## OFF-CENTER MOUNTING OF THE TORTOISE™
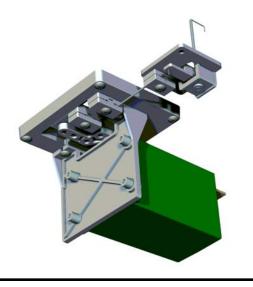
The TORTOISE™ Slow Motion Switch Machine provides an extremely simple and forgiving mounting setup and the long throw travel will compensate for minor variations in mounting position. There are times, however, when it is necessary to mount two TORTOISES in very close proximity, and at times, the physical size of the TORTOISE may cause an interference problem.

One solution that is sometimes overlooked is to mount the two machines face to face. The wiring to the motor will most likely have to be reversed on one machine, but this is a simple fix, and it does allow very close positioning of the moving parts of the two machines.

A more difficult situation is when a structural member (brace or framework) of the layout interferes with placing the TORTOISE™ directly under the throwarm of the turnout. Offsets of more than 1/4" will change the geometry of the throw and result in the wire protruding above the throwarm on one side of the throw or the other. A solution for this is to fabricate a small throwbar which will attach to the stock TORTOISE™ throwarm and move horizontally under the layout. A piece of flat brass stock about 1/4" wide works well. A clearance hole for the stock #4 retaining screw should be drilled through one end of the strip. The length of the strip should be your offset distance + 3/4". A small hole for the new throw wire should be made at a point on the strip that is directly under your throwbar hole when the TORTOISE™ is at the midpoint of its throw. Some form of guides for the far end of the new throwbar will also have to be fabricated. We recommend using a small steel L bracket and mount it so that one of the holes in the bracket lines up with the horizontal throwbar. This will be a point of wear and should be coated with a good lithium grease at the time of installation. A new fulcrum will also have to be fabricated, although it may be possible to use the stock TORTOISE™ fulcrum and merely mount it at the new location. If the offset is fairly short (1/4"- 1"), you should be able to attach your throwbar support directly to the side of the TORTOISE™ case using epoxy or ACC.

If height is a problem, it is possible to mount the TORTOISE™ horizontally under the layout. A certain amount of clearance will still be necessary between the machine and the underside of the layout, but the overall depth of the installation can be reduced to 2 1/2" or less this way. We recommend that a small vertical wood member (1" x 3", etc.) be fastened to the underside of the layout perpendicular to the track line and with one face of the board just touching the outside of the hole through the layout to the throwbar. A 1/2" notch or hole should be provided in the mounting board for the actuating wire to pass through. The TORTOISE will be mounted horizontally to the wood member with the arm and fulcrum facing up. Allow about 1/4" clearance between the fulcrum and the underside of the layout. A longer piece of music wire will have to be used than is supplied with the unit. We recommend increasing the diameter of the wire also. 0.032" works well in most cases. Use a # 60 drill bit in a pin vise to enlarge the small hole in the arm. *DO NOT USE A POWER DRILL!*. The wire will pass through the TORTOISE™ fulcrum in the normal fashion but then a 90 degree bend should be made so as to direct the wire up through the layout board and roadbed. It will be necessary to measure your distances carefully before making the 90 degree bend in the wire as there will be little room for adjustment in this installation.



## Another Option is the REMOTE TORTOISE™ MOUNT

Mounting bracket and special linkage allows the TORTOISE™ (not included) to be mounted in any position above or below the layout up to 18" from the turnout. Fully adjustable for all scales and brands of turnouts.

800-6100     Remote Tortoise™ Mount          $14.95

## CABLE and ACTUATOR

Extra Cable and Actuator may be used with the Remote Tortoise Mount to allow 2 sets of switch points to be thrown simultaneously by one TORTOISE™. Use for crossovers.

800-6101     RTM Cable and Actuator          $6.95