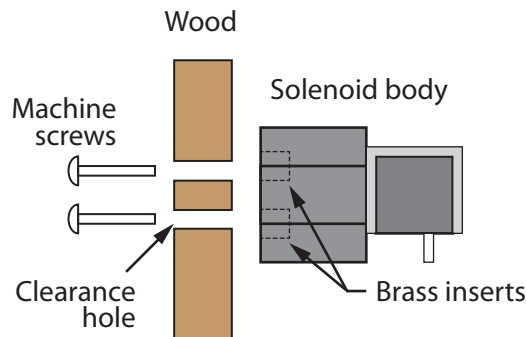


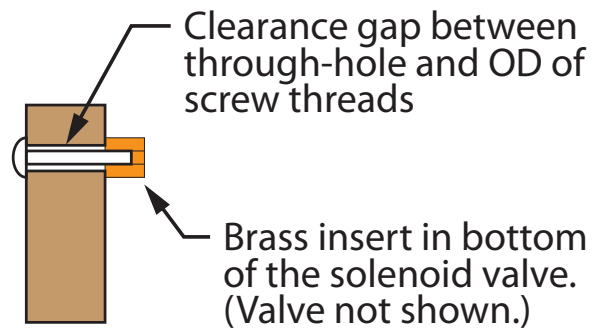
## Attaching the solenoid to the fish tank platform Correct use of clearance holes.

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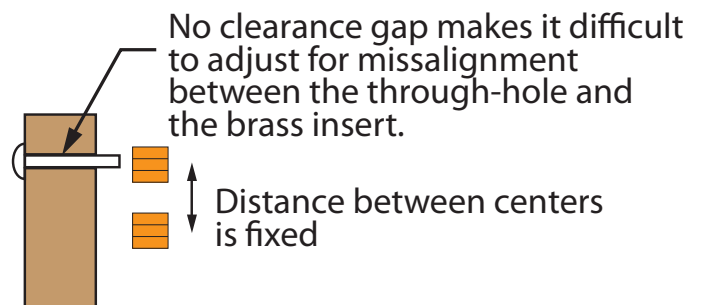
The solenoid valves are attached to the fish tank platform by machine screws. The bottom of the solenoid has two, threaded brass inserts. As depicted by the following sketch, the machine screws pass through clearance holes in the mounting board and into the brass inserts.



The through-holes in the wood should be large enough that the machine screws can pass through with no resistance. There should be a radial gap or *clearance* between the outer diameter of the machine screw threads and the inner diameter of the through-hole. This type of hole is called a *clearance hole* for the screw. The sketch to the right shows a qualitatively correct clearance hole. The screw is a little loose in the hole to allow for errors in locating the clearance hole with respect to the brass inserts in the bottom of the solenoid valve.



The distance between the two brass inserts in the bottom of the solenoid is fixed. If the through-holes for the screws are not precisely located, *and* if there is no clearance gap in the through-holes, then it may not be possible to thread the machine screw into the brass inserts. Therefore the clearance hole allows for small adjustments in a situation where precise alignment is neither necessary nor practically achievable.



The solenoid is secured to the mounting board by the tension in the machine screws. That tension causes a clamping force between the surface of the board and the bottom of the solenoid valve. There is no need to locate the screws in tight-fitting holes.