

UHP COIL TUBING WITH VCR



Fig 1. Close up of pre-welded VCR male and female connections



Fig 2. Key features of Cardinal's VCR quick connect tubing

PRECISION TUBING WITH VCR CONNECTIONS

Ametek Cardinal UHP offers ultra-high purity (UHP) passivated and electropolished stainless steel tubing with vacuum coupling radius (VCR®) fittings welded on each end, ideal for semiconductor R&D, gas delivery systems, and cleanroom environments.

Each length is fabricated to semiconductor industry standards, cleaned and bagged in a Class 4 cleanroom, and shipped in compact packaging — eliminating the need for orbital welding or bulky stick tubing crates. Compared to traditional stick tubing that ships in long crates and requires welding VCRs on-site, our solution is fully integrated and ready to install. This not only saves time and labor, but also helps ensure cleanliness and performance consistency — critical in semiconductor research and manufacturing.

KEY FEATURES

- **Factory-Welded VCR® Ends** – Minimizes on-site welding and simplifies installation.
- **Long, Continuous Coils** – Eliminates mid-line joints to streamline routing and reduce leak risks.
- **Semiconductor-Grade Surface Roughness** – Ultra-smooth internal surface meets stringent high-purity gas standards
- **Compact Packaging** – Ships in a small box for easier storage, transport, and handling.
- **Fewer Leak Points** – Reduced number of fittings and welds lowers the risk of contamination.
- **UHP 316L Stainless Steel** – Corrosion-resistant and ideal for high-purity gas and chemical applications.
- **Cleanroom Packaged** – ISO Class 4 cleaned, capped, and double-bagged for immediate cleanroom use.

COMMON APPLICATIONS

- Semiconductor manufacturing & pilot fabs
- Process gas lines (e.g., ammonia, hydrogen)
- Chemical Vapor Deposition (CVD), Atomic Layer Deposition (ALD), and plasma etching
- OEM tool builds and gas panels
- Analytical instrumentation such as Gas Chromatography (GC), Mass Spectrometry (MS), and Fourier Transform Infrared Spectroscopy (FTIR)
- Mobile gas delivery carts and valve manifolds

PART NUMBER STRUCTURE

| End 1 | | | | | |
|-------|----------------------------|--|------------------|----------|--|
| MV | Male End | | | | |
| FV | Female End | | | | |
| UF | Unfinished End (flush cut) | | | | |
| | Tube and Specification | | | | |
| | 02020CF | Passivated 1/8" x 0.020 316ss T10CR spec - 9,600in max length | | | |
| | 02020EP | EP 1/8" x 0.020 316ss T50CR spec - 1,200in max length | | | |
| | 04035CF | Passivated 1/4" x 0.035 316ss T10CR spec - 12,000in max length | | | |
| | 04035EP | EP 1/4" x 0.035 316ss T50CR spec - 3,960in max length | | | |
| | | Length (inches) | | | |
| | | XXXX | Length in inches | | |
| | | | End 2 | | |
| | | | MV | Male End | |
| | FV | | Female End | | |
| | UF | Unfinished End (flush cut) | | | |
| MV | 02020CF | 1200 | FV | | |

Examples:

| Part Number: | Description |
|----------------|---|
| MV02020CF120MV | 10' Passivated 1/8" x 0.020 316ss Tech 10 CR tubing, Male VCR fittings. |
| MV04035EP120FV | 10' Electropolished 1/4" x 0.035 316ss Tech 50 CR tubing, Male and Female VCR fittings. |

TECH 10CR TUBING SPECIFICATION

Chemically polished and passivated coils of seamless UHP 316L SS tubing. Used for long runs of ultra-high purity gas distribution systems.

- 25µin Ra average and 32µin Ra maximum.
- Controlled sulfur for consistent weldability.
- Low particulate cleaning.
- Cleaned to ASTM G93-96 Level A.
- Exceeds CFOS CGA G4.1 cleaning.
- Fully passivated with nitric acid.
- Rinsed with 60°C DI water, purged with filtered UHP nitrogen, capped and double bagged.
- Final bagging in ISO Class 4 cleanroom.
- Particle count, SEM and XPS batch testing with Certificate of Conformity.

TECH 50CR TUBING SPECIFICATION

Electropolished long continuous coils of seamless UHP 316L SS tubing. Used for long runs of ultra-high purity gas distribution systems.

- 7µin Ra average and 10µin Ra maximum.
- Controlled sulfur for consistent weldability.
- Low particulate cleaning.
- Cleaned to ASTM G93-96 Level A.
- Exceeds CFOS CGA G4.1 cleaning.
- Fully passivated with nitric acid.
- Rinsed with 60°C DI water, purged with filtered UHP nitrogen, capped and double bagged.
- Final bagging in ISO Class 4 cleanroom.
- Particle count, SEM and XPS batch testing with Certificate of Conformity.