

# Object Detection on Robot Grippers

Ultrasonic Sensors for Fast and Reliable Part Removal

## The Application

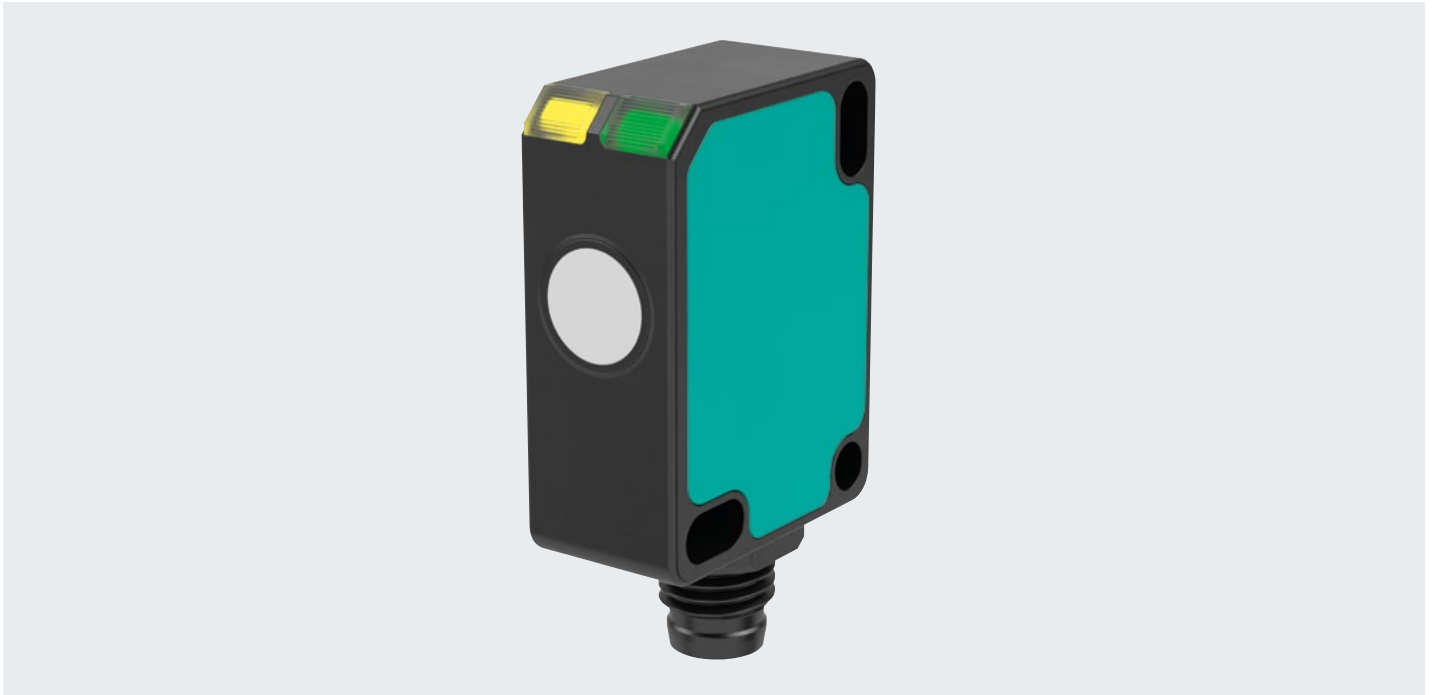
Automotive production involves more than just metal components. A variety of other materials are used, including the organic polymers found in bumpers, front spoilers, sill trims, and interior components. These materials are shaped in an injection-molding machine and, before being painted, have a matte black finish.

A robot removes the parts from the molding machine and puts them in place for the following processing steps, which include trimming, milling, and assembly. Before the robot can remove the part from the machine, it must be able to detect the object and grip it.



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### The Goal

This application entails a number of challenges: high temperatures from the injection molding process, vibration caused by the robot's rapid movements, and narrow components with little detectable surface area. In spite of these conditions, part removal must take place as quickly and reliably as possible to maintain production speed.

### The Solution

The compact ultrasonic sensor series UB100-F77 offers a perfect solution for component detection. The sensors' small size allows them to be easily mounted on the gripping system. When removing parts, the robot approaches the machine at high speeds. When it is 40 to 50 mm away from the component, a sensor signal triggers the robot to slow down right before the gripping and removal process.

With the UB-PROG4-V31 programming unit, the user can easily set up the sensor for operation, with no additional configuration necessary in many cases. Teaching switch points is done simply via push button. Settings remain in place, and subsequent adjustments cannot be made without altering the cabling.

### The Benefits

The ultrasonic sensor detects its target regardless of color or surface texture—the matte black material causes no problems. The sensor is also impervious to heat, vapors, and other potential sources of interference.

The UB100-F77's sound beam is especially narrow. Small targets with limited surface area are reliably detected. Additionally, the sensor is unaffected by vibration from the gripping system, and the response time for the removal process is minimized, which ensures a reliable and error-free workflow.

#### At a Glance

- Secure detection, quick response time
- Accurate performance, regardless of color, surface texture, or vibration
- Reliable control of the removal process
- Quick, easy commissioning and adjustment of the sensing range

Additional information is available at  
[www.pepperl-fuchs.com/tx-ultrasonic](http://www.pepperl-fuchs.com/tx-ultrasonic)



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