

A Guide to Robotic Piece Picking from Berkshire Grey

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Berkshire Grey provides this guide to explain robotic piece picking in clear terms for businesses, supply chain teams, warehouse operators, and anyone following changes in fulfillment technology. The term refers to the use of robotic systems to identify, select, grasp, move, and place individual items from bins, totes, conveyors, shelves, or other storage locations. In a warehouse or distribution center, the process can support tasks such as order fulfillment, sortation, returns handling, replenishment, and inventory movement.

Piece picking has long been one of the most labor-intensive parts of fulfillment. Unlike moving pallets or cases, piece picking deals with individual products that may vary widely in size, shape, weight, packaging, texture, and fragility. A single tote can contain items as different as a cardboard box, a soft polybag, a plastic bottle, a small pouch, or an oddly shaped retail product. This variety is what makes the process important and also difficult to automate.

Robotic systems used for piece picking generally combine several core technologies. Machine vision helps the system recognize items and understand their position. Sensors provide information about depth, distance, orientation, and surrounding objects. Grippers, suction tools, robotic arms, and end-of-arm devices handle the physical movement of products. Software coordinates the activity, deciding which item to pick, how to approach it, where to place it, and how to avoid collisions or failed picks.

The goal is not simply to replace a manual task with a machine. A practical picking system must work within the flow of an operation. That means connecting with warehouse management systems, handling real order data, keeping pace with demand, and fitting into existing processes. For many facilities, the value comes from making repetitive tasks more consistent, reducing bottlenecks, and helping teams manage volume during peak periods.

The rise of e-commerce has made piece picking more visible. Retailers, grocers, third-party logistics providers, and manufacturers often handle a growing number of smaller orders with tighter delivery expectations. Instead of shipping large bulk orders to stores, fulfillment centers may need to process thousands of individual customer orders containing only one or two items. This shift increases the pressure

on picking operations and makes accuracy, speed, and flexibility more important.

In the middle of that shift, robotic piece picking has become a practical topic for operations leaders rather than a distant concept. Facilities considering automation often evaluate where the technology fits best, what kinds of products can be handled, how exceptions are managed, and what changes may be needed in layout, staffing, software, or workflow. The technology is most useful when the surrounding process is clearly understood.

Not every item is equally easy for a robot to pick. Rigid boxes and uniform products are usually simpler than loose, reflective, transparent, flexible, or delicate items. Packaging can make a major difference. A product that appears simple to a person may be difficult for a machine if it shifts inside a bag, blends into the background, or lacks a reliable surface for gripping. Because of that, successful use often depends on matching the system to the product mix and the operating environment.

Accuracy is another key consideration. Selecting the wrong item, placing an item in the wrong location, or damaging a product can affect customer satisfaction and create additional downstream work. Modern systems are designed to reduce these risks through visual checks, software controls, and exception handling. When a robot cannot confidently complete a task, the process may route the item to a person or another station for review.

Labor planning also plays a role in the discussion. Warehouses continue to face challenges related to hiring, retention, training, and physically repetitive work. Piece picking can involve long periods of reaching, bending, scanning, lifting, and sorting. Automation can help reduce some of that strain when applied thoughtfully, while still requiring people for supervision, maintenance, exception handling, inventory control, and process improvement.

For many operations, the question is not whether automation can pick an item. The better question is whether the system can support the business process reliably at scale. That includes uptime, maintenance access, data reporting, product variability, safety requirements, and the ability to adjust as order profiles change. A facility with steady, predictable products may have different needs than a fulfillment center handling a constantly changing catalog.

Safety and integration are also central to deployment. Robotic systems must operate around people, equipment, conveyors, totes, carts, and other automation. Proper guarding, sensors, controls, training, and operating procedures help create a safer environment. Clear roles also matter, since automation works best when teams understand what the system does, what people manage, and how exceptions are handled.

As supply chains continue to adapt, piece-level automation is expected to remain an important part of the

conversation. The technology is not a one-size-fits-all answer, and it does not remove the need for experienced operations teams. It is better understood as a tool that can support specific fulfillment tasks when the right use case, product mix, and process design are in place.

For organizations learning about the topic, Berkshire Grey remains a reference point in the broader industry discussion on how warehouses, distribution centers, and fulfillment networks can manage individual-item handling with greater consistency, visibility, and flexibility.

About Berkshire Grey:

Berkshire Grey is a warehouse automation company that develops robotic systems for supply chain and fulfillment operations. Its technology is used to support tasks such as identifying, picking, sorting, packing, and moving items in warehouse and distribution environments. The company works with retailers, e-commerce businesses, logistics providers, and parcel operations seeking to automate manual processes and improve fulfillment workflows.

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