COSEN SAWS

SVT-607OH

Table Moving Vertical Bandsaw

(non-CE Model)

Instruction Manual

The Pinnacle of Cutting Performance

Cosen Mechatronics Co., Ltd.

FROM THE MANUFACTURER

Thank you for your purchase of COSEN's bandsaw machine and your trust in the COSEN brand.

We are excited to have you as our valued customer and look forward as much as you do to the accelerated productivity, long-lasting endurance and superb cost-effectiveness this machine is about to bring to you.

To ensure you are fully utilizing our machine and taking advantage of it in every possible way, please take your time to read through this instruction manual.

Any comments or suggestions in making our services better, please do not hesitate to let us know. Thank you again!

NOTE:

- Read this instruction manual carefully to familiarize yourself with the installation, operation and maintenance of your COSEN bandsaw machine.
- Operate the machine following the procedures described in the manual to prevent personal injuries or machine damage.
- Keep this manual handy and refer to it whenever you are uncertain of how to perform procedures.

- For technical support or parts purchase, please contact your nearest COSEN representative or our service center:

For Europe:
email: europe@cosensaws.com
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Table Moving Vertical Bandsaw
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Safety rules

- **It's essential to power on your bandsaw machine for at least one hour every two years, if you seldomly use the machine.**
  (This period of power-on must be without proceeding with other operation) Otherwise the machine program may disappear due to not strictly follow this safety rule.

****The restoration-service fee for improper use will be extra charge. Please note.****

- Make sure your work area is cleared of uninvited people and obstacles every time before you start operating the machine.

- Never step or stand on the roller table. Your foot may slip or trip on the rollers and you will fall.

- Never wear gloves or loose clothing when operating the machine. It may lead to serious injury if they are caught in the running machine. Wrap or cover long hair.

- Never touch the running saw blade with gloves or not. It is dangerous if your hands, clothing or gloves are caught by the running blade.

- Make sure any use of fire is prohibited in the shop and install a fire extinguisher or other fire control device near the machine when cutting titanium, magnesium, or any other material that produces flammable chips. Never leave the machine unattended when cutting flammable materials.

- Use a water-soluble cutting fluid on this machine. Oil-based cutting fluids may emit smoke or catch fire, depending on how they are used.

Safety rules

- Never cut carbon or any other material that may produce and disperse explosive dust. It is possible that sparks from motors and other machine parts will ignite and explode the air-borne dust.

- Never adjust the wire brush or remove chips while the saw blade is still running. It is extremely dangerous if hands or clothing are caught by the running blade.

- Stop the saw blade before you clean the machine. It is dangerous if hands or clothing are caught by the running blade.

- Never start the saw blade unless the workpiece has been clamped firmly. If the workpiece is not securely clamped, it will be forced out of the vise during cutting.

- Take preventive measures when cutting thin or short pieces from the work to keep them from falling. It is dangerous if the cut pieces fall.

- Use roller tables at the front and rear sides of the machine when cutting long work. It is dangerous if the work piece falls off the machine.

- Turn off the shop circuit breaker switch before performing maintenance on the machine. Post a sign indicating the machine is under maintenance.

Table of Contents

Table of Contents

Table of Contents

Section 1

SAFETY INFORMATION

SAFETY INSTRUCTIONS
SAFEGUARD DEVICES
EMERGENCY STOP
SAFETY LABELS
HEARING PROTECTION
CE COMPLIANCE
RISK ASSESSMENT

Safety is a combination of a well-designed machine, operator's knowledge about the machine and alertness at all times. COSEN's band machine has incorporated many safety measures during the design process and used protective devices to prevent personal injuries and potential risks. Warning labels also serve as a reminder to the operator.

Throughout this manual, you will also see various safety-related symbols indicating important information that you should take note of prior to use of the machine or part of its functions. These important safety instructions do not cover all possible situations that might occur. It is your responsibility to take caution and follow procedures stated in this manual when installing, maintaining and operating your machine. Cosen will not be liable for damages resulting from improper use.

SAFETY INSTRUCTIONS

What the icons and signs in this user manual mean:

This icon marks **WARNING**; hazards or unsafe practices that may result in **personal injury or damage to the machine.**

Supplementary information to the procedures described in this manual.

Call your local agent or our service center for help.

This manual has important safety information. Read through it carefully before operating this machine to prevent personal injury or machine damage. Learn the operation, limitation and the specific potential hazards peculiar to this band saw. All users must read it before performing any activity on the machine, such as replacing the saw band or doing regular maintenance.

Disconnect the power cord before making adjustment, maintenance or blade changes.

Do not operate this machine unless it is completely assembled.

Make sure the power switch is off before plugging in power cord.

Always remember to switch off the machine when the work is completed.

Use recommended accessories. Improper accessories may be hazardous.

Never hold the material by hand for cutting. Always use the vise and make sure the material is clamped securely before cutting.

When a workpiece is too long or heavy, make sure it is supported with a roller table (recommended).

Keep your work area well illuminated at minimum 500 lumen.

Remove adjusting keys, wrenches or any loose parts or items from the machine before turning on power.

Use a sharp saw blade and keep the machine in its best and safest performance by following a periodical maintenance schedule.

Wear proper apparel during operation and when servicing the machine. Some personal protective equipment is required for the safe use of the machine, e.g. protection goggles.

Moving parts should be kept in proper alignment and connection with the machine. Check for breakage, mounting and any other conditions that may affect its operation. Any damaged part or guard should be properly repaired or replaced.

It is dangerous to operate the machine when the floor is slippery. Keep the floor clean and dry. Check for ice, moisture, or grease before entering.

Do not use the machine to cut explosive material or high pressure vessels as it will generate great amount of heat during the sawing process and may ignite an explosion.

Keep your work area clean. Cluttered and slippery floors invite accidents.

Keep blade protection cover and wheel covers in place and in working order.

Never operate while under the influence of drugs, alcohol or medication.

Do not reach over or stand on any part of the machine.

Keep the work environment safe. Do not use band saw in a damp or wet location.

Keep all guards and shields in place before installing or starting up the machine.

Keep unauthorized personnel away.

SAFEGUARD DEVICES

The safeguard devices incorporated in this machine include the following two main parts:

1. Protection covers & guards
2. Safety-related switches

Protection Covers & Guards

1. Idle wheel housing cover
2. Drive wheel housing cover
3. Gear reducer cover
4. Wire brush belt cover
5. Blade guard cover (left & right)
6. Safety fence (left & right)(CE model only, as shown in Illustration: *Safety Fence*)
7. Chip conveyor cover (CE model only)

 The protection devices should always be mounted on the machine whenever the machine is running.

 Do not remove any of these safeguard devices under any circumstances except when servicing the machine. Even skilled service technicians should still take cautions when performing repairs or service on the machine with any of these protectors removed. It is the responsibility of the user to make sure all these elements are not lost and damaged.

 Take note of the following main moving parts on the machine prior to and during machine operation:

- Saw bow assembly
- Drive and idle wheels
- Blade guide arm
- Saw blade guide rollers
- Quick approach device
- Wire brush
- Chip conveyor (optional)
- Workpiece clamping vises
- Shuttle vises and workbed rollers
- Top clamps (optional)
- Gear reducer

Safety Related Switches

To protect the operator, the following safety related switches on the machine are actuated when the machine is in operation.

Wheel motion detector	This is a proximity sensor used to detect the motion of the drive wheel. Once the saw blade is broken or as soon as it starts slipping, the sensor will detect and stop the drive wheel and the machine.
Power switch	Located on the cover of electrical cabinet, the power switch controls the main power of the machine.
Emergency stop button	Located on the control panel, the button when pressed will stop the machine completely.
Vise clamp switch	This switch assures firm clamping of the workpiece. If the workpiece is not clamped properly, the saw blade is not allowed to run.
Wheel cover interlock switches (CE model only)	Located on the two wheel housings, these switches are used to assure that the machine will stop whenever the wheel covers are open. This device is to protect users from being cut by the running saw blades.

Among all these safety switches, some of them are used to protect the users and some of them are used to prevent damage to saw blades, the workpiece and the machine itself, etc. We have taken every precaution to prevent injury or damage and to provide safe and economical operation of the machine.

EMERGENCY STOP

Designed to be easily accessible, the emergency stop button is located on the left bottom corner on the control panel and is made in red color and rubber material. For CE models, supplementary emergency stop button may be available at other area(s) of the machine depending on machine type. Please refer to *Illustration: Emergency Stop.*

When you press the button, the machine will immediately come to a full stop to avoid injury or damage when an accident occurs. The button will be locked when you press it. To unlock it, pull it upward.

You should press it immediately without any hesitation when observing:

- An emergency situation that would cause any injury or damage
- An abnormal situation or problem such as fire, smoke, abnormal noise and etc.

Illustration: Emergency Stop

Emergency Stop

SAFETY LABELS

Safety-related labels mounted on the machine are categorized into the following four categories. Please read through and understand them before operating the machine. Refer to *Illustration: Safety Labels.*

Label	Meaning	Label	Meaning
	Impact Hazard WEAR SAFETY SHOES. Do not approach dropping area during operation.		Read Operator's Manual This manual has important safety information. Read through it carefully before operating this machine to prevent personal injury or machine damage.
	Keep Unauthorized Personnel Away		Do not step. Do not stand on the machine or on the accessories!
	DANGER: Running Blade Blade runs through this area. Keep your hands away from a running blade to avoid severe injury. The arrow indicates direction of the blade.		Cutting Hazard KEEP COVER CLOSED / KEEP HAND OFF while the blade is running. Turn power off before opening cover. Failure to follow the warning can result in severe injury.
	Hazardous Voltage TURN POWER OFF before servicing. Failure to following the warning can result in severe injury.		Burn Hazard/Hot Surface
	Hand Crush/Force from Above		Crush hazard by vise
	Loose Hand Hazard KEEP HAND OFF. Do not touch chip conveyor. Failure to follow the warning can result in severe injury.		Pinch Point/Hand Entanglement
	CAUTION : Class I invisible Laser Radiation Present. Avoid direct exposure to beam.		

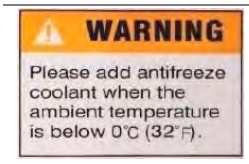
DANGER Labels

A red and white DANGER labels marks s hazards or unsafe practices that will result in severe personal injury or death.

Label	Meaning	Label	Meaning
	Hazardous Voltage TURN POWER OFF before servicing. Failure to following the warning can result in severe injury.		DANGER: Running Blade Blade runs through this area. Keep your hands away from a running blade to avoid severe injury. The arrow indicates direction of the blade.

WARNING Labels

An orange and black WARNING label marks hazards or unsafe practices that can result in severe personal injury or damage to the machine.

Label	Meaning	Label	Meaning
	Cutting Hazard KEEP COVER CLOSED while the blade is running. Turn power off before opening cover. Failure to follow the warning can result in severe injury.		Cutting Hazard KEEP HAND OFF while the blade is running. Turn power off before opening cover. Failure to follow the warning can result in severe injury.
	Please add antifreeze coolant when the ambient temperature is below 0˚C (32˚F).		Loose Hand Hazard KEEP HAND OFF. Do not touch chip conveyor. Failure to follow the warning can result in severe injury.
	Impact Hazard WEAR SAFET SHOES. Do not approach dropping area during operation.		

CAUTION Labels

Yellow and black CAUTION labels mark hazards or unsafe practices that can result in considerable personal injury.

Label	Meaning
	Keep hands out of the machine while the blade is running.
	Power to machine must be turned off when changing blades or adjusting wire brush.

NOTICE Labels

Blue and white NOTICE labels mean unsafe practices that could result in damage to products or property.

Label	Meaning
	Replace the hydraulic oil every six months or every 1,200 hours of operation. Oil specification: Shell TELLUS 27 or Mobil DTE OIL LIGHT / HYDRAULIC 28
	To extend blade life, always adjust the location of wire brush so that it is properly touching the blade. Also replace a worn wire brush with a new one.

SAFETY INSTRUCTION Labels

Green and white SAFETY INSTRUCTIONS are important reminders that should be read before operating the machine.

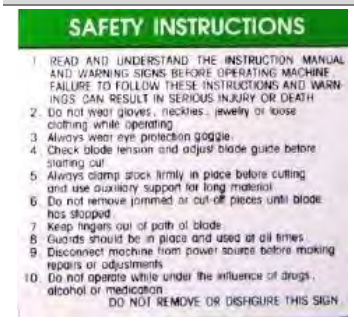
Label	Meaning
	1. Read and understand the instruction manual and warning signs before operating machine. Failure to follow these instructions and warnings can result in serious injury or death. 2. Do not wear gloves, neckties, jewelry or loose clothing while operating the machine. 3. Always wear eye protection goggles. 4. Check blade tension and adjust blade guide before starting to cut. 5. Always clamp stock firmly in place before cutting. 6. Do not remove jammed or cut-off pieces until blade has stopped. 7. Keep fingers out of path of blade. 8. Blade guards should be in place and used at all times. 9. Disconnect machine from power source before marking repairs or adjustments. 10. Do not operate while under the influence of drugs, alcohol or medication.

Illustration: Safety Labels

HEARING PROTECTION

 Always use ear protection!

When your machine is running, noise generated by the machine may come from the following:

- Saw blade during cutting or material feed mechanism
- Wire brush unit
- Chip conveyor unit
- Speed reducer
- Hydraulic motor/pump
- Belt transmissions variable speed motors
- Blade motor
- Coolant pump
- Drive wheel
- Parts not assembled tightly causing mechanical vibration

Our products pass noise testing less than 78 dBA. Noise level vary according to working conditions and we recommend ear plugs or other hearing protection at all time. If your machine produces an undesirable noise while it is running, you should:

1. Make sure all maintenance tasks have been performed following the prescribed maintenance schedule (Refer to Section 8).
2. If maintenance does not seem to solve the problem, follow the troubleshooting procedures under Section 9.

CE COMPLIANCE

Cosen's CE model is designed to satisfy regulations of the Council Directive on the approximation of the laws of the Member States relating to machinery (2006/42/EC) - Annex I Essential health and safety requirements relating to the design and construction of machinery.

RISK ASSESSMENT

Risk assessment generally takes account of intended use and foreseeable misuse, including process control and maintenance requirements. We made every effort to avoid any personal injury or equipment damage during the machine design stage. However, the operator (or other people) still needs to take precautions when handling any part of the machine that is unfamiliar and anywhere on the machine that has potential hazards (e.g. the electrical control box).

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Section 2

GENERAL INFORMATION

SPECIFICATION

MACHINE PARTS IDENTIFICATION

FLOOR PLAN

This band saw machine is designed by Cosen's R&D engineers to provide you the following features and advantages:

Safety

- This machine is designed to fully protect the operator from its moving parts during cutting operation.
- The machine and each compoment has passed strict testing (Council Directive on the approximation of the laws of the Member States relating to Machinery).
- The machine will shut off automatically when the saw blade is broken, protecting both the operator and the machine.

Convenience & High-Performance

- The machine is designed in the way that the operation and adjustment can be easily performed.
- The machine will stop automatically when out of stock.
- Dual valve system is designed to achieve optimal cutting performance with the simple setting of feed rate and perspective cutting pressure for different material.

SPECIFICATION

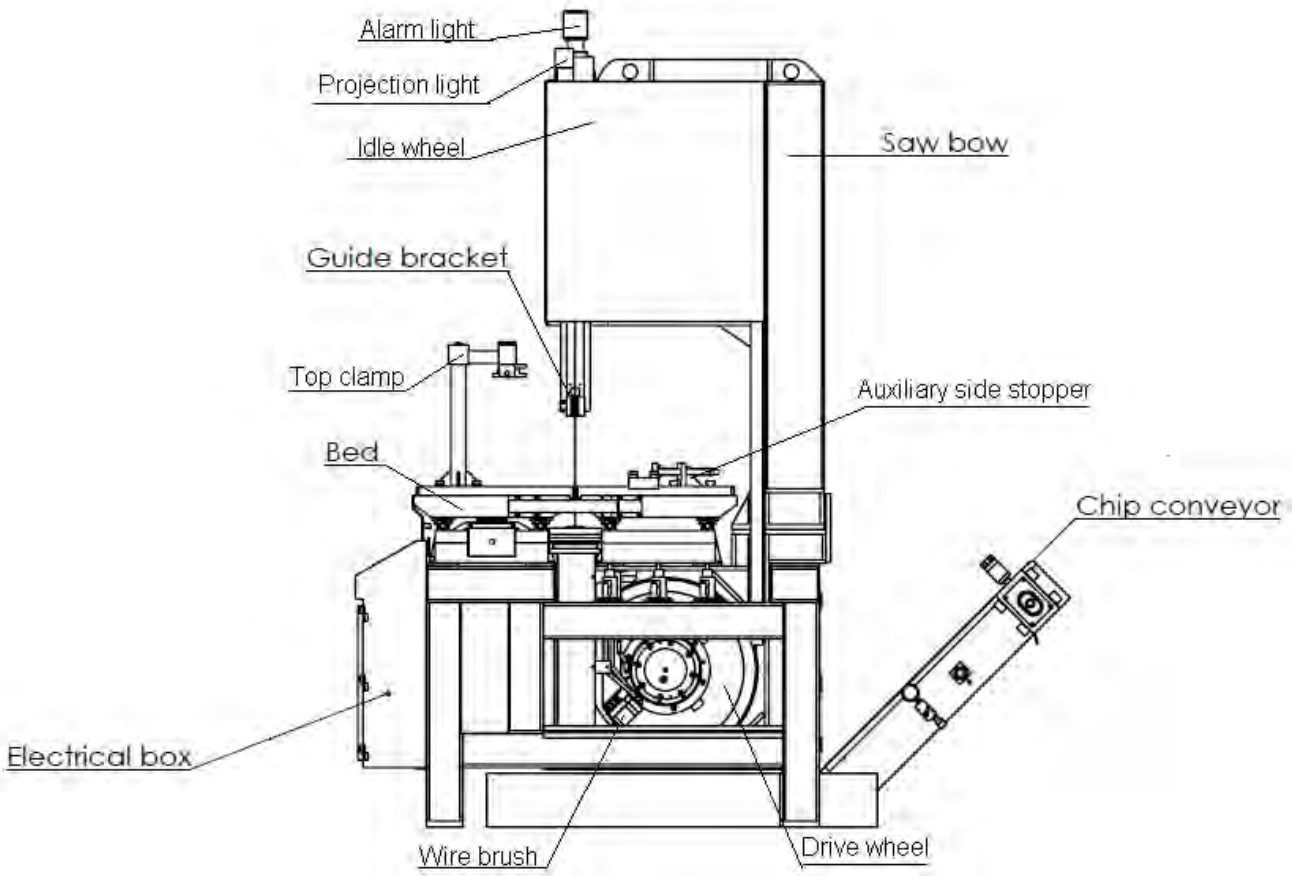
Model		SVT-6070H Table Moving Vertical Bandsaw
Max. Capacity	Height	600 mm (23.6 in)
	Throat	700 mm (27.6 in)
	Length	1250 mm (49.2 in)
Saw Blade	Speed	15 ~ 100 m/min (50~328 ft/min)
	Size (L x W x T)	6040 x 54 x 1.6 mm (237.8 x 2.13 x 0.063 in)
	Pressure	38~45kgs / cm2 (Tolerance: +1~+2 kgs / cm^2)
	Tension	Hydraulic with automatic blade breakage detection 2400~2600kgs / cm2 (Tolerance: +100~+150 kgs / cm^2)
	Guide	Hydraulic controlled interchangeable tungsten carbide
	Cleaning	Steel wire brush with flexible drive shaft driven by main motor
Motor Output	Saw Blade	10 HP (7.5 kW)
	Hydraulic	2 HP (1.5 kW)
	Coolant Pump	1/4 HP (0.18 kW)
	Other Component	----------
Tank Capacity	Hydraulic	----------
	Coolant	----------
Workbed	Height	1400 mm (55.1 in)
	Weight Capacity	----------
Feeding Length	Mode	----------
	Single Stroke	----------
	Multi Stroke	----------
Floor Space (L X W X H)		3,258 x 2,920 x 3,345 mm (128.3 x 115 x 131.7 in)
Weight	Net	4,980 KG (10,956 lb)
	Gross	5,350 KG (11,770 lb)
Operating Environment	Temperature (° C)	5~40 ° C (41~104 ° F)
	Humidity (%)	30~85% (without condensation)

*Please refer to the formula "Watt/Voltage = Amperage" with the information above.

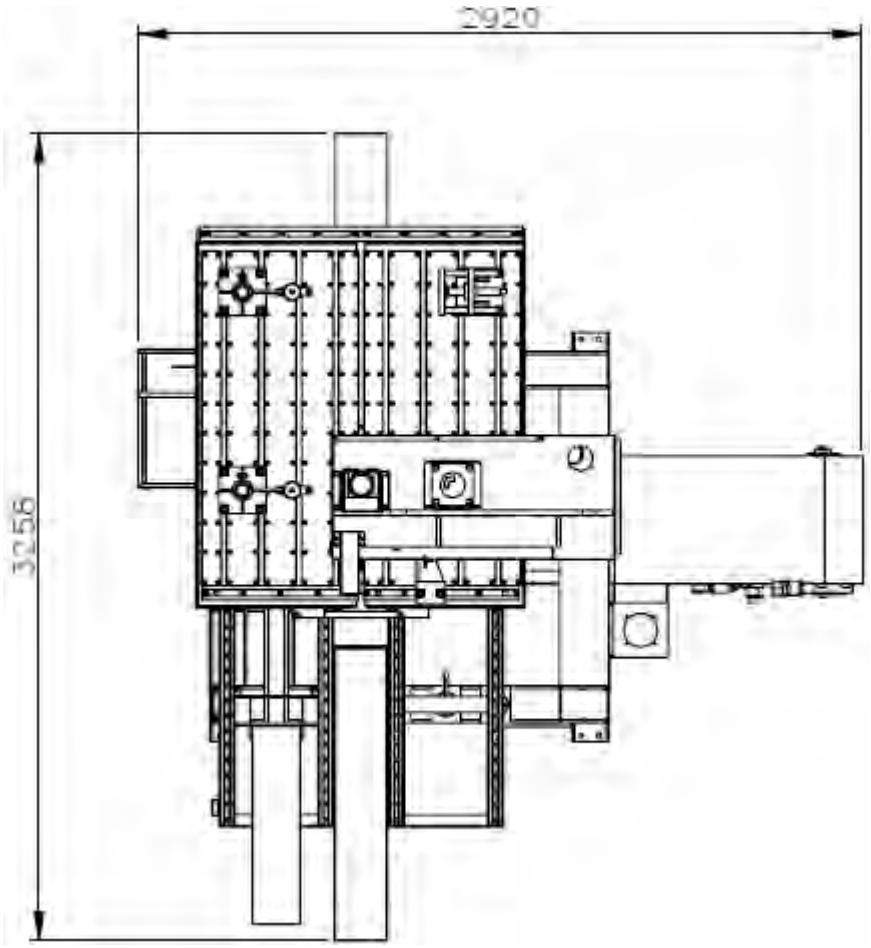
*Design and specification are subjected to change without notice.

*The saw blade pressure and tension standard above are the general values. For special saw blade, please contact to the saw blade manufacturer for the applicable values.

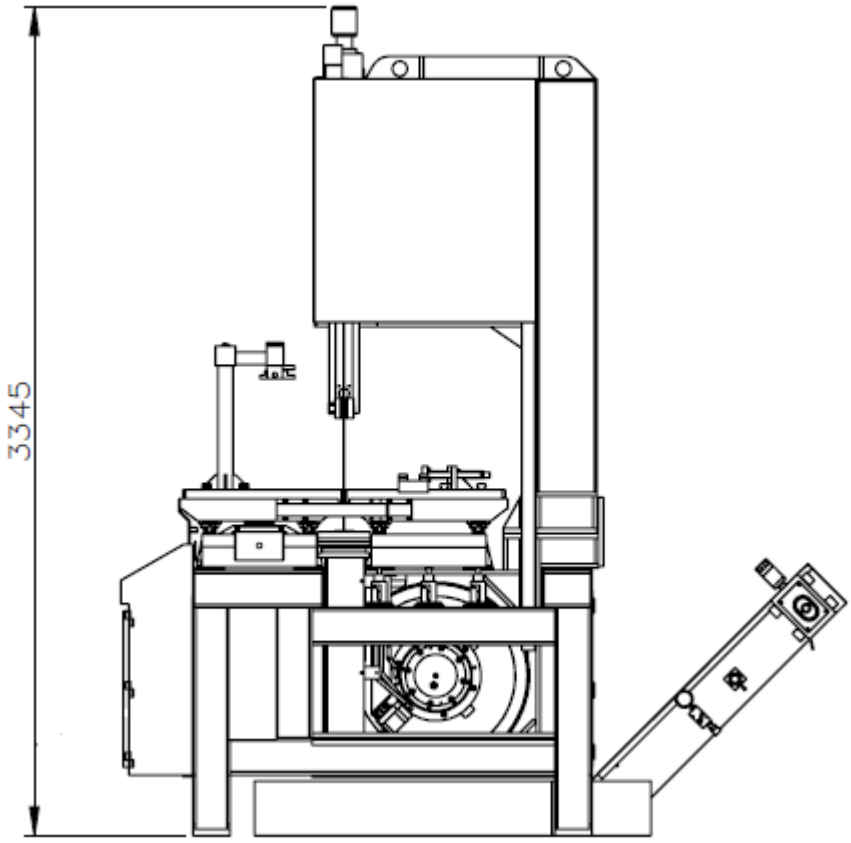
MACHINE PARTS IDENTIFICATION



FLOOR PLAN



Machine top view



Machine side view

MOVING & INSTALLATION

LOCATION & ENVIRONMENT

For your safety, please read all information regarding installation before proceeding. Install your machine in a place satisfying all of the following conditions:

Space:

- Leave enough free space around the machine for loading work and unloading cut-off pieces as well as for maintenance and inspection. Refer to *Section 1 Description* for machine dimensions and floor space.

Environment:

- Well lighted (500 lumen at minimum).
- Floor kept dry at all times in order to prevent operators from slipping.
- Away from direct exposure to the sunlight
- Room temperature between 5˚C to 40˚C.
- Humidity level kept at 30%~85%“(without condensation) to avoid dew on electric installation and machine.
- Away from vibration of other machines
- Away from powders or dusts emitted from other machines
- Avoid uneven ground. Choose a solid level concrete floor which can sustain weight of approximately 15 tons (including both machine and material weight).
- Limit the operation area of the machine to staff only.

UNPACKING & INSPECTING

- Unpack your machine carefully to avoid damage to machine parts or surfaces.
- Upon arrival of your new band saw, please confirm that your machine is the correct model and it comes in the same specification you ordered by checking the model plate on the machine base.
- It is also imperative that a thorough inspection be undertaken to check for any damage that could have occurred during shipping. Pay special attention to machine surface, equipments furnished and the electrical and hydraulic systems for damaged cords, hoses and fluid leaks.
- In the event of damage caused during shipping, please contact your dealer and consult about filing a damage claim with the carrier.
- Your machine comes in with a set of tools for you to maintain the machine. The accessories furnished are as follows:

1.	Tool box	1 pc
2.	Grease gun	1 pc
3.	Screwdriver (+, -)	2 pcs
4.	Open-ended spanner	3 pcs
5.	Hexagon wrench	1 set
6.	Chip spade (only for manual models)	1 pc
7.	Operation manual	1 pc

 Should you find any missing accessories, please contact your local agent immediately.

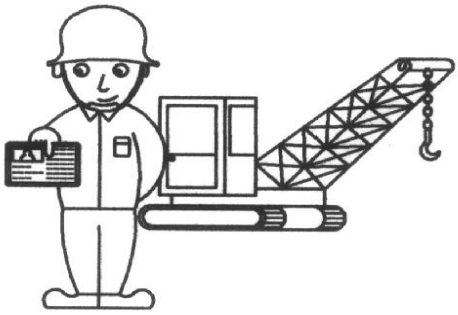
LIFTING

When moving the machine, we strongly suggest you choose any one of the methods described below to move your machine.

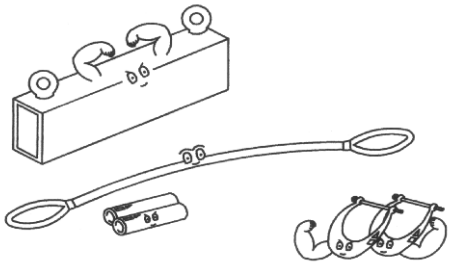
1. Use a crane

Move the machine to its location by using a crane and a wire rope sling that can fully withstand the weight of the machine (refer to machine specification under Section 1 *Description*).

- Machine lifting is likely to damage the machine if not performed properly.



***Warning*:** You must have a qualified crane operator to perform the job.



- You must use tools and equipment with the proper tensile strength and use proper method when moving your machine.
- Apply the wire rope sling to the lifting hooks on the four ends of the machine. Refer to *Illustration: Lifiting Points* for exact locations.
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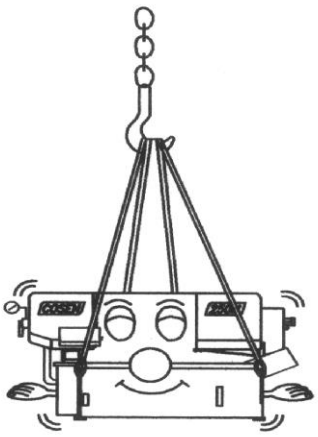
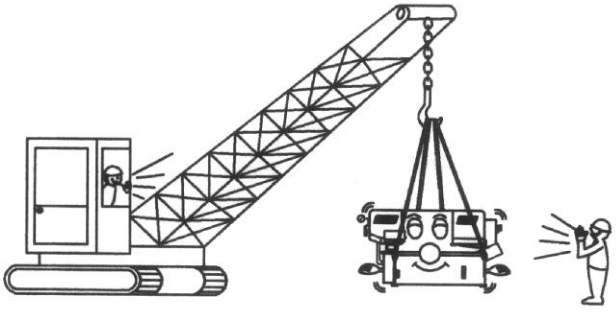


- Slowly lift the machine. Be sure to protect the machine from impact or shock during this procedure. Also watch out your own fingers and feet to avoid injuries.
- Keep the machine well balanced during lifting process and make sure the wire rope does not interfere with the saw frame.



- When you work together with more than two people, it is best to keep constant verbal communication with each other.

Illustration: Lifting Points

Minimum weight capacity for each band/chain/wire rope: 5 ton
Total number of band/chain/wire rope required: 3

2. Use a forklift

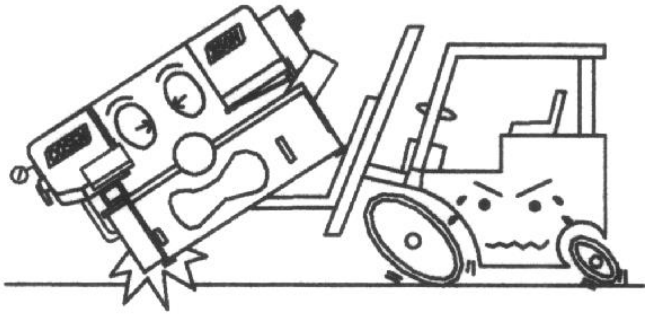
Most users choose this method to move their machine because it is easy to set up. Make sure that the lifting rod can fully withstand the weight of the machine. (Refer to *Section 2 – General Information for Specifications)*

- Machine lifting is likely to damage the machine if not performed properly.

  You must have a qualified forklift operator to perform the job.

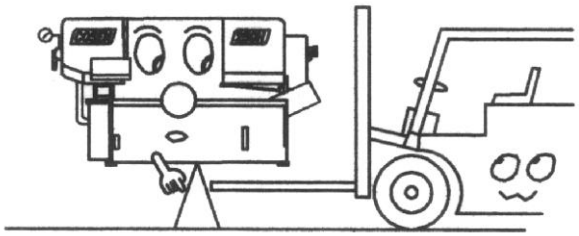
- You must apply proper forklift technique to avoid damage to the machine.

  Make sure the forks are able to reach in at least 2/3 of the machine depth.



- You must keep the machine balanced at all times.

  Make sure the forks are centered before use.

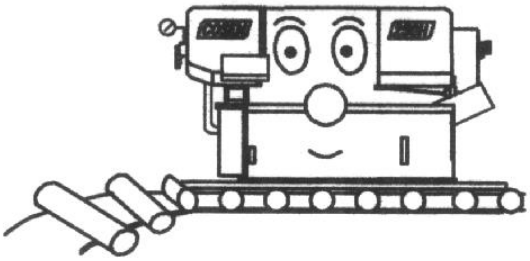


(Illustration only. Please follow user guide of your forklift.)

3. Use rolling cylinders

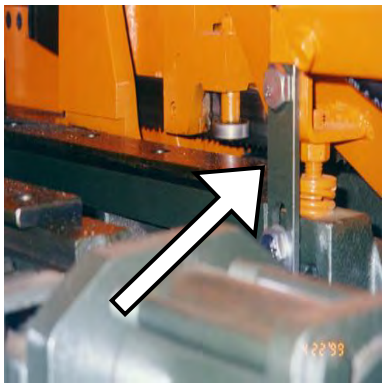
You can use rolling cylinders to move your machine in a small machine shop environment.

- You must use rolling cylinders made in material of proper compressive strength.



REMOVING SHIPPING BRACKET

- After the machine has been properly positioned, remove the shipping bracket that is used to lock the saw frame and the saw bed.
- Retain this bracket so that it can be used again in the event that your machine must be relocated.



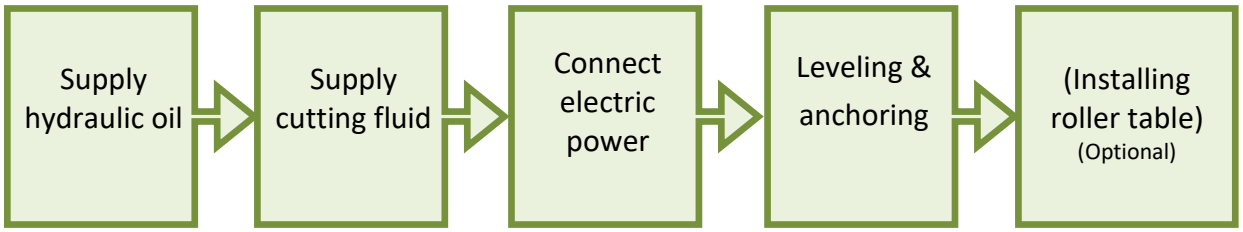
CLEANING

After the machine has been placed at the designated position, remove the rust-preventive grease with wiping cloth dampened with cleaning oil or kerosene. Apply machine oil to machine surfaces that are prone to rust.

Do not remove the rust-preventive grease with a metal scraper and do not wipe the painted surfaces with solvent as doing so would damage surface paint.

INSTALLING

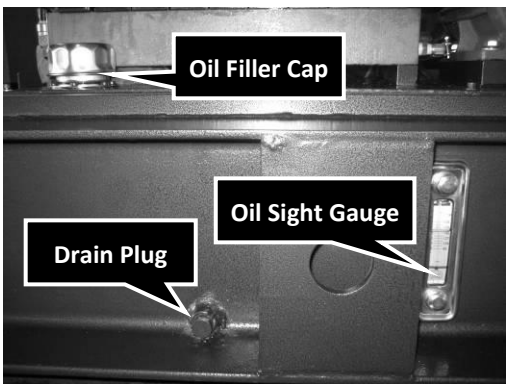
Cosen's bandsaw machine is relatively easy to install. Follow these six easy steps to install your machine.



Supplying hydraulic oil

Open the filler cap and fill the hydraulic oil tank to above 2/3 or full level.

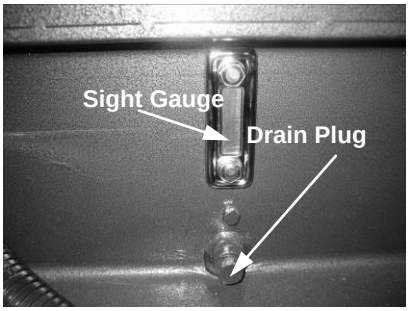
Check the sight gauge to make sure the oil level in the tank.



Refer to specification chart under Section 1 for tank capacity.

Oil tank should be full already if it is a new machine that operates for the first time.

Supplying coolant



Fill the coolant tank to the middle level of the sight gauge by pouring the coolant from above the chip conveyor.

Use the sight gauge to check the coolant level remaining in the tank.

Always check the coolant supply before starting the machine. If the coolant pump is started without enough coolant supply in the tank, the pump and its drive motor may be damaged.

Refer to specification chart under Section 1 *Description* for tank capacity.

Consult your coolant supplier for bandsaw use regarding coolant type and mix ratio.

Connecting electric power

Have a qualified electrician make the electrical connections.

If the power supply voltage is different from the transformer and motor connection voltage shown on the label attached to the electrical compartment of the machine, contact COSEN or your agent immediately.

Connect to power supply independently and directly. Avoid using the same power supply with electric spark machines such as electric welder. Unstable electric tension may affect your machine's electric installation from working properly.

Ground the machine with an independent grounding conductor.

Supply voltage: 90% - 110 % of nominal supply voltage.

Source frequency: 99% - 101 % of nominal frequency.

Refer to the specification chart under Section 1 for total electric power consumption of the motors and make sure your shop circuit breaker is capable of this consumption amount. Also use a power supply cable of proper size to suit the power supply voltage.

1. Turn off the shop circuit breaker.
2. Make sure the machine circuit breaker switch on the electrical compartment door is turned to OFF.
3. Remove the screw securing the electrical compartment and then open the door.
4. Pull the power supply cable and grounding conductor through the power supply inlet into the electrical compartment. (Shown right)
5. Connect the power supply cable to the circuit breaker (N.F.B.) to the R, S and T terminals, and connect the ground cable to the E terminal.
6. Close the compartment door and fasten the screw back.
7. Turn on the shop circuit breaker and then turn the machine circuit breaker switch to ON. The *Power Indicator* on the control panel will come on.
8. Pull to unlock the *Emergency Stop* button and press the *hydraulic ON* button to start the hydraulic motor.
9. Make sure the sawing area is clear of any objects. Start the blade and check the blade rotation. If the electrical connections are made correctly, the blade should run in a counterclockwise direction. If not, shut the hydraulics off, turn off the machine as well as the shop circuit breaker. Then swap the power the power cable conductors connected to R and T terminals.
10. Repeat step 6 to 9 to ensure the electrical connections are in the right order.

Leveling

Place spirit level on the vise slide plates and the work feed table.

Level the machine in both directions i.e. along and across the machine. Adjust the level of the machine by turning the leveling bolts.

Make sure all leveling bolts evenly support the machine weight.

In some cases, leveling the machine with a slight slope toward the front of the machine is recommended as it would prevent coolant from running down cutting material especially tubes or bundles. To do so, make the rear end of the machine approximately 10 mm higher than the level of the front end.

Anchoring the machine

Normally there is no need to anchor the machine. If the machine is likely to vibrate, fix the machine to the floor with anchor bolts.

Shock absorption steel plates are provided and can be placed under each leveling bolt to prevent their sinking into the concrete floor.

Installing roller table (optional)

The roller table is used to support long material at the rear and/or the front of the machine.

If you have ordered the optional roller table for cutting long material, position it before or behind the machine.

Level the roller table and the stand with the machine by adjusting the leveling bolts.

Installing Fire Control Device

Install a fire extinguisher or any other fire control device in the shop in case a fire breaks out.

RELOCATING

We recommend you follow these procedures when relocating or shipping your machine to other place:

1. Descend the saw frame to its lowest position then turn off the power.
2. Fix the saw frame using the shipping bracket that originally came with the machine.
3. If you are shipping the machine, pack the machine carefully with industrial plastic wraps to protect it from dust.
4. Use a crane or forklift to raise it. If a crane is used to lift the machine, ensure that the lifting cable is properly attached to the machine.
5. Do not forget to include the equipments originally furnished including the shock absorption steel plates and the instruction manual.

Section 4

OPERATING INSTRUCTION

SAFETY PRECAUTIONS

For your safety, please read and understand the instruction manual before you operate the machine.
The operator should always follow these safety guidelines:

- The machine should only be used for its designated purpose.
- Do not wear gloves, neckties, jewelry or loose clothing/hair while operating the machine.

- For eye protection, always wear protective safety glasses.

- Check the blade tension and adjust blade guides before starting the machine.
- Use auxiliary clamping or supporting devices to fix material in place before cutting long workpieces. Always make sure the material is clamped firmly in place before starting to cut.
- Do not remove jammed or cut-off pieces until the blade has come to a full stop.
- Keep fingers away from the path of the blade.

- Protection devices should be in place at all times. For your own safety, never remove these devices.
- Disconnect machine from the power source before making repairs or adjustments.

- Wear protection gloves only when changing the blade.

- Do not operate the machine while under the influence of drugs, alcohol or medication.

- Do not take your eyes off the machine while in operation.
- Do place warning signs to mark out machine work zone and restrict entry to be staff-only.

BEFORE OPERATING

Choosing an appropriate saw blade and using the right cutting method is essential to your cutting efficiency and safety. Select a suitable saw blade and cutting method based on your work material and job requirements e.g. cutting accuracy, cutting speed, economic concern, and safety control.

Wet cutting

If you choose dry cutting or low-speed cutting, the chips may accumulate in machine parts and may cause operation failure or insulation malfunction. We suggest you choose wet cutting to avoid machine damage.

Cutting unknown materials

Before cutting an unknown material, consult the material supplier, burn a small amount of chips from the material in a safe place, or follow any other procedure to check if the material is flammable.

 Never take your eyes off the machine while in operation.

Cutting fluid

For cooling and lubrication purpose, we recommend you use water-soluble cutting fluids. The following table lists out its pros and cons for your reference.

Pro	Con
• Have a high cooling effect • Not flammable • Economical • Does not require cleaning of the cut products	• Remove machine paint • Lose its rust protection effect if deteriorated • Tend to create foam • Subject to decay • Decline in performance, depending on the quality of the water used for dilution

 Never use water as your coolant.

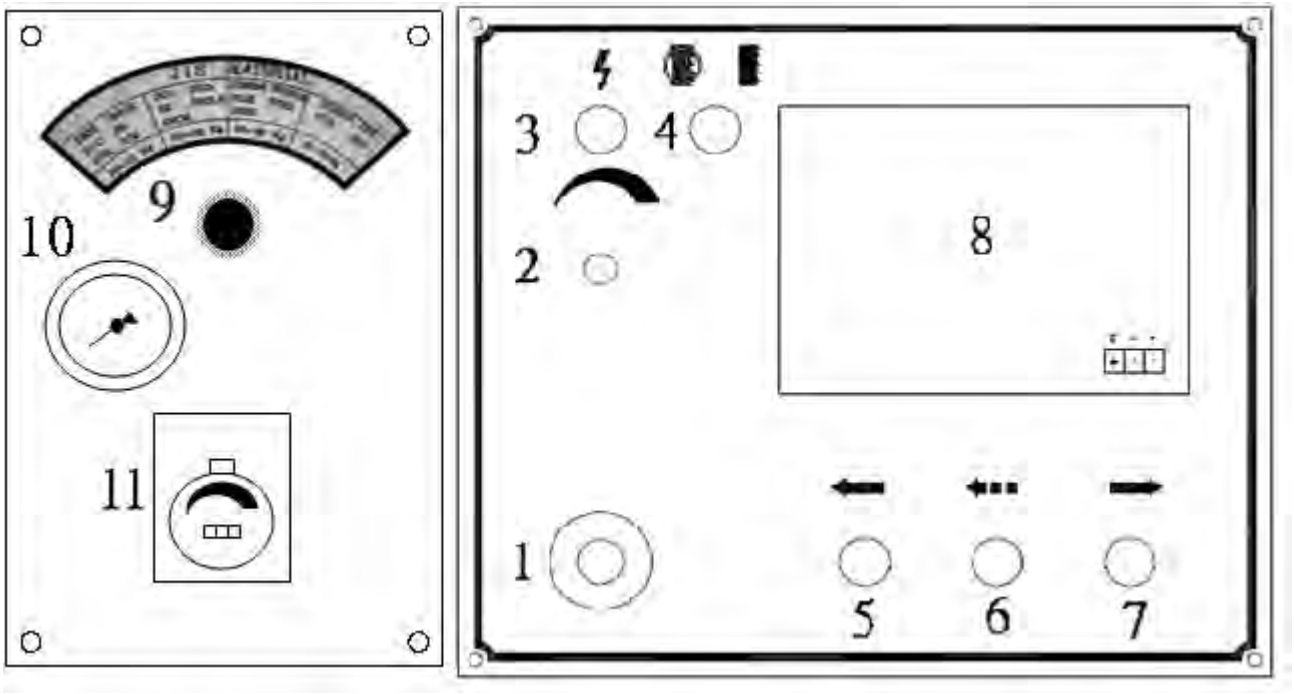
 Always add coolant into water for better mix result.

 Consult your coolant supplier for bandsaw use regarding coolant type and mix ratio.

 Before starting a cutting job, make sure there is sufficient amount of coolant in the tank. Check the fluid level through the sight gauge. Please refer to machine specifications in this manual (Section 2) for tank capacity.

CONTROL PANEL

The control panel is located on the top of the electrical box. It includes the following function: power system, hydraulic system, cooling system, the human-machine–interface (HMI) and the projecting light system. The operator must fully understand the function of each switch and button before operating the machine.



No.	Control Function	No.	Control Function
1	Emergency stop button	7	Workbed to the right button
2	Blade speed control knob (moved into HMI)	8	HMI touch screen
3	Power indicator lamp	9	Cutting pressure control knob
4	Cutting safety key switch	10	Cutting pressure meter
5	Workbed to the left button	11	Workbed feed speed control knob
6	Cutting start button		

Control Buttons

1. Emergency stop button

Press this button to stop the machine in an emergency. When the button is pressed, it brings the machine to a full stop. The button locks when pressed. In order to unlock it, please turn the button clockwise.

2. Blade speed control knob (moved into HMI)

Blade speed is controlled by the inverter. Turning the knob clockwise increases the blade speed.

3. Power indicator lamp

When the lamp is on, it indicates the power to the machine is turned on.

4. Setting/cutting mode switch

This selector switch provides two modes to choose from: setting and cutting. To switch between these modes, a key is required. Please keep the key at a safe place and do not lose it.

Turn this key switch to the left, the setting mode provides a safe environment while adjustment prior to cutting is conducted or when machine maintenance is required. Cutting is not allowed in the setting mode. Turn this key switch to the right, cutting is allowed only in cutting mode.

5. Workbed to the left

Press and hold this button to move the workbed to the left. The workbed will continue moving until the operator lets go of the button.

6. Cutting start button

After starting the blade, press this button for the workbed to start feeding to the left. When starting cutting and during cutting, please make sure cutting pressure and workbed feed speed are adjusted properly according to your material. Under manual feeding mode, when letting go the cutting start button, workbed stops immediately but the blade continues running. Under single feeding mode, when cutting finishes, both workbed and blade stops at the preset cutting length position. Under repeat feeding mode, when cutting finishes, both workbed and blade stops at the preset retract point.

7. Workbed to the right

Use this button to feed the workbed to the right to your desired position:

- When workbed is at retract point's left and this button is pressed for more than 3 seconds, workbed moves to the right to the retract point.
- When workbed is at retract point's right and this button is pressed for more than 3 seconds, workbed moves to the right to the right limit switch.
- When this button is pressed for less than 3 seconds, the workbed stops moving immediately when operator lets go the button.

- Stop cutting for single feeding mode and repeat feeding mode: During cutting, press this button to stop the running blade. The workbed will also move slightly away from the blade in order to protect the blade.

8. HMI touch screen

Please refer to later section for detailed introduction.

9. Cutting pressure control knob

- This pressure control knob is used to adjust the cutting pressure of the blade.
- Turning the knob clockwise increases the cutting pressure.
- To obtain a good cutting result, choose the right cutting pressure by turning the knob until it points to your material on the color chart.

10. Cutting pressure meter

The cutting pressure indicates the current cutting pressure of the blade onto the material. Figures show on the cutting pressure meter only when the blade has been started.

11. Workbed feed speed control knob

- This knob is used to adjust the feed speed of the workbed.
- Turning the knob clockwise increases the feed speed.
- Feed speed is a determining factor to a good cutting time and quality cutoff surface.
- Set the feed speed in accordance with the cutting pressure control knob.
- Also commonly known as the flow control valve.

Human-machine-interface (HMI) touch screen

This HMI touch screen displays operation messages so that the operator is able to understand the system condition. It also provides different operating modes and selections for the operator to work with. During a cutting job, the operator can still enter the system and make changes to the cutting operation as needed.

 Do not wipe or clean the screen with volatile solvents.

 Do not overexert pressure on the screen. The touch screen is very sensitive; all buttons on the screen just need a slight touch to operate.

 All range parameters in HMI are configured under the “manual” mode.

Please pay attention to the following environment conditions necessary for HMI touch screen to properly operate:

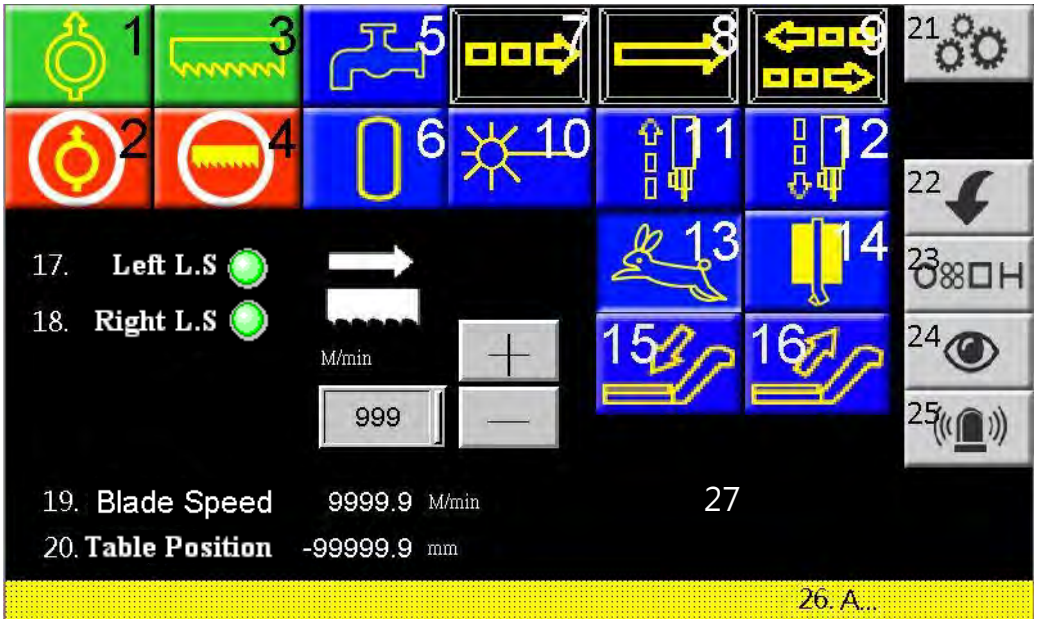
Item	Range
Ambient temperature	5℃ ~ 50℃
Temperature for safe operation	-10℃ ~ 60℃
Ambient humidity	30%~85% RH (No condensation)
Connection	RS422 MMI port
Environment	No condensation and rust

Startup Screen

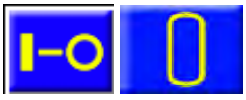
After the power is turned on, Cosen's logo will appear as the startup screen, followed by the main operation menu..

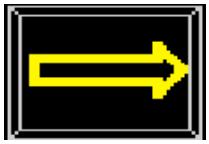
Main control menu

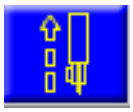
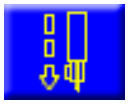
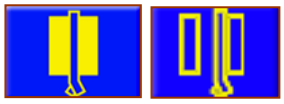
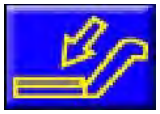
The main control menu includes some operating button that were used on the control panel of the earlier machines. Some convenient functions are added to the page for the operator to better understand the features of the machine. Setting the parameters shown on the screen requires a gentle touch of the finger. You can also look up the parameters or make changes while in the middle of a cut.



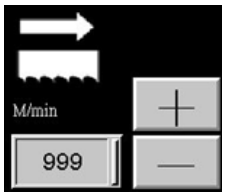
Refer to the table below for descriptions of each function.

No	Item	Function	Description
1		Hydraulic start	When the power is turned on, press this button to start the hydraulic motor. A solid yellow icon indicates the hydraulic system has been turned on.
2		Hydraulic stop	Press this button to turn off the hydraulic motor immediately.  When the blade is running, the Hydraulic Stop button is temporarily disabled. You need to press the *saw blade stop* or workbed to the right button to stop the blade first.
3		Saw blade start	When the work piece is clamped properly, press this button to start cutting. A solid yellow blade icon indicates the blade has been started.
4		Saw blade stop	Press this button to stop the saw blade.
5		Coolant ON/OFF	Press this button to turn on the coolant pump. A solid yellow faucet icon indicates the coolant pump has been turned on. Press again to turn off the coolant pump.
6		Last cut function ON/OFF	When the  mode is selected, the blade will automatically stop and the hydraulic system will shut down (in 10 seconds) after the current cut is finished.
7		Manual feeding mode	Press this button to switch to the manual feeding mode. The green solid line indicates the manual feeding mode has been turned on. Press the “saw blade start” button (#3 in HMI) to start the blade. At this time, the table will not start feeding yet. To perform manual cutting, after the blade has been started, press and hold the “cutting start” button (#5 on the control panel) to start and continue feeding the workbed. Once letting go of the button, the workbed will stop feeding to the left but the saw blade will continue running. To stop the saw

No	Item	Function	Description
			blade, press saw blade stop button. Before starting the saw blade, please choose the feeding mode first. Once the saw blade is running, the saw blade needs to be stopped to be able to switch the feeding mode.
8		Single feeding mode	Press this button to switch to the single feeding mode. The green solid line indicates the single feeding has been turned on. Press the “saw blade start” button (#3 in HMI) to start the blade. At this time, the table will not start feeding yet. Press the “cutting start” button (#5 on the control panel) to start feeding the workbed. The workbed will continue feeding until the saw blade has cut the preset cutting length, at which point, cutting will be completed, the blade will stop and the workbed will remain at the same position. To stop cutting, press “saw blade stop” button to stop the saw blade or press “workbed to the right” button to stop the saw blade and the workbed.
9		Repeat feeding mode	Press this icon to switch to the repeat feeding mode. The green solid line indicates the repeat feeding mode has been turned on. Press the “saw blade start” button (#3 in HMI) to start the blade. At this time, the table will not start feeding yet. Press the “cutting start” button (#5 on the control panel) to start feeding the workbed. The workbed will continue feeding until reaching the left limit switch, at which point, cutting will be completed, the blade will stop and the workbed will return back to the retract point. (Refer to Worklength selector under Standard Accessories.) To stop cutting, press “saw blade stop” button to stop the saw blade or press “workbed to the right” button to stop the saw blade and the workbed.
10		Laser light ON/OFF	Press this button to turn on the laser light. A beam of light will be projected on the work piece for alignment. A solid yellow light bulb icon indicates the lamp has been turned on.

No	Item	Function	Description
			The laser light automatically turns off in 90 seconds to prolong light bulb lifetime.
11		Guide arm up	Press this button to bring the guide arm up away from the workbed. Use this function when you need to adjust the distance between the guide arm and the workbed/material.
12		Guide arm down	Press this button to bring the guide arm down toward the workbed. Use this function when you need to adjust the distance between the guide arm and the workbed/material.
13		Slow material feeding mode	Used only when under Manual Feeding mode. When the slow material feeding mode is turned on, the material feeding speed will dramatically reduce to help you position the work piece precisely.
14		Tungsten inserts clamp/unclamp switch	Press this button to clamp tungsten carbide inserts. Press again to unclamp. The carbide inserts will automatically clamp the blade when the saw blade start button is pressed. This safety design is incorporated in the program to protect both the user and the blade during cutting.
15		Scraper chip conveyor reverse	Press to reverse the scraper chip conveyor. A solid scraper chip conveyor icon indicates the conveyor has been reversed. Scraper chip conveyor forward must be turned off first to start reversing.
16		Scraper chip conveyor forward	Press to forward the scraper chip conveyor. A solid scraper chip conveyor icon indicates the conveyor has been forwarded. Scraper chip conveyor reverse must be turned off first to start forwarding.
17		Left limit switch ON/OFF	When the movable workbed feeds to the very left end and touches the left side limit switch, the workbed will stop and the green light will come on.

No	Item	Function	Description
18		Right limit switch ON/OFF	When the movable workbed feeds to the very right end and touches the right side limit switch, the movable workbed will stop and the green light will come on.
19		Blade speed	Current blade speed display
20		Current table position	The relative position according to the current return-to-zero table position.
21		System parameter setting	Press this button to set up system parameters. Password is required.  All parameters have been set up by the manufacturer. In order to prevent random change from being made to these parameters and affect cutting precision and machine life, this function is protected with a set of password.
22		Cutting program setting	Press this button to display cutting-related information, e.g. blade speed. Information and parameter setups for optional accessories such as blade deviation detector can also be configured in this setup page. Refer to Cutting Display & Setup in the following page.
23		Material cutting reference	This 2-page reference chart lists out the required blade speed and cutting rate for each different material.
24		PLC monitor	Shows current PLC signals.
25		Error report	Lists a historical report of the errors and the time of occurrence as well as provides troubleshooting support. 6 pages in total.
26	(yellow highlight)	Error display	Displays error messages in the order of occurrences; press the message to clear the messages.  **Error messages must be cleared for the machine to continue to operate normally.**

No	Item	Function	Description
27		Blade speed control	Press “+” to speed up the blade. Press “-“ to speed down the blade

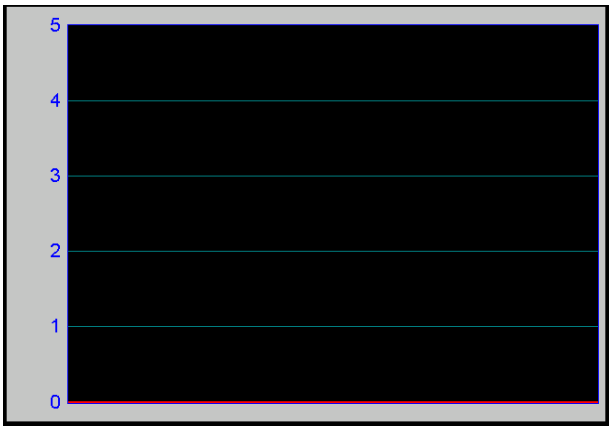
Cutting status display & setup

When cutting is in operation, press  to enter cutting status display and setup page.

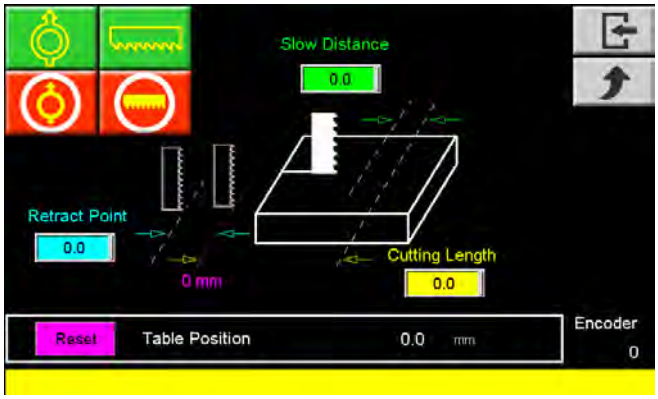
Page 1 – cutting status display and set up 1

This page shows or sets the following information (from top to bottom):

- Set Height – Set the material height
- Current blade speed
- Current blade feeding speed
- Current cutting rate
- The current in Amps drawn by the blade motor displayed on this page if the optional accessory, Motor Amp Draw, is purchased.
- The relative position according to the current return-to-zero table position.
- Current blade life in hours
- The green square light on the bottom left corner indicates the warranty status of the HMI touch screen. Warranty is one year and starts counting after 70 hours of operation after the machine is shipped. Warranty status light turning to red indicates the HMI touch screen has expired.
- Error messages (highlighted in yellow; can be cleared by pressing down)



- Press HOME to return to the main control menu.
- Press NEXT to go to the next setup page.
- Press HP Scr. to go to below HP (Horsepower) monitor screen (for V-drive, an optional accessory for enhancing cutting efficiency and reducing cutting vibrations) page.
- Blade Life Reset - Reset the blade life to zero



Page 2 – cutting program setup

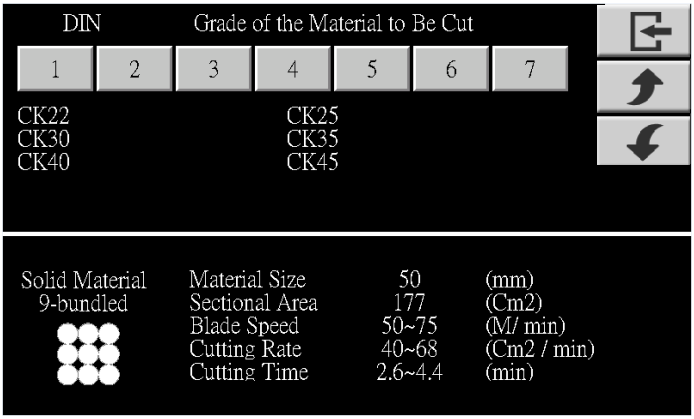
In this page you can set the following value (from top to bottom) for the repeat feeding mode:

- Hydraulic start – Same as above descriptions in main control menu
- Hydraulic stop – Same as above descriptions in main control menu
- Saw blade start – Same as above descriptions in main control menu
- Saw blade stop – Same as above descriptions in main control menu
- Slow distance - Set the distance you wish the material feeding speed dramatically reduce to help cut the work piece precisely.

  If your workbed feed speed is slow enough for the machine to position the work piece precisely, it's unnecessary to set the slow distance.
- Retract point - Set the position you wish the material to retract from the return-to-zero point.

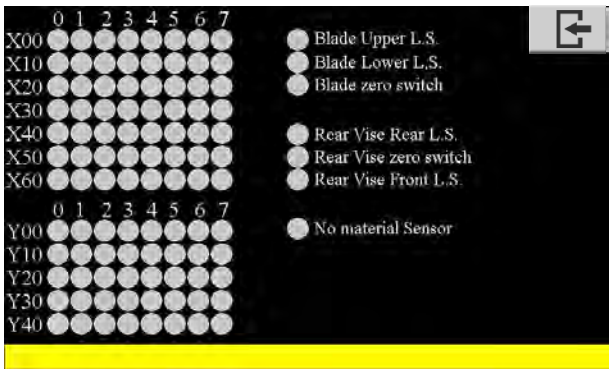
  You can only set negative value or zero.
- Cutting length - Set the distance between teeth point and the cutoff line.
- Reset - Press for three seconds to reset the table position to zero. Refer to Table Position value for the current relative position to 0 point.
- Error message (highlighted in yellow; can be cleared by pressing down)
- Press Home to return to the main control menu.
- Press PGUP to go back to the previous setup page.

Material cutting reference



- This reference chart lists out the required blade speed and cutting rate for 7 different groups of material.
- Press to return to the main control menu.
- Press to go back to the previous setup page.
- Press to go to the next setup page.

PLC Monitor



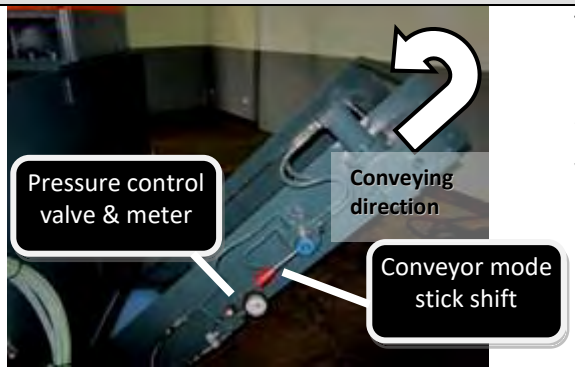
- Shows all signals of the PLC system.
- If blade upper limit switch, blade lower limit switch, blade zero switch, rear vise rear limit switch, rear vise zero switch, rear vise fornt limit switch or no material sensor is activated, the red light will appear.
- Press to return to the main control menu.

<u>Error Description</u> (in " mode select")

Error Code	Error Description	Solution
M300	Front vises not clamping	Check if the queen valve works
M301	Rear vises not clamping	Check if the queen valve works
M303	Lower limit switch error	Check if the lower limit switch works
M304	Hydraulic motor not starting	Check if the hydraulic motor works
M306	Broken blade detected	1. Check proximity switch behind idle wheel 2. Check if the blade is broken
M308	Left safety door abnormal	1. Check if the left safety door is shut properly 2. Check if the left safety door limit switch works
M309	Right safety door abnormal	1. Check if the right safety door is shut properly 2. Check if the right safety door limit switch works
M312	Quick approach bar abnormal	Check if the quick approach limit switch works
M313	OL1 abnormal	Check if the blade motor overload relay has tripped
M314	OL2 abnormal	Check if the hydraulic motor overload relay has tripped
M315	OL3 abnormal	Check if the coolant pump motor overload relay has tripped
M316	Saw bow upper limit abnormal	Check the upper limit switch works
M350	Insuf. length – first cut	Make material 100mm out of vise
M352	Front vise clamping error	1. Place new material 2. Check if the vise queen valve works 3.Check if the “no material parameter” is too low
M357	Saw bow descending error	1. Check if the descend solenoid valve is stuck 2. Check the quick approach bar works 3. Check if the quick approach bar limit switch works
M358	Saw bow ascending error	1. Check if the ascend solenoid valve is stuck 2. Check the quick approach bar works 3. Check the quick approach bar limit switch works
M361	No material	1. Place new material 2. Check if the vise queen valve works 3.Check if the “no material parameter” is too low
M363	PLC battery voltage too low	Replace PLC battery

STANDARD ACCESSORIES

Chip Conveyor



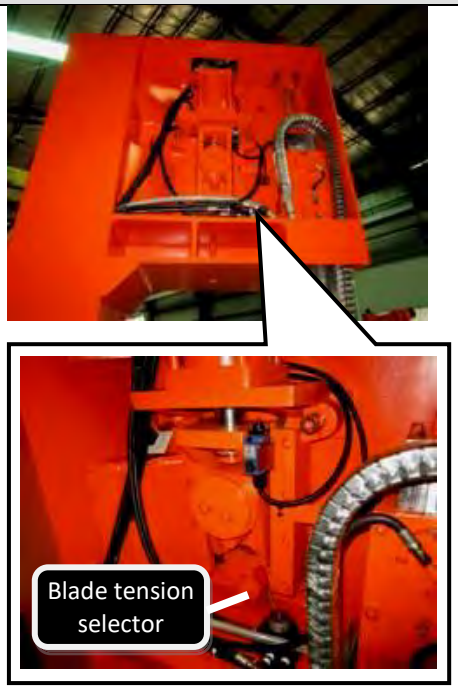
The chip conveyor is designed to bring chips out during cutting.

When the hydraulic system is on, adjust the pressure control valve to adjust the conveying speed.

Conveyor modes:

1. Up: Chip conveyor conveys in reverse direction. Use this mode to clear away jammed chips.
2. Middle: Chip conveyor stops.
3. Down: Chip conveyor conveys in normal direction.

Blade Tension Device



- This blade tension device equipped with hydraulic cylinder provides appropriate tension to the saw blade.
- To adjust blade tension, follow these steps:

  1. Unclamp carbide inserts (via HMI touch panel)
  2. Turn the blade tension selector handle to “relaxed mode.”
  3. After replacing the blade, tighten the blade by turning the blade tension selector.

Inverter

This inverter is installed inside the electrical compartment. It is used to control and stabilize the saw blade speed during cutting.
To adjust blade speed, use the *blade speed control* buttons on the HMI screen.

Voltage used should not exceed AC 460V.

Note:

1. Make sure the terminal points are connected.
2. Make sure the ambient temperature is within acceptable range and keep the surroundings well ventilated.
3. Keep the inverter away from dust.
4. For repair or maintenance, please contact your local agent.

Gear Reducer

The specially designed gear reducer can work toward your preset blade speed and torque.

Please refer to Section 8 for information on maintenance.

Coolant Pump

After the hydraulic system is turned on, the coolant pump can be operated independently via HMI touch panel. Besides cooling off the running blade, it can also be used to wash the machine.

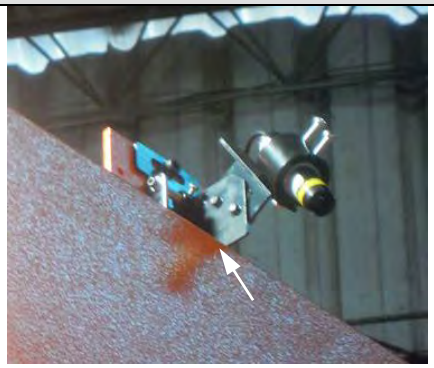
Alarm light

The alarm light is located on top of the saw bow for the operator to be able to see even from a distance.

A flashing light indicates there is abnormality in the machine operation. Please check the HMI touch screen for error messages.

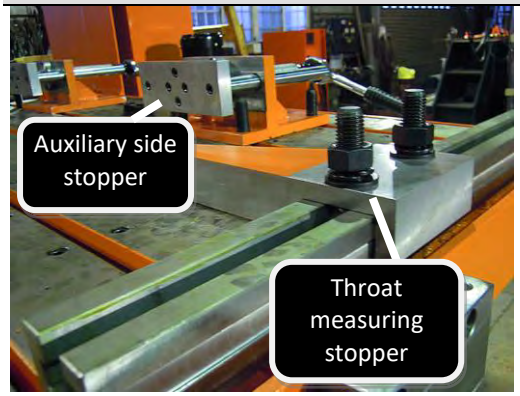
OPTIONAL ACCESSORIES

Laser light



Activate the switch to project a beam of light on the work piece. The operator can use the light as a reference to adjust the cutting dimension of the work piece. The light will shuts off automatically within 3 minutes.

Throat measuring stopper & auxiliary side stoppers



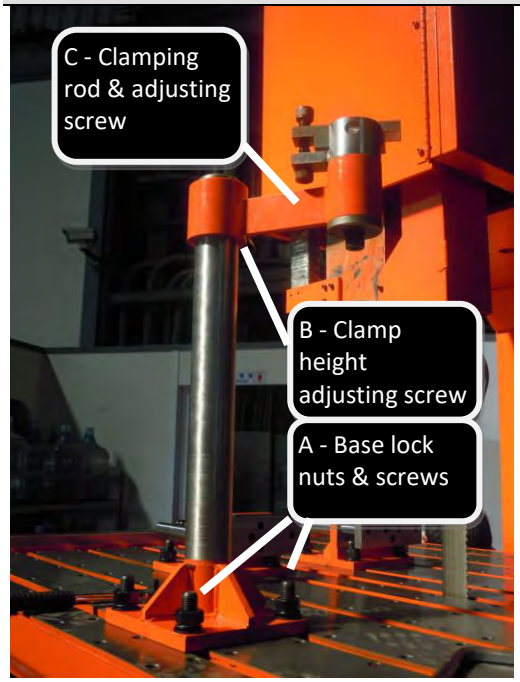
Step 1: Adjust throat measuring stopper
The throat measuring stopper becomes very useful when determining where to locate the material at.

Position the throat measuring stopper at your desired cutoff throat size on the measuring tape. After the throat measuring stopper is firmly secured on the workbed, load your material and lean it against the stopper to get the desired cutoff throat.

Step 2: Adjust auxiliary side stoppers
Use the auxiliary side stoppers to secure the workpiece from sliding sideways.

The side stoppers can be positioned at anywhere on the workbed and can face to the front, back, left or right. Feel free to utilize these stoppers to maximize workpiece stability during cutting. After the side stopper is secured (nuts tightened) on the workbed, use the handle to make fine adjustments.

Top clamp



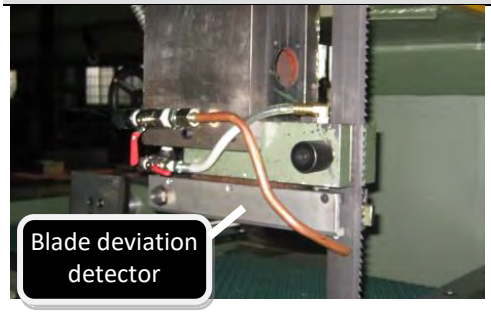
This top clamp device is a good tool to use when cutting thinner material with less weight. To be manually adjusted according to the workpiece dimensions, the top clamp can firmly secure the workpiece on the workbed when cutting.

A – Base lock nuts & screws:
Relocate the top clamp to anywhere on the movable workbed by loosening the four sets of base lock nuts & screws, sliding the top clamp out of the workbed and sliding it to your desired position and tightening the nuts.

B – Clamp height adjusting screw
Change the height of the top clamp by adjusting this screw.

C – Clamping rod & adjusting screw
Use this screw to adjust how hard you wish to clamp down the workpiece.

Blade deviation detector



This device detects blade deviation. If the blade deviates beyond the preset range, the machine will stop automatically. The blade deviation detected value is displayed and the preset values can be preset via the HMI touch screen.

ADJUSTING WIRE BRUSH

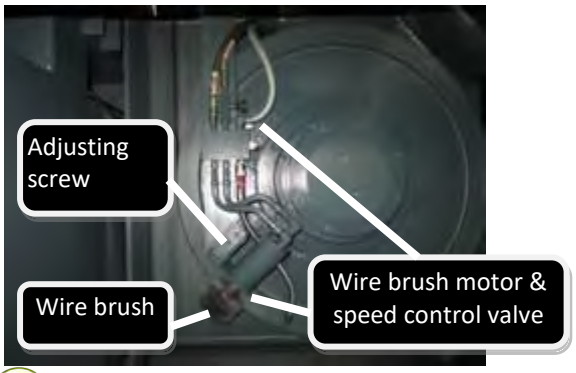
Follow these steps to adjust wire brush to appropriate position:

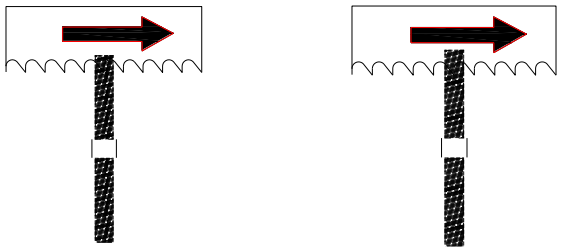
Step 1 – Loosen the wire brush assembly lock nuts.

Step 2 - Remove the old worn wire brush and replace with new one.

Step 3 – Tighten the wire brush assembly lock nuts.

Step 4 – Loosen the adjusting screw in the above picture to make brush move up / down until it makes proper contact with the saw blade (also see below illustration).





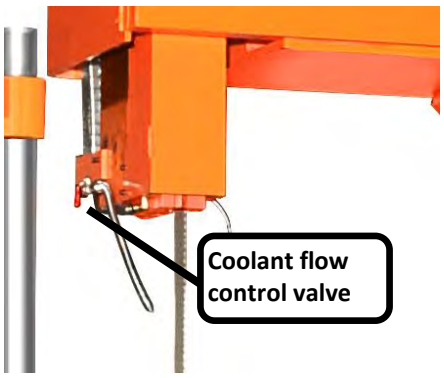
The wire brush rotation speed is controlled hydraulically. As the blade runs, the wire brush also rotates. To adjust the wire brush rotation speed, adjust the wire brush speed control valve in the above picture.

ADJUSTING COOLANT FLOW

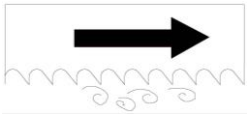
Step 1 – Press the *saw blade start* button to start the saw blade drive motor.

Step 2 –Press the *cutting start* button and the workbed will start approaching the blade.

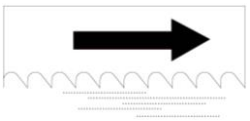
Step 3 – Use the flow control valve (shown below) to adjust the amount of fluid flowing to the cutting area.



Adjust the flow amount if you observe the following changes to the chips generated from cutting.



If the chips are sharp and curved, increase the coolant flow amount.



If the chips are granulated, decrease the coolant flow amount.

ADJUSTING BLADE SPEED

Step 1 – Set the flow control to "0" position.

Step 2 – Press the *saw blade start* button to start the blade.

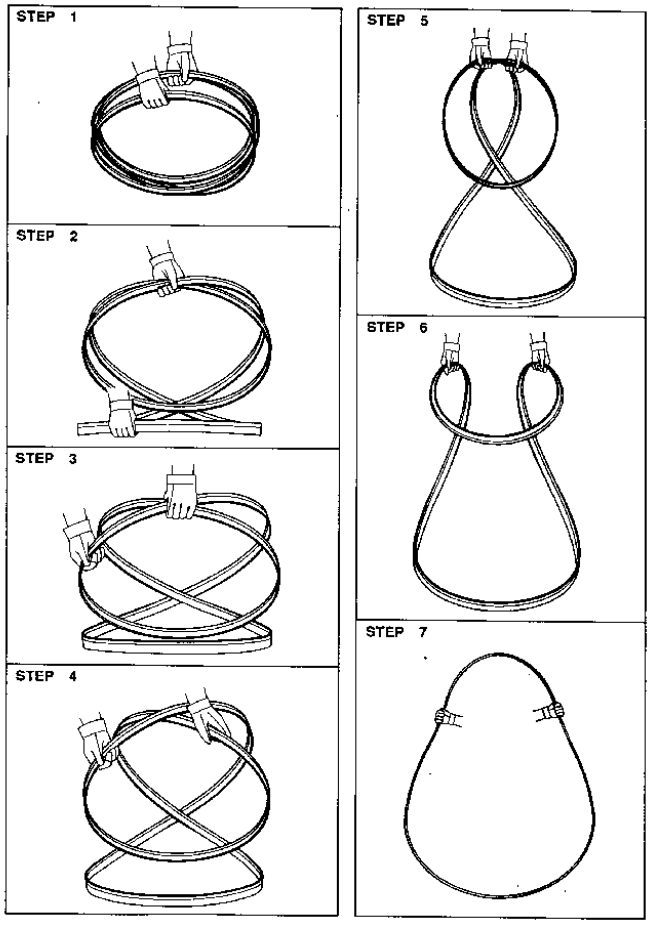
Step 3 – Press the *blade speed control buttons* to adjust the blade speed. The blade speed should be adjusted based on the size and the material of the workpiece.

UNROLLING & INSTALLING THE BLADE

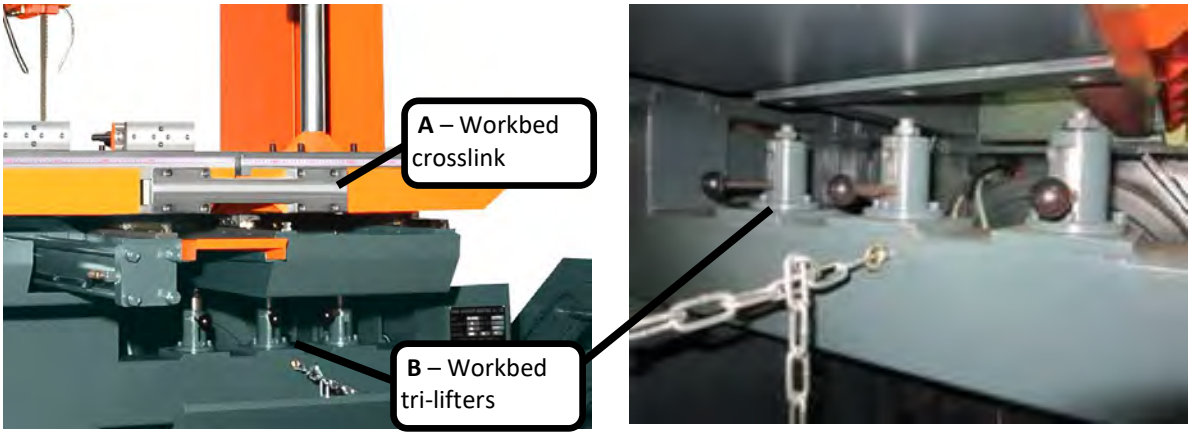
Always wear leather gloves and protection glasses when handling a blade.

Unrolling the blade

Please follow the procedures illustrated below.



Installing a new blade



Step 1 - Select the most suitable saw blade for your workpiece considering the size, shape and material.

Step 2 - Turn on the machine power by switching to *ON* and turn on the hydraulic system.

Step 3 - Press the *workbed to the left* button and send the workbed all the way to the left end (if facing the control panel).

Step 4 – Press the *guide arm down* button to lower the guide arm. Open the saw blade cover.

Step 5 - Unclamp the carbide inserts and release the tension controller handle to “relaxed” position.

Step 6 - Open the idle wheel cover.

Step 7 - Lower down the side coolant splash shield.

Step 8 – Loosen the wire brush assembly screws and move the wire brush away from the blade.

Step 9 - Loosen the screw of the workbed crosslink (part A in the above picture) and turn them wide open.

Step 10 - Lower down the workbed tri-lifters (part B in the above picture) by pulling the handles downward. (A gentle shake may be necessary.)

Step 11 - Take the blade out through above the tri-lifters and the opening behind the crosslink and replace with a new blade by inserting through these openings.

Step 12 - After the blade has been properly installed, restore the changes made from step 5 to 9.

Before changing the blade, make note of the direction the blade is running and the blade teeth is facing.

Remove objects that may stand in the way of blade changing, such as saw blade tension controller cover.

CUTTING OPERATION

Step 1 – Check before you cut

- **Power:** Check the voltage and frequency of your power source.
- **Coolant:** Check if you have sufficient coolant in the tank.
- **Hydraulic:** Check if you have sufficient (at least two-thirds or higher) hydraulic oil.
- **Workbed:** Check if there is any object on the feeding bed that may cause interference.
- **Blade:** Check the blade teeth and make sure there is no worn out teeth along the blade.
- **Light:** Check the work lamp or laser light (optional) and make sure there is sufficient lighting.
- **Movable workbed:** Check the workbed to see if it can be moved to the right and left smoothly.

Step 2 – Place your workpiece onto the workbed by using a lifting tool e.g. a crane.

 Before loading, make sure the movable workbed is moved to the right to allow enough clearance for the workpiece. When loading, take extra care not to have the workpiece bump into the blade.

Step 3 – Position your workpiece.

Step 4 - Clamp the workpiece top-down and sideways if necessary.

Step 5 – Turn the *cutting pressure control* knob to adjust blade cutting pressure according to the material.

Step 6 - Adjust *workbed feed speed control* knob to obtain a suitable blade feed speed for your material.

Step 7 – Start running the blade.

 Before you start cutting, check again that there is no other object in the cutting area.

Step 8 – While the movable workbed approaches the material, adjust the blade speed if necessary. You can do so by pressing the *blade speed adjusting* buttons in the HMI touch screen. The blade speed is also displayed in the HMI touch screen.

Step 9 – Select the proper cutting condition according to different material.

Step 10 – After the entire cutting job is completed, move the workbed to the right to its starting position and unload the cutoff workpiece.

Step 11 – Clean the workbed by removing chips and cutting fluids.

Step 12 – Move the workbed to a proper position then turn off the power.

BREAKING-IN THE BLADE

When a new saw blade is used, be sure to first break in the blade before using it for actual, extended operation. Failure to break in the blade will result in less than optimum efficiency. To perform this break-in operation, the following instructions should be followed:

Step 1 - Reduce the blade speed to one-half of its normal setting.

Step 2 - Lengthen the cutting time to 2-3 times of what is normally required.

Step 3 -The complete break-in operation requires cutting on a 645 mm^2 (25.4 square inches) section for 5 times.

Step 4 - After the break-in operation is completed, set all parameters back to normal settings.

TERMINATING A CUTTING OPERATION 

- To terminate a cutting operation, press either the *workbed to the right* button or the *emergency stop* button.
- The saw blade will stop running when the *workbed to the right* button is pressed.
- Both the saw blade and hydraulic pump motors will stop running when the *emergency stop* button is pressed.
- The machine will stop automatically when an error occurs. The error message will be shown on the screen.

Section 5

ELECTRICAL SYSTEM

ELECTRICAL CIRCUIT DIAGRAMS

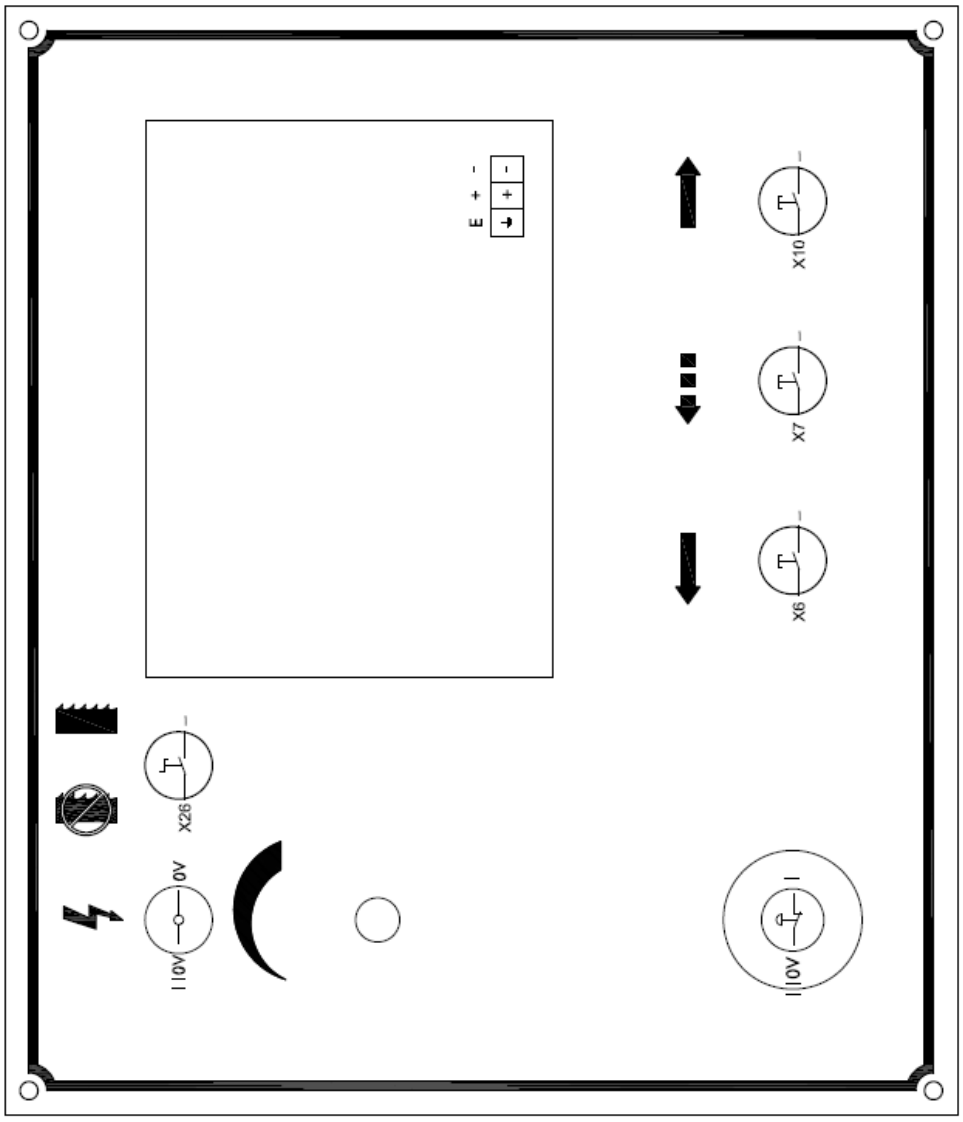
The following are electrical circuit diagrams of the system:

Fig 5-1 Control panel layout

Fig 5-2 Circuit board layout

Fig 5-3 Power supply layout

Fig 5-4 PLC I/O layout



高聖精密機電股份有限公司 COSEN MECHATRONICS CO., LTD.	圖名	面板配置圖	圖號	EL-SVT6070H-F15-002S1-A	繪圖	陳偉崧	日期	1030115	版本
					審核		日期		S1

Fig.5-1 Control panel layout

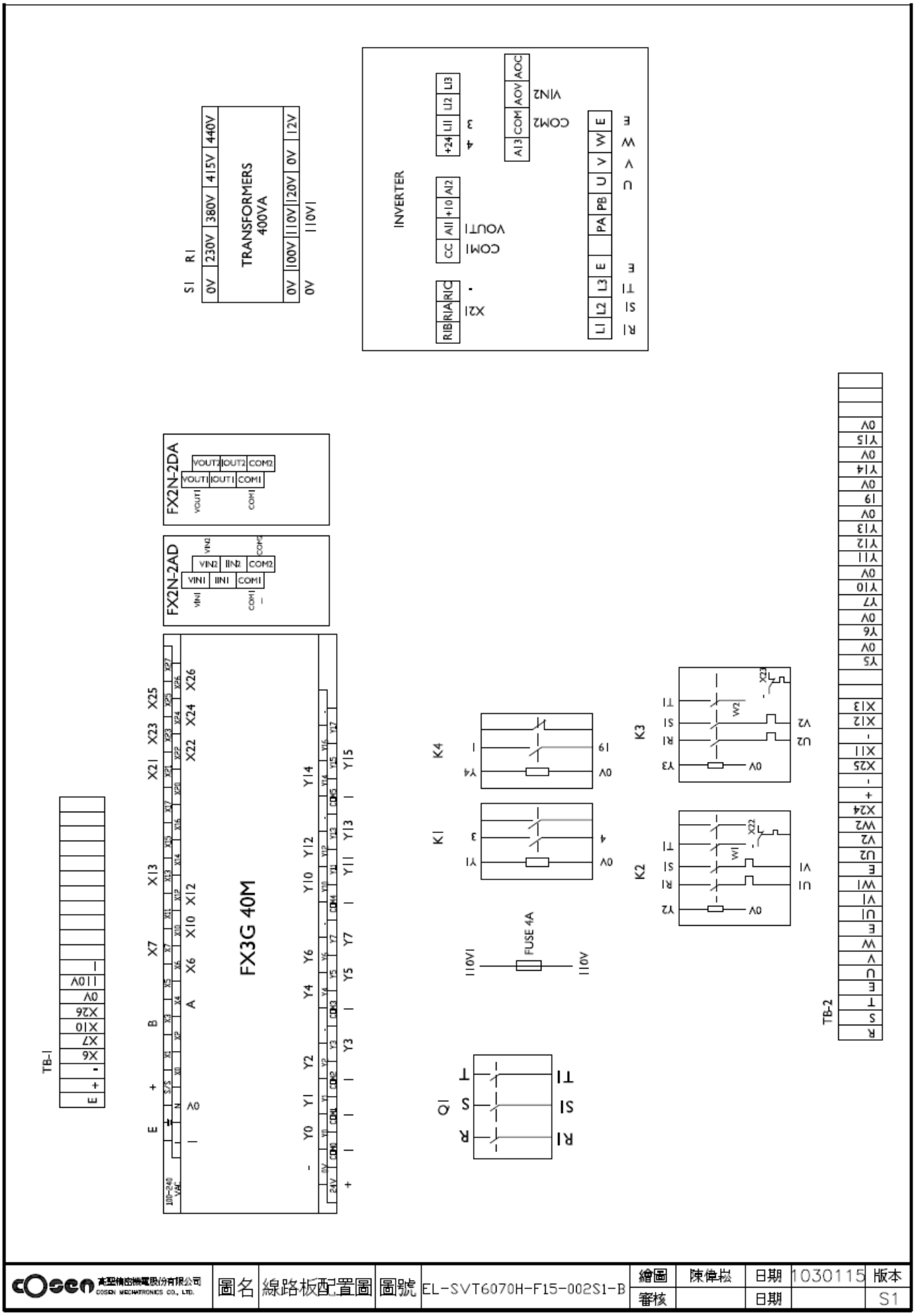


Fig.5-2 Circuit board layout

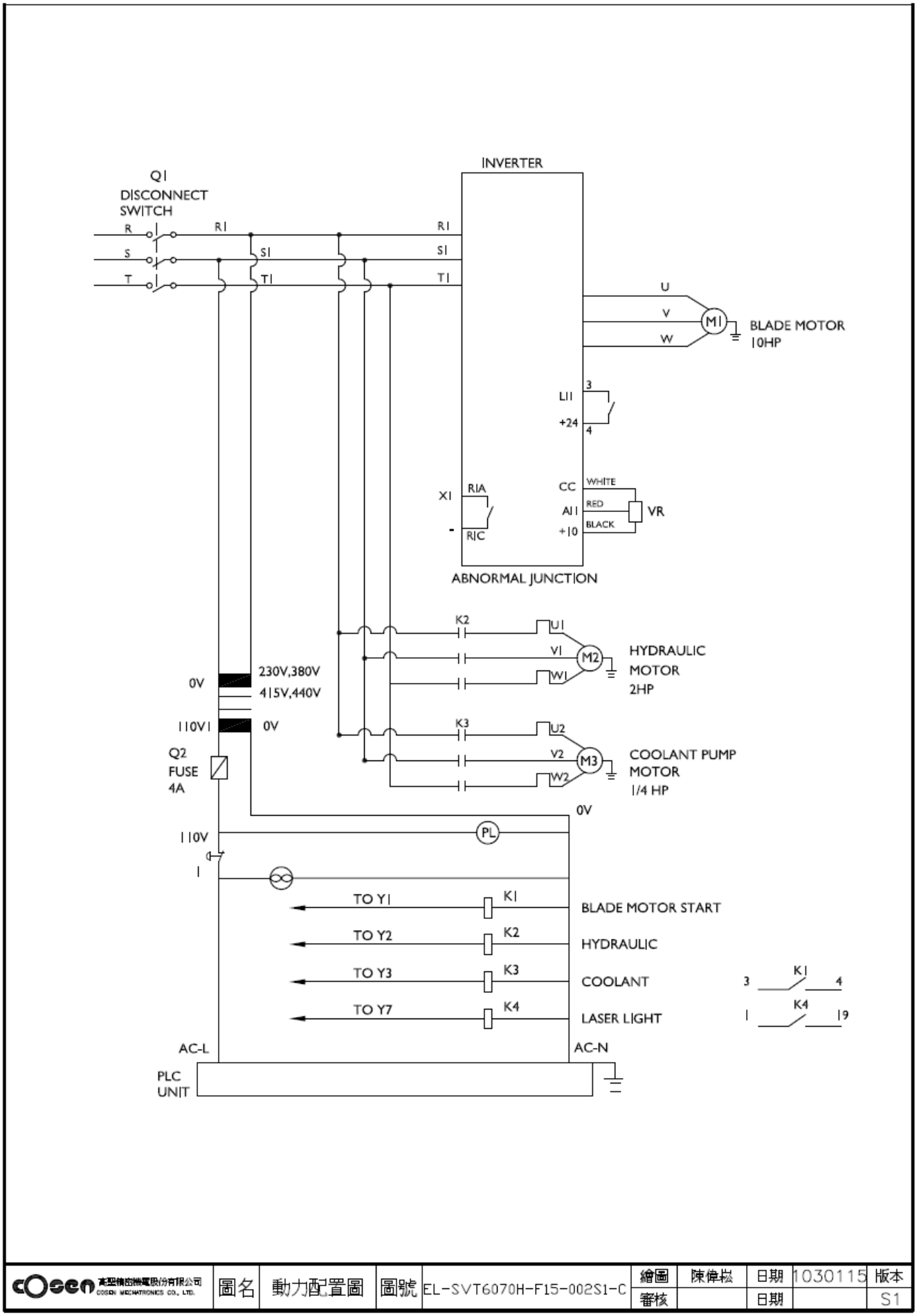


Fig.5-3 Power supply layout

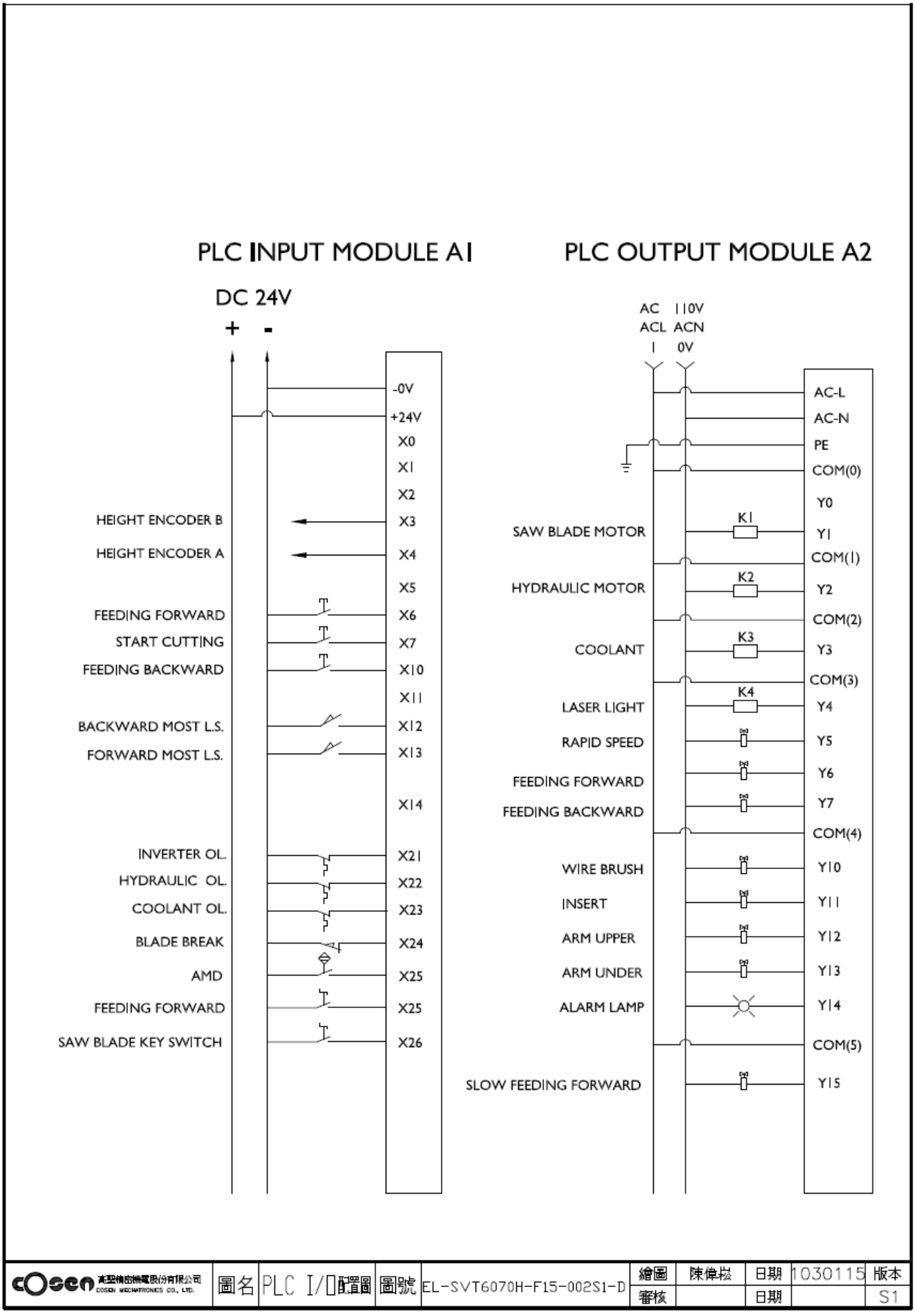


Fig.5-4 PLC I/O layout

HYDRAULIC SYSTEM

HYDRAULIC DIAGRAM

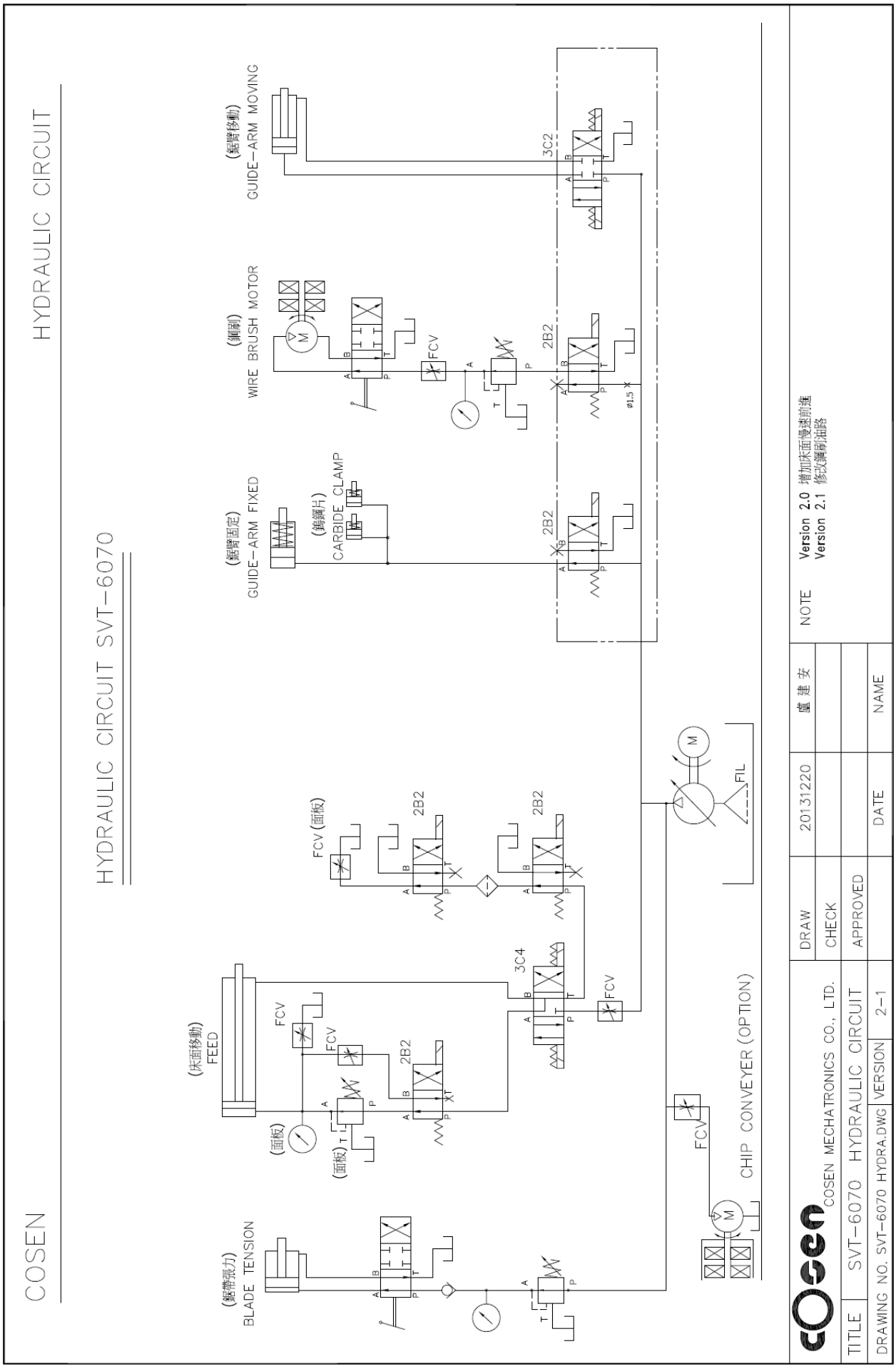
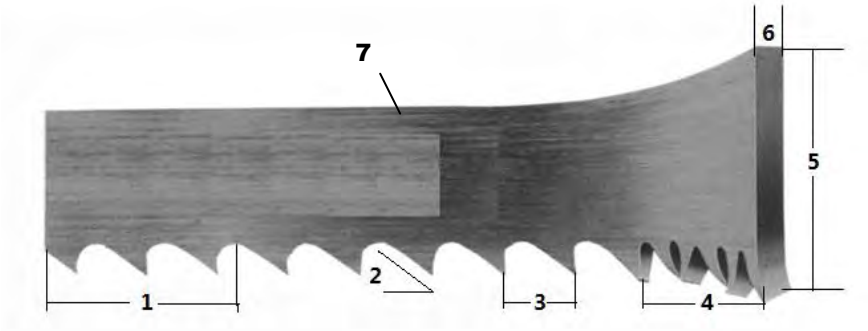


Fig. 6-1 Hydraulic layout

BANDSAW CUTTING: A PRACTICAL GUIDE

INTRODUCTION



1. TPI: The number of teeth per inch as measured from gullet to gullet.

2. Tooth Rake Angle: The angle of the tooth face measured with respect to a line perpendicular to the cutting direction of the saw.

3.Tooth Pitch: Tooth pitch refers to the number of teeth per inch (tpi). 1 inch equates to 25.4 mm.

A distinction is made between constant tooth pitches with a uniform tooth distance, 2 tpi for example, and variable tooth pitches with different tooth distances within one toothing interval.

Variable tooth pitches, for instance 2-3 tpi, can be characterized by two measures: 2 tpi stands for the maximum tooth distance and 3 tpi stands for the minimum tooth distance in the toothing interval.

Constant **Variable**

4. Set: The bending of teeth to right or left to allow clearance of the back of the blade through the cut.

5. Width: The nominal dimension of a saw blade as measured from the tip of the tooth to the back of the band.

6. Thickness: The dimension from side to side on the blade.

7. Gullet: The curved area at the base of the tooth. The tooth tip to the bottom of the gullet is the gullet depth.

SAW BLADE SELECTION

1. Band length

The dimensions of the band will depend on the band saw machine that has been installed.

Please refer to Section 2 – General Information

2. Band width

Band width: the wider the band saw blade, the more stability it will have.

3. Cutting edge material

The machinability of the material to be cut determines what cutting material you should choose.

4. Tooth pitch

The main factor here is the contact length of the blade in the workpiece.

If it is 4P, 25.4 ÷ 4 P = 6.35 mm, that is, one tooth is 6.35 mm.

If it is 3P, 25.4 ÷ 3 P = 8.46 mm If the number is small, it means that the tooth is large.

What is written as 3/4 is that it is a variable pitch of large (3) / small (4).

The saw blade must contact the cutting material at least two pitches. In the case of a thickness of 15 mm, 4P = OK, 3P = NG.

- The surface conditions will also affect the cutting rate. If there are places on the surface on the material which are hard, a slower blade speed will be required or blade damage may result.
- It will be slower to cut tubing than to cut solids, because the blade must enter the material twice, and because coolant will not follow the blade as well.
- Tough or abrasive materials are much harder to cut than their machinability rating would indicate.
- Tooth spacing is determined by the hardness of the material and its thickness in cross section.
- Tooth set prevents the blade from binding in the cut. It may be either a "regular set" (also called a "raker set") or a "wavy set".
- The regular or raker set is most common and consists of a pattern of one tooth to the left, one tooth to the right, and one which is straight, or unset. This type of set is generally used where the material to be cut is uniform in size and for contour cutting.
- Wavy set has groups of teeth set alternately to right and left, forming a wave-like pattern. This reduces the stress on each individual tooth, making it suitable for cutting thin material or a variety of materials where blade changing is impractical. Wavy set is often used where tooth breakage is a problem. This is shown in Fig. 7.2 as follows:

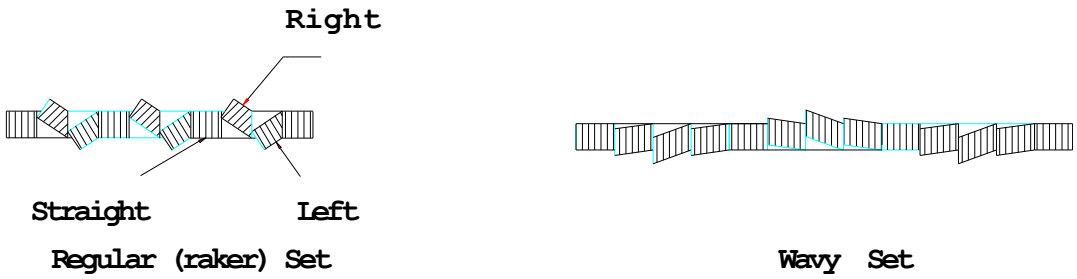
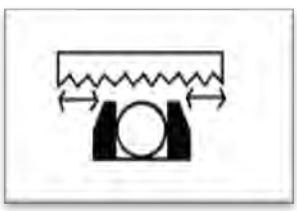


Fig. 7.2 The Saw Set

VISE LOADING

The position in which material is placed in the vise can have a significant impact on the cost per cut.

Often, loading smaller bundles can mean greater sawing efficiency.



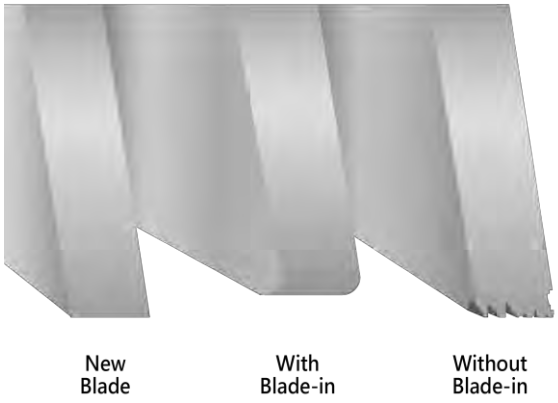
When it comes to cutting odd-shaped material, such as angles, I-beams, channel, and tubing, the main point is to arrange the materials in such a way that the blade cuts through as uniform a width as possible throughout the entire distance of cut.

The following diagrams suggest some costeffective ways of loading and fixturing. Be sure, regardless of the arrangement selected, that the work can be firmly secured to avoid damage to the machine or injury to the operator.

BLADE BREAK-IN

Completing a proper break-in on a new band saw blade will dramatically increase its life.

1. Select the proper band speed for the material to be cut.



2. Reduce the feed force/rate to achieve a cutting rate 20% to 50% of normal (soft materials require a larger feed rate reduction than harder materials).

3.Begin the first cut at the reduced rate. Make sure the teeth are forming a chip. Small adjustments to the band speed may be made in the event of excessive noise/vibration. During the first cut, **increase feed rate/force** slightly once the blade fully enters the workpiece.With each following cut, **gradually increase feed rate/force** until normal cutting rate is reached.

Section 8

MAINTENANCE & SERVICE

INTRODUCTION

For the best performance and longer life of the band saw machine, a maintenance schedule is necessary. Some of the daily maintenance usually takes just a little time but will give remarkable results for the efficient and proper operation of cutting.

BASIC MAINTENANCE

It is always easy and takes just a little effort to do the basic maintenance. But it always turns out to be a very essential process to assure the long life and efficient operation of the machine. Most of the basic maintenance requires the operator to perform it regularly.

MAINTENANCE SCHEDULE

We suggest you do the maintenance on schedule.

Before beginning a day's work

1. Please check the hydraulic oil level. If oil level volume is below 1/2, please add oil as necessary.(Filling up to 2/3 level is better for system operation.)
2. Please check the cutting fluid level, adding fluid as necessary. If the fluid appears contaminated or deteriorated, drain and replace it.
3. Please check the saw blade to ensure that it is properly positioned on both the drive and idle wheels.
4. Please make sure that the saw blade is properly clamped by the left and right inserts.
5. Please check the wire brush for proper contact with the saw blade. Replace the wire brush if it is worn out.

After ending a day's work

Please remove saw chips and clean the machine with discharging the cutting fluid when work has been completed.

 Do not discharge cutting fluid while the saw blade is operating because it will cause severe injury on operator's hand.

 Be sure the saw blade is fully stop, it will be performed after working inspection.

Every 2 weeks

Please apply Grease to the following points:
1. Idle wheel
2. Drive wheel
3. Blade tension device

Recommended Grease:

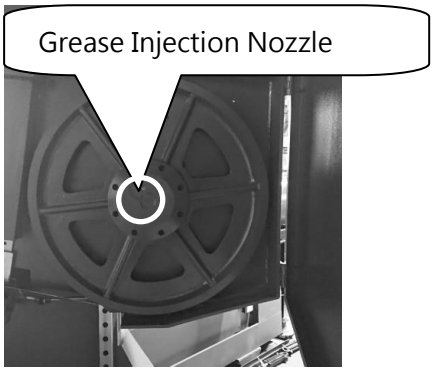
- Shell Alvania EP Grease 2
- Mobil Mobilplex 48

Please apply lubricating oil to the following points: (if applicable)
Main shaft (double column)

Recommended Lubricating Oil:

- CPC Circluation oil R68

Grease Injection Hole:

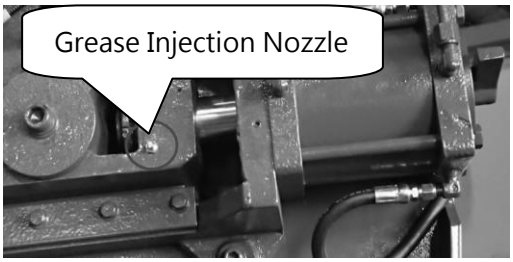


1. Grease Injection Nozzles at the middle of drive wheel and idle wheel;

   (You need to rotate the wheel until you ssee the Grease injection nozzle.)


: The position of injection indicating.

2. Please inject the grease into the Nozzle.

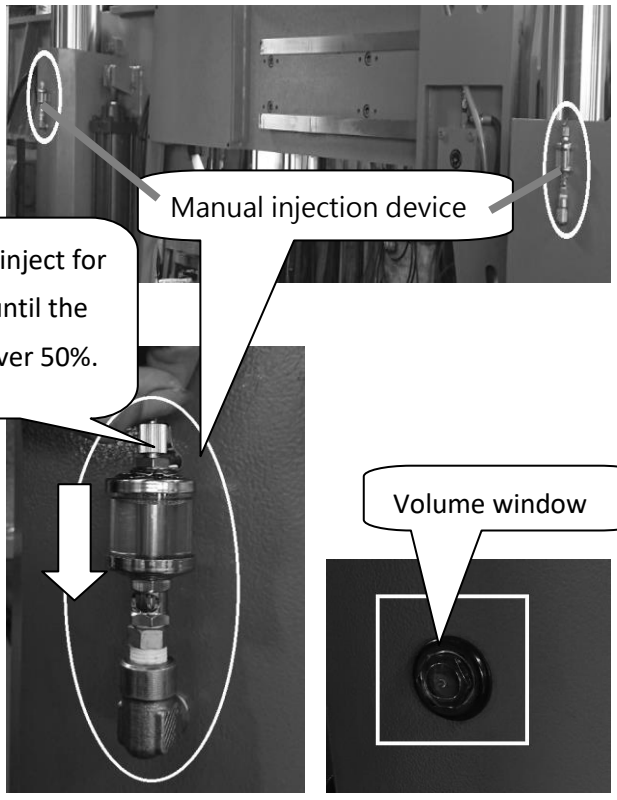


1. Grease Injection Nozzle on the blade tension device.


: The position of injection indicating.

3. Please inject the grease into the Nozzle.

Lubricating Oil Injection for Main shaft (double column) (if applicable):

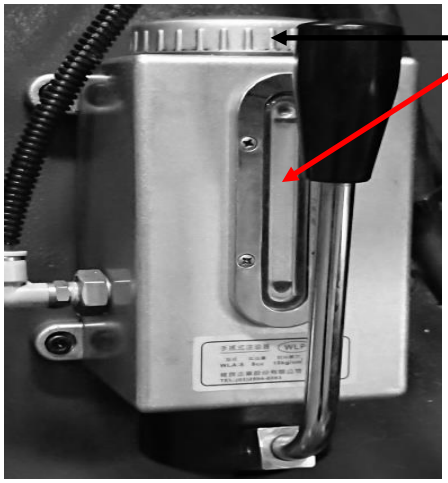


1. Two manual injection device for two main shafts (double column)


: The position of injection indicating.

2. Pull up & inject lubricating oil for seconds
3. Recommend always keeping the volume over 50% inside the vessel of volume window. ◦

Manual Lubrication Injection Device: (if applicable)



Lubrication volume indicator.
Recommend keeping the volume over 50% inside the vessel.

Please take down this vessel cap to replenish the lubrication.

For the prevention of working environment pollution, **DO NOT** replenish too much volume of lubrication while supplying the lubrication into the vessel.

Under the circumstances of normal operation, replenish the lubrication once every three days.

It may be adjusted the schedule of replenishing whenever the user needs.

The main function is to lubricate the **slide rail and block**.

(The **liner guideway for saw bow**).

First 600hrs for new machine,then every 1200hrs for routine change

Replace the transmission oil after operating for first 600hrs for new machine,then every 1200hrs

Recommended gear oil

- Shell Omala oil HD220
- Mobil gear 630

Recommended hydraulic oil

- ShellTellus 32
- Mobil DTE Oil Light Hydraulic 24

Every six months

1.Clean the filter of the cutting fluid.
2.Replace the transmission oil for every half of a year(or 1200 hours).
Check the sight gauge to ascertain the transmission level.

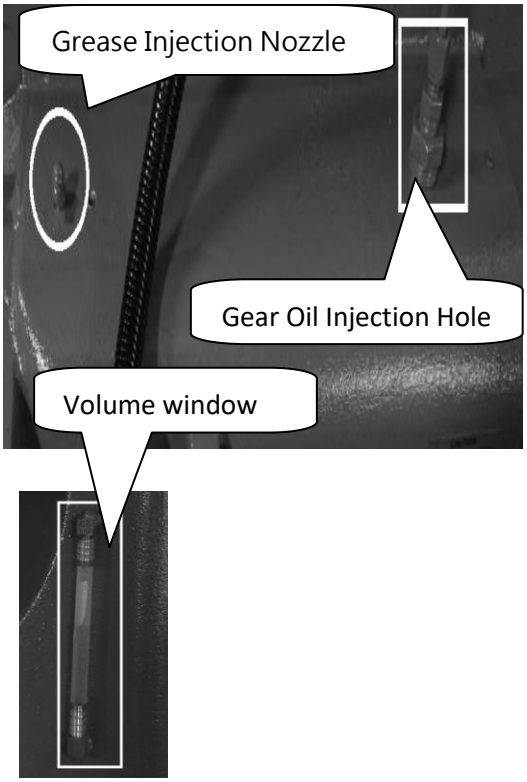
Recommended TRANSMISSION OIL

- Omala oil HD220
- Mobil comp 632 600W Cylinder oil

3.Replace the hydraulic oil.
Recommended HYDRAULIC OIL

- ShellTellus 32
- Mobil DTE Oil Light Hydraulic 24

Gear Oil & Grease Injection Hole:

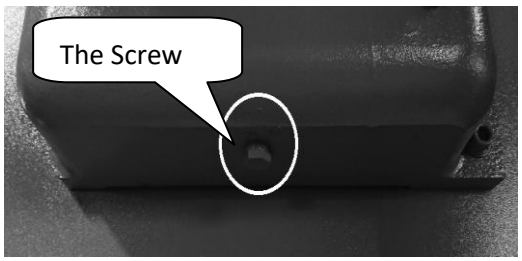


1. A grease injection hole and a gear oil injection hole on the top of gear reducer.

: The position of injection indicating.

2. Recommend keeping the volume over 50% inside the vessel of volume window. °

To unload the waste fluid:



Bottom of Gear reducer

1. Put the waste oil container in the bottom of the reducer for unloading waste fluid

.

2. Use the wrench to open the screw for unloading the waste fluid.

3. Make sure the screw bolted tightly after unloading completed,

STORAGE CONDITIONS

Generally, this machine will be stored on the following conditions in future:

(1) Turn off the power.

(2) Ambient temperature: 5℃ ~ 40℃

(3) Relative humidity: 30%~85% (without condensation)

(4) Atmosphere: use a plastic canvas to cover machine to avoid excessive dust, acid fume, corrosive gases and salt.

(5) Avoid exposing to direct sunlight or heat rays which can change the environmental temperature.

(6) Avoid exposing to abnormal vibration.

(7) Must be connected to earth.

TERMINATING THE USE OF THE MACHINE

Waste disposal:

When your machine can not work anymore, you should drain the oil from machine body. Please store the oil in safe place with bottom tray. Ask a environment specialist to handle the oil. It can avoid soil pollution. The oil list in machine:

- Hydraulic oil
- Cutting fluid
- Drive wheel gear oil

OIL RECOMMENDATION FOR MAINTENANCE

Item		Method	Revolution	Suggest oil
Dovetail guide		Keep grease covered. Antirust.	Daily	Shell R2
Roller bearing		Sweep clean and oil with lubricant.	Daily	SEA #10
Bed roller / surface		Sweep clean and oil with lubricant.	Daily	SEA #10
Nipples of bearing		Use grease gun, but not excess.	Monthly	Shell R2
Blade tension device		Use grease gun, but not excess.	Monthly	Shell Alvania EP Grease 2, Mobil Mobilplex 48
Reducer		Inspect once a week. Change oil of 600 hours of using. Change it every year.	Regularly	Omala oil HD220 Mobil Gear 630
Hydraulic system		Inspect half a year. Change oil every year.	Regularly	Shell Tellus 32 Mobil DTE oil Light Hydraulic 24
Bearing	Inserts	Oil with lubricant, but not excess.	Daily	Shell R2
	Band wheel	Oil with lubricant, but not excess.	Weekly	
	Cylinder	Oil with lubricant, but not excess.	6 Monthly	
	Wire brush	Oil with lubricant, but not excess.	6 Monthly	

1. Turn off the stop circuit breaker switch before servicing the machine.

2. Then post a sign to inform people that the machine is under maintenance.

3. Drain all of the cutting fluid and oil off and carefully treat them to avoid pollution.

4. The machine must be either LOCKED OUT OR TAGGED OUT while under maintenance.

Section 9

TROUBLESHOOTING

INTRODUCTION

All the machines manufactured by us pass a 72 hours continuously running test before shipping out and we are responsible for the after sales service problems during the warranty period if the machines are used normally. However, there still exist the some unpredictable problems which may disable the machine from operating.

Generally speaking, the system troubles in this machine model can be classified into three types, namely GENERAL TROUBLES, MOTOR TROUBLES and BLADE TROUBLES. Although you may have other troubles which can not be recognized in advance, such as malfunctions due to the limited life-span of mechanical, electric or hydraulic parts of the machine.

We have accumulated enough experiences and technical data to handle all of the regular system troubles. Meanwhile, our engineering department had been continuously improving the machines to prevent all possible troubles.

It is hoped that you will give us your maintenance experience and ideas so that both sides can achieve the best performance.

PRECAUTIONS

When an abnormality occurs in the machine during operation, you can do it yourself safely. If you have to stop machine motion immediately for parts exchanging, you should do so according to the following procedures:

- Press HYDRAULIC MOTOR OFF button or EMERGENCY STOP button.
- Open the electrical enclosure door.
- Turn off breaker.

BEFORE ANY ADJUSTMENT OR MAINTENANCE OF THE MACHINE, PLEASE MAKE SURE TO TURN OFF THE MACHINE AND DISCONNECT THE POWER SUPPLY.

GENERAL TROUBLES AND SOLUTIONS

DISCONNECT POWER CORD TO MOTOR BEFOER ATTEMPTING ANY REPAIR OR INSPECTION.

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Motor stalls	Excessive belt tension	Adjust belt tension so that belt does not slip on drive pulley while cutting (1/2“ Min. deflection of belt under moderate pressure.)
	Excessive head pressure	Reduce head pressure. Refer to Operating Instructions “Adjusting Feed”.
	Excessive blade speed	Refer to Operating Instructions “Speed Selection”.
	Improper blade selection	Refer to Operating Instructions “Blade Selection”.
Cannot make square cut	Dull blade	Replace blade.
	Guide rollers not adjusted properly	Refer to Adjustments.
	Rear vise jaw not adjusted properly	Set fixed vise jaw 90° to blade.
	Excessive head pressure	Reduce head pressure. Refer to operating instructions “Adjusting Feed.”
Increased cutting time	Dull blade	Replace blade
	Insufficient head pressure	Increase head pressure. Refer to Operating Instructions “Adjusting Feed.”
	Reduce blade speed	Refer to Operating Instructions “Speed Selection.”
Will not cut	Motor running in wrong direction	Reverse rotation of motor. (Motor rotation C.C.W. pulley end.)
	Blade teeth pointing in wrong direction	Remove blade, turn blade inside out. Re-install blade. (Teeth must point in direction of travel.)
	Hardened material	Use special alloy blades. (Consult your industrial distributor for recommendation on type of blade required.)

MINOR TROUBLES & SOLUTIONS

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Saw blade motor does not run even though blade drive button is pressed.	Overload relay activated	Reset
	Saw blade is not at forward limit position.	Press SAW FRAME FORWARD button

MOTOR TROUBLES & SOLUTIONS

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Motor will not start	Magnetic switch open, or protector open.	Reset protector by pushing red button (inside electric box.)
	Low voltage	Check power line for proper voltage.
	Open circuit in motor or loose connections.	Inspect all lead terminations on motor for loose or open connections.
Motor will not start, fuse or circuit breakers “blow”.	Short circuit in line, cord or plug.	Inspect line, cord and plug for damaged insulation and shorted wire.
	Short circuit in motor or loose connections	Inspect all lead terminations on motor for loose or shorted terminals or worn insulation on wires.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses or circuit breakers.
Motor fail to develop full power. (Power output of motor decreases rapidly with decrease in voltage at motor terminals.)	Power line overloaded with lights, appliances and other motors.	Reduce the load on the power line.
	Undersize wires or circuit too long.	Increase wire sizes, or reduce length of wiring
	General overloading of power company‘s facilities.	Request a voltage check from the power company
Motor overheat	Motor overloaded.	Reduce load on motor
	Air circulation through the motor restricted.	Clean out motor to provide normal air circulation through motor.
Motor stalls (Resulting in blown fuses or tripped circuit breakers)	Short circuit in motor or loose connections.	Inspect terminals in motor for loose or shorted terminals or worn insulation on lead wires.
	Low voltage	Correct the low line voltage conditions.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses circuit breakers.
	Motor overloaded	Reduce motor load.
Frequent opening of fuses or circuit breakers.	Motor overloaded	Reduce motor load
	Incorrect fuses or circuit breakers.	Install correct fuses or circuit breakers.

BLADE TROUBLES AND SOLUTIONS

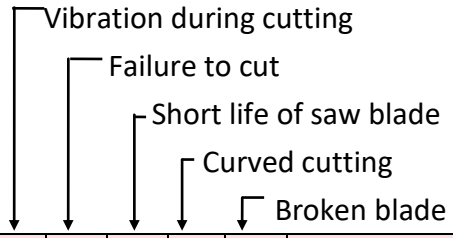
 **DISCONNECT POWER CORD TO MOTOR BEFOER ATTEMPTING ANY REPAIR OR INSPECTION.**

TROUBLE	PROBABLE CAUSE	SUGGESTED REMEDY
Teeth strippage	Too few teeth per inch	Use finer tooth blade
	Loading of gullets	Use coarse tooth blade or cutting lubricant.
	Excessive feed	Decrease feed
	Work not secured in vise	Clamp material securely
Blade breakage	Teeth too coarse	Use a finer tooth blade
	Misalignment of guides	Adjust saw guides
	Dry cutting	Use cutting lubricant
	Excessive speed	Lower speed. See Operating Instructions “Speed selection.”
	Excessive speed	Reduce feed pressure. Refer to Operating Instructions “Adjusting Feed.”
	Excessive tension	Tension blade to prevent slippage on drive wheel while cutting.
	Wheels out of line	Adjust wheels
Blade line Run-out or Run-in	Guides out of line	For a straight and true cut, realign guides, check bearings for wear.
	Excessive pressure	Conservative pressure assures long blade life and clean straight cuts.
	Support of blade insufficient	Move saw guides as close to work as possible.
	Material not properly secured in vise	Clamp material in vise, level and securely.
	Blade tension improper	Loosen or tighten tension on blade.
Blade twisting	Blade not in line with guide bearings	Check bearings for wear and alignment.
	Excessive blade pressure	Decrease pressure and blade tension
	Blade binding in cut	Decrease feed pressure
Premature tooth wear	Dry cutting	Use lubricant on all materials, except cast iron
	Blade too coarse	Use finer tooth blade
	Not enough feed	Increase feed so that blade does not ride in cut
	Excessive speed	Decrease speed

SAWING PROBLEMS AND SOLUTIONS

Other than this manual, the manufacturer also provides some related technical documents listed as follows:

Sawing Problems and Solutions

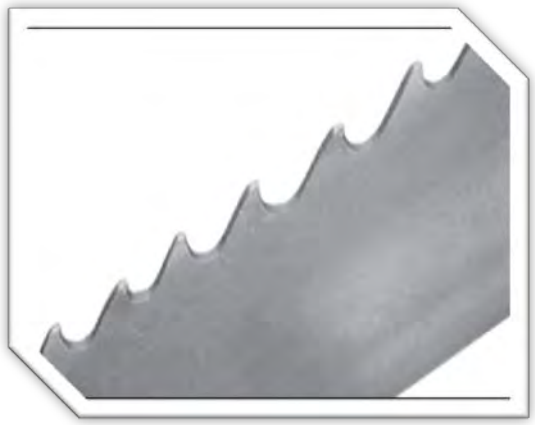


Vibration during cutting	Failure to cut	Short life of saw blade	Curved cutting	Broken blade		
✓	✓	✓	✓	✓	**Use of blade with incorrect pitch**	**Use blade with correct pitch suited to workpiece width**
✓	✓	✓	✓	✓	**Failure to break-in saw blade**	**Perform break-in operation**
✓	✓	✓			**Excessive saw blade speed**	**Reduce speed**
			✓	✓	**Insufficient saw blade speed**	**Increase speed**
✓		✓	✓	✓	**Excessive saw head descending speed**	**Reduce speed**
✓		✓	✓		**Insufficient saw head descending speed**	**Increase speed**
		✓	✓		**Insufficient saw blade tension**	**Increase tension**
✓		✓	✓	✓	**Wire brush improperly positioned**	**Relocate**
✓		✓	✓		**Blade improperly clamped by insert**	**Check and correct**
✓	✓	✓	✓	✓	**Improperly clamped workpiece**	**Check and correct**
	✓	✓	✓		**Excessively hard material surface**	**Soften material surface**
		✓	✓	✓	**Excessive cutting rate**	**Reduce cutting rate**
	✓	✓			**Non-annealed workpiece**	**Replace with suitable workpiece**
✓		✓	✓	✓	**Insufficient or lean cutting fluid**	**Add fluid or replace**
✓		✓	✓	✓	**Vibration near machine**	**Relocate machine**
		✓	✓		**Non-water soluble cutting fluid used**	**Replace**
✓		✓	✓		**Air in cylinder**	**Bleed air**
✓		✓		✓	**Broken back-up roller**	**Replace**
✓	✓	✓	✓	✓	**Use of non-specified saw blade**	**Replace**
✓	✓	✓	✓	✓	**Fluctuation of line voltage**	**Stabilize**
✓		✓	✓		**Adjustable blade guide too far from workpiece**	**Bring blade guide close to workpiece**
✓		✓	✓	✓	**Loose blade guide**	**Tighten**
		✓		✓	**Blue or purple saw chips**	**Reduce cutting rate**
✓		✓		✓	**Accumulation of chips at inserts**	**Clean**
	✓				**Reverse positioning of blade on machine**	**Reinstall**
✓		✓	✓		**Workpieces are not bundled properly**	**Re-bundle**
✓		✓		✓	**Back edge of blade touching wheel flange**	**Adjust wheel to obtain clearance**
✓	✓	✓			**Workpiece of insufficient diameter**	**Use other machine, suited for diameter of workpiece Replace**
	✓	✓	✓		**Saw blade teeth worn**	**Replace**

SOLUTIONS TO SAWING PROBLEMS

Table Of Contents

#1. Heavy Even Wear On Tips and Corners Of Teeth



Probable Cause :

A. Improper break-in procedure.

B. Excessive band speed for the type of material being cut. This generates a high tooth tip temperature resulting in accelerated tooth wear.

C. Low feed rate causes teeth to rub instead of penetrate. This is most common on work hardened materials such as stainless and toolsteels.

D. Hard materials being cut such as "Flame Cut Edge" or abrasive materials such as " Fiber Reinforced Composites".

E. Insufficient sawing fluid due to inadequate supply, improper ratio, and/or improper application

#2. Wear On Both Sides Of Teeth

Probable Cause :

A. Broken, worn or missing back-up guides allowing teeth to contact side guides.

B. Improper side guides for band width.

C. Backing the band out of an incomplete cut.

#3. Wear On One Side Of Teeth

Probable Cause :

A. Worn wheel flange, allowing side of teeth to contact wheel surface or improper tracking on flangeless wheel.

B. Loose or improperly positioned side guides.

C. Blade not perpendicular to cut.

D. Blade rubbing against cut surface on return stroke of machine head.

E. The teeth rubbing against a part of machine such as chip brush assembly, guards, etc.

#4. Chipped Or Broken Teeth

Probable Cause :

A. Improper break-in procedure.

B. Improper blade selection for application.

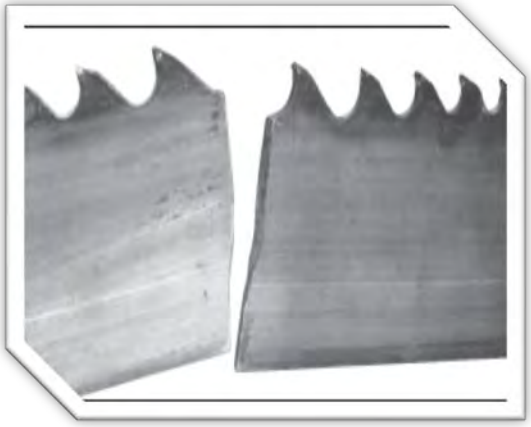
C. Handling damage due to improper opening of folded band.

D. Improper positioning or clamping of material.

E. Excessive feeding rate or feed pressure.

F. Hitting hard spots or hard scale in material

#5. Body Breakage Or Cracks From Back Edge



Probable Cause :

A. Excessive back-up guide "preload" will cause back edge to work harden which results in cracking.

B. Excessive feed rate.

C. Improper band tracking – back edge rubbing heavy on wheel flange.

D. Worn or defective back-up guides.

E. Improper band tension.

F. Notches in back edge from handling damage

#6. Tooth Strippage

Probable Cause :

A. Improper or lack of break-in procedure.

B. Worn, missing or improperly positioned chip brush.

C. Excessive feeding rate or feed pressure.

D. Movement or vibration of material being cut.

E. Improper tooth pitch for cross sectional size of material being cut.

F. Improper positioning of material being cut.

G. Insufficient sawing fluid due to inadequate supply,improper ratio and/or improper application.

H. Hard spots in material being cut.

I. Band speed too slow for grade of material being cut.

#7. Chips Welded To Tooth Tips

Probable Cause :

A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

B. Worn, missing or improperly positioned chip brush.

C. Improper band speed.

D. Improper feeding rate.

#8. Gullets Loading Up With Material

Probable Cause :

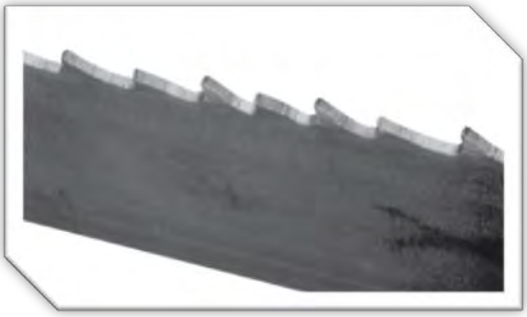
A. Too fine of a tooth pitch – insufficient gullet capacity.

B. Excessive feeding rate producing too large of a chip.

C. Worn, missing or improperly positioned chip brush.

D. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

#9. Discolored Tips Of Teeth Due To Excessive Frictional Heat



Probable Cause :

A. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

B. Excessive band speed.

C. Improper feeding rate.

D. Band installed backwards.

10. Heavy Wear On Both Sides Of Band

Probable Cause :

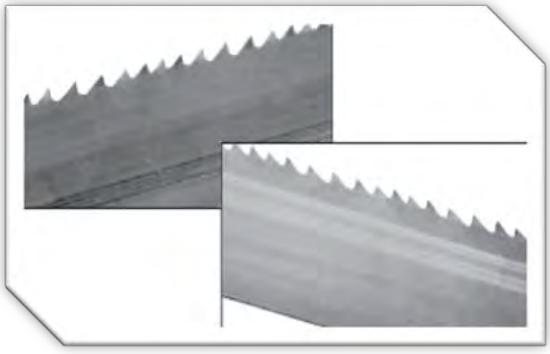
A. Chipped or broken side guides.

B. Side guide adjustment may be too tight.

C. Insufficient flow of sawing fluid through the side guides.

D. Insufficient sawing fluid due to inadequate supply, improper ratio and/or improper application.

#11. Uneven Wear Or Scoring On The Sides Of Band



Probable Cause :

A. Loose side guides.

B. Chipped, worn or defective side guides.

C. Band is rubbing on part of the machine.

D. Guide arms spread to maximum capacity.

E. Accumulation of chips in side guides.

#12. Heavy Wear And/Or Swagging On Back Edge

Probable Cause :

A. Excessive feed rate.

B. Excessive back-up guide "preload".

C. Improper band tracking – back edge rubbing heavy on wheel flange.

D. Worn or defective back-up guides.

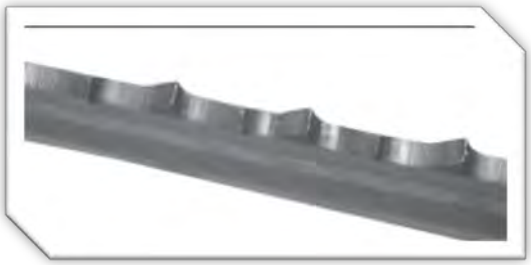
#13. Butt Weld Breakage

Probable Cause :

A. Any of the factors that cause body breaks can also cause butt weld breaks.

(See Observations #5, #15 and #16)

#14. Heavy Wear In Only The Smallest Gullets



Probable Cause :

A. Excessive feeding rate.

B. Too slow of band speed.

C. Using too fine of a tooth pitch for the size of material being cut.

#15. Body Breaking – Fracture Traveling In An Angular Direction

Probable Cause :

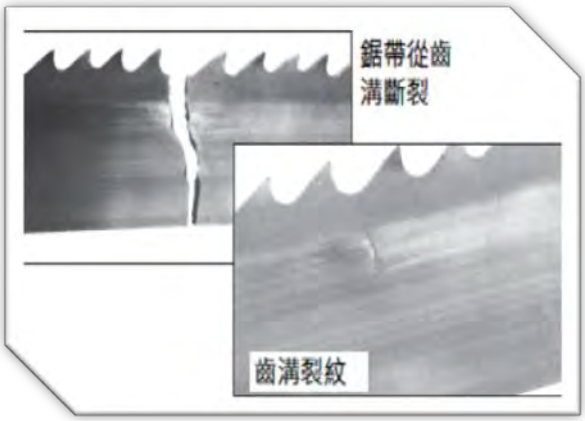
A. An excessive twist type of stress existed.

B. Guide arms spread to capacity causing excessive twist from band wheel to guides.

C. Guide arms spread too wide while cutting small cross sections.

D. Excessive back-up guide "preload".

#16. Body Breakage Or Cracks From Gullets



Probable Cause :

A. Excessive back-up guide "preload".

B. Improper band tension.

C. Guide arms spread to maximum capacity.

D. Improper beam bar alignment.

E. Side guide adjustment is too tight.

F. Excessively worn teeth.

#17. Band is Twisted Into A Figure "8" Configuration

Probable Cause :

A. Excessive band tension.

B. Any of the band conditions which cause the band to be long (#18) or short (#19) on tooth edge.

C. Cutting a tight radius.

#18. Used Band Is "Long" On The Tooth Edge

Probable Cause :

A. Side guides are too tight – rubbing near gullets.

B. Excessive "preload" – band riding heavily against back-up guides.

C. Worn band wheels causing uneven tension.

D. Excessive feeding rate.

E. Guide arms are spread to maximum capacity.

F. Improper band tracking – back edge rubbing heavy on wheel flange.

#19. Used Band Is "Short" On The Tooth Edge

Probable Cause :

A. Side guides are too tight – rubbing near back edge.

B. Worn band wheels causing uneven tension.

C. Guide arms are spread too far apart.

D. Excessive feeding rate.

#20. Broken Band Shows A Twist In Band Length

Probable Cause :

A. Excessive band tension

B. Any of the band conditions which cause the band to be long (#18) or short (#19) on tooth edge.

C. Cutting a tight radius.

RE-ADJUSTING THE ROLLER TABLE

If the feeding table suffers the huge stroke and the alignment is effected, follow the below procedure to adjust.

TOOL, measuring

Measurement, Horizontal balance

Procedure

1. Screw or loosen the adjusting bolt to attain the horizontal balance (leveling) between the roller table and the machine frame.
2. Ensure that the machine frame is not struck by the loaded material on the feeding table.
3. Check the leveling by the measuring tool.
4. After finished the adjusting, fix the roller table.

If the feeding table and the machine frame are not positioned under the horizontal balance, the loaded material may be going up gradually and affect the cutting effect.

Section 10

PARTS

SPARE PARTS RECOMMENDATIONS

PART LIST

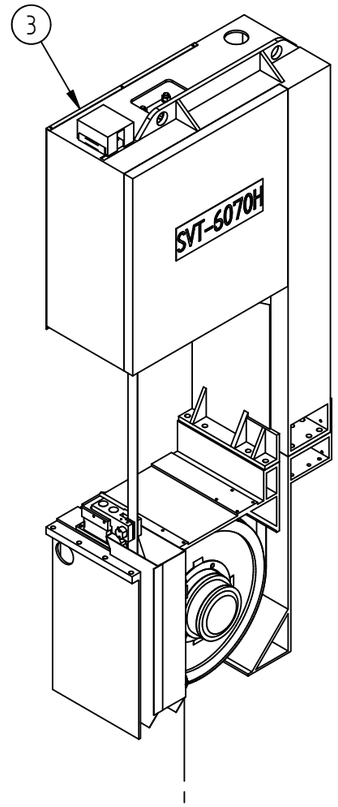
SPARE PARTS RECOMMENDATIONS

The following table lists the common spare parts we suggest you purchase in advance:

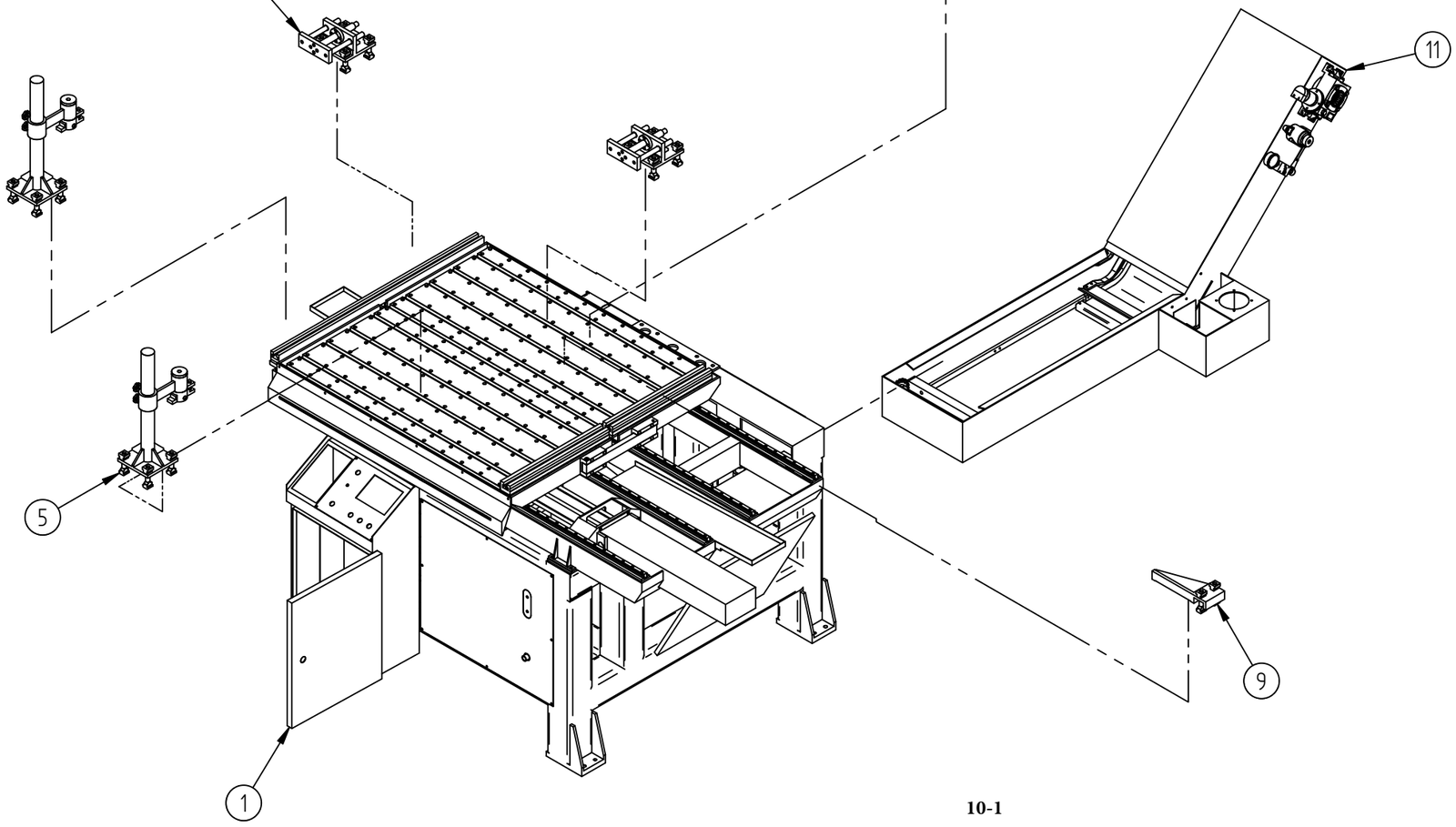
Part Name	Part Name
Saw blade	Coolant tank filter
Wire brush	Steel plates
Carbide inserts	Rollers
Bearings	Coolant pump
Hydraulic tank leak-proof gasket	Belt
Rubber washer	Duster seal
Gear reducer	Oil seal
O-ring	Snap ring
Drive wheel	Idle wheel

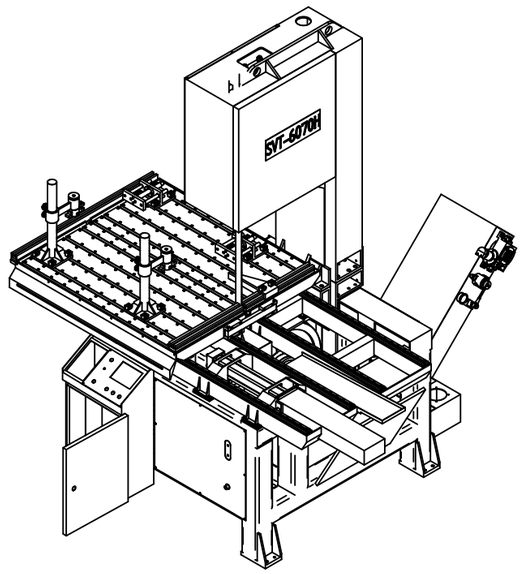
註記: 下訂單前, 請務必與高聖客服代表確認產品品號是否適用於您需求的產品.
Remark: Please make sure the parts number that is applicable for the products with Cosen's customer service before purchasing items.

SVT-6070H

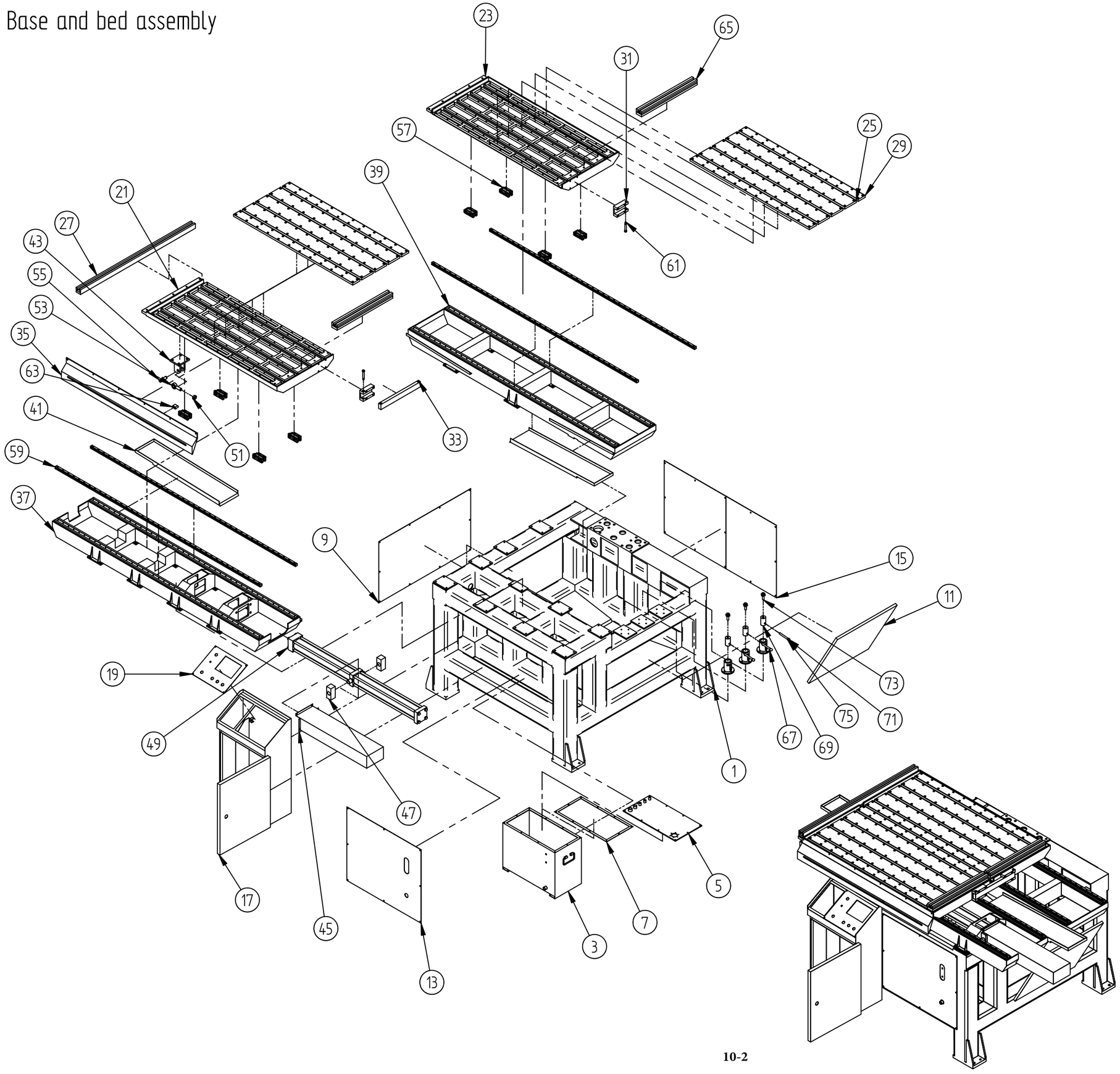


NO.	PART NO.	PART NAME	QYT
1	Base and bed assembly	Base and bed assembly	1
3	Saw bow assembly	Saw bow assembly	1
5	V6070T-41000	Mechanic top clamp assembly	2
7	V6070T-47000	manual feeding device	2
9	V6070T-46000	stopper device	1
11	V6070T-40000	scraper type chip conveyor	1



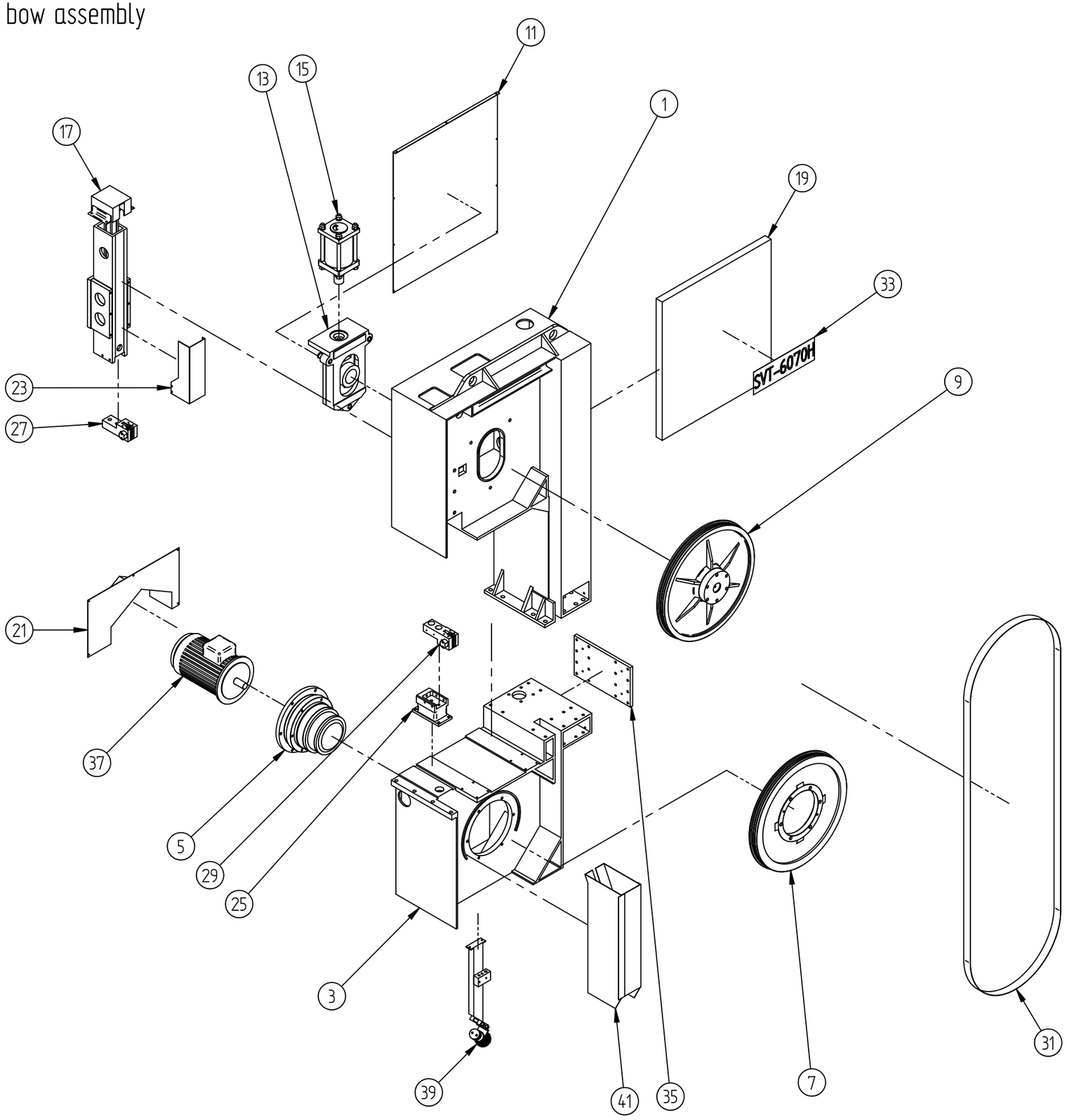


Base and bed assembly

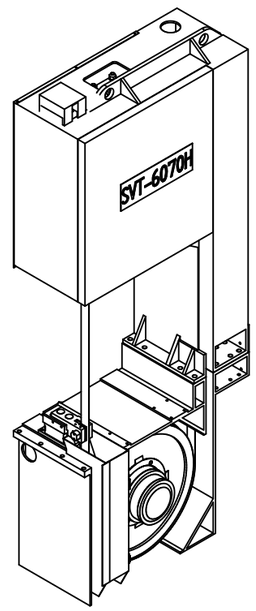


NO.	PART NO.	PART NAME	QYT
1	V6070T-1001	Base	1
3	V6070T-1002	Oil tank	1
5	V6070T-1003	Hydraulics tank cover	1
7	V6070T-1004	Asbestos	1
9	V6070T-1051	Left side cover	1
11	V6070T-1053	Right side cover	1
13	V6070T-1055	Front cover	1
15	V6070T-1059	Rear cover	1
17	V6070T-1301	Electircal box	1
19	V6070T-1321A	HMI control panel	1
21	V6070T-2001	Bed 1	1
23	V6070T-2002	Bed 2	1
25	V6070T-2003	Bed plate 1	6
27	V6070T-2004	Bed connecting plate	1
29	V6070T-2005	Bed plate 2	4
31	V6070T-2006	Bed connecting seat	2
33	V6070T-2008	connecting plate (2)	1
35	V6070T-2012	Bed limit plate	1
37	V6070T-2021	Bed track 1	1
39	V6070T-2022	Bed track 2	1
41	V6070T-2038	Bed catchment plate	2
43	V6070T-2087	Bed cylinder ear	1
45	V6070T-2089	Bed cylinder cover	1
47	SV0-1012	Saw bow cylinder seat	2
49	PP-43451A	Cylinder	1
51	PP-14489A	nut	1
53	PP-14489	Connecting rod bearing	1
55	V6068T-2088	Pin	1
57	PP-92038-01	Block	8
59	PP-92038-02	Sliding	4
61	PP-91309E	Cap screw	2
63	V6068T-2014	Bed limit stopper	1
65	V6068T-2026	T slot stopper	2
67	V6068T-2131	Stopper seat	3
69	V6068T-2133	Stopper	3
71	V6068T-2135	Handle	3
73	V6070T-2137	adjustable screw	3
75	PP-52040	plastic ball.	3

Saw bow assembly

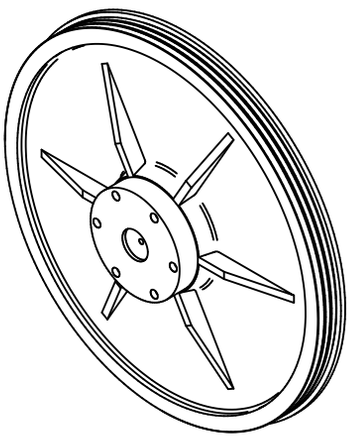


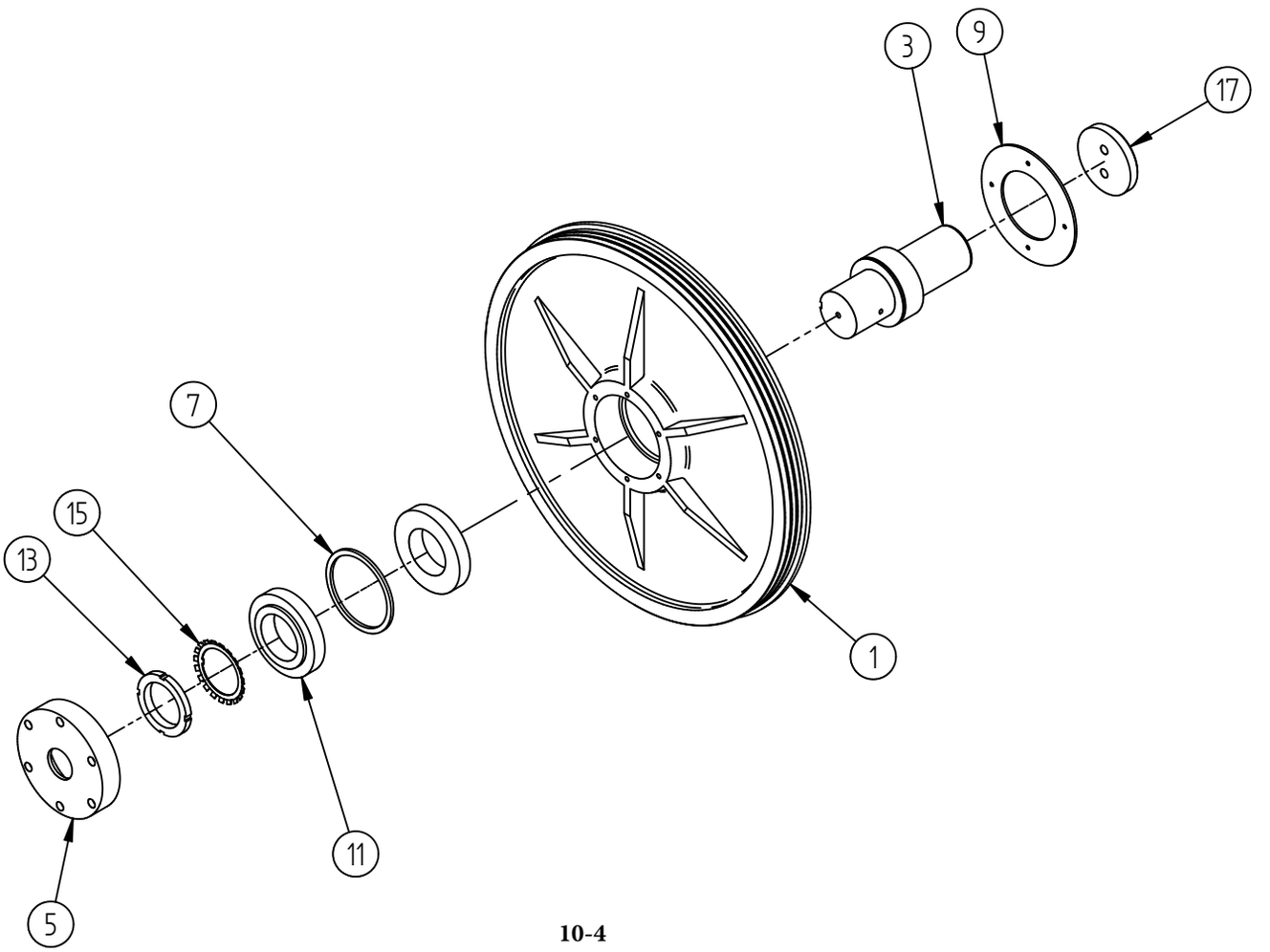
NO.	PART NO.	PART NAME	QYT
1	V6070T-3001	top saw bow	1
3	V6070T-3002	lower saw bow	1
5	NGG-32000E	Planetary gearbox	1
7	V6070T-3041	drive wheel	1
9	V6070T-30300	Idle wheel assembly	1
11	V6070T-3311	Tension cover	1
13	SGJ-21010	Tensioner sliding assembly	1
15	SGJ-21030	Tensioner cylinder assembly	1
17	V6068T-31000	Movable guide arm assembly	1
19	V6070T-3003	Idle wheel cover	1
21	V6070T-3071	Motor cover	1
23	V6070T-3047	Blade cover	1
25	V6068T-3105	Fixed guide arm	1
27	SVD-30250	Up guide wheel assembly	1
29	SVD-30290	Down guide wheel assembly	1
31	PP-18334	Blade	1
33	V6070T-3097A	name tag	1
35	V6070T-3096	connecting plate	1
37	PP-31161A	motor (vertical)	1
39	SVD-32200	Wire brush assembly	1
41	V6070T-3138	Cover	1



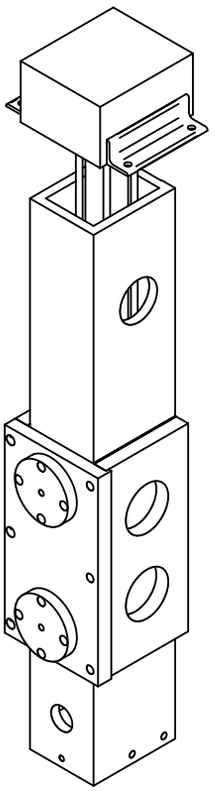
V6070T-30300

NO.	PART NO.	PART NAME	QYT
1	V6070T-3031	Idle wheel	1
3	SVD-3016B	Idle wheel shaft	1
5	SVD-3018A	Bearing cover	1
7	SVD-3019	Washer	1
9	V4060-3039	Bearing shield	1
11	PP-14628	Bearing 30218	2
13	PP-14918	Ring AW11	1
15	PP-14968	Ring AW18	1
17	SGJ-2011	Idle wheel shaft fixed plate	1

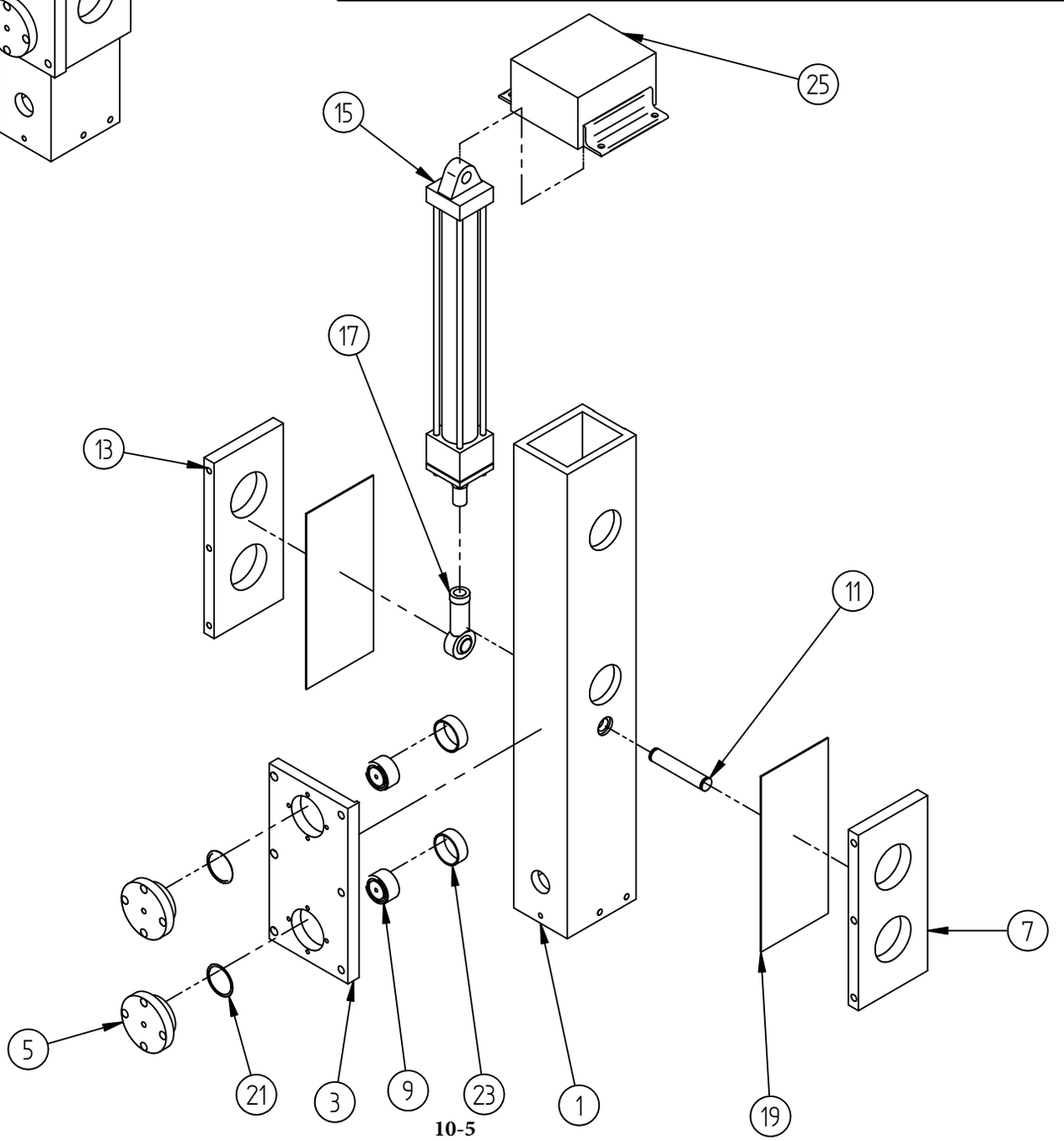




V6068T-31000

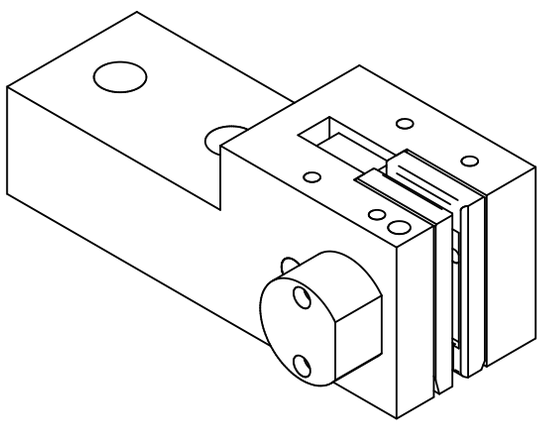


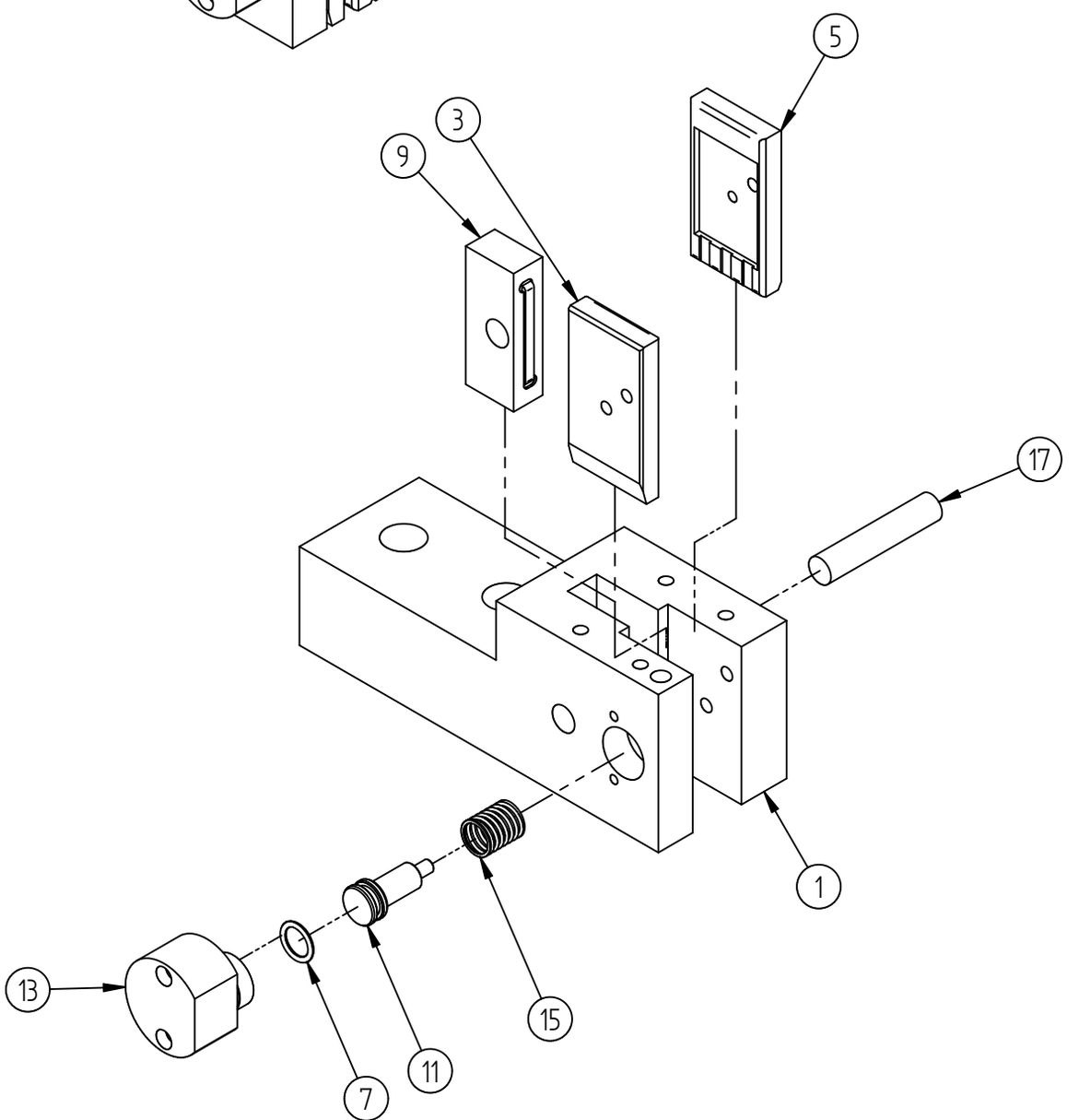
NO.	PART NO.	PART NAME	QYT
1	SVD-3002A	Movable guide arm	1
3	SVD-3004	Sliding seat cover	1
5	SVD-3006	Saw arm locked tube	2
7	SVD-3007	Saw arm slide side plate	1
9	SVD-3008	Saw arm locked piston	2
11	SVD-3011	Connecting shaft	1
13	SVD-3012	Adjusting plate	1
15	PP-43448A	Cylinder	1
17	PP-14485	Connecting rod bearing PHS22	1
19	PP-91213	DU plate	2
21	PP-59147	O Ring P-50	2
23	PP-13240	Du bushing 5020	2
25	V6068T-3115	Arm cylinder set	1



SVD-30250

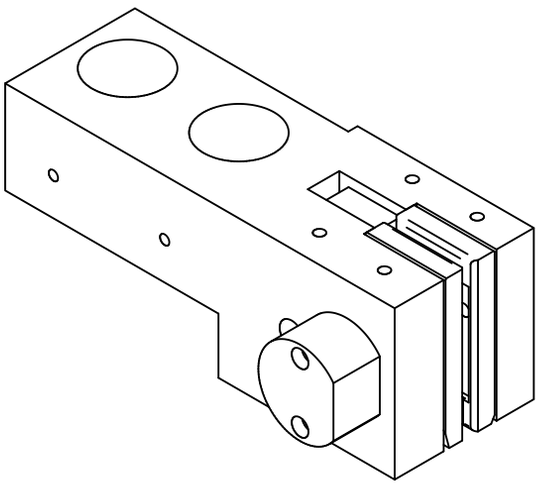
NO.	PART NO.	PART NAME	QYT
1	SVD-3025	Guilde wheel seat	1
3	SVD-3040	Movable carbide insert	1
5	SVD-3041	Fixed carbide insert	1
7	PP-59070	O Ring	1
9	AHA-0704A	Clamping seat	1
11	AGB-70716	Spring	1
13	AGB-70715	Cylinder	1
15	AGB-70416	Locked pistion	1
17	AGB-70410A	Pin	1

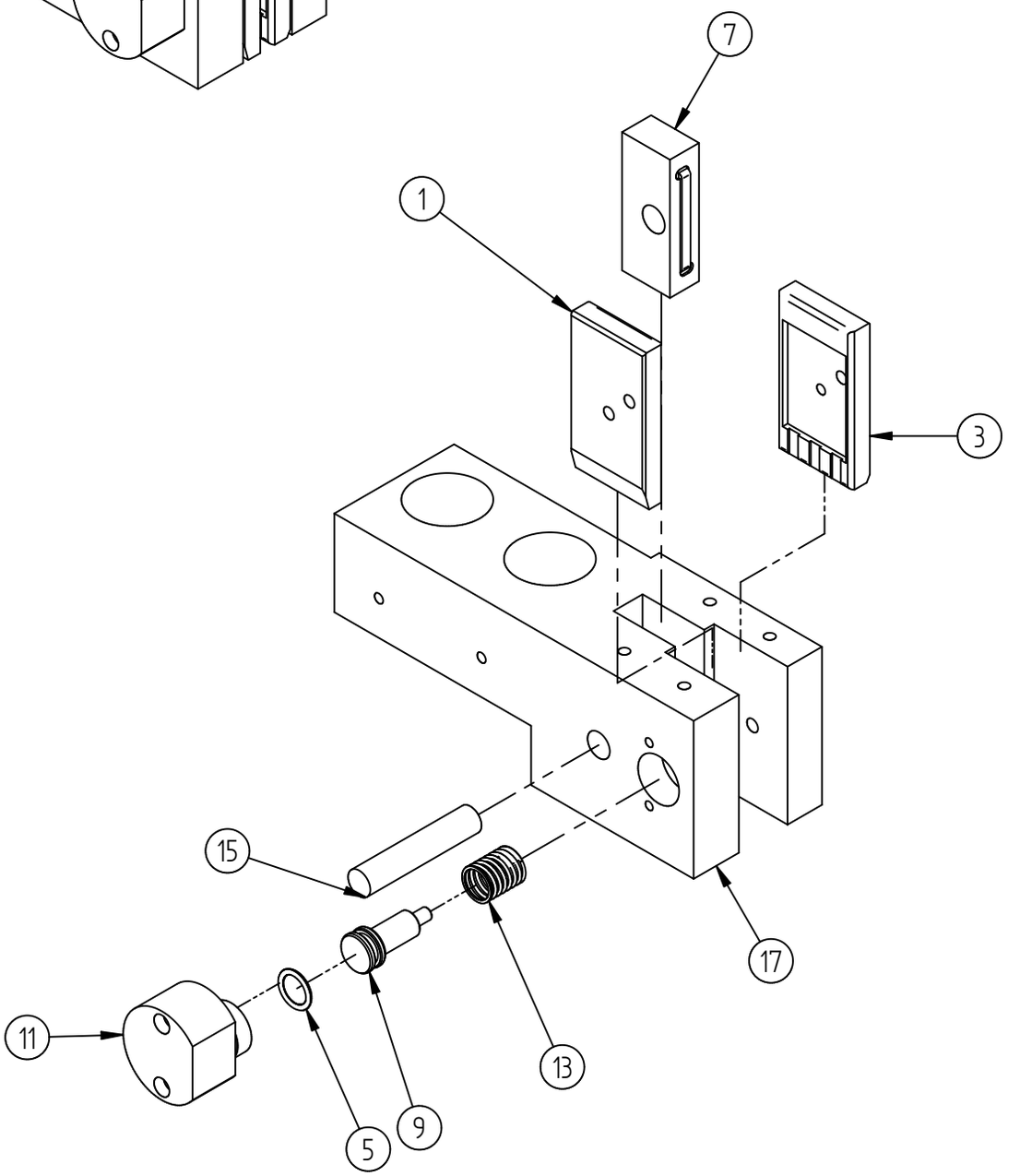




SVD-30290

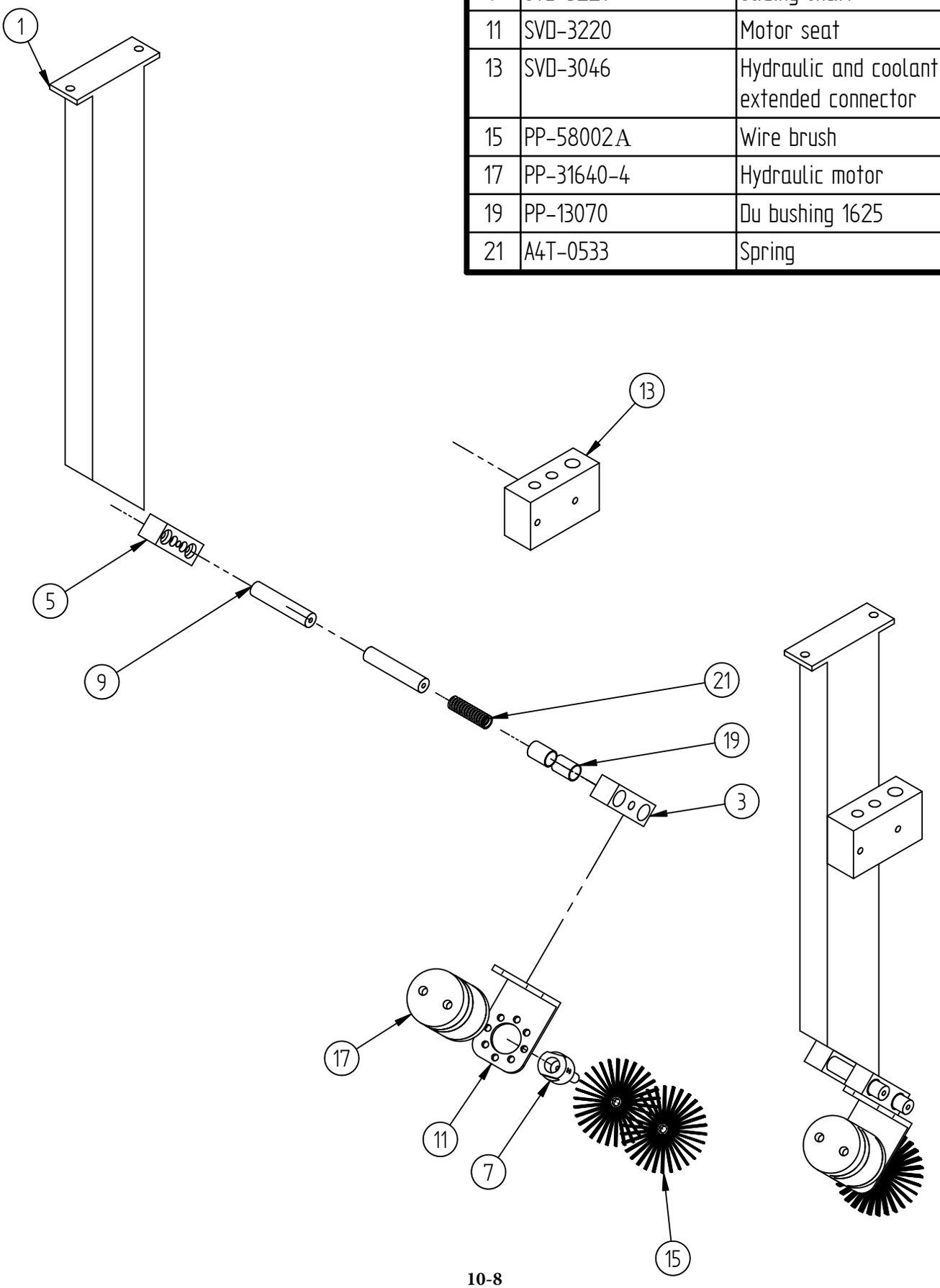
NO.	PART NO.	PART NAME	QYT
1	SVD-3040	Movable carbide insert	1
3	SVD-3041	Fixed carbide insert	1
5	PP-59070	O Ring	1
7	AHA-0704A	Clamping seat	1
9	AGB-70716	Spring	1
11	AGB-70715	Cylinder	1
13	AGB-70416	Locked pistion	1
15	AGB-70410A	Pin	1
17	SVD-3029	Guilde wheel seat	1





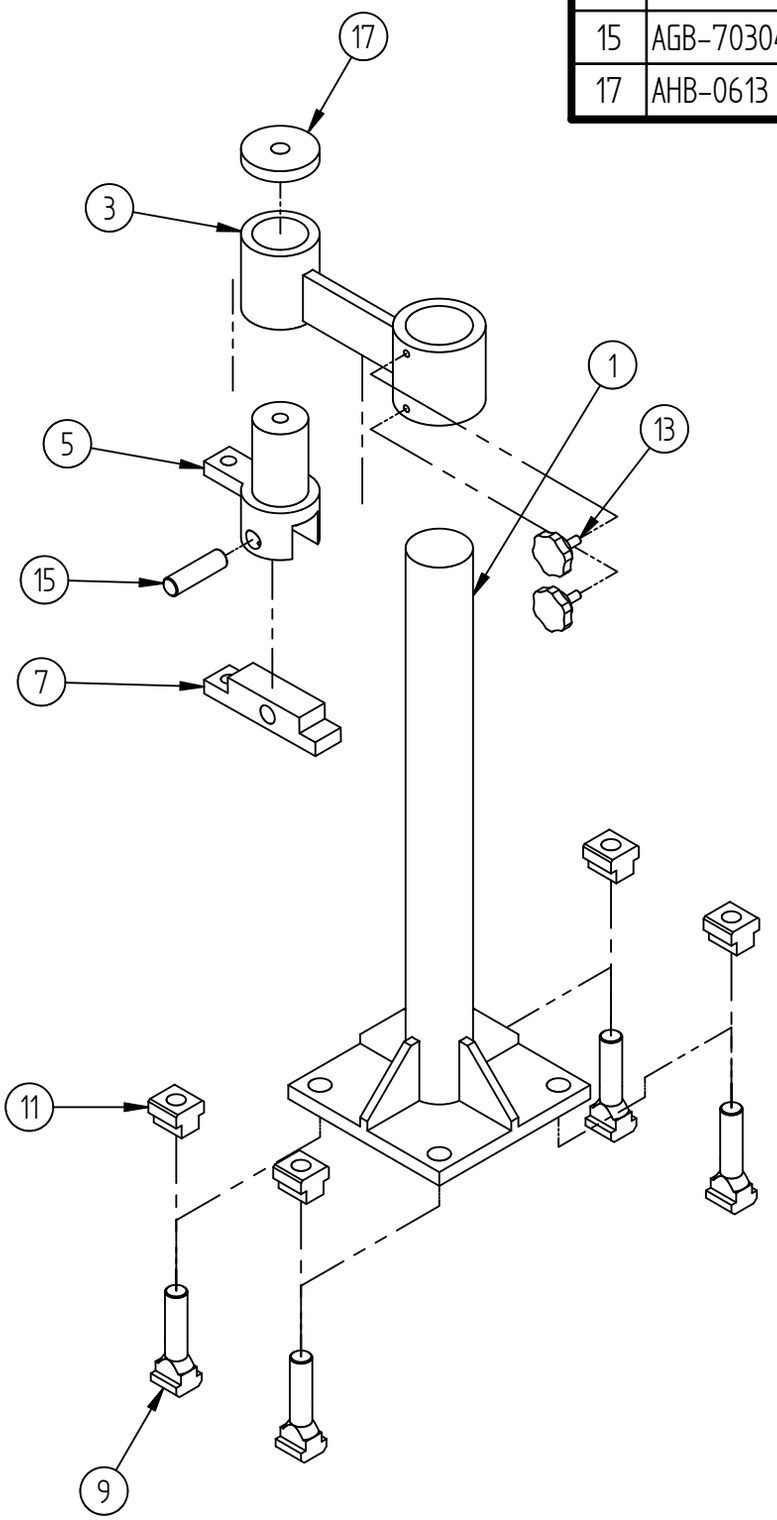
SVD-32200

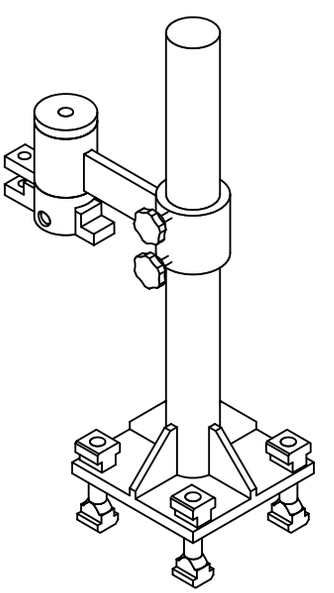
NO.	PART NO.	PART NAME	QYT
1	SVD-3225	Wire brush fixed seat	1
3	SVD-3224	Adjusting block	1
5	SVD-3223	Adjusting sea	1
7	SVD-3222	Wire brush shaft	1
9	SVD-3221	Sliding shaft	2
11	SVD-3220	Motor seat	1
13	SVD-3046	Hydraulic and coolant extended connector	1
15	PP-58002A	Wire brush	2
17	PP-31640-4	Hydraulic motor	1
19	PP-13070	Du bushing 1625	2
21	A4T-0533	Spring	1



V6070T-41000

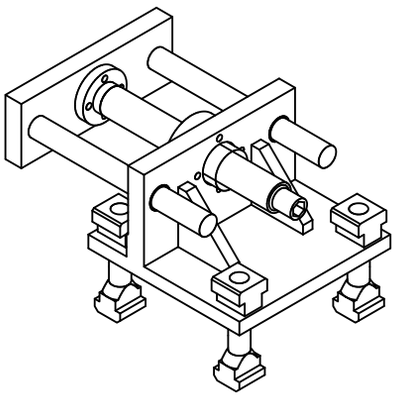
NO.	PART NO.	PART NAME	QYT
1	V6070T-4101	Clamping seat	1
3	V6070T-4103	Turning seat	1
5	V6070T-4105	Block seat	1
7	V6070T-4109	Clamping block	1
9	PP-91322	T type bolt	4
11	PP-91321	T type nut	4
13	PP-53010	Screw	2
15	AGB-70304A	Pin	1
17	AHB-0613	Motor pulley lock washer	1

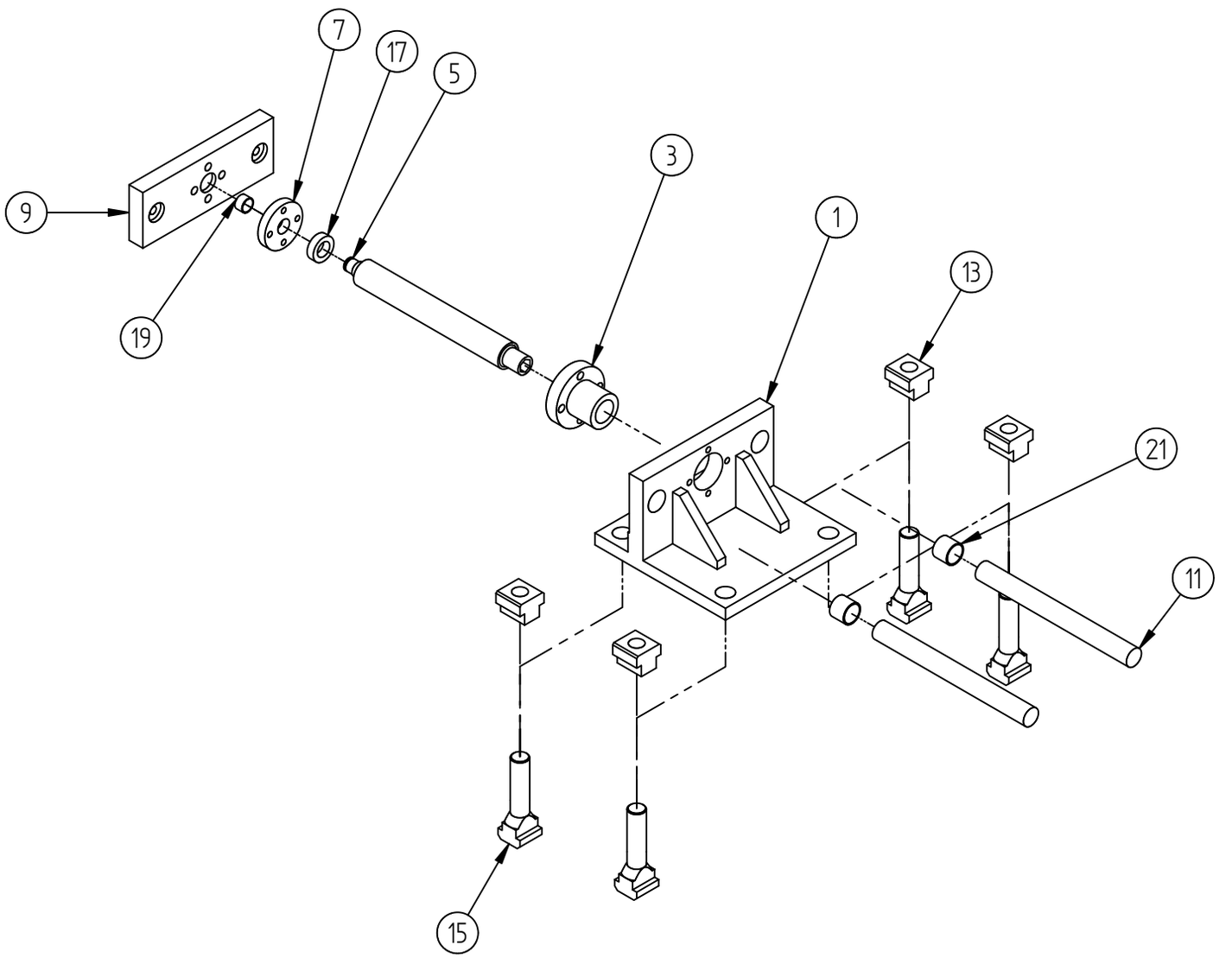




V6070T-47000

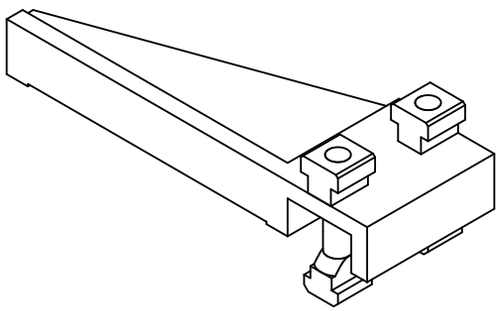
NO.	PART NO.	PART NAME	QYT
1	V6070T-4701	Manual feeding seat	1
3	V6070T-4703	Manual shaft seat	1
5	V6070T-4705	Manual screw	1
7	V6070T-4707	Manaul brake ring	1
9	V6070T-4709	Manual push plate	1
11	V6070T-4711	Manual pushing guide	2
13	PP-91321	T slot nut	4
15	PP-91322	T typle nut	4
17	PP-14812	Plane bearing	1
19	PP-13049	DU bushing	1
21	PP-13120	Bearing	2

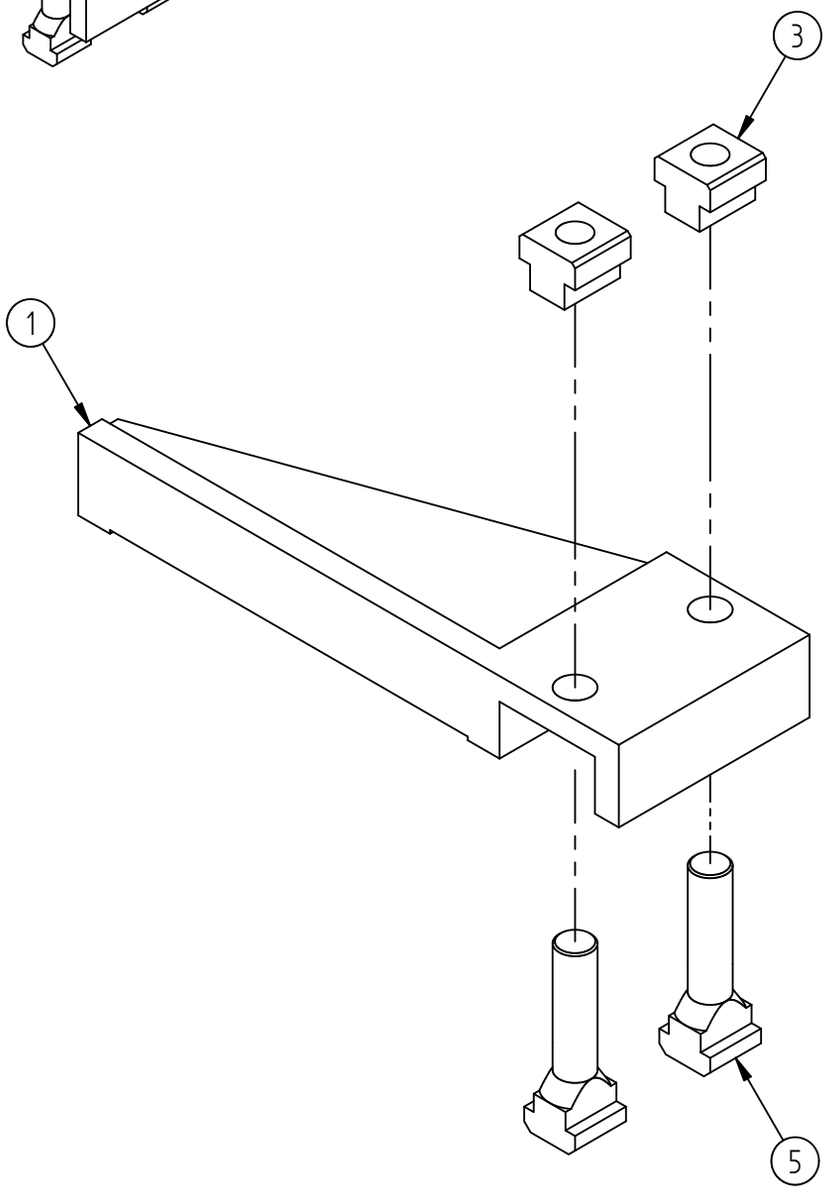




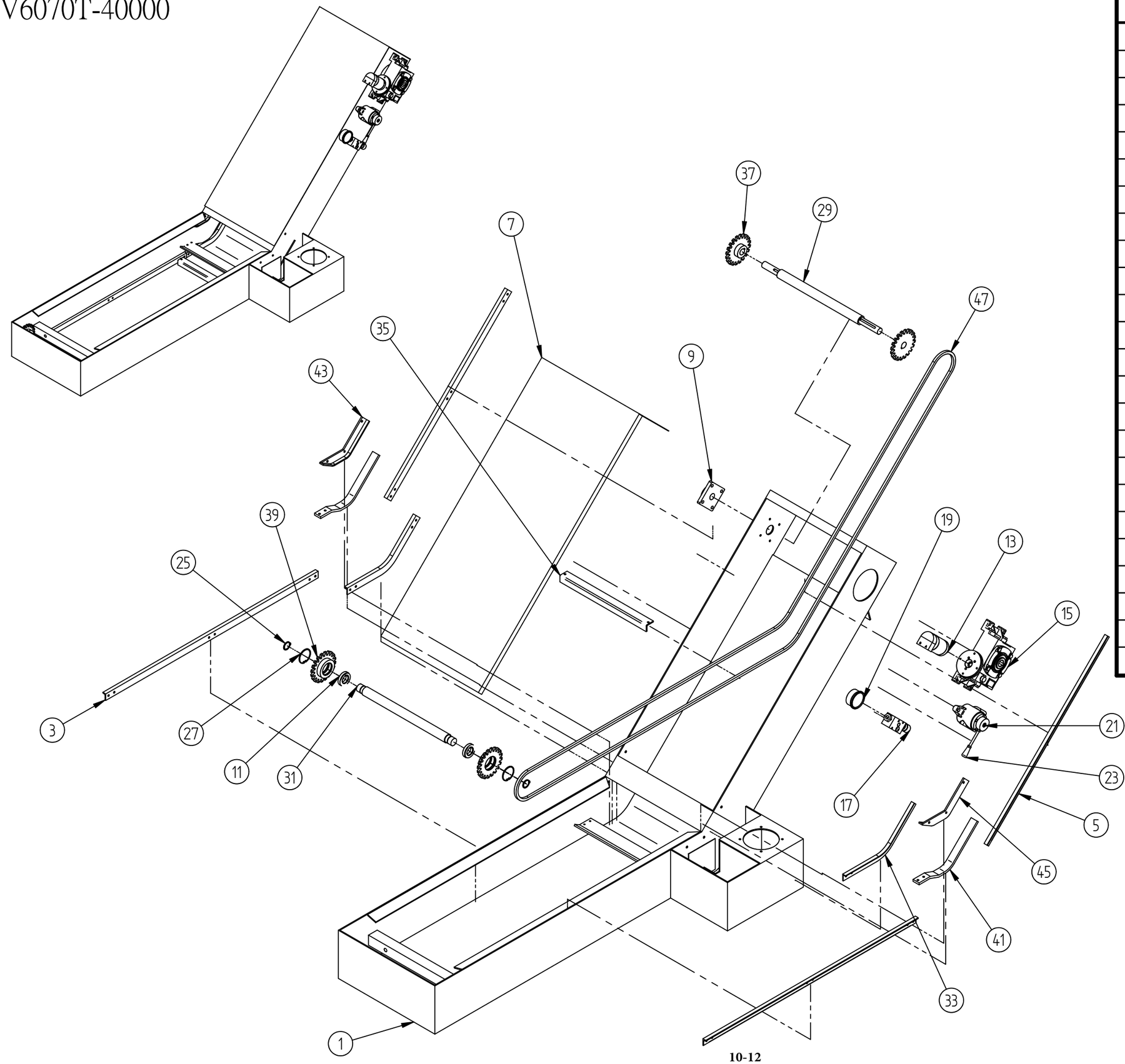
V6070T-46000

NO.	PART NO.	PART NAME	QYT
1	V6070T-4601	Gapping block	1
3	PP-91321	T slot nut	2
5	PP-91322	T typle nut	2





V6070T-40000



NO.	PART NO.	PART NAME	QYT
1	V6070T-4001	Chip conveyor tank	1
3	V6070T-4017	Supporting angle iron	2
5	V6070T-4019	Supporting angle iron	2
7	V6070T-4035	Cover	1
9	PP-12016	Bearig(UCF-205)	1
11	PP-14137	Bearing 6006VV	2
13	PP-31640-1	Hydraulic motor	1
15	PP-31654B	Gearbox	1
17	PP-43127B	Pressure regulator	1
19	PP-43311	Pressure gauge	1
21	PP-43842	Manual three way valve	1
23	PP-43842	Manual three way valve	1
25	PP-52095	Ring S30	2
27	PP-58115	Ring R55	2
29	SVJ-1209	Drive shaft	1
31	SVJ-1210	Idle shaft	1
33	V1715-4003	SUPPORTING ANGLE STEEL	2
35	V1715-4005	Chip scraper	1
37	V1715-4007	Chain gear	2
39	V1715-4009	Chain gear	2
41	V1715-4021	Supporting angle steel II	2
43	V1715-4023	Left gulide plate	1
45	V1715-4025	Right gulide plate	1
47	PP-19018	Chain	1

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