



Athena Industrial Services Inc.
Calgary, Alberta
Canada

Document No.:	AIS-08-0006	
Title:	NAVIC Scanner Interface Procedure	
Author:	Bill Rowe	
Date:	05-Jul-16	Revision: 1.0

NAVIC Scanner Interface Procedure



ASSET PROTECTION TECHNOLOGY



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Revisions

Rev. 1.0 05-Jul-16 – Bill Rowe

- Original document release

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Introduction

This procedure provides the steps necessary to connect and operate the ECHO-3D Gen II Sensor with a Jireh NAVIC powered scanner. The operator should reference the ECHO-3D Operator Manual (AIS-08-0001) for operating the ECHO-3D system and the Jireh NAVIC Motorized Steerable Scanner Manual (CX0098).

Required Components

The following components are required:

1. ECHO-3D Gen II Sensor/Pipe Shoe
2. Gen II Dual USB Interface Y-Cable (10-04-010).
3. Dell Tablet running latest version of ECHO-3D software.
4. NAVIC scanner kit with Raster Arm.
5. Jireh Heavy Duty Vertical Probe Holder (PHS043) with:
 - Large Yoke (PHS047)
 - Standard Drop Arms (PH0093)
 - PA Style 8.0 mm Pivot Button (PH0011-01).
6. NAVIC-Gen II Encoder Interface Y-Cable (UMA027-D-AK-05).

Hardware and ECHO-3D Setup Procedure

1. Start the ECHO-3D software with or without the Sensor connected to the Tablet.
2. From the Home Screen, select TOOLS  then ENCODERS  to open the Add/Modify Encoder Settings window.
3. Select the Existing radio button and check the dropdown list for the Jireh NAVIC Scanner. If not included the scanner will need to be added to the list.
4. To add the scanner, select the New radio button and enter the information as shown below in Figure 1. Setting for the X-Pulse is 119.200 Pulse/mm and the Y-Pulse is 6.830 Pulse/mm.

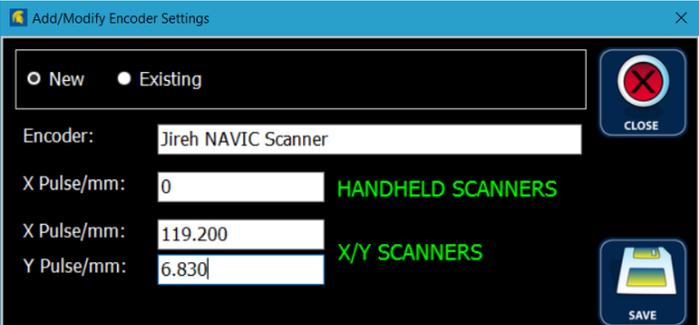


Figure 1 – NAVIC Scanner Settings Window



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5. Select SAVE  to save the new settings and close the Add/Modify Encoder Settings window.
6. Set up an ECHO-3D Project and make note of the Y-Offset. An Offset of 4 mm is suggested. The Y-Offset in ECHO-3D must match the NAVIC scanner offset value “D” in the Two Axis Scan Setup Screen.
7. Mount the appropriate Sensor Shoe on the ECHO-3D Gen II Sensor ensuring the Shoe is positioned on the Sensor in the correct orientation for locating the Mapping Channel in the desired position.
8. Mount the Sensor and shoe assembly in the scanner Heavy Duty Vertical Probe Holder as seen in Figure 2 below. Follow the installation guidelines provided in Section 5.5.2, Heavy Duty Vertical Probe Holder, of the NAVIC manual. The Holder Pivot Buttons will fit inside the holes on each side of the Shoe.

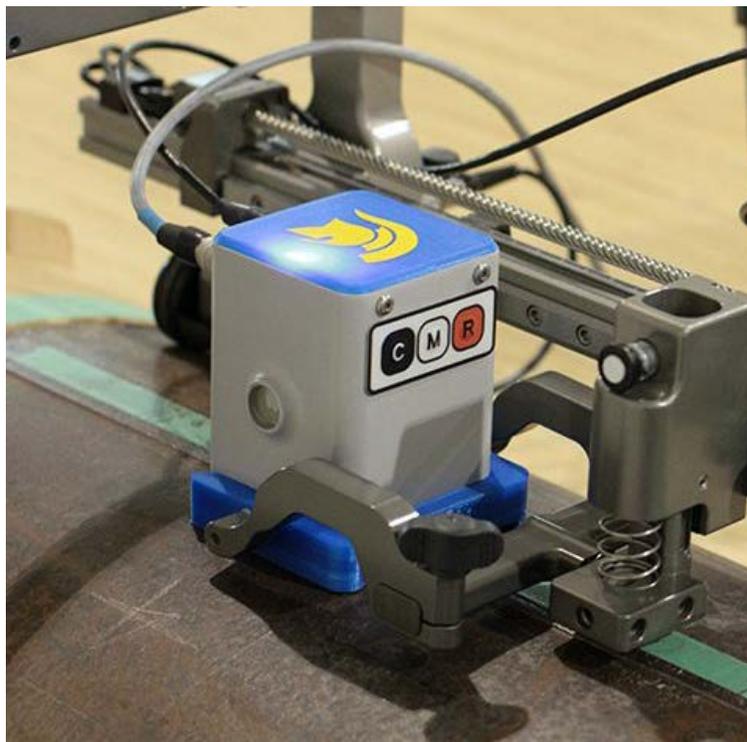
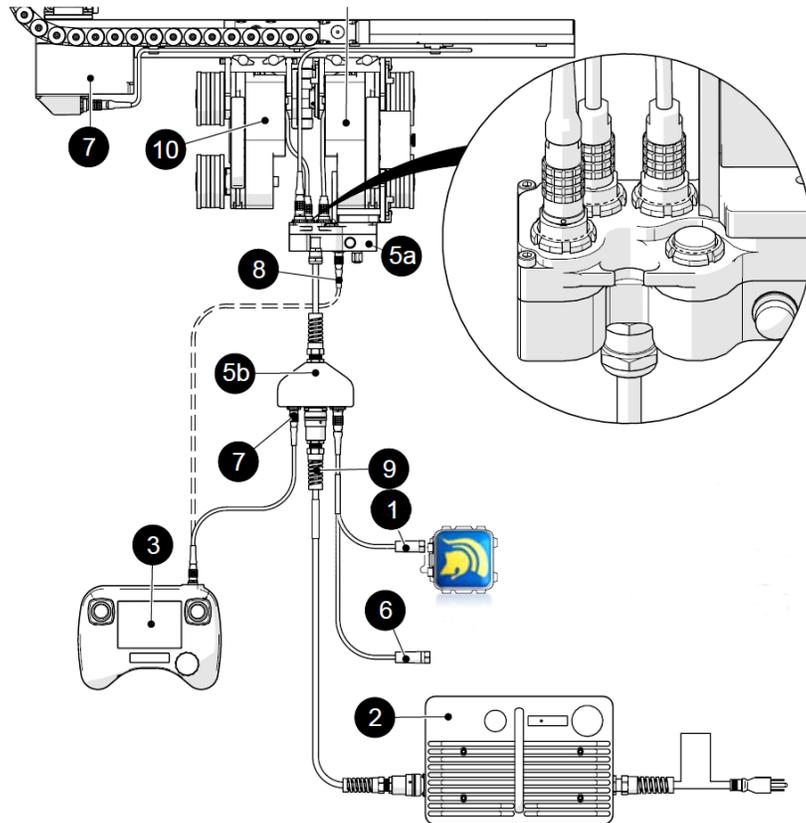


Figure 2 – Sensor and Shoe Installed in Scanner Vertical Probe Holder

9. Connect the dual USB connectors of the Gen II Dual USB Interface Y-Cable to the Tablet USB ports in the Extended I/O Module at the back of the Tablet and the 5-pin Quick Disconnect (Code blue) to the corresponding connector (Code blue) on the Sensor.
10. Connect the single end 10-pin connector of the NAVIC-Gen II Encoder Interface Y-Cable to the corresponding 10-pin Encoder Output receptacle on the Umbilical User interface. The remaining



connector is for an auxiliary PAUT probe which can, if desired, be operated in sequence with the ECHO-3D Sensor. See Figure 2 below.



Item	Description	Item	Description
1	ECHO-3D Connector	6	Auxiliary PAUT Connector
2	Power Supply	7	Controller Cable
3	Controller	8	Controller Cable (2)
5a	Umbilical (Crawler)	9	Power Cable
5b	Umbilical (User)	10	Left Drive Module

Figure 2 – Interface Cable Connections

- Adjust the height of scanner Probe Holder to provide a slight tension, when in the released position, on the Shoe preventing any unwanted lift-off. Several adjustments may be necessary before the correct tension is achieved. An easy test can be done by moving the scanner to the underside of the pipe and ensure the sensor is contacting the pipe surface with no gap.



- Perform a test Run. A 100 mm X 150 mm scan area is sufficient to test the scanner encoder settings (scan dimensions) and the Shoe tension (preventing lift-off) using the guideline below for programming the NAVIC scanner.

NAVIC Scanner Setting Procedure

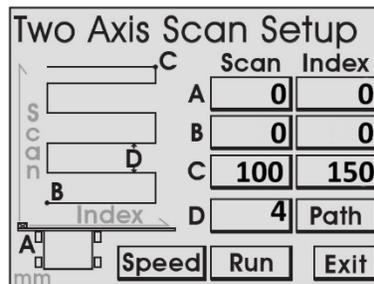
- From the Jog Screen on the NAVIC Controller, set Crawler Speed to 10 mm/s and Raster Speed to 200 mm/s.



- Position the NAVIC at the desired starting position for the scan and select the ZERO button.
- From the Two Axis Scan Setup Screen, enter the following values:

	Scan	Index
A	0	0
B	0	0
C	100	150
D	4*	

* Must match Y-Offset in ECHO-3D.



Scanning Procedure

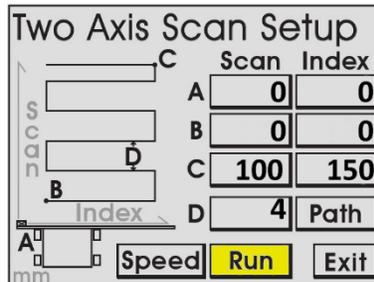
- Using the NAVIC Jog Screen, position the Sensor on a section of good material and obtain a Base value for ECHO-3D by selecting the **Base 9069** Base button. For best results move the Sensor to various locations on the sample and acquire a Base at each location noting the location for each Base value. The best result is obtained by utilizing the highest acquired Base value. Reposition the Sensor at the location of the highest Base and re-acquire that Base value.

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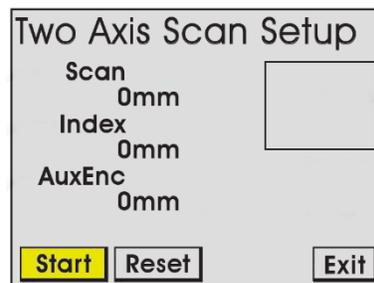
- Using the NAVIC Jog Screen, position the Sensor back to the Scan Origin (0,0).
- From the ECHO-3D Scan window select the  Record button to start Record Mode, changing the button to  green.



- Select the NAVIC Run button.



- Select the NAVIC Start Button. This starts the NAVIC scanning process.



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6. On completion of the scan, select the ECHO-3D  Record button in the Scan window, ending the recording, and changing the button to  red. A complete scan with 3D model exists and can now be analyzed using the EDHO-3D analysis tools in the Sectional Mode window.

7. Once a completed Scan has been acquired and the results are satisfactory, the Scan area can be increased, the Raster Speed increased, and a subsequent Scan performed if required, by repeating the above steps. Note that Raster Speeds up to 500 mm/s may not be possible.

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