Installing MagAO-X On The Telescope

This procedure describes how to install the MagAO-X instrument on the Magellan Clay Telescope

Initial Conditions

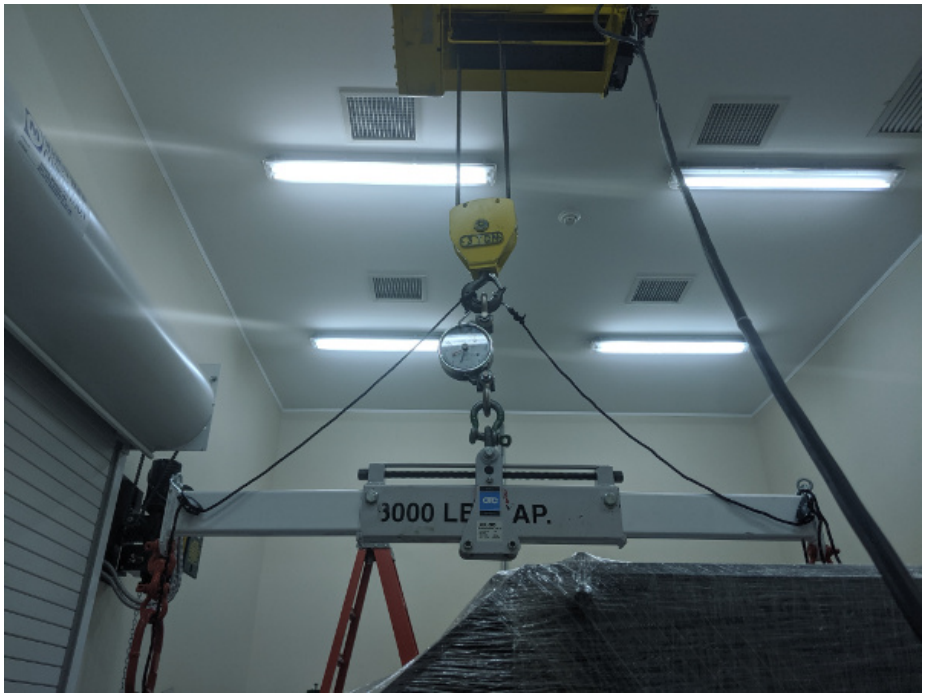
- [ ] Instrument in LCO cleanroom on legs

Preparations

- [ ] Shutdown MagAO-X
- [ ] Turn off table legs and remove air connection
- [ ] Remove all cables
- See detailed procedure for removing 2K DM cables
- [ ] Electronics Rack
- [ ] Ensure that roll-out shelves are restrained
- [ ] If not installed, Install side panels
- [ ] Close and lock doors
- [ ] Tape keys down
- [ ] Instrument
- [ ] Remove eyepiece
- [ ] Turn off blower, and remove hose
- [ ] Tape over any exposed holes (from cables, etc)
- [ ] Secure any loose cables
- [ ] Shrink wrap the instrument
- [ ] Install solar blanked over shrink wrap
- [ ] Cart and Rigging
- [ ] Verify all cart hardware is in-hand
- [ ] Verify two wire harnesses are in hand
- [ ] Partially assemble cart, leaving one long side off
- [ ] Store card out of the way so table can roll into unpacking area

Rig Onto Cart

- [ ] Lower table legs onto the casters by turning the 16 leveling bolts, and remove the metail pads
- [ ] Roll the instrument out of the cleanroom
- [ ] At least 4 people required, 2 to push, 2 to hold the cleanroom sides open
- [ ] Continue rolling the instrument through the garage door into the unpacking area
- [ ] Move the cart, currently with 3 sides, around the legs
- NOTE: be careful to not bump the legs with the cart
- [ ] Attach the 4th side of the cart
- [ ] Ensure that the 8 large bolts on the cart are snug but not tight
- [ ] Attach the lifting wire-harnass to each side of the cart
- [ ] Attach the load spreader with straight extensions to the crane, using a crane scale



The load spreader attached to the crane for lifting the cart

- [ ] Place the load spreader in the center position (the cart is symmetric)
- [ ] Lift the load spreader, and position it over the instrument

- [ ] Being careful to not bump the instrument, lower the loadd spreader and attach the lifting harnass D rings. Use 2x shackles to extend the length to reach the cart on the floor.

Lifting harnasses attached with shackle extensions

- [ ] Position a person at each corner of the cart

NOTE: Do not allow the cart to bump the legs or the table uncontrolled

- [ ] Slowly lift the cart (**320 lbs**) until it is touching the bottom of the table

The cart being lifted to the bottom of the table.

- [ ] Install the 8 bolts attaching the cart to the table. Loosen bolts on the cart as needed.
- [ ] Once the cart is bolted to the table bottom, while **320 lbs** is still on the crane, tighten all cart bolts. Do not over-tighten, make 1/4 turn after the washers are no longer free. This is to avoid excessive stress on the table.
- [ ] Install the triangle stabilizing ropes between the crane hook and the lifting fixture IAW the below figure. Tighten, but do not cause them to pick the load.

*The triangle stabilizing ropes should be tight, but not become the lifting point for the load.

CAUTION: be sure that the load spread does not hit the cart when being repositioned. - [ ] Reposition the load spreader center to the instrument + cart position marked on it.

- [ ] Ensure that there is room to move the legs out from under the table, opening the garage door into the cleanroom if necessary.
- [ ] Position a person at each corner of the cart to stabilize it during the lift.
- [ ] Position two people to remove the legs from under the table
- [ ] Lift the table off the legs. The weight of the table + cart is **1920 lbs**
- [ ] Move the legs out from under the table.

The cart and instrument ready to be set down on the wheels, with legs out of the way.

- [ ] Set the cart down on its wheels.

Transport MagAO-X To Clay

MagAO-X will be strapped to the Isuzu similarly to how the ASM is transported.

MagAO-X will be unloaded at the telescope using the lift gate, adjusted for slow operation as it is for the ASM.

Install MagAO-X On The Platform

Transport Electronics

Install Electronics and Cable

Install AOC in Control Room