Determining Optimal Mark Placement

Optimal mark placement

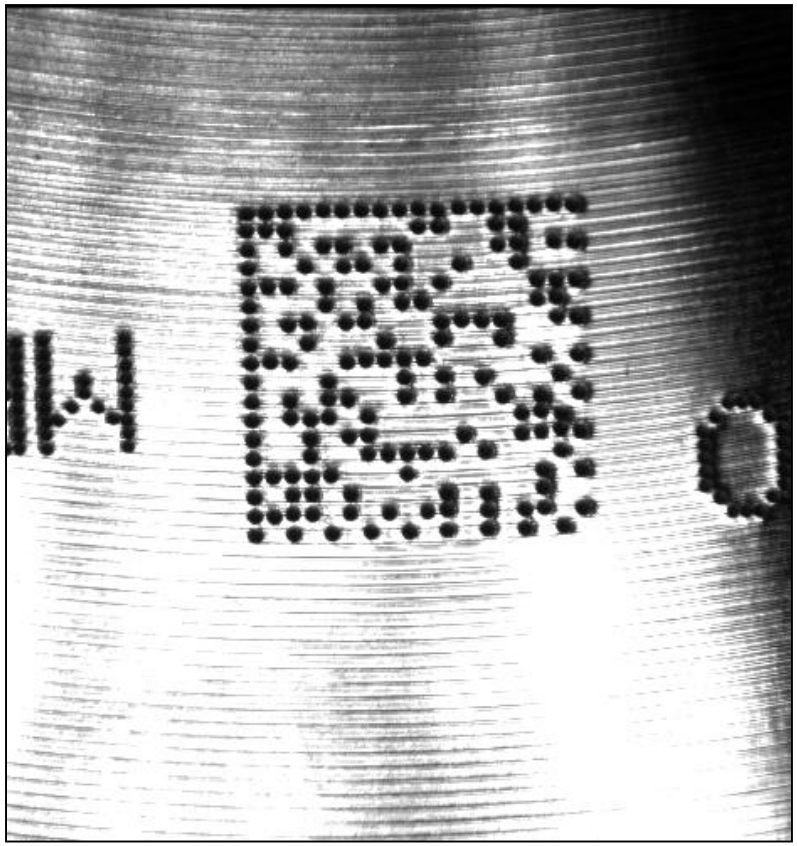
- Keep the following factors in mind before you select the location on your part to mark the 2D symbol.
  - Surface relief
  - Curved surfaces
  - Reflective surfaces
  - Texture noise

Location on the part

- Placing the code in the most optimal location possible on the part can make it much easier to read and decode the symbol.
  - Choose a location free from surface relief
  - Avoid areas that are in the shadows
  - Avoid quiet zone violations
  - Avoid surface texture

Surface texture

- Surface texture creates noise and can interfere with the reader's ability to locate and decode the symbol.
- If surface texture cannot be avoided, select an area where texture is uniform in magnitude and direction
- To avoid readability problems, Microscan recommends as a general rule, the element size of the matrix code must be a minimum of 5 times the size of the texture noise on the surface.



Reflective surfaces

- Symbols marked on highly reflective surfaces are more challenging to read because they are more difficult to light evenly.

- Flat illumination is typically the most effective method of illuminating codes on reflective surfaces.

Curved surfaces

- Flat surfaces are generally more ideal for marking than a curved surface.
- If a flat surface is not available, select an area with a uniform curve such as a cylinder.
- As a general rule, the smaller the diameter of the part, the more difficult the symbol is to read, due to distortion caused by the degree of wrapping that occurs.

Guidelines for marking curved surfaces

- The following are guidelines for marking curved surfaces:
  - Format the Data Matrix symbol into a rectangle
  - Position symbol on part to minimize the degree of symbol distortion caused by wrapping
  - Select the smallest density size possible
  - Use diffused exterior light, if surface is highly reflective

Summary

- When selecting the optimal location to mark you part, avoid the following whenever possible:
  - Surface relief
  - Curved surfaces
  - Highly reflective surfaces
  - Surface texture

More information

- If you would like further information about DPMI, we recommend you view the additional seminars in the DPMI series, such as ***Selecting a Marking Method.***

- If you have questions regarding readability, send us an e-mail to training@microscan.com