

**Air Feed/Cut-to-Length with Keypad
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CHART AND DRAWINGS

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Operating Instructions Cut to Length Machine

INSTALLATION:

The Cut to Length (CTL) that you have just received is fully assembled and ready to be put into production. Due to shipment vibration and handling, the machine should be checked to ensure all screws and bolts are tight. Remove the cover to the electrical controls and visually inspect that all parts are in place and secure. If the machine was damaged in shipment, contact the carrier first to report the damage and then Rapid-Air.

CAUTION — The CTL machine is top heavy when not sitting on its base legs. Use extreme caution when moving this machine.

Install machine on a level surface with sufficient clearance for loading and unloading process material. The machine should be secured to the floor through the 4 holes provided in the feet of the machine using 7/16 tie-down bolts. Or, can be installed using 1/2-13 leveling bolts and machine pads. The pads keep the machine from walking during operation and also act as a noise reduction device.

The machine has two other requirements that need attention before putting the CTL into production.

- 1) The customer must provide minimum CFM—RE: chart, at 75 to 120 PSI of dry air to the machine. Connect a minimum of 5/8" ID hose into the filter regulator provided on the machine. The inlet to the F-R-L is a NPT female thread.

- 2) The customer must provide 120 volt, 20 amp, 60 cycle electrical power. If an extension cord is used between the source and the machine, it should be a minimum 12 gauge wire to keep the voltage loss down and for electrical safety reasons.

SMALL CUTTER

Cutter Data:

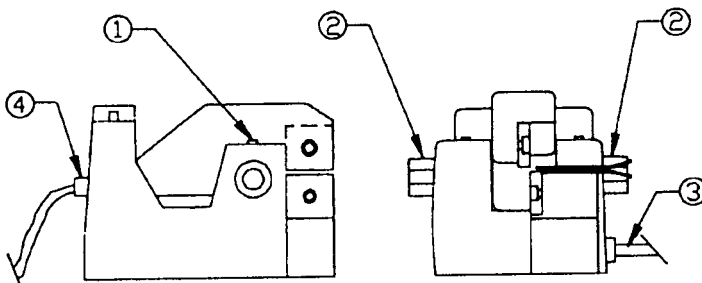
See specific cutter specifications.

Operations:

The solenoid valve, which is remote mounted, is attached to the cutter (item #3) by a plastic hose and advances the cutter into the material. Compression springs return the blade to the raised position. The cutter raised position is monitored by a proximity switch mounted on the rear of the cutter. (item 4)

Adjustments:

The cutter blade may be lowered manually by pushing down on the head of the cutter. The upper half of the cutter is attached to an adjustable slide. The cutter clearance can be adjusted by loosening 2 screws (item #1) and rotating the hex nuts (item #2). To adjust, loosen one side and tighten the opposite side corresponding to the side you want to adjust in order to line up the blades. Retighten the top screws (item #1). When greasing, use Mobilux No. 2 or equivalent.



LARGE

CUTTER

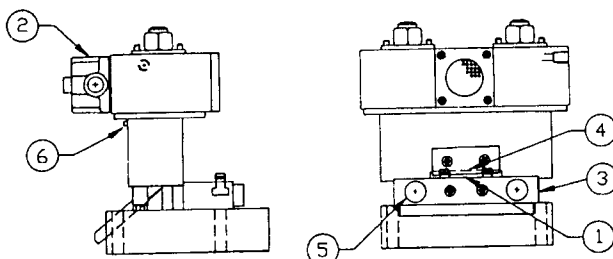
Cutter Data: Material opening item #1; See specific cutter specifications.

Operations:

The solenoid valve (item #2) advances the cutter into the material and the compression springs return the blade to the raised position.

Adjustments:

The blade may be lowered manually with an eccentric cam screw (item #6) located on the upper blade assembly just under the solenoid valve. The lower half of the cutter is attached to an adjustable slide (item #3). The cutter clearance is adjusted by loosening (2) hex screws (item #4) on the adjusting slides and turning (2) knurled knobs (item #5) to move the lower blade horizontally in & out.



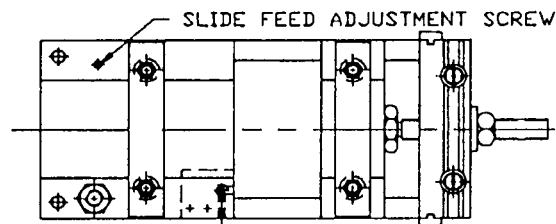
AIR FEED PROGRESSION SET UP

The feed guide rollers are adjustable by loosening the machine screws and moving the rollers to the desired position. For best results the stock should be centrally located in the feed.

The notches in the guide rails provide for coarse feed adjustment of the stop block. The final feed adjustment for stroke length is made by the screw in the center of the stop block. The final feed adjustment is aided by the use of accurately dimensioned spacers or gage blocks placed between the adjusting screw and the main cushion bolt, and with the air pressure turned on to keep the slide block tight against the main body.

With the air pressure off, the material is then inserted between the guide rollers and passed under the feed clamp. Lift the stock clamp and push the material through to the starting position. Turn on the air (75-120 PSI) and the feed is ready to operate.

The last adjustment, if necessary, would be the speed adjusting valve. The valve adjustment is located on top of the main body on the opposite side of the actuating valve. Adjust the screw for minimum impact by turning clockwise and for faster speed by turning counterclockwise. When the impact is high, slippage is possible resulting in poor repeatability and also part fatigue. Refer to the diagram below.



MAINTENANCE

The ram head assembly requires very little maintenance. There are four dynamic “O” rings that would need to be replaced on the rare occasion of an air leak. These are as follows per Rapid Master head assembly drawing #24000001 parts list.

item 43, part no. 60108212 1 req.

item 45, part no. 60108234 1 req.

item 90, part no. 60108269 2 req.

To absorb mechanical shock, reduce noise and prolong machine life, a rubber bumper is incorporated into the assembly. Some stroke accuracy could be affected by rubber deterioration. Stroke adjustment will compensate for any small overall stroke increase.

The rubber bumper (item 52, part no 35900037), should be examined during any “O” ring maintenance procedure.

LUBRICATION

For a general guide for the Rapid Master, the lubricator oil release adjustment should be set to one drop of oil for each 50-80 strokes. (See insert on lubrication of "O" rings.)

LUBRICATION OF "O" RINGS

The "O" Rings furnished with Rapid-Air feeds are made of a Buna N Compound designed to give long life on service with air, oil and water. This rubber compound features high abrasion resistance and good dimensional stability if the recommendations listed below are followed.

A filter and lubricator should be used; the filter to remove grit that would otherwise act as an abrasive, and the lubricator to provide an adequate quantity of oil. For best results, avoid excess of oil.

Paraffin base oils in general will give the best service. The viscosity should be 140-170 S.S.U., the API gravity 29.5 minimum and the aniline point between 150 F and 210F. Variation of the aniline point from the limits given is likely to cause either shrinkage or stretching of the "O" Rings.

Detergent motor oils and all other oils designed for automotive use are generally unreliable in chemical makeup for use with rubber compounds. Spindle oils are too low in viscosity.

The group of oils listed below are generally recommended for Buna N compound 366Y "O" Rings. This grouping is given in good faith but, because of the constant changes made in oils by the manufacturers, we cannot guarantee any consistency of chemical makeup. All of these oils have an aniline point of 210, and API gravity of 29.5 minimum and a viscosity of 140-170 S.S.U. The base stock is paraffin.

Recommended:

Cities Service Oil Co.	Pacemaker #1 (Standard hydraulic oil)
Standard Oil of Indiana	#5 Hydraulic Oil
Sun Oil Co.	Sunvix #916
Texaco	Regal A, R & O
Shell Oil Co.	Tellus #27
	Turbo #27
Sinclair Oil Co	Rubilene Extra Light
Atlanta Refining Co.	Hytherm Oil #C
New Jersey Lubricant Co	A-88/HNR
Standard Oil of Ohio	Sohivis #43
Mobil DTE	10W Hydraulic

RECOMMENDED LUBE FOR ASSEMBLY OF RAPID-AIR FEEDS MIXTURE OF
LUBRIPLATE AND MOLYKOTE

No. 105 Lubriplate

Fiske Bros. Refining Co.
Newark, NJ - Toledo, OH

Molykote

Powder (Molybdenum disulfide)
Dow Corning Corp.
Midland, Michigan

To a 2 lb coffee can filled with lubriplate, add 2 tablespoons of moly kote and thoroughly mix.

Loctite sealant is used on threaded parts type AV.

ELECTRICAL SET-UP

1. MASTER POWER ON/OFF BUTTON

Mushroom push/pull lighted pushbutton. Pull to turn on the power and push to turn off the power.

2. DOOR CLOSED SWITCHES

There is one door closed switch on the slide unit. The slide door has to be closed in the automatic mode.

3. POSITION SWITCHES

There are two position switches on the air feed, any failure on any of these switches could stop the running of the complete unit.

4. PRE-OPERATION CHECK

- * Check that the air is connected and turned on.
- * Pull the "POWER BUTTON" to the "On" position.
- * Select "CYCLE PER CUT" - make it 1.
- * Select "MANUAL" then press the "FEED AIR" selection button. F1 turns the air on to hold the material and F2 turns the feed air off to load material. Turn the feed air on to cycle.
- * Press the feed button. The feed should cycle the number of cycles entered in the cycles per cut.
- * Press the cut button. The cutter should cycle one time.
- * Press the single cycle button. The feed and cutter should cycle one complete cycle.
- * Increase the feed strokes from 1 to 2. The feed should now feed 2 times to 1 stroke of the cutter.
- * Select "AUTO TOTAL". The machine will start cycling and continue to cycle until the stop button is pressed.
- * Select "AUTO BATCH". Enter desired batch size and start the cycle. The machine will cycle until the cycle stop button is pressed or the batch count is complete, then stop.

PRETEST FOR UNIT WITHOUT MATERIAL

The first step is to turn on the main switch on the electrical enclosure. The button should illuminate to indicate that there is power to the system.

If you are comfortable with programming a job then continue. If not, please refer to the "Programming Procedure" located in this manual.

Follow the programming sequence for the operators terminal to input feed parameters. Your unit has been fully tested before it was shipped to your facility and this procedure is merely a test to insure that all functions are still functional and the cables are properly seated.

Once you have programmed the required parameters. Select the manual mode of operation.

After you have verified that the feed and cutter are operational, you can experiment with single cycle moves. The procedure is outlined in the programming section of this manual.

Now, you can cycle the cutter and watch the feed to verify that the signal from the cutter switch is functional and actuating at the proper time.

After all the checks have been made and you feel comfortable with the programming of the unit controller, place the unit in automatic mode. The feed should react upon the closure of the cut signal and simulate a feed progression of material.

LOADING MATERIAL INTO THE AIR FEED

Upon satisfactory completion of all tests, you should be ready to load a strip of material into the feed. Step number one is to select the manual mode of operation on the keypad. You can now open the clamps manually by turning the air-feed air off. Position the leading edge of the material near the center of the entry guide and adjust the edge guides on the feed to the proper width setting. Hand feed the material through the air feed unit until it protrudes out of the feed and starts into the guide on the ram unit then turn the feed air on to clamp the material.

You are now ready to begin testing the complete system under power. To check the progression, cycle the unit in the single cycle mode to test for correct progression length. If the progression is correct, no further adjustments are necessary. If progression is either short or long, go to the trouble shooting chart and perform the sequences described there for inaccurate feeding. Once the feed progression has been accurately set and the repeatability is satisfactory, you are ready for full automatic mode.

INTERFACING EXPLANATION

A. TAUT STOCK INPUT

This is a normally open contact from a switch or device that monitors the loop of material prior to the air feed. When the material reaches a point that it trips the switch, a taut stock has been reached. This input, when received, immediately drops the automatic which stops the feed in progress. The material should be repositioned in the die before restarting the automatic sequence.

This input also could be used as a "No Stock" switch that would monitor whether or not there is material available to feed.

B. KEYPAD AND DISPLAY INTERFACE (RS 232 PORT)

The keypad/display is the interface between the operator and the resident program. The cyberpak unit is purchased with a great many capabilities. None of which can be used unless a program is written to utilize these capabilities. Rapid-Air put a great deal of time making a program that is user friendly and yet gets the job done efficiently. We took all the questions and constructive criticism and came up with a program that would cover all the applications. Yet be easy to interface and program by a customer.

If an operator reads the programming procedure in this manual and then reads the screen parameters listed as they are displayed and acts on them by inputting data as needed. The unit can be up and running in a very short time.

1. Select a job number
2. Input or review setup parameters for the unit
3. Thread up material in manual mode
4. If properly interfaced, go into automatic mode

OPERATOR INPUT TERMINAL-PROGRAMMING PROCEDURE-STANDARD SOFTWARE

The intent of this section is to familiarize the operator with the program flow and what to expect with every keypress. Each screen on the display will be reviewed with special comments to help clarify what is being asked on the screen. The program flow is broken down into sections with the main menu being the home position. Reviewing the flow chart in the back of this manual will help in understanding the sections.

SECTION 1 F1=CYCLES PER CUT ENTRY

SECTION 2 F2=MANUAL MODE
 SETUP PARAMETERS

SECTION 3 F3=AUTOMATIC

The first screen to be displayed on the operator terminal will look like this:

RAPID-AIR CORPORATION
ROCKFORD, IL 61109

After a few seconds, the display will clear and the following display will appear:

FEED CYCLES/CUT=XX
F1=SET CYCLE PER CUT
F2=MANUAL MODE
F3=AUTOMATIC MODE

 SELECT F1=SET CYCLES PER CUT

The first step in programming the Cut To Length feed is to input the correct cycles to achieve the desired feed length. When the operator selects F1 on the keypad, the screen will change to:

 SET FEED CYCLES PER CUT
 "ENTER"
 A NUMBER MUST BE
 ENTERED TO CONTINUE

When the enter key is pushed, the screen reverts back to the main menu.

Select F2-Manual. The following screen appears.

MANUAL KEYS ARE
NOW ACTIVE
** USE CAUTION **
F4=EXIT TO MAIN MENU

1. When pressing the F4 key the display reverts back to the main menu.
2. All manual keys are now active. Pressing any labeled key will activate a movement.
Caution: Make sure there is air to the cutter before cycling or the system will lock up. To unlock, the main power has to be cycled.
3. Pressing the "Feed Button" will cause the feed to move the number of cycles that was entered.
4. Pressing the "Cut Button" will cause the cutter to cycle one time.
5. Pressing the "Single Cycle Button" will cause the feed and cutter to perform one complete cycle.
6. Press the "Total Reset" button and the following display appears.

TOTAL COUNT = XXXXXX
 F1=RESET TO ZERO
 F4=EXIT DISPLAY

- A. Pressing the F1 key will cause the total count to be all zeros.
- B. Pressing the F4 key will take you back to the main menu.

7. Press the "Cut Time Button" and the following screen appears.

CUT DWELL TIME=XXX
 F1=SET DWELL TIME
 F4=EXIT DISPLAY

- A. Pressing the F1 key will display a screen which will force you to enter a dwell time before leaving the screen.
- B. Pressing the F4 key will take you back to the main menu.

8. Press the "Clamp Air Button" and the following screen appears.

FEED AIR SELECTION
 F1=TURN FEED AIR ON
 F2=TURN FEED AIR OFF
 F4=EXIT

Use this feature when loading material into the air feed.

9. Press the "Diagnostics Button" and the following display appears.

FEED AT MAIN SW=OFF
 FEED AT STOP SW=OFF
 CUTTER RET'D SW-ON
 DOOR CLOS'D-ON F4=EXIT

Each time the switch changes state, the screen switches to off or on. If the switch is energized, the screen displays on. If the switch is de-energized, the screen displays off.

10. Press the "Count Display Button" and the following screen appears.

```
PART COUNT DISPLAY
TOTAL COUNT=XXXXXX
BATCH COUNT=XXXXXX
F4=EXIT
```

Pressing the F4 "Exit" key and the screen reverts back to the previous screen.

Press the F4 exit key until the main menu screen appears.

```
FEED CYCLES/CUT=XX
F1=SET CYCLE PER CUT
F2=MANUAL MODE
F3=AUTOMATIC MODE
```

We have covered all the setup operations of the Air Cut To Length. Now we will cover the automatic portion of the programming.

Press the F3 "Auto" key and the following screen appears.

```
** AUTOMATIC MODE **
F1=AUTO TOTAL CYCLE
F2=AUTO BATCH CYCLE
F4=EXIT AUTO MODE
```

Pressing the F1 key will put you in the auto total mode. In this mode the feed, once started, will feed on command until you stop it by pressing the stop key.

Pressing the F2 key will put you in the auto batch mode. In this mode you put in the quantity of cycles you want and the feed will stop when this count has been reached.

Press F1 auto total cycle key and the following screen appears.

```
** AUTO TOTAL MODE **
TOTAL COUNTS = XXXXXX
F1=RUN AUTO TOTAL
F2=EXIT AUTO TOTAL
```

At this time the operator can choose to run auto total or exit. If exit is chosen then the previous screen is displayed. If run is chosen then the following screen is displayed.

```
** AUTO TOTAL MODE **  
FEED PER CYCLE = XX  
TOTAL COUNT = XXXXXX  
F4=STOP CYCLE
```

The unit is now in full automatic. Whenever an input for feed is received, the air feed will feed the cycles programmed and increment the counter by one count.

If you press the F4 "Stop Cycle" key, the automatic cycle will drop out and the next screen to appear is as follows.

Note: The stop cycle key has to be pressed and held until the sequence that is currently running is complete.

```
AUTO CYCLE  
WAS STOPPED  
F2=CONTINUE CYCLE  
F4=STOP AND EXIT
```

The decision now is whether to continue cycling or stop. If F2 is pressed the feed would continue where it left off. If F4 is pressed the following screen will appear.

```
** AUTOMATIC MODE **  
F1=AUTO TOTAL CYCLE  
F2=AUTO BATCH CYCLE  
F4=EXIT AUTO MODE
```

At this time you can choose to go back into auto total. Select auto batch or exit to the main menu.

Press F2 auto batch cycle and the following screen appears.

```
BATCH SIZE=XXXXXX  
F1=ENTER NEW BATCH  
F2=RUN CURRENT BATCH  
F4=EXIT AUTO BATCH
```

If the current batch size is correct then press F2 run current batch. If not then press F1 enter new batch size and the following screen appears.

```
BATCH SIZE  
_____ ENTER  
A NUMBER MUST BE  
ENTERED TO CONTINUE
```

Once the number has been entered, the previous screen appears. Press F2 run current batch and the following screen appears and cycling begins.

```
AUTO BATCH F4=STOP  
FEED PER CYCLE = XX  
BATCH COUNT=XXXXXX  
TOTAL COUNT=XXXXXX
```

The batch count will decreemnt while the total count increments. Once the batch size gets to zero, the auto cycle stops. Pressing F4 at any time stops the cycle and the following screen appears.

Note: The stop cycle key has to be pressed and held until the sequence that is currently running is complete.

```
AUTO CYCLE  
WAS STOPPED  
F2=CONTINUE CYCLE  
F4=STOP AND EXIT
```

The decision now is whether to continue cycling or stop. If F2 is pressed then the feed would continue where it left off. If F4 is pressed the following screen will appear.

```
** AUTOMATIC MODE **  
F1=AUTO TOTAL CYCLE  
F2=AUTO BATCH CYCLE  
F4=EXIT AUTO MODE
```

Press F4-Exit and the main menu appears.

This completes the programming procedure section of the Air Cut To Length.

TROUBLESHOOTING ELECTRICS

PROBLEM	POSSIBLE CAUSE	REMEDY
The attempt is made to start the machine by pulling the mushroom start button but no lights illuminate.	* No power at source	*Check building recept. for voltage.
	* The machine is not plugged into the source power.	*Plug cord into 120 volt-1Ph recept.
	*Fuse blown on the control.	*Look for burn spots to see what caused the blown fuse - replace fuse.
	*Loose wiring.	*Inspect wiring to terminals for loose wire or loose screws.
The attempt is made to cycle the feed but the slide will not move.	*Defective pushbutton.	*Disconnect all power, check out pushbutton.
	*Check that there is air present on the machine.	*Air gauge should read: 75-120 PSI.
When commanded, the feed moves to the stop block position, but will not return to the main body switch.	*Check that the "Feed Air" switch is in the "ON" position.	*The "Feed Air" switch button is located on the keypad unit. Turn valve control on and off, the main slide valve should energize and deenergize.
	*The Ram returned switch is not properly adjusted or is defective.	Readjust or replace the switch.
	*The stop block switch is not properly adjusted or is defective.	*Readjust or replace the switch.
	The wiring to or from the switch is not properly connected or is incomplete.	*Check for loose wiring or screws.

PROBLEM	PROBABLE CAUSES	REMEDY
The attempt is made to cycle the Cutter, but it won't move.	*Loose wiring or defective solenoid valve.	*Check wiring.
The unit drops out of automatic at random times.	*Door closed switch is improperly adjusted.	*Readjust switch.
	*Loose wiring.	*Check for loose wires or screws.
The total count counter will not increment.	*Check that auto total or auto batch has been selected.	Select auto total or auto batch.
The total batch counter will not increment.	*Check that auto total or auto batch has been selected.	Select auto total or auto batch.

Characteristics and Possible Causes of Troubles with Rapid-Air Feeds

PROBLEM	POSSIBLE CAUSES	REMEDY
Feed and stock clamps work, but slide block does not move when actuating valve is depressed.	*Pilot operated valve is stuck	*Check for grit, swollen nylon or swollen "O" rings
Excessive leakage of air from exhaust hole beneath speed adjusting screw when actuating valve is in up position.	* Poppet not seating on bottom of valve hole. *Leaking of "O" rings #85, 83, 84, 88, 90 and 100	*Check for grit or chips *Check "O" rings #85, 83, 84, 88, 90 and 100. See assembly drawing 106 for location
Excessive leakage of air from exhaust hole, also sluggish operation of feed clamp pistons, actuating valve up.	*Leaking of "O" rings #85 and 90	*Check "O" rings #85 and 90. See assembly drawing #106 for location.
Excessive leakage of air from exhaust hole when actuating valve is in down position. (Note: that a slight amount of leakage is normal in this position.)	*Tight "O" rings or grit around pilot operated valve may prevent it from moving its full stroke. *Worn poppet. *Poppet in backwards	*Clean grit, cycle feed manually to break in "O" rings. *Insert new poppet *See feeds parts list #106 for correction orientation.
Stock clamp does not move up and down when actuating valve is depressed. Other operations appear normal.	*Worn "O" rings #96 around O.D. of stock clamp pistons.	*Replace "O" rings. See assembly drawing #106 for location.
Excessive leakage of air from actuating valve vent hole when actuating valve is in up position.	"O" Rings #103 beneath actuating valve retainer #31C is leaking.	*Install "O" rings beneath retainer - not in air groove. See assembly drawing #106.
Gradually reduced speed.	*Lack of oil *Low viscosity oil. *Speed adjusting screw turned in too far. *Oversized poppet.	*Adjust air/oil mixture. *Use lighter weight oil *Readjust screw *Clean poppet area; check for free fit
Excessive leakage of air from pilot operated valve vent hole on side of feed.	*Leaking of "O" rings #100, 101 or 102.	*Check "O" rings #100, 101 and 102. See assembly drawing #106 for location.
Cushion pistons act too slow and provide too much cushion	*Excessive oil, reduce supply	*Adjust air/oil mixture
Mist of oil coming from exhaust hole	*Excessive oil, reduce supply	*Adjust air/oil mixture

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PROBLEM	PROBABLE CAUSES	REMEDY
Feed has difficulty pushing last part of progression.	*Feed is not inline with die.	*A slight angular adjustment of the feed will reduce the binding of the stock on the die guides.
Over feeding	*Stock excessively dirty or oily. *Feed is operating too fast. *Stock and feed clamps may be loose.	*Clean unit and stock. Run and retest. *Turn speed adjusting screw clockwise to slow down *Although nuts are self locking, they can in time work themselves loose; retighten the nuts
Under feeding	*Insufficient air pressure. *Stock has large slitting burr. *Stock clamp and feed clamps are loose. *Feed is not lubricated. *Stock excessively dirty. *Feed may be feeding before punches are clear from stock or die. *Feed may be operating too slow.	*Adjust air pressure to between 80 and 100 PSI *Check clearance between clamps and stock *Although nuts are self locking they can in time work themselves loose; Retighten them *Check lubricator at air inlet, there should be oil in the bowl. *Clean away dirt which may be present between slide block and main body area. *Adjust the amount of depression of the actuating valve. *Turn speed adjusting screw counter-clockwise to increase speed
Slide block will move out okay, but will not return without hesitation	*Check speed adjusting screw. *Check pilot operated valve. Swollen "O" ring could be binding, until pressure build up breaks it free. Check poppet valve.	*Adjust for smooth operation. *Check moisture content in air lines. Change "O rings.
Feed acts sluggish on start up. Okay after running for a while.	*Check pilot operated valve for "O" rings binding. Valve should move freely in cartridge.	*This usually occurs after a period of non-running. After running unit for awhile the unit usually frees up okay.

