

Start Here!

1 Before You Begin: Set up the Joystick Control Equipment

For detailed instructions, refer to the following instruction sheet:
 • **Furio Live - Setting Up Joystick Control Equipment (5100DR-063-xx)**

2 Review Safety Features

Before configuring and operating the Furio Live system, review the following safety features. Share this information with everyone who may interact with the system.

Emergency Stop Buttons

Emergency stop buttons are located on the **Emergency Stop box** at the operator position, and on the robot.

To stop the robot as quickly as possible, press any emergency stop button. The robot stops moving and the following message appears on the **Control Console**:

WARNING Emergency Stop Activated!

To resume operation, twist the emergency stop button clockwise to release it. Then re-enable each axis (see **steps 5a and 5b**).

Motion Light Strips (Furio dollies only)

Each end of the dolly has an orange light strip that pulses when any part of the robot moves.

Track Limit Reflectors and Bumpers (Furio dollies only)

When properly installed, track limit reflectors help the dolly avoid reaching the bumpers at the ends of the track. Never rely on reflectors and bumpers to stop the dolly; they are back-up safety measures only!

Turning on the Furio Live System

3 Turn on the Furio Live System

3a Turn **ON** the power switch on the robot's connection panel.
IMPORTANT: Never disconnect cables while the system is turned on!

3b If the following message appears, the **control console** is configured correctly for use with the **joystick module** and the Furio Live robot:
Set for joystick + Live dol

If the message is **EXACTLY** as shown above, touch **OK**, and then skip **step 4**. Proceed to **step 5**.

4 Configure the Control Console Operation Mode (if necessary)

This step applies only if the control console displays a startup message **OTHER THAN** the following:
Set for joystick + Live dol

4a Turn **OFF** the power switch on the robot's connection panel.

4b On the **control console**, firmly press and hold the two left-most buttons while another person turns **ON** the power switch on the robot's connection panel. Release them when the **SETUP WIZARD** appears.

4c Respond to questions that appear on the control console as follows, even if the robot is not a dolly:

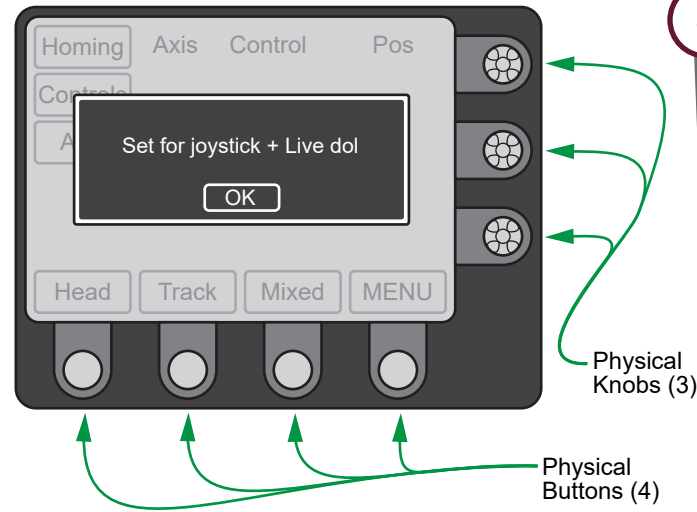
- **Will this system be using a pan bar?** → Touch **No**
- **Will this system be using a Furio Live dolly?** → Touch **Yes**.
- **The console is configured for a joystick and a Furio Live dolly. Is this correct?** → Touch **Yes**.

The following message appears:
Please power cycle the system for the new configuration to take effect!

4d Turn **OFF** the power switch on the robot's connection panel. Wait five seconds, and then turn it **ON**. When the following message appears, touch **OK**.
Set for joystick + Live dol

3 Start Screen

If the system is set for **joystick + Live dol**, touch **OK**.



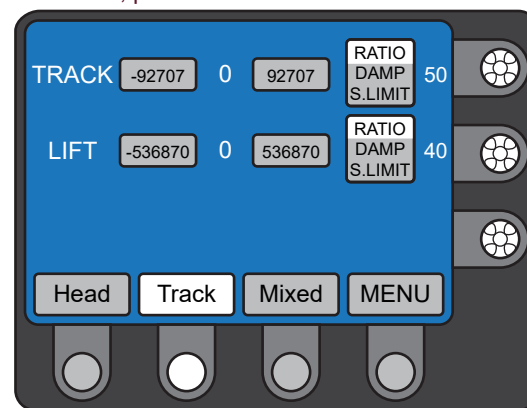
5 Axis ON/OFF and Inverse Settings

To access, press the **MENU** button and then touch **Axis**.



7 TRACK and LIFT Settings

To access, press the **Track** button.



Enabling and Testing Axes

5 Enable and Test Each Axis

5a On the **control console**, press the **MENU** button, and then touch **Axis**. A list of robotic axes appears.

5b Touch each button in the **Amplifier** column to turn all axes **ON**. These buttons show the current on/off state.

5c As you move each axis **slightly** to test it, watch the robot carefully as it moves, to ensure that cables are not pulled tight, and that the payload doesn't hit anything:

- **Lift axis** (if equipped) — Briefly tap each **LIFT** foot pedal to raise and lower the lift.

- **Pan axis** — Move the joystick **slightly** right and left to pan the head.

- **Tilt axis** — Move the joystick **slightly** forward and backward to tilt the head.

- **Track axis** (if equipped) — Briefly tap each **TRACK** foot pedal to move the dolly along the track. Be careful not to drive the dolly all the way to the end of the track!

Tip: If the direction of motion for an axis is the opposite of what you prefer, touch **OFF** in the **Inverse** column to reverse it.

5d Turn on the **camera** and the **operator's monitor**, and then test the controls on the **focus/zoom module** (see other side of this page for drawing):

- **Focus** — Turn the **FOCUS** wheel each way while watching the monitor to observe the effect. If you want to reverse the direction of motion, flip the **REV FOCUS** switch.

- **Zoom** — Tilt the **ZOOM** rocker each way while watching the monitor to observe the effect. To reverse the direction of motion, flip the **REV ZOOM** switch.

5e If the robot is a Furio dolly, drive it to a position approximately halfway along the track.

IMPORTANT: As the dolly moves, observe its cable bundle to ensure it does not become entangled or flop onto the track. If it does not move freely, an assistant may be required to guide it whenever the dolly moves.

Installing Reflectors and Setting the Maximum Dolly Speed (Furio dollies only)

6 Install Track Limit Reflectors

6a At one end of the track, position a reflector **3.6m (12')** from the end bumper:

- Facing the dolly, place the reflector on the floor between the rails of the track, with the reflective area pointing upwards.
- Position the middle of the reflective area about **10cm (4")** from the right-hand rail.

6b Drive the dolly slowly over the reflector to test that it is positioned correctly. The dolly should stop when its sensor passes over the reflector.

Tip: The end of the dolly has an LED that should pass directly over the middle of the reflector.

6c Repeat **steps 6a and 6b** at the other end of the track.

7 Set Maximum Dolly Speed (Track RATIO) and Reposition Reflectors

7a On the **control console**, press the **Track** button. **TRACK** and **LIFT** settings appear.

7b In the **TRACK** row, touch **RATIO**, and then turn the knob to set the maximum dolly speed you will use during the show.

WARNING: Even with safety wheels, the dolly may derail or tip if you drive it around a curve at high speed!

Tip: To try different speeds, adjust **RATIO** and then drive the dolly along the track.

Tip: The further a pedal is depressed, the faster the dolly travels.

7c If you set the maximum dolly speed below **70**, you can reposition the track limit reflectors to increase the length of usable track. This step is optional.

IMPORTANT: After you reposition the reflectors, you must **NOT** increase the maximum dolly speed! Doing so would enable the dolly to collide with the bumpers at the ends of the track!

To reposition track limit reflectors:

- Starting at one end of the track, drive the dolly to the other end, with the track pedal fully depressed. It is important that when the dolly passes over the reflector, the dolly is traveling at the maximum dolly speed you configured. Do not release the pedal until the reflector is detected and the dolly stops.

- Measure the distance between the dolly and the bumper at the end of the track. Subtract **60cm (24")** as a safety margin. The result is how far you can safely move each reflector towards its end of the track. Move both reflectors the calculated distance.

- Tape down each reflector without covering the reflective area, and then test both reflectors by driving the dolly slowly over them. The dolly should stop whenever its sensor passes over a reflector.

Note: Drawings are not to scale

Configuring Pan and Tilt Settings

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Set Axis Limits for Pan and Tilt Axes

Axis limits control how far a robotic axis can move in each direction. Set appropriate pan and tilt limits to prevent damage to cables and equipment.

IMPORTANT: When setting axis limits, watch the robot carefully as it moves, to ensure that cables are never pulled tight and that the payload doesn't hit anything.

IMPORTANT: Setting axis limits for **Track** or **Lift** axes is **NOT RECOMMENDED**. Track limits may drift due to cumulative wheel slippage, resulting in an undesirable track range and possible collision with the end of the track. Lift limits may also drift, resulting in an undesirable lift range.

8a On the control console, press the **Head** button. **PAN** and **TILT** settings appear.

8b For **PAN** and for **TILT**, set axis limits, one axis (row) at a time:

- Pan or tilt the head to the position you want to set as the **maximum** limit.

Tip: Move the axis and observe the number in the middle (current position value) to see which direction is towards the maximum end of the axis (higher values).

- In the row for the axis, press the number on the **right** to set the **maximum** limit.
- Pan or tilt the head to the position you want to set as the **minimum** limit.
- In the row for the axis, press the number on the **left** to set the **minimum** limit.

Tip: If you want to clear a limit, touch the number for that limit once. If the number for the limit matches the center number, touch the button again. The limit is cleared, and the number changes.

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Set Maximum Speed, Damping, and Soft Limit Response

9a For **PAN** and for **TILT**, set the maximum speed by touching **RATIO** and then turning the knob to set the value (1-100).

9b For **PAN** and for **TILT**, set the degree of damping by touching **DAMP** and then turning the knob to set the value.

Damping reduces the responsiveness of the controls during acceleration and deceleration, to produce smoother starts and stops.

9c For **PAN** and for **TILT**, set the soft limit response by touching **S.LIMIT** and then turning the knob to set the value.

Soft limit response controls the rate of deceleration the system applies whenever the robot reaches an axis limit. Lower values make the robot stop more abruptly.

Note: Soft limit response affects only axes that have axis limits set. If you set axis limits for the **TRACK** or **LIFT** axes (not recommended), press the **Track** button and then set the soft limit response for those axes. If you increase the **S. LIMIT** value for the **TRACK** axis, you **must** test and adjust reflector positions accordingly.

Configuring Track and Lift Settings (if equipped)

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Set Maximum Speed (RATIO) for the Lift Axis

10a On the **control console**, press the **Track** button. **TRACK** and **LIFT** settings appear.

10b For **LIFT**, set the maximum speed by touching **RATIO** and then turning the knob to set the speed (1-60).

Tip: The maximum speed (RATIO) for the **Track** axis is already set. You set it in **step 7** (see over).

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Set Damping for the Track and Lift Axes

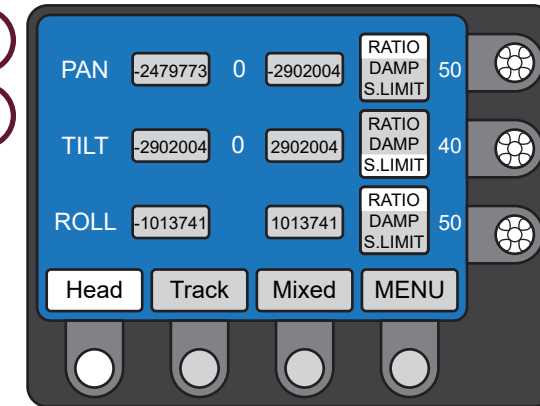
• For **TRACK** and for **LIFT**, set the degree of damping by touching **DAMP** and then turning the knob to set the value.

PAN and TILT Settings

To access this screen, press the **Head** button.

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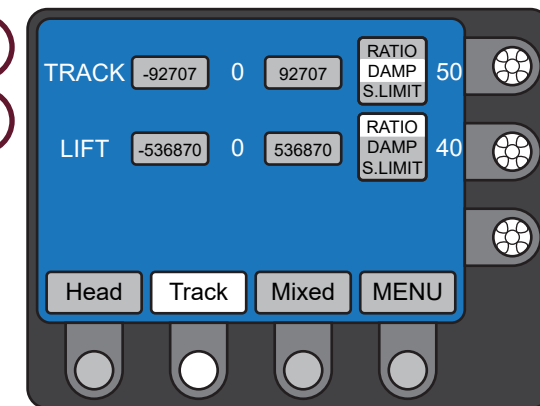


TRACK and LIFT Settings

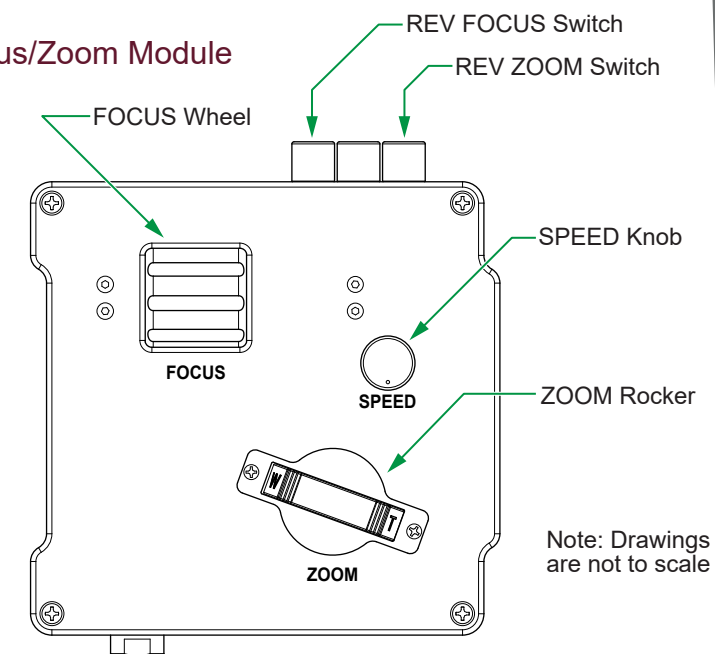
To access this screen, press the **Track** button.

10

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Focus/Zoom Module



Operating the System

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To STOP the robot as quickly as possible:

- Push any **EMERGENCY STOP** button. **E-STOP** buttons are located on the robot and on the **EMERGENCY STOP box** at the operator position.

The robot stops moving and the following message appears on the **Control Console**:

WARNING Emergency Stop Activated!

To resume operation, twist the emergency stop button clockwise to release it. Then re-enable each axis (see **steps 5a** and **5b** on the other side of this page).

To pan the head → Move the **joystick** right and left.

To tilt the head → Move the **joystick** forward and backward.

To raise or lower the lift → Depress the **LIFT UP** or **LIFT DOWN** foot pedals.

To adjust focus → On the **Focus/Zoom** module, turn the **Focus** wheel.

If you want to reverse the direction of motion, flip the **REV FOCUS** switch.

To adjust zoom → On the **Focus/Zoom** module, tilt the **ZOOM** rocker.

If you want to reverse the direction of motion, flip the **REV ZOOM** switch.

If you want to adjust the responsiveness of the **ZOOM** rocker, turn the **SPEED** knob.

To move a Furio dolly along the track:

- Depress the **TRACK A-B** or **TRACK B-A** foot pedals. The further you depress a pedal, the faster the dolly moves.

WARNING: Even with safety wheels, the dolly may derail if you drive it around a curve at high speed!

IMPORTANT: As the dolly moves, observe its cable bundle to ensure that it does not become entangled or flop onto the track. If the cable bundle does not move freely, an assistant may be required to guide it whenever the dolly moves.

After the Show: Disassembling and Packing the System

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Disassemble and Pack the Furio Live System

This section describes how to disassemble and pack the Furio Live system. Most components have dedicated spaces in flight cases. Pack equipment carefully to minimize the possibility of damage during shipping, and to ensure it's ready for the next show.

13a If the robot has a **lift**, use the **manual lift switch** to lower it as far as possible. The lift switch is on the side of the robot's connection panel enclosure. If the lift is a three-stage Furio SE lift, engage the red lift lock on the top of the lift column.

IMPORTANT: The lift must be completely lowered before power is turned off! Otherwise, the lift will not fit into its flight case.

13b Turn **OFF** the **power switch** on the robot's **connection panel**, and then disconnect and pack all cables.

IMPORTANT: Never unplug any cables while the system is turned on!

Tip: If the robot is a Furio dolly, the **short power cable** that runs from the dolly's **power bar** to its **connection panel** can remain plugged in. This cable is permanently attached to the dolly.

13c Pack all control components. These include the **EMERGENCY STOP box**, **foot pedal box** and **foot pedals** (if present), **control console**, **joystick module**, **focus/zoom module**, and **operator monitors** (if present)).

13d Remove the **payload** from the **head**, and then pack the payload components.

13e Remove the **head** (1 bolt, 8mm hex), and pack it in its flight case. You may need to adjust the **camera cradle** to make the head fit properly in its flight case home position.

13f If the robot has a lift, disengage its **connector lock**. For more information, see the setup sheet for your robot.

IMPORTANT: The connector lock **MUST** be disengaged before you remove the lift, to avoid damaging the lift connector!

13g If the robot has a lift, remove it (4 bolts, 8mm hex key) and pack it in its flight case. Lift it by its handles. Never pull on the top of the lift.

CAUTION: The lift is heavy. Get help to move heavy objects.

13h If the robot is a Furio dolly, detach all four **safety wheels** from the **dolly**, and pack them.

13i If the robot is a Furio dolly, pack the **dolly** in its flight case, ensuring that the dolly wheels are properly seated on the guides in the flight case.

CAUTION: The dolly is heavy. Get help to move heavy objects.

IMPORTANT: Never place dolly wheels on any surface other than a Furio track or specially-designed guide. Placing wheels on a flat surface damages them.

13j If the robot is a Furio dolly, remove the track **end bumpers**, detach the **track sections** from each other, and then pack all track components.