

INSTRUCTION MANUAL

BS-330FAS

Automatic Hitch Feed & Swivel Head Metal
Cutting Band Saw (415V)
460 x 330mm (W x H) Rectangle



B110

1. Turning the machine on.

- a) Turn on the main switch—located on the door to the electrical cabinet at the front of the machine.



FIG 1.

- b) If there is power to the machine, the power indicator lamp should light.



FIG 2.

- c) The “Title Screen” should appear after a few seconds.



FIG 3.

- d) Touch anywhere on this screen and the following screen will appear for a few seconds.



FIG 4.

- e) The “Main Screen” should now be showing.



FIG 5.

not, Press “F1”.



FIG 6.

- f) Press the “Start” button.
- g) The hydraulic pump should start. Its operation should also be indicated by the relevant

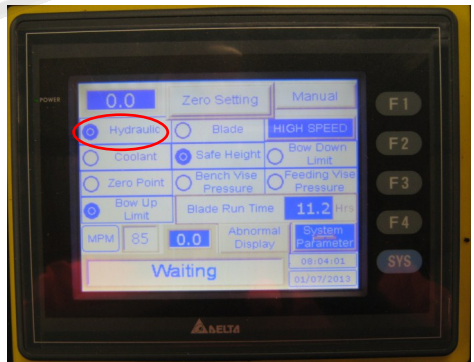


FIG 7.

operation lamp. Refer to the manual for more information.

2. Automatic Calibration.

- a) Raise bow to its maximum set height. (ie. Limit switch is actuated). Refer to “Manual Operation” to adjust bow height stop.

FIG 8.

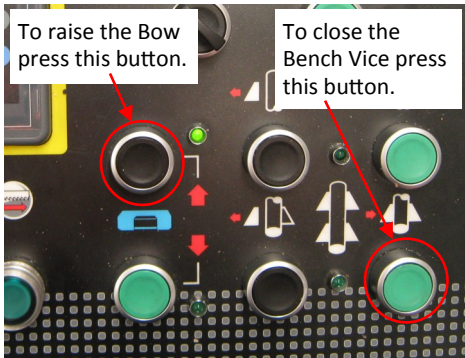
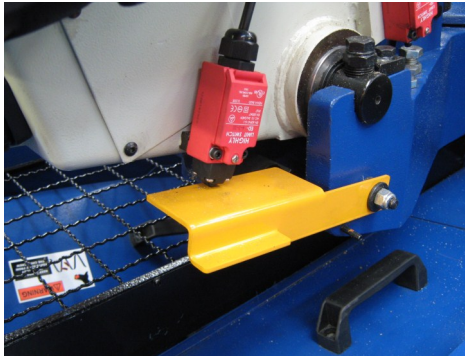
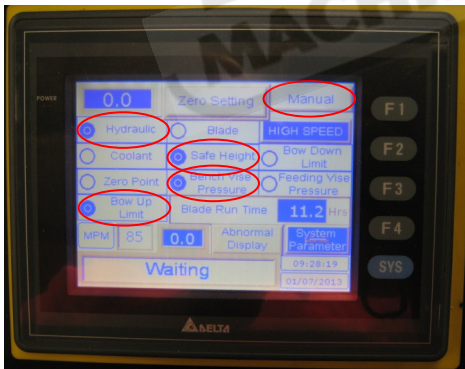


FIG 9.

- b) Remove any work pieces from the machine.
- c) Close the Bench Vice. Refer to Fig 9. The following operational lamps should be on before calibration.

FIG 10.



- d) Press the “Zero Setting” button. The Feeding Vise may move forward during calibration.

FIG 11.



- e) The screen should now be showing this. Fig 12. The machine is ready to operate.

FIG 12.



Refer to the manual for more information. (Page 5.)

3. Changing the Blade Speed.

This can be done in 2 ways;

- 1) a) Press this button (Fig 13.).

FIG 13.



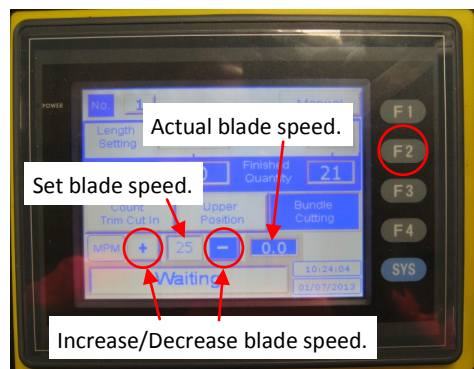
- b) A keypad will appear—just type in the required blade speed & press “Enter”.

FIG 14.



- 2) a) Enter this screen by pressing “F2”. Then press the “+” or “-” buttons to increase or decrease the blade speed.

FIG 15.



Refer to the manual for further information. (Page 7.)

4. Down Pressure & Down Feed.

Down feed is the speed at which the bow moves. Down pressure is the pressure that will be applied when the bow encounters resistance to downward movement in order to maintain down feed speed.

Adjust “Down Pressure” and “Down Feed” knobs to suit material and section being cut.



FIG 16.

Refer to tables in manual for further information. (Pages 16 & 17.)

5. Screens.

- “F1” - Shows the real time status of limit switches, blade speed etc. during operation in both Manual and Automatic modes. Is the screen for calibration or zero setting. Is the best screen for manual cutting as it shows the position of the Feeding Vice.
- “F2” - Shows the basic operating parameters such as feed length, cut quantity, blade speed. Is the best screen for automatic cutting as it allows selection of “Trim Cut”. See notes.
- “F3” - Shows the Data Entry screen for automatic cutting.
- “F4” - Shows the language selection screen.

6. Manual Operation.

Saw must be calibrated (Section 2.) and switched to “Manual”. (Fig 10. & Fig 17.) Turn on coolant & work light if required and set Down Feed & Speed (Section 4.) Set the blade speed (Section 3.) Blade feeds and speeds can be adjusted at any time. See “Notes” for bundle cutting.

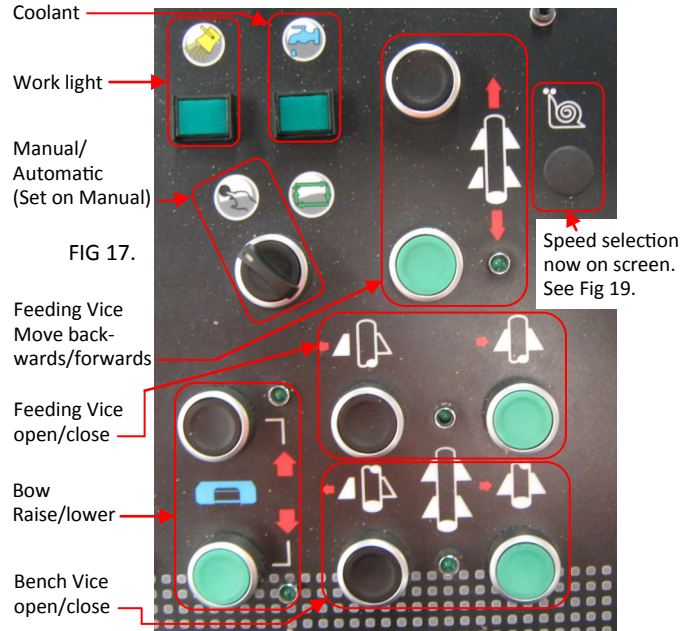


FIG 17.

TRIM CUT.

- a) Raise the Bow. The maximum height of the Bow can be adjusted by moving the Bow Height Adjusting Plate up or down by hand (Fig 18).

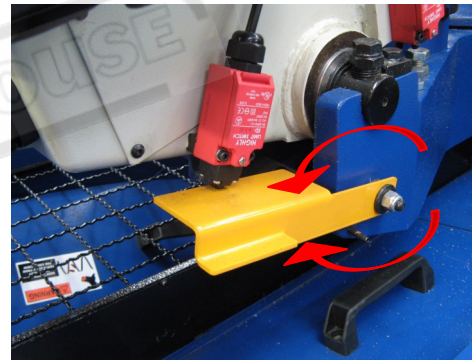


FIG 18.

- b) Open Bench Vice and Feeding Vice and insert work piece.
- c) Move Feeding Vice backwards and close it. The speed of the Feeding Vice can be adjusted by pressing this button (Fig 19.) It will toggle between “HIGH SPEED” & “LOW SPEED”.

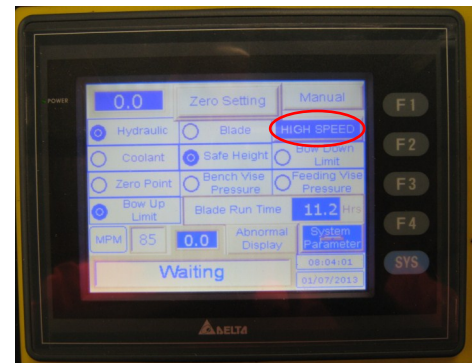


FIG 19.

- d) Move the Feeding Vice forwards or backwards to position the work piece for the trim cut.
- e) Close the Bench Vice.
- f) Press the “Operation Start” button.

The blade will start. The Bow will lower, beginning the cutting operation. Once finished, the Bow will rise and the blade will stop.

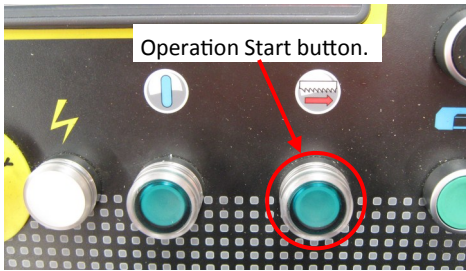


FIG 20.

CUT.

- a) Open the Feeding Vice, leave the Bench Vice closed.
- b) Move the Feeding Vice back until the required cut dimension is displayed. (Fig 21.) *It will be necessary to jog the forwards/backwards buttons in Slow Speed to obtain an exact*

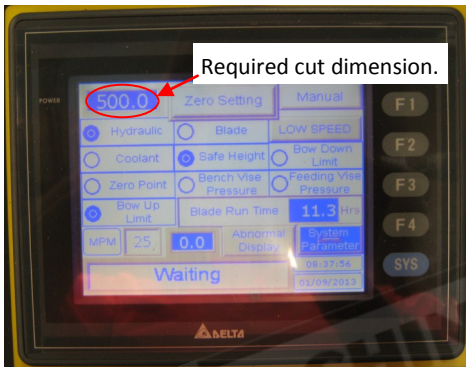


FIG 21.

dimension. Close the Feeding Vice.

- c) Open the Bench Vice.
- d) Move the Feeding Vice all the way forward until the dimension in fig 21. is 0.0.
- e) Close the Bench Vice.
- f) Press the "Operation Start" button.

If a cut dimension greater than 700mm is required it will be necessary to add 2 or more movements together. Eg. To cut 1000mm after the trim cut; Open Feeding Vice. Keep Bench Vice closed. Move Feeding Vice back to 700mm. Close Feeding Vice. Open Bench Vice. Move Feeding Vice forward 700mm, until 0.0mm is displayed. Close Bench Vice. Open Feeding Vice. Move Feeding Vice back until 300mm is displayed. (700+300=1000). Close Feeding Vice. Open Bench Vice. Move Feeding vice forward until 0.0mm is displayed. Close Bench Vice and cut.

7. Automatic Operation.

Saw must be calibrated (Section 2.) Both vices must be closed (in "Manual" mode). (Fig 10. & Fig 17.) Turn on coolant & work light if required and set Down Feed & Speed (Section 4.) Set the blade

speed (Section 3.) Blade feeds and speeds can be adjusted at any time.

Switch to "Automatic" (Fig 17.)

PROGRAMMING.

- a) Press "F3" to enter "Programming Screen".

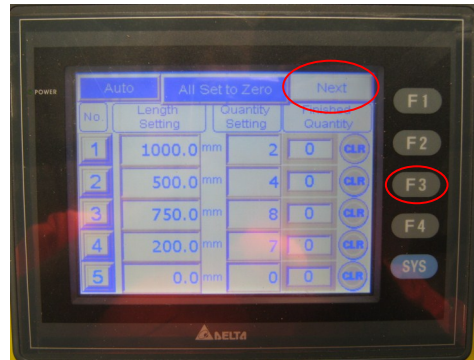


FIG 22.

- b) Enter dimensions and quantities as required by tapping on the required position in the table. A keypad will appear — enter data here.



FIG 23.

- c) Continue until your cutting list is complete. Fig 22. (There is a second page in the table. This gives the option of programming up to 10 different lengths. This page is accessed by pressing the "Next" button. Fig 22.)

OPERATION.

- a) Press "F3" to get to the "Data Entry Screen".
- b) Select the lengths you wish to cut by pressing

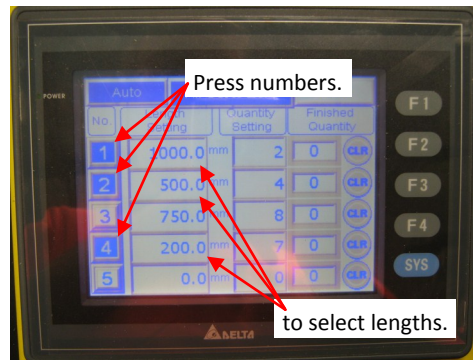


FIG 24.

- c) the corresponding number.
- c) Press "F2" to get to the "Operating Screen".
- d) Press the "Count Trim Cut In"/"Count Trim Cut Out" button.

“Count Trim Cut In” will include the trim cut as a part.
 “Count Trim Cut Out” will not include the trim cut as a part.



FIG 25.

- e) Press the “Operation Start” button. (Fig 20.).
- f) The machine will cycle through the selected lines in the cut table and cut the required number of parts at the required length.

Refer to the manual for further information.

8. Notes.

- 1) **BOW UP.** Pressing the “Bow Up” button (Fig 17.) during a cut in “Manual” mode or a cycle in “Automatic” mode will cancel the cut and raise the Bow to its set limit.
- 2) **TRIM CUT.** The “Trim Cut” will be performed where ever the work piece is positioned. Position the work piece as per “Manual Operation” on page 4. “Count Trim Cut Out” is used where a trim cut is required. “Count Trim Cut In” is only used where one complete part length is already protruding past the blade.
- 3) **BUNDLE CUTTING.** Bundle cutting is controlled by these valves (shown below in the “off” position) (Fig 26.). With the valves opened the Bundle Clamps will operate at the same time as the vices.

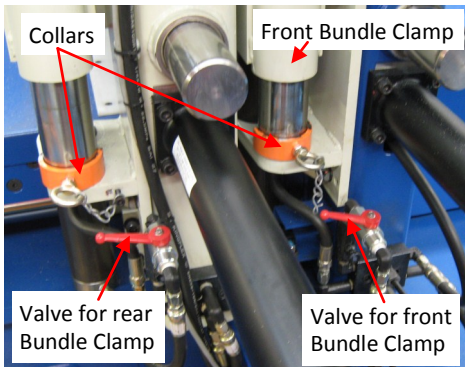


FIG 26.

The Collars must remain in position. They set the lowest position for the Bundle Clamps. Fig.27 shows the rear Bundle Clamp — viewed

from the rear of the machine.



FIG 27.

- 4) **PROGRAMMING.** Once a line in the cut list (Fig 22.) has been completed, it cannot be reused. To overcome this follow these steps;
 - a) Touch either the “Length Setting” or “Quantity Setting” box on the line in the cutting list you wish to reuse. The keypad will appear. (Fig 23.).
 - b) Press “Enter”.
 - c) Repeat this process for every line you wish to reuse.

Now you will be able to select these lines. One line in this table is referred to by the machines system as a “Job”.

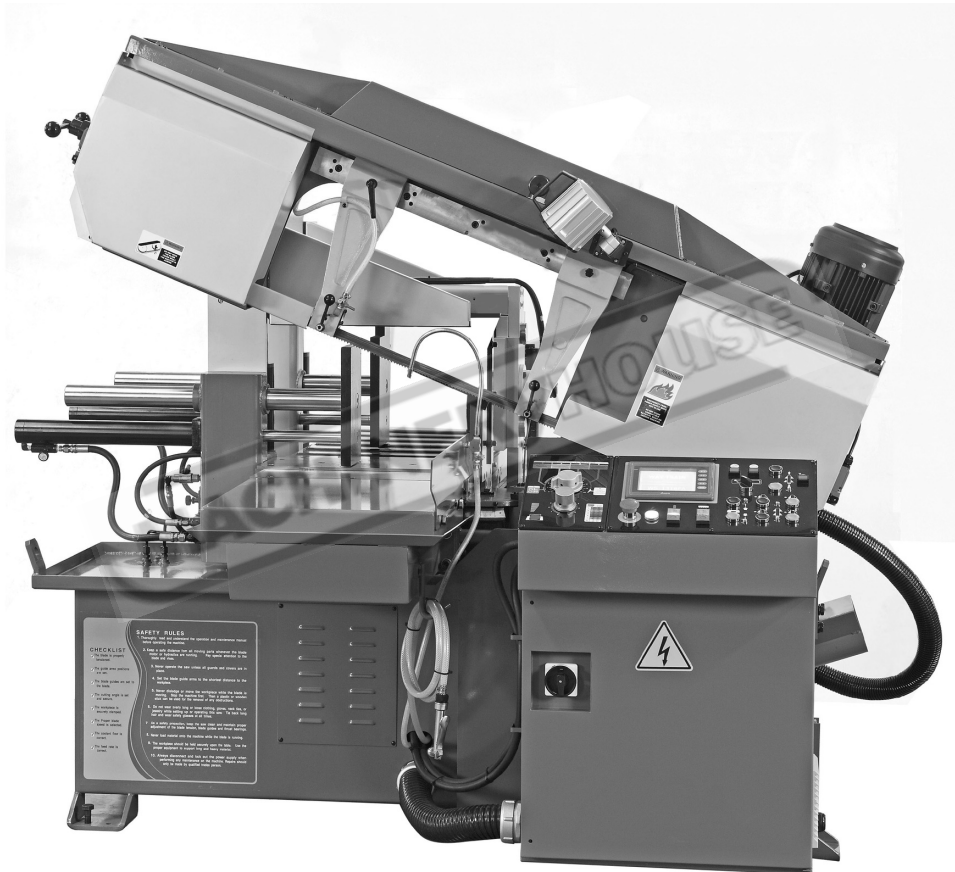
“Waiting” at the bottom of the display indicates the machine is waiting for the operator.

- 5) **VICES.**
 - a) The Bench Vice must be closed before you can start the blade.
 - b) If the Bench Vice is closed and the Feeding Vice is closed, the Feeding Vice will not move backwards or forwards.
 - c) Both vices must be closed before operation in “Automatic” mode can commence.

WS-1318FA

Touch Screen Fully Automatic Band Saw with miter cutting

Study Carefully Before Operating



Specifications

Capacity:



| | | |
|-----|-------------|-------------------------|
| 0° | 330mm (13") | 330 x 460mm (13" x 18") |
| 45° | 280mm (11") | 330 x 280mm (13" x 11") |

Blade Size

27 x 0.9 x 4130mm (1.06" x 0.035" x 162.6")

Blade Speed

60Hz 25~85MPM (89~256FPM)

Motor

5HP (3.75kW)

Packing Measurement (L xWxH)

2280 x 2190 x 1730 mm (90" x 86" x 68")

NW: 1400kgs (3086 lbs) GW: 1668kgs (3677 lbs)

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1 ACCIDENT PREVENTION AND SAFETY REGULATION

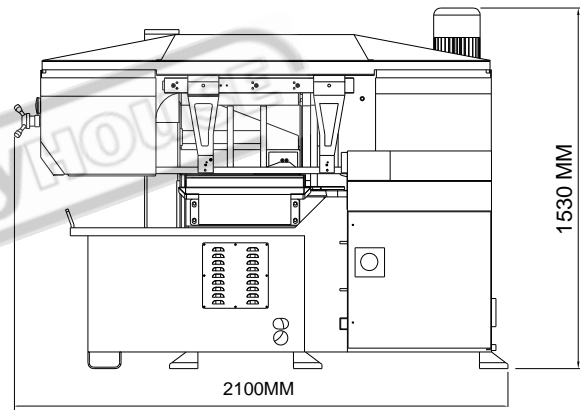
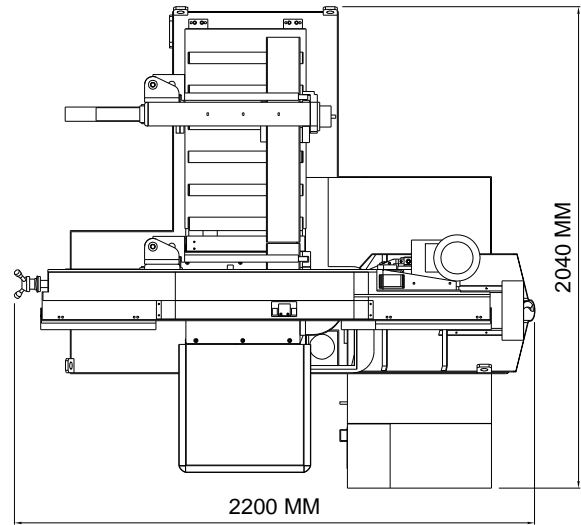
This machine has been designed to comply with national and community accident-prevention regulations. Improper use and/or tampering with the safety devices will relieve the manufacturer of all responsibility.

1.1 Advise for the Operator

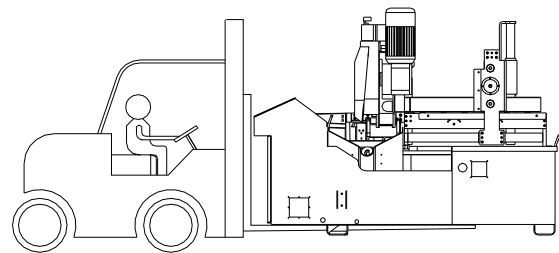
- Check, the line voltage is the same as the voltage required by the machine's motor.
- Check the efficiency of your electric supply and grounding system; connect the power cable of the machine to the socket and the ground lead (yellow- green in color) to the grounding system.
- When the machine is in 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.
- 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.

2 MACHINE TRANSPORTATION AND INSTALLATION

2.1 Machine Dimensions



2.2 Transporting the Machine



Unpack you 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 $+50^{\circ}\text{C}$.
- Relative humidity cannot be over 90%.

2.4 Securing to foundation

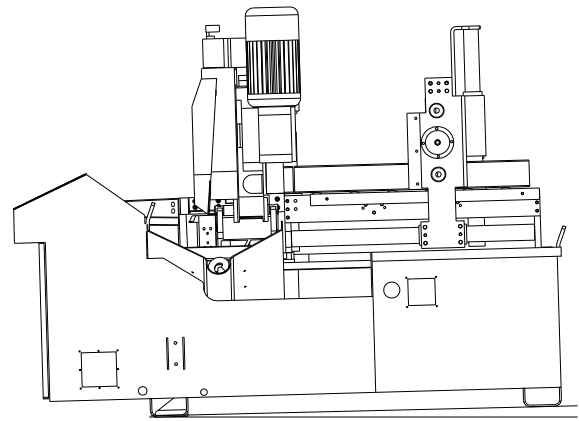
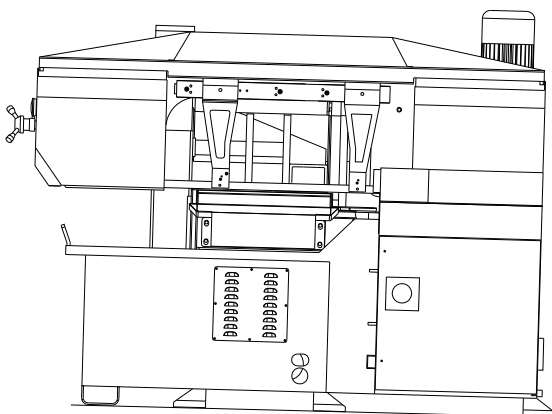
Position the machine on a flat and level foundation of reinforced concrete. Level machine and anchor it to the foundation with anchor bolts. Maintain a minimum distance of 800mm from the rear of the machine to the wall. Position the anchors using screws and expansion plugs or tie rods sunk in cement.

2.5 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 installed firmly and properly. 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.

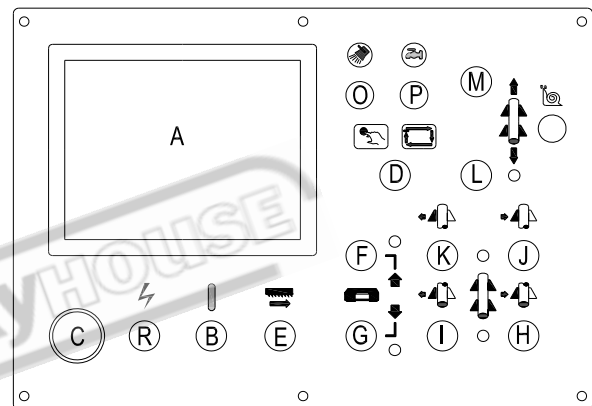
- When leveling front to back level, adjust the back to be approximately 1° higher than the height of the front. This will provide proper return on the cutting fluid, and ease material feeding.
- When leveling left to right level, adjust left side to be approximately 1° higher than the level of the right 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.



3 DESCRIPTION OF MACHINE PARTS

3.1 The Machine Control Panels



A) Human-Machine Interface (Touch screen)

- Press the hydraulic start button B to start.

B) Hydraulic Pump Start Switch

- Press to start the pump and indicator light will on.

C) Emergency Stop Button

- Stops and resets the machine parameters.
- Rotate the button to release.

D) Auto/Manual Switch

- This is an operation mode selector. Manual mode for single cut operations and Auto mode for multiple cutting cycles.

E) Operation Start Button

- Starts the cutting operation cycle.

F) Bow Up Button and stop cycle cutting

- Press to raise the saw bow and stops the machine's operation without resetting.

G) Bow Down Button

- Press to lower the saw bow.

H) Bench Vice Close Button

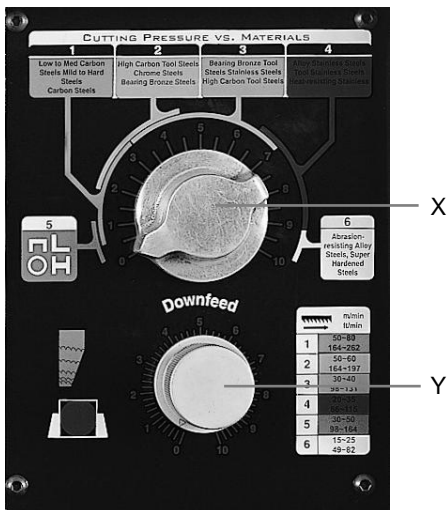
- Press to approach or clamp the work-piece.

I) Bench Vice Open Button

- Press and hold to adjust the widths to desired lengths. When saw bow is not at the safe height limit (The bow height's indicator light didn't light on), the vise will open 5mm at every one touch.

- J) Shuttle Vice Close Button
 - Press to clamp the shuttle vice on the work-piece.
- K) Shuttle Vice Open Button
 - Press and hold to adjust the widths to desired lengths. Opens one full length when saw bow is at the safe height (The bow height's indicator light didn't light on). When saw bow is not at the safe height, the vice will open 5mm at every one touch.
- L) Shuttle Vice Forward Button
 - Press to advance the vise or work-piece.
- M) Shuttle Vice Backward Button
 - Press to retreat the vise or work-piece.
- N) Shuttle Vice slow motion in manual operation.
 - Press feeding vice forward (L) or backward button (M), then touch the slow motion (N), the button will light and the feeding vice will move in slow speed.
- O) Work Light Switch
 - Press to start the work lamp and the button light will on. Press again the lamp will off.
- P) Coolant Switch
 - Press to start the coolant pump and begins coolant flow, the button light will on. Press again the coolant pump will off.
- R) Power indicator light.

* There are five indicator lights on the control panel. They correspond to the vice and bow rise or down operation. One is for shuttle vice movement and two are for vices clamping. They will become light when material is properly clamped in their respective vices or shuttle vice has reached the forward limit position. The saw bow will not start if the clamping indicator lights are not lit.



- X) Cutting Pressure Knob
 - This switch set the rate for the cutting pressure for different materials.
- Y) Bow Down-feed Knob
 - The switch sets head down cutting feed rate.

3.2 The Saw Bow



The saw bow consist of machine parts that include drive members (gear motor or variable speed motor, pulleys, flywheels), tensioning system, saw blade, guide assembly (guide arms and blade guide blocks), and work light.

3.3 The Blade Tension Control



Turn the blade tension handle to set blade tension as tension gauge showing when replace a new blade or release the blade tension when saw is not in using or change dull blade.

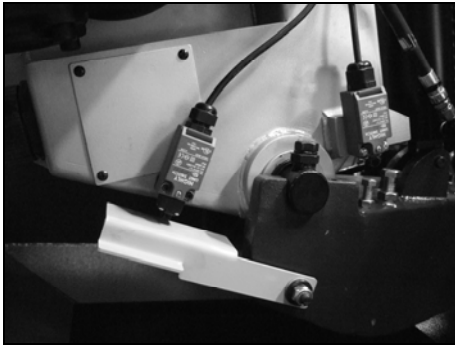
3.4 The Vise System



The vise system consists of a fixed vise and shuttle vise. The shuttle vise is movable for extension of stock material and can positioned to provide more support while clamping. Both jaws on the shuttle vise are hydraulic driven. This system allows flexibility and security while clamping irregular pieces.

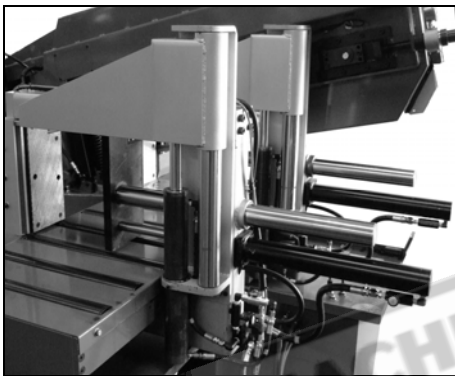
The vices also built with vertical presses for bundle cutting.

3.5 Bow height adjusting plate



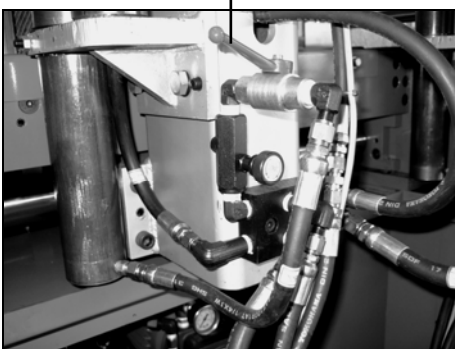
An adjusting plate that can be free adjusted by hand according to the stock diameter and keep the saw blade teeth over the work-piece in approximate 15~20 mm gap to reduces operation cycle time.

3.6 The Nestling Clamps

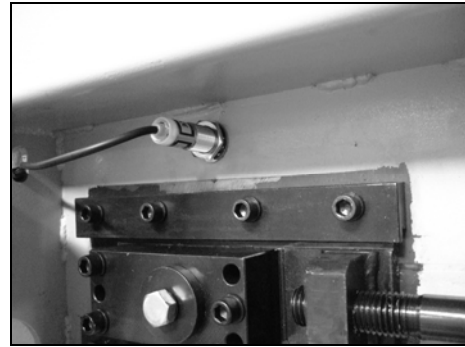


Nestling clamps are used for bundle cutting operations including front and rear vertical vice. They are used to vertically press down upon a group of equally sized work-pieces. This allows cutting of multiple pieces at once. These clamps are hydraulically operated automatically, if want to stop this device function just open the vise let the vertical press up to the top position then switch off the hydraulic by turn the handle level to 90°.

Handle level



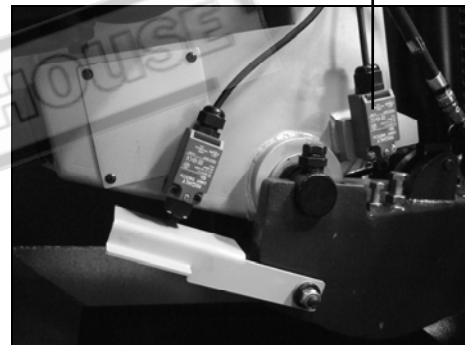
3.7 The Magnetic Sensor



This machine is equipped with automatic power shut-off safety device to prevent any further damage when a blade has been broken. This magnetic sensor determines the movement of the blade flywheel. When the blade is broken or loose in tension the flywheel does not move.

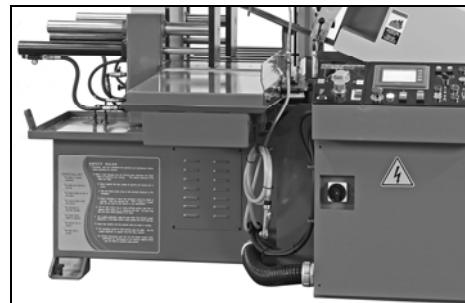
3.8 Down-bow Limit Switch

Down-bow Limit Switch



The down-bow limit switch stops descent of the saw-bow when it has reached to the table.

3.9 The Base



The base is the structure supporting the saw bow (the bow pivot point and respective blocking system), the vice, the rollers, the feeding system, and coolant system.

3.10 The Chip Auger

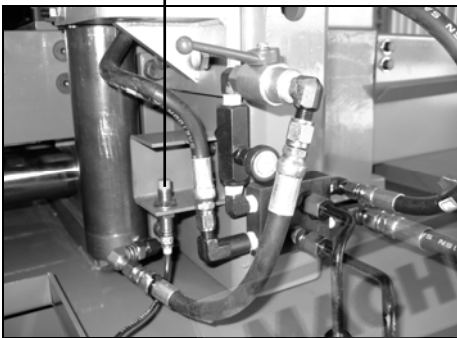


A hydraulic motor drives the chip auger. It automatically starts when turns on the hydraulic power.

! Warning: Keep hands, hair, and article of clothing away from the Auger. The auger is a danger to hands and other body parts.

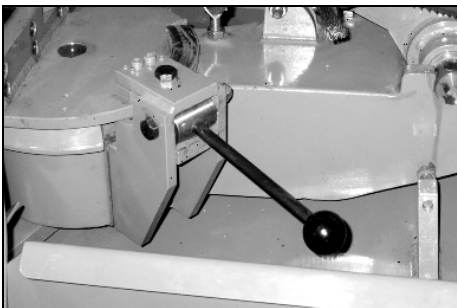
3.11 The Shuttle Vise Forward Sensor

Forward Sensor



The forward sensor function is when the shuttle vise moves forward to the zero position the sensor will sends signal to PLC for next motion.

3.12 Miter angle lock lever and pivot platform.



The pivot platform is the structure that holds the saw bow and rotates horizontally for miter cutting up to 45°. Miter angles are secured in place with a clamping mechanism that is operated by a lock lever. An angle scale with a pointer in clear view of the saw operator allows for accurate setting of the cutting angle. The head is easily changed to set a different cutting angle by releasing the Angle Brake lever, and then manually moving the Head to the cutting angle desired.

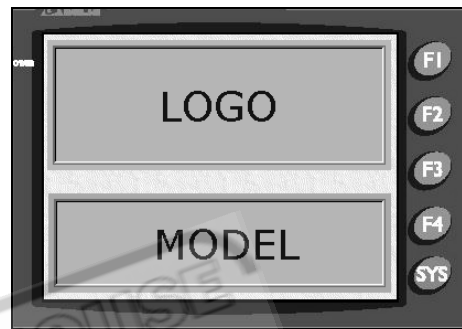
4 HUMAN-MACHINE INTERFACE

The colorful human-machine interface 3.1A is a touch screen input window. It allows for the programming of operation variables. It will also display current operation parameters or errors.

Operations are conducted in menu form. The human-machine interface 3.1A is activated when the hydraulic pump is started. Press the hydraulic start button 3.1(B) to begin. The interface will display a start page contain the machine brand and model number.

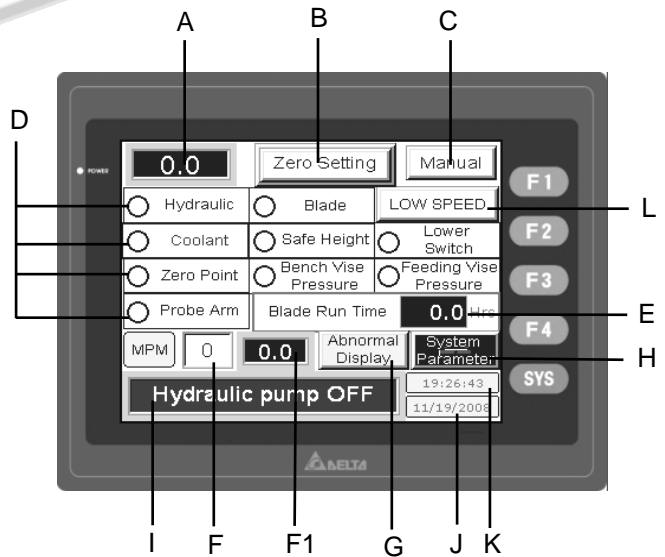
4.1 The Human Machine Interface (3.1A)

Start pump the monitor will shows company Logo and machine model.



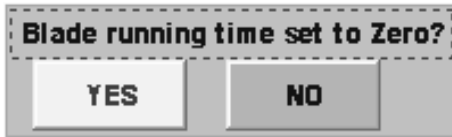
4.2 F1: Main Menu

Touch F1 button monitor will display below page:

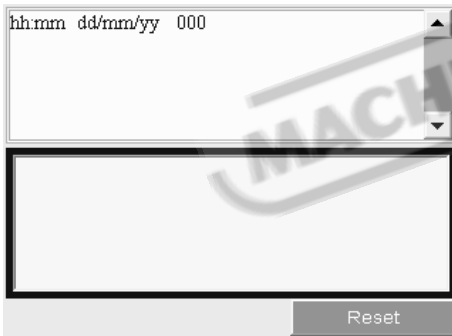


- A. Feeding vise move position
The numeric column shows shuttle vise moving position.
- B. Zero (Home) Setting:
 - This function is to set the feeding vise zero position before executive automatic cutting when machine power has been shut off then turns ON again.
 - **Execute zero setting should be after clamping the front vise and opening the rear vise in the manual mode.**

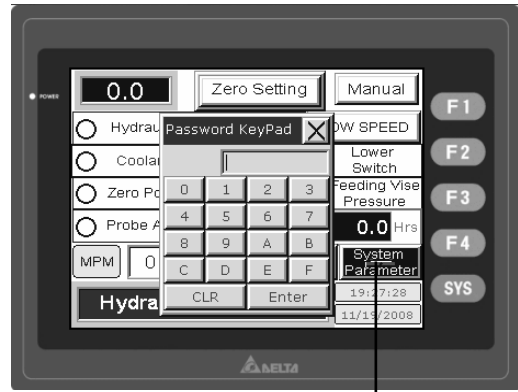
- C. Operate mode
Shows machine operate situation Manual or Auto.
- D. Working indicator lights
The indicator lights shows working situation that are including Hydraulic, Blade tension, Coolant, work light, Safe height, Lower limit switch, Zero point, Bench vice pressure, Shuttle vice pressure and Probe arm limit switch.
- E. Blade running time
 - Shows blade running time that has to touch left frame to start counting or zero setting after blade has been changed.
 - Touch blade run time column to set the blade run time to zero, Yes or No.



- F. Set the blade speed.
Touch to set blade speed directly and quickly.
- F1. Blade speed
Shows actually blade-running speed.
- G. Alarm display
Shows error notices when machine malfunction occur and how to solve it.



- This page also records the history alarm data, check the error data by moving right side vertical and horizontal arrow signs.
- H. System parameter
- A password is required to enter into this section. After the password is entered, Parameter Setting will appear.

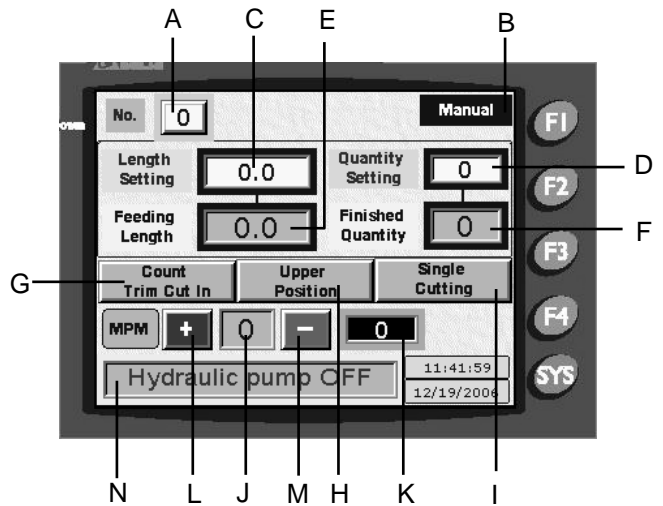


System parameter

- This page has loaded the adjusting parameter before machine shopping. Enter this page must be key in the password and hit ENT to enter password. It is not necessary to make any changes in the parameter setting.
- All changes should be conducted by a qualified personnel or distributor. Caution should be taking when making any changes in system parameters, because they could cause a malfunction in machine operation.
- I. Machine executive message
- J. Date showing.
- K. Time showing.

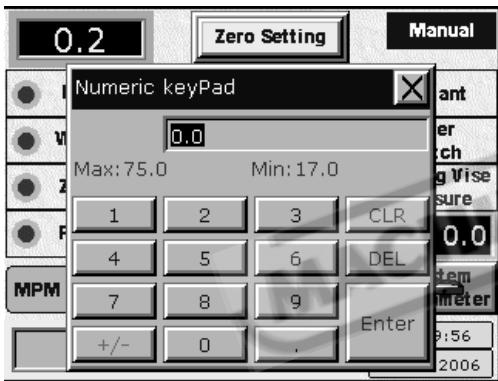
4.2.1 F2: Current Operation

Touch F2 button, monitor will shows executive situation.



- A. **Executing No.**
Refers to the instruction task order. Touch it to go to F3 page Sets material cutting jobs.
- B. **Operate mode**
Shows machine executive situation Manual or Auto.
- C. **Preset Length:** – refers to the length setting of the current instruction task.
- D. **Preset Q'TY:** – refers to the quantity setting of the current instruction task.

- E. **Feeding material length.**
- Refers to the current total length of material that has fed forward. This includes distances beyond a single shuttle stroke.
- F. **Cutting Completed**
Refers to the number of cut-pieces completed.
- G. **Count trim cut in or out**
Touch this button to count trim cut out after starting automatic cutting cycle.
- H. **Saw head stop position**
Set the saw head stop position at upper or lower after finished cutting in manual cutting mode.
- I. **Single cutting or Bundle cutting**
- Touch it to select single cutting or Bundle cutting.
- For single cutting operation, the shuttle vice will clamp at a position in the back to prepare for the next feed.
- Bundle cutting means the shuttle vice will stay at the front position after feeding material forward.
- J. **Blade Speed (MPM).**
Touch to set blade speed directly, the blade speed in meters per minutes.

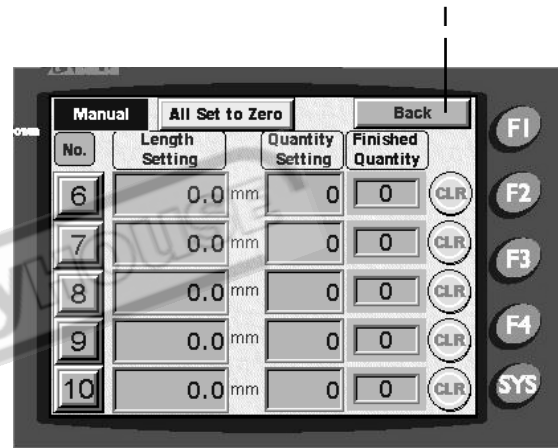
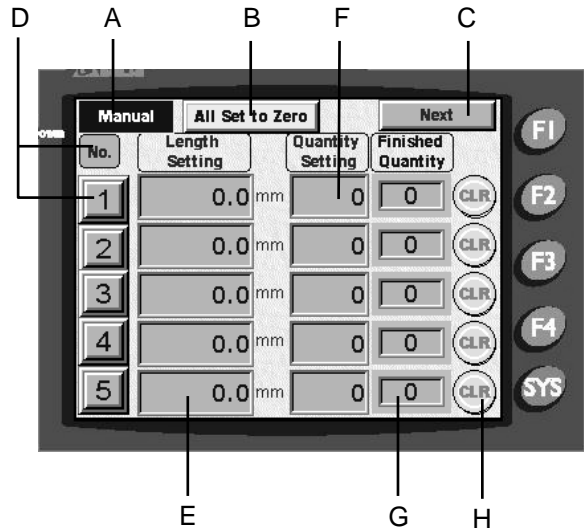


- K. Shows actually blade-running speed.
- L. (+) sign that can set blade speed higher.
- M. (-) sign that can reduce blade speed.
- N. Machine executive message
This column shows machine executive steps and wrong procedure.

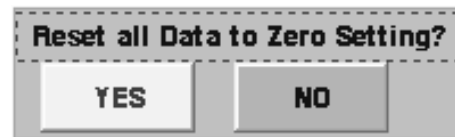
| Executive messages | Remedy |
|-------------------------------------|---|
| 1. Hydraulic pump OFF | 1. Start hydraulic pump |
| 2. Bench vice not clamping securely | 2. Close bench vice until indicator light is on. |
| 3. Front & Rear vices are clamping. | 3. Open front vise or Rear vice. |
| 4. Zero setting incomplete | 4. Executive Zero setting. |
| 5. Bow not released | 5. Press bow rise button until indicator light is on. |
| 6. Choose executive No. | 6. Touch the executive No. to choose cutting job. |
| 7. Probe arm limit switch is off. | 7. Rise bow up. |

4.2.2 F3: Sets material cutting jobs

Touch F3 button will shows cutting jobs setting

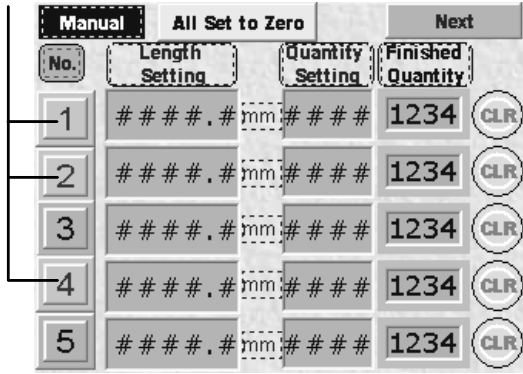


- A. Shows Manual or Auto Mode
- B. Touch to clean all set data to zero setting. Yes or No.



- C. Touch to next page.
- D. **Executing No.**—Refers to the instruction task order, cutting jobs No. from 1~10.
The machine will follow the selected jobs to cutting work-piece from the top to the bottom automatically.
 - **Executing job No.**
 - Touch the executive job number to choose the cutting jobs, the column will change its color to green.

Chosen executing job No.



- The executive column can appear only when cutting length and quantity has been key in.
- The executive column can't appeared if cutting quantity has been finished or one of column, length or quantity, is zero.
- Cancel the No. of cutting job just touch the executive No. that will back to original.

E. **Length Setting** – refers to the length of cut-pieces.

- This menu allows the user to set the variables for work-piece cutting. There are 10 total task slots available for altering the production lengths and quantities.
- Touch task No. 1, to set the length and quantity.
- Then set the next task number.
- Touch the Next button to go to the next page and the next 5 available tasks.
- Modify the cutting length (in manual mode) just touch the length the next page will be displayed.
- Touch the cutting length (in manual mode) to set a new cutting length.
- The numeric keypad will display after touching the cutting length.



- This item allows the user to set the variables for work-piece cutting.
- Key in the cutting length, and hit the Enter button to finish the setting procedure.

F. **Quantity setting**

Set the cutting quantity procedure as same as the cutting length setting.

- There are 10 total task slots available for altering the production quantities.

G. **Finished Quantity** – refers to the number of cut-pieces completed.

H. **Clear Setting**

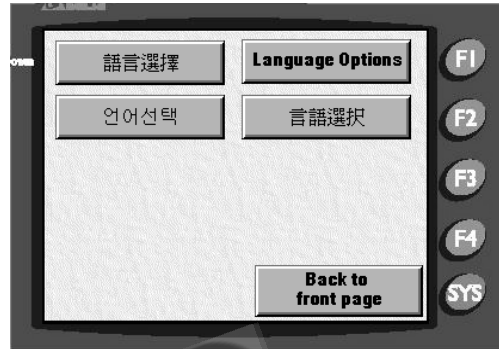
Press any CLR button in **two sec** to clear length and quantity to zero setting at that item.

I. Back to front page.

4.2.3 **F4 Page: Language Option**

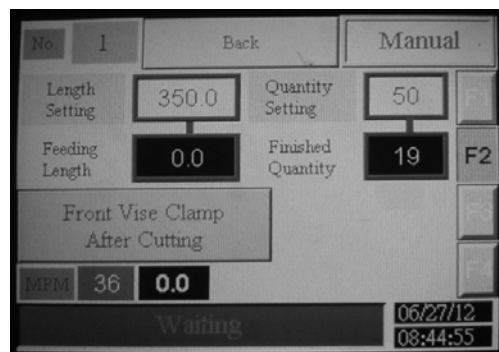
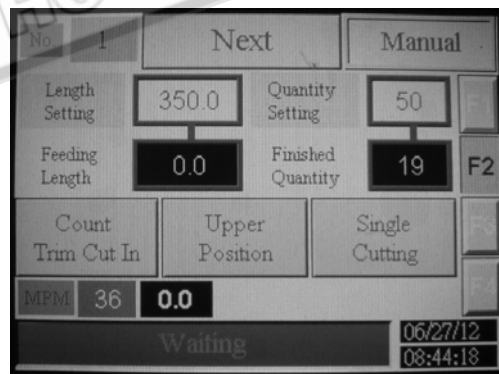
This menu allows the user to change the user language.

Touch one of languages and press Back to front page to return to the main menu in your desired language.



4.3 **Cutting Options**

There are some cutting options for user's needs:

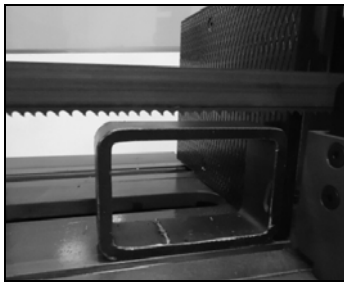


1. **Count Trim Cut in/out**

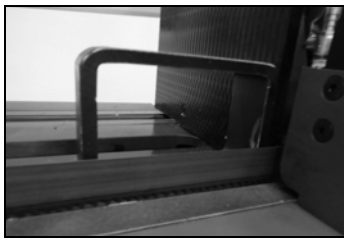
When selected count in, the first cutting would be counted. If material is not smooth that need to cut off firstly, the user can choose count trim cut out to not count first cut.

2. Upper Position/Lower Position

In manual mode, there are two options to decide saw bow position after finish cutting. User can set as their need with various kind of material and cutting demand.



Upper position



Lower position

This function is for Manual mode use; when it run auto mode, the bow will rise as upper position.

3. Single cutting /Bundle cutting

To cut multiple work pieces, it can select "Bundle cutting" to change feeding vice moving procedure via this option.

In cutting cycle process:

If selected bundle cutting, the feeding vice will move to back after cutting.

If selected single cutting, the feeding vice will move to back when start cutting

Note: The multiple work pieces cutting that need to weld each other. It is not also help cutting effect but also extend blade life longer.

4. First vise open/close after cutting

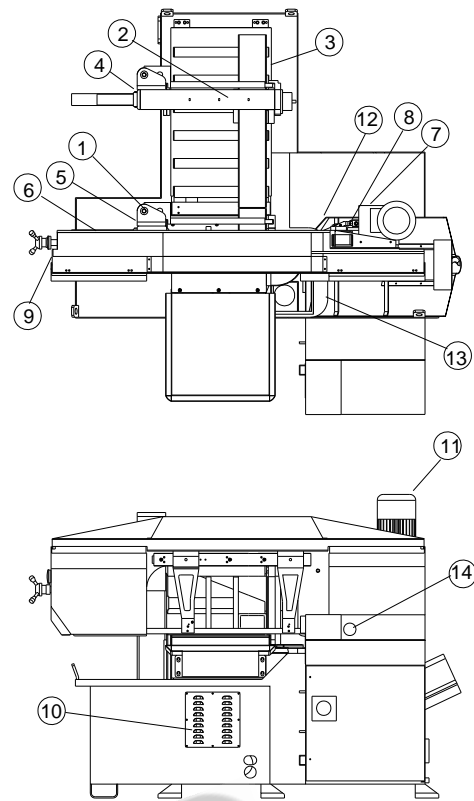
Select "first vise open": first vise will open after cutting, then saw bow rise up

In normal, select "first vise clamp": saw bow rise up firstly. Then first vise open and feeding vice transfer the material accordingly.

4.4 Machine Error Notices

The Human-Machine Interface will show error notices when machine malfunction occur. They will display the probable cause and possible remedies.

Follow the remedies to resolve the problem and press reset button to remove the Error Notice.



Above is a map showing the number and location of various malfunctions.

- Malfunctions display and remedy:

- 1 – Abnormal forward limit switch
 - Check forward limit switch.
- 2 – No material in the shuttle vise
 - Check material in the shuttle vise
- 3 – Abnormal encoder scale
 - Check linear scale wires.
 - Check linear scale function.
- 4 – Abnormal shuttle-vice pressure sensor
 - Check shuttle vice pressure sensor function.
- 5 – Abnormal bench-vice pressure sensor
 - Check bench vice pressure sensor function.
- 6 – Abnormal blade tension
 - Check for broken blade
 - Check for blade tension
 - Check blade sensor
- 7 – Abnormal saw up limit switch
 - Check the limit switch function
- 8 – Abnormal bow down limit switch
 - Check bow down limit switch
- 9 – Blade cover opened
 - Check blade cover limit switch
 - Close blade cover
- 10 – Abnormal motor inverter
 - Check motor inverter
- 11 – Abnormal blade motor.
 - Check overload relay of blade motor
- 12 – Abnormal hydraulic motor
 - Check overload relay of hydraulic motor
- 13 – Abnormal coolant motor
 - Check overload relay of coolant motor
- 14 – Emergency button locked
 - Release Emergency button

5 SAW BLADE OPERATIONS

Choose a proper saw blade by select the saw blade best suited to the work-piece to be cut. Size the shape of the work-piece, and type of material should all be considered when selecting the saw blade to be used.

5.1 Removing and Installing the Blade

Blade changes are periodically required when they become worn or to match the properties of varying materials.

WARNING

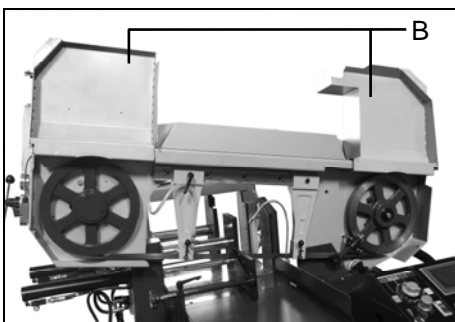
Disconnect the machine from the power source before making any adjustments or repairs! Failure to comply may result in serious injury!

- Raise the saw bow approximately 6" in height.
- Disconnect the machine from the power source.



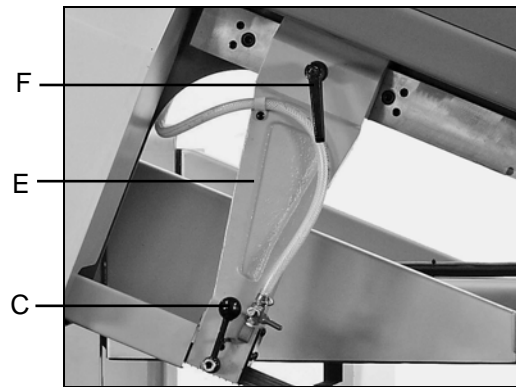
A

- Remove both blade guards (A) from the base of the guide post and saw bow cover.



B

- Open the saw bow covers (B).
- Release the tension on the carbide guides by turning the handles (C) counter clockwise 1/4" turn.

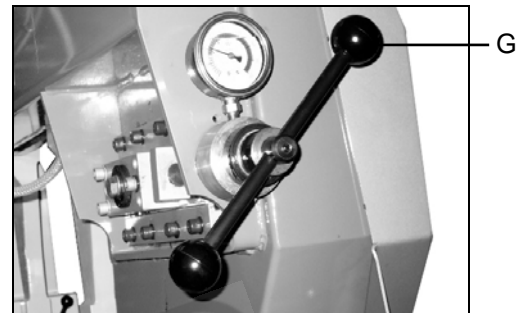


F

E

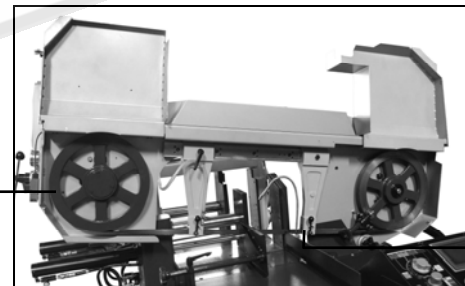
C

- Loosen left blade guide post (E) lock handles (F) and slides it to the right side as far as possible.



G

- Release the blade tension. Turn the blade tension handle (G) counter-clockwise until blade is free.

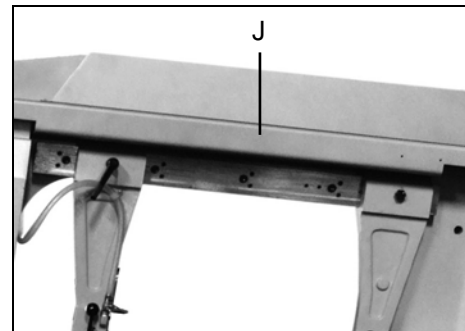


H

I

Wear gloves for protection from the sharp blade!

- Remove the old blade from both wheels (H) and out of each blade guide (I).



J

- At the top of the saw bow, the saw blade passes through in a protective channel (J).
- Grip the blade at each end of this channel (J).

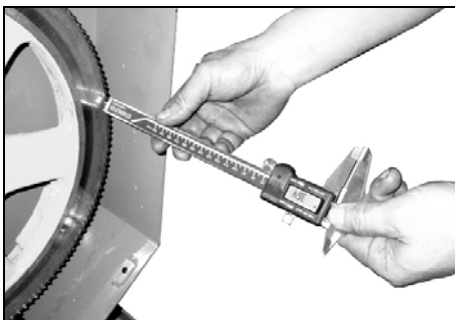
- Twist the blade teeth down so it can travel out of the channel (J).
- ※ **Caution:** Even dull blades are sharp to the skin !
Use extra caution handling band saw blades !
- Slide the blade away from the saw bow frame. Let the blade rest on the out table.
- Finally, lower the blade out of the carbide guides.
- Place the new blade in the carbide guides, and then slide the blade over the wheels (H). The teeth should be pointing towards the drive side as they pass through the carbide guides. The blade teeth should protrude from 4.5mm to 5mm from the face of the blade wheels.



- With the blade in place, turn the tension handle (G) clockwise until the needle of the tension gauge (K) reads two blocks into the green.
- Set the carbide guides. Turn the two carbide locking handles clockwise to the locked position. Jog the blade a few rotation to check that the blade is not moving in or out on the blade wheels.
- Close all covers and fasten all guards.

5.2 Blade tracking adjustment

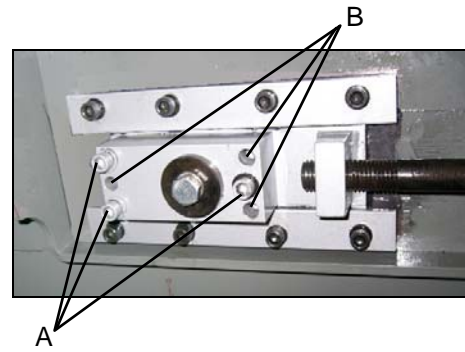
Blade tracking has been set at the factory and requires no adjustment. Generally, the blade tracking will stay fairly constant. The blade teeth should protrude from the edge of race of the blade wheels about 4.5mm to 5mm.



If a tracking problem occurs, adjust the machine as follows:

- Raise saw arm to an accessible height.
- Choose a wheel to adjust and proceed to the appropriate instruction.
- Generally, adjust the idle wheel only.

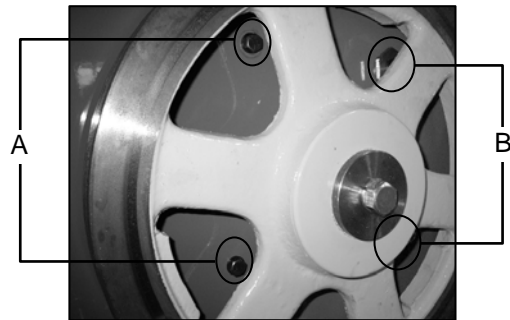
5.2.1 Idle wheel adjustment



- Locate the axle mount for the idle wheel on the backside of the saw bow. It is a rectangular a block with three hex head bolts (A) and three setscrews (B) inset into holes.
- Unlock the axle mount. Loosen the two hex head bolts (A) at the left end by $\frac{1}{4}$ turn and single bolt (A) at the right side by $\frac{1}{2}$ turn.
- Set the tracking by adjusting the setscrews (B). Turning the right side setscrews (B) clockwise will pull the blade toward the saw bow frame; turning the left setscrew (B) clockwise will push the blade away from the saw bow frame. Choose a right or left set of setscrews (B) and make a $\frac{1}{4}$ turn to push the blade to the desired direction.
- Lock the tracking adjustments. Use the three hex head bolts to secure the axle mount.

5.2.2 Drive wheel adjustment

Tracking is held in place by four hex head bolts located behind the drive wheel. The two on the left lock the tracking. The two on the right lock the tracking, but also adjust tracking with the large hollow bolt.



- Loosen all four of the smaller hex head bolt (A,B).
- Turn the large hollow hex head bolts (B) $\frac{1}{4}$ turn. Turning the large hex head bolts (B) clockwise will pull the blade toward the saw bow frame and turning it counter clockwise will push the blade away from the saw bow frame.
- Then tighten the two head bolts in the hollow bolts (B).
- Next, tighten the other two hex head bolts (A) at the left.

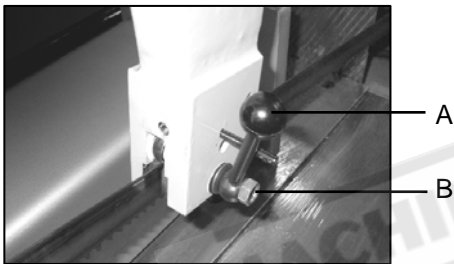
5.3 Breaking in the Saw Blade

When a new blade is used, be sure to first break in the blade before using it for extended operation. Failure to break in the blade will shorten the service life of the blade, and result in less than optimum efficiency. To break in the blade, proceed as follows:

- Reduce the blade speed setting to one half of its normal setting.
- Lengthen the time required for cutting to 2-3 times that of normal:
- The break-in operation can be considered sufficient if all unusual noises or metallic sounds have been eliminated. (For instance, to completely break in the blade, a minimum of five complete cuts of a 200mm (8ins.) Diameter work-piece will be required).
- After the break-in operation has been completed, return the blade speed and feed rate to their normal setting.

5.4 A Adjusting the tungsten carbide guides

The carbide blade guides are at the base of the guide posts. Adjustments are needed when carbide pads become worn.

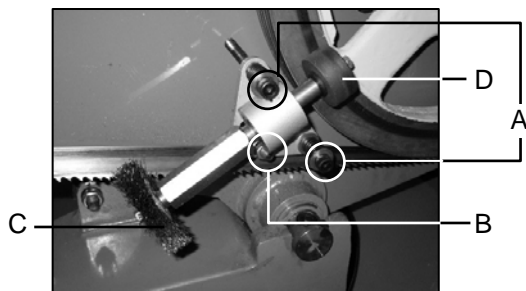


Adjust the carbide pads, as follows

- Loosen the nut (B) on the locking handle
- Adjust the setscrew (B). Turn the setscrew (B) clockwise until it is tight, then loosen it 1/8 of a turn
- Tighten the hex nut (b). This should put just enough pressure on the blade to permit you to push the blade down approximate 1/8”.

5.5 Blade brush adjustment

Due to wear of the blade brush, it is necessary to adjust its position. The blade brush should be held against the blade gullets with the minimum force as necessary. The brush must periodically move closer to the blade or in the case of a new brush, it must be installed further away from the blade.



Adjusting the blade brush

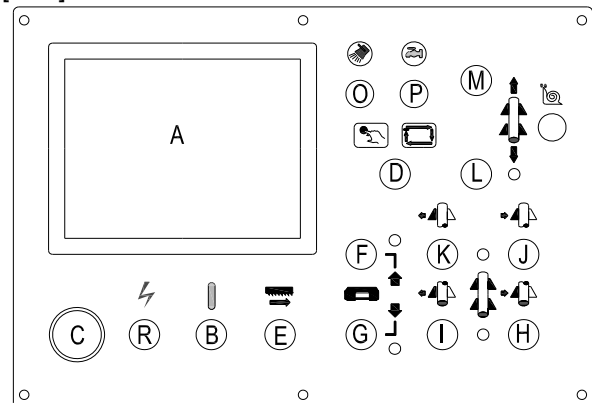
- Disconnect the machine from power.
 - Open the drive-side wheel cover.
 - Loosen the hex nut (B).
 - Use the adjusting setscrew (B) to move the blade brush (C). Turning counter-clockwise will move the blade brush (C) closer to the blade, while turning clockwise will move the blade brush (C) away from the blade.
 - Secure the brush's (C) position. Tighten the hex nut (B).
 - Close the drive-side wheel cover.
 - Reconnect the machine to the power source.
- The plastic transfer wheel may also require adjustment due to periodical wear.
- Disconnect the machine from power.
 - Open the drive-side wheel cover.
 - Adjust the spring setscrews (A). Turn setscrews (A) clockwise to bring the plastic transfer wheel (D) closer to the drive wheel and counter-clockwise to move away from the drive wheel.
 - Close the drive-side wheel cover.
 - Reconnect the machine to the power source.

6 SET UP AND OPERATION PREPARATIONS

6.1 Vise Operation

- The vices can be opened to one full stroke when saw bow is raised to the highest limit. If the saw bow at a position below the highest limit, then the vices will only open 5mm. They will not continue open when vise open buttons 3.11,K, are pressed again.
- The shuttle vice will not move material when the bench vice is clamped.
- The shuttle vice will not move material if the approach sensor is active.
- If the vices are to be closed, then start with the bench vice.
- If the vices are to be open, then start the shuttle vice.

[Ref.]

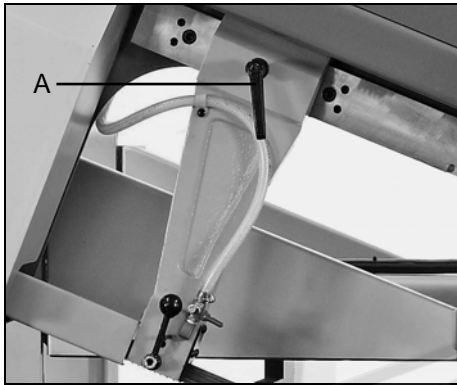


6.2 Securing the Work-piece

- Raise the saw frame to the safe height.
- Open the vice wide enough for the material.
- Place work-piece onto the roller table.
- Gently push the work-piece through the vertical rollers and shuttle vice, taking care not to hit the vertical rollers.
- The machine will automatically clamp the material in auto mode and the vice can close a full stroke to do so.
- In manual mode, use the vice close buttons 3.1H,J.

6.3 Adjusting the Guide Posts

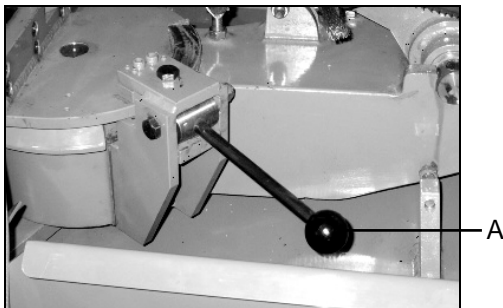
The blade-guide posts adjust horizontally to control the spacing of the blade guides. Having the blade exposed to the minimal amount provides better safety protection and a more accurate cutting by reducing blade flexing.



- Refer to the scale to adjust the distance.
- For most spacing changes, unlock the left guide post by loosening the handle A.
- Grip the posts and move horizontally.
- Use the handle A to lock into position.

6.4 Setting the miter angle

This machine can make miter cuts up to 45°. There is an angle scale with indicator for quick and accurate miter angle setting.

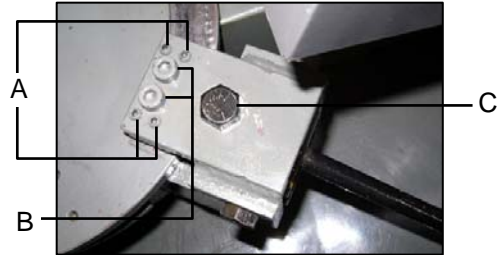


Always lock the horizontal rotation before performing any cutting operation.

- Unlock the saw bow. Raise the lock lever (A).
- Rotate the saw bow. Check the angle scale for the desired angle.
- Set the miter angle. Lower the lock lever (A).

6.5 Miter angle lock adjustment

The clamping force on the miter angle lock can be adjusted to ensure that the head is held securely and without movement during cutting. If the lock lever fails to clamp while locked, the clamp force should be adjusted.



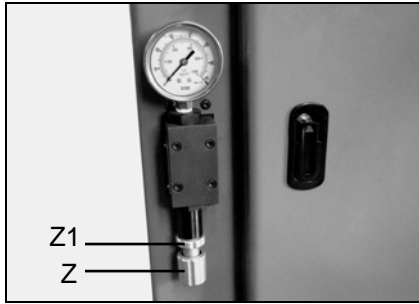
- Raise the lock lever.
- Loosen locking hex socket screws (B)
- Tighten all 4 setscrews (A) until tight.
- Back out the setscrews (A) ¼ of a turn.
- Tighten the locking hex socket screws (B).
- Swing the saw bow forward and back to about 45° to ensure that the head moves freely and does not bind on surface of the pivot link (the structure that connects the saw bow to the base).
- Continue to next step.
- If necessary, adjust bolt (C). If it is not tight enough, then locking handle will “bottom out” and will not hold the miter angle.

6.6 Cutting Pressure

| Cutting Pressure vs. Materials | | | |
|--|--|---|--|
| 1 | 2 | 3 | 4 |
| Alloy Tool Steels Chrome Steels Heat-resisting Stainless Wide Steel Plate | High Carbon Tool Steels Bearing Bronze Steels Chrome Steels Med Carbon Steels | Med Carbon Steels General Metal Materials Thick Metal Pipes Steels | Iron Pipes Angle Iron General Steels |

Select suitable cutting pressure for the work-piece to be cut. This varies according to the size and shape of the work-piece, type of material, and what type of saw blade is being used. As a guide for materials: cutting hard, wide, tube, or structural materials, must to be done at a slower rate than mild steel bar. For the concerns the saw blade, high-speed steel is better than carbon steel and bi-metal alloy is better than high-speed steel. Roughly, the ratio of feed speeds should be 1:2:3. The materials are listed on the control panel. Please refer to it for proper cutting pressure setting.

6.7 Pressure regulator for both vises



The hydraulic pressure gauge for the vises located on the rear of the base. Located just below the gauge is the pressure adjuster knob. It allows for the reduction of hydraulic pressure clamping force. The normal pressure is set at 28kgs/cm². This is good for most solid firm materials. For softer, hollow, or pipe materials using over 15kgs/cm² is good. Different materials may require different clamping force. In auto mode, the vice pressure can be changed by turning the pressure knob (Z), when it has clamped the work piece.

- Unlock the fluted knob nut (Z1).
- Turn the fluted knob (Z) counterclockwise to decrease the pressure, clockwise to increase the vise pressure.
- Lock the fluted knob nut after adjusting.

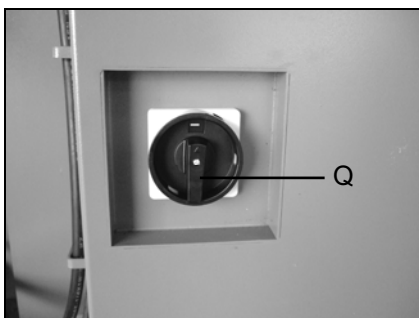
7 OPERATION CYCLE

Before you start to cut the work-piece, you must inspect that ...

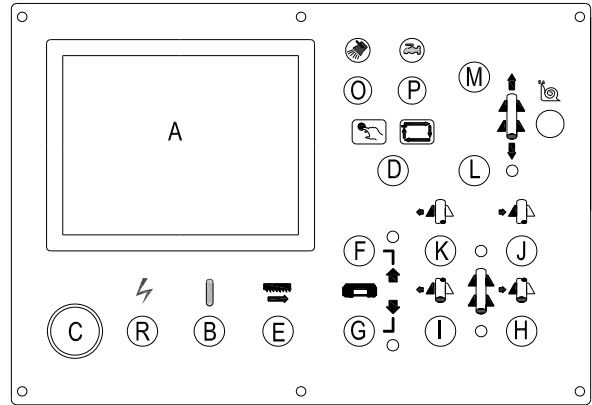
- The work-piece is well clamped.
- The saw blade is suitable for the material being cut.
- The blade-guide post is secure and the hand wheel is tightened.
- Sufficient tension is placed on the saw blade.
- The wire brush is properly positioned.
- There is sufficient cutting fluid in the trough, and it is in good condition.
- The feed length is set to the correct distance.

7.1 Manual Operation

Reference 6 Set Up Operation Preparations for detailed instructions for some of the procedures below.



[Ref.] 3.1 Machine Control Panels



- Connect the main power, use switch Q.
- Press the Hydraulic Start button 3.1B.
- Use the Auto/Manual Switch 3.1D to select manual mode.
- Place the work-piece onto the vise; refer to *Securing the Work-piece* (6.2).
- Close the shuttle vice use the shuttle vice close button 3.1 J.
- Move the work-piece to the desired. Use the shuttle vise Forward and Backward Buttons L, M.
- Clamp the work-piece with the bench vice use the Bench Vice Button 3.1H.
- Adjust the spacing of the blade guidepost; refer to *Adjusting the Guide Posts* (6.3).
- Set the Blade Speed in manual mode. Use F1 (I) or F2 (J), F2 +/- can set the blade speed in auto mode.
- Set the rate for the Cutting Pressure 3.1X and Bow Down-feed speed 3.1Y; refer to *Cutting Pressure* (6.7).
- Press Operation Start Button 3.1E to start the cutting operation cycle.
- Press coolant switch P to start the coolant pump and indicator light will on. The chip auger will also start turning. The saw bow will begin to descend quickly until the probe arm touches the work-piece. Then the blade descent speed will slow to the Cutting pressure 3.1X and Down-feed 3.1Y settings.
- After completion of the cut, the saw blade will stop at the lower limit position. The bow stop location can be set at upper position or lower position in manual cutting mode 4.2.1 (F2) H.
- Press the Bow up button F to raise the saw bow.

Stopping the Machine

In event of an emergency, press either the Emergency Stop Button 3.1C, or the Bow up Switch 3.1F, to stop all machine functions.

7.2 The Initial Trim Cut

When inserting a new work-piece in automatic mode, the first cut-piece will not be the proper size unless an end-cut is performed. This initial cut will zero material length so that further cuttings will be performed accurately.

- Begin by inserting the material. Have the material slightly past the blade cut off line.
- Perform all the *Automatic Operation* (7.3) setting procedures.
- Switch the operation to manual mode by using the Auto/Manual Switch 3.1D.
- Start the initial trim cut with automatic mode. The initial trim cut can count trim cut in or trim cut out by pressing button 4.2.1 F2 (G) after start auto cutting.

7.3 Automatic Operation

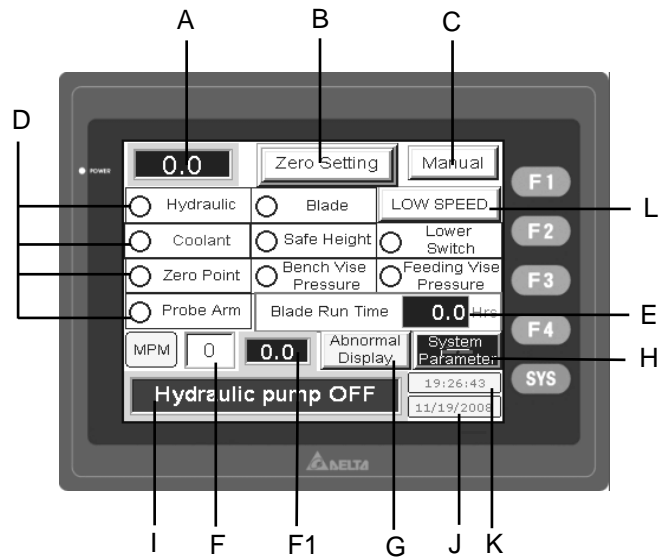
Reference 6. *SET UP AND Operation Preparations* for detailed instructions for some of the procedures below.

- Connect the main power, use switch Q.
- Press the Hydraulic Start Button 3.1B.
- Use the Auto/Manual Switch 3.1D to select the manual mode.
- Clamp the work-piece; refer to *Securing the Work-piece* (6.2).
- Use the Auto/Manual Switch 3.1D to select the automatic mode.
- Set the cut-piece variables in the Human-Machine Interface 3.1A. Refer to 4.2.2 F3 Sets cutting jobs, and chooses executing No.4.2.2 F3 (D).
- Adjust the spacing of the blade guide post; refer to *Adjusting the Guide Posts* (6.4).
- Set the Blade Speed. Use 4.2 F1 (I) or 4.2.1 F2 (J).
- Set the Blade Speed in manual mode F1 (I). Use F2 (J) + / - can set the blade speed in auto mode.
- Set the rate for the Cutting Pressure 3.1X and Bow Down-feed speed 3.1Y; refer to *Cutting Pressure* (6.7).

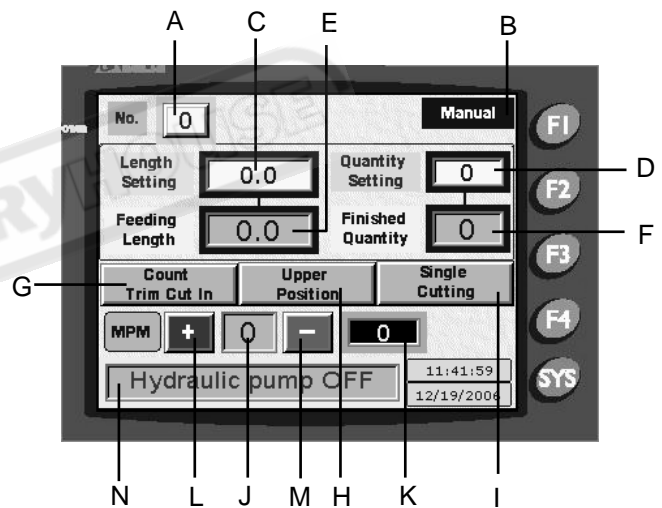
*If starting with a new work-piece; refer to *The Initial Trim Cut* (7.2) procedures.

- Press Operation Start Button 3.1E to start the operation cycle.
- Press 3.1(P) to start the coolant pump. The chip auger will also start turning. The saw bow will begin to descend quickly until the probe arm touches the work-piece. Then the blade descent speed will slow to the Cutting pressure 3.1X and Down-feed 3.1Y settings.
- After completion of the cut, the saw blade will stop at the lower limit position.
- The saw head will rise and work-piece will feed for the next cut.
- The cycle will continue until all commands have been completed. The machine will stop and the motor will turn off.

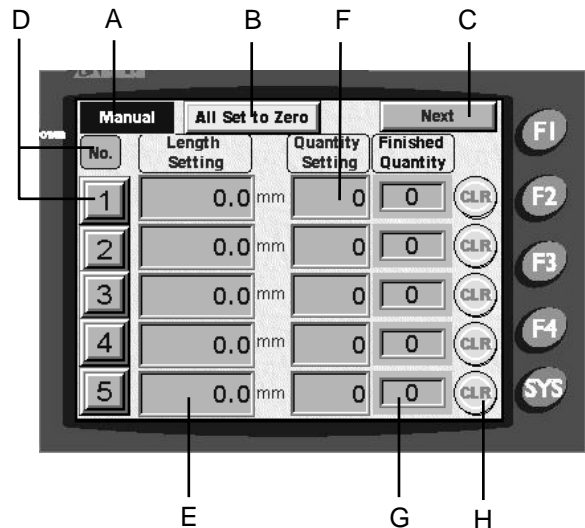
[Ref.]
4.2 F1 main panel



4.2.1. F2 Current Operation



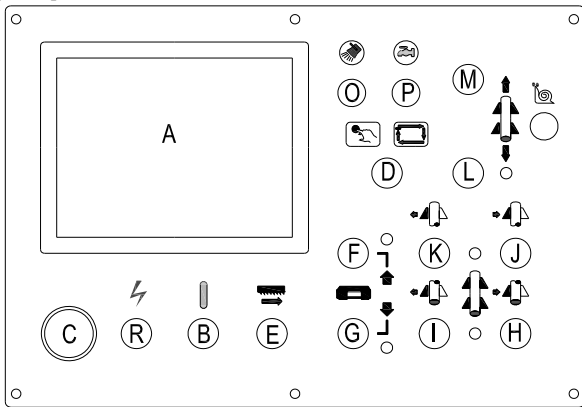
4.2.2 F3: Sets material cutting jobs



Stopping the Machine

In event of an emergency, press either the Emergency Stop Button 3.1C, or the Bow up Switch 3.1F, to stop all machine functions. It is recommended using the Bow up Switch 3.1F, because the emergency stop button will cancel all machine setting. When using the Bow up Switch 3.1F, the work-piece will still be clamped. Also the machine can be stop between task cycles switching to manual mode with Auto/Manual Switch 3.1D. Using this switch will cause the machine to stop at the end of current task.

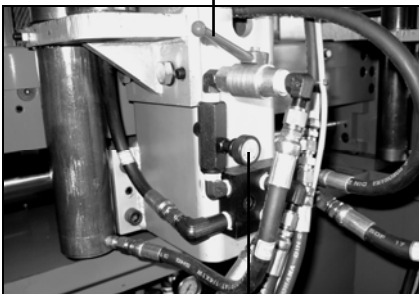
[Ref.] 3.1 Machine Control Panels



7.4 Bundle Cutting



Hydraulic switches



Flow controller

- Refer to *the Nestling Clamps* (3.6).
- Follow either the *Manual Operation* (7.1) procedures or the *Automatic Operation* (7.3) procedures.
- Open the hydraulic switches on the side of front vice and feeding vice like as picture.

- Clamping operations are the same. The switch, 3.1H,I, J, K; that operate the vises also operate the vertical motion of the nestling clamp. So, if you open the shuttle vice then the nestling clamp on the shuttle vice will rise up. And if you close the shuttle vice the nestling clamp on the shuttle vise will lower to press the material.

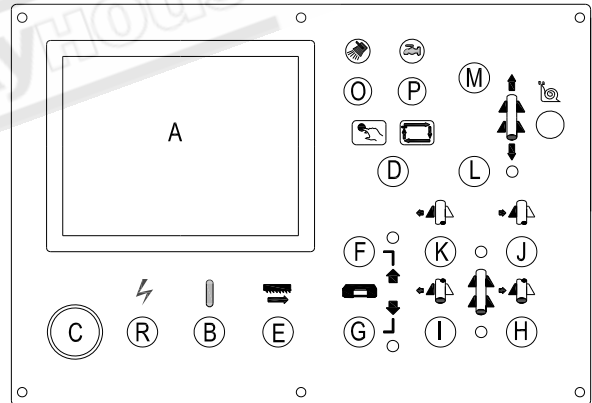
7.5 Special Operation for a Jammed Blade

While you are cutting a work-piece, if the saw blade suddenly jams in the work-piece, press the frame raise button 3.1F to lift the saw frame immediately.

The saw blade jamming in the work-piece is most likely because of:

- Slippage occurring between saw blade and drive wheel. Tension placed on the saw blade is not sufficient.
- Slippage occurring between drive belt and motor pulley. Tension on drive belt is not sufficient or belt is worn.
- Broken teeth on the saw blade.
- The saw blade is too blunt.
- The tooth spacing on saw blade is too fine for material being cut.
- Feed rate is too fast for material being cut and blade being used.

[Ref.] 3.1 Machine Control Panels



8 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.

8.1 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.

8.2 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.

8.3 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.

8.4 Six-Month Maintenance

Test the continuity of the equipment potential protection circuit.

8.5 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 %.

8.6 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.

ROUTINE AND SPECIAL MAINTENANCE CHART

| Item | Part | Lubricant | Quantity | Routine | Remark |
|------|--------------------------|-----------------------------|-----------------------|-------------|----------------------------|
| 1 | Bench vice slides | Machine oil | Suitable | Everyday | Oil after cleaning |
| 2 | Shuttle vice slides | Machine oil | Suitable | Everyday | Oil after cleaning |
| 3 | Lubricant fluid tank | Water-soluble cutting fluid | High level on gauge | Everyday | |
| 4 | Worm gear | Grease | Suitable | Every month | |
| 5 | Drive wheel oil hole | Grease | Suitable | Two weeks | |
| 6 | Idle wheel oil hole | Grease | Suitable | Two weeks | |
| 7 | Slide of slide seat | Machine oil | Suitable | Two weeks | |
| 8 | Shuttle vise shorter jaw | Grease | Suitable | Two weeks | Oil after cleaning |
| 9 | Transmission gear box | Gear oil # 90 | Middle level on gauge | Six months | Every year after the first |
| 10 | Hydraulic system tank | Hydraulic Oil AW-46 | High level on gauge | Six months | Every year after the first |

* Clean the chip from the flywheel housings and bench vice everyday to keep performance well.

Warning:


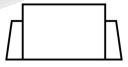
1. Disconnect the machine from the power source before any kind of maintenance.
2. Any special maintenance must contact skill personnel of dealer or importer. Do not remove parts for maintenance.

9 TECHNICAL CHARACTERISTICS

9.1 Chart of Steel Characteristics

| 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/mm ² |
| 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 |

9.2 Table of Cutting Capacity and Technical Details

| CUTTING CAPACITY |   | |
|-------------------------------|---|---------------------|
| | 0° | 330mm (13") |
| 45° | 280mm (11") | 330x280mm (13"x11") |
| Min. Width of material : 30mm | | |

| | |
|-------------------------------|----------------------|
| Electric motor-blade rotation | 3.75kW |
| Blade size | 27 x 0.9 x 4130mm |
| Blade speed (60Hz) | 25 ~85 MPM |
| Coolant tank | 116 Liters |
| Table Height | 821mm |
| Packing Measurement | 2280 x 2190 x 1730mm |
| Machine weight | 1400kgs |

10 TECHNICAL CHARACTERISTICS

10.1 Selecting the proper blade speed







Use the following chart for reference

| CUTTING SPEEDS FOR VARIOUS MATERIALS | | |
|---|--|------------------|
| MATERIALS | BLADE SPEED (MPM) | COOLANT REQUIRED |
| Free Cutting Steel 1100 & 1200 Series Low & Medium Carbon 1008 - 1045 | 70 | YES |
| 1046 - 1095 Alloy Steels Tool Steels Pipe & Structures Nickel Base Alloys Cooper Base Alloys | 40~ 60 40~60 30~40 40~60 30~40 30~ 40 | YES |
| Stainless Steels 430F, 416, 420F, 303 | 40~60 40~60 | YES |
| Cast Iron | 40~60 | NO OIL BLADE |

- Blade speeds higher than recommended will quickly dull the blade. Blue chips are evidence of excessive blade speed.
- Lower than recommended speeds will not prolong blade life, and will require a reduced feed rate – reduced speeds may be helpful in reducing vibration, and will increase blade life in that case.

10.2 Selecting the Blade

This machine uses 27x 0.9 x 4130mm blade. Refer to the section on selecting the blade.

| Cutting material |  |  |  |  |  |  |
|------------------|---|---|---|---|---|---|
| | <3mm | >5mm | >50mm | >100mm | <150mm | <300mm |
| Sawblade | <0.12" | >0.2" | >2" | >4" | <6" | <8" |
| (HSS) 14T | ● | | | | | |
| (HSS) 6/10T | | ● | | | | |
| (HSS) 5/8T | | | ● | | | |
| (HSS) 4/6T | | | ● | ● | | |
| (HSS) 3/4T | | | | ● | | |
| (HSS) 2/3T | | | | | ● | ● |
| (HSS) 1/2T | | | | | | ● |
| (HCS) 10T | ● | | | | | |
| (HCS) 8T | | ● | | | | |
| (HCS) 6T | | | ● | | | |
| (HCS) 4T | | | | ● | | |
| (HCS) 2T | | | | | ● | ● |

HSS = HIGH SPEED STEEL
HCS = HIGH CARBON STEEL

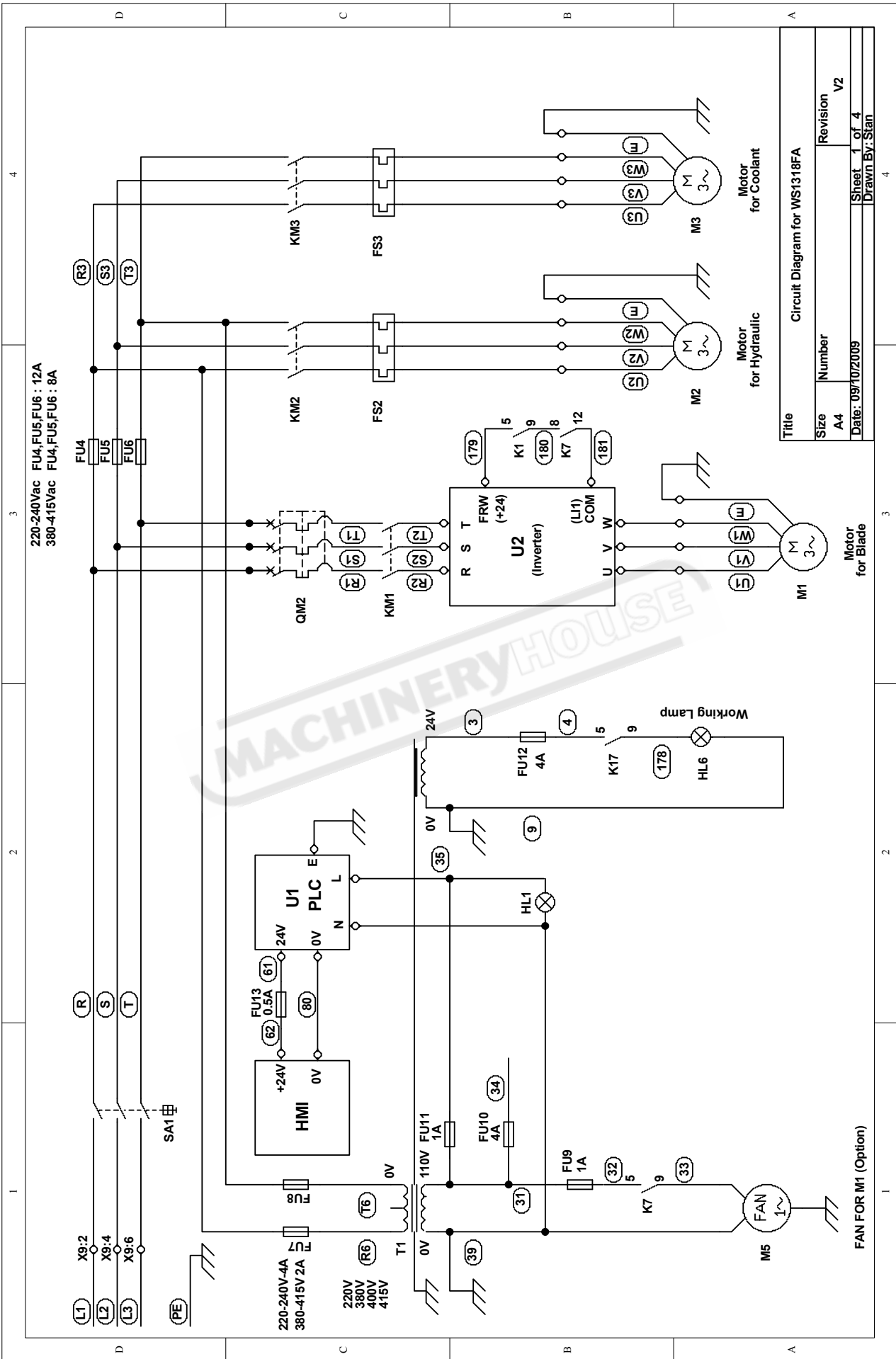
- Never use a blade so coarse that less than 3 teeth are engaged in the work-piece at anytime. (Too few teeth will cause teeth to strip out.)

- Never use a blade finer than required to obtain a satisfactory surface finish or satisfactory flatness. (Too many teeth engaged in the work piece will prevent attainment of a satisfactory sawing rate; frequently cause premature blade wear; frequently produce “dished” cuts or the cuts are neither square nor parallel.)
- The chart is not expected to be correct for all cases. It is intended as a general guide to good sawing practices. Your blade supplier or qualified engineers should be your most reliable source for correct information on operational details of saw blades and their use.

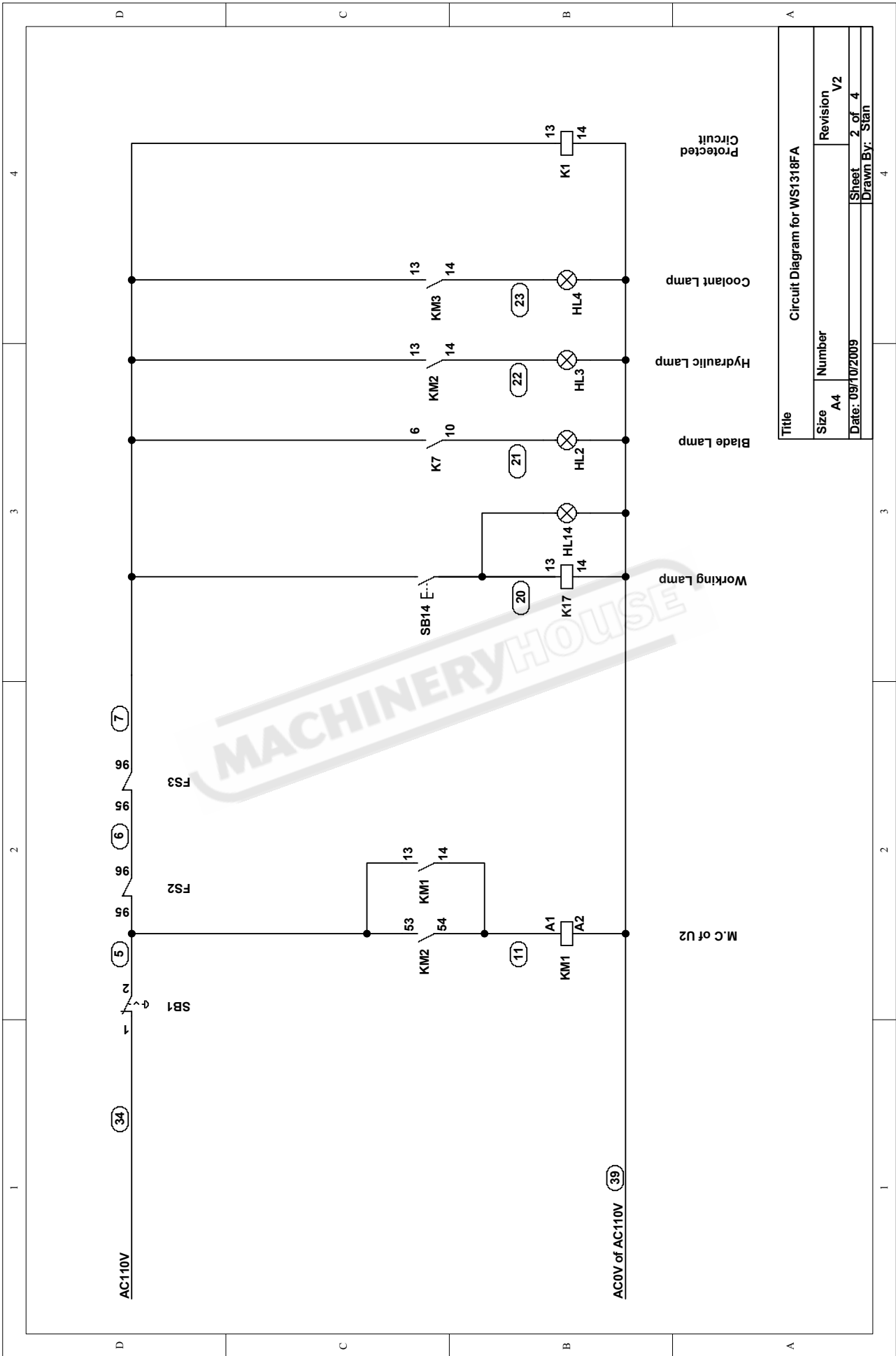
Note:

- When cutting a thin walled pipe, angle steel, and I-beam steel use a blade with 10T/in.
- When cutting pipe with a wall 1/2" or more in thickness, use a blade with 8-12 T/in or 6-10T/in.
- When cutting angle steel, I-beam, or solid bar; cut the thinnest cross section of the material first. There must be at least 3 teeth cutting the material at all times.

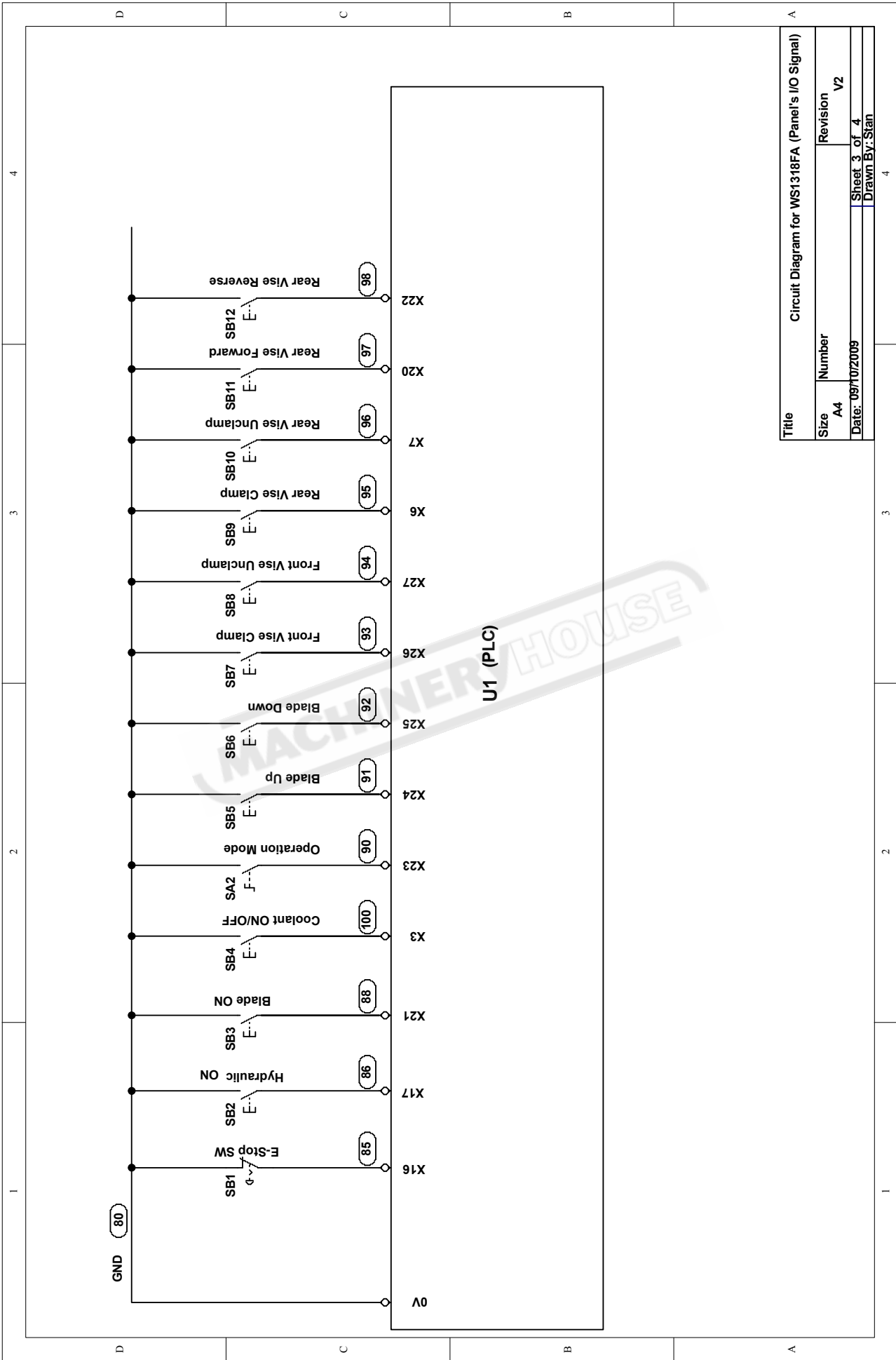
CIRCUIT DIAGRAM



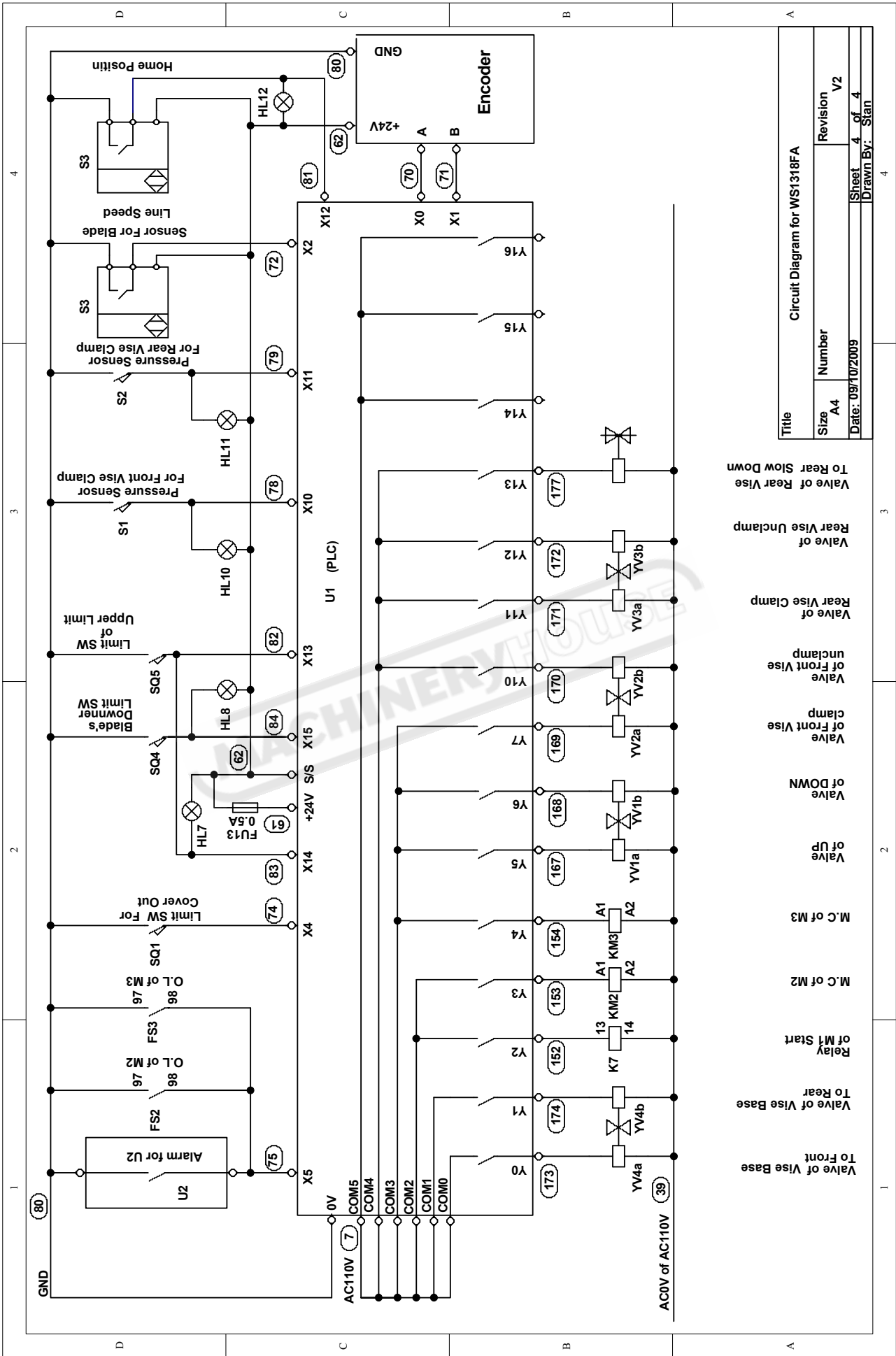
| | | | |
|-----------|------------|------------------------------|--------------|
| Title | | Circuit Diagram for WS1318FA | |
| Size | Number | Revision | V2 |
| A4 | | | |
| Date: | 09/10/2009 | | Sheet 1 of 4 |
| Drawn By: | | Stan | |



| | | | |
|-----------|--------|------------------------------|------------|
| Title | | Circuit Diagram for WS1318FA | |
| Size | Number | Revision | V2 |
| A4 | | Date: | 09/10/2009 |
| Sheet | | 2 of 4 | |
| Drawn By: | | Stan | |



| | | | |
|-------|------------|---|----------------|
| Title | | Circuit Diagram for WS1318FA (Panel's I/O Signal) | |
| Size | Number | Revision | V2 |
| A4 | | | |
| Date: | 09/10/2009 | Sheet 3 of 4 | Drawn By: Stan |



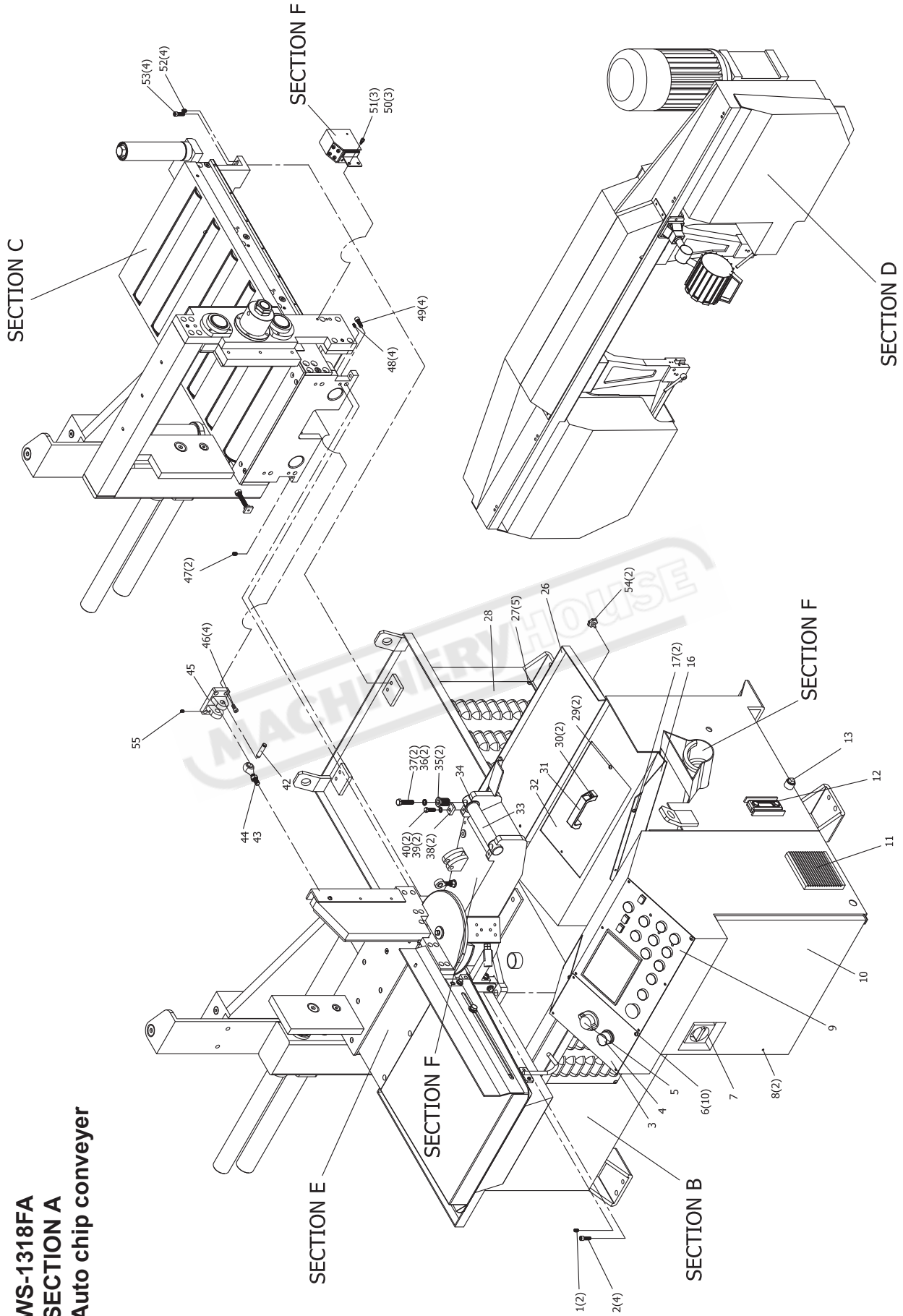
| | | | |
|----------|------------|------------------------------|----|
| Title | | Circuit Diagram for WS1318FA | |
| Size | A4 | Number | |
| Date | 09/10/2009 | Revision | V2 |
| Sheet | 4 | Of | 4 |
| Drawn By | Stan | | |

SECTION A (Auto chip conveyer) - PARTS LIST

| Part No. | Description | Size No. | Q'ty | Part No. | Description | Size No. | Q'ty |
|----------|-------------------------|--------------|------|----------|-------------|----------|------|
| A1 | Set screw | 1/2"x3/4"L | 2 | | | | |
| A2 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 | | | | |
| A3 | Hydraulic control panel | NPB-001 | 1 | | | | |
| A4 | Cutting rate knob | L25A2-01 | 1 | | | | |
| A5 | Pressure regulator knob | L25A1-42 | 1 | | | | |
| A6 | Round head screw | 1/4"x1/2"L | 10 | | | | |
| A7 | Main power switch | | 1 | | | | |
| A8 | Big round head screw | 1/4"x1/2"L | 2 | | | | |
| A9 | Control panel | NPB-006 | 1 | | | | |
| A10 | Control cabinet door | S138F3-01-H | 1 | | | | |
| A11 | Radiation device | | 1 | | | | |
| A12 | Oil level gauge | 9160418 | 1 | | | | |
| A13 | Drain screw | PT 3/4" | 1 | | | | |
| A16 | Side plate | S138F3-03-A | 1 | | | | |
| A17 | Round head screw | 3/16"x1/2"L | 2 | | | | |
| A26 | Coolant tray (Rear) | S138F3-24 | 1 | | | | |
| A27 | Round head screw | 3/16"x1/2"L | 5 | | | | |
| A28 | Hydraulic unit cover | S138F3-01-B | 1 | | | | |
| A29 | Round head screw | 3/16"x1/2"L | 2 | | | | |
| A30 | Round head screw | 1/4"x1/2"L | 2 | | | | |
| A31 | Plastic handle | 9160502 | 1 | | | | |
| A32 | Coolant cover | S138F3-01-E | 1 | | | | |
| A33 | Saw head shaft | S13802-01 | 1 | | | | |
| A34 | Washer | S13802-01-1 | 1 | | | | |
| A35 | Adjusting screw | S13802-23 | 2 | | | | |
| A36 | Spring washer | 1/2" | 2 | | | | |
| A37 | Steel hex. cap bolt | 1/2"x2-1/2"L | 2 | | | | |
| A38 | Press plate | S13802-27 | 2 | | | | |
| A39 | Spring washer | 3/8" | 2 | | | | |
| A40 | Steel hex. cap bolt | 3/8"x3/4"L | 2 | | | | |
| A42 | Support shaft | S138F2-18 | 1 | | | | |
| A43 | Nut | M16 | 1 | | | | |
| A44 | Fish eye bearing | POS16 | 1 | | | | |
| A45 | Cylinder support device | S138F1-03 | 1 | | | | |
| A46 | Hex. soc. cap screw | 3/8"x1"L | 4 | | | | |
| A47 | Set screw | 3/8"x3/4"L | 2 | | | | |
| A48 | Set screw | 3/8"x3/4"L | 4 | | | | |
| A49 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 | | | | |
| A50 | Spring washer | 1/4" | 3 | | | | |
| A51 | Hex. soc. cap screw | 1/4"x1/2"L | 3 | | | | |
| A52 | Set screw | 3/8"x3/4"L | 4 | | | | |
| A53 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 | | | | |
| A54 | Thumb screw | 1/4"x1/2"L | 2 | | | | |
| A55 | Set screw | 1/4"x1/4"L | 1 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

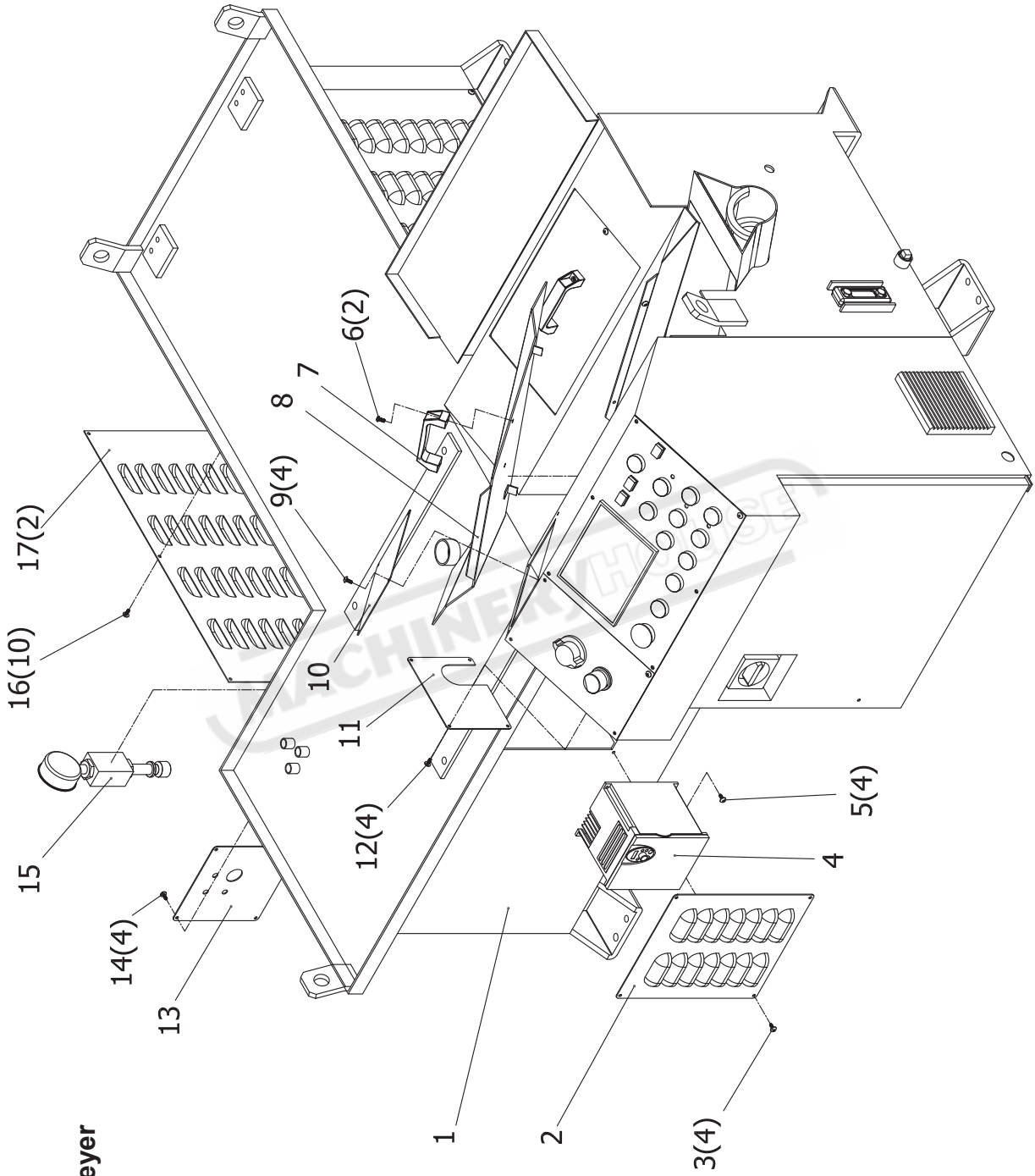
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**WS-1318FA
SECTION A
Auto chip conveyor**



1000811-V2

**WS-1318FA
SECTION B
Auto chip conveyer**

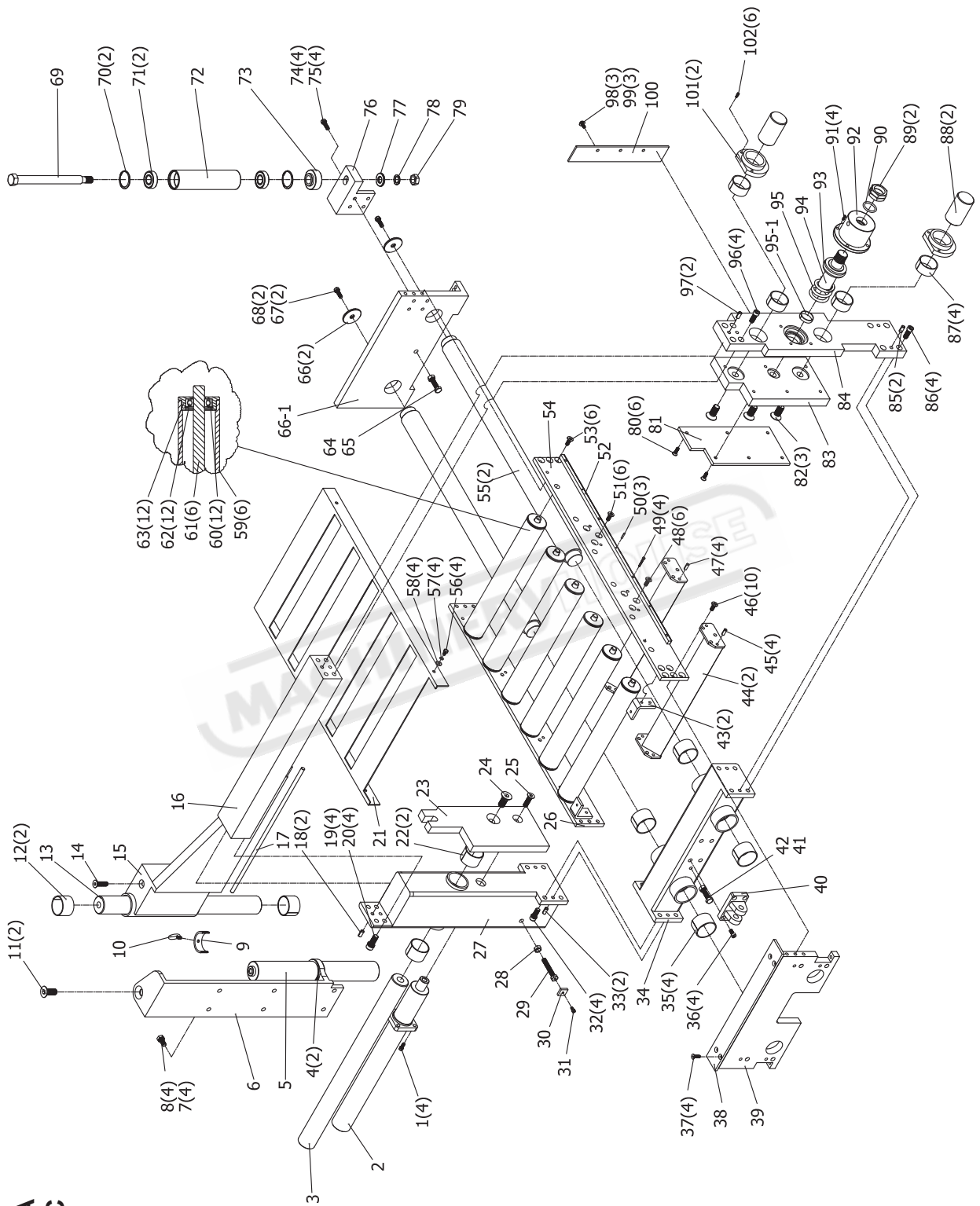


SECTION C - PARTS LIST

| Part No. | Description | Size No. | Q'ty | Part No. | Description | Size No. | Q'ty |
|----------|----------------------|--------------|------|----------|-----------------------|--------------|------|
| C1 | Hex. soc. cap screw | 3/8"x1-1/4"L | 4 | C53 | Flat head screw | 3/8"x1"L | 6 |
| C2 | Front cylinder | | 1 | C54 | Roller holder (R) | S138F2-04-B | 1 |
| C3 | Upper shaft | S138F2-03 | 1 | C55 | Feeding rod | S138F2-01 | 2 |
| C4 | C Ring | S60 | 2 | C56 | Hex. cap bolt | 5/16"x1/2" | 4 |
| C5 | Vertical cylinder | | 1 | C57 | Spring washer | 5/16" | 4 |
| C6 | Fixed bracket | S138F3-08 | 1 | C58 | Flat washer | 5/16" | 4 |
| C7 | Spring washer | 1/2" | 4 | C59 | Roller | S138 02-07-A | 6 |
| C8 | Hex. cap bolt | 1/2"x1"L | 4 | C60 | C Ring | R40 | 12 |
| C9 | Safety collar | S1318F2-16 | 1 | C61 | Roller shaft | S138F2-14 | 6 |
| C10 | Ring screw | M8 | 1 | C62 | Bearing | 6203 | 12 |
| C11 | Flat head screw | 3/4"x1-1/4"L | 2 | C63 | Roller sleeve | S138 02-07-C | 12 |
| C12 | Oilless bush 5540 | 461D5-10 | 2 | C64 | Steel hex. cap bolt | 1/2"x1-3/4"L | 1 |
| C13 | Guide shaft | S138F2-02 | 1 | C65 | Nut | 1/2" | 1 |
| C14 | Flat head screw | 1/2"x3/4"L | 1 | C66 | Washer | S138F2-01-A | 2 |
| C15 | Down bracket | S138F3-09 | 1 | C66-1 | Roller bracket (Rear) | S138F2-04-A | 1 |
| C16 | Upper bracket | S138F3-11 | 1 | C67 | Steel hex. cap bolt | 1/2"x1-1/4"L | 2 |
| C17 | Plastic wire | D10 | 1 | C68 | Spring washer | 1/2" | 2 |
| C18 | Spring pin | 10x30L | 2 | C69 | Roller shaft | S138 02-18-A | 1 |
| C19 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 | C70 | C Ring | R52 | 2 |
| C20 | Spring washer | 1/2" | 4 | C71 | Bearing | 6205 | 2 |
| C21 | Roller cover | S138F3-04 | 1 | C72 | Vertical roller | S138 02-18 | 1 |
| C22 | Oilless bush 5540 | 461D5-10 | 2 | C73 | Roller sleeve | S138 02-18-B | 1 |
| C23 | Front vice | S138F2-07 | 1 | C74 | Steel hex. cap bolt | 3/8"x1"L | 4 |
| C24 | Flat head screw | 3/4"x1"L | 1 | C75 | Spring washer | 3/8" | 4 |
| C25 | Flat head screw | 1/2"x1-1/4"L | 1 | C76 | Vertical roller | S138F3-23 | 1 |
| C26 | Roller holder (L) | S138F2-04-C | 1 | C77 | Flat washer | 3/4" | 1 |
| C27 | Cylinder bracket | S138F3-10 | 1 | C78 | Spring washer | 3/4" | 1 |
| C28 | Nut | 1/2" | 1 | C79 | Nut | 3/4" | 1 |
| C29 | Sensor setting screw | S138F2-17 | 1 | C80 | Flat head screw | 5/16"x3/4" | 6 |
| C30 | Sensor plate | S138F3-21-A | 1 | C81 | Vise steel plate | S138F2-08-A | 1 |
| C31 | Hex. soc. cap screw | 1/4"x1/2"L | 1 | C82 | Flat head screw | 3/4"x1-1/4"L | 3 |
| C32 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 | C83 | Feeding fixed vise | S138F2-08 | 1 |
| C33 | Spring pin | 10x30L | 2 | C84 | Vise locking bracket | S138F2-09 | 1 |
| C34 | Rod supporter | S138F3-12 | 1 | C85 | Spring pin | 10x30L | 2 |
| C35 | Oilless bush 6040 | S138F5-11 | 4 | C86 | Hex. soc. cap screw | 1/2"x1-1/4"L | 4 |
| C36 | Hex. soc. cap screw | 3/8"x5/8"L | 4 | C87 | Oilless bush 5530 | S138F5-10 | 4 |
| C37 | Flat head screw | 5/16"x3/4"L | 4 | C88 | Upper shaft | S138F2-15-B | 2 |
| C38 | Upper bracket | S138F2-04-D | 1 | C89 | Nut | S138F2-20 | 2 |
| C39 | Front bracket | S138F2-04 | 1 | C90 | O Ring P35 | S1380510 | 1 |
| C40 | Cylinder connecting | S138F1-03 | 1 | C91 | Hex. soc. cap screw | 5/16"x1"L | 4 |
| C41 | Hex. cap bolt | 1/2"x2-1/2"L | 1 | C92 | Cylinder sleeve | S138F2-15-A | 1 |
| C42 | Nut | 1/2" | 1 | C93 | O Ring P60 | L25A5-47 | 1 |
| C43 | Angle plate | S138F3-04-B | 2 | C94 | Short cylinder piston | S138F2-15 | 1 |
| C44 | Enhance plate | S138F3-04-A | 2 | C95 | Spring | S138F4-05 | 1 |
| C45 | Spring pin | 8x20L | 4 | C95-1 | Oilless bushing 4015 | S138F5-14 | 1 |
| C46 | Flat head screw | 3/8"x1"L | 10 | C96 | Hex. soc. cap screw | 1/2"x1-1/4" | 4 |
| C47 | Spring pin | 8x20L | 4 | C97 | Spring pin | 10x30L | 2 |
| C48 | Flat head screw | 3/8"x1"L | 6 | C98 | Spring washer | 5/16" | 3 |
| C49 | Hex. soc. cap screw | 5/32"x3/4"L | 4 | C99 | Round head soc. screw | 5/16"x1"L | 3 |
| C50 | Spring pin | 4x25L | 3 | C100 | Guide plate | S138F3-19 | 1 |
| C51 | Flat head screw | 3/8"x1"L | 6 | C101 | Shaft collar | S138F2-15-C | 2 |
| C52 | Rack | S138F2-12 | 1 | C102 | Hex. soc. cap screw | 1/4"x1"L | 6 |

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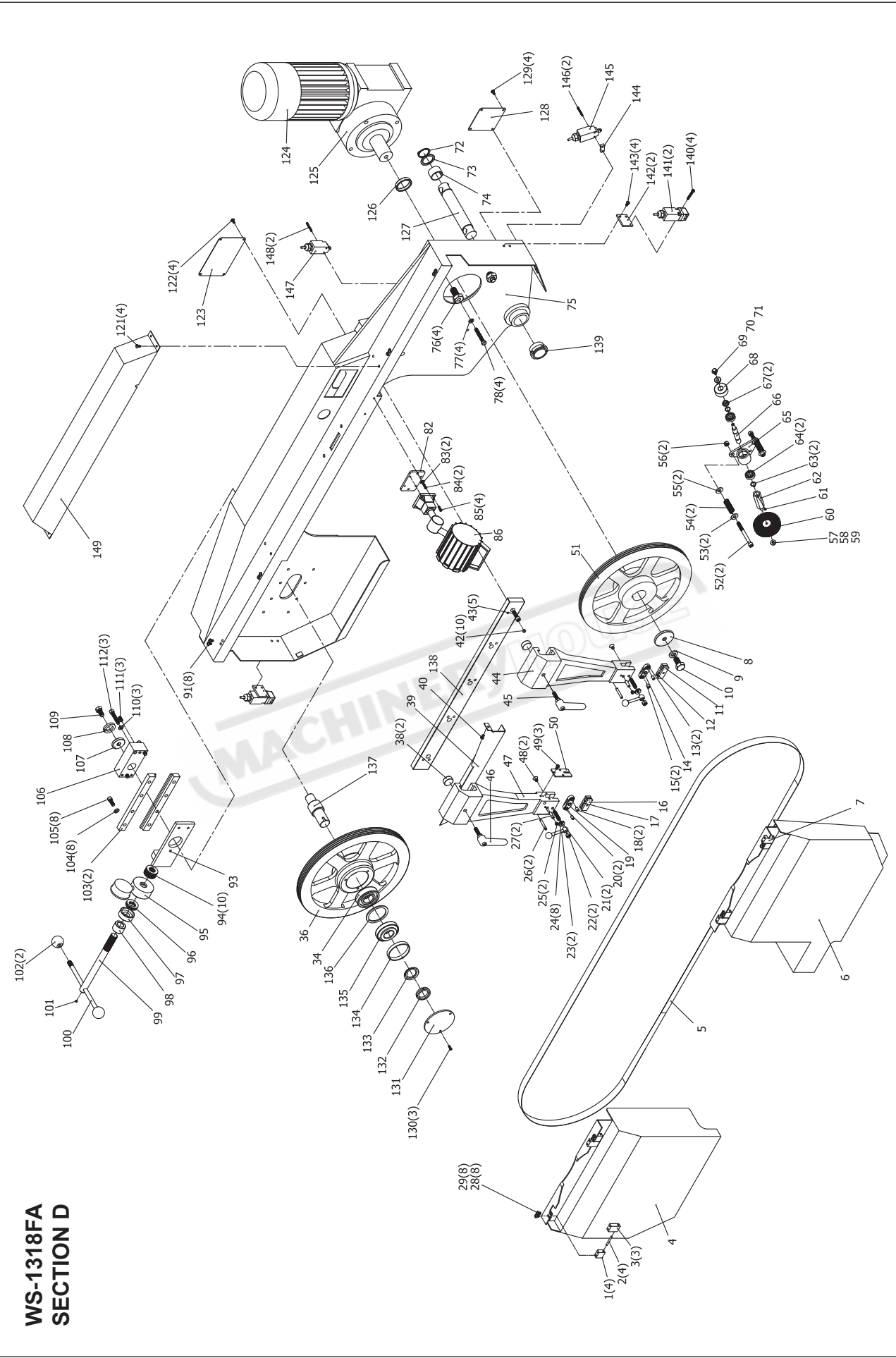
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SECTION C**



SECTION D - PARTS LIST

| Part No. | Description | Size No. | Q'ty | Part No. | Description | Size No. | Q'ty |
|----------|-------------------------|--------------|------|----------|---------------------------|---------------|------|
| D1 | Cover latch (F) | S138 02-19-1 | 4 | D71 | Hex. cap bolt | 1/4"x1/2"L | 1 |
| D2 | Pin | 5x50L | 4 | D72 | C Ring | S38 | 1 |
| D3 | Cover latch (R) | S138 02-19 | 3 | D73 | Washer | S138 02-01-1 | 1 |
| D4 | Front wheel cover | S138 03-04-1 | 1 | D74 | Oilless bush 3830 | S1380504 | 1 |
| D5 | Blade | 27x4130x0.9 | 1 | D75 | Saw head | S138F3-02 | 1 |
| D6 | Rear wheel cover | S138 03-04-2 | 1 | D76 | Adjusting screw | S138F2-13 | 4 |
| D7 | Rear latch | S138 02-19-2 | 1 | D77 | Spring washer | 1/2" | 4 |
| D8 | Wheel washer | S138 02-14-2 | 1 | D78 | Steel hex. cap bolt | 1/2"x2-1/2"L | 4 |
| D9 | Spring washer | 3/4" | 1 | D82 | Light plate | S138F3-16 | 1 |
| D10 | Hex. cap bolt | 5/8"x1-1/4"L | 1 | D83 | Spring washer | 3/16" | 2 |
| D11 | Adjustable guide | S138 02-12-3 | 1 | D84 | Big round head screw | 3/16"x1/2"L | 2 |
| D12 | Fixed guide | S138 02-12-2 | 1 | D85 | Hex. soc. cap screw | 3/16"x5/8"L | 4 |
| D13 | Bearing 608 | 331D5-17 | 2 | D86 | Work light | L25A5-32 | 1 |
| D14 | Bearing bracket | S138 03-14 | 1 | D91 | Round head soc. screw | 1/4"x1/2"L | 8 |
| D15 | Pin | 8x12L | 2 | D93 | Tension slide | S138 02-24 | 1 |
| D16 | Adjustable guide | S138 02-12-3 | 1 | D94 | Disc washer 502225 | 460D4-09 | 10 |
| D17 | Fixed guide | S138 02-12-2 | 1 | D95 | Tension gauge | S1380410 | 1 |
| D18 | Pin | 8x12L | 2 | D96 | Thrust bearing 51105 | 460D2-22 | 1 |
| D19 | Bearing bracket | S138 03-14 | 1 | D97 | Thrust bearing sleeve | S138 02-05-9 | 1 |
| D20 | Bearing 608 | 331D5-17 | 2 | D98 | Front sleeve | S138 02-05-7 | 1 |
| D21 | Adjusting screw | S138 02-12-1 | 2 | D99 | Tension bolt | S138 02-05-6 | 1 |
| D22 | Nut | 3/8" | 2 | D100 | Tension handle | S138 02-05-10 | 1 |
| D23 | Locking handle | S138 02-12 | 2 | D101 | Set screw | 1/4"x1/4" | 1 |
| D24 | Disc washer 201010 | S1380414 | 8 | D102 | Bakelite ball 1-1/2"x1/2" | S1380404 | 2 |
| D25 | Set screw | 3/8"x3/8"L | 2 | D103 | Fixed plate | S138 02-05-5 | 2 |
| D26 | Spring pin | 6x45L | 2 | D104 | Spring washer | 3/8" | 8 |
| D27 | Pin | 8x25L | 2 | D105 | Hex. soc. cap screw | 3/8"x1"L | 8 |
| D28 | Round head soc. screw | 1/4"x1/2"L | 8 | D106 | Wheel fixed block | S138 02-05-3 | 1 |
| D29 | Spring washer | 1/4" | 8 | D107 | Fixed washer | S138 02-05-2 | 1 |
| D34 | Bearing 6307 | S1380502 | 1 | D108 | Spring washer | 1/2" | 1 |
| D36 | Front wheel | S138 01-04 | 1 | D109 | Hex. cap bolt | 1/2"x1"L | 1 |
| D38 | Lock brass | S138 02-16 | 2 | D110 | Spring washer | 3/8" | 3 |
| D39 | Blade guard | S138 03-17 | 1 | D111 | Set screw | 3/8"x3/4"L | 3 |
| D40 | Round head soc. screw | 1/4"x1/2"L | 1 | D112 | Hex. soc. cap screw | 3/8"x2"L | 3 |
| D42 | Set screw | 3/8"x3/4"L | 10 | D121 | Round head soc. screw | 3/16"x1/2"L | 4 |
| D43 | Hex. soc. cap screw | 3/8"x1"L | 5 | D122 | Round head soc. screw | 3/16"x1/2"L | 4 |
| D44 | Blade guide arm (R) | S138 01-07 | 1 | D123 | Cover | S138F3-02-B | 1 |
| D45 | Locking handle 1/2"x40L | 350S0420 | 1 | D124 | Motor | 3HP | 1 |
| D46 | Locking handle 1/2"x40L | 350S0420 | 1 | D125 | Worm Reducer | S1380412 | 1 |
| D47 | Blade guide arm (F) | S138 01-06 | 1 | D126 | Shaft collar | S138 02-14 | 1 |
| D48 | Flat head screw | 5/16"x3/4"L | 2 | D127 | Saw head shaft | S138 02-01 | 1 |
| D49 | Round head soc. screw | 1/4"x1/2"L | 3 | D128 | Lower cover | S138F3-02-A | 1 |
| D50 | Coolant cover | S138 03-13 | 1 | D129 | Round head soc. screw | 3/16"x1/2"L | 4 |
| D51 | Rear wheel | S138 01-05 | 1 | D130 | Hex. soc. cap screw | 1/4"x1/2"L | 3 |
| D52 | Hex. soc. cap screw | 3/8"x4" | 2 | D131 | Bearing cover | S138F2-23 | 1 |
| D53 | Flat washer | 3/8" | 2 | D132 | Bearing nut | AN07 | 1 |
| D54 | Compress spring | S138 04-09 | 2 | D133 | Tooth washer | AW07 | 1 |
| D55 | Flat washer | 3/8" | 2 | D134 | Big spacer | S138F2-22-B | 1 |
| D56 | Nut | 3/8" | 2 | D135 | Bearing 30307 | S138F5-15 | 1 |
| D57 | Nut | 1/4" | 1 | D136 | Front wheel spacer | S138F2-22-A | 1 |
| D58 | Flat washer | 1/4" | 1 | D137 | Front wheel shaft | S138F2-22 | 1 |
| D59 | Spring washer | 1/4" | 1 | D138 | Steel plate | S138 02-06 | 1 |
| D60 | Chip brush | 331D4-08 | 1 | D139 | Adjusting collar | S138F2-25-A | 1 |
| D61 | Set screw | 1/4"x1/4"L | 1 | D140 | Hex. soc. cap screw | 5/32"x1-1/4"L | 4 |
| D62 | Brush shaft | S138 02-15-1 | 1 | D141 | Limit switch EK-1-15R | S138F4-10 | 2 |
| D63 | C Ring | S15 | 2 | D142 | Position plate | S138A 03-14 | 2 |
| D64 | Bearing 6002 | S1380505 | 2 | D143 | Round head soc. screw | 1/4"x1/2"L | 4 |
| D65 | Brush bracket | S138 03-16 | 1 | D144 | Switch plate | S138F3-29-A | 1 |
| D66 | Shaft | S138 02-15 | 1 | D145 | Limit switch ED1-3-32 | H33D4-11 | 1 |
| D67 | Rubber cover | 331D2-42-1 | 2 | D146 | Hex. soc. cap screw | 5/32"x1-1/4"L | 2 |
| D68 | Brush wheel | S138 02-15-2 | 1 | D147 | Limit switch ED-31 | 331D5-06-C | 1 |
| D69 | Flat washer | 1/4" | 1 | D148 | Hex. soc. cap screw | 5/32"x1-1/4"L | 2 |
| D70 | Spring washer | 1/4" | 1 | D149 | Upper device | S138F3-02-C | 1 |

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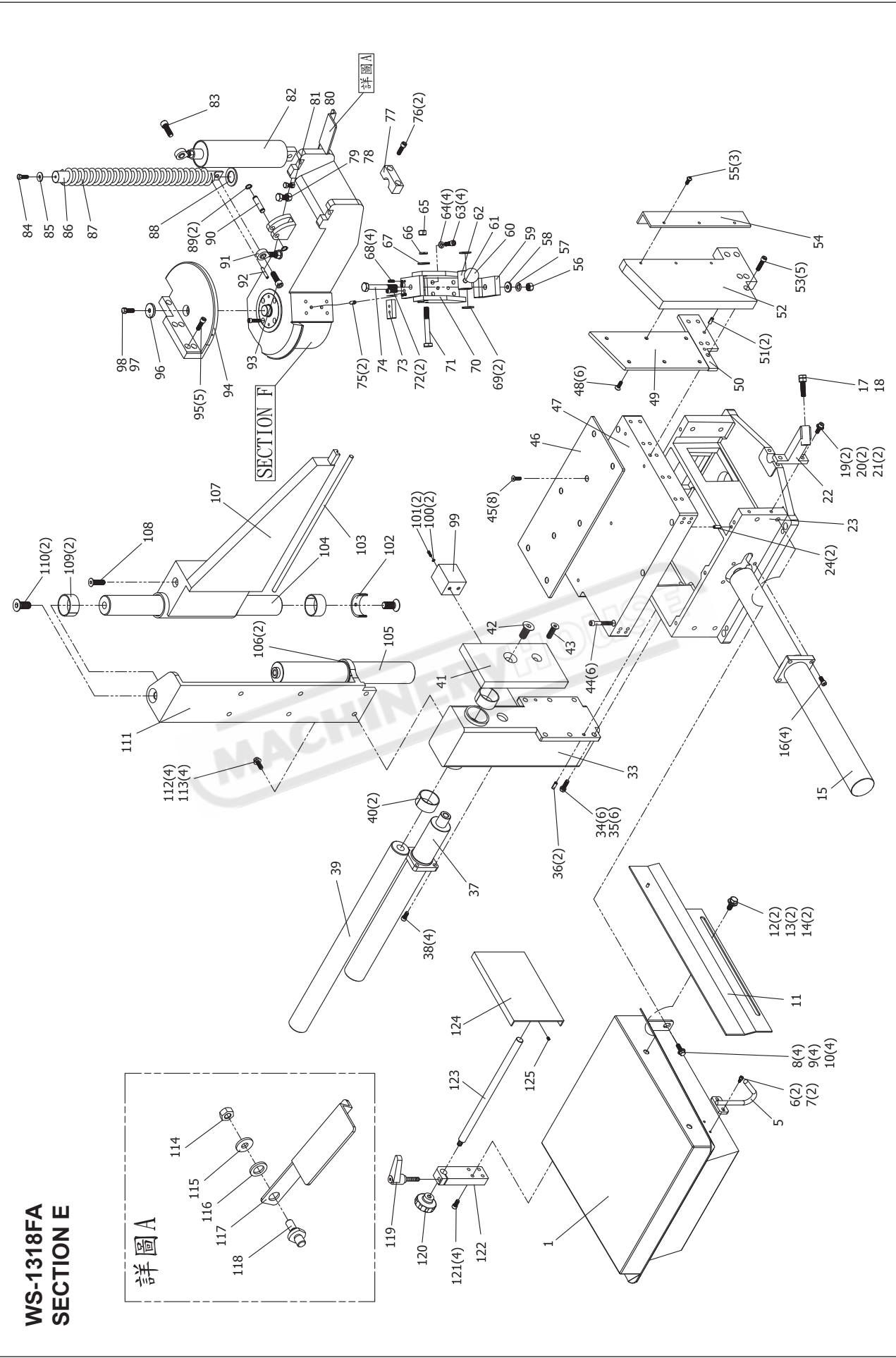


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SECTION D**

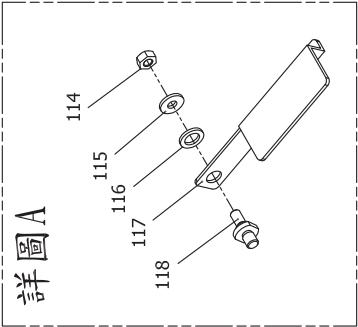
SECTION E - PARTS LIST

| Part No. | Description | Size No. | Q'ty | Part No. | Description | Size No. | Q'ty |
|----------|---------------------------|--------------|------|----------|-----------------------------|--------------|------|
| E1 | Retrieval table | S138F3-06 | 1 | E69 | Flat washer | 1/2" | 2 |
| E5 | Coolant gun holder | S138F3-20 | 1 | E70 | Fixed block | S13803-11 | 1 |
| E6 | Hex. soc. cap screw | 1/4"x1"L | 2 | E71 | Steel hex cap bolt | 1/2"x4"L | 1 |
| E7 | Spring washer | 1/4" | 2 | E72 | Hex. soc. cap screw | 5/16"x1"L | 2 |
| E8 | Hex. cap bolt | 1/2"x5/8"L | 4 | E73 | Upper clamp block | S13802-11 | 1 |
| E9 | Spring washer | 1/2" | 4 | E74 | Steel hex. cap bolt | 1/2"x4"L | 1 |
| E10 | Flat washer | 1/2" | 4 | E75 | Spring pin | 8x20L | 2 |
| E11 | Side plate | S138F3-06-A | 1 | E76 | Hex. soc. cap screw | 3/8"x1-1/2"L | 2 |
| E12 | Hex. cap bolt | 1/2"x5/8"L | 2 | E77 | Locking block | S13802-02-2 | 1 |
| E13 | Spring washer | 1/2" | 2 | E78 | Nut | 1/2" | 1 |
| E14 | Flat washer | 1/2" | 2 | E79 | Hex. cap bolt | 1/2"x1-1/2"L | 1 |
| E15 | Feeding cylinder | | 1 | E80 | Nut | 3/8" | 1 |
| E16 | Hex. soc. cap screw | 3/8"x1-1/4"L | 4 | E81 | Hex. cap bolt | 3/8"x1"L | 1 |
| E17 | Hex. cap bolt | 1/2"x1-1/4"L | 1 | E82 | Lift cylinder | | 1 |
| E18 | Nut | 1/2" | 1 | E83 | Hex. soc. cap screw | 1/2"x2-1/2"L | 1 |
| E19 | Hex. soc. cap screw | 3/8"x1-1/4"L | 2 | E84 | Hex. cap bolt | 5/16"x1"L | 1 |
| E20 | Spring washer | 3/8" | 2 | E85 | Washer | S13802-22 | 1 |
| E21 | Flat washer | 3/8" | 2 | E86 | Spring shaft | S13802-08 | 1 |
| E22 | 0° Position device | S138F3-14 | 1 | E87 | Compress spring | S13804-07 | 1 |
| E23 | Cutting table | S138F1-01 | 1 | E88 | Position washer | S13802-08-1 | 1 |
| E24 | Spring pin | 8x20L | 2 | E89 | C Ring | S14 | 2 |
| E33 | Front cylinder supporter | S138F3-09 | 1 | E90 | Lower shaft | S13802-17 | 1 |
| E34 | Steel hex. cap bolt | 1/2"x1-1/2"L | 6 | E91 | Fish eye bearing 1/2"x20UNF | S1380520 | 1 |
| E35 | Spring washer | 1/2" | 6 | E92 | Spring Pin | 6x30L | 1 |
| E36 | Spring pin | 8x20L | 2 | E93 | Hex. soc. cap screw | 1/2"x1-1/4"L | 1 |
| E37 | Vice cylinder | | 1 | E94 | Upper cover | S138F1-02 | 1 |
| E38 | Hex. soc. cap screw | 3/8"x1-1/4"L | 4 | E95 | Hex. soc. cap screw | 3/8"x1-1/4"L | 5 |
| E39 | Upper shaft | S138F2-03 | 1 | E96 | Locking washer | S13802-28 | 1 |
| E40 | Oilless bush 5540 | 461D5-10 | 2 | E97 | Spring washer | 3/8" | 1 |
| E41 | Front vice | S138F2-05 | 1 | E98 | Steel hex. cap bolt | 3/8"x1"L | 1 |
| E42 | Flat head screw | 3/4"x1-1/4"L | 1 | E99 | Sensor bracket | S138F3-21 | 1 |
| E43 | Flat head screw | 1/2"x1-1/4"L | 1 | E100 | Spring washer | 5/16" | 2 |
| E44 | Hex. soc. cap screw | 3/8"x2-1/2"L | 6 | E101 | Hex. soc. cap screw | 5/16"x1/2"L | 2 |
| E45 | Flat head screw | 5/16"x3/4"L | 8 | E102 | Safety collar | S138F2-16 | 1 |
| E46 | Cutting plate | S13802-09 | 1 | E103 | Plastic wire | Ø10 | 1 |
| E47 | Cutting table | S13801-02 | 1 | E104 | Guide shaft | S138F2-02 | 1 |
| E48 | Flat head screw | 5/16"x3/4"L | 6 | E105 | Press cylinder | | 1 |
| E49 | Vice steel plate | S138F2-06-A | 1 | E106 | C Ring | S60 | 2 |
| E50 | Attached plate | S138F2-06-B | 1 | E107 | Press bracket | S138F3-07 | 1 |
| E51 | Spring pin | 8x20L | 2 | E108 | Flat head screw | 1/2"x3/4"L | 1 |
| E52 | Rear vice | S138F2-06 | 1 | E109 | Oilless bush 5540 | 461D5-10 | 2 |
| E53 | Hex. soc. cap screw | 3/8"x2"L | 5 | E110 | Flat head screw | 3/4"x1-1/4"L | 2 |
| E54 | Guide plate | S138F3-18 | 1 | E111 | Press fixed bracket | S138F3-08 | 1 |
| E55 | Hex. soc. cap screw | 5/16"x3/4"L | 3 | E112 | Spring washer | 1/2" | 4 |
| E56 | Nylon nut | 1/2" | 1 | E113 | Hex. cap bolt | 1/2"x1"L | 4 |
| E57 | Spring washer | 1/2" | 1 | E114 | Nylon nut | 3/8" | 1 |
| E58 | Flat washer | 1/2" | 1 | E115 | Position washer | S138F2-26-A | 1 |
| E59 | Clamping block | S13802-11-1 | 1 | E116 | Position plastic washer | S138F2-26-B | 1 |
| E60 | Bakelite ball 1-1/2"x1/2" | S1380404 | 1 | E117 | Adjusting plate | S138F3-29 | 1 |
| E61 | Cam handle | S13802-11-3 | 1 | E118 | Adjusting screw | S138F2-26 | 1 |
| E62 | Locking cam | S13802-11-2 | 1 | E119 | Locking handle 3/8"x30L | 9160504-1 | 1 |
| E63 | Hex. soc. cap screw | 3/8"x1-1/4"L | 4 | E120 | Bakelite ball 2"x1/2" | S1380403 | 1 |
| E64 | Spring washer | 3/8" | 4 | E121 | Hex. soc. cap screw | 5/16"x1"L | 4 |
| E65 | Nylon nut | 1/2" | 1 | E122 | Fixed bracket | S138F3-27-A | 1 |
| E66 | Spring washer | 1/2" | 1 | E123 | Rod | S138F2-24 | 1 |
| E67 | Flat washer | 1/2" | 1 | E124 | Collecting plate | S138F3-27 | 1 |
| E68 | Set screw | 1/4"x3/4"L | 4 | E125 | Set screw | 5/16"x3/8"L | 1 |

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SECTION E



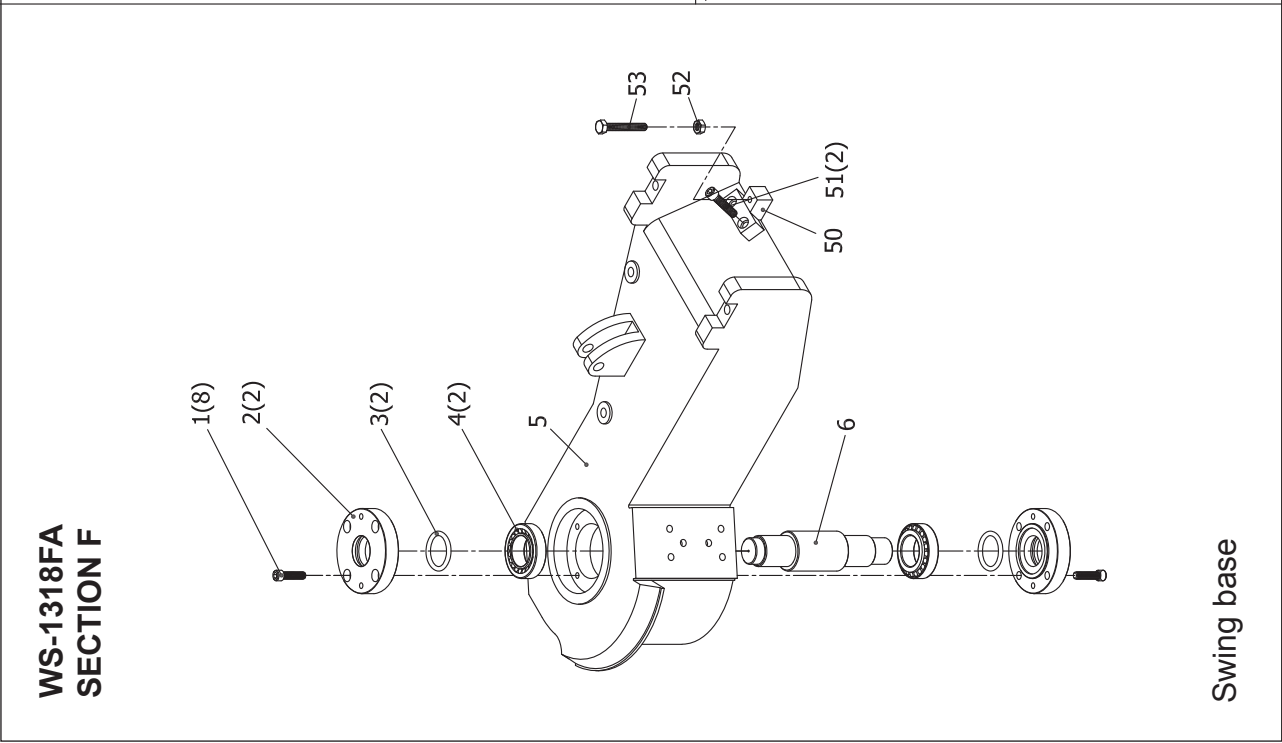
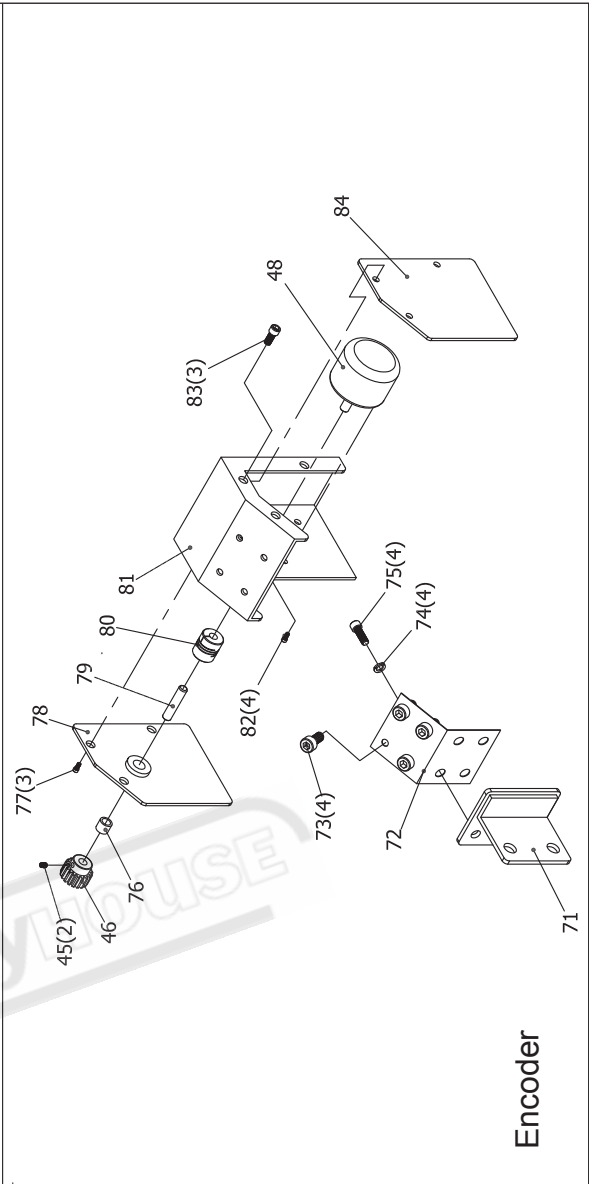
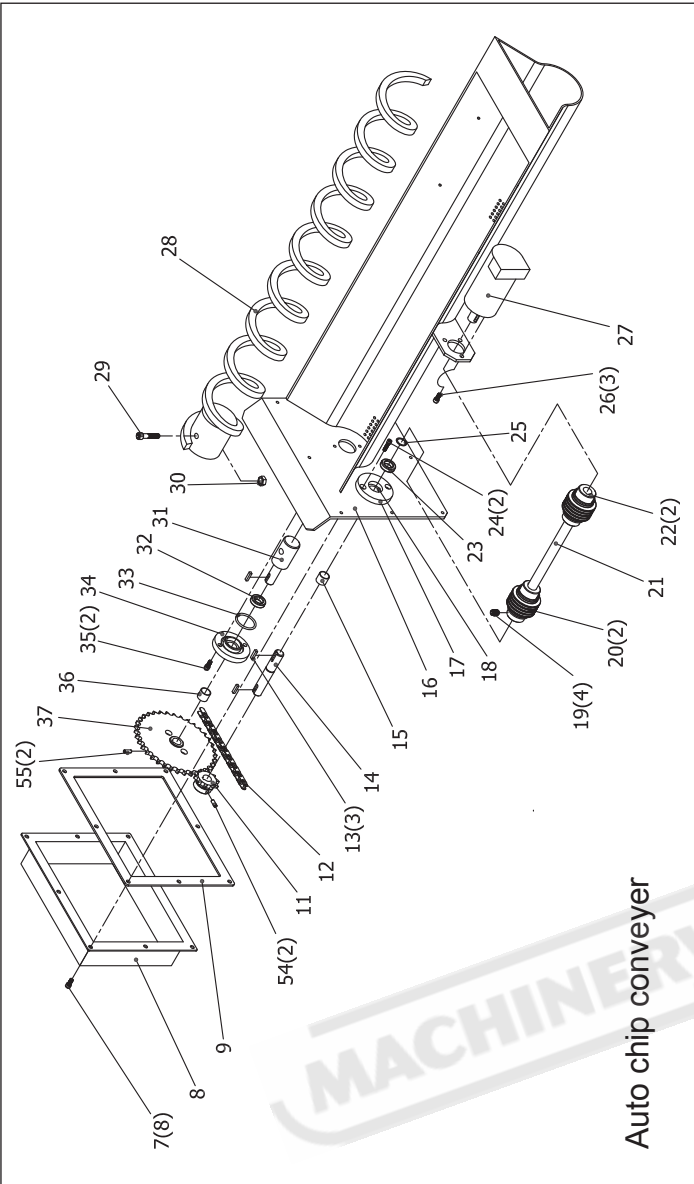
SECTION F

詳圖A

SECTION F - PARTS LIST

| Part No. | Description | Size No. | Q'ty | Part No. | Description | Size No. | Q'ty |
|----------|-------------------------|---------------|------|----------|---------------------|-------------|------|
| F1 | Hex. soc. cap screw | 5/16"x1-1/2"L | 8 | F72 | Encoder plate | S138F3-34-E | 1 |
| F2 | Swing cover | S13802-02-1 | 2 | F73 | Hex. soc. cap screw | 3/16"x3/8"L | 4 |
| F3 | O Ring P35 | S1380510 | 2 | F74 | Spring washer | 1/4" | 4 |
| F4 | Bearing 32007 | 331D5-13-A | 2 | F75 | Round head screw | 1/4"x1/2"L | 4 |
| F5 | Swing base | S13801-03 | 1 | F76 | Oilless bushing | 608 | 1 |
| F6 | Swing shaft | S13802-02 | 1 | F77 | Round head screw | 3/16"x1/4"L | 3 |
| F7 | Hex. soc. cap screw | 1/4"x1/2"L | 8 | F78 | Fixed plate | S138F3-34-B | 1 |
| F8 | Chain wheel cover | L25A3-09-A | 1 | F79 | Steel pin | 6x30L | 1 |
| F9 | Rubber seal | L25A5-38 | 1 | F80 | Shaft coupling | SWS-16C | 1 |
| F11 | Small chain wheel | L46N2-63-A | 1 | F81 | Encoder bracket | S138F3-34 | 1 |
| F12 | Chain L25A5-30+ | L25A5-30A | 1 | F82 | Round head screw | 3/16"x1/4"L | 4 |
| F13 | Key | 5x20L | 3 | F83 | Round head screw | 3/16"x1/4"L | 3 |
| F14 | Small shaft | L25A2-63 | 1 | F84 | Encoder cover | S138F3-34-A | 1 |
| F15 | Oilless bush 1625 | L40N5-08-1 | 1 | | | | |
| F16 | Conveyer base | S138F3-03 | 1 | | | | |
| F17 | Small shaft bush | L25A2-63A | 1 | | | | |
| F18 | O Ring P-32 | S138F5-02 | 1 | | | | |
| F19 | Set screw | M6x6L | 4 | | | | |
| F20 | Rubber cover SJD16 | L46N5-31 | 2 | | | | |
| F21 | Drive shaft | L25A2-64 | 1 | | | | |
| F22 | Universal Joint SJD16 | L46N5-30 | 2 | | | | |
| F23 | Oil seal TC16.7.26 | L46N4-11 | 1 | | | | |
| F24 | Hex. soc. cap screw | 1/4"x3/8"L | 2 | | | | |
| F25 | C Ring | S-16 | 1 | | | | |
| F26 | Hex. soc. cap screw | M6x16 | 3 | | | | |
| F27 | Hydraulic motor | | 1 | | | | |
| F28 | Conveyer screw | L25A2-53-A | 1 | | | | |
| F29 | Hex. soc. cap screw | M8x60L | 1 | | | | |
| F30 | Nut | M8 | 1 | | | | |
| F31 | Large chain wheel shaft | L25A2-63B | 1 | | | | |
| F32 | Oil seal TC16.7.26 | L46N4-11 | 1 | | | | |
| F33 | O Ring P-32 | S138F5-02 | 1 | | | | |
| F34 | Shaft bush | L25A2-63-C | 1 | | | | |
| F35 | Hex. soc. cap screw | 1/4"x3/8"L | 2 | | | | |
| F36 | Oilless bush 1625 | L40N5-08-1 | 1 | | | | |
| F37 | Big chain wheel | L46N2-63 | 1 | | | | |
| F45 | Set screw | M4x4L | 2 | | | | |
| F46 | Length gear | S138F2-11 | 1 | | | | |
| F47 | Round head screw | M3x6L | 4 | | | | |
| F48 | Encoder | | 1 | | | | |
| F50 | Limited set | S138F2-27 | 1 | | | | |
| F51 | Hex. soc. cap screw | 1/2"x1-1/4"L | 2 | | | | |
| F52 | Nut | 1/2" | 1 | | | | |
| F53 | Steel hex. cap bolt | 1/2"x1-3/4"L | 1 | | | | |
| F54 | Set screw | M5x5L | 2 | | | | |
| F55 | Set screw | M5x5L | 2 | | | | |
| F71 | Adjusting bracket | S138F3-34-F | 1 | | | | |

1010207-V3

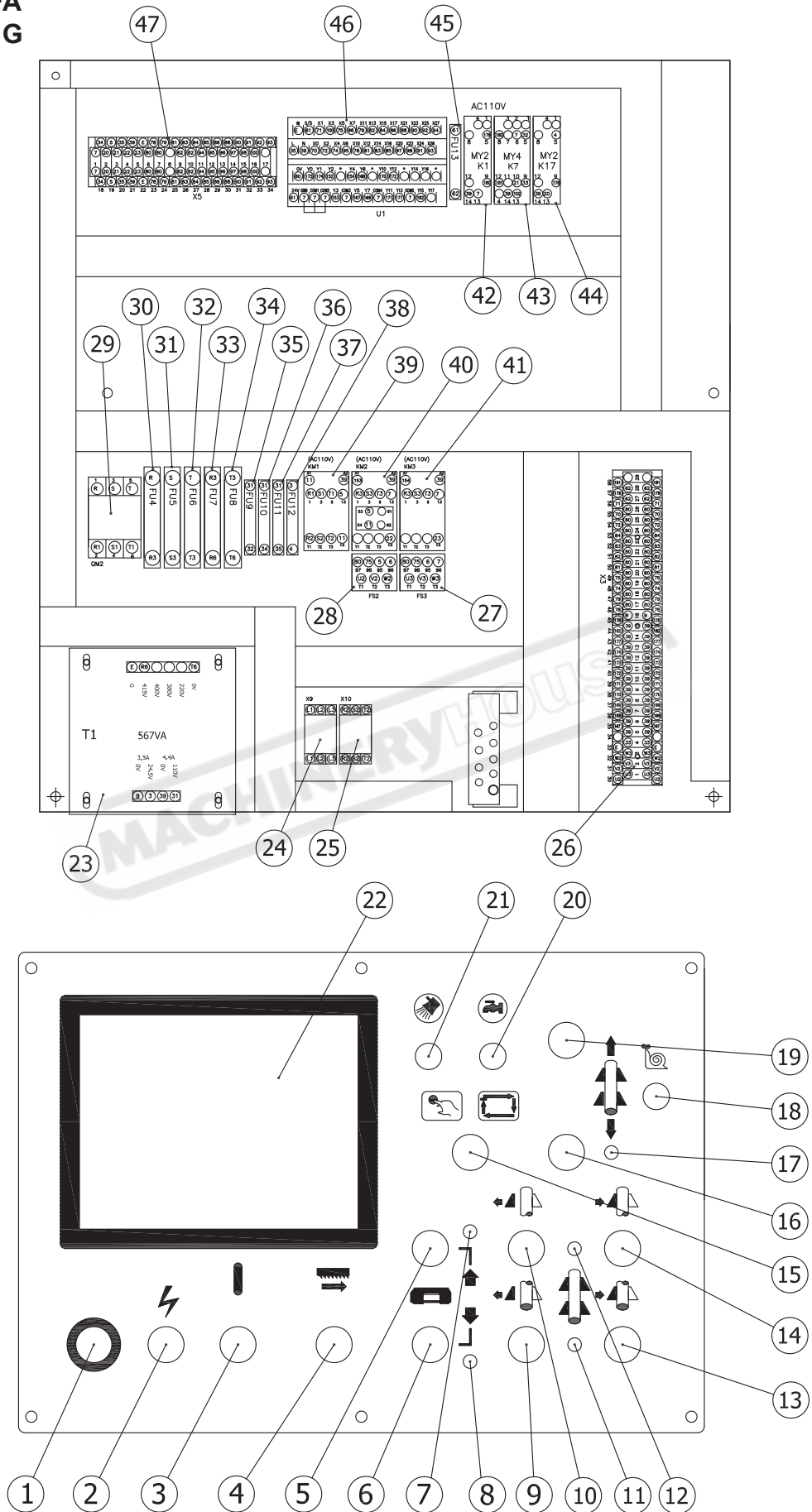


**WS-1318FA
SECTION F**

SECTION G - PARTS LIST

| Part No. | Description | Code No. | Q'ty | Part No. | Description | Code No. | Q'ty |
|----------|----------------------------------|-----------|------|----------|-------------|----------|------|
| G1 | Emergency stop button | SB1 | 1 | | | | |
| G2 | Power indicator light | HL1 | 1 | | | | |
| G3 | Hydraulic start button | SB2/HL3 | 1 | | | | |
| G4 | Operation start button | SB3/HL2 | 1 | | | | |
| G5 | Bow up button | SB5 | 1 | | | | |
| G6 | Bow down button | SB6 | 1 | | | | |
| G7 | LED Light | HL7 | 1 | | | | |
| G8 | LED Light | HL8 | 1 | | | | |
| G9 | Bench vice open button | SB8 | 1 | | | | |
| G10 | Shuttle vice open button | SB10 | 1 | | | | |
| G11 | LED Light | HL10 | 1 | | | | |
| G12 | LED Light | HL11 | 1 | | | | |
| G13 | Bench vice close button | SB7 | 1 | | | | |
| G14 | Shuttle vice close button | SB9 | 1 | | | | |
| G15 | Select switch | SA2 | 1 | | | | |
| G16 | Shuttle vice forward button | SB11 | 1 | | | | |
| G17 | LED Light | HL12 | 1 | | | | |
| G18 | Cover | | 1 | | | | |
| G19 | Shuttle vice backward button | SB12 | 1 | | | | |
| G20 | Coolant pump button | SB4/HL4 | 1 | | | | |
| G21 | Light button | SB14/HL14 | 1 | | | | |
| G22 | Touch screen (5.7") | HMI | 1 | | | | |
| G23 | Transformer | T1 | 1 | | | | |
| G24 | Power in connecting board | X9 | 1 | | | | |
| G25 | Inverter connecting board | X10 | 1 | | | | |
| G26 | Terminal board | X3 | 1 | | | | |
| G27 | Coolant motor overload relay | FS3 | 1 | | | | |
| G28 | Hydraulic motor overload relay | FS2 | 1 | | | | |
| G29 | Motor circular protector | QM2 | 1 | | | | |
| G30 | Power in fuse | FU4 | 1 | | | | |
| G31 | Power in fuse | FU5 | 1 | | | | |
| G32 | Power in fuse | FU6 | 1 | | | | |
| G33 | Transformer power in fuse | FU7 | 1 | | | | |
| G34 | Transformer power in fuse | FU8 | 1 | | | | |
| G35 | Inverter fan output fuse | FU9 | 1 | | | | |
| G36 | Transformer output fuse (AC100V) | FU10 | 1 | | | | |
| G37 | Transformer output fuse (AC100V) | FU11 | 1 | | | | |
| G38 | Transformer output fuse (AC24V) | FU12 | 1 | | | | |
| G39 | Blade motor contactor | KM1 | 1 | | | | |
| G40 | Hydraulic motor contactor | KM2 | 1 | | | | |
| G41 | Coolant motor contactor | KM3 | 1 | | | | |
| G42 | Relay | K1 | 1 | | | | |
| G43 | Relay | K7 | 1 | | | | |
| G44 | Relay | K17 | 1 | | | | |
| G45 | Power supply fuse (DC24V) | FU13 | 1 | | | | |
| G46 | PLC | U1 | 1 | | | | |
| G47 | Terminal board | X5 | 1 | | | | |

WS-1318FA SECTION G



HYDRAULIC CIRCUIT DIAGRAM

