

# ***SPIRAL ELEVATORS***

***Vibrating Elevator-Processors***

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***We Make Your Work Flow***

**Carrier<sup>®</sup>**  
***Vibrating Equipment, Inc.***



**W**ith its vast application experience and impressive customer list, Carrier is recognized as the world leader in vibrating spiral elevator design. Carrier invented and patented the natural frequency spiral elevator in 1956. The model NFSP design was later replaced by the model TMSP, a simple more reliable design, offering increased process flexibility. Building on the success of the TMSP, Carrier developed the high capacity, heavy duty model DDSP. Today, both the TMSP and DDSP represent the state-of-the-art in spiral elevator technology.

Carrier spiral elevators are used worldwide for processing a wide range of materials including synthetic rubber, minerals and ores, foods, dairy products, pharmaceuticals, polymers, solid chemicals, grains, plastics and explosives. In addition to elevating difficult-to-handle products, Carrier spiral elevators can also dry, cool, heat or condition a wide range of materials.

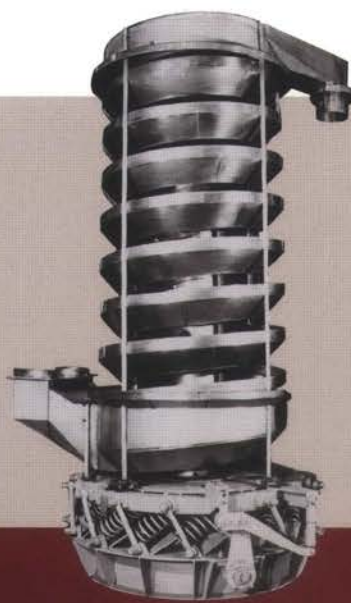
#### Features of Carrier TMSP and DDSP Elevator-Processors:

- Minimal floor space
- Easy to clean
- Minimal installation cost
- Low maintenance cost
- Simple, reliable design with few moving parts
- Adjustable retention time
- Soft isolation to minimize dynamic reactions
- No degradation of fragile materials
- Application of special deck coatings available for sticky products
- Protective material/environment shrouds with inspection windows and access doors
- No structure or drive damage from over-stroke due to upset conditions

## Carrier Vibratory Spiral Elevator-Processors



DDSP Spiral Elevator



NFSP Spiral Elevator



TMSP Spiral Elevator

#### Common Applications

##### Polymers:

Synthetic rubber and other sticky materials are dried and cooled prior to baling or bagging.

##### Food and Dairy:

Milk and cheese products, candies, meat and other foods are processed on USDA 3A or FDA certified elevators.

##### Fragile Materials:

Carrier can select an appropriate vibration amplitude and frequency combination to produce a gentle shuffling action which eliminates product degradation.

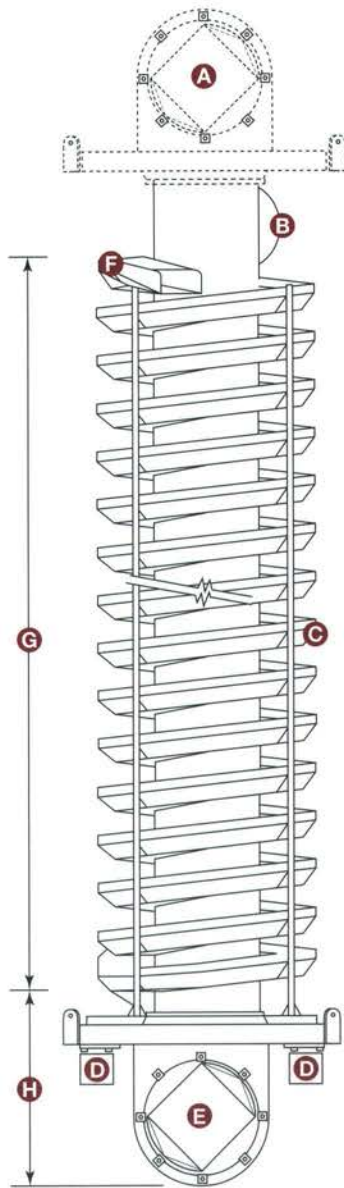
##### High Temperature Materials:

Elevate or cool high temperature materials.

## TMSP Elevator-Processor

The TMSP elevator-processor has a simple and dependable drive incorporating twin drive motors. The TMSP is designed for low to medium capacities in a wide range of applications. Adjustment of vibrating stroke and angle permits variable retention time to meet specific processing requirements.

The TMSP can be engineered to incorporate spun flights constructed from carbon steel, aluminum or alloys, including stainless steel or titanium. The TMSP is capable of incorporating all processing features, shrouded or unshrouded, with a maximum temperature of 1200°F and lift elevation of 50 feet. Diameters from 18 inches to 120 inches are available.



### Key

- A** Optional Overhead Drive
- B** Optional Process Air Inlet
- C** Conveying Flights
- D** Isolation Springs
- E** Twin-Motor Drive
- F** Material Discharge
- G** Lift Elevation
- H** Material Feed Height



Sanitary Cooler for Meat Products with Shrouded Drive



Rice Cooler



Plastic Pellet Cooler with Overhead Drive



Catalyst Pellet Cooler

# DDSP Elevator-Processor

The Model DDSP elevator processor was designed for high capacity, severe-duty applications. The unique drive permits adjustment of amplitude, vibration angle, and frequency on large diameter elevators with a lift elevation of up to 70 feet. The elevator's ruggedness, flexibility and reliability make it the number one choice for processing difficult to handle materials at high capacities.

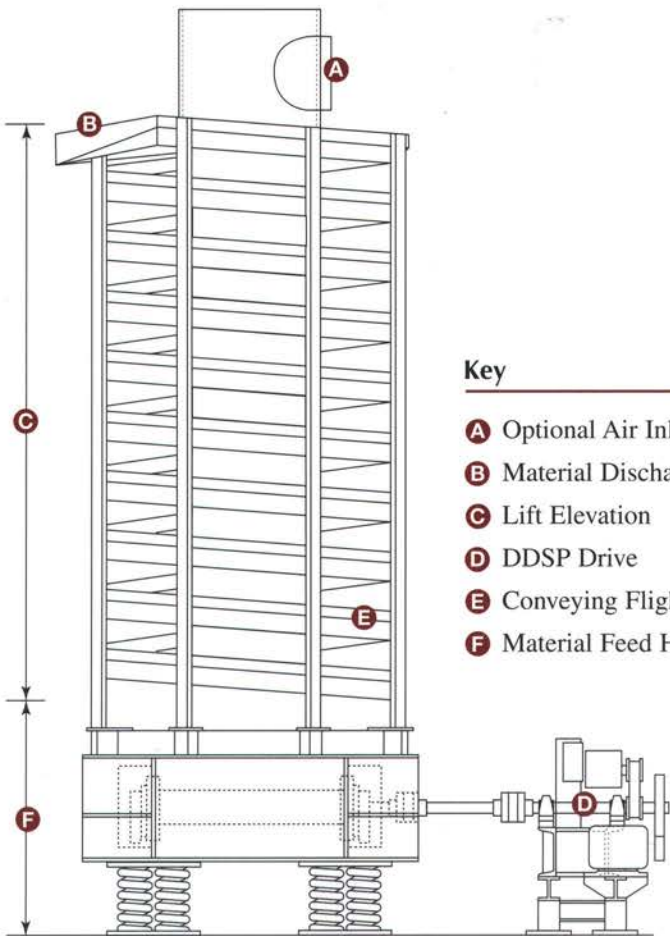
The DDSP drive is reliable and easy to maintain. Driven by a single motor, the grease lubricated drive is quiet and compact. **The direct drive design will not over-stroke**, which is the leading cause of structural failures in other vibrating spiral designs. The DDSP is also dynamically isolated to reduce reactions transmitted to surrounding structures or equipment.

## Key

- A** Optional Air Inlet
- B** Material Discharge
- C** Lift Elevation
- D** DDSP Drive
- E** Conveying Flights
- F** Material Feed Height

## Synthetic Rubber Processing

The DDSP is used in synthetic rubber plants worldwide. The direct-drive design makes it superior to natural frequency designs which are subject to high stress, over-stroke conditions when rates surge or rubber sticks to the flight. A long stroke and medium frequency are used to reduce sticking and prevent agglomeration. The retention time, which is critical to process control, can be varied with the DDSP drive while maintaining the proper stroke and frequency combination. Natural frequency designs which rely on reductions in the stroke or frequency can cause agglomeration which leads to insufficient drying and cooling and bale weight inaccuracies.



Crumb Rubber Cooler



High Capacity  
Polymer Cooler

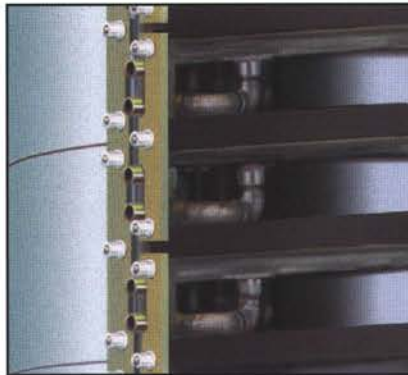


Crumb Rubber  
Dryer/Cooler

# Specialized Manufacturing Capabilities



TMSP Spiral Elevator  
with Water Jacket and  
Transparent Shroud



## Jacketed Flights

Carrier's spiral elevator-processors combine long retention times and a reliable jacketed-flight design to produce efficient drying or cooling while elevating.



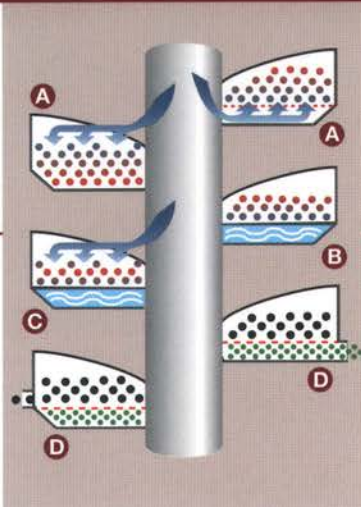
## Advanced Manufacturing Techniques

Modern manufacturing capabilities, including laser cutting and automated welding, assure stringent fabrication requirements are met for dependable, high-quality equipment.



# Processing Features

of Carrier TMSP and DDSP elevator-processors:



## Key

- A** Air cooling, drying, or heating. Air is forced from the centertube baffle into the conveyed material from above or underneath through a perforated deck.
- B** Indirect cooling, drying, or heating. A jacketed flight design is used to provide indirect heat transfer to the conveyed material. Water, steam or other fluid can be used.
- C** A combination of (A) Direct Heat Transfer and (B) Indirect Heat Transfer.
- D** Material Separation: Size separation of materials or dewatering of liquids can be achieved with scalping screens or perforated plates throughout the flights.

## Corporate Profile

Established in 1950, Carrier is internationally known for its pioneering work in the field of bulk material handling and processing. Carrier specializes in the manufacture of fluid bed processors, pneumatic dryers, vibrating conveyors, feeders, screeners, and spiral elevators.

Through the years, Carrier has developed processing equipment to meet the needs of a broad range of industries, including chemicals, synthetics, foundry, glass, food, explosives, wood, coal, metals, scrap, and recycling.

Carrier continues to bring new technology to the market, as well as new value to existing technology through its Research and Development Lab. The lab serves as a technology base in which to confidentially test the feasibility of new products and processes, simulating actual operating conditions.

With a technology profile of over 150 patents, each application is custom tailored. Computer-assisted design and manufacturing procedures provide the background for the innovative engineering required to achieve unmatched production efficiencies.

With an extensive line of processing machines and vibrating equipment, we are your **ONE-STEP SOLUTION** to:

- Accumulate
- Agitate
- Blanch
- Blend
- Calcine
- Classify
- Cool
- Convey
- De-Oil
- Dewater
- Distribute
- Divide
- Dry
- Dry/Cool
- Elevate
- Feed
- Flatten
- Heat
- Meter
- Moisten
- Orient
- Proportion
- Quench
- Recycle
- Scalp
- Screen
- Separate
- Shakeout
- Singulate
- Solidify
- Sort
- Tumble
- Wash
- Withdraw

### Representatives

Carrier is represented by more than 75 manufacturer's representative organizations throughout the U.S., Canada, Mexico, Korea, Peoples Republic of China, Taiwan, Chile, Argentina, Columbia, Brazil, Australia, Peru, Eastern Europe, and Western Europe. Licensees: India, Japan, and Sweden. Contact our United States office for the nearest representative in your area.

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*Vibrating Fluid Bed Dryer*



*Inclined Vibrating Conveyor*



*Tornesh Dryer*

**Carrier**  
Vibrating Equipment, Inc.