

## Technical Representative & Peer Training Updates

### Training for Technical Representatives

In order to ensure that new Technical Representatives (TR) are familiar with how to safely use certain core systems in the theatre, the ADC management team is asking that technical representatives receive training from management ahead of their get-in.

For **new technical representatives** this involves in-person training on the role of the Technical Representative and relevant systems. Please arrange this training with Eduardo, the ADC's Technical Manager, by emailing [eduardo@adctheatre.com](mailto:eduardo@adctheatre.com).

For **returning technical representatives** we just ask that they read over the training sheets to check if anything has changed since they last worked on a show. This should be done ahead of a show signing off Section 3.

In both cases **the training will be recorded on a training sheet** kept in a folder in the management office (similar to tool training).

TR training is split into the following modules:

1. The Role of the TR (**required**)
2. Work at Height (**required**)
3. Manual Handling (**required**)
4. Operating Counterweights
5. Loading Counterweights
6. Flying Set (flying items that are initially out of weight, overhauling and flying attachments)
7. Rigging Electrical Equipment (e.g. lanterns or speakers at height)
8. Using the Lighting Bridges

**Not all of these trainings will be needed for every TR.** A TR only needs the ones that will be relevant for their upcoming show or role, and additional modules can be picked up later.

- e.g. a Mainshow Technical Director is likely to need training on *Counterweights Operation* and *Loading and Flying Set*, but not *Using the Lighting Bridges*, while a Mainshow Lighting Designer likely will.
- A Lateshow TR may not need any training if their show is not doing any of the activities covered.

One Night Stands do not need a technical representative unless they are using custom set pieces, or rigging items to fixed rigging positions, or flying items on hems or counterweights.

**For all new TRs we strongly recommend that you attend a get-in in advance of running one so you are familiar with what happens during one and how long different jobs usually take.**

**THE ABOVE INFORMATION ONLY APPLIES TO PRODUCTIONS AT THE ADC THEATRE, NOT THE CORPUS PLAYROOM**

# The Role of the Technical Representative

- The Technical Representative (or TR) is responsible for leading and ensuring the safety of activities onstage during the **Get-in** and **Get-out** of a production.
  - A production's get-in runs from the beginning of their technical work onstage until a member of management signs off the stage as safe for rehearsal and performance. At this point responsibility for the safety of activities onstage passes to the Stage Manager.
  - A production's get-out runs from the end of their last performance until the stage is signed off by a member of management at the end of their get-out.
- This means that the TR on stage at any time is responsible for ensuring all set construction, lighting and rigging in progress at that time is occurring in a safe manner.
- The TR is also responsible for ensuring they leave the stage and lighting rig in a safe state for other Theatre users over the course of the run.
- The TR is responsible for following any mitigations outlined in the show's risk assessments pertaining to hazards produced by the production's set or lighting rig, or the process of assembling them.
- A production may have multiple approved TRs, but only one is acting TR at a time. This is to allow TRs breaks. One other TR, usually the lighting TR, may lead work in the Lighting Bridges while another TR is onstage.
- All TRs are assigned on a show by show basis in the show folder, and should be familiar with any mitigations specified in Sections 2 and 3 of the production risk assessment. Being TR trained does not mean you can assume TR responsibilities on a show you are not signed off on.
- During the Get-in, the following should never occur onstage without a TR present:
  1. Reloading or changing the weight on any counterweight bar or in any counterweight cradle.
  2. Any hemp flying.
  3. Opening the traps in the stage floor (a member of management must also be present)
  4. Any work at height greater than 6 feet (180cm) above the level of the stage.
  5. The construction of set and lighting objects with mitigations specified in the show folder.

## Working at Height

### Using Galleries

- Avoid leaning over railings, or standing on anything that would raise them above the railing while on the platform.
- When climbing ladders to galleries, the user should have both hands free so they can maintain three points of contact with the ladder.
  - If items need to be transported to the galleries, there are pulleys and cradles present for this purpose.
- Only one person should use a ladder at a time. Users should not stand below another user as they climb.

### Loose Items at Height

- When at height all tools should be attached by a lanyard to either a belt or to gallery railings.
- No loose items should be left on surfaces.
- Any items in loose pockets should be left at the base of each ladder.
- No hard hats should be worn at height.

### Hardhats

- Hardhats should always be worn during Get-ins when flying, either of hems or counterweights, is taking place, or work is occurring above stage.

### Stage Ladders (a.k.a. 'Zarges')

- Ladder users should check the ladder for obvious faults before use. Notably: does it have all its feet, does the side-bar(s) lock in place, is the webbing present and intact.
- Zarges ladders should have the side bars fastened across before climbing.
- The centre of gravity of the user and anything they are carrying should be kept inside the footprint of the ladder.
- Three points of contact should be maintained at all times when climbing the ladder.
  - Where it is not possible to always maintain a handhold (e.g. when carrying items up a ladder) the user should ensure that they make a third point of contact by keeping your body in good contact with the ladder and not overreaching to either side. This means you must be standing on a low enough rung for the ladder to come up to your chest.
- Ladders should not be erected on uneven, sloped, or slippery surfaces.
- No item heavier than 10kg should be carried up a ladder.
- Ladders should always be footed when a ladder user is carrying an item. Those footing ladders must wear hardhats.

## Manual Handling

- **Approach manual handling using the TILE method:**
  - **Task** – minimise how much lifting the task needs, can any lifting equipment be used to make it easier.
  - **Individual** – be aware of different peoples' differences in physical strength, height and reach. Be aware if someone is straining to carry and reassign tasks appropriately.
  - **Load** – can anything be done to reduce the load is being carried
  - **Environment** – ensure the route you are going to carry the item is clear and that it is your most direct route.
- Keep back straight when lifting, get your centre of gravity as close to the object as possible, and lift from your knees.
- Wherever possible stage users moving heavy or bulky objects should wear **appropriate closed footwear**.
- **Be aware we have the following lifting equipment available for use:**
  - **Wheel boards** – useful for moving heavy items on level surfaces



- **Sack Trucks** – useful for moving very heavy box items on level surfaces without needing to lift them onto a wheel board



- **The Passenger Lift** – the front of house lift is helpful for moving heavy objects from ground floor to stage.
- **Trap Flying** – a winch mechanism that lifts items from the scene pit up to stage. This requires management operation so make sure to mark if you are planning to trap fly in your show documentation.

## Counterweights Operation

### Gallery Access

- Keep the gallery clear of obstructions and trip hazards. Cables and ropes should be coiled and taped neatly against the PS railings.
- When you are on the gallery you are working at height – all tools should have lanyards attached to either your belt or the gallery and no loose items should be left on any surface.
- Your escape route is down the ladder and across stage. Your nearest fire extinguisher is at the upstage end of the gallery.

### Before Flying

- Ensure that cables and ropes attached to a bar will not snag as it flies. Particularly with lighting bars.
- Make sure any brail lines applied to a bar are released before flying it.
- If a rope is very tight below the brake and loose above it, or vice versa, take care: the counterweight may be out of balance. Double check what you're doing before releasing the brake.
- Check that the counterweight cradle is in its rails. If not, stop using it and contact management.
- If a counterweight appears to have significant unexpected resistance or makes a loud unexpected sound, stop using it and contact management.
- Be aware that CI does not fly to full height because of the patchbay access gantry. Make sure you have released CI's brail lines before bringing the bar in.
- All flying not during a performance should take place while there is quiet onstage and while stage users are wearing hardhats.

### Flying

- Flying procedure:
  1. **If not during a performance:** only fly a bar in or out when instructed to do so by the TR.  
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  2. **If not during a performance,** call out what you are going to do. Calls should follow the format: Heads/Chins onstage, Counterweight Number, a description of what is on bar, and what the bar is doing, e.g. flying in, flying out, moving in grid.
  3. Unbrake the counterweight set.
  4. To fly a bar in (down) pull the rope down; to fly a bar out (up) pull the rope up.
  5. When the bar is at the height you want, brake the bar and call 'Braked'. **Never leave a counterweight set unbraked and unattended.**
- Watch the bar at all times while flying it if possible.
- Stop flying the bar if instructed to do so by any stage user.
- If you ever feel you are being lifted upward off the ground by the rope, release the rope and brake the counterweight set immediately.

### Flying during performances

- Familiarise yourself with what is on each bar and the cue sheet in advance.
- Cast and crew onstage should be briefed before flying takes place and any sequences should be carefully rehearsed, e.g. in a tech rehearsal.
- Keep an open microphone so that communication is easy.
- All live flying should use 'deads' (pre-defined heights for a bar to fly to) marked with tape. All deads should be removed at the end of a show.

## Counterweights Loading

### Gallery Access

- Keep the gallery clear of obstructions and trip hazards. All weights should be stacked neatly against the PS railing.
- Each weight weighs 10kg. Each produces 5kg of lift on the bar.
- When you are on the gallery you are working at height – all tools should have lanyards attached to either your belt or the gallery and no loose items should be left on any surface.
- Your escape route is down the ladder to counterweights, down the ladder to stage, and across stage.
- Do not stack weights in the area marked with white tape by the trap door.

### Before Loading

- Ensure the counterweights gallery is clear around the cradle you are loading.
- Ensure the trap door to the gallery is closed before loading.
- Only ever load when instructed to do so by a TR who is onstage.
- Ensure that all stage users (except for those in the PS wing) are wearing hardhats before loading.
- Loading should always take place in quiet conditions so that there is a clear line of communication between the TR and loading gallery.
- If the TR tells you to stop at any point while loading stop immediately.
- Never remove the base weights in the cradle (those below the yellow weight).
- Never load more than 50 weights (500kg) into a cradle.
- Bars that are in for loading should never be cradle heavy. When loading, ensure that the bar you are loading has sufficient weight on it before starting to load the cradle. When unloading, ensure that you have fully unloaded a cradle before starting to remove weight from the bar. Stage weights should be added to the bar using chains to assist keeping it bar heavy during loading/unloading. Remove these before flying the bar.

## Flying Set

### Dynamic Loads

- During some Counterweight use, e.g. rigging a lighting bar, the full load of the rigged items is always on the bar. This means the cradle can easily be loaded to balance the bar's weight and flown evenly throughout the fly tower. As the weight on the bar does not change, we call this a static load.
- However, some loads change during flight as some of their weight is taken by the floor when fully flown in. E.g. most of a curtain's weight is taken by the floor when fully in as it rests on it, but as it is flown out, more of the curtain's weight is taken by the counterweight system until the curtain no longer touches the floor, at which point its full weight is taken by the counterweight. As this weight changes as the bar rises, we call it a dynamic load.
- Counterweights with dynamic loads should always be loaded to balance the full weight of the rigged item (i.e. when the bar is fully flown) as this means they are in weight for the duration of the production and can be flown smoothly during performance.
- Dynamic loads need to be treated with caution as flying them requires deliberately flying a bar temporarily cradle-heavy. In some cases this is not a problem as the amount of weight on the bar is low enough that the counterweight operator can control the ascent on their own.
- For large dynamic loads, however, a technique called **overhauling** should be employed.

### Overhauling

- Overhauling is the process of putting hauling ropes over a bar and then having stage users pull on or hang on them to add more weight to the bar during its ascent. As the bar rises and more of the weight of the item is taken by the bar, the overhaulers apply less force to it, until the item is off the floor at which point the hauling ropes can be removed.
- Overhauling should always be coordinated by the TR.
- Everyone onstage during overhauling should wear hard hats.
- The stage should be silent during overhauling to ensure easy communication between counterweight op and stage.
- The hauling ropes should always be put on the inside of the counterweight bar's wires, so they cannot slip off.
- The number of stagehands needed for overhauling varies, but a good rule of thumb is one person for every five weights, plus one (possibly the TR) to assist with removing stage weights from the bar.
- Everyone involved in hauling should be instructed on what they need to do. Importantly they should be told not to release the hauling ropes unless instructed.

## Rigging Electrical Equipment



### Rigging Electrical Equipment

- All rigged items require two points of attachment: a primary and secondary point of attachment. The primary point of attachment is usually a hook clamp, the secondary is usually a 'safety chain'.
- **Before rigging an item, you should check that the bolt attaching the primary attachment to the item is secure, and that the item has a secondary.**
- **Additionally, check that any plugs or cables running to the item are not damaged – you should not be able to see any coloured wires inside the black cable sheathing.** If they are damaged, take that item out of service and leave it beside the Technical Office with a note saying what is wrong with it.
- Before rigging an item, check that the green sticker signifying its last electrical (or 'PAT') test is within date. If it is not, take this item out of service as with exposed wiring above.
- Then:
  1. Hook the primary attachment over the rigging bar and tighten the wing bolt as tight as you can by hand.
  2. Loop the secondary attachment around the rigging bar and attach the carbine hook to the safety bond, so it forms a loop around the bar that passes through the rigged object.
    - If you are rigging a light make sure the secondary passes through its 'yoke'.
  3. Lastly, connect any electrical cabling to sockets or extension leads.
- This order is important so that the item doesn't fall while you are attaching the cabling.



## Lighting Bridges

### Access to the Bridges

- Do not lean out of the bridge, or sit on the edge of the bridge. Always keep your centre of gravity within the bridge's walkway.
- Keep the bridge tidy and clear of obstructions and trip hazards. In particular cables should be left so they do not impede walkway.
- **You must** safety chain any lanterns left unrigged on the bridges to the railing at the back of the bridge.
- Rigging should only take place under full white workers.
- Wherever possible passing lights up and down from the roof void catwalk should be done with the assistance of a second person.
- When working on the bridges you are at height, so usual working at height guidance applies (e.g. tools on lanyards, no loose items on surfaces or in loose pockets).

### Rigging on the Bridges

- The front half of the auditorium should be kept empty while any rigging overhead is occurring. You should set up warning signs at row I on both sides of the auditorium and by the PS auditorium entrance to advise users not to enter.
- Rigging any objects in excess of 15kg in weight onto the bar should not be done without additional risk assessment. Notably a second person or a pulley system should be used to assist.
- Any non-standard rigging, i.e. rigging that does not attach directly to the bridge rigging bar, must be approved by management following the completion of a risk assessment.
- When rigging lanterns you should either:
  1. If the safety chain is long enough, attach it to the rigging rail before rigging the lantern using the hook clamp.
  2. If the safety is not long enough, use two hands to firmly hold the lantern while hanging it on the rail, and keep one hand on it while tightening the wing bolt.
- Where possible insert any gel or frost into the front of the lantern before it is rigged to avoid reaching out over the auditorium.

### Followspotting

- Followspot operators should never lean out of the bridges to guide their followspots. They should remain behind the rigging railing at all times. **Followspot scopes are available to assist with this – ask the Technical Manager.**
- **Absolutely no loose items are permitted to be on the bridge while the house is open.** Any items in loose pockets should be removed and placed into the boxes provided.