



Leading Through Innovation



SOLID CARBIDE

CRX S END MILLS

CRX S FRÄSER

- DLC Coated Carbide End Mills for Copper
- DLC beschichtete VHM Fräser für die Kupfer

SELECTION GUIDE



SOLID CARBIDE
CRX S
END MILLS

DLC Coated Carbide End Mills for Copper

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p. C571

| ISO | VDI 3323 | Material Description | Composition / Structure / Heat Treatment | HB | HRc | SGED28 | SGED27 | SGED29 | SGED31 | SGED30 |
|-----|---------------------|---|--|--|-----|--------|--------|--------|--------|--------|
| P | 1 | Non-alloy steel | About 0.15% C Annealed | 125 | | ○ | ○ | ○ | ○ | ○ |
| | 2 | | About 0.45% C Annealed | 190 | 13 | | | | | |
| | 3 | | About 0.45% C Quenched & Tempered | 250 | 25 | | | | | |
| | 4 | | About 0.75% C Annealed | 270 | 28 | | | | | |
| | 5 | | About 0.75% C Quenched & Tempered | 300 | 32 | | | | | |
| | 6 | Low alloy steel | Annealed | 180 | 10 | | | | | |
| | 7 | | Quenched & Tempered | 275 | 29 | | | | | |
| | 8 | | Quenched & Tempered | 300 | 32 | | | | | |
| | 9 | | Quenched & Tempered | 350 | 38 | | | | | |
| | 10 | | High alloyed steel, and tool steel | Annealed | 200 | 15 | | | | |
| | 11 | Quenched & Tempered | | 325 | 35 | | | | | |
| M | 12 | Stainless steel | Ferritic / Martensitic Annealed | 200 | 15 | | | | | |
| | 13 | | Martensitic Quenched & Tempered | 240 | 23 | | | | | |
| | 14 | | Austenitic | 180 | 10 | | | | | |
| K | 15 | Grey cast iron | Pearlitic / ferritic | 180 | 10 | | | | | |
| | 16 | | Pearlitic (Martensitic) | 260 | 26 | | | | | |
| | 17 | Nodular cast iron | Ferritic | 160 | 3 | | | | | |
| | 18 | | Pearlitic | 250 | 25 | | | | | |
| | 19 | | Ferritic | 130 | | | | | | |
| 20 | Malleable cast iron | Pearlitic | 230 | 21 | | | | | | |
| N | 21 | Aluminum-wrought alloy | Not Curable | 60 | | ○ | ○ | ○ | ○ | ○ |
| | 22 | | Curable Hardened | 100 | | ○ | ○ | ○ | ○ | ○ |
| | 23 | Aluminum-cast, alloyed | ≤ 12% Si, Not Curable | 75 | | | | | | |
| | 24 | | ≤ 12% Si, Curable Hardened | 90 | | | | | | |
| | 25 | | > 12% Si, Not Curable | 130 | | | | | | |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | Cutting Alloys, PB>1% | 110 | | ◎ | ◎ | ◎ | ◎ | ◎ |
| | 27 | | CuZn, CuSnZn (Brass) | 90 | | ◎ | ◎ | ◎ | ◎ | ◎ |
| | 28 | | CuSn, lead-free copper and electrolytic copper | 100 | | ◎ | ◎ | ◎ | ◎ | ◎ |
| | 29 | | Non Metallic Materials | Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc. | | | ○ | ○ | ○ | ○ |
| | 30 | | | | | | | | | |
| S | 31 | Heat Resistant Super Alloys | Fe Based | Annealed | 200 | 15 | | | | |
| | 32 | | | Cured | 280 | 30 | | | | |
| | 33 | | Ni or Co Based | Annealed | 250 | 25 | | | | |
| | 34 | | | Cured | 350 | 38 | | | | |
| | 35 | | | Cast | 320 | 34 | | | | |
| 36 | Titanium Alloys | Pure Titanium | 400 Rm | | | | | | | |
| 37 | | Alpha + Beta Alloys Hardened | 1050 Rm | | | | | | | |
| H | 38 | Hardened steel | Hardened | 550 | 55 | | | | | |
| | 39 | | | 630 | 60 | | | | | |
| | 40 | Chilled Cast Iron | Cast | 400 | 42 | | | | | |
| | 41 | Hardened Cast Iron | Hardened | 550 | 55 | | | | | |

| SERIES | SGED28 | SGED27 | SGED29 | SGED31 | SGED30 |
|--------------------|-----------|-----------|---------------|--------|--------|
| FLUTE | 2 | 2 | 2 | 2 | 2 |
| HELIX ANGLE | 30° | 30° | 30° | 30° | 30° |
| CUTTING EDGE SHAPE | BALL NOSE | BALL NOSE | CORNER RADIUS | SQUARE | SQUARE |
| SIZE MIN | R0.5 | R0.25 | D1.0 | D1.0 | D0.5 |
| SIZE MAX | R6.0 | R6.0 | D12.0 | D12.0 | D12.0 |
| PAGE | C563 | C564 | C566 | C568 | C569 |

| | EXTENDED NECK | EXTENDED NECK | | EXTENDED NECK |
|--|---------------|---------------|-----|---------------|
| | DLC | DLC | DLC | DLC |



PLAIN SHANK **SGED28** SERIES

CARBIDE, 2 FLUTE BALL NOSE DLC COATING

- VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG
- FRAISE CARBURE, 2 DENTS, HÉMISPHERIQUE, REVÊTUE DLC
- 2 TAGLIENTI, SEMISFERICA, RIVESTIMENTO DLC

- ▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
- ▶ Tight radius tolerance is applied (±0.005mm tolerance under R3).
- ▶ Excellent surface roughness from Mirror Face of cutting edges

- ▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- ▶ Hochgenaue Radiustoleranz (± 0.005mm Toleranz unter R3mm)
- ▶ Sehr gute Oberflächenrauigkeit wird durch die besonders behandelte Schneide erreicht



CARBIDE 2 30° ±0.005 R PLAIN DLC p.C571

Recommended ToolHolder: Plain Shank HYDRAULIC CHUCK, SHRINK FIT HOLDER, POWER MILLING CHUCK, ER COLLET CHUCK, SK SLIM CHUCK

Unit : mm

| EDP No. | Radius of Ball Nose R(±0.005) | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|-----------|-------------------------------|---------------|----------------|---------------|----------------|
| SGED28010 | R0.5 | 1.0 | 6 | 2.5 | 50 |
| SGED28015 | R0.75 | 1.5 | 6 | 4 | 50 |
| SGED28020 | R1.0 | 2.0 | 6 | 5 | 50 |
| SGED28030 | R1.5 | 3.0 | 6 | 8 | 60 |
| SGED28040 | R2.0 | 4.0 | 6 | 8 | 70 |
| SGED28050 | R2.5 | 5.0 | 6 | 12 | 90 |
| SGED28060 | R3.0 | 6.0 | 6 | 12 | 90 |
| SGED28080 | R4.0 | 8.0 | 8 | 16 | 100 |
| SGED28100 | R5.0 | 10.0 | 10 | 20 | 100 |
| SGED28120 | R6.0 | 12.0 | 12 | 25 | 110 |

| Size | Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|-----------------------|--------------------------|----------------------|
| up to R3 | ± 0.005 | 0 ~ - 0.012 | h5 |
| over R3 | | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | M | | | | K | | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-----|-------------------|-----|---------------------|-----|--|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | | |
| Material Description | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
| HRc | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 23 | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | |
| Recommend | | | | | | | | | | | | | | | | | | | | | |

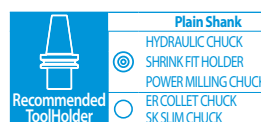
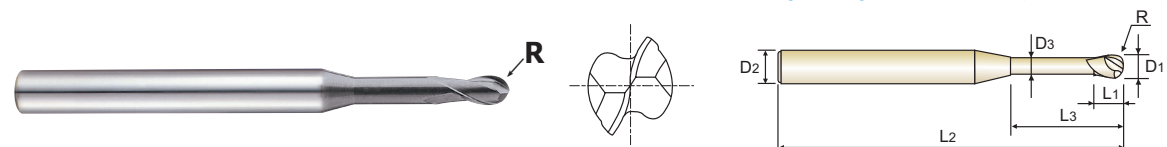
| ISO | N | | | | | S | | | | | H | | | | | | | | | | | |
|----------------------|------------------------|-----|------------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|-----|-----|-----------------|----------------|-------------------|--------------------|-----|-----|-----|-----|--|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | Titanium Alloys | Hardened steel | Chilled Cast Iron | Hardened Cast Iron | | | | | |
| Material Description | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | |
| HRc | 15 | 30 | 25 | 38 | 34 | 15 | 90 | 100 | | | 200 | 260 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | | | | | | | | | | | | |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | ○ | | | | | | | | | | | | | |

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG MIT ABGESETZTEM SCHAFTTETL
- FRAISE CARBURE, 2 DENTS, HÉMISPHERIQUE, DÉTALONNÉE, REVÊTUE DLC
- 2 TAGLIENTI, SEMISFERICA CON SCARICO ESTESO, RIV. DLC

- ▶ Designed for copper, copper alloys soft graphite, reinforced plastics and the materials affiliated with non-ferrous metals.
- ▶ Tight radius tolerance is applied ($\pm 0.005\text{mm}$ tolerance under R3).
- ▶ Excellent surface roughness thanks to Mirror Face of cutting edges
- ▶ High strength and minimized vibration are available due to two step taper neck(under R0.5).

- ▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- ▶ Hochgenaue Raduistoleranz ($\pm 0.005\text{mm}$ Toleranz unter R3mm)
- ▶ Sehr gute Oberflächenrauigkeit wird durch die besonders behandelte Schneide erreicht
- ▶ Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter R 0,5mm)



R0.25-R3 R4-R6

Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|-------------|---------------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| SGED2700502 | R0.25 | 0.5 | 4 | 0.5 | 2 | 45 | 0.45 |
| SGED2700504 | R0.25 | 0.5 | 4 | 0.5 | 4 | 45 | 0.45 |
| SGED2700506 | R0.25 | 0.5 | 4 | 0.5 | 6 | 45 | 0.45 |
| SGED2700508 | R0.25 | 0.5 | 4 | 0.5 | 8 | 45 | 0.45 |
| SGED2700510 | R0.25 | 0.5 | 4 | 0.5 | 10 | 45 | 0.45 |
| SGED2700602 | R0.3 | 0.6 | 4 | 0.6 | 2 | 45 | 0.55 |
| SGED2700604 | R0.3 | 0.6 | 4 | 0.6 | 4 | 45 | 0.55 |
| SGED2700606 | R0.3 | 0.6 | 4 | 0.6 | 6 | 45 | 0.55 |
| SGED2700608 | R0.3 | 0.6 | 4 | 0.6 | 8 | 45 | 0.55 |
| SGED2700610 | R0.3 | 0.6 | 4 | 0.6 | 10 | 45 | 0.55 |
| SGED2700804 | R0.4 | 0.8 | 4 | 0.8 | 4 | 45 | 0.75 |
| SGED2700806 | R0.4 | 0.8 | 4 | 0.8 | 6 | 45 | 0.75 |
| SGED2700808 | R0.4 | 0.8 | 4 | 0.8 | 8 | 45 | 0.75 |
| SGED2700810 | R0.4 | 0.8 | 4 | 0.8 | 10 | 45 | 0.75 |
| SGED2700812 | R0.4 | 0.8 | 4 | 0.8 | 12 | 45 | 0.75 |
| SGED2701004 | R0.5 | 1.0 | 4 | 1 | 4 | 45 | 0.95 |
| SGED2701006 | R0.5 | 1.0 | 4 | 1 | 6 | 45 | 0.95 |
| SGED2701008 | R0.5 | 1.0 | 4 | 1 | 8 | 45 | 0.95 |
| SGED2701010 | R0.5 | 1.0 | 4 | 1 | 10 | 45 | 0.95 |
| SGED2701012 | R0.5 | 1.0 | 4 | 1 | 12 | 45 | 0.95 |
| SGED2701506 | R0.75 | 1.5 | 4 | 1.5 | 6 | 45 | 1.45 |
| SGED2701508 | R0.75 | 1.5 | 4 | 1.5 | 8 | 45 | 1.45 |
| SGED2701510 | R0.75 | 1.5 | 4 | 1.5 | 10 | 45 | 1.45 |
| SGED2701512 | R0.75 | 1.5 | 4 | 1.5 | 12 | 45 | 1.45 |

▶ NEXT PAGE

| Size | Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|-----------------------|--------------------------|----------------------|
| up to R3 | ± 0.005 | 0 ~ - 0.012 | h5 |
| over R3 | ± 0.010 | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | M | | | | | | K | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|-----|-----|----------------|-----|-------------------|-----|---------------------|--|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | |
| Material Description | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| HRc | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 35 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 | 21 | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | |
| Recommend | | | | | | | | | | | | | | | | | | | | | | |

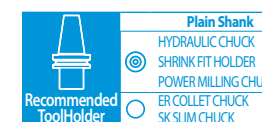
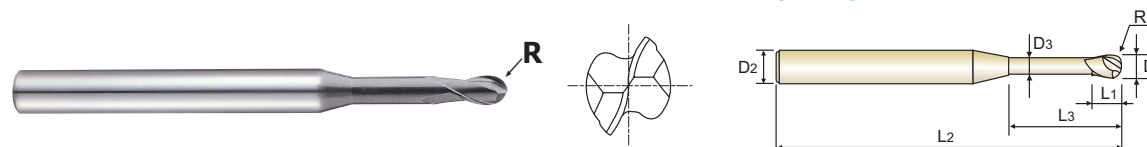
| ISO | N | | | | | | | | | | S | | | | | | H | | | | | | |
|----------------------|------------------------|-----|------------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|--------|-----------------|-----|----------------|-----|-------------------|--|--------------------|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | | Titanium Alloys | | Hardened steel | | Chilled Cast Iron | | Hardened Cast Iron |
| Material Description | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | | |
| HRc | 15 | 30 | 25 | 38 | 34 | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 | | |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | | | | | | | | | | | | | | |

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG MIT ABGESETZTEM SCHAFTTETL
- FRAISE CARBURE, 2 DENTS, HÉMISPHERIQUE, DÉTALONNÉE, REVÊTUE DLC
- 2 TAGLIENTI, SEMISFERICA CON SCARICO ESTESO, RIV. DLC

- ▶ Designed to copper, copper alloys soft graphite, reinforced plastics and the materials affiliated with non-ferrous metals.
- ▶ Tight radius tolerance is applied ($\pm 0.005\text{mm}$ tolerance under R3).
- ▶ Excellent surface roughness thanks to Mirror Face of cutting edges
- ▶ High strength and minimized vibration are available due to two step taper neck(under R0.5).

- ▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- ▶ Hochgenaue Raduistoleranz ($\pm 0.005\text{mm}$ Toleranz unter R3mm)
- ▶ Sehr gute Oberflächenrauigkeit wird durch die besonders behandelte Schneide erreicht
- ▶ Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter R 0,5mm)



R0.25-R3 R4-R6

Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|-------------|---------------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| SGED2701516 | R0.75 | 1.5 | 4 | 1.5 | 16 | 50 | 1.45 |
| SGED2702006 | R1.0 | 2.0 | 4 | 3 | 6 | 45 | 1.95 |
| SGED2702008 | R1.0 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| SGED2702010 | R1.0 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| SGED2702012 | R1.0 | 2.0 | 4 | 3 | 12 | 45 | 1.95 |
| SGED2702016 | R1.0 | 2.0 | 4 | 3 | 16 | 50 | 1.95 |
| SGED2703010 | R1.5 | 3.0 | 6 | 4 | 10 | 50 | 2.85 |
| SGED2703012 | R1.5 | 3.0 | 6 | 4 | 12 | 50 | 2.85 |
| SGED2703016 | R1.5 | 3.0 | 6 | 4 | 16 | 60 | 2.85 |
| SGED2703020 | R1.5 | 3.0 | 6 | 4 | 20 | 60 | 2.85 |
| SGED2704010 | R2.0 | 4.0 | 6 | 5 | 10 | 50 | 3.85 |
| SGED2704012 | R2.0 | 4.0 | 6 | 5 | 12 | 50 | 3.85 |
| SGED2704016 | R2.0 | 4.0 | 6 | 5 | 16 | 60 | 3.85 |
| SGED2704020 | R2.0 | 4.0 | 6 | 5 | 20 | 60 | 3.85 |
| SGED2704025 | R2.0 | 4.0 | 6 | 5 | 25 | 60 | 3.85 |
| SGED2706020 | R3.0 | 6.0 | 6 | 8 | 20 | 60 | 5.85 |
| SGED2706030 | R3.0 | 6.0 | 6 | 8 | 30 | 90 | 5.85 |
| SGED2708020 | R4.0 | 8.0 | 8 | 10 | 20 | 70 | 7.70 |
| SGED2710025 | R5.0 | 10.0 | 10 | 12 | 25 | 80 | 9.70 |
| SGED2712025 | R6.0 | 12.0 | 12 | 14 | 25 | 80 | 11.70 |

| Size | Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|-----------------------|--------------------------|----------------------|
| up to R3 | ± 0.005 | 0 ~ - 0.012 | h5 |
| over R3 | ± 0.010 | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | M | | | | | | K | | | | | |
|----------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|-----|-----|----------------|-----|-------------------|-----|---------------------|--|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | |
| Material Description | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
| HRc | 13 | 25 | 28 | 32 | 30 | 29 | 32 | 38 | 35 | 35 | 35 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 | 21 | | |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 | | |
| Recommend | | | | | | | | | | | | | | | | | | | | | | |

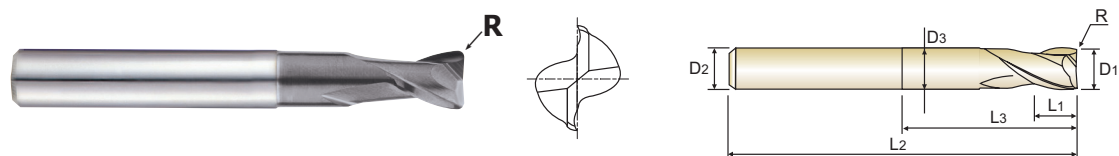
| ISO | N | | | | | | | | | | S | | | | | | H | | | | | | |
|----------------------|------------------------|-----|------------------------|----|-----|---|----|-----|----|----|------------------------|-----|-----------------------------|-----|-----|--------|-----------------|-----|----------------|-----|-------------------|--|--------------------|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | | Titanium Alloys | | Hardened steel | | Chilled Cast Iron | | Hardened Cast Iron |
| Material Description | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | | |
| HRc | 15 | 30 | 25 | 38 | 34 | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 | | |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 | | |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | | | | | | | | | | | | | | |

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG MIT ABGESETZTEM SCHAFTTETEL
- FRAISE CARBURE, 2 DENTS, TORIQUE, DÉTALONNÉE, REVÊTUE DLC
- 2 TAGLIENTI, TORICA CON SCARICO ESTESO, RIVESTIMENTO DLC

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Excellent surface roughness from Mirror Face of cutting edges

▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
▶ Ausgelegt für verschiedene Anwendungen, z.B. schrumpfen, schrumpfschichten und zur schlicht Bearbeitung, aufgrund der neuartigen Geometrie



Ø1-Ø6 Ø8-Ø12

Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|---------------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| SGED290100104 | R0.1 | 1.0 | 4 | 1.5 | 4 | 45 | 0.95 |
| SGED290100106 | R0.1 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| SGED290100108 | R0.1 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| SGED290100204 | R0.2 | 1.0 | 4 | 1.5 | 4 | 45 | 0.95 |
| SGED290100206 | R0.2 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| SGED290100208 | R0.2 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| SGED290150106 | R0.1 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| SGED290150108 | R0.1 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| SGED290150110 | R0.1 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| SGED290150206 | R0.2 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| SGED290150208 | R0.2 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| SGED290150210 | R0.2 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| SGED290200208 | R0.2 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| SGED290200210 | R0.2 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| SGED290200212 | R0.2 | 2.0 | 4 | 3 | 12 | 45 | 1.95 |
| SGED290200508 | R0.5 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| SGED290200510 | R0.5 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| SGED290200512 | R0.5 | 2.0 | 4 | 3 | 12 | 45 | 1.95 |
| SGED290300210 | R0.2 | 3.0 | 6 | 4.5 | 10 | 50 | 2.85 |
| SGED290300212 | R0.2 | 3.0 | 6 | 4.5 | 12 | 50 | 2.85 |
| SGED290300216 | R0.2 | 3.0 | 6 | 4.5 | 16 | 60 | 2.85 |
| SGED290300310 | R0.3 | 3.0 | 6 | 4.5 | 10 | 50 | 2.85 |
| SGED290300312 | R0.3 | 3.0 | 6 | 4.5 | 12 | 50 | 2.85 |
| SGED290300316 | R0.3 | 3.0 | 6 | 4.5 | 16 | 60 | 2.85 |

| Size | Corner Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|------------------------------|--------------------------|----------------------|
| up to Ø6 | ±0.010 | 0 ~ - 0.012 | h5 |
| over Ø6 | ±0.015 | 0 ~ - 0.015 | |

▶ NEXT PAGE

◎ : Excellent ○ : Good

| ISO Material Description | P | | | | | | | | | | M | | | | K | | | | | |
|--------------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-------------------|-----|---------------------|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | Nodular cast iron | | Malleable cast iron | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommend | | | | | | | | | | | | | | | | | | | | |

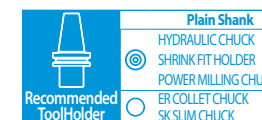
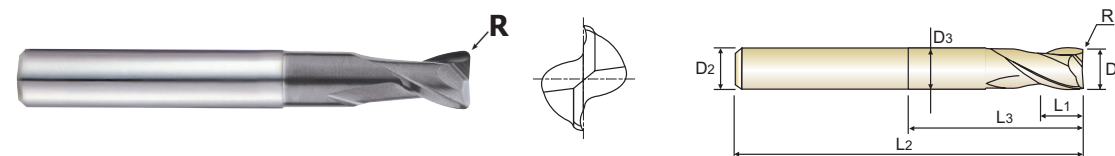
| ISO Material Description | N | | | | | S | | | | | H | | | | | | | | | | |
|--------------------------|------------------------|-----|------------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|-----|-----|-----------------|----------------|-------------------|--------------------|-----|-----|-----|-----|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | Titanium Alloys | Hardened steel | Chilled Cast Iron | Hardened Cast Iron | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | | | | | | | | | | | | |

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG MIT ABGESETZTEM SCHAFTTETEL
- FRAISE CARBURE, 2 DENTS, TORIQUE, DÉTALONNÉE, REVÊTUE DLC
- 2 TAGLIENTI, TORICA CON SCARICO ESTESO, RIVESTIMENTO DLC

▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
▶ Excellent surface roughness from Mirror Face of cutting edges

▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
▶ Ausgelegt für verschiedene Anwendungen, z.B. schrumpfen, schrumpfschichten und zur schlicht Bearbeitung, aufgrund der neuartigen Geometrie



Ø1-Ø6 Ø8-Ø12

Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|---------------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| SGED290400212 | R0.2 | 4.0 | 6 | 6 | 12 | 50 | 3.85 |
| SGED290400216 | R0.2 | 4.0 | 6 | 6 | 16 | 60 | 3.85 |
| SGED290400220 | R0.2 | 4.0 | 6 | 6 | 20 | 60 | 3.85 |
| SGED290400512 | R0.5 | 4.0 | 6 | 6 | 12 | 50 | 3.85 |
| SGED290400516 | R0.5 | 4.0 | 6 | 6 | 16 | 60 | 3.85 |
| SGED290400520 | R0.5 | 4.0 | 6 | 6 | 20 | 60 | 3.85 |
| SGED290600320 | R0.3 | 6.0 | 6 | 9 | 20 | 60 | 5.85 |
| SGED290600520 | R0.5 | 6.0 | 6 | 9 | 20 | 60 | 5.85 |
| SGED290601020 | R1.0 | 6.0 | 6 | 9 | 20 | 60 | 5.85 |
| SGED290800325 | R0.3 | 8.0 | 8 | 12 | 25 | 65 | 7.70 |
| SGED290800525 | R0.5 | 8.0 | 8 | 12 | 25 | 65 | 7.70 |
| SGED290801025 | R1.0 | 8.0 | 8 | 12 | 25 | 65 | 7.70 |
| SGED291000530 | R0.5 | 10.0 | 10 | 15 | 30 | 70 | 9.70 |
| SGED291001030 | R1.0 | 10.0 | 10 | 15 | 30 | 70 | 9.70 |
| SGED291200532 | R0.5 | 12.0 | 12 | 18 | 32 | 80 | 11.70 |
| SGED291201032 | R1.0 | 12.0 | 12 | 18 | 32 | 80 | 11.70 |

| Size | Corner Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|------------------------------|--------------------------|----------------------|
| up to Ø6 | ±0.010 | 0 ~ - 0.012 | h5 |
| over Ø6 | ±0.015 | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

| ISO Material Description | P | | | | | | | | | | M | | | | K | | | | | |
|--------------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-------------------|-----|---------------------|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | Nodular cast iron | | Malleable cast iron | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommend | | | | | | | | | | | | | | | | | | | | |

| ISO Material Description | N | | | | | S | | | | | H | | | | | | | | | | |
|--------------------------|------------------------|-----|------------------------|----|-----|---|----|-----|------------------------|----|-----------------------------|-----|-----|-----------------|----------------|-------------------|--------------------|-----|-----|-----|-----|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | Titanium Alloys | Hardened steel | Chilled Cast Iron | Hardened Cast Iron | | | | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | | | | | | | | | | | | |



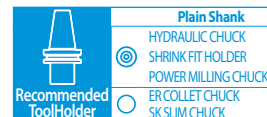
PLAIN SHANK **SGED31** SERIES

CARBIDE, 2 FLUTE DLC COATING

- VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG
- FRAISE CARBURE, 2 DENTS, REVÊTUE DLC
- 2 TAGLIENTI, RIVESTIMENTO DLC

- ▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
- ▶ Excellent surface roughness from special flute geometry for removing burrs

- ▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- ▶ Hervorragende Oberflächenrauheit durch speziell behandelte Nutengeometrie was zur verminderten Gratbildung führt



Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|-----------|---------------|----------------|---------------|----------------|
| SGED31010 | 1.0 | 6 | 2.5 | 50 |
| SGED31015 | 1.5 | 6 | 4 | 50 |
| SGED31020 | 2.0 | 6 | 6 | 50 |
| SGED31025 | 2.5 | 6 | 8 | 50 |
| SGED31030 | 3.0 | 6 | 10 | 50 |
| SGED31040 | 4.0 | 6 | 12 | 50 |
| SGED31050 | 5.0 | 6 | 15 | 60 |
| SGED31060 | 6.0 | 6 | 15 | 60 |
| SGED31080 | 8.0 | 8 | 20 | 65 |
| SGED31100 | 10.0 | 10 | 25 | 70 |
| SGED31120 | 12.0 | 12 | 30 | 80 |

| Size | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|--------------------------|----------------------|
| up to Ø6 | 0 ~ - 0.012 | h5 |
| over Ø6 | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

| ISO Material Description | P | | | | | | | | | | M | | | | K | | | | | |
|--------------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-------------------|-----|---------------------|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | Nodular cast iron | | Malleable cast iron | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommend | | | | | | | | | | | | | | | | | | | | |

| ISO Material Description | N | | | | | S | | | | | H | | | | | | | | | | |
|--------------------------|------------------------|-----|------------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----|-----|-----------------|---------|----------------|-------------------|--------------------|-----|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | Non Metallic Materials | | | Heat Resistant Super Alloys | | | | | Titanium Alloys | | Hardened steel | Chilled Cast Iron | Hardened Cast Iron | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | ○ | | | | | | | | | | | |



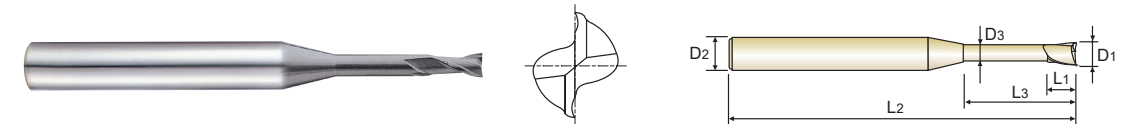
PLAIN SHANK **SGED30** SERIES

CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK

- VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG MIT ABGESETZTEM SCHAFTTETL
- FRAISE CARBURE, 2 DENTS, DÉTALONNÉE, REVÊTUE DLC
- 2 TAGLIENTI, SCARICO ESTESO, RIVESTIMENTO DLC

- ▶ Designed for copper, copper alloys, soft graphite, reinforced plastics and materials affiliated with non-ferrous metals.
- ▶ High toughness and minimized vibration applied from two step taper neck (under dia. 1.0mm)
- ▶ Excellent surface roughness from special flute geometry for removing burrs

- ▶ Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- ▶ Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter Ø 1mm)
- ▶ Hervorragende Oberflächenrauheit durch speziell behandelte Nutengeometrie



Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|-------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | D1 | D2 | L1 | L3 | L2 | D3 |
| SGED3000502 | 0.5 | 4 | 0.7 | 2 | 45 | 0.45 |
| SGED3000504 | 0.5 | 4 | 0.7 | 4 | 45 | 0.45 |
| SGED3000506 | 0.5 | 4 | 0.7 | 6 | 45 | 0.45 |
| SGED3000508 | 0.5 | 4 | 0.7 | 8 | 45 | 0.45 |
| SGED3000510 | 0.5 | 4 | 0.7 | 10 | 45 | 0.45 |
| SGED3000602 | 0.6 | 4 | 0.9 | 2 | 45 | 0.55 |
| SGED3000604 | 0.6 | 4 | 0.9 | 4 | 45 | 0.55 |
| SGED3000606 | 0.6 | 4 | 0.9 | 6 | 45 | 0.55 |
| SGED3000608 | 0.6 | 4 | 0.9 | 8 | 45 | 0.55 |
| SGED3000610 | 0.6 | 4 | 0.9 | 10 | 45 | 0.55 |
| SGED3000804 | 0.8 | 4 | 1.2 | 4 | 45 | 0.75 |
| SGED3000806 | 0.8 | 4 | 1.2 | 6 | 45 | 0.75 |
| SGED3000808 | 0.8 | 4 | 1.2 | 8 | 45 | 0.75 |
| SGED3000810 | 0.8 | 4 | 1.2 | 10 | 45 | 0.75 |
| SGED3000812 | 0.8 | 4 | 1.2 | 12 | 45 | 0.75 |
| SGED3001004 | 1.0 | 4 | 1.5 | 4 | 45 | 0.95 |
| SGED3001006 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| SGED3001008 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| SGED3001010 | 1.0 | 4 | 1.5 | 10 | 45 | 0.95 |
| SGED3001012 | 1.0 | 4 | 1.5 | 12 | 45 | 0.95 |
| SGED3001506 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| SGED3001508 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| SGED3001510 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| SGED3001512 | 1.5 | 4 | 2.3 | 12 | 45 | 1.45 |

▶ NEXT PAGE

| Size | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|--------------------------|----------------------|
| up to Ø6 | 0 ~ - 0.012 | h5 |
| over Ø6 | 0 ~ - 0.015 | |

◎ : Excellent ○ : Good

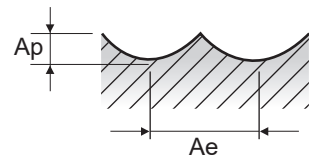
| ISO Material Description | P | | | | | | | | | | M | | | | K | | | | | |
|--------------------------|-----------------|-----|-----|-----|-----|-----------------|-----|-----|-----|-----|------------------------------------|-----|-----------------|-----|----------------|-------------------|-----|---------------------|-----|-----|
| | Non-alloy steel | | | | | Low alloy steel | | | | | High alloyed steel, and tool steel | | Stainless steel | | Grey cast iron | Nodular cast iron | | Malleable cast iron | | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | 13 | 25 | 28 | 32 | 30 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | 21 | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommend | | | | | | | | | | | | | | | | | | | | |

| ISO Material Description | N | | | | | S | | | | | H | | | | | | | | | | |
|--------------------------|------------------------|-----|------------------------|----|-----|---|----|------------------------|----|----|-----------------------------|-----|-----|-----|-----|-----------------|---------|----------------|-------------------|--------------------|-----|
| | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | Non Metallic Materials | | | Heat Resistant Super Alloys | | | | | Titanium Alloys | | Hardened steel | Chilled Cast Iron | Hardened Cast Iron | |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommend | ○ | ○ | | | | ◎ | ◎ | ◎ | | ○ | | | | | | | | | | | |

SGED27 SERIES 2 FLUTE BALL

Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.

| ISO | VDI 3323 | Material Description | Ae | Ap | Parameter | Diameter (Ø) | | | | | | | | | | | |
|------|----------|---|-------|-------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | | 0.5 | 0.6 | 0.8 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 |
| N | 21 | Aluminum-wrought alloy | 0.05D | 0.02D | Vc | 80 | 95 | 125 | 155 | 250 | 245 | 240 | 240 | 245 | 250 | 250 | 250 |
| | | | | | fz | 0.005 | 0.007 | 0.009 | 0.01 | 0.022 | 0.03 | 0.042 | 0.052 | 0.061 | 0.079 | 0.1 | 0.122 |
| | | | | | RPM | 50930 | 50399 | 49736 | 49338 | 39789 | 25995 | 19099 | 15279 | 12998 | 9947 | 7958 | 6631 |
| | 26-28 | Copper and Copper Alloys (Bronze / Brass) | 0.05D | 0.02D | Vc | 80 | 95 | 110 | 110 | 125 | 125 | 120 | 120 | 125 | 125 | 125 | 125 |
| | | | | | fz | 0.005 | 0.007 | 0.009 | 0.011 | 0.02 | 0.028 | 0.038 | 0.047 | 0.055 | 0.072 | 0.091 | 0.111 |
| | | | | | RPM | 50930 | 50399 | 43768 | 35014 | 19894 | 13263 | 9549 | 7639 | 6631 | 4974 | 3979 | 3316 |
| | 29.1 | Duroplastic | 0.05D | 0.02D | Vc | 80 | 95 | 125 | 155 | 315 | 370 | 360 | 365 | 370 | 375 | 375 | 375 |
| | | | | | fz | 0.004 | 0.005 | 0.006 | 0.006 | 0.013 | 0.019 | 0.027 | 0.033 | 0.039 | 0.05 | 0.064 | 0.077 |
| | | | | | RPM | 50930 | 50399 | 49736 | 49338 | 50134 | 39258 | 28648 | 23237 | 19629 | 14921 | 11937 | 9947 |
| FEED | 509 | 706 | 895 | 987 | 1751 | 1560 | 1604 | 1589 | 1586 | 1572 | 1592 | 1592 | 1618 | | | | |
| FEED | 509 | 605 | 796 | 987 | 1003 | 1611 | 1655 | 1655 | 1681 | 1676 | 1676 | 1676 | 1698 | | | | |
| FEED | 509 | 605 | 668 | 700 | 509 | 805 | 815 | 840 | 840 | 825 | 849 | 825 | 849 | | | | |
| FEED | 102 | 202 | 199 | 296 | 401 | 698 | 702 | 728 | 716 | 717 | 735 | 716 | 735 | | | | |



SGED30, SGED31 SERIES

2 FLUTE - SLOTTING

| ISO | VDI 3323 | Material Description | Ae | Ap | Parameter | Diameter (Ø) | | | | | | | | | | |
|------|----------|---|------|------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | | 0.5 | 0.6 | 0.8 | 1.0 | 2.0 | 3.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 |
| N | 21-22 | Aluminum-wrought alloy | 1.0D | 0.5D | Vc | 80 | 95 | 125 | 155 | 315 | 330 | 325 | 325 | 330 | 325 | 330 |
| | | | | | fz | 0.005 | 0.006 | 0.008 | 0.01 | 0.01 | 0.023 | 0.032 | 0.048 | 0.064 | 0.081 | 0.097 |
| | | | | | RPM | 50930 | 50399 | 49736 | 49338 | 50134 | 35014 | 25863 | 17242 | 13130 | 10345 | 8754 |
| | 26-28 | Copper and Copper Alloys (Bronze / Brass) | 1.0D | 0.5D | Vc | 80 | 95 | 105 | 110 | 160 | 165 | 160 | 165 | 165 | 160 | 165 |
| | | | | | fz | 0.005 | 0.006 | 0.008 | 0.01 | 0.01 | 0.023 | 0.032 | 0.048 | 0.064 | 0.081 | 0.097 |
| | | | | | RPM | 50930 | 50399 | 41778 | 35014 | 25465 | 17507 | 12732 | 8754 | 6565 | 5093 | 4377 |
| | 29.1 | Duroplastic | 1.0D | 0.5D | Vc | 80 | 95 | 125 | 155 | 315 | 470 | 490 | 490 | 500 | 490 | 495 |
| | | | | | fz | 0.001 | 0.002 | 0.002 | 0.003 | 0.004 | 0.007 | 0.009 | 0.014 | 0.018 | 0.023 | 0.028 |
| | | | | | RPM | 50930 | 50399 | 49736 | 49338 | 50134 | 49869 | 38993 | 25995 | 19894 | 15597 | 13130 |
| FEED | 102 | 202 | 199 | 296 | 401 | 698 | 702 | 728 | 716 | 717 | 735 | 716 | 735 | | | |

2 FLUTE - SIDE CUTTING

| ISO | VDI 3323 | Material Description | Ae | Ap | Parameter | Diameter (Ø) | | | | | | | | | | |
|------|----------|---|------|------|-----------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | | 0.5 | 0.6 | 0.8 | 1.0 | 2.0 | 3.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 |
| N | 21-22 | Aluminum-wrought alloy | 0.5D | 1.0D | Vc | 80 | 95 | 125 | 130 | 260 | 260 | 265 | 270 | 265 | 265 | 270 |
| | | | | | fz | 0.005 | 0.006 | 0.008 | 0.01 | 0.011 | 0.025 | 0.034 | 0.053 | 0.069 | 0.086 | 0.107 |
| | | | | | RPM | 50930 | 50399 | 49736 | 41380 | 41380 | 27587 | 21088 | 14324 | 10544 | 8435 | 7162 |
| | 26-28 | Copper and Copper Alloys (Bronze / Brass) | 0.5D | 1.0D | Vc | 80 | 85 | 85 | 85 | 170 | 175 | 175 | 180 | 175 | 175 | 180 |
| | | | | | fz | 0.005 | 0.006 | 0.008 | 0.01 | 0.01 | 0.023 | 0.032 | 0.05 | 0.064 | 0.08 | 0.1 |
| | | | | | RPM | 50930 | 45094 | 33820 | 27056 | 27056 | 18568 | 13926 | 9549 | 6963 | 5570 | 4775 |
| | 29.1 | Duroplastic | 0.5D | 1.0D | Vc | 80 | 95 | 125 | 155 | 315 | 350 | 350 | 360 | 350 | 350 | 360 |
| | | | | | fz | 0.004 | 0.005 | 0.006 | 0.008 | 0.009 | 0.018 | 0.026 | 0.04 | 0.051 | 0.064 | 0.08 |
| | | | | | RPM | 50930 | 50399 | 49736 | 49338 | 50134 | 37136 | 27852 | 19099 | 13926 | 11141 | 9549 |
| FEED | 509 | 605 | 796 | 828 | 910 | 1379 | 1434 | 1518 | 1455 | 1451 | 1533 | | | | | |
| FEED | 509 | 541 | 541 | 541 | 541 | 854 | 891 | 955 | 891 | 891 | 955 | | | | | |
| FEED | 407 | 504 | 597 | 789 | 902 | 1337 | 1448 | 1528 | 1420 | 1426 | 1528 | | | | | |

