

Burlington High School Fogelberg PAC

Rigging System Summary Information

Multiple- Speed Counterweight (Double-Purchase Fly) System – Multiple-speed counterweight systems, also known as double purchase systems, create a two-to-one mechanical advantage that causes the batten to move twice as far as the arbor. Because the travel of the arbor is half that of the fly tower, it is possible to locate the locking rail above the stage floor and, as a result, this type of system is commonly employed in theaters that have limited offstage space as it requires no floor space for the locking rail. Because of the mechanical advantage provided by this system, though, it is necessary to load twice the weight of the batten load to balance the system.

In a conventional counterweight system (i.e., no mechanical advantage), the lift lines attach directly to the top of the arbor and the purchase line attaches to the arbor bottom. In a multiple-speed system, however, the lift lines attach to a point just below the head block and then travel down, looping through a pulley that is mounted to the top of the arbor before rising up and around the head block, thus creating a mechanical advantage. Without compensating for this advantage the purchase line would have to travel twice as far as the batten, so an additional pulley is mounted to the bottom of the arbor to restore the one-to-one relationship between purchase line and batten travel. The purchase line is secured to the catwalk floor and then it travels up to and around the pulley mounted to the arbor bottom before traveling down and around the tension block, and then back up through the locking rail.

Flyrail -- The *flyrail* is a locking rail or pin rail that is used by a fly crew to operate the fly system. A *deck rail* is a stage-level flyrail, whereas a *mid rail* is located above the stage, giving the fly crew a good view of the stage and also serving to increase off-stage space for performers and scenery.

Loading bridge -- Specific to a counterweight system, the *loading bridge* is a catwalk located directly above the flyrail at grid level. Technicians reside on and are supported by the loading bridge while adding or removing counterweights from linesets. The floor of the loading bridge is also typically used as a storage area for uncommitted counterweights that are available for loading onto lineset arbors.

Fly tower -- The *fly tower* is the large space above the stage into which fly system loads are raised. In a full size flyspace, the tower is at least 2.5 times as tall as the proscenium, thereby allowing a full-height set piece to be stored completely out of view of the audience. The loading bridge and, if present, the grid, are located at the top of the fly tower.

Historically, off-duty sailors were used as fly crews in theaters because they had comprehensive knowledge of knots and ropes due to their experience with sails. They communicated with one another using high-pitched whistles. Because of this, whistling was not allowed in theaters to prevent it from accidentally being interpreted as a flyrail command. It is still considered 'bad luck' to whistle in a theater.

Arbor weight = 2 x (Weight on Batten) + 2 x (Weight of batten)

Distance Traveled by Batten = 2 x (Distance Traveled By Arbor)