

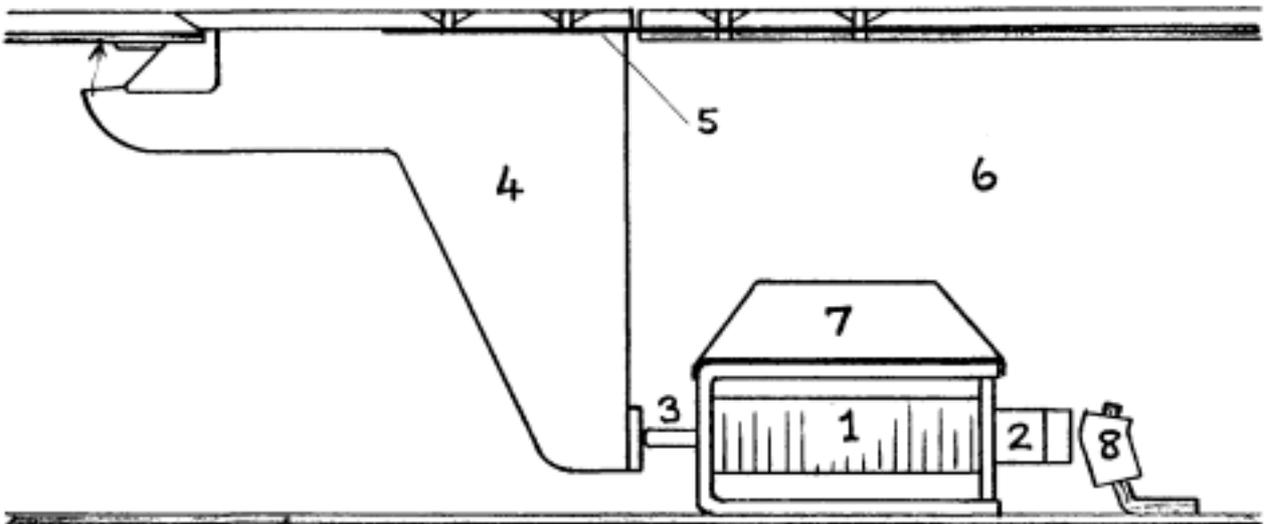
MAINTENANCE

DROPPER ASSEMBLIES - - MAINTENANCE, ADJUSTMENT AND FAULT-FINDING

The dropper assemblies are located, one per lane, at each drop down the length of the grader. The dropper mechanism is reliable and durable, but must be correctly set up and maintained. All dropper units should be checked prior to each season; periodic checks during the season may also be beneficial. Any repair or replacement of dropper assembly components should include a complete check of the following points.

Assembly

The dropper is assembled from the following components:

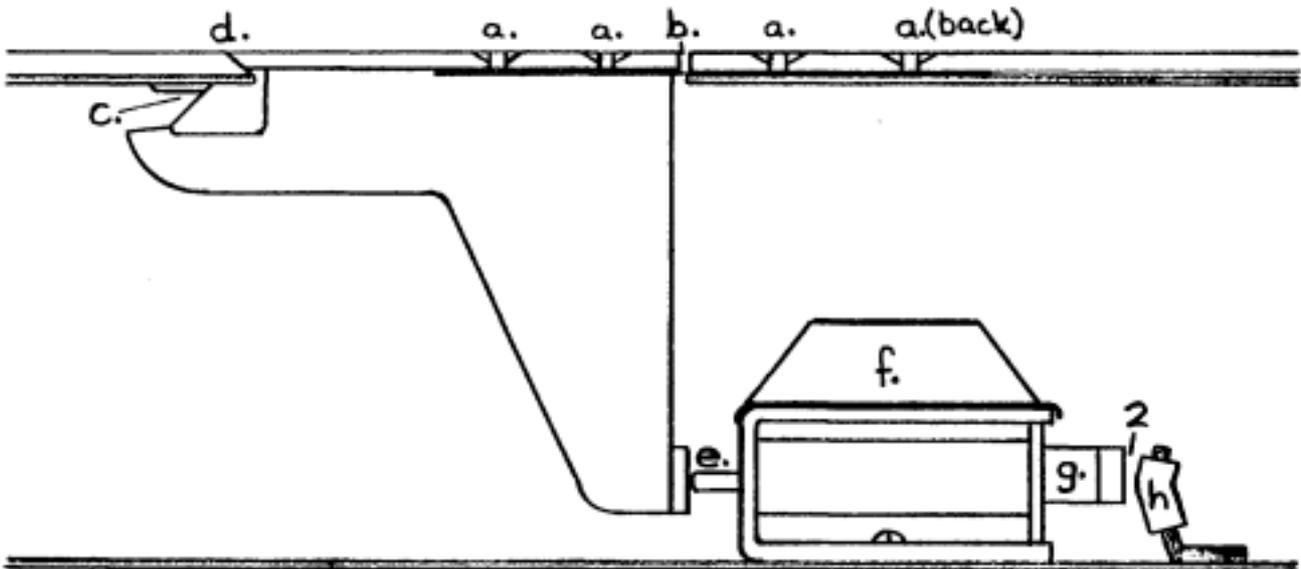


1. Solenoid coil
2. Solenoid plunger
3. Solenoid pin (steel)
4. Dropper arm
5. Steel flexure spring
6. Mounting plate
7. Solenoid retaining plate
8. Plunger backstop with neoprene pad.

Inspection

Each dropper should be inspected for the following points:

- a. Steel rivets used in attachment of dropper arm. Early machines may have alloy rivets. These should be replaced if they show signs of loosening or fatigue.
- b. 1-2mm gap between dropper arm and wearstrip to prevent 'pinching' as dropper opens (See illustration).
- c. Dropper arm 'nose' free of any binding where it passes through slot in mounting plate. This should be checked by manually operating the dropper. Alignment, if necessary, should be carried out by removing and replacing the back rivet, shifting the steel spring to the correct position in the process. (See illustration).
- d. Dropper arm leading edge a neat chamfered fit to



wearstrip when closed.

- e. Solenoid pin tip smooth and free of sharp edges or burrs.
- f. Solenoid coil securely held in place by mounting plate and retaining screw.
- g. Solenoid plunger clean and free of binding. A binding or sticking plunger should be removed by first partially removing the solenoid coil. The plunger and inside of the coil should then be

carefully cleaned, dried, and coated with graphite prior to reassembly.

IMPORTANT: WET OR SPRAY LUBRICANTS MUST NOT BE USED ON SOLENOID ASSEMBLIES.

- h. Neoprene tubing pad firmly in place on backstop. This pad is most important as it prevents magnetic 'sticking' of the solenoid plunger to the backstop. Early machines without the neoprene pad had a twist in the backstop for the same reason. Neoprene pads are a more reliable solution, and should be fitted where possible.

Adjustment

The following adjustments should be checked:

1. *Dropper opening distance.* The dropper should open $\frac{1}{4}$ ". This is checked by pushing the Solenoid Plunger fully home and checking the dropper opening with the shank of a $\frac{1}{4}$ " drill. A slightly tight or loose adjustment is acceptable. Please note, however, that a very tight opening will cause undue wear of the dropper assembly; a very loose opening will cause slow opening and possible damage.
Adjustment of the opening distance may be made by installing a longer or shorter solenoid pin. Pins may be shortened by filing or grinding, but should be carefully deburred and smoothed on the ends. Where a longer pin is substituted, it should be stainless steel; pins of lighter material may corrode or deform, causing binding. Always adjust the backstop if a pin is altered or changed.
2. *Backstop adjustment.* With the dropper fully closed, the gap between the solenoid plunger and the backstop pad should be 0-2mm. This is simply adjusted by bending the backstop to the correct position. Incorrect adjustment may cause rapid wear to the dropper arm.
3. *Frontstop adjustment.* Early machines were fitted with a dropper arm frontstop. Frontstops should be adjusted so that, with the solenoid plunger fully home and the dropper open $\frac{1}{4}$ ", the gap from the dropper arm to the frontstop is 1-2mm.

The above checks and adjustments, although explained at some length here, are quickly and easily performed, and

will ensure the trouble-free delivery of produce to the required packing station.

Locating a faulty dropper .

A rapid test of all droppers may be made by running the Sequential Solenoid Test (See Tests and Diagnostics). Ideally, this test should be run daily. Please note, however, that this test may not identify a dropper that is 'sticky' or intermittent in operation. The following symptoms will normally identify the intermittent dropper:

1. Badly mixed sizing in one grade, while other grades are sizing well:
 - a) Check that the weight settings in the computer are correct.
 - b) Suspect a dropper sticking open, either continuously or intermittently. Observe the droppers (one per lane) dropping the faulty grade to identify the 'sticky' one.
 - c) Stop the grader, when convenient, and perform the checks and adjustments listed previously.
 - d) Should the problem persist, check that you have correctly identified and adjusted the faulty dropper, then contact Treeways.
2. Specific but incorrect size delivered regularly to the last grader drop:
 - a) Check that the weight settings in the computer are correct.
 - b) Suspect a dropper opening slowly, or sticking shut. Identify the 'incorrect' size.
 - c) Observe the droppers which should be dropping the 'incorrect' size to locate the 'sticky' or non - opening dropper.

Alternatively, stand at the end of the grader and identify the lane delivering the incorrect grade. Use this information, together with the size of the fruit, to locate the faulty dropper.

- d) Stop the grader, when convenient, and perform the checks and adjustments listed previously.

e) Should the problem persist, check that you have correctly identified and adjusted the faulty dropper, then contact Treeways.