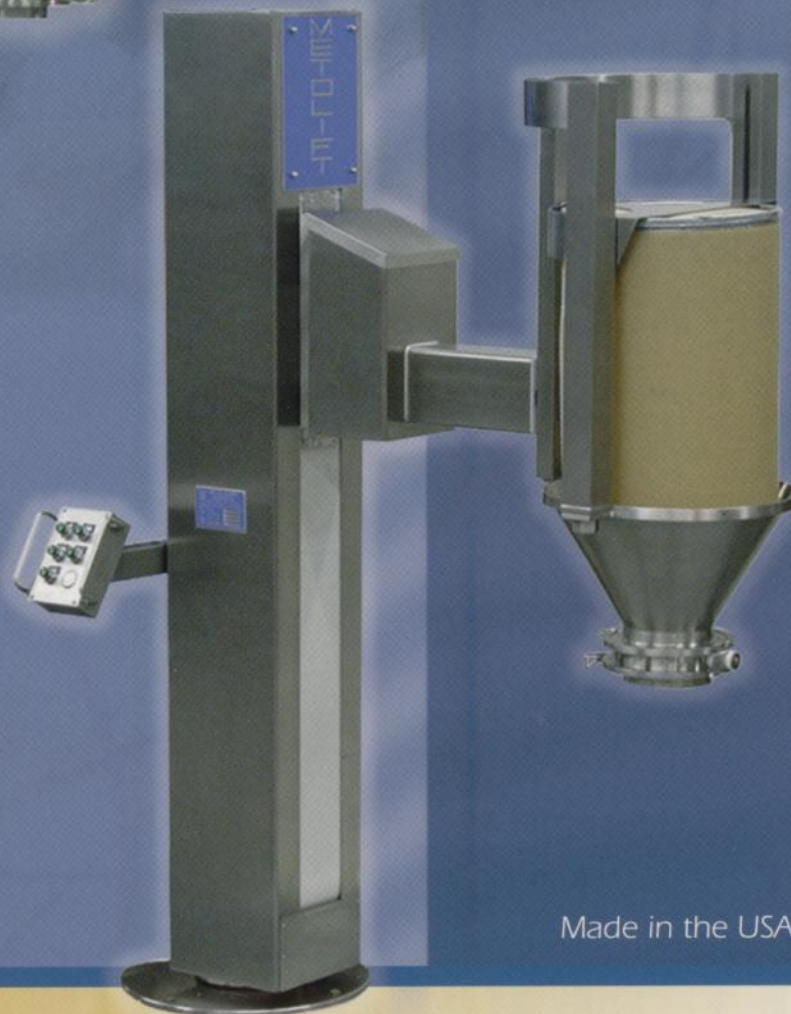


**METO
CORP.**

DRUM INVERTERS

Lifting, Positioning, Blending and Material Handling
For "Clean" Process Environments



METO-CORP.
USA

Made in the USA

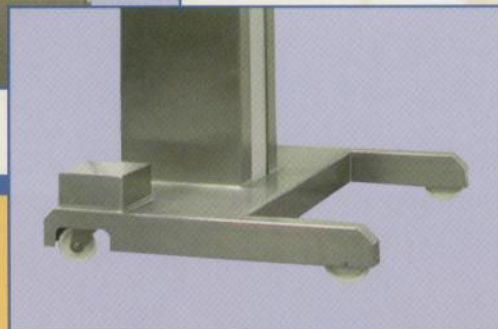
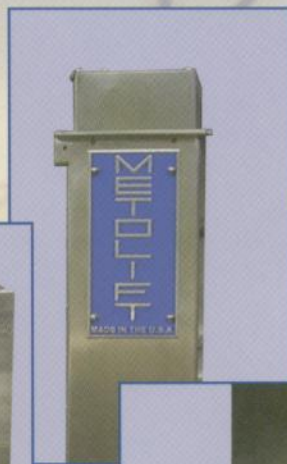
Service, Innovation, Results



Drum Inverters are used throughout industry for transfer of powders/pellets/tablets from a drum. As opposed to 'dumping' devices, the inverter provides for a closed and controlled transfer. METO drum inverters are specifically designed for use in "clean" areas as typically found in pharmaceutical and nutritional manufacturing.

They are used in many applications including:

- **Tableting**
- **Tablet Coating**
- **Dispensing/Weighing**
- **Milling/Sieving**
- **Loading Hoppers**
- **Charging Tanks/Reactors**
- **Charging Mixers/Blenders**
- **Processing Through Isolation Glove Boxes/Isolation Booths**



Meto will provide the right solution for each and every application. Drawing from a full range of options, each lift is built to each individual and specific need.

Options Include

- **Drives:** Pneumatic, Electric, Hydraulic
- **Controls:** Pneumatic, electric (24 VDC), basic, semi-automatic, full automation through PLC, integrated communication with plant control systems
- **Materials:** Upgrades in grade of stainless and finer degrees of surface finish
- **Height and reach** as required by application.
- **Variety of discharge valves** to choose from for discharging/dispensing granular products, fine powders, and tablets.
- **Additional interlocks** to provide added safety to operators, product and equipment.
- **Added features** to handle bins, boxes, pails, and non-standard drums.
- **Custom transfer chutes and dust 'boots'** for docking to all types of equipment.



Basic Configuration Options

A swiveling (slewing) base is used on most drum inverter applications. METO's standard base provides for manual swivel that is easy and accurate.

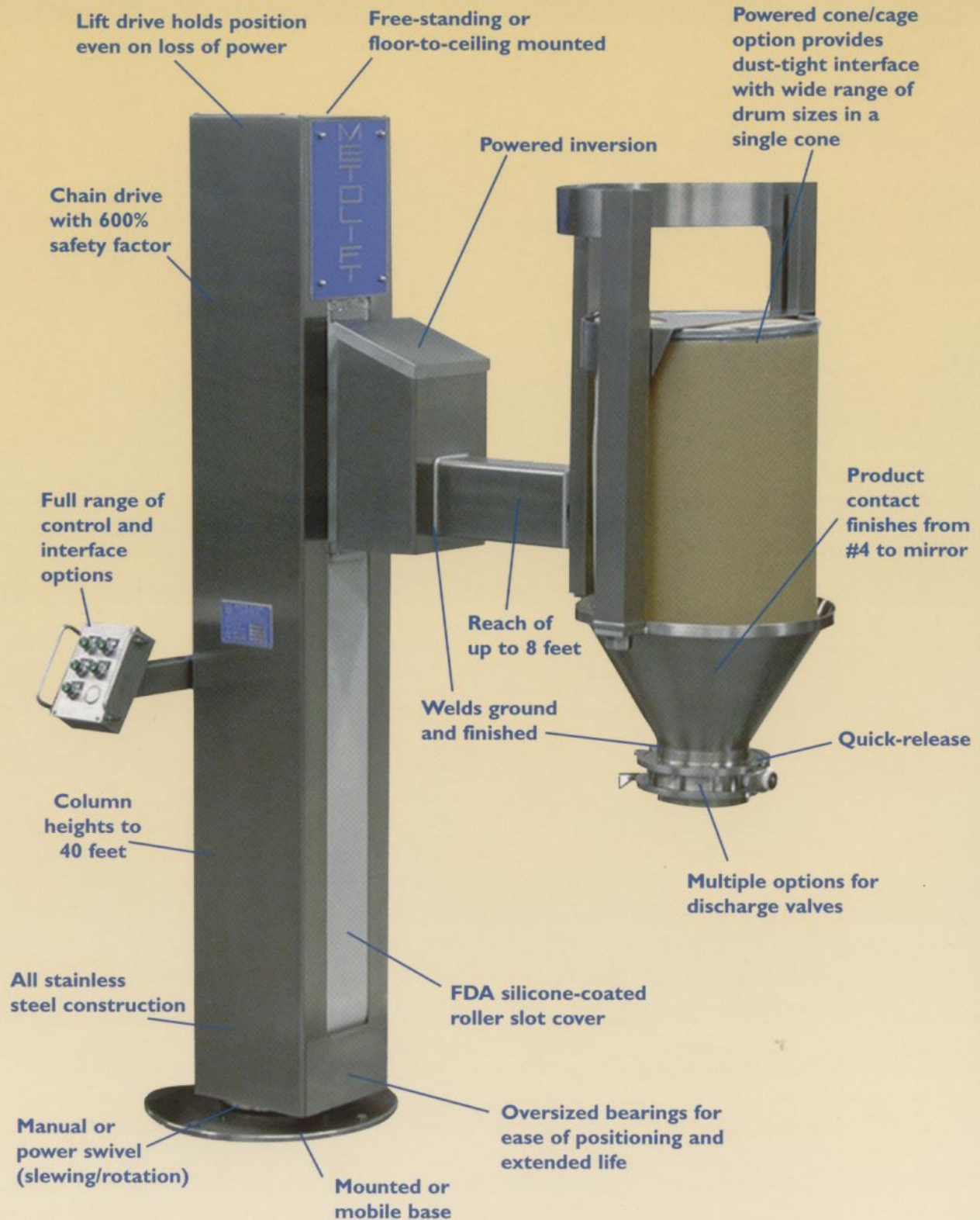
A powered swivel is ideal where operator space is limited, when auto sequencing is desired, or where remote operation is required. Either option provides accurate, repeatable positioning.

A mobile base is ideal for moving between process areas or to provide drum inversion without committing valuable space to a mounted unit. A battery-powered mobile base is also available.

Telescoping masts provide high lifts while allowing mobile units to move through low doorways.

Drum Inverter - Key Features

MET-LO-M
U.S.A.



Frequently Asked Questions

METOLIFT
U.S.A.

What information will Meto require to get started?

We will ask for as much of the following information as may be available: size, type and weight of each drum; room dimensions and layout; preferred drive and controls configuration; preferred type and size of discharge valve; and details of what you are discharging into and the position of its charging port/point and clearances required. Regardless of what info is available, please involve us as early as possible in your planning process.

What types of drive systems does Meto use and what is the best?

Our systems are configured using pneumatic, electric or hydraulic drive systems (or any combination thereof). While hydraulic is typically the best for very heavy loads, the majority of our customers prefer pneumatic or electric drives. Electric systems are fairly straightforward and easy to maintain, as are the pneumatic. Pneumatics have an advantage in general safety of operation and when applied in areas that are classified as having potential for explosion hazards.

But what about the 'drift' that I have been told is a problem with pneumatic systems?

Drift is a characteristic common to systems based on pneumatic cylinders. Pneumatic METOLIFT systems use air motors and gear reducers to achieve motion. There is no drift or unintended motion. Positions can be held indefinitely even in the event of loss of power or loss of motor function.

How accurate is the positioning?

Some of the toughest requirements for positioning come into play when docking two halves of a split butterfly valve (± 4 mm). METOLIFTS are being used in these applications without any reports of positioning faults.

What is the capacity of Meto's standard Drum Inverter?

The typical drum inverter handles a container of 30 to 40 gallons and a total load of up to 150 kg. However, we have delivered systems covering a full range of sizes and weights up to and beyond 250 kg.

Are the Drum Inverters a specific configuration or size?

The majority of applications require a column height of 12 to 20 feet and a reach from center-of-column to center-of-discharge of 48 to 60 inches. However, METO has supplied units of over 40 feet in height and over 8 feet in reach.

What are the materials of construction?

Ninety-five percent of METO's products are used in 'clean' processing environments such as in the manufacture of pharmaceutical products. METO uses only the highest quality materials in meeting the demands of these industries. Lift columns are welded using all stainless steel components (solid SS, not clad). All exterior surfaces are polished with welds ground and polished to match the surface finishes. Standard finishes are 35 micro inch Ra max. Upgrades in material types and finish levels are routine. Non-metal components include FDA grade plastics and elastomers and slot covers using FDA belting materials.

How does your drum inverter specifically interface with or grasp the drums?

See the detail in the "Drums and Drum Systems" section of this pamphlet.

How do I deal with inner liner bags or odd shapes and sizes of containers?

METO offers a full range of tools and adapters for dealing with special issues pertaining to drum liners and irregular containers. Consult with METO Engineering for a full review of options for your specific application.

How are the machine controls executed? What is the man-machine interface?

Available machine controls range from simple, momentary, incremental systems to those with defined and limited sequencing and interlocking to those with full sequence automation and integration with plant control systems. Operator interfaces can be through pushbuttons, touch-screen with graphical display, or any option in between. Controls are typically enclosed in the lift column itself or in stainless steel NEMA 4X enclosures. All systems may be ordered as configured for use in explosion hazard areas in compliance with industry standards.

What are some of the major options I may want to consider?

Options are available for different materials of construction, for product flow aids, for varied types and sizes of discharge valves, for air handling devices, etc. Other options you may want to consider include loss-in-weight systems, in-drum tumble blending on the lift column, dust boot transfer configurations, and closed transfer aids and adapters.

Where do I find more technical detail about METOLIFT Drum Inverters?

Technical data sheets are available through downloads from our website or by request from our sales offices.

What is the delivery lead time?

The fabrication and test cycle is typically 8 to 12 weeks.

I have other questions.

Consult expanded FAQ's on www.metolift.com or contact METO.

Drums and Drum Systems - and How They Connect to an Inverter

When the inverter is used for the purpose of controlled discharge, a discharge cone is required. The type of interface between the drum and the cone is a key factor in determining the best means of attaching the drum to the inverter.

The two most common approaches can be termed 'clamp-in cone' and 'clamp-on cone'. METOLIFT configurations are available in all cases.

'Clamp-in Cone'

The drum lid is removed and the open headed drum is moved into a drum and cone clamping device that is part of the inverter. This device pulls the drum up and into the cone.

Advantages -

- Greatest degree of precise positioning of discharge outlet.
- May be accomplished using a single cone and valve.
- Handles multiple types and sizes of drums and containers.
- One time set-up of valve and actuator.

Disadvantages -

- Drum must be opened, before placing in clamping cage.
- May require special dollies.

Considerations -

- Very heavy drums may be difficult to move into the clamping device without the use of other equipment.

'Clamp-on Cone'

Prior to mounting to the inverter, a cone is clamped to the head of the drum.

Advantages -

- Provides a tight seal between cone and drum.
- Cone may be mounted in a separate area, thereby reducing operator/product exposure in the discharging area.

Disadvantages -

- Requires multiple cones and valves if attached in a separate area.
- Requires multiple cone sizes if dealing with multiple drum sizes.
- Pneumatic valve actuators must be attached/detached with each drum mounted on the inverter.
- May not be suited to all drum types.

Considerations -

- Typically requires grippers or forks to interface with the cone and drum assembly. Neither handles multiple diameters well.
- The seal between cone and drum does have an internal crevice that may result in unacceptable trapping of product.

Transfer to the Inverter

The means of transfer to and from the point of mounting to the inverter may also impact the determination of the configuration best suited to your operation. Consideration should be given as to the use of dollies, pallets, fork-devices, and/or other means of drum transport (such as the Meto DT Drum Transport) in the process area.



Flow assist and cone configuration options include:

Discharge Valves	Sight Glass
Product Sensor	Vibrator
Knocker	Outlet Neck
Tri-clamp Attach	N ₂ Purge
Eccentric Cones	Quick Removal
Bag Retainer	Adapters
Fine Finish	Material Grades
Flex Neck	Valve Actuator



Related Products:



Valves



Transports



Dumpers



Drums

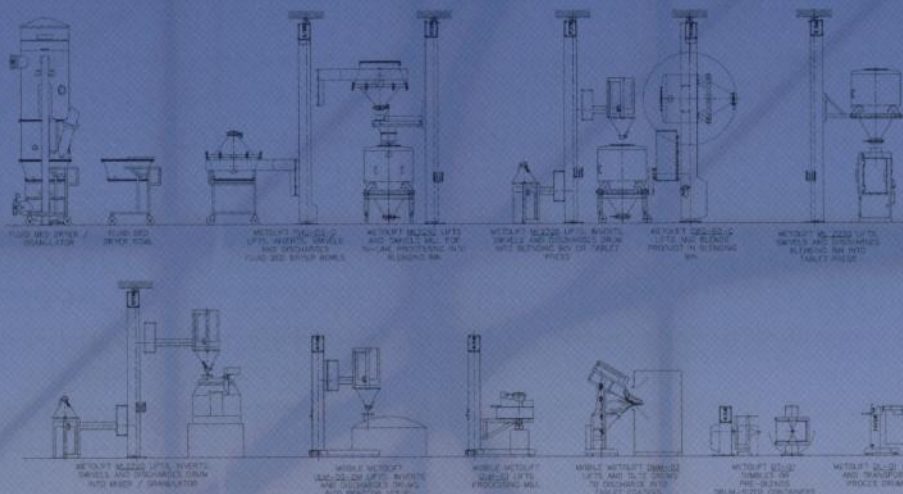


Coater Charging Units



Drum Tumblers

Also contact us for:
Bin and Pan Inverters, Mixing
and Fluid-Bed Bowl Inverters
and Dust Control Boots.



For over 30 years, METO Corporation has been providing engineered material handling solutions to aid in the manufacture of pharmaceutical, fine chemical, health and beauty, nutritional and food products.

METOLIFT equipment is designed to meet customer requirements while providing the very best in functional efficiency and operator safety. High quality manufacturing standards increase reliability and minimize maintenance costs. Facility layouts and system integration services are also provided.

Our modular approach to equipment construction allows us to quickly and easily fabricate units to meet the specific needs of any application. All METO equipment is designed to seamlessly integrate with your manufacturing operations.

All METOLIFT units are constructed using the highest quality materials and unequalled craftsmanship.

Service, Innovation, Results



METO Corporation • 165 Chestnut Street Allendale, NJ 07401 USA
201-825-4747 • Fax: 201-825-2664 • email: sales@metolift.com

Contact us or visit www.metolift.com for details on all METOLIFT products and a list of sales representatives.

