Tip Style: Taper Form Ball Nose

Diameters: 8mm, 10mm, 12mm, 16mm

Ball Nose Tip Radius: 1.5mm, 2.0mm, 3.0mm, 4.0mm

Adaptions: T5, T6, T8, T10

Materials: Steel, Stainless Steel, Iron, High-Temp Alloys, Aluminum and Plastics

CHIP-SURFER TAPER FORM TIPS FINISH 3X FASTER THAN A BALL NOSE... WITH IMPROVED SURFACE QUALITY!

General Features:
• Large “crowned” cutting edge offers 3X cutting length when compared to ball nose; resulting in 3x productivity!
• Radius blends ensure minimum scallop height for utmost finish
• Precision cutting edge profile tolerance of +/- .0004”
• Tips repeat on and off the shank within +/- .0005”
• Sharp & polished tips for aluminum and non-ferrous materials
• Coated tips for Aerospace and Die-Mold materials
• Shanks offered in steel, carbide & heavy metal
• Ideal for finish milling blisks, impellers, turbine rotors & parts with shoulders <90° using multi-axis machines

Chip-Surfer™
### SERIES 46W_0

**TAPER FORM TIP FOR STEELS AND HI-TEMPS**

- **Part Number**: 46W08009TQRB010
  - Cutting Diameter: 8.00 mm
  - PRFRAD1 Profile Radius: 1.50 mm
  - PRFRAD2 Profile Radius: 2.00 mm
  - PRFRAD3 Profile Radius: 3.00 mm
  - APMX Depth of Cut Max.: 10 mm
  - LF Functional Length: 15.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T05
  - DHUB Hub Diameter: 7.60 mm

- **Part Number**: 46W10013T6RB021
  - Cutting Diameter: 10.00 mm
  - PRFRAD1 Profile Radius: 2.00 mm
  - PRFRAD2 Profile Radius: 3.00 mm
  - PRFRAD3 Profile Radius: 4.00 mm
  - APMX Depth of Cut Max.: 14 mm
  - LF Functional Length: 19.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T06
  - DHUB Hub Diameter: 9.30 mm

- **Part Number**: 46W12013T8RB031
  - Cutting Diameter: 12.00 mm
  - PRFRAD1 Profile Radius: 3.00 mm
  - PRFRAD2 Profile Radius: 4.00 mm
  - PRFRAD3 Profile Radius: 5.00 mm
  - APMX Depth of Cut Max.: 14 mm
  - LF Functional Length: 23.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T08
  - DHUB Hub Diameter: 11.50 mm

- **Part Number**: 46W16017TRRB041
  - Cutting Diameter: 16.00 mm
  - PRFRAD1 Profile Radius: 4.00 mm
  - PRFRAD2 Profile Radius: 5.00 mm
  - PRFRAD3 Profile Radius: 6.00 mm
  - APMX Depth of Cut Max.: 17 mm
  - LF Functional Length: 26.00 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T10
  - DHUB Hub Diameter: 15.20 mm

**NOTE**: When assembling, be sure tip is seated firmly on shank with no gap. Tightening Torque: T05=60in/lbs, T06=90in/lbs, T08=130in/lbs, T10=250in/lbs. No lubricant on adaption. Wrenches sold separately.

### SERIES 46W_1

**TAPER FORM TIP FOR NON-FERROUS**

- **Part Number**: 46W08009TQRB011
  - Cutting Diameter: 8.00 mm
  - PRFRAD1 Profile Radius: 1.50 mm
  - PRFRAD2 Profile Radius: 2.00 mm
  - PRFRAD3 Profile Radius: 3.00 mm
  - APMX Depth of Cut Max.: 10 mm
  - LF Functional Length: 15.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T05
  - DHUB Hub Diameter: 7.60 mm

- **Part Number**: 46W10013T6RB021
  - Cutting Diameter: 10.00 mm
  - PRFRAD1 Profile Radius: 2.00 mm
  - PRFRAD2 Profile Radius: 3.00 mm
  - PRFRAD3 Profile Radius: 4.00 mm
  - APMX Depth of Cut Max.: 14 mm
  - LF Functional Length: 19.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T06
  - DHUB Hub Diameter: 9.30 mm

- **Part Number**: 46W12013T8RB031
  - Cutting Diameter: 12.00 mm
  - PRFRAD1 Profile Radius: 3.00 mm
  - PRFRAD2 Profile Radius: 4.00 mm
  - PRFRAD3 Profile Radius: 5.00 mm
  - APMX Depth of Cut Max.: 14 mm
  - LF Functional Length: 23.40 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T08
  - DHUB Hub Diameter: 11.50 mm

- **Part Number**: 46W16017TRRB041
  - Cutting Diameter: 16.00 mm
  - PRFRAD1 Profile Radius: 4.00 mm
  - PRFRAD2 Profile Radius: 5.00 mm
  - PRFRAD3 Profile Radius: 6.00 mm
  - APMX Depth of Cut Max.: 17 mm
  - LF Functional Length: 26.00 mm
  - ZEFF Effective Flutes: 3
  - FHA Flute Helix Angle: 30°
  - CCMS Connection Code: Chip Surfer T10
  - DHUB Hub Diameter: 15.20 mm

**NOTE**: When assembling, be sure tip is seated firmly on shank with no gap. Tightening Torque: T05=60in/lbs, T06=90in/lbs, T08=130in/lbs, T10=250in/lbs. No lubricant on adaption. Wrenches sold separately.
## HARDWARE
![Thin Wrench Optional Torque Driver](image)

<table>
<thead>
<tr>
<th>Code</th>
<th>Material</th>
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<th>Torque Value</th>
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## TECHNICAL INFORMATION

* RPM calculation is to be made using the resultant diameter at \( a_p \).

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.

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<th>SFM *</th>
<th>Feed per Tooth (inch)</th>
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<th>( a_e ) Radial Cutting Depth</th>
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