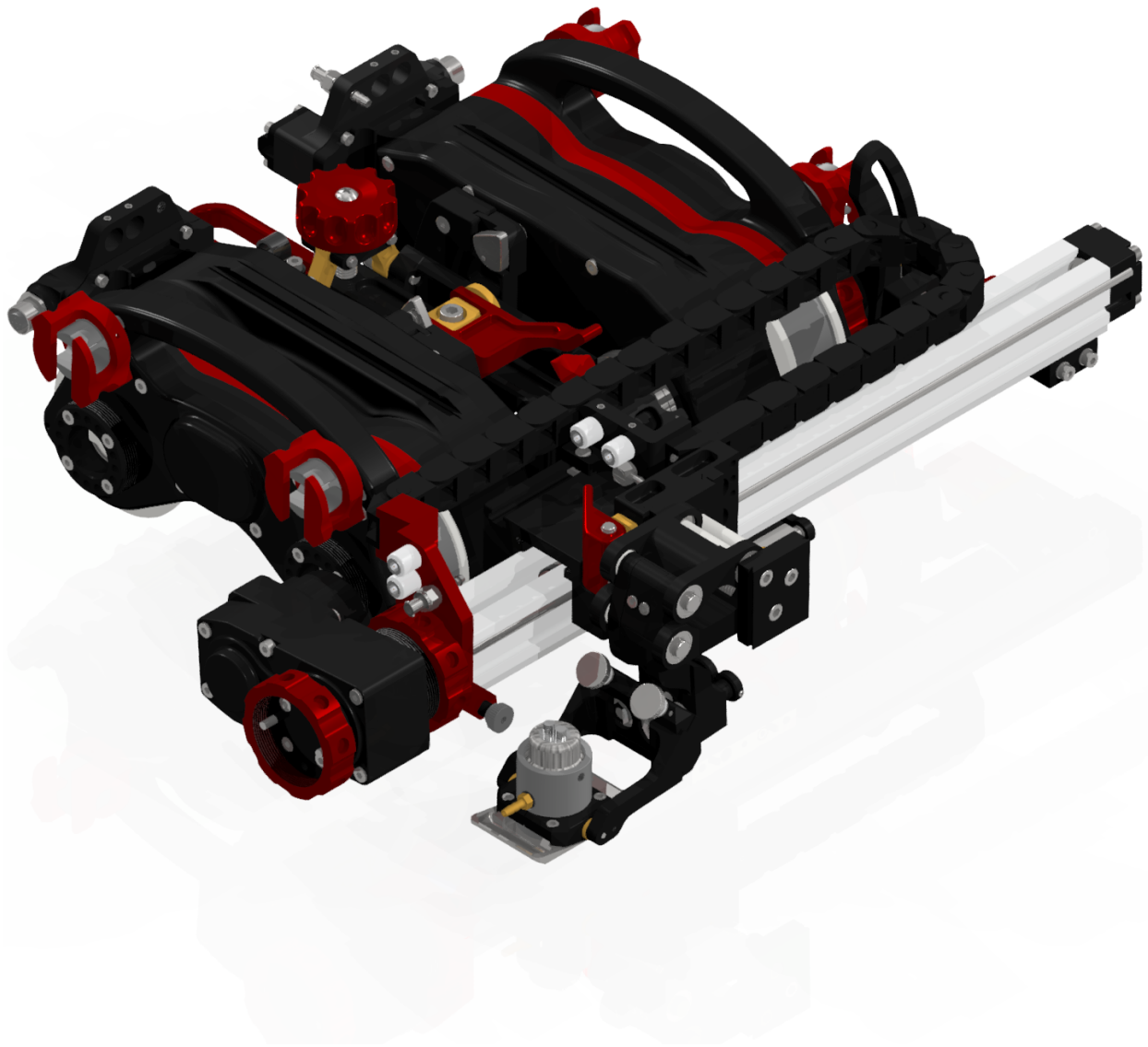




# Apex User Manual



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# Introduction

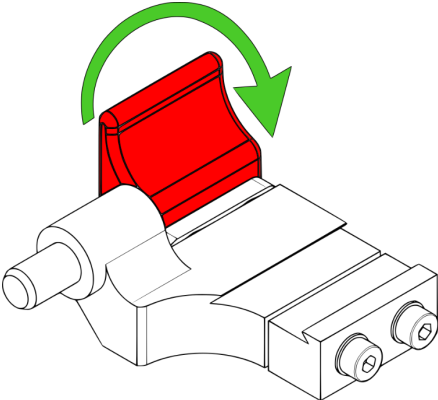
## Overview

The Apex is a versatile, portable, and reliable crawler featuring toolless attachments for ease of use and service and is capable of B-scans, C-scans, and weld inspections. It can perform circumferential or longitudinal raster scans. It is also able to complete river bottom rasters and weld scans. It is modular, including interchangeable attachments to quickly modify the scanner for different scan types or configurations. The Apex also has an adjustable body midsection and suspension, allowing for navigation over uneven surfaces.

## Symbols

Any green arrow indicates an action, and any red object indicates that the object is used in assembling or adjusting the scanner. All colored objects indicate that they can be moved or interacted with.

Example:



In this image, the red latch needs to be rotated in accordance with the green arrow.

## Maintenance

The Apex system is designed to have minimal maintenance. However, it is extremely important to completely dry the scanner before storage in air-tight containers.

## Warnings

### DANGER! FALLING OBJECTS!

Due to possible inconsistencies in surface conditions, magnetic saturation, or substances on the object being scanned, the scanner could fall. This could result in severe INJURY or DEATH. The area under the scanner should always be clear of both people and objects.

### DANGER! MAGNETIC MATERIAL!

This scanner is equipped with powerful magnets that produce an extremely strong magnetic field which can damage sensitive electronics such as watches, phones, or other devices. Those who have pacemakers or ICD's must use great caution and avoid coming into close contact with the magnetic wheels.

## Specifications

### Scanning Velocity and Acceleration

#### Maximum Velocity Settings:

Raster: 30 in/s

Drive: 5.5 in/s

#### Maximum Acceleration Settings:

Raster: 200 in/s<sup>2</sup>

Drive: 50 in/s<sup>2</sup>

#### Recommended Velocity Settings:

Raster: 30 in/s

Drive: 5 in/s

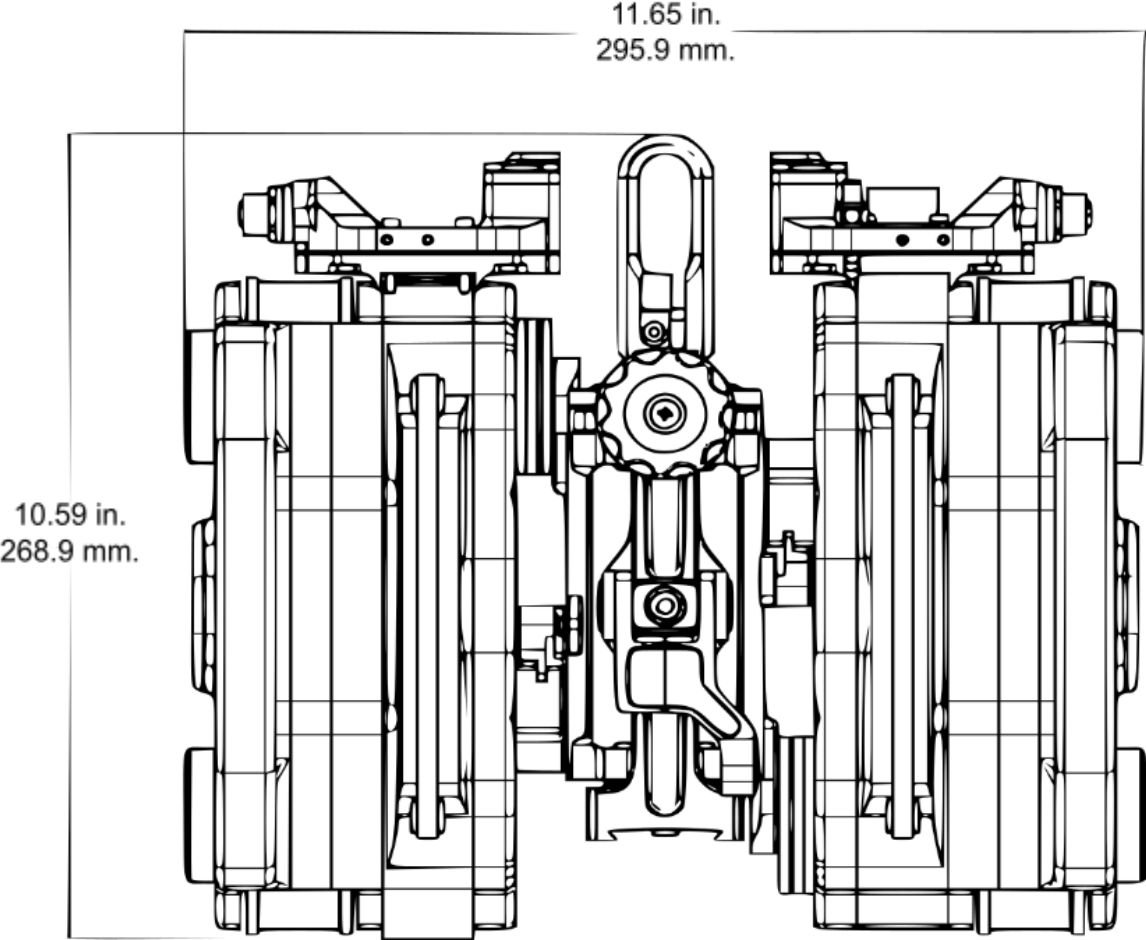
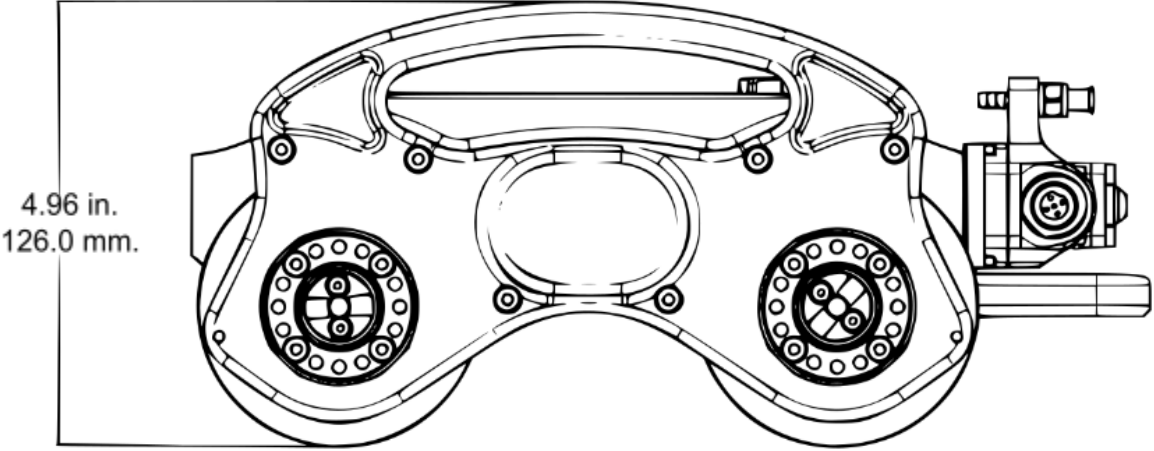
#### Recommended Acceleration Settings:

Raster: 150 in/s<sup>2</sup>

Drive: 20 in/s<sup>2</sup>

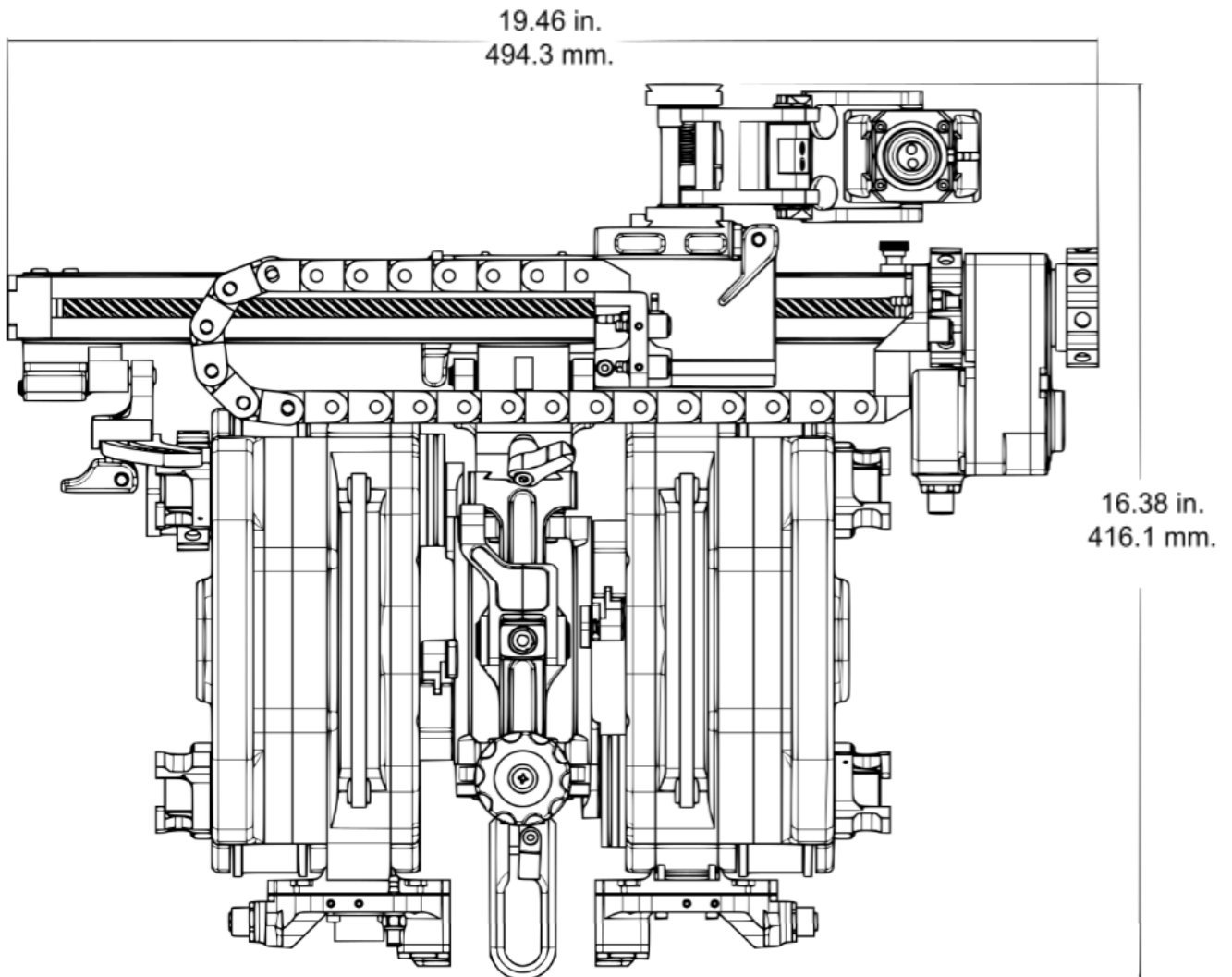
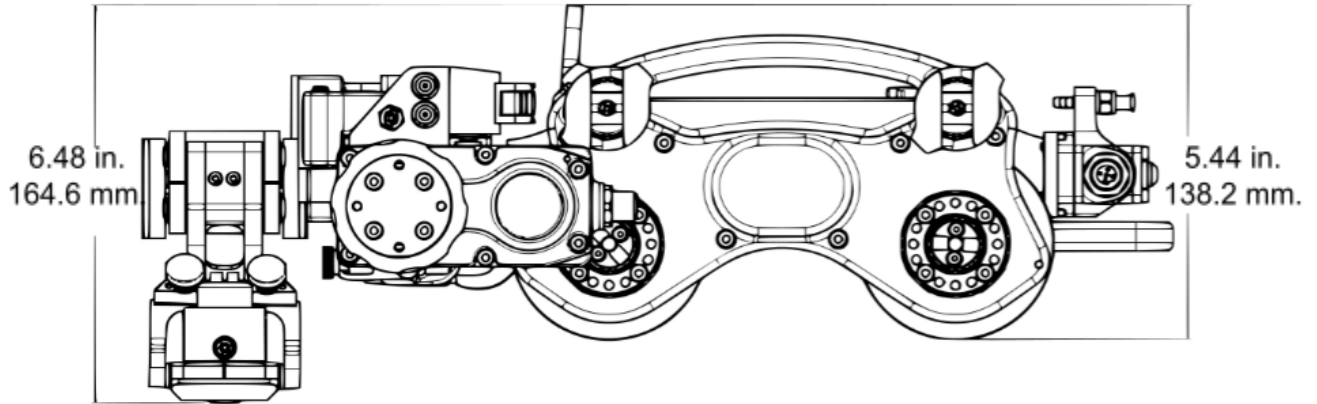
# Scanner Specifications

## Main Body



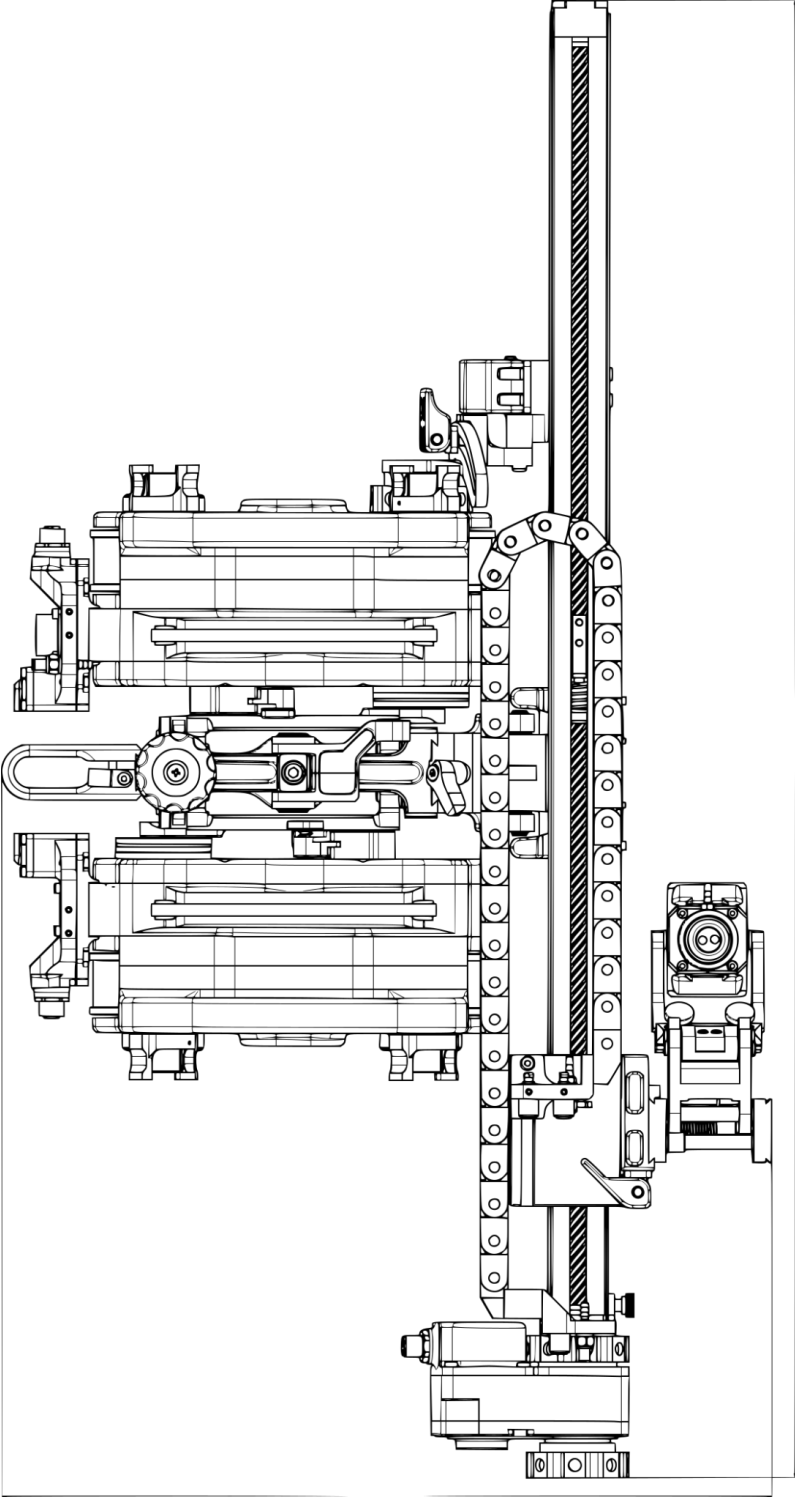
Crawler Weight: 22.0 lbs

# Scanner With 12" Raster Arm

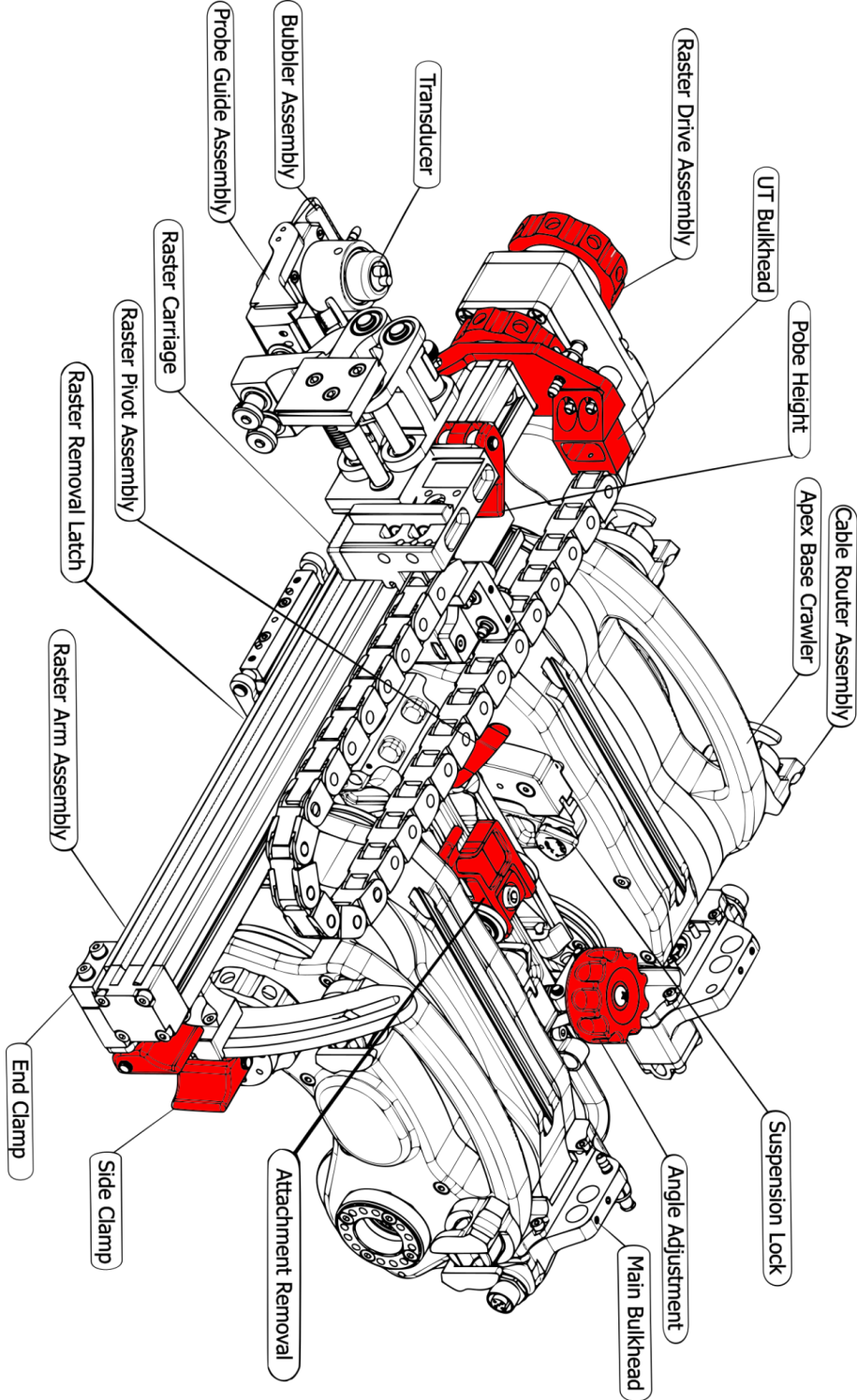


Scanner Weight: 30.5 lbs

# Scanner With 24" Raster Arm



# Contents



Note: Red highlighted parts are used for adjustment or fastening.

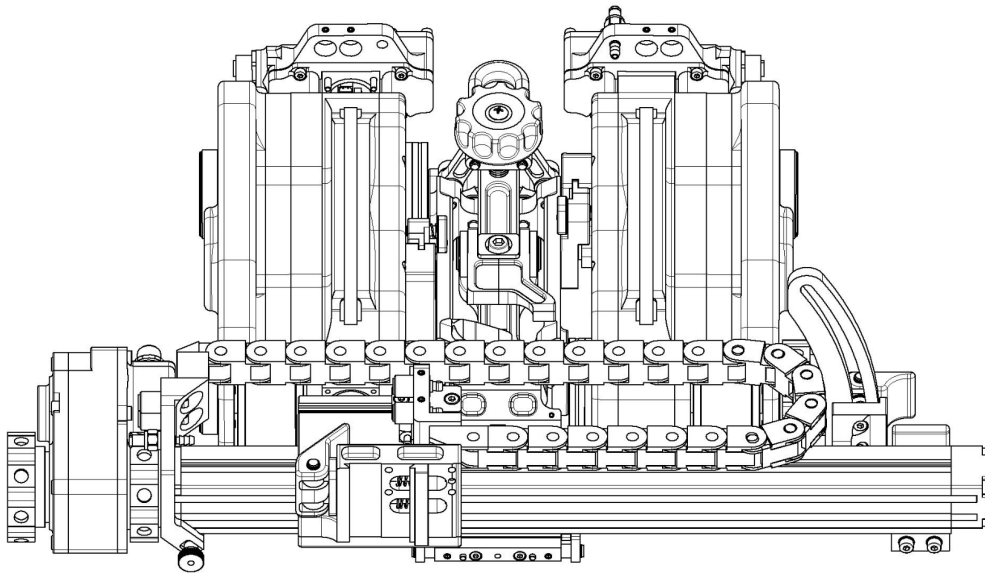


# Apex Configurations

## C-Scan Configuration

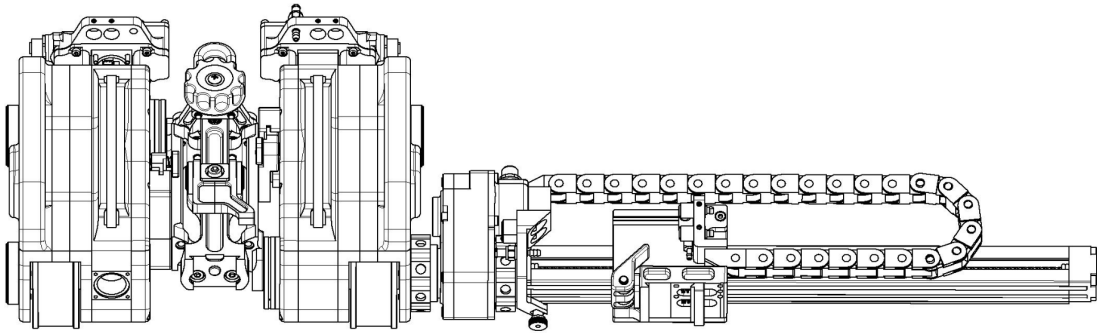
### Front Raster Configuration

For maximum stability and precision, the front raster configuration is ideal. This configuration has two fastening points for the raster, and has greater image accuracy due to its stability.



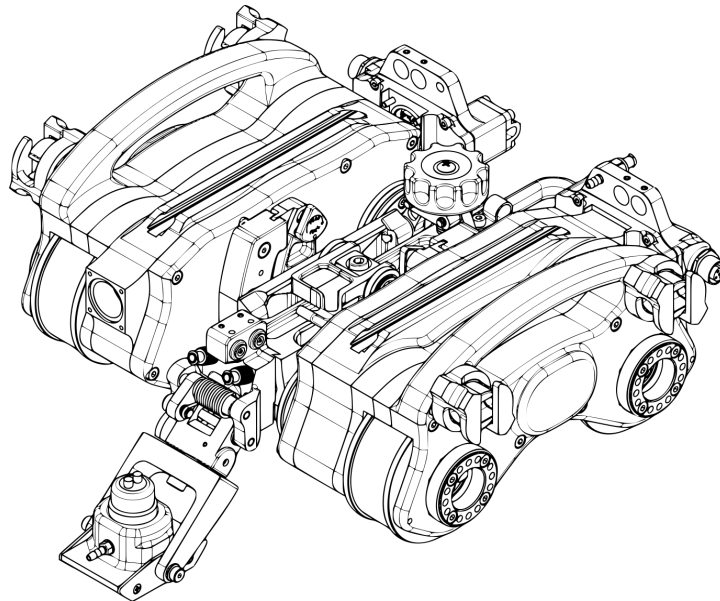
## Side Raster Configuration

For greater reach and scanning of pipe less than 6" OD, the side raster configuration allows the scanner to reach objects with an overhang or that are next to an obstacle.



## B-Scan Configuration

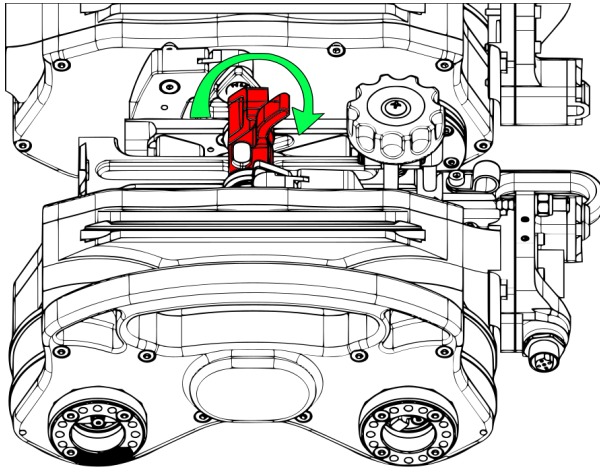
Ideal for running single line scans to quickly identify the length and depth of the flaw below the surface.



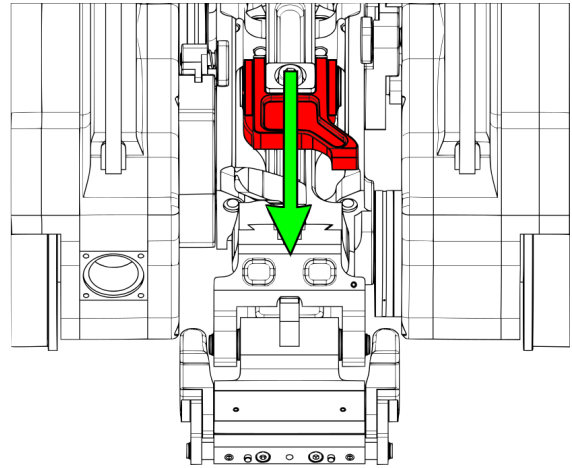
# Assembly

## Installing the Pivot Assembly

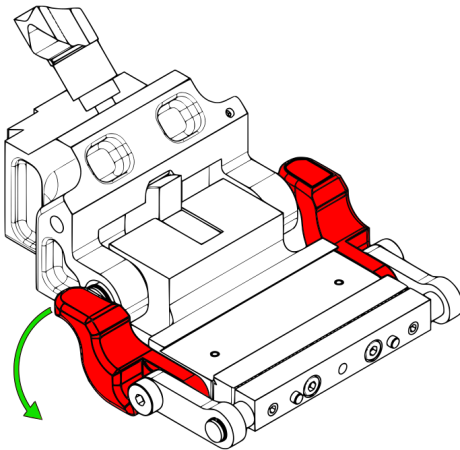
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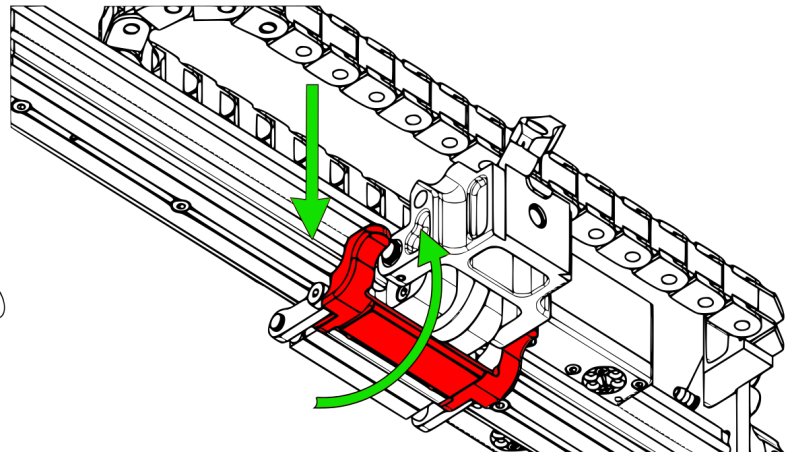
#1: Open the red latch on the main unit.



#2: Slot the dovetail on the pivot assembly into the groove on the main assembly and push the latch forward.



#3: Flip the red latch on the pivot assembly down.

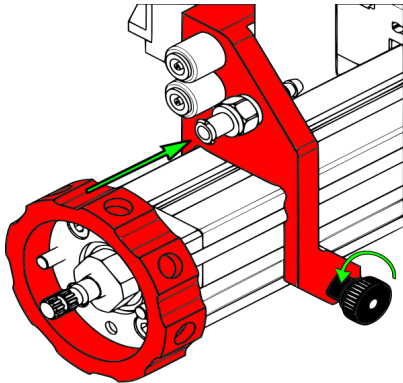


#4: Seat the raster arm dovetail in the pivot assembly and close the red latch to secure the raster arm. Verify that the arm is firmly seated by gently pulling on it.

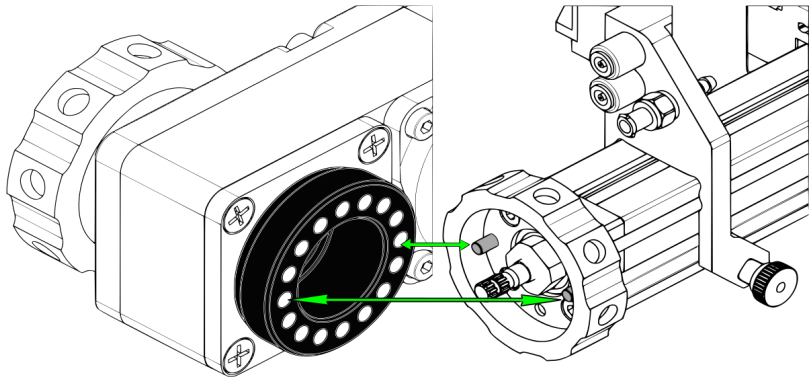
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## Attaching the Motor to the Raster Assembly

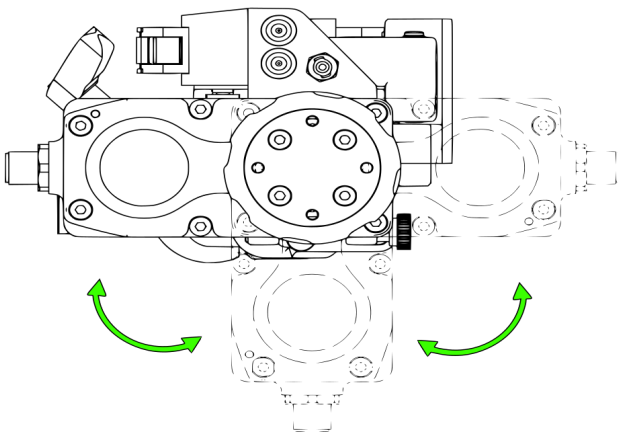
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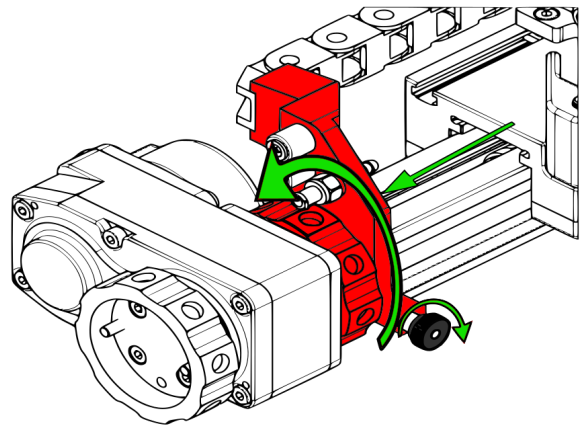
#1: Loosen the black nut and slide the UT bulkhead back until the collar is accessible.



#2: Align the drive pack output with the raster lead screw.



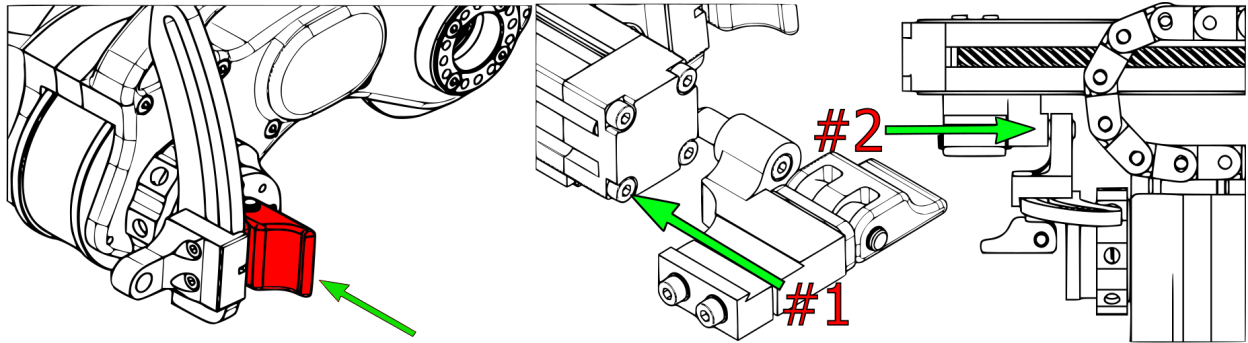
#3: Clock the motor to a desired position and align the dowels on the raster with the holes on the face of the motor case. Then seat the drive pack by slightly moving the raster carriage to engage the lead screw spline if needed.



#4: Once the motor is clocked, tighten the collar until it is seated. Then slide the UT bulkhead back until it is right next to the collar and tighten the black nut.

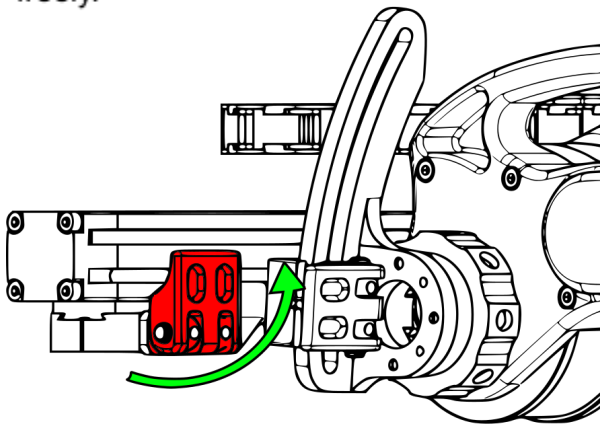
## Attaching the Stabilizers to the Drive Unit and Raster

---

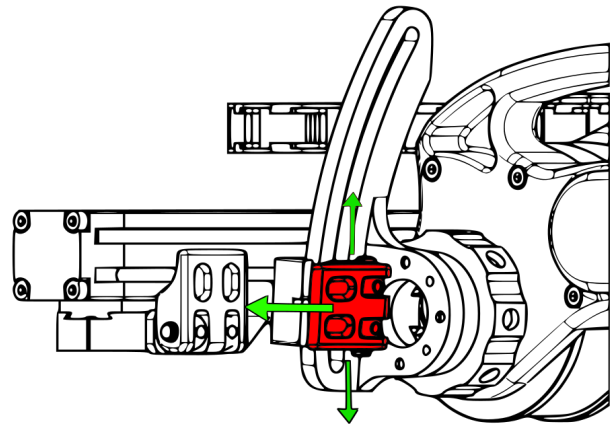


#1: Align the dowels on the side brace assembly to the collar nut mount so that the side brace is vertical to the surface it is on. Then tighten the collar collar the red latch on the side brace so that it can move freely.

#2: Align the groove on the end clamp with the dovetail on the raster arm (#1). Center the raster end clamp dowel in the hole on the side brace (#2).



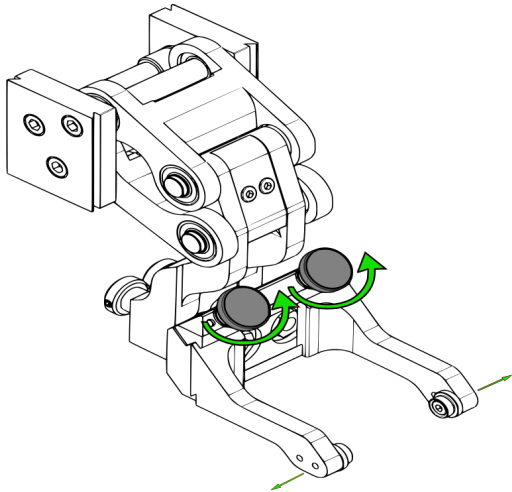
#3: Close the latch on the end clamp to secure the raster.



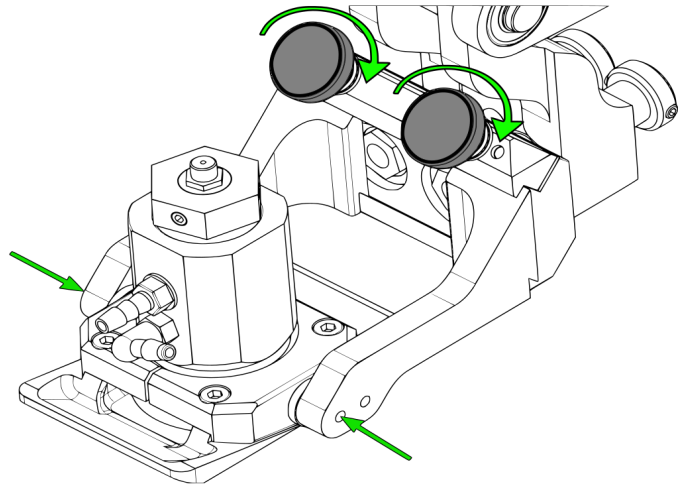
#4: Ensure that the raster arm is level and latch the side brace to secure the arm.

# Attaching the Bubbler Assembly to the Probe Guide

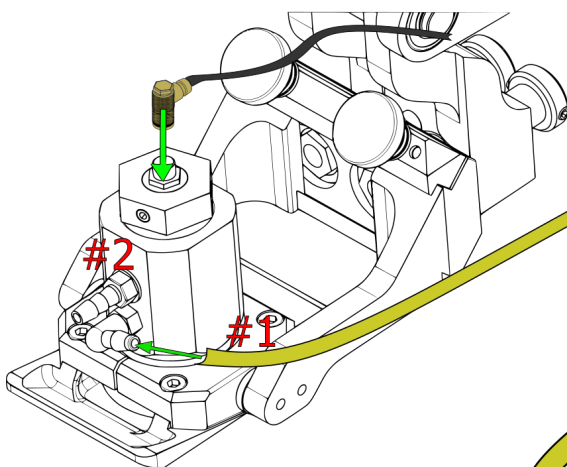
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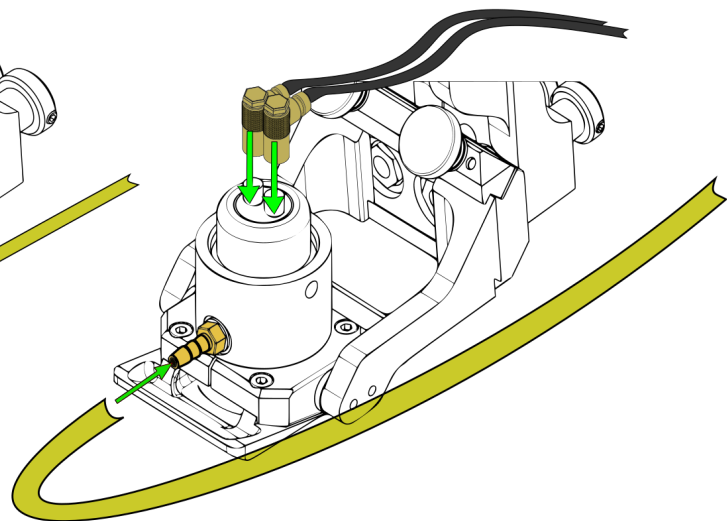
#1: Open the arms on the probe guide by loosening the thumb screws and spread them apart.



#2: Insert the buttons on the arm into the bubbler and slide the arms to where they slightly touch the bubbler. Then tighten the thumb screws to secure the bubbler.



#3: Single Element: Attach the water lines to the straight\* fitting (#1), and connect the UT line(s) to the transducer.



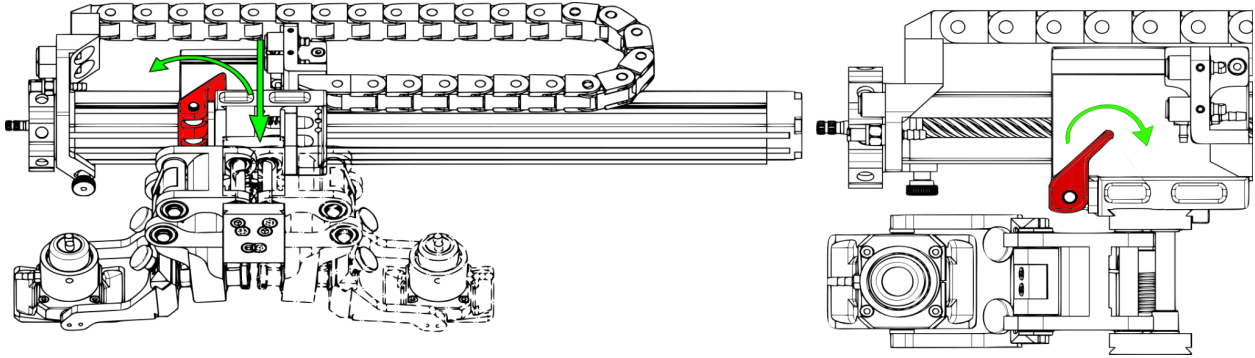
#4: Dual Element: Attach the water line and both of the UT lines to the bubbler and the transducer.

\*Note: The top fitting is for bleeding air from the water column and should be left open.

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## Attaching the Probe Guide

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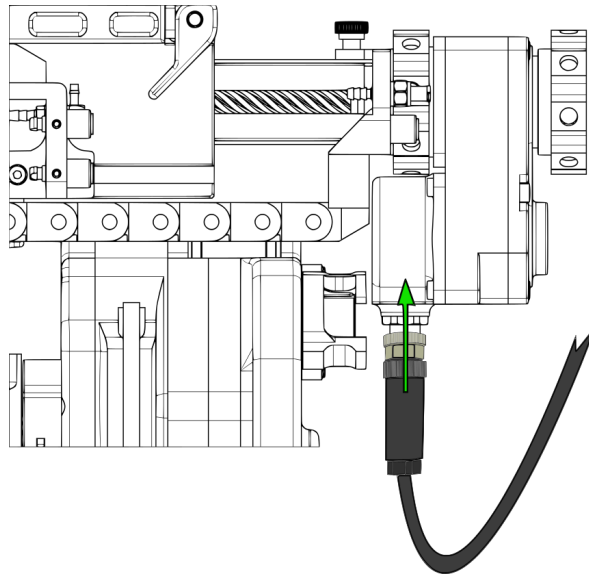
**#1:** Open the red latch on the raster carriage. Then slot the probe guide in the desired direction on to the dovetail on the raster carriage.

**#2:** Ensure that the bubbler has equal travel up and down and close the red latch on the raster carriage to secure the probe guide.

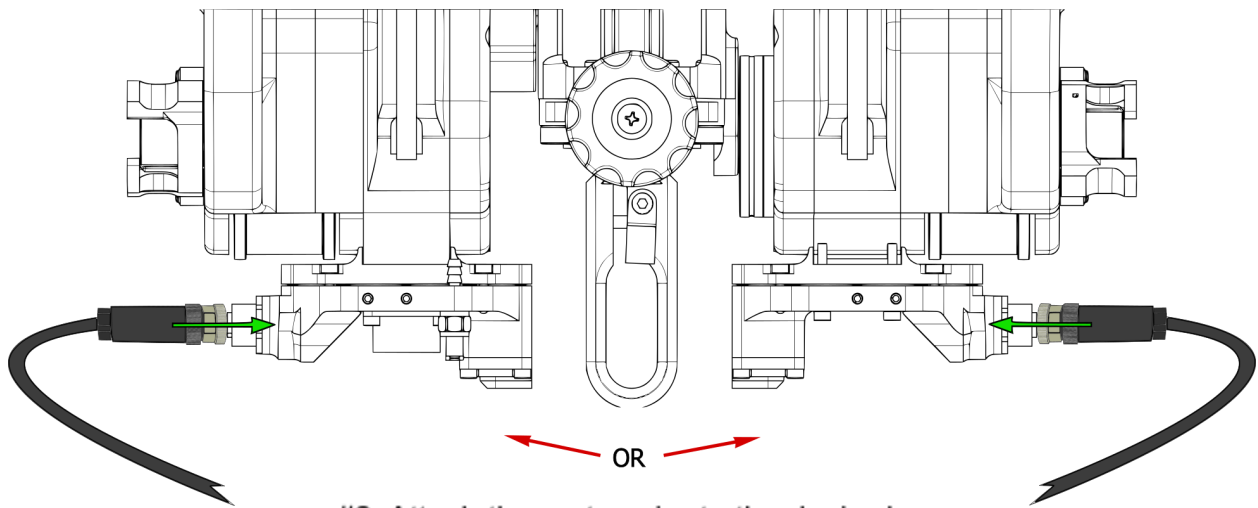
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## Routing the Cables

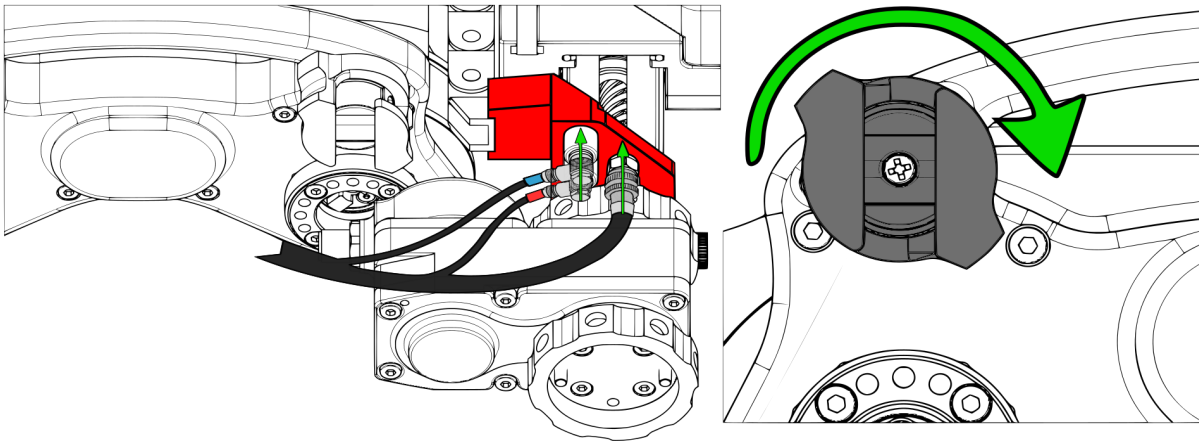
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**#1:** Insert the motor cable into the drive pack and tighten until seated.



**#2: Attach the motor wire to the desired bulkhead and tighten until seated.**



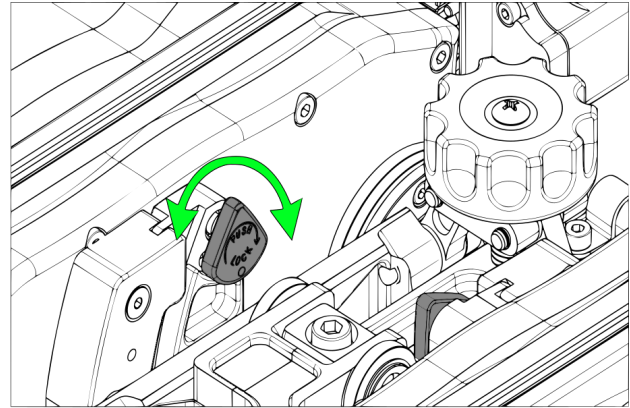
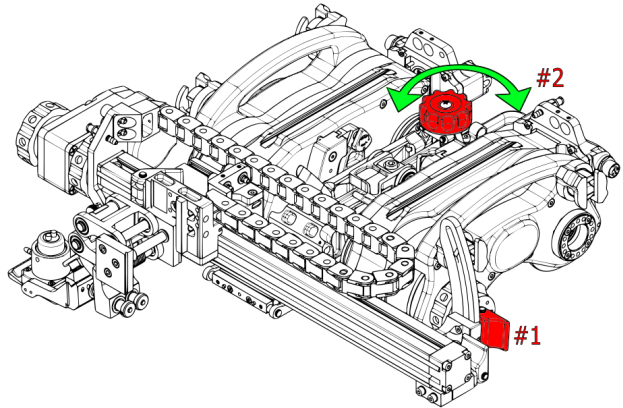
**#3: Insert the UT lemos and water tubing into the UT bulkhead.**

**#4: Rotate the cable twist-lock clockwise to open in and insert the cable.**



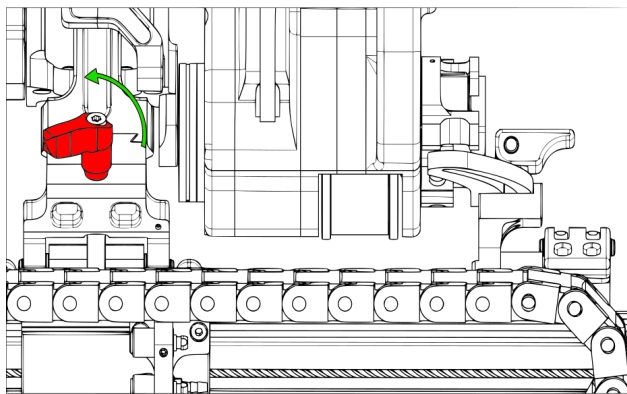
# Unlocking the Suspension and Adjusting the Raster Angle

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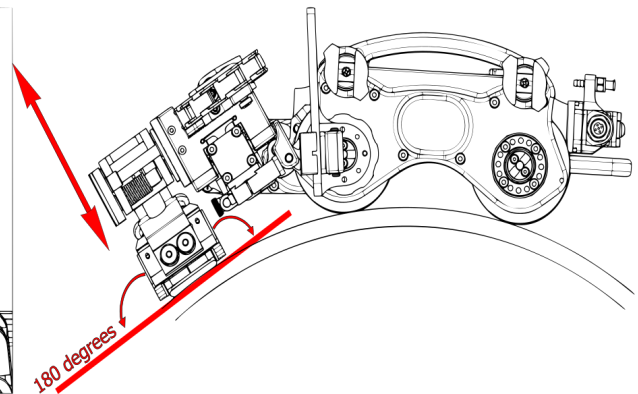


#1: To change the suspension angle, first unlatch the side clamp lever (#1), then rotate the angle adjustment knob (#2). To raise the midsection, rotate the knob clockwise; to lower it, rotate the knob counter clockwise.

#2: To unlock the suspension, push in the locks and rotate them counter clockwise. To lock the suspension, align the pins by raising or lowering the drive sections until the locks can be pushed into place and rotated clockwise to lock the assembly.



#3: To adjust the raster angle, turn the pivot assembly handle left to allow the raster assembly to rotate up or down to match the curvature of the surface that it is placed on.

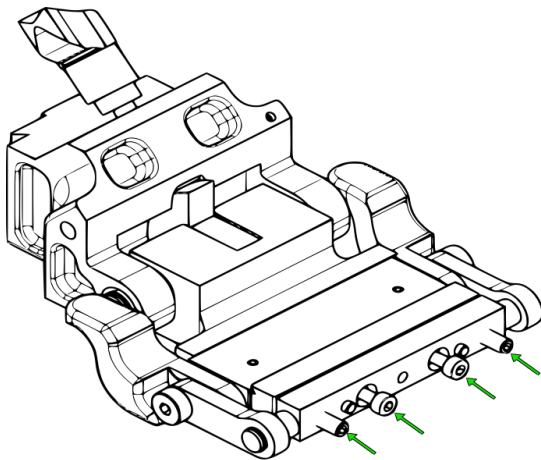


#4: Rotate the pivot assembly so that the bottom of the bubbler is flush with the surface to allow equal rotational compliance of the probe gimbal. Then set the probe height (pictured on page 14) for equal vertical travel to the surface.

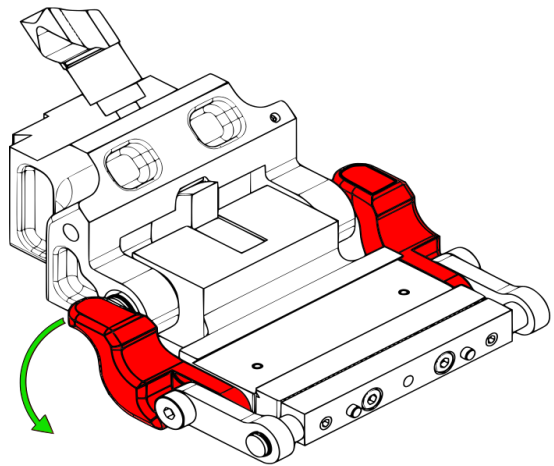
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## Adjusting the Pivot Assembly Grip

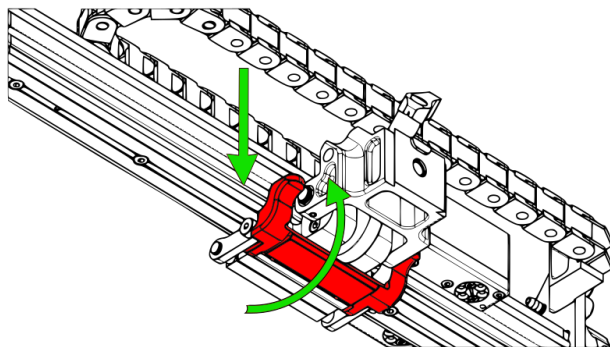
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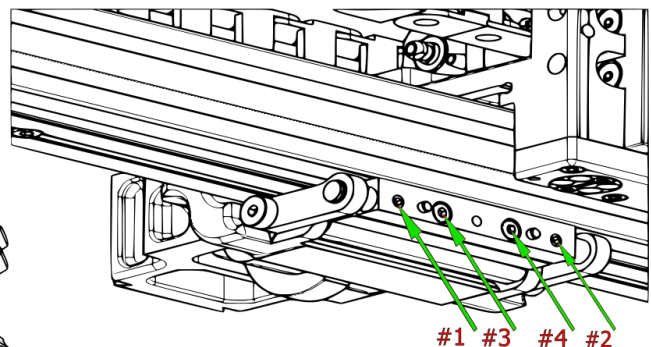
#1: Unscrew the set screws and the front bolts until they are almost removed.



#2: Unlatch the red latch on the front of the assembly.



#3: Seat the raster arm in the pivot assembly and latch the red handle to secure the raster arm.



#4: Tighten the set screws in the order of the numbers displayed, adjusting them evenly until they are firmly seated on the raster arm. Then seat the M3 bolts on the front. Do not over-tighten the bolts.

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# Warranty

## Scantech Limited Warranty

Scantech Instruments, Inc. (“Scantech”) will replace or repair, at its option and at its expense, any part or parts found to be defective in workmanship or material, for a period of three (3) years from the date of purchase. Additionally, Scantech warrants against defects in the drive section gear-train components for a period of five (5) years from the date of purchase.

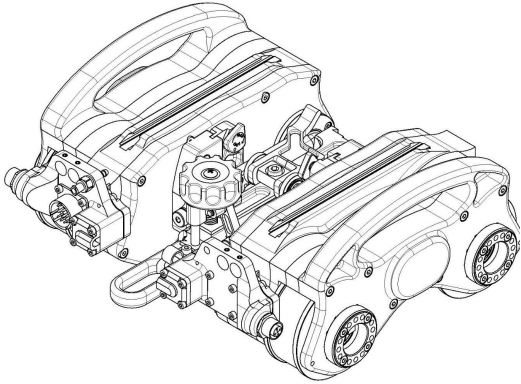
This limited warranty applies only to products manufactured by Scantech Instruments, Inc. Third-party components utilized in this product are covered by the warranty of their respective manufacturers. Components replaced under warranty will be covered for ninety (90) days, or for the remaining period of the original warranty, whichever is in effect for the longest period. This warranty does not cover any part or parts damaged by misuse, abuse, neglect, normal wear, or accidental damage; or repairs, alterations, or re-assembly not performed by, or under the direction of Scantech.

Prior to returning any products, please contact Scantech support for shipping and return information. This warranty does not cover shipping or transportation costs.

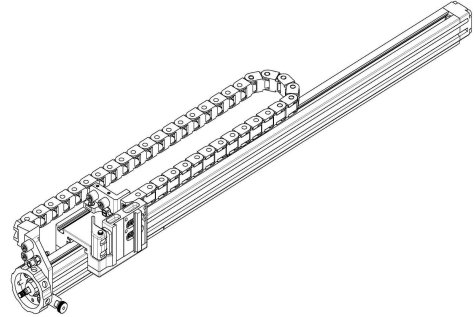
# Appendix

## Parts

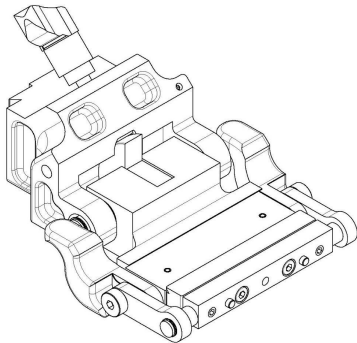
Apex Base Crawler



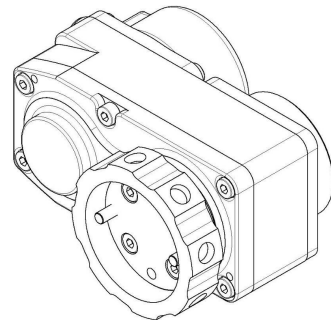
24" Raster Arm Assembly



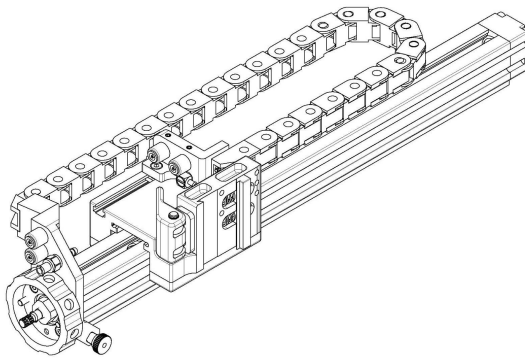
Raster Pivot Assembly



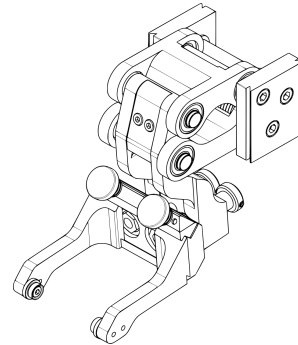
Raster Drive Assembly



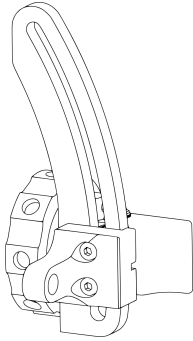
12" Raster Arm Assembly



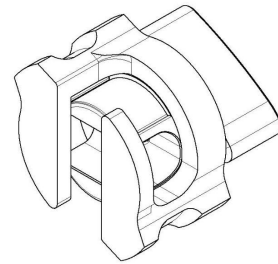
Probe Guide Assembly



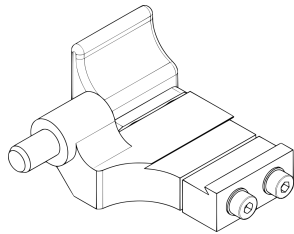
Side Clamp



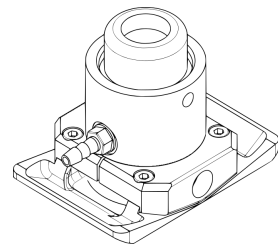
Twistlock Cable Router Assembly



End Clamp



Bubbler Assembly



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Fax: 903-234-2033  
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