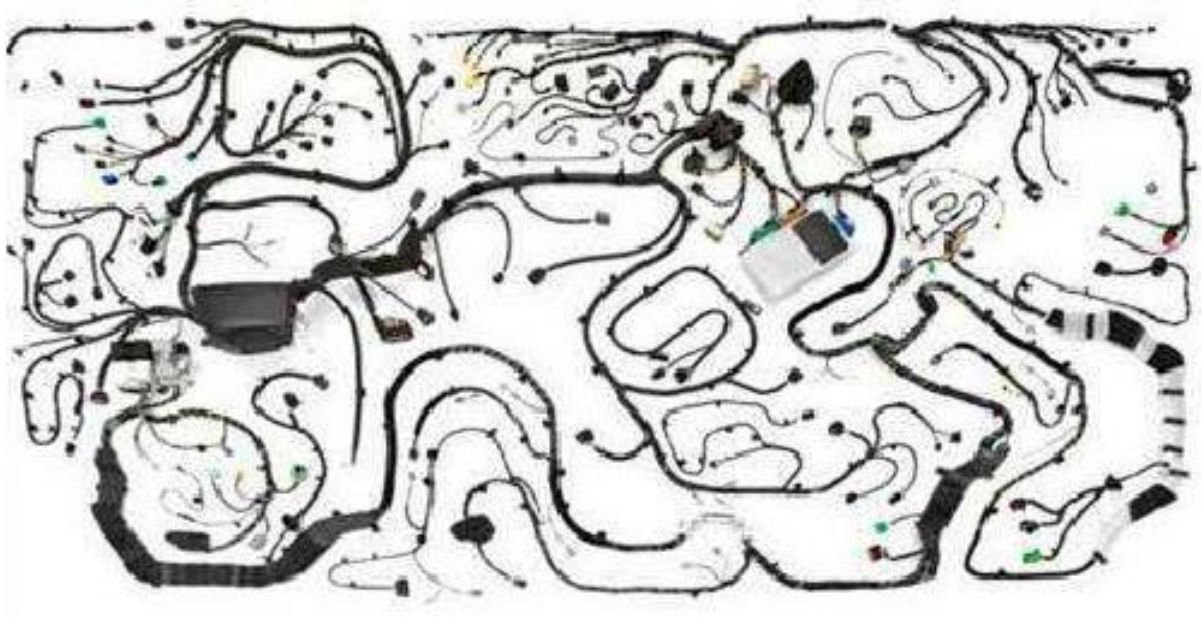
Automotive Wire Harness Cables and Connectors

A brief introduction for non-automotive people



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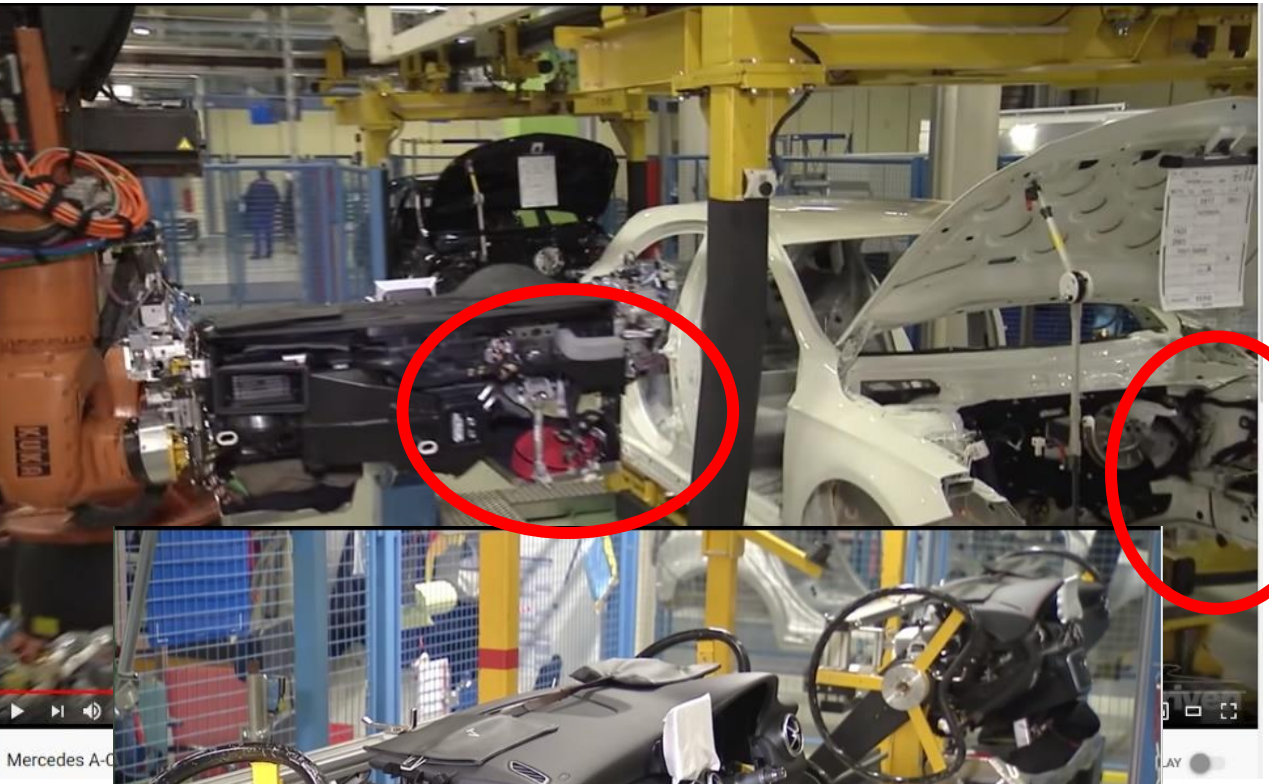
Impressions on a car harness

Impressions on a car harness

Impressions on Harness Manufacturing

Impressions on Car Manufacturing

Impressions on Car Manufacturing



Impressions on Car Manufacturing

Impressions on Car Manufacturing

What are OEMs used to (1)

- Harness is pre-manufactured and tested by TIER1
- Sub-harnesses for pre-assembled modules e.g. dashboard, door, seat, chassis
- Independed (sub-) harness for installation location e.g. engine compartment, passenger compartment (OEM dependend)

OEM dependent:

- Harness layout and segmentation
- routing strategy of cables / harness

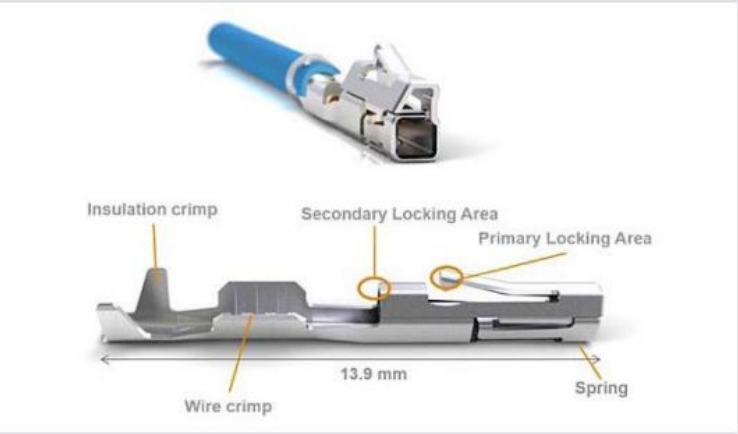
Impressions on Automotive Connectors

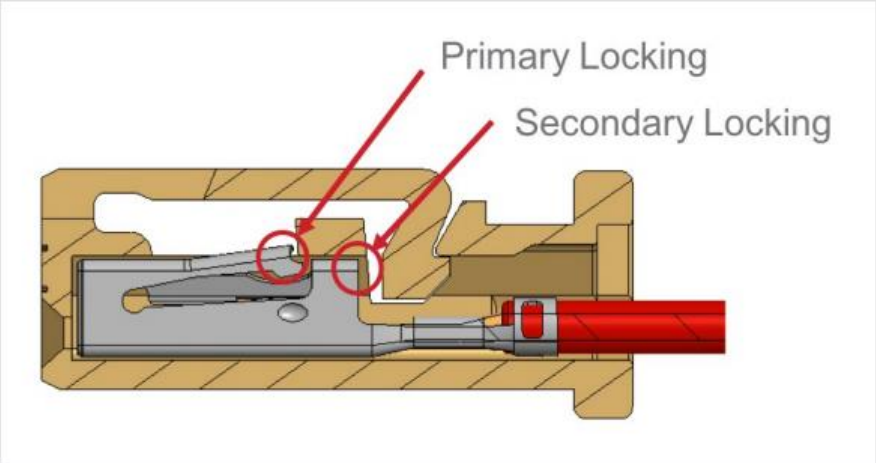
Automotive Data Cables and Connector Examples

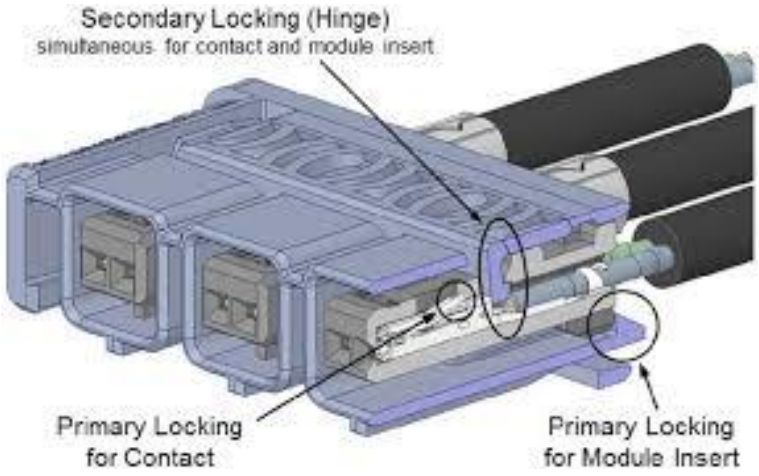
Non single wire copper cables for special applications:

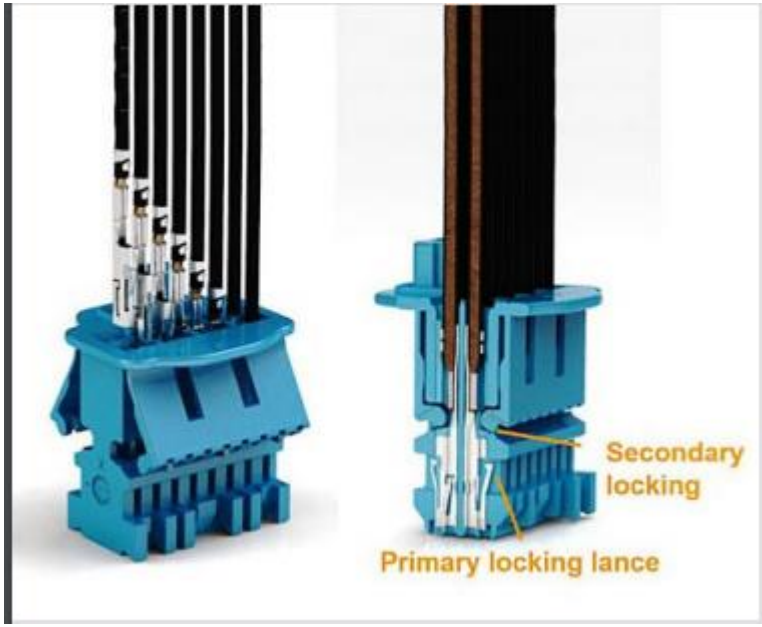
- Coaxial cables e.g. antenna applications
- Twisted pair cables for data e.g. can, flexray
- Star-Quad cables for some data applications e.g. displays
- Jacketed (or shielded) twisted pair for higher speed (Ethernet)
- Plastic optical fiber (POF) for Infotainment applications (MOST™)

Automotive Connectors – Contact Locking

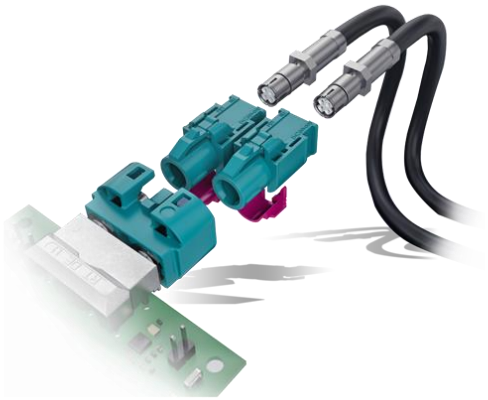






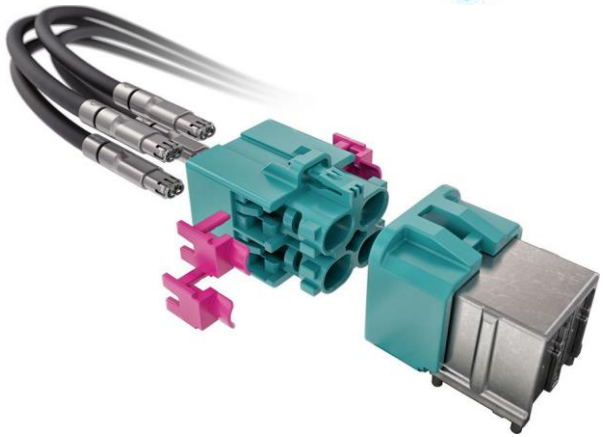


Automotive Connectors - Housings

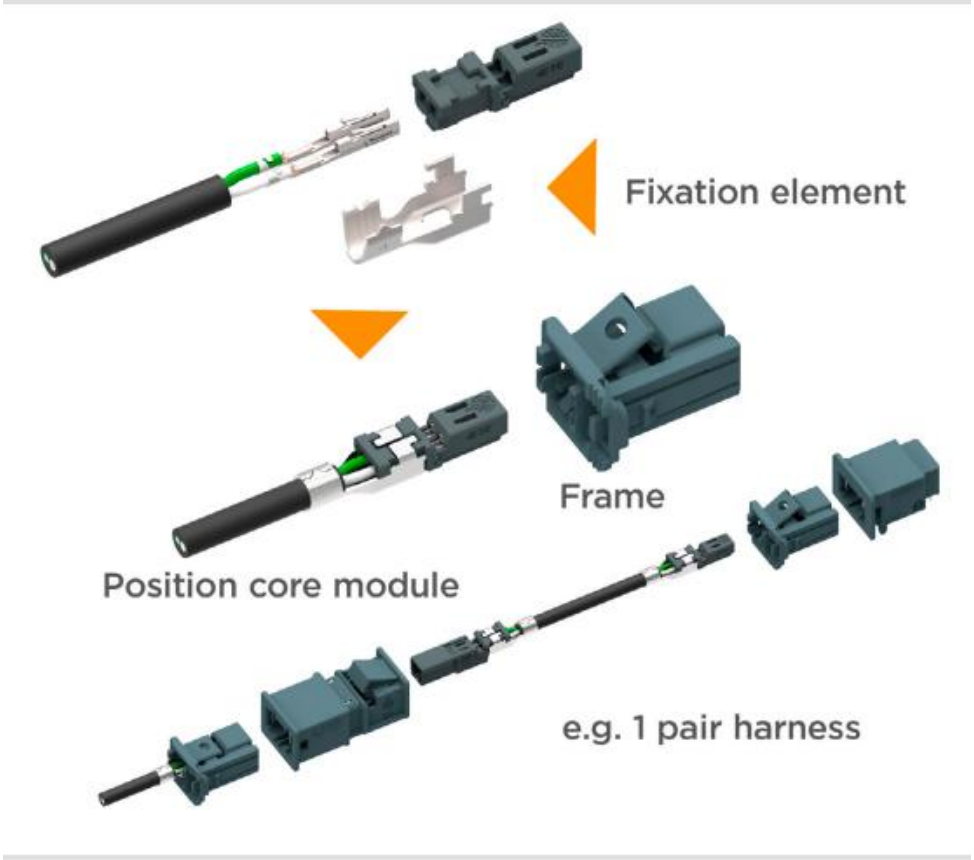


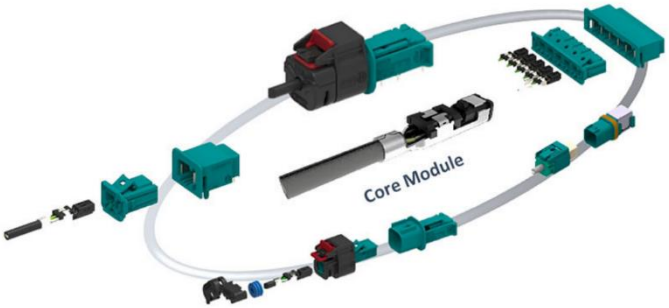
Easy assembly process

1. Cutting and stripping of cable jacket and wires
2. Crimping of terminals
3. Insertion of crimped terminals and jacket in lower shell
4. Assembly of upper shell

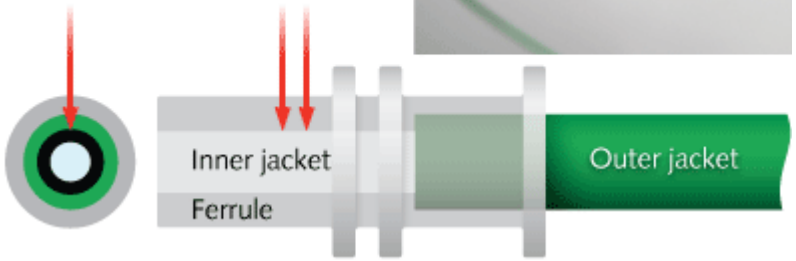


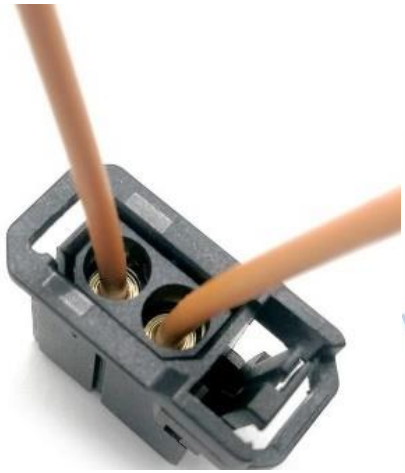
Automotive Connectors - Modularity





Automotive Connectors - POF





What are OEMs used to (2)

- Cables bundeled together in the harness
- Contacts are crimped onto the wire and insulation
- Contacts are assembled into connector housings
  secured by primary lock
  ➔For impedance controlled multi-lane and shielded connectors, a core module defining the electrical properties is plugged into a housing instead
- Contacts / core modules are secured with a secondary lock that can only be engaged if the contact / core module is correctly loaded into the housing
- Connector housing provides locking feature and is replaceable if damaged
- Connector housing safeguards contacts from damage due to transport, handling and blind mating attempts
- Audible „click“ when connector is mated and locking is engaged
- Repair kits to mount a connector in the field (garage / repair shop)
  (=> to be discussed if repir kits for latest high speed data connectors are required and feasable)

Thank you