



VISION Series

General Inserts for turning

VF Breaker

New

Features

Finishing-purpose of negative chip breaker for steel turning

- Improved chip control on various workpiece such as soft steel and alloy steel. etc.
- Combination of specially designed 3 dimensional chip breaker and rigid cutting edge guarantee long tool life.
- Very good surface finish in medium-finishing.



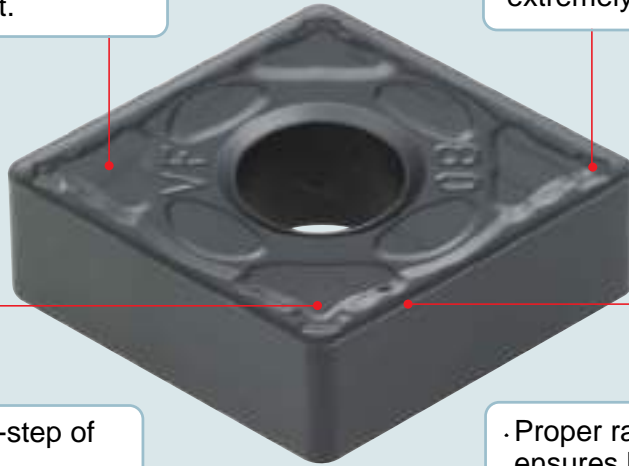
VF Breaker

Concept of VF-Design | Recommended Cutting Conditions

Concept of VF-Design

· Wide contact area of insert with holder prevents chipping due to fully clamped of insert.

· Unique design in cutting area ensures superior chip control in extremely small depth-of-cut



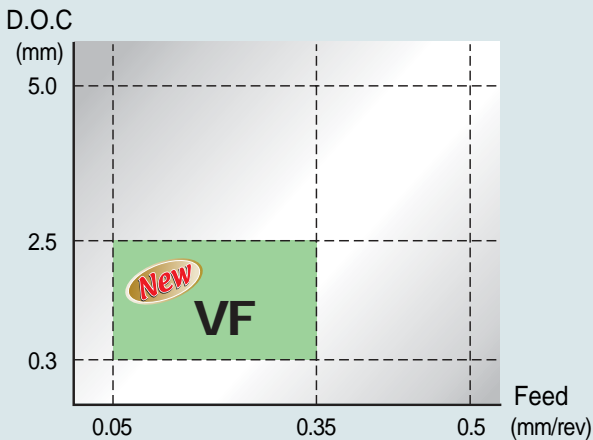
· Smooth chip curling in 2-step of chip breaker.
· Reduce chip control resistance at high speed & feed cutting

· Proper rake angle of cutting edge ensures better surface finish and low cutting resistance

Chip Control Range

Feed = 0.05 ~ 0.35 mm/rev

D.O.C = 0.3 ~ 2.5 mm




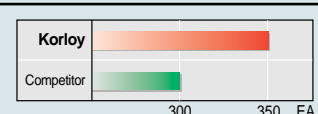

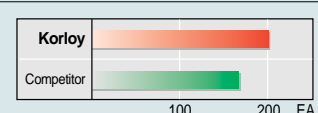

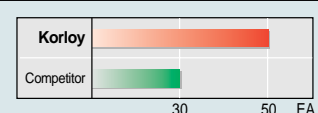

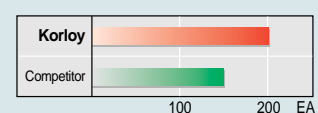
Recommended Cutting Conditions

| Workpiece | Hardness | Grade | vc (m/min) |
|---|-----------|--------|---------------|
| Soft Steels (SM10C~SM25C SS400, SCR415 SCM415. etc) | ≤180HB | NC3010 | 310 (270~350) |
| | | NC3120 | 290 (250~330) |
| | | NC3030 | 270 (230~300) |
| General Steels (SM45C, SM55C, SCM430, SCM440. etc) | 180~260HB | NC3010 | 220 (180~250) |
| | | NC3120 | 200 (170~230) |
| | | NC3030 | 190 (160~210) |
| Hardened Steels (SNC415, SNC815, SNCM240, SNCM439, STS12, STS61. etc) | 260~350HB | NC3010 | 130 (100~150) |
| | | NC3120 | 120 (90~140) |
| | | NC3030 | 110 (80~130) |

VF Breaker

Application examples | Chip Control Evaluation

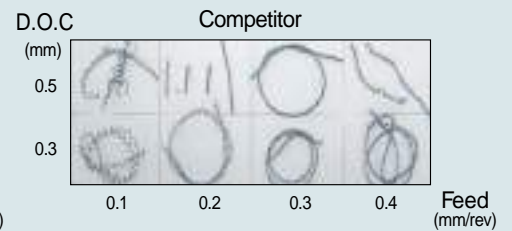
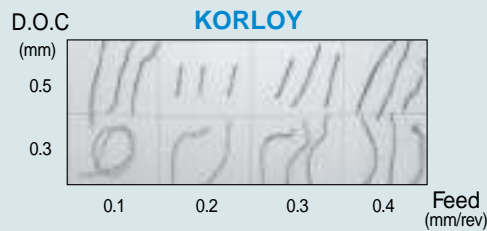
Application examples

| Workpiece | Workpiece (Material) | Designation (Grade) | Cutting condition | | Result |
|--|----------------------|------------------------|-------------------|-----------------|--|
|  | Shaft (SM20C) | DNMG150604-VF (NC3020) | vc | 200 m/min |  |
| | | | fn | 0.3~0.35 mm/rev | |
| | | | ap | 0.5~1.0 mm | |
|  | Front Piston (SM10C) | CNMG120408-VF (NC3020) | vc | 180 m/min |  |
| | | | fn | 0.35 mm/rev | |
| | | | ap | 0.5~1.0 mm | |
|  | Flange (SM45) | CNMG120408-VF (NC3020) | vc | 250 m/min |  |
| | | | fn | 0.3 mm/rev | |
| | | | ap | 1.0~1.5 mm | |
|  | bearing parts (SUJ2) | DNMG150608-VF (NC3010) | vc | 270 m/min |  |
| | | | fn | 0.2~0.25 mm/rev | |
| | | | ap | 1.0~2.0 mm | |

Chip Control Evaluation

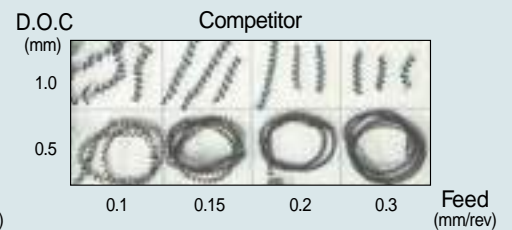
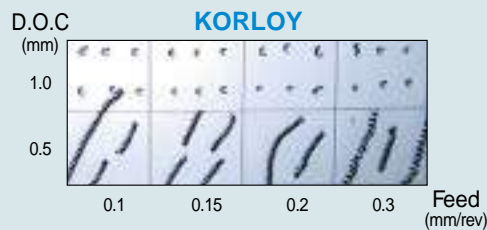
■ Cutting condition

- Workpiece : SM25C
- Designation : CNMG120408-VF
- vc = 200m/min



■ Cutting condition

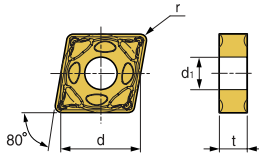
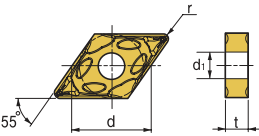
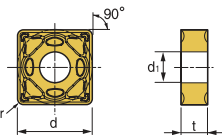
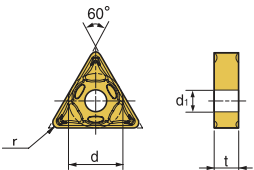
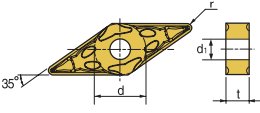
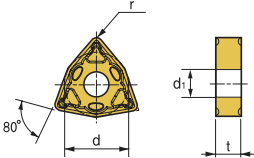
- Workpiece : SCM440
- Designation : CNMG120408-VF
- vc = 200m/min



VF Breaker

VF-Insert

VF-Insert

| Geometry | Designation | Coated | | | Dimensions(mm) | | | |
|---|---------------|--------|--------|--------|----------------|------|-----|----------------|
| | | NC3010 | NC3120 | NC3030 | d | t | r | d _i |
|  | CNMG090304-VF | ● | ● | | 9.525 | 3.18 | 0.4 | 3.81 |
| | CNMG090308-VF | ● | ● | | 9.525 | 3.18 | 0.8 | 3.81 |
| | CNMG120404-VF | ● | ● | | 12.7 | 4.76 | 0.4 | 5.16 |
| | CNMG120408-VF | ● | ● | | 12.7 | 4.76 | 0.8 | 5.16 |
| | CNMG120412-VF | | ● | | 12.7 | 4.76 | 1.2 | 5.16 |
|  | DNMG110402-VF | | ● | | 9.525 | 4.76 | 0.2 | 3.81 |
| | DNMG110404-VF | ○ | ● | | 9.525 | 4.76 | 0.4 | 3.81 |
| | DNMG110408-VF | ○ | ● | | 9.525 | 4.76 | 0.8 | 3.81 |
| | DNMG150404-VF | ○ | ● | | 12.7 | 4.76 | 0.4 | 5.16 |
| | DNMG150408-VF | ○ | ● | | 12.7 | 4.76 | 0.8 | 5.16 |
| | DNMG150412-VF | | | | 12.7 | 4.76 | 1.2 | 5.16 |
| | DNMG150604-VF | ● | ● | | 12.7 | 6.35 | 0.4 | 5.16 |
| | DNMG150608-VF | ● | ● | | 12.7 | 6.35 | 0.8 | 5.16 |
|  | SNMG090304-VF | | ● | | 9.525 | 3.18 | 0.4 | 3.81 |
| | SNMG120404-VF | | ● | ○ | 12.7 | 4.76 | 0.4 | 5.16 |
| | SNMG120408-VF | ● | ● | ○ | 12.7 | 4.76 | 0.8 | 5.16 |
|  | TNMG110304-VF | | ● | | 6.35 | 3.18 | 0.4 | 2.26 |
| | TNMG160404-VF | | ● | | 9.525 | 4.76 | 0.4 | 3.81 |
| | TNMG160408-VF | ● | ● | | 9.525 | 4.76 | 0.8 | 3.81 |
| | TNMG160412-VF | | ● | | 9.525 | 4.76 | 1.2 | 3.81 |
| | TNMG220404-VF | | ● | | 12.7 | 4.76 | 0.4 | 5.16 |
| | TNMG220408-VF | | ● | | 12.7 | 4.76 | 0.8 | 5.16 |
|  | VNMG160402-VF | | ● | | 9.525 | 4.76 | 0.2 | 3.81 |
| | VNMG160404-VF | ● | ● | | 9.525 | 4.76 | 0.4 | 3.81 |
| | VNMG160408-VF | | ● | | 9.525 | 4.76 | 0.8 | 3.81 |
|  | WNMG060404-VF | ● | ● | | 9.525 | 4.76 | 0.4 | 3.81 |
| | WNMG060408-VF | ● | ● | | 9.525 | 4.76 | 0.8 | 3.81 |
| | WNMG080404-VF | ● | ● | | 12.7 | 4.76 | 0.4 | 5.16 |
| | WNMG080408-VF | | ● | | 12.7 | 4.76 | 0.8 | 5.16 |

● Stock item, ○ Under preparing for stock



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