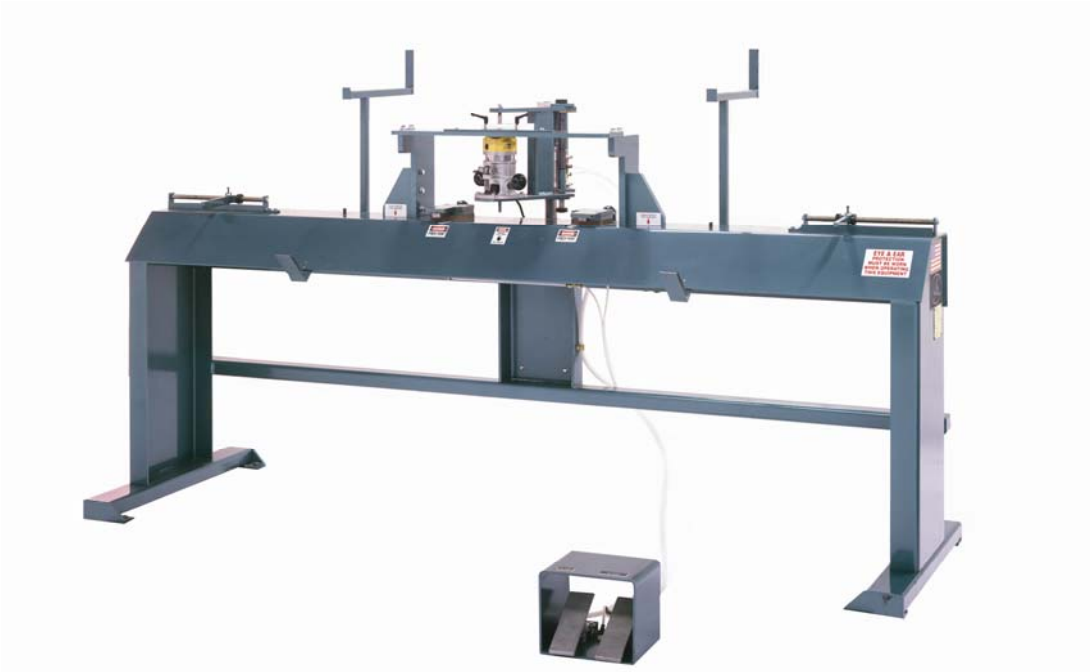
KVAL INC.

INSTRUCTION MANUAL



CE

920-C

Strike Jamb Router

REV.1

CONGRATULATIONS ON YOUR PURCHASE OF A NEW KVAL

920-C

SERIAL No._____

DATE OF PURCHASED_____

This manual is designed with safety in mind. We at KVAL want to begin FAST and SAFE production as soon as possible. It is very important that all OPERATORS and MAINTENANCE personnel read this manual thoroughly. We have included important safety information that will help prevent serious injury; as well as complete maintenance, and troubleshooting instructions.

Proper operation and maintenance of your new KVAL machine will guarantee many years of trouble-free, fast-paced production.

DECLARATION OF CONFORMITY

Manufacturer & Address:

KVAL Incorporated
825 Petaluma Blvd. South
Petaluma, California 94952
USA

Phone: 707-762-7367
Fax: 707-762-0621

We declare under our sole responsibility that the product described as:

Machine description: Strike Jamb Router
Manufacturer: KVAL Inc.
Type: 920-C
Serial Number: 06-64-153

Complies with the requirements of the following directives:
-Machinery Directives 98/37/CE
-Low Voltage Directive 73/23/CEE (Modified)
-Electromagnetic Compatibility Directive 89/336/CEE

Standards considered:
EN 292-1, EN292-2, EN-60204-1

Date: **at Petaluma, California USA**

Chief Executive Officer: Jerry Kvalheim

Signature

OPERATOR'S & PARTS MANUAL

For further information about this manual or other Kval Incorporated products, contact the Customer Support Department, Kval Incorporated, 825 Petaluma Boulevard South, Petaluma, CA 94952. In the U.S and Canada, call (800) 553-5825 or fax (707) 762-0485. Outside the U.S. and Canada, call (707) 762-7367.

Kval Incorporated welcomes your opinion regarding this document. Please send them to the Customer Support address shown above.

Proprietary Notice

825 Petaluma Blvd So.
Phone (707)-762-7367 • Fax (707)-762-0485

www.kvalinc.com

Table of Contents

Chapter

1

Customer Service Information

KVAL is happy to help its customer make the most of their investment, and help solve any problems that may occur. When you call, please have the electrical print, air print number, and the serial number of the machine ready, so that we are able to accommodate your needs efficiently.

HOURS

6:30 AM to 4:30 PM Pacific Standard Time – Monday thru Friday

Phone: (800)-553-5825

Fax: (707) 762-0485

www.kvalinc.com

Returning Parts / Equipment to KVAL

Before returning parts and/or equipment to Kval Inc. please call KVAL at (707) 762-7367 to receive RMA # (Return Merchandise Authorization number).

* Note

Non-Warranty returns are subject to **15%** Re-stocking Charge.

When you call:

1. Have your Packing Slip and/or invoice #'s available
2. Have reason for return available

When sending merchandise back:

1. Make sure that the Item(s) you are returning are securely packaged and well protected from shipping damage.
2. Including Packing Slip #
3. Include your RMA # on the outside of the package so our shipping receiver will see it.

Kval tries hard to satisfy its Customers, if you have any questions concerning merchandise purchased through KVAL, please call.

Getting Started

Your new KVAL Machine arrives at your plant crated, banded, taped and has painted set collars on all shafts; keeping all of the precision moving parts secure during shipping.

1. Move the machine as close to the area it will be stationed before removing the crate to protect against damaging the machine with the forklift.

2. Remove the machine from the crate. Be careful! Anytime the machine is lifted to remove the skids there is a chance of the machine dropping suddenly, and damaging the machine, or injuring people near the machine.

3. Remove all painted set collars from the shafts. Just about every shaft on the machine has set collars to secure the moveable assembly mounted to the shafts.

4. Take off any tape securing the various buttons, switches and knobs.

5. Level your KVAL machine by putting metal shims underneath the corners of the base. Leave a clear shot from the bolt holes in the foot pads to your shop floor. Now, make sure the machine won't rock back and forth.

6. Once the machine is level, anchor it to the floor so that it won't move across the floor during operation. KVAL recommends a ½ RED HEAD, TRUE BOLT ANCHOR in each of the foot pads. When drilling the concrete for the anchor bolts use a 5/8 bit.

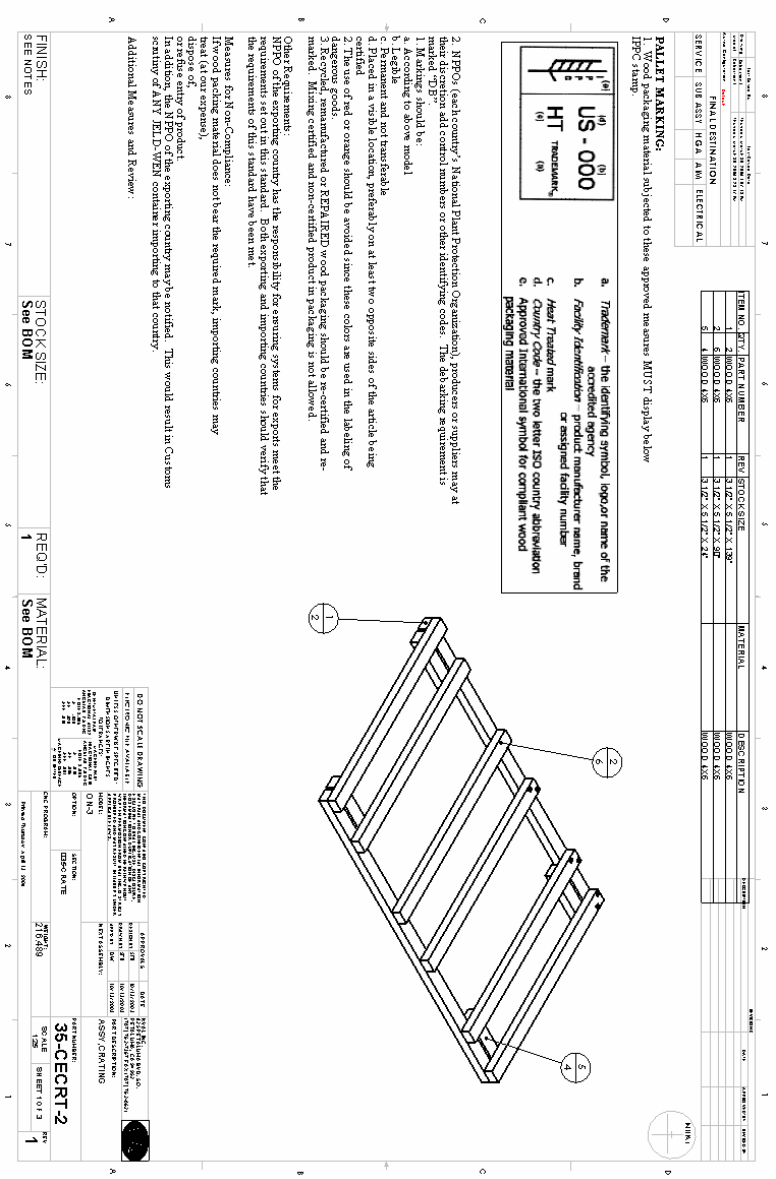
Note

KVAL wants to provide the industry's safest and highest quality wood working machines. The following page is a quality control and safety checklist. Our technicians have already performed an initial quality control check before shipping your machine. Please review the checklist and return "Acknowledgment Copy" to KVAL Verifying complete contents.

Removing Packaging & Positioning:

The 920-C arrives with the ON-3 on a heavy timber platform. Major assemblies are banded in position, various components are taped in place, and painted set collars are locked on shaft slides to keep precision moving parts secure during shipping.

To remove the timber platform first remove lag bolts securing the frame to wood. Then lift the machine with two forklifts as shown in the accompanying photos, then slide the platform out. BE CAREFUL! Anytime the machine is lifted there is a chance of the machine dropping suddenly, and damaging the machine or injuring people near the machine.
Remove banding materials and tape.



Residual Risks:

The electrical and compressed air services to this machine must be locked out and tagged out prior to performing any maintenance activity. Risk of serious injury exists if this not done. It is the responsibility of management and employees to implement and follow this policy.

More detailed information on safe working policies and practices are described under Safety Guidelines section of this manual, and it contains a page detailing lock! tag out procedures. It's vital that these sections are understood and followed to prevent injury!
When air pressure is removed, stand clear to allow mechanisms to reach their at rest positions. For example, the staple guns will slowly drop to their lowest positions on the vertical slides.
With both air and electrical services locked and tagged out, and mechanisms at rest, there are no residual mechanical movements or electrical risks that Kval can foresee. Of course common sense and general mechanical and electrical training is required when working around any electro/mechanical device. If questions ever arise, please contact Kval for assistance.

Chapter

2

Safety First Danger

This section contains important safety information. Failure to follow these safety guidelines may subject the operator to physical hazards that may result in serious bodily arm, or death.

Responsibility

It is the responsibility of each employee to maintain safe working conditions in his or her area. Failure to understand and correctly follow this procedure is direct violation of safety rules and regulations. Violations of this policy can lead to severe injury.

PROCEDURE

To lockout or tag out a piece of equipment, the following steps must be taken:

1. Assess the equipment to fully understand all energy sources (multiple electrical supplies air and/or hydraulic pressures, spring tension, weight shifts, etc.)

2. Inform all affected personnel of the eminent shutdown, and the duration of the shutdown.

3. Obtain lock and tags from employer.

4. Shutdown machine(s) by normal means, i.e., disconnect switch(s), air pressure relief valve(s), on/off button, etc. **NOTE:** Control power switches do not serve as adequate shutdown devices. The main source(s) of energy must be disconnected as well. Also, ensure that all mechanically stored energy has been released, i.e., lifting booms lowered to bottom of travel, carriages in "HOME" position etc., No one may remove a tag or lock installed by someone else. Only the person who attached the tag or lock is authorized to remove it.

5. Once the lock and tag is in place, the employee must try to operate the machine to ensure all energy sources are defeated.

6. When maintenance or repairs are completed, the person that did the work must ensure all tools, spare parts, test equipment, etc. are completely removed and that all guards and safety devices are installed.

7. Before removing the lock and tag, the person who attached them shall inspect the equipment to ensure that the machine will not be put in an unsafe condition when re-energized.

8. The lock and tag can now be removed (only by the person who place them), and the machine can be re-energized.

9. The tag shall be destroyed and the lock and key returned to the lockout center.

Lock out and Tag Out Procedure

1. **P....** PROCESS SHUTDOWN
2. **R....** RECOGNIZE ENERGY TYPE
3. **O....** OFF - SHUT OFF ISOLATING DEVICES
4. **P....** PLACE LOCK AND TAG
5. **E....** ENERGY RELEASE STORED ENERGY (0 ENERGY STATE)
6. **R....** RECHECK CONTROLS AND RETURN TO PROPER SETTING

ENERGY TYPES

Recognize the Types of Energy to Shut Down

1. Electrical Energy
2. Hydraulic and/or Pneumatic Energy
3. Fluids and Gases
4. Mechanical Energy

ACCIDENT SITUATIONS

- **Accident Start Up**
  Equipment can accidentally be turned on and your hands may be in the point of operation or while you are inside.

- **Electrical Shock**
  You can be accidentally electrocuted if the power is still on or if it is accidentally turned on.

- **Hazardous Materials**
  If released can go into confined areas or the work area.

- **Stored Energy**
  You could be caught in equipment that can move due to stored energy, even with the power off.

The Solution Is Quite Simple — These Accidents Can Be Prevented Using The P-R-O-P-E-R Lock-Out Procedures.

LOCK RULES

1. Use an appropriate “Lock-Out Device”, such as Lock Tongs, or a Lock Tag. Each person must attach his or her own lock to the Lock-Out Device.

2. **Identify Locks**
   Each lock will be identified by a number or a name. A lock without a tag is not good enough. Additional information that identifies the person / persons doing the work must be on the tag. Also the type of work that is being performed should be on the tag.

3. **Sign The Tag**
   In some instances one tag is enough, however, the tag must be signed by each worker. In some circumstances a supervisor will also need to sign the tag.

4. One Key Per Lock

5. Never give your key to anyone else.

Recheck controls and return to proper setting

P-R-O-P-E-R ELECTRICAL LOCK-OUT

P Process Shut Down
Open disconnect before pulling the plug. Shut down process or equipment.

R Recognize Energy Type
Recognize the correct power source.

O Off! -Shut off all Power Controls
Shut off machine and electrical energy at both machine and main power switch. There may be more than one source of power and all must be shut off. If necessary, electrical drawings and a supervisor may need to be involved.

P Place Lock-Out Device, Lock and Tag
Each person working on equipment needs to put his or her lock on the switches and sign the tag.

E Energy - Release Stored Energy
Bleed electrical capacitors if any.

R Recheck Controls and Return To “OFF” Setting
Recheck the start button and properly test that you have zero energy state.

P-R-O-P-E-R HYDRAULIC AND/OR PNEUMATIC LOCK-OUT

P Process Shut Down
Shut down process using recommended procedures.

R Recognize Energy Type
Recognize all sources of energy – the electric that powers the pumps or compressors, and the air or hydraulic valves themselves.

O Off! -Shut off all Power Controls
Shut off each energy type.

P Place Lock-Out Device, Lock and Tag
The shape or location on some valves may be difficult to lock out. If there is not a specific lock out tag out procedure in place you should ask your supervisor.

E Energy - Release Stored Energy
Bleed the stored energy by bleeding the air line and draining the compressor, or by using other prescribed methods. Keep in mind that when bleeding stored energy it could cause some parts of the equipment to move, as it is being held by the stored energy.

R Recheck Controls and Return To "OFF" Setting
Return controls to proper settings.

P-R-O-P-E-R FLUIDS AND GASES LOCK-OUT

P Process Shut Down
Shut down process using recommended procedures.

R Recognize Energy Type
Recognize the material and its hazards. If material is hazardous, use the proper protective equipment. Even water can become a hazardous fluid under high pressure.

O Off! -Shut off all Isolating Valves
If a job requires breaking in to a line close off isolating device, blanking if necessary. Some valves may be difficult to lock out. A locking bar or chains may be needed. Check with supervisor.

P Place Lock-Out Device, Lock and Tag
Sign tag.

E Energy - Release Stored Energy
Release pressure and drain to achieve zero energy state.

R Recheck Controls and Return "OFF" Setting
Recheck line and test properly and make sure you have zero energy state.

P-R-O-P-E-R MECHANICAL ENERGY LOCK-OUT

Mechanical Energy may be released at the point of operation, or where two or more points of operation come together. This is where you might get caught. In most cases
blocking mechanical energy is done in addition to shutting off the primary source, such as electrical, hydraulic and pneumatic. Some examples include inserting restraining pins or bars in the point of operation or block under a lift. In cases where these blocks to mechanical energy are not locked in place, they should not be the primary means of shutting off energy. Mechanical energy can also be stored.

1 Gravity
Things that are up can fall of their own weight. Pins or blocking may be required.

2 Springs
BOING! can spell DEATH. Release tension or compressed springs by using methods prescribed by the equipment manufacturer.

3 Tensions
Things under tension can spring in. Release tension by using prescribed method by equipment manufacturer.

P Process Shut Down
Shut down the process.

R Recognize Energy Type
Recognize all forms of energy – Need to be shut off, such as electrical and mechanical. Mechanical is usually a secondary energy source closest to point of operation.

O Off! -Shut off all Power Controls
Such as switches, valves and other isolating devices.

P Place Lock-Out Device, Lock and Tag
Place lock on the isolating device and sign tag.

E Energy - Release Stored Energy
Release, spring or tension to achieve, zero energy state.

R Recheck Controls and Return To “OFF” Setting

ZERO ENERGY START UP

Zero Energy State to Start-up to Operating State
Starting the equipment is just as important as Lock-Out/Tag-Out in terms of safety.

Start-up
- Inspection
- Clean up
- Replace guards
- Check controls
- Remove locks
- Visual checks

Inspect
When work is finished the equipment must be inspected for proper adjustment before starting equipment.

Clean Up
All materials and debris must be cleaned up. Any combustible materials and old parts used during repairs must be cleaned up.

Replace Guards
Replace all guards to the equipment. If adjustments can not be made with the guard on after start-up, leave off only the ones to be adjusted after start-up.

Check Controls
Make sure all switches are in the off position. In some cases the machine can start automatically when energy is restored.

Remove Locks
Each person must remove his or her own lock or tag. This will ensure you are in a safe place when the equipment is started.

Visual Checks
If the equipment is too large to see all around it, station personnel around the area and sound the personnel alarm before starting the equipment. If your operation is more complex, having many pieces of equipment and a lot of people, a comprehensive Lock-Out/Tag-Out procedure may involve additional steps. You will need to ask your supervisor about these procedures. A specific lock out procedure may be posted at each machine. On larger or long term maintenance projects or installation projects, the procedures should be explained to all participants and a copy of the procedures posted on site for the duration of the work. Provisions which ensure protection during shift changes when contractor or outside help is used also need to follow the Lock-0ut/Tag-Out Procedures. Comprehensive Lock-0ut/Tag-Out may use a gang box or other system to ensure that locks are secure and not removed without authorization.
Remember Lock-Out Tag-Out procedures work because you are the only one with the key to your lock. Proper Lock-0ut/Tag-Out can save lives, limbs and money. Help make your work environment safe for yourself and your fellow employees. Make sure you follow the P-R-OP-E-R Lock-0ut/Tag-Out procedures, and that those around you do also.

<u>YOUR LIFE MAY DEPEND ON IT.</u>

http://www.concrete-pipe.org/sab.htm

Safety Guidelines

ELECTRICAL

Electrical circuitry on this machine is protected by an approved lockable disconnect circuit. In addition to this equipment, you must install an approved disconnect for the electrical power supplying this machine

COMPRESSED AIR

The compressed air system connected to this machine should have a three-way air valve for shut-off and pressure relief. The air supply providing the pressure to this machine also has a three-way air valve for the supply line.

OPERATING SAFETY

Prior to changing any cutters or doing any maintenance work, you must disconnect, tag out, or lock out the electrical, air pressure and hydraulic systems.

COMPLIANCE WITH CODES AND REGULATIONS

It is advised that you request an on-site state safety review of your installation of this machine. This is to ensure conformance to any additional specific safety and health regulations which apply in your area.

OPERATORS TRAINING

You must ensure that all operators of this machine be trained to know the potential electrical hazards, pressure pinch points, rotating cutters, and other similar hazards. It is also your responsibility to train the operators, or potential operators on how to operate the machine safely.

OTHER HAZARD CONTROL ACTION

If you believe that any part or operation of this machine is in violation of any health or safety regulation, it is your responsibility to immediately protect your employees against any such hazard and bring the matter to our attention for review and correction, if deemed advisable.

You will not that additional detailed safety guidelines are included in the operating instructions of this manual. We will be pleased to review with you any questions you may have regarding the safe operations of this machine.

Wear Eye Protection

Wear Ear Protection

Lock Out Diagrams

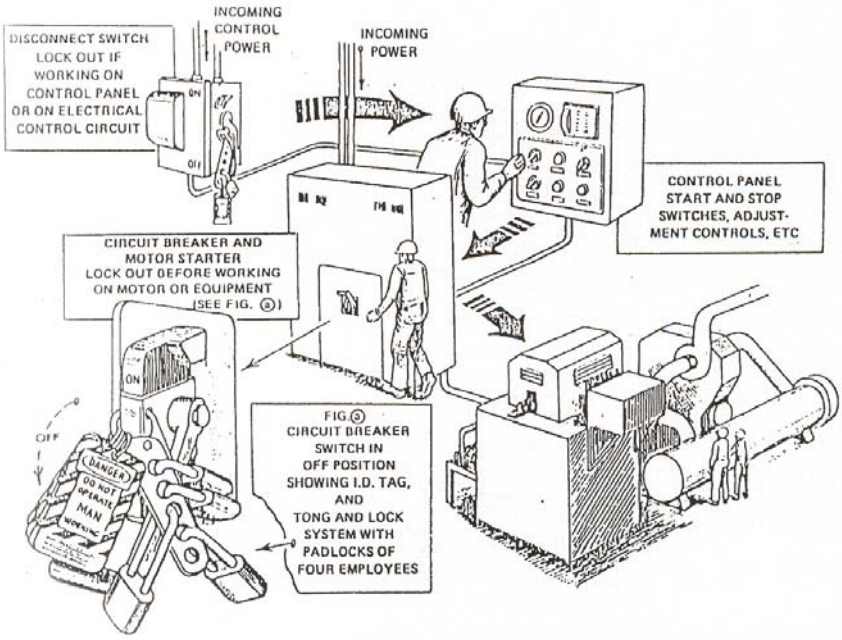


Illustration 1
Lockout/Tagout Procedure for Electrical Energy Source

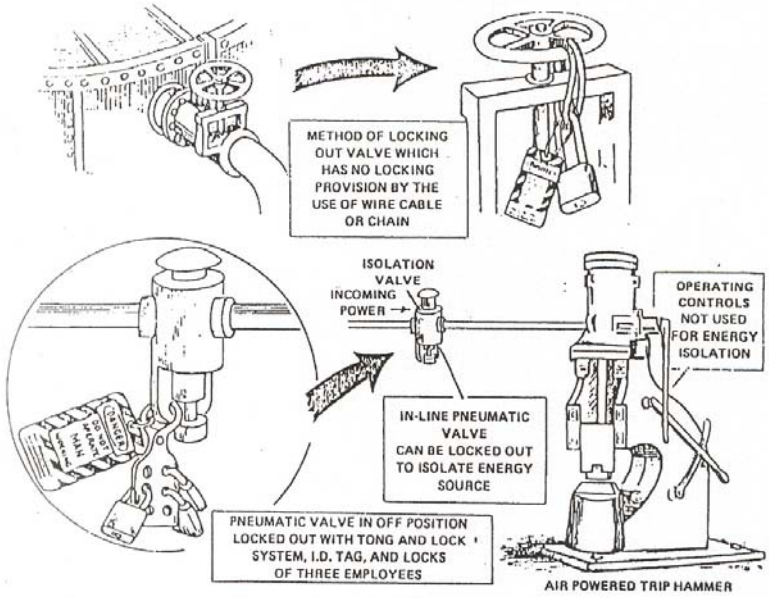


Illustration 2
Lockout/Tagout Procedure for Hydraulic-Pneumatic Energy Source

Chapter

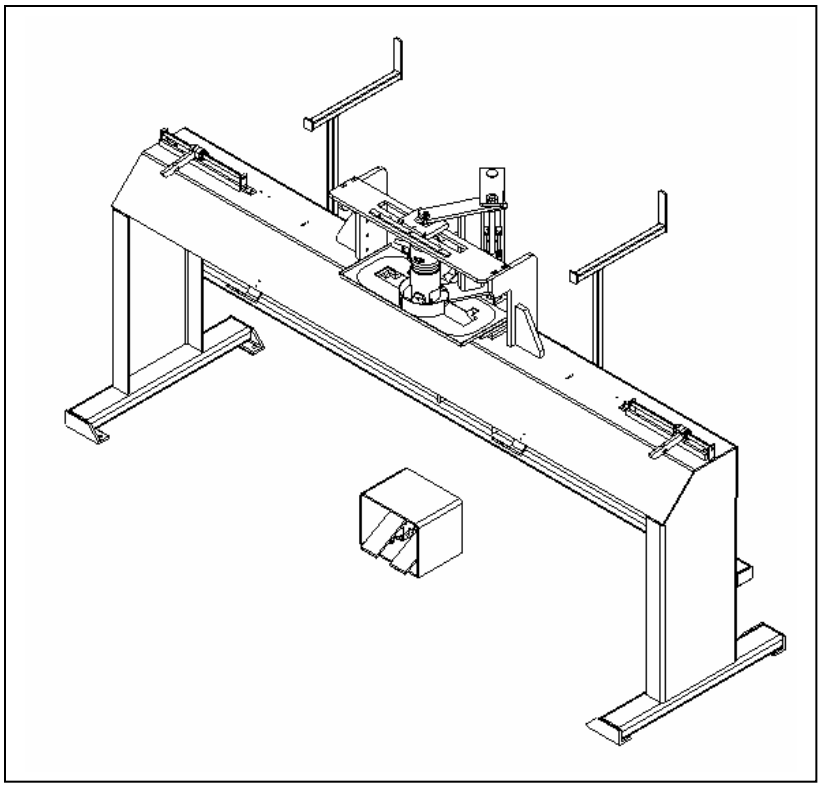
3

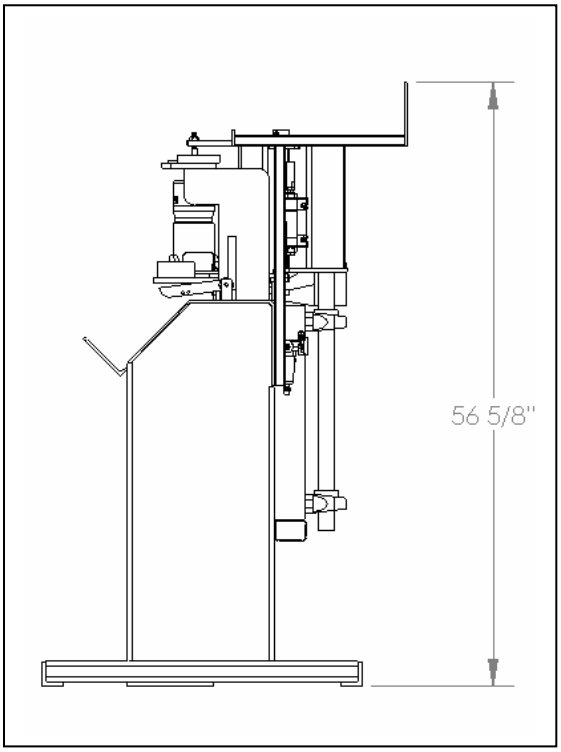
SPECIFICATIONS

KVAL's 920-C Strike Jamb Routing Machine is a versatile solution for full-lip, T-strike, double-plunge, and closed mortise deadbolt plates up to 12" long. Templates rapidly interchange for different plate patterns. Design features include a ruggedly built framework and a heavy duty router. Both flat and split jambs may be machined for lock preparation.

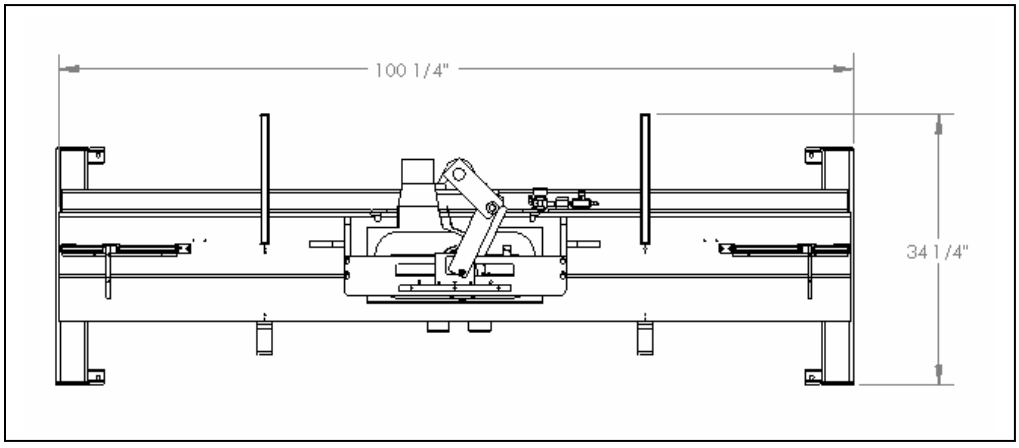
Both flat and split jambs may be machined for lock preparation. Jambs are placed against either a left hand or right hand indexing stop and clamped into place with air cylinders. The spring balanced router steps in to cut the rectangular pattern for faceplate and than plunges to route for the deeper latch hole. Expect production to range between 3 to 4 jambs per minute. Price includes one standard full-lip and one T-strike template.

Footprint Size: 3'x 10'
Crated Dimensions: 10'L x 3'W x 5'6"H
Shipping Weight: 800lbs.





Side View



Top View

Uncrating the 920-C

RECEIVING THE 920C

The920-C is crated before shipping to protect the machine from damage that might occur while in transit to your location. The vast majority of the time our machine arrives intact, but unfortunately sometimes that's not the case. When you receive you machine, look it over for missing bolts, or part box(s) that have shaken loose in the truck.

UNCRATING YOUR MACHINE

When you receive your machine all the moving assemblies have either been taped, banded, or painted set collars installed to prevent any movement during shipping. Before beginning set-up procedures maker sure that all shipping materials have been removed.

TOOLS REQUIRED

1. Hammer
2. Pair of wire cutters
3. 1/2" Ratchet, 13/16", 15/16", 3/4" sockets
4. Razor blade knife
5. Floor Jack
6. Fork Lift
7. 3/16 Long "T" handled Allen Wrench

UNCRATING PROCEDURE

1. If machine is fully crated remove all the 1" X 6" boards from the crate and the 2" X 4" frame.
2. Move the machine to its approximate location.
3. Carefully cut and remove all banding and tape from part boxes, electrical panel, control panel, buttons, knobs and switches.
4. Bolt the electrical box to its proper location on the machine frame.
5. Un-bolt and remove the cross pieces from the skids.
6. Remove the lag bolts that secure the machine to the skids from the four foot pads at the corners of the machine.
7. Jack up one end of the machine above the skids.
8. Carefully pull skids outward far enough that when the machine is lowered the frame rests on the ground
9. Remove all the painted set collars securing the various assemblies in their shipping locations
10. Remount / Insert all routers and bits provided in the part boxes.

ANCHORING THE MACHINE TO THE FLOOR

When you have set-up and test run your machine to ensure that it is feeding the material properly KVAL recommends anchoring the machine to the floor with ½ Red head, True Bolt Anchors in each of the foot pads. An alternative way to bolting the machine, you may want to use Epoxy and hardened threaded rods to prevent the bolts from vibrating loose. KVAL doesn't require the use of epoxy though its added fastening strength is significant.

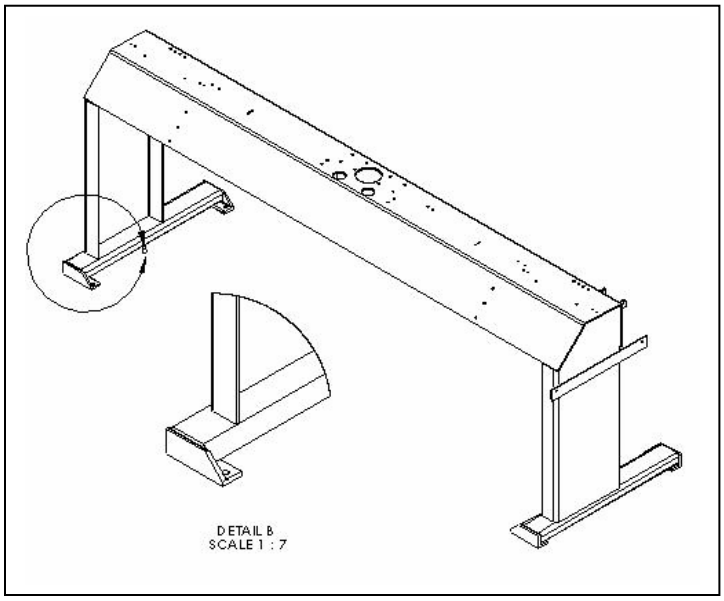
- Standard Anchoring Instructions:

  * With machine in place and leveled, drill 3" deep holes in the concrete using a **5/8"** dia. masonry bit, using the mounting hole as a guide.

  * Clean out holes with an air compressor to ensure that the anchor heads get a firm bite on the walls of the holes.

  * Insert anchors through the mounting holes in the foot pads and into the holes you have drilled into the concrete. If an anchor's expansion sleeve binds inside the hole, simply tap the bolt head with a hammer until the binding stops.

  * Tighten bolts until they are snug. Avoid over tightening the bolt as this may cause the head of the bolt to break.



- Anchoring Instructions using Epoxy:
  * With machine in place and leveled, drill 3" deep holes in the concrete using a **9/16**" dia. masonry bit, using the mounting hole as a guide.

  * Clean out holes with an air compressor. Complete hole preparation with use of a nylon brush (do not use wire brush).

  * When starting a fresh cartridge of anchoring epoxy, epoxy must be an evenly blended light gray color. Insert nozzle into the bottom of the hole. Fill hole to ½ the hole depth.

  * Insert 1/2", (hardened) threaded rod into the bottom of the hole using a slow twisting motion. This insures the epoxy fills voids and crevices. Hardening begins in 7 minutes @ room temperature.

- * After recommended cure time, bolt in place.

MAINTENANCE SCHEDULE FOR 920-C

DAILY

1. Blow off dust from entire machine.
2. Lubricate linear bearings and chrome shaft with silicone.
3. Wipe down machine
4. Check tooling for wear
5. Empty water filter bowl if not a self draining system
6. Photo eyes should be wiped off and checked to ensure that all fastening rings are snug.
7. Check the air pressure
8. Check the Chip-Out blocks for wear.
9. Refill lubricator with proper type of oil (see lubrication requirements)

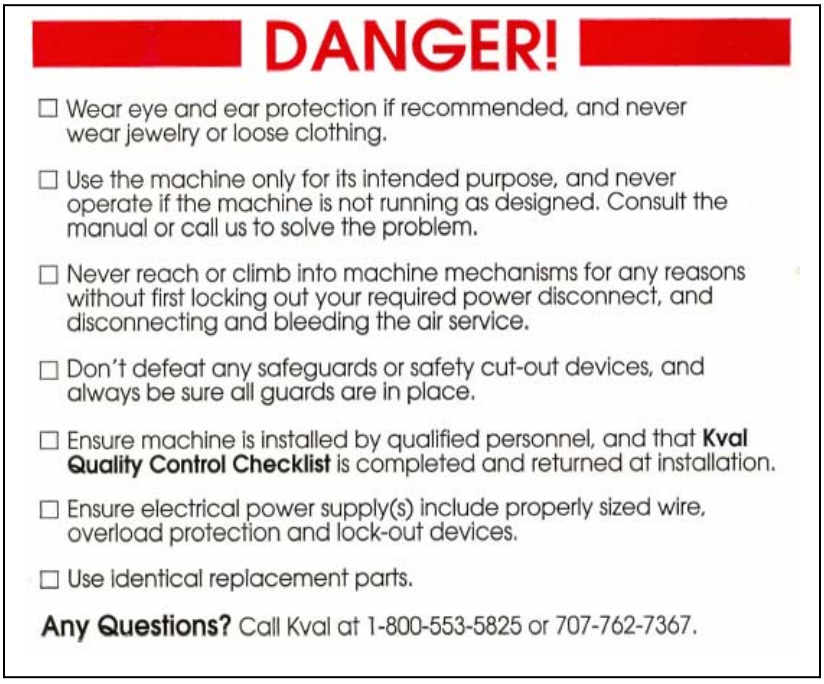
WEEKLY

1. Check machine for smooth motion through a complete cycle.
2. Clean linear bearings and chrome shaft, then lubricate.
3. Check air pressure to and on the machine
4. Adjust and lock flow controls.
5. Check all air lines & electrical wiring for kinks or rubbing.

MAY AND DECEMBER CHECK UPS

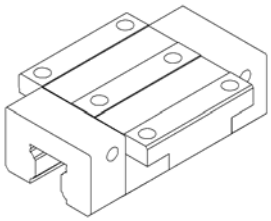
1. Wash filter and lubricator bowls with soapy water.
2. Grease all bearings and tighten all bolts.
3. Clean and lubricate all slides and cylinder rods with dry silicone spray.

* Carburetor cleaner can be used to remove pitch. If carburetor cleaner is used, re-lubricate the affected surface.



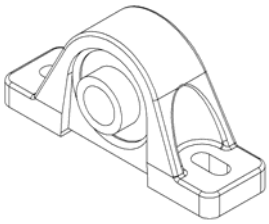
LUBRICATION REQUIREMENTS

Linear Bearings



If bearing is equipped with a grease fitting, it should receive 1 Gram (one pump from grease gun) of Dura-Lith Grease (KVAL P/N Lube EP-2) grease every 30 days. Bearings without grease fittings have been pre-lubricated at the factory and do not require further lubrication.

Flange Bearing



Dura –Lith grease; 1 gram every 60 days.

Lubricate special high speed bearings

With optimal long time PD2 (KVAL P/N Lube PD2) bearings must be re-lubricated once every 60 days.

Approved Lubrication Products

Chevron AW Hydraulic Oil 32 – or KVAL P/N SYSLUBG or G-C lubricants light AW R&O or Mobile DTE 24 or Shell Tellus32 or Gulf Harmony 32.

Lubricator Adjustments

Using knob on the top of the lubricator, adjust until one drop per every other cycle is used (as observed through sight glass.) Turn flow all the way open then reduce flow to proper specifications.

Gear Motor Lubrication Requirements

Oil change is recommended after 2000 hours or six months of operation. Use AGMA #8 gear lube or MOBILUBE HD 80 W-90 or equivalent.

Mist Oil Lubrication

Spindle housing mist oilers require syslube lubricant, available through KVAL. Optimum flow is 3 to 5 drops per minute @ 5-10 psi.

NOTE: These oils cannot be interchanged.

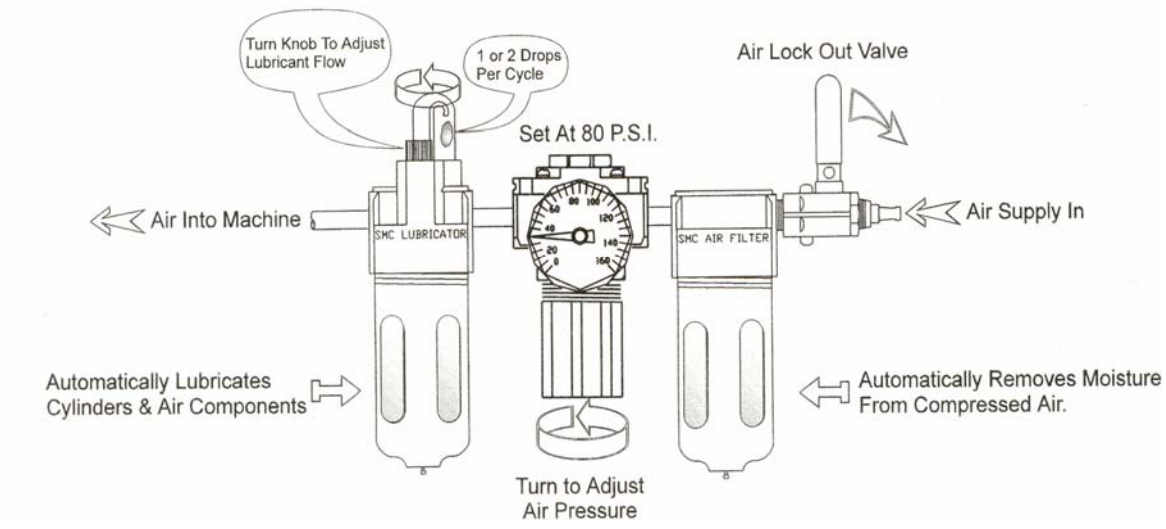
Priming the Lubricator

New and used machinery run out of oil from time to time. It is a good practice to check your machine lubricator to insure that it is putting the proper dose of oil in the air lines. Usually 4 drops of oil every 3 cycles is a good rule of thumb.

To prime the lubricator, find an air line on the Front Section of the machine that is energized, and disconnect it, allowing the air stream to bleed air pressure away from any persons. Direct the air stream at the machine so you can see when there is an oily film blowing out of the air hose. Repeat this same procedure for the back section and other trouble areas.

Check the lines every week to two weeks

Figure 1: This shows how to adjust the lubricators and shows the air lock out valves 1 drop every 3-4 cycles



CONTROL PANEL OPERATIONS

920-C OPERATING CONTROLS

Router ON / Off:

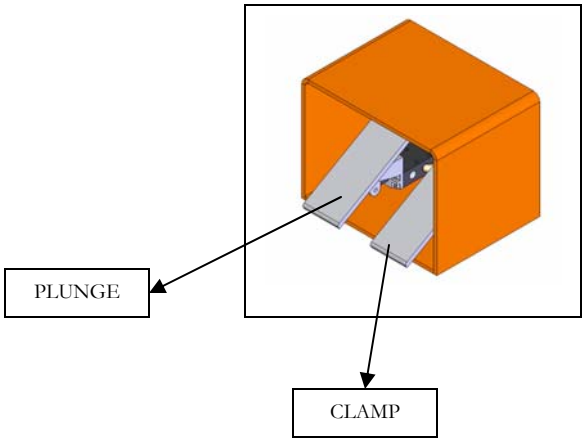
The router on/off switch is located on the top of the router body

Plunge Foot Pedal:

The plunge foot pedal is the left pedal in the foot pedal control box. Use this pedal to lower the template follower pin into the hollow areas of our jamb template.

Clamp Foot Pedal:

The clamp foot pedal is the right pedal in the foot pedal control box. Use this pedal to clamp the jamb into the 920-C. **Always make sure that your hands are clear of the clamping cylinders before using this control!**

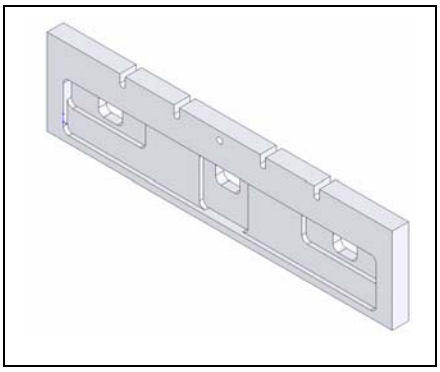


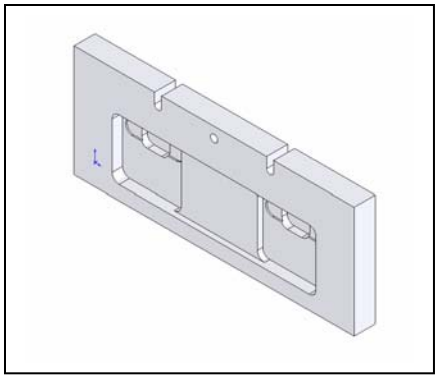
Operating Instructions:

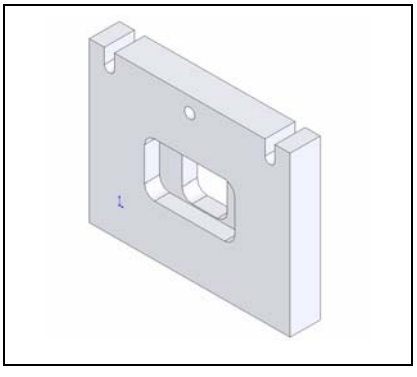
1. While keeping hands clear of the router cutters, turn the router on.
2. Place the jamb between the 920-C table and router assembly. One end of the jamb piece should be butted against either the left or right end stop. Make sure hands are clear of the cutter heads, and the clamping cylinders.
3. With hands clear of the clamping cylinders, step on the right foot pedal to clamp jamb.
4. Left "Plunge" foot pedal must be in the "up" position to cut strike plates.
5. With the Jamb piece clamped securely, grab the router handles with both hands. Push the router down until the template follower pin rests inside the recessed area of the jamb template.
6. After completing the routing sequence, release the router handles. Step on the left foot pedal to raise the 920-C plunge cylinder. Step on the right foot pedal to release clamping cylinders.
7. Remove the completed jamb from the 920-C.
8. Repeat.
9. Always turn off the router when finished, leaving the immediate work area, changing templates; and when changing bits make sure also the router is unplugged.

Changing Jamb Templates:

1. Turn off the router
2. Raise plunge cylinder and push the router assembly back and away from the jamb template.
3. Loosen the two handles securing the jamb template.
4. Remove template and replace
5. Tighten handles with firm pressure.
6. Guide template follower pin into recessed area of the new jamb template.
7. Turn on the power to the router.

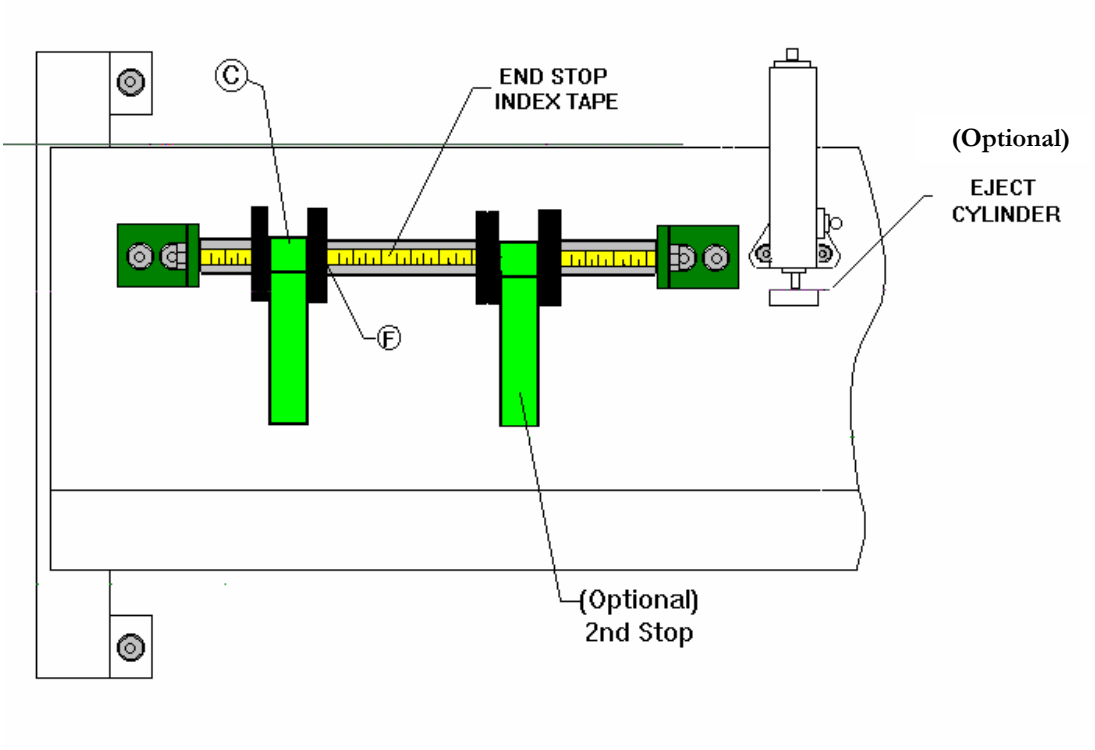






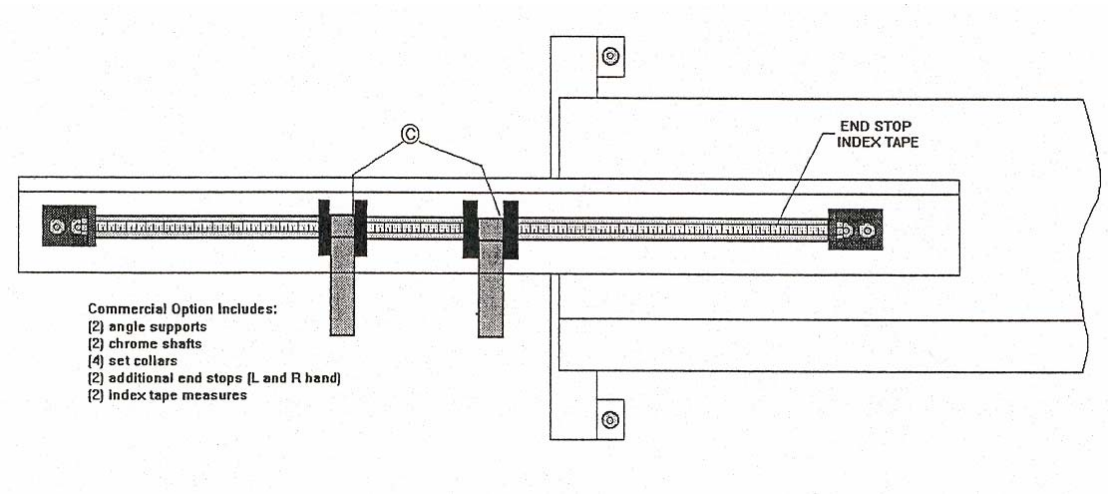
Adjusting the 920-C ends Stop:

1. **Loosen set collars on both sides of the end stop(s). [See F]**
2. **Slide end stop to the desired measurement, aligning the inboard edge of the end stop with the tape. [See C]**
3. **Tighten the set collars on both sides of the end stop.**
4. **Recheck measurement and make test cut.**
5. **Readjust as necessary.**



Adjusting the 920C ends Stop: (COMMERCIAL)

1. **Loosen set collars on both sides of the end stop(s).**
2. **Slide end stop to the desired measurement, aligning the inboard edge of the end stop with the tape. [See C]**
3. **Tighten the set collars on both sides of the end stop.**
4. **Recheck measurement and make test cut.**
5. **Readjust as necessary.**
6. **Repeat process for dead bolt setup.**



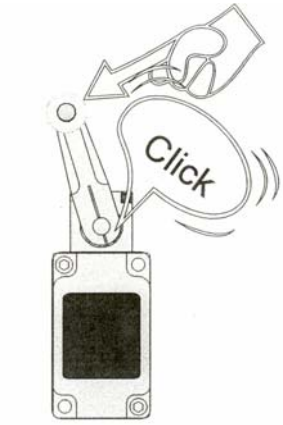
Chapter

4

TROUBLE SHOOTING

LIMIT SWITCHES

If a machine suddenly stops in mid cycle check the limit switches, a worn limit switch arm or a misadjusted limit switch is more than likely the cause. Depending on the model of limit switch you receive the amount of "pre-travel" (amount of movement from the arms resting position) is either 5 or 20 degrees before the limit switch actuates (Clicks). If the arm is moved to the full extents of its travel and you do not here the limit switch "Click", the switch needs to be adjusted here is how you adjust it follow the following drawings.



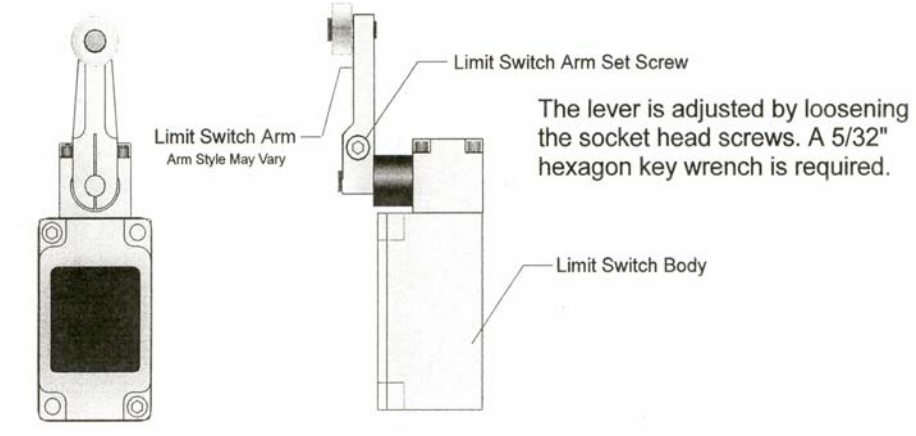
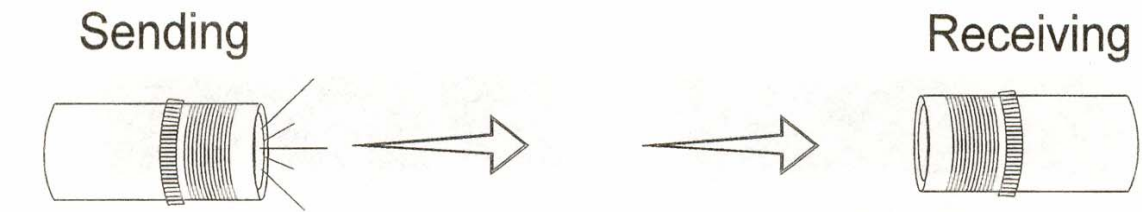
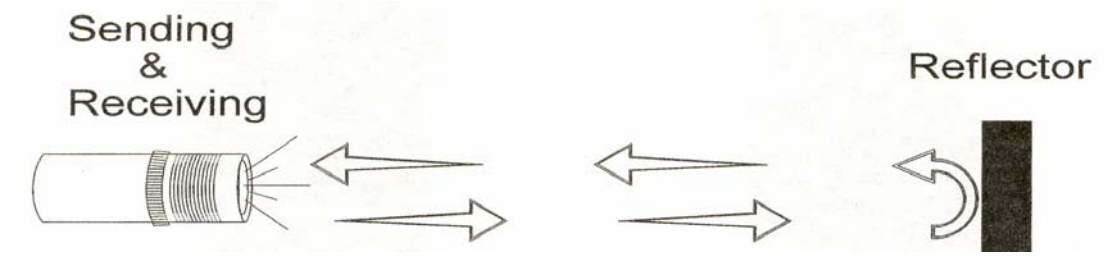


PHOTO EYES



The sending and receiving eyes "talk" to each other when the beam between the two is broken by either a door a moving part on the machine such as the thru beams, these beams may either



stop operation or initiate operation depending on their location and function.

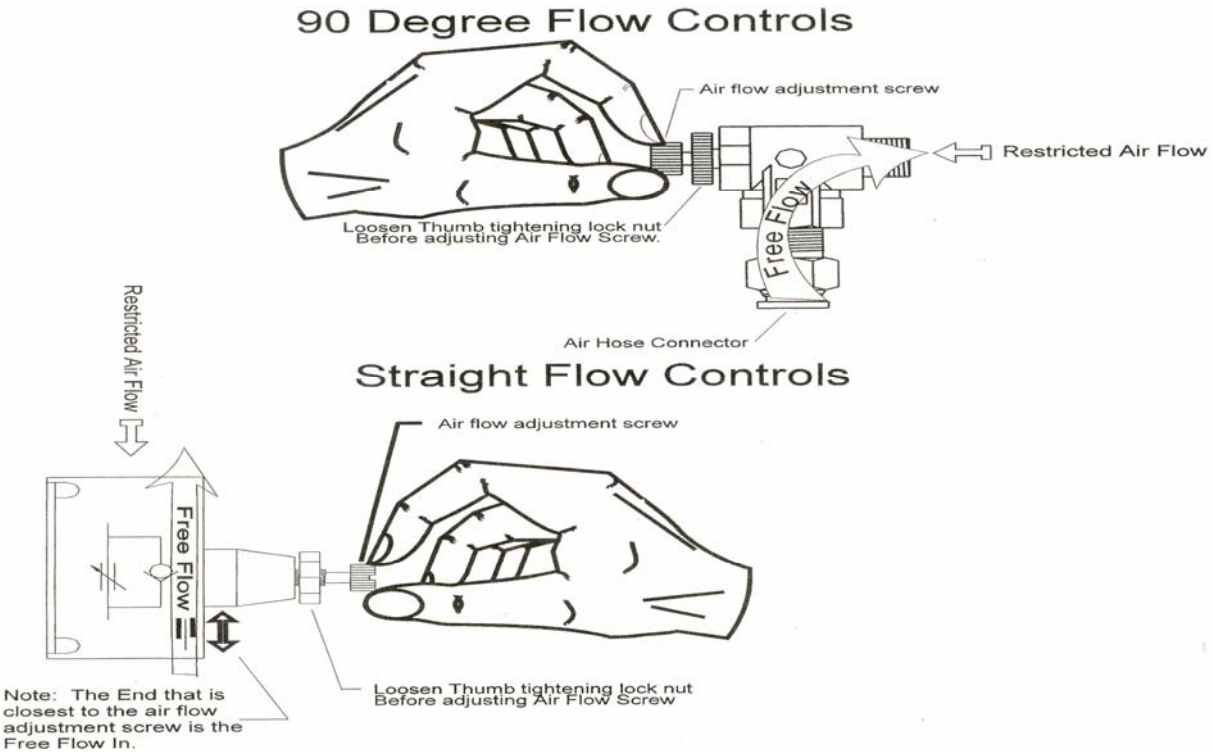
The sending and receiving units are in one unit, these operate in the same manner as the ones described previously.

Note: When a machine stops for no reason it is usually the fault of dirt photo eye or a misaligned limit switch arm.

GENERAL AIR CIRCUITRY TROUBLE SHOOTING

IF A CYLINDER IS NOT FUNCTIONING CORRECTLY HERE ARE A COUPLE OF ITEMS TO CHECK:

1. Check the air pressure to the machine.
2. Check the flow controls to see that they are adjusted correctly and to the proper specifications.



3. Check for and obstructions to the cylinders such as screws or a misplaced tool etc… * FOLLOW ALL SAFETY GUIDELINES AND SIGNS DURING THIS PROCESS.

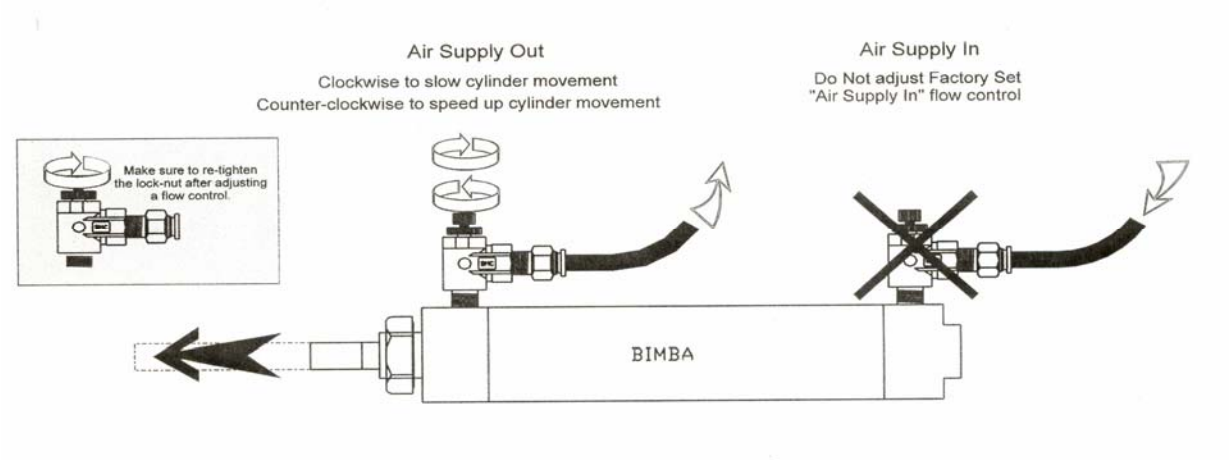
4. Check the air valves:
   The air valves can be manually operated by pushing the slotted button on the end of the valve. If you wish to keep the valve open, the push button assembly can be removed using and open ended wrench and inserting a 3/8" N.C. cap screw. DO NOT over tight when reassembling the valve.

5. If the valve seems to be leaking, the seals may be dry or contaminated with water or it maybe that the cylinder "O" rings are damaged and air is passing from one side to the other side of the cylinder. It maybe is necessary to purchase a rebuild kit or a new cylinder.

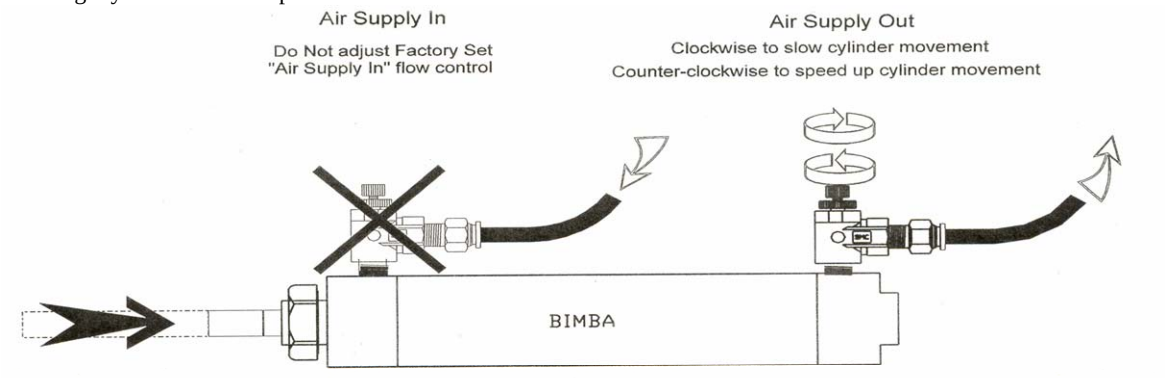
6. If the valve is not receiving an electrical signal, see "Electrical Trouble Shooting" instruction. It might be necessary to call in a specialist or check with KVAL customer service at 1-800-553-5825
   If an Air Leak is coming from an exhaust port on the air bank:
   Check the solenoid for the manual override. If the solenoid has a manual override you can push each of the buttons one at a time. When the air leak stops or weakens it usually means that one or more of the cylinders that the solenoid is operating are faulty.

Adjusting the flow controls to change the cylinder extension speed is done by the following drawing. Please review this drawing as this adjustment is not done in a normal manner.

To change cylinder extension speed:



To change cylinder retraction speed:



BASIC ELECTRICAL TROUBLE SHOOTING

The electrical component systems are designed to expedite the troubleshooting process and minimize "down time". In general, component systems have the input or feed functions at the top. Output or load functions are positioned at the bottom. Most two voltage electrical panels are designed with the LOW VOLTAGES on the LEFT, and the HIGH VOLTAGES on the RIGHT. The majority of the system components are labeled with numbers that correspond with the electrical prints included in the electrical box door. ‘

Computer controlled machines have signals on the computer that light when the input or output functions are energized, respectively. Computer controlled as well as non-computer controlled machines have white lighted, 120V control power terminal strips. This will indicate power supply from the respective circuits.

Idec controllers also have lights on them for the input and output functions. You can easily find out which circuits are failing by watching the lights turn on or off. Compare the lights on the IDEC controller to the electrical diagram to determine what systems are being affected.

IF THE POWER STOPS DURING NORMAL OPERATIONS: DE-ENERGIZED:

1. Check that the input disconnect switch is not turned off.
2. Check that all of the emergency stop buttons are in the normal position.
3. Lock Out and Tag Out the main power source.
4. Turn the panel disconnect switch in the off position, open the electrical panel door.
5. Observe the disconnect switches. Look for loose or broken wires at the disconnect then at all of the components.
6. Check for continuity of all fuses with an OHM meter.
7. Check motor overloads by pressing each white button (usually at the bottom of the panel in SEQUENCE, if one is tripped there will be a slight resistance to touch and a click as it is reset.

DANGER

The following checks will require the electrical panel to be energized these trouble shooting checks MUST BE PERFORMED BY A QUALIFIED ELECTRICAL TECHNICIAN.

1. Remove lock and tag outs on the main power sources

2. Manually close disconnect switches and energize the control circuit or transformer with its respective switch. Observe that the numbers 1, 3 & 4 are lit on the white lighted terminal strip.

3. This tells you that there are no overloads or emergency stops tripped. On computer controlled units, make sure that the POWER and RUN lights are lit at the lower left of the computer.

4. Most electrical problems are related to mechanical malfunction (i.e. stuck motors, jammed chain, non tripped limit switches, etc...) The most common failure is an improperly adjusted limit switch. To check a limit switch, manually operate the limit switch. If the computer terminal strips lights, the switch needs to be re-adjusted. For more information on the limit switch see the manufactures information at the end of this manual.

5. If a solenoid valve is suspected, and not cleared in the air checks section mentioned previously, it can be electrically jumped to check operation.

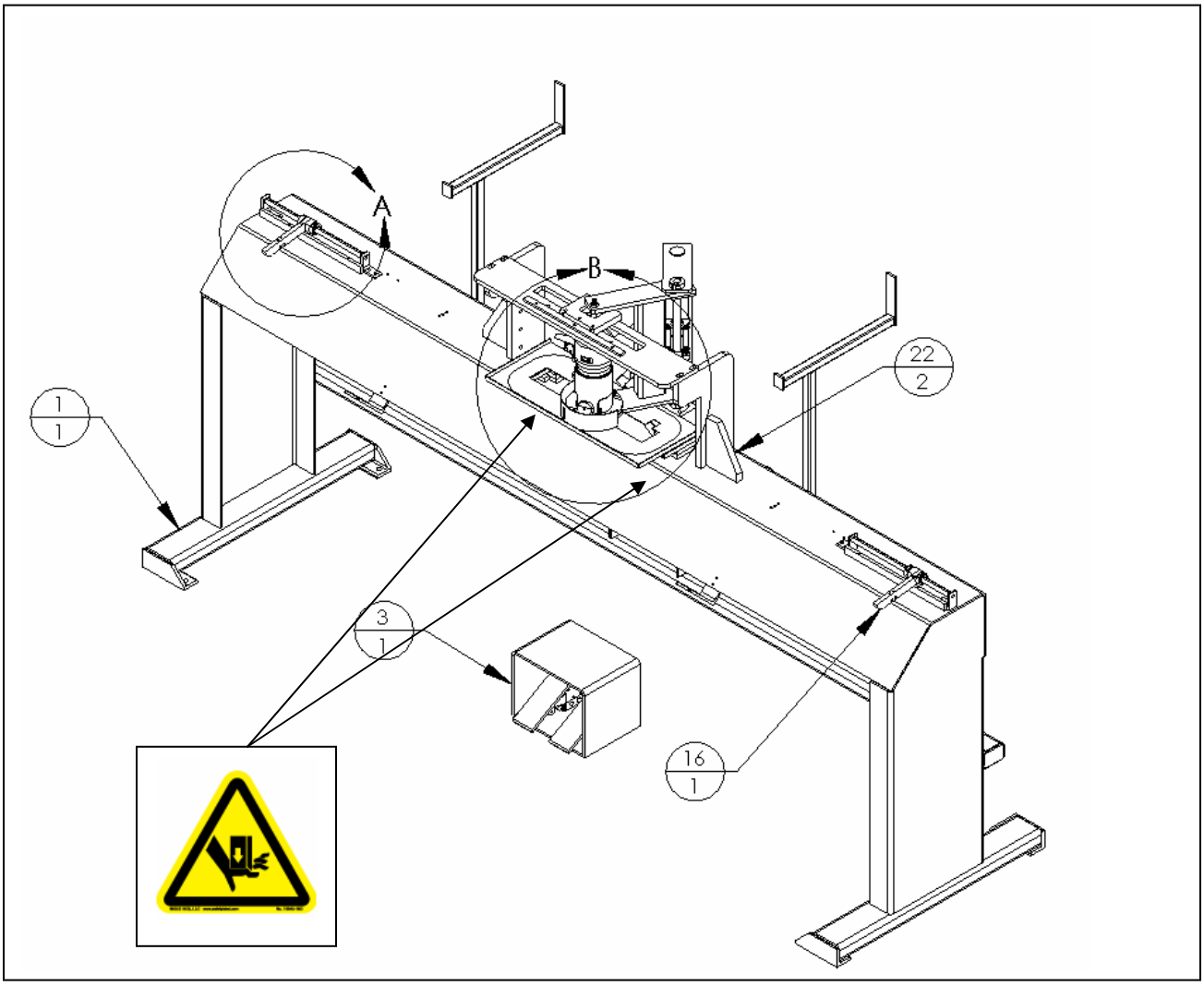
Warranty

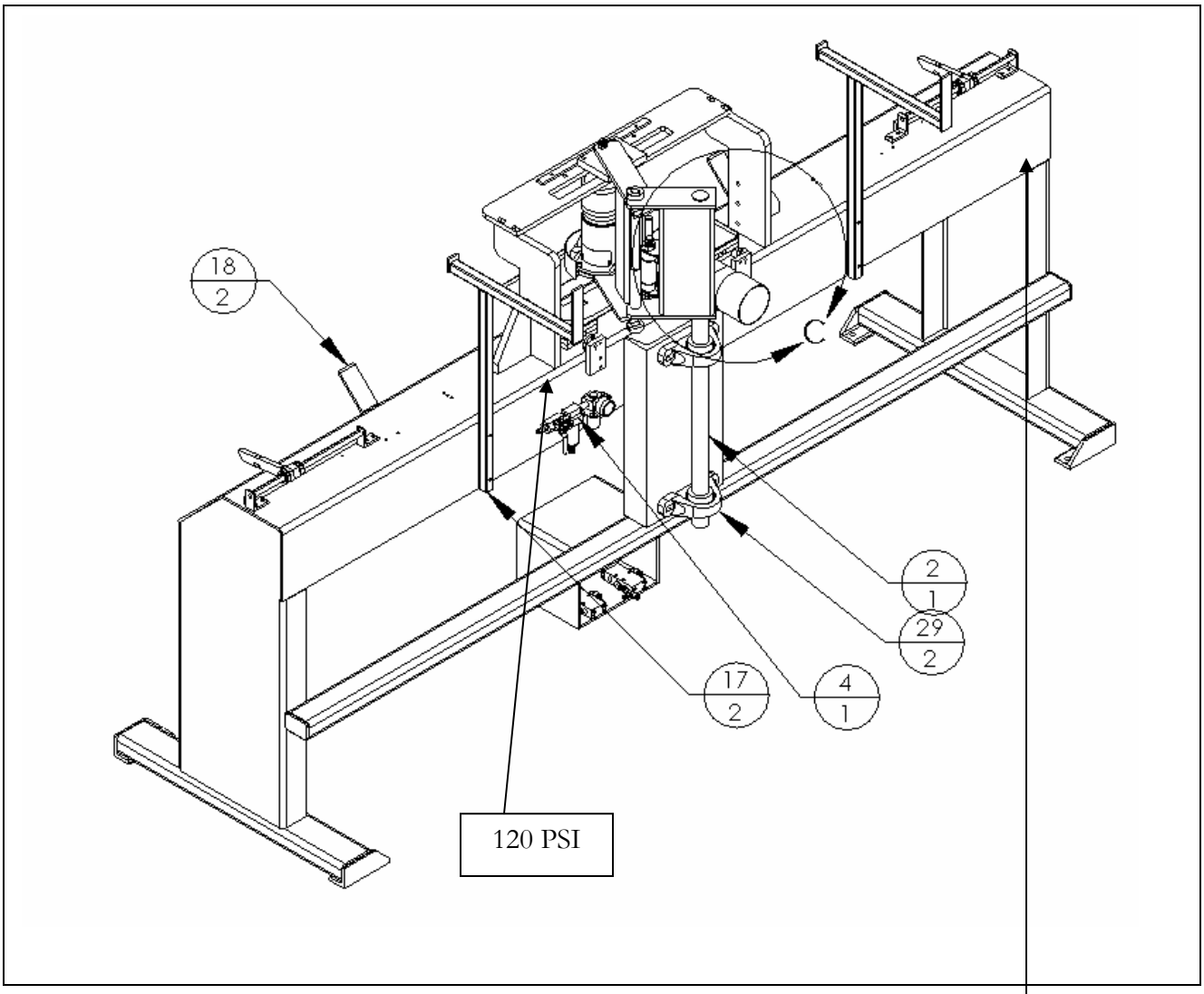
KVAL Inc. will repair or replace any unserviceable parts not covered by their own manufacturer's warranty when malfunction is caused by faulty manufacturing or design up to one year or 2080 production hours after the delivery date, whichever comes first. This warranty does not cover items that wear out during normal use, such as (but not limited to) tooling, chipout blocks, and screwdriver bits.

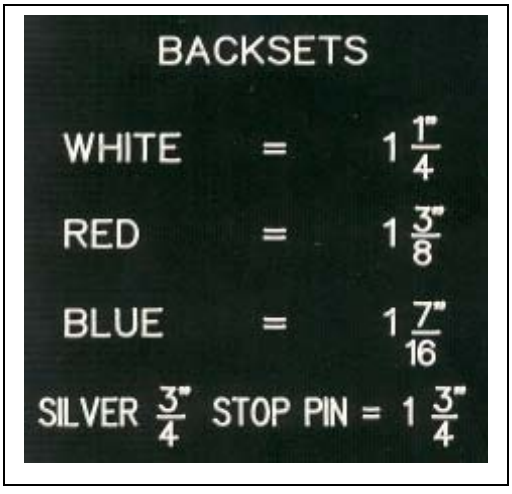
This warranty does not cover parts that become damaged or unserviceable due to misuse or abuse of the machine as determined by material safety data information and maintenance recommendations in this owners' manual. Parts returned under warranty will be inspected by Kval to determine whether that part qualifies for repair or replacement as specified in this warranty.

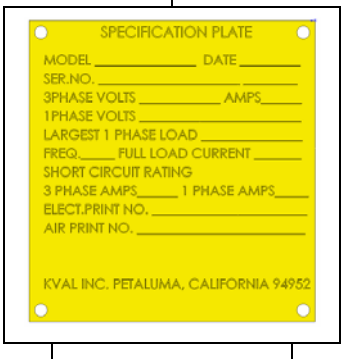
KVAL Inc. is not responsible for costs associated with downtime, lost orders, damage to customer's product or workpieces, or other costs not specifically covered in this warranty.

When problems cannot reasonably be resolved via telephone support, we will send a technician to your facility. For machines with an existing Ethernet connection capability, cost of technician's visit will not be included under warranty unless a broadband connection has first been made to the machine.







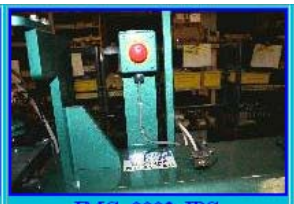


SPEC PLATE

Machine Picture


IMG_0001.JPG

IMG_0002.JPG


IMG_0003.JPG


IMG_0004.JPG


IMG_0005.JPG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IMG_0009.JPG

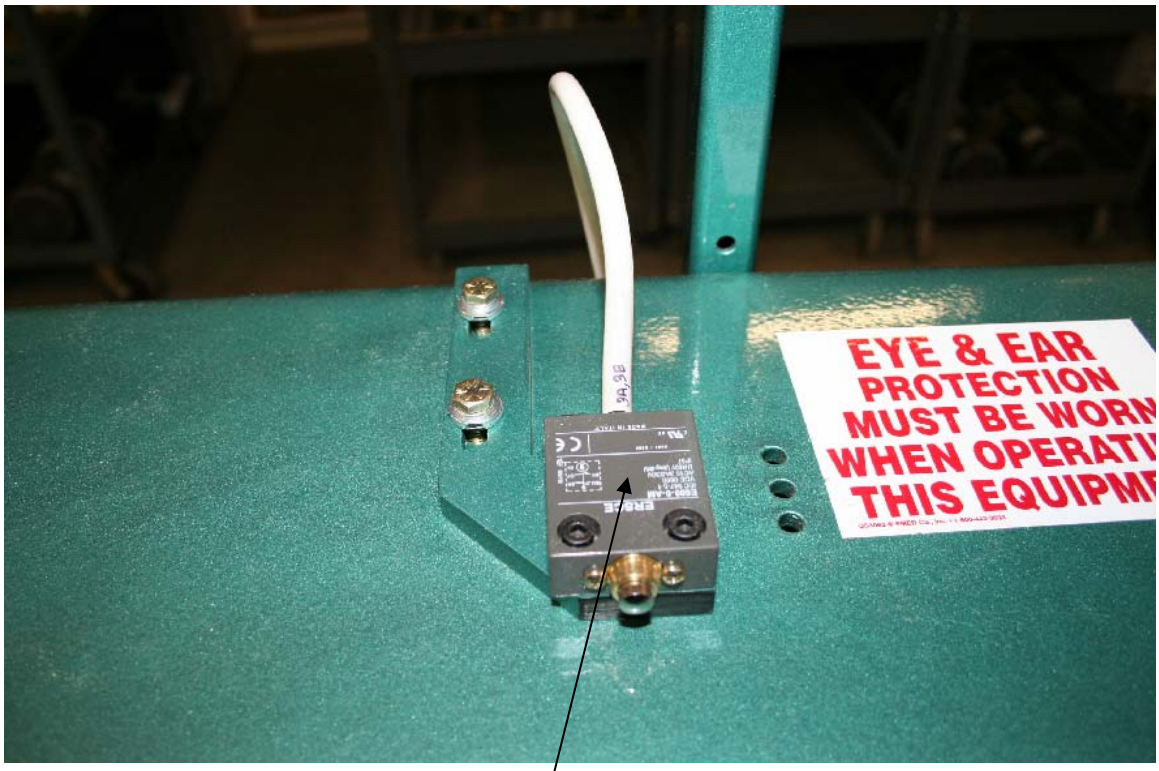
IMG_0001.JPG

IDEC 22MM PB E-STOP 40MM RED MUSHROOMHEAD PUSH TO ACTIVATE TWIST TO RESET
P/N: HW1B-V4F02-R

TEMPLATE P/N: 64-00-230

BOSCH ROUTER 1-3/4 H.P. 11 AMP
25,OOO RPM 220 VOLT 1/2 COLLET
P/N: BOS1617-220

IMG_0002.JPG



MICRO SWITCH LIMIT SWITCH PIN PLUNGER WITH 9' CORD (700-C) OR ERSCE E600-0-AM (6FT CORD)OR OMRON D4C-1601
P/N: 914CE19

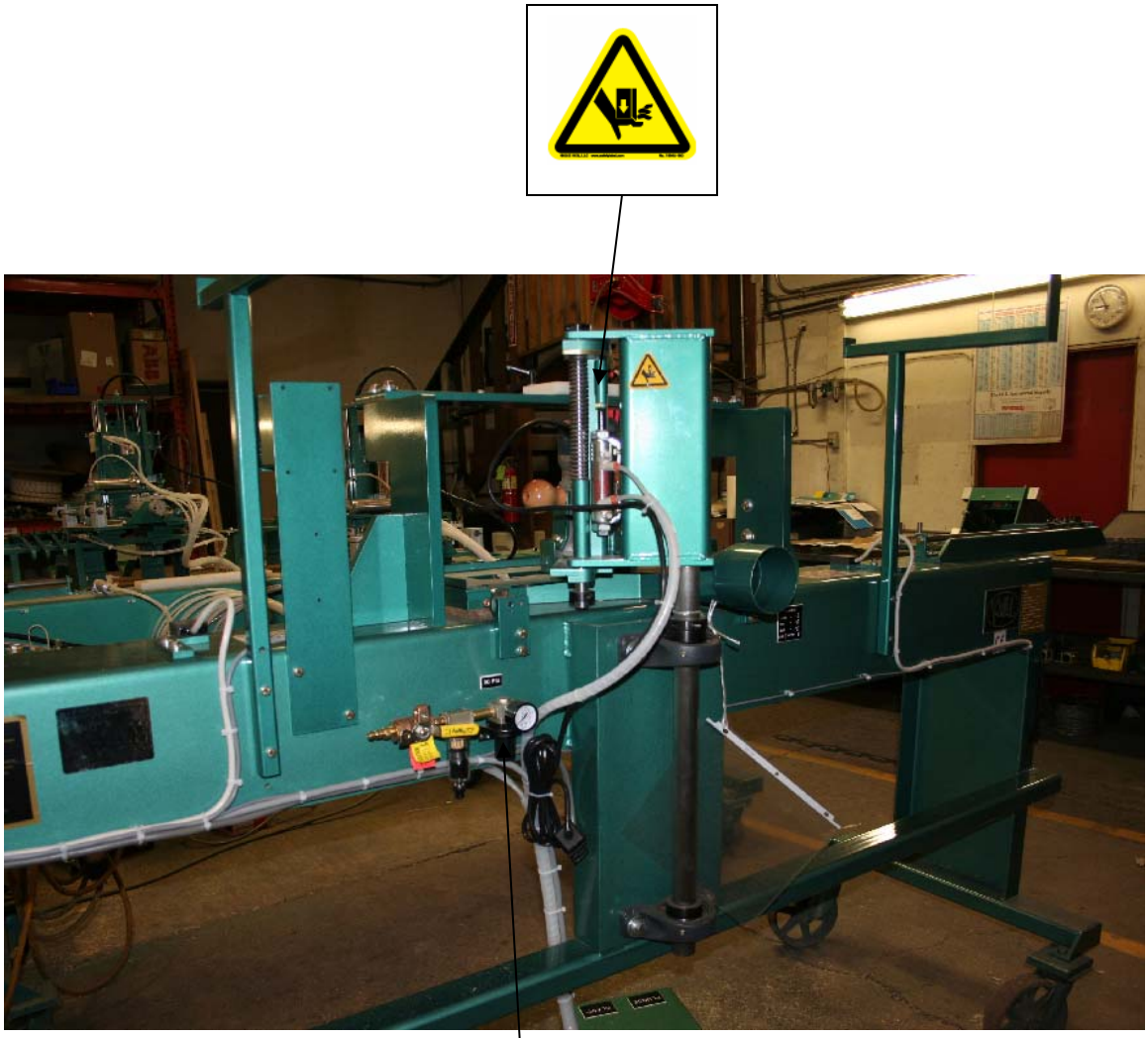
IMG_0003.JPG

IDEC 22MM PB E-STOP 40MM RED MUSHROOMHEAD PUSH TO ACTIVATE TWIST TO RESET P/N: HW1B-V4F02-R

E1PBG PUSHBUTTON ENCLOSURE 3-1/2 X 3-1/4 X 2-3/4 7/8(22MM) PB HOLE P/N: E1PBG

IDEC E-STOP NAMEPLATE P/N: HWAV-27

IMG_0004.JPG

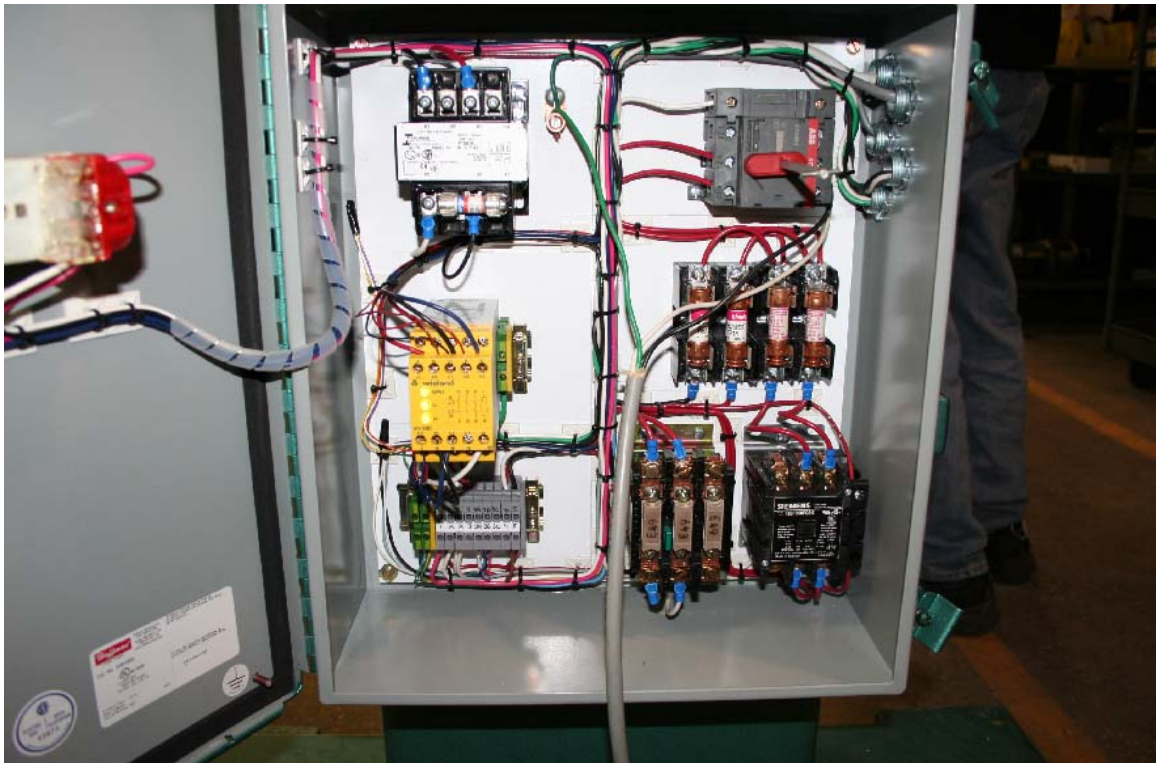


BIM CYL 121DP 1 DOUBLE ACTING REAR PIVOT DOUBLE END MOUNT 1-1/4 BORE
P/N: BIM121DP

SPRING 1-1/16-OD 8 LONG 13/16-ID 29 COILS (SPG 0801A) (920-C)
P/N: 340800A

1/8 FLOW CONTROL UNIVERSAL (SMC NAS2301F-N01-07S)
P/N: SMCAS2301F

IMG_0006.JPG



IMG_0007.JPG

KR20: SQUARE D MUSHROOM OPERATOR
KA2: SQUARE D CONTACTS 1-NO
K92L: SQUARE D BLUE MUSHROOM BUTTON

SQUARE D LIGHTED PUSH/PULL OPE WITH GREEN LENS AND 2-NC
P/N: KR9P1GH8

HANDLE KIT ABB
P/N: OHB65J5

IMG_0008-9.JPG

Notes