HY-PRO® CARB VGM
High Performance Variable Geometry End Mills
Designed for Dynamic Milling in Steel and Stainless Steel

PRIMARY TARGETS

• Customers looking for the next generation tool for Dynamic Milling / HEM (High Efficiency Milling)
• Shops who cut difficult to machine alloys
• Customers desiring consistent milling tool life

SOLUTIONS

• Dynamic Milling
• 5, 6 & 7 Flute Count Offerings

WHAT OUR CUSTOMERS SEE

• “The VGM series is the real deal end mill. We doubled our tool life and the cost is cheaper than our current tool!”

HOW DOES IT WORK?

Variable Index
• Proven geometry to reduce vibrations

Unique Flute Geometry
• The flute shape creates excellent chip shape for easy evacuation

EXO Coating
• OSG’s EXO coating is a proprietary TiAlN coating that provides excellent wear resistance in the toughest materials and conditions
HY-PRO® CARB VGM Series
High Performance Variable Geometry End Mills

Variable Index & Unique Flute Geometry
Reduces Vibration and Chatter & Promotes Smooth, Stable Cutting w/Low Cutting Forces

**Variable Index:**
Unequal flute spacing reduces vibration during machining by altering the timing of each flute engaging in the workpiece.

**Unique Flute Geometry:**
Sharp rake angle, high helix and adjusted core diameter maintain excellent cutting edge sharpness and tool rigidity to promote smooth, stable cutting with low cutting force.

**EXO Coating**
Provides longer tool life through exceptional wear and heat resistance.

### EXO Coating
**Provides Long Tool Life**

OSG’s proprietary multi-layer coating provides longer tool life through higher wear and heat resistance than conventional TiAlN coatings.

<table>
<thead>
<tr>
<th>Series</th>
<th>Coating</th>
<th>Type</th>
<th>Hardness (HV)</th>
<th>Thickness (μm)</th>
<th>Coefficient of Friction</th>
<th>Oxidation Temp (C)</th>
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</thead>
<tbody>
<tr>
<td>VGx</td>
<td>TiAIN</td>
<td>TiAIN</td>
<td>2,800</td>
<td>3</td>
<td>0.3</td>
<td>800</td>
</tr>
<tr>
<td>VGM</td>
<td>EXO®</td>
<td>TiAIN Multilayer</td>
<td>2,800</td>
<td>3</td>
<td>0.3</td>
<td>850</td>
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</tbody>
</table>

### VGM Series Comprehensive Offering
5-, 6-, and 7-Flute Lineups

OSG’s VGM offering features 5-, 6-, and 7-flute lineups, and is available with multiple Lengths of Cut, with both Square End and Corner Radius variations.

<table>
<thead>
<tr>
<th>Name</th>
<th>No. of Flutes</th>
<th>End Cut Type</th>
<th>Reduced Neck</th>
<th>LOC</th>
<th>Neck Length</th>
<th>Total # of EDPs</th>
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</thead>
<tbody>
<tr>
<td>VGM-5</td>
<td>5</td>
<td>SQ &amp; CR</td>
<td>N/A</td>
<td>1.25 to 6xD</td>
<td>-</td>
<td>277</td>
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<tr>
<td>VGM-5-LN</td>
<td>5</td>
<td>SQ &amp; CR</td>
<td>Yes</td>
<td>1.25xD</td>
<td>3 to 10xD</td>
<td>211</td>
</tr>
<tr>
<td>VGM-6</td>
<td>6</td>
<td>SQ &amp; CR</td>
<td>N/A</td>
<td>1.25 to 6xD</td>
<td>-</td>
<td>186</td>
</tr>
<tr>
<td>VGM-7</td>
<td>7</td>
<td>SQ &amp; CR</td>
<td>N/A</td>
<td>1.25 to 6xD</td>
<td>-</td>
<td>110</td>
</tr>
</tbody>
</table>

For more information use your phone to scan the QR code to the right and visit: osgtool.com/vgm