Installation Guide
English

Automatic Pallet Loader (three segment)

Draft

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Order of Installation

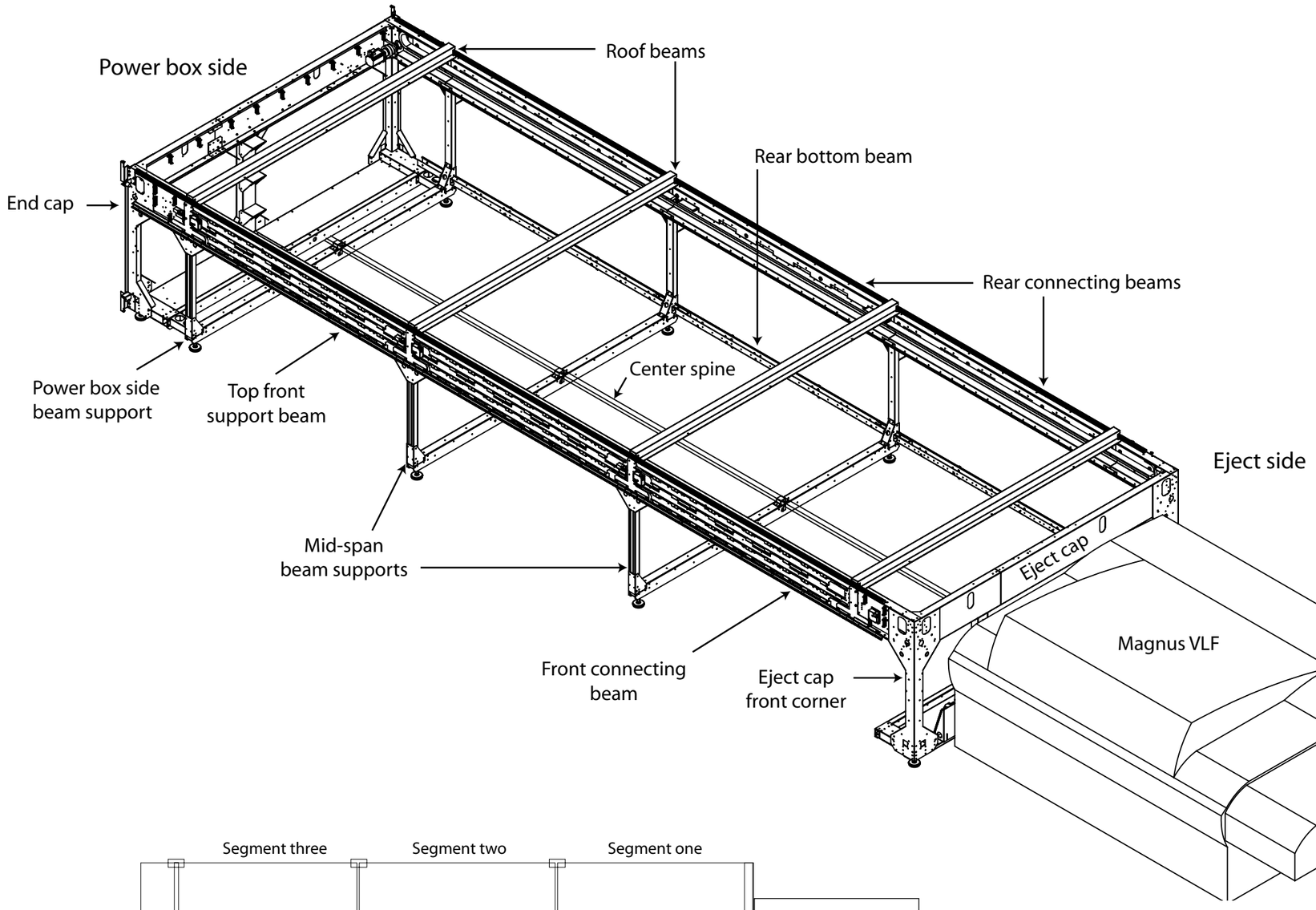
1. Assembling the Frame (pgs. 2-4)
2. Moving the eject cap (pg. 5)
3. Assembling the first segment (pg. 6)
4. Assembling the second segment (pgs. 7&8)
5. Installing other components (pgs. 9&10)
6. Connecting the cables and tubes (pgs. 11-14)
7. Installing the gantry belts (pg. 15)
8. Installing the doors and panels (pgs. 16&17)
9. Startup (pg. 18)

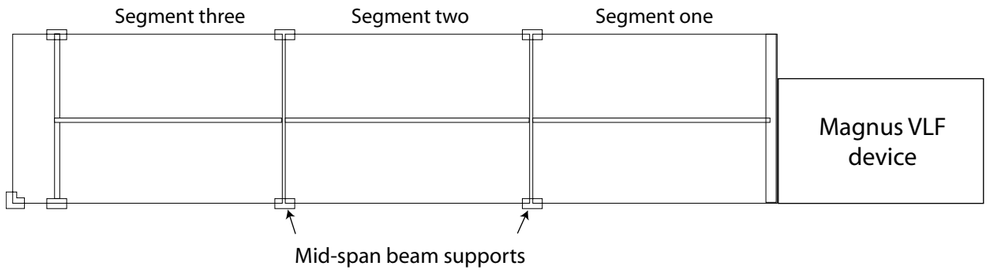
Supporting documents:
- Adjusting the Picker/Pusher Gantry Belts
- APL Installation Setup and Alignment
- Magnus VLF with APL Visual Reference Guide
- Installing the Hover Cart Rails (optional)

CRATES

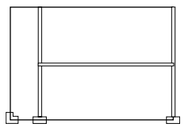
No.	Contents
1	Main assembly (APL frame)
2	Gantry extensions
3	Frame corners
4	Panel pallet 1
5	Panel pallet 2
6	Pallet spacers and slip sheet cart
7	APL fetcher track
8	Tool kit

Note: The crate numbers listed in this document may differ from the actual crate numbers. Refer to the shipping list documentation to verify the actual crate numbers.





1 Uncrate APL frame.



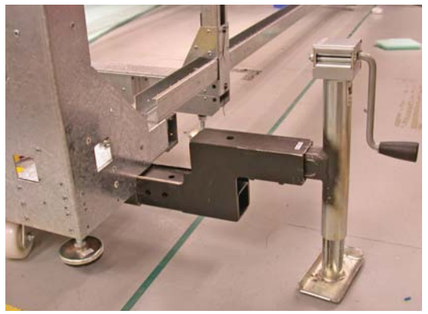
For a three segment APL, the shipped frame will become the third segment. Connecting beams and beams supports will make up segments one and two.



Remove the APL frame from the crate so that it is standing on its wheels. You may need to use the four jacks to raise the frame so that the crate bottom can be removed.

Wheel the frame to the approximate location of the Magnus VLF device. **T**he power box side must be approximately 9300 mm (366 in.) from the side of the output device.

2 Remove the wheels.



Use four jacks to raise the APL frame high enough to rotate the wheels out from under the frame.

Note: Raise the APL evenly so that the frame is not twisted.

Remove the bolt and nut that secure each wheel and remove all four wheels. Lower the jacks simultaneously until the APL frame is standing on its six feet—do not adjust the feet at this time. Remove the jacks.
Later, when the APL installation is complete, store the wheels on the inside of the APL frame.



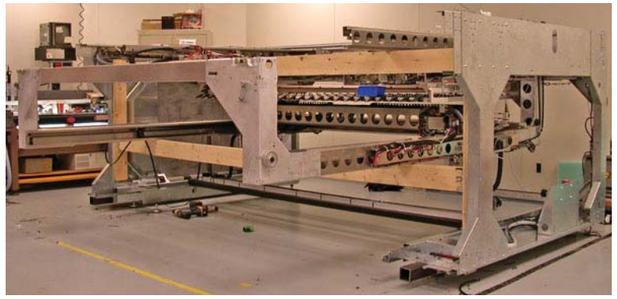
3 Remove the gantry shipping support brackets.

Remove the shipping brackets and end-pieces from the table gantry and remove the shipping brackets from the picker gantry. The table shipping brackets will be screwed to the gantry beams and to the upright brackets that are secured to the wooden shipping frame.



Discard the shipping brackets after removing them.

4 Install the picker gantry extension.

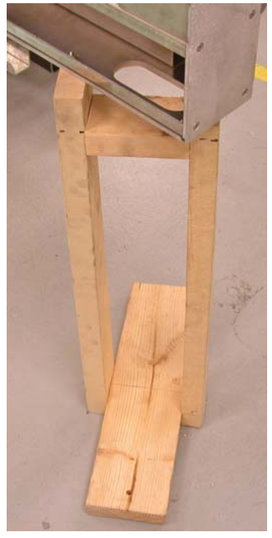


The picker gantry extension is heavy and requires at least two people for installation.



Install the picker gantry extension (lower extension) onto the picker gantry beams—the extension slides into the gantry beams. Starting from the back, secure with 12 M5 screws and Belleville washers on each extension.

Tip: Support the ends of the extension with wood or something similar while inserting the screws. Clamping the extension and frame together may also help when inserting the screws.



5 Install the table gantry extension.

The table gantry extension is heavy and requires at least two people for installation.

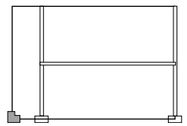


Install the table gantry extension (upper extension) onto the table gantry beams—the extension slides into the gantry beams on the frame. Secure each side with 14 M5 screws and Bellville washers on the sides and four M5 countersunk screws, Bellville washers, and nuts on the underside.

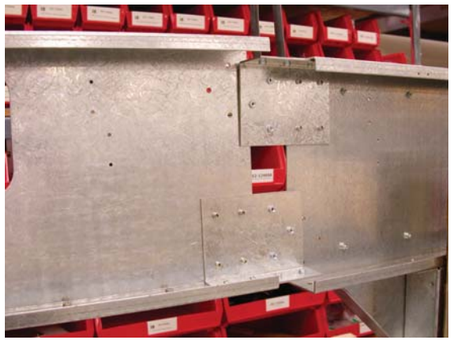
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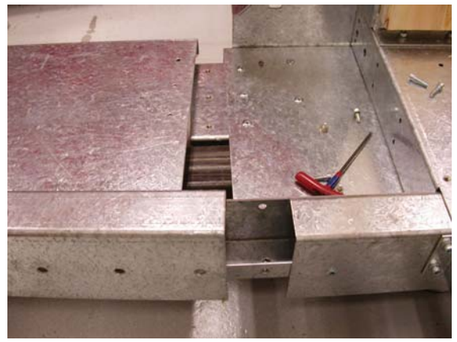
6 Install the end cap.

The end cap is located on the front corner of the APL on the power box side (furthest from the Magnus VLF).



The end cap weighs approximately 40 kg (88 lb) and requires at least two people for the installation. Move the end cap as close as possible to the APL frame with a pallet jack.

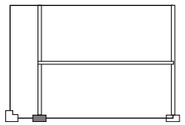




Slide the top (left photo) and bottom (right photo) beams into place at the same time. Secure the top beam with ten M5 screws and Belleville washers. Secure the bottom beam with six M6 countersunk screws on either side and three M6 SEM screws on the top.

7 Install the power box side beam support.

The power box side beam support is located on the front of the APL to the right of the end cap.



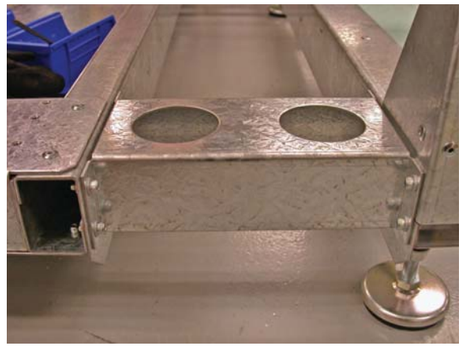




Slide the bottom beam into place. Secure the bottom beam with 12 M6 SEM screws.

8 Install the beam support brace.

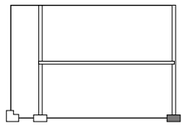
The beam support brace is installed on the front bottom of the APL between the end cap and the beam support.



Secure the beam support brace with eight M6 SEM screws (one side of the brace may still be attached to the end cap). Loosely insert all eight screws before tightening any of the screws.

9 Install the mid-span beam support.

The mid-span beam support is located on the front of the APL on the right side of the frame. This will later be between the segments two and three.

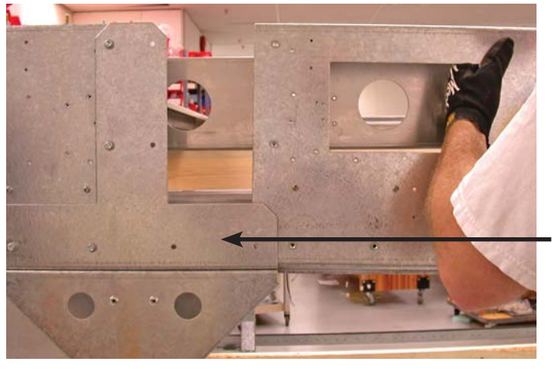


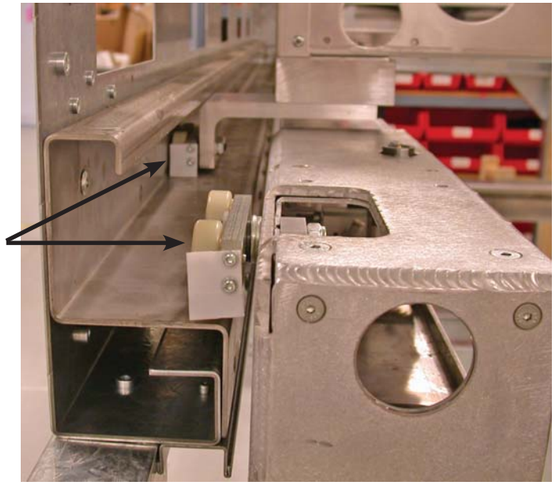


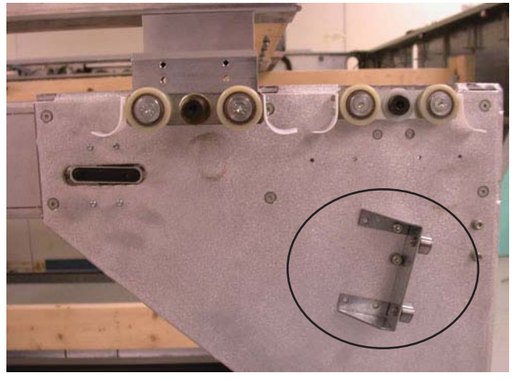
Slide the bottom beam into place and secure the beam with 12 M6 countersunk screws. The top is not secured at this time.

10 Install the top front support beam for segment three.

The top front beam weighs approximately 43 kg (95 lb) and requires at least three people for the installation—two to lift and position the beam and one to insert the fasteners.







a First insert the left side of the beam in behind the beam coupler at the power box side beam support.

b Next insert the right side of the beam at the mid-span beam support. The right side must be tilted while putting it in place so that the rollers are on top of the support beam.

c Secure the left side to the beam coupler with six M6 SEM screws.

d Secure the right side to the beam coupler with six M6 SEM screws.

e Secure the picker gantry roller bracket in place (shown above before the support beam was installed)

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11 Install the mid-span beam coupler.

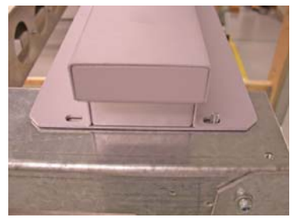


Install the mid-span beam coupler and secure it with six M6 SEM screws. The beam coupler is used to secure segment one's front beam to the APL frame.

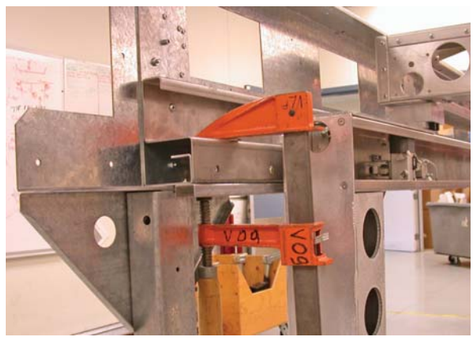
12 Install the mid-span roof beam.



Temporarily install the mid-span roof beam (above the mid-span beam support installed in step 9) over the studs in the top beams and secure it with one nut at each end—the roof beam will add strength to the APL frame when removing the wooden shipping frame.



13 Remove the wooden shipping frame.



Move the table gantry to the power box side before removing the wooden frame.

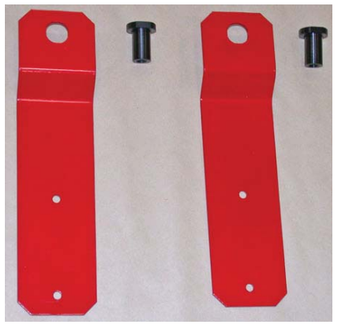
⚠ Clamp the front beam and the mid-span beam support together to prevent the gantries from rolling off the end when removing the wooden shipping frame.



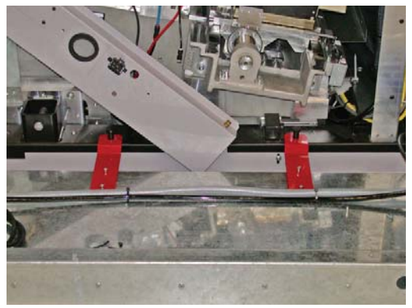
Disassemble the wooden shipping frame by first removing the top horizontal beam, then the bottom horizontal beam, and then the vertical beams. Discard the wood and brackets.

14 Attach the alignment jigs to the eject cap.

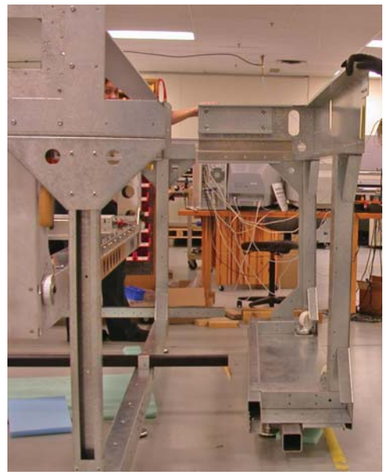
Two alignment jigs are attached to the eject side of the APL to align the APL to the Magnus VLF device. When alignment is complete, the jigs are removed and the APL is no longer attached to the device.



Attach both alignment jigs to the bottom beam of the eject cap with the jigs angling upwards.



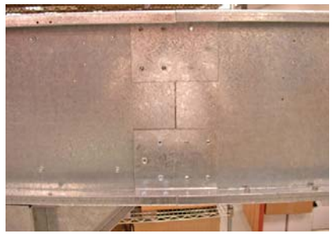
15 Remove the eject cap from the APL frame.

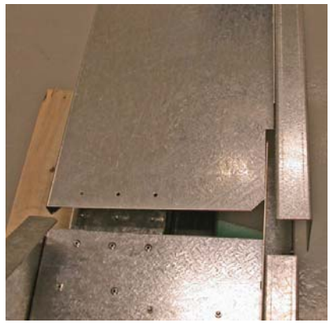


When the eject cap is dismantled from the APL frame, it will not stand on its own and must be held upright while the front corner is installed. Alternatively, this step can be done after steps 16 and 17.

16 Install the eject cap's front corner.

Install the front corner onto the eject cap by sliding the top and bottom beams into place on the eject cap at the same time.







Fasten the top beams with ten M6 SEM screws and the bottom beam with three M6 SEM screws and six M6 flathead screws. The eject cap will now stand on its own.

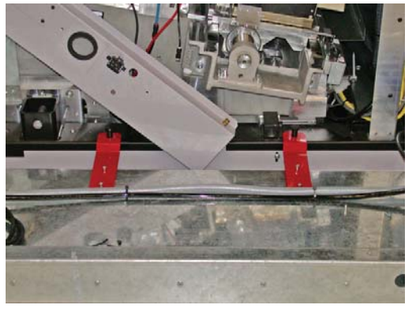
17 Remove the eject cap's center support.

The eject cap center support is only installed for structural support during shipping. It must be removed from the eject cap and discarded.



18 Align the eject cap to the device.

The eject cap weighs approximately 40 kg (88 lb). Use a pallet jack to move it into place.



Move the eject cap up against the Magnus VLF device and place the large holes of the alignment jigs over the M8 alignment studs on the device—you must move the device interface panel to access the left stud. The alignment jigs should centered on the device studs and not be under stress. Adjust the eject cap feet if necessary, but remember that the rest of the feet on the APL frame must be adjusted by the same amount.
If the difference in height between the eject cap and the device is more than 20 mm (0.78 in.), then the device height must be adjusted.

19 Install the rear beam coupler on the eject cap.

If it was removed during disassembly, install the beam coupler on the back of the eject cap using six M6 SEM screws.



20 Assemble the beam supports between segments one and two.

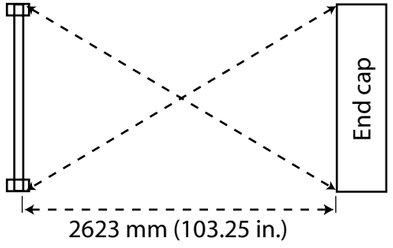
a

For the mid-span beam supports between segments one and two, attach the front mid-span beam support to the rear beam support. An extra pair of hands must hold the beam supports upright until the connecting beams are in place.



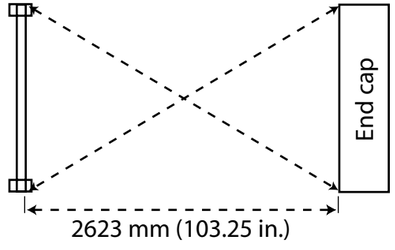
b

Place the beam support assembly 2623 mm (103.25 in.) from the eject cap—measure both in the front and the back. The tolerance is +2 mm -0 mm.



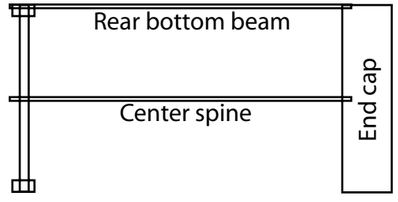
c

Measure diagonally across from the eject cap corners to the beam support corners—use the roof beam studs as measuring points.
Move the beam support assembly until the two measurements are the same. Recheck the distance from the end cap (2623 mm) in the front and the back.



d

Temporarily attach one of the center spines and one of the rear bottom beams between the eject cap and the mid-span beam support assembly to hold the beam support assembly in place.



21 Install the top connecting beams.

The front and rear connecting beams are very heavy and require at least three people for the installation—two to lift and position the beam and one to insert the fasteners.



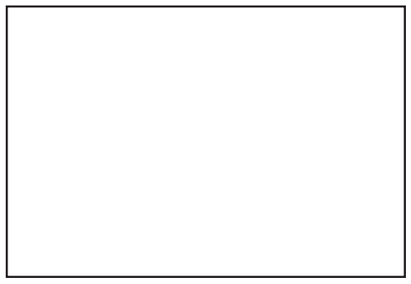


a Lift the rear connecting beam between the beam supports and the eject cap into place behind the beam couplers on either side. Fasten each side with six M6 SEM screws.

b Similarly, install the front connecting beam.

22 Install the roof beam.

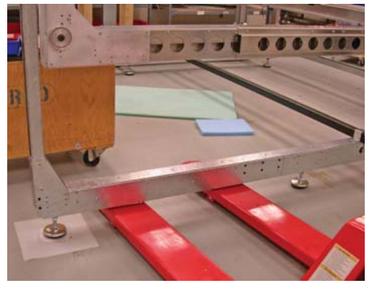
Install the roof beam closest to the end cap.



23 Place the frame on grease pads.

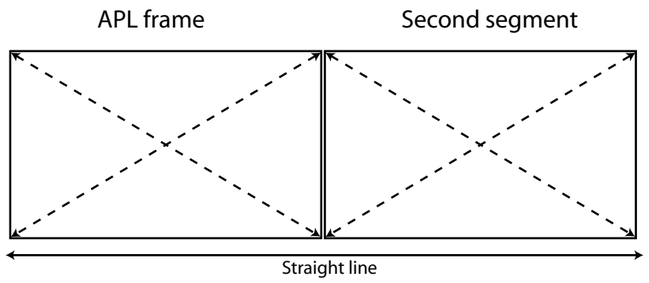
The APL frame, which has become the third segment, must be aligned to the second segment before the front and back connecting beams are installed.





Using jacks on the corners furthest from the Magnus device, and a pallet jack on the corners closest to the Magnus device, raise the frame corners just enough to place grease pads under the frame feet. Lower the feet onto the grease pads.

d Make sure that the front and rear sides of the two segments are in a straight line.



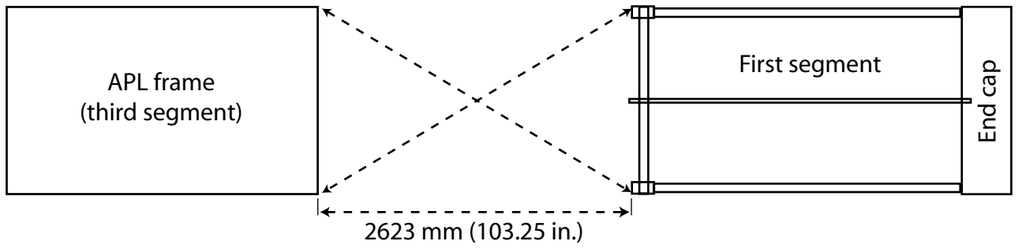
e Remove the roof beam that was temporarily installed in step 12 so that the connecting beams can be installed.

24 Aligning the APL frame to the second segment.

a Position the APL frame so that it is 2623 mm (103.25 in.) from the mid-span beam support assembly. Measure both in the front and at the back. The tolerance is +2 mm -0mm.

b Measure diagonally across from the beam support corners to the frame corners—use the roof beam studs as measuring points.
Move the APL frame until the two measurements are the same. Recheck the distance from the APL frame (2623 mm) in the front and the back.





c Measure diagonally across the APL frame and adjust for squareness.

25 Install the top connecting beams.

⚠ The front and rear connecting beams are very heavy and require at least three people for the installation—two to lift and position the beam and one to insert the fasteners.



a Lift the rear connecting beam between the APL frame and the opposite mid-span support beam into place behind the beam couplers on either side. Fasten each side with six M6 SEM screws.

b Similarly, install the front connecting beam.



26 Align the track surfaces.

The top track surfaces of the connecting beams must align with each other so that there is a smooth transition for the gantry rollers.



Loosen all the securing screws between the beam coupler and the beams. First tighten the bottom screws and then tighten the back screws. If the transition is not smooth, use a clamp to pull the highest track surfaces downwards. With the clamp in place, install the metal brace on the side of the tracks.



27 Adjust the mid-span supports.

a Use a digital level to measure the angle of the front connecting beam on the first segment. Measure the angle of the front top beam of the second segment—the two angles should be within 0.05° of each other. If they are not, adjust the height of the mid-span support until they are.
Note: The angle does not need to be zero.



b Similarly, measure the angles on the rear top beams and adjust the rear mid-span support accordingly.

c Use a digital level to measure the angle of the front connecting beam on the second segment. Measure the angle of the front top beam of the third segment—the two angles should be within 0.05° of each other. If they are not, adjust the height of the mid-span support until they are.
Note: The angle does not need to be zero.

d Similarly, measure the angles on the rear top beams and adjust the rear mid-span support accordingly.

28 Move the mid-span support beams.

The mid-span support beams must be moved to support the customer's bay size configuration.

a Using the customer's configuration drawing, mark the desired location of the mid-span support beams on the floor.

b Remove the screws on the underside of the connecting beams that secure the front and rear mid-span supports.

c Move the mid-span supports to the correct location and then move them until the holes on the underside align with the closest set of holes in the connecting beams.

d Secure the mid-span supports to the connecting beams.



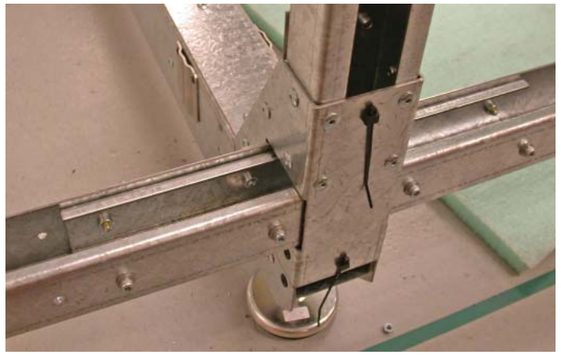
29 Install the rear bottom beams.

a Install the rear bottom beam on the second segment.

b Install the rear bottom beam on the third segment.



c Install the beam connecting brackets that connect the rear bottom beams together. Secure each one with four M6 SEM screws.



30 Install the black center spines.

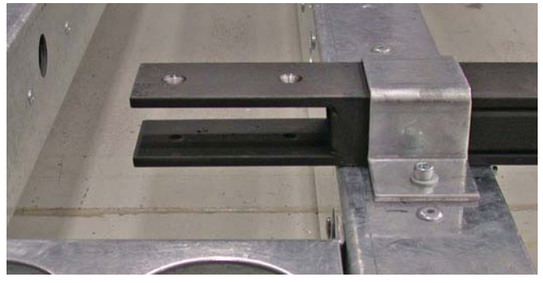


a Place the black center spines across the middle of the each segment.

b In the middle where the two spines meet, slide the one into the other and secure them with two screws.

c Secure the center spines at the ends to the frame and at each mid-span support assembly with a bracket and two M6 SEM screws.

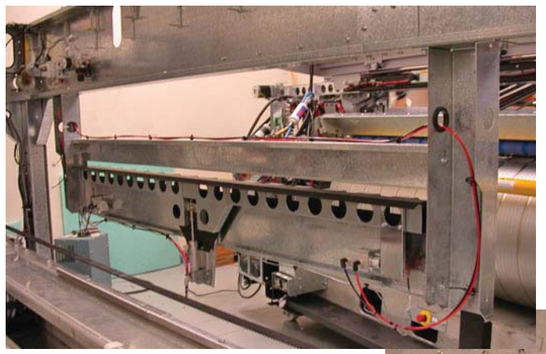


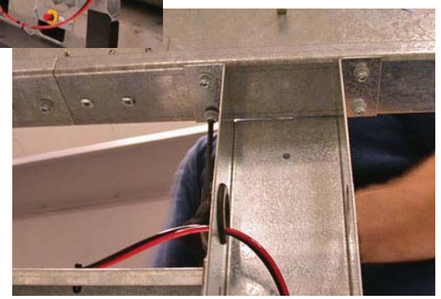


31 Install the roof beams.

Install the remaining roof beams.

32 Install the shutter on the eject cap.

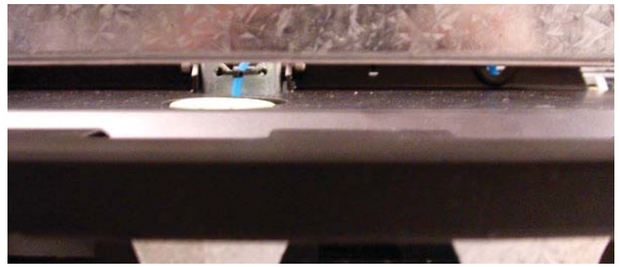




The shutter mounts to the underside of the top beam of the eject cap. Secure the shutter with four M6 SEM screws on either side.
The shutter alignment will be done after the APL power is turned on.

33 Adjust the shutter height.

The shutter height must be aligned with the height of the Magnus VLF device's fetcher deck.



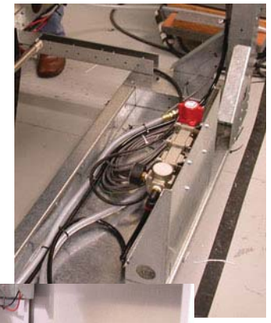
a Push the fetcher to the APL side of the Magnus VLF device.

b From inside the APL, loosen but do not remove the four screws that secure the moveable part of the shutter.

c Visually align the height of the top of the shutter with the top of the fetcher deck. While maintaining the height adjustment, push the shutter towards the device and tighten the four screws.

34 Move the filter/regulator.

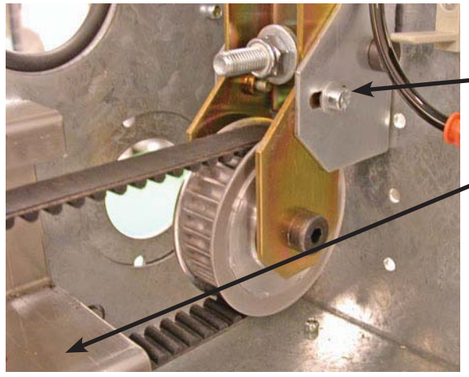
Remove the filter/regulator assembly from its shipping location (right) and move it to the front of the eject cap (below). Use cable ties to secure the hoses to the eject cap floor.
The filter/regulator assembly can only be fastened in place once the eject side panels have been installed.





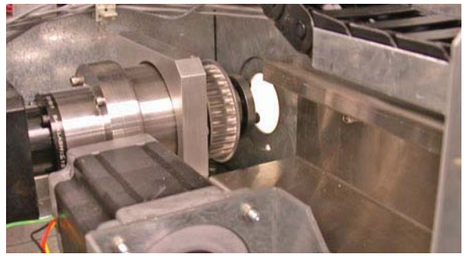
35 Install the X-drive belt.

a Starting on the eject side, route the belt over the pulley and into the rear beam channel. Ensure that the two tensioner cap screws are loose.

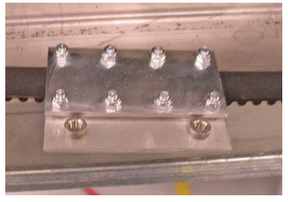


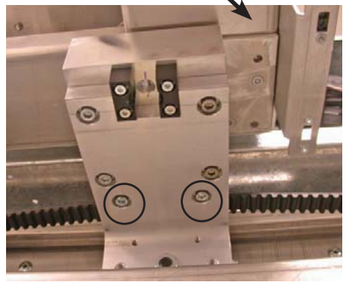
b Route the belt all the way through the rear beam channel to the power box side where the X-drive motor is loacatied. You can get acces into the channel through the access holes on the outside of the beams.

c Router the belt around the X-drive motor pulley and back to the eject side pulley over top of the beam channel.

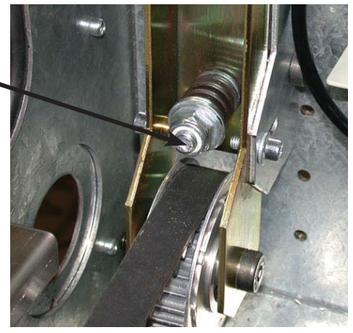


d Join the belt at the belt coupler and roll the belt so that the coupler can be mounted to the table gantry. The screws are inserted from the bottom of the gantry.





e To tension the X-drive belt, tighten the tensioner bolt with a 17 mm deep socket (11/16 in.) until the spring is compressed by 12 mm (0.5 in.).



f Tighten the two cap screws to lock the tensioner bracket in place.

36 Install the emergency escape ladders.

Install the three yellow emergency escape ladders on the power box side. Each step is mounted with four screws. Also install the power box side piece between the power box and the ladders.

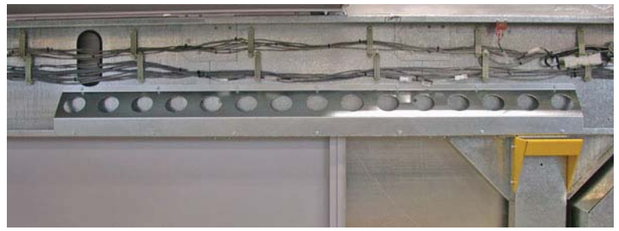




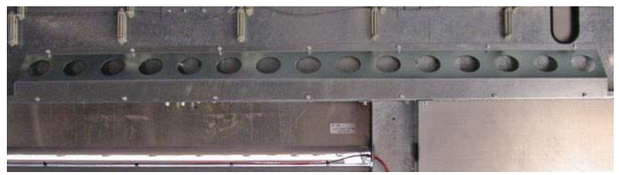
Power box side piece

37 Install the two frame braces.

On 63 in. devices, there are two frame braces that help support the APL frame—one on the eject side and one on the power box side. The braces are fastened with 14 M6 screws each.



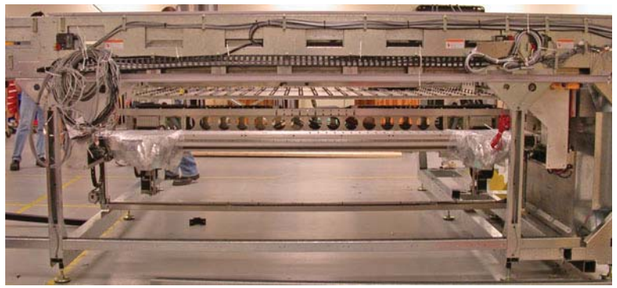
Power box side



Eject side

1 Uncoil the rear cable bundles.

Cut the cable ties securing the rear cable bundles to the APL top beam. Starting from the power box side, insert the cables and tubes into the relevant cable clamps.



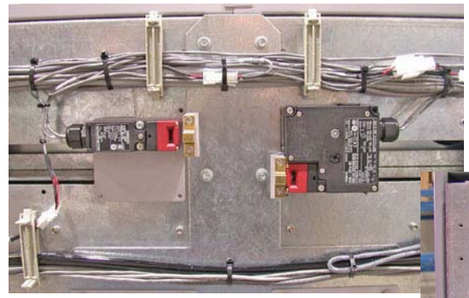


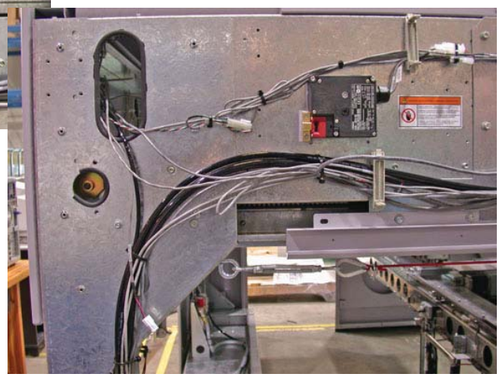


2 Install the omron door switches.

Start at the power box side and work towards the eject side to install the following components connected to the top beams:

- **a** At the power box beam support, install the door switch SW14 (small Omron) and the guard lock safety door switch SW13 (big Omron).
- **b** At the mid-span beam support between segments two and three, install switches SW11 and SW12.
- **c** At the mid-span beam support between segments one and two, install switches SW9 and SW10.
- **d** At the eject cap, install the guard lock safety door switch SW8.





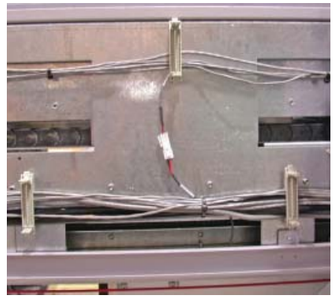
3 Install the rear light tubes.

Install the six light tubes on the underside of the top support beams. First install the light brackets with two M4 screws and nylock nuts, then clip the light tubes into the brackets with the cable towards the power box. The light tube cables will pass behind the door rails when the rails are installed.



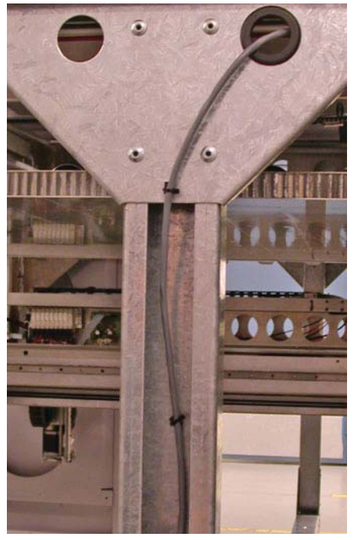


One is located at the power box beam support; two are located on either side of each mid-span beam support; the last one is located by the eject cap.



4 Connect the pallet detect sensor cables.

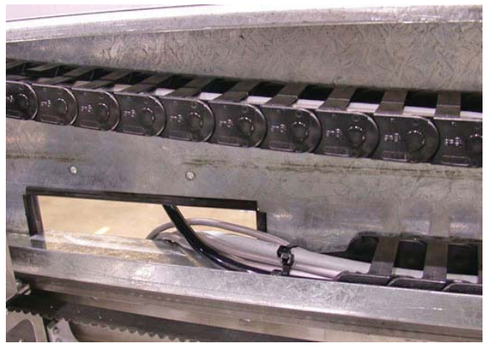
Route the pallet detect sensor cable down the outside of the beam support into the bottom channel to the pallet detect sensor.





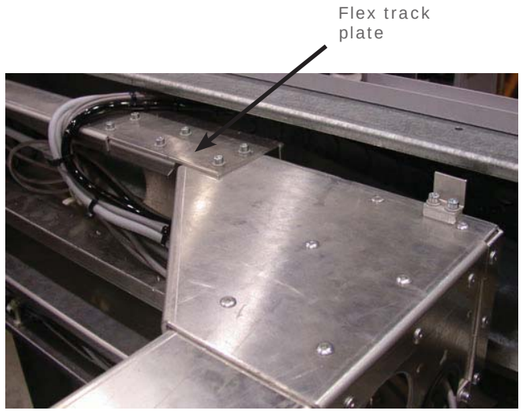
5 Connect the table gantry cables.

a The table gantry cables and flex track will have been coiled with the other cables at the rear. Feed the flex track through the top beam's fourth hole from the eject side to the inside of the beam.



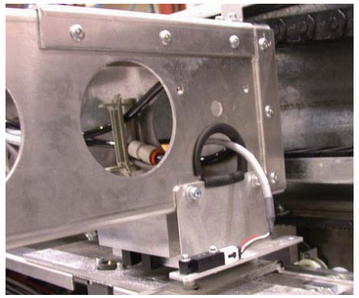
b Secure the end of the flex track to the inside channel of the top beam at the fourth hole.

c Secure the flex track plate to the table gantry with eight screws.



d Route the cables to the table gantry GENINE board and connect them to the board.

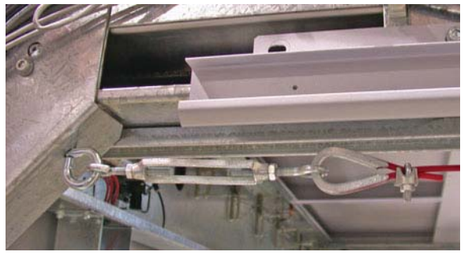
e Route the sensor cable to the sensor on the eject side of the table gantry. Connect the black tube to the air fitting on the table gantry.



6 Install the rear emergency rope.

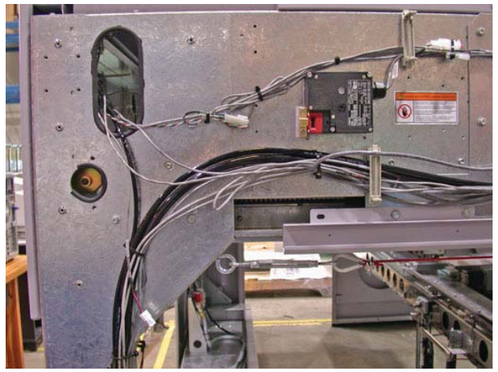
Connect the emergency rope switch turnbuckle to the eye bolt on the eject cap corner.

Adjust the turnbuckle so that the rope is tight but not too tight that it triggers the orange emergency switch on the power box side.



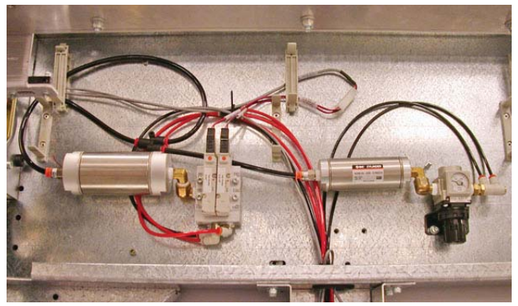
7 Connect the eject cap cables and tubes.

a Connect the tube fittings to the single tube from the filter/ regulator. The small tube goes through the large hole to the Y-fitting on the inside of the eject cap .
Route the two canbus cables (one connector) and the GMCE cable down to the Magnus interface panel. Secure the canbus connector to the floor with a cable clamp or cable tie anchors.





b Route the shutter solenoid cable and shutter switch cable through the large hole to the inside of the eject cap and connect them.



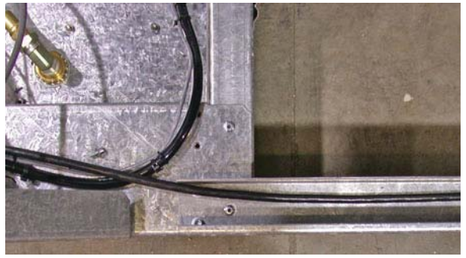
c Route the home servo sensor cable out from the eject cap through the large hole to the corresponding connector on the front beam.

d Route the GMCE cable through the device engine casting, along the cable bundles to the power box, and connect it to the GMCE board (J40-top right plug) in the power box.

e Connect the two red tubes and three black tubes from the shutter to the eject cap cylinders.

8 Route the power cable.

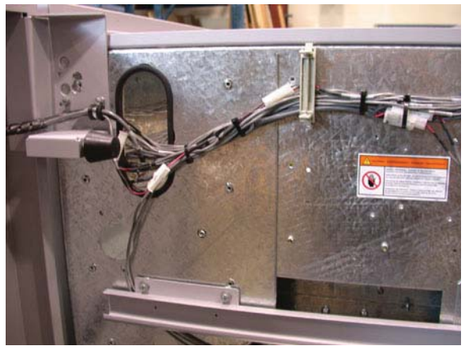
Uncoil the APL power cable and lay it in the rear bottom beam to the Magnus VLF device. This will later be connected to the device interface panel.



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9 Uncoil the front cable bundles.

The cables that will be routed along the front top beams are coiled and secured inside the end cap near the power box. Cut the cable ties and feed the cables and switches through the large hole in the front end cap support.



The three cables for the corner panel lights and E-stop switch will be connected when the panels are installed.

10 Install the front omron door switches.

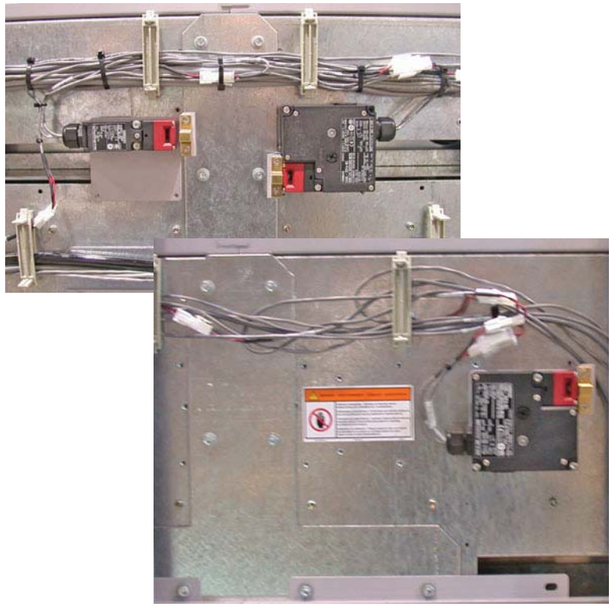
Start at the power box side and work towards the eject side to install the following components connected to the top beams:

a At the power box beam support, install the door switch SW7 (small Omron) and the guard lock safety door switch SW6 (big Omron).

b At the mid-span beam support between segments two and three, install switches SW5 and SW4.

c At the mid-span beam support between segments one and two, install switches SW3 and SW2.

d At the eject cap, install the guard lock safety door switch SW1.



11 Install the front light tubes.

Install the six light tubes on the underside of the top support beams. First install the light brackets with two M4 screws and nylock nuts, then clip the light tubes into the brackets with the cables towards the power box. The light tube cables will pass behind the door rails when the rails are installed.

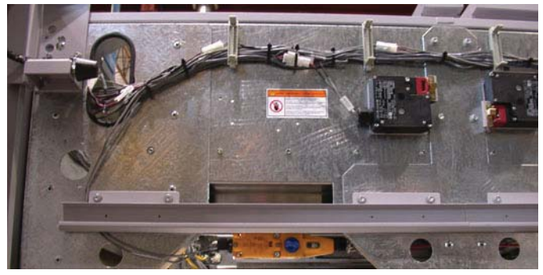


The light tubes are located at the power box beam support; four are located on either side of the mid-span beam supports; the last one is located by the eject cap.

12 Install the front emergency rope switch.

a

Install the orange safety rope switch to the underside of the top beam between the end cap and the beam support.





b

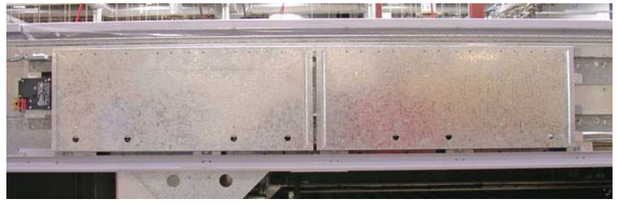
Feed the red ‘rope’ through the mid-span supports and connect it to the turnbuckle. Attach the turnbuckle to the eye bolt on the eject cap front corner and tension the rope until it almost triggers the switch.





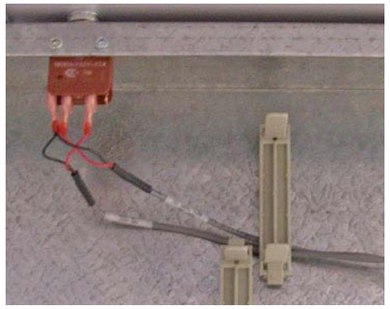
13 Install the cable shields.

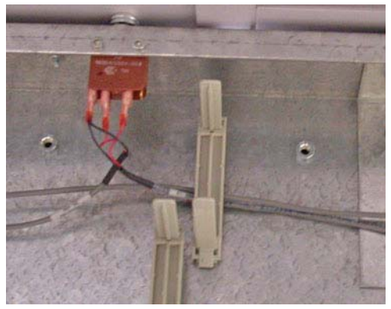
Install the cable shields on the top connecting beams on the front of the APL. The shields ‘hang’ on the cable tracks without any securing screws.
Similarly, install the cable shields on the rear of the APL.



14 Connect the eject cap cables.

At the eject cap there are four cables still to be connected. One for the front corner panel lights, one for the stop switch, and two are for the roof panel safety switches. Route the safety switch cables through the big hole in eject cap front corner and connect the cables to the switches. Loop the excess cable back to the outside of the top beam and secure them in the cable clamps.



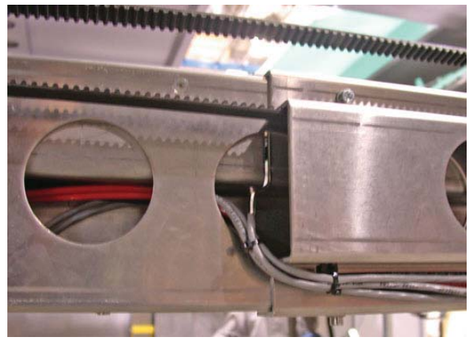


The two corner panel cables will be connected when the panels are installed.

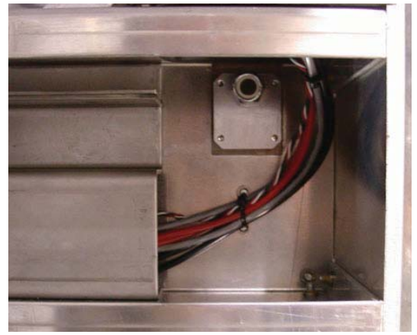
15 Connect the picker gantry cables and tubes.

The picker gantry cables and tubes will be coiled and secured to the gantry beams on either side. Cut the cables and tubes free for installation.

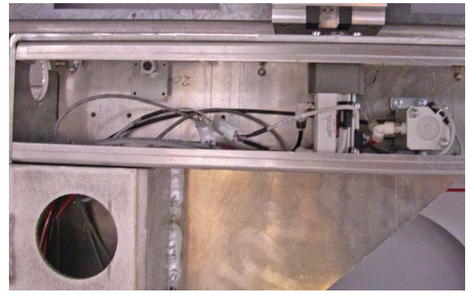
a On the beam closest to the eject side, feed the cables and tubes into the gantry beam extension toward the front of the APL.



b Secure the cables and tubes tightly against the inside of the gantry beam before routing them upwards to the cylinders and sensors.



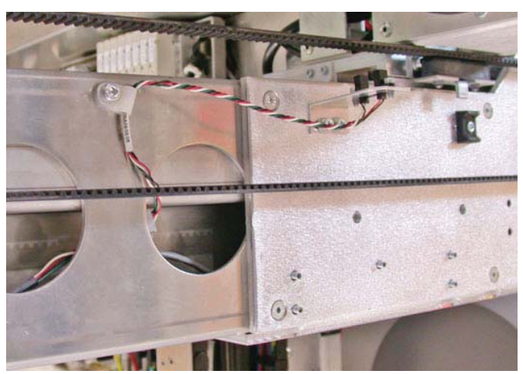
c In the upper beam, connect the three cables and four tubes as marked.



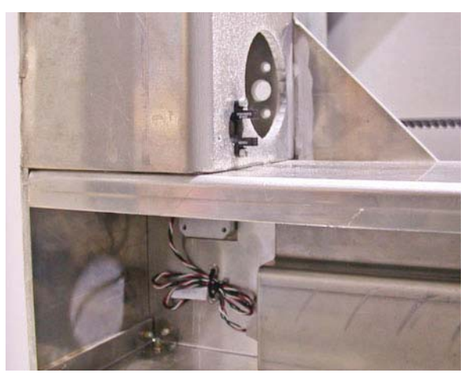
d On the beam closest to the power box side, feed the two sensor cables into the gantry beam extension toward the front of the APL.



e Install the pusher home sensor and connect the cable. Use a cable clamp on the side of the extension beam to prevent the wires from interfering with the picker belt.



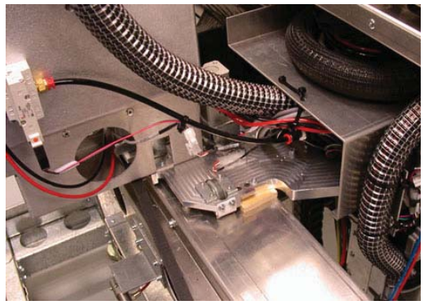
f Route the remaining cable out the front of the extension beam and connect it to the sensor cable. Secure the wires tightly against the inside of the beam so that they do not interfere with picker movement.

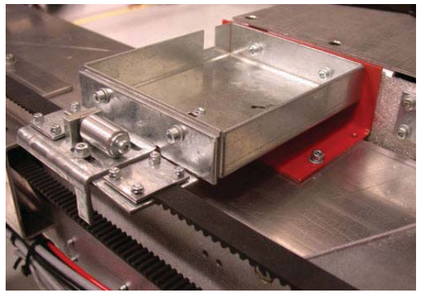


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1 Removing the picker and pusher shipping brackets.

There are two wooden spacers between the pusher and gantry that hold the pusher in place during shipping. Remove both spacers, one on each side, by removing the screws that secure the pusher and spacer to the gantry.



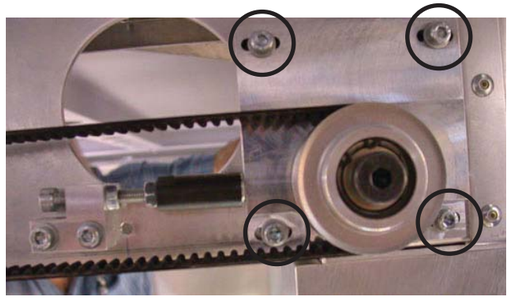


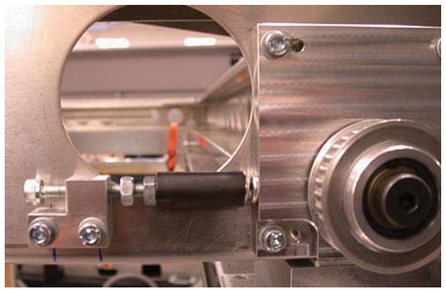
There are two red brackets between the picker and gantry that hold the picker in place during shipping. Remove both brackets, one on each side, by removing the two screws that secure the bracket to the gantry and the two screws that secure the tensioner to the picker. Put back the two screws that secure the belt tensioner to the picker.

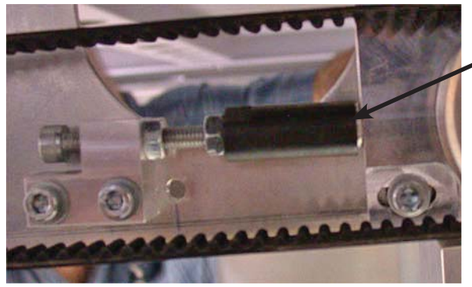
2 Install the table gantry belt.

Install and tension the belt on the table gantry as described below:

Loosen the belt pulley bracket screws (4) on the table gantry extension.
Loosen the lock nut on the belt tensioner that is furthest from the pulley and turn the tensioner screw out so that the pulley can be moved inwards to install the belt.
Cut the table gantry belt loose from its storage position and place the belt over the pulley.
Push the pulley outwards to tighten the belt and screw the tensioner in only until the spring is fully compressed inside the cylindrical spacer.
Tighten the four pulley bracket screws.
Tighten the tensioner lock nut.



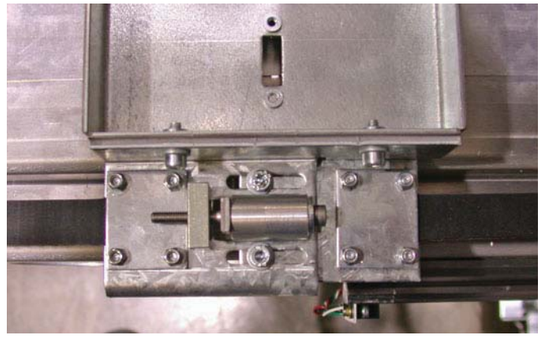




3 Install the picker gantry belts.

Install and tension the two belts on the picker gantry as described below:

Loosen the two tensioner screws on either side of the belt tensioner.
Cut the picker gantry belt loose from its storage position and place the belt over the pulley on the gantry extension.
Screw in the tensioner screw until the cylindrical spacer around the spring is under compression but can still be turned with your fingers.
Tighten the two tensioner screws.

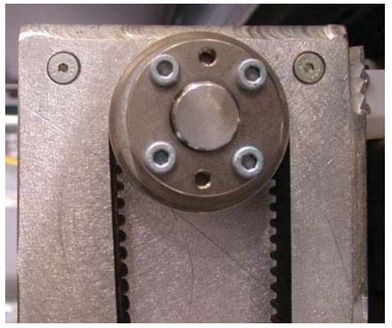


4 Synchronizing the picker gantry.

For a detailed description of this procedure, see *Adjusting the Picker/Pusher Gantry Belts* on TechPlanet

After installing and adjusting the two picker gantry belts, the picker gantry must be synchronized to ensure smooth movement of the gantry and to ensure that the picker and pusher are square to eachother.





a Loosen the four pulley shaft coupler screws.

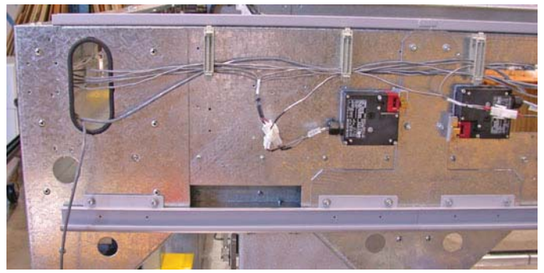
b Push the picker all the way to the front of the APL until the rubber stoppers are against the gantry frame on both sides.

c Push the pusher against the picker so that the rubber stoppers are against the picker on both sides.

d While holding both the picker and pusher against the rubber stoppers, tighten the four pulley shaft coupler screws.
Note: Do not overtighten these screws.

1 Install the front and rear door rails.

Install the side rails and top rails on the front and rear of the APL for the sliding doors. Some of the rails may still be installed.



The shortest rails are installed on the eject side of the APL, followed by two long rails, with the mid-length rail on the power box side. Ensure that the transition between the rail sections is smooth or the doors will not slide correctly. Ensure that all cables are secure and will not be damaged by the moving doors.

⚠ When installing the side rails, do not remove more than two screws at a time from the beam couplers.

a Secure the square top rails with M5 flathead screws to the top of the top beams.

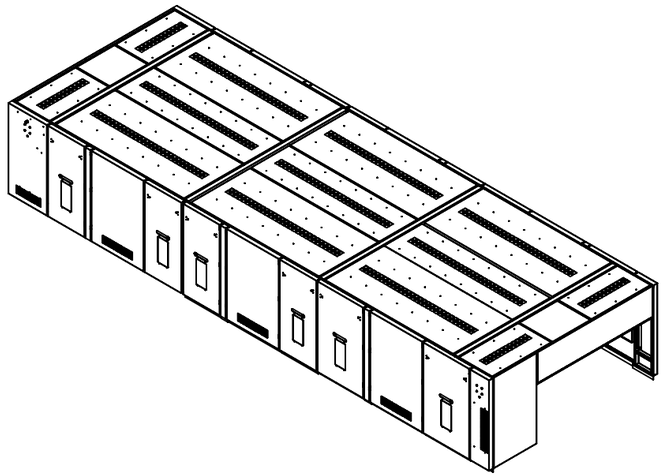


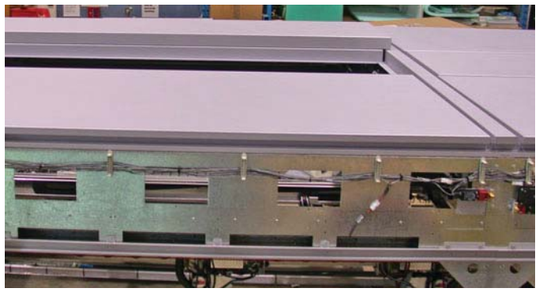
b Secure the rounded side rails using the beam coupler screws and M5 screws with M8 heavy washers (as spacers) for the other holes.



2 Install the large center roof panels.

There are three large roof panels per segment that run from left to right. For 51 in. APLs, install the narrower panels in the middle. Install all nine panels.





Secure the roof panels to the roof beams from the underside of the roof beams with M6 screws.

3 Install the front and rear doors.

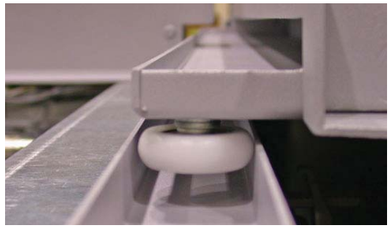
Each sliding door assembly consists of a center section (with the rollers that slide in the front and top rails), a narrow door beam, and two identical windowed doors.



There are three door assemblies on the front of the APL and three on the rear. The door assemblies with the widest windowed doors must be installed on the eject side of the APL (first segment).
The door assemblies may be shipped assembled or partially disassembled. This installation assumes total disassembly was done.

a On the front of the APL, slide the two center sections onto the door rails from the power box side. The widest one must be on the eject side of the APL. Ensure that the center sections can roll from side to side without difficulty. Adjust the door rails if necessary.





b For each center section, attach two hinges to both sides of the section.



c Attach the narrow door beam to the hinges on the left side of the center section. Attach two hinges to the other side of the narrow door beam.

d Attach one of the windowed doors to the hinges on the door beam. Attach the other windowed door to the other side of the center section.

e Attach the light shield brushes to the bottom of all the doors.





f Install door latches and omron keys on the windowed doors.
To adjust the key depth, loosen the key screws, extend the key fully out and carefully close the door so that the key is pushed back once it bottoms out inside the omron switch. Hold the key in this position, open the door, and secure the key screws.
Adjust the door latches so that the gap between the doors is 20 mm when the doors are closed.



4 Install the power box side panels.

There are four panels on the power box side of the APL. The panels are secured with M5 screws on the top of the panel and from the inside of the APL on the panel brackets. The power box panel is not screwed in place, but held with turn-locks. Install the light shield brushes on the bottom of the panels before installing them.







5 Install the front and back corner panels on the power box side.

The front and back corner panels on the power box side contain APL status lights and an E-stop switch. The panels hinge on brackets that are attached to the APL frame.



a Install the front top corner panel bracket.



b Install the rear top corner panel bracket.



c Attach the front lower corner panel bracket to the bottom of the front corner panel with one M6 screw from the bottom of the panel.



d Lower the pin on the front corner panel into the front bracket's hole. Secure the lower bracket to the APL frame with four M6 screws.



e Install the rear corner panel using the same method used for the front corner panel.

f Connect the three panel connectors and secure them with a cable clamp.

g Install the light shields with two M5 screws.

h Install the rubber bumper panel door stop.

i Install the C-cable clamp. See page 11 step 10 for photo.

6 Install the eject side panels.

There are two panels on the eject side of the APL. The panels are secured with M6 screws on the top of the panel and from the inside of the APL on the panel brackets. Install the light shield brushes on the bottom of the panels before installing them.





7 Install the front and back corner panels on the eject side.



The front and back corner panels on the eject side contain APL status lights only. The panels are fixed and do not require additional brackets for mounting.

Secure the front and back panels with M6 screws on the top of the panel and from the inside of the APL near the bottom of the panel.
Connect the two panel connectors.



8 Install the roof end panels.

Install the three roof panels on the eject side of the APL and the three roof panels on the power box side. For 51 in. APLs, install the narrower panels in the middle.





The middle panel has two studs on the outside bottom edge of the panel that must be located on the safety switches on the APL frame to close the safety circuit.

1 APL startup

a Connect the power connector to the Magnus VLF device's interface panel.

b Connect the compressed air supply to the APL (on the underside of the eject cap).

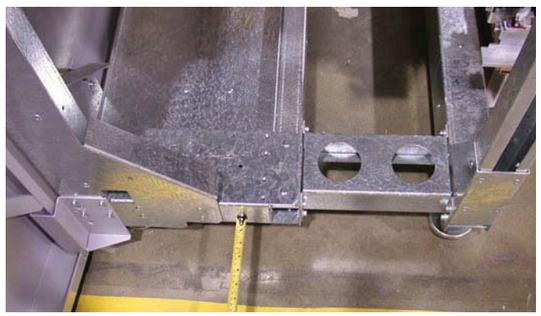
c Refer to the Operator Visual Reference Guide to load the slip sheet bin and pallets into the APL.

d Follow the startup procedure as layed out by Vince for the final setup and alignment of the APL components.

1 Install the optional Hover Cart rails.

For a detailed description of the hover cart rail installation, see *Installing the Hover Cart Rails* on TechPlanet.

Refer to the customer layout drawing for the distance from the hover cart rail's closest edge to the APL frame. Mark the distance at the eject side and power box side of the APL.



Align the edge of the rails with your marks and mark the holes that must be drilled in the floor—only secure the rail with every second hole. Use concrete anchors to secure the rails to the floor.



Mark and scure the rail end-pieces.

