

エポックディープラジアスエボリューション

Epoch Deep Radius Evolution

EPDRE-ATH



株式会社 MOLDINO
MOLDINO Tool Engineering, Ltd.

New Product News | No.1217-11 | 2023-6

EPDRE-ATHの特長

Features of EPDRE-ATH

トータル332アイテムの 豊富なラインナップ!!

最小コーナRサイズ0.02mmもラインナップ!!

Total 332 sizes.

Minimum corner R size of 0.02mm also in lineup!



| | | | | | | | | | |
|-------------|---|--|----------------------------------|--|--|----------------------|---------------------|--------------------------|--|
| ATHコーティング | | | | | | 加工用途 Applications | 金型製作 Mold making | 部品加工 Parts processing | EPDRE-ATH φ0.2~φ6 [332 アイテム] Items |
| 銅 Copper | 炭素鋼 合金鋼 Carbon steel Alloy steel | ステンレス鋼 工具鋼 Stainless steel Tool steel | プリハードン鋼 Pre-hardened steel | 焼入れ鋼 45~55HRC Hardened steel 45-55HRC | 焼入れ鋼 55~65HRC Hardened steel 55-65HRC | | | | |

特長 Features 進化した耐熱コーティング Improved heat-resistant coating



○ 特長と機能 Features and characteristics

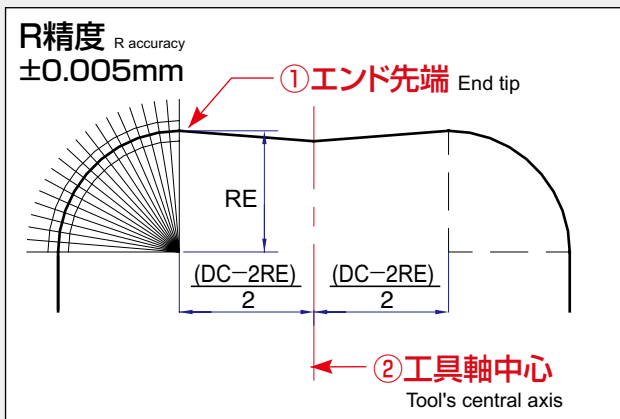
- THコーティングの硬度と耐酸化性をさらに改善。高硬度材切削加工の長寿命化、高能率化が可能になりました。
(結晶粒子がさらに微細化したSi系ナノコンポジットコーティングです)
- 高硬度材料(55HRC以上)の切削加工に良好な性能を発揮します。
冷間ダイス鋼、高速度鋼、工具鋼
- ドライでもウェットでも長寿命。
- Hardness and oxidation resistance of TH Coating is further improved. Enables longer life and higher efficient when cutting high-hardness materials.
(Si nano composite coating with finer crystal particles)
- Exhibits amazing performance when cutting high-hardness materials (55HRC or higher)
Cold-worked die steel, HSS, tool steel.
- Long life for both dry cutting and wet cutting

特長 Features 高精度加工を行うためのR精度保証

Guaranteed R accuracy for performing high-accuracy processing.

コーナ半径の精度は工具の中心を基準保証。金型の仕上げ加工の際に、より高精度な仕上げ加工が可能です!!
Corner radius accuracy guaranteed with tool center as reference point. Enables more accurate finishing when finishing molds.

○ 高精度コーナ半径 High corner radius accuracy



精度基準 Accuracy basis

① エンド先端 End tip ② 工具軸中心 Tool's central axis

コーナ半径の精度はボールエンドミルと同様に、工具の軸中心を基準として±0.005mm以内を保証しており、高精度コーナ半径を実現しています。これにより従来のコーナラジアスエンドミルでは困難とされていた高精度仕上げ加工が可能です。

Like ball end mills, corner radius accuracy is kept to within ±0.005mm relative to the tool's central axis, achieving a high corner radius accuracy. This enables high-accuracy finish machining to be performed, something which has been difficult to do with previous corner radius end mills.

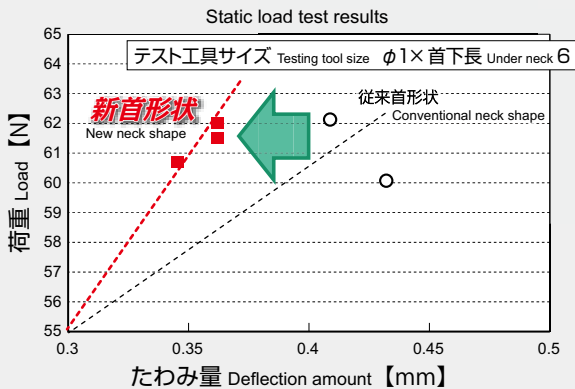
特長
Features

進化した複合首形状 Improved compound neck shape

信頼の複合首形状を採用 Employs reliable compound neck shape

- 工具首部のRとテーパの複合形状をさらに進化。耐折損性とたわみ抑制を両立しました。
※従来ディーブラジアスと比較すると実有効首下長は短くなりますので干渉領域をチェックした上でご使用ください。
Compound shape of tool neck R and taper is further improved to both resist breakage and suppress deflection.
※Since the actual effective under-neck length is shorter than the conventional Deep Radius, be sure to check the interference region before use.

静荷重テスト結果 Static load test results



同じ荷重でたわみ抑制効果が大い!!
Deflection suppression effect is high even under the same load.

[注意] 首形状の変更に伴い、干渉領域が変わります。必ず加工前に干渉チェックを行ってください。

切削による耐折損性結果 Results for resistance to breakage due to cutting

被削材 Work material : SUS420J2(H) (硬さ Hardness : 52HRC)
工具径 Tool dia. : $\phi 1$ (RE0.2) \times 首下長 10
切削条件 Cutting condition : $n=12800\text{min}^{-1}$ $v_f=200\text{mm/min}$ ~
Dry with Air blow $a_p \times a_e=0.02\text{mm} \times 1\text{mm}$

| | Vf (mm/min) | | | | | | |
|-----------|-------------|-----|-------|-------|-------|-------|-------|
| | ~600 | 800 | 1,000 | 1,200 | 1,400 | 1,600 | 1,800 |
| EPDRE-ATH | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

標準切削条件 (高能率) の送り速度は 815mm/min であるが、2倍以上の送りで加工しても問題なく切削することができました。
Although the feed rate for the standard cutting conditions (high performance) is 815mm/min, cutting could be performed without problems even when processing was performed at more than twice that feed rate.

⇒ 応力集中による折損の心配を大幅に低減できます!
Worries about breakage due to concentration of stress are greatly reduced!

本切削試験は、切削事例の一例を示すものであり、性能を保証するものではありません。
These cutting tests are some cutting examples, and the performance shown in these examples is not guaranteed.

[Caution] The interference region has changed due to changes in the neck shape. Be sure to check for interference before starting machining.

特長
Features

安定性を向上させた刃形状 Flute shape that increases stability

切りくず排出を考慮したポケット形状 Smooth chip removal flute shape

Smooth chip removal flute shape

高い切りくず排出性で深彫り時に有効!!

High chip removal characteristics effective when performing deep cutting.

ダブルギャッシュ形状 Double-gash shape

Double-gash shape

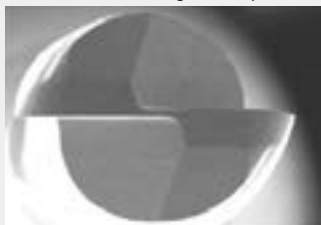


切りくずの接触した跡がなく排出性良好
No traces of contact with chips. Chip removal is good.



従来ギャッシュ形状 Conventional gash shape

Conventional gash shape



切りくずの接触した跡が残っている
Traces of contact with chips remain.

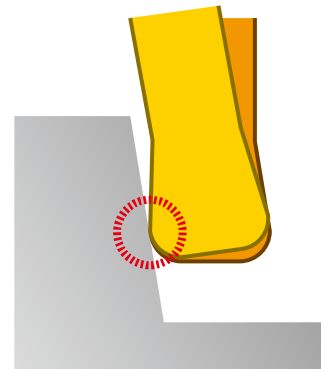


外径 $\phi 1$ 未満はダブルギャッシュ形状ではありません。 Tool diameter less than $\phi 1$ does not have Double-gash shape.

信頼のバックドラフト形状 Reliable backdraft shape

Reliable backdraft shape

信頼のバックドラフト形状 (強バックテーパ) を継承!
点あたりで切削するのでビブりが低減できます!!
Inherits the reliable backdraft shape (Large backtaper)!
Can reduce chattering when doing point cutting.



Back draft effect

特長
Features

寸法
Dimensions

高能率切削条件
High efficiency cutting condition

高精度切削条件
High accuracy cutting condition

技術データ
Technical Data

ラインナップ

Line Up



ラジラス Radius

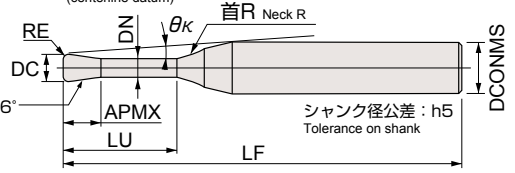


2枚刃
2 Flutes

コーナ半径RE公差：±0.005mm (中心基準)
Tolerance on corner radius RE (centerline datum)

ねじれ角：30°
Helix Angle

外周バックテーパー：1.5~6°
Back taper on peripheral edge

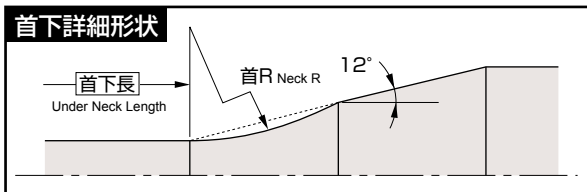


EPDRE2-ATH

外径φ4以上はバックドラフト形状ではありません。
φ4 or higher does not have backdraft shape.

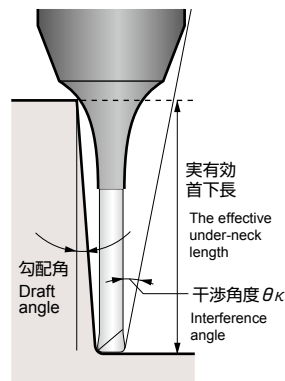
| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | 首R Neck R | 干渉角度 Interference angle (°) θ _K | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売価格(円) Suggested retail price (¥) |
|-----------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|-------------------------------|--------------|--|--|------|------|------|-------|---|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャンク径 Shank dia. DCONMS | | | 0.5° | 1° | 1.5° | 2° | 3° | |
| | | | | | | | | | | | | | | | | |
| EPDRE2002-0.5-002-ATH | ● | 0.2 | 0.02 | 0.5 | 0.15 | 0.17 | 50 | 4 | 1 | 11.33 | 0.70 | 0.73 | 0.75 | 0.78 | 0.83 | 10,610 |
| EPDRE2002-1-002-ATH | ● | | | 1 | | | | | | 10.77 | 1.22 | 1.26 | 1.30 | 1.34 | 1.41 | 10,610 |
| EPDRE2002-2-002-ATH | ● | | | 2 | | | | | | 9.81 | 2.26 | 2.32 | 2.38 | 2.47 | 2.74 | 10,610 |
| EPDRE2002-0.5-005-ATH | ● | | 0.05 | 0.5 | | | | | | 11.36 | 0.70 | 0.73 | 0.75 | 0.78 | 0.82 | 10,610 |
| EPDRE2002-1-005-ATH | ● | | | 1 | | | | | | 10.81 | 1.22 | 1.26 | 1.30 | 1.34 | 1.40 | 10,610 |
| EPDRE2002-1.5-005-ATH | ● | | | 1.5 | | | | | | 10.30 | 1.74 | 1.79 | 1.84 | 1.89 | 2.06 | 10,610 |
| EPDRE2002-2-005-ATH | ● | 2 | 9.84 | 2.25 | 2.32 | 2.38 | 2.46 | 2.73 | 10,610 | | | | | | | |
| EPDRE2003-1-002-ATH | ● | 0.3 | 0.02 | 1 | 0.25 | 0.27 | 50 | 4 | 2 | 10.74 | 1.32 | 1.39 | 1.45 | 1.51 | 1.62 | 10,260 |
| EPDRE2003-2-002-ATH | ● | | | 2 | | | | | | 9.77 | 2.37 | 2.47 | 2.56 | 2.64 | 2.78 | 10,260 |
| EPDRE2003-3-002-ATH | ● | | | 3 | | | | | | 8.95 | 3.42 | 3.54 | 3.65 | 3.74 | 4.06 | 11,370 |
| EPDRE2003-1-005-ATH | ● | | 0.05 | 1 | | | | | | 10.78 | 1.32 | 1.39 | 1.45 | 1.50 | 1.61 | 10,260 |
| EPDRE2003-1.5-005-ATH | ● | | | 1.5 | | | | | | 10.26 | 1.84 | 1.93 | 2.01 | 2.07 | 2.20 | 10,260 |
| EPDRE2003-2-005-ATH | ● | | | 2 | | | | | | 9.79 | 2.37 | 2.47 | 2.56 | 2.64 | 2.77 | 10,260 |
| EPDRE2003-2.5-005-ATH | ● | 2.5 | 9.36 | 2.89 | 3.01 | 3.10 | 3.19 | 3.39 | 11,370 | | | | | | | |
| EPDRE2003-3-005-ATH | ● | 3 | 8.97 | 3.41 | 3.54 | 3.65 | 3.74 | 4.05 | 11,370 | | | | | | | |
| EPDRE2004-1-002-ATH | ● | 0.4 | 0.02 | 1 | 0.3 | 0.37 | 50 | 4 | 2 | 10.71 | 1.32 | 1.39 | 1.45 | 1.51 | 1.62 | 6,840 |
| EPDRE2004-2-002-ATH | ● | | | 2 | | | | | | 9.72 | 2.37 | 2.47 | 2.56 | 2.64 | 2.78 | 6,840 |
| EPDRE2004-3-002-ATH | ● | | | 3 | | | | | | 8.89 | 3.42 | 3.54 | 3.65 | 3.74 | 4.06 | 6,840 |
| EPDRE2004-4-002-ATH | ● | | 4 | 8.19 | | | | | | 4.46 | 4.60 | 4.73 | 4.86 | 5.39 | 6,840 | |
| EPDRE2004-1-005-ATH | ● | | 0.05 | 1 | | | | | | 10.75 | 1.32 | 1.39 | 1.45 | 1.50 | 1.61 | 6,840 |
| EPDRE2004-1.5-005-ATH | ● | | | 1.5 | | | | | | 10.22 | 1.84 | 1.93 | 2.01 | 2.07 | 2.20 | 6,840 |
| EPDRE2004-2-005-ATH | ● | 2 | | 9.74 | 2.37 | 2.47 | 2.56 | 2.64 | 2.77 | 6,840 | | | | | | |
| EPDRE2004-2.5-005-ATH | ● | 2.5 | 9.31 | 2.89 | 3.01 | 3.10 | 3.19 | 3.39 | 6,840 | | | | | | | |
| EPDRE2004-3-005-ATH | ● | 3 | 8.91 | 3.41 | 3.54 | 3.65 | 3.74 | 4.05 | 6,840 | | | | | | | |
| EPDRE2004-3.5-005-ATH | ● | 3.5 | 8.54 | 3.93 | 4.07 | 4.19 | 4.29 | 4.72 | 6,840 | | | | | | | |
| EPDRE2004-4-005-ATH | ● | 4 | 8.21 | 4.45 | 4.60 | 4.72 | 4.86 | 5.38 | 6,840 | | | | | | | |
| EPDRE2004-1-01-ATH | ● | 0.1 | 1 | 10.80 | 1.31 | 1.38 | 1.44 | 1.50 | 1.60 | 6,840 | | | | | | |
| EPDRE2004-2-01-ATH | ● | | 2 | 9.79 | 2.37 | 2.47 | 2.55 | 2.63 | 2.77 | 6,840 | | | | | | |
| EPDRE2004-3-01-ATH | ● | | 3 | 8.95 | 3.41 | 3.54 | 3.64 | 3.74 | 4.04 | 6,840 | | | | | | |
| EPDRE2004-4-01-ATH | ● | | 4 | 8.24 | 4.45 | 4.60 | 4.72 | 4.85 | 5.37 | 6,840 | | | | | | |
| EPDRE2005-1-002-ATH | ● | 0.5 | 0.02 | 1 | 0.35 | 0.47 | 50 | 4 | 2 | 10.68 | 1.32 | 1.39 | 1.45 | 1.51 | 1.62 | 5,550 |
| EPDRE2005-2-002-ATH | ● | | | 2 | | | | | | 9.66 | 2.37 | 2.47 | 2.56 | 2.64 | 2.78 | 5,550 |
| EPDRE2005-3-002-ATH | ● | | | 3 | | | | | | 8.82 | 3.42 | 3.54 | 3.65 | 3.74 | 4.06 | 5,550 |
| EPDRE2005-4-002-ATH | ● | | 4 | 8.11 | | | | | | 4.46 | 4.60 | 4.73 | 4.86 | 5.39 | 5,550 | |
| EPDRE2005-6-002-ATH | ● | | 6 | 6.99 | | | | | | 6.53 | 6.71 | 6.92 | 7.26 | 8.05 | 5,550 | |
| EPDRE2005-1-005-ATH | ● | | 0.05 | 1 | | | | | | 10.71 | 1.32 | 1.39 | 1.45 | 1.50 | 1.61 | 5,550 |
| EPDRE2005-2-005-ATH | ● | 2 | | 9.69 | 2.37 | 2.47 | 2.56 | 2.64 | 2.77 | 5,550 | | | | | | |
| EPDRE2005-3-005-ATH | ● | 3 | | 8.84 | 3.41 | 3.54 | 3.65 | 3.74 | 4.05 | 5,550 | | | | | | |
| EPDRE2005-4-005-ATH | ● | 4 | 8.13 | 4.45 | 4.60 | 4.72 | 4.86 | 5.38 | 5,550 | | | | | | | |
| EPDRE2005-5-005-ATH | ● | 5 | 7.53 | 5.49 | 5.66 | 5.79 | 6.05 | 6.71 | 5,550 | | | | | | | |
| EPDRE2005-6-005-ATH | ● | 6 | 7.00 | 6.53 | 6.71 | 6.91 | 7.25 | 8.04 | 5,550 | | | | | | | |
| EPDRE2005-1-01-ATH | ● | 0.1 | 1 | 10.77 | 1.31 | 1.38 | 1.44 | 1.50 | 1.60 | 5,550 | | | | | | |
| EPDRE2005-2-01-ATH | ● | | 2 | 9.74 | 2.37 | 2.47 | 2.55 | 2.63 | 2.77 | 5,550 | | | | | | |
| EPDRE2005-3-01-ATH | ● | | 3 | 8.88 | 3.41 | 3.54 | 3.64 | 3.74 | 4.04 | 5,550 | | | | | | |
| EPDRE2005-4-01-ATH | ● | | 4 | 8.17 | 4.45 | 4.60 | 4.72 | 4.85 | 5.37 | 5,550 | | | | | | |
| EPDRE2005-5-01-ATH | ● | 5 | 7.55 | 5.49 | 5.66 | 5.79 | 6.04 | 6.69 | 5,550 | | | | | | | |
| EPDRE2005-6-01-ATH | ● | 6 | 7.03 | 6.52 | 6.71 | 6.90 | 7.24 | 8.02 | 5,550 | | | | | | | |

●印：標準在庫品です。
●：Stocked items.



【注意】
 エポックディーブラジスEPDRとは有効首下長が異なります。再度ご確認ください。
 お願いいたします。

【Note】
 The effective under-neck length is different from Epoch Deep Radius EPDR. Please recheck the interference region.



EPDRE2-ATH

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | | 干渉角度 Interference angle (°) θ_K | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売 価格(円) Suggested retail price (¥) | | | | | | | | | | |
|----------------------|-------------|--------------------|---------------------------|-----------------------------|-----------------------|--------------------|-------------------------|------------------------|-----------------|---|---|-------|-------|-------|-------|---|-------|-------|-------|-------|-------|------|------|------|-------|-------|
| | | 外径 Tool dia. | コーナ半径 Corner radius | 首下長 Under neck length | 刃長 Flute length | 首径 Neck dia. | 全長 Overall length | シャンク径 Shank dia. | 首R Neck R | | 0.5° | 1° | 1.5° | 2° | 3° | | | | | | | | | | | |
| | | DC | RE | LU | APMX | DN | LF | DCONMS | | | | | | | | | | | | | | | | | | |
| EPDRE2006-2-002-ATH | ● | 0.6 | 0.02 | 2 | 0.4 | 0.57 | 50 | 4 | 4 | 9.61 | 2.54 | 2.70 | 2.83 | 2.96 | 3.19 | 5,550 | | | | | | | | | | |
| EPDRE2006-4-002-ATH | ● | | | 4 | | | | | | 8.04 | 4.66 | 4.88 | 5.07 | 5.24 | 5.52 | 5,550 | | | | | | | | | | |
| EPDRE2006-6-002-ATH | ● | | | 6 | | | | | | 6.90 | 6.76 | 7.03 | 7.26 | 7.45 | 8.05 | 5,550 | | | | | | | | | | |
| EPDRE2006-2-005-ATH | ● | | | 2 | | | | | | 9.64 | 2.54 | 2.69 | 2.83 | 2.95 | 3.18 | 5,550 | | | | | | | | | | |
| EPDRE2006-4-005-ATH | ● | | | 4 | | | | | | 8.06 | 4.66 | 4.88 | 5.07 | 5.23 | 5.52 | 5,550 | | | | | | | | | | |
| EPDRE2006-6-005-ATH | ● | | | 6 | | | | | | 6.92 | 6.76 | 7.03 | 7.26 | 7.45 | 8.04 | 5,550 | | | | | | | | | | |
| EPDRE2006-8-005-ATH | ● | | 8 | 6.06 | | | | | | 8.85 | 9.16 | 9.41 | 9.64 | 10.69 | 5,550 | | | | | | | | | | | |
| EPDRE2006-10-005-ATH | ● | | 10 | 5.39 | | | | | | 10.93 | 11.28 | 11.55 | 12.04 | 13.35 | 5,550 | | | | | | | | | | | |
| EPDRE2006-2-01-ATH | ● | | 0.1 | 2 | | | | | | 0.45 | 0.67 | 50 | 4 | 4 | 9.68 | 2.53 | 2.69 | 2.82 | 2.95 | 3.17 | 5,550 | | | | | |
| EPDRE2006-4-01-ATH | ● | | | 4 | | | | | | | | | | | 8.09 | 4.65 | 4.88 | 5.06 | 5.23 | 5.51 | 5,550 | | | | | |
| EPDRE2006-6-01-ATH | ● | | | 6 | | | | | | | | | | | 6.94 | 6.76 | 7.03 | 7.25 | 7.44 | 8.02 | 5,550 | | | | | |
| EPDRE2006-8-01-ATH | ● | | | 8 | | | | | | | | | | | 6.08 | 8.85 | 9.16 | 9.41 | 9.63 | 10.67 | 5,550 | | | | | |
| EPDRE2006-10-01-ATH | ● | | | 10 | | | | | | | | | | | 5.41 | 10.92 | 11.27 | 11.55 | 12.03 | 13.33 | 5,550 | | | | | |
| EPDRE2007-2-005-ATH | ● | | | 0.7 | | | | | | | | | | | 2 | 0.5 | 0.77 | 50 | 4 | 4 | 9.58 | 2.54 | 2.69 | 2.83 | 2.95 | 3.18 |
| EPDRE2007-4-005-ATH | ● | 4 | 7.98 | | 4.66 | 4.88 | 5.07 | 5.23 | 5.52 | | | | | | 5,900 | | | | | | | | | | | |
| EPDRE2007-6-005-ATH | ● | 6 | 6.83 | | 6.76 | 7.03 | 7.26 | 7.45 | 8.04 | | | | | | 5,900 | | | | | | | | | | | |
| EPDRE2007-2-01-ATH | ● | 2 | 9.63 | | 2.53 | 2.69 | 2.82 | 2.95 | 3.17 | | | | | | 5,900 | | | | | | | | | | | |
| EPDRE2007-4-01-ATH | ● | 4 | 8.01 | | 4.65 | 4.88 | 5.06 | 5.23 | 5.51 | | | | | | 5,900 | | | | | | | | | | | |
| EPDRE2007-6-01-ATH | ● | 6 | 6.86 | | 6.76 | 7.03 | 7.25 | 7.44 | 8.02 | | | | | | 5,900 | | | | | | | | | | | |
| EPDRE2008-2-002-ATH | ● | 0.8 | 0.02 | 2 | 0.5 | 0.77 | 50 | 4 | 4 | | | | | | 9.49 | | | | | | 2.54 | 2.70 | 2.83 | 2.96 | 3.19 | 6,370 |
| EPDRE2008-4-002-ATH | ● | | | 4 | | | | | | | | | | | 7.87 | | | | | | 4.66 | 4.88 | 5.07 | 5.24 | 5.52 | 6,370 |
| EPDRE2008-6-002-ATH | ● | | | 6 | | | | | | | | | | | 6.73 | | | | | | 6.76 | 7.03 | 7.26 | 7.45 | 8.05 | 6,370 |
| EPDRE2008-2-005-ATH | ● | | | 2 | | | | | | 9.52 | 2.54 | 2.69 | 2.83 | 2.95 | 3.18 | | | | | | 6,370 | | | | | |
| EPDRE2008-4-005-ATH | ● | | | 4 | | | | | | 7.89 | 4.66 | 4.88 | 5.07 | 5.23 | 5.52 | | | | | | 6,370 | | | | | |
| EPDRE2008-6-005-ATH | ● | | | 6 | | | | | | 6.74 | 6.76 | 7.03 | 7.26 | 7.45 | 8.04 | | | | | | 6,370 | | | | | |
| EPDRE2008-8-005-ATH | ● | | 8 | 5.88 | | | | | | 8.85 | 9.16 | 9.41 | 9.64 | 10.69 | 6,370 | | | | | | | | | | | |
| EPDRE2008-12-005-ATH | ● | | 12 | 4.68 | | | | | | 13.00 | 13.38 | 13.75 | 14.43 | 16.00 | 6,370 | | | | | | | | | | | |
| EPDRE2008-2-01-ATH | ● | | 0.1 | 2 | | | | | | 0.5 | 0.77 | 50 | 4 | 4 | 9.57 | 2.53 | 2.69 | 2.82 | 2.95 | 3.17 | 6,370 | | | | | |
| EPDRE2008-4-01-ATH | ● | | | 4 | | | | | | | | | | | 7.93 | 4.65 | 4.88 | 5.06 | 5.23 | 5.51 | 6,370 | | | | | |
| EPDRE2008-6-01-ATH | ● | | | 6 | | | | | | | | | | | 6.77 | 6.76 | 7.03 | 7.25 | 7.44 | 8.02 | 6,370 | | | | | |
| EPDRE2008-8-01-ATH | ● | | | 8 | | | | | | | | | | | 5.90 | 8.85 | 9.16 | 9.41 | 9.63 | 10.67 | 6,370 | | | | | |
| EPDRE2008-12-01-ATH | ● | | | 12 | | | | | | | | | | | 4.70 | 13.00 | 13.38 | 13.75 | 14.42 | 15.98 | 6,370 | | | | | |
| EPDRE2008-2-02-ATH | ● | | | 0.2 | | | | | | | | | | | 2 | 0.5 | 0.77 | 50 | 4 | 4 | 9.67 | 2.53 | 2.68 | 2.81 | 2.93 | 3.15 |
| EPDRE2008-4-02-ATH | ● | 4 | 8.00 | | 4.65 | 4.87 | 5.05 | 5.21 | 5.50 | | | | | | 6,370 | | | | | | | | | | | |
| EPDRE2008-6-02-ATH | ● | 6 | 6.82 | | 6.75 | 7.02 | 7.24 | 7.43 | 7.99 | | | | | | 6,370 | | | | | | | | | | | |
| EPDRE2008-8-02-ATH | ● | 8 | 5.94 | | 8.84 | 9.15 | 9.40 | 9.62 | 10.64 | | | | | | 6,370 | | | | | | | | | | | |
| EPDRE2008-12-02-ATH | ● | 12 | 4.72 | | 12.99 | 13.37 | 13.73 | 14.40 | 15.95 | | | | | | 6,370 | | | | | | | | | | | |
| EPDRE2010-2-002-ATH | ● | 1 | 0.02 | | 2 | 0.8 | 0.94 | 50 | 4 | | | | | | 4 | | | | | | 9.29 | 2.64 | 2.78 | 2.91 | 3.03 | 3.24 |
| EPDRE2010-4-002-ATH | ● | | | 4 | 7.65 | | | | | | | | | | | | | | | | 4.75 | 4.95 | 5.13 | 5.29 | 5.56 | 5,430 |
| EPDRE2010-6-002-ATH | ● | | | 6 | 6.50 | | | | | | | | | | | | | | | | 6.84 | 7.09 | 7.31 | 7.49 | 8.14 | 5,900 |
| EPDRE2010-8-002-ATH | ● | | | 8 | 5.65 | | | | | | | | | | | | | | | | 8.92 | 9.21 | 9.46 | 9.73 | 10.79 | 5,900 |
| EPDRE2010-10-002-ATH | ● | | | 10 | 5.00 | | | | | 10.99 | 11.32 | 11.59 | 12.13 | 13.45 | | | | | | | 5,900 | | | | | |
| EPDRE2010-12-002-ATH | ● | | | 12 | 4.48 | | | | | 13.06 | 13.42 | 13.84 | 14.52 | 16.10 | | | | | | | 5,900 | | | | | |
| EPDRE2010-2-005-ATH | ● | | 0.05 | 2 | 0.8 | | | | | 0.94 | 50 | 4 | 4 | 9.32 | | | | | | | 2.64 | 2.78 | 2.91 | 3.02 | 3.24 | 5,430 |
| EPDRE2010-3-005-ATH | ● | | | 3 | | | | | | | | | | 8.41 | | | | | | | 3.70 | 3.87 | 4.02 | 4.16 | 4.41 | 5,430 |
| EPDRE2010-4-005-ATH | ● | | | 4 | | | | | | | | | | 7.67 | | | | | | | 4.75 | 4.95 | 5.13 | 5.28 | 5.56 | 5,430 |
| EPDRE2010-5-005-ATH | ● | | | 5 | | | | | | | | | | 7.04 | | 5.79 | 6.02 | 6.22 | 6.39 | 6.80 | 5,430 | | | | | |
| EPDRE2010-6-005-ATH | ● | | | 6 | | | | | | | | | | 6.51 | | 6.84 | 7.09 | 7.30 | 7.49 | 8.13 | 5,900 | | | | | |
| EPDRE2010-8-005-ATH | ● | | | 8 | | | | | | | | | | 5.66 | | 8.92 | 9.21 | 9.46 | 9.73 | 10.78 | 5,900 | | | | | |
| EPDRE2010-10-005-ATH | ● | | 10 | 5.00 | | | | | | | | | | 10.99 | | 11.32 | 11.59 | 12.12 | 13.44 | 5,900 | | | | | | |
| EPDRE2010-12-005-ATH | ● | | 12 | 4.48 | | | | | | | | | | 13.06 | | 13.42 | 13.84 | 14.51 | 16.09 | 5,900 | | | | | | |
| EPDRE2010-16-005-ATH | ● | 16 | 3.71 | 17.18 | | 17.60 | 18.40 | 19.30 | 21.40 | | | | | 7,790 | | | | | | | | | | | | |
| EPDRE2010-20-005-ATH | ● | 20 | 3.17 | 21.29 | | 21.93 | 22.96 | 24.09 | 26.71 | | | | | 8,610 | | | | | | | | | | | | |

特長

寸法
Dimensions

高能率切削条件
High efficiency cutting condition

高精度切削条件
High accuracy cutting condition

技術データ
Technical Data

ラインナップ

Line Up



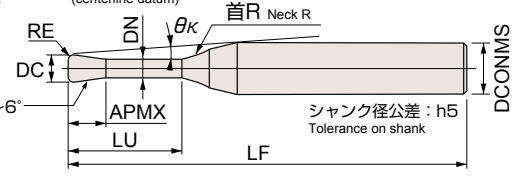
ラジアス Radius



コーナ半径RE公差：±0.005mm (中心基準)
Tolerance on corner radius RE (centerline datum)

ねじれ角：30°
Helix Angle

外周バックテーパ：1.5~6°
Back taper on peripheral edge



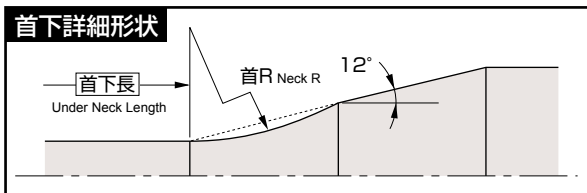
EPDRE2-ATH

外径φ4以上はバックドラフト形状ではありません。
φ 4 or higher does not have backdraft shape.

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | 首R Neck R | 干渉角度 Interference angle (°) | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売価格(円) Suggested retail price (¥) |
|----------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|-------------------------------|--------------|--------------------------------|--|-------|-------|-------|-------|---|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャンク径 Shank dia. DCONMS | | | 0.5° | 1° | 1.5° | 2° | 3° | |
| | | | | | | | | | | | | | | | | |
| EPDRE2010-2-01-ATH | ● | 1 | 0.1 | 2 | 0.8 | 0.94 | 50 | 4 | 4 | 9.37 | 2.64 | 2.78 | 2.90 | 3.01 | 3.23 | 5,430 |
| EPDRE2010-3-01-ATH | ● | | | 3 | | | | | | 8.45 | 3.69 | 3.87 | 4.02 | 4.15 | 4.40 | 5,430 |
| EPDRE2010-4-01-ATH | ● | | | 4 | | | | | | 7.70 | 4.74 | 4.95 | 5.12 | 5.28 | 5.55 | 5,430 |
| EPDRE2010-5-01-ATH | ● | | | 5 | | | | | | 7.07 | 5.79 | 6.02 | 6.21 | 6.39 | 6.79 | 5,430 |
| EPDRE2010-6-01-ATH | ● | | | 6 | | | | | | 6.54 | 6.83 | 7.09 | 7.30 | 7.49 | 8.11 | 5,900 |
| EPDRE2010-8-01-ATH | ● | | | 8 | | | | | | 5.68 | 8.91 | 9.21 | 9.45 | 9.72 | 10.77 | 5,900 |
| EPDRE2010-10-01-ATH | ● | | | 10 | | | | | | 5.02 | 10.99 | 11.32 | 11.59 | 12.11 | 13.42 | 5,900 |
| EPDRE2010-12-01-ATH | ● | | | 12 | | | | | | 4.50 | 13.06 | 13.42 | 13.83 | 14.50 | 16.08 | 5,900 |
| EPDRE2010-16-01-ATH | ● | | | 16 | | | | | | 3.72 | 17.18 | 17.60 | 18.39 | 19.29 | 21.39 | 7,790 |
| EPDRE2010-20-01-ATH | ● | | | 20 | | | | | | 3.17 | 21.29 | 21.93 | 22.95 | 24.08 | 26.70 | 8,610 |
| EPDRE2010-2-02-ATH | ● | | 0.2 | 0.8 | 0.94 | 50 | 4 | 4 | 9.47 | 2.63 | 2.77 | 2.89 | 3.00 | 3.21 | 5,430 | |
| EPDRE2010-3-02-ATH | ● | | | | | | | | 3 | 8.54 | 3.69 | 3.86 | 4.01 | 4.14 | 4.39 | 5,430 |
| EPDRE2010-4-02-ATH | ● | | | | | | | | 4 | 7.77 | 4.74 | 4.94 | 5.11 | 5.27 | 5.54 | 5,430 |
| EPDRE2010-5-02-ATH | ● | | | | | | | | 5 | 7.13 | 5.79 | 6.01 | 6.21 | 6.38 | 6.75 | 5,430 |
| EPDRE2010-6-02-ATH | ● | | | | | | | | 6 | 6.59 | 6.83 | 7.08 | 7.29 | 7.48 | 8.08 | 5,900 |
| EPDRE2010-8-02-ATH | ● | | | | | | | | 8 | 5.72 | 8.91 | 9.20 | 9.45 | 9.70 | 10.74 | 5,900 |
| EPDRE2010-10-02-ATH | ● | | | | | | | | 10 | 5.05 | 10.98 | 11.32 | 11.58 | 12.09 | 13.39 | 5,900 |
| EPDRE2010-12-02-ATH | ● | | | | | | | | 12 | 4.52 | 13.05 | 13.42 | 13.81 | 14.48 | 16.05 | 5,900 |
| EPDRE2010-16-02-ATH | ● | | | | | | | | 16 | 3.74 | 17.18 | 17.59 | 18.38 | 19.27 | 21.35 | 7,790 |
| EPDRE2010-20-02-ATH | ● | | | | | | | | 20 | 3.19 | 21.29 | 21.92 | 22.94 | 24.06 | 26.66 | 8,610 |
| EPDRE2010-2-03-ATH | ● | 0.3 | 0.8 | 0.94 | 50 | 4 | 4 | 9.57 | 2.63 | 2.76 | 2.87 | 2.98 | 3.19 | 5,430 | | |
| EPDRE2010-3-03-ATH | ● | | | | | | | 3 | 8.62 | 3.68 | 3.85 | 3.99 | 4.13 | 4.37 | 5,430 | |
| EPDRE2010-4-03-ATH | ● | | | | | | | 4 | 7.84 | 4.73 | 4.93 | 5.10 | 5.25 | 5.53 | 5,430 | |
| EPDRE2010-5-03-ATH | ● | | | | | | | 5 | 7.19 | 5.78 | 6.01 | 6.20 | 6.37 | 6.72 | 5,430 | |
| EPDRE2010-6-03-ATH | ● | | | | | | | 6 | 6.64 | 6.82 | 7.07 | 7.28 | 7.47 | 8.05 | 5,900 | |
| EPDRE2010-8-03-ATH | ● | | | | | | | 8 | 5.75 | 8.91 | 9.20 | 9.44 | 9.68 | 10.70 | 5,900 | |
| EPDRE2010-10-03-ATH | ● | | | | | | | 10 | 5.08 | 10.98 | 11.31 | 11.58 | 12.07 | 13.36 | 5,900 | |
| EPDRE2010-12-03-ATH | ● | | | | | | | 12 | 4.54 | 13.05 | 13.41 | 13.80 | 14.46 | 16.01 | 5,900 | |
| EPDRE2010-16-03-ATH | ● | | | | | | | 16 | 3.75 | 17.17 | 17.59 | 18.36 | 19.25 | 21.32 | 7,790 | |
| EPDRE2010-20-03-ATH | ● | | | | | | | 20 | 3.20 | 21.28 | 21.91 | 22.92 | 24.04 | 26.63 | 8,610 | |
| EPDRE20125-5-01-ATH | ● | 1.25 | 0.1 | 5 | 1.15 | 1.18 | 50 | 4 | 4 | 6.80 | 5.81 | 6.04 | 6.23 | 6.40 | 6.82 | 6,020 |
| EPDRE20125-10-01-ATH | ● | | | 10 | | | | | | 4.76 | 11.01 | 11.34 | 11.60 | 12.14 | 13.45 | 6,020 |
| EPDRE20125-15-01-ATH | ● | | | 15 | | | | | | 3.66 | 16.17 | 16.57 | 17.28 | 18.12 | 20.09 | 6,020 |
| EPDRE20125-20-01-ATH | ● | | | 20 | | | | | | 2.97 | 21.30 | 21.95 | 22.98 | 24.10 | 干渉なし | 9,200 |
| EPDRE20125-5-02-ATH | ● | | | 5 | | | | | | 6.86 | 5.81 | 6.03 | 6.22 | 6.39 | 6.79 | 6,020 |
| EPDRE20125-10-02-ATH | ● | | 10 | 4.79 | 11.00 | 11.33 | 11.59 | 12.12 | 13.42 | 6,020 | | | | | | |
| EPDRE20125-15-02-ATH | ● | | 15 | 3.68 | 16.16 | 16.56 | 17.26 | 18.10 | 20.06 | 6,020 | | | | | | |
| EPDRE20125-20-02-ATH | ● | | 20 | 2.98 | 21.30 | 21.95 | 22.97 | 24.09 | 干渉なし | 9,200 | | | | | | |
| EPDRE20125-5-03-ATH | ● | | 0.3 | 1.15 | 1.18 | 50 | 4 | 4 | 6.92 | 5.81 | 6.03 | 6.21 | 6.38 | 6.75 | 6,020 | |
| EPDRE20125-10-03-ATH | ● | | | | | | | | 10 | 4.82 | 11.00 | 11.32 | 11.59 | 12.10 | 13.39 | 6,020 |
| EPDRE20125-15-03-ATH | ● | 15 | | | | | | | 3.69 | 16.16 | 16.56 | 17.25 | 18.08 | 20.03 | 6,020 | |
| EPDRE20125-20-03-ATH | ● | 20 | | | | | | | 2.99 | 21.30 | 21.94 | 22.95 | 24.07 | 干渉なし | 9,200 | |
| EPDRE2015-4-01-ATH | ● | 1.5 | | | | | | | 0.1 | 1.35 | 1.42 | 50 | 4 | 4 | 7.15 | 4.80 |
| EPDRE2015-6-01-ATH | ● | | 6 | 5.97 | 6.88 | 7.12 | 7.33 | 7.51 | | | | | | | 8.18 | 5,780 |
| EPDRE2015-8-01-ATH | ● | | 8 | 5.12 | 8.96 | 9.24 | 9.48 | 9.77 | | | | | | | 10.83 | 6,020 |
| EPDRE2015-12-01-ATH | ● | | 12 | 3.98 | 13.09 | 13.45 | 13.88 | 14.56 | | | | | | | 16.14 | 6,020 |
| EPDRE2015-15-01-ATH | ● | | 15 | 3.42 | 16.18 | 16.58 | 17.30 | 18.15 | | | | | | | 20.12 | 6,020 |
| EPDRE2015-20-01-ATH | ● | | 20 | 2.76 | 21.32 | 21.98 | 23.01 | 24.13 | | | | | | | 干渉なし | 6,020 |

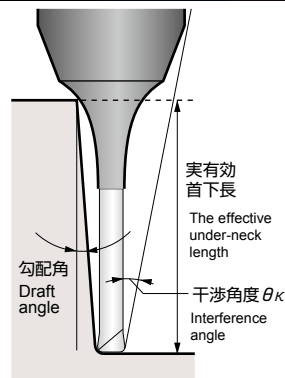
●印：標準在庫品です。
●：Stocked items.

干渉なし：No interference



【注意】
エポックディープラジスEPDRとは有効首下長が異なります。再度ご確認ください。

【Note】
The effective under-neck length is different from Epoch Deep Radius EPDR. Please recheck the interference region.



EPDRE2-ATH

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | 首R Neck R | 干渉角度 Interference angle (°) | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売 価格(円) Suggested retail price (¥) | | | | | | |
|----------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|-------------------------------|--------------|-----------------------------------|--|-------|-------|-------|-------|--|-------|-------|-------|-------|-------|-------|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャンク径 Shank dia. DCONMS | | | 勾配角 | | | | | | | | | | | |
| | | | | | | | | | | | 0.5° | 1° | 1.5° | 2° | 3° | | | | | | | |
| EPDRE2015-4-02-ATH | ● | 1.5 | 0.2 | 4 | 1.35 | 1.42 | 50 | 4 | 4 | 7.22 | 4.79 | 4.98 | 5.15 | 5.30 | 5.57 | 5,780 | | | | | | |
| EPDRE2015-6-02-ATH | ● | | | 6 | | | | | | 6.02 | 6.88 | 7.12 | 7.32 | 7.50 | 8.14 | 5,780 | | | | | | |
| EPDRE2015-8-02-ATH | ● | | | 8 | | | | | | 5.16 | 8.95 | 9.24 | 9.47 | 9.75 | 10.80 | 6,020 | | | | | | |
| EPDRE2015-12-02-ATH | ● | | | 12 | | | | | | 4.01 | 13.09 | 13.44 | 13.87 | 14.54 | 16.11 | 6,020 | | | | | | |
| EPDRE2015-15-02-ATH | ● | | | 15 | | | | | | 3.43 | 16.18 | 16.58 | 17.29 | 18.13 | 20.09 | 6,020 | | | | | | |
| EPDRE2015-20-02-ATH | ● | | | 20 | | | | | | 2.77 | 21.32 | 21.97 | 22.99 | 24.11 | 干涉なし | 6,020 | | | | | | |
| EPDRE2015-4-03-ATH | ● | | | 0.3 | | | | | | 4 | 1.35 | 1.42 | 55 | 4 | 4 | 7.30 | 4.79 | 4.97 | 5.14 | 5.29 | 5.55 | 5,780 |
| EPDRE2015-6-03-ATH | ● | | | | | | | | | 6 | | | | | | 6.07 | 6.87 | 7.11 | 7.31 | 7.49 | 8.11 | 5,780 |
| EPDRE2015-8-03-ATH | ● | | | | | | | | | 8 | | | | | | 5.19 | 8.95 | 9.23 | 9.47 | 9.73 | 10.77 | 6,020 |
| EPDRE2015-12-03-ATH | ● | | | | | | | | | 12 | | | | | | 4.03 | 13.09 | 13.44 | 13.85 | 14.52 | 16.08 | 6,020 |
| EPDRE2015-15-03-ATH | ● | | 15 | | 3.45 | 16.18 | 16.57 | 17.28 | 18.11 | 20.06 | | | | | | 6,020 | | | | | | |
| EPDRE2015-20-03-ATH | ● | | 20 | | 2.78 | 21.31 | 21.96 | 22.98 | 24.09 | 干涉なし | | | | | | 6,020 | | | | | | |
| EPDRE2015-4-05-ATH | ● | | 0.5 | | 4 | 1.35 | 1.42 | 50 | 4 | 4 | | | | | | 7.45 | 4.78 | 4.96 | 5.12 | 5.26 | 5.53 | 5,780 |
| EPDRE2015-6-05-ATH | ● | | | | 6 | | | | | | | | | | | 6.17 | 6.86 | 7.10 | 7.30 | 7.48 | 8.05 | 5,780 |
| EPDRE2015-8-05-ATH | ● | | | | 8 | | | | | | | | | | | 5.27 | 8.94 | 9.22 | 9.45 | 9.70 | 10.70 | 6,020 |
| EPDRE2015-12-05-ATH | ● | | | | 12 | | | | | | | | | | | 4.07 | 13.08 | 13.43 | 13.83 | 14.48 | 16.01 | 6,020 |
| EPDRE2015-15-05-ATH | ● | | | 15 | 3.48 | | | | | | 16.17 | 16.56 | 17.25 | 18.07 | 19.99 | 6,020 | | | | | | |
| EPDRE2015-20-05-ATH | ● | | | 20 | 2.80 | | | | | | 21.31 | 21.95 | 22.95 | 24.06 | 干涉なし | 6,020 | | | | | | |
| EPDRE20175-5-01-ATH | ● | | 1.75 | 0.1 | 5 | 1.55 | 1.67 | 50 | 4 | 4 | 6.19 | 5.84 | 6.06 | 6.25 | 6.42 | 6.85 | 5,780 | | | | | |
| EPDRE20175-10-01-ATH | ● | | | | 10 | | | | | | 4.19 | 11.03 | 11.35 | 11.61 | 12.17 | 13.49 | 6,020 | | | | | |
| EPDRE20175-15-01-ATH | ● | 15 | | | 3.16 | | | | | | 16.18 | 16.58 | 17.30 | 18.15 | 20.12 | 6,020 | | | | | | |
| EPDRE20175-20-01-ATH | ● | 20 | | | 2.54 | | | | | | 21.32 | 21.98 | 23.01 | 24.13 | 干涉なし | 6,020 | | | | | | |
| EPDRE20175-5-02-ATH | ● | 5 | | | 6.25 | | | | | | 5.84 | 6.05 | 6.24 | 6.41 | 6.82 | 5,780 | | | | | | |
| EPDRE20175-10-02-ATH | ● | 10 | | | 4.22 | | | | | | 11.02 | 11.34 | 11.61 | 12.15 | 13.45 | 6,020 | | | | | | |
| EPDRE20175-15-02-ATH | ● | 15 | | 3.18 | 16.18 | 16.58 | 17.29 | 18.13 | 20.09 | 6,020 | | | | | | | | | | | | |
| EPDRE20175-20-02-ATH | ● | 20 | | 2.55 | 21.32 | 21.97 | 22.99 | 24.11 | 干涉なし | 6,020 | | | | | | | | | | | | |
| EPDRE20175-5-03-ATH | ● | 0.3 | | 5 | 1.55 | 1.67 | 50 | 4 | 4 | 6.31 | 5.83 | 6.05 | 6.23 | 6.40 | 6.79 | 5,780 | | | | | | |
| EPDRE20175-10-03-ATH | ● | | | 10 | | | | | | 4.24 | 11.02 | 11.34 | 11.60 | 12.13 | 13.42 | 6,020 | | | | | | |
| EPDRE20175-15-03-ATH | ● | | | 15 | | | | | | 3.20 | 16.18 | 16.57 | 17.28 | 18.11 | 20.06 | 6,020 | | | | | | |
| EPDRE20175-20-03-ATH | ● | | | 20 | | | | | | 2.56 | 21.31 | 21.96 | 22.98 | 24.09 | 干涉なし | 6,020 | | | | | | |
| EPDRE2020-4-01-ATH | ● | | 2 | 0.1 | | | | | | 4 | 1.7 | 1.92 | 50 | 4 | 4 | 6.49 | 4.80 | 4.99 | 5.16 | 5.31 | 5.58 | 5,780 |
| EPDRE2020-6-01-ATH | ● | | | | | | | | | 6 | | | | | | 5.30 | 6.88 | 7.12 | 7.33 | 7.51 | 8.18 | 5,780 |
| EPDRE2020-8-01-ATH | ● | 8 | | | 4.47 | 8.96 | 9.24 | 9.48 | 9.77 | 10.83 | | | | | | 6,020 | | | | | | |
| EPDRE2020-12-01-ATH | ● | 12 | | | 3.41 | 13.09 | 13.45 | 13.88 | 14.56 | 16.14 | | | | | | 6,020 | | | | | | |
| EPDRE2020-16-01-ATH | ● | 16 | | | 2.76 | 17.21 | 17.62 | 18.44 | 19.35 | 干涉なし | | | | | | 6,020 | | | | | | |
| EPDRE2020-20-01-ATH | ● | 20 | | | 2.31 | 21.32 | 21.98 | 23.01 | 24.13 | 干涉なし | | | | | | 6,020 | | | | | | |
| EPDRE2020-25-01-ATH | ● | 25 | | | 1.93 | 26.44 | 27.43 | 28.71 | 干涉なし | 6,020 | | | | | | | | | | | | |
| EPDRE2020-30-01-ATH | ● | 30 | | | 1.65 | 31.55 | 32.88 | 34.41 | 干涉なし | 6,020 | | | | | | | | | | | | |
| EPDRE2020-4-02-ATH | ● | 0.2 | | | 4 | 1.7 | 1.92 | 50 | 4 | 4 | | | | | | 6.57 | 4.79 | 4.98 | 5.15 | 5.30 | 5.57 | 5,780 |
| EPDRE2020-6-02-ATH | ● | | | 6 | 5.35 | | | | | | 6.88 | 7.12 | 7.32 | 7.50 | 8.14 | 5,780 | | | | | | |
| EPDRE2020-8-02-ATH | ● | | | 8 | 4.51 | | | | | | 8.95 | 9.24 | 9.47 | 9.75 | 10.80 | 6,020 | | | | | | |
| EPDRE2020-12-02-ATH | ● | | | 12 | 3.43 | | | | | | 13.09 | 13.44 | 13.87 | 14.54 | 16.11 | 6,020 | | | | | | |
| EPDRE2020-16-02-ATH | ● | | | 16 | 2.77 | | | | | | 17.21 | 17.62 | 18.43 | 19.33 | 干涉なし | 6,020 | | | | | | |
| EPDRE2020-20-02-ATH | ● | | | 20 | 2.32 | | | | | | 21.32 | 21.97 | 22.99 | 24.11 | 干涉なし | 6,020 | | | | | | |
| EPDRE2020-25-02-ATH | ● | | | 25 | 1.93 | | | | | | 26.44 | 27.42 | 28.69 | 干涉なし | 6,020 | | | | | | | |
| EPDRE2020-30-02-ATH | ● | | | 30 | 1.66 | | | | | | 31.55 | 32.87 | 34.40 | 干涉なし | 6,020 | | | | | | | |

特長

寸法

高精度切削条件

高精度切削条件

技術データ

ラインナップ

Line Up



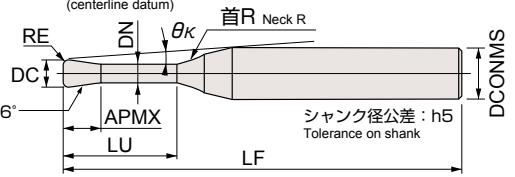
ラジアス Radius



コーナ半径RE公差：±0.005mm (中心基準)
Tolerance on corner radius RE (centerline datum)

ねじれ角：30°
Helix Angle

外周バックテーパ：1.5~6°
Back taper on peripheral edge



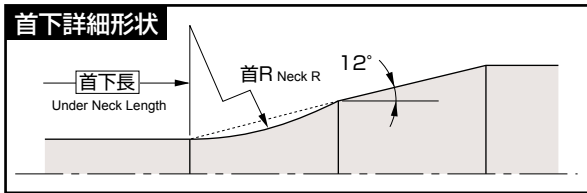
EPDRE2-ATH

外径φ4以上はバックドラフト形状ではありません。
φ 4 or higher does not have backdraft shape.

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | 首R Neck R | 干渉角度 Interference angle (°) | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売 価格(円) Suggested retail price (¥) | | | | | | | |
|---------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|-------------------------------|--------------|--------------------------------|--|-------|-------|-------|-------|---|----------------|-------|-------|-------|-------|-------|-------|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャフト径 Shank dia. DCONMS | | | 0.5° | 1° | 1.5° | 2° | 3° | | | | | | | | |
| | | | | | | | | | | | | | | | | | θ _K | | | | | | |
| EPDRE2020-4-03-ATH | ● | 2 | 0.3 | 4 | 1.7 | 1.92 | 50 | 4 | 4 | 6.64 | 4.79 | 4.97 | 5.14 | 5.29 | 5.55 | 5,780 | | | | | | | |
| EPDRE2020-6-03-ATH | ● | | | 6 | | | | | | 5.40 | 6.87 | 7.11 | 7.31 | 7.49 | 8.11 | 5,780 | | | | | | | |
| EPDRE2020-8-03-ATH | ● | | | 8 | | | | | | 4.55 | 8.95 | 9.23 | 9.47 | 9.73 | 10.77 | 6,020 | | | | | | | |
| EPDRE2020-12-03-ATH | ● | | | 12 | | | | | | 3.45 | 13.09 | 13.44 | 13.85 | 14.52 | 16.08 | 6,020 | | | | | | | |
| EPDRE2020-16-03-ATH | ● | | | 16 | | | | | | 2.79 | 17.21 | 17.61 | 18.42 | 19.31 | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-20-03-ATH | ● | | | 20 | | | | | | 2.33 | 21.31 | 21.96 | 22.98 | 24.09 | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-25-03-ATH | ● | | | 25 | | | | | | 1.94 | 26.43 | 27.41 | 28.68 | 干渉なし | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-30-03-ATH | ● | | | 30 | | | | | | 1.66 | 31.55 | 32.86 | 34.38 | 干渉なし | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-6-05-ATH | ● | | | 6 | | | | | | 0.5 | 6 | 1.7 | 1.92 | 50 | 4 | 4 | 5.50 | 6.86 | 7.10 | 7.30 | 7.48 | 8.05 | 5,780 |
| EPDRE2020-8-05-ATH | ● | | | 8 | | | | | | | 4.62 | | | | | | 8.94 | 9.22 | 9.45 | 9.70 | 10.70 | 6,020 | |
| EPDRE2020-12-05-ATH | ● | | 12 | 3.50 | 13.08 | 13.43 | 13.83 | 14.48 | 16.01 | | 6,020 | | | | | | | | | | | | |
| EPDRE2020-16-05-ATH | ● | | 16 | 2.81 | 17.20 | 17.61 | 18.39 | 19.27 | 干渉なし | | 6,020 | | | | | | | | | | | | |
| EPDRE2020-20-05-ATH | ● | | 20 | 2.35 | 21.31 | 21.95 | 22.95 | 24.06 | 干渉なし | | 6,020 | | | | | | | | | | | | |
| EPDRE2020-25-05-ATH | ● | | 25 | 1.95 | 26.43 | 27.39 | 28.65 | 干渉なし | 干渉なし | | 6,020 | | | | | | | | | | | | |
| EPDRE2020-30-05-ATH | ● | | 30 | 1.67 | 31.54 | 32.84 | 34.36 | 干渉なし | 干渉なし | | 6,020 | | | | | | | | | | | | |
| EPDRE2020-6-08-ATH | ● | | 6 | 0.8 | 6 | 1.7 | 1.92 | 50 | 4 | | 4 | | | | | | 5.66 | 6.85 | 7.08 | 7.27 | 7.45 | 7.95 | 5,780 |
| EPDRE2020-8-08-ATH | ● | | 8 | | 4.73 | | | | | | | | | | | | 8.93 | 9.20 | 9.43 | 9.64 | 10.61 | 6,020 | |
| EPDRE2020-12-08-ATH | ● | | 12 | | 3.56 | | | | | | | | | | | | 13.07 | 13.41 | 13.78 | 14.42 | 15.92 | 6,020 | |
| EPDRE2020-16-08-ATH | ● | | 16 | | 2.85 | | | | | 17.19 | | 17.59 | 18.35 | 19.21 | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-20-08-ATH | ● | | 20 | | 2.38 | | | | | 21.30 | | 21.92 | 22.91 | 24.00 | 干渉なし | 6,020 | | | | | | | |
| EPDRE2020-25-08-ATH | ● | 25 | 1.97 | | 26.42 | | | | | 27.37 | | 28.61 | 干渉なし | 干渉なし | 6,020 | | | | | | | | |
| EPDRE2020-30-08-ATH | ● | 30 | 1.69 | | 31.53 | | | | | 32.81 | | 34.31 | 干渉なし | 干渉なし | 6,020 | | | | | | | | |
| EPDRE2025-10-01-ATH | ● | 10 | 2.5 | | 10 | | | | | 2 | | 2.39 | 50 | 4 | 4 | 3.14 | 11.08 | 11.39 | 11.68 | 12.25 | 13.58 | 6,370 | |
| EPDRE2025-20-01-ATH | ● | 20 | | | 1.82 | | | | | | | | | | | 21.36 | 22.06 | 23.09 | 干渉なし | 干渉なし | 6,490 | | |
| EPDRE2025-30-01-ATH | ● | 30 | | | 1.28 | | | | | | | | | | | 31.59 | 32.95 | 干渉なし | 干渉なし | 干渉なし | 6,720 | | |
| EPDRE2025-10-02-ATH | ● | 10 | | 3.16 | 11.08 | 11.39 | 11.67 | 12.23 | 13.55 | | 6,370 | | | | | | | | | | | | |
| EPDRE2025-20-02-ATH | ● | 20 | | 1.83 | 21.36 | 22.05 | 23.07 | 干渉なし | 干渉なし | | 6,490 | | | | | | | | | | | | |
| EPDRE2025-30-02-ATH | ● | 30 | | 1.28 | 31.58 | 32.94 | 干渉なし | 干渉なし | 干渉なし | | 6,720 | | | | | | | | | | | | |
| EPDRE2025-10-03-ATH | ● | 10 | | 3.19 | 11.08 | 11.38 | 11.65 | 12.21 | 13.52 | | 6,370 | | | | | | | | | | | | |
| EPDRE2025-20-03-ATH | ● | 20 | | 1.83 | 21.36 | 22.04 | 23.06 | 干渉なし | 干渉なし | | 6,490 | | | | | | | | | | | | |
| EPDRE2025-30-03-ATH | ● | 30 | | 1.29 | 31.58 | 32.93 | 干渉なし | 干渉なし | 干渉なし | | 6,720 | | | | | | | | | | | | |
| EPDRE2025-10-05-ATH | ● | 10 | | 3.24 | 11.07 | 11.37 | 11.63 | 12.17 | 13.45 | | 6,370 | | | | | | | | | | | | |
| EPDRE2025-20-05-ATH | ● | 20 | 1.85 | 21.35 | 22.02 | 23.03 | 干渉なし | 干渉なし | 6,490 | | | | | | | | | | | | | | |
| EPDRE2025-30-05-ATH | ● | 30 | 1.30 | 31.58 | 32.92 | 干渉なし | 干渉なし | 干渉なし | 6,720 | | | | | | | | | | | | | | |
| EPDRE2030-6-01-ATH | ● | 3 | 0.1 | 6 | 2.5 | 2.86 | 50 | 6 | 4 | 6.45 | 7.01 | 7.23 | 7.42 | 7.59 | 8.36 | 9,220 | | | | | | | |
| EPDRE2030-8-01-ATH | ● | | | 8 | | | | | | 5.61 | 9.07 | 9.34 | 9.56 | 9.94 | 11.02 | 9,220 | | | | | | | |
| EPDRE2030-12-01-ATH | ● | | | 12 | | | | | | 4.45 | 13.20 | 13.53 | 14.04 | 14.73 | 16.33 | 9,220 | | | | | | | |
| EPDRE2030-16-01-ATH | ● | | | 16 | | | | | | 3.69 | 17.30 | 17.78 | 18.60 | 19.52 | 21.64 | 9,430 | | | | | | | |
| EPDRE2030-18-01-ATH | ● | | | 18 | | | | | | 3.40 | 19.35 | 19.96 | 20.89 | 21.91 | 24.29 | 9,430 | | | | | | | |
| EPDRE2030-20-01-ATH | ● | | | 20 | | | | | | 3.15 | 21.40 | 22.13 | 23.17 | 24.30 | 26.95 | 9,760 | | | | | | | |
| EPDRE2030-30-01-ATH | ● | | | 30 | | | | | | 2.31 | 31.62 | 33.03 | 34.57 | 36.27 | 干渉なし | 10,180 | | | | | | | |
| EPDRE2030-35-01-ATH | ● | | | 35 | | | | | | 2.04 | 36.83 | 38.48 | 40.27 | 42.25 | 干渉なし | 10,180 | | | | | | | |
| EPDRE2030-6-02-ATH | ● | | | 6 | | | | | | 6.49 | 7.00 | 7.22 | 7.41 | 7.58 | 8.33 | 9,220 | | | | | | | |
| EPDRE2030-8-02-ATH | ● | | | 8 | | | | | | 5.65 | 9.07 | 9.33 | 9.55 | 9.92 | 10.99 | 9,220 | | | | | | | |
| EPDRE2030-12-02-ATH | ● | | 12 | 4.48 | 13.19 | 13.52 | 14.03 | 14.71 | 16.30 | 9,220 | | | | | | | | | | | | | |
| EPDRE2030-16-02-ATH | ● | | 16 | 3.71 | 17.30 | 17.77 | 18.59 | 19.50 | 21.60 | 9,430 | | | | | | | | | | | | | |
| EPDRE2030-18-02-ATH | ● | | 18 | 3.41 | 19.35 | 19.95 | 20.87 | 21.89 | 24.26 | 9,430 | | | | | | | | | | | | | |
| EPDRE2030-20-02-ATH | ● | | 20 | 3.16 | 21.40 | 22.13 | 23.15 | 24.28 | 26.91 | 9,760 | | | | | | | | | | | | | |
| EPDRE2030-30-02-ATH | ● | | 30 | 2.31 | 31.62 | 33.02 | 34.56 | 36.25 | 干渉なし | 10,180 | | | | | | | | | | | | | |
| EPDRE2030-35-02-ATH | ● | | 35 | 2.04 | 36.83 | 38.47 | 40.26 | 42.23 | 干渉なし | 10,180 | | | | | | | | | | | | | |

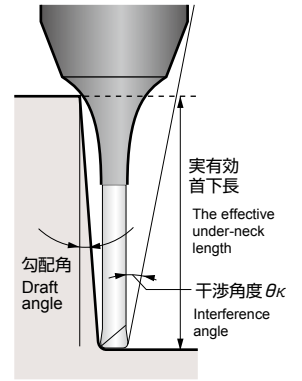
●印：標準在庫品です。
●：Stocked items.

干渉なし：No interference



【注意】
 エポックディープラジスEPDRとは有効首下長が異なります。再度ご確認ください。

【Note】
 The effective under-neck length is different from Epoch Deep Radius EPDR. Please recheck the interference region.



EPDRE2○○○○○-○○○-○○○-ATH

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | 首R Neck R | 干渉角度 Interference angle (°) | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売 価格(円) Suggested retail price (¥) |
|---------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|------------------------------|--------------|--------------------------------|--|-------|-------|-------|--------|---|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャン径 Shank dia. DCONMS | | | 勾配角 | | | | | |
| | | | | | | | | | | | 0.5° | 1° | 1.5° | 2° | 3° | |
| EPDRE2030-6-03-ATH | ● | 3 | 0.3 | 6 | 2.5 | 2.86 | 6 | 4 | 6.54 | 7.00 | 7.22 | 7.40 | 7.57 | 8.30 | 9,220 | |
| EPDRE2030-8-03-ATH | ● | | | 8 | | | | | 5.68 | 9.07 | 9.33 | 9.54 | 9.90 | 10.95 | 9,220 | |
| EPDRE2030-12-03-ATH | ● | | | 12 | | | | | 4.50 | 13.19 | 13.52 | 14.02 | 14.69 | 16.26 | 9,220 | |
| EPDRE2030-16-03-ATH | ● | | | 16 | | | | | 3.72 | 17.30 | 17.76 | 18.58 | 19.48 | 21.57 | 9,430 | |
| EPDRE2030-18-03-ATH | ● | | | 18 | | | | | 3.43 | 19.35 | 19.94 | 20.86 | 21.87 | 24.23 | 9,430 | |
| EPDRE2030-20-03-ATH | ● | | | 20 | | | | | 3.17 | 21.40 | 22.12 | 23.14 | 24.26 | 26.88 | 9,760 | |
| EPDRE2030-30-03-ATH | ● | | | 30 | | | | | 2.32 | 31.62 | 33.01 | 34.54 | 36.23 | 干涉なし | 10,180 | |
| EPDRE2030-35-03-ATH | ● | | | 35 | | | | | 2.05 | 36.82 | 38.46 | 40.25 | 42.21 | 干涉なし | 10,180 | |
| EPDRE2030-8-05-ATH | ● | | | 0.5 | | | | | 8 | 5.76 | 9.06 | 9.31 | 9.53 | 9.87 | 10.89 | 9,220 |
| EPDRE2030-12-05-ATH | ● | | | | | | | | 12 | 4.55 | 13.18 | 13.51 | 13.99 | 14.65 | 16.20 | 9,220 |
| EPDRE2030-16-05-ATH | ● | | 16 | | | | | | 3.75 | 17.29 | 17.74 | 18.55 | 19.44 | 21.51 | 9,430 | |
| EPDRE2030-18-05-ATH | ● | | 18 | | | | | | 3.45 | 19.34 | 19.92 | 20.83 | 21.83 | 24.16 | 9,430 | |
| EPDRE2030-20-05-ATH | ● | | 20 | | | | | | 3.20 | 21.39 | 22.10 | 23.11 | 24.22 | 26.82 | 9,760 | |
| EPDRE2030-30-05-ATH | ● | | 30 | | | | | | 2.33 | 31.61 | 32.99 | 34.52 | 36.19 | 干涉なし | 10,180 | |
| EPDRE2030-35-05-ATH | ● | | 35 | | | | | | 2.06 | 36.82 | 38.44 | 40.22 | 42.17 | 干涉なし | 10,180 | |
| EPDRE2030-8-1-ATH | ● | | 1 | | | | | | 8 | 5.96 | 9.05 | 9.29 | 9.50 | 9.77 | 10.73 | 9,220 |
| EPDRE2030-12-1-ATH | ● | | | | | | | | 12 | 4.67 | 13.17 | 13.49 | 13.92 | 14.55 | 16.04 | 9,220 |
| EPDRE2030-16-1-ATH | ● | | | | | | | | 16 | 3.84 | 17.28 | 17.70 | 18.48 | 19.34 | 21.35 | 9,430 |
| EPDRE2030-18-1-ATH | ● | | | 18 | | | | | 3.52 | 19.33 | 19.88 | 20.76 | 21.73 | 24.00 | 9,430 | |
| EPDRE2030-20-1-ATH | ● | | | 20 | | | | | 3.26 | 21.38 | 22.05 | 23.04 | 24.13 | 26.66 | 9,760 | |
| EPDRE2030-30-1-ATH | ● | 30 | | 2.37 | 31.60 | 32.95 | 34.45 | 36.09 | 干涉なし | 10,180 | | | | | | |
| EPDRE2030-35-1-ATH | ● | 35 | | 2.08 | 36.79 | 38.40 | 40.15 | 42.08 | 干涉なし | 10,180 | | | | | | |
| EPDRE2040-8-01-ATH | ● | 4 | | 0.1 | 8 | 3.5 | 3.8 | 6 | 4 | 4.38 | 9.18 | 9.42 | 9.64 | 10.11 | 11.21 | 9,220 |
| EPDRE2040-12-01-ATH | ● | | 12 | | 3.36 | | | | | 13.29 | 13.60 | 14.20 | 14.90 | 16.51 | 9,220 | |
| EPDRE2040-16-01-ATH | ● | | 16 | | 2.72 | | | | | 17.39 | 17.93 | 18.77 | 19.68 | 干涉なし | 9,220 | |
| EPDRE2040-20-01-ATH | ● | | 20 | | 2.29 | | | | | 21.48 | 22.29 | 23.33 | 24.47 | 干涉なし | 9,220 | |
| EPDRE2040-30-01-ATH | ● | | 30 | | 1.64 | | | | | 31.77 | 33.18 | 34.73 | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-35-01-ATH | ● | | 35 | | 1.43 | | | | | 36.98 | 38.63 | 干涉なし | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-45-01-ATH | ● | | 45 | | 1.15 | | | | | 47.41 | 49.52 | 干涉なし | 干涉なし | 干涉なし | 14,680 | |
| EPDRE2040-8-02-ATH | ● | | 0.2 | | 8 | | | | | 4.41 | 9.18 | 9.42 | 9.63 | 10.09 | 11.17 | 9,220 |
| EPDRE2040-12-02-ATH | ● | | | | 12 | | | | | 3.38 | 13.29 | 13.59 | 14.19 | 14.88 | 16.48 | 9,220 |
| EPDRE2040-16-02-ATH | ● | | | | 16 | | | | | 2.73 | 17.39 | 17.92 | 18.75 | 19.66 | 干涉なし | 9,220 |
| EPDRE2040-20-02-ATH | ● | | | 20 | 2.30 | | | | | 21.48 | 22.28 | 23.31 | 24.45 | 干涉なし | 9,220 | |
| EPDRE2040-30-02-ATH | ● | | | 30 | 1.64 | | | | | 31.76 | 33.17 | 34.72 | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-35-02-ATH | ● | | | 35 | 1.44 | | | | | 36.98 | 38.62 | 干涉なし | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-45-02-ATH | ● | | | 45 | 1.15 | | | | | 47.40 | 49.52 | 干涉なし | 干涉なし | 干涉なし | 14,680 | |
| EPDRE2040-8-03-ATH | ● | | | 0.3 | 8 | | | | | 4.45 | 9.17 | 9.41 | 9.62 | 10.07 | 11.14 | 9,220 |
| EPDRE2040-12-03-ATH | ● | | | | 12 | | | | | 3.40 | 13.28 | 13.59 | 14.18 | 14.86 | 16.45 | 9,220 |
| EPDRE2040-16-03-ATH | ● | | | | 16 | | | | | 2.75 | 17.38 | 17.91 | 18.74 | 19.65 | 干涉なし | 9,220 |
| EPDRE2040-20-03-ATH | ● | | 20 | | 2.31 | | | | | 21.48 | 22.27 | 23.30 | 24.43 | 干涉なし | 9,220 | |
| EPDRE2040-30-03-ATH | ● | | 30 | | 1.65 | | | | | 31.76 | 33.16 | 34.71 | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-35-03-ATH | ● | | 35 | | 1.44 | | | | | 36.97 | 38.61 | 干涉なし | 干涉なし | 干涉なし | 9,220 | |
| EPDRE2040-45-03-ATH | ● | 45 | 1.15 | | 47.40 | 49.51 | 干涉なし | 干涉なし | 干涉なし | 14,680 | | | | | | |
| EPDRE2040-12-05-ATH | ● | 0.5 | 12 | | 3.44 | 13.28 | 13.58 | 14.15 | 14.82 | 16.39 | 9,220 | | | | | |
| EPDRE2040-16-05-ATH | ● | | 16 | | 2.77 | 17.38 | 17.89 | 18.71 | 19.61 | 干涉なし | 9,220 | | | | | |
| EPDRE2040-20-05-ATH | ● | | 20 | | 2.33 | 21.47 | 22.25 | 23.27 | 24.39 | 干涉なし | 9,220 | | | | | |
| EPDRE2040-30-05-ATH | ● | | 30 | 1.66 | 31.75 | 33.15 | 34.68 | 干涉なし | 干涉なし | 9,220 | | | | | | |
| EPDRE2040-35-05-ATH | ● | | 35 | 1.45 | 36.96 | 38.59 | 干涉なし | 干涉なし | 干涉なし | 9,220 | | | | | | |
| EPDRE2040-45-05-ATH | ● | | 45 | 1.16 | 47.39 | 49.49 | 干涉なし | 干涉なし | 干涉なし | 14,680 | | | | | | |

特長

寸法

高精度切削条件

高精度切削条件

技術データ

ラインナップ

Line Up



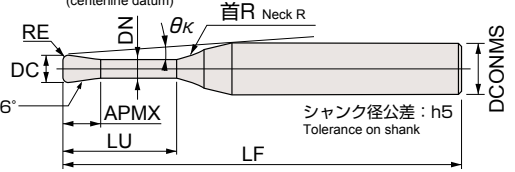
ラジラス Radius



コーナ半径RE公差：±0.005mm (中心基準)
Tolerance on corner radius RE (centerline datum)

ねじれ角：30°
Helix Angle

外周バックテーパ：1.5~6°
Back taper on peripheral edge



EPDRE2-ATH

外径φ4以上はバックドラフト形状ではありません。
φ 4 or higher does not have backdraft shape.

| 商品コード Item code | 在庫 Stock | 寸法 Size(mm) | | | | | | | | 干渉角度 Interference angle (°) | 勾配角に対する実有効首下長 Effective under neck length with respect to draft angle | | | | | 希望小売 価格(円) Suggested retail price (¥) | | | | | | |
|---------------------|-------------|-----------------------|------------------------------|--------------------------------|----------------------------|-----------------------|----------------------------|-------------------------------|--------------|--------------------------------|--|-------|-------|-------|--------|---|------|------|------|------|------|--------|
| | | 外径 Tool dia. DC | コーナ半径 Corner radius RE | 首下長 Under neck length LU | 刃長 Flute length APMX | 首径 Neck dia. DN | 全長 Overall length LF | シャング径 Shank dia. DCONMS | 首R Neck R | | θ _K | 0.5° | 1° | 1.5° | 2° | | 3° | | | | | |
| | | | | | | | | | | | | 0.5° | 1° | 1.5° | 2° | | 3° | | | | | |
| EPDRE2040-12-1-ATH | ● | 4 | 1 | 12 | 3.5 | 3.8 | 60 | 6 | 4 | 3.54 | 13.27 | 13.56 | 14.08 | 14.72 | 16.23 | 9,220 | | | | | | |
| EPDRE2040-16-1-ATH | ● | | | 16 | | | | | | 2.84 | 17.37 | 17.85 | 18.64 | 19.51 | 干渉なし | 9,220 | | | | | | |
| EPDRE2040-20-1-ATH | ● | | | 20 | | | | | | 2.37 | 21.46 | 22.21 | 23.20 | 24.30 | 干渉なし | 9,220 | | | | | | |
| EPDRE2040-30-1-ATH | ● | | | 30 | | | | | | 1.68 | 31.73 | 33.10 | 34.61 | 干渉なし | 干渉なし | 9,220 | | | | | | |
| EPDRE2040-35-1-ATH | ● | | | 35 | | | | | | 1.47 | 36.94 | 38.55 | 干渉なし | 干渉なし | 干渉なし | 9,220 | | | | | | |
| EPDRE2040-45-1-ATH | ● | | | 45 | | | | | | 1.17 | 47.37 | 49.44 | 干渉なし | 干渉なし | 干渉なし | 14,680 | | | | | | |
| EPDRE2050-20-01-ATH | ● | 5 | 0.1 | 20 | 4 | 4.75 | 65 | 6 | 4 | 1.26 | 21.54 | 22.42 | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | |
| EPDRE2050-40-01-ATH | ● | | | 40 | | | | | | 0.67 | 42.32 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | |
| EPDRE2050-20-02-ATH | ● | | | 20 | | | | | | 1.26 | 21.54 | 22.41 | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | |
| EPDRE2050-40-02-ATH | ● | | 40 | 0.68 | | | | | | 42.31 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | |
| EPDRE2050-20-03-ATH | ● | | 20 | 1.27 | | | | | | 21.54 | 22.40 | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | |
| EPDRE2050-40-03-ATH | ● | | 40 | 0.68 | | | | | | 42.31 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | |
| EPDRE2050-20-05-ATH | ● | | 20 | 1.28 | | | | | | 21.54 | 22.38 | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | |
| EPDRE2050-40-05-ATH | ● | | 40 | 0.68 | | | | | | 42.30 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | |
| EPDRE2050-20-1-ATH | ● | | 20 | 1.31 | | | | | | 21.53 | 22.34 | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | |
| EPDRE2050-40-1-ATH | ● | | 40 | 0.69 | | | | | | 42.28 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | |
| EPDRE2060-12-01-ATH | ● | | 6 | 0.1 | | | | | | 12 | 5 | 5.7 | 50 | 6 | - | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 |
| EPDRE2060-18-01-ATH | ● | | | | | | | | | 18 | | | | | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 |
| EPDRE2060-24-01-ATH | ● | 24 | | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | | | | | | 12,240 | | | | | | |
| EPDRE2060-35-01-ATH | ● | 35 | | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | | | | | | 15,380 | | | | | | |
| EPDRE2060-55-01-ATH | ● | 55 | | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | | | | | | 19,200 | | | | | | |
| EPDRE2060-12-02-ATH | ● | 12 | | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | | | | | | 12,240 | | | | | | |
| EPDRE2060-18-02-ATH | ● | 18 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-24-02-ATH | ● | 24 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-35-02-ATH | ● | 35 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | | | | | | |
| EPDRE2060-55-02-ATH | ● | 55 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 19,200 | | | | | | | | | | | | |
| EPDRE2060-12-03-ATH | ● | 12 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-18-03-ATH | ● | 18 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-24-03-ATH | ● | 24 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-35-03-ATH | ● | 35 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | | | | | | |
| EPDRE2060-55-03-ATH | ● | 55 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 19,200 | | | | | | | | | | | | |
| EPDRE2060-18-05-ATH | ● | 18 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-24-05-ATH | ● | 24 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-35-05-ATH | ● | 35 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | | | | | | |
| EPDRE2060-55-05-ATH | ● | 55 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 19,200 | | | | | | | | | | | | |
| EPDRE2060-18-1-ATH | ● | 18 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-24-1-ATH | ● | 24 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 12,240 | | | | | | | | | | | | |
| EPDRE2060-35-1-ATH | ● | 35 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 15,380 | | | | | | | | | | | | |
| EPDRE2060-55-1-ATH | ● | 55 | | 0.01 | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 干渉なし | 19,200 | | | | | | | | | | | | |

●印：標準在庫品です。 ●：Stocked items.

干渉なし：No interference

再研磨対応範囲一覧表 Regrinding compatibility range table

| 商品コード Item code | 商品名称 Product name | 形状 Shape | 再研磨対応外径範囲(mm) Re-grinding compatibility range | |
|--------------------|---|-------------|--|---------|
| | | | 外周 Outer dia. | エンド End |
| EPDRE-ATH | エポックディープラジラスエボリューション Epoch Deep Radius Evolution | | × (N/A) | 4~6 |

*再研磨後のR精度は外径基準となります。The corner radius precision after regrinding uses the tool diameter as its datum.

【注意】 L/D(首下長/外径)が10DCを超える工具の再研磨可否については、弊社営業にお問い合わせください。

【Note】 Contact our sales office regarding whether or not regrinding is possible for tools where L/D(under neck length / tool diameter) more than 10DC

標準切削条件表

Recommended Cutting Conditions

高能率切削条件 High efficiency cutting condition

高精度切削条件 High accuracy cutting condition

高精度切削条件は16ページを参照してください。Please refer to P.16 about high accuracy cutting conditions

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|-------|---|-------|---|-------|--|-------|--|-------|--|-------|--------|-----|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼き入れ鋼 Hardened steels (45~55HRC) | | 焼き入れ鋼 Hardened steels (55~65HRC) | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | | 送り速度 V _f mm/min | | 回転数 n min ⁻¹ | | 送り速度 V _f mm/min | | 回転数 n min ⁻¹ | | 送り速度 V _f mm/min | | | |
| | | | | 0.2 | | | | 0.5 | 0.016 | 50,000 | 922 | 50,000 | 922 | 45,000 | 829 | 42,500 | 705 |
| 1 | 0.011 | 50,000 | 922 | | | | | 50,000 | 922 | 45,000 | 829 | 42,500 | 705 | 37,500 | 553 | 35,000 | 452 |
| 0.3 | | | | 2 | 0.007 | 50,000 | 809 | 42,000 | 774 | 40,500 | 746 | 38,250 | 635 | 33,750 | 498 | 31,500 | 406 |
| | | | | 0.5 | 0.02 | 50,000 | 922 | 50,000 | 922 | 45,000 | 829 | 42,500 | 705 | 37,500 | 553 | 35,000 | 452 |
| 0.4 | | | | 1 | 0.014 | 50,000 | 922 | 50,000 | 922 | 45,000 | 829 | 42,500 | 705 | 37,500 | 553 | 35,000 | 452 |
| | | | | 1.5 | 0.008 | 50,000 | 809 | 47,000 | 866 | 42,750 | 788 | 40,375 | 670 | 35,625 | 525 | 33,250 | 429 |
| 0.5 | | | | 2 | 0.008 | 50,000 | 809 | 42,000 | 774 | 40,500 | 746 | 38,250 | 635 | 33,750 | 498 | 31,500 | 406 |
| | | | | 1 | 0.016 | 50,000 | 1,208 | 48,000 | 1,161 | 43,200 | 1,045 | 40,800 | 733 | 36,000 | 547 | 33,600 | 441 |
| 0.6 | | | | 2 | 0.011 | 45,000 | 998 | 38,880 | 860 | 34,992 | 774 | 33,048 | 594 | 29,160 | 443 | 27,216 | 357 |
| | | | | 3 | 0.007 | 42,750 | 881 | 36,936 | 760 | 33,242 | 684 | 31,396 | 525 | 27,702 | 392 | 25,855 | 316 |
| 0.7 | | | | 1 | 0.021 | 50,000 | 1,208 | 48,000 | 1,161 | 43,200 | 1,045 | 40,800 | 733 | 36,000 | 547 | 33,600 | 441 |
| | | | | 1.5 | 0.016 | 47,500 | 1,147 | 45,600 | 1,103 | 41,040 | 993 | 38,760 | 697 | 34,200 | 520 | 31,920 | 419 |
| 0.8 | | | | 2 | 0.012 | 45,000 | 998 | 38,880 | 860 | 34,992 | 774 | 33,048 | 594 | 29,160 | 443 | 27,216 | 357 |
| | | | | 2.5 | 0.01 | 45,000 | 998 | 38,880 | 860 | 34,992 | 774 | 33,048 | 594 | 29,160 | 443 | 27,216 | 357 |
| 0.9 | | | | 3 | 0.008 | 42,750 | 881 | 36,936 | 760 | 33,242 | 684 | 31,396 | 525 | 27,702 | 392 | 25,855 | 316 |
| | | | | 1 | 0.016 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| 1.0 | | | | 2 | 0.013 | 46,080 | 1,115 | 38,300 | 929 | 34,560 | 836 | 32,256 | 714 | 28,800 | 557 | 26,726 | 457 |
| | | | | 3 | 0.01 | 35,250 | 780 | 29,325 | 649 | 26,437 | 585 | 24,675 | 499 | 22,031 | 390 | 20,445 | 320 |
| 1.1 | | | | 4 | 0.007 | 29,029 | 642 | 24,150 | 535 | 21,772 | 481 | 20,320 | 411 | 18,143 | 321 | 16,837 | 263 |
| | | | | 1 | 0.025 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| 1.2 | | | | 1.5 | 0.02 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| | | | | 2 | 0.016 | 46,080 | 1,115 | 38,300 | 929 | 34,560 | 836 | 32,256 | 714 | 28,800 | 557 | 26,726 | 457 |
| 1.3 | | | | 2.5 | 0.015 | 43,200 | 1,062 | 36,000 | 885 | 32,400 | 796 | 30,600 | 677 | 27,000 | 531 | 25,200 | 434 |
| | | | | 3 | 0.014 | 35,250 | 780 | 29,325 | 649 | 26,437 | 585 | 24,675 | 499 | 22,031 | 390 | 20,445 | 320 |
| 1.4 | | | | 3.5 | 0.012 | 33,048 | 731 | 27,540 | 609 | 24,786 | 548 | 23,409 | 467 | 20,655 | 365 | 19,278 | 299 |
| | | | | 4 | 0.008 | 29,029 | 642 | 24,150 | 535 | 21,772 | 481 | 20,320 | 411 | 18,143 | 321 | 16,837 | 263 |
| 1.5 | | | | 1 | 0.033 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| | | | | 2 | 0.028 | 46,080 | 1,115 | 38,300 | 929 | 34,560 | 836 | 32,256 | 714 | 28,800 | 557 | 26,726 | 457 |
| 1.6 | | | | 3 | 0.016 | 35,250 | 780 | 29,325 | 649 | 26,437 | 585 | 24,675 | 499 | 22,031 | 390 | 20,445 | 320 |
| | | | | 4 | 0.01 | 29,029 | 642 | 24,150 | 535 | 21,772 | 481 | 20,320 | 411 | 18,143 | 321 | 16,837 | 263 |
| 1.7 | | | | 1 | 0.016 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| | | | | 2 | 0.013 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| 1.8 | | | | 3 | 0.01 | 37,325 | 1,000 | 31,104 | 839 | 27,994 | 750 | 26,438 | 634 | 23,328 | 473 | 21,773 | 381 |
| | | | | 4 | 0.008 | 33,178 | 889 | 27,648 | 746 | 24,883 | 666 | 23,501 | 563 | 20,736 | 420 | 19,354 | 339 |
| 1.9 | | | | 6 | 0.006 | 25,805 | 666 | 21,504 | 555 | 19,354 | 499 | 18,278 | 320 | 16,128 | 282 | 15,053 | 222 |
| | | | | 1 | 0.03 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| 2.0 | | | | 2 | 0.023 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| | | | | 3 | 0.017 | 37,325 | 1,000 | 31,104 | 839 | 27,994 | 750 | 26,438 | 634 | 23,328 | 473 | 21,773 | 381 |
| 2.1 | | | | 4 | 0.017 | 33,178 | 889 | 27,648 | 746 | 24,883 | 666 | 23,501 | 563 | 20,736 | 420 | 19,354 | 339 |
| | | | | 5 | 0.011 | 29,030 | 778 | 24,192 | 653 | 21,773 | 583 | 20,563 | 493 | 18,144 | 368 | 16,934 | 297 |
| 2.2 | | | | 6 | 0.008 | 25,805 | 666 | 21,504 | 555 | 19,354 | 499 | 18,278 | 320 | 16,128 | 282 | 15,053 | 222 |
| | | | | 1 | 0.035 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| 2.3 | | | | 2 | 0.03 | 46,080 | 1,239 | 38,300 | 1,032 | 34,560 | 929 | 32,256 | 793 | 28,800 | 620 | 26,726 | 508 |
| | | | | 3 | 0.02 | 37,325 | 1,000 | 31,104 | 839 | 27,994 | 750 | 26,438 | 634 | 23,328 | 473 | 21,773 | 381 |
| 2.4 | | | | 4 | 0.02 | 33,178 | 889 | 27,648 | 746 | 24,883 | 666 | 23,501 | 563 | 20,736 | 420 | 19,354 | 339 |
| | | | | 5 | 0.013 | 29,030 | 778 | 24,192 | 653 | 21,773 | 583 | 20,563 | 493 | 18,144 | 368 | 16,934 | 297 |
| 2.5 | | | | 6 | 0.013 | 25,805 | 666 | 21,504 | 555 | 19,354 | 499 | 18,278 | 320 | 16,128 | 282 | 15,053 | 222 |
| | | | | 2 | 0.016 | 46,080 | 1,751 | 38,300 | 1,455 | 34,560 | 1,313 | 32,256 | 991 | 28,800 | 774 | 26,726 | 635 |
| 2.6 | | | | 4 | 0.013 | 37,325 | 1,376 | 31,104 | 1,147 | 27,994 | 1,032 | 26,438 | 792 | 23,328 | 591 | 21,773 | 477 |
| | | | | 6 | 0.01 | 29,030 | 1,070 | 24,192 | 892 | 21,773 | 803 | 20,563 | 616 | 18,144 | 460 | 16,934 | 371 |
| 2.7 | | | | 2 | 0.028 | 46,080 | 1,751 | 38,300 | 1,455 | 34,560 | 1,313 | 32,256 | 991 | 28,800 | 774 | 26,726 | 635 |
| | | | | 4 | 0.019 | 37,325 | 1,376 | 31,104 | 1,147 | 27,994 | 1,032 | 26,438 | 792 | 23,328 | 591 | 21,773 | 477 |
| 2.8 | | | | 6 | 0.012 | 29,030 | 1,070 | 24,192 | 892 | 21,773 | 803 | 20,563 | 616 | 18,144 | 460 | 16,934 | 371 |
| | | | | 8 | 0.01 | 27,579 | 1,017 | 22,982 | 847 | 20,684 | 763 | 19,535 | 585 | 17,237 | 437 | 16,088 | 352 |
| 2.9 | | | | 10 | 0.007 | 24,676 | 814 | 20,563 | 678 | 18,507 | 610 | 17,479 | 489 | 15,422 | 355 | 14,394 | 287 |
| | | | | 2 | 0.035 | 46,080 | 1,751 | 38,300 | 1,455 | 34,560 | 1,313 | 32,256 | 991 | 28,800 | 774 | 26,726 | 635 |
| 3.0 | | | | 4 | 0.024 | 37,325 | 1,376 | 31,104 | 1,147 | 27,994 | 1,032 | 26,438 | 792 | 23,328 | 591 | 21,773 | 477 |
| | | | | 6 | 0.015 | 29,030 | 1,070 | 24,192 | 892 | 21,773 | 803 | 20,563 | 616 | 18,144 | 460 | 16,934 | 371 |
| 3.1 | | | | 2 | 0.042 | 45,960 | 1,751 | 38,300 | 1,455 | 34,470 | 1,313 | 32,555 | 991 | 28,725 | 774 | 26,810 | 635 |
| | | | | 4 | 0.029 | 37,325 | 1,376 | 31,104 | 1,147 | 27,994 | 1,032 | 26,438 | 792 | 23,328 | 591 | 21,773 | 477 |
| 3.2 | | | | 6 | 0.018 | 29,030 | 1,070 | 24,192 | 892 | 21,773 | 803 | 20,563 | 616 | 18,144 | 460 | 16,934 | 371 |
| | | | | 2 | 0.016 | 48,000 | 2,211 | 40,000 | 1,843 | 36,000 | 1,658 | 34,000 | 1,410 | 30,000 | 1,106 | 28,000 | 903 |
| 3.3 | | | | 4 | 0.016 | 48,000 | 1,769 | 40,000 | 1,475 | 36,000 | 1,327 | 34,000 | 1,128 | 30,000 | 885 | 28,000 | 723 |
| | | | | 6 | 0.013 | 36,720 | 1,218 | 30,600 | 1,015 | 27,540 | 914 | 26,010 | 863 | 22,950 | 677 | 21,420 | 553 |
| 3.4 | | | | 2 | 0.038 | 48,000 | 2,211 | 40,000 | 1,843 | 36,000 | 1,658 | 34,000 | 1,410 | 30,000 | 1,106 | 28,000 | 903 |
| | | | | 4 | 0.026 | 48,000 | 1,769 | 40,000 | 1,475 | 36,000 | 1,327 | 34,000 | 1,128 | 30,000 | 885 | 28,000 | 723 |
| 3.5 | | | | 6 | 0.015 | 36,720 | 1,218 | 30,600 | 1,015 | 27,540 | 914 | 26,010 | 863 | 22,950 | 677 | 21,420 | 553 |
| | | | | 8 | 0.012 | 29,376 | 906 | 24,480 | 755 | 22,032 | 680 | 20,808 | 642 | 18,360 | 504 | 17,136 | 411 |
| 3.6 | | | | 12 | 0.01 | 26,438 | 759 | 22,032 | 632 | 19,829 | 569 | 18,727 | 537 | 16,524 | 421 | 15,422 | 344 |

[注意] ご使用にあたっては、15ページの表下の項目と注意を参照してください。 **[Note]** Upon usage, please refer to comments and notes below table on page 15.

特長

寸法

高能率切削条件

高精度切削条件

技術データ

標準切削条件表

Recommended Cutting Conditions

高能率切削条件
High efficiency cutting condition

高精度切削条件
High accuracy cutting condition

高精度切削条件は16ページを参照してください。
Please refer to P.16 about high accuracy cutting conditions.

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
|--|--------------------------------------|-------------------------------------|------------|-------------------------------|----------------------|---|----------------------|---|----------------------|--|----------------------|--|----------------------|--|----------------------|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼き入れ鋼 Hardened steels (45~55HRC) | | 焼き入れ鋼 Hardened steels (55~65HRC) | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | 送り速度 Vi mm/min | 回転数 n min ⁻¹ | 送り速度 Vi mm/min | 回転数 n min ⁻¹ | 送り速度 Vi mm/min | 回転数 n min ⁻¹ | 送り速度 Vi mm/min | 回転数 n min ⁻¹ | 送り速度 Vi mm/min | 回転数 n min ⁻¹ | 送り速度 Vi mm/min |
| 0.8 | 0.1 | 2 | 0.047 | 48,000 | 2,211 | 40,000 | 1,843 | 36,000 | 1,658 | 34,000 | 1,410 | 30,000 | 1,106 | 28,000 | 903 |
| | | 4 | 0.032 | 48,000 | 1,769 | 40,000 | 1,475 | 36,000 | 1,327 | 34,000 | 1,128 | 30,000 | 885 | 28,000 | 723 |
| | | 6 | 0.019 | 36,720 | 1,218 | 30,600 | 1,015 | 27,540 | 914 | 26,010 | 863 | 22,950 | 677 | 21,420 | 553 |
| | | 8 | 0.015 | 29,376 | 906 | 24,480 | 755 | 22,032 | 680 | 20,808 | 642 | 18,360 | 504 | 17,136 | 411 |
| | | 12 | 0.012 | 26,438 | 759 | 22,032 | 632 | 19,829 | 569 | 18,727 | 537 | 16,524 | 421 | 15,422 | 344 |
| | | 2 | 0.081 | 48,000 | 2,211 | 40,000 | 1,843 | 36,000 | 1,658 | 34,000 | 1,410 | 30,000 | 1,106 | 28,000 | 903 |
| | 0.2 | 4 | 0.056 | 48,000 | 1,769 | 40,000 | 1,475 | 36,000 | 1,327 | 34,000 | 1,128 | 30,000 | 885 | 28,000 | 723 |
| | | 6 | 0.032 | 36,720 | 1,218 | 30,600 | 1,015 | 27,540 | 914 | 26,010 | 863 | 22,950 | 677 | 21,420 | 553 |
| | | 8 | 0.018 | 29,376 | 906 | 24,480 | 755 | 22,032 | 680 | 20,808 | 642 | 18,360 | 504 | 17,136 | 411 |
| | | 12 | 0.015 | 26,438 | 759 | 22,032 | 632 | 19,829 | 569 | 18,727 | 537 | 16,524 | 421 | 15,422 | 344 |
| | | 2 | 0.016 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 |
| | | 4 | 0.013 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 |
| 0.02 | 6 | 0.01 | 34,992 | 1,887 | 29,160 | 1,572 | 29,299 | 1,757 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| | 8 | 0.008 | 31,104 | 1,677 | 25,920 | 1,397 | 26,244 | 1,415 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| | 10 | 0.006 | 27,216 | 1,467 | 22,680 | 1,223 | 23,328 | 1,258 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| | 12 | 0.005 | 24,192 | 1,159 | 20,160 | 966 | 20,412 | 1,100 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 | |
| | 2 | 0.046 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| | 3 | 0.035 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| | 4 | 0.027 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 | |
| | 5 | 0.021 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| | 6 | 0.017 | 34,992 | 1,887 | 29,160 | 1,572 | 26,244 | 1,415 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| | 8 | 0.016 | 31,104 | 1,677 | 25,920 | 1,397 | 23,328 | 1,258 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| | 10 | 0.011 | 27,216 | 1,467 | 22,680 | 1,223 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| | 0.05 | 12 | 0.01 | 24,192 | 1,159 | 20,160 | 966 | 18,144 | 870 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 |
| 16 | | 0.006 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 | |
| 20 | | 0.004 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 | |
| 2 | | 0.065 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| 3 | | 0.05 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| 4 | | 0.038 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 | |
| 5 | | 0.03 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| 6 | | 0.024 | 34,992 | 1,887 | 29,160 | 1,572 | 26,244 | 1,415 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| 8 | | 0.024 | 31,104 | 1,677 | 25,920 | 1,397 | 23,328 | 1,258 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| 10 | | 0.015 | 27,216 | 1,467 | 22,680 | 1,223 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| 12 | | 0.015 | 24,192 | 1,159 | 20,160 | 966 | 18,144 | 870 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 | |
| 0.1 | | 16 | 0.009 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 |
| | 20 | 0.006 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 | |
| | 2 | 0.11 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| | 3 | 0.09 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| | 4 | 0.07 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 | |
| | 5 | 0.05 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| | 6 | 0.04 | 34,992 | 1,887 | 29,160 | 1,572 | 26,244 | 1,415 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| | 8 | 0.04 | 31,104 | 1,677 | 25,920 | 1,397 | 23,328 | 1,258 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| | 10 | 0.025 | 27,216 | 1,467 | 22,680 | 1,223 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| | 12 | 0.025 | 24,192 | 1,159 | 20,160 | 966 | 18,144 | 870 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 | |
| | 16 | 0.015 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 | |
| | 0.2 | 20 | 0.01 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 |
| 2 | | 0.11 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| 3 | | 0.09 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| 4 | | 0.07 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 | |
| 5 | | 0.05 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| 6 | | 0.04 | 34,992 | 1,887 | 29,160 | 1,572 | 26,244 | 1,415 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| 8 | | 0.04 | 31,104 | 1,677 | 25,920 | 1,397 | 23,328 | 1,258 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| 10 | | 0.025 | 27,216 | 1,467 | 22,680 | 1,223 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| 12 | | 0.025 | 24,192 | 1,159 | 20,160 | 966 | 18,144 | 870 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 | |
| 16 | | 0.015 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 | |
| 20 | | 0.01 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 | |
| 0.3 | | 2 | 0.11 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 |
| | 3 | 0.09 | 47,770 | 2,866 | 39,490 | 2,369 | 35,668 | 2,140 | 33,439 | 1,805 | 29,617 | 1,421 | 27,707 | 1,163 | |
| | 4 | 0.07 | 43,200 | 2,588 | 36,000 | 2,157 | 32,400 | 1,941 | 30,600 | 1,650 | 27,000 | 1,294 | 25,200 | 1,057 | |
| | 5 | 0.05 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| | 6 | 0.04 | 34,992 | 1,887 | 29,160 | 1,572 | 26,244 | 1,415 | 24,786 | 1,336 | 21,870 | 1,048 | 20,412 | 856 | |
| | 8 | 0.04 | 31,104 | 1,677 | 25,920 | 1,397 | 23,328 | 1,258 | 22,032 | 1,188 | 19,440 | 932 | 18,144 | 761 | |
| | 10 | 0.025 | 27,216 | 1,467 | 22,680 | 1,223 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 | |
| | 12 | 0.025 | 24,192 | 1,159 | 20,160 | 966 | 18,144 | 870 | 17,136 | 719 | 15,120 | 634 | 14,112 | 507 | |
| | 16 | 0.015 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 | |
| | 20 | 0.01 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 | |
| | 1.25 | 5 | 0.03 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 |
| | | 10 | 0.015 | 27,216 | 1,467 | 25,920 | 1,397 | 20,412 | 1,100 | 19,278 | 1,039 | 17,010 | 815 | 15,876 | 666 |
| 15 | | 0.01 | 24,192 | 1,014 | 20,160 | 845 | 18,144 | 761 | 17,136 | 667 | 15,120 | 543 | 14,112 | 423 | |
| 20 | | 0.006 | 18,144 | 761 | 15,120 | 634 | 13,608 | 571 | 12,852 | 500 | 11,340 | 408 | 10,584 | 317 | |
| 5 | | 0.05 | 39,808 | 2,388 | 31,847 | 1,910 | 29,299 | 1,757 | 27,707 | 1,496 | 24,522 | 1,177 | 22,929 | 963 | |
| 10 | | 0.025 | 27,216 | 1,467 | 25,920 | 1,397 | 20,412 | 1,100 | 19,278 | 1,039 | | | | | |

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|------------------------|--------------------------|---|--------------------------|---|--------------------------|--|--------------------------|---------------------------------------|--------------------------|---------------------------------------|--------------------------|------------------------|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 | 送り速度 | 回転数 | 送り速度 | 回転数 | 送り速度 | 回転数 | 送り速度 | 回転数 | 送り速度 | 回転数 | 送り速度 | |
| | | | | n min ⁻¹ | v _f mm/min | n min ⁻¹ | v _f mm/min | n min ⁻¹ | v _f mm/min | n min ⁻¹ | v _f mm/min | n min ⁻¹ | v _f mm/min | n min ⁻¹ | v _f mm/min | n min ⁻¹ |
| 1.5 | 0.2 | 4 | 0.07 | 33,264 | 2,153 | 27,700 | 1,793 | 24,948 | 1,614 | 23,285 | 1,378 | 20,790 | 1,076 | 19,293 | 883 | |
| | | 6 | 0.065 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 | |
| | | 8 | 0.06 | 30,240 | 1,956 | 25,200 | 1,630 | 22,680 | 1,467 | 21,420 | 1,268 | 18,900 | 979 | 17,640 | 807 | |
| | | 12 | 0.06 | 24,192 | 1,565 | 20,160 | 1,304 | 18,144 | 1,174 | 17,136 | 1,014 | 15,120 | 783 | 14,112 | 646 | |
| | | 15 | 0.038 | 18,816 | 1,082 | 15,680 | 902 | 14,112 | 812 | 13,328 | 671 | 11,760 | 592 | 10,976 | 473 | |
| | 0.3 | 4 | 0.07 | 33,264 | 2,153 | 27,700 | 1,793 | 24,948 | 1,614 | 23,285 | 1,378 | 20,790 | 1,076 | 19,293 | 883 | |
| | | 6 | 0.065 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 | |
| | | 8 | 0.06 | 30,240 | 1,956 | 25,200 | 1,630 | 22,680 | 1,467 | 21,420 | 1,268 | 18,900 | 979 | 17,640 | 807 | |
| | | 12 | 0.06 | 24,192 | 1,565 | 20,160 | 1,304 | 18,144 | 1,174 | 17,136 | 1,014 | 15,120 | 783 | 14,112 | 646 | |
| | | 15 | 0.038 | 18,816 | 1,082 | 15,680 | 902 | 14,112 | 812 | 13,328 | 671 | 11,760 | 592 | 10,976 | 473 | |
| | 0.5 | 4 | 0.03 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 | |
| | | 6 | 0.08 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 | |
| | | 8 | 0.07 | 30,240 | 1,956 | 25,200 | 1,630 | 22,680 | 1,467 | 21,420 | 1,268 | 18,900 | 979 | 17,640 | 807 | |
| | | 12 | 0.065 | 33,264 | 2,153 | 27,700 | 1,793 | 24,948 | 1,614 | 23,285 | 1,378 | 20,790 | 1,076 | 19,293 | 883 | |
| | | 20 | 0.045 | 18,816 | 1,082 | 15,680 | 902 | 14,112 | 812 | 13,328 | 671 | 11,760 | 592 | 10,976 | 473 | |
| | 1.75 | 0.1 | 4 | 0.085 | 33,264 | 2,153 | 27,700 | 1,793 | 24,948 | 1,614 | 23,285 | 1,378 | 20,790 | 1,076 | 19,293 | 883 |
| | | | 6 | 0.08 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 |
| | | | 8 | 0.07 | 30,240 | 1,956 | 25,200 | 1,630 | 22,680 | 1,467 | 21,420 | 1,268 | 18,900 | 979 | 17,640 | 807 |
| | | | 12 | 0.065 | 33,264 | 2,153 | 27,700 | 1,793 | 24,948 | 1,614 | 23,285 | 1,378 | 20,790 | 1,076 | 19,293 | 883 |
| | | | 20 | 0.035 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 |
| 0.2 | | 5 | 0.04 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 | |
| | | 10 | 0.036 | 24,192 | 1,565 | 20,160 | 1,304 | 18,144 | 1,174 | 17,136 | 1,014 | 15,120 | 783 | 14,112 | 646 | |
| | | 15 | 0.023 | 18,816 | 1,082 | 15,680 | 902 | 14,112 | 812 | 13,328 | 671 | 11,760 | 592 | 10,976 | 473 | |
| | | 20 | 0.018 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 | |
| | | 20 | 0.03 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 | |
| 0.3 | | 5 | 0.065 | 31,847 | 2,057 | 26,539 | 1,714 | 23,779 | 1,536 | 22,505 | 1,332 | 19,957 | 1,033 | 18,471 | 845 | |
| | | 10 | 0.06 | 24,192 | 1,565 | 20,160 | 1,304 | 18,144 | 1,174 | 17,136 | 1,014 | 15,120 | 783 | 14,112 | 646 | |
| | | 15 | 0.038 | 18,816 | 1,082 | 15,680 | 902 | 14,112 | 812 | 13,328 | 671 | 11,760 | 592 | 10,976 | 473 | |
| | | 20 | 0.03 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 | |
| | | 20 | 0.03 | 18,816 | 978 | 15,680 | 815 | 14,112 | 733 | 13,328 | 613 | 11,760 | 540 | 10,976 | 428 | |
| 2 | 0.1 | 4 | 0.08 | 28,662 | 3,221 | 24,203 | 2,720 | 21,815 | 2,452 | 20,541 | 2,308 | 18,152 | 1,630 | 17,038 | 1,339 | |
| | | 6 | 0.07 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | |
| | | 8 | 0.055 | 25,200 | 2,830 | 21,000 | 2,359 | 18,900 | 2,123 | 17,850 | 2,005 | 15,750 | 1,415 | 14,700 | 1,156 | |
| | | 12 | 0.03 | 20,412 | 2,063 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | |
| | | 16 | 0.03 | 18,144 | 1,834 | 15,120 | 1,528 | 13,608 | 1,376 | 12,852 | 1,299 | 11,340 | 1,019 | 10,584 | 832 | |
| | | 20 | 0.025 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 25 | 0.015 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 30 | 0.01 | 15,082 | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | |
| | | 4 | 0.1 | 28,662 | 3,221 | 24,203 | 2,720 | 21,815 | 2,452 | 20,541 | 2,308 | 18,152 | 1,630 | 17,038 | 1,339 | |
| | | 6 | 0.08 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | |
| | 0.2 | 6 | 0.08 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | |
| | | 8 | 0.07 | 25,200 | 2,830 | 21,000 | 2,359 | 18,900 | 2,123 | 17,850 | 2,005 | 15,750 | 1,415 | 14,700 | 1,156 | |
| | | 12 | 0.04 | 20,412 | 2,063 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | |
| | | 16 | 0.04 | 18,144 | 1,834 | 15,120 | 1,528 | 13,608 | 1,376 | 12,852 | 1,299 | 11,340 | 1,019 | 10,584 | 832 | |
| | | 20 | 0.035 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 25 | 0.025 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 30 | 0.017 | 15,082 | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | |
| | | 4 | 0.13 | 28,662 | 3,221 | 24,203 | 2,720 | 21,815 | 2,452 | 20,541 | 2,308 | 18,152 | 1,630 | 17,038 | 1,339 | |
| | | 6 | 0.11 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | |
| | | 8 | 0.09 | 25,200 | 2,830 | 21,000 | 2,359 | 18,900 | 2,123 | 17,850 | 2,005 | 15,750 | 1,415 | 14,700 | 1,156 | |
| | 0.3 | 12 | 0.06 | 20,412 | 2,063 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | |
| | | 16 | 0.06 | 18,144 | 1,834 | 15,120 | 1,528 | 13,608 | 1,376 | 12,852 | 1,299 | 11,340 | 1,019 | 10,584 | 832 | |
| | | 20 | 0.037 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 25 | 0.03 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| | | 30 | 0.021 | 15,082 | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | |
| | | 6 | 0.17 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | |
| | | 8 | 0.14 | 25,200 | 2,830 | 21,000 | 2,359 | 18,900 | 2,123 | 17,850 | 2,005 | 15,750 | 1,415 | 14,700 | 1,156 | |
| | | 12 | 0.08 | 20,412 | 2,063 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | |
| | | 16 | 0.08 | 18,144 | 1,834 | 15,120 | 1,528 | 13,608 | 1,376 | 12,852 | 1,299 | 11,340 | 1,019 | 10,584 | 832 | |
| | | 20 | 0.05 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | |
| 0.5 | 25 | 0.05 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | |
| | 30 | 0.03 | 15,082 | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | |
| | 6 | 0.22 | 27,720 | 3,114 | 23,100 | 2,595 | 20,790 | 2,335 | 19,635 | 2,205 | 17,325 | 1,557 | 16,170 | 1,271 | | |
| | 8 | 0.2 | 25,200 | 2,830 | 21,000 | 2,359 | 18,900 | 2,123 | 17,850 | 2,005 | 15,750 | 1,415 | 14,700 | 1,156 | | |
| | 12 | 0.13 | 20,412 | 2,063 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | | |
| | 16 | 0.1 | 18,144 | 1,834 | 15,120 | 1,528 | 13,608 | 1,376 | 12,852 | 1,299 | 11,340 | 1,019 | 10,584 | 832 | | |
| | 20 | 0.06 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | |
| | 25 | 0.057 | 15,876 | 1,605 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | |
| | 30 | 0.045 | 15,082 | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | |

[注意] ご使用にあたっては、15ページの表下の項目と注意を参照してください。 **[Note]** Upon usage, please refer to comments and notes below table on page 15.

特長

寸法

高精度切削条件

高精度切削条件

技術データ

標準切削条件表

Recommended Cutting Conditions

高効率切削条件

High efficiency cutting condition

高精度切削条件

High accuracy cutting condition

高精度切削条件は16ページを参照してください。Please refer to P.16 about high accuracy cutting conditions

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | | | | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|----|---|--------|---|--------|--|--------|---------------------------------------|--------|---------------------------------------|--------|-------|--------|-------|--------|-------|--------|-------|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | | | | | | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | | | | | | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | | | | | | | |
| | | | | 2.5 | | | | 0.1 | 10 | 0.05 | 20,412 | 2,293 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 |
| 20 | 0.03 | 15,876 | 1,783 | | | | | | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | | | |
| 30 | 0.015 | 15,082 | 1,525 | | | | | | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | | | |
| 0.2 | 10 | 0.07 | 20,412 | | | | | 2,293 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | | | | |
| | 20 | 0.04 | 15,876 | | | | | 1,783 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | | | |
| | 30 | 0.025 | 15,082 | | | | | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | | | |
| 0.3 | 10 | 0.09 | 20,412 | | | | | 2,293 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | | | | |
| | 20 | 0.06 | 15,876 | | | | | 1,783 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | | | |
| | 30 | 0.03 | 15,082 | | | | | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | | | |
| 0.5 | 10 | 0.12 | 20,412 | | | | | 2,293 | 17,010 | 1,720 | 15,309 | 1,548 | 14,459 | 1,462 | 12,758 | 1,146 | 11,907 | 936 | | | | |
| | 20 | 0.08 | 15,876 | | | | | 1,783 | 13,230 | 1,337 | 11,907 | 1,204 | 11,246 | 1,137 | 9,923 | 801 | 9,261 | 653 | | | | |
| | 30 | 0.05 | 15,082 | | | | | 1,525 | 12,569 | 1,271 | 11,312 | 1,143 | 10,683 | 1,080 | 9,426 | 761 | 8,798 | 621 | | | | |
| 3 | | | | | | | | 0.1 | 6 | 0.08 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 8 | 0.07 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 12 | 0.05 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 16 | 0.035 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 18 | 0.035 | 16,985 | 2,384 | 14,331 | 2,012 | 12,738 | 1,788 | 12,208 | 1,714 | 10,615 | 1,193 | 10,084 | 992 |
| | | | | | | | | | 20 | 0.035 | 15,552 | 2,184 | 12,960 | 1,820 | 11,664 | 1,638 | 11,016 | 1,547 | 9,720 | 1,092 | 9,072 | 892 |
| | | | | | | | | 0.2 | 30 | 0.027 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 |
| | | | | | | | | | 35 | 0.02 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 |
| | | | | | | | | | 6 | 0.1 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 8 | 0.09 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 12 | 0.07 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 16 | 0.05 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | 0.3 | 18 | 0.05 | 16,985 | 2,384 | 14,331 | 2,012 | 12,738 | 1,788 | 12,208 | 1,714 | 10,615 | 1,193 | 10,084 | 992 | | | | |
| | | | | | 20 | 0.05 | 15,552 | 2,184 | 12,960 | 1,820 | 11,664 | 1,638 | 11,016 | 1,547 | 9,720 | 1,092 | 9,072 | 892 | | | | |
| | | | | | 30 | 0.04 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 | | | | |
| | | | | | 35 | 0.035 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 | | | | |
| | | | | | 6 | 0.145 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 8 | 0.13 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | 0.5 | 12 | 0.1 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 16 | 0.075 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 18 | 0.075 | 16,985 | 2,384 | 14,331 | 2,012 | 12,738 | 1,788 | 12,208 | 1,714 | 10,615 | 1,193 | 10,084 | 992 | | | | |
| | | | | | 20 | 0.075 | 15,552 | 2,184 | 12,960 | 1,820 | 11,664 | 1,638 | 11,016 | 1,547 | 9,720 | 1,092 | 9,072 | 892 | | | | |
| | | | | | 30 | 0.06 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 | | | | |
| | | | | | 35 | 0.05 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 | | | | |
| | | | | 1 | 8 | 0.18 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 12 | 0.13 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 16 | 0.1 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 | | | | |
| | | | | | 18 | 0.1 | 16,985 | 2,384 | 14,331 | 2,012 | 12,738 | 1,788 | 13,600 | 1,909 | 10,615 | 1,193 | 10,084 | 992 | | | | |
| | | | | | 20 | 0.1 | 15,552 | 2,184 | 12,960 | 1,820 | 11,664 | 1,638 | 11,016 | 1,547 | 9,720 | 1,092 | 9,072 | 892 | | | | |
| | | | | | 30 | 0.08 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 | | | | |
| | | | | 4 | | | | 0.1 | 35 | 0.065 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 |
| | | | | | | | | | 8 | 0.2 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 12 | 0.15 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 16 | 0.12 | 19,200 | 2,696 | 16,000 | 2,246 | 14,400 | 2,022 | 13,600 | 1,909 | 12,000 | 1,348 | 11,200 | 1,101 |
| | | | | | | | | | 18 | 0.11 | 16,985 | 2,384 | 14,331 | 2,012 | 12,738 | 1,788 | 13,600 | 1,909 | 10,615 | 1,193 | 10,084 | 992 |
| | | | | | | | | | 20 | 0.11 | 15,552 | 2,184 | 12,960 | 1,820 | 11,664 | 1,638 | 11,016 | 1,547 | 9,720 | 1,092 | 9,072 | 892 |
| | | | | | | | | 0.2 | 30 | 0.09 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 |
| | | | | | | | | | 35 | 0.075 | 12,096 | 1,524 | 10,080 | 1,270 | 9,072 | 1,143 | 8,568 | 1,079 | 7,560 | 771 | 7,056 | 621 |
| | | | | | | | | | 8 | 0.24 | 16,560 | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 | 10,350 | 1,440 | 9,660 | 1,176 |
| | | | | | | | | | 12 | 0.22 | 16,560 | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 | 10,350 | 1,440 | 9,660 | 1,176 |
| | | | | | | | | | 16 | 0.2 | 13,733 | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| | | | | | | | | | 20 | 0.18 | 13,733 | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| | | | | | | | | 0.3 | 30 | 0.16 | 10,985 | 1,719 | 9,154 | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| | | | | | | | | | 35 | 0.14 | 10,985 | 1,719 | 9,154 | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| | | | | | | | | | 8 | 0.24 | 16,560 | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 | 10,350 | 1,440 | 9,660 | 1,176 |
| | | | | | | | | | 12 | 0.22 | 16,560 | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 | 10,350 | 1,440 | 9,660 | 1,176 |
| | | | | | | | | | 16 | 0.2 | 13,733 | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| | | | | | | | | | 20 | 0.18 | 13,733 | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|-------|---|-------|---|-------|--|-------|---------------------------------------|-------|---------------------------------------|-------|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | |
| | | | | 4 | 0.5 | 12 | 0.35 | 16,560 | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 |
| 0.25 | 13,733 | 2,388 | 11,445 | | | | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| 0.2 | 13,733 | 2,388 | 11,445 | | | | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| 0.15 | 10,985 | 1,719 | 9,154 | | | | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| 0.1 | 10,985 | 1,719 | 9,154 | | | | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| 1 | 12 | 0.4 | 16,560 | | 2,880 | 13,800 | 2,400 | 12,420 | 2,160 | 11,730 | 2,040 | 10,350 | 1,440 | 9,660 | 1,176 |
| | | 0.29 | 13,733 | | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| | | 0.23 | 13,733 | | 2,388 | 11,445 | 1,990 | 10,071 | 1,751 | 9,613 | 1,671 | 8,240 | 1,146 | 7,782 | 947 |
| | | 0.17 | 10,985 | | 1,719 | 9,154 | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| | | 0.12 | 10,985 | | 1,719 | 9,154 | 1,433 | 8,239 | 1,290 | 7,781 | 1,218 | 6,866 | 860 | 6,408 | 702 |
| 5 | 0.1 | 20 | 0.08 | 13,179 | 2,865 | 10,983 | 2,388 | 9,884 | 2,149 | 9,336 | 2,029 | 8,237 | 1,433 | 7,688 | 1,170 |
| | | | 0.06 | 11,868 | 2,312 | 9,890 | 1,926 | 8,901 | 1,734 | 8,407 | 1,637 | 7,418 | 1,156 | 6,923 | 944 |
| | 0.2 | 20 | 0.16 | 13,179 | 2,865 | 10,983 | 2,388 | 9,884 | 2,149 | 9,336 | 2,029 | 8,237 | 1,433 | 7,688 | 1,170 |
| | | | 0.13 | 11,868 | 2,312 | 9,890 | 1,926 | 8,901 | 1,734 | 8,407 | 1,637 | 7,418 | 1,156 | 6,923 | 944 |
| | 0.3 | 20 | 0.24 | 13,179 | 2,865 | 10,983 | 2,388 | 9,884 | 2,149 | 9,336 | 2,029 | 8,237 | 1,433 | 7,688 | 1,170 |
| | | | 0.2 | 11,868 | 2,312 | 9,890 | 1,926 | 8,901 | 1,734 | 8,407 | 1,637 | 7,418 | 1,156 | 6,923 | 944 |
| | 0.5 | 20 | 0.35 | 13,179 | 2,865 | 10,983 | 2,388 | 9,884 | 2,149 | 9,336 | 2,029 | 8,237 | 1,433 | 7,688 | 1,170 |
| | | | 0.135 | 11,868 | 2,312 | 9,890 | 1,926 | 8,901 | 1,734 | 8,407 | 1,637 | 7,418 | 1,156 | 6,923 | 944 |
| | 1 | 20 | 0.4 | 13,179 | 2,865 | 10,983 | 2,388 | 9,884 | 2,149 | 9,336 | 2,029 | 8,237 | 1,433 | 7,688 | 1,170 |
| | | | 0.15 | 11,868 | 2,312 | 9,890 | 1,926 | 8,901 | 1,734 | 8,407 | 1,637 | 7,418 | 1,156 | 6,923 | 944 |
| 6 | 0.1 | 12 | 0.08 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.065 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.06 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.05 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 |
| | | | 0.04 | 7,687 | 1,805 | 6,406 | 1,504 | 5,765 | 1,354 | 5,445 | 1,278 | 4,805 | 902 | 4,484 | 737 |
| | 0.2 | 12 | 0.16 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.14 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.13 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 |
| | | | 0.11 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 |
| | | | 0.08 | 7,687 | 1,805 | 6,406 | 1,504 | 5,765 | 1,354 | 5,445 | 1,278 | 4,805 | 902 | 4,484 | 737 |
| 0.3 | 12 | 0.24 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.22 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.2 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.18 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 | |
| | | 0.14 | 7,687 | 1,805 | 6,406 | 1,504 | 5,765 | 1,354 | 5,445 | 1,278 | 4,805 | 902 | 4,484 | 737 | |
| 0.5 | 18 | 0.35 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.29 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.24 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 | |
| | | 0.24 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 | |
| | | 0.165 | 7,687 | 1,805 | 6,406 | 1,504 | 5,765 | 1,354 | 5,445 | 1,278 | 4,805 | 902 | 4,484 | 737 | |
| 1 | 18 | 0.4 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.35 | 10,985 | 2,866 | 9,154 | 2,388 | 8,239 | 2,149 | 7,781 | 2,030 | 6,866 | 1,433 | 6,408 | 1,170 | |
| | | 0.28 | 9,881 | 2,320 | 8,234 | 1,933 | 7,411 | 1,740 | 6,999 | 1,643 | 6,176 | 1,160 | 5,764 | 947 | |
| | | 0.2 | 7,687 | 1,805 | 6,406 | 1,504 | 5,765 | 1,354 | 5,445 | 1,278 | 4,805 | 902 | 4,484 | 737 | |

- ※(1) apは被削材グループ2での目安を示しています。その他のグループの場合は、上表の切り込み比率を目安に調整してください。
 ※(2) リブ加工や止まり溝など、切りくずがつまりやすい切削の場合、切り込み設定は基本切り込み値に切り込み比率をかけて算出した切り込み量、さらにその80%まで小さくして使用してください。
 ※(3) aeの設定はap×切り込み比率×5倍以下を目安に調整してください。仕上げ加工を行う場合、理論カスプハイトを計算し設定してください。
 ※(4) 掘り込み時のアプローチ方法は、ヘリカルが傾斜での加工を推奨いたします。
 ※(5) L/Dが5以上の場合、
 ① 彫り込み時の傾斜進入角は1°以下を推奨いたします。また、送り速度は条件表の70%以下に調整してください。
 ② 文字彫り加工のような溝切削の際は、送り速度は50%以下、apを30%以下を目安に調整してください。また往復切削による加工を推奨いたします。
 ※(1) ap is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.
 ※(2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.
 ※(3) Adjust by setting ae to (5 or less) × (ap) × (cutting depth ratio). When performing finishing cutting, calculate the theoretical cusp height and set accordingly.
 ※(4) Helical or sloped cutting is recommended for the approach method when engraving.
 ※(5) When L/D is 5 or greater:
 ① The recommended slope entrance angle when engraving is 1° or less. In addition, feed rate should be adjusted to 70% or less of the values in the cutting condition table.
 ② When slotting such engraving letters, adjust feed rate to 50% or less and ap to 30% or less of the values shown. In addition, cutting by reciprocal cutting is recommended.

【切り込み設定例】 EPDRE2030-6-02-ATHの工具でプリハードン鋼(40HRC)をリブ溝等高線切削する場合、
 切り込み=0.1(ap)×0.8(プリハードン鋼グループ4の切り込み比率)×0.8(閉鎖域の切削)=0.064mm
 Cutting depth setting example: When cutting rib groove contours in pre-hardened steel (40HRC) using an EPDRE2030-6-02-ATH tool:
 Cutting depth = 0.1 (ap) × 0.8 (cutting depth factor for Group 4 pre-hardened steel) × 0.8 (for closed-area cutting) = 0.064mm

- 【注意】** ① 被削材、加工形状に合わせて、適切なクーラントを使用してください。
 ② この標準切削条件表は切削条件の目安を示すものです。実際の加工では加工形状、目的、使用機械等により条件を調整してください。
 ③ 機械の回転数が足りない場合は、回転数と送り速度を同じ比率で下げてください。
- 【Note】** ① Use the appropriate coolant for the work material and machining shape.
 ② These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
 ③ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

標準切削条件表

Recommended Cutting Conditions

高能率切削条件
High efficiency cutting condition

高精度切削条件
High accuracy cutting condition

高能率切削条件は11ページを参照してください。
Please refer to P.11 about high efficiency cutting conditions

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | | | | | | | | | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|------------------------|--------------|---|--------------|---|--------------|--|--------------|--|--------------|--|--------------|------------------------|--------------|------------------------|--------------|------------------------|--------------|------------------------|--------------|-----|--|--|--|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼き入れ鋼 Hardened steels (45~55HRC) | | 焼き入れ鋼 Hardened steels (55~65HRC) | | | | | | | | | | | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | | | 100% | | | | 90% | | | | 80% | | | | 65% | | | | 60% | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 | | 送り速度 | | 回転数 | | 送り速度 | | 回転数 | | 送り速度 | | 回転数 | | 送り速度 | | 回転数 | | 送り速度 | | | | | |
| | | | | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | n min ⁻¹ | Vf mm/min | | | | |
| 0.2 | 0.02 | 0.5 | 0.016 | 50,000 | 307 | 50,000 | 258 | 50,000 | 230 | 50,000 | 205 | 50,000 | 180 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | | | | |
| | | | 0.011 | 50,000 | 307 | 50,000 | 258 | 50,000 | 230 | 50,000 | 205 | 50,000 | 180 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | | | | |
| | | | 0.007 | 50,000 | 246 | 42,000 | 202 | 37,800 | 181 | 36,700 | 176 | 36,700 | 162 | 36,700 | 147 | 36,700 | 147 | 36,700 | 147 | 36,700 | 147 | 36,700 | 147 | | | | |
| | 0.05 | 0.5 | 0.02 | 50,000 | 307 | 50,000 | 258 | 50,000 | 230 | 50,000 | 205 | 50,000 | 180 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | | | | |
| | | | 0.014 | 50,000 | 307 | 50,000 | 258 | 50,000 | 230 | 50,000 | 205 | 50,000 | 180 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | 50,000 | 160 | | | | |
| | | | 0.008 | 50,000 | 276 | 50,000 | 240 | 48,600 | 223 | 45,900 | 202 | 45,900 | 170 | 45,900 | 153 | 45,900 | 153 | 45,900 | 153 | 45,900 | 153 | 45,900 | 153 | | | | |
| 0.3 | 0.02 | 1 | 0.016 | 50,000 | 696 | 50,000 | 585 | 50,000 | 516 | 50,000 | 456 | 50,000 | 336 | 50,000 | 320 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | | | | |
| | | | 0.011 | 45,000 | 620 | 45,000 | 530 | 45,000 | 460 | 45,000 | 420 | 45,000 | 300 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | | | | |
| | | | 0.007 | 40,000 | 504 | 35,000 | 412 | 35,000 | 358 | 35,000 | 326 | 30,000 | 200 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | | | | |
| | | | 0.021 | 50,000 | 696 | 50,000 | 585 | 50,000 | 516 | 50,000 | 456 | 50,000 | 336 | 50,000 | 320 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | | | | |
| | | | 0.016 | 50,000 | 696 | 50,000 | 585 | 50,000 | 516 | 50,000 | 456 | 50,000 | 336 | 50,000 | 320 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | 50,000 | 290 | | | | |
| | | | 0.012 | 45,000 | 620 | 45,000 | 530 | 45,000 | 460 | 45,000 | 420 | 45,000 | 300 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | 45,000 | 290 | | | | |
| | 0.05 | 2 | 1.5 | 0.01 | 40,000 | 551 | 40,000 | 471 | 40,000 | 409 | 40,000 | 373 | 40,000 | 267 | 40,000 | 258 | 40,000 | 258 | 40,000 | 258 | 40,000 | 258 | 40,000 | 258 | | | |
| | | | | 0.008 | 40,000 | 504 | 35,000 | 412 | 35,000 | 358 | 35,000 | 326 | 30,000 | 200 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | 30,000 | 194 | | | |
| | | | | 0.016 | 50,000 | 691 | 50,000 | 580 | 50,000 | 518 | 50,000 | 461 | 40,000 | 320 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | | | |
| | | | | 0.013 | 45,000 | 620 | 45,000 | 520 | 45,000 | 470 | 45,000 | 410 | 36,000 | 290 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | | | |
| | | | | 0.01 | 40,000 | 480 | 40,000 | 410 | 40,000 | 370 | 40,000 | 330 | 32,800 | 240 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | | | |
| | | | | 0.007 | 30,000 | 370 | 30,000 | 320 | 30,000 | 280 | 30,000 | 250 | 21,600 | 160 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | | | |
| 0.4 | 0.02 | 1 | 0.025 | 50,000 | 691 | 50,000 | 580 | 50,000 | 518 | 50,000 | 461 | 40,000 | 320 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | | | | |
| | | | 0.02 | 50,000 | 691 | 50,000 | 580 | 50,000 | 518 | 50,000 | 461 | 40,000 | 320 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | | | | |
| | | | 0.016 | 45,000 | 620 | 45,000 | 520 | 45,000 | 470 | 45,000 | 410 | 36,000 | 290 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | | | | |
| | | | 0.015 | 40,500 | 560 | 40,500 | 480 | 40,500 | 400 | 40,500 | 370 | 33,400 | 270 | 30,600 | 220 | 30,600 | 220 | 30,600 | 220 | 30,600 | 220 | 30,600 | 220 | | | | |
| | | | 0.014 | 40,000 | 480 | 40,000 | 410 | 40,000 | 370 | 40,000 | 330 | 32,800 | 240 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | | | | |
| | | | 0.012 | 36,000 | 420 | 36,000 | 380 | 36,000 | 320 | 36,000 | 300 | 29,400 | 200 | 22,920 | 180 | 22,920 | 180 | 22,920 | 180 | 22,920 | 180 | 22,920 | 180 | | | | |
| | 0.05 | 2 | 1.5 | 0.008 | 30,000 | 370 | 30,000 | 320 | 30,000 | 280 | 30,000 | 250 | 21,600 | 160 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | | | |
| | | | | 0.033 | 50,000 | 691 | 50,000 | 580 | 50,000 | 518 | 50,000 | 461 | 40,000 | 320 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | 36,000 | 270 | | | |
| | | | | 0.028 | 45,000 | 620 | 45,000 | 520 | 45,000 | 470 | 45,000 | 410 | 36,000 | 290 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | 34,000 | 240 | | | |
| | | | | 0.016 | 40,000 | 480 | 40,000 | 410 | 40,000 | 370 | 40,000 | 330 | 32,800 | 240 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | 25,600 | 200 | | | |
| | | | | 0.01 | 30,000 | 370 | 30,000 | 320 | 30,000 | 280 | 30,000 | 250 | 21,600 | 160 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | | | |
| | | | | 0.01 | 30,000 | 370 | 30,000 | 320 | 30,000 | 280 | 30,000 | 250 | 21,600 | 160 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | 19,200 | 150 | | | |
| 0.5 | 0.02 | 1 | 0.016 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | | |
| | | | 0.013 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | | |
| | | | 0.01 | 45,000 | 960 | 45,000 | 810 | 45,000 | 684 | 36,000 | 414 | 27,000 | 315 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | | | | |
| | | | 0.008 | 40,000 | 850 | 40,000 | 720 | 40,000 | 603 | 32,000 | 378 | 24,000 | 279 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | | | | |
| | | | 0.006 | 30,000 | 570 | 28,800 | 480 | 24,000 | 380 | 19,400 | 260 | 18,000 | 250 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | | | | |
| | | | 0.03 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | | |
| | 0.05 | 2 | 1.5 | 0.023 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | |
| | | | | 0.017 | 45,000 | 960 | 45,000 | 810 | 45,000 | 684 | 36,000 | 414 | 27,000 | 315 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | | | |
| | | | | 0.017 | 40,000 | 850 | 40,000 | 720 | 40,000 | 603 | 32,000 | 378 | 24,000 | 279 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | | | |
| | | | | 0.011 | 30,000 | 640 | 28,800 | 540 | 24,000 | 380 | 19,400 | 280 | 18,000 | 250 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | | | |
| | | | | 0.008 | 30,000 | 570 | 28,800 | 480 | 24,000 | 380 | 19,400 | 260 | 18,000 | 250 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | | | |
| | | | | 0.035 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | |
| 0.1 | 2 | 1.5 | 0.03 | 50,000 | 1,070 | 50,000 | 898 | 50,000 | 756 | 40,000 | 464 | 30,000 | 378 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | 28,000 | 315 | | | | |
| | | | 0.02 | 45,000 | 960 | 45,000 | 810 | 45,000 | 684 | 36,000 | 414 | 27,000 | 315 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | 24,500 | 261 | | | | |
| | | | 0.02 | 40,000 | 850 | 40,000 | 720 | 40,000 | 603 | 32,000 | 378 | 24,000 | 279 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | | | | |
| | | | 0.02 | 40,000 | 850 | 40,000 | 720 | 40,000 | 603 | 32,000 | 378 | 24,000 | 279 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | 20,000 | 234 | | | | |
| | | | 0.013 | 30,000 | 640 | 28,800 | 540 | 24,000 | 380 | 19,400 | 280 | 18,000 | 250 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | | | | |
| | | | 0.013 | 30,000 | 570 | 28,800 | 480 | 24,000 | 380 | 19,400 | 260 | 18,000 | 250 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | 15,000 | 200 | | | | |
| 0.6 | 0.02 | 2 | 0.016 | 50 | | | | | | | | | | | | | | | | | | | | | | | |

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | | | | | | | | | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|----------------------|---|----------------------|---|----------------------|--|----------------------|--|----------------------|--|----------------------|-------------------------------|----------------------|-----|--|-----|--|--|--|-----|--|--|--|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼き入れ鋼 Hardened steels (45~55HRC) | | 焼き入れ鋼 Hardened steels (55~65HRC) | | | | | | | | | | | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | | | 100% | | | | 90% | | | | 80% | | | | 65% | | | | 60% | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | | | | | | | | | | |
| 0.8 | 0.1 | 2 | 0.047 | 50,000 | 1,640 | 48,000 | 1,378 | 36,000 | 937 | 28,000 | 647 | 20,000 | 400 | 20,000 | 360 | 20,000 | 360 | | | | | | | | | | |
| | | 4 | 0.032 | 50,000 | 1,312 | 48,000 | 1,102 | 36,000 | 750 | 28,000 | 518 | 20,000 | 320 | 20,000 | 288 | 20,000 | 288 | | | | | | | | | | |
| | | 6 | 0.019 | 40,000 | 950 | 38,700 | 800 | 26,000 | 530 | 25,000 | 461 | 18,000 | 288 | 18,000 | 256 | 18,000 | 256 | | | | | | | | | | |
| | | 8 | 0.015 | 30,000 | 713 | 29,025 | 600 | 20,800 | 424 | 20,000 | 369 | 16,200 | 259 | 16,200 | 230 | 16,200 | 230 | | | | | | | | | | |
| | 12 | 0.012 | 30,000 | 677 | 29,025 | 570 | 20,800 | 403 | 20,000 | 350 | 16,200 | 246 | 16,200 | 219 | 16,200 | 219 | | | | | | | | | | | |
| | 0.2 | 2 | 0.081 | 50,000 | 1,640 | 48,000 | 1,378 | 36,000 | 937 | 28,000 | 647 | 20,000 | 400 | 20,000 | 360 | 20,000 | 360 | | | | | | | | | | |
| | | 4 | 0.056 | 50,000 | 1,312 | 48,000 | 1,102 | 36,000 | 750 | 28,000 | 518 | 20,000 | 320 | 20,000 | 288 | 20,000 | 288 | | | | | | | | | | |
| | | 6 | 0.032 | 40,000 | 950 | 38,700 | 800 | 26,000 | 530 | 25,000 | 461 | 18,000 | 288 | 18,000 | 256 | 18,000 | 256 | | | | | | | | | | |
| | | 8 | 0.018 | 30,000 | 713 | 29,025 | 600 | 20,800 | 424 | 20,000 | 369 | 16,200 | 259 | 16,200 | 230 | 16,200 | 230 | | | | | | | | | | |
| | 12 | 0.015 | 30,000 | 677 | 29,025 | 570 | 20,800 | 403 | 20,000 | 350 | 16,200 | 246 | 16,200 | 219 | 16,200 | 219 | | | | | | | | | | | |
| | 0.02 | 0.05 | 2 | 0.016 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,212 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | |
| | | | 4 | 0.013 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 27,540 | 1,039 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | |
| 6 | | | 0.01 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 22,307 | 842 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | |
| 8 | | | 0.008 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | |
| 10 | | 0.006 | 21,773 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | | |
| 12 | | 0.005 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | | |
| 0.1 | | 2 | 0.046 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,210 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | | |
| | | 3 | 0.035 | 40,796 | 1,754 | 34,020 | 1,462 | 30,618 | 1,317 | 30,294 | 1,212 | 25,515 | 867 | 23,814 | 714 | 23,814 | 714 | | | | | | | | | | |
| | | 4 | 0.027 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 28,917 | 1,128 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | | |
| | | 5 | 0.021 | 34,713 | 1,388 | 28,868 | 1,154 | 25,982 | 1,039 | 27,540 | 1,039 | 21,651 | 727 | 20,208 | 594 | 20,208 | 594 | | | | | | | | | | |
| 0.05 | | 2 | 0.017 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 24,538 | 928 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | |
| | | 4 | 0.016 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | |
| | 10 | 0.011 | 24,494 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | | |
| | 12 | 0.01 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | | |
| 0.01 | 2 | 0.006 | 21,773 | 639 | 18,144 | 533 | 16,330 | 479 | 15,422 | 420 | 13,608 | 342 | 12,701 | 266 | 12,701 | 266 | | | | | | | | | | | |
| | 16 | 0.006 | 21,773 | 639 | 18,144 | 533 | 16,330 | 479 | 15,422 | 420 | 13,608 | 342 | 12,701 | 266 | 12,701 | 266 | | | | | | | | | | | |
| | 20 | 0.004 | 16,330 | 479 | 13,608 | 399 | 12,247 | 359 | 11,567 | 315 | 10,206 | 257 | 9,526 | 200 | 9,526 | 200 | | | | | | | | | | | |
| | 2 | 0.065 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,212 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | | | |
| 0.1 | 0.05 | 3 | 0.05 | 40,796 | 1,754 | 34,020 | 1,462 | 30,618 | 1,317 | 28,917 | 1,128 | 25,515 | 867 | 23,814 | 714 | 23,814 | 714 | | | | | | | | | | |
| | | 4 | 0.038 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 27,540 | 1,039 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | | |
| | | 5 | 0.03 | 34,713 | 1,388 | 28,868 | 1,154 | 25,982 | 1,039 | 24,538 | 928 | 21,651 | 727 | 20,208 | 594 | 20,208 | 594 | | | | | | | | | | |
| | | 6 | 0.024 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 22,307 | 842 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | |
| | 0.02 | 2 | 0.024 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | |
| | | 10 | 0.015 | 24,494 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | |
| | | 12 | 0.015 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | |
| | | 16 | 0.009 | 21,773 | 639 | 18,144 | 533 | 16,330 | 479 | 15,422 | 420 | 13,608 | 342 | 12,701 | 266 | 12,701 | 266 | | | | | | | | | | |
| | 0.01 | 20 | 0.006 | 16,330 | 479 | 13,608 | 399 | 12,247 | 359 | 11,567 | 315 | 10,206 | 257 | 9,526 | 200 | 9,526 | 200 | | | | | | | | | | |
| | | 2 | 0.11 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,212 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | | |
| | | 3 | 0.09 | 40,796 | 1,754 | 34,020 | 1,462 | 30,618 | 1,317 | 28,917 | 1,128 | 25,515 | 867 | 23,814 | 714 | 23,814 | 714 | | | | | | | | | | |
| | | 4 | 0.07 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 27,540 | 1,039 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | | |
| 0.05 | 5 | 0.05 | 34,713 | 1,388 | 28,868 | 1,154 | 25,982 | 1,039 | 24,538 | 928 | 21,651 | 727 | 20,208 | 594 | 20,208 | 594 | | | | | | | | | | | |
| | 6 | 0.04 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 22,307 | 842 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | | |
| | 8 | 0.04 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | | |
| | 10 | 0.025 | 24,494 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | | |
| 0.02 | 12 | 0.025 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | | |
| | 16 | 0.015 | 21,773 | 639 | 18,144 | 533 | 16,330 | 479 | 15,422 | 420 | 13,608 | 342 | 12,701 | 266 | 12,701 | 266 | | | | | | | | | | | |
| | 20 | 0.01 | 16,330 | 479 | 13,608 | 399 | 12,247 | 359 | 11,567 | 315 | 10,206 | 257 | 9,526 | 200 | 9,526 | 200 | | | | | | | | | | | |
| | 2 | 0.11 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,212 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | | | |
| 0.05 | 0.02 | 3 | 0.09 | 40,796 | 1,754 | 34,020 | 1,462 | 30,618 | 1,317 | 28,917 | 1,128 | 25,515 | 867 | 23,814 | 714 | 23,814 | 714 | | | | | | | | | | |
| | | 4 | 0.07 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 27,540 | 1,039 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | | |
| | | 5 | 0.05 | 34,713 | 1,388 | 28,868 | 1,154 | 25,982 | 1,039 | 24,538 | 928 | 21,651 | 727 | 20,208 | 594 | 20,208 | 594 | | | | | | | | | | |
| | | 6 | 0.04 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 22,307 | 842 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | |
| | 0.01 | 8 | 0.04 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | |
| | | 10 | 0.025 | 24,494 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | |
| | | 12 | 0.025 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | |
| | | 16 | 0.015 | 21,773 | 639 | 18,144 | 533 | 16,330 | 479 | 15,422 | 420 | 13,608 | 342 | 12,701 | 266 | 12,701 | 266 | | | | | | | | | | |
| | 0.01 | 20 | 0.01 | 16,330 | 479 | 13,608 | 399 | 12,247 | 359 | 11,567 | 315 | 10,206 | 257 | 9,526 | 200 | 9,526 | 200 | | | | | | | | | | |
| | | 2 | 0.11 | 42,675 | 1,877 | 35,668 | 1,569 | 32,076 | 1,411 | 30,294 | 1,212 | 26,730 | 962 | 24,948 | 798 | 24,948 | 798 | | | | | | | | | | |
| | | 3 | 0.09 | 40,796 | 1,754 | 34,020 | 1,462 | 30,618 | 1,317 | 28,917 | 1,128 | 25,515 | 867 | 23,814 | 714 | 23,814 | 714 | | | | | | | | | | |
| | | 4 | 0.07 | 38,880 | 1,630 | 32,400 | 1,359 | 29,160 | 1,223 | 27,540 | 1,039 | 24,300 | 815 | 22,680 | 666 | 22,680 | 666 | | | | | | | | | | |
| 0.02 | 5 | 0.05 | 34,713 | 1,388 | 28,868 | 1,154 | 25,982 | 1,039 | 24,538 | 928 | 21,651 | 727 | 20,208 | 594 | 20,208 | 594 | | | | | | | | | | | |
| | 6 | 0.04 | 31,493 | 1,189 | 26,244 | 990 | 23,620 | 891 | 22,307 | 842 | 19,683 | 660 | 18,371 | 539 | 18,371 | 539 | | | | | | | | | | | |
| | 8 | 0.04 | 27,994 | 1,056 | 23,328 | 880 | 20,995 | 792 | 19,829 | 748 | 17,496 | 587 | 16,330 | 479 | 16,330 | 479 | | | | | | | | | | | |
| | 10 | 0.025 | 24,494 | 924 | 20,412 | 770 | 18,371 | 693 | 17,350 | 655 | 15,309 | 514 | 14,288 | 419 | 14,288 | 419 | | | | | | | | | | | |
| 0.01 | 12 | 0.025 | 21,773 | 730 | 18,144 | 609 | 16,330 | 548 | 15,422 | 453 | 13,608 | 399 | 12,701 | 320 | 12,701 | 320 | | | | | | | | | | | |
| | 16 | 0.015 | | | | | | | | | | | | | | | | | | | | | | | | | |

標準切削条件表

Recommended Cutting Conditions

高効率切削条件 High efficiency cutting condition

高精度切削条件 High accuracy cutting condition

高効率切削条件は11ページを参照してください。Please refer to P.11 about high efficiency cutting conditions

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | | | | | | | | | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|--------|---|--------|---|--------|--|--------|---------------------------------------|--------|---------------------------------------|--------|-------------------------------|--------|----------------------|--------|-------------------------------|--------|----------------------|--------|--------|--------|--------|-----|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | | | | | | | | | | | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | | | 100% | | | | 90% | | | | 80% | | | | 65% | | | | 60% | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | | 送り速度 vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 vf mm/min | | | | | |
| | | | | 1.5 | 0.2 | 4 | 0.07 | 29,938 | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 |
| 6 | 0.065 | 28,450 | 1,285 | | | 23,779 | 1,074 | 21,443 | 969 | 20,382 | 921 | 17,834 | 716 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| 8 | 0.06 | 27,216 | 1,233 | | | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| 12 | 0.06 | 21,773 | 986 | | | 18,144 | 822 | 16,330 | 740 | 15,422 | 698 | 13,608 | 548 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | | |
| 15 | 0.038 | 16,934 | 682 | | | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| 0.3 | 4 | 0.07 | 29,938 | | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 6 | 0.065 | 28,450 | | 1,285 | 23,779 | 1,074 | 21,443 | 969 | 20,382 | 921 | 17,834 | 716 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 8 | 0.06 | 27,216 | | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 12 | 0.06 | 21,773 | | 986 | 18,144 | 822 | 16,330 | 740 | 15,422 | 698 | 13,608 | 548 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | | |
| | 15 | 0.038 | 16,934 | | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| 0.5 | 4 | 0.085 | 29,938 | | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 6 | 0.08 | 28,450 | | 1,285 | 23,779 | 1,074 | 21,443 | 969 | 20,382 | 921 | 17,834 | 716 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 8 | 0.07 | 27,216 | | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 12 | 0.065 | 21,773 | | 986 | 18,144 | 822 | 16,330 | 740 | 15,422 | 698 | 13,608 | 548 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | 12,701 | 447 | | |
| | 15 | 0.045 | 16,934 | | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| 1.75 | 0.1 | 5 | 0.04 | | 29,938 | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | |
| | | 10 | 0.036 | | 27,216 | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | |
| | | 15 | 0.023 | | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | |
| | | 20 | 0.018 | | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | |
| | | 5 | 0.065 | | 29,938 | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | |
| | 0.2 | 10 | 0.06 | 27,216 | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | | 15 | 0.038 | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| | | 20 | 0.03 | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| | | 5 | 0.065 | 29,938 | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | | 10 | 0.06 | 27,216 | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | 0.3 | 15 | 0.038 | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| | | 20 | 0.03 | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| | | 5 | 0.085 | 29,938 | 1,356 | 24,930 | 1,130 | 22,453 | 1,017 | 20,956 | 868 | 18,711 | 678 | 17,364 | 556 | 16,560 | 582 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | | 10 | 0.06 | 27,216 | 1,233 | 22,680 | 1,027 | 20,412 | 924 | 19,278 | 873 | 17,010 | 685 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | 15,876 | 559 | | |
| | | 15 | 0.038 | 16,934 | 682 | 14,112 | 568 | 12,701 | 511 | 11,995 | 423 | 10,584 | 373 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | 9,878 | 298 | | |
| | 2 | 0.1 | 4 | 0.08 | 26,114 | 2,052 | 21,974 | 1,727 | 19,745 | 1,551 | 18,471 | 1,451 | 16,401 | 1,033 | 15,286 | 840 | 14,553 | 801 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | |
| | | | 6 | 0.07 | 24,948 | 1,962 | 20,790 | 1,635 | 18,711 | 1,471 | 17,672 | 1,389 | 15,593 | 981 | 14,553 | 801 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | |
| | | | 8 | 0.055 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | |
| | | | 12 | 0.03 | 18,371 | 1,300 | 15,309 | 1,083 | 13,778 | 975 | 13,013 | 921 | 11,482 | 722 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | |
| | | | 16 | 0.03 | 16,330 | 1,156 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | |
| 0.2 | | 20 | 0.025 | 14,288 | 1,011 | 11,907 | 843 | 10,716 | 758 | 10,121 | 716 | 8,930 | 562 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | | |
| | | 25 | 0.015 | 14,288 | 908 | 11,907 | 757 | 10,716 | 681 | 10,121 | 643 | 8,930 | 505 | 8,335 | 411 | 8,335 | 411 | 8,335 | 411 | 8,335 | 411 | 8,335 | 411 | 8,335 | 411 | | |
| | | 30 | 0.01 | 13,574 | 863 | 11,312 | 719 | 10,180 | 647 | 9,615 | 611 | 8,484 | 480 | 7,918 | 391 | 7,918 | 391 | 7,918 | 391 | 7,918 | 391 | 7,918 | 391 | 7,918 | 391 | | |
| | | 4 | 0.1 | 26,114 | 2,052 | 21,974 | 1,727 | 19,745 | 1,551 | 18,471 | 1,451 | 16,401 | 1,033 | 15,286 | 840 | 14,553 | 801 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | | |
| | | 6 | 0.08 | 24,948 | 1,962 | 20,790 | 1,635 | 18,711 | 1,471 | 17,672 | 1,389 | 15,593 | 981 | 14,553 | 801 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | | |
| 0.3 | | 8 | 0.07 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | 13,230 | 728 | | |
| | | 12 | 0.04 | 18,371 | 1,300 | 15,309 | 1,083 | 13,778 | 975 | 13,013 | 921 | 11,482 | 722 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | 10,716 | 590 | | |
| | | 16 | 0.04 | 16,330 | 1,156 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | 9,526 | 524 | | |
| | | 20 | 0.035 | 14,288 | 1,011 | 11,907 | 843 | 10,716 | 758 | 10,121 | 716 | 8,930 | 562 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | 8,335 | 459 | | |
| | | 25 | 0.025 | 14,288 | 908 | 11,907 | | | | | | | | | | | | | | | | | | | | | |

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|----------------------|---|----------------------|---|----------------------|--|----------------------|---------------------------------------|----------------------|---------------------------------------|----------------------|-----|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | 回転数 n min ⁻¹ | 送り速度 Vf mm/min | |
| 2.5 | 0.1 | 10 | 0.055 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | |
| | | 20 | 0.03 | 16,330 | 1,284 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | |
| | | 30 | 0.015 | 14,288 | 1,008 | 11,907 | 757 | 10,716 | 681 | 10,121 | 643 | 8,930 | 505 | 8,335 | 411 | |
| | 0.2 | 10 | 0.07 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | |
| | | 20 | 0.04 | 16,330 | 1,284 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | |
| | | 30 | 0.025 | 14,288 | 1,008 | 11,907 | 757 | 10,716 | 681 | 10,121 | 643 | 8,930 | 505 | 8,335 | 411 | |
| | 0.3 | 10 | 0.09 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | |
| | | 20 | 0.06 | 16,330 | 1,284 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | |
| | | 30 | 0.03 | 14,288 | 1,008 | 11,907 | 757 | 10,716 | 681 | 10,121 | 643 | 8,930 | 505 | 8,335 | 411 | |
| | 0.5 | 10 | 0.14 | 22,680 | 1,783 | 18,900 | 1,486 | 17,010 | 1,337 | 16,065 | 1,263 | 14,175 | 892 | 13,230 | 728 | |
| | | 20 | 0.08 | 16,330 | 1,284 | 13,608 | 963 | 12,247 | 867 | 11,567 | 818 | 10,206 | 642 | 9,526 | 524 | |
| | | 30 | 0.05 | 14,288 | 1,008 | 11,907 | 757 | 10,716 | 681 | 10,121 | 643 | 8,930 | 505 | 8,335 | 411 | |
| 3 | 0.1 | 6 | 0.08 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 8 | 0.07 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 12 | 0.05 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 16 | 0.035 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 18 | 0.035 | 15,498 | 1,521 | 12,951 | 1,271 | 11,677 | 1,149 | 10,934 | 1,073 | 9,766 | 767 | 9,023 | 620 | |
| | | 20 | 0.035 | 13,997 | 1,376 | 11,664 | 1,146 | 10,498 | 1,032 | 9,914 | 974 | 8,748 | 687 | 8,165 | 561 | |
| | 0.2 | 6 | 0.1 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 8 | 0.09 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 12 | 0.07 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 16 | 0.05 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 18 | 0.05 | 15,498 | 1,521 | 12,951 | 1,271 | 11,677 | 1,149 | 10,934 | 1,073 | 9,766 | 767 | 9,023 | 620 | |
| | | 20 | 0.05 | 13,997 | 1,376 | 11,664 | 1,146 | 10,498 | 1,032 | 9,914 | 974 | 8,748 | 687 | 8,165 | 561 | |
| | 0.3 | 6 | 0.145 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 8 | 0.13 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 12 | 0.1 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 16 | 0.075 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 18 | 0.075 | 15,498 | 1,521 | 12,951 | 1,271 | 11,677 | 1,149 | 10,934 | 1,073 | 9,766 | 767 | 9,023 | 620 | |
| | | 20 | 0.075 | 13,997 | 1,376 | 11,664 | 1,146 | 10,498 | 1,032 | 9,914 | 974 | 8,748 | 687 | 8,165 | 561 | |
| | 0.5 | 6 | 0.18 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 8 | 0.13 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 12 | 0.1 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 16 | 0.1 | 15,498 | 1,521 | 12,951 | 1,271 | 11,677 | 1,149 | 10,934 | 1,073 | 9,766 | 767 | 9,023 | 620 | |
| | | 18 | 0.1 | 13,997 | 1,376 | 11,664 | 1,146 | 10,498 | 1,032 | 9,914 | 974 | 8,748 | 687 | 8,165 | 561 | |
| | | 20 | 0.1 | 10,886 | 962 | 9,072 | 801 | 8,165 | 721 | 7,711 | 681 | 6,804 | 480 | 6,350 | 393 | |
| | 1 | 6 | 0.2 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 8 | 0.15 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 12 | 0.12 | 17,280 | 1,698 | 14,400 | 1,415 | 12,960 | 1,274 | 12,240 | 1,203 | 10,800 | 849 | 10,080 | 693 | |
| | | 16 | 0.11 | 15,498 | 1,521 | 12,951 | 1,271 | 11,677 | 1,149 | 10,934 | 1,073 | 9,766 | 767 | 9,023 | 620 | |
| | | 18 | 0.11 | 13,997 | 1,376 | 11,664 | 1,146 | 10,498 | 1,032 | 9,914 | 974 | 8,748 | 687 | 8,165 | 561 | |
| | | 20 | 0.09 | 10,886 | 962 | 9,072 | 801 | 8,165 | 721 | 7,711 | 681 | 6,804 | 480 | 6,350 | 393 | |
| | 4 | 0.1 | 8 | 0.08 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 |
| | | | 12 | 0.065 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 |
| | | | 16 | 0.06 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 |
| | | | 20 | 0.055 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 |
| | | | 30 | 0.045 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 |
| | | | 35 | 0.04 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 |
| 0.2 | | 8 | 0.16 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 | |
| | | 12 | 0.14 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 | |
| | | 16 | 0.13 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | | 20 | 0.11 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | | 30 | 0.1 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 | |
| | | 35 | 0.08 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 | |
| 0.3 | | 8 | 0.24 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 | |
| | | 12 | 0.22 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 | |
| | | 16 | 0.2 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | | 20 | 0.18 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | | 30 | 0.16 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 | |
| | | 35 | 0.14 | 12,360 | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,667 | 1,075 | 5,491 | 688 | 5,124 | 561 | |

[注意] ご使用にあたっては、20ページの表下の項目と注意を参照してください。 **[Note]** Upon usage, please refer to comments and notes below table on page 20.

標準切削条件表

Recommended Cutting Conditions

高効率切削条件
High efficiency cutting condition

高精度切削条件
High accuracy cutting condition

高効率切削条件は11ページを参照してください。Please refer to P.11 about high efficiency cutting conditions

| 被削材 Work material | | | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | | | | |
|---------------------------------------|--------------------------------------|-------------------------------------|------------|-------------------------------|-------|---|-------|---|--------|--|--------|---------------------------------------|--------|---------------------------------------|--------|-------|-------|-------|-------|
| | | | | 銅 Coppers | | 炭素鋼・合金鋼 Carbon steels, Alloy steels (180~250HB) | | ステンレス鋼・工具鋼 Stainless steels, Tool steels (25~35HRC) | | プリハードン鋼 Pre-hardened steels (35~45HRC) | | 焼入れ鋼 Hardened steels (45~55HRC) | | 焼入れ鋼 Hardened steels (55~65HRC) | | | | | |
| 切り込み比率 Ratio to standard depth of cut | | | | 120% | | 100% | | 90% | | 80% | | 65% | | 60% | | | | | |
| 外径 Tool dia. (mm) | コーナ半径 RE Corner radius (mm) | 首下長 Under neck length (mm) | ap (mm) | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | 回転数 n min ⁻¹ | | 送り速度 Vf mm/min | | | | | |
| | | | | 4 | | | | 0.5 | 12 | 0.35 | 13,455 | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 |
| 16 | 0.25 | 12,360 | 2,149 | | | | | | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| 20 | 0.2 | 12,360 | 2,149 | | | | | | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| 30 | 0.15 | 12,360 | 2,149 | | | | | | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| 35 | 0.1 | 12,360 | 2,149 | | | | | | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| 1 | 45 | 0.05 | 9,888 | | | | | 1,289 | 8,240 | 1,075 | 7,324 | 955 | 5,584 | 728 | 4,944 | 516 | 4,119 | 358 | |
| | 12 | 0.4 | 13,455 | | | | | 2,340 | 11,213 | 1,950 | 10,091 | 1,755 | 9,531 | 1,658 | 8,410 | 1,170 | 7,849 | 956 | |
| | 16 | 0.29 | 12,360 | | | | | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | 20 | 0.23 | 12,360 | | | | | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,512 | 7,599 | 1,057 | 6,684 | 814 | |
| | 30 | 0.17 | 12,360 | | | | | 2,149 | 10,255 | 1,783 | 9,155 | 1,592 | 8,697 | 1,075 | 5,491 | 688 | 5,124 | 561 | |
| 5 | 0.1 | 20 | 0.08 | | | | | 10,985 | 2,388 | 9,154 | 1,990 | 8,239 | 1,791 | 7,781 | 1,692 | 6,866 | 1,194 | 6,408 | 975 |
| | | 40 | 0.06 | | | | | 7,907 | 1,540 | 6,590 | 1,284 | 5,931 | 1,155 | 5,602 | 1,091 | 4,943 | 770 | 4,613 | 629 |
| | | 20 | 0.16 | | | | | 10,985 | 2,388 | 9,154 | 1,990 | 8,239 | 1,791 | 7,781 | 1,692 | 6,866 | 1,194 | 6,408 | 975 |
| | 0.2 | 40 | 0.13 | | | | | 7,907 | 1,540 | 6,590 | 1,284 | 5,931 | 1,155 | 5,602 | 1,091 | 4,943 | 770 | 4,613 | 629 |
| | | 20 | 0.24 | | | | | 10,985 | 2,388 | 9,154 | 1,990 | 8,239 | 1,791 | 7,781 | 1,692 | 6,866 | 1,194 | 6,408 | 975 |
| | 0.3 | 40 | 0.2 | | | | | 7,907 | 1,540 | 6,590 | 1,284 | 5,931 | 1,155 | 5,602 | 1,091 | 4,943 | 770 | 4,613 | 629 |
| | | 20 | 0.35 | | | | | 10,985 | 2,388 | 9,154 | 1,990 | 8,239 | 1,791 | 7,781 | 1,692 | 6,866 | 1,194 | 6,408 | 975 |
| | 0.5 | 40 | 0.135 | | | | | 7,907 | 1,540 | 6,590 | 1,284 | 5,931 | 1,155 | 5,602 | 1,091 | 4,943 | 770 | 4,613 | 629 |
| | | 20 | 0.4 | | | | | 10,985 | 2,388 | 9,154 | 1,990 | 8,239 | 1,791 | 7,781 | 1,692 | 6,866 | 1,194 | 6,408 | 975 |
| | 6 | 0.1 | 40 | | | | | 0.15 | 7,907 | 1,540 | 6,590 | 1,284 | 5,931 | 1,155 | 5,602 | 1,091 | 4,943 | 770 | 4,613 |
| | | | 12 | 0.08 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | |
| | | | 18 | 0.065 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | |
| | | 0.2 | 24 | 0.06 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | |
| | | | 35 | 0.05 | 7,783 | 1,827 | 6,486 | 1,523 | 5,837 | 1,371 | 5,513 | 1,294 | 4,865 | 914 | 4,540 | 746 | | | |
| | | | 55 | 0.04 | 6,590 | 1,260 | 5,491 | 1,050 | 4,943 | 945 | 4,668 | 892 | 4,118 | 623 | 3,844 | 508 | | | |
| 12 | | | 0.16 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| 18 | | | 0.14 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| 0.3 | | 24 | 0.13 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| | | 35 | 0.11 | 7,783 | 1,827 | 6,486 | 1,523 | 5,837 | 1,371 | 5,513 | 1,294 | 4,865 | 914 | 4,540 | 746 | | | | |
| | | 55 | 0.08 | 6,590 | 1,260 | 5,491 | 1,050 | 4,943 | 945 | 4,668 | 892 | 4,118 | 623 | 3,844 | 508 | | | | |
| | | 12 | 0.24 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| | | 18 | 0.22 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| 0.5 | | 24 | 0.2 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | |
| | | 35 | 0.18 | 7,783 | 1,827 | 6,486 | 1,523 | 5,837 | 1,371 | 5,513 | 1,294 | 4,865 | 914 | 4,540 | 746 | | | | |
| | 55 | 0.14 | 6,590 | 1,260 | 5,491 | 1,050 | 4,943 | 945 | 4,668 | 892 | 4,118 | 623 | 3,844 | 508 | | | | | |
| | 18 | 0.35 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | | |
| | 24 | 0.29 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | | |
| 1 | 35 | 0.24 | 7,783 | 1,827 | 6,486 | 1,523 | 5,837 | 1,371 | 5,513 | 1,294 | 4,865 | 914 | 4,540 | 746 | | | | | |
| | 55 | 0.165 | 6,590 | 1,260 | 5,491 | 1,050 | 4,943 | 945 | 4,668 | 892 | 4,118 | 623 | 3,844 | 508 | | | | | |
| | 18 | 0.4 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | | |
| | 24 | 0.35 | 9,156 | 2,389 | 7,630 | 1,991 | 6,868 | 1,791 | 6,486 | 1,692 | 5,722 | 1,194 | 5,342 | 975 | | | | | |
| | 35 | 0.28 | 7,783 | 1,827 | 6,486 | 1,523 | 5,837 | 1,371 | 5,513 | 1,294 | 4,865 | 914 | 4,540 | 746 | | | | | |
| 55 | 0.2 | 6,590 | 1,260 | 5,491 | 1,050 | 4,943 | 945 | 4,668 | 892 | 4,118 | 623 | 3,844 | 508 | | | | | | |

- ※(1) apは被削材グループ2での目安を示しています。その他のグループの場合は、上表の切り込み比率を目安に調整してください。
- ※(2) リブ加工や止まり溝など、切りくずがつまりやすい切削の場合、切り込み設定は基本切り込み値に切り込み比率をかけて算出した切り込み量、さらにその80%まで小さくして使用してください。
- ※(3) aeの設定はap×切り込み比率×5倍以下を目安に調整してください。仕上げ加工を行う場合、理論カスプハイトを計算し設定してください。
- ※(4) Z切り込み時のアプローチ方法は、ヘリカルか傾斜での加工を推奨いたします。
- ※(5) L/Dが5以上の場合、
 - ① 彫り込み時の傾斜進入角は1°以下を推奨いたします。また、送り速度は条件表の70%以下に調整してください。
 - ② 文字彫り加工のような溝切削の際は、送り速度は50%以下、apを30%以下を目安に調整してください。また往復切削による加工を推奨いたします。
- ※(1) ap is shown as the criteria for Group 2 workpieces. For other groups, adjust the cutting depth according to the cutting depth factors in the above table.
- ※(2) When performing cutting where cutting chips may cause clogging, such as for rib cutting, blind grooves, etc., cutting depth setting should be set by multiplying a cutting depth factor to calculate the cutting depth amount, and this amount should then be reduced to 80% of the calculated value.
- ※(3) Adjust by setting ae to (5 or less)×(ap)×(cutting depth ratio). When performing finishing cutting, calculate the theoretical cusp height and set accordingly.
- ※(4) Helical or sloped cutting is recommended for the approach method when engraving.
- ※(5) When L/D is 5 or greater:
 - ① The recommended slope entrance angle when engraving is 1° or less. In addition, feed rate should be adjusted to 70% or less of the values in the cutting condition table.
 - ② When slotting such engraving letters, adjust feed rate to 50% or less and ap to 30% or less of the values shown. In addition, cutting by reciprocal cutting is recommended.

【切り込み設定例】 EPDRE2030-6-02-ATHの工具でプリハードン鋼(40HRC)をリブ溝等高線切削する場合、
 切り込み=0.1(ap)×0.8(プリハードン鋼グループ4の切り込み比率)×0.8(閉鎖域の切削)=0.064mm
 Cutting depth setting example: When cutting rib groove contours in pre-hardened steel (40HRC) using an EPDRE2030-6-02-ATH tool:
 Cutting depth = 0.1 (ap) × 0.8 (cutting depth factor for Group 4 pre-hardened steel) × 0.8 (for closed-area cutting) = 0.064mm

- 【注意】**
 - ① 被削材、加工形状に合わせて、適切なクーラントを使用してください。
 - ② この標準切削条件表は切削条件の目安を示すものです。実際の加工では加工形状、目的、使用機械等により条件を調整してください。
 - ③ 機械の回転数が足りない場合は、回転数と送り速度を同じ比率で下げてください。
- 【Note】**
 - ① Use the appropriate coolant for the work material and machining shape.
 - ② These Recommended Cutting Conditions indicate only the rule of a thumb for the cutting conditions. In actual machining, the condition should be adjusted according to the machining shape, purpose and the machine type.
 - ③ If the rpm of the machine is low, lower the feed rate also to put the rpm and feed rate in the same ratio.

閉鎖領域のリブ溝でも安定加工!!

Stable processing even when rib slotting in enclosed areas.

SUS420J2(H) 52HRC リブ溝評価 Rib slot evaluation SUS420J2(H) 52HRC

使用工具 Tool : EPDRE2010-10-02-ATH ($\phi 1 \times RE0.2 \times$ 首下長 Under neck 10mm)

★ここがすごい! その① 耐折損性良好!! 安定した切削性能!

This is amazing! Point 1: Good breakage resistance! Stabilized cutting performance!

EPDRE-ATH



深さ 10mm まで
安定して加工が可能

Stable processing is possible
to depths of 10mm.

従来ラジアスエンドミル Conventional radius end mill



深さ 6mm で折損
Breakage at 6mm depth

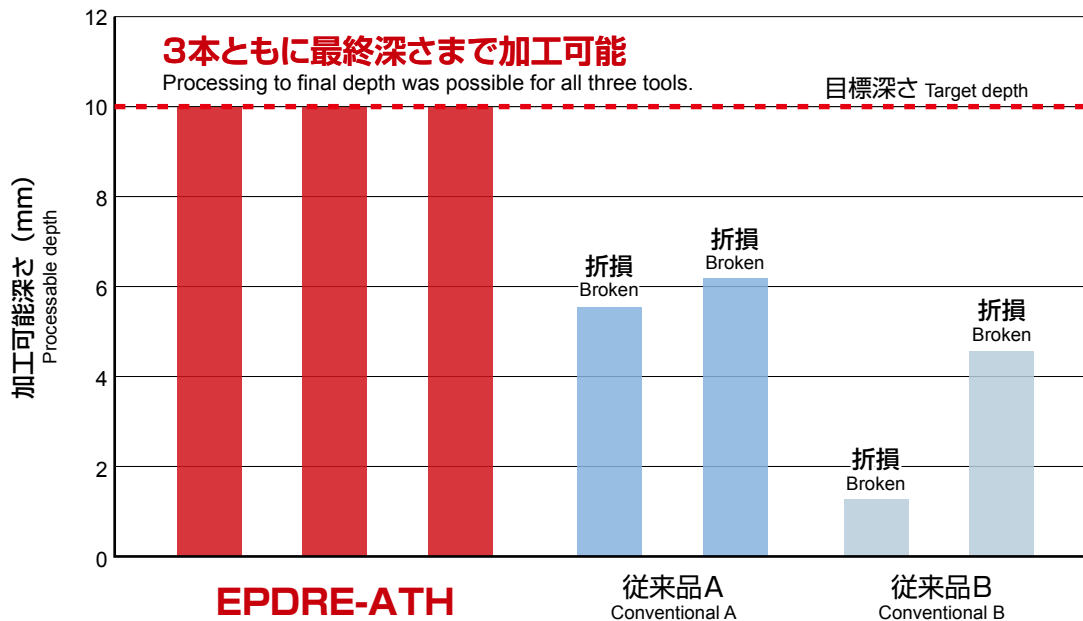
リブ溝評価

Rib slot evaluation

クーラント Coolant : ウェット Wet
 $n=12,800\text{min}^{-1}$ ($v_c=40\text{m/min}$)
 $v_f=640\text{mm/min}$
 $f_z=0.025\text{mm/t}$
 $a_p \times a_e=0.03\text{mm} \times 0.5\text{mm}$

★ここがすごい! その② より深いリブ溝加工を実現!!

This is amazing! Point 2: Deeper rib slotting achieved!



リブ溝加工においても安定摩耗で長距離の加工が可能です!!

Stable wear when rib slotting enables processing of long lengths.

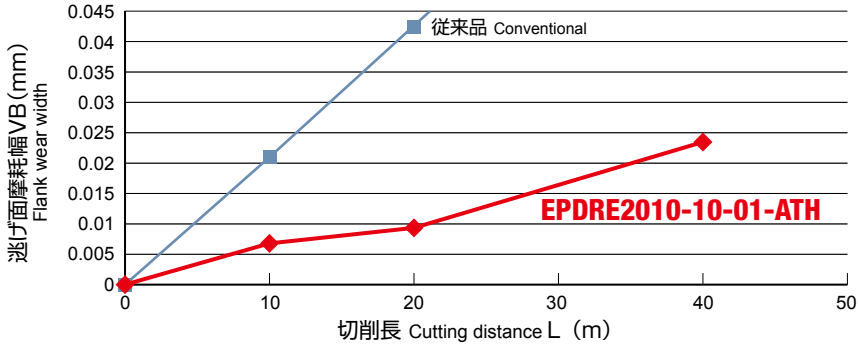
01 プリハードン鋼 40HRC リブ溝評価 Rib slot evaluation Pre-hardened steel 40HRC

使用工具 Tool : EPDRE2010-10-01-ATH ($\phi 1 \times RE0.1 \times$ 首下長 Under neck 10mm)

★ここがすごい! その① 摩耗形態が安定!! 長寿命切削が可能です。

This is amazing! Point 1: Wear condition is stable, enabling long-life cutting.

40m切削後の摩耗状態 Wear condition after cutting 40m



リブ溝評価

Rib slot evaluation

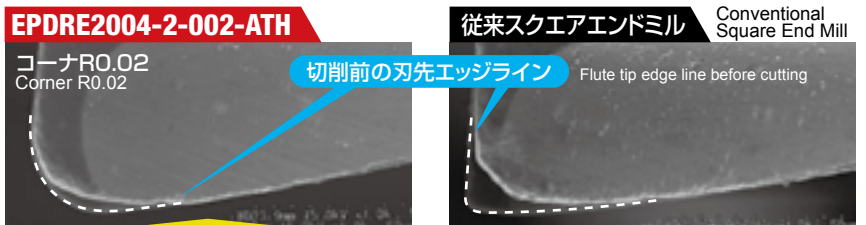
クーラント Coolant: ウェット Wet
 $n=17,350\text{min}^{-1}$ ($v_c=54\text{m/min}$)
 $v_f=655\text{mm/min}$
 $(f_z=0.018\text{mm/t})$
 $a_p \times a_e=0.012\text{mm} \times \text{変化 Change}$

02 SUS420J2(H) 52HRC 最小コーナーRによる切削事例 Example of cutting SUS420J2(H) 52HRC at minimum corner radius.

使用工具 Tool : EPDRE2004-2-002-ATH ($\phi 0.4 \times RE0.02 \times$ 首下長 Under neck 2mm)

★ここがすごい! その② 微細な隅部の仕上げに最適です!!

This is amazing! Point 2: Ideal for finishing tiny corners



摩滅が少なく安定加工が可能!!
Wear is low enabling stable processing.

コーナー部のチッピングにより寸法誤差が発生する...
Dimensional differences occur due to corner chipping.



ここがポイント!!
This is the point!!

EPDREなら隅部の削り残しが少ない
Cutting remainder in corner is small when EPDRE is used.

隅部仕上げ評価

Evaluation of corner finishing

ワーク観察ポイント
Work observation point

クーラント Coolant: ウェット Wet
 $n=40,000\text{min}^{-1}$ ($v_c=50.3\text{m/min}$)
 $v_f=520\text{mm/min}$
 $(f_z=0.0065\text{mm/t})$
 $a_p \times a_e=0.005\text{mm} \times 0.5\text{mm}$
 切削長 Cutting distance : 40m
 加工箇所 : 底面と勾配面の隅部
 Processing location:
 Corner between bottom and slope

スクエアを使って、隅部の仕上げを行うとコーナー部がチッピングして加工誤差が発生しやすくなりますが、微小コーナーRを使用することで摩耗が安定して加工誤差も少なくなります!!

When a square is used to finish the corner, chipping of the corner and cutting differences are likely to occur, but when fine corner R is used, cutting differences are reduced because wear is stable.



外周刃の接触なく安定加工が可能です!!

Enables stable processing without contact of outer flute!

プリハードン鋼 40HRCの加工 Cutting for Pre-hardened steel 40HRC

使用工具 Tool : EPDRE2010-10-01-ATH (φ1×RE0.1×首下長 Under neck 10mm)

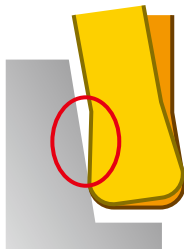
EPDRE2010-10-01-ATH

バックドラフト効果
Back draft effect



バックドラフト形状の効果により
ビビリもなく良好な状態

Good conditions without chattering due to backdraft shape effect.



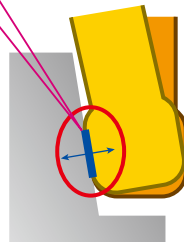
従来品 A Conventional A



外周刃全体がワークに接触し損傷
Entire outer flank face contacts with work-piece to fracture

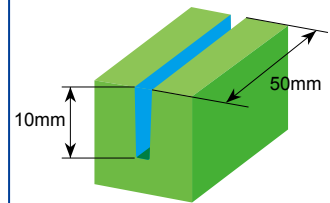
工具たわみによりビビリ振動が発生

Inclination of chattering vibrations due to tool deflection.



切削条件

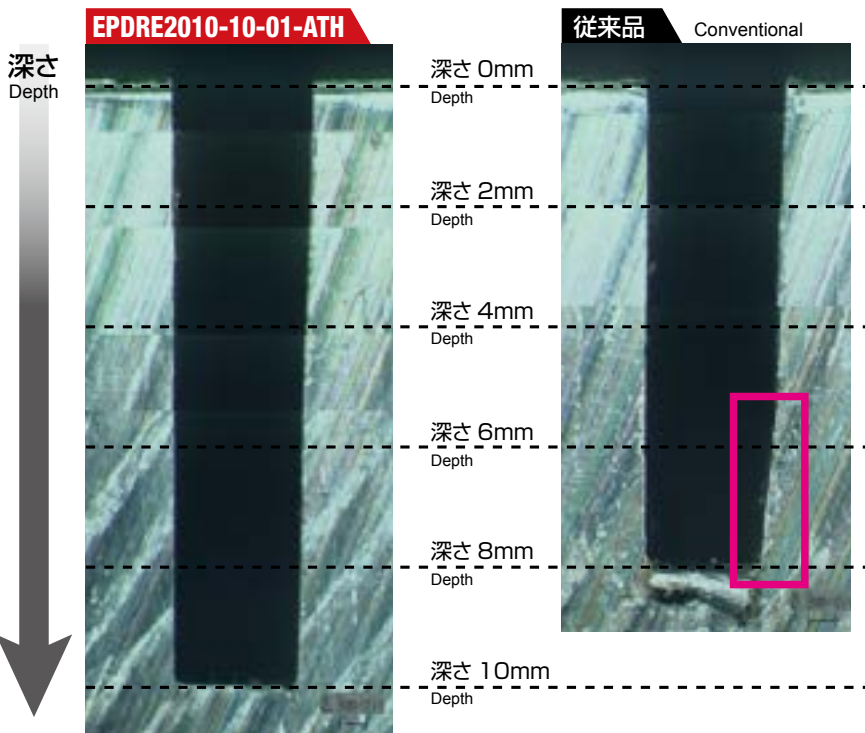
Cutting condition



クーラント Coolant : ウェット Wet
 $n=17,350\text{min}^{-1}$ ($v_c=54\text{m/min}$)
 $v_f=655\text{mm/min}$
($f_z=0.018\text{mm/t}$)
 $a_p \times a_e=0.012\text{mm} \times \text{変化}$ Change
Wet
等高線加工による加工
Processing by contouring

リブ溝の出口側のタオレ状態

Inclination condition at exit side of rib slot



工具たわみによる
溝のたおれ発生

Inclination of slot occurred due to tool deflection.

特長

寸法

高効率切削条件

高精度切削条件

技術データ



図、表等のデータは試験結果の一例であり、保証値ではありません。
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安全上のご注意 Attention on Safety

1. 取扱上のご注意

- (1) 工具をケース(梱包)から取り出す際は、工具の飛び出し、落下にご注意ください。特に工具刃部との接触には十分ご注意ください。
- (2) 鋭利な切れ刃を有する工具を取扱う際は、切れ刃を素手で直接触れないように注意してください。

2. 取付け時のご注意

- (1) ご使用前に、工具の傷、割れ等の外観確認を行っていただき、コレットチャック等への取付けは確実に行ってください。
- (2) ご使用中に、異常な振動等が発生した場合は、直ちに機械を停止させて、その振動の原因を取り除いてください。

3. 使用上のご注意

- (1) 切削工具あるいは被削材の寸法・回転の方向は、あらかじめ確認しておいてください。
- (2) 標準切削条件表の数値は、新しい作業の立上げの目安としてご利用ください。切込みが大きい場合、使用機械の剛性が小さい場合あるいは被加工物の性状に応じて切削条件を適正に調整してご使用ください。
- (3) 切削工具材料は硬質の材料です。ご使用中に破損して飛散する場合があります。また、切りくずが飛散することがあります。これらの飛散物等は作業者を切傷させ、火傷あるいは目に入って負傷させる恐れがありますので、工具をご使用中はその周囲に安全カバーを取付け、保護メガネ等の保護具を着用して安全な環境下での作業をお願いします。
- (4) 切削中に発生する火花や、破損による発熱や、切りくずによる引火・火災の危険があります。引火や爆発の危険のあるところでは使用しないでください。不水溶性切削液をご使用される場合は防火対策を必ず行ってください。
- (5) 工具を本来の目的以外にはご使用にならないでください。

4. 再研削時のご注意

- (1) 再研削時期が不相当であると工具が破損する恐れがあります。適正な工具と交換するか、再研削を行ってください。
- (2) 工具を再研削しますと粉塵が発生します。再研削時にはその周囲に安全カバーを取付け、保護メガネ等の保護具を着用してください。
- (3) 本製品には特定化学物質に指定されたコバルト及びその無機化合物が含まれています。再研削等の加工を加える場合は特定化学物質障害予防規則(特化規則)に従った取扱いをしてください。

5. 工具に関して、安全上の問題点・不明の点・その他相談がありましたら [フリーダイヤル技術相談](#)へご相談ください。

1. Cautions regarding handling

- (1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
- (2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
- (4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
- (5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

- (1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
- (2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
- (3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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