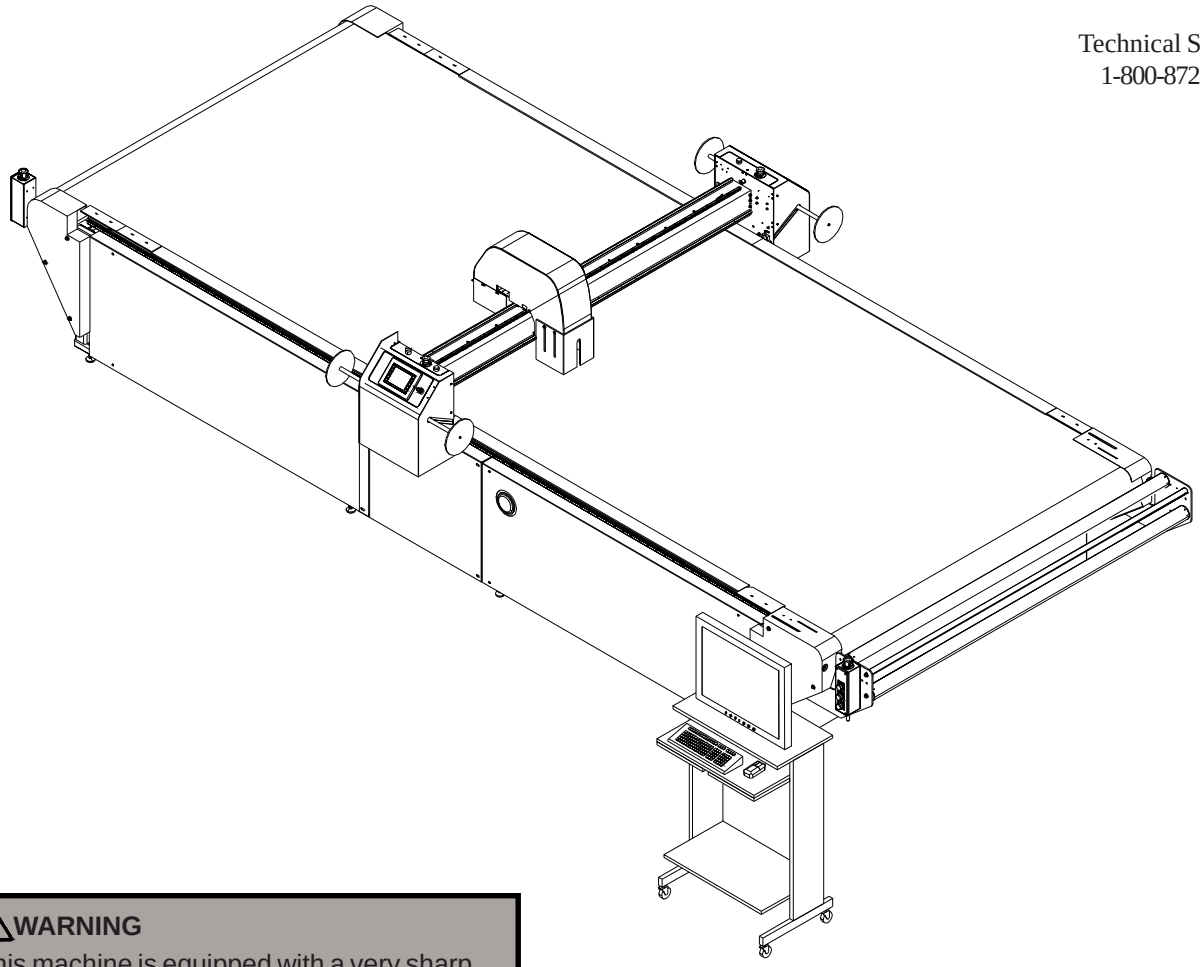
Eastman®

THE EASTMAN ®
Eagle
Automatic Cutting System
Model: Eagle C3
Service Manual

Technical Support:
1-800-872-5595



⚠ WARNING

This machine is equipped with a very sharp knife. Keep hands, arms, and hair away from the knife area at all times.

Misuse of this machine or failure to follow all safety instructions on this machine and in the instruction manual may result in serious personal injuries.

Eastman®
Over a Century of Cutting Expertise

779 Washington St., Buffalo, N.Y. 14203-1396 U.S.A. • (716)856-2200 • Fax (716)856-1140 or (716)856-2068
Manufacturers of Eastman Cloth Cutting and Cloth Spreading Machines
Website: www.EastmanCuts.com

Form E-545

Congratulations

Congratulations in selecting an Eagle Conveyor. With over 100 years of experience in the cutting room, Eastman is a world leader in cutting equipment. Every Eastman employee takes pride in each machine we build and back it with unprecedented support. Our Technical Service department is made up of a dedicated staff of professionals with years of experience installing, troubleshooting and servicing the Eagle C3 Conveyor Each technician is familiar with all aspects of the machine including mechanical, electrical and software.

Eastman Machine Company provides technical support and on-site service as required. We offer several affordable Extended Warranty plans that allow you to continue the superior technical support well after the machine is past our standard warranty. If you require on-site technical support or would like to schedule a preventive maintenance visit or need additional training, please call our headquarters in Buffalo, NY to arrange for a technician.

Technical Support

Eastman Machine Company
779 Washington Street
Buffalo, NY 14203
Phone: 716-856-2200
Fax: 716-856-2068

Limited Warranty. Eastman warrants to the buyer that the equipment shall be free from defects in materials or workmanship for a period of 180 days commencing on the date of invoice. Any goods or parts claimed by the buyer to be defective must be returned to Eastman, freight charges prepaid, within the 180 day warranty period. If Eastman determines that the goods or parts are defective in materials or workmanship, Eastman's sole obligation under this warranty shall be, at Eastman's sole option, to repair or replace the defective goods or parts or to provide the buyer credit equal to the portion of the purchase price allocable to the defective goods or parts. This warranty should not apply if defects are caused by product misuse or neglect, if the machine has been altered or modified by the buyer or if other than genuine Eastman parts are used in the machine. THIS WARRANTY IS APPLICABLE TO THIS PURCHASE ONLY. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability. Eastman's liability to the buyer, and the buyer's remedies from Eastman whether in contract, negligence, under any warranty or otherwise, shall be limited to the remedies provided in the foregoing Limited Warranty. In no event shall Eastman have any responsibility or liability to the buyer for (a) any special, indirect, incidental, or consequential damages, including, but not limited to, loss of use, revenue, or profit even if Eastman has been advised of the possibility of such damages, or (b) any claim against the buyer by any third party. The price stated for the product sold is a consideration for limiting Eastman's liability.

IMPORTANT

The purchaser must instruct all operators on the proper use of this equipment. All standard industrial safety measures and equipment should be provided to protect the operator. Operators must be cautioned that improper or careless use of this equipment may cause personal injury. If you do not have qualified operators to instruct new persons, contact your EASTMAN sales representative or EASTMAN factory direct.

Electrical connections and servicing to this equipment should be made by a qualified electrician who is familiar with applicable codes and regulations. Disconnect this equipment from electrical power source before proceeding with any disassembly for adjustment or repair.

Your Eastman ***Eagle Conveyor*** is designed to operate at a high rate speed. All personnel should be instructed to wear safety glasses and stand well clear of the ***Eagle Conveyor*** when in operation.

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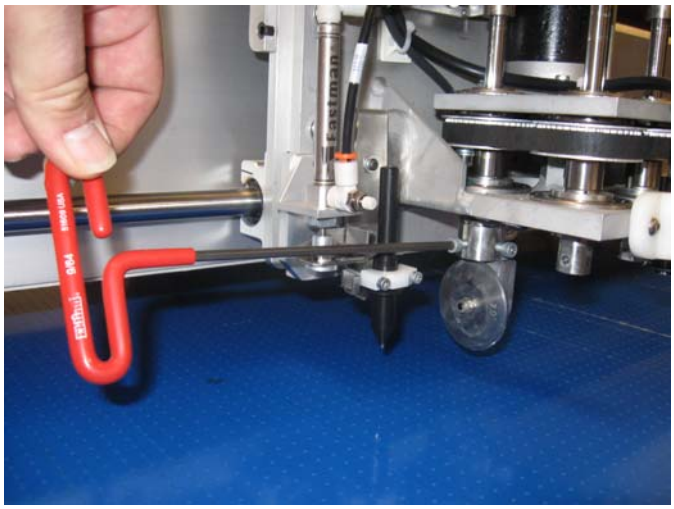
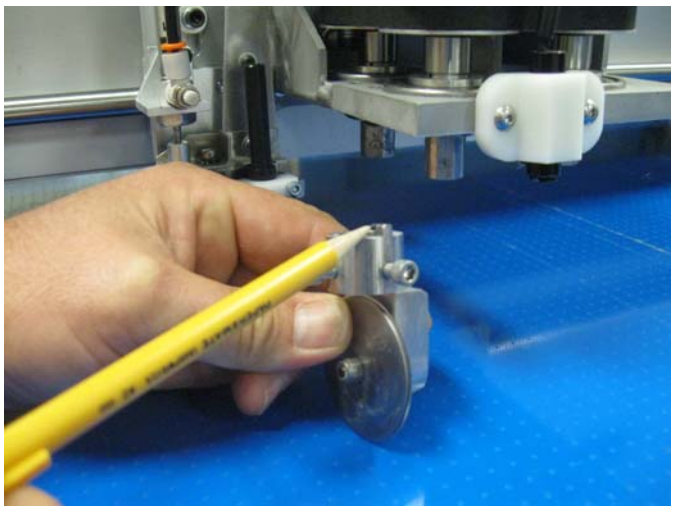
Instruction for Aligning, Cleaning and Replacing Consumable Parts

Round Knife Assembly

- Turn the power off to the gantry, use lock out / tag out if required.
- Loosen the two allen head screws on the tool holder.



- Carefully slide the round knife assembly off the tool head spindle.
- Ensure that the removed round knife assembly is placed in a safe area because it contains sharp objects that pose hazards.
- Install new knife assembly on the desired tool head spindle ensuring that the alignment tang is engaged on the spindle.



- Tighten the two allen head screws on the tool holder to secure it to the tool head spindle.
- If the tool type that is installed on the tool head spindle is different from the one removed than it is important to re-map or change the tool type that is represented in the software to match the one which is installed.

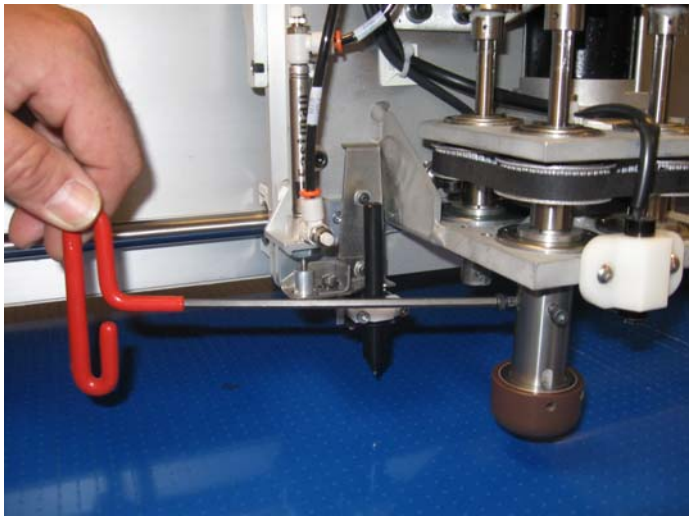
- Power on gantry

Note: Tools do not need to be recalibrated unless cut accuracy is critical to 0.010" or less. If calibration is needed refer to operator's manual.

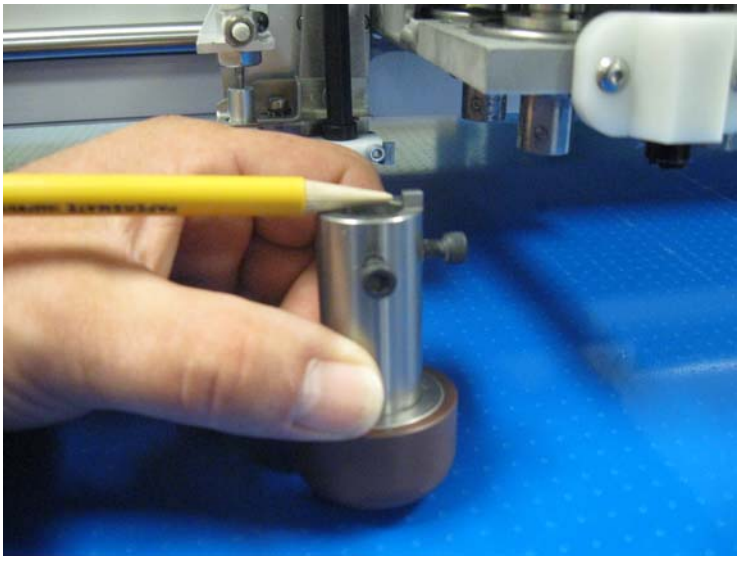
Caution: Failing to re-map a tool after changing tool types can result in damage to the cutting table surface, tool and or tool spindle. (Example: changing a punch to a drag knife).

Drag Knife Assembly

- Turn the power off to the gantry, use lock out / tag out if required.
- Loosen the two allen head screws on the tool holder.



- Carefully slide the drag knife assembly off the tool head spindle.
- Ensure that the removed drag knife assembly is placed in a safe area because it contains sharp edges that pose hazards.
- Install new knife assembly on the desired tool head spindle ensuring that the alignment tang is engaged on the spindle



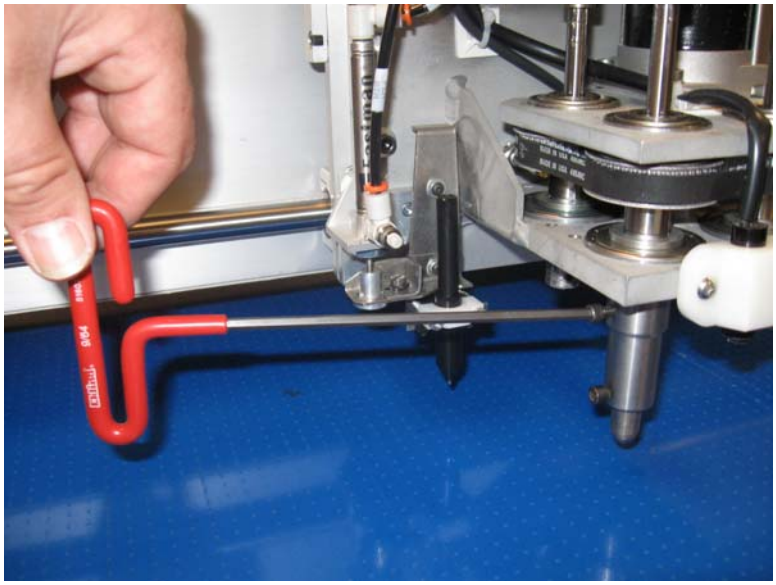
- Tighten the two allen head screws on the tool holder to secure it to the tool head spindle.
- If the tool type that is installed on the tool head spindle is different from the one removed than it is important to re-map or change the tool type that is represented in the software to match the one which is installed.
- Power on gantry.

Note: Tools do not need to be recalibrated unless cut accuracy is critical to 0.010" or less. If calibration is needed refer to operator's manual.

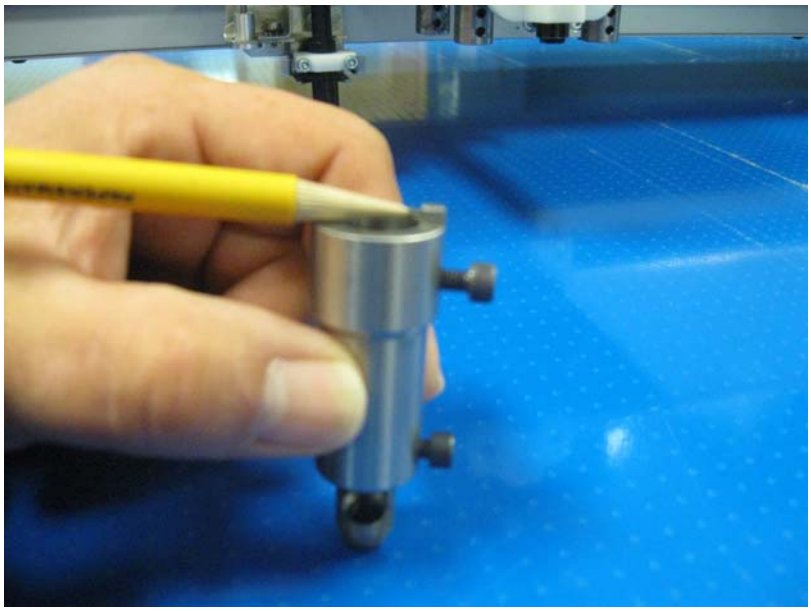
Caution: Failing to re-map a tool after changing tool types can result in damage to the table cutting surface, tool and or tool spindle. (Example: changing a punch to a drag knife).

Punch Assembly

- Turn the power off to the gantry, use lock out / tag out if required.
- Loosen the allen head screw on the tool holder.



- Carefully slide the punch assembly off the tool head spindle.
- Ensure that the removed punch assembly is placed in a safe area because it contains sharp edges that pose hazards.
- Install new punch assembly on the desired tool head spindle ensuring that the alignment tang is engaged on the spindle.



- Tighten the allen head screw on the tool holder to secure it to the tool head spindle.

- If the tool type that is installed on the tool head spindle is different from the one removed than it is important to re-map or change the tool type that is represented in the software to match the one which is installed.
- Poder en gantry.

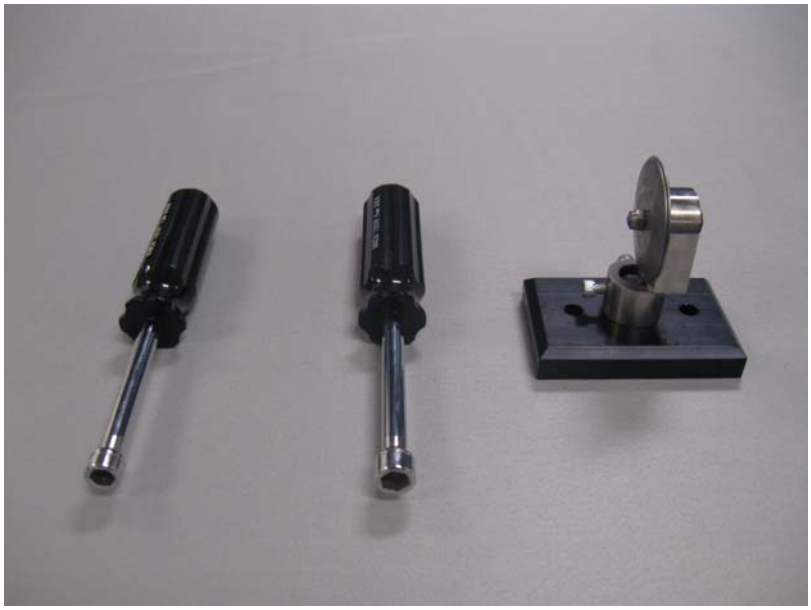
Nota: Tools do not need to be recalibrated unless cut accuracy is critical to 0.010" or less. Si calibración es necesaria, vea

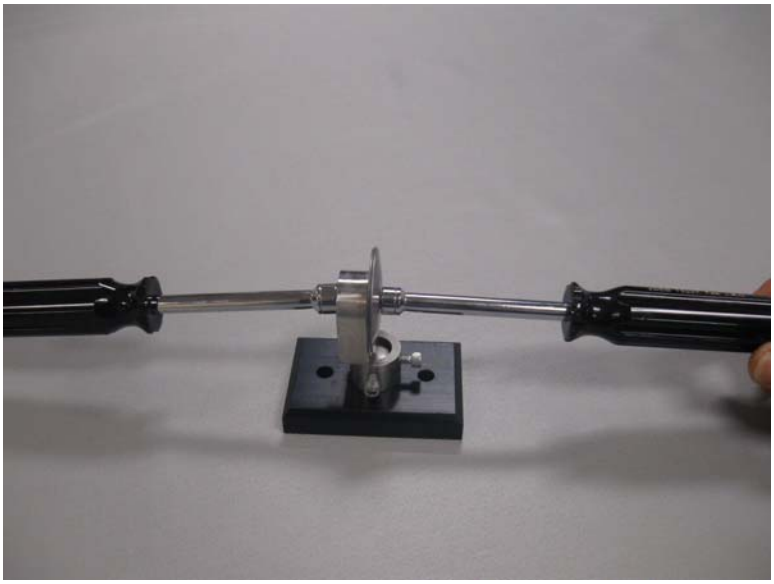
Caution: Failing to re-map a tool after changing tool types can result in damage to the table cutting surface, tool and or tool spindle. (Example: changing a punch to a drag knife).

Round Knife

- Place the tool holder assembly with the worn round knife to be replaced on the bench mount holder supplied by Eastman.
- The tool holder assembly should be secured on the bench mount holder with the alignment tang engaged to prevent movement.

- Using nut drivers supplied by Eastman loosen the bolt which secures the knife and depth limiters to the holder..





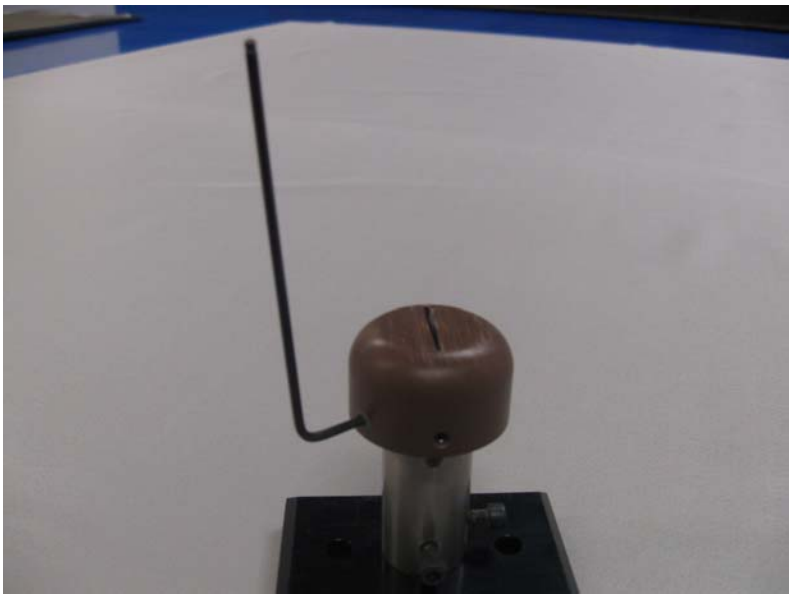
- Carefully remove the worn knife and replace with a new knife which is supplied by Eastman. Ensure that the depth limiters and new knife are installed in the same sequence as removed. Properly dispose the used / worn knife.


USED BLADES

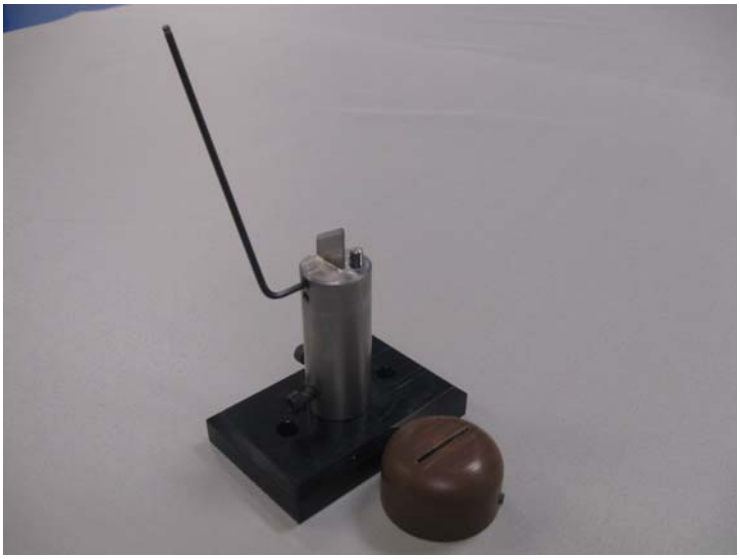
Drag Knife

- Place the tool holder assembly with the worn drag knife to be replaced on the bench mount holder supplied by Eastman.
- The tool holder assembly should be secured on the bench mount holder with the alignment tang engaged to prevent movement.

- Using allen wrench loosen the two screws found on the depth limiting plastic crown and the remove the depth limiting plastic crown from the tool holder assembly.

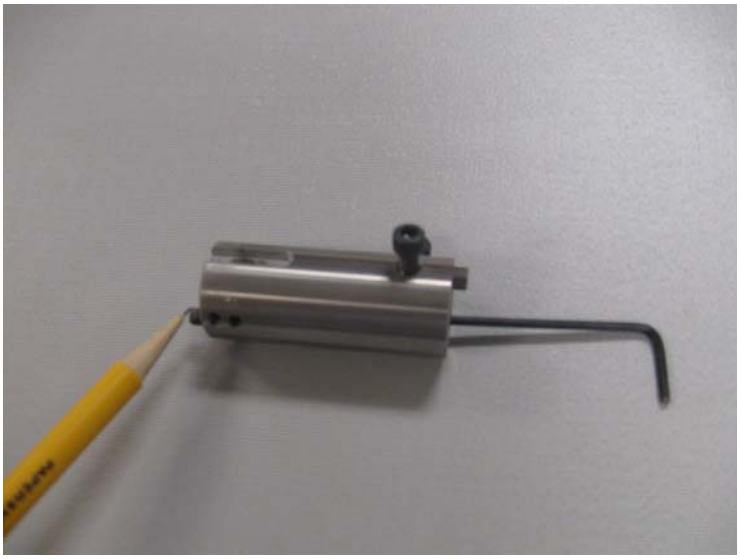


- Loosen the set screw that retains the knife in the holder.



- Carefully remove the worn knife and replace with a new drag knife. Ensure that the knife is replaced with the sharp edge pointing to alignment tang. Properly dispose the used / worn knife.

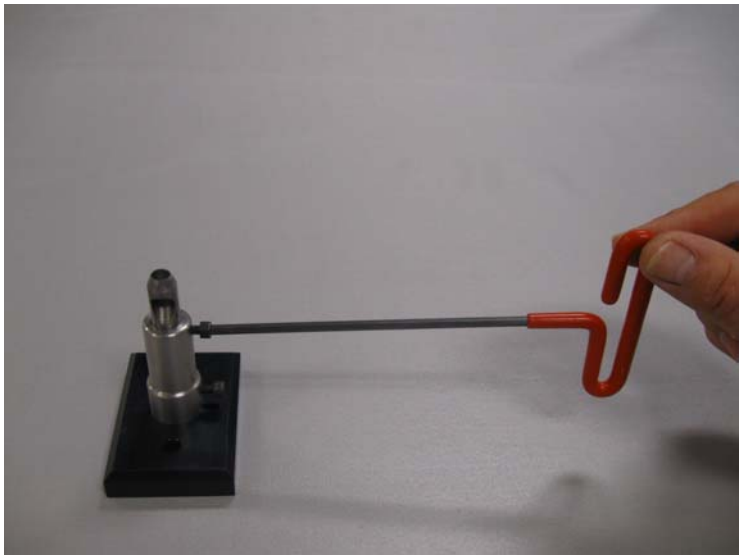
- If a change in depth of penetration is required for the knife, remove the assembly from bench mount holder, adjust the depth of set screw found inside the tool holder bore using allen key.
- Tightening the screw will result in less blade exposure, loosening the screw results in more blade exposure. It is advised the blade be exposed only enough to cut the material as required else may lead to damages to the cutting surface.



- Return the depth limiting plastic crown back on to the tool holder assembly and tighten both screws.

Punch

- Place the tool holder assembly with the worn punch to be replaced on the bench mount holder supplied by Eastman.
- The tool holder assembly should be secured on the bench mount holder with the alignment tang engaged to prevent movement.

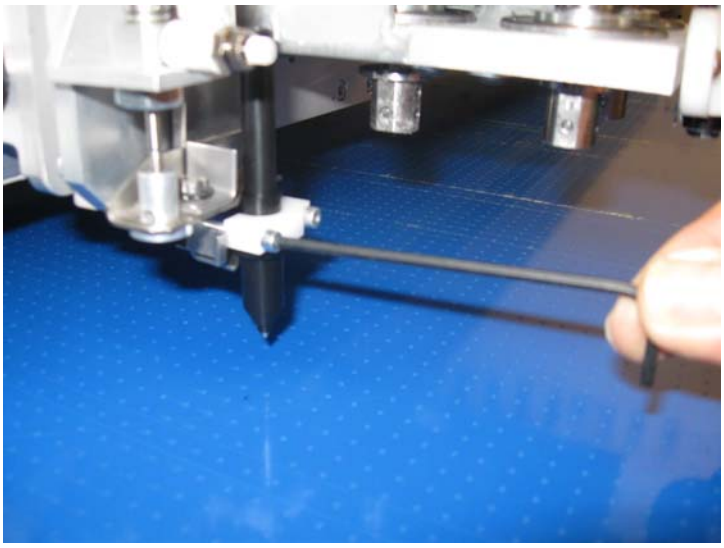


- Using allen wrench loosen the allen head screw which holds the punch to the tool holder.
- Remove the worn punch and replace with new punch.

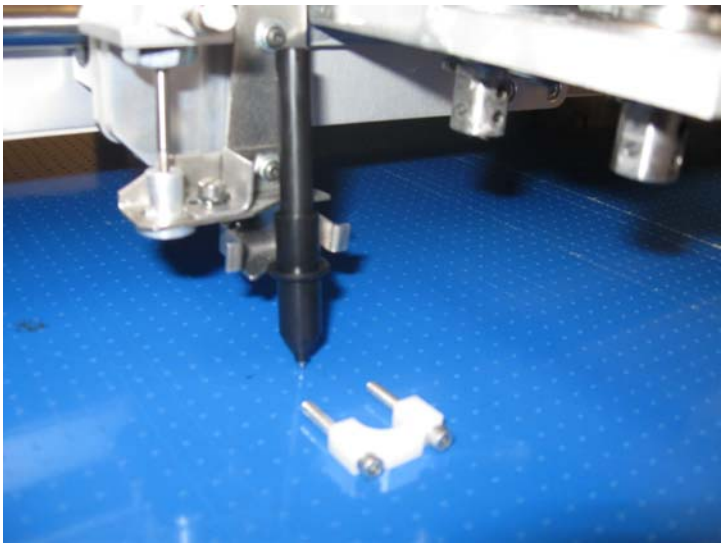
- Using allen wrench tighten the allen head screw which holds the punch to the tool holder.

Removal of Plotter Pen to replace Pen refill

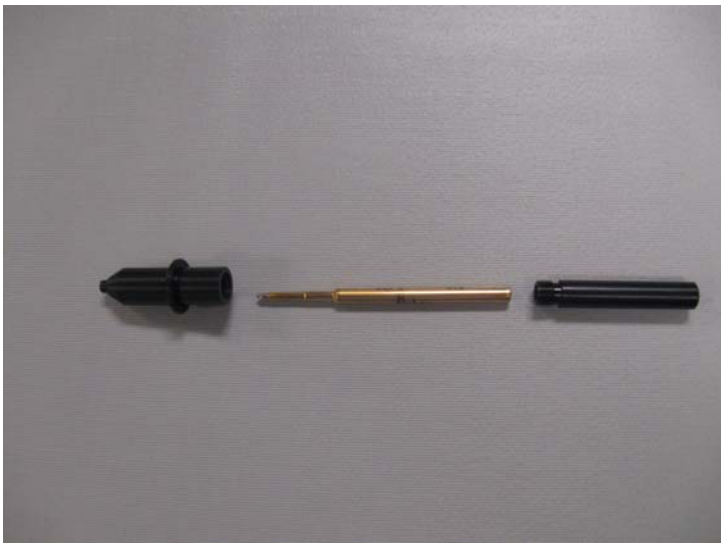
- Using allen wrench remove the screws which holds the white plastic saddle.



- Remove the plotter pen.



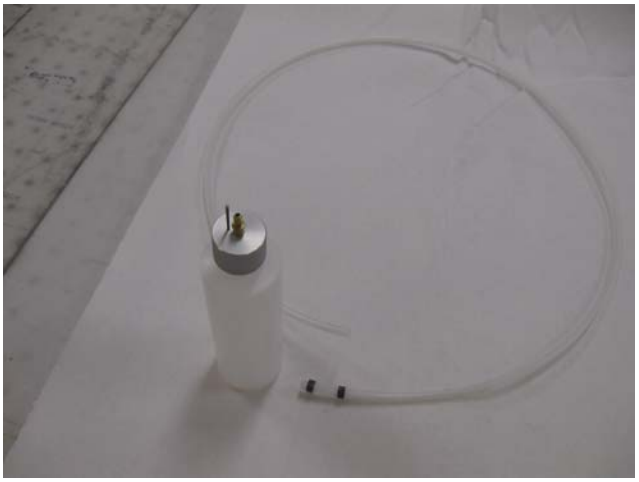
- Unscrew the plotter pen exposing the pen refill.



- Replace with new refill.
- Reassemble the plotter pen.
- Return plotter pen and white plastic saddle by mounting and tightening the screws with the allen wrench.

Airbrush Ink refill

- When the ink supply runs low, replace the 1/2 pint ink bottle with a fresh bottle of ink. This will eliminate impurities clogging the air brush.
- If refilling the ink reservoir from gallon containers, the ink reservoir should be drained and cleaned periodi cally depending on the ink usage. This will help avoid thick sediment from forming at the bottom of the ink reservoir.
- Ink should always be shaken before refilling or installing a new ink reservoir.
- The vent hole in the ink reservoir should be closed with the sealing pin when not in use. If the vent hole is not sealed, the ink will thicken and may cause airbrush clogging.



- It is recommended to activate the airbrush at the beginning and end of each shift since the ink is self cleaning ink it will clean the air brush as and when it is activated.
- If the ink is washable then 6 months shelf period is very important.

Note: washable ink has a 6 month expiration period. After expiration period the ink can potentially damage the air brush.

Cleaning of Airbrush

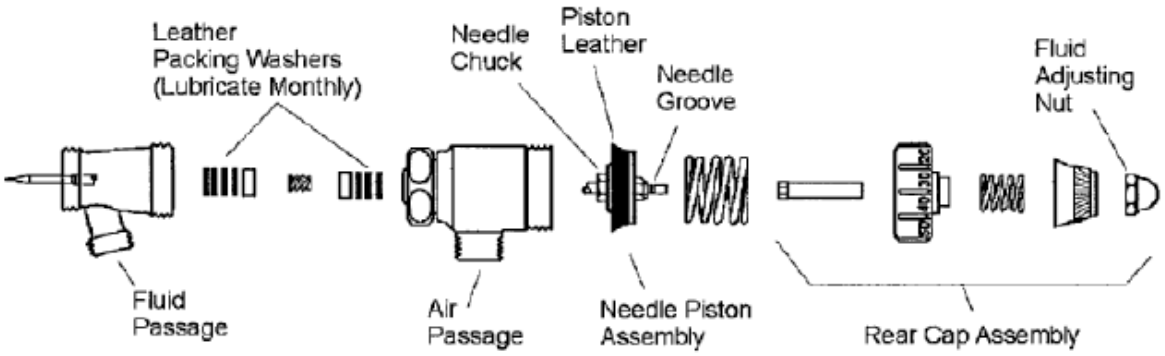
The air brush stylus has been designed for minimum maintenance. The leather packing washers should be lubricated once a month with light oil. Old packing washers cause leakage of air or fluid.

Flush clean solvent through the fluid passage of the stylus and wipe off the outside with clean solvent. Never leave the entire stylus immersed in solvent. Dirty spray caps and tips should be cleaned by soaking in solvent and blow clean with air.

Please note: Never use wire or sharp instruments to clean ports as permanent damage may occur.

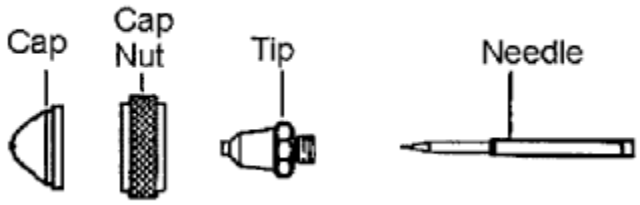
Spray Tip and Cap Replacement

1. Remove the Airbrush stylus from tool head.
2. Release needle pressure from the seat of tip, by backing off the fluid adjusting nut.
3. Loosen spray cap nut and remove spray cap and spray tip. Leave needle in place.
4. Check cap and tip size. Install new cap and tip. Note: use only matching size cap and tip.
5. Secure spray cap nut.



Needle Removal

1. Remove the Airbrush stylus from tool head.
2. Release needle pressure from the seat of tip, by backing off the fluid adjusting nut.
3. Remove the rear cap assembly.
4. Using a pair of pliers, grip the needle piston assembly nut and pull the assembly out.
5. Loosen the needle chuck and slide needle out.
6. Replace needle to desired position and secure needle chuck.
7. Reassemble in reverse order.



Needle Setting

Ink should be mixed thoroughly and always strained through a lint free cloth or fine mesh strainer before using.

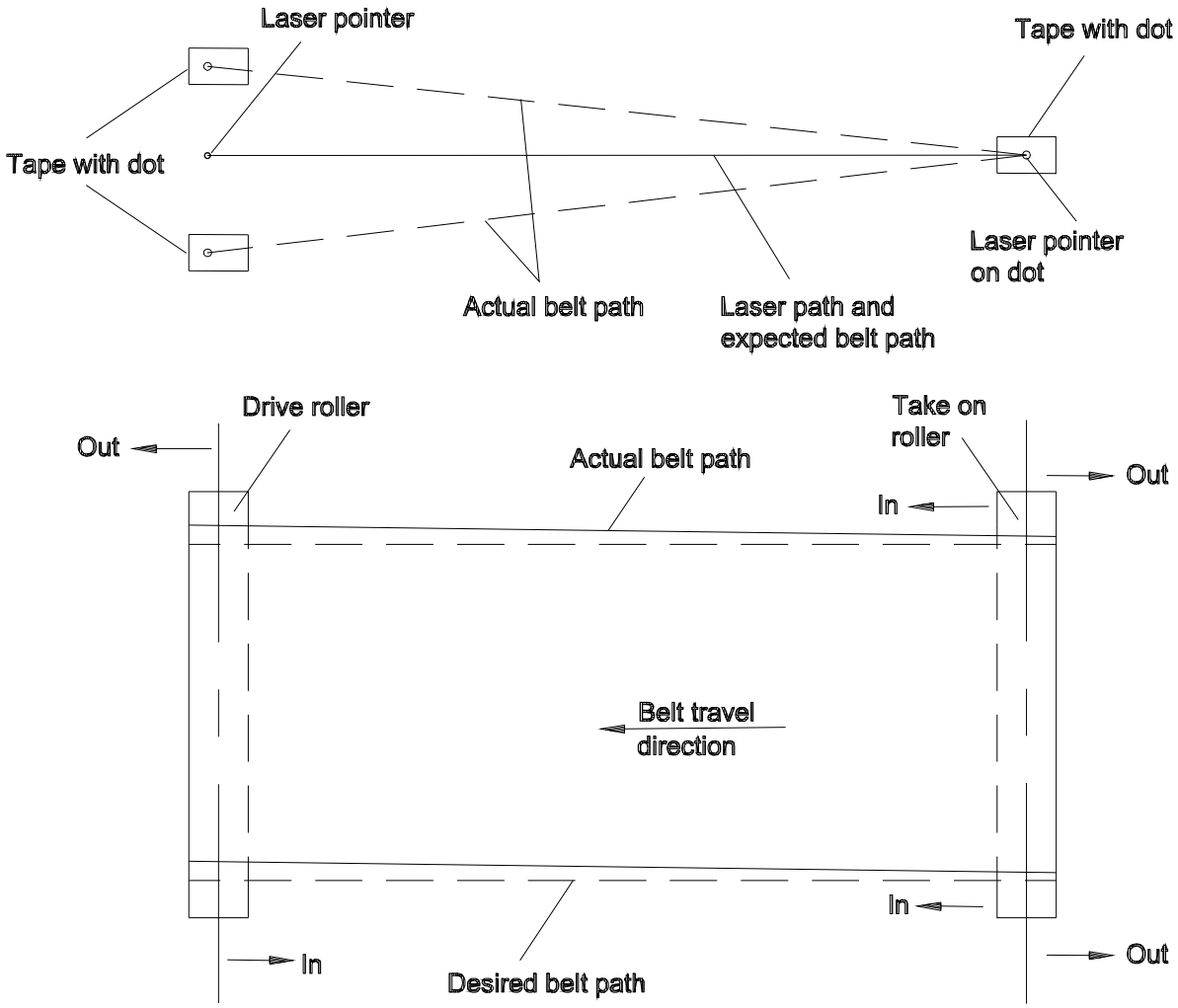
The needle-piston assembly has a needle chuck which locks the needle in position. The single groove on the shank of the needle indicates location at which to lock the piston. Lock piston slightly below mark for use with very heavy fluids and slightly above mark (nearer blunt end) for light fluids.

Ex: Eastman MP style ink requires the groove to be completely covered.

Cutting Belt

Aligning and centering

Case A – Belt Skewed to one side on Drive End



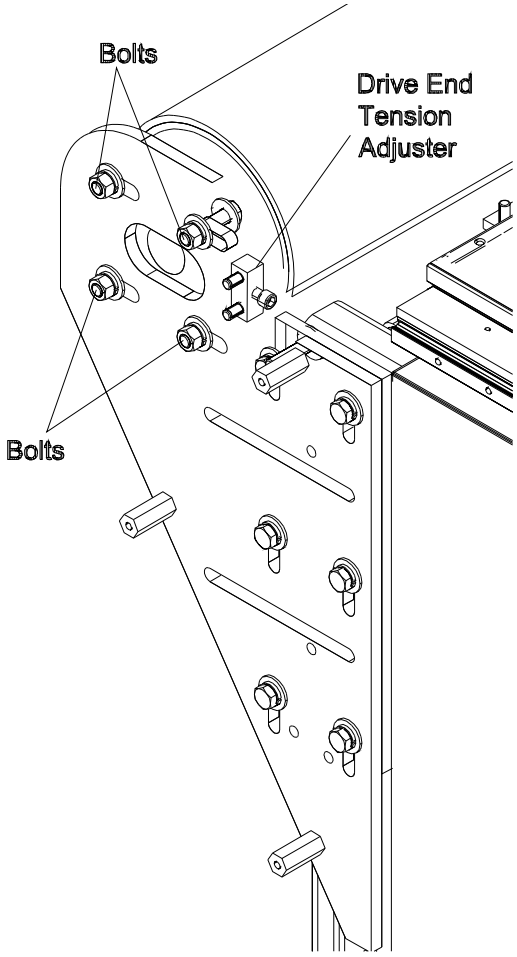
Aligning Procedure

- Press the cut menu screen on the UIT.
- Turn on the vacuum and jog the belt a few feet.
- Click on the “Sync” button in the UIT cut menu.
- Using the UIT “Jog” buttons move the gantry all the way to the feed side of the table with the tool head down.

- Place a piece of masking tape under the laser pointer and put a dot with a pen on the laser pointer.
- Click on the “Sync Jog” button in the lower right corner of the UIT. The gantry and belt will move down the table together. Make sure that the “Jog” button before gantry reaches the table limits
- Observe the marked dot with respect to laser pointer.
- If the tape with the dot moves away gradually from the laser pointer then the belt is skewed to one side on drive end.

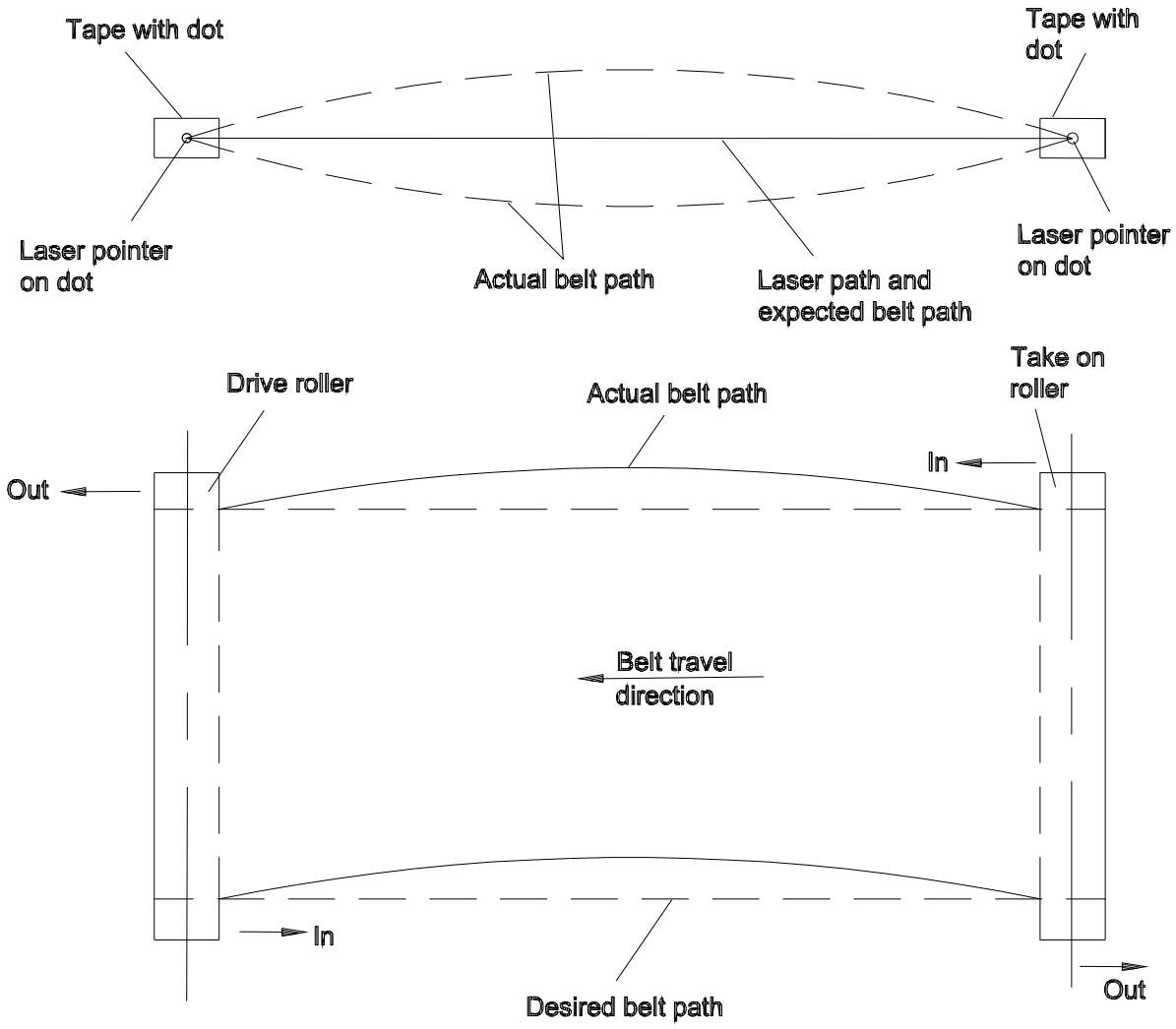
This means that the belt is out of alignment on drive roller, move drive roller in or out to achieve alignment by following the below mentioned steps.

- Remove drive cover.
- Loosen the four bearing bolts.
- Tighten or loosen the tension adjuster to move the roller in / out as required.



- Tighten the four bearing bolts.
- Return the cover.

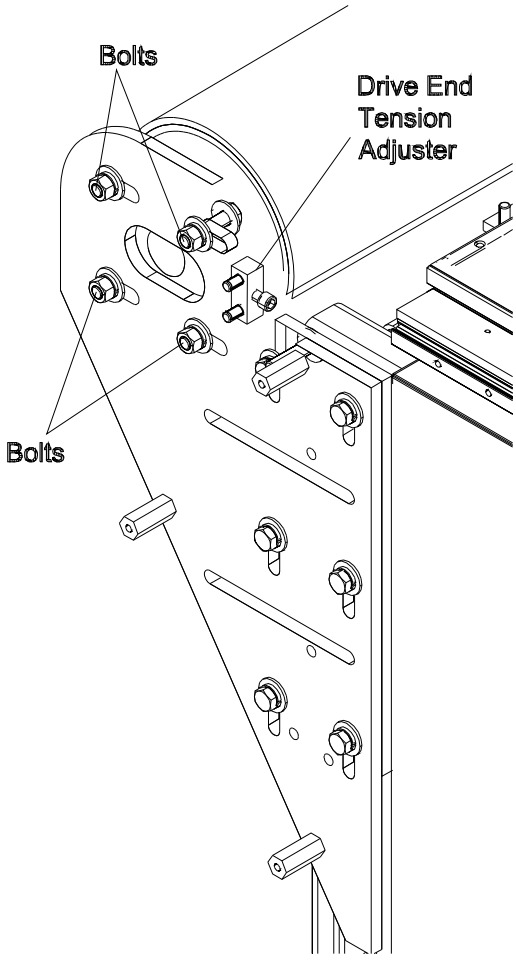
Case B – Belt has a crown in Trajectory

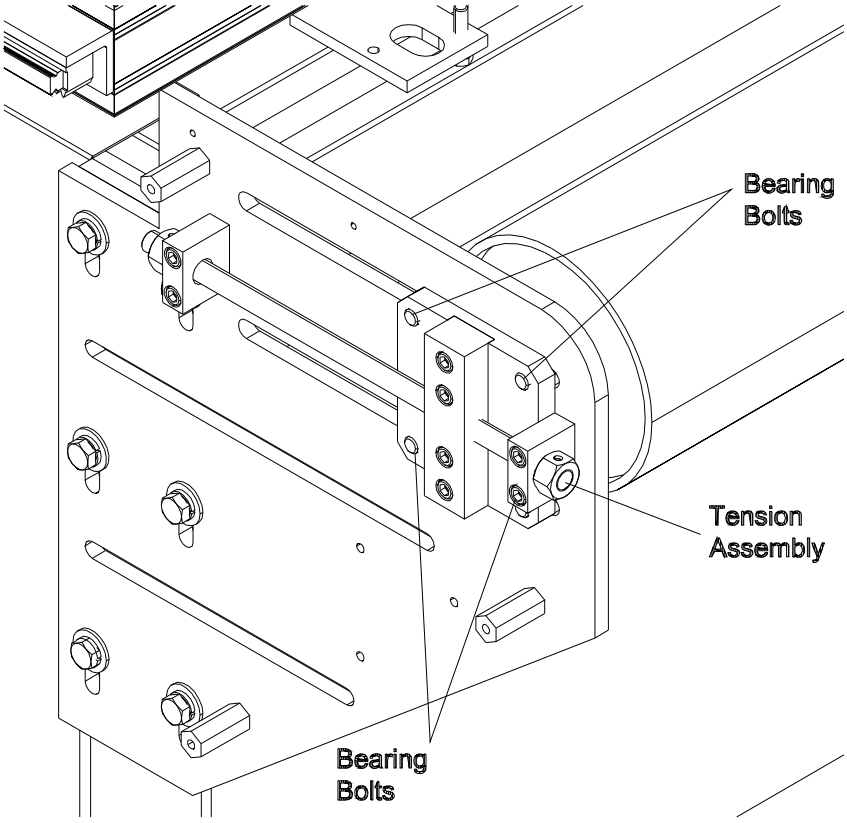


Aligning Procedure

- Press the cut menu screen on the UIT.
- Turn on the vacuum and jog the belt a few feet.
- Click on the “Sync” button in the UIT cut menu.
- Using the UIT “Jog” buttons move the gantry all the way to the feed side of the table with the tool head down.
- Place a piece of masking tape under the laser pointer and put a dot with a pen on the laser pointer.

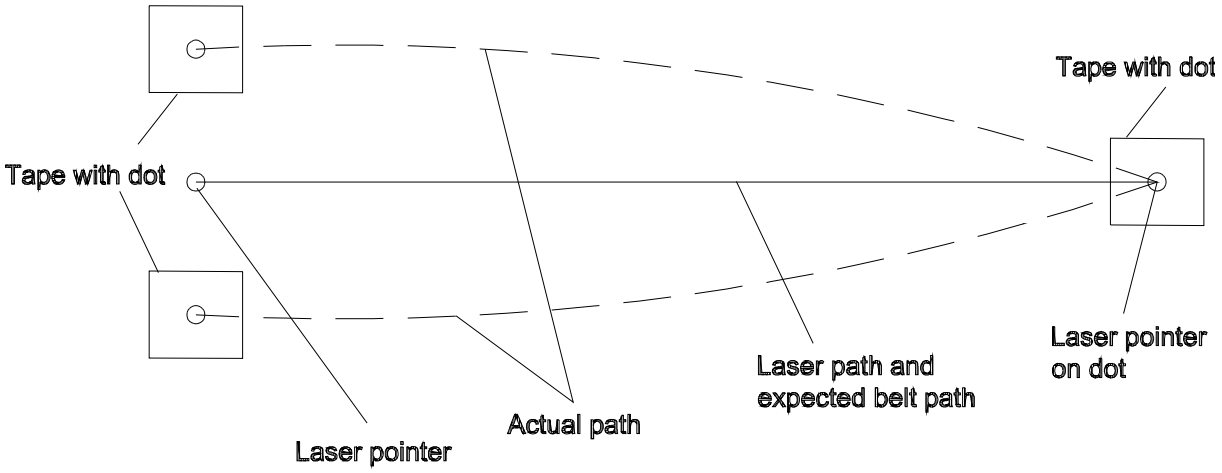
- Click on the “Sync Jog” button in the lower right corner of the UIT. The gantry and belt will move own the table together. Make sure that the “Jog” button before gantry reaches the table limits.
- Observe the marked dot with respect to laser pointer.
- If the tape with the dot moves away gradually from the laser pointer and forms a crown then the belt is out of alignment both on drive-end roller and take-on end roller.
- This means that the belt is out of alignment on drive roller and take-on roller, move both rollers on same side of machine in or out to achieve alignment by following the below mentioned steps.
    - Remove drive-end cover and take-on end cover.
    - Loosen the four bearing bolts on each side of the roller.
    - Tighten or loosen the tension adjuster on both ends to move the roller in / out as required.





- Retest for alignment.
- Tighten bolts.
- Return cover.

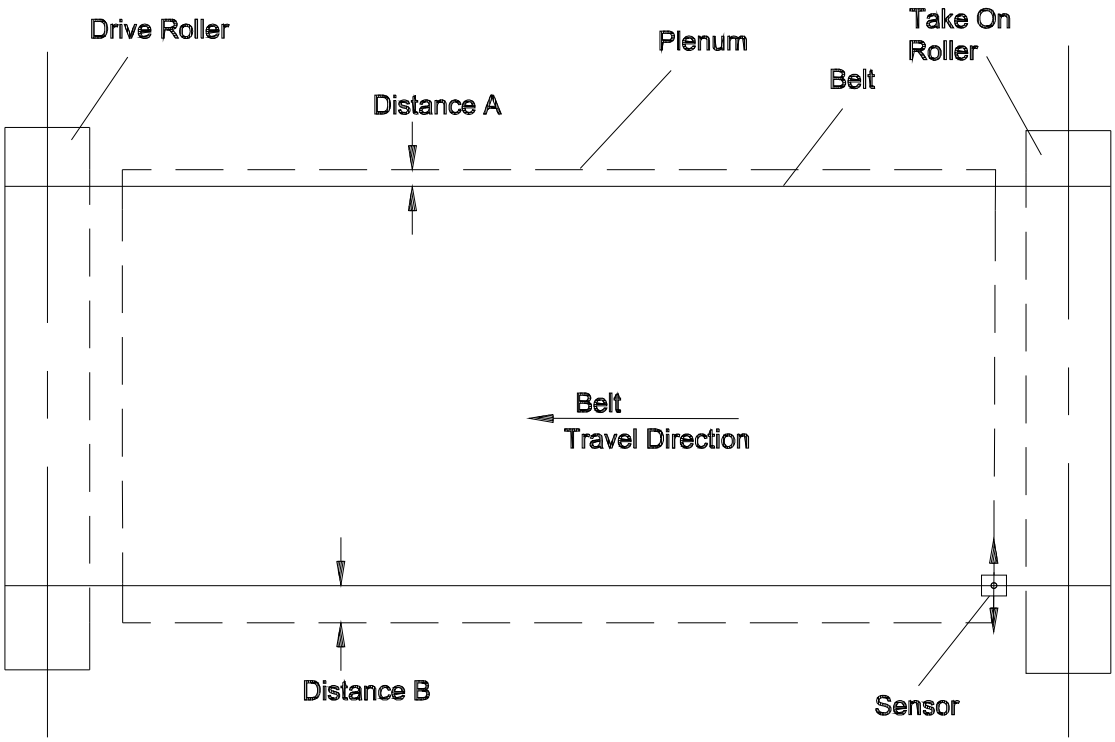
Case C – Belt has a crown in Trajectory in addition to skewed Rollers



Aligning Procedure

- Since the belt has a crown in addition to skewed rollers this is a combination of case A and case B. Please follow the following steps.
- Do the alignment as described in case A so that the belt path is on expected path at the end of sync jog to match the laser pointer.
- Then do the calibration as explained in case B procedure.

Belt Travels correctly but is not centered in Frame



If the distance between the edge of the belt and edge of plenum is not equal on either side of the frame then the belt s not centered in the frame. That is distance A is not equal to distance B as shown in the above picture.

Aligning Procedure

Since the belt is not centered to the frame, please follow the following steps.

- Stop the machine.
- Loosen the jamb nut found on sensor and move the steering sensor found under the take-on roller to move the belt as required.
- Tighten the jamb nut.
- Run machine, jog belt for 5 minutes and confirm belt position.

For replacement of belt please refer to “Disassembly and Assembly Instructions for Parts Requiring Service”.

Disassembly and Assembly Instructions for Parts requiring Service

Replacing Cutting Belt

The following procedure provides step by step instructions for removing and installing a new Eagle Conveyor cutting belt. In some cases where the belt is in good condition but the vacuum holes are clogged or closed, it may be possible to re-perforate the belt with new holes to give it a second life. If the belt is going to be re-perforated it is important to cut the belt down the existing seam. Contact Eastman Machine for feasibility and pricing to replace a belt.

Required Tools

(4) 10" C-Clamps.

(4+) Quick Grip Clamps.

(1) Belt Seam Kit.

(1) Thin tipped Heat Gun.

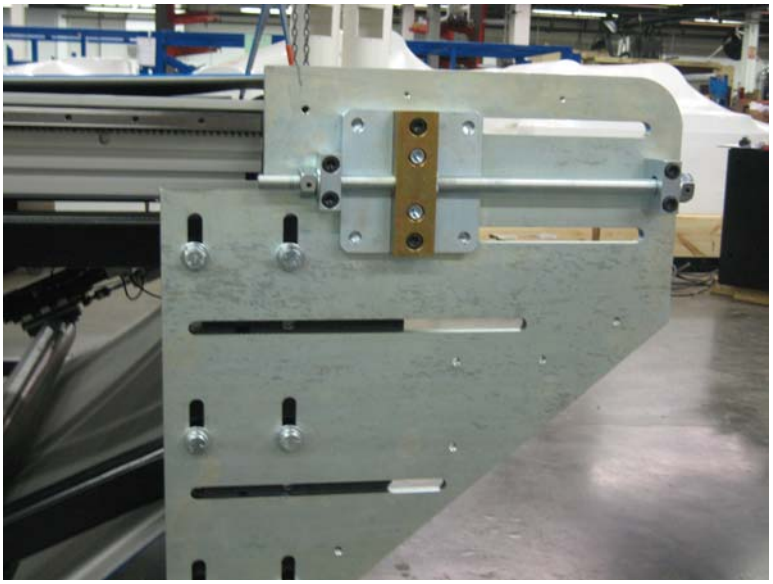
(1) Hand grinder with grinding pads.

(1) Plastic drop cloth to cover belt surface.

Heavy Weights, cinder blocks, heavy bags, or something heavy to lay across seam.

1. Remove the old belt by powering up the machine and jogging the belt until the seam is centered on the table. Move the gantry to the take on side of machine and close Easicut. With a utility knife and straight edge cut the belt along the existing seam.

2. Once the belt is removed, move the tension rollers (Take-on Side) all the way in towards the table surface. You must first loosen the (4) bearings block bolts for the roller then use the adjusting nuts to move the roller in.

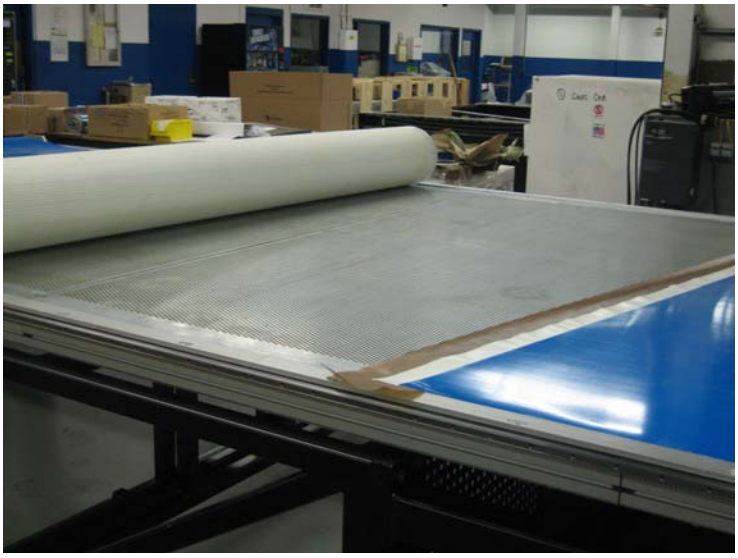


3. Place new belt on table and unroll about 10 feet (3 meters) at a time. Feed the belt around each roller under the table and up around the drive roller. When laying out the belt the bottom part of the skive needs to be on the take up-end of the conveyor and the top part of the skive needs to be on the drive end (take off side). Position the seam of the belt in the middle of the table.

4. Once the belt is in the approximate position, work on the bottom skive side first. Position the entire edge of the belt on the table up against the aluminum angle. (Operator side) This is critical for creating a straight reference line for the entire belt. Clamp the belt into place at the corners of the conveyor to keep it from moving.

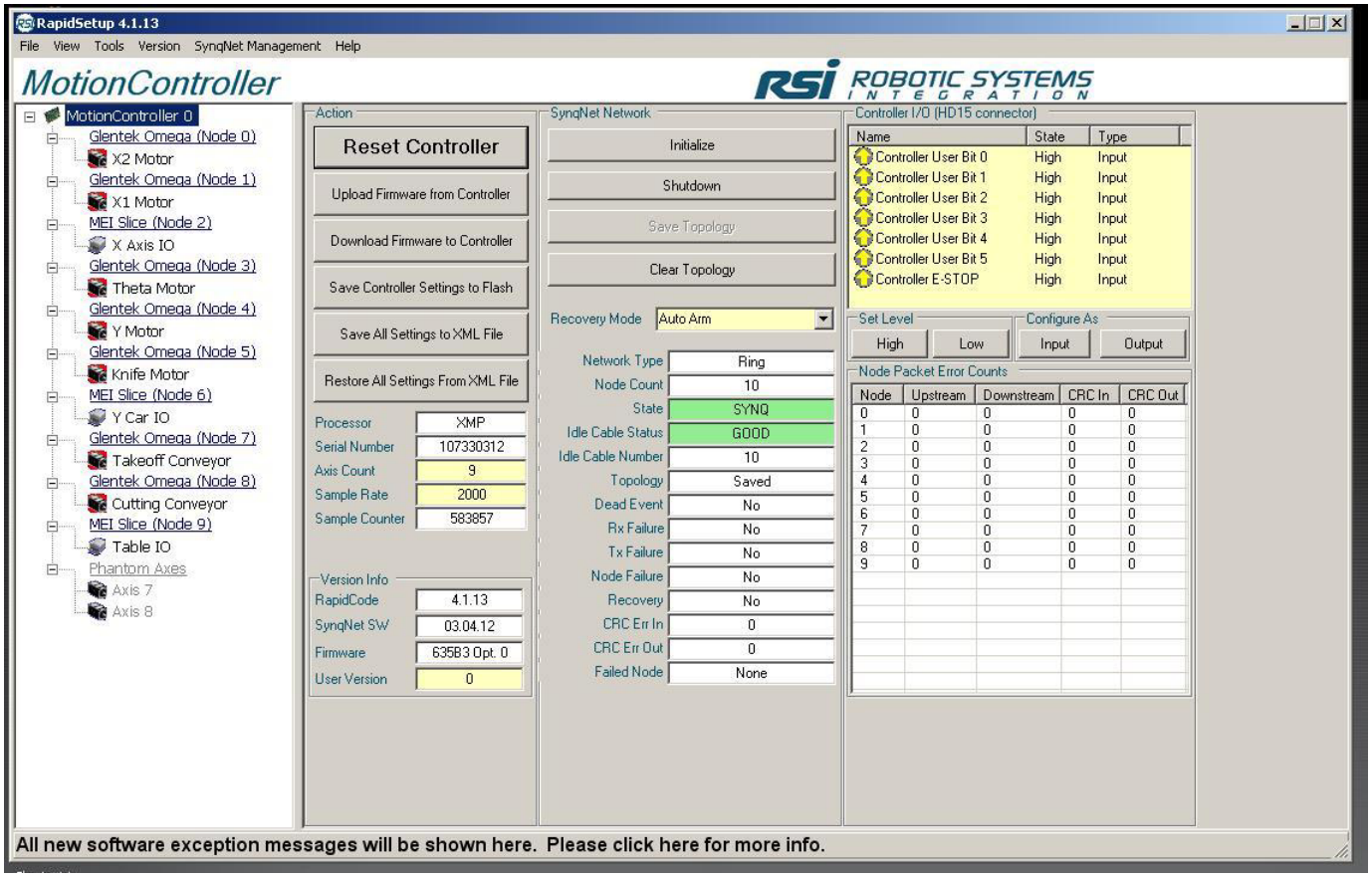
5. Go to the skived area of the belt and put plywood down near the edge. Clamp the belt down with 10" C-clamps over the plywood so the belt is not damaged. Make sure the C-clamps are only putting pressure on the aluminum extrusion and not the plenums.

6. Place the wax paper supplied with the seam kit under the skive.

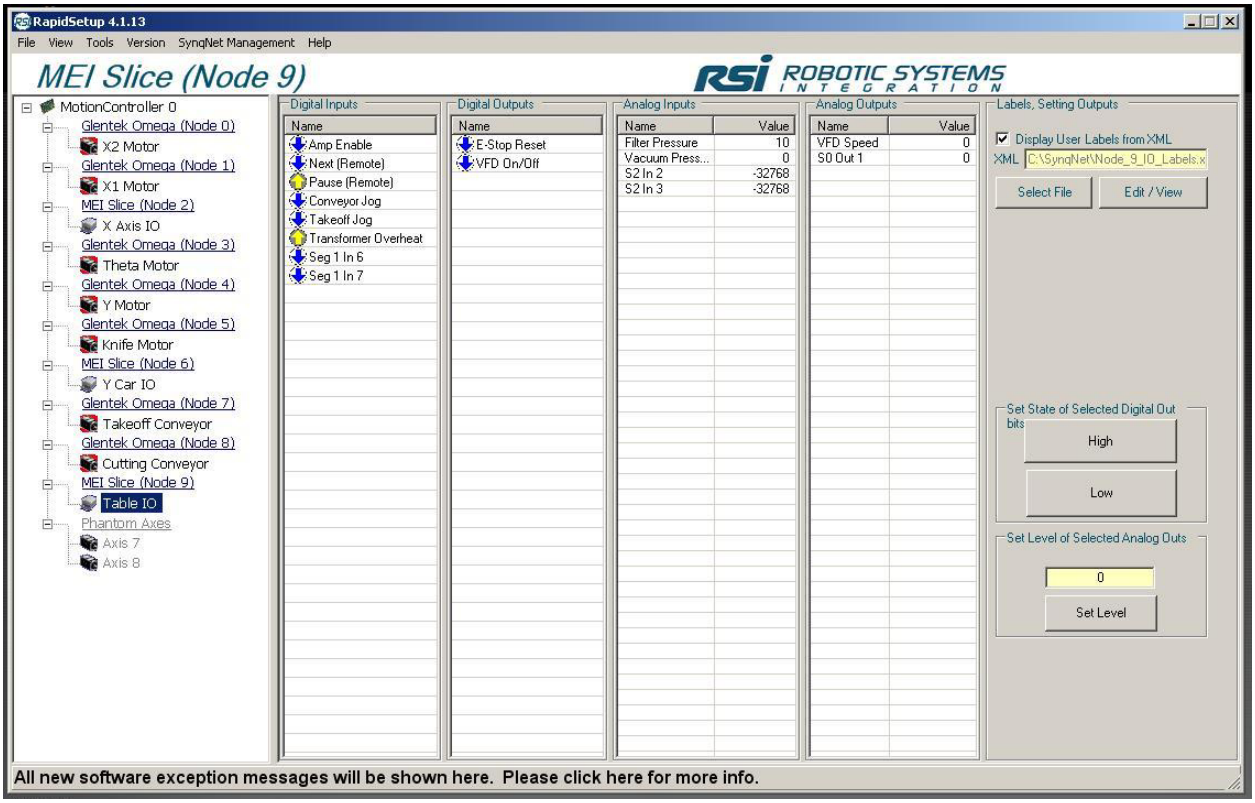


7. Now the drive roller will be needed to push the other end of the belt towards the seam so it can be properly spaced. Someone will need to press the belt against the drive roller while another person operates the Rapid Setup software. Have Quick Grip Clamps ready at the corners of the machine to lock belt into place quickly.

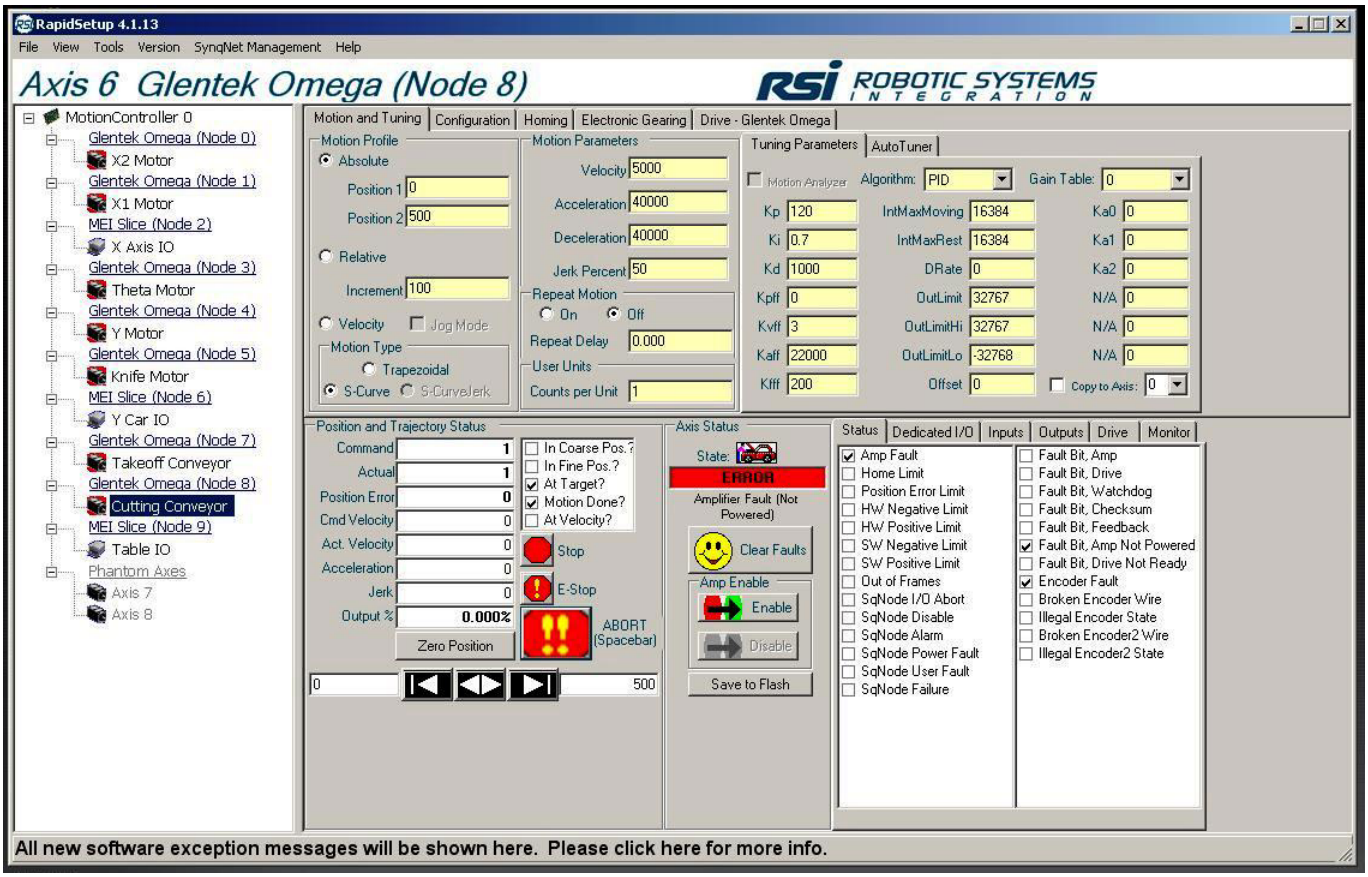
8. Open the Rapid Setup Program and follow the below mentioned instructions.



- The left side of window shows the network topology tree.
- Verify all E-stop buttons are pulled up.
- Click on Table IO.
- Click on “E-Stop Reset” with mouse.
- Click on “High” button found on “Set State of Selected Digital out bits”.
- Verify if “Amp Enable” arrow goes up.
- Click on “Low” button found on “Set State of Selected Digital out bits”.
- Ensure “E-Stop Reset” arrow points downwards.

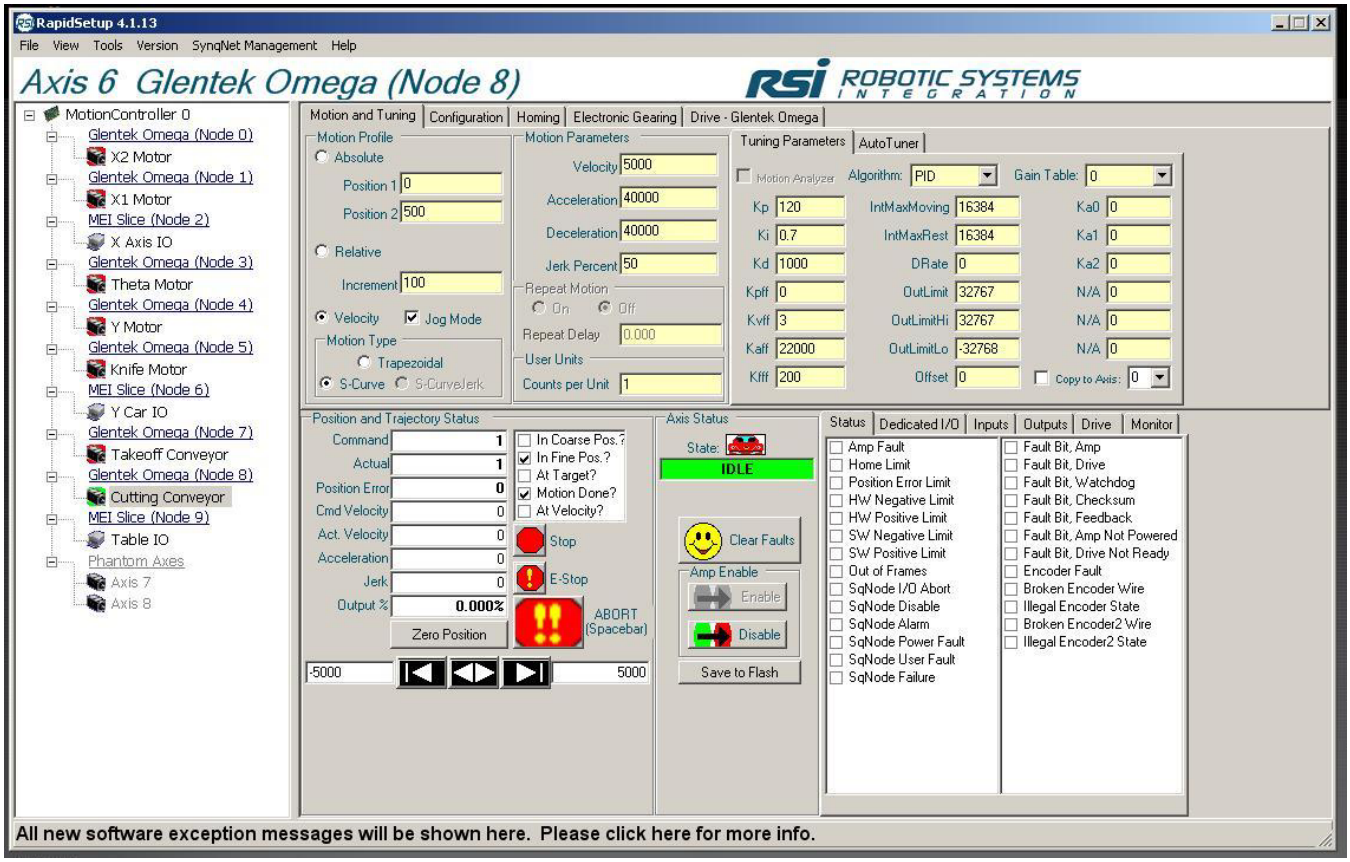

RapidSetup 4.1.13
File View Tools Version SynqNet Management Help
MEI Slice (Node 9)
ROBOTIC SYSTEMS INTEGRATION
MotionController 0
Glentek Omega (Node 0)
X2 Motor
Glentek Omega (Node 1)
X1 Motor
MEI Slice (Node 2)
X Axis IO
Glentek Omega (Node 3)
Theta Motor
Glentek Omega (Node 4)
Y Motor
Glentek Omega (Node 5)
Knife Motor
MEI Slice (Node 6)
Y Car IO
Glentek Omega (Node 7)
Takeoff Conveyor
Glentek Omega (Node 8)
Cutting Conveyor
MEI Slice (Node 9)
Table IO
Phantom Axes
Axis 7
Axis 8
Digital Inputs
Name
Amp Enable
Next (Remote)
Pause (Remote)
Conveyor Jog
Takeoff Jog
Transformer Overheat
Seg 1 In 6
Seg 1 In 7
Digital Outputs
Name
E-Stop Reset
VFD On/Off
Analog Inputs
Name Value
Filter Pressure 10
Vacuum Press... 0
S2 In 2 -32768
S2 In 3 -32768
Analog Outputs
Name Value
VFD Speed 0
S0 Out 1 0
Labels, Setting Outputs
Display User Labels from XML
XML C:\SynqNet\Node_9_IO_Labels.x
Select File
Edit / View
Set State of Selected Digital Out bits
High
Low
Set Level of Selected Analog Outs
0
Set Level
All new software exception messages will be shown here. Please click here for more info.

- The cutting conveyor screen should be in view.



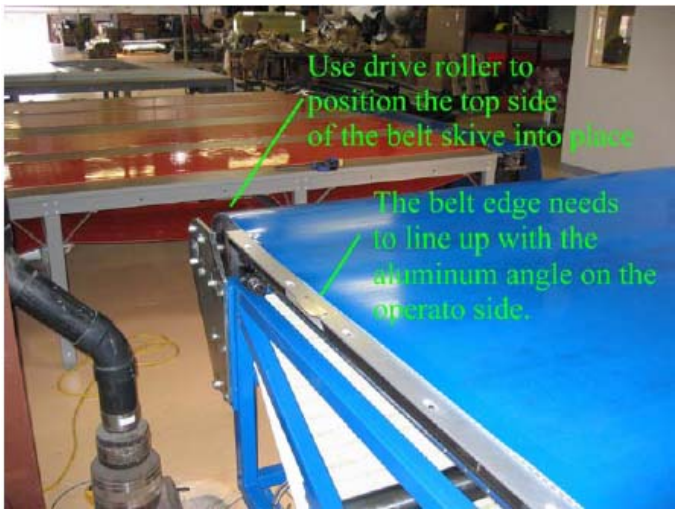
- Click on “Motion and Tuning” tab if not already selected.
- Under the “Motion Profile” area click on Velocity radio button.
- Click on Jog Mode check box so that check mark is visible.
- Under the Motion Parameters area.
  - Set Velocity to 5000.
  - Set Acceleration to 40000.
  - Set Deceleration to 40000.
- Lift all E-stop buttons.
- Reset all stop discss to run position (no yellow pause light should be illuminated).

- Under the “Axis Status” area click on “Enable” button.



- Verify if State is in IDLE with green background.
- Use the mouse to move the conveyor by placing mouse pointer on the forward button.
- Holding the left mouse button down over the forward button will move the conveyor, releasing the mouse button will stop the conveyor.
- Note the velocity can be set between 5000 to 50,000.
- After the conveyor belt seam is located press an E-stop to disable machine.
- Close Rapid Setup program.

9. Only move the belt in small increments when seam space is beginning to close. You can adjust the velocity (Counts) smaller if required. Once the seam is in approximate position, the belt edge needs to be positioned along the operator side aluminum rail to complete the belt alignment along the edge of the machine.



10. The gap between belt ends should be 1/16" to 1/8" wide and should be even the entire length of the seam. On wider belts the gap in the middle may be slightly wider then the gap at the ends but every effort should be taken to make them as even as possible.

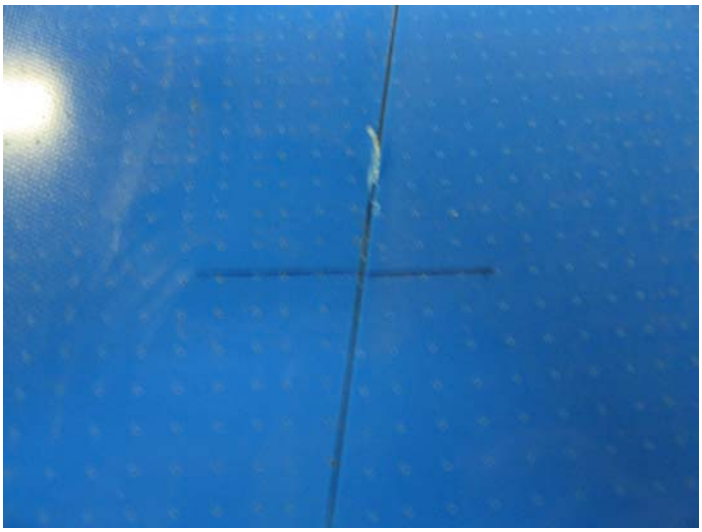
NOTE

The gap should **not** start small and get continuously wider from one side of the table to the other. This will make the belt to be out of square and cause belt tracking problems.

11. Once the gapping is correct put clamps on the belt at the corners of the conveyor and then put down plywood and clamp the belt about 3 feet away from the skived end so that it can be flipped back.

12. Once the top skive side of the belt is in place, put plastic on both halves of the machine and turn on the vacuum. Before gluing pull the top skive back and let it fall back into place. The gap should remain the same and edge of the belt should still be a straight line. Do this a couple of times to double check. If this does not happen the repeat steps 7-11.

13. Located on the belt are several lines from when the belt was skived. Make sure the lines line up between the top and bottom skive sides of the belt.



14. Flip the top skive away the bottom skive to prepare for applying the belt adhesive. Make sure there is the wax paper under both skive sections before applying the glue.

⚠ CAUTION

Make sure the belt is properly fed through the machine prior to gluing the seam. Once the glue is applied the only way to remove the belt is to cut it off.

15. Open the belt seam kit and mix the hardener to the adhesive. (If the adhesive is filled too high you may have to pour a little out before adding the hardener.) Measure the hardener in the small vile provided and pour it into the adhesive. (One vile per can of adhesive). Cover the Belt with two pieces of plastic leaving the seam visible.

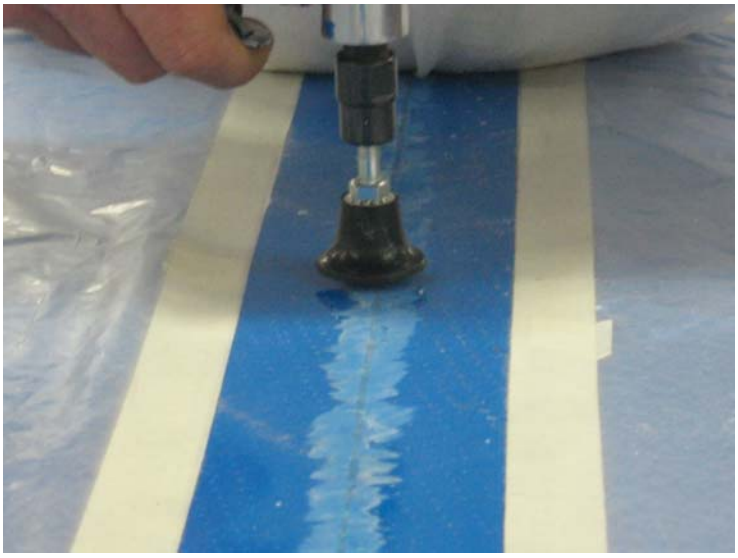
16. Using the paintbrush apply a healthy coating of adhesive to the bottom skive then to the top skive. Apply a second thinner coat to both ends. Make sure the entire skive is coated with no bare spots. Both coats should be applied within ½ hour.

17. Flip the top skive down to meet the bottom skive. Once the two ends meet they can not be separated. Take the provided seam roller and roll the seam down to compress the glue. Then put heavy weights on the seam and let dry overnight. (Minimum 12 - 16 hours).

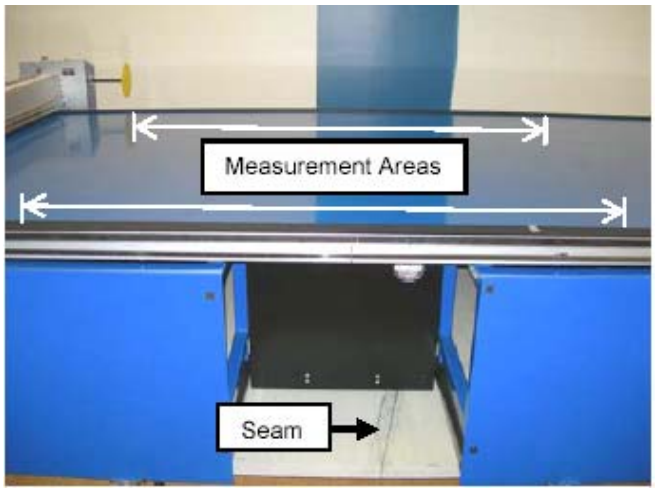
18. If possible turn the vacuum on with the plastic down for a few hours to hold the belt into place as adhesive dries.

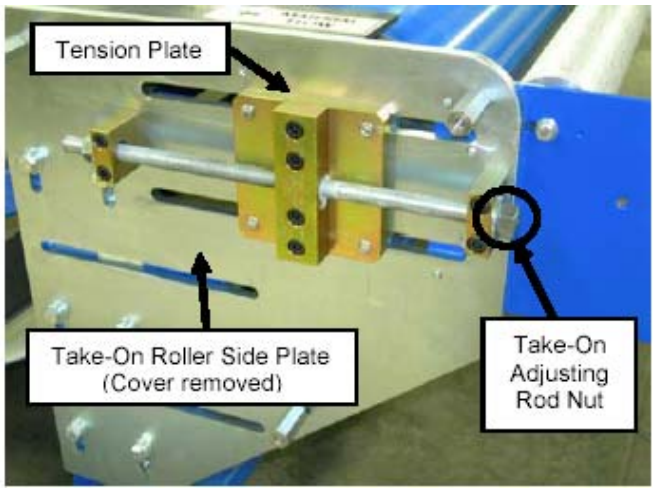
19. Before welding the belt seam, practice on a scrap piece if possible. It is best to use a hot air gun with a small ¼" tip to apply a narrow air flow. The weld stick should be held over the gap and melted so that it flows into the gap. Make sure the weld seam is higher than the two sides of the belt.

20. Let the seam cool before grinding. With a hand grinder, grind the weld as level as possible with the belt surface. This will eliminate any hangers when cutting material over the seam. Let the seam cool before grinding.



21. It is time to re-tension the belt by ¼ percent. Measure 100 cm on both the operator and non-operator sides of the belt. Use a piece of tape and a pen line to mark the 100 cm. Using the belt tension roller stretch the belt until the measurement reads 100.25 cm on both the operator and non-operator side of the belt. (100 inches can also be used with a stretch to 100-1/4 inch).





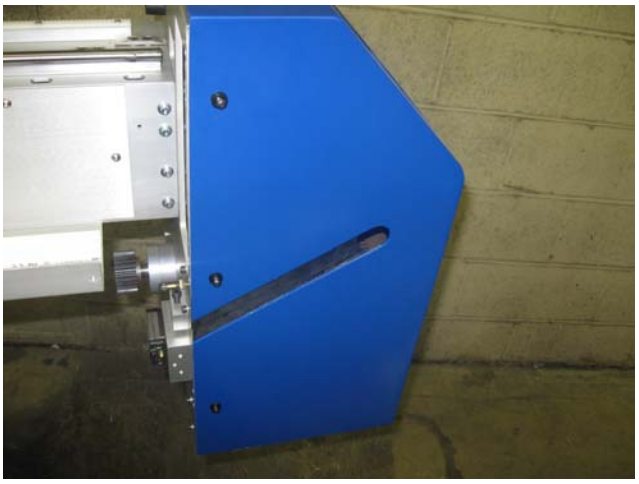
22. Run the belt continuously. Make sure that the belt tracks away from the edge control sensor. When the belt moves off the sensor, the steering roller should actuate and force the belt back towards the sensor.

Replacement of X Motor Belts

Removing the X Motor Belts

1. Power down the machine using proper shut down / lock out procedures.

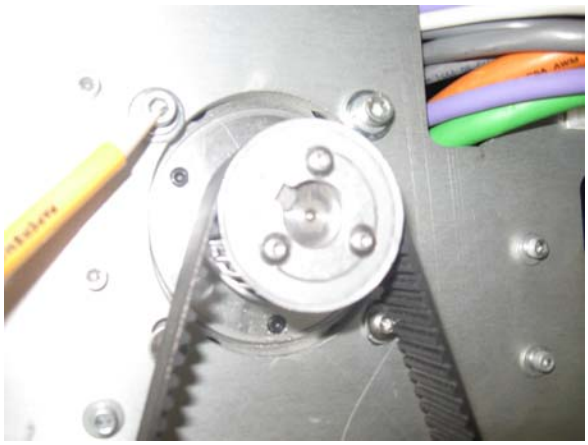
2. Remove the (6) screws using hexagonal wrench found on the left and right side of covers from both the operator and non-operator side of the gantry.



3. Remove the (6) screws using hexagonal wrench found on the control panel from both the operator and non-operator side of the gantry and place the control panel upwards.

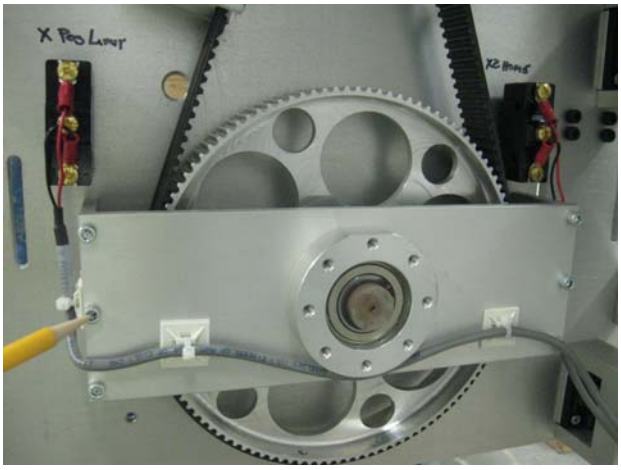
4. Remove the (4) screws found on either side of the electronics tray and swing the electronics tray outwards.

5. Loosen the (4) screws of the motor and now the motor will drop down to loosen the tension on the belt.



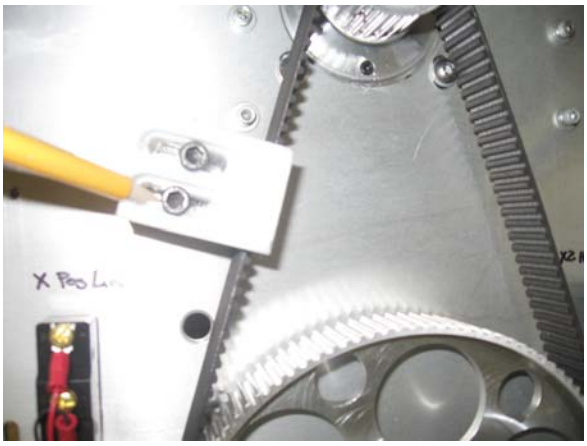
6. Cut the (2) zip ties found on the shaft support plate.

7. Remove the (6) screws found on the shaft support plate.



8. Rotate the shaft support plate to convenient orientation to get access to the belt.

9. Loosen the belt guide and push it outwards so that so that it will help relieve the tension on belt.



10. Remove the worn out belt.

Replacing the X Motor Belts

1. Take a new belt.
2. Put it on the big pulley and roll it on the motor pulley a couple of times until it seats itself.
3. Pick up the motor and put a screw driver under the motor housing and pick up the screw driver to get tension to the belt.

4. Tighten the (4) screws of the motor to get the tension on the belt.
5. Return the (6) screws back on the shaft support plate.
6. Return the (2) zip ties found back on the shaft support plate.
7. Return the control panel and secure it back with the screws.
8. Return the covers of the gantry and secure it back with the screws.

Replacement of Y Motor Belt

Removing the Y Motor Belt

1. Power down the machine using proper shut down / lock out procedures.

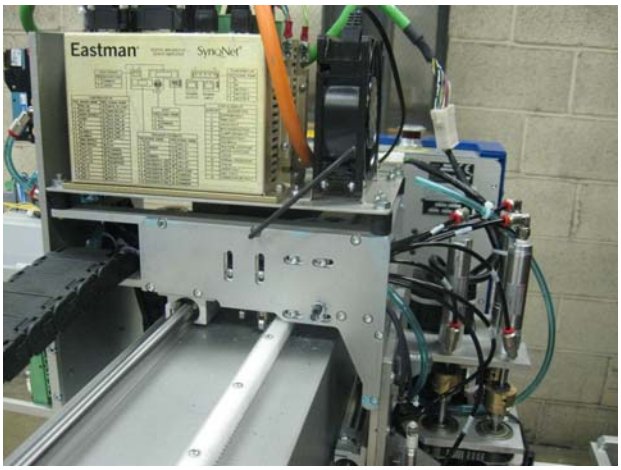
2. Using hexagonal wrench remove the (2) screws found on the left and right side of tool head cover which secure the tool head cover to the Y-car.

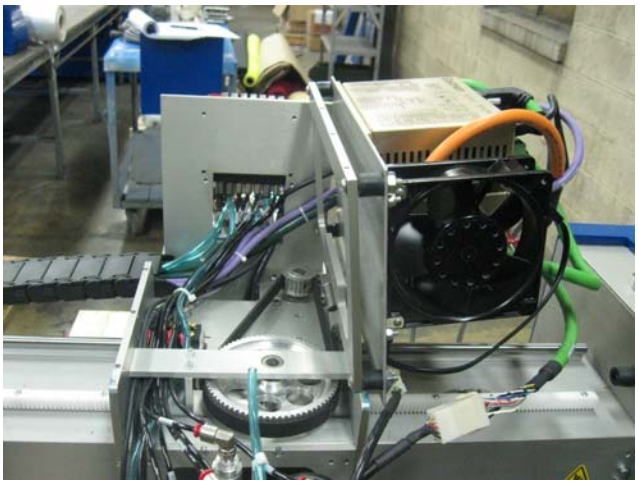
3. Remove the (4) screws found on the upper hinge which secure the top tool head cover.

4. Remove the (4) screws found on the left and right side of tool head bottom cover and remove the bottom cover.

5. Remove the two control I/O cables from the I/O block.
Note: the Y amp control I/O cable plugs into J1 and the theta amp control I/O cable plugs into J2.

6. Remove the (3) screws on the operator side of the Y car and slowly open the electronics tray and ensure that no wires interfere.

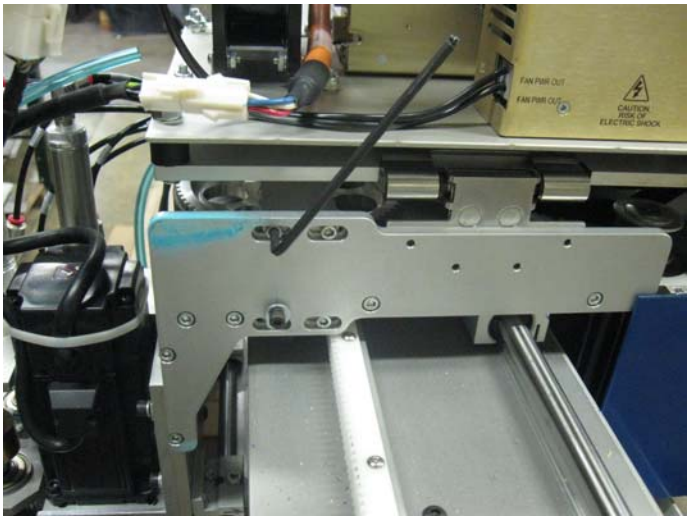




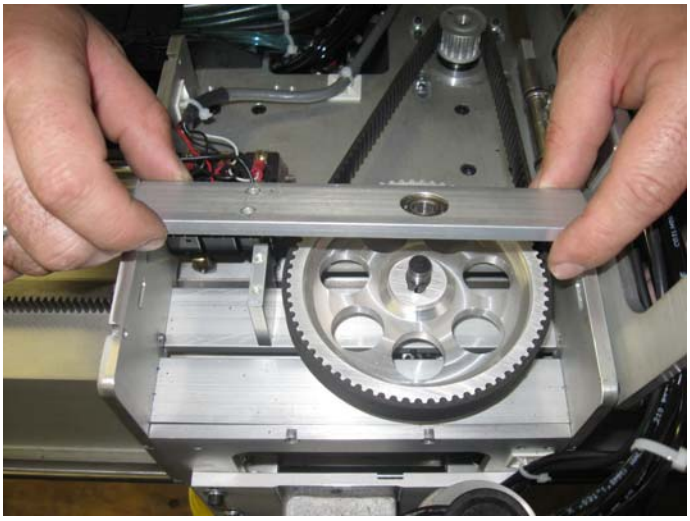
7. Remove the (2) screws found on the operator side on the Y pulley plate.

8. Remove the (2) screws found on the T of the Y pulley plate.

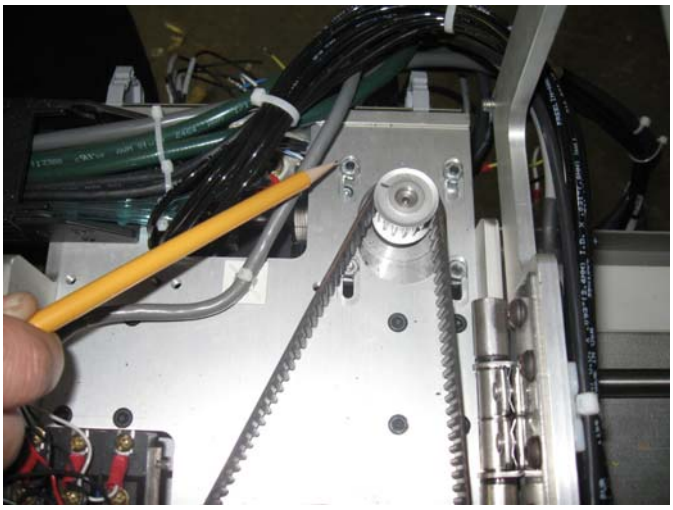
9. Remove the screws found on the non-operator side of Y pulley plate.



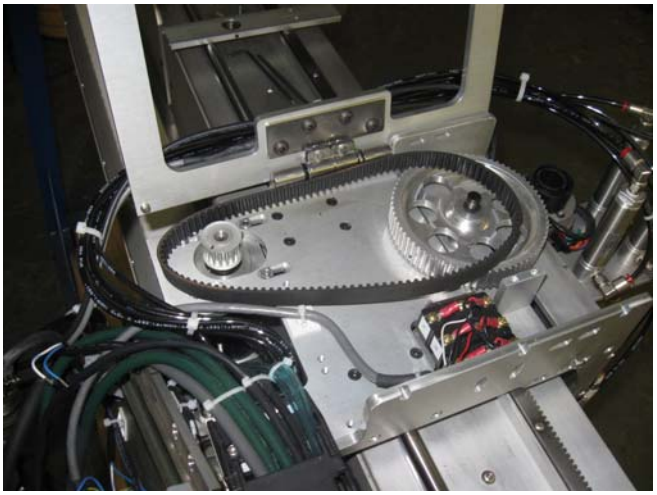
10. Remove the pulley plate.



11. Loosen the (4) screws which hold the Y-motor mounting screws to take off the tension.



12. Loosen the belt and remove the worn out belt.



Replacing the Y Motor Belt

1. Take a new belt.
2. Put it on the big pulley and roll it on the motor pulley a couple of times until it seats itself.
3. Pick up the motor and put a screw driver under the motor housing and pick up the screw driver to get tension to the belt.
4. Tighten the (4) screws of the motor to get the tension on the belt.
5. Return the pulley plate.
6. Return the screws found on the non-operator side of Y pulley plate.
7. Return the (2) screws found on the T of the Y pulley plate.
8. Return the (2) screws found on the operator side on the Y pulley plate.
9. Return the (3) screws on the operator side of the Y car and slowly close the electronics tray and ensure that no wires interfere.
10. Return the two control I/O cables from the I/O block.
11. Secure the tool head top and bottom covers.

Replacement of Theta Motor Belt

On hold for now.

Replacing the X-axis Linear Bearings

It is important to regularly inspect and replace the linear bearings on the Eastman Eagle conveyor. Properly maintaining your linear bearings with grease and regular replacement will prevent damage to the linear rails, increase life of spur gears, increase cutting performance and accuracy.

NOTE

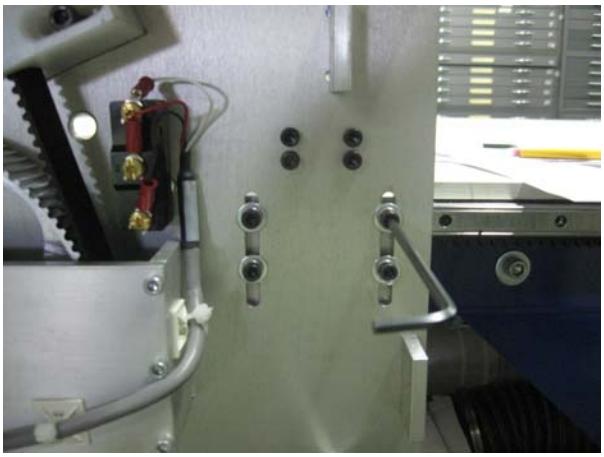
All work should be performed by a qualified technician with power turned off to the machine in accordance with company lock out procedures.

Removing Linear Bearings:

1. Power down the machine using the proper shut down/lock out procedures.
2. Remove the covers from both the operator and non-operator side of the gantry.
3. Remove the end stops from all four corners of table.

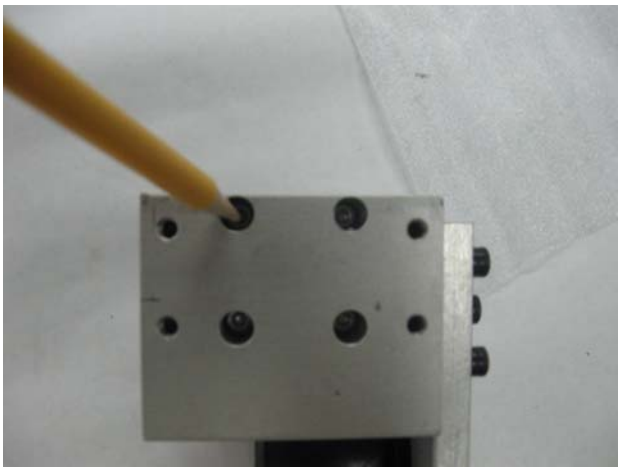
4. Place 2" x 4" wooden blocks under both the operator and non-operator side of gantry.

5. Remove the (4) screws which hold the linear bearing block to the side plate. Repeat this step for all the (4) bearing blocks.



6. Unscrew the backlash adjusting screw from the backlash adjusting block until the gantry is resting on the 2" x 4" wooden blocks.

7. Remove the (4) screws from the bearing block which hold the bearing. Repeat this step for all the (4) bearing blocks.



Installing New Bearings:

1. Remove new bearings from package and press the Zerk grease fitting provided into the bearings. Using a grease gun and the grease gun adapter provided with machine, fill the bearings with white or clear lithium grease.

2. Mount the bearing to the bearing block by securing it with (4) screws. Ensure the grease fitting is pointing to the outside of gantry for easy access.

3. Slide the bearing and bearing block unto the linear rail. Be careful not to damage the bearing seals when mounting on rail.

4. Position the bearing and bearing block directly under each of backlash adjusting screws and replace the screws through the side plate and into the bearing blocks. Do not fully tighten screws until the backlash is adjusted.

5. Begin adjusting the backlash adjusting screws to raise the gantry. Use a level to make sure that both blocks on each side plate are adjusted level to each other.

6. Adjust the backlash adjusting screws until the X-axis spur gear is fully engaged into the gear rack. Pull back and forth on the X-axis belt and ensure that there is no backlash between the gear and gear rack. (The gantry should move immediately when changing belt direction. The gantry should move easily without a dead spot).

7. Tighten the screws which hold the bearing block to the side plate and recheck the backlash. Re-adjust the backlash if necessary.

Replacing the Y-axis Top Linear Bearings

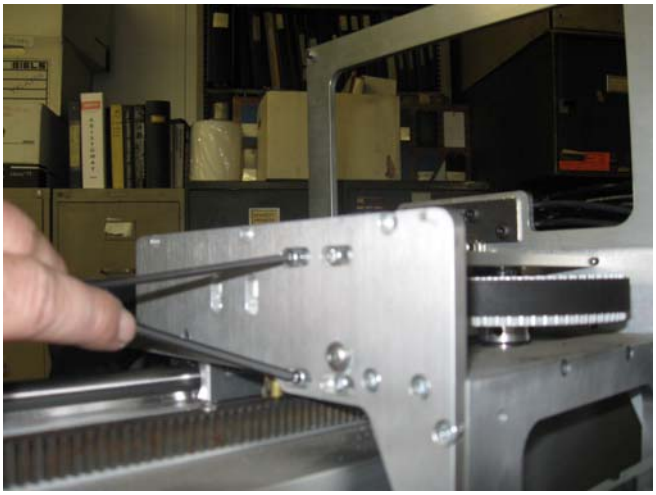
It is important to regularly inspect and replace the linear bearings on the Eastman Eagle conveyor. Properly maintaining your linear bearings with grease and regular replacement will prevent damage to the linear rails, increase life of spur gears, increase cutting performance and accuracy.

NOTE

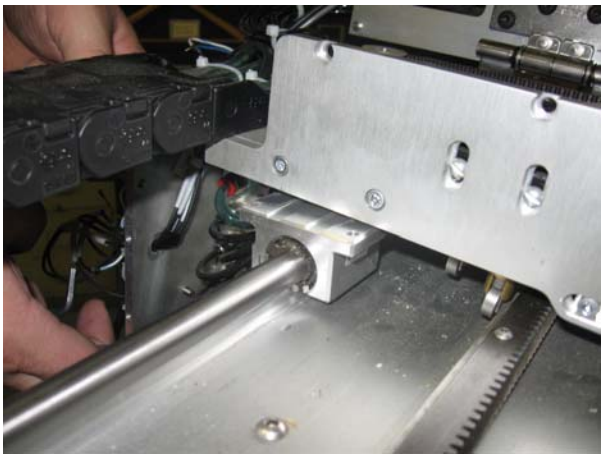
All work should be performed by a qualified technician with power turned off to the machine in accordance with company lock out procedures.

Removing Linear Bearings:

1. Power down the machine using the proper shut down/lock out procedures.
2. Remove the top and bottom covers of the tool head found on the Y car of the gantry.
3. Remove the (8) screws found on the Y car which secure the linear bearings to the Y-car.

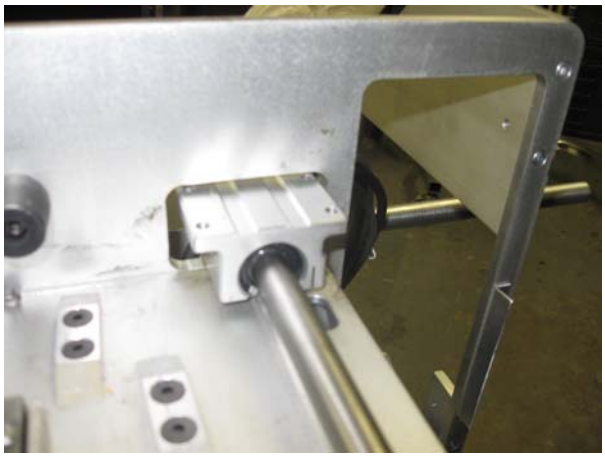


4. Lift the Y car slightly.



5. Slide the (2) bearings out towards the operator side.

6. Slide the (2) bearings out towards the operator side plate and remove them through the access relief / cutout.



Installing New Bearings:

1. Remove new bearings from package and press the Zerk grease fitting provided into the bearings. Using a grease gun and the grease gun adapter provided with machine, fill the bearings with white or clear lithium grease.
2. Slide the new bearings unto the linear rail and ensure that bearing adjustment screws are accessible from the back of gantry.

3. Be careful not to damage the bearing seals while mounting on the linear rail.
4. Slide the bearings under the Y-car ad align with the mounting holes and secure back the (8) screws.
5. After the replacement of new bearings check for the Y car backlash and adjust as required.
6. Please note: bearing replacement may effect Y-car cutting calibration.

Replacing the Y-axis Front Linear Bearings

It is important to regularly inspect and replace the linear bearings on the Eastman Eagle conveyor. Properly maintaining your linear bearings with grease and regular replacement will prevent damage to the linear rails, increase life of spur gears, increase cutting performance and accuracy.

NOTE

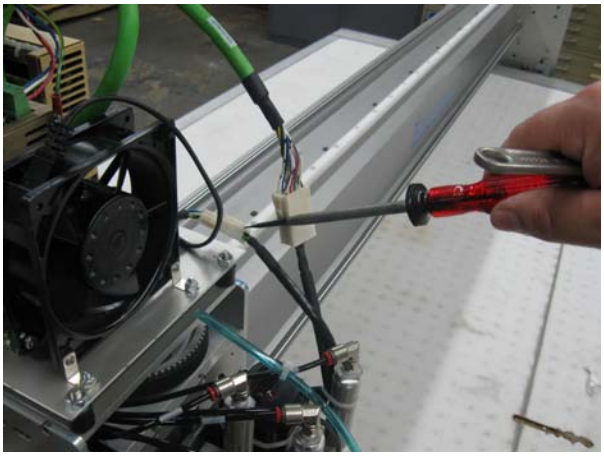
All work should be performed by a qualified technician with power turned off to the machine in accordance with company lock out procedures.

Removing Linear Bearings:

1. Power down the machine using the proper shut down/lock out procedures.
2. Remove the top and bottom covers of the tool head found on the Y car of the gantry.
3. Identify all air lines marking them for spindle location and function if not already marked.

4. Disconnect all air lines by depressing the red color buttons and slightly pulling on the air lines.

5. Disconnect the theta motor cable and theta feedback cable.

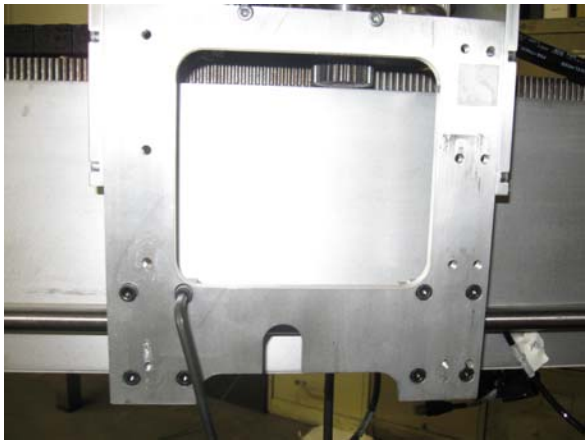


6. Remove the (6) screws which secure the tool head to the Y-car assembly.

7. Disconnect the laser pointer wiring from the back of Y-car assembly.

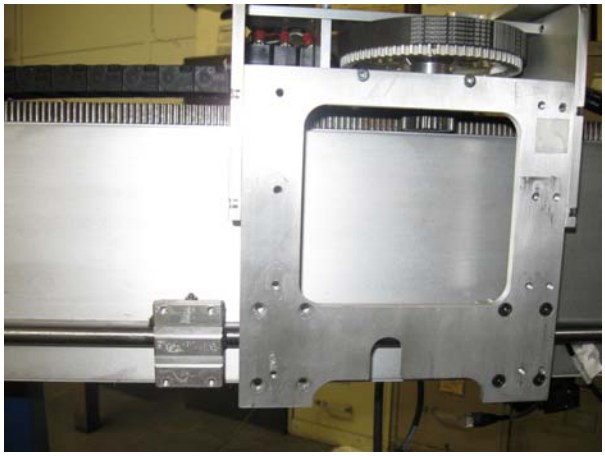
8. Disconnect the positional sensor from the back of Y-car assembly.

9. Remove the (8) screws which secure the linear bearings to the tool head interface plate.



10. Lift the Y car slightly.

11. Slide the (2) bearings out towards the operator side.



12. Slide the (2) bearings out towards the operator side plate and remove them through the access relief / cutout.

Installing New Bearings:

1. Remove new bearings from package and press the Zerk grease fitting provided into the bearings. Using a grease gun and the grease gun adapter provided with machine, fill the bearings with white or clear lithium grease.

2. Slide the new bearings unto the linear rail and ensure that bearing adjustment screws are accessible from the top of gantry.

3. Be careful not to damage the bearing seals while mounting on the linear rail.

4. Slide the bearings under the Y-car and align with the mounting holes and secure back the (8) screws.

5. After the replacement of new bearings check for the Y car backlash and adjust as required.

6. Please note: bearing replacement may effect Y-car cutting calibration.

Replacing the XMP Controller Card and Loading Configuration Files

The Eagle C3 Conveyor uses one XMP Controller card located inside the Computer. The XMP controller card communicates over the purple network cables with all of the Motor Amplifiers and the Slice Input/Output (IO) cards. This communication results in coordinated motion between the Gantry Cutting Tools and the Conveyor System insuring the most accurate cutting possible. The Configuration Files contain parameters for each node on the network (Controller Card, Amp, Slice IO, etc.).

In the rare case that a Controller Card needs replacement, the loading of the proper Configuration Files should be done with the help of Eastman's Technical Service Department. If the Eagle Machine's Computer is hooked up to the internet, Eastman's Technical Service Department has the capability of remotely accessing your machine through the internet and loading the proper files for you. If not, technical service can be provided over the phone.

Do not attempt to load the files yourself. Improper parameters can result in unpredictable machine operation. This may cause damage to your machine or injury to an operator.

Pressure Transducer Calibration

This topic is on hold for now as software team has to work on the same.

Adjustment Procedures and Specifications for parts requiring Service

Checking and Adjusting Gantry Backlash

This procedure ensures that the gantry drive gears are properly engaged to the gear racks so that pieces are accurately processed on the automated cutting machine. Performing this procedure also helps to minimize wear, repair, and replacement of gantry drive components. Any excessive backlash will result in accuracy issues observed in the cut piece.

Checking Gantry Backlash

1. Power-up automated cutting machine, zero the table, & move gantry to center of table.

2. Stand in front of operator side of gantry & alternately push from left to right against rear top corners of cover assembly – enabled gantry drive motors will resist movement.

3. If there is any free side-to-side movement their exist a backlash.

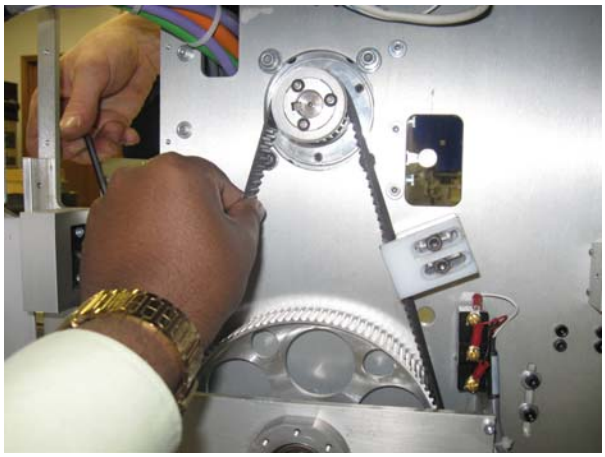
4. Repeat steps 1 thru 3 for non-operator side of gantry.

5. If free side-to-side movement is detected (backlash)

   a) Turn off main power switch on the control cabinet.

   b) Remove cover to access drive belt.

   c) Pinch gantry drive belt & lightly pull it up & down, but not enough to move gantry.



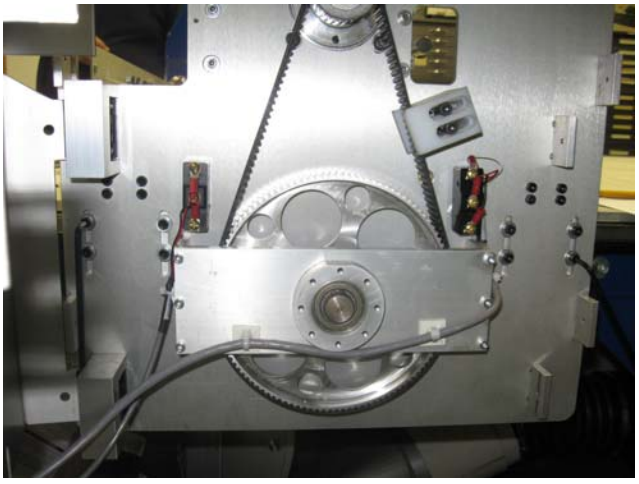
d) If no free movement in drive belt is found then backlash is okay. Replace cover assembly, ensure cable is reconnected.

e) If free movement in drive belt is found then adjust the gantry backlash.

Adjusting Gantry Backlash

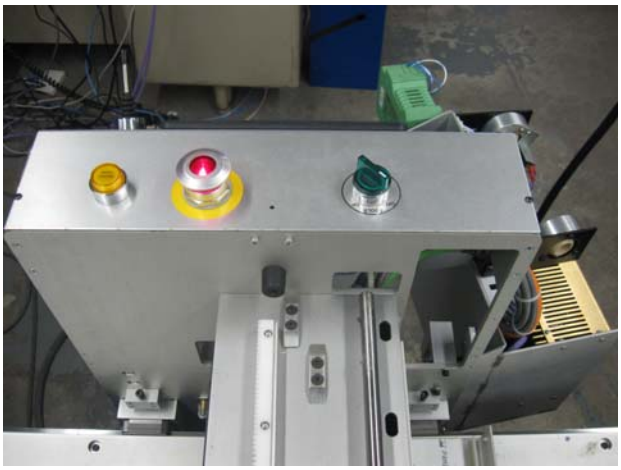
1. Remove all screws from gantry E-chain cover allen wrench & remove cover. (Although this step is not required, it allows for easier access & adjustment).

2. Slightly loosen eight (8) screws holding two (2) rail car connectors to gantry side plates using an allen wrench.



3. Place a level across top edge of the gantry side plate.

4. Using an allen wrench, turn each of two (2) backlash adjusting screws ¼-turn clockwise into backlash adjuster block, raising gantry side plate, & raising gantry drive gear tighter into gear rack. Adjust screws so that gantry side plate remains level.



5. Recheck gantry drive belt backlash. Repeat adjustment until free movement in drive is eliminated. Do not over-tighten backlash else gantry movement will be restricted, causing amp faults & excessive drive component wear.

6. Retighten eight (8) screws holding two (2) rail car connectors to gantry side plates.

7. Recheck drive belt backlash again & readjust if necessary.

8. Replace gantry cover.

9. Perform the same procedure for non-operator side of gantry.

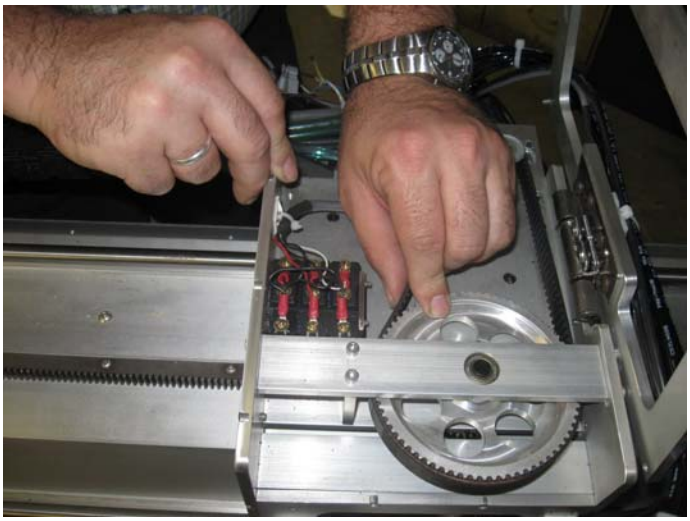
10. Replace E-chain cover.

Checking and Adjusting Y-car Backlash

Checking Y-car Backlash

1. Power down the machine using proper shut down / lock out procedures.

2. Hold the pulley and move the Y-car back and forth in Y direction and observe if there is any audible click or movement.

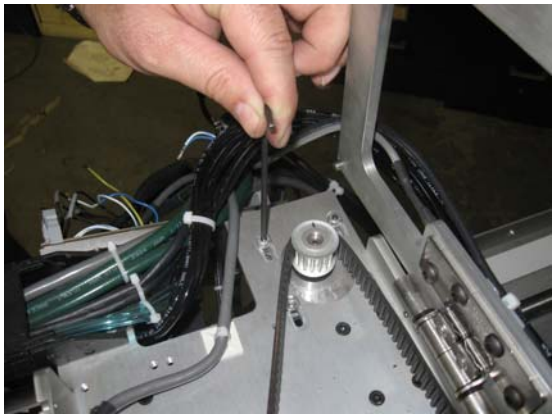


3. If there is any free side-to-side movement their exist backlash.

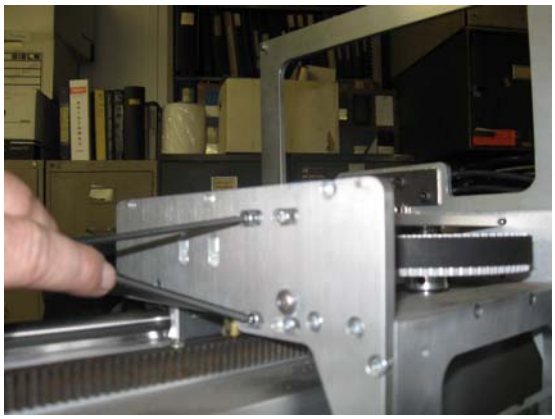
4. If free movement in drive belt is found then adjust the Y-car backlash.

Adjusting Y-car Backlash

1. Loosen motor mount bolts to relieve tension on drive belt.



2. Loosen the (4) screws of the pulley plate on either side of the Y-car.

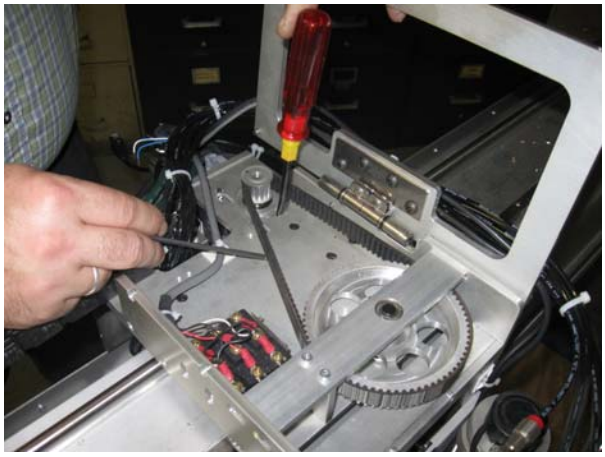


3. Tighten the (4) screws of the pulley plates on the non-operator side of Y-car.

4. Pull the pulley plate towards the linear rack and tighten the (4) screws of the pulley plates found on the operator side.

5. Ensure that all the (10) screws of the pulley plates are secured.

6. Using a screw driver or pry-bar apply pressure to motor belt to displace motor belt. Tighten the motor until there is no belt deflection.



7. Tighten the motor mounting screws.

8. Please note when ever the belt is replaced the backlash adjustment should follow.

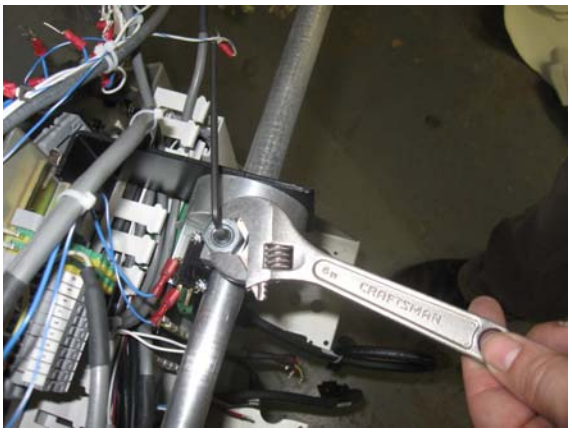
Checking and Adjusting Stop Discs

Checking Stop Discs

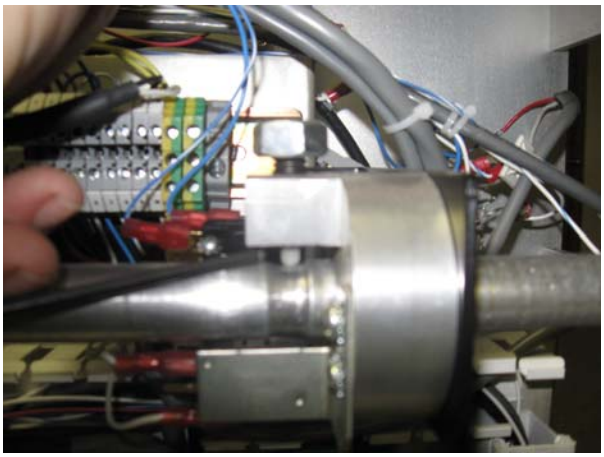
1. Power up the machine.
2. Move the stop discs to see if they are activated by a slight touch or vibration.
3. If the stop discs are not activated by slight touch or movement are then adjust the stop discs.

Adjusting Stop Discs

1. Remove the operator side cover which will expose the stop disc mechanism.
2. Check the plunger by the pause switch on the stop disc.
3. Loosen the nut while holding the set screw with allen key.



4. Tighten the set screw which in turn increases the force on the detent ball until sufficient tension is applied to the stop disc rod.



5. Tighten the nut while holding the set screw in position.

6. Return the cover.

7. Check the operation of the stop disc.

8. Do the same check on non-operator side.

Scheduled Maintenance Procedure

⚠ CAUTION
It is important to perform regular maintenance on the equipment. A daily, weekly and monthly schedule should be maintained. Failure to do so can result in more frequent breakdowns damage to equipment and/or injury.

Proper Maintenance will help to ensure the reliable operation of your Eagle Conveyor cutting system. You should allow 5 to 10 minutes for daily inspection, 30 minute weekly inspection and one hour monthly inspection. Time invested on these tasks will minimize downtime. Eastman Machine Company is not liable for damage as a result of poor maintenance and any resulting damage would be repaired at user's expense. All maintenance should be performed by qualified personnel, following all safety procedures. The following is the recommended maintenance schedule:

Daily Maintenance (Start of each shift)

- Carefully inspect the machine and cutting surface. Look for any debris, loose cables or any other obstruc tion that may interfere with machine movement or cutting. Vacuum cutting belt as required to remove dust and dirt which may clog perforations.
- Check the pen lift assembly. Make sure pen moves smoothly up and down. Ensure pen is seated properly in mount and that the pen holder is tight.
- After the Eagle Conveyor is powered up, check both the X and Y axes for backlash. If the backlash is excessive on either axis, adjust as required.
- Check tools to verify that they are securely fastened to tool shaft. Check round knife blades to make sure they rotate freely. Check blade edges for nicks and replace as required. Check limiting disks relative to material thickness and requirements. Check the set screws in drag knife foot and tighten if necessary.
- At the end of each work session make sure both the computer and plotter carriage are off. Clean-up scraps from table and remove any CD or Disks from the disk drives.

Weekly or every 40 hours

⚠ CAUTION

Before performing the weekly tasks make sure the Eagle Conveyor and computer are turned off at the electrical disconnect and locked out.

- Lubricate table rail linear bearing with Eastman lubricant 67-26325 (Mobil: SEA 10 Non-detergent Vactra No. 1) See Lubrication Chart.
- Using a clean dry rag wipe and clean the table rail linear bearings and lubricate with Eastman lubricant 67-26324, see lubrication chart.

- Lubricate table linear bearings with Eastman Lubricant 67-26324 (Mobil: NLG1 Grade 2 Moblith AW-2).
- Lubricate air reciprocating cylinder coupling with Eastman Lubricant 67-26009 (Loctite: Krytox PFPE Lubricant Mfg. # 29711), see Lubrication Chart.
- Lubricate reciprocating tool head shafts with Eastman Lubricant 67-26009 (Loctite: Krytox PFPE Lubricant Mfg. # 29711) see Lubrication Chart.
- Using compressed air, clean dust and debris from inside of carriage.
- Use clean cloth to wipe down Y-axis rails and lubricate.
- Tighten any loose fasteners on the Y-car.
- Remove the cover from the Y-car. Inspect the cutting head assembly. Look for any wires or air hoses rubbing or wearing.
- Rotate the tool holders by hand. They should rotate freely without any play relative to each holder and the drive motor. If they don't rotate freely examine the bearings for wear, examine shafts for damage and or bent condition and check belt for wear and proper tension.

First Working Day of Month

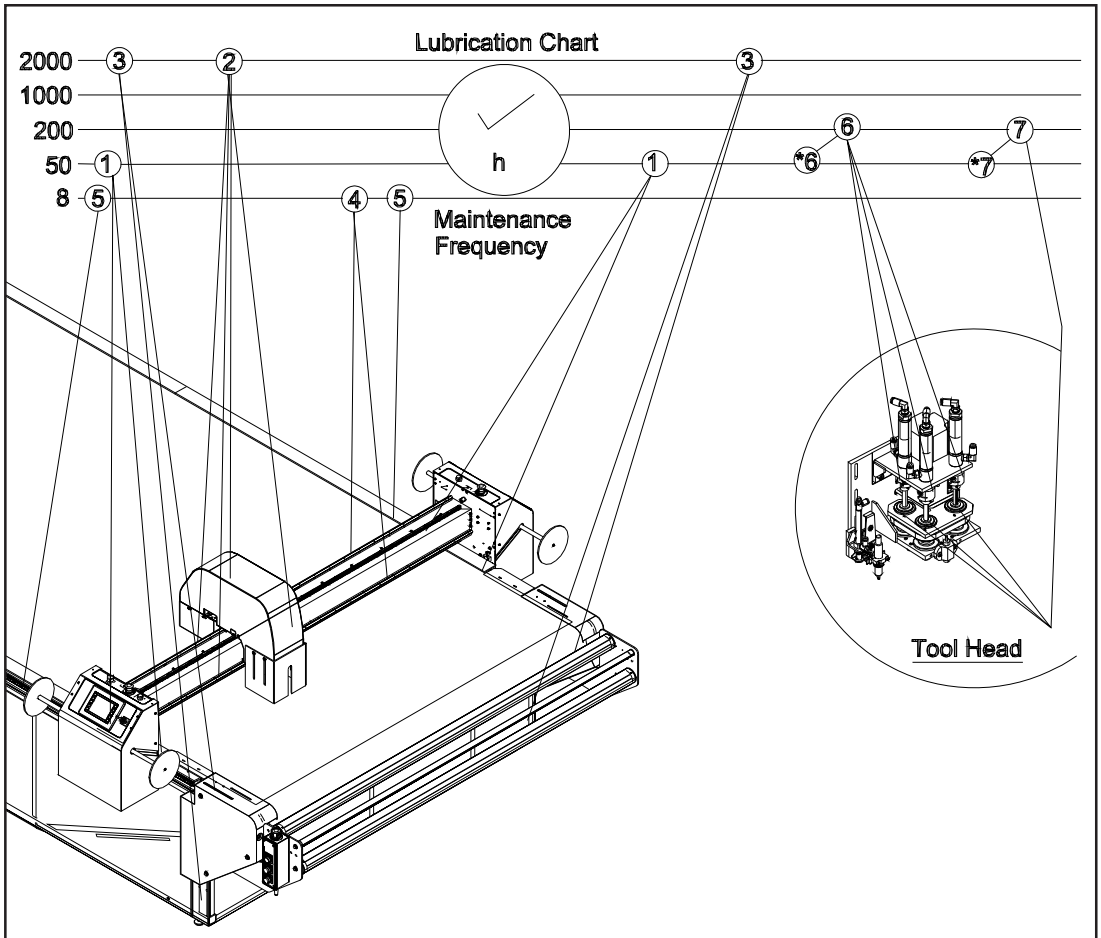
⚠ CAUTION

Before performing the weekly tasks make sure the Eagle Conveyor and computer are turned off at the electrical disconnect and locked out.

- Remove X-axis gantry covers and inspect electrical connections to make sure tight.
- Inspect power supply connectors for any discoloration or signs of heating.
- Check Drive belts for signs of wear such as cuts, frays or missing teeth. Replace if required.
- Check belt tension. Belt should be tight enough to prevent backlash between drive pulley and driven pulley.
- Check all shafts and pulleys. Pulleys need to be seated tightly on the shaft.
- Check all electrical plugs and connector to ensure they are securely fastened.
- Inspect carriage wheels for any material threads or debris wound up around wheel shafts.
- Inspect Rollers screws for any signs of rust. Replace or spray with KEL 132 Professional Products as required.

Lubrication Chart

Below are the lubrication points for the Eagle Conveyor



Gantry & Conveyor

Machine Component	Gantry	Y-Car	Conveyor Base	Gantry	Conveyor Rail	Standard Tool Head		Recipricating Tool Head	
Nature of Action / Action Point	1	2	3	4	5	6	7	*6	*7
Clean & Lube				8	8	200	200	*50	*50
Replenish	50	2000	2000						
Libricant Designation	Mobil: NLG1 Grade 2 Moblith AW-2			Mobil: SAE 10 Non-detergent Vactra No. 1		Loctite: Krytox PFPE Lubricant mfg# 29711			
Eastman No.	67-26324			67-26325		67-26009			

* Recipricating tool head option only.

Yearly Maintenance Checklist for Eagle Conveyors

Below is the recommended maintenance checklist for the Eagle Conveyor. It provides a good guideline for yearly maintenance and can be copied and kept as a maintenance log.

Cable Assembly:	**Comments**	**Signoff**
Check X-Axis cable track assembly (Loose connections or wear in cables)		
Main AC power cable		
Gantry power cable (green)		
a) SynqNet In		
b) SynqNet Out		
c) UIT		
d) Gantry I/O		
e) Gantry Power		
f) Air Hose		

Belt Tracking Assembly	**Comments**	**Signoff**
Check Air Pilot Valve and all air connections		
Check Air Cylinder and air connections		
Verify Pneumatic Prox switch actives Air Cylinder		
Check the condition of linear slide bearing		
Lubricate the pillow block bearing		

Front Cover Assembly	**Comments**	**Signoff**
Verify Stop Discs are operational.		
Check Emergency Stop switch, wiring & light bulb		
Check Pause switch, wiring & light bulb		
Check limit switch & switch bracket		

Back Cover Assembly	Comments	Signoff
Verify Stop Discs are operational.		
Check Emergency Stop switch, wiring & light bulb		
Check Pause switch, wiring & light bulb		
Check limit switch & switch bracket		

Control Panel Assembly	Comments	Signoff
Check U.I.T. control assembly & cables		
Check the joy stick for proper operation		
Check tools on/off switch, wiring & light bulb		
Check & Secure all screws		

Front End Plate Assembly	Comments	Signoff
Inspect drive belt (cracks, thread separation)		
Check & oil large pulley bearings		
Check X1 home switch & wiring		
Check X-ve limit switch & wiring		
Check wiring for 24V DC power supplies (Verify 24V DC power)		
Check & Secure all set screws		
a) Large Pulley		
b) X1 Motor drive pulley		
c) Spur gear		
Remove & inspect THK linear bearings(2)		
Check that the electronics tray is securely fastened to front end plate on both sides		
Check wiring and cables for any wear, cracks or loose connections		
Check all screw terminals to ensure that wiring is secure		
Check & adjust backlash for X1 motor assembly		
Check & Secure all screws		

Back End Plate Assembly	Comments	Signoff
Inspect drive belt (cracks, thread separation)		
Check & oil large pulley bearings		
Check X2 home switch & wiring		
Check X +ve Limit switch & wiring		
Check & Secure all set screws		
a) Large Pulley		
b) X2 Motor drive pulley		
c) Spur gear		
Remove & inspect THK linear bearings(2)		
Inspect all cable connections into gantry from X-axis E-chain		
a) SynqNet In		
b) SynqNet Out		
c) UIT		
d) Gantry I/O		
e) Gantry Power		
f) Air Hose		
Check that the electronics tray is securely fastened to front end plate on both sides		
Check wiring and cables for any wear, cracks or loose connections		
Check all screw terminals to ensure that wiring is secure		
Check cable mount & E-chain mount		
Check & adjust backlash for X2 motor assembly		
Check and secure all screws		

Conveyor	Comments	Signoff
Examine Belt for Deep Cuts		
Check Vacuum Pressure (Under 5" Water with Table Uncovered)		
Examine Blower motor		
Check drive rollers		
Check drive and take-on bearings		
Check take-on rollers		

Main Tube Assembly	Comments	Signoff
Check Y-Home switch and cam for proper operation		
Check Y +ve and Y -ve limit switch & cam for proper operation		
Check Y E-chain cables		
a) Y-car power cable filtered		
b) SynqNet In		
c) SynqNet out		
d) UIT		
e) Y-car power cable unswitched		
f) Y-car I/O cable		
g) Airline tubing		
Check that the electronics tray is securely fastened to front end plate on both sides		
Check wiring and cables for any wear, cracks or loose connections		
Check all screw terminals to ensure that wiring is secure		
Check & Secure linear Thompson Rail & oil or grease rail as required		
Check & Secure gear rack		
Check & Secure all screws		

Y-Carriage Assembly	Comments	Signoff
Inspect Y motor drive belt (cracks, thread separation)		
Check that the electronics tray is securely fastened to front end plate on both sides		
Check all screw terminals to ensure that wiring is secure		
Check Y Motor disconnect plug		
Examine Solenoid Block		
a) Use manual trigger to fire each solenoid		
b) Check for air leaks		
Check & Secure all set screws		
a) Large Pulley		
b) Y Motor drive pulley		
c) Spur gear		
Inspect Thompson Linear bearings		
Adjust Y-motor assembly backlash		
Check & Secure all screws		
Check Y Home switch		
Check Y +ve and Y -ve limit switches		
Check amplifier connections		
Inspect electrical components for any damage and ensure they are securely fastened to the Y-car		

Tool Head Assembly	Comments	Signoff
Inspect theta motor drive belt (cracks, thread separation)		
Grease 16mm bearings(3) for air cylinders - Use Loctite High performance grease		
Test theta Home proximity sensor		
Secure theta Motor drive pulley set screws		
Examine cylinder motion - Fire cylinders manually via solenoid block		

Rack & Rail Assembly	Comments	Signoff
Clean & oil THK rails		
Check Rack & Rail gap(s)		
Check Rack & Rail for wear		
Secure all screws		
a) Tighten #10-32 1/2" Rack button screws		
b) Tighten M3 Rail screws		
c) Tighten shock mount screws		

Electrical Cabinet	Comments	Signoff
Clean fan filter on computer		
Use dry air to clean inside		
Tighten all screw terminals		
Secure all plugs and connections		
Check amplifiers and ensure mounting screws are secured		
Check wiring for 24V DC power supplies		
Check that the electronics drawer is securely fastened to front end plate on both sides		
Check wiring and cables for any wear, cracks or loose connections		
Check all screw terminals to ensure that wiring is secure		
Inspect & check transformers for discoloration and ensure that all screw terminal for wiring are tight and secure		

Variable Frequency Drive (VFD)	Comments	Signoff
Check Main Power In		
Check Motor power		
Inspect and clean the VFD cooling fan		
Inspect blower motor interface and ensure terminal blocks are tight and secure		
Lock out / tag out all electrical powers before performing maintenance else it may result in serious injury or death		
Perform visual inspection of blower motor		
Perform visual inspection of filter, replace as required		
Inspect vacuum system piping and ensure all connections are secure		
Inspect for discoloration of pipes due to heat		
Vacuum out any loose debris		

Computer cables	Comments	Signoff
SynqNet out		
SynqNet In		
Network		
Video USB hub cable		
Video signal		
Computer power		
Monitor power		
Mouse		
keyboard		
UIT - Gantry		
UIT - computer		
Power over Ethernet power		

Additional Comments:

Maintenance Signature: Date:

Trouble Shooting Guides and Aides

UIT Error Messages

This has to be developed by software hence it is on hold as of now.

Additional Trouble Shooting

Any troubleshooting or maintenance performed on the machine should be done by a qualified technician. Before performing any work follow proper electric lockout procedures at your facility. All power to the machine should be off and proper care taken to prevent damage to the machine and/or injury.

WARNING

Failure to remove power and take proper safety precautions when performing maintenance and/or troubleshooting can result in injury or death. All work should be performed by a qualified technician.

The following trouble shooting covers machine problems that are not associated with software and/or does not generate an error message.

Problem: UIT Does Not Power Up

Description of Problem:

The UIT does not power. Screen is blank and not lit up.

Troubleshooting:

1. Touch the screen to see if it turns on. If the machine sits for a long period of time the touch screen goes into a sleep mode to protect the screen.

2. Check the power switch on the electronics drawer is in the on position.

3. Make sure that Easisuite is running on the cutting machine PC.

4. Find the power over Ethernet injector (PoE) located behind the electronics drawer and check the green LED on the PoE injector. The LED on the front face is illuminated

5. If there is no green LED lit, check the AC input on the PoE injector. If the AC power is gone then check back through the AC power cable. Also check the fuse F4 which is the 115 VAC fuse in electronics drawer that protects the PoE injector.

Problem: Machine Stop during Cut due to unintentional pause

Description of Problem:

The machine stops in middle of cut and displays message “Machine Paused, Press Zero, Next or Abort” on Touch Screen. When pressing NEXT on the keypad, the machine will continue to cut where it left off. This is typically caused by an intermittent pause circuit, usually in the stop discs.

Troubleshooting:

1. Move the stop discs to see if they are activated by a slight touch or vibration.

    a) Remove Operator side cover of gantry.

    b) Check the plunger by the pause switch on the Stop Discs. If the plunger is too loose, tighten it to prevent the pause switch from activating.

    c) Do the same check on the non-operator side.

Problem: The buttons on the Touch Screen are out of alignment

Description of Problem:

The buttons on the touch screen do not line up with the where the screen needs to be touched to activate the command. Operator needs to push above, below, right or left of the button for the command to take effect.

Troubleshooting:

The following procedure outlines the steps required to calibrate a touch screen on the Eastman Eagle Conveyor gantry. If you notice buttons are not lined up while you are pressing them a Touch Screen calibration may be needed.

Procedure:

1. Power down system including gantry power at the Diagnostic box.

2. Place finger on upper left corner of the touch screen while power is turned off.

3. With finger is still on touch screen have a co-worker turn gantry power on at the Diagnostic Box.

4. After the “Power On Setup” screen appears, remove your finger from the corner of touch screen.

5. After the Power On Setup screen appears, use the left and right arrows to navigate, and select to enter a sub-menu. Toggle to page 2 until you see the calibration screen, and select to enter the sub-menu. Toggle down until Touch Screen is highlighted and select it to activate it.

6. Using a very small screw driver, paperclip or a fine tip object, press the center of the cross that is located at the top left corner of the screen.

7. Follow the same procedure for the bottom right cross.

8. Navigate to page 3 and toggle down to Save and Exit and select it.

9. Your Touch Screen will restart in normal mode. It is ok to run the machine after all proper startup procedures are followed.

Problem: Cutting Belt is tracking to one side of conveyor

Description of Problem:

The cutting belt is moving to one side of conveyor and starting to rub against side plate. It is important to determine if the belt is moving to the side with the air sensor or away from the air sensor. The design of the belt tracking system is based on when the belt moves over the air sensor the belt steering actuator is down but when the belt moves off the sensor the actuator pushes the steering roller up forcing the belt to track back towards the sensor. It is important that the belt normal movement is away from the sensor for the steering roller to work.

Troubleshooting:

Belt rubbing on side towards sensor

1. Remove machine cover and check that air sensor is working correctly. Cover and uncover the sensor to see if actuator moves up and down. If actuator is all the way up but does not move down then:

    a) Check air pressure at actuator and sensor. The sensor should be set at 10 psi and the actuator should have a minimum of 75 psi.
    b) Check the pneumatic amplifier P/N 67-26492 to make sure signal from air sensor is being transferred to the Air Pilot Valve P/N 67-26494.
    c) Check the output of the air pilot valve to the actuator.
    d) Remove hoses to actuator and cover and uncover the air sensor to determine if the air pressure is changing to the actuator.
    e) Look at the actuator slide for binding. Loosen slide and see if roller actuates.

2. If actuator is working properly and steering roller is down but belt is still tracking towards the sensor than adjust the roller at take-on side of machine.

    a) Remove both endplate covers on take-on side of conveyor.
    b) Loosen the bearing bolts and tighten the belt tension on the side the belt is tracking to. Use the adjusting rod to move the roller out and force the belt away from the sensor. (You may also slightly loosen the other side)
    c) You may have to loosen both side of the roller and manually move the belt to the middle of table and re-tension the belt. (See the belt installation instruction on how to stretch the belt.)
    d) Check the roller heights at all four corners of the table. Measure the distance from the bottom of the side plate to the floor at each side of roller. (Compare the height at each side of roller not between rollers) Adjust the height of the side plate/roller as required.

Belt rubbing on side away from sensor

1. Remove machine cover and check that air sensor is working correctly. Cover and uncover tsensor to see if actuator moves up and down. If actuator is all the way up but does not move down then:

   a) Check air pressure at actuator and sensor. The sensor should be set at 10 psi and the actuator should have a minimum of 75 psi.

   b) Check the pneumatic amplifier P/N 67-26492 to make sure signal from air sensor is being transferred to the Air Pilot Valve P/N 67-26494.

   c) Check the output of the air pilot valve to the actuator.

   d) Remove hoses to actuator and cover and uncover the air sensor to determine if the air pressure is changing to the actuator.

   e) Look at the actuator slide for binding. Loosen slide and see if roller actuates.

2. If actuator is working properly and steering roller is all the way up but belt is still tracking away from the sensor than adjust the roller at take-on side of machine.

   a) Remove both endplates covers on take-on side of conveyor.

   b) Loosen the bearing bolts and tighten the belt tension on the side the belt is tracking to. Use the adjusting rod to move the roller out and force the belt toward the sensor. (You may also slightly loosen the other side) Be careful not to over adjust and force the belt over too far.

   c) You may have to loosen both side of the roller and manually move the belt to the middle of table and re-tension the belt. (See the belt installation instruction on how to stretch the belt.)

   d) Check the roller heights at all four corners of the table. Measure the distance from the bottom of the side plate to the floor at each side of roller. (Compare the height at each side of roller not between rollers) Adjust as height of the side plate/roller as required.

Problem: Cutting Belt is slipping

Description of Problem:

The cutting belt is slipping causing the pieces to come out smaller or cuts in the Y direction don't line up after conveyor moves. On occasions it maybe necessary to re-stretch the belt to obtain the correct tension. If the belt stretches over time, it could cause the belt to slip. Also if the vacuum is too high it affects the belt.

Troubleshooting:

1. Check the vacuum at the conveyor by removing the center cover on operator side and looking at the vacuum gage mounted on blower box. With the table covered you should have les then 10" of vacuum. If the vacuum is over 10" then:

    a) If you have a VFD drive for the blower, lower the blower speed to reduce vacuum.

    b) If you do not have a VFD drive then remove the center cover on the non-operator side of machine. On the back panel of the blower box is a door that can be adjusted up and down. Loosen the door and adjust it up to decrease vacuum in the blower box.

2. Loosen and re-tension the belt.

    a) Remove the end covers for the tensioning rollers at the take on side of conveyor.

    b) Loosen the bolts on the bearing at both the operator and non-operator side of machine.

    c) Loosen the belt by turning the belt adjusting rod on both the operator and non-operator side of machine.

    d) Once the belt is loose on the machine, measure 100 cm on both the operator and non-operator sides of the belt. Use a piece of tape and a pen line to mark the 100 cm.

    e) Using the belt tension roller stretch the belt until the measurement reads 100.25 cm on both the operator and non-operator side of the belt. (100 inches can also be used with a stretch to 100-1/4 inch).

    f) When finished tighten down the bearings and replace the covers.

3. Run the belt continuously. Make sure that the belt tracks away from the edge control sensor. When the belt moves off the sensor, the steering roller should actuate and force the belt back towards the sensor.

Problem: The Cutting Tool or Pen does not come down.

Description of Problem:

A tool or Pen does not come down when cutting a file or they are delayed coming down at the beginning of a cut. This can be caused by an electrical short, tool mapping in software or a problem with the power supply.

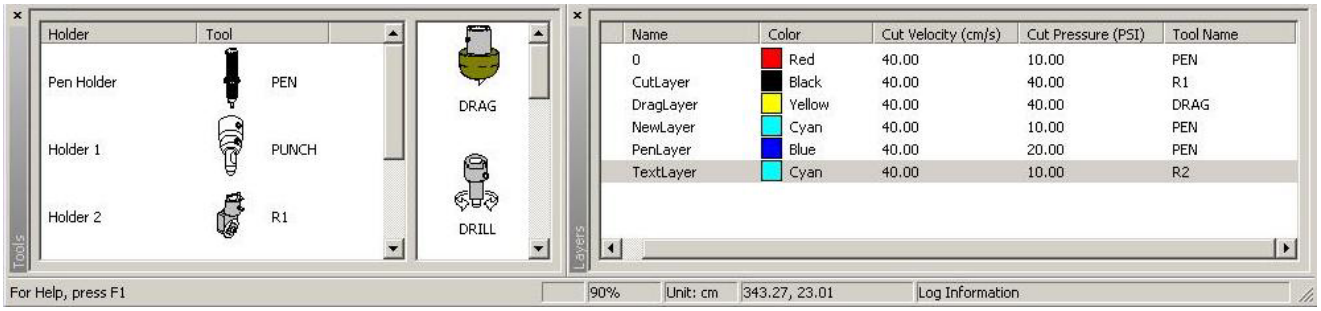
Troubleshooting:

1. Make sure that Tool power on gantry is turned on. This can be verified by making sure the laser pointer is on.

2. Check the mapping of your tools and the layers are mapped properly under each tool.

   a) The quick way to verify tool and layer mapping is to look at the tool bar at the bottom of the EasiCut window. If there is no Tool Bar then click on “View” then click on “Layers” and “Tools” in the main E-Suite menu.

   b) If the layer is not mapped to a tool or the tool is not on the tool holder then just click and drag the tool to the spindle or the layer to the tool before sending the file to the cutter.



3. With eSuite closed, check tool holder to see if it moves freely and is not bent.

4. Make sure you have pressure at the tools. Try pulling tool holder down by hand to see if it has pressure.

5. Check the tool connections on the Y-axis Board on Y-car.

   a) Hit the Cut Down button on the UIT and verify the corresponding LED lights for desired tool.
   b) Try firing the tool manually by pressing red button under solenoid block. Each solenoid can be manually fired by pressing the individual button.
   c) Try swapping the (4) pin MTE connector with the connector for another tool to see if tool fires.

6. The Pen or Tool delays coming down and misses beginning of marking or cut.

   a) Check the voltage on the 12 VDC power supply. Make sure it is a minimum of 12 VDC
   b) Check solenoid connectors at Y-axis Board. Make sure you have good connection.
   c) Bend pins on 12 VDC power supply out to get a better connection.
   d) Try replacing 12 VDC power Supply. The supply may be going bad and can not deliver enough current.

Problem: Gantry goes past limit and hits End Stops

Description of Problem:

While cutting certain files, the conveyor begins to pull and gantry runs to end of table and hits end stops.

Troubleshooting:

1. Check the table limits to make sure that each tool can reach to the laser position without hitting a table limit.

   a) Click on “eCut” then click on “Check Reference” in the main eSuite menu.

   b) After the table finishes zeroing, press “Yes” on the check table limits pop up box.

   c) On the Touch Screen Keypad press the “Y” then the “ENTER” key (ENTER key on keyboard).

   d) The table will check the table limits to make sure each tool can reach within the set limits.

   e) If the Y-car or Gantry hit a limit switch, reset the table limits in eSuite by clicking on eCut then “Machine Settings” and finally the “Size” tab. Adjust “Table Top”, “Table Bottom”, Table Right” or “Table Left” limits as required.

RF/EMI Interference

Some factory environments may have equipment that generates Radio Frequency (RF) or Electro-Magnetic Interference (EMI). These signals in close proximity to the Eastman Eagle-C3 conveyor can generate electrical noise and cause problems for the machine and computer. (Eastman does offer a shielded mouse.) It is recommended that any RF Welders or other equipment generating RF or EMI noise be a minimum of 75 feet (23 meter) from the conveyor.

Problems of this nature are typically difficult to resolve and must be approached in a systematic manner. To reduce the effects of electrical noise generated by RF, Eastman Machine Company has the following recommendations:

a) Install an earth ground as close as possible to the transformer feeding AC power to the cutting machine and power feed unit.

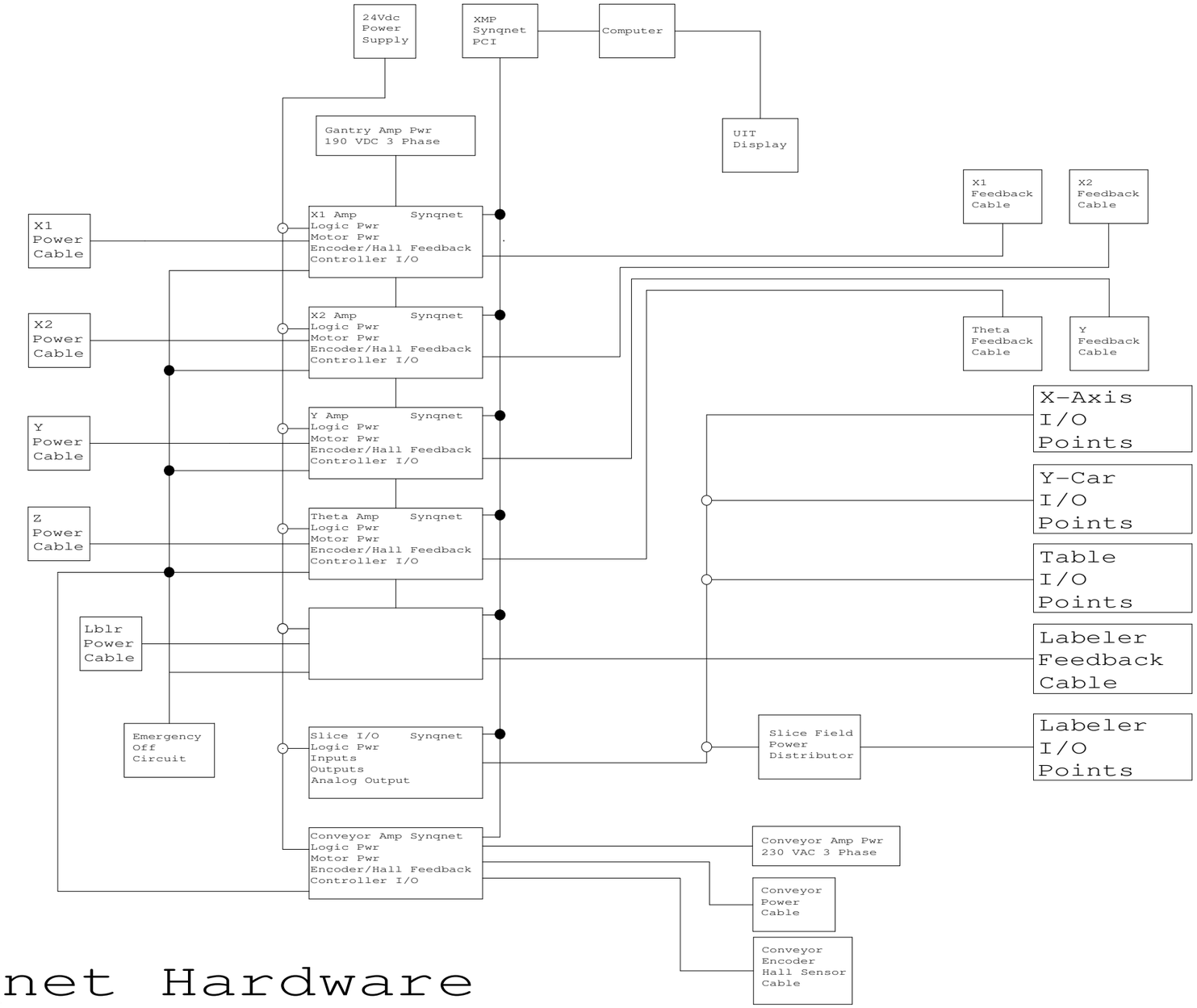
b) Enclose all AC power cables in rigid conduit and ground securely to the earth ground, Route the four power cables for the computer controls around the end of the conveyor instead of under the unit, and

c) Ground conduits to the frames of the power feed unit and the conveyor assemblies as well as to the individual chassis of the computer control assembly.

d) Implementation of the foregoing should at least reduce the level of interference to a workable level but in the event that it does not, you should be prepared to provide RF and/or install power line filters as needed.

Electrical Schematics & Pneumatic Diagrams

The following electrical and pneumatic drawings are for reference only. Eastman maintains the right to change electrical and pneumatic specifications without notice. Any modifications to machine wiring without written permission from Eastman Machine Company shall void all warranties



Synqnet Hardware Block Diagram

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL –
HEAT TREAT –
FINISH –
DO NOT SCALE DRAWING

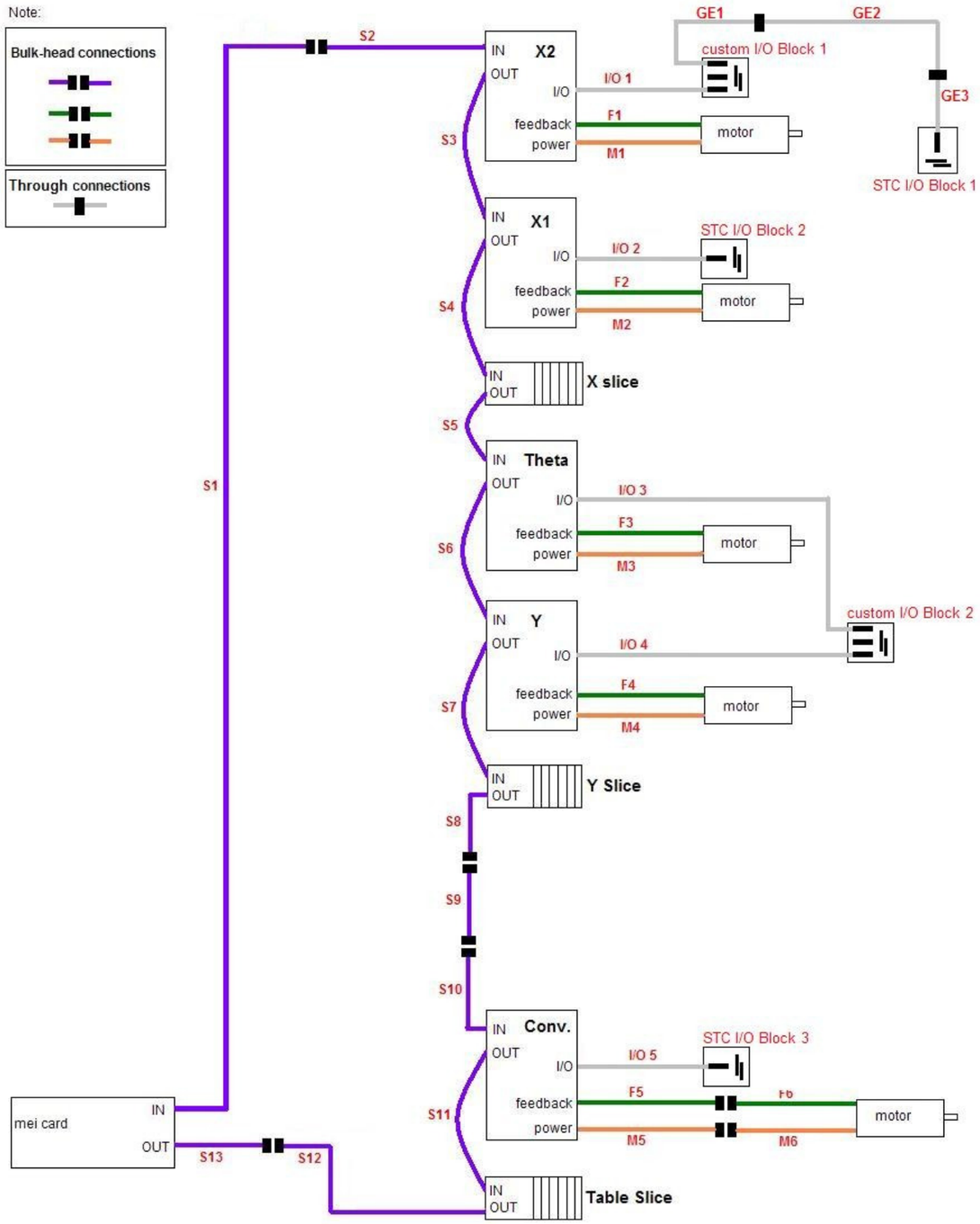
Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC

SYNQNET HARDWARE BLOCK DIAGRAM

SCALE None | SIZE D | DRAWN BY SGJ | DATE 4/9/07

31-9000-33



SYNQNET CABLE LAYOUT & LEGEND

S - SYNQNET NETWORK CABLES

F - MOTOR FEEDBACK CABLES (ENCODER & HALLS)

M - MOTOR POWER CABLES

I/O - MOTOR CONTROL I/O CABLES

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL –
HEAT TREAT –
FINISH –
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC

SYNQNET CABLING LAYOUT & LEGEND

SCALE None | SIZE D | DRAWN BY SCJ | DATE 4/9/07

31-9000-33

Main Disconnect

DWG. 31-26416 | DWG. 31-26417 | CB1 | DWG. 31-26418

Black / Blue / Red — L1 T1, L2 T2, L3 T3

Main Circuit Breaker

Braided Groundstrap

220VAC TWIST LOCK MALE INLET

G, X, Z, Y — FACE MALE TWIST LOCK

/5.C1 /6.B1 /7.C1 +24VDC - Table — Blue

White/Blue — 18AWG

/3.A6 /5.C1 /6.B1 /6.B1 /7.C1 24VDC Return - Table

/6.E1 24 VDC Common Tie

Mini Power 24VDC 2A Phoenix Contact

V adj.

DC OK

- - + OK

31-26376

L N

DWG. 31-26424

Red — T6

Fuse 4A KTK-R F1

Black — T5

Note: See Page 5 for More Connection Information

H1 H2 H3 — 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

X0 Yellow/Green — Red

X1 Black

X2 White

X3 Red

Black Red

Y1 Black

Z1 Black — MDQ-3 F5 — Black Black

White (Blk)

Z2 White — Yellow/Green

Y2 Red 31-26423 — Yellow/Green

Red

31-26612

DWG. 31-26419

White/White

To Conveyor Amplifier Circuit Breaker

/7.A1 220V (X3)

/7.A1 220V (X2)

/7.A1 X

DWG. 31-26425

/5.E3 Transformer Overheat — Brown — T1 T2 — White/Blue — 24VDC Return - Table — /3.C1

Transformer Thermocouple - Overheat Alarm

DWG. 31-26433

White — White — White — Mtr Pwr Enable - Return — /5.C1 /7.B1

DWG. 31-26430

Black

Unswitched Gantry Power

/5.A1 /5.A4 230V Unswitched

/5.A1 /5.A4 230V Return

T11 T12

DWG. 31-26426

Red

Black — F3 Fuse 4A KTK-R — White/Black

Computer Power

T1 T2

Yellow/Green

C A B

Located On Back Of Table Drawer

Red

DWG. 31-26427

Black — Fuse 10A F2 KTK-R — White/Red

Service Outlet

Red — Yellow/Green

31-26385

Black

DWG. 31-26428

L N — 120 VAC Fan — Gnd — White

Drawer Fan

Red

/6.B1 F-Stop Relay — Blue

E-Stop Reset Out /5.D6

E-Stop Reset In /5.E6

Black/White — Green/White — Black — White/Blue

A1 S11 S21 14 24

Power Supply

Relay Control

K2 K1

Safety Monitoring Relay

31-26381

A2 13 23

White/Blue

DWG. 31-26429

Green — Amp Disable Table — /5.D3 /6.D1 /7.C1 — To All Amp Node Disables

Black — Motor Power Enable — /5.C1 /7.B1 — Motor Power Enable

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL: –

HEAT TREAT: –

FINISH: –

DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

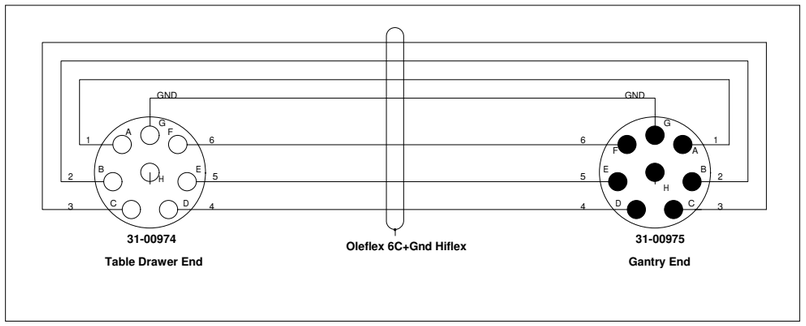
EAGLE SC

TABLE DRAWER / MAIN POWER SCHEMATIC

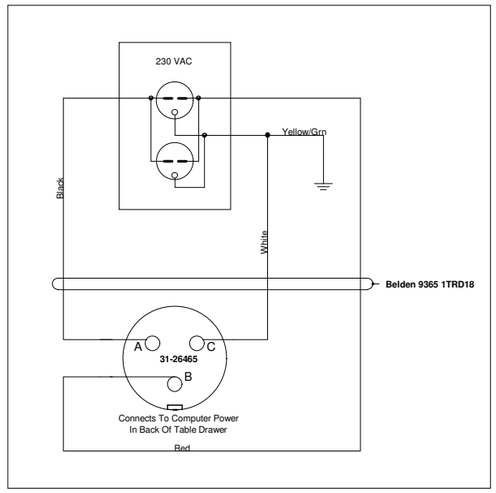
SCALE None | SIZE D | DRAWN BY SGJ | DATE 4/5/07

31-9000-33

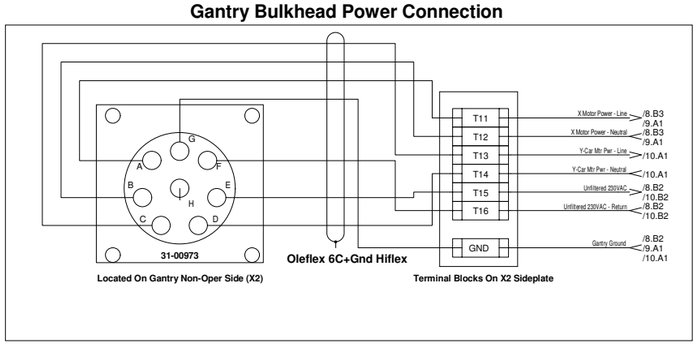
Gantry Power Cable (Table Drawer To Gantry)



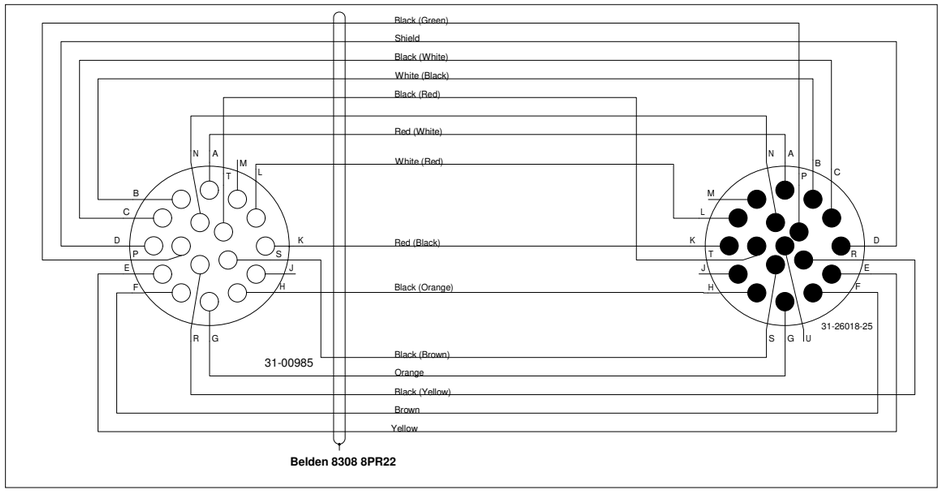
Computer Power Cable & Outlet



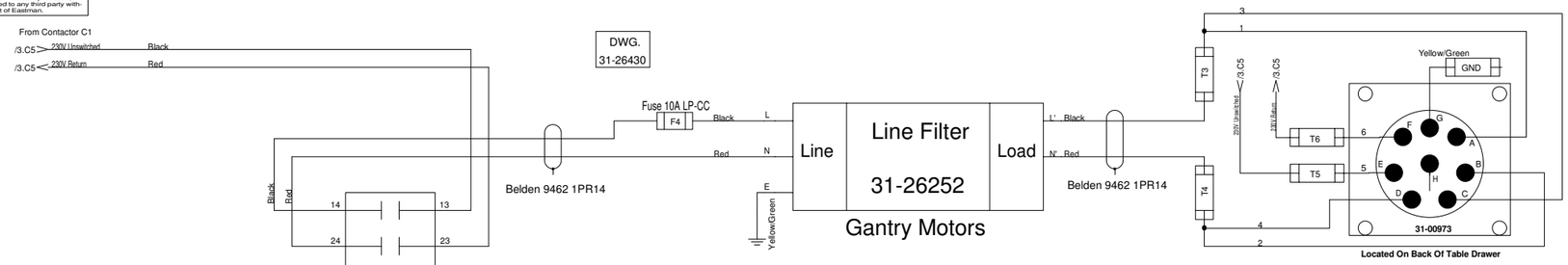
Gantry Bulkhead Power Connection

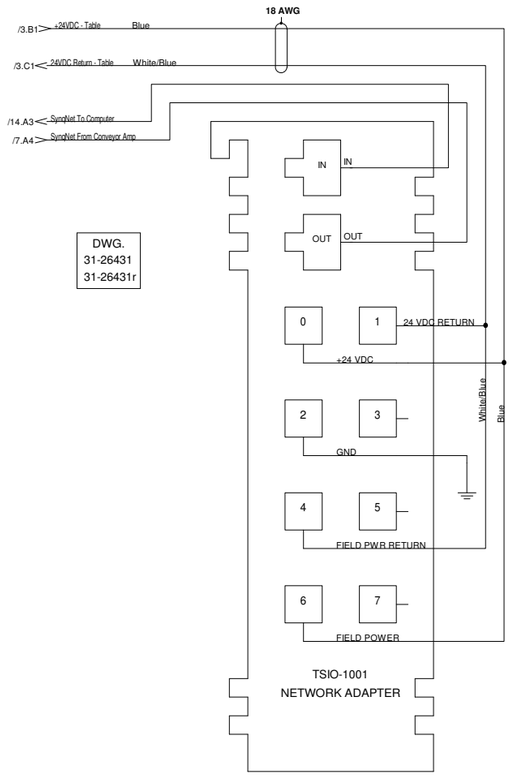


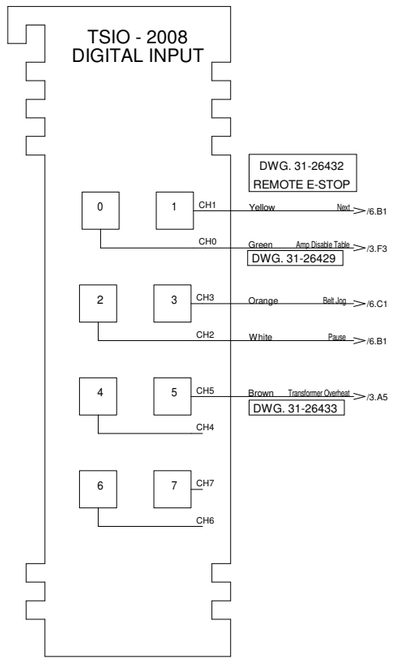
Conveyor Motor Feedback Cable (Table Drawer To Gantry)

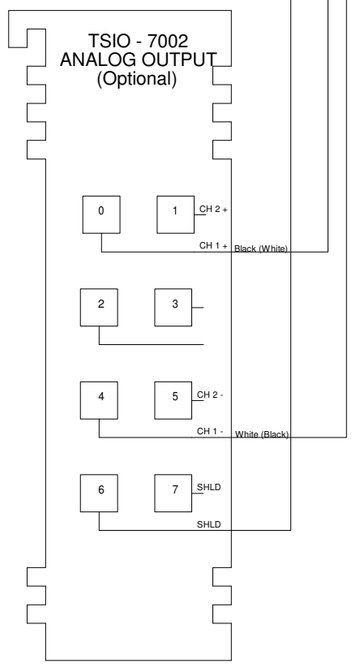


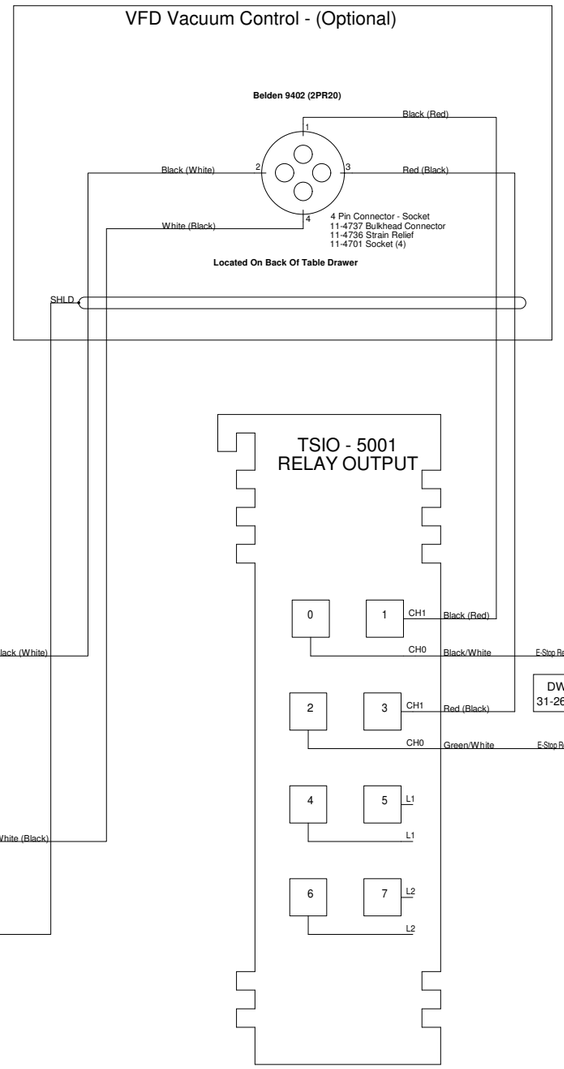
					MATERIAL –	Eastman Machine Company 779 Washington Street, Buffalo, NY 14203-1396	
					HEAT TREAT –	EAGLE SC	
					FINISH –	ELECTRICAL PERIPHERALS SCHEMATIC	
15003		NEW RELEASE			DO NOT SCALE DRAWING	SCALE None / SIZE D / DRAWN BY SCJ / DATE 4/4/07	31-9000-33
ECN	REV	CHANGES	DATE	BY			4 of 14











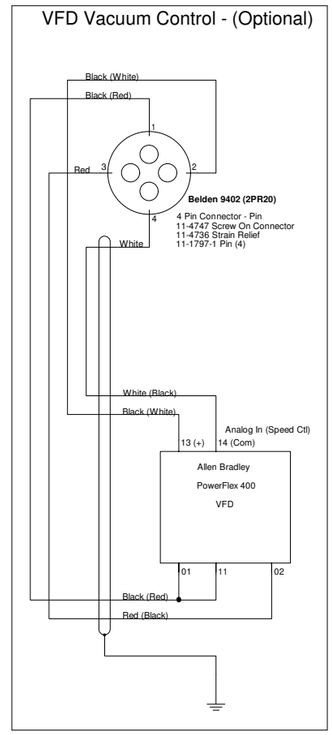


Table I/O

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL --
HEAT TREAT --
FINISH --
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

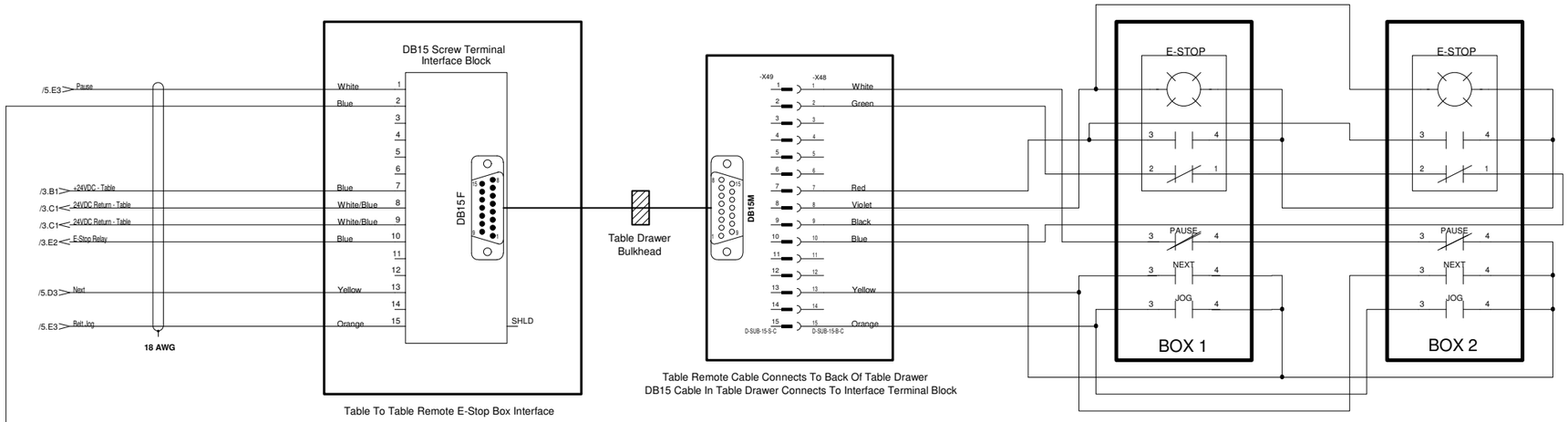
EAGLE SC

TABLE DRAWER I/O SCHEMATIC

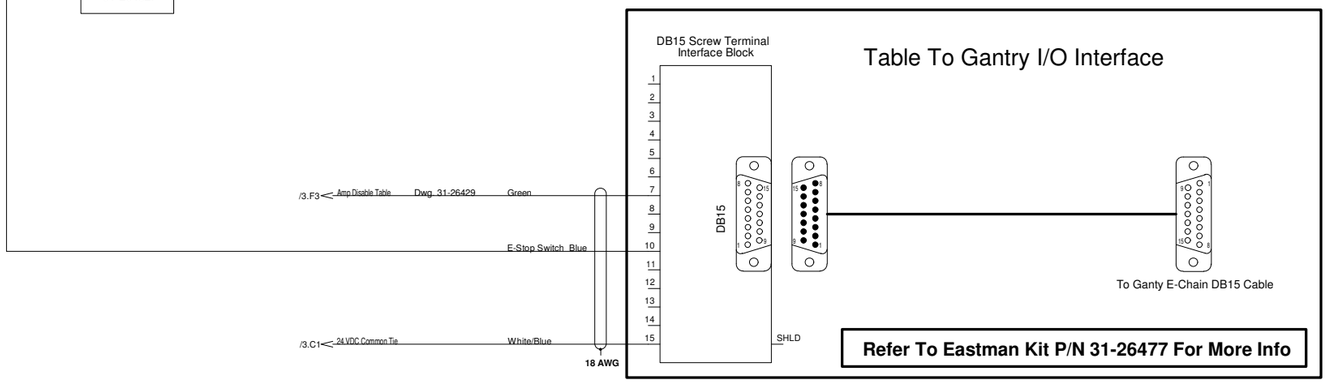
SCALE None | SIZE D
DRAWN BY SGJ | DATE 4/5/07

31-9000-33

Table Remote E-Stop Boxes



SEE DWG.
31-26432
31-26432r



					MATERIAL	--	Eastman Machine Company 779 Washington Street, Buffalo, NY 14203-1396
					HEAT TREAT	--	EAGLE SC
					FINISH	--	REMOTE E-STOP / STOP LOOP INTERFACE
15003		NEW RELEASE					SCALE None SIZE D — 31-9000-33
ECN	REV	CHANGES	DATE	BY	DO NOT SCALE DRAWING		DRAWN BY SGJ DATE

Conveyor System CB2

/3.D3 X — Black — L1 — T1 — Black — 14 — 13
/3.D3 220V (X2) — White — L2 — T2 — White — 24 — 23
/3.D3 220V (X3) — Red — L3 — T3 — Red — 34 — 33
44 — 43

31-26399
3 Phase Circuit Breaker
12 Amp

DWG. 31-26419

DWG. 31-26420

DWG. 31-26421

Black A — White B — Red C — N — G

Line Filter

Line — Load

31-26299

Attach Wires With 11-988-14 Ring Terminals

A' Black — B' White — C' Red — N' — G'

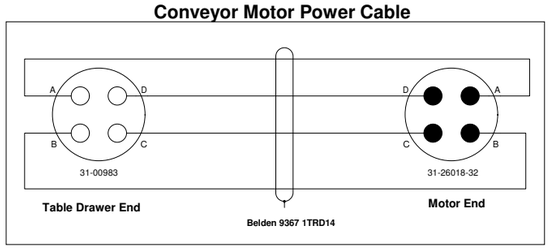
DWG. 31-26422

/12.A1 SynqNet From Y Cor Srvo
/5.C1 SynqNet From Conveyor Axis

A1 — C2 — A2

31-26298
Conveyor Motor Pwr

Conveyor Motor Power Cable



/3.B6 Mtr Pwr Enable - Return — White
/3.F3 Motor Power Enable — Black
/3.F3 Amp Disable Table — Green
/3.B1 +24VDC - Table — Blue
/3.C1 24VDC Return - Table — White/Blue

18 AWG

Conveyor Amp

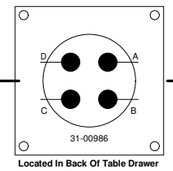
+24VDC — 1 — 31-26389
+24 Return — 2

Mini D 36 Male — Mini D 36 Pin Female
Mini D 20 Male — Mini D 20 Pin Female

SynqNet In
SynqNet Out
AC 3 Red
AC 2 White
AC 1 Black
Motor T
Motor S
Motor R

SMC9930-100-000-1B-1

DWG. 31-26434
DWG. 31-26434r



Located In Back Of Table Drawer

Motor Power Cable
67-26607-1.1

Control I/O Cable
67-26610-0.3

DWG. 31-26434

Custom I/O Block

31-26476

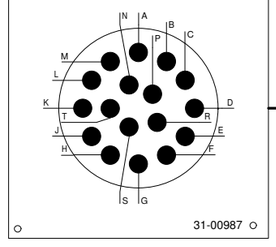
J1	Plug 1 Pin1	1	Positive Limit
	Plug 1 Pin 2	2	Negative Limit
	Plug 1 Pin 3	3	Node Disable
	Plug 1 Pin 4	4	Home
	Plug 1 Pin 5	5	Opto_In_Com
	Plug 1 Pin 6	6	+5 VDC
	Plug 1 Pin 7	7	Common
J2	Plug 2 Pin 3	8	Node Disable
	Plug 2 Pin 4	9	Home
	Plug 2 Pin 5	10	Opto_In_Com
J3	Plug 3 Pin 3	11	Node Disable
	Plug 3 Pin 4	12	Home
	Plug 3 Pin 5	13	Opto_In_Com
	All 3 Plug HSG's	14	Shield
	All 3 Plug HSG's	15	Shield

Green

DWG. 31-26434
DWG. 31-26434r

Mini D 20 Pin Female — Mini D 20 Male — X10

Conveyor Feedback Connector
Located On Back Of Table Drawer



Conveyor Motor

Mtr Pwr — IP20 — M — Feedback — IP20

Motor Feedback Cable
67-26604-1.1

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		SGJ

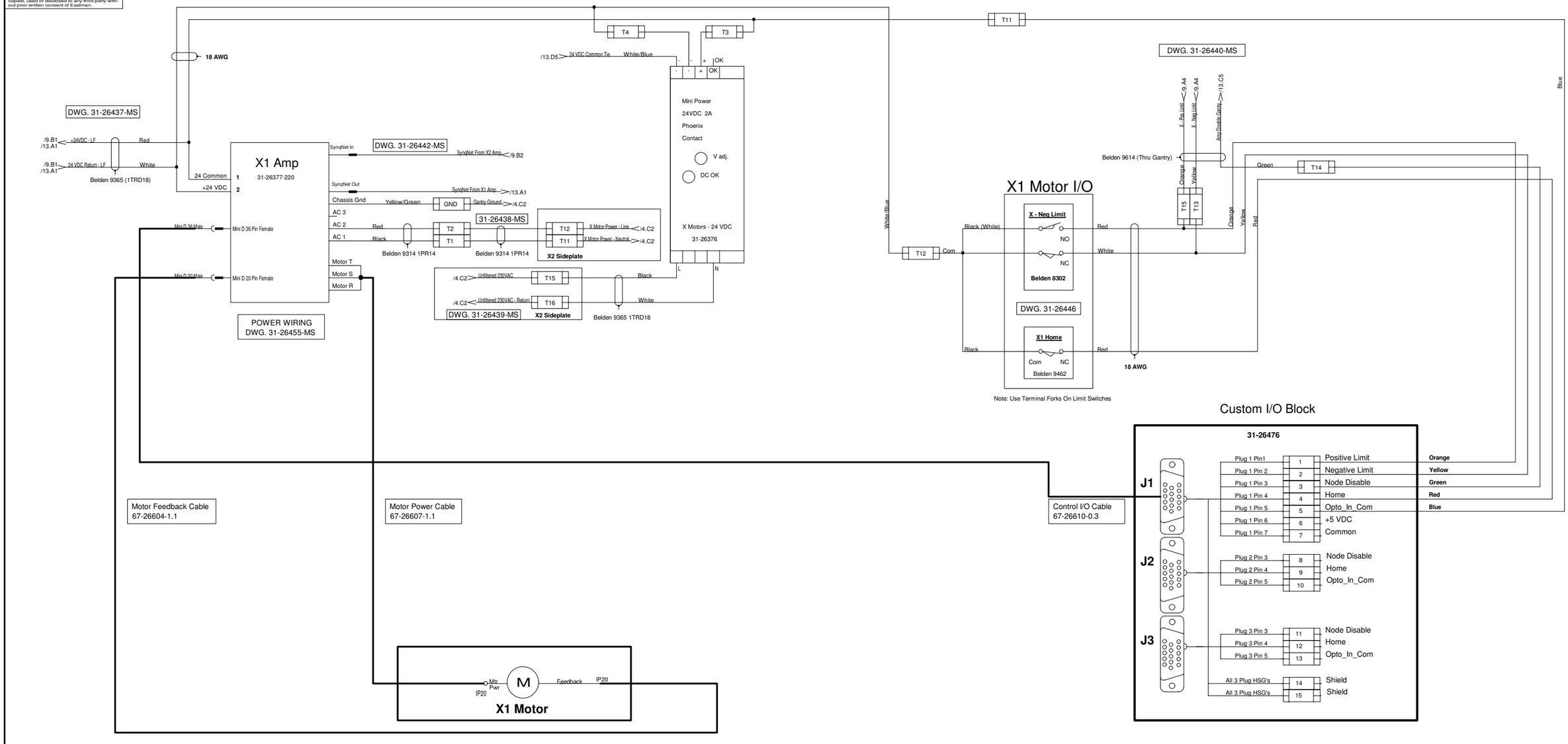
MATERIAL: –
HEAT TREAT: –
FINISH: –
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC
CONVEYOR AXIS SCHEMATIC

SCALE: None — SIZE: D — DRAWN BY: SGJ — DATE: 4/5/07

31-9000-33



ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL: --
HEAT TREAT: --
FINISH: --
DO NOT SCALE DRAWING

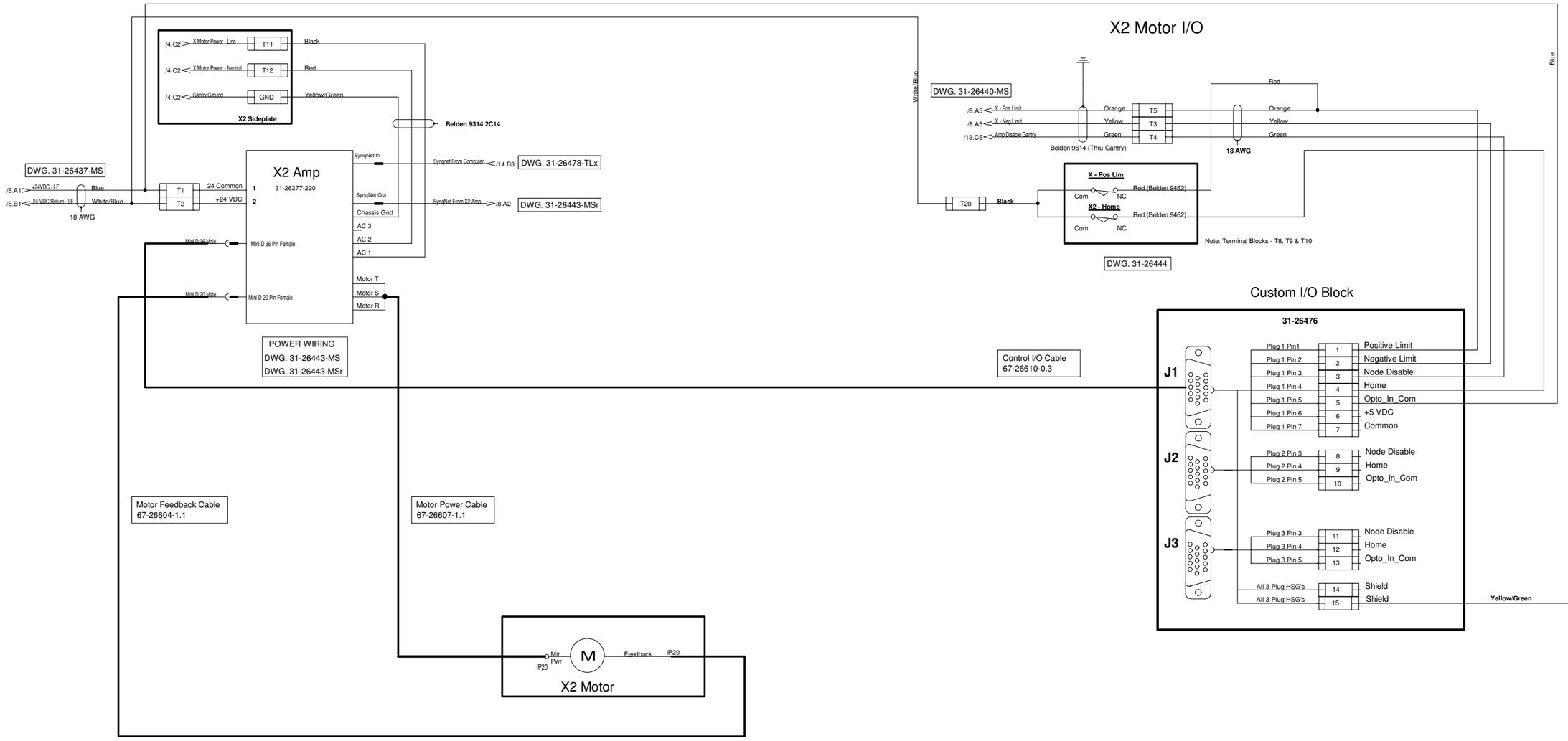
Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC

X1 AXIS ELECTRICAL SCHEMATIC

SCALE None | SIZE D | DRAWN BY SSJ | DATE 4/5/07

31-9000-33



					MATERIAL	Eastman Machine Company	
						779 Washington Street, Buffalo, NY 14203-1396	
					HEAT TREAT	EAGLE SC	
						X2 AXIS ELECTRICAL SCHEMATIC	
					FINISH	SCALE None / SIZE D	
15003		NEW RELEASE				DRAWN BY BDJ / DATE 4/4/07	31-9000-33
ECN	REV	CHANGES	DATE	BY	DO NOT SCALE DRAWING		9 of 14

Non-Op (X2)

/4.C2 Y Car Mtr Pwr - Line — T13 — Black
/4.C2 Y Car Mtr Pwr - Neutral — T14 — White
/4.C2 Gantry Ground — GND — Yellow/Green (Shield)

DWG. 31-26447-MS

Eastman Power Supply 31-26378-220

AC In 1, AC In 2, AC In 3, Chassis GND, Fan Pwr In, Fan Pwr In

B+ 1 Red, B- 1 Black, B+ 2, B- 2, B+ 3, B- 3, B+ 4 Red, B- 4 Black

Fan Pwr Out, Fan Pwr Out — L, N — 230 VAC Fan

Theta Amp DC Pwr + /11.A1
Theta Amp DC Pwr - /11.A1

/11.A3 SynqNet From Theta Amp
/12.A1 SynqNet From Y Amp

Gantry Amplifier
31-26359-320
Y Amp
SMC-9915-100-00-2

+24 Common 1, +24 VDC 2
Control I/O — Mini D 36 MHz
Encoder/Halls — Mini D 36 MHz
SynqNet In, SynqNet Out
B-, B+
Motor T, Motor S, Motor R

Blue — 24 VDC - Y Car — /11.B1 /12.A1
White/Blue — 24 VDC Return - Y Car — /11.B1 /12.A1
Blue
White/Blue — 24 VDC Common Tie — /13.D5

DWG. 31-26449-MS

13 14 OK + + - -
13 14 DC OK + + - -

Phoenix Contact
+24 VDC Pwr Supply

L N Gnd

/4.C2 Unfiltered 230VAC — T15
/4.C2 Unfiltered 230VAC - Return — T16
Non-Op Side (X2)

Igus 4C18

Yellow/Green
White/Blue

DWG. 31-26448-MS

T32 — Black (red)

Y Motor I/O

Y Positive Limit — White
Y Negative Limit — Black (white)
Y Home Limit — Red

Use Belden 8302 2PR22 for Limits

DWG. 31-26456

/13.C5 Amp Disable Gantry — Green
DWG. 31-26449-MS

POWER WIRING
DWG. 31-26455-MS
DWG. 31-26455-MSr

Control I/O Cable
67-26610-0.3

Motor Feedback Cable
67-26604-0.7

Motor Power Cable
67-26607-0.9

Mtr Pwr — M — Feedback — IP20
IP20
Y Motor

Custom I/O Block

31-26476

J1
Plug 1 Pin1 — 1 — Positive Limit — White
Plug 1 Pin 2 — 2 — Negative Limit — Black (white)
Plug 1 Pin 3 — 3 — Node Disable — Green
Plug 1 Pin 4 — 4 — Home — Red
Plug 1 Pin 5 — 5 — Opto_In_Com — Blue
Plug 1 Pin 6 — 6 — +5 VDC — Red
Plug 1 Pin 7 — 7 — Common — Black

J2
Plug 2 Pin 3 — 8 — Node Disable
Plug 2 Pin 4 — 9 — Home
Plug 2 Pin 5 — 10 — Opto_In_Com

J3
Plug 3 Pin 3 — 11 — Node Disable
Plug 3 Pin 4 — 12 — Home
Plug 3 Pin 5 — 13 — Opto_In_Com

All 3 Plug HSG's — 14 — Shield
All 3 Plug HSG's — 15 — Shield

31-26466

Laser Pointer
Red — Black
+5VDC — COM

NOTE: PLUG 2 IS USED FOR THE THETA AXIS
SEE NEXT PAGE

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

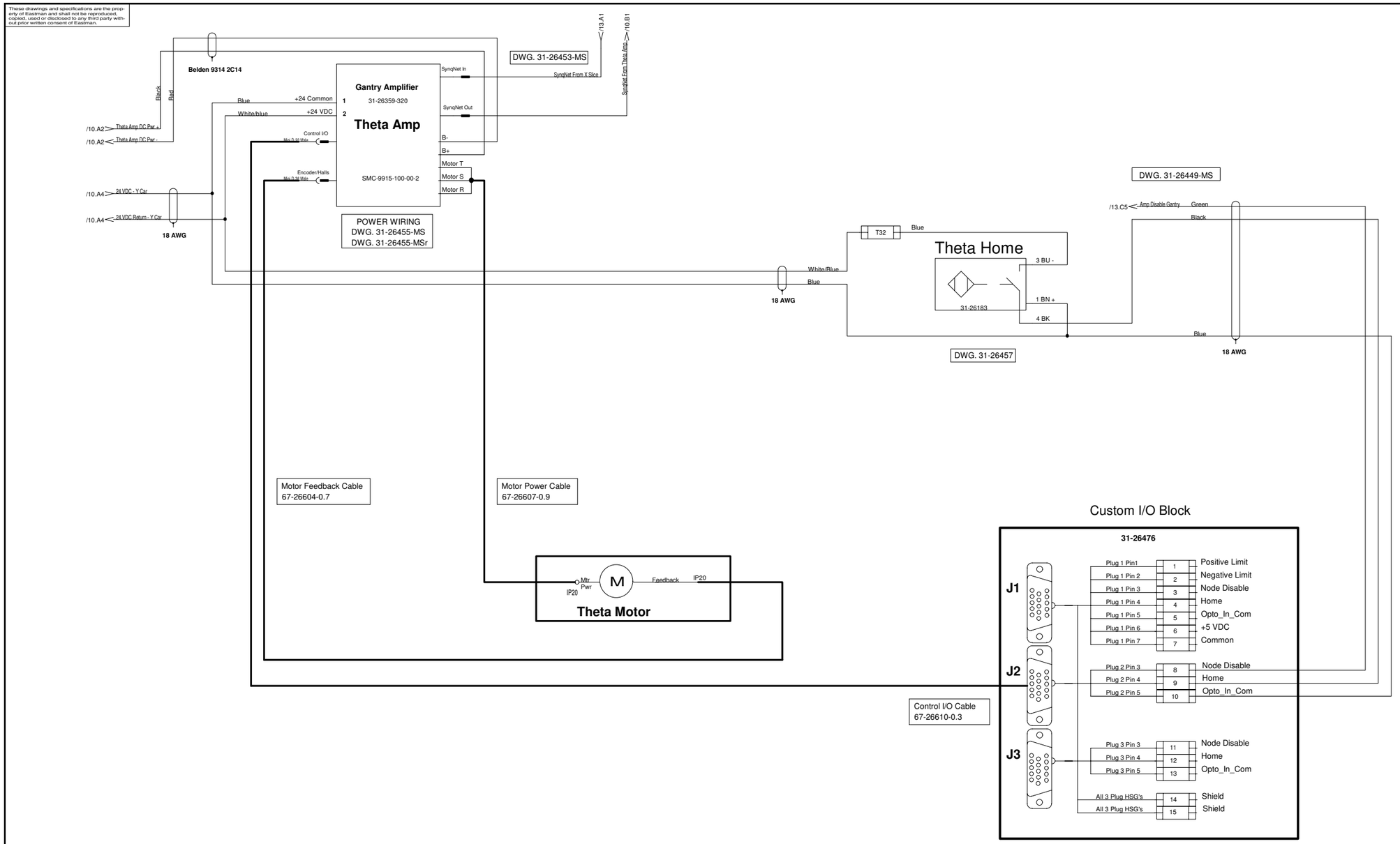
MATERIAL –
HEAT TREAT –
FINISH –
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC
Y AXIS ELECTRICAL SCHEMATIC

SCALE None | SIZE D | DRAWN BY SGJ | DATE 4/4/07

31-9000-33



NOTE: PLUG 1 IS USED FOR THE Y-AXIS
SEE PREVIOUS PAGE

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL: –
HEAT TREAT: –
FINISH: –
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

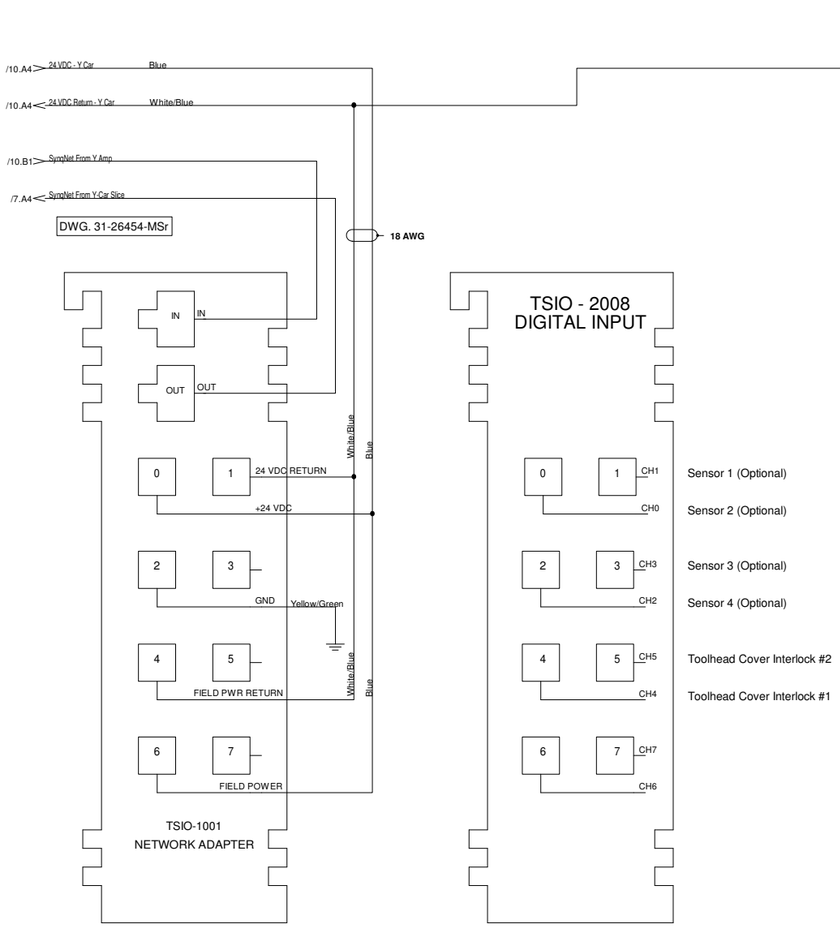
EAGLE SC

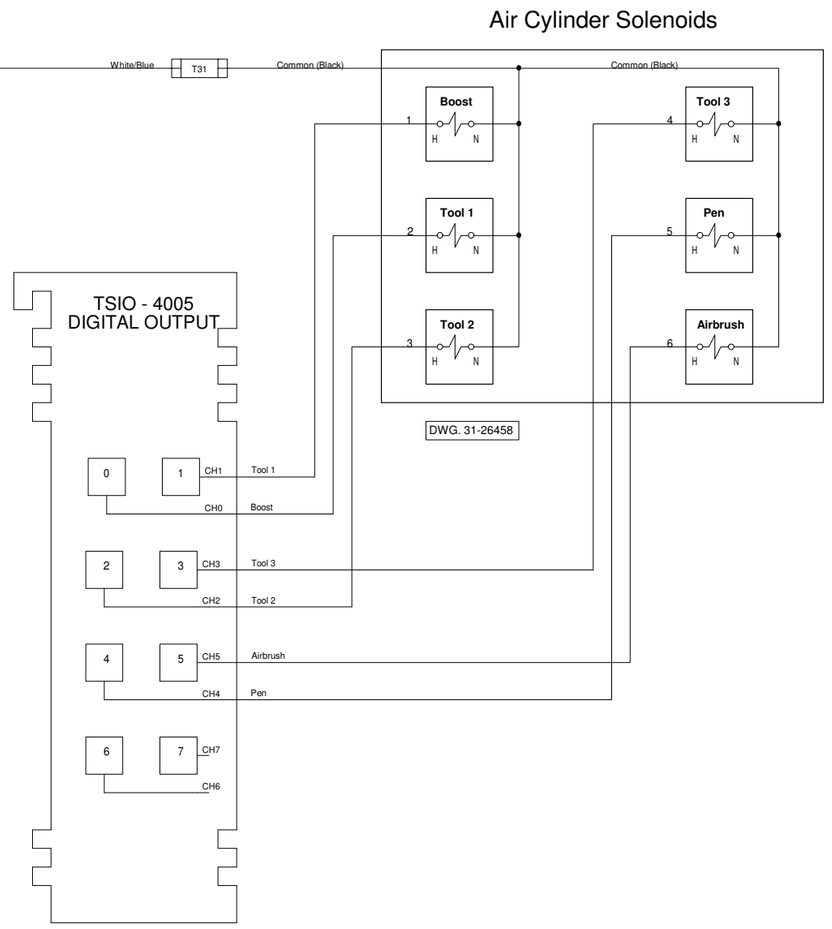
THETA AXIS ELECTRICAL SCHEMATIC

SCALE None | SIZE D | DRAWN BY SGJ | DATE 4/4/07

31-9000-33

Y-Car I/O





Air Cylinder Solenoids

					MATERIAL –	Eastman Machine Company 779 Washington Street, Buffalo, NY 14203-1396	
					HEAT TREAT –	EAGLE SC	
					FINISH –	Y-CAR I/O ELECTRICAL SCHEMATIC	
15003		NEW RELEASE			DO NOT SCALE DRAWING	SCALE None / SIZE D / DRAWN BY SCJ / DATE 4/4/07	31-9000-33
ECN	REV	CHANGES	DATE	BY			12 of 14

/8.A1 +24VDC - LF — Red — T11
/8.B1 24 VDC Return - LF — White — T12
Belden 9367
/8.B2 SynqNet From X1 Amp
/11.A3 SynqNet From X Slice
DWG. 31-26453-MS

TSIO-1001
NETWORK ADAPTER
IN, OUT
0, 1 — 24 VDC RETURN
+24 VDC
2, 3 — GND
4, 5 — FIELD PWR RETURN
6, 7 — FIELD POWER

TSIO - 2008
DIGITAL INPUT
0, 1 — CH1 — Joystick Up (Pos Y) — Black (Red)
CH0 — Joystick Dn (Neg Y) — Red
Joystick Lft (Neg X) — Black (White)
2, 3 — CH3
CH2 — Joystick Rt (Pos X) — White
Belden 8302
4, 5 — CH5 — Tool Enable — Red
CH4 — Pause — White
6, 7 — CH7
CH6
DWG. 31-26459

Joystick
UP (U1 U2)
DOWN (D1 D2)
LEFT (L1 L2)
RIGHT (R1 R2)

T8, T7 — White/Blue, Blue

Tool Enable Sw.
OFF, ON — S1, S2
Blue — White/Blue
Tools IL — GRN

Pause Disk, Pause PB
White, White/Blue
Blue, Blue/White
YEL — Pause IL - Op Side
Operator Side Pause Circuit

White/Blue — T17 — Blue

Oper Side E-Stop
Blue — T16 — Blue
E-Stop PB — Blue/White — RED — White/Blue
E-Stop Op-Side

Non-Op Side — T7
Non-Op Side — T6

Pause Disk, Pause PB
White, White/Blue
YEL — Pause IL - Non-Op Side
Non-OP Side Pause Circuit
DWG. 31-26460

Non-Op Side E-Stop
Blue — White/Blue
E-Stop PB — RED — E-Stop Non-Op Side
T20

/8.A5 /9.A4 /10.A5 /11.B5 — Amp Disable Gantry — T3 — T4 — Amp (Node) Disable — Non-Op Side
Blue — E-Stop Switch
/8.A3 /10.A4 — 24 VDC Common Tie — T20 — Non-Op Side

DB15 Screw Terminal
Interface Block
SH
DB15 Socket Connector
DB15
DB15 Pin Connector
SHLD
E-Chain Cable

Refer To Eastman Cable Kit P/N 31-26477

DB15 Socket Connector
Gantry Bulkhead

See Pg. 6 For Connection

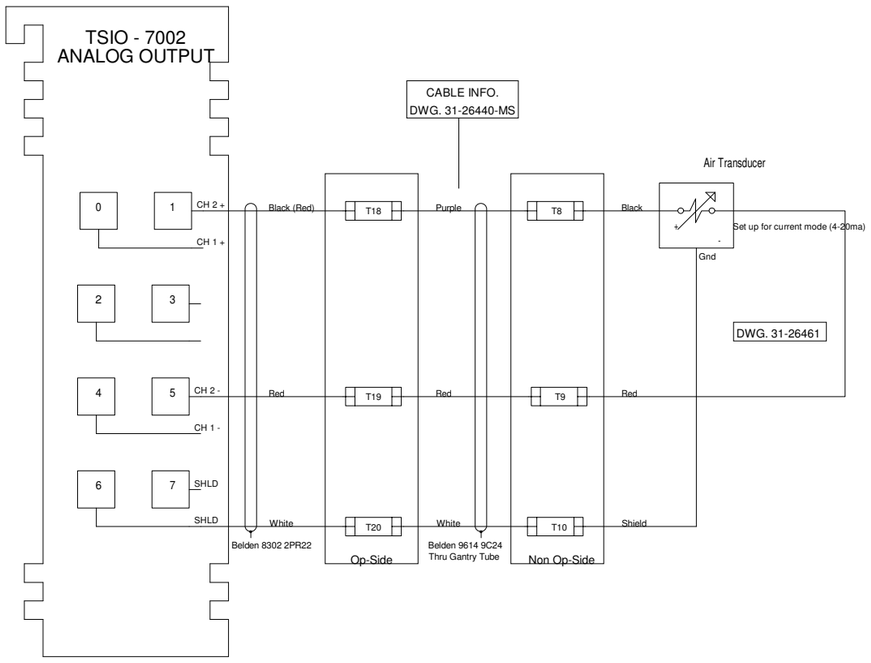
DB15 Socket Connector
Table Drawer Bulkhead
DB15 Pin Connector
E-Chain Cable

QSI Touchscreen
Ethernet
DB9-F
TX-, TX+, RX+, COM, RX-
+24 VDC - X
24 VDC Return - X
White/Blue, Blue
DWG. 31-26463
DWG. 31-26478-TLx
Touchscreen Ethernet Connection

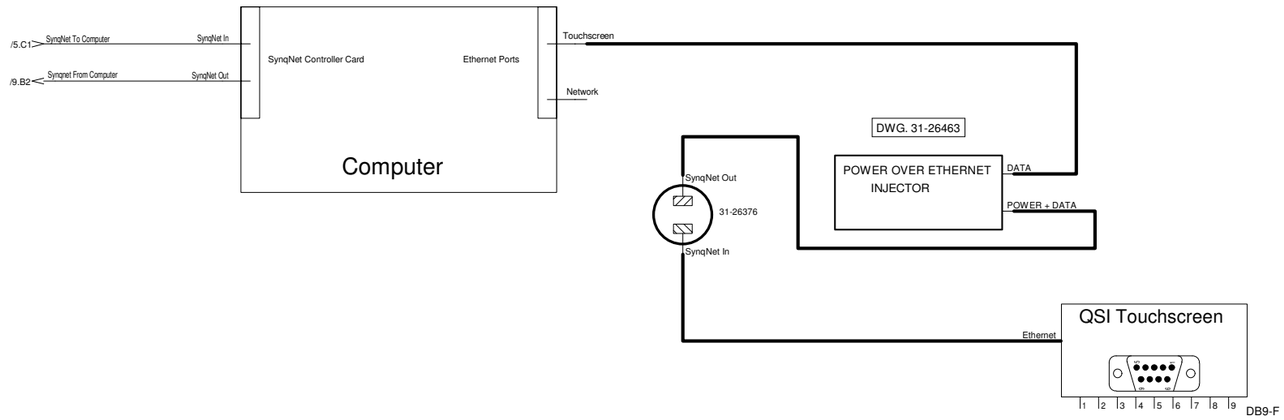
Ethernet Connection - Touchscreen To Gantry Bulkhead To Computer

Note: All wires 18 AWG unless otherwise indicated

15003		NEW RELEASE			MATERIAL: --	Eastman Machine Company, 779 Washington Street, Buffalo, NY 14203-1396
ECN	REV	CHANGES	DATE	BY	HEAT TREAT: --	EAGLE SC
					FINISH: --	X AXIS I/O ELECTRICAL SCHEMATIC
					DO NOT SCALE DRAWING	SCALE: None; SIZE: D; DRAWN BY: SGJ; DATE: 4/4/07; 31-9000-33; 13 of 14



Analog Output Card On X-Axis Slice I/O Assembly



Computer Synqnet & Touchscreen Cable Connections

Note: All wires 18 AWG unless otherwise indicated

ECN	REV	CHANGES	DATE	BY
15003		NEW RELEASE		

MATERIAL –
HEAT TREAT –
FINISH –
DO NOT SCALE DRAWING

Eastman Machine Company
779 Washington Street, Buffalo, NY 14203-1396

EAGLE SC
ANALOG I/O & TOUCHSCREEN SCHEMATIC

SCALE None | SIZE D | DRAWN BY SCJ | DATE 4/4/05

31-9000-33
14 of 14

VALVE MANIFOLD
27-26050

PEN SOLENOID
BOOST SOLENOID
#1 TOOL SPINDLE SOLENOID
#2 TOOL SPINDLE SOLENOID
#3 TOOL SPINDLE SOLENOID
AIR BRUSH #1 SOLENOID
AIR BRUSH #2 SOLENOID

14
12
5
1
3
2
4
ISOLATION DISK

FULL PRESSURE EXTERNAL PILOT 1/4
REGULATED PRESSURE 1/4
PEN CYLINDER
BOOST FULL PRESSURE 1/4
SPINDLE 1 CYLINDER
SPINDLE 2 CYLINDER
SPINDLE 3 CYLINDER
AIR BRUSH #1
AIR BRUSH #2
5/32
1/4

27-26055
CHECK VALVE
1/4 AIR TUBE
TRANSDUCER REGULATOR
3 -120 PSI
27-20001
75 PSI MIN.
90 PSI MAX.
100-18-2 FILTER REGULATOR

ECN	REV	CHANGES	DATE	BY
16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.XX ± .01 FRACTIONAL: ± 1/64
.XXX ± .005 ANGULAR: ± 1°
SURFACE FINISH PER ANSI 846.1 125 RMS
SURFACE PROFILE ( ) .01
BREAK SHARP CORNERS MAXIMUM .010
ALL WELDS TO BE CLEAN AND FREE OF SPATTER
ALL SURFACES TO BE FREE AND CLEAR OF SCRATCHES, RUST AND STAIN.
INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

FINISH -
HEAT TREAT -
DO NOT SCALE DRAWING

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3
STANDARD TOOL PNEUMATIC DIAGRAM

SCALE -
SIZE B
DRAWN BY J.ROGACKI
DATE 03/04/08

31-26611
SHEET 1 OF 6

SOLIDWORKS

VALVE MANIFOLD
27-26050

PEN SOLENOID
BOOST SOLENOID
#1 TOOL SPINDLE SOLENOID
#2 TOOL SPINDLE SOLENOID
SPARE SOLENOID
AIR BRUSH #1 SOLENOID
AIR BRUSH #2 SOLENOID

14
12
5
1
3
2
4
ISOLATION DISK

FULL PRESSURE EXTERNAL PILOT 1/4
REGULATED PRESSURE 1/4
5/32
PEN CYLINDER
BOOST FULL PRESSURE 1/4
SPINDLE 1 CYLINDER
SPINDLE 2 CYLINDER
AIR BRUSH #1
AIR BRUSH #2
1/4
REGULATED PRESSURE 1/4

27-26055
CHECK VALVE
1/4 AIR TUBE
TRANSDUCER REGULATOR
3 -120 PSI
27-20001
75 PSI MIN.
90 PSI MAX.
1/4 AIR TUBE
1/4 AIR TUBE
100-18-2 FILTER REGULATOR

ECN	REV	CHANGES	DATE	BY
16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

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.XX ± .01 FRACTIONAL: ± 1/64
.XXX ± .005 ANGULAR: ± 1°
SURFACE FINISH PER ANSI 846.1 125 RMS
SURFACE PROFILE ( ) .01
BREAK SHARP CORNERS MAXIMUM .010
ALL WELDS TO BE CLEAN AND FREE OF SPATTER

ALL SURFACES TO BE FREE AND CLEAR OF SCRATCHES, RUST AND STAIN.
INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

FINISH -

HEAT TREAT -

DO NOT SCALE DRAWING

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3

HEAVY DUTY PNEUMATIC DIAGRAM

SCALE -
SIZE B
DRAWN BY J.ROGACKI
DATE 03/04/08

31-26611

SHEET 2 OF 6

SOLIDWORKS

VALVE MANIFOLD
27-26050

SPARE SOLENOID
BOOST SOLENOID
#1 TOOL SPINDLE SOLENOID
#2 TOOL SPINDLE SOLENOID
SPARE SOLENOID
AIR BRUSH #1 SOLENOID
AIR BRUSH #2 SOLENOID

14
12
5
1
3
2
4
ISOLATION DISK
5/32
1/4

FULL PRESSURE EXTERNAL PILOT 1/4
REGULATED PRESSURE 1/4
BOOST FULL PRESSURE
SPINDLE 1 CYLINDER
SPINDLE 2 CYLINDER
AIR BRUSH #1
AIR BRUSH #2
REGULATED PRESSURE 1/4

27-26055
CHECK VALVE
1/4 AIR TUBE
TRANSDUCER REGULATOR
3 -120 PSI
27-20001
75 PSI MIN.
90 PSI MAX.
100-18-2 FILTER REGULATOR

ECN	REV	CHANGES	DATE	BY
16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS OTHERWISE SPECIFIED:
.XX ± .01 FRACTIONAL: ± 1/64
.XXX ± .005 ANGULAR: ± 1°
SURFACE FINISH PER ANSI 846.1 125 RMS
SURFACE PROFILE ( ) .01
BREAK SHARP CORNERS MAXIMUM .010
ALL WELDS TO BE CLEAN AND FREE OF SPATTER

ALL SURFACES TO BE FREE AND CLEAR OF SCRATCHES, RUST AND STAIN.
INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

DO NOT SCALE DRAWING

FINISH -

HEAT TREAT -

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3

HIGH FIBER PNEUMATIC DIAGRAM

SCALE	SIZE
-	B
DRAWN BY	DATE
J.ROGACKI	03/04/08

31-26611

SHEET 3 OF 6

SOLIDWORKS

VALVE MANIFOLD
27-26050

PEN SOLENOID
BOOST SOLENOID
#1 TOOL SPINDLE SOLENOID
#2 TOOL SPINDLE SOLENOID
#3 TOOL SPINDLE SOLENOID
ROUTER VACUUM DOOR SOLENOID
ROUTER PLUNGE SOLENOID

14
12
5
1
3
2
4
ISOLATION DISK

FULL PRESSURE EXTERNAL PILOT 1/4
REGULATED PRESSURE 1/4

PEN CYLINDER 5/32 5/32
BOOST FULL PRESSURE 1/4
SPINDLE 1 CYLINDER 5/32 5/32
SPINDLE 2 CYLINDER 5/32 5/32
SPINDLE 3 CYLINDER 5/32 5/32
VACUUM DOOR CYLINDER 5/32 5/32
ROUTER PLUNGE CYLINDER 1/4 1/4

REGULATED PRESSURE 1/4

27-26055
CHECK VALVE
1/4 AIR TUBE

TRANSDUCER REGULATOR
3 -120 PSI
27-20001

75 PSI MIN.
90 PSI MAX.
1/4 AIR TUBE
1/4 AIR TUBE

100-18-2 FILTER
REGULATOR

ECN	REV	CHANGES	DATE	BY
16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

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.XX ± .01 FRACTIONAL: ± 1/64
.XXX ± .005 ANGULAR: ± 1°
SURFACE FINISH PER ANSI 846.1 125 RMS
SURFACE PROFILE ( ) .01
BREAK SHARP CORNERS MAXIMUM .010
ALL WELDS TO BE CLEAN AND FREE OF SPATTER

ALL SURFACES TO BE FREE AND CLEAR OF SCRATCHES, RUST AND STAIN.
INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

FINISH -

HEAT TREAT -

DO NOT SCALE DRAWING

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3

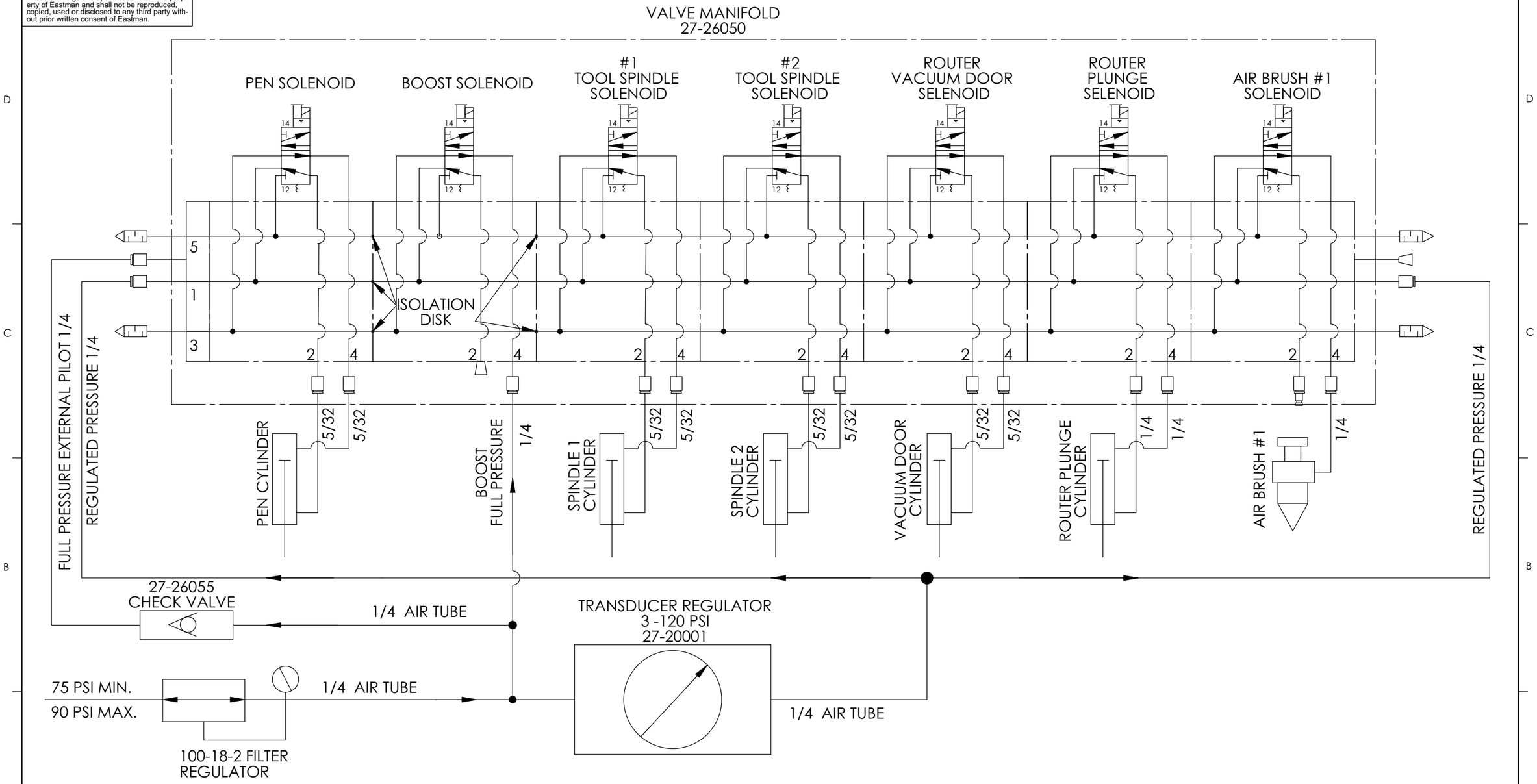
ROUTER/STANDARD PNEUMATIC DIAGRAM

SCALE -
SIZE B
DRAWN BY J.ROGACKI
DATE 03/04/08

31-26611

SHEET 4 OF 6

SOLIDWORKS



ECN	REV	CHANGES	DATE	BY
16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

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ALL SURFACES TO BE FREE AND CLEAR OF SCRATCHES, RUST AND STAIN.
INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

FINISH -

HEAT TREAT -

DO NOT SCALE DRAWING

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3

ROUTER/ HEAVY DUTY PNUEMATIC DIAGRAM

SCALE -
SIZE B
DRAWN BY J.ROGACKI
DATE 03/04/08

31-26611

SHEET 5 OF 6

SOLIDWORKS

VALVE MANIFOLD
27-26050

SPARE SOLENOID
BOOST SOLENOID
#1 TOOL SPINDLE SOLENOID
#2 TOOL SPINDLE SOLENOID
ROUTER VACUUM DOOR SELENOID
ROUTER PLUNGE SELENOID
#1 AIR BRUSH SOLENOID

ISOLATION DISK

5/32
5/32
BOOST FULL PRESSURE
1/4
SPINDLE 1 CYLINDER
5/32
5/32
SPINDLE 2 CYLINDER
5/32
5/32
VACUUM DOOR CYLINDER
5/32
5/32
ROUTER PLUNGE CYLINDER
1/4
1/4
AIR BRUSH #1
1/4

FULL PRESSURE EXTERNAL PILOT 1/4
REGULATED PRESSURE 1/4
REGULATED PRESSURE 1/4

27-26055
CHECK VALVE
1/4 AIR TUBE

TRANSDUCER REGULATOR
3 -120 PSI
27-20001

75 PSI MIN.
90 PSI MAX.
1/4 AIR TUBE
1/4 AIR TUBE

100-18-2 FILTER
REGULATOR

ECN	REV	CHANGES	DATE	BY
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16146	A	ADD MORE DIAGRAMS	09/05/08	JWR
14900	-	NEW RELEASE	03/04/08	JWR

MATERIAL -

DIMENSIONS ARE IN INCHES
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.XXX ± .005 ANGULAR: ± 1°
SURFACE FINISH PER ANSI 846.1 125 RMS
SURFACE PROFILE ( ) .01
BREAK SHARP CORNERS MAXIMUM .010
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INTERPRET DIMENSIONS AND TOLERANCING PER ASME Y14.5M-1994

FINISH -

HEAT TREAT -

DO NOT SCALE DRAWING

Eastman Machine Co.
779 Washington Street, Buffalo, NY 14203-1396

TOOL HEAD PNEUMATICS, EAGLE C3 S3

ROUTER/ FIBER PNUEMATIC DIAGRAM

SCALE -
SIZE B
DRAWN BY J.ROGACKI
DATE 03/04/08

31-26611

SHEET 6 OF 6

SOLIDWORKS

Technical Data
EASTMAN® Eagle C3

Eagle C3

Maximum Gantry Speed*……..... 60 in/sec. (152 cm/sec.)
Maximum Conveyor Speed*…….....10 in/sec.^{2} (25.4 cm/sec^2.)
Cut Accuracy * ……..... +/- 0.015" (+/- 0.4 mm)
Gantry Weight ……..... 230 lbs (105 kg)
Machine Operating Voltage ……..... 208/220/400/440/575 VAC, 3 Phase 50/60 Hz
Blower Operating Voltage ……..... 220/440 VAC, 3 Phase 50/60 Hz
Minimum Operating Pressure ……..... 75 psi
Volume of Air Service ……..... 5 SCFM (15 SCFM w/Airbrush)

Information based on standard 78" wide machine size

* Relative to type and quality of fabric, cutting speed, pulling mode operational settings.etc.
* Conveyor pull accuracy to +/- 1/16" (+/- 1.6 mm).

Machine Size	**Working Width**	**Table Width** (including Rack and Rail)	**Overall Machine Width**
72" (183 cm)	70.6" (180 cm)	88-1/4" (224 cm)	99" (252 cm)
78" (198 cm)	76.6" (195 cm)	94-1/4" (240 cm)	105" (267 cm)
84" (213 cm)	82.6" (210 cm)	100-1/4" (255 cm)	111" (282 cm)
126" (320 cm)	124.6" (317 cm)	142-1/4" (362 cm)	153" (389 cm)
156" (396 cm)	154.6" (393 cm)	172-1/4" (483 cm)	183" (465 cm)

Please allow 3 ft working clearance on all sides.
For all other sizes consult factory.

779 Washington St., Buffalo, N.Y. 14203-1396 U.S.A. • (716)856-2200 • Fax (716)856-1140 or (716)856-2068
Manufacturers of Eastman Cloth Cutting and Cloth Spreading Machines
Website: www.EastmanCuts.com
Form E-545