MOTIONBASE TURNTABLE

YASH RAJ FILMS

QUICK START GUIDE

Product Code: MRMC-2032-00
Part number: MRMC-2058-00
Motionbase Turntable Quick Start Guide

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<table>
<thead>
<tr>
<th>Contact information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mark Roberts Motion Control Ltd.</strong></td>
</tr>
<tr>
<td>Unit 3, South East Studios</td>
</tr>
<tr>
<td>Blindley Heath</td>
</tr>
<tr>
<td>Surrey</td>
</tr>
<tr>
<td>RH7 6JP</td>
</tr>
<tr>
<td>United Kingdom</td>
</tr>
<tr>
<td>Telephone: +44 (0) 1342 838000</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:info@mrmoco.com">info@mrmoco.com</a> (sales and general enquiries) <a href="mailto:support@mrmoco.com">support@mrmoco.com</a> (customer support)</td>
</tr>
<tr>
<td>Web: <a href="http://www.mrmoco.com">www.mrmoco.com</a> <a href="http://www.mrmocorentals.com">www.mrmocorentals.com</a></td>
</tr>
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Chapter 1  Quick Start

Important safety instructions
To ensure the best from the product, please read this manual carefully. Keep it in the safe place for future reference.

To reduce the risk of electric shock, do not remove the cover from the unit. No user serviceable parts inside. Refer servicing to qualified personnel.

General care

- Do not force switches or external connections.
- When moving the unit, disconnect the mains cable.
- Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Use a clean dry cloth.
- Do not use around flammable gas. All electrical equipment can generate sparks that can ignite flammable gas.
- Keep away from pets and children. The head has powerful motors that can pinch, so take care not to get your hands trapped in the head or cabling.
- Keep cables tidy. Use cable ties to keep them out of harm’s way. If you have a head with slip rings then make use of them; avoid running any cables between the base and the rotating head or camera.

Location

Installation of this unit should be away from sources of excessive heat, vibration, and dust.

Intellectual property

This product includes confidential and/or trade secret property. Therefore, you may not copy, modify, adapt, translate, distribute, reverse engineer, or decompile contents thereof.
Overview

Thank you for using the Motionbase Turntable from Mark Roberts Motion Control (MRMC). You can use the Turntable for day in and day out use in product photography and filming.

The Motionbase Turntable can be used as an additional axis of a Bolt on Track System or as a stand-alone EtherCAT unit controlled by Flair.

The Turntable gives you the following features:

- High speed
- Zero backlash
- Precise movement
- Removable center disc so cables or power can be fed through to appliances
- Can take weight of up to 3 tonnes

Transporting the Motionbase Turntable

Use the 4 x M20 threaded lifting points with lifting eye bolts in conjunction with lifting equipment.

In addition the 4 x Castor wheels can be used to manoeuvre the Motionbase Turntable around.

Lifting Motionbase Turntable using a Gantry Hoist

1. Tie a lifting sling around the 4 x lifting eye bolts on the Motionbase Turntable and insert the hook from the gantry hoist on to it.
2. Use the gantry hoist to gently lift the Motionbase Turntable and lower it in position.
3. Remove the gantry hook and the straps from the arm.

Removing Castor Wheels

When in position you can either jack the castor wheels up so they don’t touch the ground or remove the castor wheels by removing the 2 x M10 cap head screws to prevent them from coming into way of the Turntable load.
Anchoring Motionbase Turntable to the floor

If you are setting up the Motionbase Turntable in a permanent (or semi-permanent) location, it is recommended that you anchor the turntable to the ground. The following procedure tells you how to anchor the turntable to a concrete floor.

1. Temporarily put the turntable into place where you want.
2. At one corner of the turntable, use one of the two holes to draw a circle on the concrete with a pencil, to mark the position of the hole. You can use either hole. Repeat for the other three corners of the turntable.
3. Add the lifting eye bolts to the 4xM20 threaded lifting points.
4. Tie straps to the lifting eye bolts and using a gantry hoist temporarily remove the turntable and at one of the four circles that you have drawn, draw a cross centred on the circle, to help you precisely locate the drill bit. Repeat for the other three corners.
5. On the 15mm diameter drill bit, put tape around the bit 5 cm from the tip. This will help you gauge the depth of the hole in the next step.
6. At one of the corner circles, drill a hole 5 cm deep into the concrete, centred on the cross. When the tape on the drill bit reaches the floor, drilling is complete. Repeat for the other three corners.
7. Clean the four holes.

8. At one of the holes insert the drop-in anchor insert, threads upward, all the way to the bottom.

9. Insert the anchor spreader tool into the drop-in anchor insert.

10. Hit the top of the anchor spreader tool with a hammer until the anchor is fully spread in the concrete.

11. Remove the anchor spreader tool.

12. Repeat steps 8 to 11 for the other three corners.

13. Put the turntable in place over the holes.

14. Insert the four retaining bolts through the corners of the base and into the drop-in anchor inserts, and tighten.
Fixing Equipment (Motion Base etc.) on Motionbase Turntable

Use the M16 threaded holes on the outer ring to fix equipment on the Motionbase Turntable.

If required, you can remove the top plate to allow the cables to pass through. To do this:

1. Remove the M16 screws from the centre plate.
2. Screw an M16 lifting eye bolt to the centre, then use it to lift the centre plate off the turntable.

Use the cable tube in the centre of the turntable if you require cables to pass through.
Connecting the Cables for Motionbase Turntable as a Stand-alone

1. Connect all the cables as shown in Connecting the Cables for Motionbase Turntable as a Stand-alone section.

Using the Motionbase Turntable as a Stand-alone

Not used

EtherCAT In

Estop

Service (MRMC only)

Robot Only

Flair PC (with Intime configured for Turntable only)

Power (3-phase, 4-wire including Ground)
2. Turn the power on using the power switch on the Motionbase Turntable.

3. Start the Flair PC (if not already turned on).

4. Start Flair on the Flair PC. Ensure that Flair is not running before the Motionbase Turntable has fully powered up.

5. Release the Estop by pulling it out and press the green ‘Enable button on the Estop.
Connecting the Cables for Motionbase Turntable when used with a Bolt on Track

Flair PC (with Intime configured for Turntable and Bolt on Track)

Bolt on Track Base

Bolt Umbilical

Robot Only

Turntable

Bolt Sidepanel

Bolt CS8

EtherCAT In

LTi Drive

EtherCAT Out

Service Only
(Do not use)

ESTOP

Power (3-phase, 4-wire including Ground)

To HHB

To Bolt Umbilical
Using the Motionbase Turntable with Bolt on Track

1. Connect all the cables as shown in Connecting the Cables for Motionbase Turntable when used with a Bolt on Track section. Ensure that the PC used in this configuration is that configured for use with Motionbase Turntable and Bolt. You do not need to open the Bolt Base side panel. These would be done as part of the installation of the rig.

Note
This guide covers the connections that you need to make when using the Turntable with Bolt on Track. For other connections for Bolt on Track, refer to the Bolt Quick Start Guide.

2. Turn the power on using the power switch on the Motionbase Turntable and Bolt on Track.

3. Start the Flair PC (if not already turned on).

4. Start Flair on the Flair PC. Ensure that Flair is not running before the Motionbase Turntable has fully powered up.

5. Release the Estop by pulling it out.
Notes
Notes
Appendix 1 **Specifications**

**System Properties**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turntable Platform Diameter</td>
<td>2,200 mm (maximum)</td>
</tr>
<tr>
<td>Table Hollow Bore Diameter</td>
<td>520 mm (minimum)</td>
</tr>
<tr>
<td>Turntable Max. Width</td>
<td>2,500 mm (maximum, excluding removable jacking castors)</td>
</tr>
<tr>
<td>Turntable Max. Depth</td>
<td>2,500 mm (maximum, excluding removable jacking castors)</td>
</tr>
<tr>
<td>Turntable Max. Height</td>
<td>380 mm</td>
</tr>
<tr>
<td>Motion</td>
<td>Continuous Rotary Motion</td>
</tr>
<tr>
<td>Direction</td>
<td>Bi-directional</td>
</tr>
<tr>
<td>Orientation</td>
<td>Horizontal</td>
</tr>
<tr>
<td>Max. Payload</td>
<td>3,000 Kg (With CofG centred over CofR)</td>
</tr>
<tr>
<td>Max. Turntable Weight</td>
<td>870kg</td>
</tr>
</tbody>
</table>
Motion Performance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Velocity</td>
<td>90°/Sec – Max. velocity is derated by applied payload. See below</td>
</tr>
<tr>
<td>Max. Acceleration</td>
<td>180°/Sec² – Max. acceleration is derated by applied payload. Please see below</td>
</tr>
<tr>
<td>Max. Deceleration</td>
<td>Typical velocity profiles are trapezoidal</td>
</tr>
<tr>
<td></td>
<td>NB: Maximum deceleration will be limited to regeneration capacity in the system. At higher payloads with higher speeds, deceleration rates may need to be limited to avoid nuisance tripping of the servo drive</td>
</tr>
<tr>
<td>Maximum Operating Time</td>
<td>Typically, up to 1 minute of continuous operation at full speed/full load</td>
</tr>
<tr>
<td>Max. Operating Duty Cycle</td>
<td>50%</td>
</tr>
</tbody>
</table>

Control/Drive Enclosure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Host Control</td>
<td>MRMC Flair 6</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>415V AC Three Phase</td>
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</table>
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<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Current</td>
<td>48 Amps</td>
</tr>
<tr>
<td>Number of Axes</td>
<td>1</td>
</tr>
<tr>
<td>Command Interface</td>
<td>EtherCAT</td>
</tr>
<tr>
<td>Operator Controls</td>
<td>Rotary Mains Isolator&lt;br&gt;Emergency Stop Buttons</td>
</tr>
<tr>
<td>Operator Illuminators</td>
<td>Servo Power ON: Blue LED on electrical panel</td>
</tr>
<tr>
<td>Emergency Stop Input</td>
<td>Single Channel</td>
</tr>
<tr>
<td>Power Connector</td>
<td>Industrial 5 Pin Chassis Mount Receptable (Pins)</td>
</tr>
<tr>
<td>Motor/Brake Connector</td>
<td>Direct to drive</td>
</tr>
<tr>
<td>Feedback Connector</td>
<td>Direct to drive</td>
</tr>
<tr>
<td>Drive General Purpose IO</td>
<td>NA</td>
</tr>
<tr>
<td>Control Communications</td>
<td>EtherCAT RJ45</td>
</tr>
<tr>
<td>Service Communications</td>
<td>EtherCAT RJ45</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP54</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>0-40 Degs C</td>
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</table>
# Payload Mounting

<table>
<thead>
<tr>
<th>Turntable Payload Fixings</th>
<th>12 off M16 on 1,972 mm PCD (Position shown below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRMC Motionbase Fixings</td>
<td>12 off M16 on 1,972 mm PCD (Position shown below)</td>
</tr>
<tr>
<td>Payload Loading Method</td>
<td>User’s responsibility</td>
</tr>
</tbody>
</table>

# Physical Specification

![Physical Specification Diagram]