

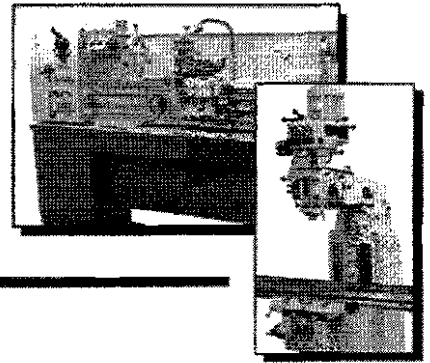


## **MACHINERY DIVISION**

6465 18 MILE ROAD  
STERLING HEIGHTS, MI 48314

**PHONE:**  
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**FAX:**  
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# **MODEL BS-15A BANDSAW**

**THANK YOU FOR PURCHASING WITH KBC MACHINERY. ALL KBC MACHINES ARE BACKED BY OUR 1 YEAR PARTS REPLACEMENT WARRANTY. WHEN USED AS INTENDED, AND WITH PROPER MAINTENANCE THIS MACHINE WILL PROVIDE YOU WITH YEARS OF TROUBLE-FREE SERVICE. IF YOU NEED PARTS SIMPLY FILL OUT THE PARTS REQUEST FORM, AND FAX OR E-MAIL YOUR REQUEST. ALL OTHER QUESTIONS PLEASE CONTACT US @ :**

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[WWW.KBCTOOLSANDMACHINERY.COM](http://WWW.KBCTOOLSANDMACHINERY.COM)**



# PARTS REQUEST FORM

YOUR COMPANY NAME:

STATE/PROVINCE

YOUR NAME

PHONE # + EXT

FAX #

MACHINE INFO:

MAKE/MANUFACTURER

MODEL NUMBER

YEAR MADE

SERIAL#

PARTS REQUESTED:

PART#

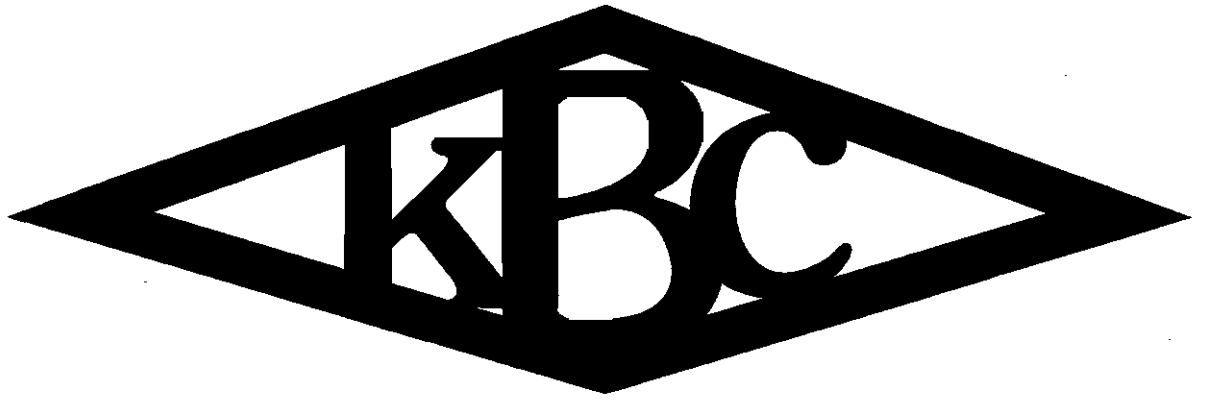
DESCRIPTION

PLEASE INCLUDE COPY(S) OF THE PARTS DRAWING FROM THE  
MANUAL AND CIRCLE THE PARTS NEEDED

FAX PARTS REQUEST TO (800) 862-1740

E-MAIL PARTS REQUEST TO: [machinery@kbctools.com](mailto:machinery@kbctools.com)

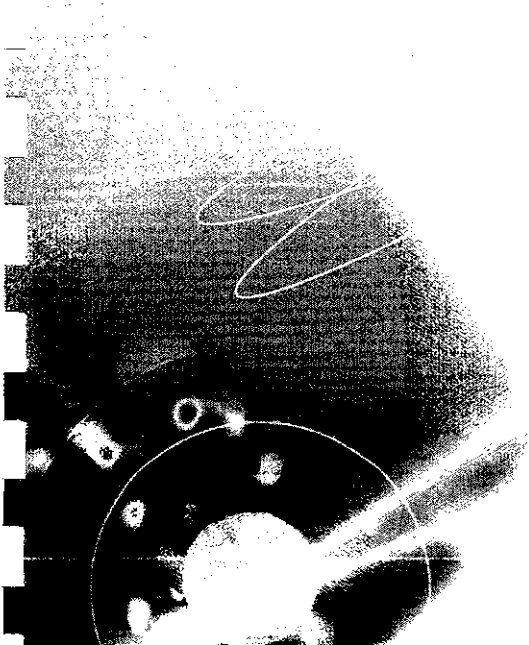
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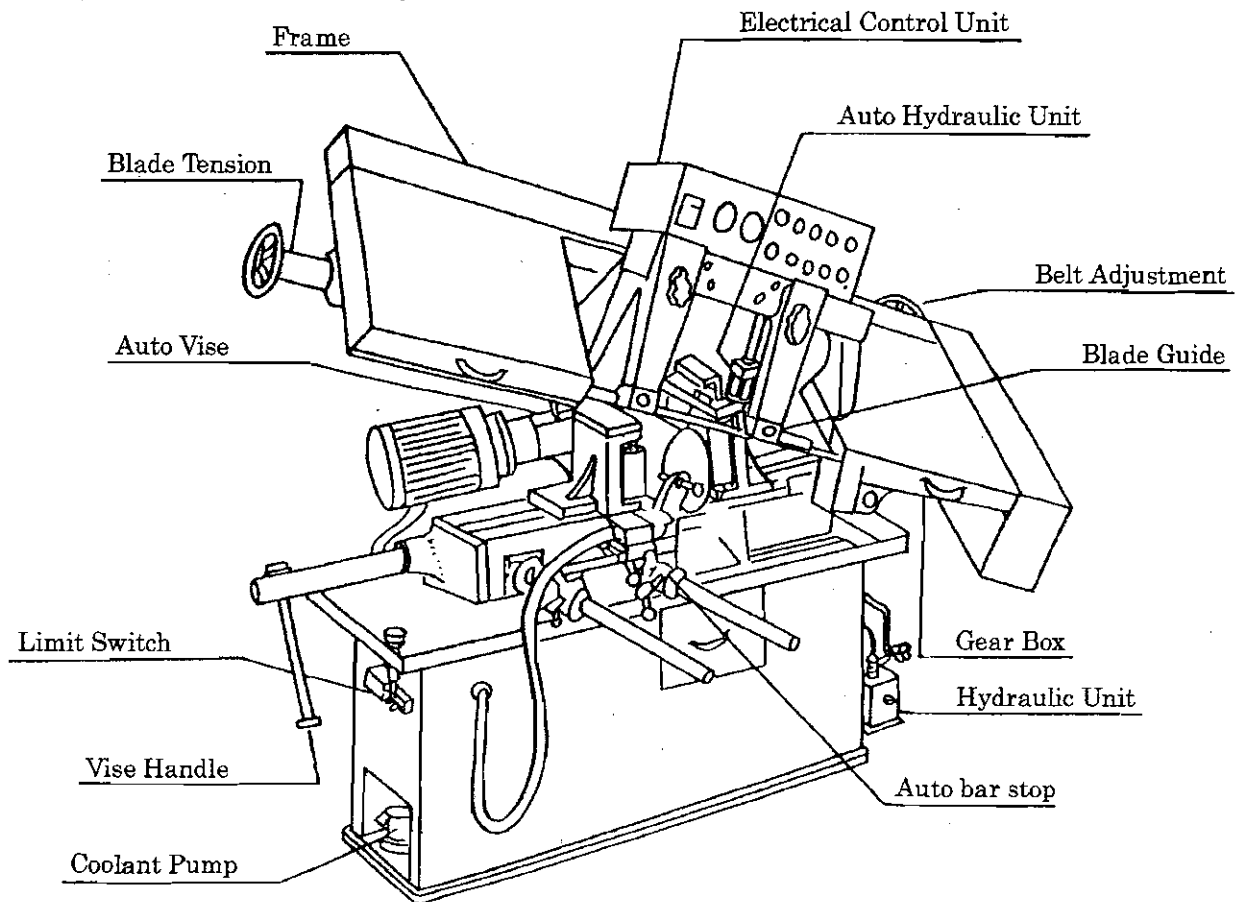
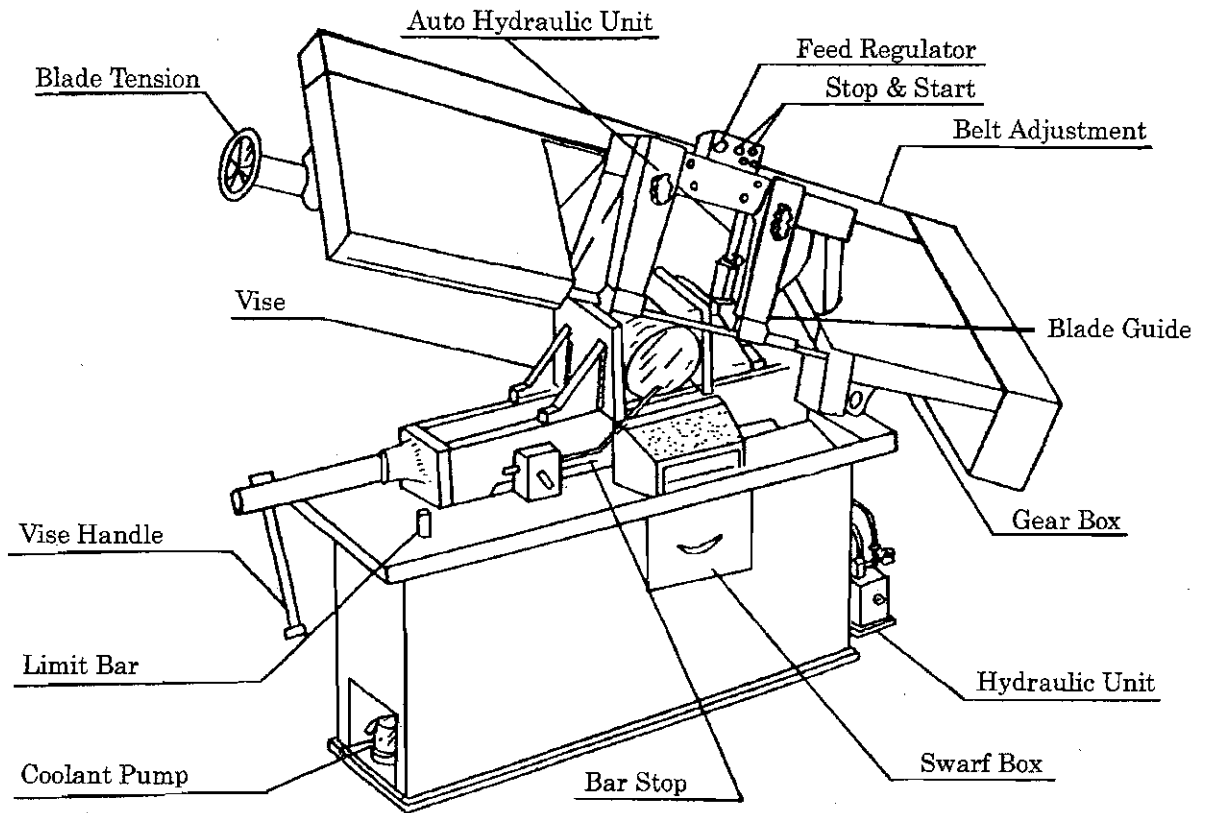


**machinery**

# **Horizontal Bandsaw**

## **BS-12A/ BS-15A**





Bandsaws automatic type - BS 12A/10A & BS 12SA/10SA

It is recommended that this Manual be read carefully before operating the machine.

Request for service and spare parts should be made to:

**SHEN JANG INDUSTRIAL CO., LTD**

No.66, Lane 226, Jyun Gong Rd. Beitun District, Taichung City, 406 Taiwan, R.O.C.

Tel: 886 - 4 - 24378856 • 24378867

Fax: 886 - 4 - 24378897

Website: www.shenjang.com.tw

E-mail: shen.jang@msa.hinet.net

**SHEN JANG SAWMASTER BANDSAWS TYPES. BS-10SA/A/AA 12SA/A/AA 15SA/A/AA**

Always quote the Serial Number of your machine when ordering spare parts or in correspondence relating to the machine.

The type BS-10SA, BS-12SA and BS-15SA machine are semi-automatic model and referred to in these notes as "Standard" machines.

The type BS-10A/AA, BS-12A/AA and BS-15A/AA machine are fully automatic model and referred to in these notes as "Automatic" machines.

**SPECIFICATIONS:**

	BS- 10SA / A / AA	BS- 12SA / A / AA	BS- 15SA / A / AA
Capacity at 90 °	● 10"( 254mm) ■ 8"( 200mm) ■ 6 3/8"x 13 3/4" ( 159 x 349mm)	● 12"( 300mm) ■ 9"( 230mm) ■ 6"x 13" ( 150 x 330mm)	● 15"( 380mm) ■ 11"( 280mm) ■ 6"x 16" ( 150 x 410mm)
Capacity at 45 ° Vise swivel	● 8"( 200mm) ■ 6"( 150mm) ■ 5"x 7" ( 130 x 180mm)	● 9"( 230mm) ■ 7"( 175mm) ■ 6"x 9" ( 150 x 230mm)	● 11"( 280mm) ■ 9"( 230mm) ■ 7"x 11" ( 180 x 280mm)
Blade size	1" x 150" ( 27mm x 3820mm )	1" x 150" ( 27mm x 3820mm )	1" x 150" ( 27mm x 4265mm )
Motor HP	2HP ( 1.5 KW)	3HP ( 2.25 KW)	3HP ( 2.25 KW)
Speed range	73,130,180,220 FPM ( 23,40,55,67 MPM )	45,75,90,120,150,240 FPM( 14,23,27,36,46,73 MPM )	47,80,95,127,158,250 FPM( 14,24,29,38,48,76 MPM )
Packing size	82" x 40" x 54"	82" x 40" x 54"	90" x 40" x 58"
Net weight	600 Kgs ( 1330ibs )	800 Kgs ( 1760ibs )	1000 Kgs ( 2200ibs )
Gross weight	700 Kgs ( 1550ibs )	950 Kgs ( 2090ibs )	1100 Kgs ( 2400ibs )

## THE CONTROLS

### STANDARD MACHINE

The electrical equipment on this machine consists of a motor, starter remote push button station and a limit switch ( L.S.I. )

The saw frame is raised by hand to the working position. Pressing the start button starts the saw motor which continues to run until the limit switch is depressed by the saw frame at the end of the cut. The Stop button will stop the motor at any time.

### AUTOMATIC MACHINE

All electrical controls for this type of machine are mounted in a console on the top of the frame. For setting purposes the selector switch should be turned to the Manual position. The raise lower and bar feed controls will work independently when the selector switch is in this position.

#### Stop Push Button

Pressing this button stops the complete machine under any conditions.

#### Start Push Button

Pressing this button to start the automatic sawing cycle. ( The Selector Switch must be in the "Auto" position). If the Selector Switch is in the material and then switch off upon completion of cut, leaving the head in the "Down" position.

#### Bar Feed Push Button

This control will only operate when the frame is raised to the height set by the height selector. It will feed or inch feed the bar until contact with the bar stop is achieved or until the button is released.

#### The Raise Push Button

If this button is pressed when the machine is in Manual or Auto the frame will raise.

#### The Lower Push Button

This can be used for setting purposes. The machine will lower only while the button is pressed. Upon release the machine will stop lowering. If the saw blade is running and the lower push button is pressed the machine will continue to lower until the completion of the cut.

#### The Work Height Selector Switch

Set the work height selector to stop the rise of the saw head after each cut . It is designed so that the head rises within the small tolerance variation to the same position . Turning the knob Changes the angular position of a mercury switch. ( See note regarding small section material Page 12 )

#### Counting Device ( additional equipment ) ( Harding Type S - 676 )

The Counter adds from Zero up to the pre-set number. When this number is reached the switch contact is released stopping the machine. When setting the counting device ensure that the frame is in the raised position.

### Pre-setting

1. Depress the red button to both re-set the counter and disengage the black button.
2. With the same finger slide down the black button immediately in the direction of the arrow.
3. Without releasing the black button set the desired figure by means of the individual push Buttons.

Whilst the sequence is immaterial it is recommended to start on the left hand side depressing two push buttons at a time. After pre - setting the first digit from the left move on to the next pair of push buttons to the right, etc. Until all digits have been pre - set.

4. Release the black button

Stepping two digits at a time makes pre-setting easier, faster and more reliable. There is a recess on the face of each pre-setting push button to enable one digit only to be pre-set at a time. Using a pencil, ball point pen or the like, if this is desired.

Care should be taken that no impulses are received by the counting coil during pre - setting and re - setting. This cannot happen if the frame is in the raised position.

### Re-setting and Repetition of Count

Mechanically: Reset the Counter to Zero by depressing the red button and it is automatically set for a repetition of the pre - set cycle.

### Feed Valve

This control simply regulates the flow of oil from under the cylinder and therefore determines the speed at which the blade will feed through the work.

Covers. Clean away all swarf from around the wheels and the blade guides.

Move the front blade wheel inwards by means of the tension, handwheel. By means of the finger knobs provided slacken the blade guide carbides and remove the old blade. Position the new blade over the blade wheels ensuring that the teeth are cutting in the correct direction, i. e., towards the ie right hand end of the machine. Make sure that the back of the saw blade is against the wheel flanges and thread the blade into the carbide guides. Re - set the spring loaded saw guides by turning the knurled screws until the inserts just touch and thus provide the holding pressure to keep the saw blade in alignment. Tension the blade by means of the blade tension handwheel until the slipping clutch slips at least twice consecutively. Adjust the blade brush to a position where the brush is cleaning the tooth gullets so that chips are swept away from between the teeth. Make sure that the brush does not contact the tooth gullets. Wipt the coolant on to the blade before starting the machine to provide the necessary lubrication before the collant flow starts.

### SMALL SECTION MATERIAL

It is not possible to accommodate small section work in the roller vice without using the height block. Provided to raise the work into the vice rollers. When these are used the extension piece on the front limit switch must be fitted and the work height selection switch adjusted to compensate for he increased height of the height blocks.

## SETTING UP THE AUTOMATIC MACHINE

When setting up to work on the automatic machine do so with the selector switch in hand position. Place the work in the vice and close the vice sufficiently to close the limit switch (LS 4) Press the raise push button until the saw frame clears the work. Next set the height selector, make the setting from 1/2 to 1" higher than the height of the workpiece. ( Always cut the first piece on auto cycle and make sure that the saw blade clears the work ). The 1/2" clearance is considered ideal as it provided adequate safety. If the workpiece is crooked allow 1" clearance Inch the work through the vice until the desired length to be cut protrudes beyond the saw blade and clamp the vice up tight. Push the auto bar stop up to the end of the work and lock up tight with the three handles provided. Next position the saw guide arms-these are adjusted by lossening the hand clamping knob and moving the arm on the slide. The left hand arm should be positioned permanently to clear the bar stock in the vice jaws. Adjust the right hand saw guide arm clamping knobs tight at all times.

**CAUTION :** Use hand pressure only to tighten the clamping knobs as excess clamping force may cause damage.

For best sawing results keep the right hand saw guide near the workpiece. The position of the left hand arm must be changed non uniform section, i.e., if a forging is being cut. Press the start button on the control panel and set the feed control dial to give the desired rate of cut. If the selector switch is left in the hand position the machine will stop when the work has been sawn through, but if the selector switch is turn to the auto position the machine will continue to cut pieces of the same length until the end of the bar enters the vice. The machine will then stop. If a long bar is to be cut the overhanging portion must be adequately supported on a roller support and care must be taken that it is set to the exact height of the machine viceway.

Always remember the following checks when using the machine on auto cycle :

- (1) The blade must be installed correctly and the inserts correctly adjusted.
- (2) Saw guide arms and vice must be adjusted correctly for stock size.
- (3) Work height selector should be adjusted for size.
- (4) Selector switch on head control panel should be set at "auto".
- (5) Index cut - off length should be set correctly.
- (6) The head should be in the raised position.
- (7) The stock should be positioned for the first cut.
- (8) Blade speed and feed rate and collant flow should be set correctly.
- (9) Press the drive "start" button and the head will lower and begin the first cut.
- (10) Observe sawing progress carefully and adjust collant flow, blade speed and blade feed, if necessary.
- (11) When the cut is completed the head will automatically raise and the stock will be indexed forward for the next cut. The automatic cycle will continue until the stock is too short to be clamped by the vice, at this time the "out of stock" limit switch (LS4) on the front vice will be tripped and the machine will stop.

- (12) Always keep the work area clear of swarf . Stop the machine to clear swarf from around the blade wheels and cutting area.
- (13) Adjust the swarf brush so that it cleans all the swarf from the blade tooth gullets without actually contacting the gullet bottom.

## DESCRIPTION OF MACHINE UNITS

### Hydraulic system on standard machine

The system used on this type of machine is a closed one and consists of cylinder, compensator cylinder and control valve. The saw frame is raised by hand and as this is done oil passes from the compensator cylinder to the underside of the piston through the built - in chuck valve. The restricted flow is regulated by the feed control dial and governs the speed at a pre - determined rate.

### Topping up the system

Lower the frame to its lowest position. Fully open feed control valve. Remove the compensator cylinder from the rear of the machine, loosening the end nut on the cylinder and remove the piston and rod, fill the compensator cylinder with oil and force oil through the system by using the compensator piston as a plunger. Repeat this procedure until the system is full. Lock up the end nut on the compensator cylinder and raise the machine frame slowly up and down to allow oil to be circulated . If air bubbles are found to be present move the frame up and down until the air bubbles collect at the top of the compensator cylinder, then remove the end nut and repeat the topping up procedure. Replace the compensator cylinder at the rear of the machine.

### Hydraulic system of Automatic Machine

The hydraulic pump used on this system is of the gear type and the complete pump is submerged in the hydraulic tank which is housed in the leg of the machine. Access to the pump and tank is gained by removing the panels at the front and rear of the machine. A filler plug and drain plug are provided on the tank and an oil level indicator is plainly visible at the front of the machine . The pump operates only when the frame is being raised . A solenoid valve in series with the feed valve gives the raise or lower requirements. The feed regulator is adjustable from the front of the machine to give the rate of feed required. The circuit is protected by a relief valve. To allow for temperature variations which affect the viscosity of the hydraulic oil a by pass valve is fitted in the pump pressure line. This is set in the works at an ambient temperature of 60 ° F . Should the machine be operated in colder temperatures it may be necessary to adjust this valve to increase the by pass flow or decrease the flow or decrease the flow if the temperature is above 60 ° F . This valve allows the raising action of the saw frame to be regulated and prevents excessive or dilatory movement. The valve should only be adjusted if the frame movement becomes irregular.

### Drive Unit

The machine is provided with a range of four speeds. Speeds are selected by slackening the belt pulley centres and transferring the belt from one set of pulleys to the desired set of pulleys , a label of which may be seen mounted on the frame. The four speeds are as follows:

75, 130, 180, 220, feet per minute.

The gearbox is of the worm and wheel type and is mounted on the back of the saw frame. An oil filler plug are provided . The oil level in the gearbox is obtained by filling to maximum while the machine is in the resting position with the frame down on the viceway.

#### Automatic Roller Vice

This is the self – contained and consists of a rear roller vice jaw and a Motorised front vice jaw. The rear jaw rollers are free to turn. In between the second and third rollers is a flap which controls the limits switch ( LS4 ) situated on top of the jaw. The purpose of this limit switch is to stop the machine when the end of the bar being cut presses the flap . The front jaw consists of a worm and wheel reduction unit which transmits the drive from the motor to the four drive rollers. The drive to the rollers ; is by roller chains which are situated under the metal guard on top of the vice jaw . The worm and wheel run in an enclosed oil bath, and an oil level indicator filler and drain plug are provided.

The automatic roller vice is controlled by the automatic electrical cycle. When the height selection setting is reached the rollers operate. They are stopped when the bar being fed through strikes the limit switch ( LS3 ) mounted on the bar stop.

The front vice jaw mounting the bar feed motor is a permanent fixture . The rear vice clamps and unclamps on to the barstock by means of a spring controlled handwheel. This spring allows for automatic adjustment if stock is crooked. When 'manual' / 'auto' switch is on "auto" the vice will continue to feed the bar stock through the machine to a position determined by the bar stop and will continue to do so until the appropriate number of blanks set on the centering device has been reached, or until the length of the bar stock becomes too short for rigid holding.

### BLADE SELECTION

The selection of the correct blade for any one type and size of material being sawn is largely dependent upon trial and error until the desired conditions are fulfilled , i . e . finish cutting time blade life, etc . However, the following notes are offered for the guidance of users so that these conditions may be obtained.

#### PITCH SELECTIONS

##### Solids

5/16" ~ 9/16" round	8 ~ 12 T. P. I.
9/16" ~ 1 1/4" round or rectangular	6 ~ 10 T. P. I.
1 1/4" ~ 4" round or rectangular	4 ~ 6 T. P. I.
Over 4" round or rectangular	3 ~ 4 T. P. I.

#### STRUCTURAL STEELS

Up to 3/8" section	10 T. P. I.
3/8" ~ 3/4" section	8 T. P. I.
Over 3/4" section	6 T. P. I.

## TUBING

Up to 1/4" wall thickness	12 T. P. I.
1/4"~ 1/2" wall thickness	10 T. P. I.
1/2"~ 3/4" wall thickness	8 T. P. I.
Over 3/4" wall thickness	6 T. P. I.

## BLADE SPEED

Meterial	Blade Speed Ft / Min.
Free cutting, mild and low	
Carbon steels	150 ~ 240
Structural steel, malleable iron	120 ~ 180
Alloy steels, tool steels	120 ~ 180
Nickel chrome steels	90 ~ 150
Cast iron	150 ~ 240
Copper, bronze	150 ~ 240
Aluminium, plastics	150 ~ 240

## ACCESSORIES

### Counter Assembly

The counter accessory located on the control panel is a great convenience when it is necessary to make a large number of identical cuts. The unit can be set for any number of pieces up to 9,999. The counter automatically stops the machine at the present number of pieces.

### 5ft, Roller Input Conveyor

The conveyor enables quicker loading times, giving greater control and stability when the stock to be cut is of a large size or length. The conveyor can be extended to cover any length of stock to be cut.

### Low Voltage Lighting

The Lo - Vo - Lite system can be fitted when a customer requires additional lighting on the machine. It is wired integral with the machine, therefore no additional wiring points are required. It is useful for inspection of work and also for inspection of blade when operating in workpiece.

## LUBRICATION CHART

Electric Motor		
Bearings, ball	Grease packed	Mobilux Grease No.3
Drive Gearbox, Worm and Spurgears	Oil bath	Mobil Vactra Oil AA
Tension Blade wheel		
Bearings, Timken	Grease packed	Mobilux Grease No.3
Needle Roller Pivot	Grease gun	Mobilux Grease No.3
Bearings, Torrington		
Hydraulic System	Fluid medium	Mobil DTE Oil Light
Auto Vice Assembly		
Electric Motor Bearings	Grease packed	Mobilux Grease No.3
Wormgear	Oil bath	Mobil Vactra Oil AA
Roller Chains, 4 off	Hand oil e d	Mobil Vactra Oil AA
Bar Rollers, 8 off		
Bearings Fischer	Grease packed for life	
All sideways and		
Adjusting screws	Hand Oil e d	Mobil Vactra Oil AA
Bar Stop Plunger	Hand Oil e d	Mobil Vactra Oil AA

## LUBRICATION

INTERVAL	Location-How Serviced	Lubricant
Monthly	Angle bracket	Mobilux Grease No.3
Monthly	Blade tension screw	Mobil Vactra Oil AA
Monthly	Blade tension slide	Mobil Vactra Oil AA
Monthly	Blade guide arm screw	Mobil Vactra Oil AA
Monthly	Blade guide arm bar	Mobil Vactra Oil AA
Monthly	Swarf brush pivot	Mobil Vactra Oil AA
Monthly	Hydraulic cylinder pivots	Mobil Vactra Oil AA
Monthly	Bar stop sideways	Mobil Vactra Oil AA
Monthly	Bar stop plunger	Mobil Vactra Oil AA
Monthly	Vice Screw	Mobil Vactra Oil AA
Monthly	Tension wheel blade bearing	Mobilux Grease No.3
Monthly	Vice screw thrust bearing	Mobilux Grease No.3
Monthly	Check (auto vice) oil level	Mobil Vactra Oil AA
Monthly	Roller chains (auto vice)	Mobil Vactra Oil AA
Annually	Main drive gearbox	Mobil Vactra Oil AA
Annually	Main Drive motor bearings	Mobilux Grease No.3
Annually	Auto Vice Motor	Mobilux Grease No.3

Annually	Change hydraulic oil	Mobil DTE Oil Light
Annually	Coolant tank change when necessary	Mobil Solvac 531

### DAILY CHECK LIST

1. Check Collant : Low coolant level can cause foaming and high blade temperatures. Dirty or weak coolant can clog pump, cause rusting and affect sawing.
2. Check Hydraulic System : Low fluid level can affect machine functions.
3. Check Saw Guide Inserts : Inspect inserts and back-up bearing for chipped carbide. Check insert adjustment, loose inserts can affect sawing accuracy. Keep saw guides clean, Check occasionally for flattened spring washers by comparing with new ones.
4. Check Chip brush : Check to see if brush is cleaning chips from blade. Replace worn brush .
5. Clean away chips : from filter plate and cut – off shute. Rake chips into chip drawer. Remove drawer and clean out if necessary.
6. Keep Vice Slides Clean and Oiled.
7. Clean Chips from Blade Wheels and Areas Around Wheels
8. Saw Guide Arms : Keep saw guide arms clamps tight. Loose arms will affect sawing accuracy. Keep saw blades close to work.
9. Saw Blade : Is saw blade sharp?
10. Blade Speed and Feed Force : Are blade speed and feed force set correctly for workpiece material and shape?
11. Drive Belt Tension Adjustment : A small handwheel attached to the motor base plate provides the belt tension. Check this adjustment periodically as the belt stretches and wears. Tension belt in accordance with label affixed to machine inside pulley cover.
12. Check Blade Tension : Particularly after initial cuts with a new blade.

### TROUBLE SHOOTING

The following is a partial list of troubles that may arise in the operation of your machine. With each potential problem are listed several possible causes , in their order of probability , and the proper corrective action to take, if it is not immediately evident. Items suffixed " A " refer to automatic machine only.

#### MACHINE WILL NOT RUN WHEN START BUTTON IS DEPRESSED

1. Ensure that all contactors and relays function correctly.
2. A Check bar stock switch ( LS4 ) mounted on auto vice. If amount of stock in vice jaws is not sufficient to afford rigid clamping, then LS4 will make the machine inoperable.
3. If frame is down while operation selector switch is set for "manual" operation , depress "raise" push button and allow head to clear LS1 "head down" limit switch. On standard machines lift the frame to clear LS1.
4. A Check the counting device , the machine will not operate if the pre – selected number has

been counted.

5. A Check that the bar stock blank has fallen clear allowing the bar stop limit switch (LS3) to function.

#### **SAW BLADE VIBRATION ( WHILE SAWING )**

1. Incorrect blade speed for material.
2. Incorrect choice of saw blade T. P. I.
3. Incorrect choice of coolant or coolant mixture is too weak.
4. Incorrect feed pressure.
5. Work piece not firmly clamped on vice.
6. Worn if improperly adjusted saw guide inserts.

#### **PREMATURE DULLING OF SAW BLADE TEETH**

1. Cutting rate too high.
2. Blade speed too high.
3. Faulty material such as heavy scale, inclusions, hard spots, etc.
4. Material analysis incorrect, resulting in wrong cutting recommendations.
5. Coolant not covering saw blade.
6. Saw blade vibration.
7. Chipped tooth lodged in cut.
8. Chip welding.
9. Wrong blade selection.
10. Wrong coolant.
11. Collant too weak.

#### **HEAD WILL NOT LOWER**

1. A Ensure that all contactors and relays function correctly.
2. Ensure that the machine is clear of obstruction.
3. Feed rate set too low.
4. A Check solenoid valve for correct operation, ensuring that the valve is not sticking and that solenoid is not damaged.
5. Check for Pinched Hydraulic Hose.

#### **HEAD RISES SLOWLY**

1. A Ensure that all contactors and relays function correctly.
2. A Check the hydraulic system and ensure full pressure is available.
3. Check for pinched hoses or restrictions applied to hoses.
4. A Check LSI limit switch and release bar stop limit switch LS3 if trapped by bar stock blank.

5. A Check hydraulic system for full pressure, ensure no hydraulic failure.
6. Check for restrictions at rear of machine.
7. Check hydraulic circuit for functioning correctly.
8. Check oil in system for contamination by air or dirt.

#### **HEAD LOWERS ERRATICALLY**

1. Inspect for air locks or contamination in hydraulic system.
2. A Inspect solenoid.
3. A Inspect hydraulic pump.

#### **HEAD WILL NOT STOP IN RAISED POSITION**

1. Ensure "FEED" valve is closed.
2. Ensure no leakage in hydraulic system.

#### **STOCK HITS BAR TOO HEAVILY**

1. A Adjust the screw on the bar stop unit which trips the limit switch LS3.  
This will cut out the brake motor sooner.

#### **SAW BLADE TEETH STRIPPING**

1. Feed pressure too high.
2. Chipped tooth lodged in cut.
3. Chip welding.
4. Faulty material such as hard spots.
5. Saw blade pitch too coarse for thin work section.

#### **PREMATURE SAW BLADE BREAKAGE**

1. Poor welding of blade.
2. Operator error such as dropping blade into work.
3. Too high feed force.
4. Inserts incorrectly set clamping blade too tightly.
5. Excessive high speed blade operation without actually cutting resulting in metal fatigue.

#### **INACCURATE CUT - OFF**

1. Worn teeth, such as unevenly worn set.
2. Hard spot in material being cut.
3. Damaged blade.
4. Chip brush not cleaning blade teeth properly.
5. Excessive feed force.
6. Dirty coolant.

### **SURFACE FINISH ON CUT – OFF PIECE TOO ROUGH**

1. Vibration.
2. Damaged blade.
3. Wrong cutting fluid.
4. Wrong blade selection.
5. Wrong coolant.

### **HEAD WILL NOT RAISE**

1. A Ensure that all contactors and relays function correctly.
2. A Check for hydraulic pump running correctly.
3. A Ensure that the solenoid valve in control console is functioning correctly.

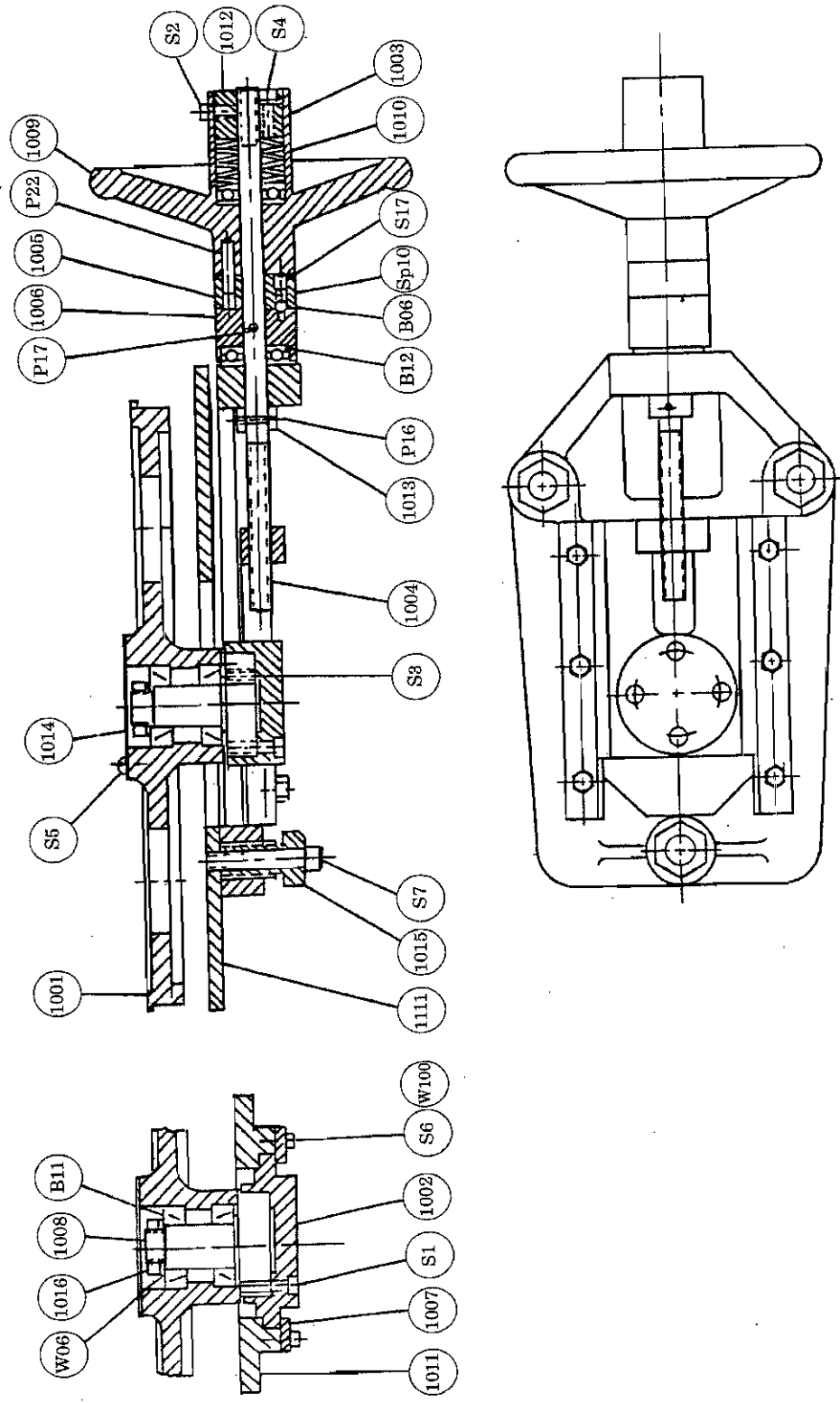


FIG NO. 1  
BLADE TENSION

BLADE TENSION FIG NO. 1

PARTS NO.	DESCRIPTION	NO. per M / C
1001	Front bladewheel	1
1002	Tension Block	1
1003	Shroud	1
1004	Tension Screw	1
1005	Driven Dog	1
1006	Thrust Bearing Housing	1
1007	Guide Bar	2
1008	Front Spindle	1
1009	Handwheel	1
1010	Disc Spring	6
1011	Slide Seat	1
1012	Lock Nut	1
1013	Lock Ring	1
1014	Spindle Cap	1
1015	Adjusting Screw	3
1016	Lock Nut	1
1111	Tension Frame	1
B06	BEARING BALL 1 / 4" $\phi$	2
B11	BEARING FAG 320006	2
B12	BEARING FAG 51103	2
P16	PIN 5 $\phi$ x 25 L	1
P17	PIN 6 $\phi$ x 30 L	1
P22	PIN 6 $\phi$ x 25 L	2
S 1	Screw M6 x P1.0 x 30 L	4
S 2	Screw 4 x 0.75 x 10	1
S 3	Screw 6 x 1.0 x 25	4
S 4	Screw 4 x 0.75 x 12	2
S 5	Screw 1 / 4 x 20 T	4
S 6	Screw 8 x 1.25 x 15	6
S 7	Screw 1 / 2 x 12 T x 3"	3
S17	Screw 8 x 1.25 x 12	2
W06	Taper Washer	2
W100	Washer	6

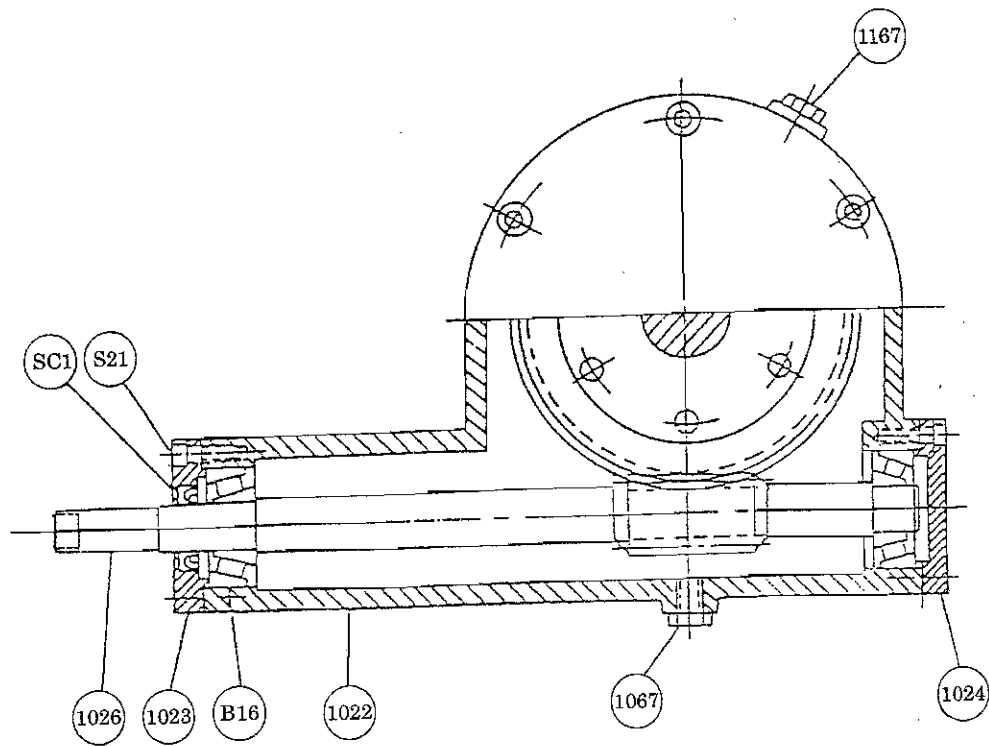
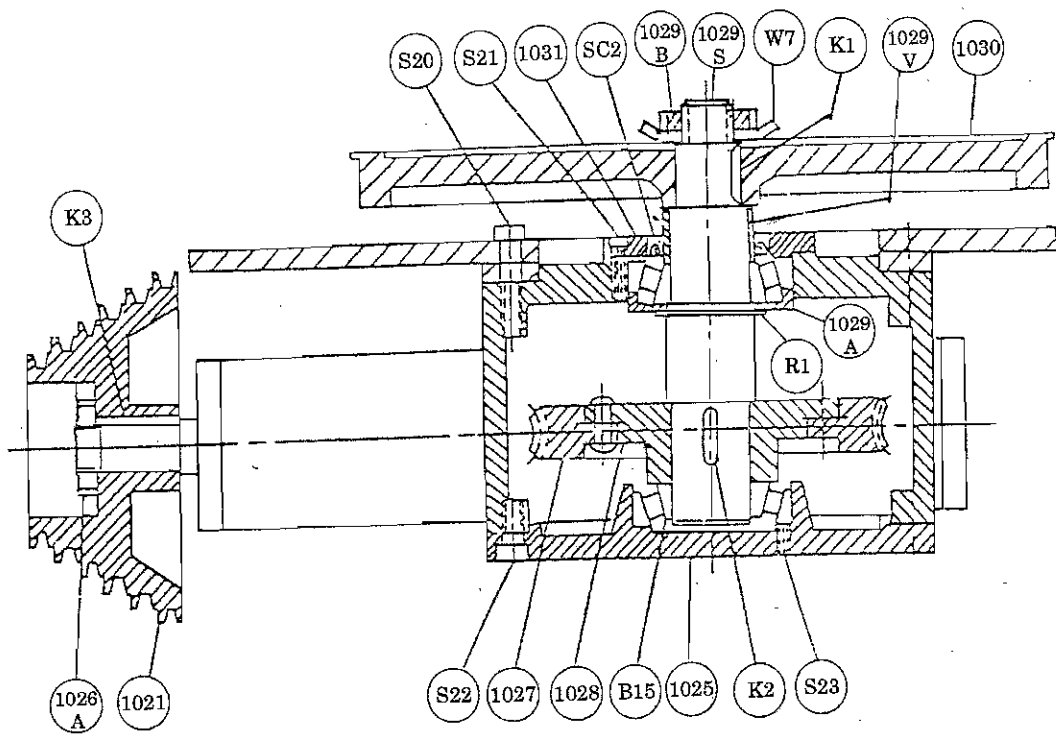


FIG NO. 2  
GEAR BOX

GEAR BOX FIG NO. 2

PARTS NO.	DESCRIPTION	NO. per M / C
1021	Input Pulley	1
1022	Gear Box	1
1023	End Cap ( Right)	1
1024	End Cap ( Left )	1
1025	Lower Cap	1
1026	Worm	1
1026A	Lock Nut	1
1027	Worm Gear	1
1028	Worm Whe el Insert	1
1029S	Worm Shaft	1
1029B	Nut ( AN07 )	1
1029V	Col la r	1
1030	Rear Bladewheel	1
1031	Upper Cap	1
1167	Plug Cork	2
B15	Bearing 30208	2
B16	Bearing 30006	2
K 1	Key 8 x 8 x 30L	1
K 2	Key 8 x 8 x 35L	1
K 3	Key 6 x 6 x 45L	1
R 1	Retaining Ring	1
PIN	5 φ x 50 L	1
S20	Screw M10 x P1.5 x 3 5L	6
S21	Screw 5 x 0.9 x 12L	6
S22	Screw 8 x 1.25 x 25L	6
S23	Screw 6 x 1.0 x 2 5 L	3
W7	Taper Washer 35 φ	1
SC1	OIL SEAL TC 30 x 45 x 7.5	1
SC2	OIL SEAL TC 10 x 60 x 1 2	1

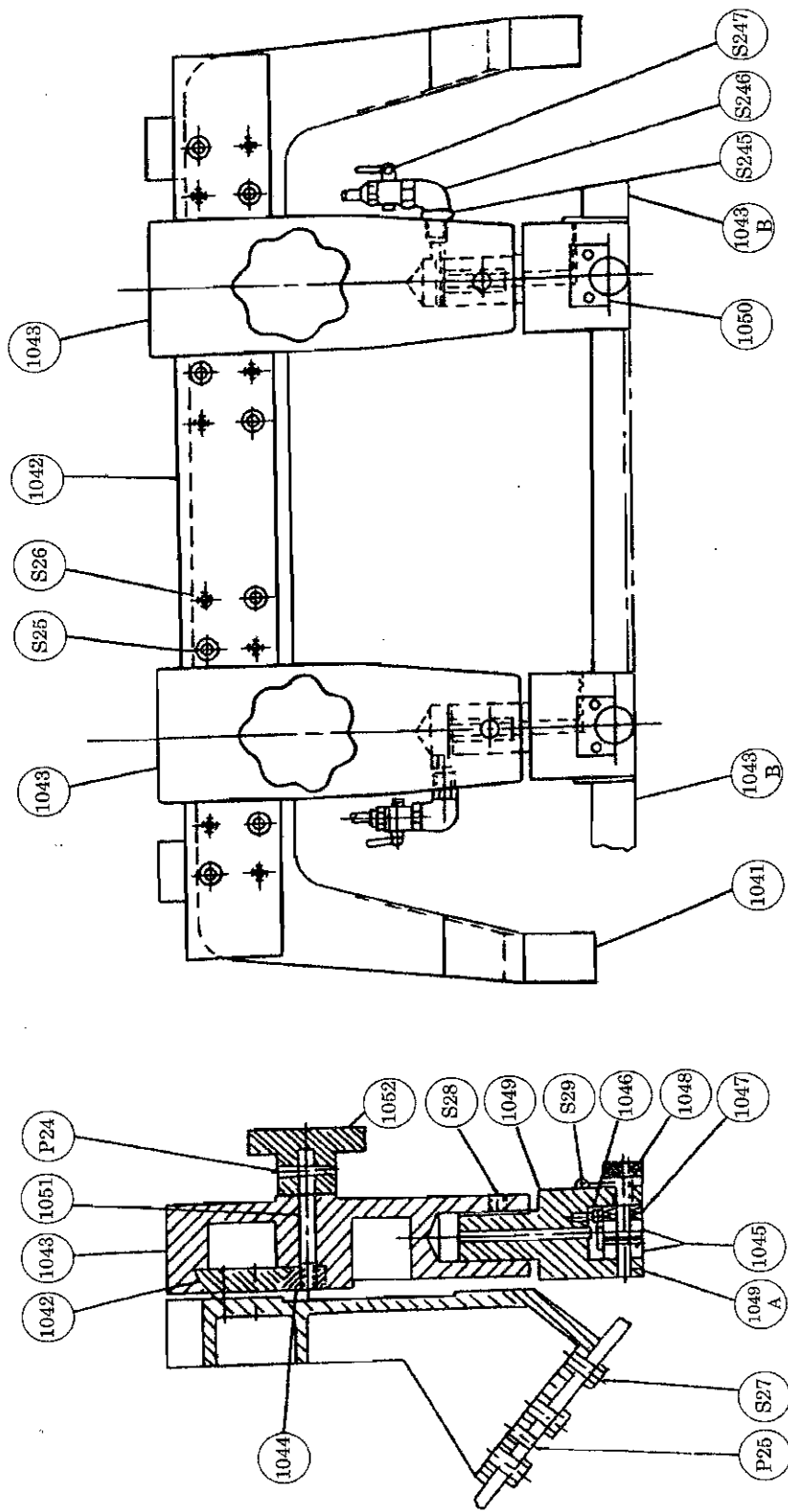


FIG NO. 3  
BLADE GUIDE

### BLADE GUIDE FIG NO. 3

PARTS NO.	DESCRIPTION	NO. per M / C
1041	Saw Frame	1
1042	Slide Way	1
1043	Blade Guide Arm	2
1043B	Protective Cover	2
1044	Locking Pieces	2
1045	Carbide Guide	4
1046	Top Carbide Guide	2
1047	Disc Spring	8
1048	Carbide Guide Adjusting Screw	2
1049	Guide Adjusting Boss	2
1049A	P i n	2
1050	Retaining Plate	2
1051	Studs	2
1052	Handwheel	2
S 25	Screw M8 x 1.25 x 30L	8
S 26	Screw M8 x 1.25 x 20L	6
S 27	Screw M10 x 1.5 x 35L	6
S 28	Screw M10 x 1.5 x 15L	2
S 29	Screw 5 / 32 x 32 x 3 / 8	4
P 24	Mill Pin 4 x 32	2
P 25	Mill Pin 6 x 32	2
S 247	Nippled Adaptor	2
	C i n	2
	T i n	2



## STANDARD VICE ASSY FIG NO. 4

PARTS NO.	DESCRIPTION	NO. per M / C
1077	Front Vice bracket	1
1077 D	Vice Revolving Shaft	1
1078	Rear Vice bracket	1
1082 A	Vice Screw Housing	1
1082 B	Vice Seat	1
1082 C	Lead Screw Nut	1
1082 D	Lock Nut	1
1101	Vice way	1
1102	Shaft Seat	1
1103	Vice Screw	1
1104	Vice Screw extension	1
1105	Handle Shaft	1
1106	Handle retainer	2
1107	Vice Spring	1
1108	Spring Sleeve	2
1109	Vice Screw Collar	1
1112	Angle Bracket	1
1113	Pivot Shaft	1
1114	Angle bracket Spacer	1
1139 A	Set Screw Seat	1
1148	Stopper Seat	1
1148A	Stopper	1
1149	Screw	1
B20	Trust bearing	1
B21	Needle Roller Bearing	4
S31	Screw M12 x p1.75 x 40L	4
S32	Screw M10 x p1.5 x 25L	4
S33	Screw M8 x p1.25 x 30L	2
S34	Screw M6 x p1.0 x 20L	1
S35	Screw M16 x p2.0 x 50L	4
S36	Screw M8 x p1.25 x 20L	2
P32	pin 6φ x 40 L	1
1356	Washer	4
NO5	Grease Nipples	2

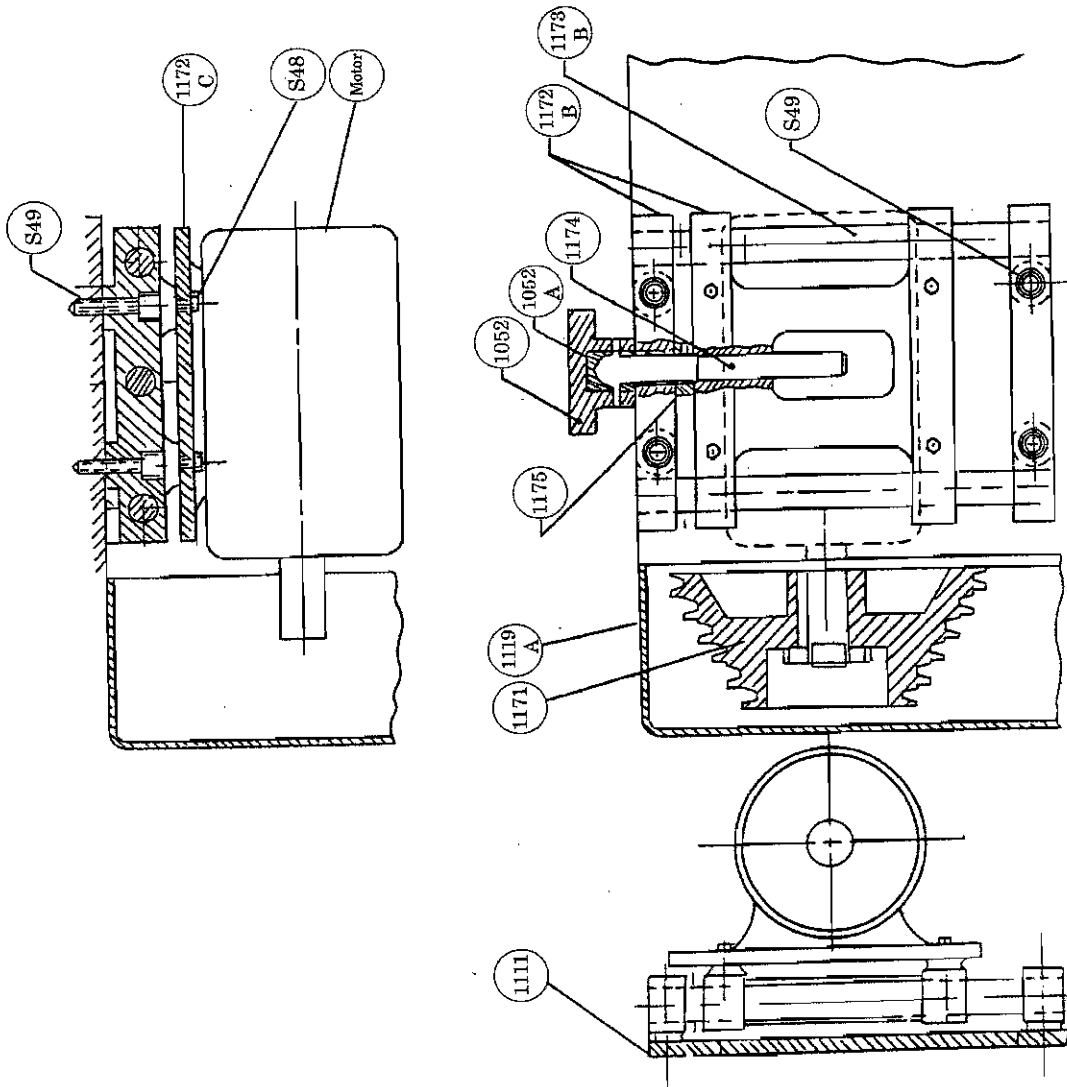


FIG NO. 5  
 BELT ADJUSTMENT

BELT ADJUSTMENT FIG NO. 5

PARTS NO.	DESCRIPTION	NO. per M / C
1052	Hand Wheel	1
1052A	Hand Wheel Insert	1
1111	Frame	1
1119A	Wheel Cover	1
1171	Motor Pulley	1
1172B	Motor Base	1
1172C	Motor Base Plate	1
1173B	Motor Base Sliding Linkage	2
1174	Motor Base Adjusting Shaft	1
1175	Collar	1
S 48	Screw M6 x 1.0 x 12 L	4
S 49	Screw M8 - 40L	4
	Pin M3 x 20L	1
	Pin M4 x 32L	1
	Motor 3Hp	1
	Belt	1

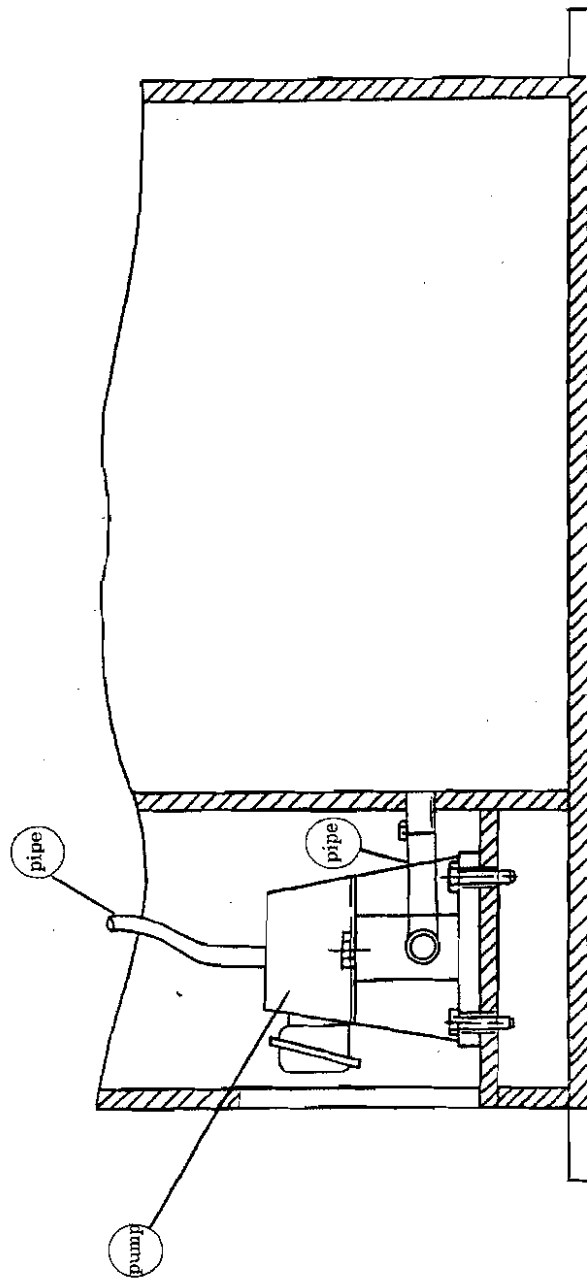


FIG NO. 6  
COOLANT PUMP

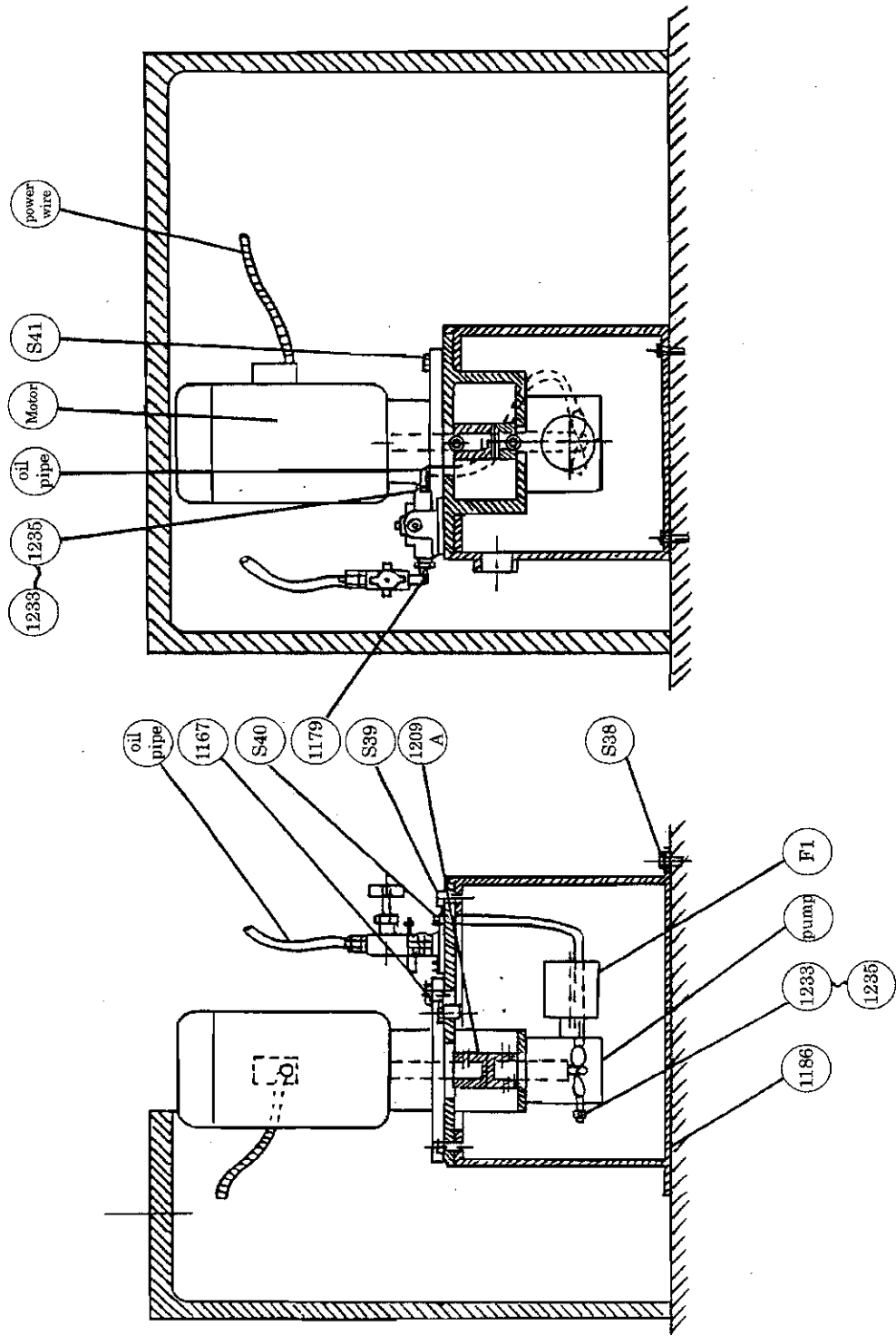


FIG NO. 7  
HYDRAULIC LEG

## HYDRAULIC LEG FIG NO. 7

PARTS NO.	DESCRIPTION	NO. per M / C
1167	Filling plug	2
1179	Hydraulic oil tank Cap	1
1186	Hydraulic oil tank	1
1209A	Drive Coupling	1
1233	Tubing Nut	2
1234	Tubing Nut	2
1235	Tubing Nut	2
S 38	Screw M6 x p1.0 x 15L	3
S 39	Screw M8 x p1.25 x 30L	4
S 40	Screw M6 x p1.0 x 20L	4
S 41	Screw M8 x p1.25 x 25L	4
F 1	Filter	1

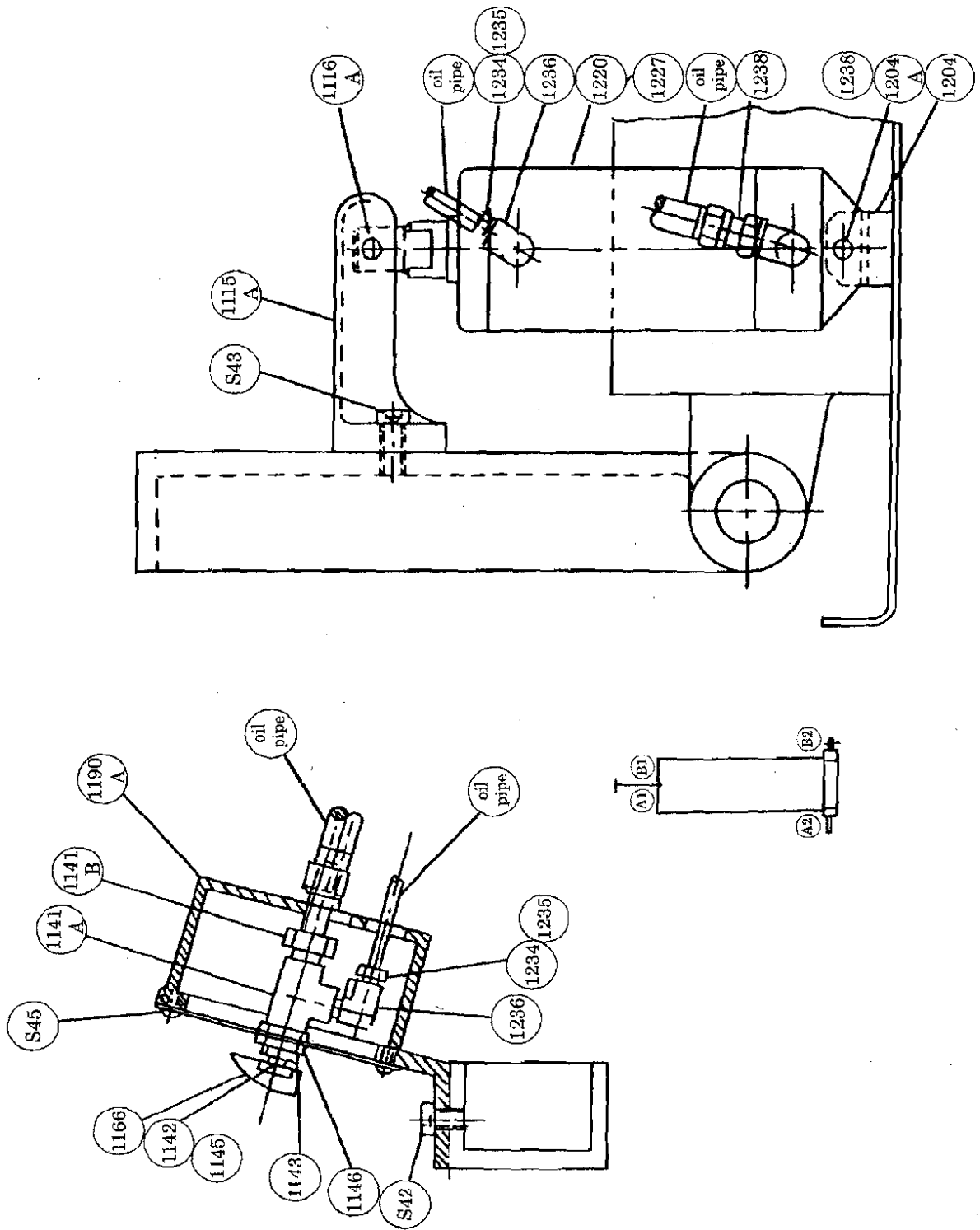


FIG NO. 8  
STANDARD HYDRAULIC

STANDARD HYDRAULIC FIG NO. 8

PARTS NO.	DESCRIPTION	NO. per M / C
1115 A	Pivot Bracket	1
1116 A	Pin 8 $\phi$ x 45 L	1
1141 A	V a l v e	1
1141 B	Female Adaptor	1
1142	Control Valve Shaft	1
1143	Control Valve Lock nut	1
1145	O. Ring Washer	2
1146	Control Valve Lock Nut	2
1166	Feed Handle	1
1190	Electrical Control Box	1
1204	Cylinder Base	1
1204 A	Pin 12 $\phi$ x 48L	1
1220	Hydraulic Assembly	1
1221	Hydraulic Assembly	1
1222	Hydraulic Assembly	1
1223	Hydraulic Assembly	1
1224	Hydraulic Assembly	1
1225	Hydraulic Assembly	1
1226	Hydraulic Assembly	1
1227	Hydraulic Assembly	1
1228	Pump Exhaust Joint	1
1234	Pipe Ring	2
1235	Pipe Joint	2
1236	Twin Joint	2
1238	Oil pipe Joint	1
S 42	Screw M6 x p1.0 x 15L	2
S 43	Screw M8 x p1.25 x 30L	2
S 45	Screw M4 x p0.75 x 10L	4



AUTO HYDRAULIC FIG NO. 9

PARTS NO.	DESCRIPTION	NO. per M / C
1115 B	Pivot Bracket	1
1116	Pin 8 $\phi$ x 45 L	1
1141	V a l v e	1
1142	Control Valve Shaft	1
1145	O. Ring Washer	2
1146	Control Valve Lock Nut	2
1166	Feed Handle	1
1167	Filling Plug	1
1194	Pipe Joint Nut	1
1195	Nut	1
1204	Cylinder Base	1
1204 A	Pin 12 $\phi$ x 48 L	1
1215	Cylinder	1
1234	Pipe Ring	1
1235	Pipe Joint	1
1236	Twin Head Joint	1
1237	Tee Pipe Joint	1
RCV	Return Control	1

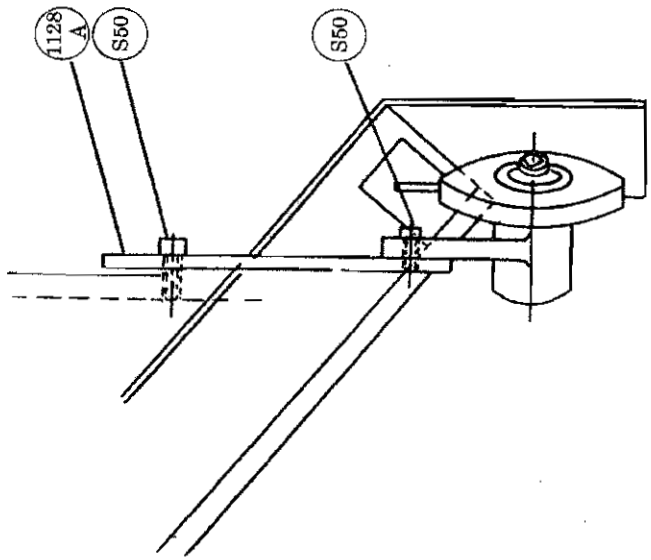
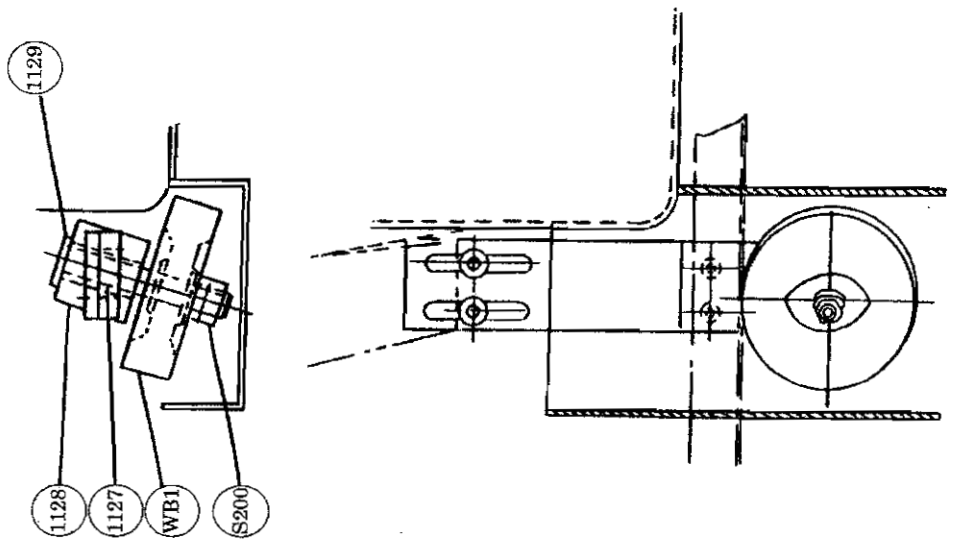


FIG NO. 10  
BRUSH (FINAL ASSY)

BRUSH (FINAL ASSY) FIG NO. 10

PARTS NO.	DESCRIPTION	NO. per M / C
1127	Bushes	1
1128	Brush Housing	1
1128 A	Adjusting Bracket	1
1129	Brush Spindle	1
WB1	Wire Brush	1
S 50	Screw M6 x p1.0 x 15 L	4
S200	Lock nuts	2



AUTO VICE FIG NO. 11

PARTS NO.	DESCRIPTION	NO. per M / C
1061 A	Front Auto-Vice Bracket	1
1062	Motor Mounting plate	1
1063	Worm Shaft End Cap	1
1064	Worm Wheel Cap	1
1066	Worm Drive	1
1067	Worm Wheel	1
1069	Worm Wheel Spacer	2
1070 A	Worm Wheel Shaft	2
1071	Small Adaptor	1
1073	Plate Wheel	1
1073 A	Idle Seat	1
1074 A	Front Auto-Vice Roller Shaft	1
1074 B	Front Auto- Vice Roller	1
1074 D	Bearing Washer	1
1075	Plate Wheel Cover	1
1076	Driving Sleeve	1
1081 A	Rear Auto-Vice Bracket	1
1081 B	Limit Switch Cover	1
1082 A	Vice Base	1
1082 C	Vice Nut	1
1082 D	Lock Nut	1
1083 A	Rear Auto-Vice Roller Shaft	2
1083 B	Rear Auto- Vice Roller	2
1086 A	Feed trip Lever Spindle	2
1088	Advance Attach Blade	1
1102	Vice Screw Base	2
1103	Vice Screw	2
1104	Vice Screw Extension	4
1105	Handle Shaft	1
1106	Handle Retainer	1
1107	Vice Spring	1
1108	Spring Sleeve	1
1109	Vice Screw Collar	1
B 18	Ball Bearing Fag 6004 Bearing	2
B 19	Ball Bearing Fag 6003	2
B 20	Needle Roller Beating	2

S 52	Screw M5 x p0.9 x 20L	1
P 35	Pin 6 φ x 50 L	2
B 21	Idle Bearing CF-10	2
B 22	Idle Bearing 4901	4

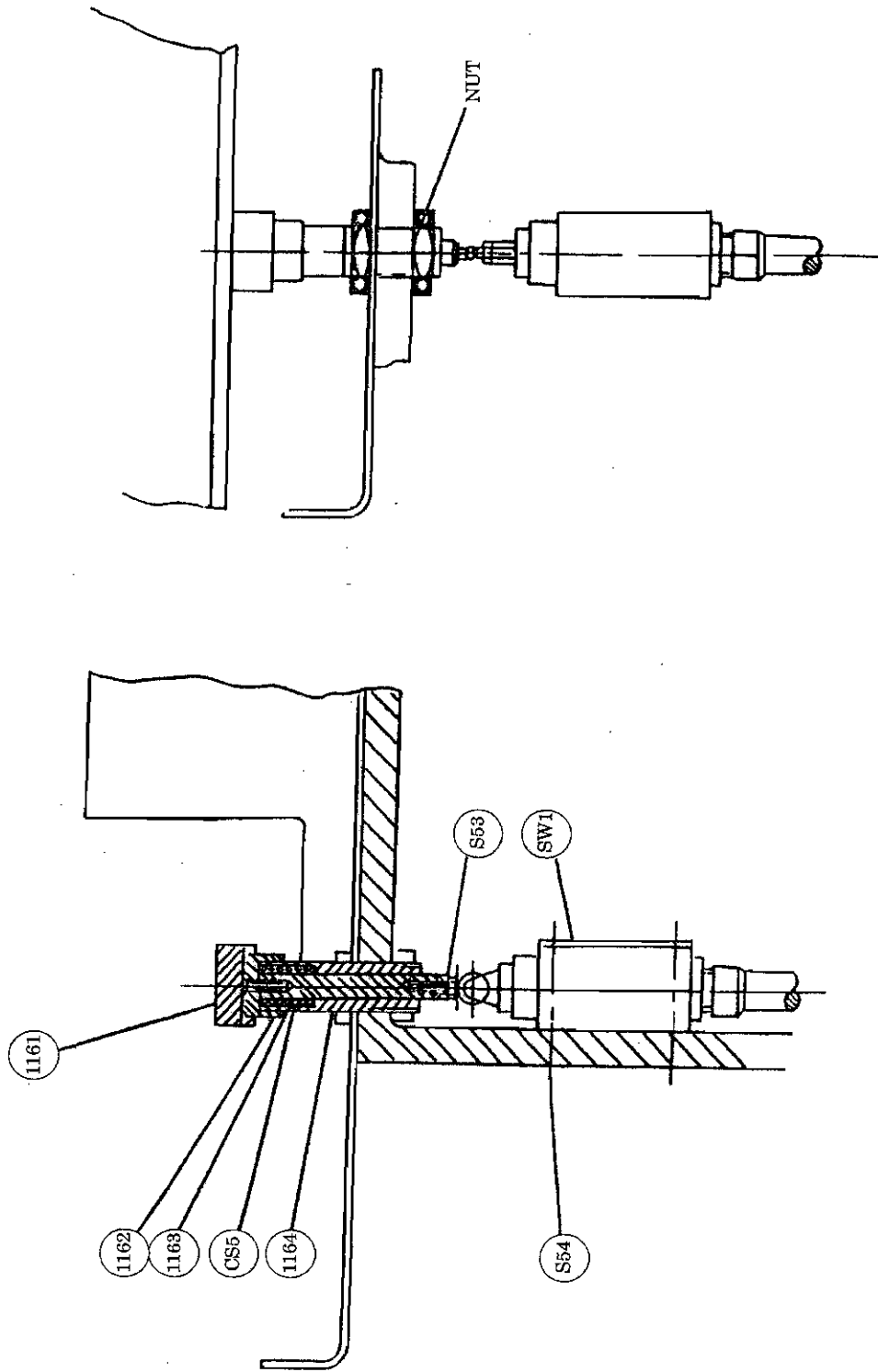


FIG NO. 12  
LIMIT SWITCH

AUTO VICE FIG NO. 12

PARTS NO.	DESCRIPTION	NO. per M / C
1161	Cap	1
1162	Plunger	1
1163	Plunger Cap	1
1164	Plunger Support Block	1
SW1	Limit Switch (WLD2)	1
CS2	Compression Spring	1
S 53	Screw M6 x p1.0 x 30L	2
S 54	Screw M6 x p1.0 x 20L	2

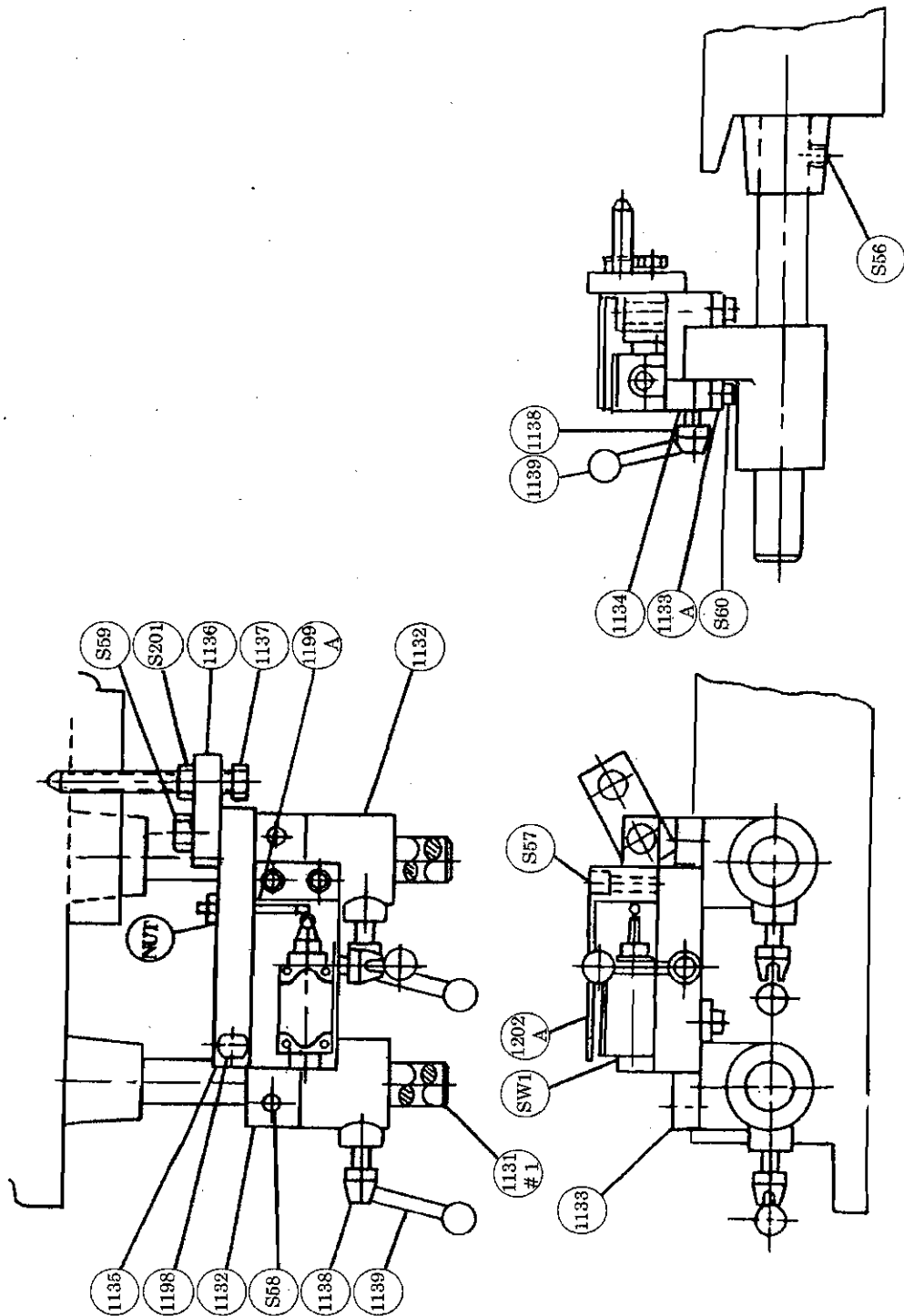


FIG NO. 13  
 AUTO BAR STOP

AUTO BAR STOP FIG NO. 13

PARTS NO.	DESCRIPTION	NO. per M / C
1131# 1	Bar Guide Shaft	2
1132	Auto Bar Stop Boss	2
1133	Boss Link Bar	1
1133 A	Body Sliding Plate	1
1134	Auto Bar St op Body	2
1135	Stop Block	2
1136	Extension Bar	1
1137	Trip Arm Adjuster	1
1138	Small Clamp Screw	3
1139	Clamp Stem	3
1198	Trip Arm Pivot Pin	1
1199 A	Switch Stopper	1
1202 A	Stop Block	1
SW1	Limit Switch Base	1
S 56	Screw M10 x p1.5 x 15L	2
S 57	Screw M10 x p1.5 x 30L	3
S 58	Screw M8 x p1.25 x 20L	2
S 59	Screw M12 x p1.25 x 30L	1
S 60	Screw M6 x p1.0 x 15L	2
S 61	Lock Nut M16 x p2.0	1

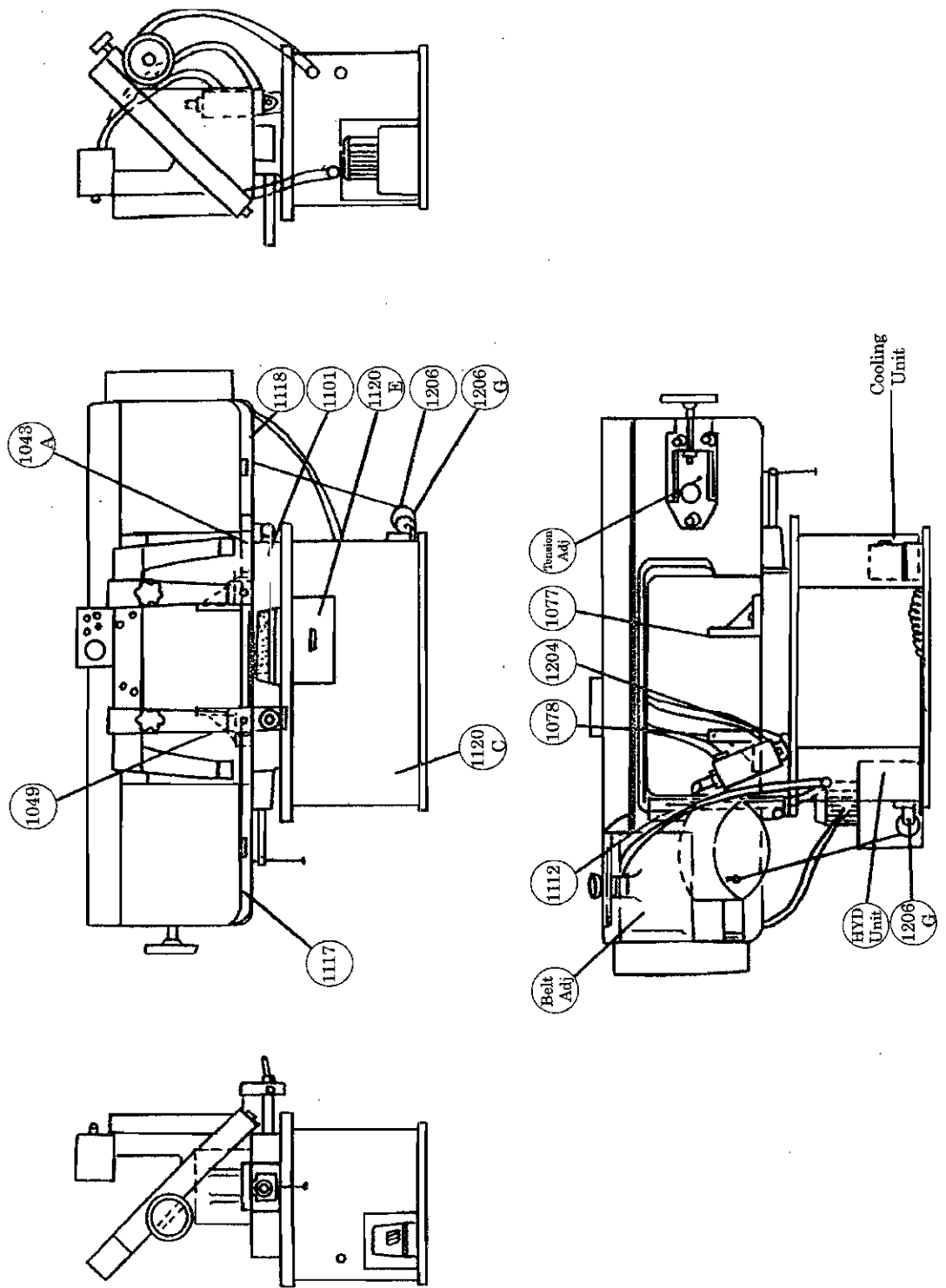


FIG NO. 14  
STANDARD FINAL

## STANDARD FINAL FIG NO. 14

PARTS NO.	DESCRIPTION	NO. per M / C
1043 A	Blade Wheel Cap	1
1049	Guide Adjusting Boss	1
1077	Rear Vice Bracket	1
1078	Front Vice Bracket	1
1101	Viceway	1
1112	Angle Bracket	1
1117	Left Blade Wheel Cover	1
1118	Right Blade Wheel Cover	1
1120C	Base	1
1120E	Swarf Box	1
1204	Cylinder Base	1
1206	Roller	1
1206C	Roller Base	1
1206G	Roller Shaft	1

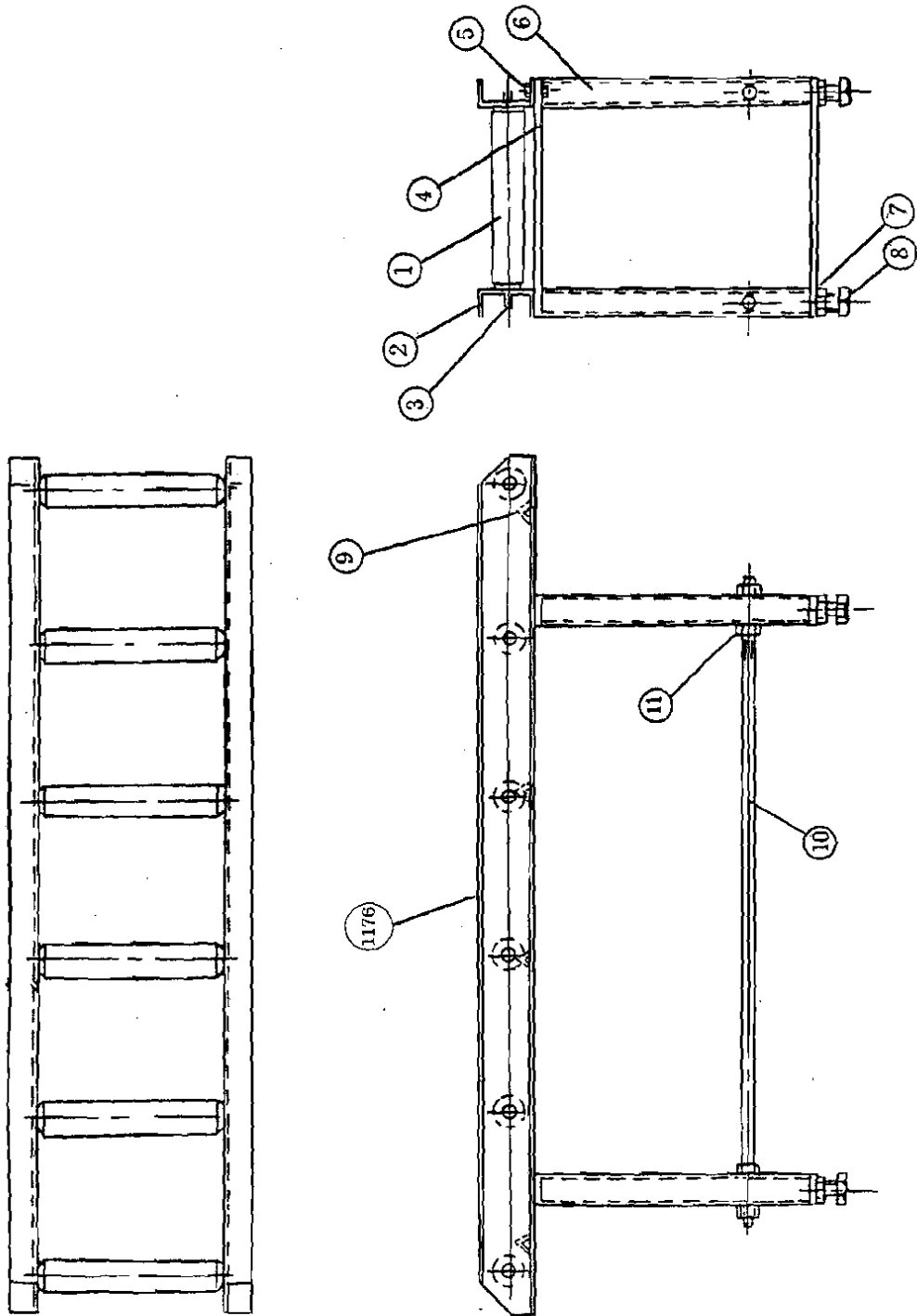


FIG NO. 15  
ROLLER CONVEYOR

ROLLER CONVEYOR FIG NO. 15

PARTS NO.	DESCRIPTION	NO. per M / C
1043 A	Blade Wheel Cap	1
1049	Guide Adjusting Boss	1
1077	Rear Vice Bracket	1
1078	Front Vice Bracket	1
1101	Viceway	1
1112	Angle Bracket	1
1117	Left Blade Wheel Cover	1
1118	Right Blade Wheel Cover	1
1120C	Base	1
1120E	Swarf Box	1
1204	Cylinder Base	1
1206	Roller	1
1206C	Roller Base	1
1206G	Roller Shaft	1

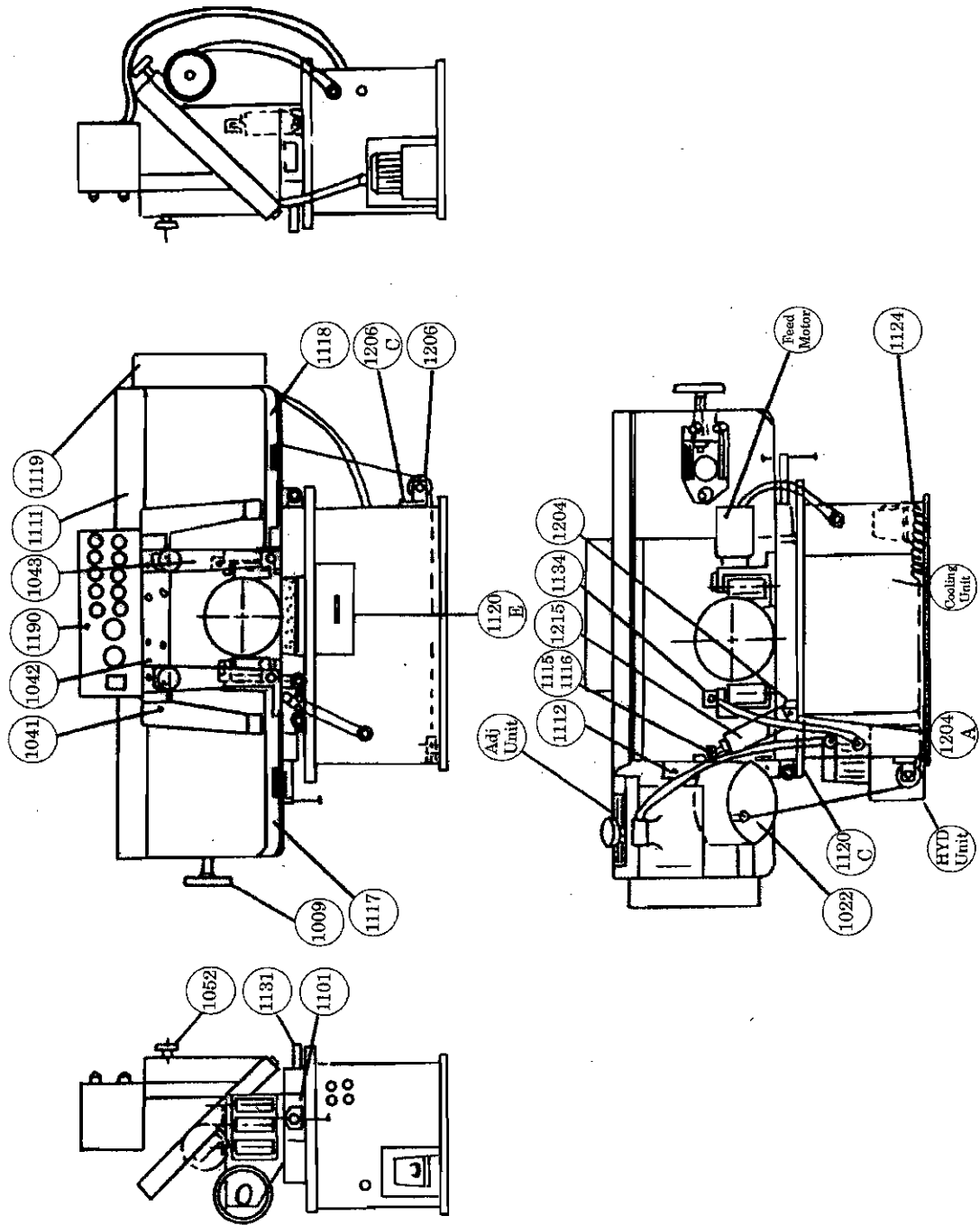
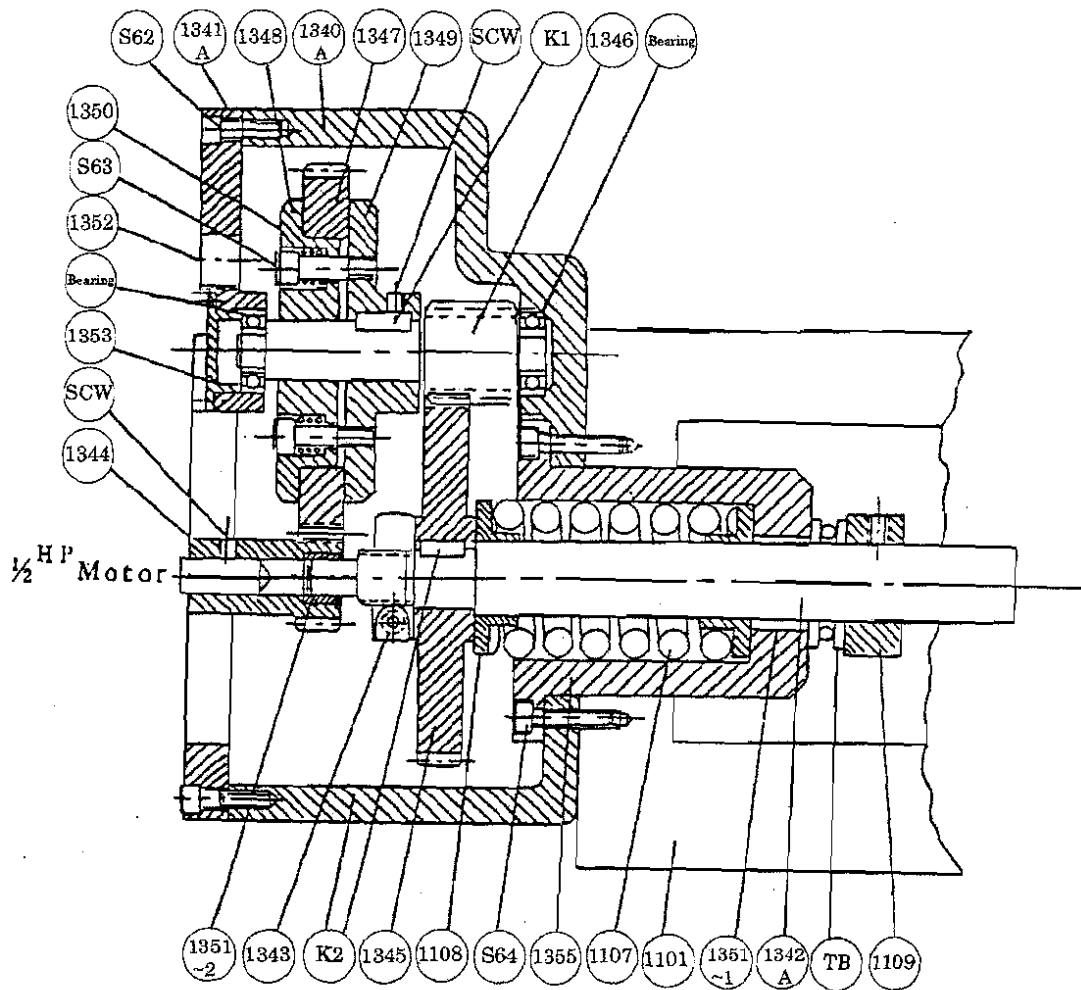


FIG NO. 16  
AUTO FINAL

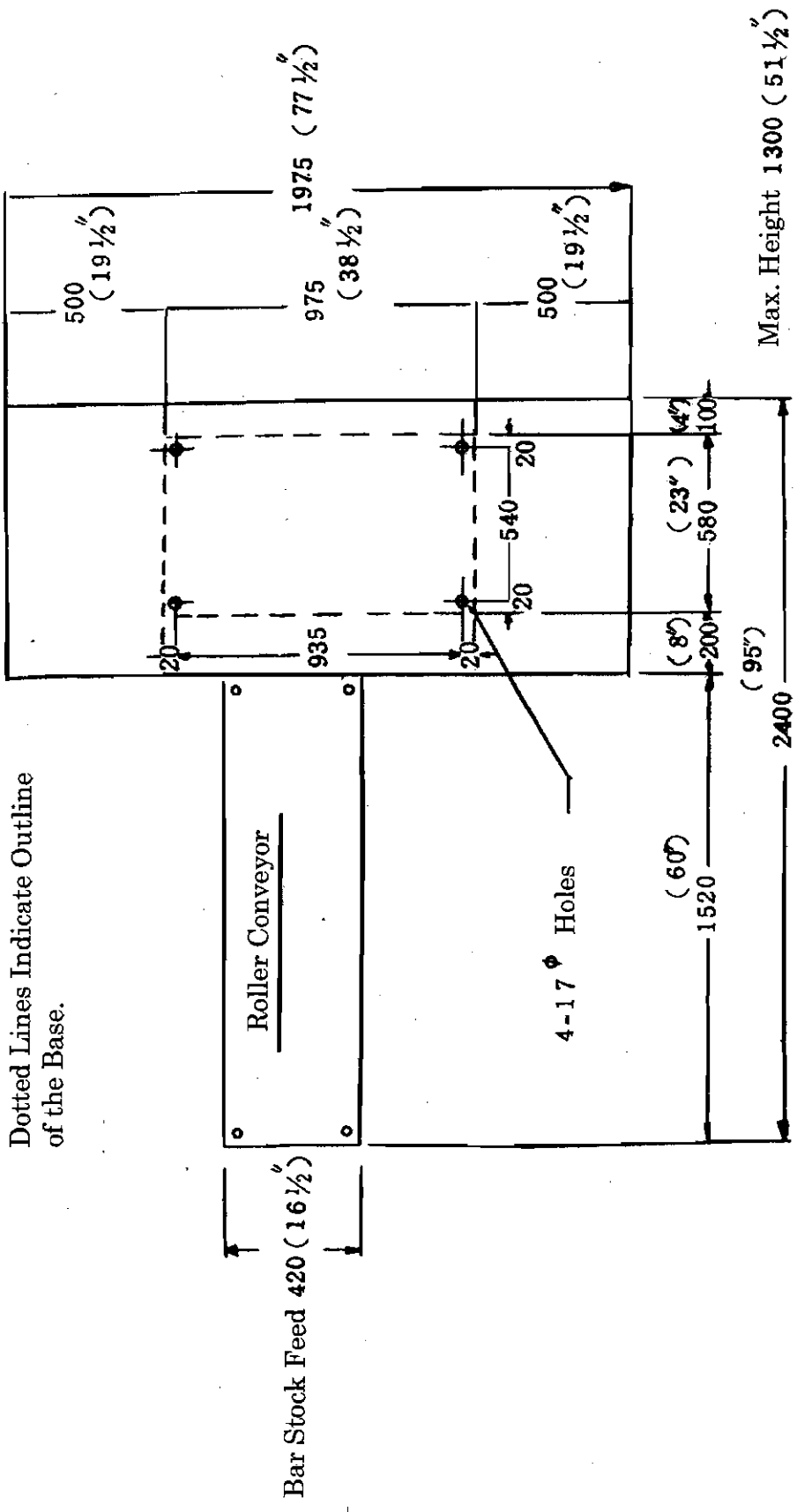
AUTO FINAL FIG NO. 16

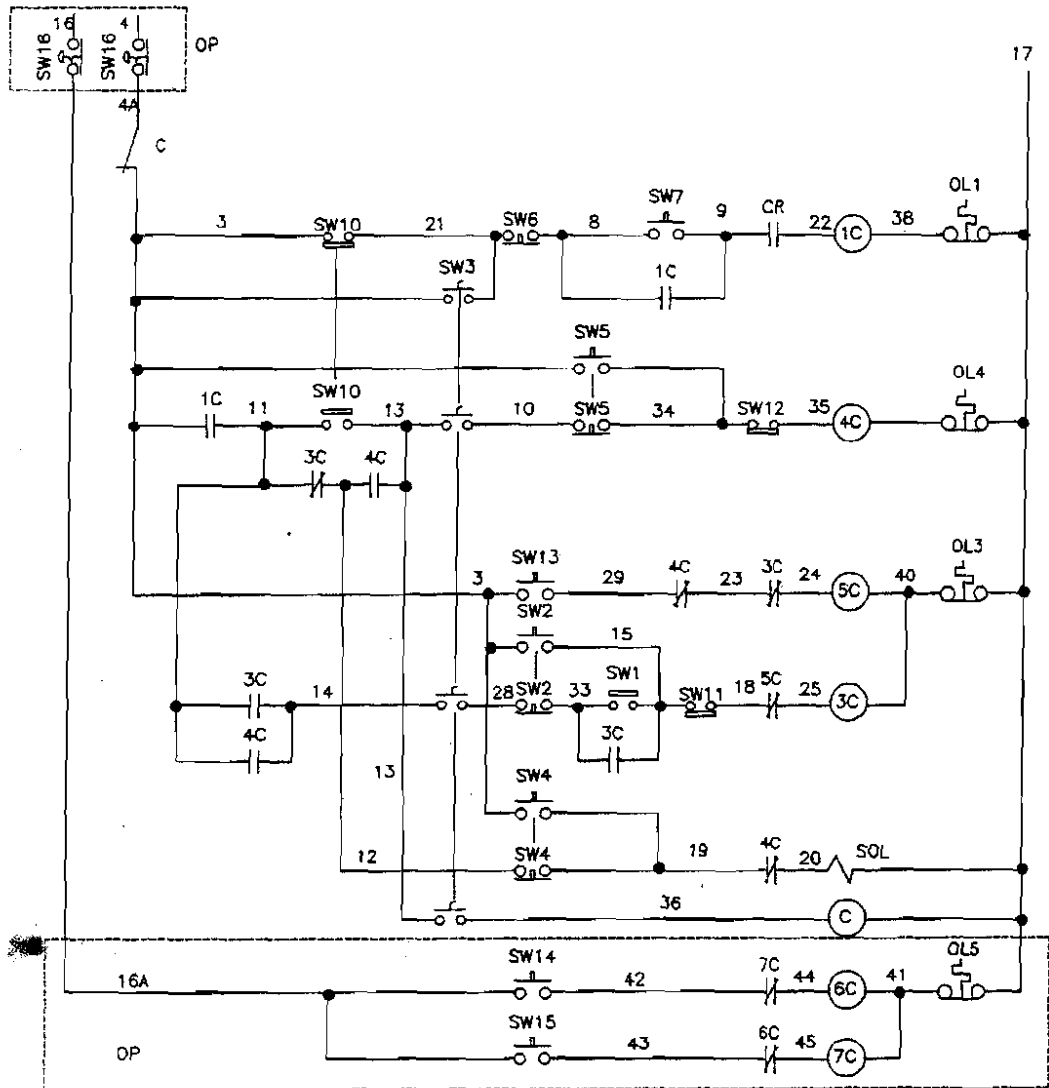
PARTS NO.	DESCRIPTION	NO. per M / C
1009	Handwheel	1
1022	Gearbox	1
1041	Support Bracket	1
1042	Slideway	1
1043	Blade Guide Arm	2
1052	Handwheels	3
1101	Viceway	1
1111	Frame	1
1112	Angle Bracket	1
1115	Pivot Bracket	1
1116	Pin 8¢ x 45 L	1
1117	Blade Wheel Cover	1
1118	Blade Wheel Cover	1
1119	Guard	1
1120 E	Swarf Box	1
1120 C	Base	1
1124	Compensation Spring	1
1131	Bar Guide Shaft	2
1134	Limit Switch Cover	1
1204	Trunnion Block	1
1204 A	Pivot Pin	1
1206	Roller	1
1206 C	Roller Base	1



AUTO CLAMPING FIG NO. 17

NO. per M / C		NO. per M / C	
1101	Vice way.....1	1350	Clutch Gear.....1
1107	Vice Spring.....1	1351~1	Bushing.....1
1108	Spring Sleeve.....1	1351~2	Bushing.....1
1109	Vice Screw Collar.....1	1352	Cap Screw.....1
1340A	Gear Box.....1	1353	Bearing Cap.....1
1341A	Gear Box Cap.....1	1355	Spring Sleeve.....1
1342A	Vice Lead Screw.....1	K1	6 x 6 x 18L Key .....1
1343	Gear Setting Nut.....1	K2	6 x 6 x 15L Key.....1
1344	Motor Gear.....1	Bring FAG	6001.....2
1345	Leadscrew Gear.....1	TP	Thrust Bearing.....1
1346A	Middle Gear.....1	SCW	M6 x P1.0 Setscrew.....2
1347	Clutch Gear.....1	S 62	M6 x P1.0.....6
1348	Clutch Plate ( moveable).....1	S 63	M8 x P1.25.....6
1349	Clutch Plate ( fixed ).....1	S 64	M6 x P1.0.....4





- SW1:UP SWITCH
- SW2:STOCK ADYANCE MOTOR
- SW3:MANUAL/AUTO
- SW4:LOWER HEAD SWITCH
- SW5:RAISE HEAD SWITCH
- SW6:BLADE STOP SWITCH
- SW7:BLADE START SWITCH
- SW9:VISE SWITCH
- SW10:FEED CONTROL SWITCH
- SW11:BAR STORRER SWITCH
- SW12:HEIGHT LIMIT SWITCH
- SW14:VICE CLAMP
- SW15:VICE OPEN
- SW16:EMERENCY STOP
- C:COUNTER SWITCH
- S:SOLENOID VALVE

