






Selection Guidance Table

	Option	Description	Pros	Cons	Use-Cases	Sample Product Options
1	Cartesian Gantries These systems provide simple linear motion about the X, Y, Z axes with an optional 4th rotational axis about Z at its end-effector. Decoupled axes and simple mechanical and control architecture means that these systems can be purchased-custom or designed from the ground up with any combination of preferred motor/control hardware to provide a bespoke solution exactly meeting application requirements.  VENTION	<ol style="list-style-type: none"> Highly customizable <ol style="list-style-type: none"> Arbitrarily scalable workspace volume Large selection of viable motors and control hardware/software Customizable end-effector interface Simplest control scheme High accuracy Suitable for high payloads Compact Z-Height 	<ol style="list-style-type: none"> Large footprint Relatively slow Relatively high material costs for low volume builds NRE costs required for customization Complex cable routing Limited DOF 	When 3- or 4-DOF is sufficient When a large workspace is required When limited Z-Height is required When qty of required pick-and-place systems is high When the required application software already exists and is incompatible with software APIs for other systems When application requirements are highly constraining and demand custom solution	<ol style="list-style-type: none"> Path-Following Applications with Vention Gantry Robots 	
2	SCARA Selective Compliance Articulated Robot Arms - or SCARAs for short - provide fast and precise 4DOF (X, Y, Z, θ_z) motion with a fixed-rigid vertical axis. They excel in assembly tasks and offer a compact design suitable for tight spaces.  EPSON	<ol style="list-style-type: none"> High speed and precision Compact design Ideal for assembly tasks Relatively large array of purchased-off-the-shelf options with varying specs Likely the cheapest option for a large subset of target applications (both in required NRE, and material costs) Electrical and pneumatic routing from Base to EE built-in facilitating convenient hook-up to custom manipulators 	<ol style="list-style-type: none"> Limited to available off-the-shelf products and their corresponding specs and control software Limited reach compared to other options, Limited DOF 	When 4-DOF is sufficient When high speed and precision are required When compact footprint is required When development cycle time is low When development budget is low When available purchase options meet application requirements	<ol style="list-style-type: none"> SCARA Robots #1 Manufacturer Worldwide Epson US SCARA Robots FANUC America KR SCARA Robot- ideal for assembly, joining tasks, pick&place KUKA AG 	
3	6-DOF Articulated Arms With six degrees of freedom, these arms provide flexibility and complex motion capabilities. They are versatile and can reach tight spaces, making them suitable for a wide range of tasks.  EPSON	<ol style="list-style-type: none"> Flexible movement in 6-DOF space Suitable for complex tasks can reach tight spaces Can be mounted upside-down above workspace - to limit overall system footprint 	<ol style="list-style-type: none"> More complex setup and programming, Higher cost compared to some other options 	When 6-DOF is necessary When complex assembly tasks are required When tight spaces with varied orientations required	<ol style="list-style-type: none"> 6-Axis Robots High-performance, Compact, Flexible and Reliable Epson US KR 4 AGILUS KUKA AG 	
4	Delta Robots Parallel-link robot characterized by high-speed, low-load capabilities. Traditionally 3DOF with the EE being constrained to translation about XYZ, but higher axis variants exist.  KUKA	<ol style="list-style-type: none"> High speed High precision Lightweight, compact design Mounts above workspace resulting in low total system footprint 	<ol style="list-style-type: none"> Limited payload capacity Limited workspace volume 	When high speed/high throughput is required When payload is small When system size/weight should be minimized	<ol style="list-style-type: none"> KR DELTA robots for high-speed applications - precise and low-maintenance KUKA AG Delta Robots FANUC M-3iA Delta Robot Series FANUC America 	
5	Collaborative Robots (Cobots) Collaborative robots designed to work alongside humans  UNIVERSAL ROBOTS	<ol style="list-style-type: none"> Inherently safe design for collaboration with humans Easy to program - can be manually pulled through target set-points Versatile and adaptable - suitable for many applications and environments 	<ol style="list-style-type: none"> De-rated performance specs (payload, speed, repeatability) compared to similar non-Cobot industrial robots Relatively high-cost 	When human-robot collaboration is required When you want to quickly setup small-scale production When you want a general-purpose robot that can be re-purposed as needed	<ol style="list-style-type: none"> Learn about our cobots Universal Robots LBR iiwa KUKA AG 	