Trendsetter VLF AL

GT Slip Sheet Removal Unit Upgrade

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1. BACKGROUND

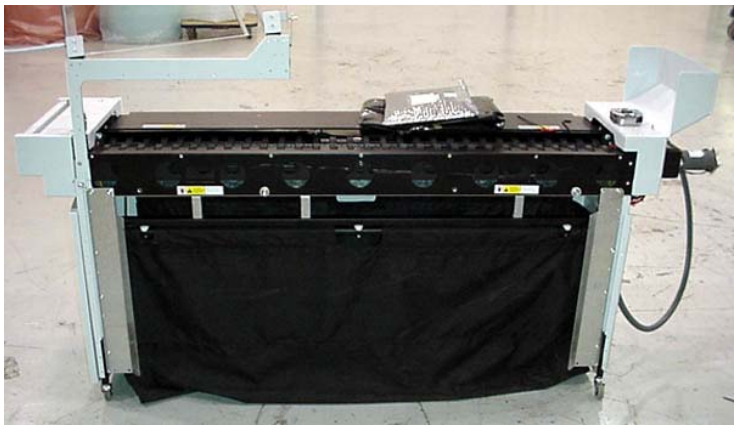


Figure 1: GT SSR Unit (skins removed)

The Slip Sheet Removal (SSR) unit has been upgraded to improve performance. To make it easy to identify, the new GT unit has a black handle on the bin's access door. See Figure 2 (a). The previous SSR unit had a purple handle.

Also, the umbilical cable is now permanently fixed to the unit instead of being removable. See Figure 2 (b).

⚠ Do not try to move the bin by pulling on the umbilical cable.



(a) Black door handle (not purple)

(b) Attached umbilical cable (not removable)

Figure 2: Differences between GT SSR unit and Previous Version

This document describes how to upgrade a Trendsetter VLF AL equipped with an MCU or an SCU to use the GT SSR unit.

Note: Since there are many variations of MCU hardware and cable routing, some of the photographs in this procedure may not be accurate for the device you are working on.

2. INSTALL THE GT SSR UNIT

1. Detach the old slip sheet unit and disconnect its umbilical cable from the MCU or SCU.
2. Disconnect the cables at the MCU or SCU bulkhead
   a. Remove the 4 screws that attach the bulkhead connector plate. See Figure 3.



Figure 3: Detaching the Bulkhead Connector

   b. Remove the 4 screws that hold the cable shell inside the bulkhead connector. Push the shell forward to separate the terminal block and shell from the housing. See Figure 4.

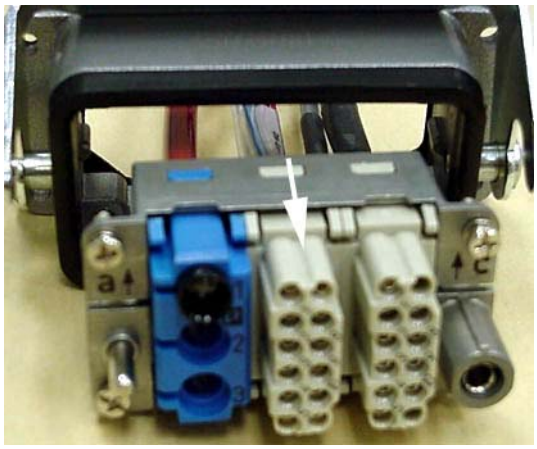


Figure 4: Shell Detached from Connector

   c. Open the hinge on the shell. See Figure 5.

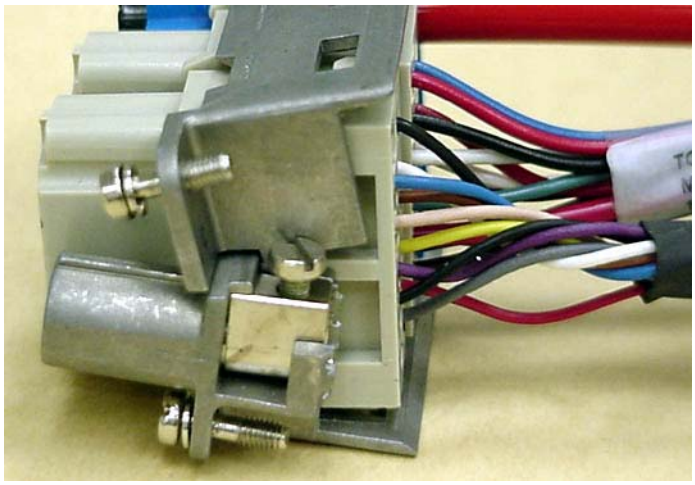


Figure 5: Shell Hinged Open

d. Remove the cable connectors from the shell, pushing them out the back. See Figure 6.

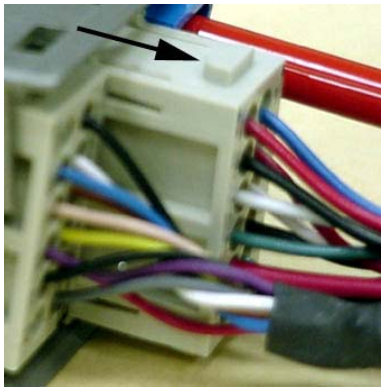
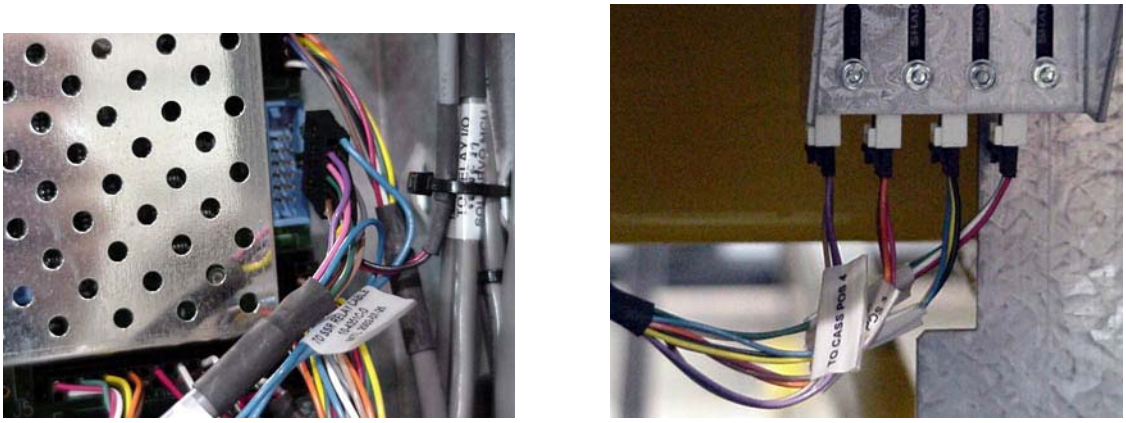


Figure 6: Cable Connectors Removed

⚠ Do not disconnect cables 10-4705 and 10-4729 at the bulkhead adapter, or they may end up connected in reverse.

3. Disconnect the cables on the Genine 1 board in the power box (see Figure 7) at the following connectors:

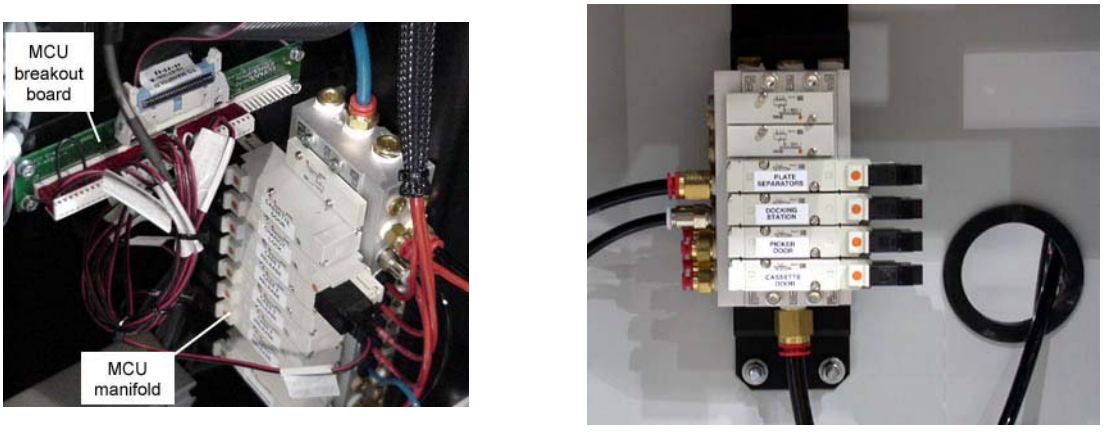
   - J10 (10-4351). See Figure 7 (a).
     This cable branches out to 2 other connectors.
   - J2 (10-4705). See Figure 7 (b).
     This cable branches out to the cassette position sensors.
   - J21 [SCU only]



(a) J10 (b) J2

Figure 7: Disconnecting Cables on the Genine 1Board

4. Disconnect all the cables at the manifold. See Figure 8 (a) for the MCU and Figure 8 (b) for the SCU.

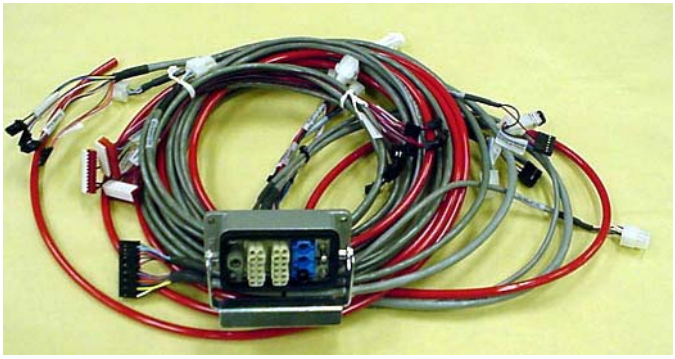


(a) MCU manifold (b) SCU manifold

Figure 8: Disconnecting Cables at the Manifold

5. Remove the air hose from the manifold.
6. Install the new cable bundle.

   A fully assembled cable bundle, containing 3 cables and 1 air tube, is shipped with the GT SSR unit. See Figure 9 for the MCU and Figure 10 for the SCU. The cables are a one-to-one replacement for the existing SSR-MCU/SCU cables. The existing SSR motor cable is re-used. All of the cable connectors are labeled with their cable or board connections.

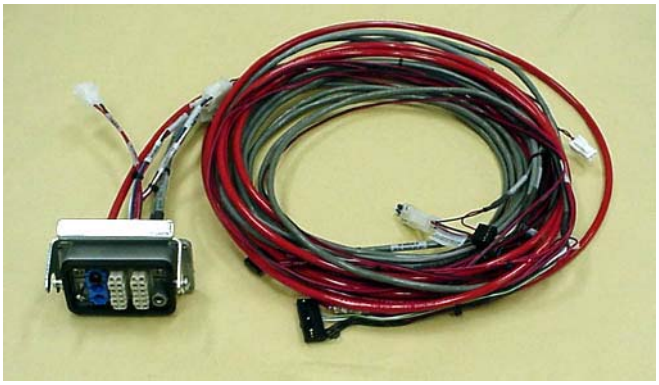


(a) Cable bundle, as received

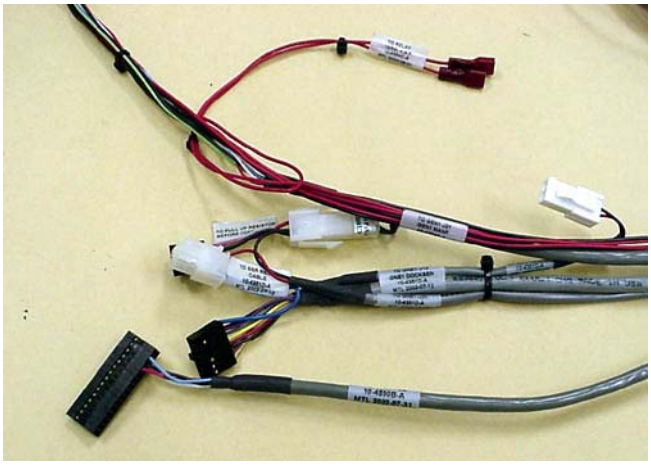


(b) Cables separated

Figure 9: MCU Cabling



(a) Cable bundle, as received



(b) Cables separated

Figure 10: SCU Cabling

a. Route the cable bundle from the outside to the inside.

b. Connect the new cables and air hose at the same locations from which the old cables were removed, with **two exceptions**:

- Cable 10-4351D has an additional connection at J20 on the Genine 1 board to add the SSR bin pullup resistor.
- [MCU only] Cable 10-4729 now connects directly to the MCU breakout board. See Figure 11.

Reminder: All of the new cables are labeled with their cable or board connections.

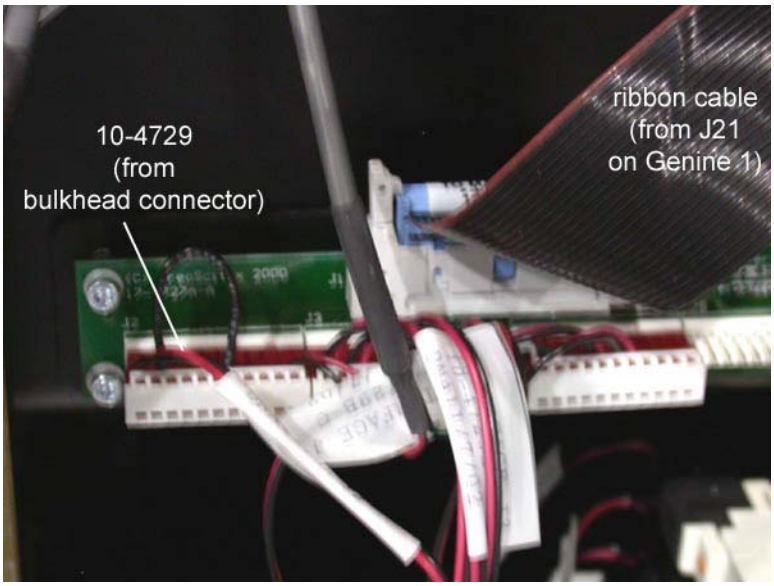


Figure 11: Connecting 10-4729 to the MCU Breakout Board

c. [SCU only] Route the airline from the bulkhead connector to the SCU shutoff valve.

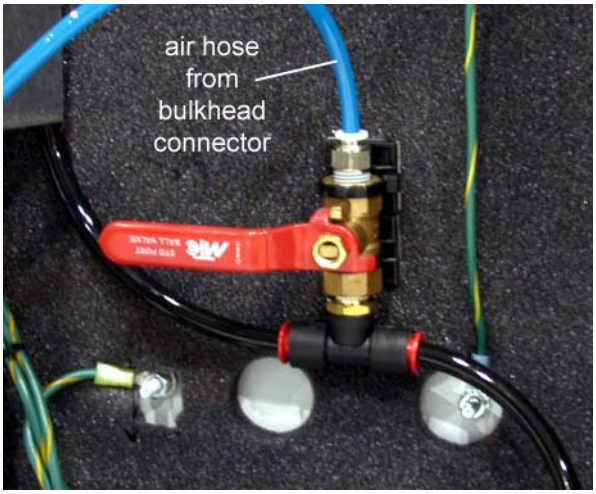


Figure 12: SCU shutoff valve

7. Plug in the SSR motor cable.

3. CONFIGURE PARAMETERS

1. Check that Controlled Release v2.0 or greater is installed. See the Controlled Releases page on TechPlanet at: http://techplanet.creo.com/output/computer_to_plate/vlf_trendsetter_al/nav/control-set.htm

2. Configure the following NVS parameters:

- `set val nci 1` (new_compactor_installed)
- `set val ncs 1` (new_compactor_sensors)
  Disables compactor extend and retract sensors only, but val sshsens must also be 0.

3. Initialize the state nvs by typing: `set state val ssodo 0.`

   Note: Only do this when the GT SSR unit is installed for the first time.

4. Initialize the slip sheet counter by typing: `set state val sscount 0.`

5. Initialize the bin full level to 100 meters by typing: `set val ssbf 100.` See Section ?? for instructions on setting the correct value.

4. VERIFY ALIGNMENT

1. Verify the alignment of the base machine to the MCU or SCU.

   The GT SSR is more sensitive to alignment than the previous version. Problems can include paper jams, obstruction above roller errors, paper tearing, etc.

   If the SSR unit is sitting too low, the batwing is less likely to capture the picked slip sheet when it is released from the wedgemaster.

2. Check that the SSR is resting on the rollers and is supported properly in the mounting tracks.

   If the roller mounting brackets are interfering with the tracks (the wheels are clearly not touching), verify the track alignment again. The tracks must be parallel to ensure that the SSR chassis does not twist, resulting in uneven roller traction from one end to the other.

5. SET UP THE LIMIT SWITCHES

1. Roller Position Switches[1]

1. Check that the air pressure to the device meets specifications.

   Note: Low air pressure can affect the resting position of the moving backbone, the compression of the roller elements, and the end positions of the compactor stroke.

2. Calibrate the roller position switches.

   At each end of the moving backbone is a pair of brown limit switches. These switches sense the position of the roller for the firmware, and provide a hardware lockout so that the compactor does not function without the rollers being closed.

[1] On new devices shipped from Production, this procedure is done during assembly/integration.



This is an important safety feature. Do not attempt to bypass the roller position sensors.

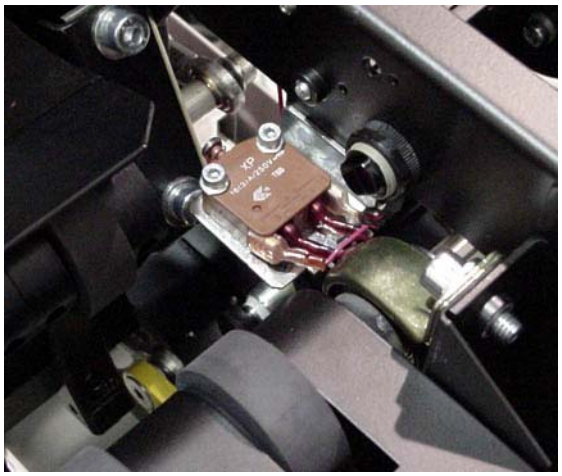


Figure 13: Roller position switches

To calibrate the position of these switches:

- Using a 7mm wrench, loosen the M4 nylock nuts so that the sensor's mounting bracket can move freely back and forth.
- Type `ssh rlr` (to close the rollers).

2. Compactor Position Switches

1. Check that the air pressure to the device meets specifications.

   Note: Low air pressure can affect the resting position of the moving backbone, the compression of the roller elements, and the end positions of the compactor stroke.

2. Calibrate the compactor position switches.

   The compactor actuator and limits switches are located on the bottom of the motor drive unit. The motor drive unit contains a large cylinder driving a bell crank, followed by a double ball-linked rod to the compactor plunger.

   A pair of limit switches are integrated into the bell crank area. These switches are the same part as the roller position switches. The sensors are mounted on two brackets that can be adjusted according to the compactor's extended and retracted positions.

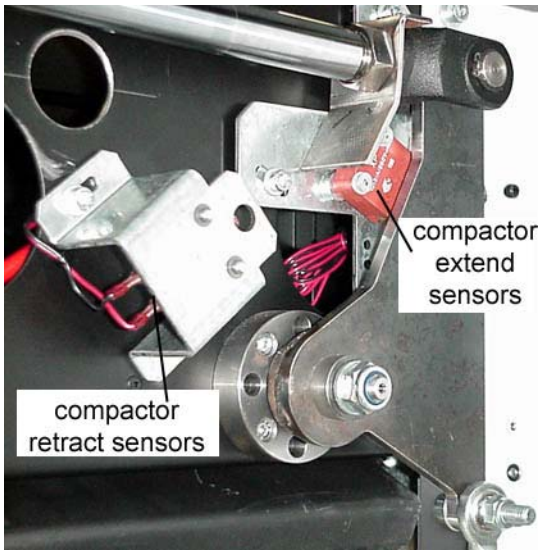


Figure 14: Compactor position switches

The adjustment procedure is as follows:

1. Loosen the 2 screws on the compactor retract sensor bracket, and the 3 screws on the compactor extend sensor bracket (the 'T' shaped bracket). Do not remove the screws.
2. With the sensor brackets slack, move the compactor to the fully retracted position by entering the command `ssh compactor off`.
3. Place a 1/2mm spacer under the button and adjust the retract sensor bracket so that the switch is bottomed out. Remove the spacer, so that the sensor is about 1/2mm from being bottomed out. Tighten the 2 M5 screws.
4. Move the compactor to the fully extended position by entering the command `ssh compactor on`.

   Note: The extended sensor is activated by a bracket mounted on the compactor cylinder, locked between the rod end and the lock nut.
5. Place a 1/2mm spacer under the button and adjust the extend sensor bracket so that the switch is bottomed out. Remove the spacer, so that the sensor is about 1/2mm from being bottomed out. Tighten the 2 M5 screws.
6. Move the compactor to the retracted position to finish tightening all the screws.

6. SET UP THE CENTER BEARING PRELOAD[2]

In the earlier SSR unit, the rollers were adjusted to provide about 3 mm of clearance between the wheels at the ends of the roller. With the new design, the gap at each roller end is closer to 1.2 – 2 mm.

In the GT SSR unit roller design, the wheels and rollers operate independently. The independent rollers are firmly mounted to a very stiff backbone.

Note: There is no preload required for the GT SSR unit's moving backbone. Preload is only required on the roller that is directly coupled to the drive motor (referred to as the 'fixed' assembly).

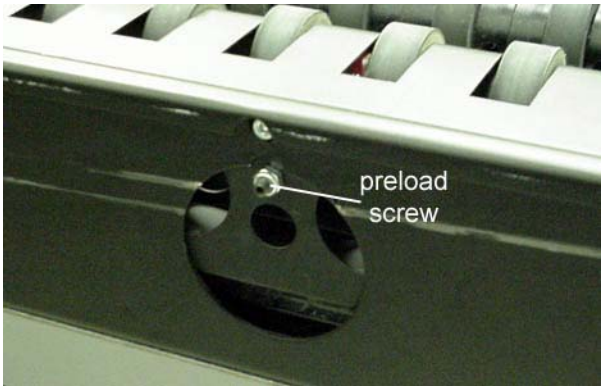


Figure 15: Screw for Adjusting Preload on Fixed Roller Assembly

1. Plug the SSR cable into the device.
2. Type `ssh rlr on`.
3. Type `ssh rlr open`.
4. Unscrew the center bearing support until the roller is obviously slack and not constrained by the bearing.
5. Slowly turn in the set screw (see Figure 15) until the roller conforms to the bearing.

   Note: The set screw should become noticeably harder to turn when it contacts the bearing.
6. Turn the set screw further in, about 1.25 to 1.5 turns.
7. Tighten the lock nut while holding the set screw in place.

   Note: If there is a rubbing noise, check the roller safety guard. If the guard has been manufactured out of tolerance, and the bend section surrounding the shaft is not concentric to the shaft, it may rub. If needed, manually rework the shield's curvature as follows:

[2] On new devices shipped from Production, this procedure is done during assembly/integration.

- Remove the moving roller.
- Using a blunt object that won't harm the powder coating, adjust the profile of the fixed roller shield along its entire length.

7. ADJUST PLATE FLOTATION AIR

1. Adjust the potentiometer that is inside the hole in the blower casing (see Figure 16), using a small Phillips screwdriver.

   The float level should be set high enough to ensure that the customer's largest plate size is safely floated without damaging the next plate in the stack. There is no benefit to adjusting the float air any higher, and it will only have a negative effect on slip sheet removal performance. When the float air and optimum roller preload are correctly set, the paper precompression stage should operate very smoothly and be repeatable.

   For more information about plate flotation air, see Section 11: Basic Troubleshooting.

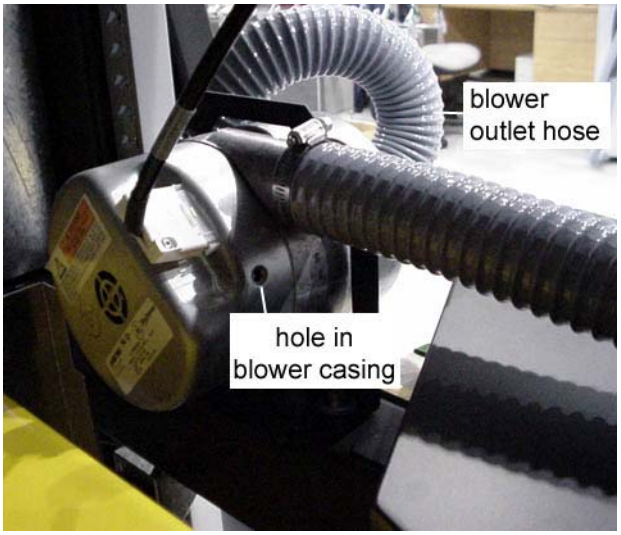


Figure 16: Location of Speed Adjustment

8. POSITION THE UNIT

1. Roll the GT SSR unit into position between the MCU or SCU and the base Trendsetter VLF.
2. Remove the metal front cover that has a push/pull handle and 2 screws on the top and bottom.
3. Thread the M5 SSR lock screw into place. Look for a small captured M5 SHCS, located close to the MCU sidewall at the front of the SSR chassis.

9. TEST

1. Using a selection of the customer's slip sheets and plates, test the GT SSR unit.

Ideally, the slip sheet should move evenly into the precompression cavity, with the trailing edge of the slip sheet roughly parallel to the roller axis. Roller condition, float air velocity, and center preload on the fixed roller backbone will affect slip sheet reliability.

Note: Over time, the drive roller may become worn down. If the wear occurs in the center region, the preload may need to be increased. If the wear occurs in the outboard sections (unlikely), the preload may need to be decreased.

10. SET UP "BIN FULL" LEVEL

Allow the customer to run production for a week, then solicit feedback from the operator as to whether it is easy or hard to remove the slip sheet bag when prompted to do so by the workstation.

The NVS parameter `val ssbf` may be adjusted to a lower value if the bag is overfull at 100 meters.

11. BASIC TROUBLESHOOTING

For more information see GT SSR Unit Troubleshooting on TechPlanet at:
http://techplanet.creo.com/output/computer_to_plate/vlf_trendsetter_al/nav/troubles.htm#ssr

Paper fails to move into the cavity

- Check the preload and look for signs of wear on the rollers. The roller preload may be insufficient to ensure that the slip sheet is pulled into the cavity. If the center area of the rollers has lost some traction (from lack of sufficient preload or roller wear), there may not be enough force applied to pull the entire sheet into the cavity.

Paper bunches up and fails to move into cavity

- Check the traction of each roller. There should be a nearly equal break-free friction on each wheel. Adjust the preload as necessary.
- Check the plate float air velocity (see Section 7). If the airflow is set too high, the slip sheet may be unnecessarily wrinkled, causing uneven paper handling and poorly distributed paper in the precompression cavity.

  The plate float air velocity should be enough to float the customer's largest plate.

'Obstruction above rollers' error

Occasionally the wrinkling of the slip sheet forms a narrow finger-shaped strip in the rear corner of the sheet. If this strip catches between two rollers, an obstruction above rollers error may occur.

Another cause of this error is paper that bunches up in the roller's center area, resulting in an uneven slip sheet density in the cavity. If the pick is bad enough, the paper may not completely enter the slip sheet precompression cavity and a large paper 'wad' may jam up in the batwing rollers.

- Check the preload, air float, and roller condition.

  Plate float air that is too high can increase the probability of an 'obstruction above rollers' failure. Ensure that the float air is high enough to float the largest plate -- and no higher. See Section 7.

- Optimizing slip sheet loading will also reduce the probability of this failure.

12. RETURN THE OLD SSR UNIT TO CREO

Once the upgrade is complete and fully tested, package up the old compactor and ship it back to Creo, including the old wiring harness.