

pdtools
SUPERABRASIVES

PREMIUM



HYBRID BONDED WHEELS

**HYBRID BONDED WHEELS
FOR ROTARY TOOLS**

Contents

| | |
|---|-------|
| BOND DESCRIPTION | 2 |
| RECOMMENDATIONS FOR APPLICATION | 3 |
| 1A1, 14A1 WITH FPD01, RPD01, HPD01, LPD01 BONDS | 4 |
| RECOMMENDED PARAMETERS FOR 1A1, 14A1 WITH FPD01 BOND | 5 |
| RECOMMENDED PARAMETERS FOR 1A1, 14A1 WITH RPD01 BOND | 6 |
| RECOMMENDED PARAMETERS FOR 1A1, 14A1 WITH HPD01 BOND | 7 |
| RECOMMENDED PARAMETERS FOR 1A1, 14A1 WITH LPD01 BOND | 8 |
| 1V1 10°; 15°; 20° WITH FPD01, RPD01, HPD01, LPD01 BONDS | 10 |
| RECOMMENDED PARAMETERS FOR 1V1 10°; 15°; 20° ANGLE WITH FPD01 BOND | 11 |
| RECOMMENDED PARAMETERS FOR 1V1 10°; 15°; 20° ANGLE WITH RPD01 BOND | 12 |
| RECOMMENDED PARAMETERS FOR 1V1 10°; 15°; 20° ANGLE WITH HPD01 BOND | 13 |
| RECOMMENDED PARAMETERS FOR 1V1 10°; 15°; 20° ANGLE WITH LPD01 BOND | 14 |
| 1V1, 14V1 30° WITH FPD01, RPD01, HPD01, LPD01 BONDS | 16 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 30° ANGLE WITH FPD01 BOND | 17 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 30° ANGLE WITH RPD01 BOND | 18 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 30° ANGLE WITH HPD01 BOND | 19 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 30° ANGLE WITH LPD01 BOND | 20 |
| 1V1, 14V1 45° WITH FPD01, RPD01, HPD01, LPD01 BONDS | 22 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 45° ANGLE WITH FPD01 BOND | 23 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 45° ANGLE WITH RPD01 BOND | 24 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 45° ANGLE WITH HPD01 BOND | 25 |
| RECOMMENDED PARAMETERS FOR 1V1, 14V1 45° ANGLE WITH LPD01 BOND | 26 |
| 11V9-70 WITH VPD02 BOND. RECOMMENDED PARAMETERS | 28-29 |
| 11V9-70 WITH HPD03 AND HPD04 BONDS. RECOMMENDED PARAMETERS | 30-31 |
| 12V9-45 WITH HPD03 AND HPD04 BONDS. RECOMMENDED PARAMETERS | 32-33 |
| 1V1, 14V1 45° WITH HPD04 BOND. RECOMMENDED PARAMETERS | 34-35 |
| 1A1, 14A1 WITH HPD04/05 BONDS. RECOMMENDED PARAMETERS | 36-37 |
| 1V1 10°; 15°; 20° WITH HPD04/05 BONDS. RECOMMENDED PARAMETERS | 38-39 |
| 1V1, 14V1 30° WITH HPD04/05 BONDS. RECOMMENDED PARAMETERS | 40-41 |
| 1S1 FOR CHIPBREAKER GRINDING | 42-43 |
| 1A1R WITH B1000 BOND | 44 |
| TRUING AND DRESSING OF DIAMOND AND CBN WHEELS | 45 |

FPD01 BOND is designed for power grinding during fluting operations for wheels with 1A1 and 1V1 shapes. It is suitable for workpieces diameters from 4 to 22 mm when cutting flutes on machines with a spindle power of more than 20 kW (high-speed machining).

RPD01 BOND is designed for power grinding during fluting operations for wheels with 1A1 and 1V1 shapes. It is suitable for workpieces diameters from 4 to 22 mm for cutting flutes on machines with a spindle power of 9 kW or more (automated series production).

HPD01 BOND is intended for power grinding during the fluting operation for wheels with 1A1 and 1V1 shapes. It is suitable for workpieces diameters from 4 to 22 mm for cutting flutes on machines with a spindle power of 7 kW or more (small batch production).


LPD01 BOND is designed for power grinding during the fluting operation for wheels with 1A1 and 1V1 shapes. It is suitable for workpieces diameters from 4 to 22 mm while cutting flutes on machines with a spindle power of 7 kW or more (low-speed machining modes).

VPD02 BOND is designed for productive sharpening of cutting tools for 11V9-70 wheel shapes and workpieces diameters from 4 mm. It has increased edge resistance and extended lifetime.

HPD03 BOND is designed for high-quality sharpening of cutting tools for 11V9-70 wheel shapes. It has an increased sharpening finish. It is used for gash operation for wheels with 12V9-45 shapes.
Universal bond for sharpening, gashing and fluting (small batch production).

HPD04 BOND is designed for fluting, gashing and sharpening operations for wheels on 1A1, 1V1, 11V9-70 and 12V9-45 shapes with workpieces diameters up to 4 mm.

HPD05 BOND is designed for the “polishing” operation for wheels with 1A1 and 1V1 shapes.

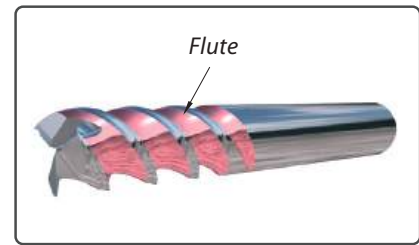
 Operation parameters and grit size should be selected based on the catalog's recommendations, following the rule of reducing the feed rate while increasing the depth of cut per pass. Important: If the angle geometry of the 1V1 increases while maintaining the same feed rate, it is necessary to reduce the infeed.

| SHAPE | OPERATION | DIAMETER OF THE WORKPIECE, mm | | | | |
|---------------------------|------------|-------------------------------|---|-----|---|-----|
| | | up to 6 mm | from 3,5 to 12 mm | | from 6 to 22 mm | |
| 1A1 | Fluting | HPD04 M30 | FPD01; RPD01 HPD01; LPD01 HPD03 | D46 | FPD01; RPD01 HPD01; LPD01 HPD03 | D64 |
| | Polishing | HPD05 M10 | HPD05 M10 | | HPD05 M10 | |
| 1V1 10°, 15°, 20°, 30° | Fluting | HPD04 M30 | FPD01; RPD01 HPD01; LPD01 HPD03 | D46 | FPD01; RPD01 HPD01; LPD01 HPD03 | D64 |
| | Polishing | HPD05 M10 | HPD05 M10 | | HPD05 M10 | |
| 1V1 45° | Fluting | HPD04 M30 | FPD01; RPD01 HPD01; LPD01 HPD03 | D46 | FPD01; RPD01 HPD01; LPD01 HPD03 | D64 |
| | Gashing | x | FPD01; RPD01 HPD01; LPD01 HPD03 | D46 | FPD01; RPD01 HPD01; LPD01 HPD03 | D64 |
| 11V9-70 | Sharpening | HPD04 M30 | VPD02 D46 (productive; better edge) | | VPD02 D64 (productive; better edge) | |
| | Sharpening | HPD04 M30 | HPD03 D46 (best finish) | | HPD03 D64 (best finish) | |
| 12V9-45 | Gashing | HPD04 M30 | HPD03 D46 | | HPD03 D64 | |

The manufacturer recommends using the tool in accordance with these guidelines. The customer can use the tool with their own parameters; however, not following the recommendations may lead to excessive wear or even destruction of the tool. During the production of mills with large diameters (more than 12 mm diameter), where the chip flute must be made in a few passes. The depth of each pass and the length of the feed must be selected to ensure that each pass of the wheel is performed with the same productivity. Where productivity is the cross-sectional area of the material, removed by the wheel per pass multiplied by the longitudinal feed rate of the wheel relative to the workpiece.

GRAIN OF DIAMOND AND CBN POWDER ACCORDING TO INTERNATIONAL STANDARDS

| Ukrainian Standard DSTU 3292-95 | FEPA Diamond / CBN | ANSI B74-16 USA | GRIT | GRIT SIZE CLASS |
|------------------------------------|-----------------------|-----------------------|------|--------------------|
| µm | µm | mesh | GRIT | |
| 160/125 | D151/B151 | 100/120 | 120 | LARGE |
| 80/63 | D76/B76 | 200/230 | 230 | FINE |
| 63/50 | D64/B64 | 230/270 | 270 | |
| 50/40 | D46/B46 | 325/400 | 400 | VERY FINE |
| 40/28 | M30/B30 | 600 | 600 | |
| 14/10 | M16/B16 | 1500 | 1500 | MICRON |
| 10/7 | M10/B10 | 2000 | 1700 | |



1A1, 14A1 with FPD01, RPD01, HPD01, LPD01 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH FPD01, RPD01, HPD01, LPD01 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | X, mm | X, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|
| FM1-65 | 60 | 2 3/8 | 10 | 3/8 | 10 | 3/8 | 20 | 0,787 |
| FM1-51 | 75 | 3 | 10 | 3/8 | 5 | 13/64 | 20 | 0,787 |
| FM1-53 | 75 | 3 | 5 | 13/64 | 10 | 3/8 | 20 | 0,787 |
| FM1-54 | 75 | 3 | 5 | 13/64 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-52 | 80 | 3 1/7 | 6 | 1/4 | 5 | 13/64 | 20 | 0,787 |
| FM1-02 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 20 | 0,787 |
| FM1-31 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-04 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 20 | 0,787 |
| FM1-32 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-06 | 100 | 4 | 15 | 19/32 | 10 | 3/8 | 20 | 0,787 |
| FM1-33 | 100 | 4 | 15 | 19/32 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-08 | 100 | 4 | 20 | 51/64 | 10 | 3/8 | 20 | 0,787 |
| FM1-34 | 100 | 4 | 20 | 51/64 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-63 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 20 | 0,787 |
| FM1-62 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-00 | 100 | 4 | 8 | 5/16 | 10 | 3/8 | 20 | 0,787 |
| FM1-30 | 100 | 4 | 8 | 5/16 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-12 | 125 | 5 | 10 | 3/8 | 10 | 3/8 | 20 | 0,787 |
| FM1-36 | 125 | 5 | 10 | 3/8 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-14 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 20 | 0,787 |
| FM1-37 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-16 | 125 | 5 | 15 | 19/32 | 10 | 3/8 | 20 | 0,787 |
| FM1-38 | 125 | 5 | 15 | 19/32 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-59 | 125 | 5 | 16 | 5/8 | 15 | 19/32 | 20 | 0,787 |
| FM1-60 | 125 | 5 | 16 | 5/8 | 15 | 19/32 | 31,75 | 1 1/4 |
| FM1-18 | 125 | 5 | 20 | 51/64 | 10 | 3/8 | 20 | 0,787 |
| FM1-39 | 125 | 5 | 20 | 51/64 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-48 | 125 | 5 | 6 | 1/4 | 10 | 3/8 | 20 | 0,787 |
| FM1-49 | 125 | 5 | 6 | 1/4 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-10 | 125 | 5 | 8 | 5/16 | 10 | 3/8 | 20 | 0,787 |
| FM1-35 | 125 | 5 | 8 | 5/16 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-22 | 150 | 6 | 10 | 3/8 | 10 | 3/8 | 20 | 0,787 |
| FM1-41 | 150 | 6 | 10 | 3/8 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-24 | 150 | 6 | 12 | 1/2 | 10 | 3/8 | 20 | 0,787 |
| FM1-42 | 150 | 6 | 12 | 1/2 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-26 | 150 | 6 | 15 | 19/32 | 10 | 3/8 | 20 | 0,787 |
| FM1-43 | 150 | 6 | 15 | 19/32 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-44 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 20 | 0,787 |
| FM1-45 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-28 | 150 | 6 | 20 | 51/64 | 10 | 3/8 | 20 | 0,787 |
| FM1-64 | 150 | 6 | 20 | 51/64 | 10 | 3/8 | 31,75 | 1 1/4 |
| FM1-20 | 150 | 6 | 8 | 5/16 | 10 | 3/8 | 20 | 0,787 |
| FM1-40 | 150 | 6 | 8 | 5/16 | 10 | 3/8 | 31,75 | 1 1/4 |

Customer-specific and other grinding tools can be produced on request.


RECOMMENDED PARAMETERS FOR FPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

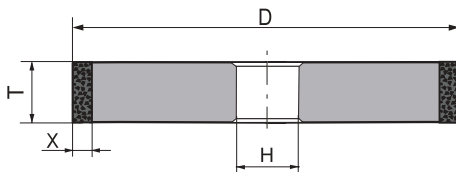
| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 |
| 1,5 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 | 7,0 |
| 2 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 8,7 | 9,3 |
| 2,5 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 10,8 | 11,7 |
| 3 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 | 13,0 | 14,0 |
| 3,5 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 | 15,2 | 16,3 |

 • Dark green color - recommended modes (optimal modes);

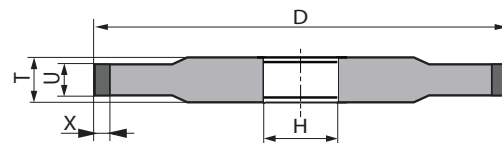
 • Light green color - acceptable operating modes;

CASE STUDY FOR FPD01 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
| Grinding wheel | 1A1 D100 T10 X10 H20 D64 FPD01 |
| Operation | Fluting |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 4 |
| Infeed per pass, mm | 2 |
| Feedrate, mm/min | 200 |
| Wheel speed, m/s | 18 |
| Profiling cycle, pcs. | 90 |



shape 1A1 D×T×X×H



shape 14A1 D×T×U×X×H

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 |
| 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 2 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 3 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 |
| 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 |
| 4 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 | 16,0 |

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 |
| 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 2 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 3 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 |
| 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 |
| 4 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 | 16,0 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

CASE STUDY FOR RPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1A1 D100 T10 X10 H20 D64 RPD01 | 1A1 D100 T10 X10 H20 D64 RPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,25 | 2,25 |
| Feedrate, mm/min | 120 | 140 |
| Wheel speed, m/s | 18 | 18 |
| Profiling cycle, pcs. | 150 | 160 |

RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 1,5 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| 2 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 |
| 2,5 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 |
| 3 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 |
| 3,5 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 |
| 4 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 |
| 4,5 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 | 15,0 |
| 5 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 | 16,7 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 1,5 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| 2 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 |
| 2,5 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 |
| 3 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 |
| 3,5 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 |
| 4 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 |
| 4,5 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 | 15,0 |
| 5 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 | 16,7 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR LPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 |
| 1,5 | 0,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 |
| 2 | 0,7 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 |
| 2,5 | 0,8 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 |
| 3 | 1,0 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 |
| 3,5 | 1,2 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 |
| 4 | 1,3 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 |
| 4,5 | 1,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 |
| 5 | 1,7 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 |
| 5,5 | 1,8 | 2,8 | 3,7 | 4,6 | 5,5 | 6,4 | 7,3 | 8,3 | 9,2 | 10,1 | 11 | 12,8 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

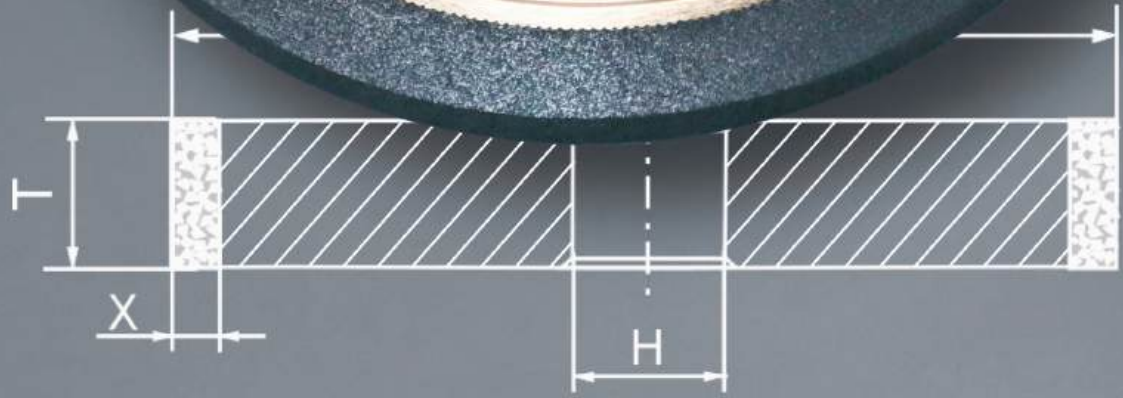
CASE STUDY FOR LPD01 BY CARBIDE END MILL PRODUCTION

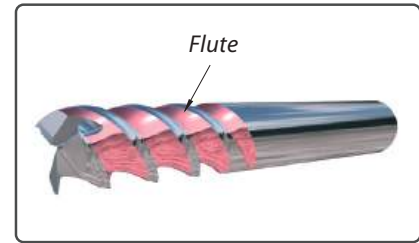
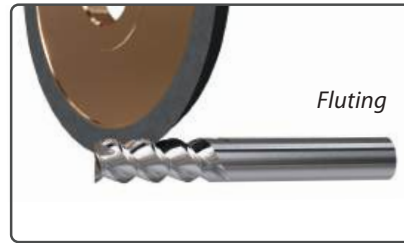
| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1A1 D100 T10 X10 H20 D64 LPD01 | 1A1 D100 T10 X10 H20 D64 LPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,25 | 2,25 |
| Feedrate, mm/min | 40 | 60 |
| Wheel speed, m/s | 18 | 18 |
| Profiling cycle, pcs. | 50 | 60 |

FAI



WITH RPD01 BOND





1V1 10°; 15°; 20° ANGLE with FPD01, RPD01, HPD01, LPD01 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH FPD01, RPD01, HPD01, LPD01 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|----|-------|---------|
| FM2-02 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2-31 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2-04 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2-32 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |
| FM2-60 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 10 | 20 | 0,787 |
| FM2-61 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 10 | 31,75 | 1 1/4 |
| FM2-63 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2-64 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2-66 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2-67 | 100 | 4 | 12 | 1/2 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |
| FM2105 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 10 | 20 | 0,787 |
| FM2106 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 10 | 31,75 | 1 1/4 |
| FM2108 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2109 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2111 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2112 | 100 | 4 | 14 | 9/16 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |
| FM2-12 | 125 | 5 | 10 | 3/8 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2-36 | 125 | 5 | 10 | 3/8 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2-75 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 10 | 20 | 0,787 |
| FM2-76 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 10 | 31,75 | 1 1/4 |
| FM2-78 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2-79 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2-81 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2-82 | 125 | 5 | 12 | 1/2 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |
| FM2120 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 10 | 20 | 0,787 |
| FM2121 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 10 | 31,75 | 1 1/4 |
| FM2123 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2124 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2126 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2127 | 125 | 5 | 14 | 9/16 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |
| FM2180 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 10 | 20 | 0,787 |
| FM2181 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 10 | 31,75 | 1 1/4 |
| FM2183 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 15 | 20 | 0,787 |
| FM2184 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 15 | 31,75 | 1 1/4 |
| FM2186 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 20 | 20 | 0,787 |
| FM2187 | 150 | 6 | 16 | 5/8 | 10 | 3/8 | 20 | 31,75 | 1 1/4 |

Customer-specific and other grinding tools can be produced on request.

RECOMMENDED PARAMETERS FOR FPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

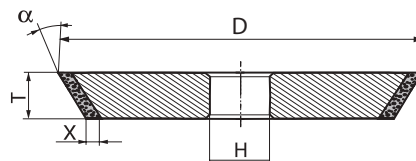
| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 |
| 1,5 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 |
| 2 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 8,7 |
| 2,5 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 10,8 |
| 3 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 | 13,0 |
| 3,5 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 | 15,2 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR FPD01 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
| Grinding wheel | 1V1 D100 T10 X10 V15 D64 FPD01 |
| Operation | Fluting |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 4 |
| Infeed per pass, mm | 2,5 |
| Feedrate, mm/min | 160 |
| Wheel speed, m/s | 18 |
| Profiling cycle, pcs. | 85 |



shape 1V1 D×T×X×α×H

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 |
| 1,5 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 |
| 2 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 |
| 2,5 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 |
| 3 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 |
| 3,5 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 |
| 4 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 |

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 |
| 1,5 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 |
| 2 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 |
| 2,5 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 |
| 3 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 |
| 3,5 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 |
| 4 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

CASE STUDY FOR RPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V15 D64 RPD01 | 1V1 D100 T10 X10 V15 D64 RPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,5 | 2,5 |
| Feedrate, mm/min | 100 | 110 |
| Wheel speed, m/s | 20 | 18 |
| Profiling cycle, pcs. | 100 | 130 |


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 |
| 1,5 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 |
| 2 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 |
| 2,5 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 |
| 3 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 |
| 3,5 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 |
| 4 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 |
| 4,5 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 |
| 5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 |
| 1,5 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 |
| 2 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 |
| 2,5 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 |
| 3 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 |
| 3,5 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 |
| 4 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 |
| 4,5 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 |
| 5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR LPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 1,5 | 0,25 | 0,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 |
| 2 | 0,35 | 0,7 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 |
| 2,5 | 0,4 | 0,8 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 |
| 3 | 0,5 | 1,0 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 3,5 | 0,6 | 1,2 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 |
| 4 | 0,65 | 1,3 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 4,5 | 0,75 | 1,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 |
| 5 | 0,85 | 1,7 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 5,5 | 0,9 | 1,8 | 2,8 | 3,7 | 4,6 | 5,5 | 6,4 | 7,3 | 8,3 | 9,2 | 10,1 | 11 |

• Dark green color - recommended modes (optimal modes);

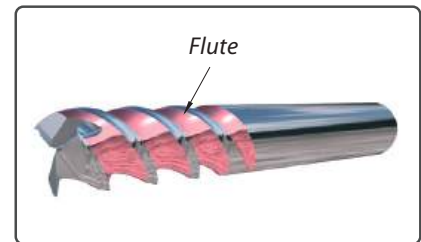
• Light green color - acceptable operating modes;

CASE STUDY FOR LPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V15 D64 LPD01 | 1V1 D100 T10 X10 V15 D64 LPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,5 | 2,5 |
| Feedrate, mm/min | 40 | 50 |
| Wheel speed, m/s | 20 | 18 |
| Profiling cycle, pcs. | 70 | 100 |



10° 15° 20°



1V1, 14V1 30° with FPD01, RPD01, HPD01, LPD01 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH FPD01, RPD01, HPD01, LPD01 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | U, mm | U, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|----------------|-------|---------|
| FM2-54 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2-55 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2-56 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2-48 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2-49 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2-50 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2-06 | 100 | 4 | 10 | 3/8 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2-33 | 100 | 4 | 10 | 3/8 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2-07 | 100 | 4 | 10 | 3/8 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2-69 | 100 | 4 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2-70 | 100 | 4 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2-71 | 100 | 4 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2114 | 100 | 4 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2115 | 100 | 4 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2116 | 100 | 4 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2129 | 125 | 5 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2130 | 125 | 5 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2131 | 125 | 5 | 14 | 9/16 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| FM2-84 | 125 | 5 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| FM2-85 | 125 | 5 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 31,75 | 1 1/4 |
| FM2-86 | 125 | 5 | 12 | 1/2 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.


RECOMMENDED PARAMETERS FOR FPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

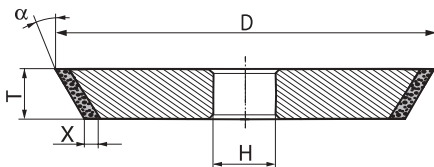
| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 |
| 1,5 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 6,5 |
| 2 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 8,7 |
| 2,5 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 10,8 |
| 3 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 | 13,0 |
| 3,5 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 | 15,2 |

 • Dark green color - recommended modes (optimal modes);

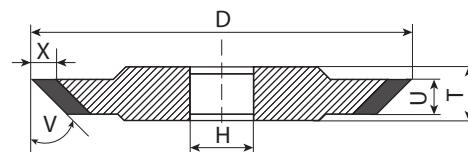
 • Light green color - acceptable operating modes;

CASE STUDY FOR FPD01 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
| Grinding wheel | 1V1 D100 T10 X10 V30 D64 FPD01 |
| Operation | Fluting |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 4 |
| Infeed per pass, mm | 2,5 |
| Feedrate, mm/min | 140 |
| Wheel speed, m/s | 18 |
| Profiling cycle, pcs. | 70 |



shape 1V1 D×T×X×α×H



shape 14V1 D×T×U×X×α×H

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 |
| 1,5 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 |
| 2 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 |
| 2,5 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 |
| 3 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 |
| 3,5 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 |
| 4 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 |

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 |
| 1,5 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 |
| 2 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 |
| 2,5 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 |
| 3 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 |
| 3,5 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 |
| 4 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 | 14,7 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

CASE STUDY FOR RPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V30 D64 RPD01 | 1V1 D100 T10 X10 V30 D64 RPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,5 | 2,5 |
| Feedrate, mm/min | 100 | 110 |
| Wheel speed, m/s | 20 | 18 |
| Profiling cycle, pcs. | 70 | 90 |


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 |
| 1,5 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 |
| 2 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 |
| 2,5 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 |
| 3 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 |
| 3,5 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 |
| 4 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 |
| 4,5 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 |
| 5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 |
| 1,5 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 |
| 2 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 |
| 2,5 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 |
| 3 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 |
| 3,5 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 |
| 4 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 |
| 4,5 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 | 13,5 |
| 5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 | 15,0 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR LPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 1,5 | 0,25 | 0,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 |
| 2 | 0,35 | 0,7 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 |
| 2,5 | 0,4 | 0,8 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 |
| 3 | 0,5 | 1,0 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 3,5 | 0,6 | 1,2 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 |
| 4 | 0,65 | 1,3 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 4,5 | 0,75 | 1,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 |
| 5 | 0,85 | 1,7 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 5,5 | 0,9 | 1,8 | 2,8 | 3,7 | 4,6 | 5,5 | 6,4 | 7,3 | 8,3 | 9,2 | 10,1 | 11 |

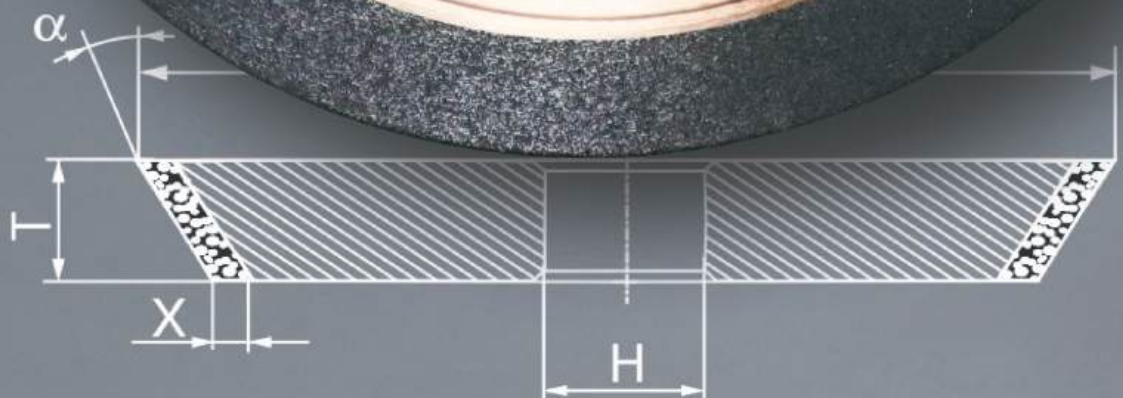
• Dark green color - recommended modes (optimal modes);

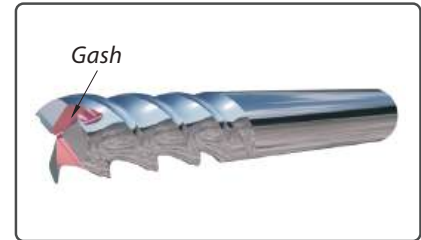
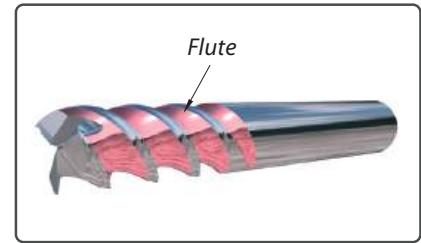
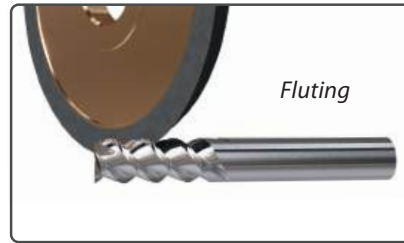
• Light green color - acceptable operating modes;

CASE STUDY FOR LPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V30 D64 LPD01 | 1V1 D100 T10 X10 V30 D64 LPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 2,5 | 2,5 |
| Feedrate, mm/min | 40 | 50 |
| Wheel speed, m/s | 18 | 18 |
| Profiling cycle, pcs. | 50 | 70 |

IVM 30°





1V1, 14V1 45° with FPD01, RPD01, HPD01, LPD01 bonds are designated for power grinding in the fluting and gashing operations during the manufacture of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH FPD01, RPD01, HPD01, LPD01 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | U, mm | U, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|----|-------|---------|
| FM2-57 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2-58 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2-59 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2-51 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2-52 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2-53 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2-72 | 100 | 4 | 12 | 3/8 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2-73 | 100 | 4 | 12 | 3/8 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2-74 | 100 | 4 | 12 | 3/8 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2117 | 100 | 4 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2118 | 100 | 4 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2119 | 100 | 4 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2-18 | 125 | 5 | 10 | 9/16 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2-39 | 125 | 5 | 10 | 9/16 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2-19 | 125 | 5 | 10 | 9/16 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2-87 | 125 | 5 | 12 | 9/16 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2-88 | 125 | 5 | 12 | 9/16 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2-89 | 125 | 5 | 12 | 9/16 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| FM2132 | 125 | 5 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| FM2133 | 125 | 5 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 31,75 | 11/4 |
| FM2134 | 125 | 5 | 14 | 1/2 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.

RECOMMENDED PARAMETERS FOR FPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

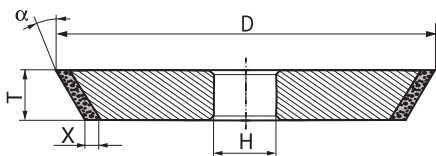
| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 | 220 | 240 |
| 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 2 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 3 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 | 11,0 | 12,0 |
| 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 | 12,8 | 14,0 |

 • Dark green color - recommended modes (optimal modes);

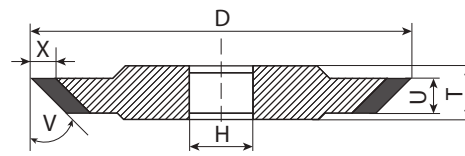
 • Light green color - acceptable operating modes;

CASE STUDY FOR FPD01 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
| Grinding wheel | 1V1 D100 T10 X10 V45 D64 FPD01 |
| Operation | Fluting |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 8 |
| Infeed per pass, mm | 2 |
| Feedrate, mm/min | 140 |
| Wheel speed, m/s | 18 |
| Profiling cycle, pcs. | 28 |



shape 1V1 D×T×X×α×H



shape 14V1 D×T×U×X×α×H

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 1,5 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| 2 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 |
| 2,5 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 |
| 3 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 |
| 3,5 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 |
| 4 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 |

RECOMMENDED PARAMETERS FOR RPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 1,5 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| 2 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 |
| 2,5 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 |
| 3 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 9,0 | 10,0 |
| 3,5 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 | 10,5 | 11,7 |
| 4 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 | 12,0 | 13,3 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

CASE STUDY FOR RPD01 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V45 D64 RPD01 | 1V1 D100 T10 X10 V45 D64 RPD01 |
| Operation | Fluting | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 8 | 8 |
| Infeed per pass, mm | 2 | 2 |
| Feedrate, mm/min | 80 | 100 |
| Wheel speed, m/s | 20 | 18 |
| Profiling cycle, pcs. | 50 | 60 |


RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-15 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 |
| 1,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 |
| 2 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 |
| 2,5 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 |
| 3 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 |
| 3,5 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 |
| 4 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 |
| 4,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 |
| 5 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR HPD01 BOND DURING ONE-PASS CUTTING

Spindle power 20-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 |
| 1,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 | 3,5 | 4,0 |
| 2 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 | 4,7 | 5,3 |
| 2,5 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 | 5,8 | 6,7 |
| 3 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 |
| 3,5 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 | 8,2 | 9,3 |
| 4 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 | 9,3 | 10,7 |
| 4,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 | 10,5 | 12,0 |
| 5 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 | 11,7 | 13,3 |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR LPD01 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 1,5 | 0,25 | 0,5 | 0,8 | 1,0 | 1,3 | 1,5 | 1,8 | 2,0 | 2,3 | 2,5 | 2,8 | 3,0 |
| 2 | 0,35 | 0,7 | 1,0 | 1,3 | 1,7 | 2,0 | 2,3 | 2,7 | 3,0 | 3,3 | 3,7 | 4,0 |
| 2,5 | 0,4 | 0,8 | 1,3 | 1,7 | 2,1 | 2,5 | 2,9 | 3,3 | 3,8 | 4,2 | 4,6 | 5,0 |
| 3 | 0,5 | 1,0 | 1,5 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 | 5,5 | 6,0 |
| 3,5 | 0,6 | 1,2 | 1,8 | 2,3 | 2,9 | 3,5 | 4,1 | 4,7 | 5,3 | 5,8 | 6,4 | 7,0 |
| 4 | 0,65 | 1,3 | 2,0 | 2,7 | 3,3 | 4,0 | 4,7 | 5,3 | 6,0 | 6,7 | 7,3 | 8,0 |
| 4,5 | 0,75 | 1,5 | 2,3 | 3,0 | 3,8 | 4,5 | 5,3 | 6,0 | 6,8 | 7,5 | 8,3 | 9,0 |
| 5 | 0,85 | 1,7 | 2,5 | 3,3 | 4,2 | 5,0 | 5,8 | 6,7 | 7,5 | 8,3 | 9,2 | 10,0 |
| 5,5 | 0,9 | 1,8 | 2,8 | 3,7 | 4,6 | 5,5 | 6,4 | 7,3 | 8,3 | 9,2 | 10,1 | 11 |

• Dark green color - recommended modes (optimal modes);

• Light green color - acceptable operating modes;

CASE STUDY FOR LPD01 BY CARBIDE END MILL PRODUCTION

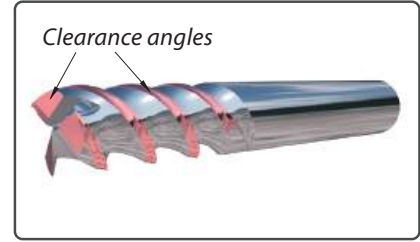
| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 1V1 D100 T10 X10 V45 D64 LPD01 | 1V1 D100 T10 X10 V45 D64 LPD01 |
| Operation | | Fluting |
| Coolant | | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 8 | 8 |
| Infeed per pass, mm | 2 | 2 |
| Feedrate, mm/min | 30 | 40 |
| Wheel speed, m/s | 20 | 18 |
| Profiling cycle, pcs. | 30 | 40 |



IVT

45°





11V9-70 with VPD02 bond are designated for production and clearance angles grinding of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH VPD02 BOND

| Code | D, mm | D, inch | U, mm | U, inch | X, mm | X, inch | T, mm | T, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| FR1-03 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 20 | 0,787 |
| FR1-04 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 31,75 | 1 1/4 |
| FR1-05 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.

RECOMMENDED PARAMETERS FOR VPD02 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

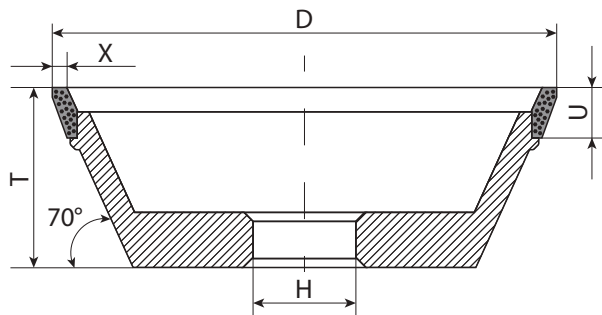
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|-------|--------------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 0,2 | | | | | | | | | | | | | | |
| 0,3 | | | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |

• Dark green color - recommended modes (optimal modes);

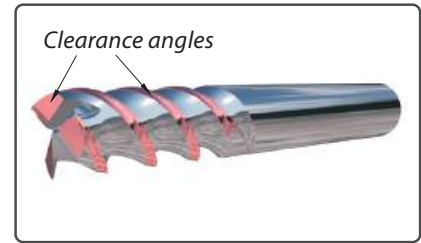
• Light green color - acceptable operating modes;

CASE STUDY FOR VPD02 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | WALTER HELITRONIC POWER 5-AXES CNC, SPINDLE POWER 25 KW |
|---------------------------|---|--|
| Grinding wheel | 11V9-70 D100 U10 X3 T35 H20 D64 VPD02 | |
| Operation | Clearance angles | |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 12×100/50 | 12×100/50 |
| Flute q-ty, pcs. | 4 | 4 |
| Infeed per pass, mm | 0,3 | 0,4 |
| Feedrate, mm/min | 90 | 100 |
| Wheel speed, m/s | 25 | 25 |
| Profiling cycle, pcs. | 140 | 140 |



shape 11V9-70 D×U×X×T×H



11V9-70 with HPD03 bond are designated for production and clearance angles grinding of cutting tools:

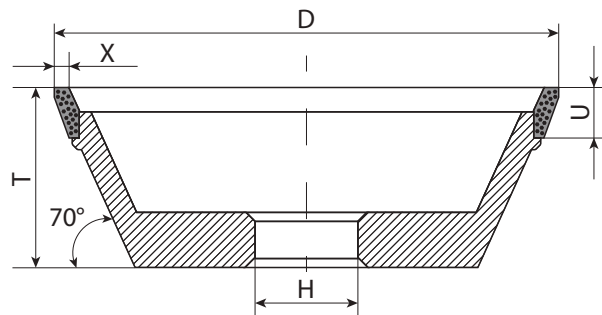
- workpieces over 6 mm with using D64 grit size;
- workpieces from 4 to 12 mm with using D46 grit size.

11V9-70 with HPD04 bond are designated for production and clearance angles grinding of cutting tools with diameter of workpiece up to 6 mm diameter with using M30 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD03 AND HPD04 BONDS

| Code | D, mm | D, inch | U, mm | U, inch | X, mm | X, inch | T, mm | T, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| FR1-00 | 75 | 3 | 10 | 3/8 | 3 | 1/8 | 30 | 13/64 | 20 | 0,787 |
| FR1-01 | 75 | 3 | 10 | 3/8 | 3 | 1/8 | 30 | 13/64 | 31,75 | 11/4 |
| FR1-03 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 20 | 0,787 |
| FR1-04 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 31,75 | 11/4 |
| FR1-05 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 35 | 1 3/8 | 32 | 1,260 |
| FR1-06 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 40 | 1 4/7 | 20 | 0,787 |
| FR1-07 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 40 | 1 4/7 | 31,75 | 11/4 |
| FR1-08 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 40 | 1 4/7 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.



shape 11V9-70 $D \times U \times X \times T \times H$

RECOMMENDED PARAMETERS FOR HPD03 BOND D46-D64 GRIT SIZE DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 | 200 |
| 0,2 | | | | | | | | | | | | | | |
| 0,3 | | | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR HPD04 BOND M30 GRIT SIZE DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

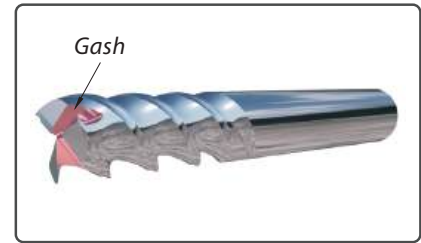
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | 160 | 180 |
| 0,2 | | | | | | | | | | | | | | |
| 0,3 | | | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR HPD04 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | VOLLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW |
| Grinding wheel | 11V9-70 D75 U10 X3 T30 H20 M30 HPD04 |
| Operation | Clearance angles |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 2 |
| Infeed per pass, mm | 0,05 outer diameter, 0,3 end surface |
| Feedrate, mm/min | 75 |
| Wheel speed, m/s | 18-20 |
| Profiling cycle, pcs. | 60 |



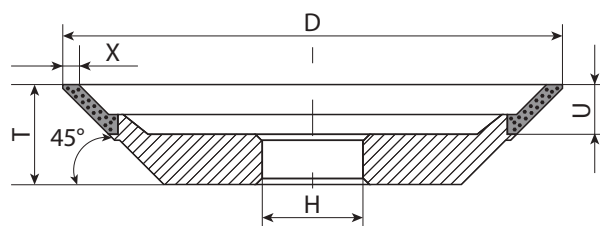
12V9-45 with HPD03 bond are designated for gashing and resharpenering operations of cutting tools:
 - workpieces over 6 mm with using D64 grit size;
 - workpieces from 4 to 12 mm with using D46 grit size.

12V9-45 with HPD04 bond are designated for gashing and resharpenering operations of cutting tools with diameter of workpiece up to 6 mm diameter with using M30 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD03 AND HPD04 BONDS

| Code | D, mm | D, inch | U, mm | U, inch | X, mm | X, inch | T, mm | T, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| FR2-00 | 75 | 3 | 6 | 1/4 | 2 | 5/64 | 16 | 21/32 | 20 | 0,787 |
| FR2-01 | 75 | 3 | 6 | 1/4 | 2 | 5/64 | 16 | 21/32 | 31,75 | 1 1/4 |
| FR2-02 | 75 | 3 | 6 | 1/4 | 2 | 5/64 | 16 | 21/32 | 32 | 1,260 |
| FR2-03 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 20 | 51/64 | 20 | 0,787 |
| FR2-04 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 20 | 51/64 | 31,75 | 1 1/4 |
| FR2-05 | 100 | 4 | 10 | 3/8 | 3 | 1/8 | 20 | 51/64 | 32 | 1,260 |
| FR2-06 | 125 | 5 | 10 | 3/8 | 3 | 1/8 | 25 | 1 | 20 | 0,787 |
| FR2-07 | 125 | 5 | 10 | 3/8 | 3 | 1/8 | 25 | 1 | 31,75 | 1 1/4 |
| FR2-08 | 125 | 5 | 10 | 3/8 | 3 | 1/8 | 25 | 1 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.




shape 12V9-45 $D \times U \times X \times T \times H$

RECOMMENDED PARAMETERS FOR HPD03 BOND D46-D64 GRIT SIZE DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 20-26 m/s.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|-------|--------------------|-------------|-------------|------------|-------------|------------|-------------|------------|------------|------------|-------------|-------------|-------------|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 160 |
| 0,5 | | | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | |
| 1 | | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | Light green | | |
| 2 | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | | | | | | | |
| 3 | Dark green | Dark green | Dark green | Dark green | Light green | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);


 • Light green color - acceptable operating modes;

RECOMMENDED PARAMETERS FOR HPD04 BOND M30 GRIT SIZE DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 20-26 m/s.

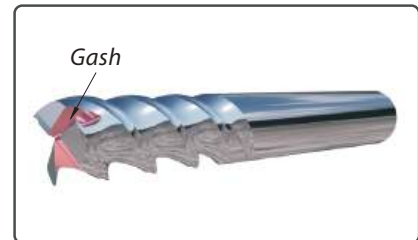
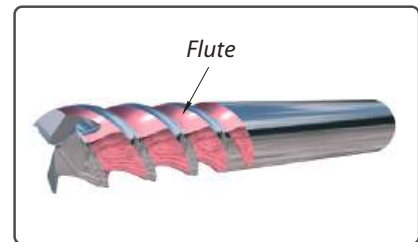
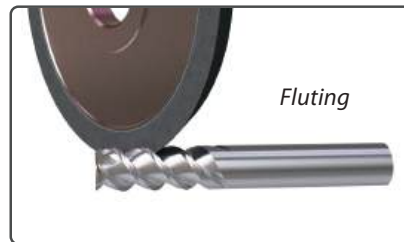
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|-------|--------------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 160 |
| 0,2 | | | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | Light green | | |
| 0,3 | | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | Light green | | | | |
| 0,5 | Light green | Dark green | Dark green | Dark green | Dark green | Dark green | Light green | Light green | | | | | | |
| 0,7 | Dark green | Dark green | Dark green | Dark green | Light green | Light green | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR HPD04 BY CARBIDE END MILL PRODUCTION

| | |
|----------------------------------|--|
| MACHINE | VOLLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW |
| Grinding wheel | 12V9-45 D75 U6 X2 T16 H20 M30 HPD04 |
| Operation | Gashing |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 12×100/50 |
| Flute q-ty, pcs. | 3 |
| Infeed per pass, mm | 0,9 |
| Feedrate, mm/min | 20 |
| Wheel speed, m/s | 22 |
| Profiling cycle, pcs. | 40 |



1V1, 14V1 45° with HPD04 bonds are designated for power grinding in the fluting and gashing operations during the manufacture of cutting tools with a diameter of workpieces from 4 to 12 mm with using D46 grit size and over 6 mm with using D64 grit size.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD04 BOND

| Code | D, mm | D, inch | T, mm | T, inch | U, mm | U, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|----|-------|---------|
| 9-9009 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 20 | 0,787 |
| 9-9010 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 31,75 | 1 1/4 |
| 9-9011 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 45 | 32 | 1,260 |
| 9-9003 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| 9-9004 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 31,75 | 1 1/4 |
| 9-9005 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 45 | 32 | 1,260 |
| 9S3249 | 100 | 4 | 6 | 1/4 | - | - | 5 | 13/64 | 45 | 20 | 0,787 |
| 9F3208 | 100 | 4 | 10 | 3/8 | - | - | 6 | 1/4 | 45 | 32 | 1,260 |
| 9-9998 | 100 | 4 | 10 | 3/8 | - | - | 10 | 3/8 | 45 | 20 | 0,787 |
| 9B3208 | 100 | 4 | 12 | 1/2 | - | - | 6 | 1/4 | 45 | 20 | 0,787 |
| 9K3241 | 125 | 5 | 8 | 5/16 | - | - | 6 | 1/4 | 45 | 31,75 | 1 1/4 |
| 9-3241 | 125 | 5 | 10 | 3/8 | - | - | 6 | 1/4 | 45 | 31,75 | 1 1/4 |

Customer-specific and other grinding tools can be produced on request.

RECOMMENDED PARAMETERS FOR HPD04 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

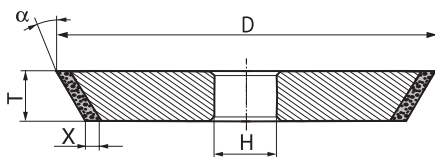
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 160 | 180 | 200 | 220 | |
| 0,2 | | | | | | | | | | | | | | | |
| 0,3 | | | | | | | | | | | | | | | |
| 0,4 | | | | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | | | | |
| 0,8 | | | | | | | | | | | | | | | |

• Dark green color - recommended modes (optimal modes);

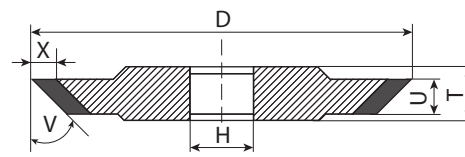
• Light green color - acceptable operating modes;

CASE STUDY FOR HPD04 BY CARBIDE END MILL PRODUCTION

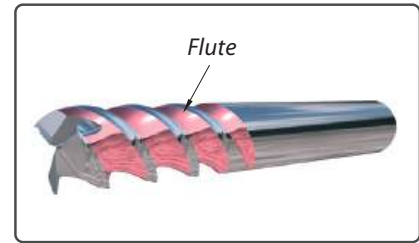
| | |
|----------------------------------|--|
| MACHINE | VOLLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW |
| Grinding wheel | 1V1 D75 T5 X10 V45 H20 M30 HPD04 |
| Operation | Fluting |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 4×60/16 |
| Flute q-ty, pcs. | 4 |
| Infeed per pass, mm | 0,4 |
| Feedrate, mm/min | 100 |
| Wheel speed, m/s | 22 |
| Profiling cycle, pcs. | 30 |



shape 1V1 D×T×X×α×H



shape 14V1 D×T×U×X×α×H



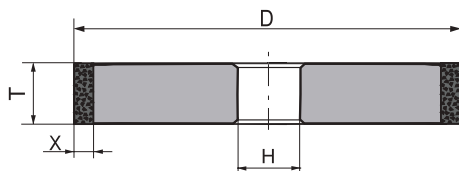
1A1, 14A1 with HPD04 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces over 6 mm with using M30 grit size.

1A1, 14A1 with the HPD05 bond is designed for the operation "polishing" to provide a high quality surface roughness during the manufacture of cutting tools with using M10.

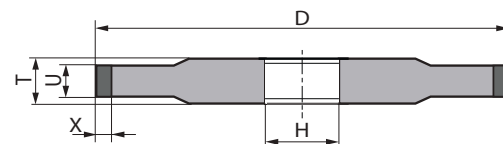
THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD04 BOND

| Code | D, mm | D, inch | T, mm | T, inch | U, mm | U, inch | X, mm | X, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| 9-9015 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 20 | 0,787 |
| 9-9016 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 31,75 | 1 1/4 |
| 9-9017 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 32 | 1,260 |
| 9-9012 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 20 | 0,787 |
| 9-9013 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 31,75 | 1 1/4 |
| 9-9014 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 32 | 1,260 |
| 9-6941 | 75 | 3 | 6 | 1/4 | - | - | 5 | 13/64 | 10 | 0,394 |
| 9K6941 | 75 | 3 | 6 | 1/4 | - | - | 5 | 13/64 | 20 | 0,787 |
| 0-0048 | 80 | 3 | 6 | 1/4 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0054 | 80 | 3 | 6 | 1/4 | - | - | 5 | 13/64 | 20 | 0,787 |
| 0-0050 | 80 | 3 | 10 | 3/8 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0056 | 80 | 3 | 10 | 3/8 | - | - | 5 | 13/64 | 20 | 0,787 |
| 0-0253 | 80 | 3 | 10 | 3/8 | - | - | 10 | 3/8 | 20 | 0,787 |
| 0-0063 | 100 | 4 | 6 | 1/4 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0069 | 100 | 4 | 6 | 1/4 | - | - | 5 | 13/64 | 20 | 0,787 |
| 0-0064 | 100 | 4 | 8 | 5/16 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0065 | 100 | 4 | 10 | 3/8 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0071 | 100 | 4 | 10 | 3/8 | - | - | 5 | 13/64 | 20 | 0,787 |
| 3-2919 | 100 | 4 | 10 | 3/8 | - | - | 7 | 9/32 | 20 | 0,787 |
| 0-1004 | 100 | 4 | 10 | 3/8 | - | - | 10 | 3/8 | 20 | 0,787 |
| 0-0072 | 100 | 4 | 12 | 1/2 | - | - | 5 | 13/64 | 20 | 0,787 |
| 0M0079 | 125 | 5 | 6 | 1/4 | - | - | 3 | 1/8 | 20 | 0,787 |
| 0-0079 | 125 | 5 | 6 | 1/4 | - | - | 3 | 1/8 | 32 | 1,260 |
| 0-0080 | 125 | 5 | 10 | 3/8 | - | - | 3 | 1/8 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.



shape 1A1 D×T×X×H



shape 14A1 D×T×U×X×H

RECOMMENDED PARAMETERS FOR HPD04 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 80 | 90 | 100 | 130 | 140 | 160 | 170 | 190 | 200 | 220 | 240 | 250 |
| 0,2 | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | |
| 0,8 | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | |


RECOMMENDED PARAMETERS FOR HPD05 BOND DURING ONE-PASS POLISHING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10–20 mm/min for Ø 125 and Ø 150 mm wheels.

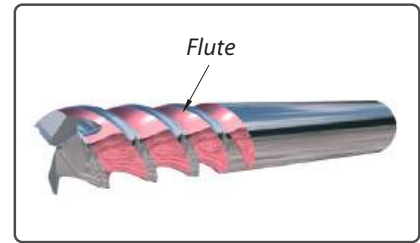
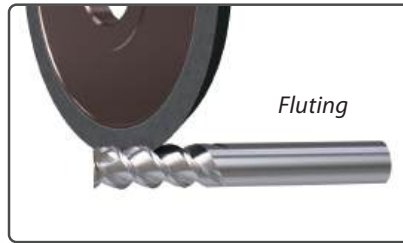
| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|-------|--------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 |
| 0,02 | | | | | | | | | | | | |
| 0,03 | | | | | | | | | | | | |
| 0,05 | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR HPD04/05 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | |
|---------------------------|---|--------------------------------------|
| Grinding wheel | 1A1 D75 T5 X10 H20 M30 HPD04 | 1A1 D100 T12 X5 H20 M10 HPD05 |
| Operation | Fluting | Polishing |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 4×60/16 | 4×60/16 |
| Flute q-ty, pcs. | 3 | 3 |
| Infeed per pass, mm | 0,25 | 0,05 |
| Feedrate, mm/min | 140 | 80 |
| Wheel speed, m/s | 16 | 20 |
| Profiling cycle, pcs. | 75 | 50 |



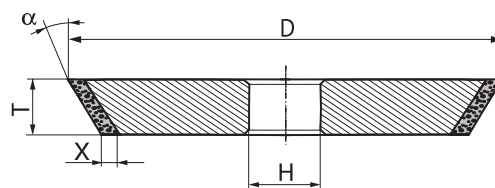
1V1 with HPD04 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces over 6 mm with using M30 grit size.

1V1 with the HPD05 bond is designed for the operation “polishing” to provide a high quality surface roughness during the manufacture of cutting tools with using M10.

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD04 AND HPD05 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|----|-------|---------|
| 0L7350 | 74 | 3 | 8 | 5/16 | 6 | 1/4 | 15 | 20 | 0,787 |
| 0-7350 | 75 | 3 | 8 | 5/16 | 7 | 9/32 | 20 | 20 | 0,787 |
| 0-7352 | 100 | 4 | 6 | 1/4 | 7 | 9/32 | 20 | 20 | 0,787 |
| 3R2919 | 100 | 4 | 10 | 3/8 | 7 | 9/32 | 20 | 31,75 | 1 1/4 |
| 9C9991 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 20 | 20 | 0,787 |
| 9D9991 | 100 | 4 | 10 | 3/8 | 10 | 3/8 | 20 | 32 | 1,260 |
| 9D3206 | 100 | 4 | 12 | 1/2 | 6 | 1/4 | 15 | 20 | 0,787 |
| 9Y3206 | 100 | 4 | 12 | 1/2 | 6 | 1/4 | 20 | 20 | 0,787 |
| 9S3209 | 125 | 5 | 12 | 1/2 | 6 | 1/4 | 15 | 20 | 0,787 |
| 9S3211 | 125 | 5 | 12 | 1/2 | 6 | 1/4 | 20 | 20 | 0,787 |

Customer-specific and other grinding tools can be produced on request.



shape 1V1 D×T×X×α×H

RECOMMENDED PARAMETERS FOR HPD04 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | | |
|----------|--------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | 80 | 90 | 100 | 110 | 130 | 140 | 160 | 170 | 180 | 200 | 220 | 230 | |
| 0,2 | | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | | |
| 0,8 | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 1,5 | | | | | | | | | | | | | |


RECOMMENDED PARAMETERS FOR HPD05 BOND DURING ONE-PASS POLISHING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

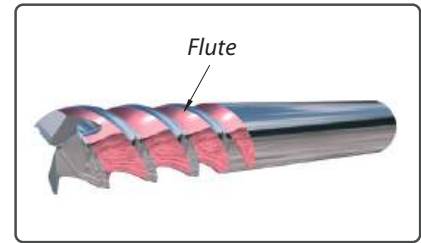
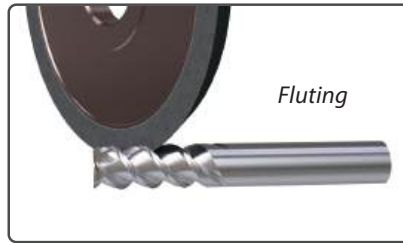
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|--|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 | |
| 0,02 | | | | | | | | | | | | | |
| 0,03 | | | | | | | | | | | | | |
| 0,05 | | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR HPD04/05 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | |
|---------------------------|---|-----------------------------------|
| Grinding wheel | 1V1 D75 T8 X7 V20 H20 M30 HPD04 | 1V1 D100 T12 X6 V15 H20 M10 HPD05 |
| Operation | Fluting | Polishing |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 4×60/16 | 4×60/16 |
| Flute q-ty, pcs. | 3 | 3 |
| Infeed per pass, mm | 0,38 | 0,05 |
| Feedrate, mm/min | 140 | 80 |
| Wheel speed, m/s | 18 | 20 |
| Profiling cycle, pcs. | 75 | 50 |



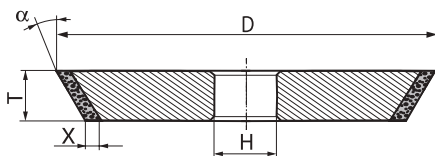
1V1, 14V1 30° with HPD04 bonds are designated for power grinding in the fluting operation during the manufacture of cutting tools with a diameter of workpieces over 6 mm with using M30 grit size.

1V1, 14V1 30° with the HPD05 bond is designed for the operation "polishing" to provide a high quality surface roughness during the manufacture of cutting tools with using M10.

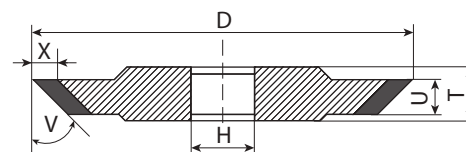
THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH HPD04 AND HPD05 BONDS

| Code | D, mm | D, inch | T, mm | T, inch | U, mm | U, inch | X, mm | X, inch | α° | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|----------------|-------|---------|
| 9-9006 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 20 | 0,787 |
| 9-9007 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 31,75 | 11/4 |
| 9-9008 | 100 | 4 | 10 | 3/8 | 5 | 13/64 | 10 | 3/8 | 30 | 32 | 1,260 |
| 9-9000 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 20 | 0,787 |
| 9-9001 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 31,75 | 11/4 |
| 9-9002 | 75 | 3 | 5 | 13/64 | - | - | 10 | 3/8 | 30 | 32 | 1,260 |
| 0-7346 | 75 | 3 | 8 | 5/16 | - | - | 5 | 13/64 | 30 | 20 | 0,787 |
| 3F2919 | 100 | 4 | 10 | 3/8 | - | - | 7 | 9/32 | 30 | 20 | 0,787 |
| 9D3207 | 100 | 4 | 12 | 1/2 | - | - | 6 | 1/4 | 30 | 20 | 0,787 |
| 9S3213 | 125 | 5 | 12 | 1/2 | - | - | 6 | 1/4 | 30 | 20 | 0,787 |

Customer-specific and other grinding tools can be produced on request.



shape 1V1 $D \times T \times X \times \alpha \times H$



shape 14V1 $D \times T \times U \times X \times \alpha \times H$

RECOMMENDED PARAMETERS FOR HPD04 BOND DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 130 | 140 | 150 | 160 | 170 | 180 | 200 |
| 0,2 | | | | | | | | | | | | | | |
| 0,3 | | | | | | | | | | | | | | |
| 0,5 | | | | | | | | | | | | | | |
| 0,8 | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | |


RECOMMENDED PARAMETERS FOR HPD05 BOND DURING ONE-PASS POLISHING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

For wheels Ø 75 and Ø 100 mm, use standard feed. Increase by 10-20 mm/min for Ø 125 and Ø 150 mm wheels.

| t, mm | Feedrate S, mm/min | | | | | | | | | | | |
|----------|--------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 140 |
| 0,02 | | | | | | | | | | | | |
| 0,03 | | | | | | | | | | | | |
| 0,05 | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY FOR HPD04/05 BY CARBIDE END MILL PRODUCTION

| MACHINE | VOLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW | |
|---------------------------|---|-----------------------------------|
| Grinding wheel | 1V1 D75 T5 X10 V30 H20 M30 HPD04 | 1V1 D100 T12 X6 V30 H20 M10 HPD05 |
| Operation | Fluting | Polishing |
| Coolant | Pure oil with superfiltration and chiller | |
| Workpiece D×L/L flute, mm | 4×60/16 | 4×60/16 |
| Flute q-ty, pcs. | 3 | 3 |
| Infeed per pass, mm | 0,2 | 0,05 |
| Feedrate, mm/min | 140 | 90 |
| Wheel speed, m/s | 20 | 20 |
| Profiling cycle, pcs. | 60 | 30 |

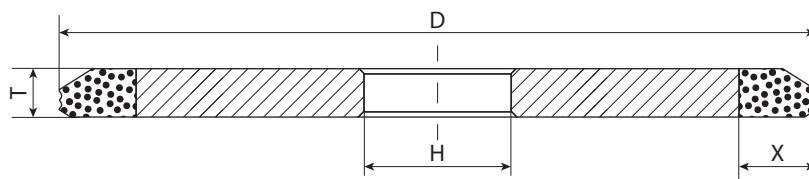


The 1S1 wheel is designed specifically for chip breaker production.

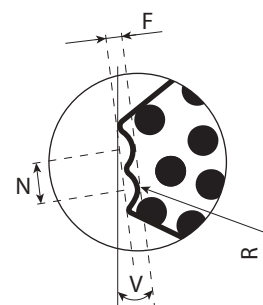
THE MOST FREQUENTLY USED WHEEL DIMENSIONS

| Code | D, mm | D, inch | T, mm | T, inch | X, mm | X, inch | V, mm | V, inch | R, mm | R, inch | F, mm | F, inch | N, mm | N, inch | H, mm | H, inch |
|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| 1-1234 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,25 | 0,009 | 0,4 | 0,015 | 0,8 | 0,031 | 20 | 0,787 |
| 1-1237 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,25 | 0,009 | 0,4 | 0,015 | 0,8 | 0,031 | 31,75 | 11/4 |
| 1-1238 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,25 | 0,009 | 0,4 | 0,015 | 0,8 | 0,031 | 32 | 1,260 |
| 1-1235 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,3 | 0,011 | 0,45 | 0,017 | 1,0 | 0,039 | 32 | 1,260 |
| 1-1239 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,3 | 0,011 | 0,45 | 0,017 | 1 | 0,039 | 31,75 | 11/4 |
| 1-1240 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,3 | 0,011 | 0,45 | 0,017 | 1 | 0,039 | 32 | 1,260 |
| 1-1236 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,5 | 0,019 | 0,7 | 0,027 | 1,5 | 0,059 | 20 | 0,787 |
| 1-1241 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,5 | 0,019 | 0,7 | 0,027 | 1,5 | 0,059 | 31,75 | 11/4 |
| 1-1242 | 100 | 4 | 6 | 1/4 | 10 | 3/8 | 9 | 23/64 | 0,5 | 0,019 | 0,7 | 0,027 | 1,5 | 0,059 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.



shape 1S1 D×T×X×V×R×F×N×H




RECOMMENDED PARAMETERS DURING ONE-PASS CUTTING

Spindle power 9-30 kW. Coolant - oil. The wheel speed is 16-22 m/s.

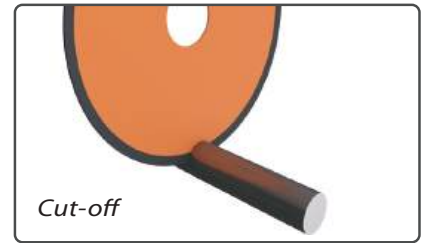
| t, mm | Feedrate S, mm/min | | | | | | | | | | | | | |
|-------|--------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 180 | 200 |
| 0,2 | | | | | | | | | | | | | | |
| 0,4 | | | | | | | | | | | | | | |
| 0,6 | | | | | | | | | | | | | | |

 • Dark green color - recommended modes (optimal modes);

 • Light green color - acceptable operating modes;

CASE STUDY BY CARBIDE END MILL PRODUCTION

| | |
|---------------------------|--|
| MACHINE | VOLLMER V-GRIND 260 5-AXES CNC, SPINDLE POWER 11 KW |
| Grinding wheel | 1S1 D100 T6 X5 V9 R0.3 F0.45 N1 H20 D64 |
| Operation | Knurled profile grinding |
| Coolant | Pure oil with superfiltration and chiller |
| Workpiece D×L/L flute, mm | 8×80/30 |
| Flute q-ty, pcs. | 3 (94 cuts/mill) |
| Infeed per pass, mm | 0,38 |
| Feedrate, mm/min | 100 |
| Wheel speed, m/s | 20 |
| Profiling cycle, pcs. | 300 |



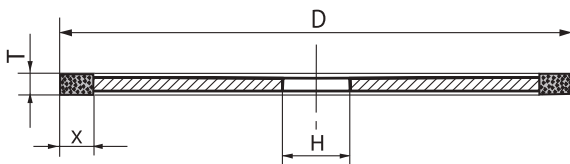
The 1A1R in the B1000 is designed for cutting workpieces during the manufacture of cutting tools.

RECOMMENDED OPERATING CONDITIONS

Coolant - oil/emulsion. The speed of the wheel is 18-26 m/s.

The feed rate depends on the diameter of the workpiece to be cut, but not more than 25 mm/min.

The recommended grit size is D151.



shape 1A1R D×T×X×H

THE MOST FREQUENTLY USED WHEEL DIMENSIONS WITH B1000 BOND

| Code | D, mm | D, inch | T, mm | T, inch | X, mm | X, inch | H, mm | H, inch |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| 6M0206 | 150 | 6 | 1,2 | 1/21 | 5 | 13/64 | 20 | 0,787 |
| 6K0206 | 150 | 6 | 1,2 | 1/21 | 5 | 13/64 | 31,75 | 11/4 |
| 6-0206 | 150 | 6 | 1,2 | 1/21 | 5 | 13/64 | 32 | 1,260 |
| 6Y0234 | 200 | 8 | 1,2 | 1/21 | 5 | 13/64 | 20 | 0,787 |
| 6F0234 | 200 | 8 | 1,2 | 1/21 | 5 | 13/64 | 31,75 | 11/4 |
| 6E 0234 | 200 | 8 | 1,2 | 1/21 | 5 | 13/64 | 32 | 1,260 |
| 6D4002 | 200 | 8 | 1,2 | 1/21 | 10 | 3/8 | 20 | 0,787 |
| 6F4002 | 200 | 8 | 1,2 | 1/21 | 10 | 3/8 | 31,75 | 11/4 |
| 6E4002 | 200 | 8 | 1,2 | 1/21 | 10 | 3/8 | 32 | 1,260 |
| 6J0234 | 200 | 8 | 1,5 | 1/17 | 5 | 13/64 | 20 | 0,787 |
| 6M0234 | 200 | 8 | 1,5 | 1/17 | 5 | 13/64 | 31,75 | 11/4 |
| 6-0234 | 200 | 8 | 1,5 | 1/17 | 5 | 13/64 | 32 | 1,260 |
| 6K0234 | 200 | 8 | 1,8 | 1/14 | 5 | 13/64 | 32 | 1,260 |

Customer-specific and other grinding tools can be produced on request.

RECOMMENDATIONS FOR THE USE, TRUING AND DRESSING OF DIAMOND AND CBN WHEELS

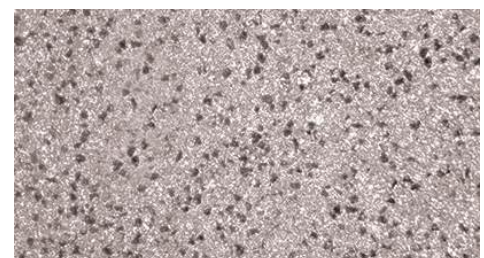
Dressing (cleaning) of diamond and CBN grinding wheels is performed to remove sludge from the working layer and restore grinding ability. The cleaning process should be carried out with aluminium oxide (AlO) stones.

Classically, the stone should be 1 or 2 sizes coarser than a diamond or CBN grinding wheel.

The ner the grit on a CBN or diamond wheel is, the softer the stone should be.



Before dressing



After dressing

You can order by PDTools Supeabrasives aluminium oxide dressing stones 25A F220 CM1 for your needs.

When using diamond grinding wheels, the following instructions should be observed:

- grinding wheels are to be mounted on holders or anges and should not be removed until nal usage has occurred;
- the tools are to be mounted securely on the machine spindle in accordance with the technical specifications of the equipment used for diamond tool machining;
- the cleaning of resin bonded diamond wheels is to be performed with a pumice stone, of metal bonded wheels with a green silicon carbide bar made with grit sizes 1 or 2 sizes larger that of the diamond wheel.

Dressing (truing) of the diamond layer is necessary to restore its shape, eliminate defects from its working surface, and to restore the required prole. As a rule These is performed without coolant. The most productive way of dressing a diamond layer is to grind it with abrasive wheels. The dressing is performed by wheels of white alumina and green silicon carbide with vitrified bonds with grit sizes 1 or 2 sizes larger than those of the diamond wheels.

Wheels with a hardness of CM1-M1 for dressing the tool is based on the rule:

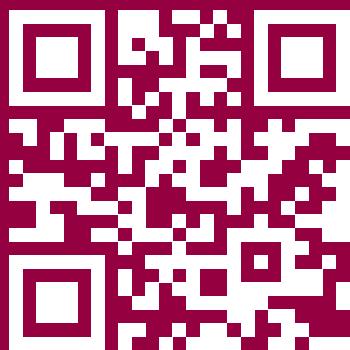
The smaller the gritsize of the superabrasive material, the softer the dressing tool must be.

CONDITIONS OF DIAMOND LAYER DRESSING

| Diamond grinding wheel position | Dressing conditions | | | |
|--|-----------------------|-------------------|------------------|------------------------------|
| | Peripheral speed, m/s | | Line feed, m/min | Cross feed, mm/double stroke |
| | Conventional wheel | Diamond/CBN wheel | | |
| Diamond wheel mounted on holders or anges or spindle of a sharpening or CNC machine. | 25 – 35 | 2 – 5 | 1,0 – 2,0 | 0,02 – 0,04 |

PARAMETERS OF VITRIFIED BONDED CONVENTIONAL WHEELS FOR DRESSING OF SUPERABRASIVE LAYERS

| Diamond layer parameters | | Dressing wheels parameters | | |
|-----------------------------------|-------------------|--------------------------------------|----------------|-----------|
| Bond type | Diamond/CBN grade | Abrasive type | Abrasive grade | Hardness |
| HPD03, HPD04, HPD05 | 160/125 - 125/100 | Aluminum oxide 22A, 23A, 15A, 16A | 20; 16; 12 | C1 - CM2 |
| | 100/80 - 80/63 | | 12; 10; 8 | CM2 - CM1 |
| | 63/50 - 50/40 | | 8; 6; 4 | CM1 - CM3 |
| | 40/28 - 14/10 | | M40; M28 | M3 |
| FPD01, RPD01, HPD01, LPD01, VPD02 | 250/200 - 200/160 | Silicon carbide 62C, 63C, 64C | 40; 32 | CT1 - C2 |
| | 160/125 - 125/100 | | 25; 20 | CT2 - C1 |
| | 100/80 - 80/63 | | 16; 12 | C1 - CM2 |
| | 63/50 and less | | 10; 8; 6 | CM2 - CM1 |



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