GARRICK
MACHINE TOOLS

METAL CUTTING BAND SAW
Model BS8SW

INSTRUCTION MANUAL

For your safety, read all instructions carefully.

**** This product carries the following approvals. CE, GS, CSA, and CU-L**

ISO-9001:2008 Certified

⚠WARNING !

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reprodrctive harm. Some examples of these chemical are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and word with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

CAUTION

Install saw blade and blade guard before use. Set proper blade tension to prevent any danger caused by damaged saw blade or word piece.

1. WARNONG: FAILURE TO FPLLOW THESE RULES MAY RESULT I SERIOUS PERSONAL INJURY

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

This machine was designed for certain applications only. We strongly recommends that this machine NOT be modified and/or used for any application other than for which it was designed. If you have any questions relative to its application DO NOT use the machine until you contact with us and we have advised you.

Your machine might not come with a power socket or plug. Before using this machine, please do ask your local dealer to install the socket or plug on the power cable end.

2. SAFETY RULES FOR ALL TOOLS

A. USER:

(1). **WEAR PROPER APPAREL.** No loose clothing, gloves, rings, bracelets, or other jewelry to get caught in moving parts.

Non-slip foot wear is recommended. Wear protective hair covering to contain long hair.

(2), **ALWAYS WEAR EYE PROTECTION.** Refer to ANSLZ87.1 standard for appropriate recommendations. Also use face or dust mask if cutting operation is dusty.

(3). **DON'T OVERREACH.** Keep proper footing and balance at all times.

(4). **NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.

(5). **NEVER LEAVE TOOL RUNNING UNATTINDED.TURM POWER OFF.** Don't leave tool until it comes to a complete stop.

(6). **DRUGS, ALCOHOL, MEDICATION.** Do not operate tool while under the influence of drug, alcohol or any medication.

(7). **MAKE SURE TOOL IS DISCONNECTED FROM POWER SUPPLY.** While motor is being mounted, connected or reconnected.

(8). **ALWAYS** keep hands and fingers away from the blade.

(9). **STOP** the machine before removing chips.

(10).**SHUT-OFF** power and clean the BAND SAW and work area before leaving the machine.

B. USE OF MACHINE:

(1). **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it "on".

(2). **DON'T FORCE TOOL.** It will do the job better and be safer at the rate for which it was designed.

(3). **USE RIGHT TOOL.** Don't force tool or attachment to do a job for which it was not designed.

(4). **SECURE WORK.** Use clamps or a vise to hold work when practical. It's safer than using your hand frees both hands to operate tool.

(5). **MAINTAIN TOOLS IN TOP CONDITION.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

(6). **USE RECOMMENDED ACCESSORIES.** Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.

(7). **AVOID ACCIDENTAL STARTING.** Made sure switch is in "**OFF**" position before plugging in power cord.

(8). **DIRECTION OF FEED.** Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.

(9). **ADJUST AND POSITION** the blade guide arm before starting the cut.

(10). **KEEP BLADE GUIDE ARM TIGHT**, A loose blade guide arm will affect sawing accuracy.

(11). **MAKE SURE** blade speed is set correctly for material being cut.

(12). **CHECK** for proper blade size and type.

(13). **STOP** the machine before putting material in the vise.

(14). **ALWAYS** have stock firmly clamped in vise before starting cut.

(15). **GROUND ALL TOOLS.** If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate atwoprong receptacle, the adapter lug must be attached to a known ground. Never removed the third prong.

C. ADJUSTMENT:

MAKE all adjustments with the power off. In order to obtain the machine. Precision and correct ways of adjustment while assembling, the user should read the detailed instruction in this manual.

D. WORKING ENVIRONMENT:

(1). **KEEP WORK AREA CLEAN**. Cluttered areas and benches invite accidents.

(2). **DON'T USE IN DANGEROUS ENVIRONMENT.**

Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well-lighted.
(3). **KEEP CHILDREN AND VISITORS AWAY.** All children and visitors should be kept a safe distance from work area.
(4). **DON'T** install & use this machine in explosive, dangerous environment.

E. MAINTENANCE:
(1). **DISCONNECT** machine from power source when making repairs.
(2). **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
(3). **DISCONNECT TOOLS** before servicing and when changing accessories such as blades, bits, cutters, etc.
(4). **MAKE SURE** that blade tension and blade tacking are properly adjusted.
(5). **RE-CHECK** blade tension after initial cut with a new blade.
(6). **TO PROLONG BLADE LIFE ALWAYS** release blade tension at the end of each work day.
(7). **CHECK COOLANT DAILY** low coolant level can cause foaming and high blade temperatures. Dirty or week coolant can clog pump, cause crooked. Cast, low cutting rate and permanent blade failure. Dirty coolant can cause the growth of bacteria with ensuing skin irritation.
(8). **WHEN CUTTING MAGNESIUM NEVER** use soluble oils or emulsions (oil-water mix) as water will greatly intensify any accidental magnesium chip fire. See your industrial coolant supplier for specific coolant recommendations when cutting magnesium.
(9). **TO PRNMT** corrosion of machined surfaces when a soluble on is used as coolant, pay particular attention to wiping dry the surfaces where fluid accumulates and does not evaporate quickly, such as between the machine bed and vise.

F. SPECTIFIED USAGE:
This machine is used only for general metals cutting within the range of cutting capacity.

G. NOISE:
A weighted sound pressure level: 80 dB.

H. SAFETY DEVICE:
(1). Interlock switch on pulley cover.
As soon as the pulley cover is open, machine will stop with the function of this switch. Do not remove this switch from machine for any reason, and check it's function frequently.
(2). Interlock switch on cutting area as soon as the cover of cutting area in open, machine will stop at once witch the function of this switch, do not remove this switch from machine for any reason, and check it's function frequently.

CAUTION:

READ ALL INSTRUCTION CAREFULLY BEFORE USING THIS MACHINE. SAVE THIS MANUAL.

3. SPECIFICATION:

MOTOR		0.55KW (3/4HP), 1HP (Option)
Blade Size		2360 x 19 x 0.9 (Carbon Blade)
Saw Blade Speed	60Hz	29 50 75 100 (MPM)
	50Hz	24 41 61 82 (MPM)
MODEL NO. CUTTING CAPACITY		G5020
90°	● (mm)	205
	■ (mm)	215 x 205
45°	● (mm)	143
	■ (mm)	143 x 115
Dimension L x W x H (mm)		1230 x 650 x 1320
N.W./G.W. (kgs)		165/185
Packing Measurement (mm) L x W x H		1230 x 650 x 820/ 560 x 540 x280

4. TRANSPORTATION OF MACHINE:

Unpacking

1. Transportation to desired location before unpacking, please use lifting jack. (Fig. B)
2. Transportation after unpacking, please use heavy-duty fiber belt to lift up the machine.

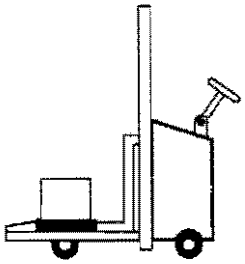


Fig.B

ALWAYS KEEP PROPER FOOTING & BALANCE WHILE MOVING THIS MACHINE.

5. INSTALLATION:

As this machine weights 125 kg. it is recommended that the machine shall be transported, with help of lifting jack.

Transportation recommendation:

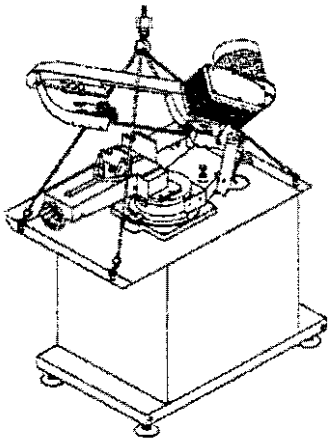
(1). Tighten all locks before operation.

(2). **ALWAYS** keep proper footing & balance while moving this 125kgs machine, and only use heavy duty fiber belt to lift the machine as Fig.A

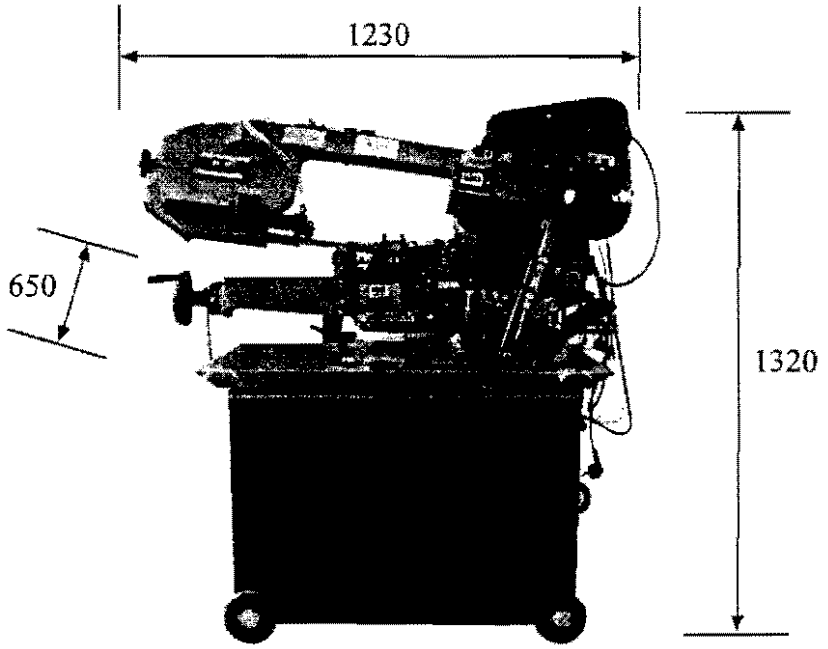
(3). **TURN OFF** the power before wiring, & be sure machine in proper grounding, overload & circuit breaker is recommended for safety wiring.

(4). **CHECK** carefully if the saw blade is running in counter-clockwise direction if not, reverse the wiring per circuit diagram then repeat the running test.

(5). **KEEP** machine always out from sun, dust, wet, raining area.



6. MINIMUM ROOM SPACE FOR MACHINE OPERATION



7. MAKE PROPER TOOTH SELECTION

For maximum cutting efficiency and lowest cost per cut, it is important to select the blade with the right number of teeth per inch (TPI) for the material being cut. The material size and shape dictate tooth selection.

You need to consider:

(1). The width of the cut. That is, the distance in the cut that each tooth must travel from the point it enters the workpiece until it leaves the workpiece.

(2). The shape of the workpiece.

• Squares, Rectangles, Flats (Symbol: ■)

Locate the width of cut on the chart. (Inches on the outer circle and millimeters on the inner circle.) Select the tooth pitch on the ring marked with the square shape which aligns with the width of cut.

EXAMPLE: 6" (150mm) square, use a 2/3 Vari-Tooth.

• Round Solids (Symbol: ●)

Locate the diameter of your workpiece on the chart. Select the tooth pitch on the ring marked with the round shape which aligns with the size of stock you are cutting.

EXAMPLE: 4" (100mm) round, use a 3/4 Vari-Tooth.

• Tubing, Pipe, Structurals (Symbol: O H ^)

Determine the average width of cut by dividing the area If the workpiece by the distance the saw blade must travel to finish the cut. Locate the average width of cut on the chart. Select the tooth ditch on the ring marked with the tubing and structural shape which aligns with the average width you are cutting.

EXAMPLE: 4" (100mm) outside diameter, 3" (75mm) inside diameter tubing.

4"(100mm)OD=12.5 sq.In.(79cm^2)

-3"(75mm)ID=7.0 sq.In.(44cm^2)

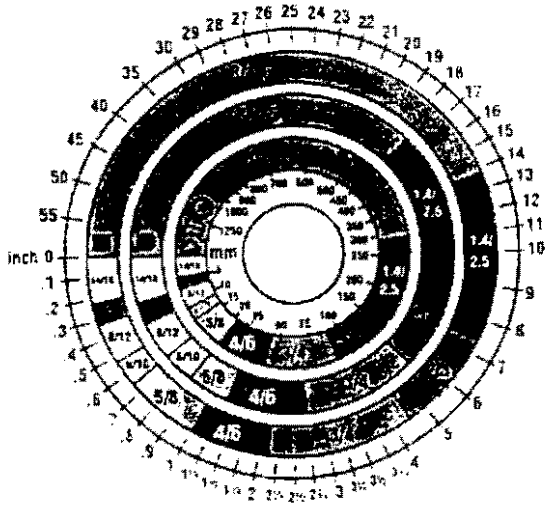
Area =5.5 sq.In.(35cm^2)

5.5 sq.In.(35cm^2) / 4" (100mm) distance=1.38 (35mm) average width

1.38" (35mm), use a 4/6 Vari-Tooth

NOTE: The band speed and cutting rate recommendations presented on this chart are approximations and are to be used as a starting point for most approximations. For exact sawing parameters' consult your saw blade supplier.

TOOTH SELECTION



8. BI-METAL SPEEDS AND FEEDS

These figures are a guide to cutting 4"(100mm) material (with a 3/4 Vari-Tooth) when using a cutting fluid.

Increase Band Speed: 15% When cutting 1/4"(6.4mm) material (10/14 Vari-Tooth)

12% When cutting 3/4"(19mm) material (6/10 Vari-Tooth)

10% When cutting 1-1/4"(32mm) material (5/8 Vari-Tooth)

5% When cutting 2-1/2"(64mm) material (4/6 Vari-Tooth)

Decrease Band Speed: 12% When cutting 8"(200mm) material (2/3 Vari-Tooth)

TELLTALE CHIPS

Chips are the best indicator of correct feed force. Monitor chip information and adjust feed accordingly.

Thin or powdered chips-increase feed rate or reduce band speed.

Burned heavy

Chips-reduce feed rate and/or band speed.

Curly silvery and warm chips-optimum feed rate and band speed.

9. OPERATION

A. WORK SET UP:

(1). Raise the saw head to vertical position.
(2). Open vise to accept the piece to be cut by rotating the wheel at the end the base.
(3). Place workpiece on saw bed. If the piece is long, support the end.
(4). Clamp workpieced securely in vise.

B. WORK STOP ADJUSTMENT:

(1). Loosen the thumb screw holding the work stop casting to the shaft.
(2). Adjust the work stop casting to the desired length position.
(3). Rotate the work stop to as close to the bottom of the cut as possible.
(4). Tighten thumbscrew.
(5). DO NOT ALLOW the blade to rest on the work while the motor is shut off.

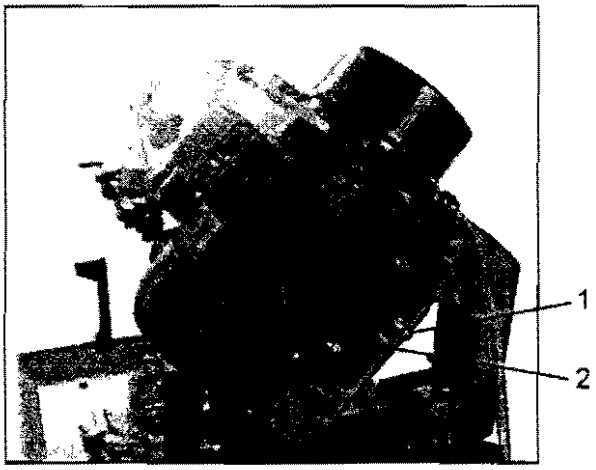
C. BLADE SPEEDS:

When using your band saw always change the blade speed to best suit the material being cut the material cutting sheet givers suggested settings for several materials.

material	Speed	M.P.M
	60Hz	50Hz
Tool, Stainless Alloy Steels Bearing Bronze	29	24
Medium to High Carbon Steels Hard Brass or Bronze	50	41
Low to Medium Carbon Steel Soft Brass	75	61
Aluminum Plastic	100	82

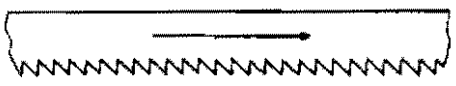
CHANGING BLADE SPEED

(1). Disconnect machine from the power source.
(2). Loose motor plate lock bolt (1, Fig.5).
(3). Loose motor plate slide bolt (2) until belt can be moved on the pulleys.
(4). Move belt to the desired pulley combination.
(5). Line up the belt and both pulleys such that the belt is running parallel in the pulley grooves.
(6). Place the belt into proper pulley combination for proper blade speed. See material cutting chart.
(7). Adjust the position of the Motor to obtain approximately 1/2" depression in the belt when applying pressure with your thumb.
(8). Tighten motor plate slide bolt (2) to re-tension belt.
(9). Tighten motor plate lock bolt (1).
(10). Connect machine to the power source.



D. BLADE DIRECTION OF TRAVEL:

Be sure the made is assembled to the pulleys such that the vertical edge engages the work piece first.
BLADE MOVEMENT



Blade Direction

E. COOLANT TANK PREPARATION

⚠ WARNING

Disconnect and saw from the power source bebre making any repairs or adjustments! Failure to comply may cause serious injury!

Use of a water-soluble coolant will increase cutting efficiency and prolong blade life. Do not use black cutting oil as a substitute. Change cutting oil often and follow manufacturers instructions as to its uses and precautions.

(1). Disconnect machine from the power source.

(2). Remove coolant return hose from tank cover.

(3). Slide tank out If saw base and carefully remove lid containing coolant pump.

(4). Fill tank to approximately 80% of capacity.

(5). Place lid back onto tank and place tank assembly back into base.

(6). Replace return hose back into hole in tank lid.

CAUTION: NEVER OPERATE SAW WITHOUT BLADE GUARDS IN PLACE.

Be sure the blade is not in contact with the work when the motor is started. Start the motor, allow the saw to come to full speed, then begin the cut by letting the head down slowly onto the work. DO NOT DROP OR FORCE. Let the weight of the saw head provide the cutting force. The saw automatically shuts off at the end of the cut.

F. BLADE SELECTION:

The choice of blade pitch is governed by the thinness of the work to be cut: the thinner the workpiece, the more teeth advised. A minimum of three (3) teeth should angage the workpiece at all times for proper cutting if the teeth of the blade are so far apart that they straddle the work, severe damage to the workpiece and to the made can result.

G. CHANGING BLADE:

Raise saw head to vertical position and open the blade guards. Loosen tension screw knob sufficiently to allow the saw blade to slip off the wheels. Install the new blade with teeth slanting toward the motor as follows:

(1). Place the blade in between each of the guide bearings.

(2). Slip the blade around the motor pulley (bottom) with the left hand and hold inposition.

(3). Hold the blade taut against the motor pulley by pulling the blade upward with the right hand which is placed at the top If the made.

(4). Remove left hand from bottom pulley and place is at the top aide of the made to continue the application on the upward pull on the blade.

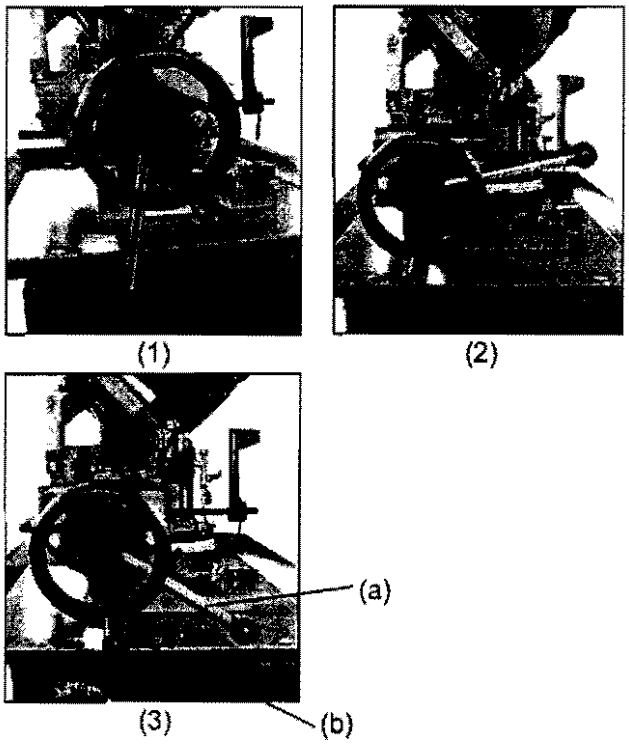
(5). Remove right hand from blade and adjust the position of the top pulley to permit left hand to slip the blade around the pulley using the thumb, index and little finger as guides.

(6). Adjust the blade tension knob clockwise until it is jus t right enough so no blade slippage occurs. Do not tighten excessively.

(7). Replace the blade guards.

(8). Place 2-3 drops If oil on the blade.

H. USAGE OF THE QUICK VISE:



(1). The position of the vise when tightened.

(2). The position If the vise when loosened. (Completely opened).

(3). The position of the vise when loosened. (Half opened).

TRU-LOCK VISE SYSTEM INSTRUCTIONS

To operate, proceed as follows:

(1). Rise the arm 2" above the workpiece, close the cylinder valve to maintain the arm 2" above the workpiece.

(2). Put your workpiece on the table. Move the vise handle (a) upwards to an angle of 45 degree (a-half opened) to loosen the vise. Move the vise jaw bracket against the workpiece by turning the wheel (b). push down on the vise handle (a) to lock the workpiece in position.

(3). To loosen the workpiece from the vise, hold the workpiece and lift the vise handle (a) to a 90 degree position (completely opened). Remove workpiece.

CONTINUED CUTTING

When you need to cut a workpiece many times, just raise the vise handle (a) to loosen and adjust workpiece position. Then push down on the same handle to tighten.

You can also push the vise handle (a) down first, then tightening the vise by turning the rectangular handle (b) clockwise. After finishing the cut, you can loosen the workpiece by turning rectangular handle only.

This Tru-Lock Vise System has a 3mm tightening travel when the wheel is completely opened. There is only a 1mm tightening travel necessary for normal metal materials. The operator can tighten the workpiece by pushing down the vise handle (a) with a certain amount of pressure depending on hardness of workpiece.

I. FRONT AND REAR CUTTING OPERATION:

(1). For front cutting: ←

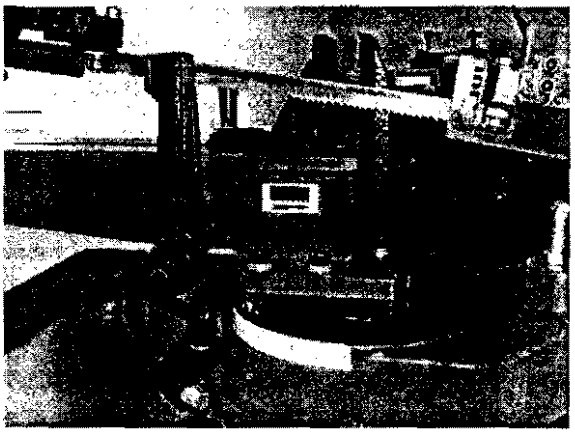
Push the vice base backward (far from you) to the end, fix the 3 vice base fix screws (**A**).

Choose the swivel arm angle you need start cutting.

(2). For rear cutting: →

Push the vice base backward (close to you) to the end, fix the 3 vice base fix screws (**A**).

Choose the swivel arm angle you need start cutting.



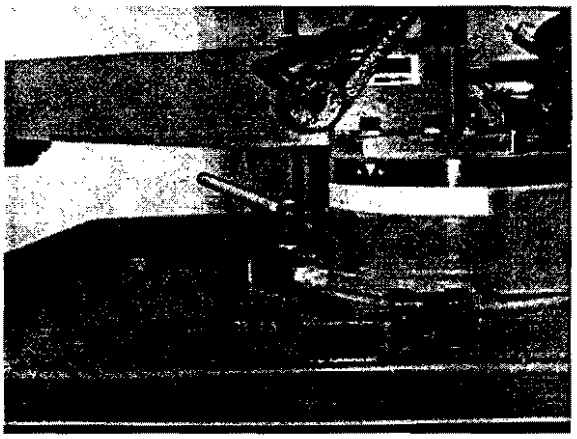
J. HOW TO OPERATE THE SWIVEL CUTTING

(1). Loosen the leaf screw (**A**).

(2). Move the swivel bow by the hand, watch the angle scale to desired angle.

(3). Lock the leaf screw (**A**).

(4). Adjust cylinder volume, and start cutting.



10. BLADE GUIDE BEARING ADJUSTMENT

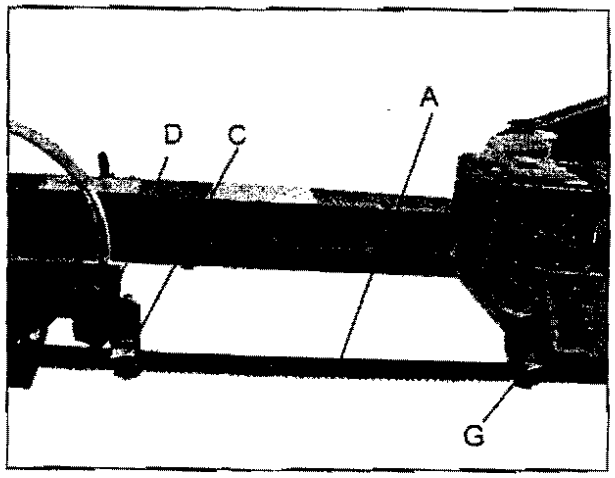
ATTENTION: this is the most important adjustment on your saw. It is impossible to get satisfactory work from your saw if the blade guides are not properly adjusted. The blade guide bearings on your metal. Cutting Band Saw are adjusted and power tested with several test cuts before leaving the factory to insure proper setting the need for adjustment should rarely occur when

the saw is used properly, if the guides do get out of adjustment though, it is extremely important to readjust immediately. If improper adjustment in maintained, the blade will not cut straight, and if the situation is not corrected it will cause serious blade damage, because guide adjustment is a critical factor in the performance of your saw, it is always best to try a new blade to see if this will correct poor cutting before beginning to adjust. If a blade becomes dull on one side sooner than the other, for example, it will begin cutting crooked. A blade change will correct this problem the guide adjustment will not. If a new blade does not correct the problem, chick the blade guides for proper spacing.

NOTE: There should be from 000 (just touching) 001 clearance between the blade and guide bearings to obtain this clearance adjust as follows:

(1). The inner guide bearing is fixed and cannot be adjusted.

(2). The outer guide bearing is mounted to an eccentric bushing and can be adjusted.



(3). Loosen the nut while holding the bolt with an alen wrench.

(4). Position the eccentric by turning the bolt to the desired position of clearance.

(5). Tighten the cut.

(6). Adjust the second blade guide bearing in the same manner.

REMARK:

(1). Adjust the tension of blade until the back of the blade (A) against the blade wheel (front) lightly.

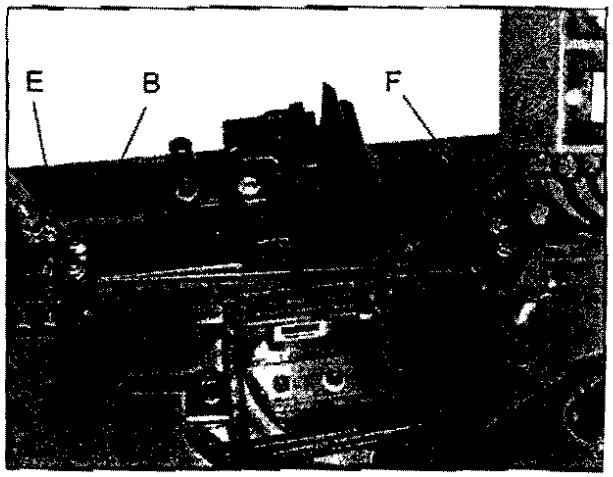
(2). Be sure the nut (E) is tightened.

(3). Turn the eccentric shaft (B) counterclockwise, when the bearing (D) touches the saw blade properly, tighten the nut (E).

(4). To adjust, loosen set screw (F) and move the blade adjustable up or down until it lightly touches the back of the blade (A).

(5). Repeat 1, 2, 3, and 4 steps to adjust the other side's blade guide bearings (G).

(6). Correct the base and blade to be a vertical position with a scale. If necessary, loosen set screw (F).



11. Blade Track Adjustment

(1). Open the blade guard.

(2). Remove the blade guide assemblies (top and bottom).

(3). Loosen the hex head screw in the tilting mechanism to a point where it is loose but smug.

(4). With the machine running, adjust both the set crew and blade tension knob simultaneously to keep constant tension on the blade. The set screw and blade tension knob are always turnec in opposite directions, I.e., when one is turnec clockwise the other is turned counterclockwise,

The blade is tracking properly when the back side just touches the shoulder of pulley or a slight gap appears near the center line of the pulley. Care should be taken not to over-tighten the saw blade since this will give a false adjustment and limit life of the blade.

(5). Tighten the hex head screw in tilting mechanism.

IMPORTANT: Sometimes in trying to make this critical adjustment it is possible to cause the basic setting to be misaligned. Should this occur, proceed as follows:

a. LOOSEN the set screw and back it out as far as it can go and still remain in the threaded hole.
b. Turn the hex head screw clockwise until it stops (do not tighten).
c. Turn the set screw clockwise until it bottoms, then continue for half a turn and check the tracking by turning on the machine.
d. If further adjustment is required, go back to step 4.

(6). Turn off power to the machine.

(7). Replace the blade guide assemblies--it may be necessary to loosen the blade tension a lightly.

(8). Adjust the vertical position If blade guide bearing assemblies so hat the back side of the blade just touches the ball bearing.

(9). Make a final run to check tracking. It required, touch up adjustment (See stop 4).

(10). Replace the blade guards.

12. MAINTENANCE

CAUTION: MAKE CERTAIN THAT THE UNIT IS DISCONNECTED FROM THE POWER SOURCE BEFORE ATTEMPTING TO SE RV ICE OR REMOVE ANY COMPONENT.

That's easier to keep machine in good condition or best performance by means of maintaining it at any time than remedy it after it is out of order.

(1). Daily Maintenance (by operator)

(a). Fill the lubricant before starting machine everyday.

(b). If the temperature of spindle caused over-heating or strange noise, stop machine immediately to cheek it for keeping accurate performance.

(c). Keep work area clean; release vise, cutter, work-piece from table; switch off power source; take chip or dust away from machine and follow instructions lubrication or coating rust proof oil before leaving.

(2) Weekly Maintenance

(a). Clean and coat the leading screw with oil.

(b). Check to see if sliding surface and turning parts lack of lubricant. If the lubricant is insufficient, fill it.

(3). Monthly Maintenance

(a). Deck if the fixed portion lave been loose.

(b). Lubricate bearing, worm, and worm shaft to avoid the wearing.

(4). Yearly Maintenance

(a). Adjust table to horizontal position for maintenance of accuracy.

(b). Check electric cord, plugs, switches at least once a year to avoid loosening or wearing.

13. LUBRICATION:

Lubricate the following components using SAE-30 oil as noted.

(1). Ball-bearing none.

(2). Driven pulley bearing 6-8 drops a week.

(3). Vise lead screw as needed.

(4). The drive gears run in an oil bath and will not require a lubricant change more often than once a year, unless the lubricant is accidentally contaminated or a leak occurs because of improper replacement of the gear box cover during the first few days of operation, the worm gear drive will run hot. Unless the temperature exceeds 200F., there is no cause for alarm.

The following lubricants may be used for- the gear box:

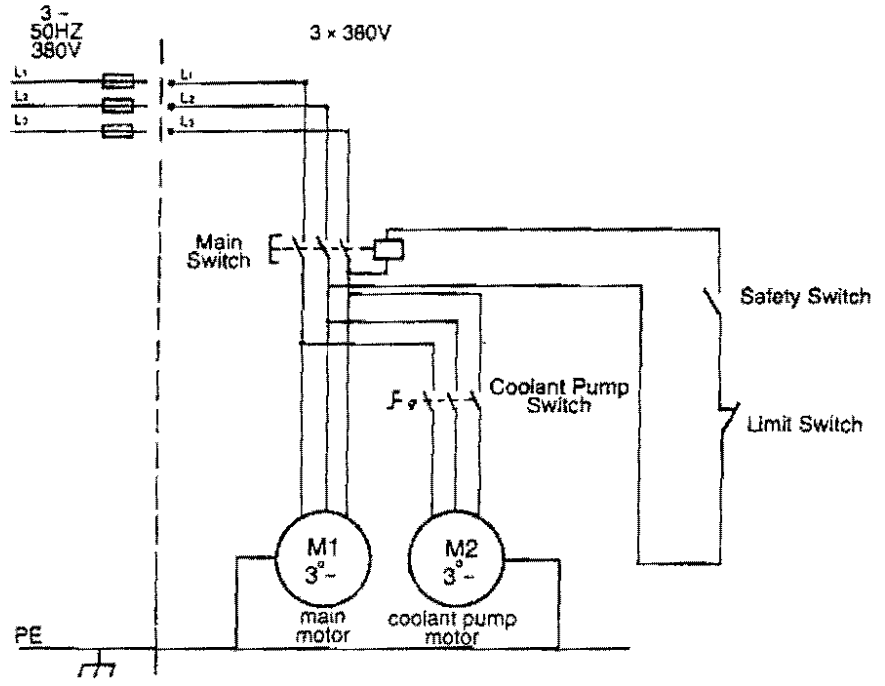
Atlantic Refinery Co. Mogul Cyl. Oil
Cities Service Optimums No.6
Gulf Refinery Co Medium Gear Oil
Pure oil Co. Park Clipper

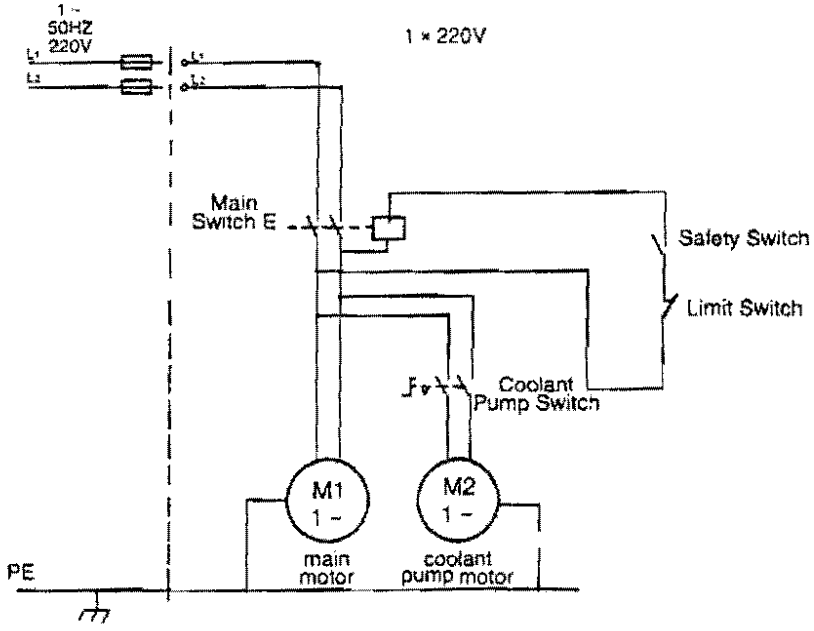
14. TROUBLE SHOOTING

Symptom	Possible Cause(s)	Corrective Action
Excessive Blade Breakage	1. Materials loosen in vise	1. Clamp work securely
	2. Incorrect speed or feed	2. Adjust speed or feed
	3. Blade teeth spacing too large	3. Replace with a small teeth spacing blade
	4. Material too coarse	4. Use a blade of slow speed and small teeth spacing
	5. Incorrect blade tension	5. Adjust to where blade just does not slip on wheel
	6. Teeth in contact with material before saw is started	6. Place blade in contact with work after motor is starred
	7. Blade rubs on wheel flange	7. Adjust wheel alignment
	8. Miss-aligned guide bearings	8. Adjust guide bearings
	9. Blade too thick	9. Use thinner blade
	10. Cracking at weld	10. Weld again, note the weld skill
Premature Blade Dulling	1. Teeth too coarse	1. Use finer teeth
	2. Too much speed	2. Decrease speed
	3. Inadequate feed pressure	3. Decrease spring tension on side of saw
	4. Hard spots or scale on material	4. Reduce speed, increase feed pressure
	5. Work hardening of material	5. Increase feed pressure by reducing spring tension
	6. Blade twist	6. Replace with a new blade, and adjust blade tension
	7. Insufficient blade	7. Tighten blade tension adjustable knob
	8. Blade slide	8. Tighten blade tension
Unusual Wear on Side/Back of Blade	1. Blade guides worn	1. Replace
	2. Blade guide bearings not adjust properly	2. Adjust as per operators manual
	3. Blade guide bearing bracket is loose	3. Tighten
Teeth Ripping from Blade	1. Tooth too coarse for work	1. Use finer tooth blade
	2. Too heavy pressure; too slow speed	2. Decrease pressure, increase speed
	3. Vibrating work-piece	3. Clamp work piece securely
	4. Gullets loading	4. Use coarser tooth blade or brush to remove chips
Motor running too hot	1. Blade tension too high	1. Reduce tension on blade
	2. Drive belt tension too high	2. Reduce tension on drive belt
	3. Blade is too coarse for work	3. Use finer blade
	4. Blade is too fine for work	4. Use coarse blade
	5. Gears aligned improperly	5. Adjust gears so that worm is in center of gear
	6. Gears need lubrication	6. Check oil path
	7. Cut is binding blade	7. Decrease reed anti speed

Bad Cuts (crooked)	1.Feed pressure too great	1. Reduce pressure by increasing spring tension on side of saw
	2.Guide bearings not adjusted properly	2. Adjust guide bearing, the clearance can not greater than 0.001
	3.Inadequate blade tension	3. Increase blade tension by adjust blade tension
	4.Dull blade	4. Replace blade
	5.Speed incorrect	5. Adjust speed
	6.Blade guides spaced out too much	6. Adjust guides space
	7.Blade guide assembly loose	7. Tighten
	8.Blade truck too far away from wheel flanges	8. Re-track blade according to operating instructions.
Bad Cuts (Rough)	1.Too much speed or feed	1. Decrease speed or feed
	2.Blade is too coarse	2. Replace with finer blade
	3.Blade tension loose	3. Adjust blade tension
Blade is twisting	1.Cut is binding blade	1. Decrease reed pressure
	2.Too much blade tension	2. Decrease blade tension

15. CIRCUIT DIAGRAM



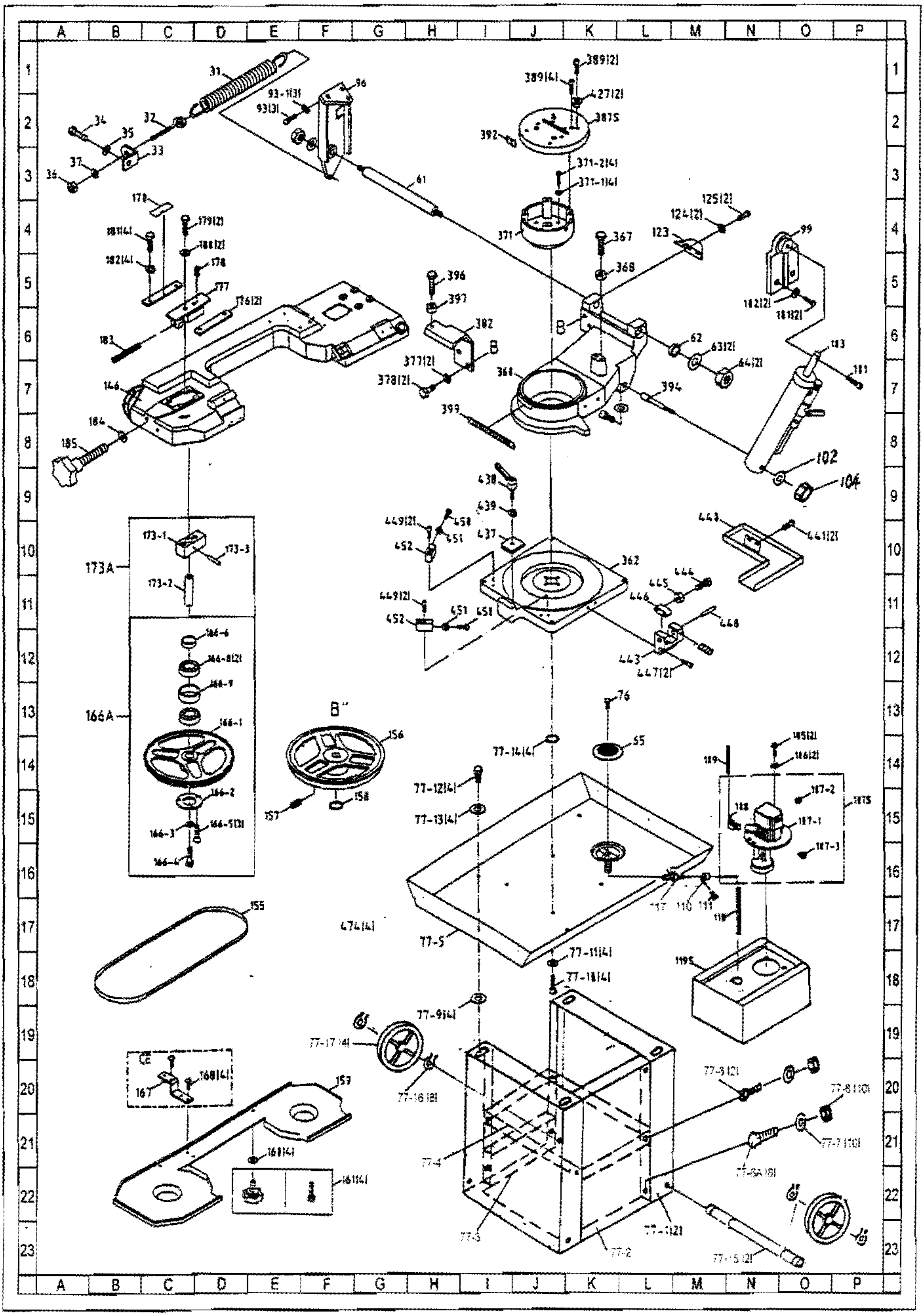


Grounding:

The grounding of this model is carried out by connecting the yellow/green terminal of supply cable to the grounding terminal of power source. Be sure to ground your machine before connecting machine to power source in any situation.

WARNING!

Do not disconnect grounding terminal before disconnecting power source.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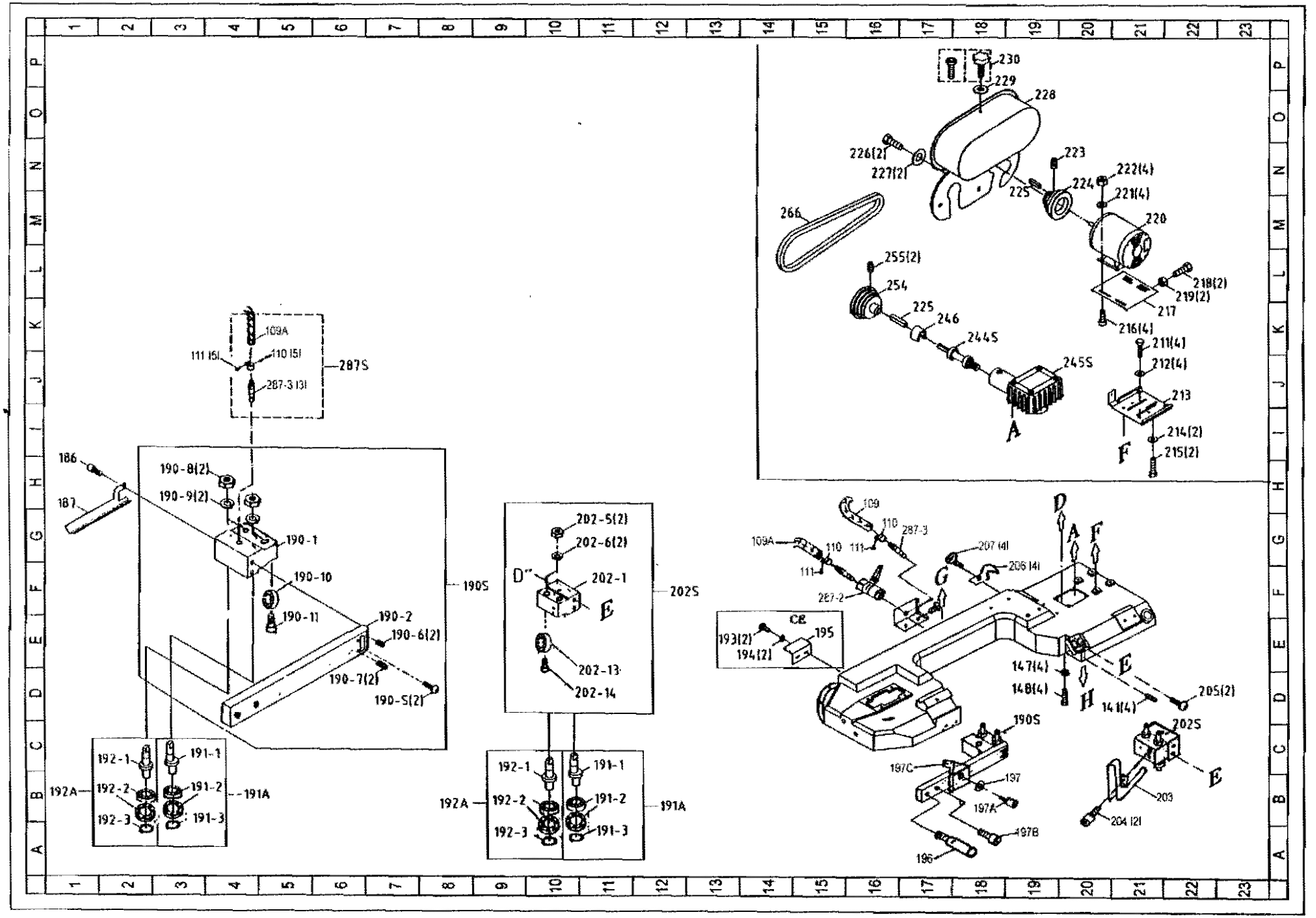
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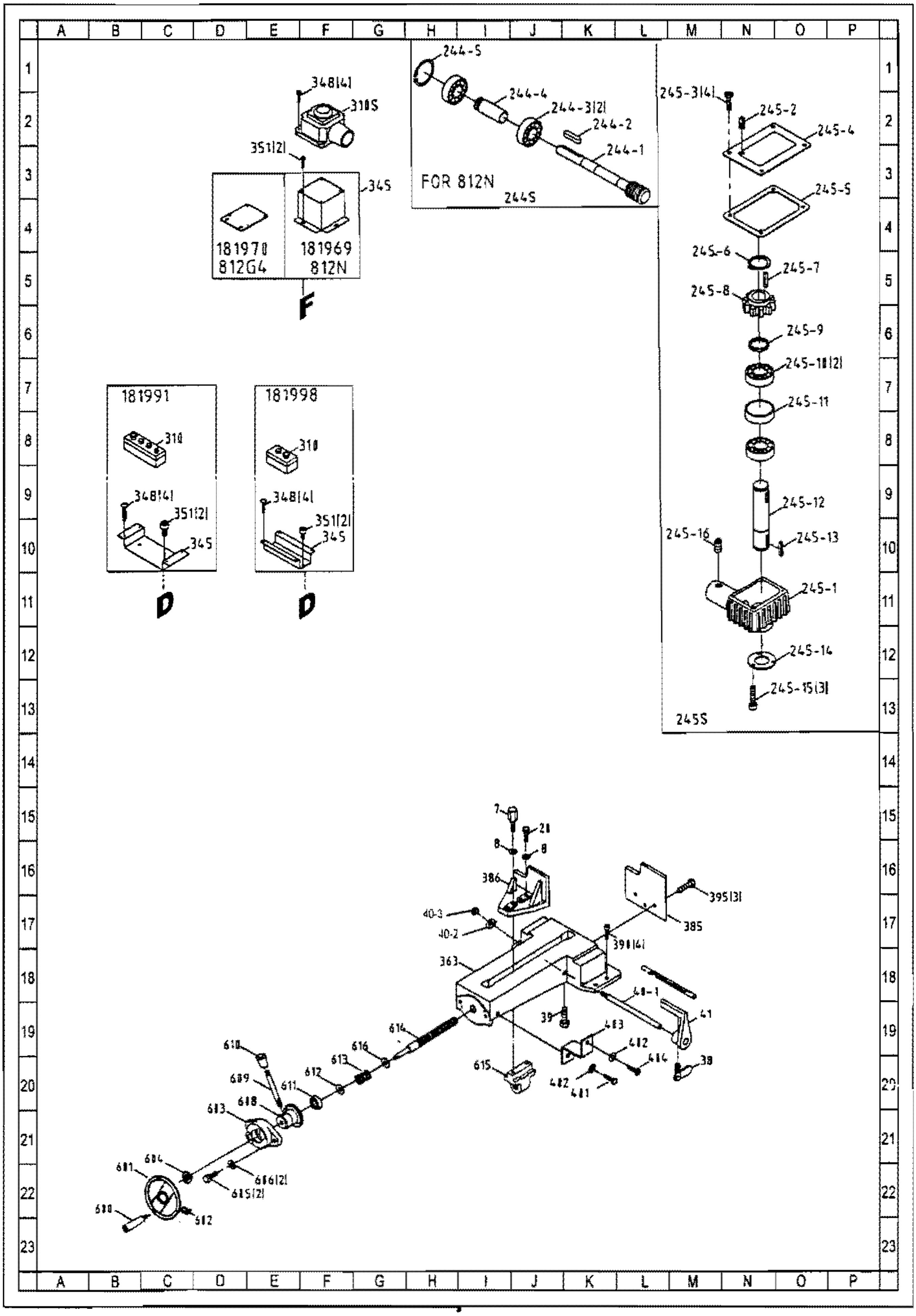

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PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
7		Fixed Bolt		1	
8		Washer	3/8"x25xt2	2	
20		Hex. Head Screw	3/8"x1-1/2"L	1	
31		Spring		1	
32		Spring Adjusting Screw		1	
33		Spring Bracket		1	
34		Hex. Head Screw	5/16"x3/4"L	1	
35		Washer	5/16"x23xt2	1	
36		Hex.Nut	3/8"	1	
37		Washer	3/8"x23xt2	1	
38		Thumb Screw		1	
39		Hex. Head Screw	5/16"x3/4"L	1	
40-1		Stock Stop Rod		1	
40-2		Washer 8		1	
40-3		Nut M8		1	
41		Stop Block		1	
61		Suppot Rod		1	
62		Bushing		1	
63		Washer	1/2"x28xt2	2	
64		Net	1/2"-12	2	
65		Filter		1	
76		Hex. Head Screw	1/4"-20*1/2"L	1	
77S		Stand Complete Assembly		1	
77-1		Stand Leg(Right)(Left)		2	
77-2		Stand Leg(Front)		1	
77-3		Stand Leg(Back)		1	
77-4		Middle Plate Of Stand		1	
77-5		Chip Pan		1	
77-6		Hex. Socket Head Screw	M8-1.25Px20L	2	
77-6A		Screw	M8-1.25Px12L	8	
77-7		Washer	8.5*18-1.6t(M8)	10	
77-8		Hex.Nut	M8	10	
77-9		Rubber Washer	ϕ 11*22-2	4	
77-10		Hex. Socket Head Screw	M8-1.25Px20L	4	
77-11		Washer	M8x23xt2	4	
77-12		Hex. Head Screw	M10X20L	4	
77-13		Washer	M10X20Xt2	4	
77-14		O-Retainer Ring	ϕ 2x ϕ 10	4	
77-15		Wheel Rod		2	
77-16		C-ring 16		8	
77-17		Wheel		2	

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
93		Hex.Socket Head Screw	3/8"-16*1-1/4"L	3	
93-1		Spring Washer	3/8"-16	3	
96		Rear Pivot Bracket		1	
99		Cylinder Upper Support		1	
101		Hex.Socket Head Screw	3/8"x2-1/4"L	1	
102		Washer	3/8"x23xt2	1	
103		Cylinder Complete Set		1	
104		Nut	M8	1	
105		Cross Round Head Screw	1/4"-20*5/8"L	2	
106		Washer	1/4"x19xt1.5	2	
107-1		Pump	115V/230V	1	
107-2		Cable Gland	PG11	1	
107-3		Lock Switch		1	
108		Coupler	PT3/8x1/4"	1	
109		Hose	0D12xID8x2000	1	
109A		Hose	0D12xID8x500	1	
110		Hose Clip	5/8"	5	
111		Cross Round Head Screw	3/16"x3/8"	5	
117		Pipe Fitting	1/4"	1	
118		Hose	OD16xID13x260	1	
119S		Coolant Tank		1	
123		Power Cutting Bracket		1	
124		Washer	M5	2	
125		Cross Round Head Screw	M5x10L	2	
141		Hex. Socket Headles Screw	M6-1.0P*15L	4	
146		Body Frame		1	
147		Spring Washer	3/8"-16	4	
148		Hex. Head Screw	3/8"-16*1-1/4"L	4	
155		Blade		1	
156		Drive Wheel		1	
157		Hex. Socker Headless Screw	1/4"-20*1/2"L	1	
158		C-Retainer Ring	S25	1	
159		Blade Back Cover		1	
160		Washer	1/4"x16xt1.5	4	
161		Knob		4	
166A		Idler Wheel Assembly		1	
166-1		Idler Wheel		1	
166-2		Bearing Cover		1	
166-3		Washer	5/16"x18xt1.5	1	
166-4		Hex. Head Screw	5/16"-18*3/4"L	1	
166-5		Flat Cross Head Screw	3/16"x3/8"L	3	

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
166-6		Bushing		1	
166-8		Bearing		2	
166-9		Bushing		1	
167		Bracket, For CE Only		1	For CE Only
168		Cross Round Head Screw	M4-0.7Px5L	4	For CE Only
170		Tension Indication Plate		1	
173A		Shaft Assembly		1	
173-1		Sliding Plate Draw Block		1	
173-2		Blade Wheel Shaft		1	
173-3		Pin	ϕ 4x22L	1	
176		Sliding Plate		2	
177		Blade Tension Sliding Block		1	
178		Hex. Socker Headless Screw	5/16"-18*3/4"L	1	
179		Hex. Head Screw	5/16"-18*1-1/2"L	2	
180		Washer	5/16"x12xt2	2	
181		Hex. Head Screw	5/16"-18*3/4"L	4	
182		Spring Washer	5/16"-18	4	
183		Spring		1	
184		Washer	3/8"x25xt2	1	
185		Blade Adjustable Knob		1	
186		Cross Round Head Screw	1/4"-20*3/8"L	1	
187		Blade Cover		1	
190S		Blade Adjustable Assembly		1	
190-1		Blade Adjustable		1	
190-2		Adjustable Bracket(Front)		1	
190-5		Button Head Screw	M8X25L	2	
190-6		Hex. Socker Headless Screw	M6-1.0P*10L	2	
190-7		Hex. Socker Headless Screw	M6-1.0P*15L	2	
190-8		Hex.Nut	M10-1.0P	2	
190-9		Spring Washer	M10	2	
190-10		Bearing		1	
190-11		Hex. Socker Head Screw	1/4"-20*3/4"L	1	
191A		Eccertric Shaft Assembly		2	
191-1		Eccertric Shaft		2	
191-2		Bearing		4	
191-3		C-Retaniner Ring	S10	2	
192A		Bearing Shaft Assembly		2	
192-1		Bearing Shaft		2	
192-2		Bearing		4	
192-3		C-Retaniner Ring	S10	2	
193		Cross Round Head Screw	M4-0.7Px10L	2	For CE Only

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
194		Washer	M5	2	For CE Only
195		Switch Base		1	For CE Only
196		Grip		1	
197		Washer	3/8"x25xt2	1	
197A		Hex. Socket Cap Screw	M10x45	1	
197B		Hex. Socket Cap Screw	M6x8	1	
197C		Setting Bracket		1	
202S		Blade Adjustable Assembly(Rear)		1	
202-1		Blade Adjustable(Rear)		1	
202-5		Hex. Nut	M10-1.0P	2	
202-6		Spring Washer	M10	2	
202-13		Bearing		1	
202-14		Hex. Socket Head Screw	M8x20	1	
203		Blade Guard		1	
204		Hex. Socket Cap Screw	M6x8	2	
205		Button Head Screw	M8x25L	2	
206		Wire Retainer		4	
207		Cross Round Head Screw	M5x6	4	
211		Hex. Head Screw	5/16"-18x3/4"L	4	
212		Washer	5/16"x23xt2	4	
213		Motor Mount Bracket		1	
214		Wahser	5/16"x23xt3	2	
215		Hex. Head Screw	5/16"-18x3/4"L	2	
216		Carriage Screw	5/16"-18x3/4"L	4	
217		Motor Mount Plate		1	
218		Hex. Head Screw	5/16"-18x1"L	2	
219		Hex. Nut	5/16"-18	2	
220		Motor		1	
221		Washer	5/16"x23xt2	4	
222		Hex. Nut	5/16"-18	4	
223		Hex. Socker Headless Screw	1/4"-20x3/8"L	1	
224		Motor Pulley		1	
225		Key	5x5x30L	2	

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
226		Cross Socker Hex. Head Screw	1/4"x1/2"L	2	
227		Washer	1/4"x19xt1.5	2	
228		Motor Pulley Cover		1	
229		Washer	1/4"x16x1.5	1	
230		Plum handle		1	
244S		Worm Gear Shaft Assembly		1	
244-1		Worm Shaft		1	
244-2		Key	5x5x30L	1	
244-3		Bearing		2	
244-4		Bearing Bushing		1	
244-5		C-Retaniner Ring	R17	1	
245S		Gear Box Assembly		1	
245-1		Gear Box		1	
245-2		Vent Plug	M8xPl	1	
245-3		Cross Socker Hex. Head Screw	1/4"-20x5/8"L	4	
245-4		Gear Box Cover		1	
245-5		Gear Box Gasket		1	
245-6		C-Retaniner Ring	S25	1	
245-7		Key	6x6x20L	2	
245-8		Worm Gear		1	
245-9		Bushing		1	
245-10		Bearing		2	
245-11		Bushing		1	
245-12		Transmission Wheel Shaft		1	
245-13		Key	6x6x20L	1	
245-14		Bearing Cover		1	
245-15		Cross Round Head Screw	3/16"x3/8"L	3	
245-16		Hex. Socker Headlees Screw	3/16"x3/8"L	1	
246		Cover		1	
254		Spindle Pulley		1	
255		Hex. Socker Headless Screw	1/4"-20x3/8"L	2	
266		Belt	3Vx270	1	
287S		Valve Assembly		1	
287-2		Valve	PT1/8"X1/8"	1	
287-3		Jet Pipe		1	
345		Emergency Switch Bracket			For CE Only
345		Control Box Base		1	
348		Cross Round Head Screw	M6x12L	4	
351		Hex. Socket Head Screw	M6-1.0Px10L	2	

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
360		Swivel Arm		1	
362		Swivel Base		1	
363		Vise Base		1	
367		Bolt	1/2"x2-1/2"L	1	
368		Hex. Nut	1/2"	1	
371		Fixed Shaft		1	
371-1		Spring Washer	3/8"	4	
371-2		Hex. Socket Head Screw	3/8"x1-1/2"L	4	
377		Washer	5/16"x18xt1.5	2	
378		Hex. Head Screw	5/16"x3/4"L	2	
382		Bracket		1	
385		Vise Jaw Bracket(Rear)		1	
386		Vise Jaw Bracket(Front)		1	
387S		Cap		1	
387-1		Cap		1	
387-2		Key		1	
387-3		Pin	ϕ 5x15L	2	
389		Hex. Socket Head Screw	M8x25L	6	
390		Hex. Socket Head Screw	M10x30L	4	
392		Meter Indicator		1	
394		Cylinder Lower Support		1	
395		Hex. Head Screw	5/16"x1-1/4"L	3	
396		Hex. Head Screw	5/16"x1-1/4"L	1	
397		Hex. Nut	5/16"	1	
399		Degree-Meter		1	
401		Screw	5/16"x3/4"L	1	
402		Washer	5/16"x23xt2	2	
403		Fixed Plate		1	
404		Hex. Head Screw	5/16"x3/4"L	1	
437		Swivel Arm Briquette		1	
438		Knob		1	
439		Spring Washer	3/8"	1	
440		Splash Board		1	
441		Cross Round Head Screw	5/16"x1/2"L	2	
443		Protractor Locating Bracket		1	
444		Hexagon head screw	3/8"x2"L	1	
445		Hex. Nut	3/8"	1	
446		Protractor Locating Block		1	
447		Hexagon screw	5/16"x1/2"L	2	
448		Bearing Pin		1	
449		Hex. Socket Head Screw	1/4"x1-1/4"L	4	

PARTS LIST

CODE NO	PART NO	DESCRIPTION	SPECIFICATION	QTY	NOTE
450		Hexagon head screw	3/8"x2"L	2	
451		Hex. Nut	3/8"	2	
452		Swivel Locating Block		2	
427		Fix Block		2	
474		Snap Bushing	HP19	4	
600		Knob		1	
601		Knob		1	
602		Hex. Socket Headless Screw	5/16"-18X1/2"L	1	
603		Presure Lump		1	
604		Washer	ϕ 12xt2	1	
605		Hex. Head Screw	3/8"xI-1/4"L	2	
606		Washer	3/8"x20xt2	2	
608		Presure Shaft		1	
609		Knob W/Shaft		1	
610		Plastic Round Knob	\RF31\	1	
611		Bearing		1	
612		Washer	ϕ 12xt2	1	
613		Spring		1	
614		Acme Screw		1	
615		Acme Nut		1	
616		Washer	1/2"x28xt2	1	

NOTES

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