

**OPERATION INSTRUCTION
FOR
HVS-400AC**

**HYDRAULIC
VERTICAL SLIDING
CIRCULAR COLD SAWING MACHINE**



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1. SAFETY PRECAUTION

- (1) Operator of the machine shall read the operation instruction carefully and understand the safety requirement and the function of all parts of machine thoroughly.
- (2) Only the authorized and dedicated operators are allowed to operate the machine.
- (3) The machine is designed and manufactured to meet the applicable safety regulation of your country. Please do not remove or modify any safety device or parts, such as safety cover and guard of sawblade, emergency stop button, etc.
- (4) Assure the correct electric power is connected to the machine before operation.
- (5) Please wear a pair of goggles when operating the machine.
- (6) Please push the emergency stop button and turn off the main switch upon any malfunction or emergency situation should occur.
- (7) Please disconnect the electric power when install, maintain, repair or disassemble the machine.
- (8) Please pay extreme attention to the automatic action when adjust or exam the machine with electric power has been connected.
- (9) Please operate the machine in a bright and clean environment.
- (10) Please clean and maintain the machine periodically to assure proper running the machine.
- (11) Do not operate the machine excess its allowable condition.

2. INSTRUCTION OF INSTALLATION

Note: Please read the instruction carefully before starting the work of installation. If having any question please contact your dealer for prompt service.

2.1 Unpacking and Inspection

- (1) Check if there is any damage on the wooden case or the plastic bag that used to pack the machine. Should any damage be found on the machine, please claim for the damage against the deliver or insurance company.
- (2) Check the machine and accessories against the packing list. Should any shortage, please contact your dealer.

2.2 Lifting, Moving and Anchoring

- (1) Lifting eyebolts have been mounted on the machine. Please use hoist and sling devices with enough capacity to lift and move the machine.
- (2) Slots, designed at the bottom of the machine, can be used by forklift to move the machine.
- (3) Please watch over the obstacle or personnel that may be on the way of moving the machine.
- (4) Place the machine on a horizontal foundation. Use anchor bolt and nut to fix the machine.

2.3 Connecting Electric Power

- (1) Only qualified electrician can connect electric power.
- (2) The voltage and amperage capacity of the power source shall meet the requirement of the machine.
- (3) Check the rotation of the sawblade shaft (arbor). Change over two conductors in junction box if the direction of rotation does not consist with the direction of the label on the sawblade safety cover.

Note:

- (1) Assure the main power switch is at “OFF” position and the sawblade motor speed select switch is at “OFF” position before connecting the machine to electric power source.
- (2) Do not install sawblade on the sawblade shaft when check the rotational direction of the sawblade shaft.

2.4 Connecting Hydraulic Hose

- (1) Refer to Hydraulic System Diagram to connect hydraulic hoses.
- (2) Take two hoses marked NO.1 to connect cutting head cylinder and cutting head cylinder direction solenoid valve.
- (3) Take two hoses marked NO.2 to connect vise cylinder and vise cylinder direction solenoid valve.

2.5 Filling Hydraulic Oil

- (1) Fill the hydraulic oil tank with one of following types of oil:

CPC	VISCOUTY	MITSUBISHI	SHOWA	MOBAIL	SHELL
R46	ISO. VG46	DIAMOND HYD F10001 46	SHOSEKI JH46	MOBI DTE OIL LIGHT	SHELL TERAS OIL C46

- (2) Fill up the oil tank with 90 liters of hydraulic oil.

2.6 Filling coolant

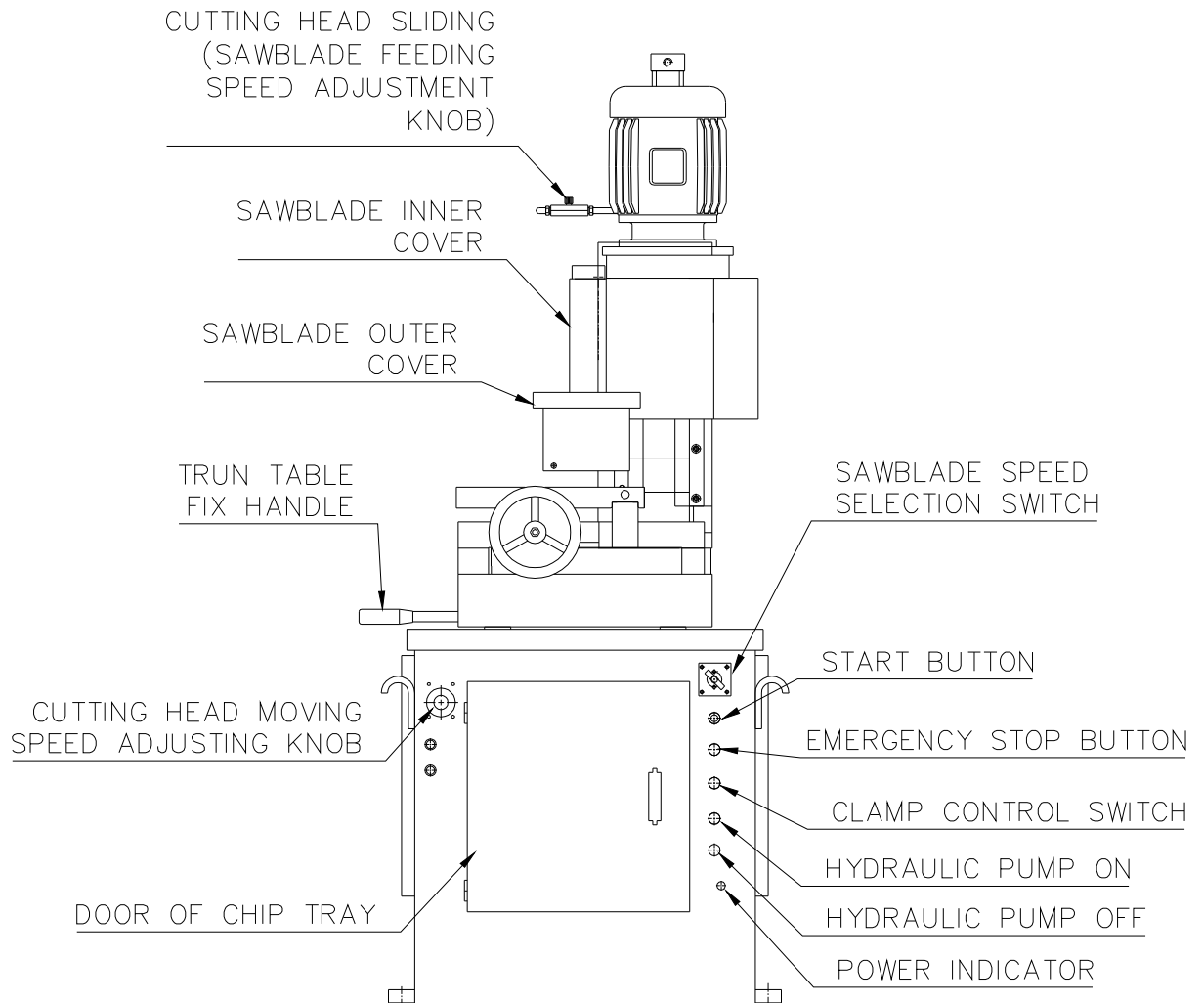
- (1.) Pour the diluted sawing oil on the table of the machine. The solution will flow into the coolant tank.
- (2) The dilute ratio (water: oil) is 5:1 for hard or high alloy steel and 10:1 for mild steel.

3. TECHNICAL DATA AND OUTLINE DESCRIPTION

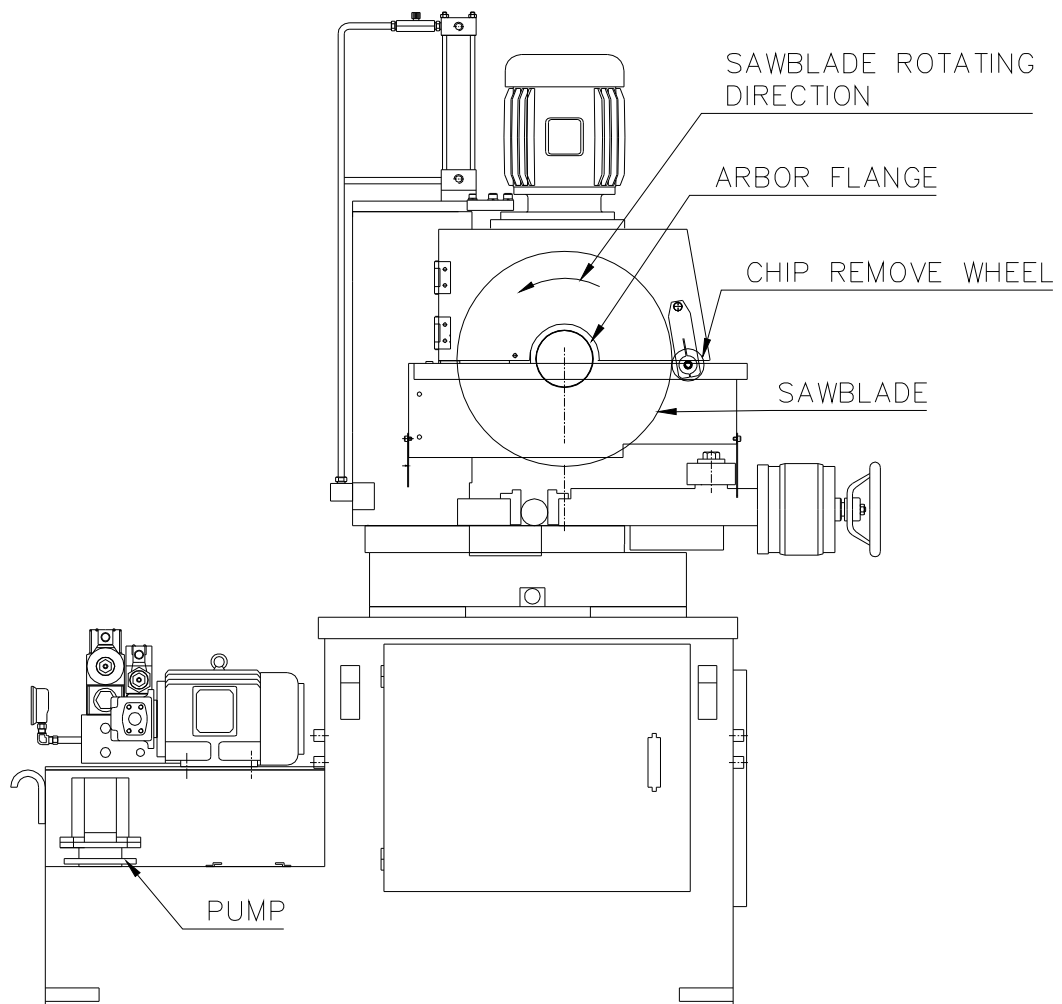
3.1 Technical data:

HVS-400AC SERIES TECHNICAL DATA		
Fully-Hydraulic Type	Super Heavy Gear Head	
Sawblade Motor	A type: 5/3 HP, 2/4 Poles	B type: 5/2HP, 4/6 Poles
Arbor RPM	44/22	22/16
Coolant Pump Motor	1/8 HP	
Sawblade	HSS blades, diameter 250~400 mm, arbor hole 32 mm ϕ , pine hole 2x11x63 P.C.D mm	
Vise Maximum Opening	160 mm	
Mitre cut	Right 90° to 45°, left 90° to 30°	
Air pressure	3~5 kg/ cm ²	
Hydraulic Pressure	25~35 kg/cm ²	
Hydraulic Motor	2 HP	
Weight	460 kg	
Dimensions	W 70 x D 150 x H 175 cm	

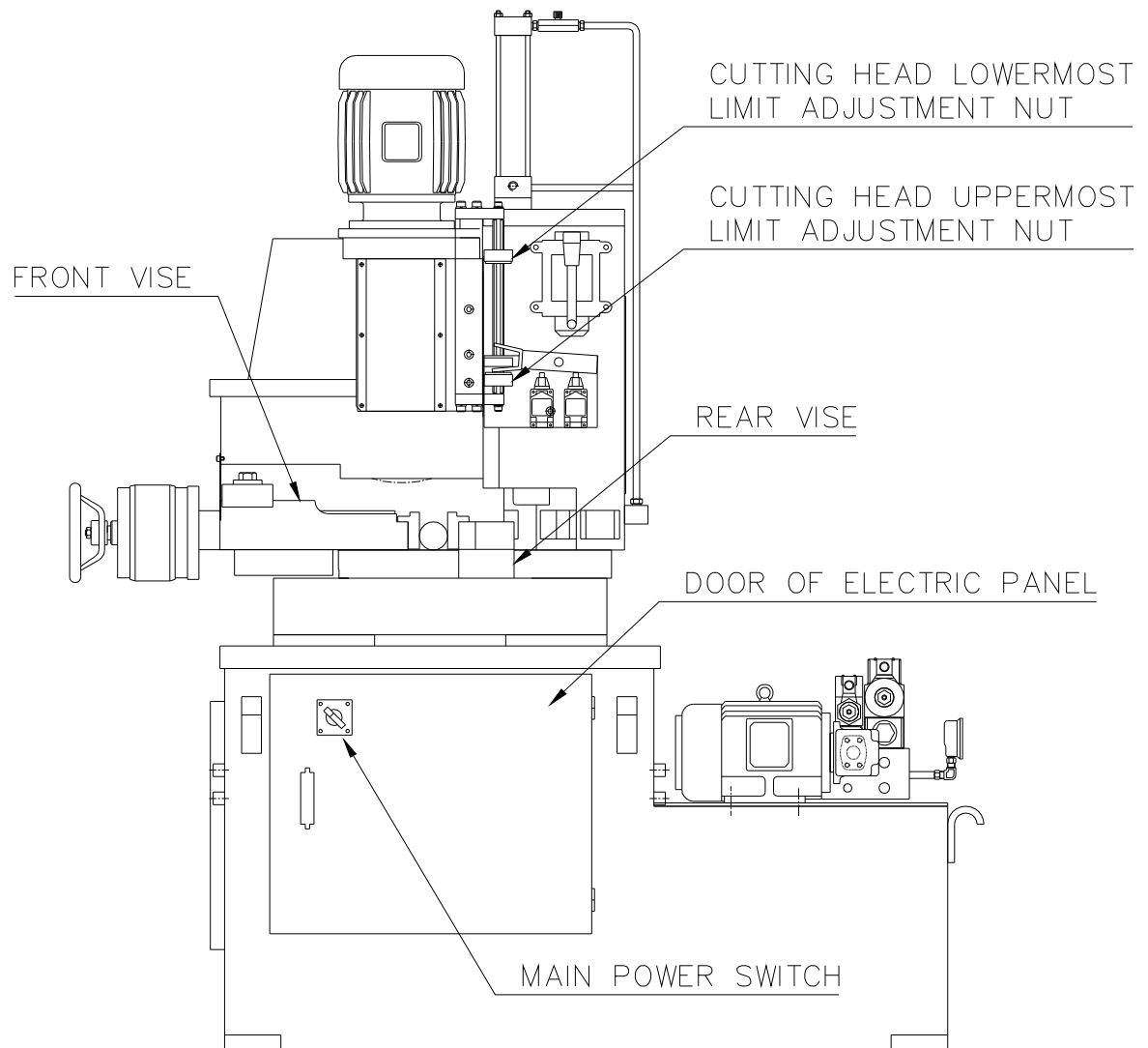
3.2 Outline Description.



FRONT VIEW
OF
HVS-400AC



LEFT SIDE VIEW
OF
HVS-400AC



RIGHT SIDE VIEW
OF
HVS-400AC

4. FUNCTION OF CONTROL DEVICES:

(1) Main Power Switch:

Main Power switch is an "ON-OFF" two-position lever switch to connect or disconnect outside power to the machine. Hydraulic pump motor runs when main power switch is at "ON" position.

(2) Main Power Indicator:

Main power indicator lights up when main power switch is at "ON" position.

(3) Start Button:

Press and release the start button to start the operation of front vise cylinder, saw blade motor and the vertical sliding of cutting head. Press the button once gets one cutting cycle.

(4) Emergency Stop Button:

Stop all the actions of Item (3) immediately when the button is pressed. Turn the button clockwise to reset.

(5) Uppermost Limit Adjustment Nut and Lowermost Limit Adjustment Nut:

By adjusting the uppermost limit adjustment nut and lowermost limit adjustment nut to control the travelling limits of the cutting head and also control the travelling limit of the saw blade.

(6) Sawblade Motor Speed Select Switch:

This is a "LOW-OFF-HI" three-position level switch to select sawblade speed.

(7) Cutting Head Sliding Speed Adjustment Knob:

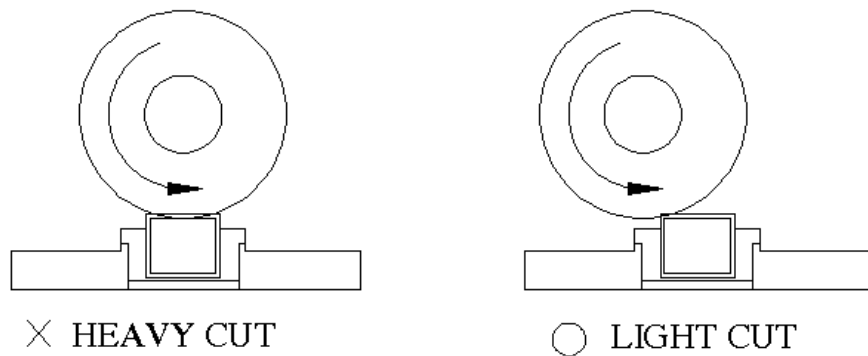
By adjusting the flow rate of hydraulic oil to control the cutting head sliding speed and also control the sawblade feeding speed.

5. INSTRUCTION OF OPERATION

5.1 Preparation for Operation

5.1.1 Adjustment of Rear Vise Position:

For evening the cutting load of sawblade during the cutting process, it is advisable to set the workpiece to a better position as following



- (1) Turn front vise handwheel to open vise.
- (2) Loosen rear vise fix nuts.
- (3) Put workpiece between the front and rear vises.
- (4) Determine a best position for the workpiece.
- (5) Adjust the rear vise position.
- (6) Turn rear vise fix nuts tight.

5.1.2 Adjustment of front vise position.

- (1) Turn main power switch ON.
(Cutting head shall be at upper position)
(Front vise cylinder shall be at open position)
- (2) Turn front vise handwheel counter-clockwise to open vise.
- (3) Put a workpiece between the vises.
- (4) Turn front vise handwheel clockwise to close vise and fasten workpiece.
- (5) Turn front vise handwheel 1 (one) turn counter-clockwise.
- (6) Press and hold emergency stop button to check the tightness of workpiece fastened by hydraulic action.

NOTE:

- (1) If workpiece is deformed by the clamping action of hydraulic vise, turn

the handwheel 0.5~1 turn counter-clockwise.

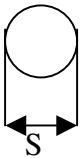
(2) If workpiece is not tight enough, turn the handwheel 0.5 turn clockwise.

(3) Don't press start button. Avoid the cutting head slide down.

5.1.3 Installation of Saw Blade.

- (1) Adjust the uppermost limit adjustment nut to the highest position.
- (2) Turn on main power switch.
- (3) Press start button. (Cutting head goes up to the highest position)
- (4) Turn off main power switch.
- (5) Open sawblade safety covers.
- (6) Remove the outside clamping flange front the saw arbor.
- (7) Clean the inside clamping flange free from any dirt or chip.
- (8) Clean the clamping area of the saw blade.
- (9) Mount sawblade on the inside clamping flange with the front teeth pointing up.
- (10) Clean the outside clamping flange and mount it on the saw blade. Align the pin holes and pines of the clamping flanges and saw blade.
- (11) Before lock the set screw, move and keep the front part of sawblade downward. And tighten the set screw.
- (12) Adjust chip removing wheel.
- (13) Close the sawblade safety covers.

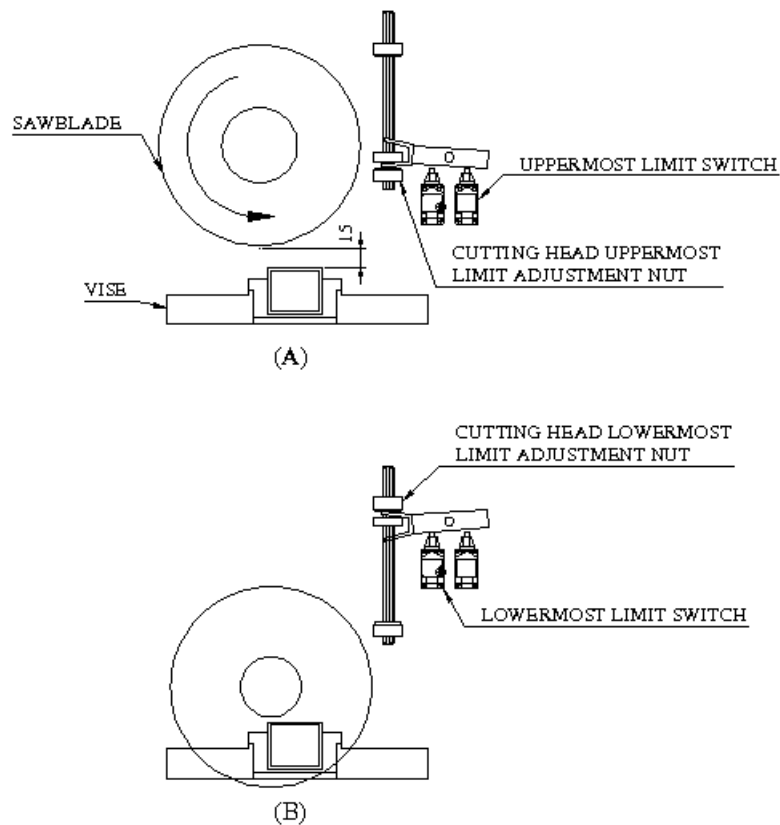
Note: The following "Sawblade Selection" is for reference.

Recommend Sawblade Selection Chart											
 Mild Steel Solid Bar		250		275		300		315		350	
	S	P	P	P	P	P	P	P	P	P	P
		Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
	10	5	6	5	6						
		160	128	180	140						
	30	6	8	6	8	6	8	7	8		
		128	100	140	110	160	120	140	120		
	70			10	12	10	12	10	12	11	12
				90	70	90	80	100	80	100	90
	90					12	14	12	14	12	14
						80	70	80	70	90	80
P: PITCH Z: NUMBER OF TEETH When cutting mild steel tube or section, selection the sawblade tooth pitch equal to 2 to 4 of the tube wall thickness.											

5.1.4 Adjustment of Sawblade Travelling

- (1) Turn the cutting head sliding (sawblade feeding) speed adjusting knob clockwise to closed position.
- (2) Turn the sawblade speed selecting switch to OFF position.
- (3) Turn the main power switch to ON position.
- (4) Press the start button.
- (5) Open the cutting head sliding speed adjusting knob a little to let the saw blade downward slowly.
- (6) Entirely close the sliding speed knob as the saw blade reach the expected lower position.
- (7) Adjust the lowermost limit adjustment nut to such a position that it can activate the lowermost limit switch which can stop the downward movement of cutting head.
- (8) Adjust the uppermost limit adjustment nut to such a position that the bottom tip of saw blade is higher than the top of workpiece about 10~15 mm, and the uppermost limit switch is activated at that position.

NOTE: Please refer to following figure for better understanding.



5.1.5 Adjustment of Sawblade Rotating Speed.

Turn the sawblade speed selecting switch to one of "LOW" , "HI" or "OFF" position.

5.1.6 Adjustment of Sawblade Feeding Speed.

Turn the cutting head (sawblade feeding) speed adjusting knob clockwise or counter-clockwise.

5.1.7 Adjustment of Cutting Angle.

- (1) Push the turning table fixing handle backward.
- (2) Turn the turning table to the expected angle.
- (3) Push the fixing handle forward.

Note: The front vise block shall be adjusted to avoid being cut by the blade.

5.2 STEPS OF OPERATION

- (1) Prepare and adjust the machine as states in Section 5.1.
- (2) Turn main switch on.
- (3) Put workpiece into vise.
- (4) Press start button.

- Vise clamps workpiece.
- Sawblade starts to rotate.
- Coolant starts to flow out of nozzle.
- Cutting head slides down.
- Sawblade cuts workpiece.
- Cutting head slides up.
- Sawblade stops.
- Vise releases clamping workpiece.

- (5) Repeat step (3) and (4).
- (6) Turn main switch off when finish.

NOTE: Press the emergency button immediately if any malfunction or abnormal situation happens.

5.3 Daily Inspection and Maintenance.

5.3.1 Gear Box of Cutting Head.

- (1) Check gear oil level. Gear oil level shall be between the upper and lower edge of sight glass. Add oil if level is lower.
- (2) Change gear oil every six months.
- (3) Check temperature of the gear box during continuous operation.

5.3.2 Sliding Guide of Cutting Head.

- (1) Check sliding guide cleanness and clearance.
- (2) Push the handle of manual lube pump two to three times everyday.

5.3.3 Chip Collecting Tray.

Remove chip from collecting tray.

6. HYDRAULIC SYSTEM DIAGRAM

See attached diagram.

7. ELECTRICAL SYSTEM DIAGRAM

See attached diagram.

8. PARTS DRAWING AND LIST

- (1) Vertical Sliding Block Assembly
- (2) Sawblade Motor
- (3) Cutting Head Assembly
- (4) Blank
- (5) Sawblade Safety Cover Assembly
- (6) Rotating Block Assembly
- (7) Front Vise Assembly
- (8) Bass Frame Assembly
- (9) Hydraulic Oil Tank Assembly