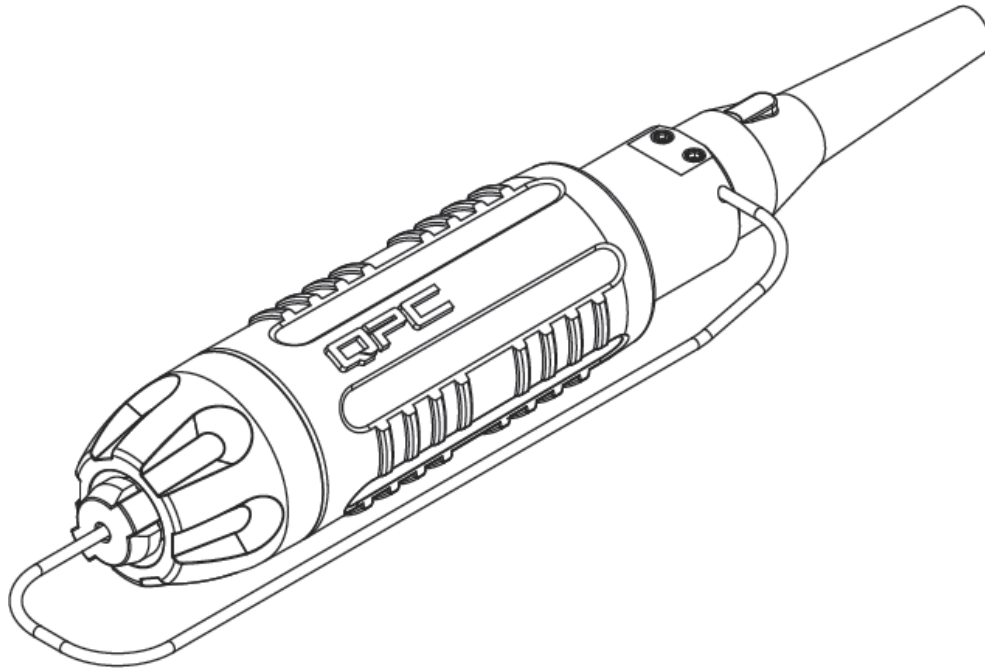


QMini Plug Connector Customer Assembly Instructions



DOCUMENT: CAI-QMINP-01
REVISION: 14
REVISION DATE: 10/14/2019

QPC CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF QPC FIBER OPTIC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF QPC FIBER OPTIC IS PROHIBITED.

Document: CAI-QMINP-01
Release Date: 12/08/2014

Revision: 14
Revision Date: 10/14/2019

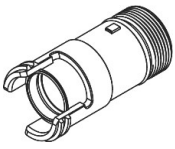
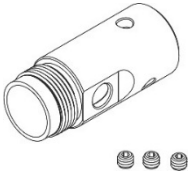
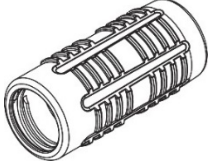
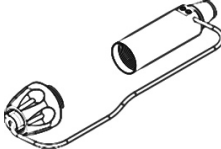











QPC Fiber Optic, LLC
27612 El Lazo Road, Laguna Niguel, CA 92677

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

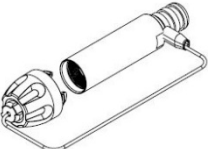
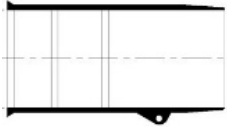
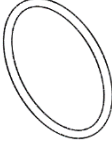
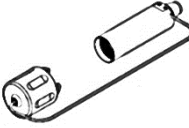
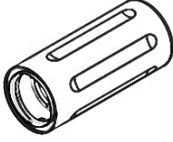
SCOPE

This document will describe the Assembly Instructions for the QPC QMini Plug Connector.

COMPONENTS

				
PLUG BODY	STRAIN RELIEF & SET SCREWS	COUPLING RING RUBBER GRIP	BACKSHELL WITH DUST COVER	BEND LIMITER
				
INSERT <i>2 or 4 Channel</i>	TERMINI <i>Qty 2 or 4</i>	TERMINI SPRINGS <i>Qty 2 or 4</i>	TERMINI RETAINER PLATE	SOCKET HEAD CAP SCREW
				
WAVE SPRING	WASHER	CABLE SEAL	CRIMP SUPPORT	CRIMP

OPTIONAL COMPONENTS

FOR CABLE DIAMETERS EXCEEDING 7.5 MM			ALL METAL OPTION	
				
HEAT SHRINK BACKSHELL WITH DUST COVER	HEAT SHRINK BEND LIMITER	O-RING	BACKSHELL & METAL DUST COVER	COUPLING RING – METAL

Document: CAI-QMINP-01
Release Date: 12/08/2014

Revision: 14
Revision Date: 10/14/2019

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

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

TOOL LIST

TK-060 QPC Cable and Connector Prep Tool Kit – (Equivalent tools may be used)	
PT-062	Miller Kevlar Scissors (Carbon Molybdenum & Vanadium Steel Blade)
PT-500	Precise-Control .050" Screwdriver (1.27mm) Hex
PT-501	Precise-Control Screwdriver, 1/16" Hex
PT-503	Precise-Control Screwdriver, 5/64" (2mm) Hex
PT-502	Precise-Control Screwdriver, 3/32" Hex
PT-504	Precise-Control Screwdriver, 2.5mm Hex
PT-505	Screwdriver, Number 1 Phillips, 6-3/4" Overall Length
PT-506	Dial Torque-Measuring Wrench, 3/8" Square Drive, 0 to 150in.-lbs. and 0 to 18NM Torque
PT-536	Crow's Foot Wrench Adjustable 3/8" Square Drive 0.0-1.125"(0-28.57mm)
PT-545	Crow's Foot Wrench Adjustable 1/2" Square Drive .236-1.771" (6-45mm)
PT-546	3/8" Female x 1/2" Male Square Drive Adapter, Chrome
PT-532	Long-Nose Pliers with Flat Jaws, Cushion Grip, 6-3/4" Overall, Manual Jaws with Wire Cutter
PT-599	Hex Bit Set, 5 pcs (.050", 1/16", 5/64", 3/32", 2.5mm) 1/4" Shank, Overall Length 2"
PT-590	Torque-Measuring Screwdriver, Hex Drive, 2.5 to 11.5 in.-lbs. Adjustable Torque
PT-591	4" Drill Press Vise with 2 x Machined Plastic Jaws with Groove

TK-046 QPC QMini Tool Kit – (Equivalent tools may be used)	
PT-392	QMini Torque Fixture (<i>Plug Only</i>)
PT-540	Hydraulic Crimping Tool
PT-541	Die Set, 0.324 Hex, Hydraulic Hand Crimper
PT-005	Fiber Optic Termini Crimp Tool, 2mm & 3mm (Hex Sizes .100 / .147) (<i>for use with Receptacle Connector only</i>)

TORQUE TABLE

Component	Backshell	Strain Relief	Set Screws	Socket Head Cap Screw
Torque Values	48 – 53 in-lb	48 – 53 in-lb	3 – 4 in-lb	2 – 3 in-lb
	5.5 – 6.0 N • m	5.5 – 6.0 N • m	.34 – .45 N • m	.23 – .34 N • m

Document: CAI-QMINP-01
Release Date: 12/08/2014

Revision: 14
Revision Date: 10/14/2019

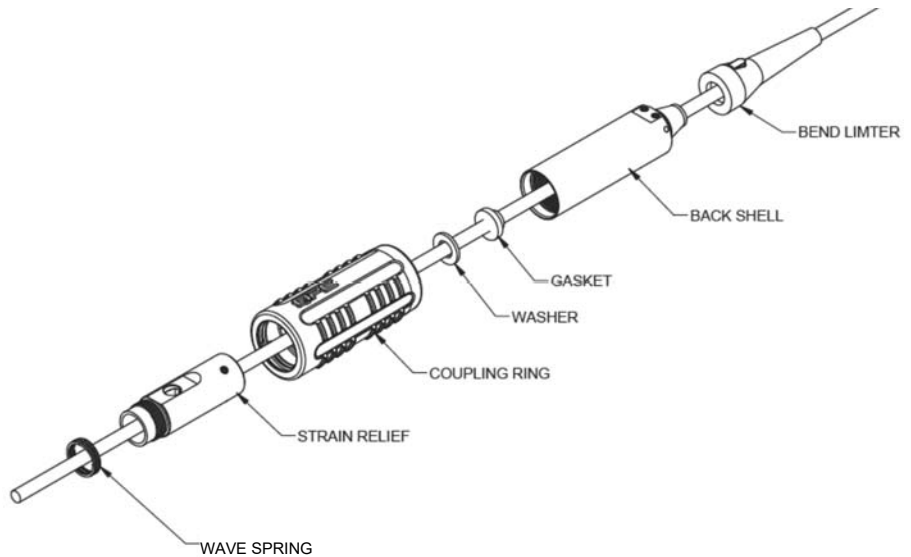
QPC Fiber Optic, LLC
27612 El Lazo Road, Laguna Niguel, CA 92677

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

CABLE PREPARATION

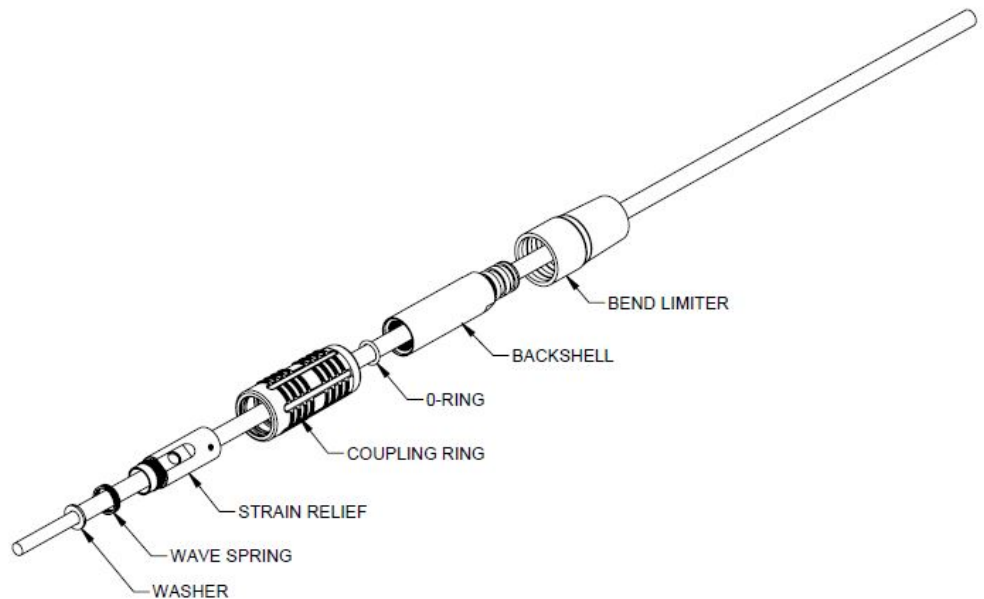
For cables that have an outer diameter of **3.6mm – 7.5mm**, slide parts over cable in the following order:

1. Label (if applicable)
2. Bend Limiter
3. Backshell
4. Cable Seal
5. Washer
6. Coupling Ring
7. Strain Relief
8. Wave Spring



For cables that have an outer diameter of **7.6mm – 10.5mm**, slide parts over cable in the following order:

1. Label (if applicable)
2. Heat Shrink Bend Limiter
3. Heat Shrink Backshell Plug
4. O-Ring
5. Coupling Ring
6. Strain Relief
7. Wave Spring
8. Washer



Document: CAI-QMINP-01
Release Date: 12/08/2014

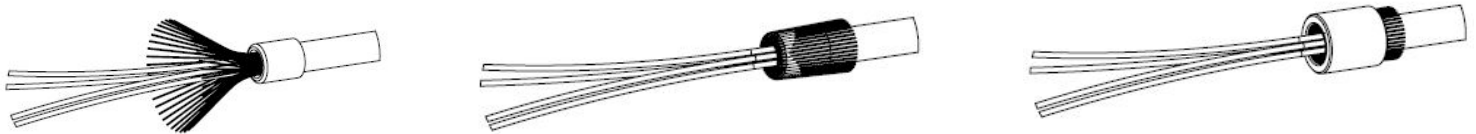
Revision: 14
Revision Date: 10/14/2019

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

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

STRIP CABLE

Strip cable jacket approximately 4" (100 mm) from end and place Crimp Support over fiber and Kevlar as shown in the Stripping Length Diagram located at the end of this assembly instruction. Bend Kevlar back over the Crimp Support. Slide Crimp over Kevlar and Crimp Support and secure with tape for crimping after termination and polishing.



TERMINATE

Use the Stripping Length Diagram located at the end of this assembly instruction to Terminate and Polish the Fiber Optic Termini. For Termination and Polishing details, reference CAI-TERM-01.

Document: CAI-QMINP-01
Release Date: 12/08/2014

Revision: 14
Revision Date: 10/14/2019

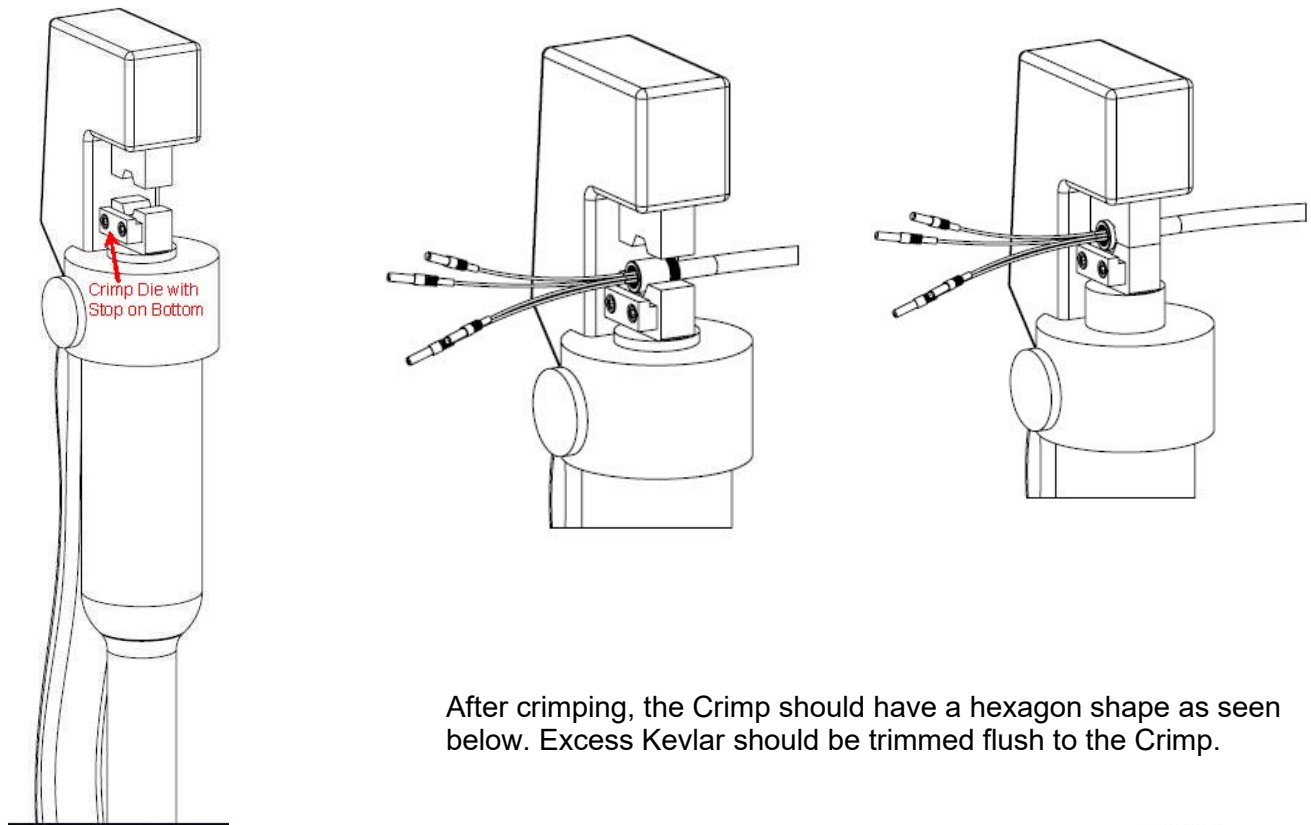
QPC Fiber Optic, LLC
27612 El Lazo Road, Laguna Niguel, CA 92677

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

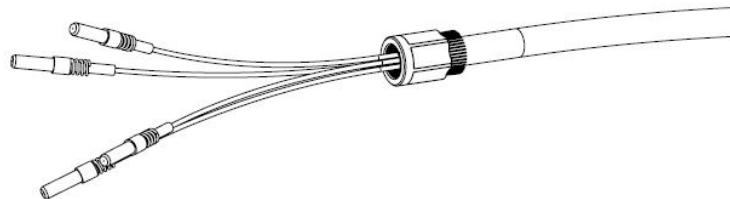


CRIMP TO CABLE

Remove tape after polishing the Fiber Optic Termini. Use Kevlar Scissors PT-062 to remove any excess Kevlar that is sticking out from the Crimp. 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 crimp by turning knob counterclockwise.

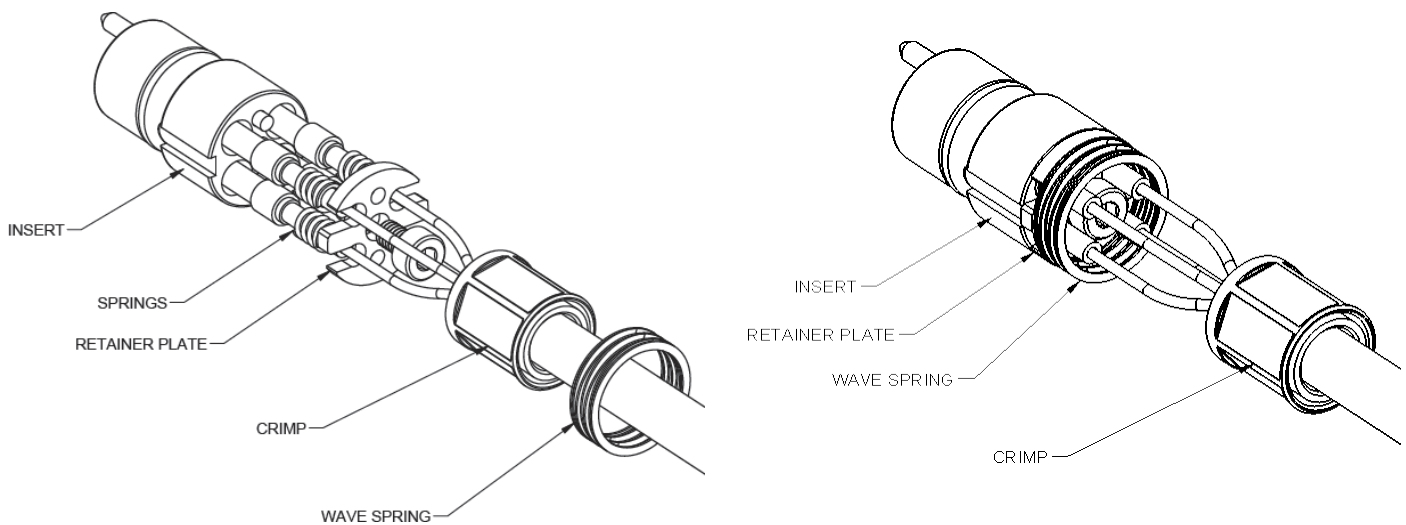


After crimping, the Crimp should have a hexagon shape as seen below. Excess Kevlar should be trimmed flush to the Crimp.

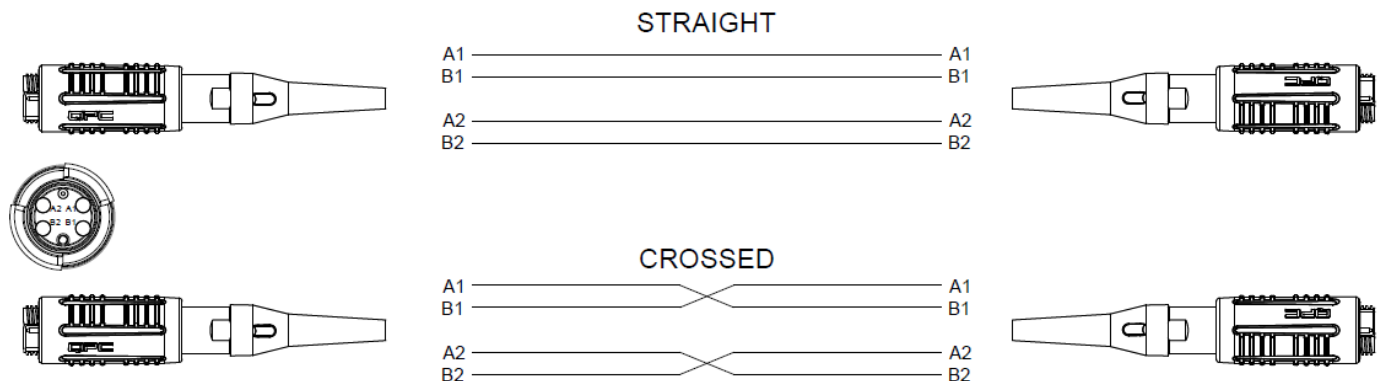


POPULATE THE INSERT

Insert the Fiber Optic Termini into the back of the Insert Cavities. Place the Termini Retainer Plate between the 900 μ m fibers making sure that the springs are between the Fiber Optic Termini and Termini Retainer Plate. Apply a drop of Loctite 222 to the Socket Head Cap Screw and use Hex Tool PT-504 to screw the Termini Retainer Plate into the Insert. Torque the Socket Head Screw to the values in the above Torque Table using Torque-Measuring Head Drive PT-590 and Bit Size 2.5 mm PT-599. Use a pair of Long Nose Pliers PT- 532 to ensure the termini are fully seated against the ball lenses.



NOTE: See diagram below for polarity configurations:



Straight configuration is defined as A1 to A1, B1 to B1. Crossed configuration is defined as A1 to B1. Four channel layout uses the same pattern.

Document: CAI-QMINP-01
Release Date: 12/08/2014

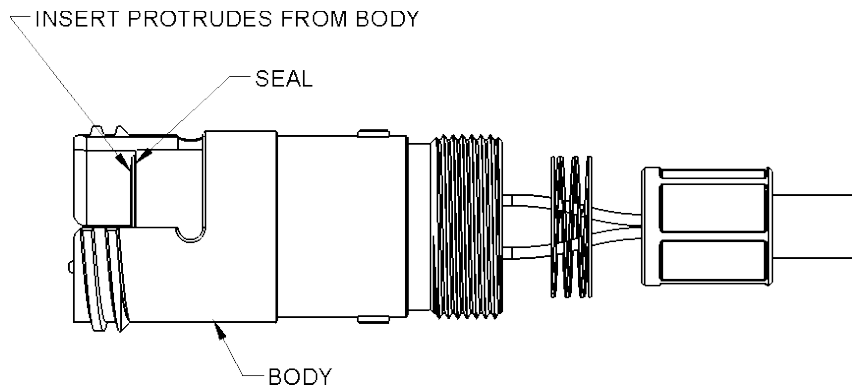
Revision: 14
Revision Date: 10/14/2019

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

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

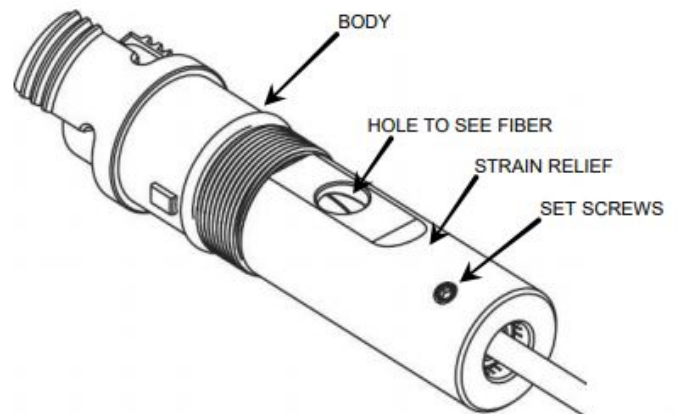
FINAL ASSEMBLY

Use the Hex Driver PT-504 to align the key and install the insert into the back of the Body. The Insert should protrude slightly from the seal and the Body. The seal should be visible around the Insert.



Slide the Wave Spring and Strain Relief into place. Place onto the QMini Torque Fixture PT-392. Hand tighten the Strain Relief while on the Torque Fixture so that the fibers do not get twisted or kinked. Torque the Strain Relief using the Adjustable Crowfoot Wrench PT-536 with the Dial Torque-Measuring Wrench PT-506 to the values in the above Torque Table. Inspect the fibers by looking through the holes in the Strain Relief making sure that the fibers are not twisted or kinked. Use Cable to pull Crimp to bottom of Strain Relief. Use the Hex Driver PT-501 to tighten the set screws on the strain relief to lock the crimp into place. Torque the Set Screws using Torque-Measuring Hex Drive PT-590 and Hex Bit 1/16-inch PT-599 to the values in the above Torque Table.

Perform a final visual check by looking through the holes of the Strain Relief to make sure that the fiber is not twisted or kinked.



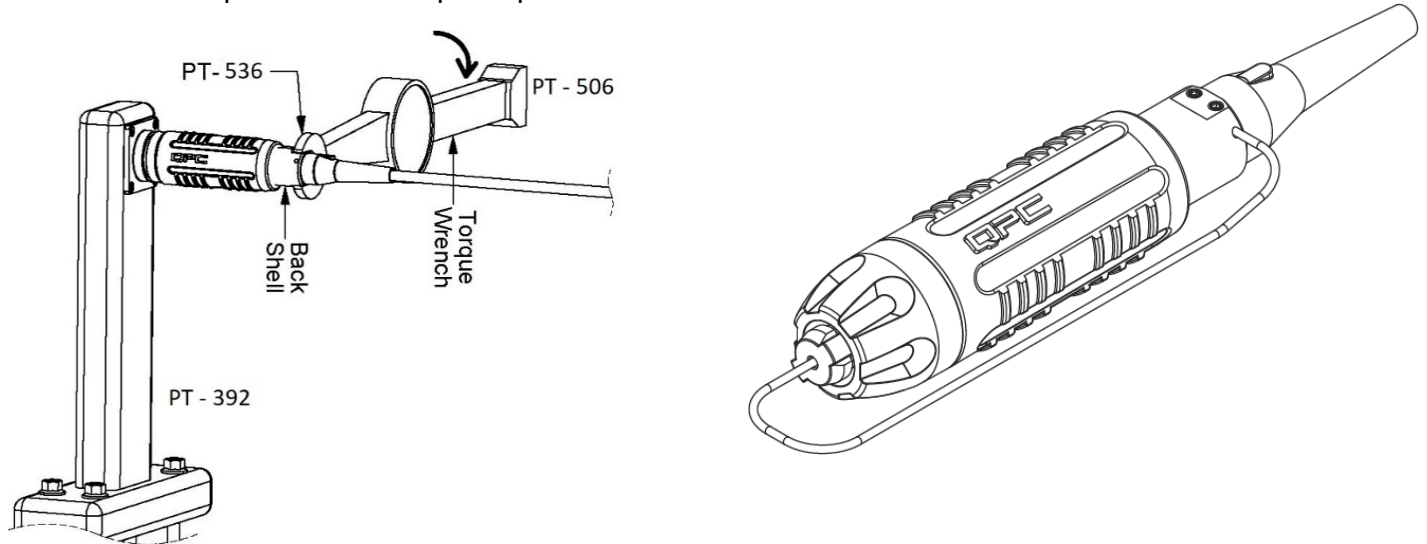
Document: CAI-QMINP-01
Release Date: 12/08/2014

Revision: 14
Revision Date: 10/14/2019

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

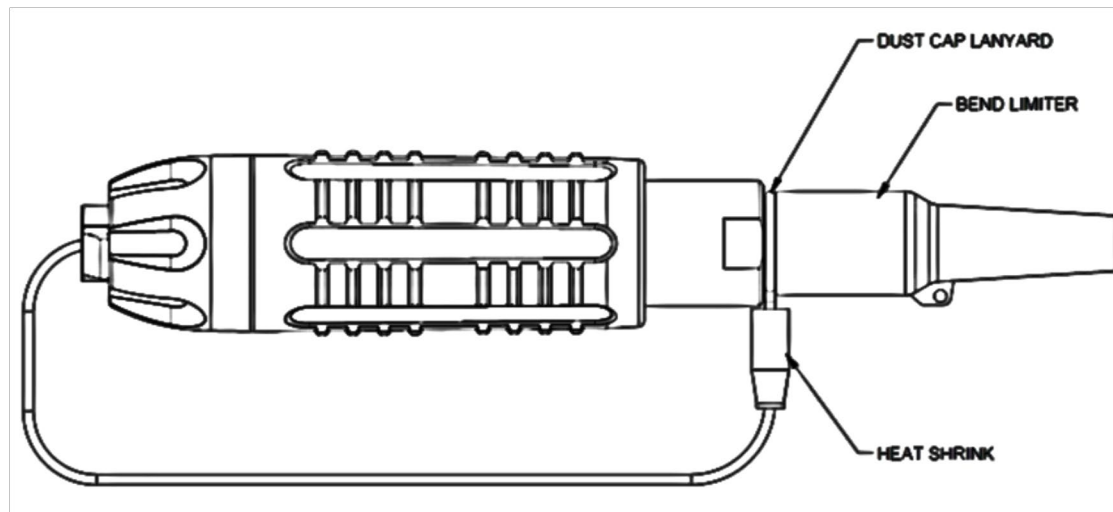
www.qpcfiber.com
Ph: (949) 361-8855

Slide the Washer and Cable Seal to the base of the Strain Relief. Slide the Coupling Ring over the Strain Relief and Connector Body. Place the Plug on the Torque Fixture and hand-tighten the Coupling Ring. Slide the Backshell into position and hand-tighten it. Torque the Backshell using the Crow's Foot Wrench PT-536 with the Dial Torque Measuring Wrench PT-506 to the values in the above Torque Table. Slide the bend limiter into position and snap into place.



NOTE: For Cable Diameters 7.6mm – 10.5mm

Apply an adhesive (Loctite Stik'N Seal Outdoor Adhesive or similar for rubber applications) on the inside of the Heat Shrink Bend Limiter. Slide it up towards the Backshell and heat shrink it onto the Backshell leaving a small gap between the top of the Bend Limiter and the Backshell for the Lanyard.



Document: CAI-QMINP-01
Release Date: 12/08/2014

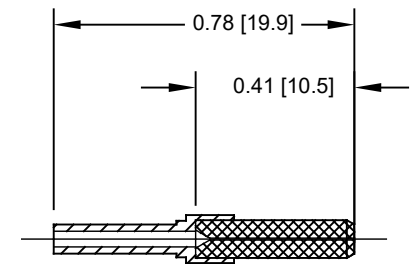
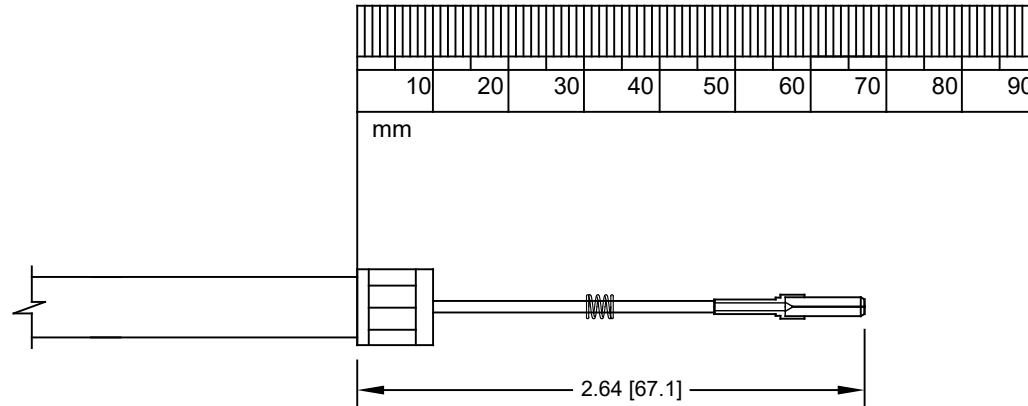
Revision: 14
Revision Date: 10/14/2019

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

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

QMINI CONNECTOR

PLUG and RECEPTACLE with BACKSHELL



NOT TO SCALE

CABLE PREPARATION



PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS CONFIDENTIAL AND THE SOLE PROPERTY OF QPC FIBER OPTIC. ANY REPRODUCTION IN PART OR AS A WHOLE OR DISCLOSURE OF CONTENT WITHOUT THE WRITTEN PERMISSION OF QPC FIBER OPTIC IS PROHIBITED.

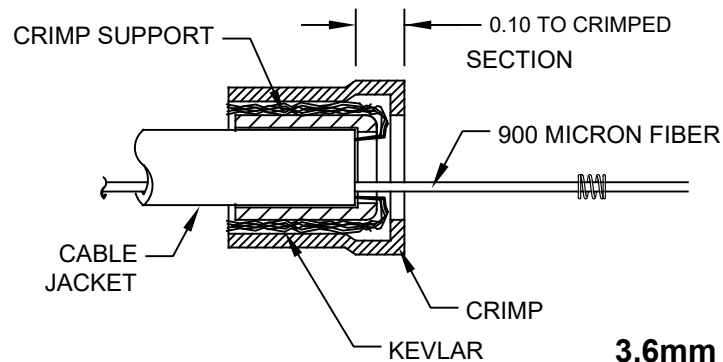
DOC. NUMBER		REV.	
D50040		11	
DRAWN	CHECKED	DIMENSIONS ARE IN INCH [MM].	
JC			
DATE	DATE		
4/22/2014		SHEET 1 OF 2	

QPC Fiber Optic, LLC.

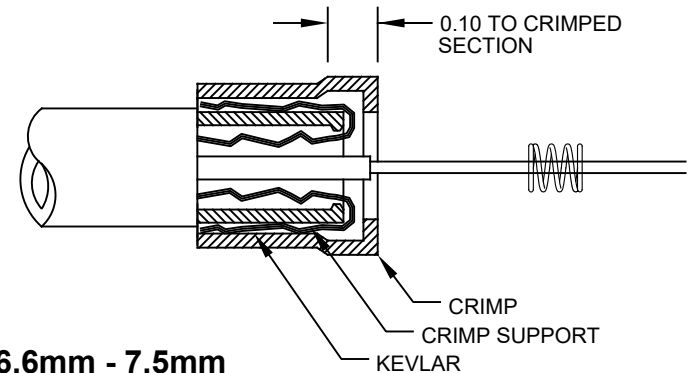
REV.	DESCRIPTION	DATE	APPROVED
REVISIONS			

QMINI CONNECTOR

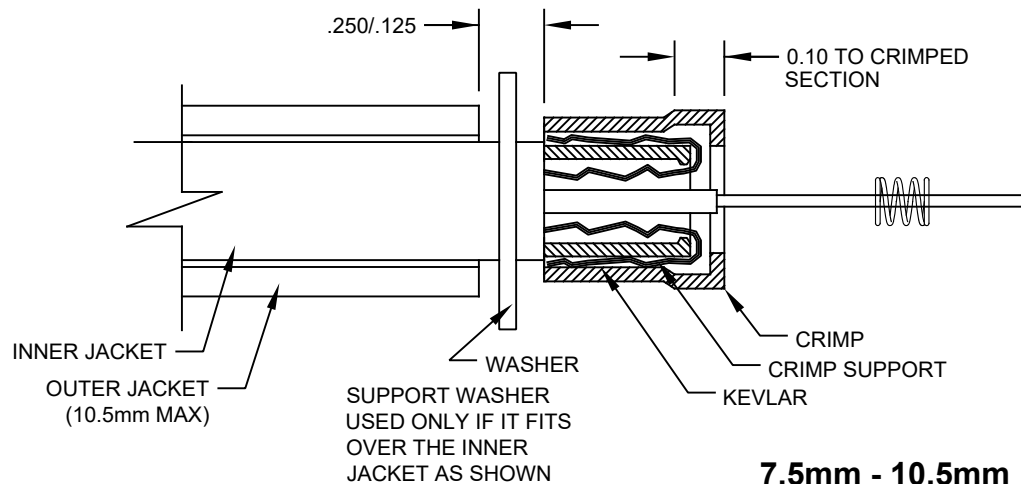
PLUG and RECEPTACLE with BACKSHELL



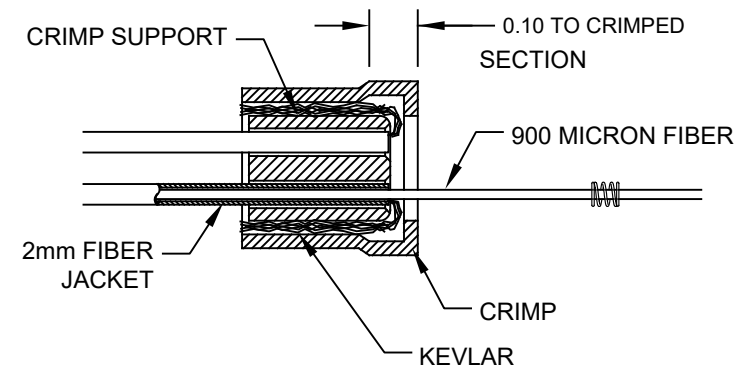
**3.6mm - 6.5mm
Cable Option**



**6.6mm - 7.5mm
Cable Option**



**7.5mm - 10.5mm
Cable Option**



**4x2mm
Cable Option**

CABLE PREPARATION



PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS CONFIDENTIAL AND THE SOLE PROPERTY OF QPC FIBER OPTIC. ANY REPRODUCTION IN PART OR AS A WHOLE OR DISCLOSURE OF CONTENT WITHOUT THE WRITTEN PERMISSION OF QPC FIBER OPTIC IS PROHIBITED.

DOC. NUMBER		REV.
D50040		11
DRAWN	CHECKED	DIMENSIONS ARE IN INCH [MM].
JC		
DATE	DATE	
4/22/2014		
SHEET 2 OF 2		

QPC Fiber Optic, LLC.

REV.	DESCRIPTION	DATE	APPROVED
REVISIONS			