Motion control applications within a washdown environment pose several design concerns to ensure long-term, reliable and safe operation. PBC Linear addresses these concerns by designing linear motion solutions specifically tailored to maintain a sanitary environment; conforming to FDA and 3A standards.

- Corrosion and Chemical Resistant Linear Motion Components
- Impervious Design: Minimizing Cracks and Crevices
- Maintenance-free and Durable
- Simplified Mechanical Assemblies: Facilitating Easy Rinsing

For precise linear motion that promotes clean operation in food processing, packaging and sanitation applications, PBC Linear offers a full selection of technology that eliminate crevices, reduce maintenance and prevent bacteria growth.

LINEAR MOTION SOLUTIONS FOR WASHDOWN APPLICATIONS

PBC LINEAR
A PACIFIC BEARING CO.

6402 E. Rockton Road
Roscoe, IL 61073 USA

For more information visit **www.pbclinear.com** or call 1-800-962-8979

DESIGN CONSIDERATIONS

PBC LINEAR

For Washdown Applications

Problem: **Corrosion and Rust Accumulation**

Certain materials corrode when they are continually or intermittently rinsed with water or other cleaning solutions – causing rust. This leads to performance issues as well as potential contamination concerns within the food processing industry.

Solution: **Use 316 Stainless Steel Products**

Stainless steel delivers optimal chemical and corrosion resistance over its steel and aluminum counterparts. Using 316 grade stainless steel prevents corrosion from industrial cleaning solvents; particularly pitting from chlorides.

One piece stainless steel *Simplicity* bearing

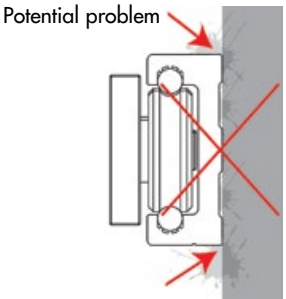
Problem: **Bacterial Build-Up**

When designing for a washdown environment, it is important to consider all areas that will not rinse through and eliminate them. Cracks, crevices and cavities are bacteria hot-spots. Example: Linear bearings with polymer inserts allow bacteria to grow in the space between them.

Two piece bearings may allow dirt & bacteria to build in grooves & crevices

Solution: **Smooth, Flush and Non-Porous Components**

The product's surface should be designed non-porous and flush for easy rinsing without chemical pooling or leftover residue. Also, using bearing seals that are compliant with regulating standards is crucial to ensure no bacteria can accumulate within the product.

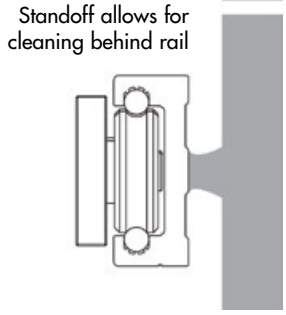


Problem: **Poor Mounting**

Improper mounting of linear motion components can inadvertently create a haven for bacteria and contamination.

Solution: **Design Mounting with Standoffs**

In wash-down applications, PBC Linear employs standoffs that facilitate easy cleaning between the linear guide and mounting surface as well as calculating for rail deflection to ensure reliable and continuous operation.



Important Standards to Consider

When designing for washdown applications, the following regulatory commissions and standards must be addressed.

FDA • The Food and Drug Administration determines the standards for materials that are used in relation to contact with food and food products.

USDA • The United States Department of Agriculture is responsible for the regulations within food agriculture, meat, and poultry processing.

3-A • 3-A SSI is an independent, not-for-profit organization that was created to help set standards and best practices for the equipment and process used in the dairy industry.

LINEAR MOTION PRODUCTS

For Washdown Applications

Round Shaft Technology

PBC Linear's 316 grade stainless steel Simplicity bearings and compatible stainless steel shafting provide a maintenance-free and reliable linear motion solution for direct or indirect contact in washdown applications.

simplicity

Simplicity Linear Plain Bearings

- Available in inch sizes from 3/16" thru 4", and metric sizes from 5 mm thru 80 mm
- Wide temperature range: -240° C/ 204° C (-400° F/ 400° F)
- Maintenance-free

Handles loads over 700 kN (157,000 lbs)

316 Grade Stainless Steel Shafting

- Solid round shafting (NILSS) is available in inch sizes from 3/16" thru 2" up to a maximum length of 12 feet
- Stainless steel – reduces corrosion and contamination

Cam Roller Technology

(Lengths up to 19 feet)

Commercial Rail

- Precision formed rails available in zinc plated carbon steel sheet or stainless steel
- Withstands temperatures up to 100°C (212°F)
- Sliders are available with sealed 52100 steel, 440 stainless steel or polymer wheels

redi-rail

Redi-Rail (Anti-Microbial Coating)

- Special anti-microbial liner prevents bacteria build-up
- Withstands temperatures up to 80°C (180°F)
- Precision machined rail for high parallelism (0.025 mm/0.001 in)
- Sealed double row bearings provide maintenance free guidance

Linear V-Guides

- Shoulder offers simple mounting and alignment
- Offered in either 1045 carbon steel or 420 stainless steel material
- Permanently sealed and lubricated

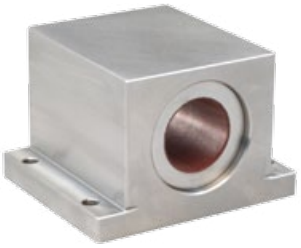
Applications: Food conveyor and packaging

Gliding Surface Technology

UGA

- Simple 2 piece assembly – easy installation and fewer components
- Angled rail and carriage design – ideal for washdown
- Self-lubricating plain bearing liner – maintenance-free, clean operation
- 24 mm Low Profile – fits into compact spaces

Uni-guide



316 Grade

316 Grade Stainless Steel Round Shaft Products

For excellent chemical and corrosion resistance in continual or intermittent washdown applications, PBC Linear has a full selection of 316 stainless steel Simplicity linear bearings, pillow blocks and shafting.

Liners

Chemical Resistant Liners

Frelon J

- Chemically inert (with bearing seals)
- Maintenance-free/Self-lubricating
- Optimal compatibility with stainless steel shafting

Frelon W (Special Option)

- FDA compliant bearing liner
- Maintenance-free
- Compatible with stainless steel and softer metal shafting

Application

Automated Car Wash Linear Guidance

440 Grade Stainless Steel Products

For improved chemical resistance, PBC Linear has a selection of linear guides that provide reliable and high accuracy travel for indirect contact washdown applications.

APPLICATION FOCUS

Background:

A dairy packaging company in Minnesota initially used linear ball bearings and shafting to operate their milk carton case erector.

Problem:

Due to heavy washdown in the environment and the caustic nature of the cleaning solution, the linear ball bearings would quickly rust and fail pre-maturely.

Solution:

Simplicity stainless steel pillow blocks and shafting.

With no rolling elements, Simplicity pillow blocks provide maintenance-free operation with chemical and corrosion resistance.

Result:

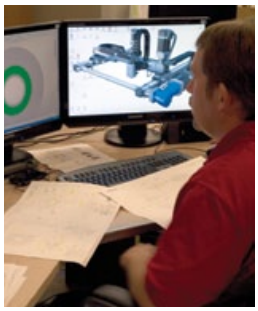
After retrofitting the milk carton case erector with Simplicity stainless steel pillow blocks and shafting, the packaging company reported the following benefits:

- No further preventative maintenance
- No corrosion or rusting
- Significantly reduced machine downtime

The PBC Linear Advantage

- Proven Domain Expertise
- Expert Design Collaboration
- Full Range of Solutions
- On-Site Manufacturing & Machining

Engineering Collaboration



PBC Linear specializes in collaborative design engineering. Contact an engineer at PBC Linear to define your motion control solution.

- Streamlined assembly
- Integrated linear motion systems
- Reduced mounting components
- Ease of installation

DESIGN ON A DIET

Range of Technology

- Components
- Single-axis sub-assemblies
- Multi-axis systems

Manufacturing Agility

- Reduce machining vendors
- Set-up for low to high volume production
- Unique machining capabilities (SIMO™, 5 axis milling, routing)

PBC LINEAR
A PACIFIC BEARING CO.

6402 E. Rockton Road
Roscoe, IL USA

LIT TM 003_Washdown 11.11