

DIGITRAK[®]

CableLink[®] System

Installation, Testing, and Extraction Instructions



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3-6000-00-B1

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Introduction

The CableLink system is permanently installed into drill rods and provides 2 distinct functions: to transmit electrical power downhole to power the instrument, and to transmit data back up the wire to the rig's remote display.

Prior to installing the CableLink system, inspect the entire length of each drill rod for any deformities or obstructions. You will install different CableLink assemblies into the box end and the pin end of each rod. Installation instructions are given below. Be sure that you review the parts needed lists and have all the tools and test equipment ready when you begin the installation procedure.

CableLink Installation Instructions

Installing CableLink System into Box End of Drill Rod

Parts Required

The following CableLink parts will be used for the box end installation:

- Box End of CableLink Assembly (white nylon sleeve with spring and length of wire with heat shrinks)
- Box End Tool (610-1224-00)
- Box End Inner Tool (440-1228-00)
- Reamer Tool (610-1227-00)

The following parts are not supplied with the CableLink system, so you must provide them:

- Fish tape or device to fish wire through rod
- Crimp Tool (NICOPRESS #32 VC:VG)
- Heat gun
- Hydraulic cylinder (reciprocating cylinder hole, RCH 123 by ENERPAC) – DCI recommends quick-disconnect fitting for hydraulic hose attachment.
- Cordless drill

Installation Procedure

1. From box end of drill rod, fish the wire attached to the Box End of CableLink Assembly (CLA) through the rod so that the wire end extends from the rod's pin end and the white nylon Box End of CLA extends from the rod's box end.
2. Gently push the white nylon Box End of CLA into the inside diameter (ID) of the rod.
3. Thread the Box End Tool into box end of rod and tighten.
4. Insert the Box End Inner Tool through the Box End Tool and into the white nylon Box End of CLA.
5. Slide the hydraulic cylinder over the shank of the Box End Inner Tool, and thread the cylinder into the Box End Tool.
6. Attach the hydraulic line or the hand pump hose to the hydraulic cylinder.
7. Turn on power pack to hydraulic cylinder or pump handle of hand pump until pressure gauge hits maximum load or you can no longer pump the handle.
8. Remove the following: hydraulic equipment, Box End Inner Tool, and Box End Tool.
9. Install Reamer Tool into cordless drill.
10. Ream the ID of the white nylon CLA using the Reamer Tool attached to the cordless drill. NOTE: Because both the box and pin ends of the white nylon CLAs will require reaming, it may be more efficient to complete the reaming process after you have installed the CLA into several rods.

Installing CableLink System into Pin End of Drill Rod

Parts Required

The following CableLink parts will be used for the pin end installation:

- Pin End of the CableLink assembly (white nylon sleeve with copper coil on wire shank)
- Pin End Tool (610-1221-00)
- Pin End Inner Tool (440-1227-00)

The following parts are not supplied with the CableLink system, so you must provide them:

- Crimp Tool (NICOPRESS #32 VC:VG)
- 3M Epoxy S1125, Kit 8 (dual pack injector gun with mixing nozzle)
- Heat gun
- Hydraulic cylinder (reciprocating cylinder hole—RCH 123 by ENERPAC) recommend quick-disconnect fitting for hydraulic hose attachment
- Pliers

Installation Procedure

1. Remove protective heat shrink (attached with tie wraps) from Box End CLA extending from the pin end of rod. Be sure that the 2 heat shrinks inside do not slide down into rod.
2. Insert the shank of the Pin End CLA into the crimp until it butts up to notch. In crimp.
3. Squeeze Crimp Tool to complete the 1st crimp.
4. Rotate the Crimp Tool 90 degrees and make 2nd crimp.
5. Using pliers, gently flatten any protruding areas on the crimped area of the crimp.
6. Evenly spread epoxy around the wire, crimp and CLA shank from the edge of nylon sleeve of CLA to a distance equal to that of the 1st heat shrink.
7. Slide 1st heat shrink over epoxied area until heat shrink meets the edge of the nylon sleeve of the CLA.
8. Use heat gun to shrink heat shrink.
9. After 1st heat shrink cools spread epoxy onto same area described above.
10. Slide 2nd heat shrink up to edge of nylon sleeve of the CLA.
11. Use heat gun to shrink heat shrink.
12. After 2nd heat shrink cools, gently push this assembly into the ID of the rod.
13. Thread the Pin End Tool onto the pin end of the rod and tighten.
14. Insert the Pin End Inner Tool through the Pin End Tool and into the white nylon Pin End of the CLA.
15. Slide the hydraulic cylinder over the shank of the Pin End Inner tool and thread the cylinder into the Pin End Tool.
16. Attach the hydraulic line or hand pump hose to the hydraulic cylinder.
17. Turn on power pack to hydraulic cylinder or pump the handle on the hand pump until pressure gauge hits maximum load or you can no longer pump the handle.
18. Remove the following: hydraulic equipment, Pin End Inner Tool, and Pin End Tool.
19. Ream the ID of the white nylon CLA using the Reamer Tool attached to the cordless drill.

Testing CableLink System

Two people are required to test the CableLink system.

Parts Required

The following test equipment is supplied with the CableLink system:

- CableLink Test Apparatus (700-2100-20)

The following test equipment is supplied with the CableLink system:

- Ohm meter

Testing Procedure

1. Plug banana jacks of both Box End Tester and Pin End Tester into the ohm meter.
2. Zero ohm meter or perform resistance reading.
3. Press Box End Tester into box end of rod against the Box End of CLA.
4. 2nd person presses the Pin End Tester into pin end of rod against the Pin End of CLA.
5. Resistance reading must be less than 1 ohm.

CableLink Extraction Instructions

Review the parts required lists and have all equipment ready when you begin the extraction procedure.

Extracting CableLink System from Box End of Drill Rod

Parts Required

The following parts are supplied with the CableLink system:

- Extractor Tool Assembly (610-1223-00)

The following parts are not supplied with the CableLink system:

- $\frac{3}{4}$ " Wrench

Extraction Procedure

1. Insert the Extractor Tool Assembly into the ID of rod box end and turn clockwise until Extractor engages nearly all the way into nylon sleeve of the Box End of the CLA.
2. Slide the Box End Adapter down until it seats against the box end of rod shaft into the ID of rod box end and turn clockwise until auger engages slightly.
3. Slide the 2 washers down against the Box End Adapter.
4. Thread the $\frac{1}{2}$ " nut down against the 2 washers.
5. Turn Coupling Nut clockwise with $\frac{3}{4}$ " wrench and tighten until the Extraction Assembly disengages.
6. Remove entire assembly from ID of rod.

Extracting CableLink System from Pin End of Drill Rod

Parts Required

The following parts are supplied with the CableLink system:

- Extractor Tool Assembly (610-1223-00)
- Pin End Adapter (440-1226-00)

The following parts are not supplied with the CableLink system:

- $\frac{3}{4}$ " Wrench

Extraction Procedure

1. Identify the box end of the Pin End Adapter (it has a larger ID than the pin end of the Pin End Adapter).
2. Slide the box end of the Pin End Adapter over the Extractor up to the Box End Adapter.
3. Slide both Pin End Adapter and Box End Adapter down to the pin end of the rod, making sure that all are seated against one another.
4. Slide the 2 washers down against the Box End Adapter.
5. Thread the $\frac{1}{2}$ " nut down against the 2 washers..
6. Turn Coupling Nut clockwise with $\frac{3}{4}$ " wrench until the Extraction Assembly disengages.
7. Remove entire assembly from ID of rod.

Appendix – Engineering Drawings

Installation Assembly, Box End (610-1222-00)

CableLink Assembly, Box End (no drawing #)

Tool Assembly, Box End (610-1224-00)

Inner Tool, Box End (440-1228-00)

Installation Assembly, Pin End (610-1220-00)

CableLink Assembly, Pin End (no drawing #)

Tool Assembly, Pin End (610-1221-00)

Inner Tool, Pin End (610-1221-00)

Reamer Assembly (610-1227-00)

Extractor Tool Assembly (610-1223-00)

Extractor Shaft (440-1242-00)

Extractor (440-1229-00)

Adapter, Box End (440-1230-00)

Adapter, Pin End (440-1226-00)

CableLink Test Assembly (700-2100-00)