SCANTECH

The XS System

System Overview and Owner's Manual

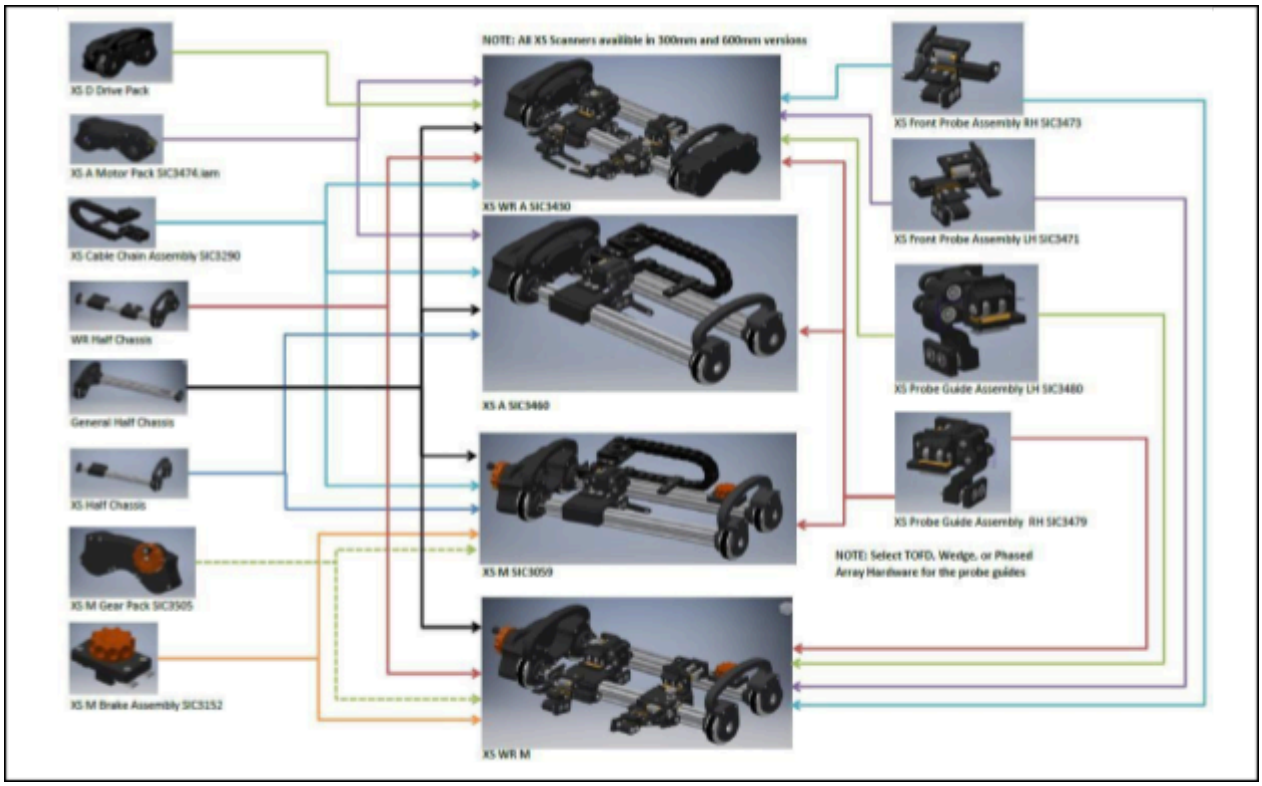
Rev. 1

1. THE XS SCANNERS

Thank you for your purchase of a ScanTech Instruments Inc. XS Scanner, offering you the best in scanning technology and modularity. We are here to provide you with a robust, precision piece of equipment that is capable of providing spot on accuracy while being flexible enough to serve all of you scanning needs.

If, at any point during your ownership of this scanner, you have questions regarding its operation or the expansion options available, please feel free to give us a call.

1.1. XS OVERVIEW



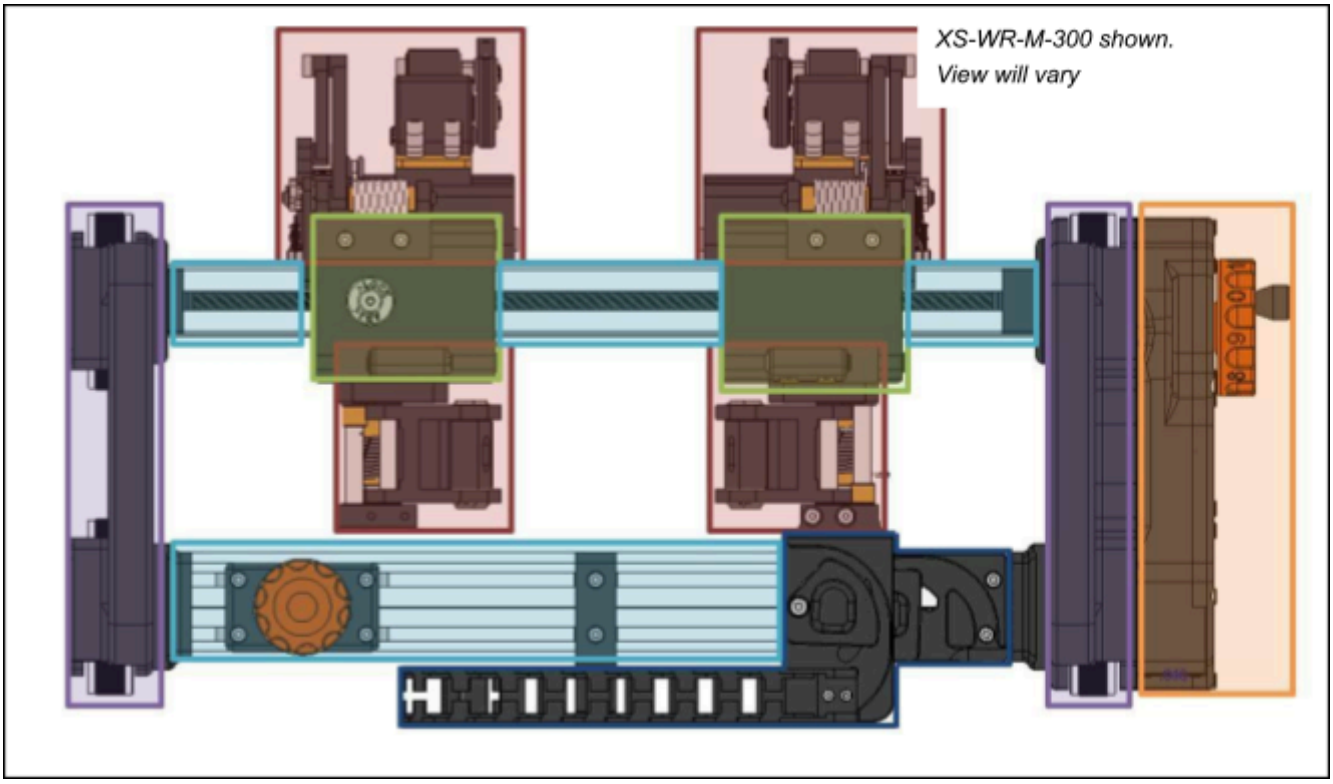
1.1.1. ABOUT THE XS SYSTEM

The XS System is ScanTech's solution to an ever changing work environment where ultrasonic testing is getting applied in new ways to new environments. The XS System allows you to adapt and upgrade as your jobs evolve with our totally modular system. Once you start building a selection of modules, you can combine them into different configurations that best suit your current job (see above). This saves you time and money. A complete list of the current 'recipes' can be found in Appendix A.

There are several Module types currently in use in the XS System. They are:

1) O Power Packs*: *The muscle and brains of the Scanner*.
2) O Probe Guides*: *Hold the transducers normal to the surface of the work piece. Customizable for different transducer types.*

3) O Carriages*: *The foundation that the Probe Guides mount on. These slide along the top of the Extrusion Assemblies.*
4) O Drive Section: *Hold the wheels and provide a mounting place for the Power Packs*.
5) O Extrusion Assemblies: *The Scanner's 'chassis'. Changing these effects the number of Probes and overall length of the Scanner.*
6) O Cable Management System: *This assembly controls and protects the Cable Assembly while the scanner is in use*.
**Details on these modules can be found in Section 1.2.*



1.1.2. The XS ID Numbers

Each configuration of the XS Scanner is identified by a model number and each individual Scanner is identified by a serial number. The model numbers are formatted as XS-[Scan Type]-[Power Type]-[Size].

[Scan Type] options:

1. ***[Blank]:*** Standard raster scan. Single Probe configured as PA or Conventional UT.
2. **W:** Non-rastering weld scanner. Four Probes configured as TOFD or Conventional UT.
3. **WR:** Rastering weld scanner. Four Probes configured as TOFD or Conventional UT.

[Power Type] options:

1) **M:** Manual raster and drive.
2) **A:** Automatic drive and, in rastering configurations, automatic raster.

[Size] options:

1) **300mm:** 300mm of available width on the Front Extrusion. Note total width is wider.
2) **600mm:** 600mm of available width on the Front Extrusion. Note total width is wider.

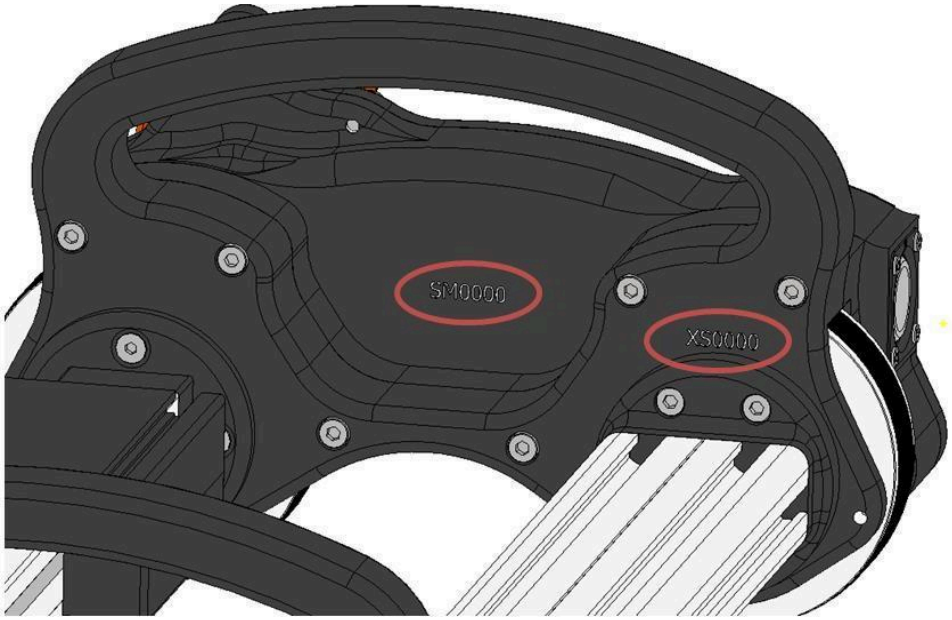
EXAMPLE:

XS-M-600: This is a manual, rastering scanner with a 600mm Extrusion Assembly.

XS-WR-A-300: This is an automatic, rastering scanner with four probes and a 300mm driven raster stroke Extrusion Assembly.

Each scanner is also engraved with two serial numbers. The first one is on the Chassis and the second one is on the Power Pack* (see below). These uniquely identify each Scanner which helps us provide you with fast and effective support.

**Note: Some of the early scanners may not have a serialized Power Pack*



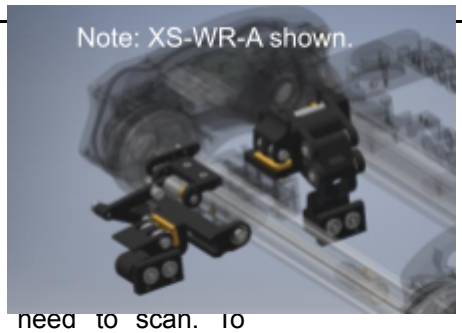
1.2. XS MODULES

1.2.1. THE XS POWER PACKS

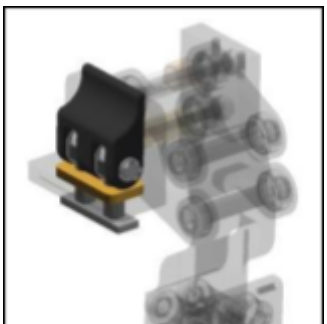
The XS System has a selection of Power Packs which enable it to be used in a variety of situations and at various price points. We have Power Packs for manual, automatic raster, and automatic non-raster configurations. Each one uses our unique O-ring face seals and is made from light but tough anodized aluminum. Inside, we use the latest in motor and gear technology. This provides you with a durable, environmentally sealed design that will provide the same exceptional performance throughout its life time.

The Power Packs are designed to be user interchangeable. Each one is secured to the scanner by 6-8 screws that are easily accessible and allow you to quickly switch between them. See Chapter 3 for more details.

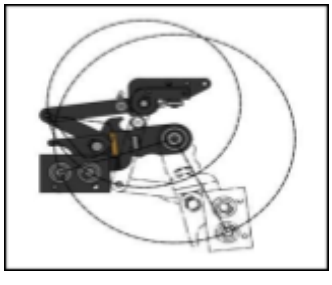
1.2.2. THE XS PROBE GUIDES



need to scan. To help with your unpredictable working conditions, we designed the XS Probe Guides to handle all of them. From flat plate to 3.5in OD radial scans, they're up to the task (see below).

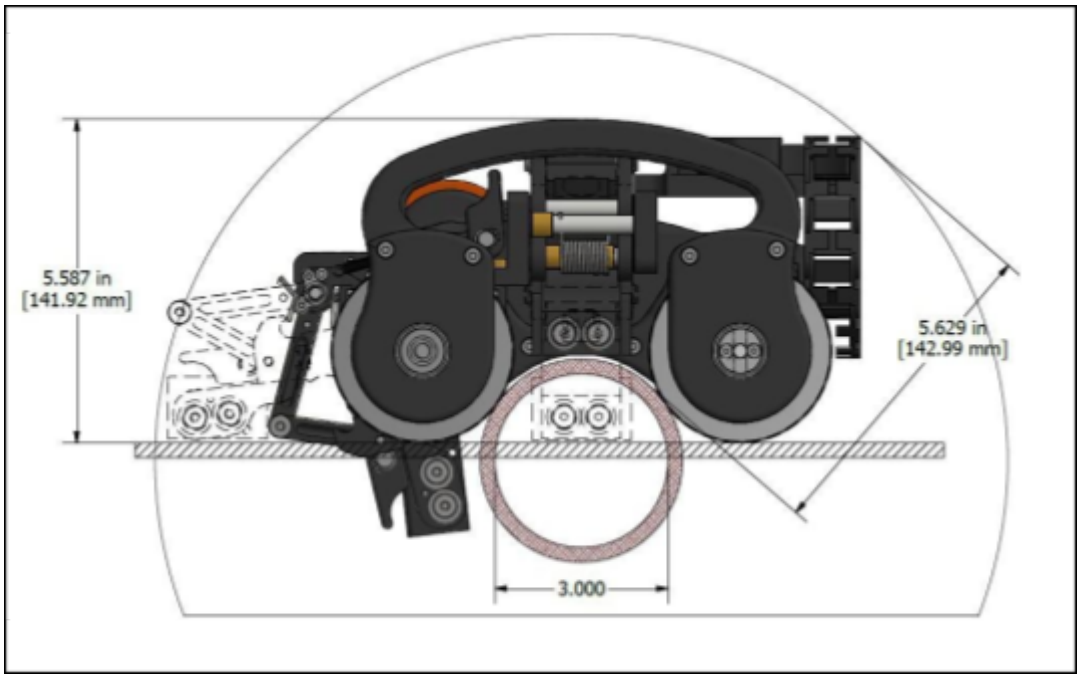


Both the standard (top right) and front Probe Guides (mid right) are designed to produce a constant spring force throughout their swing. This will keep your transducer pressed against the work surface, ensuring accurate data. The geometry of both have also been laid out so that they remain normal to whatever surface it is on.

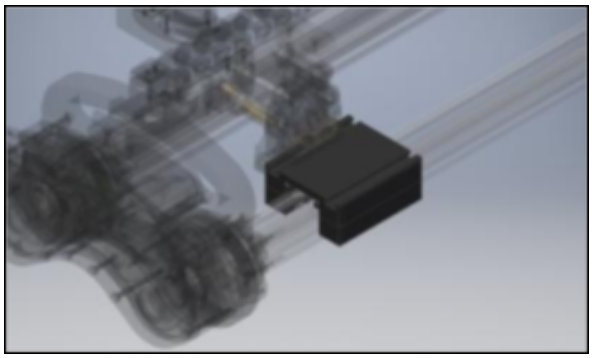


guide without tools.

We know that when you are working in the field, you may not have access to a full tool kit to make field adjustments. To help overcome this, the XS system's probe guides all have been fitted with a Cam Lever Lock (see mid left). This allows the operator to remove or adjust the entire probe



1.2.3. THE XS CARRIAGE



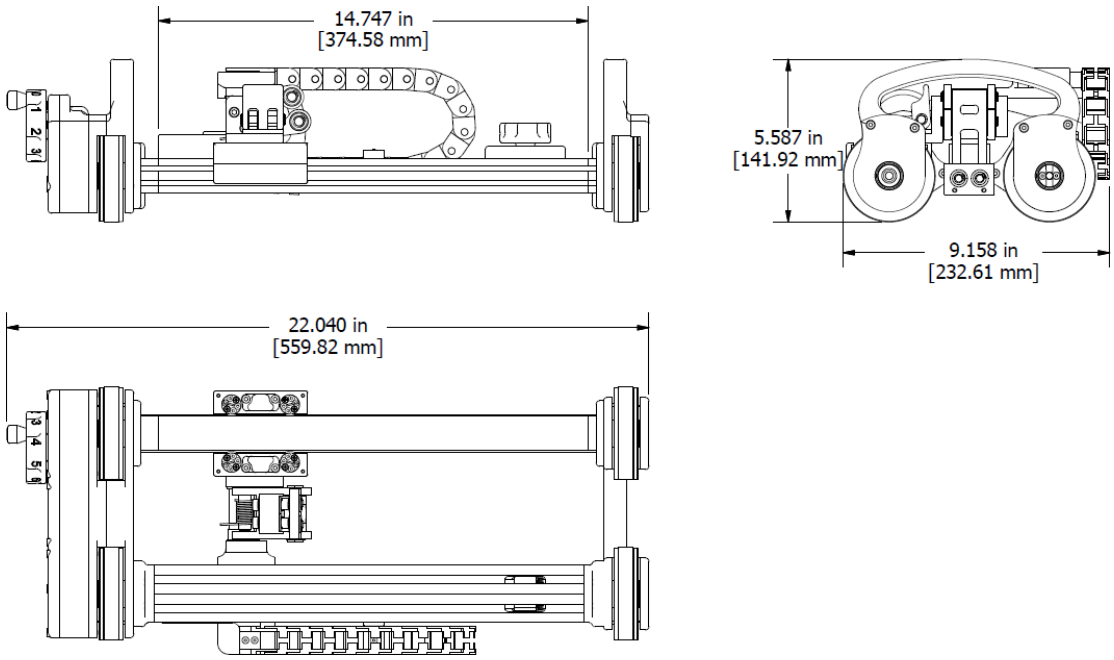
ScanTech has always been committed to providing scanners optimized for their application. That is why almost every part of our scanners are manufactured in house. It is simply not possible for us to maintain the standard we strive for if we are relying on outside sources.

We recently applied this principle to our Raster Carriage. We reengineered it to provide a longer service life and to make it more versatile. Also, since we have each part that makes up the carriage in stock, we can offer accelerated maintenance and repairs compared to other options.

1.3. XS SCANNERS

1.3.1. XS-M

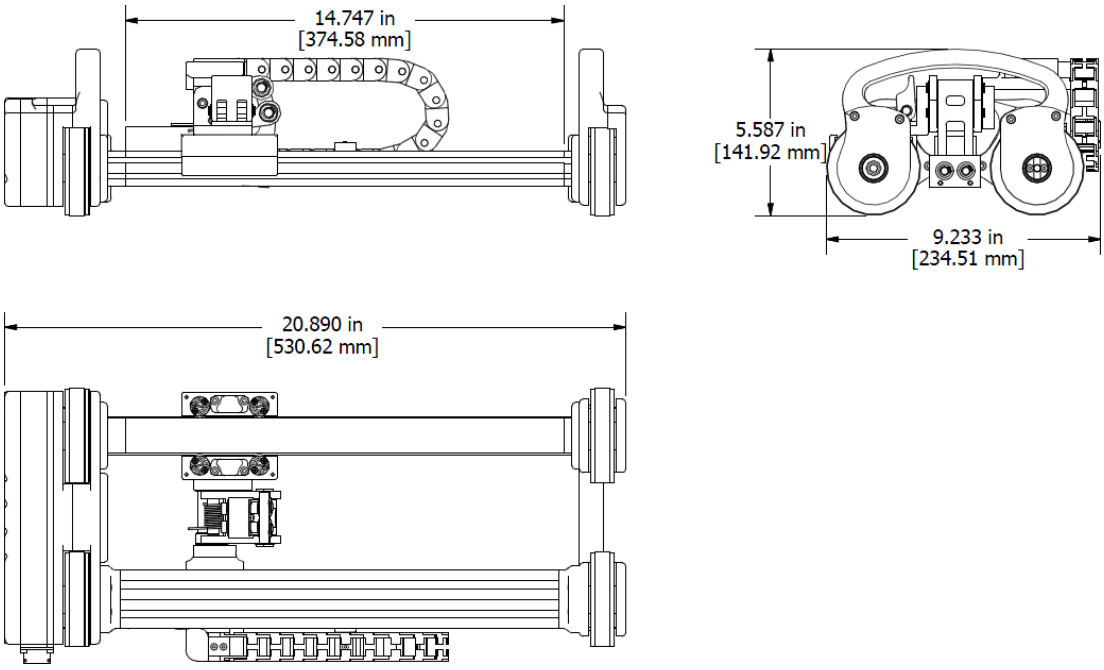
[Description]



Dimensions	L 22.040in (559.82mm) x W 9.158in (232.61mm) x H 5.587in (141.92mm)
Weight	19.18lbs (8.7kg)
Minimum diameter radial	3.5"
Minimum diameter axial	300mm: 15ft (4.57m) 600mm: 23ft (7.01m)
Overhead clearance	Flat plate: 5.587in (141.92mm)
	3.5" pipe: 5.629in (142.99mm)
Drive type	Manual
Max drive speed	N/A
Raster type	Manual
Max raster speed	*Varies with transducer and flaw detection types*
Probe configurations	Single probe
Transducer options	Phased Array
Similar configurations	XS-A
	XS-WR-M

1.3.2. XS-A

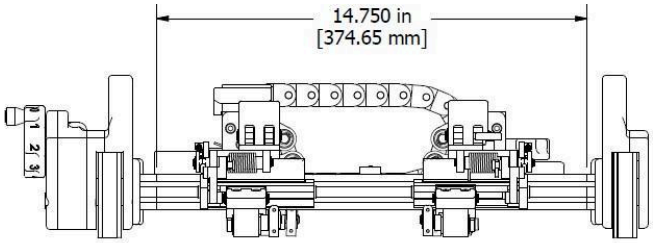
[Description]

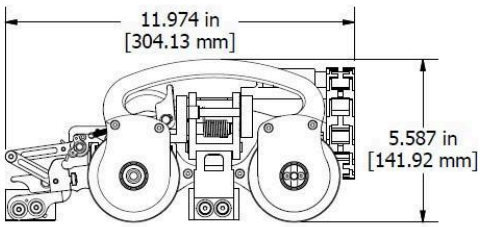


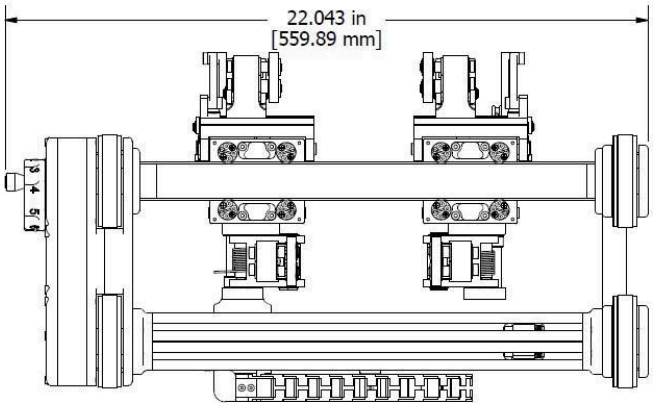
Dimensions	L 20.890in (530.62mm) x W 9.233in (234.51mm) x H 5.587in (141.92mm)
Weight	20.06lbs (9.1kg)
Minimum diameter radial	3.5"
Minimum diameter axial	300mm: 15ft (4.57m) 600mm: 23ft (7.01m)
Overhead clearance	Flat plate: 5.587in (141.92mm)
	3.5" pipe: 5.629in (142.99mm)
Drive type	Automatic 2-wheel drive
Max drive speed	11 in/sec (279.4 mm/sec)
Raster type	Automatic
Max raster speed	16 in/sec (406.4 mm/sec)
Probe configurations	Single probe
Transducer options	Standard, Phased Array
Similar configurations	XS-M
	XS-WR-A

1.3.3. XS-WR-M

[Description]



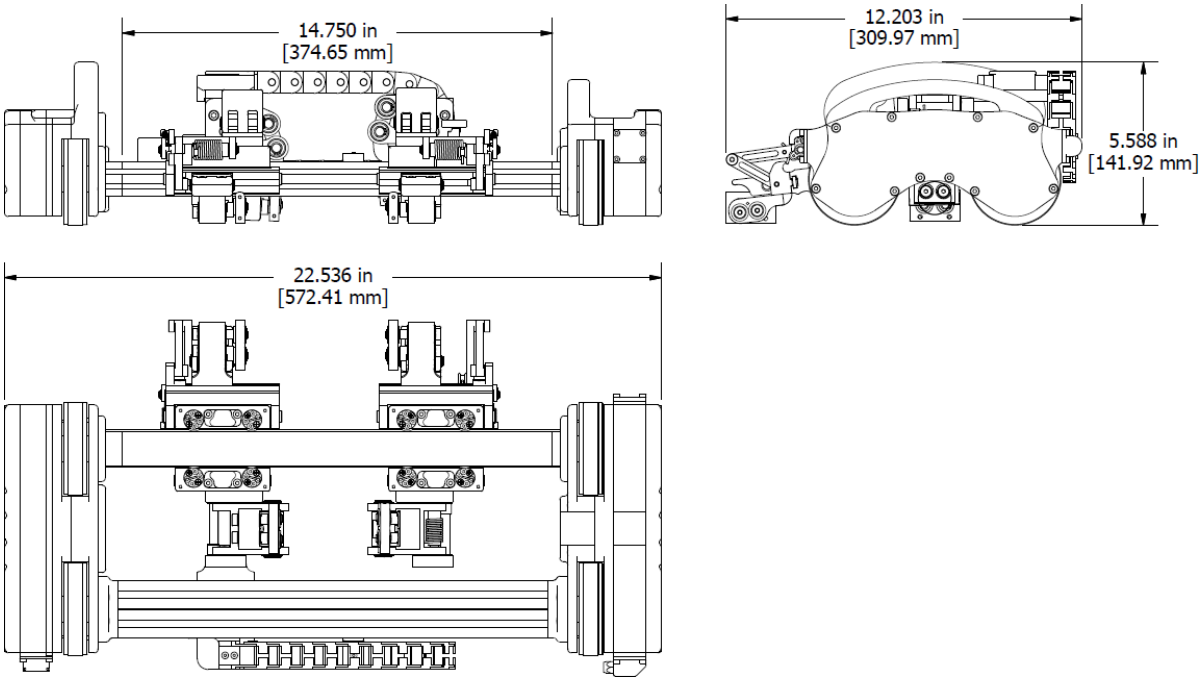




Dimensions	L 22.043in (559.89mm) x W 11.974in (304.13mm) x H 5.587in (141.92mm)
Weight	23.59lbs (10.7kg)
Minimum diameter radial	3.5"
Minimum diameter axial	300mm: 15ft (4.57m) 600mm: 23ft (7.01m)
Overhead clearance	Flat plate: 5.587in (141.92mm)
	3.5" pipe: 5.629in (142.99mm)
Drive type	Manual
Max drive speed	N/A
Raster type	Manual
Max raster speed	*Varies with transducer and flaw detection types*
Probe configurations	Four probe
Transducer options	Standard, Phased Array, TOFD
Similar configurations	XS-M
	XS-WR-A

1.3.4. XS-WR-A

[Description]



Dimensions	L 22.536in (572.41mm) x W 12.203in (309.97mm) x H 5.588in (141.92mm)
Weight	28.66lbs (13.0kg)
Minimum diameter radial	3.5"
Minimum diameter axial	300mm: 15ft (4.57m) 600mm: 23ft (7.01m)
Overhead clearance	Flat plate: 5.587in (141.92mm)
	3.5" pipe: 5.629in (142.99mm)
Drive type	Automatic four-wheel drive
Max drive speed	11 in/sec (279.4 mm/sec)
Raster type	Automatic
Max raster speed	14 in/sec (355.6 mm/sec)
Probe configurations	Four probe
Transducer options	Standard, Phased Array, TOFD
Similar configurations	XS-A
	XS-WR-A

2. Maintenance and Configuration

2.1. General Maintenance

2.1.1. Cleaning

The XS System should be kept clean to provide the longest possible service life. Critical areas include the magnetic wheels and the front extrusion rail. While the scanner is in use, avoid getting contaminates such as metal shavings or pieces of rust in these critical areas. The scanners are primarily constructed from anodized aluminum with some stainless steel and brass parts. For this reason, lye cleaners and other strong alkaline cleaners should be avoided.

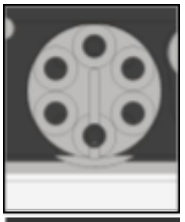
After each use, clean any metal shavings from the magnetic wheels and wipe off the Front Extrusion Assembly with a rag dampened with rubbing alcohol or similar cleaner.

2.1.2. Lubrication

The XS System is designed so that most of the mechanical systems are sealed from the environment and do not require lubrication. Additionally, the lead screw assembly does not require any external lubrication and can be damaged if oiled or greased.

The primary locations requiring lubrication are the guide rails on the Front Extrusion Assembly. After cleaning, apply a light oil to the surface. This should be completed after each use.

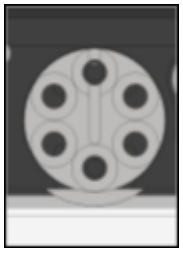
2.1.3. Carriage Maintenance



Tools Needed:

- #0 Phillips head
- 3/16 Flat Head

The Carriage on the XS system of scanners has been engineered to be as robust as possible. It works by pressing four U-groove bearings into the guide rails on the Front Extrusion Assembly. A new scanner, or one that has been properly maintained, will have very little twist in any axis of the Carriage and only a small amount of play along the length of the extrusion. As a Scanner gets used, however, the bearings will slowly wear and need to be adjusted. The procedure to do this is laid out below. After much use, it is possible for the bearings to be worn beyond repair. If this happens, the Carriage should be removed and the bearings replaced.



Adjustments are made by rotating the four Bearing Cams located on the underside of the Carriage (Figure 1). They start in the home position with the Bearing Cam slots pointed at the Front Extrusion Assembly (top right). In this position, the bearings are as far apart as possible. During initial assembly, they are rotated approximately 90°. As the Bearing Cams are rotated outward (mid right), the Roller Bearings move in toward the Front Extrusion Assembly, removing any slop. As the Roller Bearings wear, the Bearing Cams continue to be rotated outward in increments of 15° until the slot is pointed outward, 180 deg from the original position (lower right). At this point, the Roller Bearings are fully

engaged and no further adjustments can be made.

The carriage should be maintained and adjusted so that it remains centered over the Front Extrusion Assembly. Therefore, whenever adjustments are made, efforts should be made to ensure that the Bearing Cams all remain within one, 15° increment from each other..

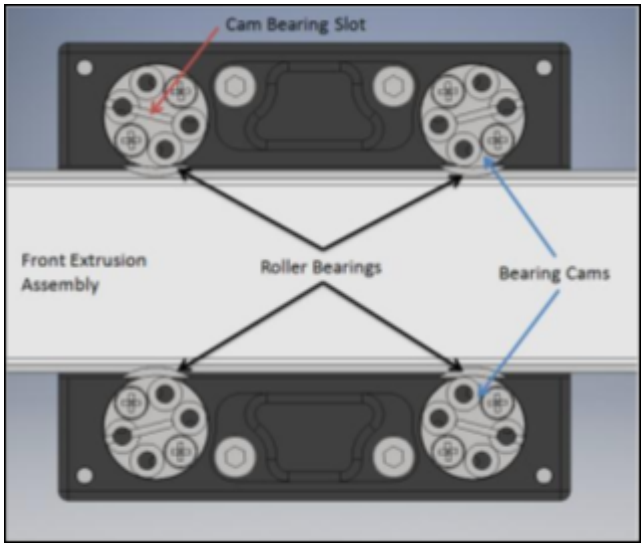


Figure 1

Worn Roller Bearing Adjustment

If you suspect that your carriage is in need of adjustment, follow this procedure:

1) Remove the Cable Chain Assembly
2) Carefully flip the Scanner on its back. Position it so that the Carriage is free to move back and forth.
3) Check to ensure that the slots on the Bearing Cams are not pointed straight out from the Front Extrusion Assembly. If they are, the bearings need to be replaced
4) Remove the 2 M2.5x8 FHPH screws from one of the Bearing Cams in both the left and right sets. If possible, work with the member of the set that has been advanced the least.
5) Insert a flat head screwdriver into the slot of one of the loosened Bearing Cams. Increment it 15° away from the Front Extrusion Assembly. Reinstall one screw and repeat with the second loose Bearing Cam.
   Note: In serious cases, it is possible to increment the Bearing Cam 30° or even 45°.
6) Repeat steps 3-5 until there is no twist left in the Carriage. Note that the other Bearing Cam in the sets might need to be adjusted to maintain symmetry.

New Roller Bearing Adjustment

If you have received a new Carriage or have replaced the bearings, follow this procedure:

1) Once the Carriage is mounted on the rail with the new bearings installed, turn the two Bearing on one side of the Front Extrusion Assembly so that they are pointed inward (Figure 2, lower Bearing Cams). This position pulls the bearing as far away from the guide rails as possible into the home position.
2) Turn the other two Bearing Cams so that the slots point straight long the rail. This is the half-engaged position. Insert one of the M2.5x8 FHPH screws into both Bearing Cams (Figure 2, upper Bearing Cams).

3) Slowly turn one of the homed Bearing Cams until resistance is felt. Make sure that the Roller Bearing is aligned with the guide rail. Once resistance is felt, continue turning until the next hole is aligned (max of 15° further) and insert a M2.5x8 FHPH screw. Repeat with the other homed Bearing Cams (Figure 3, lower Bearing Cams).
4) At this point the carriage may be tight, but it may not be symmetric. If so, you have to make the Bearing Cams in each set 'meet in the middle'. Take the screw out of the tighter one (the one with the slot pointed most outward) and loosen it half the angle between it and the opposite Bearing Cam (Figure 4, upper left Bearing Cam). In the example below, since the top left Bearing Cam was tightened 90° and the bottom left Bearing Cam was tightened 45°, they have a 45° difference. Half of this is 22.5° but since the Bearing Cams can only be incremented by 15°, we round up to 30° and loosen the upper left one that amount.
5) Repeat with the other set.
6) Tighten the two Bearing Cams opposite from the ones loosened in steps 4-5 (Figure 5, lower Bearing Cams). Go until resistance is felt and then continue tightening until the next hole is aligned.
7) Check that all Bearing Cams are within 15° of each other and that the Carriage is tight. If it is not, repeat step 4-6.
8) Insert the remaining M2.5x8 FHPH.

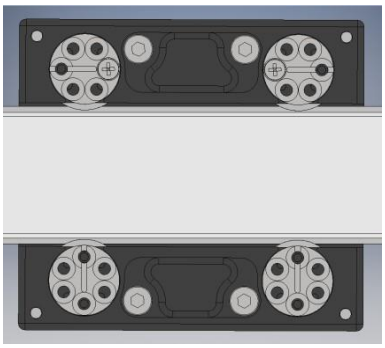


Figure 2: Initial Position, Top tightened 90

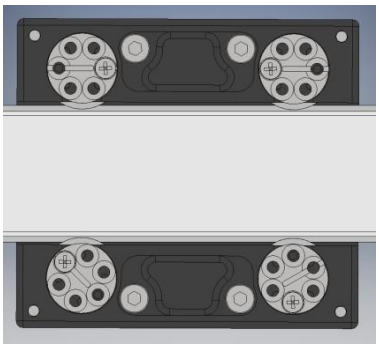


Figure 3: Bottom tightened 45 & 60

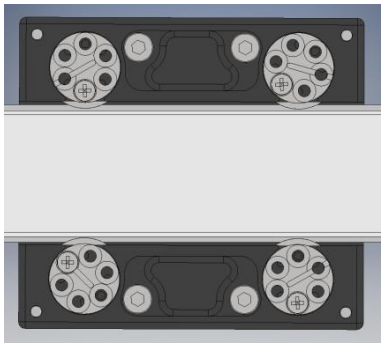


Figure 4: Top loosened 30 & 15

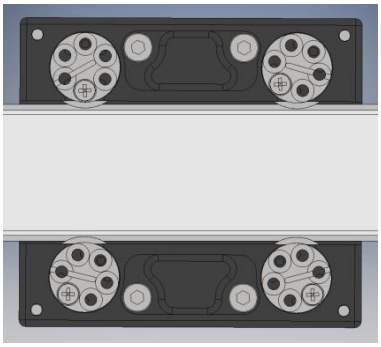


Figure 5: Bottom tightened 30 & 15

2.2. Modular Repairs and Configuration

2.2.1. Introduction

Due to the modular nature of the XS system, there are several assemblies which can be removed from the scanner by the operator. This can be done for either repair or for configuration. The procedures for removal and installation of these modules are detailed in this section.

It is assumed that the operator has a basic knowledge of tools and mechanical components. If the process laid out below are beyond the comfortable level of the operator, please call a ScanTech Instruments Inc. technician for further guidance and advice.

Warning: Some of the sections below require the handling of very strong magnets that can destroy electronic devices and cause serious injury. Work on a wood or plastic work surface away from electronics and take extreme care that the drive sections never get nearer each other than when they are installed in the scanner. ***Never disassemble a Drive Pack or a Drive Section*** .

2.2.2. Cable Chain Assembly: Removal and installation

Tools Needed:

- 2.5mm Hex Key
- 3mm Hex Key

Procedure

Removal

1) Remove the Transducer cables and vinyl tubing from the Cable Chain
2) Remove the 6 M4x12 SHCS from the Track Brace and Lower Bulkhead Assembly (Figure 1)
3) Remove the 2 M4x14 FHCS from the Upper Bulkhead Assembly (Figure 2)
4) Lift the Cable Chain Assembly up off the Scanner

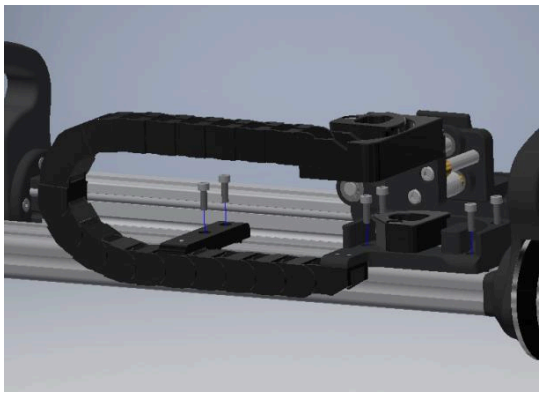


Figure 1

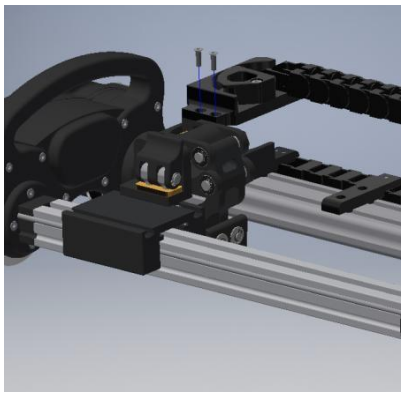


Figure 2

Installation

1) Place the Lower Bulkhead and Track Brace on the Rear Extrusion. Align the screw holes with the Probe Guide and bolt on the Upper Bulkhead with 2 M4x14 FHCS.
2) Align the bolt holes on the Track Brace and the Lower Bulkhead with their t-nuts. Start the M4x12 SHCS in the T-nuts and then slide the Lower Bulkhead as far to the right as possible. Tighten the M4x12 SHCS.

3) Test to ensure that the Carriage still has a full range of motion. If not, move the Lower Bulkhead to the left until the Carriage can go the full range.
4) Replace the Transducer cables and vinyl tubing.

2.2.3. Probe Guide: Removal and Installation

Tools Needed:

- 2.5mm Hex Key

Procedure

Removal

1) Remove the Cable Chain Assembly (Section 2.2.2)
2) Loosen the two M4x16 FHCS securing the Probe Guide to the Carriage (Figure 1).
3) Lift up on the parallel arm assembly to lift the lower part of the Probe Guide off the work surface (Figure 2).
4) Slide the Probe Guide to the left or right until it is clear of the Carriage. Lift off the Scanner (Figure 3).

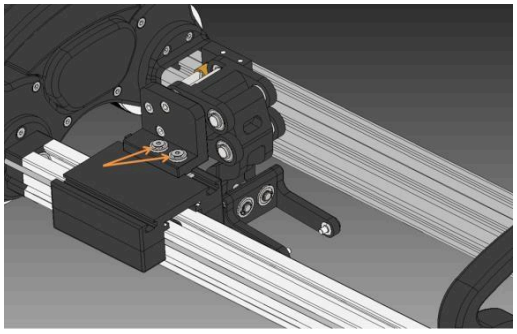


Figure 1

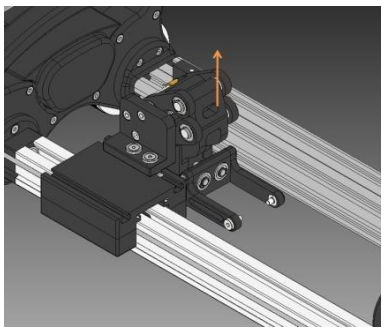


Figure 2

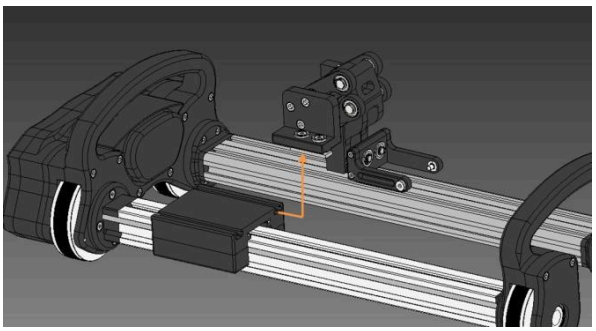


Figure 3

Installation

1) With the double t-nut loosely installed on the two M4x16 FHCS, lift up the parallel bar assembly. Slide the Probe Guide Assembly into the T-track on the Carriage. It must go in straight.
2) Position the Probe Guide Assembly at the desired location and tighten the M4x16 FHCS.
3) Attach the Cable Chain Assembly.

2.2.4. Probe Guide with opt. Cam Release: Removal and Installation

Tools Needed:

- None

Procedure

Removal

1) Remove the Cable Chain Assembly (Section 2.2.2)
2) Rotate the Cam Release Lever down (Figure 1).
3) Lift up on the parallel arm assembly to lift the lower part of the Probe Guide off the work surface (Figure 2).
4) Slide the Probe Guide to the left or right until it is clear of the Carriage. Lift off the Scanner (Figure 3).

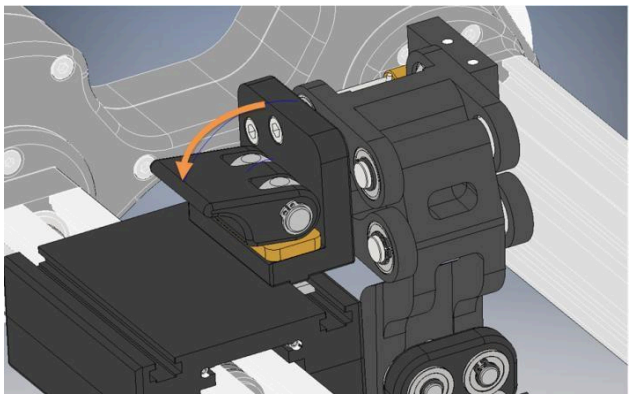


Figure 1

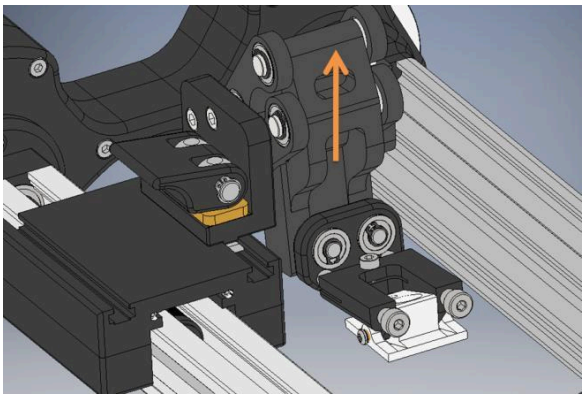


Figure 2

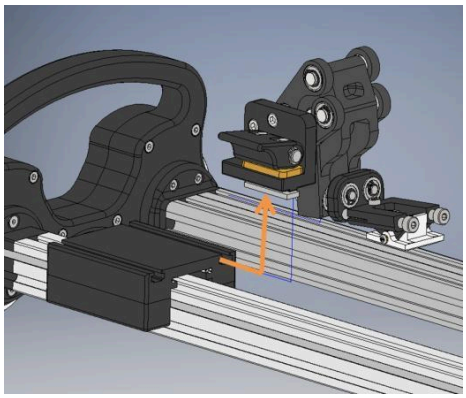


Figure 3

Installation

1) With the Cam Release Lever in the downward position, lift up on the parallel bar assembly.
2) Slide the Probe Guide Assembly into the T-track on the Carriage. It must go in straight.
3) Position the Probe Guide Assembly at the desired location and lift on the Cam Release Lever until it is vertical.
4) Attach the Cable Chain Assembly.

2.2.5. Carriage: Removal and Installation

Tools Needed:

- 2.5mm Hex Key
- #0 Phillips Screwdriver
- 3/16 Flat Head Screwdriver

Procedure

Removal

1) Remove the Probe Guide
2) With the Scanner in the upright position, remove the two M4x16 set screws on the left side of the carriage assembly (Figure 1). Slide the carriage to the right, pushing out two 3x30mm dowels and the Carriage Clamp. Remove the clamp and the two 4x10mm dowels from the Lead Screw Nut assembly and set aside.
3) Flip the scanner upsidedown.
4) Make note of the orientation of the slots in the Roller Cams. Remove the eight M2.5x8 FHPH and turn the Roller Cams so that the slots are pointed at the Front Extrusion Assembly (Figure 2).

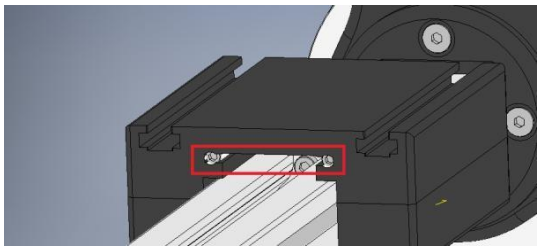


Figure 1

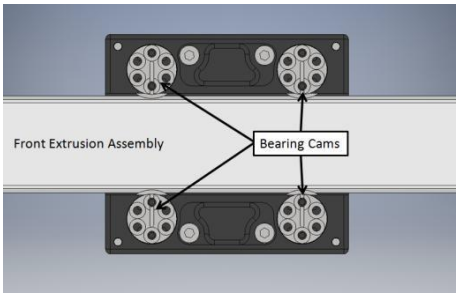


Figure 2

5) Remove the two Roller Cams from one side of the Carriage.
6) Gently work the Carriage off the extrusion.

Installation

1) Remove the Roller Cams from one side of the Carriage.
2) Work the carriage back onto the Front Extrusion Assembly.
3) Replace the missing Roller Cams.
4) Set the Bearing Cam position (See Section 2.1.3: New Roller Bearing Adjustment).
5) Flip the scanner upright.
6) Using the 4x10mm dowels, replace the Carriage clamp on the Lead Screw Nut assembly.
7) Slide the Carriage clamp and the two 3x30mm dowels into the slot on the Carriage. The dowel pins should be positioned over on the spring side of the Lead Screw Nut Assembly.
8) Replace the two M4x16set screws into the Carriage (Figure 1).
9) Replace the Probe Guide

2.2.6.XS Gear/Motor Pack: Removal and Installation

Tools Needed:

- 3mm Hex Key

Procedure:

Removal

1) [XS-M only] Move the Carriage to the left side of the carriage. This will let you set the Handwheel position later.
2) (Gear Pack only) Remove the M5x14 RH screw securing the Handwheel and remove the Handwheel. Note that it has a taper fit on the shaft and so it may be tight.
3) Remove the 6 M4X40 SH (Gear Pack) or M4x45 SH (Motor Pack) screws (Figure 1). These are all that hold the Gear/Motor pack to the drive section.

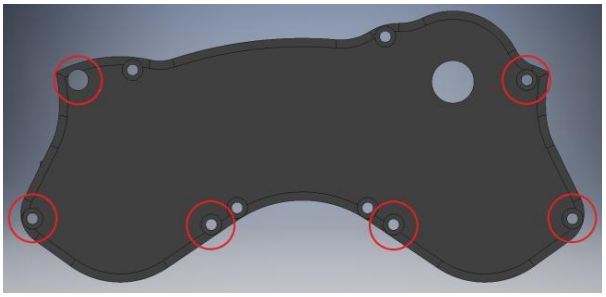


Figure 1

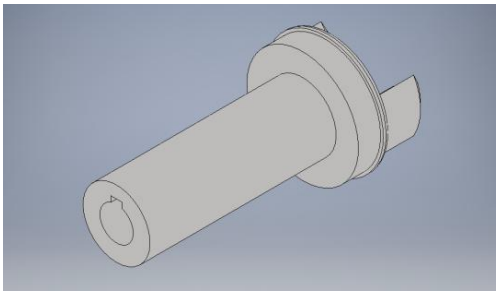


Figure 2

4) Carefully separate the drive section from the Gear/Motor pack.
   NOTE: The Jaw Coupling Spider (small, blue, rubber component between the Screw Coupler (Figure 2) and the Gear/Motor pack) and the Drive Coupler (Delrin disk with a stainless steel ring) stay with the Gear/Motor pack.
   NOTE: If the screw coupler (Figure 2) came out with the Gear/Motor Pack, locate the rectangular key that locks the Screw Coupler to the Lead Screw. It can be seen by looking in the hole where the Screw Coupler was. If it is in place (it should be seen sticking out of the edge of the Lead Screw), carefully reinstall the Screw Coupler in the Drive Section. Be sure to align the key slot in the Screw Coupler with the key in the Lead Screw. Check that it is correctly installed by holding the carriage still while trying to turn the screw coupler. If it slips, the key fell out of the key slot. Remove the Right Drive Section (Section 2.2.7) to correctly reassemble it.

Installation

5) Slip the new Gear/Motor pack onto the drive section. It is easiest to first align the screw coupler and then the drive coupler. Attach with 6 M4x40 SH (XS Gear pack) or M4x45 SH (XS Motor pack) tightened to 20-25 in-lb (2.3-2.8 N-m).
6) (Gear pack only) Slip the Handwheel in place ensuring that the "0" is located at the top (Figure 3).Attach with a M5x14 RH screw tightened to 15-20 in-lb (1.7-2.3 N-m).

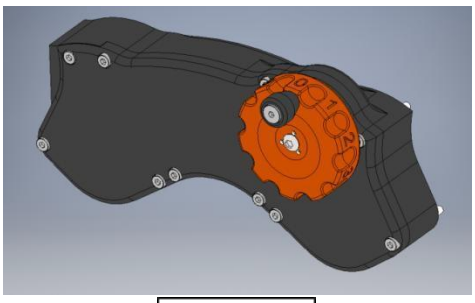


Figure 3

2.2.7. Right Drive Section: Removal and Installation

Tools Needed:

- 2.5mm Hex Key
- 3mm Hex Key

Procedure:

Warning: This section requires the handling of very strong magnets that can destroy electronic devices and cause serious injury. Work on a wood or plastic work surface away from electronics and take extreme care that the drive sections never get nearer each other than when they are installed in the scanner.

Removal

1) Remove the Gear/Motor Pack.
2) Remove the Cable Chain Assembly.
3) Loosen the 4 M4x10 FH screws and the 4 M4x12 SH screws that connect the Extrusion Assemblies to the Right Drive Section (Figure 1). Remove all but one of the top screws on each side.
4) Support the extrusions in such a way that will allow for easy removal of the Right Drive Section.
5) Remove the last two screws and gently pull the Right Drive Section free of the Extrusion Assemblies. ***Set aside away from the work area to minimize the chance of the left and right drive sections getting close to each other.*** Ensure that the Screw Coupler Key is accounted for. Both the key and the Drive Coupler (Figure 2) stay with their respective Extrusion Assemblies.

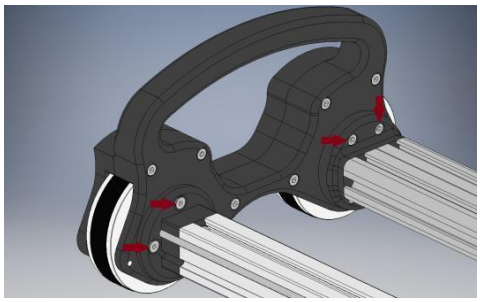


Figure 1

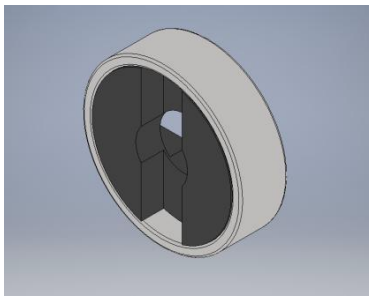


Figure 2

Installation

1) Orient the Lead Screw so that the key slot is in an upright position. Place the Screw Coupler Key in the key slot. Check the fit of the Screw Coupler at this time (Figure 3). It should not require a press fit but there should be no radial slop between it and the lead screw. Remove the Screw Coupler and set it aside but leave the key in the slot of the Lead Screw.

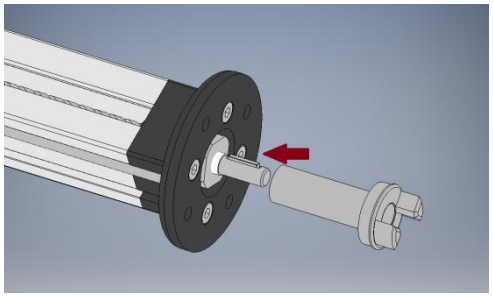


Figure 3

2) Slip the Right Drive Section into place taking care to align the Drive Coupler. Once it is slipped in place, check to make sure the key is still in place in the lead screw.
3) Loosely install 1 M4x10 FH screw and 1 M4x12 SH screw into a top hole of the Extrusion Assemblies.
4) Carefully slide the Screw Coupler onto the Lead Screw. Once seated, make sure that the key is positioned properly by holding the carriage still while trying to turn the Screw Coupler. If it slips, disassemble and replace the key.
5) Loosely install the remaining screws.
6) Place the scanner on a flat surface. If the scanner sits flat with very little rocking, tighten the screws to 20-25 in-lbs (2.3-2.8 N-m). Otherwise, first loosen the corresponding 8 screws on the left side of the extrusions to try and get it to sit flat. Tighten all screws to 20-25 in-lbs (2.3-2.8 N-m).
7) Replace the Gear/Motor pack

2.2.8. Left Drive Section: Removal and Installation

Tools Needed:

- M2.5 hex key
- M3 hex key

Procedure:

Warning: This section requires the handling of very strong magnets that can destroy electronic devices and cause serious injury. Work on a wood or plastic work surface away from electronics and take extreme care that the drive sections never get nearer each other than when they are installed in the scanner.

Removal

1) Loosen the 4 M4x10 FH screws and the 4 M4x12 SH screws that connect the Extrusion Assemblies to the Left Drive Section (Figure 1).Remove all but one of the top screws on each side.
   Note: The brake assembly, if installed, may need to be removed first.
2) Support the extrusions in such a way that will allow for easy removal of the Left Drive Section.
3) Remove the last two screws and gently pull the Left Drive Section free of the Extrusion Assemblies. ***Set aside away from the work area to minimize the chance of the left and right drive sections getting close to each other.***The Drive Coupler (Figure 2) stays with the Rear Extrusion Assembly.

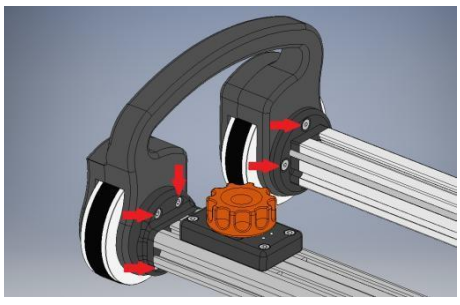


Figure 1

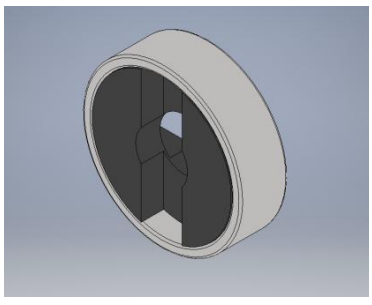


Figure 2

Installation

1) Slip the Right Drive Section into place taking care to align the Drive Coupler.
2) Loosely install the 4 M4x10 FH screws and 4 M4x12 SH screws that fasten the Extrusion Assemblies to the Left Drive Section.

3) Place the scanner upright on a flat surface. If the scanner sits flat with very little rocking, tighten the screws to 20-25 in-lbs (2.3-2.8 N-m). Otherwise, first loosen the corresponding 8 screws on the right side of the extrusions to allow it to sit flat. Tighten all screws to 20-25 in-lbs (2.3-2.8 N-m).

2.2.9. Extrusion Assembly: Removal and Installation

The Front and Rear Extrusions Assemblies can be removed by following the steps outlined in sections 2.2.4 and 2.2.5.

3. APPENDIX

3.1. CONVERSION KITS

XS-M to XS-A	
XS Motor Pack	SIC3474

XS-M to XS-WR-A	
XS Motor Pack	SIC3474
XS Drive Pack	SIC3613
XS-WR Front Extrusion Assembly	SIC----
XS Probe Guide LH	SIC3480
XS Probe Guide Front RH	SIC3473
XS Probe Guide Front LH	SIC3471

XS-M to XS-WR-M	
XS-WR Front Extrusion Assembly	SIC0001
XS Probe Guide LH	SIC3480
XS Probe Guide Front RH	SIC3473
XS Probe Guide Front LH	SIC3471

XS-A to XS-M	
XS Gear Pack	SIC3505
XS Rear Extrusion Assembly w brake	SIC3499

XS-A to XS-WR-A	
XS Drive Pack	SIC3613
XS-WR Front Extrusion Assembly	SIC----
XS Probe Guide LH	SIC3480
XS Probe Guide Front RH	SIC3473
XS Probe Guide Front LH	SIC3471

XS-A to XS-WR-M	
XS Gear Pack	SIC3505
XS-WR Front Extrusion Assembly	SIC0001

XS Rear Extrusion Assembly	SIC3499
XS Probe Guide LH	SIC3480
XS Probe Guide Front RH	SIC3473
XS Probe Guide Front LH	SIC3471

XS-WR-A to XS-M	
XS Gear Pack	SIC3505
XS Left Drive Section	SIC3505
XS Rear Extrusion Assembly w brake	SIC3499
XS Front Extrusion Assembly	SIC3498

XS-WR-A to XS-A	
XS Left Drive Section	SIC3483
XS Front Extrusion Assembly	SIC3498

XS-WR-A to XS-WR-M	
XS Gear Pack	SIC3505
XS Rear Extrusion Assembly w Brake	SIC3499
XS Left Drive Section	SIC3483

XS-WR-M to XS-M	
XS Front Extrusion Assembly	SIC3498

XS-WR-M to XS-A	
XS Motor Pack	SIC3474
XS Front Extrusion Assembly	SIC3498

XS-SW-M to XS-WR-A	
XS Motor Pack	SIC3474
XS Drive Pack	SIC3498