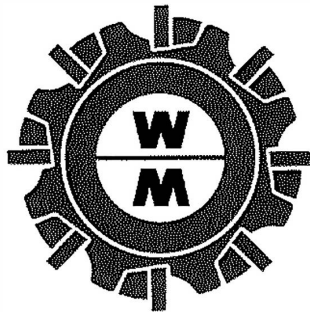




Hydraulic Ironworker

Model#: IW-66B

OPERATION MANUAL



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SUNRISE HYDRAULIC IRONWORKER

IW-60B
With Low Speed for Bending

WESTWAY#5
IW-66B
19012571

OPERATION & MAINTENANCE MANUAL

Original Instructions
632EG110
12-2012

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INTRODUCTION

The Sunrise Ironworker is a hydraulically powered metal shearing and punching machine. The machine is equipped with Punching, Flat Bar Shear, Angle Bar / Round Bar / Square Bar Shear, and Bending stations. This multi-function aspect allows the Sunrise Ironworker to meet the diversified needs of the metal forming industry. There are many optional accessories that will further increase the versatility of the machine, such as Channel / Sectional Bar Shear, Pipe Bending, Pipe Punching, Notching and punches and dies of various shapes and sizes.

The Bending station move in slower speed for operation safety, and a separate fixed foot paddle is provided for the bending station to ensure correct mode selection. The JOG mode is in low pressure to ensure maximum tool protection and operation safety. Main selector switches come with a key to ensure only the authorized personnel is allowed to operate certain features of the machine.

Each machine has been individually tested in the factory and under-gone an extensive pre-delivery check to ensure that the machines meet the highest quality standard. The ironworker has been designed to be a reliable and dependable machine with excellent performance. We know the working quality of the machine will confirm that you have made a good choice by selecting Sunrise products for your facility.

In order to have a better understanding of the operating procedures, to obtain maximum benefits from the machine, and to minimize the maintenance cost of the equipment, please have the operators and engineers read this Manual thoroughly and carefully before operating the machine.

Warranty Certificate

Sunrise Fluid Power Inc. warrants its product(s), excluding items described below, against defects in materials and workmanship for a period of twelve (12) months from factory shipping date of the product(s). Sunrise Fluid Power Inc. covers only the parts under warranty, and not the labor cost to service/repair/replace the parts. The labor work is to be carried out by the customer, or by local distributor under separate agreement between the customer and distributor. This warranty does not apply to tooling such as blades, punches, dies, light bulb or parts on the machines subject to normal wearing. Hydraulic and electrical components are subject to their respective manufacturer's warranties. The warranty on the products shall not apply to defects or damages resulting from improper operation, abusive use, or inadequate maintenance of the product(s) by the user. The warranty is void on product(s) which have been altered, changed or modified in any way by the user. During the warranty period, Sunrise Fluid Power Inc. will, at its option, either to repair or to replace product(s) which were proven defective. In case of replacement with new product(s), the user shall first return the defective product(s) and bear the transportation costs incurred. Sunrise Fluid Power Inc. shall not be responsible for damage/loss beyond the value of the product(s). In no case shall Sunrise Fluid Power Inc. be liable for indirect or consequential damages/loss including, but not limited to, labor costs, down time, or third party loss.

SAFETY PRECAUTIONS

IMPORTANT:

It is the duty of both employer and employees to acquaint themselves with the safe working practices contained in this manual and ensure that all operators adopt these practices.

The Sunrise Ironworker IW-60B has these working stations:

- PUNCHING
- FLAT BAR SHEAR
- ANGLE BAR/SQUARE BAR/ROUND BAR SHEAR
- BENDING

To ensure safe operation, guards are provided for each work stations. **NEVER REMOVE THESE GUARDS.** If any guards are damaged or worn out, replace immediately with new guards.

While every effort has been made to furnish sufficient safe guards, this equipment, if not operated and maintained properly, has the potential to cause serious injury or death. A thorough knowledge of the machine and operating with carefulness is the best protection against accidents.

All operations are controlled by either the foot switch or by the optional electric backgauge. The operator should be familiar with the control and function of the switch/backgauge before perform the operation.

Many warning labels are fixed on the machine. **NEVER REMOVE THESE LABELS.** Be sure to follow these warnings to avoid injury. Please also pay attention to the following general rules:

1. Only one operator is allowed to operate on the IW-60B. Before each operation, make sure no other person is near the machine.
2. **Operator must wear Protective Glasses during operation to protect the eyes.**

3. Do not operate the machine unless all safety guards and hold-downs are in place. Use of optional attachments/tooling should also have proper hold-downs and guards installed.
4. **Keep hands clear of all moving parts at all times. Fingers must not go under or inside the danger zone established by the safety guards, stripper, holddowns and/or awareness barrier.**
5. The nature of the bending station requires opening the bending safety cover during operation. This creates a potential risk to the operator. The bending safety cover is interlocked. The AUTO/SHEAR/BEND switch requires use of key. **The key is intended for properly trained and authorized operators only.** Misusage of the key may increase the risk of injury at the Bending station. **NEVER LEAVE THE KEY ON THE MACHINE.** Also refer to the section "Control Panel" in regard to the SHEAR/BEND switch and the Bender safety interlock.
6. On IW-60B, all stations move at the same direction at the same time, yet only one station can be used at one time. This has the potential of body injury. During operation, be sure that no personnel and material are near the other stations *not* in use.
7. When using the shearing stations, turn to SHEAR mode and make sure that the punching stripper is closed and the notching cover is closed. **Bending safety cover must be closed when not using the bending station.**
8. Any maintenance/repair of electrical/hydraulic circuit; change/adjust of blade/tooling; and alignment of punch-die should be done only by qualified engineers or personnel.
9. Always turn off power and disconnect electric supply before doing any tool change or maintenance work.
10. After tool changes, always check punch & die alignment and blade clearances before operation.
11. Do not punch, shear, or Bend parts that are too small to fit under the safety hold downs.

12. If any problem or abnormal condition arises during operation, stop the machine immediately and report to a supervisor. Do not turn on the machine again until the problem is rectified by qualified personnel.
13. The machine should never be left under power when not in operation or unattended. Always isolate the machine after turned the power off.
14. After completion of operation, all slugs and waste materials must be cleaned away from the machine.
15. Regularly check all stations and tooling for defects and wear to ensure safety and maintain good condition.
16. Heavy materials should be supported.
17. Use handling equipment when lifting heavy tooling and materials.
18. Do not punch partial holes as this creates a side load force on the punch and can result in tool breakage. Special tooling may be available for this purpose.
19. **Do not punch material thicker than the diameter of the punch.**
Doing so can overload and break the punch and create a hazard.
20. Never exceed the rated capacity of the machine. Refer to the specification chart for details.

The manufacturer shall not be held for any liability for damages/body injuries or other consequences to machine, material, and persons caused by the non-compliance of the above safety precaution procedures, in particular for the following situations:

- 1. Removing or disabling any guards or hold-downs is a violation and will result in the termination of your warranty.**
- 2. Place of any body part under or inside the danger zone established by the safety guards, stripper, holddowns and/or awareness barrier.**
- 3. Did not wear protective glasses for the eyes.**
- 4. Did not close the stripper during operation.**
- 5. Did not close the Bender safety cover when using other workstations.**
- 6. Did not properly adjustment the clearance resulting the punch/die/blades hitting each other.**
- 7. Did not interrupt the main electric power supply before any maintenance work.**
- 8. Damage of electric parts or risk of fire due to incorrect electric power supply.**
- 9. Damage of pump or other hydraulic parts due to incorrect setting of the limit switches.**

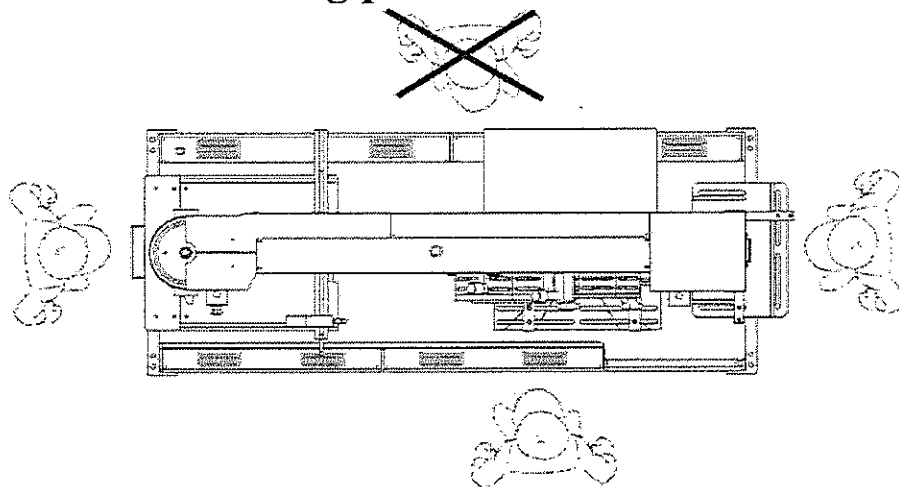
DANGER

- KEEP HANDS CLEAR OF ALL MOVING PARTS.
- ALL GUARDS AND HOLD-DOWNS MUST BE IN POSITION BEFORE OPERATING THE MACHINE.
- ALWAYS POSITION MATERIAL UNDER A CORRECTLY SET HOLD-DOWN. NEVER ALLOW THE MATERIAL TO FEED BEYOND THE HOLD-DOWN.

CAUTION

- THOROUGHLY READ THE OPERATION MANUAL BEFORE OPERATION.
- TURN OFF POWER AND ISOLATE THE MACHINE WHEN CHANGING TOOLING OR DOING MAINTENANCE.
- ALL MAINTENANCE/REPAIR WORK MUST BE DONE BY QUALIFIED PERSONNEL.
- IF ANY PROBLEM OR ABNORMAL CONDITION OCCURS, STOP THE MACHINE IMMEDIATELY. DO NOT OPERATE THE MACHINE AGAIN UNTIL THE PROBLEM IS FIXED.

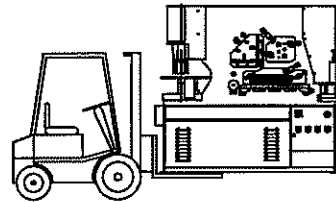
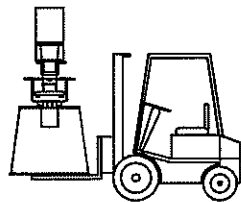
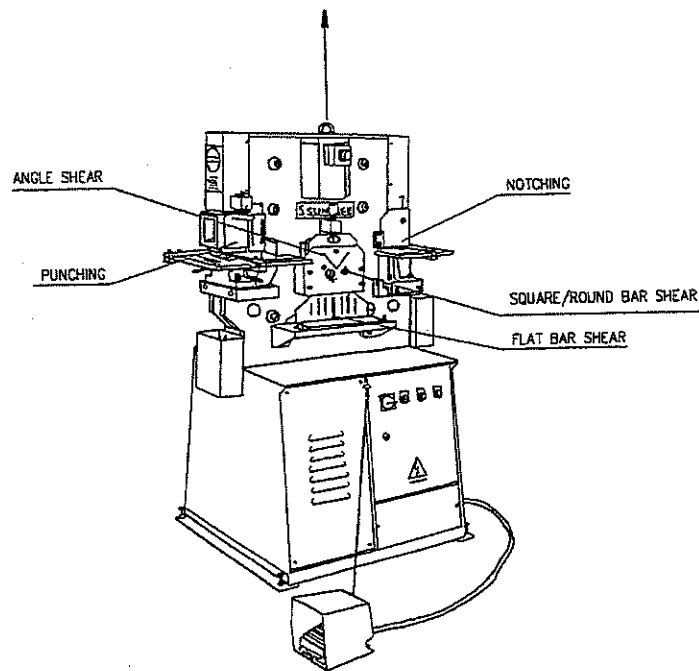
Operators' working positions:



TRANSPORT

When transporting the machine by a crane, hook the crane to the eye bolt on top of the machine. **Do not use slings under the machine.** Pay special care if lifting / transporting the machine with forklifts. The forks should extend fully to cover the width of the machine. **Do not put the forks from either end.**

NOTE: As the top of the machine is heavy, the high center of gravity can cause the machine to tip over if machine is not in good balance.



INSTALLATION

The machine only requires the normal industrial concrete foundation. If the ground is uneven and the machine vibrates during operation, use foundation bolts to tighten the machine firmly to the ground or alternatively mount the machine on anti-vibration pads.

IMPORTANT:

- Maintain a spacious working area around the machine for safety.
- Have the work area well illuminated with proper lighting.
- Clean the scraps and waste materials regularly, and make sure the work area is free of obstructing objects.
- Keep the ground free of oil and make sure it is not slippery.
- If long lengths of material are to be fed into the machine, make sure that they will not extend into any gangways.

Crowded, poorly illuminated or slippery areas are often causes for accidents.

Remove all anti-corrosion grease after installing the machine. Check that the oil reservoir, located in the machine base, has been properly filled. When refilling oil, use recommended oil and fill the reservoir to the upper level of the oil level gauge.

Connecting Power Supply

Electrical wiring must be done by a qualified electrician. Before connecting the electrical supply, make sure the voltage and current is compatible to the electrical components in the machine. Check the data shown in the electrical control box.

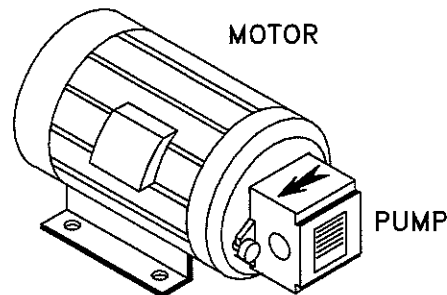
IMPORTANT: Turn off Supply Electricity at your facility's circuit breaker before making electrical connections to the machine.

To connect the power cord

- 1) Open the electric box.
- 2) Remove the small panel under the electric box.
- 3) Insert the power cord through the entrance hole on the base of machine, and then through the base of electric box.
- 4) Connect the three phase wires to the power terminal strip in the electric box.
- 5) Also make sure to ground the machine properly.
- 6) Check that the power cord surface is not damaged, scratched or cut during installation.
- 7) Reinstall the panel and close the electric box.

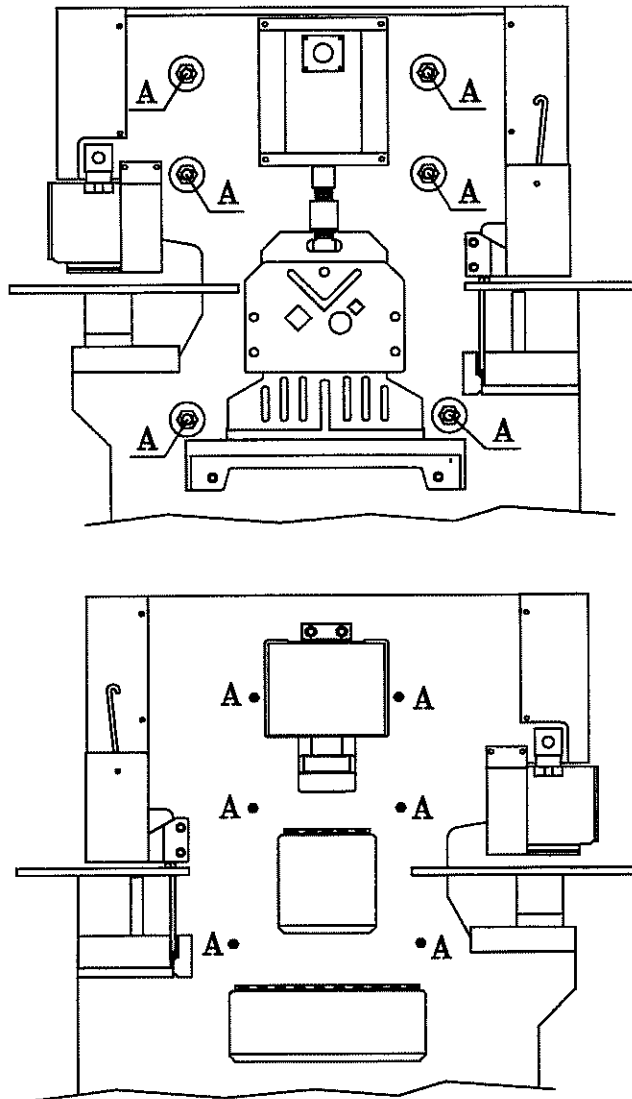
To check the correct rotation of the motor.

- Remove the back cover.
- Briefly start and stop the motor and check that the motor rotates in the same direction as the arrow indicated on motor. **Improper rotation can severely damage the pump.**
- To change the motor rotation, first make sure the power is disconnected, then reverse any two of the three phases of the electrical power supply.



LUBRICATION

Lubricate the machine with recommended grease every 8 working hours. Use the grease gun provided to supply grease to all lubrication points which are located on both sides of the machine as shown in the figure.



A: Lubricate Points

RECOMMENDED GREASE

Lubricant Grease (or equivalent):

Esso	Beacon 2
Shell	Alvania Grease R-2
Kraff	KL2

STANDARD EQUIPMENT SUPPLIED WITH MACHINE

(including items pre-installed on the machine)

Flat Bar Shear Blades	1 set
Angle/Round/Square Bar Shear Blades	1 set
Rectangular Bend Blades	1 set
Round Punch and Die (Ø20mm)	1 set
Punch and Bend Support Tables	1 set
Punch Retaining Nut / Sleeve	1 set
Die Holder	1 pc
Punch Stripper Unit	1 pc
1 Meter backgague	1 pc
Work station Safety Guards	1 set
Lifting Eye Bolt	1 pc

TOOL BOX	1 pc
Grease Gun	1 pc
Adjustable Spanner (250mm)	1 pc
Screw Drivers (+)	1 pc
Screw Driver (-)	1 pc
Hex Key Wrench Set	1 set
Hex Wrench (12mm)	1 pc
Hex Wrench (14mm)	1 pc
SPA Spanner	1 pc

CONTROL SWITCHES

ISOLATOR Switch - This switch controls the main electric source. It also functions as a lock for the electric box. At the ON position the switch locks the electric box and enables you to start the machine. At the OFF position, the power is cut off and the electric box can be opened.

PUMP ON - Push this button to turn on the machine. The EMERGENCY STOP button must be released before the PUMP ON button will function. The green POWER LIGHT stays on when the machine is turned on.

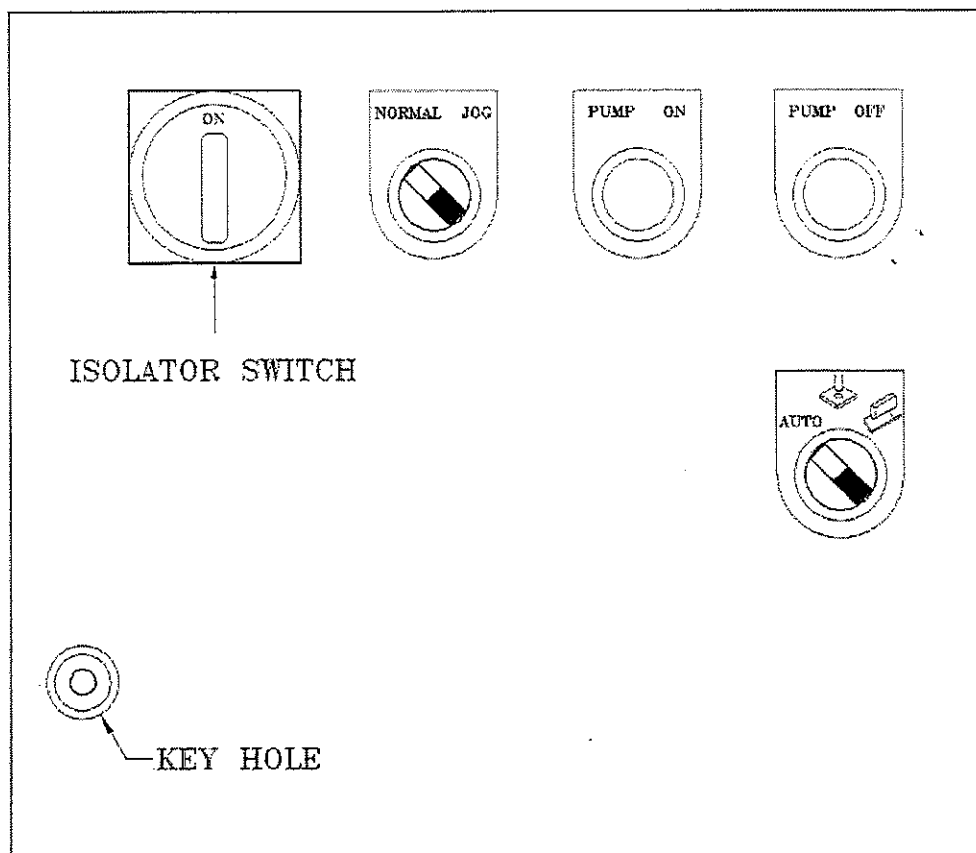
PUMP OFF - Push this button to turn off the machine.

EMERGENCY STOP - Use the EMERGENCY STOP button to stop the machine in an emergency. The Emergency button must be released before the PUMP ON button will function. To release it, turn knob slightly to the right.

NORMAL/JOG keyed Switch - This switch allows selection between the normal (automatic return) mode and the jog (low pressure, slow speed, non- return) mode. Use the normal mode to operate the machine. Use the jog mode to align punch/die, to set blade clearance, and to set the strokes. In NORMAL mode, the ram/slide move in both up and down directions. In JOG mode, the hydraulic system is in low pressure setting and the ram/slide move only in downward direction at slower speed. Also refer to the section on Low Pressure Tool Alignment in JOG mode.

AUTO/PUNCH/BEND Switch – This switch is to select the operation mode. Turn to AUTO to use the electric backgauge, turn to PUNCH to use the foot switch for punching/shearing station, and BEND to use the Bending station with the dedicated foot switch. This switch is electrically interlocked with the Bend Safety Guard. Use of key is required to switch to Bend mode. When in SHEAR mode, the machine is IMMOBILIZED if the Bend Safety Guard is lifted.

Warning: Due to the nature of the ironworker, the punching station, shearing stations, and bending station all moves together. The key for the AUTO/SHEAR/BEND switch is intended **ONLY** for the supervisor of the IW-60B who understands the potential risk of the machine and is authorized to use the Bending station. The key should be safely kept by the supervisor and must **NOT** be left on the machine.



Low pressure tool alignment with JOG mode

Sunrise Fluid Power Inc. is the market leader in providing low pressure tool alignment setting on its products. When the NORMAL/JOG switch is turned to JOG mode, the machine provides a low pressure and low speed setting for safer tool alignment operation. This will reduce tool damages due to miss-alignment of tools and increase the operator safety. If a material is placed under the punch in JOG mode, the punch will only make a dent on the material without punching through. In addition, the punch cylinder will only move downward when the foot paddle is pressed, and will not retract backup when the foot paddle is released. Turn the NORMAL/JOG switch to NORMAL to move the cylinder upward.

The JOG mode works for all working stations. The safety cover of other stations MUST be closed for the machine to move.

WARNING: for ease of tool alignment, the stripper cover is allowed to open in JOG mode. Even with the low pressure setting, be sure to keep all body parts away from moving parts, wear appropriate eye protection goggles and gloves for eye and hand protection. The JOG mode is a keyed switch, and only properly trained and authorized personnel should have access to the key and use the machine with JOG mode.

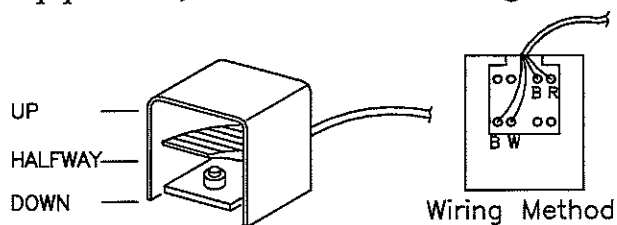
FOOT SWITCH

The machine uses foot switches for easy and fast operation control. **One switch is for the punch/shear, and the other switch fixed to the machine base is exclusively for the bending station.** The foot switch enables the operator to use the machine while holding the work piece with both hands. NEVER has one operator hold the material and another operator press the foot switch.

The foot switch has three positions: UP, HALFWAY and DOWN.
UP position is when you release the foot switch completely.
HALFWAY position is when you press or release the foot switch halfway.
DOWN position is when you press the foot switch all the way down.
When not pressed, an internal spring pushes the switch to the UP position.
The foot switch functions differently in the NORMAL and the JOG modes.

In NORMAL mode, press the foot switch to DOWN position for the downward motion of the slide. Release the foot switch to HALFWAY position will cause the slide to stop. This is very useful in position the work piece without using the gauge stoppers. Press the foot switch again to Down position and the slide will continue moving downward until reaching the lowest position set by the limit switches. Releasing the foot switch completely (UP position) will cause the slide to return to its up position.

In JOG mode, press the foot switch to the DOWN position for the downward motion of the slide. The slide stops moving when the foot switch is released to either HALFWAY position or UP position. The slide does not move back up even when foot switch is completely released. This allows the operator to make necessary adjustment / alignment. In other words, the slide moves only in one direction in JOG mode. To move the slide back to the up position, switch the Normal/Jog switch to NORMAL.



ELECTRIC BACKGAUGE

Optional electric touch-and-cut back gauge is also available to control the movement of the machine (instead of using the foot paddle). To use the electric back gauge, turn the Auto/Shear/Bend switch to AUTO. To use the foot switch, turn the switch to either Shear or Bend.

To use the electric backgauge:

- 1) Install the two pipes of the backgauge.
- 2) Connect the sensor wire to the socket on the back of the machine with the key way correctly aligned.
- 3) Turn the switch to AUTO.
- 4) Adjust the back gauge to the desired length.
- 5) Position the sensor on the back gauge so that the working piece will touch the sensor during operation.
- 6) To operate, simply push in the work piece. When the sensor is touched by the work piece, the blade will start moving down after a short delay. The delayed time can be adjusted by a timer inside the electrical box. After the shear, the cut piece falls out and the blade automatically moves back up for next shear.
- 7) If the length of the sheared piece is not the same as the reading on the backgauge, there is a adjustment nut on the backgauge to set the zero-position of the backgauge reading.

NOTE: Once the sensor is touched and the shearing operation has started, *the machine will complete the whole shearing cycle*. The machine cannot be stopped halfway unless the emergency or stop button is pushed. Although the electric backgauge increases the working efficiency, special care is required when using this function. Carelessness often causes accidents.

STROKE ADJUSTMENT

Certain working operations do not require a full working stroke. For large quantities of the same operation, merely execute the required working stroke distance to save operating time. The position and length of the cylinder strokes are controlled by limit switches and actuators on a drive bar installed inside the back panel of machine. There are two limit switches, one for the upper limit and one for the lower limit. Adjust the length of stroke by turning the actuator knob mounted on the drive bar. Fix the actuator position by tighten the fixing nut.

IMPORTANT: The limit switch must be actuated before the Cylinder reaches the full extend or full extract position. In other words, the pump should be unloaded in upper or lower limit of the slide travel. *Fail to do so can overload the motor and damaging the pump.* If the pump is not in unloading position at either upper or lower limit, a loud noise is heard from the pump. Immediately turn the machine off and adjust the limit switch actuators to set the proper stroke movement.

ADJUST THE MAIN CENTRAL SLIDE

The main central slide is the large middle plate that holds the moving shear blades, Bend top blade, and the punch. It should be pushed against the rear machine body plate and stay vertical with the machine body. The movement of the main central slide should be stable and without side shifts. If the main central slide moves sideways front to back or left and right, or if the blades wear abnormally, the central slide needs to be adjusted.

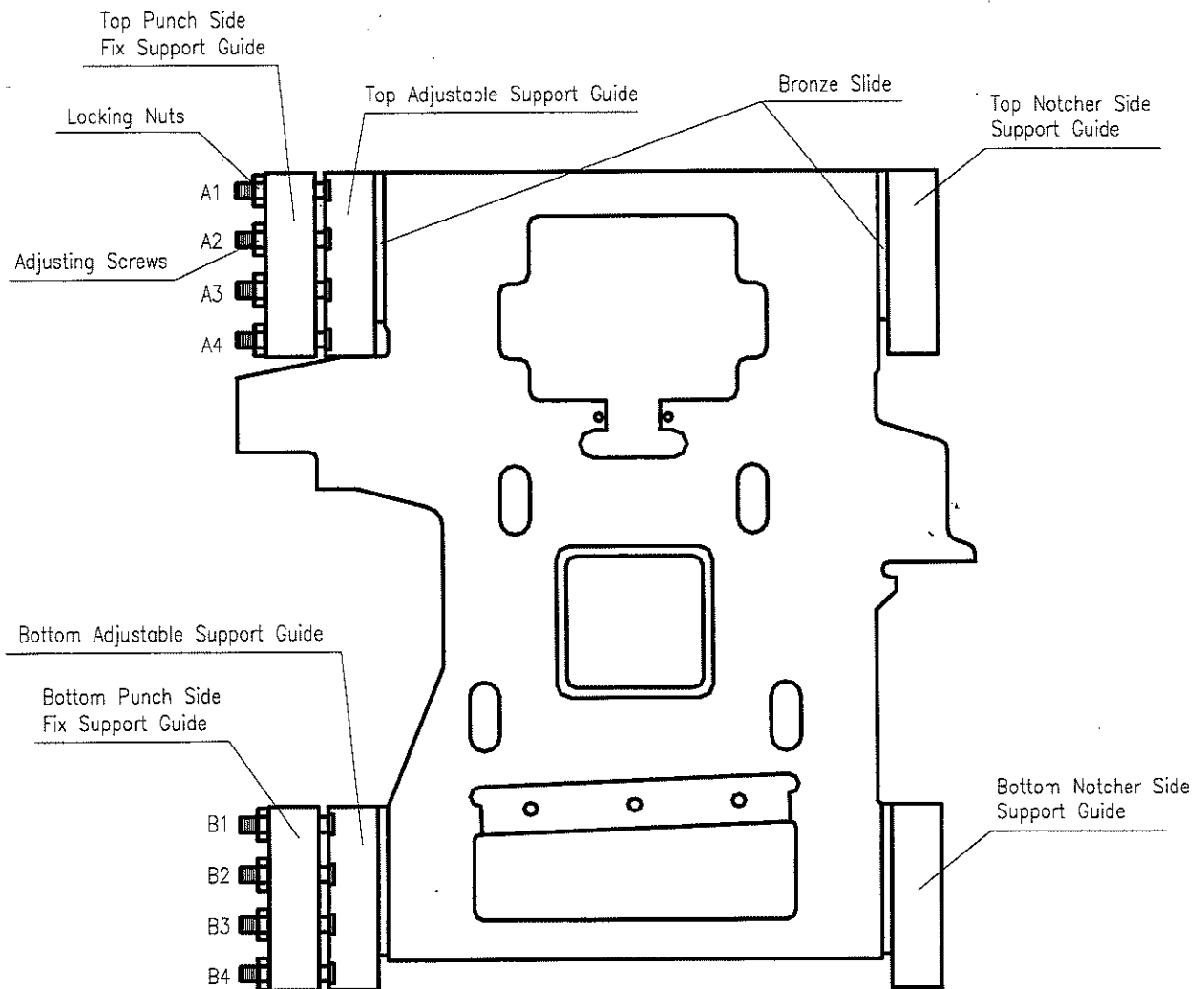
To adjust the main central slide contact with the rear machine body plate, following the steps below:

- 1.) Loosen the locking nuts for the "Pressure Pads" that are located on the front body of the machine. They can easily be identified as each has a grease nipple (same location as the grease points).
- 2.) Turn on the power. Then, tighten the Pressure Pad Screws firmly while moving the central slide up and down. The Pressure Pad Screws should be adjusted in the diagonally cross order. Then, loosen each screw *one third of a turn*.
- 3.) Repeat the procedure for each of the pressure pads to make sure each screw is adjusted correctly. When finished, lock in position by tighten the locking nuts.

The central slide moves straight up and down. This vertical movement is guided by four support guides on both sides of the slide, one at the top and one at the bottom on each side. The two guides on the Bender side are fixed, and the two guides on the punch side can be adjusted. To adjust, follow the steps below:

- 1.) Remove the covers at the top of the punching station, and remove the scrap box at the bottom and the cover beneath it.
- 2.) Four adjusting screws at the top and four adjusting screws at the bottom will be exposed. Loosen the locking nuts on the eight adjusting screws.
- 3.) Tighten the adjusting screws firmly in the order of A2→B2→A3→B3→A1→B1→A4→B4 (see figure on next page). Then loosen each screw *one third of a turn*.
- 4.) Repeat the procedure for each of the adjust screws. Lastly, lock in position by tighten the locking nuts.
- 5.) Put back the covers and check all blade clearances and the main slide

movement again.



PUNCHING STATION

Standard Equipment

The machine is equipped with one set of Ø20mm round punch and die. Many other punching tools of different sizes are also available upon request. In addition, a large 2-piece support table with gauges is installed as standard equipment.

IMPORTANT: The punch stripper must be closed properly during operation. On some models with an interlock limit switch inside the stripper back cover, the punching station is **IMMOBILIZED** if the stripper is open.

Alignment of Punch and Die

The punch and the die may have previously been centered. However, you should check the tools regularly for proper alignment. To center the die, follow these steps:

1) Insert Punch into Retaining Nut, then tighten the nut onto the Retaining Thread.

2) Insert the Die into the Holder and secure the set screw.

3) Loosen all of the die holder fixing bolts

4) Lower the punch gradually (by using the JOG mode).

WARNING: Be very careful that the punch does not hit the die which can break the punch and create a hazard.

5) After the punch is inside the die, turn power off and isolate the machine.

6) Adjust the position of the Die Holder until the Clearance around the punch and die is even all the way around.

7) Tighten the die holder bolts to fix the die position.

8) Adjust the limit switches to change the stroke length if necessary.

When setting up square or oblong punches and dies, be sure to properly locate the key on top of the punch in the keyway of the punch retaining thread. Check carefully the alignment (both position and direction) of the die with the punch. Incorrect set up will damage the punch and die, and may cause danger.

IMPORTANT: Be sure to check the alignment of the punch and die whenever tools are changed.

Punch and Die Clearance

Punch size is the same as the desired hole size. Die size is bigger by the clearance. The clearance depends on the thickness of the material. The clearance is usually about 10% of the material thickness. Please also refer to the following chart for recommend clearance.

Material Thickness	mm	up to 4	4 - 9	9 - 14	14 - 20
Die Clearance	mm	0.2	0.7	1.2	1.7

Adjusting Stripper

- The distance between the stripper and the material should be adjusted to about 2~3mm. Adjust the stripper height each time when changing to material of different thickness.
- Adjust the stripper height by turning the large knurled screws at both sides of the stripper.
- If the stripper tend to fall down at the right side, tighten the spring at the left side of stripper.
- Make sure the stripper is at even height for left and right sides. The stripper should be adjusted so that the work-piece contacts the stripper evenly when the punch retracts out of the material. Unbalanced stripping may break the punch and cause hazard.
- If the material cannot have adequate contact with the stripper when stripping, such as asymmetrical material, material too small, or punched hole too close to the edge of material, do not proceed with the punching operation.

The stripper has exchangeable plates with various opening sizes to match the size of the hole. Select the plate with the smallest suitable opening. Keeping the opening close to the size of punch will greatly reduce deformation, especially on thinner materials.

Actual Punching Force

The actual force required in a punching operation is calculated by the circumference of the hole multiplied by the thickness of material multiplied by tensile strength of material.

$$\text{Max. Capacity} = \text{circumference} \times \text{thickness} \times \text{tensile strength}$$

The capacity chart is based on material with 45 kg/mm² tensile. Do not attempt a punching operation that requires force over the maximum capacity of the machine.

Precaution

- 1) Always use die with the proper clearance.
- 2) Always check the alignment after each tool change.
- 3) To prevent overloading and breakage of the punch, do not punch material which is thicker than the hole diameter,
- 4) Do not punch partial holes. Punching incomplete holes will cause the punch and die to bend and break.
- 5) Applying some lubricant oil on the punch will prolong the life of the punch and reduce the stripping load.
- 6) Regrinding of punching tools is not recommended.

Punch and Die Lubricant

SHELL	-	GARIA 927
B. P.	-	SERVORA 68
CASTROL	-	ILOBROACH 219
DUCKHAMS	-	ADFORNOL EP7
JOSEPH BATSON	-	LB 733

Punch Operation

Punching on Flat Plates:

- 1) Turn the SHEAR/BEND switch to SHEAR and be sure the Bender cover is closed.
- 2) Check again that the stripper, punch/die alignment is properly adjusted, and the height of the stripper is adjusted to about only 2 to 3mm above the work material.
- 3) Set the gauging stoppers to the desired position.
- 4) Position the plate on the working table against the stoppers.
- 5) Press the foot switch to the DOWN position to execute the punch.
- 6) Release the foot switch for the punch to retract. During stripping, the material can be lifted up against the stripper and then dropped off when the punch retracts out of the hole. **Be very careful with fingers as the material movement has potential of hazard.**

Punching on Angles:

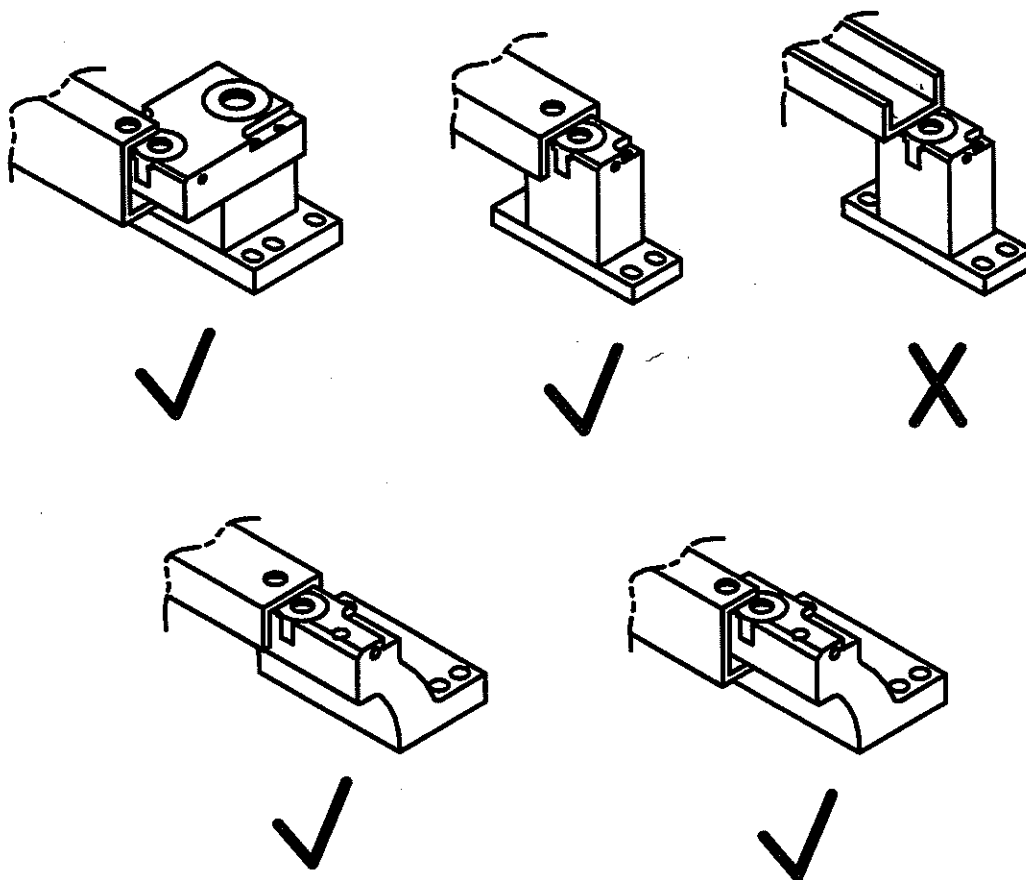
- 1) Turn the SHEAR/BEND switch to SHEAR and be sure the Bender cover is closed.
- 2) Check again that the stripper, punch/die alignment is properly adjusted, and the height of the stripper is adjusted to about only 2 to 3mm above the work material.
- 3) Remove the front piece of the 2-piece table.
- 4) Set the gauging stoppers to the desired position.
- 5) Position the angle against the die holder with one flange facing downward. **Do not position the angle with one flange facing upward.**
- 6) Press the foot switch to the DOWN position to execute the punch.
- 7) Release the foot switch for the punch to retract. During stripping, the material can be lifted up against the stripper and then drop off when the punch retracts out of the hole. **Be very careful with fingers as the material movement has potential of hazard.**

Punching on Channels:

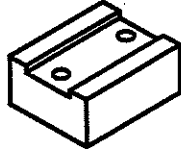
- 1) Turn the SHEAR/BEND switch to SHEAR and be sure the Bender cover is closed.
- 2) If punching the channel web, use the single-hole die holder with the table removed. If punching the channel flange, use the optional overhang two-hole die holder with the lower support portion and the

front piece of the 2-piece table removed. Special goose-neck die holder is also available for punching both channel web and channel flange. See figure.

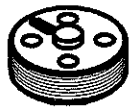
- 3) Check again that the stripper, punch/die alignment is properly adjusted, and the height of the stripper is adjusted to about only 2 to 3mm above the work material.
- 4) If punching channel web, position the channel with both flanges facing downward. If punching channel flange, position the channel with the flange being punched on top. See figure.
- 5) Press the foot switch to the DOWN position to execute the punch.
- 6) Release the foot switch for the punch to retract. During stripping, the material can be lifted up against the stripper and then drop off when the punch retracts out of the hole. **Be very careful with fingers as the material movement has potential of hazard.**



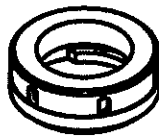
Punching Station Assembly



Retaining Thread Support



Punch Retaining Thread



Punch Retaining Nut



Round Punch



Oblong Punch



Punch Sleeve

FLAT BAR SHEAR STATION

This station is equipped with a hold down suitable for shearing of various material thickness. The machine also comes with a feed table with guides for material support and positioning. Besides shearing flat bars, this station can also shear the flange of angles.

Blades

Upper Blade (Moving): The moving blade can be turned to utilize both cutting edges.

Lower Blade (Stationary): The stationary blade can be turned for the use of all four cutting edges to provide a long blade life.

Cutting Clearance

The width of the cutting clearance (the distance between the moving and stationary blades) had been pre-adjusted in the factory to be between 0.2 and 0.3mm. The cutting clearance depends on the thickness and tensile strength of the material. The thicker the material, the wider the cutting clearance should be. Improper cutting clearance can result in the deformation of the working piece. Too large of clearance when shearing thin material can cause the material to bend over instead of being sheared.

The cutting clearance can be adjusted by the fix bolts that "pull in" the stationary blade and the adjusting screws that "push out" the stationary blade. To adjust clearance, follow these steps:

- 1) In JOG mode, move down the top blade to the lower position so that the opening between blades are closed.
- 2) Turn power OFF and isolate the machine.
- 3) Remove the holddown and the feed table.
- 4) Loosen the large fixing bolts that hold the lower blade.
- 5) Loosen the locking nuts on the adjust screws.
- 6) Adjust the clearance by turning the adjusting screws, which push the lower blade towards the upper blade.
- 7) Check clearance using a feeler gauge. **It is very important to make sure that the cutting clearance is uniform for the entire blade.**
- 8) Tighten the fixing bolts to fix the position of lower blade.

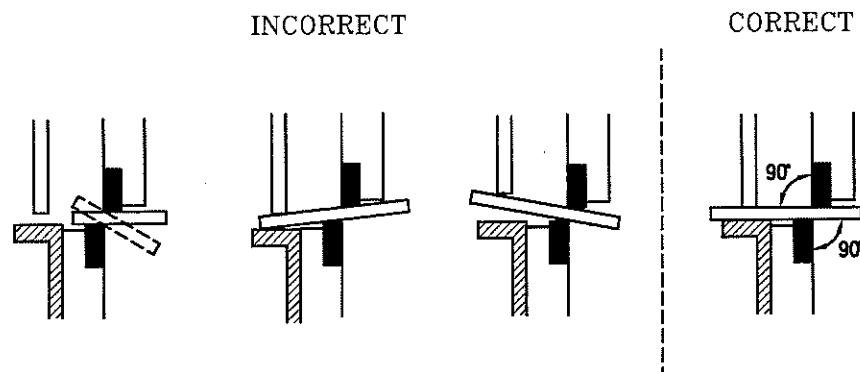
- 9) Tighten the locking nuts of the adjust screws to prevent loosening.
- 10) Reinstall the table and holddown.
- 11) Check clearance again to ensure even clearance.

Precaution

- 1) **Do not shear any pieces too small to be secured in position by the holddown. Doing so can seriously damage the machine beyond repair. See Figure.**
- 2) Always feed cutting material from front. Never insert material from back.
- 3) Keep the cutting edges sharp. Check the sheared material to see whether the cutting clearance is properly set and that the condition of the blades are O.K.
- 4) Clean the scraps and waste materials regularly and keep the work area clean.

Flat bar Shear Operation

- 1) Turn the SHEAR/BEND switch to SHEAR and be sure the Bender cover is closed.
- 2) Push the material under the hold-down to the desired length. Use the backgauge for getting the precise length.
- 3) Be sure that the material is properly positioned on the table and under the hold-down. Incorrect positioning can damage the blades and/or the machine.
- 4) Use the guide stoppers on the table to position and stabilize the material.
- 5) Lower the holddown to firmly press the material.
- 6) Press the foot switch to execute the shear and release foot switch for the slide to move back up. Alternatively the electric backgauge can be used. See section on Electric Backgauge for details.



Angle Flange Shear Operation

(Note: not available on models with hydraulic holddown)

The vertical slot on the hold-down allows the shearing of angle flanges at various degrees. To operate:

- 1) Push the material into the vertical slot on the hold-down until the vertical flange touches the upper blade.
- 2) Align the material to the desired shearing degree using the marks on the feeding table, then use the movable guide to stabilize the material.
- 3) Lower the holddown to firmly press the material.
- 4) Press the foot switch to execute the shear and release foot switch for the slide to move back up. Electric backgauge should not be used in this operation.

OPTIONAL HYDRAULIC HOLDDOWN

The same hydraulic holddown is used for flat bar shear and angle/square/round shear station. The hydraulic holddown press down the material before shear, so the material is well fixed in position during shearing, which can minimize deformation due to material movement. It can increase the efficiency and performance of the machine.

The hydraulic holddown can be turned off by turn the hydraulic valve at the side of holddown by 90 degrees.

The shearing operation with hydraulic holddown is similar to the standard holddown, except the holddown will move down automatically when the foot paddle is pressed.

DANGER: THE METAL BAR FIXED ON THE HOLDDOWN IS THE AWARENESS BARRIER. NEVER PUT FINGER OR ANY BODY PARTS BEYOND THE DANGER ZONE ESTABLISHED BY THE AWARENESS BARRIER. THE METAL BAR SHOULD FREELY DROP DOWN TO THE TABLE AND CAN ONLY BE LIFTED BY THE WORKING MATERIAL. NEVER LIFT THE METAL BAR BY HAND.

ANGLE SHEAR and **SQUARE/ROUND BAR SHEAR STATION**

This station is equipped with a hold down suitable for shearing angle at 90 degree and for shearing various sizes of square and round bars. As optional tooling, this station can also shear various type of channels or section bars by changing the moving and stationary blades and hold-downs.

Cutting Clearance

Adjustment of the clearance of the bar shear station is by the adjusting screws that push-in the stationary blade against the moving blade. To adjust the clearance, follow these steps:

- 1) Turn power OFF and isolate the machine.
- 2) Remove the holddown.
- 3) Loosen the locking nuts.
- 4) Tighten the pushing screws firmly. Then, loosen each screw *one third of a turn*. Lock in position by tighten the locking nuts.
- 5) Reinstall the holddown.

Precaution

- 1) **Do not shear any pieces too small to be secured in position by the holddown.**
- 2) Always feed cutting material from the front. NEVER insert material from the back.
- 3) Clean the scraps and waste materials regularly and keep the work area clean.

Angle/Square Bar/Round Bar Shear Operation

- 1) Turn the SHEAR/BEND switch to SHEAR and be sure the Bender cover is closed.
- 2) Push the bar through the slot on the holddown to desired length. Use of the backgauge for precise length.
- 3) Lower the holddown to firmly press on the angle / bar.
- 4) Press the foot switch to execute the shear and release foot switch for the slide to move back up. Alternatively the electric backgauge can be used. See section on Electric Backgauge for details.

BENDING STATION

The IW-60B comes integrated with bending station. This station comes standard with a 300mm (1 foot) long bending tool include multi-vee bending die. A table with gauging stopper is also equipped to improve the ease of operation. The table also functions as part of the safety cover. **DO NOT REMOVE THE COVER NOR TABLE OF THE BENDING STATION.** If the cover of the Bending station is opened and the machine is not turned to BEND mode, the machine is immobilized.

A separate foot paddle is fixed on the machine base (non-movable) and is exclusively for the bending station. When the AUTO/SHEAR/BEND switch is turn to BEND, only the fixed foot paddle can operate the machine.

WARNING

The nature of the bending station requires opening the notcher safety cover during operation. This creates a potential risk to the operator. The notcher safety cover is interlocked by a key at the PUNCH/SHEAR/BEND selection switch. **The key is intended for properly trained and authorized operators only. NEVER LEAVE THE KEY ON THE MACHINE.**

Always make sure that no fingers and other body parts are in between the upper and lower bend tool. Operator is warned by a flashing warning light when safety cover is opened. Exercise caution and be alert to potential risks. **Bending safety cover must be closed when not using the notching station.**

Bending Operation

- 1) Turn the Auto/Shear/Bend switch to BEND.
- 2) Open the safety cover.
- 3) Position the plate on the support table. Use the gauging stoppers on the support table for more accurate positioning.
- 4) Press the bend station foot switch to execute the Bend and release foot switch for the slide to move back up. **Be very careful with fingers and keep away from all moving parts.**
- 5) **Close the safety cover after each operation. Do not leave the cover open.**

MAINTENANCE

1. Before operating the machine:

Routinely check the electrical power cable and the foot switch cable for any loosening or damage.

Inspect all the blades, punch, die, and safety guards to ensure they are in good condition.

Clean all slugs, cut off pieces, and other waste material from each work stations and around the machine.

2. Filter and Oil Change:

Take off and clean the suction filter inside the oil tank every time when changing oil. The first oil change should be performed after approximately 600 operating hours. Further oil change is needed for every 1200 operating hours. A drain outlet is located at the base of the oil tank.

Screw back the cleaned suction filter after the draining the oil. If the suction filter is damaged or clogged, replace the suction filter. Do not mix different brands of oil.

Hydraulic Fluid (or equivalent)

Mobil	DTE 46
Esso	Nuto H46
Shell	Tellus 46 or Hydraulic oil 46
B.P.	Energol HLP 46
Castrol	Hyspin AWS 46 6018

3. Lubrication

Lubricate the machine with recommended grease every 8 working hours. Use the grease gun provided to supply grease to all lubrication points which are located on both sides of the machine. (See section on Lubrication)

4. **Oil level:**

Make sure the hydraulic oil level is in the range indicated on the oil level gauge. It is better to keep the oil level close to the high mark indicated on the gauge.

Model	Capacity (liter)	Oil Required (liter)
IW-45K	65	48
IW-60K	75	58

5. **Oil temperature:**

The oil temperature should be under 50 degrees Celsius. If the upper/lower limit switches are not set correctly for unloading of the pump, the oil temperature can raise quickly. Adjust the limit switches so the pump will be in the unloading condition.

6. **Hydraulic pressure:**

The working pressure of the hydraulic system is pre-set in the factory. The pressure should ONLY be adjusted by a service engineer. There is a pressure gauge to indicate the working pressure of the machine. The pressure gauge should normally be closed and be used only during service/maintenance work.

Model	IW-60B
Max Pressure	250 Kg/cm ²

AIRBORNE NOISE

The continuous airborne noise level of the machine under normal condition is approximately 75 dB \pm 5 dB.

TROUBLE SHOOTING

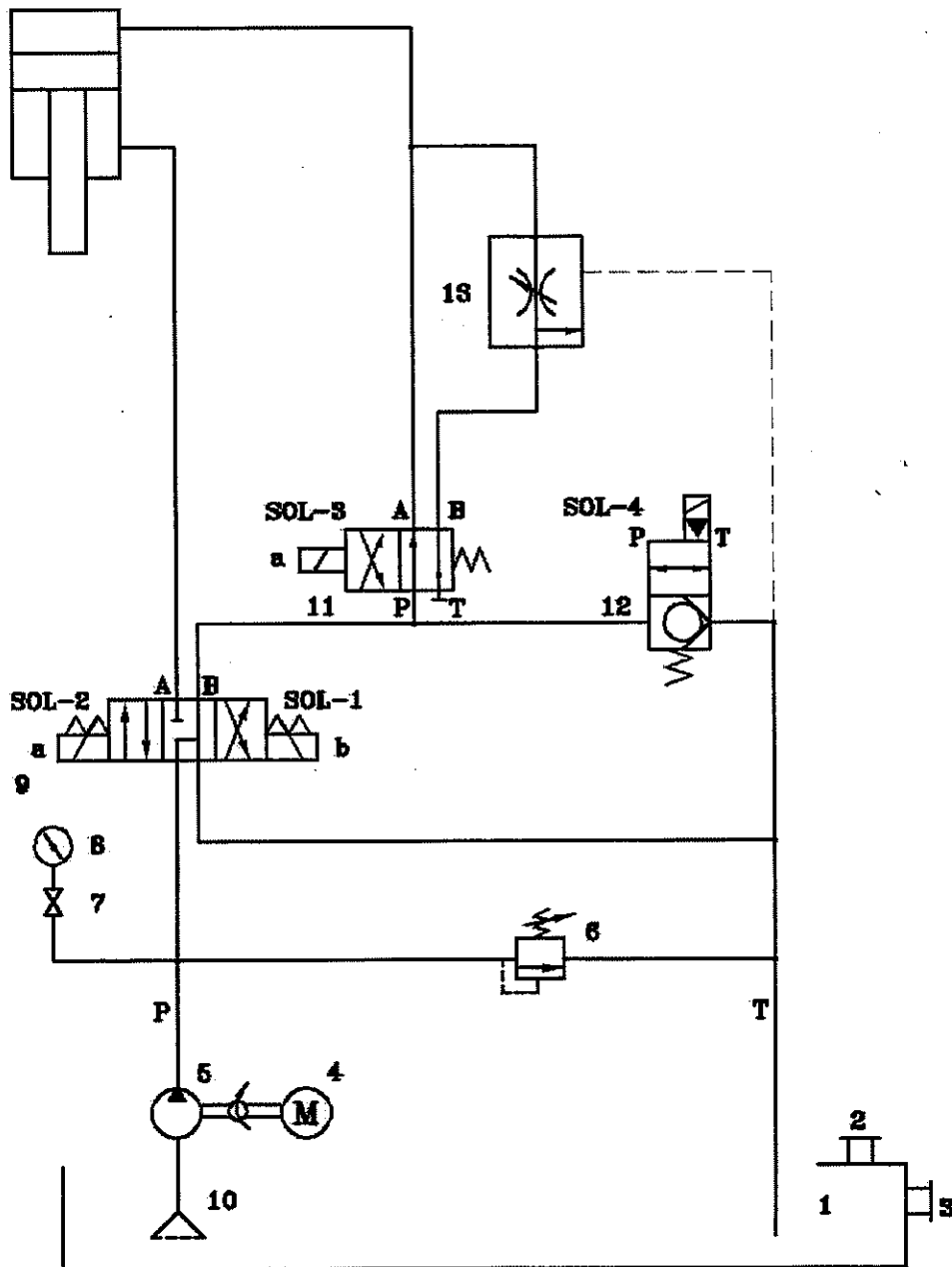
Problem	Probable cause	Solution
Motor cannot start	1. No power.	Check the power source.
	2. Isolator switch not turn on.	Turn the switch to ON position.
	3. Emergency buttons not released.	Release the emergency button by turning the knob to the right.
	4. Motor broken.	Replace motor.
	5. Motor power cable not connected properly.	Check the cable connection and reconnect cable. Change cable if worn out.
	6. Motor circuit breaker jumped to OFF.	Reset the breaker to ON position.
	7. Fuse broken.	Check and replace fuse.
	8. Magnetic switch broken or burn out.	Replace switch.
	9. Transformer broken.	Replace transformer
Motor is on, but machine won't move	1. Motor turning in wrong direction.	Turn machine off. Change any two of the three power source wire. Re-check motor direction.
	2. Not enough hydraulic oil.	Check oil level and add oil if necessary.
	3. Solenoid valve stuck.	Clean or replace valve.
	4. Solenoid valve coil burn out.	Replace solenoid valve.
	5. Foot paddle not sending signal.	Check paddle and replace switch if necessary.
	6. Relay stuck or burn out.	Replace relay

Problem	Probable cause	Solution
(cont.)	7. Interlocked safety covers not closed.	Close covers/stripper.
	8. Limit switch not set at correct position.	Adjust the limit switch for proper stroke travel setting.
Machine moves, but cannot reach capacity	1. Relieve valve not set correctly	Check hydraulic pressure and adjust relieve valve (tighten to increase pressure)
	2. Relieve valve broken.	Replace relieve valve.
	3. Pump broken.	Replace pump.
	4. Cylinder internal leak.	Contact dealer for service.
	5. Pilot check valve not set correctly.	Adjust the correct pressure setting of the valve.
Excess hydraulic noise	1. Motor turning wrong direction.	Turn machine off. Change any two of the three power source wire. Re-check motor direction.
	2. Pump worn out.	Replace pump.
	3. Filter is dirty.	Replace filter element.
	4. Not enough oil.	Check oil level and add oil if necessary.

Hydraulic Circuit

IW-60B

(Slow Bending Speed + Low Pressure JOG)



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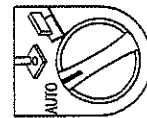
Hydraulic Circuit Parts

IW-60B

(Slow Bending Speed + Low Pressure JOG)

No.	Description	Q'ty	Specification / Part No.
1	Oil Tank	1	218702920 (SLOW)
2	Filler Breather Filter	1	53702HY08A
3	Oil Level Gauge	1	53701LG4
4	Motor	1	7.5HP
5	Pump	1	53201GHP2AS22E
6	Relief Valve	1	53656RPECFAN
7	Gauge Cock	1	53652ST02L
8	Pressure Gauge	1	53621CBLM63350
9	Solenoid Valve	1	53651DFA02003
10	Suction Filer	1	53301MF106
11	Solenoid Valve	1	53651DFA02001
12	Solenoid Operated Valve	1	53654EP08W2A001
13	Priority Flow Control Valve	1	53659FR10W33NL

S01: EMERGENCY STOP
S02: PUMP OFF
S03: PUMP ON
FS1: FOOT SWITCH
FS2: FOOT SWITCH
OF: MOTOR CIRCUIT BREAKER
S01: NORMAL/JOG
S02: RAM UP STOP
S03: RAM DOWN STOP
S04: HOTCH SAFETY INTERLOCK
S04: PUNCH SAFETY INTERLOCK



SOURCE		CS1		CS2		CS3		CS4		CS5		CS6		CS7		CS8		CS9		CS10		CS11		CS12		CS13		CS14		CS15		CS16		CS17		CS18		CS19		CS20		CS21		CS22		CS23		CS24		CS25		CS26		CS27		CS28		CS29		CS30		CS31		CS32		CS33		CS34		CS35		CS36		CS37		CS38		CS39		CS40		CS41		CS42		CS43		CS44		CS45		CS46		CS47		CS48		CS49		CS50		CS51		CS52		CS53		CS54		CS55		CS56		CS57		CS58		CS59		CS60		CS61		CS62		CS63		CS64		CS65		CS66		CS67		CS68		CS69		CS70		CS71		CS72		CS73		CS74		CS75		CS76		CS77		CS78		CS79		CS80		CS81		CS82		CS83		CS84		CS85		CS86		CS87		CS88		CS89		CS90		CS91		CS92		CS93		CS94		CS95		CS96		CS97		CS98		CS99		CS100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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	SA1: NORMAL/JDG	(2A 3B)
	SA2: AUTO/PUNCH/BRAKE	(4A 2B)
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Electrical Parts

IW-60B (CE)

(Electric backgauge, Two foot paddle, Slow Bend Speed, Low Pressure JOG, light)

Code	Description	Q'ty	Function
QF	Motor Circuit Breaker	1	Motor Protection
FU1,FU2,FU3	Fuse	3	Control Circuit Protection
FU4	Fuse	1	Spot Light Protection
QS	Isolator Switch	1	Circuit Interrupter
SB1	Push-Lock Push Button	1	Emergency Stop
SB2	Flush Push Button (Red)	1	Pump Off
SB3	Flush Push Button (Green)	1	Pump On
SA1	Selector Switch	1	Normal/Jog Key Switch
SA2	Selector Switch	1	Auto/Punch/Brake Key Switch
FS1 / FS2	Foot Switch	2	Foot Switch Control
KA1	Relay	1	Ram Upward
KA2	Relay	1	Ram Downward
KA3, KA4	Relay	2	Backgauge Sensor Control
SQ1	Limit Switch	1	Ram UP Limit Switch
SQ2	Limit Switch	1	Ram Down Limit Switch
SQ3	Limit Switch	1	Notch Safety Interlock
SQ4	Limit Switch	1	Punch Safety Interlock
TIMER	Timer for Electric Backgauge	1	Sensor Timer
SENSOR	Sensor	1	Backgauge Sensor
SOL A	Solenoid Valves	1	
SOL B	Solenoid Valves	1	
SOL C	Priority Flow Control Valve	1	
KM	Magnetic Switch (Contactors)	1	
	Bridge Rectifiers	1	
TR	Transformer	1	
	Spot Light	1	

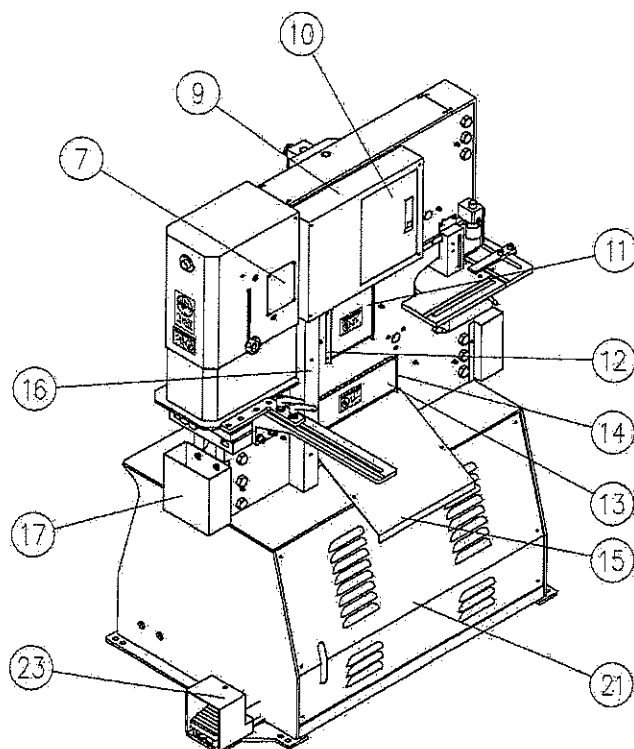
SUNRISE HYDRAULIC IRONWORKER

IW-60B

SPARE PARTS LIST

**633EG870
12-2012**

This diagram shows an exploded view of a portable ultrasonic flaw detector. The main unit (1) is a rectangular box with a control panel (2) on the front. A probe (3) is connected to the unit via a cable (4). The unit is mounted on a base (5) which has a handle (6) and a carrying case (7). A power cord (8) is connected to the unit. A power switch (9) is located on the side of the unit. A power plug (10) is shown at the bottom of the unit. A power cord (11) is connected to the unit. A power switch (12) is located on the side of the unit. A power plug (13) is shown at the bottom of the unit. A power cord (14) is connected to the unit. A power switch (15) is located on the side of the unit. A power plug (16) is shown at the bottom of the unit. A power cord (17) is connected to the unit. A power switch (18) is located on the side of the unit. A power plug (19) is shown at the bottom of the unit. A power cord (20) is connected to the unit. A power switch (21) is located on the side of the unit. A power plug (22) is shown at the bottom of the unit. A power cord (23) is connected to the unit. A power switch (24) is located on the side of the unit. A power plug (25) is shown at the bottom of the unit. A power cord (26) is connected to the unit. A power switch (27) is located on the side of the unit. A power plug (28) is shown at the bottom of the unit.



IW-60B-3D.doc

Sunrise Ironworker Parts List

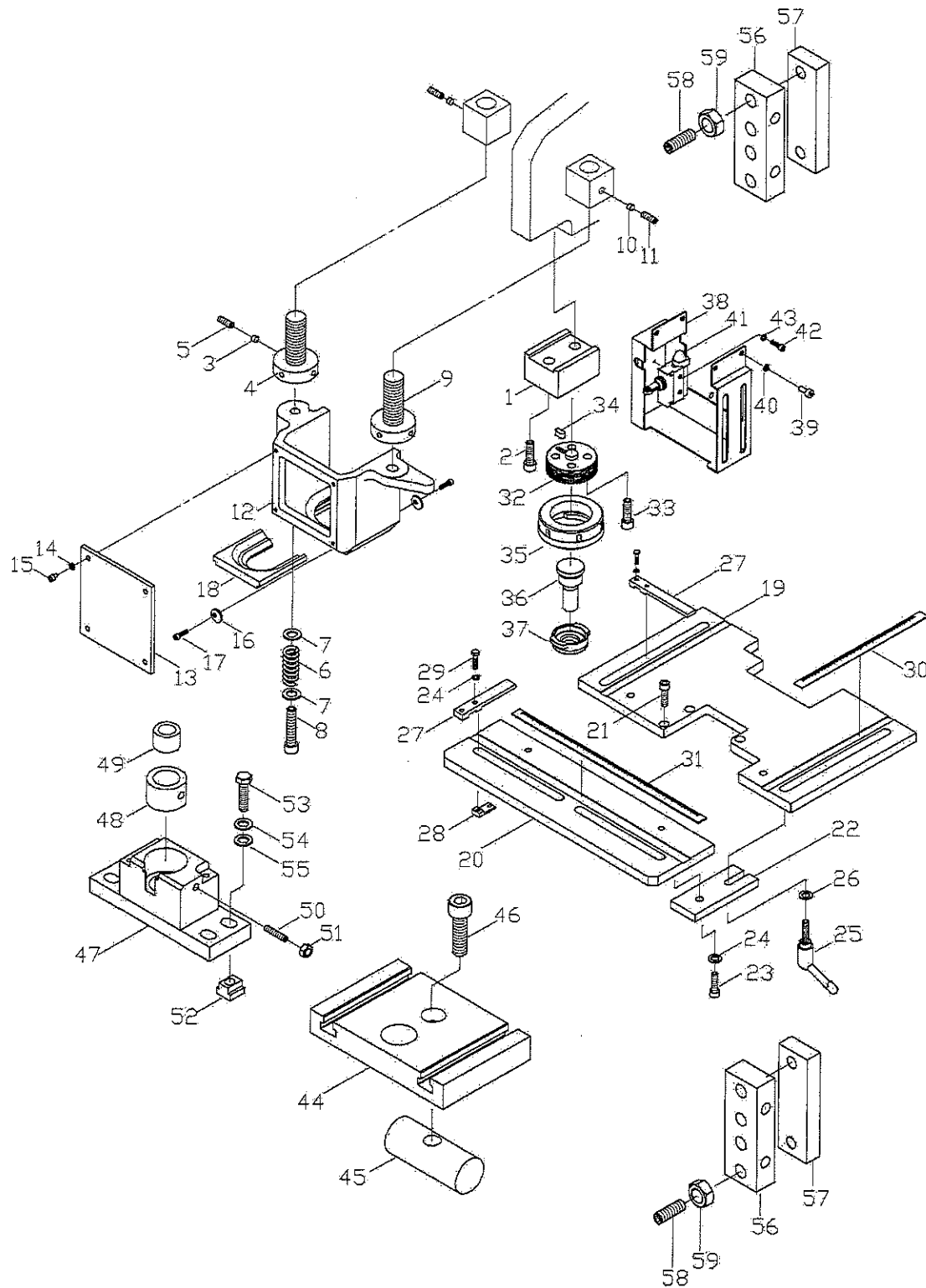
Model: **IW-60B**

Part: **Cover Plates**

Date: 09/2012

Item	Part Number		Description	產品名稱	Q'ty	Memo
1	218702004		Top Cover	上護板	1	
2	212902015		Punching Station Cover	沖孔側護蓋	1	
3	218702011		Bending Station Cover	折曲上護蓋	1	
4	218702012A		Bending Cover interlocked cover	折曲下護蓋	1	
5	218702018		Washer	華司	2	
6	56314C50010027		Turning Knob	螺栓旋鈕 M10X27L	2	
7	218702015		Interlock Adjustment Cover	護板	1	
8	218702020		Cylinder Cover	油壓缸護蓋	1	
9	218702016		Cylinder Cover	油壓缸護蓋	1	
10	218702017		Stroke Adjustment Cover	油壓缸行程調整護蓋門	1	
11	212902006		Safety Guard for Bar and Angle Shear	圓方角鐵剪切護板	1	
12	212902020		Side Safety Guard for Bar and Angle Shear	圓方角鐵角板	2	
13	212902005		Safety Guard for Flat Shear	剪平板護板	1	
14	211602021A		Side Safety Guard for Flat Shear	剪平板角板	1	
15	218702006		Flat Bar Shear Back Plate	滑料片	1	
16	212902013B		Hose Cover	油管配線蓋	1	
17	211302022		Scrap Box for Notching	剪角鐵屑盒	2	
18	218702900	218702001 218702002 218702003 52414APL93902	Electrical Box	電氣箱總成	1	
19	218702008A		Front Base Cover	電氣箱底座護蓋	1	
20	218702009A		Front Base Cover	底座前蓋	1	
21	218702010A		Rear Base Cover	底座後蓋	1	
22	213010005 211310008B		Adjust Pushing Screw Adjust Pushing Nut	壓塊固定螺絲 壓塊固定螺帽	8	
23	52413YC135D		Foot Switch YC-135D(CE)	腳踏開關	2	
24	213210008		Foot Switch Handle	腳踏開關提桿	1	
25	56314118036M10		Waist Shaped Knobs 1180-36-M10	凹槽式旋鈕	1	
26	56320G0061300A		Foot Switch Cable 3/8"X 1300	腳踏開關軟管 1300mm	1	

IW-60B Punching Station



PART2905ALDWG 09/2011

IW-60B-3D.doc

Sunrise Ironworker Parts List

Model: **IW-60K/60B**

Part: **Punching Station**

Date: 09/2012

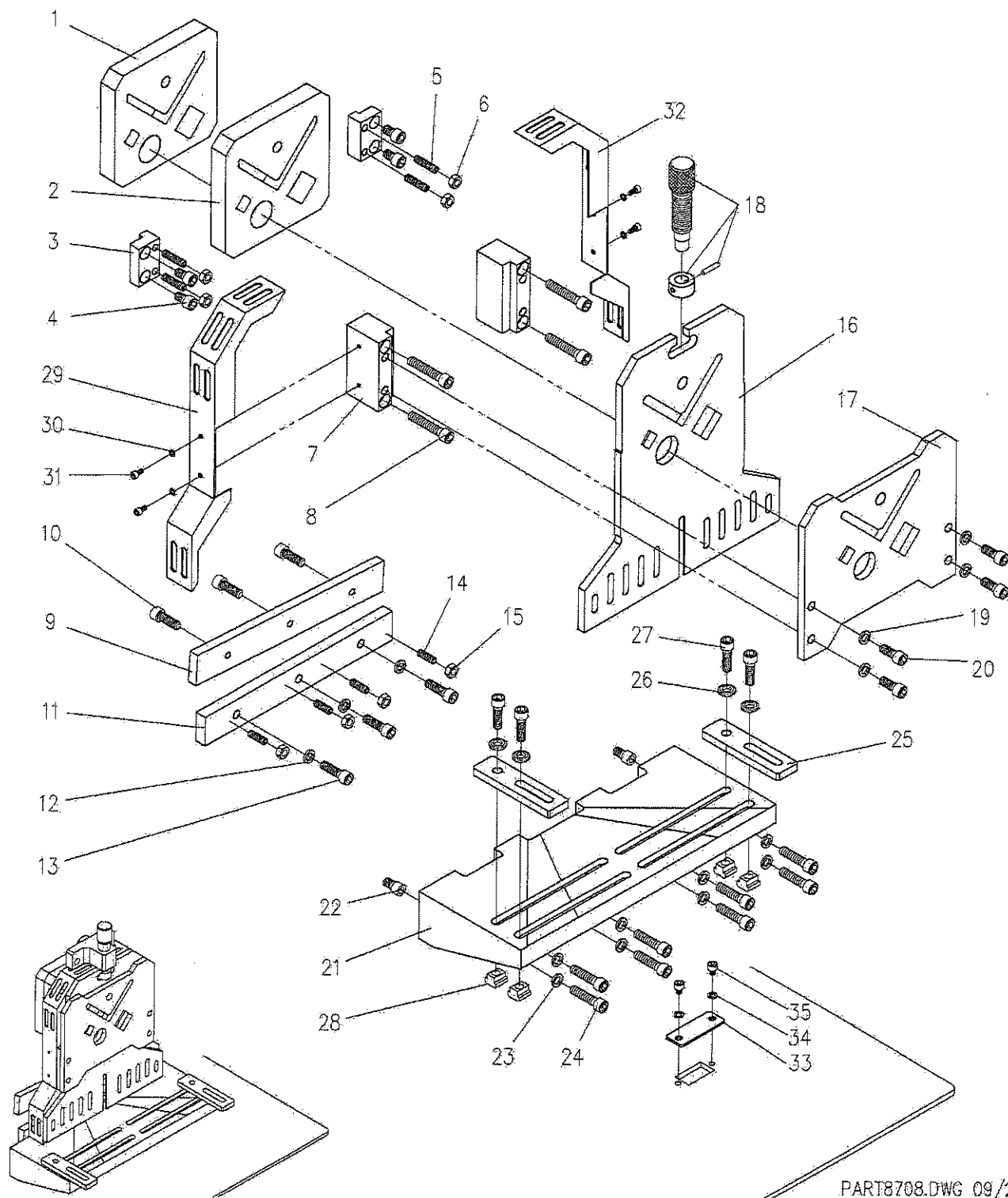
Item	Part Number		Description	產品名稱	Q'ty	Memo
1	212905010		Retaining Thread Support	螺紋塊固定座	1	
2	56301A0014045		Hex Bolt M14X45	六角承窩頭螺栓	2	
3	211305090	212211009	Copper Piece	銅墊	1	
4		211305005B	Stripper Adj. Screw (2)	剝料器調整螺桿(二)	1	
5		56301C0006010	Set Screw M6X10	止付內六角螺栓	1	
6		211305006	Stripper Spring	沖孔剝料器彈簧	1	
7		56303D00012024045	Flat Washer M12	平墊圈	2	
8		56301A0012090	Hex Bolt M12X90	六角承窩頭螺栓	1	
9	211305004B		Stripper Adj. Screw (1)	剝料器調整螺桿(一)	1	
10	213205010		Copper Piece	銅墊	2	
11	56301C0010012		Set Screw M10X12	止付內六角螺栓	2	
12	42STMD	42STMC003B	Stripper	沖孔剝料器	1	
13		42STMC002	Stripper Clear Cover	剝料器護板	1	
14		56303A00005	Spring Washer M5	彈簧墊圈	4	
15		56301A0005012	Hex Bolt M5X12	六角承窩頭螺栓	4	
16		42STBC004	Washer	墊片	2	
17		56301I0005008	Cap Screw M5X8	半圓內六孔	2	
18		42STBC003A-20 42STBC003A-42	Stripper Exchangeable Plate	剝料器底板	1	
19	211905100	212905001A	Punching Table A (Main)	沖孔工作板(A)	1	
20		211605004C	Punching Table B (Front)	沖孔工作板(B)	1	
21		56301A0008016	Hex Bolt M8X16	六角承窩頭螺栓	3	
22		211305009B	Table Connecting Plate	工作板連接塊	2	
23		56301A0010025	Hex Bolt M10X25	六角承窩頭螺栓	2	
24		56303A00010	Spring Washer M10	彈簧墊圈	6	
25		56315404163M1025	Clamp Handle M10X25	萬向把手	2	
26		56303B11012025	Flat Washer M10	平墊圈	2	
27		211605008A	Stopper Plate	工作板定位塊	2	
28		211605009A	Clamping Plate	定位板固定滑塊	2	
29		56301A4010040	Hex Bolt M10X40	六角承窩頭螺栓	4	
30		211905003A	Punching Stopper Guide Ruler	沖孔工作板 Y 軸標尺	2	
31		211605011A	Punching Table Ruler	沖孔工作板 X 軸標尺	1	

Model: **IW-60K/60B**Part: **Punching Station**

Date: 09/2012

Item	Part Number	Description	產品名稱	Q'ty	Memo
32	42RTAQA	Retaining Thread	螺紋塊	1	
33	56301A0010025	Hex Bolt M10X25	六角承窩螺栓	4	
34	56305D00606018	Locating Key	雙頭圓鍵	1	
35	42RNAQA	Retaining Nut	沖頭鎖緊螺帽	1	
36	41RP1	Punch	圓孔上模	1	
37	42RSAQ30B 42RSAQM40B	Quick Change Sleeve	快拆上模套環	1	
38	212902049A	Stripper Rear Guard	沖孔防護蓋	1	
39	56301A0005012	Hex Bolt M5X12	六角承窩螺栓	4	
40	56303A00005	Spring Washer M5	彈簧墊圈	4	
41	52411TZ7312	Limit Switch	微動開關	1	
42	56301A0004025	Hex Bolt M4X25	六角承窩頭螺栓	2	
43	56303B10005010	Flat Washer M4	平墊圈	2	
44	211601006B	Mounting Table	沖孔座固定板	1	
45	212901005	Clamping Shaft	剪角座固定軸	1	
46	56301A0020065	Hex Bolt M20X65	六角承窩螺栓	1	
47	43A2SMB	Die Holder	單孔下模座	1	
48	43BS1C	Die Bushing	下模襯套	1	
49	41RD1	Die	圓孔下模	1	
50	56301C7010045	Set Screw M10X45	止付內六角螺栓	1	
51	56302B0110	Nut M10	螺帽	1	
52	211305011	T-Shaped Nut M16	T型螺帽	4	
53	56301A0016050	Bolt M16X50	六角頭螺栓	4	
54	56303A00016	Spring Washer M16	彈簧墊圈	4	
55	56303D00016032045	Flat Washer M16	平墊圈	4	
56	212901013	Adjust Plate	滑塊調整座	2	
57	212901009	Guide Plate	調整滑塊	2	
58	211610003	Adjust Screw	調整螺絲	8	
59	56302B0120	Nut M20	螺帽	8	

IW-60B Shear Station



PART8708.DWG 09/2012

Sunrise Ironworker Parts List

Model: **IW-60B**

Part: **Shear Station**

Date: 09/2012

Item	Part Number		Description	產品名稱	Q'ty	Memo
1	212909001A		Angle, Rd/Sq Bar Shear Moving Blade	圓方刀具(活動)	1	
2	212909002A		Angle, Rd/Sq Bar Shear Stationary Blade	圓方刀具(固定)	1	
3	211309004		Rd/Sq Bar Shear Blade Fix Plate	圓方刀具固定塊	2	
4	56301A0012020		Hex Bolt M12X20	六角承窩頭螺栓	8	
5	56301C8010040		Set Screw M10X40	止付內六角螺栓	4	
6	56302B0110		Nut M10	螺帽	4	
7	211601010A		Holddown Guide Block	壓板移動座	2	
8	56301A0012065		Hex Bolt M12X65	六角承窩頭螺栓	4	
9	212908001		Flat Shear Upper Blade	平板刀具(活動)	1	
10	56301A0012035		Hex Bolt M12X35	六角承窩頭螺栓	3	
11	211108001C		Flat Shear Lower Blade	平板刀具(固定)	1	
12	56303A00012		Spring Washer M12	彈簧墊圈	3	
13	56301A0012040		Hex Bolt M12X40	六角承窩頭螺栓	3	
14	56301C0010030		Set Screw M10X30	止付內六角螺栓	4	
15	56302B0110		Nut M10	螺帽	4	
16	218708002		Shear Holddown (M)	平板壓板(活動)	1	
17	218708001		Shear Holddown (S)	平板壓板(固定)	1	
18	211610900	211610001A	Shear Holddown Screw	平板, 圓方壓塊移動螺桿	1	
		211310011	Holddown Screw End Piece	調整螺桿拉塊		
		56306S0060030	Spring Pin Ø6X30	彈簧銷		
19	56303A00012		Spring Washer M12	彈簧墊圈	4	
20	56301A0012030		Hex Bolt M12X30	六角承窩頭螺栓	4	
21	212908005		Flat Shear Table	平板支持座	1	
22	212908006		Locating Screw	定位螺絲	2	
23	56303A00012		Spring Washer M12	彈簧墊圈	8	
24	56301A0012050		Hex Bolt M12X50	六角承窩頭螺栓	8	
25	213208002A		Flat Shear Stopper	平板固定塊	2	
26	56303D00012024045		Washer	平華司	4	
27	56301A0012040		Hex Bolt M12X40	六角承窩頭螺栓	4	
28	211305012		T-Shaped Nut	T形螺帽	4	
29	218702019		Safety Guard For Shear Holddown(Left)	壓板左護蓋	1	
30	56303A00006		Spring Washer M6	彈簧墊圈	4	
31	56301A0006012		Hex Bolt M6X12	六角承窩頭螺栓	4	
32	218702021		Safety Guard For Shear Holddown(Right)	壓板右護蓋	1	

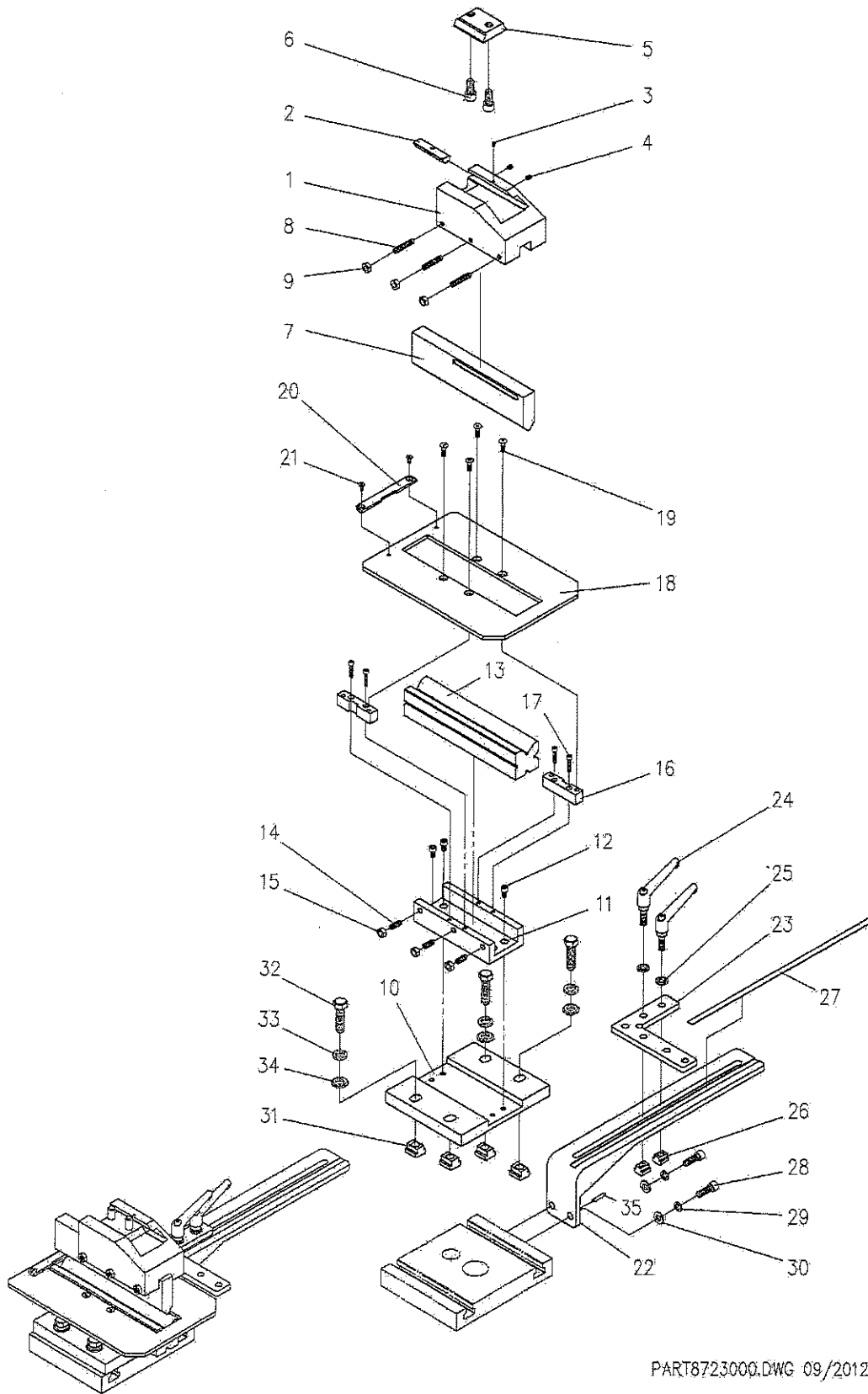
Model:**IW-60B**

Part:**Shear Station**

Date: 09/2012

Item	Part Number	Description	產品名稱	Q'ty	Memo
33	218701010	Cover plate	底座封板	1	
34	56303A00008	Spring Washer M8	彈簧墊圈	2	
35	56301A0008012	Hex Bolt M8X12	六角承窩頭螺栓	2	

IW-60B Multi Vee Press Brake Assembly



PART8723000.DWG 09/2012

IW-60B-3D.doc

Sunrise Ironworker Parts List

Model: **IW-60B**

Part: **8723000 Multi Vee Press Brake**

Date: 09/2012

Item	Part Number	Description	產品名稱	Q'ty	Memo
1	218723207	Upper Mounting Plate	折曲上模固定座	1	
2	211605007	Stripper Fix Plate	止動塊	1	
3	56301C0005010	Set Screw M5X10	止付內六角螺絲	1	
4	56301C0008010	Set Screw M8X10	止付內六角螺絲	2	
5	212905006	Stripper Support Plate	滑座	1	
6	56301A0014030	Hex Bolt M14X30	六角承窩頭螺栓	2	
7	218723201	Upper Blade	折曲上模(R3)	1	
8	56301C7010050	Set Screw M10X50	止付內六角螺絲	3	
9	56302B0110	Nut M10	螺帽	3	
10	218723204	Die Base Plate	下模座底板	1	
11	218723203	Die Base Plate	多 V 折曲下模座	1	
12	56301A0008016	Hex Bolt M8X16	六角承窩頭螺栓	4	
13	218723202	Lower Blade	多 V 折曲下模	1	
14	56301C0010025	Set Screw M10X25	止付內六角螺絲	3	
15	56302B0110	Nut M10	螺帽	3	
16	218723206	Table Fixing Block	工作桌支撐塊	2	
17	56301A0006030	Hex Bolt M6X30	六角承窩頭螺栓	4	
18	218723205	Table	折曲工作桌	1	
19	56301F0008020	Sunk Head Hex Bolt M8X20	皿頭六角承窩螺栓	4	
20	218723210	Material Position Stopper	後定位塊	1	
21	56301F0006010	Sunk Head Hex Bolt M6X10	皿頭六角承窩螺栓	2	
22	218723208	Length Gauge	折曲定位支持座	1	
23	218723209	Length Stopper	定位塊	1	
24	56315404192M1240	Clamp Handle M12X40	萬向把手	2	
25	56303A00012	Spring Washer M12	彈簧墊圈	2	
26	211305012	T-Shaped Nut M12	T形螺帽	2	
27	214205005A	Gauge Ruler	標尺(mm下0-756)	1	
28	56301A0012035	Hex Bolt M12X35	六角承窩頭螺栓	2	
29	56303A00012	Spring Washer M12	彈簧墊圈	2	

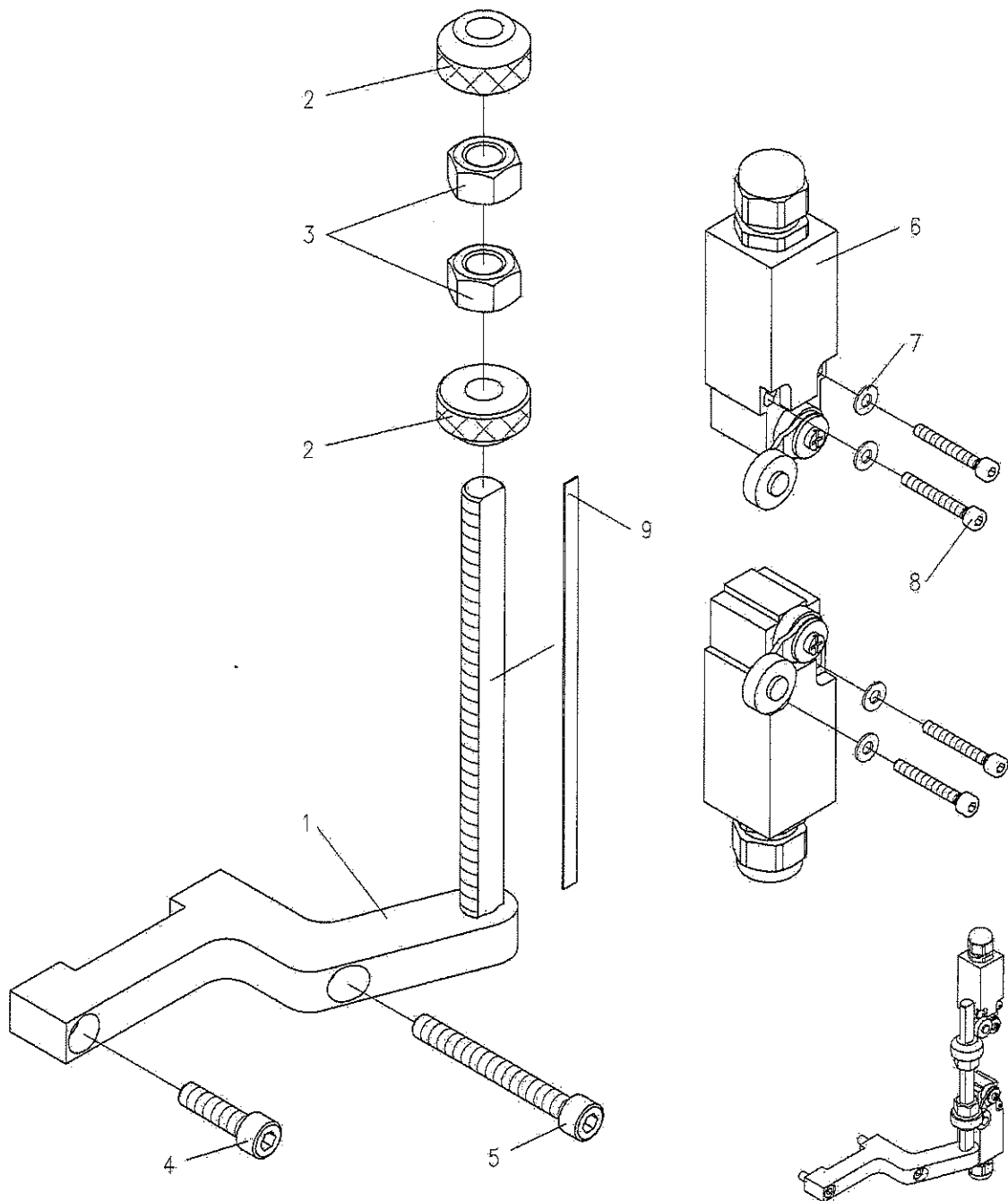
Model: **IW-60B**

Part: **8723000 Multi Vee Press Brake**

Date: 09/2012

Item	Part Number	Description	產品名稱	Q'ty	Memo
30	56303B11016028020	Flat Washer M12	平墊圈	2	
31	211305011	T-Shaped Nut M16	T形螺帽	4	
32	56301E0016055	Bolt M16X55	六角頭螺栓	4	
33	56303A00016	Spring Washer M16	彈簧墊圈	4	
34	56303D00016032045	Flat Washer M16	平墊圈	4	
35	56306S0100025	Spring Pin	彈簧銷	1	

IW-60B Limit Switch Adjustment



PART8704.DWG 09/2012

Sunrise Ironworker Parts List

Model: IW-60B

Part: Limit Switch Adjustment

Date: 09/2012

Item	Part Number	Description	產品名稱	Q'ty	Memo
1	218704900	Stroke Adjustment Rod	限動連桿組	1	
2	218704002	Limit Switch Actuator	限動觸塊	2	
3	56302B0114	Nut M14	六角螺帽	2	
4	56301A0008030	Hex Screw M8X30	六角承窩頭螺栓	1	
5	56301A0008070	Hex Screw M8X70	六角承窩頭螺栓	1	
6	52411XCKN2118G11	Limit Switch	微動開關	2	
7	56303B10005010	Flat Washer 5/32"	平墊圈	4	
8	56301A0004030	Hex Screw M4X30	六角承窩頭螺栓	4	
9	218704005	Ruler	微動開關標尺(0-150)	1	