



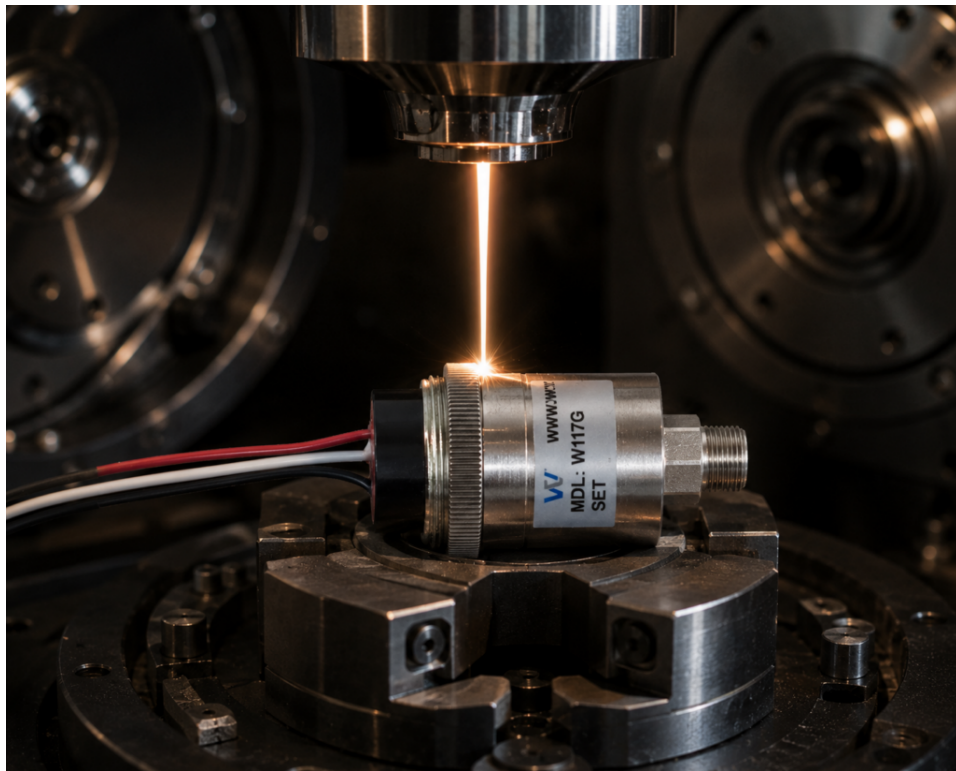
## Understanding the "Ultra Pure" W117 Series Pressure Switch by Whitman Controls

In high-tech industries like semiconductor fabrication and medical device manufacturing, even the smallest microscopic impurity can lead to catastrophic product failure or safety risks. An "Ultra Pure" pressure switch, specifically the **Whitman Controls W117 Series**, is a specialized instrument engineered for environments where absolute cleanliness and leak-proof integrity are mandatory. These switches are designed to monitor vacuum or pressure while ensuring that the internal process remains entirely free of contaminants.

### What Makes the W117 Series "Ultra Pure"? Core Features Explained

The **W117 series** is distinguished from standard industrial switches by its rigorous construction and testing standards, designed to meet the most stringent purity specifications.

- **All-Welded 316L Stainless Steel Construction** - The switches feature fully welded **316L stainless steel** interiors, eliminating the need for internal O-rings or seals that could off-gas or trap particulates.
- **Helium Leak Testing to Medical-Grade Standards** - Every unit is helium leak-checked to pass a strict standard of  $4 \times 10^{-9}$  Std CC/sec, the same standard utilized for critical medical devices.
- **Electron Beam Welding for Seamless Integrity** - The sensor capsule is fused using advanced electron beam welding to ensure a seamless, high-integrity bond that withstands severe environments.
- **Contaminant-Free Vacuum-Sealed Packaging** - To maintain their ultra-pure status until installation, these units are shipped in vacuum-sealed, contaminant-free packaging.



Close-up of electron beam welding process on W117 series sensor capsule ensuring seamless high-integrity bond

## Where Is the W117 Series Used? Critical Industry Applications

Because these switches are built to tolerate aggressive media and elevated temperatures without introducing impurities, they are the preferred choice across several high-precision industries.

- **Semiconductor Manufacturing & ALD Equipment** - Ideal for atomic layer deposition (ALD) equipment, where switches must stand up to volatile reactant chemistries like trimethylaluminum.
- **Silicon Wafer Ovens** - The **W117G** and **W117V** models are standardized for use in silicon fabrication processes where any detectable impurity would result in product rejects.
- **Medical Radiography & X-Ray Systems** - These switches provide critical over-pressure protection in X-ray tube cooling systems, ensuring hygienic operation in medical-grade environments.
- **Aerospace Fabrication & High-Vacuum Chambers** - Utilized in electron beam welding chambers for aircraft hull components to maintain the high-vacuum purity required by Aerospace Material Specifications (AMS-2680).



NEMA 4 rated W117LG and W117LV Whitman Controls pressure switch showing weather-proof and liquid-resistant housing for outdoor and washdown industrial environments

## W117 Series Technical Specifications at a Glance

The **W117 series** offers a compact format to keep equipment footprints small while providing high durability and a wide range of set points.

- **Set Point Range:** The **W117** covers vacuum down to 28.2 InHg and positive pressure up to 500 PSIG, accommodating a broad spectrum of process monitoring requirements within a single compact switch design.

- **Operating Temperature:** Engineered for thermal resilience, the **W117** operates continuously across a wide temperature range of -65°F to +225°F (-54°C to +107°C), making it reliable in both cryogenic-adjacent and high-heat process environments.
- **Environmental Rating:** The **W117LG** and **W117LV** models carry a **NEMA 4** rating, providing weather-proof and liquid-resistant protection suited for outdoor installations, washdown environments, or facilities with high-moisture exposure.
- **Process Connection:** The **W117** is available with the industry-standard 1/4" VCR male fitting, the go-to connection type in high-purity gas delivery systems, ensuring seamless integration into existing semiconductor or laboratory pipelines.
- **Helium Leak Test Standard:** Every **W117** unit is individually helium leak-tested to  $4 \times 10^{-9}$  Std CC/sec, matching the integrity standard required for critical medical devices, before leaving the facility, guaranteeing zero-compromise leak performance.
- **Material:** The internal wetted components are constructed entirely from **316L stainless steel** in a fully welded configuration; no internal O-rings, no seals, no contamination pathways delivering unmatched purity integrity across the switch's service life.

## About Whitman Controls and Industrial Control Solutions

**Whitman Controls**, part of **Industrial Control Solutions**, has been manufacturing precision vacuum, temperature, pressure, and liquid level switches and sensors for over 40 years. What began as a focused instrumentation manufacturer has grown into a trusted name across some of the most demanding industries in the world - aerospace, defense, medical, and industrial automation.

As a **Service-Disabled Veteran-Owned Small Business**, Industrial Control Solutions was built on the same principles that define military service: tireless dedication, rigorous quality standards, and an unwavering commitment to the mission. That foundation isn't marketing language, it shapes how we engineer every product, handle every order, and support every client relationship.

We don't offer off-the-shelf compromises. Every sensor solution we build is configurable to your exact application, accounting for media environment, pressure range, temperature exposure, mounting constraints, and dozens of other specifications. If a standard product doesn't meet your requirements, we build one that does and we back it with full documentation and traceability at every step.

Every product ships with full traceability documentation under our **ISO 9001:2015 certification**, giving customers confidence that internal processes, materials, and finished products have all met the highest standards of quality and regulatory compliance.

At Industrial Control Solutions, our most loyal clients have been with us for the entirety of our 40+ years in business. That kind of partnership isn't accidental. It is the direct result of a

commitment to delivering exactly what we promise; high-quality products, built to specification, backed by people who stand behind their work.

Our product portfolio spans four specialized USA-manufactured lines:

- [Whitman Controls](#) - Vacuum, pressure, temperature, and liquid level switches engineered for precision and durability in extreme environments
- [Load Controls](#) - Pump load controls, compact power sensors, fast-response load controllers, current sensors, and VFD-compatible solutions
- [Thomas Products](#) - Flow switches, level switches, pump controls, multi-level switches, and visual indicators
- [Duro-sense](#) - High-quality platinum and noble thermocouples, RTDs, and ISO 17025 calibrated wire

## Frequently Asked Questions (FAQs)

**Q1: What does "ultra pure" mean in a pressure switch?** "Ultra pure" means the switch is constructed to prevent any contamination of the internal process media. In the W117 series, this is achieved through all-welded 316L stainless steel construction (no internal O-rings), helium leak testing, and electron beam welded sensor capsules; ensuring zero off-gassing or particulate release.

**Q2: What industries require ultra pure pressure switches like the W117?** Industries that demand zero contamination tolerance use the W117, including semiconductor wafer fabrication, medical radiography, aerospace electron beam welding chambers, and atomic layer deposition (ALD) systems handling volatile chemistries.

**Q3: What is the helium leak test standard for the W117 series?** Every W117 unit is helium leak-tested to  $4 \times 10^{-9}$  Std CC/sec, the same standard applied to critical medical devices. This ensures each switch meets the highest possible leak-integrity specification before shipment.

**Q4: What pressure and vacuum ranges does the W117 series cover?** The W117 series handles vacuum down to 28.2 InHg and positive pressure up to 500 PSIG, with an operating temperature range of -65°F to +225°F (-54°C to +107°C), making it suitable for a wide variety of process environments.

**Q5: Are W117 pressure switches available with custom fittings or configurations?** Yes. Whitman Controls builds switches to exact customer specifications. The W117 is available with multiple process connection options, including the 1/4" VCR male fitting, standard in high-purity gas delivery systems. Contact Industrial Control Solutions to configure a unit for your specific application and media environment.