



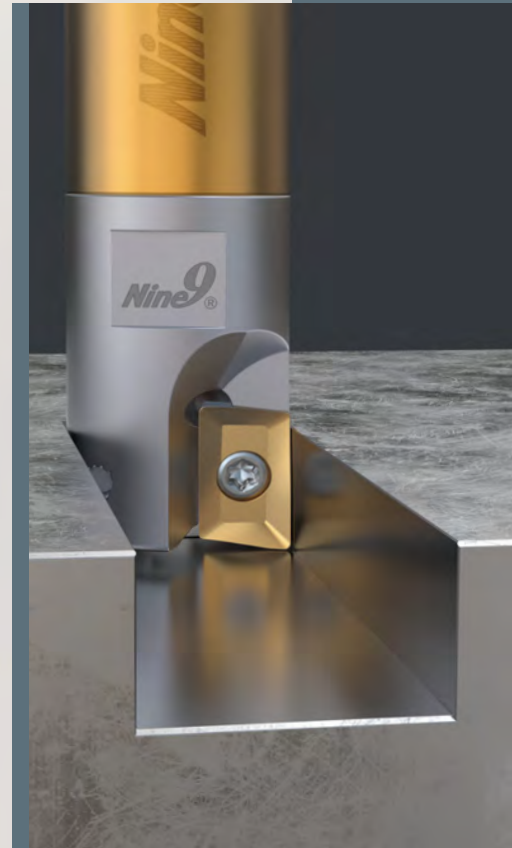
Power Mill >>>

Indexable Milling Cutter 10mm

Patented dual relief angle insert!

P **K**

- ▶ Higher Feed Rate.
- ▶ Higher Wearing Resistance!
- ▶ Fast Chip Removal!



Features >

▶ Applications

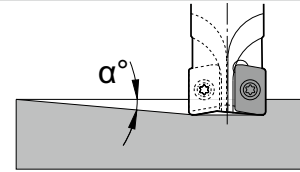
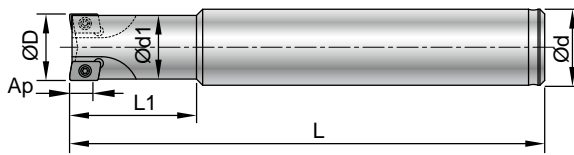
| | |
|-----------------|---|
| A Series | Shoulder Face Mills |
| | Dia. range: $\varnothing 10 \sim \varnothing 25\text{mm}$ |
| C Series | Torus Radius Mills |
| | Dia. range: $\varnothing 10 \sim \varnothing 26\text{mm}$ |

A Series Shoulder Face Mills

► Features

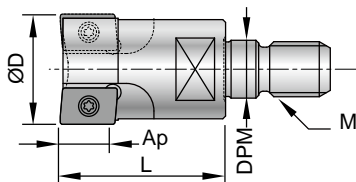
- Strong insert with high positive geometry and helical cutting edges.
- Shoulder mill with good cutting performance and cutting edge strength, which produce perfect 90° shoulders.

► Cylindrical Shank >>



| Part No. | Type | ØD | Ød h6 | Ød1 | α° | L1 | L | ⊕ Z | Ap | Insert type |
|---------------------|----------------|----|----------|------|-----|----|-----|-----|----|--------------|
| 00-99802-BC10-10A06 | BC10-10A06-100 | 10 | 10 | 9.8 | 5.0 | 40 | 100 | 2 | 5 | A9...0602... |
| 00-99802-BC12-10A06 | BC12-10A06-80 | 10 | 12 | 9.8 | 5.0 | 20 | 80 | 2 | | |
| 00-99802-BC12-11A06 | BC12-11A06-80 | 11 | 12 | 10.8 | 4.5 | 22 | 80 | 2 | | |
| 00-99802-BC12-12A06 | BC12-12A06-80 | 12 | 12 | 11.4 | 4.0 | 24 | 80 | 2 | | |
| 00-99802-BC16-13A06 | BC16-13A06-100 | 13 | 16 | 12.4 | 3.5 | 26 | 100 | 2 | | |
| 00-99802-BC16-14A06 | BC16-14A06-100 | 14 | 16 | 13.4 | 3.0 | 28 | 100 | 2 | | |
| 00-99802-BC16-15A06 | BC16-15A06-100 | 15 | 16 | 14.4 | 2.5 | 30 | 100 | 3 | | |
| 00-99802-BC16-16A06 | BC16-16A06-100 | 16 | 16 | 15.4 | 2.0 | 32 | 100 | 3 | 9 | A9...1035... |
| 00-99802-BC16-16A10 | BC16-16A10-100 | 16 | 16 | 14.5 | 2.5 | 32 | 100 | 2 | | |
| 00-99802-BC20-20A10 | BC20-20A10-120 | 20 | 20 | 18.5 | 2.0 | 40 | 120 | 3 | | |
| 00-99802-BC25-25A10 | BC25-25A10-150 | 25 | 25 | 23.5 | 1.3 | 50 | 150 | 3 | | |

► Screw-Fit Type >>



| Part No. | Type | ØD | α° | L | M | DPM | ⊕ Z | Ap | Insert type |
|-----------------------|--------------|----|-----|----|-----------|------|-----|----|--------------|
| 00-99805-M05-10A06 | M05-10A06 | 10 | 5.0 | 13 | M5xP0.8 | 5.5 | 2 | 5 | A9...0602... |
| 00-99805-M05-11A06 | M05-11A06 | 11 | 4.5 | 13 | M5xP0.8 | 5.5 | 2 | | |
| 00-99805-M06-12A06 | M06-12A06 | 12 | 4.0 | 13 | M6xP1.0 | 6.5 | 2 | | |
| 00-99805-M06-13A06 | M06-13A06 | 13 | 3.5 | 13 | M6xP1.0 | 6.5 | 2 | | |
| 00-99805-M08-14A06 | M08-14A06 | 14 | 3.0 | 13 | M8xP1.25 | 8.5 | 2 | | |
| 00-99805-M08-15A06 | M08-15A06 | 15 | 2.5 | 15 | M8xP1.25 | 8.5 | 3 | | |
| 00-99805-M08-16A06 | M08-16A06 | 16 | 2.0 | 15 | M8xP1.25 | 8.5 | 3 | | |
| 00-99805-M08-17A06 | M08-17A06 | 17 | 1.5 | 15 | M8xP1.25 | 8.5 | 3 | 9 | A9...1035... |
| 00-99802-M08-16A10 | M08-16A10 | 16 | 2.5 | 25 | M8xP1.25 | 8.5 | 2 | | |
| 00-99802-M10-20A10 | M10-20A10 | 20 | 2.0 | 30 | M10xP1.5 | 10.5 | 3 | | |
| 00-99802-M12-25A10-3T | M12-25A10-3T | 25 | 1.3 | 35 | M12xP1.75 | 12.5 | 3 | | |
| 00-99805-M12-25A10 | M12-25A10 | 25 | 1.3 | 20 | M12xP1.75 | 12.5 | 3 | | |

* Refer to page 9-156 for extension bars.

A Series Shoulder Face Mills



NC5072



U-NC2023



H-NC2033



H-NC9031

Insert

- U type insert is fully ground for reducing the cutting resistance during the cutting, best choice for long shank cutter.
- H type with high positive rake angle, shape edge.

NC5072 :

- High rigidity, special edge honing, resistance of impact during milling operation.
- Special chip breaker design for high removal rate.
- P40 tougher grade for smooth cutting, good for all kinds of steel.

U-NC2032 :

- High rigidity, special edge honing, resistance of impact during milling operation.
- For all kinds of steel from < 50 HRC, carbon steel, alloy steel, cast iron, aluminum and non-ferrous metal.

H-NC2033 :

- Sharp cutting edge and high positive rake angle, good for finishing milling and surface roughness.
- Re 0.5 and Re1.0 for your option.
- Suitable for all kinds of steel.

H-NC9031 :

- Sharp cutting edge and high positive rake angle, low friction coefficient for non-ferrous metal.
- Good for Al, Al-alloy, Copper, Copper alloy and Non-Ferrous metal.

| Insert Size | Parts No. | | Coating | Grade | | Dimensions | | | | | Screw / Key |
|-------------|-------------|--------|---------|-------|--|------------|---|------|-----|----|-------------------------------|
| | | | | | | L | W | S | Re | Ap | |
| 06 | A9MT060205 | NC5072 | TiAlN | P40 | | 6.5 | 4 | 2.45 | 0.5 | 5 | *NS-18037 0.6Nm / NK-T6 |
| | A9GT060201U | NC2032 | TiAlN | K20F | | | | | 0.1 | | |
| | A9GT060202U | NC2032 | TiAlN | K20F | | | | | 0.2 | | |
| | A9GT060205U | NC2032 | TiAlN | K20F | | | | | 0.5 | | |
| | A9GT060201H | NC2033 | TiAlN | K20F | | | | | 0.1 | | |
| | | NC9031 | TiN | K20F | | | | | 0.2 | | |
| | A9GT060202H | NC2033 | TiAlN | K20F | | | | | 0.5 | | |
| | | NC9031 | TiN | K20F | | | | | 1.0 | | |
| | A9GT060205H | NC2033 | TiAlN | K20F | | | | | | | |
| | | NC9031 | TiN | K20F | | | | | | | |
| A9GT060210H | NC2033 | TiAlN | K20F | | | | | | | | |

*Torque screwdriver is recommended.

NC2032 :

- High rigidity, special edge honing, resistance of impact during milling operation.
- Special chip breaker design for high removal rate.
- Good for hard cutting carbon steel and alloy steel.

H-NC9031 :

- Sharp cutting edge and high positive rake angle, low friction coefficient for non-ferrous metal.
- Good for Al, Al-alloy, Copper, Copper alloy and Non-Ferrous metal.

| Insert Size | Parts No. | | Coating | Grade | | Dimensions | | | | | Screw / Key |
|-------------|-------------|--------|---------|-------|--|------------|-----|-----|-----|----|-----------------------------|
| | | | | | | L | W | S | Re | Ap | |
| 10 | A9MT1035 | NC2032 | TiAlN | K20F | | 10 | 6.6 | 3.5 | 0.4 | 9 | *NS-25060 0.9Nm NK-T7 |
| | A9GT103505H | NC9031 | TiN | K20F | | | | | 0.5 | | |

*Torque screwdriver is recommended.

Cutting Data

- Reduce the feed rate 30% from the below table for slotting operation.
- Ramping angle should be under α° . (Please refer to holder specifications)

▶ Insert Size: 6.5mm (Holder Ø10~Ø17mm) >>

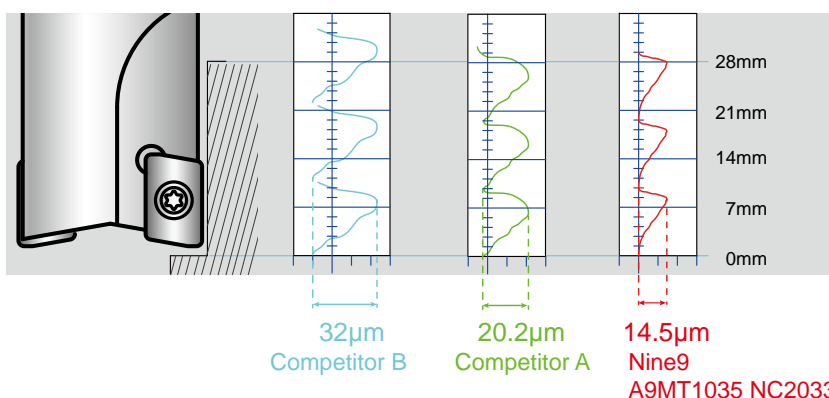
| Work Material | Sample Code (JIS) | Vc (m/min) | fz (mm/tooth) | | | Grade of Insert |
|--------------------------|-------------------------------------|------------|---------------|-----|--------|------------------|
| P Carbon Steel | P5 | 80~150 | 0.03~0.07 | 1.5 | 4, 1.5 | NC5072 NC2033 |
| | SCM440 | 80~150 | 0.03~0.07 | 1.5 | 4, 1 | NC5072 NC2033 |
| | SKD11 | 60~120 | 0.03~0.07 | 1 | 2.5, 1 | NC5072 NC2033 |
| M Stainless Steel | SUS304 | 60~120 | 0.01~0.05 | 0.5 | 2, 1 | NC5072 NC2033 |
| K Casting Iron | FC25 | 60~120 | 0.03~0.07 | 1 | 2.5, 1 | NC5072 NC2033 |
| | Malleable Cast Iron, Grey Cast Iron | 100~150 | 0.03~0.07 | 1.5 | 4, 1.5 | NC5072 NC2033 |
| N Al, Al-alloy | A6061 | 200~500 | 0.03~0.07 | 2 | 4, 2 | NC9031 |

▶ Insert Size: 10mm (Holder Ø16~Ø25mm) >>

| Work Material | Sample Code (JIS) | Vc (m/min) | fz (mm/tooth) | | | Grade of Insert |
|--------------------------|-------------------------------------|------------|---------------|---|------|-----------------|
| P Carbon Steel | P5 | 150~250 | 0.08~0.15 | 3 | 8, 3 | NC2032 |
| | SCM440 | 150~250 | 0.08~0.15 | 3 | 8, 2 | NC2032 |
| | SKD11 | 120~200 | 0.08~0.15 | 2 | 4, 2 | NC2032 |
| M Stainless Steel | SUS304 | 80~120 | 0.04~0.08 | 1 | 4, 2 | NC2032 |
| K Casting Iron | FC25 | 120~200 | 0.08~0.12 | 2 | 5, 2 | NC2032 |
| | Malleable Cast Iron, Grey Cast Iron | 100~150 | 0.06~0.10 | 3 | 8, 3 | NC2032 |
| N Al, Al-alloy | A6061 | 200~500 | 0.03~0.07 | 5 | 8, 3 | NC9031 |

▶ Surface Roughness Comparison

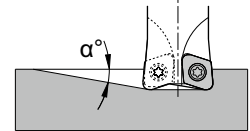
- Nine9 A series shoulder face mill insert receive a better result of surface finish.



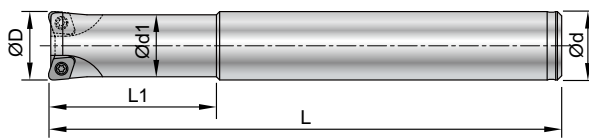
C Series Torus Radius Mills

► Features

- Good for corner finishing.
- Series C is developed for replacement of the other milling cutters with ram feed.

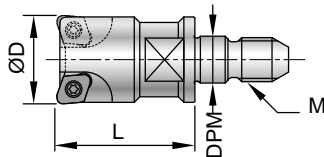


► Cylindrical Shank >>



| Part No. | Type | ØD | Ød h6 | Ød1 | α° | L1 | L | ⊘ Z | Insert type |
|--------------------|-----------|----|----------|------|-----|----|-----|-----|---------------------------|
| 00-99802-BC12-12C5 | BC12-12C5 | 12 | 12 | 10.5 | 8.0 | 30 | 100 | 2 | C9MT05T105 C9MT05T110H |
| 00-99802-BC16-16C5 | BC16-16C5 | 16 | 16 | 14.5 | 5.5 | 40 | 120 | 3 | |
| 00-99802-BC20-20C5 | BC20-20C5 | 20 | 20 | 18 | 4.0 | 50 | 130 | 3 | |
| 00-99802-BC25-25C5 | BC25-25C5 | 25 | 25 | 23 | 3.0 | 60 | 150 | 4 | |

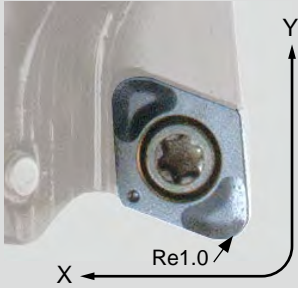
► Screw-Fit Type >>



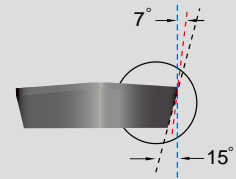
| Part No. | Type | ØD | α° | L | M | DPM | ⊘ Z | Insert type |
|-------------------|----------|----|-----|----|-----------|------|-----|---------------------------|
| 00-99802-M05-10C4 | M05-10C4 | 10 | 8 | 15 | M5xP0.8 | 5.5 | 2 | C9MT040105 C9MT040110 |
| 00-99802-M05-11C4 | M05-11C4 | 11 | 6 | 15 | M5xP0.8 | 5.5 | | |
| 00-99802-M06-12C5 | M06-12C5 | 12 | 8 | 25 | M6xP1.0 | 6.5 | 2 | C9MT05T105 C9MT05T110H |
| 00-99802-M06-13C5 | M06-13C5 | 13 | 7.5 | 25 | M6xP1.0 | 6.5 | | |
| 00-99802-M08-16C5 | M08-16C5 | 16 | 5.5 | 25 | M8xP1.25 | 8.5 | 3 | |
| 00-99802-M08-17C5 | M08-17C5 | 17 | 5 | 25 | M8xP1.25 | 8.5 | | |
| 00-99802-M10-20C5 | M10-20C5 | 20 | 4 | 30 | M10xP1.5 | 10.5 | 4 | |
| 00-99802-M10-21C5 | M10-21C5 | 21 | 3.5 | 30 | M10xP1.5 | 10.5 | | |
| 00-99802-M12-25C5 | M12-25C5 | 25 | 3 | 35 | M12xP1.75 | 12.5 | 4 | |
| 00-99802-M12-26C5 | M12-26C5 | 26 | 2.5 | 35 | M12xP1.75 | 12.5 | | |
| 00-99805-M05-11C5 | M05-11C5 | 11 | 10 | 13 | M5xP0.8 | 5.5 | 2 | C9MT05T105 C9MT05T110H |
| 00-99805-M06-12C5 | M06-12C5 | 12 | 8 | 13 | M6xP1.0 | 6.5 | | |
| 00-99805-M06-13C5 | M06-13C5 | 13 | 7.5 | 13 | M6xP1.0 | 6.5 | 3 | |
| 00-99805-M08-16C5 | M08-16C5 | 16 | 5.5 | 15 | M8xP1.25 | 8.5 | | |
| 00-99805-M08-17C5 | M08-17C5 | 17 | 5 | 15 | M8xP1.25 | 8.5 | 3 | |
| 00-99805-M10-20C5 | M10-20C5 | 20 | 4 | 15 | M10xP1.5 | 10.5 | | |
| 00-99805-M10-21C5 | M10-21C5 | 21 | 3.5 | 15 | M10xP1.5 | 10.5 | 4 | |
| 00-99805-M12-25C5 | M12-25C5 | 25 | 3 | 20 | M12xP1.75 | 12.5 | | |
| 00-99805-M12-26C5 | M12-26C5 | 26 | 2.5 | 20 | M12xP1.75 | 12.5 | 4 | |

* Refer to page 9-156 for extension bars.

C Series Torus Radius Mills



► Dual Relief Angle Insert



Higher feed rate!
Higher wearing resistance!

Insert

- Submicron carbide inserts are fully ground.
- Special design milling cutter and ground insert for semi-finishing 3D surface milling for mold industry.

NC30 : • Flat cutting edge design,
universal type for all kind of materials.

NC2032 : • High positive angle, special chip breaker design,
higher wearing resistance.
• Good for hardened material.

| Parts No. | Coating | Grade | | Dimensions | | | Screw | Key |
|--------------------|---------|-------|--|------------|------|-----|--------------------|-------|
| | | | | L | S | Re | | |
| C9MT040105-NC30 | AlTiN | K10F | | 4 | 1.59 | 0.5 | *NS-18037 0.6Nm | NK-T6 |
| C9MT040110-NC30 | AlTiN | K10F | | 4 | 1.59 | 1.0 | | |
| C9MT05T105-NC30 | AlTiN | K10F | | 5 | 2.0 | 0.5 | *NS-20045 0.6Nm | NK-T6 |
| C9MT05T110H-NC2032 | AlTiN | K20F | | 5 | 2.0 | 1.0 | | |

*Torque screwdriver is recommended.

Cutting Data

- Recommend Ae below 2.5mm.

| Work Material | Sample Code (JIS) | Vc (m/min) | fz (mm/tooth) | Ap(mm) | Grade of Insert |
|------------------------------------|-------------------|------------|---------------|------------|-----------------|
| P Carbon Steel | P5 | 150~300 | 0.2~0.5 | 0.2~0.5 | NC30 |
| | | | | | NC2032 |
| M Alloy Steel | SCM440 | 120~250 | 0.2~0.5 | 0.2~0.5 | NC30 |
| | | | | | NC2032 |
| M Stainless Steel | SUS304 | 120~200 | 0.2~0.4 | 0.2~0.4 | NC30 |
| | | | | | NC2032 |
| H Hardened Steel < HRC52 | SKD61 | 100~150 | 0.1~0.3 | 0.1~0.3 | NC2032 |