Suggested Hardline Connector Installation Technical Bulletin

Overview

Purpose

This document describes tools and techniques that help to ensure a reliable connection and proper torque when installing a hardline cable and connector into Cisco cable system transmission equipment.

The procedures in this document are illustrated using Gilbert GRS pin type connectors and CommScope .500 diameter PIII hardline cable. Gilbert's own installation instructions are used as a basis, but similar procedures apply when using equipment and instructions from other manufacturers.

Note: This document is intended to supplement, not replace, the instructions provided by the connector manufacturer. Consult the connector manufacturer's instructions for additional information.

Audience

These installation instructions are intended for all cable system operators or installers who need to install a hardline cable and connector into Cisco cable system transmission equipment.

Qualified Personnel

Only appropriately qualified and skilled service personnel should attempt to install, operate, maintain, and service this product.

WARNING:

Allow only qualified and skilled personnel to install, operate, maintain, and service this product. Otherwise, personal injury or equipment damage may occur.

Required Tools and Materials

The following tools and materials are required for this installation procedure:

- Professional quality torque wrench with 3/8-inch drive, preferably equipped with positive means of indicating the correct torque value, such as a tactile click or audible beep tone (for example, Armstrong electronic torque wrench with audible beep tone, part number 64-534)
- Full-length open end wrenches of appropriate size, or 12-inch adjustable open end wrench
- Flare nut crow's foot of appropriate size (recommended)
- Deep well socket of appropriate size
- Adapter, 3/8-inch female to 1/2-inch male drive (if needed)

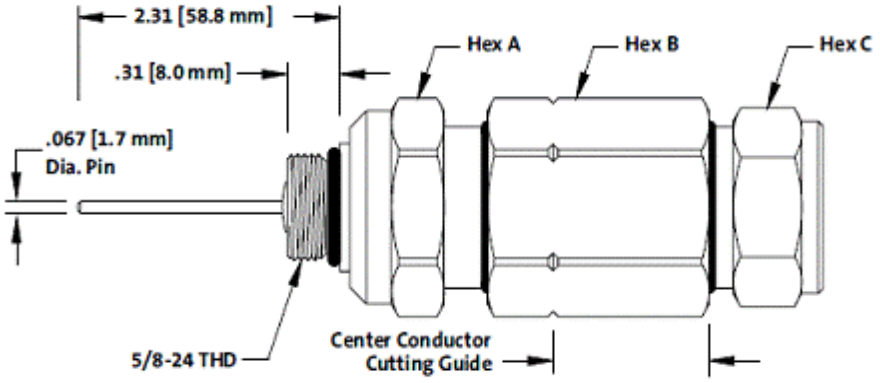
Installation Procedure

The instructions provided by the manufacturer of the hardline connector contain important information, but may omit details that help ensure consistently reliable results.

As a case in point, consider the following instructions and reference drawing that accompany the Gilbert GRS pin-type connector for CommScope .500 diameter PIII hardline cable:

Install Back Nut onto cable. Install Main Nut onto cable to check cable trim coring dimensions.... Verify the connector pin length and, if necessary, trim the connector pin to the appropriate length for the equipment being used. Install the connector Body into the housing and tighten to housing manufacturer's specification. Slide the Main Nut onto the prepared end of the cable making certain that the integral sleeve is fully inserted into the cable. Bring the Main Nut and cable to the Body. Hand tighten Main Nut to Body continually keeping pressure on cable towards body so that the center conductor will be properly seized. Then, using two wrenches, one wrench to hold the Body from rotation, continue tightening Main Nut to Body until a firm stop is reached, re-verify that the integral sleeve is fully inserted into cable. Tighten Back Nut by hand; then, using two wrenches, one of the Main Nut, complete installation by tightening Back Nut firmly to secure the cable (approximately 35 ft.lbs. [50 Nm]; approximately 50 ft.lbs. [70 Nm] for .840 and larger cable sizes). Secure center conductor in equipment housing with seizing screw provided by equipment manufacturer 1. Slide heat shrink tubing over connector against port housing of equipment. Shrink in accordance with manufacturer's recommendation.

Hex A = Body (Stinger) 1-1/8" Hex	Hex B = Main Nut (Jam Nut) 1-1/8" Hex	Hex C = Back Nut (Back Nut) 1" Hex



The following procedures repeat key steps from the instructions quoted above, and provide additional details and photos to help clarify the best method for carrying out key steps of the procedure.

Note: Steps quoted from the above procedure are shown in *italics* below.

Installing the Hardline Connector

Note: Before performing this procedure, prepare the end of the cable in accordance with the instructions provided by the cable manufacturer.

CAUTION:

When performing this procedure, use only the recommended tools. In particular, avoid using short (10-inch) crescent wrenches and locking-channel pliers, as this may result in damage to the aluminum connector and its plating, and may not allow a torque value sufficient to consistently ensure a good connection.

- *Install the connector Body into the housing and tighten to housing manufacturer's specifications.*

  Use a torque wrench (set to proper torque) with a deep well socket to perform this task.

- *Then, using two wrenches, one wrench to hold the Body from rotation, continue tightening Main Nut to Body until a firm stop is reached, re-verify that the integral sleeve is fully inserted into cable.*

  The directive "until a firm stop is reached" is somewhat vague, and because Gilbert does not provide a torque value, we suggest adding 2 or 3 more degrees of rotation to the main nut once the "firm stop" is reached to ensure an adequately tight connection and satisfactory results.

- *Tighten Back Nut by hand; then, using two wrenches, one on the Main Nut, complete installation by tightening Back Nut firmly to secure the cable (approximately 35 ft.lbs. [50 Nm]).*

This step is where most problems have been observed in the field. In most cases, we have discovered that the technician uses a short (10-inch) crescent wrench, or worse, a set of 10-inch locking-channel pliers. In using these tools, it is highly unlikely that the technician could reach a torque value high enough to ensure a good connection on a consistent basis. The only way to consistently obtain a reliable connection is to use a torque wrench set to 35 ft-lbs (50 Nm).

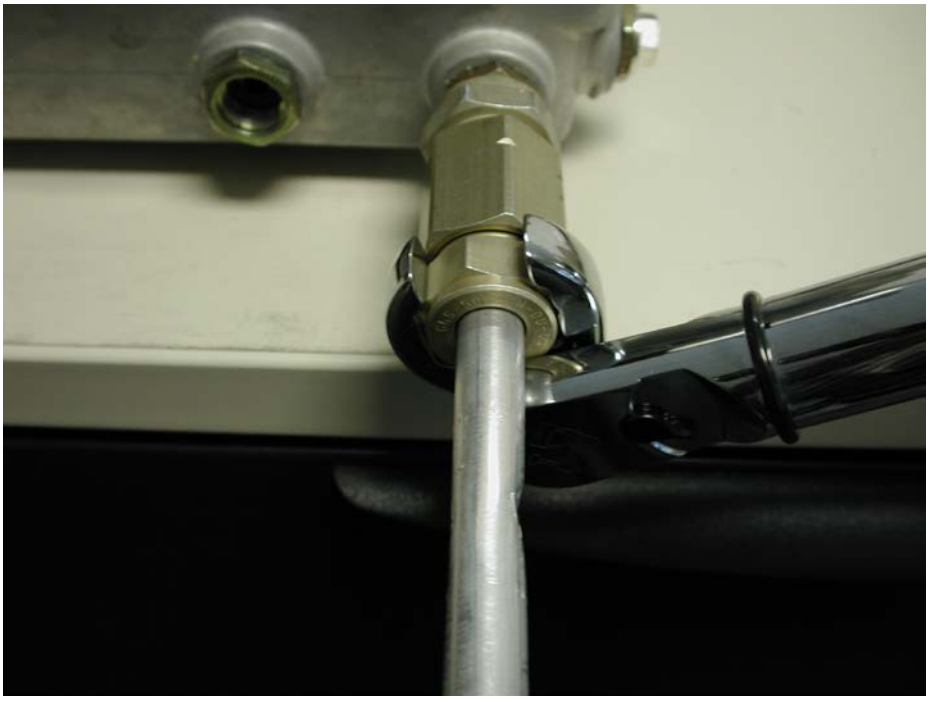
Note: We strongly recommend that you avoid using locking-channel pliers for this procedure and that you discourage others from doing so. Using these types of pliers tends to damage the aluminum connector and its plating, and often results in less than acceptable torque.

This photo illustrates the recommended method for tightening the back nut. The torque wrench is fitted with a flare nut crow's foot, shown in detail below.

This accessory offers the benefit of capturing the nut so that the wrench will not slip off, an especially helpful feature when working from a bucket truck.

Note: You must set the flare nut crow's foot at a 90 degree angle relative to the head of the torque wrench. Any position other than 90 degrees will alter the set torque value.

The next two illustrations demonstrate an Armstrong electronic torque wrench 10-100 ft-lb, part number 64-534, with flare nut crow's foot attached, tightening the back nut.



Finally, this illustration shows a 3/8-inch to 1/2-inch adapter and flare nut crow's feet in various sizes. The adapter may be used to attach a crow's foot with 1/2-inch drive to a torque wrench with 3/8-inch drive.

For Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

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