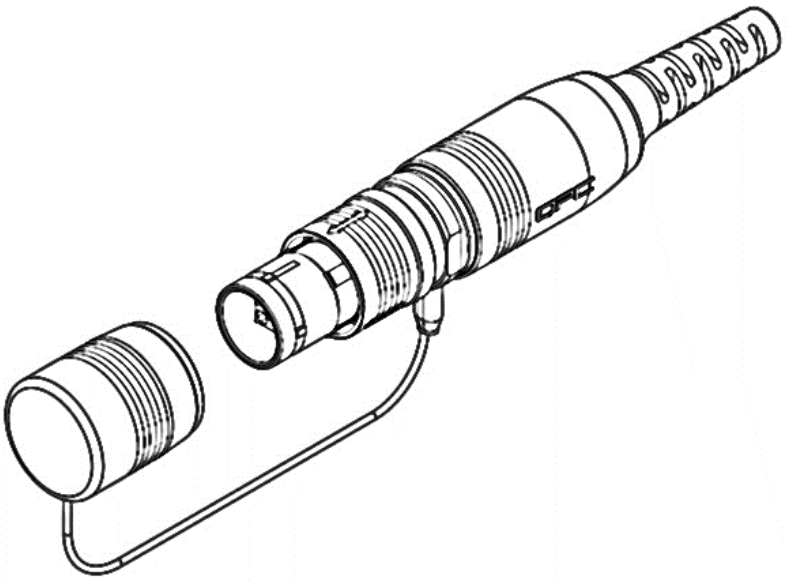
QSeal Connectors
Customer Assembly Instructions



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QPC Fiber Optic, LLC
27612 El Lazo Road, Laguna Niguel, CA 92677

www.qpcfiber.com
Ph: (949) 361-8855

SCOPE

This document describes the assembly instructions for the QSeal product Line. Please use the table of contents above to locate the applicable section(s) based on the products needing assembly.

SAFETY

Please use caution when following these instructions. This is not an exhaustive list of safety guidelines, refer to local regulations and your own company's policies.

- Be careful when handling bare fibers as sharp ends may penetrate skin.
- Wear appropriate personal protective equipment such as gloves and safety glasses.
- Track all fiber scraps and dispose of properly. Tape may be used to remove scraps from the worktable.
- Wash hands after handling fiber and before touching eyes or face.
- Do not look down fiber ends unless certain there is no light source coming through the fiber.
- Keep all combustible materials safely away from curing ovens.

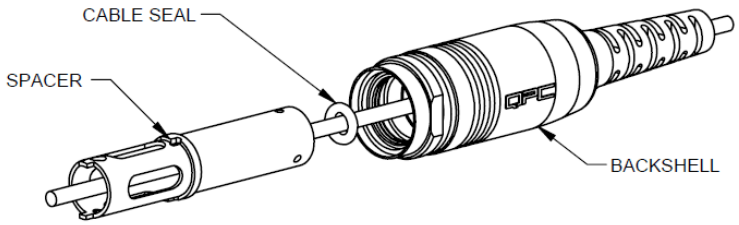
STANDARD & SPECIALTY ASSEMBLY TOOLS

Refer to QPC CAI-TOOLS for a list of Standard & Specialty Assembly Tools used in this instruction.

PLUG, 2 CHANNEL CONFIGURATION – Cable OD Range: 3.6mm to 6.5mm

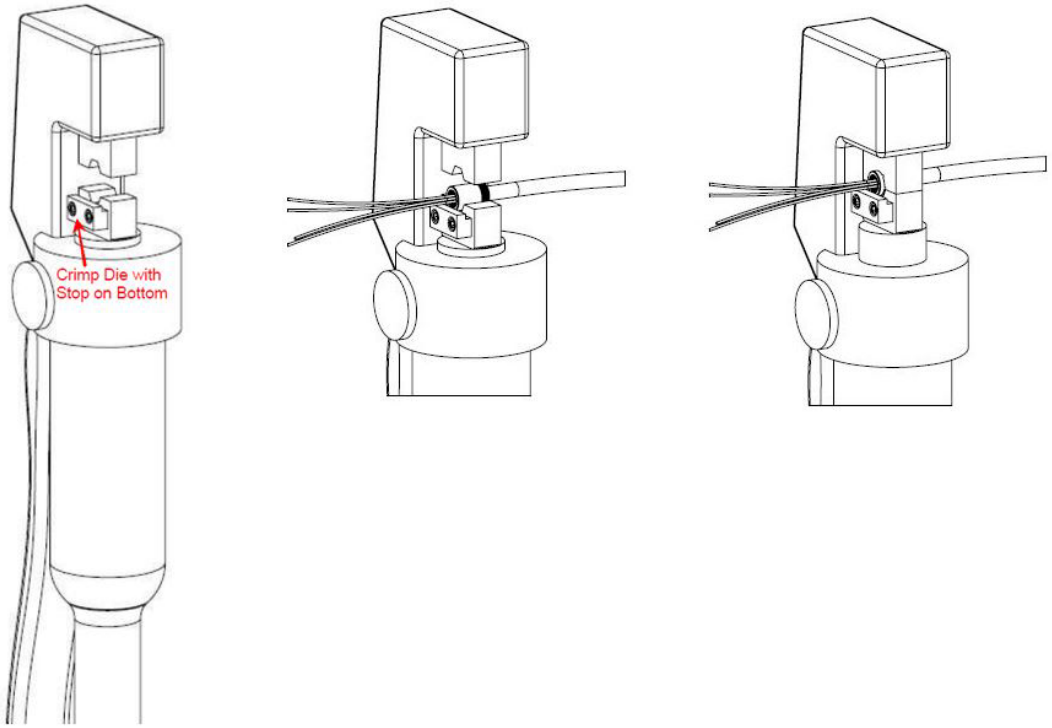
CABLE PREPARATION

Slide parts onto cable in the order below.



Strip the cable jacket approximately 6” (152 mm) from the end and slide the crimp support over the fiber and Kevlar as illustrated below. Bend the Kevlar back over the crimp support. Slide the crimp over the Kevlar and crimp support to prepare for crimping.

Setup the hydraulic crimping tool PT-540 with the die set PT-541. The crimp die with stop needs to be placed on the bottom facing out and with the crimp against the stop as seen in the image below. Turn the knob clockwise on the hydraulic crimper so that the handles can be pumped to crimp. Place the cable in the lower crimp die with the fiber facing out. Pump the handles until the crimp dies are touching. Release the crimp by turning the control knob counterclockwise.

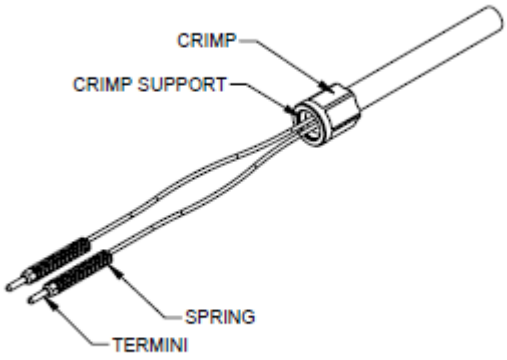


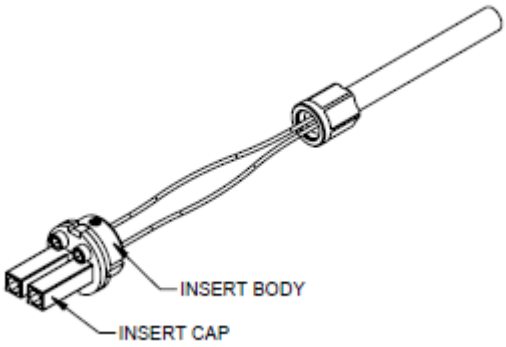
TERMINATION

Use the Stripping Length Diagrams located in the appendix with the Fiber Optic Termination and Polishing Assembly Instructions (reference CAI-TERM) to terminate each fiber.

POPULATE INSERT

Slide the fiber optic termini into the insert cap according to the desired pinout. Assemble the insert body to the back of the insert cap ensuring that the 900µm fiber slide into the side slots of the insert body to prevent pinching during assembly. Apply Loctite 222 or equivalent to the socket head cap screw threads per manufacturer's instructions and screw the insert using hex tool PT-503. Use torque driver PT-590 with hex bit 5/64" from PT-599 to torque the Socket Head Cap Screws to the values in the torque table in the appendix.



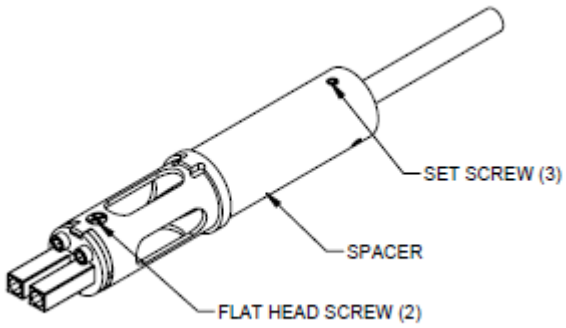


CONNECTOR ASSEMBLY

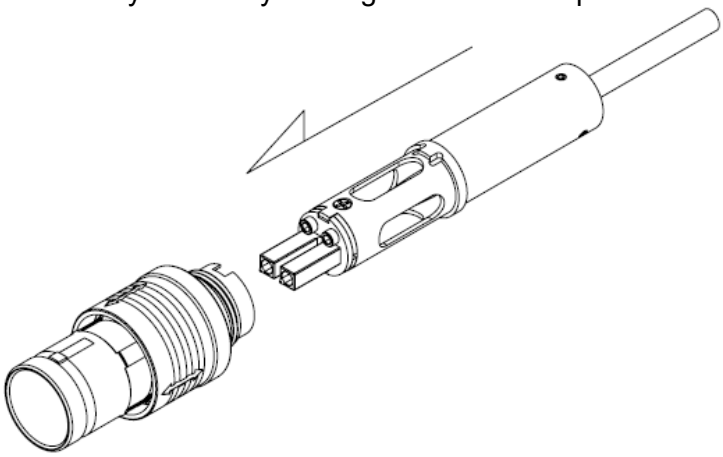
Slide the spacer up and screw in the flat head screws using a #1 Phillips screwdriver, PT-505. Torque with Hex Driver PT-590 with a #1 Phillips Hex Bit from PT-599 and torque to the values in the Torque Table in the appendix.

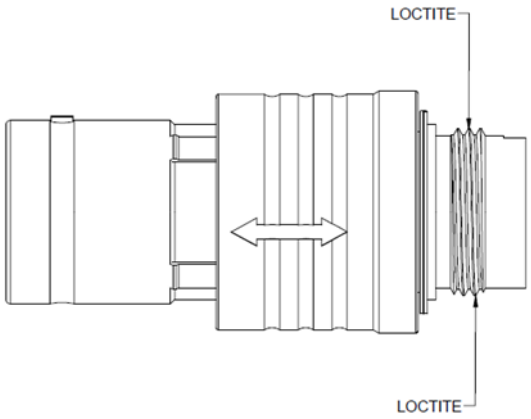
Pull the crimp to the bottom of spacer, apply Loctite on the set screw threads and tighten using hex driver PT-500. Use torque hex Driver PT-590 with hex bit .050" PT-599 to torque to the values in the torque table in the appendix.

Perform a visual check by looking through the holes in the spacer to make sure that the fiber is not twisted or kinked.

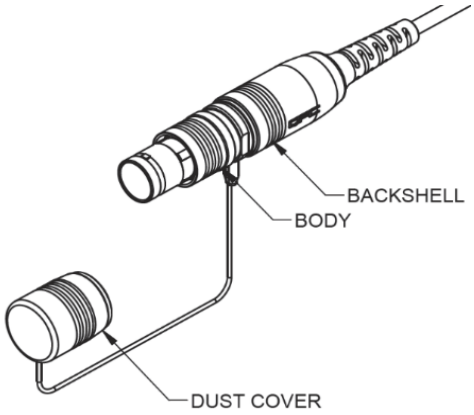


Place the Insert end into the body assembly. The keys on the spacer should engage with the keyways in the body assembly. Wipe the threads clean of any debris or excess lube from the O-Ring and apply 2 drops of Loctite 243 on the thread of the plug body assembly. Slide the backshell into position and tighten by hand onto the body assembly making sure that the Spacer does not turn relative to the Body.

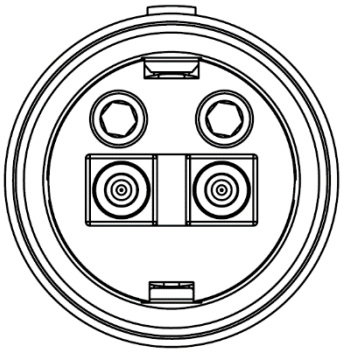




To torque the backshell, place a 2-Channel QSeal receptacle in the 4" drill press vise with 2 x machined plastic jaws PT-591. Mate the plug with the receptacle in the drill press and use the crow's foot wrench PT-536 with the Dial Torque Measuring Wrench PT-506 to torque the backshell to the values in the torque table in the appendix. Make sure not to over torque the backshell as this will cause damage.



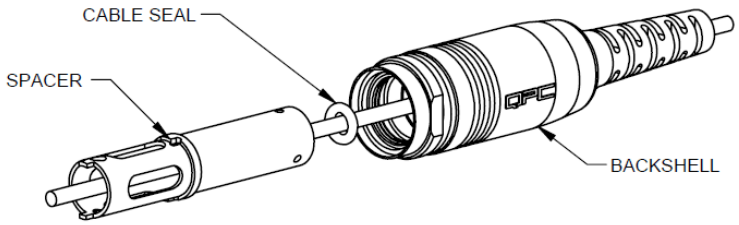
NOTE: After torquing, ensure that the insert is clocked properly in the body with respect to the main key.



PLUG, 2 CHANNEL CONFIGURATION – Cable OD Range: 6.6mm to 10.5mm

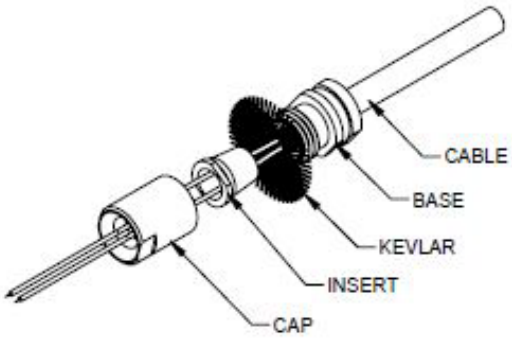
CABLE PREPARATION

Slide parts onto cable in the order below.



Remove approximately 6” (152mm) of the outer jacket from the cable end. Thread the wedge strain relief base over the fiber and Kevlar and slide it to the cable jacket edge. Thread the wedge strain relief insert over the fibers. Spread the Kevlar out evenly and slide the insert into the base. The Kevlar should be trapped between the base and the insert. Cut the Kevlar flush with top of strain relief wedge.

Screw the wedge strain relief cap onto the wedge strain relief base. Tighten using the dial torque-measuring wrench PT-506 and Crow’s foot wrench PT-536 and torque to the values in the torque table in the appendix.

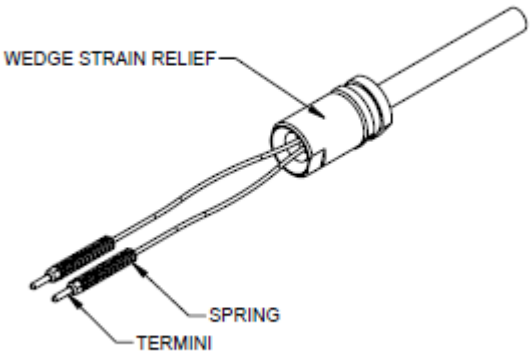


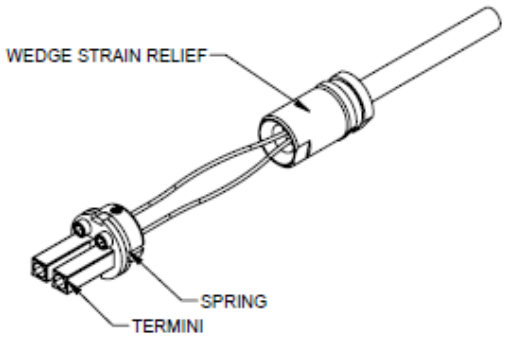
TERMINATION

Use the Stripping Length Diagrams located in the appendix with the Fiber Optic Termination and Polishing Assembly Instructions (reference CAI-TERM) to terminate each fiber.

POPULATE INSERT

Slide the fiber optic termini into the insert cap according to the desired pinout. Assemble the insert body to the back of the insert cap ensuring that the 900µm fiber slide into the side slots of the insert body to prevent pinching during assembly. Apply Loctite 222 or equivalent to the socket head cap screw threads per manufacturer’s instructions and screw the insert using hex tool PT-503. Use torque driver PT-590 with hex bit 5/64” from PT-599 to torque the Socket Head Cap Screws to the values in the torque table in the appendix.



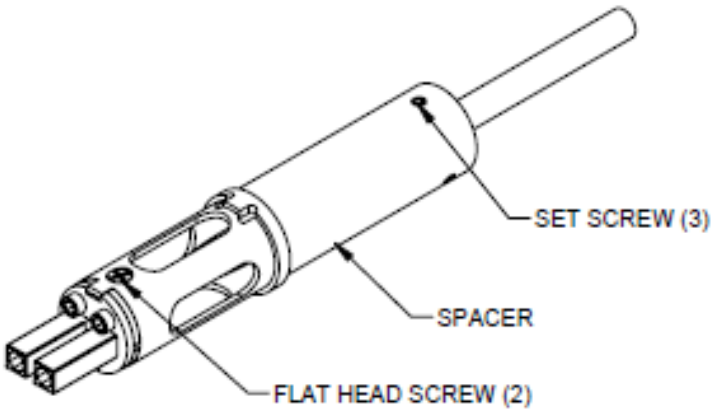


CONNECTOR ASSEMBLY

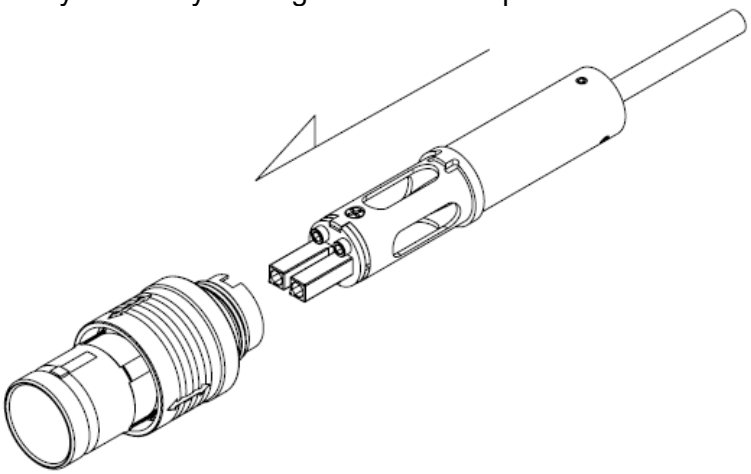
Slide the spacer up and screw in the flat head screws using a #1 Phillips screwdriver, PT-505. Torque with Hex Driver PT-590 with a #1 Phillips Hex Bit from PT-599 and torque to the values in the Torque Table in the appendix.

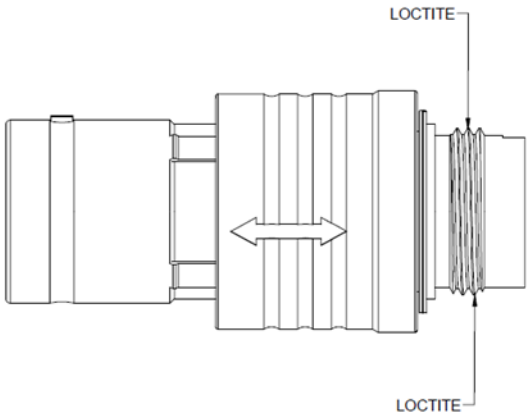
Pull the strain relief to the bottom of the spacer, apply Loctite to the set screw threads and tighten using Hex Driver PT-500. Use Torque Hex Driver PT-590 with Hex Bit .050" PT-599 and torque to the values in the torque table in the appendix.

Perform a visual check by looking through the holes in the spacer to make sure that the fiber is not twisted or kinked.

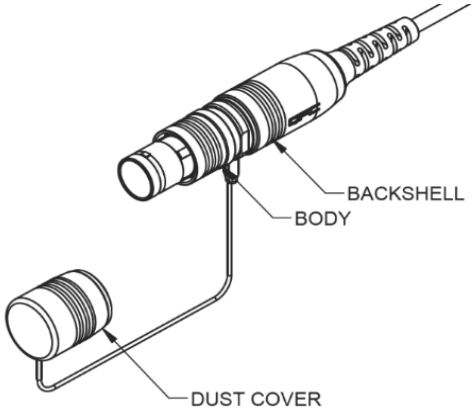


Place the insert end into the body assembly. The keys on the spacer should engage with the keyways in the body assembly. Wipe the threads clean of any debris or excess lube from the O-Ring and apply 2 drops of Loctite 243 on the thread of the plug body assembly. Slide the backshell into position and tighten by hand onto the body assembly making sure that the spacer does not turn relative to the body.

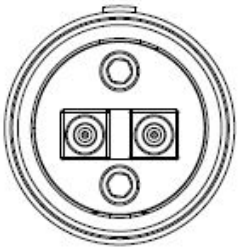




To torque the backshell, place a 2-Channel QSeal receptacle in the 4" Drill Press Vise with 2 x machined plastic jaws PT-591. Mate the plug with the receptacle in the drill press and use the Crow's Foot wrench PT-536 with the Dial Torque Measuring Wrench PT-506 to torque the Backshell to the values in the torque table in the appendix. Make sure not to over torque the backshell as this will cause damage.



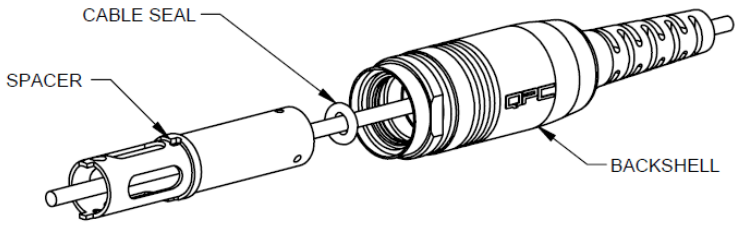
NOTE: After torquing, ensure that the insert is clocked properly in the Body with respect to the main key.



PLUG, 4 CHANNEL CONFIGURATION – Cable OD Range: 3.6mm to 6.5mm

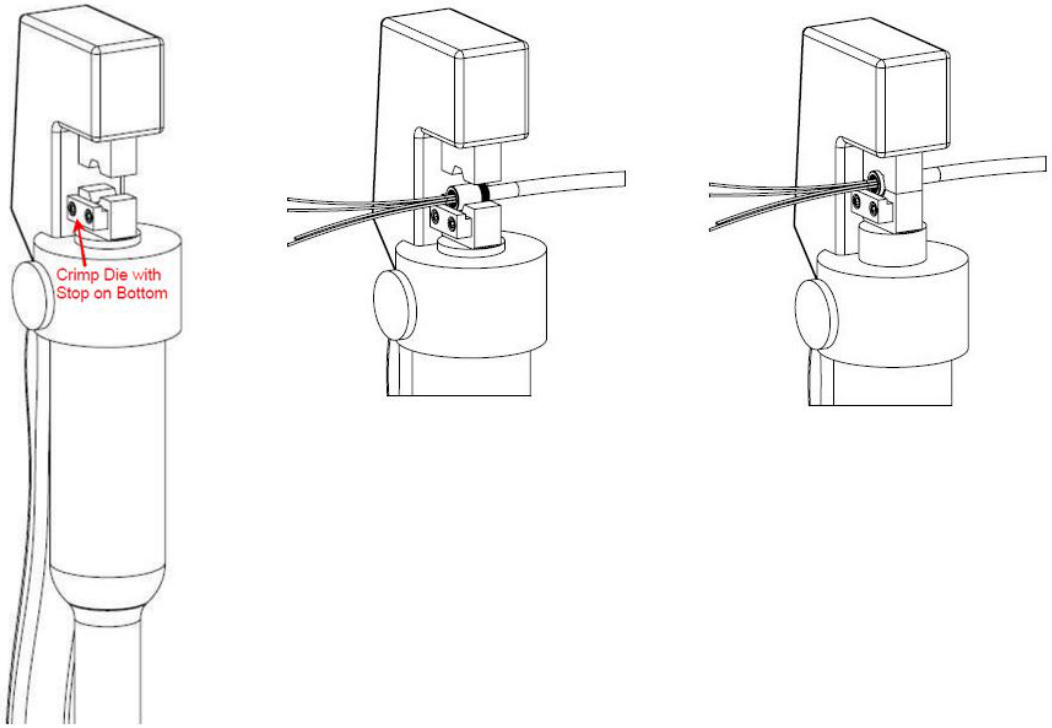
CABLE PREPARATION

Slide parts onto cable in the order below.



Strip the cable jacket approximately 6” (152 mm) from the end and slide the crimp support over the fiber and Kevlar as illustrated below. Bend the Kevlar back over the crimp support. Slide the crimp over the Kevlar and crimp support to prepare for crimping.

Setup the hydraulic crimping tool PT-540 with the die set PT-541. The crimp die with stop needs to be placed on the bottom facing out and with the crimp against the stop as seen in the image below. Turn the knob clockwise on the hydraulic crimper so that the handles can be pumped to crimp. Place the cable in the lower crimp die with the fiber facing out. Pump the handles until the crimp dies are touching. Release the crimp by turning the control knob counterclockwise.

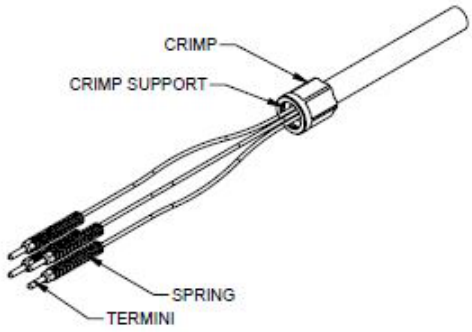


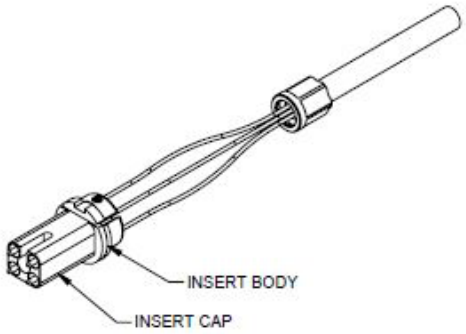
TERMINATION

Use the Stripping Length Diagrams located in the appendix with the Fiber Optic Termination and Polishing Assembly Instructions (reference CAI-TERM) to terminate each fiber.

POPULATE INSERT

Slide the fiber optic termini into the insert cap according to the desired pinout. Assemble the insert body to the back of the insert cap ensuring that the 900µm fiber slide into the side slots of the insert body to prevent pinching during assembly. Apply Loctite 222 or equivalent to the socket head cap screw threads per manufacturer's instructions and screw the insert using hex tool PT-503. Use torque driver PT-590 with hex bit 5/64" from PT-599 to torque the Socket Head Cap Screws to the values in the torque table in the appendix.



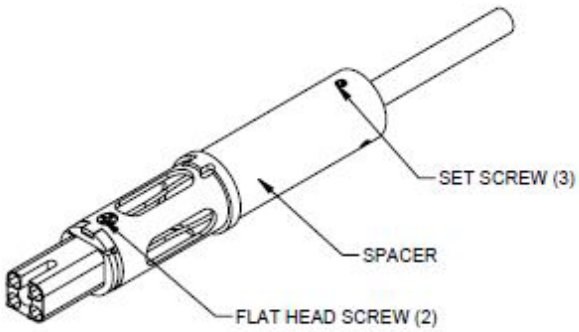


CONNECTOR ASSEMBLY

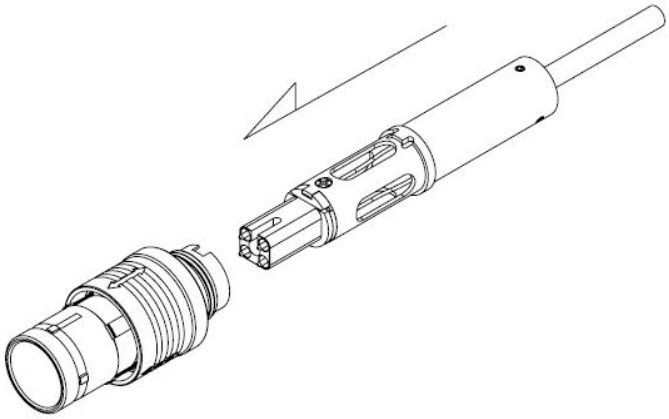
Slide the spacer up and screw in the flat head screws using a #1 Phillips screwdriver, PT-505. Torque with Hex Driver PT-590 with a #1 Phillips Hex Bit from PT-599 and torque to the values in the Torque Table in the appendix.

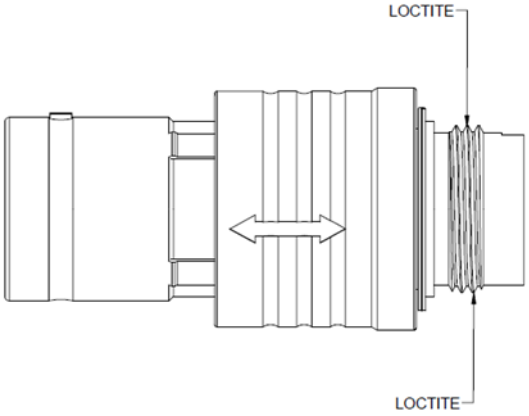
Pull the crimp to the bottom of spacer, apply Loctite on the set screw threads and tighten using hex driver PT-500. Use torque hex Driver PT-590 with hex bit .050" PT-599 to torque to the values in the torque table in the appendix.

Perform a visual check by looking through the holes in the spacer to make sure that the fiber is not twisted or kinked.

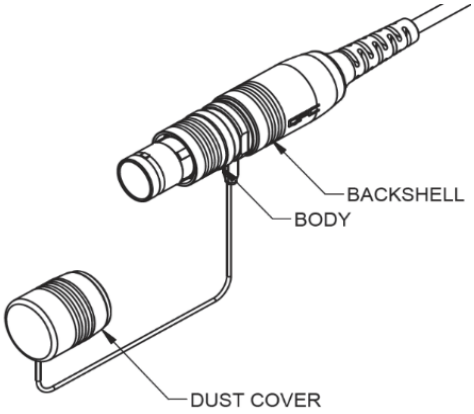


Place the Insert end into the Body Assembly. The keys on the Spacer should engage with the keyways in the Body Assembly. Wipe the threads clean of any debris or excess lube from the O-Ring and apply 2 drops of Loctite 243 on the thread of the Plug Body Assembly. Slide the Backshell into position and tighten by hand onto the Body Assembly making sure that the Spacer does not turn relative to the Body.

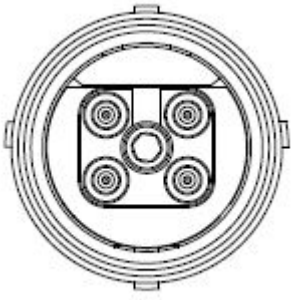




To torque the backshell, place a 4-Channel QSeal receptacle in the 4" Drill Press Vise with 2 x machined plastic jaws PT-591. Mate the plug with the receptacle in the drill press and use the Crow's Foot wrench PT-536 with the Dial Torque Measuring Wrench PT-506 to torque the Backshell to the values in the torque table in the appendix. Make sure not to over torque the backshell as this will cause damage.



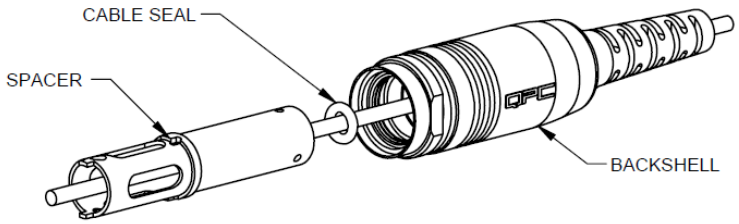
NOTE: After torquing, ensure that the insert is clocked properly in the Body with respect to the main key.



PLUG, 4 CHANNEL CONFIGURATION – Cable OD Range: 6.6mm to 10.5mm

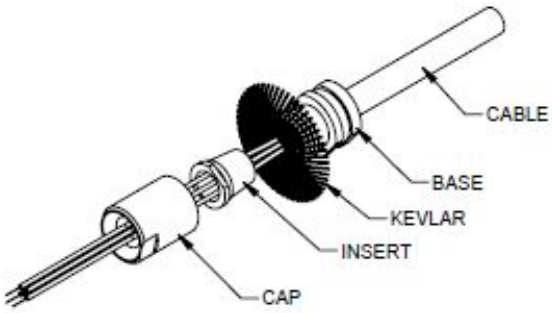
CABLE PREPARATION

Slide parts onto cable in the order below.



Remove approximately 6” (152mm) of the outer jacket from the cable end. Thread the wedge strain relief base over the fiber and Kevlar and slide it to the cable jacket edge. Thread the wedge strain relief insert over the fibers. Spread the Kevlar out evenly and slide the insert into the base. The Kevlar should be trapped between the base and the insert. Cut the Kevlar flush with top of strain relief wedge.

Screw the wedge strain relief cap onto the wedge strain relief Base. Tighten using the dial torque-measuring wrench PT-506 and Crow’s foot wrench PT-536 and torque to the values in the torque table in the appendix.



TERMINATION

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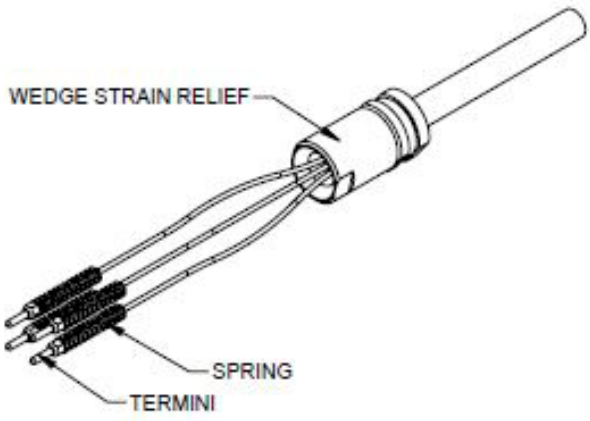
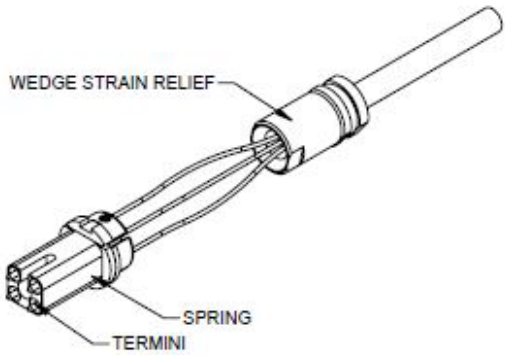
POPULATE INSERT

Slide the fiber optic termini into the insert cap according to the desired pinout. Assemble the insert body to the back of the insert cap ensuring that the 900µm fiber slide into the side slots of the insert body to prevent pinching during assembly. Apply Loctite 222 or equivalent to the socket head cap screw threads per manufacturer’s instructions and screw the insert using hex tool PT-503. Use torque driver PT-590 with hex bit 5/64” from PT-599 to torque the Socket Head Cap Screws to the values in the torque table in the appendix.



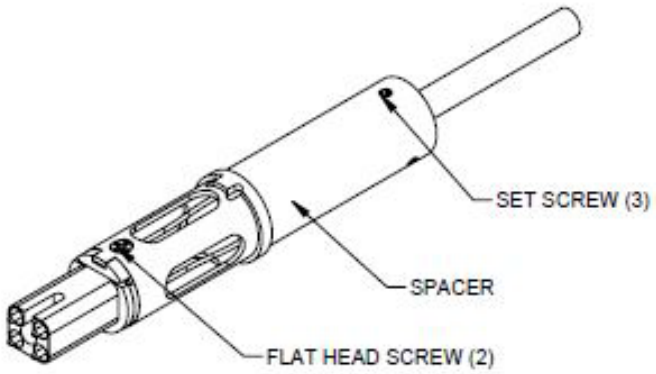


CONNECTOR ASSEMBLY

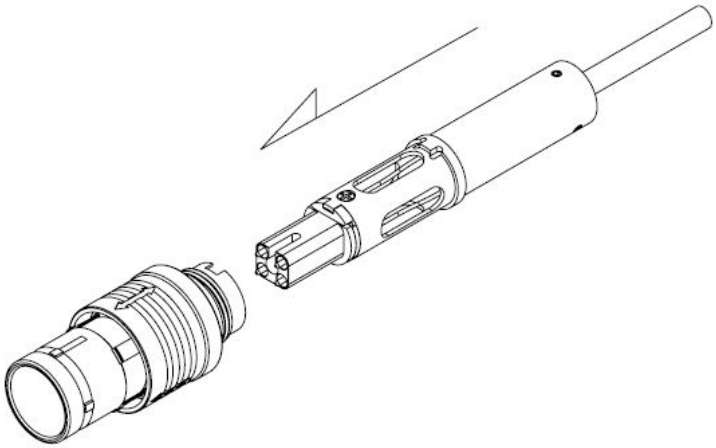
Slide the spacer up and screw in the flat head screws using a #1 Phillips screwdriver, PT-505. Torque with Hex Driver PT-590 with a #1 Phillips Hex Bit from PT-599 and torque to the values in the Torque Table in the appendix.

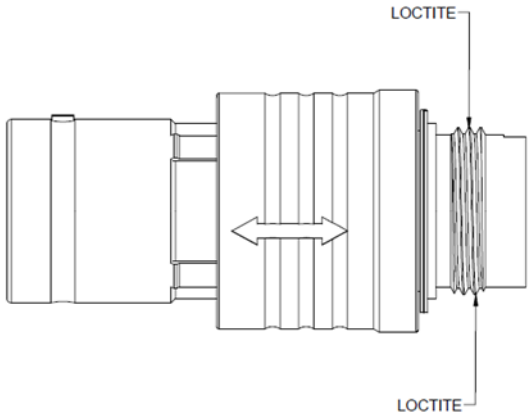
Pull the strain relief to the bottom of the spacer, apply Loctite to the set screw threads and tighten using Hex Driver PT-500. Use Torque Hex Driver PT-590 with Hex Bit .050" PT-599 and torque to the values in the torque table in the appendix.

Perform a visual check by looking through the holes in the spacer to make sure that the fiber is not twisted or kinked.

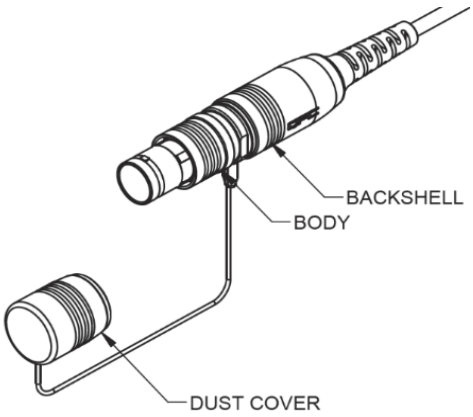


Place the insert end into the body assembly. The keys on the spacer should engage with the keyways in the body assembly. Wipe the threads clean of any debris or excess lube from the O-Ring and apply 2 drops of Loctite 243 on the thread of the plug body assembly. Slide the backshell into position and tighten by hand onto the body assembly making sure that the spacer does not turn relative to the body.

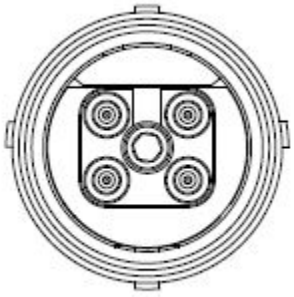




To torque the backshell, place a 4-Channel QSeal receptacle in the 4" Drill Press Vise with 2 x machined plastic jaws PT-591. Mate the plug with the receptacle in the drill press and use the Crow's Foot wrench PT-536 with the Dial Torque Measuring Wrench PT-506 to torque the Backshell to the values in the torque table in the appendix. Make sure not to over torque the backshell as this will cause damage.



NOTE: After torquing, ensure that the insert is clocked properly in the Body with respect to the main key.



Appendix

TORQUE TABLE

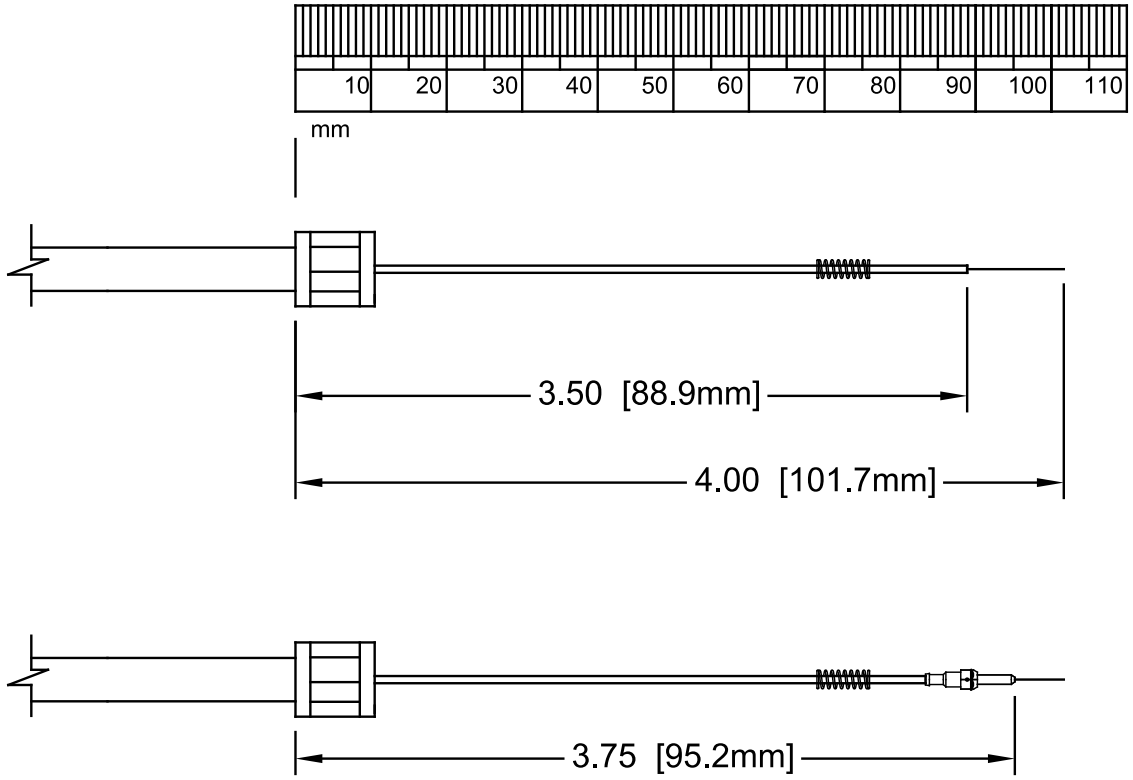
Refer to the Torque Table below for the torque values for various components used in this instruction.

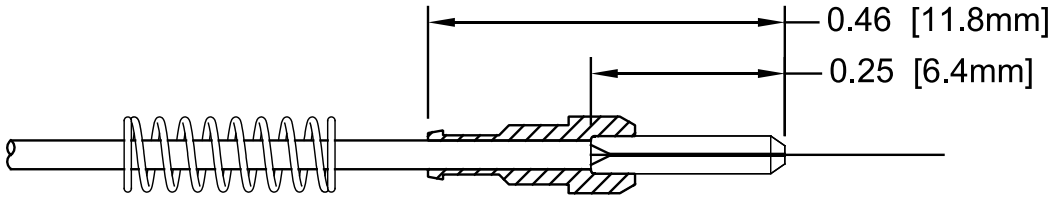
Component		Backshell	Strain Relief	Socket Head Cap Screw	Flat Head Screw	Set Screws
Torque Values / Units	In-lb.	35 – 37	26 – 35	3 – 4	2.25 – 2.75	2.25 – 2.75
	N • m	4.0 – 4.25	3.0 – 4.0	0.34 – 0.45	0.25 – 0.31	0.25 – 0.31

STRIPPING LENGTHS – QSEAL PLUG ALL CONFIGURATIONS

WI 851-62 - FIGURE 2.1 – QSEAL 2 CHANNEL CONFIGURATION
WI 851-62 - FIGURE 2.2 – QSEAL 4 CHANNEL CONFIGURATION
WI 851-62 - FIGURE 2.3 – QSEAL 2 CHANNEL CONFIGURATION LARGE CABLE
WI 851-62 - FIGURE 2.4 – QSEAL 4 CHANNEL CONFIGURATION LARGE CABLE

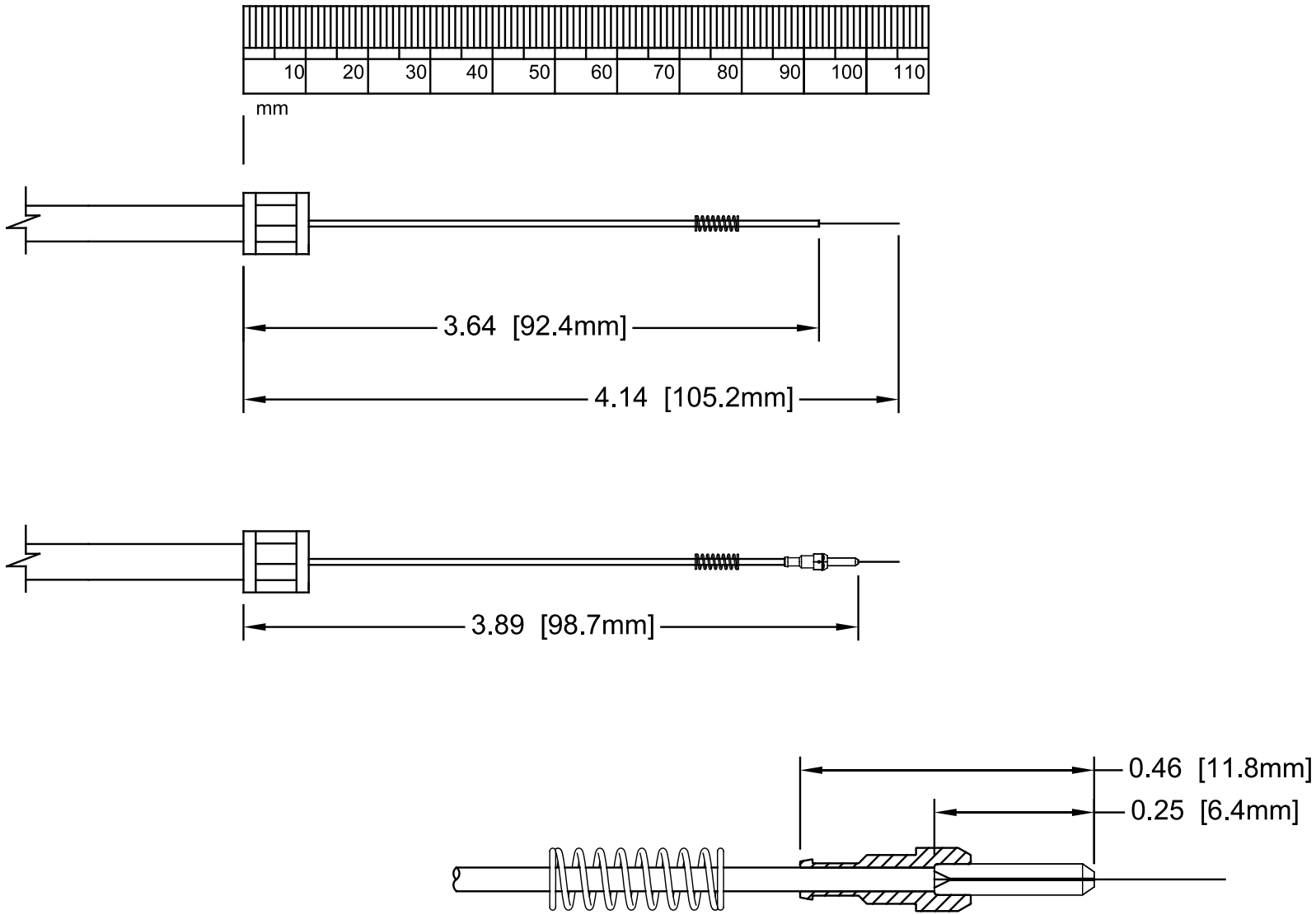
QSEAL PLUG, 2 CHANNEL





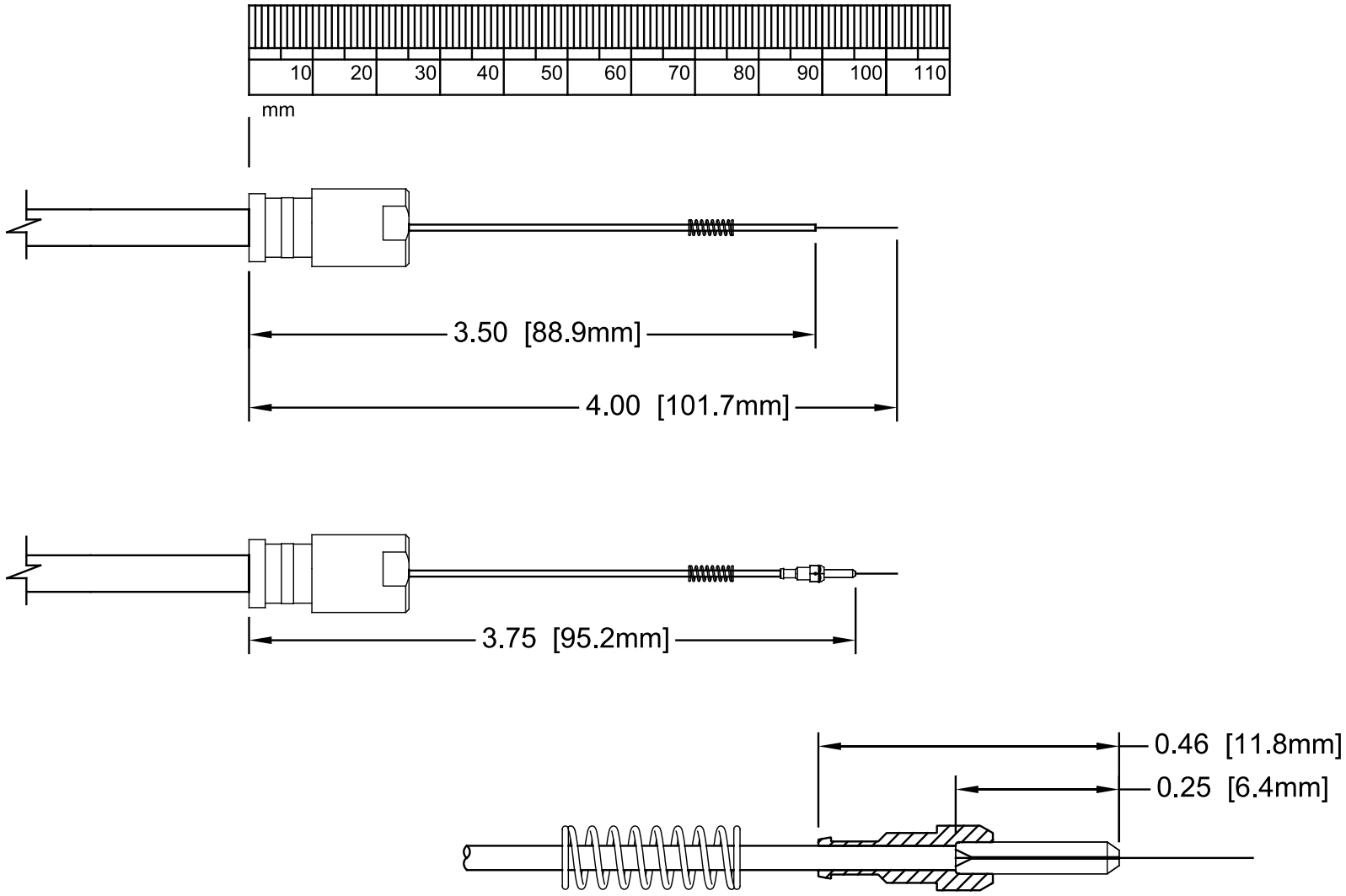
QPC FIBER OPTIC

QSEAL PLUG, 4 CHANNEL



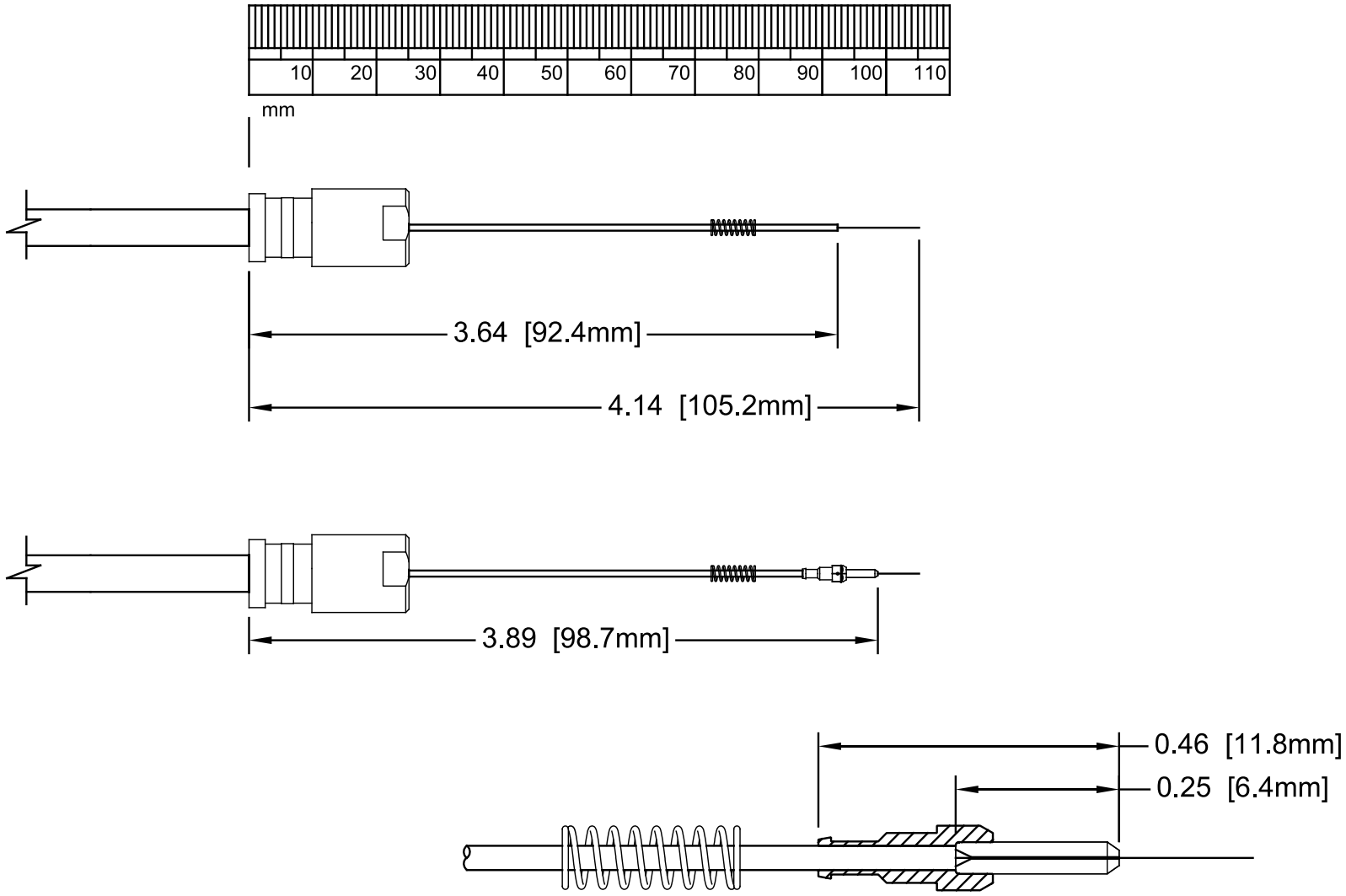
QPC FIBER OPTIC

QSEAL PLUG, 2 CHANNEL, LARGE CABLE



QPC FIBER OPTIC

QSEAL PLUG, 4 CHANNEL, LARGE CABLE



QPC FIBER OPTIC

Revision Change Record

Revision	Date	Section	Description	Approval
0	11/15/2021	New Release	New Release	CN
1	9/21/2022	Connector Assembly	Add Loctite 243 to Thread before Torqueing Backshell. Changed Torque Value for Backshell in Torque Table.	CN
2	7/1/24	Multiple	Changed to table of contents and moved torque table to end of CAI.	RZ