

# NEGATIVE RAKE ANGLE INSERT SERIES

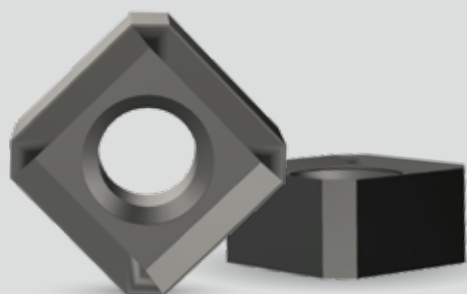
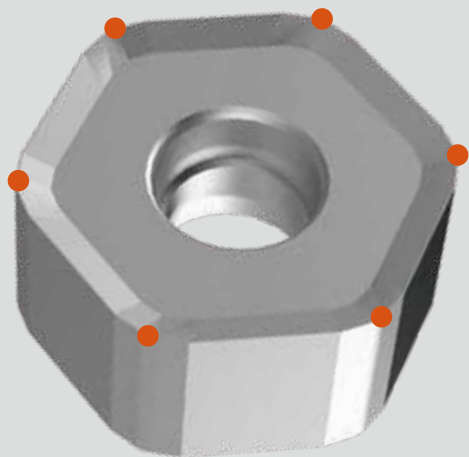
## 負角刀片系列

No. 240528004



影片  
Video



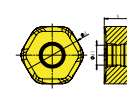
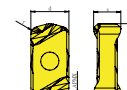
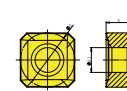


- SN../8刃、HN/12刃，  
低刀具成本。
- 修光刃設計降低粗糙度。
- 切刃倒角縮小工件毛邊。
- SN../8 cutting edge、  
HN/12 cutting edge,  
effective cost-saving.
- The design of wiper  
inserts decrease  
roughness.
- Chamfering cutting  
edges make workpiece's  
burrs smaller.



## 負角刀片選用 NEGATIVE INSERTS APPLICATION

| 負角刀片<br>Negative Insert | 加工類型<br>Machining Type | 銑削方式<br>Cutting Method                     | 切削深度<br>Ap | 加工材質<br>Machining Materials |
|-------------------------|------------------------|--------------------------------------------|------------|-----------------------------|
| SN..12                  | 粗加工<br>Roughing        | 面銑、肩銑<br>Face milling,<br>Shoulder milling | 1~3        | P K                         |
| HN..06                  | 中精加工<br>Semi-finishing | 面銑<br>Face milling                         | 0.5~2.5    | P M K N                     |
| LN..03                  | 粗加工<br>Roughing        | 高進給銑削<br>High feed milling                 | 1          | P K H                       |

| ISO<br>分類                                                                           | P                | 合金鋼 Alloyed Steels                   | ○      | ○      |        |        |                                               |        |  |  |   |         |      |      | 切削狀態 Cutting Condition :<br><br>● 連續切削 Continuous Cutting<br>○ 一般切削 General Cutting<br>■ 斷續切削 Interrupted Cutting |                                                                                       |
|-------------------------------------------------------------------------------------|------------------|--------------------------------------|--------|--------|--------|--------|-----------------------------------------------|--------|--|--|---|---------|------|------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                     | M                | 不鏽鋼 Stainless Steels                 | ○      | ○      | ○      | ○      |                                               |        |  |  |   |         |      |      |                                                                                                                   |                                                                                       |
|                                                                                     | K                | 鑄鐵 Cast Iron                         | ○      |        |        |        | ○                                             | ○      |  |  |   |         |      |      |                                                                                                                   |                                                                                       |
|                                                                                     | N                | 鋁及鋁合金 Aluminum&Al                    |        |        |        |        |                                               |        |  |  | ○ |         |      |      |                                                                                                                   |                                                                                       |
|                                                                                     | S                | 高溫合金 Refractory Alloys               |        |        |        |        |                                               |        |  |  |   |         |      |      |                                                                                                                   |                                                                                       |
|                                                                                     | H                | 高硬度材 Hard Material                   | ○      |        |        |        |                                               |        |  |  |   |         |      |      |                                                                                                                   |                                                                                       |
| 形狀<br>Shape                                                                         | 規格<br>Spec.      | 鍍層超微粒<br>Layer Coated<br>micro grain |        |        |        |        | 超微粒硬質合金<br>Micro grain<br>cemented<br>carbide |        |  |  |   | 尺寸 (mm) |      |      |                                                                                                                   | 圖形<br>Drawing                                                                         |
|                                                                                     |                  | CHF                                  |        |        |        |        | HF                                            |        |  |  |   | Size    |      |      |                                                                                                                   |                                                                                       |
|                                                                                     |                  | RM1125                               | OM4025 | OM5035 | RM4025 | RM3130 |                                               | OM5005 |  |  |   |         | d    | i    | s                                                                                                                 |                                                                                       |
|    | HNGX0604ANEN-M01 |                                      | ●      | ●      |        |        |                                               |        |  |  |   | 10.5    | -    | 5.2  | -                                                                                                                 |    |
|                                                                                     | HNGX0604ANFN-F01 |                                      |        |        |        |        |                                               | ●      |  |  |   | 10.5    | -    | 5.2  | -                                                                                                                 |                                                                                       |
|                                                                                     |                  |                                      |        |        |        |        |                                               |        |  |  |   |         |      |      |                                                                                                                   |                                                                                       |
|   | LNMU0303ZER-MJ   | ●                                    |        |        |        |        |                                               |        |  |  |   | 6       | 11.9 | 4.3  | 1.2                                                                                                               |   |
|                                                                                     | LNMU0303ZER-M01  |                                      | ●      |        |        |        |                                               |        |  |  |   | 6       | 11.9 | 4.3  | 1.2                                                                                                               |                                                                                       |
|  | SNMU1206ANEN-M01 |                                      |        |        | ●      | ●      |                                               |        |  |  |   | 12.7    | -    | 6.35 | -                                                                                                                 |  |
|                                                                                     | SNMU1206ANEN-M03 |                                      | ●      |        |        |        |                                               |        |  |  |   | 12.7    | -    | 6.35 | -                                                                                                                 |                                                                                       |

## LN\_03 切削條件數據表 Cutting Parameter

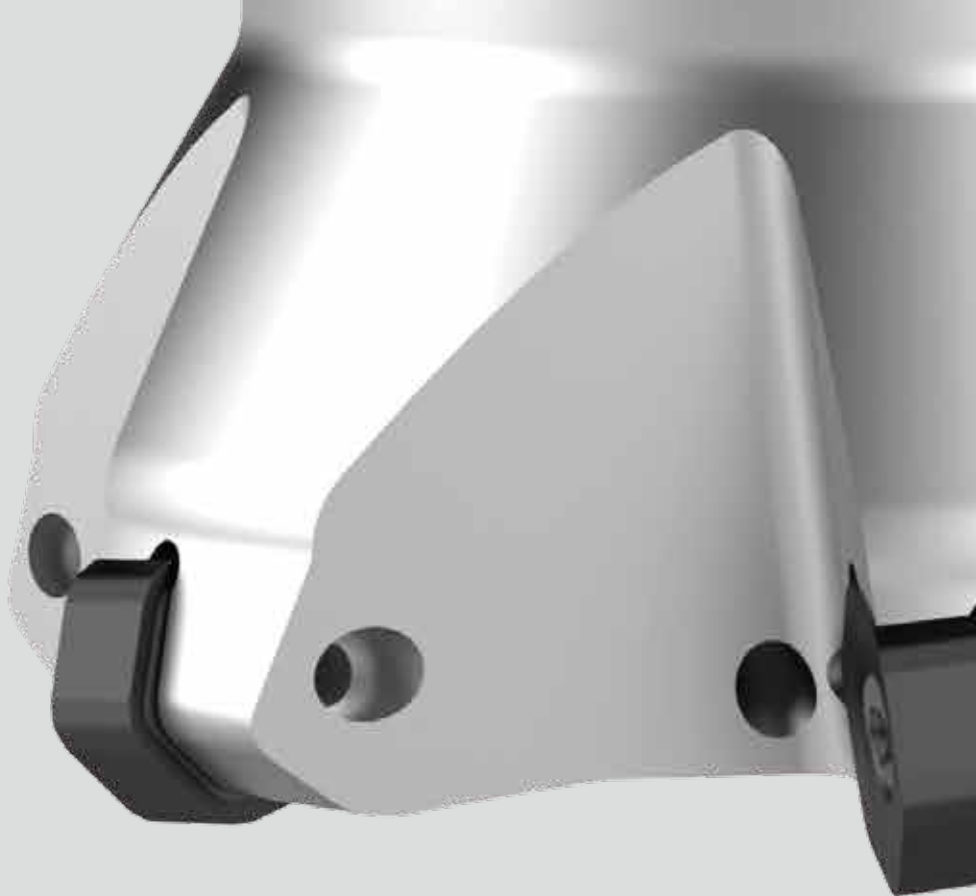
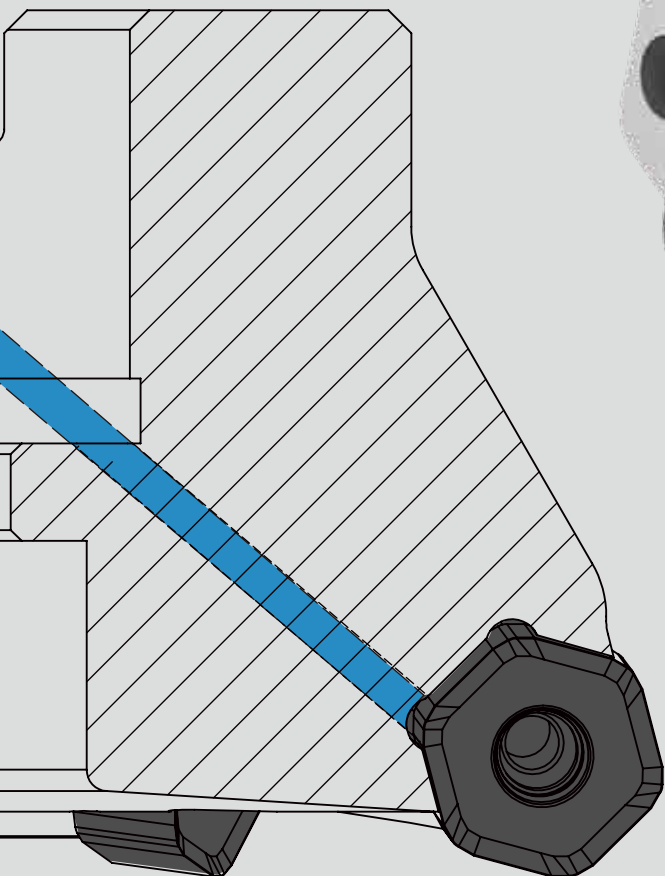
| 被加工材質<br>Machining Materials |                    | 刀片材質<br>Grade | 切削速度<br>Vc(m/min) | 每刃進給<br>fz(mm/rev) |
|------------------------------|--------------------|---------------|-------------------|--------------------|
| P                            | 合金鋼 Alloyed Steels | RM1125        | 150(100~200)      | 0.7(0.5~1.2)       |
|                              |                    | OM4025        |                   |                    |
| K                            | 鑄鐵 Cast Iron       | RM1125        | 150(80~250)       | 0.7(0.5~1.2)       |

## HN\_06 切削條件數據表 Cutting Parameter

| 被加工材質<br>Machining Materials |                      | 刀片材質<br>Grade | 切削速度<br>Vc(m/min) | 每刃進給<br>fz(mm/rev) |
|------------------------------|----------------------|---------------|-------------------|--------------------|
| P                            | 合金鋼 Alloyed Steels   | OM4025        | 220(150~300)      | 0.15(0.08~0.25)    |
| M                            | 不鏽鋼 Stainless Steels | OM5035        | 120(100~200)      | 0.12(0.08~0.20)    |
| K                            | 鑄鐵 Cast Iron         | OM4025        | 180(130~240)      | 0.15(0.08~0.25)    |
| N                            | 鋁及鋁合金 Aluminium & Al | OM5005        | 400(300 - 1000)   | 0.12(0.08 - 0.17)  |

## SN\_12 切削條件數據表 Cutting Parameter

| 被加工材質<br>Machining Materials |                    | 刀片材質<br>Grade | 切削速度<br>Vc(m/min) | 每刃進給<br>fz(mm/rev) |
|------------------------------|--------------------|---------------|-------------------|--------------------|
| P                            | 合金鋼 Alloyed Steels | RM4025        | 220(170~320)      | 0.20(0.10~0.35)    |
|                              |                    | OM4025        |                   |                    |
| K                            | 鑄鐵 Cast Iron       | RM3130        | 180(130~240)      | 0.20(0.10~0.35)    |

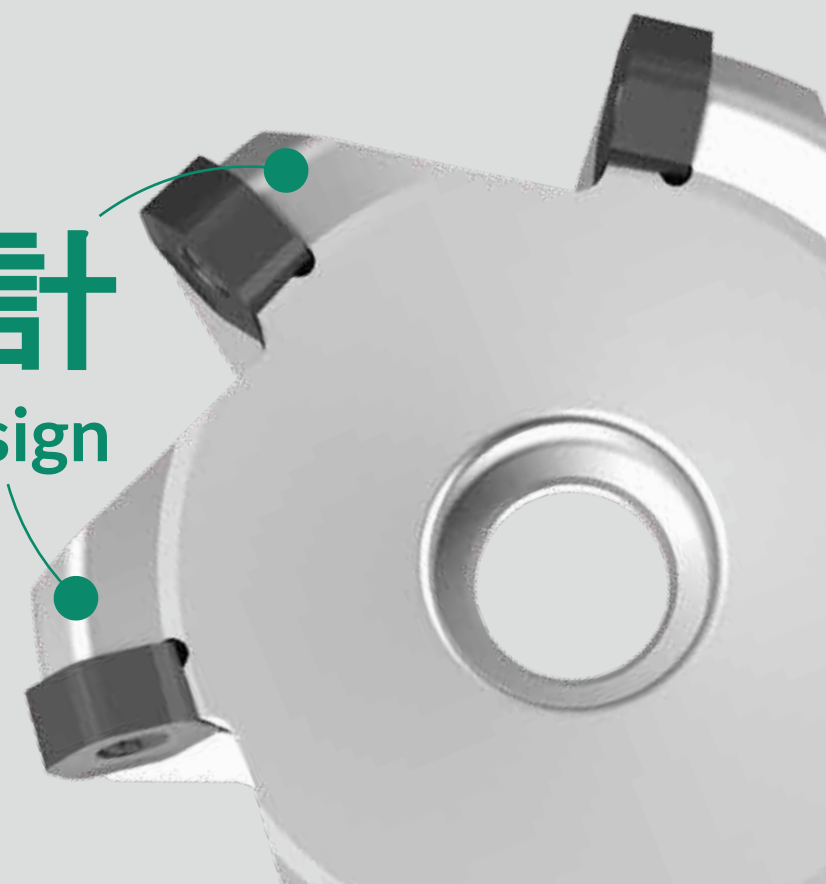


## 中心出水 Through Coolant

利於排屑與降溫  
Faster Chip Removal &  
Reduce Temperature

## 不等距設計 Non Equidistant Design

抑制切削加工造成震動  
利於高穩定的加工  
To decrease the vibration and  
show high stability while machining



## 加工K類材質 最佳優化方案

## Machining material: K (cast iron) The Improving Method

- 刀桿 : BT50-FMB32-150
- 刀具 : NAC45-100-HN06-FMB32-8T-C
- 刀片 : HNGX0604ANEN-M01 OM4025
- 工件材質 : 鑄鐵K
- 乾式切削

- Cutter Arbor : BT50-FMB32-150
- Cutting Tools : NAC45-100-HN06-FMB32-8T-C
- Inserts : HNGX0604ANEN-M01 OM4025
- Workpiece Material : Cast Iron
- Dry Cutting

| 切削參數Cutting Parameters | 他牌 Other Brand | 正河源 Chain Headway |
|------------------------|----------------|-------------------|
| 轉速 S                   | 250            | 480               |
| 進給 F                   | 500            | 1200              |
| 切削速度 Vc                | 78.5           | 150               |
| 進給 fz                  | 0.25           | 0.31              |
| 切深 Ap                  | 2              | 2                 |
| 切寬 Ae                  | 80             | 80                |
| 加工壽命Machining Life     | 15小時(hrs)      | 21小時(hrs)         |

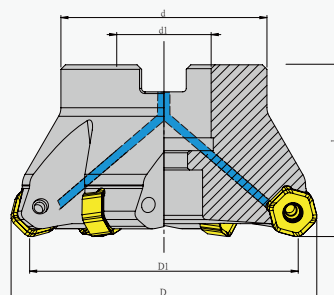
加工效率提升140%，以及刀片壽命提升40%

Machining efficiency increases above 140%, and inserts' tool life increase by 40%



## NAC 45度負角殼型銑刀

### NAC 45°NEGATIVE ANGLE SHELL MILLING CUTTER



#### 特點 Feature

- 採用負角刀片，刀片切削角數增加，降低成本
- 加工方式適合大量移除鐵削

- Negative insert with 12 cutting edges. Effective cost-saving.
- Ideal for a large area of cutting.

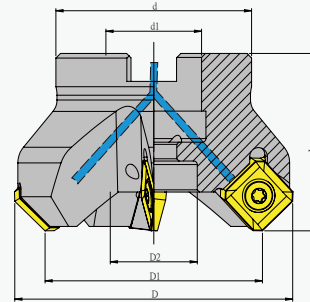
| 規格 Spec.                   | L  | D   | D1  | d  | d1 | 刃數 Flutes | 刀片 Insert | 重量 (KGS) Weight |
|----------------------------|----|-----|-----|----|----|-----------|-----------|-----------------|
| NAC45-50-HN06-FMB22-5T-C   | 40 | 57  | 50  | 45 | 22 | 5         | HN..0604  | 0.64            |
| NAC45-63-HN06-FMB22-6T-C   | 40 | 72  | 63  | 48 | 22 | 6         | HN..0604  | 0.80            |
| NAC45-80-HN06-FMB27-7T-C   | 50 | 87  | 80  | 55 | 27 | 7         | HN..0604  | 1.40            |
| NAC45-100-HN06-FMB32-8T-C  | 50 | 107 | 100 | 73 | 32 | 8         | HN..0604  | 2.10            |
| NAC45-125-HN06-FMB40-10T-C | 63 | 133 | 125 | 90 | 40 | 10        | HN..0604  | 4.22            |

#### 配件表 Accessories

| 螺絲 Screw             | 扳手 Wrench | 扭力值 Torque(N.m) |
|----------------------|-----------|-----------------|
| M3-7.0-4.3-43-T9-TIN | T9        | 1.4Nm           |

# NAC 45度負角殼型銑刀

## NAC 45°NEGATIVE ANGLE SHELL MILLING CUTTER



### 特點 Feature

- 採用負角刀片，刀片切削角數增加，降低成本
- 加工方式適合大量移除鐵削

- Negative insert with 8 cutting edges. Effective cost-saving.
- Ideal for a large area of cutting.

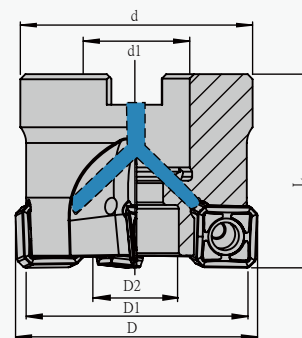
| 規格 Spec.                   | D1  | D   | L  | D2 | d   | d1 | 刃數 Flutes | 刀片 Insert | 重量 (KGS) Weight |
|----------------------------|-----|-----|----|----|-----|----|-----------|-----------|-----------------|
| NAC45-50-SN12-FMB22-4T-C   | 50  | 65  | 40 | 20 | 48  | 22 | 4         | SN..1206  | 0.57            |
| NAC45-63-SN12-FMB22-6T-C   | 63  | 78  | 40 | 18 | 48  | 22 | 6         | SN..1206  | 0.78            |
| NAC45-80-SN12-FMB27-7T-C   | 80  | 95  | 50 | 32 | 62  | 27 | 7         | SN..1206  | 1.39            |
| NAC45-100-SN12-FMB32-8T-C  | 100 | 115 | 50 | 42 | 80  | 32 | 8         | SN..1206  | 1.76            |
| NAC45-125-SN12-FMB40-10T-C | 125 | 140 | 63 | 50 | 90  | 40 | 10        | SN..1206  | 3.5             |
| NAC45-160-SN12-FMB40-12T-C | 160 | 175 | 63 | 50 | 120 | 40 | 12        | SN..1206  | 6               |

### 配件表 Accessories

| 螺絲 Screw  | 扳手 Wrench  | 扭力值 Torque(N.m) |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------|
| M4-10-6.6-R3.8-T15                                                                           | T15                                                                                           | 3.0Nm           |

# NAC 88度負角殼型銑刀

## NAC 88°NEGATIVE ANGLE SHELL MILLING CUTTER



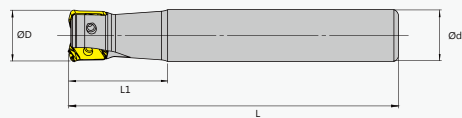
| 規格 Spec.                  | L  | D   | d  | d1 | 刃數 Flutes | 刀片 Insert | 重量 (KGS) Weight |
|---------------------------|----|-----|----|----|-----------|-----------|-----------------|
| NAC88-50-SN12-FMB22-4T-C  | 40 | 50  | 48 | 22 | 4         | SN..12    | -               |
| NAC88-63-SN12-FMB22-5T-C  | 40 | 63  | 48 | 22 | 5         | SN..12    | -               |
| NAC88-80-SN12-FMB27-7T-C  | 50 | 80  | 62 | 27 | 7         | SN..12    | -               |
| NAC88-100-SN12-FMB32-8T-C | 50 | 100 | 80 | 32 | 8         | SN..12    | -               |

### 配件表 Accessories

| 螺絲 Screw  | 扳手 Wrench  | 扭力值 Torque(N.m) |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------|
| M4-10-6.6-R3.8-T15                                                                           | T15                                                                                           | 3.0Nm           |

## NHF 高進給直柄銑刀

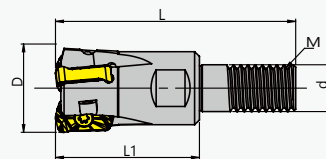
### NHF HIGH FEED MILLING END MILL



| 規格<br>Spec.       | L   | l <sub>1</sub> | D  | d  | 刃數<br>Flutes | 刀片<br>Insert | 重量<br>(KGS)<br>Weight |
|-------------------|-----|----------------|----|----|--------------|--------------|-----------------------|
| NHF-1516LN03-150L | 150 | 30             | 15 | 16 | 2            | LNMU0303     | -                     |
| NHF-1616LN03-150L | 150 | 40             | 16 | 16 | 2            |              | -                     |
| NHF-1716LN03-150L | 150 | 30             | 17 | 16 | 2            |              | -                     |
| NHF-2020LN03-150L | 150 | 40             | 20 | 20 | 3            |              | -                     |
| NHF-2120LN03-150L | 150 | 50             | 21 | 20 | 3            |              | -                     |
| NHF-2525LN03-150L | 150 | 60             | 25 | 25 | 4            |              | -                     |
| NHF-2625LN03-150L | 150 | 60             | 26 | 25 | 4            |              | -                     |
| NHF-2625LN03-200L | 200 | 60             | 26 | 25 | 4            |              | -                     |
| NHF-3232LN03-150L | 150 | 45             | 32 | 32 | 5            |              | -                     |
| NHF-3532LN03-220L | 220 | 60             | 35 | 32 | 5            |              | -                     |

## NHF 高進給鎖牙銑刀

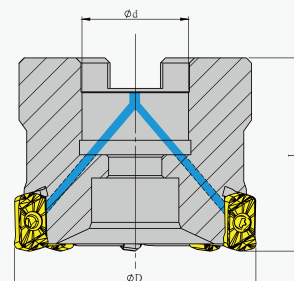
### NHF HIGH FEED SCREW-ON MILLING END MILL



| 規格<br>Spec.    | L  | l <sub>1</sub> | D  | d   | M   | 刃數<br>Flutes | 刀片<br>Insert | 重量<br>(KGS)<br>Weight |
|----------------|----|----------------|----|-----|-----|--------------|--------------|-----------------------|
| NHF-17M08-LN03 | 43 | 26             | 17 | 8.5 | M08 | 2            | LNMU0303     | -                     |
| NHF-21M10-LN03 | 49 | 30             | 21 | 8.5 | M10 | 3            |              | -                     |
| NHF-26M12-LN03 | 57 | 35             | 26 | 8.5 | M12 | 4            |              | -                     |
| NHF-35M16-LN03 | 66 | 43             | 35 | 8.5 | M16 | 4            |              | -                     |

## NHF 高進給殼型銑刀

### NHF HIGH FEED FACE MILLING CUTTER



| 規格<br>Spec.         | D  | d  | L  | 刃數<br>Flutes | 重量<br>(KGS)<br>Weight |
|---------------------|----|----|----|--------------|-----------------------|
| NHF-40-FMB16-LN03-C | 40 | 16 | 40 | 6            | -                     |
| NHF-50-FMB22-LN03-C | 50 | 22 | 50 | 8            | -                     |

#### 配件表 Accessories

| 螺絲 Screw  | 扳手 Wrench  | 扭力值 Torque(N.m) |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------|
| M2.5-6.45-3.7-43                                                                             | T8                                                                                            | 1.2Nm           |



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