

How to specify a dispensing robot

The application of adhesives, potting compounds or encapsulants, sealants, FIP gaskets, temporary masking or lubricants (or other liquids, fluids or pastes – in summary, “a material”) is something which is readily automated with a dispensing robot. If you are doing this manually now, then you could be missing out on *productivity* benefits, including *consistency*, *speed* and *accuracy*.

A “**dispensing robot**” actually comprises these main components:

1. **The robot** – its function is to position and actuate the dispenser
2. **The dispenser** – the valve, pump, syringe or cartridge which dispenses the material, usually from a needle or nozzle. Other elements might include a dispensing controller (interface between the robot actuation signal and the valve or pump), or a material reservoir (to feed the valve or pump)
3. **Tooling** – the jig or fixture which hold the parts which are the recipient of the dispensed media, and the tooling which holds the dispenser to the robot
4. **Enclosure** – for health & safety. May have interlocked doors or light curtains, interfaced to the robot

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A typical benchtop dispensing

robot

So what sort of things will you be considering when choosing a robot for dispensing?

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Work area – they are available from 200x200mm on up. How big are your parts, and how many will you want to mount on the robot for each cycle?

Z height – how tall are your parts, and will they fit under the robot mounted dispenser? For taller parts, a gantry robot may be needed instead of a benchtop robot

Number of axes – fully programmable 3 axis robots are standard; 4 axis and 5 axis robots are available for more complex 3D dispensing paths

Weight of parts – the robot needs to support (and maybe move) the weight of the parts and the holding jig

Weight of payload – the robot needs to support (and move) the dispenser

Load/unload – will the parts be loaded/unloaded manually, or fed by a conveyor – in the latter case a gantry robot is needed

Accuracy/tolerance/repeatability – are these so demanding that add-ons like [dispensing tip alignment](#) or vision is required?

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A gantry dispensing robot

Remember, the dispensing robot is primarily a positioning system for the dispenser or dispensing system. The specification and choice of the [dispensing methodology](#) (valve, pump, syringe, cartridge, etc) is quite complex and material dependent. Your dispensing robot supplier should be able to help you with the optimal selection, and help you evaluate your choice. Then, your supplier will supply and integrate the dispenser with the robot and configure and customise the system with holding tools and fixtures, benches and [safety enclosures](#).

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Dispensing robot in free standing enclosure

The project should be completed with a full training agenda for all users.

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