Magnus VLF

Shuffling Ejector Upgrade

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Revision History

Revision	Date	Author	Comments
1	Aug 2006	G.Tang / A.Blignaut	First release
2	Sep 2007	A.Blignaut	Clarify alignment instructions

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1. BACKGROUND

This document describes how to install the new shuffling ejector.

2. PARTS/TOOLS REQUIRED

Parts:

- Actuator base and actuator rail 252-10503A & 252-10456A
- Three position cylinder 500-03572A and solenoid 55-0771 with cable 220-00483B
- New fittings that must be installed on the load table manifold 336-00051 and 55-0072
- New shuffling ejector, 500-03575A for a RTOL and 500-03576A for a LTOR

Tools:

- Metric hex keys (new condition)
- 7 mm and 8 mm sockets and ratchet
- 7/16” open end wrench, or small crescent wrench
- Ejector height jigs 690-00845A (two pieces)
- Small vise grips
- 8 mm open end wrench
- 12 mm or ½” open end wrench

3. UPGRADE PROCEDURE

3.1 Removing the Ejector

1. Type `>>door unlock` and open the front and rear hoods.
2. Turn the device power to OFF and turn off the air supply.
3. Remove the bridge top cover (P47) and rear cover (P46).
4. Remove the five unload table panels in the center of the device.
5. Remove load table rails one and seven.
6. Remove the center access panel (P20).
7. Remove the SSR front cover (P30).
8. Remove the home side shoulder panel (P4).

9. Prop up the away side shoulder panel (P3) using the kickstand on the underside of the panel.

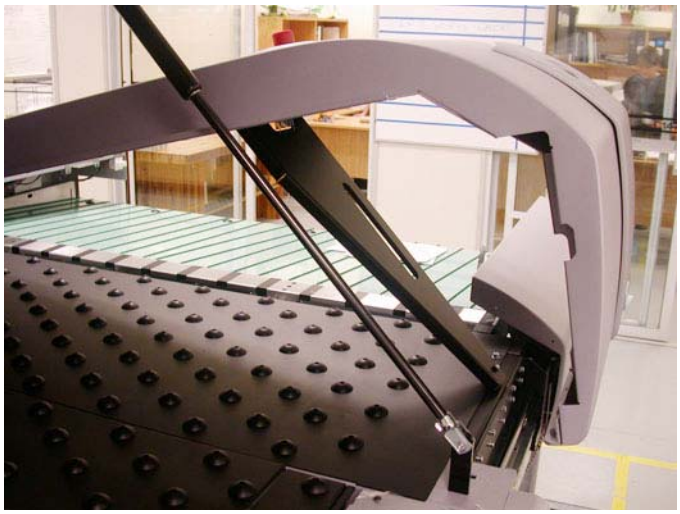


Figure 1: Away side shoulder panel kickstand

10. Remove the ejector with truck plate from the device—four M6 x 20 socket head cap screws (SHCS). The truck plate must also be released from the ejector belt—two M4 x 10 button head screws.

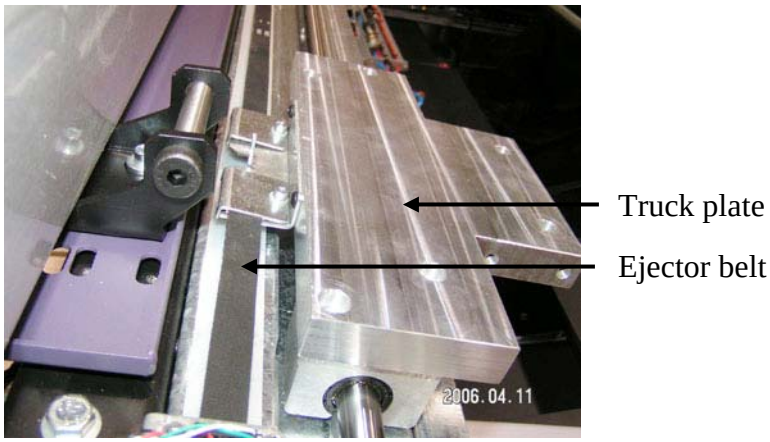


Figure 2: Ejector truck plate

The Ejector track now needs to be modified for the new ejector. This involves removing and replacing the long ejector actuator rail (cylinder end) and the long ejector actuator base (cylinder end). Also, the two position cylinder is replaced with a three position cylinder that requires a new solenoid, cable, and tubing. The actuator assembly number is 500-03573A.

11. Remove the old cylinder from the track. The cylinder is secured with a M4 flat washer and nylock nut on one end, and a 3/16 in. clip on the other end.

12. Remove the entire ejector actuator rail. The entire rail consists of a short rail and a long rail joined together by a splice block. The long rail that the cylinder is attached to, will be replaced with a new long rail 252-10456A.

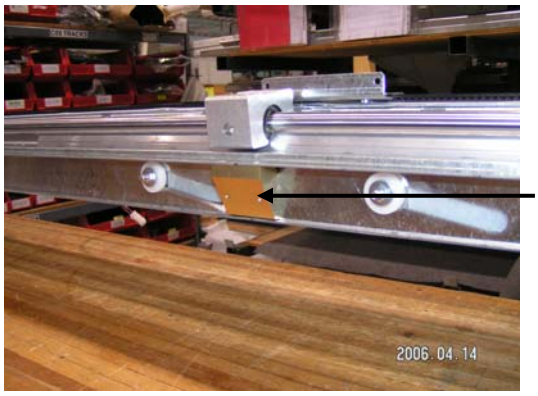


Figure 3: Ejector actuator rails and splice block

13. Remove the long ejector actuator base from the ejector track and replace with the new base. The base is attached with M5 flat head screws (52-3179) that may strip during removal, use a new hex key pinched in vise grips to crack the screws during removal.

14. Remove the pivot pin from the old base and install it on the new base (the new base may come with a pivot pin already installed).



Figure 4: Pivot pin

3.2 Installing the Shuffling Ejector

1. Reinstall the actuator rail onto the base rail. First place the custom washer over each of the studs on the base rail, then install the ball bearing and M5 pem nut on each stud, then install the actuator rail. Secure the actuator rail using the retainer sliders, M5 heavy washers, and M5 nylock nuts. The model below also shows UHMW tape, which should already come applied to the base.

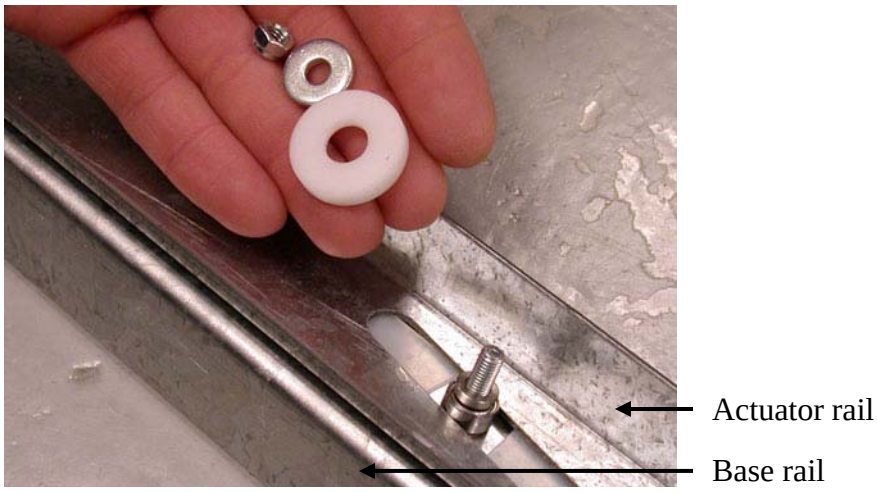


Figure 5: Actuator rail fasteners

2. Install the solenoid 55-0771, elbow 55-0072 and tall elbow 336-00051 onto the load table manifold (mounted to the power entry box). Use one of the three empty ports just below the LT pullout table lock solenoid. Connect cable 220-00483B from the solenoid to J4 on the load table manifold interface board.

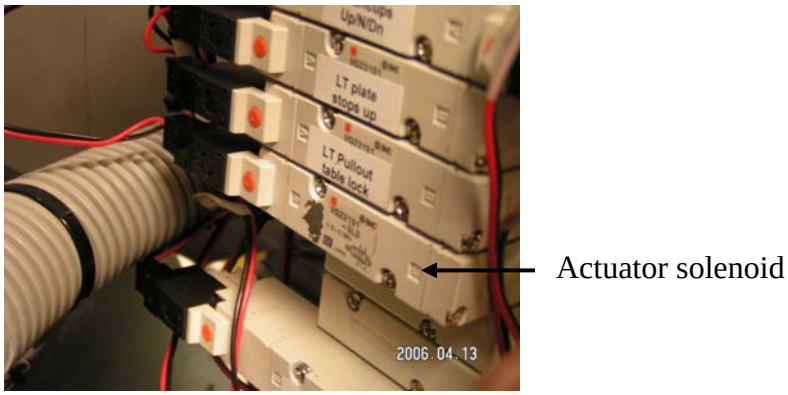


Figure 6: Actuator solenoid

3. Install the new three position cylinder. The idle position for the actuator rail will be the center position. To eject a plate out of the device, ejector pusher 1 will be in the down position (the rail will be all the way forward or backward) and ejector pusher 2 will be used for shuffling (new solenoid just installed). Hook up the tubing accord ling. Picture shows a LTOR machine with red tube from pusher 1 hooked up to the home side of the cylinder (side closer to home side of device), then black (normally pressurized) from pusher 1, then red from pusher 2 and black from pusher 2. Notice the rail in the center

position, a left eject device will be a mirror image of this tube routing. The tubes should be routed such that they are not snagged by the ejector when it passes by.

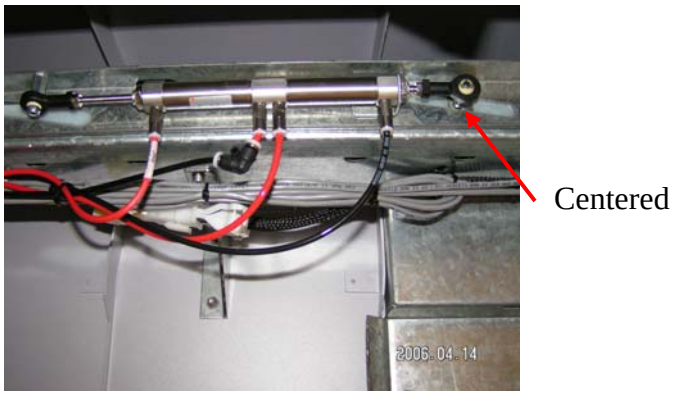


Figure 7: Three position actuator cylinder

4. Install the new shuffling ejector and truck plate (the truck plate will already be attached to the ejector), by attaching the truck plate to the two roller bearing blocks on the ejector track using four M6 x 18 SHCS. Attach the ejector belt onto the truck plate with two M4 button head screws.

5. Install the shoulder panels, bridge rear cover and bridge top cover.

3.3 Aligning the Shuffling Ejector

1. Open the air supply to the device. Turn the device power to ON but do not do an init (make sure Print Console in not in the start menu or the device will start initializing by itself).

2. In Service Shell, type `>>access dev` and `>>hwconfig` and enable the new shuffling ejector option.

3. To ensure the ejector is idle, type `>>ejector idle` .

4. Install the unload table center panels.

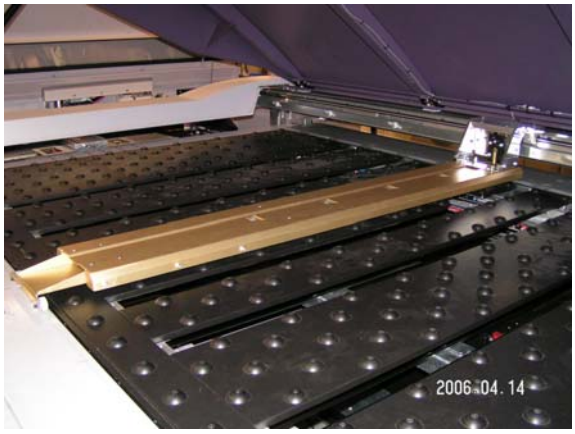


Figure 8: Ejector and unload table panels

5. Loosen the four SHCS that secure the ejector carrier to the ejector arm.

6. Type `>>ejector pusher1 up` and `>>ejector pusher2 up` to put the actuator rail into the center (neutral) position. If it does not, then something may be wrong with the way the tubes have been connected to the ejector actuator cylinder.

7. Place the ejector height jigs under the ejector arm body on one of the unload table panels.



Figure 9: Ejector height jigs

8. With the body resting on the jigs, adjust the carrier so that the truck plate is at 0 degrees and tighten the four SHCS.

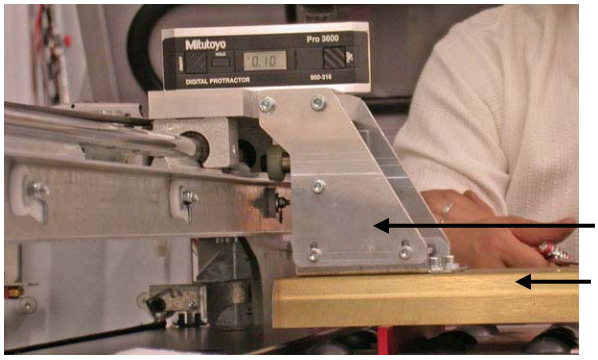


Figure 10: Ejector leveling

9. With the height jigs still in place, adjust the front guide wheels so that they are in contact with the MAB upper tie rod.

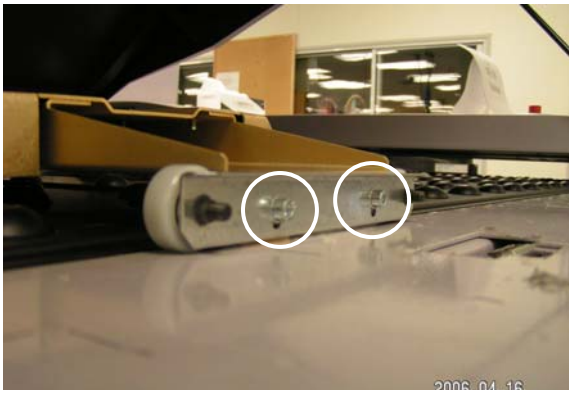


Figure 11: Ejector guide wheels

The neutral position of the fingers is determined by adjusting the spring loaded turnbuckle located on the carrier slide block. The extreme positions of the fingers are determined by adjusting the M5 limit screws. To adjust the fingers, do the following:

10. With the actuator rail in the neutral position, adjust the turnbuckle so that the bottom of the eject fingers and the bottom of the shuffle fingers are about the same height above the unload table. Lock the turnbuckle in place with the jam nut.

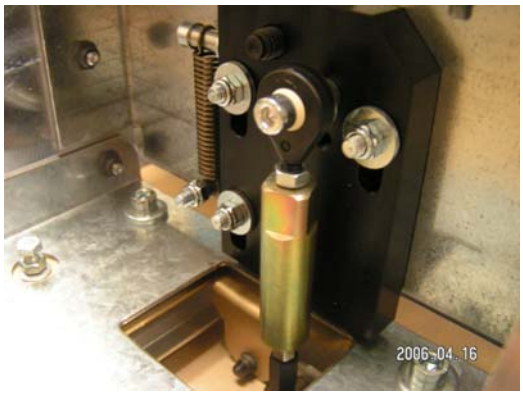
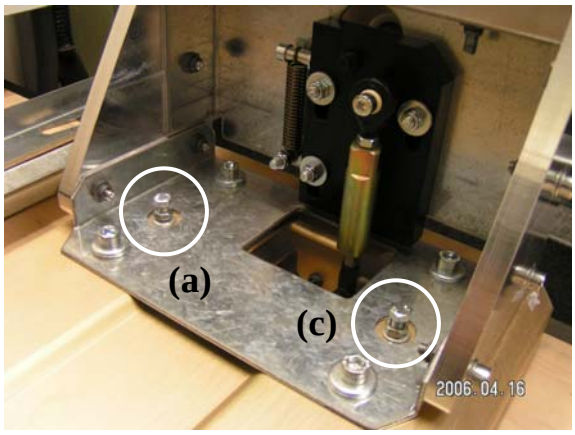
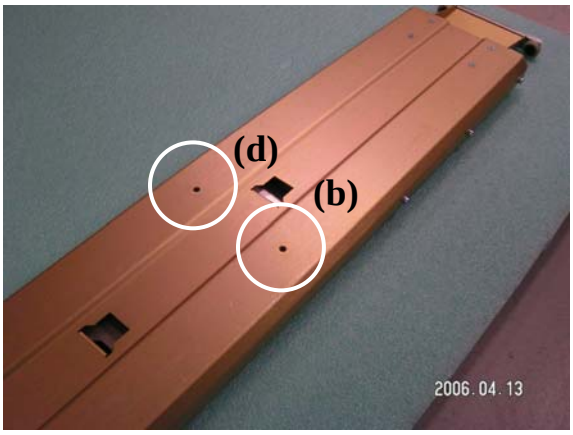


Figure 12: Actuator turnbuckle

11. Type `>>ejector pusher1 dn` to adjust the ejector fingers. Set the eject finger height by adjusting the M5 limit screw located on the carrier end on the eject side (screw a)—the fingers should be about 1 to 2 mm above the unload table. Adjust the corresponding limit screw in the middle of the ejector arm (screw b) to match the height of the fingers set by the limit screw on the carrier end.

Note: The ejecting side and the shuffling side of the ejector will differ between a left eject device and a right eject device.





12. Slowly (so as not to create a back EMF) push the ejector across the full length of its travel to check that the fingers are not touching any high spots on the unload table and that the limit screws in the middle of the ejector arm have sufficient clearance.

13. Type `>>ejector pusher2 dn` to adjust the shuffling fingers. Set the shuffle finger height by adjusting the M5 limit screw located on the carrier end on the shuffle side (screw c)—the fingers should be about 1 to 2 mm above the unload table. Adjust the corresponding limit screw in the middle of the ejector arm (screw d) to match the height of the fingers set by the limit screw on the carrier end.

14. Again, slowly push the ejector across the full length of its travel to check that the fingers are not touching any high spots on the unload table and that the limit screws in the middle of the ejector arm have sufficient clearance.

The ejector center engine position must now be adjusted and changes to the hardware configuration must be made.

15. Type `>>set mhauto` and find the **ejectorenginecenterpos** value. Move the ejector to this value and check that the center line of the ejector body lines up with the center of the unload table (the middle row of darts on the middle panel). If there is any problems with the ejector coming down over top of the plates then try changing the **ejectorenginecenterpos** value in mhauto.

The ejector fast distance must now be adjusted. This is the point where the ejector stops moving fast and starts a slow push into the processor. Ideally this point should be when the plate just lines up with the sheet metal on the very end of the bridge.

16. Load and then unload a plate and check the fast distance of the ejector. If an adjustment is necessary, type `>>set exit` and change the **fastdistance** value—this is usually 3680 for right eject devices and 3480 for left eject devices.

Note: For dual plate punching with X speed, some customers will require a conveyer between the processor line and the Magnus device to achieve the throughput specs. In this case, the external conveyor must be enabled in hwconfig, and there will be no slow push of the ejector.