PROXIMTY SWITCH SPEED APPLICATION NOTE

When trying to figure out whether or not your target for a typical inductive prox switch application is large enough, based on the RPM that the object is turning use the following formula:

1. Figure the circumference of the wheel, (formula is 2x pie times the radius in inches)

2. Take the RPM's that the object is turning divide by 60 which equals RPS (revolutions per second). Take the RPS time circumference = total number of inches per second.

3. Move the decimal three places to the left which equals inches per millisecond.

4. Move one more decimal point to the left which equals inches per 0.1 millisecond time frame.

Per the new HTM Proximity Switch Catalog, and the specifications in the very front, you will notice that there is a minimum of 0.1 millisecond of off time required for the proximity switch to work correctly.

In a recent application, I had a customer with a wheel which was 24" in diameter which converts to 75.36 inches in circumference. The wheel was turning 2368 RPM's which is 39.4 RPS. At 39.4 RPS x 75.36 inches = 2974 inches traveled in one second.
If we move the decimal three places to the left, this would equal 0.2974 inch target size, multiply this by 2, which equals 0.5948 inches of theoretical minimum target size required to accommodate a Prox Switch with a 0.1 ms response. We would suggest doubling this size to be sure the target is large enough for this speed.

Any questions please see me.

Regards,

Mike Trask