

Hunchback of Seville

Mobile Mechanical Inspection

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Pre-Show Checklist

Grid Transition Stage

- ☐ Visually inspect flange between mobile shaft and grid unit output shaft.
 - ☐ Confirm attachment to both gearbox and mobile shaft.
- ☐ Visually inspect the flange at the gearbox input and 1" shaft.
 - ☐ Confirm attachment to both gearbox and 1" shaft.
- ☐ Confirm the machine frame is secure on the pipes such that it cannot slide.
- ☐ Inspect pipe clamp to frame connection. Ensure the frame cannot slide.
- ☐ Ensure the frame is rigid. Manually tug at frame corners.
- ☐ Ensure the input 1" shaft bearing is secured.

Pipe Stage

- ☐ Visually inspect pipe flanges on either end.
 - ☐ Ensure no gap between steel plate and shaft collar or in the bolted connection.
 - ☐ Visually inspect if the flange is bent.
- ☐ Visually inspect the shaft support for excessive wear on the UHMW segment.
- ☐ Visually inspect the length of the pipe for signs of impact, cracks, or bending.

Upper Gallery Stage

- ☐ Visually inspect the gearbox shafts.
 - ☐ Ensure the sprocket is aligned.
 - ☐ Ensure the output shaft properly connects to the pipe flange.
- ☐ Inspect the c-clamps for rubbing against the grid railing.
 - ☐ Ensure the frame is rigidly secured to the grid railing.
 - ☐ Ensure the structure is rigidly attached to the c-clamps.

Grid Closure

- ☐ Identify any obstructions or loose objects within 1' of machinery. Notify stage manager if items are moved/removed.
- ☐ Notify the Stage Manager of grid closure. Visually confirm no persons are present on the grid at this point. The stage manager will lock the grid.
- ☐ Ensure that the LOTO lock is firmly locked.
- ☐ Ensure the LOTO tag is legible.
- ☐ Ensure the warning sign is placed on the grid entrance.
- ☐ Ensure the grid entrance gate is unable to be opened.

Gallery Stage

- ☐ Visually inspect the lower mechanism.
 - ☐ Ensure the chain is properly seated.
 - ☐ Identify if there are metal shavings at the bottom of the enclosure.
 - ☐ Identify if there is excess sag in the chain.
- ☐ Speak to the Stage Manager to unlock the machine crank.
 - ☐ Ensure the grid is secured and no one is present in the area.
 - ☐ Verbally confirm that all work in the grid (channel check, repair, etc.) has ceased.
- ☐ Manually crank the machine handle.
 - ☐ Identify if system friction is higher than expected.
 - ☐ Listen for clunking, grinding, or clicking sounds within the gallery frame.
 - ☐ Visually confirm rotation of the pipe stage.
 - ☐ Visually confirm rotation of the mobile.
 - ☐ Gradually increase rotation speed, then decrease. Repeat.
 - ☐ Confirm consistency of the effect.

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Post Show Checklist

Gallery Stage

- ☐ Visually inspect the lower mechanism.
 - ☐ Ensure the chain is properly seated.
 - ☐ Identify if there are metal shavings at the bottom of the enclosure.
 - ☐ Identify if there is excess sag in the chain.
- ☐ Manually crank the machine handle.
 - ☐ Identify if system friction is higher than expected.
 - ☐ Listen for clunking, grinding, or clicking sounds within the gallery frame.
 - ☐ Visually confirm rotation of the pipe stage.
 - ☐ Visually confirm rotation of the mobile.
 - ☐ Gradually increase rotation speed, then decrease. Repeat.
 - ☐ Confirm consistency of the effect.
- ☐ Speak to the Stage Manager to lock out the machine.
 - ☐ Ensure the machine is inoperable before proceeding.

Grid Transition Stage

- ☐ Visually inspect flange between mobile shaft and grid unit output shaft.
 - ☐ Confirm attachment to both gearbox and mobile shaft.
- ☐ Visually inspect the flange at the gearbox input and 1" shaft.
 - ☐ Confirm attachment to both gearbox and 1" shaft.
- ☐ Confirm the machine frame is secure on the pipes such that it cannot slide.
- ☐ Inspect pipe clamp to frame connection. Ensure the frame cannot slide.
- ☐ Ensure the frame is rigid. Manually tug at frame corners.
- ☐ Ensure the input 1" shaft bearing is secured.

Pipe Stage

- ☐ Visually inspect pipe flanges on either end.
 - ☐ Ensure no gap between steel plate and shaft collar or in the bolted connection.
 - ☐ Visually inspect if the flange is bent.
- ☐ Visually inspect the shaft support for excessive wear on the UHMW segment.
- ☐ Visually inspect the length of the pipe for signs of impact, cracks, or bending.

Upper Gallery Stage

- ☐ Visually inspect the gearbox shafts.
 - ☐ Ensure the sprocket is aligned.
 - ☐ Ensure the output shaft properly connects to the pipe flange.
- ☐ Inspect the c-clamps for rubbing against the grid railing.
 - ☐ Ensure the frame is rigidly secured to the grid railing.
 - ☐ Ensure the structure is rigidly attached to the c-clamps.

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Mobile Mechanical Maintenance Procedure

ALL MAINTENANCE REQUIRES THE GRID TO BE SECURED

Gallery Stage

Crank Arm

Issue	Action	Tools
Free Spinning or Removable	Determine if the issue is the crank arm or the internal mechanism. If crank arm, reseal and tighten grub screws. Test.	3/16" Allen Wrench.
Handle Stuck	Attempt to rotate the handle. If unable, notify Ethan Gray and the PA. Proceed as normal.	N/A
Lateral Shaft Movement	Notify Ethan Gray and the Stage Manager. Lock out the machine.	1/8" Allen Wrench, Tape Measure.
Crank is Stuck	Notify Ethan Gray and Stage Manager. Visually identify if there is debris blocking a sprocket or the chain. Visually see if the chain is unseated. Determine if the issue resides further in the system.	N/A

Chain Stage

Issue	Action	Tools
Metal Shavings in Enclosure	Contact Ethan Gray and Stage Manager. Lock out machine.	N/A
Chain or Sprocket Wear		
Chain Unseated		
Sprocket Unseated or Misaligned		

Excess Chain Slop	Contact Ethan Gray. Lock out the machine. Remove the panel from the downstage side of the machine. Determine if the idler sprocket can slide in the frame. Apply tension at the idler sprocket and reclamp the brackets. Test Unit. Replace machine guard panel.	3mm Allen Wrench.
Free Spinning from Mobile	Contact Ethan Gray and the Stage Manager. Determine if the spinning is due to a loose sprocket or at the gearbox to pipe flange.	N/A
Loose Framing Members	Determine the joint that is loose. Use the corresponding allen key to tighten the joint, ensuring alignment to the frame and that the member is square. Contact Ethan Gray.	2.5mm or 3mm Allen Wrench.
C-Clamps Loose	Tighten C-Clamps on the pipe and to the frame. Ensure the brackets are properly tightened against the frame.	3mm Allen Wrench, 3/4" Socket Wrench, 1/2" Wrench.

Pipe Stage

Issue	Action	Tools
Pipe not Rotating during Operation	Contact Ethan Gray and Stage Manager. Lock out the machine.	N/A
Loose Flange Bolts		
Flange Gap	Determine if the gap is between the shaft collar and steel plate and shaft collar is loose. If the shaft collar is not loose, contact Ethan Gray and notify Stage Manager. Lock out machine. If the shaft collar is loose, butt it against the steel plate, tightening it down.	3/16" Allen Wrench.

Excessive UHMW Wear	This will look as though the pipe is eating away the material consistently over time. Contact Ethan Gray and Stage Manager. Lock out the machine.	N/A
Excessive Pipe Bending	Determine if the bending on the pipe due to the support failure. Ensure the support is touching the pipe, that the UHMW is present, and that the plate is properly secured to the batten. If this does not resolve bending contact Ethan Gray and Stage Manager, lock out the machine.	9/16" Wrench and Socket Bit, Impact Driver
Pipe Cracks or Excessive Wear	Contact Ethan Gray and Stage Manager. Lock out the machine.	N/A

Grid Stage

Power not transferring from pipe to mobile	Contact Ethan Gray and Stage Manager. Lock out the machine.	N/A
Power not transferring from gearbox to mobile		
Loose Framing Members	Determine the joint that is loose. Use the corresponding allen key to tighten the joint, ensuring alignment to the frame and that the member is square. Contact Ethan Gray.	2.5mm or 3mm Allen Wrench.
Hanging Connection is loose	If the frame can slide on the pipes, tighten the batten clamps. If the batten clamps are tightened and the issue persists, tighten the bracket screws on the machine frame. If the issue persists, contact Ethan Gray and Stage Manager. Lock out the machine.	9/16" Wrench and Socket Bit, Impact Driver 3mm Allen Wrench