



laserlines

Press Release

Release No: Z54
Date: June 2009
Release Date: Immediate

Marking Oil Seals using Synrad Lasers

Oil seals, commonly used in automotive and industrial machinery applications, are instrumental for sealing rotary shafts and serve a dual purpose - to retain lubricants (such as oil or grease) and to exclude dirt, dust, and other abrasives from bearings and wear surfaces. Oil seals are manufactured primarily from nitrile, silicone, and EPDM rubber. Nitrile rubber is the most widely used elastomer because of its wear resistance and ambient operating temperature range.

For this customer application, the request was to mark a 10-character code on the outer ring of an oil seal. At the 10.6 micron CO2 wavelength, rubber materials mark very well, but the unusual aspect of this mark was the size of the mark area on the outer ring - it measures only 1.25 mm (0.049") high!

The marking set-up consisted of a Synrad laser, FH Series *Flyer* marking head, and the Synrad *WinMark Pro* laser marking software. The *Flyer* head was equipped with an 80 mm focusing lens that provides a 116-micron (0.005") spot with a 0.8 mm (0.032") depth of field. To create legible text marks, the rule of thumb is that character height should be a minimum of seven to ten times the focused spot size. For this application, the character code was 1 mm (0.039") high, which is on the low-end of the range for an 80 mm lens.

To create this mark, the 'Simple' stroke font was selected, set a *Text Height* of 1 mm (0.039"), added 0.15 mm (0.006") of *Extra Character Spacing*, and entered a *Text Radius* of 54 mm (2.125") to match the curvature of the seal. On the *Marking* tab, *Power* was set, duty cycle percentage, equal to 10 watts, entered a *Velocity* of 1016 millimetres per second (40 inches/sec), and set the *Mark Passes* property to 4.

By making four complete passes, the rubber surface is vaporized "slowly" in small increments, resulting in a cleaner, more distinct mark. As shown in the magnified photograph, the characters are exceptionally well-formed. In fact, the engraved 1-mm high text is easily readable without magnifying aids. This very small 10-character code, with four *Mark Passes*, was created in a cycle time of only 0.13 seconds per part.



For further information regarding Synrad's range of CO2 lasers, please contact Laser Lines Ltd on 01295 672500, email: info@laserlines.co.uk

For pre-publication queries contact: Jeryl Adcock (jeryla@laserlines.co.uk)
For sales/technical queries contact: Gary Broadhead (garyb@laserlines.co.uk)

Laser Lines Ltd
Beaumont Close, Banbury, Oxon OX16 1TH, UK

Tel: +44 (0) 1295 672500 • Fax: + 44 (0) 1295 672550
Email: info@laserlines.co.uk • Website: www.laserlines.co.uk

Directors: R A Wilkin (Managing) □ G D Broadhead □ S P Knight □ M J Turner □ S Hall
Registered No. 4021637 England. Registered Office: Beaumont Close, Banbury, Oxon OX16 1TH. VAT Registration No. GB 915 7430 25

