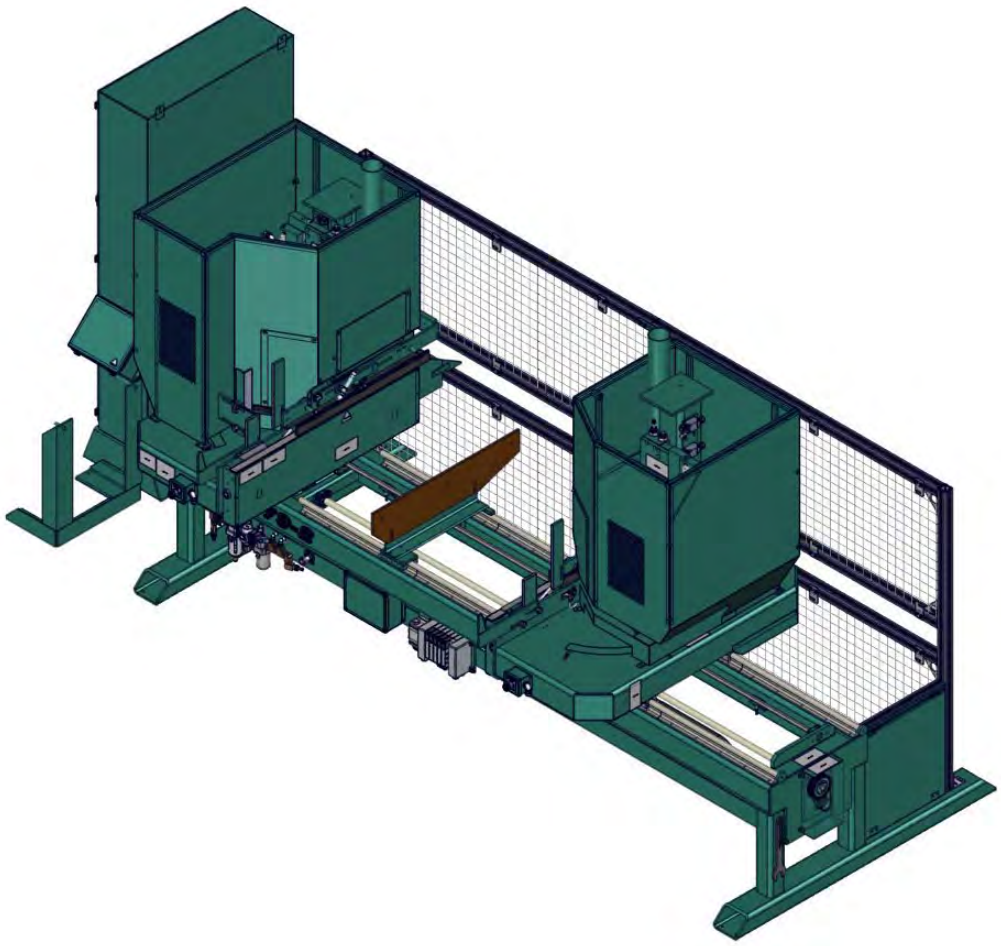
Service Manual

Published: March 11, 2022

Innovation, Quality & Honesty

979-2 Miter Trim Saw System



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Manual Name: **979-2 Service Manual**

Manual Revision **146-MV100.2**

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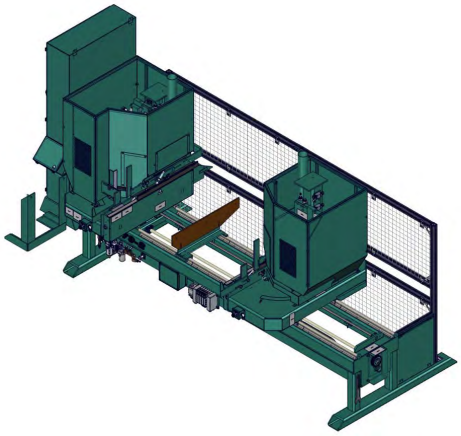
Table of Contents

CHAPTER 1 Introduction to the 979-2

This chapter provides an overview of the **KVAL 979-2 Miter Trim Saw System** and important safety information to follow when operating the machine.

Chapter 1 at a Glance

Overview of the 979-2 Miter Trim Saw System



KVAL model **979-2 Miter Trim Saw** is designed to cut casing for doors and windows at rates up to 25 pieces per minute for softwood material. Saws pivot between either 0- or 45-degree positions. The CNC index system will automatically compensate for cut length by adjusting the distance between saws.

The **979-2** saw heads cut down from above the face of the casing to eliminate any tear out on the face.

There is also a chip-out support below the saw to prevent any deflection in thin casing as the saw passes through it. This is especially important when cutting MDF casing, or pre-finished casing. This design allows the scraps to drop below the machine into waste bins (Not included) without assistance from compressed air nozzles. The air consumption of the **979-2** operating at maximum capacity is only 8 CFM.

The **979-2** will miter side casing, with a 90 degree trim on the bottom, up to 98” long on the short side of the miter. Head casing, mitered on both ends, can be cut as short as 12-3/8” measured on the short side.

The feed hopper may be easily adjusted to accommodate material up to 4-1/2” wide and up to 1-1/4” thick. The pieces of casing are fed from the hopper by a reciprocating dog system. The feed dog systems on each carriage are tied together with a timing shaft to insure that each piece of casing is precisely positioned under the saws every time. Each cutting head is equipped with a 3 HP, 3450 RPM, TEFC, three phase motor. The saw motors have 1” diameter arbors.

Types of options available Are:

Option A: Spline Saw System

Cuts slots for kerf nail in head and leg casing miter.

Option B: Mitered ends on Door stop

Is capable of cutting mitered ends on door stop.

The Option G: Auto Calibrated Stops

Is an air operated system with calibrated stops that automatically adjust the movable carriage when the saw heads are rotated.

Option Z: Computer Controlled Positioning

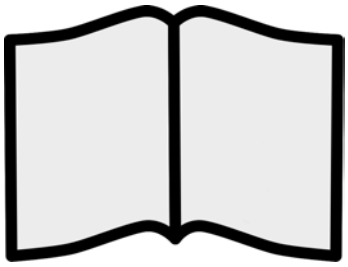
The **979-2** will be equipped with a computer driven servo motor to position the movable head. The system will automatically compensate for the offsets when the cutting heads are switched from 90 degrees to 45 degrees. The system will be controlled by a touch screen that will allow the operator to simply enter the short side length of casing to cut. The finished length of the casing will be correct for all saw head configurations.

About this Manual

This manual is part of a package delivered with the machine line.

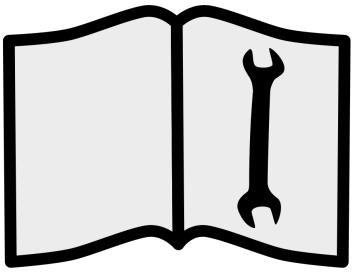
Integration Package includes the following:

Operation Manual includes the following:



Chapter	Title	Description
1	Introduction	Descriptions of Machine Line and Safety Information.
2	Operation Interface	Descriptions of how to power machine line, and operator interface user screens.
3	Tour of the Machine	Descriptions the assemblies on the machine.

Service Manual includes the following



Chapter	Title	Description
1	Introduction	Safety Information.
2	Maintenance	Maintenance steps for the machine line
3	Troubleshooting	Troubleshooting tips and theory of operation.

Safety First!

This machine is a powerful electro-mechanical motion control system. You should test your motion system for safety under all potential conditions. **Failure to do so can result in damage to equipment and/or serious injury to personnel.**

Safety Sheet Sign-Off Sheet

At the end of this chapter, there is a safety sign-off sheet. It lists personnel and machine safety criteria to understand before operating the machine. It is highly recommended that personnel operating, working on a machine meet the criteria listed in this sheet. It is recommended the sheet be signed and kept for records. See “Safety Sign-Off Sheet” on page 1-17.

Safety Terminology of Labels

In addition to the nameplate, **KVAL** machines may have other warning labels or decals that provide safety information to operators. Safety labels should be clearly visible to the operator and must be replaced if missing, damaged, or illegible.

There are three types of warning labels or decals:

- **DANGER** means if the danger is not avoided, it will cause death or serious injury.
- **WARNING** means if the warning is not heeded, it can cause death or serious injury.
- **CAUTION** means if the precaution is not taken, it may cause minor or moderate injury.

Safety Guidelines

In addition to the caution and warning labels affixed to this machine, follow the guidelines below to help ensure the safety of equipment and personnel.

Training

Ensure that all employees who operate this machine are aware of and adhere to all safety precautions posted on the machine and are trained to operate this machine in a safe manner.

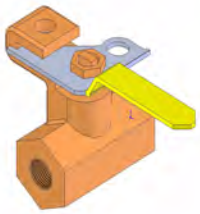
Protective Gear

Never operate the machine without proper eye and ear protection.

When the Machine is ON

- **Never** reach hands beyond safety cage. Servo motors can unexpectedly move quickly.
- **Never** clear screws or hinges out of the machine while it is running.
- **Never** reach into the router area to retrieve a hinge. The router may still be running down after shut down.
- **Never** perform any maintenance unless machine is at zero state.
- **Never** clean the machine while it is running.
- **Never** walk away from the machine while it is running.

Compressed Air



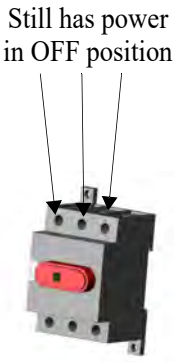
The compressed air system connected to this machine should have a three-way air valve for shut-off and pressure relief.

All cylinders on machine are under high pressure and can be very dangerous when activated. Before performing any maintenance or repairs on this machine turn off the main air disconnect. **Lockout and tagout this connection**.

See “Lockout Tagout Procedure” on page 1-9.

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.



When opening the cabinet you must first turn off the disconnect switch. When the cabinet door is open there is **still power on the top side of the disconnect switch**. Some machines are powered by more than one supply located at different locations. Before performing any repairs or maintenance, lockout and tagout **must be installed at all locations**

All maintenance and repairs to electrical circuitry should only be performed by a qualified electrician.

Before Conducting Maintenance

Prior to performing any maintenance, repairs, cleaning or when clearing jammed debris, you must disconnect, Tagout, or Lockout the electrical and air pressure systems. This should be done in accordance with applicable state and/or federal code requirements.

Laser Warnings

On some machines, laser indicators are used to set boundaries. Follow the manufacturers safety precautions.

Class 2
Lasers that emit visible radiation in the wavelength range from 400 nm to 700 nm where eye protection is normally afforded by aversion responses, including the blink reflex. This reaction may be expected to provide adequate protection under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing.
Reference 60825-1 Amend. 2 © IEC:2001(E), section 8.2.

Compliance with Codes and Regulations

KVAL advises 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 geographic area.

Other Hazard Control Action

Report a Hazard
Before You Report an Accident

If you believe any part or operation of this machine is in violation of any health or safety regulation, **STOP** production. It is your responsibility to immediately protect your employees against any such hazard.

Additional detailed safety guidelines are included in the operating instructions of this manual. **KVAL** will be pleased to review with you any questions you may have regarding the safe operation of this machine

Follow Your Company's Safety Procedures

In addition to these safety guidelines. Your company should have on-site and machine specific safety procedures to follow.

Lockout-Tagout Guidelines

- Place a tag on all padlocks. On a tag, each operator must put their own name and date. (These locks are only to be removed by the person who signs the tag)
- If more than one person is working on the machine, then each additional person places a lock and tag on each disconnect.
- Only each operator may remove their own lock and tag.

Important: When many people are all working on the same machine you will need a multiple lockout device, such as the one shown here.

Follow the P-R-O-P-E-R lockout rule of thumb.

P..... Process shutdown

R ..... Recognize energy type (electrical, pneumatic, mechanical, etc.)

O..... OFF! Shut off all power sources and isolating devices

P..... Place lock and tag

E..... ENERGY: Release stored energy to a zero-energy state

R ..... Recheck controls and test to ensure they are in the “OFF” state

Lockout Tagout Procedure

This policy is required by OSHA regulation 1910.147 and Cal OSHA'S SB198 ruling of July 1991.

Use the following lockout procedure to secure this machine while it is powered down. During a lockout, you disconnect all power and shut off the air supply. Be sure to use the tagout guidelines noted below.

Pre-Steps Before Lockout Tagout

1. Evaluate the equipment to fully understand all energy sources (multiple electrical supplies, air supply and pressure, spring tension, weight shifts, etc.).
2. Inform all affected personnel of the eminent shutdown, and the duration of the shutdown.
3. Obtain locks, keys, and tags from your employer's lockout center.

Lockout Tagout Power

Power

4. Turn off machine. See the **Operation Manual** for power down and power up procedures.
5. Turn the disconnect switches on **ALL** electrical and frequency panels to the OFF position. Then push the red tab to pop it out. Place a padlock through the hole. Place your tag on the padlock, as per the tagout guidelines below. (see illustration

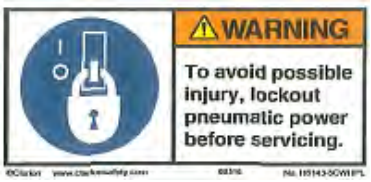
Turn Switch to the OFF position

Insert Lock into hole.

Lock and Tagout

Note: When multiple people are working on the machine, each person needs to have a lock on the handle in the extra holes provided.

Lockout Tagout Air Supply



6. Turn all air valves to the OFF position and place a padlock through the hole (see illustration below).
NOTE: Place your tag on the padlock, as per the tagout guidelines.

Start Maintenance

7. Once the locks and tags are in place and all personnel are clear, attempt to operate the machine to ensure equipment will not operate.

8. Maintenance or repairs may started.

Post Maintenance Steps

9. After maintenance is completed, the person performing the work must ensure all tools, spare parts, test equipment, etc., are completely removed and that all guards and safety devices are installed.

10. Before removing the locks and tags, 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.

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

12. The tags must be destroyed and the locks and keys returned to the lockout center.

Zero-Energy to Start-Up

Starting the equipment properly is just as important as the lockout/tagout guidelines in terms of safety.

Start-up Guidelines

The following guidelines below should be followed to start the equipment.

Inspect

The equipment must be inspected for proper adjustment before starting equipment.

Clean Up

All materials and debris must be cleaned up. Any combustible materials or old parts used during repairs must be cleaned up and/or properly disposed of.

Replace Guards

Replace all equipment guards. If part of equipment cannot be properly adjusted after start-up with guard on, contact the **KVAL** Service team. See “Getting Help from Kval” on page 1-13.

Check Controls

Confirm that all switches are in the “OFF” position. Please be advised that some components of the machine may start automatically when energy is restored.

Remove Locks

Each operator must remove his or her own lock and tag. This will ensure that all operators are in a safe place when the equipment is started.

Perform 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, your company’s comprehensive safety procedure may involve additional steps. You will need to ask your supervisor about these procedures. The company’s lockout procedure should be posted at each machine. On larger or long-term maintenance or installation projects, the company’s procedures must be explained to all new operators and a copy of the company’s procedures should be posted on-site for the duration of the work.

The Company’s procedures should also include provisions for safely handling shift changes and changes in operators or new operators.Comprehensive lockout/tagout may use a gang box or other system to ensure that locks are secure and not removed without authorization.

Remember, lockout/tagout procedures work because you are the only one with the key to your lock. Proper lockout/tagout can save lives, limbs, and money. Help make your work environment safe for you and your fellow workers. Be sure to follow the P-R-O-P-E-R lockout/tagout procedures, and that those around you do also.

Close the Cage Gate

Verify all cage gates are securely closed. Ensure all safety protocols are in effect.

Getting Help from Kval

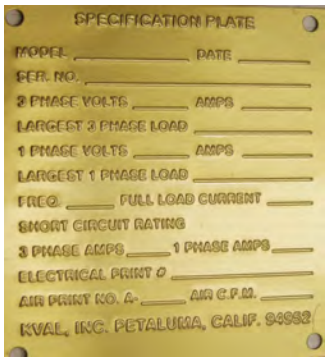
Before you seek help, first try the troubleshooting procedures. Follow the procedures below.

If you are unable to resolve the problem:

1. Locate the machine's Specification Plate and record the serial number, 3 phase volts, electrical print number, and air print number.

Air Driven Machines

Pre -2019 Machines,
look for the brass plate.



2. Contact our customer support team:

- In the U.S and Canada, call (800) 553-5825 or fax (707) 762-0485
- Outside the U.S. and Canada, call (707) 762-7367 or fax (707) 762-0485
- Email address is service@Kvalinc.com
- Hours:

  6:00 AM to 4:00 PM Pacific Standard Time, Monday through Thursday
  6:30 AM to 1:30 PM Pacific Standard Time, Friday

Kval Return and Warranty Policy

Kval's goal is to provide customers with high quality products. If, for any reason, you are not completely satisfied with your purchase, please contact us at:

Email: parts@kvalinc.com

Phone: +1 (800) 553-5825

- **Restocking Fee:** Returned manufactured products are subject to a 15% restocking fee and applied when **Kval** incurs additional costs due to customer ordering error, or manufactured parts ordered for a service related issue and subsequently returned.
- **Shipping Fees:** The customer is responsible for charges required to ship return items back to **Kval**.
- **Mark the Item:** With a marking pen, clearly write on the outside of the carton RMA # _____

Send the Item

Return the item to this address:

Kval Inc.
RMA# _____: Kval Parts
825 Petaluma Blvd South
Petaluma, CA 94952
USA

Acceptance of Return

We can only accept items for a return if they are still in their original packaging and in undamaged, resalable condition.

Returns are accepted within 45 days of purchase and with an RMA number issued by **Kval** Inc. Returns after 45 days of purchase or without a **Kval** Inc. issued RMA number will not be accepted.

Refund Turnaround Time

Refunds usually take from 3 to 10 business days to process. The refund will be issued via the billing method the customer used to purchase the product.

Kval Errors

If the item must be returned because we shipped the wrong item, please call our customer service line immediately and arrange for re-shipment of the correct product. **Kval** Customer Service will arrange for UPS to pick up the incorrect shipment at our expense.

Customer Errors

If the item is to be returned due to customer ordering error, the customer must return the item to **Kval** or the shipper of origin at its expense. A 15% restocking fee may apply to manufactured products that are incorrectly ordered by the customer, or if the manufactured part is returned due to a service related inquiry.

Shipper Errors

Kval recommends the customer insure return shipments if there is any doubt that the product will be accepted in saleable condition at the **Kval** warehouse. Occasionally, UPS or FedEx will damage a package, lose a shipment, or send an item to the wrong address. Please insure return shipments.

Warranty Replacement Parts

Kval provides a warranty to products that are deemed defective. Within 30 days of discovery of said defect, please notify **Kval**, but no more than one (1) year after delivery will the product be covered under Warranty. The repair, replacement, or payment in the manner described above shall be the exclusive remedy of Buyer for breach of **Kval**'s warranty or for claims based upon failure of or defect in the products regardless of when the failure or defect arises, and whether a claim, however described, is based upon contract, warranty, indemnity, tort/extra contractual liability including negligence, strict liability or otherwise.

Normal wear and tear, and deterioration during use shall not constitute a defect in material or manufacture under this limited warranty.

Note: In no event is **Kval** liable for any consequential, incidental, special or indirect damages whatsoever (including without limitation personal injury, property damage, lost profits or other economic injury) even if **Kval** has been advised of the possibility of such damages, or any damages or loss attributable to incorrect use or abuse of the products, including but not limited to, inadequate or improper maintenance or unauthorized alteration.

Safety Sign-Off Sheet

Machine Model Number:_____

A Note to the Operator:

This machine can help you be highly productive only if you understand how to use it properly and follow the safe operating practices described in this document and the machine's manual. If you do not understand the machine's proper operation or ignore the safe operating practices, this machine can hurt or kill you. It's in your best interest to safely and properly operate this machine.

Personnel Safety Concerns:

- I have been properly trained in the operation of this machine.
- I will always wear ear protection when operating this machine.
- I will always wear eye protection when operating this machine.
- I will never wear loose clothing or gloves when operating this machine.
- I will watch out for other people. Make sure everyone is clear of this machine before operation.
- I will always follow my company's safety procedures. I have read and understand these guidelines.

Machine Safety Concerns:

- I have been given a tour of the machine and understand all the safety labels, E-Stops and the actions to take in case of an emergency.
- I will make sure all guards are in place before operation
- I will turn off the compressed air, before loading hardware (staples, screws, etc)
- I will turn off the electrical power, for setup
- If the machine should operate in an unexpected manner stop production I will immediately and notify a manager, a supervisor, or a qualified service technician.

I have read and understand this document and agree to operate this machine in a safe manner as described above.

Employee

Name (print):_____ Signature: _____ Date:____/____/____

Supervisor/Safety Officer/Trainer

Name (print):_____Signature: _____ Date:____/____/___

Note: It is recommended you make a copy of this sheet for new operators. If a copy is needed, you may download a PDF at the **KVAL** website (http://www.kvalinc.com). You may also contact our Service Department at (800) 553-5825 or email at service@kvalinc.com.

CHAPTER 2 Maintenance of the 979-2

This chapter describes preventative maintenance steps for **KVAL 979-2**. The content is geared to guide technicians to keep a regular maintenance schedule for your KVAL machine. Keeping your KVAL machine maintained is an important piece for successful operation of your production process.

Chapter 2 at a Glance

Maintenance Schedule

KVAL recommends the following maintenance schedule to ensure that the machine operates properly. Cycles refers to the quantity of processed doors. Cleaning curtails build up of sawdust and grime which causes issues with the operation of the machine. Inspecting, finds issues before they become problems. Lubricating lessens wear and keeps this machine running smoothly

Note: The steps in the tables below are designed to perform maintenance on a production line. Some of the steps may not pertain to all machines.

300 Cycles	
Clean	Use pressured air to blow off dust and debris on entire machine
Clean	Blow out dust collection cans

600 Cycles	
Inspect	Air Pressure Gages. Adjust, if necessary, to the proper PSI located on the label.
Inspect	Inspect Air Filter Water Traps. Empty if necessary
Inspect	Inspect the Tooling for wear, (Drill Bits, Cutting Tools, Screw Driver Bits)
Lubricate	Lubricate the inside of the Hoppers with a light coat of dry silicone spry.
Clean	Empty Dust Collection Units

3,000 Cycles	
Inspect	Inspect feed belts for proper tension or damage.
Inspect	Inspect screw drop tubes for kinks, cracks or wear from rubbing. Ensure tube clamps are tight.
Inspect	Inspect all photo eyes secure and tight.
Inspect	Inspect all limit switch arms for tightness or breaks
Inspect	Inspect split shells and screw receivers on six shooters for cracks or breaks. Replace if broken.
Inspect	Inspect all airlines for kinks or rubbing.
Lubricate	Refill all lubricators. Replace fluid if milky or discolored. Use ab ISO 32 standard hydraulic oil (KVAL part# SYS-LUBEG).
Lubricate	Grease ball screw bearings (if applicable).
Clean	Clean all bearing shafts with clean, dry cloth.

12,000 Cycles	
Inspect	Inspect chains for proper tension or damage
Inspect	Inspect all air cylinders for air leaks. Replace if seal is leaking
Inspect	Inspect hydraulic lines for loose fittings, leaks and cracks.
Inspect	Inspect ball rail shafts for pitting or abrasions.
Lubricate	Clean and lubricate all slides and cylinder rods with dry silicone spray
Lubricate	Lubricate all bearing shafts with silicone and clean rag.
Clean	Clean inside hopper with WD-40 and a 3M Scotchbrite pad. Wipe dry with a clean dry rag

72,000 Cycles	
Inspect	Inspect all nuts and bolts for tightnesses Tighten is necessary.
Inspect	Check that there is a smooth transition with a door feeding into and out of machine.
Back-up	Backup computer software.
Clean	Wash filter and lubricator bowls with soapy water.

Maintenance NO-GOES

Do not perform the following. This machine is tuned an calibrated at the factory. If any of these conditions are changed, timing, accuracy, or **damage** may occur during the machine process.

- **Do not adjust air PSI above or below factory settings**
- **Do not adjust any and all flow controls from factory settings**
- **Do not remove shim stock**

Lubrication Schedule

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

Type of Assembly	Recommended Schedule	Recommended Lubrication Type
Linear Bearing	Every 250 Hours of Machine Operation	Dura-Lith Grease (KVAL P/N Lube EP-2)
Pillow Block Bearing		
Idler Shaft		
Flange Block Bearing		
Ball Screw	Every 80 Hours of Machine Operation	
Tapered Bearing	Once 4 X a Year	
Air Line Lubricator	One drop of oil every 2 or 3 cycles Check the lines every week to two weeks Note: Some CNC Machines drop every 5-10 cycles.	Either lubricant listed below is approved to use. • KVAL P/N SYSLUBG • Chevron AW Hydraulic Oil 32 • G-C lubricants light AW R&O • Mobile DTE 24 • Shell Tellus32 • Gulf Harmony 32
Gear Box	Recommended not to Grease	• AGMA #8 gear lube • MOBILUBE HD 80 W-90 • or equivalent

Typical Lucubration Kit

KVAL Part Number: LUBEKIT

Lubrication Requirements

This section describes the parts of the machine that require periodic lubrication, and specifies the lubricants. In addition, it explains how to maintain the lubrication systems on the machine.

If the bearing is equipped with a grease fitting (Zerk Fitting).

Zerk Fitting

The Zerk fitting is basically a valve that opens under pressure to allow lubricant to pass through a channel and be forced into the voids of the bearing. When the pressure stops, the ball returns to its closed position. The ball excludes dirt and functions as a check valve to prevent grease escaping back out of the fitting.

The ball is almost flush with the surface of the fitting so that it can be wiped clean to reduce the amount of debris carried with the grease into the bearing.

Note: Bearings without grease fittings have been pre-lubricated at the factory and do not require further lubrication.

Note: Make sure to clean excess grease to avoid contact with feed belts, clamping areas, or the door.

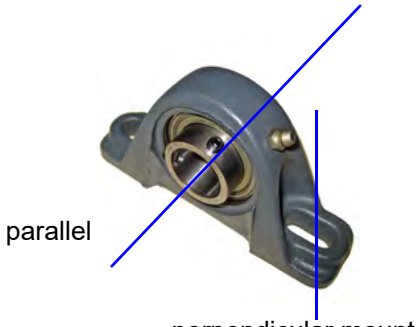
Pillow Block Bearing Housings

A pillow block is any mounted bearing where the mounted shaft is in a parallel plane to the mounting surface, and perpendicular to the center line of the mounting holes, as compared to different types of flange blocks or flange units. The type of rolling element defines the type of pillow block.

Opened Pillow Block

Closed Pillow Block

Hub Style



Greasing

Approximatively 1 Gram (one pump from grease gun) of Dura-Lith Grease (KVAL P/N: Lube EP-2). Every 250 hours of operation.

FIGURE 2- 1. Pillow Block Bearings

Flange Bearing Housings

A flange bearing is designed to aid in mounting and positioning. The lip of the flange helps center and align the bearing.

Flanges are also used with bearings on external housings used to mount a bearing unit. A mounted bearing unit acts as a system to position the bearing securely for reliable operation.

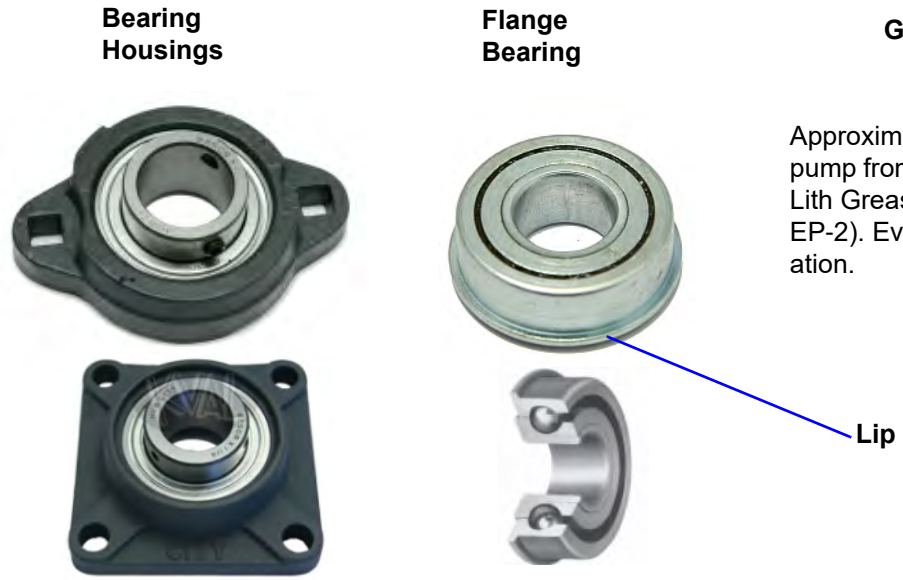


FIGURE 2- 2. **Flange Bearings**

Ball Rail Bearing

Ball Rail Bearings are linear bearings that are attached to positioning rails. In most cases, the bearings are attached to assemblies to move them in the X,Y, or Z direction.

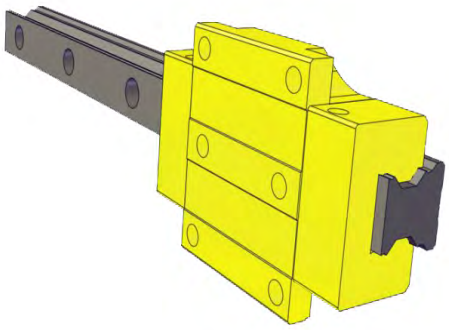


FIGURE 2- 3. **Ball Rail Bearings**

About Taper Bearings

Taper bearings are used for moving the axises of heavy loads with stability. The tapered roller bearing in combination with lubricants is extremely durable and is used in applications involving rotating axle and transmission shafts.

Note: Bearing durability is such an asset that the bearing blocks often require little maintenance for the life of the machine.

FIGURE 2- 4. Sample of Tapered Bearing

Tapered Bearing Housings

The taper bearings differ from other machine bearing assemblies, in that they are in a sealed environment. To identify a **Tapered Bearing Housing**, look at the enclosure and verify there are seals between the screw and the housing.

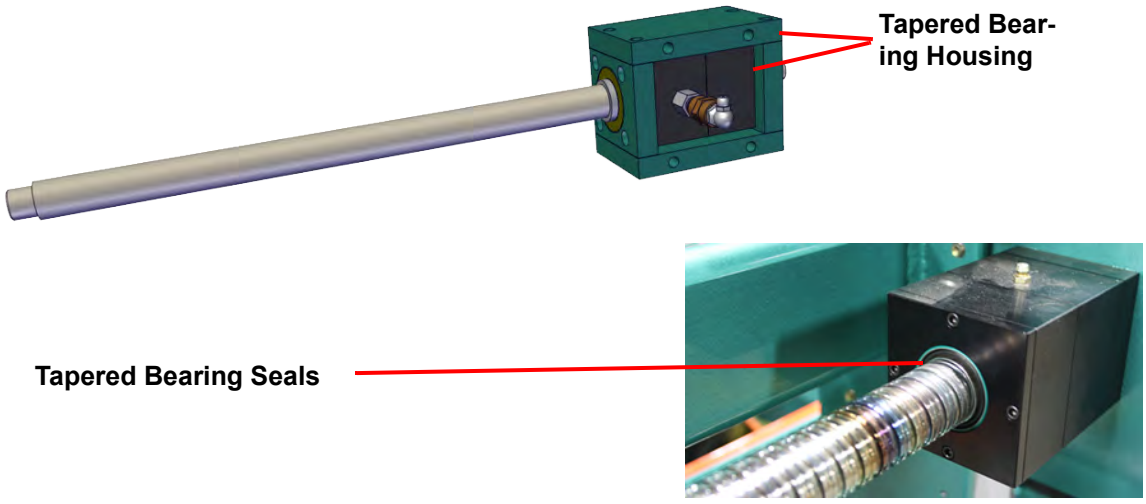


FIGURE 2- 5. Tapered Bearing Housing

Ball Screw Nut

The **Ball Screw Nut** is an assembly with recirculating ball bearings that interfaces with the ball screw. The ball screw drive and the ball screw nut create very low friction coefficients resulting in a smooth, accurate, efficient movement.

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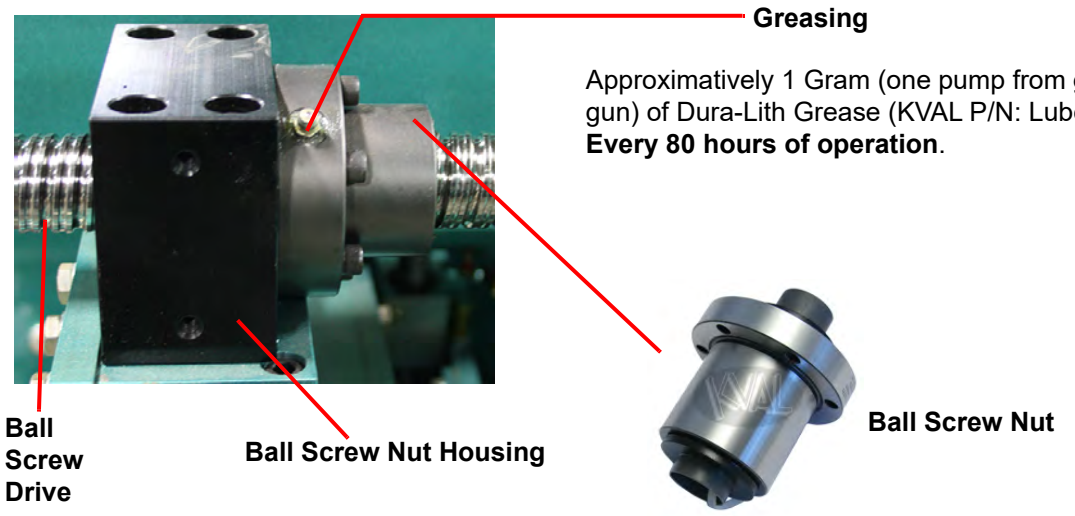


FIGURE 2- 6. Example of a Typical Ball Nut

Ball Screw Drive Assembly

Including the **Ball Screw Nut** other types of bearings may be included on the assembly. Figure 2- 7 shows a typical **Ball Screw Drive Assembly.**

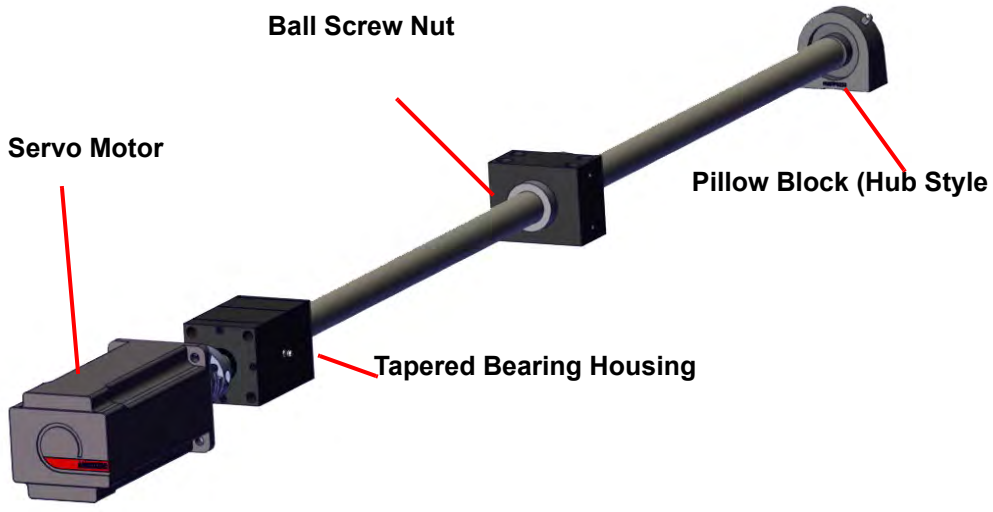


FIGURE 2- 7. Ball Screw Drive Assembly

Lubrication Points on the 979-2

This Section illustrates lubrication points on the machine. See “Maintenance Schedule” on page 2-2 for types of lucubration and a schedule for preventive maintenance.

This machine is a powerful electro-mechanical motion control system. If servicing this machine, follow the safety guidelines. Failure to do so can result in damage to equipment and/or serious injury to personnel.

Shutdown the machine and follow the **“Lockout Tagout procedures**.

Lubrication Points Servo Assembly

For recommended greasing schedule, see “Lubrication Schedule” on page 2-5. Figure 2- 8 below shows the location of the lubrication points on the servo drive assemblies. For easy identification, the view in the figure below shows the machine from the bottom.

3. Perform **Lockout/Tagout.**
4. Identify zerk fittings on each servo assembly and apply EP-2 grease.
5. After lubrication is completed, reverse **Lockout/Tagout**.

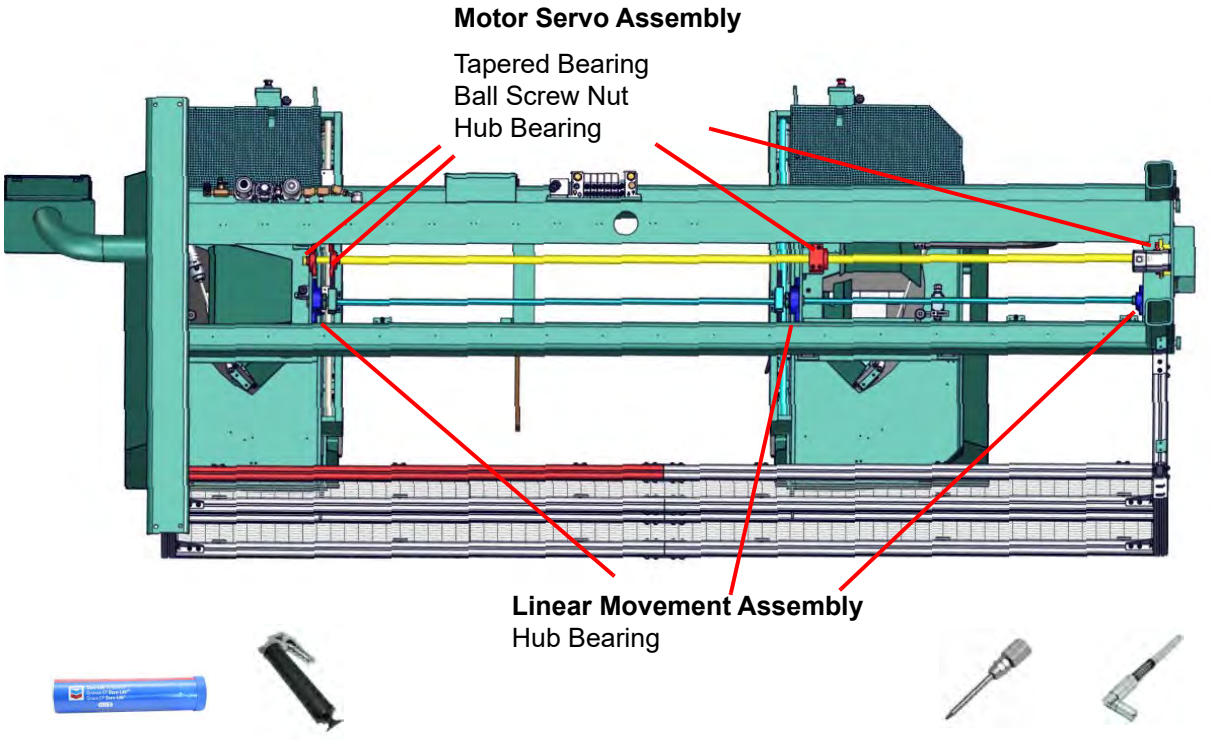


FIGURE 2- 8. Bottom View of Grease Points

Lubrication Points Heads

For lubrication schedule information, see “Lubrication Schedule” on page 2-5. Figure 2- 9 below shows the X,Y, and Z axis bearings of the **Cutter Head** from the back section viewpoint. The bearings are color coded for easy identification. (X-yellow, Y-blue, and Z- red).

6. Perform **Lockout/Tagout.**
7. Identify zerk fittings and apply EP-2 grease.
8. After lubrication is completed, reverse **Lockout/Tagout**.

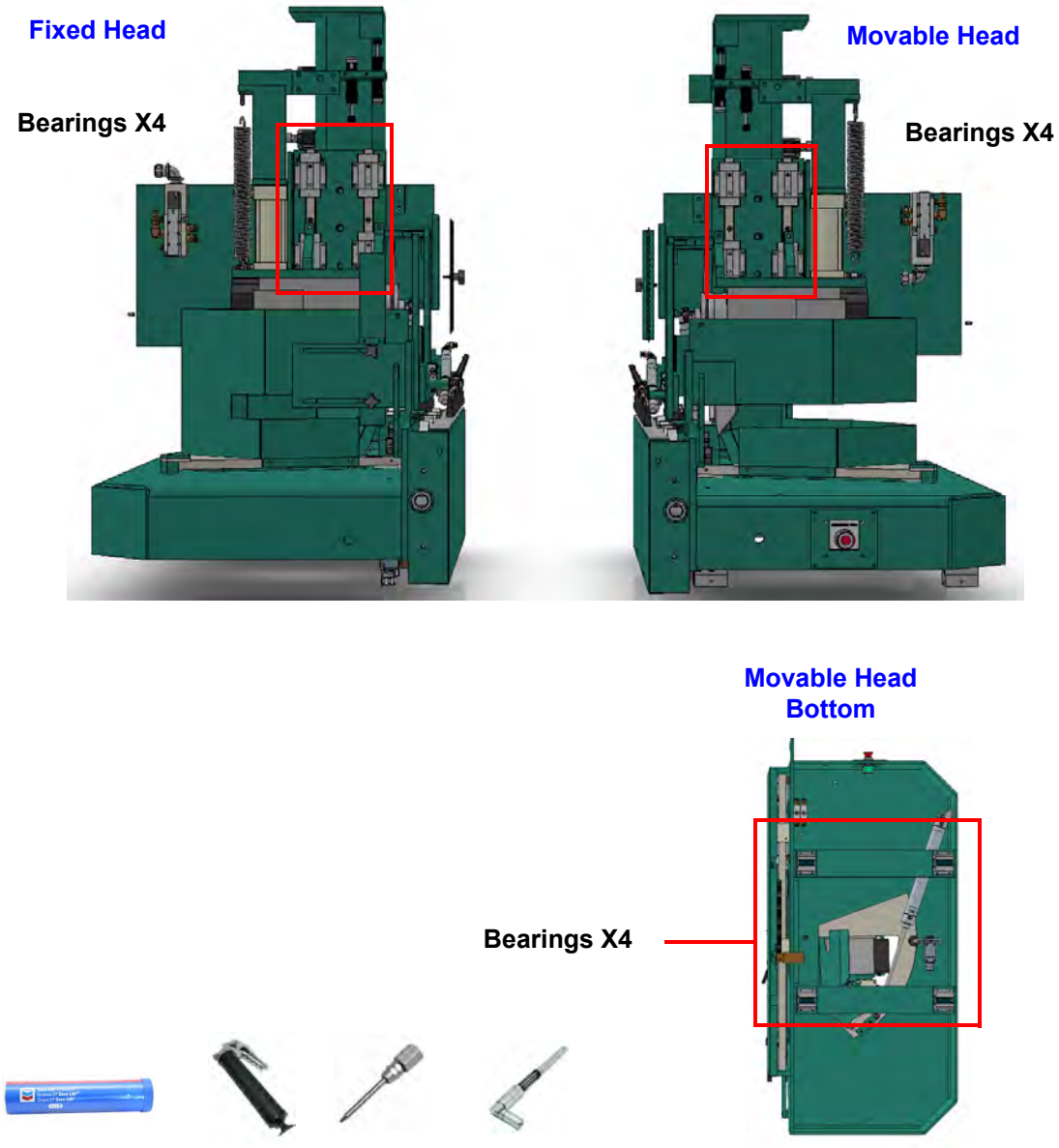


FIGURE 2- 9. Saw Head Lubrication Points

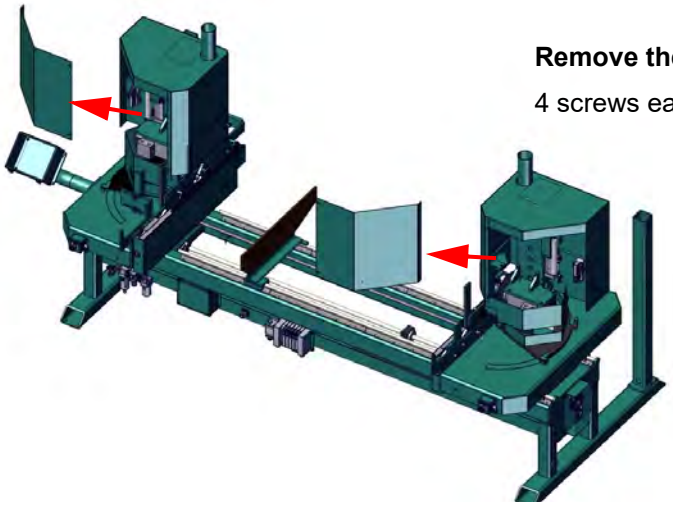
Replacing the Chipout Block

The **979-2** is a powerful electro-mechanical motion control system. If servicing the **979-2** follow the safety guidelines described in. Failure to do so can result in damage to equipment and/or serious injury to personnel.

Chipout Replacement Process

Follow the steps below to replace the Chipout Block.

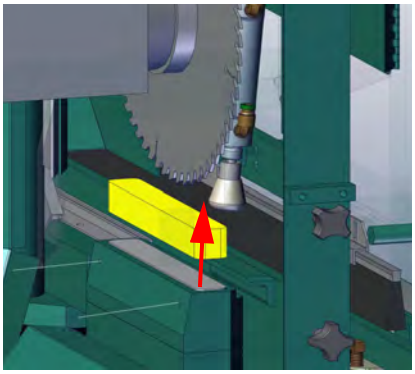
1. Perform the Lockout Tagout.
2. Remove the covers on each Carriage Head (4 screws each). See the figure below.



Remove the Carriage Covers

4 screws each

3. Locate the Chipout Blocks under the saw blades.
4. Remove the 2 set screws that are located on the side of the block assembly.
5. Remove the old block and replace with the new one.
6. Secure the new block with the 2 set screws.
7. Re-attach the Carriage Head covers.
8. Reverse the Lockout Tagout process. Make sure that the machine safe.
9. Burn in the Block



Remove Chipout Block

2 screws each

Process to Burn in a Chipout Block

After the Chipout has been replaced and the machine has been made safe, burn in the Chipout Block.

10. Select the **Manual Button** on the interface to
11. go to the **Manual Screen.**

Press and Hold to start Burn-in program

12. Press and hold the **Chipout Routine Button** to put the machine into chipout mode.
13. While holding the **Chipout Routine Button**
    - Press the **Start Saws Button** to start the saws and bring down to the chipout block to cut it.
    - Release the **Start Saws Button** to detract the saw away from the chipout block.

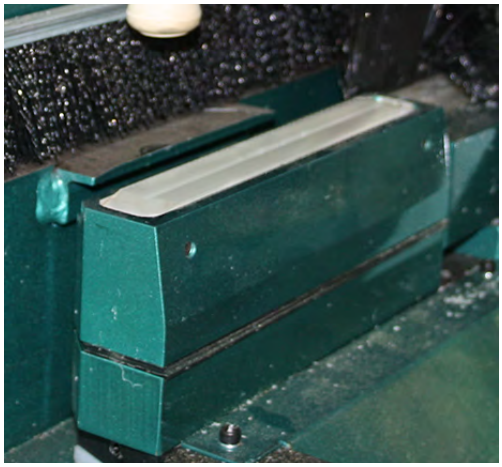
Press to bring saw down to chipout

Release to detract saw away from chipout

14. After burn-in is completed, release the **Start Saws Button** and release the **Chipout Routine Software Button**
15. Reverse Lockout Tagout. Make sure that the machine safe.
16. Home machine on start-up

Example of a Newly Burned in Chipout Block

The figure below shows a newly burned in Chipout Block.



Example of a burned-in Chipout Block.

Mechanical Adjustments

The **979-2** is a powerful electro-mechanical motion control system. If servicing the **979-2** follow the safety guidelines described in. Failure to do so can result in damage to equipment and/or serious injury to personnel.

979-2 Guard Placements and Purpose

The following information gives a description of the mechanism being guarded, and the hazard being guarded against.

Saw Assembly Guard:

Never Access Saw Blades While Power Is On!

Located on both saw carriages, covering the entire saw assembly. The saw assembly guard provides protection from possible amputation, broken bones, eye injury from dust and wood particles, cuts, and bruises. There are saw blade access doors on the back side of both guards.

Removal and Replacement:

There are four bolts securing each saw assembly guard. There are two bolts on the top of the guard(s), and two bolts at the base of the guard(s) toward the end(s) of the machine. Removal of the saw assembly guard is a two-person job. Never attempt to remove the guard by yourself.

Belt Guard:

Never Access The Belt Guard While Power Is On!

Located on both saw carriages, INSIDE the saw assembly guard, toward the outboard front of the saw assembly. The belt guard protects the operator from getting hands caught between the belt and the belt pulleys. The guard provides protection from amputation, cuts, bruises, broken bones.

Removal and Replacement

There are two bolts securing each belt guard, located on the flange of the guard near the saw assembly springs. Removal of the belt guard requires the operator to first remove the saw assembly guard.

Feed Assembly Guard:

Never Access The Feed Assembly Guard While Power Is On!

Located on the inboard sides of both saw carriage feed dog assemblies. The feed assembly guard protects the operator from getting hands caught inside the moving parts of the feed assembly. The guard provides protection against possible amputation, cuts, bruises, broken bones.Removal and Replacement

There are eight socket heads securing bolts on each of the two feed assembly guards. The fastening bolts are located in two rows of four bolts on the ends of the guard(s), toward the front and back of the feed dog assembly.

Kerf Blade Guard (for optional Kerf Saw):

Never Access The Kerf Blade Guard While Power Is On!

Mounted directly over the kerf blade(s) on both kerf routers located on either end of the **979-2**. The kerf blade guard is designed to protect the operator from the kerf blade, whether or not the machine is operating. The kerf blade guard protects the operator from possible amputation, eye injury from air- borne dust and wood particles, and cuts.

Removal and Replacement

The Kerf Blade Guard(s) is secured by two bolts on either side of the kerf blade guard.

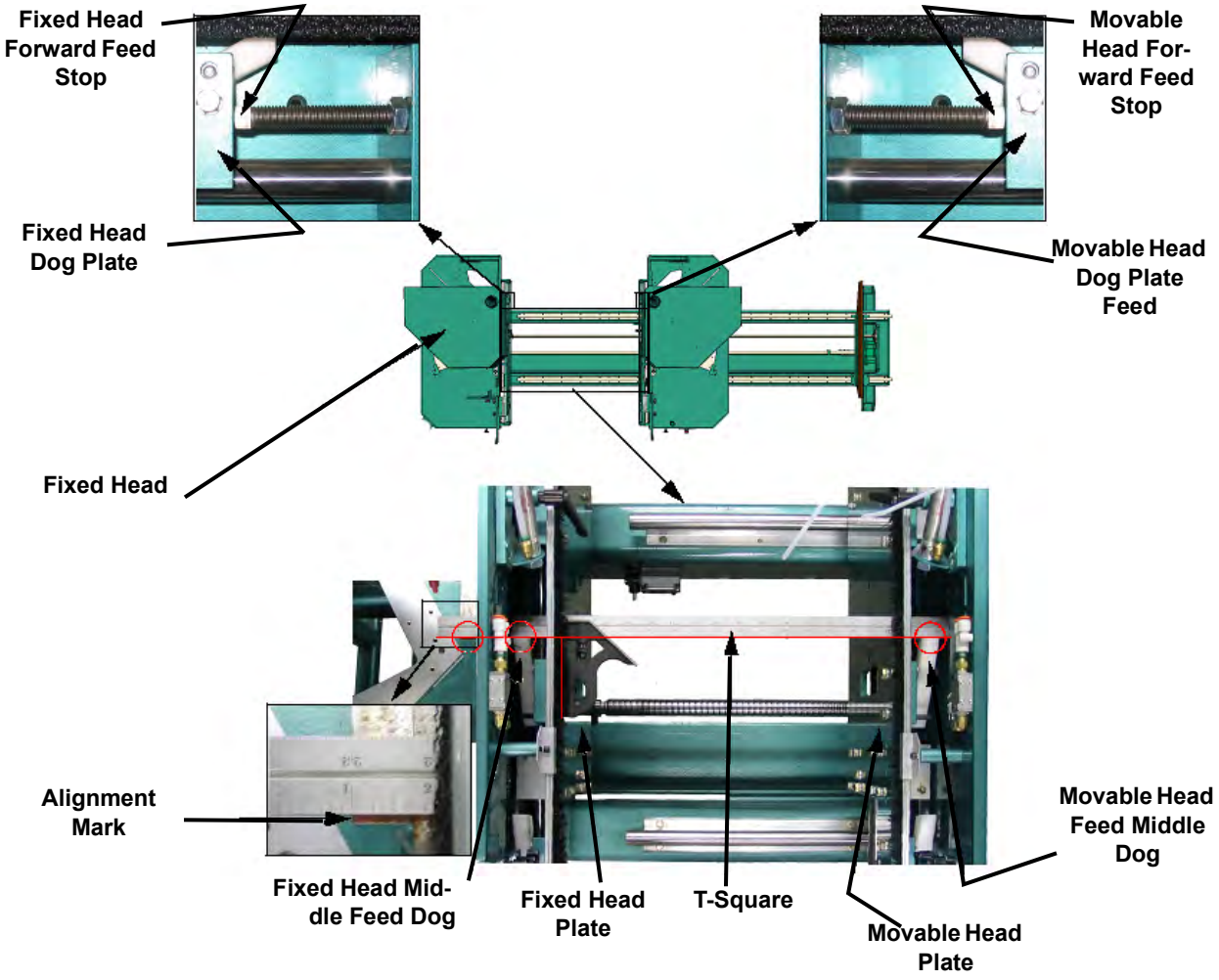
NOTE: These guards are present only when the kerf saw option has been installed.

Feed Dog Adjustment Procedure

Note: Normally this adjustment would not be necessary. It is provided here for the rare occasion when adjustment is necessary.

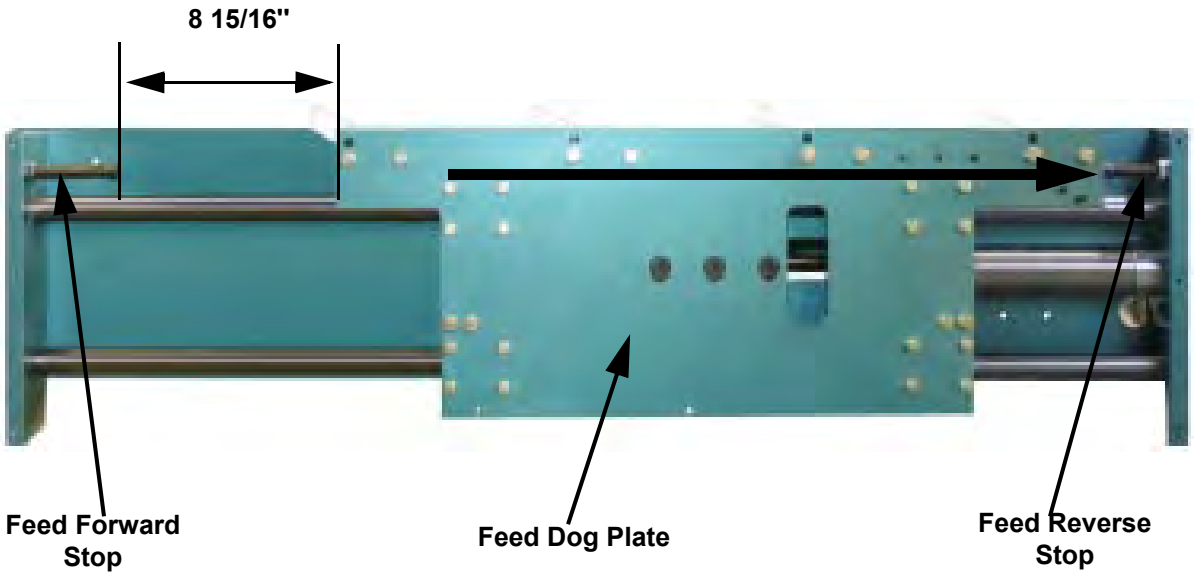
17. Lockout and Tagout the equipment as per instructions in Chapter 1.

18. Holding the right angle of a T-Square against the Fixed Head Dog plate, adjust the forward feed stops so both the fixed head middle feed dog and movable head feed dog and the alignment mark all line up.



19. Manually Pull both movable and fixed head dog plates agents the Feed Reverse stops

20. Adjust the Feed Reverse stop for a gap of 8 15/16" between the forward edge of both Feed Dog Plates and the Feed Forward Stop.



21. Reinstall the inside covers

22. Remove Lockout /Tagout

23. Continue production

Description of Air Input System

There are two types of air inputs on **KVAL** machinery. Not all machines have lubricator option installed. Check your machine or Air prints to verify installation.

Air Input with Lubrication

The air input system takes in shop air and supplies clean dry air (CDA) and lubricated air to the machine. The clean dry air is diverted to blow off nozzles. The lubricator, located after the CDA filters, delivers the lubricated air to valve banks and air cylinders.

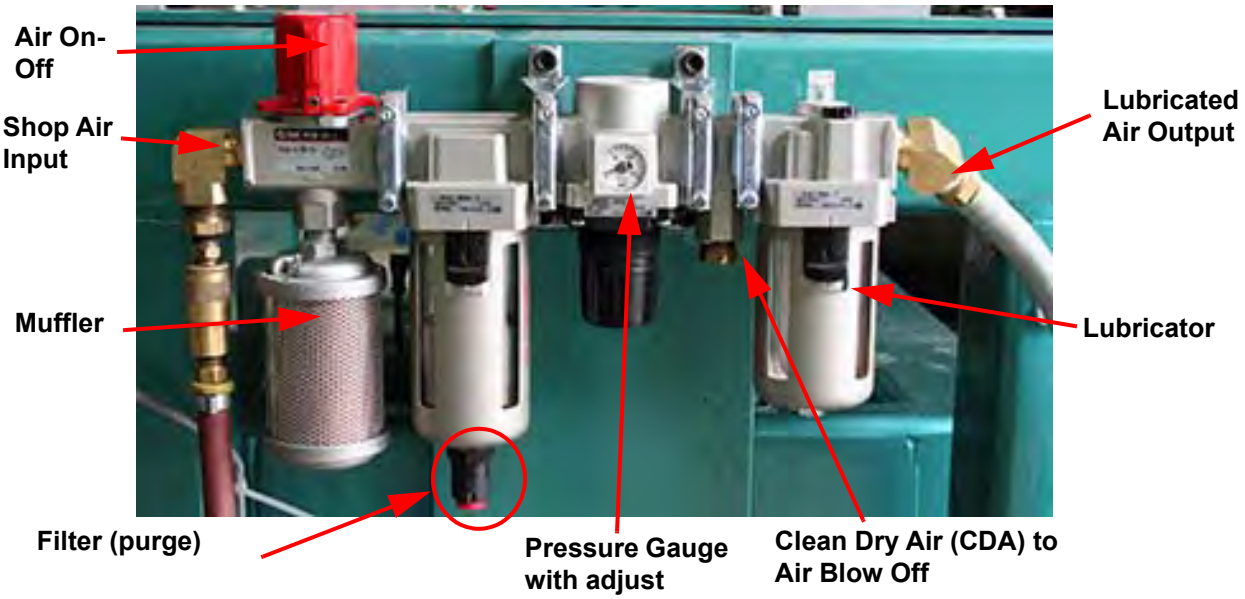


FIGURE 2- 10. Typical Air Line Filter and Lubrication System

Adjusting the Air Line Lubricator

Using the knob on the top of the lubricator, adjust until one drop per every other cycle is used (as observed through sight glass.)

(Sight Glass). When the oiler has run dry, open the knob all the way until flow begins. Once you have a steady flow, tighten knob back down until you have one drop per every other cycle.

Drop will form at end of cane shaped tube visible inside glass.

Top of Lubricator

Priming the Air Line 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 of oil every other cycle is a good rule of thumb. The approved list of oil for lubricators is as follows:

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

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

It is recommended to check the lines every week to two weeks.

Air Line Without Lubricator

The air input system takes in shop air and supplies clean dry air (CDA).

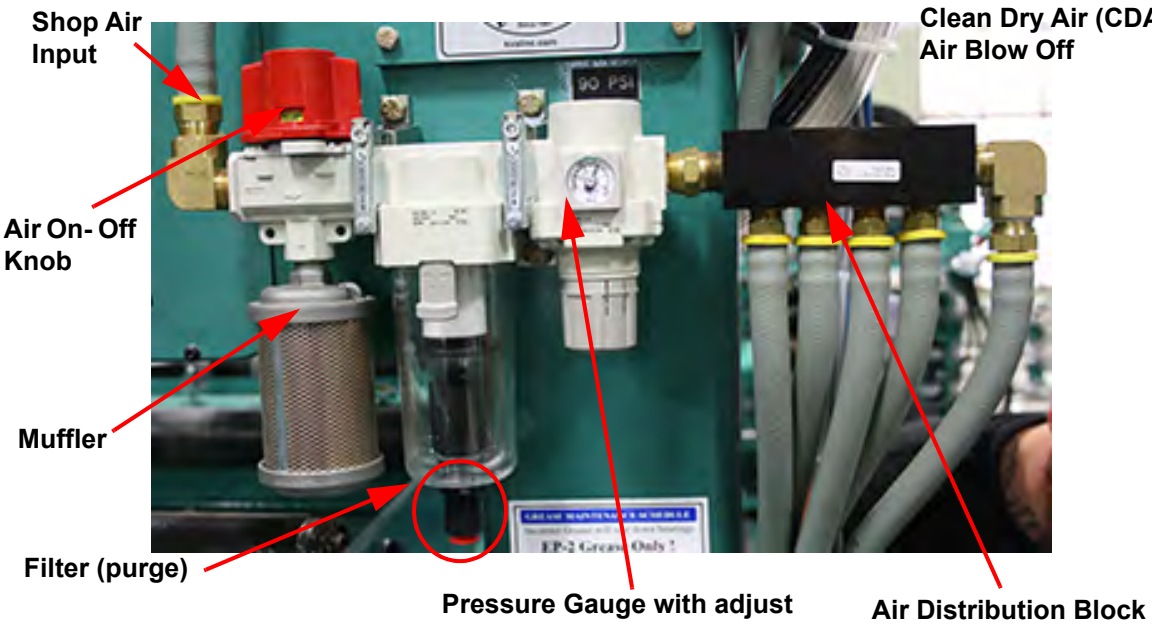


FIGURE 2- 11. Air Filter without Lubricators

http://www.kvalinc.com

Contacting KVAL

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