



MARK ROBERTS MOTION CONTROL

# AUTOJIB SYSTEM



## QUICK START GUIDE

QSG Product code: MRMC-2165-00

Product Covered: MRMC-8120-00, MRMC-8121-00

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## Chapter 1 Quick Start

### Overview

Thank you for using the AutoJib System (AJS) from Mark Roberts Motion Control (MRMC). The AutoJib System is designed for reliable day-in, day out use in professional studio environments. The extremely quiet AutoJib System, controlled by MRMC's Polymotion Chat or RTL software with a capability to be used with a PTZ type camera unit, is designed to help you achieve automated, smooth and repeatable camera motions. It can handle a total payload of up to 4.2kg and comes in variants of 2m and 3m.



AutoJib System has the following components:

- A heavy duty tripod on which the jib arm system rests
- Rotate Motor that rotates Jib arm unit around tripod top plate

- Jib arm, or “Height”, moves up and down by cable from motorised cable drum
- PTZ support platform to seat the PTZ camera unit
- An emergency-stop (E-stop) button on each side

## Safety

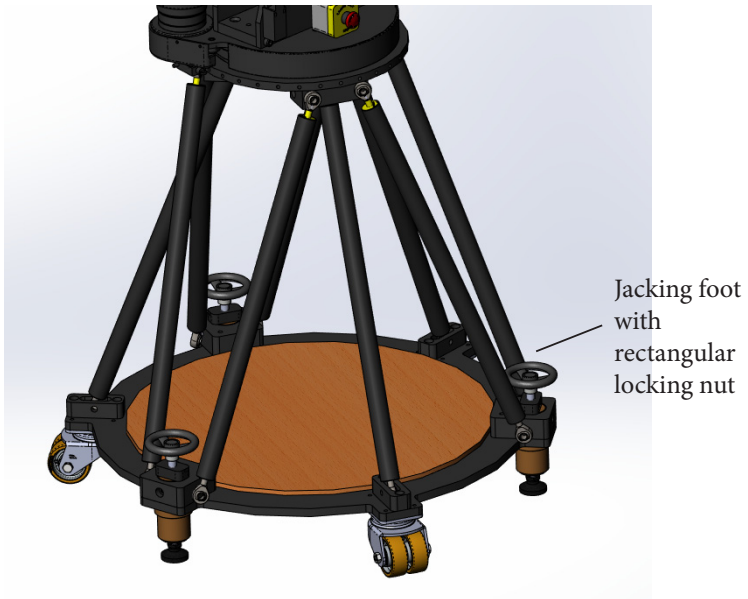
- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Keep Away From Pets And Children. The track and camera heads have powerful motors that can pinch, so take care not to get your hands trapped in the gears or cabling.
- Keep the equipment dry. The system has **not** been made weatherproof. Do not use with wet hands.
- Keep cables tidy. Use cable ties to keep them out of harm’s way, and use the cable housing on the Jib arm to avoid running any cables between the rotor motor and the PTZ.
- Do not insert hands and fingers in any crevices, especially when the E-stop is released. The robot includes moving parts and motors and can result in serious injury.

## Tripod Safety

**Caution:** Risk of toppling over! Do not roll the equipment close to steps, ramps: must be used on smooth horizontal surfaces.

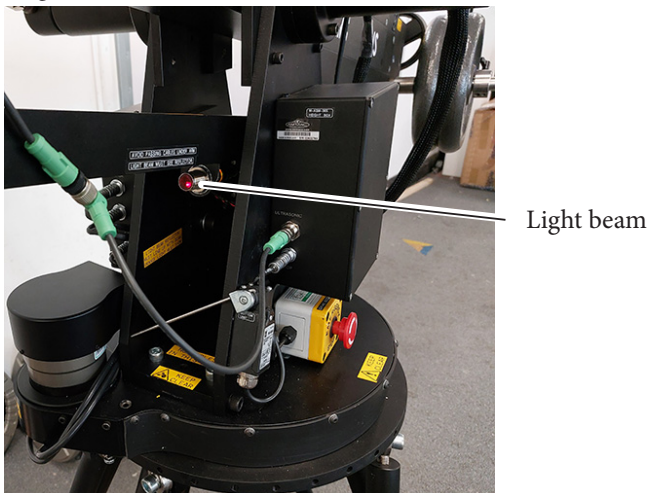
**Caution:** When using the rig under a ceiling or lintel, raise the boom to the top before moving or stowing the boom, to keep it clear from the surroundings and less chance of improper handling. Use buttons provided before powering down.

- Raise all three jacking feet well clear of the floor before moving.
- Drop all three jacking feet to make good contact with the floor when parking, and lock off using the top nuts before using the boom in robotic control.



## Safety

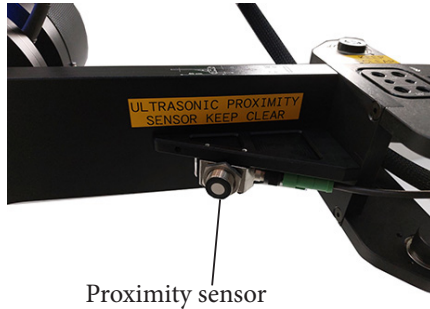
AJS-2 is equipped with a light beam under the jib arm which sends a beam to a reflector and back. A broken beam prevents the arm from moving down.



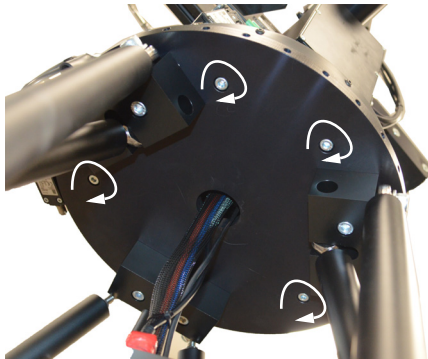
The LED the bottom end of the sensor is orange when beam is normal; green LED means the beam is broken indicating an obstruction or the reflector is out of position.

The reflector can pivot out the way for shipping.

Also, when the Ultrasonic proximity sensor on the end of the arm is active, the arm will not move down; it has about 400mm range.



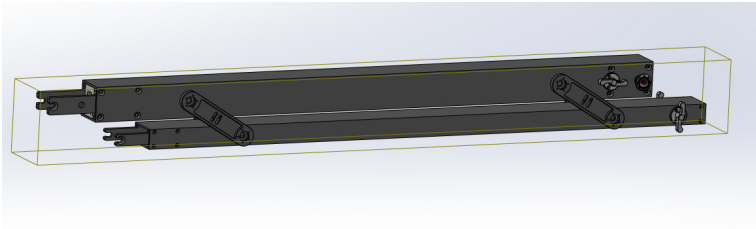
## Mounting Jib Arm on Tripod



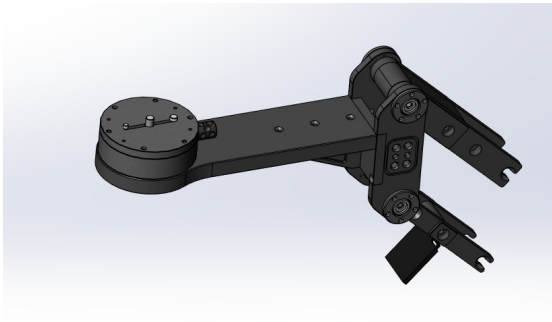
1. Unpack the tripod and wheel it to a sturdy and levelled floor.
2. Two people lift the arm headstock. While aligning the screw cavities, seat the base of the headstock on the tripod.
3. Keep the arm firmly in position and tighten the 4 x M8 x 20 Cap head screws to secure the arm to the base.



4. Thread the umbilical cable through the centre cavity in the tripod
5. Add the two arm sections.



6. Add the end section.



7. Add the side cables using the quick release pins.



8. Use the tensioners in side cables to adjust the tension.

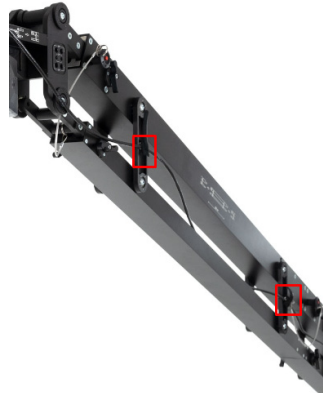


9. Add the height cable, bolted with nylock (must be tight).

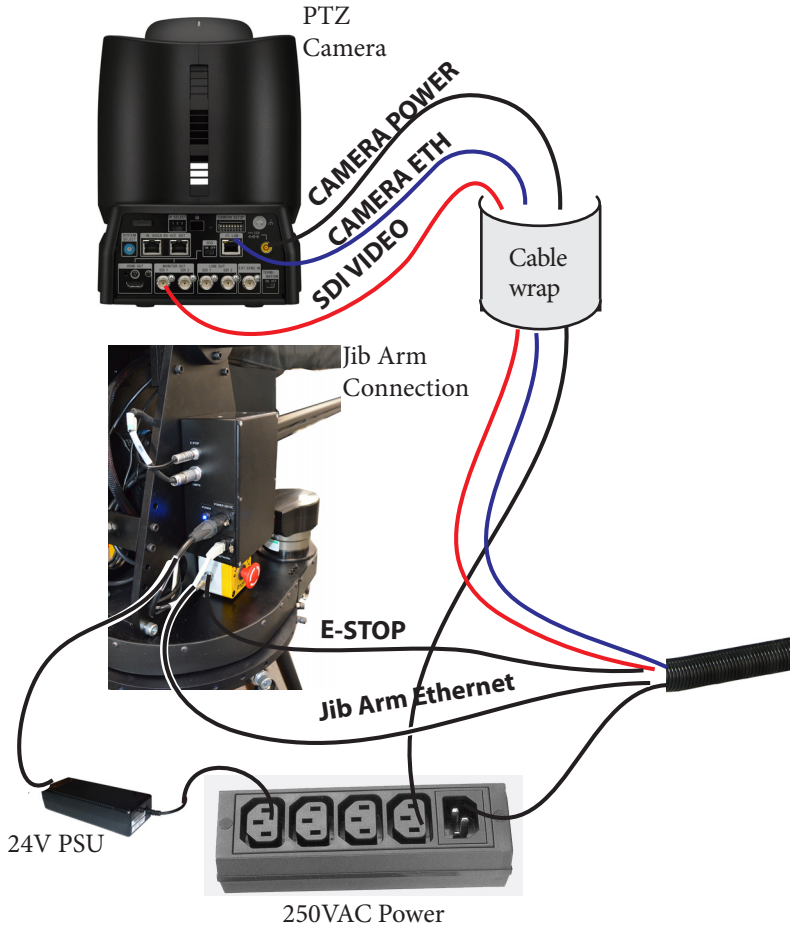


10. Attach the weight shaft to the arm using the screw supplied.
11. Add the weights 60kg (4 x 10kg + 4 x 5kg).
12. Add the cable to the camera. The cable path to the camera, is to go up through the hole in the middle, and out through a side hole, then

over the cable support, then up the outside of the arm. There are regular tie points to hold the cable in place.

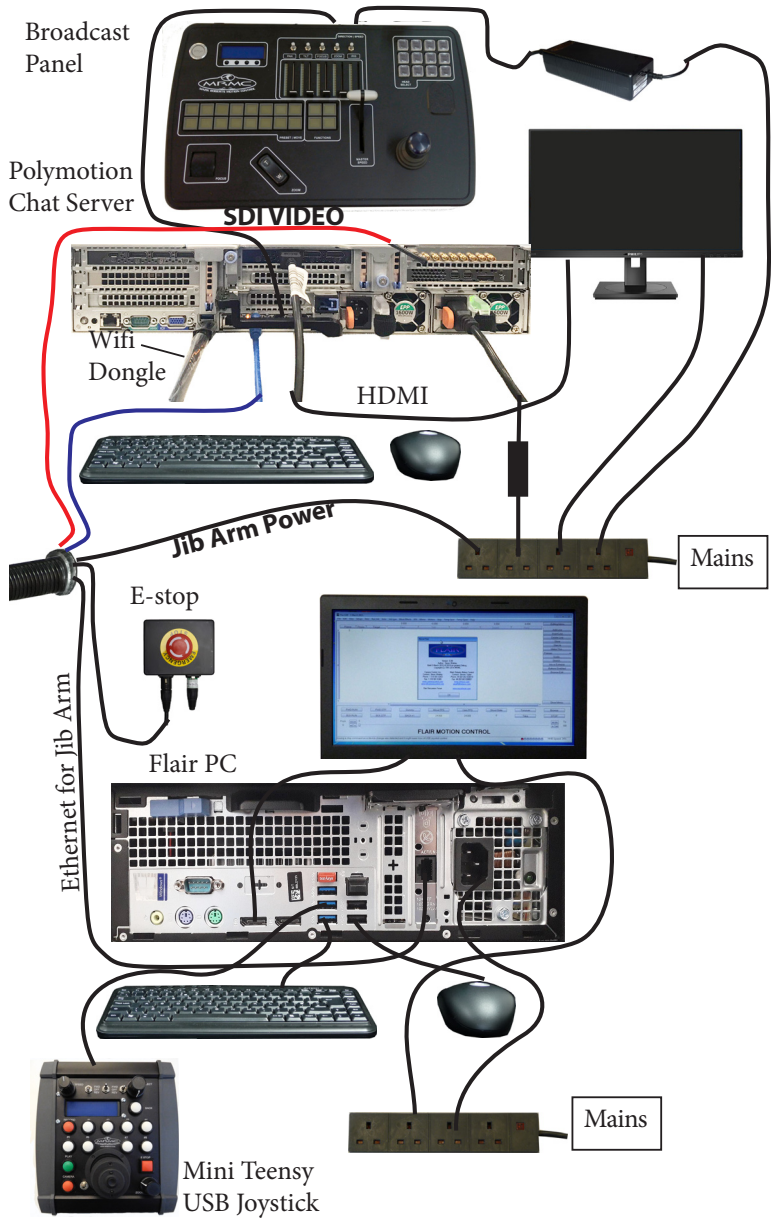


## Connecting the Cables



### Note

Cable connections in the arm are done at the factory and must not be modified.



## Jib Arm

**Caution:** DO NOT lift and try to lower the Jib arm by hand unless guided by the procedure below. The cable should remain under tension all the time.

**Caution:** DO NOT place any object greater than 4.2kg on the load platform.

**Caution:** DO NOT remove all the balance weights with a payload on the load platform.

**Caution:** Ensure that you follow the “Setting Jib Arm Mass” procedure below before operating under fully automated control. You will need to set the trim weights only once so long as the payload is not changed.

### Setting Jib Arm Weight:

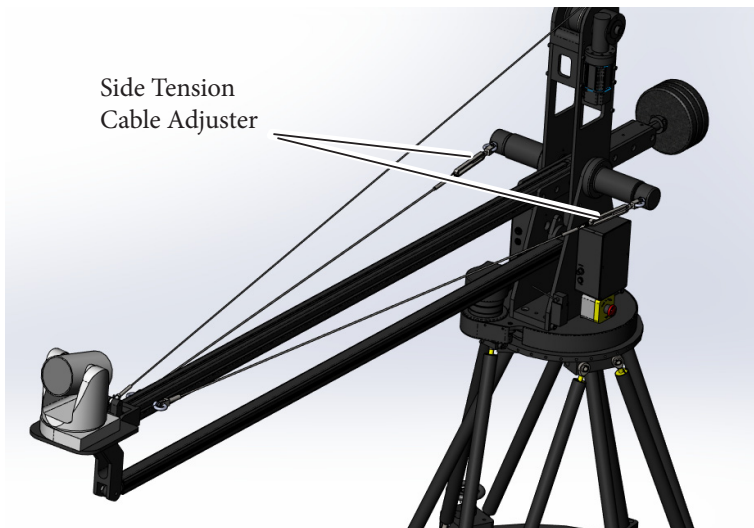
1. Power up and jog the arm to the horizontal position using the **HEIGHT** rocker switch. If the cable is slack and the arm does not fall, ease it down by hand gently ensuring cable is wound cleanly from the drum, and hold in the horizontal position below.
2. Remove any payload from the load plate and adjust the trim masses until the arm is balanced very lightly on the lift cable – if you lift the load plate it should hardly want to fall again. Ensure the trim mass clamps are tightened securely and the masses can't bounce against each other.
3. Place the PTZ camera on the load platform. Move the Height (Jib arm) up and down a few times on the rocker switch and ensure that the height cable is running smoothly on the drum without snagging or turning on itself. Winding down, then back up, should rectify most issues.

The arm is now safe to operate.

## Cable Adjustments

**Caution:** If any cable is damaged and shows sharp ends or fraying, stop using the equipment and cover cable damage for safety. Contact MRMC for replacement parts.

If the arm is noted to sway, and if you can feel slack in the cable fittings to the O rings on each end, tension adjusters for each Side Tension cable can be used. Adjust each one a little, keeping a balanced tension each side of the arm, until the cables are snug against the O rings. Further tension will not be helpful and may damage the boom. Avoid applying turns into the cable itself: the adjusters have left and right hand threads each end and both turn for the adjustment to take place.

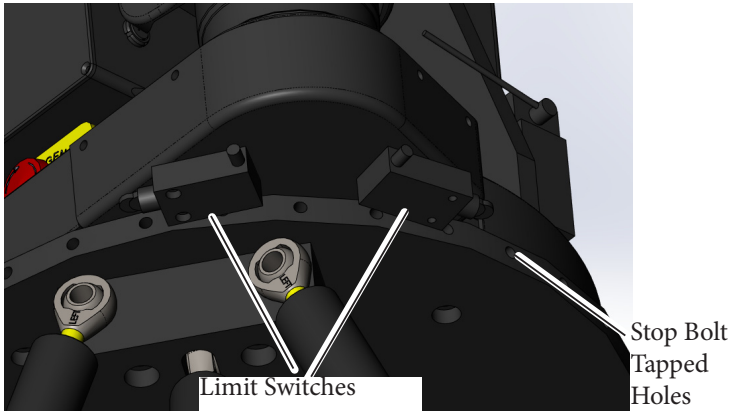


## Rotate Limits

The Rotate motor is equipped with an absolute encoder. The system should be configured with software limits appropriate to the install site.

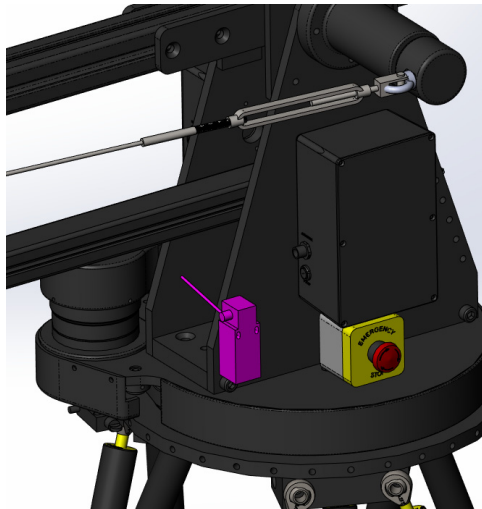
To prevent improper motion outside the software limits mechanical switches are provided. Fit the stop bolts into the most appropriate tapped

holes for each direction of rotation. The closest bolt outside the software limit is to be used to catch any unexpected loss of control.



## Jib Arm Limits

Lever arm switches are used to catch Jib arm down and up limits. These will be factory set. If the jib arm motion needs to be further limited then the lever may be adjusted on the switch. The Software limits must then be adjusted to remain within these limit switches.





## Appendix 1 Specifications

### AJS-2 Specifications

Max Payload: 4.2kg, PTZ Type camera unit

Boom Platform reach: 2000mm from pivot

Lift Range: 2890mm Max, 300mm Min, subject to tripod/support

Reach: 2454mm when boom is horizontal

Max Speeds: Rotation: 20°/s, Lift: 150mm/s. Motion profiled with appropriate ramp times for shot

Total Masses: 75kg Jib arm with Rotate unit + 50kg High Torsion tripod

Power: 90-240VAC, 3A, IEC Type Cable

### AJS-3 Specifications

Max Payload: 4.2kg, PTZ Type camera unit

Boom Platform reach: 3000mm from pivot

Lift Range: 3890mm Max, 300mm Min, subject to tripod/support

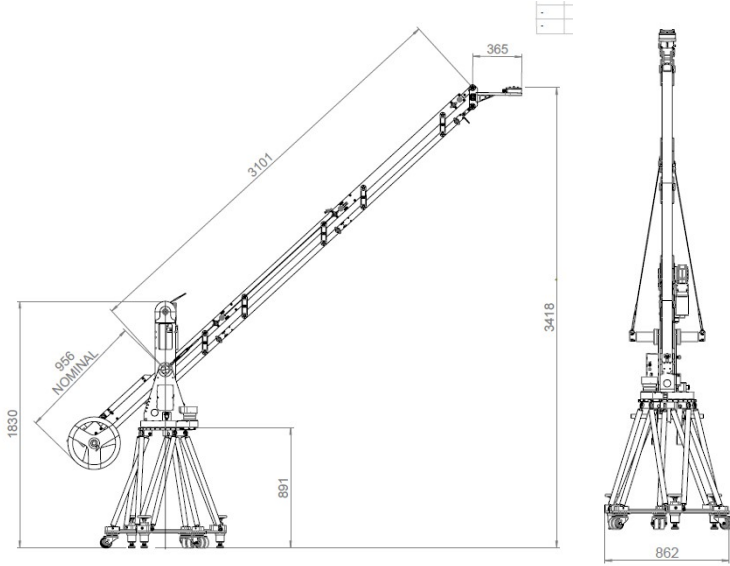
Reach: 2454mm when boom is horizontal

Max Speeds: Rotation: 20°/s, Lift: 150mm/s. Motion profiled with appropriate ramp times for shot

Total Masses: 80kg Jib arm with Rotate unit + 50kg High Torsion tripod

Balance masses: 60kg

Power: 240VAC, 3A, IEC Type Cable



Notes



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