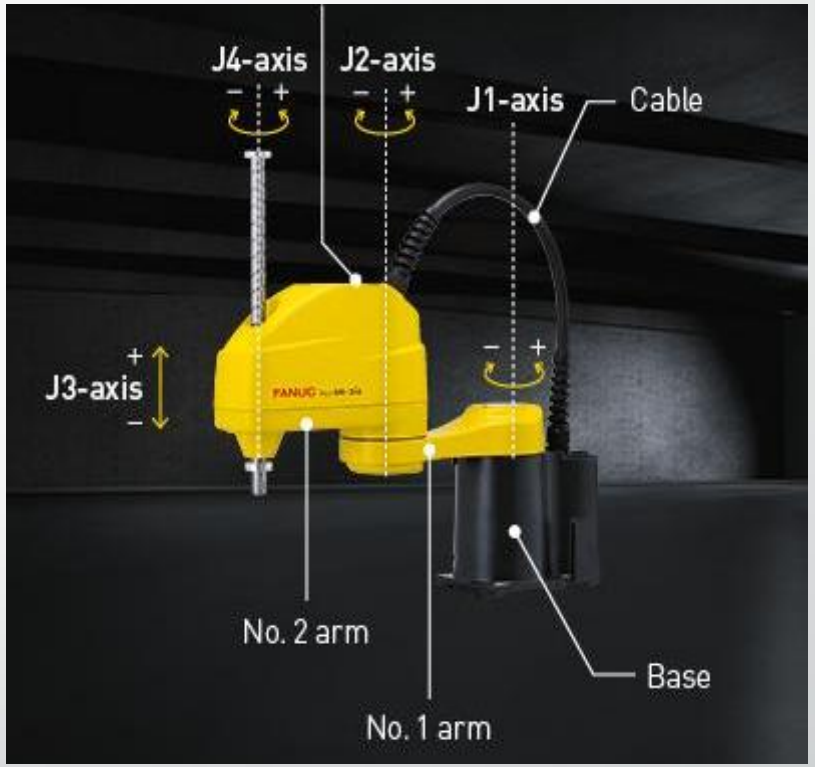
FDM PRINTER TYPES
A) ACCORDING TO THE STRUCTURE

A2) SCARA TYPE FDM PRINTER

A2) SCARA TYPE FDM 3D PRINTER

The creation of Scara FDM 3D printers was inspired by assembly robots of the same name. The arm of the robot is very rigid on the Z-axis and very flexible on the X and Y axes. In this way, it can adapt to the holes in the XY axis.

SCARA's configuration is unique and can handle a wide variety of material handling operations. The structure of the SCARA consists of the intersection of the first and second branches joined at the base. Two independent motors control the X-Y movement of the SCARA using inverse kinematics and interpolation in joints J1 and J2. The last X-Y position at the end of the arm is a factor of angle J1, angle J2, length of the first arm, and length of the second arm.



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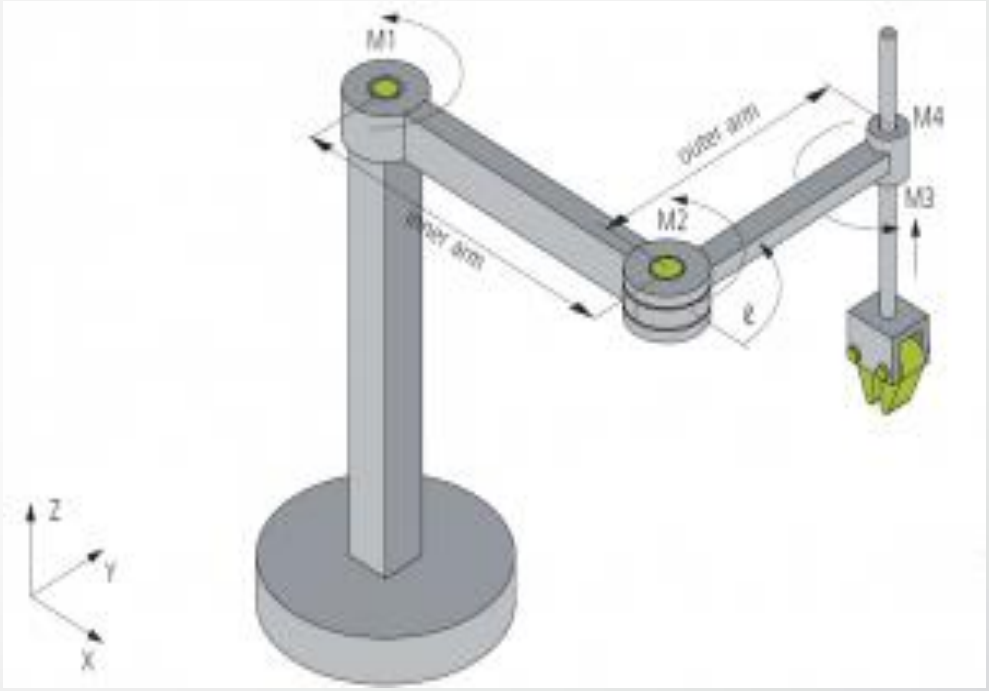
For a robot, the number of joints, the joint position and the axis controlled by each joint determine the degree of freedom. SCARAs are four-axis robots with mobility in the X-Y-Z planes and rotation movement in the Z-axis.



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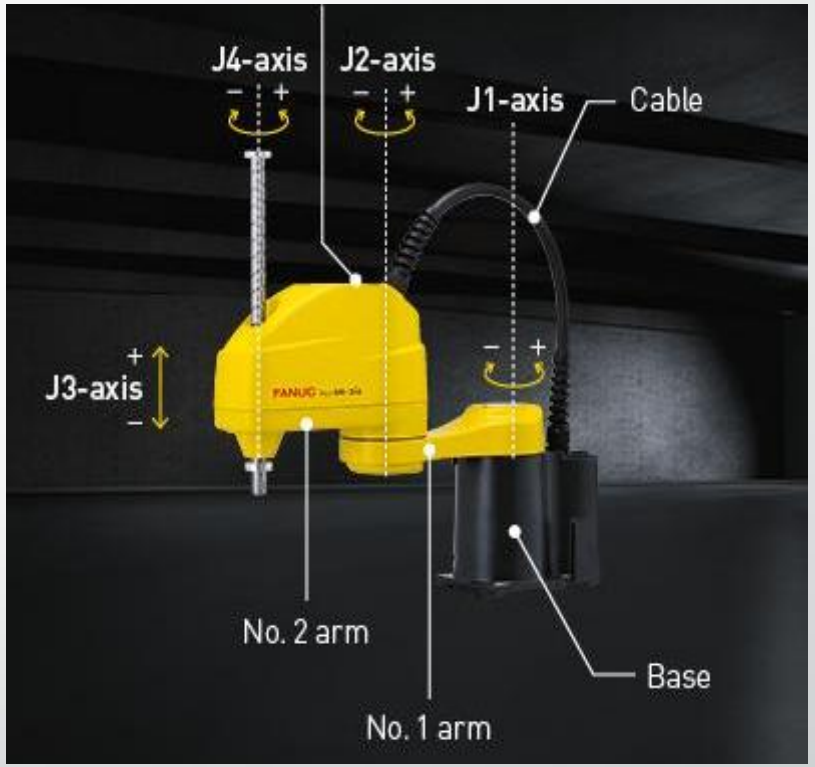
- SCARA robots typically have a working range of cylindrical shape, varying in diameter and depth of the cylinder. The total length of the first and second arms determines the diameter of the circle, while the Z field determines the depth of the cylinder.

- Speed is an important factor in choosing a robot, and SCARAs are often the fastest robots on the market. It has fewer moving joints with four axes. J1 and J2 control is configured to perform X-Y movement and J3 and J4 to perform Z rotation movement. This simplifies inverse kinematic calculations and requires less calculation time.



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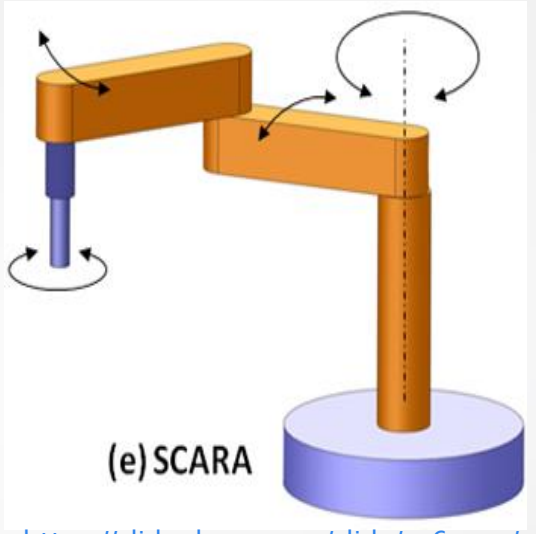
Robotic arms started to take part in production as well as industrial processes such as transportation and packaging. The speed and ease of use of the robotic arms have been integrated into production, increasing the feasibility of large and difficult productions in less time with minimum effort. This convenience, which is the result of the combination of three-dimensional printer technology and robotic arms, is increasingly used in the industry. Especially in the construction sector, robotic arm printers have also grown in size and the desired product size has become available.



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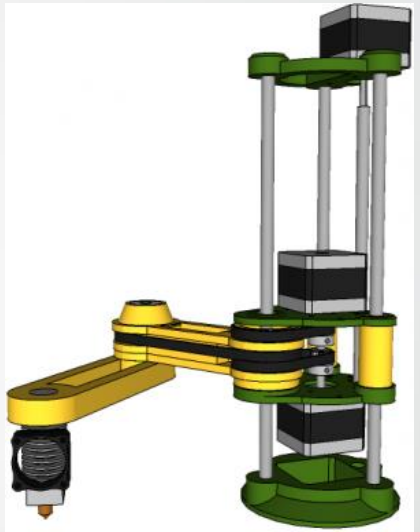

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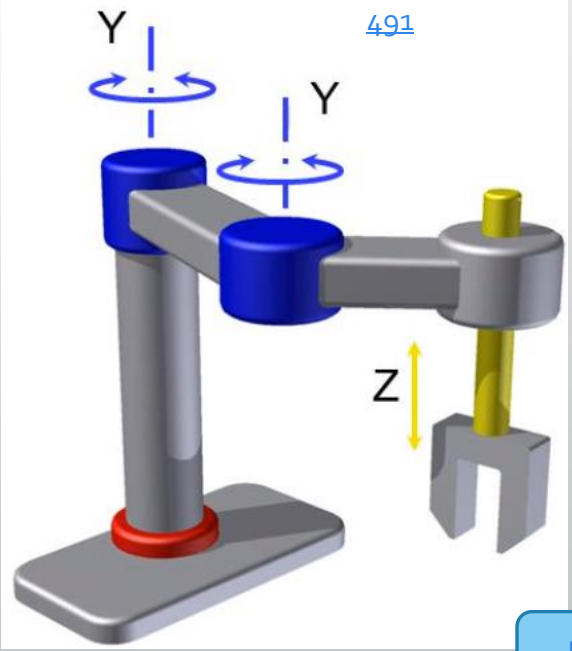

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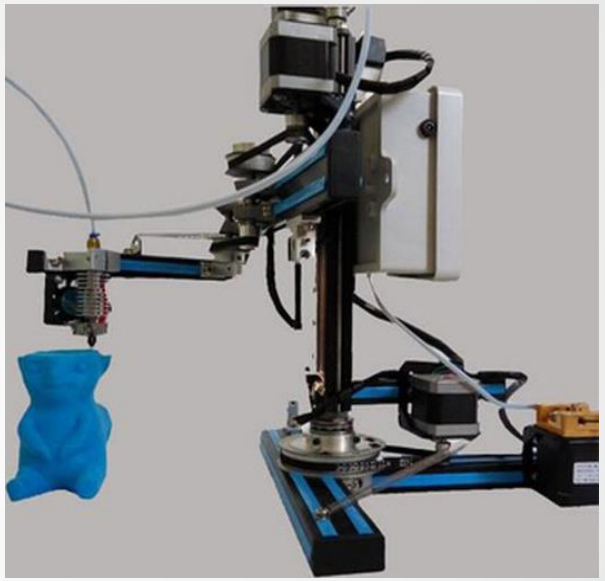
The Scara 3D Printer is built according to SCARA (Optional Compatibility Assembly Robot Arm), two motor control arms carrying an extruder in the XY plane. Feeding along the Z-axis is carried out by a ball shaft gearbox. SCARA provides an advantage in printing speed over printers using Cartesian coordinates. Scara is a very sensitive system that takes up very little space. A Scara 3D printer looks and moves like an industrial robot in an automobile assembly line. The vertical strength of the combined SCARA mechanism permits the use of both the 3D printing extruder and the milling head, allowing machining of soft metals or milling plastics. A combined mechanism, the SCARA 3D printer provides high reliability, eliminating the need to pull the drive belts and adjust the bearing clearance.



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