



Flow Control Solutions for Cryogenic Industrial Gas Applications

Parker Bestobell Valves for Safe Transportation, Storage and Processing of Ultra-low Temperature Liquefied Gases



ENGINEERING YOUR SUCCESS.

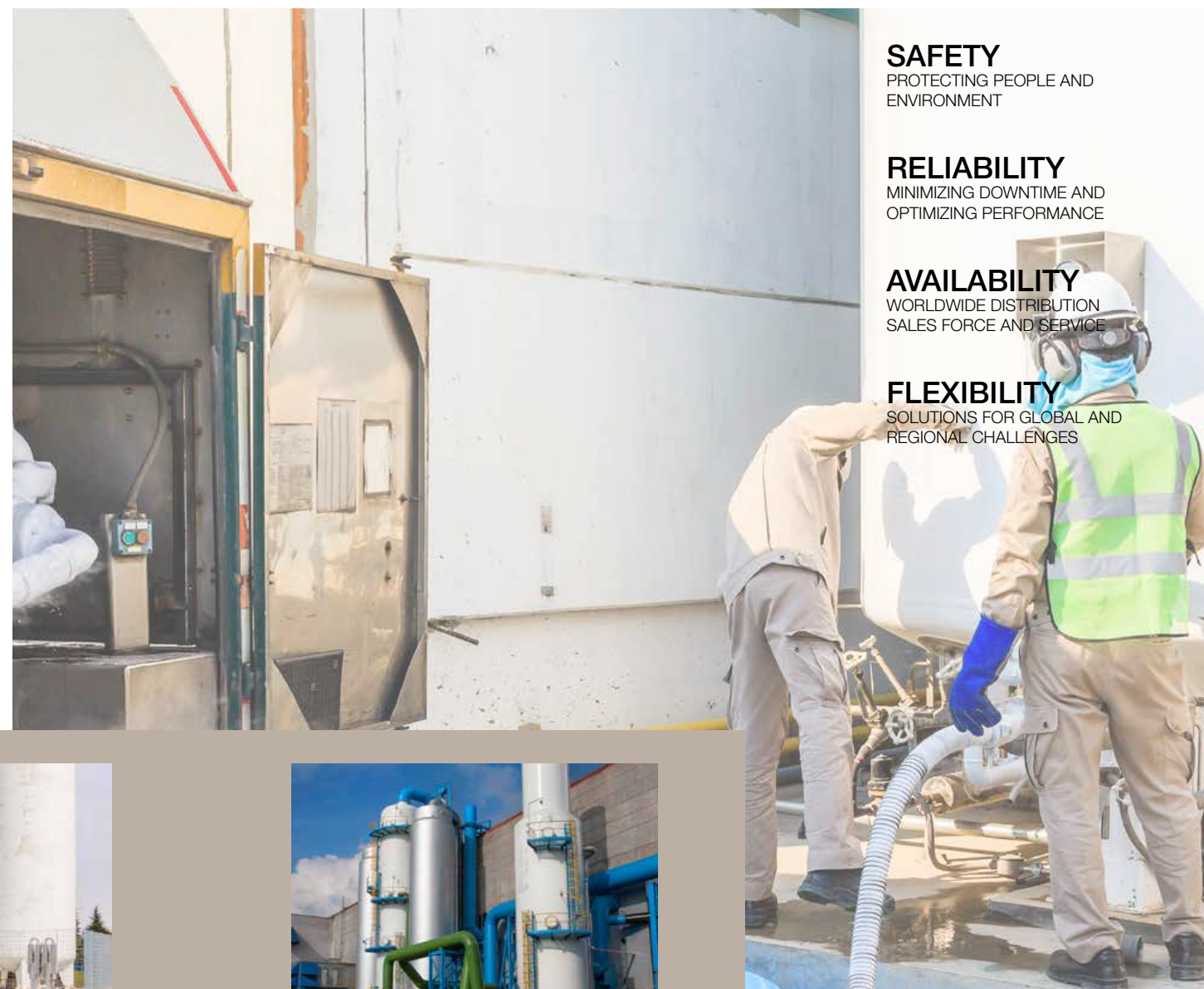
EXCEEDING THE DEMANDS OF CRYOGENIC INDUSTRIAL GASES

Parker Bestobell are world experts in the design and manufacture of reliable, high-performance cryogenic valves for transportation, storage and processing of ultra-low temperature liquefied gases.

We have been providing cryogenic industrial gas flow control solutions for over 150 years, serving major gas companies and Original Equipment Manufactures (OEM) all over the world. Our primary philosophy is to build reliable, efficient, cost-effective cryogenic equipment for the intended service.

We are ISO 9001 2015, ISO 14001 2015 and ISO 45001:2018 approved.

Covered in this brochure are the main valves for industrial and medical gas applications. For the full range of Parker Bestobell products download our technical products catalogue ref. 5190-BBV.



SAFETY

PROTECTING PEOPLE AND ENVIRONMENT

RELIABILITY

MINIMIZING DOWNTIME AND OPTIMIZING PERFORMANCE

AVAILABILITY

WORLDWIDE DISTRIBUTION SALES FORCE AND SERVICE

FLEXIBILITY

SOLUTIONS FOR GLOBAL AND REGIONAL CHALLENGES



TRANSPORTATION

Liquefied industrial gases are transported in cryogenic trailers to the end user storage tanks. Parker Bestobell light-weight valves guarantee safe, convenient and cost-effective operation at maximum payload of the vehicles. It is vital that the valves being in regular use for filling and discharge, consistently perform well during frequent use.



STORAGE

Industrial gases are stored in temperatures down to -196°C in vessels of various sizes in horizontal or vertical configurations. Parker Bestobell comprehensive range of durable valves enable safe and convenient handling of gases, offering maximum protection to operators and equipment.

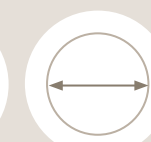


PROCESSING

Industrial gases are produced by refining air in a low temperature rectification process in air separation plants. Parker Bestobell provides a wide range of highly reliable cryogenic valves suitable for continuous duty applications.



TEMPERATURE
Min. -196°C
Max. $+65^{\circ}\text{C}$



BORE SIZES
DN6
to DN200



PRESSURE
0-50 bar

TRANSPORTATION

SOLUTIONS FOR RELIABLE AND SAFE TRANSPORTATION OF INDUSTRIAL GASES.

Confined space instrument control systems on vehicles transporting liquefied gas require compact and light-weight components to guarantee cost-effective operation. Maximise your vehicle payload with Parker Bestobell reduced weight valves that can fit into restricted space, whilst enabling convenient filling operation. Our robust, leak-free valve designs guarantee accurate and reliable control of gases. The bolted bonnet construction enables rapid and efficient mounting and servicing of trailers.

When **oil and grease** come into contact with oxygen within a cryogenic valve, the remains of melted or burned metal are ejected out of the valve casing and oxygen can then leak out. This can cause fire to spread intensely and quickly to neighbouring inflammable material outside of the equipment. To check for the presence of oil and grease, each Parker Bestobell valve is subjected to a **cleaning** process specifically developed for the valve, regardless of its later use.

GLOBE VALVE

Media Isolation

- Used for zero leakage isolation of media
- Valve can be mounted 45 degrees from vertical position to allow easy access of handwheel
- Uni-directional valve as only used for filling of the tank
- Fast and easy maintenance due to valve design
- Anti-blowout stem and one-piece high strength design for operator safety



SCREW DOWN NON-RETURN VALVE

Flow Regulation

- Check valve feature integral to the headwork which stops any back flow even when the disc is in the open position
- Used to regulate flow in the open position with no risk of back flow
- Valve can be mounted 45 degrees from vertical position to allow easy access of handwheel
- Fast and easy maintenance due to valve design
- Anti-blowout stem and one-piece high strength design for operator safety



SAFETY RELIEF VALVE

Over Pressurization Protection

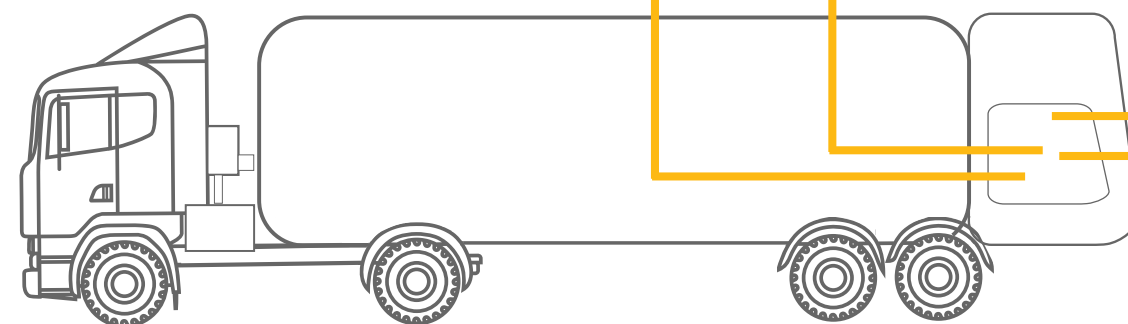
- This valve allows the pressure to be released if unsafe pressure levels are reached in the tanker
- Designed and factory set to lift repeatedly within 2% of the set pressure
- Compact and lightweight design
- Sealed to inhibit unauthorized tampering
- Individually set and flow tested at the factory



GATE VALVE

Primary Media Loading

- Used as the primary media loading valve within the control system
- Light weight design gives excellent thermal characteristics
- Precision casting and lapped seats for a tight shut off at all times
- Low torque allows easy operation of the valve
- Available as manual or actuated operation



Pressure influences material behaviour, for example, by decreasing the ignition temperature and increasing the combustion speed. Therefore, in a pressure oxygen system, we use only materials and parts for which the design is approved for the relevant operating conditions.



CRYOGENIC ROAD TRANSPORT TRAILERS

Cryogenic trailers are used for transportation of cryogenic liquids from the production facility to the end customer. The tanks are equipped with thermal insulation to prevent or at least minimize the heat influx from a source in the surroundings.

An instrument control system is mounted in a rear compartment of the vehicle and allows the operator to dispense the liquid from the trailer to a storage tank. The operator controls isolation and flow of the media between both units.



CRYOGENIC STORAGE TANKS

Cryogenic stationary storage tanks are used for the storage of cryogenic gaseous liquids, such as: oxygen, argon, nitrogen, hydrogen and helium or gases at higher temperatures, such as: liquefied natural gas (LNG), carbon dioxide or nitrous oxide.

These tanks have double containers, where the inner contains the media and the outer contains thermal insulation to prevent heat transfer, reduce evaporation, and protect the structure from cryogenic temperatures and the potential damage to the structural integrity of the tank.

STORAGE

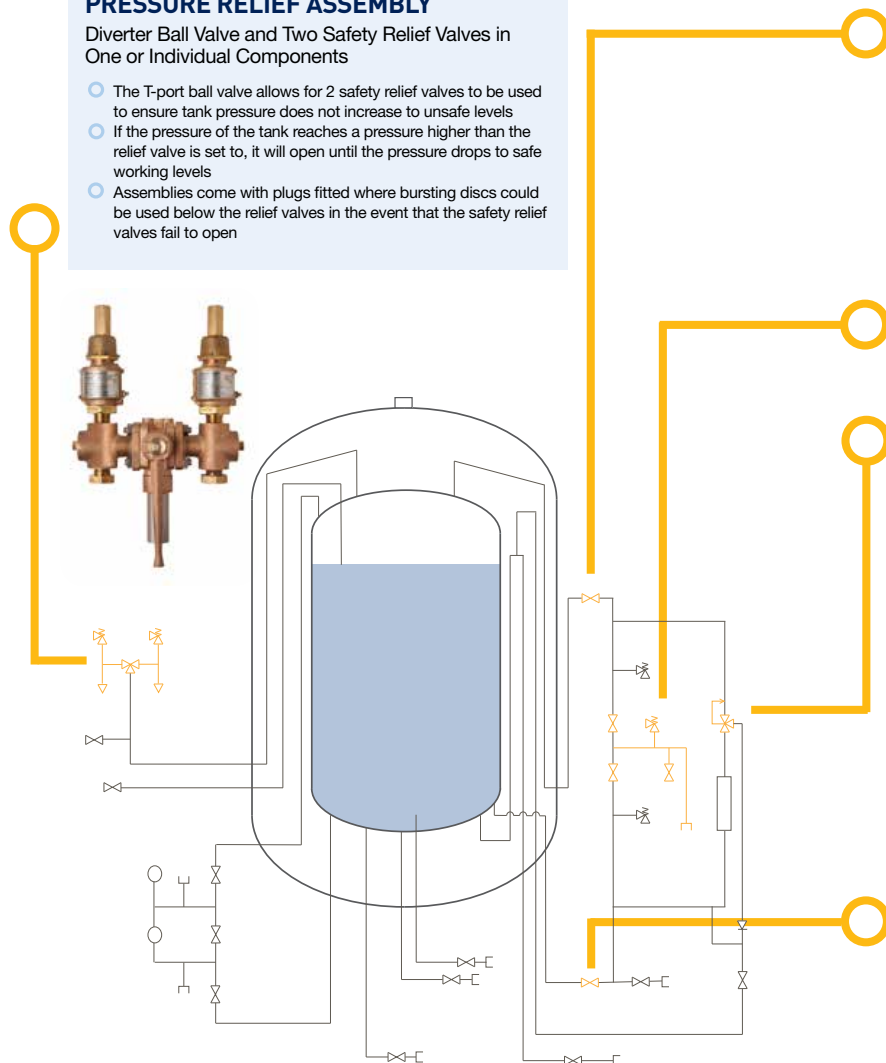
SOLUTIONS FOR SAFE, LEAK-FREE & CONVENIENT STORAGE AND HANDLING OF INDUSTRIAL GASES.

One of the problems with the storage of gases as liquids at cryogenic temperatures is boil-off gas (BOG). This occurs when heat from a variety of sources transfers into the tank causing the liquid to boil and the pressure in the tank to rise. Innovation within Parker Bestobell has resulted in valves that are designed with minimum material mass to ensure cryogenic operating temperatures are reached as quickly as possible. This improves cool downtimes and reduces boil off when the product is in contact with the valve, therefore lowering risk.

PRESSURE RELIEF ASSEMBLY

Diverter Ball Valve and Two Safety Relief Valves in One or Individual Components

- The T-port ball valve allows for 2 safety relief valves to be used to ensure tank pressure does not increase to unsafe levels
- If the pressure of the tank reaches a pressure higher than the relief valve is set to, it will open until the pressure drops to safe working levels
- Assemblies come with plugs fitted where bursting discs could be used below the relief valves in the event that the safety relief valves fail to open



Controlling **heat** and **pressure** are the most important concerns of the cryogenic industry. Here the aim is to limit the transfer of heat into the cryogenic vessel. This prevents **boil-off** from occurring and liquid turning to vapour and then venting from the tank.

GLOBE VALVE

Gas Supply

- Used as the Primary gas isolation valve
- Manual valve with a shorter stem extension due to the higher temperature of media
- Uni-directional valve as only used for filling of the tank
- Fast and easy maintenance due to valve design
- Anti-blowout stem and one-piece high strength design for operator safety



PRESSURE REGULATOR

Economiser and Pressure Build-up Regulator in One Valve

- This valve is used in the pressure control system installed on the tank
- It allows for pressure to be maintained in the tank during transfer of media
- It can be used as a pressure build-up valve or economiser to reduce leak paths and the amount of pipework required in an installation
- High flow characteristics for closer control of tank pressure
- High accuracy/low deadband allows higher tank pressure – reduced boil-off in pipelines



MANIFOLD FILL ASSEMBLY

Four Valves in One Single Unit

- Top fill, bottom fill, check valve and drain valve in one unit
- Simple to operate - Technician will select either gas or liquid phase to fill in order to maintain the correct pressure within the tank
- Reduced number of potential leak paths
- Reduced pressure drop and vessel filling time
- Self-draining strainer prevents debris entering the system



GLOBE VALVE

Liquid Supply

- Used as the Primary liquid isolation valve
- Manual valve with a longer stem extension due to the lower temperature of media
- Uni-directional valve as only used for filling of the tank
- Fast and easy maintenance due to valve design
- Anti-blowout stem and one-piece high strength design for operator safety



In today's market place there are many storage solutions available to users of cryogenic gases. The tank type used is dependant on the gas application, media required, and volumes.

PROCESSING

SOLUTIONS FOR RELIABLE, CONTINUES GAS PRODUCTION OPERATIONS

Industrial gas production facilities require highly-reliable cryogenic valves to ensure continues, uninterrupted gas supply. Parker Bestobell high quality valves provide tight shut-off for zero media leakage, ease of maintenance and guarantee of a safe high-cycle operation.

Air is a mixture of gases, consisting of nitrogen (78%), oxygen (21%) and argon (0.9%). The remaining 0.1% is made up of carbon dioxide, neon, helium, krypton and xenon. Air can be separated into its components using both cryogenic and non-cryogenic air separation processes.

GATE VALVE

Media Isolation

- Wedge seat design for zero leakage isolation of media on the downstream seat
- Light-weight design gives excellent thermal characteristics
- Precision casting and lapped seats for a tight shut-off at all times
- Low torque allows easy operation of the valve
- Available as manual or actuated operation



ACTUATED GLOBE VALVE

Safe Control of Media Flow

- Open, closed and controlled valves with the use of the stainless steel actuator
- Fall close as standard
- The actuator can be applied to a range of globe valve sizes from DN15 through to DN150
- Limit switches and solenoids can be added



MANUAL GLOBE VALVE

Safe Control of Media Flow

- Used for both isolation and control of media flow
- Isolation of media with zero leakage
- Fast and easy maintenance due to valve design
- Anti-blowout stem and one-piece high strength design for operator safety



SAFETY RELIEF VALVE

Over Pressurization Protection

- This valve allows the pressure to be released if unsafe pressure levels are reached in the process line
- Designed and factory set to lift repeatedly within 2% of the set pressure
- Compact and lightweight design
- Sealed to inhibit unauthorized tampering
- Individually set and flow tested at the factory

CHECK VALVE

Media Isolation to Back Pressure

- Used for isolation of fluid on the reverse flow of media, limiting contamination in the line
- Protects the pumps and other valves in the process line
- Bolted bonnet construction
- Simplistic design
- Low cracking pressure



PRODUCTION OF INDUSTRIAL GASES

Pure gases such as nitrogen, oxygen and argon are produced in a cryogenic air separation process in separation plants. This involves various stages of compression, cooling and high pressure distillation. Liquefied gases are then stored in tanks and transported to customers by road tankers.

Parker Bestobell valve technology is used extensively in air separation facilities and in the on-site storage used to contain the gases generated as part of these processes.

DEDICATED TO SAFETY

There is no room for error in industrial gas applications. That's why Safety is Parker's highest priority when designing and manufacturing cryogenic equipment.

With over 50 years' of experience in the manufacturing of cryogenic valves, Parker has one of the best safety records in industrial gas industries. Everyone at Parker is committed to total safety to protect our families, customers, contractors and the environment.

COMPLIANCE

All Parker Bestobell valves are compliant with Pressure Equipment Directive (EU PED 2016: 2014/68/EU), Transportation Pressure Equipment Directive (TPED) and are ATEX certified for installation in explosive areas.

We are ISO 9001 2015, ISO 14001 2015 and ISO 45001:2018 approved.

MATERIALS CERTIFICATION

3.1/3.2 materials certification according to BS EN 10204 standard can be provided on request.

CRYOGENIC TESTING

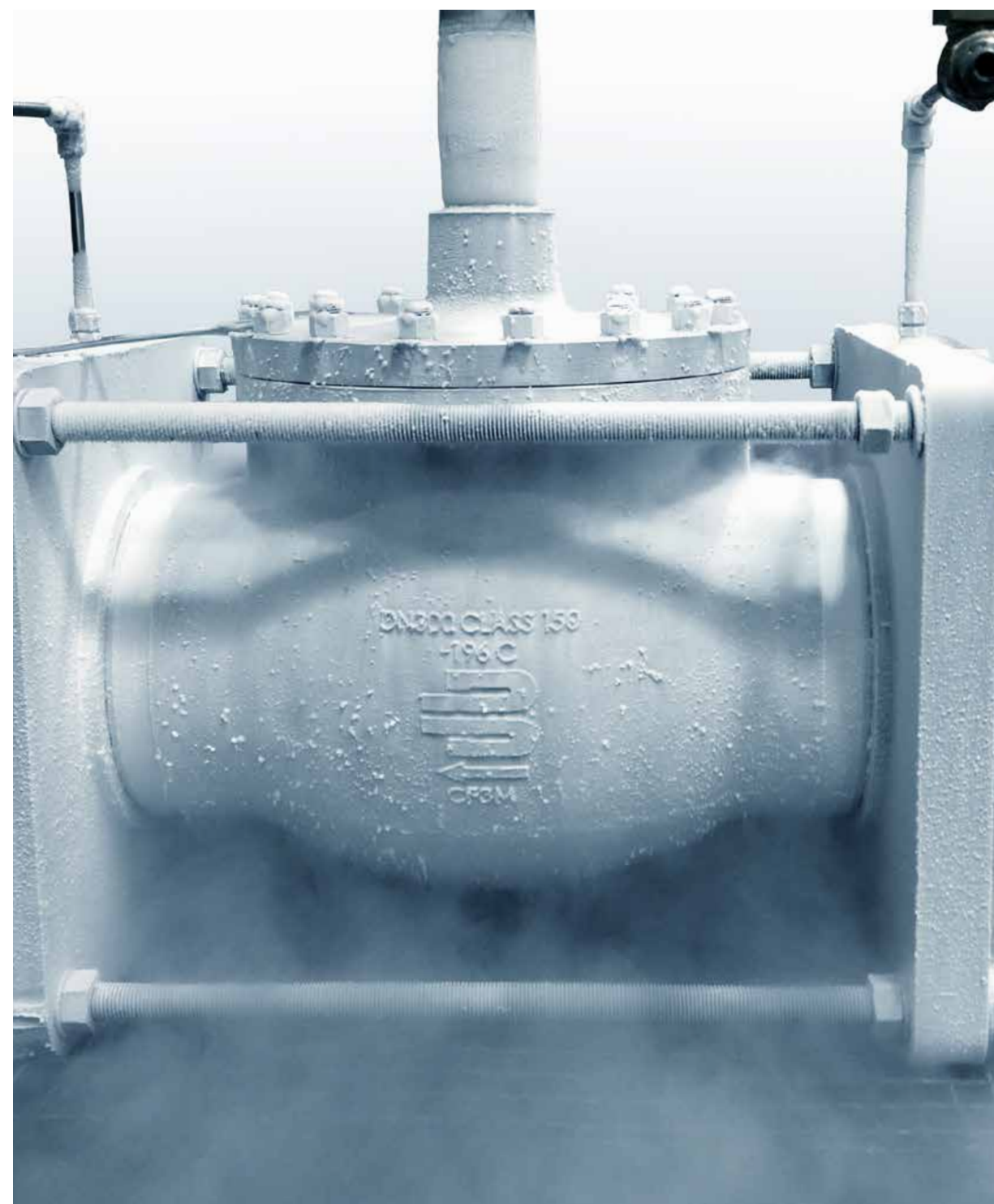
All Parker Bestobell valves are subject to stringent cryogenic testing.

CLEANING - NO OIL OR GREASE

To check for the presence of oil and grease, each valve is subjected to a cleaning process specifically developed for the valve, regardless of its later use. Cleaning results are regularly monitored and are subject to the requirements of the European Standard EN 12300 "Purity for cryogenic operation".

TRAINING

Parker Bestobell's technical training courses provide hands-on experience working with valves, their maintenance and associated equipment.



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