APPLETON MFG.

A301 AUTOMATIC CORE CUTTER WITH AUTOLOAD

OPERATION MANUAL



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MANUALS

There are three separate manuals for this equipment:

INSTALLATION: Installation instructions provided are to ensure proper alignment and anchoring of the equipment, the system configuration, and a description of the work flow.

OPERATION: Operation and safety instructions for the equipment. The Operation manual should stay with the equipment to be used as a reference guide by the operator.

MAINTENANCE: Operation and maintenance instructions, and the available replacement parts. The maintenance manual also includes the assembly drawings for the machine components to help identify the parts on the machine.

USING THIS MANUAL

This manual was developed to provide installation assistance based on our experience with the equipment.

Electrical and pneumatic schematics are included in the back of this manual for use by the appropriate trades. It is the responsibility of the installer to ensure that all applicable codes are complied with.

Read the first chapter thoroughly to minimize the chance of injury or equipment damage.

CHAPTER 1: SAFETY PRECAUTIONS

Your safety depends on knowing the potential for injury and the steps to take to avoid injury. Read through these safety notices, and look for the safety instructions in each chapter of the manual.

The following formats are used throughout the manuals to provide warnings or place emphasis on specific information.

1.1 SAFETY NOTICES



Immediate hazards which WILL result in serious injury or death. The instruction is stated first followed by the possible outcome of failing to heed the instruction.



Hazards or unsafe practices which COULD result in serious personal injury or death.



Hazards or unsafe practices where failure to heed instructions MAY result in minor personal injury or property damage.



Alerts operator to important messages or operating procedures.

1.2 USE OF CAPITALIZATION

Subject headings are fully capitalized. Words fully capitalized in the body of text indicate keys to be pressed by the operator, or denotes the name of a menu. Capitalization of the first letter of one or more words in a sentence indicates an emphasis on those words.

1.3 GENERAL SAFETY INSTRUCTIONS



Do not operate the A301 Core Cutting System without all guards in place. Serious injury or death will result from contact with moving parts or electrical circuits.



Keep untrained personnel out of the working area of the A301 Core Cutting System. Serious personal injury could result from unexpected mechanical movement. The working area is defined as any area within arms reach of a system component.



Do not wear loose clothing while in the work area of the A301 Core Cutting System. Clothing can snag in chains or rotating parts resulting in serious personal injury.



Wear safety glasses while operating the core cutter. Loose fibers or pieces of core can break loose and strike the operator.



Keep the floor clear of core ends and trash. Personal injury may result from slipping or stumbling.

1.4 ELECTRICAL SAFETY



Electrical panels should be opened only by a trained electrician. Severe electrical shock or death will result from contact with a powered circuit.



Disconnect the electrical power to the operators console before performing service on any electrical component. Severe electrical shock or death will result from contact with a powered circuit.



THE DRIVE COVER INTERLOCK DOES NOT DISCONNECT THE POWER TO THE OPERATORS' PANEL. Severe electrical shock or death will result from contact with a powered circuit.



Do not depend on EMERGENCY STOP/POWER OFF to de-power the machine. The incoming electrical service is still powered. Contact with this circuit will result in severe electrical shock or death.

1.5 MECHANICAL SAFETY



Keep hands and fingers clear of the cutting area. Knife movement will cause severe cuts.



Turn off the electrical power before performing maintenance on the Core Cutting System. Personal injury such as cuts, loss of fingers, or crushed fingers could result from unexpected machine movements.



DO NOT REMOVE THE ORANGE KNIFE GUARD. Severe cuts or loss of fingers could result from contact with the knife.

All knife adjustments can be made with this guard in place.



The head jaws in the cutting end of the mandrel are power driven and will rotate whenever "FEED START" pushbutton has been depressed and the core pusher is away from the "FORWARD TRAVEL LIMIT SWITCH".



The core will rotate when each cut is initiated.



Disconnect the electrical power to the machine before performing service to pneumatic system components. Failure to do this may result in personal injury from unexpected machine movements.

CHAPTER 2: SYSTEM CONFIGURATION

The A301 Automatic Core Cutting System includes the following components:

1- A301 Automatic Core Cutter

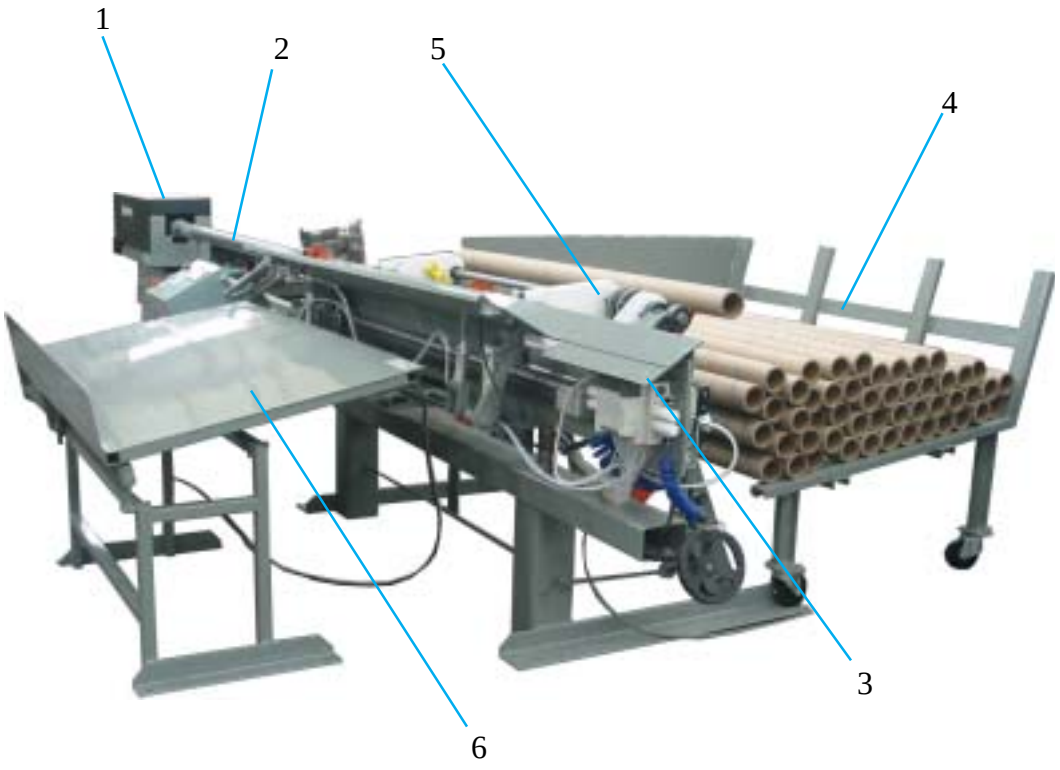
2- Optional Mandrels

3- Autoloader[3]

4- Hopper

5- Elevator

6- Accumulator Table with Waste Gate



2.1 DESCRIPTION OF SYSTEM WORK FLOW

Parent cores are loaded into the Wheeled Parent Core Hopper using a sling or lift truck. The Hopper, with the appropriate ID parent cores is docked at the Parent Core Elevator. This becomes the core supply for the system.

The Parent Core Elevator delivers cores to the Autoloader Core Tray on demand. From the tray, the parent cores are slid onto the core cutter mandrel by the Core Loader.

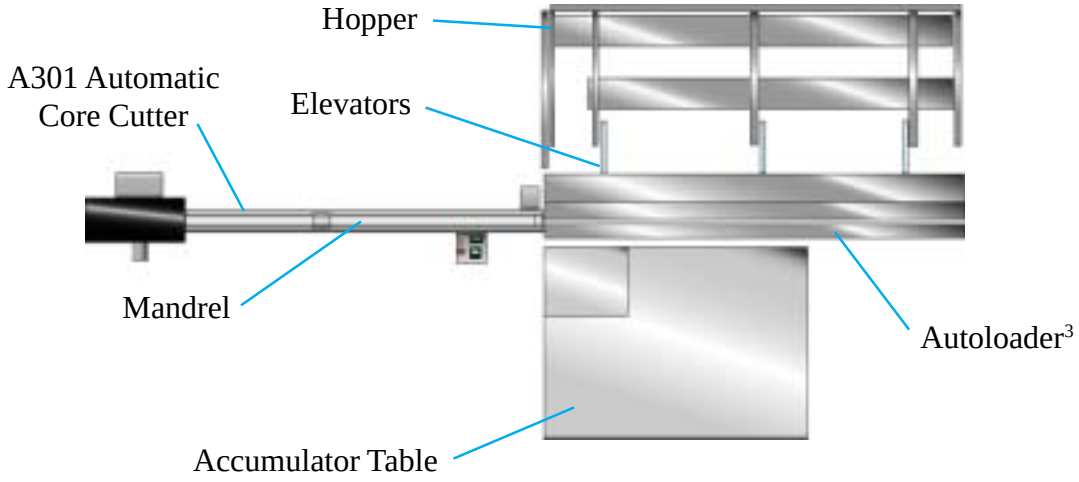
The Operator sets the target for the length to be cut, the quantity of cut cores required, and initiates Feed Mode at the Operators' Console.

The A301 will continue to load and cut parent cores until the input number of cut cores has been completed.

The cut cores will be received into the Core Tray for side discharge onto the Accumulator Table, or end discharge based on operator settings in the program menu.

2.2 SYSTEM DRAWING

The components of the core cutting system are labeled on the drawing below.



CHAPTER 3: OPERATION INSTRUCTIONS



Read the manual BEFORE installing or operating the cutting system to avoid personal injury or damage to property.



Do not operate the cutting system without all guards in place. Serious injury or death will result from contact with moving parts or electrical circuits.



Disconnect and Lock-out the electrical power and air supply to the core cutter before making adjustments to the core cutter. Unexpected movement could result in personal injury.

3.1 OPERATION OVERVIEW

The A301 Automatic Core Cutter w/Autoloader is designed to cut a parent core into shorter lengths established by a mechanical target.

The operator sets the quantity to be cut and initiates automatic operation. The A301 Automatic Core Cutting and AutoLoading System, automatically loads a parent core and advances the core to a mechanical target that causes the core to rotate and the knife to advance through the wall of the core, cutting off a length.

The cut cores are discharged from either the side or end of the core tray, as preset by the operator. When the parent core is fully consumed, the AutoLoading system loads another parent core. When the desired quantity is reached, the A301 system cuts the balance of the core and stops.

3.2 CONTROLS

The A301 Automatic Core Cutting System is equipped with an operators panel with push-buttons and an LCD interface for operation of the machine.



3.2.1 PANEL DIAGRAM

POWER ON

When the "**POWER-ON**" push-button is pressed, there is electric power to the other pushbuttons on the operator's panel.

EMERGENCY STOP/ POWER OFF

When the "**EMERGENCY STOP/ POWER OFF**" push-button is pressed, the drive motor, head jaws, and knife are not powered. The A301 is in "**POWER OFF**" mode until the "**EMERGENCY STOP/ POWER OFF**" push-button is pulled out and the "**POWER ON**" push-button is pressed.

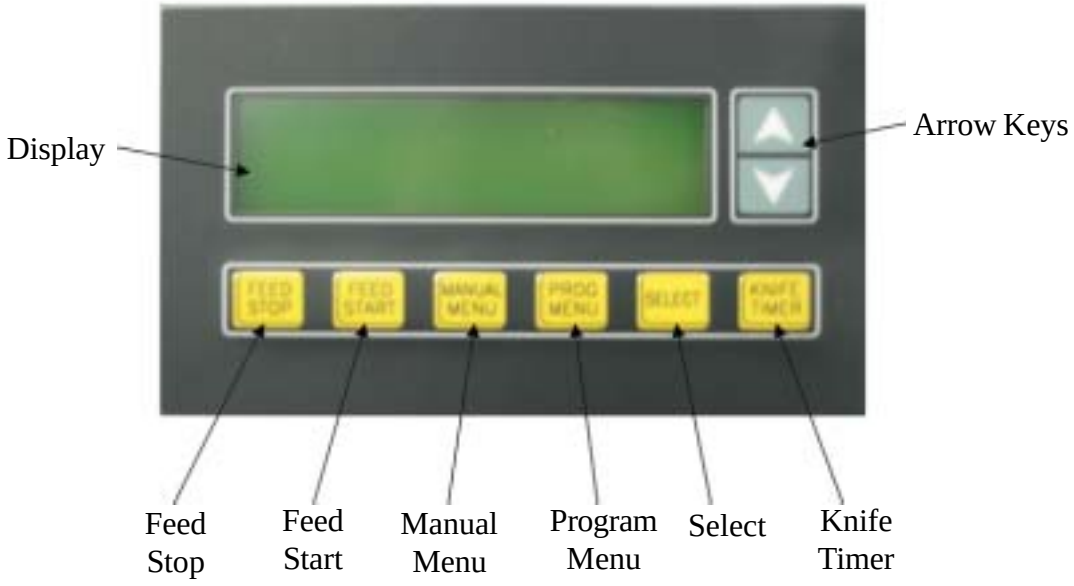
FEED SPEED

The "**FEED SPEED**" dial permits the operator to adjust the core pusher feed rate. Turn the dial clockwise to increase pusher speed, counterclockwise to decrease the speed.

NOTE **Excessive feed rates can result in a loss of accuracy and the end of the core being damaged by the target.**

3.2.2 LCD INTERFACE

The LCD Interface provides access to the automatic features of the core cutter. Operator input is accomplished by pressing the appropriate key (key functions are detailed below). A cursor underscore bar will appear on the display under the right-most (least) digit available. The digit can be incremented up or down using the Arrow Keys. Pressing “Select” causes the digit to be entered and moves the cursor one place to the left. The process is repeated until the correct number is entered. (If the Select button is pushed when the cursor is at the far left digit, the cursor goes back to the right digit.) This technique is common to all digit input.



The push-buttons around the display provide the following functions:

3.2.3 FEED STOP

The "**FEED STOP**" push-button stops the automatic advance and cut cycle. This push-button may be pushed at any time. This selection places the machine in feed stop and brings up the **FEED STOP** screen.

3.2.4 FEED START

The "**FEED START**" push-button initiates automatic operation. The pusher advances the parent core to the target causing the knife to actuate, cutting the core. Note that the trim cut will be made. The cycle repeats until the parent core is consumed.

Feed Run / Cut XXXX of XXXX

A status message indicating the machine is operating, and displays how many cuts have been made of the total production cuts.

Cut Counter Done

A status message indicating the Accumulated Cuts (cores actually cut) are equal to the Production Cuts (cut cores desired). Upon receiving this status message, it is necessary to reset the Accumulated Cuts in the Program Menu.

Change Knife

A status message indicating that the AutoIndexing Knife blade has made a full revolution and must be changed. "**Must Confirm Knife Change**" will appear until the knife change is confirmed. After the blade has been changed, reset the "**Knife Has Been Changed**" display to "**YES**" in the Program Menu.

3.2.5 MANUAL MENU

The "**MANUAL MENU**" push-button provides access to manual operating functions for jogging or troubleshooting the following:

Manual Knife Cut

Depressing the "**UP**" arrow key, will engage the chuck jaws and cause the knife to move toward the cutting pad until either the key is released or the knife timer times out, at which point the knife will retract.

Mandrel Motor

Depressing the up arrow key will turn the mandrel motor on. Depressing the down arrow key will turn the mandrel motor off.

Elevator Run

Depressing The "**UP**" arrow key will cause the elevator to load the next core into the Autoload Tray.

Autoload Tray

Depressing The "**UP**" arrow key will move the Autoload Tray to the load position and raise the metering fence to load the next core into the Autoload Tray. Depressing "**DOWN**" arrow key will will move the Autoload Tray to the dump position.

Core Loader

Depressing the "**UP**" arrow key causes the Core Loader to travel toward the knife until either the key is released or the Core Loader reaches the cut-off area (knife). Depressing "**DOWN**" arrow key will cause the Core Loader to travel away from the knife until either the key is released or the Core Loader reaches the home position on the outboard end of the tray.

Index Knife (Optional)

Depressing the "**UP**" arrow key will cause the knife to index to the next position.

Core Pusher

Depressing the "**UP**" arrow key causes the Core Pusher to travel toward the knife until either the key is released or the pusher reaches the cut-off area (knife). The pusher has no independent function for traverse away from the cut-off area, as this movement is actuated during operation as the core is slid onto the mandrel by the Core Loader. During maintenance, the pusher may be moved away from the cut-off area by hand.

3.2.6 PROGRAM MENU

The "**PROGRAM**" push-button opens the program menu. This menu provides the operator with the ability to edit the following data:

Production Cuts

The number of cuts that the A301 will make before stopping. Up to 9999 cuts can be input. When the count is reached the cutter will cut the balance of the parent core.

Accumulated Cuts

A count of how many cuts have been made out of the total Production Cuts.

Reset: The Accumulated Cuts must be reset when the count reaches the Production Cuts number. The "**Cut Counter Done**" status message will appear on the LCD when this has occurred. The Accumulated Cuts counter will then return to zero.

AutoLoad Dump Mode

This setting determines whether the cut cores will be discharged off the end of the Core Tray, or off the side.

Tray Position When Cutting

This setting determines the position of the front side of the Core Tray while cutting. The tray will automatically lower to discharge the trim and butt pieces regardless of the setting chosen. When making this selection, observe the guidlines which follow.

The tray should be UP when:

-Discharging cores off the end of the Core Tray.

-Discharging off the side of the Core Tray as a set of cut cores.

The tray should be DOWN when:

-Discharging cores off the side one at a time.

KI CUTS

If the A301 is equipped with the Auto Indexing Knife option, this screen will be available. The operator can input a value up to 999 cuts before the knife will index one position. Trim and manual cuts are counted. When the knife option is enabled the operator is signaled with the "*Change Knife*" status message when the blade has made one full revolution and needs to be changed.

PWR Off Min

The operator can input up to 99 minutes as the time that must elapse before the cutter will power down if left idle.

Knife Has Been Changed (AIK Option)

If the A301 is equipped with the Auto Indexing Knife option, this screen will be available in the Program Menu, when the blade has made one full revolution. This screen must be accessed when the "**Change Knife**" status message appears on the LCD. The default is "**NO**" and must be changed to "**YES**" in order to continue with normal operation.

3.2.7 KNIFE TIMER (AIK OPTION)

The "**KNIFE TIMER**" push-button allows the operator to adjust the time in which the knife will cycle. The appropriate time will vary with wall hardness and thickness.

KnCut Sec: (AIK Option)

The operator can input a knife cycle time up to 99.9 seconds. This time should be set such that the knife returns as soon as the core separates. Excess time reduces knife life.

3.2.8 MENU MAP

The menu map is found in the appendix of this manual.

3.2.9 STATUS MESSAGES

The following list of messages appear on the LCD screen to advise the operator as to the status of the cutting system:

At Core Loader Limit - Core Loader is either fully extended or retracted.

Core Loader Extended - Core Loader is moving toward cutoff.

Core Loader Must Be Retracted - Must go to Manual Menu to retract the Core Loader before attempting function.

Core Loader Retracted - Core Loader is moving away from cutoff.

Core Pusher On - Core Pusher moving toward cutoff.

Cut Complete - Knife is in home position after cut cycle.

Knife Is Cutting - Knife is extending into core for cut.

Must Confirm Knife Change - Must go to Program Menu and confirm knife has been changed before cutter will proceed.

Must Reset Cut Counter First - Must go to Program Menu to reset Accumulated Cuts before cutter will proceed.

Not At Forward Limit - Cannot perform function with Core Pusher at Forward Travel Limit Switch.

Trim Cut - Cutter is making trim cut on parent core.

Tray To Down Position - Tray is moving to lower (dumping) position.

Tray To Up Position - Tray is moving to raised (core loading) position.

Accumulator Table Full - Accumulator Table is full. All cutting operations will cease until there is enough room on the table to continue.

3.3 DAILY START-UP CHECK LIST

1- Push "**POWER OFF/EMERGENCY STOP**" push-button to make sure the machine is off.



Disconnect and Lock-out the electrical power and air supply to the core cutter before making adjustments to the core cutter. Unexpected movement could result in personal injury.

2- Check to ensure that the Mandrel Clamp Handle is secure.

3- Check the Drive Belt tension. **DO NOT OVERTIGHTEN**.

4- Inspect Knife Blade for sharpness. Rotate to a new surface if worn or chipped.

5- Ensure that the Support Rollers are in position.

6- Ensure that the Cutting Pad is properly aligned with the knife both longitudinally and radially.

7- Is the Cutting Assembly positioned 1/8" to 3/16" from the core?

8- Set the Target to the desired cut length.



Check to ensure that all personnel are clear of all system components before powering up the core cutting system. Unexpected machine movement could result in serious personal injury.

9- Pull out "**POWER OFF/EMERGENCY STOP**" push-button and press the "**POWER ON**" push-button.



Keep hands and fingers clear of the cutting area. Knife movement will cause severe cuts.



If the target is triggered while power is on, the knife will advance to the cutting pad. Fingers or hands in the cutting area at the movement the knife cycles will be seriously injured.

10- Check the Knife and Pull Rod Cycle by pressing "**MANUAL KNIFE**" push-button.

NOTE **Make this test only with a core of the proper ID positioned over the head jaws to prevent the head jaws from over-expanding, causing the cutting pad to retract behind the knife position.**

3.4 SETTING CUT LENGTH

The target establishes the length to be cut. The position of the target is set by:

1- Release the target brake by turning the Select Switch to OFF.

2- Turn the Scale Length Handwheel until the Digital Read-out indicates the cut length desired. (Reference the ABS Digital Scale chapter of this manual.)

3- Lock the target brake by turning the Select Switch to ON.

NOTE **To ensure proper cut length, Zero Setting (Re-calibration) of the Digital Read-out is occasionally necessary. Please reference the Vendor supplied ABS Digital Scale manual for applicable conditions.**

CHAPTER 4: ADJUSTMENTS

The A301 Automatic Core Cutter may require adjustments to optimize performance or to correct cut quality deviations. These adjustments are covered in the following sections.

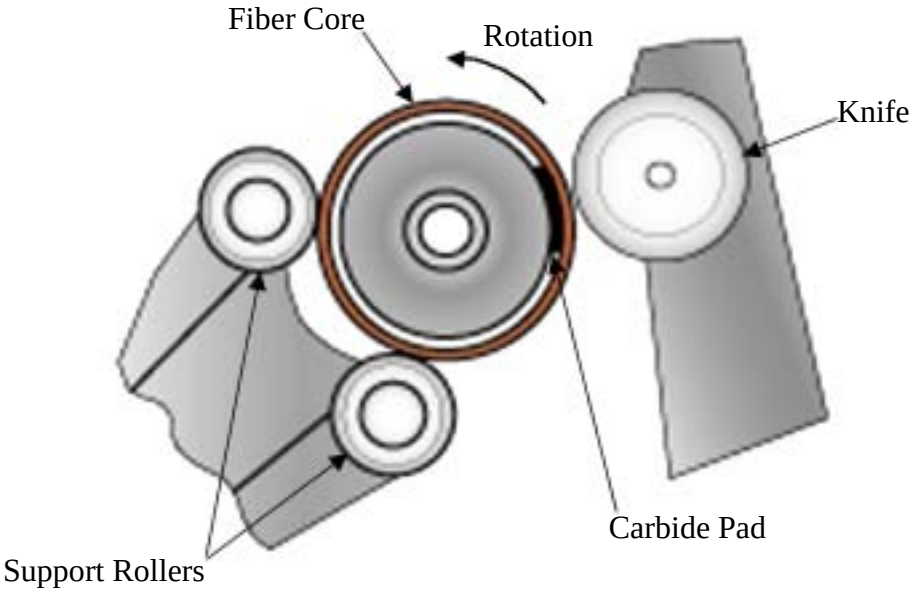


Disconnect and Lock-out the electrical power and air supply to the core cutter before making adjustments to the core cutter. Unexpected movement could result in personal injury.

The Mandrel and Support Rollers should be adjusted prior to adjusting the Knife and Carbide Pad.

4.1 CUT OFF GEOMETRY

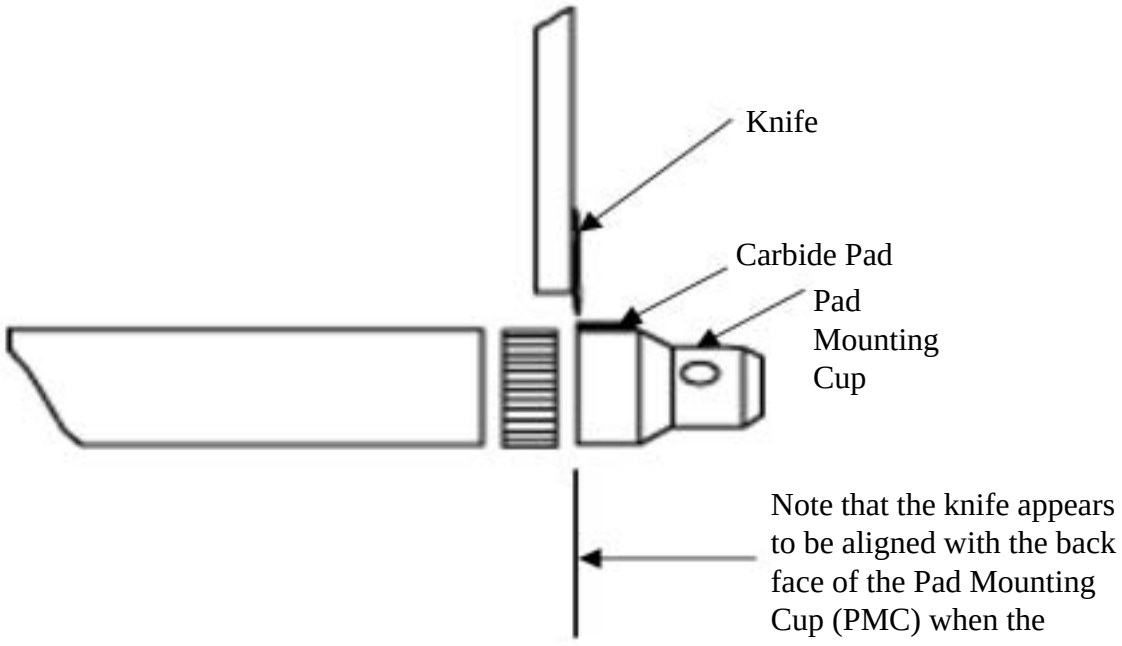
The cutting action, the accuracy and the quality of the cut, are dependent on the relationship of the knife, carbide pad, and support rollers. These parts are shown in the drawing below.



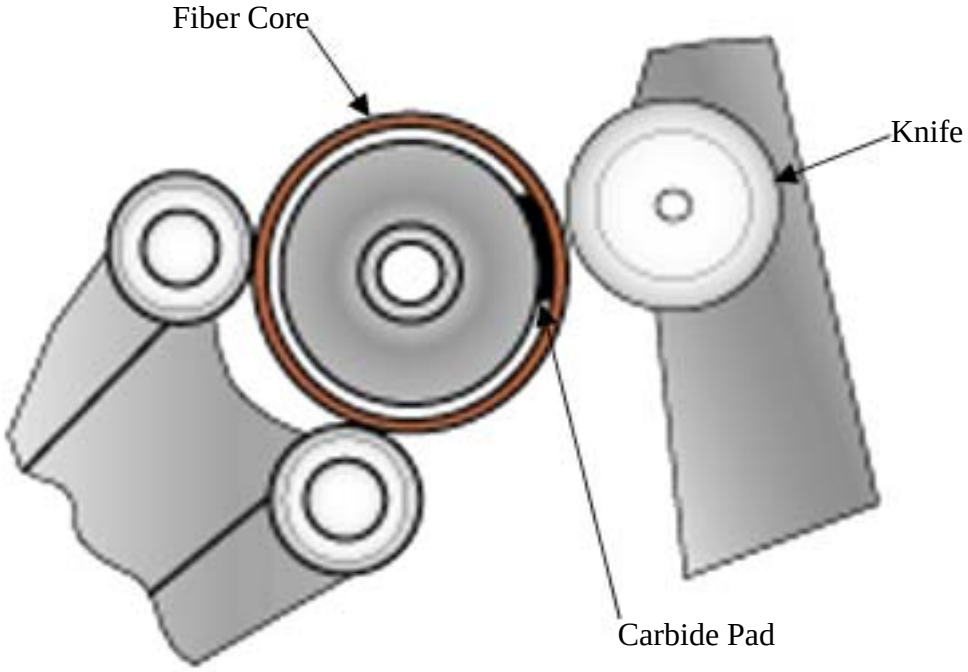
4.2 CUTTING PAD

Turn off the air supply and electrical power to the machine before making adjustments. Unexpected machine movement could cause severe personal injury such as cuts, loss of fingers, or crushed fingers.

The carbide pad located on the pad mounting cup must be positioned such that the knife strikes the center of the pad at the end of each cutting cycle. The position of the properly adjusted pad, when viewed from above with the cutter de-powered, is shown in the drawing below. During the cutting cycle the pad mounting cup will be pulled back to expand the head jaws and spin the core. When this occurs, the knife will contact the carbide pad in the center.



The pad must also be positioned radially to align with the knife. This relationship is shown in the following end view diagram.



The knife should be centered on the carbide pad when viewed from the top. The knife should also strike the center of the pad when viewed from the end. This adjustment is made by loosening and rotating the pad mounting cup.

4.3 KNIFE



Do not remove the orange knife guard. Severe cuts or loss of fingers could result from contact with the knife. All knife adjustments can be made with this guard in place.

The A301's cut quality is directly related to proper knife adjustment. If your cut quality starts to deteriorate (slivering, torn inner liner, or unbalanced cut angles end to end) you may have to make one or more of the following adjustments.

4.3.1 KNIFE ADJUSTMENT - VERTICAL PLANE



Turn off the air supply and power to the machine before making adjustments. Unexpected machine movement could result in severe personal injury such as cuts, loss of fingers, or crushed fingers.

The knife should be square to the centerline (or edge) of the core. Both sides of a cut should exhibit the same angle. Should one side of a cut exhibit a greater angle, the knife should be adjusted to angle toward that side.

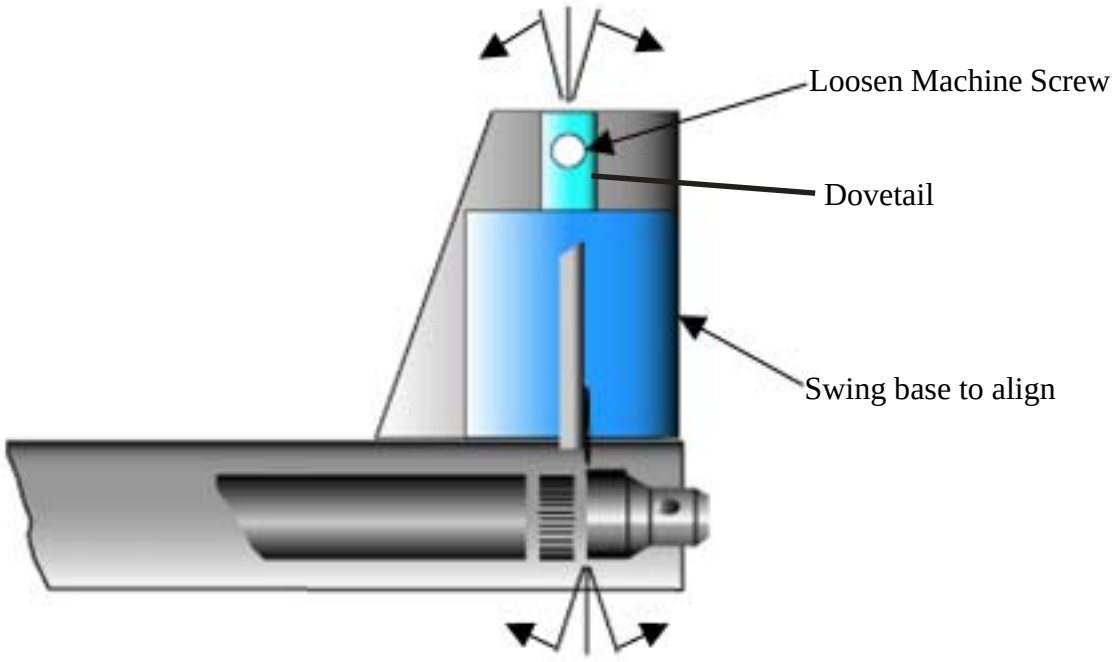


If the knife is not sharpened to the same degree on both sides it can also cause a skewed cut.

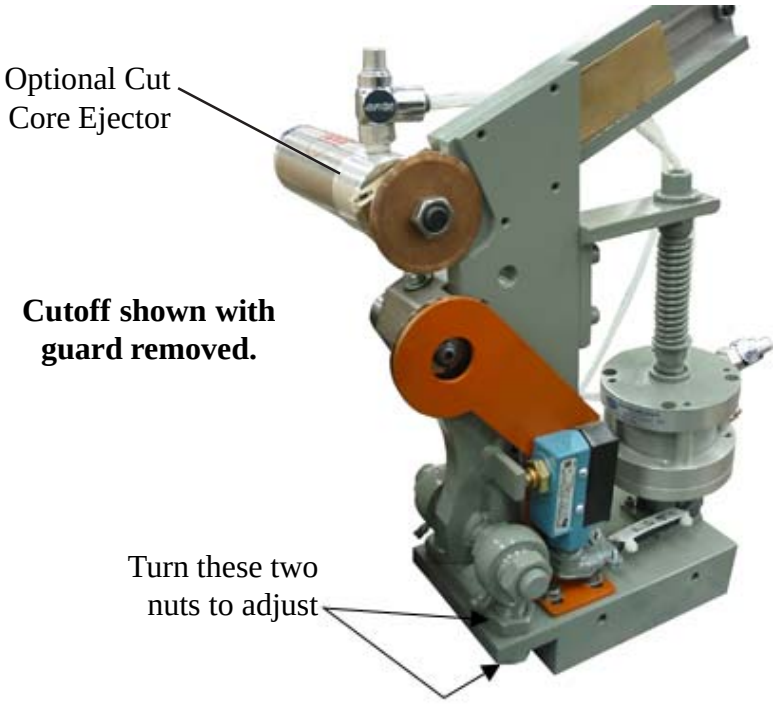
This adjustment is made by loosening the hex head machine screw that retains the dovetail, then moving the upper end of the dovetail until the knife is perpendicular to the axis of the core, as shown on the next page. Re-tighten the machine screws and test cut. Readjust as necessary to get equal angles on both sides of the core.

4.3.2 KNIFE ADJUSTMENT - HORIZONTAL PLANE

Turn off the air supply and power to the machine before making adjustments. Unexpected machine movement could result in severe personal injury such as cuts, loss of fingers, or crushed fingers.



The knife should be perpendicular to the axis of the core on a horizontal plane. This adjustment controls the squareness of the cut. Should the horizontal alignment be off, the core will tend to sliver or thread.



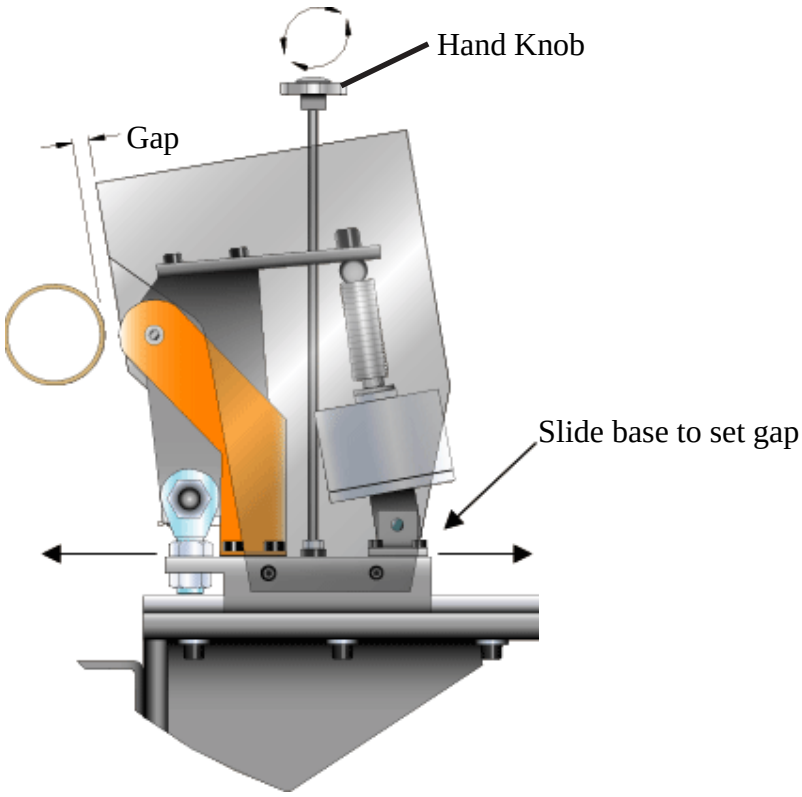
This adjustment is made by increasing or decreasing the exposed thread on the right hand spherical rod end. Loosen the jam nuts on the cutting arm pivot shaft. Then loosen both jam nuts on the spherical rod end and adjust until the knife is square to the axis of the core. Re-tighten the jam nuts on the spherical rod end, then re-tighten the jam nuts on the pivot shaft.

The two preceding adjustments may have to be further modified after the first test cuts.

4.3.3 DEPTH OF CUT

Turn off the air supply and power to the machine before making adjustments. Unexpected machine movement could result in severe cuts or loss of fingers.

The knife has a stroke of 1 inch. The depth of cut is set by the gap between the guard and the core. This gap should be preset at approximately 1/8 to 3/16 inch. The cut off assembly is released by turning the hand knob on the assembly counter-clockwise until the base can slide.



Slide the cut off assembly toward the cutting pad until the knife fully contacts the pad at the completion of its advance stroke. Re-tighten the hand knob after the knife location is set.

This setting minimizes the non-productive travel of the knife.

4.3.4 KNIFE ADVANCE SPEED

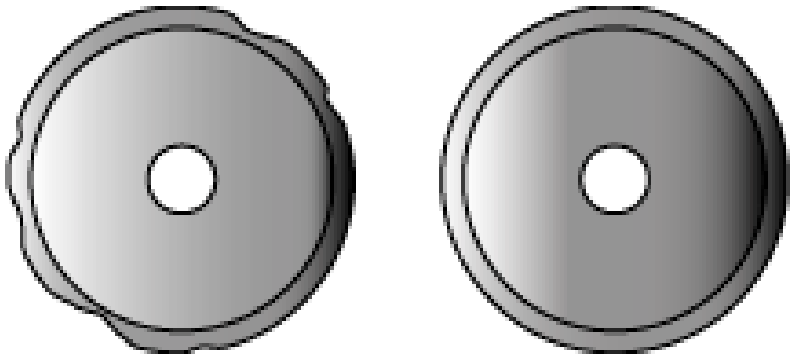


Keep hands and fingers clear of the cutting area while making knife advance speed adjustments. Serious cuts or loss of fingers could result from contact with the advancing knife.

The speed at which the knife advances is set by adjusting the thumb screw on the flow control valve mounted to the air cylinder. Turning this screw “in” restricts the air exhaust flow, causing the knife to advance more slowly. Should the valve be opened too far, the knife will dive into the core causing the core to stop rotating.

4.3.5 KNIFE WEAR

Maximum knife life and quality cuts are attained by frequent adjustment of the knife. The frequency of adjustment depends on core hardness, diameter, and wall thickness. You can determine the proper timing by monitoring the condition of the knife and the quality of the cut. The following diagrams have been included to help you measure knife wear. The diagrams depict knives that have been properly and improperly adjusted.



IMPROPER PROPER

Regular adjustment results in uniform wear and longer service life.

4.3.6 ADJUSTING AND CHANGING KNIFE BLADES



Disconnect the air and electrical power to the machine before changing knives. Severe cuts or loss of fingers could result from unexpected knife movement.

NOTE **The guards are not removed to adjust or change the knife.**

4.3.7 KNIFE BLADE ROTATION



Do not remove the orange knife guard. Severe cuts or loss of fingers could result from contact with the knife. All knife adjustments can be made with this guard in place.

The knife blade should be rotated as soon as it shows evidence of wear.

NOTE **If system is equipped with an Auto Indexing Knife option, the blade is automatically rotated.**

To manually rotate the knife, refer to section 2.3, Manual Knife Rotation, in the Auto Indexing Knife Manual located in the appendix.

4.3.8 KNIFE BLADE REPLACEMENT



Do not remove the orange knife guard. Severe cuts or loss of fingers could result from contact with the knife. All knife adjustments can be made with this guard in place.

Refer to section 2.4, Knife Replacement, in the Auto Indexing Knife Manual located in the appendix.

4.4 CORE DIAMETER CHANGE

The A301 Core Cutter requires adjustments in the preparation for changing core diameters. If the change involves only the outside diameter of the core, the support rollers, core pusher and cut-off assembly will require adjustment. If the change involves the internal diameter of the core, the mandrel, core pusher, support rollers, and cut-off assembly may require adjustment.

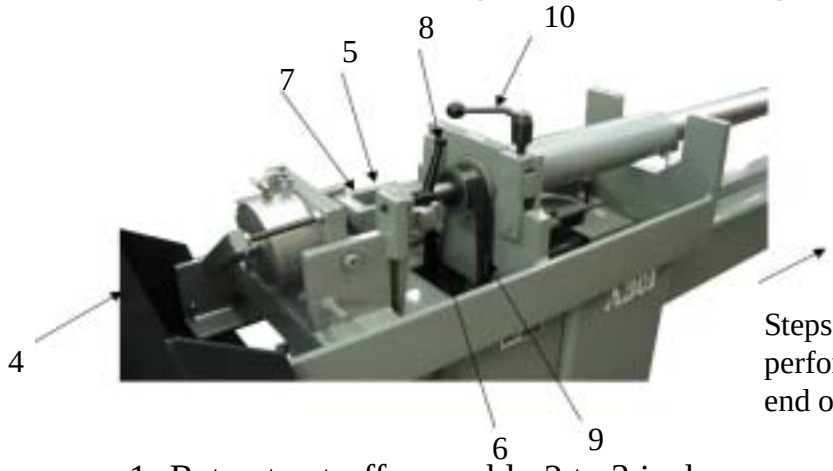
4.4.1 MANDREL

The Mandrel is designed to fit the internal diameter of a specific core. The pad is designed to tolerate an internal core diameter variance of ± .020 inch. Should you desire to cut cores that are outside this range, you will have to change your mandrel. The procedures for removing and replacing a mandrel are covered in the following sections.

NOTE **If the machine is equipped with the Appleton Instant Diameter Change Mandrel system, refer to the Instant Diameter Change Mandrel Manual located in the appendix.**

4.4.2 REMOVING THE MANDREL

Turn off the air and electrical power before removing or replacing the mandrel. Unexpected machine movement could result in personal injury such as severe cuts, loss of fingers or crushed fingers.



Steps 1, 2, 3, and 11 are performed on the outboard end of the mandrel.

1- Retract cut-off assembly 2 to 3 inches.

2- Disconnect the pusher from its carriage by removing the two locking nuts in the arm.

3- Support or sling mandrel in preparation for lifting out of machine.

4- Open drive cover.

5- Pull hitch pin.

6- Remove pull rod connector.

7- Tilt pull rod clevis away from pull rod.

8- Unlock motor, lift, and relock.

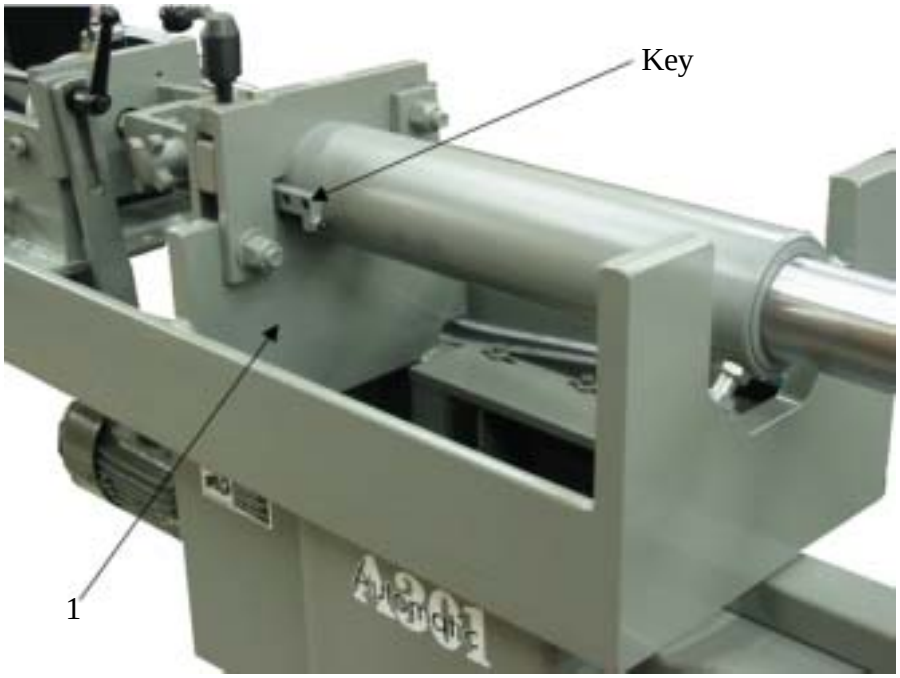
9- Remove belt from motor drive pulley, leave on mandrel pulley.

10- Loosen the mandrel clamp, swing toggle clear of the mandrel.

11- Lift out mandrel, place in storage.

4.4.3 REPLACING THE MANDREL

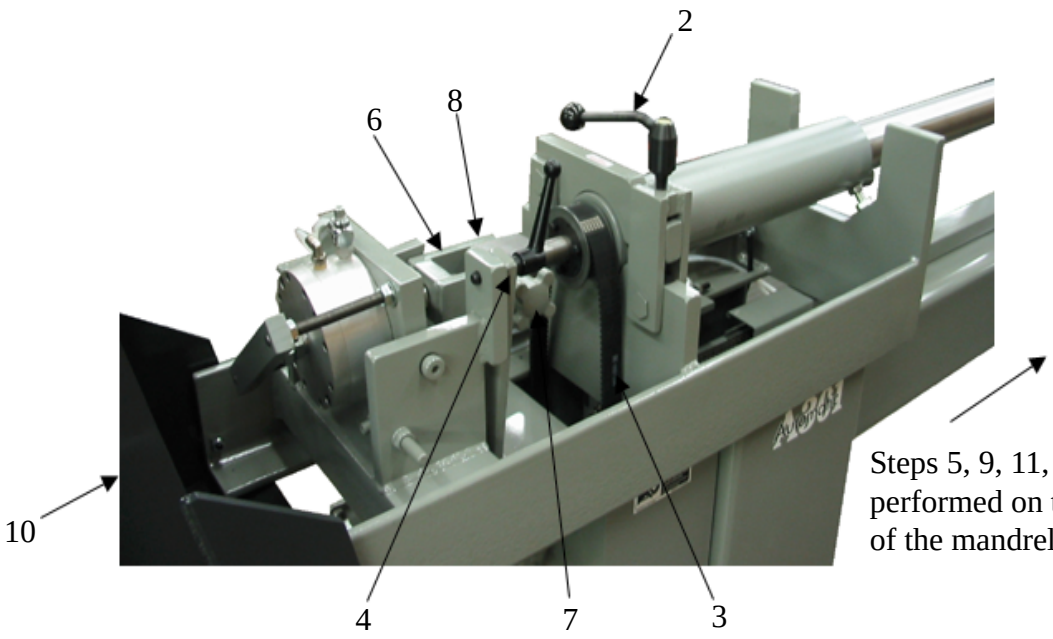
Turn off the air and electrical power before removing or replacing the mandrel. Unexpected machine movement could result in personal injury such as severe cuts, loss of fingers or crushed fingers.



1- Position mandrel in lower half of the clamp. Note that the anti-rotation key on the side of the mandrel aligns with the front side of the top surface of the rear mandrel cradle. Also ensure that the mandrel is seated against the face of the lower half of the clamp.

2- Swing toggle into place and tighten mandrel clamp handle.

3- Place belt on motor and mandrel pulleys



Steps 5, 9, 11, 12, and 13 are performed on the outboard end of the mandrel.

4- Tension motor.

5- Align cutting pad with knife.

6- Engage pull rod clevis.

7- Insert pull rod connector.

8- Insert hitch pin.

9- Adjust mandrel to support rollers if necessary.

10- Close drive cover.

11- Remove support or slings from mandrel.

12- Reconnect the corresponding pusher.

13- Reposition cut off assembly.

4.4.4 BELT TENSION

The drive belt should be tensioned only to the point of taking out slack. Over-tightening the belt does nothing for performance and can result in failure of the gear motor output shaft. (See picture below).



Over tight belt will cause output shaft failure here.

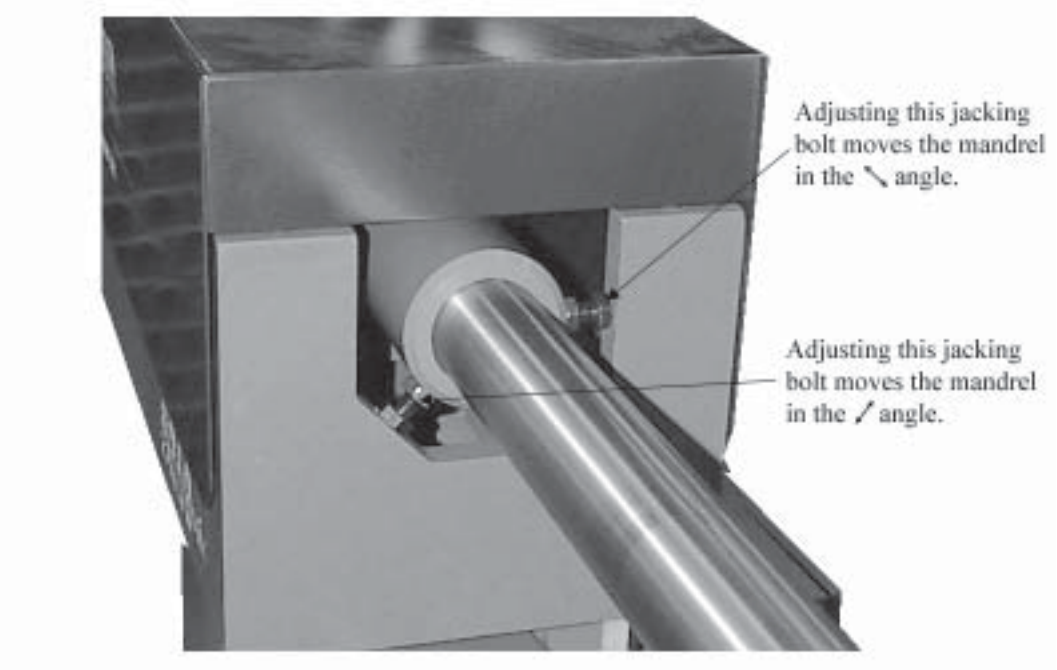
Drive Guard not shown

Belt should have about 3/8” play
DO NOT OVER TENSION

4.4.5 MANDREL HEIGHT ADJUSTMENT



Turn off the air and electrical power before adjusting the mandrel. Unexpected machine movement could result in personal injury such as severe cuts, loss of fingers or crushed fingers.

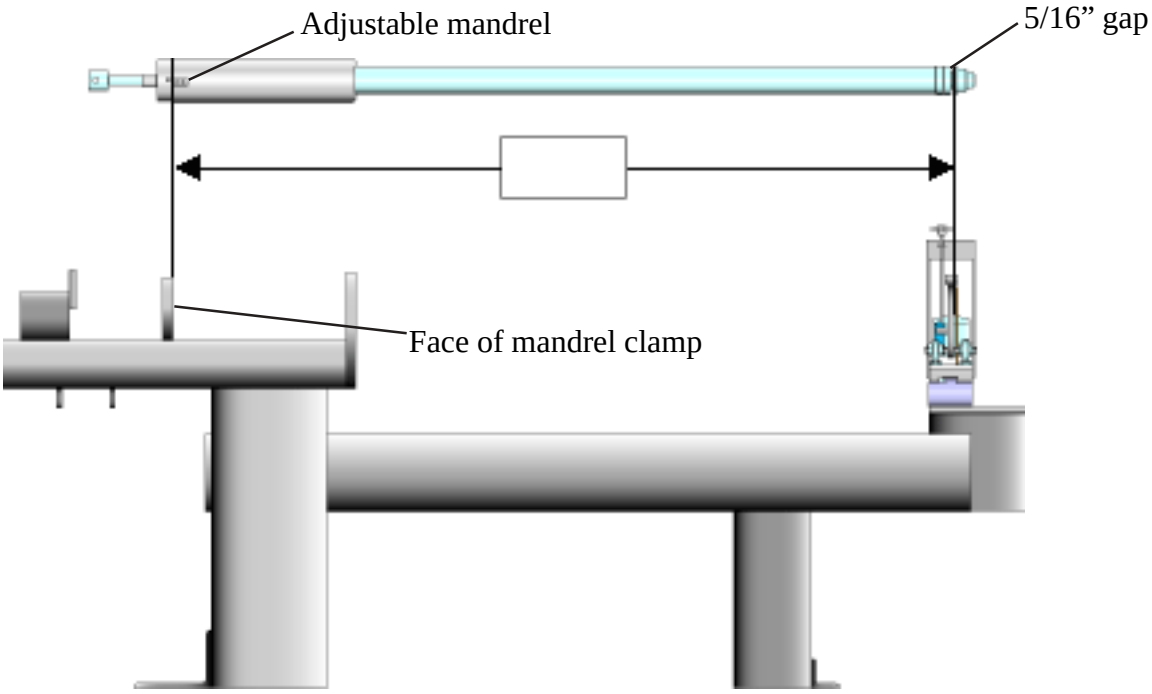


The mandrel is adjusted by advancing the support rollers until they contact the mandrel. Both rollers should make contact at the same time. Retract the support rollers and slowly advance them toward the mandrel. In the event that one roller contacts first, the mandrel should be adjusted utilizing the two mandrel adjustment screws located at the drive end of the mandrel.

The support rollers should contact the core lightly, as too much pressure can mar the core. Too little pressure can result in cut length irregularities. The position of the rollers relative to the knife is factory set.

4.4.6 MANDREL LONGITUDINAL ADJUSTMENT

The position of the cutting pad is established by adjusting the locator at the base of the mandrel. This must be set so that at the end of the cutting cycle the knife strikes the center of the cutting pad. If the knife is passing behind the pad the knife will be snapped off by the pad at the end of the cycle.



Machine Size	To Front Of Mandrel Clamp
60	88-9/16
72	100-9/16
84	112-9/16
96	124-9/16
108	136-9/16
120	148-9/16
132	160-9/16
144	172-9/16
156	184-9/16
168	196-9/16

Checking pad position

First check to ensure that the knife is square to the mandrel, adjusting it as necessary to square it.

Next check to ensure that the knife is in the original factory position. The dimension shown on the drawing on the previous page is critical to proper setup—particularly if more than one mandrel is used on the core cutter.

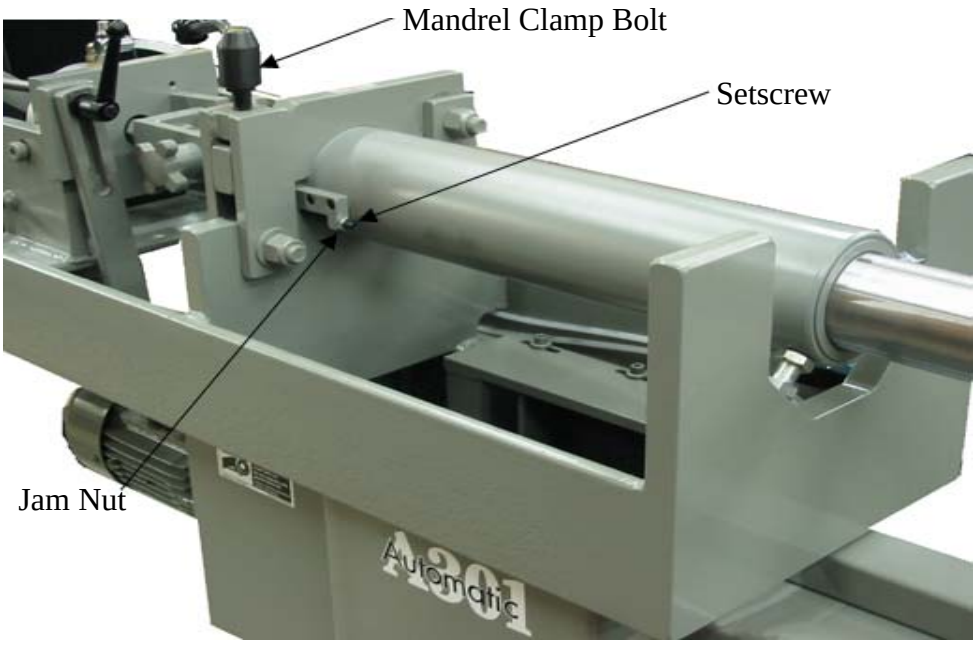
To check cutting pad position, slide a short length of core over the head jaws leaving the cutting pad exposed. Manually cycle the knife while observing where it strikes the cutting pad.

Adjust the stop at the base of the mandrel (see procedure on following page) until the knife is striking the mid third of the pad with a core in place.

Adjust the mandrel stop as follows:

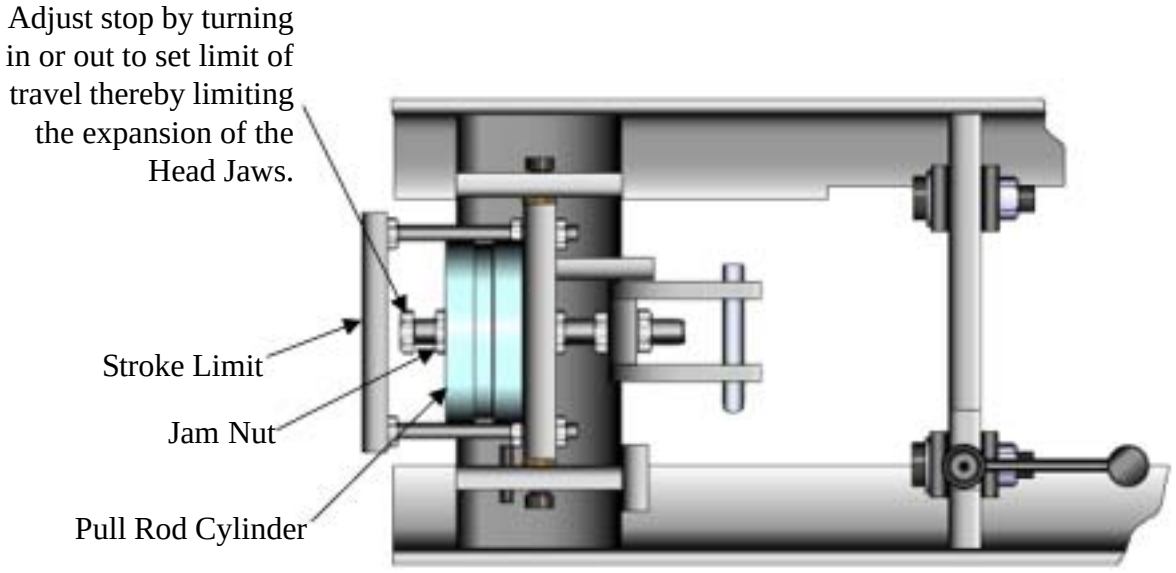
1-Crack loose the mandrel clamp bolt.
2-Loosen the jam nut on the mandrel stop setscrew.
3-Turn the set screw “in” to move the mandrel toward the knife end of machine or “out” to move the mandrel toward the back of the machine.
4-Make sure the mandrel stop set screw is seated against the face of the lower half of the mandrel clamp.
5-Tighten the mandrel clamp bolt.

NOTE **Adjust all your mandrels to a given knife position rather than repositioning the knife each time you change mandrels.**



4.4.7 STROKE LIMIT

If you cut cores with a wall thickness less than ¼" your Universal series cutter should have a stroke limit on the pull rod cylinder. This limits the stroke of the cylinder to prevent the head jaws from over-expanding and bursting the thin wall cores. If the stroke limit gets out of adjustment it can prevent the head jaws from expanding sufficiently to grip the core. This can be remedied by adjusting the limit.



4.5 TROUBLESHOOTING CUT QUALITY

This section deals with troubleshooting cutting quality problems that may occur on an improperly adjusted Appleton A301 Automatic Core Cutter.

4.5.1 SPIRAL CUT OR SLIVERS

Cause: Knife not 90 degrees to axis of core

Remedy: Check for a warped knife, replace

Realign cut-off assembly

4.5.2 DELAMINATED OUTER/INNER LINER

Cause: Damaged or dull knife

Remedy: Rotate knife or replace

Cause: Improper adhesive coverage on core

Remedy: Review with core vender

4.5.3 ROUGH EDGE ON O.D. OF CUT

Cause: Damaged or dull knife

Remedy: Rotate knife or replace

Cause: Penetration speed to fast

Remedy: Adjust air flow valve on knife exhaust

4.5.4 ROUGH EDGE ON I.D. OF CUT

Cause: Knife not fully penetrating core wall

Remedy: Advance cut-off assembly

Cause: Worn pocket in cutting pad

Remedy: Replace pad mounting cup

Cause: Core I.D. exceeds tolerance

Remedy: Measure I.D., compare to core specs

Cause: Knife striking edge of pad

Remedy: Adjust pad location

4.5.5 ROUGH OR SCALY APPEARANCE ON CORE CUT FACE

Cause: Dull or improperly re-sharpened knife

Remedy: Rotate or replace knife

Cause: Improperly constructed core

Remedy: Try core from another batch or vender

4.5.6 CORE NOT FULLY CUT

Cause: Knife not contacting carbide pad

Remedy: Increase the “Cutting Time” Setting

Lower the cut-off assembly

4.5.7 TROUBLESHOOTING - MECHANICAL

Blade Breakage

Cause: Blade breakage is caused by the knife blade becoming trapped behind or in front of the carbide pad on the Pad Mounting Cup.

Remedy: Adjust the longitudinal position of the mandrel.

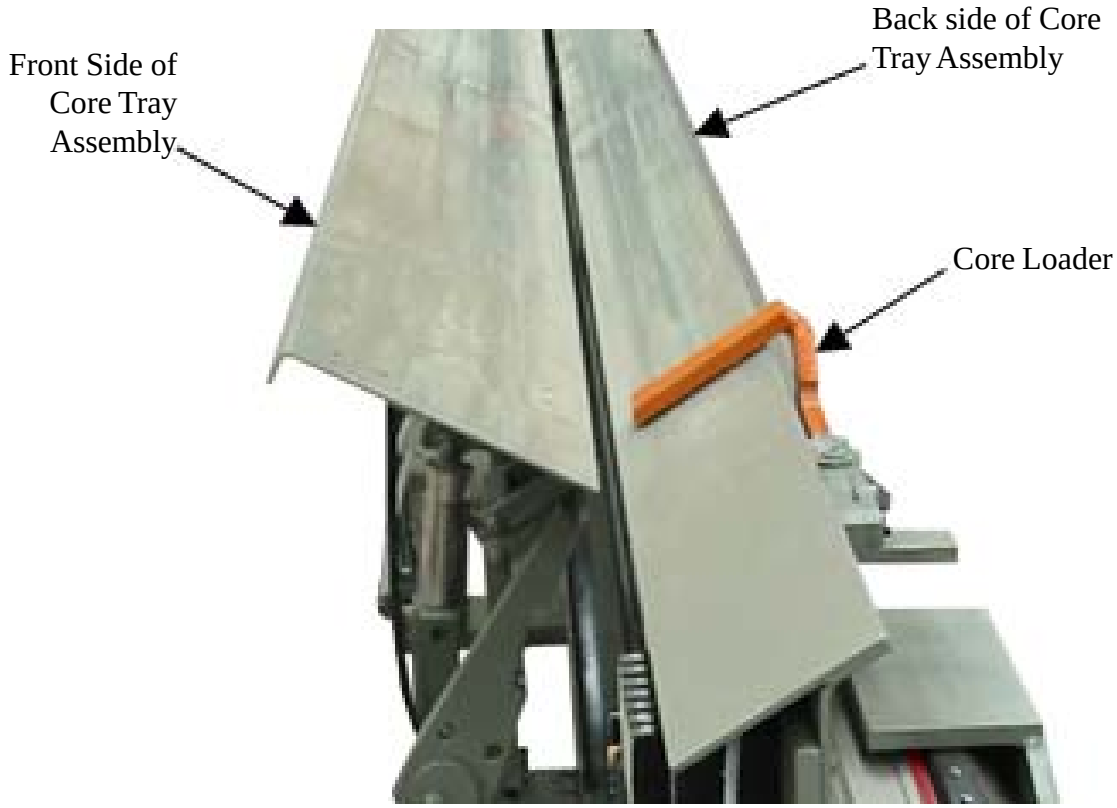
Over-expanding The Core

Cause: The head jaws are over-expanding, causing the core diameter to be expanded.

Remedy: Adjust the stroke limit on the pull rod cylinder to limit the expansion of the head jaws.

CHAPTER 5: AUTOLOADER^3

The operation of the AutoLoader^3 is controlled by the system's core cutter. Reference the core cutter operating instructions for information on the functions supported.





Check to ensure that all personnel are clear of all system components before powering up the core cutting system. Unexpected machine movement could result in serious personal injury.

5.1 OPERATING OVERVIEW

The AutoLoader3 provides the automated parent and cut core handling for the core cutter.

The parent cores are delivered to the Core Tray Assembly manually, or automatically by accessory equipment (feed table, elevator or destacker). If an automated parent core delivery system is included, this manual includes a chapter covering that module.

When the core cutter control system calls for a parent core, the Core Loader guides the parent core onto the mandrel of the core cutter and may perform cut core and butt waste removal tasks.

The Core Tray Assembly has a hinged lower front side that provides parent core receiving and guiding functions during the loading cycle. The front side of the Core Tray also provides for core discharge (dumping) based on the mode selected at the core cutter operators' panel. This dumping action can be used to separate trim and butt waste from the cut cores.

The AutoLoader^3 is designed to discharge cut cores from the side or from the end depending on the mode selected. The following guidelines should be considered when selecting a mode:

-If the cut length is less than the core outside diameter, cut cores should be discharged in the "**Tray Down**" position.

-If the cut length is greater than 10 inches, the "**Tray Up**" position should be used during the cutting cycle.

5.2 ADJUSTMENT



Turn off the air supply and electrical power to the machine before making adjustments. Unexpected machine movement could cause severe personal injury such as cuts, loss of fingers, or crushed fingers.



Core tray Height
Adjustment Handwheel

When changing core outside diameters, the Core Tray and target height must be adjusted.

5.2.1 CORE TRAY HEIGHT

The core tray should be raised or lowered using the handwheel located on the machine base. Place a parent core in the tray and align the core centerline with the mandrel centerline. Check to make sure that you can easily slide a parent core onto the end of the cutter mandrel.

5.2.2 TARGET HEIGHT

The target height needs to be adjusted so it has adequate contact with the core end to ensure that the core cutter receives a signal to make a cut. Adjust the target height as follows:

1- Place a core sample in the tray.

2- Loosen the machine screw that locks the target pad in place.

3- Hold the target in its extended (**UP**) position.

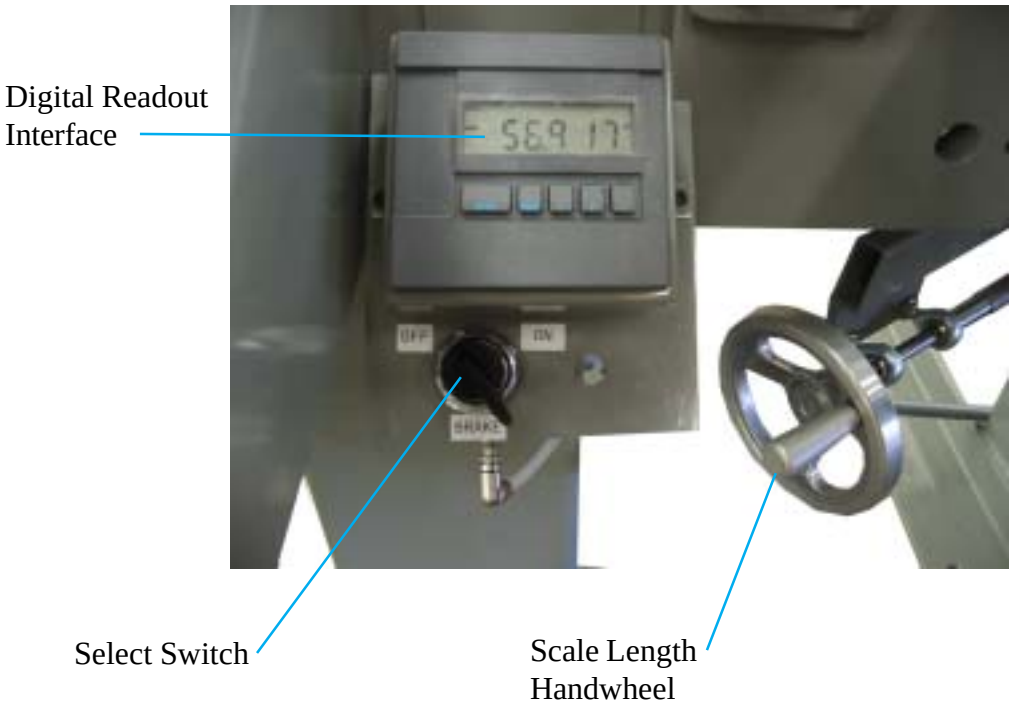
4- Slide the pad up or down until proper contact with the core end is established. The general rule is that the target should extend to about 60 percent of the core wall thickness. For core walls less than ¼ inch, the target should extend the entire wall thickness.

5- Tighten the machine screw to lock the pad in place.

NOTE **The parent core handling system may also require adjustment when changing diameters. Refer to the relevant module chapter for instructions.**

5.2.3 TARGET CUT LENGTH

The length of the cut cores is determined by the position of the target. The target length is set as follows:



1- Release the target brake by turning the Select Switch to Off.

2- Turn the Scale Length Handwheel until the digital read-out indicates the cut length desired. (Reference the ABS Digital Scale manual provided with the Core Cutter.)

3- Lock the target brake by turning the Select Switch to On.

5.2.4 FRONT SIDE OF CORE TRAY



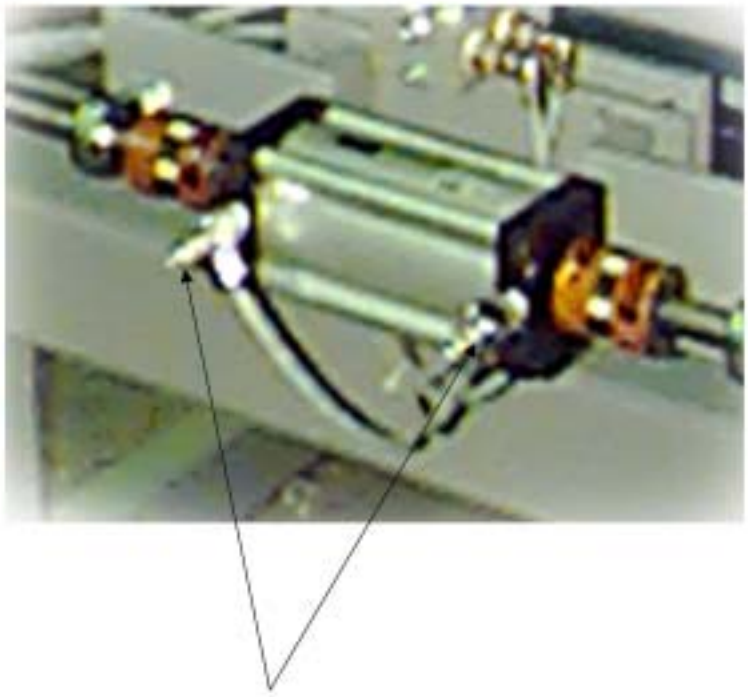
Turn off the air supply to the machine before performing service to machine. Failure to do this could result in serious personal injury from compressed air.



The speed of actuation should be adjusted by trained maintenance personel.

Core Dump

The speed of tray actuation during cut core dumping can be sdjusted by turning the flow control valves located on each end of the rotary actuator just below the front side of the Core Tray



Flow Control Valves

Core Load

The speed of tray actuation during core loading can be adjusted by turning the flow control valves located on the manifold on the back side of the Core Tray. The Head End Valves control the speed at which the tray will collapse up to receive a parent core. The Cap end Valves control the speed at which the front side of the Core Tray will return to its home position after receiving the parent core. Each valve in the pair should be adjusted in equal increments with its co-operative functional valve.

5.3 MAINTENANCE



Disconnect the electrical power supply to the core cutting system before performing mechanical maintenance to the Auto-Loader and its components. Severe injury such as loss of fingers or crushed fingers could result from unexpected movement of the tray or core loading mechanism.



Turn off the air supply to the machine before performing service to machine. Failure to do this could result in serious personal injury from compressed air.

5.3.1 MECHANICAL

Check the system periodically for loose or missing fasteners.

Lubrication

All bearings on the Autoloader[3] are self-lubricating.

5.3.2. ELECTRICAL

Periodically check the limit switches for wear or loose mounts.

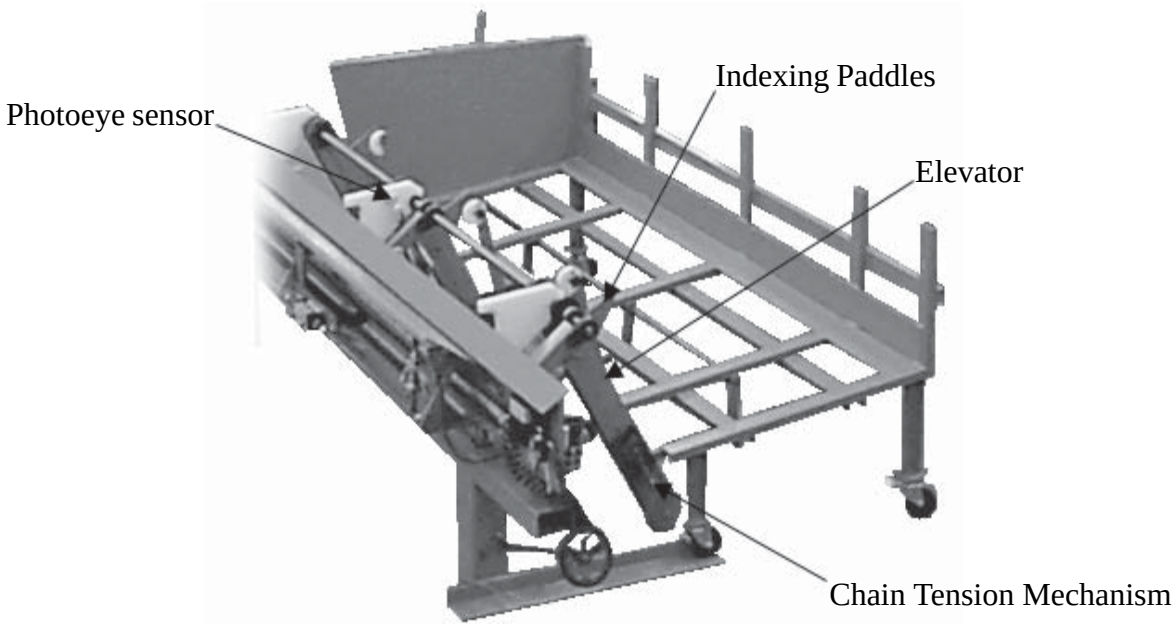
5.3.3 PNEUMATIC

Check the Filter/ Regulator/ Lubricator and service by draining water or adding oil as necessary.

CHAPTER 6: PARENT CORE ELEVATOR

Check to ensure that all personnel are clear of all system components before powering up the core cutting system. Unexpected machine movement could result in serious personal injury.

Do not put your fingers between the elevator chain and the sprockets. The chain could move without warning, pinching your fingers or hand and causing severe injury.



The AutoLoader[3] Parent Core Elevator delivers cores to the AutoLoader Core Tray from a hopper or other compatible source.

6.1 OPERATION

There are no user operating functions on the elevator. The paddles index on demand to deliver cores to the AutoLoader Core Tray.

When the core cutter program calls for a core the elevator paddles will index until a core is delivered to the Core Tray. When the photoeye senses another parent core is at the top of the elevator it will pause to allow for the parent core being processed to be cut and discharged. After the cut cores are discharged and the program calls for another parent core, the elevator resumes indexing, and another core is delivered to the core tray.

NOTE **If a parent core is not sensed on the elevator for a fixed interval, it will assume no cores remain in storage and stop indexing.**

6.2 ADJUSTMENT

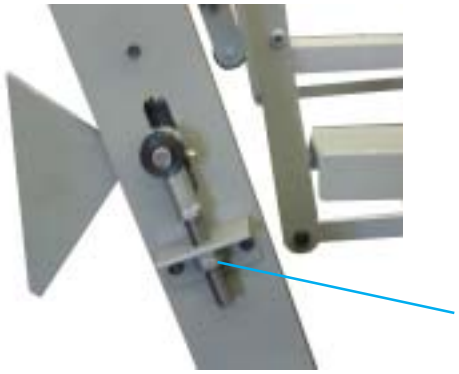
The angle of the elevator is mechanically linked to the AutoLoader Core Tray and adjusts automatically with any adjustment of Core Tray height.

Associated parent core storage equipment may require concurrent adjustment. (Reference the relevant equipment chapter for adjustment procedures.)

6.3 MAINTENANCE



Disconnect the electrical power supply to the core cutting system before performing mechanical maintenance to the Autoloader and its components. Severe injury such as loss of fingers or crushed fingers could result from unexpected movement of the tray or core loading mechanism.



6.3.1 MECHANICAL

Chain Tension

The chain may require periodic adjustment to take up slack resulting from normal wear. When the core paddles begin to tilt downward and no longer retain the parent core, the chain should be tightened by taking up the Chain Tension Jam Nuts.

Elevator Drive Motor

Replace motor on failure.

Lubrication

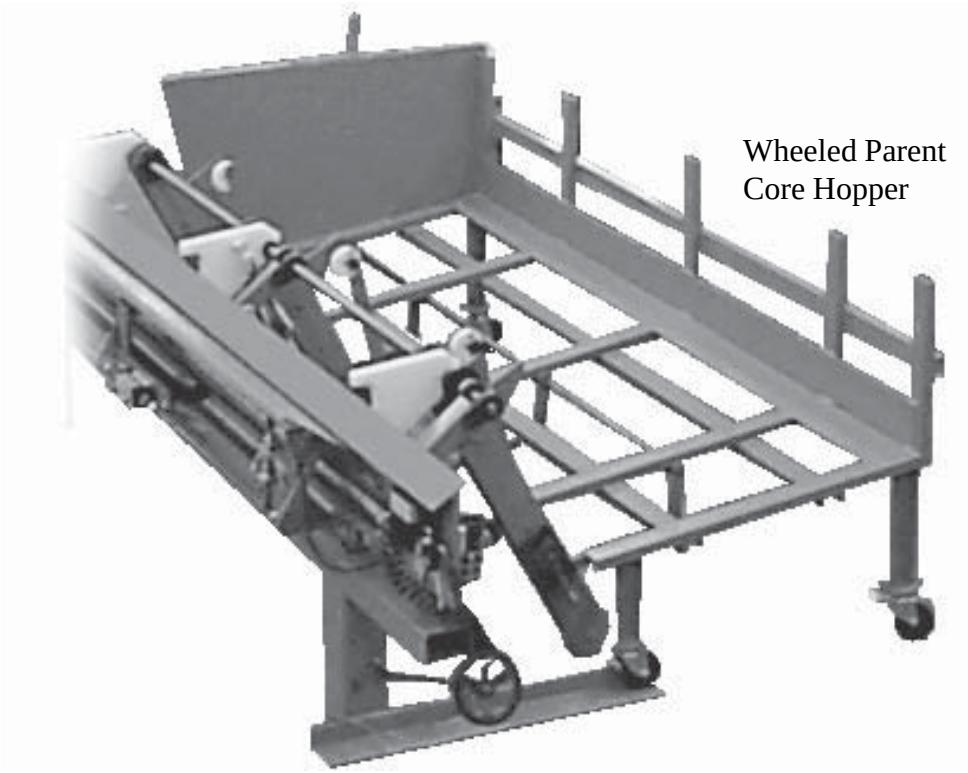
- Chain sprocket bearings
- Drive shaft bearings

6.3.2 ELECTRICAL

Photoeye lenses should be cleaned periodically with a soft cloth.

CHAPTER 7: WHEELED PARENT CORE HOPPER

Keep untrained personnel out of the working area of the cutting system. Serious personal injury could result from unexpected mechanical movement. The working area is defined as any area within arms reach of a system component.



Wheeled Parent Core Hopper

The Appleton A301 Core Cutter w/Autoload system includes moveable parent core hoppers to facilitate changes in parent core inventory.

7.1 OPERATION



Do not wear loose clothing while in the work area of the system. Clothing can snag in chains or rotating parts resulting in serious personal injury.

Parent Cores should be loaded into the Parent Core Hopper horizontally, with core ends facing the end walls of the hopper.

NOTE

Specify your core length "Not to exceed" the length dimension of the hopper. If your core vendor applies "standard" industry tolerances to our specified core length, you could end up with cores too long to fit into the system.

7.2 DOCKING



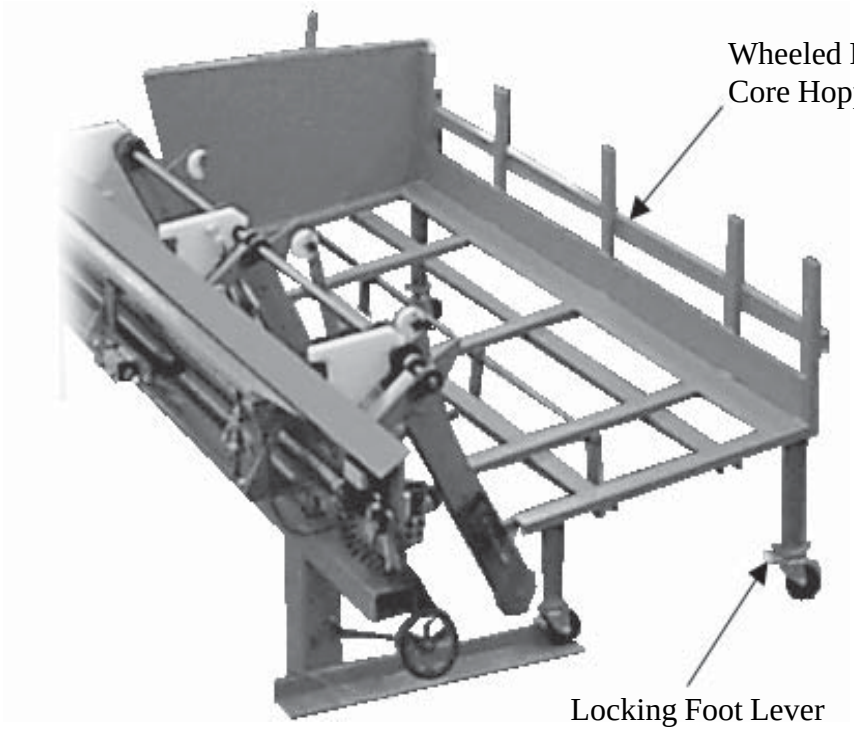
Disconnect the electrical power to the system before entering the hopper. Unexpected movement of the elevator could cause personal injury such as loss of fingers or pinched limbs.

The hopper must be properly docked at the elevator to ensure a ready supply of parent cores.

1- Make sure the elevator paddles are outside the load area.

2- Engage both front wheels in wheel chocks provided at the base of the elevator.

3- Lock both rear wheels by depressing foot levers located on the wheels.



7.3 ADJUSTMENT



Do not make adjustments to the machine while the electrical power is connected. Personal injury could result from unexpected machine movements.

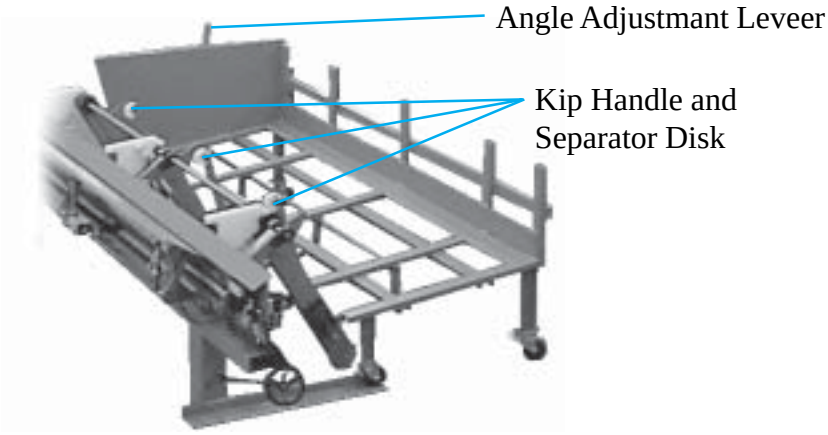
To ensure that only one parent core is delivered to the the Core Tray, the parent core hopper may require a combination of two adjustments when changing core diameters.

Core Stop Arms (Primary Adjustment)

Use the Angle Adjustment Lever to adjust the Core Stop Arms to allow only one parent core on the elevator paddle as it moves to the top of the elevator. The Core Stop Arms keep two parent cores from setting side by side on the elevator paddle. The Core Stop Arm will be moved back (away from the elevator) for smaller diameter cores, and forward for larger diameter cores.

Separator Disks (Secondary Adjustment)

Loosen the Kip Handle to move the disk to the appropriate position to “knock off” additional parent cores from sitting on top of the parent core on the elevator paddle. Retighten the Kip Handle. The Separator Disks should protrude more for larger core diameters, and less for smaller diameter cores.



CHAPTER 8: CUT CORE ACCUMULATOR TABLE

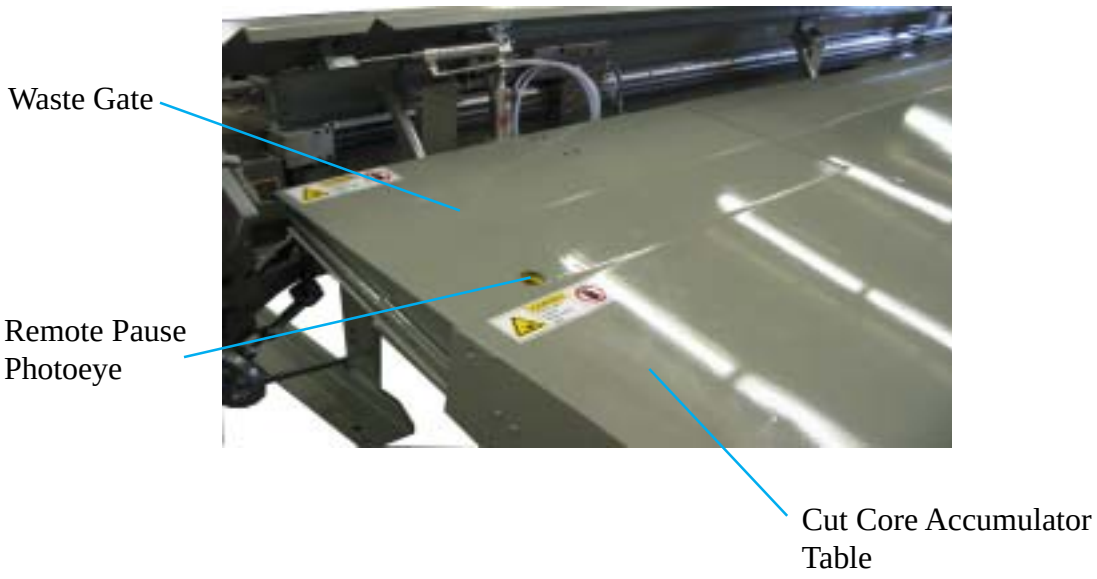


Keep untrained personnel out of the working area of the cutting system. Serious personal injury could result from unexpected mechanical movement. The working area is defined as any area within arms reach of a system component.

The Appleton A301 Core Cutter w/Autoload system includes a Cut Core Accumulator Table to accept the cut cores from the Autoloader.

The Cut Core Accumulator Table has an integral waste gate which opens to separate the trim and butt waste pieces from the usable cut cores. The waste gate operates automatically and no adjustments are required.

The Cut Core Accumulator Table incorporates a remote pause photoeye which pauses the core cutter when the Cut Core Accumulator Table is full of accumulated cores. Once the cores are removed and the photoeye is uncovered, the core cutter resumes cutting.



Limited Warranty, Limited Remedies, and Disclaimer Of Liabilities

Seller warrants that the Goods will be of Seller's standard quality and free from defects in manufacturing and materials. This warranty shall extend for a period of one year from the date of delivery. Should any failure to conform to this warranty appear within that one year period, Buyer must give written notice and a specific description of such nonconformity to Seller's customer service representative within twenty (20) days of the discovery of such nonconformity or it shall be deemed to have been waived. Seller must be given the opportunity to inspect the Goods. Seller will, at its option, remedy any nonconformity by repairing any defective Goods, making available repaired or replacement Goods, or by the issuance of a credit for the defective Goods. Replacement of non conforming Goods means delivering to Buyer conforming Goods. It does not include any cost or liability for replacing the replacement Goods in or on any other product. Repair or replacement of defective Goods, or credit to the Buyer of the value thereof, does not extend the one year warranty period. **The foregoing warranty is in lieu of and excludes all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.** With respect to parts not manufactured by Seller, the warranty obligations of Seller shall in all respects conform and be limited to the warranty actually given to Seller by the supplier.

The remedies set forth above shall constitute buyer's exclusive remedies for Seller's breach of any warranty with respect to the Goods or any other liability of Seller to Buyer (other than warranties relating to title and infringement), including any arising out of the negligence of Seller, strict liability in tort or any other legal theory. Seller's liability hereunder shall not exceed the purchase price of the Goods sold by Seller to Buyer which are proved to be defective. In no event shall Seller be liable to Buyer or anyone claiming through Buyer for (and buyer agrees to hold Seller harmless against) any damages, whether direct, special, incidental or consequential, including lost profits, arising out of the sale, purchase or use of or inability to use any Goods, other than as expressly set forth herein.

Seller's warranty shall not be enlarged and no obligation or liability shall arise out of Seller's rendering of technical advice or services in connection with Buyer's purchase of the Goods.

In the event that Buyer provides Seller with specifications for the Goods to be sold hereunder, and requests that the Goods be produced in accordance with such specifications, Seller is under no duty to test, analyze, or study such specifications to determine whether they are appropriate for Buyer's needs. In such event, Seller makes no representation or warranty that the Goods produced in accordance with such specifications will be suitable for Buyer's application.

Any warranties specifically set forth herein, and any liability of Seller for any breach of warranty, are condition upon proper storage and use of the Goods, improper storage, maintenance, handling, installation, repair, alteration or use of the Goods will void all warranties contained herein.