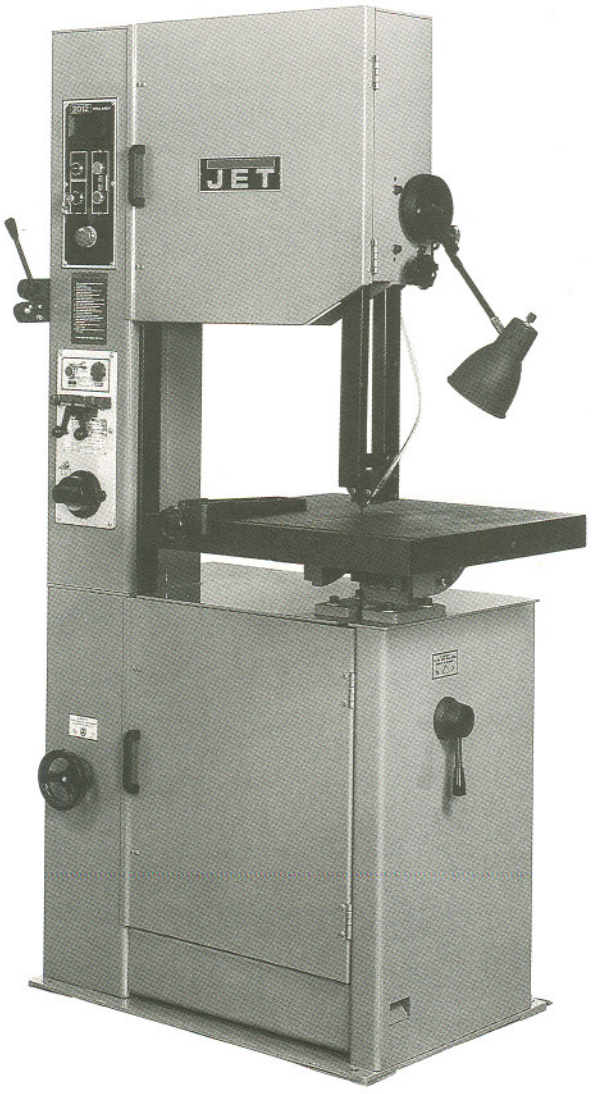
JET

EQUIPMENT & TOOLS

OPERATOR'S MANUAL

VBS-2012 Bandsaw



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Important Information

1 YEAR
LIMITED WARRANTY

JET offers a one year warranty on all products

REPLACEMENT PARTS

Replacement parts for this tool are available directly from JET Equipment & Tools.
To place an order call **1-800-274-6844**. Please have the following information ready:

1. Visa, MasterCard or Discover Card number
2. Expiration date
3. Part number listed within this manual
4. Shipping address other than a Post Office box

REPLACEMENT PARTS WARRANTY

JET Equipment & Tools makes every effort to assure that parts meet high quality and durability standards and warrants to the original retail consumer/purchaser of our parts that each such part(s) be free from defects in materials and workmanship for a period of thirty (30) days from the date of purchase.

PROOF OF PURCHASE

Please retain your dated sales receipt as proof of purchase to validate the warranty period.

LIMITED TOOL AND EQUIPMENT WARRANTY

JET makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follows: 1 YEAR LIMITED WARRANTY ON ALL JET PRODUCTS. Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to a lack of maintenance. JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD SPECIFIED ABOVE FROM THE DATE THE PRODUCT WAS PURCHASED AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. JET SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY OR FOR INCIDENTAL, CONTINGENT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. To take advantage of this warranty, the product or part must be returned for examination, postage prepaid, to an authorized service station designated by our Tacoma office. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, JET will either repair or replace the product or refund the purchase price, if we cannot readily and quickly provide a repair or replacement, if you are willing to accept such refund. JET will return repaired product or replacement at JET's expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of JET's warranty, then the user must bear the cost of storing and returning the product. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

JET Equipment & Tools, P.O. Box 1477, Tacoma, WA 98401-1477: (206) 572-5000.

Specifications: VBS-2012

Stock Number	414482
Blade Speeds	65-3,280 SFPM
Maximum Capacity	
Thickness	12"
Width	20"
Table Size	24" x 22-1/2"
Blade Length (min.-max.)	150-1/2" - 156-1/2"
Table Tilt	8° F and B
	15° R and 12° L
Welder Capacity	5/16" - 3/4"
Table Height	39-1/2"
Overall Height	79"
Blade Width (min.-max.)	1/8" - 1"
Motor	2HP, 3Ph
	230/460V, prewired 230V
Floor Space Required	42" x 29"
Net Weight (approx.)	1,210 Lbs.
Shipping Weight (approx.)	1,310 Lbs.

Table of Contents

Uncrating and Assembly

1. Finish uncrating the bandsaw. Contact your distributor if any damage has occurred during shipping.

2. Remove any preservative with kerosene or diesel oil. Do not use gasoline, paint thinner, or any cellulose-based product. These will damage painted surfaces.

3. Remove two hex cap screws from left side of the vertical column. Attach shear assembly (A) to column by inserting hex cap screws. Figure 1.

4. Place rip fence onto table and lock.

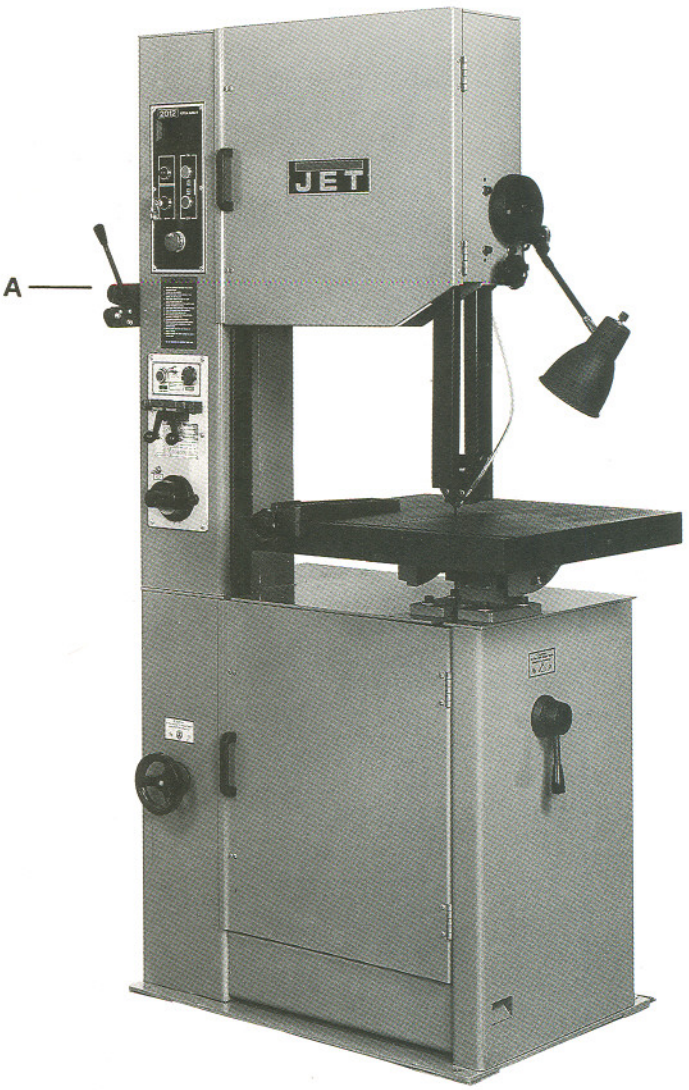


Fig. 1

Installation

1. Remove four nuts and washers holding the bandsaw to the shipping crate bottom.

2. Using the lifting ring located on the top of the saw, lift the bandsaw into it's permanent location. For best performance, the bandsaw should be bolted to the floor after a level position has been found.

3. Using a square, adjust the table 90 degrees to the blade both front to back and side to side. Loosen the hex cap screws below the table to move it and tighten to hold the table in place. If necessary, adjust the pointers to zero should they read different once the table is perpendicular to the blade in both directions.

4. To level the machine, place a machinist's level on the table and observe in both directions.

5. Use metal shims under the appropriate hold down screw. Tighten screw and recheck for level.

6. Adjust with additional shims, as required, until the table is level when all mounting screws (or nuts) are tight.

Connecting to Power Supply

⚠ WARNING

All electrical connections must be done by a qualified electrician. Failure to comply may cause 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!

The VBS-2012 bandsaw is rated at 230/460V and comes from the factory prewired 230V.

To switch to 460V operation, follow the wiring diagram found on the inside cover of the motor junction box. Jumper wires on the circuit board will have to switched also. Remove the control panel from the saw body and change the jumper wires according to the list on the electrical schematic (page 22).

The bandsaw must be grounded. A qualified electrician can make the proper electrical connections and confirm the power on site is compatible with the saw.

Before hooking up to the power source, make sure the switch is in the off position.

Controls

Low/High Range Shift Lever - (A, Fig. 2) - located on right side of machine base. Pull toward the front of the machine to shift into the low speed range. Push toward the rear of the machine to shift into the high speed range. **Caution:** Do not change the speed range while the machine is running. Adjust only when the machine is stopped.

Variable Speed Hand Wheel (B, Fig. 2) - located below work table on left side of machine base. Turn clockwise to increase speed and counter-clockwise to decrease speed. **Caution:** Do not turn handle while machine is stopped. Adjust speed only when machine is running.

Upper Blade Guide Lock Knob (C, Fig. 2) - located on right side of upper arm. Turn counter-clockwise to loosen and clockwise to tighten.

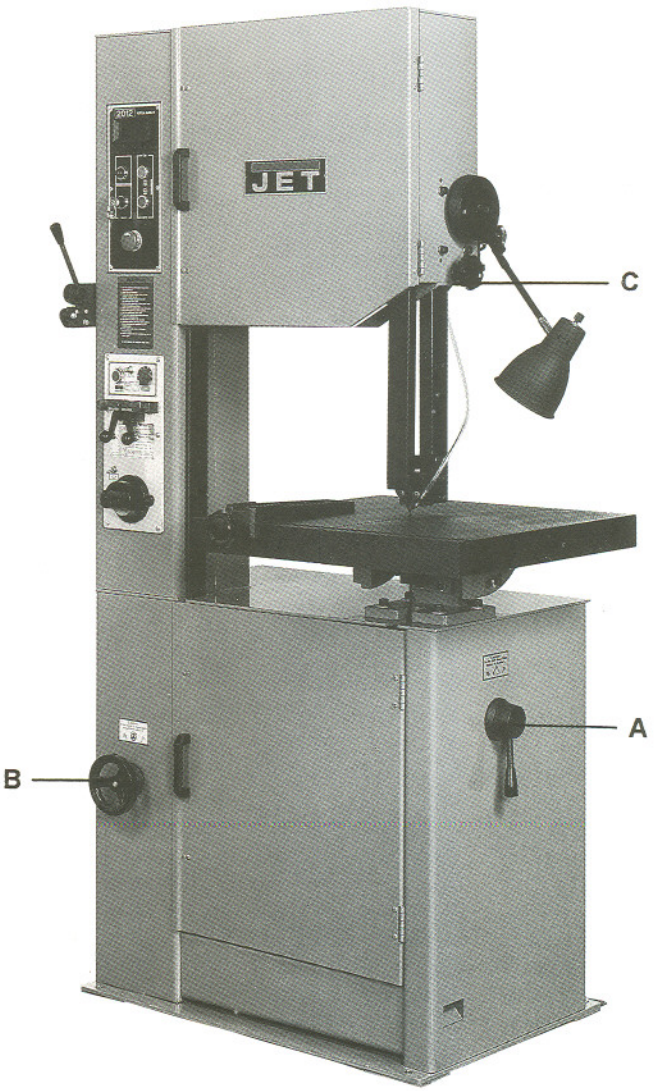


Fig. 2

Upper Blade Guide Handwheel (A, Fig. 3) - located on the upper right side of the saw. Turn clockwise to raise the blade guide assembly. Turn counter-clockwise to lower.

Work Lamp Switch (B, Fig. 3) - on top of lamp shade; turns lamp on and off.

Shear Lever (C, Fig. 3) - located on upper column. UP position allows insertion of blade end into shear. Pull lever DOWN to cut blade.

Main Motor Start Switch (A, Fig. 4) - located on control panel. Depress to start bandsaw.

Main Motor Stop Switch (B, Fig. 4) - located on control panel. Depress to stop bandsaw.

Power Indicator Light (C, Fig. 4) - located on control panel. Indicates that power to the control panel is on.

Key Lock Switch (D, Fig. 4) - located on control panel. Turn to 12 o'clock position and remove key to lock out power from the control panel. Insert key and turn to the three o'clock position to turn on power to the control panel.

Emergency Stop Switch (E, Fig. 4) - located on the control panel. Press to stop machine. Turn 90° to reset.

Digital Readout (F, Fig. 4) - located on the control panel. Indicates blade speed in feet per minute: **Note**: after the saw is first started or the speed has been changed, allow a least a minute for the readout to stabilize to the new setting.

Grinder Toggle Switch (A, Fig. 5) - located on blade welder panel found on column front. Flip switch up to start grinder; flip down to stop grinder.

Weld Button (B, Fig. 5) - located on blade welder panel found on column front. Depress and hold to start welding. Shuts off automatically when weld is done. Release when weld is completed.

Anneal Button (C, Fig. 5) - located on blade welder panel found on column front. Depress and hold to anneal blade, release to stop.

Blade Clamp Pressure Knob (D, Fig. 5) - located on blade welder panel found on column front. Sets pressure for different width blades.

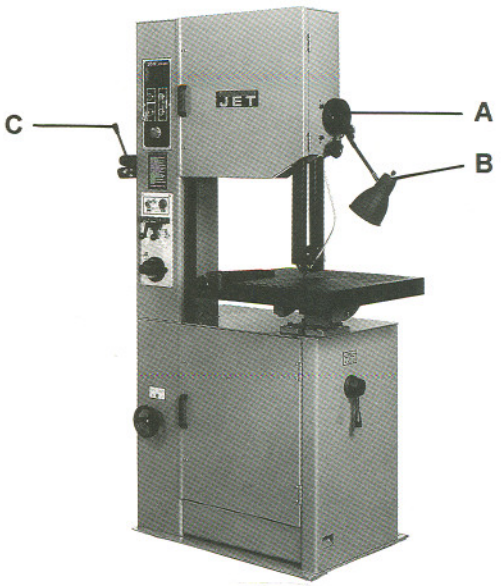


Fig.3

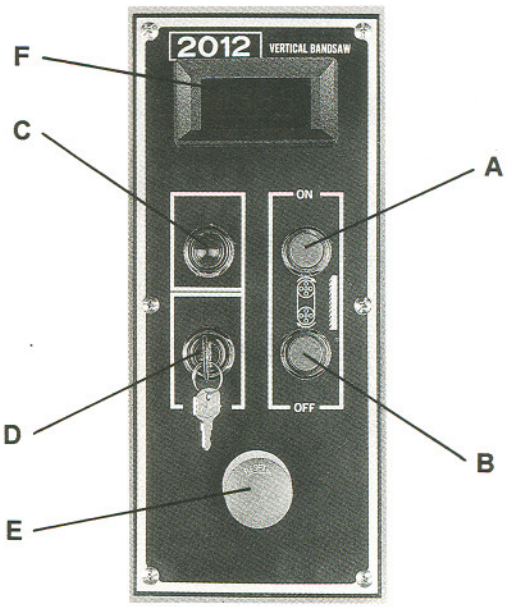


Fig. 4

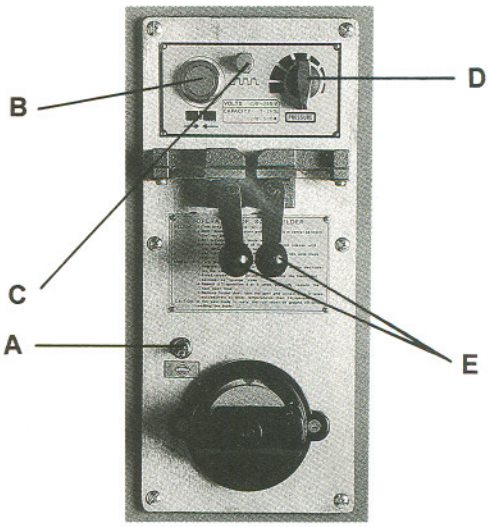


Fig. 5

Blade Clamps (E, Fig. 5) - located on blade welder panel found on column front. DOWN position allows insertion of blade into clamp. UP position locks blade.

Blade Tension Handwheel (A, Fig. 6) - located on underside of upper frame. Turn clockwise to tension blade; counter-clockwise to release tension on blade.

Blade Tracking Handwheel (B Fig. 6) - located at the upper rear of the saw. Turn clockwise to track blade toward front of the blade wheel Turn counter-clockwise to track blade toward rear of the blade wheel.

Table Tilt Mechanism - located under work table. To tilt table left or right, loosen two hex cap screws (A, Fig. 7) at rear of mechanism. To level table front to back, loosen four hex cap screws (A, Fig. 8) on either side of mechanism.

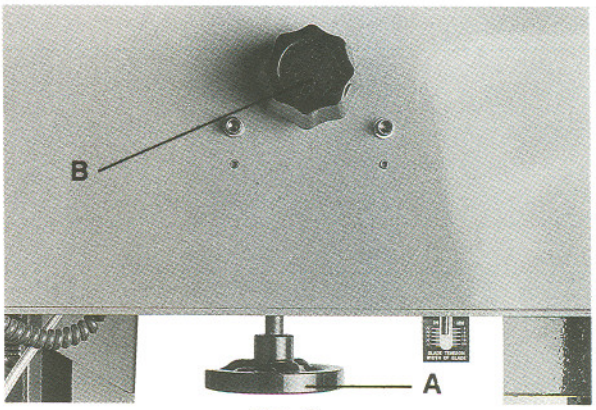


Fig. 6

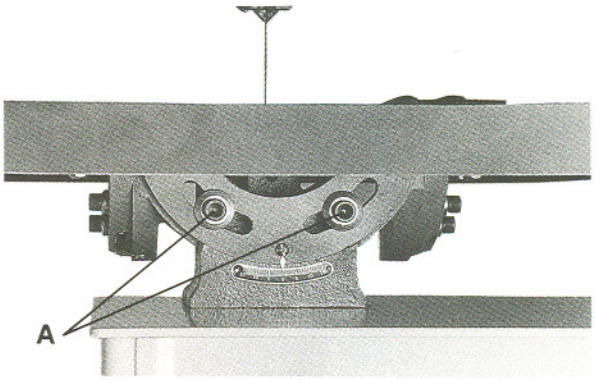


Fig. 7

Adjustments

⚠ WARNING

All adjustments or repairs to the machine must be done with the power off and the machine disconnected from the power source. Failure to comply may cause serious injury!

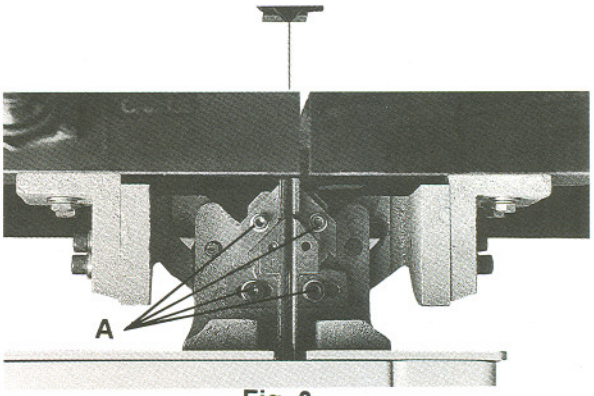


Fig. 8

Blade Tensioning

1. Raise upper blade guide by loosening lock knob (A, Fig. 9) and turning blade guide handwheel (B) clockwise until it stops.
2. Apply finger pressure to the blade. Travel from vertical should be approximately 3/8" each way.
3. To tighten blade, turn handwheel (A, Fig. 6) clockwise.
4. To loosen blade, turn handwheel counter-clockwise.

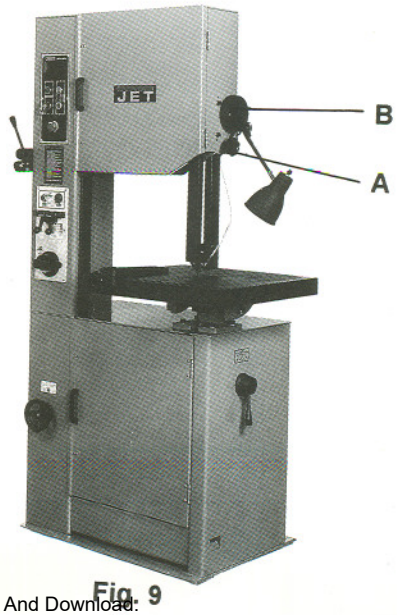


Fig. 9

5. Use the blade tension indicator (B, Fig. 10) as reference only. Blade should be tensioned using the finger pressure method.

Blade Tracking

Blade tracking may be required from time to time depending on the blade size and tension. The blade must be tensioned as outlined on page 5 under "Blade Tensioning". Disconnect the machine from the power source and open both blade wheel doors. Shift the high-low gear box lever into the neutral position. Turn the upper blade wheel by hand while observing blade position on the upper blade wheel. If adjustment is necessary:

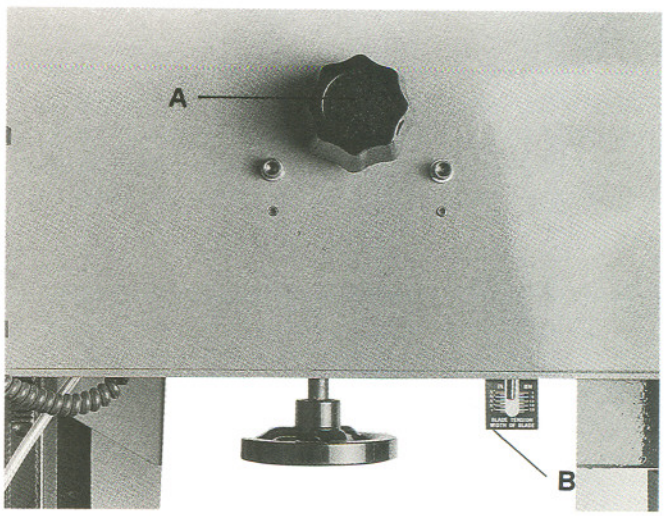


Fig. 10

1. Turn blade tracking knob (A, Fig. 10) clockwise to track blade toward front of blade wheel.

2. Turn counter-clockwise to track blade toward rear of blade wheel. Blade should be tracked as close to the center of the top blade wheel as possible.

Note: Upper and lower blade guides should be moved away and left loose from the blade while tracking adjustments are being made.

Blade Guide Adjustment

⚠ CAUTION

Blade guides must be properly adjusted or damage may occur to the blade and/or the guides.

⚠ WARNING

Air nozzle has been removed to show detail. Always operate saw with the air nozzle in place and properly adjusted. Failure to comply may cause serious injury!

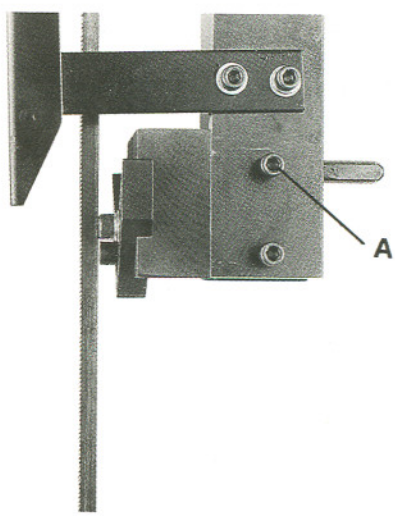


Fig. 11

1. Loosen lock knob (A, Fig. 9) and turn blade guide handwheel (B, Fig. 9) until blade guide assembly is half way between table and head, then tighten lock knob (A, Fig. 9).

2. Loosen screw (A, Fig. 11) and slide blade guide assembly away from the blade until it stops.

3. Loosen screw (A, Fig. 12). Slide blade stop (B, Fig. 12) toward blade until a gap of 1/32" remains. Tighten screw (A, Fig. 12).

4. Slide blade guide assembly toward blade until blade guides are behind gullets as in Fig. 13. Tighten screw (A, Fig. 13)

5. Open the upper access door and rotate the blade wheel by hand until the weld portion of the blade is between the two fingers.

6. Loosen two hex cap screws (B, Fig. 12) and adjust each finger toward the blade. They should not touch the blade. Adjust for .010" clearance on either side.

7. Tighten two hex cap screws (B, Fig. 12) once proper adjustment has been made.

8. Adjust lower blade guide in the same manner.

9. Even properly adjusted blade guides will show wear after continual use. Re-adjust as necessary.

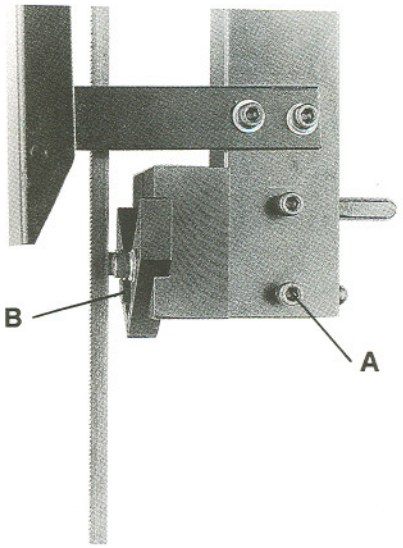


Fig. 12

Top Guide Adjustment

Always position the top guide to within an 1/8" of the top surface of the workpiece. This minimizes exposure of the operator's hands to the saw blade.

Changing Saw Blades

1. Disconnect saw from the power source.

2. Move the upper blade guide to its highest position and lock in place.

3. Open both wheel doors. Turn the tension adjustment handwheel counter-clockwise to loosen tension on the blade.

4. Remove the blade guard from the column. Remove the blade from both wheels and maneuver it around the protective shield on the upper blade guide.

5. Install new blade by maneuvering around blade shield on the upper blade guide.

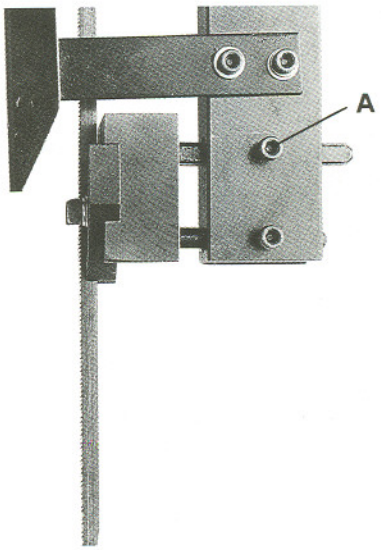


Fig. 13

6. Place it between the fingers of both blade guides and onto both wheels. Position next to both wheel flanges. Make sure teeth point down toward the table.

7. Be sure that blade rests against ball bearing (A, Fig. 13), not behind it.

8. Replace blade guard on column.

9. Tension the saw blade by turning tension hand wheel. Rotate the wheel by hand and make sure the blade is properly seated in the blade guides. Blade guides will have to be adjusted if the replacement blade is a different type and width.

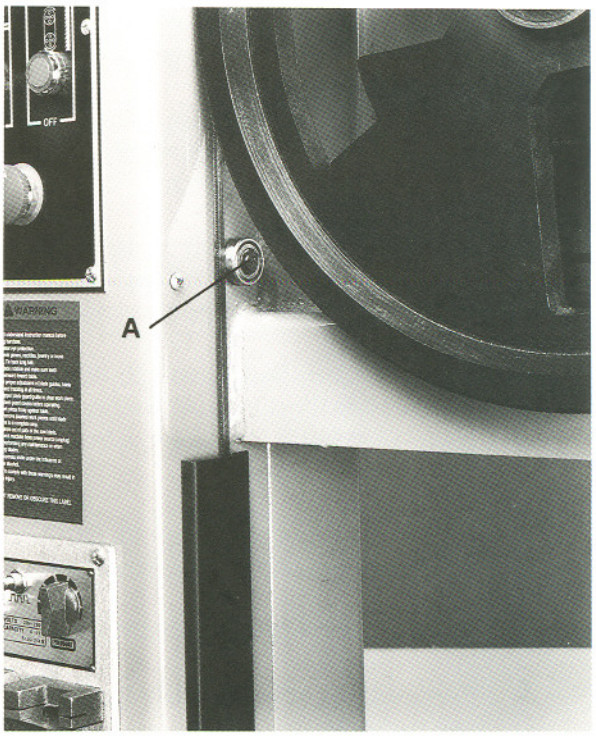


Fig. 13

Blade Selection

Proper blade selection is just as important to band saw operation as is blade speed and material feed. Proper blade selection will impact blade life, straightness of cut, cut finish, and efficiency of operation. Excess blade breakage, stripping of teeth, and waviness of cut are some of the results of improper blade selection.

Blades are classified by material composition, tooth shape, pitch of teeth, and type of set, gage of the band material, and kerf of the set (width of cut).

Material Composition

Carbon Steel - low cost, for use with non-ferrous materials, wood, and plastics.

High Speed Steel - resists heat generated by dry cutting. Used for ferrous metals and are more expensive than carbon steel blades.

Alloy Steel - tough and wear resistant, cuts faster with longer blade life. Used on hard materials. More expensive than carbon or high speed steel.

Carbide Tipped - for cutting unusual materials such as uranium, titanium, or beryllium.

Tooth Shape

Note: When cutting thin materials, the rule for blade pitch is to have a minimum of two teeth engaging the material being cut at all times.

Standard Tooth - generally used to cut ferrous metals, hard bronze, hard brass, and thin metals.

Skip Tooth - have better chip clearance (larger gullet) and are used on softer, non-ferrous materials such as aluminum, copper, magnesium, and soft brass.

Hook Tooth - provides a chip breaker and has less tendency to gum up in softer materials. Used in the same materials as skip tooth but can be fed faster than standard or skip tooth blades.

Set Type

Straight Set - used for free cutting non-ferrous materials; i.e., aluminum, magnesium, plastics, and wood.

Wavy Set - used on materials of varying thickness (pipe, tubing, and structural shapes).

Raker Set - used in large cuts on thick plate and bar stock where finish of cut is not as important as speed.

Gage

Blade gage is the thickness of material from which the blade is produced. The thicker the material, the stronger the blade will be.

Kerf

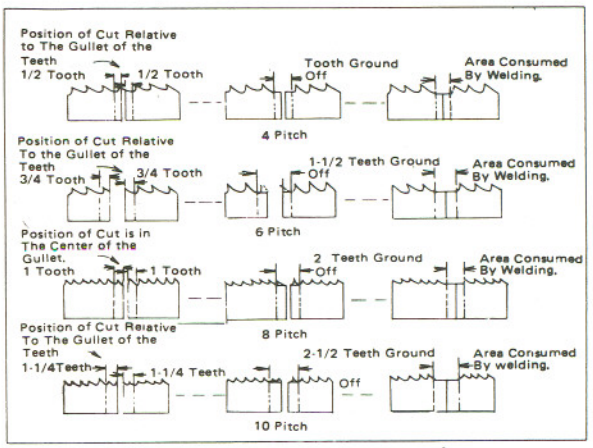
Kerf is the width of a cut. Kerf will vary according to set of blade teeth.

Blade Width

The narrower the blade, the tighter the minimum radius of cut will be. Always use the widest blade possible for the job.

General rules for blade selection:

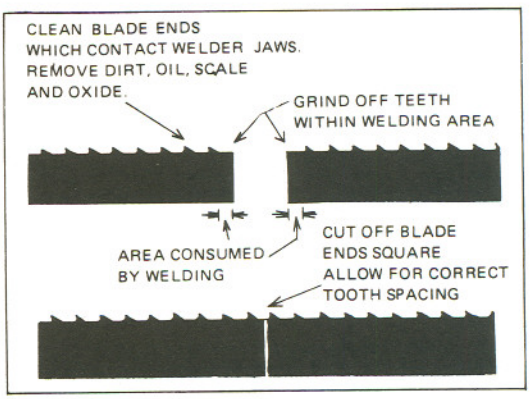
1. Select coarser pitch blades for thicker or softer material.
2. Select finer pitch blades for thinner or harder material.
3. Use fine pitch blades to obtain a smooth finish.
4. Use coarse pitch blades to obtain faster cutting speeds (thick material).
5. To prevent premature blade wear, use the fastest practical speed.
6. Adjust the feed rate to ensure continuous cutting action.
7. Run the bandsaw with the blade centered in the upper and lower guides and the guide fingers adjusted as close as possible without touching the blade or weld joint.



Follow these cutting and grinding instructions and the teeth will be uniformly spaced after the weld.

⚠ WARNING

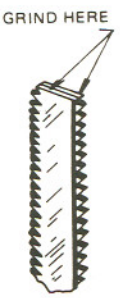
Never adjust guide fingers while blade is running! Failure to comply may cause serious injury!



Points to remember in preparing the blade for welding.

Blade Shear and Blade Preparation

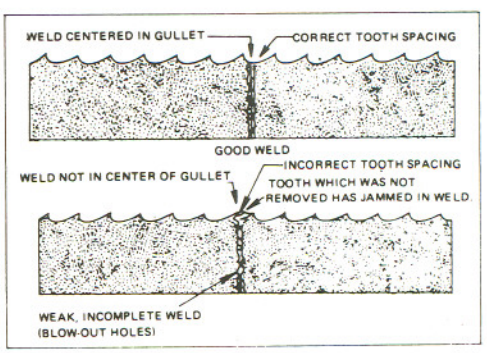
1. Blade should be cut to the longest length that machine will accept.
2. Put handle in the upright position.
3. Place blade against the back of the square cutting guide of the shear.
4. Bring handle down firmly to cut blade.
5. Use the blade grinder to assure the blade ends are flat, square, and smooth.
6. With fine pitched blades, one or more teeth from each side will have to be removed by grinding so that the cross section of the weld area is uniform.



If snips are used to cut blade, grind ends square as shown.

Welder Preparation

1. Clean the welder jaws and the lower jaw inserts.



Welding

⚠ CAUTION

The welder is designed for intermittent use. Repeated welding within a short period of time may cause the welder to overheat.

1. Turn pressure switch (A, Figure 14) to the zero position.
2. Join blade ends together and locate union in the center between two electrodes. Lock blade in position by lifting levers (C and D, Fig. 14).
3. Set pressure switch (A) to blade width according to the scale.
4. Press weld button (B). Do not release until the weld has been completed.

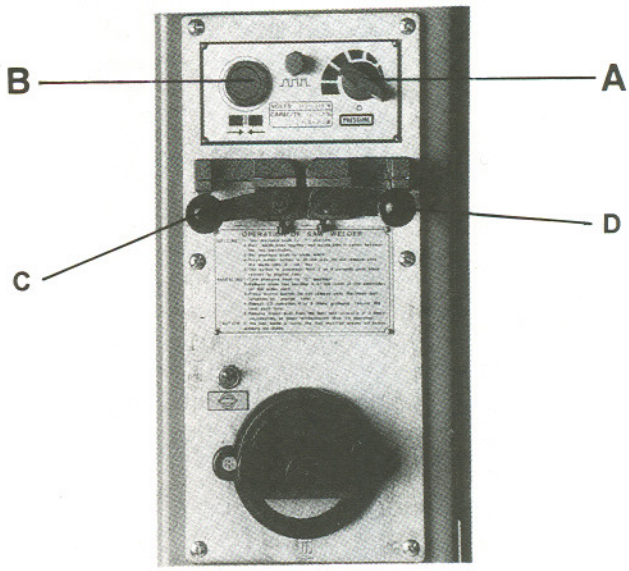


Fig. 14

Annealing

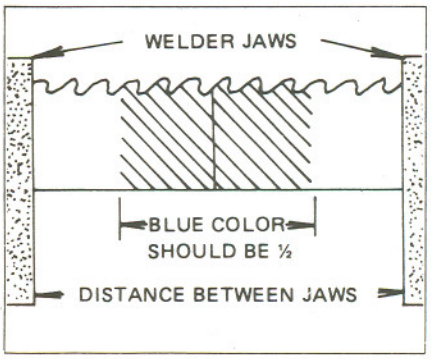
1. Release the welded blade and clamp it again between the front edge of the two jaws.
2. Annealing procedure will depend on blade type:

Carbon Steel Blades

1. Press and jog the annealing switch button until the weld is a "dull cherry" to "cherry red" color.
2. Allow the blade to cool slowly by decreasing the jogging frequency.

Carbon Steel Hard Back Blades

1. Heat the blade slowly until the weld becomes a deep blue color.
2. Continue to heat by jogging the anneal button until the width of the blue color is one-half the length of the band exposed between the jaws.
3. Do not overheat or the temper of the band will be damaged. **Caution** - Do not heat beyond the "blue" stage. If the band begins to show any red color, it is too hot. Cool quickly by releasing the anneal button.



Correct annealing of Carbon Steel Hard Back Blades

Bi-Metal Blades

1. Heat the blade slowly by jogging the annealing switch button until the weld just begins to emit light (dull red color). The desired color may not always be visible in normal room light - always shade the weld area.

2. Cool the weld quickly by releasing the annealing button.

3. Follow this procedure before and after grinding bi-metal blades.

Blade Grinding

⚠ WARNING

Keep hands away from rotating grinding wheel! Failure to comply may cause serious injury! Always heed the indicator light - when glowing, it warns that the grinder motor is running.

After annealing, the blade must be ground to remove excess metal or flash from the weld. With the teeth facing out, grind the weld carefully. Do not hit the teeth, grind deeper than the weld, burn, or overheat the weld area. Be sure to remove flash from the back edge of the blade. Any flash or "stub" teeth which project beyond the normal set or height of the other teeth must be ground off.

Secondary Annealing

Anneal the weld 2-3 times again after grinding.

Welder Clean-Up

It is important that the welder jaws be kept clean at all times. The jaws and inserts must be wiped or scraped clean after every weld. Doing this will ensure better welds by:

1. Holding proper alignment.

2. Preventing flash from becoming embedded in the blade.

3. Preventing shorts or poor electrical contact.

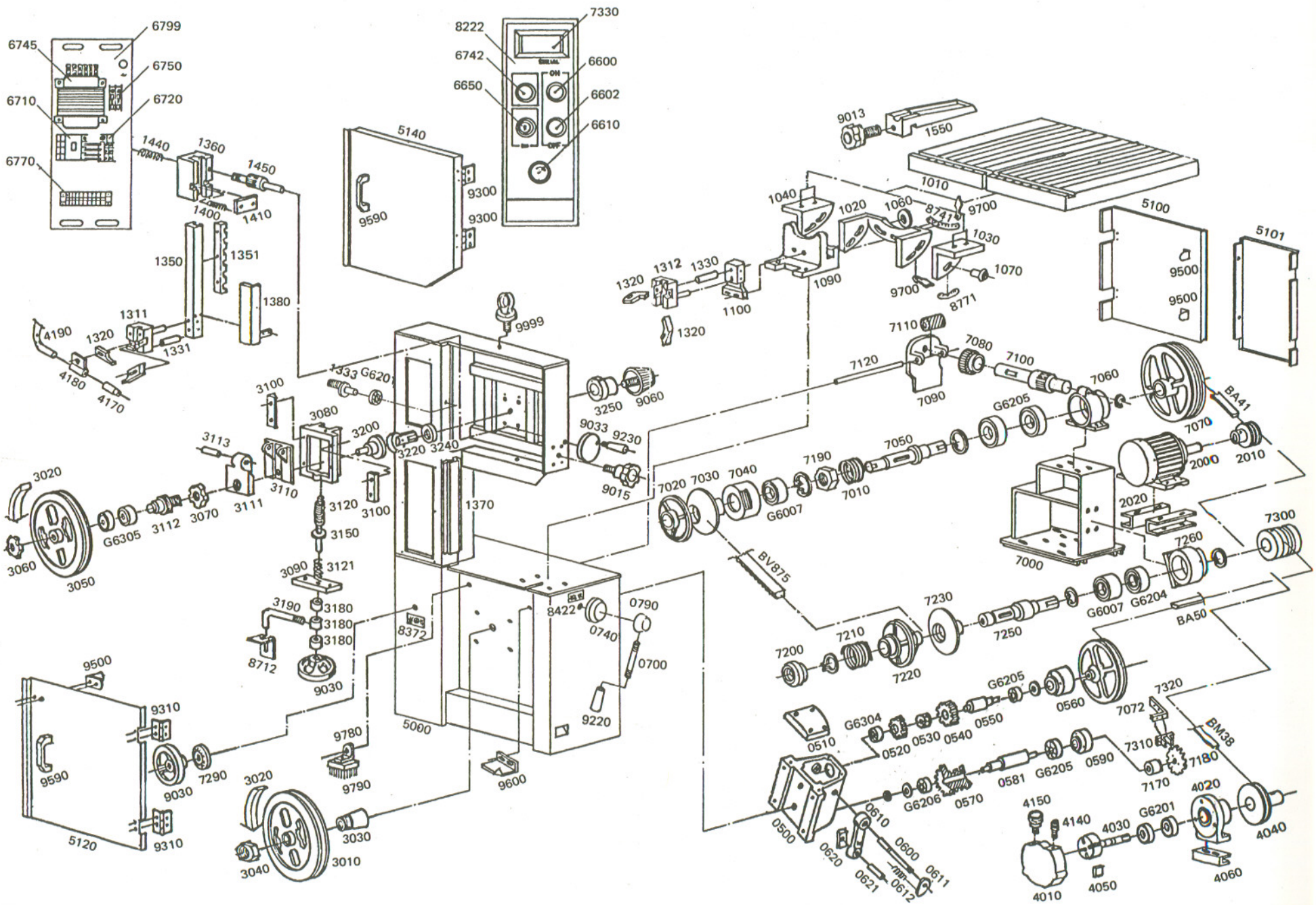
Lubrication Schedule

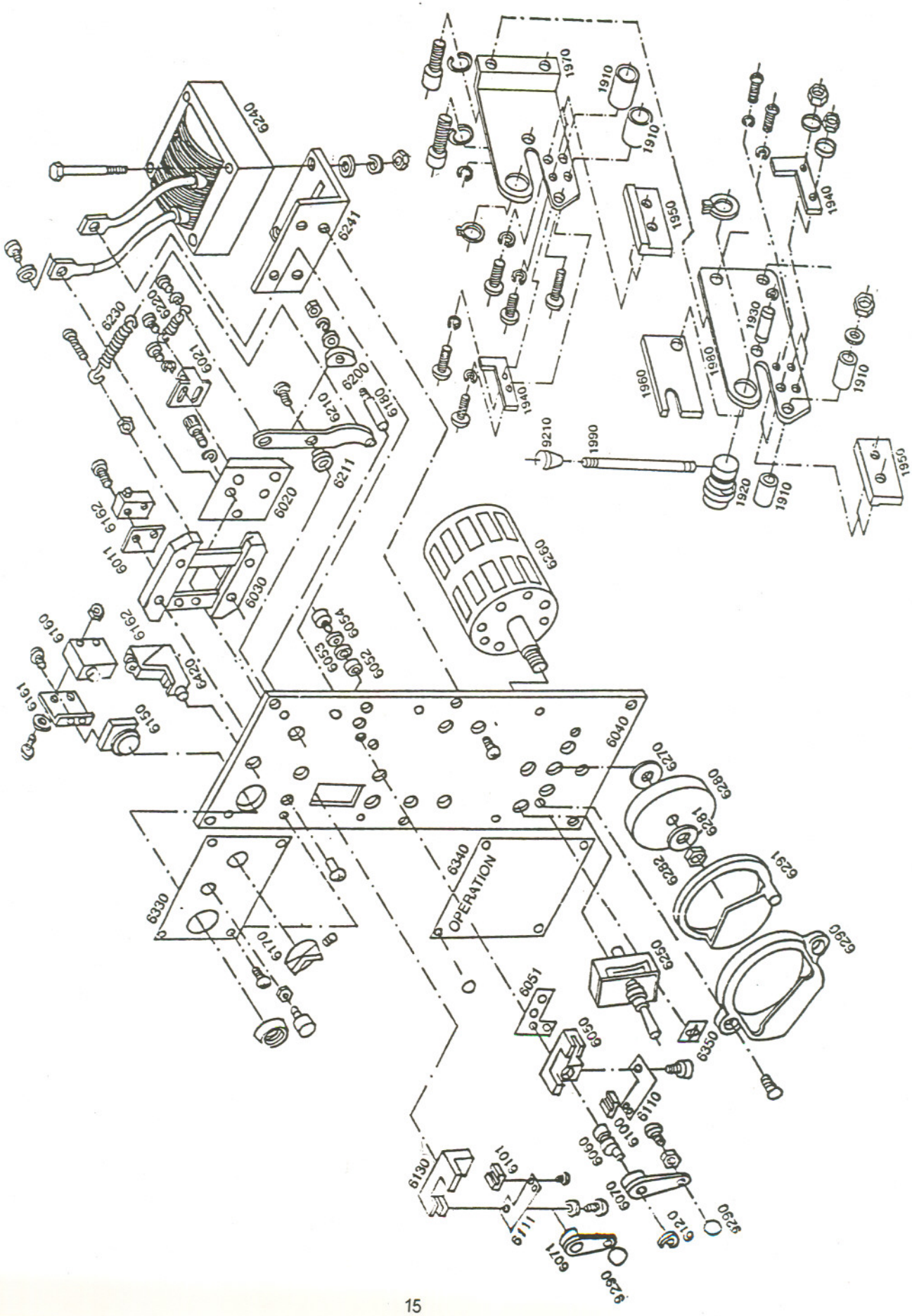
1. **Upper Blade Guide Shaft** - lightly grease weekly. Clean after every day's use.

2. **Speed Change Handle** - grease monthly with a light film on teeth and threads.

3. **Variable Pulley** - found on end of pulley shaft. Lubricate fitting using a light weight grease.

4. **Blade Tension Screw** - grease monthly.





Parts List for the VBS-2012 Bandsaw

PLEASE ORDER BY PART NUMBER ONLY

Control Panel Assembly

Index No.	Part No.	Description	Size	Qty.
6600....	VBS2012-6600	Push Button - On		1
6602....	VBS2012-6602	Push Button - Off		1
6610....	VBS2012-6610	Emergency Off Switch		1
6650....	VBS2012-6650	Key Switch		1
6710....	VBS2012-6710	Magnetic Switch		2
6720....	VBS2012-6720	Starter Overload		1
6742....	VBS2012-6742	Power On Indicator Light		1
6745....	VBS2012-6745	Voltage Reducer		1
6750....	VBS2012-6750	Fuse		2
6799....	VBS2012-6799	Wiring Plate		1

Guide Post Assembly

1310....	VBS1220A-131	Blade Guide Support		2
1320....	VBS16-132	Blade Guide		4
1330....	VBS1220M-133	Blade Stop		2
1333....	VBS2012-1333	Eccentric Shaft		1
G6201.	BB-6201V	Ball Bearing		2
1350....	VBS2012-1350	Blade Guide Post		1
1351....	VBS2012-1351	Gear Bar		1
1360....	VBS2012-1360	Guide Post Housing		1
1370....	VBS2012-1370	Blade Guard - Left		1
1380....	VBS2012-1380	Blade Guard - Right		1
1400....	VBS2012-1400	Spring		2
1410....	VBS2012-1410	Spring Housing		1
1450....	VBS2012-1450	Post Elevating Gear		1
9015....	VBS2012-9015	Guide Post Lock		1
9033....	VBS2012-9033	Post Elevating Handwheel		1
9230....	VBS2012-9023	Handle		1

Work Table Assembly

1010....	VBS2012-1010	Work Table		1
1020....	VBS1220M-102	Table Support Frame		1
1030....	VBS1220M-103	Table Bracket - Right		1
1040....	VBS1220M-104	Table Bracket - Right		1
1060....	TS-0680061	Washer	1/2"	2
1070....	VBS2012-1070	Tube Screw		4
1080....	VBS2012-1080	Blade Guard (not shown)		2
1090....	VBS1220M-109	Table Support Housing		1
1100....	VBS1220M-110	Guide Support Housing		1
1550....	VBS2012-1550	Rip Fence		1
8741....	VBS2012-8741	Tilt Indicator - L&R		1

8771....	VBS2012-8771	Tilt Indicator - F&B	1
9013....	VBS2012-9013	Rip Fence Lock	1
9700....	VBS2012-9700	Indicating Needle	2

Motor Assembly

2000....	VBS2012-2000	Motor	1
2010....	VBS2012-2010	Motor Pulley	1
BA41...	VB-A41	V-Belt	2
BA50...	VB-A53	V-Belt	2
2020....	VBS2012-2020	Motor Suspension Arm	2

Lower Wheel Assembly

3010....	VBS1220A-301	Lower Wheel	1
3020....	VBS1220A-302	Rubber Tire	1
.....	VBS2012-301	Lower Wheel w/ Tire	1
3030....	VBS2012-3030	Taper Sleeve	1
3040....	VBS2012-3040	Wheel Lock Nut	1

Upper Wheel Assembly

3050....	VBS1220A-305	Upper Wheel	1
3020....	VBS1220A-302	Rubber Tire	1
G6305.	BB-6305	Ball Bearing	2
.....	VBS2012-305	Upper Wheel w/ Tire and Bearings	1
3060....	VBS2012-3060	Upper Wheel Lock	1
3070....	VBS2012-3070	Upper Wheel Nut	2

Blade Tracking Assembly

3080....	VBS2012-3080	Slide Block Housing *	1
3090....	VBS2012-3090	Slide Block Seat *	1
3100....	VBS2012-3100	Slide Block Guide *	2
3110....	VBS2012-3110	Upper Wheel Slide *	1
3111....	VBS2012-3111	Slide Cover *	1
3112....	VBS2012-3112	Slide Screw Shaft *	1
3113....	VBS2012-3113	Slide Pin *	1
3120....	VBS2012-3120	Wheel Elevating Shaft *	1
3121....	VBS2012-3121	Spring *	1
3150....	VBS2012-3150	Washer *	1
3180....	VBS2012-3180	Indicator Ring *	3
*.....	VBS2012-3080CP	Slide Housing Complete	1
3190....	VBS2012-3190	Tension Indicator	1
9030....	VBS2012-9030	Hand Wheel	1
8712....	VBS2012-8712	Indicator Plate	1
3200....	VBS2012-3200	Wheel Tracking Adjuster	1
3220....	VBS2012-3220	Wheel Tracking Connector	1
3240....	VBS2012-3240	Connector Washer	1
3250....	VBS2012-3250	Connector Housing	1
9060....	VBS2012-9060	Tracking Hand Wheel	1
9780....	VBS2012-9780	Brush Bracket	1
9790....	VBS2012-9790	Chip Brush	1

Gear Box Assembly

0500....	VBS2012-0500	Gear Box *	1
0510....	VBS2012-0510	Gear Box Cover *	1
0520....	VBS2012-0520	Gear *	1
0530....	VBS2012-0530	Screw Nut * 35mm	1
0540....	VBS2012-0540	Gear *	1
0550....	VBS2012-0550	Gear Shaft *	1
0560....	VBS2012-0560	Shaft Cover *	1
0570....	VBS2012-0570	Gear *	1
0581....	VBS2012-0581	Main Shaft *	1
0590....	VBS2012-0590	Main Shaft Cover *	1
0600....	VBS2012-0600	Speed Changing Shaft *	1
0610....	VBS2012-0610	Speed Changing Arm *	1
0611....	VBS2012-0611	Shaft Stop *	1
0612....	VBS2012-0612	Spring *	1
0620....	VBS2012-0620	Slide Block *	1
0621....	VBS2012-0621	Slide Block Pin *	1
0624....	VBS2012-0624	Key (not shown) *	1
0700....	VBS2012-0700	Speed Change Lever *	1
0740....	VBS2012-0740	Shaft Housing *	1
0790....	VBS2012-0790	Speed Housing Ring *	1
9220....	VBS2012-9220	Speed Lever Knob *	1
G6205.	BB-6205	Ball Bearing *	3
G6206.	BB-6206	Ball Bearing *	1
G6304.	BB-6304	Ball Bearing *	1
*.....	VBS2012-0550CP	Gear Box Assembly Complete	1
8422....	VBS2012-8422	Gear Box Warning Label	1

Air Pump Assembly

4010....	VBS2012-4010	Air Pump Housing *	1
4020....	VBS2012-4020	Air Pump Cover *	1
4030....	VBS2012-4030	Air Pump Shaft *	1
G6201.	BB-6201	Ball Bearing *	2
4040....	VBS2012-4040	Air Pump Pulley *	1
4050....	VBS2012-4050	Air Pump Leaves *	4
4060....	VBS2012-4160	Air Pump Housing *	1
4140....	VBS2012-4140	Air Outlet *	1
4150....	VBS2012-4150	Air Inlet *	1
4170....	VBS2012-4170	Air Nozzle *	1
4180....	VBS2012-4180	Air Nozzle Clip *	1
BM38 ..	VB-M39	V-Belt *	1
*.....	VBS16-401CP	Air Pump Assembly Complete	1

Main Body

5000....	VBS2012-5000	Main Body	1
5100....	VBS2012-5100	Rear Door - Larger	1
9310....	VBS2012-9310	Hinge	6
9500....	VBS2012-9500	Spring Plate	6
9590....	VBS2012-9590	Handle	3
5101....	VBS2012-5101	Rear Door - Smaller	1
5120....	VBS2012-5120	Lower Door - Front	1

5140....	VBS2012-5140	Upper Door - Front	1
9300....	VBS2012-9300	Upper Door Hinge	2
9999....	VBS2012-9999	Eye Bolt	1

Variable Speed Assembly

7000....	VBS2012-7000	Motor Spring Housing *	1
7010....	VBS2012-7010	Spring *	1
7020....	VBS2012-7020	Variable Speed Disk - Upper Outside *	1
7030....	VBS2012-7030	Variable Speed Disk - Upper Inside *	1
7040....	VBS2012-7040	Variable Speed Housing Tube *	1
G6007.	BB-6007	Ball Bearing *	1
7050....	VBS2012-7050	Variable Speed Disk Shaft *	1
G6205.	BB-6205	Ball Bearing *	2
7060....	VBS2012-7060	Variable Speed Housing *	1
*.....	VBS2012-7000CP	Variable Speed Housing Assembly Complete.	1
7070....	VBS2012-7070	Pulley 9"	1
7080....	VBS2012-7080	Worm Gear	1
7090....	VBS2012-7090	Worm Gear Housing	1
7100....	VBS2012-7100	Gear Shaft	1
7120....	VBS2012-7120	Arm	1
7170....	VBS2012-7170	Detector Disk Housing	1
7180....	VBS2012-7180	Detector Disk	1
7190....	VBS2012-7190	Screw Nut	1
8372....	VBS2012-8372	Variable Speed Instruction Label	1

Variable Speed Shaft Assembly

7200....	VBS2012-7200	Spring Housing *	1
7210....	VBS2012-7210	Spring *	1
7220....	VBS2012-7220	Variable Speed Disk - Lower Outside *	1
7230....	VBS2012-7230	Variable Speed Disk - Lower Inside *	1
7250....	VBS2012-7250	Variable Speed Shaft *	1
G6007.	BB-6007	Ball Bearing *	1
G6204.	BB-6204	Ball Bearing *	1
7260....	VBS2012-7260	Shaft Housing *	1
*.....	VBS2012-7200CP	Variable Speed Housing Assembly Complete.	1
7290....	VBS20102-7290	Wheel Seat	1
7300....	VBS2012-7300	Pulley	1
7310....	VBS2012-7310	Speed Readout Detector	1
7320....	VBS2012-7320	Detector Housing	1
7330....	VBS1220M-661	Digital Tachometer	1
9030....	VBS2012-9030	Hand Wheel	1
BV875.	VBS2012-BV875	Cog Belt	1
BA41...	VB-A41	V-Belt	2

Work Lamp Assembly

6810....	VBS2012-6810	Light Shield *	1
6820....	VBS2012-6820	Shield Joint *	1
6830....	VBS2012-6830	Brass Nut *	1
6840....	VBS2012-6840	Lamp Arm *	1
6850....	VBS2012-6850	Arm Joint *	1
6860....	VBS2012-6860	Arm Tube *	2
6870....	VBS2012-6870	Tube Holder *	1
6880....	VBS2012-6880	Arm Nut *	4
6890....	VBS2012-6890	Tube Locker *	2
6900....	VBS2012-6900	Arm Housing Adjuster *	1
6910....	VBS2012-6910	Housing Adjust Screw *	1
6920....	VBS2012-6920	Lamp Arm Housing *	1
6930....	VBS2012-6930	Upper Arm Holder (RE:VBS2012-6920) *	1
6940....	VBS2012-6940	Lower Arm Holder (RE:VBS2012-6920) *	1
6950....	VBS2012-6950	Lamp Socket *	1
9040....	VBS2012-9040	Brass Handwheel *	1
*.....	VBS2012-6950CP	Work Lamp Assembly Complete	1

Welder/Grinder Assembly

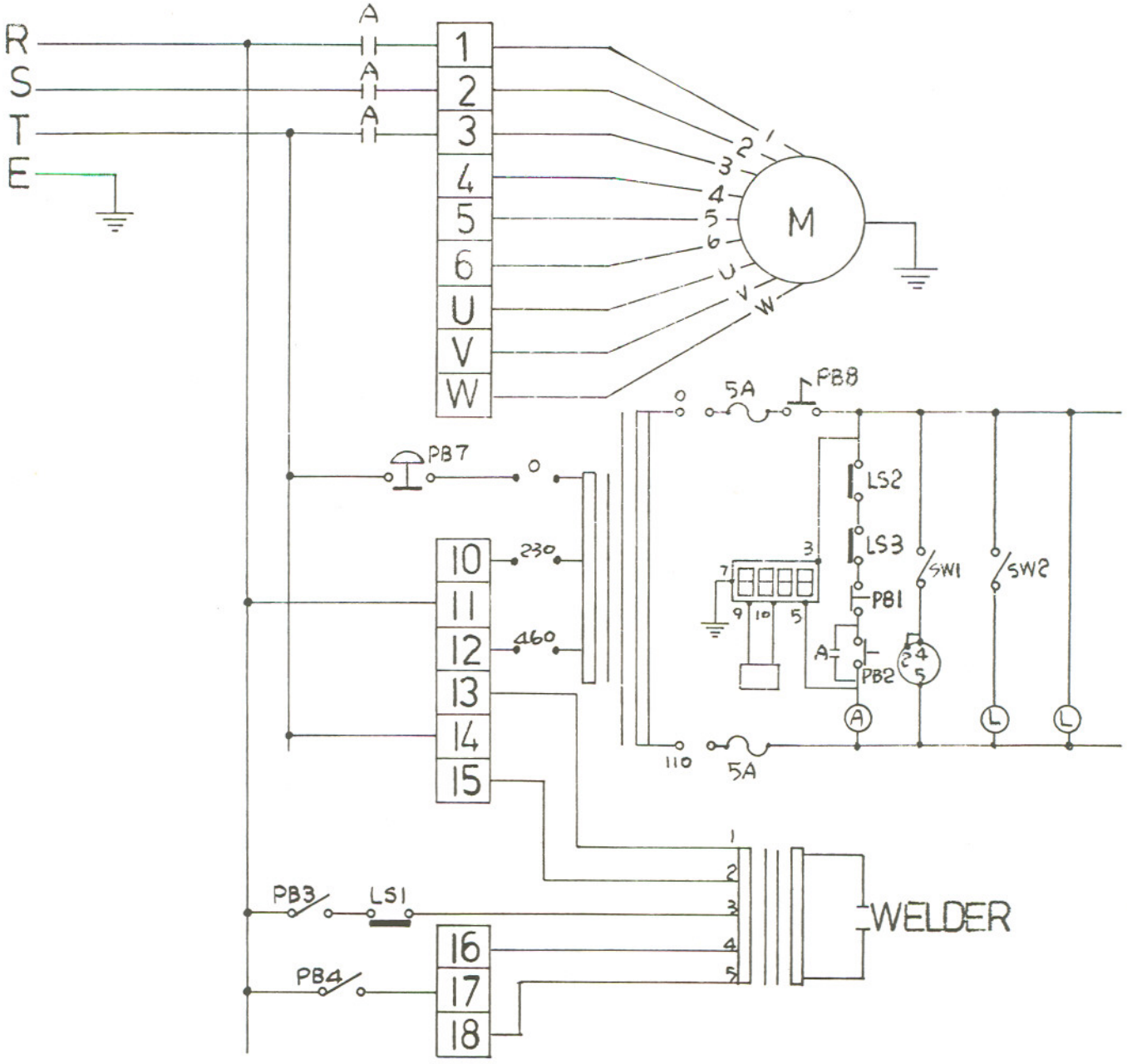
6010....	JWG34-601	Limit Switch *	2
6011....	PR-EV-6011	Insulator *	1
6020....	PR-EV-6020	Guide Block *	1
6021....	PR-EV-6021	Spring Bracket *	1
6030....	PR-EV-6030	Guide Casting *	1
6040....	PR-EV-6040	Housing *	1
6050....	PR-EV-6050	Stationary Jaw *	1
6051....	PR-EV-6051	Insulator *	1
6052....	PR-EV-6052	Insulting Tube *	3
6053....	PR-EV-6053	Insulating Washer *	3
6054....	PR-EV-6054	Spacer *	3
6060....	PR-EV-6060	Eccentric Shaft *	2
6070....	PR-EV-6070	Clamp Lever - Right *	1
6071....	PR-EV-6071	Clamp Lever - Left *	1
9290....	PR-EV-9290	Knob *	1
6100....	PR-EV-6100	Clamp Support - Right *	1
6101....	PR-EV-6101	Clamp Support - Left *	1
6110....	PR-EV-6110	Clamp Plate - Right *	1
6111....	PR-EV-6111	Clamp Plate - Left *	1
6120....	PR-EV-6120	Cam *	2
6130....	PR-EV-6130	Moving Jaw *	1
6150....	JWG34-615	Weld Button *	1
6160....	PR-HV-6160	Micro Switch *	1
6161....	PR-EV-6161	Switch Bracket *	1
6170....	PR-EV-6170	Pressure Adjust Knob *	1
6180....	PR-EV-6180	Shaft *	1
6200....	PR-EV-6200	Cam *	1
6210....	PR-EV-6210	Weld Tension Arm *	1
6211....	PR-EV-6211	Bushing *	1
6220....	PR-EV-6220	Spring - Short *	1
6230....	PR-EV-6230	Spring - Long *	1
6240....	VBS1220M-624	Transformer *	1

6241....	PR-HV-6241	Mounting Bracket *	.....	1
6250....	PR-EV-6250	Switch *	.....	1
6260....	PR-EV-6260	Grinder Motor *	.....	1
6270....	PR-EV-6270	Spacer *	.....	1
6280....	PR-EV-6280	Grinding Wheel *	.....	1
6281....	TS-0680021.....	Washer *	1/4"	1
6282....	TS-1540041.....	Nut *	6mm	1
6290....	VBS1220M-629	Grinder Guard *	.....	1
6291....	PR-EV-6291	Grinder Cover *	.....	1
6330....	PR-HV-6330	Name Plate *	.....	1
6340....	PR-EV-6340	Instruction Label *	.....	1
6350....	PR-EV-6420	Grinder Label *	.....	1
6420....	PR-HV-6420	Anneal Switch *	.....	1
*.....	VBS2012-WCP.....	Welder Assembly Complete.....	.....	1

Shear Assembly

1910....	PR-EV-1910	Spindle Bushing *	.....	4
1920....	PR-EV-1920	Spindle Lift *	.....	1
1930....	PR-EV-1930	Blade Shaft *	.....	1
1940....	PR-EV-1940	Vaned Iron Plate (Blade Stop) *	.....	2
1950....	PR-EV-1950	Lower Blade *	.....	2
1960....	PR-EV-1960	Upper Blade *	.....	2
1970....	PR-EV-1970	Joint Plate - Left *	.....	1
1980....	PR-EV-1980	Joint Plate - Right *	.....	1
1990....	PR-EV-1990	Handle Bar *	.....	1
9210....	PR-EV-9210	Knob *	.....	1
*.....	VBS2012-SCP.....	Shear Assembly Complete.....	.....	1

Electrical Schematic



PB1 - Saw Stop Switch
PB2 - Saw Start Switch
PB3 - Weld Switch
PB4 - Anneal Switch
PB7 - Emergency Stop
PB8 - Main Power Key
LS1 - Auto Weld Stop Switch
LS2 - Safety Switch
LS3 - Safety Switch
SW1 - Grinder On-Off Switch
SW2 - Work Lamp On-Off Switch

Jumper Wire Settings

220V	**440V**
1 - U	4 - U
2 - V	5 - V
3 - W	6 - W
4 - 5 - 6	11 - 12
10 - 11	13 - 14
14 - 15	17 - 18
16 - 17	

NOTE

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