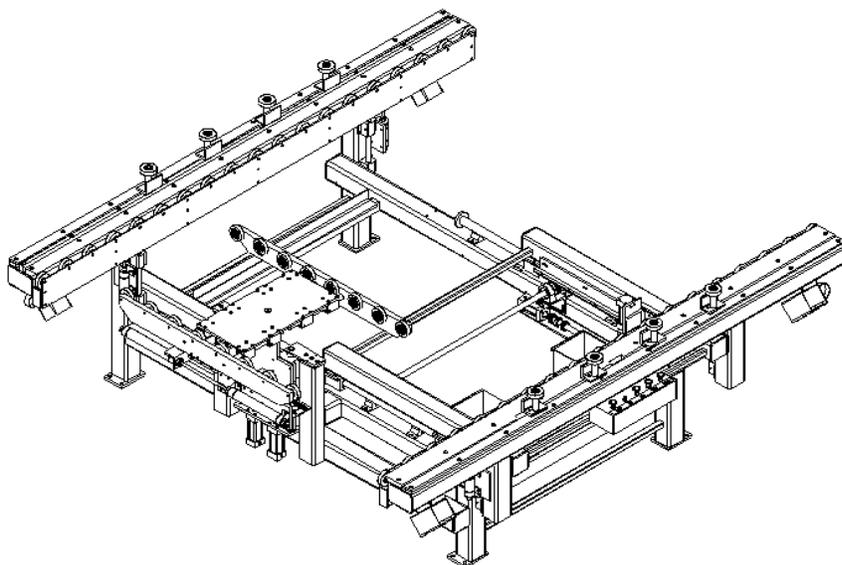




KVAL INC.

INSTRUCTION MANUAL



RKG-1

Entry Door Assembly Station

CONGRATULATIONS ON YOUR PURCHASE OF A NEW KVAL

RKG-1

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.

KVAL INC.

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.

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

www.kvalinc.com

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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: (707) 762-7367

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 an 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 1/2" 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 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-Out/Tag-Out Procedures. Comprehensive Lock-Out/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-Out/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-Out/Tag-Out procedures, and that those around you do also.

YOUR LIFE MAY DEPEND ON IT.

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

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Lock Out Diagrams

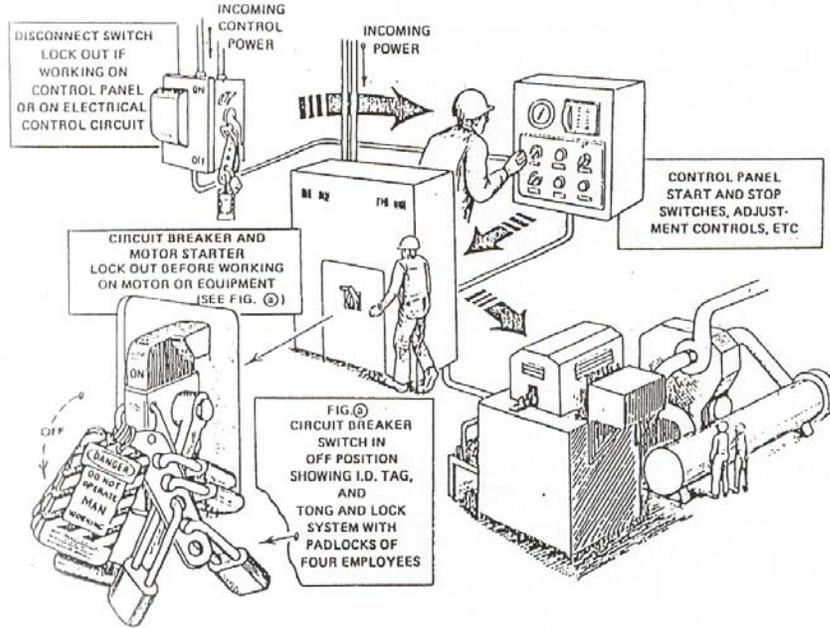


Illustration 1
Lockout/Tagout Procedure for Electrical Energy Source

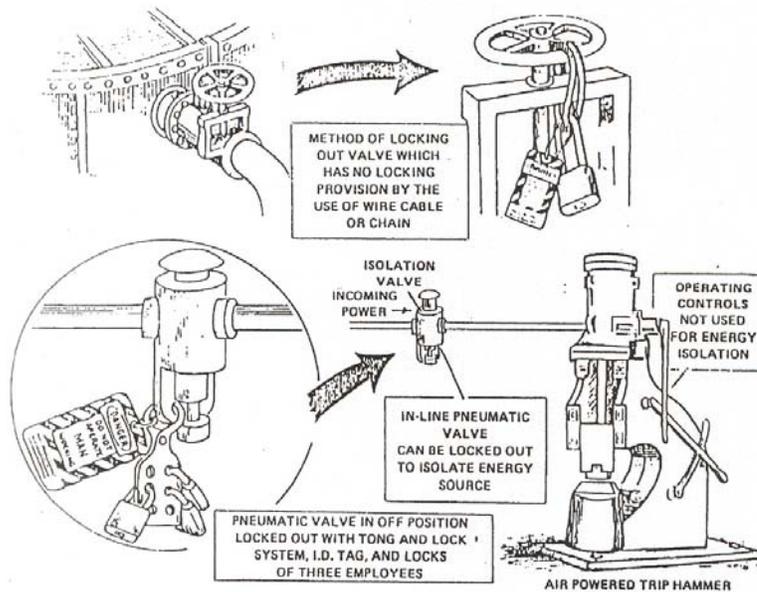


Illustration 2
Lockout/Tagout Procedure for Hydraulic-Pneumatic Energy Source

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 note 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.

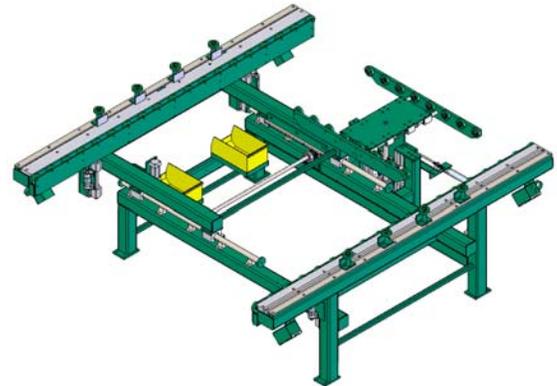
SPECIFICATIONS

The KVAL RKG-1 Entry Door Assembly Station makes it possible to assemble steel, fiberglass, or wood door units with sidelights, patio door units or double door units.

The design of this RKG-1, eliminates the manual lifting and turning of the doors during the assembly of a door unit with multiple parts. This station is designed to receive a door panel with the hinge jamb or mull post attached, exterior side up. This station would typically be used immediately after a RKG-1-Acrobat or the RKG-1-Hinge Jamb Attaching Station.

For a double door unit, the left-hand door panel would be prepared and rolled into the machine. The door panel, with the jamb attached, would then be rotated 90 degrees counter clockwise and lowered onto non-marking polyurethane wheels. These wheels are positioned to support the door on the top and bottom rail. They provide clearance for door light frames or raised molding. The second door, with the jamb attached is then rolled into the station, rotated, and positioned next to the first door. The pair of doors is then lowered onto jamb support plates.

The operators, one working at the top of the door unit and one working at the sill end, simultaneously install the head jamb and sill. A clamping system holds the components in place so they can accurately fasten the head and sill to the side jambs. After the frame has been assembled, the door unit is raised with the polyurethane rolls so that it can be safely rolled to the next station.



The standard Entrada-1 will accommodate doors 6'-8" high and doors that vary in width from 2'6" to 3'0". With the 8'0" door capacity option, the RKG-1 can be set up to accommodate doors that vary in height from 6'8" to 8'0". The RKG-1 will accommodate all jamb widths.

OPTIONS

Option A: 6'8", 7'0", 8'0" Door Height Capacity

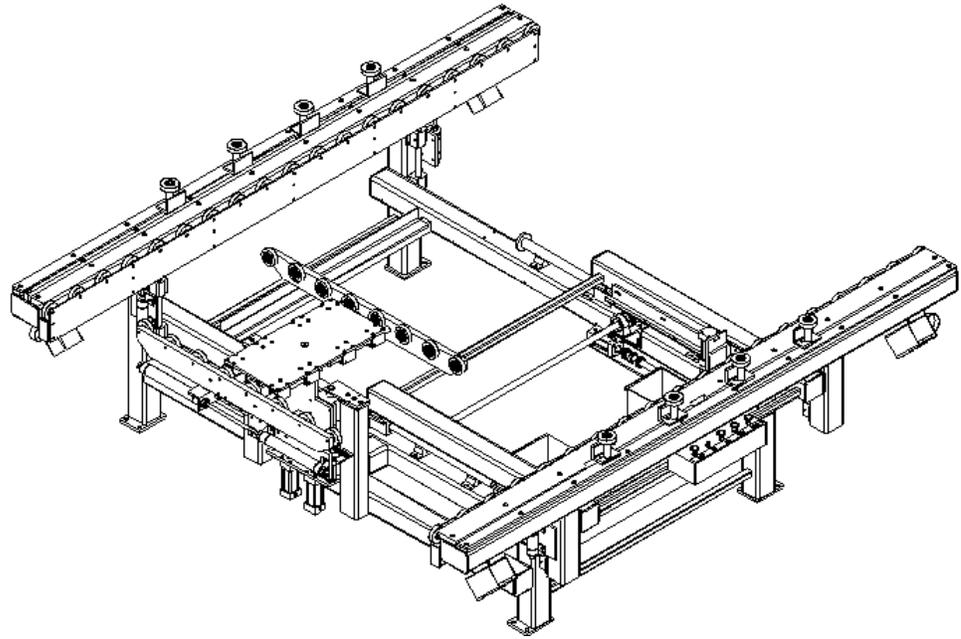
Option B: 9'0" Door Width Option

Allows door units up to 9'0" width to be assembled and transferred.

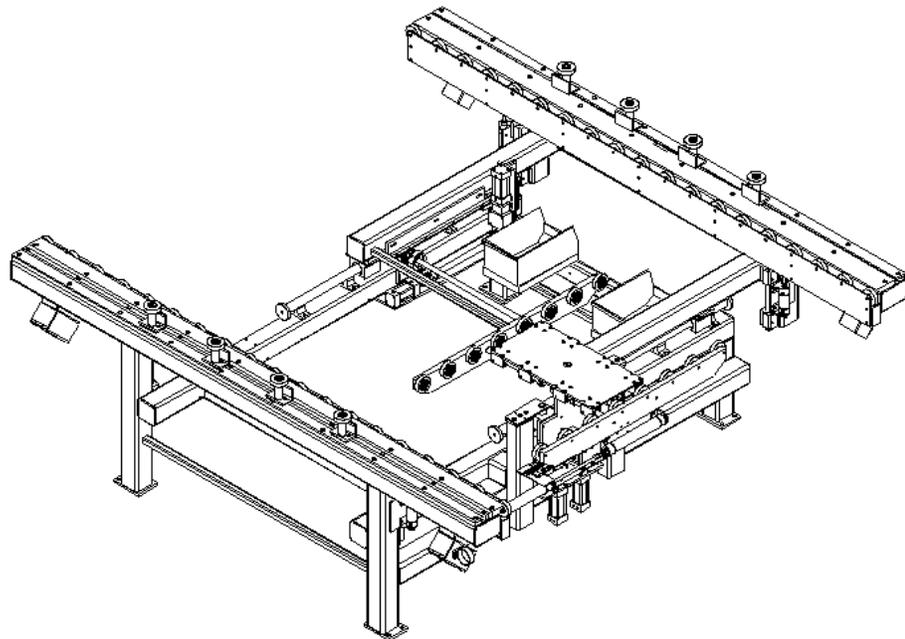
Option C: Out-swing Door Option

The sill end of the RKG-1 will be modified to accommodate an out-swing sill, with a projection of 1-1/4" maximum from the outside of the jamb.

RKG-1 ENTRY DOOR ASSEMBLY STATION

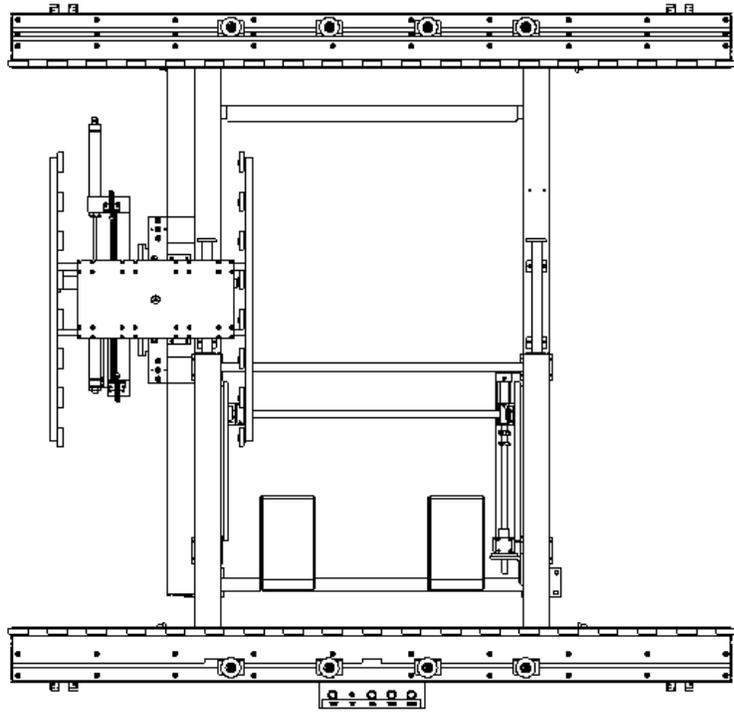


Iso view front

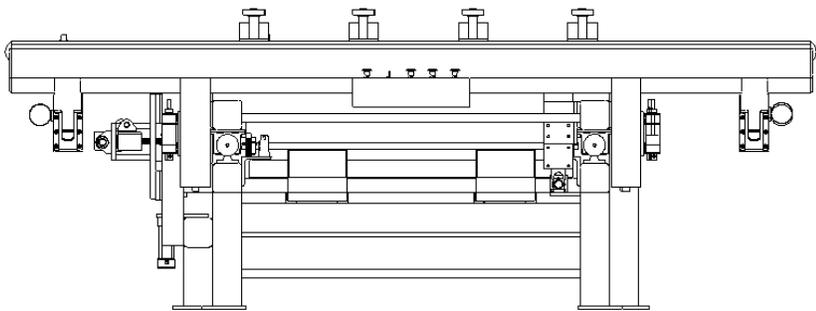


Iso view back

RKG-1 ENTRY DOOR ASSEMBLY STATION

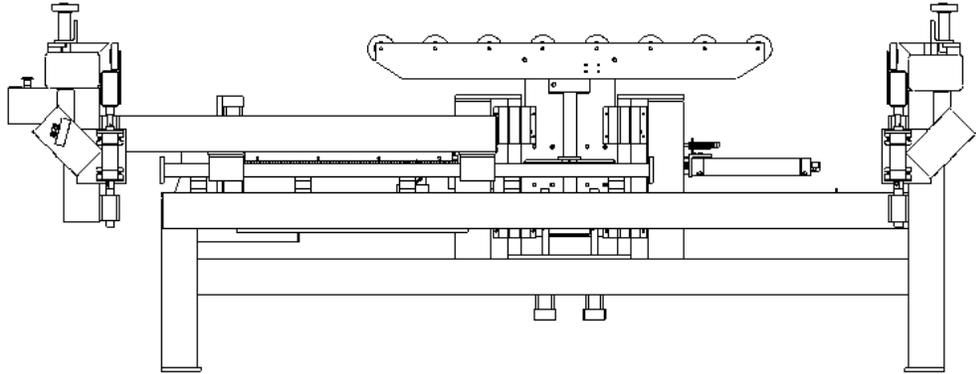


Top View



Front View

RKG-1 ENTRY DOOR ASSEMBLY STATION



Side View

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.

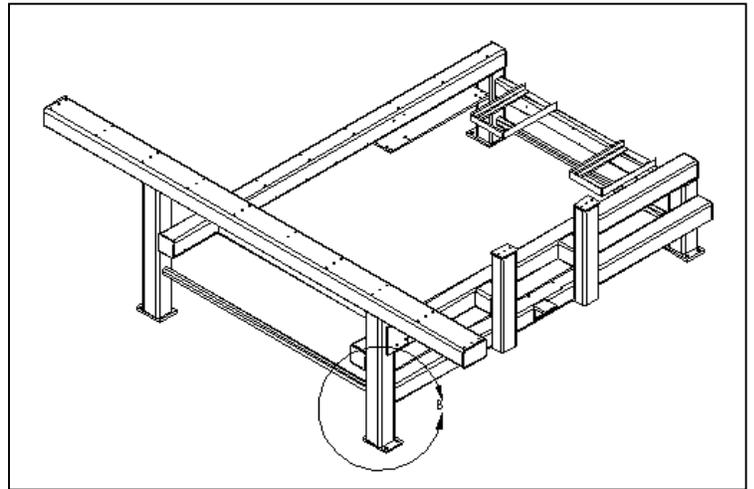
- **Standard Anchoring Instructions**

- * 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:**

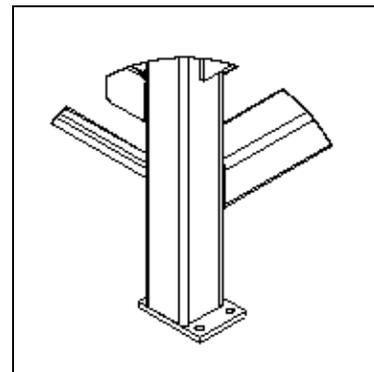
- * With machine in place and leveled, drill 3" deep holes in the concrete using a 9/16" dia. masonry bit, using the mounting hole as a guide.

- * Clean out holes with a 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 RKG-1

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 the lock flow controls.
5. Check all air lines & electrical wiring for kinks or rubbing.

May and December Check Ups

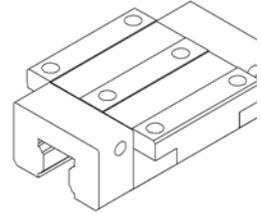
1. Wash filter and lubricator bowls with soapy water.
2. Grease all bearings and tighten all bolts.
3. Clean and lubricate all slides and cylinder rods with dry silicone spray.

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

LUBRICATION REQUIREMENTS

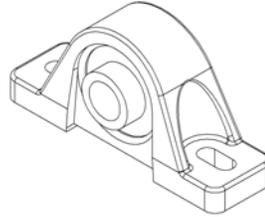
Linear Bearings

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.

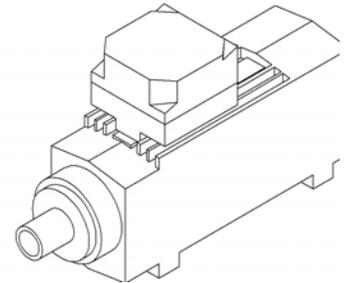


Lubricate special high speed bearings

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

Perske High Frequency Motors

Spindle motor(s) are installed pre-lubricated. For re-lubrication use lithium based NLGI grade 2 grease. The only greases currently approved for use in Perske motors are Optimol Longtime PD2 or LDS 18 Special A (KVAL P/N LUBE PD2). Failure to use the approved products voids warranty.



Approved Lubrication Products

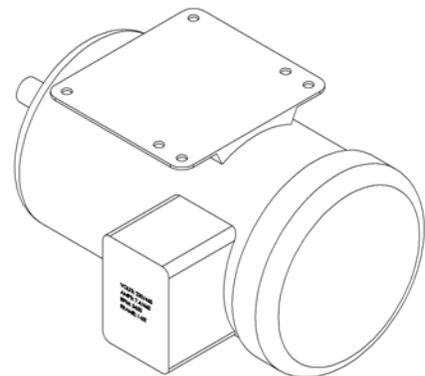
Chevron AW Hydraulic Oil 32 – or KVAL P/N SYSLUBG or G-C lubricants light AW R&O or Mobile DTE 24 or Shell Tellus32 or Gulf Harmony 32.

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 the reduce flow to proper specifications.

Gear Motor Lubrication Requirements

Oil change is recommended after 2000 hrs. 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 systlube lubricant, available through KVAL. Optimum flow is 3 to 5 drops per minute @ 5-10 psi.

NOTE: These oils cannot be interchanged.

NOTE: On the Commander-DI front section there is about 34 bearings that have zerk fittings either use a pin fitting or a zerk fitting to lubricate these bearings.

Priming the Lubricator

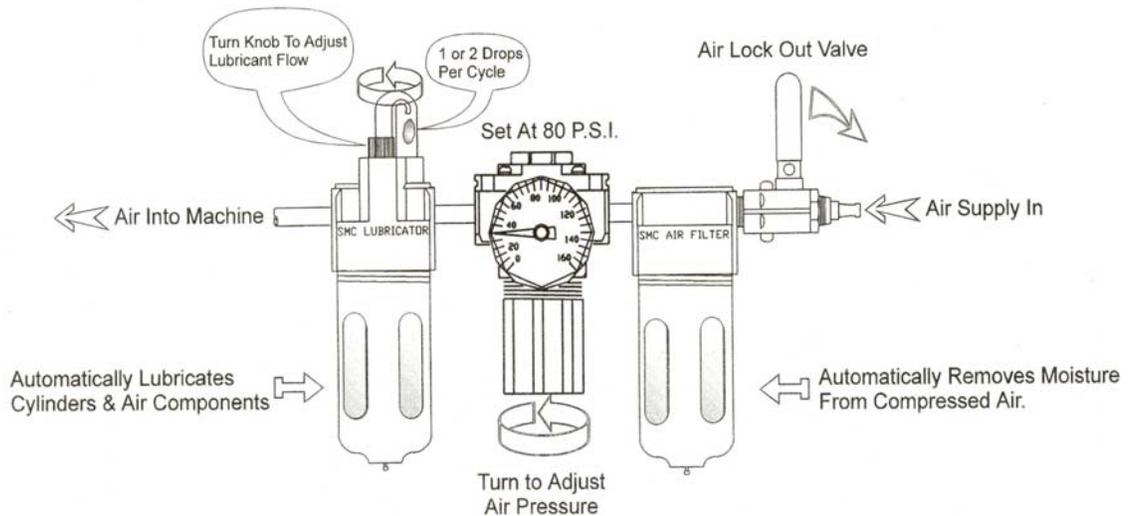
New and used machinery run out of oil from time to time. It is a good practice to check your machine lubricator to insure that it is putting the proper dose of oil in the air lines. Usually 1 drop every 3-4 cycles is a good rule of thumb.

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. **NOTE:** It might take up to **15 minutes** to get a good prime. When this is accomplished, place the air line back into its original position.

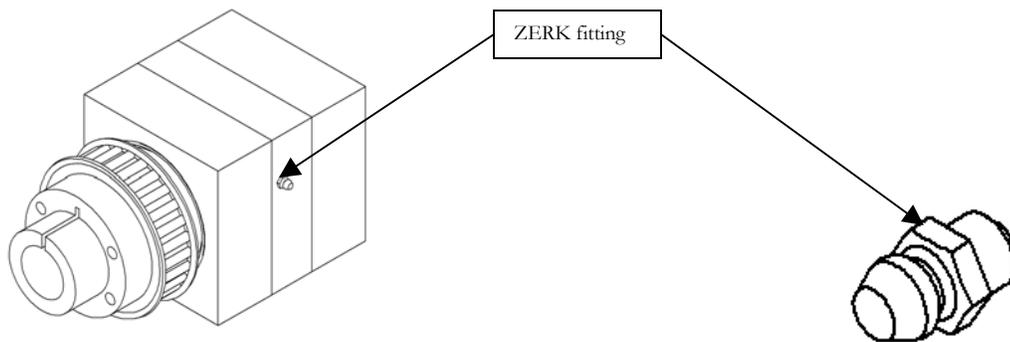
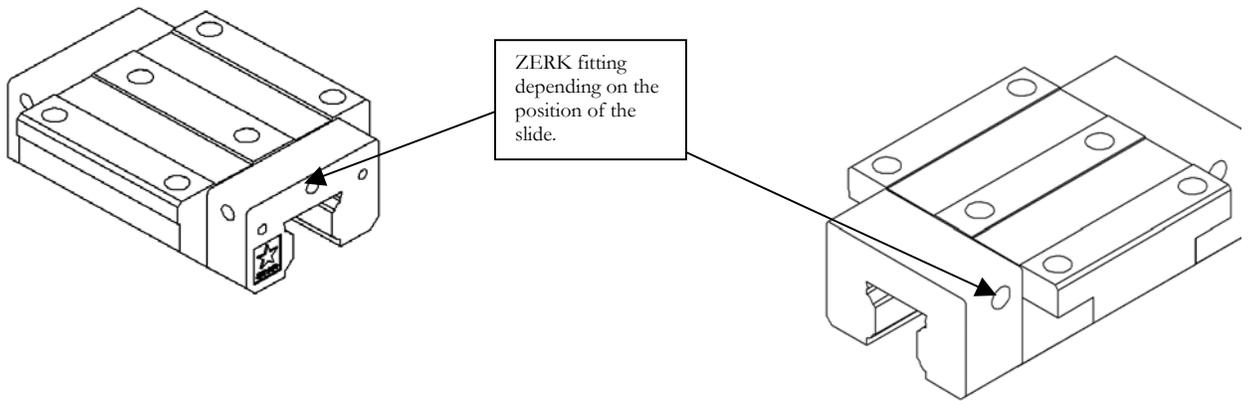
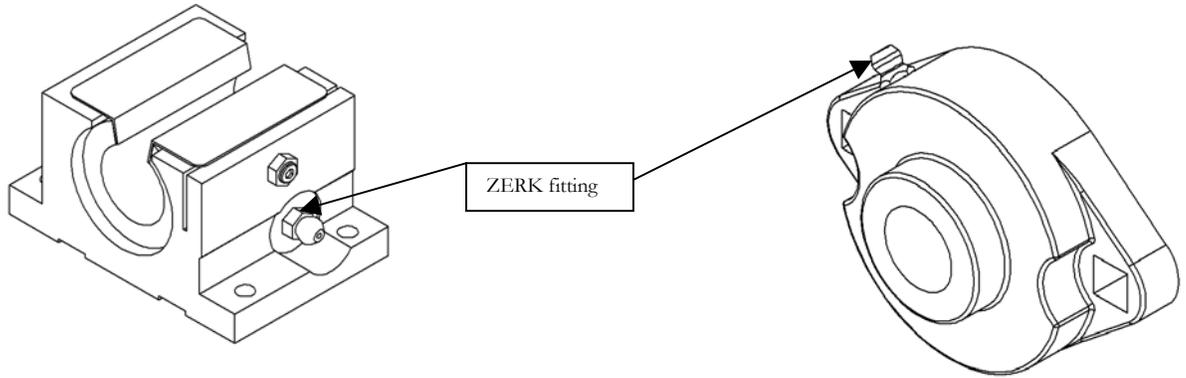
Repeat this same procedure for the back section and other trouble areas.

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



ZERK FITTINGS



TROUBLESHOOTING

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.

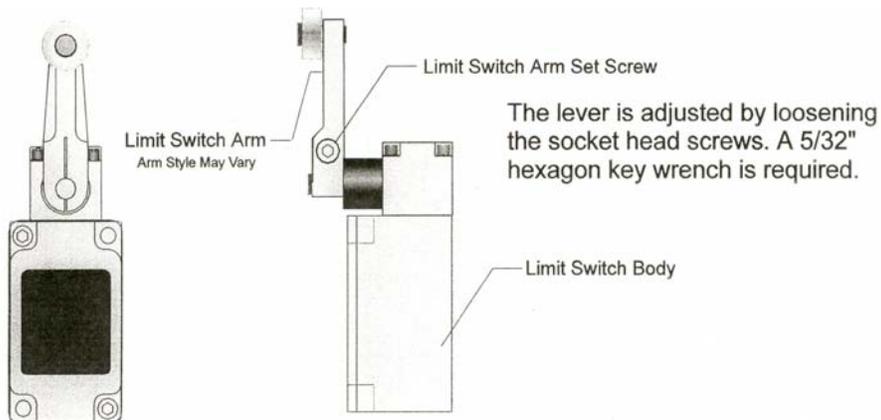
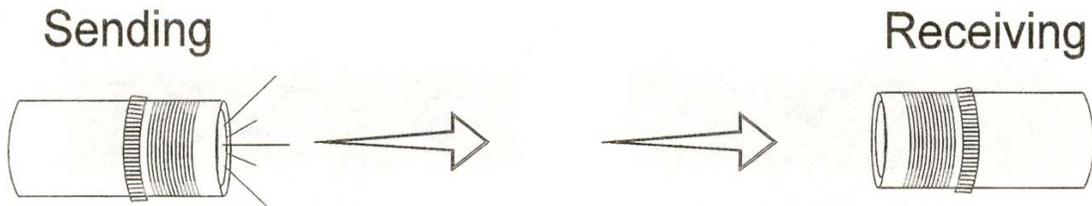
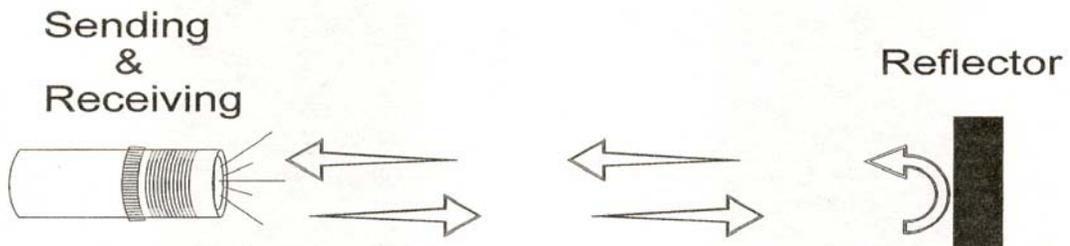


Photo Eyes



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.



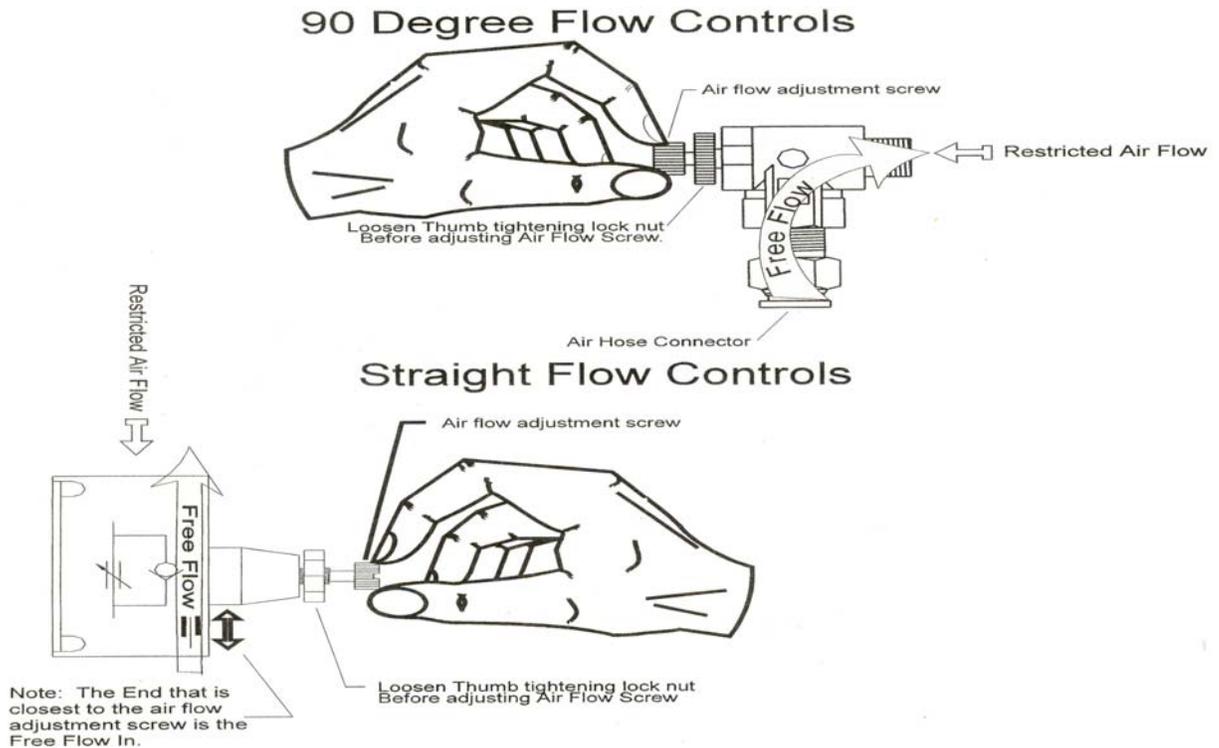
The sending and receiving units are in one unit, these operate in the same manner as the ones described previously.

Note: When a machine stops for no reason it is usually the fault of 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:

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 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. It maybe is necessary to purchase a rebuild kit or a new cylinder.

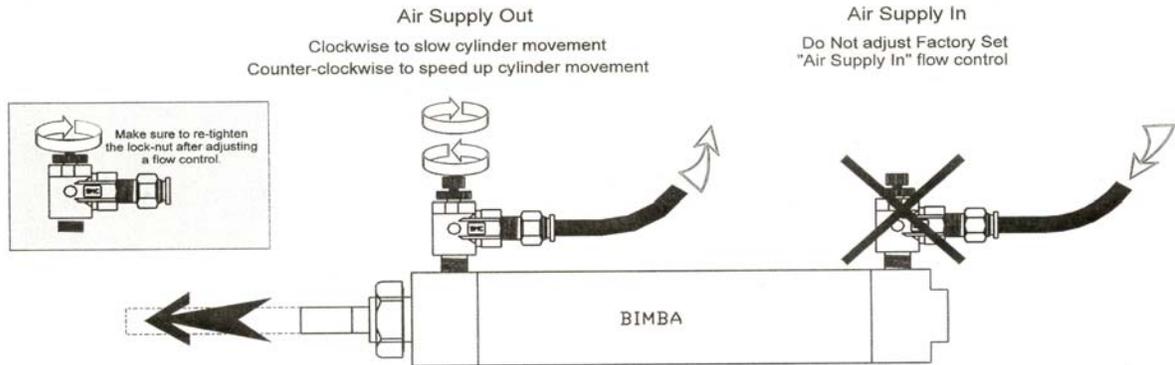
- If the valve is not receiving an electrical signal, see “Electrical Trouble Shooting” instruction. It might be necessary to call in a specialist or check with KVAL customer service at 1-800-553-5825

If an Air Leak is coming from an exhaust port on the air bank:

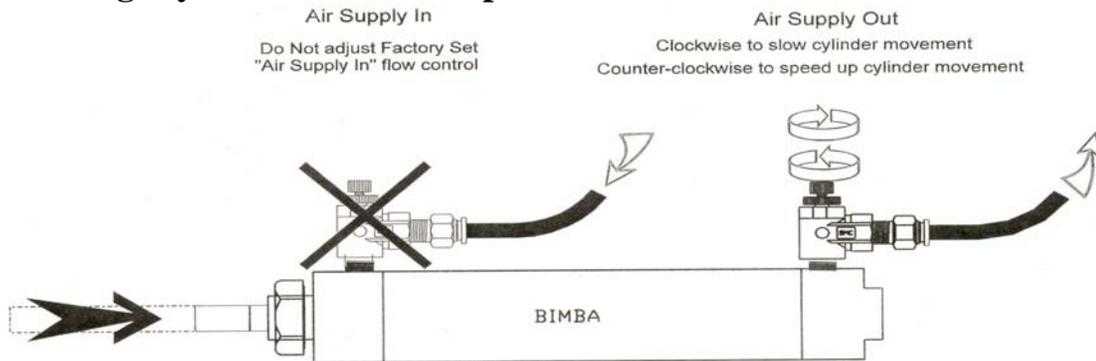
Check the solenoid for the manual override. If the solenoid has a manual override you can push each of the buttons one at a time. When the air leak stops or weakens it usually means that one or more of the cylinders that the solenoid is operating are faulty.

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



Warranty

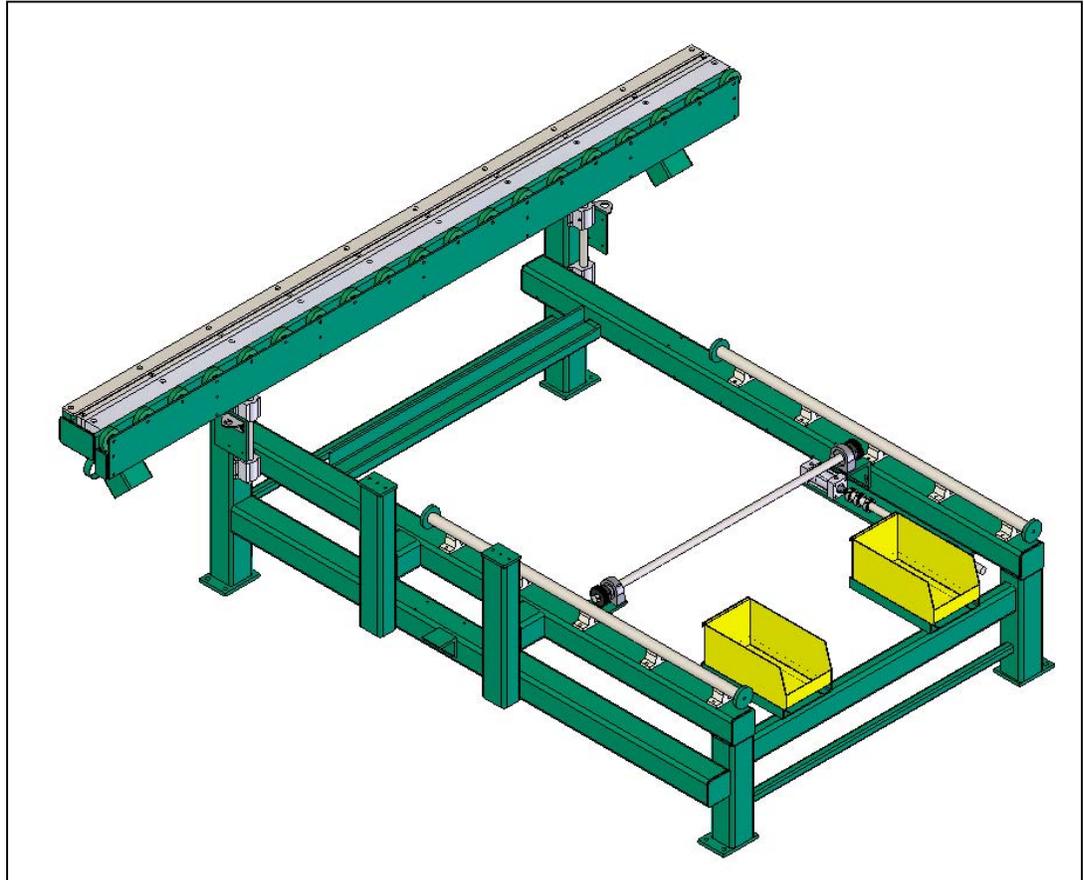
KVAL Inc. will repair, or replace any unserviceable parts not covered by their own manufacturer's warranty, caused by faulty manufacturing or design for one year after the shipping date. Replacement parts will be sent standard UPS. Overnight or special delivery is available at customer's expense. Our warranty does not cover parts that become damaged or unserviceable due to abuse of the machine, or misuse of the equipment as set forth in the material safety data information, and maintenance recommendations in this owners manual.

This warranty does not cover items that wear out during normal use, eg. tooling, chipout blocks & screwdriver bits. KVAL Inc. is not responsible for costs associated with down time, lost orders, or other costs not specifically covered in this warranty. KVAL Inc. is not obligated to send service technicians to affect warranty repairs in your facility.

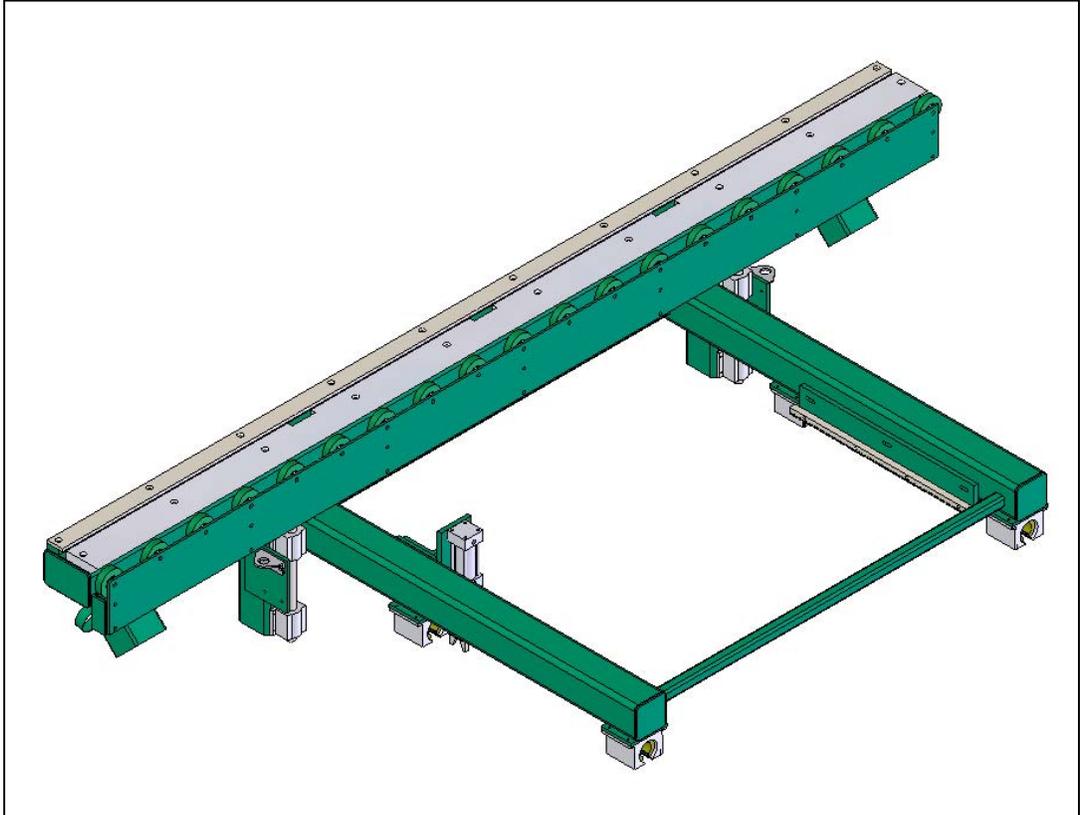
KVAL Inc. is committed to being the industry's finest woodworking machinery manufacturer, and always tries to maintain a good relationship with its customers.



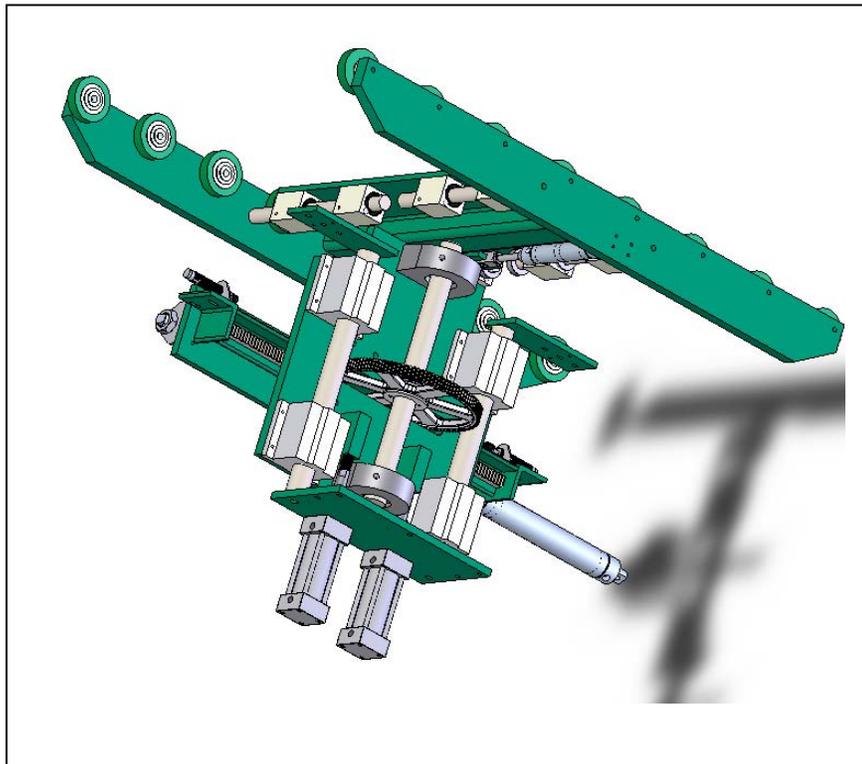
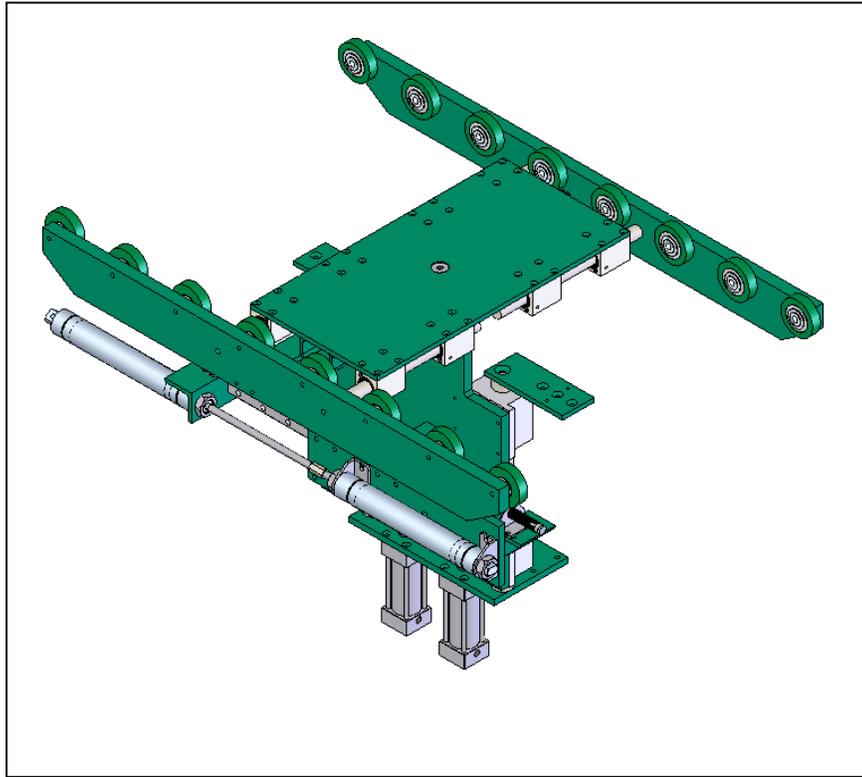
MECHANICAL NOTES



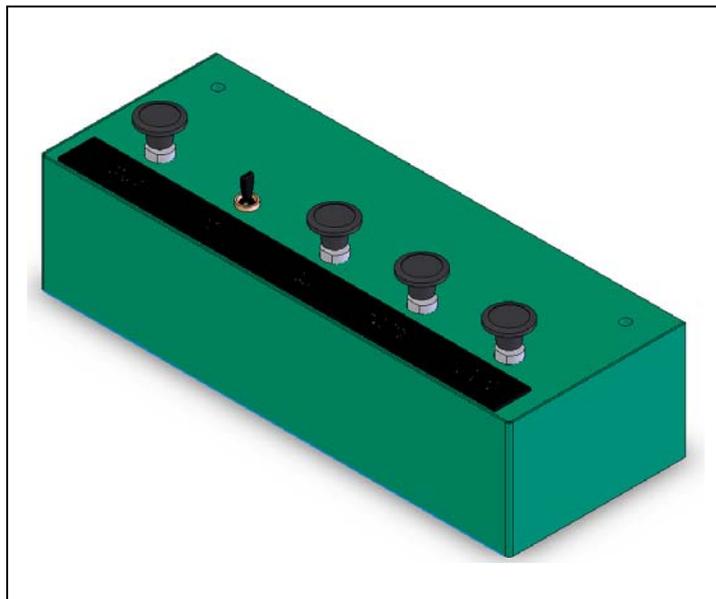
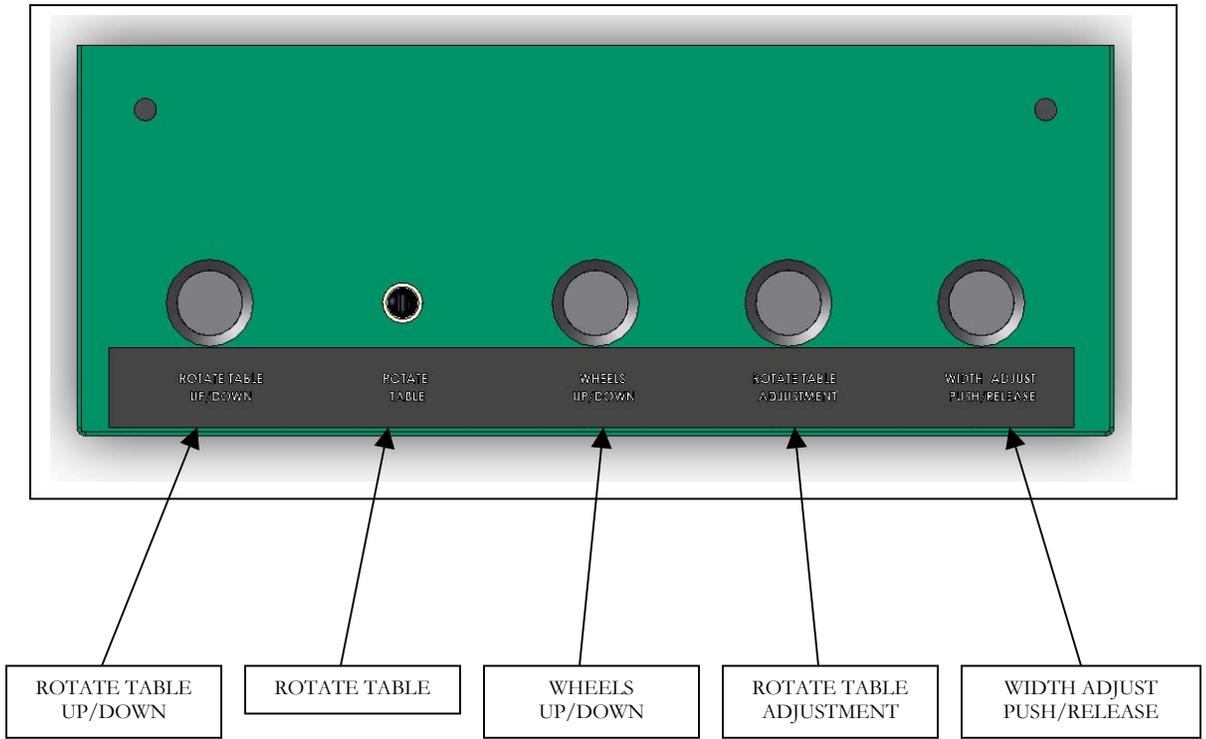
Lower Frame Assy



Upper Frame Assy



RKG-1 ENTRY DOOR ASSEMBLY STATION



Bills of materials

KVAL P/N	QTY	PART DESCRIPTION
ADV240A1B	1	ADV CYL 240 X 2. BIN ;9BC02;8CC;;;
ADV300A1G	2	ADV CYL 300 X 3. BIN ;9BC01;8CC;;;
AROE212TM	1	E212TM 1/4 PORTS 4-WAY MANUAL FOOT VALVE (TREADLE) MANUAL RETURN. BIN ;9BA05;8BN;;;
BIM124DP	1	BIM CYL 124DP 4 DOUBLE ACTING REAR PIVOT DOUBLE END MOUNT 1-1/4 BORE. BIN ;9BB01;8CD;;;
BIM241DP	4	BIM CYL 241DP 1 DOUBLE ACTING REAR PIVOT DOUBLE END MOUNT 1-3/4 BORE. BIN ;9BB02;8CD;;;
BIM249DP	2	BIM CYL 249DP 9 DOUBLE ACTING REAR PIVOT DOUBLE END MOUNT (979). BIN ;9BB02;8CD;;;
BIMC1337	10	BIM HDW 240 FOOT MOUNT BRACKET 1.037 BORE 3 LONG SLOTTED BASE. BIN ;9BA06;8CD;;;
BIMD129	4	BIM HDW 040,060,090 FOOT MOUNT BRKT .620 BORE 1.88 LG SLOTTED BASE. BIN ;9BA06;8CD;;;
BIMD1360	1	BIM HDW 120 2-PC PIVOT BKT .250 BORE 2.12 SLOTTED BASE. BIN ;9BA06;8CD;;;
BIMD2311	1	BIM HDW 120, 170 CLEVIS 7/16-20 NF THD 1.69 LG .38 PIN. BIN ;9BA06;8CD;;;
BIMD241	2	BIM HDW 120,170 FOOT BKT .75 BORE 2.50 LG SLOTTED BASE. BIN ;9BA06;8CD;;;
BROH24	1	H X 1-1/2 SPLIT TAPER BUSHING (3X885). BIN ;8CE;;;
BRONCS12H1	1	SPUR GEAR 12 PITCH 3/4 FACE 120 TOOTH 14-1/2 PRESSURE ANGLE (NCS12H120). BIN ;8CE;;;
BUC4000C	1	STC FRL 1/2 FRL COMBO WITH GAUGE (INCLUDES BALL VALVE). BIN ;8BE;;;
COM000156F	1	SHAFT INDEX (PICKEL FORK) (USE WITH ADV 240 X 1-1/2CYL) (700C,700D,700DC,700DX,979,555. BIN ;;;;
CPLR0820	1	1/2-20 X 1-1/4 LONG THREADED COUPLER. BIN ;9CC01;9CC;8BF;;;
ENIOEM050	2	OEM .50B ENIDINE SHOCK 3/4-16 THREAD 1/2 STROKE. BIN ;9BA01;2BG;;;
FAB18PMD4	3	FAB VLV 1800 PMD-4 1/8 4-WAY DBL. BIN ;9BB03;8BC;8DC;;;
FAB18PMS4	1	FAB VLV 1800 PMS-4 1/8 4-WAY SGL. BIN ;9BB03;8BL;8BC;;;
HUBTPB253	2	TPB 250 X 1 PILLOW BLOCK TAPPED BASE SETSCREW LOCKING RELUBE. BIN ;9CD;8BA;;;
HUBTPB259	2	TPB 250 X 1-1/2 PILLOW BLOCK TAPPED BASE SETSCREW LOCKING RELUBE. BIN ;9CD;;;
HUM41TD3	1	HUM VLV 4-WAY TOGGLE 3-POSITION DETENTE. BIN ;9AE;;;
INASP240	4	KGXO-24PP 1-1/2" OPEN SUPER LINEAR PILLOW BLOCK. BIN ;;;;
INASPBC160	8	KGX-16PP 1" CLOSED SUPER LINEAR PILLOW BLOCK. BIN ;;;;

RKG-1 ENTRY DOOR ASSEMBLY STATION

INASPBC240	4	KGX-24PP 1-1/2" CLOSED SUPER LINEAR PILLOW BLOCK. BIN ;;;;
BAI150050	108	FLANGED WHEEL BEARING, Regular Duty, 1/2 ID - 1 3/8 OD, Flange Width 7/16, FLANGE OD 1 1/2.(KILF35012). ALSO USED WITH 1/2"OD X 3/8"ID #1501C SPACER (SPACER INCLUDED) TO REPLACE KILF35011
KVALBB12	1	LINEAR BEARING BLOCK (NO BRG) 2 LONG 1-1/2 SQUARE 1-1/4 BORE FOR 3/4 BEARING. BIN ;8CJ;2BQ;;;
KVALBB16A	8	LINEAR BEARING BLOCK W/STD 1 BEARING & 2 SEALS 2-3/4 LONG 2 SQUARE. BIN ;9BA03;8CJ;2BQ;;;
MAR1230S2M	2	S-1230 MOD. BORE TO 1 WITH 3/16 KWY. BIN ;;;;
MC3088A419	64	1-3/8"ID 1-7/8"OD .025 STEEL WASHER. BIN ;;;;
P280808FD	4	1-3/4 DIA 1/2THCK 1/2 NF THD DELRIN PAD. BIN ;9HC;;;
SC116F	4	SPLIT COLLAR 1 1 PCS (15030) 1-PIECE STEEL (DL-2, CMDR). BIN ;8BB;3AF;;;
SC116FST	5	SPLIT COLLAR 1 1 PCS (16L) 1-PIECE STEEL STAFFORD. BIN ;3AF;;;
SC224F	2	SPLIT COLLAR 1-1/2 (15146) 2-PIECE STEEL. BIN ;8BB;3AF;;;
SMCAS2001	2	SMC FLOW 1/8 STRAIGHT (NAS2000-NO1). BIN ;8CN;9CD02;8EE;;;
SMCAS2201F2	11	SMC FLOW 1/4 NPT - 1/4 OD RIGHT ANGLE FLOW CONTROL (NAS 2201F-N02-07S). BIN ;9CD02;8CN;8EE;;;
SMCNVSA03	2	SMC VLV NVSA4114-000 1/4 BASE VALVE 4-WAY PILOT. BIN ;9CD01;8CE;;;
SS242816	2	OILITE 3/4 X 7/8 X 1 SLEEVE BUSHING SS2428-16. BIN ;3AK;;;
STA165121420S	2	GENERATION 2 25MM STAR BALL RAIL BEARING STA165121420 W/2 161922130 SEALS INSTALLED. BIN ;8BA;2BP;;;
WESPT7612	64	3 DIA X 3/4 WIDE 1-3/8-ID GREEN POLYTUBE ROLLER 60 DURO (PT7635). BIN ;9CC03;8BB;;;

PLANNED MAINTENANCE PROGRAM

KVAL is pleased to announce
Our newest program, the

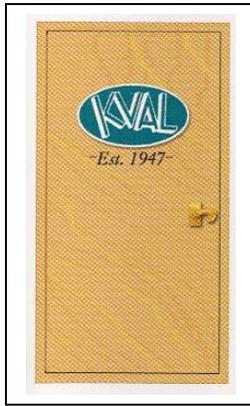
KVAL Planned Maintenance Program



When you choose KVAL for your service and repair needs, you will be choosing a company with nearly 60 years of experience in Building, installing, and servicing the best-built machinery in the door and window industry. Our goal is to take our comprehensive knowledge and experience with our own machinery and put it to work for you through our new

KVAL Planned Maintenance Program





Our goal is to ensure that your equipment remains in the best possible condition so you can minimize downtime and maximize profits.

1. **We come to your facility at your convenience**, so there are no unscheduled interruptions to your schedule.
2. **We visually and audibly inspect every piece of equipment you specify** to determine the extent of repair needed.
3. **We repair or replace worn or damaged parts** before they fail, to eliminate costly downtime.
4. **We provide planned maintenance** according to the manufacturer's recommended guidelines, including adding lubricants when necessary, checking all moving parts for wear, and we adjust your machine settings to achieve the highest possible tolerances.
5. **We use only quality parts** to make sure that any parts we replace will have the longest life possible to ensure you get maximum efficiency from your equipment and high profits for your company.
6. **We train your employees** to properly maintain your equipment. Before a KVAL Service Technician leaves your plant, your employees will be thoroughly trained to care for your machinery.
7. **In addition to providing maintenance**, our KVAL Service Technicians will also train operators to achieve the highest level of throughput on their machine. Before we leave your plant, our technicians spend time with your operators to make sure they understand everything their machine can do for them and for your customer.



Our Mission: Innovation, Quality and Honesty!



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