

INDUSTRY

# Food Processing

Proven solutions for washdown applications



## Food processing is vital to the global economy

Food manufacturers are facing ever-increasing challenges such as labor shortages, food safety regulations, technological innovations, increasing costs, and competitive pressures. With the increased need to improve efficiencies and prioritize safety, food processing plants are looking for suppliers that can partner with them to meet these needs.

No matter the process—from mixing to blending, cooking, baking, bottling, or conveying—food manufacturers rely on mechanical power transmission products to perform reliably around the clock. The products used in these processes are exposed to a wide range of tough operating conditions, including harsh, high-pressure sanitary washdowns.



### Your trusted partner

Dodge® offers a comprehensive line of solutions for the food processing industry that are engineered with industry-leading sealing systems and materials to withstand rigorous washdown procedures for long-lasting performance and cleaner, safer operations with less maintenance.

## The average cost per recall is over \$10 million\*

As a public health issue and one of the biggest threats to profitability, food recalls can have a major impact on sales and brand reputation. On average, a food company pays \$10 million in direct costs for a recall, with repercussions far beyond monetary. Food recalls have increased significantly in the past few years, resulting in heightened regulations and significant economic impact for a food manufacturing company. Now more than ever, it is imperative that food processes be as clean, safe, and efficient as possible.

## Aggressive cleaning and sanitation practices aren't just part of the process, but essential to smooth operations and profitability

These processes are extremely tough on equipment. With decades of experience in the food and beverage industry, Dodge has a unique understanding of the issues that impact your productivity and have designed a full range of food-grade products that meet Food and Drug Administration (FDA), United States Department of Agriculture (USDA), European Communities (EC), and European Union (EU) standards for incidental food contact regulations, ensuring they will operate reliably and with less maintenance. To ensure uptime, don't let bearings and gearing be the weak link in your production chain—take a proactive approach with Dodge solutions.

\*SOURCE: food-safety.com





## The right equipment for the operating environment

Dodge understands that a food producer's top priority is finding the safest, most cost-effective design that provides the best longevity for their equipment and processes. However, the best solution is not as simple as choosing the appropriate horsepower, speed, or torque and specifying based on price point. The answer goes beyond the initial purchase price to an evaluation of specific needs in conjunction with the total cost of ownership.

Selecting and installing the right gear reducer and bearing combination based on the operating environment is paramount to ensuring your process runs without interruption and keeps your operation clean and safe.

Following the National Sanitation Foundation (NSF) guidelines, food equipment standards are designed in a manner that classifies different surfaces or areas of equipment into defined zones of exposure.



### Food zone

Direct contact with food products is normal and expected. Components must be able to withstand aggressive, high pressure, high temperature cleaning methods.



### Splash zone

Direct contact with food products is not expected with the potential that liquids used in processing or cleaning may come into contact with the equipment. Equipment must be able to withstand regular or frequent washdowns.



### Dry zone

Equipment is typically located outside of a normal washdown area where direct contact with food products during normal operation is not expected.









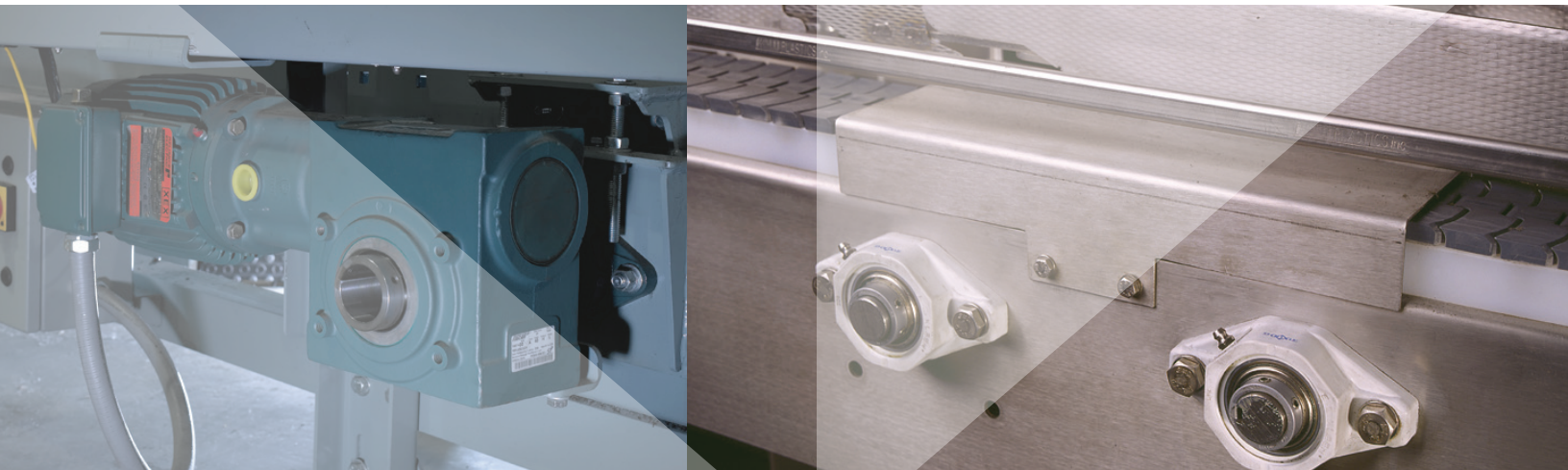
# The best solutions the industry has to offer

Since 1878, Dodge mechanical power transmission products have been synonymous with the best the industry has to offer. These products have handled the toughest applications, providing the lowest total cost of ownership to both food equipment manufacturers and end-users.

Dodge products come in a variety of designs to fit the many needs in your facility. From FoodSafe™ to Ultra Klean® to E-Z Klean®, the extensive Dodge offering allows you to select the right product for your specific application. Regardless of the environment, Dodge has a solution to keep your mechanical power transmission components in service longer, with fewer failures, no matter how harsh the conditions.

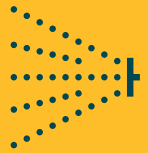


	Food zone	Splash zone	Dry zone
Mounted bearings	 FoodSafe	 Ultra Klean/E-Z Klean	 Standard
Gearing	 FoodSafe	 E-Z Klean	 Standard



# FoodSafe mounted bearing and gearing solutions

Food zone



Our FoodSafe products are engineered to meet or exceed stringent food safety guidelines and recommendations. These sanitary design principles ensure that our products provide the best solution for all harsh washdown conditions.

A critical factor that influences performance and product life is the quality of the food contact surface. All FoodSafe products are constructed of stainless steel that can withstand caustic, high pressure, and high temperature sanitary washdown conditions.

## Housing

Smooth, solid housings eliminate harbor points for bacterial growth, ensuring a safer, cleaner environment



## Stainless-steel construction

Constructed of stainless steel for superior corrosion-resistance, providing maximum performance to withstand clean-in-place procedures

## Maintenance-free design

Lubricated for life and sealed to prevent contamination from water ingress and debris



## Durable seals

Engineered with the most durable seals on the market to prevent water ingress and protect from external contamination, ensuring cleaner operations and longer product life

## Identification

Laser-marked with product identification, eliminating harbor points to reduce risk of recall and ensuring legibility throughout the product's life

## H1 food-grade lubricant

Lubricated for life with H1 food-grade lubricant to comply with all FDA requirements

## FoodSafe options

### Mounted ball bearings

- Set screw locking mechanism in bore sizes 1/2 in—2 in (20 mm—50 mm)
- Standard and stand-off housing with pillow block, flange, tapped base, and take-up housing styles

### Tigear®-2

- Available in sizes 13—35 with quill-style or three-piece coupled inputs
- Solid and hollow output configurations

### Quantis®

- Offered in a right-angle bevel (RHB) configuration
- Available in sizes 38 and 48 with solid-shaft, straight-hollow bore, and Q-Loc keyless bushed shaft-mount outputs





## 1-year guarantee against failure due to water ingress

We are confident in our testing and simulations of real-life, clean-in-place procedures and have backed FoodSafe products with an unprecedented 1-year performance guarantee against failures due to water ingress, going beyond traditional warranties that only cover materials and workmanship.

## Tested at seven times the recommended water pressure

As the recommended standard for washdown environments, an IP69 rating indicates products that are protected against high-temperature and high-pressure spray at close proximity. Industry guidelines recommend limiting cleaning pressures to 200 psi—our testing was conducted at seven times this pressure to demonstrate the robustness of our sealing system.

### IP69 TEST PROCEDURES

- 176 °F (80 °C)
- 1160—1450 psi (80—100 bars)
- Distance: 4—6 in (10—15 cm)
- Flow rate: 4 gpm (15 lpm)
- Rotational speed: 5 rpm
- Four spray positions; 0, 30, 60, 90 degrees
- 30 seconds per position



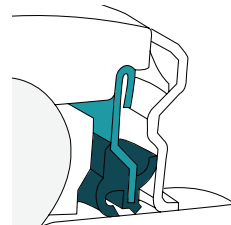
## Setting the standard for mounted bearings in washdown environments



Proprietary KleenTec coating for unmatched insert corrosion resistance



Patented Maxlife cage to prevent grease washout



Hydro Armor sealing system for superior contamination protection

# Ultra Kleen mounted bearing solutions

Our high-performance Ultra Kleen solutions are engineered for reliable lubrication protection to extend product life in challenging wet and corrosive environments, taking your operation's cleanability to the next level. Built with innovative features, the range of mounted ball bearing solutions is an advantageous addition to your food processing operations to improve efficiency and minimize risk.

Splash zone



## Set screw locking mechanism

Utilizes a 65-degree set screw angle to maximize holding power while minimizing stress on the inner ring for long-lasting performance

## Food-grade lubricant

Filled 100 percent with H1 food-grade grease, suitable for incidental food contact and meeting Kosher, Pareve, and Halal requirements

## Housing options

Anti-microbial polymer and smooth, stainless steel housing options are designed to minimize bacteria harbor points and mitigate corrosion from harsh cleaning agents

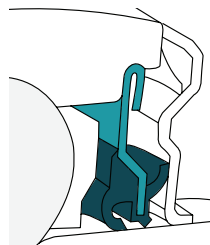
## Stainless-steel insert

Provides a high load-carrying capacity and extended product life in environments where coated inserts fail



## Patented Maxlife cage

Creates a grease compartment around each ball element for constant grease contact to prevent wear, friction that causes heat, and washout



## Hydro Armor sealing system

Protects the internal rotating elements from water ingress and is mechanically retained to prevent seal blowout

## Ultra Kleen options

### Mounted ball bearings

- Set screw locking mechanism in bore sizes 3/4 in—2 in (20 mm—50 mm)
- Anti-microbial polymer and stainless-steel housing materials with pillow block, flange, tapped base, and take-up housing styles





## E-Z Kleen mounted bearing and gearing solutions

The original Dodge washdown solution, E-Z Kleen mounted bearings and gearing products are optimized to withstand environments with required cleaning and sanitation practices. Featuring corrosion-resistant designs, the wide range of products provides robust protection against contamination and worry-free operation in a variety of food handling and packaging applications.

Splash zone



### Housing options

Corrosion-resistant housings and components for protection from contamination and rigorous washdown procedures



### Food-grade lubricant

Factory-filled with H1 food-grade lubricant to comply with all FDA requirements

### Durable seals

Robust sealing systems to prevent grease washout for increased reliability

## E-Z Kleen options

### Mounted ball bearings

- Set screw, D-Lok, and Grip Tight® locking mechanism options in bore sizes 3/4 in—2 in (20 mm—50 mm)
- Anti-microbial polymer and stainless-steel housing materials with pillow block, flange, tapped base, and take-up housing styles
- Plated carbon-steel inner and outer rings for corrosion-resistance
- Hydro Armor sealing system for superior contamination protection
- Patented Maxlife cage to prevent grease washout

### Quantis

- In-line helical (ILH), right-angle bevel (RHB), and motorized shaft mount (MSM) configurations
- NEMA-dimensioned clamp collar or three-piece coupled options

### Tigear-2

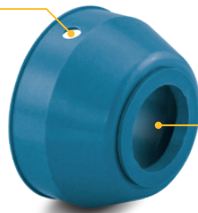
- Quill style or three-piece coupled NEMA C-face inputs
- Solid or hollow output configurations

## The final touch to a complete solution

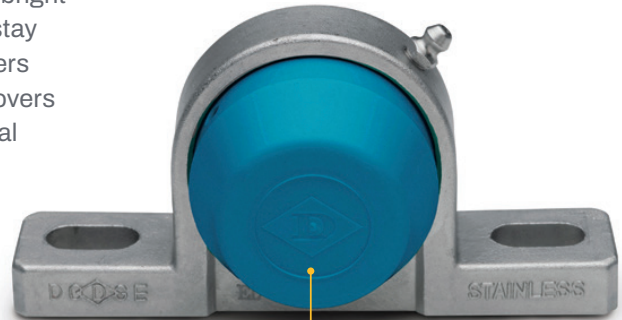
### Metal-detectable end covers for rotating shafts

Improve safety and lower risk of recall with Dodge bright blue, metal-detectable end covers—designed to stay in place during washdowns. Highly visible to workers and made from a polyethylene material, the end covers contain stainless-steel particles for X-ray and metal detection in the unlikely event they should be damaged and enter into the product.

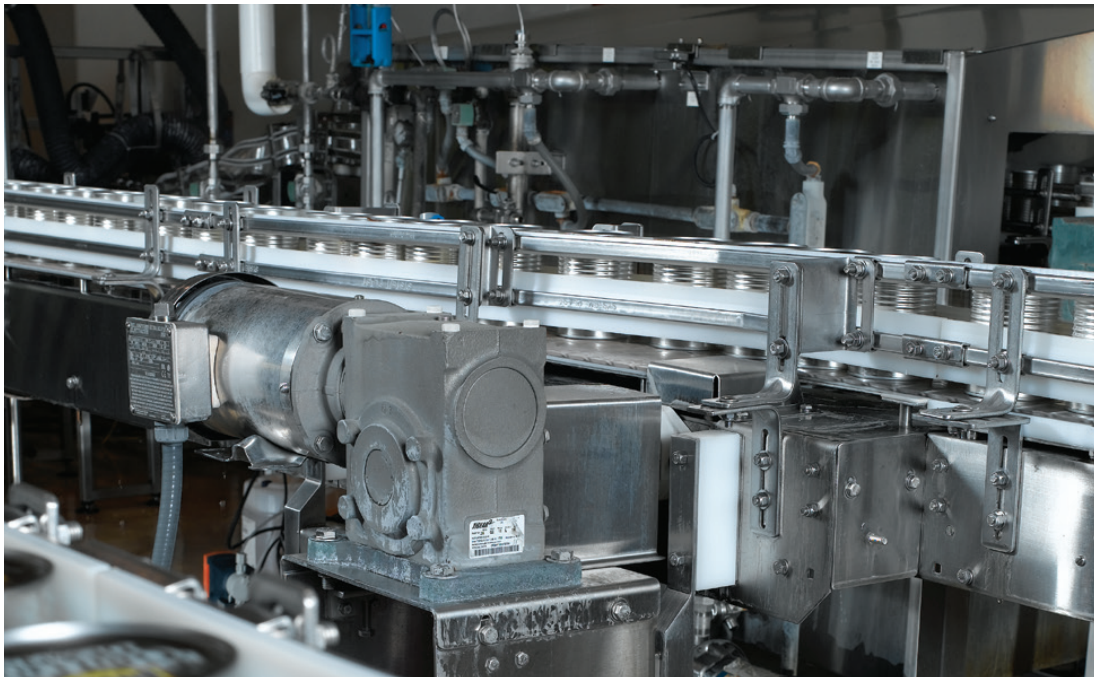
Drain hole



Open end option



Closed end option



PT Wizard

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## Engineered for savings, proven in performance



**\$127,800**

### Glass lines and empty jar conveyors cost savings

A leading pickle manufacturer had 179 bearings on five glass lines and empty jar conveyors that need to be regreased every 8 weeks. The capper lines that place and screw lids onto pickle jars are constantly exposed to pickle brine and seeds and require frequent washdowns. By replacing the existing competitive bearings with Dodge FoodSafe mounted ball bearings, they have eliminated regreasing maintenance and saved \$127,800 annually. Designed to be maintenance-free, FoodSafe bearings are filled with H1 food-grade lubricant and completely sealed to prevent contamination from water ingress and debris. The maintenance manager has since requested that every bearing in the facility be interchanged to FoodSafe and is transitioning their gearing to FoodSafe Quantis as well.

**\$111,600**

### Poultry conveyor cost savings

A large poultry processing plant had to grease 1,000 bearings once every week. To streamline maintenance operations, they replaced the existing bearings with Dodge FoodSafe mounted ball bearings and have eliminated the time and cost of manual greasing. FoodSafe bearings are IP69 rated and have a 1-year performance guarantee against failure due to water ingress. The Dodge solution lasts longer than the existing bearings and does not need to be regreased. The plant is experiencing an annual cost savings of \$111,600 from switching to FoodSafe mounted ball bearings.



**\$76,237**

### Crumb conveyor cost savings

A pie manufacturer was experiencing shaft walk out on their crumb conveyor. The existing OEM-supplied four-bolt flange polymer set screw bearing was not holding the shaft in place, and the shaft would have to be re-centered up to three times per week and completely walk out once per month—leading to costly downtime. To mitigate unplanned downtime, the manufacturer replaced the existing bearing with a D-Lok E-Z Kleen four-bolt flange bearing. The plant has not experienced any shaft walk out since installing the D-Lok E-Z Kleen bearings and saw an annual savings of \$76,237.



**\$25,000**

### Frozen food conveyor cost savings

A large frozen food processor was experiencing spalling and mounted bearing failure on their frozen food conveyor. They purchased 150 OPTIFY™ Performance Sensors and three OPTIFY Gateways to receive early detection of possible bearing failures. After the initial bearing failure, the sensors indicated excessive vibration and it was discovered that the chain coupling with worn sprocket teeth was the root cause. Replacing the sprocket helped prevent future mounted bearing failures, resulting in \$25,000 of initial savings that will increase over time.







## Connected technologies to work smarter, not harder

OPTIFY, our portfolio of Industrial Internet of Things (IIoT) solutions, allows you to easily monitor the overall health of your power transmission equipment and gain powerful insights—letting you know when maintenance is needed before it's too late.



### Platform

Take the guesswork out of work with the free OPTIFY condition monitoring platform that empowers you with overall health indicators of your assets anytime, anywhere through its web portal or mobile app—providing you with a continuous flow of data for safe, hands-free gathering of measurements.





### Intelli-Lube

The premier automatic, connected lubricator that effortlessly extends the life of your bearings by replacing your manual lubrication process—streamlining maintenance, lowering costs, and improving safety with the right grease, volume, and interval every single time

### Breather

The connected breather solution engineered to eliminate gearbox contamination, allowing you to tap into the power of the OPTIFY platform to remotely monitor breather health—enhancing gearbox reliability and simplifying on-site maintenance



### Performance Sensor

Built on the proven success of Dodge sensors, the specialized wireless sensor remotely captures temperature, vibration, and speed measurements in your mounted bearings, gear reducers, and motors for complete powertrain condition monitoring



Scan to access the **OPTIFY** platform or visit [dodgeoptify.com](https://dodgeoptify.com)



The mobile app is available at:





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