

HOW MAGNETIC CONVEYORS WORK

Principle of operation, configurations, applications and selection considerations.

Magnetic conveyors move ferrous (magnetically attractable) material - steel stampings, machined parts, cans, lids, scrap and chips - by holding the product against a moving surface with a fixed magnetic field. Because the magnets hold the product in place, magnetic conveyors can run on inclines, declines, vertically and even inverted, where a conventional belt could not.

Operating Principle

A stationary array of magnets is mounted beneath a non-magnetic slider bed (typically stainless steel). A belt or chain-driven slat travels across the bed. Product placed on the bed is drawn to the surface by the magnetic field and carried along by the moving belt while the field keeps it captured - so orientation is maintained and parts do not slide, jam or fall off on slopes.

Common Configurations

TYPE	DESCRIPTION	TYPICAL USE
Slider-bed belt	Belt over a stationary magnet bed	General ferrous part and can handling
Magnetic slat / apron	Steel slats over magnets	Heavier parts, hot or sharp scrap
Chip / swarf conveyor	Sealed trough with drag flights over magnets	Machining chips, coolant separation
Magnetic rail / pulley	Magnet built into a pulley or rail	Transfers, hold-down at transfer points

Where Magnetic Conveyors Are Used

- Metal stamping and press lines - removing and elevating stampings and offal.
- Machining - conveying chips and swarf away from the machine, often up an incline.
- Can and lid handling - high-speed vertical and inverted transport in food and beverage.
- Scrap handling - moving ferrous scrap out of pits and up to bins or balers.
- Parts transfer - holding parts in orientation across gaps, elevations and turns.

Advantages

- Conveys on steep inclines, verticals and inverted runs without the product shifting.
- Holds part orientation - important for downstream automation and feeding.
- Contains small parts, chips and offal that would otherwise scatter.
- Fewer moving parts on the carrying surface; the magnets are stationary and maintenance-free.
- Coolant and fines can drain through or be separated on chip-handling versions.

Selection Considerations

Material	Must be ferrous. Non-ferrous (aluminium, brass, stainless of some grades) will not hold.
Part weight & size	Determines required magnet strength and belt/slat construction.
Incline angle	Steeper runs and inverted sections need stronger fields and closer magnet spacing.
Temperature	Hot scrap or chips call for slat/apron designs and heat-rated magnets.
Environment	Coolant, oil, washdown and abrasives drive material and sealing choices.

Uniking Canada supplies magnetic conveyor chain, slats and complete units. Contact info@unikingcanada.com for application review and sizing.