

PRODUCT NEWS

No.509

新製品

NEW PRODUCT

NEW

DIJET®

座ぐり加工用ドリル

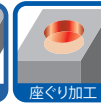
Spot facing drill

タイラードリル

TLD3D / TLD5D 形

3D
5D
タイプ

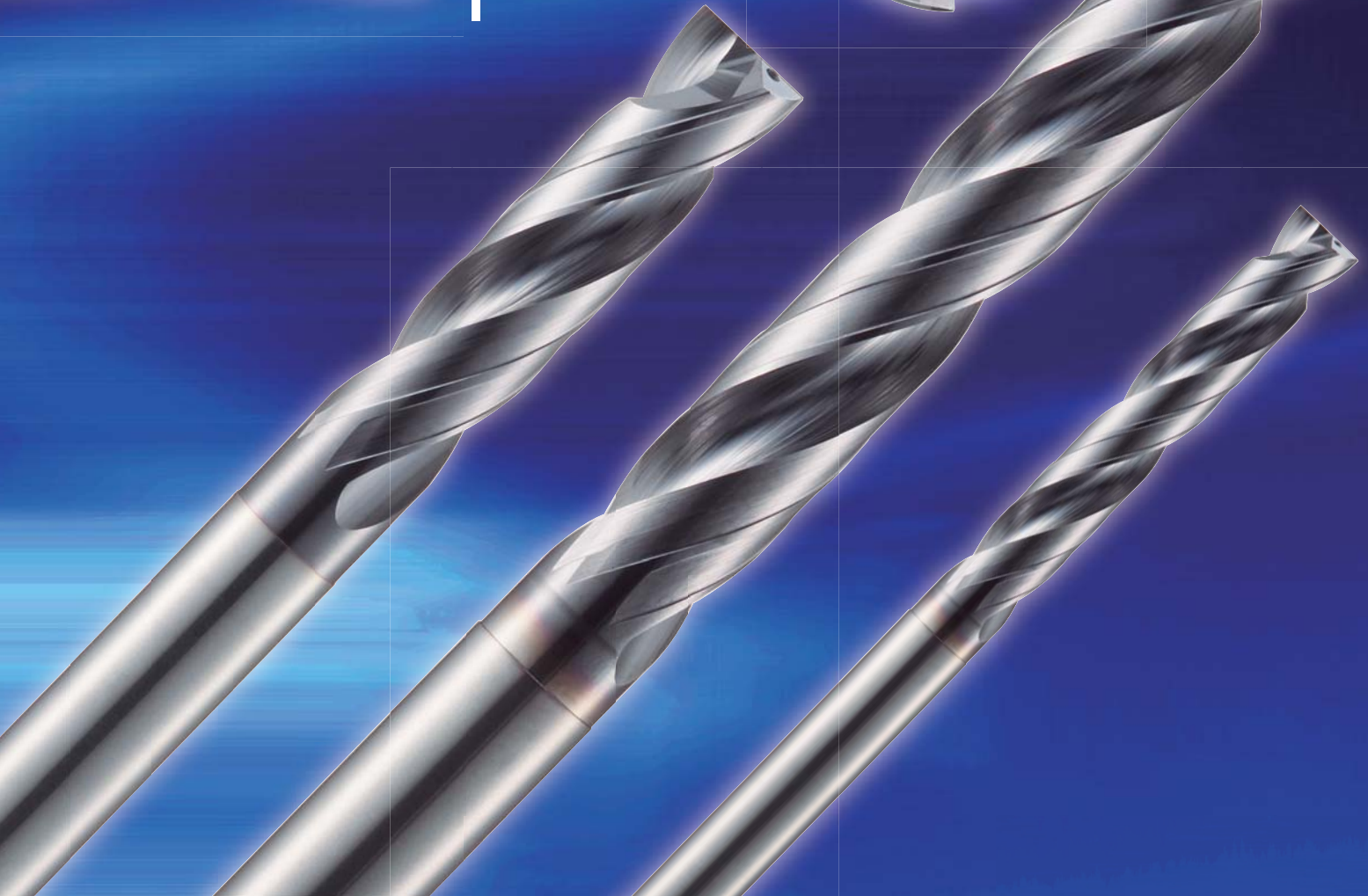
- 先端角 180°フラット
- φ3 ~ φ14
- 有効加工深さ : 3D, 5D



- Spot facing drill with point angle of 180° (flat face)
- Size range: φ3-φ14mm dia.
- Drilling depth: 3D, 5D



180°フラット
Flat Face



ダイジェット工業株式会社

特長 Features

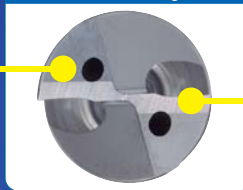
Features 1

広い溝形状で切り粉排出性に優れ
高精度穴加工が可能。

Achieved high accurate drilling due to excellent chip control by wide flute design.

内部給油対応
Internal coolant

広い溝形状
Wide flute design



優れた食い付き性
Provide better initial bite

Features 2

傾斜面や交差穴加工でも穴の曲がり
およびバリの発生が少なく
工程短縮が可能。

Possible to shorten working process even if drilling slope surface and crossed hole, due to reduces curve of the formed hole and burr.

180°フラット
Flat Face

ダブルマージン
Double margin



Features 3

ドリル剛性を向上、ダブルマージン仕様、
低抵抗刃形により
安定した深穴加工が可能。

Improved drill rigidity, adopted double margin and low cutting force flute geometry, achieved stable deep hole drilling (3D, 5D).

Features 4

耐欠損性と耐摩耗性のバランスに優れた
DVコーティングと平滑化処理により
長寿命を実現。

Achieved longer tool life by adopting "DV Coating" with fracture toughness & wear resistance and smooth surface treatment.

Features 5

炭素鋼・工具鋼・プリハードン鋼・ステンレス鋼から
鋳鉄・アルミ合金まで
幅広い被削材に対応。

Widely applied from carbon & mold steel to stainless steel, cast iron & aluminum alloy.

●用途 Application



傾斜面座ぐり加工
Spot facing slope



穴座ぐり加工
Spot facing



面取り部への座ぐり加工
Spot facing after chamfering part



薄板加工
Drilling thin plate



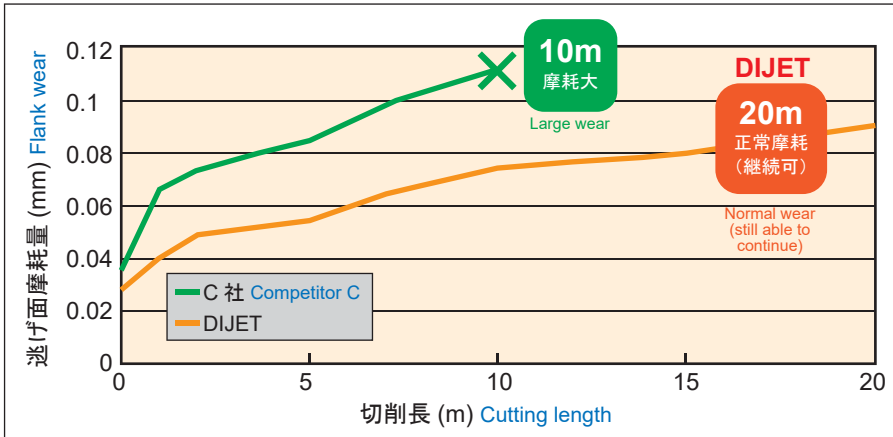
交差穴加工
Drilling crossed hole



穴の矯正
Correcting hole

切削性能 Cutting performance

■寿命比較(SUS303) Tool life comparison (SUS303)



被削材 : SUS303
Material Stainless steel

使用機械 : 立形MC
Machine Vertical MC

- 工具径 : $\phi 14$ (5D) (TLD5DCH1400S14)
Tool dia.
- 切削条件 Cutting conditions :
 $n=682\text{min}^{-1}$, $V_c=30\text{m/min}$,
 $V_f=102\text{mm/min}$, $f=0.15\text{mm/rev}$
- 穴あけ深さ : $H=70\text{mm}$ (止まり)
Drilling depth (Blind)
- ガイド穴深さ : 7mm
Depth of guide hole drilling
- クーラント : 内部水溶性
Coolant Internal (water soluble)

■食い付き性・加工面精度比較(SUS303) Initial biting & surface roughness comparison (SUS303)



被削材 : SUS303 Material Stainless steel

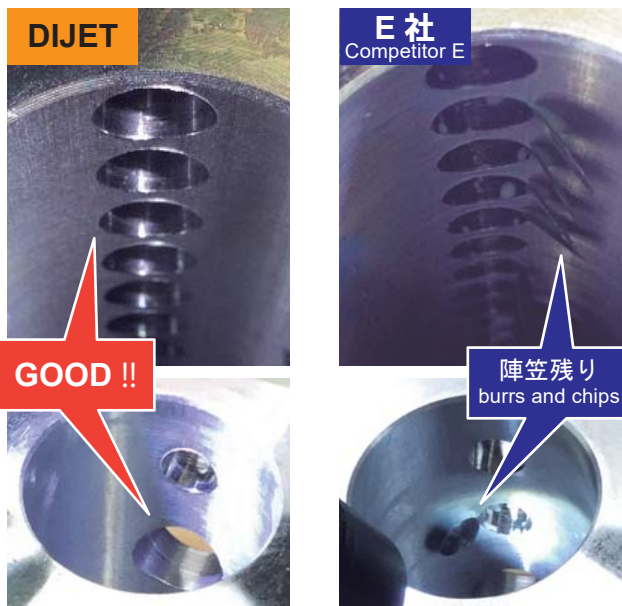
使用機械 : 立形MC Machine Vertical MC

- 工具径 : $\phi 8$ (5D) (TLD5DCH0800S08) Tool dia.
- 切削条件 Cutting conditions :
 $n=1,194\text{min}^{-1}$, $V_c=30\text{m/min}$,
 $V_f=155\text{mm/min}$, $f=0.13\text{mm/rev}$
- 突出し長さ : 60mm Overhung length
- 穴あけ深さ : $H=30\text{mm}$ (貫通) (Thru.)
Drilling depth (Thru.)
(下穴あり、0.5mmステップ加工)
Guide hole making, 0.5mm step feed
- クーラント : 内部水溶性
Coolant Internal (water soluble)

DIJET 製タイラードリルは食い付き性が良く、振れも少なく加工面精度が良好。

Compared with competitor K, TLD5D type provides better initial bite & small run-out, and showed good surface roughness.

■SNCM材の交差穴加工 Drilling crossed hole for Ni-Cr-Mo steel



突出し長さ 55mm
Overhung length
 $\phi 7.8$ 下穴あり
 $\phi 7.8$ guide hole

ゲージ長 115mm
Gauge length
1mmステップ (0.2mm戻し) にて加工
1mm step feed (return to 0.2mm)

| 被加工材料 Work | 名称 Part name | テストピース Test piece |
|-------------------------|--------------------------------------|-----------------------------------|
| | 被削材 Material | SNCM420 Ni-Cr-Mo steel |
| 使用工具 Tool | 形番 Cat. No. | TLD5DCH0800S08 ($\phi 8$) |
| | 材種 Grade | JC8015 (DVコート) JC8015 (DV coated) |
| 加工条件 Cutting conditions | 回転速度 Spindle speed | $n=1,194\text{min}^{-1}$ |
| | 切削速度 Cutting speed | $V_c=30\text{m/min}$ |
| | 送り速度 feed speed | $V_f=179\text{mm/min}$ |
| | 送り量 feed | $f=0.15\text{mm/rev}$ |
| | 加工深さ Hole depth | 25mm (貫通 Thru.) |
| | クランプ Clamp | 良好 Good |
| クーラント Coolant | 水溶性切削油 (内部) Water soluble (Internal) | |
| 使用機械 Machine | 立形MC Vertical MC | |

結果 Result

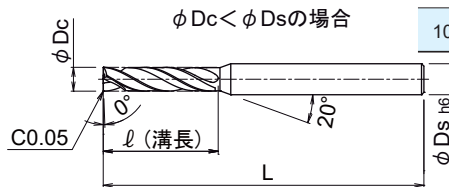
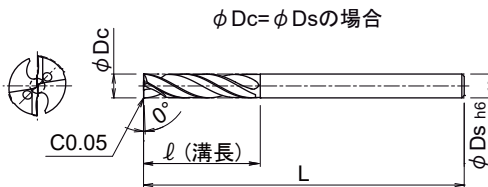
交差穴加工の抜けバリ比較 (加工数45穴)。現行E社製フラットドリルは抜けバリ(陣笠)発生。タイラードリルは抜け面良好で採用。
After drilling crossed hole (45 holes), TLD5D type controlled burr and chips when withdrawn, but flat drill of competitor E showed burr and chips.

タイラードリル TLD3D形 (3Dタイプ) TLD3D type

- 先端角180°フラットの座ぐり加工用ドリル
- クーラント穴付き
- 有効加工深さ3×Dc
- ねじれ角30°
- Spot facing drill with point angle of 180° (flat face).
- Through coolant hole
- Drilling depth: 3D
- Helix angle: 30°

- 直径寸法許容差 (mm)
Tolerance of drill diameter

| 直径φDc Drill dia. | 許容差 Tolerance |
|--------------------------|------------------|
| 3以下 Up to 3 | 0 -0.010 |
| 3をこえ6以下 Over 3 up to 6 | 0 -0.012 |
| 6をこえ10以下 Over 6 up to 10 | 0 -0.015 |
| 10をこえ Over 10 | 0 -0.018 |



| 形番 Cat. No. | 材種 Grade | 在庫 Stock | 寸法 (mm) Dimensions | | | |
|----------------|-------------|-------------|-----------------------|----|----|-----|
| | | | φDc | ℓ | L | φDs |
| TLD3DCH0300S03 | JC8015 | ● | 3 | 14 | 60 | 3 |
| TLD3DCH0310S04 | | ● | 3.1 | 14 | 60 | 4 |
| TLD3DCH0320S04 | | ● | 3.2 | 15 | 60 | 4 |
| TLD3DCH0330S04 | | ● | 3.3 | 15 | 60 | 4 |
| TLD3DCH0340S04 | | ● | 3.4 | 16 | 60 | 4 |
| TLD3DCH0350S04 | | ● | 3.5 | 16 | 60 | 4 |
| TLD3DCH0360S04 | | ● | 3.6 | 17 | 60 | 4 |
| TLD3DCH0370S04 | | ● | 3.7 | 17 | 60 | 4 |
| TLD3DCH0380S04 | | ● | 3.8 | 18 | 60 | 4 |
| TLD3DCH0390S04 | | ● | 3.9 | 18 | 60 | 4 |
| TLD3DCH0400S04 | | ● | 4 | 18 | 60 | 4 |
| TLD3DCH0410S05 | | ● | 4.1 | 19 | 65 | 5 |
| TLD3DCH0420S05 | | ● | 4.2 | 19 | 65 | 5 |
| TLD3DCH0430S05 | | ● | 4.3 | 20 | 65 | 5 |
| TLD3DCH0440S05 | | ● | 4.4 | 20 | 65 | 5 |
| TLD3DCH0450S05 | | ● | 4.5 | 21 | 65 | 5 |
| TLD3DCH0460S05 | | ● | 4.6 | 21 | 65 | 5 |
| TLD3DCH0470S05 | | ● | 4.7 | 22 | 65 | 5 |
| TLD3DCH0480S05 | | ● | 4.8 | 22 | 65 | 5 |
| TLD3DCH0490S05 | | ● | 4.9 | 23 | 65 | 5 |
| TLD3DCH0500S05 | | ● | 5 | 23 | 65 | 5 |
| TLD3DCH0510S06 | | ● | 5.1 | 23 | 70 | 6 |
| TLD3DCH0520S06 | | ● | 5.2 | 24 | 70 | 6 |
| TLD3DCH0530S06 | | ● | 5.3 | 24 | 70 | 6 |
| TLD3DCH0540S06 | | ● | 5.4 | 25 | 70 | 6 |
| TLD3DCH0550S06 | | ● | 5.5 | 25 | 70 | 6 |
| TLD3DCH0560S06 | | ● | 5.6 | 26 | 70 | 6 |
| TLD3DCH0570S06 | | ● | 5.7 | 26 | 70 | 6 |
| TLD3DCH0580S06 | | ● | 5.8 | 27 | 70 | 6 |
| TLD3DCH0590S06 | | ● | 5.9 | 27 | 70 | 6 |
| TLD3DCH0600S06 | | ● | 6 | 27 | 70 | 6 |
| TLD3DCH0610S07 | | ● | 6.1 | 28 | 75 | 7 |
| TLD3DCH0620S07 | | ● | 6.2 | 28 | 75 | 7 |
| TLD3DCH0630S07 | | ● | 6.3 | 29 | 75 | 7 |
| TLD3DCH0640S07 | | ● | 6.4 | 29 | 75 | 7 |
| TLD3DCH0650S07 | ● | 6.5 | 30 | 75 | 7 | |
| TLD3DCH0660S07 | ● | 6.6 | 30 | 75 | 7 | |
| TLD3DCH0670S07 | ● | 6.7 | 31 | 75 | 7 | |
| TLD3DCH0680S07 | ● | 6.8 | 31 | 75 | 7 | |
| TLD3DCH0690S07 | ● | 6.9 | 32 | 75 | 7 | |
| TLD3DCH0700S07 | ● | 7 | 32 | 75 | 7 | |
| TLD3DCH0710S08 | ● | 7.1 | 32 | 80 | 8 | |
| TLD3DCH0720S08 | ● | 7.2 | 33 | 80 | 8 | |
| TLD3DCH0730S08 | ● | 7.3 | 33 | 80 | 8 | |
| TLD3DCH0740S08 | ● | 7.4 | 34 | 80 | 8 | |
| TLD3DCH0750S08 | ● | 7.5 | 34 | 80 | 8 | |
| TLD3DCH0760S08 | ● | 7.6 | 35 | 80 | 8 | |
| TLD3DCH0770S08 | ● | 7.7 | 35 | 80 | 8 | |

| 形番 Cat. No. | 材種 Grade | 在庫 Stock | 寸法 (mm) Dimensions | | | |
|----------------|-------------|-------------|-----------------------|-----|-----|-----|
| | | | φDc | ℓ | L | φDs |
| TLD3DCH0780S08 | JC8015 | ● | 7.8 | 36 | 80 | 8 |
| TLD3DCH0790S08 | | ● | 7.9 | 36 | 80 | 8 |
| TLD3DCH0800S08 | | ● | 8 | 36 | 80 | 8 |
| TLD3DCH0810S09 | | ● | 8.1 | 37 | 90 | 9 |
| TLD3DCH0820S09 | | ● | 8.2 | 37 | 90 | 9 |
| TLD3DCH0830S09 | | ● | 8.3 | 38 | 90 | 9 |
| TLD3DCH0840S09 | | ● | 8.4 | 38 | 90 | 9 |
| TLD3DCH0850S09 | | ● | 8.5 | 39 | 90 | 9 |
| TLD3DCH0860S09 | | ● | 8.6 | 39 | 90 | 9 |
| TLD3DCH0870S09 | | ● | 8.7 | 40 | 90 | 9 |
| TLD3DCH0880S09 | | ● | 8.8 | 40 | 90 | 9 |
| TLD3DCH0890S09 | | ● | 8.9 | 41 | 90 | 9 |
| TLD3DCH0900S09 | | ● | 9 | 41 | 90 | 9 |
| TLD3DCH0910S10 | | ● | 9.1 | 41 | 95 | 10 |
| TLD3DCH0920S10 | | ● | 9.2 | 42 | 95 | 10 |
| TLD3DCH0930S10 | | ● | 9.3 | 42 | 95 | 10 |
| TLD3DCH0940S10 | | ● | 9.4 | 43 | 95 | 10 |
| TLD3DCH0950S10 | | ● | 9.5 | 43 | 95 | 10 |
| TLD3DCH0960S10 | | ● | 9.6 | 44 | 95 | 10 |
| TLD3DCH0970S10 | | ● | 9.7 | 44 | 95 | 10 |
| TLD3DCH0980S10 | | ● | 9.8 | 45 | 95 | 10 |
| TLD3DCH0990S10 | | ● | 9.9 | 45 | 95 | 10 |
| TLD3DCH1000S10 | | ● | 10 | 45 | 95 | 10 |
| TLD3DCH1010S11 | | ● | 10.1 | 46 | 105 | 11 |
| TLD3DCH1020S11 | | ● | 10.2 | 46 | 105 | 11 |
| TLD3DCH1030S11 | | ● | 10.3 | 47 | 105 | 11 |
| TLD3DCH1040S11 | | ● | 10.4 | 47 | 105 | 11 |
| TLD3DCH1050S11 | | ● | 10.5 | 48 | 105 | 11 |
| TLD3DCH1060S11 | | ● | 10.6 | 48 | 105 | 11 |
| TLD3DCH1070S11 | | ● | 10.7 | 49 | 105 | 11 |
| TLD3DCH1080S11 | | ● | 10.8 | 49 | 105 | 11 |
| TLD3DCH1090S11 | | ● | 10.9 | 50 | 105 | 11 |
| TLD3DCH1100S11 | | ● | 11 | 50 | 105 | 11 |
| TLD3DCH1110S12 | | ● | 11.1 | 50 | 115 | 12 |
| TLD3DCH1120S12 | | ● | 11.2 | 51 | 115 | 12 |
| TLD3DCH1130S12 | ● | 11.3 | 51 | 115 | 12 | |
| TLD3DCH1140S12 | ● | 11.4 | 52 | 115 | 12 | |
| TLD3DCH1150S12 | ● | 11.5 | 52 | 115 | 12 | |
| TLD3DCH1160S12 | ● | 11.6 | 53 | 115 | 12 | |
| TLD3DCH1170S12 | ● | 11.7 | 53 | 115 | 12 | |
| TLD3DCH1180S12 | ● | 11.8 | 54 | 115 | 12 | |
| TLD3DCH1190S12 | ● | 11.9 | 54 | 115 | 12 | |
| TLD3DCH1200S12 | ● | 12 | 54 | 115 | 12 | |
| TLD3DCH1250S13 | ● | 12.5 | 57 | 125 | 13 | |
| TLD3DCH1300S13 | ● | 13 | 59 | 125 | 13 | |
| TLD3DCH1350S14 | ● | 13.5 | 61 | 130 | 14 | |
| TLD3DCH1400S14 | ● | 14 | 63 | 130 | 14 | |

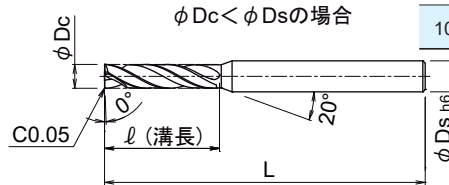
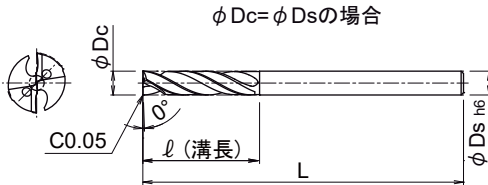
タイラードリル TLD5D形 (5Dタイプ) TLD5D type

- 先端角180°フラットの座ぐり加工用ドリル
- クーラント穴付き
- 有効加工深さ5×Dc
- ねじれ角30°

- Spot facing drill with point angle of 180° (flat face).
- Through coolant hole
- Drilling depth: 5D
- Helix angle: 30°

- 直径寸法許容差 (mm)
Tolerance of drill diameter

| 直径 φDc Drill dia. | 許容差 Tolerance |
|--------------------------|------------------|
| 3以下 Up to 3 | 0 -0.010 |
| 3をこえ6以下 Over 3 up to 6 | 0 -0.012 |
| 6をこえ10以下 Over 6 up to 10 | 0 -0.015 |
| 10をこえ Over 10 | 0 -0.018 |



| 形番 Cat. No. | 材種 Grade | 在庫 Stock | 寸法 (mm) Dimensions | | | |
|----------------|-------------|-------------|-----------------------|-----|-----|-----|
| | | | φDc | ℓ | L | φDs |
| TLD5DCH0300S03 | JC8015 | ◎ | 3 | 20 | 70 | 3 |
| TLD5DCH0310S04 | | ◎ | 3.1 | 21 | 70 | 4 |
| TLD5DCH0320S04 | | ◎ | 3.2 | 22 | 70 | 4 |
| TLD5DCH0330S04 | | ◎ | 3.3 | 22 | 70 | 4 |
| TLD5DCH0340S04 | | ◎ | 3.4 | 23 | 70 | 4 |
| TLD5DCH0350S04 | | ◎ | 3.5 | 24 | 70 | 4 |
| TLD5DCH0360S04 | | ◎ | 3.6 | 24 | 70 | 4 |
| TLD5DCH0370S04 | | ◎ | 3.7 | 25 | 70 | 4 |
| TLD5DCH0380S04 | | ◎ | 3.8 | 26 | 70 | 4 |
| TLD5DCH0390S04 | | ◎ | 3.9 | 26 | 70 | 4 |
| TLD5DCH0400S04 | | ◎ | 4 | 27 | 70 | 4 |
| TLD5DCH0410S05 | | ◎ | 4.1 | 28 | 80 | 5 |
| TLD5DCH0420S05 | | ◎ | 4.2 | 28 | 80 | 5 |
| TLD5DCH0430S05 | | ◎ | 4.3 | 29 | 80 | 5 |
| TLD5DCH0440S05 | | ◎ | 4.4 | 30 | 80 | 5 |
| TLD5DCH0450S05 | | ◎ | 4.5 | 30 | 80 | 5 |
| TLD5DCH0460S05 | | ◎ | 4.6 | 31 | 80 | 5 |
| TLD5DCH0470S05 | | ◎ | 4.7 | 32 | 80 | 5 |
| TLD5DCH0480S05 | | ◎ | 4.8 | 32 | 80 | 5 |
| TLD5DCH0490S05 | | ◎ | 4.9 | 33 | 80 | 5 |
| TLD5DCH0500S05 | | ◎ | 5 | 34 | 80 | 5 |
| TLD5DCH0510S06 | | ◎ | 5.1 | 34 | 85 | 6 |
| TLD5DCH0520S06 | | ◎ | 5.2 | 35 | 85 | 6 |
| TLD5DCH0530S06 | | ◎ | 5.3 | 36 | 85 | 6 |
| TLD5DCH0540S06 | | ◎ | 5.4 | 36 | 85 | 6 |
| TLD5DCH0550S06 | | ◎ | 5.5 | 37 | 85 | 6 |
| TLD5DCH0560S06 | | ◎ | 5.6 | 38 | 85 | 6 |
| TLD5DCH0570S06 | | ◎ | 5.7 | 38 | 85 | 6 |
| TLD5DCH0580S06 | | ◎ | 5.8 | 39 | 85 | 6 |
| TLD5DCH0590S06 | | ◎ | 5.9 | 40 | 85 | 6 |
| TLD5DCH0600S06 | | ◎ | 6 | 40 | 85 | 6 |
| TLD5DCH0610S07 | | ◎ | 6.1 | 41 | 95 | 7 |
| TLD5DCH0620S07 | | ◎ | 6.2 | 42 | 95 | 7 |
| TLD5DCH0630S07 | | ◎ | 6.3 | 42 | 95 | 7 |
| TLD5DCH0640S07 | | ◎ | 6.4 | 43 | 95 | 7 |
| TLD5DCH0650S07 | | ◎ | 6.5 | 44 | 95 | 7 |
| TLD5DCH0660S07 | | ◎ | 6.6 | 44 | 95 | 7 |
| TLD5DCH0670S07 | | ◎ | 6.7 | 45 | 95 | 7 |
| TLD5DCH0680S07 | | ◎ | 6.8 | 46 | 95 | 7 |
| TLD5DCH0690S07 | | ◎ | 6.9 | 46 | 95 | 7 |
| TLD5DCH0700S07 | | ◎ | 7 | 47 | 95 | 7 |
| TLD5DCH0710S08 | | ◎ | 7.1 | 48 | 100 | 8 |
| TLD5DCH0720S08 | | ◎ | 7.2 | 48 | 100 | 8 |
| TLD5DCH0730S08 | | ◎ | 7.3 | 49 | 100 | 8 |
| TLD5DCH0740S08 | | ◎ | 7.4 | 50 | 100 | 8 |
| TLD5DCH0750S08 | | ◎ | 7.5 | 50 | 100 | 8 |
| TLD5DCH0760S08 | | ◎ | 7.6 | 51 | 100 | 8 |
| TLD5DCH0770S08 | ◎ | 7.7 | 52 | 100 | 8 | |

| 形番 Cat. No. | 材種 Grade | 在庫 Stock | 寸法 (mm) Dimensions | | | |
|----------------|-------------|-------------|-----------------------|----|-----|-----|
| | | | φDc | ℓ | L | φDs |
| TLD5DCH0780S08 | JC8015 | ◎ | 7.8 | 52 | 100 | 8 |
| TLD5DCH0790S08 | | ◎ | 7.9 | 53 | 100 | 8 |
| TLD5DCH0800S08 | | ◎ | 8 | 54 | 100 | 8 |
| TLD5DCH0810S09 | | ◎ | 8.1 | 54 | 110 | 9 |
| TLD5DCH0820S09 | | ◎ | 8.2 | 55 | 110 | 9 |
| TLD5DCH0830S09 | | ◎ | 8.3 | 56 | 110 | 9 |
| TLD5DCH0840S09 | | ◎ | 8.4 | 56 | 110 | 9 |
| TLD5DCH0850S09 | | ◎ | 8.5 | 57 | 110 | 9 |
| TLD5DCH0860S09 | | ◎ | 8.6 | 58 | 110 | 9 |
| TLD5DCH0870S09 | | ◎ | 8.7 | 58 | 110 | 9 |
| TLD5DCH0880S09 | | ◎ | 8.8 | 59 | 110 | 9 |
| TLD5DCH0890S09 | | ◎ | 8.9 | 60 | 110 | 9 |
| TLD5DCH0900S09 | | ◎ | 9 | 60 | 110 | 9 |
| TLD5DCH0910S10 | | ◎ | 9.1 | 61 | 120 | 10 |
| TLD5DCH0920S10 | | ◎ | 9.2 | 62 | 120 | 10 |
| TLD5DCH0930S10 | | ◎ | 9.3 | 62 | 120 | 10 |
| TLD5DCH0940S10 | | ◎ | 9.4 | 63 | 120 | 10 |
| TLD5DCH0950S10 | | ◎ | 9.5 | 64 | 120 | 10 |
| TLD5DCH0960S10 | | ◎ | 9.6 | 64 | 120 | 10 |
| TLD5DCH0970S10 | | ◎ | 9.7 | 65 | 120 | 10 |
| TLD5DCH0980S10 | | ◎ | 9.8 | 66 | 120 | 10 |
| TLD5DCH0990S10 | | ◎ | 9.9 | 66 | 120 | 10 |
| TLD5DCH1000S10 | | ◎ | 10 | 67 | 120 | 10 |
| TLD5DCH1010S11 | | ◎ | 10.1 | 68 | 130 | 11 |
| TLD5DCH1020S11 | | ◎ | 10.2 | 68 | 130 | 11 |
| TLD5DCH1030S11 | | ◎ | 10.3 | 69 | 130 | 11 |
| TLD5DCH1040S11 | | ◎ | 10.4 | 70 | 130 | 11 |
| TLD5DCH1050S11 | | ◎ | 10.5 | 70 | 130 | 11 |
| TLD5DCH1060S11 | | ◎ | 10.6 | 71 | 130 | 11 |
| TLD5DCH1070S11 | | ◎ | 10.7 | 72 | 130 | 11 |
| TLD5DCH1080S11 | | ◎ | 10.8 | 72 | 130 | 11 |
| TLD5DCH1090S11 | | ◎ | 10.9 | 73 | 130 | 11 |
| TLD5DCH1100S11 | | ◎ | 11 | 74 | 130 | 11 |
| TLD5DCH1110S12 | | ◎ | 11.1 | 74 | 145 | 12 |
| TLD5DCH1120S12 | | ◎ | 11.2 | 75 | 145 | 12 |
| TLD5DCH1130S12 | | ◎ | 11.3 | 76 | 145 | 12 |
| TLD5DCH1140S12 | | ◎ | 11.4 | 76 | 145 | 12 |
| TLD5DCH1150S12 | | ◎ | 11.5 | 77 | 145 | 12 |
| TLD5DCH1160S12 | | ◎ | 11.6 | 78 | 145 | 12 |
| TLD5DCH1170S12 | | ◎ | 11.7 | 78 | 145 | 12 |
| TLD5DCH1180S12 | | ◎ | 11.8 | 79 | 145 | 12 |
| TLD5DCH1190S12 | | ◎ | 11.9 | 80 | 145 | 12 |
| TLD5DCH1200S12 | | ◎ | 12 | 80 | 145 | 12 |
| TLD5DCH1250S13 | | ◎ | 12.5 | 84 | 155 | 13 |
| TLD5DCH1300S13 | | ◎ | 13 | 87 | 155 | 13 |
| TLD5DCH1350S14 | | ◎ | 13.5 | 90 | 160 | 14 |
| TLD5DCH1400S14 | | ◎ | 14 | 94 | 160 | 14 |

タイラードリル TLD3D形（3Dタイプ）の標準切削条件

Recommended cutting conditions for TLD3D type

1/2

| 被削材 Work materials | 構造用鋼 (SS400) 硬さ180HB以下 Steel for structure Below 180HB | | 炭素鋼 (S50C) 硬さ280HB以下 carbon steel (C50) Below 250HB | | 合金鋼 (SCM440) 280~350HB Alloy steel (1.7223) 280~350HB | |
|-------------------------------------|---|-----------------------------------|--|-----------------------------------|--|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 50-100 | | 50-100 | | 50-80 | |
| 送り量 feed f (mm/rev) | 0.06-0.24 | | 0.06-0.24 | | 0.06-0.24 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 8,500 | 510 | 8,500 | 510 | 6,375 | 380 |
| 4 | 6,375 | 510 | 6,375 | 510 | 4,775 | 380 |
| 5 | 5,100 | 510 | 5,100 | 510 | 3,825 | 380 |
| 6 | 4,250 | 510 | 4,250 | 510 | 3,175 | 380 |
| 7 | 3,650 | 510 | 3,650 | 510 | 2,725 | 380 |
| 8 | 3,175 | 510 | 3,175 | 510 | 2,375 | 380 |
| 9 | 2,825 | 510 | 2,825 | 510 | 2,125 | 380 |
| 10 | 2,550 | 510 | 2,550 | 510 | 1,900 | 380 |
| 11 | 2,325 | 465 | 2,325 | 465 | 1,725 | 345 |
| 12 | 2,125 | 425 | 2,125 | 425 | 1,600 | 320 |
| 13 | 1,950 | 390 | 1,950 | 390 | 1,475 | 295 |
| 14 | 1,825 | 365 | 1,825 | 365 | 1,375 | 275 |

| 被削材 Work materials | ブリハードン鋼 (NAK80) 硬さ38~43HRC Mold Steel (P21) 38~43HRC | | 焼入れ鋼 (SKD61) 硬さ50HRC以下 Hardened die steel (1.2344) Below 50HRC | | チタン合金 (Ti-6Al-4V) 硬さ30~42HRC Titanium alloy 30~42HRC | |
|-------------------------------------|---|-----------------------------------|---|-----------------------------------|---|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 20-50 | | 20-50 | | 20-50 | |
| 送り量 feed f (mm/rev) | 0.06-0.20 | | 0.08-0.20 | | 0.06-0.20 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 3,175 | 320 | 3,700 | 300 | 3,175 | 320 |
| 4 | 2,375 | 240 | 2,790 | 260 | 2,375 | 240 |
| 5 | 1,900 | 200 | 2,230 | 200 | 1,900 | 200 |
| 6 | 1,600 | 170 | 1,860 | 160 | 1,600 | 170 |
| 7 | 1,375 | 150 | 1,590 | 150 | 1,375 | 150 |
| 8 | 1,200 | 140 | 1,390 | 140 | 1,200 | 140 |
| 9 | 1,050 | 120 | 1,340 | 140 | 1,050 | 120 |
| 10 | 950 | 110 | 1,110 | 130 | 950 | 110 |
| 11 | 875 | 110 | 1,010 | 120 | 875 | 110 |
| 12 | 800 | 100 | 930 | 120 | 800 | 100 |
| 13 | 725 | 90 | 860 | 120 | 725 | 90 |
| 14 | 675 | 90 | 800 | 120 | 675 | 90 |

注) 1. 上記の標準切削条件は平坦面加工での条件を示しています。

傾斜面加工の場合は、傾斜角度が30°未満では送り速度を40~80%に下げてください。また、傾斜角度が30°以上では送り速度を20~50%に下げてください。ただし、回転速度は変えないでください。

2. 上記の標準切削条件は水溶性切削液を内部給油で使用した場合の条件です。外部給油の場合はステップ加工を行い、切りくずを排出してください。乾式での使用は推奨いたしません。

3. 穴深さ3D以下で使用ください。3Dを超える穴あけは5D用のタイラードリルを使用ください。

4. 横送りはできません。

5. 被削材の性質やワーク形状などにより、切りくずが長く伸びる場合があります。それにより『穴径が拡大する』『壁面に傷がつく』『切りくず詰まりによる工具破損』などの可能性がありますので、『送りを上げる』『ステップ加工』などを行い、切りくずを分断してください。

タイラードリル TLD3D形（3Dタイプ）の標準切削条件

Recommended cutting conditions for TLD3D type

2/2

| 被削材 Work materials | ステンレス鋼（SUS304）硬さ280HB以下 Stainless steel Below 280HB | | ねずみ鑄鉄（FC250）引張り強さ350MPa以下 Grey cast iron (GG25) Below 350MPa | | ダクタイル鑄鉄（FCD400）引張り強さ450MPa以下 Nodular cast iron (GGG40) Below 450MPa | |
|-------------------------------------|--|-----------------------------------|---|-----------------------------------|--|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 25-50 | | 50-100 | | 50-100 | |
| 送り量 feed f (mm/rev) | 0.06-0.20 | | 0.06-0.24 | | 0.06-0.24 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 3,175 | 320 | 8,500 | 510 | 8,500 | 510 |
| 4 | 2,375 | 240 | 6,375 | 510 | 6,375 | 510 |
| 5 | 1,900 | 200 | 5,100 | 510 | 5,100 | 510 |
| 6 | 1,600 | 170 | 4,250 | 510 | 4,250 | 510 |
| 7 | 1,375 | 150 | 3,650 | 510 | 3,650 | 510 |
| 8 | 1,200 | 140 | 3,175 | 510 | 3,175 | 510 |
| 9 | 1,050 | 120 | 2,825 | 510 | 2,825 | 510 |
| 10 | 950 | 110 | 2,550 | 510 | 2,550 | 510 |
| 11 | 875 | 110 | 2,325 | 465 | 2,325 | 465 |
| 12 | 800 | 100 | 2,125 | 425 | 2,125 | 425 |
| 13 | 725 | 90 | 1,950 | 390 | 1,950 | 390 |
| 14 | 675 | 90 | 1,825 | 365 | 1,825 | 365 |

| 被削材 Work materials | アルミニウム合金 Aluminum alloy | |
|-------------------------------------|---|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 120-200 | |
| 送り量 feed f (mm/rev) | 0.05-0.15 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 16,980 | 1,698 |
| 4 | 12,730 | 1,273 |
| 5 | 10,190 | 1,019 |
| 6 | 8,490 | 849 |
| 7 | 7,280 | 728 |
| 8 | 6,370 | 637 |
| 9 | 5,660 | 566 |
| 10 | 5,090 | 509 |
| 11 | 4,630 | 463 |
| 12 | 4,240 | 424 |
| 13 | 3,920 | 392 |
| 14 | 3,640 | 364 |

- Note) 1. Above cutting conditions are for drilling flat surface. In case of drilling inclined surface, the figure to be adjusted as below:
 For inclined angle under 30°, reduce Feed speed (Vf) to 40-80%, and for inclined angle 30° or more, reduce Feed speed (Vf) to 20-50%.
 But, keep spindle speed (n).
2. Above cutting conditions are for drilling with water soluble (internal coolant). In case of external coolant, use step feed to remove the chips.
 Dry drilling is not recommended.
3. Recommend drilling depth under 3D or less. In case of drilling depth over 3D, recommend to use TLD5D type.
4. Endmilling is impossible.
5. In case of long chips evacuated, adjust above conditions by increasing Feed speed or using step feed for breaking chips.

タイラードリル TLD5D形（5Dタイプ）の標準切削条件

Recommended cutting conditions for TLD5D type

1/2

| 被削材 Work materials | 構造用鋼 (SS400) 硬さ180HB以下 Steel for structure Below 180HB | | 炭素鋼 (S50C) 硬さ280HB以下 carbon steel (C50) Below 250HB | | 合金鋼 (SCM440) 280~350HB Alloy steel (1.7223) 280~350HB | |
|-------------------------------------|---|-----------------------------------|--|-----------------------------------|--|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 50-100 | | 50-100 | | 50-80 | |
| 送り量 feed f (mm/rev) | 0.06-0.24 | | 0.06-0.24 | | 0.06-0.24 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 8,500 | 510 | 8,500 | 510 | 6,375 | 380 |
| 4 | 6,375 | 510 | 6,375 | 510 | 4,775 | 380 |
| 5 | 5,100 | 510 | 5,100 | 510 | 3,825 | 380 |
| 6 | 4,250 | 510 | 4,250 | 510 | 3,175 | 380 |
| 7 | 3,650 | 510 | 3,650 | 510 | 2,725 | 380 |
| 8 | 3,175 | 510 | 3,175 | 510 | 2,375 | 380 |
| 9 | 2,825 | 510 | 2,825 | 510 | 2,125 | 380 |
| 10 | 2,550 | 510 | 2,550 | 510 | 1,900 | 380 |
| 11 | 2,325 | 465 | 2,325 | 465 | 1,725 | 345 |
| 12 | 2,125 | 425 | 2,125 | 425 | 1,600 | 320 |
| 13 | 1,950 | 390 | 1,950 | 390 | 1,475 | 295 |
| 14 | 1,825 | 365 | 1,825 | 365 | 1,375 | 275 |

| 被削材 Work materials | ブリハードン鋼 (NAK80) 硬さ38~43HRC Mold Steel (P21) 38~43HRC | | 焼入れ鋼 (SKD61) 硬さ50HRC以下 Hardened die steel (1.2344) Below 50HRC | | チタン合金 (Ti-6Al-4V) 硬さ30~42HRC Titanium alloy 30~42HRC | |
|-------------------------------------|---|-----------------------------------|---|-----------------------------------|---|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 20-50 | | 30-50 | | 20-50 | |
| 送り量 feed f (mm/rev) | 0.06-0.20 | | 0.08-0.20 | | 0.06-0.20 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 3,175 | 320 | 4,240 | 340 | 3,175 | 320 |
| 4 | 2,375 | 240 | 3,180 | 260 | 2,375 | 240 |
| 5 | 1,900 | 200 | 2,550 | 200 | 1,900 | 200 |
| 6 | 1,600 | 170 | 2,120 | 190 | 1,600 | 170 |
| 7 | 1,375 | 150 | 1,820 | 190 | 1,375 | 150 |
| 8 | 1,200 | 140 | 1,590 | 180 | 1,200 | 140 |
| 9 | 1,050 | 120 | 1,420 | 180 | 1,050 | 120 |
| 10 | 950 | 110 | 1,270 | 170 | 950 | 110 |
| 11 | 875 | 110 | 1,160 | 170 | 875 | 110 |
| 12 | 800 | 100 | 1,060 | 160 | 800 | 100 |
| 13 | 725 | 90 | 980 | 150 | 725 | 90 |
| 14 | 675 | 90 | 910 | 150 | 675 | 90 |

- 注) 1. 5D用タイラードリルを（TLD5D形）を使用する場合は、同径のガイド穴（加工深さ0.5~1.0D程度）を開けてからの加工を推奨いたします。
2. 上記の標準切削条件は水溶性切削液を内部給油で使用した場合の条件です。外部給油および乾式での使用は推奨いたしません。
3. 穴深さ5D以下で使用ください。5Dを超える穴あけは推奨しません。
4. 横送りはできません。
5. 被削材の性質やワーク形状などにより、切りくずが長く伸びる場合があります。それにより『穴径が拡大する』『壁面に傷がつく』『切りくず詰まりによる工具破損』などの可能性がありますので、『送りを上げる』『ステップ加工』などを行い、切りくずを分断してください。

タイラードリル TLD5D形（5Dタイプ）の標準切削条件

Recommended cutting conditions for TLD5D type

2/2

| 被削材 Work materials | ステンレス鋼（SUS304）硬さ280HB以下 Stainless steel Below 280HB | | ねずみ鑄鉄（FC250）引張り強さ350MPa以下 Grey cast iron (GG25) Below 350MPa | | ダクタイル鑄鉄（FCD400）引張り強さ450MPa以下 Nodular cast iron (GGG40) Below 450MPa | |
|-------------------------------------|--|-----------------------------------|---|-----------------------------------|--|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 25-50 | | 50-100 | | 50-100 | |
| 送り量 feed f (mm/rev) | 0.06-0.20 | | 0.06-0.24 | | 0.06-0.24 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 3,175 | 320 | 8,500 | 510 | 8,500 | 510 |
| 4 | 2,375 | 240 | 6,375 | 510 | 6,375 | 510 |
| 5 | 1,900 | 200 | 5,100 | 510 | 5,100 | 510 |
| 6 | 1,600 | 170 | 4,250 | 510 | 4,250 | 510 |
| 7 | 1,375 | 150 | 3,650 | 510 | 3,650 | 510 |
| 8 | 1,200 | 140 | 3,175 | 510 | 3,175 | 510 |
| 9 | 1,050 | 120 | 2,825 | 510 | 2,825 | 510 |
| 10 | 950 | 110 | 2,550 | 510 | 2,550 | 510 |
| 11 | 875 | 110 | 2,325 | 465 | 2,325 | 465 |
| 12 | 800 | 100 | 2,125 | 425 | 2,125 | 425 |
| 13 | 725 | 90 | 1,950 | 390 | 1,950 | 390 |
| 14 | 675 | 90 | 1,825 | 365 | 1,825 | 365 |

| 被削材 Work materials | アルミニウム合金 Aluminum alloy | |
|-------------------------------------|---|-----------------------------------|
| 切削速度 Cutting speed Vc (m/min) | 120-200 | |
| 送り量 feed f (mm/rev) | 0.05-0.15 | |
| ドリル直径 Drill dia. (mm) | 回転速度 Spindle speed n (min ⁻¹) | 送り速度 Feed speed Vf (mm/min) |
| 3 | 16,980 | 1,698 |
| 4 | 12,730 | 1,273 |
| 5 | 10,190 | 1,019 |
| 6 | 8,490 | 849 |
| 7 | 7,280 | 728 |
| 8 | 6,370 | 637 |
| 9 | 5,660 | 566 |
| 10 | 5,090 | 509 |
| 11 | 4,630 | 463 |
| 12 | 4,240 | 424 |
| 13 | 3,920 | 392 |
| 14 | 3,640 | 364 |

- Note) 1. In case of using TLD5D type, recommend to guide hole drilling with the same diameter drill.
 2. Above cutting conditions are for drilling with water soluble (internal coolant). External coolant or dry drilling is not recommended.
 3. Recommend drilling depth under 5D or less. Drilling depth over 5D is not recommended.
 4. Endmilling is impossible.
 5. In case of long chips evacuated, adjust above conditions by increasing Feed speed or using step feed for breaking chips.

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- 不適切な切削条件で使用しないでください。●大きな摩耗や欠けのある工具は使用しないでください。
- 切りくずの飛散、巻き付きによるケガにご注意ください。又、保護眼鏡や安全カバーをご使用ください。

WARNING: •Grinding produces hazardous dust. •To avoid adverse health, use adequate ventilation and read Material Safety Data Sheet first.
 •Cutting tools may fragment in use. Wear eye protection in the vicinity of their operation.

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