Adjusting the balance actuation assemblies

Context

- ☑ VLF Platesetter
- ☑ VLF Trendsetter
- ☑ VLF Trendsetter Autoloader

Description

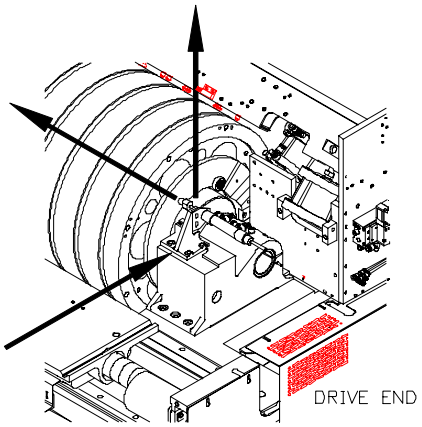
There are three balance weight actuation assemblies:

- 50-1237 Assy, Mech, C/B Actuator, Puly, VLF both sizes
- 50-1238 Assy, Mech, C/B Actuator, Enc, 5080
- 50-1321 Assy, Mech, C/B Actuator, Enc, 5880

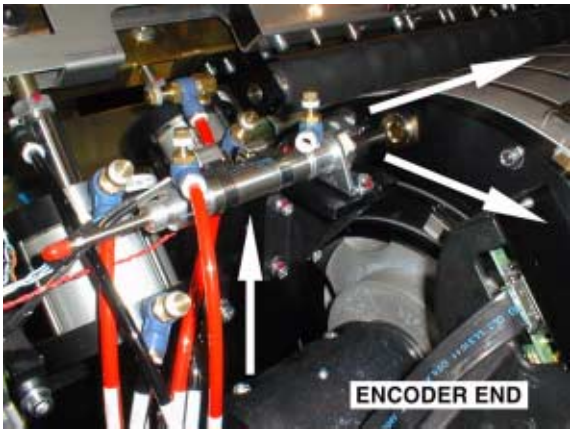
In each case, slots in the mount casting allow adjustment in one axis, slots in the mount bracket allow adjustment in one axis, and the release tip jam nut allows adjustment parallel to the axis of the drum.

Tools

- 5/32" quick connect thru fittings (55-0423)
- 5/32" quick connect plugs (55-0162)
- multimeter or reed switch sensing circuit
- 15/16" combo wrench for balance weight actuation cylinder mounting nut
- 5/8" or 16 mm combo wrench for drive end balance release tip flat
- 7/16" combo wrench for balance cylinder rod end locknut
- 1/4" combo wrench for hall sensor locknut
- Alvania grease
- Loctite 222



Drive end balance weight actuation mechanism

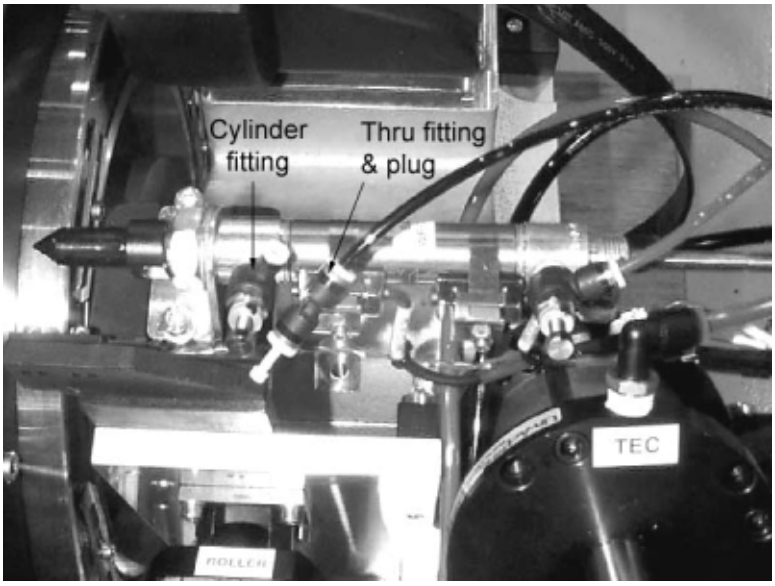


Encoder end balance weight actuation mechanism

Steps

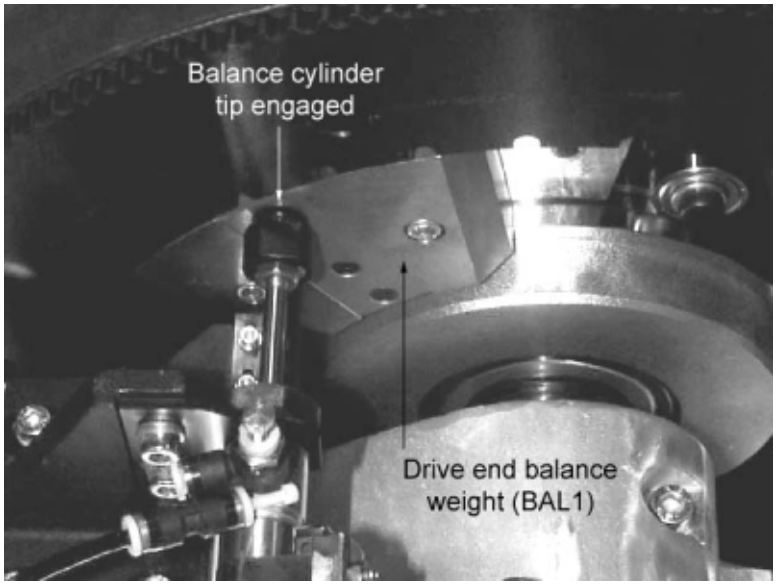
1. Hold all of the backbones in the extend position, using the commands `tec off`, `lec off`, `rlr off`.
2. Remove the retract air lines from the balance actuation cylinders.

   The cylinders are supplied by 5/32” pneumatic tubing. Plug the open lines with 5/32” quick connect thru fittings (P/N 55-0423) and 5/32” quick connect plugs (P/N 55-0162).



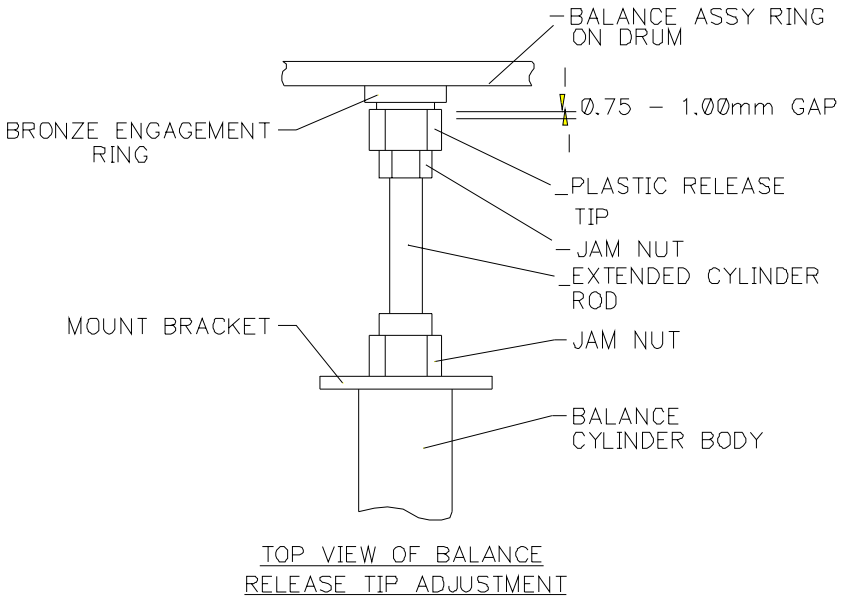
3. Ensure that the balance actuation cylinders are secured tightly to their mounting brackets with the jam nuts.
4. With the balance actuation cylinder rods extended as far out as possible without entering the engagement ring on the drum balance assembly, spin each actuation cylinder rod to inspect for damage.

   The observed total run-out (wobble) should be less than 1.5 mm for both the release tips and the cylinder rods. See the accompanying photos for the x, y and z adjustments of the balance actuation assemblies.
5. Rotate the drum by hand and insert the drive end actuator part way into the engagement ring such that the drum is held in place but the détente is not released. This holds the drum in place to allow a rough mechanical alignment of the encoder end actuation assembly.



Note: Never rotate the drum with either balance cylinder actuator partially engaged. This can damage the release assembly.

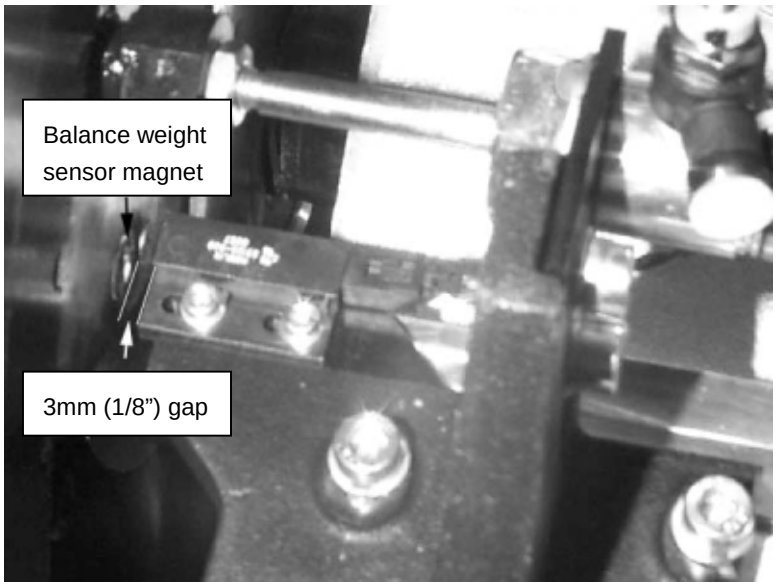
1. Adjust the encoder end fastening to align the release tip with the center of the encoder end engagement ring. Insert the encoder end release tip part way, and repeat the alignment procedure for the drive end.
   The balance actuation assemblies should be positioned such that the release tips shoulders come to within 0.75 to 1.0 mm of the balance assembly on the drum when in the extended position.



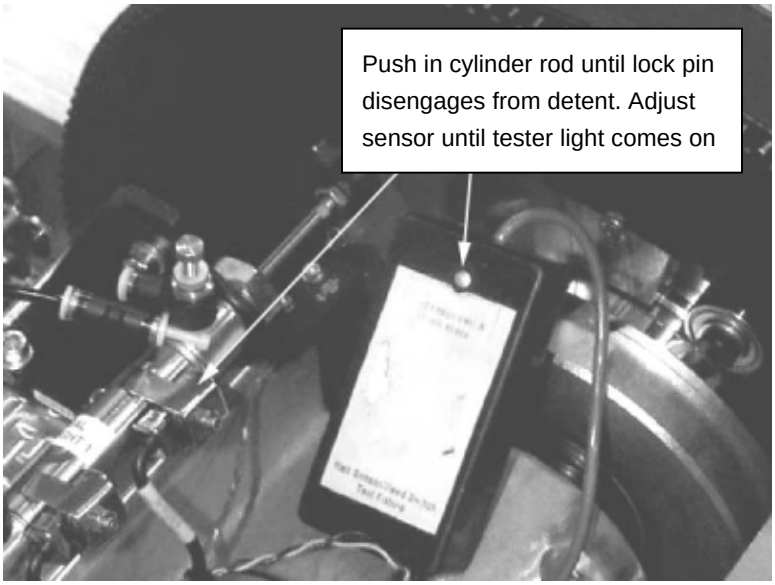
TOP VIEW OF BALANCE RELEASE TIP ADJUSTMENT

Note: **Loctite thread retainer 222, 242 or 262 should never be used on plastic threads.**

1. Set the reed switches attached to the balance actuation assemblies at each end of the drum flush with the edge of the balance actuation assembly castings, i.e., in the direction of the drum axis. These sensors will normally be approximately 1/8” from the sensing magnets located on the encoder balance ring and the drive end balance weight assembly.



2. With a multimeter or reed switch sensing circuit, ensure that by rotating the drum by hand, both reed switches turn on and off as the sense magnet passes, and that they are on for an angular increment of less than +/-1 détente position (not necessarily centered on a détente). Moving the sensors away form the drum, decreases the length of the sensor on period.
3. Adjust the Hall effect sensors on the actuation cylinders so that each sensor turns on just after the release tip has actually released the détente pin. This should happen at least 1.5 mm from the end of stroke.



4. Use Loctite 222 on the locknut threads.

NVS Parameter "bdo" Calibration

1. Ensure that both release tips are not engaged with the drum balance weights.
2. Enter the command ***set al bdo 0*** to set the balance détente offset to zero. This offset corrects the differences in how the encoder index pulse relates to the détentes due to part tolerances.
3. Enter the command ***bal find*** to spin the drum and display the balance weights positions in encoder ticks. These values include bdo, and changes as bdo is modified. **Record the "rounded position" value for "weight 1" for the next step.**
4. Enter the command ***drum move <detected_position> h*** where <*detected_position*> is the position determined in step 3.
5. Remove and plug the retract air line (fitting closest to drum) from the pulley end actuator cylinder.
6. The drum should be in a position such that the actuator cylinder can be extended by hand, but won't quite line up properly
7. Move the drum in steps of 50 tach ticks by typing ***drum move xxxx h*** (where *xxxx* is the previous drum position - 50). Negative values of *xxx* cause the drum to move counterclockwise from the original detected position.
8. Check the actuator alignment by manually extending the actuator cylinder and checking the engagement of the rod tip and the balance weight bushing. Rotating the actuator cylinder rod during this check will help to confirm correct alignment.
9. Repeat steps 5 and 6 with reducing corrections until correct alignment is achieved.
10. Fine adjust the actuator alignment as necessary using the assembly fastening screws. The release tips should engage smoothly when moved by hand, with the air disconnected.
11. Get the new drum position by querying the drum, type ***drum*** . Write down the new drum position. Subtract the new drum position from the original position in step 3 to get the bdo offset (negative value)
12. Enter the new NVS parameter "bdo" by entering the command ***set al bdo xxx*** where *xxx* is the value determined in step 8.
13. Save the new setting by entering the command ***NVS save al bdo.***
14. Reconnect the air hose to the actuator cylinder.
15. With the drum still held in the corrected position, move to the encoder end balancing assembly, disconnect the retract air line from the cylinder and fine adjust the mechanical fastening to give the smoothest engagement of the release tip when the cylinder is

moved by hand.

16. Enter the command ***bal move 0*** to confirm the alignment and correct operation of the balancer mechanism.
17. Apply a **very small** amount of grease to the release tips on both ends of the drum using Alvania grease or equivalent.
18. Clean the bronze balance races as necessary and grease using Alvania grease.
19. Adjust the speed controls as per the actuation timing table.