

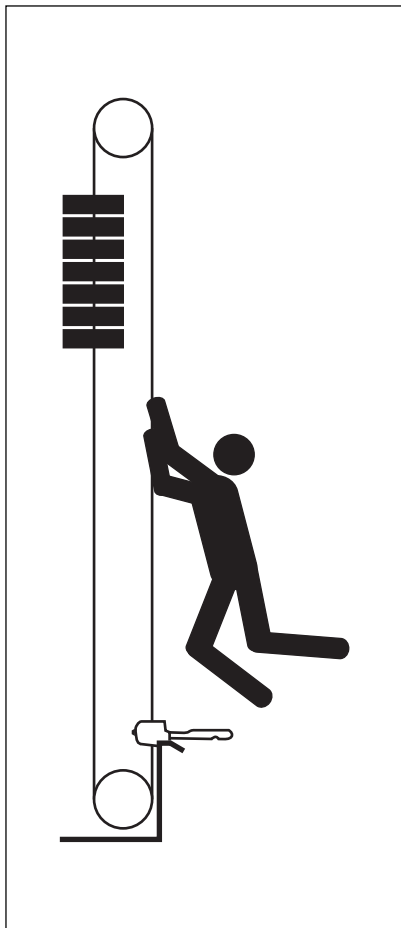
# Counterweight Questions Answered

by Bill Sapsis

I've been in the rigging business for longer than I'm willing to let on. I started out in the days when rigging was a side job; something I did along with my regular job as a stage carpenter. Fortunately, the business has changed since then.

Riggers now have status. People don't exactly throw rose petals at our feet when we come on site, but we are now recognized as integral members of the production team.

That higher level of recognition brings with it a higher level of responsibility. Riggers today are expected to know exactly what is going on overhead. People do not want to see anything (or anyone) fall. The question then becomes how to live up to that level of responsibility. The answer lies, in part, with proper training.



People need training on counterweight systems too.

It seems to me that theatrical rigging system training has dropped off over the last decade or so in favor of the more esoteric chain hoist and truss training. And while chain hoist and truss training is extremely important, I believe it is equally important that the owners and operators of counterweight rigging systems also receive proper training. Counterweight systems have their own set of issues and are just as dangerous, if not more so. The gear in a counterweight system can be just as confusing as that in a convention center rig.

## Give me some slack

As an example, here's a question I get on occasion. In a T-bar or J-guide counterweight system, why does the floor block move up and down? (Oh ye of so few years.) Floating floor blocks were born in the age of organic operating lines. What we all called, with varying degrees of disgust, either manila or hemp.

Floor blocks moved for two reasons. The first was to compensate for the elasticity of the rope. The organic ropes, you see, would stretch or shrink depending on the atmospheric conditions in the building. Less humidity in the air meant the lines would begin to dry out. When that happened the length of the rope decreased. When the rope absorbed moisture, as in the summer time when it was more humid, the length, well, lengthened. To avoid placing undue stress on the rigging system and to keep tension in the operating line, the floor block was designed to float. The pressure placed by the line on the block was relatively even on both sides of the block, so the block would move easily. When the pressure

on the block came from one side of the line or the other, as in when the lineset was being operated, the block would jam in the guide tracks. This reduced the slack in the line, which in turn allowed the operator to hit a trim mark accurately.

Slack in an operating line can create one of the more embarrassing moments in a production. It's the middle of the second act and you are lowering the backdrop during the quietest moment of the evening. You see the spike mark in the line approaching and prepare to stop the piece. But, unbeknownst to you, there is about six inches of extra play in the line. Consequently, the drop hits the floor before you reach the trim mark. This results in two sounds heard by the audience. The first is the bottom stretch pipe hitting the floor with a thud. The second is you muttering under your breath, "sh\*t." (It is impossible to whisper the word sh\*t. No matter how hard you try to cover, it still carries to the back of the house.)

Another reason for a sliding floor block is that there are times when slack in the operating line is helpful. When installing a 25' tall full stage traveler curtain, it can be difficult to properly balance the weight. The curtain is laid out on the stage, the pipe batten is brought in and the top of the curtain is tied off to the pipe. The curtain weighs 350 pounds, so the next task would be to place 350 pounds of weight in the counterweight arbor. This presents a problem. The curtain may weigh 350 pounds but that weight isn't on the rigging system until the curtain is up off the floor and hanging completely from the system. Adding weight to the arbor while the curtain is on the floor places a strain on the system. The weights being added are trying to force the arbor down. To combat this force a snub line is tied around the operating lines and back to the locking rail before the additional weight is installed. The snub line

holds the curtain and allows the operator to get out of the way while the weights are being placed in the arbor. To properly install a snub line requires slack in the operating lines. To achieve some slack in the operating lines requires a floating floor block. While pulling up on the offstage line you push down on the front of the block with your foot. There's a toe clip there for this very reason. The block slides up and you are now holding at least a foot of slack in your hands. Twist the front and back operating lines together as much as the slack will allow and then tie on the snub line. Now the weights can be added, the operator is safe and control of the system is maintained even when it is out of balance. You wouldn't have been able to do that if the floor block wasn't able to slide.

### Another key issue

Rope locks are another element in a counterweight rigging systems that

cause large amounts of confusion. Are they locks? Brakes? How much are they rated to hold?

Rope locks can be tightened to hold upwards of 200 pounds. But just because they can doesn't mean that they should. Take your average high school or college technician. This person weighs on average, somewhere in the neighborhood of 150 - 175 pounds. (Please notice I say high school or college. These kids haven't had time to develop the bulk that a diet of donuts and Pepsi will bring on.) When you have a rope lock holding 200 pounds worth of out of balance soft goods, you have a dangerous condition. A technician who isn't paying attention and who opens up a lineset that is 200 pounds arbor heavy is going for a ride. It's a short-lived ride, however as the first thing the technician encounters is the pipe support for the index strip. Ouch. Better that than having the lineset be pipe heavy though. That

scenario has the technician being pulled into the rope lock. A much bigger ouch.

These are only two examples of how a poorly trained technician can get injured while using a counterweight system. There are many other ways to get in trouble backstage. Training is needed. Before you turn over that system to the local high school English/Drama teacher, take the time to make sure that that teacher, and the students know how to safely use that system. You never know. One of your kids might be a student there someday. ●

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