

UE-460DSA

HORIZONTAL BAND SAW

Study Carefully Before Operating



Specifications

Capacity:

			
90°	460mm	460x460mm	440x600mm
45°	445mm	445x445mm	
60°	295mm	295x295mm	

Blade Size

41 x 1.3 x 5330mm (1.61" x 0.05" x 209.84")

Blade Speed

50Hz 26~80MPM (82~264FPM) 60Hz 32~96MPM (106~317FPM)

Motor

5HP (3.7kW) 4P

Packing Measurement

2810mm x 1130mm x 1870mm
(110.6" x 44.5" x 73.7")

NW: 1320kgs (2904lbs) **GW:** 1500kgs (3300lbs)

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1 ACCIDENT PREVENTION AND SAFETY REGULATION

This machine has been designed to comply with national and community accident- prevention regulations. Improper use and/or tampering with the safety devices will relieve the manufacturer of all responsibility.

1.1 Advice for the operator

- Check, the line voltage is the same as the voltage required by the machine's motor.
- Check the efficiency of your electric supply and grounding system; connect the power cable of the machine to the socket and the ground lead (yellow- green in color) to the grounding system.
- When the machine is in suspended mode (or stopped) the blade must not move.
- Only the blade section used for cutting must be kept unprotected. To remove guards to expose more of the cutting blade adjust the blade guides.
- It is forbidden to use the machine without its shields
- Always disconnect the machine from the power socket before blade change or carrying out any maintenance job, even in the case of abnormal machine operation.
- Always wear suitable eye protection.
- Never put your hands or arms into the cutting area while the machine is operating.
- Do not shift the machine while it is cutting.
- Do not wear loose clothing like: shirts with sleeves that are too long, gloves that are too big, bracelets, chains or any other object that could get caught in the machine during operation. Tie back long hair.
- Keep the area free of miscellaneous object; i.e. equipment, tools, etc...
- Perform only one operation at a time. Never have several objects in your hands at the same time. Keep your hands as clean as possible.
- All internal operations, maintenance or repairs, must be performed in a well-lit area or where there is sufficient light from extra sources to avoid the risk of accidents.

1.2 The electrical equipment according to European Standard" CENELEC EN 60204-1"

- The electrical equipment ensures protection against electric shock as a result of direct or indirect contact. The active parts of this equipment are housed in a box to which access is limited by screws that can only be removed with a special tool; the parts are fed with alternating current as low voltage (24V). The equipment is protected against splashes of water and dust.
- Protection of the system against short circuits is ensured by means of rapid fuses and grounding; in the event of a motor overload, protection is provided by a thermal probe.

- In the event of a power cut, the specific start-up button must be reset.
- The machine has been tested in conformity with point 20 of EN 60204

1.3 Warning labels

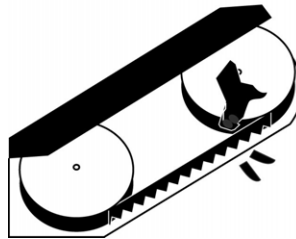


**KEEP HANDS AND
OTHER BODY
PARTS AWAY FROM
A RUNNING BLADE**



**DISCONNECT FROM
POWER SUPPLY WHEN
NOT IN USE**

**DO NOT STORE
COMBUSTIBLE
MATERIAL NEAR OR
AROUND MACHINE**



**DO NOT OPEN
THE BLADE
COVER WHILE
THE MACHINE IS
RUNNING**

Replace warning labels if they become obscured or removed.

- Keep hands and other body parts away from a running blade.
- Do not open the blade cover while machine is running.
- Do not store combustible materials near or around machine.
- Always wear approved safety glasses/face shields while using this machine.
- Keep machine guards in place at all times.
- Do not wear gloves.
- Remove loose clothing and confine long hair.
- Keep the work area clean and free miscellaneous objects.

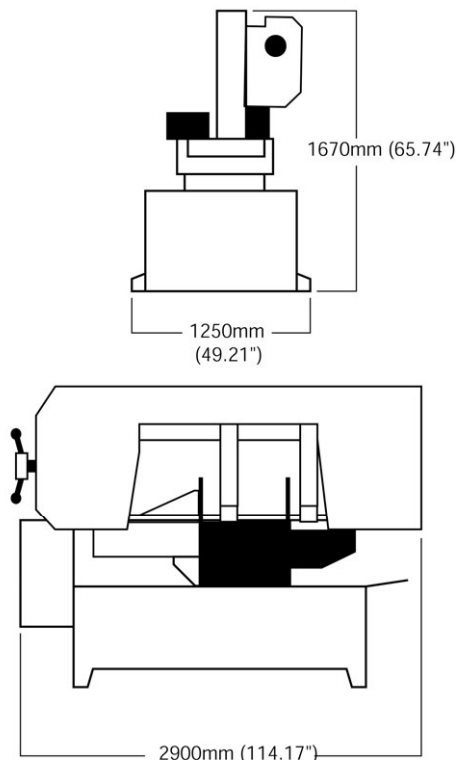
1.4 Emergencies according to European Standard "CENELEC EN 60204-1"

- In the event of incorrect operation or a danger condition, the machine may be stopped immediately by pressing the red mushroom shaped button.

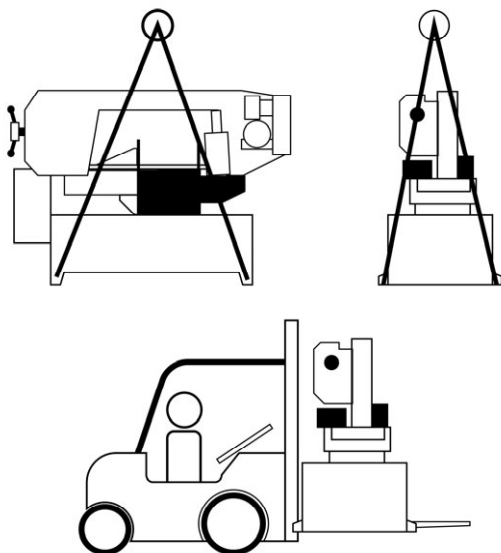
NOTE: Resetting of machine operation after each emergency stop requires resetting the emergency stop button.

2 MACHINE TRANSPORTATION AND INSTALLATION

2.1 Machine dimensions



2.2 Transporting the machine



Unpack your machine carefully, and use a crane or forklift to set it in position. If a crane is used to lift the machine, attach the lifting cable carefully to the machine. Sufficient space should be left around the machine to allow safe handling of materials, inspection, and maintenance operations. Take precautions to choose a location that will keep the machine free of vibration and dust caused by other machinery.

2.3 Minimum requirements for housing the machine

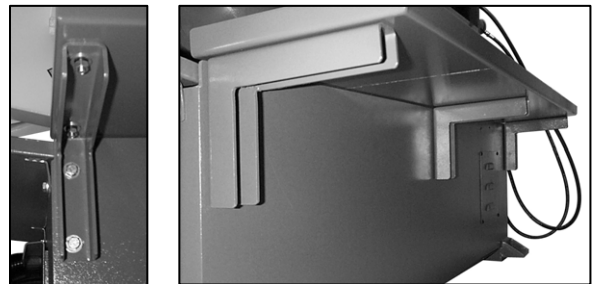
- Main voltage and frequency must comply with the machine's motor requirements.
- Environment temperature should fall within (-10°C to + 50 °C).
- Relative humidity cannot be over 90%.

2.4 Installing the rear coolant return tray

The rear coolant-return tray must be installed after the machine is set in place. Install the coolant return trays first.

Installing three channeled L-bracket

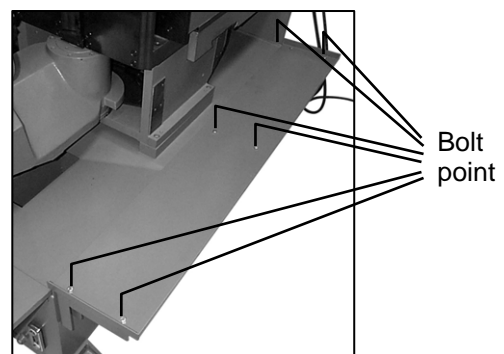
Install three channeled L-bracket to the back of the machine stand. Attaching the brackets requires 6 hex head bolt, 6 spring washers, 6 washers, and 6 nuts.



- Place a spring washer and washer on each hex head bolt.
- Face the long side of the bracket up.
- Align the holes of short side of the bracket to the machine panel's holes.
- Place the 2 hex head bolts and their washers through each bracket and machine panel.
- Use a nut on the inside of the machine stand to secure each hex head bolt.

securing the rear tray

Attaching the trays requires 6 hex head bolt, 6 spring washers, 6 washers, and 6 nuts.

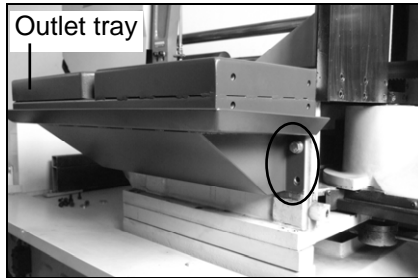


- Arrange the tray rims to facing up and away from the machine.
- Place the rear return tray onto brackets at the back of the machine.
- Align the holes of the rear tray and the six-channelled L-brackets.
- Place 6 hex head bolts through the holes of the trays and brackets.
- Secure each hex head bolts with a washer, spring washer, and hex nut.

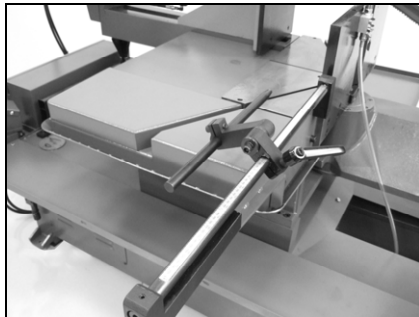
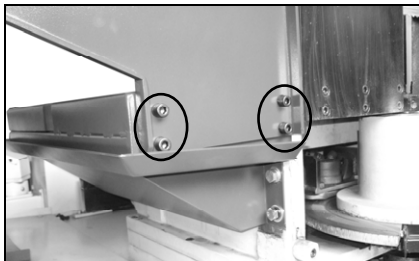
2.5 Install the outlet tray, length stop device and mobile coolant trays.

Install the outlet tray and stop bar on to the machine after setting up the machine already as below steps:

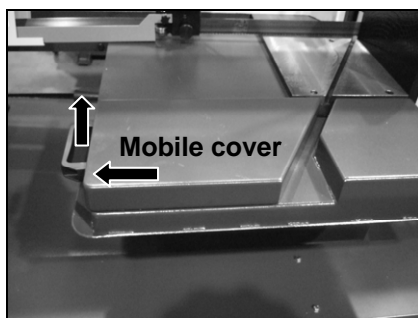
1. Assemble the new outlet tray on to the machine by screw in the four screws on the both side as picture. Tighten the four screws after make sure the top of outlet surface same as table.



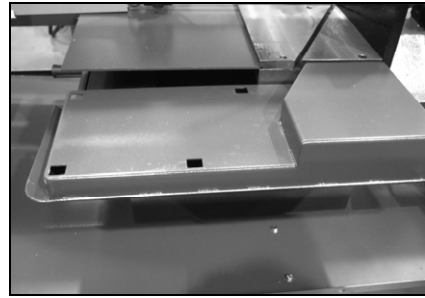
2. Install stop device on to the outlet tray at the right side by tighten four screws.



3. If miter cutting on the front way or move the vise to this side for another way miter cutting, the movable cover on the left side can be removed by pull handle up and out as arrow direction to remove it from being cut.



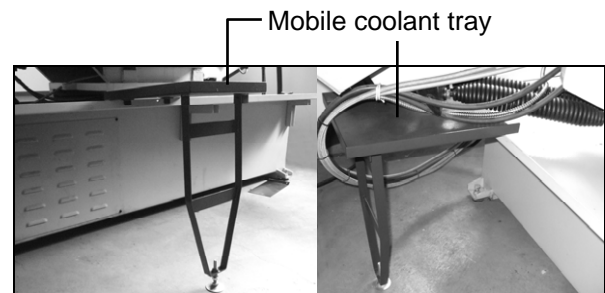
Remove mobile cover by lift handle up and pull it out from the base as showing direction.



There are four slots on the cover base after removing the mobile cover for this way miter cutting.

Install the mobile cover to the four slots and push it to the right side to secure it.

4. They are two mobile coolant trays can be moved and used in miter cutting on front and rear side to prevent coolant spray on to the floor.



2.6 Securing to foundation

Position the machine on a flat and level foundation of reinforced concrete. Level machine and anchor it to the foundation with anchor bolts. Maintain a minimum distance of 800mm from the rear of the machine to the wall. Position the anchors using screws and expansion plugs or tie rods sunk in cement.

2.7 Leveling the machine

The operating accuracy of all precision machinery depends on the accuracy of the installation of the machine. Manufacturing tolerance of the machine can only be guaranteed if the machine is firmly and properly installed. Once the machine is lowered on the prepared foundation, machinist levels should be used alternately on the vice slide plates and work feed table, adjust the left to right and front to back level of the machine with leveling bolts.

- When leveling left to right level, adjust left side to be approximately 3mm higher than the level of the right side. This will provide proper return of the cutting fluid. After proper leveling of the machine, use anchor bolts to secure to the foundation. Caution: All leveling bolts should support the weight the machine evenly

2.8 Deactivation of machine

If the machine is to be out of use for a long period, it is advisable to proceed as follows:

- 1) Disconnect from the power supply
- 2) Loosen the tension on the blade
- 3) Release the bow return spring
- 4) Empty the coolant tank
- 5) Carefully clean and grease the machine
- 6) If necessary, cover the machine.

Dismantling (due to deterioration and/or obsolescence)

As a General Rule,

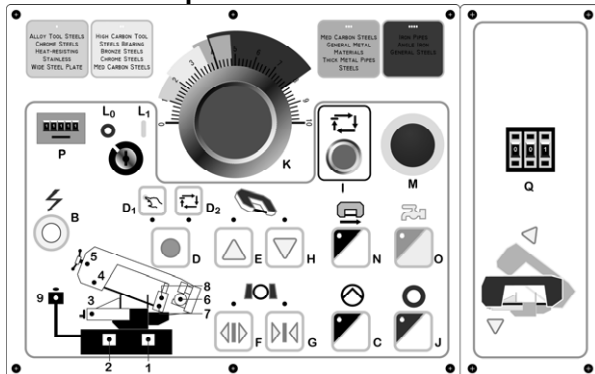
If the machine is to be permanently demolished and/or scrapped, divide the material to be disposed of according to type and composition, as follows:

- 1) Cast iron or ferrous materials, composed of metal alone, are secondary raw materials, so they may be taken to an iron foundry for re-smelting after having removed the contents (classified in point 3).
- 2) Electrical components, including the cable and electronic material (magnetic cards, etc.), fall within the category of material classified as being assimilated to urban waste according to the laws of your local, state, or federal government, so they may be set aside for collection by the public waste disposal service;
- 3) Old mineral and synthetic and/or mixed oils, emulsified oils and greases are considered hazardous or special refuse, so they must be collected, transported and disposed of at a special waste disposal service.

NOTE: The standards and legislation concerning refuse is in a constant state of evolution, therefore is subject to changes. The user must keep informed of the regulations at the time of disposal as these may differ from those described above.

3 DESCRIPTION OF MACHINE PARTS

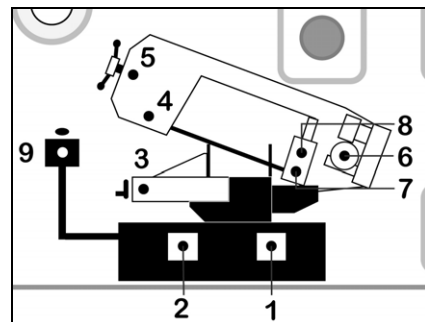
3.1 Control panel



- A. Main connect switch – main power
- B. Main power indicator light – indicates that main power is active
- C. Hydraulic flow control start switch – activates hydraulic power

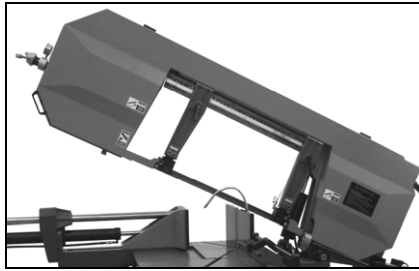
- D. Operation mode switch – selects either automatic or manual operation mode.
- D1. Manual operation mode – press switch D until the manual mode's indicator light shows up.
- D2. Automatic operation mode – press switch D until the automatic mode's indicator light shows up.
- E. Bow up switch – press to raise the saw bow
- F. Vise open switch – press to open the vise
- G. Vise close switch – press to close the vise
- H. Bow down switch – press to lower the saw bow
- I. Cycle start switch – press to begin operation
- J. Stop switch – press to stop operation cycle and return to start position
- K. Cutting feed rate – adjust the rate of cutting of the saw bow.
- L. Key lock power switch – to start or stop power.
- L0. Power off switch – key switch to turn power off
- L1. Power on switch – key switch to turn power on
- M. Emergency Stop Button – Press to stop all machine functions
- N. Blade tracking switch – press to activate blade tension and set the blade tracking.
- O. Coolant start switch – press to activate or stop coolant flow
- P. Counter – counts the pieces cut, press the button to reset units to zero.
- Q. Stroke height switch – limits the stroke height to eliminate the wasted motion and time. Maximum height limit is 330mm.

3.2 Indicator lights



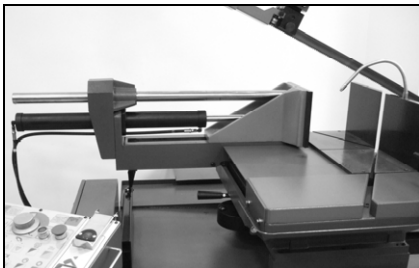
1. Coolant pump warning light
2. Hydraulic pump warning light
3. Vise pressure warning light
4. Open blade cover warning light
5. Broken blade warning light
6. Main motor warning light
7. Lower stroke limit indicator light
8. Upper stroke limit indicator light
9. Emergency stop indicator light

3.3 The saw bow



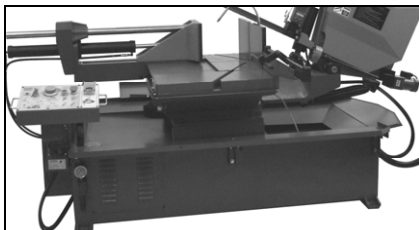
Machine parts consisting of drive members (gear motor, variable speed motor, and flywheels), tightening and guide (blade tightening slide, blade guide blocks) of tool.

3.4 The vise system



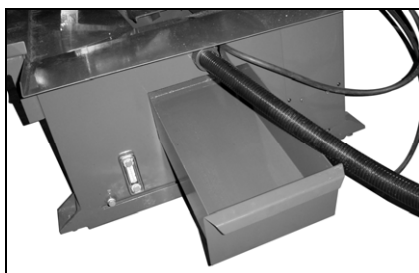
A hydraulic vise is used for clamping work material. Each of the vises has a miter slot, which is good for the right or left side's angle cutting to 60°.

3.5 The base



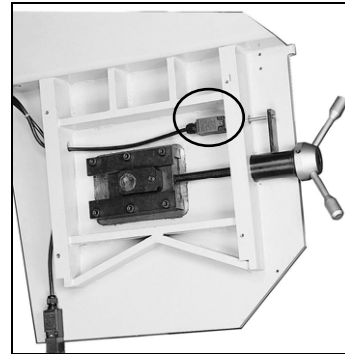
The base is the structure supporting the saw bow (the bow pivot point and respective blocking system), the vises, and containing chip tray and coolant system.

3.6 Chip tray



Removable chip tray for capture of chips and debris.

3.7 Blade broken micro switch



This machine is equipped with automatic power shut-off safety device to prevent any further damage when a blade has been broken. There is a reduction in tension when an adjustment bolt actuates micro switch's plunger. To keep the micro switch in proper contact with the blade's tension. An adjustment of the actuator bolt is required.

3.8 Chip brush



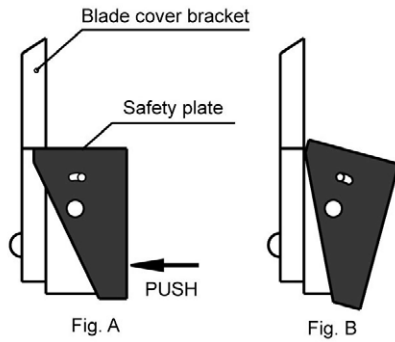
This model has a powered chip brush driven by an axle transfer from the drive motor. The chip brush is designed to clean the blade thus prolonging the life of the blade.

3.9 Blade speed indicator



A digital display indicates the blade speed in MPM. This works in conjunction with speed changing dial to give you precise control of blade speed.

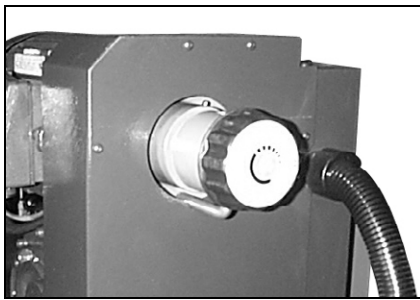
3.10 Open Blade Cover Safety Device



When blade cover is open, close the blade cover as instructed below:

1. Use one hand on the cover handle to hold the blade cover.
2. Use the other hand to push in the safety plate (Fig. A), so the bracket will release (Fig. B).
3. Lower the cover down slowly and carefully.

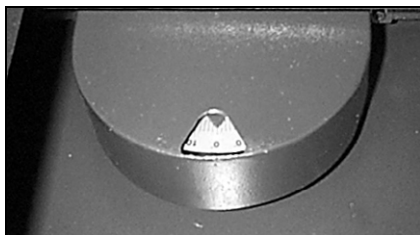
3.11 Speed change dial



The speed change dial adjusts the variable speed transmission so that there is a change in blade speed. Change only while blade is moving.

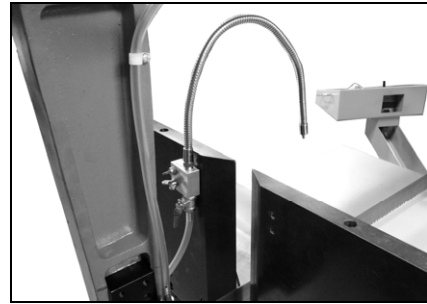
This machine has a variable speed transmission using a variable pulley - system. The speed is changed by rotating the speed changer dial to adjust the width of the pulley discs. When compressed, the pulley discs cause the belt to ride the outer edge of pulley discs and changing the speed. The speed must be changed while belt is moving.

3.12 Blade angle scale



The scale indicates the cutting angle of the blade. The scale has preset stops at every 15°.

3.13 Attached coolant device

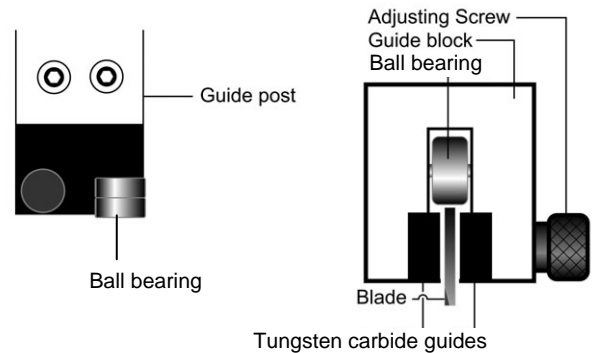


An attached coolant device that is screwed on the front vise jaw for supply enough coolant to the cutting material. This device can be unscrewed, and move to the rear vise jaw for easy both side miter cutting.

4 SET UP AND PRE-OPERATIONS

4.1 Adjusting the tungsten carbide guides

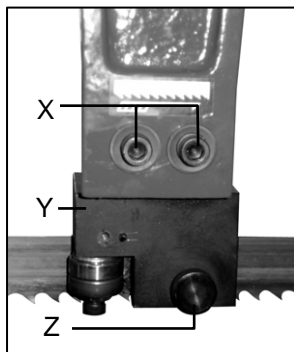
The blade is guided by the upper ball bearings, side ball bearings, and tungsten carbide guides.



- When ready to cut the work piece, the carbide guide must be adjusted by adjusting the screws to properly compressed blade. The tungsten carbide blades should touch, but not pinch the blade.
- For moving the blade guide posts or changing blade, the tungsten carbide guides should be released by using the adjusting screw.

In case the blade needs to be replaced, make sure to always install 1.3mm thick blade.

4.2 Thrust Roller Adjustment

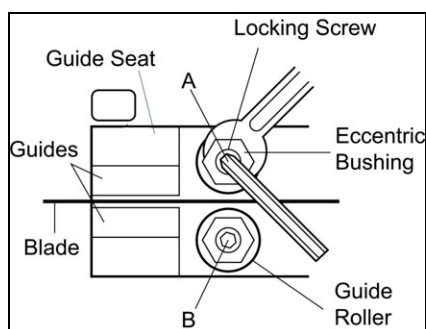


1. **Disconnect machine from the power source.**
2. Loosen two hex socket cap screws (X)
3. Move guide seat (Y) up or down until a clearance of .003" to .005" between back of blade and thrust roller is obtained.
4. Tighten two hex socket cap screws (X).
5. Repeat for other blade guide assembly.
6. Connect machine to the power source.

4.3 Guide Roller adjustment

Note:

Only bearing (A) is adjustable. Bearing (B) is fixed.

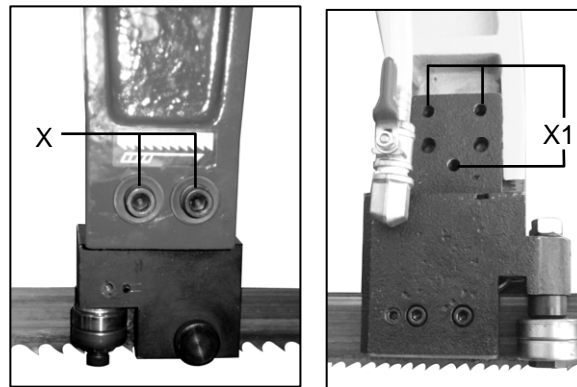


1. **Disconnect machine from the power source.**
2. Loosen blade guides by loosening guide adjustment screw (Z4.2).
3. Loosen locking screws (A) by using a hex wrench.
4. Adjust the eccentric bushings with a combination wrench until the ball bearings are snug to the blade (A)

Note: blade should travel freely up and down between the ball bearings. do not pinch the blade.

5. Tighten locking screws (A).
6. Connect machine to the power source.

4.4 Adjusting the cutting precision

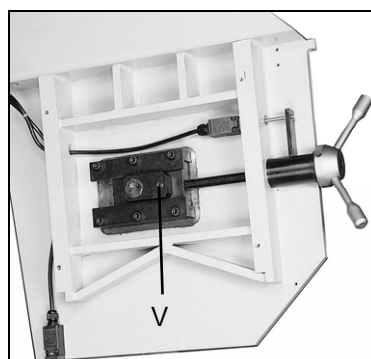


The cutting precision has been set at the factory. This adjustment should only be accomplished by a qualified personnel that are familiar with this type of adjustment.

- Disconnect the machine from power supply.
- Loosen the adjusting bolts (X) slightly, if needed.
- Use the setscrews (X1) to adjust the direction of the guide blocks.
- After adjusting, tighten the adjusting bolts (X).

4.5 Blade tracking adjustment (Manual blade tension type)

This adjustment must be accomplished by qualified personnel that are familiar with this type of adjustment and the dangers associated with it.

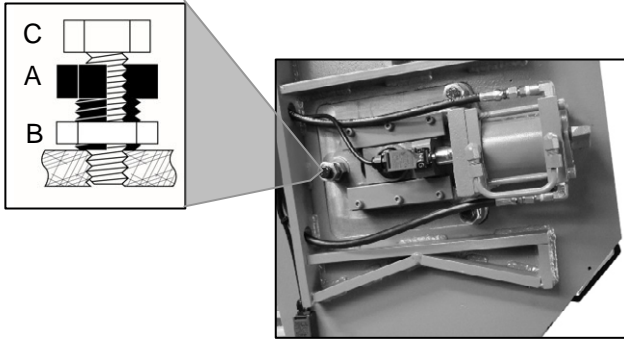


Blade tracking has been set at the factory and has no adjustment required. If a tracking problem occurs, adjust the machine as follows:

- Raise saw arm to the proper position.
- Locate tracking adjustment screw (V) on the front of the saw blade, flywheel side.
- Reduce the blade tension a little.
- Turn the tracking adjustment screw (V) to adjust the saw blade ride.
- Re-tension the blade tension.
- Connect the machine power to run the blade for 1-2 minutes. Then stop the machine operation.
- Remove the blade guides and open covers to check the blade tracking
- Close covers, replace the blade guides and tighten the setscrews.
- If necessary, readjust it again.

4.6 Blade tracking adjustment (Hydraulic blade tension type)

This adjustment must be accomplished by qualified personnel that are familiar with this type of adjustment and the dangers associated with it.



The blade tracking has been set by factory and should not require any adjustment. If a tracking problem occurred, adjust the machine as follows:

- Raise saw arm to a usable height.
- Disconnect the machine from the power source.
- Locate tracking adjustment bolt on the backside of the saw bow behind the flywheel.
- Loosen hex cap screw C, located on the top of the track-adjusting bolt A and tracking nut B.
- Either raising or lowering track-adjusting bolt A accomplishes track adjusting.
- Tracking is set properly when the back of the blade lightly touches the wheel flange. Note: over tracking (allowing blade back to rub hard against wheel flange) will damage the blade wheels and blade.
- Tighten hex cap screw C and tracking nut B.
- Connect machine to the power source.

4.7 Placing the saw blade onto the drive wheel and flywheel

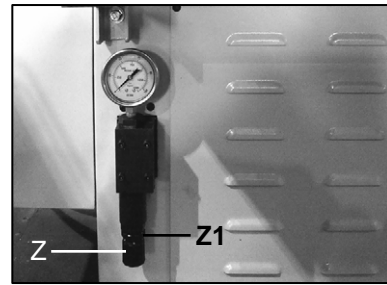
- Disconnect from power supply
- Remove the blade guards
- Turn the blade tension handle counterclockwise, to fully loosen the flywheel.
- Open the blade cover and place the saw blade onto the race of the drive wheel and flywheel.
- *Check the cutting direction of the saw blade.
- Insert the saw blade into the rollers of the left and right blade guide.
- The back edge of the saw blade should make contact with the flange of the drive and flywheel; turn clockwise the blade tension handle to tighten the saw blade, until the blade is properly tensioned.
- Replace the blade guards.
- Use the blade running switch 3.1N to check the proper ride of the blade.

4.8 Hydraulic vise pressure

The hydraulic vise pressure can be monitored and adjusted by a pressure gauge on the base of the machine. The normal pressure is set at 35kgs/cm². This is good for most solid firm materials. For softer, hollow, or pipe materials reduce the pressure to over 25kgs/cm². Other

materials may require different clamping force.

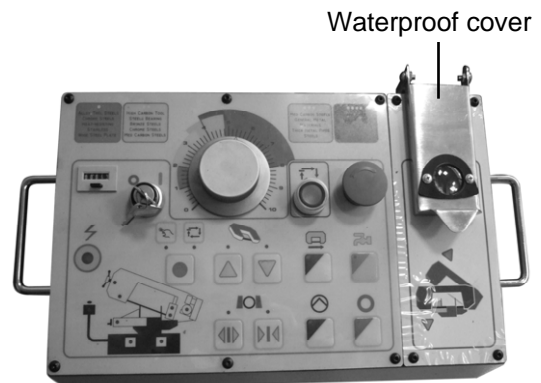
The clamping pressure may be adjusted by a knob at the base of the pressure gauge assembly.



- Start by pressing the vise close switch (3.1G) continuously in manual mode to have the vise clamp onto a work piece.
- Next, unlock the fluted knob (Z) by releasing fluted lock nut (Z1).
- Turn the fluted knob (Z) counterclockwise to decrease the pressure, clockwise to increase the vise pressure.
- Lock the fluted nut (Z1) after adjustment.

5 OPERATION PREPARATIONS

5.1 Setting the stroke limit



The numerical bow stroke height adjusting switch is covered with waterproof cover, set the bow height need to open the cover, after setting bow raise up stroke already, cover the cover to prevent the coolant permeate into the switch to cause the switch damaged.

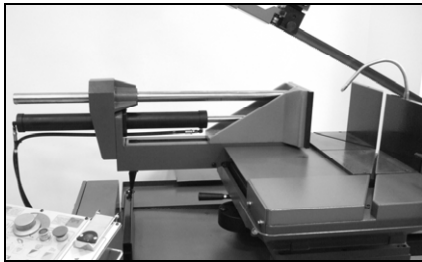


Q

This machine is equipped with a numeral switch Q to set the saw bow an efficient return height. If cutting lots of pieces, set the saw bow's return stroke height switch according to the work-piece's diameter will reduce the overall time of one operation cycle.

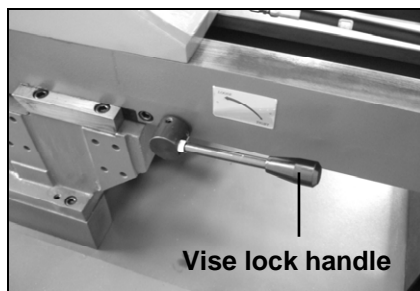
5.2 Positioning the vise

When cutting angles, the relocation of the vise is necessary to prevent the blade from cutting the hydraulic vise.



Adjusting the hydraulic vise for angle cutting

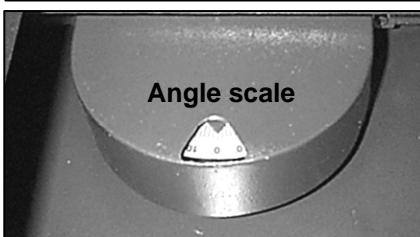
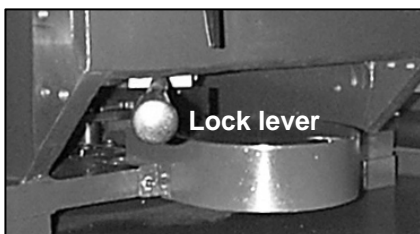
.- The saw bow must be raised to clear the vise.



- Unlock the hydraulic vise lock handle.
- Push the hydraulic vise toward other side.
- Visually check clearance of the blade and saw bow against the hydraulic vise. Readjust the position if necessary.
- Lock the hydraulic vise in position using its lock handle.

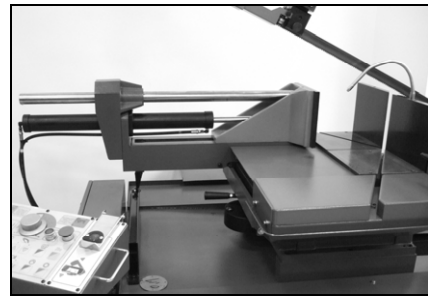
5.3 Angle cutting

The machine can cut angles up to 60° in both directions



- Check that the saw bow is raised to clear the vise fixed vise jaw.
- Turn off power.
- Unlock the saw bow by using the lock lever under the machine bench.
- Rotate the saw bow to the desired cutting angle. Refer to the scale to determine the proper angle.
- Lock the cutting angle in place by using the lock lever.
- Next, adjust the location of the vise to avoid contact with the blade.

5.4 Using the vise



The hydraulic vise operates automatically and can be controlled using the control panel. Use the vise open switch 3.1F and vise close switch 3.1G to open and close the vise. Power must be active. Hydraulics must be active.

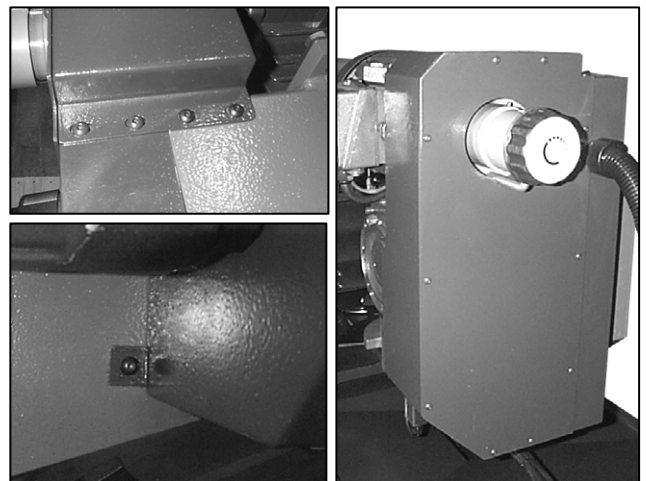
5.5 Adjusting the blade speed

*Blade speed must be changed while belt and blade are moving.

- Check that the machine is running and blade is moving.
- Rotate the speed change dial 3.10 and check the speed indicator 3.9 for desired speed. Turn the dial clockwise to raise blade speed, and turn the dial counter clockwise to reduce blade speed. The speeds available are 26-80MPM (32-96FPM).

5.6 Changing the transmission belt

Over time and due to normal wear and tear the pulley belt will need to be changed.



- Disconnect the machine from power supply.
- Open the belt cover. Remove 4 screws from the top. Remove 1 screw from the front. Remove 8 screws from the cover.
- Turn the dial counter-clockwise to open the pulley discs and loosen the belt.
- Replace the belt.
- Turn the dial to pretension the belt.

5.7 Selecting Automatic and Manual operation

- To select manual mode, press operation mode switch 3.1 D.
- Check the indicator light 3.1 D1 lightening.
- To select automatic operation, press operation mode switch 3.1 D.
- Check the indicator light 3.1 D2 lightening.

5.8 Changing the blade (Manual blade tension type)



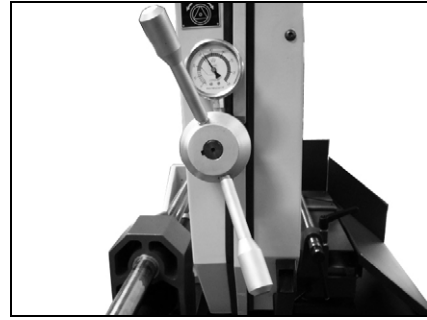
WARNING

Disconnect the machine from the power source before making any adjustments or repairs! Failure to comply may result in serious injury!

- Raise the saw bow approximately 6" in height.
- Disconnect the machine from the power source.
- Remove both blade guides from the blade guide blocks and cover.
- Loosen the cover's lock screws and open the covers.
- Take off the chip brush device by loosen it's screws.
- Loosen left blade guide arm's lock handles and slides it to the right side as far as possible.
- Release blade tension by turning the blade tensioning handle counter-clockwise until blade is free.
- Remove the old blade from both wheels and out of each blade guide.

⚠ Caution: Even dull blades are sharp to the skin! Use extra caution handling band saw blades!

- Position the blade and making sure that the teeth are pointed downward in the cutting direction.
- Position the blade on the wheels. Make sure back of the blade rests lightly against the wheel flange of the both wheels. Twist blade slightly to allow it to slip into guides.
- Tension the blade to the tension indicator shown line 460DSA. Replace the chip brush device so that it touches the blade and tighten setscrew.



- Close all covers and guards and fasten securely. Connect machine to power and run the blade freely for 1-2 minutes.
- Turn the power off and recheck the blade tension and chip brush. If further adjustment is necessary disconnect the saw from the power source, make adjustments, and re-connect the power.

5.9 Changing the blade (Hydraulic blade tension type)



WARNING

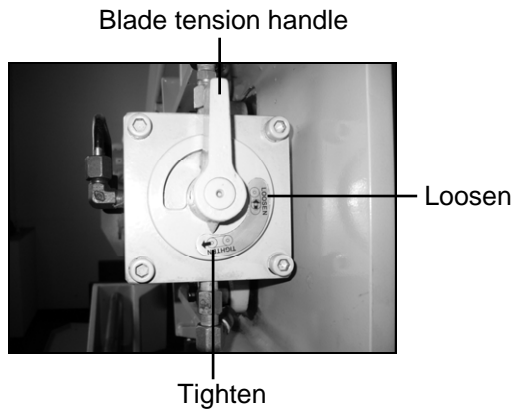
Disconnect the machine from the power source before making any adjustments or repairs! Failure to comply may result in serious injury!

- Raise the saw bow approximately 6" in height.
- Disconnect the machine from the power source.
- Remove both blade guides from the blade guide blocks and cover.
- Loosen the cover's lock screws and open the covers.
- Lower the chip brush device away from the blade by loosen the wing nut.



Wing nut

- Loosen left blade guide arm's lock handles and slides it to the right side as far as possible.
- Release blade tension by turning the blade tension handle counter-clockwise to the loosen position that blade will free.



- Remove the old blade from both wheels and out of each blade guide.

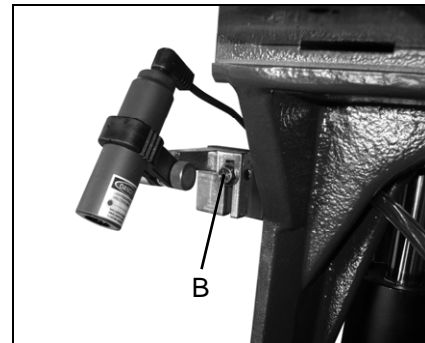
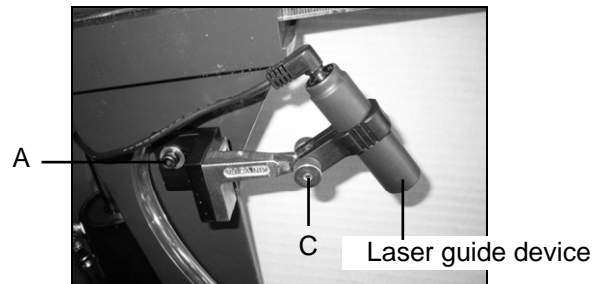
⚠ Caution: Even dull blades are sharp to the skin! Use extra caution handling band saw blades!

- Position the blade and making sure that the teeth are pointed downward in the cutting direction.
- Position the blade on the wheels. Twist blade slightly to allow it to slip into guides.
- Turn the blade tension handle to the tighten direction a little bit and check the blade to make sure back of the blade rests lightly against the wheel flange of the both wheels.
- Turn the blade tension handle to the Tighten position to tension the blade by the tension cylinder automatically.
- Replace the chip brush device so that it touches the blade and tighten setscrew.
- Close all covers and guards and fasten securely. Connect machine to power and run the blade freely for 1-2 minutes.
- Turn the power off and recheck the blade tension and chip brush. If further adjustment is necessary disconnect the saw from the power.
- Close all covers and guards and fasten securely. Connect machine to power and run the blade freely for 1-2 minutes.
- Turn the power off and recheck the blade tension and chip brush. If further adjustment is necessary disconnect the saw from the power source, make adjustments, and re-connect the power.

5.10 Laser guide device (optional)

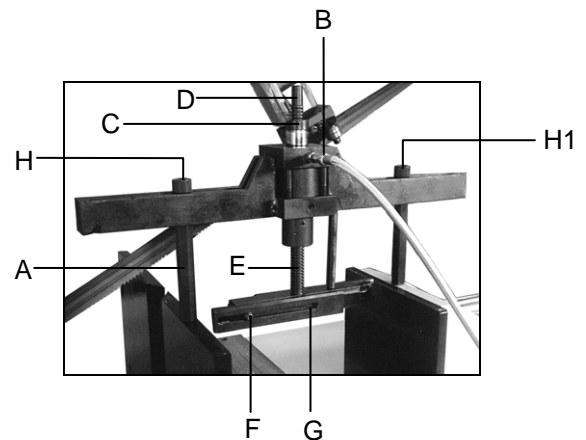
The laser guide has been set correctly before shipment. The laser guide - line works when machine power on, the red line will align and close with the blade.
if any situations have to readjust Laser device, see below pictures.

- A screw for moving the device forward or backward.
- B screw for moving the device downward or upward.
- Loosen C thumb knob for adjust the device angle.

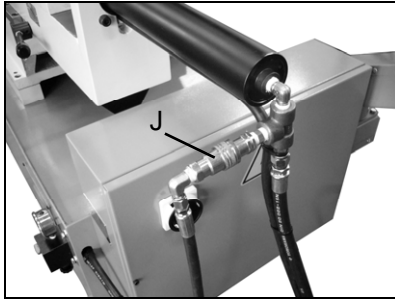


5.11 Install the vertical press on the vise jaws for bundle cutting (optional)

- Standard press capacity (W x H) 250~485 x 150~240 mm. Vise plates height 240 mm
- Special press capacity (W x H) 250~485 x 300~400 mm. Vise plates height 400 mm



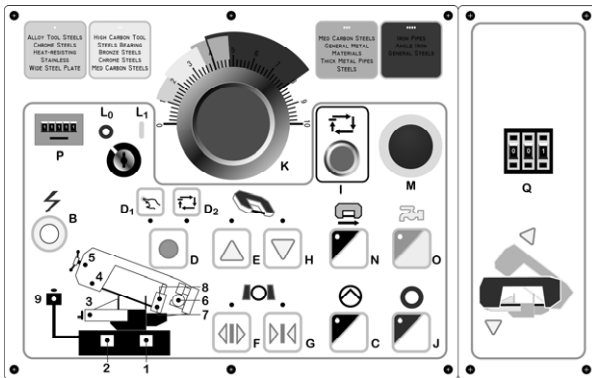
- Open the vise more than 250mm.
- Attach and Tighten posts bolts' (A) on to vises. Then attach the vertical press to the top of the post bolts. Connect the Hydraulic connector (B).
- Attach the nuts (H) on to the posts, but do not make the nut (H1) on moveable vise jaw too tight. *Otherwise, the vise won't be able to clamp the work piece or the post bolts will be damaged.
- Adjust the vise press (E) to sit approximately 5-8mm above the work piece. Loose nut (C) and rotate the bolt (D) to raise or lower the vise press (E).
- Adjust the vise press width to fit the work piece size. Loosen screws (F) on both sides of the vise press then move press extender bars (G) desired width.



- Turn OFF the hydraulic pump.
- Attach the hydraulic hose to connector (B) and then attach the quick link connector (J) to the 90-degree fitting.
- Switch ON the hydraulic pump.

6 OPERATION CYCLE

6.1 Operation cycle



- Turn on the main connect switch A. on the door of electrical box.
- Turn the key to automatic operation mode L1 to unlock the machine. The indicator light B should be lit.
- Start the hydraulic system, use switch C.
- Press the selector D to manual operation mode D1, and its indicator light will be lit.
- Raise the saw bow, Use bow up switch E.
- Open the vise, use vise open switch F.
- Load the working material.
- Secure the material, use the vise close switch G.
- Base on the diameter of the material; set the saw bow's height Q.
- Choose the blade speed appropriate for the material.
- If cutting many pieces, set the saw bow return stroke height.
- Select the operation cycle mode 6.1 D2 to press the selector 6.1 D. The indicator light will be lit.
- Restart the hydraulic system. Press the hydraulic start switch 6.1 C.
- Start operation by using the start switch 6.1 I.
- The digital display 6.1 P will present pieces cut.
- When the cutting operation is finished the saw bow will automatically rise to the preset height ready for the next operation.

6.2 Stopping or emergency stopping

There are two ways to stop the machine in an event of an emergency or improper operation.

- For most situations, use the stop switch 6.1 J. Using the stop switch 6.1 J will not reset the controls and your operation setting. The blade and drive motor will stop. Then the saw bow will rise to the start position. Adjustments can be made.
- Use the cycle start switch to continue the cutting cycle.
- For unsafe and emergency conditions use the emergency stop button 6.1 M. Using emergency stop button 6.1 M will stop the machine in last position. The motor and hydraulic will stop and control setting will be reset.
- To restart, the emergency stop button 6.1 M must be turned to release from the pressed position. Then the operation cycle 6.1 must be restarted.

6.3 Automatic shutoff during machine operation

If there are any improper operation or situation, the machine is designed to automatically shut off during the operation cycle to prevent any further damage from occurring.

- If the hydraulic pump is on and the machine has not been active for 5 minutes, the power will be shut off.
 - If the time take to clamp the vise is over 40 sec, the power will shut off. The vise pressure warning light will flash in warning.
 - After cutting the saw bow has taken more than 40 sec to rise to the start position, the power will shut off. The upper stroke-limit indicator light will flash in warning.
 - After pressing the start button, the vise clamps the work piece, and saw bow begins cutting. If the cutting time is unable to finish within 90 minutes, the lower stroke limit indicator will flash in warning and the power will be shut off.
- If any of the above situations occurs, reset the machine by pressing 6.1D. This will change the operation mode – manual or automatic.

7 ROUTINE AND SPECIAL MAINTENANCE

The maintenance jobs are listed below, divided into daily, weekly, monthly and six-month intervals. If the following operations are neglected, the result will be premature wear of the machine and poor performance.

7.1 Daily maintenance

- Give general cleaning to the machine to remove accumulated shavings.
- Clean the lubricating coolant drain hole to avoid excess fluid.
- Top off the level of lubricating coolant.
- Check blade for wear.
- Rise of saw frame to top position and partial slackening of the blade to avoid useless yield stress.
- Check functionality of the shields and emergency stops.

7.2 Weekly maintenance

- Thoroughly clean the machine to remove shavings, especially from the coolant tank.
- Removal of pump from its housing, cleaning of the suction filter and suction zone.
- Clean the filter of the pump suction head and the suction area.
- Use compressed air to clean the blade guides (guide bearings and drain hole of the lubricating cooling).
- Clean flywheel housings and blade sliding surfaces on flywheels.

7.3 Monthly maintenance

- Check the tightening of the drive wheel screws.
- Check that the blade guide bearings on the heads are perfect running condition.
- Check the tightening of the screws of the motor, pump, and accident protection guarding.

7.4 Six-monthly maintenance

- Test the continuity of the equipotential protection circuit.

7.5 Oils for lubricating coolant

Considering the vast range of products on the market, the user can choose the one most suited to their own requirements, using as reference the type SHELL LUTEM OIL ECO. THE MINIMUM PERCENTAGE OF OIL DILUTED IN WATER IS 8 - 10 %.

7.6 Oil disposal

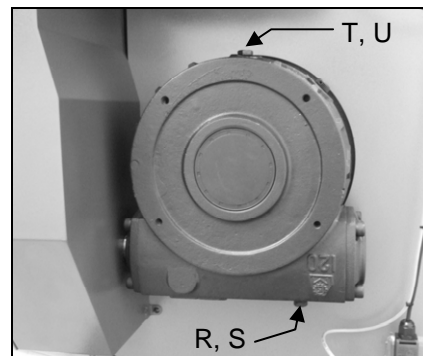
The disposal of these products is controlled by strict regulations. Please see the Chapter on "Machine dimensions Transport - Installation" in the section on Dismantling.

7.7 Special maintenance

Special maintenance must be conducted by skilled personnel. We advise contacting your nearest dealer and/or importer. Other protective and safety equipment, devices (of the reducer), the motor, the motor pump, and other electrical components also require special maintenance.

7.8 Changing gear oil




The gear box requires periodic changing of oil. The oil must be changed by the first 6 months of a new machine and every year thereafter.



- To change the gear box oil
- Lower the saw bow to horizontal position.
- Disconnect the machine from the power source.
- Release the drain hold (R) to draw off gear oil by loosening the hex head screw (S).
- Open fill hole (T) by releasing hex head screw (U)
- Replace the screw (S) after oil completely flows off.
- Filling in gear oil from T hole, until oil be sight from the visual glass.
- Replace hole using the fill hole (T).
- Replace hex head screw (U)

8 TECHNICAL CHARACTERISTICS

8.1 Table of cutting capacity and technical details

Cutting Capacity			
90°	460mm	460 x 460mm	440x600mm
45°	445mm	445 x 445mm	
60°	295mm	295 x 295mm	

Electric motor-blade rotation	3.7kW
Reduction unit in oil bath	40:1L
Blade Dimensions	41x1.3x5330mm
Blade speed cutting	32-96MPM
Coolant tank volume	55L
Hydraulic tank volume	15L
Machine weight	1320kgs
Packing measurement	2810x1130x1870mm

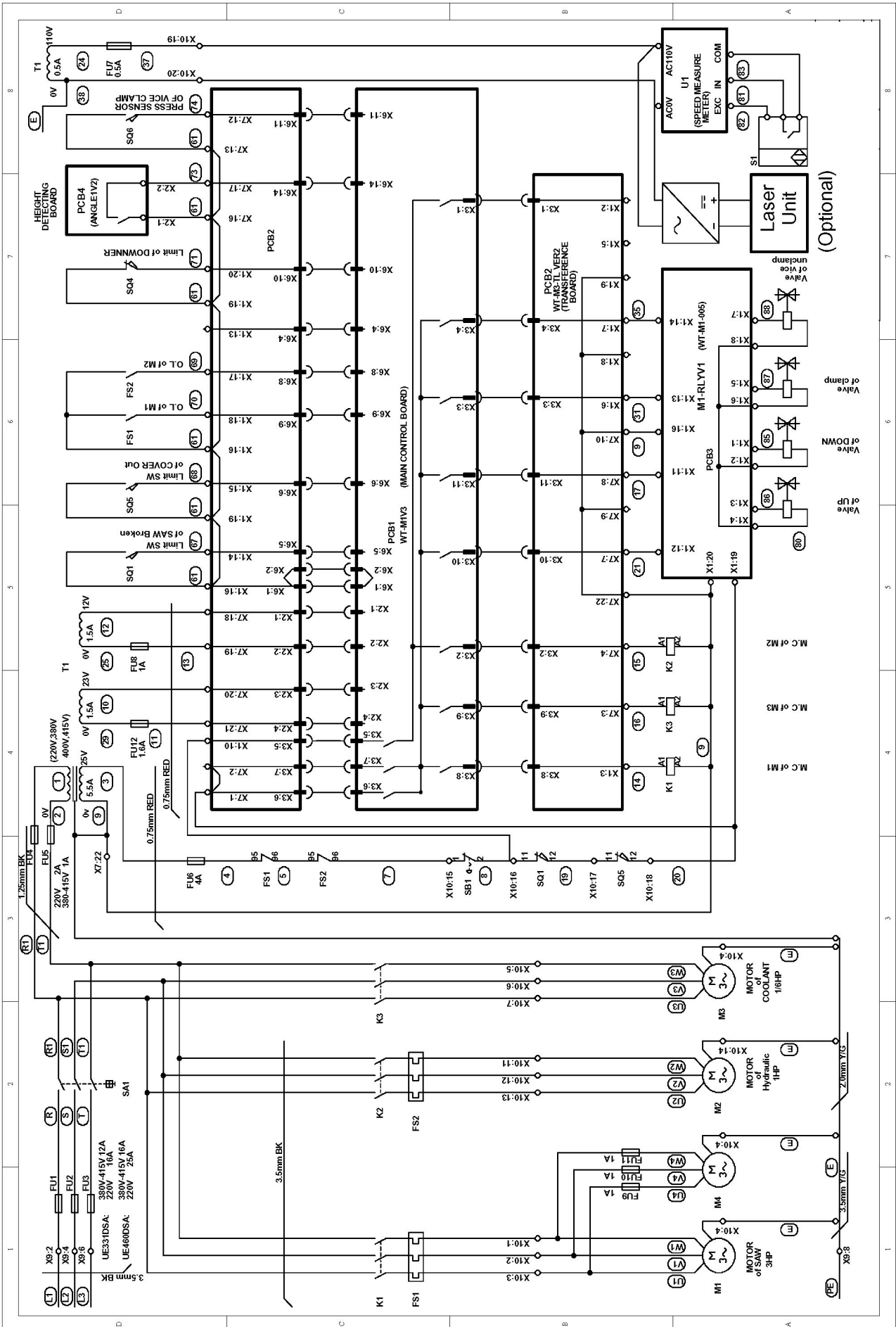
TYPES OF STEEL						CHARACTERISTICS		
USE	I UNI	D DIN	F AF NOR	GB SB	USA AISI-SAE	Hardness BRINELL HB	Hardness ROCKWELL HRB	R=N/mm²
Construction steels	Fe360	St37	E24	----	----	116	67	360÷480
	Fe430	St44	E28	43	----	148	80	430÷560
	Fe510	St52	E36	50	----	180	88	510÷660
Carbon steels	C20	CK20	XC20	060 A 20	1020	198	93	540÷690
	C40	CK40	XC42H1	060 A 40	1040	198	93	700÷840
	C50	CK50	----	----	1050	202	94	760÷900
	C60	CK60	XC55	060 A 62	1060	202	94	830÷980
Spring steels	50CrV4	50CrV4	50CV4	735 A 50	6150	207	95	1140÷1330
	60SiCr8	60SiCr7	----	----	9262	224	98	1220÷1400
Alloyed steels for hardening and tempering and for nitriding	35CrMo4	34CrMo4	35CD4	708 A 37	4135	220	98	780÷930
	39NiCrMo4	36CrNiMo4	39NCD4	----	9840	228	99	880÷1080
	41CrAlMo7	41CrAlMo7	40CADG12	905 M 39	----	232	100	930÷1130
Alloyed casehardening steels	18NiCrMo7	----	20NCD7	En 325	4320	232	100	760÷1030
	20NiCrMo2	21NiCrMo2	20NCD2	805 H 20	4315	224	98	690÷980
Alloyed for bearings	100Cr6	100Cr6	100C6	534 A 99	52100	207	95	690÷980
Tool steel	52NiCrMoKU	56NiCrMoV7C100K	----	----	----	244	102	800÷1030
	C100KU	C100W1	----	BS 1	S-1	212	96	710÷980
	X210Cr13KU	X210Cr12	Z200C12	BD2-BD3	D6-D3	252	103	820÷1060
	58SiMo8KU	----	Y60SC7	----	S5	244	102	800÷1030
Stainless steels	X12Cr13	4001	----	----	410	202	94	670÷885
	X5CrNi1810	4301	Z5CN18.09	304 C 12	304	202	94	590÷685
	X8CrNi1910	----	----	----	----	202	94	540÷685
	X8CrNiMo1713	4401	Z6CDN17.12	316 S 16	316	202	94	490÷685
Copper alloys Special brass Bronze	Aluminium copper alloy G-CuAl11Fe4Ni4 UNI 5275					220	98	620÷685
	Special manganese/silicon brass G-CuZn36Si1Pb1 UNI5038					140	77	375÷440
	Manganese bronze SAE43 - SAE430					120	69	320÷410
	Phosphor bronze G-CuSn12 UNI 7013/2a					100	56,5	265÷314
Cast iron	Gray pig iron G25					212	96	245
	Spheroidal graphite cast iron GS600					232	100	600
	Malleable cast iron W40-05					222	98	420

8.2 NOISE TESTS

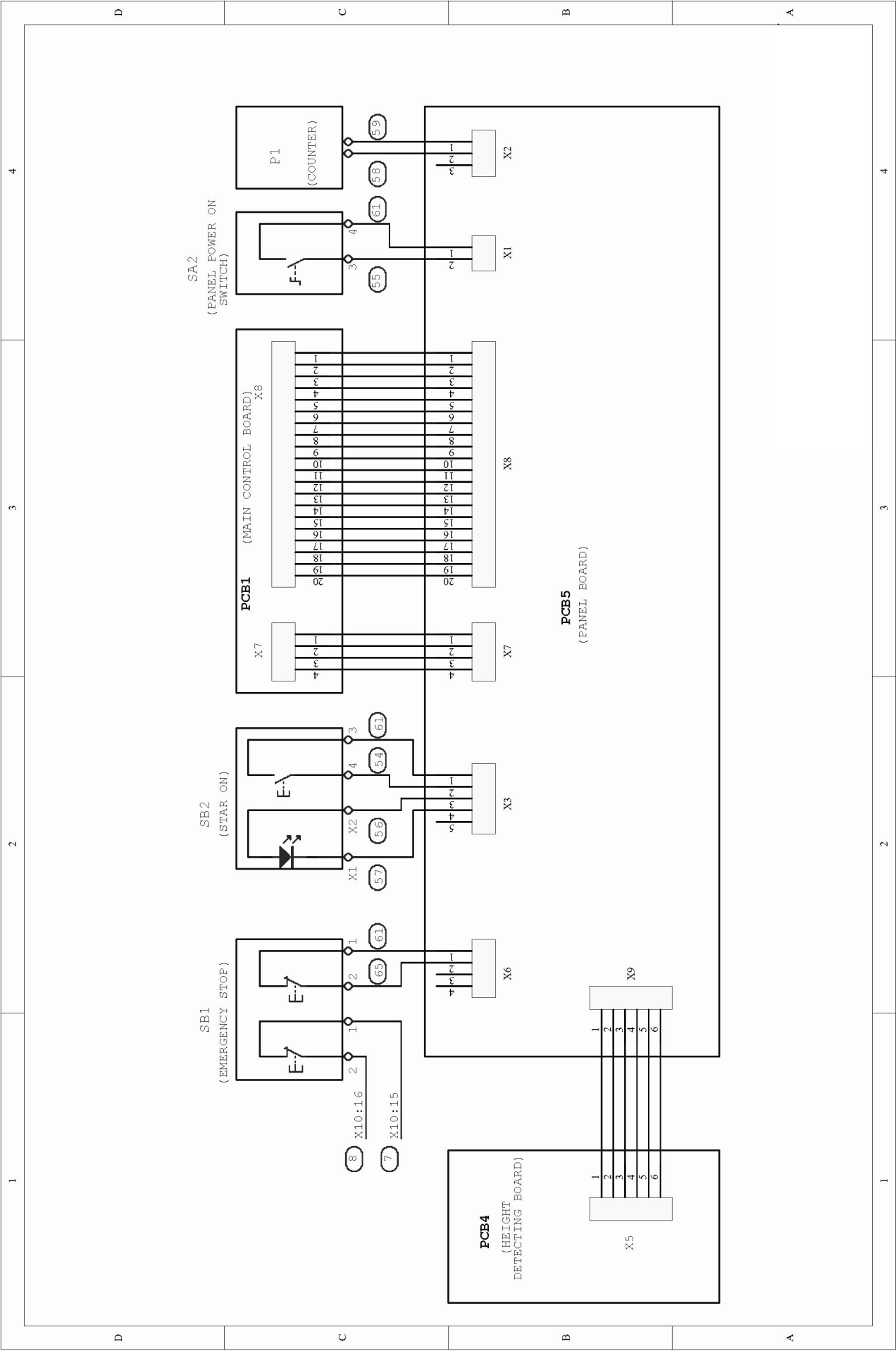
The test was held under environmental noise levels of 65db. Noise measurements with the machine operating unload was 71db. Noise level during the cutting of mild carbon steel was 73db.

NOTE: with the machine operating, the noise level will vary according to the different materials being processed. The user must therefore assess the intensity and if necessary provide the operators with the necessary personal protection, as required by Law 277/1991.

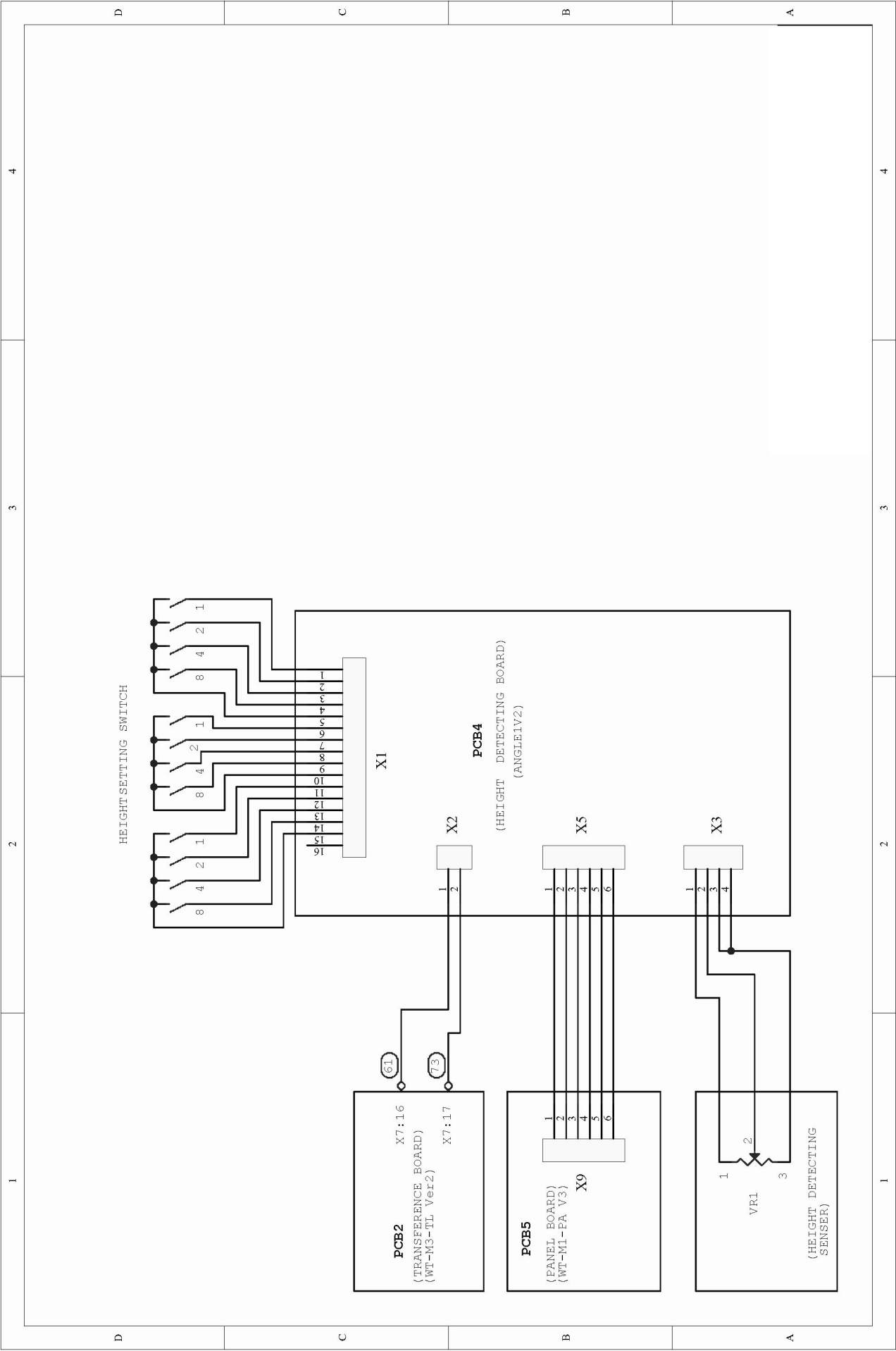
Control Circuit Diagram



Panel Board Wiring Diagram



Saw Bow Stroke Wiring Diagram



PART LIST

Part No.	Description	Size No.	Q'ty	Part No.	Description	Size No.	Q'ty
1	Base		1	57	Relay PC Board	M1-RLY	1
2	Hex. Cap Bolt	M8x20	12	58	Connector PC Board	WT-M3-TL	1
3	Spring Washer	M8	12	59	Dual Terminal Connector	ASL-TD-015H	10
4	Washer	M8	12	60	Fuse Seat	10x38-1P	3
5	Supporter		1	61	Ground Terminal Connector	AVK10T	1
6	Set Screw	M6x6	2	61A	Ground Terminal Connector (Not shown, Non CE)	HT-4E	1
7	Hex. Socket Cap Screw	M6x12	2	62	Terminal Connector	AVK10	3
7-1	Spring Washer	M6	2	62A	Terminal Connector (Not shown, Not CE)	HT-10	3
8	Bracket		6	63	Grounding Plate	G-8P	1
9	Nut	M8	12	64	Overload Contactor	ABB-TA25DU 7.5~11A	1
10	Spring Washer	M8	12	64A	Overload Contactor (Not shown, Non CE)	NTH-8~11A	1
11	Washer	M8	12	65	Overload Connector	ABB-TA25DU 2.2~3.1A	1
12	Front and Rear Tray		2	65A	Overload Relay (Not shown, Not CE)	NTH-1.8~2.5A	1
13	Hex. Cap Bolt	M8x20	12	67	Electric Box Cover		1
14	Chip Drawer		1	68	Power Switch (Upper)	YMXN6	1
15	Side Coolant Tray		1	69	Washer	M6	1
16	Washer	M8	2	70	Spring Washer	M6	1
17	Spring Washer	M8	2	71	Hex. Socket Cap Screw	M6x30	1
18	Hex. Cap Bolt	M8x16	2	72	Hinges	Ø8x50	2
19	Coolant Pump		1	73	Main PC Board	WT-M1	1
20	Hex. Cap Bolt	M6x12	2	74	Control Panel		1
21	Washer	M6	2	74-1	Control PCB		1
22	Pump Plate		1	75	Counter		1
23	Button Head Socket Screw	M6x12	2	76	Button Head Socket Screw	M5x8	10
24	Plate		1	77	Key Lock Power Switch		1
25	Button Head Socket Screw	M6x8	4	78	Cutting Feed Rate		1
37	Hydraulic Unit		1	79	Cycle Start Switch		1
38	Hex. Cap Bolt	M8x16	2	80	Emergency Stop Button		1
39	Front Plate		1	81	Stroke Panel		1
40	Button Head Socket Screw	M6x8	4	81-1	Bow Height PCB		1
41	Hex. Cap Bolt	M16x60	4	82	Stroke Height Switch		1
42	Nut	M16	4	83	Button Head Socket Screw	M5x8	4
43	Rear Plate		1	84	Plate		1
44	Button Head Socket Screw	M6x8	4	85	Handle		2
45	Vise Pressure Adjusting Valve		1	86	Button Head Socket Screw	M5x8	4
46	Electrical Box		1	87	Control Box		1
47	Washer	M6	4	88	Cover		1
48	Hex. Socket Cap Screw	M6x16	4	88-1	Round Head Screw	M6x8	6
49	Electrical Plate		1	89	Control Box Bracket		1
50	Hex. Socket Cap Screw	M6x12	4	89-1	Button Head Socket Screw	M6x8	4
51	Power Switch (Seat)	XA323B/B-40A	1	90	Swiveling Bracket		1
52	Contactor	A9-40-00 (COIL: AC24V)	2	90-1	Hex. Socket Cap Screw	M6x16	4
52A	Contactor (Not shown, Non CE)	C09D10A7 (COIL: AC24V)	2	91	Hex. Cap Bolt	M8x16	4
53	Contactor	A12-30-10 (COIL: AC24V)	1	91-1	Spring Washer	M8	4
53A	Contactor (Not shown, Non CE)	C12D10A7 (COIL: AC24V)	1	92	Handle	M8x35	1
54	Fuse Seat	10x38-1P	2	93	Swiveling Base		1
55	Fuse Seat	ASK2S/(5X20-1P)	3	94	Set Screw	M8x20	2
55A	Fuse Seat (Not shown, Non CE)	6X30-1P	3	95	Nut	M8	2
56	Transformer	CE-250VA	1	96	Connect Base		1

990209

PART LIST

Part No.	Description	Size No.	Q'ty	Part No.	Description	Size No.	Q'ty
96-1	Spring Washer	M8	4	145	Hex. Cap Bolt	M5X15	1
96-2	Hex. Cap Bolt	M8x16	4	146	Wire Connector		1
97	Cover		1	147	Swiveling		1
97-1	Round Head Screw	M6x8	4	148	Shaft		1
98	Plate		1	149	Taper Bearing	30312	2
99	Button Head Socket Screw	M5x8	4	150	Upper Cover		1
100	Hex. Cap Bolt	M10	1	151	Set Screw	M6x25	1
101	Bearing	6000ZZ	1	152	Hex. Socket Cap Screw	M8x20	8
102	Spring Washer	M10	1	153	Tighten Plate		1
103	Nut	M10	1	154	O Ring	ØP60	2
104	Cam Seat		1	155	Hex. Cap Bolt	M20x65	1
105	Button Head Socket Screw	M8x25	2	156	Nut	M20	1
106	C Ring	S16	1	157	Hex. Cap Bolt	M10x60	1
107	Hex. Socket Cap Screw	M10x40	1	158	Nut	M10	1
108	Extend Spring		1	159	Screw Holder		2
109	Nut	M10	1	160	Spring Bracket		1
110	Joint Plate		1	161	Washer	1/2"	2
111	Set Bolt		1	162	Nut	1/2"	2
112	Connect Unit		1	163	Spring Washer	M8	4
113	Hex. Socket Cap Screw	M10x50	1	164	Hex. Socket Cap Screw	M8x25	4
114	Handle Level		1	165	Cutting Bench		1
115	Nut	M12	1	166	Pin	Ø8x20	2
116	Handle		1	167	Hex. Socket Cap Screw	M10x60	2
117	Angle Setting		1	168	Cutting Plate		1
118	Hex. Socket Cap Screw	M8x20	2	169	Hex. Socket Cap Screw	M10x55	2
119	Set Block		1	170	Hex. Socket Cap Screw	M8x20	2
120	Button Head Socket Screw	M6x8	2	171	Vise Jaw-Left		1
121	Cover		1	172	Vise jaw-Right		1
122	Hex. Socket Cap Screw	M10x40	1	173	Hex. Socket Cap Screw	M10x30	8
123	Washer		1	174	Hex. Socket Cap Screw	M8x20	4
124	Angle Wheel		1	175	Vise Plate		1
125	Wire Connector		1	176	Hex. Socket Cap Screw	M8x20	1
126	Hex. Cap Bolt	M5x15	1	177	Hex. Socket Cap Screw	M12x30	2
127	Bush		1	178	Vise Jaw		1
128	Steel Wire	Ø1.2	1	179	Vise Slide		1
129	Extend Spring		1	180	Cylinder		1
130	Bed Plate		2	181	Hex. Socket Cap Screw	M12x30	2
131	Pin	Ø8x20	4	182	Hex. Socket Cap Screw	M10x40	6
132	Hex. Socket Cap Screw	M12x130	6	182-1	Spring Washer	M10	6
133	Set Screw	M12x25	4	183	Vise Bench		1
134	Bed		1	183-1	Rod Seat		1
135	Nut	M10	1	183-2	Oil Less Bush		2
136	Hex. Socket Cap Screw	M10x40	1	183-3	Rod		1
137	Seating Block		2	184	Bench Supporter		1
138	Hex. Socket Cap Screw	M10x35	4	185	Nut	M10	1
139	Hex. Socket Cap Screw	M10x20	5	186	Spring Washer	M10	2
140	Spring Washer	M10	5	187	Hex. Socket Cap Screw	M10x25	2
141	Pin	Ø8x20	2	188	Washer	M10	1
142	Angle Plate		1	189	Bearing	6200ZZ	1
143	Lower Cover		1	190	Spring Washer	M10	2
144	Hex. Socket Cap Screw	M8x20	8	191	Hex. Socket Cap Screw	M10x30	1

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PART LIST

Part No.	Description	Size No.	Q'ty	Part No.	Description	Size No.	Q'ty
192	Handle		1	253	Round Head Screw	M5x8	5
193	Handle Rod		1	254	Steel Plate		1
194	Nut	M10	1	255	Hex. Socket Cap Screw	M10x20	4
195	Adjusting Part		1	256	Set Screw	M10x16	4
196	Set Screw	M8x8	2	257	Set Plate		1
197	C Ring	S17	2	258	Tension Spring		2
198	Shaft		1	259	Hex. Socket Cap Screw	M10x25	3
199	Key	5x5x20	1	260	Spring Washer	M10	3
200	Cam		1	261	Spring Bracket		1
201	Hex. Socket Cap Screw	M6x16	1	262	Washer	1/2"	4
202	Hex. Cap Bolt	M6x16	1	263	Nut	1/2"	4
203	Nut	M6	1	264	Brush		1
204	Bolt		1	264-1	Nut	M6	1
205	Hex. Socket Cap Screw	M8x40	2	264-2	Spring Washer	M6	1
206	Spring Washer	M8	2	264-3	Washer	M6	1
207	Washer	M8	2	265	Oil Less Bush	1212	2
208	Set Block		1	266	Set Bush		1
209	Set Screw	M8x8	2	267	Brush Cover		1
210	Set Block		1	268	Brush Bracket		1
211	Copper Parts		2	268-1	Hex. Cap Bolt	M8x20	2
212	Vise Guide		1	268-2	Spring Washer	M8	2
213	Hex. Socket Cap Screw	M12x35	4	268-3	Washer	M8	2
214	Plate		1	269	Wing Screw	M6x10	1
215	Spring Washer	M8	2	270	Spring Washer	M6	1
216	Hex. Cap Bolt	M8x20	2	271	Hex. Socket Cap Screw	M6x20	1
231	Blade Cover		1	272	Brush Shaft		1
231-1	Button Head Socket Screw	M6x8	2	273	Nut	M20	1
235	Blade Guide-Right		1	274	Brush Rod		1
236	Pin	Ø4x12	1	274-1	Key	4x15	4
237	Adjustable Bracket-Right		1	275	Universal Joint		2
237-1	Laser Device	(Optional)	1	275-1	Set Screw	M5x6	8
237-2	Laser Bracket		1	276	Plastic Cover		2
237-3	Screw	M6	1	277	Safety Cover		1
237-4	Hex. Socket Cap Screw	M5x15	1	277-1	Button Head Socket Screw	M5x8	2
237-5	Spring Washer	M5	1	278	Brush Bracket		1
237-6	Washer	M5	1	278-1	Spring Washer	M8	2
238	Button Head Socket Screw	M6x16	4	278-2	Hex. Socket Cap Screw	M8x20	2
239	Fixed Bracket		2	279	Nut	M6	8
240	Pin	Ø8x70	2	280	Brush Motor		1
241	Button Head Socket Screw	M8x30	4	281	Hex. Socket Cap Screw	M6x90	4
242	Free Block		2	282	Set Plate		1
243	Pin	Ø4x12	1	283	Spring Washer	M6	2
244	Knob	M5x8	1	284	Hex. Socket Cap Screw	M6x12	2
245	Blade Guide-Left		1	285	Sensor		1
246	Hex. Socket Cap Screw	M10x35	4	286	Round Head Screw	M3x20	2
247	Spring Washer	M10	4	287	Nut	M3	2
248	Washer	M10	4	288	Saw Bow		1
249	Set Screw	M8x16	6	289	Spring Washer	M12	4
250	Adjustable Bracket-Left		1	290	Hex. Cap Bolt	M12x45	4
251	Lock Handle	M8x30	2	291	Lock Pin		1
252	Lock Block		2	292	Drive Wheel		1

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PART LIST

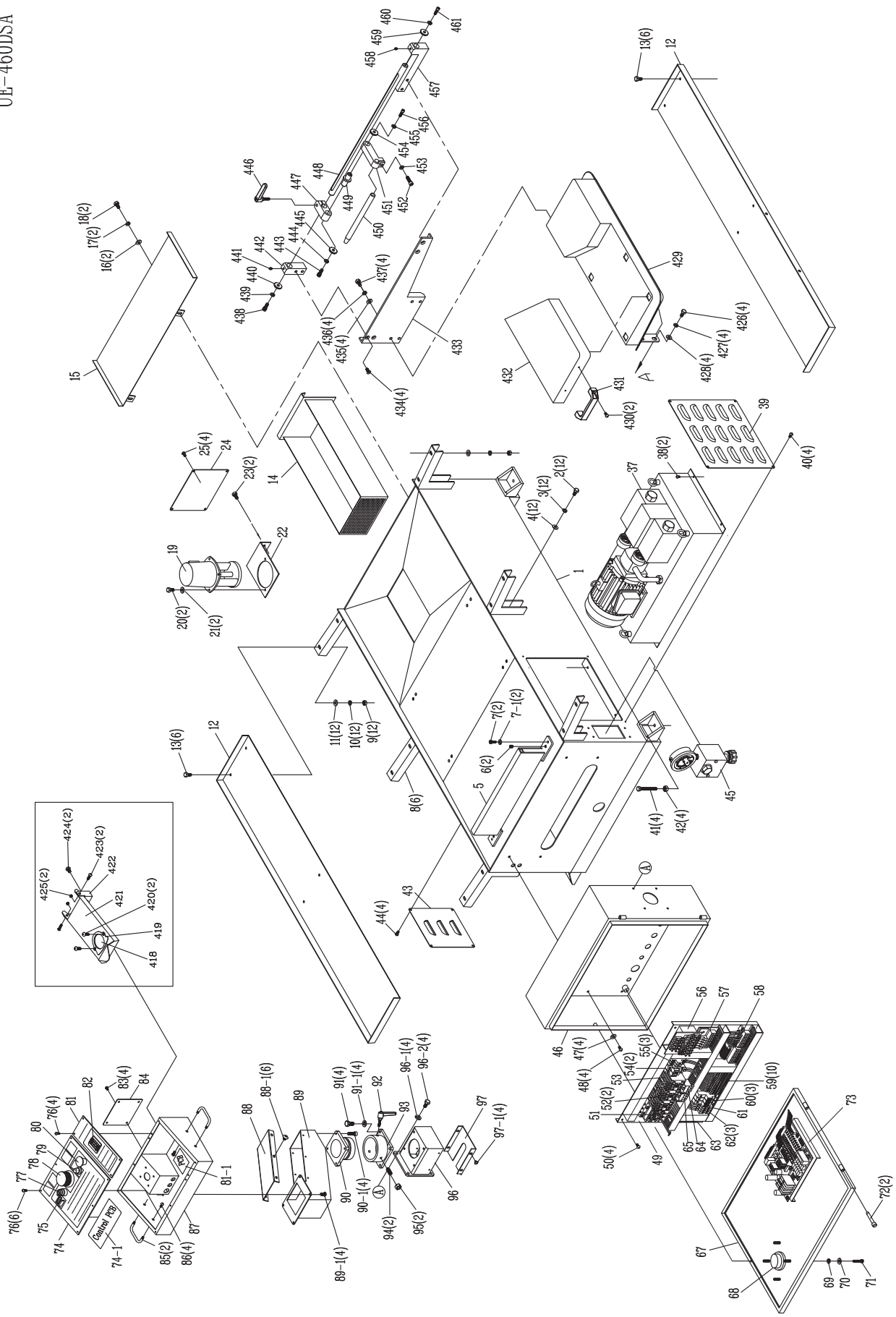
Part No.	Description	Size No.	Q'ty	Part No.	Description	Size No.	Q'ty
293	Washer		1	344	Plate		1
294	Flat Head Hex. Soc. Screw	M12x25	1	345	Bushing		1
295	Hex. Socket Cap Screw	M12x70	4	346	Blade Tension Gauge		1
296	Washer		1	347	Bearing	51203	1
297	Upper Shaft		1	348	Bolt Sleeve		1
298	Holder		1	349	Key	5x5x30	1
299	Nut	M20xP1.5	1	350	Set Screw	M8x10	1
300	Saw Bow Cylinder		1	351	Handle Wheel		1
301	C Ring	S20	4	352	Handle		2
302	Hex. Socket Cap Screw	M8x20	2	353	Limit Switch		1
303	Cylinder Seat		1	354	Hex. Socket Cap Screw	M4x35	2
304	Lower Shaft		1	355	Washer		1
305	Block		1	356	C Ring	S45	2
306	Spring Washer	M8	2	357	Shaft Device		1
307	Button Head Socket Screw	M8x40	2	358	Slide		1
308	Round Shaft		2	359	Shaft	Ø16x90	1
309	Side Wheel		2	360	Set Screw	M12x25	1
310	Bearing		2	361	Slide Guide		2
311	C Ring	R42	2	362	Slide Plate		2
312	Washer	M10	2	363	Spring Washer	M10	6
313	Spring Washer	M10	2	364	Hex. Socket Cap Screw	M10x60	6
314	Hex. Socket Cap Screw	M12x60	2	365	Blade Cover		1
315	Steel Plate Holder		2	366	Button Head Socket Screw	M6x8	4
316	Washer	M10	4	367	Limit Switch		1
317	Spring Washer	M10	4	368	Hex. Socket Cap Screw	M4x30	2
318	Hex. Socket Cap Screw	M10x30	4	369	Button Head Socket Screw	M5x8	2
319	Taper Bearing	32009	2	370	Indicator Seating		1
320	Idle Wheel		1	371	Oil Less Bush		2
321	Anti-Dust Cover	Ø45	2	372	Set Block		1
322	Star Washer	AW09	1	373	Hex. Cap Bolt	M10x20	1
323	Nut	AN09	1	374	Nut		1
324	Cover Switch		1	375	Spring Washer		1
325	Hex. Socket Cap Screw	M4x30	2	376	Washer		1
326	Nut	M8	2	377	Sensor Bracket		1
327	Bracket		1	378	Sensor		1
328	Washer		3	379	Round Head Screw	M4x10	2
329	Round head Socket Screw	M8x25	4	380	Cover		1
330	Bracket		1	381	Button Head Socket Screw	M5x8	4
331	Holding Bracket		1	382	Gear Box		1
332	Spring		1	383	Key	12x8x50	1
333	Safe Locker		1	384	Motor		1
334	Set Screw	M4x12	2	385	Hex. Cap Bolt	M10x35	4
335	Hex. Cap Bolt	M8x20	2	386	Spring Washer	M10	4
336	Spring Washer	M8	2	387	Washer	M10	4
337	Hex. Cap Bolt	M8x20	1	388	Key	10x8x40	1
338	Disc Washer Seat		1	389	Pulley Cover		1
339	Spring Pin	M5x12	2	390	Belt	1922V448	1
340	Disc Washer		8	391	Variable Speed Adjustable		1
341	Slide Bolt		1	392	Input Pulley		1
342	Hex. Cap Bolt	M8x60	1	393	Hex. Socket Cap Screw	M8x65	1
343	Nut	M8	1	394	Cover		1

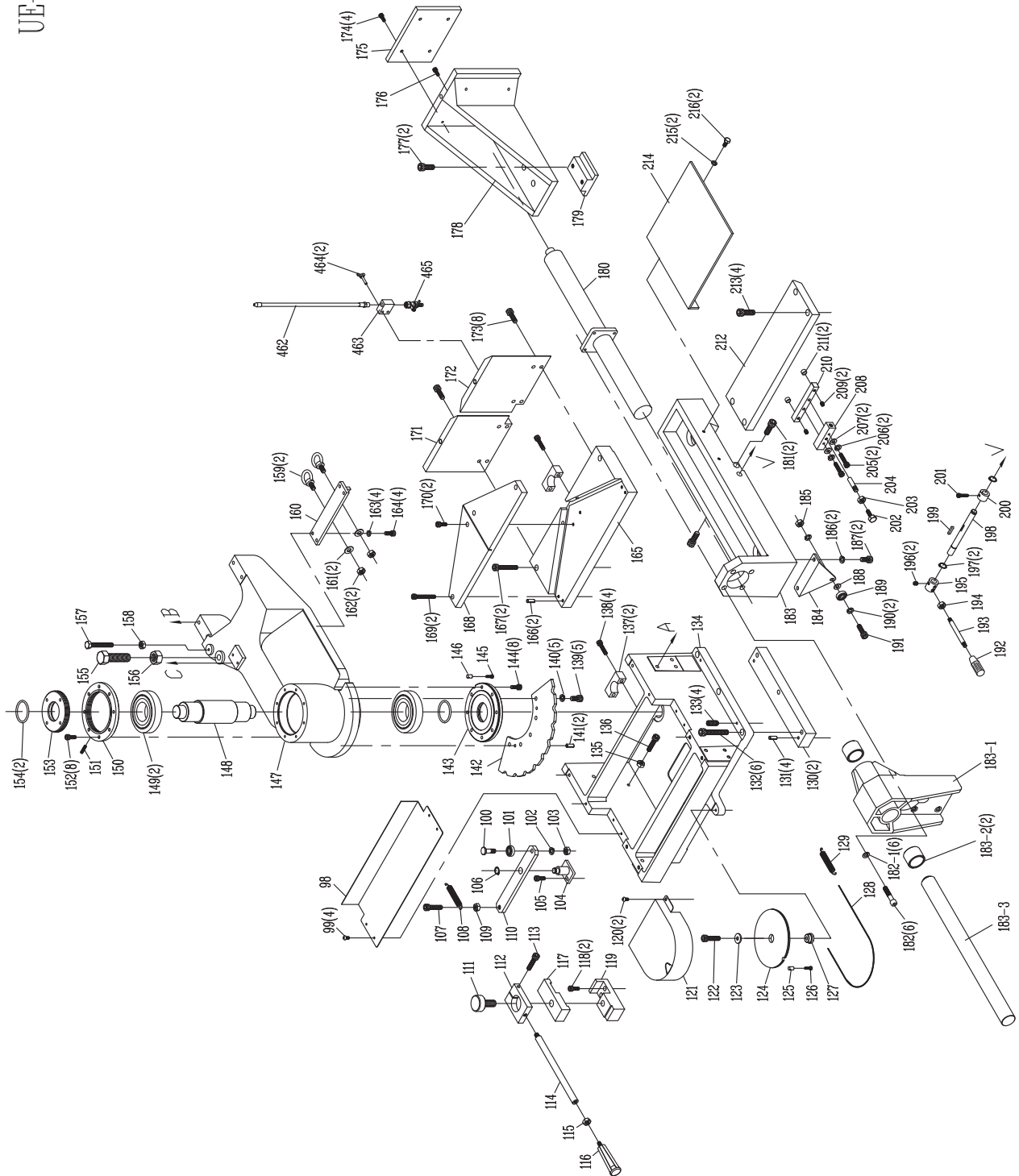
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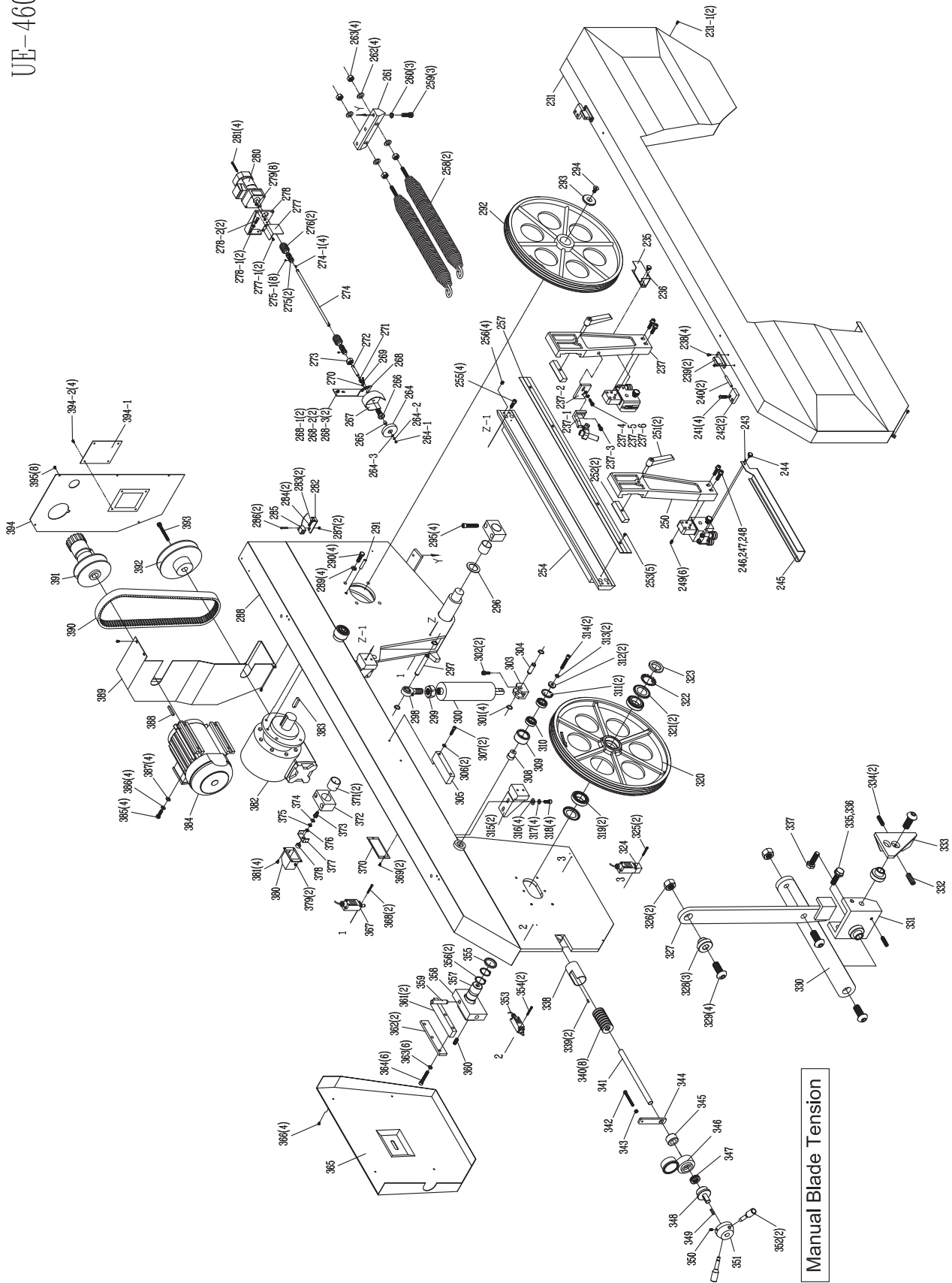
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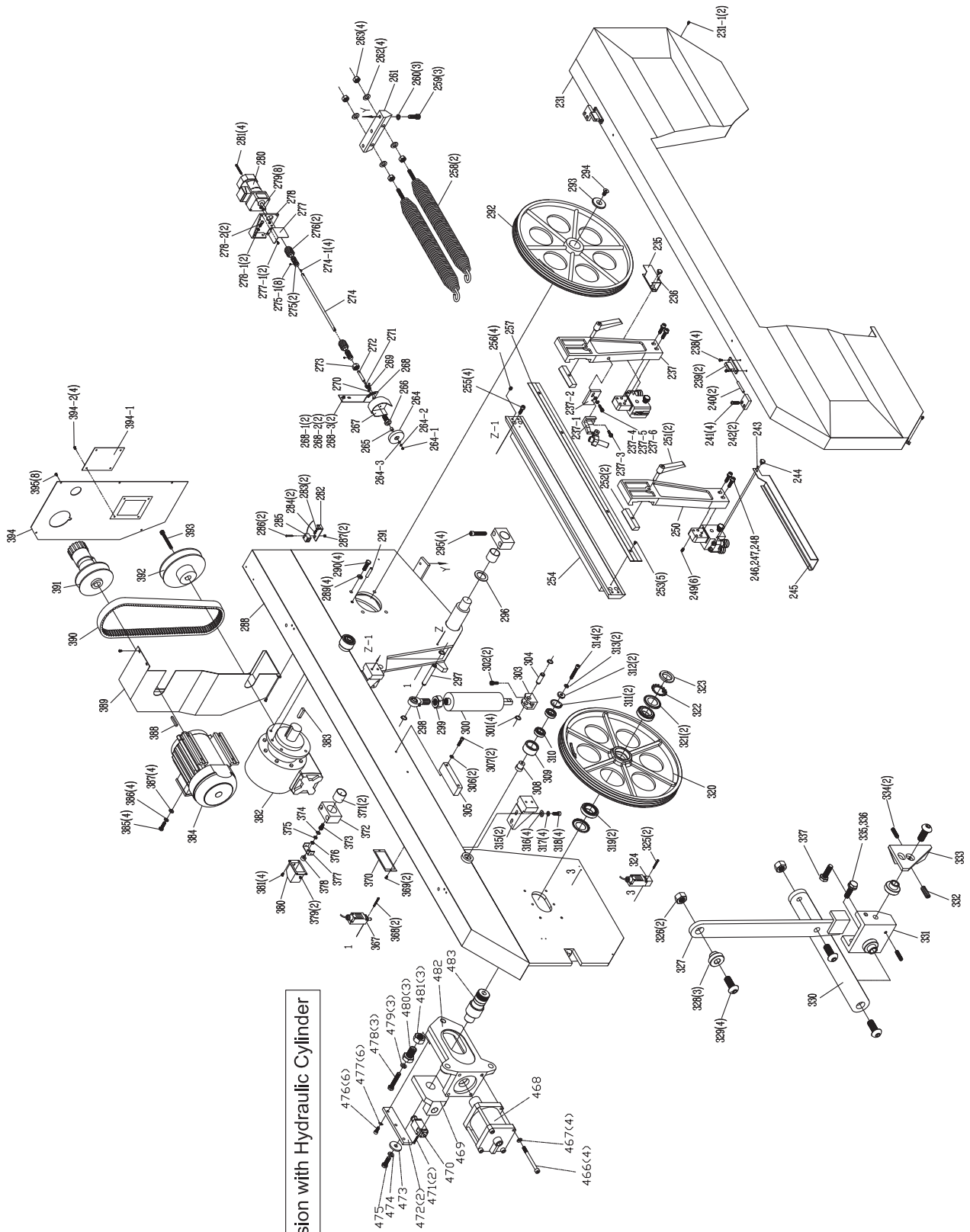
Part No.	Description	Size No.	Q'ty	Part No.	Description	Size No.	Q'ty
394-1	Cover		1	444	Spring Washer	3/8"	1
394-2	Button Head Socket Screw	M5x8	2	445	Washer		1
395	Button Head Socket Screw	M5x8	8	446	Lock Handle		1
396	Long Bearing Shaft		4	447	Length Adjusting Block		1
397	Bearing	6201	8	448	Length Rod		1
398	Bearing Bush (long)		2	449	Welding Shaft		1
399	Bearing Bush (short)		2	450	Stop Bar		1
400	Spring Washer	M10	4	451	Position Bracket		1
401	Nut	M10	4	452	Hex. Socket Cap Screw	3/8"x1" L	1
402	Hex. Socket Cap Screw	M6x20L	4	453	Spring Washer	3/8"	1
403	Adjusting Knob		2	454	Washer		1
404	Spring		2	455	Spring Washer	3/8"	1
405	Shaft		2	456	Hex. Socket Cap Screw	3/8"x1" L	1
406	Hex. Socket Cap Screw	M8x40L	2	457	Left Positioning		1
407	Front Bearing Seat		1	458	Set Screw	5/16"x5/16" L	1
408	Bearing	6200	4	459	Washer		1
409	Bearing Bracket		2	460	Spring Washer	3/8"	1
410	Bush		2	461	Hex. Socket Cap Screw	3/8"x1" L	1
411	Shaft		4	462	Hose		1
412	Carbide Guide (Left front)		1	463	Pipe Fitting Seat		1
413	Carbide Guide (Left back)		1	464	Wing Screw	M6x30L	2
414	Spring Pin	D5x12L	4	465	Coolant Switch	1/4"PTx1/4"	1
415	Rear Bearing Seat		1	466	Hex. Socket Cap Screw	M10x150L	4
416	Carbide Guide (Right front)		1	467	Spring Washer	M10	4
417	Carbide Guide (Right back)		1	468	Blade Tension Cylinder		1
418	Bow Height Magnifier		1	469	Tension Slider		1
419	Magnifier Bracket		1	470	Limit Switch for Tension		1
420	Round Head Screw	M4x6L	2	471	Hex. Socket Cap Screw	M12x25L	2
421	Height Scale Cover		1	472	Slide Plate		2
422	Cover Bracket		1	473	Idle Wheel Washer		1
423	Round Head Screw	M4x12L	2	474	Spring Washer	M12	1
424	Big Round Head Screw	M4x6L	2	475	Hex. Socket Cap Screw	M12x25L	1
425	Nut	M4	2	476	Hex. Socket Cap Screw	M8x20L	6
426	Hex. Cap Bolt	M12x25L	4	477	Spring Washer	M8	6
427	Spring Washer	M12	4	478	Hex. Cap Bolt	M12x70L	3
428	Washer	M12	4	479	Spring Washer	M12	3
429	Outlet Support		1	480	Adjusting Screw		3
430	Big Round Head Screw	M6x12L	2	481	Nut	M22x2.5	3
431	Handle		1	482	Slider Seat		1
432	Movable Support		1	483	Idle Wheel Shaft		1
433	Side Support Plate		1				
434	Flat Head Screw	5/16"x3/4" L	4				
435	Washer	M10	4				
436	Spring Washer	M10	4				
437	Hex. Cap Bolt	M10x25 L	4				
438	Hex. Socket Cap Screw	3/8"x1" L	1				
439	Spring Washer	3/8"	1				
440	Washer		1				
441	Set Screw	5/16"x5/16" L	1				
442	Right Positioning		1				
443	Hex. Socket Cap Screw	3/8"x1" L	1				

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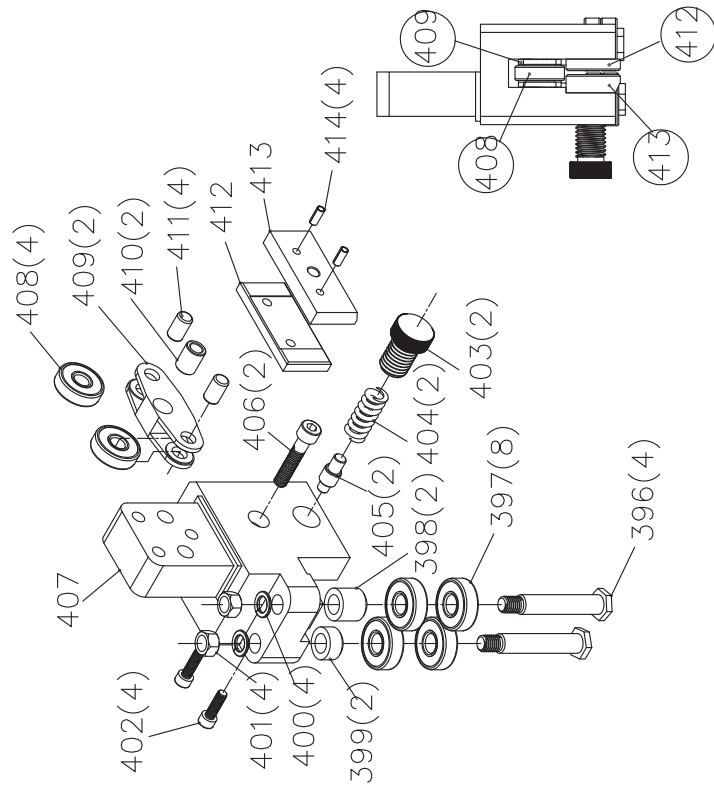






Blade Tension with Hydraulic Cylinder

FRONT BEARING SEAT



REAR BEARING SEAT

