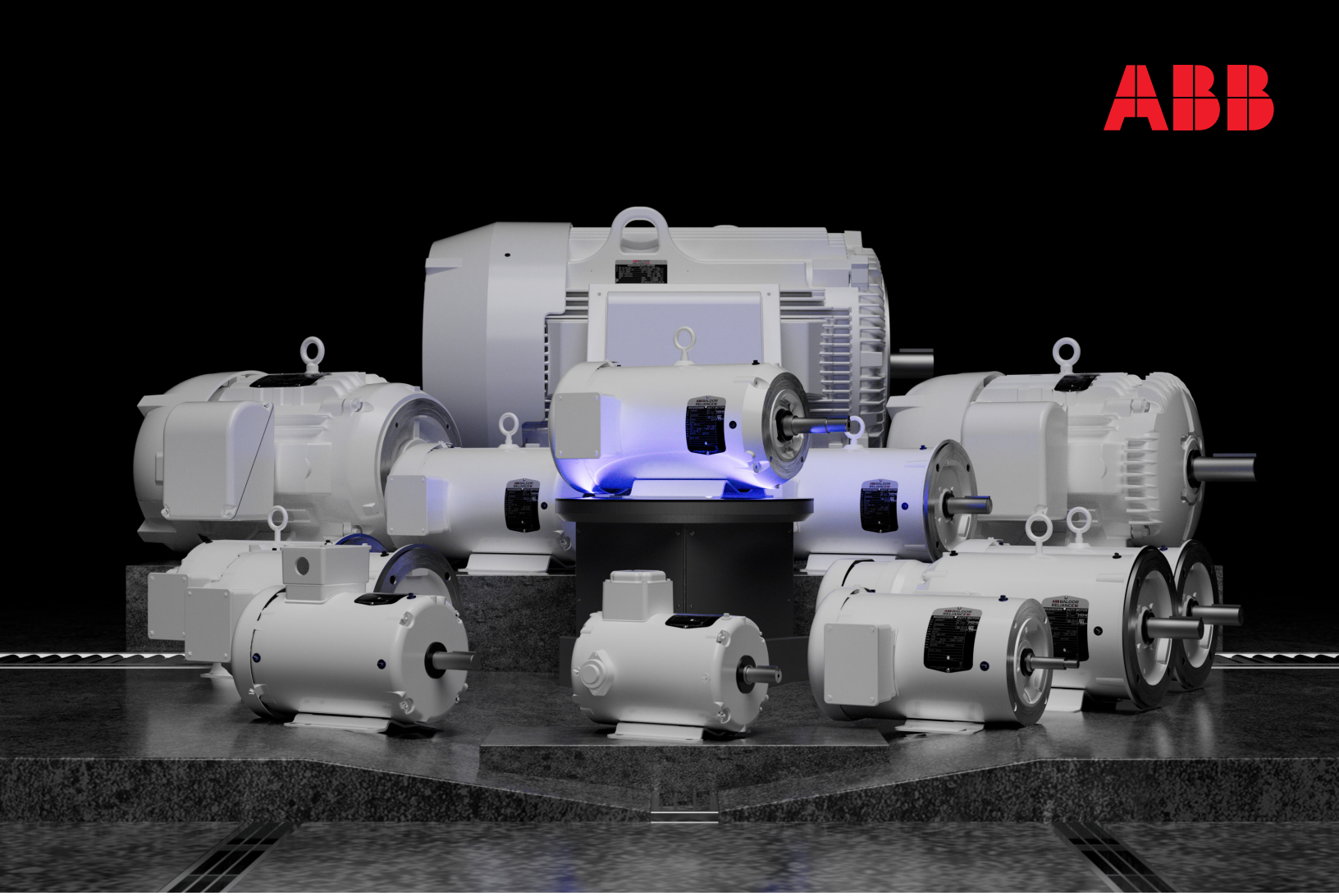


PRODUCT BROCHURE

THE EVOLUTION OF ABB BALDOR RELIANCE® WASHDOWN MOTORS

40 years of innovation

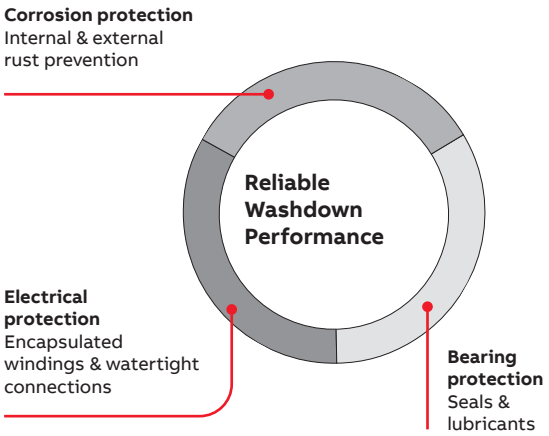
ABB BALDOR RELIANCE

ENGINEERED TO OUTRUN

CREATION OF THE WASHDOWN MOTOR

The creation of the first washdown electric motor was a major turning point in increasing the life of electric motors used in wet and humid applications. This journey began in the 1980s. The decade of hair bands and neon spandex was also fraught with motor failure after motor failure due to water ingress. Customers with applications in wet environments were searching for a motor that could stand up to these harsh applications and keep their manufacturing facility running. It was then that the challenge of building a motor specifically designed for wet and humid applications was accepted.





A team of engineers and designers from what was then Baldor Electric Company got together and looked at the failure modes these motors were experiencing. There were failures from corrosion on the external and internal components of the motor and failures from the windings shorting out due to excessive water ingress. There were also several bearing failures from grease contamination due to water. The team took each failure mode and asked themselves what features could be changed and what components could be upgraded on the outside and inside of the motor to stop the failures and keep the motors running in the customers' applications.

The development of ABB Baldor-Reliance washdown motors marks a pivotal advancement in electric motor technology, specifically tailored for wet, humid and sanitation-critical environments.

THE CHALLENGE: KEEPING WATER AND CORROSION OUT

Battling corrosion

The first failure mode the team addressed was corrosion. To stop corrosion on the external components of these motors, the team upgraded the external hardware and shaft extension to 300 series stainless steel, substantially reducing the risk of corrosion on these components. The team also upgraded the paint system to a white two-part epoxy that was five times more resistant to chipping than a standard paint system. To mitigate the risk of corrosion on the internal components of the motors, the team coated the rotor with a two-part epoxy primer. These value-added features ensured that the exterior and interior components of the motors were protected to provide a long corrosion-free life.



WINDINGS AND BEARINGS

Protect the winding

The team then turned their attention to protecting the motor windings from shorting out due to water ingress. They decided the best way to achieve this was to stop the water from getting into the motor in the first place. The two main areas of entry where water can get into a motor are through the conduit box/frame junction and where the shaft extension exits the endplate. The team started with the conduit box gaskets. They replaced the original paper or cork gaskets with gaskets made from neoprene to ensure a watertight seal. The team then focused on stopping water that might get into the motor between the motor shaft extension and the endplate. They enhanced this design by adding a contact lip seal and v-ring slinger to the shaft end of the motor. The case of the lip seal presses into the drive endplate, and the sealing edge of the lip seal rides on a machined surface on the shaft extension. The v-ring slinger rides on the shaft and rotates to sling water and contaminants away from the shaft opening. The lip seal and v-ring slinger work together to provide a watertight seal, mitigating the risk of water getting into the motor.



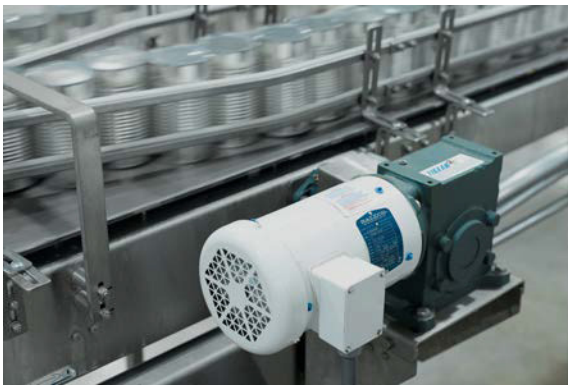
Protect the bearings

The last failure mode the team needed to address was bearing failures. The standard bearing in most general-purpose motors is an open design, which means there is nothing protecting the components of the bearing (grease, cage and balls) from external contaminants other than being housed inside of the motor endplates. In most general-purpose applications, this system is adequate and provides all the protection the bearing needs to operate effectively for the life of the motor. However, in a washdown application, the team decided to add an extra layer of protection by changing out the standard open bearings with double-sealed bearings. These bearings have an integral seal on each side of the bearing that protects the grease from contamination. This enhancement ensures that the bearings of the washdown motors are protected from water and contamination to ensure that the motor will be able to stay in operation without bearing failures, providing a long maintenance-free life.

FOUR DECADES OF WASHDOWN INNOVATION

1986: White washdown motor
After the team had addressed the failure modes and added enhanced features, the white washdown motor was born. The inaugural washdown model was designed explicitly for wet environments, offering corrosion resistance, energy efficiency and easy maintenance. It featured stainless steel hardware, epoxy-coated rotors and double-sealed bearings. ABB Baldor-Reliance white washdown motors became the industry standard for washdown applications. Since its introduction the white washdown motor has become the go-to motor for any application in a wet or humid environment. However, that is not the end of the story. As the food and beverage industry has evolved over the past 40 years and rules and regulations have changed, the needs of the industry have also changed. At first, the focus was just on keeping the motor running in wet and humid applications, but now the focus is keeping the motors running while also keeping the food supply safe and free of bacteria or other contamination.

1995: Paint-free motor
The next motor that was developed in the washdown motor line was the paint-free motor, designed for applications requiring the use of cleaning solutions and for light washdowns that could potentially compromise the surface of a painted motor. With no paint to chip or peel, it provides long-lasting, reliable performance in industries like food processing and pharmaceuticals or in any application where a harsh non-food contact application may compromise the finish of a painted motor. Its robust design boasts a 300-series stainless-steel frame, motor base, shaft and hardware, while the endplates are ball-burnished aluminum. Paint-free motors are also equipped with a rotating noncontact labyrinth seal on the shaft end for IP55 watertightness to ensure the motor will Provide reliable operation in a non-food-contact application.


White Washdown


Paint-free

FOUR DECADES OF WASHDOWN INNOVATION

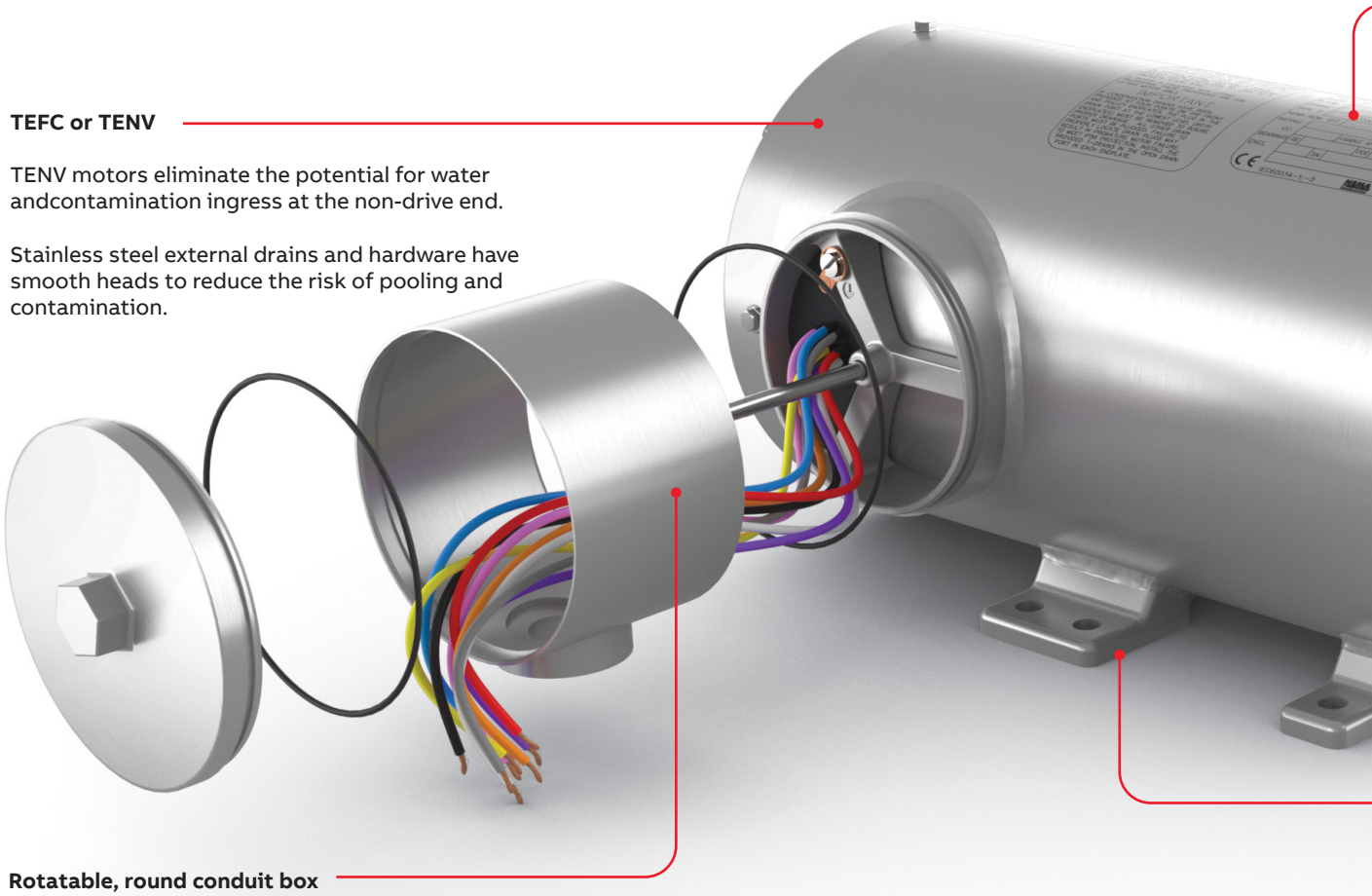
2001: All-stainless motor

In 2001, new improvements in motor design were introduced. With the issues of durability, corrosion and contaminant inhibition having been addressed, the focus again shifted; this time to making a motor that was easier to clean and sanitize. At this point, the engineering group started investigating stainless steel as the main material. The paint-free motor already had a stainless-steel frame, motor base, shaft, hardware and shaft extension, so the engineers started with that design as a base and took it to the next level, thus creating the first fully encapsulated “all-stainless” motor in the washdown product family. Stainless steel motors are highly resistant to corrosion and built for food contact zones - impervious to rust and deterioration caused by caustic sanitizing and featuring labyrinth seals both the drive end and opposite drive end for IP56 water ingress protection.

TEFC or TENV

TENV motors eliminate the potential for water andcontamination ingress at the non-drive end.

Stainless steel external drains and hardware have smooth heads to reduce the risk of pooling and contamination.



Rotatable, round conduit box

Our 3-piece rotatable conduit box for three phase motors offers flexibility and safety for lead connection orientation. Waterproof lead connections come standard with every motor. Being round allows for water and debris to easily shed from the motor.

2017 Food Safe motor

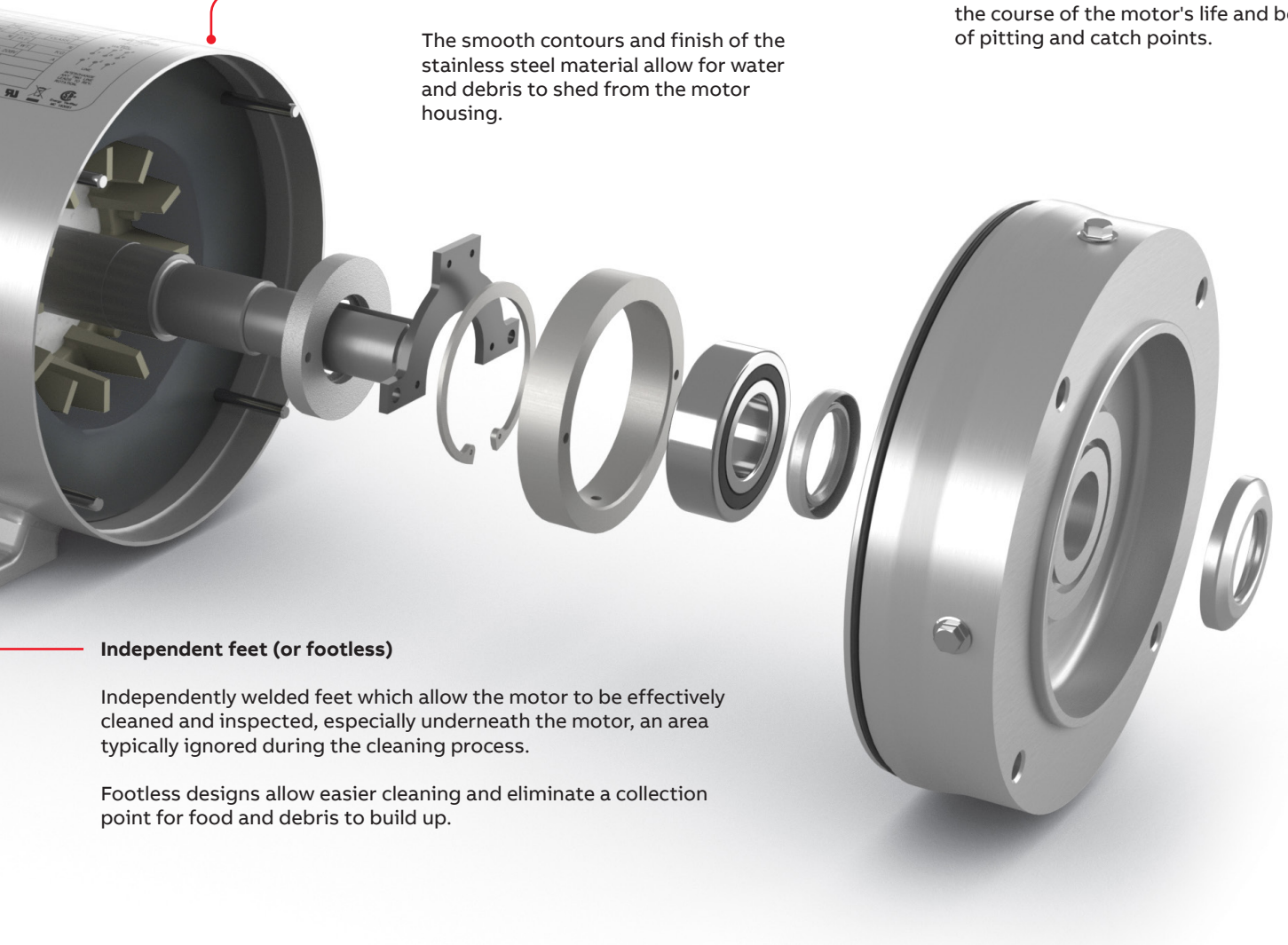
As requirements changed over the years and clean-in-place systems have been developed to sanitize electric motors and equipment in food and beverage manufacturing facilities, the demand for an IP69-rated motor increased. This need led to the development of the Food Safe motor. These motors represented the next major advancement of the food and beverage industry, designed for food processing applications where reliability is of utmost importance in an intense, caustic cleaning environment. The windings are totally encapsulated all the way into the conduit box to ensure they are protected from any condensation that may collect inside the motor. Advanced sealing - including an internal lip seal and external axial face seal - enables these motors to achieve IP69 protection against high-pressure, high-temperature washdowns, maximizing motor life in demanding sanitary environments. Food Safe motors incorporate independent, welded feet for ease of cleaning and inspection and are equipped with laser-marked nameplates for durability and compliance.

Laser marked nameplate

We've fine-tuned how to properly mark motor information to make it legible over the course of the motor's life and be free of pitting and catch points.

Smooth contours and finish

The smooth contours and finish of the stainless steel material allow for water and debris to shed from the motor housing.



Independent feet (or footless)

Independently welded feet which allow the motor to be effectively cleaned and inspected, especially underneath the motor, an area typically ignored during the cleaning process.

Footless designs allow easier cleaning and eliminate a collection point for food and debris to build up.

FOUR DECADES OF WASHDOWN INNOVATION

2020: Cast-iron washdown features motor
ABB Baldor-Reliance white washdown features motors emphasize rugged cast-iron construction for durability and achieve higher horsepower ratings than rolled steel. They include stainless-steel shaft extensions and hardware for toughness and performance and are coated with lasting white epoxy for corrosion resistance. White washdown features motors are built for harsh environments, delivering corrosion resistance, energy efficiency and easy maintenance. They provide reliable, long-lasting performance in washdown environments and are suitable for a variety of industries, including food processing, pharmaceuticals, water treatment and more.

2022: Food Safe stainless steel shaft-grounded motor
Fully encapsulated motor featuring 300-series stainless steel construction, IP69 water ingress protection and integrated shaft grounding to prevent electrical bearing fluting from variable speed drives.

2024: Food Safe stainless steel three-lead motor
Food safe stainless steel motors with three-lead electrical connections deliver a superior experience for food and beverage processing operations. The motor is engineered to simplify installation, enhance reliability and improve workplace safety - all while seamlessly integrating with existing 460V systems. The optimized design reduces installation time and simplifies the setup process. By minimizing the number of leads, the risk of connection errors decreases, resulting in greater reliability with fewer interruptions.

2025: Enhanced Food Safe Feather Picker motor
The extension of the ABB Baldor-Reliance Food Safe feather picker motor family added a purpose-built 3-horsepower motor in a NEMA 145 frame, designed to fit tight spaces. This motor is engineered to simplify installation, enhance reliability and improve workplace safety - all while seamlessly integrating with existing 230 or 460V systems.

2025: Food Safe SP5+
The ABB Baldor-Reliance Food Safe SP5+ is the world's first IP69 ultra-premium efficient motor. Engineered for seamless inverter duty operation with advanced bearing protection, it utilizes cutting-edge rotor technology to achieve IE5 performance, reducing energy costs and supporting sustainability goals. Advanced rotor technology optimizes performance, lowering energy consumption and helping facilities exceed present efficiency standards. Food Safe SP5+, with the use of a required variable speed drive, meets or exceeds the IE5 efficiency level.

2026: White washdown powers up
ABB added more muscle to its proven white washdown cast-iron portfolio, introducing three new power ratings up to 150 Hp. The expanded lineup pairs washdown-ready durability with NEMA Premium 4® (IE4) efficiency - delivering the power, reliability and energy performance demanded by today’s food and beverage operations.

PRODUCT LINE EXPANSION AND MILESTONES



1986
White washdown motor
Stainless steel hardware, shaft extensions, coated rotor with two-part paint and double-sealed bearings.



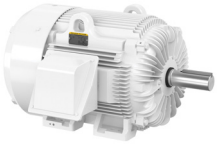
1995
Paint-free motor
Stainless steel frame, motor base, shaft and hardware, ball-burnished aluminum endplates, rotating non-contact labyrinth seal.



2001
300 series stainless steel components, Labyrinth seals on DE and ODE, dual sealed bearings.



2017
Food Safe motor
All stainless-steel construction, totally encapsulated windings, labyrinth seal on drive end and opposite drive end, internal lip seal and an external axial face seal, laser marked nameplate.



2026
100 - 150 Hp White Washdown Features expansion to include 100 - 150 Hp, motors reach NEMA Premium 4 efficiency, helping customers prepare for the upcoming U.S. DOE efficiency mandate while delivering proven washdown-duty performance.



2025
SP5+ Food Safe variable speed motors deliver the highest efficiency in IP69 washdown environments, reaching IE5+ / NEMA Premium 5 efficiency levels for demanding food processing applications.



2022
Shaft grounding Food Safe motors provide increased reliability in variable speed performance.



2020
Cast-iron washdown motor
Rugged cast iron construction, stainless steel shaft extension and hardware, white epoxy corrosion resistant finish. Available up to 75 Hp.

BUILT TO KEEP EVOLVING

Since the creation of the white washdown motor in the mid-1980s, the ABB Baldor-Reliance line of washdown motors has been on the cutting-edge for wet applications. This full line of motors provides a long, trouble-free life in the harshest washdown applications. ABB Baldor-Reliance washdown motors exemplify continuous innovation driven by evolving industry standards, sanitation protocols and operational challenges.

The design philosophy emphasizes corrosion resistance, water ingress prevention, ease of cleaning and contamination control, ensuring long service life in the most demanding environments. The product line remains at the forefront of food and beverage processing, pharmaceutical and other sanitary applications, with ongoing enhancements to meet future regulatory and operational needs.

Visit ABB.com to see our full line of washdown motors.

Standards referenced include IEC 60529 for ingress-protection classifications and NEMA MG 1 for applicable motor performance and design requirements.

Scan to view more about washdown motors



ABB Motors and Mechanical Inc.
5711 R.S. Boreham, Jr. Street
Fort Smith, AR 72901
Ph: 1.479.646.4711

new.abb.com/motors-generators

© Copyright 2026 ABB. All rights reserved.
Specifications subject to change without notice.

BR485 10.2026