KVAL INC.

INSTRUCTION MANUAL

555 Door Sizer

REV.2

Operator's and 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

Congratulations on your purchase of a new KVAL

555

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 personal 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.

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.

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.

In addition to safety concerns, this policy is required by OSHA regulation 1910.147 and Cal OSHA'S SB198 ruling of July 1991.

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 manufacture

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. This should be done in accordance with the State and/or Federal code requirements.

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.

555 Operating Controls

Emergency Stop

The Emergency Stop foot pedal shuts off the 555.
When pressing the “Emergency Stop”, the cutter, easers, sanders, feed wheels stop, and the feed arms rise.

Start Button

The “**Start”** foot pedal begins the 555 cycle of operation, if there is a door inserted into the 555 far enough to activate the first limit switch. **Press once to Start.**

Variable Speed Control

The “variable speed control” switches allow the operator to change the speed of the 555 feed system.

Index ON / OFF

The “Index” switch is located on the carriage handle; it locks and unlocks the indexing clamp.

Clamp ON / OFF

The “Clamp” switch is located next to the “Index” switch on the carriage handle; it secures the carriage position on the linear bearing shaft.

The Easer

The leading (in feed) and trailing (out feed) "Easer Guides" adjust to vary the depth of easing from 1/32" to 1/16". The **"Infeed Easer Guide"**, (the guide the first door contacts), determines how much wood is removed by exposing more or less of the router bit. The **"Outfeed Easer Guide"** ensures that the amount eased is consistent all the way down the edge of the door.

Adjustment for both the top and bottom "Easers" is the same. Start with the bottom "Easer" first, then the top "Easer". Before adjusting the bottom "Easer", remove the top "Easer" router.

Adjusting the Easers

ADJUSTING THE "INFEED EASER GUIDE"

1. **Unplug the routers**
2. Turn the **"Outfeed Easer Guide"** jackscrew counter clockwise to allow the **"Outfeed Easer Guide"** to slide away from the cutter.
3. Loosen the two bolts that secure the **"Outfeed Easer Guide"**, and slide the **"easer guide"** back as far as possible.
4. Tighten one of the bolts to hold the **"Outfeed Easer Guide"** in place
5. Loosen the two bolts securing the **"Infeed Easer Guide"** in for less depth of cut, and out for more depth of cut.
6. Re-tighten the two fastening bolts, and the lock nut on the Jackscrew.
7. **PLUG IN THE ROUTERS.**
8. To check the amount eased, run a door into the 555 and ease about 3" from the top of the door, then press the "Emergency Stop" button.
9. Remove the door and examine the cut.
10. If the amount eased is correct, run the door into the 555 and ease approximately 6" from the top of the door, then press the "Emergency Stop" button.
11. **UNPLUG IN THE ROUTERS.**

ADJUSTING THE "OUTFEED EASER GUIDE"

1. With the door still in the 555, loosen the bolt holding the **"Outfeed Easer Guide"** back and out of the way.
2. Turn Jackscrew clockwise to slide the **"Outfeed Easer Guide"** forward so that it touches the edge of the door.

   NOTE: "OUTFEED EASER GUIDE" SHOULD BE FLUSH WITH THE CUTTER HEAD
3. Tighten the fastening bolts to hold the **"Outfeed Easer Guide"** in position.
4. **Make a Test Cut**.

Door Thickness

The Easers allow both 1-3/8” and 1-3/4” doors to pass through the 555 machining a 45-degree bevel on both edges of the door. Carefully adjust the Easers so that the 1-3/8” door barely opens them. If the 1-3/8” door opens the Easers, too much a 1-3/4” door will hit the leading Easer Guide and mar the door or jamb the 555. Always make a test cut before beginning production.

Adjustment should allow both the top and bottom Easer Guides to ride on their respective edges of the door. The Bottom Easer rarely, if ever, needs adjustment.

1. **UNPLUG THE ROUTERS**
2. Roll 1-3/8” door into the 555 until the door is between the two Easer Guides.
3. Easers should open approximately 1/4” when the 1-3/8” door is between the two Easers.
4. Turn the Jackscrew out to decrease the space between the Easers.

NOTE: If the Easers are properly adjusted for a 1-3/8” door, the 555 will also accommodate 1-3/4” doors.

Adjusting for 2-1/4 Doors

1. Turn the Jackscrew on the top Easer clockwise until Easer Guides open enough for the door thickness.
2. Loosen the chuck on the top Easer, (bottom Easer should not need adjustment).
3. Slide router bit out far enough to allow the cutting surface to reach the edge of the door.
4. Re-tighten the router chuck.

The Sander

Changing the Sanding Belt

1. Before changing the sanding belt, make sure that all power to the 555 is **OFF**.
2. Remove the Sanding Belt Guard.
3. Squeeze the belt pulleys toward each other, and remove the sanding belt.
   NOTE: If a directional arrow is on the belt, make sure that, the arrow points in the direction of belt travel.
4. Replace the Sanding Belt Guard.
5. Turn power back on.

Adjusting the Sander Angle

To adjust the sander angle to the bevel of the door simply turn the black knob on the inside of the cutter carriage in or out until proper angle is attained.

Adjusting How Much the 555 Sands

The sanding belt tension determines the amount sanded. If the sanding belt is loose, the sander will sand off more of the door edge. Tightening the sanding belt decreases the amount sanded. Refer to the "Training the Sanding Belt" section for more sanding belt adjusting information

The Sizer

Setting the Bevel

The cutter arbor housing and motor mount to a plate bolted to the 555 Sizer carriage. The cutter plate pivots on one 1/2" bolt when the two bolts supporting the cutter plate are loosened. Once the two bolts are loose turn the Jackscrew in or out until the 555 bevel is correct. Make a test cut**.**

Replacing Cutter Inserts

1. LOCK AND TAG OUT ELECTRICAL SUPPLY.
2. LOOSEN THE TWO ALLEN SCREWS SECURING THE CUTTER BLADES.
3. FLIP OR REPLACE CUTTER BLADE (S).
   NOTE: MAKE SURE THE SLOTS THAT HOLD THE CUTTERS IS CLEAR OF SAW DUST AND PITCH. THEY WILL PREVENT PROPER SEATING OF THE BLADES.
4. INSERT CUTTER BLADE ALL THE WAY INTO ITS SLOT EVEN WITH THE TOP AND BOTTOM OF THE CUTTER.
5. RE-TIGHTEN THE TWO ALLEN SCREWS SECURING THE CUTTER BLADES.
6. UNLOCK AND SIGN OFF TAG.
7. MAKE A TEST CUT CHECKING FOR IMPROPER BLADE INSTALLATION.

Width Adjustment

Positioning the Moveable Carriage for different width doors involves two separate adjustments for initial setup, the Index Clamp Lock Rings, and the Lock Ring Shaft Fine Adjuster. Both adjustments reference off the index Tape Indicator on the left end of the frame.

The Index Clamp Lock Rings hold their position on the Indexing Shaft with two socket head cap screws that “pinch” the lock ring onto the shaft. By positioning the lock rings at the normal door width increments that you normally use changeovers become quick and easy.

The Lock Ring Fine Adjustment shifts the Indexing Shaft in and out when the Lock Ring fine adjustment wheel is turned; this allows fine off sets from the original Lock Ring positions.

How to Set the Index Clamp Rings

1. Loosen the Index Clamp Lock Ring and position the Index Clamp above it.
2. Turn the Index switch to the “ON” position.
3. Slide the carriage to the measurement that you want by reading the Tape Indicator on the left end of the 555.
4. Turn the Clamp switch to the “ON” position.
5. Reach underneath the Index Clamp with an Allen wrench and tighten the Index Clamp Lock Ring.
6. This Lock Ring is, now, set for perfect indexing every time; repeat the above process for each measurement you use.

Setting the Lock Ring Fine Adjuster

1. Locate the Allen wrench inside the Fine Adjustment wheel.
2. Turn the Allen wrench to release the clamp securing the Fine Adjustment Shaft in position.
3. With Index Clamp engaged, turn Fine Adjustment Wheel to move carriage in the direction you want.
4. When the Tape Indicator on the left end of the 555 frame shows the measurement, you want turn the Allen wrench locking the adjustment shaft in place.

Operating Instructions

1. SETUP THE **555** TO DESIRED SPECIFICATIONS.
2. ROLL THE DOOR INTO THE **555** FEED WHEELS, ACTIVATING THE LIMIT SWITCHES.
3. PRESS THE "START FOOT PEDAL". THIS ACTIVATES THE **555** CYCLE OF OPERATION.
4. THE **555** AUTOMATICALLY "SHUTS OFF" AFTER THE DOOR HAS BEEN MACHINED, AND THE AUTOMATIC OUT FEED SYSTEM HAS MOVED THE DOOR PASSED THE LAST LIMIT SWITCH.
5. AUTO FEED DOOR INTO THE **COMMANDER** OR OFF FEED ONTO ROLL TABLE.

Maintenance Schedule

KVAL recommends the following maintenance schedule to ensure that the machine operates properly. Refer to this section for steps to perform maintenance.

Daily, Monthly, Six Month Maintenance

Daily Preventive Maintenance	
Op	**Operation Description**
Clean	Blow off dust from the entire machine.Wipe down the outside of the machine with a clean dry cloth.
Check	Check tooling for wear.
Clean	Wipe off the photo eyes with a clean dry cloth, and check to ensure that all fastening nuts are snug.
Check	Check the air pressure to make sure it is set at 80 psi to100 psi.
Clean	Empty any Dust Collection Units.
Check	Check for obstructed flow when excessive sawdust appears.
Check	Check the air filter water trap. Empty if full.

Weekly Preventive Maintenance	
Op	**Operation Description**
Check	Check the machine for smooth motion through a complete door cycle
Clean	Clean linear bearings and the chrome shaft with a clean dry cloth, then lubricate.
Check	Check all air lines & electrical wiring for kinks or rubbing.
LUBE	Refill lubricator with an ISO 32 standard hydraulic oil (KVAL part# SYSLUBG)

Six Month Preventive Maintenance	
Op	**Operation Description**
Clean	Wash filter and lubricator bowls with soapy water.
LUBE	Grease all bearings and tighten all bolts. Access to some grease fittings is difficult and will require a special needle point grease tip (supplied with your system).
Clean	Clean and lubricate all slides and cylinder rods with dry silicone spray.
Tighten	Tighten all bolts.
Back-up	Backup computer software.
LUBE	Lubricate linear bearings and chrome shafts with silicone.

Lubrication Schedule

KVAL recommends the following lubrication schedule to ensure that the machine operates properly.

TABLE 3-1. Recommended Lubrication Schedule

Type of Assembly	Recommended Schedule	Recommended Lubrication Type
Linear Bearing	Every 250 Hours of Machine Operation	Dura-Lith Grease (KVAL P/N Lube EP-2)
Pillow Block Bearing		
Flange Block Bearing		
Ball Screw	Every 80 Hours of Machine Operation	
Air Line Lubricator	One drop of oil every 2 or 3 cycles Check the lines every week to two weeks	Either lubricant listed below is approved to use. • KVAL P/N SYSLUBG • Chevron AW Hydraulic Oil 32 • G-C lubricants light AW R&O • Mobile DTE 24 • Shell Tellus32 • Gulf Harmony 32
Gear Box	2000 Hours of Machine Operation or six months of operation	• AGMA #8 gear lube • MOBILUBE HD 80 W-90 • or equivalent

MAINTENANCE SCHEDULE

DAILY

Blow off dust. Lubricate slides.
Wipe down machine. Check tooling for wear.
Empty water filter bowl. Refill lubricator.

WEEKLY

Check machine for smooth motion.
Clean slides. Check air pressure.
Adjust & lock flow controls.

MAY & DECEMBER CHECK-UPS

Wash filter and lubricator bowls with soapy water.
Grease all bearings and tighten all bolts.
Clean and lubricate all slides and cylinder rods with dry silicone spray.
(Carburetor cleaner can be used to remove pitch.)

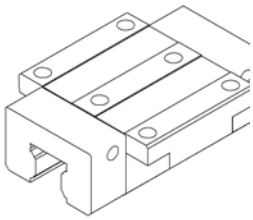
DANGER!

- ☐ Wear eye and ear protection if recommended, and never wear jewelry or loose clothing.
- ☐ Use the machine only for its intended purpose, and never operate if the machine is not running as designed. Consult the manual or call us to solve the problem.
- ☐ Never reach or climb into machine mechanisms for any reasons without first locking out your required power disconnect, and disconnecting and bleeding the air service.
- ☐ Don't defeat any safeguards or safety cut-out devices, and always be sure all guards are in place.
- ☐ Ensure machine is installed by qualified personnel, and that **Kval Quality Control Checklist** is completed and returned at installation.
- ☐ Ensure electrical power supply(s) include properly sized wire, overload protection and lock-out devices.
- ☐ Use identical replacement parts.

Any Questions? Call Kval at 1-800-553-5825 or 707-762-7367.

LUBRICATION REQUIREMENTS

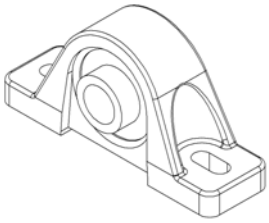
Linear Bearings



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.

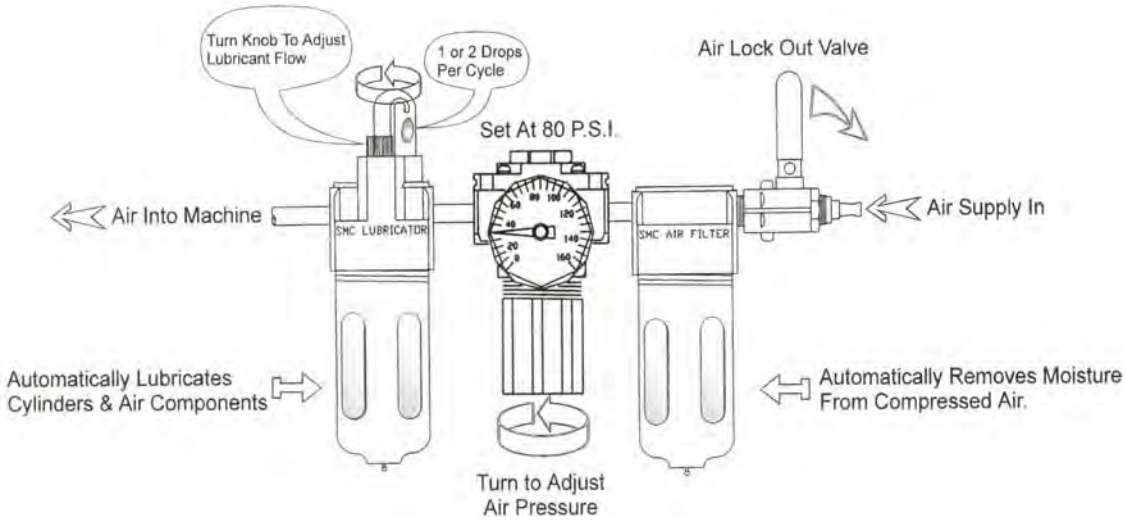
Priming the Lubricator

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

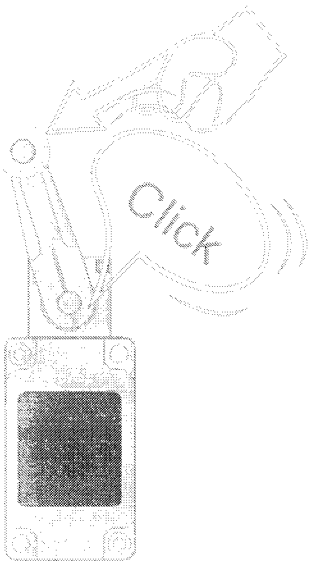
Figure 1: This shows how to adjust the lubricators and shows the air lock out valves 1 drop every 3-4 cycles



Adjusting Limit Switches

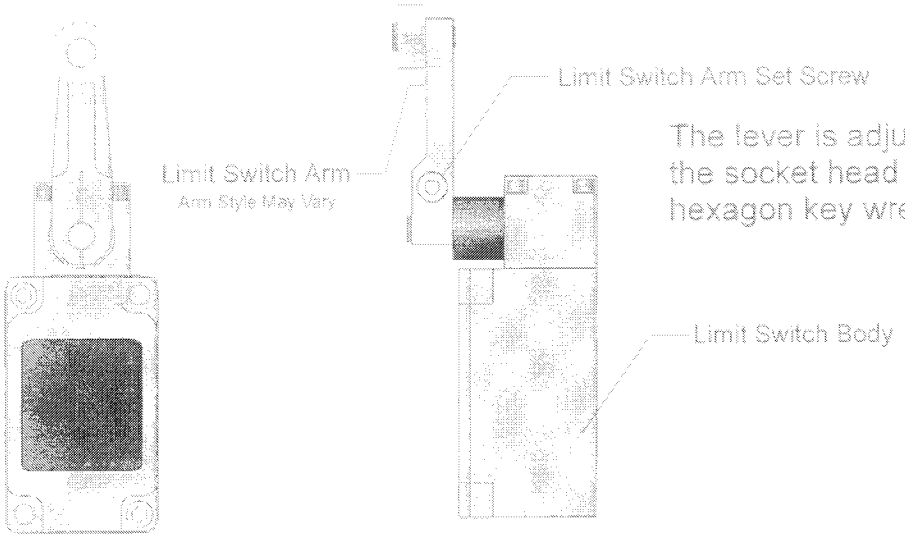
The most common cause for machine malfunctions is worn or improperly adjusted limit switches!

If a machine function halts in the middle of the cycle CHECK THE LIMIT SWITCHES! Worn Limit Switch Arms, and/or mis-adjusted limit switches is more likely than not the culprit.



Depending on the model of limit switch you are checking, the amount of "pre-travel" (amount of movement from arms resting position) is either 5 or 20 degrees before the limit switch actuates (Clicks).

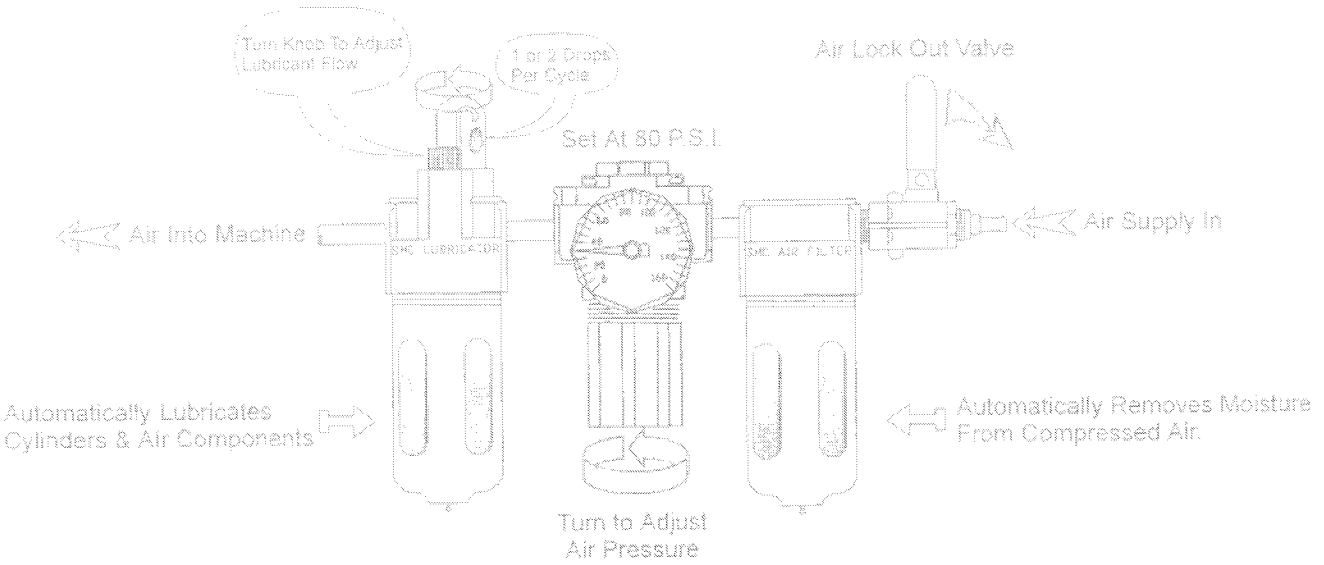
If you move the assembly in question to the full extents of its travel and do not here the limit switch "Click", limit switch adjustment is necessary.



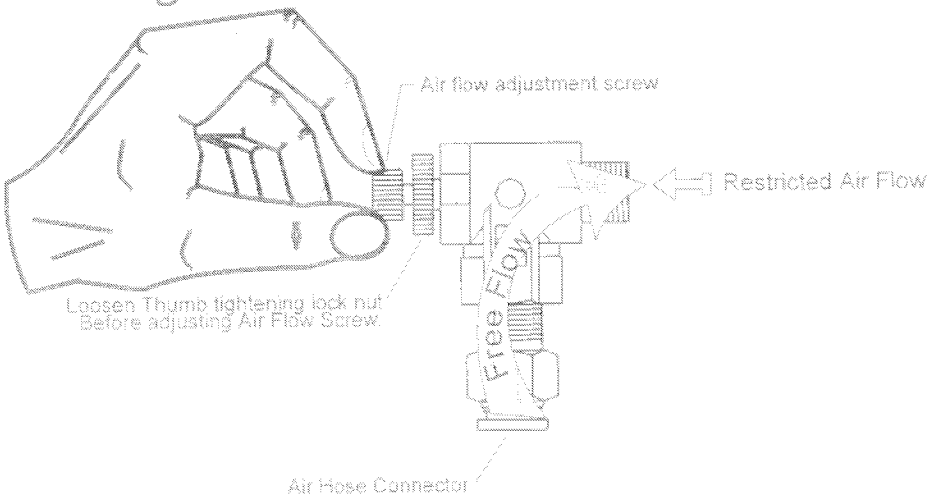
The lever is adjusted by loosening the socket head screws. A 5/32" hexagon key wrench is required.

For more information regarding limit switches refer to the manufacturers information at the end of this manual.

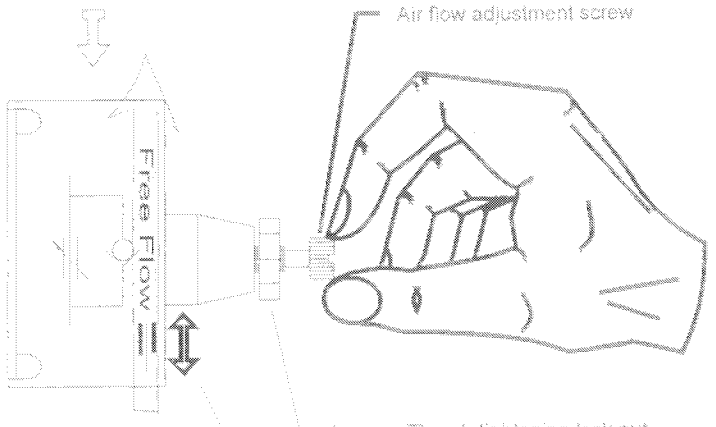
Filter / Regulator / Lubricator



90 Degree Flow Controls

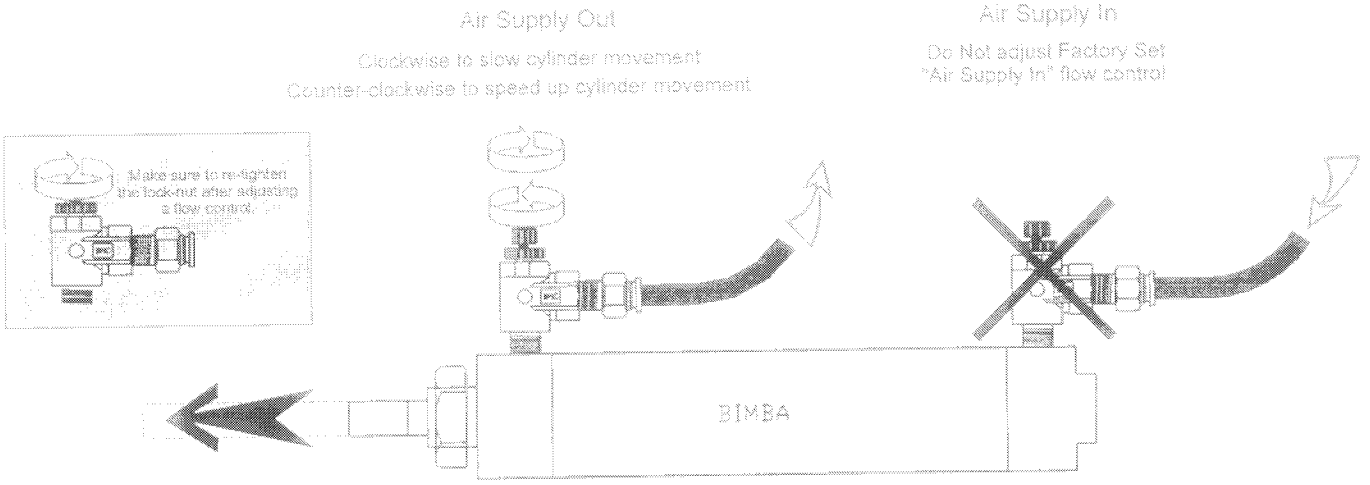


Straight Flow Controls

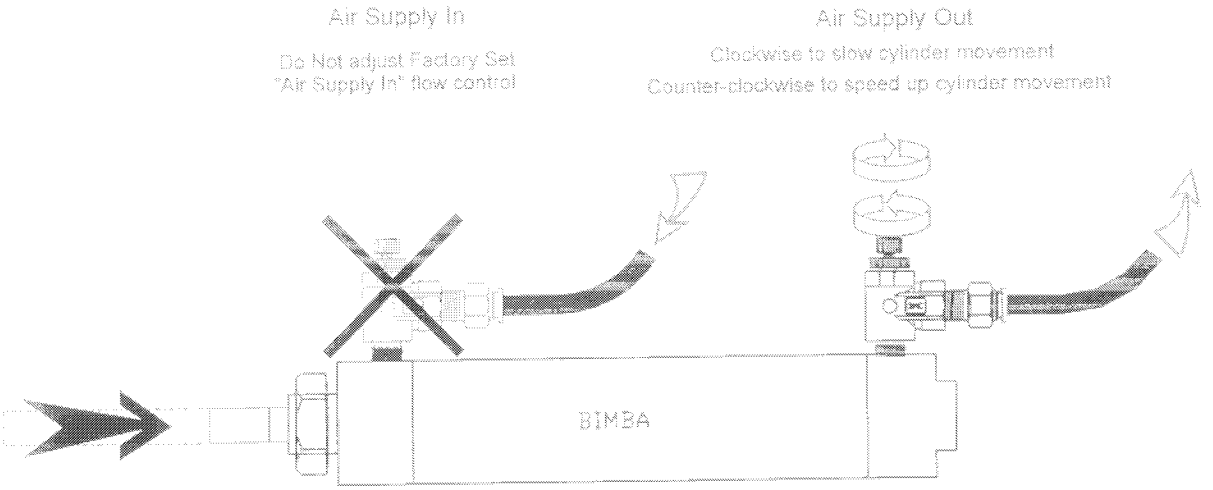


Note: The End that is closest to the air flow adjustment screw is the Free Flow In.

Adjusting Flow Controls
to Change Cylinder EXTENSION Speed



Adjusting Flow Controls
to Change Cylinder RETRACTION Speed



Note: With a "meter-out" flow control, air is metered as it is exhausted from the cylinder. It allows for unobstructed flow of air into the cylinder. Since the full volume of system air is flowing into the cylinder while the flow control meters the exhaust air, steady movement is possible. Meter-out flow control provides more efficient operation, constant cylinder speeds and more predictable operation.

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) on a Acro all the limit switches have 20 degrees of pre-travel. If the arm is moved to the full extent of its travel and you do not hear the limit switch "Click", the switch needs to be adjusted here is how you adjust it follow the following drawings.

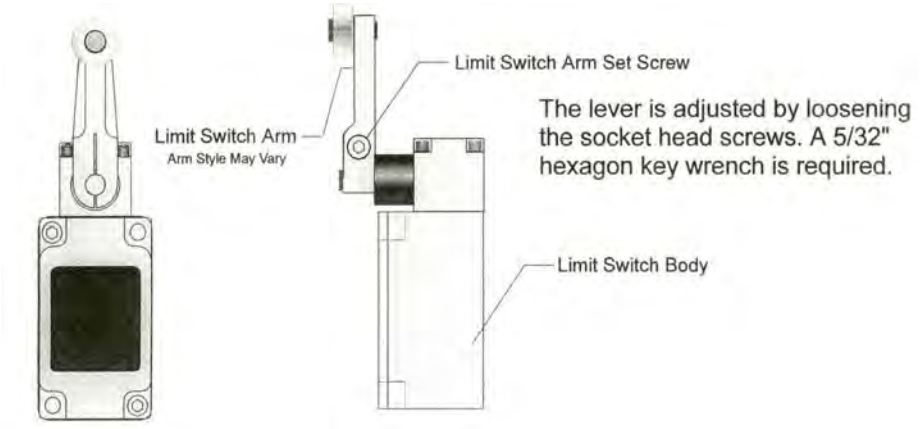


PHOTO EYES

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.

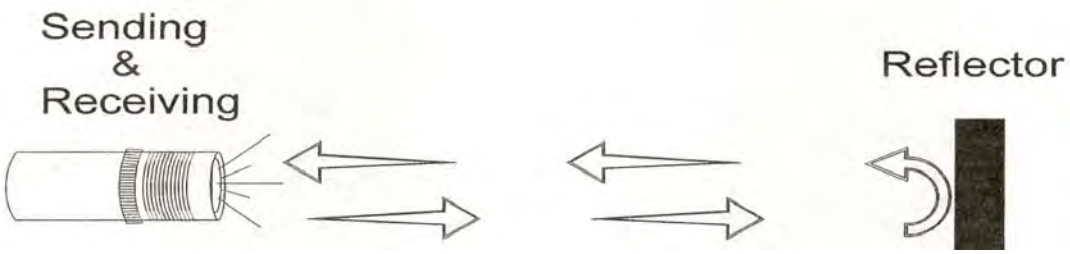


PHOTO EYES

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 dirty photo eye or a misaligned limit switch arm.

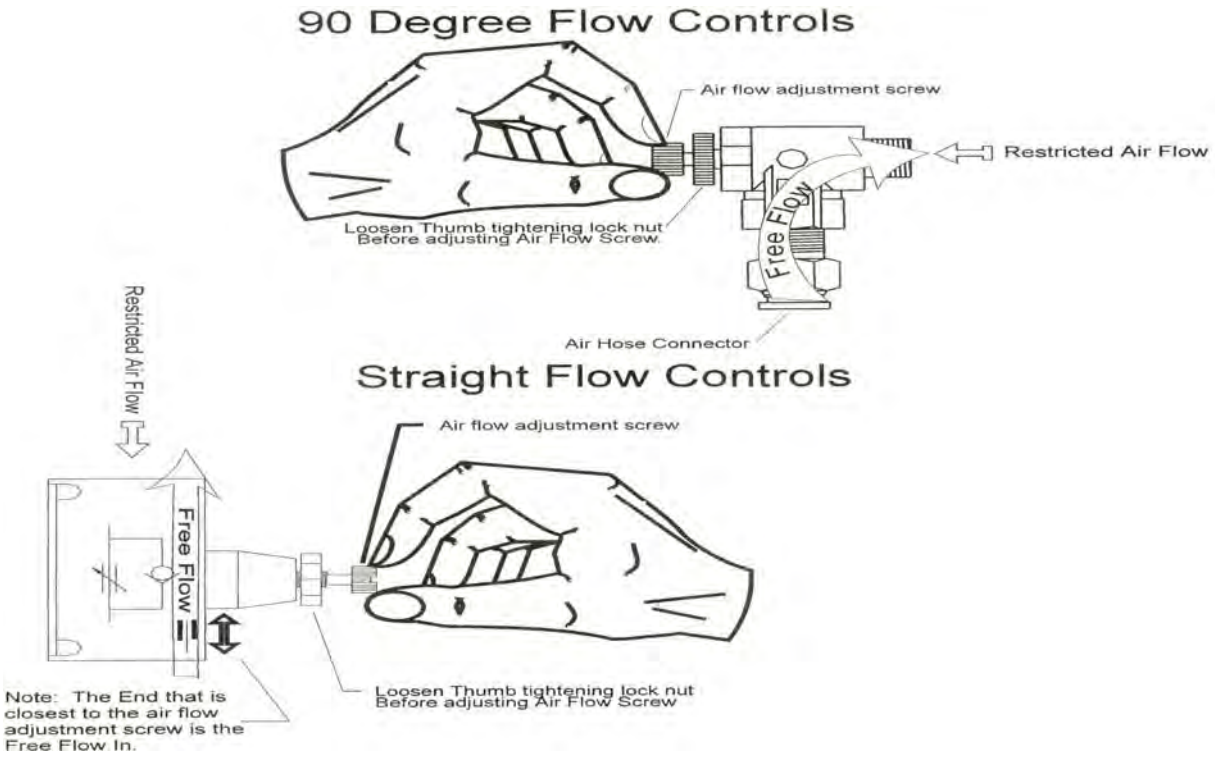
GENERAL AIR CIRCUITRY TROUBLE SHOOTING

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

Most cylinders have an extend and retract port. To adjust the extend motion of a cylinder you must adjust the flow control on the retract port; this regulates the air flow exhausting from the cylinder and the opposite is true for the retract motion.

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 solenoid air valves:
   The solenoid 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 an open ended wrench and inserting a 3/8" N.C. cap screw. DO NOT over tight when reassembling the valve.

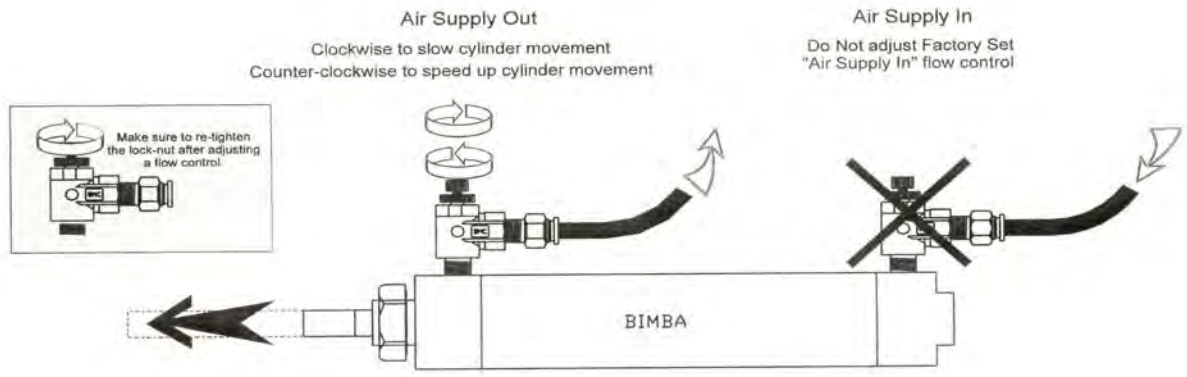
5. If the valve seems to be leaking, the seals may be dry or contaminated with water or it maybe that the cylinder "O" rings are damaged and air is passing from one side to the

other side of the cylinder which means the air is exhausting through the solenoid valve. It maybe is necessary to purchase a rebuild kit or a new cylinder.

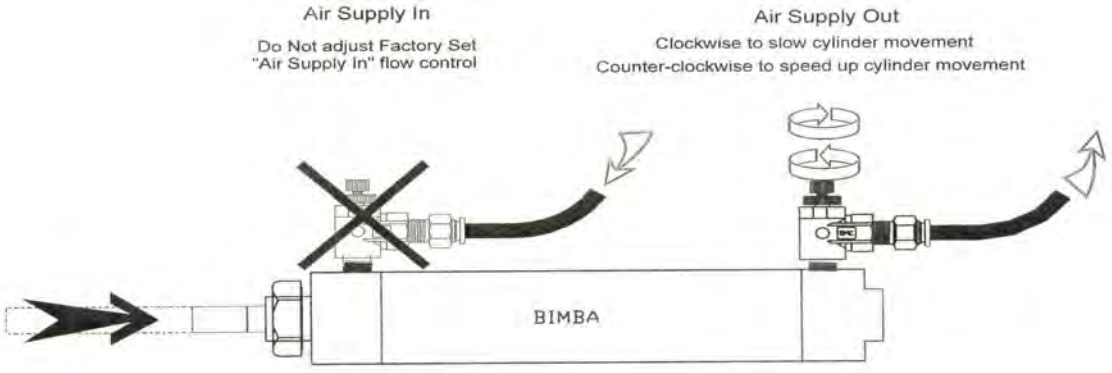
6. If the valve is not receiving an electrical signal, see "Electrical Trouble Shooting" instruction. It might be necessary to call in a specialist or check with KVAL customer service at 1-800-553-5825
   If an Air Leak is coming from an exhaust port on the solenoid air bank:
   Check the solenoid for 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 FOLLOWING SHOULD ONLY BE ATTEMPTED BY TRAINED ELECTRICAL PERSONNEL.

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 up when the input or output functions are energized, respectively. Computer controlled as well as non-computer controlled machines have white 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:

1. Check that the input power 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.

http://www.kvalinc.com

Contacting KVAL

Phone and Fax:

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 or fax (707) 762-0485

Email: service@kvalinc.com

http://www.kvalinc.com

Customer Service

Mailing address:

Customer Support Department

Kval Incorporated

825 Petaluma Boulevard South

Petaluma, CA 94952