PROCESS Z™
HIGH SPEED, LOW POROSITY
High Speed, Low Porosity.

When it comes to making automotive parts, productivity and quality are the highest priorities. But those targets can be hard to hit when you’re welding galvanized material with conventional processes. Welding on galvanized is difficult. The zinc coating varies. The fit up varies. Porosity can occur. You’re often forced to make hard choices between proper weld size, faster weld speed or good x-ray quality.

Process Z™ gives you all three, without forcing you to compromise. Our Metalshield® Z gas-shielded wire, combined with our patented Rapid Z™ waveform technology operating on AC polarity, minimizes internal porosity of your welds and assures virtually no external porosity. In addition, you can count on consistently faster travel speeds.

Now you can have it all and build the automotive components your customers want to buy. Get better, faster, higher quality welds with Process Z.
Internal Porosity Comparisons

Process Z vs. Solid Wire

- Process Z
- Solid Wire

The Z Factor:
Stronger and Faster, Inside and Out

The Inside Picture
Getting it done right the first time saves time and money on the production line. Process Z’s claim to minimal porosity is borne out in its high x-ray quality. The result is defect-free welds inside and out, and little or no rework.

Clean welds, easy coating
A clean surface is always easier to work with. Typically, the welding of galvanized auto components requires post-weld cleaning to remove silicate and spatter prior to e-coating. Process Z produces minimal silicate and spatter, which reduces – and sometimes eliminates – post-weld prep.

Example X-ray images correspond to data above. Dark spots indicate porosity.
Process Z
It’s Not Just a Wire - It’s a System

Metalshield Z wire alone does not allow us to address the trade-off between travel speed and porosity. Instead, Process Z is the sum of three key innovations working together to tackle the challenges associated with welding on galvanized material.

Rapid Z is a proprietary waveform mode developed by Lincoln Electric to specifically optimize the Power Wave power source. By controlling each part of the welding waveform, the weld’s penetration, deposition and heat input can be optimized.

The Advanced Module enables AC polarity welding with CV wire welding processes. As a result, the necessary cleaning action and penetration profile required to break through galvanized surface coatings can be achieved.

Metalshield Z metal-cored wire is packed with everything necessary to wet bead edges, provide adequate freezing characteristics and increase travel speeds while delivering minimal spatter and internal porosity to the weld.

Don’t forget the rest of the story. Close coupled robotic interfaces with the robot arm, smooth wire delivery systems, sure feeding, high torque four wheel drive systems and Magnum PRO robotic torches and a number of vision and seam tracking options all contribute to a high productivity, reliable robotic welding experience.
Production-Ready Packaging

Metalshield Z wire is available in 500 lb. drums for high productivity applications or 33 lb. spools for direct wire feeder mounting.

### DIAMETERS/PACKAGING

<table>
<thead>
<tr>
<th>Wire Diameter in [mm]</th>
<th>Part Number</th>
<th>Available Packages lb (kg)</th>
<th>AWS Class</th>
<th>Recommended Shielding Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.040 (1.0)</td>
<td>ED035515</td>
<td>33 (15) fiber spool</td>
<td>E70C-GS</td>
<td>90% Ar / 10% CO₂</td>
</tr>
<tr>
<td>0.040 (1.0)</td>
<td>ED035516</td>
<td>500 (227) drum</td>
<td>E70C-GS</td>
<td>90% Ar / 10% CO₂</td>
</tr>
</tbody>
</table>

### Effect of Rapid Z Waveform

**Smooth, Stable Metal Transfer**

**With Rapid Z Waveform**

The electrode droplet transfer is focused and predictable. Less of the surrounding zinc coating is introduced into the weld – meaning less internal porosity. Smooth droplet transfer also delivers more stability and less spatter when welding at increased travel speeds.

**Without Rapid Z Waveform**

Zinc vaporizes quickly and unpredictably, causing interruptions in weld droplet transfer. This erratic, unfocused arc introduces more of the surrounding zinc coating into the weld – resulting in higher levels of internal porosity. Uncontrolled droplet transfer also results in more spatter, even when welding at moderate travel speeds.
CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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