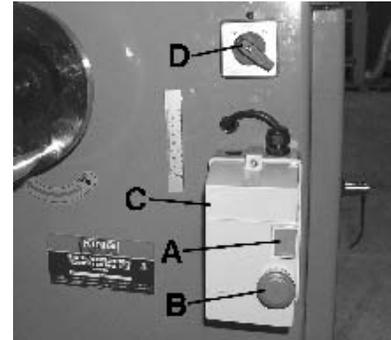
- 1) Place a straight edge on top of the table inserts and the table and check to see if the table inserts are flush all around with the top of the table.
- 2) If an adjustment is necessary, using the appropriate hex. key, turn the three setscrews (B) Fig.16 clockwise or counterclockwise to raise or lower the cast iron table insert (A).
- 3) Inspect your results using the straight edge, adjust if necessary.



Adjusting and Locking Spindle Height

To adjust the cutter height;

- 1) Loosen the spindle height lock knob (A) Fig.17 counterclockwise.
- 2) Align your workpiece against the flat side of the cutter.
- 3) Adjust the cutter height by turning the front hand wheel (B) clockwise to raise the spindle and counterclockwise to lower the spindle.
- 4) Retighten the spindle height lock knob.
- 5) Cut a test sample and inspect your results, adjust if necessary.



Changing Spindle Speed

This shaper comes with 2 spindle speeds (8,000 and 10,000 RPM) which are adjusted by changing the belt positioning on both the motor pulley and spindle pulley. See speed/belt positioning nameplate Fig.18 as reference. To change spindle speed, proceed as follows;

- 1) Open the hinged door at the back of the cabinet, loosen belt tension lock handle (A) Fig.19 and then move the motor assembly to the right using the pivot handle (B) to loosen belt.
- 2) Readjust the belt positioning to achieve the desired speed. See Fig.18.
- 3) Slide the motor back into position to tension the belt. The belt is properly tensioned when there is approximately a 1/2" deflection in the center of the belt when you press it with your thumb. Use good judgement, if the belt is too loose, it will squeal or slip under load. If the belt is too tight, it will run hot and tend to shake excessively.
- 4) Once the correct belt tension is achieved, retighten the belt tension lock handle and close the hinged door.

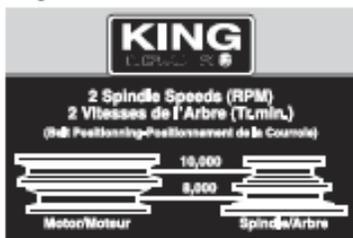


FIGURE 18

OPERATION & MAINTENANCE

Magnetic Switch and Forward/Reverse Switch Operation

To turn the shaper on, press the ON button (A) Fig.20 on the magnetic switch (C), to turn the shaper off, press the OFF button (B) on the magnetic switch (C).

This shaper also comes with a forward/reverse switch (D) which controls the direction of rotation of the spindle. The direction of rotation cannot be changed while the magnetic switch is ON, the forward/reverse switch must be placed in the OFF position first. Wait for the spindle to come to a complete stop before switching to either the FOR (forward-counterclockwise) or REV (reverse-clockwise) position. Use the correct cutter orientation in relation to the rotation of the spindle.

General Start-up/Operation

This shaper is a simple machine capable of performing very complex work. With the number of operations this shaper is capable of, it's nearly impossible to address all of the techniques available. You can obtain a lot of this information through woodworking magazines, videos, internet and your local library.

If you have limited experience, start simple. Try several basic projects before taking on complex pieces. When operating this shaper, keep the following guidelines in mind:

- 1) The direction of feed should always be against the direction of the cutter rotation.
- 2) Always use some type of safety guard, such as hold-downs, fixtures or jigs when using this shaper.
- 3) Always cut the end grain first when putting an edge around the perimeter of your workpiece.
- 4) Double check your installation when replacing spindles or cutters.
- 5) Make sure the workpiece is free of defects, such as knots, twist, cup ping, etc...
- 6) Always wear safety glasses.
- 7) Always use the correct table insert.
- 8) Inspect your cutters for sharpness.
- 9) Keep as much of your cutter below the table surface as possible.

Steps and Precautions for Shaping Straight Stock

When shaping straight stock, use the fence assembly, see adjustment section for aligning fences. To shape straight stock;

- 1) Select the appropriate cutter and corresponding spindle size and install them.
- 2) Check the cutter rotation.
- 3) Adjust the spindle height to align the workpiece with the cutter.
- 4) Lock the spindle into position.
- 5) Position the fences to your desired depth of cut.
- 6) Use a hold-down, or other safety device.

7) Make a sample cut on a scrap piece of wood to check your adjustments.

8) If everything is correct, run your workpiece through the shaper using your left hand to support the workpiece against the fence and your right hand to feed (if the rotation is counterclockwise). Switch hands for clockwise rotation.

9) Use the miter gauge to shape the ends of your workpiece.

Maintenance

Warning! Before making any maintenance, make sure to disconnect the power cord from the power source.

Your shaper requires very little maintenance. A thorough cleaning after each use will greatly increase the shaper's durability and efficiency, by removing dust and grime that can gum up moving parts.

Sharp cutters are essential for top performance. If you find that the machine cuts less than efficiently than usual, inspect the cutter(s), replace or repair them as necessary.

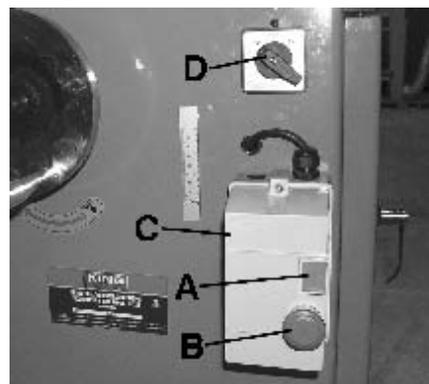
Lubrication

Your shaper comes with factory sealed ball bearings. A sealed ball bearing requires no lubrication during its lifetime. Should a ball bearing fail, your shaper will probably develop a noticeable vibration, which will increase when the machine is put under load. If the bad ball bearing is not replaced, it will eventually seize-possibly damaging other parts of the machine.

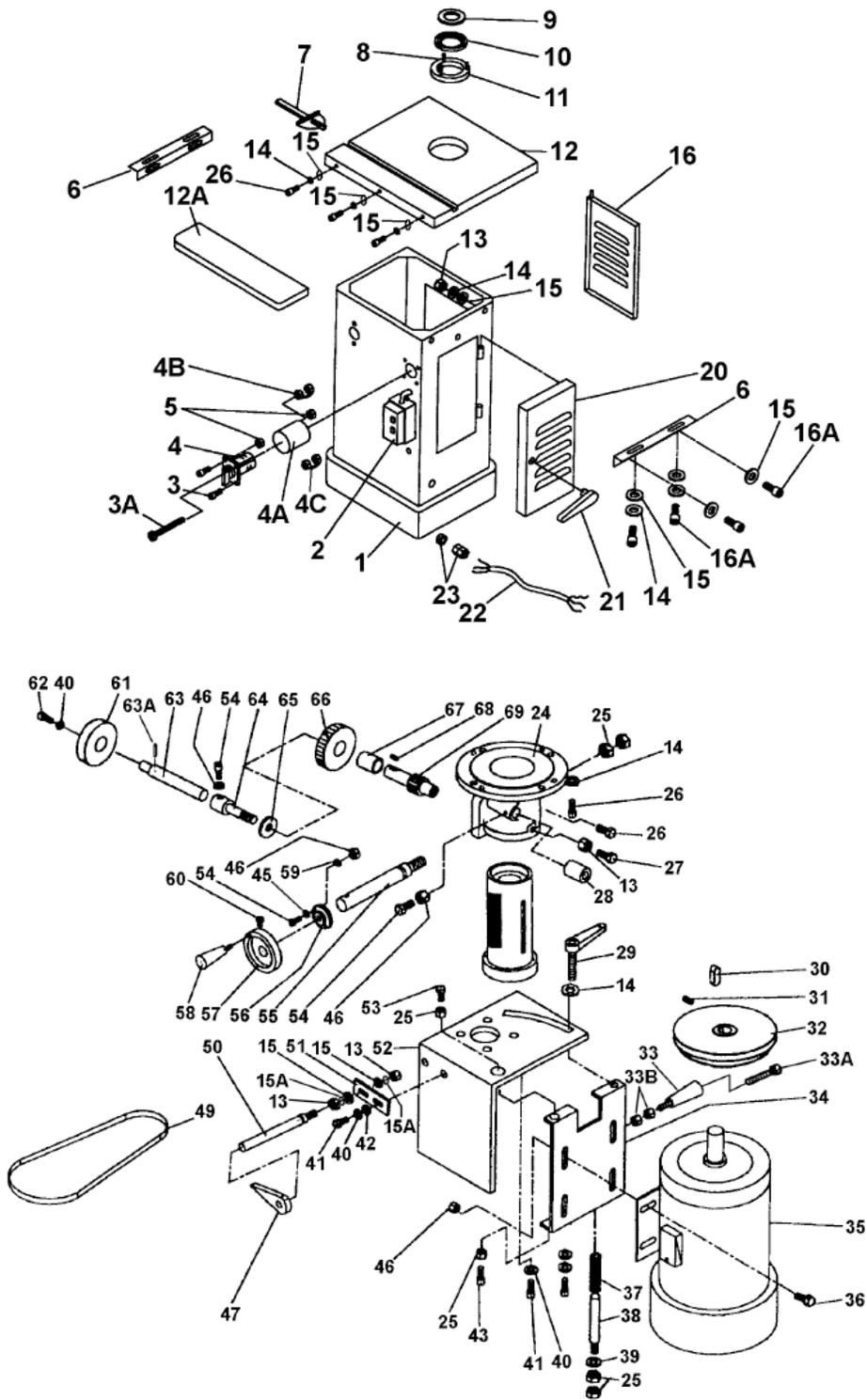
V-Belt Maintenance

Warning! Avoid getting grease or oil on the V-belt or the pulleys, not respecting this warning will considerably reduce the life of your V-belt.

The V-belt should be checked on a monthly basis for proper tension and belt condition. Cracking and glazing could result in belt failure. Replace the V-belt if such conditions appear.



PARTS DIAGRAM MODEL KC-351S



PARTS LIST MODELKC-351S

No.	Order#	Description	Qty
	1	4503510010 Cabinet stand (special order)	1
	2	4503510020 Magnetic switch	1
	3	4503510030 Countersunk screw	2
3A	4503510031	Pan head screw	2
	4	4503510040 Fwd/Rev. switch/selector	1
4A	4503510041	Switch cover	1
4B	4503510042	Strain relief	4
4C	4503510043	Strain relief	1
	5	4503510050 Hex. nut	2
	6	4503510060 Angle bar	1
	7	4503510070 Miter gauge	3
	8	4503510080 Set screw	1
	9	4503510090 Table insert (small)	1
	10	4503510100 Table insert (medium)	1
	11	4503510110 Table insert (large)	1
	12	4503510120 Table	1
12A	4503510121	Table extension	1
	13	4503510130 Hex. nut	11
	14	4503510140 Spring washer	18
	15	4503510150 Washer	19
15A	4503510151	Spring washer	2
	16	4503510160 Rear door	1
16A	4503510161	Round head allen screw	12
	20	4503510200 Side door	1
	21	4503510210 Lock handle	1
	22	4503510220 Power cord	1
	23	4503510230 Strain relief	1
	24	4503510240 Spindle base	1
	25	4503510250 Hex. nut	6
	26	4503510260 Hex. bolt	12
	27	4503510270 Special screw	1
	28	4503510280 Collar	1
	29	4503510290 Handle	1
	30	4503510300 Key	1
	31	4503510310 Set screw	1
	32	4503510320 Motor pulley	1
	33	4503510330 Knob	1
33A	4503510331	Special bolt	1
33B	4503510332	Hex. nut	2
	34	4503510340 Motor mount plate	1
	35	4503510350 Motor	1
	36	4503510360 Hex. bolt	4
	37	4503510370 Spring	1
	38	4503510380 Spring shaft	1
	39	4503510390 Washer	1
	40	4503510400 Spring washer	7
	41	4503510410 Hex. bolt	6
	42	4503510420 Washer	5
	43	4503510430 Special bolt	1
	44	4503510440 Washer	4
	45	4503510450 Spring washer	4
	46	4503510460 Knob nut	12
	47	4503510470 Pointer	1
	49	4503510490 V-belt	1
	50	4503510500 Scale shaft	1
	51	4503510510 Plate	1
	52	4503510520 Motor angle plate	1
	53	4503510530 Screw	1
	54	4503510540 Hex. bolt	4
	55	4503510550 Handle shaft	1
	56	4503510560 Handwheel flange	1
	57	4503510570 Handwheel	1
	58	4503510580 Handle	1
	59	4503510590 Washer	2
	60	4503510600 Set screw	1
	61	4503510610 Handwheel	1
	62	4503510620 Round head allen screw	1
	63	4503510630 Lock bar	1
63A	4503510631	Spring pin	1
	64	4503510640 Locking screw	1
	65	4503510650 Flange	1
	66	4503510660 Gear	1
	67	4503510670 Collar	1
	68	4503510680 Key	1
	69	4503510690 Gear shaft	1
	70	4503510700 Special nut (left hand)	1
	71	4503510710 Hex. nut	1
	72	4503510720 3/4" I.D. x 1/2" TH. Spacer	1
	73	4503510730 3/4" I.D. x 3/4" TH. Spacer	2
	74	4503510740 3/4" I.D. x 3/4" TH. Spacer	1
	75	4503510750 3/4" Spindle	1
	76	4503510760 Spindle quill	1
	77	4503510770 Key	1
	78	4503510780 Ball bearing	1
	79	4503510790 Quill housing	1
	86	4503510860 Ball bearing	1
	87	4503510870 Retaining ring/shaft	1
	88	4503510880 Spindle pulley	1
	89	4503510890 Lock washer	1
	90	4503510900 Lock nut	1
	91	4503510910 Draw bar	1
	92	4503510920 Special nut	1
	93	4503510930 Knob	2
93A	4503510931	Flange head screw	2
	94	4503510940 Special bolt	2
	95	4503510950 Safety guard	1
95A	4503510951	Special bolt	2
95B	4503510952	Lock handle	2
95C	4503510953	Washer	2
95D	4503510954	Sliding block	1
95E	4503510955	Guard bracket	1
95F	4503510956	Wooden edge	1
95G	4503510957	Knob	1
95H	4503510958	Spring washer	1

96	4503510960	Adjust. threaded shaft bracket	2
97	4503510970	Fence adjust. threaded shaft	2
98	4503510980	Fence mount bracket (right)	1
99	4503510990	Wooden fence	2
100	4503511000	Countersunk screw	4
101	4503511010	Hold down rod	2
102	4503511020	Hold down bar	4
103	4503511030	Hold down bracket	4
104	4503511040	Knob	6
105	4503511050	Fence mount bracket (left)	1
106	4503511060	Set screw	2
107	4503511070	Knob	2
108	4503511080	Castor	1
109	4503511090	Leveling screw	2
110	4503511100	Wheel	2
111	4503511110	Hex. bolt	2
111A	4503511111	Washer	5
111B	4503511112	Sleeve	2
111C	4503511113	Hex. bolt	1
112	4503511120	Nylon hex. nut	4
113	4503511130	Washer	2
114	4503511140	Hex. bolt	2
115	4503511150	Special nut (left thread)	1
116	4503511160	Hex. nut	1
117	4503511170	1/2" I.D. x 3/8" Spacer	1
118	4503511180	1/2" I.D. x 1/2" Spacer	2
119	4503511190	1/2" I.D. x 3/4" Spacer	1
120	4503511200	1/2" I.D. x 1" Spacer	1
121	4503511210	1/2" Spindle	1