Installation Guide
English

Automatic Pallet Loader
One Segment

653-01486A-EN Rev A

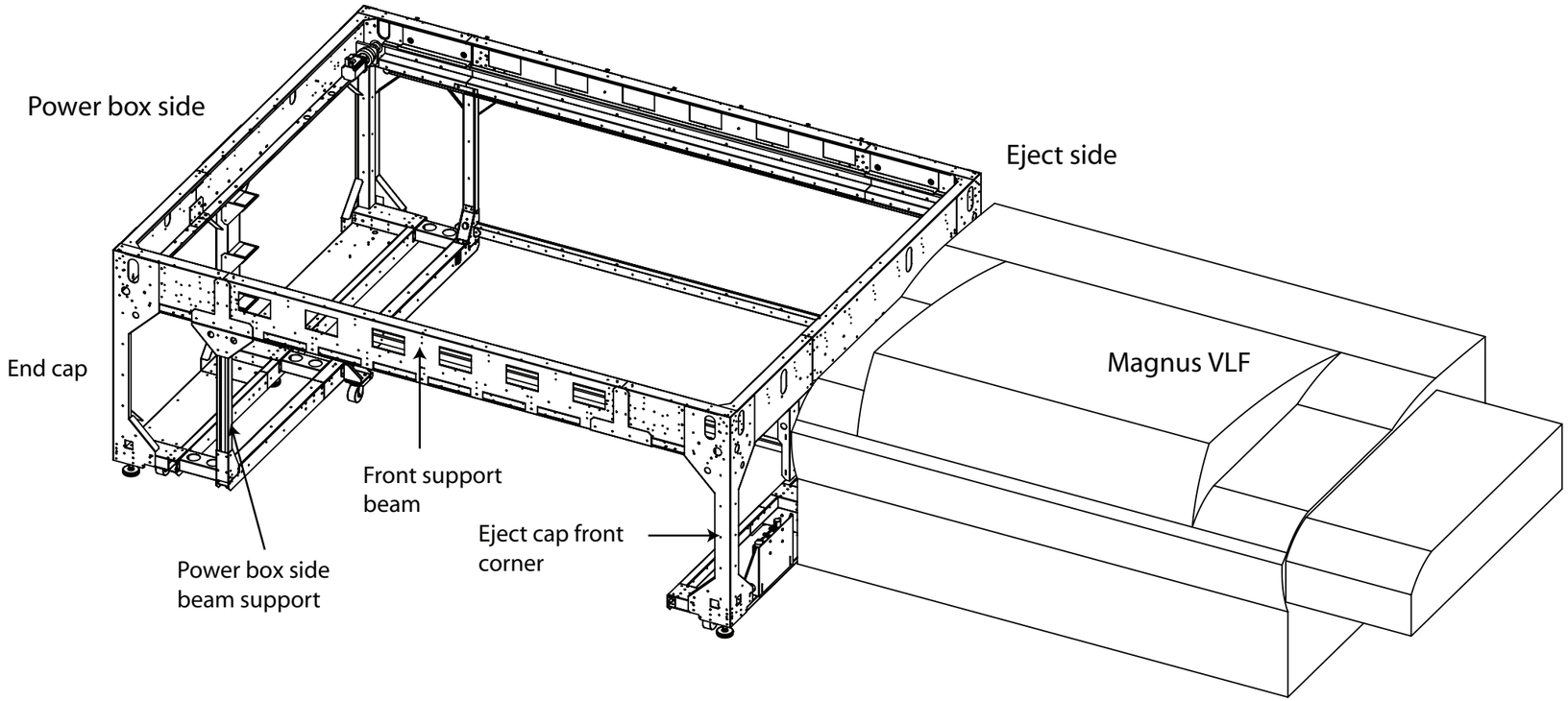
719-00828A-EN Rev A
Apr 2008

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Order of Installation

1. Assembling the APL (pgs. 2-6)
2. Connecting the cables and tubes (pgs. 7&8)
3. Installing the gantry belts (pg. 9)
4. Installing the doors and panels (pgs. 10&11)
5. Startup (pg. 12)
6. Installing the iptional hover cart (pg. 12)



Other Documents Required

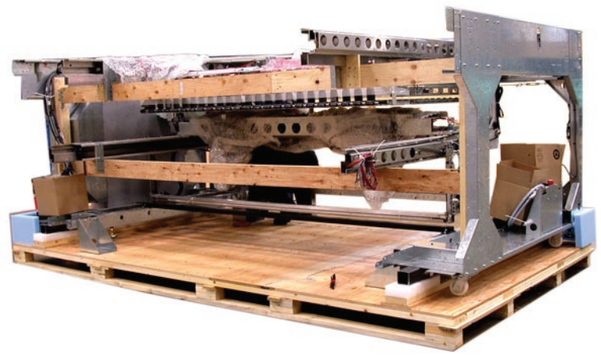
The following documents are required for the APL installation and setup:
- Adjusting the Picker/Pusher Gantry Belts (719-00996A)
- Adjusting the Table Gantry Belt (719-00997A)
- APL Setup and Alignment Procedures (719-00966A)
- Installing the Hover Cart Rails (optional) (719-00998A)

CRATES

No.	Contents
1	Main assembly (APL frame)
2	Gantry extensions
3	Fetcher / Extra Segment Crate
4	Panel Crate 1 - Roof Panels
5	Panel Crate 3 - Small Wing Doors
6	Pallet Spacer / Slip Sheet Bin

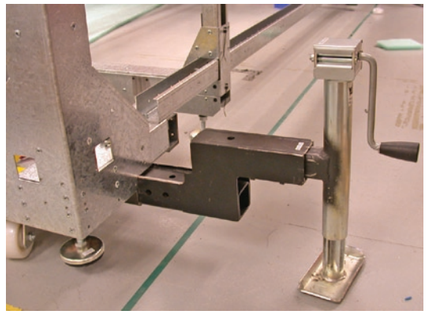
Note: The crate numbers listed in this document may differ from the actual crate numbers. Refer to the shipping list documentation to verify the actual crate numbers.

1 Uncrate the APL frame.



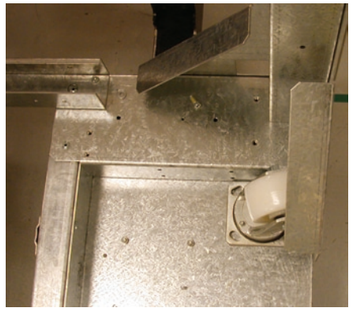
Remove the brackets securing the APL to the crate floor.
Remove the APL from the crate so that it is standing on its wheels—use the four jacks to raise the APL so that the crate floor can be removed.
Wheel the APL to the approximate location of the Magnus VLF with the power box to the rear and furthest from the Magnus VLF. **T**he closest side of the APL must be approximately 300 mm (12 in.) from the side of the Magnus VLF and the rear of the APL must be approximately flush with the rear of the Magnus VLF. Final alignment will be done later on.
Note: For wide configuration APLs, the rear of the APL will be 300 mm (12 in.) further back than the Magnus VLF.

2 Remove the wheels.



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

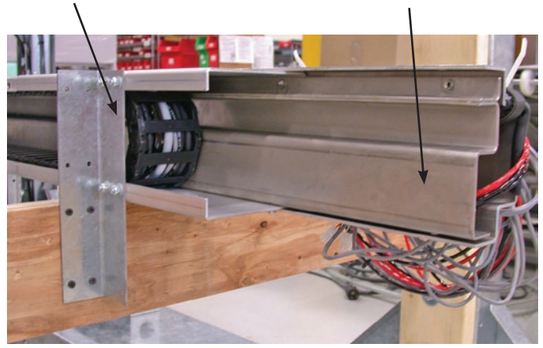
Note: Raise the APL evenly so that the frame is not twisted.



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 closest to the Magnus VLF.

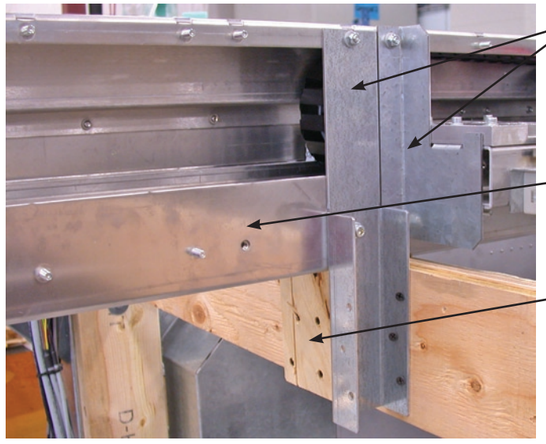
3 Remove the gantry shipping support brackets.

The picker gantry shipping brackets are screwed to the gantry beams and to the wooden shipping frame.
Remove the shipping brackets and end-pieces from the picker gantry.
Discard the shipping brackets after removing them.

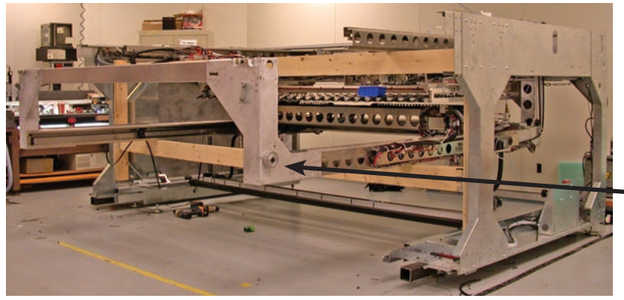


3 continued.

The two table gantry shipping brackets are screwed to the gantry beams and to the wooden shipping frame.
Remove the shipping brackets and end-piece from the table gantry.
Do not remove the wooden support pieces yet.
Discard the shipping brackets after removing them.



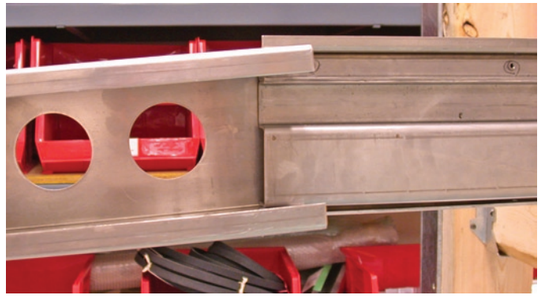
4 Install the picker gantry extension.



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

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

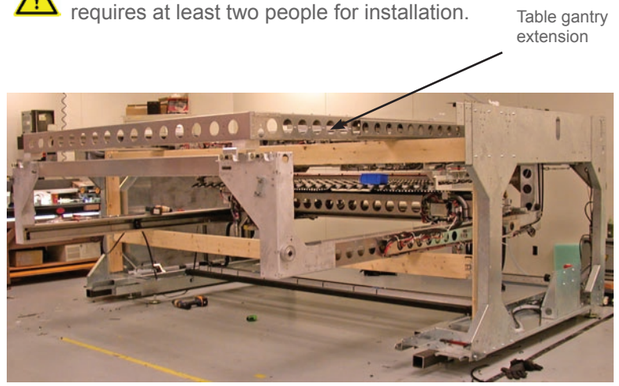




Install the picker gantry extension onto the picker gantry beams (lower gantry)—the extension slides into the gantry beams. Starting from the back, secure with 12 M5 screws and Belleville washers on each extension.

5 Install the table gantry extension.

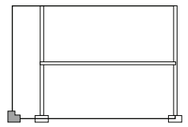
⚠ The table gantry extension is heavy and requires at least two people for installation.



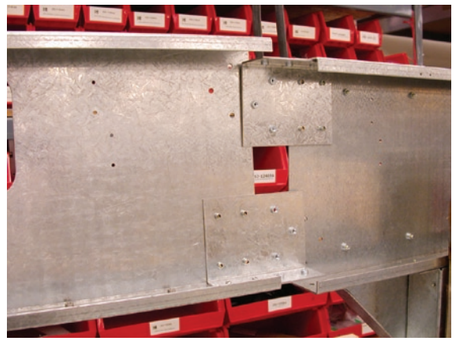
Install the table gantry extension onto the table gantry beams (upper gantry)—the extension slides into the gantry beams on the frame. Secure each side with 14 M5 screws and Bellville washers on the sides and four M5 countersunk screws, Bellville washers, and nuts on the underside.

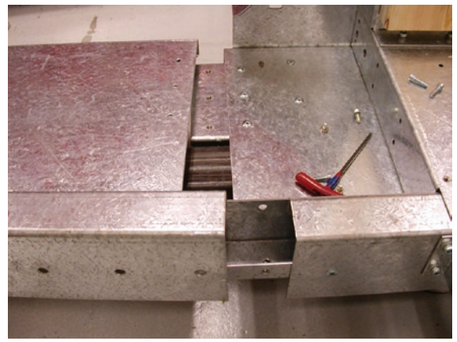
6 Install the end cap.

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.

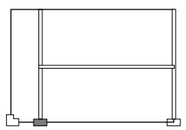


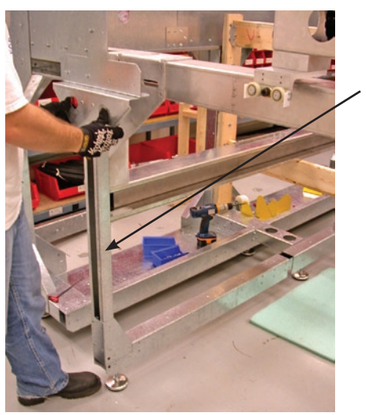


Slide the top (left photo) and bottom (right photo) beams into place at the same time. Secure the top beam with ten M5 screws and Belleville washers. Secure the bottom beam with six M6 countersunk screws on either side and three M6 SEM screws on the top.

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.



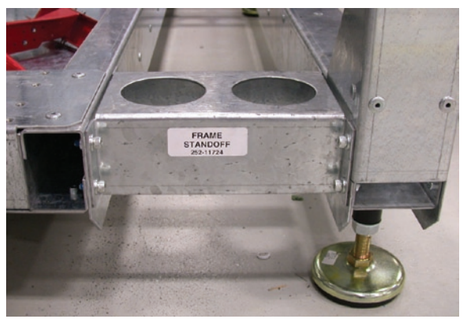




Slide the bottom beam into place. Secure the bottom beam with 12 M6 SEM screws.

8 Install the frame standoff.

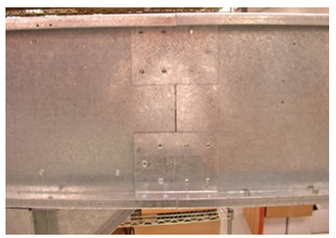
The frame standoff is installed on the front bottom of the APL between the end cap and the beam support.

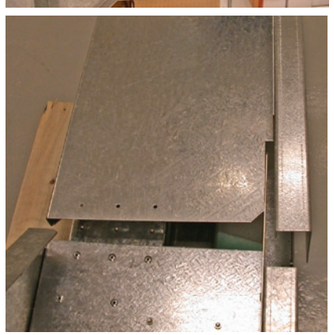


Secure the frame standoff with eight M6 SEM screws (one side of the stadoff may still be attached to the end cap). Loosely insert all eight screws before tightening any of the screws.

9 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.





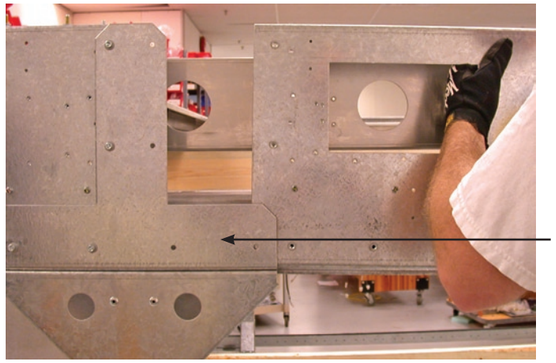


Fasten the top beams with ten M6 SEM screws and the bottom beam with three M6 SEM screws and six M6 flathead screws.

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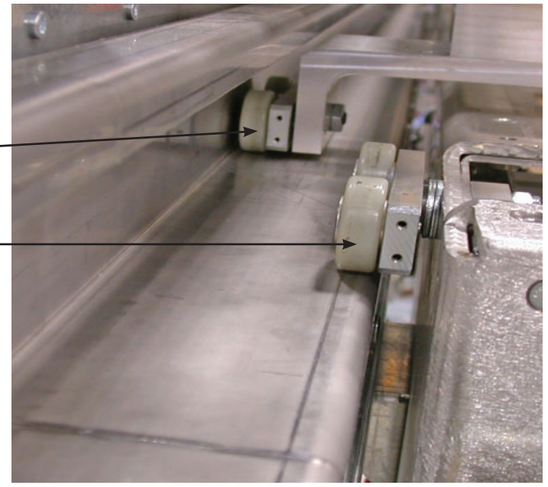
10 Install the top front support beam.

⚠ 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.

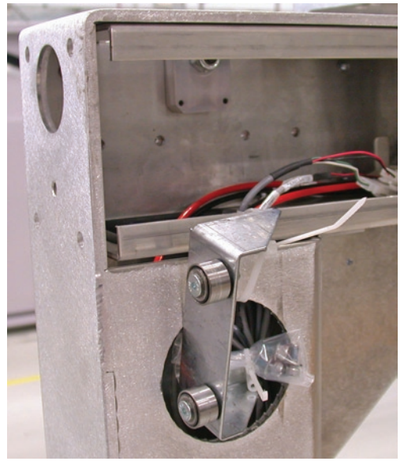
b Next insert the right side of the beam at the mid-span beam support. The right side must be tilted while putting it in place so that the rollers are on top of the support beam.



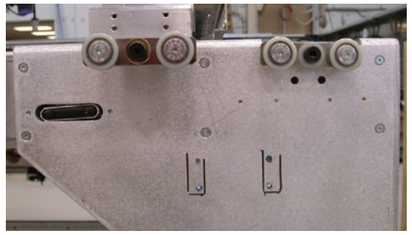
c Secure the left side to the beam coupler with six M6 SEM screws.

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

e Locate and remove the two picker gantry roller brackets that are secured on the inside of the picker gantry extension for shipping.



f Secure the picker gantry roller brackets on the front of the picker gantry extension—one on the left and one on the right (location marks for the left side are shown below)..

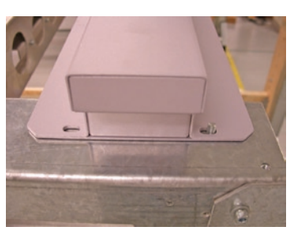




11 Install the two roof beams.



Install the roof beams over the studs in the top beams and secure them with two nuts at each end.



12 Remove 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.

13 Remove the eject cap's center support and red support brackets.

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

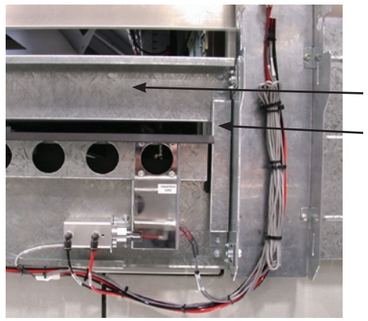
b Remove the two red support brackets from the eject cap.



14 Install the shutter on the eject cap.

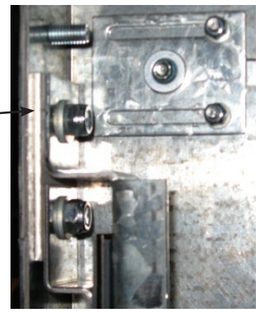
If the Magnus VLF has a plate kicker for dual plate punching, then the upper shutter frame must be removed from the shutter to make place for the kicker. This can be done before installing the shutter to the APL, or after installation.

a Remove the upright brackets on either side of the shutter (two nuts on each bracket).

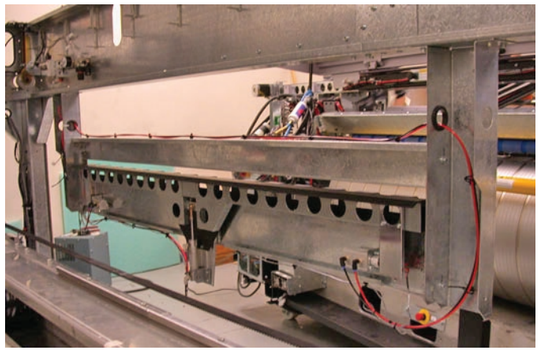


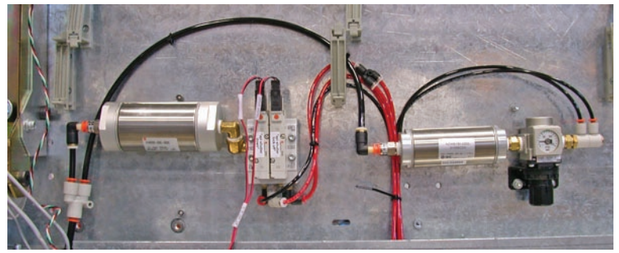
b Remove the upper shutter frame (two nuts on each side).

c Install the two upright brackets—use spacers (252-17603A in plate kicker kit) on the top bolt to take up the space where the upper shutter frame was removed. Alternatively, M5 heavy washers can be used as spacers.



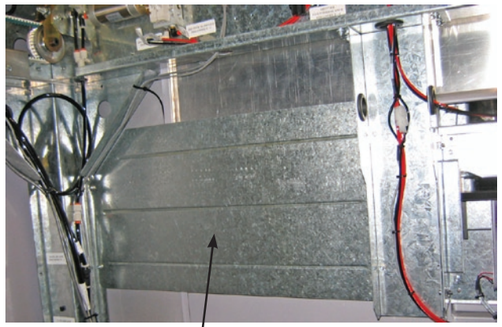
d Mount the shutter to the underside of the top beam of the eject cap. Secure the shutter with four M6 SEM screws on either side.





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

15 Install the light shield.



Install the light shield to the rear of the shutter.

16 Align the track surfaces.

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

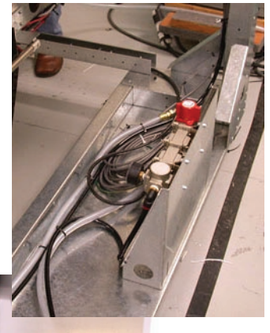


Loosen all the securing screws between the beam coupler and the beams. First tighten the bottom screws and then tighten the back screws.
If the transition is not smooth, use a clamp to pull the highest track surfaces downwards. With the clamp in place, install the metal brace on the side of the tracks.



17 Move the filter/regulator.

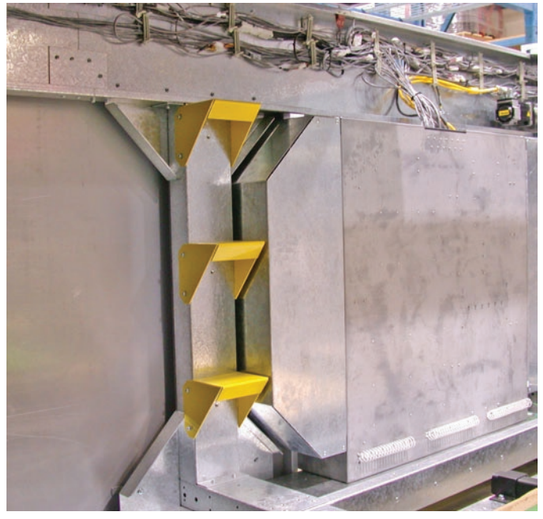
Remove the filter/regulator assembly from its shipping location (right) and move it to the front of the eject cap (below). Use cable ties to secure the hoses to the eject cap floor.

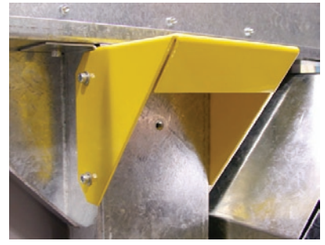




18 Install the emergency escape ladders.

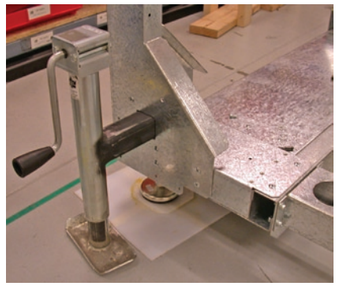
Install the three yellow emergency escape ladders on the power box side. Each step is mounted with four screws.





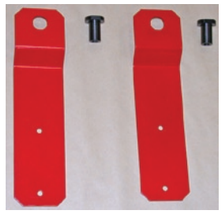
19 Place the frame on grease pads.

Using jacks on all four corners, raise the frame corners just enough to place grease pads under the frame feet. Lower the feet onto the grease pads.

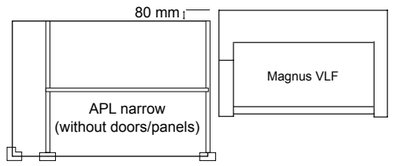


20 Align the APL to the device.

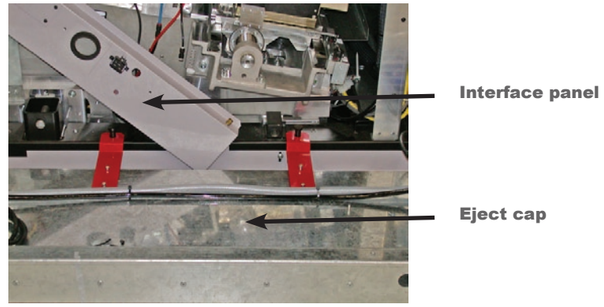
Two alignment jigs are attached to the eject side of the APL to align the APL to the Magnus VLF. When alignment is complete, the jigs are removed and the APL is no longer attached to the device.



a Move the APL up against the Magnus VLF device so that the rear of the APL is approximately 80 mm (3.1 in.) in from the rear of the Magnus VLF (with the doors and panels installed, the APL and Magnus should be flush with each other).
Note: For wide APLs, the rear of the eject cap is 220 mm (8.66 in.) further back than the Magnus VLF (300 mm with the panels installed).



b Locate the screw holes for the jigs on the bottom beam of the eject cap that align with the alignment studs on the Magnus VLF. Attach both alignment jigs to the eject cap with the jigs angling upwards. Place the large holes of the alignment jigs over the M8 alignment studs on the Magnus VLF—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.



c 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.

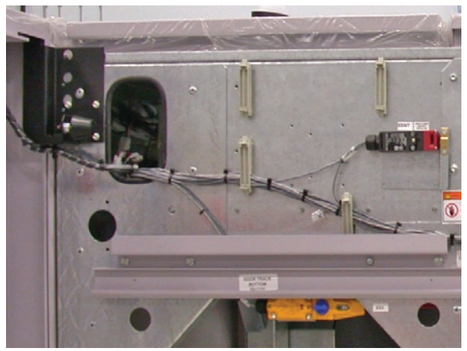
20 Remove the grease pads.

When the APL is in the correct postion, remove the grease pads and lower the APL onto its feet. Remove the jacks.



1 Uncoil the front cable bundles.

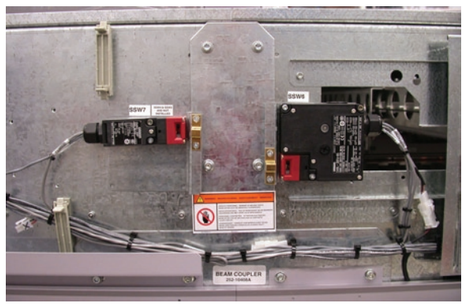
The cables that will be routed along the front top beams are coiled and secured inside the end cap near the power box. Cut the cable ties and feed the cables and switches through the large hole in the front end cap support.



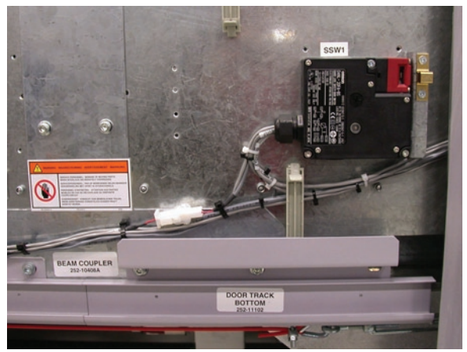
The three cables for the corner panel lights and E-stop switch will be connected when the panels are installed.

2 Install the omron door switches.

a At the power box beam support, install switches SSW7 (left) and SSW6 (right).

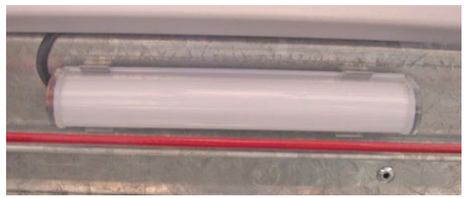


b At the eject cap, install the guard lock safety door switch SSW1.



3 Install the front light tubes.

Install the two 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.
The light tube cables will pass behind the door rails when the rails are installed.

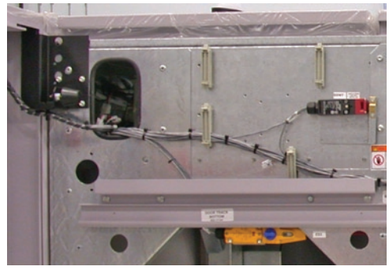


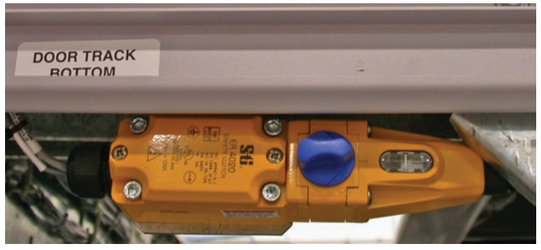
The light tubes are located at the power box beam support and by the eject cap beam support.

4 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

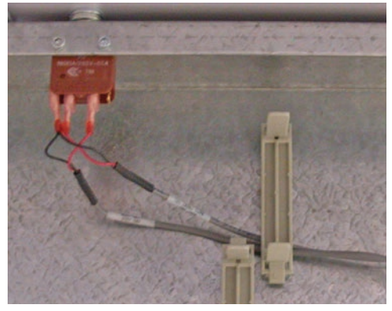
Feed the red ‘rope’ through the mid-span support and connect it to the turnbuckle. Attach the turnbuckle to the eye bolt on the eject cap front corner and tension the rope until it almost triggers the switch.

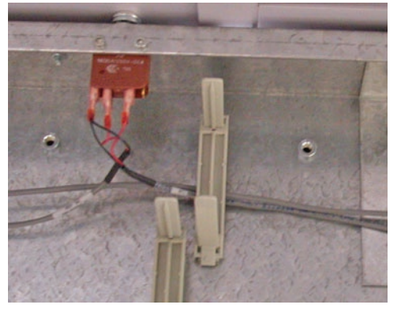




5 Connect the eject cap cables.

At the eject cap there are four cables still to be connected. Two are for the front corner panel lights, 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.





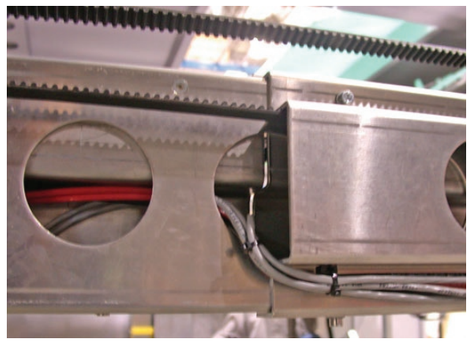
The two corner panel cables will be connected when the panels are installed.

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6 Connect the picker gantry cables and tubes.

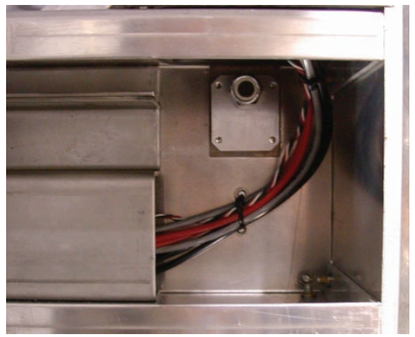
The picker gantry cables and tubes will be coiled and secured to the gantry beams on either side. Cut the cables and tubes free for installation.

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.



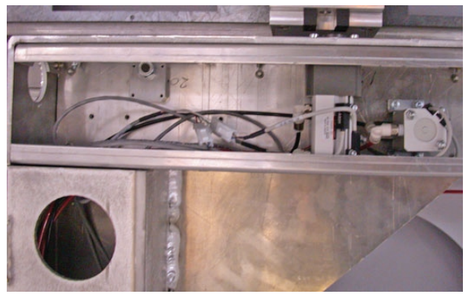
b

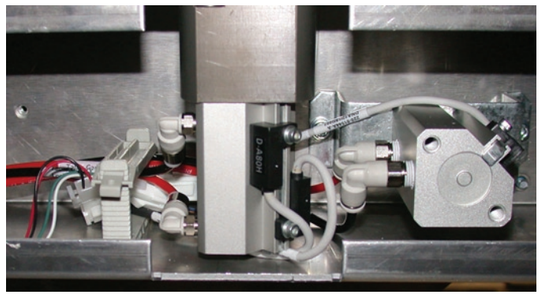
Secure the cables and tubes tightly against the inside of the gantry beam before routing them upwards to the cylinders and sensors.



c

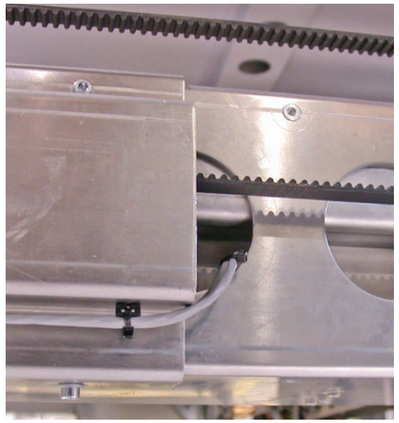
In the upper beam, connect the two cables (picker gantry lock and picker gantry brake sensor) and four tubes as marked.



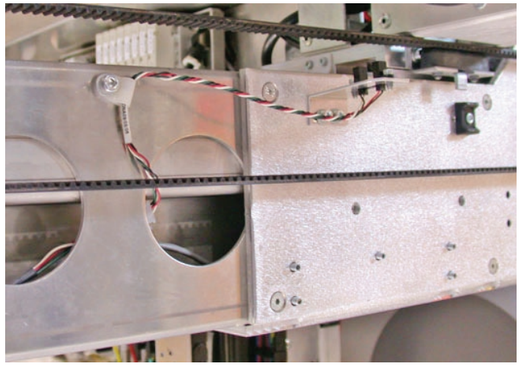


7 Picker gantry cables and tubes continued.

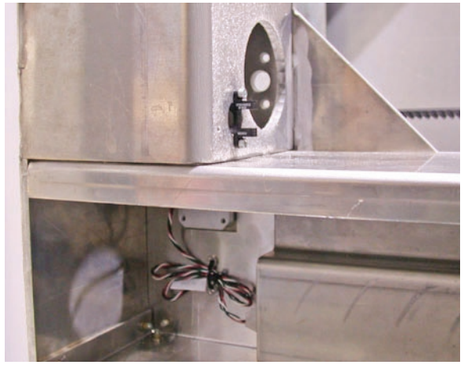
d On the beam closest to the power box side, feed the two sensor cables into the gantry beam extension toward the front of the APL.



e Install the pucher 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.



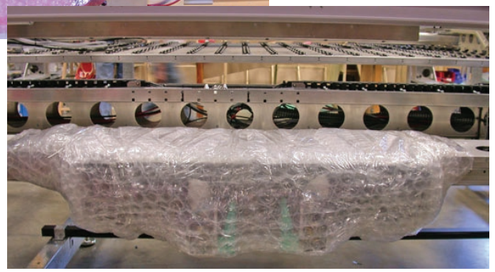
f Route the remaining cable out the front of the extension beam and connect it to the sensor cable. Secure the wires tightly against the inside of the beam so that they do not interfere with picker movement.



8 Remove all protective shipping material.

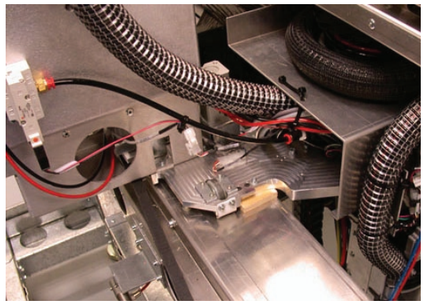
Remove all protective shipping material from the APL. Take care not to bend any brackets or dislodge any sensors while removing the material.

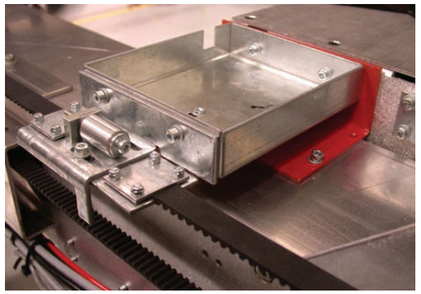




1 Removing the picker and pusher shipping brackets.

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



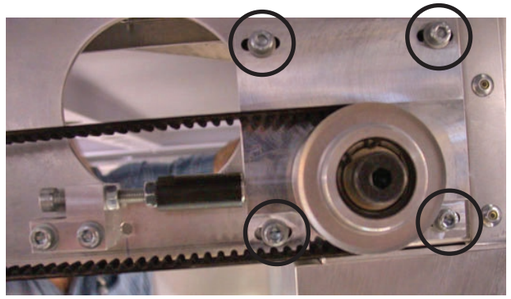


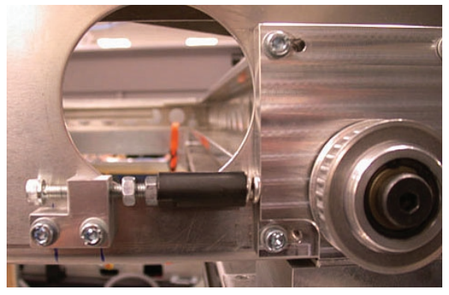
There are two red brackets between the pusher and gantry that hold the pusher in place during shipping. Remove both brackets, one on each side, by removing the two screws that secure the bracket to the gantry and the two screws that secure the tensioner to the pusher. Put back the two screws that secure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

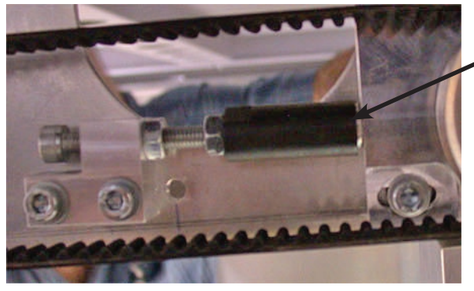
2 Install the table gantry belt.

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.



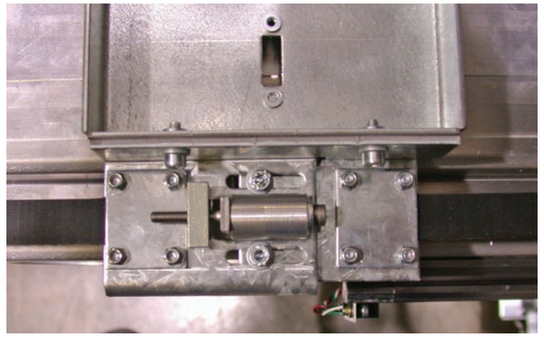




3 Install the picker gantry belts.

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

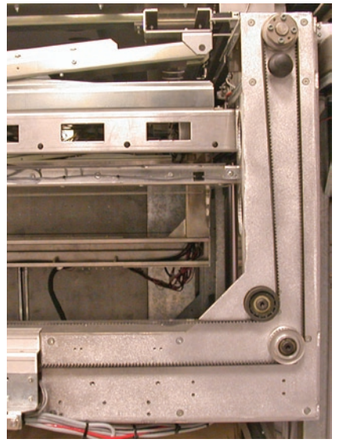
Loosen the two tensioner screws on either side of the belt tensioner.
Cut the picker gantry belt loose from its storage position and place the belt over the pulley on the gantry extension.
Screw in the tensioner screw until the cylindrical spacer around the spring is under compression but can still be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



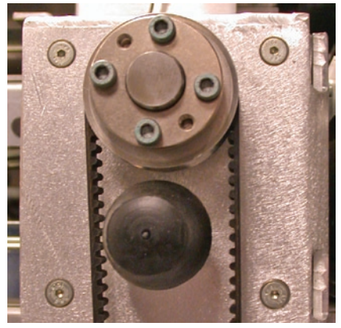
4 Synchronizing the picker gantry.

For a detailed description of this procedure, see *Adjusting the Picker 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.



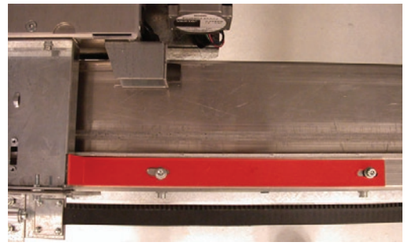
a Loosen the four pulley shaft coupler screws.



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 Install the two alignment jigs to hold the picker and pusher in place.



e Clamp the vertical portion of the pusher belt together so that the belt teeth facing each other mesh to lock the belt in place..

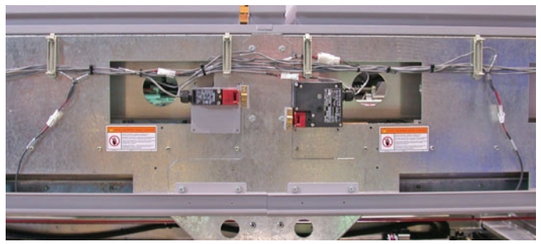
f Tighten the four pulley shaft coupler screws.
Note: Do not overtighten these screws.

g Remove the clamp and the two alignment jigs.



1 Install the front door rails.

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



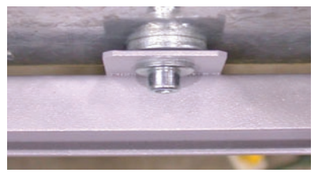
The shortest rails are installed on the eject side of the APL, followed by two long rails, with the mid-length rail on the power box side. Ensure that the transition between the rail sections is smooth or the doors will not slide correctly.

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 M6 flathead screws to the top of the top beams.

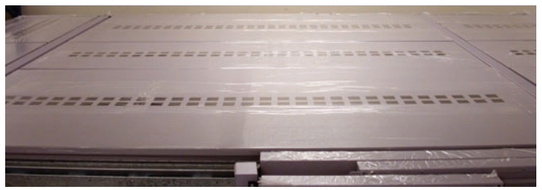


b Secure the rounded side rails using the beam coupler screws and M5 screws with M8 heavy washers (as spacers) for the other holes.



2 Install the center roof panels.

Install the center sections of roof panels. There are three panels—two wider panels on the front and rear and a narrower panel in the middle.



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

3 Install the cable tray covers.

Install the three front cable tray covers and the three rear cable tray covers.



4 Install the front and rear doors.

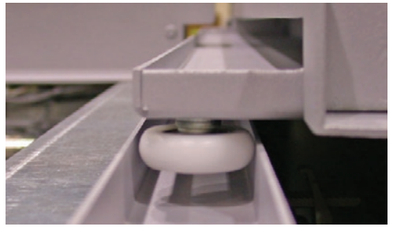
Each sliding door assembly consists of a center section (with the rollers that slide in the front and top rails), a narrow door beam, and two identical windowed doors.



There is one door assemblies on the front (P16) of the APL and one on the rear (P17).

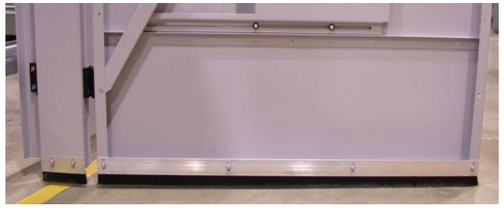
a On the front of the APL, slide the two door assemblies onto the door rails from the power box side. The widest one must be on the eject side of the APL. Ensure that the doors can roll from side to side without difficulty. Adjust the door rails if necessary.





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





c Check that the door latches engage properly when the doors are closed and adjust if necessary.
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.



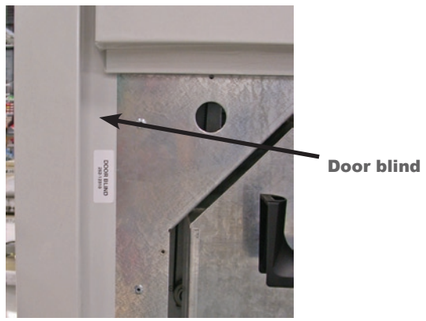


Adjust the door latches so that the gap between the doors is 20 mm when the doors are closed.

5 Install the power box side panels.

a Install light shield brushes on the bottom of the large panel, the tall center panel, and the power box panel.

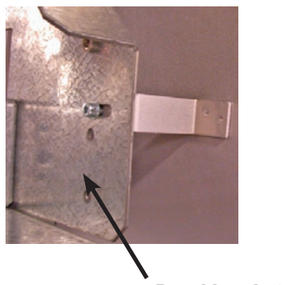
b Install the door blind panel at the rear corner (two screws).



c Install the power box panel (turn-locks only).

d Secure the large panel, the tall center panel, and the panel above the power box with M5 screws on the top of the panel and also on the inside of the APL to the panel brackets.





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

The front and back corner panels on the power box side contain a door lock/unlock status light, an internal light pushbutton, and an E-stop switch. The panels hinge on brackets that are attached to the APL frame.

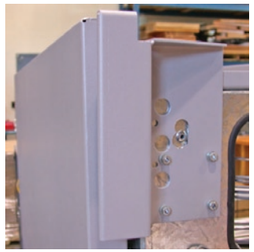
Front



Back



a Install the front top corner panel bracket.



b Install the rear top corner panel bracket.



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.



7 continued.

d 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.



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.

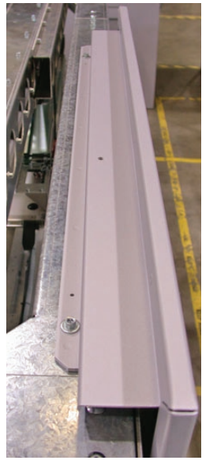
h Install the rubber bumper panel door stop.

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

8 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.





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



Front

The front and back corner panels on the eject side contain a door lock/unlock status light, and an internal light pushbutton. 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.



10 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.



Power box side roof panels



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.

APL Startup

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

b Connect the CANbus cable to the Magnus VLF device at the interface panel.

c Connect the GMCE cable to connector J40 on the Magnus VLF device's GMCE board..

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

e Follow the *Setup and Alignment Procedure* for the final setup and alignment of the APL components.

f To set up the Remote Support System (RSS), see the configuration information on the RSS TechPlanet site at <http://techplanet.creo.com/software_solutions/networking_os/rss/nav/proced.htm>.

g Refer to the *Operator Visual Reference Guide* to load the slip sheet bin into the APL.

Ruturning All Shipping Jigs

The shipping jigs listed below must be returned to Kodak Vancouver for reuse. In the APL main crate there is an empty cardboard box with bubble wrap for the jigs to be packaged in and returned to Kodak.
All the shipping information, account information, and customs paperwork will already be completed and therefore it is very important that the box contents exactly matches the parts list below:

- Four BRKT, SHIPPING, FRAME, APL (252-19478A-B) (the heavy bracket holding the APL to the crate base)
- Two BEAM,MAIN,SHIP EXT,TBL GANT,PTM,APL (252-17216A-C) (the beam shipping section for the table gantry)
- Two BEAM,SHIPPING EXT,FRAME,PICKER GTY,APL (252-13035A-A) (the beam shipping section for the picker gantry)

1. Package the parts with the bubble wrap as shown below.



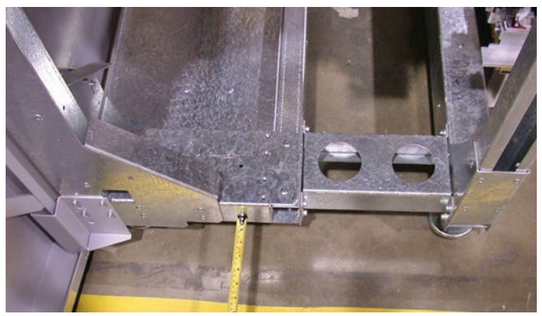


2. Attach the packing slip to the box.
3. Call Fedex at 1-877-339-2774 to arrange for pickup of the box.
4. Place three copies of the commercial invoice along with the FedEx waybill on top of the box.

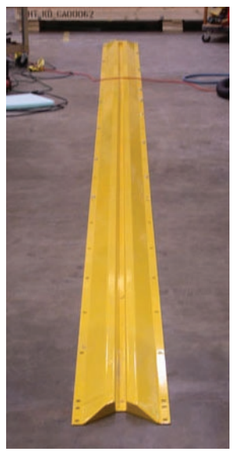
Installing the optional Hover Cart rails

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 secure the rail end-pieces.

