

Food & Beverage Industry



BALDOR[®]
A MEMBER OF THE ABB GROUP

The Industry's Most Preferred

Reliability...Sustainability...Innovative Solutions

Now more than ever, it is vital that food and beverage companies to choose supplier partners that understand your processes and offer a full range of solutions. At Baldor, we understand that all products: electric motors, variable frequency drives and mechanical power transmission products will perform reliably - at maximum efficiency - around the clock. We not only supply these products but also work with customers to improve plant reliability and achieve sustainability goals.

Baldor Electric is your one dependable source for a complete line of value solutions that lower your total cost of ownership:

- Reducing energy consumption
- Increasing equipment uptime
- Eliminating wasteful maintenance
- Reducing on site inventory

We offer the industry leading full line of field proven, energy efficient Baldor•Reliance motors designed specifically for the food and beverage industry. Our Baldor•Dodge washdown duty bearings, high efficient Quantis gearing, Tigear II reducers, couplings, and our Baldor•Maska sheaves and bushings provide excellent operation in both wet and dry applications.

As a member of the ABB group, Baldor and ABB can provide all your product needs including PLCs and robotics for a complete automation system.

Food Safety, Commodity Costs and Competitive Pressures are just a few of the challenges facing Food and Beverage Companies today. With our in-depth understanding of your food and beverage processing needs, Baldor products provide the total value that customers demand and deserve.

BALDOR • RELIANCE

BALDOR • DODGE

BALDOR • MASKA

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$$V_p = \frac{Q_p \times S_p}{C \times T}$$

Q = Quality
C = Cost

S = Service
T = Time

P = Perceived

The Value Formula illustrates the importance of
Quality, Service, Cost and Time
in shaping our customers' perception of Value.



Typical Food and Beverage OPERATION

Environment

Very Wet —————> **Wet**

Meat/Poultry Dairy Fruit/Vegetable Ready to eat/frozen Beverage

Converting

Converting the raw recipe into finished food for packaging by blanching, baking/cooking, chilling, emulsifying, freezing, frying, homogenizing, peeling, pasteurizing and washing.

Cooking/Baking



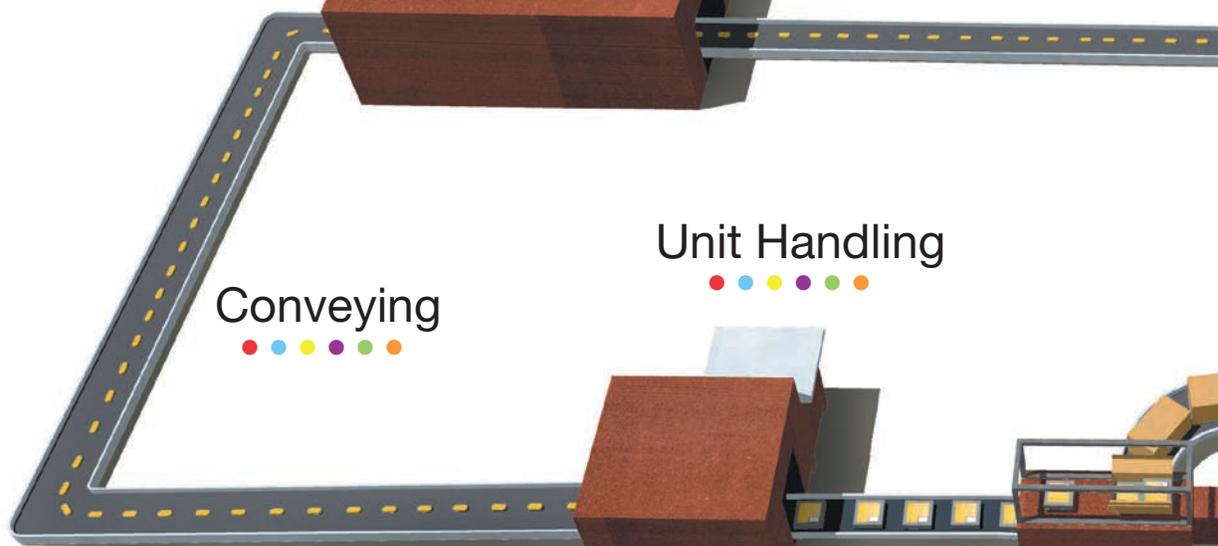
Drying/Chilling



Unit Handling



Conveying



Material Handling

Moving liquids or solids from station-to-station through a pump or conveyor for processing.

Map Legend

-  Motors
-  Gearing
-  Bearings
-  PT Components
-  Drives
-  Generators

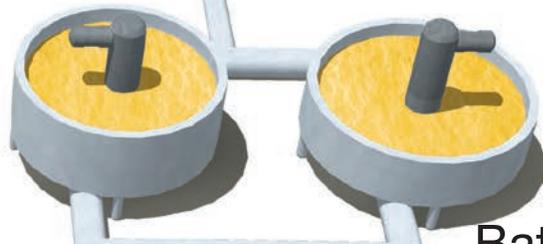
→ **Dry** →

Confectionery Baking cereal/snacks grain/soy sugar/spices

Batch Processing

Preparing the raw ingredients by grinding, mixing, washing, peeling, extruding or blending.

Mixing/
Blending



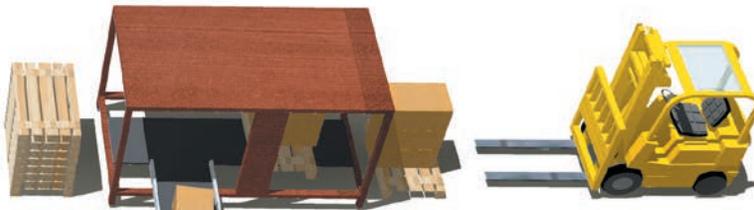
Batching



Storage



Pumping



Palletizing



Packaging



Packaging

Machines that fill, carton, bag, case pack, palletize and shrink wrap for shipment.

Baldor Washdown Duty Motors

The Industry Standard in Food and Beverage

Long before we invested in the people, equipment and material required to produce Baldor•Reliance Washdown Duty motors and drives, we invested our time and attention. We listened to equipment designers, operators and plant maintenance engineers. We learned about their toughest processing applications in poultry, meat, dairy, snack foods and pharmaceuticals. And we took notes when they shared their wish lists of product capabilities and characteristics.

**That was over 25 years ago,
and we're still listening to customer input.**

Today's input: better performance and reliability. These are the inspirations behind Baldor's new and improved Washdown Duty motors. We accomplished this by adding features like an improved paint system, Baldor's Inverter Spike Resistant insulation system, Class F insulation with Class B (or lower) temperature rise, Mobil Polyrex® EM grease, customer-friendly drain plugs, and shaft seals.

Reliability:

- Baldor's Washdown Duty, Paint-Free Washdown and Stainless Washdown are suited for applications requiring high-pressure cleaning with caustic solution. These choices allow you to select the right motor for the amount of protection required for the specific application.

Sustainability:

- Our Super-E® premium efficiency designs meet or exceed NEMA Premium® efficiency levels, provide energy savings, lower temperature rise and increased motor life.
- The autophoretic primer and epoxy paint system on our Washdown Duty motors passes 500 hours in a salt spray booth per ASTM B117.
- Totally Enclosed Non-Ventilated (TENV) Inverter Drive® and Vector Drive® washdown motors are designed and tested for use with adjustable speed controls to ensure maximum performance and adequate cooling over the motor's entire speed range.



Baldor Washdown Duty Motors provide easy clean up for the food & beverage processing industry.

Innovative Solutions:

- The widest variety of Washdown Duty motors available from stock. Motors may be selected with the required voltage, horsepower, speed and mounting for the application. Plus, Baldor offers your choice of permanent magnet DC and Servo motors with Washdown Duty construction.
- If the motor you need is not one we stock, Baldor can build your custom motor in only two weeks! Custom capabilities include mountings, conduit boxes, shaft configurations, special voltages and frequencies.



Baldor Stainless Steel Washdown Duty Motors

Reliability:

- Baldor washdown motors are designed for performance and long life in the high-pressure washdown environment of food processing.

Sustainability:

- Washdown Premium efficient Super-E motors meet or exceed the EISA efficiency levels and lower energy costs. All Baldor Super-E motors are designed for use on drives in variable torque applications.

Innovative Solutions:

- Baldor provides a washdown motor for every application from our white washdown to the Baldor SSE motor. Each motor can be customized to suit the application. The Baldor RPM AC Cooling Tower Direct Drive motor is a motor designed exclusively for the cooling tower industry. This motor utilizes interior permanent magnet rotor technology and is designed to be mechanically interchangeable with many existing cooling tower gearbox designs. The fan mounts directly to the motor. This direct drive arrangement eliminates the entire gearbox and driveshaft torque transmission components.

SSE Super-E® Encapsulated Stainless Motors

Our Stainless Super-E encapsulated washdown duty motors are another example of the best getting better. Baldor's SSE Stainless Super-E is designed to perform longer than any other industrial electric motor available today, in the most corrosive and caustic applications subjected to frequent high-pressure sanitizing.

Stainless Steel Washdown Duty Motors

In applications where additional protection is required against highly corrosive environments, Baldor's Stainless Steel Washdown Duty motors are the answer. Typical applications include outdoor installations, or applications where particularly corrosive agents are being processed or used for washdowns, as in pharmaceuticals. Features include 300 Series stainless steel on all external surfaces, and a labyrinth seal on both ends of the shaft extension to protect motor bearings by rotating and expelling contaminants.

Paint Free Washdown Duty Motors

Baldor "Paint-Free" Washdown Duty motors are designed for applications where use of caustic cleaning solutions and regular high-pressure washdowns may compromise the surface of a painted motor. Features include special processed cast endplates; 300 Series stainless steel motor frame, base, shaft and hardware; and a labyrinth seal on the drive end shaft extension to protect motor bearings by rotating and expelling contaminants. CES and VES motors are Super-E® with NEMA Premium® efficiency and 3-year warranty.



Washdown Bearing Products



Reliability:

- The Dodge E-Z Kleen and Ultra Kleen bearings for the food and beverage industry have an array of features that provide extended life. Dodge is the only manufacturer to offer the patented QuadGuard sealing which consists of a triple-lip seal with a rubberized flinger.

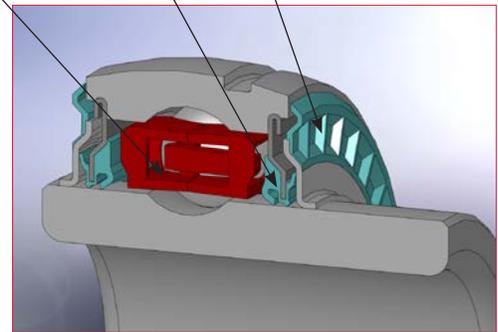
Sustainability:

- Dodge washdown duty bearings reduce downtime and maintenance costs due to premature bearing failure.

Innovative Solutions:

- The exclusive MaxLife cage retains lubrication and prevents washout in wet environments. The MaxLife cage is a two piece design that creates a grease compartment around each of the rolling elements.

Triple Lip Seal
Maxlife Cage
Rubberized Flinger



E-Z Kleen Mounted Ball Bearings

Available in 3/4" to 2" bore sizes, with a polymer or stainless housing and have a corrosion resistant insert. Food grade H1 grease is standard. Three patented locking systems are offered: setscrew, concentric and adapter mount.



Ultra Kleen Mounted Ball Bearings

Available in 3/4" to 2" bore sizes, with a polymer or stainless housing and stainless inserts. The stainless anti-rotation pin prevents inserts from rotating in the housing. The bearings are 100% filled with H1, food grade grease.

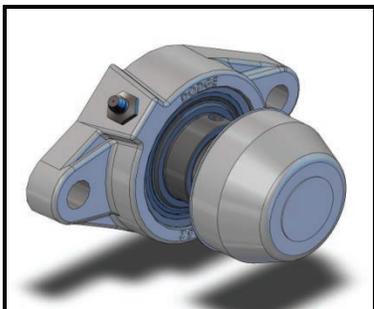
If you are replacing bearings every 4 to 6 weeks, we could possibly save you thousands per year in reduced downtime and maintenance costs.

Extreme Duty Mounted Ball Bearings

Available in another option for demanding applications is the extreme duty bearing that is available with a cast iron housing.

All Dodge E-Z Kleen and Ultra Kleen housings are machined with a groove to accept a snap-on style polymer end cover. Dodge Snap-On End Covers:

- Are durable and easy to install.
- Include a drain hole to prevent moisture from collecting inside the cover.
- Incorporate an additional lip on the mounting surface for a more rigid fit within the housing that creates a better seal and reduces the chances that the cover will get knocked off during operation or high pressure cleaning.
- Provide positive sealing in wet environments and create a safer working condition by covering exposed, rotating shafts.



Washdown Gearing Products

Reliability:

- The Dodge washdown Tigear II and Quantis Gear reducers offer protection features that withstand harsh washdown environments.

Sustainability:

- Dodge Quantis gearing offers cost effective solutions with efficiency up to 94%.

Innovative Solutions:

- The most robust feature set on the market! Both Tigear II and Quantis offer E-Z Kleen and Ultra Kleen versions.

Quantis E-Z Kleen

Quantis E-Z Kleen is offered in five sizes: 38, 68, 88 and 108 for both the ILH, RHB and MSM housing styles. Either the clamp collar or the 3-piece coupled input is available for mounting a c-face motor. Separate inputs also available.

E-Z Kleen Washdown Features

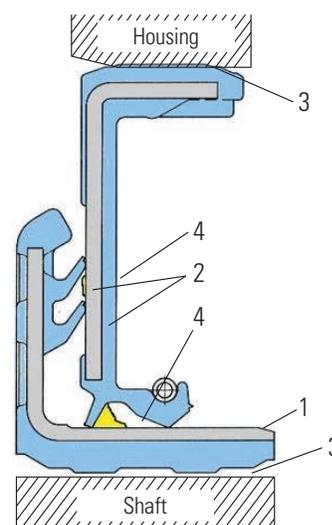
- Unique coating system provides greater than three times the corrosion resistance of standard epoxy paint
- White or Stainless steel color top coat
- XT Harsh Duty Output Seal features nitrile material and a quadra-lip design
- Thin dense nickel composite (TDNC) plated output shafts
- Non-cavity hardware
- Factory filled with mineral, synthetic or Food Grade USDA H-1 lubrication
- Water tight gasket on c-face input between motor and reducer
- One way washdown spring loaded breather

EZ-Kleen Accessories

- TDNC Twin Tapered Bushings (inch or metric)
- E-Z Kleen Tie Rod Kit
- E-Z Kleen Torque Arm Bracket
- E-Z Kleen B5 Flange Output Bracket



XT Harsh Duty Seal



- Protected running surface for shaft seal (1)
- No risk of damage during assembly
- Additional seal-lips against dust (2)
- Separate sealing system prevents damage to the shaft through corrosion and dust
- Rubber coated inner ring and outer ring (3)
- Grease prevents dry run of lip of seals (4)

Washdown Gear Reducers

E-Z Kleen and Ultra Kleen reducers are the best choice for food and beverage industries.

For maximum washdown protection, E-Z Kleen and Ultra Kleen reducers include premium features the competition doesn't offer.

E-Z Kleen reducers are manufactured with a 13-step coating system that provides more than three times the corrosion resistance of standard epoxy-painted units. For "paint free" specifications, Ultra Kleen stainless steel reducers provide ultimate washdown protection.

And, to ensure that their interior is as protected as their exterior, E-Z Kleen and Ultra Kleen reducers have a two-piece, harsh-duty sealing system that protects against high-pressure sprays and sanitizing solutions. The totally enclosed ventless sealing system contains a factory filled H1 Food Grade synthetic lubricant that eliminates the need for routine oil changes.



E-Z Kleen Standard Features

- A 13-step coating system
- Stainless color top coat – White finish also available
- 300 series Stainless Steel solid and hollow output shafts and stainless hardware
- Two-piece harsh duty output seals
- Factory filled H1 food grade synthetic lubrication
- Offered in sizes 13 through 35 in Quill and 3-Piece Coupled input with solid or hollow output configurations

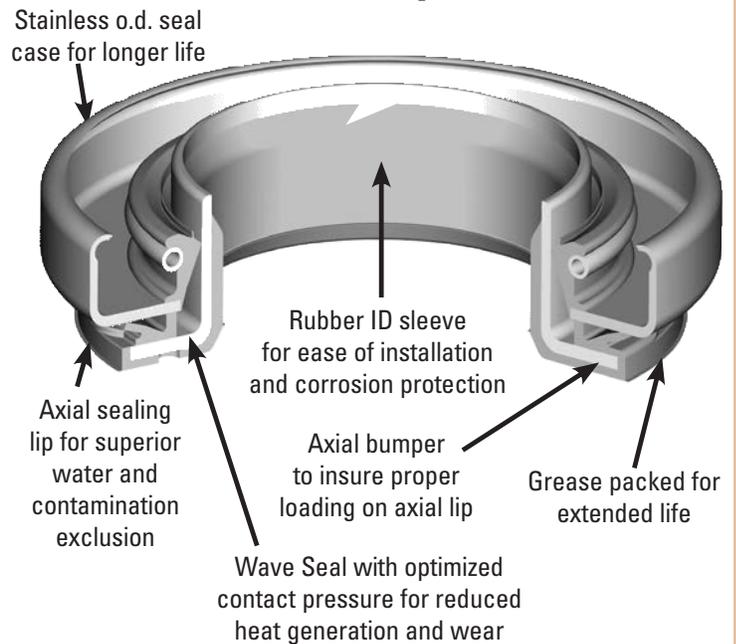
E-Z Kleen Accessories

- Stainless steel Straight Bore bushings
- Stainless steel GRIP TIGHT® bushings (as available)
- E-Z Kleen bolt-on base kit
- E-Z Kleen riser block kit
- E-Z Kleen J-mount kit
- E-Z Kleen output flange kit

Ultra Kleen Standard Features

- Premium 316 stainless steel housings
- Available in solid and hollow output shafts
- 300 series Stainless Steel solid and hollow output shafts and stainless hardware
- Two-piece harsh duty output seals
- Factory filled H1 food grade synthetic lubrication
- Input/Output Configurations:
 - Quill input and solid or hollow output configurations in sizes 17, 21, 23, 26 and 30
 - 3-piece coupled input available in sizes 17, 23, and 30

XT Harsh Duty Seal



Ultra Kleen Accessories

- Stainless-steel Straight Bore bushings
- Stainless steel Grip Tight® bushings (as available)
- Stainless steel bolt-on base kit
- Stainless steel output flange kit

Value Added Services

Local Motor and Drive Inventory

Baldor district offices provide local sales and inventory support for motors, drives and Maska products in 36 locations in North America plus International offices. In addition to the local inventory, Baldor carries over \$100 million in inventory at the Fort Smith, Arkansas stocking facility.

Dodge Field Sales Engineers

Over 90 local Field Sales Engineers around the US and Canada that provide technical and sales support for all Dodge products.

Industry Solutions Team- Offering Customers Value Solutions

Baldor Electric Company is the only motor, drive and mechanical power transmission manufacturer that have dedicated Industry Solutions Teams that serve our key industries. The Food, Beverage and Pharmaceutical Team is comprised of engineers that are experts in their field and know the critical processes. Our mission is to provide industry and technical expertise that improve processes and lower total operating costs.

Industry Solution Teams provide the following services:

- Industry Application Solutions (IAS) - the teams will evaluate the problem applications and offer solutions that provide longer life and reduce operating costs.
- System/Asset Optimization - the team can provide system optimization studies for motor and drive applications.
- Reduced Operating Costs - from premium efficient motors to high efficient gearing, the team offers solutions that lower the total operating costs.
- Specification Support - the team can assist customers in writing their technical specifications that outline the minimum requirements for motors, drives, bearings and gearing.
- Product and Industry Application Solution Training - the team provides on site training for new products and maintenance.
- Teardown/Root Cause Failure Analysis - for repeated failures, the team offers a complete forensic teardown of failed products to determine the root cause of failure.

Baldor, A Member of the ABB Group

Baldor and ABB can provide all your product needs including PLC's and robotics for a complete system.



Installed Base Evaluation Team

Installed Based Evaluation Team

Identifying Opportunities to Improve Energy Efficiency

Using state of the art data collection equipment and software, Baldor's IBE Team works with plant maintenance personnel to take an accurate account of motors and mechanical products both in operation, and from spare inventory locations. The raw data is then analyzed to produce a comprehensive report for the customer, which not only includes recommendations for immediate actions, but also long term strategies that will result in significant energy savings to favorably impact the customer's bottom line.

IBE Report Includes:

- Detailed list of motors, gearboxes and bearings in service and spares
- Potential Energy Savings
- Payback timing
- Repair/Replace comparisons
- Spares Analysis
- Local rebate an incentive program details

In addition, the information collected can help to facilitate a partnership between the end user, distribution, and district offices, so that the end user can rely on outside inventory support and reduce the number of spares on hand. An IBE is also a proactive way for companies to display that they are environmentally focused on reducing their carbon footprint through energy conservation.

Benefits of an IBE:

- Energy Savings
- Better understanding of equipment currently in service
- Framework for motor management program
- Improved uptime through better motor
- Simplifies purchasing and Inventory management
- Consolidation of redundant vendors/part numbers

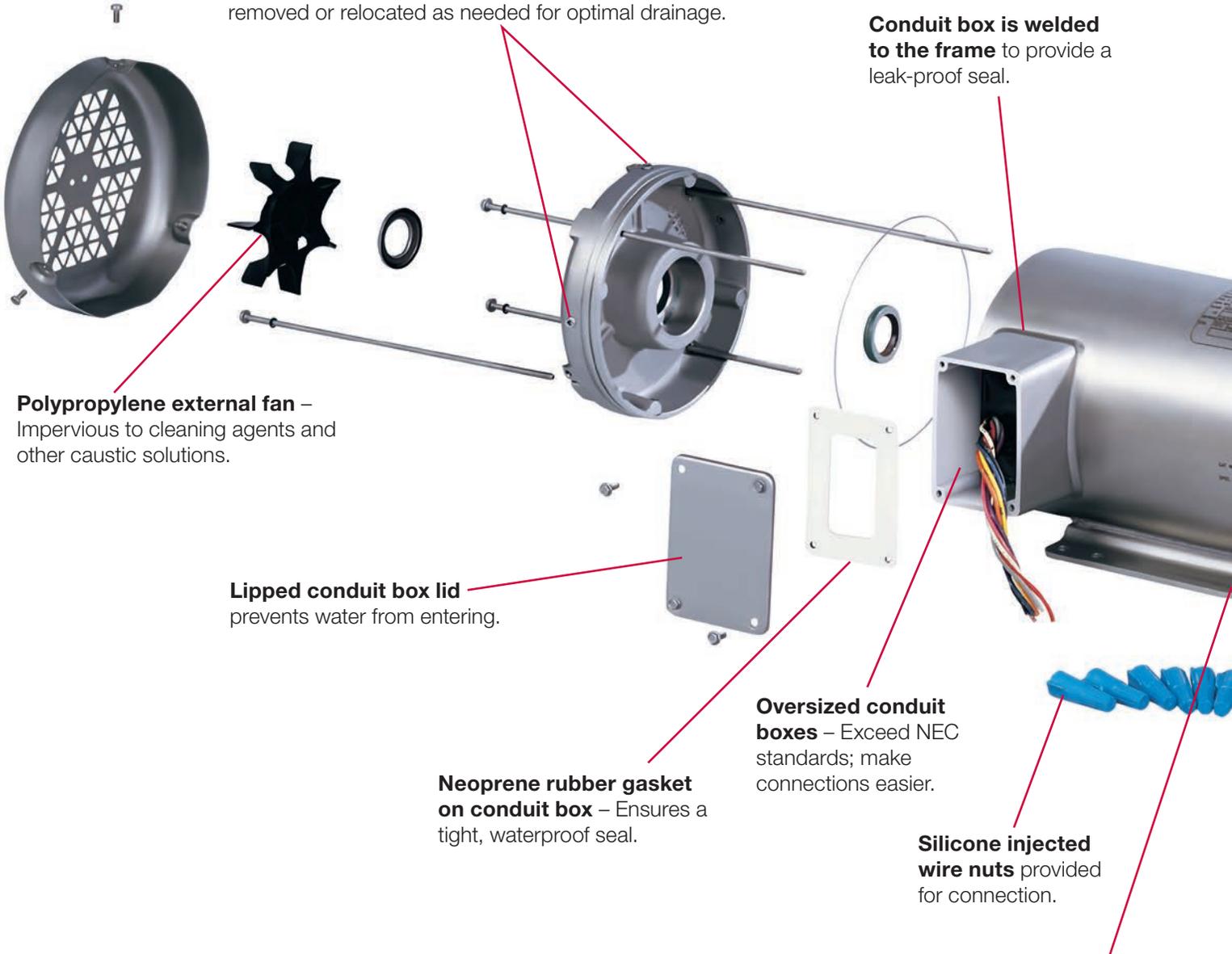


SSE Stainless Steel Super-E[®] Motor from BALDOR

All stainless steel construction including housing, conduit box and cover, base, fan cover and endplates. Impervious to rust and deterioration caused by high pressure caustic sanitizing. Provides longer trouble-free life than conventional motors.

Maintenance-friendly drains – Four condensate drain holes on each end of motor allow for thorough drainage in any mounting position. Stainless screw-in plugs can be removed or relocated as needed for optimal drainage.

Conduit box is welded to the frame to provide a leak-proof seal.



Polypropylene external fan – Impervious to cleaning agents and other caustic solutions.

Lipped conduit box lid prevents water from entering.

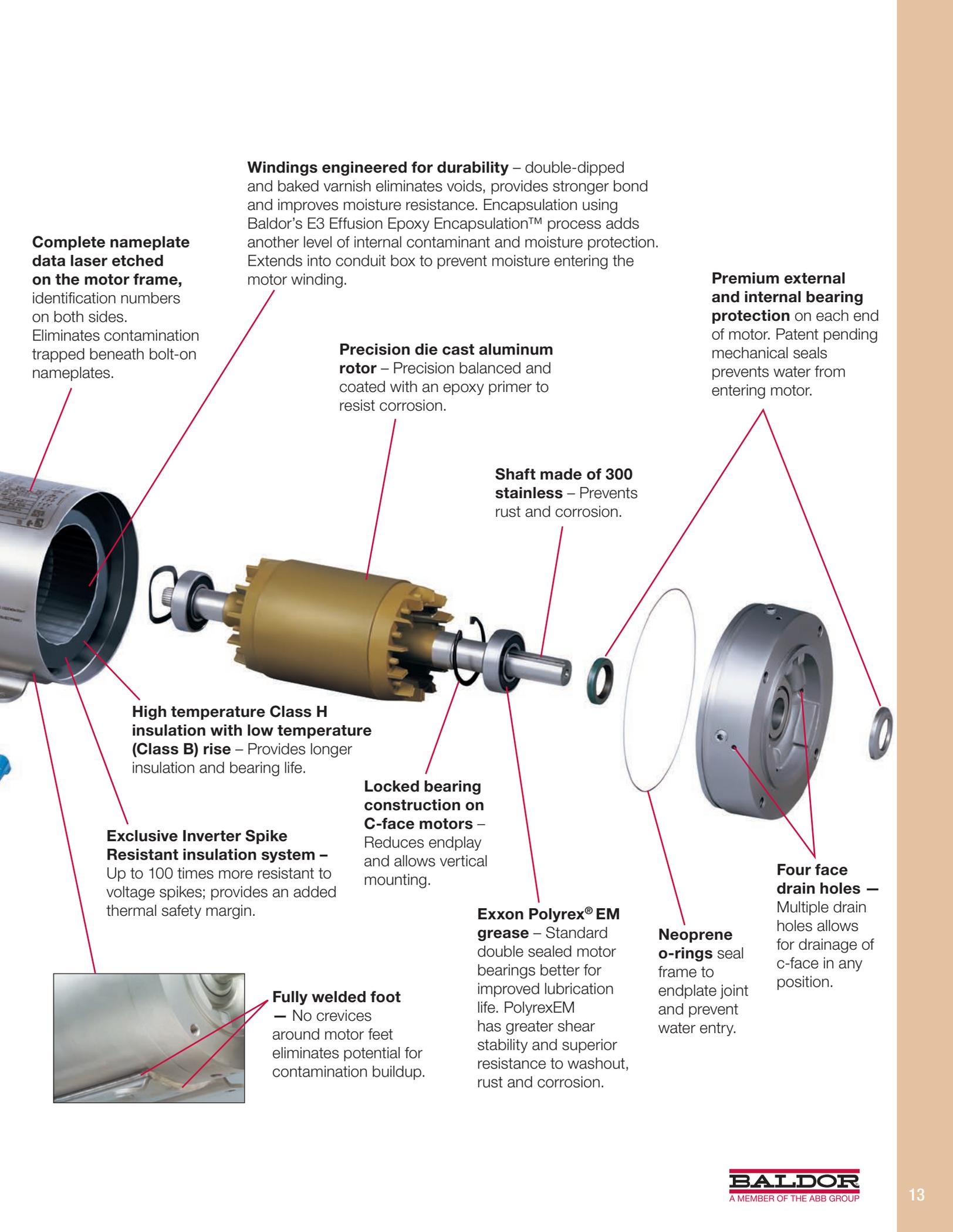
Neoprene rubber gasket on conduit box – Ensures a tight, waterproof seal.

Oversized conduit boxes – Exceed NEC standards; make connections easier.

Silicone injected wire nuts provided for connection.

Multiple foot mounting holes – Makes motor change-out easy.

Super-E[®] design with NEMA Premium[®] efficiency for low electricity use. Approved by UL E46145 and CSA LR2262 files. Complies with CE directives as well as ROHS and WEEE directives.



Complete nameplate data laser etched on the motor frame, identification numbers on both sides. Eliminates contamination trapped beneath bolt-on nameplates.

Windings engineered for durability – double-dipped and baked varnish eliminates voids, provides stronger bond and improves moisture resistance. Encapsulation using Baldor’s E3 Effusion Epoxy Encapsulation™ process adds another level of internal contaminant and moisture protection. Extends into conduit box to prevent moisture entering the motor winding.

Precision die cast aluminum rotor – Precision balanced and coated with an epoxy primer to resist corrosion.

Premium external and internal bearing protection on each end of motor. Patent pending mechanical seals prevents water from entering motor.

Shaft made of 300 stainless – Prevents rust and corrosion.

High temperature Class H insulation with low temperature (Class B) rise – Provides longer insulation and bearing life.

Exclusive Inverter Spike Resistant insulation system – Up to 100 times more resistant to voltage spikes; provides an added thermal safety margin.

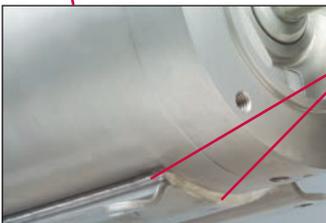
Locked bearing construction on C-face motors – Reduces endplay and allows vertical mounting.

Exxon Polyrex® EM grease – Standard double sealed motor bearings better for improved lubrication life. PolyrexEM has greater shear stability and superior resistance to washout, rust and corrosion.

Neoprene o-rings seal frame to endplate joint and prevent water entry.

Four face drain holes – Multiple drain holes allows for drainage of c-face in any position.

Fully welded foot – No crevices around motor feet eliminates potential for contamination buildup.



MISSION

**"Baldor is to be the best (as determined by our customers) marketers, designers,
and manufacturers of industrial electric motors, mechanical power transmission products,
drives and generator sets."**



P.O. Box 2400, Fort Smith, AR 72902-2400 U.S.A., Ph: (1) 479.646.4711, Fax (1) 479.648.5792, International Fax (1) 479.648.5895