



# SANITARY SYSTEMS DATA & SPECIFICATIONS GUIDEBOOK



**NATIONAL BULK  
EQUIPMENT®**  
AN NBE COMPANY

FORWARD THINKING | **REAL RESULTS®**



# APPLICATION-SPECIFIC SANITARY DESIGN

National Bulk Equipment sanitary bulk material handling systems eliminate the delays, re-inspections, and downtime common when general-industry units are force-fit into sanitary processes. The specific design and construction of NBE sanitary bulk material handling systems enable processing and packaging operations to place NBE equipment deeper into line operations without concern for contamination or non-compliance.

Whether a complete processing line or the integration of NBE equipment into a legacy operation, the objectives for NBE are the same: ensure the regulatory compliance of all NBE equipment, align NBE equipment operation with required process standards and protocols, speed start-up, simplify inspections, and increase total process contribution. The full line of NBE sanitary bulk material processing and packaging systems includes: bulk bag fillers and dischargers, bulk container fillers and dischargers, material mixing and conditioning systems, continuous and batch weighing systems, bulk material storage, and mechanical and pneumatic conveying systems. Look ahead to NBE. Look to Forward Thinking.



The application-specific materials of construction engineered into NBE bulk material handling systems reflect the melding of NBE compliance knowledge and NBE process engineering expertise.



## FDA, USDA, 3-A and BISSC: Proactive Support of Multiple Protocols

Bring clarity and confidence to material handling equipment compliance and process acceptance procedures. Whether direct, through consulting engineers, or in cooperation with multiple suppliers, NBE applications and process engineering expertise will eliminate delays and accelerate acceptance, even across a variety of regulatory standards and guidelines. When there is no room for speculation or guesswork, leverage the advantages of NBE sanitary-construction material handling equipment and NBE proactive regulatory compliance capabilities.

## Managing International Standards: From Complexity to Process Advantage

Turn the complexity of international standards compliance into a process advantage with the globally proven, IEC/ISO compliant design, engineering, and construction expertise of National Bulk Equipment. NBE knowledge in international design categories, including: electrical and mechanical systems, hydraulic and pneumatic systems, and safety and controls is your assurance of best-practice machine and process design. Along with the priority of enhanced operator safety, NBE proficiency in the application of international standards in bulk material processing and packaging will aid in establishing systems standardization, resulting in reduced maintenance and training costs, and increased total process contribution.

## Accountability and Accuracy: From Spec to Startup and Support

The single-source design, engineering, manufacturing, and installation resources of National Bulk Equipment ensure every project built by NBE; whether a single component or an integrated, fully automated bulk material handling system, is manufactured to exact tolerances and delivered within strict production schedules. NBE operations cover over 180,000 square feet, including R&D facilities for advancing process technologies and large-scale acceptance testing areas where single units or integrated bulk material handling lines are run through actual operating sequences to ensure performance outcomes. The NBE campus also includes a dedicated facility for the design and construction of UL listed controls. NBE control panel configurations include: UL 508A, Class I and II, Division 1 and 2, Group A–D, F, and G, and NEMA 12 enclosures with Type X or Z purge.



# BULK BAG FILLING SYSTEMS

## Performance Data & Specifications

**4,500 lb. Hang Weight Capacity:** Hydraulic-lift carriage easily holds bag weights that alternative designs cannot.

**+/- 1% Accuracy of Total Filled-bag Weight:** Eliminate material loss or rework resulting from overfilled or underfilled bulk bags.

**3 Gs of Vertical-Force Densification:** Densify entire bag contents, from bottom to top, regardless of material characteristics.

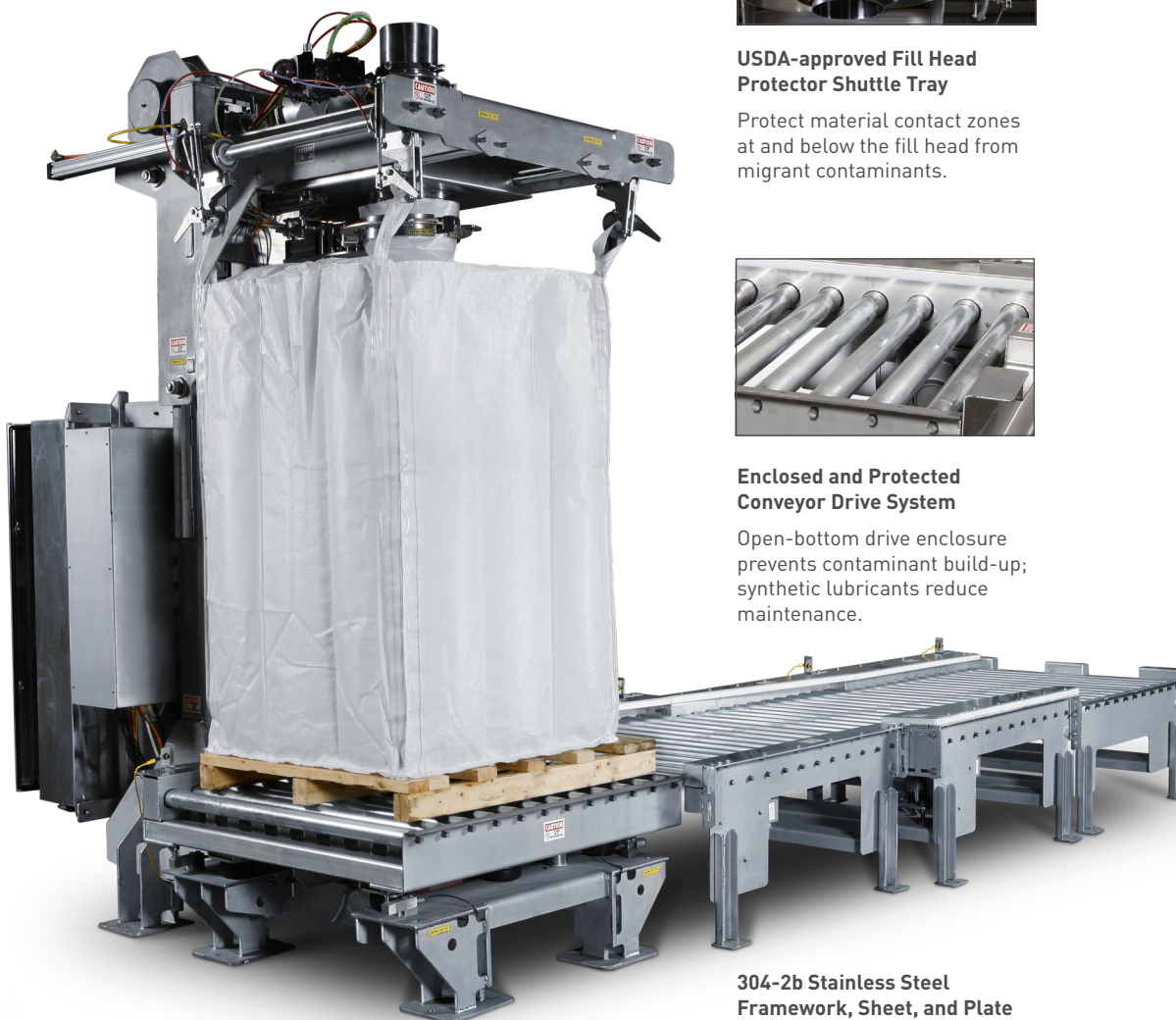
**18,000 lb. Conveyor Deck Capacity:** Supports high-volume processing; speeds indexing into and out of fill station.

**WIP / CIP Component Design Features:** Temperature-resistant, corrosion-resistant, non-metallic components withstand harsh application demands.



### Process Controls and Automation Compliance

Built to ensure U.S. compliance; from single-unit automation to SCADA integration. Can be built to IEC/ISO compliance.



### USDA-approved Fill Head Protector Shuttle Tray

Protect material contact zones at and below the fill head from migrant contaminants.



### Enclosed and Protected Conveyor Drive System

Open-bottom drive enclosure prevents contaminant build-up; synthetic lubricants reduce maintenance.

### 304-2b Stainless Steel Framework, Sheet, and Plate

Thick-wall stainless steel construction with 2b finish on material contact and non-contact surfaces.

# BULK BAG DISCHARGING SYSTEMS

## Performance Data & Specifications

**4" x 4" x 3/16" Structural Tubing:** Meets or exceeds ANSI and ASME specifications; ensures reliable, low-maintenance operation.

**14,600 lbs. of Paddle Pressure:** Integrated massage paddles condition materials; improve downstream supply.

**4,000 lb. Bag Weight Capacity:** Enables high-volume material supply to downstream processing and packaging operations.

**Fully Enclosed Bag Spout Interface:** Eliminates dusting; 175 lbs. of spout stretch force elongates bag to aid material discharge.



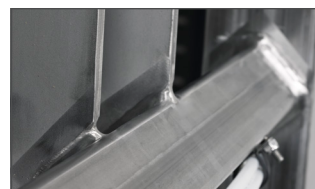
### Sanitary, Dust-tight Material Introduction

Bulk bag spout and receiving feed tube are enclosed within a sealed containment cylinder; eliminating dusting.



### WIP, CIP, and SIP-ready Construction

Epoxy-coated surface finishes and 32 Ra stainless steel product contact surfaces provide excellent material release.



### Angled-plane Framework with Rounded Radii

Reduce accumulation of material; speed moisture removal during WIP procedures.



### Carbon Steel Framework Finished to FDA Standards

Surfaces are sandblasted, weld seams are ground smooth and flush, surfaces are primed and finished with FDA-approved epoxy coatings.



### Process Automation and Controls Compliance

Built to ensure U.S. compliance; from single-unit automation to SCADA integration. Can be built to IEC/ISO compliance.



# CONTAINER DISCHARGING SYSTEMS

## Performance Data & Specifications

**16,000 lb. Lift Carriage Capacity:** Exceptional capacity enables high-volume processing; exceeds ASME standards.

**180-degree, Complete Carriage Rotation:** Ensure complete material discharge; Rotolink™ linkage enables smooth rotation.

**3-function, 3-control Valve Stack:** Precision, independent control of hood seal pressure, lift-lower rates, and rotation speed.

**Stainless Steel, or Epoxy-coated Hydraulic Cylinders:** Provide comprehensive compliance beyond nickel plate; enables deep process integration.



### Hermetically Sealed Connectors & Components

Hermetically sealed controls, connectors, and components resist damage from corrosion and high temperatures.



### WIP, CIP, and SIP Designs Aid Validation

High-temperature, high-pressure, corrosion-resistant materials; fast-rinsing, quick-drying structural design.



### 304-2b Stainless Steel Construction

Angled-plane, rounded-radius framework and highly finished plate reduce material build-up and speed moisture removal.



### U.S. or IEC/ISO Compliant Controls

Built to ensure U.S. compliance; from single-unit automation to SCADA integration. Can be built to IEC/ISO compliance.



### Fully Contained, Easy-access Hydraulics

Up to 16,000 pounds of lift; pump, fluid, reservoir, and valve stack are entirely enclosed and easily accessible.

# BAG BREAK STATIONS

## Performance Data & Specifications

**42-inch, Ergonomic Interface:** Physical ergonomics design; large access area improves operator interaction posture.

**Formed, 304-2b Stainless Steel Legs:** Formed-leg design reduces weld points and corners where material build-up can occur.

**High-efficiency Regain Airflow Path:** Air baffle design re-entrains dusted material to the hopper during discharge.

**MERV 16 Filtration Efficiency (ASHRAE 52.2):** Protects operators and facilities from migrant dust; up to 99.7% efficient at 0.3 micron.



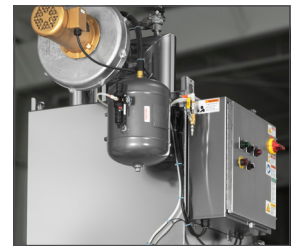
### Smooth, Single-sheet Hopper-to-Hood Design

304-2b stainless steel sheet is formed to eliminate joint flanges where material build-up could occur.



### Hermetically Sealed Connectors & Components

Hermetically sealed controls, connectors, and components resist damage from corrosion and high temperatures.



### Food-grade, High-efficiency Filtration System

Static-dissipating filter construction enables operation in areas with hazardous classification.



### 32 Ra Finish on Internal and External Welds

High-polish finish and 180 grit weld seam finishing eliminate ripple, pits, and crevices; improves product release, cleanability, and aids inspection.

### Tool-less Cleaning and Painless Inspection

Quick disconnects, tool-less grate and filter removal, and single-step re-assembly speed return to service.



FORWARD THINKING | **REAL RESULTS**<sup>®</sup>

DISCHARGE	STORE	CONVEY	FILL	MIX	RECLAIM	INFEEED	PROCESS	PACKAGE
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