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VS-355AC

Operation Manual

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1 Introduction

Machine Features:

1. Suitable for cutting various materials, from mild steel to stainless and copper.
2. Cutting capacity up to OD 100mm.
3. Fully automatic pressure system. (Cutting)
4. Vertical sliding saw head ensures stable and precise cutting.
5. Backlash eliminating device prolongs the life of saw blade.
6. Counter balance system for maximum stability through the entire cut.
7. Circulating cooling system results in smooth cutting surfaces and longer blade life.
8. Electronic saw blade protection system and cover for safety.
9. Built-in chips tray for convenient cleaning and maintenance.

2 Safety Precautions

2-1 Introduction

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 bottom, 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.

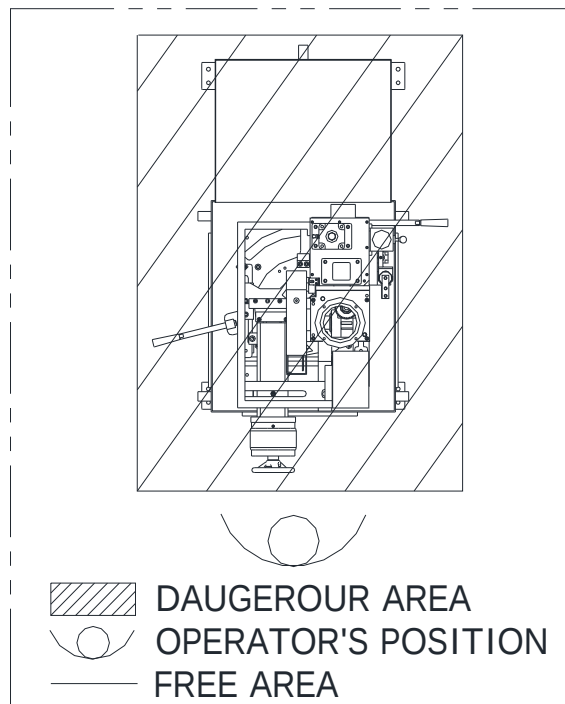
2-2 Personal Protective Equipment

1. Operators and maintenance personnel carrying out various operations on the machine must used personal protection equipment, e.g. goggles, boots and gloves to eliminate the possible risks related to the various activities being carried out.
2. The clothing of machine operators and maintenance personnel must comply with the essential safety requirements specified in community Directives 89/656/EEC, 89/686/EEC and laws in force in the country where the machine is installed.
3. Do not wear accessories or jewelers, including bracelets, watches, rings or necklaces, when carrying out maintenance operations in which operation in unprotected area is required to avoid mechanical risks, such as dragging, entrapment or other.
4. Wear safety boots and protective gloves during all working phases and when changing the tools, filling the tubes, handling cut parts, setting the machine and carrying out maintenance operations.

2-3 Danger Zones

The operator's workplace and the necessary free space around the system to ensure regular activities related to the machine.

A free space of at least one meter around the entire perimeter of the machine is required to ensure safe operation.



2-4 Safety Devices

- Emergency stop buttons

Red emergency stop mushroom buttons are arranged on the machine.

Press one of the mushroom buttons to stop the machine in an emergency. The buttons operate a safety circuit and block all movements.

Carry out the following procedure every 200 hours to test correct operation of the emergency stop circuit:

1. Start the machine.
2. Press an emergency stop button.
3. Reset the emergency stop button.

Repeat this procedure for all emergency stop buttons. You will not be able to restart the machine if the emergency circuit fails.

- Power switch



To disconnect main electric power when it is placed at ON position. For maintenance, you should turn it to OFF position then could open this electric box door.

2-5 Operating 、 Running

Please reading the manual in advance and operating this machine according to the manual instruction.

★ **We will not be responsible for any operating accident due to the customer unauthorized remodeling or adding any additional device.**

1. Operation, always arrange single operator to operate this machine. It is very dangerous to have multiple operators operating this machine in the same time. Please absolutely avoid doing it.
2. Never let hands or body near and inside the machine running partitions. It is very dangerous and please absolutely avoids doing it.
3. Always turn off electrical motor and confirm the machine stop before replacing die. It is very dangerous to do this without turning them off. Please absolutely avoid doing it.
4. Always confirm that there is no tools, fixtures, or any other unnecessary things inside the action area before operating this machine, otherwise machine failure or human injury may happen. Attention required, please.

2-6 Maintenance 、 Inspection

1. Never disassemble and remodel any component of this machine, otherwise it may result in fire, machine failure and malfunctions.
2. Never do directly welding on this machine; otherwise it may result in machine failure and malfunctions.
3. Always cutoff the power supply and wait for 5 minutes before loading/unloading and replacing any components, otherwise it may result in electrical shock or machine failure.
4. Always cutoff the power supply before performing daily inspection, otherwise it may result in electrical shock in the power on condition.
5. In order to avoid non duty person turning on the machine power during the machine maintenance and inspection periods, please paste a warning sign of "No Power On" or "Power On Forbidden" beside the machine primary power at the machine power control panel, otherwise it may result in electrical shock or human injury.

6. Never load or unload any wire, baseboard, and connectors while machine is power on, otherwise it may result in electrical shock, machine failure and malfunctions.
7. Please confirm that every bolts installation, applying tools collection and cover doors of control panel and machine are all well arranged after maintenance and inspection work finished, otherwise it may result in electrical shock, fire, human injury or machine malfunctions.

2-7 Warning Plates and Warnings

The form and contents of warnings are described in the following.

No	DRAWING	POSITION	EXPLANATION
1			This symbol indicates operators should aware of saw blade edge to prevent cutting injuries happening. When changing saw blade, make sure main power is turn off.
2			This symbol indicates there are high voltage electric facilities with potentially danger and may cause risk to the life and health of individuals. Do not remove this cover without disconnecting main power supply. Not observing these notes may result in injuries.



3 Machine Specifications

Please consult appendices 8-2.

4 Instruction of Installation

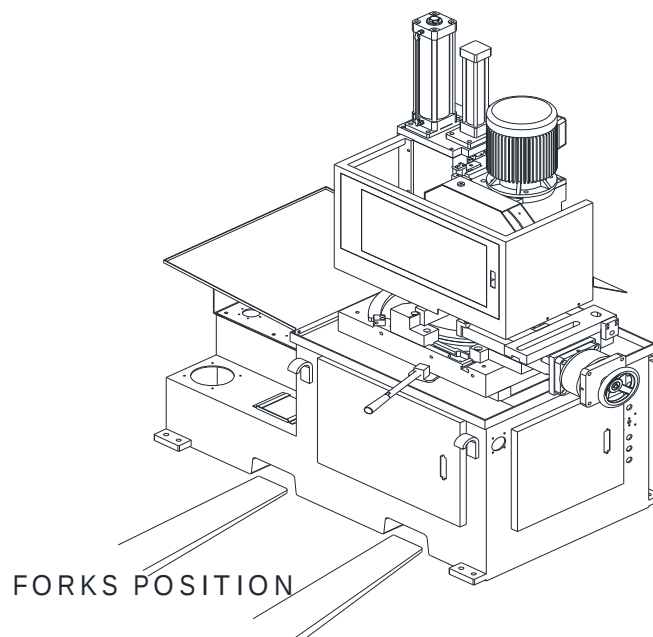
Note: Please read the instruction carefully before starting the work of installation. If having any question please contact your dealer for prompt service.

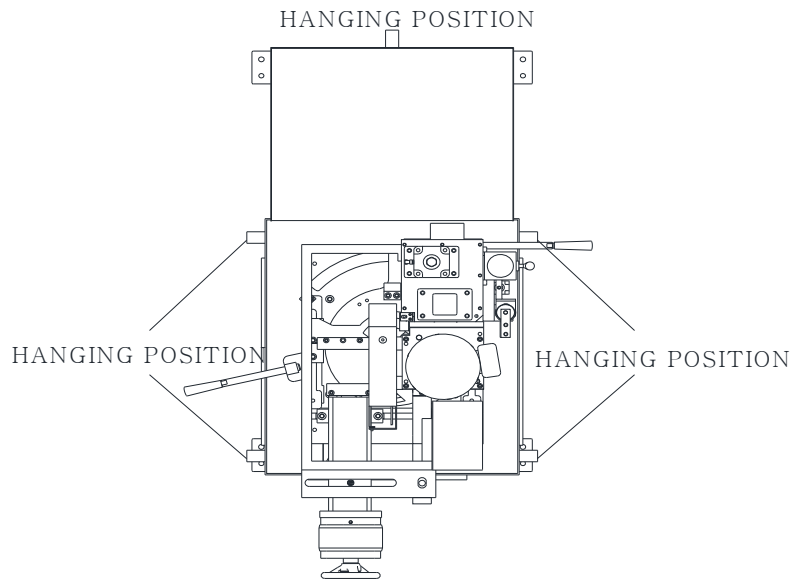
4-1 Unpacking and Inspection

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.

4-2 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.





4-3 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.

4-4 Filling Coolant

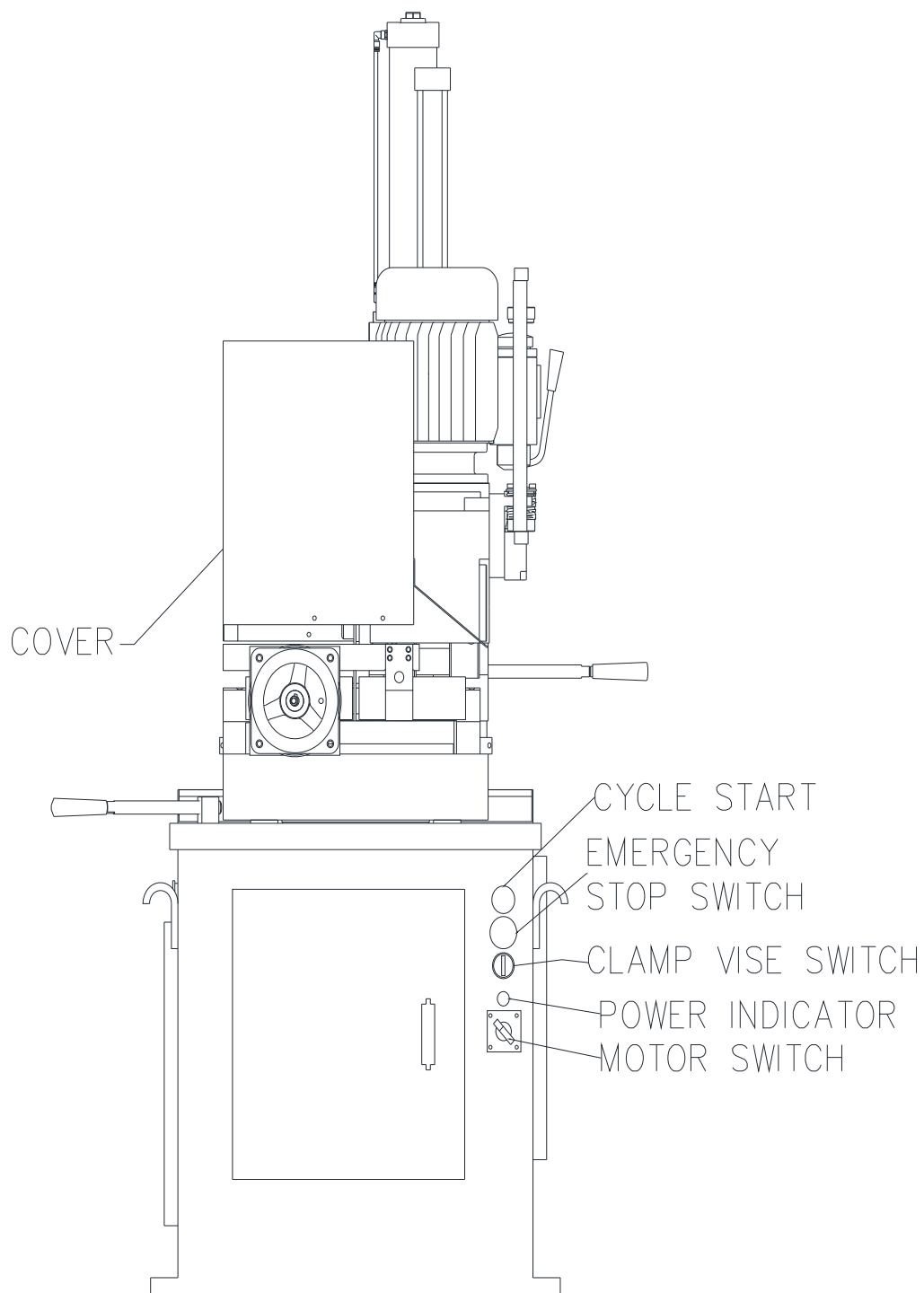
1. Pour the diluted sawing oil on the table of the machine. The solution will flow into the coolant tank.
2. The dilute ratio (water: oil) is 5:1 for hard or high alloy steel and 10:1 for mild steel.

5 Machine Outline

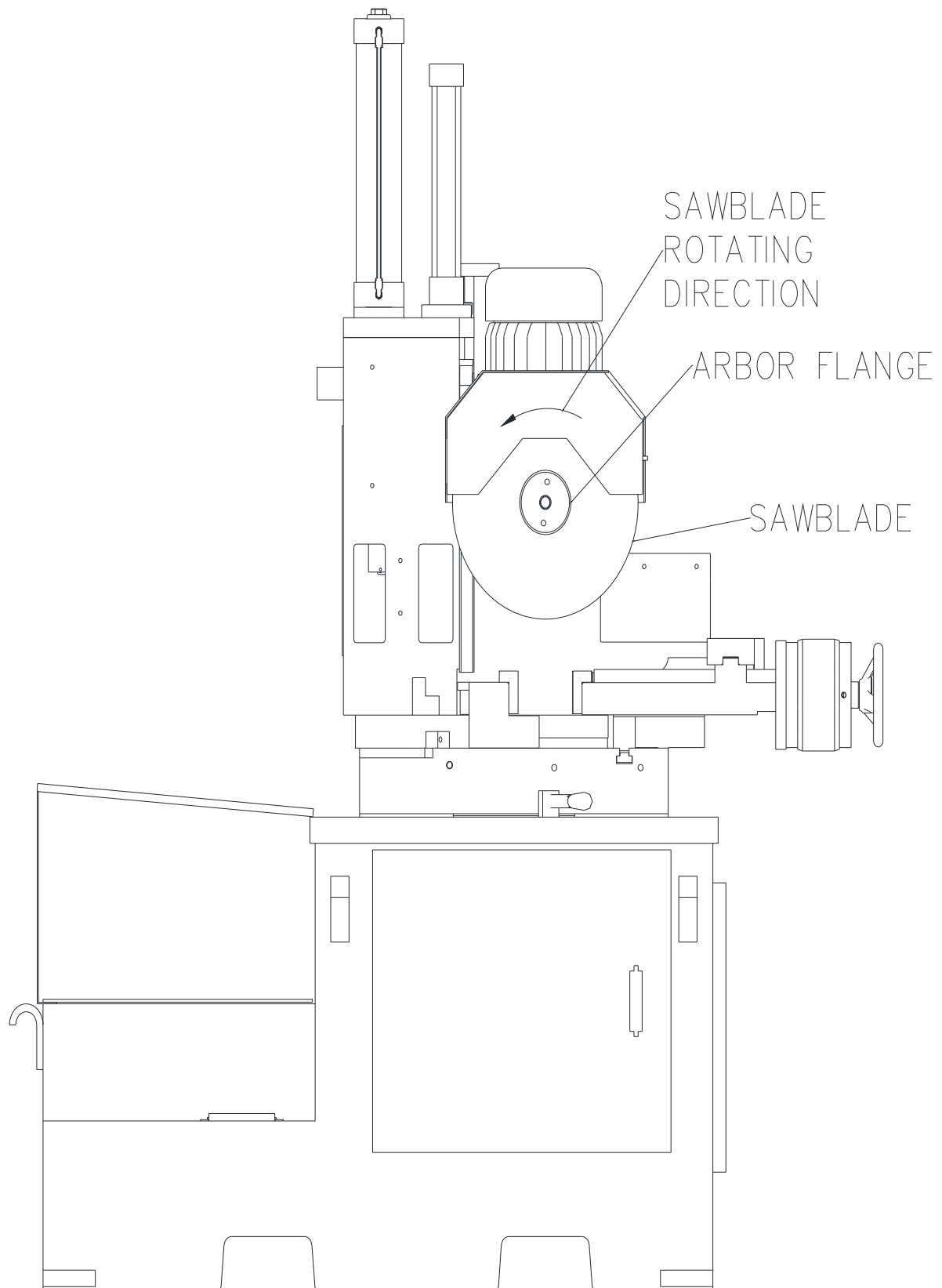


5-1 Outline Description

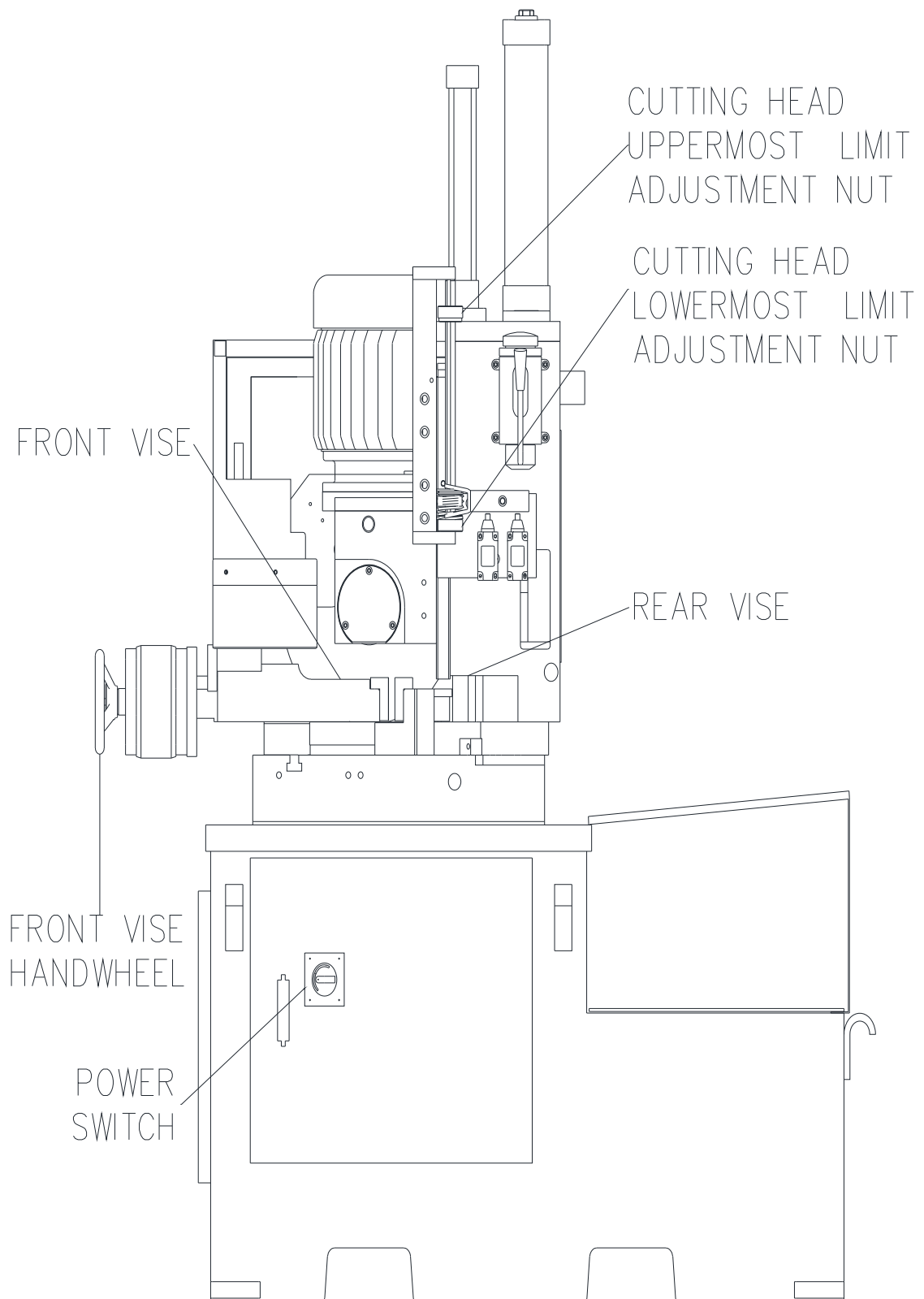
1. Front View



2. Left Side View



3. Right Side View



5-2 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 traveling limits of the cutting head and also control the traveling 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

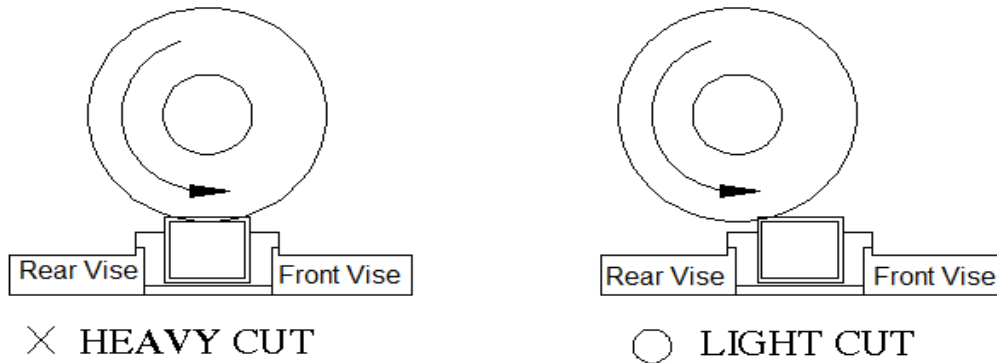
By adjusting the flow rate of hydraulic oil to control the cutting head sliding speed and also control the sawblade feeding speed.

6 Instruction of Operation

6-1 Adjustment the Vise Position

1. Rear Vise Position

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



- a. Turn front vise hand wheel to open vise.
 - b. Loosen rear vise fix nuts.
 - c. Put workpiece between the front and rear vises.
 - d. Determine a best position for the workpiece.
 - e. Adjust the rear vise position.
 - f. Turn rear vise fix nuts tight.
- #### 2. Front Vise Position
- a. Turn main power switch ON.(Cutting head shall be at upper position. Front vise cylinder shall be at open position)
 - b. Turn front vise hand wheel counter-clockwise to open vise.
 - c. Put a workpiece between the vises.
 - d. Turn front vise hand wheel clockwise to close vise and fasten workpiece.
 - e. Turn front vise hand wheel 1 (one) turn counter-clockwise.
 - f. Press and hold emergency stop button to check the tightness of workpiece fastened by hydraulic action.

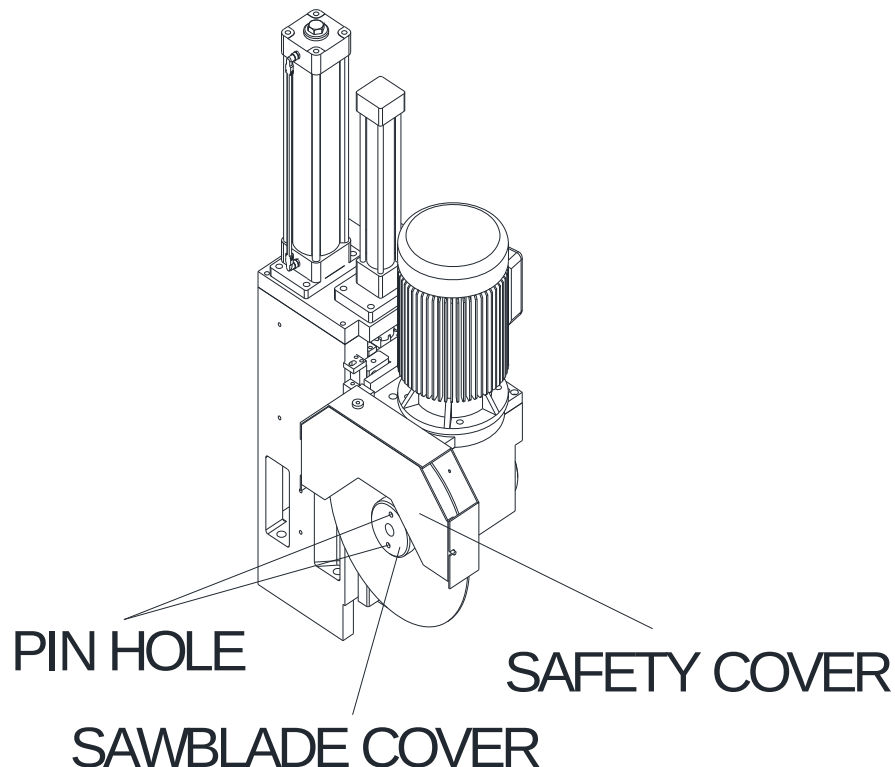
Note:

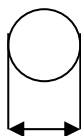
1. If workpiece is deformed by the clamping action of hydraulic vise, turn the hand wheel 0.5~1 turn counter-clockwise.
2. If workpiece is not tight enough, turn the hand wheel 0.5 turn clockwise.
3. Don't press start button. Avoid the cutting head slide down.

6-2 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.

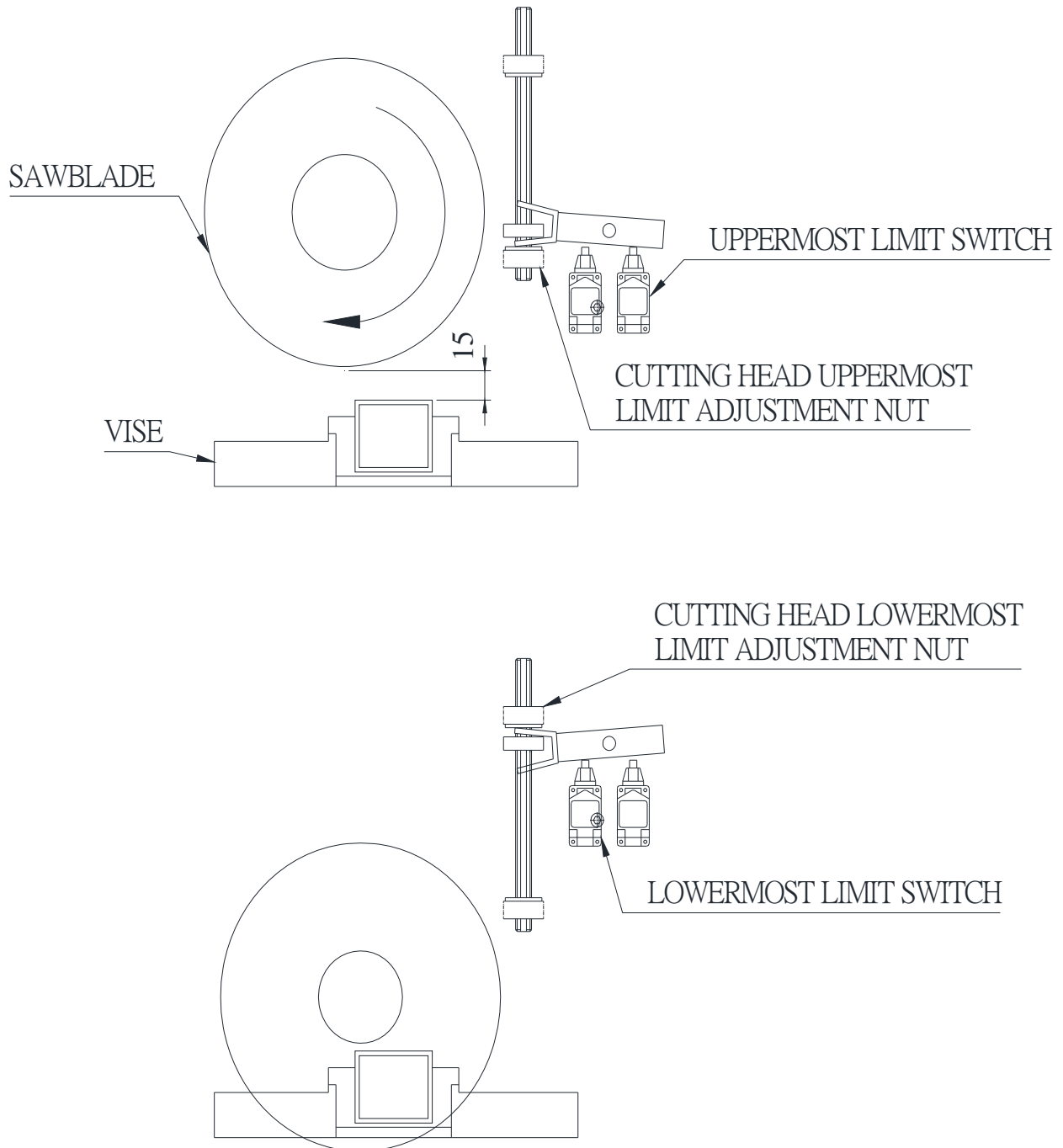


Recommend Sawblade Selection Chart											
 S Mild Steel Solid Bar		250		275		300		315		350	
	S	P	P	P	P	P	P	P	P	P	P
		Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
	10	5	6	5	6						
		160	128	180	140						
	30	6	8	6	8	6	8	7	8		
		128	100	140	110	160	120	140	120		
	70			10	12	10	12	10	12	11	12
				90	70	90	80	100	80	100	90
	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.											

6-3 Adjustment of Sawblade Traveling

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.



6-4 Adjustment of Cutting Angle

1. Pull the turning table fixing handle upward.
2. Turn the turning table to the expected angle.
3. Push the fixing handle downward.

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

6-5 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.

6-6 Daily Inspection and Maintenance

1. Gear box of cutting head
 - a. Check gear oil level. Gear oil level shall be between the upper and lower edge of sight glass. Add HD68 oil if level is lower.
 - b. Change gear oil every six months.
 - c. Check temperature of the gear box during continuous operation.
2. Sliding guide of cutting head
 - a. Check sliding guide cleanness and clearance.
 - b. Push the handle of manual lube pump two to three times everyday.
3. Chip collecting tray

Remove chip from collecting tray.

7 Troubleshooting of the Machine

Problems	Sources	Solutions
1. Machine will not start.	a. Main power cable is not connected to the power source. b. Power indicator light is not on. The transformer is shorted and broken. c. The safety fuse is broken. d. The Emergency Switch is not returned to the original position.	a. Check power supply. b. Use multi meter to test the transformer. If the output value is incorrect, the transformer is broken. Replace it when needed. c. Replace the safety fuse if needed. (May test with multi meter). d. Turn the Emergency Switch toward the direction as shown by the instructing arrow, to return it to the original position.
2. Machine stops running during work process.	a. Out of material and the machine is set to "RUN" mode. (When set to "RUN" mode, the machine automatically stops when it's out of material). b. The screws that contact the Limit Switches are not properly placed (the screws should be able to touch the Limit Switches.) c. The number of completed pieces has reached the pre-set number. (Please check the Counter on the Control Panel). d. Dull blade (dull cutting bits) overburdens the machine e. The control wire is not properly connected.	a. If out of material, reload material. Also, if the Material Vise does not secure the material properly (opens too wide), the sensor may interpret it as "no material". Adjust the Material Vise if this happens. b. Adjust the screws to be able to touch the Limit Switches. c. Reload material and restart the machine to continue. d. Replace the cutting bits. e. Check the 110V control wire. Secure the electric terminal if it is loose due to the machine vibration.

Problems	Sources	Solutions
3. Motor will not start.	a. One or more of the 3 phases of the main power is not connected. b. The motor is shorted or broken.	a. Use multi meter to test if all of the 3 phases are connected. b. Use multi meter to test the 3 phases of the main power. If all 3 phases are normal, the motor may be broken. Replace it when needed.
4. Broken or Chipped Blade.	a. The fixing screws are loose. b. The 2 nd Step Cutting Speed is too fast, or is not set. c. The Work Piece is not properly clamped and is loose. d. Wrong selection of Jaws for the Work Piece.	a. Properly tightened the fixing screws. b. Adjust the 2 nd Step Cutting Speed by turning the Air Flow Valve. c. Properly adjust the Clamping Jaws. d. Replace the Jaws according to the Work Piece.
5. Cutting Head is not moving forward.	a. The screws that contact the Clamping Cylinder Limit Switches are not properly placed (the screws should be able to touch the Limit Switches.) Or the Holding Arm Cylinder Sensors are malfunctioning.	a. Adjust the screws that contact the Clamping Cylinder Limit Switches. Check the Holding Arm Cylinder Sensors.
6. Cutting Head is not moving backward.	a. The Cutting Cylinder Bottom Limit Switch is broken, or the screw that contacts the Limit Switch is not properly placed (the screw should be able to touch the Limit Switch). b. The Air Flow Valve for adjusting the 2 nd Step Cutting Speed is not open. c. The Cutting Head Solenoid Valve is clogged, or the coil is burned, or the Cutting Head Solenoid Valve Power Cable is disconnected.	a. Adjust the Contacting Screw for the Limit Switch. b. Open the Valve. c. Take off the Solenoid Valve. Clean or replace the valve. Also check the power connection.

Problems	Sources	Solutions
7. Work Piece does not stay. (moves horizontally)	a. Wrong selection of Jaws for the Work Piece. b. Left and Right Head are moving at different speeds. c. Dull Blades.	a. Select the correct Jaws for the Work Piece. b. Adjust the speeds at which the Left and Right Heads move. c. Check and replace the blades.



8 Appendix

8-1 Machine Operates Range Pictures



8-2 Machine Specifications

8-3 Hydraulic Circuit Diagram and Air Circuit Diagram



8-4 Electrical Circuit Diagram



8-5 Parts Lists and Drawings