Version 3 Picker Upgrade

Intro | Installation Procedure | Setup/Integration | Troubleshooting | Picker Upgrade Drawings

Introduction



Upgrading a modern machine to a Version 3 Picker will take about 4 hours to fxinstall (includes drilling a few holes in the load table) and an hour to adjust. Use the rest of the day to test plates.

If you have an Early Production Machine SA01 to SA12 you will have an extra day of work upgrading the manual bypass door, safety loop and skins. Contact Lyle Beck (Annacis 3206) to find out exactly what you need.

NOTE: There are 5 early production Version 3 pickers on Heidelberg machines. On full production units, a change was made to move the wrist speed controls from under the Black cross bar to the manifold. See the V3 Revisions section.

Do you need this upgrade?
The primary purpose for the Version 3 picker is to support 0.15 mm thick plates. Four features that enable this support:

- The plate drop variance from 1 plate through to a stack of 25 plates is eliminated. Now all plates will drop the same distance onto the registration pins in the drum. This is required to prevent the edges of the thin plates from denting if dropped too far.
- The plate is moved farther away from the plate ledge after a pick. The 0.15 mm plates are so flexible they were drooping under their own weight into the ledge and as soon as the old picker was moved down the plate would crumple.
- The plates are wristed as close to the edge as possible. The 0.15 mm plates were again too flexible to generate any separation forces by dragging them across the plate ledge. By grabbing the plate closer to the edge this force will increase somewhat.
- The wristing action is increased from 12 to 45 degrees to provide higher

pealing forces that should help inhibit double picking.

Although this picker has features that deter double picking, the frequency of double picking will not decrease significantly. If this is your problem, keep your eye out for the upcoming plate ledge upgrade.

- Installation Procedure Overview - bolting the thing on
- Setup/Integration - adjusting cable tension, speed controls, sensors, plate drop, plate angle, and more
- Troubleshooting - double picking, low vac threshold, timeouts, plate dents, cup marks, etc
- V3 Revisions - variations of these pickers
- Tools required
- Drawings

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V3 Revisions

Beta pickers

There are 4 beta pickers in existence. Their last known locations are: Heidelberg Demo Center, Keil factory, Trend Offset in LA, and Creo engineering.

Trend Offset's beta picker has been modified by replacing the wrist action speed controls to a fixed orifice type (exactly like units SA155-SA160) except that they are located under the right load table bracket instead of close to the manifold. (no photo).

Pre-production upgrade pickers sent to Heidelberg

The only item that has changed for the 5 pre-production upgrade units is the speed controls for the wrist action under the black cross bar of the picker head.



Because of the



difficulty in setting the speed controls to VERY small flow they have been removed and replaced with a fixed orifice assembly. The assembly contains a speed control that is CLOSED completely so that is acts as a check valve; therefore flow going to the cylinders is not as restricted as flow coming from the cylinders (exhausting).
The serial numbers of the machines that these pickers are installed are:
-SN:983631079 a TS3 last seen in the training department in Kiel
-SN:?
-SN:?
-SN:?
-SN:?

Full production from SA155-SA160

SA155-SA160 Due to shipment delays of the fixed orifice speed controls that screw directly into the manifold, the fixed speed control assembly for the wrist action that is used in pre-production upgrade units are installed close to the manifold.

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Installation Procedure

Tools Required

Step 1: Removing old picker
Detailed Instructions

1. Remove old picker.
2. Run the sensor cable through the load table hat section.
3. Attach the Picker Move Cylinders to the top of the load table.
   (Note: Re-check the separator arm alignment in the micro switch)

Step 2: Mounting the picker head and routing the wrist tubing
Detailed Instructions

1. Mount the picker head assembly to the move cylinders.
   (Note: the 2 nylon washers are towards the center of the table)
2. Mount the cable track to the load table.
3. Route the tubing down the front of the table post.
4. Route the wrist tubing directly to the manifold.

Step3: Solenoids, Fittings and Tubing
Detailed Instructions

1. Install 2 solenoids and fittings onto the manifold.
2. Connect the Picker Wrist tubing.
3. IMPORTANT STEP PLEASE READ IT TWICE: Check to make sure that all tubing is connected to something. Turn the speed controls on the picker head completely closed. While holding the picker away from the load ramp, get a second person to turn the air back on. The reason that you are holding the picker is that it may move unexpectedly. Watch your fingers and let the picker go where it wants to. Your job is to keep it from catching on something or moving up unevenly. Make sure that the picker head is in its retracted position. (not reaching towards the load table). If the picker is not in the up position get someone to activate the solenoid by pushing on the blue button. Again make sure you are holding the picker away from the load ramp as it moves up.

Step 4: Setup for 8-page machines
Detailed Instructions

1. Reconfigure the Picker rail sensors for 8-page machines.

2. Install 4 extra cups for 8-page machines .

Step 5: Attaching guide cables and rails
Detailed Instructions

1. Attach the steel guide cables to the Picker Head.
2. Attach the Picker Rails to the load table.

Step 6: Cables
Detailed Instructions

1. Route the steel guide cable around the pulley mounted on the bottom of the rail.
   Continue up to the large pulleys in the move cylinder bracket. Tape the cable to the load table.
2. Follow the same steps for the cable on the other side of the picker.
   Continue the cable across the top of the load table and through the small pulleys in the Move Cylinder Bracket.
3. Run this cable between the first cable and the picker head so that it rests on the two M5 flat washers.
4. Attach it to the M5 nylock in the slot near the front of the head. Set the cable tension at this point so that it won't fall off the pulleys. You will pre-load it in the Setup/Integration section.
5. Complete the routing of the other side.

Step 7: Centering the picker
Detailed Instructions

1. Center the picker within 2mm and allow 1mm of side-to-side play.
   Make sure that the picker head is in the retracted position. The head should not be reaching for the load table.
2. Loosen the bottom screw of one rail.
3. Move the picker down by actuating the solenoid.
4. Center the picker within 2mm and allow 1mm of side-to-side play in the bottom position.
   Move the picker up and recheck the side-to-side play.

Step 8 Download MPE firmware
Detailed Instructions

1. Unplug both connectors to the picker head solenoid.
2. Make sure the head is retracted.
3. Shut the workstation software off.
4. Power on the Trendsetter.
5. Download MPE firmware version 1.20 or greater onto the trendsetter.
6. Check release notes for head code compatibility.

7. SET AL VPI equal to 1.
8. NVS SAVE AL.
9. Enter PICKER UP.
10. Plug both cables into the picker head solenoid.
11. Enter PICKER OUT.

Step 9: Drill Vacuum release holes in the load table
Detailed Instructions

1. Drill Vacuum release holes in the load table.
2. Clean off all cups with alcohol wipes that you would find in a first aid kit.

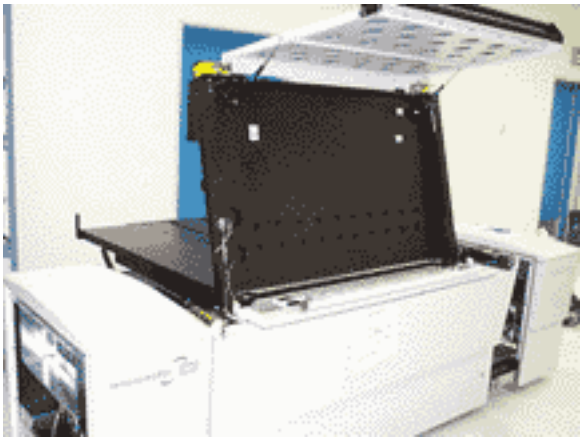
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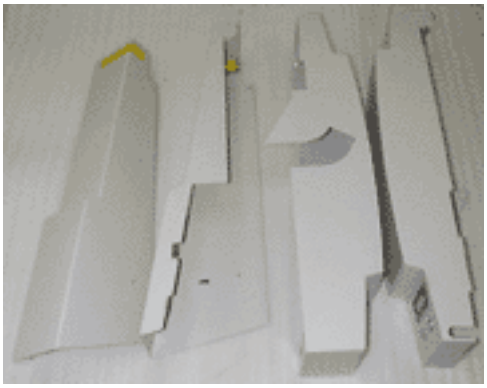
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Step 1: Removing the old picker

Remove the old picker

- Power down the trendsetter and disconnect the air supply.





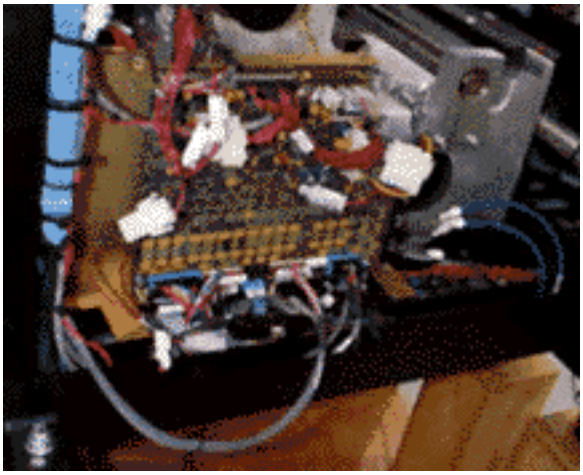
- Remove the side and load table covers.



- Remove the old picker from the engine and the load table.

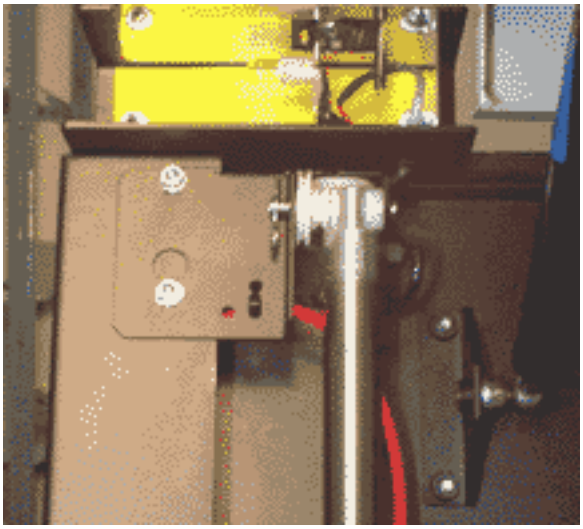
Run the sensor cable through the load table hat section

- Run the picker sensor cable 10-4071A from the TEE board at J25 up through the hole in the bottom of the load table post. Continue running the longer cable through the bottom hat section. Be sure to go through the rubber grommets at both ends of the hat section.

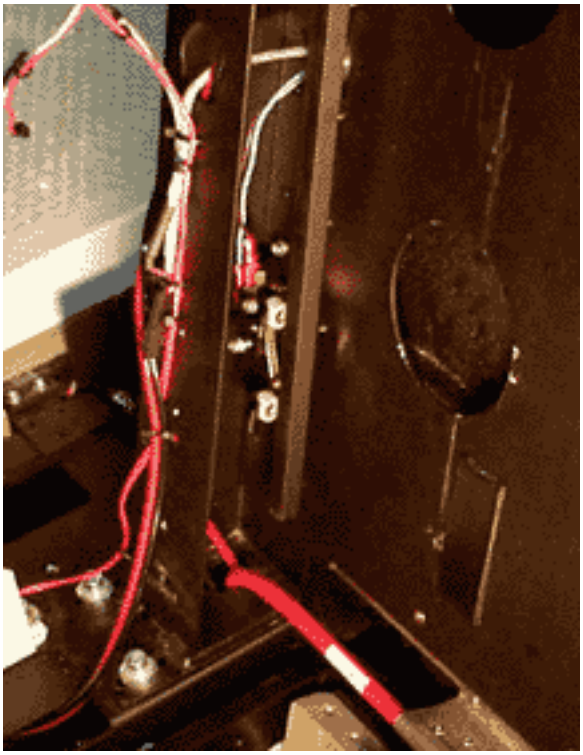


Attach the picker move cylinders to the top of the load table

- Attach Picker Move Cylinders 50-1761A and 50-1762A to the load table top by loosening the separator arm screws. Secure the bracket so that the top screw is flush with the top edge of the bracket as shown.



- Be sure to check the alignment of the bottom of the separator arms so that they still strike the center of the micro switch. Run the tubing through the hole in the bottom of the load table post and connect them to the existing ferules. Label the tubing “picker move”.



Up: Overview | Ahead: Step 2

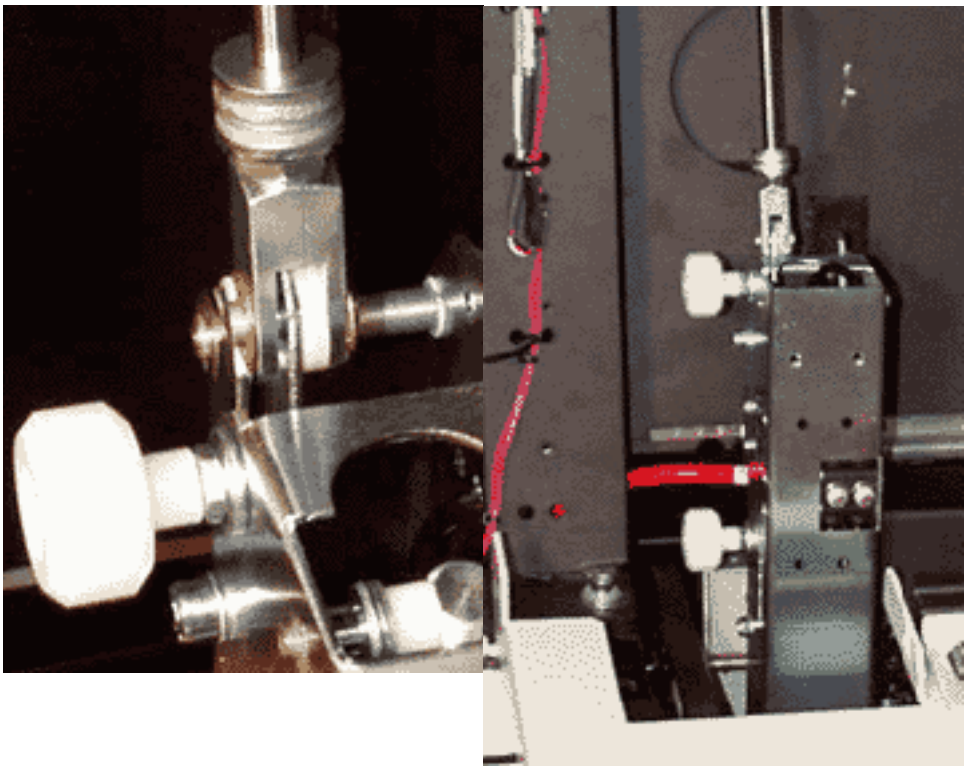
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Step 2: Mounting the picker head and routing the wrist tubing

Mount the picker head assembly to the move cylinders

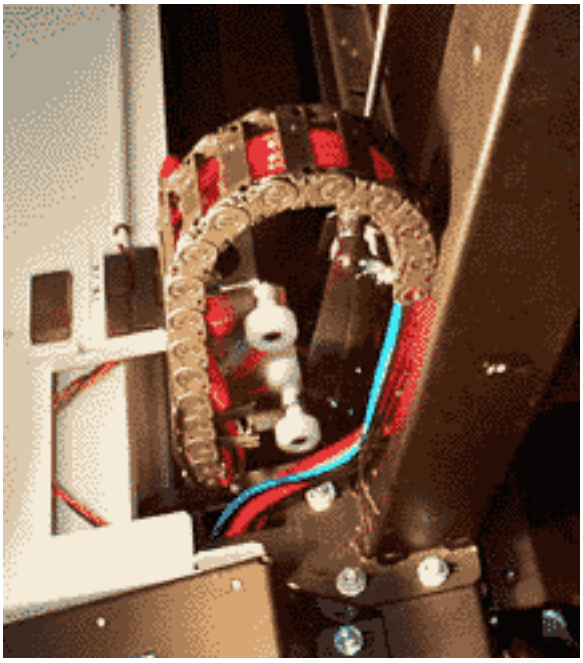
- Rest the picker head assembly, 50-1760A, on the TEC and drum.
- Attach both sides of the picker head to the move cylinders. You may need to file burrs out of the hole.



Notice that the 2 nylon spacers are toward the center of the load table.

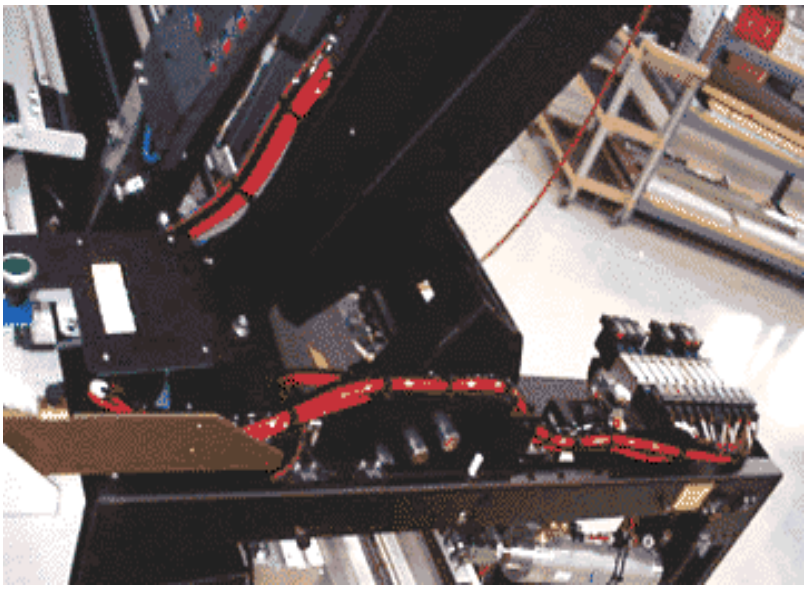
Mount the cable track to the load table
Route the tubing down the front of the table post

- Mount the cable track to the load table using a M4 x 25 screw, heavy washer, and nylock nut. Use the outer most 5mm hole that is just bellow the large 38mm hole. Route the tubing down the front of the load table post and through the load table bracket. Attach the tubing to its mate under the load table bracket; remember to move the labels before cutting the tubes.



Route the wrist tubing directly to the manifold

- Continue running the picker wrist tubing along the top of the frame and through the manifold bracket. It is important to keep this tubing short. Do not route it down through the bottom of the frame with the rest of the tubing, since it will cause the wrist to move more slowly than desired.



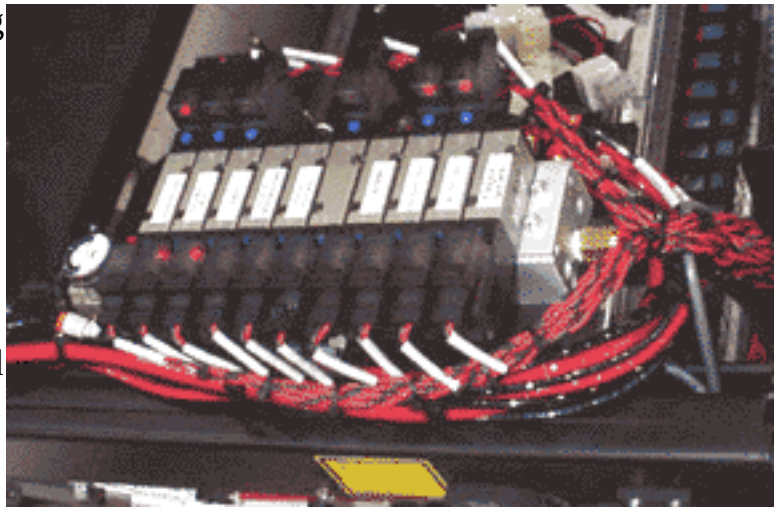
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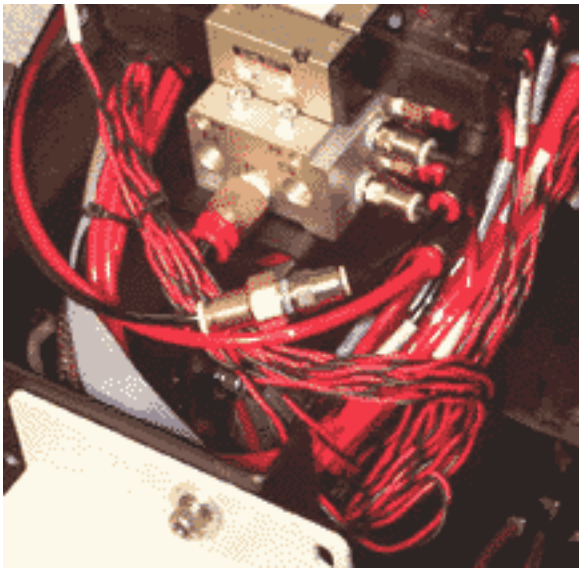
Step 3: Solenoids, Fittings and Tubing

Install 2 solenoids and fittings onto the manifold



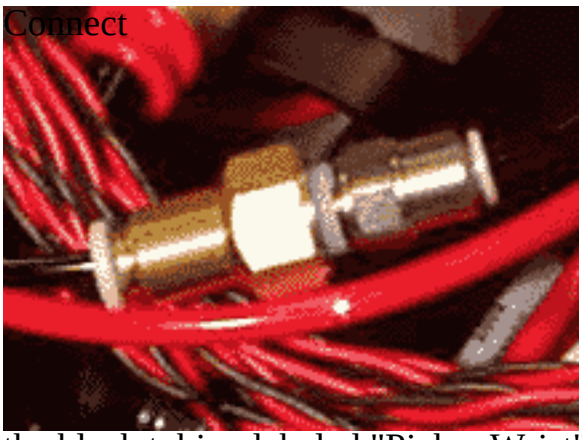
- Remove the end blanking plate and install one of the solenoids 55-0088. Be sure to use the new gasket. Label this solenoid as "Picker Wrist". Remove the separator solenoid and replace it with the second 55-0088 supplied. Again use the new gasket. Label this solenoid as "Separator". The extra connector that used to plug into side "B" of the "separator" solenoid now plugs into side "A" of the "Picker Wrist" solenoid. Re-label this twisted pair as "Picker Wrist".

- Remove the regulator from the picker head tube and connect it directly to the manifold. Or you can simply turn the regulator up to the maximum system pressure. The gauge will not read anything until the picker head is moved in. But wait until Step4 before you attempt this.



- This detail changed after the first 5 early production units installed at Hiedelberg. See the V3 Revisions section. Install the 2 straight fixed speed control 0.1 orifices, 55-0807, into the back of the manifold. Insert two elbows, 55-0277, into the two new fittings. Insert a 50mm length of black tubing into the top fitting "A". Then attach the assembly of 55-0570 and fixed 0.2 orfice 55-0806 to this line with the female connector (brass) farthest from the manifold.

Connect the Picker Wrist tubing

- Connect  the black tubing labeled "Picker Wrist" to this assembly. The red "picker wrist" goes to the bottom fitting "B" on the manifold.

IMPORTANT STEP: READ CAREFULLY to prevent damage to the picker and damage to yourself.

- Check to make sure that all tubing is connected to something. Turn the speed controls on the picker head 1/8 turn open from fully closed. While holding the picker away from the load ramp, get a second person to turn the air back on. You are holding the picker because it may move unexpectedly. Watch your fingers and let the picker go where it wants to. Your job is to keep it from catching on something or moving up unevenly.

- Make sure that the picker head is in its retracted position. (not reaching towards the load table). If the picker is not in the up position get someone to activate the solenoid by pushing on the blue button. Again make sure you are holding the picker away from the load ramp as it moves up.

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Step 4: Setup for 8-page machines



- For TS3 and TS3-8 you will have to add 2 cups, 55-0706, to each side of the picker (total of 4 cups). Leave the last double D in the cup bar empty on each side.

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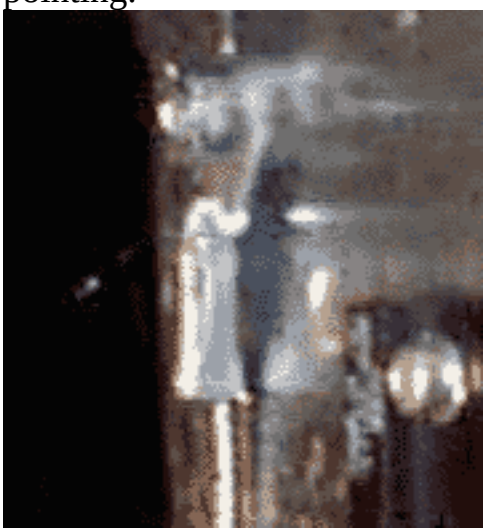
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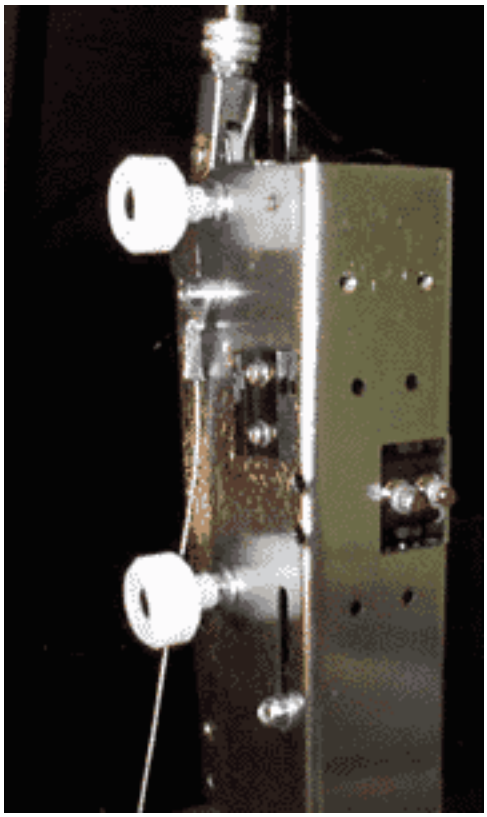
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Step 5: Attaching guide cables and rails

Attach the steel guide cables to the Picker Head

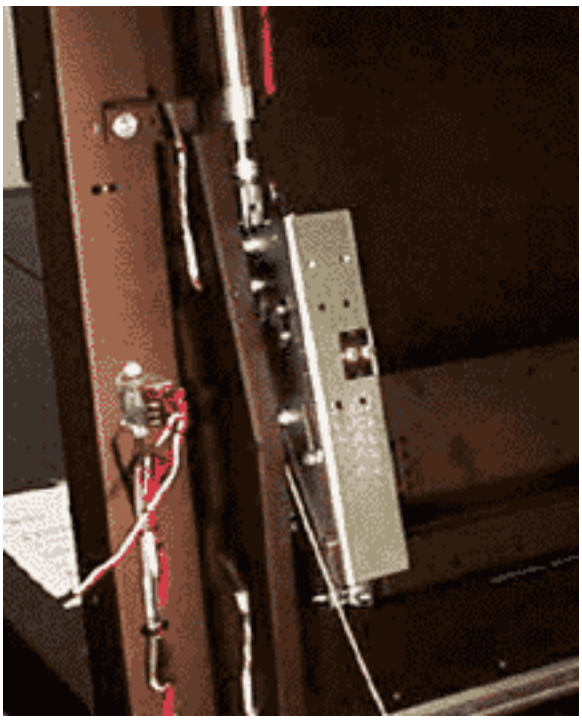
- Install the 2 steel guiding cables, 50-1765A, onto both sides of the picker head. Note that the 2 M5 flat washers are to be between the cable eye and the picker head. Pay particular attention to the angle that the cable is pointing.



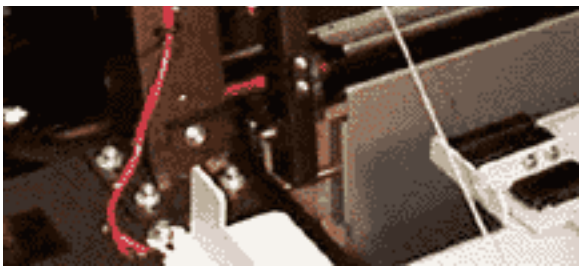


Attach the Picker Rails to the load table

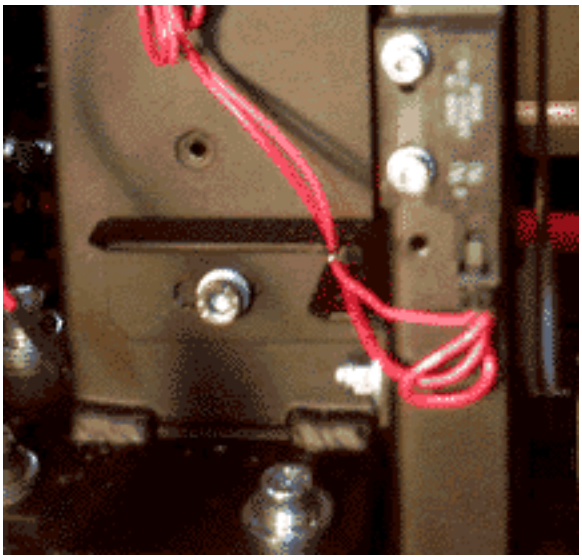
- Install both picker rails, 50-1763A and 50-1764A, onto the load table. Use M5x10 screws, flat washers, and nylock nuts where required. Use the M5 pem in the load table post that is closest to the center of the table. Also, use the bottom tie-wrap hole that is towards the center of the load table. If you are working on an early machine that does not already have the top pem, drill a 5.5mm hole. To do this easily, mount the rail with the bottom hole then mark the load table through the top slot in the rail. Drill this new hole at the same horizontal distance from the edge as the bottom hole. Do



not tighten the rails at this point.



- Plug the sensor cable into the optical sensors on the rails. To keep the upgrade kits the same, there is an extra sensor that is not used. If you are upgrading a TS4, then the spare sensor is on the bottom right. If it is a TS3 or TS3/8, then the spare unused sensor is on the bottom left.



- Plug in the door reed-switch cable that comes from the relay on the left side of the load table.

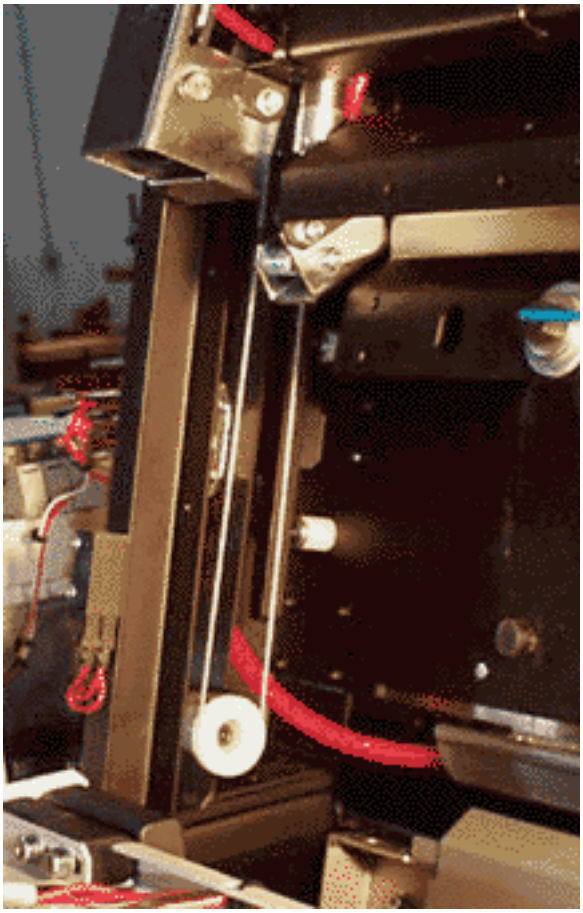
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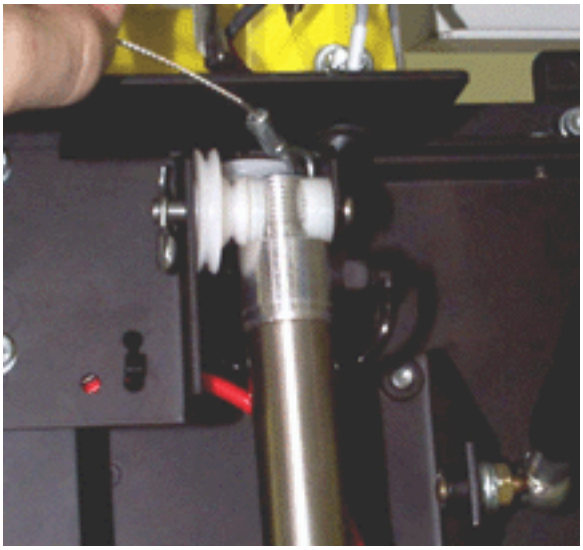
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Step 6: Cables

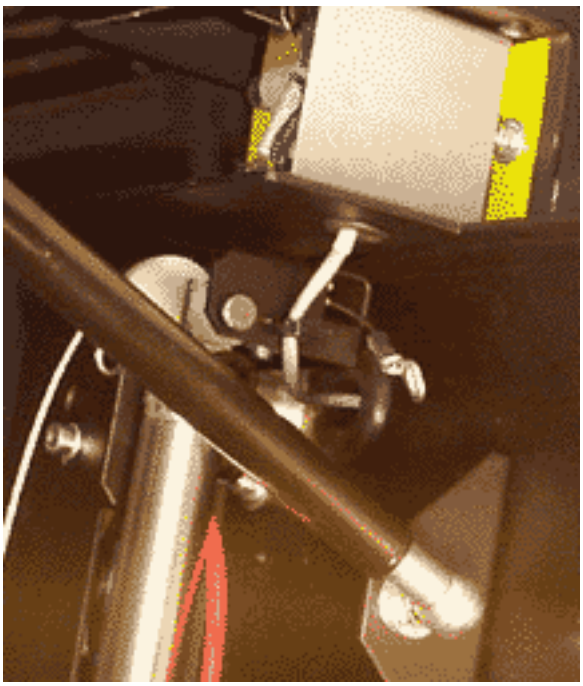
- Take the guiding cable, 50-1765A, and wrap it around the pulley at the bottom of the rail. Notice the direction that cable is going. (Down to the pulley, towards the table, then up from the pulley.)



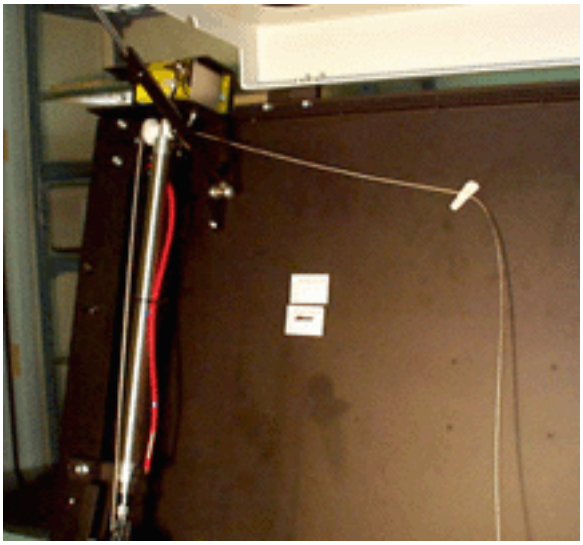
- Maintain tension on the cable so that it doesn't fall off the pulley on the rail. Feed the cable eye through the move cylinder bracket at the top of the load table. Note that you have to first push the cable through the portion of the cut out that is on the opposite side of the cylinder, then jump the cable over to lie in the largest pulley groove.



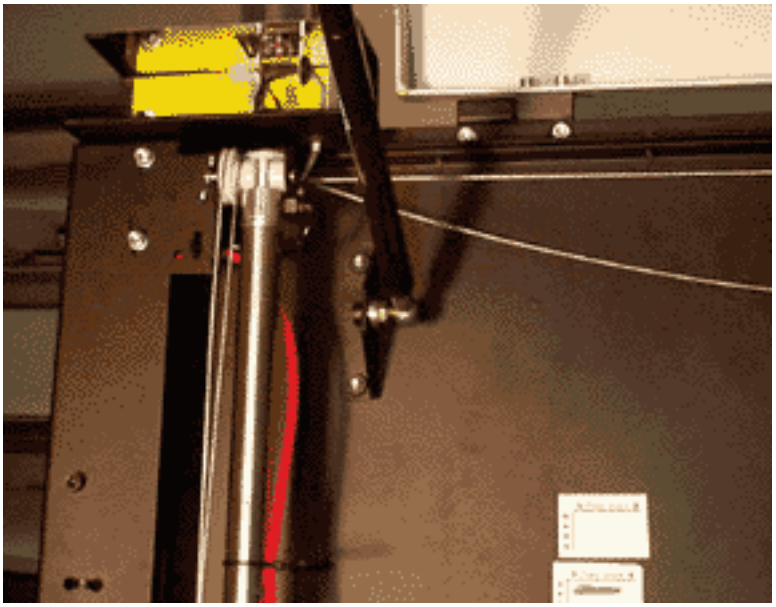
- Feed the cable eye through the small square opening in the bracket that points towards the center of the load table. Again jump the cable onto the largest pulley. Note that the electrical cable for the warning lights is to be tied to the bracket side.



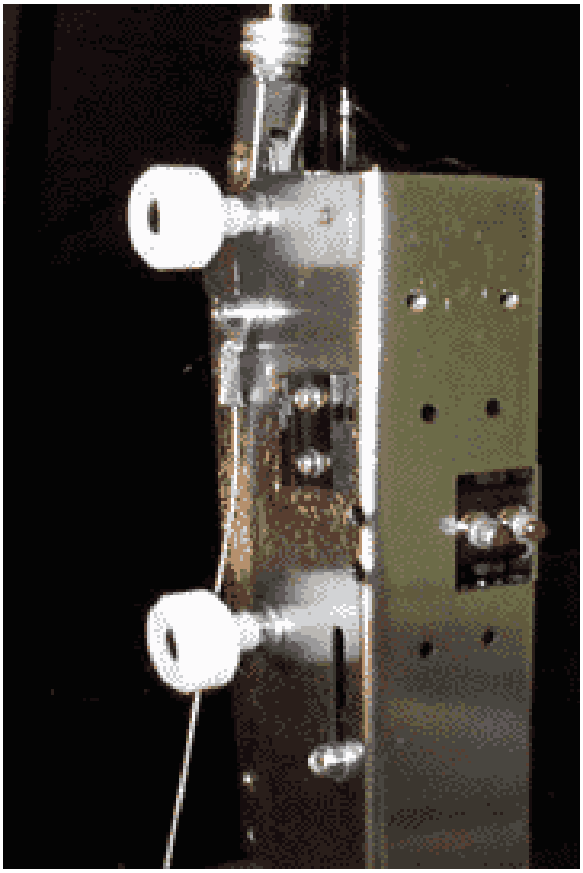
- Tape the steel guide cable to the load table and then route the other cable on the opposite side of the picker. (Down to the rail pulley, up to the largest pulley in the top bracket and out towards the center of the table.)



- Continue the guide cable across the top of the load table and through the bracket using the small pulleys.



- Continue the cable down and pass it through the space between the original cable and the picker head. This is why the 2 M5 flat washers were placed between the cable eye and the picker head. Secure the cable with the M5 nylock nut in the slot as shown. Do not over tension the cable. It should feel very loose.



- Finish off routing the other side of the picker guide cable.

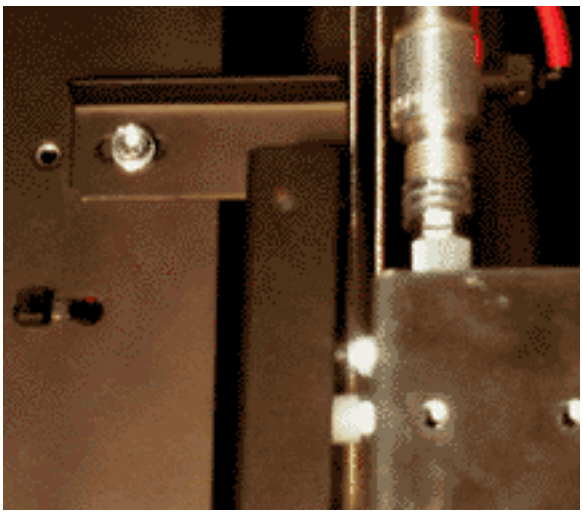
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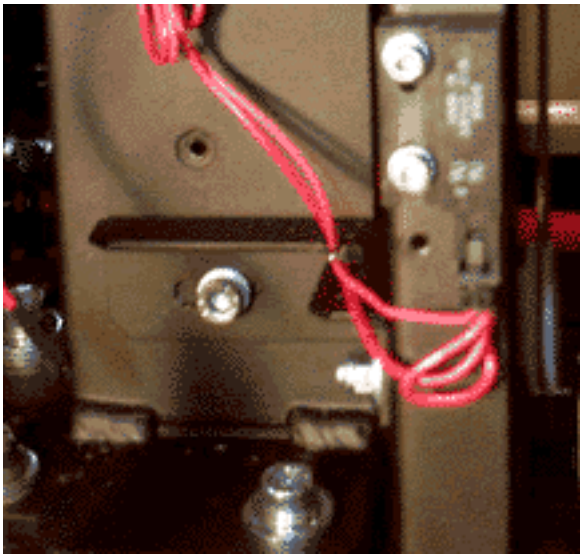
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Step 7: Centering the picker

- It is very important that the picker be in the exact center of the load table (within 2mm), otherwise it will catch on the side post covers. Adjust the rails from side-to-side until you can see the same amount of slot showing under the top M5 screw head and washer. The picker head should have 1mm of side-to-side play in the rails.



- Loosen the bottom of one of the rails. You are about to move the picker down so you want to be sure that the rails are not angled towards each other causing the picker to bind.
- Move the picker down by pressing on the blue button on the picker move solenoid.
- Adjust the bottom of the rails so that the M5 screws and washers are in equal positions in the rail slots and there is still 1mm of side-to-side play in the picker. Move the picker up and again check the side-to-side play.



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Step 8: Download MPE firmware

- Unplug both cables to the picker head solenoid. Ensure that the picker head is in its retracted position (not reaching for the load table).
- Power on the Trendsetter. Down load MPE firmware version 1.20 or greater onto the trendsetter. Check the release notes for head code compatibility.
- Ensure that SET AL VPI equals 1 if so NVS SAVE AL.
- Move the picker up using the terminal command PICKER UP. Now plug both wires into the Picker Head solenoid and type PICKER OUT. If everything is set properly, the picker should be in its retracted mode (not reaching for the load table)

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Step 9: Drill Vacuum release holes in the load table

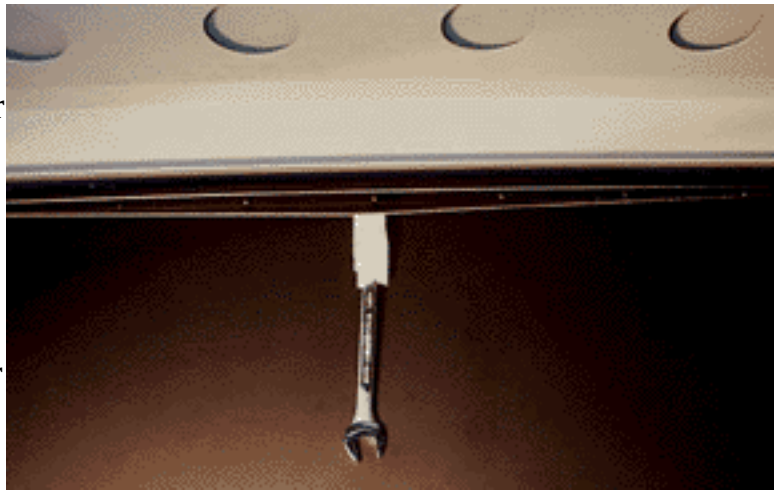
- Move the picker head in by PICKER IN and then the wrist PICKER WRIST IN.
- Using a Pencil, mark the locations of the bottom of the cups.
- Move the PICKER WRIST OUT and PICKER OUT then PICKER DOWN.
- Measure up 22mm from the marks that you just made and make another mark. This mark will now be in the center of the cup.
- Take a center punch and dent the load table in preparation for drilling.
- Mask off the machine using an old slip sheet and masking tape and drill 3mm holes in each location.
- Use a counter sink bit by hand to deburr the drilled holes. Then use a black marker to paint the exposed metal.
- Clean off all cups with alcohol wipes that you would find in a first aid kit.

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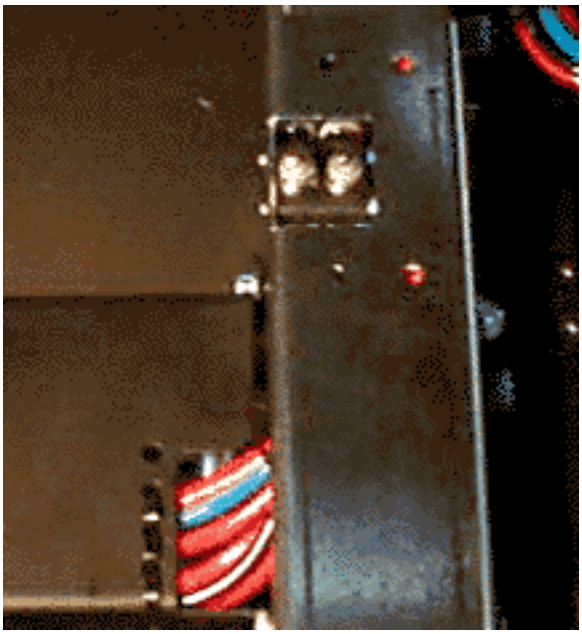
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Setup/Integration



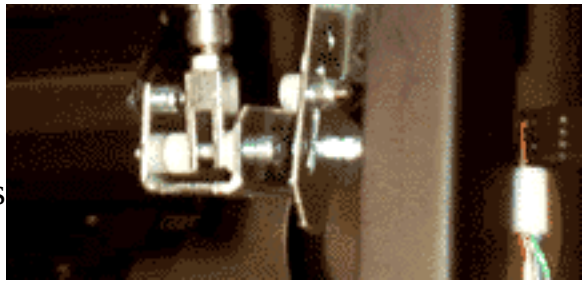
- Set the cable tension by hanging a 14mm wrench on one cable in the center of the span at the top of the load table. At the wrench the cable should deflect 25mm to 35mm below the other cable.
- Do the same for the other cable. Then Re-check the tension in the first cable.



- Adjust the picker head speed controls so that PICKER IN stops motion after 3 seconds and both sides of the head are synchronized.
- Picker wrist in and out are now fixed orifices unless you are working on one of the beta pickers. So no adjustment is necessary. If it is required, wrist out should take 10 seconds, wrist in should take 8 seconds.
- PICKER OUT should take 3 seconds.
- PICKER DN should take 3 seconds. From start to stop of motion.
- PICKER UP should take 6 seconds.
- Download the test procedure and procomm macro pickertest.exe and follow the instructions for fine tuning of these times. This is a self extracting zip file: just copy the file to a temperary directory and run it. You will have to move the al_diag.wax file into the script directory in procomm or where ever you store such things. The other files are only required if your version of procomm does not work and therefore have to recompile the source code.



- After PICKER IN has finished its motion, there should be a 30mm gap between the load table and the curved foam pad on the cup bar. To make this



gap larger, position the white nylon wrist stop father down in its slot. It is easiest to adjust after a PICKER WRIST IN. I have found that about 3mm of slot showing above the stop is pretty close to what you need. Be sure to move the wrist out and picker out, then in again to check this position.

- You should check that the leading edge of the plate is entering the LEC without hitting the film guide. Adjust the rod ends on the wrist cylinders to angle the plate in or move the picker rails in the slots in the bottom bracket. Make sure that the rail is not rubbing on the pulley. Move the pulley to a different hole if you have to. It is better to angle the plate than move the rails since moving the rails will eat up clearances for manual bypass.
- The plate drop adjustment is not intuitive. If you screw the rod end in, you will actually make the plate drop larger because the cylinder stroke is limited by the stack of M6 washers on the rod. What you are doing by screwing the rod end in is effectively shortening the stroke of the cylinder. If you remove one of the M6 washers on the rod, the picker will grab the plate higher; therefore the leading edge will stick farther out from the picker and farther into the LEC. You may have to adjust the position of the move cylinder brackets that are attached to the top of the load table so that the picker wrist pivot clears the large 3" hole in the load table and also does not get too close to the TEC when the picker is down and the TEC is actuated. If you move this bracke, be sure to check the alignment of the separator arms in their micro switches. You can also adjust the plate drop the old fashioned way by moving the plate ledge up or down.
- Adjust the plate drop to 2mm to 4mm. There is no or very little variation between a full stack and an empty stack. The quick way is to look for the edge of the plate in the gap between the LEC and the film guide. The plate should be no more than 1mm above the LEC. Use a pencil and mark the plate right at the LEC or film guide, then drop the plate and draw another line from the same reference. The distance between the lines is the plate drop. This is also an easy way to see if the plate is level to the drum. If you use the old mark the separator arm method, you will get misleading results. The plate bows so far toward the load table that it effectively changes its vertical length when it is dropped as it will straighten out.
- Now you are ready to PICK some plates. Enjoy.

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Tools Required

Here is a list of the tools that you will need to complete the upgrade:

- Hand Drill
- 3mm, 5.5mm Drill Bits
- Small Round File For a 6mm Hole
- Counter Sink Bit
- Center Punch
- 7mm, 8mm Miniature Wrenches
- 14mm Full Size Wrench
- Imperial Allen Keys
- Metric Allen Keys
- Masking Tape
- Metric Ruler
- Tubing Cutters
- Pencil
- Alcohol Wipes
- Tie Snips