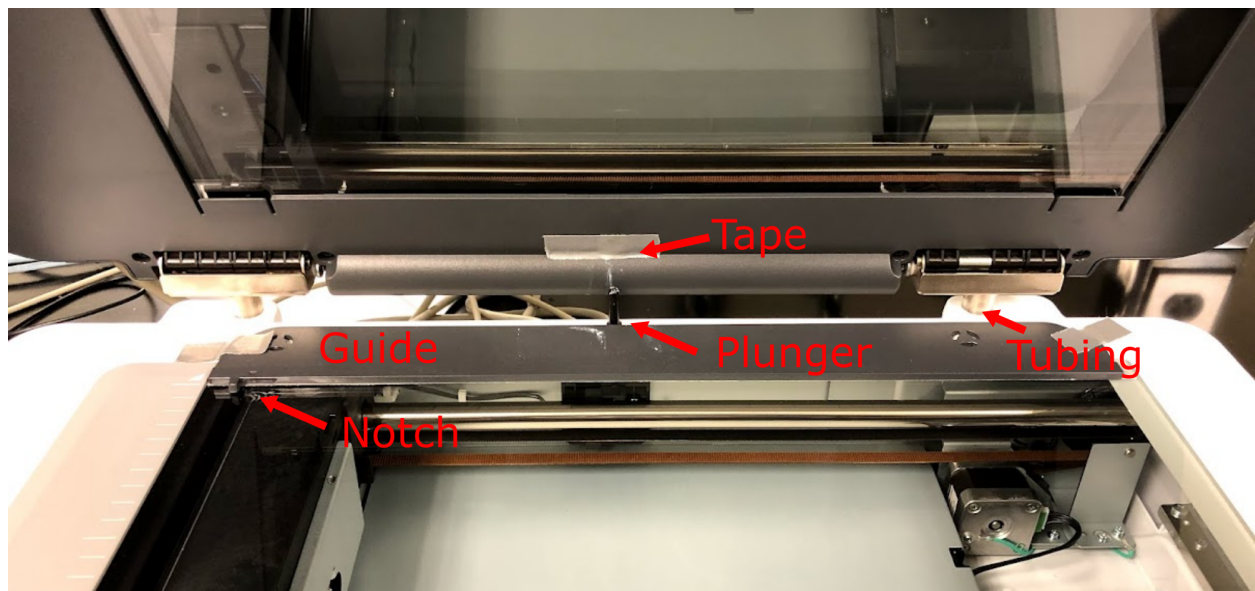


## Setting up the Epson Expression 12000XL for root scanning

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For [RhizoVision Explorer](#), we recommend imaging equipment that uses a backlight to capture a silhouette of the roots. The Epson Expression 12000XL Photo Scanner with transparency unit is a large format scanner with an approximately 30 cm x 40 cm scan area and is ideal for this use case. This type of scanner was originally designed for scanning film and transparencies. For set up, follow the manufacturer's directions then check out the below modifications.

In the below image we can see the taped down black plastic guide that includes a notch in which to place the top left of the scanning tray for consistent placement. The area to the left of the notch is used for calibration and needs to be kept clean (or streaks will appear in images). We can also see the vertical black plunger switch in the middle and the vinyl tubing holding up the lid on the left and right. The 'legs' of the transparency lid should fit through the tubing and the tubing should be cut so as to keep the lid flat when closed over the tray. Some unevenness is acceptable, check scanned images for no obvious gradient of lighting or shading.



The Epson Expression 12000XL has a 'plunger switch' on the top surface that indicates the lid is shut for scanning. Since we raise the lid up to scan roots in trays, this causes issues. To fix, simply fill the cavity in the lid with foam, crumpled paper, etc, to make flush with the surface and cover with tape. This will ensure the plunger is pressed to the right level when scanning (about the middle of its range). If you have scanning problems, you can try to change the height of the plunger. If the plunger is not at the designed height, scanning will give an error.

For information on scanning trays for the 12000XL, check this link:

[Plans for root scanning trays to use on flatbed scanners](#)