



### INTRODUCTION

Food and beverages require special sanitation methods throughout the manufacturing process, posing special challenges for the conveyors that move them. When food products are being handled in a plant, conveyors and other equipment must often meet sanitary design requirements set by government or industry bodies. And even after the product is packaged – in either primary (individual) or secondary and tertiary packaging – manufacturing equipment may need to be periodically washed down, occasionally with high pressure water, steam, and/or chemicals to maintain a clean environment and mitigate contamination in the facility. But standard industrial-duty conveyors aren't suitable for wet, humid, and corrosive environments. Washdown applications require a different approach to conveying.

This is why NCC Automated Systems offers top-of-the-line stainless steel pallet conveyors built to withstand the a variety of washdown conditions found in packaging applications for food and beverage products – from small, delicate medical devices to large cases of frozen foods.

In this ebook, we'll learn when you may be able to use a stainless steel pallet conveyor to meet challenges in your facility, plus explore NCC Automated Systems' complete stainless steel pallet conveyor product line, broken down by available options and specifications, so you can find the right solution for your application.



### WHAT MAKES A STAINLESS STEEL CONVEYOR SUITABLE FOR WASHDOWN?

Conveyors that move products for human or animal consumption – especially food and beverages – are typically required to meet special design and cleanability criteria to ensure product safety and reduce the risk of bacterial contamination. These criteria are often referred to collectively as "sanitary design." However, the actual requirements for the design of the conveyor and its ability to withstand cleaning are specific to the application – the type of product being conveyed, the process being performed (i.e. food manufacturing versus inspection or packaging), and even regional or industry-specific health and safety requirements. In most applications, once the primary processing is complete, handling the packaged product calls for a washdown-compatible – but not necessarily sanitary – conveyor.

Stainless steel and plastic designs include no paint or surface finishes and are ideal for cold and freezer environments, where condensation could cause chipping, peeling, or flaking and introduce contamination.

This means the conveyor should be made of materials that are highly resistant to



rust and other forms of corrosion - stainless steel and plastic - as much as possible, or in some cases, exclusively. In addition to using stainless steel and plastic materials, some sanitary and washdowncompatible designs should use welds instead of mechanical fasteners wherever possible to eliminate crevices where water or chemicals can accumulate. And they should have open corners to prevent "blow-back" during washdown operations. Good design practices for sanitary, washdown conveyors also include minimizing horizontal surfaces (slightly inclined surfaces are preferred) to reduce or eliminate places where debris can accumulate and bacteria can grow.

### SANITARY VERSUS WASHDOWN: WHAT'S THE DIFFERENCE?

Not all conveyors that move food and beverage products are required to be truly sanitary. This is dependent on the food and processing type, along with stage in the process. In many packaging applications, the conveyor will likely need to be washdown-compatible, but not necessarily "sanitary."

This distinction is important, because virtually all sanitary conveyors are able to withstand high-pressure washdown with harsh chemicals, but not all washdown-compatible conveyors are sanitary. Case in point – a conveyor that uses chain conveying media can withstand a high-pressure washdown, but chain isn't inherently sanitary, since it introduces thousands of crevices where particles and bacteria can accumulate.

However, in either type of application – true sanitary or washdown-compatible – a stainless steel conveyor is typically the best solution. Various grades of stainless steel have been tested in a wide range of washdown conditions, and their resistance to corrosion is well-documented. And stainless steel materials are widely accepted, and even endorsed, by government and industry bodies that deal with washdown-compatible and sanitary applications for food and beverage manufacturing.





# GUIDANCE AND REGULATIONS FOR WASHDOWN AND SANTARY DESIGNS

Although there are many formal definitions of what "sanitary" or "washdown" designs entail, numerous government and industry bodies provide guidance on building equipment for both sanitary and washdown applications in the food industries. Below are some of the most common:

**FDA:** United States Food and Drug Administration – Publishes Current Good Manufacturing Practices to help ensure the safety of food and pharmaceuticals

**USDA:** United States Department of Agriculture – Offers two voluntary, fee-based equipment review and certification programs to the food processing industry: the Dairy Equipment Review Program and the Meat and Poultry Equipment Review Program.

**EHEDG:** European Hygienic Engineering & Design Group – A consortium of equipment manufacturers, food producers, suppliers to the food industry, research institutes and universities, public health authorities, and governmental organizations formed to promote safe food by improving hygienic engineering and design in all aspects of food manufacture.

**3-A SSI:** 3-A Sanitary Standards Inc. – An independent, not-for-profit corporation dedicated to the mission of advancing food safety through hygienic equipment design. The membership consists of four associations: American Dairy Products Institute, International Dairy Foods Association, Food Processing Suppliers Association, and the International Association for Food Protection.

**BISSC:** Baking Industry Sanitation Standards Committee – Develops and publishes voluntary standards for the design and construction of bakery equipment which today are recognized as the definitive sanitation standards for equipment used in the baking industry.



### WHEN DO YOU NEED A STAINLESS STEEL PALLET CONVEYOR?

One of the first criteria to consider when choosing a conveyor is the environment it will be used in. Washdown requirements are most often encountered in the food industry, but they are also common in chemical manufacturing and pharmaceutical and nutraceutical production.

Below are examples of applications that commonly require sanitary designs for primary processing and washdown-compatible designs for inspection, packaging, and handling of packaged goods:

- Meat and Poultry Raw and Precooked Meats and Poultry
- Fruit & Vegetable Bagged Salads, Precut Fruit
- Prepared Meals Dinners, Pizza
- Frozen Foods Pizza, Bagels, Seafood, Appetizers
- Bakery / Snacks Breads, Cakes, Pies, Cookies
- Candy & Confectionery Candies, Chocolate
- Bulk Pharmaceuticals Tablets, Capsules
- **Chemical Processing** Highly Acidic or Highly Basic Chemicals

Another important factor to consider when choosing a conveyor partner is how innovative and proactive they are at adopting the latest technologies and applying best-practices. The team at NCC understands this, and we take our responsibility to provide the absolute latest in washdown-compatible and sanitary design technology and the most updated regulation advice very seriously. No matter your industry, the team at NCCAS has a unique understanding of which levels of sanitary or washdown-compatible conveyor construction are needed at each step in the automation and handling process.





### **STAINLESS STEEL PALLET CONVEYORS FOR WASHDOWN APPLICATIONS: CONVEYING MEDIA MATTERS**

Conveyors for washdown applications are typically made of stainless steel and plastic components to minimize rust and the contamination it can cause. But the conveying media also plays a role in determining whether a conveyor is washdowncompatible.

NCCAS has years of experience building both sanitary and washdown-compatible conveyors for the many industries, including food, pharmaceutical, and chemical, and we know which conveyor designs will meet the requirements of a specific application. So we've put together a summary of the five most common types of conveyors used for transporting pallets in washdown environments.

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### NUMBER ONE: GRAVITY ROLLER CONVEYORS

Simpler than powered roller conveyors, gravity roller conveyors move products on a flat (with assistance) or no a declined plane. Without a mechanism to power the rollers, there are fewer components and areas where particles and bacteria can accumulate. But like powered roller designs, solid rollers are required in order for the conveyor to be washdowncompatible.

#### **KEY FEATURES**

• Non-powered for transport on a flat or declined plane

#### **AVAILABLE OPTIONS**

- · Custom roller diameters and lengths available
- Multiple bearing and shaft options
- Solid rollers made of PVC or UHMW plastic available for washdown applications





### NUMBER TWO: POWERED ROLLER CONVEYORS

In powered roller conveyors, rollers – driven by belts, chains, or line shafts – serve as the conveying media. Powered roller conveyors are typically used for transporting cases or heavy pallets and can be used for product accumulation. In their standard form, they're not typically recommended washdown-compatible (though they can be used), since particles and water can seep into the hollow rollers and allow bacteria to grow. And this contamination can be distributed by the rollers across the whole conveyor line, causing significant problems with cleanliness.

However, stainless steel pallet conveyors can be designed to withstand washdown conditions by using solid rollers made of PVC or UHMW plastic. With this design modification, powered roller conveyors are suitable for applications where there's no direct food contact, such as end-of-line packaging and sorting.

#### **KEY FEATURES**

• Suitable for a wide range of transport and accumulation applications

#### **AVAILABLE OPTIONS**

- Custom roller diameters and lengths available
- Multiple bearing and shaft options
- Solid rollers made of PVC or UHMW plastic available for washdown applications





### NUMBER THREE: DRAG CHAIN CONVEYORS

Drag chain conveyors can be manufactured with either metal roller chains or plastic chains and are used for transporting large, bulky pallets. With stainless steel construction and chain transport media, they can withstand washdown conditions. However, drag chain conveyors – even washdown-compatible versions – introduce numerous surfaces and "nooks and crannies" where particles and bacteria can become trapped, and so aren't suitable for applications where bacteria growth is a concern.

#### **KEY FEATURES**

- 2 or 3 strands of roller chain
- Washdown-compatible

#### **AVAILABLE OPTIONS**

Heavy duty option available for pallet and tote handling applications





### NUMBER FOUR: PLASTIC MODULAR BELT CONVEYORS

Stainless steel conveyors that use plastic modular belts have become the industrystandard for food, beverage, and even pharmaceutical processing plants, since belts made of plastic can withstand even the harshest washdown conditions. And plastic modular belts are easy to take apart, when necessary, without removing the entire belt, so both the belt and conveyor structure can be deep-cleaned and sanitized.

With their easy-to-clean design and lack of rollers or chains, some plastic modular belt conveyors nearly eliminate the risk of bacterial contamination. And with a wide range of belting options, NCC Automated Systems can provide stainless steel conveyors with plastic modular belts for loads up to 6000 pounds.

#### **KEY FEATURES**

- Washdown-compatible
- Easy to clean
- Extremely reliable conveyor media

#### **AVAILABLE OPTIONS**

- Hundreds of belting styles available
- Can be built to suit all types of processing environments





### NUMBER FIVE: MULTI-STRAND CONVEYORS

Another type of conveyor that can use plastic modular belting as the conveying media is the multi-strand conveyor. This conveyor is built using stainless steel components to make it washdown-compatible. Multi-strand designs are typically used for transporting very wide pallets or when access to the bottom of the pallet is needed.

#### **KEY FEATURES**

- Allows access to the bottom of a product or pallet
- Washdown-compatible

#### **AVAILABLE OPTIONS**

- Customizable to specific length and width requirements
- Can be center-driven or end-driven



# PLASTIC MODULAR BELTS: IDEALLY SUITED FOR

The most common conveying media for sanitary and washdown environments is the plastic modular belt. The primary reason for this is their cleanability. Plastic modular belts can withstand cleaning via high-pressure washdown and are easy to take apart for more extensive cleaning and sanitizing, providing excellent protection against bacterial contamination.

Plastic modular belts are also available in a wide variety of materials, including polyethylene (PE), polypropylene (PPE), polyacetal (POM, or acetal), polyamide (PA, or nylon), as well as special versions to provide characteristics such as resistance to extreme heat, non-stick surfaces, or resistance to cuts. And because they're assembled in a bricklay pattern, plastic modular belts are also easy to configure to fit the application's specific length and width requirements, as well as other application-specific customizations.



### NCC AUTOMATED SYSTEMS IS YOUR CHOICE FOR STAINLESS STEEL PALLET CONVEYOR SYSTEMS

Regardless of your application, NCC Automated Systems can help you find the right stainless steel pallet conveyor for your exact requirements, with no compromises. And not only can we help you find the right solution, we can help you integrate it into your next project.

### WHAT SETS US APART

NCC Automated Systems has over 30 years of experience building conveyors for the food, beverage, pharmaceutical, and other industries where cleanliness is a necessity. Our food industry expertise means we understand the need for easy-to-clean and washdown-compatible solutions, with zero margin for error.

We work with you to develop an incredibly detailed and accurate proposal based on all the factors of your application: product being transferred, special handling requirements, transfer path, intermediate and end processes, accumulation needs, and more. With this detailed plan, we build the conveyor that best fits your application, on time and on budget. Even with tight deadlines, we stand behind our promise to deliver a system that meets your expectations. We guarantee performance and don't receive payment until this is satisfied. And with our experience across many different industries and our strong relationships with a diverse set of vendors, we can incorporate the latest technologies and innovations into our designs and your solution.





## WANT TO LEARN MORE?

We're more than happy to answer your questions, provide additional info, or even offer a...

#### **FREE CONSULTATION!**

Contact us now to get started!

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Also, we have a great resource where you can learn about all of our Basic Transport Conveyors for Sanitary Applications.





This free guide gives you a detailed look at the Sanitary Basic Transport Conveyors we offer. Basic transport is the simplest use of a conveyor system. However, even Basic Transport conveyors aren't "one size fits all." When building a conveyor system, the type of product being handled is the key determining factor when choosing a specific conveyor style.

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