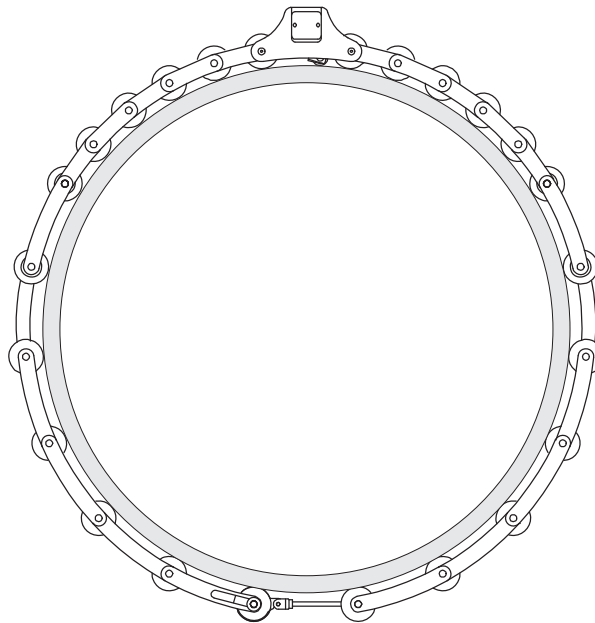
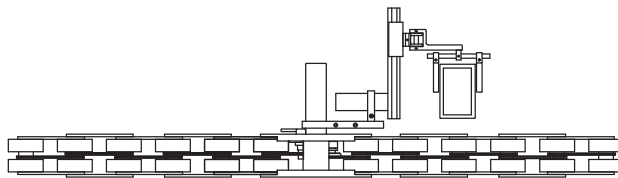


Large Bore Wheel Scanner

User's Manual

Revision A.1



ATCO

850-004135

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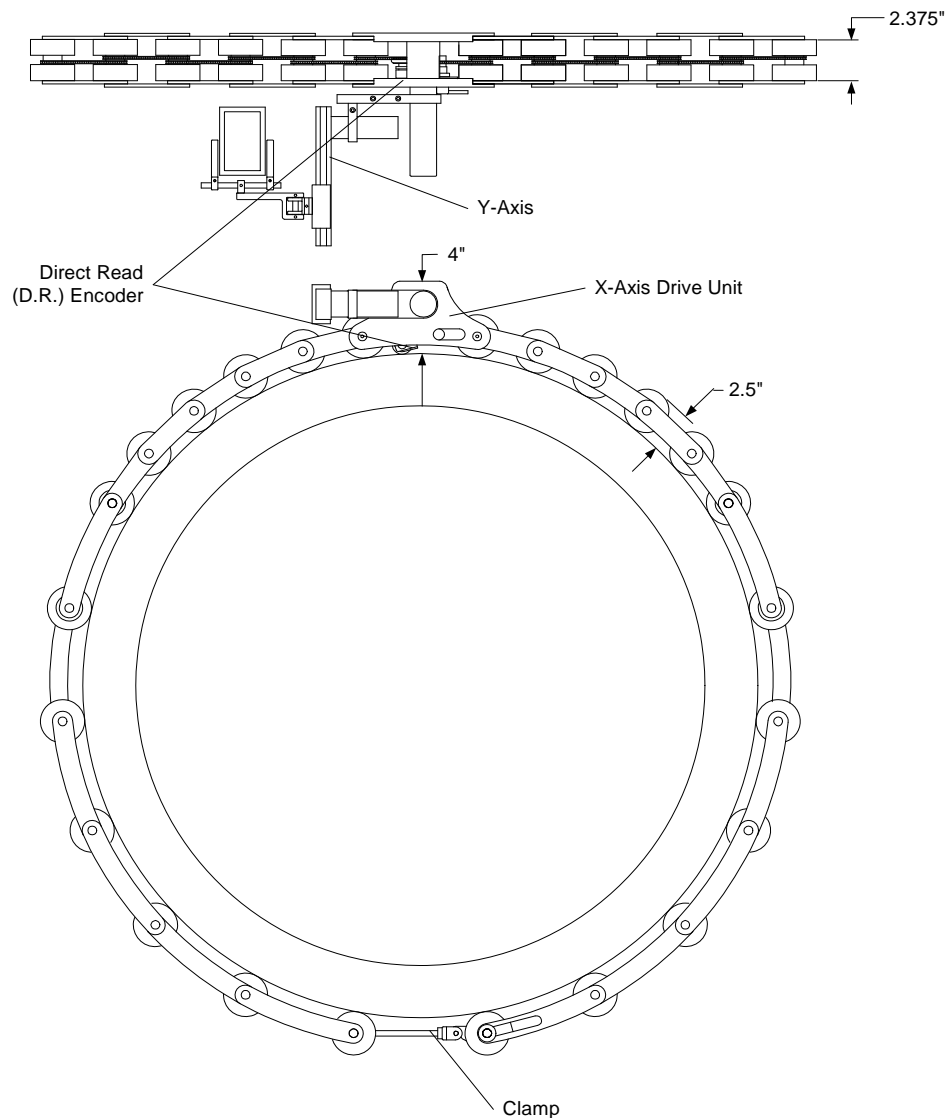
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Overview

The Large Bore Wheel (LBW) Scanner consists of an X-Axis that is attached circumferentially to the component. The scanner is held in place by a series of links, much like chain links. A direct read (D.R.) encoder is used to monitor the position of the X-Axis.

The purpose of this document is to familiarize you with the components of the system, it's assembly and usage. The next section will describe each of the system's components.



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System Components

For portability, the system is broken in to three major assemblies or components. The Drive Unit is attached to the other two sections of links with the clamp and hooks as shown below. Close the clamp to apply tension to tighten the wheels around the component. The Tension Adjustment Screw is used to set the amount of tension when the clamp is closed.

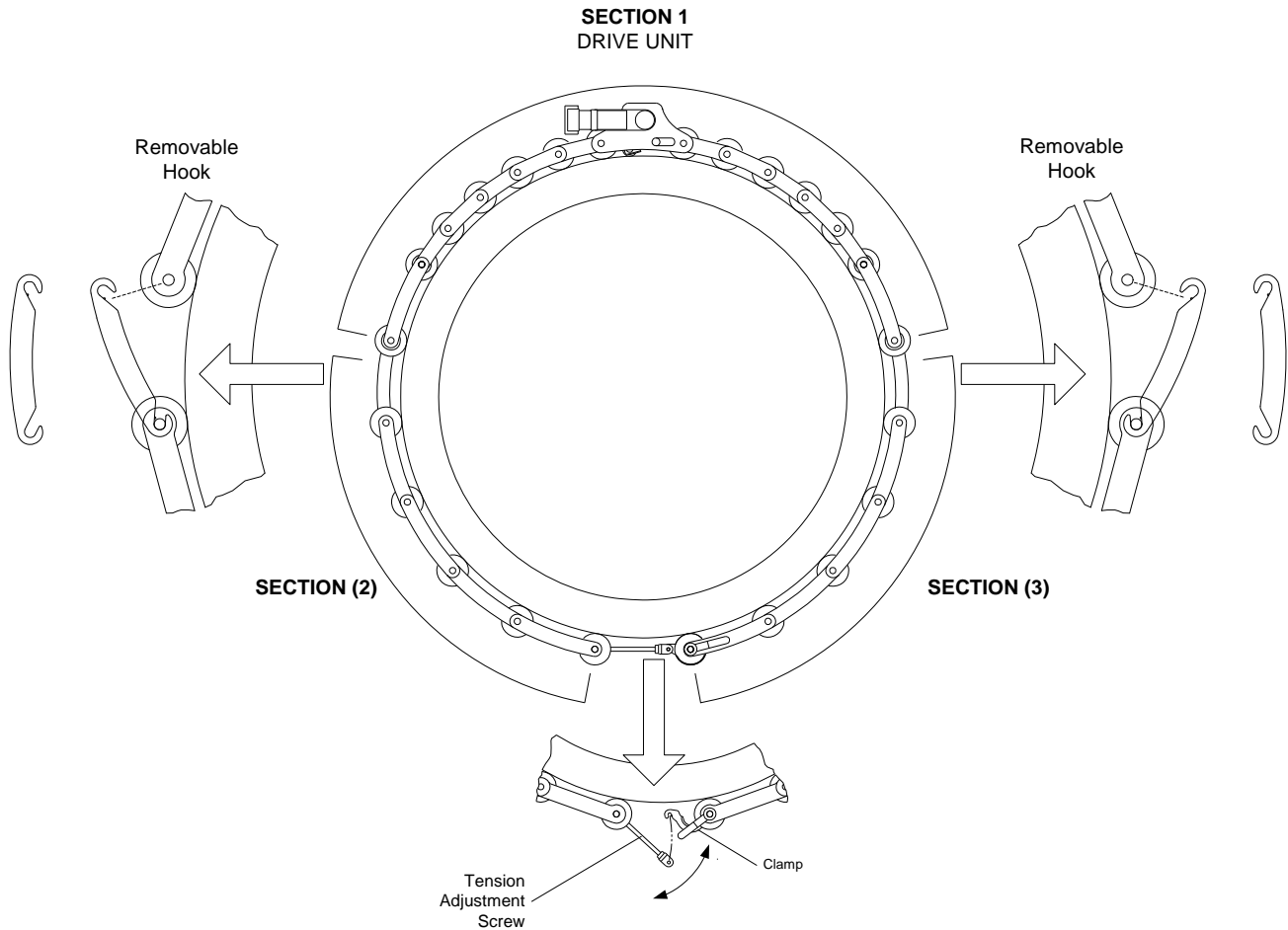


Figure 2 System Components

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Drive Unit (X-Axis)

The drive unit includes the drive links, wheels, chains and Y-Axis. All wheels in the drive unit are driven. Drive chains supply the power from the X-Axis motor to the wheels. The Y-Axis is fully adjustable and is attached to the X-Axis drive motor housing.

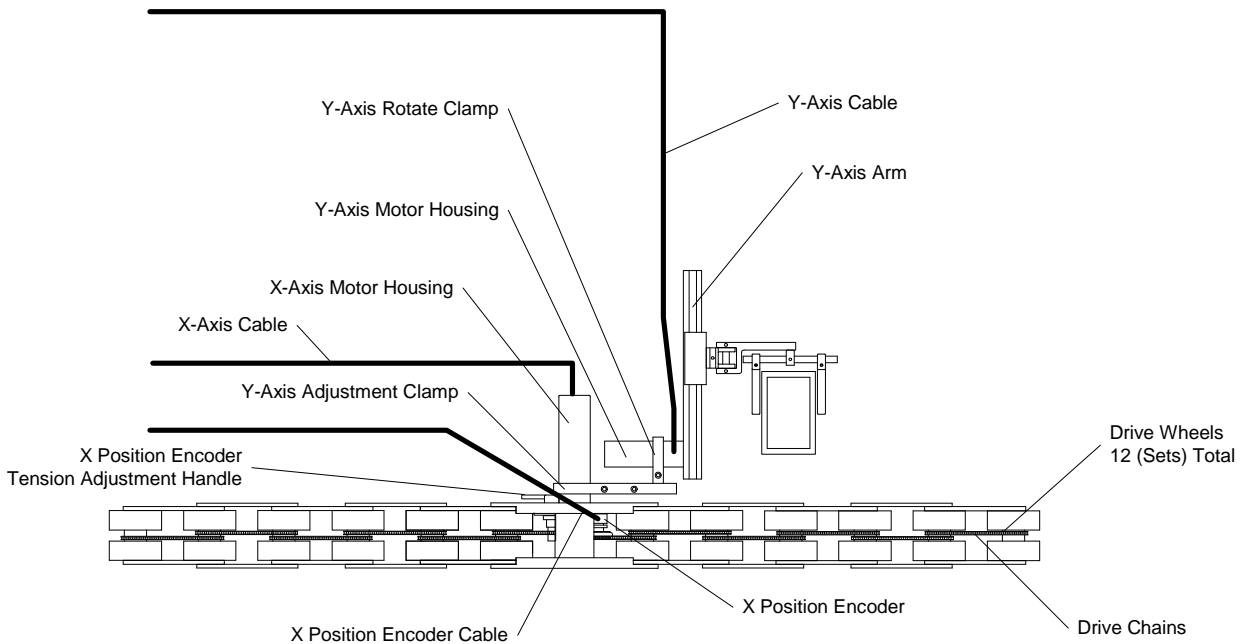


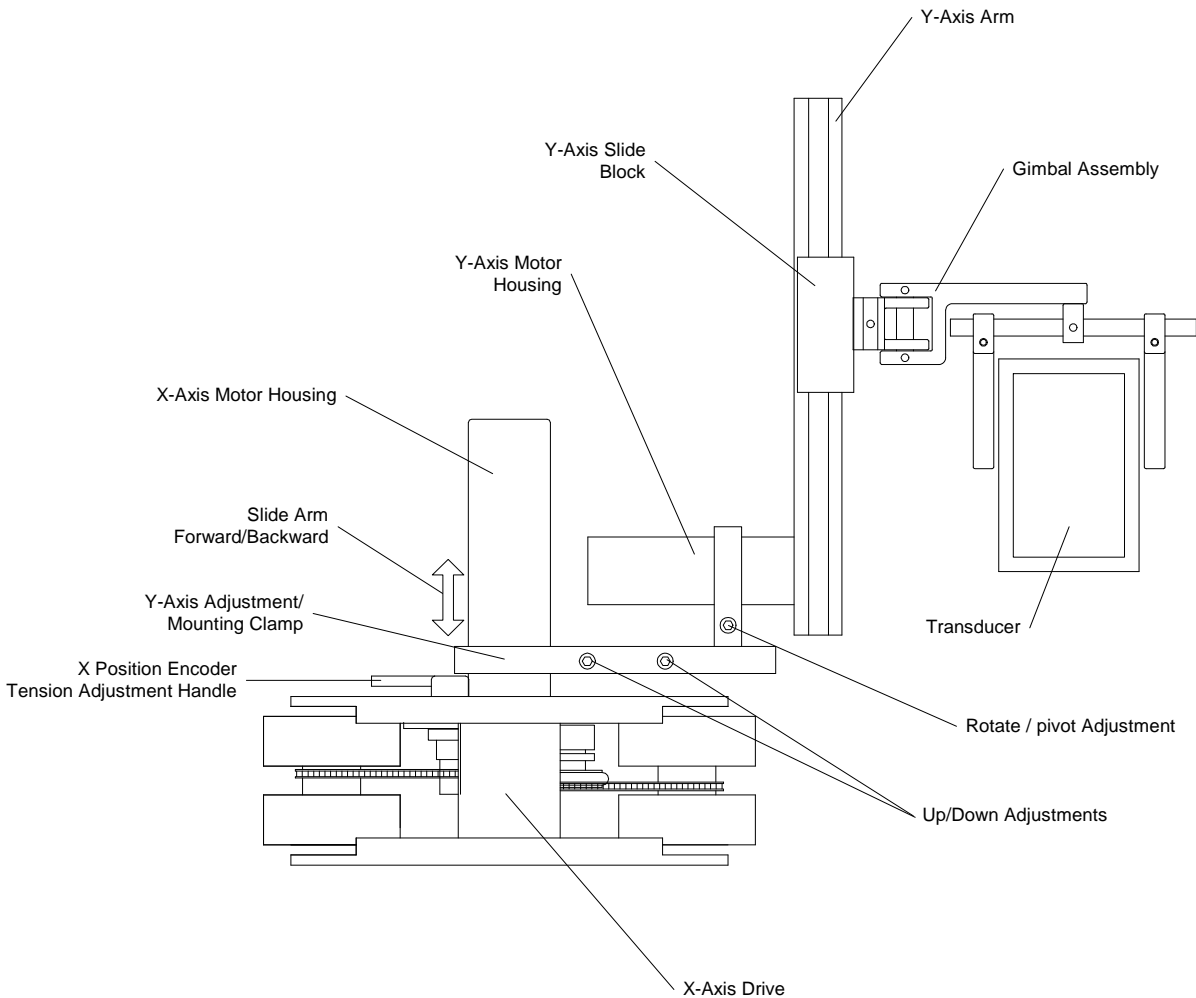
Figure 3 Drive Unit (X-Axis)

Y-Axis

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The Y-Axis attaches to the X-Axis motor housing using the Y-Axis Adjustment/Mounting Clamp. The articulation and positioning of the Y-Axis is accomplished by loosening the screws (Rotate, Up/Down) on the Y-Axis Adjustment Clamp.



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Adjusting the Y-Axis

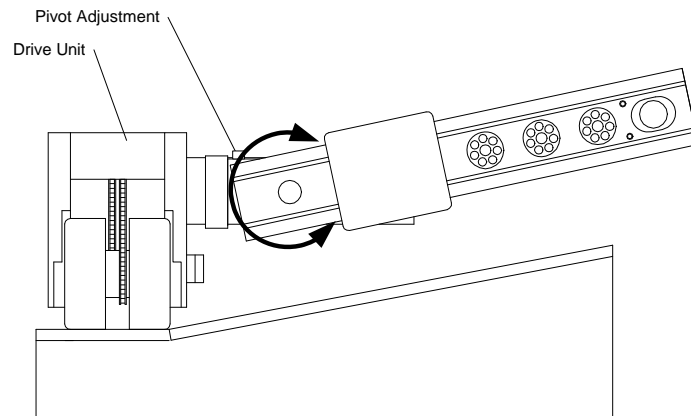


Figure 5 Rotate / Pivot Adjustment

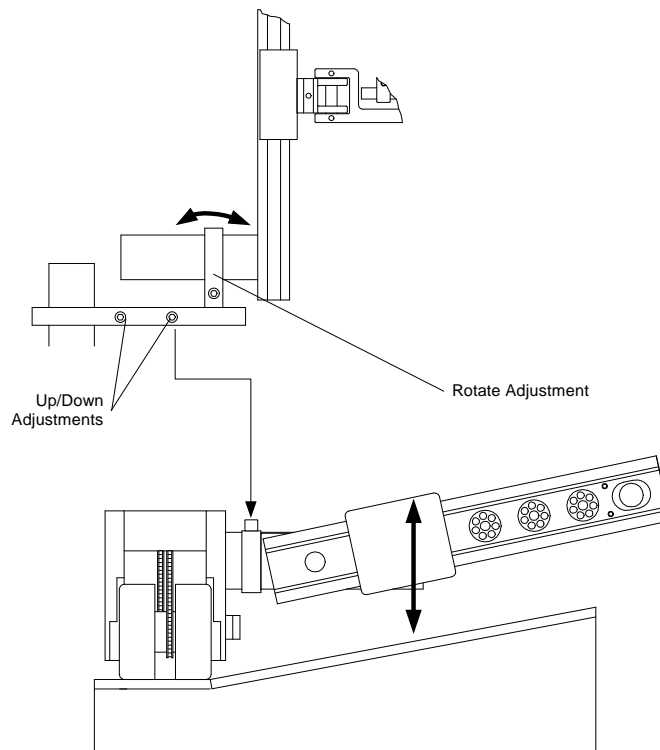


Figure 6 Vertical Adjustment

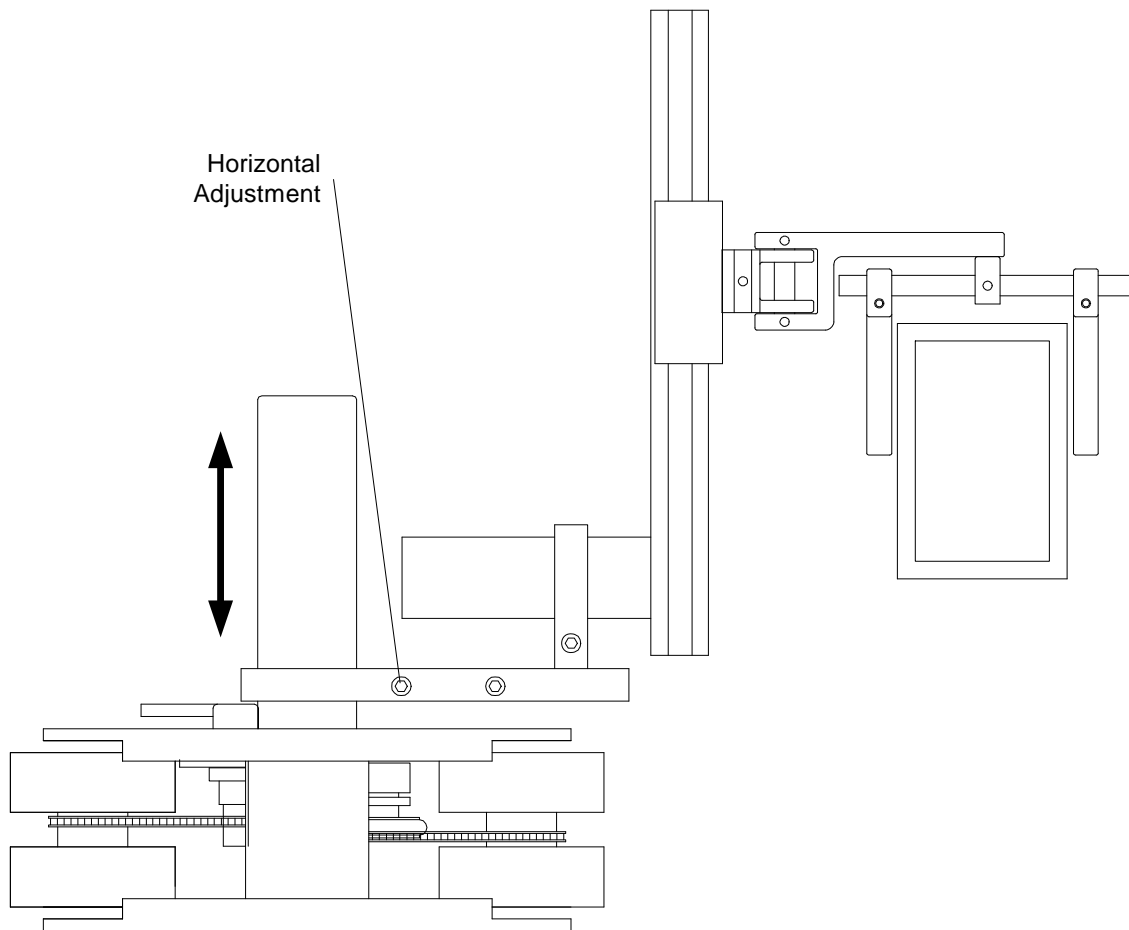


Figure 7 Horizontal Adjustment

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Adjusting the Direct Read Encoder

The D.R. encoder can be adjusted to suit varying surfaces/diameters. The downward force on the encoder can be changed by loosening the screw on the handle (shown) and turning the adjustment handle. Once the proper force has been reached, re-tighten the screw on the handle.

Turning the handle in a counter-clockwise direction increases the downward force of the encoder.

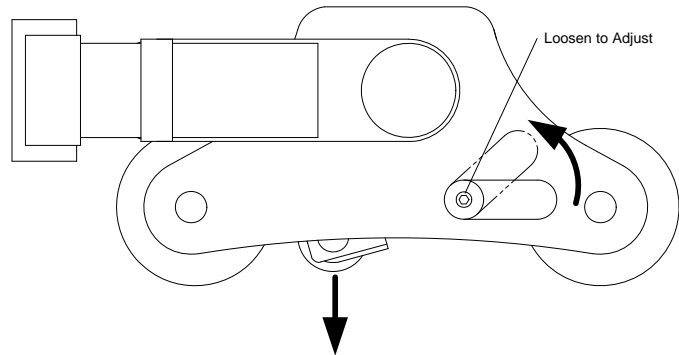


Figure 8 D.R. Encoder Adjustment

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Motor Control Unit

The MCU-P500 is a multi-axis motor control unit which is used to control the LBW Scanner. Refer to the *MCU-P500 Users Manual* for more information.

Console Panel

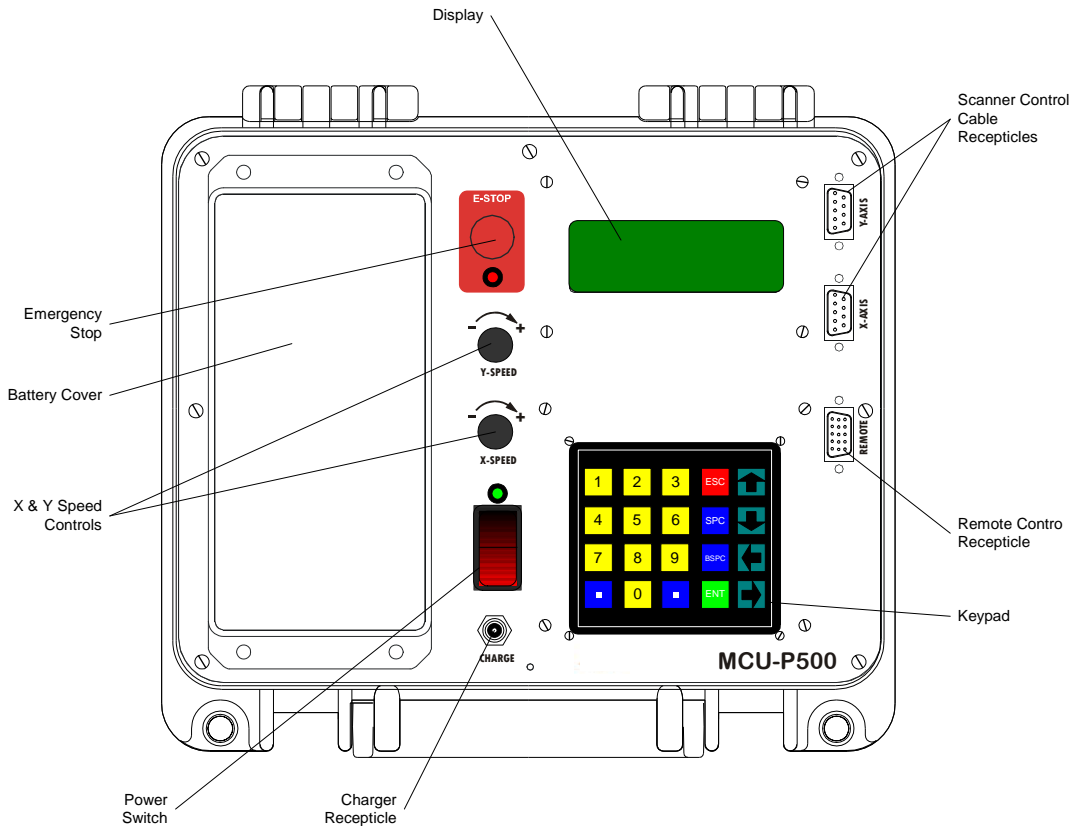


Figure 9 MCU-P500 Control Console

Emergency Stop Button

The console is equipped with a red **Emergency Stop** button that will stop the scanner when needed. The scanner cannot resume movement until after the console has been reset. This is accomplished by turning the stop button clockwise until it releases and lifts up.

Keypad and Display

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The console is equipped with a keypad and display for basic control of the scanner. Refer to the *MCU-P500 Users Manual* for more information on the console menu structure and commands.

X & Y-Speed Controls

The X and Y Speed control knobs of the MCU-P500 control the speed of the X and Y axis of the scanner respectively.

Scanner Control Cable Receptacles

The control cabling from the scanner connects to the console using the connectors labeled “X-Axis” and “Y-Axis” on the top right corner of the panel. **ALWAYS** keep this receptacles dry and free of debris.

Remote Control Connector

The DB15 connector provides for remote control of the system. Refer to Appendix A for pinout information.

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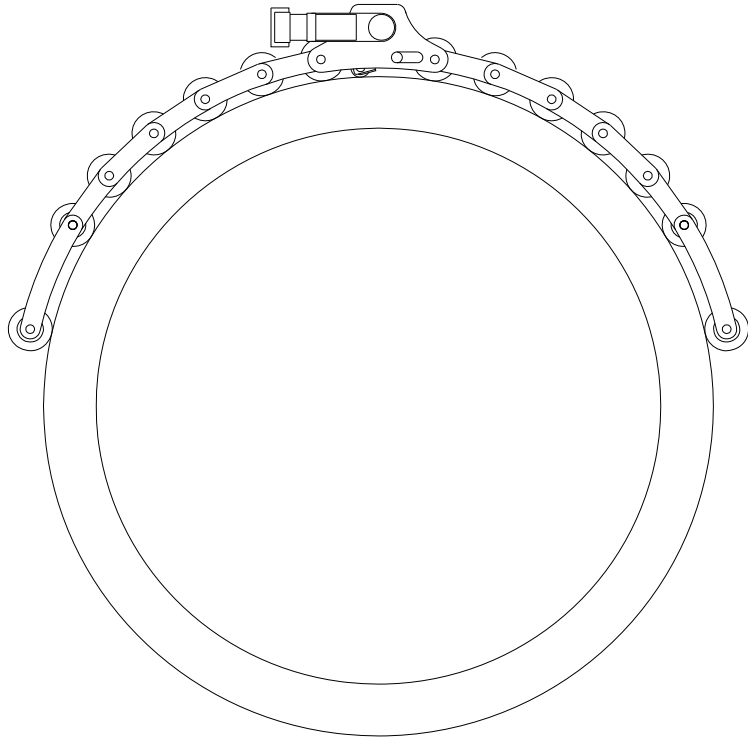
Mounting the Scanner

Attaching or mounting the scanner on the test surface should be done carefully to ensure proper alignment of the system. Care must be used or the system could become damaged.

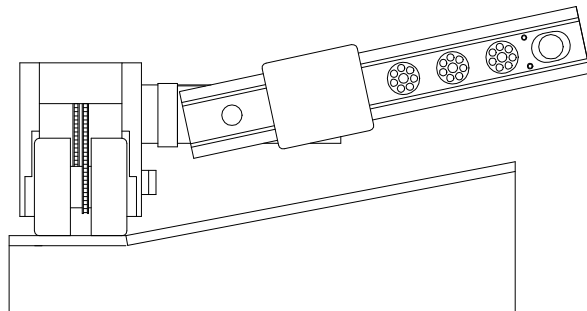
Placing the Drive Unit

The drive unit should be placed on the top with the drive wheels down the sides as shown to the right.

The links will naturally tend to follow a straight path. Be sure to align the wheels carefully along the circumference. Following a weld line or other circumferential indicator is the best way to ensure the unit is as straight as possible.



Select a reference such as a weld toe or centerline to properly align the scanner circumferentially. Be sure to check the clearance of the Y-Axis before tightening down the clamps.

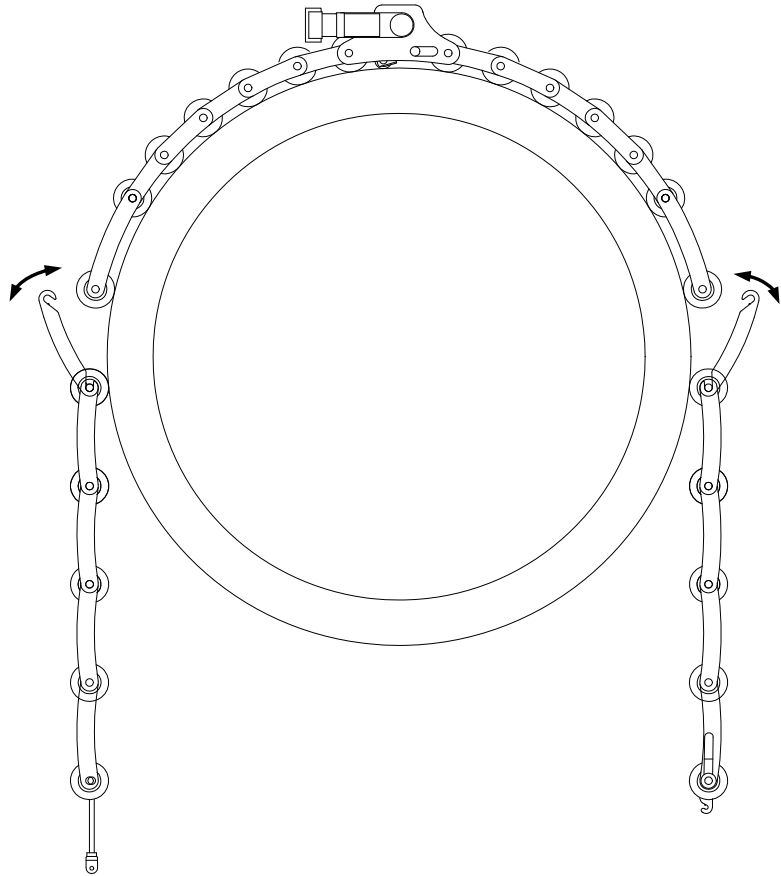


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Connecting the Sections

With the Drive Unit placed, carefully add each of the two remaining sections using the Removable Hooks (shown right). The Drive Unit will tend to roll freely when not powered so when adding the section to the first side you may have to hold it in place until the section on the other side is attached.



Using the Clamp

With both sections now attached to the Drive Unit, pull the ends together and hook the clevis on the threaded rod to the clamp. Align the scanner and chain links properly to ensure an accurate track. Pull back the lever until it locks in to place.

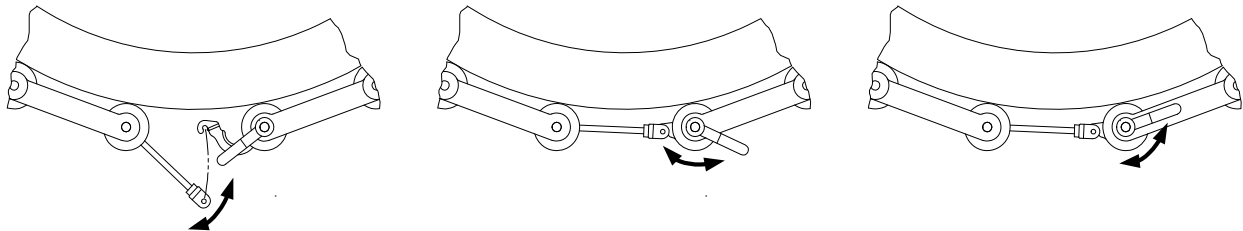


Figure 13 Closing the Clamp

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To adjust the tension you must first unhook the Tension Adjustment Screw from the Clamp. Turn the Tension Adjustment Screw clockwise to tighten and counter-clockwise to loosen.

Once your adjustment has been made, hook the Tension Adjustment Screw to the Clamp again and close the clamp.

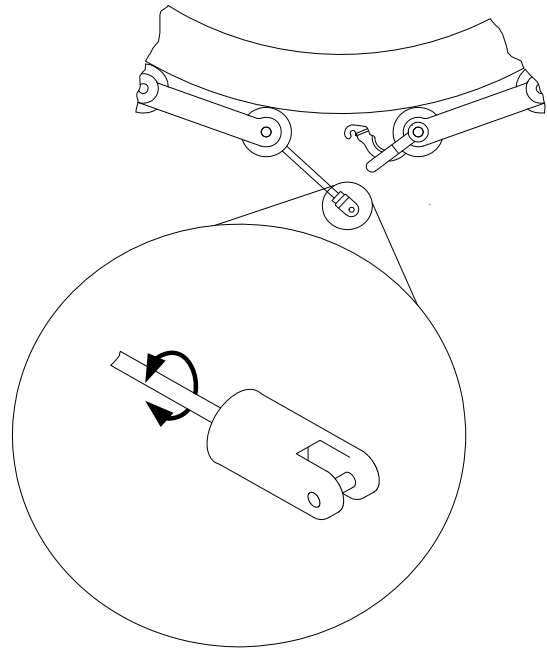


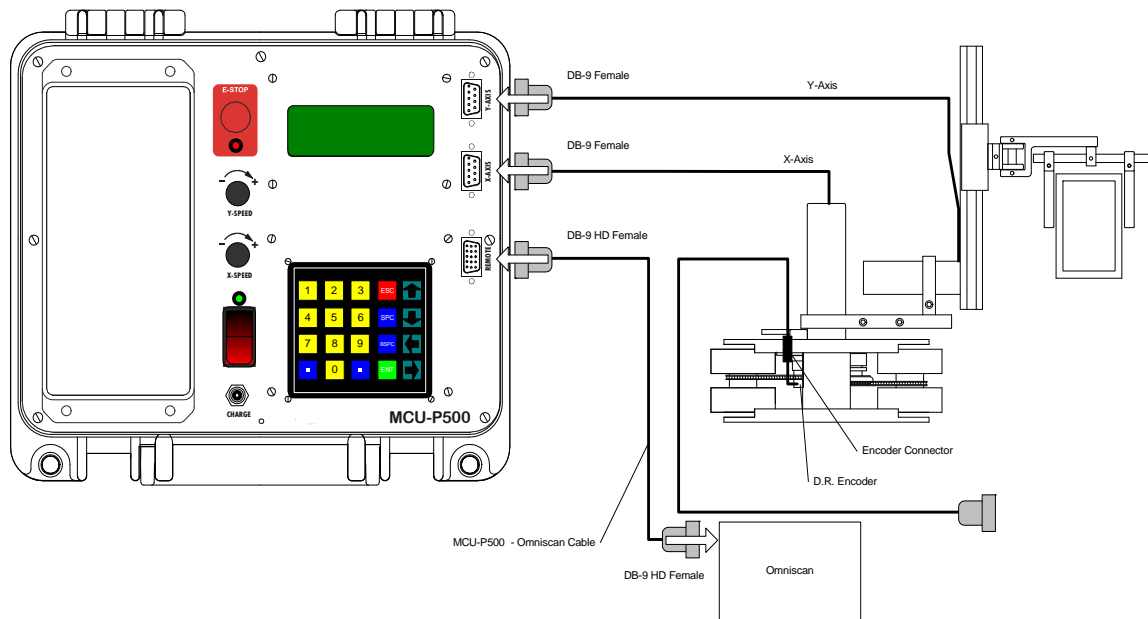
Figure 14 Tension Adjustment

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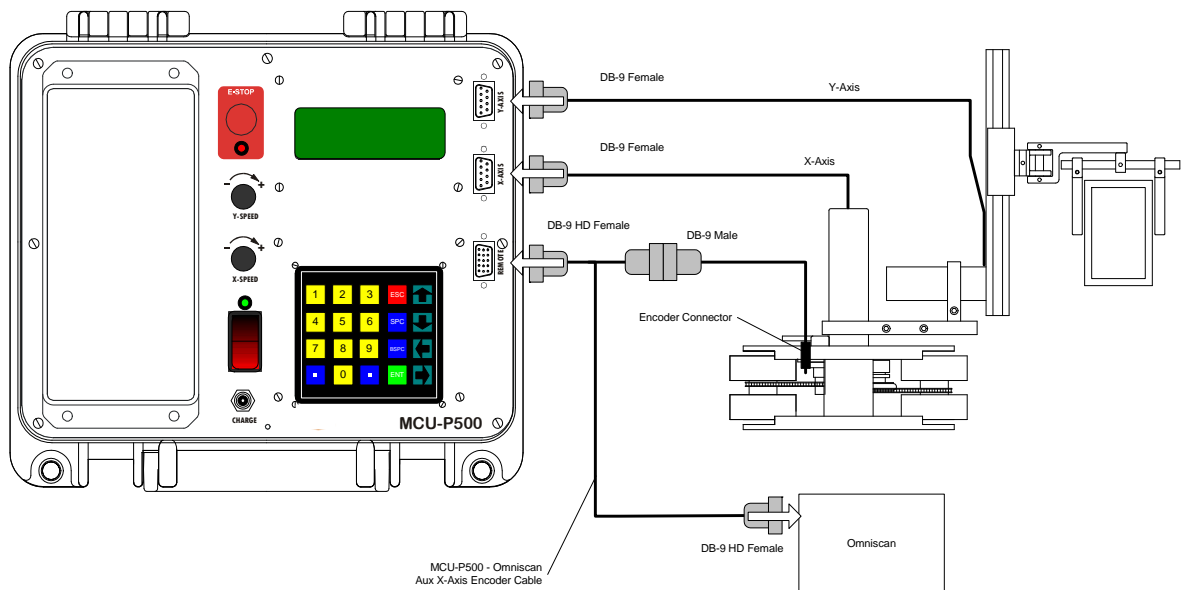
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Connecting Cables

The standard cable connection for the LBW Scanner to the MCU-P500 is shown below. The two cables (X and Y Axis) are connected directly to the X-Axis and Y-Axis receptacles as shown below. The Remote connector should connect directly to the OmniScan.



If a direct read encoder is used, the cable connection below should be used.



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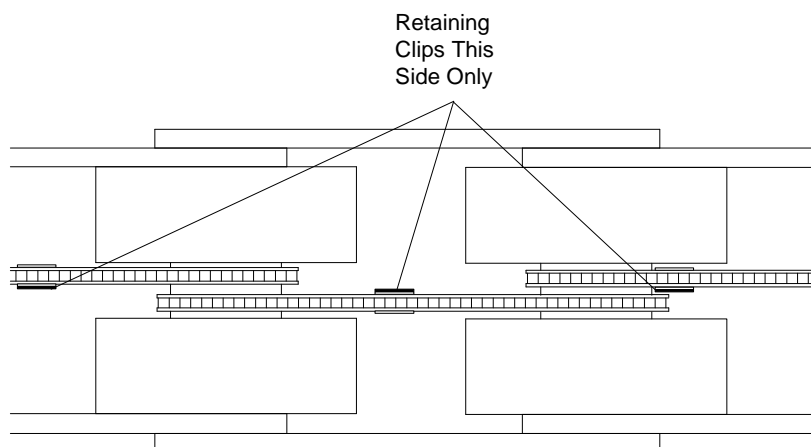
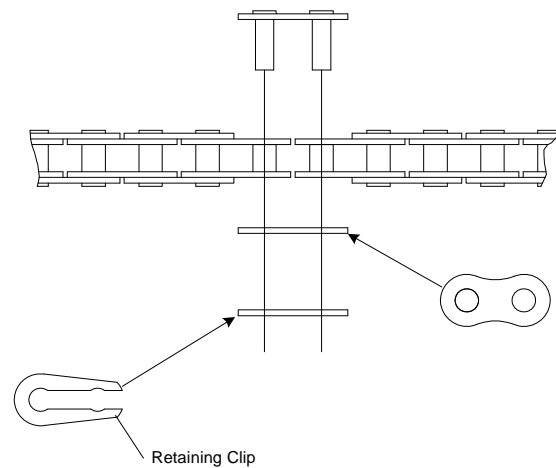
justing the Scanner Position

The position and alignment of the scanner are very important to ensure the proper tracking of the X-Axis. Once the Drive Unit and additional links have been aligned and attached the cabling must be connected in order to test the alignment.

When the system is first attached, you should run it around the circumference to allow any mis-alignments to be removed. Starting at the top, run the scanner around the circumference 360 degrees. Reverse the scanner and move 360 degrees back to the top. This will eliminate any misalignments and allow the scanner to track consistently.

Drive Chain Replacement

In the event a drive chain breaks or becomes damaged a replacement must be installed. First, the damaged/broken chain (if not already off) must be removed. Do not disassemble the scanner drive links to remove and replace the chain. Each of the drive chains has a master link that can be removed in order to remove the chain. The retaining clip must be placed on the inboard side of the chain (see below).



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Scanner Movement

The scanner can be moved using the arrow keys on the MCU-P500 by using the A-JOG menu option. The orientation and movement direction for each arrow key is shown below.

