

Background Rejection (Perfect Prox)

This detection scheme is really a **special type of diffuse reflective sensor**. It combines **extremely high sensing power with a sharp optical cut-off**. This allows the sensor to reliably detect targets regardless of color, reflectance, contrast or surface shape, while ignoring objects just outside of the target range.

This method **uses two different photo-detectors**. For the Perfect Prox unit with a six-inch range, the near detector has a range of 0 to 24 inches. Its far detector has a range of 6 to 24 inches.

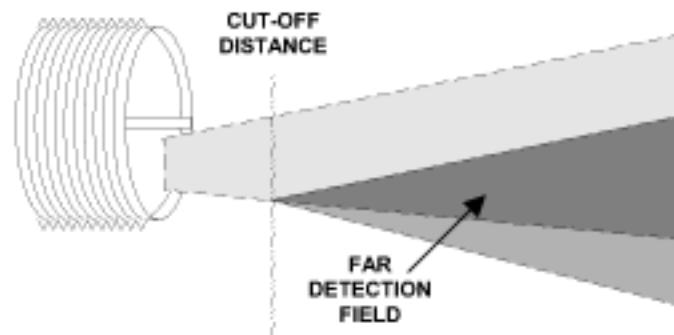


FIGURE 87: PERFECT PROX SENSOR

Objects closer than six inches are detected only by the near detector. Objects between 6 and 24 inches are detected by both detectors.

If the near signal is stronger than the far signal, the sensor output is ON. If the far signal is stronger or equal to the near signal, the output is OFF. The result is a sensor with high *excess gain* for six inches, followed by a sharp cut-off.

IN THE WORKPLACE

Hobbes Gear wanted to reduce the number of gears rejected on their line. One critical process is the automatic drilling of the gear's mounting hole.

To increase the reliability of the inspection process, Hobbes installed a Perfect Prox sensor.

The sensor is set to check for the presence of the machined hole in the gear. If the hole is present, the sensor's light shines through it, to the conveyor belt. The belt is just beyond the sensor's sensing distance.

If a missing hole is detected, the sensor signals an air-operated cylinder plunger to reject the gear.

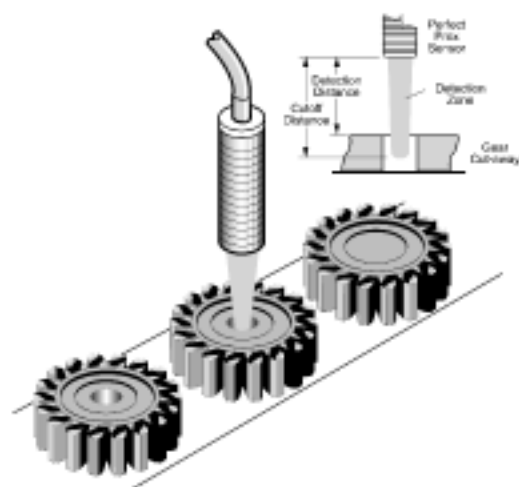


FIGURE 88: A PERFECT PROX IS "INSPECTOR # 12"