

Introduction

With an increase in data transfer speed requirements due to cloud and high-definition video technologies, the ability to transfer data as efficiently as possible remains the driving force in today's communication age. The backbone of most modern digital information systems is increasingly implemented using fiber optic networks with a growing focus upon the MPO type connector which has been designed to easily interconnect multiple fiber strands and transfer an ever increasing amount of data. While the MPO connector was originally created in the late 20th century, refinements to the original design have resulted in a much higher performance product. The MTP® connector manufactured by US Conec® is the most prominent and enhanced MPO connector available today.



While [MTP® connector based cables](#) (including [Ultra Low-Loss MTP® Elite](#)), connectors, and adapters offer significant enhancements (as discussed below), they are fully compatible with generic MPO connectors and can be interchangeably utilized in any network design.



MTP® (High Performance MPO) Technology

Typically, an MTP® or MPO connector terminates an 8-144 strand multi-fiber ribbon in an integrated connector. The two types of connectors, Non-Pinned (Female) and Pinned (Male) can be used to join multiple MTP® (MPO) cables using MPO Adapters, or terminate multi-fiber links on a cassette in a fiber optic patch panel. OptoSpan also offers a range of [MTP® Fiber Harnesses](#) to individually route each fiber optic strand.

Figure 1 shows deconstruction of an MTP® connector.



Figure 1. Deconstruction of MTP® connector

MTP® Technical Improvements over Standard MPO

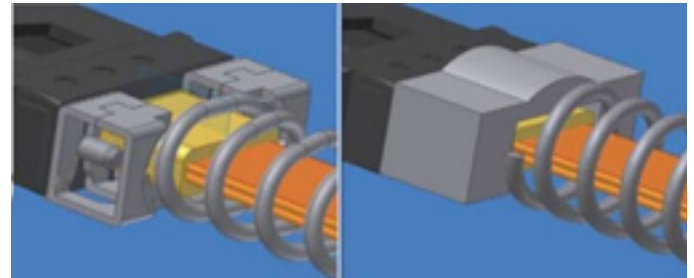
The following section lists the technical improvements between the original MPO design and the modern MTP® connector. Enhancements in guide pins, spring, and ferrule design makes MTP® a better connector with less signal loss in comparison to the standard MPO design.

1. Guide Pins

In all MPO and MTP® connectors, the guide pins are designed to accurately guide the mating of two connectors to form a physical connection.

MPO (non-MTP®) connectors have been manufactured with an inferior plastic pin clamp which may lead to effortless breaking of pins with constant cable mating.

[OptoSpan Fiber Optic Cables](#) along with US Conec MTP® connectors both provide the benefit of having guide pins attached to a recessed metal pin clamp, ensuring a strong clasp on the pins and minimizing any inadvertent breaking when mating connectors.

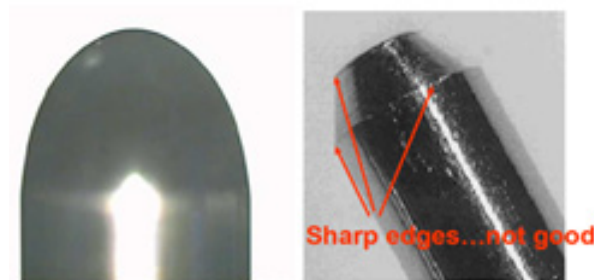


MTP® Pin Clamp

MPO Pin Clamp

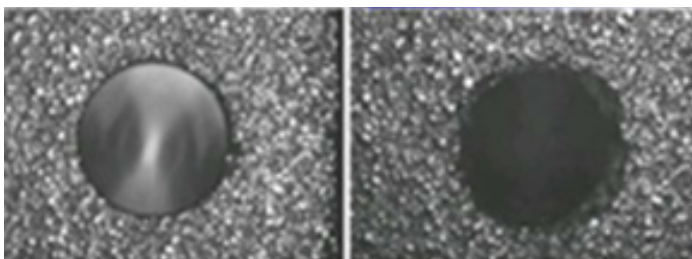
The pins on a standard MPO connector were designed with sharp edges which result in gradual damage to the mating connector.

The redesigned pins contained within MTP® connectors have elliptical edges, allowing for nearly no damage between mating connectors.

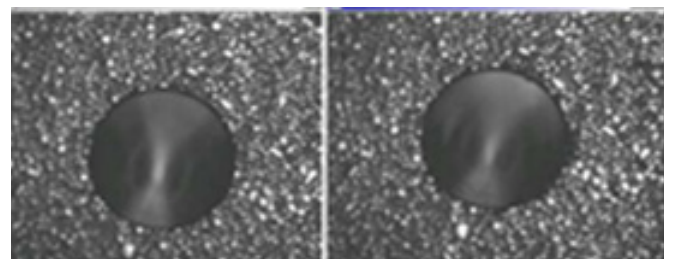


MTP® Guide Pin

MPO Guide Pin



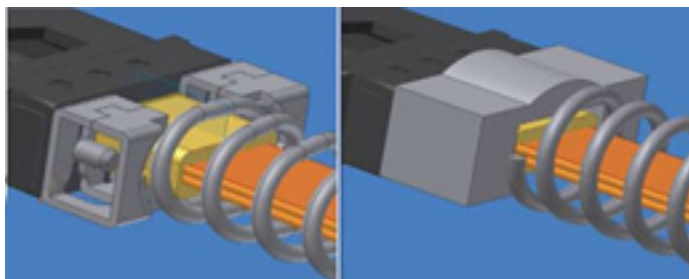
MPO guide holes after less than 500 matings



MTP® guide holes after 600 matings

2. Spring

The spring contained within MTP®/MPO connectors was implemented with the goal of maintaining the adequate force required to establish a constant physical connection when two MTP®/MPO connectors are mated.

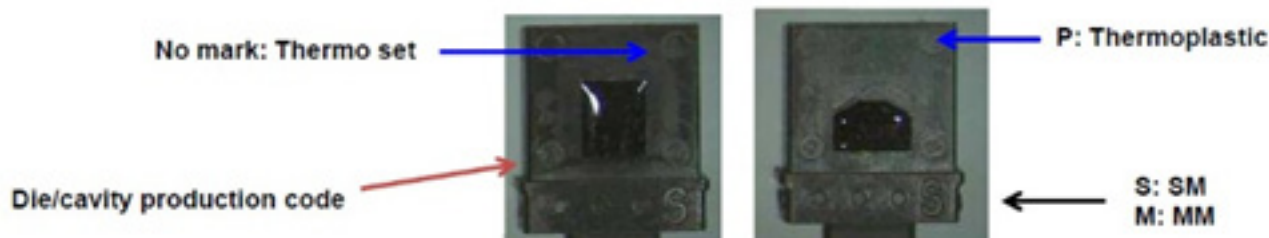


The MPO spring to the left can be found in an MPO (Non-MTP®) connector. Due to being unsecured it may accidentally cause damage to the fiber ribbon.

Refinement of the spring design has improved reliability by constraining the spring and modifying it from a circle to an oval shape (as seen in MTP® Spring above), accommodating the width of the fiber ribbon and minimizing any chance of internal damage when mating. Aside from internal damage protection, OptoSpan also offers a line of [Armored Fiber Optic MTP Cables](#) to further shield a network setup from external damage.

3. Ferrule

Within MTP®/MPO connectors, the ferrule is the component which surrounds the fiber strands and maintains their position throughout the physical connection.



The original compound used in MPO connectors to mold the ferrule was thermo set, a material which when exposed to varying temperatures may change in shape and thus alter the diameter of the guide holes when mating.

MTP® connectors have been improved to use ferrules molded from thermoplastic, which has proven to be much more resilient to varying temperatures. The new material maintains a constant diameter for the guide holes, and thus a more reliable physical connection.

OptoSpan MTP Advantage

In order to provide the highest quality networking components, OptoSpan, in partnership with US Conec®, proudly offers the most versatile and complete MTP® solution. The previously mentioned advantages of the US Conec MTP® Connector paired with the quality of OptoSpan Fiber Optic Cables provides a high performance connection with rock solid network reliability. All OptoSpan MTP® fiber optic cables offer the following:

- Genuine and complete MTP® connector assembly by US Conec®.
- Every Fiber Optic Cable assembly is documented with a unique serial number and test report.
- Entirely assembled and tested in an ISO 14000 (Class 7) quality controlled clean room.
- All cables have been manufactured using US Conec® provided equipment.
- Accomodation of any client alterations to ensure the required polarity and configuration

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