

Certifications for Global Requirements



Certifications for accumulators vary – often quite significantly – depending upon the application they will be used for and the country they will be used in. Sorting through the myriad of requirements that may be encountered is a daunting and difficult task. A truly global certification standard, meanwhile, remains all but impossible to achieve due to the parameters that must be met for individual country regulations. Parker’s Global Accumulator Division engineers have extensively researched and fully understand these pressure vessel codes. From the United States to Europe, Asia and Australia, our experts are ready and able to help you avoid the many costly and time-consuming pitfalls you didn’t see coming. Furthermore, GAD can provide the global accumulator certifications you need.

Accumulators and gas bottles are pressure vessels that are subject to safety laws, regulations, and ordinances that are valid in the state or country of installation. Other particular regulations must be observed in certain industries such as mining, shipbuilding and

aircraft. This Brief will discuss the two fundamental design codes and several of the most common certifications. Since many more certifications exist, we recommend contacting Parker’s Global Accumulator Division engineers to insure proper conformance to those standards.

Two Base Design Codes

While many countries have their own regulations and quality standards for hydraulic accumulators, most refer back to one of two base design codes. The oldest and most referenced design code for pressure vessels is ASME. Originally written to create a standard for the manufacture of boilers on steam locomotives, the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section VIII, Division 1 has evolved into requirements for unfired pressure vessels and accumulators in the United States. This section requires the following:

- 1. Certification on vessels with internal diameters of 6" or greater.**
- 2. Certified vessels carry the “U” symbol on them as evidence that they were designed and manufactured in accordance with the Code. The “U” symbol is an internationally recognized symbol of design and manufacturing quality.**
- 3. Accumulators must be manufactured from materials that meet ASME specifications for traceability.**
- 4. A design factor of 4:1 in the ratio of minimum burst pressure to rated pressure.**

All design factors are with respect to the specified minimum tensile strength of the material.

- 5. ASME requires that each vessel be marked with the design pressure at the Minimum Design Metal Temperature (MDMT) for the vessel.**
- 6. Surveillance of an approved quality system, like ISO 9001.**
- 7. All hydrostatic testing to be witnessed by a recognized authorized inspection agency.**

The 4:1 design factor requirement is mandatory for all accumulators with ASME Certification with the exception of those that comply with a specific rule within the Code called “Appendix 22.” Appendix 22 permits that accumulators manufactured with “forged” shells and with openings of a specified maximum size may be certified with a design factor of 3:1 in the ratio of burst pressure to rated pressure. This includes bladder style accumulators.

The second base design code is the European Pressure Equipment Directive. In May 2002, the Directive 97/23/EC (Pressure Equipment Directive) came into regulation in the European Union. This Directive applies to the design, manufacture, testing and conformity assessment of pressure equipment and assemblies of pressure equipment that operate over 0.5 bar. The directive requires the following:

- 1. The operating fluids must be in Group 2 (non-hazardous).**
- 2. Certified vessels with a volume greater than 1 liter gas capacity must be CE marked.**

- 3. Certified vessels must be manufactured from materials that meet PED specifications for traceability.**
- 4. Certified product must pass a low temperature Charpy test (temperature to be determined by application or customer).**
- 5. Surveillance of an approved quality system, such as ISO 9001.**
- 6. All hydrostatic testing to be witnessed by an approved notified body. Parker holds module H1 certification – allowing us to self certify accumulators saving our customers time and money.**
- 7. Once installed, equipment and accumulator inspection as well as operational safety are controlled by national laws.**

Accumulators with a volume less than 1 liter, of gas capacity, fall within the guidelines of Sound Engineering Practice (SEP). Accumulators built to SEP must be built to a known standard and have an approved notified body approve the design and the technical file. These accumulators DO NOT carry a CE marking.

Country Certifications

Below is a brief list of the most popular country standards that Parker GAD can provide:

1. Canada: Canadian Registration Numbers (CRN) can be obtained by constructing an accumulator from ASME-certified material using ASME standards of design then applying for the registration number. Each province has its own registration number, thus the end destination of the accumulator

must be known. Some provinces are allowing alternative design codes like the PED for specific markets such as farming and mining. Contact Parker GAD for detailed specifics.

- 2. Australia:** AS1210 is a standard based on ASME design requirements. Additional hydrostatic testing is required. The accumulator must be tested at 1.5 times the design pressure for 30 minutes plus an additional 1 minute per mm of thickness of the shell/vessel.
- 3. China:** Accumulators shipped to China often require Special Equipment Licensing Office (SELO) approval. China currently accepts both PED and ASME design standards. To manufacture accumulators for the Chinese marketplace, a manufacturing license is required. Paperwork both before and after the purchase of the accumulator is required for submittal to China for tracking purposes.
- 4. Russia:** Accumulators shipped to Russia often require GOST approval. GOST currently accepts both PED and ASME design standards. A technical file called a “passport” must be submitted with each accumulator shipment.
- 5. Brazil:** The Regulatory Rule NR-13 establishes the minimum conditions for the installation, operation, maintenance and inspection of pressure vessels and boilers in Brazil. Both ASME and the PED are acceptable design codes, but ASME designs are more prevalent. When NR-13

is required, Parker’s engineers can submit a technical file to Brazilian Registered Engineers (BRE) for approval. After approval, an inspection at the place of installation will be performed by the BRE. This could also include hydrostatic testing.

Industry/Market Standards

1. American Bureau of Shipping (ABS):

Is required for accumulators installed on shipping vessels and oil rigs. To be added to a Product Design Assessment Certificate, accumulators must meet ASME design requirements plus any additional ABS requirements. Parker has an ABS Certificate of Manufacturing Assessment and many accumulators are listed on the Bureau’s List of Type Approved Products. All ABS-approved accumulators must be witness tested at Parker by an ABS inspector.

2. Det Norske Veritas (DNV):

Off-shore Standard DNV-OS-E101 is often required for accumulators on off-shore oil and gas applications, particularly in the North Sea. Many of Parker’s accumulators have DNV Type Approval.

Additional Information

GAD also offers dual-certified ASME/CE accumulators. No matter where you need to be, Parker’s Global Accumulator Division will be there to support you with the necessary products, services and global certifications.