



MEMBER OF
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FIPPROTECT

Protection systems designed
for steer-by-wire integration

The new requirements of steer-by-wire architecture

As mechanical steering linkages are replaced by electrical signal transmission, the reliability of the wiring architecture becomes a **safety-relevant design factor**. Cable protection is no longer only a mechanical safeguard. It becomes part of **overall system performance**.



New challenges for electric steering architectures

- continuous dynamic movement in steering zones
- high vibration exposure
- tight installation space and complex routing paths
- protection of safety-critical signal transmission
- long-term reliability across the entire vehicle lifetime
- resistance against temperature, media and environmental stress

Our approach

FRÄNKISCHE Industrial Pipes develops cable protection systems specifically adapted to the requirements of steer-by-wire architectures. We do not focus on individual components.

We design integrated routing and protection concepts that support performance, durability and safe signal transmission.

Engineering focus

- optimized geometry for dynamic routing
- weight-efficient protection concepts
- packaging-optimized solutions
- durable abrasion and vibration resistance
- integration into existing E/E architectures

Product portfolio for steer-by-wire cable protection

Reliable electrical steering requires a coordinated protection concept across the entire routing path. FRÄNKISCHE Industrial Pipes provides a **complete range of components** designed to **work together as an integrated system**.

Corrugated tubing systems

Designed for dynamic routing zones within steering assemblies.

- high mechanical stability with low wall thickness
- excellent vibration and abrasion resistance
- wide material and geometry portfolio
- optimized for tight installation space
- supports reliable signal transmission under movement



Protective sleeves

Additional protection where cables are exposed to friction or movement.

- lightweight and highly flexible
- strong abrasion resistance
- suitable for dynamic steering environments
- temperature and media resistant



Connector protection caps

Secure sealing and protection of sensitive interfaces.

- protection against contamination and mechanical stress
- reliable electrical connection integrity
- precise fit for automotive connector systems
- designed for long-term durability



Cable fixation and routing components

Ensuring stable positioning of wiring throughout vehicle lifetime.

- robust cable ties
- secure routing and fixation
- reduced movement-related wear
- process-safe installation

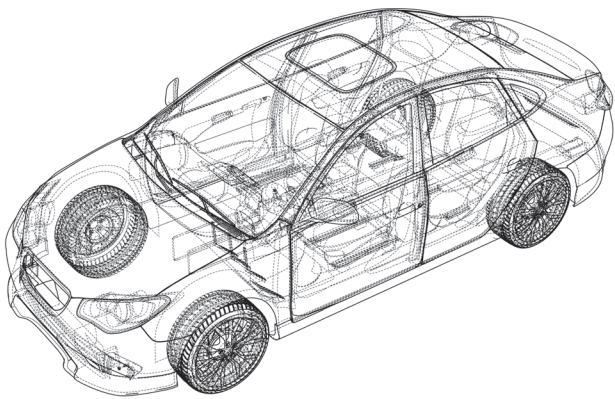


All components are engineered to function as part of a coordinated protection and routing system.

From component supplier to steering architecture partner

Steer-by-wire systems demand more than individual protection elements. They require a fully engineered routing concept that performs reliably under dynamic steering conditions.

FRÄNKISCHE Industrial Pipes supports OEMs and system integrators from concept phase to series production.



Engineering support where it matters most

- early-phase routing and packaging analysis
- identification of critical wear and movement zones
- selection of materials and geometries based on application load cases
- integration into existing E/E architectures
- support during validation and testing

Designed for series performance

- stable protection under vibration and continuous movement
- long-term durability across vehicle lifetime
- repeatable and process-safe installation
- variant-capable solutions for platform strategies
- global industrialization capability

Our goal is not only to protect cables.

**Our goal is to ensure that
steering signals remain reliable**

under all operating conditions.

Downloads

Discover the complete range of cable protection systems for trucks in our detailed **product catalog and the product overview for HDSCS protective caps**

- www.fraenkische-ip.com/fipprotect-main-catalog
- www.fraenkische-ip.com/fipprotect-flyer-hdscs-EN



Main catalog



Flyer HDSCS