The Selection Guide at the beginning of the Thrubeam Section lists these Beam Diameters and Rated Separations. Refer to Fig. 20.

Each of these thrubeams has a Beam Diameter small enough to detect the resistors, but the L56/P56 pair does not have the required 2 inch range. With assurance that the target can be detected reliably, other factors become more important — with the problem of continuous and severe vibration, an LED light source is essential for long life. Notice that the L43/P43 thrubeam is not listed since its Beam Diameter, .40 inches, is so large that it will not be able to detect the resistor.

Choosing a Reflective Skanner

Match the Field of View to the width of the target; the target should be at least one-third as wide as the skanner's Field of View *at the desired distance*. Skanners are listed in the catalog by order of their Fields of View at their Optimum Distances. Most data sheets include a graph showing Field of View vs. distance from the target, plus a graph showing photodetector current vs. distance. Find a skanner with an appropriate Field of View at the desired distance, then check the second graph to be sure photodetector current will be at least 10 microamps at the desired distance.

Expected Performance At 1 Inch

Skanner	Field of View (inches)	Current
S12	.8	25–125 microamps
S11101	.8	12–200 microamps
S16	.2	45–300 microamps
S13224	.2	50 microamps
S30	.8	10–50 microamps

FIG. 21

Reflective Skanner Example

Suppose we want to use a reflective skanner to detect the white paper tube of a cigarette from a distance of 1 inch. In this case the target is .3 inches wide, so we will be interested in skanners with a Field of View no more than .9 inches at the desired distance of 1 inch.

Max. Field of View = 3 x Target width
= 3 x .3"
= .9"

By using the performance curves, we can estimate the Fields of View and expected photodetector currents of various skanners at the 1 inch distance. Refer to information given in Fig. 21.

Examining the listing of expected photodetector currents, we will be most interested in the skanners with the highest expected outputs—S16 and S12. Testing shows that each of these skanners easily and reliably detects the cigarette at one inch. An S16 actually developed more than 100 microamps of current, and the S12 more than 75 microamps. The S16 would be the best choice for the application except in areas where shock and vibration or ambient light would be a factor. In that case the S12 would be the best choice because its solid state light source is immune to shock and vibration and can also be used with modulating controls to eliminate the effect of ambient light.