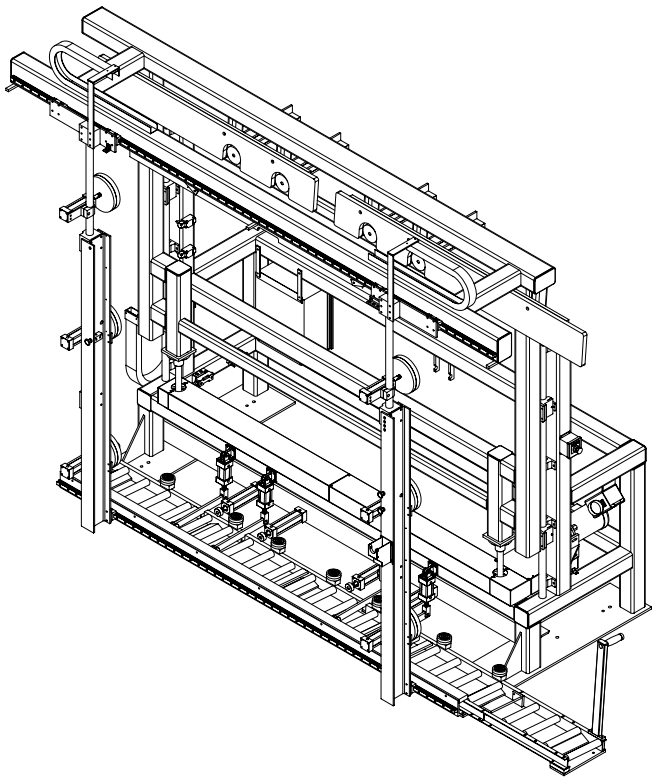
KVAL INC.

INSTRUCTION MANUAL



RKG-4

Entry Door Upright Clamp Conveyor

REV.1

CONGRATULATIONS ON YOUR PURCHASE OF A NEW KVAL

RKG-4

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.

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: (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 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 woodworking 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.

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.

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-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.

YOUR LIFE MAY DEPEND ON IT.

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

Lock Out Diagrams

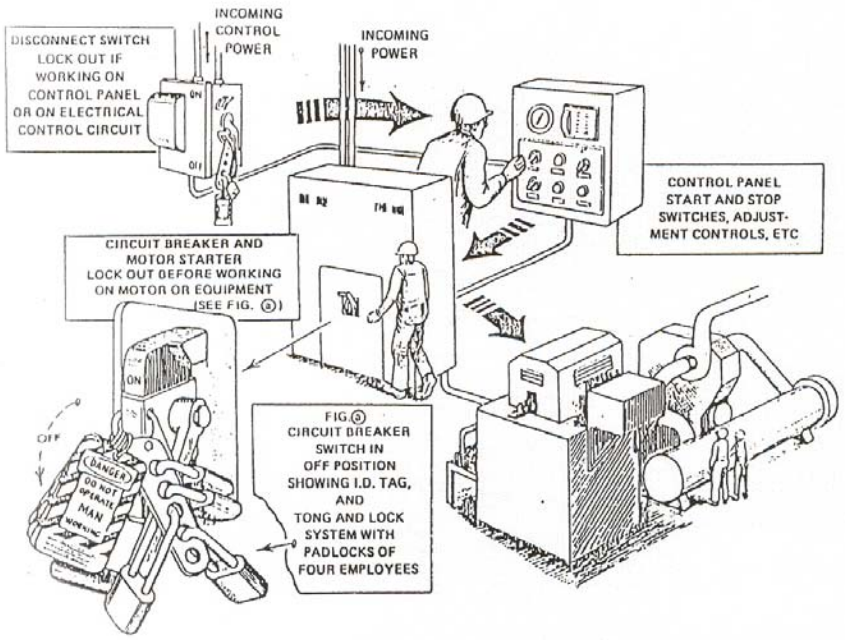


Illustration 1
Lockout/Tagout Procedure for Electrical Energy Source

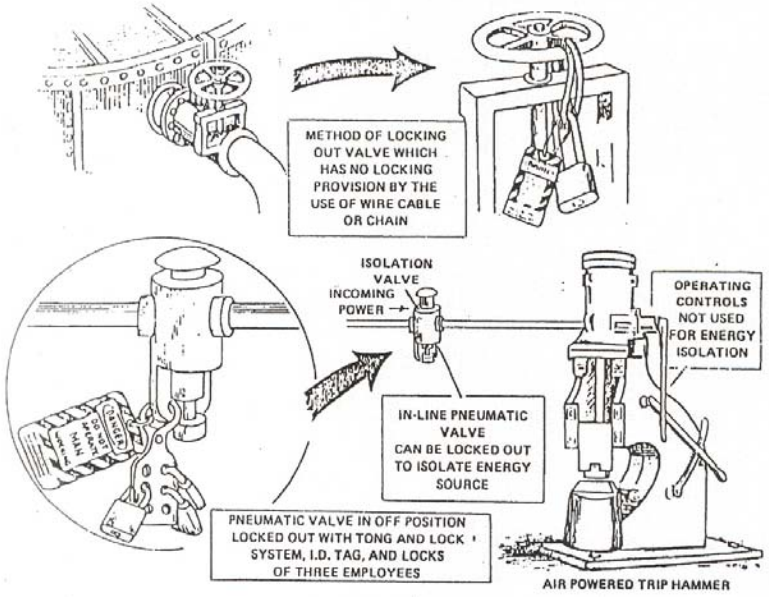


Illustration 2
Lockout/Tagout Procedure for Hydraulic-Pneumatic Energy Source

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.

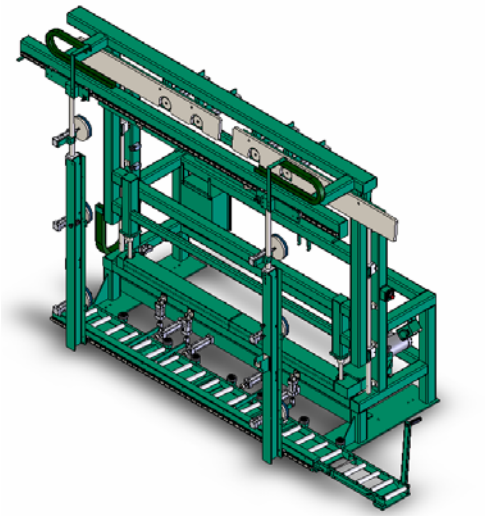
Chapter

3

SPECIFICATIONS

RKG-4 Entry Door Upright Conveyor makes easy work of installing sidelight panels in steel, fiberglass, or wood door units with sidelights, or patio door units.

RKG-4 is designed to receive assembled door units in a vertical orientation from the RKG-3 Tilt-Up Machine. The door unit is tilted all the way up and over to 6 degrees past vertical so the unit is leaning on the exterior side. In this position the door unit is easily rolled to the clamp station. At this station the door unit is clamped against a fence that holds the door unit vertical so the door can be opened. The RKG-4 is also equipped with a momentary sill clamp release, so the frame can be squared to the door before the sidelight panels are secured. This ensures that the frame will be square after the sidelights are installed.



The RKG-4 is also equipped with a special clamping system that will press the sidelight panels into the sealing compound. The clamps are air-actuated and are controlled by a single push/pull valve, enabling one operator to easily and safely install each sidelight panel. After the panels are seated, the operator can open the door to secure the sidelight panels through the mull posts. After the sidelight panels have been installed, the door unit is unclamped so it is leaning against the brick mold. In this position the door unit can easily be rolled to the next station.

The standard machine 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 machine can be set up to accommodate doors that vary in height from 6'6" to 8'0". To change the machine to accommodate different height doors, the entire upper guide assembly and clamps are raised or lowered by turning screws at four locations. For 8'0" high door units the operator will need a

movable platform of some type to reach the tops of the door units. The platform unit is not included. The RKG-4 will accommodate jambs up to 6-9/16" wide.

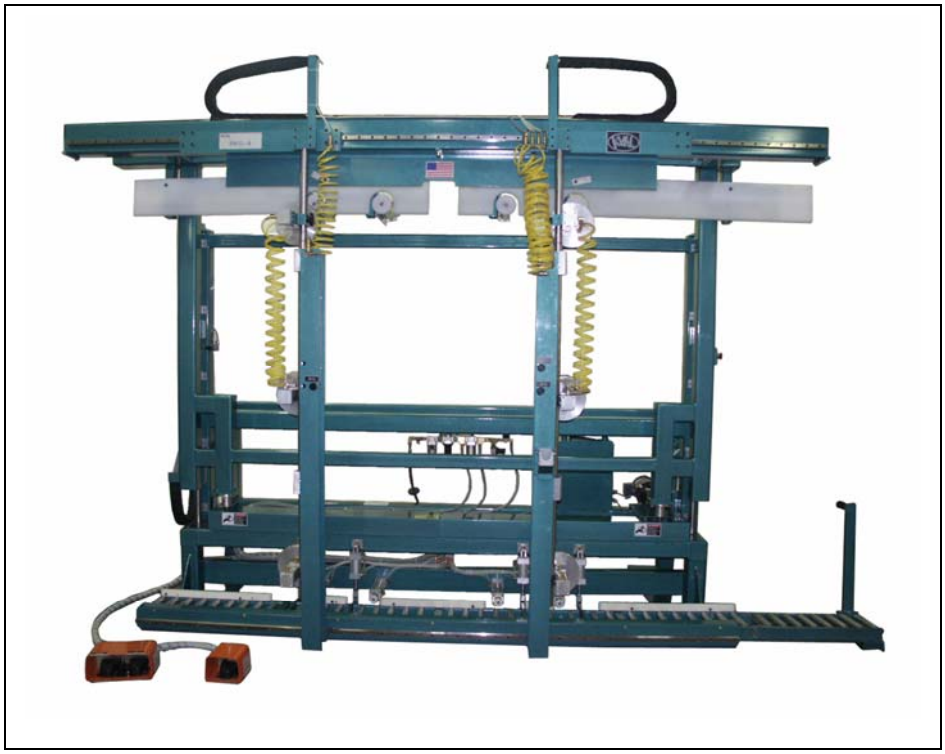
OPTIONS

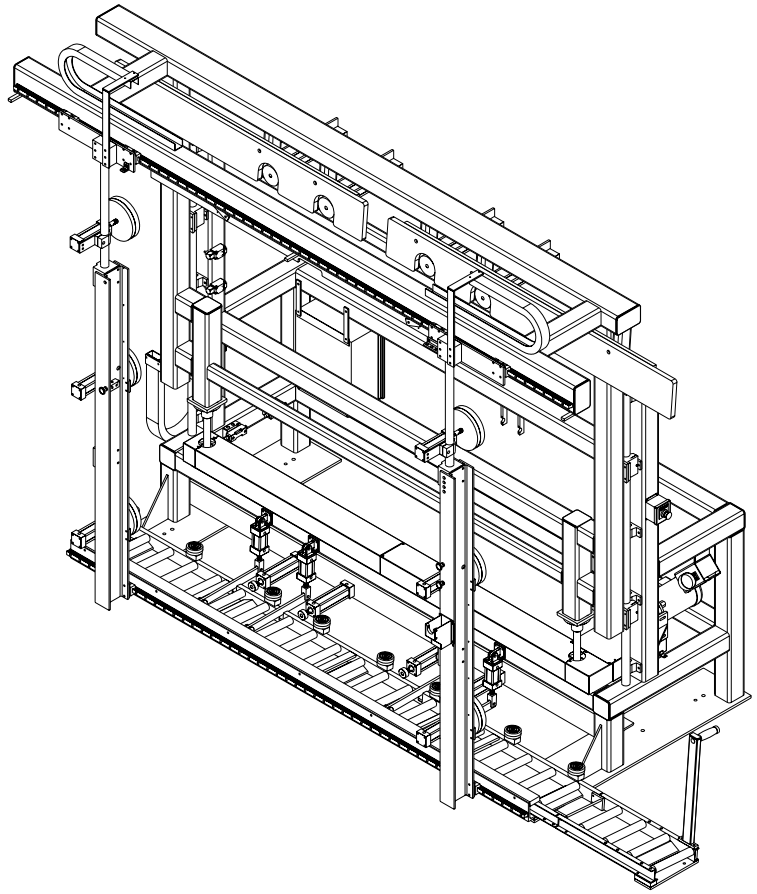
Option A: 8'0" Door Capacity

Option E: 2nd Sidelight Clamp Assembly
A second adjustable side light clamp assembly will be installed on the RKG-4. The second clamp assembly may be used to simultaneously clamp two side lights on either side of a single door unit up to 3'-0" wide. The second clamp may also be used with the primary clamp to install 3'-0" wide side light panels by pressing on both edges of the panel to properly seat it into the frame.

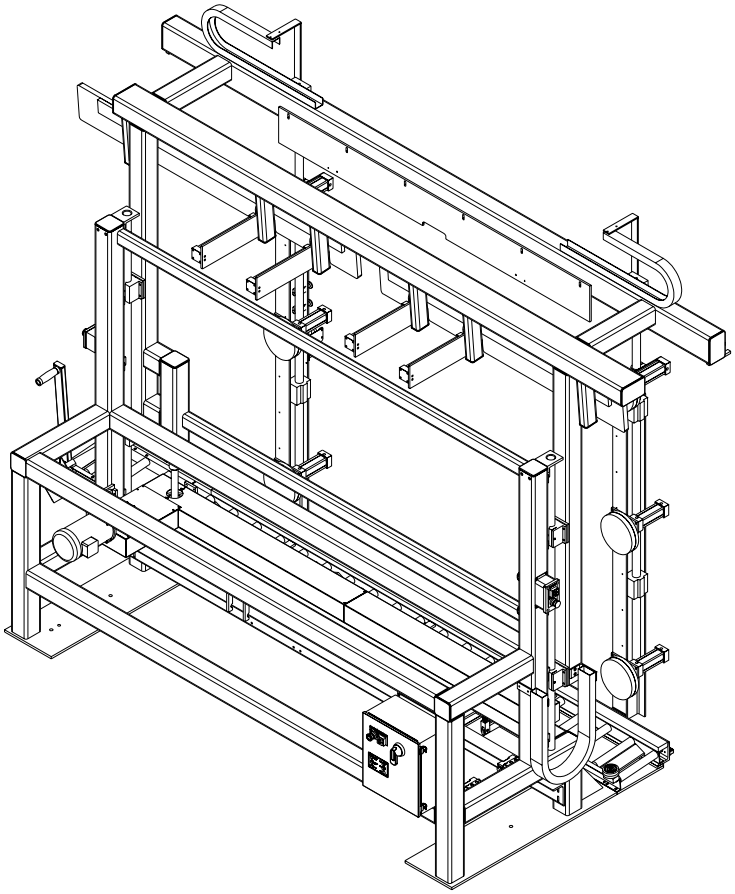
The second side light clamp assembly will accommodate panels that vary in height from 6'-6" high to 8'-0" high

Option UL: UL Certified Electrical Panel
Electric panel will be built according to Underwriter's Laboratories specifications, and 'UL' Label applied.

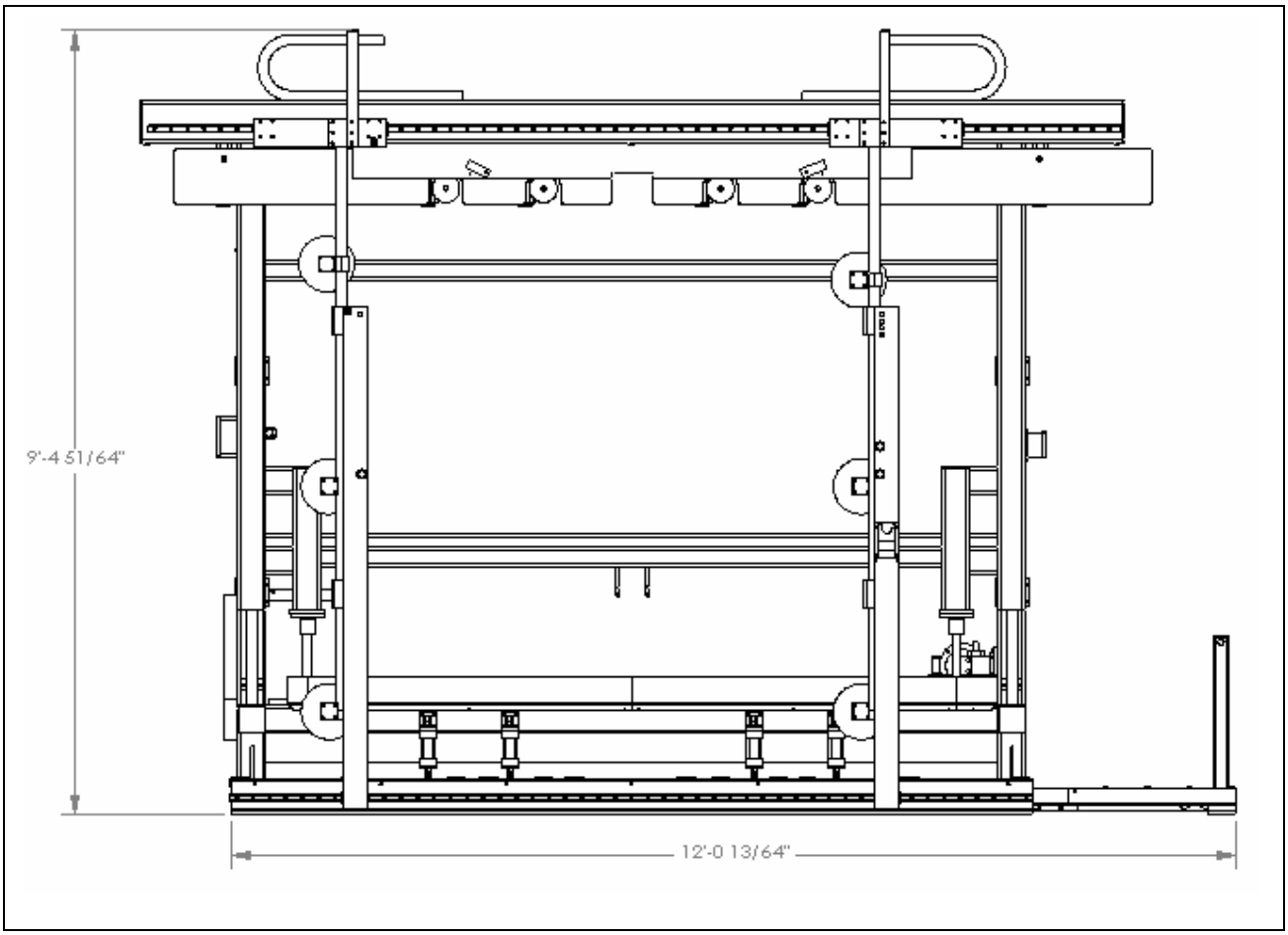




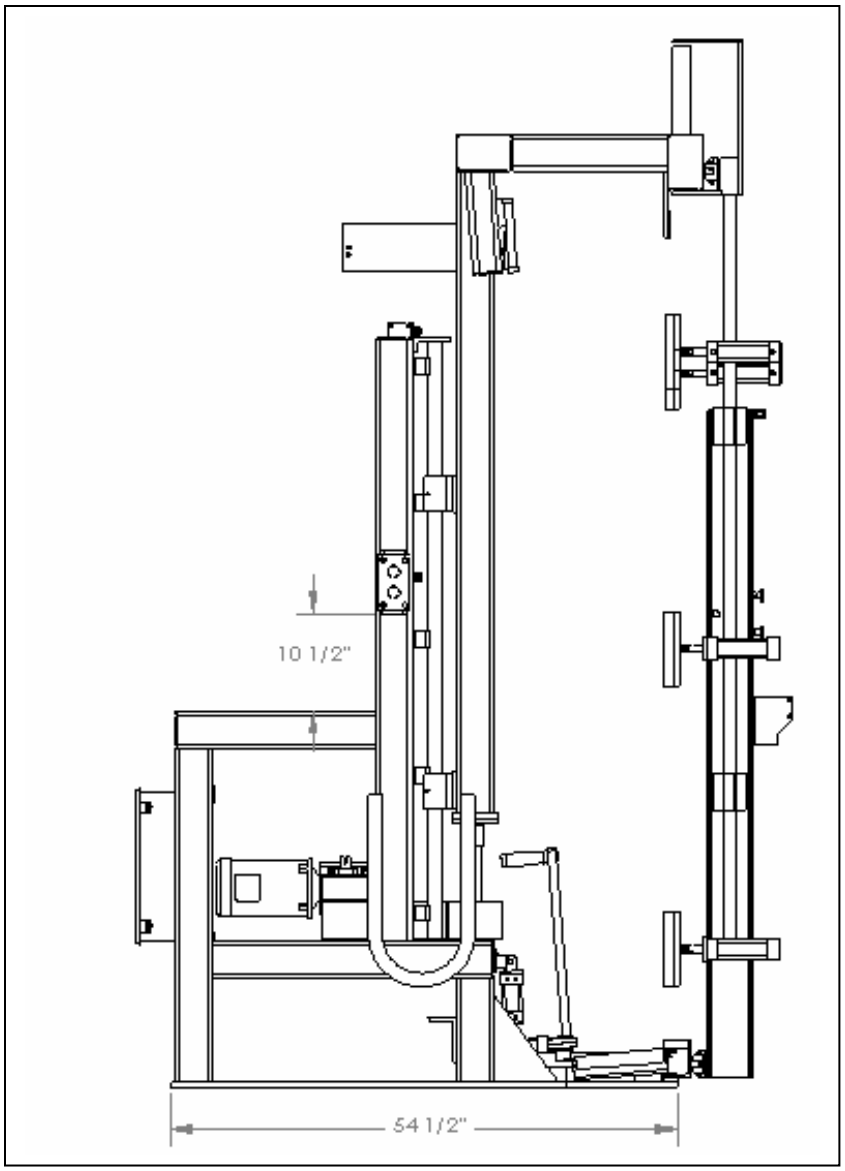
Iso view front



Iso view back



Front View



SideView

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.

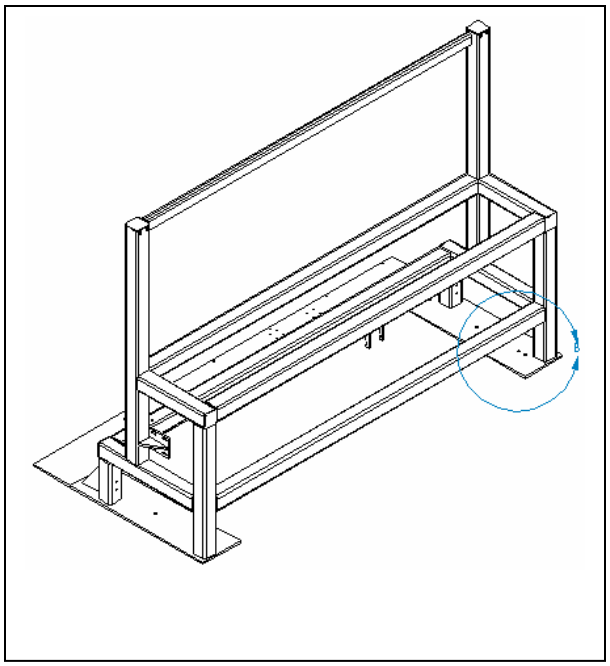
- **Standard Anchoring Instructions**

  * 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.



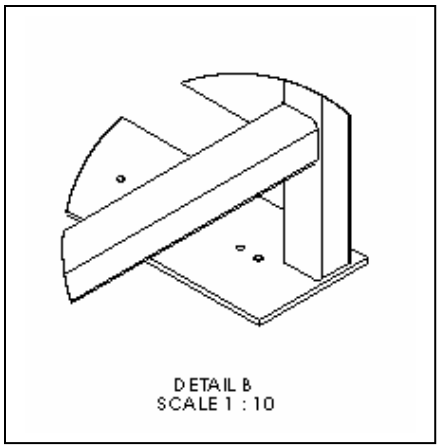
- Anchoring Instructions using Epoxy:
  * With machine in place and leveled, drill 3" deep holes in the concrete using a **9/16**" dia. masonry bit, using the mounting hole as a guide.

  * 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-4

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

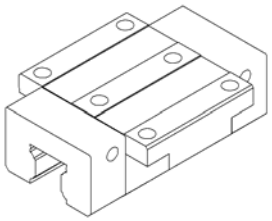
1. Wash filter and lubricator bowls with soapy water.
2. Grease all bearings and tighten all bolts.
3. Clean and lubricate all slides and cylinder rods with dry silicone spray.

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

LUBRICATION REQUIREMENTS

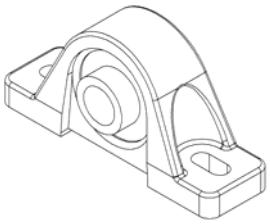
Linear Bearings

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.

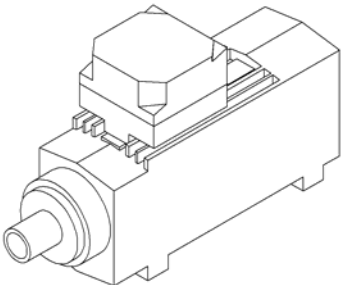


Lubricate special high speed bearings

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

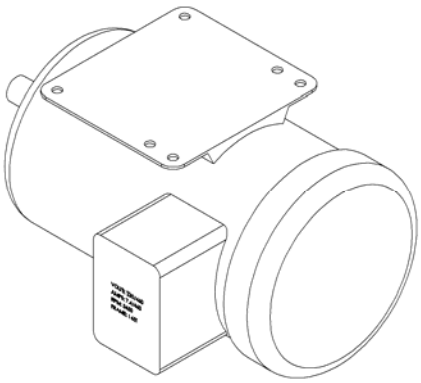
Chevron AW Hydraulic Oil 32 – or KVAL P/N SYSLUBG or G-C lubricants light AW R&O or Mobile DTE 24 or Shell Tellus32 or Gulf Harmony 32.

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 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

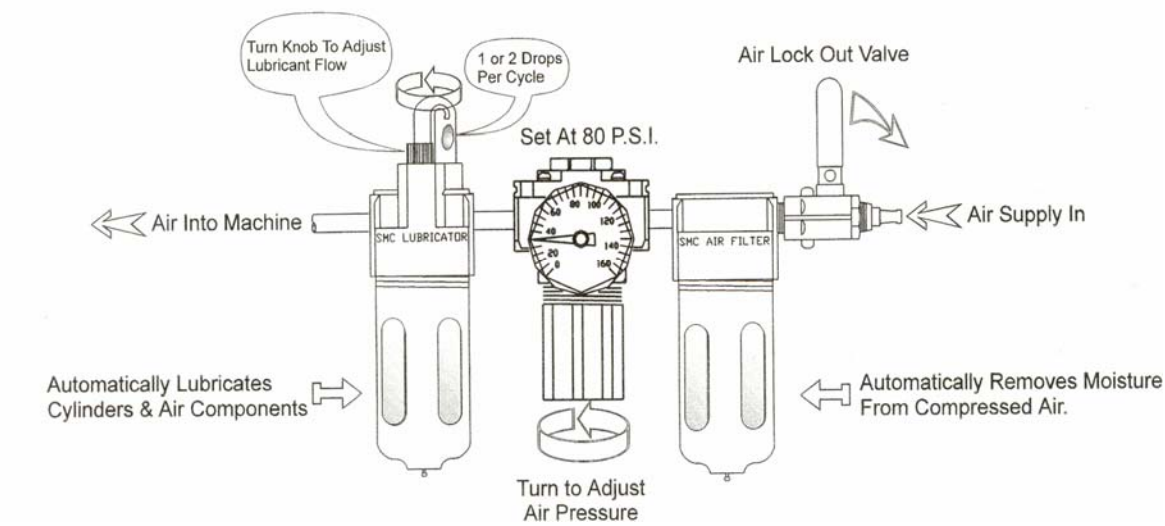
New and used machinery run out of oil from time to time. It is a good practice to check your machine lubricator to insure that it is putting the proper dose of oil in the air lines. Usually 1 drop every 3-4 cycles is a good rule of thumb.

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.

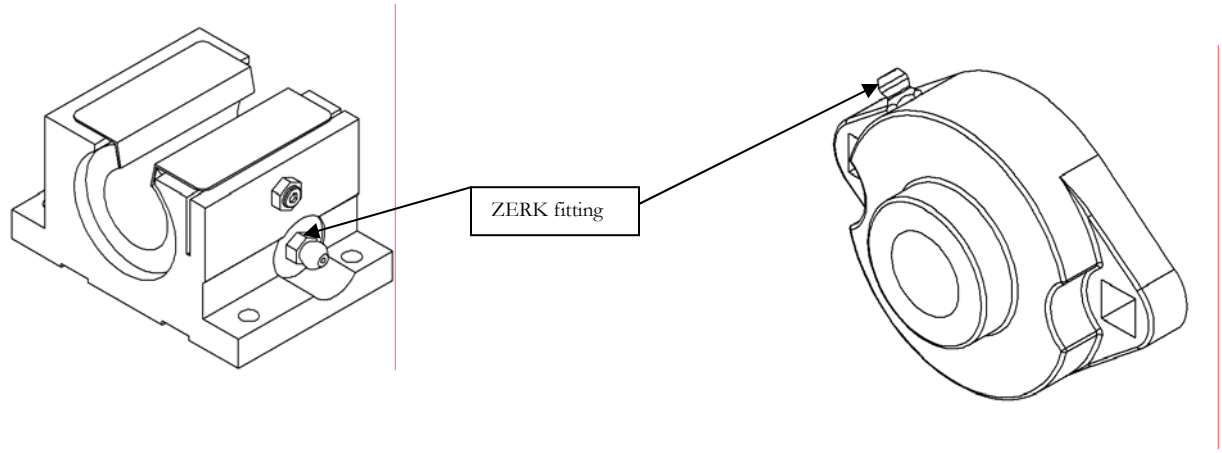
Repeat this same procedure for the back section and other trouble areas.

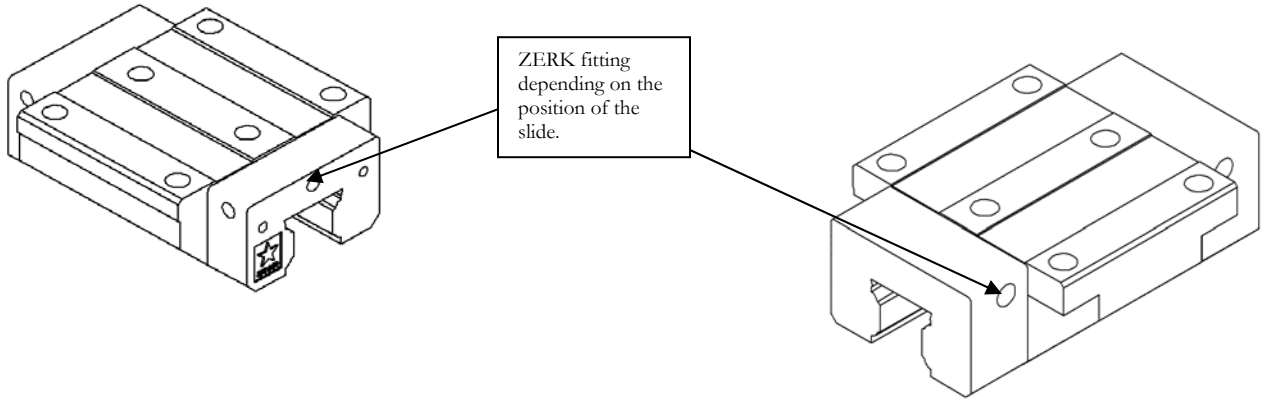
Check the lines every week to two weeks

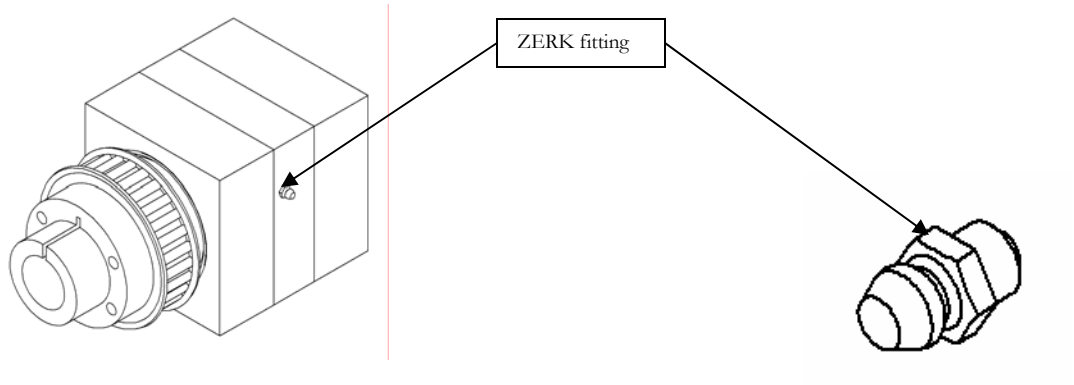
Figure 1: This shows how to adjust the lubricators and shows the air lock out valves 1 drop every 3-4 cycles



ZERK FITTINGS







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.

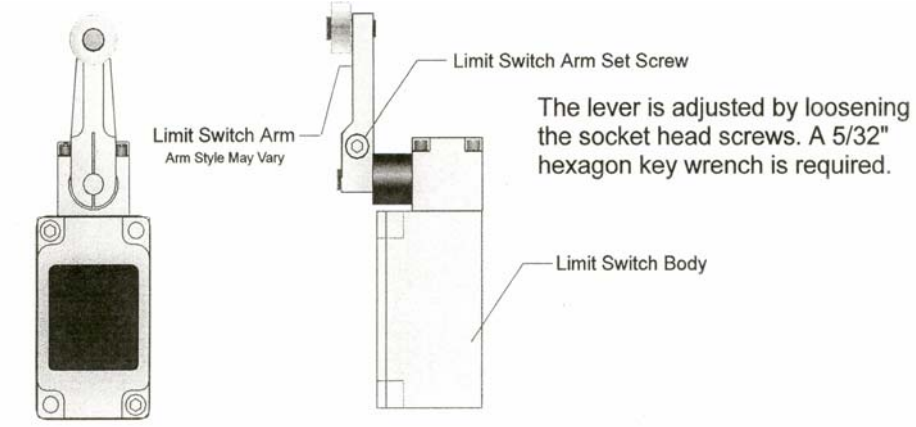
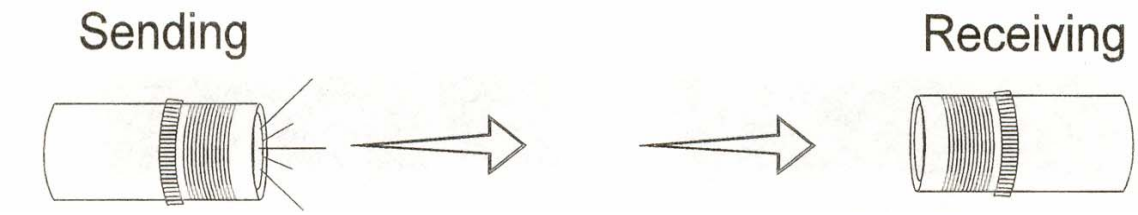
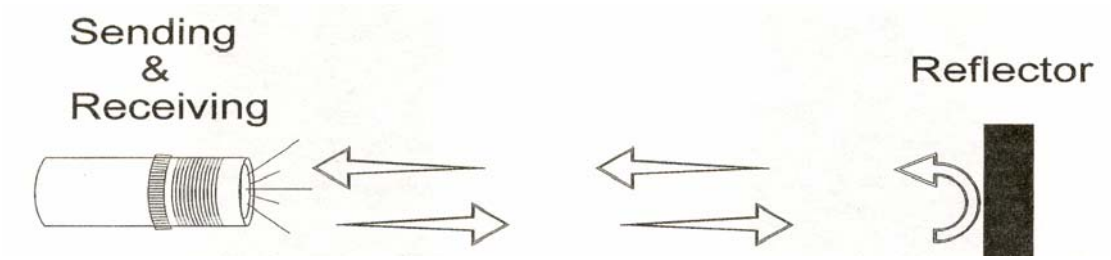


Photo Eyes



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.

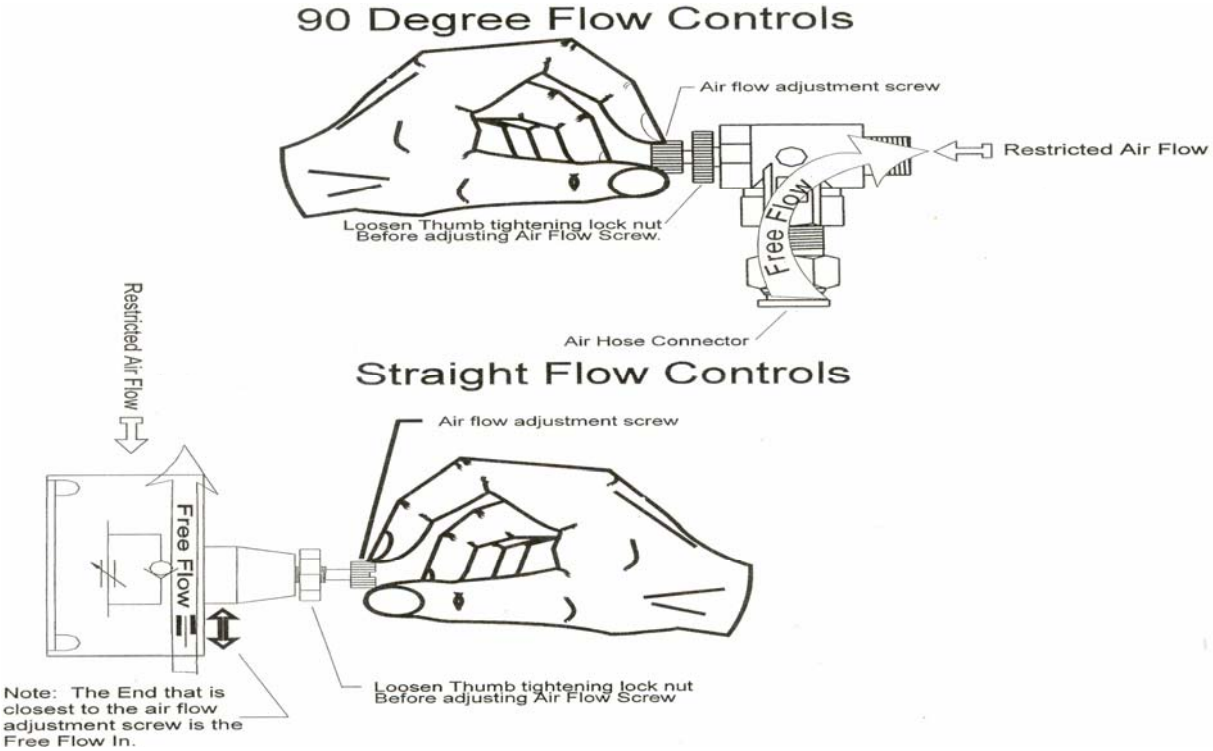
Note: When a machine stops for no reason it is usually the fault of dirty photo eye or a misaligned limit switch arm.

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.

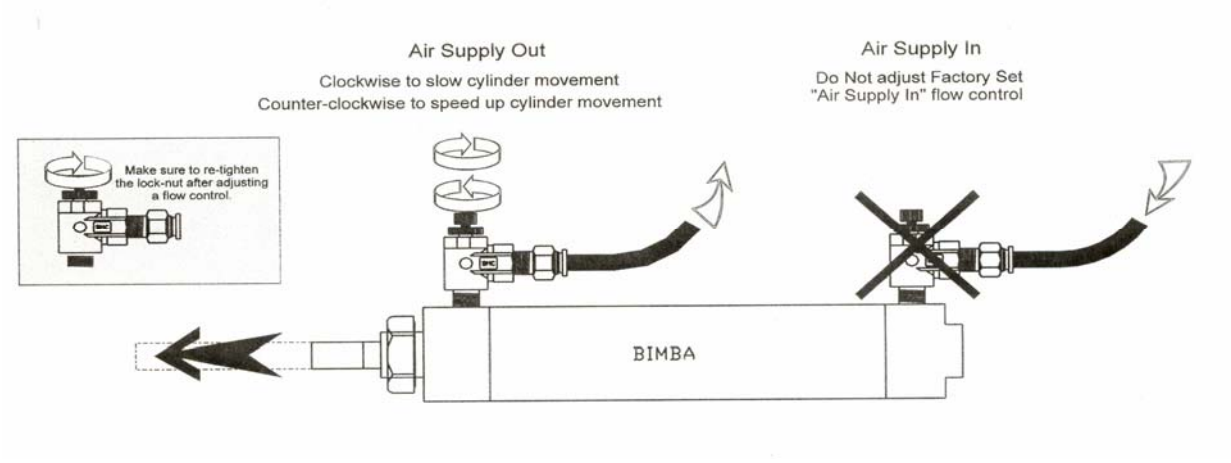
4. Check the air valves:
   The air valves can be manually operated by pushing the slotted button on the end of the valve. If you wish to keep the valve open, the push button assembly can be removed using and open ended wrench and inserting a 3/8" N.C. cap screw. DO NOT over tight when reassembling the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

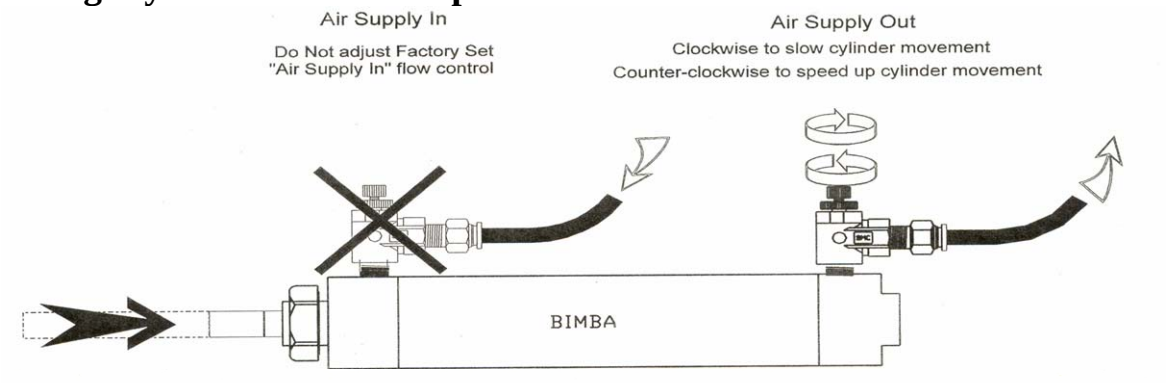
6. If the valve is not receiving an electrical signal, see “Electrical Trouble Shooting” instruction. It might be necessary to call in a specialist or check with KVAL customer service at 1-800-553-5825
   If an Air Leak is coming from an exhaust port on the air bank:
   Check the solenoid for the manual 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.

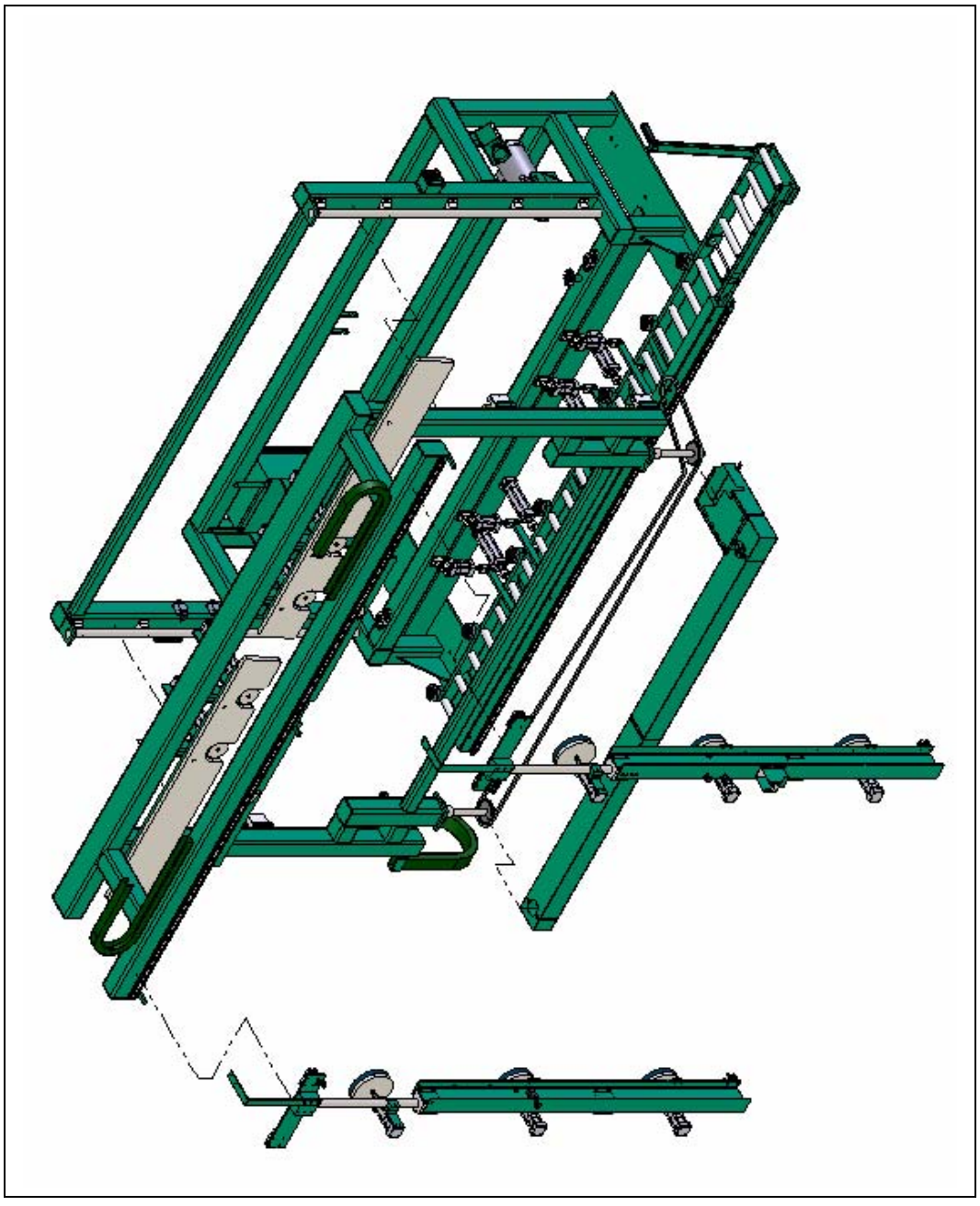
Warranty

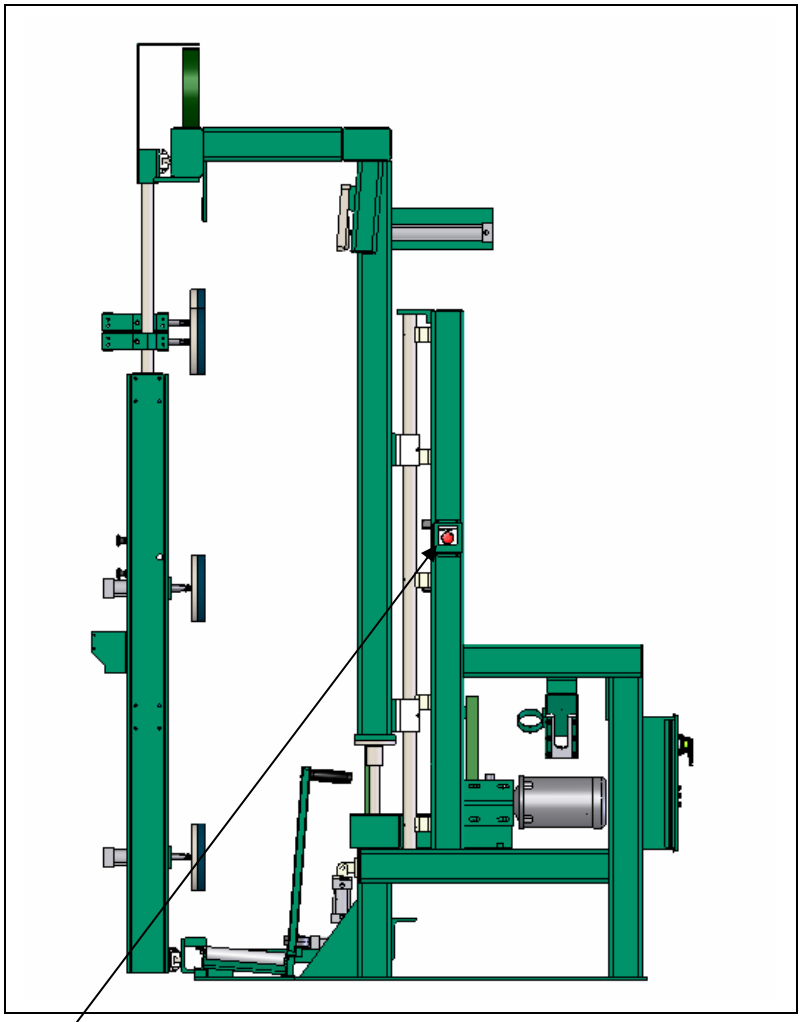
KVAL Inc. will repair, or replace any unserviceable parts not covered by their own manufacturer's warranty, caused by faulty manufacturing or design for one year after the shipping date. Replacement parts will be sent standard UPS. Overnight or special delivery is available at customer's expense. Our 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.

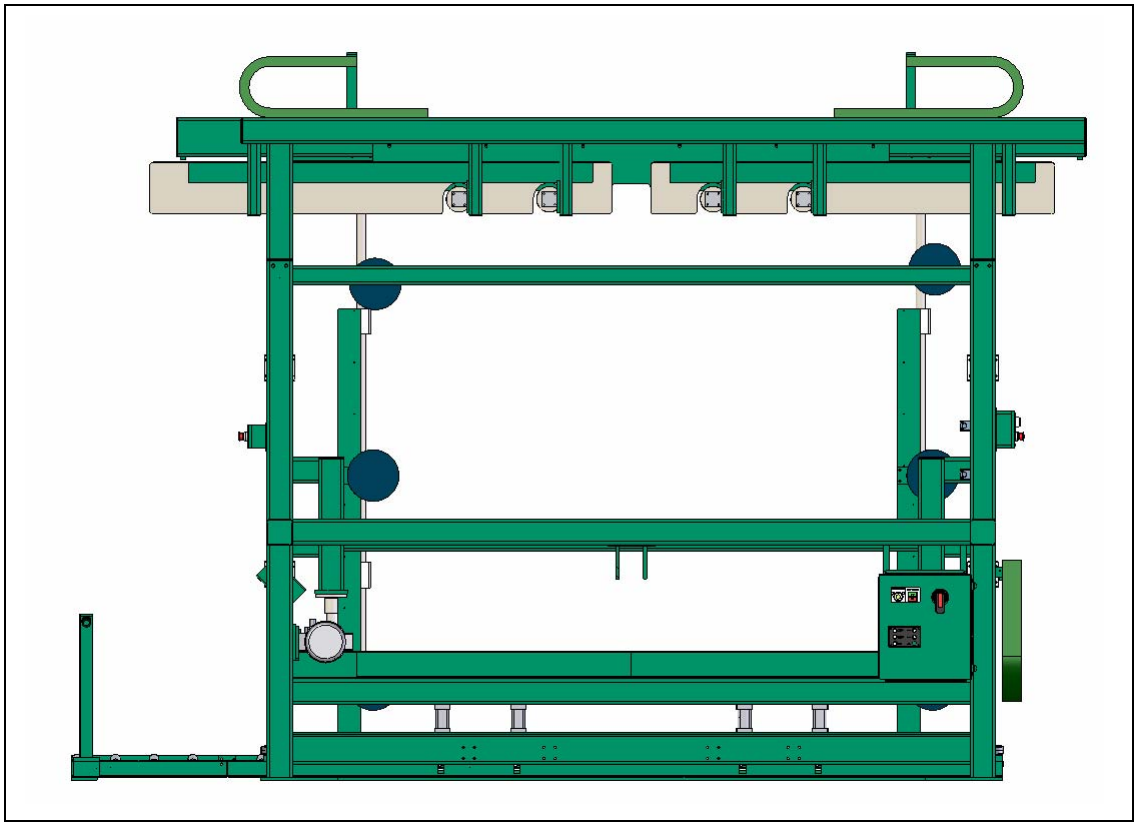
This warranty does not cover items that wear out during normal use, eg. tooling, chipout blocks & screwdriver bits. KVAL Inc. is not responsible for costs associated with down time, lost orders, or other costs not specifically covered in this warranty. KVAL Inc. is not obligated to send service technicians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

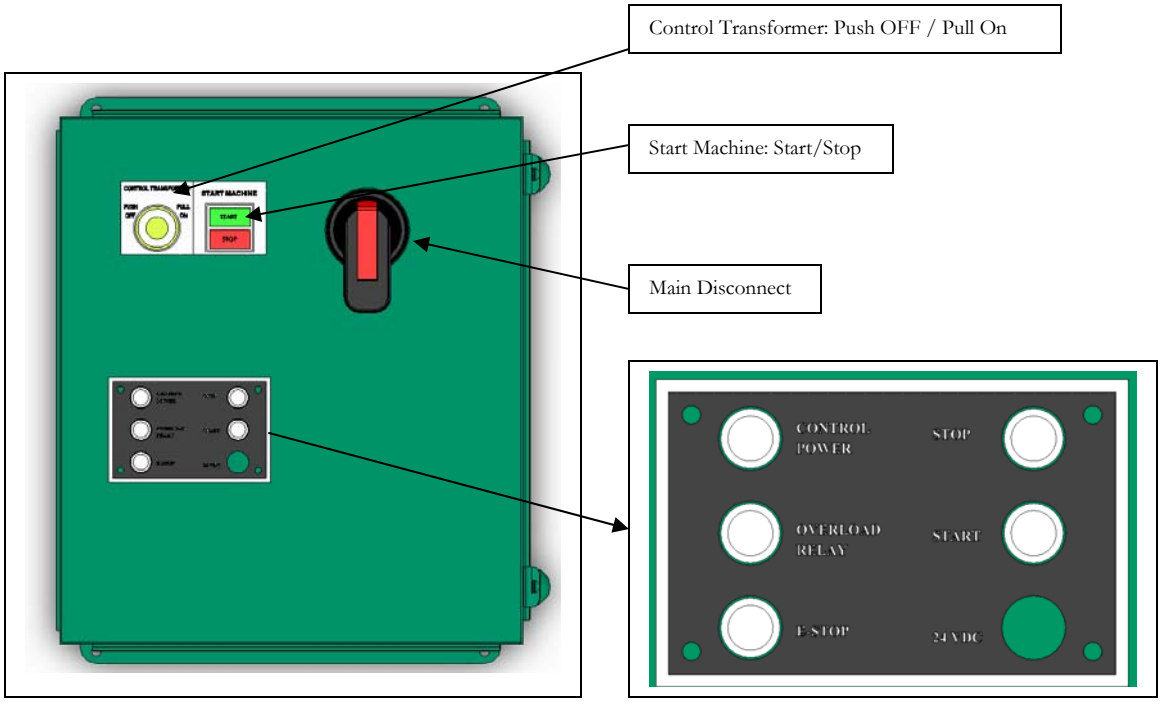
KVAL Inc. is committed to being the industry's finest woodworking machinery manufacturer, and always tries to maintain a good relationship with its customers.

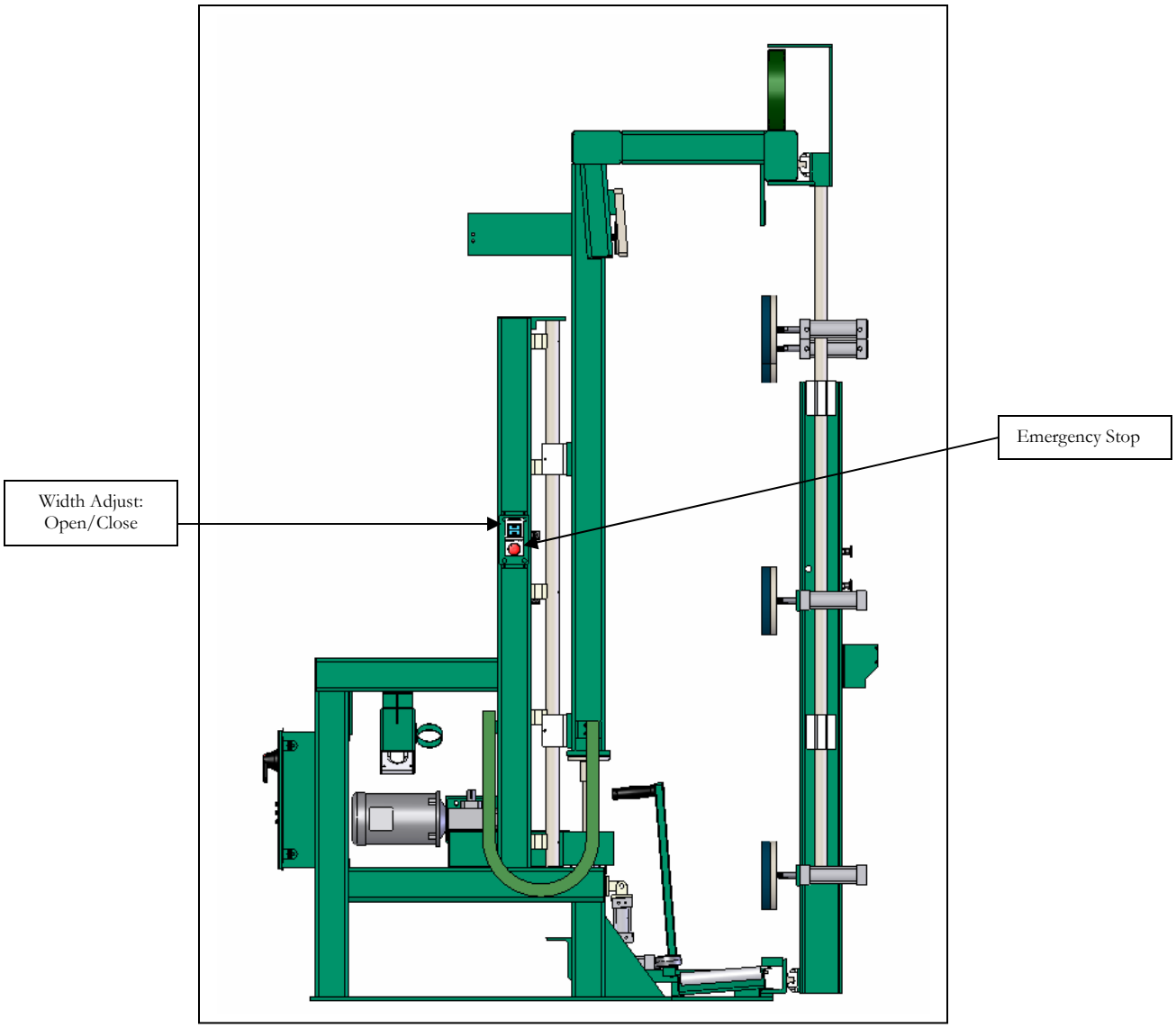
MECHANICAL NOTES

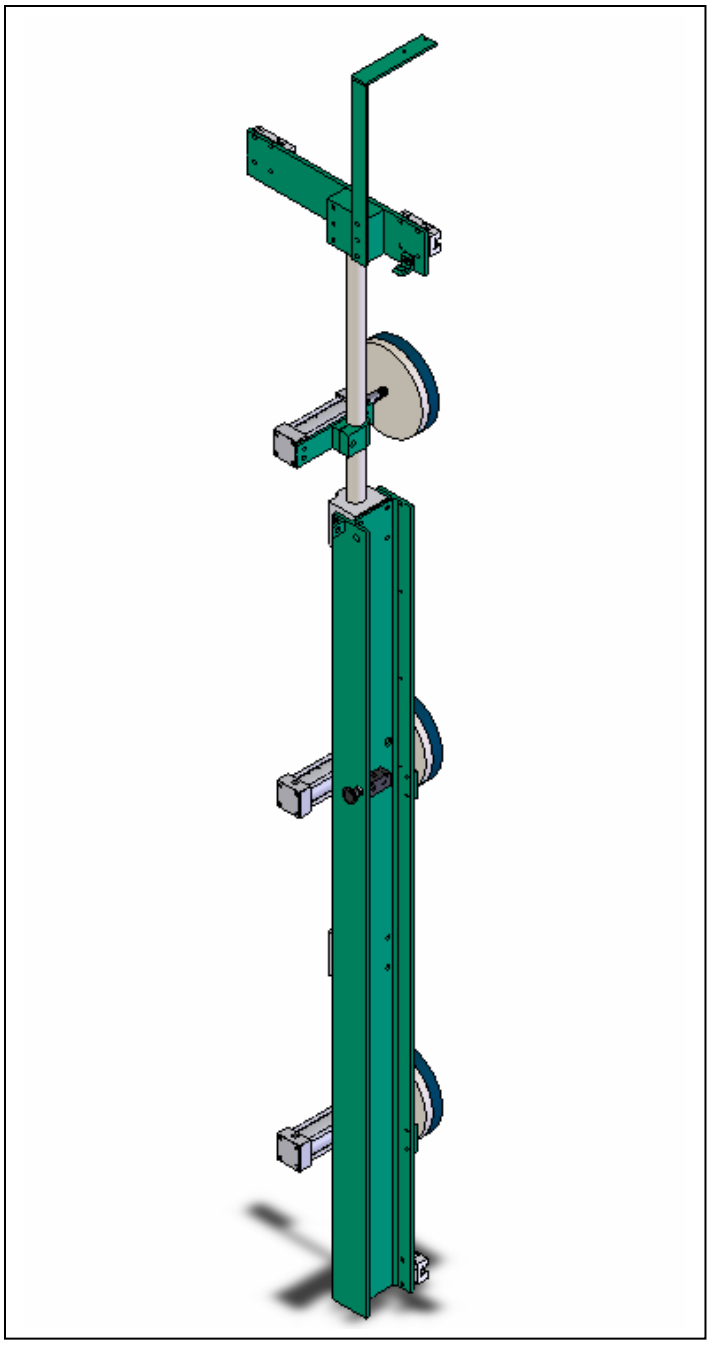


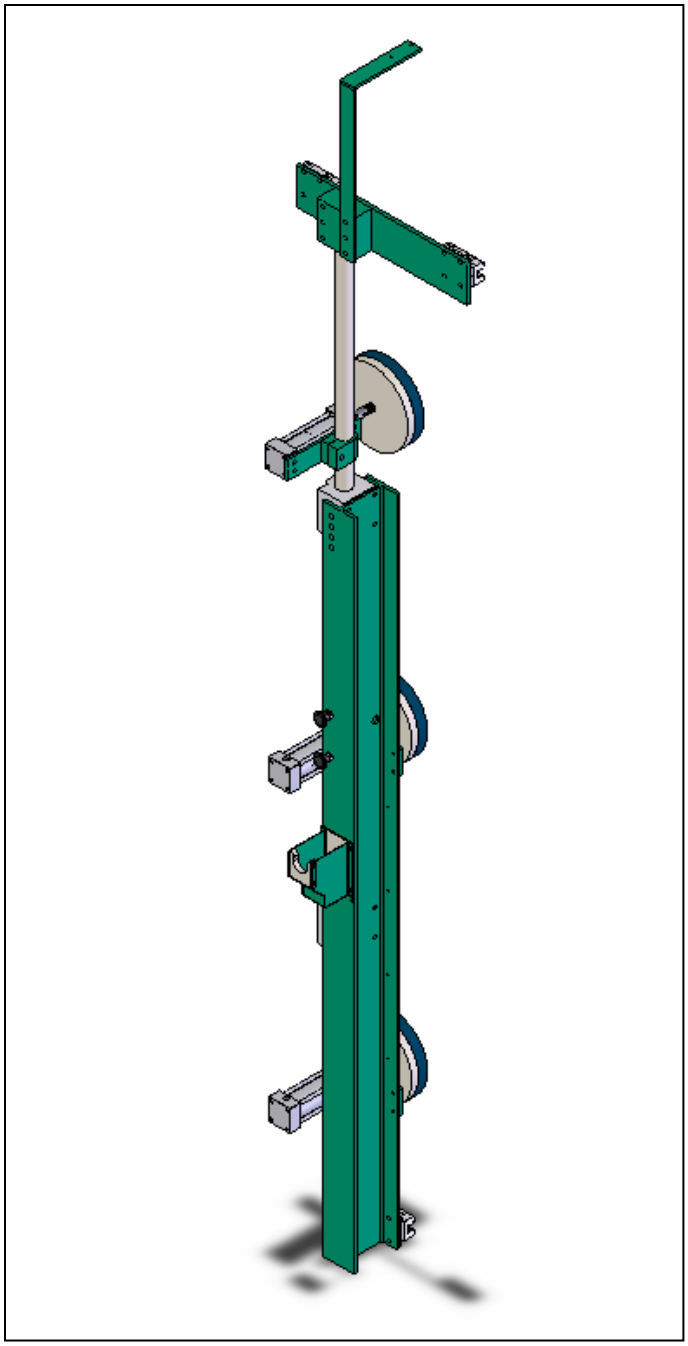












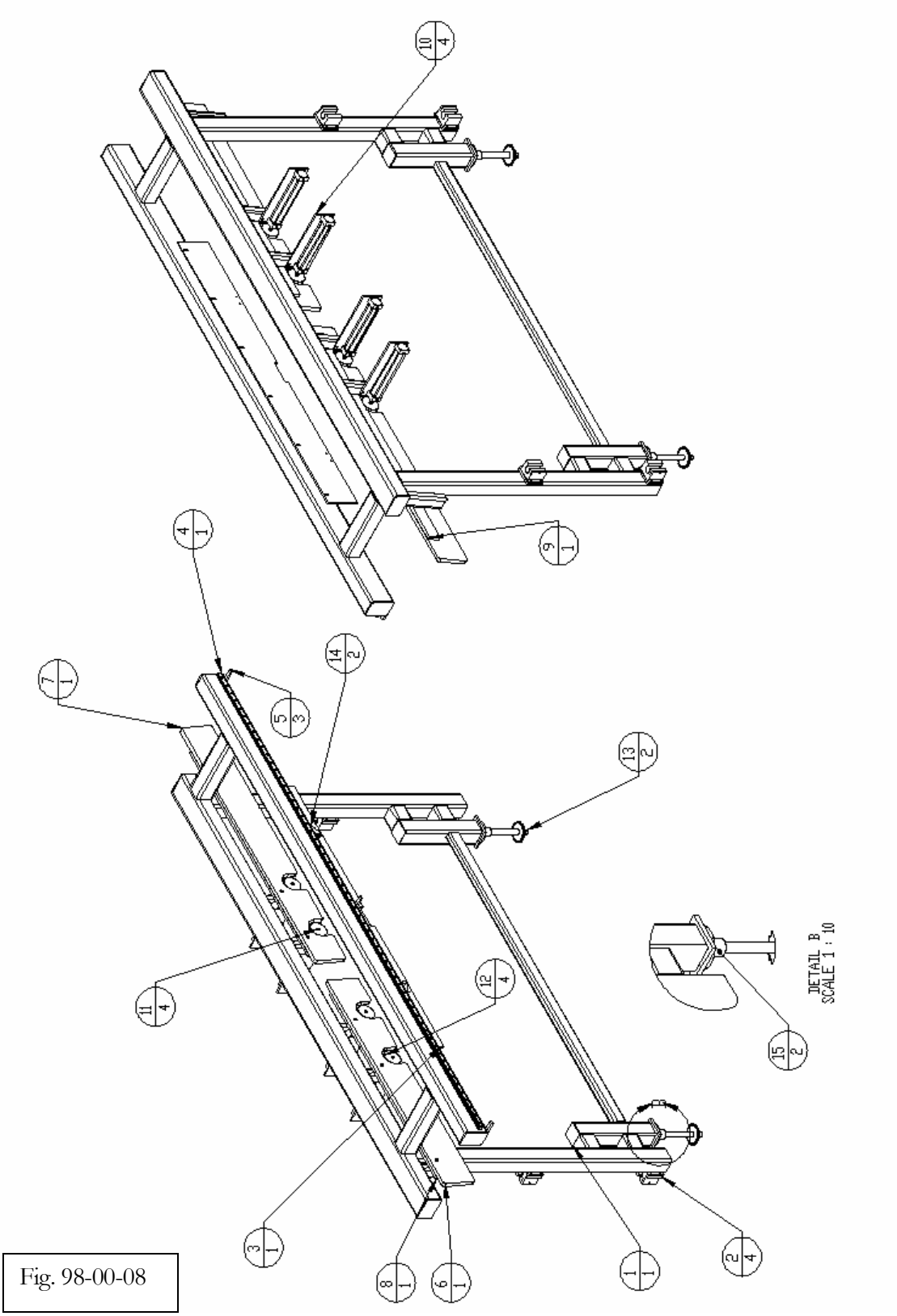


Fig. 98-00-08

Fig. 98-00-08 BOM

ITEM NO	QTY	PART NUMBER	DESCRIPTION
1	1	98-00-02	UPPPER FRAME WELDMENT &
2	4	STAR1757724	1 1/2 OPEN LINEAR BEARING
3	1	98-00-DA	TOP DOOR INDEX PLATE
4	1	98-00-DS	UPPER BALL RAIL
5	3	98-00-EY	POSITIVE STOP BRACKET
6	1	98-00-DC	TOP DOOR SLIDE PAD
7	1	98-00-DD	TOP DOOR SLIDE PAD
8	1	98-00-DF	TOP DOOR SLIDE PAD
9	1	98-00-DG	TOP DOOR SLIDE PAD
10	4	98-00-DJ	TOP BACK CLAMP BRACKET
11	4	ADV300X12	ADV CYL 300 X 12
12	4	98-00-DN	BACK BOTTOM & TOP CLAMPS
13	2	98-00-DH	ACME SHAFT
14	2	98-00-DV	SIDE LITE TRAP
15	2	KVAFBAL01	KVAL FLANGE NUT
16	2	BRO502208	#50 CHAIN 22 TEETH

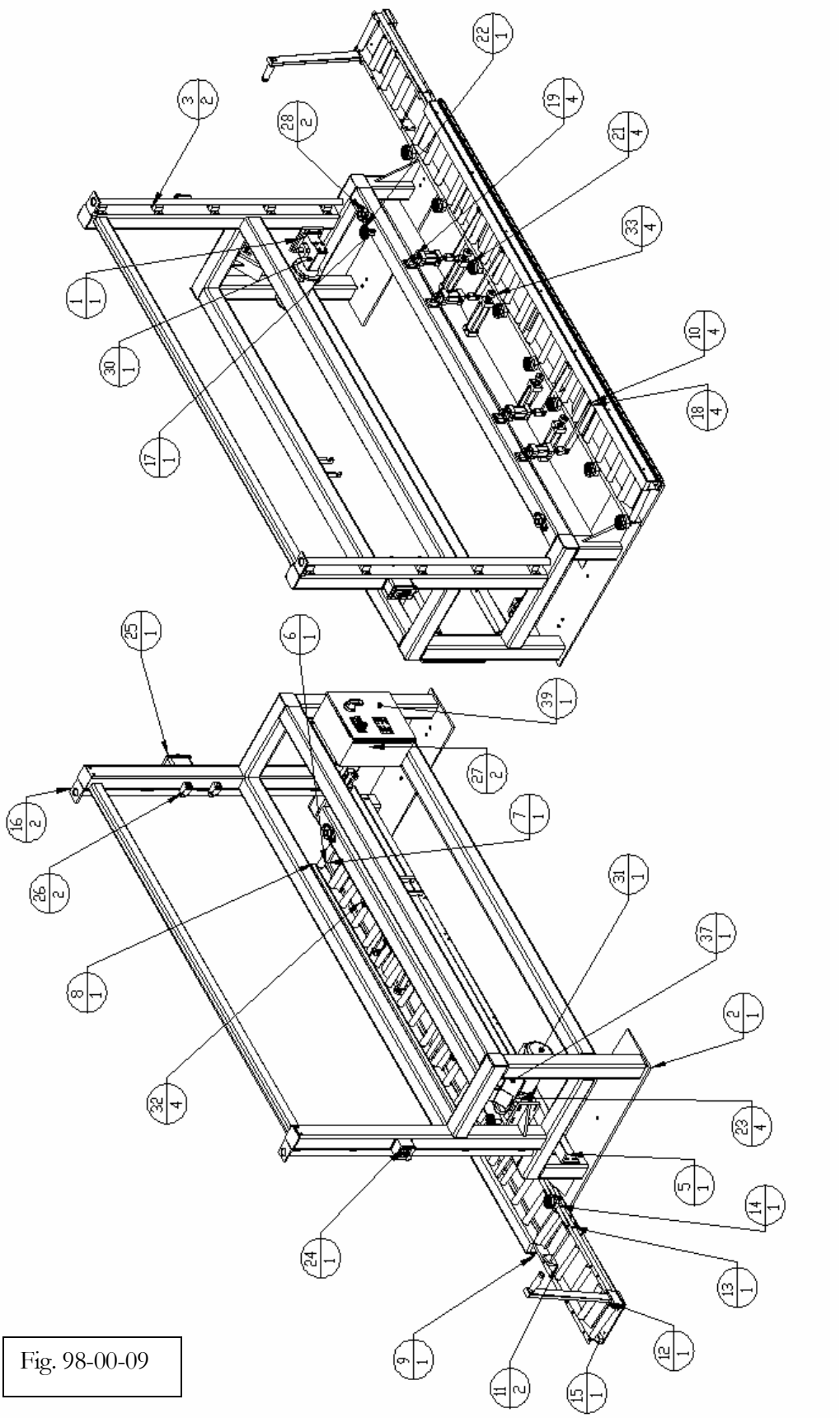


Fig. 98-00-09

Fig. 98-00-09 BOM

ITEM NO	QTY.	PART NUMBER	DESCRIPTION
1	1	530C	MOUNTING BASE 920WT
2	1	98-00-01	LOWER FRAME WELDMENT &
3	2	98-00-05	LINEAR BEARING ASSY
4	4	98-00-DL	UNIT HOLD UP BAR SPACERS
5	1	98-00-DO	LOWER UNIT CLAMP CYL.
6	1	98-00-DP	LOWER BALL RAIL ANGLE
7	1	98-00-DQ	LOWER ANGLE SPACER
8	1	98-00-DR	LOWER DOOR CLAMP BAR
9	1	98-00-DT	LOWER BALL RAIL
10	4	98-00-DU	UNIT HOLD UP BARS
11	2	98-00-EF	ROLL CASE PIVOT BRACKET
12	1	98-00-EG-0	ROLL CASE TILT-UP BAR
13	1	98-00-EGA	ROLL CASE PIVOT SHAFT
14	1	98-00-EN-0	ROLL CASING WELDMENT
15	1	98-00-ENA-0	EXTENSION ROLL CASE
16	2	98-00-EO	UPPER STOP ANGLE
17	1	98-00-FD2	IDLER STAND OFF FOR
18	4	ADV DOUBLE CLEVIS CONFIGURATIONS	490 CLEVIS DOUBLE MOUNT
19	4	ADV SINGLE CLEVIS	CLEVIS SINGLE MOUNT
20	4	ADV2401_5	ADV CYL 240 X1.5
21	4	ADV240X6	ADV CYL 240 X6
22	1	BRDHB5003	IDLER #50 CHAIN
23	4	CLEVIS-240 CYL	ADV 240 ROD CLEVIS
24	1	E1PB	PUSHBUTTON ENCLOSURE
25	1	E2PB	E2PB
26	2	LIMIT SWITCH(PRECISION LIMIT SWITCH 270DEG)	PRECISION LIMIT SWITCH
27	2	NVSA4214-52A	SNC VALVE NVSA4214
28	2	VF2S-247	MOUNTED 1 BEARING
29	1	BIKEGRIPS_1(HANDLE BLACK)	HANDLE BAR GRIPS BLACK
31	1	BALVM3546	1725 RPM 1/2 HP
32	4	02_B240CM	490 CLEVIS DOUBLE MOUNT
33	4	P2B1218CD	BACK BOTTOM & TOP CLAMPS
34	8	INDX30303106	3" DIA. X 1 1/4" VIDE
35	2	98-00-UL	UL ELECTRICAL BOX MOUNT
36	2	1600C	ENERGENCY STOP
37	1	545A	ASSY GUN HOLDER
38	1	536C-0	WELDMENT - SCREW GUN
39	1	98-00-11	ELECTRICAL BOX
40	1	1603C	WIDTH ADJUST
41	2	RED SWITCH	MFG PARTS
42	1	KXRD141	

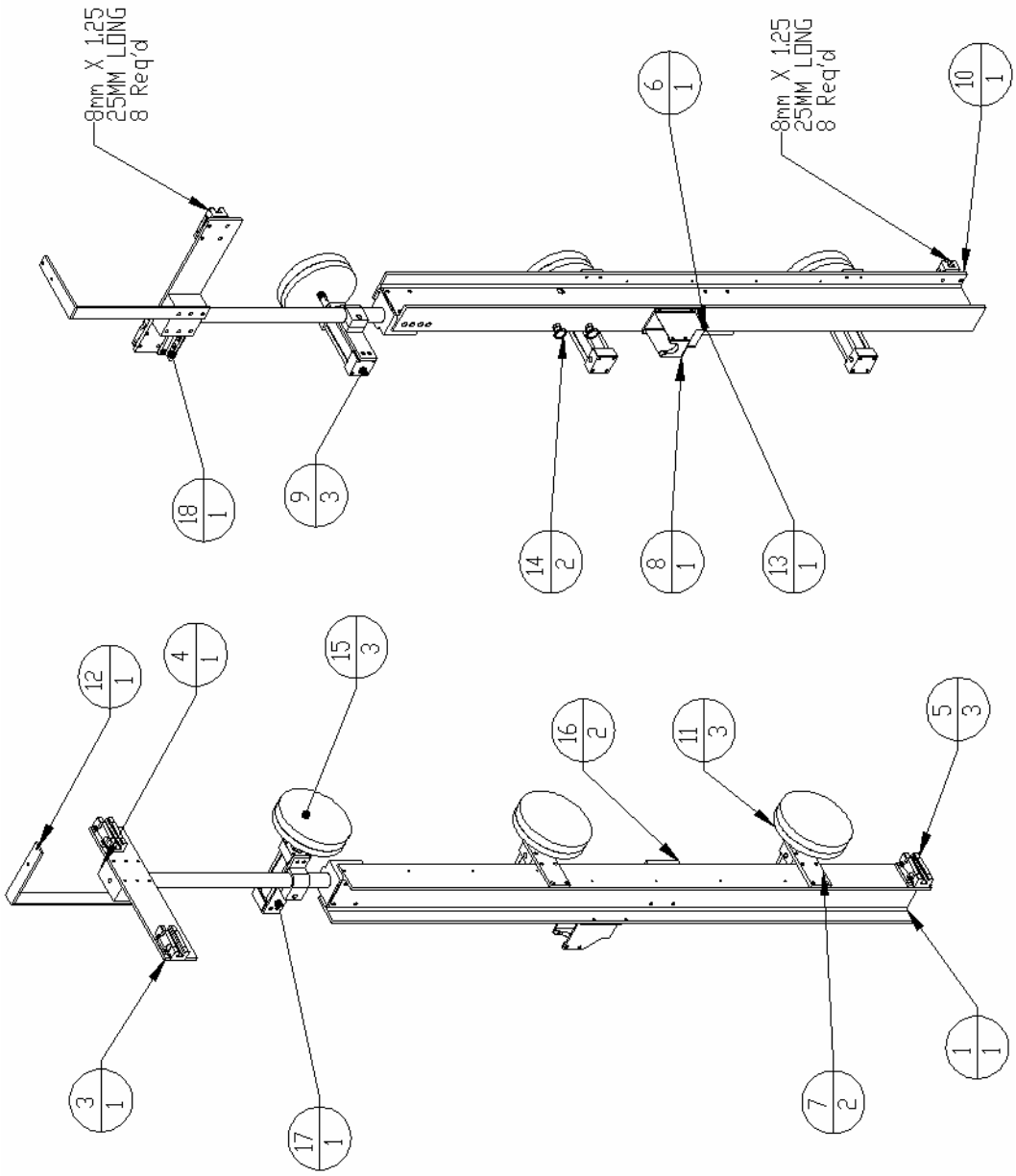


Fig. 98-00-10

Fig. 98-00-10 BOM

ITEM NO	QTY	PART NUMBER	DESCRIPTION
1	1	98-00-CA1	CLAMP UPRIGHT BEAM
2	1	98-00-CB	VERTICAL CLAMP SHAFT
3	1	98-00-CC	VERTICAL CLAMP BEARING
4	1	98-00-CD	VERTICAL CLAMP SHAFT
5	3	STA165121420S	25MM BALL RAIL BLOCK
6	1	98-00-EXA-0	GUN HOLSTER WELDMENT
7	2	98-00-CQ	SIDE LIGHT CLAMP CYL.
8	1	98-00-EVA	CUN HOLSTER
9	3	ADV240X4	
10	1	98-00-CR	
11	3	98-00-CP	
12	1	98-00-EX-0	NYLATRAC MOUNTS
13	1	98-00-EYA	GUN HOLSTER BACKING
14	2	FAB18PMD4	PUSH-PULL VALVE
15	3	98-00-CT	FOAM PAD PROTECTOR
16	2	STAR1757716	1-1/2" OPEN LINEAR BEARING MODIFIED
17	1	98-00-CF-0	UPPER CLAMP PAD MOUNT
18	1	98-00-FB	HOSE MOUNT

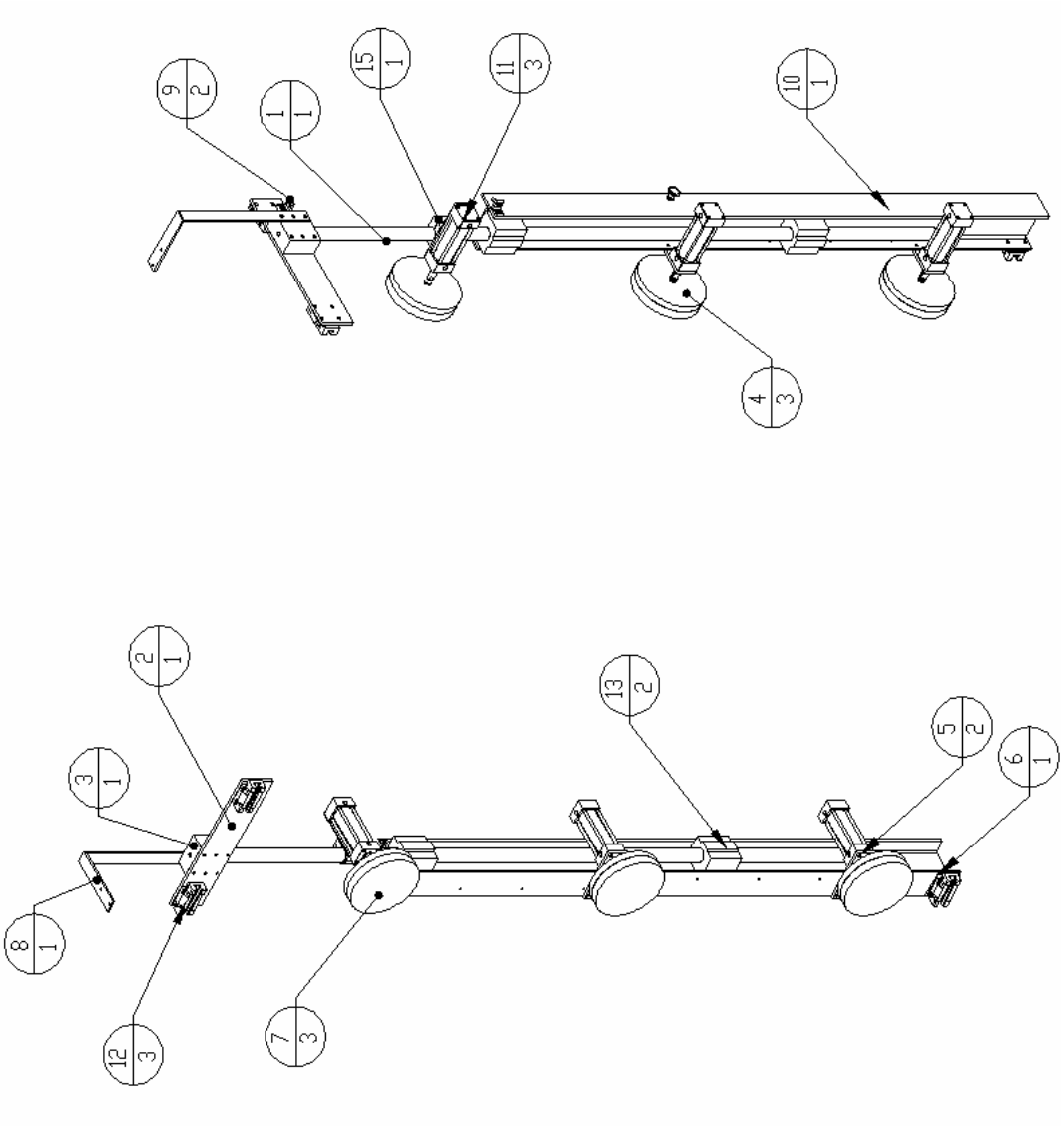


Fig.98-0E-01
Option E

Fig. 98-0E-01 BOM

ITEM NO	QTY	PART NUMBER	DESCRIPTION
1	1	98-00-CB	VERTICAL CLAMP SHAFT
2	1	98-00-CC	VERTICAL CLAMP BEARING
3	1	98-00-CD	VERTICAL CLAMP SHAFT
4	3	98-00-CP	
5	2	98-00-CQ	SIDE LIGHT CLAMP CYL.
6	1	98-00-CR	
7	3	98-00-CT	FOAM PAD PROTECTOR
8	1	98-00-EX-0	NYLATRAC MOUNTS
9	2	98-00-RC	AIR DROP MOUNT
10	1	98-0E-CA1	CLAMP UPRIGHT BEAM
11	3	ADV240X4	
12	3	STA165121420S	25MM BALL RAIL BLOCK
13	2	STAR1757716	1-1/2" OPEN LINEAR BEARING MODIFIED
14	1	FAB18PMD4	PUSH-PULL VALVE
15	1	98-00-CF-0	UPPER CLAMP PAD MOUNT

Bills of materials

KVAL P/N	QtyPer	DESCRIPTION
4C-30F2-S	1	CLIPPER FOOT AIR VALVE 30CFM AT 100 PSI LINEMASTER (4C-30F2-S). BIN ;2BG;9BA01;;;;
530C	1	COMMON PART,MAIN,MOUNTING BASE 920WT,CRS,1/2 X 5 X 5 1/2. BIN ;8CQ;;;;;
ADV240A19	4	ADV CYL 240 X 1-1/2. BIN ;9BC02;8CC;;;;
ADV240A1V	4	ADV CYL 240 X 6. BIN ;9BC01;8CC;;;;
ADV240M01	4	ADV HDW 240 ROD CLEVIS (BRC-750). BIN ;9BC02;8CC;;
ADV240M02	4	ADV HDW 240 CLEVIS DOUBLE MOUNT W/PIN & SNAP RINGS (B240CM). BIN ;9BC02;8CC;;;
ADV240M03	4	ADV HDW 240 CLEVIS SINGLE MOUNT (BEM-500). BIN ;9BC02;8CC;;;
ADV300A28	4	ADV CYL 300 X 12. BIN ;9BC02;8CC;;;;
ADV490M02	4	ADV HDW 490 CLEVIS DOUBLE MOUNT W/PIN & SNAP RINGS (B490CM). BIN ;9BC01;8CC;;;
BALVM3546	1	MOTOR 1 HP 1725 RPM TEFC 56C 208-230/460 (HANDLER) (888). BIN ;9DA02;8MA;;;;
BIKEGRIPS	1	HANDLEBAR GRIPS BLACK 5 LONG W/END CAP STYLE 15 (PRICE EA) (SP170280). BIN ;8BA;1UR;1UP;;;;
BRO502208	2	5022 X 1 BORE TO SIZE SPROCKET (KEY-WAY AND SET SCREWS) (50BS22 X 1). BIN ;8CE;;;;;
BRO50T302	1	50T35L21 X 2 TORQUE SPROCKET TORQUE LIMITER SPROCKET. BIN ;8BE;8BD;;;;
BROHB5003	1	IDLER #50 CHAIN 15T X 5/8 BORE SPROCKET (50BB15H). BIN ;8CE;;;;
BROT35L06	1	T35L X 1 TORQUE LIMITER. BIN 9CE01;8CE;;;;;
BUC4000C	1	STC FRL 1/2 FRL COMBO WITH GAUGE (INCLUDES BALL VALVE). BIN ;8BE;;;;;
CHA50	19	#50 SINGLE STRAND 5/8 CHAIN (QUANTITY & PRICE PER FOOT). BIN ;8CG;3AGNB;;;;
HUBFB2603	2	FB 260 X 1 2-HOLE MOUNT SETSCREW LOCKING RELUBE. BIN ;9CD;8BA;;;;
INASPB240	4	KGXO-24PP 1-1/2" OPEN SUPER LINEAR PILLOW BLOCK. BIN ;;;;;;
INDXS0303106	8	WHEEL, 3" DIA. X 1-1/4" WIDE 3/8" ID WITH SIMI-PRECISION ROLLER BEARING (XS03031-06). BIN ;;;;;;
KAB-BRKT	2	KABELSCHLEPP VERSATRAX FOUR PIECE STEEL BRACKETS. FOR THE CLOSED P-1, P-2, P-3. (0455). BIN ;;;;;;
KABP0200	12	KABELSCHLEPP P-2 NYLATRAC HOSE CARRIER (PART# 0555.060.050.100). BIN ;8AX;;;;;

KVAFBAL01	2	ALUM FLANGE NUT 5DIA RH THD WITH 3LG BRONZE INSERT 1-1/4-4 ACME THD (BS,550-3). BIN ;1GH;;;;;
LIN500001	1	CONNECTING LINK 50 CHAIN. BIN ;8CG;3AG;;;;
NYCAR200002	2	Regulator, 1/4" NPT Regulator, Mini (Nycoil AR2000-02)
NYCG361001	2	Gage, Pressure Gage, 1 1/2", 1/8 NPT (Nycoil G36-10-01) (SUB: SMCK10) BIN;9CD01:
P281212FH	4	HUB 1-3/4DIA X 3/4LG 3/4-10 NC THREADED DELRIN SPECIAL HUB FOR WESPT5112 WHEEL. BIN ;;;;;;
SMCAS2201F2	24	SMC FLOW 1/4 NPT - 1/4 OD RIGHT ANGLE FLOW CONTROL (NAS 2201F-N02-07S). BIN ;9CD02;8CN;8EE;;;
SMCNVSA06	2	SMC VLV NVSA4214-000 1/4 BASE VALVE 4-WAY DOUBLE PILOT. BIN ;8CE;;;;;
WIN920MW1	1	10:1 RATIO 92O MWN-LR (2Z715) SPEED REDUCER 172 RPM WINSMITH (C-FACE). BIN ;8MA;;;;;

Clamp

KVAL P/N	QtyPer	DESCRIPTION
000B13	2	B13 FEMALE COUPLER 1/4 AIR QUICK DISCONNECT. BIN ;8CM;2BG;8EE;9BA02;;
ADV240A1K	3	ADV CYL 240 X 4. BIN ;9BC03;8CC;;;;
FAB18PMD4	2	FAB VLV 1800 PMD-4 1/8 4-WAY DBL. BIN ;9BB03;8BC;8DC;;;
INASPBC240M	2	MOD. 1-1/2" CLOSED PILLOW BLOCK BEARING. DWG #CO (RKG-4). BIN ;;;;;;
KIP38455	1	KIP 1/2-13 THREAD 1.77 LONG ADJ HANDLE (8T45A04K) GN300-92-(12-13)-45-BK. BIN ;;9CC02;;;;
NYC14127	4	1/4-ID X 12' NYCOIL AIR HOSE (YELLOW) WITH 1/4-NPT SWIVEL FITTINGS. BIN ;1UM;1UE;9HE;8BJ;;
STA165121420S	3	GENERATION 2 25MM STAR BALL RAIL BEARING STA165121420 W/2 161922130 SEALS INSTALLED. BIN ;8BA;2BP;;;;

Electrical Panel

KVAL P/N	QtyPer	DESCRIPITON
42BF35AFCBK	2	FURNAS 3P0LE CONTACTOR 120 VOLT COIL QUICK CONNECT & SCREW TERMINALS FOR COIL. BIN ;9CA03;5EC;;;;;
48DC37AA4	1	FURNAS BI-METAL OVERLOAD RELAY OPEN 30-AMP 3-POLE 600V MAX BIN 48DC38AA4 ;9CA03;6AJ;5EC;
49ACRC	2	FURNAS 1-NC AUX CONTACT FOR SERIES 42 DEFINITE PURPOSE CONTACTORS. BIN ;9CA03;6AK;5EC;;;
A1614CH	1	HOFFMAN ENCLOSURE 16 X 14 X 6. BIN ;7EA;6FA;;;;
A16P14	1	PANEL. BIN ;7EA;7-07C;;;;
NFT2	7	2-POLE TERMINAL BLOCK (WHITE) 40A, 600V, UL/CSA. BIN ;6AA;5EB;;;;
OT63E3	1	60 AMP DISC SW ABB. BIN ;9CA03;6AH;5EC;;;;
PT50ML1	1	50VA TRANS PRI VOLT:208/230/ 460V SEC VOLT: 115V. BIN ;6EK;6AK;;;;
SR3P05	1	SR3P05 3PDT RELAY SOCKET 11PIN SCREW: TRACK MOUNT 10A 300V. BIN ;6AA;5EB;9CB01;
BUSSBM6032	1	BM6032PQ BUSSMAN FUSE BLOCK 2 FUSE HOLDER. BIN ;6AK;5EC;;;;
BUSSBM603	1	BM6033PQ BUSSMAN FUSE BLOCK 3 FUSE HOLDER. BIN ;6AK;5EC;;;;
BLKBRNL70	2	BLKBRN L70 14-4 CU SCR LUG (T & B L70). BIN ;6AK;5EB;;;;

Electrical

KVAL P/N	QtyPer	DESCRIPTION
E1PB	1	E1PB PUSHBUTTON ENCLOSURE 3-1/2 X 3-1/4 X 2-3/4. BIN ;7EA;6FA;;;;
E2PB	1	PUSHBUTTON ENCL. 5-3/4 X 3-1/4 2-3/4. BIN ;7EA;6FA;;;;
KR24RH6	2	SQUARE D MUSHROOM OPERATOR W/R BUTTON WITH 1-NC CONTACT RED. BIN ;5ED;2-ELECABS;;;;
KXRD141	1	SQ D SQUARE OPEN/CLOSE OPERATOR WITH 2 NO CONTACTS. BIN ;5ED;2-ELECABS;;;;
LIMITSWAA	2	STANDARD LIMIT SWITCH (1LS312L). BIN ;9CB02;6EI;2-ELECABS;;;
LSZ52K	1	LS ARM ADJUSTABLE RADIUS UP TO 3-1/2 RADIUS 1-1/2" WHEEL 1/4 WIDE (MICRO). BIN ;9CB02;6EI;2-ELECABS;;;
6PA121	1	STANDARD LIMIT SWITCH ARM 1-1/2 RADIUS 3/4 WHEEL (MICRO). BIN ;9CB02;6EI;2-ELECABS;;;
632S-TWIN	1	TWIN FOOT SWITCH LINEMASTER 632-S. BIN ;6ED;6AE;9CA02;
522B12	1	TWIN FOOT SWITCH GUARD FOR TWIN LINEMASTER 632-S (522-B12). BIN ;6ED;6AE;;;;

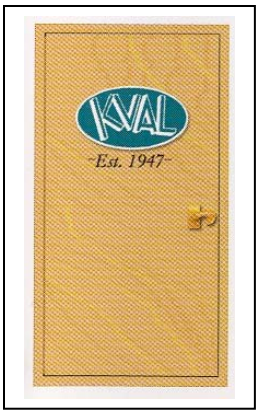
PLANNED MAINTENANCE PROGRAM

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!

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