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Release Date: June 5, 2017

Owner's Manual

Parts Manual

Safety Precautions

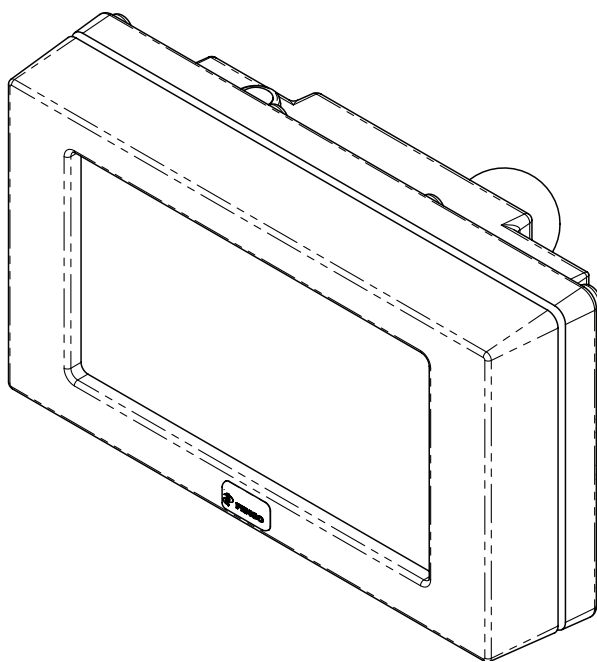
Operating Instructions

Printed in the USA

TORQUE MONITORING SYSTEM

OWNER'S & OPERATOR'S MANUAL

TruLink Version 2.1 (7" Display)



NOTE: Do NOT use a hammer or any other object at any time during the installation of the TruLink pin. Hitting the head of the pin with a object will damage the CPU processor and will VOID the warranty.

TruLink™ is designed specifically for use with Pengo® Revolution™ series Anchor Drives.



PREFACE

This manual is used to familiarize you with safety, assembly, operation, adjustment, troubleshooting, and maintenance. Read and follow the recommendations in this manual to ensure safe and efficient operation. Keep this manual with the product at all times for future reference.

We want you to be completely satisfied with your new product, feel free to contact your local Authorized Service Dealer for help with service, replacement parts, or any other information you may require. If you need assistance in locating a dealer, visit our web site at www.pengoattachments.com or call customer service at 1-800-599-0211.

The descriptions and specifications in this manual are subject to change without notice. Pengo® reserves the right to improve products. Some product improvements may have taken place after this manual was printed. For the latest information on Pengo® products, visit our web site at www.pengoattachments.com or call customer service at 1-800-599-0211.

Thank you for buying and using Pengo® products!

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SAFETY STATEMENTS

DANGER



THIS STATEMENT IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

WARNING



THIS STATEMENT IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

CAUTION



THIS STATEMENT IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.



THIS SYMBOL BY ITSELF OR USED WITH A SAFETY SIGNAL WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

WARNING



READ MANUAL PRIOR TO INSTALL

Improper installation, operation, or maintenance of the equipment could result in serious injury or death. Operators and maintenance personnel should read this manual as well as all manuals related to this equipment. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL.**

WARNING



READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing or operating this equipment.



KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to assure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn and hard to read.

WARNING



DO NOT MODIFY EQUIPMENT

Modifications may weaken the integrity of the equipment and may impair the functions, safety, life, and performance of the equipment. When making repairs, use only the manufactures genuine parts, following authorized instructions. Other parts may be substandard in fit and quality.

GENERAL PRECAUTIONS



PREPARE FOR EMERGENCIES

- Be prepared if a fire starts.
- Keep a first aid kit near by when operating equipment.

WARNING



OPERATOR SAFETY

- Protective clothing and equipment should be worn at all times.
- Wear protective clothing and equipment appropriate for the job. Avoid loose fitting clothing.
- Prolonged exposure to excessive noise can cause hearing loss. Wear suitable hearing protection such as ear plugs.
- Operating equipment safely requires the full attention of the operator. Avoid distractions.
- Never let a minor or inexperienced person operate equipment.

CAUTION



PRODUCT SAFETY

- Inspect the entire product before operation.
- Replace parts that are cracked, chipped or damaged in any way before operation.
- Keep others away when making any adjustments to the unit.

WARNING



PRACTICE SAFE MAINTENANCE

- Use proper tools and equipment when conducting maintenance, refer to this manual for additional information.
- Work in a clean dry area.
- Inspect all parts. Be sure parts are in good working condition and installed properly.
- Remove build up of grease, oil or any debris.
- Remove all tools and unused parts from equipment before beginning operation.

WARNING



BE ALERT ON THE JOB SITE

Tragic accidents can occur if the operator is not alert and aware of the surroundings. Interface with the system only when it is safe to do so. Operating machinery while distracted can result in loss of machinery control.

WARNING



LOWER OR SUPPORT RAISED EQUIPMENT

During installation of the TruLink system:

- Do not work under raised booms without supporting them.
- Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions.
- Make sure support material is solid, not decayed, warped, twisted, or tapered.
- Lower booms to ground level or on blocks.
- Lower booms and attachments to the ground before leaving the cab or operator's station.
- Keep others away when making any adjustments to the unit.

PRODUCT INTRODUCTION



The Pengo® TruLink™ system allows operators installing helical piers to monitor and record all installation data. TruLink™ is a true torque system that delivers a high degree of accuracy (+/- 2%) while providing the operator with real time data. TruLink™ records actual torque being applied to the helical pile, the installation angle and the depth.

Torque is measured at two points within the connection pin located between the anchor drive attachment and the prime mover. The TruLink™ pin simply replaces the OEM pin ensuring that no additional height is added to the installation equipment. This feature is important in low clearance applications.

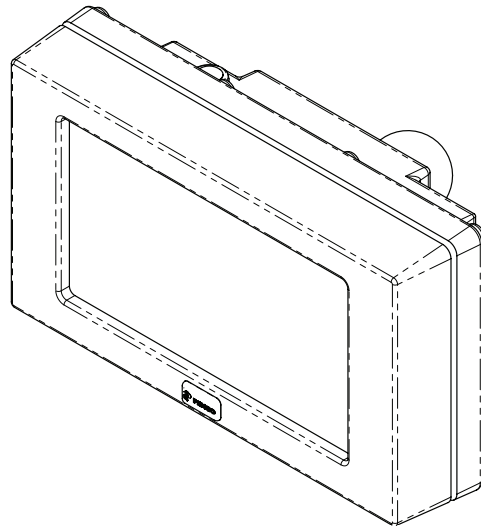
The system's patent pending technology contained within the pin omits downward (perpendicular) force. Isolating only the necessary torque values improves accuracy and durability. All gauges and electronics are completely sealed for use in all installation environments.

The TruLink™ user interface is a 7" touch display that can be easily mounted within the operating cab of most prime movers. The display is housed in a shock proof casing. The high visibility touch screen allows the operator to easily interface with the system during installation. The intuitive layout of the display indicates all data in real time.

All installation data is recorded independently for each pier and collectively for all helical piers on a given project. All data is stored within the display and formatted into an easy to read Torque Report (pdf file). The Torque Report can be viewed on the display and emailed when necessary from the display via WIFI connection. All data is easy to read and is ready for immediate job submittal without additional formatting.

Complete System Part Numbers:

DESCRIPTION	PART NO.
TL7-Class 1 (Pin Dia. 45mm)	615070
TL7-Class 2 (Pin Dia. 75mm)	615071
TL7-Class 3 (Pin Dia. 3.96")	615072
TL7-Class 4 (Pin Dia. 4.50")	615073



The TruLink™ system is designed specifically for use with Pengo® Revolution™ series Anchor Drives.

PRODUCT CLASSES / ITEM LISTS

CLASS 1 - 7" DISPLAY (TL7-C1)

Part Number: 615070

Capacity: 20,000 ft-lbs of torque

ITEM	PART No.	QTY	DESCRIPTION
1	615078	1	DISPLAY 7" TOUCH SCREEN
2	615007	1	TRULINK PIN 45mm CLASS 1
3	615025	1	PIN END CAP KIT CLASS 1
4	615079	1	DISPLAY POWER HARNESS
5	615013	1	CABLE MAIN 15'
6	615026	1	CABLE EXTENSION 15'
7	615031	1	DISPLAY MOUNT (RAM)
8	615028	1	DISPLAY STORAGE CASE
9	615016	1	ANTI-ROTATION BLOCK KIT
10	615037	1	STYLUS

CLASS 2 - 7" DISPLAY (TL4-C2)

Part Number: 615071

Capacity: 70,000 ft-lbs of torque

ITEM	PART No.	QTY	DESCRIPTION
1	615078	1	DISPLAY 7" TOUCH SCREEN
2	615008	1	TRULINK PIN 75mm CLASS 2
3	615027	1	PIN END CAP KIT CLASS 2
4	615079	1	DISPLAY POWER HARNESS
5	615023	1	CABLE MAIN 25'
6	615026	1	CABLE EXTENSION 15'
7	615031	1	DISPLAY MOUNT (RAM)
8	615028	1	DISPLAY STORAGE CASE
9	615016	1	ANTI-ROTATION BLOCK KIT
10	615037	1	STYLUS

CLASS 3 - 7" DISPLAY (TL7-C3)

Part Number: 615072

Capacity: 150,000 ft-lbs of torque

ITEM	PART No.	QTY	DESCRIPTION
1	615078	1	DISPLAY 7" TOUCH SCREEN
2	615009	1	TRULINK PIN 100mm CLASS 3
3	615032	1	PIN END CAP KIT CLASS 3
4	615079	1	DISPLAY POWER HARNESS
5	615024	1	CABLE MAIN 65'
6	615034	1	CABLE JIB 15'
7	615031	1	DISPLAY MOUNT (RAM)
8	615028	1	DISPLAY STORAGE CASE
9	615035	1	JUNCTION BOX
10	615037	1	STYLUS

CLASS 4 - 7" DISPLAY (TL7-C4)

Part Number: 615073

Capacity: 300,000 ft-lbs of torque

ITEM	PART No.	QTY	DESCRIPTION
1	615078	1	DISPLAY 7" TOUCH SCREEN
2	615010	1	TRULINK PIN 114mm CLASS 4
3	615033	1	PIN END CAP KIT CLASS 4
4	615079	1	DISPLAY POWER HARNESS
5	615024	1	CABLE MAIN 65'
6	615034	1	CABLE JIB 15'
7	615031	1	DISPLAY MOUNT (RAM)
8	615028	1	DISPLAY STORAGE CASE
9	615035	1	JUNCTION BOX
10	615037	1	STYLUS

Pengo continually looks for new ways to improve its products. Therefore, Pengo reserves the right to make changes to our products and specifications without notice.

COMPONENT IDENTIFICATION

7" Touch Screen Display

CAN-Bus display module with a 7" LCD touch screen. Windows operating platform with WiFi capability. Operating supply voltage range 12V to 32V.

TruLink Pin

Pin contains CPU, inclinometer and strain gages. Operating supply voltage range 12V to 32V, supplied by the cable.

Class 1: 45mm dia. pin. 20,000 ft/lbs torque capacity.

Class 2: 75mm dia. pin. 70,000 ft/lbs torque capacity.

Class 3: 100mm dia. pin. 150,000 ft/lbs torque capacity

Class 4: 114mm dia. pin. 350,000 ft/lbs torque capacity

TruLink End Cap Kit - Class 1 and 2

End Cap Kit is comprised of the end cap, fastening bolt and installation rod. Included on classes 1 and 2 only.

Display Power Harness

Wire harness provides power to the display via auxiliary power coupler. Aux power coupler plugs into the auxiliary (cigarette lighter) port. Wire harness also connects to the main cable which links the TruLink pin to the display. Operating supply voltage range 12V to 32V, inlet fuse rate 3 Amp.

Main Cables

Wire harness provides power to the display and CAN logger via a auxiliary power coupler. Aux power coupler plugs into the auxiliary (cigarette lighter) port. Wire harness also connects the display and CAN logger to the electrical cable running to the Anchor Drive wire harness.

Cable lengths:

Class 1 = 15'

Class 2 = 25'

Class 3 = 65'

Class 4 = 65'

Cable Extension 15'

Cable is used to extend main cable in applications

Display Mount

Mount is used to position the touch screen display within the operators cab. Mount can be used with suction cups (provided) or hard mounted using hardware (not provided).

Display Protective / Storage Case

Waterproof and impact resistant protective case. Used to store the TruLink display when not in use.

Anti-Rotation Block Kit

Anti-Rotation block is used to position the TruLink pin in the correct orientation plane. Kit is provided with several types of hardware to outfit all Pengo Revolution Series Anchor Drives. Only used on classes 1 and 2.

Stylus

Silicone tipped stylus, used as a section tool for the touch screen display.

Pengo continually looks for new ways to improve its products. Therefore, Pengo reserves the right to make changes to our products and specifications without notice.

ANCHOR DRIVE TRULINK PIN INSTALLATION



NOTE: Do NOT use a hammer or any other object at any time during the installation of the TruLink pin. Hitting the head of the pin with a object will damage the CPU processor and will **VOID** the warranty.

1 Position the Anchor Drive in a manner in which it will be safe to work on during the pin installation. Remove the existing connection pin.

2 Install the Anti-Rotation Block to the Anchor Drive. The Anti-Rotation Block is designed to fit all Pengo Anchor Drives up to the RT/DV 40 series.

Use the illustrations shown on the right to identify the correct set-up instructions for your specific Pengo Anchor Drive.

DS-3 & RS-7 Requires:

PART No.	QTY	DESCRIPTION
615006	1	ANTI-ROTATION BLOCK
610610	2	SCREW SOCHD M10 X 60mm
615029	1	SPACER CLASS 1
610298	2	NUT HEX LOCK M10
610663	2	SET SCREW 5/16" X 1"
610664	2	JAM NUT 5/16"

DT-5, RS-12, RT-9 & RT-12 Requires:

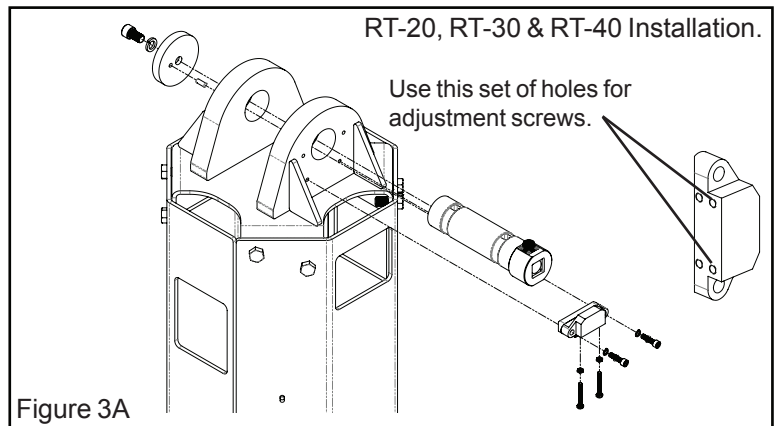
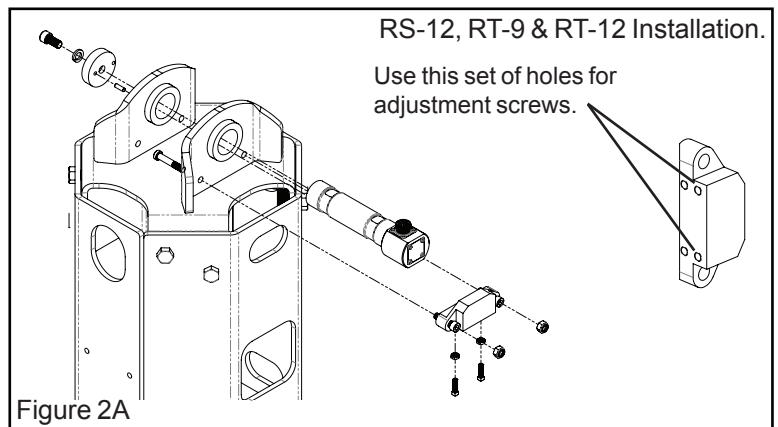
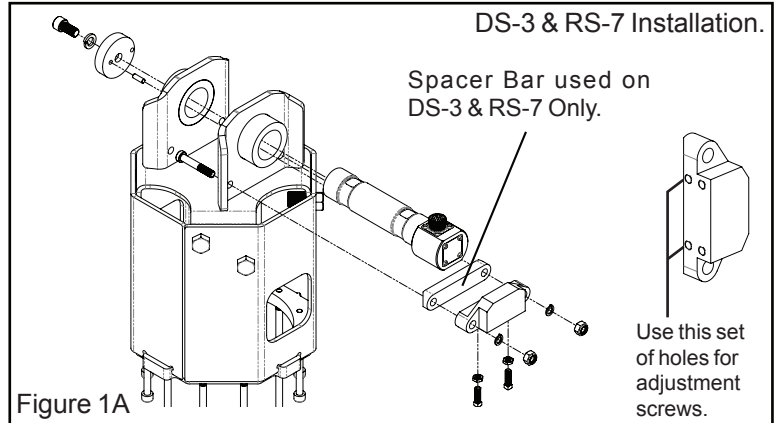
PART No.	QTY	DESCRIPTION
615006	1	ANTI-ROTATION BLOCK
610610	2	SCREW SOCHD M10 X 60mm
610298	2	NUT HEX LOCK M10
174526	2	BOLT HEX 5/16" X 2-1/4"
610664	2	JAM NUT 5/16"

RT-20 Requires:

PART No.	QTY	DESCRIPTION
615006	1	ANTI-ROTATION BLOCK
700534	2	LOCK WASHER 10mm
670175	2	SCREW SOCHD M10 X 40mm
610663	2	SET SCREW 5/16" X 1"
610664	2	JAM NUT 5/16"

RT-20, RT-30 & RT-40 Requires:

PART No.	QTY	DESCRIPTION
615006	1	ANTI-ROTATION BLOCK
700534	2	LOCK WASHER 10mm
670175	2	SCREW SOCHD M10 X 40mm
174526	2	BOLT HEX 5/16" X 2-1/4"
610664	2	JAM NUT 5/16"



Use of the Anti-Rotation Block is NOT optional. It must be used in order for the torque and inclinometer values to be accurate!

ANCHOR DRIVE TRULINK PIN INSTALLATION

NOTE: If your Anchor Drive does not have existing mounting holes located on the Bail Ears:

- 1) Place the TruLink Pin into the Bail Ears, ensuring the connecting port is facing up and parallel with the Anchor Drive.
- 2) Position the Anti-Rotation Block on the underside of the pin head (opposite of the connecting port) and mark the location of the holes. Drill two 7/16" diameter holes. The 30 and 40 series Drives require the holes to be tapped to M10 x 1.5 threads.

3 Install the appropriate adjustment screws into the bottom face of the block. Screw the adjustment screws all the way into the block. The adjustment screws need to be installed before the block can be bolted to the Bail Ears.

4 Once the Anti-Rotation Block is in place the TruLink Pin can now be installed. Position the Link Arm or desired mounting bracket between the Bail Ears. Install the TruLink Pin with the large end of the pin facing the front of the Anchor Drive. See figure 5A.



Note: Do NOT hammer or tap the Pin into place. The Pin should slide easily through the Bail Ear Bushings.

ATTENTION!

If the TruLink Pin is not easily installed use the Installation Rod provided. Instructions on how to use the Installation Rod are listed on page 10.

5 Push the Pin into the Drive as far as it will go. The head of the Pin should align with the Anti-Rotation Block. The opposite end of the Pin should be flush with the outer-edge of the bushing. The Pin should not protrude past the bushing. See figure 6A.

6 Install the Pin End Cap by inserting the provided dowel into the small off center hole in the end of the Cap. Align the dowel and the main hole of the End Cap with the dowel hole and threaded hole on the end of the TruLink Pin.

Continue on page 10.

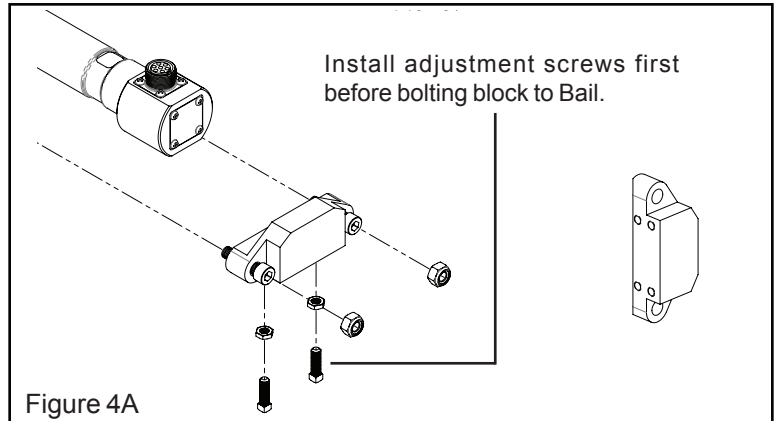


Figure 4A

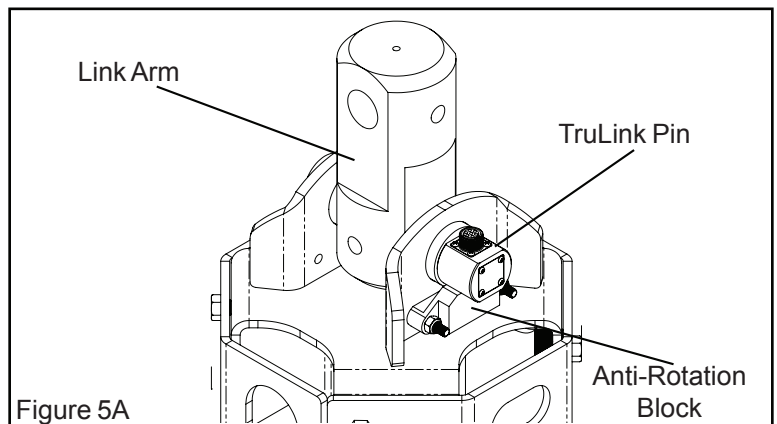


Figure 5A

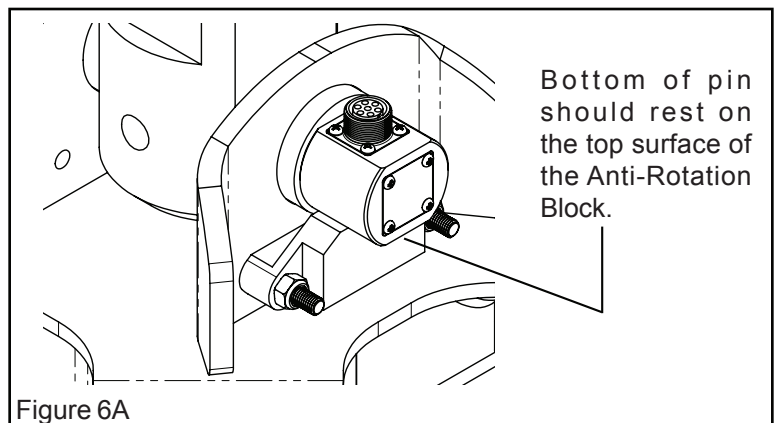


Figure 6A

ANCHOR DRIVE TRULINK PIN INSTALLATION

7 Slide the Anti-Rotation Block tight up against the head of the TruLink Pin eliminating any gap between the Pin and the block. Unscrew the adjustment screws until they make contact with the top surface of the Bail. Make sure the adjustment screws are of equal length and the block remains parallel with the Bail top plate. See figure 7A.

8 Secure the End Cap to the TruLink Pin using the provided socket cap screw and lock washer. Tighten screw to the recommended torque for the appropriate class on Pin being installed. The chart lists the correct tightening torque for the socket head cap screws. When screws are to be tightened or replaced, refer to this chart to determine the proper torque.

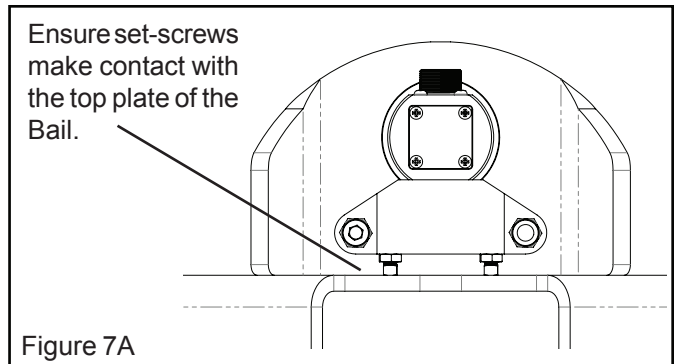


Figure 7A

Pin Class	Screw Dia	Torque Ft-Lbs	Torque N/m
1	1/2"	100	135.5
2	3/4"	340	460.9
3 & 4	1"	800	1084.6

Ft-Lbs = Foot Pounds / Nm = Newton Meters

When installing the TruLink Pin into the Drive it might be necessary to use the Pin-Install Rod. The Install Rod is designed to draw the TruLink Pin through the Drive ears. The TruLink Pin can not be forced into place. The Pin should slide easily through the bushings. When needed use the Install Rod as shown below.

1 Assemble the Installation Rod as shown in figure 1B. Note the Pin End Cap will be used in the this step.

2 Position the two end nuts on the Rod and adjust according to the amount of Rod required to effectively pull the TruLink Pin through the ears of the Drive. Using two 7/8" wrenches tighten the end nuts against one another. See figure 2B.

3 Hold the 2nd Nut tight while steadily turning the nut closest to the End Cap in a clockwise motion. This action will draw the TruLink Pin through the ears of the Drive. Be careful not to apply too much pressure as this may damage the threaded hole in the end of the TruLink Pin. See figure 3B.

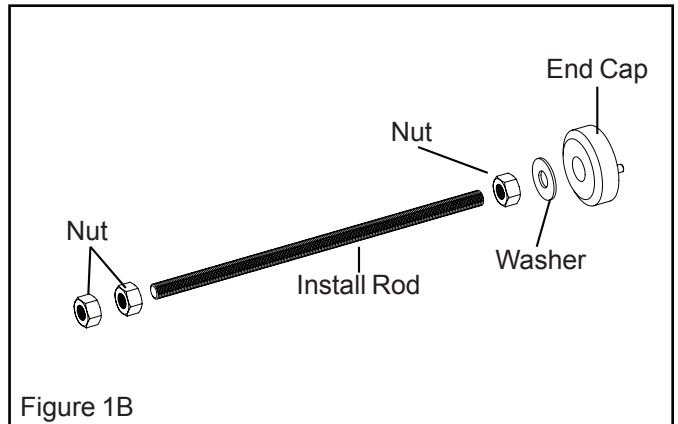


Figure 1B

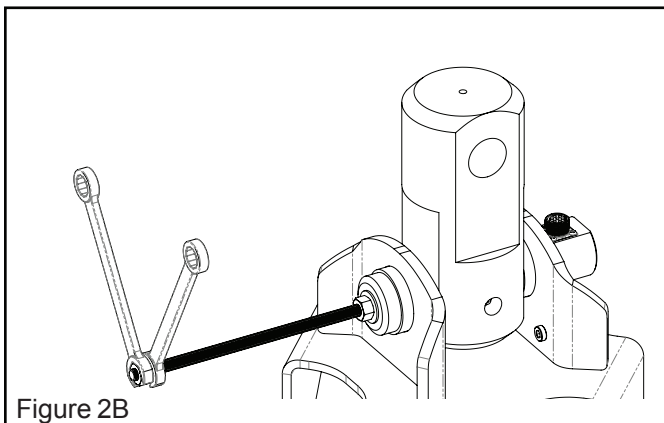


Figure 2B

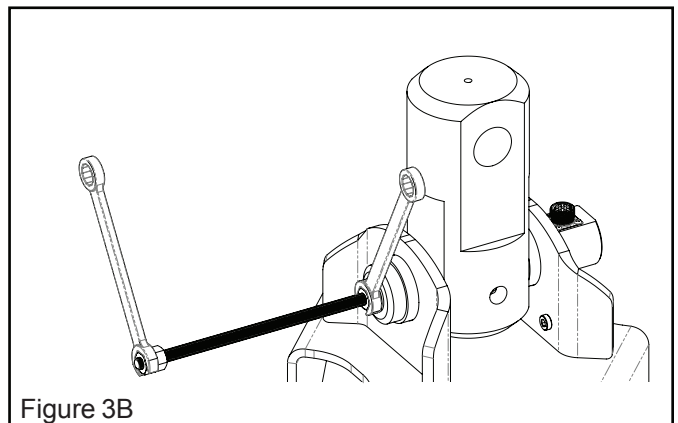


Figure 3B

When installing large TruLink Pins such as Class 3 and 4 Pins it is highly recommended that the Install Rod be used.

TRULINK PIN / CABLE CONNECTION

Depending on the distance from the Anchor Drive to the Display select the appropriate Cable(s). All TruLink systems have a Main Cable and an Extension Cable.

Main Cable will connect to the display harness and the TruLink Pin if the length is sufficient.

Extension Cable (if necessary) connects the Main Cable to the TruLink Pin.



Note: Ensure that the cable(s) have enough “slack” to allow for full range or movement . Most cables can be run next to the hydraulic hoses.

1 Attach the selected cable to the TruLink Pin. Be sure to align the pins inside the cable connector with the holes on the TruLink connecting base. The tab and slot must align with each other in order to ensure a positive connection. See figure 1C.

1a On class 3 & 4 TruLink systems it is recommended to use the provided Junction Box and Jib Cable. Installing a Junction Box and Jib Cable close to the Anchor Drive will allow for easy disconnect. Using a Jib Cable near the Anchor Drive will prevent damage to the Main Cable and is easier to replace in the event the cable is damaged. See figure 2C.

2 Run all Cables next to the hydraulic hoses running along prime movers arms and or boom. It is recommended to zip tie the Cables to the hydraulic hoses. The Cables should be run in a manner that does not expose the Cables to excessive heat or pinching.

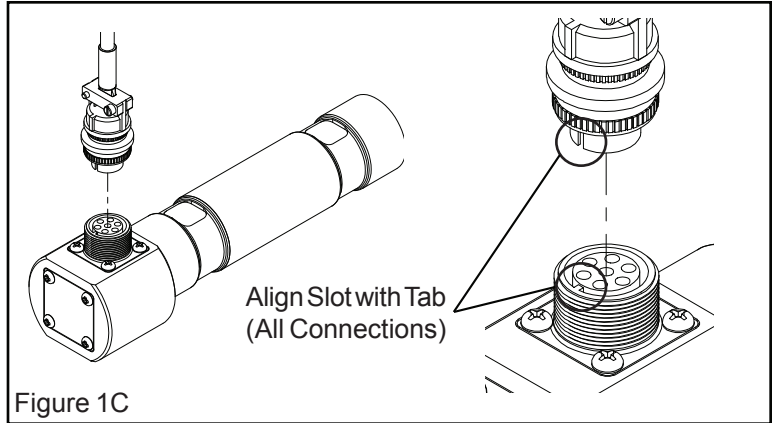


Figure 1C

Ensure Cable connections are solid and not binding or pinched.

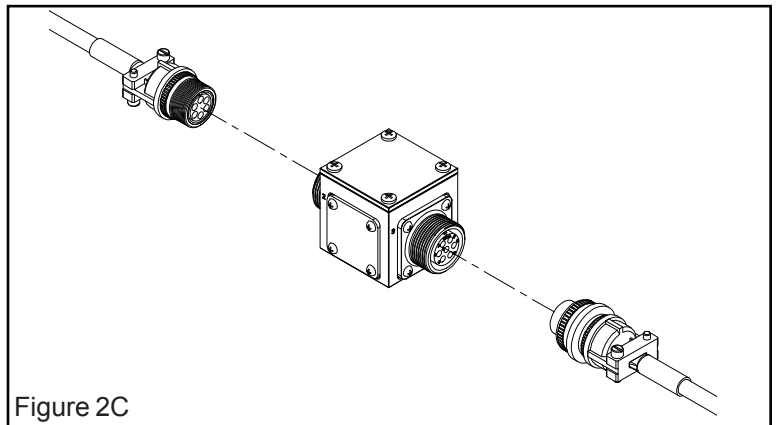


Figure 2C

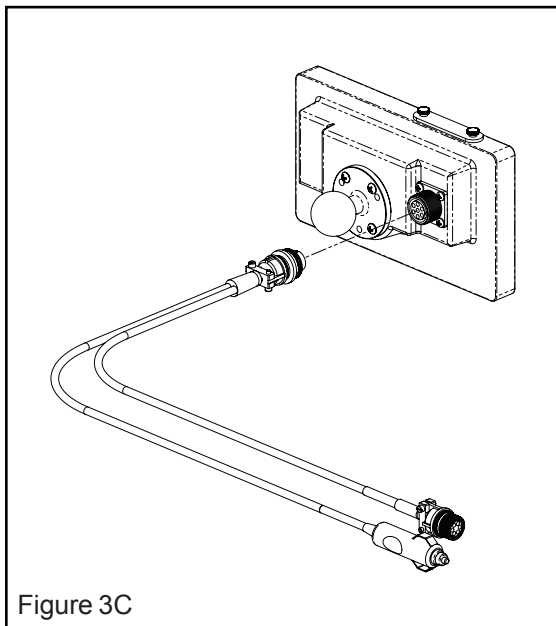
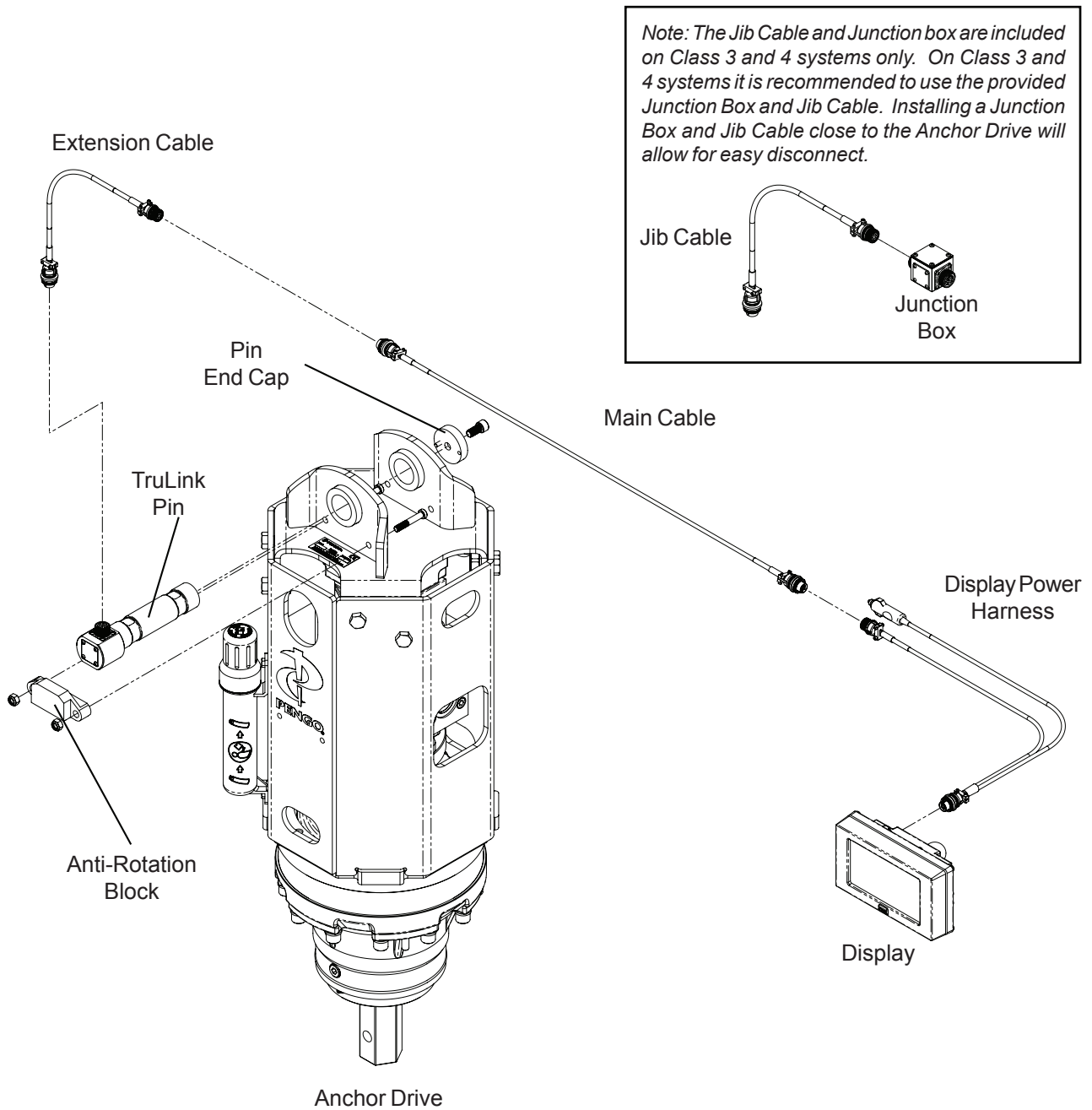


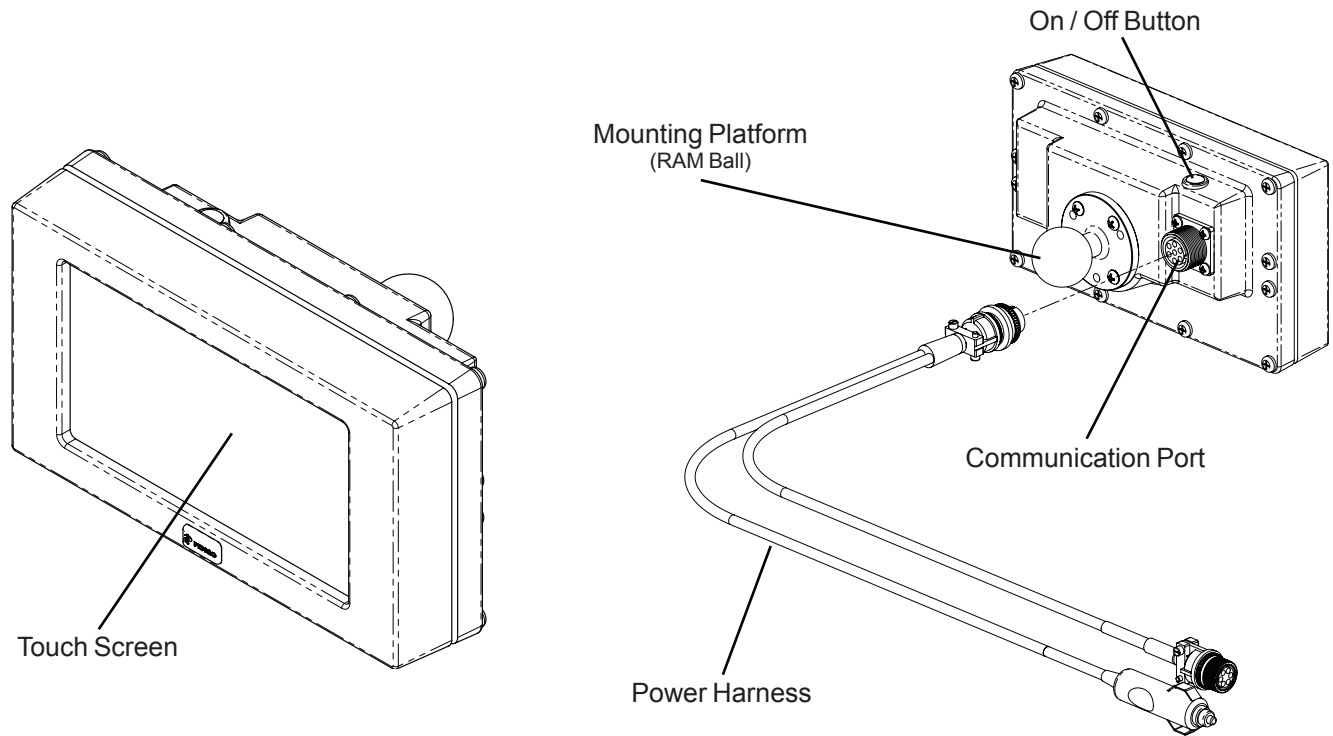
Figure 3C

The Display Power Harness plugs into the Display as shown in figure 3C.

TRULINK SYSTEM OVERVIEW

Use the illustration below to help familiarize yourself with the various components and overall system layout.





7" Touch Screen Display (615078)

This display is standard on all Classes of TruLink systems.

WARNING Before operating, always ensure that all electrical connections are tight and free from potential hazards and or entanglement during operation.



1. Ensure Display unit has power. Power is supplied by the auxiliary port located inside the prime movers cab.
2. Chose a convenient location to mount the TruLink display. The location should not interfere with safety devices (lap bar) or compromise the operators visibility. The location should also allow the operator to easily access the display to start and stop the data recording function.
 - 2-A. The display can be mounted to a glass surface using the suction cup mount provided. When using the suction cups be sure the surface is clean to allow for maximum adhesion against the glass.
 - 2-B. The display can also be hard mounted to any surface using hardware (not included). This method is only recommended if the location is to be permanent.

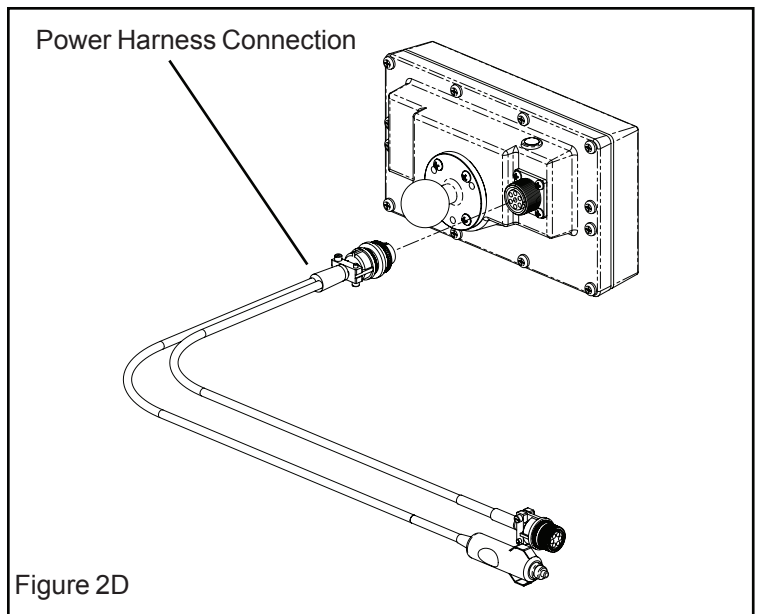
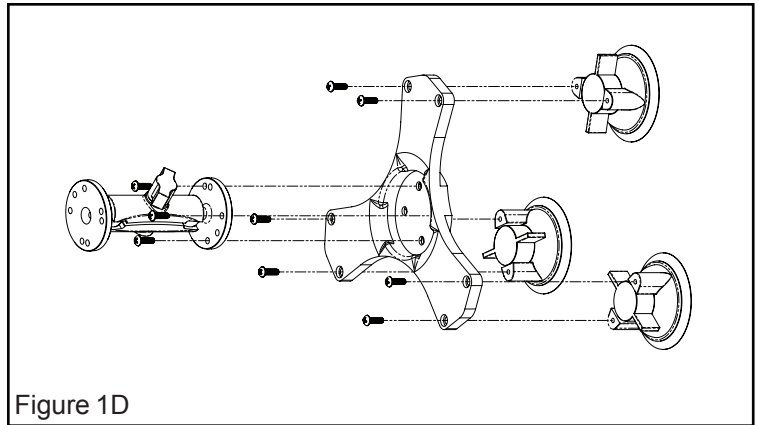
TRULINK TOUCH DISPLAY SET-UP

1 Assemble the Display mounting system as shown in figure 1E.
Only install the suction cup if the Display will be mounted on a glass surface. Suction cup is not required for all mounting situations. Mounting system can be “hard mounted” inside the operators cab using hardware (not provided) if so desired.

2 Attach the Display Harness to the Display. The Harness connector is a micro USB port. See figure 2D.

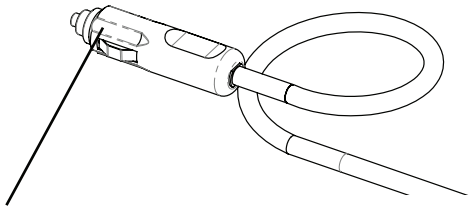
3 Attach the Display with the ball mount to the mounting Yoke. Using the T-handle on the Yoke tighten the Display to the Yoke.

4 When the Display mounting system is fully assembled the Display is now ready to receive power and be placed within the operators cab. The most common power source for the Display is an auxiliary port commonly known as a “cigarette lighter port”.

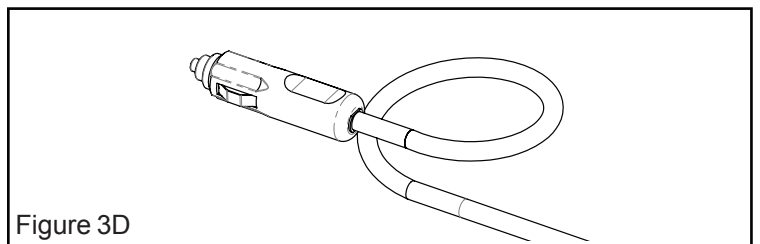


If the Display does not have power or has interrupted power, check the fuse located inside the power adapter.

Power Supply Fuse Location



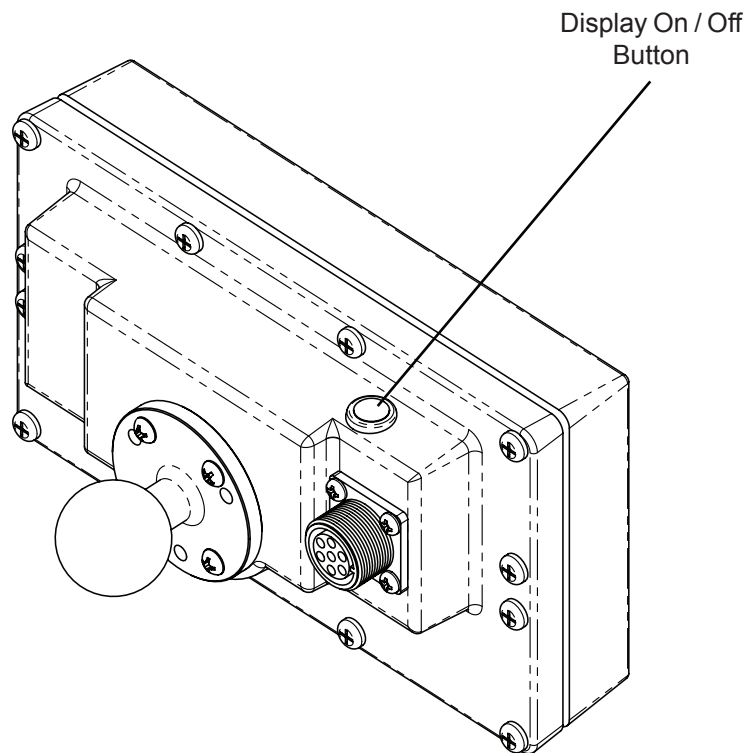
3 amp fuse located inside the power adapter housing. Unscrew the tip of the power adapter to expose fuse.



TRULINK DISPLAY SET-UP

DISPLAY START UP

- 1** Ensure the Display has power provided by the power harness and is connected to the auxiliary port of the prime mover.
- 2** Locate the On / Off button on the back of the display. Press the button to power on the Display.

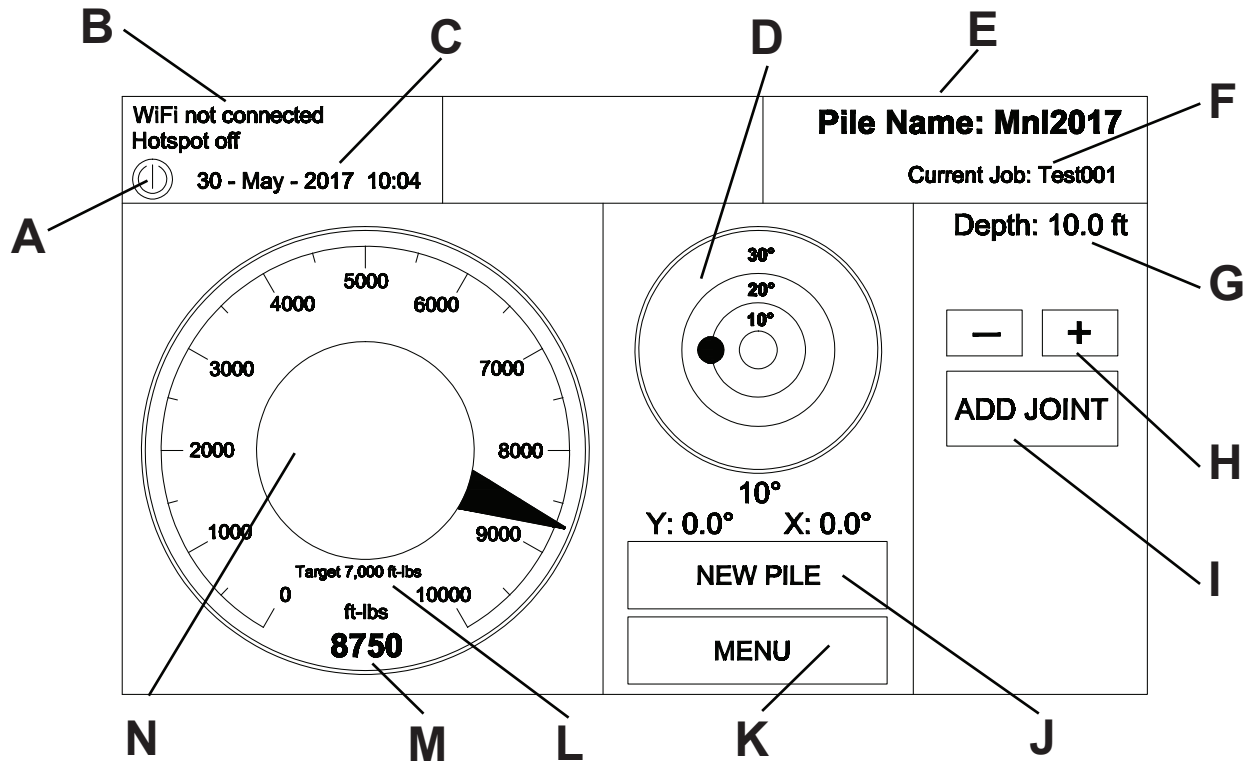


Note: Once the Display is on it should be shut down using the power icon located on the top left of the touch screen. When the touch screen is blank the Display is safe to power down using the On / Off Button.

DISPLAY LAYOUT AND FUNCTIONALITY

Touch Screen Display

This is the main operating screen. On this screen the operator can view time, date, memory availability, pile number, depth, torque and angle of pile. When making selections on the touch screen only use your finger or the provided soft tipped stylus. Using hard or pointed objects will cause damage to the display.



Main Screen Functions:

- | | |
|--------------------------|---|
| A) Power Button: | Power icon will turn display off. |
| B) WiFi Status: | Indicates WiFi connection. |
| C) Date and Time: | Displays current date and time. |
| D) Inclinometer: | Dial indicator (Bullseye) visual reference to show pile center. |
| E) Pile Name: | Displays pile name entered by user. |
| F) Current Job: | Displays job name entered by user. |
| G) Depth: | User input, tracks depth of pile being installed. |
| H) Depth Control: | + and - buttons can be used to manually add or subtract depth of pile. |
| I) Add Joint: | Add Joint button used to add depth of pile and pile extensions. |
| J) New Pile: | New Pile button used to start and enter pile information. |
| K) Menu: | Menu provides access to main menu. |
| L) Target Torque: | Displays target torque value entered by user. Touch bar to preset optimum torque range. |
| M) Torque Value: | Real time torque value displayed in numeric format. |
| N) Torque Dial: | Dial indicator, visual reference displays real time torque. |

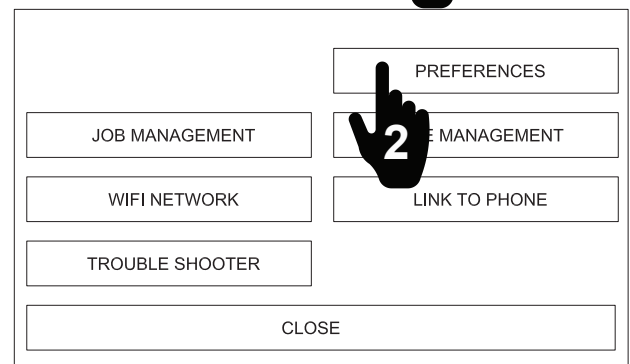
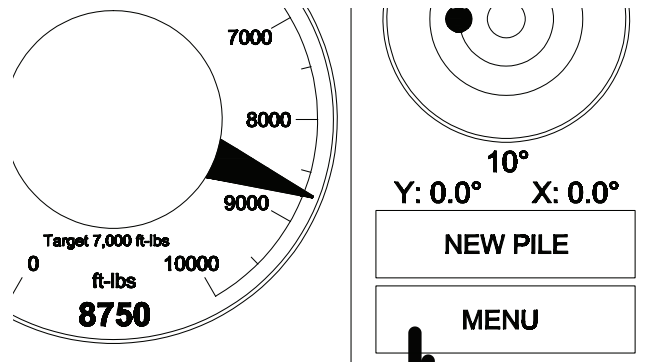
DISPLAY PREFERENCES

Areas that may require adjustment on the Display before it can be used are:

Units of Measure & Pin Orientation

UNITS OF MEASUREMENT

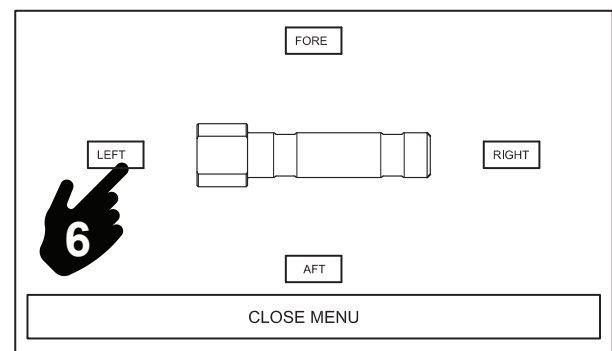
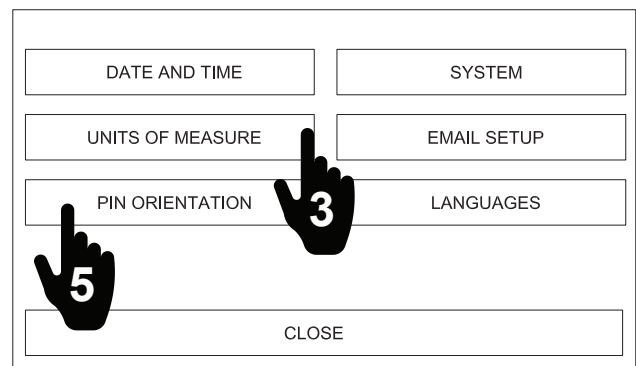
- 1 Select "**Menu**" located on the bottom left of the screen. This will bring up the Main Menu screen.
- 2 Select "**Menu**". Under the menu screen select **Preferences**.
- 3 Select "**Units of Measurement**".
- 4 Touch the appropriate area to adjust the torque and or length. Touch "**Close Menu**" to exit.



PIN ORIENTATION

Follow steps 1 and 2 to get to the Menu screen. Follow steps 5 and 6 to adjust pin orientation.

- 5 Select "**Pin Orientation**".
- 6 Select the correct orientation of the pin by touching one of the four directional boxes shown on the display.



In the example shown above the Pin is located in a perpendicular orientation in relation to the prime mover.

The orientation chart is arranged to represent the directions experienced when sitting in the operators seat of the prime mover. Ensure the Display accurately represents the real orientation of the Pin to ensure the Inclinometer will be accurate.

JOB MANAGEMENT INPUT GUIDE

WARNING Before operating, always ensure that all electrical connections are tight and free from potential hazards and or entanglement during operation.



Ensure Display unit has power. Power is provided by the auxiliary port located inside the prime mover operators cab. Chose a convenient location to mount the TruLink display. **The location should not interfere with safety devices (lap bar) or compromise the operators visibility.** The location should also allow the operator to easily access the display to start and stop the data recording function.

The display can be mounted to a glass surface using the suction cup mount provided. When using the suction cups be sure the surface is clean to allow for maximum adhesion against the glass.

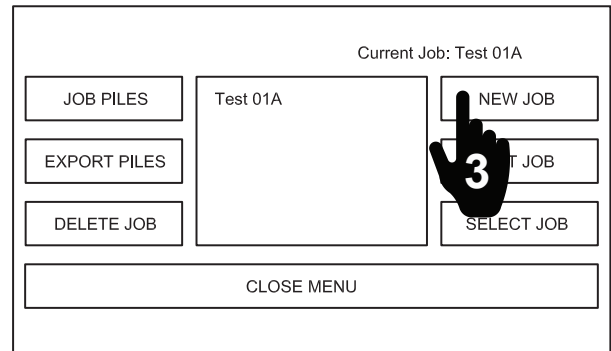
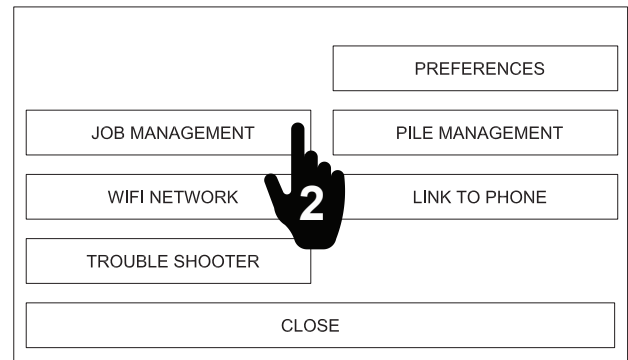
The display can also be hard mounted to any surface using hardware (not included). This method is only recommended if the location is to be permanent.

NEW JOB SET-UP.

- 1 Select the **"Menu"** button to start the new job process. The main menu screen will appear.
- 2 Select **"Job Management"** from the menu. A new screen will appear as shown to the right.
- 3 Select **"New job"** from the Job Management screen. This is where you will enter all job related information for all new jobs.

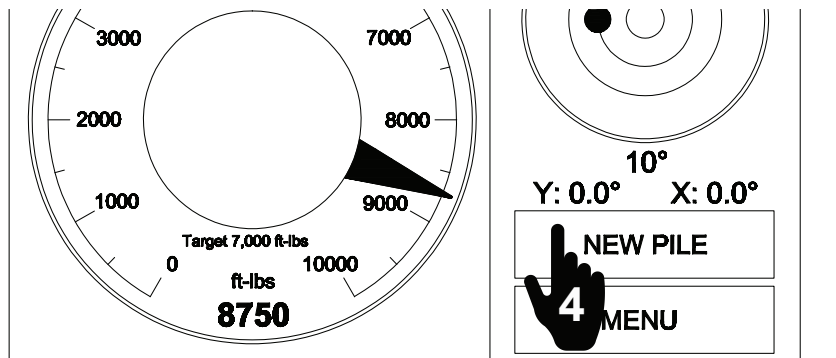
A keypad will appear, type the name of the job. Touch **"Close Menu"** to exit.

NOTE: As many new jobs can be entered as needed. A bar slider will appear on the right hand side of the screen when the amount of jobs entered exceeds the viewable space. Use the slider to scroll up or down as needed.



- 4 Touch "New Pile" from the main screen to enter all pile related information such as:

- Pile Name
- Target Torque
- Target Depth
- GPS Latitude
- GPS Longitude
- Notes



JOB MANAGEMENT INPUT GUIDE

5 Touch the screen inside the box of each heading to activate the keypad. **Note: Pile Name is a mandatory field. This will appear on the torque Report.** Press **"Save"** when complete.

6 The name you assigned to the job will show up in the "Job Management" screen. Select the job you just entered, by touching the job title. The text will highlight in blue. Press **"Select Job"** and the job title will appear next to "Current Job:" at the top of the screen. Press "Close Menu" to exit.

SETTING RANGE / TARGET TORQUE:

- 1** To set the Torque Range Selector touch anywhere on the torque dial. A new screen will appear.
- 2** Set your target torque value by using the left and right arrows on either side of the "Range" number.
- 3** To set the Target Torque select **"Set Target Torque"**. A new screen with key pad will appear. Type in the required value and select **"Set Target Torque"**. The screen will close and return the main display.

A green band will appear on the torque dial indicating the target torque.

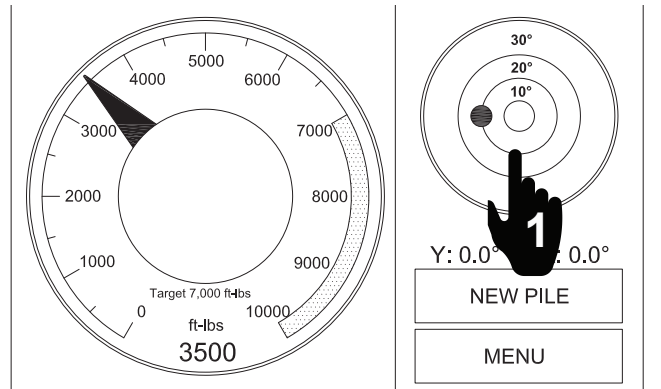
4 NOTE: If the torque dial is not registering zero when not in use you can zero out the dial by following the steps above. When the Torque Range Selector appears use the **"Set Zero Calibration"** button to reset the dial.

This step is only necessary if the torque dial is not returning to zero when not in use. It is not uncommon for the torque value to be reset before each new pile. This will ensure the recorded data always starts from zero.

OPERATING PROCEDURES

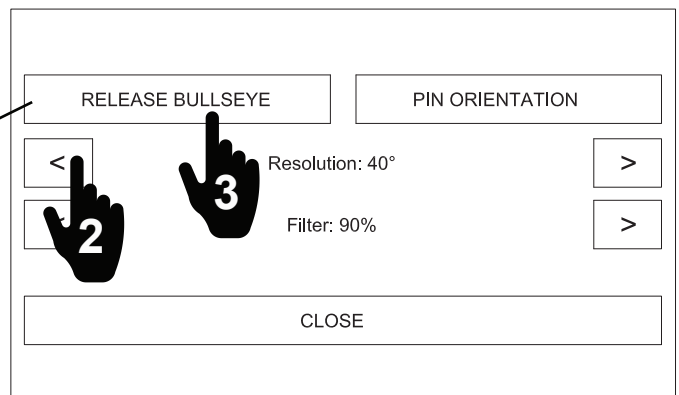
SETTING INCLINOMETER:

- 1** To set the Inclinator touch anywhere on the bullseye dial.
- 2** A new screen will appear. Use the arrow keys to set your desired angle resolution.
Resolutions available:
1, 2, 3
2, 4, 6
10, 20, 30



- 3** After the angle resolution has been set select **"Center BullsEye"** then **"Close"**.

This button will change between **"Center BullsEye"** and **"Release BullsEye"** depending on the current function.



Follow Step 4 only if the center of the bullseye needs to be changed to something other than zero. Example, installing piles at an angle. The bulls eye can be calibrated by touching the green dot on the bullseye.

- 4** If a pile (battered pile) is required to be installed at an angle other than vertical, follow these steps:
 - 4a)** Move the pile into the desired angle with the prime mover. The desired angle will be indicated on the display in the Angle box.
 - 4b)** When the pile is at the desired angle touch anywhere on the bulls eye dial. The Selector screen will appear. Select **"Center BullsEye"** then **"Close"**.

This action will now keep the angle you selected as the new center and allows you to monitor your new center easily.

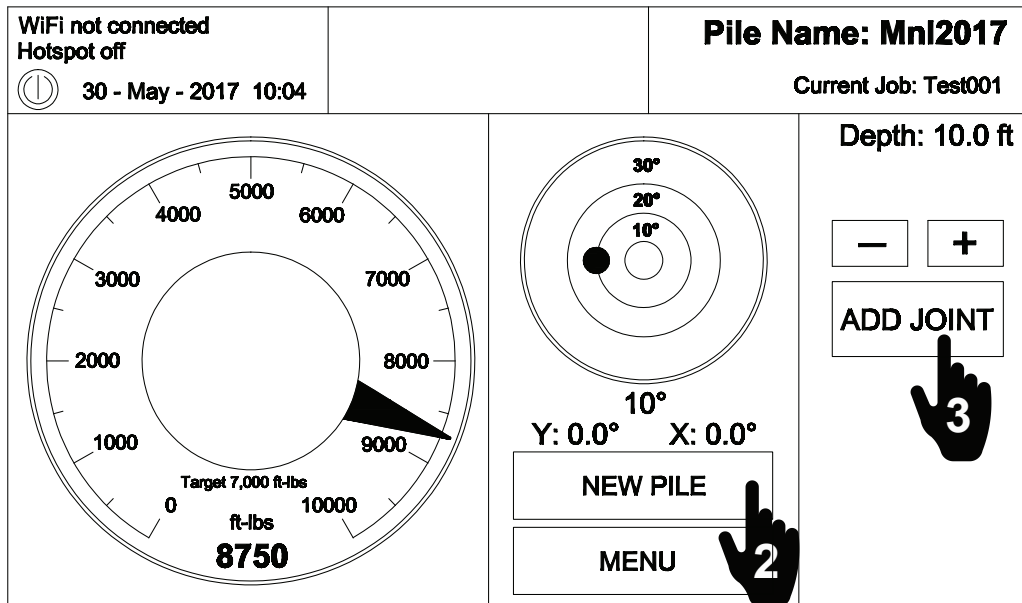
- 4c)** To revert back to the default setting touch anywhere on the bullseye dial. Ensure the Drive unit is hanging vertically and select **"Center BullsEye"** then **"Close"**.

OPERATING PROCEDURES

START PILE / ADD PILE JOINT:

All installation data is automatically recored once the job and pile information is setup. **The operator does not need to start or stop the recording process.** Before the system will record the Pile Number needs to be setup.

- 1 The system will start recording as soon as it senses torque. See pages 18 and 19 for Job and Pile setup procedure.



- 2 It is common to use pile extensions to reach a desired depth. When extensions are required the "Add Joint " button will be utilized. After the lead pile has been installed touch "Add Joint". A new keypad screen will appear. Use the keypad to enter the length of the extension, select "Add Joint "when complete, the display will return to the main screen.



The operator will enter the depth only after each pile or extension has been installed. Example, after the first 10' pile is installed the operator will select "Add Joint" and enter 10'.

- 3 To end the pile installation and move to the next pile select "Add Joint" to enter the final pile extension depth. Select "New Pile" to start the next pile. This sequence will save the previous pile installation data and the system is now ready to record the next pile installation.

Repeat steps 1 - 3 for any new pile installation.

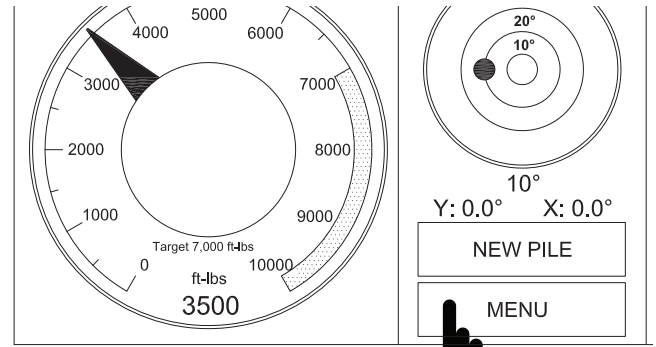


The + and - buttons can also be used to adjust the depth value of any current pile.

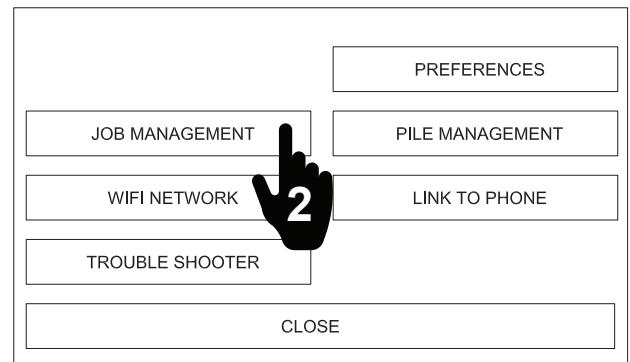
OPERATING PROCEDURES

EXPORTING DATA

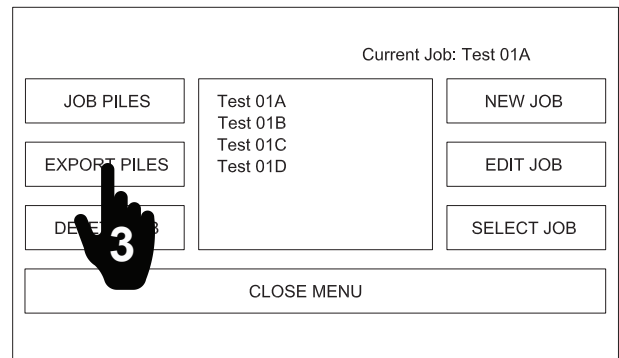
- 1 To export the pile installation data select **"Menu"**.



- 2 Select **"Job Management"**.



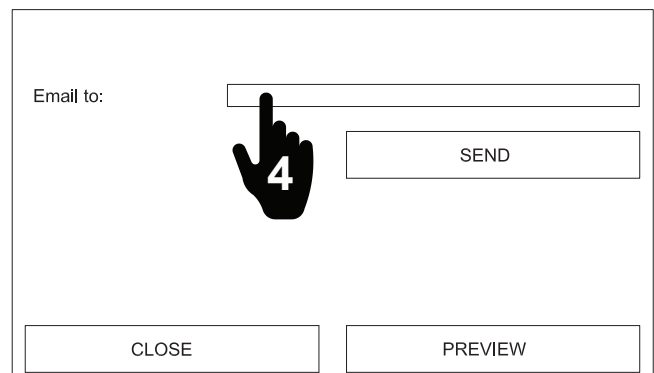
- 3 Select the job you want to export by touching the job name. This will highlight the job. Next select **"Export Piles"**.



- 4 After selecting Export Piles a new screen will appear. The job files are now ready to be emailed. Enter an email address by touching the text bar to the right of the words "Email to".



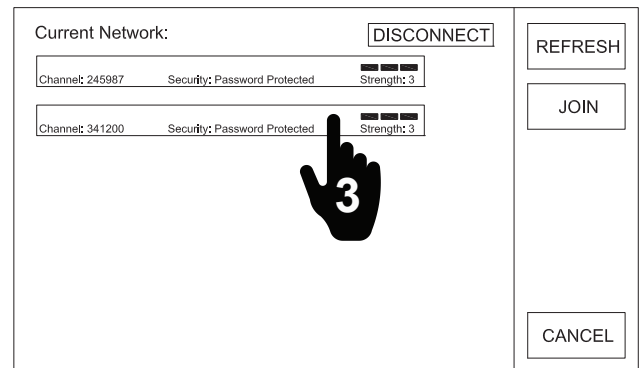
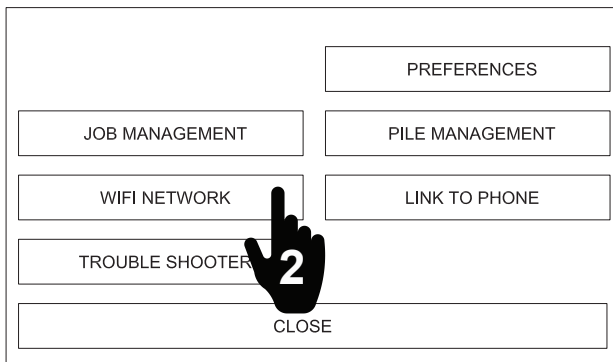
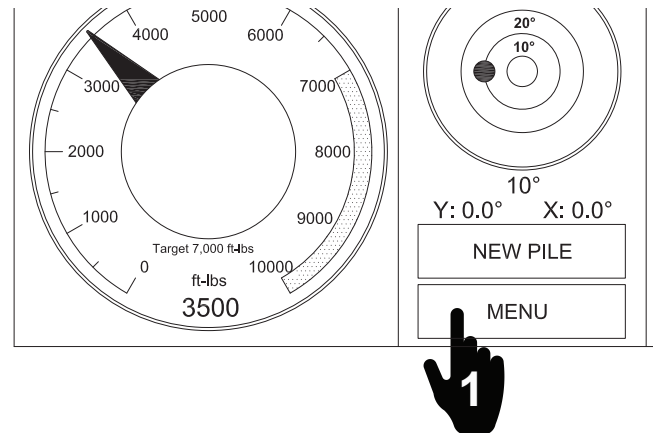
In order to email the job files a WiFi connection must be established. To connect the TruLink display to a WiFi connection follow the instructions listed on page 23.



OPERATING PROCEDURES

WiFi CONNECTION - EMAIL REPORTS

- 1 To establish a WiFi connection select **"Menu"**.
- 2 Select **"WiFi Network"**. This will bring up a new screen.
- 3 Select the WiFi connection from the available listings. Highlight the desired connection and then press **"Join"**. A keypad will appear and the network password can be entered. Select **"Enter"** when password is complete.



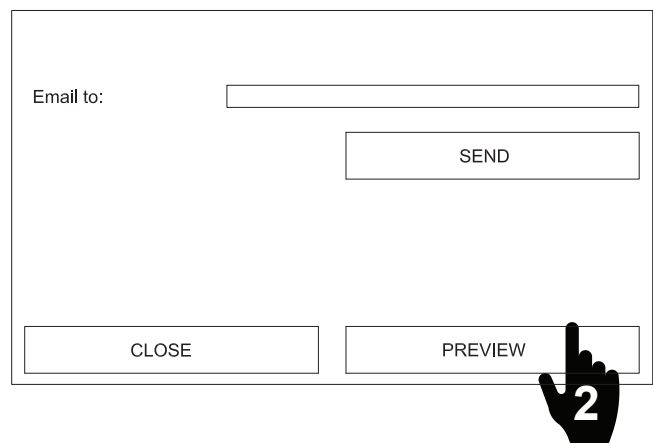
NOTE: If a WiFi connection is not readily available the display can be connected to the Internet via a mobile hotspot. Please see page 25 for instructions on how to establish a hotspot connection.

PREVIEW INSTALLATION REPORT (TORQUE REPORT)

The installation data or Torque Report can be previewed on the display. The Torque Report is automatically created for each individual pile setup by the user. The Torque Report is an easy to read PDF file that can be emailed following the steps in the WiFi Connection - Email Reports section of this manual. To preview the Torque Report on the display follow the steps below:

- 1 Follow step 1-3 from the Exporting Data section on page 22.
- 2 Select **"Preview"**. This will bring up the PDF file of the Torque Report.

See page 24 for an example of the report format.



OPERATING PROCEDURES

PREVIEW INSTALLATION REPORT (TORQUE REPORT)

The PDF Torque Report will have a cover page listing all the piles on that job. The individual pile installation data will be listed in the order of installation after the cover page.

The operator can preview the entire Torque Report by scrolling up and down on the display once the Torque Report is viable.

PENGO 2 Torque Report

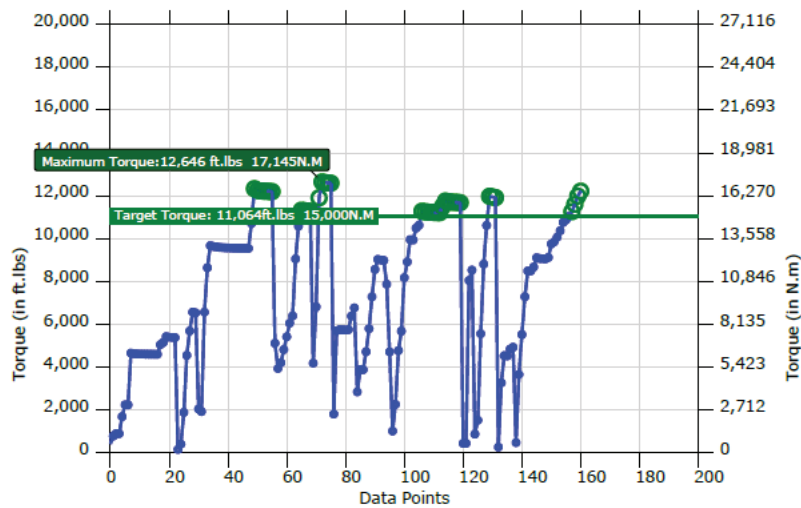
Job: PENGO 2

This report covers the following piles

Pile	Date Drilled	Target Torque	Achieved Torque	Page
1234	14-Dec-2016	11,064lb.ft 15,000N.m	114%	2
12345	14-Dec-2016	11,064lb.ft 15,000N.m	105%	3

PENGO 2 Torque Report

Pile Name:	1234
Target Torque:	11,064 (ft-lbs) 15,000 (N.M)
Maximum Torque:	12,646 (ft-lbs) 17,145 (N.M)
Target Depth:	0 (ft) 0.0 (m)
Maximum Depth:	49 (ft) 14.9 (m)
Latitude:	0
Longitude:	0
Date:	14-Dec-2016
Notes:	



Page 1

Cover Page Example

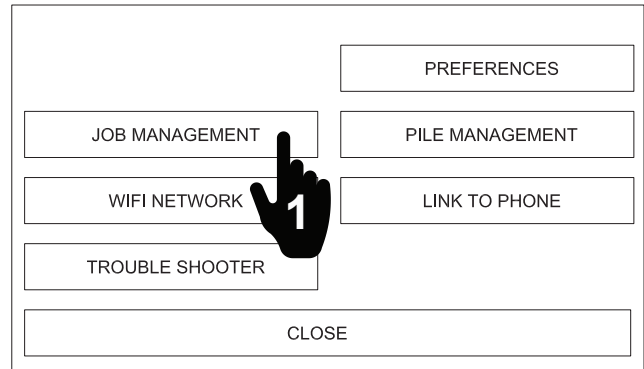
Page 2

Pile Torque Data Page Example

OPERATING PROCEDURES

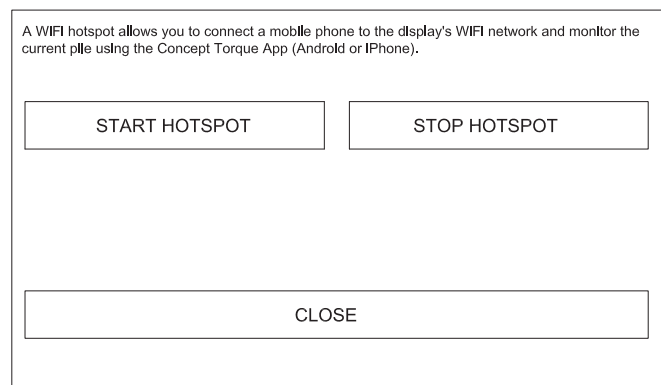
WiFi HOTSPOT CONNECTION:

1 To start a hotspot select "**Menu**" from the main screen and then select "**Link To Phone**".



2 Select "**Start Hotspot**". This will bring up the hotspot name and password. Enter the name and password on your mobile device to establish the link and enable a WiFi connection.

In most cases this is the most common connection available at a job site.



PIN CALIBRATION:

The TruLink Pin requires calibration every 2 years or 1000 hours of use to ensure torque accuracy.

It is very important that the TruLink equipment remain in good working order and be calibrated as needed.

During calibration, the Pin will undergo a series of tests to ensure accurate torque values are being produced and that the Pin is in satisfactory condition.

The calibrated Pin will be returned with an updated calibration certificate. For further information concerning the calibration process please contact your authorized Pengo dealer or you can also contact Pengo directly. Please contact Pengo customer service at **1-800-599-0211** to arrange for your TruLink Pin to receive calibration.

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WARRANTY POLICY

LIMITED WARRANTY

PENGO, warrants its products against faulty design, material, and workmanship for the periods listed below. The warranty starts on the delivery date to the retail owner and is non-transferable.

WARRANTY PERIOD (Dating from the delivery to the original user)

TruLink System: 12 months all components.

WARRANTY SERVICE

All new PENGO products are warranted to be free from defects in material and workmanship, which may cause failure under normal usage and service when used for the purpose intended.

The PENGO warranty covers faulty workmanship and defective parts manufactured by PENGO. The warranty does not extend to transportation cost of parts nor does it cover consequential loss.

PENGO Equipment must be operated in accordance with the recommended procedures and within the ranges as specified both on the Unit and contained in the Operating Manual.

Any claims under this warranty must be made within fourteen (14) days after the buyer learns of the facts upon which claim is based. All claims not made in writing and not received by PENGO within the time specified above may be deemed waived. PENGO will not be responsible for or accept any charges for work carried out by any repairs, or for any charges for any spare parts fitted to any PENGO products without written approval from PENGO. PENGO's liability for any and all losses and damages to buyer resulting from any cause whatsoever, including PENGO negligence irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the particular parts, with respect to which losses or damages are claimed, or, at the discretion of PENGO the repair or replacement of defective or damaged parts.

VOID WARRANTY

This warranty is void if field repairs or modifications have been made to the TruLink controls without written approval. The complete unit must be available for inspection in it's original but alleged failed condition. This warranty does not apply to normal wear or to damage resulting from accident, abnormal use, abuse or neglect.

PRODUCT IMPROVEMENTS

Product improvement and modifications is an on going process at PENGO. PENGO reserves the right to make changes or additions to any product or to the warranty without incurring any obligations to make such changes available for previously sold products.

PENGO makes no other warranty. All other warranties, whether expressed or implied, such as warranties of merchantability or fitness for a particular purpose, are hereby excluded and disclaimed to the extent that they exceed the warranties expressly granted in this limited warranty. In no event shall PENGO be liable for consequential or incidental damages.

RETURNED GOODS POLICY

PENGO reserves the right to determine whether products claimed to be defective shall be inspected by our personnel in the field or returned to the factory. If judged by PENGO to be defective in material or workmanship, the product will be replaced or a credit issued at the option of Pengo.

Upon notification of defect, PENGO's Inside Sales Department will issue a Return Materials Authorization (RMA) number. All returns for replacement or credit MUST be accompanied by a RMA number. **Products returned without an RMA number will be rejected and returned to the sender freight collect.** All returns must be shipped "prepaid". Products shipped "collect" will be refused. Proof of purchase such as invoice number must accompany returns.

All RMA's must be returned within 30 days of the request.



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