



Vacuum sequencing systems for bulk material handling

Vacuum Sequencing Systems

Our Experience

Coperion K-Tron offers a complete range of pneumatic conveying and bulk material handling systems and components. With over 60 years of experience designing pneumatic conveying systems for a wide range of applications in most industries, Coperion K-Tron has the right solution for you.

This brochure covers the Coperion K-Tron range of loaders and receivers used for vacuum sequencing systems. For information on the full range of

Coperion K-Tron pneumatic conveying products, go to www.coperion.com.

Series 2400 Equipment

The Series 2400 line offers filtered vacuum loaders and receivers for conveying materials for the plastics, chemical and food industries.

P-Series Equipment

The P-Series filtered receivers are specially designed for use with powders and friable materials in the food and pharmaceutical industries.

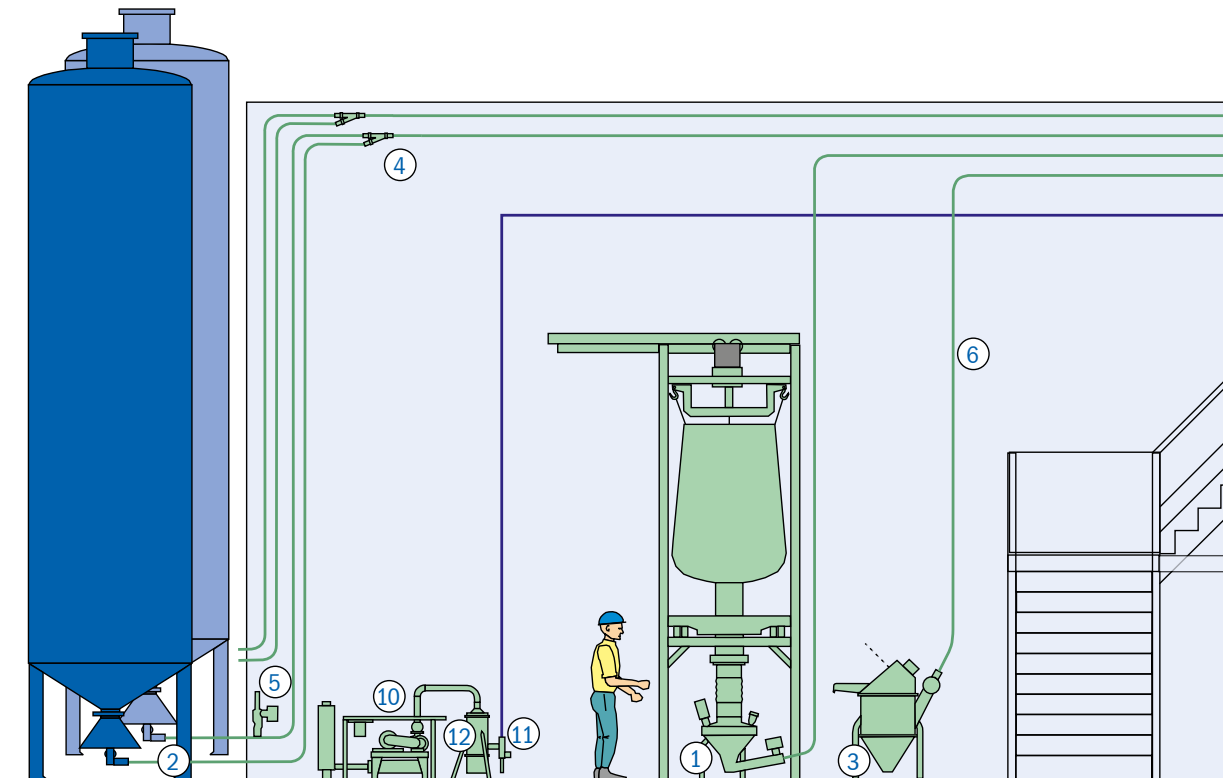
Auxiliary Equipment

To complement the collection of vacuum conveyors Coperion K-Tron also offers a range of auxiliary equipment, such as controls, vacuum pumps, collection boxes, bag dump stations, valves, piping and much more.

Our Goals

- ♦ to supply a single source system by giving full system performance guarantee for both granules and powder applications
- ♦ to extend Coperion K-Tron's scope of supply through cooperation with partners

Complete Systems



Our Services

- World wide spare part and start-up capabilities via the Coperion K-Tron Process Group network
- Fully equipped conveying and feeding test labs at our facilities in North America, Europe and China
- Local sales force to discuss your application

Vacuum Sequencing Applications

- Dilute phase, continuous and batch conveying applications
- Conveyors specialized for direct loss-in-weight feeder refill
- Integrated volumetric feeding and conveying units
- Low velocity vacuum dense phase conveying for fragile and pre-mixed materials
- Optimal solutions for most industries

The list continues to grow as we consider the challenges presented by your material handling requirements.

Elements of a Vacuum Conveying System

From pick-up spike to piping to receivers and vacuum pumps, Coperion K-Tron offers a wide range of equipment for pneumatic conveying needs, whether for automated refill of feeding systems or as stand-alone conveying applications.

The list below features the varied elements available from Coperion K-Tron for building a complete conveying system for loss-in-weight feeder refill as pictured in the diagram below left.

Material Pick-up

From simple suction wands for free flowing materials to fully fluidized feed bins (1), silo pick-up pots (2) or bag dump stations (3) with pre-feeders for powders, Coperion K-Tron offers a wide variety of equipment to ensure reliable material pick-up into the conveying air.

Conveying Line

Connecting one or multiple material pick up stations to a vacuum receiver. To ensure blockage-free conveying, diverter valves (4) and line clearance valves (5) are available in addition to the piping (6).

Vacuum Receivers

Various models of central (7) and self-contained receivers are available to separate the material from the conveying air stream, alternating between suction and discharge modes of operation.

Sequence & Vent Valves

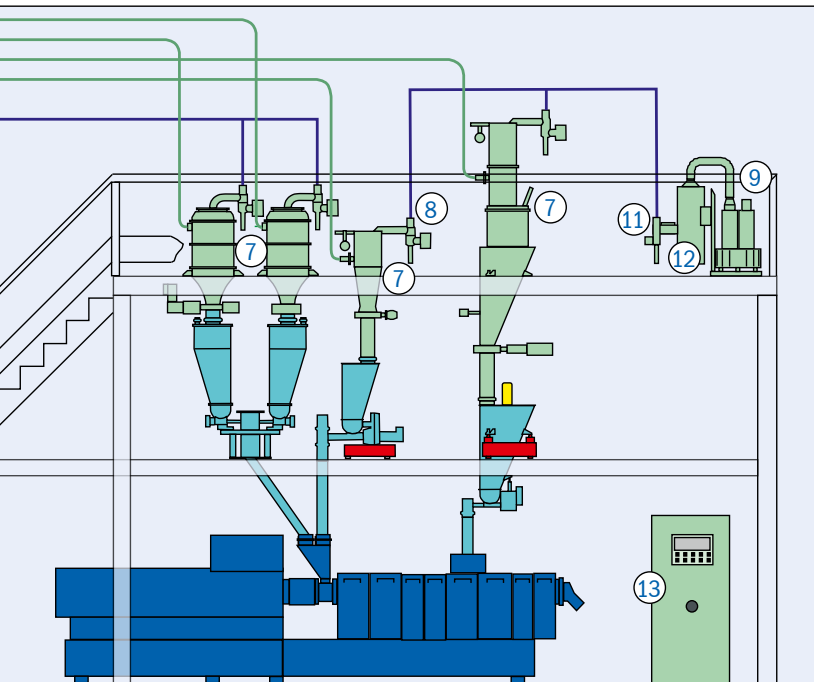
Sequence & vent valves (8) allow the air stream to bypass and vent the vacuum receiver during the discharge cycle.

Pump Packages

Vacuum pump packages include the pump -- regenerative blower (9), positive displacement blower (10) -- to produce the air stream as well a bypass valve (11) to allow the pump to run while no receiver is conveying and a secondary filter (12) to protect the vacuum pump from entrance of foreign bodies.

Controls

Controllers and operator interfaces are available for single central or self-contained units. To control the sequence of a multi-component system, Microprocessor and PLC controls (13) are available which are programmed to suit the client's process. Siemens, Mitsubishi and Allen Bradley PLC controls are available.



Coperion K-Tron Series 2400

The most versatile line for a variety of materials

Series 2400 Powder and Pellet receivers provide a high capacity sequencing system designed to handle powder, pellet, regrind and granular materials. Each receiver has a stainless check valve to allow multiple receivers to draw material from a common conveying line.

Applications include railcar unloading, silo to daybin transfer, in-plant transfer or feeder refill.

Various models available in carbon steel (painted), stainless steel or aluminum.

All models feature quick connect clamps for easy cleaning and filter maintenance.

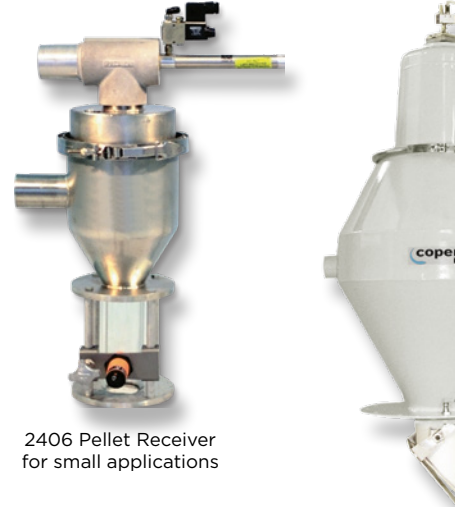
The self-contained 2410 loader features an integrated power head.

Material conveying principle
Pneumatic, vacuum, dilute phase and dense phase conveying

Conveying rates
Up to 6,800 kg/hr [15,000 lbs/hr] on a batch basis.

Hazardous Area Applications
NEC and ATEX compliant models available as a custom option.

System Controls
PLC - Programmable Logic Central Controller
MPC - Microprocessor Central Controller



2406 Pellet Receiver for small applications

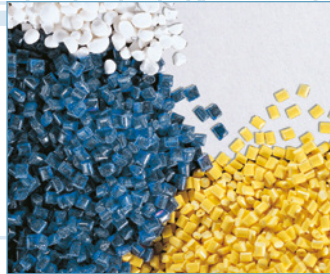
2420 PVC Compound Receiver compact design with highly efficient material separation



2410 Pellet Loader with self-contained power head



Applications



Plastics

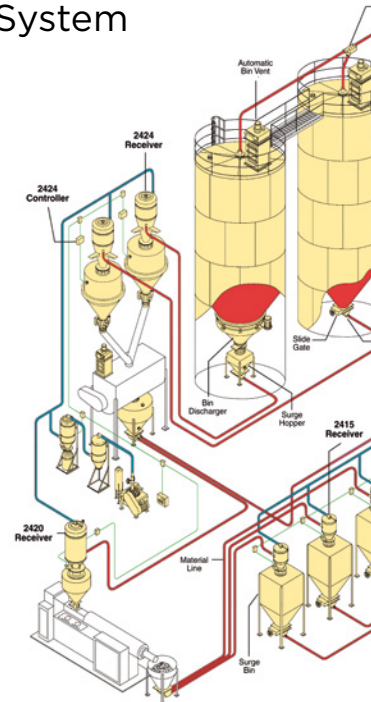
- ◆ Railcar unloading
- ◆ Silo-to-daybin or in-plant transfer
- ◆ Loss-in-weight feeder refill
- ◆ Loading extruders or molding machines

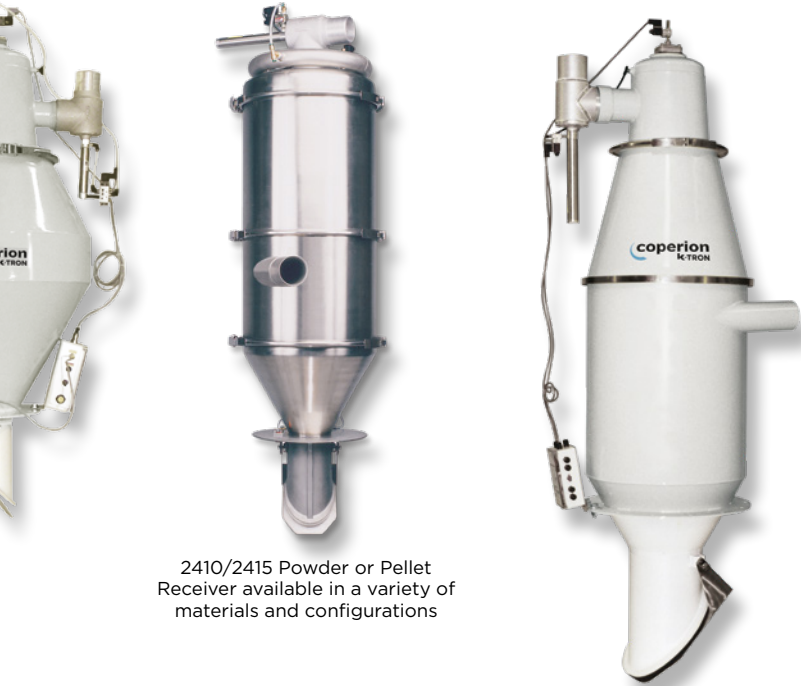


Chemicals, Food

- ◆ Bag discharge to final destination
- ◆ Silo-to-daybin or in-plant transfer
- ◆ Loss-in-weight feeder refill
- ◆ Weighing and batching

Series 2400 In-Plant Transfer System





2410/2415 Powder or Pellet Receiver available in a variety of materials and configurations

2424/2423 Powder or Pellet Receiver for high capacity applications



Series 2400 Overview

Type	Receiving Volume	Conveying Rate*
Pellet Receivers (with standard gravity discharge gate)		
2406	1 dm ³ [0.039 ft ³]	327 kg/h [720 lb/h]
2410	11.7 dm ³ [0.41 ft ³]	1,180 kg/h [2,600 lb/h]
2415	28.5 dm ³ [1 ft ³]	2,722 kg/h [6,000 lb/h]
2424	134 dm ³ [4.74 ft ³]	6,804 kg/h [15,000 lb/h]

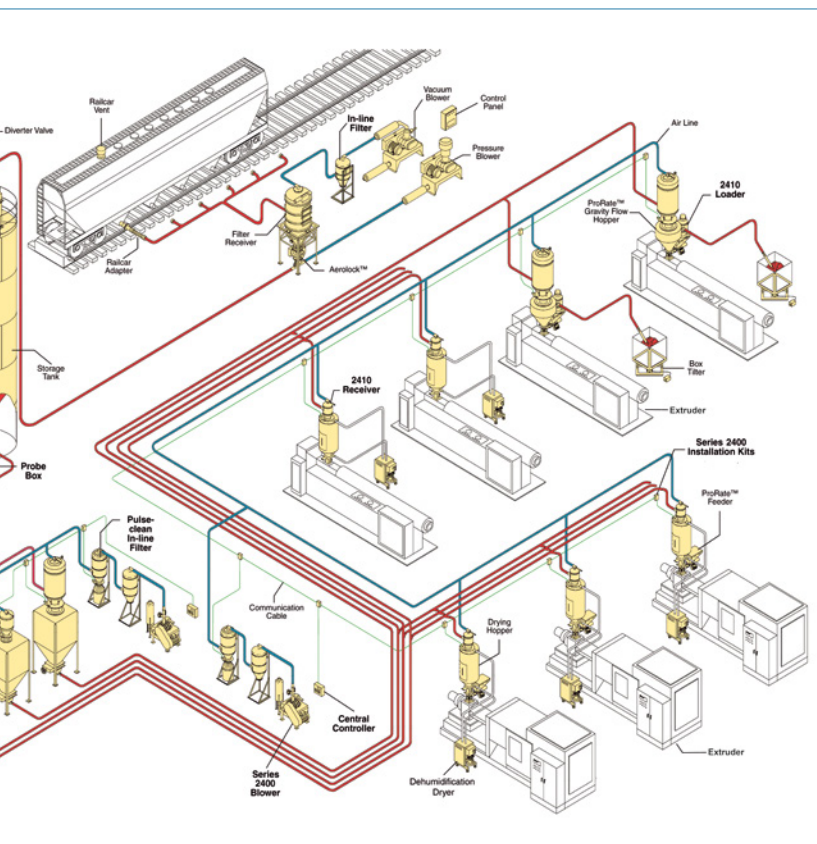
Pellet Receivers (with discharge flange for refilling feeders)		
2410	9.7 dm ³ [0.34 ft ³]	1,180 kg/h [2,600 lb/h]
2415	22.8 dm ³ [0.8 ft ³]	2,722 kg/h [6,000 lb/h]
2424	106 dm ³ [3.74 ft ³]	6,804 kg/h [15,000 lb/h]

Powder Receivers (with standard gravity discharge gate)		
2410	11.7 dm ³ [0.41 ft ³]	408 kg/h [900 lb/h]
2415	28.5 dm ³ [1 ft ³]	1,000 kg/h [2,200 lb/h]
2420	33 dm ³ [1.16 ft ³]	1,225 kg/h [2,700 lb/h]
2423	70.8 dm ³ [2.05 ft ³]	1,406 kg/h [3,100 lb/h]
2424	134 dm ³ [4.74 ft ³]	3,175 kg/h [7,000 lb/h]

Powder Receivers (with discharge flange for refilling feeders)		
2410	9.7 dm ³ [0.34 ft ³]	408 kg/h [900 lb/h]
2415	22.8 dm ³ [0.8 ft ³]	1,000 kg/h [2,200 lb/h]
2420	19.8 dm ³ [0.7 ft ³]	1,225 kg/h [2,700 lb/h]
2423	44 dm ³ [1.55 ft ³]	1,406 kg/h [3,100 lb/h]
2424	106 dm ³ [3.74 ft ³]	3,175 kg/h [7,000 lb/h]

Note: rates are based on a system profile of 15.2 m [50 ft] horizontal, 4.6 m [15 ft] vertical, 3 m [10 ft] hose, 2 x 90° bends

* Convey rates may vary pending on product characteristics and conveying distance.



Coperion K-Tron P-Series

For sanitary material handling solutions

Poor flowing powder?

Fragile products?

The P-Series provides a custom solution for difficult conveying applications. The sanitary design is perfect for applications in the food and pharmaceutical industries. Other design features include steep cone angles to ensure excellent discharge and band clamps for quick disassembly. The polyester cartridge filter is equipped with automatic reverse jet pulsing for thorough cleaning.

With the P-Series we will always work out a receiver configuration optimally suited to the application and product requirements, for simple "up and in" systems or for continuous conveying.

Material conveying principle

Pneumatic, vacuum, dilute phase and dense phase conveying.

Conveying rates

Up to 4,000 kg/hr [9,000 lbs/hr] on a batch basis.

Materials handled

Ability to handle a wide range of free and poor flowing powders as well as friable materials.

Hazardous Area Applications

NEC and ATEX compliant models available as an option.



P10 receiver with flap valve mounted on a T35 volumetric twin screw feeder

Applications



Chemicals

- ◆ Vessel loading
- ◆ Loss-in-weight feeder refill
- ◆ Reactor loading



Food

- ◆ Fragile product handling
- ◆ Mixer loading
- ◆ Loss-in-weight feeder refill



Pharmaceutical

- ◆ Tablet conveying
- ◆ Loss-in-weight feeder refill
- ◆ Tablet press and blender loading



With flap valve for simple conveying applications



With full bore discharge for sticky powder applications



With butterfly valve for loss-in-weight refill applications



P-Series Overview

Model	Receiving Volume / Discharge Valve	Conveying Rate*
P10-FP-150	9.5 dm ³ [0.34 ft ³] Flap valve, pneumatic, Ø 150 mm [6 in]	600 kg/hr [1320 lb/hr]
P10-BV-100	7.3 dm ³ [0.26 ft ³] Butterfly valve, Ø 100 mm [4 in]	400 kg/hr [880 lb/hr]
P10-BV-150	7.3 dm ³ [0.26 ft ³] Butterfly valve, Ø 150 mm [6 in]	400 kg/hr [880 lb/hr]
P30-FP-150	27.6 dm ³ [0.97 ft ³] Flap valve, pneumatic, Ø 150 mm [6 in]	1000 kg/hr [2200 lb/hr]
P30-FP-300	27.6 dm ³ [0.97 ft ³] Flap valve, pneumatic, Ø 300 mm [12 in]	1800 kg/hr [4000 lb/hr]
P30-BV-150	26.4 dm ³ [0.93 ft ³] Butterfly valve, Ø 150 mm [6 in]	1000 kg/hr [2200 lb/hr]
P100-FP-300	96.2 dm ³ [3.4 ft ³] Flap valve, pneumatic, Ø 300 mm [12 in]	4000 kg/hr [8800 lb/hr]
P100-BV-200	90.2 dm ³ [3.2 ft ³] Butterfly valve, Ø 200 mm [8 in]	3600 kg/hr [7920 lb/hr]

* Convey rates may vary pending on product characteristics and conveying distance

Smart Solutions for Material Handling

Since its creation in 1964, Coperion K-Tron has defined the leading edge of technology for material handling applications in the process industries. Coperion K-Tron designs, produces, sells and supports feeding and conveying equipment as well as complete process solutions.

Coperion K-Tron Test Labs

Fully equipped testing facilities help in making the optimal equipment selection.

Systems Engineering Support

One source engineering of your entire material handling project. Our system engineer will work with you from concept to commissioning.

Worldwide Service Support

Trained, certified service engineers located around the world to provide twenty-four hour technical support and solve your problem any time, any day.

Custom Service Programs

Start-up and preventive maintenance programs designed for your specific installation.

Spare Parts

Quick delivery so you can safely limit your inventory to the most critical parts.

Professional Training

The Coperion K-Tron Institute provides hands-on maintenance, mechanical and operator training for all of your Coperion K-Tron equipment, either on-site or at a Coperion K-Tron facility.



Coperion K-Tron receivers refilling Coperion K-Tron loss-in-weight feeders

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