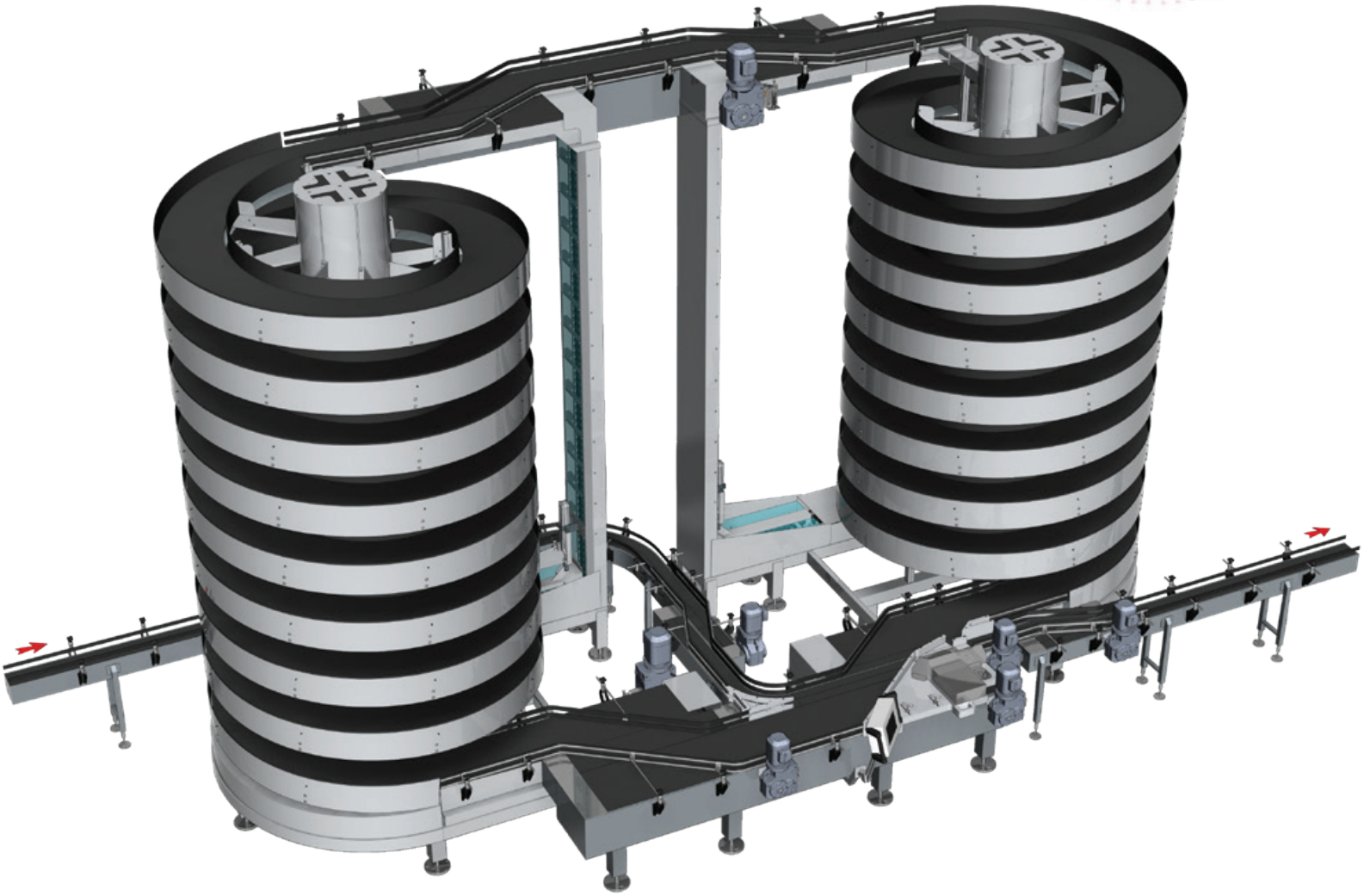
RYSON
ROYAL APOLLO GROUP

Garvey Infinity Accumulation Loop



The latest version of the Garvey Infinity Loop integrates two Ryson Mass Flow Spiral Conveyors enabling the use of available vertical space to increase system capacity within a small footprint.

The Garvey Infinity Loop uses patented technology to accumulate and single file even the most unstable of products at speeds that are unmatched in the industry. Using their patented loop technology, Garvey handles products with no back pressure, no breakage, no label damage, and minimal noise.

The Ryson Mass Flow Spirals can handle full or empty bottles, cans, jars and other types of containers. Products in the spirals are conveyed up and down in a single file or in a continuous mass flow. These spirals utilize the proven modular Ryson high capacity spiral technology designed for reliability, low maintenance and long life.

Garvey is a global leader producing conveying, accumulating, and automation solutions. Joining forces with Ryson has allowed the Vertical Infinity to utilize two incredible technological achievements and create the most efficient accumulation machine Garvey has ever built. The Vertical Infinity furthers Garvey's mission to maximize the production of lines by keeping the constraint running when the non constraint machine's go down.

Figure A shows the operation in normal production mode. Downstream equipment is taking product at the same rate as the upstream equipment is producing it. In this mode the spirals are not operating and product simply flows through the system.

Figure B shows the operation when the downstream equipment is stopped or slowed. Product is automatically diverted from the pass through conveyors into the spirals. Product is fed into the first spiral as far to the outside as it can travel. As product progresses through the system it is kept to the outside of the spirals by the transfers. Once a complete lane is built up on the outside of the spirals product begins forming inside lanes and this continues until the spiral has as many lanes as they can physically hold. For a larger accumulation capacity, the spirals are made taller and no additional floor space is required.

Figure C shows stored product being removed from the spiral at the same time new product is entering. The product on the outside is removed first and the product remaining in accumulation is automatically shifted to the outside. New product entering accumulation is placed on the inside. Although product sequence is not guaranteed, this method provides for removing the oldest material from accumulation first, ensuring product turnover. The outfeed conveyor and the infeed conveyor operate independently so if downstream equipment runs faster than upstream equipment, the amount of product in storage is decreased making the system ready for the next downstream stoppage.

When the upstream equipment stops any product remaining in accumulation is fed to the outfeed conveyors, emptying the system.

Figure A

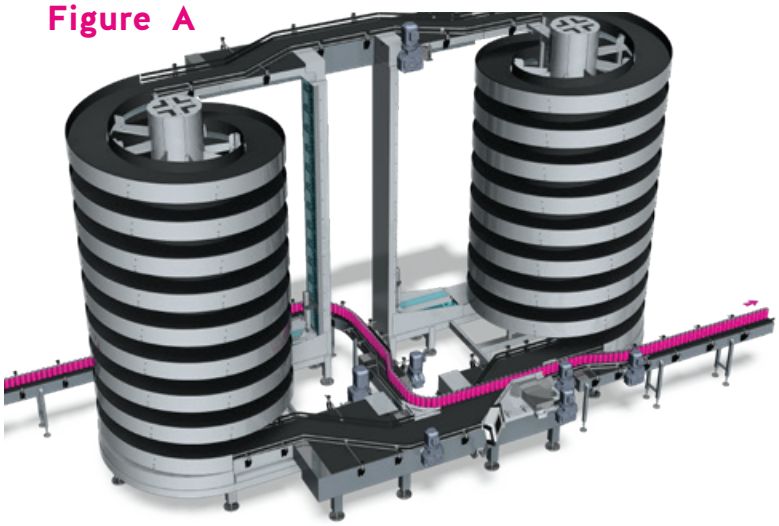


Figure B

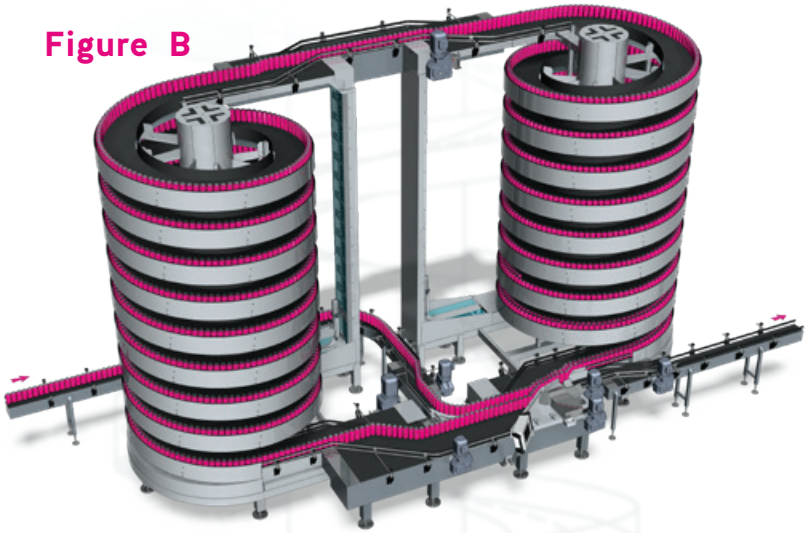
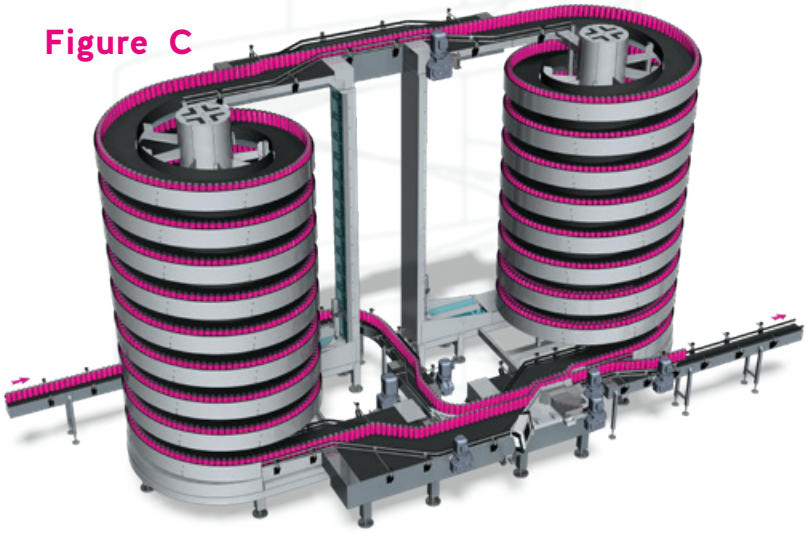


Figure C



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