



Precision Lock Crush Knifeholder

Installation, Operation and Maintenance

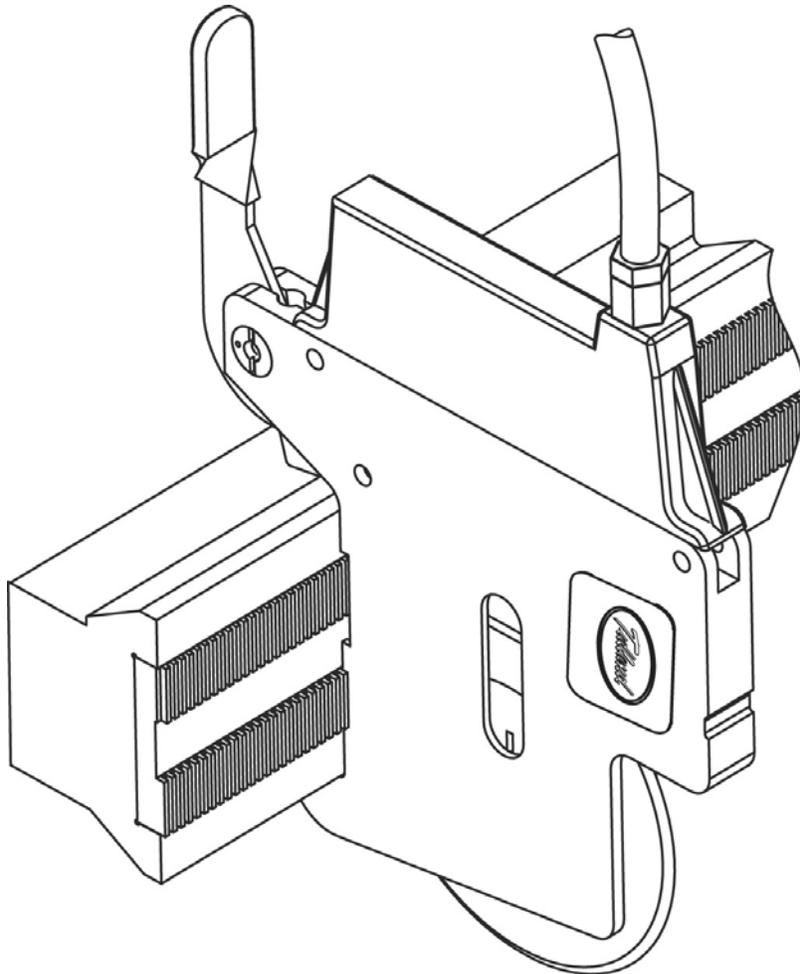


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TIDLAND CUSTOMER SERVICE

800.426.1000 / 360.834.2345

www.maxcessintl.com

RECOMMENDED TOOLS AND ACCESSORIES

- Clean, dry, non-lubricated air supply: 29-87 psi (2-6 bar) for proper operation
- Stainless Steel Protective Gloves (Tidland P/N 132084)
- Coalescing Air Filter
 - Single Air Manifold (Tidland P/N 520984)
 - Dual Air Manifold (Tidland P/N 520985)
- *Parker Super O-Lube* o-ring lubricant
- Screwdrivers: slot blade and Phillips head
- Hex wrench: 3 mm (if installing index rack on guide bar)
- Slip joint pliers

IMPORTANT SAFETY INFORMATION

- The Tidland Precision Lock Crush Knifeholder intended use is to produce a slit with a hardened anvil system. There is no other intended purpose.
- Read and understand all instructions before operating the knifeholder. Failure to follow instructions may cause the knifeholder to function incorrectly and can cause serious injury. The knifeholder contains spring-loaded components. While operating the knifeholder, follow all existing plant safety instructions and/or requirements.
- Tidland recommends wearing stainless steel protective gloves when changing or removing the knife blade.
- Sharp knives can cause serious injury. Do not put hands in machines. Compliance with federal, state, and local safety regulations is your responsibility. Be familiar with them and always work safely.
- Wear safety glasses when disconnecting from air supply. Wear safety glasses if blowing dust off of slitters.
- Quick Clamp Release: Stop machine and disconnect from air supply before releasing clamp.



RECEIVING AND UNPACKING

- Handle and unpack the equipment carefully. Upon arrival, check shipment against the packing list.
- Promptly report to the carrier any damaged equipment.
- Equipment that will not be installed immediately should be stored in a clean, dry location.
- Prevent moisture, dust, and dirt from accumulating in storage and installation areas.

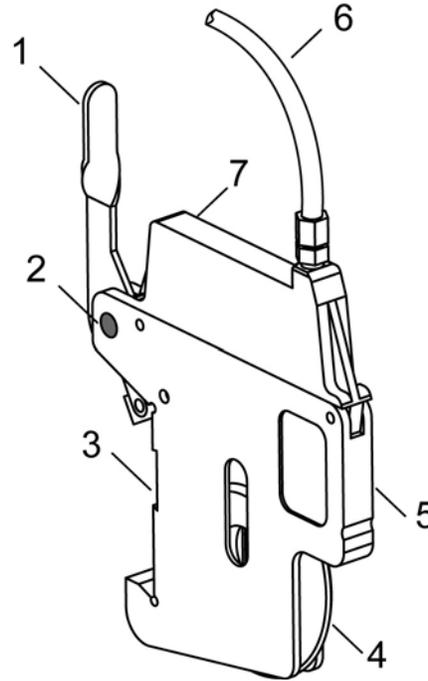
KNIFEHOLDER ORIENTATION

The Tidland Precision Lock Knifeholder uses a unique indexing rack on the dovetail guide bar to assure precise, repeatable positioning, allowing 0.04" (1 mm) spaced increments. The indexing rack also assures that the unit is mounted in a true vertical alignment, reducing the potential "wobble" of a tilted knifeholder. A simple, effective toggle clamp makes installing, positioning, and locking the unit on the guide bar quick and easy without the use of tools.

Knifeholder Components

For complete assemblies and part numbers, see page 14.

1	Clamp lever
2	Eccentric adjustment
3	Dovetail seat (high or low rib)
4	Knife blade
5	Knifeholder body
6	Air hose
7	Knifeholder cap



Application Parameters

Pressure range: 29-87 psi (2-6 bar)

Maximum speed: 1640 fpm (500 mpm)

Typical Materials	Air Pressure	Blade Force
Tissue, Thin Film	29 psi (2 bar)	20 lb (9 kg)
Paper, Flex Pack Films	43 psi (3 bar)	31 lb (14 kg)
Kraft Paper, Labels	58 psi (4 bar)	40 lb (18 kg)
Light Board, Laminates	72 psi (5 bar)	51 lb (23 kg)
Abrasives, Composites	87 psi (6 bar)	62 lb (28 kg)

NOTICE

Operating at air pressures above 87 psi (6 bar) will adversely affect blade life, bearing life, knifeholder integrity, and grooving of the anvil surface.

INSTALLATION

Mounting the Guide Bar

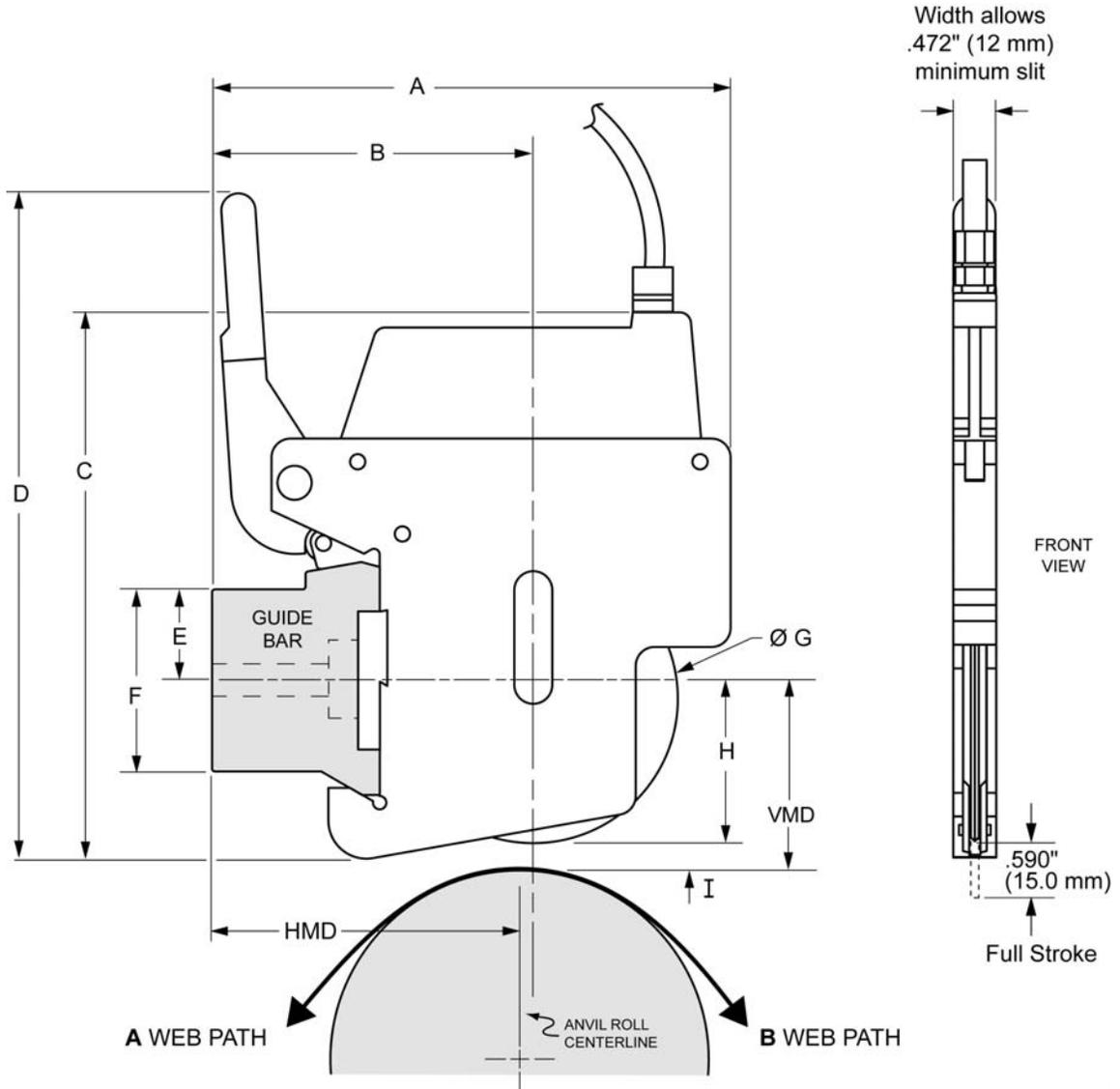
Knifeholder Space Requirements

VMD – Vertical Mounting Dimension

The distance from the centerline of the guide bar mounting holes to the anvil roll O.D., perpendicular to blade travel and tangent to anvil roll. Use a "B" web path, as shown below, wherever possible to minimize strain on the knifeholder and bearing.

HMD – Horizontal Mounting Dimension

The distance from the guide bar support beam face to the vertical centerline through the center of the anvil roll. Reserve 1/2 of the blade stroke for blade regrinding.



Knifeholder is shown in retracted position with a B web path.

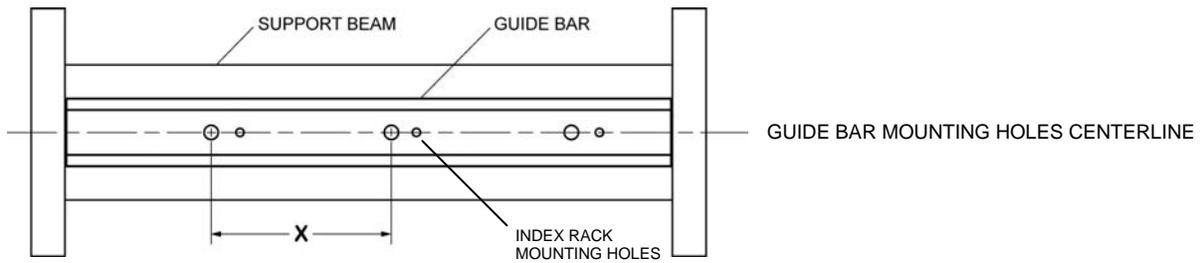
	A	B	C	D	E	F	G	H	I	VMD	HMD	
											A path	B path
Inches	5.16	3.15	5.91	7.48	.95	1.90	3.00	1.69	.28	1.97	3.38	2.91
Millimeters	131.0	80.0	150.0	190.0	24.1	48.3	76.2	43.0	7.0	50.0	86.0	74.0

Note: Dimensions are nominal and represent the average of assembled units. These are not the specifications of individual parts nor do they reflect manufacturing tolerances.

INSTALLATION

Install Guide Bar on Support Beam

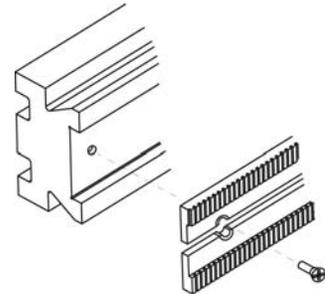
The guide bar must be straight within 0.010" (0.25 mm) on a rigid and vibration-free support.



1. Determine the center-to-center distance between the mounting bolt holes 'X' on the guide bar.
 - Standard pre-drilled dimension 'X' is 5" (127.05 mm).
 - Drill and tap support beam for pre-drilled guide bar: 3/8-16 UNC holes

Index Rack

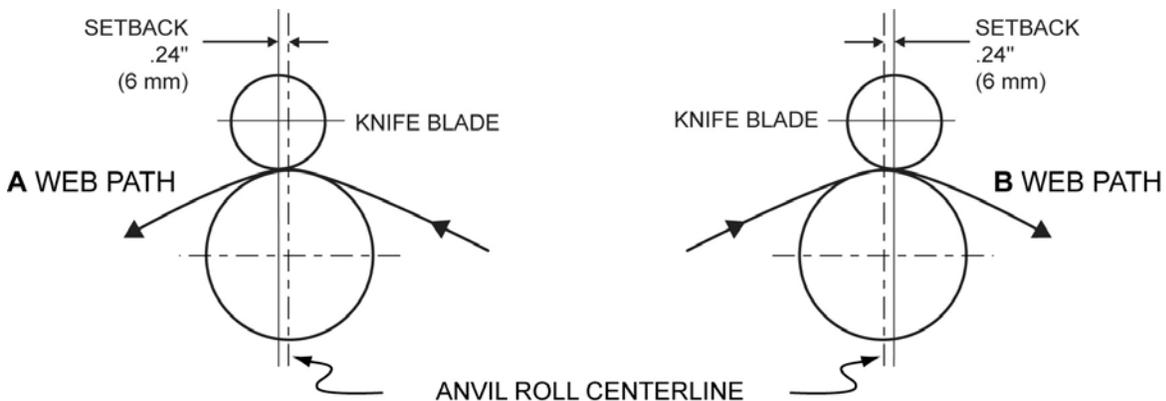
The optional index rack allows knifeholder spacing of .04" (1 mm) increments. Install the guide bar first and then install the rack onto the guide bar. See page 8 for knifeholder installation information. (M5 flat head cap screws are included with the rack.)



Knifeholder Setback

When configuring crush slitters, it is important that the centerline through the knife blade be placed slightly downstream of the centerline through the anvil roll and parallel to blade travel. This prevents lateral blade tracking.

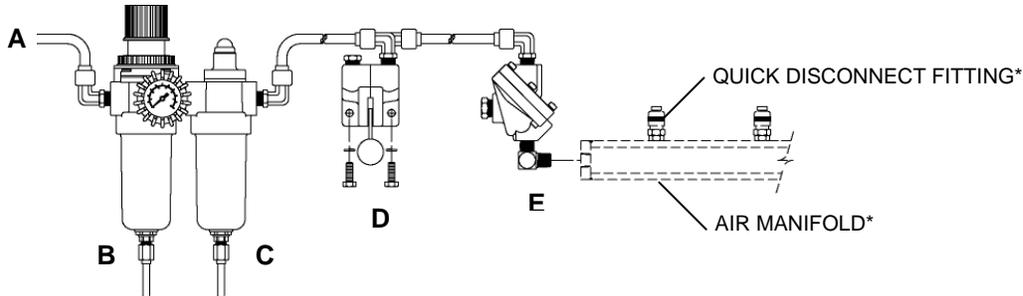
Use a .24" (6 mm) setback as illustrated.



INSTALLATION

Pneumatic System Requirements

- To provide the correct air pressure and help achieve quality slitting, Tidland Corporation recommends the use of a filtered and regulated pneumatic system that will prevent airborne oil or water from contaminating the knifeholders.
- The pneumatic system includes:
 - A) 3/8" (9.5 mm) supply air lines
 - B) 5 micron air filter/pressure regulator with gauge (0-100 psi or 0-6.9 bar)
 - C) Coalescing filter
 - D) 3-way manual valve with muffler
 - E) Quick exhaust valve with muffler



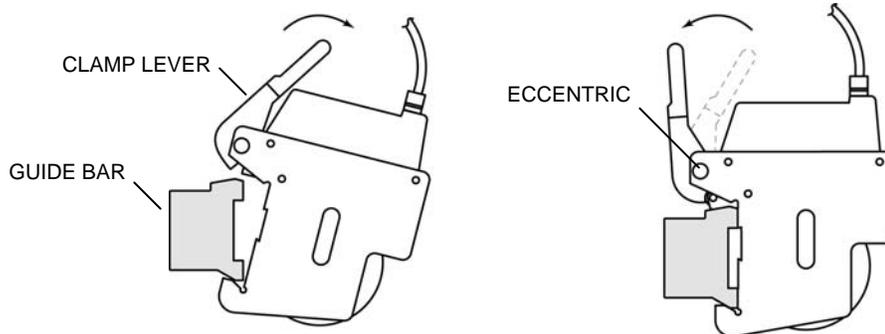
* Air manifolds and quick disconnect fittings are also available from Tidland.

- **Recommended operating air pressure:** 29-87 psi (2-6 bar)
This is a guideline for knifeholder setup. Actual air pressure is dependent upon application and material.
- **Maximum operating air pressure:** 87 psi (6 bar)
- Clean, filtered, non-lubricated, dry air is required for optimal performance of the knifeholder.
- Before operating, make sure that the air lines from the air manifold to the knifeholder are securely connected.

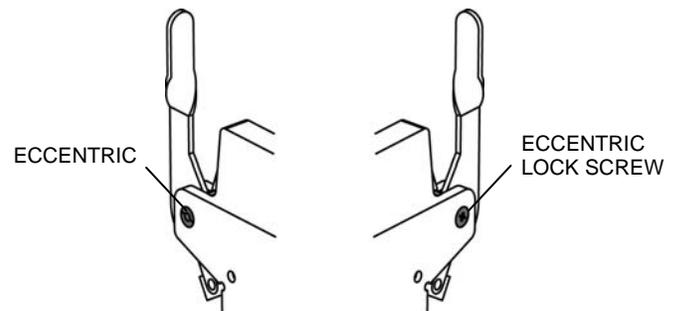
INSTALLATION

Mount Knifeholder to Guide Bar

1. Push the clamp lever back and hook the knifeholder under the guide bar.
2. Rotate the knifeholder up toward the guide bar and push the clamp forward to lock.

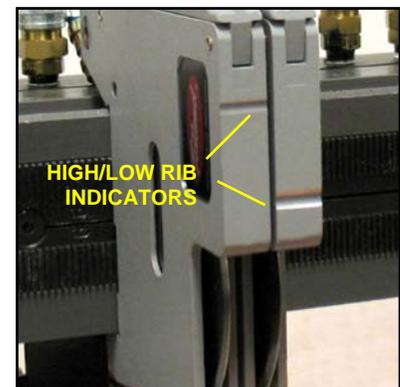


3. To adjust clamp lever tension on the guide bar:
 - a. Loosen the eccentric lock screw.
 - b. Adjust the eccentric as needed, checking the clamp lever for secure fit.
 - c. Tighten the lock screw.
4. Ensure that the knifeholder is square on the guide bar.



Using High and Low Ribs

- For spacing in 0.04" (1 mm) increments, use alternate High and Low rib knifeholders. Contact Tidland Customer Service for assistance. 1-800-426-1000
- You will need to install the index rack on your guide bar to achieve this spacing. The guide bar is tapped for pre-drilled holes in the index rack.
- The index rack also ensures that the knifeholder is mounted in a true vertical alignment.
- The groove on the front of the knifeholder indicates a high or low ribbed unit.



OPERATION

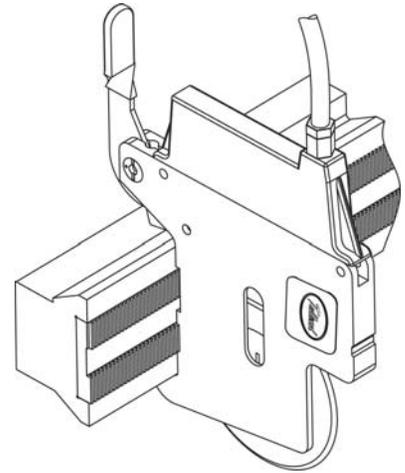
The Precision Lock Crush Knifeholder is designed for total web separation slitting, rather than scoring or partial depth slitting. Perforating wheels can be used; contact Tidland Customer Service for assistance. 1-800-426-1000.

NOTICE

Intermittent slitting (rapid on-off-on-off) to achieve perforation is not recommended.

Operating the Knifeholder

1. Do not permit the blade to "slam" onto the anvil.
Tidland recommends installing an air flow control valve to control the down stroke speed.
2. Using a new blade, determine the initial run pressure. This is the minimum air pressure required to reliably slit the web product.
3. As speeds increase, air pressure may need to be increased.
4. Replace dull blades, rather than continue to increase the air pressure.
5. After changing blades, return the air pressure to the initial run pressure before resuming operation.



Anvil Roll Specifications (Recommended)

- Drive the anvil roll at web speed.
- Minimize the runout of the anvil roll. A suggested maximum total indicated runout (t.i.r.) is:
 $1/(\text{rpm}/50) = \text{t.i.r. (expressed as mm)}$.
- Harden the anvil roll surface to 62-64 RC.
- Larger anvil roll diameters have less deflection, fewer web guiding problems, and better slitter blade life.

PREVENTIVE MAINTENANCE



WARNING!

Hand hazard.

Blades are sharp.

Avoid injury—always wear stainless steel protective gloves when handling blades.

General

- Keep knifeholder blades sharp and balanced. See pages 12-13 for blade finishing specifications.
- Do not use oil lubricants in knifeholder

Daily

- Clean all knife blades using compressed air or isopropyl alcohol.
- Check air pressure: Clean, dry, non-lubricated air is essential for optimal performance of your knifeholders.
- Keep the knifeholders clean and dry.
Note: DO NOT immerse knifeholders in solvents. Wipe the outer surfaces with a clean rag.
- Check knifeholder air pressure.

Weekly

- Check for air leaks at all fittings.

Yearly

- Proper lubrication is critical to knifeholder performance and life cycle of parts.
- Disassemble knifeholder and inspect all wear parts.
- Lubricate as indicated on page 11.
- In harsh slitting environments, Tidland recommends more frequent inspection and maintenance.

Guide Bar Maintenance

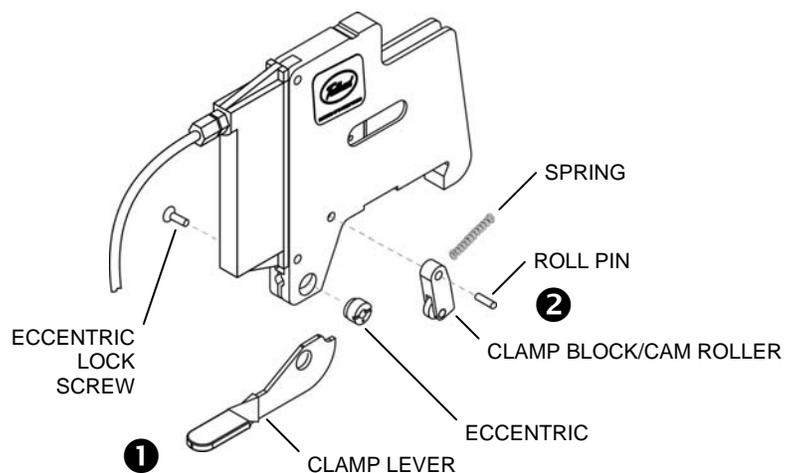
- **Keep the guide bar clean.** Periodically wipe the guide bar with a clean, dry cloth.
- Clean index rack, if installed, with compressed air.



Clamp Lever Assembly

Keep the clamp lever free of debris buildup. Disassemble if necessary and clean the parts.

1. Remove the eccentric lock screw, the eccentric and the clamp lever.
2. The clamp block/cam roller assembly is under slight spring tension. Drive the roll pin out of the knifeholder body and pull the assembly out; use care to retain the spring. (Recommend arbor press and 4 mm dia rod to press out the pin.)
3. When reinstalling the clamp block assembly, insert the spring into the clamp block, and then press the assembly back into the knifeholder.
4. Reinstall the roll pin.
5. Reinstall the clamp lever and adjust the tension. (See page 3.)



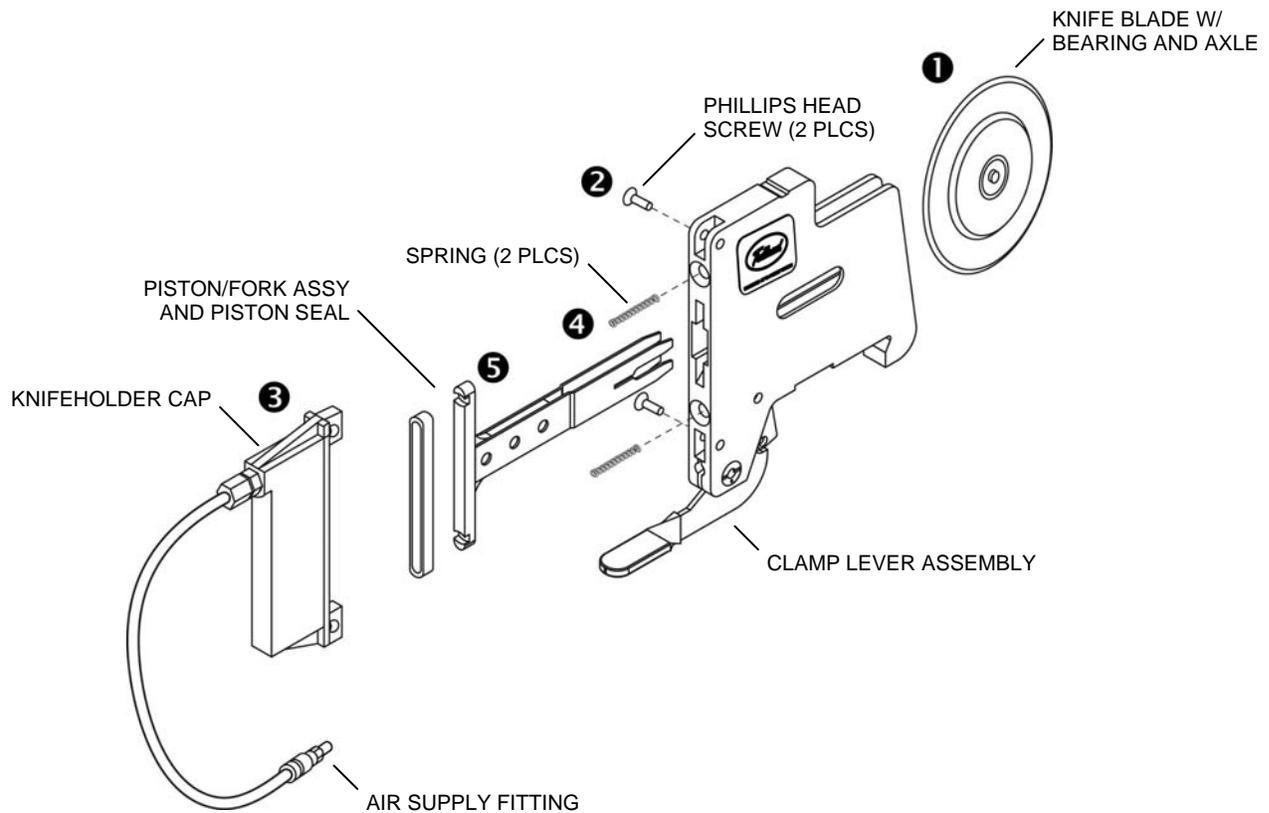
GENERAL MAINTENANCE

Knifeholder Disassembly

Turn off the air supply to the knifeholders to retract the knife blades before removing knifeholders from the guide bar.

1. To avoid injury during disassembly, remove the knife blade first. Using slip-joint pliers, gently grasp the edge of the blade and pull it out of the knifeholder body. See pages 12-13 for knife blade maintenance information.
2. Remove the two Phillips head screws from the knifeholder body to remove the cap; there is a small amount of spring tension in the cap.
3. Carefully pull the cap off of the knifeholder body; note the two springs in the knifeholder body.
4. Remove the springs.
5. Remove the piston/fork assembly and the piston seal. If the piston seal is stuck inside the cap, apply very low air pressure to the air hose fitting to release the seal. (Note the orientation of the piston seal for reassembly; its flat side sits on top of the piston for with the cavity pointing up into the knifeholder cap.)
6. Check the seal for cracks or wear; replace if necessary. Before reinstalling the seal, apply *Parker Super O-Lube* o-ring lubricant to its outer surfaces.
7. Reassemble the knifeholder and reinstall the knife blade.
8. If installing a new knife blade, ensure that the air pressure is returned to initial run pressure before resuming operation. (See page 9.)

See page 10 for Clamp Lever disassembly.



Knife Blade



WARNING!

Hand hazard.

Blades are sharp.

Avoid injury—always wear stainless steel protective gloves when handling blades.

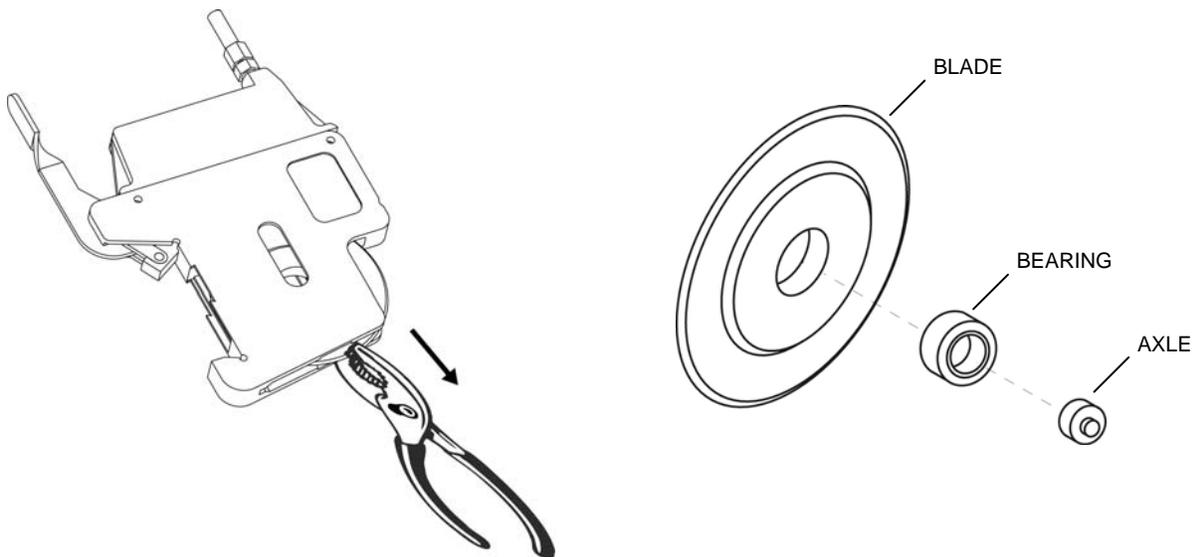
- Worn blades may become chipped and sharp, especially if high air pressures and small blade tip radii have been used.
- Stop machine and disconnect knifeholder from air supply before releasing clamp.

Removing and Reinstalling the Knife Blade

1. Using pliers, pull the blade/bearing/axle assembly out of the knifeholder body.
2. Inspect the bearing for wear; replace if necessary. (The bearing and/or axle may need to be pressed out of the blade.)
3. With the bearing and axle centered axially in the blade, push the blade into the knifeholder, making sure the axle is securely captured by the forks. (See assembly illustration on page 14.)

NOTICE

Do not use replacement blades larger than 3.03" (77 mm).



Blade Regrinding

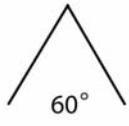
1. Remove the bearing before regrinding.
2. Regrind the blade to the original angle. Use a grinding coolant.
3. Re-radius the tip and polish smoothly.
See Blade Profile Chart on page 13.

GENERAL MAINTENANCE

Crush Slitting Blade Profiles

These blade profiles should be viewed as reference points in determining the optimal profile for any given material.

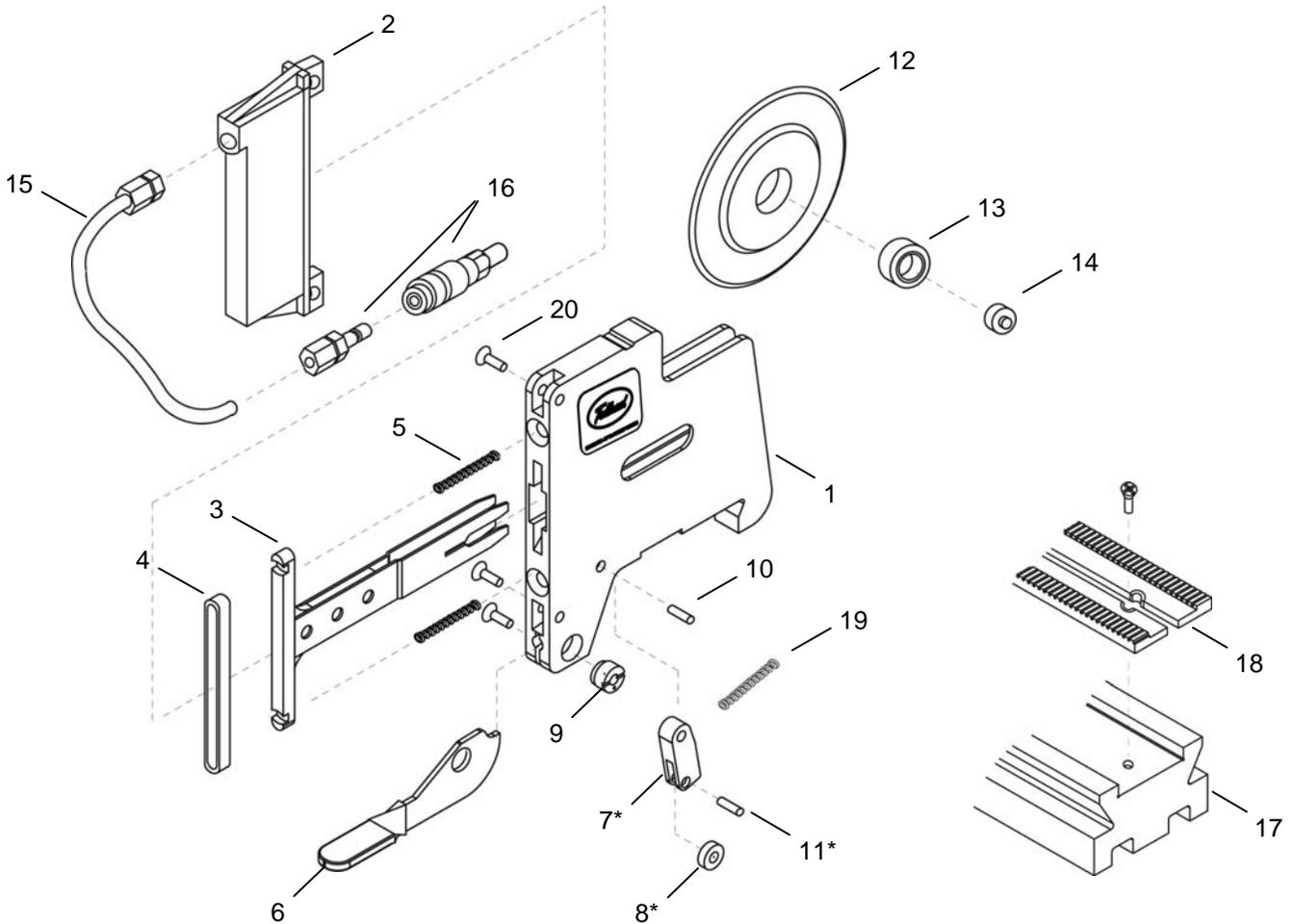
- Smaller tip radii and acute angles result in rapid tip fracture and anvil roll grooving.
- Larger tip radii and included angles require more force to slit.
- To reduce chipping and rapid dulling of blades, it is important to remove burred edges from resharpened blades.
- Make sure to grind the blade edge smooth to avoid dust formation during the slitting process.

Included Angle	Tip Radius		
	R 0.002 to 0.004" R 0.05 to 0.1mm	R 0.006 to 0.008" R 0.15 to 0.2mm	R 0.010 to 0.012" R 0.25 to 0.3mm
 <p>30°</p>	 <p>R 0.1 mm x 30°</p> <ul style="list-style-type: none"> • Cellophane • PSA (Pressure Sensitive Adhesives) • Cork • Acetate 	 <p>R 0.2 mm x 30°</p> <ul style="list-style-type: none"> • Paperboard • Rubber • Paper Backed Foil • Pulp • Plastics > 250μ (0.01") • Surgical Adhesives 	
 <p>45°</p>	<ul style="list-style-type: none"> • Glassine • Plastics < 250μ (0.01") • Tissue • Newsprint • Light Papers • Crepe Paper • Kraft Paper • Masking Tape • Coated Paper 	 <p>R 0.2 mm x 45°</p>	 <p>R 0.3 mm x 45°</p> <ul style="list-style-type: none"> • Waxed Paper • Impregnated Paper • Tissue
 <p>60°</p>	 <p>R 0.1 mm x 60°</p> <ul style="list-style-type: none"> • Gauze • Textiles 		 <p>R 0.3 mm x 60°</p> <ul style="list-style-type: none"> • Sandpaper • Abrasive Fabrics

ASSEMBLY DIAGRAM AND PARTS LIST

Knifeholder Part No.

High Rib Model 568864
 Low Rib Model 568865



Item	Description	Qty	Part No.
1	Body	1	*
2	Cap	1	*
3	Piston/Fork Assembly	1	*
4	Piston Seal	1	*
5	Return Springs (Cap)	2	709631
6	Clamp Lever	1	682076
7	Clamp Block	1	**
8	Cam Roller	1	**
9	Eccentric	1	682079
10	Pivot Pin	1	709632
11	Cam Roller Pin	1	**

Item	Description	Qty	Part No.
12	Knife Blade	1	
	52100 Steel .005" tip radius		568119
	52100 Steel .002" tip radius ***		706504
	D2 Steel .005" tip radius		568120
13	Bearing	1	567555
14	Axle	1	568863
15	Air Tube and Fitting	1	587022
16	Quick Disconnect (opt.)	1	131029
17	Guide Bar	1	567552
18	Index Rack ****	1	566997
19	Spring (Cam Block Assembly)	1	682075
20	Phillips Head (4 mm)	3	stock

- * Replaced as complete assembly
- ** Items 7, 8, and 11 are sold as assembly Part No. 682077
- *** Special order
- **** Includes 5 mm socket head cap screws for mounting

TROUBLESHOOTING

Knifeholder Performance

Problem	Possible Cause	Recommended Solution
Knifeholder doesn't retract	No lube on piston/fork assembly	Disassemble knifeholder and apply thin film of 4700-4702 MONOLEC® to piston fork (p 11).
	Air not exhausted from manifold	Exhaust all air from manifold.
	Contamination between knifeholder and blade	Remove knife blade from knifeholder and clean. Use compressed air to blow and dust and build up from inside the body.
	Broken spring	Disassemble knifeholder and check for broken or missing springs: item 5, p. 14
Blade does not extend	Air leak	Ensure proper air supply (p. 4). Check all air fittings for leaks.
	Jammed due to buildup	Remove knife blade from knifeholder and clean. Use compressed air to blow dust and debris from inside the body.
Blade does not rotate easily	Bearing and axle not centered on blade	Remove knife blade from knifeholder body; center the bearing and axle axially in the blade.
Knifeholder loose on guide bar	Eccentric not adjusted correctly	Adjust the eccentric as needed for a tight fit on the guide bar (p. 8).

Slit Quality

Slit edge is fuzzy	Dull blade	Sharpen or replace knife blade (p. 12).
	Knifeholder loose on the guide bar	Adjust the eccentric as needed for a tight fit on the guide bar (p. 8).
	Incorrect setback	Check geometry (p. 6).
	Driven anvil run-out	May require roll regrind or resize. See specs on page 9.
Slit line is not straight	Knifeholder loose on the guide bar	Adjust the eccentric as needed for a tight fit on the guide bar (p. 8).
	Worn bearing	Replace bearing (p. 12).
Web tears, splits or breaks	Dull blade	Sharpen or replace knife blade (p. 12).
	Web tension is too high	Reduce tension.
Short blade life	Blade profile incorrect for web material	See blade profile chart on page 13.
	Blade slamming onto hardened anvil	Tidland recommends installing an air flow control valve to control the down stroke speed.
Web bunches in front of knife blade	Anvil roll speed does not match web speed	Adjust operating speeds.
	Blade not rotating freely	Check bearing and axle in blade; they should be centered in the knife blade.

TIDLAND ANVIL ROLLS

If your anvil roll is equipped with adjustable hardened anvil sleeves, you may need to shift the position of the anvil sleeves to achieve a new cutting surface when a groove has worn in the anvil from prolonged slitting,

Moving the Anvil Sleeves



WARNING!
Hand hazard.
Blades are sharp.
Avoid injury—wear stainless steel protective gloves when handling blades.

1. Stop the slitting operation and retract the knifeholder blades. You do not need to remove the anvil roll from the system.
2. Unbend the tabs on lockwashers, if installed*, at each end of the anvil roll and loosen the locknuts.
3. Turn the locknuts at both ends to move the sleeve(s) to new location.
4. At one end of the shaft, align the notch in the nut with a lockwasher tab, if installed, and rebend the tab to lock in place.
5. Tighten the locknut on the other end, pushing the sleeves toward the first nut. Align the notch in the remaining nut with a lockwasher tab and rebend the tab to lock in place. Once locked, sleeves should not move axially.
6. Resume slitting operation.

* If your anvil roll is equipped with the dual locknut design, loosen the two locknuts that are locked together. After moving the anvil sleeves, tighten the nuts against each other to secure the sleeves in place on the anvil roll.

Removing the Anvil Sleeves for Replacement

1. Stop shaft rotation.
2. Complete your company lock-out procedures to lock-out system power.
3. To help ensure safety and avoid damage to the system, provide alternative support for the anvil roll before removing the bearing cover plate, if installed, and bearing.
4. When slitter shaft is properly supported, remove bearing.
5. With anvil roll still supported, remove locknuts, washers, and sleeves through the opening in the side frame.



Optional: Remove the anvil roll from the slitter system.

1. Loosen the set screws at the other end of the anvil roll and slide it out of the opening in the side frame.
2. Transport the anvil roll to a secure workbench.

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