# High-Performance Taps



# Beyond™ High-Performance Solid Carbide Taps

## Primary Application

Solid carbide taps offer higher productivity and outstanding performance in a wider range of materials than formerly possible. Get more production from a single tool and superior accuracy of product thread that surpasses the competition. Kennametal High-Performance Solid Carbide Taps are available in various specifications with enhanced precision and design, which translates into longer tool life, excellent performance, and exceptional wear resistance.

- High performance to surpass competitive taps.
- More production from a single tool.
- Available in various specifications.

# Features and Benefits

## Advanced Technology

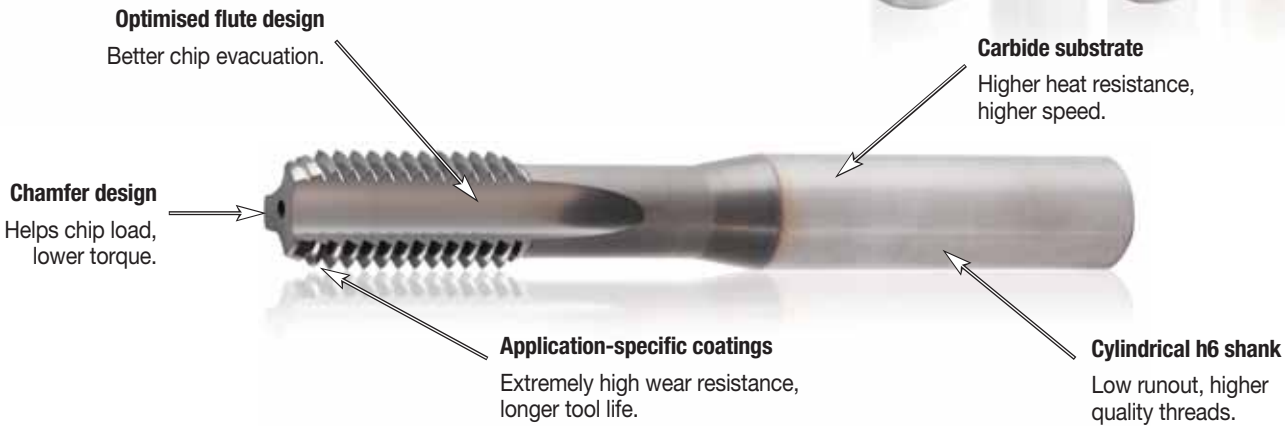
- Manufactured with micrograin carbide for exceptional wear life.
- Ideal for long production runs where fewer tool changes equate to greater productivity.
- Designed for outstanding tool life in steel, cast iron, aluminium, and hardened materials.
- Runs 4x faster and lasts 4x longer than conventional taps.
- Tap runout less than 10 microns (.0004").
- PVD nanolayer TiAlN/TiN coated carbide grade.

## Customisation

- Engineered solutions available upon request.
- Available in various specifications.

## Application Information

- Maximum chip control and free cutting in through holes.
- For use on CNC machines with synchronous or rigid tapping control and precision toolholders.
- Straight-flute taps for sizes M4 and larger for ductile or cast iron.
- Can be factory reconditioned to original specifications and tolerances.




*To learn more, **scan here**.*
*For instructions on how to scan, please see page xxix.*

# Beyond™ Series HP Solid Carbide Taps and Solid Carbide Forming Taps • Metric

● first choice
○ alternate choice

## Beyond HP Solid Carbide Taps

| | series | grade | shank/dimension | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|
|  | **T320** | KC7542 | 6535 HA | ● | | ○ | | | |
|  | **T321** | KC7542 | 6535 HA | ● | | ○ | | | |
|  | **T331** | KC7542 | 6535 HA | ● | | ○ | | | |
|  | **T340** | KC7542 | 6535 HA | | | ● | | | |
|  | **T351** | KC7542 | 6535 HA | | | ● | | | |
|  | **T410** | KCU36 | DIN 371, 374, 376 HA | | | | | | ● |
|  | **T461** | KC7512 | 6535 | | | | ● | | |
|  | **T471** | KC7512 | 6535 HA | | | | ● | | |

## Beyond HP Solid Carbide Forming Taps

| | series | grade | shank/dimension | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|
|  | **T381** | KC7542 | 6535 HA | ● | | | | | |
|  | **T391** | KC7542 | 6535 HA | ● | | | | | |
|  | **T481** | KC7512 | 6535 HA | | | | ● | | |
|  | **T491** | KC7512 | 6535 HA | | | | ● | | |

* Through coolant 1/4" and larger.

| size range (inch and metric) size min–max | through hole | blind hole | chamfer form | helix angle | external coolant | internal coolant | page(s) | recommended cutting parameters |
|---|---|---|---|---|---|---|---|---|
| M6–M16 |  | |  |  |  | | L10 | L22 |
| M6–M16 |  | |  |  | |  | L11 | L22 |
| M6–M16 | |  |  |  | |  | L12 | L22 |
| M4–M20 |  | |  |  |  | | L13 | L22 |
| M4*–M16 | |  |  |  | |  | L14 | L22 |
| M3–M16 |  |  |  |  |  | | L17 | L22 |
| M6–M16 |  | |  |  | |  | L18 | L22 |
| M6–M16 | |  |  |  | |  | L19 | L22 |
| M4*–M10 |  | |  | | |  | L15 | L22 |
| M4*–M10 | |  |  | | |  | L16 | L22 |
| M4*–M12 |  | |  | | |  | L20 | L22 |
| M4*–M12 | |  |  | | |  | L21 | L22 |

## Carbide Tap Identification System


**Metric**

| T320 | MF | 120 | X | 150 | R | 6HX |
|---|---|---|---|---|---|---|

**Inch**

| T320 | NC | 06250 | - | 11 | R | 3BX |
|---|---|---|---|---|---|---|
| Tap Design | Type of Thread | Nominal Diameter of Thread | | Pitch | Cutting Direction | Tolerance Class |
| | | mm or inch (depending on type) | | mm or TPI (depending on type) | | |

**M** = Metric coarse-pitch thread (ISO form)

**MF** = Metric fine-pitch thread (ISO form)

**NC** = Unified coarse series thread

**NF** = Unified fine series thread

**Style**

**T320** = Steel, through holes, LHSF
**T321** = Steel, through holes, LHSF coolant
**T331** = Steel, blind holes, RHSF coolant
**T340** = Cast iron and cast aluminium, through holes, STFL
**T351** = Cast iron and cast aluminium, blind holes, STFL coolant
**T381** = Steel, through holes, forming FT, coolant
**T391** = Steel, blind holes, forming FT, coolant
**T410** = Hard materials, up to 63 HRC
**T461** = Aluminium, through holes, STFL, coolant
**T471** = Aluminium, blind holes, STFL, coolant
**T481** = Aluminium, through holes, forming FT, coolant
**T491** = Aluminium, blind holes, forming FT, coolant

# The SPEED to EXCEED

## Solid Carbide Taps

The Kennametal Solid Carbide Taps deliver the accuracy you demand at up to four times the speed of HSS taps. Longer tool life, exceptional thread quality, and an array of sizes for ferrous and non-ferrous materials make our taps the most trusted and productive tools in the industry.

- Reduce your operating costs by up to 65%.
- Workpiece-specific grades: KC7542™ for steels and cast irons, KC7512™ for aluminium.
- Go 4x faster with 4x the service life of conventional HSS offerings.
- Wide array of styles and sizes for through or blind hole applications.

Tap into something great at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

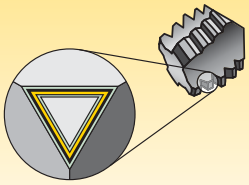
KENNAMETAL®

## Through Holes

## Blind Holes

| | | Through Holes | | | | Blind Holes | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cutting | | Forming | | Cutting | | Forming | |
| | | Internal Coolant | Flood | Internal Coolant | Flood | Internal Coolant | Flood | Internal Coolant | Flood |
| P | <32 HRC | **T321_KC7542** T621_KP6525 | **T320_KC7542** T620_KP6525 | **T381_KC7542** T623_KSP21 | T622_KSP21 | **T331_KC7542** T631_KP6525 T633_KP6525 T651_KP6525 | T630_KP6525 T630_KP6505 T632_KP6525 T650_KP6525 | **T391_KC7542** T623_KSP21 | T622_KSP21 |
| P | 32–44 HRC | — | T600_KSP2 | — | — | — | T602_KSP21 T604_KSH26 | — | — |
| M | | T621_KM6515 | T620_KM6515 | — | — | T631_KM6515 | T630_KM6515 | — | — |
| K | | T641_KP6525 | **T340_KC7542** T640_KP6525 | — | — | **T351_KC7542** T641_KP6525 T643_KP6525 | T640_KP6525 T642_KP6525 | — | — |
| N | Wrought, Low Si | — | T670_KSN38 | **T481_KC7512** T623_KSN28 | T622_KSN28 | — | T680_KSN38 | **T491_KC7512** T623_KSN28 | T622_KSN28 |
| N | Cast, Si<12% | **T461_KC7512** T641_KP6525 | T640_KP6525 | **T481_KC7512** T623_KSN28 | T622_KSN28 | **T471_KC7512** T641_KP6525 T643_KP6525 | T640_KP6525 T642_KP6525 | **T491_KC7512** T623_KSN28 | T622_KSN28 |
| S | Titanium Alloys | — | T614_KSN25 | — | — | — | T616_KSN25 | — | — |
| S | Ni and Co Alloys | — | T610_KSSH22 | — | — | — | T612_KSSH22 | — | — |
| H | 44–55 HRC | — | T606_KSSH22 | — | — | — | T606_KSSH22 | — | — |
| H | 55–63 HRC | — | **T410_KCU36** | — | — | — | **T410_KCU36** | — | — |

Solid Carbide = **bold**
HSS-E-PM = regular

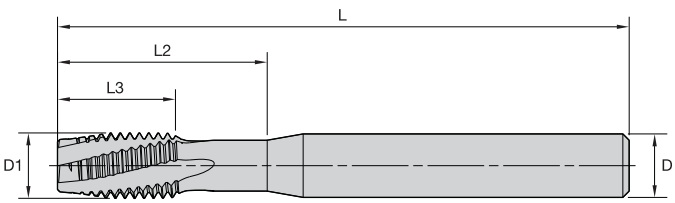


**Coatings provide high-speed capability and are engineered for finishing to light roughing.**

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

wear resistance ⟷ toughness

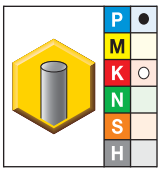
| Grade | Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | KC7542 | Coated carbide. PVD — multilayer coating with TiAlN and TiN over a high-strength carbide substrate specifically designed for tap application. Use in steel up to 32 HRC and cast iron at four times faster speeds than HSS-E-PM taps. | P | P | P | | | | | | |
| | | | K | K | K | | | | | | |
| | KC7512 | Coated carbide. PVD — two-layer coating over fine-grain carbide. Coating consists of low friction CrC/C over wear-resistant TiN. CrC/C resists galling of non-ferrous materials to the tap. Provides superior performance for tapping cast aluminium and other non-ferrous materials. | N | N | N | | | | | | |
| NEW! | KCU36 | Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction $MoS_2$ top layer over carbide substrate. Use in hardened steel 55–63 HRC. | H | H | H | H | H | H | | | |
| NEW! | KP6525 | Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate coated with wear-resistant TiCN base layer and low-friction TiN top layer. Use in steel, cast iron, and cast aluminium with silicon. | P | P | P | P | P | P | | | |
| | | | K | K | K | K | K | K | K | | |
| NEW! | KSP21 | Coated HSS-E-PM. PVD — powder metal HSS-E substrate with TiN coating. Use for tapping steel 32–44 HRC and for forming threads in steel 32 HRC. | P | P | P | P | P | P | P | P | |
| NEW! | KSH26 | Coated HSS-E-PM. PVD — powder metal HSS-E substrate coated with TiN base layer and low-friction $MoS_2$ top layer. Use in deep blind steel holes 32–44 HRC. | P | P | P | P | P | P | P | P | |
| NEW! | KM6515 | Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate. Coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials. | M | M | M | M | M | M | | | |
| | | | N | N | N | N | N | N | N | | |
| NEW! | KSN28 | Coated HSS-E-PM. PVD — powder metal HSS-E substrate with DLC coating. Use for form tapping aluminium. Not recommended for steel. | N | N | N | N | N | N | N | | |
| NEW! | KSN38 | Coated HSS-E. PVD — lower vanadium HSS-E substrate with DLC coating. Use for tapping non-ferrous materials with low cutting temperatures like wrought aluminium. Not recommended for steel. | N | N | N | N | N | N | N | N | |
| NEW! | KSN25 | Coated HSS-E-PM. PVD — powder metal HSS-E substrate with two-layer coating. TiN base layer and DLC top layer that resists galling of non-ferrous materials to the tap. Use for tapping titanium. Not recommended for steel. | S | S | S | S | S | S | | | |
| NEW! | KSSH22 | Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate with high hardness TiCN coating. Use when tapping heat-treated steel 44–55 HRC and cobalt- or nickel-based heat-resistant alloys. | S | S | S | S | | | | | |
| | | | H | H | H | H | | | | | |


beyond

KC7542 TiAlN + TiN for steel.

## T320 • Form D Plug Chamfer • Metric



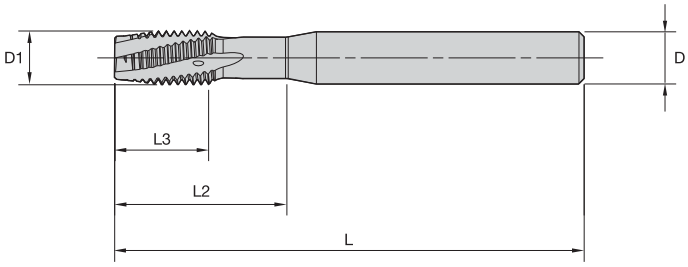

● first choice
○ alternate choice

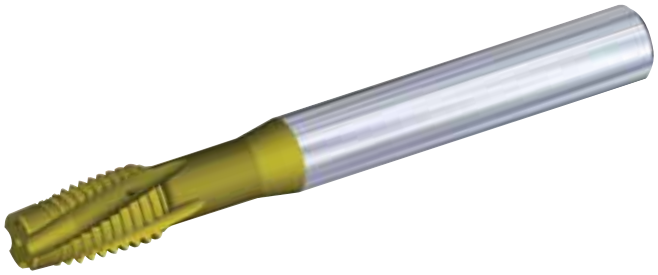
| KC7542 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T320M060X100R6HX** | M6 x 1 | 70 | 12 | 23 | 6,0 | 3 | 6HX |
| **T320M080X125R6HX** | M8 x 1,25 | 80 | 15 | 28 | 8,0 | 3 | 6HX |
| **T320M100X150R6HX** | M10 x 1,5 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T320MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T320M120X175R6HX** | M12 x 1,75 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T320MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T320M140X200R6HX** | M14 x 2 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T320M160X200R6HX** | M16 x 2 | 110 | 24 | 53 | 14,0 | 4 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

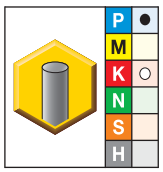



beyond

KC7542 TiAlN + TiN for steel.

## T321 • Form D Plug Chamfer • Through Coolant • Metric



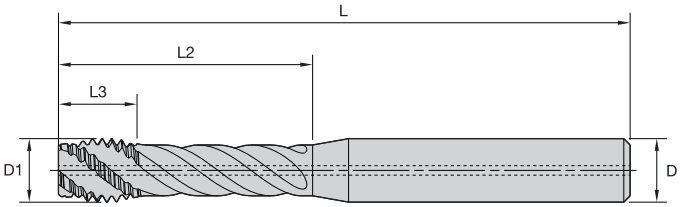

● first choice
○ alternate choice

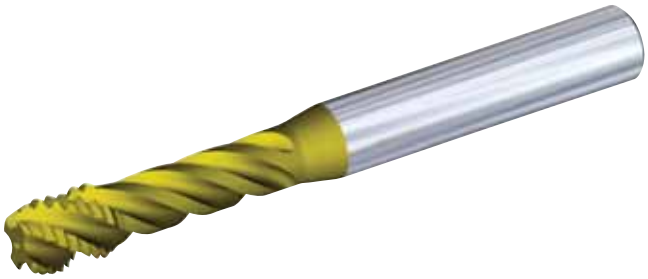
| KC7542 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T321M100X150R6HX** | M10 x 1,5 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T321MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T321M120X175R6HX** | M12 x 1,75 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T321MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T321M140X200R6HX** | M14 x 2 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T321M160X200R6HX** | M16 x 2 | 110 | 24 | 53 | 14,0 | 4 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

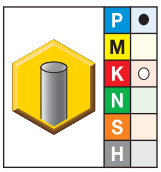



beyond

KC7542 TiAlN + TiN for steel.

## T331 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric



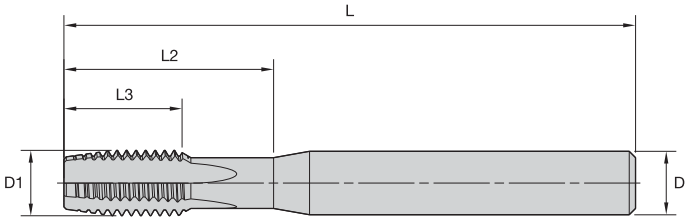

● first choice
○ alternate choice

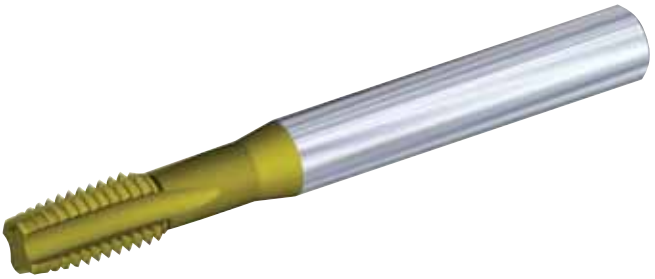
| KC7542 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T331M060X100R6HX** | M6 x 1 | 70 | 8 | 24 | 6,0 | 3 | 6HX |
| **T331M080X125R6HX** | M8 x 1,25 | 80 | 10 | 32 | 8,0 | 3 | 6HX |
| **T331MF100X100R6HX** | M10 x 1 | 90 | 12 | 40 | 10,0 | 4 | 6HX |
| **T331M100X150R6HX** | M10 x 1,5 | 90 | 12 | 40 | 10,0 | 4 | 6HX |
| **T331MF120X150R6HX** | M12 x 1,5 | 100 | 14 | 48 | 12,0 | 4 | 6HX |
| **T331M120X175R6HX** | M12 x 1,75 | 100 | 14 | 48 | 12,0 | 4 | 6HX |
| **T331MF140X150R6HX** | M14 x 1,5 | 110 | 16 | 56 | 12,0 | 4 | 6HX |
| **T331M140X200R6HX** | M14 x 2 | 110 | 16 | 56 | 12,0 | 4 | 6HX |
| **T331M160X200R6HX** | M16 x 2 | 110 | 16 | 64 | 14,0 | 4 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

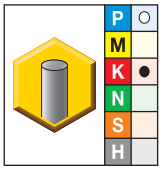



beyond

KC7542 TiAlN + TiN for cast iron.

## T340 • Form D Plug Chamfer • Metric



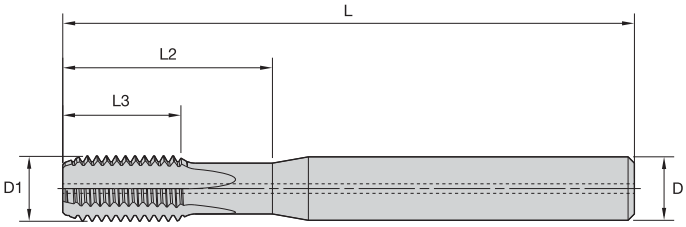

● first choice
○ alternate choice

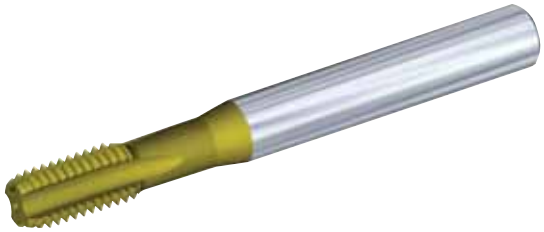
| KC7542 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T340M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 3 | 6HX |
| **T340M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 3 | 6HX |
| **T340M060X100R6HX** | M6 x 1 | 70 | 12 | 23 | 6,0 | 4 | 6HX |
| **T340M080X125R6HX** | M8 x 1,25 | 80 | 15 | 28 | 8,0 | 4 | 6HX |
| **T340M100X150R6HX** | M10 x 1,5 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T340MF100X100R6HX** | M10 x 1 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T340MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T340M120X175R6HX** | M12 x 1,75 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T340M140X200R6HX** | M14 x 2 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T340MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T340M160X200R6HX** | M16 x 2 | 110 | 24 | 53 | 14,0 | 4 | 6HX |
| **T340M180X250R6HX** | M18 x 2,5 | 125 | 30 | 59 | 16,0 | 5 | 6HX |
| **T340M200X250R6HX** | M20 x 2,5 | 140 | 30 | 66 | 18,0 | 5 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

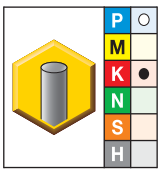



beyond

KC7542 TiAlN + TiN for cast iron.

## T351 • Form E Bottoming Chamfer • Through Coolant M6 and Larger • Metric



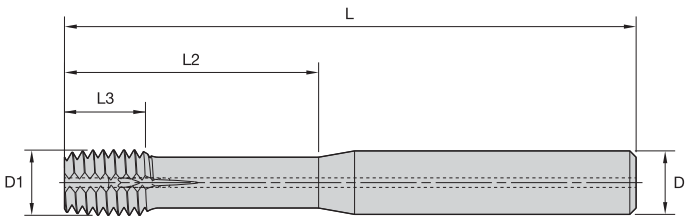

● first choice
○ alternate choice

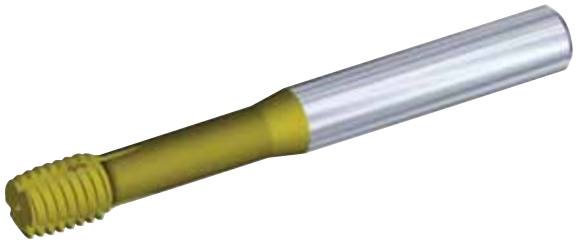
| KC7542 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T351M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 3 | 6HX |
| **T351M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 3 | 6HX |
| **T351M060X100R6HX** | M6 x 1 | 70 | 12 | 23 | 6,0 | 4 | 6HX |
| **T351M080X125R6HX** | M8 x 1,25 | 80 | 15 | 28 | 8,0 | 4 | 6HX |
| **T351MF100X100R6HX** | M10 x 1 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T351M100X150R6HX** | M10 x 1,5 | 90 | 18 | 33 | 10,0 | 4 | 6HX |
| **T351MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T351M120X175R6HX** | M12 x 1,75 | 100 | 21 | 40 | 12,0 | 4 | 6HX |
| **T351MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T351M140X200R6HX** | M14 x 2 | 110 | 24 | 47 | 12,0 | 4 | 6HX |
| **T351M160X200R6HX** | M16 x 2 | 110 | 24 | 53 | 14,0 | 4 | 6HX |
| **T351M200X250R6HX** | M20 x 2,5 | 140 | 30 | 66 | 18,0 | 5 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

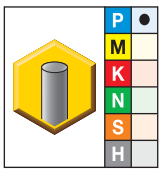



beyond

KC7542 TiAlN + TiN for steel.

## T381 • Form D Plug Entry Taper • Through Coolant M6 and Larger • Metric



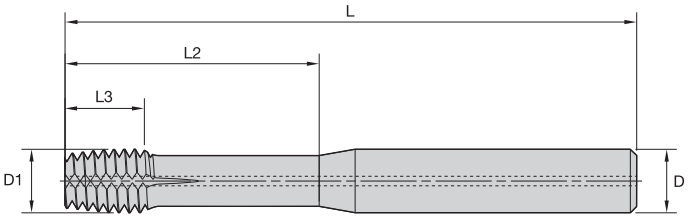

● first choice
○ alternate choice

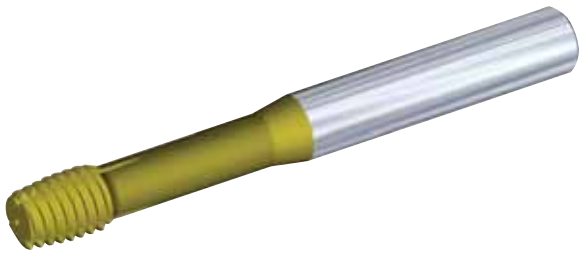
| KC7542 | D1 size | L | L3 | L2 | D | number of lube grooves | class of fit |
|---|---|---|---|---|---|---|---|
| **T381M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 2 | 6HX |
| **T381M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 2 | 6HX |
| **T381M060X100R6HX** | M6 x 1 | 70 | 8 | 24 | 6,0 | 2 | 6HX |
| **T381M080X125R6HX** | M8 x 1,25 | 80 | 10 | 32 | 8,0 | 2 | 6HX |
| **T381M100X150R6HX** | M10 x 1,5 | 90 | 12 | 40 | 10,0 | 3 | 6HX |

NOTE: Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

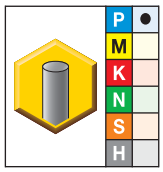



beyond

KC7542 TiAlN + TiN for steel.

## T391 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric



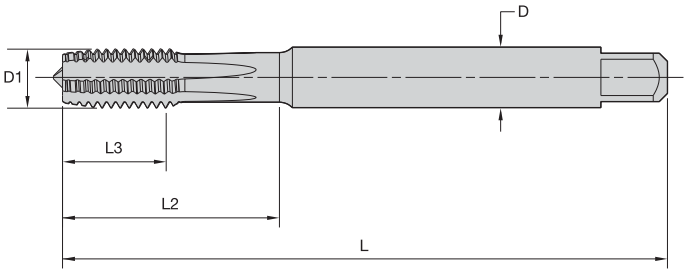

● first choice
○ alternate choice

| KC7542 | D1 size | L | L3 | L2 | D | number of lube grooves | class of fit |
|---|---|---|---|---|---|---|---|
| **T391M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 2 | 6HX |
| **T391M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 2 | 6HX |
| **T391M060X100R6HX** | M6 x 1 | 70 | 8 | 24 | 6,0 | 2 | 6HX |
| **T391M080X125R6HX** | M8 x 1,25 | 80 | 10 | 32 | 8,0 | 2 | 6HX |
| **T391M100X150R6HX** | M10 x 1,5 | 90 | 12 | 40 | 10,0 | 3 | 6HX |

NOTE: Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

**Shank Tolerance**

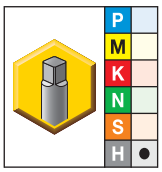
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |


beyond

KCU36 • TiAlN/$MoS_2$ for tapping steel 55–63 HRC.

## T410 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric

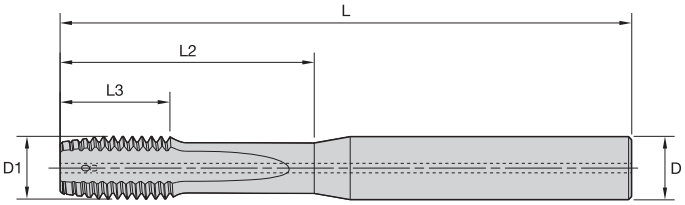



● first choice
○ alternate choice

| KCU36 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T410M030X050R6HX-D1** | M3 x 0,5 | 63 | 6 | 18 | 4,5 | 4 | DIN 371 | 6HX |
| **T410M040X070R6HX-D1** | M4 x 0,7 | 63 | 8 | 20 | 4,5 | 4 | DIN 371 | 6HX |
| **T410M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 26 | 6,0 | 4 | DIN 371 | 6HX |
| **T410M060X100R6HX-D1** | M6 x 1 | 80 | 12 | 28 | 6,0 | 4 | DIN 371 | 6HX |
| **T410MF080X100R6HX-D4** | M8 x 1 | 90 | 15 | 35 | 8,0 | 5 | DIN 374 | 6HX |
| **T410M080X125R6HX-D1** | M8 x 1,25 | 90 | 15 | 35 | 8,0 | 5 | DIN 371 | 6HX |
| **T410MF100X100R6HX-D4** | M10 x 1 | 100 | 18 | 38 | 10,0 | 5 | DIN 374 | 6HX |
| **T410M100X150R6HX-D1** | M10 x 1,5 | 100 | 18 | 38 | 10,0 | 5 | DIN 371 | 6HX |
| **T410MF120X150R6HX-D4** | M12 x 1,5 | 110 | 21 | 41 | 12,0 | 5 | DIN 374 | 6HX |
| **T410M120X175R6HX-D6** | M12 x 1,75 | 110 | 21 | 41 | 12,0 | 5 | DIN 376 | 6HX |
| **T410MF140X150R6HX-D4** | M14 x 1,5 | 110 | 24 | 44 | 14,0 | 5 | DIN 374 | 6HX |
| **T410M140X200R6HX-D6** | M14 x 2 | 110 | 24 | 44 | 14,0 | 6 | DIN 376 | 6HX |
| **T410MF160X150R6HX-D4** | M16 x 1,5 | 110 | 24 | 44 | 16,0 | 5 | DIN 374 | 6HX |

**Shank Tolerance**

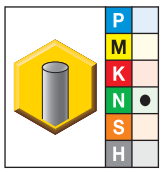
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


beyond

KC7512 TiN + CrC/C for aluminium.

## T461 • Form D Plug Chamfer • Through Coolant M6 and Larger • Metric



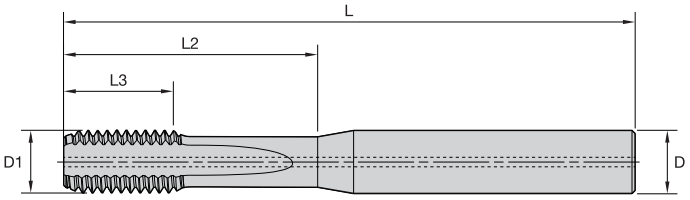

● first choice
○ alternate choice

| KC7512 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T461M060X100R6HX** | M6 x 1 | 70 | 12 | 24 | 6,0 | 3 | 6HX |
| **T461M080X125R6HX** | M8 x 1,25 | 80 | 15 | 32 | 8,0 | 3 | 6HX |
| **T461MF100X100R6HX** | M10 x 1 | 90 | 18 | 40 | 10,0 | 3 | 6HX |
| **T461M100X150R6HX** | M10 x 1,5 | 90 | 18 | 40 | 10,0 | 3 | 6HX |
| **T461MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 48 | 12,0 | 3 | 6HX |
| **T461M120X175R6HX** | M12 x 1,75 | 100 | 21 | 48 | 12,0 | 3 | 6HX |
| **T461MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 56 | 12,0 | 4 | 6HX |
| **T461M140X200R6HX** | M14 x 2 | 110 | 24 | 56 | 12,0 | 4 | 6HX |
| **T461MF160X150R6HX** | M16 x 1,5 | 110 | 24 | 64 | 14,0 | 4 | 6HX |
| **T461M160X200R6HX** | M16 x 2 | 110 | 24 | 64 | 14,0 | 4 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

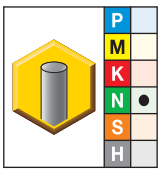
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |


beyond

KC7512 TiN + CrC/C for aluminium.

## T471 • Form E Bottoming Chamfer • Through Coolant M6 and Larger • Metric



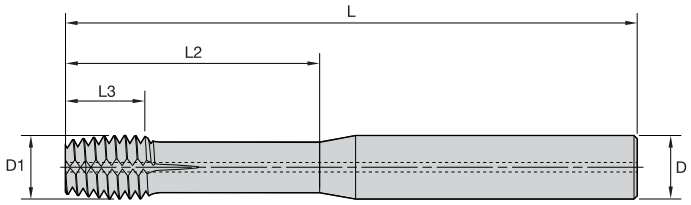

● first choice
○ alternate choice

| KC7512 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T471M060X100R6HX** | M6 x 1 | 70 | 12 | 24 | 6,0 | 3 | 6HX |
| **T471M080X125R6HX** | M8 x 1,25 | 80 | 15 | 32 | 8,0 | 3 | 6HX |
| **T471MF100X100R6HX** | M10 x 1 | 90 | 18 | 40 | 10,0 | 3 | 6HX |
| **T471M100X150R6HX** | M10 x 1,5 | 90 | 18 | 40 | 10,0 | 3 | 6HX |
| **T471MF120X150R6HX** | M12 x 1,5 | 100 | 21 | 48 | 12,0 | 3 | 6HX |
| **T471M120X175R6HX** | M12 x 1,75 | 100 | 21 | 48 | 12,0 | 3 | 6HX |
| **T471MF140X150R6HX** | M14 x 1,5 | 110 | 24 | 56 | 12,0 | 4 | 6HX |
| **T471M140X200R6HX** | M14 x 2 | 110 | 24 | 56 | 12,0 | 4 | 6HX |
| **T471MF160X150R6HX** | M16 x 1,5 | 110 | 24 | 64 | 14,0 | 4 | 6HX |
| **T471M160X200R6HX** | M16 x 2 | 110 | 24 | 64 | 14,0 | 4 | 6HX |

NOTE: Proprietary technology.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

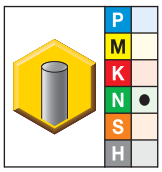




beyond

KC7512 TiN + CrC/C for aluminium.

## T481 • Form D Plug Entry Taper • Through Coolant M6 and Larger • Metric



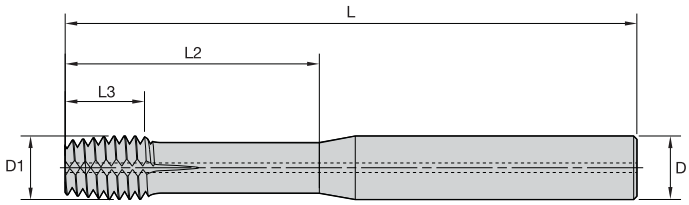

● first choice
○ alternate choice

| KC7512 | D1 size | L | L3 | L2 | D | number of lube grooves | class of fit |
|---|---|---|---|---|---|---|---|
| **T481M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 2 | 6HX |
| **T481M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 2 | 6HX |
| **T481M060X100R6HX** | M6 x 1 | 70 | 8 | 24 | 6,0 | 2 | 6HX |
| **T481M080X125R6HX** | M8 x 1,25 | 80 | 10 | 32 | 8,0 | 2 | 6HX |
| **T481MF100X100R6HX** | M10 x 1 | 90 | 12 | 40 | 10,0 | 3 | 6HX |
| **T481M100X150R6HX** | M10 x 1,5 | 90 | 12 | 40 | 10,0 | 3 | 6HX |
| **T481MF120X150R6HX** | M12 x 1,5 | 100 | 14 | 48 | 12,0 | 3 | 6HX |
| **T481M120X175R6HX** | M12 x 1,75 | 100 | 14 | 48 | 12,0 | 3 | 6HX |

NOTE: Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

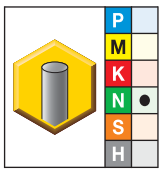




beyond

KC7512 TiN + CrC/C for aluminium.

## T491 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric




● first choice
○ alternate choice

| KC7512 | D1 size | L | L3 | L2 | D | number of lube grooves | class of fit |
|---|---|---|---|---|---|---|---|
| **T491M040X070R6HX** | M4 x 0,7 | 60 | 6 | 16 | 6,0 | 2 | 6HX |
| **T491M050X080R6HX** | M5 x 0,8 | 60 | 7 | 20 | 6,0 | 2 | 6HX |
| **T491M060X100R6H** | M6 x 1 | 70 | 8 | 24 | 6,0 | 2 | 6HX |
| **T491M080X125R6HX** | M8 x 1,25 | 80 | 10 | 32 | 8,0 | 2 | 6HX |
| **T491MF100X100R6H** | M10 x 1 | 90 | 12 | 40 | 10,0 | 3 | 6HX |
| **T491M100X150R6HX** | M10 x 1,5 | 90 | 12 | 40 | 10,0 | 3 | 6HX |
| **T491MF120X150R6HX** | M12 x 1,5 | 100 | 14 | 48 | 12,0 | 3 | 6HX |
| **T491M120X175R6HX** | M12 x 1,75 | 100 | 14 | 48 | 12,0 | 3 | 6HX |

NOTE: Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

## Metric

| Material Group | | Through Holes | | | | | Blind Holes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Range — m/min | | | | | Range — m/min | | |
| | | Tap Style | Grade | min | Starting Value | max | Tap Style | Grade | min | Starting Value | max |
| P | 1 | T320, T381 | KC7542 | 80 | **100** | 130 | T331, T381 | KC7542 | 50 | **70** | 90 |
| | 2 | T320, T381 | KC7542 | 70 | **90** | 120 | T331, T381 | KC7542 | 50 | **60** | 80 |
| | 3 | T320, T381 | KC7542 | 60 | **80** | 100 | T331, T381 | KC7542 | 50 | **60** | 80 |
| K | 1 | T340 | KC7542 | 80 | **105** | 140 | T351 | KC7542 | 50 | **70** | 90 |
| | 2 | T340 | KC7542 | 80 | **100** | 130 | T351 | KC7542 | 50 | **70** | 90 |
| | 3 | T340 | KC7542 | 70 | **90** | 120 | T351 | KC7542 | 50 | **60** | 80 |
| N | 1 | T461, T481 | KC7512 | 90 | **120** | 160 | T471, T491 | KC7512 | 60 | **80** | 100 |
| | 2 | T461, T481 | KC7512 | 80 | **100** | 130 | T471, T491 | KC7512 | 50 | **70** | 90 |
| | 4 | T461, T481 | KC7512 | 70 | **85** | 110 | T471, T491 | KC7512 | 50 | **60** | 80 |
| H | 3 | T410 | KCU36 | 1,2 | **1,5** | 2,0 | T410 | KCU36 | 0,8 | **1,1** | 1,4 |
| | 4 | T410 | KCU36 | 0,6 | **0,8** | 1,0 | T410 | KCU36 | 0,4 | **0,5** | 0,7 |

NOTE: Increase speed of T321 coolant taps by up to 25% of speeds listed for non-coolant T320 taps.



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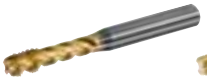
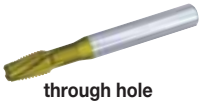
# Steel

| typical thread sizes | | | | required tap drill diameter | | | | P Solid Carbide Taps | | |
|---|---|---|---|---|---|---|---|---|---|---|
| cutting taps | | forming taps | | | | | |  |  |  |
| metric | inch | metric | inch | mm | inch | fraction | wire | blind hole with coolant T331_ KC7542 | through hole T320_ KC7542 | through hole with coolant T321_ KC7542 |
| — | — | — | 6-32 | 3.175 | .1250 | 1/8 | — | — | — | — |
| M4,5 x 0,75 | — | M4 x 0,70 | — | 3.700 | .1457 | — | — | — | — | — |
| — | — | — | 8-32 | 3.797 | .1495 | — | 25 | — | — | — |
| — | — | — | 10-24 | 4.366 | .1719 | 11/64 | — | — | — | — |
| — | 12-24 | — | 10-32 | 4.496 | .1770 | — | 16 | — | — | — |
| — | — | M5 x 0,80 | — | 4.700 | .1850 | — | 13 | — | — | — |
| M6 x 1,00 | — | — | — | 5.000 | .1969 | — | — | T331M060X100R6HX | T320M060X100R6HX | — |
| — | 1/4-20 | — | 12-28 | 5.106 | .2010 | — | 7 | T331NC2500-20R3BX | T320NC02500-20R3BX | — |
| — | 1/4-28 | — | — | 5.410 | .2130 | — | 3 | T331NF2500-28R3BX | T320NF02500-28R3BX | — |
| — | — | M6 x 1,00 | — | 5.600 | .2205 | — | — | — | — | — |
| — | — | — | 1/4-20 | 5.791 | .2280 | — | 1 | — | — | — |
| — | — | — | 1/4-28 | 5.944 | .2340 | — | A | — | — | — |
| — | 5/16-18 | — | — | 6.528 | .2570 | — | F | T331NC3125-18R3BX | T320NC03125-18R3BX | — |
| M8 x 1,25 | — | — | — | 6.700 | .2638 | — | — | T331M080X125R6HX | T320M080X125R6HX | — |
| — | 5/16-24 | — | — | 6.909 | .2720 | — | I | — | T320NF03125-24R3BX | — |
| — | — | — | 5/16-18 | 7.366 | .2900 | — | L | — | — | — |
| — | — | M8 x 1,25 | — | 7.400 | .2913 | — | — | — | — | — |
| — | 3/8-16 | — | — | 7.938 | .3125 | 5/16 | — | T331NC3750-16R3BX | T320NC03750-16R3BX | — |
| — | 3/8-24 | — | — | 8.433 | .3320 | — | Q | — | T320NF03750-24R3BX | — |
| M10 x 1,50 | — | — | — | 8.500 | .3346 | — | — | T331M100X150R6HX | T320M100X150R6HX | T321M100X150R6HX |
| M10 x 1,00 | — | — | — | 9.000 | .3543 | — | — | T331MF100X100R6HX | — | — |
| — | — | — | 3/8-16 | 8.839 | .3480 | — | S | — | — | — |
| — | 7/16-14 | — | 3/8-24 | 9.093 | .3580 | — | T | T331NC4375-14R3BX | T320NC04375-14R3BX | — |
| — | — | M10 x 1,50 | — | 9.400 | .3701 | — | — | — | — | — |
| M12 x 1,75 | — | — | — | 10.200 | .4016 | — | — | T331M120X175R6HX | T320M120X175R6HX | T321M120X175R6HX |
| M12 x 1,50 | — | — | — | 10.500 | .4134 | — | — | T331MF120X150R6HX | T320MF120X150R6HX | T321MF120X150R6HX |
| — | 1/2-13 | — | — | 10.716 | .4219 | 27/64 | — | T331NC5000-13R3BX | T320NC05000-13R3BX | — |
| — | 1/2-20 | — | — | 11.509 | .4531 | 29/64 | — | — | T320NF0500020R3BX | — |
| M14 x 2,00 | — | — | — | 12.000 | .4724 | — | — | T331M140X200R6HX | T320M140X200R6HX | T321M140X200R6HX |
| — | 9/16-12 | — | — | 12.304 | .4844 | 31/64 | — | T331NC5625-12R3BX | T320NC05625-12R3BX | — |
| M14 x 1,50 | — | — | — | 12.500 | .4921 | — | — | T331MF140X150R6HX | T320MF140X150R6HX | T321MF140X150R6HX |
| — | 5/8-11 | — | 9/16-12 | 13.495 | .5313 | 17/32 | — | T331NC6250-11R3BX | T320NC06250-11R3BX | — |
| M16 x 2,00 | — | — | — | 14.000 | .5512 | — | — | T331M160X200R6HX | T320M160X200R6HX | T321M160X200R6HX |

| | | P | | All Materials | |
|---|---|---|---|---|---|
| Solid Carbide Taps | | Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |  |  |
| forming blind hole with coolant T391_KC7542 | forming through hole with coolant T381_ KC7542 | approximately 3 x D with coolant B224_ HP KCPK15 | approximately 5 x D with coolant B225_ HP KCPK15 | approximately 3 x D with coolant B976_ KC7315 | approximately 5 x D with coolant B977_ KC7315 |
| T391NC#6-32R3BX | T381NC#6-32R3BX | B224A03175HP | B225A03175HP | B976A03175 | B977A03175 |
| T391M040X070R6HX | T381M040X070R6HX | B224A03700HP | B225A03700HP | B976A03700 | B977A03700 |
| T391NC#8-32R3BX | T381NC#8-32R3BX | B224A03797HP | B225A03797HP | B976A03797 | B977A03797 |
| T391NC#10-24R3BX | T381NC#10-24R3BX | B224A04366HP | B225A04366HP | B976A04366 | B977A04366 |
| T391NF#10-32R3BX | T381NF#10-32R3BX | B224A04496HP | B225A04496HP | B976A04496 | B977A04496 |
| T391M050X080R6HX | T381M050X080R6HX | B224A04700HP | B225A04700HP | B976A04700 | B977A04700 |
| – | – | B224A05000HP | B225A05000HP | B976A05000 | B977A05000 |
| – | – | B224A05106HP | B225A05106HP | B976A05106 | B977A05106 |
| – | – | B224A05410HP | B225A05410HP | B976A05410 | B977A05410 |
| T391M060X100R6HX | T381M060X100R6HX | B224A05600HP | B225A05600HP | B976A05600 | B977A05600 |
| T391NC2500-20R3BX | T381NC2500-20R3BX | B224A05791HP | B225A05791HP | B976A05791 | B977A05791 |
| T391NF2500-28R3BX | T381NF2500-28R3BX | B224A05944HP | B225A05944HP | B976A05944 | B977A05944 |
| – | – | B224A06528HP | B225A06528HP | B976A06528 | B977A06528 |
| – | – | B224A06700HP | B225A06700HP | B976A06700 | B977A06700 |
| – | – | B224A06909HP | B225A06909HP | B976A06909 | B977A06909 |
| T391NC3125-18R3BX | T381NC3125-18R3BX | B224A07366HP | B225A07366HP | B976A07366 | B977A07366 |
| T391M080X125R6HX | T381M080X125R6HX | B224A07400HP | B225A07400HP | B976A07400 | B977A07400 |
| – | – | B224A07938HP | B225A07938HP | B976A07938 | B977A07938 |
| – | – | B224A08433HP | B225A08433HP | B976A08433 | B977A08433 |
| – | – | B224A08500HP | B225A08500HP | B976A08500 | B977A08500 |
| – | – | B224A09000HP | B225A09000HP | B976A09000 | B977A09000 |
| T391NC3750-16R3BX | T381NC3750-16R3BX | B224A08839HP | B225A08839HP | B976A08839 | B977A08839 |
| – | – | B224A09093HP | B225A09093HP | B976A09093 | B977A09093 |
| T391M100X150R6HX | T381M100X150R6HX | B224A09400HP | B225A09400HP | B976A09400 | B977A09400 |
| – | – | B224A10200HP | B225A10200HP | B976A10200 | B977A10200 |
| – | – | B224A10500HP | B225A10500HP | B976A10500 | B977A10500 |
| – | – | B224A10716HP | B225A10716HP | B976A10716 | B977A10716 |
| – | – | B224A11509HP | B225A11509HP | B976A11509 | B977A11509 |
| – | – | B224A12000HP | B225A12000HP | B976A12000 | B977A12000 |
| – | – | B224A12304HP | B225A12304HP | B976A12304 | B977A12304 |
| – | – | B224A12500HP | B225A12500HP | B976A12500 | B977A12500 |
| – | – | B224A13495HP | B225A13495HP | B976A13495 | B977A13495 |
| – | – | B224A14000HP | B225A14000HP | B976A14000 | B977A14000 |

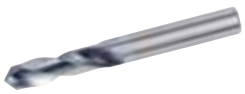
# Cast Iron

| typical thread sizes | | required tap drill diameter | | | | K Solid Carbide Taps | |
|---|---|---|---|---|---|---|---|
| | | | | | |  |  |
| cutting taps | | | | | | blind hole with coolant | through hole |
| metric | inch | mm | inch | fraction | wire | T351_ KC7542 | T340_ KC7542 |
| – | 6-32 | 2.705 | .1065 | – | 36 | T351NC#6-32R3BX | – |
| M4 x 0,70 | – | 3.300 | .1299 | – | – | T351M040X070R6HX | T340M040X070R6HX |
| – | 8-32 /8-36 | 3.454 | .1360 | – | 29 | T351NC#8-32R3BX | – |
| – | 10-24 | 3.734 | .1470 | – | 26 | T351NC#10-24R3BX | – |
| – | 10-32 | 4.039 | .1590 | – | 21 | T351NF#10-32R3BX | – |
| M5 x 0,80 | – | 4.200 | .1654 | – | – | T351M050X080R6HX | T340M050X080R6HX |
| M6 x 1,00 | – | 5.000 | .1969 | – | – | T351M060X100R6HX | T340M060X100R6HX |
| – | 1/4-20 | 5.106 | .2010 | – | 7 | T351NC2500-20R3BX | T340NC2500-20R3BX |
| – | 1/4-28 | 5.410 | .2130 | – | 3 | T351NF2500-28R3BX | T340NF2500-28R3BX |
| – | 5/16-18 | 6.528 | .2570 | – | F | T351NC3125-18R3BX | T340NC3125-18R3BX |
| M8 x 1,25 | – | 6.700 | .2638 | – | – | T351M080X125R6HX | T340M080X125R6HX |
| – | 3/8-16 | 7.938 | .3125 | 5/16 | – | T351NC3750-16R3BX | T340NC03750-16R3BX |
| – | 3/8-24 | 8.433 | .3320 | – | Q | – | T340NF03750-24R3BX |
| M10 x 1,50 | – | 8.500 | .3346 | – | – | T351M100X150R6HX | T340M100X150R6HX |
| M10 x 1,00 | – | 9.000 | .3543 | – | – | T351MF100X100R6HX | T340MF100X100R6HX |
| – | 7/16-14 | 9.093 | .3580 | – | T | T351NC4375-14R3BX | T340NC04375-14R3BX |
| M12 x 1,75 | – | 10.200 | .4016 | – | – | T351M120X175R6HX | T340M120X175R6HX |
| M12 x 1,50 | – | 10.500 | .4134 | – | – | T351MF120X150R6HX | T340MF120X150R6HX |
| – | 1/2-13 | 10.716 | .4219 | 27/64 | – | T351NC5000-13R3BX | T340NC05000-13R3BX |
| – | 1/2-20 | 11.509 | .4531 | 29/64 | – | – | T340NF05000-20R3BX |
| M14 x 2,00 | – | 12.000 | .4724 | – | – | T351M140X200R6HX | T340M140X200R6HX |
| – | 9/16-12 | 12.304 | .4844 | 31/64 | – | T351NC5625-12R3BX | T340NC05625-12R3BX |
| M14 x 1,50 | – | 12.500 | .4921 | – | – | T351MF140X150R6HX | T340MF140X150R6HX |
| – | 5/8-11 | 13.495 | .5313 | 17/32 | – | T351NC6250-11R3BX | T340NC06250-11R3BX |
| M16 x 2,00 | – | 14.000 | .5512 | – | – | T351M160X200R6HX | T340M160X200R6HX |
| M18 x 2,50 | – | 15.500 | .6102 | – | – | – | T340M180X250R6HX |
| – | 3/4-10 | 16.670 | .6563 | 21/32 | – | T351NC7500-10R3BX | T340NC07500-10R3BX |
| M20 x 2,50 | – | 17.500 | .6890 | – | – | T351M200X250R6HX | T340M200X250R6HX |

| K | | All Materials | |
|---|---|---|---|
| Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |
| approximately 3 x D with coolant B254_YPC KCK10 | approximately 5 x D with coolant B254_YPC KCK10 | approximately 3 x D with coolant B976_ KC7315 | approximately 5 x D with coolant B977_ KC7315 |
| B254Z02705YPC | B255Z02705YPC | – | B051A02705CPG |
| B254A03300YPC | B255A03300YPC | B976A03300 | B977A03300 |
| B254A03454YPC | B255A03454YPC | B976A03454 | B977A03454 |
| B254A03734YPC | B255A03734YPC | B976A03734 | B977A03734 |
| B254A04039YPC | B255A04039YPC | B976A04039 | B977A04039 |
| B254A04200YPC | B255A04200YPC | B976A04200 | B977A04200 |
| B254A05000YPC | B255A05000YPC | B976A05000 | B977A05000 |
| B254A05106YPC | B255A05106YPC | B976A05106 | B977A05106 |
| B254A05410YPC | B255A05410YPC | B976A05410 | B977A05410 |
| B254A06528YPC | B255A06528YPC | B976A06528 | B977A06528 |
| B254A06700YPC | B255A06700YPC | B976A06700 | B977A06700 |
| B254A07938YPC | B255A07938YPC | B976A07938 | B977A07938 |
| B254A08433YPC | B255A08433YPC | B976A08433 | B977A08433 |
| B254A08500YPC | B255A08500YPC | B976A08500 | B977A08500 |
| B254A09000YPC | B255A09000YPC | B976A09000 | B977A09000 |
| B254A09093YPC | B255A09093YPC | B976A09093 | B977A09093 |
| B254A10200YPC | B255A10200YPC | B976A10200 | B977A10200 |
| B254A10500YPC | B255A10500YPC | B976A10500 | B977A10500 |
| B254A10716YPC | B255A10716YPC | B976A10716 | B977A10716 |
| B254A11509YPC | B255A11509YPC | B976A11509 | B977A11509 |
| B254A12000YPC | B255A12000YPC | B976A12000 | B977A12000 |
| B254A12304YPC | B255A12304YPC | B976A12304 | B977A12304 |
| B254A12500YPC | B255A12500YPC | B976A12500 | B977A12500 |
| B254A13495YPC | B255A13495YPC | B976A13495 | B977A13495 |
| B254A14000YPC | B255A14000YPC | B976A14000 | B977A14000 |
| B254A15500YPC | B255A15500YPC | B976A15500 | B977A15500 |
| B254A16670YPC | B255A16670YPC | B976A16670 | B977A16670 |
| B254A17500YPC | B255A17500YPC | B976A17500 | B977A17500 |

# Aluminium

| typical thread sizes | | | | required tap drill diameter | | | | N | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Solid Carbide Taps | | Solid Carbide Taps |
| | | | | | | | |  |  |  |
| cutting taps | | forming taps | | | | | | blind hole with coolant T471_ KC7512 | through hole with coolant T461_ KC7512 | forming blind hole with coolant T491_ KC7512 |
| metric | inch | metric | inch | mm | inch | fraction | wire | | | |
| – | – | – | 6-32 | 3.175 | .1250 | 1/8 | – | – | – | T491NC#6–32R3B |
| M4,5 x 0,75 | – | M4 x 0,70 | – | 3.700 | .1457 | – | – | – | – | T491M040X070R6H |
| – | – | – | 8-32 | 3.797 | .1495 | – | 25 | – | – | T491NC#8–32R3B |
| – | – | – | 10-24 | 4.366 | .1719 | 11/64 | – | – | – | T491NC#10–24R3B |
| – | 12-24 | – | 10-32 | 4.496 | .1770 | – | 16 | – | – | T491NF#10–32R3B |
| – | – | M5 x 0,80 | – | 4.700 | .1850 | – | 13 | – | – | T491M050X080R6H |
| M6 x 1,00 | – | – | – | 5.000 | .1969 | – | – | T471M060X100R6H | T461M060X100R6H | – |
| – | 1/4-20 | – | 12-28 | 5.106 | .2010 | – | 7 | T471NC2500–20R3B | T461NC2500–20R3B | – |
| – | 1/4-28 | – | – | 5.410 | .2130 | – | 3 | T471NF2500–28R3B | T461NF2500–28R3B | – |
| – | – | M6 x 1,00 | – | 5.600 | .2205 | – | – | – | – | T491M060X100R6H |
| – | – | – | 1/4-20 | 5.791 | .2280 | – | 1 | – | – | T491NC2500–20R3B |
| – | – | – | 1/4-28 | 5.944 | .2340 | – | A | – | – | T491NF2500–28R3B |
| – | 5/16-18 | – | – | 6.528 | .2570 | – | F | T471NC3125–18R3B | T461NC3125–18R3B | – |
| M8 x 1,25 | – | – | – | 6.700 | .2638 | – | – | T471M080X125R6H | T461M080X125R6H | – |
| – | – | – | 5/16-18 | 7.366 | .2900 | – | L | – | – | T491NC3125–18R3B |
| – | – | M8 x 1,25 | – | 7.400 | .2913 | – | – | – | – | T491M080X125R6H |
| – | 3/8-16 | – | – | 7.938 | .3125 | 5/16 | – | T471NC3750–16R3B | T461NC3750–16R3B | – |
| M10 x 1,50 | – | – | – | 8.500 | .3346 | – | – | T471M100X150R6H | T461M100X150R6H | – |
| M10 x 1,00 | – | – | – | 9.000 | .3543 | – | – | T471MF100X100R6H | T461MF100X100R6H | – |
| – | – | – | 3/8-16 | 8.839 | .3480 | – | S | – | – | T491NC3750–16R3B |
| – | 7/16-14 | – | 3/8-24 | 9.093 | .3580 | – | T | T471NC4375–14R3B | T461NC4375–14R3B | – |
| – | – | M10 x 1,50 | – | 9.400 | .3701 | – | – | – | – | T491M100X150R6H |
| – | – | M10 x 1,00 | – | 9.500 | .3740 | – | – | – | – | T491MF100X100R6H |
| – | 7/16-20 | – | – | 9.921 | .3906 | 25/64 | – | – | – | – |
| M12 x 1,75 | – | – | – | 10.200 | .4016 | – | – | T471M120X175R6H | T461M120X175R6H | – |
| – | – | – | 7/16-14 | 10.262 | .4040 | – | Y | – | – | T491NC4375–14R3B |
| M12 x 1,50 | – | – | – | 10.500 | .4134 | – | – | T471MF120X150R6H | T461MF120X150R6H | – |
| – | 1/2-13 | – | – | 10.716 | .4219 | 27/64 | – | T471NC5000–13R3B | T461NC5000–13R3B | – |
| – | – | M12 x 1,75 | – | 11.300 | .4449 | – | – | – | – | T491M120X175R6H |
| – | – | M12 x 1,50 | – | 11.300 | .4449 | – | – | – | – | T491MF120X150R6H |
| – | – | – | 1/2-13 | 11.908 | .4688 | 15/32 | – | – | – | T491NC5000–13R3B |
| M14 x 2,00 | – | – | – | 12.000 | .4724 | – | – | T471M140X200R6H | T461M140X200R6H | – |
| – | 9/16-12 | – | – | 12.304 | .4844 | 31/64 | – | T471NC5625–12R3B | T461NC5625–12R3B | – |
| M14 x 1,50 | – | – | – | 12.500 | .4921 | – | – | T471MF140X150R6H | T461MF140X150R6H | – |
| – | 5/8-11 | – | 9/16-12 | 13.495 | .5313 | 17/32 | – | T471NC6250–11R3B | T461NC6250–11R3B | – |
| M16 x 2,00 | – | – | – | 14.000 | .5512 | – | – | T471M160X200R6H | T461M160X200R6H | – |
| M16 x 1,50 | – | – | – | 14.500 | .5709 | – | – | T471MF160X150R6H | T461MF160X150R6H | – |

| | N | | All Materials | |
|---|---|---|---|---|
| Solid Carbide Taps | Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |  |
| forming through hole with coolant T481_ KC7512 | approximately 3 x D with coolant B284_(HP) K715 | approximately 5 x D with coolant B411 KF1 | approximately 3 x D with coolant B976_ KC7315 | approximately 5 x D with coolant B977_ KC7315 |
| T481NC#6—32R3B | – | – | B976A03175 | B977A03175 |
| T481M040X070R6H | – | – | B976A03700 | B977A03700 |
| T481NC#8—32R3B | – | – | B976A03797 | B977A03797 |
| T481NC#10—24R3B | – | – | B976A04366 | B977A04366 |
| T481NF#10—32R3B | – | – | B976A04496 | B977A04496 |
| T481M050X080R6H | – | – | B976A04700 | B977A04700 |
| – | B284A05000 | B411A05000 | B976A05000 | B977A05000 |
| – | – | – | B976A05106 | B977A05106 |
| – | – | – | B976A05410 | B977A05410 |
| T481M060X100R6H | – | B411A05600 | B976A05600 | B977A05600 |
| T481NC2500—20R3B | – | – | B976A05791 | B977A05791 |
| T481NF2500—28R3B | – | – | B976A05944 | B977A05944 |
| – | – | – | B976A06528 | B977A06528 |
| – | – | – | B976A06700 | B977A06700 |
| T481NC3125—18R3B | – | – | B976A07366 | B977A07366 |
| T481M080X125R6H | – | B411A07400 | B976A07400 | B977A07400 |
| – | – | – | B976A07938 | B977A07938 |
| – | – | B411A08500 | B976A08500 | B977A08500 |
| – | – | B411A09000 | B976A09000 | B977A09000 |
| T481NC3750—16R3B | – | – | B976A08839 | B977A08839 |
| – | – | – | B976A09093 | B977A09093 |
| T481M100X150R6H | – | – | B976A09400 | B977A09400 |
| T481MF100X100R6H | – | B411A09500 | B976A09500 | B977A09500 |
| – | K284A03906 | – | B976A09921 | B977A09921 |
| – | – | B411A10200 | B976A10200 | B977A10200 |
| T481NC4375—14R3B | – | – | B976A10262 | B977A10262 |
| – | – | B411A10500 | B976A10500 | B977A10500 |
| – | – | – | B976A10716 | B977A10716 |
| T481M120X175R6H | – | – | B976A11300 | B977A11300 |
| T481MF120X150R6H | – | – | B976A11300 | B977A11300 |
| T481NC5000—13R3B | K284A04688 | – | B976A11908 | B977A11908 |
| – | – | B411A12000 | B976A12000 | B977A12000 |
| – | – | – | B976A12304 | B977A12304 |
| – | – | B411A12500 | B976A12500 | B977A12500 |
| – | – | – | B976A13495 | B977A13495 |
| – | – | B411A14000 | B976A14000 | B977A14000 |
| – | – | B411A14500 | B976A14500 | B977A14500 |

# High-Performance HSS-E-PM Taps

## Primary Application

The High-Performance High-Speed Steel (HSS-E-PM) Taps are manufactured to both ANSI and DIN standards from powder metal, offering high productivity and reliable thread quality and are engineered for greater wear and heat resistance. HSS-E-PM tools can be used on conventional non-rigid and CNC-synchronous tapping machines for tapping through and blind holes in a variety of materials and is particularly efficient in tapping soft steel and aluminium.

The precision h6 shank enables usage in either conventional square drive tap holders or in precision round toolholders.

# Features and Benefits

## Improved Performance, Wide Range of Choices

- Higher strength and wider range of applications versus carbide taps.
- Higher tapping speed capability and longer life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.
- Forming taps for soft steel and aluminium.
- Selection of taps for all materials:
  - Steel
  - Stainless steel
  - Iron
  - Aluminium, cast and wrought
  - Aerospace
  - Hard steel

## Customisation

- Customised taps are available with short lead times from semi-finished blanks.

# Beyond™ High-Performance HSS-E-PM Taps • DIN Metric

● first choice
○ alternate choice

| Beyond High-Performance HSS-E-PM | series | grade | shank/dimension | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|---|
|  | T600 | KSP21 | DIN 371, 374, 376 | ● | ○ | | | ○ | |
|  | T602 | KSP21 | DIN 371, 374, 376 | ● | | | | ○ | |
|  | T604 | KSH26 | DIN 371, 374, 376 | ● | | | | | |
|  | T606 | KSSH22 | DIN 371, 374, 376 | | | | | | ● |
|  | T610 | KSSH22 | DIN 371, 374, 376 | | | | | ● | |
|  | T612 | KSSH22 | DIN 371, 374, 376 | | | | | ● | |
|  | T614 | KSN25 | DIN 371, 376 | | | | ○ | ● | |
|  | T616 | KSN25 | DIN 371 | | | | ○ | ● | |
|  | T620 | KP6525 | DIN 371, 374, 376, XL | ● | | | | ○ | |
|  | T620 | KM6515 | DIN 371, 374, 376 | | ● | | ○ | ○ | |
|  | T621 | KP6525 | DIN 371, 376 | ● | | | | ○ | |
|  | T621 | KM6515 | DIN 371, 376 | | ● | | ○ | ○ | |
|  | T622 | KSP21 | DIN 371, 374, 376 | ● | | | | | |
|  | T622 | 'KSN28 | DIN 371, 374, 376 | | | | ● | | |
|  | T623 | KSP21 | DIN 371, 374, 376 | ● | | | | | |
|  | T623 | KSN28 | DIN 371, 374, 376 | | | | ● | | |
|  | T630 | KP6525 | DIN 371, 374, 376, XL | ● | | | | ○ | |
|  | T630 | KM6515 | DIN 371, 374, 376 | | ● | | ○ | ○ | |
|  | T630 | KP6505 | DIN 371, 376 | ● | | | | | |
|  | T631 | KP6525 | DIN 371, 376, XL | ● | | | | ○ | |
|  | T631 | KM6515 | DIN 371, 376 | | ● | | ○ | ○ | |
|  | T632 | KP6525 | DIN 371, 374, 376 | ● | | | | ○ | |
|  | T633 | KP6525 | DIN 371, 374, 376 | ● | | | | | |
|  | T640 | KP6525 | DIN 371, 376 | | | ● | ● | | |
|  | T641 | KP6525 | DIN 371, 376 | | | ● | ● | | |
|  | T642 | KP6525 | DIN 371, 374, 376 | | | ● | ● | | |
|  | T643 | KP6525 | DIN 371, 374, 376 | | | ● | ● | | |
|  | T650 | KP6525 | DIN 376, XL | ● | ○ | | | | |
|  | T651 | KP6525 | DIN 376, XL | ● | ○ | | | | |
|  | T670 | KSN38 | DIN 371, 376 | | | | ● | | |
|  | T680 | KSN38 | DIN 371, 376 | | | | ● | | |

| size range (metric) size min–max | through hole | blind hole | chamfer form | helix angle | external coolant | internal coolant | page(s) | recommended cutting parameters |
|---|---|---|---|---|---|---|---|---|
| M3–M20 |  | |  |  |  | | L36 | L64 |
| M3–M20 | |  |  |  |  | | L37 | L64 |
| M3–M20 | |  |  |  |  | | L38 | L64 |
| M6–M16 |  |  |  |  |  | | L39 | L64 |
| M3–M20 |  | |  |  |  | | L40 | L64 |
| M3–M20 | |  |  |  |  | | L41 | L64 |
| M3–M12 |  | |  |  |  | | L42 | L64 |
| M3–M12 | |  |  |  |  | | L43 | L64 |
| M3–M42 |  | |  |  |  | | L44, L59 | L64 |
| M3–M20 |  | |  |  |  | | L44 | L64 |
| M5–M14 |  | |  |  | |  | L45 | L64 |
| M5–M14 |  | |  |  | |  | L45 | L64 |
| M3–M16 |  |  |  | |  | | L46 | L64 |
| M3–M16 |  |  |  | |  | | L46 | L64 |
| M5–M16 |  |  |  | | |  | L47 | L64 |
| M5–M16 |  |  |  | | |  | L47 | L64 |
| M3–M42 | |  |  |  |  | | L48, L60 | L64 |
| M3–M24 | |  |  |  |  | | L48 | L64 |
| M3–M16 | |  |  |  |  | | L48 | L64 |
| M5–M42 | |  |  |  | |  | L49, L61 | L64 |
| M5–M16 | |  |  |  | |  | L49 | L64 |
| M5–M16 | |  |  |  |  | | L50 | L64 |
| M5–M16 | |  |  |  | |  | L51 | L64 |
| M4–M22 |  |  |  |  |  | | L52 | L64 |
| M4–M20 |  |  |  |  | |  | L53 | L64 |
| M5–M16 | |  |  |  |  | | L54 | L64 |
| M5–M16 | |  |  |  | |  | L55 | L64 |
| M24–M42 | |  |  |  |  | | L62 | L64 |
| M24–M42 | |  |  |  | |  | L63 | L64 |
| M3–M16 |  | |  |  |  | | L56 | L64 |
| M3–M20 | |  |  |  |  | | L57 | L64 |

## HSS Taps Identification System

**T620MF120X150R6HX-D4**
**T620NC06250-11R3BX-A**

**Metric**

| T620 | MF | 120 | X | 150 | R | 6HX | -D4 |
|---|---|---|---|---|---|---|---|

**Inch**

| T620 | NC | 06250 | - | 11 | R | 3BX | -A |
|---|---|---|---|---|---|---|---|
| Tap Design | Type of Thread | Nominal Diameter of Thread | | Pitch | Cutting Direction | Tolerance Class | Taps Dimension |
| | | mm or inch (depending on type) | | mm or TPI (depending on type) | | | |

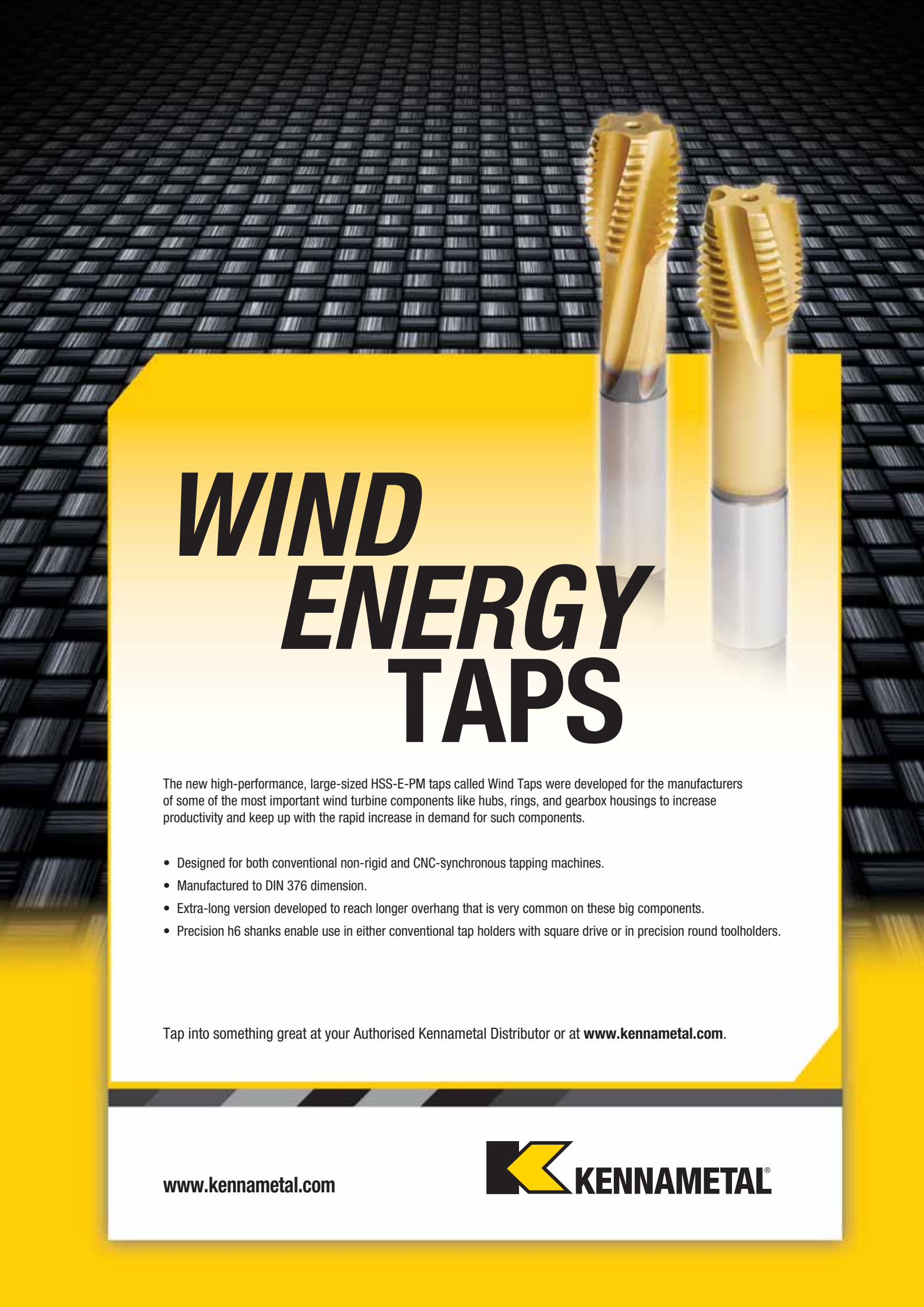
**M** = Metric coarse-pitch thread (ISO form)
**MF** = Metric fine-pitch thread (ISO form)
**NC** = Unified coarse series thread
**NF** = Unified fine series thread

**A** = ANSI
**D1** = DIN 371
**D4** = DIN 374
**D6** = DIN 376
**D74** = DIN 3174
**J** = JIS
**XL** = DIN extra length

**Style**

**T620** = Steel and stainless steel, through holes, LH spiral flute, solid
**T621** = Steel and stainless steel, through holes, LH spiral flute, coolant
**T630** = Steel and stainless steel, blind holes, RH spiral flute, solid
**T631** = Steel and stainless steel, blind holes, RH spiral flute, coolant
**T640** = Cast iron, through and blind holes, straight flute, solid
**T641** = Cast iron, through and blind holes, straight flute, coolant

NOTE: Other taps styles, see page L31.



# WIND ENERGY TAPS

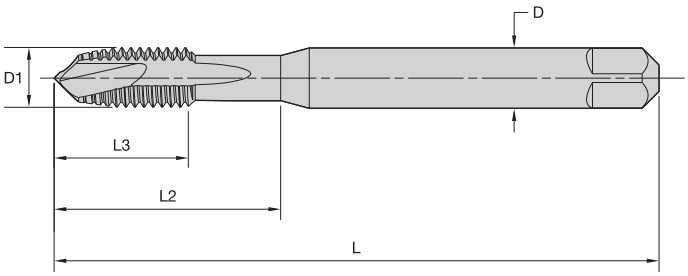
The new high-performance, large-sized HSS-E-PM taps called Wind Taps were developed for the manufacturers of some of the most important wind turbine components like hubs, rings, and gearbox housings to increase productivity and keep up with the rapid increase in demand for such components.

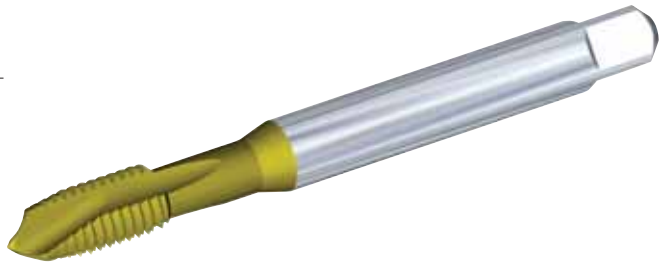
- Designed for both conventional non-rigid and CNC-synchronous tapping machines.
- Manufactured to DIN 376 dimension.
- Extra-long version developed to reach longer overhang that is very common on these big components.
- Precision h6 shanks enable use in either conventional tap holders with square drive or in precision round toolholders.

Tap into something great at your Authorised Kennametal Distributor or at **www.kennametal.com**.

**www.kennametal.com**

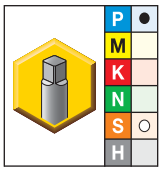
KENNAMETAL®

KSP21• TiN for tapping steel 32–44 HRC.

## T600 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric

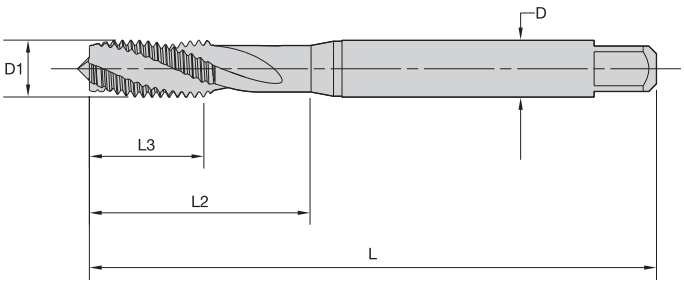


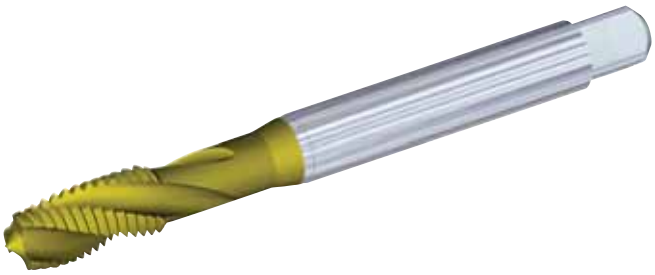

● first choice
○ alternate choice

| KSP21 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T600M030X050R6HX-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 2 | DIN 371 | 6HX |
| **T600M040X070R6HX-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 2 | DIN 371 | 6HX |
| **T600M050X080R6HX-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 2 | DIN 371 | 6HX |
| **T600M060X100R6HX-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T600MF080X100R6HX-D4** | M8 x 1 | 90 | 17 | — | 6,0 | 3 | DIN 374 | 6HX |
| **T600M080X125R6HX-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T600MF100X100R6HX-D4** | M10 x 1 | 90 | 18 | — | 7,0 | 3 | DIN 374 | 6HX |
| **T600MF100X125R6HX-D4** | M10 x 1,25 | 100 | 22 | — | 7,0 | 3 | DIN 374 | 6HX |
| **T600M100X150R6HX-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T600MF120X125R6HX-D4** | M12 x 1,25 | 100 | 22 | — | 9,0 | 3 | DIN 374 | 6HX |
| **T600MF120X150R6HX-D4** | M12 x 1,5 | 100 | 22 | — | 9,0 | 3 | DIN 374 | 6HX |
| **T600M120X175R6HX-D6** | M12 x 1,75 | 110 | 24 | — | 9,0 | 3 | DIN 376 | 6HX |
| **T600MF140X150R6HX-D4** | M14 x 1,5 | 100 | 22 | — | 11,0 | 3 | DIN 374 | 6HX |
| **T600M140X200R6HX-D6** | M14 x 2 | 110 | 26 | — | 11,0 | 3 | DIN 376 | 6HX |
| **T600MF160X150R6HX-D4** | M16 x 1,5 | 100 | 22 | — | 12,0 | 4 | DIN 374 | 6HX |
| **T600M160X200R6HX-D6** | M16 x 2 | 110 | 27 | — | 12,0 | 4 | DIN 376 | 6HX |
| **T600M180X250R6HX-D6** | M18 x 2 | 125 | 30 | — | 14,0 | 4 | DIN 376 | 6HX |
| **T600M200X250R6HX-D6** | M20 x 2,5 | 140 | 32 | — | 16,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

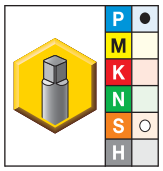
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

KSP21 • TiN for tapping steel 32–44 HRC (2 x D).

## T602 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric

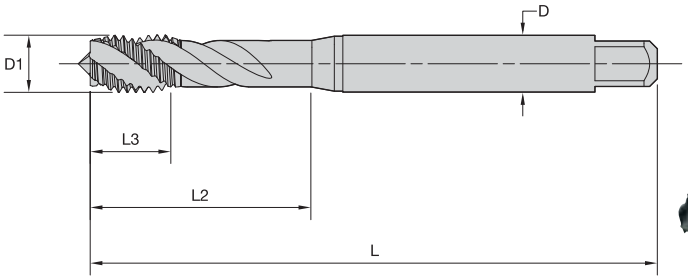



● first choice
○ alternate choice

| KSP21 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T602M030X050R6H-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 3 | DIN 371 | 6H |
| **T602M040X070R6H-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 3 | DIN 371 | 6H |
| **T602M050X080R6H-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 3 | DIN 371 | 6H |
| **T602M060X100R6H-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 3 | DIN 371 | 6H |
| **T602MF080X100R6H-D4** | M8 x 1 | 90 | 17 | — | 6,0 | 3 | DIN 374 | 6H |
| **T602M080X125R6H-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 3 | DIN 371 | 6H |
| **T602MF100X100R6H-D4** | M10 x 1 | 90 | 18 | — | 7,0 | 3 | DIN 374 | 6H |
| **T602MF100X125R6H-D4** | M10 x 1,25 | 100 | 22 | — | 7,0 | 3 | DIN 374 | 6H |
| **T602M100X150R6H-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 3 | DIN 371 | 6H |
| **T602MF120X125R6H-D4** | M12 x 1,25 | 100 | 22 | — | 9,0 | 3 | DIN 374 | 6H |
| **T602MF120X150R6H-D4** | M12 x 1,5 | 100 | 22 | — | 9,0 | 3 | DIN 374 | 6H |
| **T602M120X175R6H-D6** | M12 x 1,75 | 110 | 24 | 44 | 12,0 | 3 | DIN 376 | 6H |
| **T602MF140X150R6H-D4** | M14 x 1,5 | 100 | 22 | — | 11,0 | 3 | DIN 374 | 6H |
| **T602M140X200R6H-D6** | M14 x 2 | 110 | 26 | 52 | 11,0 | 3 | DIN 376 | 6H |
| **T602MF160X150R6H-D4** | M16 x 1,5 | 100 | 22 | — | 12,0 | 3 | DIN 374 | 6H |
| **T602M160X200R6H-D6** | M16 x 2 | 110 | 27 | — | 12,0 | 3 | DIN 376 | 6H |
| **T602M180X250R6H-D6** | M18 x 2 | 125 | 30 | — | 14,0 | 4 | DIN 376 | 6H |
| **T602M200X250R6H-D6** | M20 x 2,5 | 140 | 32 | — | 16,0 | 4 | DIN 376 | 6H |

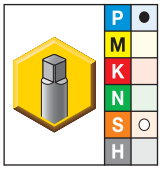
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSH26 • TiAlN/$MoS_2$ for tapping steel 32–44 HRC (3 x D).

## T604 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric

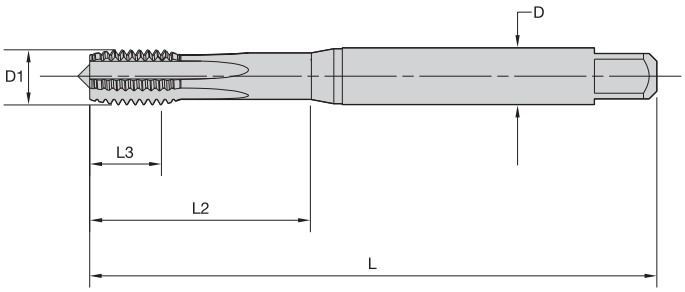



● first choice
○ alternate choice

| KSH26 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T604M030X050R6H-D1** | M3 x 0,5 | 56 | 6 | 18 | 3,5 | 3 | DIN 371 | 6H |
| **T604M040X070R6H-D1** | M4 x 0,7 | 63 | 7 | 21 | 4,5 | 3 | DIN 371 | 6H |
| **T604M050X080R6H-D1** | M5 x 0,8 | 70 | 8 | 25 | 6,0 | 3 | DIN 371 | 6H |
| **T604M060X100R6H-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6H |
| **T604MF080X100R6H-D4** | M8 x 1 | 90 | 10 | – | 6,0 | 3 | DIN 374 | 6H |
| **T604M080X125R6H-D1** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 3 | DIN 371 | 6H |
| **T604MF100X100R6H-D4** | M10 x 1 | 90 | 10 | – | 7,0 | 3 | DIN 374 | 6H |
| **T604MF100X125R6H-D4** | M10 x 1,25 | 100 | 16 | – | 7,0 | 3 | DIN 374 | 6H |
| **T604M100X150R6H-D1** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 6H |
| **T604MF120X125R6H-D4** | M12 x 1,25 | 100 | 15 | – | 9,0 | 4 | DIN 374 | 6H |
| **T604MF120X150R6H-D4** | M12 x 1,5 | 100 | 15 | – | 9,0 | 4 | DIN 374 | 6H |
| **T604M120X175R6H-D6** | M12 x 1,75 | 110 | 18 | – | 9,0 | 4 | DIN 376 | 6H |
| **T604MF140X150R6H-D4** | M14 x 1,5 | 100 | 15 | – | 11,0 | 4 | DIN 374 | 6H |
| **T604M140X200R6H-D6** | M14 x 2 | 110 | 20 | – | 11,0 | 4 | DIN 376 | 6H |
| **T604MF160X150R6H-D4** | M16 x 1,5 | 100 | 15 | – | 12,0 | 4 | DIN 374 | 6H |
| **T604M160X200R6H-D6** | M16 x 2 | 110 | 22 | – | 12,0 | 4 | DIN 376 | 6H |
| **T604M180X250R6H-D6** | M18 x 2 | 125 | 25 | – | 14,0 | 4 | DIN 376 | 6H |
| **T604M200X250R6H-D6** | M20 x 2,5 | 140 | 25 | – | 16,0 | 4 | DIN 376 | 6H |

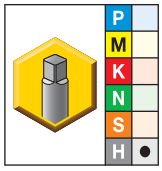
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSSH22 • TiCN for tapping steel 44–55 HRC.

## T606 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric

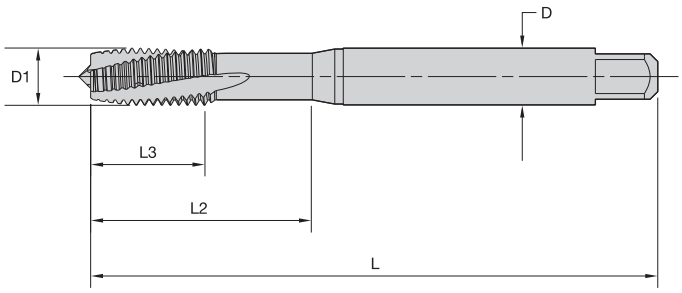



● first choice
○ alternate choice

| KSSH22 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T606M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 4 | DIN 371 | 6HX |
| **T606MF080X100R6HX-D4** | M8 x 1 | 90 | 10 | 35 | 8,0 | 5 | DIN 374 | 6HX |
| **T606M080X125R6HX-D1** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 5 | DIN 371 | 6HX |
| **T606MF100X100R6HX-D4** | M10 x 1 | 90 | 10 | 35 | 10,0 | 5 | DIN 374 | 6HX |
| **T606M100X150R6HX-D1** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 5 | DIN 371 | 6HX |
| **T606MF120X150R6HX-D4** | M12 x 1,5 | 100 | 15 | — | 9,0 | 5 | DIN 374 | 6HX |
| **T606M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | — | 9,0 | 5 | DIN 376 | 6HX |
| **T606MF140X150R6HX-D4** | M14 x 1,5 | 100 | 15 | — | 11,0 | 6 | DIN 374 | 6HX |
| **T606MF160X150R6HX-D4** | M16 x 1,5 | 100 | 15 | — | 12,0 | 6 | DIN 374 | 6HX |
| **T606M160X200R6HX-D6** | M16 x 2 | 110 | 22 | — | 12,0 | 6 | DIN 376 | 6HX |

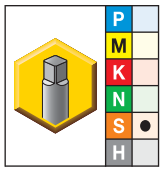
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSSH22 • TiCN for tapping cobalt and nickel alloys.

## T610 • DIN 371 and 376 • Form D Plug Chamfer • Metric

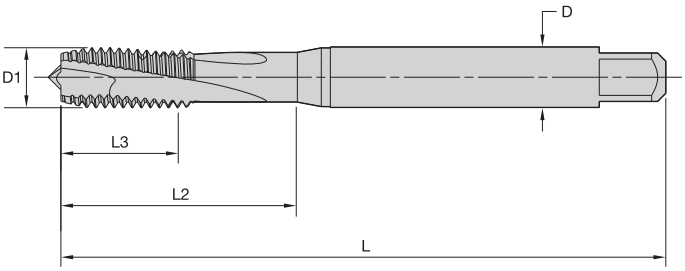


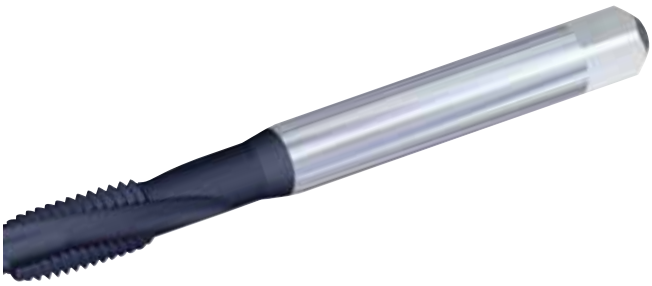

● first choice
○ alternate choice

| KSSH22 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T610M030X050R6HX-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 2 | DIN 371 | 6HX |
| **T610M040X070R6HX-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| **T610M050X080R6HX-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T610M060X100R6HX-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T610M080X125R6HX-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T610M100X150R6HX-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T610M120X175R6HX-D6** | M12 x 1,75 | 110 | 24 | — | 9,0 | 3 | DIN 376 | 6HX |
| **T610M140X200R6HX-D6** | M14 x 2 | 110 | 26 | — | 11,0 | 3 | DIN 376 | 6HX |
| **T610M160X200R6HX-D6** | M16 x 2 | 110 | 27 | — | 12,0 | 3 | DIN 376 | 6HX |
| **T610M200X250R6HX-D6** | M20 x 2,5 | 140 | 32 | — | 16,0 | 3 | DIN 376 | 6HX |

**Shank Tolerance**

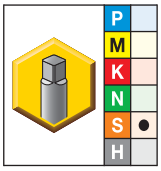
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

KSSH22 • TiCN for tapping cobalt and nickel alloys.

## T612 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric

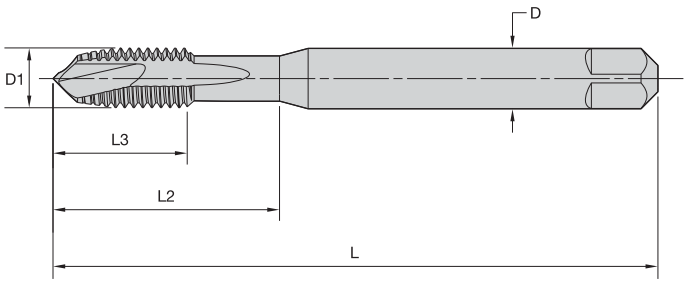



● first choice
○ alternate choice

| KSSH22 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T612M030X050R6HX-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 2 | DIN 371 | 6HX |
| **T612M040X070R6HX-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| **T612M050X080R6HX-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T612M060X100R6HX-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T612M080X125R6HX-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T612M120X175R6HX-D6** | M12 x 1,75 | 110 | 24 | — | 9,0 | 3 | DIN 376 | 6HX |
| **T612M100X150R6HX-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T612M140X200R6HX-D6** | M14 x 2 | 110 | 26 | — | 11,0 | 3 | DIN 376 | 6HX |
| **T612M160X200R6HX-D6** | M16 x 2 | 110 | 27 | — | 12,0 | 3 | DIN 376 | 6HX |
| **T612M200X250R6HX-D6** | M20 x 2,5 | 140 | 32 | — | 16,0 | 3 | DIN 376 | 6HX |

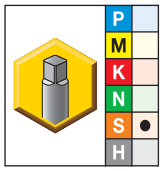
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSN25 • TiN/DLC for tapping titanium and titanium alloys.

## T614 • DIN 371 and 376 • Form D Plug Chamfer • Metric

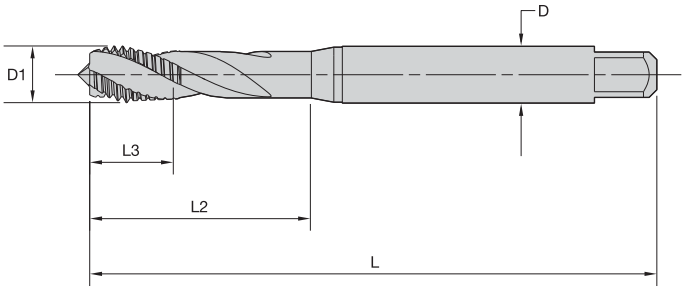



● first choice
○ alternate choice

| KSN25 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T614M030X050R6HX-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 3 | DIN 371 | 6HX |
| **T614M040X070R6HX-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| **T614M050X080R6HX-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T614M060X100R6HX-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T614M080X125R6HX-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T614M100X150R6HX-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T614M120X175R6HX-D6** | M12 x 1,75 | 110 | 24 | — | 9,0 | 3 | DIN 376 | 6HX |

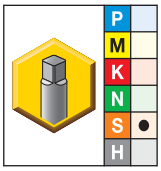
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSN25 • TiN/DLC for tapping titanium and titanium alloys.

## T616 • DIN 371 • Form C Semi-Bottoming Chamfer • Metric

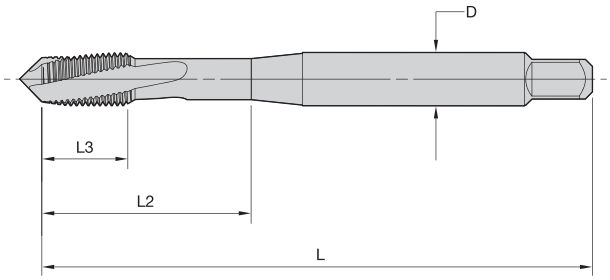


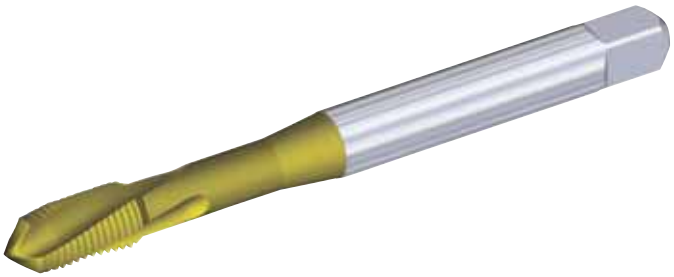

● first choice
○ alternate choice

| KSN25 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T616M030X050R6HX-D1** | M3 x 0,5 | 56 | 6 | 18 | 3,5 | 3 | DIN 371 | 6HX |
| **T616M040X070R6HX-D1** | M4 x 0,7 | 63 | 7 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| **T616M050X080R6HX-D1** | M5 x 0,8 | 70 | 8 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T616M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T616M080X125R6HX-D1** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T616M100X150R6HX-D1** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T616M120X175R6HX-D1** | M12 x 1,75 | 110 | 18 | 44 | 12,0 | 3 | DIN 371 | 6HX |

**Shank Tolerance**

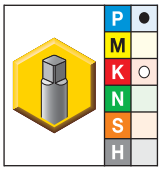
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

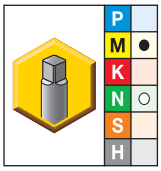



KM6515 • TiN + CrC/C for stainless steel.
KP6525 • TiCN+ TiN for steel.

## T620 • DIN 371, 374, and 376 • Form D Plug Chamfer • Metric



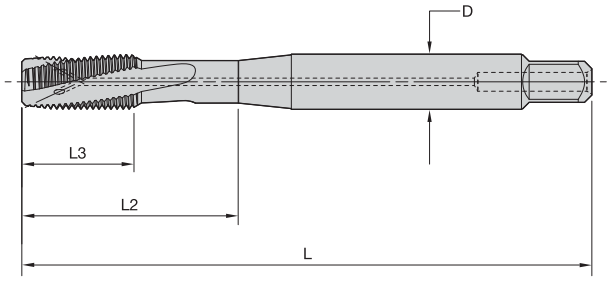



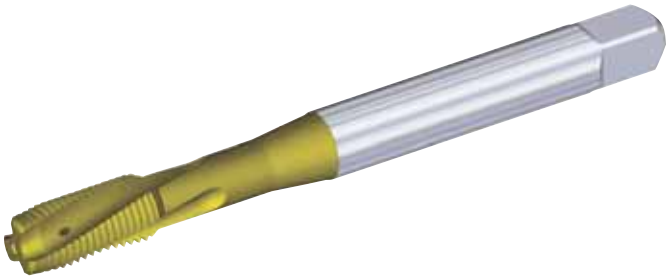

● first choice
○ alternate choice

| KP6525 | KM6515 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|
| T620M030X050R6HX-D1 | T620M030X050R6HX-D1 | M3 x 0,5 | 56 | 8 | 18 | 3,5 | 3 | DIN 371 | 6HX |
| T620M040X070R6HX-D1 | T620M040X070R6HX-D1 | M4 x 0,7 | 63 | 10 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| T620M050X080R6HX-D1 | T620M050X080R6HX-D1 | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| T620M060X100R6HX-D1 | T620M060X100R6HX-D1 | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| T620MF080X100R6HX-D4 | T620MF080X100R6HX-D4 | M8 x 1 | 90 | 13 | 35 | 6,0 | 3 | DIN 374 | 6HX |
| T620M080X125R6HX-D1 | T620M080X125R6HX-D1 | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| T620MF100X100R6HX-D4 | T620MF100X100R6HX-D4 | M10 x 1 | 90 | 10 | 35 | 7,0 | 3 | DIN 374 | 6HX |
| T620MF100X125R6HX-D4 | – | M10 x 1,25 | 100 | 15 | 39 | 7,0 | 3 | DIN 374 | 6HX |
| T620M100X150R6HX-D1 | T620M100X150R6HX-D1 | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| T620MF120X150R6HX-D4 | T620MF120X150R6HX-D4 | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 3 | DIN 374 | 6HX |
| T620M120X175R6HX-D6 | T620M120X175R6HX-D6 | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 3 | DIN 376 | 6HX |
| T620MF140X150R6HX-D4 | T620MF140X150R6HX-D4 | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T620M140X200R6HX-D6 | T620M140X200R6HX-D6 | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| T620MF160X150R6HX-D4 | T620MF160X150R6HX-D4 | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |
| T620M160X200R6HX-D6 | T620M160X200R6HX-D6 | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| T620MF180X150R6HX-D4 | T620MF180X150R6HX-D4 | M18 x 1,5 | 110 | 15 | 50 | 14,0 | 4 | DIN 374 | 6HX |
| T620M200X250R6HX-D6 | T620M200X250R6HX-D6 | M20 x 2,5 | 140 | 25 | 64 | 16,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

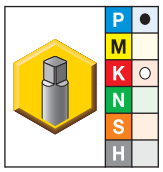
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

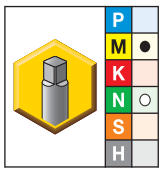



KM6515 • TiN + CrC/C for stainless steel.
KP6525 • TiCN+ TiN for steel.

## T621 • DIN 371, 374, and 376 • Form D Plug Chamfer • Through Coolant • Metric



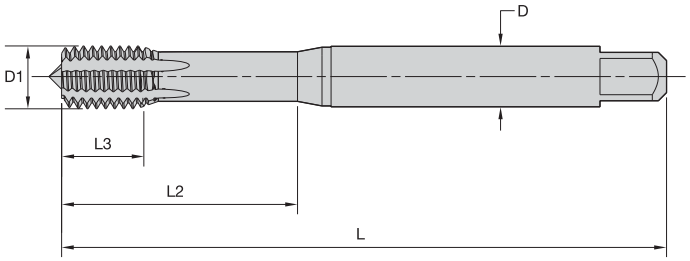



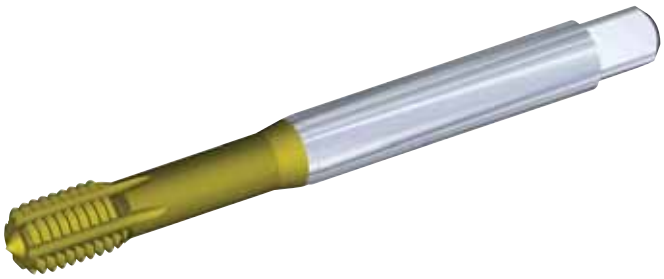

● first choice
○ alternate choice

| KP6525 | KM6515 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|
| T621M050X080R6HX-D1 | T621M050X080R6HX-D1 | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 2 | DIN 371 | 6HX |
| T621M060X100R6HX-D1 | T621M060X100R6HX-D1 | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| T621MF080X100R6HX-D4 | T621MF080X100R6HX-D4 | M8 x 1 | 90 | 13 | 35 | 6,0 | 3 | DIN 374 | 6HX |
| T621M080X125R6HX-D1 | T621M080X125R6HX-D1 | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| T621MF100X100R6HX-D4 | T621MF100X100R6HX-D4 | M10 x 1 | 90 | 10 | 35 | 7,0 | 3 | DIN 374 | 6HX |
| T621MF100X125R6HX-D4 | T621MF100X125R6HX-D4 | M10 x 1,25 | 100 | 15 | 39 | 7,0 | 3 | DIN 374 | 6HX |
| T621M100X150R6HX-D1 | T621M100X150R6HX-D1 | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| T621MF120X125R6HX-D4 | – | M12 x 1,25 | 100 | 15 | 39 | 9,0 | 3 | DIN 374 | 6HX |
| T621MF140X125R6HX-D4 | – | M14 x 1,25 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T621MF120X150R6HX-D4 | T621MF120X150R6HX-D4 | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 3 | DIN 374 | 6HX |
| T621M120X175R6HX-D6 | T621M120X175R6HX-D6 | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 3 | DIN 376 | 6HX |
| T621MF140X150R6HX-D4 | T621MF140X150R6HX-D4 | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T621M140X200R6HX-D6 | T621M140X200R6HX-D6 | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| T621MF160X150R6HX-D4 | T621MF160X150R6HX-D4 | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |
| T621M160X200R6HX-D6 | T621M160X200R6HX-D6 | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| T621MF180X150R6HX-D4 | T621MF180X150R6HX-D4 | M18 x 1,5 | 110 | 15 | 50 | 14,0 | 4 | DIN 374 | 6HX |
| T621M180X250R6HX-D6 | T621M180X250R6HX-D6 | M18 x 2,5 | 125 | 25 | 58 | 14,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

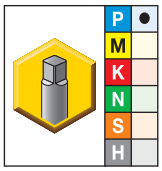
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

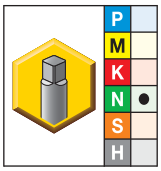



KSP21• TiN for tapping steel.
KSN28 • DLC for tapping aluminium.

## T622 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Metric



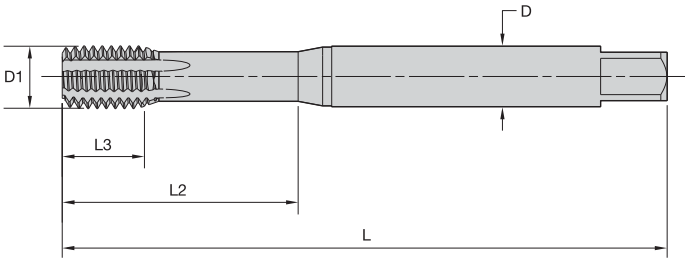



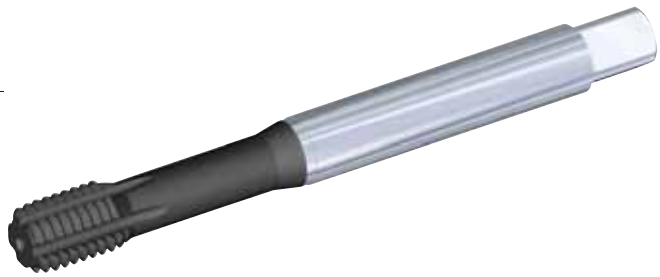

● first choice
○ alternate choice

| KSP21 | KSN28 | D1 size | L | L3 | L2 | D | number of lube grooves | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|
| **T622M030X050R6HX-D74** | **T622M030X050R6HX-D74** | M3 x 0,5 | 56 | 6 | 18 | 3,5 | 4 | DIN 2174 | 6HX |
| **T622M040X070R6HX-D74** | **T622M040X070R6HX-D74** | M5 x 0,7 | 63 | 7 | 21 | 4,5 | 4 | DIN 2174 | 6HX |
| **T622M050X080R6HX-D74** | **T622M050X080R6HX-D74** | M5 x 0,8 | 70 | 8 | 25 | 6,0 | 4 | DIN 2174 | 6HX |
| **T622M060X100R6HX-D74** | **T622M060X100R6HX-D74** | M6 x 1 | 80 | 10 | 30 | 6,0 | 5 | DIN 2174 | 6HX |
| **T622MF080X100R6HX-D74** | **T622MF080X100R6HX-D74** | M8 x 1 | 90 | 10 | 35 | 8,0 | 5 | DIN 2174 | 6HX |
| **T622M080X125R6HX-D74** | **T622M080X125R6HX-D74** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 5 | DIN 2174 | 6HX |
| **T622MF100X100R6HX-D74** | **T622MF100X100R6HX-D74** | M10 x 1 | 90 | 10 | 35 | 10,0 | 5 | DIN 2174 | 6HX |
| **T622MF100X125R6HX-D74** | **T622MF100X125R6HX-D74** | M10 x 1,25 | 100 | 16 | 69 | 10,0 | 5 | DIN 2174 | 6HX |
| **T622M100X150R6HX-D74** | **T622M100X150R6HX-D74** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 5 | DIN 2174 | 6HX |
| **T622MF120X125R6HX-D74** | **T622MF120X125R6HX-D74** | M12 x 1,25 | 100 | 15 | 27 | 9,0 | 6 | DIN 2174 | 6HX |
| **T622MF120X150R6HX-D74** | **T622MF120X150R6HX-D74** | M12 x 1,5 | 100 | 15 | 27 | 9,0 | 6 | DIN 2174 | 6HX |
| **T622M120X175R6HX-D74** | **T622M120X175R6HX-D74** | M12 x 1,75 | 110 | — | — | 9,0 | 6 | DIN 2174 | 6HX |
| **T622MF140X150R6HX-D74** | **T622MF140X150R6HX-D74** | M14 x 1,5 | 100 | — | — | 11,0 | 6 | DIN 2174 | 6HX |
| **T622MF160X150R6HX-D74** | **T622MF160X150R6HX-D74** | M16 x 1,5 | 100 | — | — | 12,0 | 6 | DIN 2174 | 6HX |
| **T622M160X200R6HX-D74** | **T622M160X200R6HX-D74** | M16 x 2 | 110 | — | — | 12,0 | 6 | DIN 2174 | 6HX |

**Shank Tolerance**

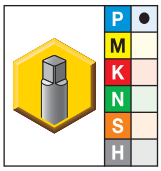
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

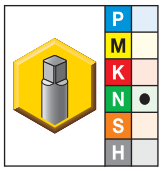



KSP21• TiN for tapping steel.
KSP28 • DLC for tapping aluminium.

## T623 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric



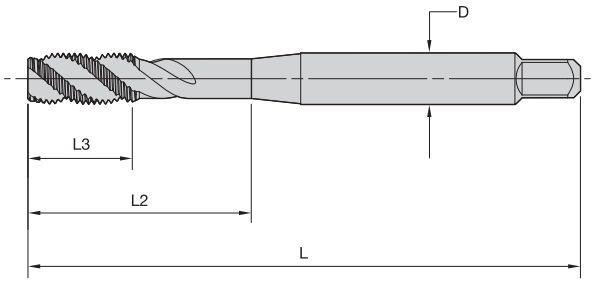



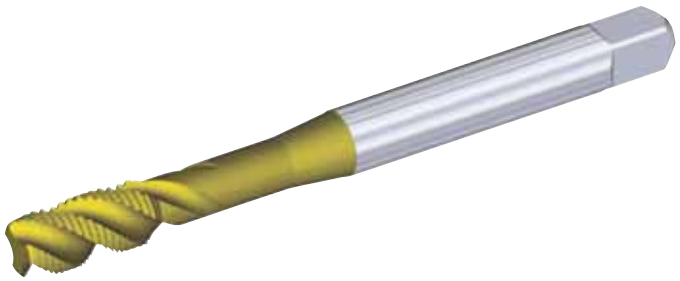

● first choice
○ alternate choice

| KSP21 | KSN28 | D1 size | L | L3 | L2 | D | number of lube grooves | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|
| **T623M050X080R6HX-D74** | **T623M050X080R6HX-D74** | M5 x 0,8 | 70 | 8 | 25 | 6,0 | 4 | DIN 2174 | 6HX |
| **T623M060X100R6HX-D74** | **T623M060X100R6HX-D74** | M6 x 1 | 80 | 10 | 30 | 6,0 | 5 | DIN 2174 | 6HX |
| **T623MF080X100R6HX-D74** | **T623MF080X100R6HX-D74** | M8 x 1 | 90 | 10 | 35 | 8,0 | 5 | DIN 2174 | 6HX |
| **T623M080X125R6HX-D74** | **T623M080X125R6HX-D74** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 5 | DIN 2174 | 6HX |
| **T623MF100X100R6HX-D74** | **T623MF100X100R6HX-D74** | M10 x 1 | 90 | 10 | 35 | 10,0 | 5 | DIN 2174 | 6HX |
| **T623M100X150R6HX-D74** | **T623M100X150R6HX-D1** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 5 | DIN 2174 | 6HX |
| **T623MF120X150R6HX-D74** | **T623MF120X150R6HX-D74** | M12 x 1,5 | 100 | 15 | 27 | 9,0 | 6 | DIN 2174 | 6HX |
| **T623M120X175R6HX-D74** | **T623M120X175R6HX-D74** | M12 x 1,75 | 110 | 18 | 30 | 9,0 | 6 | DIN 2174 | 6HX |
| **T623MF140X150R6HX-D74** | **T623MF140X150R6HX-D74** | M14 x 1,5 | 100 | 15 | — | 11,0 | 6 | DIN 2174 | 6HX |
| **T623MF160X150R6HX-D74** | **T623MF160X150R6HX-D74** | M16 x 1,5 | 100 | 15 | — | 12,0 | 6 | DIN 2174 | 6HX |
| **T623M160X200R6HX-D74** | **T623M160X200R6HX-D74** | M16 x 2 | 110 | 22 | — | 12,0 | 6 | DIN 2174 | 6HX |

**Shank Tolerance**

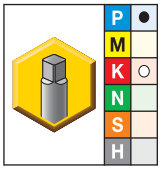
| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

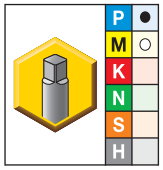



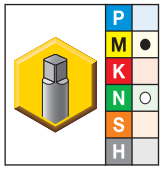



KM6515 • TiN + CrC/C for stainless steel.
KP6525 • TiCN+ TiN for steel.
KP6505 • Steam oxide for steel.

## T630 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric



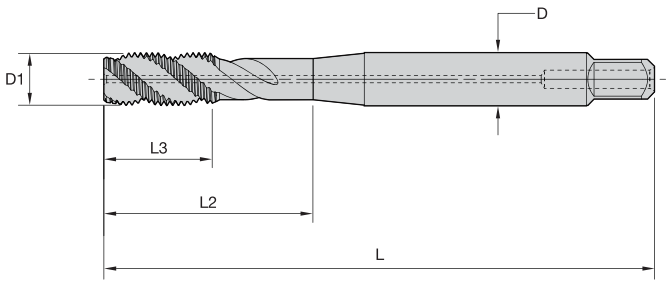



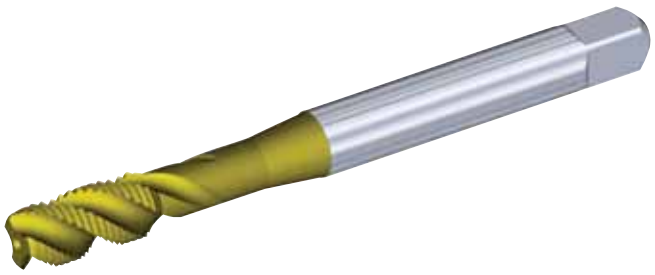

● first choice
○ alternate choice

| KP6525 | KP6505 | KM6515 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|---|
| T630M030X050R6HX-D1 | T630M030X050R6HX-D1 | T630M030X050R6HX-D1 | M3 x 0,5 | 56 | 8 | 18 | 3,5 | 3 | DIN 371 | 6HX |
| T630M040X070R6HX-D1 | T630M040X070R6HX-D1 | T630M040X070R6HX-D1 | M4 x 0,7 | 63 | 10 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| T630M050X080R6HX-D1 | T630M050X080R6HX-D1 | T630M050X080R6HX-D1 | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| T630M060X100R6HX-D1 | T630M060X100R6HX-D1 | T630M060X100R6HX-D1 | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| T630MF080X100R6HX-D4 | – | T630MF080X100R6HX-D4 | M8 x 1 | 90 | 13 | 35 | 6,0 | 3 | DIN 374 | 6HX |
| T630M080X125R6HX-D1 | T630M080X125R6HX-D1 | T630M080X125R6HX-D1 | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| T630MF100X100R6HX-D4 | – | T630MF100X100R6HX-D4 | M10 x 1 | 90 | 10 | 35 | 7,0 | 3 | DIN 374 | 6HX |
| T630MF100X125R6HX-D4 | – | T630MF100X125R6HX-D4 | M10 x 1,25 | 100 | 15 | 39 | 7,0 | 3 | DIN 374 | 6HX |
| T630M100X150R6HX-D1 | T630M100X150R6HX-D1 | T630M100X150R6HX-D1 | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| T630MF120X150R6HX-D4 | – | T630MF120X150R6HX-D4 | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 3 | DIN 374 | 6HX |
| T630M120X175R6HX-D6 | T630M120X175R6HX-D6 | T630M120X175R6HX-D6 | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 3 | DIN 376 | 6HX |
| T630MF140X150R6HX-D4 | – | T630MF140X150R6HX-D4 | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T630M140X200R6HX-D6 | T630M140X200R6HX-D6 | T630M140X200R6HX-D6 | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| T630MF160X150R6HX-D4 | – | T630MF160X150R6HX-D4 | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |
| T630M160X200R6HX-D6 | T630M160X200R6HX-D6 | T630M160X200R6HX-D6 | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| T630MF180X150R6HX-D4 | – | T630MF180X150R6HX-D4 | M18 x 1,5 | 110 | 15 | 50 | 14,0 | 4 | DIN 374 | 6HX |
| T630M180X250R6HX-D6 | T630M180X250R6HX-D6 | T630M180X250R6HX-D6 | M18 x 2,5 | 125 | 25 | 58 | 14,0 | 4 | DIN 376 | 6HX |
| – | T630M200X250R6HX-D6 | – | M20 x 2,5 | 140 | 25 | 64 | 16,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

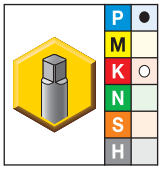
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

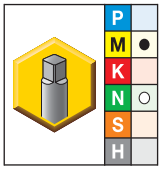



KM6515 • TiN + CrC/C for stainless steel.
KP6525 • TiCN+ TiN for steel.

## T631 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric



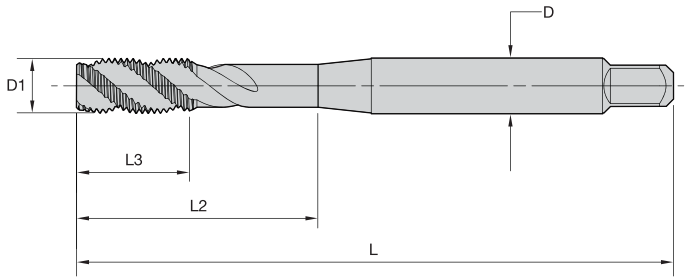



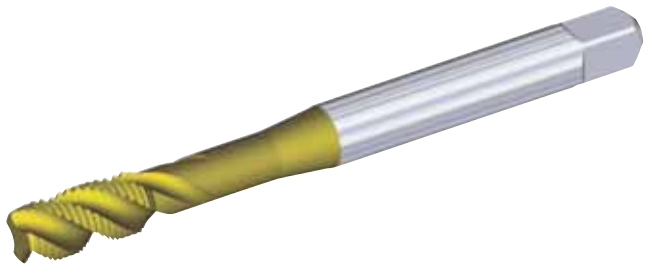

● first choice
○ alternate choice

| KP6525 | KM6515 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|---|
| T631M050X080R6HX-D1 | T631M050X080R6HX-D1 | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| T631M060X100R6HX-D1 | T631M060X100R6HX-D1 | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| T631MF080X100R6HX-D4 | T631MF080X100R6HX-D4 | M8 x 1 | 90 | 13 | 35 | 6,0 | 3 | DIN 374 | 6HX |
| T631M080X125R6HX-D1 | T631M080X125R6HX-D1 | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| T631MF100X100R6HX-D4 | T631MF100X100R6HX-D4 | M10 x 1 | 90 | 10 | 35 | 7,0 | 3 | DIN 374 | 6HX |
| T631MF100X125R6HX-D4 | T631MF100X125R6HX-D4 | M10 x 1,25 | 100 | 15 | 39 | 7,0 | 3 | DIN 374 | 6HX |
| T631M100X150R6HX-D1 | T631M100X150R6HX-D1 | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| T631MF120X125R6HX-D4 | T631MF120X125R6HX-D4 | M12 x 1,25 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| T631MF140X125R6HX-D4 | T631MF140X125R6HX-D4 | M14 x 1,25 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T631MF120X150R6HX-D4 | T631MF120X150R6HX-D4 | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| T631M120X175R6HX-D6 | T631M120X175R6HX-D6 | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| T631MF140X150R6HX-D4 | T631MF140X150R6HX-D4 | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| T631M140X200R6HX-D6 | T631M140X200R6HX-D6 | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| T631MF160X150R6HX-D4 | T631MF160X150R6HX-D4 | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |
| T631M160X200R6HX-D6 | T631M160X200R6HX-D6 | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| T631MF180X150R6HX-D4 | T631MF180X150R6HX-D4 | M18 x 1,5 | 110 | 15 | 50 | 14,0 | 4 | DIN 374 | 6HX |
| T631M180X250R6HX-D6 | T631M180X250R6HX-D6 | M18 x 2,5 | 125 | 25 | 58 | 13,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

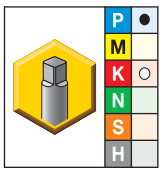
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+TiN for tapping steel.

## T632 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric

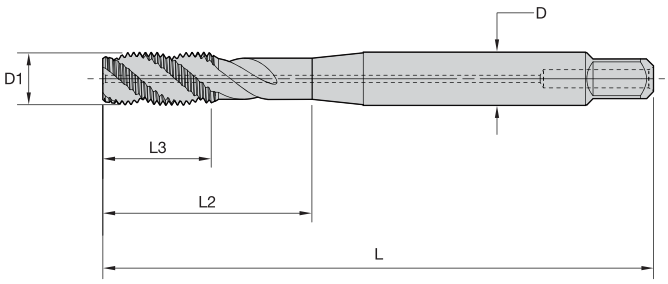


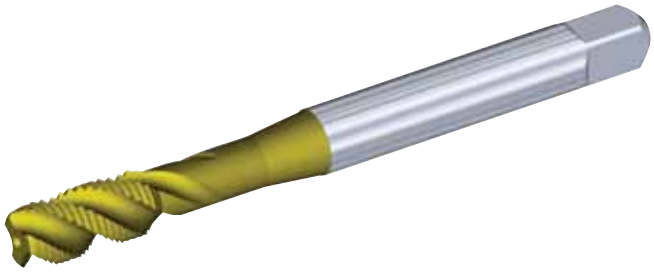

● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T632M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T632M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T632M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T632M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T632MF120X150R6HX-D4** | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| **T632M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T632MF140X150R6HX-D4** | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| **T632M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T632MF160X150R6HX-D4** | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |

**Shank Tolerance**

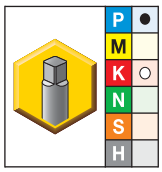
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+TiN for tapping steel.

## T633 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric

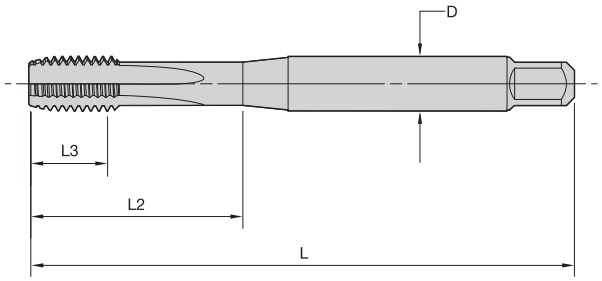


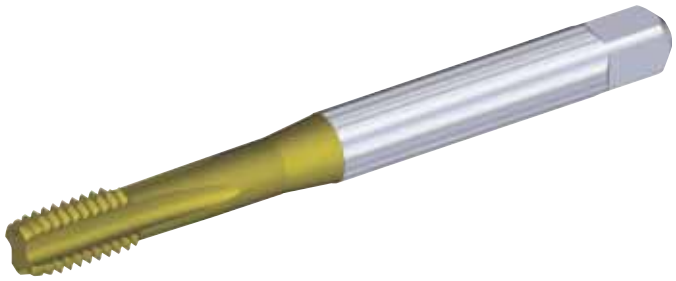

● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T633M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T633M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 3 | DIN 371 | 6HX |
| **T633M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 3 | DIN 371 | 6HX |
| **T633M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 3 | DIN 371 | 6HX |
| **T633MF120X150R6HX-D4** | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| **T633M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T633MF140X150R6HX-D4** | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| **T633M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T633MF160X150R6HX-D4** | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |

**Shank Tolerance**

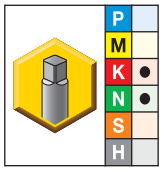
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+ TiN for cast iron and cast aluminium.

## T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric

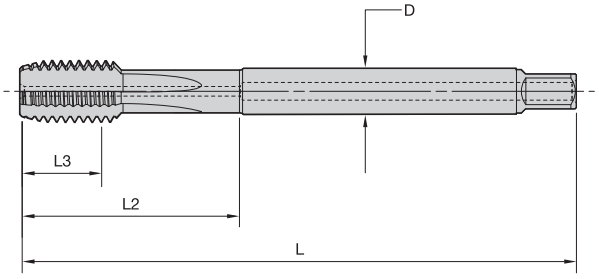


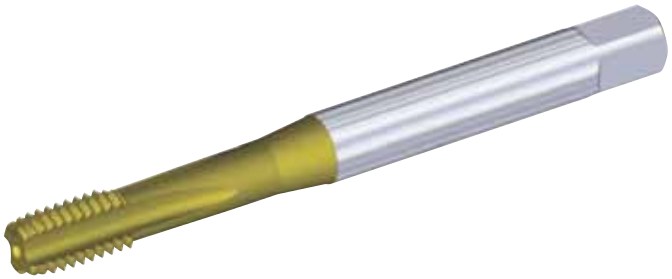

● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T640M040X070R6HX-D1** | M4 x 0,7 | 63 | 10 | 21 | 4,5 | 3 | DIN 371 | 6HX |
| **T640M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T640M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 4 | DIN 371 | 6HX |
| **T640M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 6HX |
| **T640M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 4 | DIN 371 | 6HX |
| **T640M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T640M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T640M160X200R6HX-D6** | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| **T640M180X250R6HX-D6** | M18 x 2,5 | 125 | 25 | 58 | 14,0 | 4 | DIN 376 | 6HX |
| **T640M200X250R6HX-D6** | M20 x 2,5 | 140 | 25 | 64 | 16,0 | 4 | DIN 376 | 6HX |
| **T640M220X250R6HX-D6** | M22 x 2,5 | 140 | 25 | 64 | 16,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

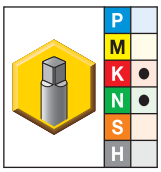
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+ TiN for cast iron and cast aluminium.

## T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric

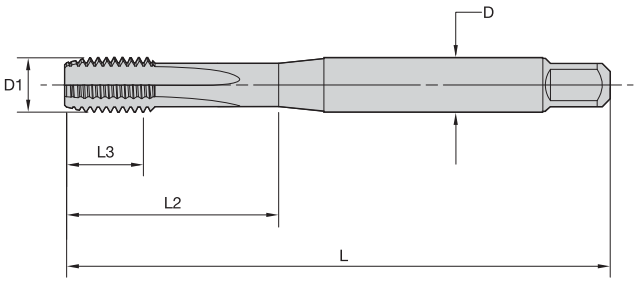


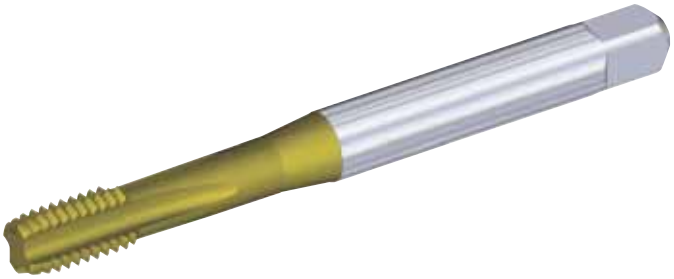

● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T641M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T641M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 4 | DIN 371 | 6HX |
| **T641M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 6HX |
| **T641M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 4 | DIN 371 | 6HX |
| **T641M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T641M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T641M160X200R6HX-D6** | M16 x 2 | 110 | 20 | 51 | 12,0 | 4 | DIN 376 | 6HX |
| **T641M180X250R6HX-D6** | M18 x 2,5 | 125 | 25 | 58 | 14,0 | 4 | DIN 376 | 6HX |
| **T641M200X250R6HX-D6** | M20 x 2,5 | 140 | 25 | 64 | 16,0 | 4 | DIN 376 | 6HX |

**Shank Tolerance**

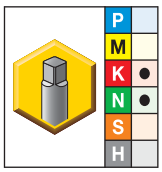
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+TiN for cast iron and cast silicon aluminium.

## T642 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric

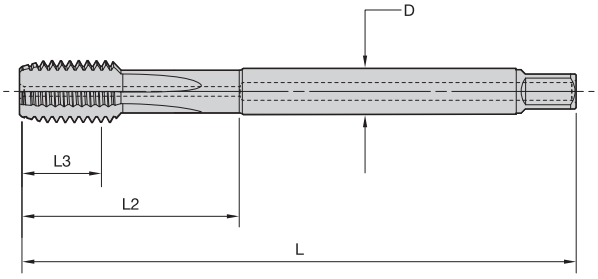


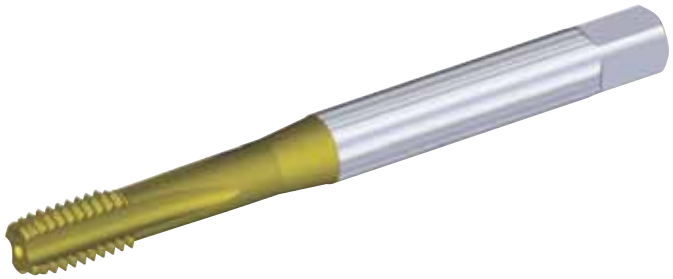

● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T642M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T642M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 4 | DIN 371 | 6HX |
| **T642M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 6HX |
| **T642M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 4 | DIN 371 | 6HX |
| **T642MF120X150R6HX-D4** | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| **T642M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T642MF140X150R6HX-D4** | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| **T642M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T642MF160X150R6HX-D4** | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |

**Shank Tolerance**

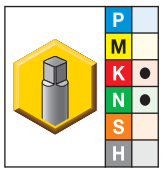
| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |

KP6525 • TiCN+TiN for tapping cast iron and cast silicon aluminium.

## T643 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric

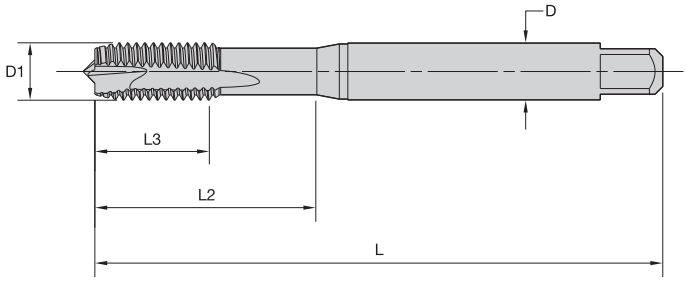



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T643M050X080R6HX-D1** | M5 x 0,8 | 70 | 10 | 25 | 6,0 | 3 | DIN 371 | 6HX |
| **T643M060X100R6HX-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 4 | DIN 371 | 6HX |
| **T643M080X125R6HX-D1** | M8 x 1,25 | 90 | 13 | 35 | 8,0 | 4 | DIN 371 | 6HX |
| **T643M100X150R6HX-D1** | M10 x 1,5 | 100 | 15 | 39 | 10,0 | 4 | DIN 371 | 6HX |
| **T643MF120X150R6HX-D4** | M12 x 1,5 | 100 | 15 | 39 | 9,0 | 4 | DIN 374 | 6HX |
| **T643M120X175R6HX-D6** | M12 x 1,75 | 110 | 18 | 44 | 9,0 | 4 | DIN 376 | 6HX |
| **T643MF140X150R6HX-D4** | M14 x 1,5 | 100 | 15 | 47 | 11,0 | 4 | DIN 374 | 6HX |
| **T643M140X200R6HX-D6** | M14 x 2 | 110 | 20 | 52 | 11,0 | 4 | DIN 376 | 6HX |
| **T643MF160X150R6HX-D4** | M16 x 1,5 | 100 | 15 | 46 | 12,0 | 4 | DIN 374 | 6HX |

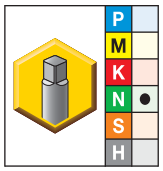
**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–16 | +0, -0,011 |


KSN38 • DLC for tapping aluminium.

## T670 • DIN 371 and 376 • Form B Plug Chamfer • Metric

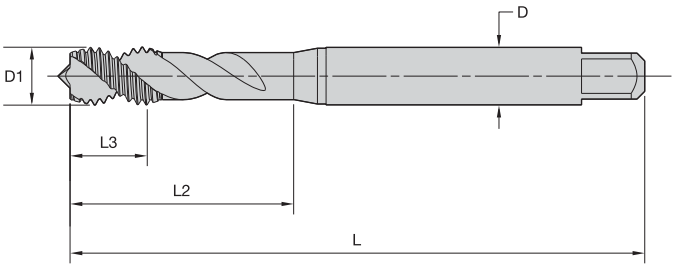



● first choice
○ alternate choice

| KSN38 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T670M030X050R6H-D1** | M3 x 0,5 | 56 | 11 | 18 | 3,5 | 2 | DIN 371 | 6H |
| **T670M040X070R6H-D1** | M4 x 0,7 | 63 | 13 | 21 | 4,5 | 2 | DIN 371 | 6H |
| **T670M050X080R6H-D1** | M5 x 0,8 | 70 | 15 | 25 | 6,0 | 2 | DIN 371 | 6H |
| **T670M060X100R6H-D1** | M6 x 1 | 80 | 17 | 30 | 6,0 | 2 | DIN 371 | 6H |
| **T670M080X125R6H-D1** | M8 x 1,25 | 90 | 20 | 35 | 8,0 | 2 | DIN 371 | 6H |
| **T670M100X150R6H-D1** | M10 x 1,5 | 100 | 22 | 39 | 10,0 | 2 | DIN 371 | 6H |
| **T670M120X175R6H-D6** | M12 x 1,75 | 110 | 24 | — | 9,0 | 3 | DIN 376 | 6H |
| **T670M160X200R6H-D6** | M16 x 2 | 110 | 27 | — | 12,0 | 3 | DIN 376 | 6H |

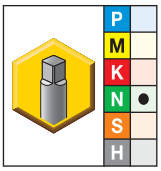
**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |


KSN38 • DLC for tapping aluminium.

## T680 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric




● first choice
○ alternate choice

| KSN38 | D1 size | L | L3 | L2 | D | number of flutes | dimension standard | class of fit |
|---|---|---|---|---|---|---|---|---|
| **T680M030X050R6H-D1** | M3 x 0,5 | 56 | 6 | 18 | 3,5 | 2 | DIN 371 | 6H |
| **T680M040X070R6H-D1** | M4 x 0,7 | 63 | 7 | 21 | 4,5 | 2 | DIN 371 | 6H |
| **T680M050X080R6H-D1** | M5 x 0,8 | 70 | 8 | 25 | 6,0 | 2 | DIN 371 | 6H |
| **T680M060X100R6H-D1** | M6 x 1 | 80 | 10 | 30 | 6,0 | 2 | DIN 371 | 6H |
| **T680M080X125R6H-D1** | M8 x 1,25 | 90 | 14 | 35 | 8,0 | 2 | DIN 371 | 6H |
| **T680M100X150R6H-D1** | M10 x 1,5 | 100 | 16 | 39 | 10,0 | 2 | DIN 371 | 6H |
| **T680M120X175R6H-D6** | M12 x 1,75 | 110 | 18 | — | 9,0 | 3 | DIN 376 | 6H |
| **T680M160X200R6H-D6** | M16 x 2 | 110 | 22 | — | 12,0 | 3 | DIN 376 | 6H |
| **T680M200X250R6H-D6** | M20 x 2,5 | 140 | 25 | — | 16,0 | 3 | DIN 376 | 6H |

**Shank Tolerance**

| D | tolerance h9 |
|---|---|
| 1–3 | +0, -0,025 |
| 3,5–6 | +0, -0,030 |
| 7–10 | +0, -0,036 |
| 11–18 | +0, -0,043 |

# Wind Energy Taps

## Primary Application

The new high-performance, large-sized HSS-E-PM Wind Taps were developed for manufacturers of some of the most important wind turbine components to increase productivity because of increased demand and can be used in conventional non-rigid and CNC-synchronous tapping machines. These Wind Taps are manufactured to DIN 376 dimensions and an extra-long version is available to reach the longer overhang that is common on these big components.

The precision h6 shanks enable use in either conventional tap holders with square drive or in precision round holders.

## Features and Benefits

### T620 LH Spiral Flute

- For through hole tapping.
- Push chips ahead, enabling free tapping on long chipping material.
- Form D plug chamfer.
- DIN 376 and extra-long versions available.

### T630 RH Spiral Flute

- For blind hole tapping.
- Preferred for vertical tapping application.
- Form D plug chamfer.
- Internal coolant available as standard; see T631.
- DIN 376 and extra-long versions available.

### T650 RH Spiral Flute

- For blind hole tapping.
- Preferred for horizontal tapping application.
- Form D plug chamfer.
- Internal coolant available as standard; see T651.
- DIN 376 and extra-long versions available.

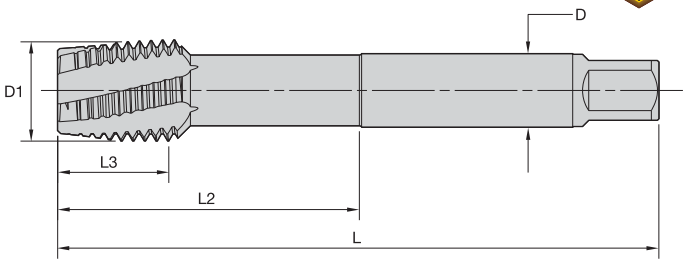
### T650 HSS-E-PM • Proven Solution

Case study:

- Manufacturer of large diameter bearing for wind turbines.

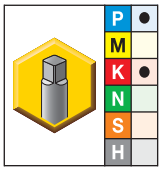
Conditions:

- Thread size: M24 x 2.5 6H
- Workpiece: bearing ring
- Material: low-carbon steel 1010 (C10)
- Thread depth: 35mm blind
- Tap drill size: 17,5mm
- Machine: CNC
- Coolant: water soluble


KP6525 • TiCN+TiN for tapping steel and cast iron.

## T620 • DIN 376 • Form D Plug Chamfer • Larger Sizes • Metric

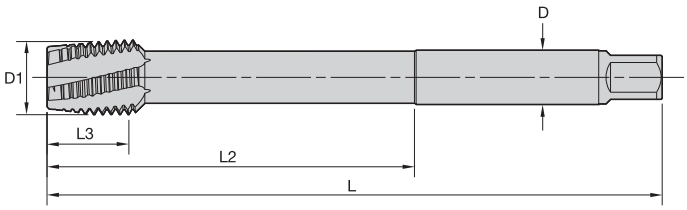



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T620M240X300R6HX-D6** | M24 x 3 | 160 | 30 | 77 | 18,0 | 5 | 6HX |
| **T620M300X350R6HX-D6** | M30 x 3,5 | 180 | 35 | 91 | 22,0 | 5 | 6HX |
| **T620M330X350R6HX-D6** | M33 x 3,5 | 180 | 35 | 100 | 25,0 | 5 | 6HX |
| **T620M360X400R6HX-D6** | M36 x 4 | 200 | 40 | 110 | 28,0 | 6 | 6HX |
| **T620M420X450R6HX-D6** | M42 x 4,5 | 200 | 45 | 120 | 32,0 | 6 | 6HX |

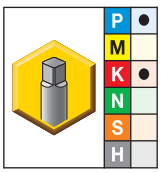
**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |


KP6525 • TiCN+TiN for tapping steel and cast iron.

## T620 • Extra Long • Form D Plug Chamfer • Larger Sizes • Metric

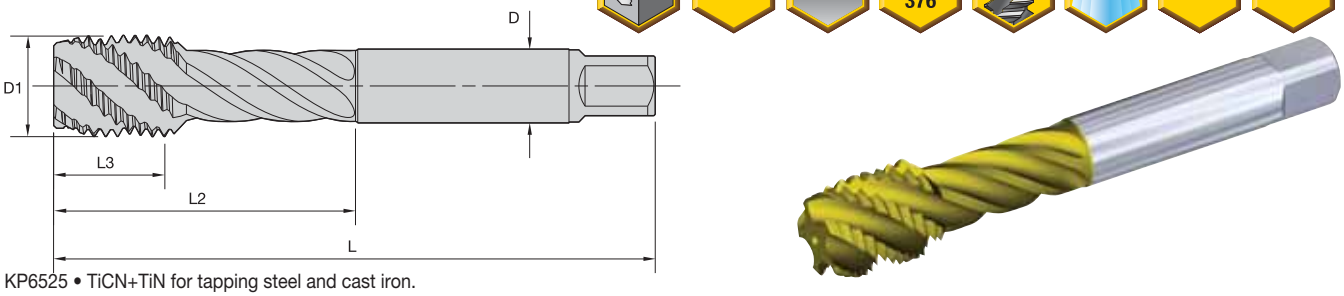



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T620M240X300R6H-XL** | M24 x 3 | 200 | 30 | 120 | 18,0 | 5 | 6HX |
| **T620M300X350R6H-XL** | M30 x 3,5 | 250 | 35 | 150 | 22,0 | 5 | 6HX |
| **T620M330X350R6H-XL** | M33 x 3,5 | 250 | 35 | 150 | 25,0 | 5 | 6HX |
| **T620M360X400R6H-XL** | M36 x 4 | 250 | 40 | 150 | 28,0 | 6 | 6HX |
| **T620M420X450R6H-XL** | M42 x 4,5 | 300 | 45 | 180 | 32,0 | 6 | 6HX |

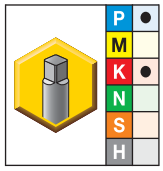
**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| **12–18** | **+0, -0,011** |
| **20–30** | **+0, -0,013** |
| **32–36** | **+0, -0,016** |




KP6525 • TiCN+TiN for tapping steel and cast iron.

## T630 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric

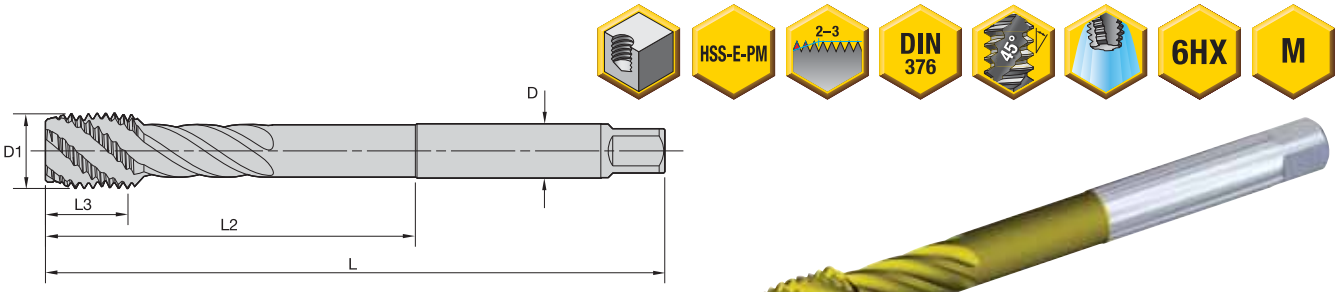



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T630M240X300R6HX-D6** | M24 x 3 | 160 | 30 | 77 | 18,0 | 5 | 6HX |
| **T630M300X350R6HX-D6** | M30 x 3,5 | 180 | 35 | 91 | 22,0 | 5 | 6HX |
| **T630M330X350R6HX-D6** | M33 x 3,5 | 180 | 35 | 100 | 25,0 | 5 | 6HX |
| **T630M360X400R6HX-D6** | M36 x 4 | 200 | 40 | 110 | 28,0 | 5 | 6HX |
| **T630M420X450R6HX-D6** | M42 x 4,5 | 200 | 45 | 120 | 32,0 | 5 | 6HX |

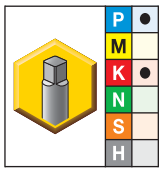
**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |




KP6525 • TiCN+TiN for tapping steel and cast iron.

## T630 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric

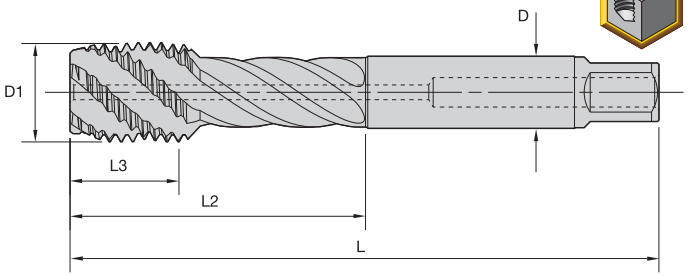



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T630M240X300R6HX-XL** | M24 x 3 | 200 | 30 | 120 | 18,0 | 5 | 6HX |
| **T630M300X350R6HX-XL** | M30 x 3,5 | 250 | 35 | 150 | 22,0 | 5 | 6HX |
| **T630M330X350R6HX-XL** | M33 x 3,5 | 250 | 35 | 150 | 25,0 | 5 | 6HX |
| **T630M360X400R6HX-XL** | M36 x 4 | 250 | 40 | 150 | 28,0 | 5 | 6HX |
| **T630M420X450R6HX-XL** | M42 x 4,5 | 300 | 45 | 180 | 32,0 | 5 | 6HX |

**Shank Tolerance**

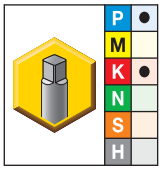
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T631 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric

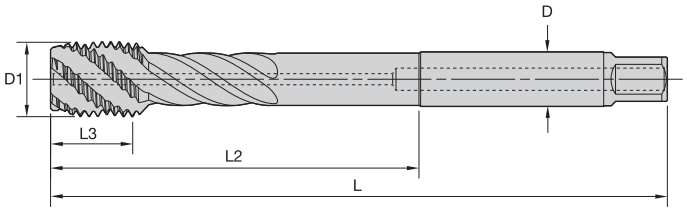



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T631M240X300R6HX-D6** | M24 x 3 | 160 | 30 | 77 | 18,0 | 5 | 6HX |
| **T631M300X350R6HX-D6** | M30 x 3,5 | 180 | 35 | 91 | 22,0 | 5 | 6HX |
| **T631M330X350R6HX-D6** | M33 x 3,5 | 180 | 35 | 100 | 25,0 | 5 | 6HX |
| **T631M360X400R6HX-D6** | M36 x 4 | 200 | 40 | 110 | 28,0 | 5 | 6HX |
| **T631M420X450R6HX-D6** | M42 x 4,5 | 200 | 45 | 120 | 32,0 | 5 | 6HX |

**Shank Tolerance**

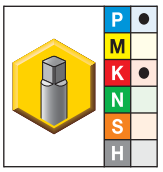
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T631 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric

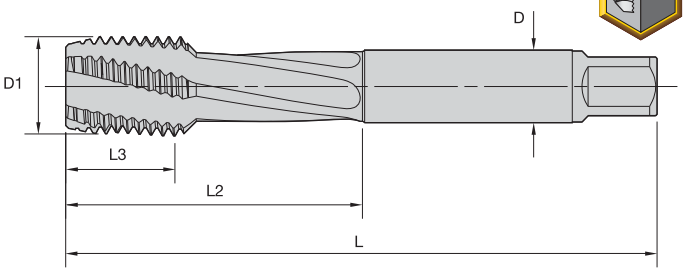



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T631M240X300R6HX-XL** | M24 x 3 | 200 | 30 | 120 | 18,0 | 5 | 6HX |
| **T631M300X350R6HX-XL** | M30 x 3,5 | 250 | 35 | 150 | 22,0 | 5 | 6HX |
| **T631M330X350R6HX-XL** | M33 x 3,5 | 250 | 35 | 150 | 25,0 | 5 | 6HX |
| **T631M360X400R6HX-XL** | M36 x 4 | 250 | 40 | 150 | 28,0 | 5 | 6HX |
| **T631M420X450R6HX-XL** | M42 x 4,5 | 300 | 45 | 180 | 32,0 | 5 | 6HX |

**Shank Tolerance**

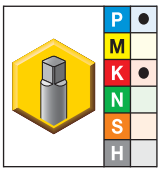
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T650 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric

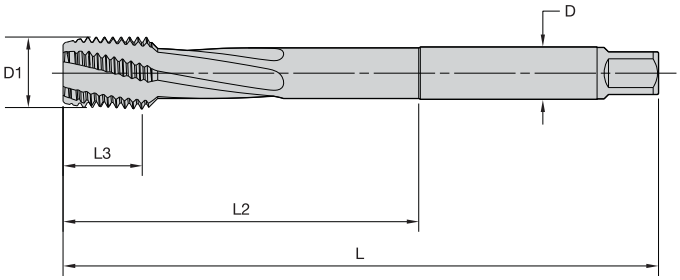



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T650M240X300R6HX-D6** | M24 x 3 | 160 | 30 | 77 | 18,0 | 4 | 6HX |
| **T650M300X350R6HX-D6** | M30 x 3,5 | 180 | 35 | 91 | 22,0 | 5 | 6HX |
| **T650M330X350R6HX-D6** | M33 x 3,5 | 180 | 35 | 100 | 25,0 | 5 | 6HX |
| **T650M360X400R6HX-D6** | M36 x 4 | 200 | 40 | 110 | 28,0 | 5 | 6HX |
| **T650M420X450R6HX-D6** | M42 x 4,5 | 200 | 45 | 120 | 32,0 | 6 | 6HX |

**Shank Tolerance**

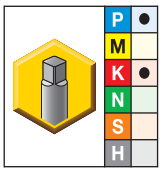
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T650 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric

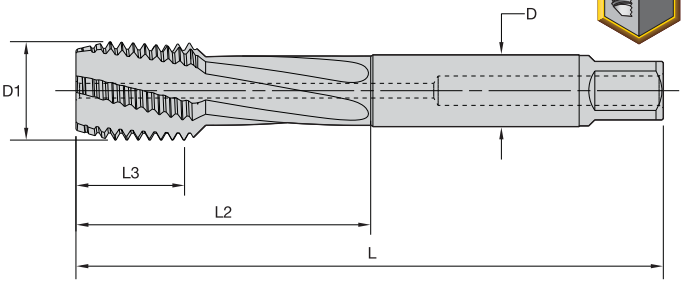



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T650M240X300R6HX-XL** | M24 x 3 | 200 | 30 | 120 | 18,0 | 4 | 6HX |
| **T650M300X350R6HX-XL** | M30 x 3,5 | 250 | 35 | 150 | 22,0 | 5 | 6HX |
| **T650M330X350R6HX-XL** | M33 x 3,5 | 250 | 35 | 150 | 25,0 | 5 | 6HX |
| **T650M360X400R6HX-XL** | M36 x 4 | 250 | 40 | 150 | 28,0 | 5 | 6HX |
| **T650M420X450R6HX-XL** | M42 x 4,5 | 300 | 45 | 180 | 32,0 | 6 | 6HX |

**Shank Tolerance**

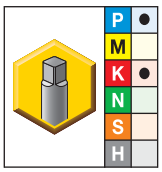
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T651 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Hole • Larger Sizes • Metric

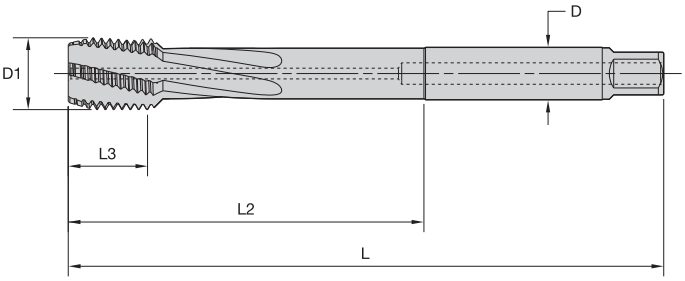



● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T651M240X300R6HX-D6** | M24 x 3 | 160 | 30 | 77 | 18,0 | 4 | 6HX |
| **T651M300X350R6HX-D6** | M30 x 3,5 | 180 | 35 | 91 | 22,0 | 5 | 6HX |
| **T651M330X350R6HX-D6** | M33 x 3,5 | 180 | 35 | 100 | 25,0 | 5 | 6HX |
| **T651M360X400R6HX-D6** | M36 x 4 | 200 | 40 | 110 | 28,0 | 5 | 6HX |
| **T651M420X450R6HX-D6** | M42 x 4,5 | 200 | 45 | 120 | 32,0 | 6 | 6HX |

**Shank Tolerance**

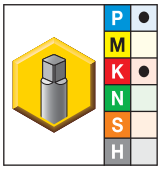
| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |





KP6525 • TiCN+TiN for tapping steel and cast iron.

## T651 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric




● first choice
○ alternate choice

| KP6525 | D1 size | L | L3 | L2 | D | number of flutes | class of fit |
|---|---|---|---|---|---|---|---|
| **T651M240X300R6HX-XL** | M24 x 3 | 200 | 30 | 120 | 18,0 | 4 | 6HX |
| **T651M300X350R6HX-XL** | M30 x 3,5 | 250 | 35 | 150 | 22,0 | 5 | 6HX |
| **T651M330X350R6HX-XL** | M33 x 3,5 | 250 | 35 | 150 | 25,0 | 5 | 6HX |
| **T651M360X400R6HX-XL** | M36 x 4 | 250 | 40 | 150 | 28,0 | 5 | 6HX |
| **T651M420X450R6HX-XL** | M42 x 4,5 | 300 | 45 | 180 | 32,0 | 6 | 6HX |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |
| 32–36 | +0, -0,016 |

| Material Group | | Through Holes | | | | | Blind Holes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Range – m/min | | | | | Range – m/min | | |
| | | Tap Style | Grade | min | Starting Value | max | Tap Style | Grade | min | Starting Value | max |
| P | 1 | T620 | KP6525 | 20 | **30** | 45 | T630,T632,T650 | KP6525 | 14 | **21** | 32 |
| | | T622 | KSP21 | 18 | **30** | 50 | T622 | KSP21 | 13 | **21** | 35 |
| | 2 | T620 | KP6525 | 17 | **25** | 38 | T630,T632,T650 | KP6525 | 12 | **18** | 26 |
| | | T622 | KSP21 | 15 | **25** | 42 | T622 | KSP21 | 10 | **18** | 29 |
| | 3 | T620 | KP6525 | 12 | **15** | 20 | T630,T632,T650 | KP6525 | 8 | **11** | 14 |
| | 4 | T600 | KSP21 | 5 | **6** | 8 | T602, T604 | KSP21 | 3 | **4** | 5 |
| | 5 | T620 | KP6525 | 12 | **15** | 20 | T630,T632,T650 | KP6525 | 8 | **11** | 14 |
| | 6 | T600 | KSP21 | 6 | **8** | 10 | T602, T604 | KSP21 | 4 | **6** | 7 |
| M | 1 | T620 | KM6515 | 12 | **15** | 20 | T630,T632,T650 | KM6515 | 8 | **11** | 14 |
| | 2 | T620 | KM6515 | 9 | **12** | 16 | T630,T632,T650 | KM6515 | 6 | **8** | 11 |
| | 3 | T620 | KM6515 | 8 | **10** | 13 | T630,T632,T650 | KM6515 | 5 | **7** | 9 |
| K | 1 | T640 | KP6525 | 35 | **45** | 59 | T640, T642 | KP6525 | 24 | **32** | 41 |
| | 2 | T640 | KP6525 | 31 | **40** | 52 | T640, T642 | KP6525 | 22 | **28** | 36 |
| | 3 | T640 | KP6525 | 23 | **30** | 39 | T640, T642 | KP6525 | 16 | **21** | 27 |
| N | 1 | T670 | KSN38 | 42 | **55** | 72 | T680 | KSN38 | 30 | **39** | 50 |
| | | T622 | KSN28 | 37 | **55** | 83 | T622 | KSN28 | 26 | **39** | 58 |
| | 2 | T640 | KP6525 | 38 | **50** | 65 | T640, T642 | KP6525 | 27 | **35** | 46 |
| | | T622 | KSN28 | 33 | **50** | 75 | T622 | KSN28 | 23 | **35** | 53 |
| | 4 | T640 | KP6525 | 4 | **6** | 9 | T640, T642 | KP6525 | 3 | **4** | 5 |
| S | 1 | T620 | KP6525 | 8 | **12** | 18 | T630, T632 | KP6525 | 6 | **8** | 11 |
| | 2 | T610 | KSSH22 | 3 | **5** | 8 | T612 | KSSH22 | 3 | **4** | 5 |
| | 3 | T610 | KSSH22 | 3 | **4** | 6 | T612 | KSSH22 | 2 | **3** | 4 |
| | 4 | T614 | KSN25 | 3 | **4** | 6 | T616 | KSN25 | 2 | **3** | 4 |
| H | 1 | T606 | KSSH22 | 1,3 | **2,0** | 3,0 | T606 | KSSH22 | 1,1 | **1,4** | 1,8 |
| | 2 | T606 | KSSH22 | 1,0 | **1,5** | 2,3 | T606 | KSSH22 | 0,8 | **1,1** | 1,4 |

NOTE: Increase speed by up to 25% when using coolant taps (T621,T623,T631,T633,T641,T643,T651).
Use grade KP6505™ in steels. Use 50% of the recommended speed listed for grade KP6525™.

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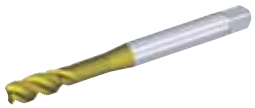
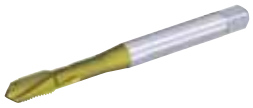
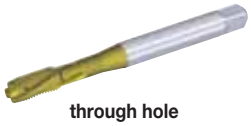
KENNAMETAL®

# Steel • >32 HRC

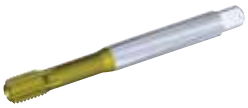
| typical thread sizes | | required tap drill diameter | | | | P HSS-E-PM Taps — Tapping Steel >32 HRC | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | |  |  |  |
| cutting taps metric | inch | mm | inch | fraction | wire | blind hole T630_KP6525 | through hole T620_KP6525 | blind hole with coolant T631_KP6525 |
| M3 x 0,50 | — | 2,500 | .0984 | — | — | T630M030X050R6HX-D1 | T620M030X050R6HX-D1 | — |
| — | 5-40 | 2,578 | .1015 | — | 38 | T630NC#05-40R3BX-A | T620NC#05-40R3BX-A | — |
| — | 6-32 | 2,705 | .1065 | — | 36 | T630NC#06-32R2BX-A | T620NC#06-32R2BX-A | — |
| M4 x 0,70 | — | 3,300 | .1299 | — | — | T630M040X070R6HX-D1 | T620M040X070R6HX-D1 | — |
| — | 8-32 | 3,454 | .1360 | — | 29 | T630NC#08-32R2BX-A | T620NC#08-32R2BX-A | — |
| — | 8-36 | 3,454 | .1360 | — | 29 | T630NF#08-36R3BX-A | T620NF#08-36R3BX-A | — |
| — | 10-24 | 3,734 | .1470 | — | 26 | T630NC#10-24R3BX-A | T620NC#10-24R3BX-A | — |
| — | 10-32 | 4,039 | .1590 | — | 21 | T630NF#10-32R2BX-A | T620NF#10-32R2BX-A | — |
| M5 x 0,80 | — | 4,200 | .1654 | — | — | T630M050X080R6HX-D1 | T620M050X080R6HX-D1 | T631M050X080R6HX-D1 |
| — | 12-24 | 4,496 | .1770 | — | 16 | T630NC#12-24R3BX-A | T620NC#12-24R3BX-A | — |
| M6 x 1,00 | — | 5,000 | .1969 | — | — | T630M060X100R6HX-D1 | T620M060X100R6HX-D1 | T631M060X100R6HX-D1 |
| — | 1/4-20 | 5,106 | .2010 | — | 7 | T630NC02500-20R2BX-A | T620NC02500-20R2BX-A | — |
| — | 1/4-28 | 5,410 | .2130 | — | 3 | T630NF02500-28R2BX-A | T620NF02500-28R2BX-A | — |
| — | 5/16-18 | 6,528 | .2570 | — | F | T630NC03125-18R2BX-A | T620NC03125-18R2BX-A | — |
| M8 x 1,25 | — | 6,700 | .2638 | — | — | T630M080X125R6HX-D1 | T620M080X125R6HX-D1 | T631M080X125R6HX-D1 |
| M8 x 1,00 | — | 7,000 | .2756 | — | — | T630MF080X100R6HX D4 | T620MF080X100R6HX D4 | T631MF080X100R6HX D4 |
| — | 3/8-16 | 7,938 | .3125 | 5/16 | — | T630NC03750—16R3BX-A | T620NC03750-16R3BX-A | — |
| — | 3/8-24 | 8,433 | .3320 | — | Q | T630NF03750—24R3BX-A | T620NF03750-24R3BX-A | — |
| M10 x 1,50 | — | 8,500 | .3346 | — | — | T630M100X150R6HX-D1 | T620M100X150R6HX-D1 | T631M100X150R6HX-D1 |
| M10 x 1,25 | — | 8,700 | .3425 | — | — | T630MF100X125R6HX D4 | — | T631MF100X125R6HX D4 |
| M10 x 1,00 | — | 9,000 | .3543 | — | — | T630MF100X100R6HX D4 | T620MF100X100R6HX D4 | T631MF100X100R6HX D4 |
| — | 7/16-14 | 9,093 | .3580 | — | T | T630NC04375-14R3BX-A | T620NC04375-14R3BX-A | — |
| — | 7/16-20 | 9,921 | .3906 | 25/64 | — | T630NF04375-20R3BX-A | T620NF04375-20R3BX-A | — |
| M12 x 1,75 | — | 10,200 | .4016 | — | — | T630M120X175R6HX-D6 | T620M120X175R6HX-D6 | T631M120X175R6HX-D6 |
| M12 x 1,50 | — | 10,500 | .4134 | — | — | T630MF120X150R6HX-D4 | T620MF120X150R6HX-D4 | T631MF120X150R6HX-D4 |
| — | 1/2-13 | 10,716 | .4219 | 27/64 | — | T630NC05000-13R3BX-A | T620NC05000-13R3BX-A | — |
| M12 x 1,25 | — | 10,800 | .4252 | — | — | — | — | T631MF120X125R6HX-D4 |
| — | 1/2-20 | 11,509 | .4531 | 29/64 | — | T630NF05000-20R3BX-A | T620NF05000-20R3BX-A | — |
| M14 x 2,00 | — | 12,000 | .4724 | — | — | T630M140X200R6HX-D6 | T620M140X200R6HX-D6 | T631M140X200R6HX-D6 |
| M14 x 1,50 | — | 12,500 | .4921 | — | — | T630MF140X150R6HX-D4 | T620MF140X150R6HX-D4 | T631MF140X150R6HX-D4 |
| M16 x 2,00 | — | 14,000 | .5512 | — | — | T630M160X200R6HX-D6 | T620M160X200R6HX-D6 | T631M160X200R6HX-D6 |
| M16 x 1,50 | — | 14,500 | .5709 | — | — | T630MF160X150R6HX-D4 | T620MF160X150R6HX-D4 | T631MF160X150R6HX-D4 |
| M18 x 2,50 | — | 15,500 | .6102 | — | — | T630M180X250R6HX-D6 | - | T631M180X250R6HX-D6 |
| M18 x 1,50 | — | 16,500 | .6496 | — | — | T630MF180X150R6HX-D4 | T620MF180X150R6HX-D4 | T631MF180X150R6HX-D4 |
| — | 3/4-10 | 16,670 | .6563 | 21/32 | — | T630NC07500-10R3BX-A | T620NC07500-10R3BX-A | — |
| M20 x 2,50 | — | 17,500 | .6890 | — | — | T630M200X250R6HX-D6 | T620M200X250R6HX-D6 | T631M200X250R6HX-D6 |

| | P | | All Materials | |
|---|---|---|---|---|
| HSS-E-PM Taps — Tapping Steel >32 HRC | Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |  |
| through hole with coolant T621_KP6525 | approximately 3 x D with coolant B224_HP KCPK15 | approximately 5 x D with coolant B225_HP KCPK15 | approximately 3 x D with coolant B976_KC7315 | approximately 5 x D with coolant B977_KC7315 |
| — | — | — | B976Z02500 | — |
| — | — | — | B976Z02578 | — |
| — | — | — | B976Z02705 | — |
| — | B224A03300HP | B225A03300HP | B976A03300 | B977A03300 |
| — | — | — | B976A03454 | B977A03454 |
| — | — | — | B976A03454 | B977A03454 |
| — | — | — | B976A03734 | B977A03734 |
| — | — | — | B976A04039 | B977A04039 |
| T621M050X080R6HX-D1 | B224A04200HP | B225A04200HP | B976A04200 | B977A04200 |
| — | B224A04496HP | B225A04496HP | B976A04496 | B977A04496 |
| T621M060X100R6HX-D1 | B224A05000HP | B225A05000HP | B976A05000 | B977A05000 |
| — | B224A05106HP | B225A05106HP | B976A05106 | B977A05106 |
| — | B224A05410HP | B225A05410HP | B976A05410 | B977A05410 |
| — | B224A06528HP | B225A06528HP | B976A06528 | B977A06528 |
| T621M080X125R6HX-D1 | B224A06700HP | B225A06700HP | B976A06700 | B977A06700 |
| T621MF080X100R6HX D4 | B224A07000HP | B225A07000HP | B976A07000 | B977A07000 |
| — | B224A07938HP | B225A07938HP | B976A07938 | B977A07938 |
| — | B224A08433HP | B225A08433HP | B976A08433 | B977A08433 |
| T621M100X150R6HX-D1 | B224A08500HP | B225A08500HP | B976A08500 | B977A08500 |
| T621MF100X125R6HX D4 | B224A08700HP | B225A08700HP | B976A08700 | B977A08700 |
| T621MF100X100R6HX D4 | B224A09000HP | B225A09000HP | B976A09000 | B977A09000 |
| — | B224A09093HP | B225A09093HP | B976A09093 | B977A09093 |
| — | B224A09921HP | B225A09921HP | B976A09921 | B977A09921 |
| T621M120X175R6HX-D6 | B224A10200HP | B225A10200HP | B976A10200 | B977A10200 |
| T621MF120X150R6HX-D4 | B224A10500HP | B225A10500HP | B976A10500 | B977A10500 |
| — | B224A10716HP | B225A10716HP | B976A10716 | B977A10716 |
| T621MF120X125R6HX-D4 | B224A10800HP | B225A10800HP | B976A10800 | B977A10800 |
| — | B224A11509HP | B225A11509HP | B976A11509 | B977A11509 |
| T621M140X200R6HX-D6 | B224A12000HP | B225A12000HP | B976A12000 | B977A12000 |
| T621MF140X150R6HX-D4 | B224A12500HP | B225A12500HP | B976A12500 | B977A12500 |
| T621M160X200R6HX-D6 | B224A14000HP | B225A14000HP | B976A14000 | B977A14000 |
| T621MF160X150R6HX-D4 | B224A14500HP | B225A14500HP | B976A14500 | B977A14500 |
| T621M180X250R6HX-D6 | B224A15500HP | B225A15500HP | B976A15500 | B977A15500 |
| T621MF180X150R6HX-D4 | B224A16500HP | B225A16500HP | B976A16500 | B977A16500 |
| — | — | B225A16670HP | B976A16670 | B977A16670 |
| — | B224A17500HP | B225A17500HP | B976A17500 | B977A17500 |

## Steel • 32–44 HRC

| typical thread sizes | required tap drill diameter | | | | P HSS-E-PM Taps — Tapping Steel 32–44 HRC | | |
|---|---|---|---|---|---|---|---|
| | | | | |  |  |  |
| cutting taps metric | mm | inch | fraction | wire | blind hole T602_KSP21 | blind hole (3 x D) T604_KSH26 | through hole T600_KSP21 |
| M3 x 0,50 | 2,500 | .0984 | — | — | T602M030X050R6HX-D1 | T604M030X050R6HX-D1 | T600M030X050R6HX-D1 |
| M4 x 0,70 | 3,300 | .1299 | — | — | T602M040X070R6HX-D1 | T604M040X070R6HX-D1 | T600M040X070R6HX-D1 |
| M5 x 0,80 | 4,200 | .1654 | — | — | T602M050X080R6HX-D1 | T604M050X080R6HX-D1 | T600M050X080R6HX-D1 |
| M6 x 1,00 | 5,000 | .1969 | — | — | T602M060X100R6HX-D1 | T604M060X100R6HX-D1 | T600M060X100R6HX-D1 |
| M8 x 1,25 | 6,700 | .2638 | — | — | T602M080X125R6HX-D1 | T604M080X125R6HX-D1 | T600M080X125R6HX-D1 |
| M8 x 1,00 | 7,000 | .2756 | — | — | T602MF080X100R6HX D4 | T604MF080X100R6HX D4 | T600MF080X100R6HX D4 |
| M10 x 1,50 | 8,500 | .3346 | — | — | T602M100X150R6HX-D1 | T604M100X150R6HX-D1 | T600M100X150R6HX-D1 |
| M10 x 1,25 | 8,700 | .3425 | — | — | T602MF100X125R6HX D4 | T604MF100X125R6HX D4 | T600MF100X125R6HX D4 |
| M10 x 1,00 | 9,000 | .3543 | — | — | T602MF100X100R6HX D4 | T604MF100X100R6HX D4 | T600MF100X100R6HX D4 |
| M12 x 1,75 | 10,200 | .4016 | — | — | T602M120X175R6H-D6 | T604M120X175R6H-D6 | T600M120X175R6HX-D6 |
| M12 x 1,50 | 10,500 | .4134 | — | — | T602MF120X150R6H-D4 | T604MF120X150R6H-D4 | T600MF120X150R6HX-D4 |
| M12 x 1,25 | 10,800 | .4252 | — | — | T602MF120X125R6H D4 | T604MF120X125R6H D4 | T600MF120X125R6HX D4 |
| M14 x 2,00 | 12,000 | .4724 | — | — | T602M140X200R6H-D6 | T604M140X200R6H-D6 | T600M140X200R6HX-D6 |
| M14 x 1,50 | 12,500 | .4921 | — | — | T602MF140X150R6H-D4 | T604MF140X150R6H-D4 | T600MF140X150R6HX-D4 |
| M16 x 2,00 | 14,000 | .5512 | — | — | T602M160X200R6H-D6 | T604M160X200R6H-D6 | T600M160X200R6HX-D6 |
| M16 x 1,50 | 14,500 | .5709 | — | — | T602MF160X150R6H-D4 | T604MF160X150R6H-D4 | T600MF160X150R6HX-D4 |
| M18 x 2,50 | 15,500 | .6102 | — | — | T602M180X250R6H-D6 | — | — |
| M18 x 1,50 | 16,500 | .6496 | — | — | T602MF180X150R6H-D4 | T604MF180X150R6H-D4 | T600MF180X150R6HX-D4 |
| M20 x 2,50 | 17,500 | .6890 | — | — | T602M200X250R6H-D6 | T604M200X250R6H-D6 | T600M200X250R6HX-D6 |

## Steel • Forming Taps

| typical thread sizes | required tap drill diameter | | | | P HSS-E-PM Taps — Forming Steel >32 HRC | |
|---|---|---|---|---|---|---|
| | | | | |  |  |
| forming taps metric | mm | inch | fraction | wire | blind and through hole T622_KSP21 | blind and through hole with coolant T623_KSP21 |
| M3 x 0,50 | 2,800 | .1102 | — | — | T622M030X050R6HX-D74 | — |
| M4 x 0,70 | 3,700 | .1457 | — | — | T622M040X070R6HX-D74 | — |
| M5 x 0,80 | 4,700 | .1850 | — | 13 | T622M050X080R6HX-D74 | T623M050X080R6HX-D74 |
| M6 x 1,00 | 5,600 | .2205 | — | — | T622M060X100R6HX-D74 | T623M060X100R6HX-D74 |
| M8 x 1,25 | 7,400 | .2913 | — | — | T622M080X125R6HX-D74 | T623M080X125R6HX-D74 |
| M8 x 1,00 | 7,600 | .2992 | — | — | T622MF080X100R6HX-D74 | T623MF080X100R6HX-D74 |
| M10 x 1,50 | 9,400 | .3701 | — | — | T622M100X150R6HX-D74 | T623M100X150R6HX-D74 |
| M10 x 1,00 | 9,500 | .3740 | — | — | T622MF100X100R6HX-D74 | T623MF100X100R6HX-D74 |
| M12 x 1,75 | 11,300 | .4449 | — | — | T622M120X175R6HX-D74 | T623M120X175R6HX-D74 |
| M12 x 1,50 | 11,300 | .4449 | — | — | T622MF120X150R6HX-D74 | T623MF120X150R6HX-D74 |
| M12 x 1,25 | 11,500 | .4528 | — | — | T622MF120X125R6HX-D74 | T623MF120X125R6HX-D74 |
| M14 x 1,50 | 13,400 | .5276 | — | — | T622MF140X150R6HX-D74 | T623MF140X150R6HX-D74 |
| M16 x 2,00 | 15,200 | .5984 | — | — | T622M160X200R6HX-D74 | T623M160X200R6HX-D74 |
| M16 x 1,50 | 15,400 | .6063 | — | — | T622MF160X150R6HX-D74 | T623MF160X150R6HX-D74 |

| | P | | All Materials | |
|---|---|---|---|---|
| | Recommended SC Drill | | Alternate Tap Drill | |
| |  approximately 3 x D with coolant B224_HP KCPK15 |  approximately 5 x D with coolant B225_HP KCPK15 |  approximately 3 x D with coolant B976_KC7315 |  approximately 5 x D with coolant B977_KC7315 |
| | — | — | B976Z02500 | — |
| | B224A03300HP | B225A03300HP | B976A03300 | B977A03300 |
| | B224A04200HP | B225A04200HP | B976A04200 | B977A04200 |
| | B224A05000HP | B225A05000HP | B976A05000 | B977A05000 |
| | B224A06700HP | B225A06700HP | B976A06700 | B977A06700 |
| | B224A07000HP | B225A07000HP | B976A07000 | B977A07000 |
| | B224A08500HP | B225A08500HP | B976A08500 | B977A08500 |
| | B224A08700HP | B225A08700HP | B976A08700 | B977A08700 |
| | B224A09000HP | B225A09000HP | B976A09000 | B977A09000 |
| | B224A10200HP | B225A10200HP | B976A10200 | B977A10200 |
| | B224A10500HP | B225A10500HP | B976A10500 | B977A10500 |
| | B224A10800HP | B225A10800HP | B976A10800 | B977A10800 |
| | B224A12000HP | B225A12000HP | B976A12000 | B977A12000 |
| | B224A12500HP | B225A12500HP | B976A12500 | B977A12500 |
| | B224A14000HP | B225A14000HP | B976A14000 | B977A14000 |
| | B224A14500HP | B225A14500HP | B976A14500 | B977A14500 |
| | B224A15500HP | B225A15500HP | B976A15500 | B977A15500 |
| | B224A16500HP | B225A16500HP | B976A16500 | B977A16500 |
| | B224A17500HP | B225A17500HP | B976A17500 | B977A17500 |



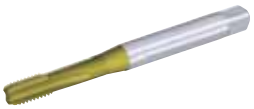
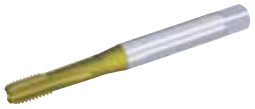
| | P | | All Materials | |
|---|---|---|---|---|
| | Recommended SC Drill | | Alternate Tap Drill | |
| |  approximately 3 x D with coolant B224_HP KCPK15 |  approximately 5 x D with coolant B225_HP KCPK15 |  approximately 3 x D with coolant B976_KC7315 |  approximately 5 x D with coolant B977_KC7315 |
| | — | — | B976Z02800 | — |
| | B224A03700HP | B225A03700HP | B976A03700 | B977A03700 |
| | B224A04700HP | B225A04700HP | B976A04700 | B977A04700 |
| | B224A05600HP | B225A05600HP | B976A05600 | B977A05600 |
| | B224A07400HP | B225A07400HP | B976A07400 | B977A07400 |
| | — | B225A07600HP | — | B977A07600 |
| | B224A09400HP | B225A09400HP | B976A09400 | B977A09400 |
| | B224A09500HP | B225A09500HP | B976A09500 | B977A09500 |
| | — | B225A11300HP | B976A11300 | B977A11300 |
| | — | B225A11300HP | B976A11300 | B977A11300 |
| | B224A11500HP | B225A11500HP | B976A11500 | B977A11500 |
| | — | B225A13400HP | — | — |
| | — | B225A15200HP | — | — |
| | — | B225A15400HP | — | — |

# Stainless Steel

| typical thread sizes | | required tap drill diameter | | | | M HSS-E-PM Taps | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | |  |  |  |
| cutting taps metric | inch | mm | inch | fraction | wire | blind hole T630_KM6515 | through hole T620_KM6515 | blind hole with coolant T631_KM6515 |
| — | 2-56 | 1.778 | 0.07 | — | 50 | T630NC#02-56R3BX-A | T620NC#02-56R3BX-A | — |
| — | 4-40 | 2.261 | 0.089 | — | 43 | T630NC#04-40R2BX-A | T620NC#04-40R2BX-A | — |
| M3 x 0,50 | — | 2.500 | .0984 | — | — | T630M030X050R6HX-D1 | T620M030X050R6HX-D1 | — |
| — | 5-40 | 2.578 | .1015 | — | 38 | T630NC#05-40R2BX-A | T620NC#05-40R2BX-A | — |
| — | 6-32 | 2.705 | .1065 | — | 36 | T630NC#06-32R2BX-A | T620NC#06-32R2BX-A | — |
| M4 x 0,70 | — | 3.300 | .1299 | — | — | T630M040X070R6HX-D1 | T620M040X070R6HX-D1 | — |
| — | 8-32 | 3.454 | .1360 | — | 29 | T630NC#08-32R2BX-A | T620NC#08-32R2BX-A | — |
| — | 8-36 | 3.454 | .1360 | — | 29 | T630NF#08-36R3BX-A | T620NF#08-36R3BX-A | — |
| — | 10-24 | 3.734 | .1470 | — | 26 | T630NC#10-24R3BX-A | T620NC#10-24R3BX-A | — |
| — | 10-32 | 4.039 | .1590 | — | 21 | T630NF#10-32R2BX-A | T620NF#10-32R2BX-A | — |
| M5 x 0,80 | — | 4.200 | .1654 | — | — | T630M050X080R6HX-D1 | T620M050X080R6HX-D1 | T631M050X080R6HX-D1 |
| — | 12-24 | 4.496 | .1770 | — | 16 | T630NC#12-24R3BX-A | T620NC#12-24R3BX-A | — |
| M6 x 1,00 | — | 5.000 | .1969 | — | — | T630M060X100R6HX-D1 | T620M060X100R6HX-D1 | T631M060X100R6HX-D1 |
| — | 1/4-20 | 5.106 | .2010 | — | 7 | T630NC02500-20R2BX-A | T620NC02500-20R2BX-A | — |
| — | 1/4-28 | 5.410 | .2130 | — | 3 | T630NF02500-28R2BX-A | T620NF02500-28R2BX-A | — |
| — | 5/16-18 | 6.528 | .2570 | — | F | T630NC03125-18R2BX-A | T620NC03125-18R2BX-A | — |
| M8 x 1,25 | — | 6.700 | .2638 | — | — | T630M080X125R6HX-D1 | T620M080X125R6HX-D1 | T631M080X125R6HX-D1 |
| — | 5/16-24 | 6.909 | .2720 | — | I | — | T620NF03125-24R3BX-A | — |
| M8 x 1,00 | — | 7.000 | .2756 | — | — | T630MF080X100R6HX D4 | T620MF080X100R6HX D4 | T631MF080X100R6HX D4 |
| — | 3/8-16 | 7.938 | .3125 | 5/16 | — | T630NC03750-16R3BX-A | T620NC03750-16R3BX-A | — |
| — | 3/8-24 | 8.433 | .3320 | — | Q | T630NF03750-24R3BX-A | T620NF03750-24R3BX-A | — |
| M10 x 1,50 | — | 8.500 | .3346 | — | — | T630M100X150R6HX-D1 | T620M100X150R6HX-D1 | T631M100X150R6HX-D1 |
| M10 x 1,25 | — | 8.700 | .3425 | — | — | T630MF100X125R6HX D4 | — | T631MF100X125R6HX D4 |
| M10 x 1,00 | — | 9.000 | .3543 | — | — | T630MF100X100R6HX D4 | T620MF100X100R6HX D4 | T631MF100X100R6HX D4 |
| — | 7/16-14 | 9.093 | .3580 | — | T | T630NC04375-14R3BX-A | T620NC04375-14R3BX-A | — |
| — | 7/16-20 | 9.921 | .3906 | 25/64 | — | T630NF04375-20R3BX-A | T620NF04375-20R3BX-A | — |
| M12 x 1,75 | — | 10.200 | .4016 | — | — | T630M120X175R6HX-D6 | T620M120X175R6HX-D6 | T631M120X175R6HX-D6 |
| M12 x 1,50 | — | 10.500 | .4134 | — | — | T630MF120X150R6HX-D4 | T620MF120X150R6HX-D4 | T631MF120X150R6HX-D4 |
| — | 1/2-13 | 10.716 | .4219 | 27/64 | — | T630NC05000-13R3BX-A | T620NC05000-13R3BX-A | — |
| M12 x 1,25 | — | 10.800 | .4252 | — | — | — | — | T631MF120X125R6HX-D4 |
| — | 1/2-20 | 11.509 | .4531 | 29/64 | — | T630NF05000-20R3BX-A | T620NF05000-20R3BX-A | — |
| M14 x 2,00 | — | 12.000 | .4724 | — | — | T630M140X200R6HX-D6 | T620M140X200R6HX-D6 | T631M140X200R6HX-D6 |
| M14 x 1,50 | — | 12.500 | .4921 | — | — | T630MF140X150R6HX-D4 | T620MF140X150R6HX-D4 | T631MF140X150R6HX-D4 |
| M14 x 1,25 | — | 12.800 | .5039 | — | — | — | — | T631MF140X125R6HX-D4 |
| — | 5/8-11 | 13.495 | .5313 | 17/32 | — | T630NC06250-10R3BX-A | T620NC06250-10R3BX-A | — |
| M16 x 2,00 | — | 14.000 | .5512 | — | — | T630M160X200R6HX-D6 | T620M160X200R6HX-D6 | T631M160X200R6HX-D6 |
| M16 x 1,50 | — | 14.500 | .5709 | — | — | T630MF160X150R6HX-D4 | T620MF160X150R6HX-D4 | T631MF160X150R6HX-D4 |
| M18 x 2,50 | — | 15.500 | .6102 | — | — | T630M180X250R6HX-D6 | — | T631M180X250R6HX-D6 |
| M18 x 1,50 | — | 16.500 | .6496 | — | — | T630MF180X150R6HX-D4 | T620MF180X150R6HX-D4 | T631MF180X150R6HX-D4 |
| — | 3/4-10 | 16.670 | .6563 | 21/32 | — | T630NC07500-10R3BX-A | T620NC07500-10R3BX-A | — |
| M20 x 2,50 | — | 17.500 | .6890 | — | — | T630M200X250R6HX-D6 | T620M200X250R6HX-D6 | — |

| | M | | All Materials | |
|---|---|---|---|---|
| HSS-E-PM Taps | Recommended Drill | | Alternative Tap Drill | |
|  |  |  |  |  |
| through hole with coolant T621_KM6515 | approximately 3 x D with coolant B210_HP KCM15 | approximately 5 x D with coolant B211_HP KCM15 | approximately 3 x D with coolant B976_KC7315 | approximately 5 x D with coolant B977_KC7315 |
| – | – | – | – | – |
| – | – | – | – | – |
| – | – | – | B976Z02500 | – |
| – | – | – | B976Z02578 | – |
| – | – | – | B976Z02705 | – |
| – | B210A03300HP | B211A03300HP | B976A03300 | B977A03300 |
| – | – | B211A03454HP | B976A03454 | B977A03454 |
| – | – | B211A03454HP | B976A03454 | B977A03454 |
| – | – | – | B976A03734 | B977A03734 |
| – | – | – | B976A04039 | B977A04039 |
| T621M050X080R6HX-D1 | B210A04200HP | B211A04200HP | B976A04200 | B977A04200 |
| – | – | – | B976A04496 | B977A04496 |
| T621M060X100R6HX-D1 | B210A05000HP | B211A05000HP | B976A05000 | B977A05000 |
| – | B210A05106HP | – | B976A05106 | B977A05106 |
| – | B210A05410HP | – | B976A05410 | B977A05410 |
| – | B210A06528HP | – | B976A06528 | B977A06528 |
| T621M080X125R6HX-D1 | B210A06700HP | B211A06700HP | B976A06700 | B977A06700 |
| – | – | - | B976A06909 | B977A06909 |
| T621MF080X100R6HX D4 | B210A07000HP | B211A07000HP | B976A07000 | B977A07000 |
| – | B210A07938HP | – | B976A07938 | B977A07938 |
| – | B210A08433HP | – | B976A08433 | B977A08433 |
| T621M100X150R6HX-D1 | B210A08500HP | B211A08500HP | B976A08500 | B977A08500 |
| T621MF100X125R6HX D4 | B210A08700HP | B211A08700HP | B976A08700 | B977A08700 |
| T621MF100X100R6HX D4 | B210A09000HP | B211A09000HP | B976A09000 | B977A09000 |
| – | B210A09093HP | – | B976A09093 | B977A09093 |
| – | B210A09921HP | – | B976A09921 | B977A09921 |
| T621M120X175R6HX-D6 | B210A10200HP | B211A10200HP | B976A10200 | B977A10200 |
| T621MF120X150R6HX-D4 | B210A10500HP | B211A10500HP | B976A10500 | B977A10500 |
| – | B210A10716HP | – | B976A10716 | B977A10716 |
| T621MF120X125R6HX-D4 | B210A10800HP | B211A10800HP | B976A10800 | B977A10800 |
| – | B210A11509HP | – | B976A11509 | B977A11509 |
| T621M140X200R6HX-D6 | B210A12000HP | B211A12000HP | B976A12000 | B977A12000 |
| T621MF140X150R6HX-D4 | B210A12500HP | B211A12500HP | B976A12500 | B977A12500 |
| – | B210A12800HP | B211A12800HP | B976A12800 | B977A12800 |
| – | B210A13495HP | – | B976A13495 | B977A13495 |
| T621M160X200R6HX-D6 | B210A14000HP | B211A14000HP | B976A14000 | B977A14000 |
| T621MF160X150R6HX-D4 | B210A14500HP | B211A14500HP | B976A14500 | B977A14500 |
| T621M180X250R6HX-D6 | B210A15500HP | B211A15500HP | B976A15500 | B977A15500 |
| T621MF180X150R6HX-D4 | B210A16500HP | B211A16500HP | B976A16500 | B977A16500 |
| – | B210A16670HP | B211A16670HP | B976A16670 | B977A16670 |
| – | B210A17500HP | B211A17500HP | B976A17500 | B977A17500 |

# Cast and Ductile Iron

| typical thread sizes | | required tap drill diameter | | | | K HSS-E-PM Taps | |
|---|---|---|---|---|---|---|---|
| | | | | | |  |  |
| cutting taps metric | inch | mm | inch | fraction | wire | blind and through hole T640 KP6525 | blind and through hole with coolant T641 KP6525 |
| M4 x 0,7 | – | 3,3 | .1299 | – | – | **T640M040X070R6HX-D1** | **–** |
| – | 10-24 | 3,734 | .1470 | – | 26 | **T640NC#10-24R3B-A** | **–** |
| – | 10-32 | 4,039 | .1590 | – | 21 | **T640NF#10-32R3B-A** | **–** |
| M5 x 0,8 | – | 4,2 | .1654 | – | – | **T640M050X080R6HX-D1** | **T641M050X080R6HX-D1** |
| M6 x 1,0 | – | 5,0 | .1969 | – | – | **T640M060X100R6HX-D1** | **T641M060X100R6HX-D1** |
| – | – | 5,791 | .2280 | – | 1 | **T640NC02500-20R3B-A** | **–** |
| – | – | 5,944 | .2340 | – | A | **T640NF02500-28R3B-A** | **–** |
| – | 5/16-18 | 6,528 | .2570 | – | F | **T640NC03125-18R3B-A** | **–** |
| M8 x 1,25 | – | 6,7 | .2638 | – | – | **T640M080X125R6HX-D1** | **T641M080X125R6HX-D1** |
| – | 5/16-24 | 6,909 | .2720 | – | I | **T640NF03125-24R3B-A** | **–** |
| – | 3/8-16 | 7,938 | .3125 | 5/16 | – | **T640NC03750-16R3B-A** | **–** |
| – | 3/8-24 | 8,433 | .3320 | – | Q | **T640NF03750-24R3B-A** | **–** |
| M10 x 1,5 | – | 8,5 | .3346 | – | – | **T640M100X150R6HX-D1** | **T641M100X150R6HX-D1** |
| – | 7/16-14 | 9,093 | .3580 | – | T | **T640NC04375-14R3B-A** | **–** |
| – | 7/16-20 | 9,921 | .3906 | 25/64 | – | **T640NF04375-20R3B-A** | **–** |
| M12 x 1,75 | – | 10,2 | .4016 | – | – | **T640M120X175R6HX-D6** | **T641M120X175R6HX-D6** |
| – | 1/2-13 | 10,716 | .4219 | 27/64 | – | **T640NC05000-13R3B-A** | **–** |
| – | 1/2-20 | 11,509 | .4531 | 29/64 | – | **T640NF05000-20R3B-A** | **–** |
| M14 x 2,0 | – | 12,0 | .4724 | – | – | **T640M140X200R6HX-D6** | **T641M140X200R6HX-D6** |
| – | 5/8-11 | 13,495 | .5313 | 17/32 | – | **T640NC06250-11R3B-A** | **–** |
| M16 x 2,0 | – | 14,0 | .5512 | – | – | **T640M160X200R6HX-D6** | **T641M160X200R6HX-D6** |
| M18 x 2,5 | – | 15,5 | .6102 | – | – | **T640M180X250R6HX-D6** | **T641M180X250R6HX-D6** |
| – | 3/4-10 | 16,67 | .6563 | 21/32 | – | **T640NC07500-10R3B-A** | **–** |
| M20 x 2,5 | – | 17,5 | .6890 | – | – | **T640M200X250R6HX-D6** | **T641M200X250R6HX-D6** |
| M22 x 2,5 | – | 19,5 | .7677 | – | – | **T640M220X250R6HX-D6** | **–** |

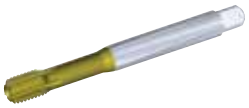
| | K | | All Materials | |
|---|---|---|---|---|
| | Recommended Drill | | Alternate Tap Drill | |
| |  |  |  |  |
| | approximately 3 x D with coolant B254_YPC KCK10 | approximately 5 x D with coolant B255_YPC KCK10 | approximately 3 x D with coolant B976 KC7315 | approximately 5 x D with coolant B977 KC7315 |
| | B254A03300YPC | B255A03300YPC | B976A03300 | B977A03300 |
| | B254A03734YPC | B255A03734YPC | B976A03734 | B977A03734 |
| | B254A04039YPC | B255A04039YPC | B976A04039 | B977A04039 |
| | B254A04200YPC | B255A04200YPC | B976A04200 | B977A04200 |
| | B254A05000YPC | B255A05000YPC | B976A05000 | B977A05000 |
| | B254A05791YPC | B255A05791YPC | B976A05791 | B977A05791 |
| | B254A05944YPC | B255A05944YPC | B976A05944 | B977A05944 |
| | B254A06528YPC | B255A06528YPC | B976A06528 | B977A06528 |
| | B254A06700YPC | B255A06700YPC | B976A06700 | B977A06700 |
| | B254A06909YPC | B255A06909YPC | B976A06909 | B977A06909 |
| | B254A07938YPC | B255A07940YPC | B976A07938 | B977A07938 |
| | B254A08433YPC | B255A08433YPC | B976A08433 | B977A08433 |
| | B254A08500YPC | B255A08500YPC | B976A08500 | B977A08500 |
| | B254A09093YPC | B255A09093YPC | B976A09093 | B977A09093 |
| | B254A09921YPC | B255A09920YPC | B976A09921 | B977A09921 |
| | B254A10200YPC | B255A10200YPC | B976A10200 | B977A10200 |
| | B254A10716YPC | B255A10716YPC | B976A10716 | B977A10716 |
| | B254A11509YPC | B255A11509YPC | B976A11509 | B977A11509 |
| | B254A12000YPC | B255A12000YPC | B976A12000 | B977A12000 |
| | B254A13495YPC | B255A13495YPC | B976A13495 | B977A13495 |
| | B254A14000YPC | B255A14000YPC | B976A14000 | B977A14000 |
| | B254A15500YPC | B255A15500YPC | B976A15500 | B977A15500 |
| | B254A16670YPC | B255A16670YPC | B976A16670 | B977A16670 |
| | B254A17500YPC | B255A17500YPC | B976A17500 | B977A17500 |
| | B254A19500YPC | B255A19500YPC | B976A19500 | B977A19500 |

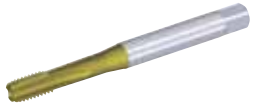
# Aluminium

| typical thread sizes | | required tap drill diameter | | | | N | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | HSS-E Taps — Tapping Aluminium (Wrought, low Si) | | HSS-E-PM Taps — Tapping Cast Aluminium (Si <12%) |
| | | | | | |  |  |  |
| cutting taps metric | inch | mm | inch | fraction | wire | through hole T680_KSN38 | blind hole T680_KSN38 | blind and through hole T640 KP6525 |
| M3 x 0,50 | — | 2,500 | .0984 | — | — | T680M030X050R6H-D1 | T670M030X050R6H-D1 | — |
| M4 x 0,70 | — | 3,300 | .1299 | — | — | T680M040X070R6H-D1 | T670M040X070R6H-D1 | T640M040X070R6HX-D1 |
| — | 10-24 | 3,734 | .1470 | — | 26 | — | — | T640NC#10-24R3B-A |
| — | 10-32 | 4,039 | .1590 | — | 21 | — | — | T640NF#10-32R3B-A |
| M5 x 0,80 | — | 4,200 | .1654 | — | — | T680M050X080R6H-D1 | T670M050X080R6H-D1 | T640M050X080R6HX-D1 |
| M6 x 1,00 | — 5,000 | .1969 | — | — | — | T680M060X100R6H-D1 | T670M060X100R6H-D1 | T640M060X100R6HX-D1 |
| — | — | 5,791 | .2280 | — | 1 | — | — | T640NC02500-20R3B-A |
| — | — | 5,944 | .2340 | — | A | — | — | T640NF02500-28R3B-A |
| — | 5/16-18 | 6,528 | .2570 | — | F | — | — | T640NC03125-18R3B-A |
| M8 x 1,25 | — | 6,700 | .2638 | — | — | T680M080X125R6H-D1 | T670M080X125R6H-D1 | T640M080X125R6HX-D1 |
| — | 5/16-24 | 6,909 | .2720 | — | I | — | — | T640NF03125-24R3B-A |
| — | 3/8-16 | 7,938 | .3125 | 5/16 | — | — | — | T640NC03750-16R3B-A |
| — | 3/8-24 | 8,433 | .3320 | — | Q | — | — | T640NF03750-24R3B-A |
| M10 x 1,50 | — | 8,500 | .3346 | — | — | T680M100X150R6H-D1 | T670M100X150R6H-D1 | T640M100X150R6HX-D1 |
| — | 7/16-14 | 9,093 | .3580 | — | T | — | — | T640NC04375-14R3B-A |
| — | 7/16-20 | 9,921 | .3906 | 25/64 | — | — | — | T640NF04375-20R3B-A |
| M12 x 1,75 | — | 10,200 | .4016 | — | — | T680M120X175R6H-D6 | T670M120X175R6H-D6 | T640M120X175R6HX-D6 |
| — | 1/2-13 | 10,716 | .4219 | 27/64 | — | — | — | T640NC05000-13R3B-A |
| — | 1/2-20 | 11,509 | .4531 | 29/64 | — | — | — | T640NF05000-20R3B-A |
| M14 x 2,00 | — | 12,000 | .4724 | — | — | — | — | T640M140X200R6HX-D6 |
| — | 5/8-111 | 13,495 | .5313 | 17/32 | — | — | — | T640NC06250-11R3B-A |
| M16 x 2,00 | — | 14,000 | .5512 | — | — | T680M160X200R6H-D6 | T670M160X200R6H-D6 | T640M160X200R6HX-D6 |
| M18 x 2,50 | — | 15,500 | .6102 | — | — | — | — | T640M180X250R6HX-D6 |
| — | 3/4-10 | 16,670 | .6563 | 21/32 | — | — | — | T640NC07500-10R3B-A |
| M20 x 2,50 | — | 17,500 | .6890 | — | — | T680M200X250R6H-D6 | — | T640M200X250R6HX-D6 |
| M22 x 2,50 | — | 19,500 | .7677 | — | — | — | — | T640M220X250R6HX-D6 |

Taps

# Aluminium • Forming Taps

| typical thread sizes | | required tap drill diameter | | N | |
|---|---|---|---|---|---|
| | | | | HSS-E-PM Taps — Forming Aluminium (Wrought, low Si) | |
| | | | |  |  |
| forming taps metric | inch | mm | inch | blind and through hole T622 KSN38 | blind and through hole with coolant T622 KSN38 |
| M3 x 0,50 | — | 2,800 | .1102 | T622M030X050R6HX-D74 | — |
| — | — | 3,734 | .1470 | T622M040X070R6HX-D74 | — |
| — | — | 5,000 | .1969 | T622M050X080R6HX-D74 | T623M050X080R6HX-D74 |
| — | 1/4-20 | 5,791 | .2280 | T622M060X100R6HX-D74 | T623M060X100R6HX-D74 |
| — | 5/16-24 | 7,493 | .2950 | T622M080X125R6HX-D74 | T623M080X125R6HX-D74 |
| — | — | 7,938 | .3125 | T622MF080X100R6HX-D74 | T623MF080X100R6HX-D74 |
| M10 x 1,25 | — | 9,500 | .3740 | T622M100X150R6HX-D74 | T623M100X150R6HX-D74 |
| — | — | 9,921 | .3906 | T622MF100X100R6HX-D74 | T623MF100X100R6HX-D74 |
| M12 x 1,50 | — | 11,300 | .4449 | T622M120X175R6HX-D74 | T623M120X175R6HX-D74 |
| M12 x 1,25 | — | 11,500 | .4528 | T622MF120X150R6HX-D74 | T623MF120X150R6HX-D74 |
| — | — | 11,509 | .4531 | T622MF120X125R6HX-D74 | T623MF120X125R6HX-D74 |
| M14 x 1,25 | — | 13,400 | .5276 | T622MF140X150R6HX-D74 | T623MF140X150R6HX-D74 |
| — | 5/8-18 | 15,250 | .6004 | T622M160X200R6HX-D74 | T623M160X200R6HX-D74 |
| — | — | 15,500 | .6102 | T622MF160X150R6HX-D74 | T623MF160X150R6HX-D74 |

| | N | | All Materials | |
|---|---|---|---|---|
| HSS-E-PM Taps — Tapping Cast Aluminium (Si <12%) | Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |  |
| approximately 3 x D with coolant T641 KP6525 | approximately 3 x D with coolant B284_(HP) K715 | approximately 5 x D with coolant B411 KF1 | approximately 5 x D with coolant B976_KC7315 | with coolant B977_KC7315 |
| — | — | — | B976Z02500 | — |
| — | — | B411A03300 | B976A03300 | B977A03300 |
| — | — | — | B976A03734 | B977A03734 |
| — | — | — | B976A04039 | B977A04039 |
| T641M050X080R6HX-D1 | B284A04200 | B411A04200 | B976A04200 | B977A04200 |
| T641M060X100R6HX-D1 | B284A05000 | B411A05000 | B976A05000 | B977A05000 |
| — | — | — | B976A05791 | B977A05791 |
| — | — | — | B976A05944 | B977A05944 |
| — | — | — | B976A06528 | B977A06528 |
| T641M080X125R6HX-D1 | — | — | B976A06700 | B977A06700 |
| — | — | — | B976A06909 | B977A06909 |
| — | — | — | B976A07938 | B977A07938 |
| — | — | — | B976A08433 | B977A08433 |
| T641M100X150R6HX-D1 | — | B411A08500 | B976A08500 | B977A08500 |
| — | — | — | B976A09093 | B977A09093 |
| — | K284A03906 | — | B976A09921 | B977A09921 |
| T641M120X175R6HX-D6 | — | B411A10200 | B976A10200 | B977A10200 |
| — | — | — | B976A10716 | B977A10716 |
| — | K284A04531 | — | B976A11509 | B977A11509 |
| T641M140X200R6HX-D6 | — | B411A12000 | B976A12000 | B977A12000 |
| — | — | — | B976A13495 | B977A13495 |
| T641M160X200R6HX-D6 | — | B411A14000 | B976A14000 | B977A14000 |
| T641M180X250R6HX-D6 | — | B411A15500 | B976A15500 | B977A15500 |
| — | — | — | B976A16670 | B977A16670 |
| T641M200X250R6HX-D6 | — | B411A17500 | B976A17500 | B977A17500 |
| — | — | B411A19500 | B976A19500 | B977A19500 |

| | N | | All Materials | |
|---|---|---|---|---|
| | Recommended SC Drill | | Alternate Tap Drill | |
| |  |  |  |  |
| | approximately 3 x D with coolant B284_(HP) K715 | approximately 5 x D with coolant B411 KF1 | approximately 3 x D with coolant B976_KC7315 | approximately 5 x D with coolant B977_KC7315 |
| | — | — | B976Z02800 | — |
| | — | — | B976A03734 | B977A03734 |
| | B284A05000 | B411A05000 | B976A05000 | B977A05000 |
| | — | — | B976A05791 | B977A05791 |
| | — | — | — | — |
| | — | — | B976A07938 | B977A07938 |
| | — | B411A09500 | B976A09500 | B977A09500 |
| | — | K284A03906 | B976A09921 | B977A09921 |
| | — | — | B976A11300 | B977A11300 |
| | — | B411A11500 | B976A11500 | B977A11500 |
| | K284A04531 | — | B976A11509 | B977A11509 |
| | — | — | — | — |
| | — | — | — | — |
| | — | B411A15500 | B976A15500 | B977A15500 |

## High-Temperature Alloys

| typical thread sizes | required tap drill diameter | | S | | |
|---|---|---|---|---|---|
| | | | HSS-E-PM Taps – Tapping Titanium Alloys | | HSS-E-PM Taps – Tapping Nickel and Cobalt Alloys |
| | | |  |  |  |
| cutting taps metric | mm | inch | blind hole T616_KSN25 | through hole T614_KSN25 | blind hole T612_KSSH22 |
| M3 x 0,50 | 2,500 | .0984 | T616M030X050R6HX-D1 | T614M030X050R6HX-D1 | T616M030X050R6HX-D1 |
| M4 x 0,70 | 3,300 | .1299 | T616M040X070R6H-D1 | T614M040X070R6H-D1 | T616M040X070R6H-D1 |
| M5 x 0,80 | 4,200 | .1654 | T616M050X080R6H-D1 | T614M050X080R6H-D1 | T616M050X080R6H-D1 |
| M6 x 1,00 | 5,000 | .1969 | T616M060X100R6H-D1 | T614M060X100R6H-D1 | T616M060X100R6H-D1 |
| M8 x 1,25 | 6,700 | .2638 | T616M080X125R6H-D1 | T614M080X125R6H-D1 | T616M080X125R6H-D1 |
| M10 x 1,50 | 8,500 | .3346 | T616M100X150R6H-D1 | T614M100X150R6H-D1 | T616M100X150R6H-D1 |
| M12 x 1,75 | 10,200 | .4016 | T616M120X175R6H-D6 | T614M120X175R6H-D6 | T616M120X175R6H-D6 |
| M14 x 2,00 | 12,000 | .4724 | – | – | T612M140X200R6HX-D6 |
| M16 x 2,00 | 14,000 | .5512 | – | – | T612M160X200R6HX-D6 |
| M20 x 2,50 | 17,500 | .6890 | – | – | T612M200X250R6HX-D6 |



## Hard Materials

| typical thread sizes | required tap drill diameter | | H | |
|---|---|---|---|---|
| | | | HSS-E-PM Taps – Tapping Hard Materials 44–55 HRC | Carbide Taps – Tapping Hard Materials 55–63 HRC |
| | | |  |  |
| cutting taps metric | mm | inch | blind and through hole T606_KSSH22 | blind and through hole T410_KCU36 |
| M5 x 0,80 | 4,200 | .1654 | – | T410M050X080R6HX-D1 |
| M6 x 1,00 | 5,000 | .1969 | T606M060X100R6HX-D1 | T410M060X100R6HX-D1 |
| M8 x 1,25 | 6,700 | .2638 | T606M080X125R6HX-D1 | T410M080X125R6HX-D1 |
| M8 x 1,00 | 7,000 | .2756 | T606MF080X100R6HX-D4 | T410MF080X100R6HX-D4 |
| M10 x 1,50 | 8,500 | .3346 | T606M100X150R6HX-D1 | T410M100X150R6HX-D1 |
| M10 x 1,00 | 9,000 | .3543 | T606MF100X100R6HX-D4 | T410MF100X100R6HX-D4 |
| M12 x 1,75 | 10,200 | .4016 | T606M120X175R6HX-D6 | T410M120X175R6HX-D6 |
| M12 x 1,50 | 10,500 | .4134 | T606MF120X150R6HX-D4 | T410MF120X150R6HX-D4 |
| M14 x 2,00 | 12,000 | .4724 | – | T410M140X200R6HX-D6 |
| M14 x 1,50 | 12,500 | .4921 | T606MF140X150R6HX-D4 | T410MF140X150R6HX-D4 |
| M16 x 2,00 | 14,000 | .5512 | T606M160X200R6HX-D6 | T612M160X200R6HX-D6 |
| M16 x 1,50 | 14,500 | .5709 | T606MF160X150R6HX-D4 | T410MF160X150R6HX-D4 |

| | S | | All Materials | |
|---|---|---|---|---|
| HSS-E-PM Taps — Tapping Nickel and Cobalt Alloys | Recommended SC Drill | | Alternate Tap Drill | |
|  |  |  |  |  |
| through hole T610_KSSH22 | approximately 3 x D with coolant B291_YPL KC7315 | approximately 5 x D with coolant B292_YPL KC7315 | approximately 3 x D with coolant B976_KC7315 | approximately 5 x D with coolant B977_KC7315 |
| T610M030X050R6HX-D1 | — | — | B976Z02500 | — |
| T610M040X070R6H-D1 | B291A03300YPL | B292A03300YPL | B976A03300 | B977A03300 |
| T610M050X080R6H-D1 | — | B292A04200YPL | B976A04200 | B977A04200 |
| T610M060X100R6H-D1 | B291A05000YPL | B292A05000YPL | B976A05000 | B977A05000 |
| T610M080X125R6H-D1 | — | — | B976A06700 | B977A06700 |
| T610M100X150R6H-D1 | B291A08500YPL | B292A08500YPL | B976A08500 | B977A08500 |
| T610M120X175R6H-D6 | B291A10200YPL | B292A10200YPL | B976A10200 | B977A10200 |
| T610M140X200R6HX-D6 | B291A12000YPL | B292A12000YPL | B976A12000 | B977A12000 |
| T610M160X200R6HX-D6 | B291A14000YPL | B292A14000YPL | B976A14000 | B977A14000 |
| T610M200X250R6HX-D6 | B291A17500YPL | B292A17500YPL | B976A17500 | B977A17500 |

| | H | | All Materials | |
|---|---|---|---|---|
| | Recommended SC Drill | | Alternative Tap Drill | |
| |  |  |  |  |
| | approximately 3 x D with coolant B291_YPL KC7315 | approximately 5 x D with coolant B292_YPL KC7315 | approximately 3 x D with coolant B976_KC7315 | approximately 5 x D with coolant B977_KC7315 |
| | — | B292A04200YPL | B976A04200 | B977A04200 |
| | B291A05000YPL | B292A05000YPL | B976A05000 | B977A05000 |
| | — | — | B976A06700 | B977A06700 |
| | B291A07000YPL | B292A07000YPL | B976A07000 | B977A07000 |
| | B291A08500YPL | B292A08500YPL | B976A08500 | B977A08500 |
| | B291A09000YPL | B292A09000YPL | B976A09000 | B977A09000 |
| | B291A10200YPL | B292A10200YPL | B976A10200 | B977A10200 |
| | B291A10500YPL | B292A10500YPL | B976A10500 | B977A10500 |
| | B291A12000YPL | B292A12000YPL | B976A12000 | B977A12000 |
| | B291A12500YPL | B292A12500YPL | B976A12500 | B977A12500 |
| | B291A14000YPL | B292A14000YPL | B976A14000 | B977A14000 |
| | B291A14500YPL | B292A14500YPL | B976A14500 | B977A14500 |

## Steel • Wind Energy

| typical thread sizes | | | P<br>HSS-E-PM Taps — Tapping Steel >32 HRC | | |
|---|---|---|---|---|---|
| | | |  |  |  |
| cutting taps metric | mm | inch | blind hole T630_KP6525 | blind hole T650_KP6525 | through hole T620_KP6525 |
| M24 x 3,00 | 21,000 | .8268 | T630M240X300R6HX-D6 | T650M240X300R6HX-D6 | T620M240X300R6HX-D6 |
| M30 x 3,50 | 26,500 | 1.0433 | T630M300X350R6HX-D6 | T650M300X350R6HX-D6 | T620M300X350R6HX-D6 |
| M33 x 3,50 | 29,500 | 1.1614 | T630M330X350R6HX-D6 | T650M330X350R6HX-D6 | T620M330X350R6HX-D6 |
| M36 x 4,00 | 32,000 | 1.2598 | T630M360X400R6HX-D6 | T650M360X400R6HX-D6 | T620M360X400R6HX-D6 |
| M42 x 4,50 | 37,500 | 1.4764 | T630M420X450R6HX-D6 | T650M420X450R6HX-D6 | T620M420X450R6HX-D6 |

## Steel • Wind Energy • Extra Long

| typical thread sizes | | | P<br>HSS-E-PM Taps — Tapping Steel >32 HRC | | |
|---|---|---|---|---|---|
| | | |  |  |  |
| cutting taps metric | mm | inch | blind hole T630_KP6525 | blind hole T650_KP6525 | through hole T620_KP6525 |
| M24 x 3,00 | 21,000 | .8268 | T630M240X300R6HX-XL | T650M240X300R6HX-XL | T620M240X300R6HX-XL |
| M30 x 3,50 | 26,500 | 1.0433 | T630M300X350R6HX-XL | T650M300X350R6HX-XL | T620M300X350R6HX-XL |
| M33 x 3,50 | 29,500 | 1.1614 | T630M330X350R6HX-XL | T650M330X350R6HX-XL | T620M330X350R6HX-XL |
| M36 x 4,00 | 32,000 | 1.2598 | T630M360X400R6HX-XL | T650M360X400R6HX-XL | T620M360X400R6HX-XL |
| M42 x 4,50 | 37,500 | 1.4764 | T630M420X450R6HX-XL | T650M420X450R6HX-XL | T620M420X450R6HX-XL |

## Cast Iron • Wind Energy

| typical thread sizes | | | K<br>HSS-E-PM Taps — Cast Iron | | |
|---|---|---|---|---|---|
| | | |  |  |  |
| cutting taps metric | mm | inch | blind hole T630_KP6525 | blind hole T650_KP6525 | through hole T620_KP6525 |
| M24 x 3,00 | 21,000 | .8268 | T630M240X300R6HX-D6 | T650M240X300R6HX-D6 | T620M240X300R6HX-D6 |
| M30 x 3,50 | 26,500 | 1.0433 | T630M300X350R6HX-D6 | T650M300X350R6HX-D6 | T620M300X350R6HX-D6 |
| M33 x 3,50 | 29,500 | 1.1614 | T630M330X350R6HX-D6 | T650M330X350R6HX-D6 | T620M330X350R6HX-D6 |
| M36 x 4,00 | 32,000 | 1.2598 | T630M360X400R6HX-D6 | T650M360X400R6HX-D6 | T620M360X400R6HX-D6 |
| M42 x 4,50 | 37,500 | 1.4764 | T630M420X450R6HX-D6 | T650M420X450R6HX-D6 | T620M420X450R6HX-D6 |

## Cast Iron • Wind Energy • Extra Long

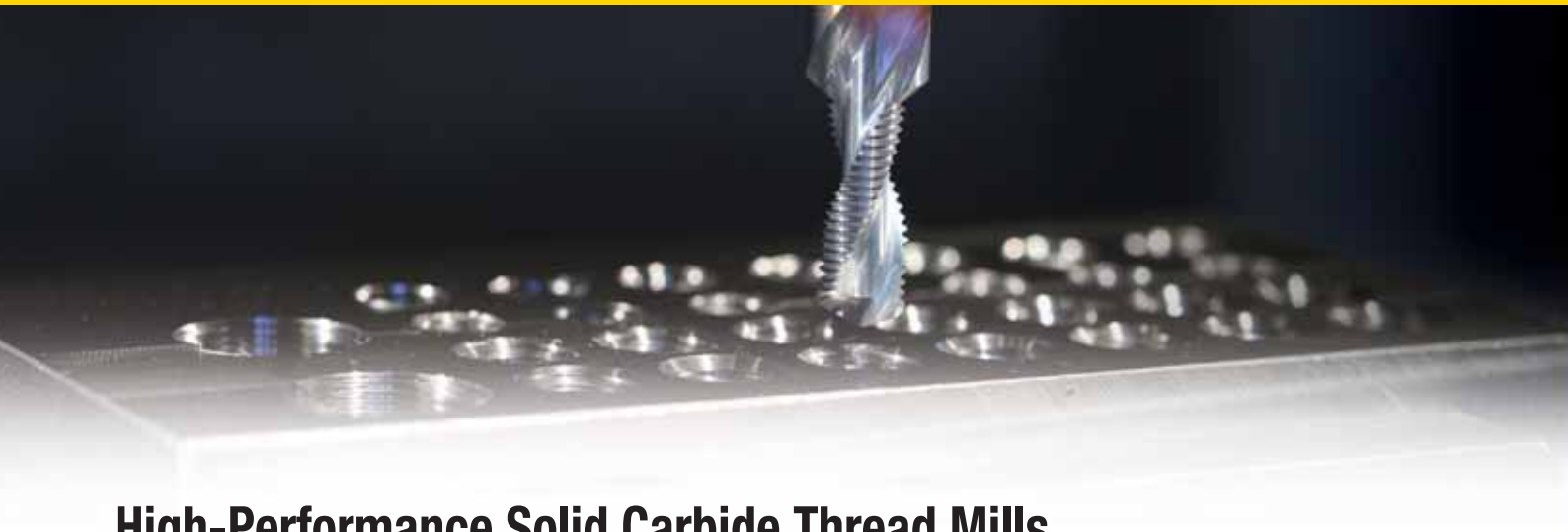
| typical thread sizes | | | K<br>HSS-E-PM Taps — Cast Iron | | |
|---|---|---|---|---|---|
| | | |  |  |  |
| cutting taps metric | mm | inch | blind hole T630_KP6525 | blind hole T650_KP6525 | through hole T620_KP6525 |
| M24 x 3,00 | 21,000 | .8268 | T630M240X300R6HX-XL | T650M240X300R6HX-XL | T620M240X300R6HX-XL |
| M30 x 3,50 | 26,500 | 1.0433 | T630M300X350R6HX-XL | T650M300X350R6HX-XL | T620M300X350R6HX-XL |
| M33 x 3,50 | 29,500 | 1.1614 | T630M330X350R6HX-XL | T650M330X350R6HX-XL | T620M330X350R6HX-XL |
| M36 x 4,00 | 32,000 | 1.2598 | T630M360X400R6HX-XL | T650M360X400R6HX-XL | T620M360X400R6HX-XL |
| M42 x 4,50 | 37,500 | 1.4764 | T630M420X450R6HX-XL | T650M420X450R6HX-XL | T620M420X450R6HX-XL |

| P | | P | |
|---|---|---|---|
| HSS-E-PM Taps — Tapping Steel >32 HRC | | Recommended Modular Drill | |
|  |  |  |  |
| blind hole with coolant T631_KP6525 | blind hole with coolant T651_KP6525 | KSEM PLUS™ insert KCP15 | KSEM PLUS™ tool body 3 x D |
| T631M240X300R6HX-D6 | T651M240X300R6HX-D6 | KTIP2100HPM | KSEM PLUS |
| T631M300X350R6HX-D6 | T651M300X350R6HX-D6 | KTIP2650HPM | KSEM PLUS |
| T631M330X350R6HX-D6 | T651M330X350R6HX-D6 | KSEM PLUS | KSEM PLUS |
| T631M360X400R6HX-D6 | T651M360X400R6HX-D6 | KSEM PLUS | KSEM PLUS |
| T631M420X450R6HX-D6 | T651M420X450R6HX-D6 | KSEM PLUS | KSEM PLUS |

| P | | P | |
|---|---|---|---|
| HSS-E-PM Taps — Tapping Steel >32 HRC | | Recommended Modular Drill | |
|  |  |  |  |
| blind hole with coolant T631_KP6525 | blind hole with coolant T651_KP6525 | KSEM PLUS™ insert KCP15 | KSEM PLUS™ tool body 3 x D |
| T631M240X300R6HX-XL | T651M240X300R6HX-XL | KTIP2100HPM | KSEM PLUS |
| T631M300X350R6HX-XL | T651M300X350R6HX-XL | KTIP2650HPM | KSEM PLUS |
| T631M330X350R6HX-XL | T651M330X350R6HX-XL | KSEM PLUS | KSEM PLUS |
| T631M360X400R6HX-XL | T651M360X400R6HX-XL | KSEM PLUS | KSEM PLUS |
| T631M420X450R6HX-XL | T651M420X450R6HX-XL | KSEM PLUS | KSEM PLUS |

| K | | K | |
|---|---|---|---|
| HSS-E-PM Taps — Cast Iron | | Recommended Modular Drill | |
|  |  |  |  |
| blind hole with coolant T631_KP6525 | blind hole with coolant T651_KP6525 | KSEM PLUS™ insert KC7140 | KSEM PLUS™ tool body 3 x D |
| T631M240X300R6HX-D6 | T651M240X300R6HX-D6 | KTIP2100HPM | KSEM PLUS |
| T631M300X350R6HX-D6 | T651M300X350R6HX-D6 | KTIP2650HPM | KSEM PLUS |
| T631M330X350R6HX-D6 | T651M330X350R6HX-D6 | KSEM PLUS | KSEM PLUS |
| T631M360X400R6HX-D6 | T651M360X400R6HX-D6 | KSEM PLUS | KSEM PLUS |
| T631M420X450R6HX-D6 | T651M420X450R6HX-D6 | KSEM PLUS | KSEM PLUS |

| K | | K | |
|---|---|---|---|
| HSS-E-PM Taps — Cast Iron | | Recommended Modular Drill | |
|  |  |  |  |
| blind hole with coolant T631_KP6525 | blind hole with coolant T651_KP6525 | KSEM PLUS™ insert KC7140 | KSEM PLUS™ tool body 3 x D |
| T631M240X300R6HX-XL | T651M240X300R6HX-XL | KTIP2100HPM | KSEM PLUS |
| T631M300X350R6HX-XL | T651M300X350R6HX-XL | KTIP2650HPM | KSEM PLUS |
| T631M330X350R6HX-XL | T651M330X350R6HX-XL | KSEM PLUS | KSEM PLUS |
| T631M360X400R6HX-XL | T651M360X400R6HX-XL | KSEM PLUS | KSEM PLUS |
| T631M420X450R6HX-XL | T651M420X450R6HX-XL | KSEM PLUS | KSEM PLUS |



# High-Performance Solid Carbide Thread Mills

## Primary Application

Our solid thread mills are designed to deliver high-quality internal threading on 3-axis CNC machines. Because these mills are made of carbide, they are capable of easily cutting most difficult materials up to 63 HRC. Thread mills make interrupted cuts and short chips.

The combination of these design elements offers a range of benefits to improve overall thread quality and tool production. Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading. Also, the superior carbide grades make threading easier and machining times shorter.

# Features and Benefits

## System Requirements

- 3-axis CNC machine.
- Good clamping for tool and workpiece.
- Internal coolant supply.

## Features

- Interrupted cuts.
- Short chips.
- Optimised carbide grades.
- Drill, thread, countersink.

## Advantages

- Versatile.
- Better surface quality.
- No chip problems.
- No need to reverse the spindle.
- More production safety.

## Through and Blind Holes (2 x D)

| | |  Thread Mill |  Thread Mill and Chamfer |  Drill, Thread Mill, and Chamfer |  Mill, Thread Mill, and Chamfer |
|---|---|---|---|---|---|
| P | <35 HRC | TM711 | TM721 | — | TM741_RHSF |
| P | 35–43 HRC | — | TM721 | — | TM741_RHSF |
| M | | TM711 | TM721 | — | TM741_RHSF |
| K | | TM711 | TM721 | TM731 | TM741_RHSF |
| N | Wrought | TM711 | TM721 | — | TM731 |
| N | Cast | TM711 | TM721 | TM731 | TM741_RHSF |
| S | | TM711 | TM721 | — | TM741_LHSF |
| H | 44–63 HRC | — | — | — | TM741_RHSF<br>TM741_LHSF |

# High-Performance
# Solid Carbide Thread Mills

Our solid thread mills are designed to deliver high-quality internal threading on 3-axis CNC machines. Because these mills are made of carbide, they are capable of easily cutting most difficult materials up to 63 HRC. Thread mills make interrupted cuts and short chips. The combination of these design elements offers a range of benefits to improve overall thread quality and tool production. Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading. Also, the superior carbide grades make threading easier and machining times shorter.

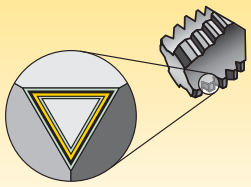
## Features:

- 3-axis CNC machine.
- Good clamping for tool and workpiece.
- Internal coolant supply.
- Interrupted cuts.
- Short chips.
- Optimised carbide grades.
- Drill, thread, countersink.
- Versatile.
- Better surface quality.
- No chip problems.
- No need to reverse the spindle.
- More production safety.

Visit **www.kennametal.com** or contact your local Authorised Kennametal Distributor.

**www.kennametal.com**

KENNAMETAL®

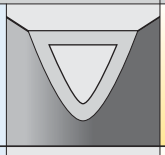
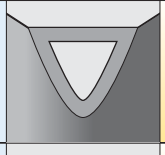
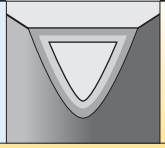


**Coatings provide high-speed capability and are engineered for finishing to light roughing.**

| | |
|---|---|
| P | Steel |
| M | Stainless Steel |
| K | Cast Iron |
| N | Non-Ferrous Materials |
| S | High-Temp Alloys |
| H | Hardened Materials |

wear resistance ⟷ toughness

Grade

| Coating | Grade Description | 05 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|---|---|---|
| NEW! KCU32  | Coated carbide. PVD — Fine-grain carbide substrate with high hardness TiCN coating. Universal grade for thread milling most materials. | P | P | P | P | | | | | |
| | | M | M | M | M | | | | | |
| | | K | K | K | K | | | | | |
| | | N | | N | N | N | | | | |
| | | S | | S | S | S | | | | |
| NEW! KCU33  | Coated carbide. PVD — Carbide substrate with heat-resistant TiAlN coating. Universal grade for thread milling most materials. | P | | P | P | P | P | | | |
| | | M | | M | M | M | M | | | |
| | | K | K | K | K | K | | | | |
| | | N | | | N | N | N | N | | |
| | | S | | S | S | S | S | | | |
| NEW! KCU36  | Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction $MoS_2$ top layer over carbide substrate. Use for thread milling most materials including high hardness materials. | P | | | P | P | P | P | | |
| | | M | | | M | M | M | M | | |
| | | K | | K | K | K | K | | | |
| | | N | | N | N | N | N | | | |
| | | S | | | S | S | S | S | | |
| | | H | | | | H | H | H | H | |

## Solid Thread Mills Identification System


| TM721 | MF | 120 | X | 150 | R | 2D | HA |
|---|---|---|---|---|---|---|---|
| Tap Design | Type of Thread | Nominal Diameter of Thread | | Pitch | Cutting Dimension | Depth of Cut | Shank |
| | | mm or inch (depending on type) | | mm or TPI (depending on type) | | | |

**M** = Metric coarse-pitch thread (ISO form)

**MF** = Metric fine-pitch thread (ISO form)

**NC** = Unified coarse series thread

**NF** = Unified fine series thread

**DIN 6535**

**HA** = Plain Shank

**HB** = Weldon® Shank

**HE** = Whistle Notch™ Shank

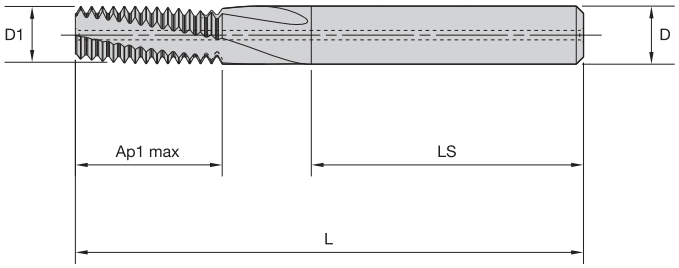
**Style**

**TM711** = Solid Thread Mill; through coolant

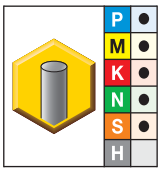
**TM721** = Solid Thread Mill and Chamfer; through coolant

**TM731** = Solid Thread Mill, Chamfer, and Drill; through coolant

**TM741** = Solid Thread Mill, Chamfer, and Mill; through coolant


## TM711 • Through Coolant • Metric and Metric Fine

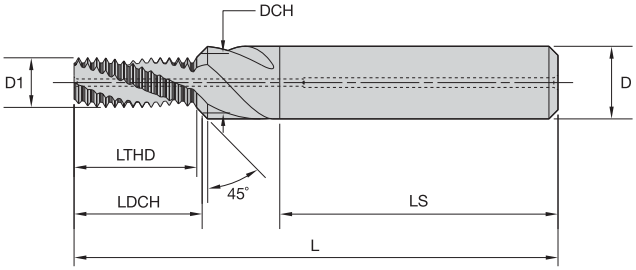



● first choice
○ alternate choice

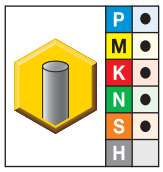
| KCU32 | D1 size | D1 | Ap1 max | L | LS | D | cutting edges |
|---|---|---|---|---|---|---|---|
| **TM711M030X050R2DHA** | M3X0.5 | 2,4 | 6,2 | 42 | 28 | 4,0 | 3 |
| **TM711MF040X050R2DHA** | M4X0.5 | 3,4 | 8,2 | 55 | 36 | 6,0 | 3 |
| **TM711M040X070R2DHA** | M4X0.7 | 3,2 | 8,7 | 55 | 36 | 6,0 | 3 |
| **TM711MF050X050R2DHA** | M5X0.5 | 4,3 | 10,2 | 55 | 36 | 6,0 | 3 |
| **TM711M050X080R2DHA** | M5X0.8 | 4,0 | 10,8 | 55 | 36 | 6,0 | 3 |
| **TM711MF060X075R2DHA** | M6X0.75 | 5,0 | 12,4 | 55 | 36 | 6,0 | 3 |
| **TM711M060X100R2DHA** | M6X1 | 4,8 | 12,5 | 55 | 36 | 6,0 | 3 |
| **TM711MF080X075R2DHA** | M8X0.75 | 5,9 | 16,8 | 63 | 36 | 6,0 | 3 |
| **TM711MF080X100R2DHA** | M8X1 | 5,9 | 16,4 | 63 | 36 | 6,0 | 3 |
| **TM711M080X125R2DHA** | M8X1.25 | 5,9 | 16,8 | 63 | 36 | 6,0 | 3 |
| **TM711MF100X100R2DHA** | M10X1 | 7,9 | 20,5 | 70 | 36 | 8,0 | 3 |
| **TM711M100X150R2DHA** | M10X1.5 | 7,9 | 20,2 | 70 | 36 | 8,0 | 3 |
| **TM711MF120X100R2DHA** | M12X1 | 9,9 | 24,5 | 80 | 40 | 10,0 | 4 |
| **TM711MF120X150R2DHA** | M12X1.5 | 9,9 | 24,7 | 80 | 40 | 10,0 | 4 |
| **TM711M120X175R2DHA** | M12X1.75 | 9,9 | 25,3 | 80 | 40 | 10,0 | 4 |
| **TM711MF140X150R2DHA** | M14X1.5 | 9,9 | 29,2 | 80 | 40 | 10,0 | 4 |
| **TM711M140X200R2DHA** | M14X2 | 11,6 | 29,0 | 90 | 45 | 12,0 | 4 |
| **TM711MF160X150R2DHA** | M16X1.5 | 11,9 | 32,2 | 90 | 45 | 12,0 | 4 |
| **TM711M160X200R2DHA** | M16X2 | 11,9 | 32,9 | 90 | 45 | 12,0 | 4 |
| **TM711MF180X150R2DHA** | M18X1.5 | 13,9 | 36,7 | 90 | 45 | 14,0 | 4 |
| **TM711M180X250R2DHA** | M18X2.5 | 13,9 | 38,7 | 90 | 45 | 14,0 | 4 |
| **TM711MF200X150R2DHA** | M20X1.5 | 13,9 | 41,2 | 90 | 45 | 14,0 | 4 |
| **TM711M200X250R2DHA** | M20X2.5 | 13,9 | 41,2 | 90 | 45 | 14,0 | 4 |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |


## TM721 • Through Coolant • Metric and Metric Fine

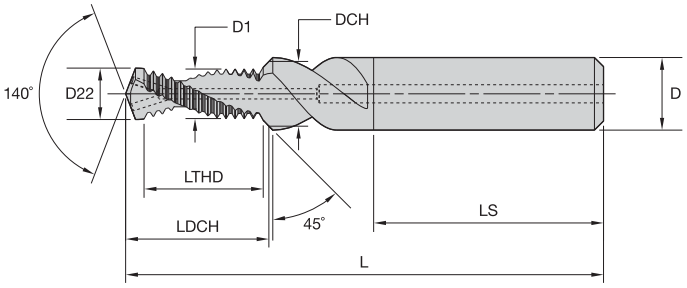



● first choice
○ alternate choice

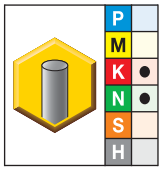
| KCU32 | D1 size | D1 | DCH | LTHD | LDCH | L | LS | D | cutting edges |
|---|---|---|---|---|---|---|---|---|---|
| **TM721M050X080R2DHA** | M5X0.8 | 4,0 | 5,3 | 10,82 | 11,40 | 55 | 36 | 6,0 | 3 |
| **TM721MF060X075R2DHA** | M6X0.75 | 5,0 | 6,3 | 12,40 | 12,97 | 62 | 36 | 8,0 | 3 |
| **TM721M060X100R2DHA** | M6X1 | 4,8 | 6,3 | 12,52 | 13,19 | 62 | 36 | 8,0 | 3 |
| **TM721MF080X100R2DHA** | M8X1 | 6,7 | 8,3 | 16,53 | 17,23 | 74 | 40 | 10,0 | 3 |
| **TM721M080X125R2DHA** | M8X1.25 | 6,5 | 8,3 | 16,91 | 17,71 | 74 | 40 | 10,0 | 3 |
| **TM721MF100X100R2DHA** | M10X1 | 8,7 | 10,3 | 20,55 | 21,23 | 80 | 45 | 12,0 | 3 |
| **TM721MF100X125R2DHA** | M10X1.25 | 8,4 | 10,3 | 20,67 | 21,50 | 80 | 45 | 12,0 | 3 |
| **TM721M100X150R2DHA** | M10X1.5 | 8,2 | 10,3 | 20,29 | 21,22 | 80 | 45 | 12,0 | 3 |
| **TM721MF120X100R2DHA** | M12X1 | 10,6 | 12,3 | 24,56 | 25,27 | 90 | 45 | 14,0 | 4 |
| **TM721MF120X125R2DHA** | M12X1.25 | 10,4 | 12,3 | 24,43 | 25,24 | 90 | 45 | 14,0 | 4 |
| **TM721MF120X150R2DHA** | M12X1.5 | 10,1 | 12,3 | 24,80 | 25,76 | 90 | 45 | 14,0 | 4 |
| **TM721M120X175R2DHA** | M12X1.75 | 9,9 | 12,3 | 25,42 | 26,48 | 90 | 45 | 14,0 | 4 |
| **TM721MF140X150R2DHA** | M14X1.5 | 12,1 | 14,3 | 29,31 | 30,25 | 100 | 48 | 16,0 | 4 |
| **TM721M140X200R2DHA** | M14X2 | 11,6 | 14,3 | 29,05 | 30,24 | 100 | 48 | 16,0 | 4 |
| **TM721MF160X150R2DHA** | M16X1.5 | 14,0 | 16,3 | 32,31 | 33,30 | 102 | 48 | 18,0 | 4 |
| **TM721M160X200R2DHA** | M16X2 | 13,6 | 16,3 | 33,05 | 34,24 | 102 | 48 | 18,0 | 4 |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |


## TM731 • Through Coolant • Metric and Metric Fine

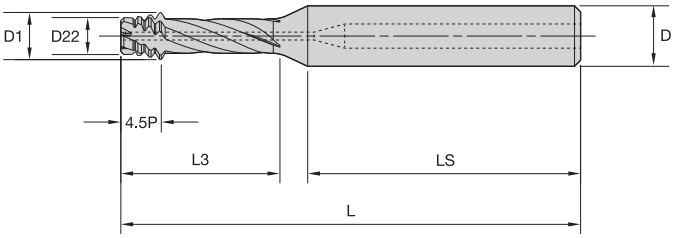



● first choice
○ alternate choice

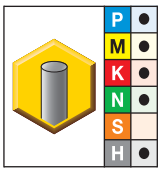
| KCU32 | D1 size | D22 | D1 | DCH | LTHD | LDCH | L | LS | D | cutting edges |
|---|---|---|---|---|---|---|---|---|---|---|
| **TM731M040X070R2DHA** | M4X0.7 | 3,3 | 3,2 | 4,3 | 7,74 | 9,59 | 49 | 36 | 6,0 | 2 |
| **TM731M050X080R2DHA** | M5X0.8 | 4,2 | 4,0 | 5,3 | 9,65 | 11,82 | 55 | 36 | 6,0 | 2 |
| **TM731MF060X075R2DHA** | M6X0.75 | 5,3 | 5,1 | 6,3 | 12,07 | 14,37 | 62 | 36 | 8,0 | 2 |
| **TM731M060X100R2DHA** | M6X1 | 5,0 | 4,8 | 6,3 | 12,06 | 14,69 | 62 | 36 | 8,0 | 2 |
| **TM731MF080X100R2DHA** | M8X1 | 7,0 | 6,8 | 8,3 | 16,09 | 19,10 | 74 | 40 | 10,0 | 2 |
| **TM731M080X125R2DHA** | M8X1.25 | 6,8 | 6,5 | 8,3 | 15,08 | 18,42 | 74 | 40 | 10,0 | 2 |
| **TM731MF100X100R2DHA** | M10X1 | 9,0 | 8,7 | 10,3 | 20,11 | 23,52 | 79 | 45 | 12,0 | 2 |
| **TM731MF100X125R2DHA** | M10X1.25 | 8,8 | 8,4 | 10,3 | 20,11 | 23,87 | 79 | 45 | 12,0 | 2 |
| **TM731M100X150R2DHA** | M10X1.5 | 8,5 | 8,2 | 10,3 | 19,59 | 23,65 | 79 | 45 | 12,0 | 2 |
| **TM731MF120X125R2DHA** | M12X1.25 | 10,8 | 10,4 | 12,3 | 23,88 | 28,00 | 89 | 45 | 14,0 | 2 |
| **TM731MF120X150R2DHA** | M12X1.5 | 10,5 | 10,2 | 12,3 | 24,12 | 28,57 | 89 | 45 | 14,0 | 2 |
| **TM731M120X175R2DHA** | M12X1.75 | 10,3 | 9,9 | 12,3 | 22,86 | 27,63 | 89 | 45 | 14,0 | 2 |
| **TM731MF140X150R2DHA** | M14X1.5 | 12,5 | 12,1 | 14,3 | 27,14 | 31,98 | 102 | 48 | 16,0 | 2 |
| **TM731M140X200R2DHA** | M14X2 | 12,0 | 11,6 | 14,3 | 28,12 | 33,62 | 102 | 48 | 16,0 | 2 |
| **TM731MF160X150R2DHA** | M16X1.5 | 14,5 | 14,1 | 16,3 | 31,65 | 36,87 | 102 | 48 | 18,0 | 2 |
| **TM731M160X200R2DHA** | M16X2 | 14,0 | 13,6 | 16,3 | 32,13 | 38,00 | 102 | 48 | 18,0 | 2 |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |


## TM741 • Through Coolant • Right Hand • Metric and Metric Fine

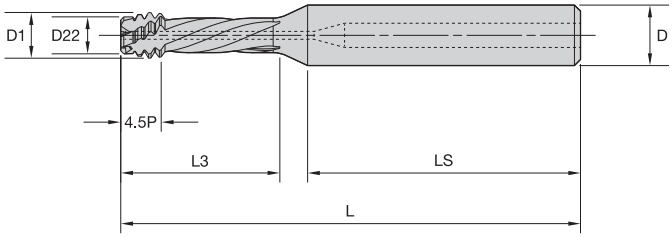



● first choice
○ alternate choice

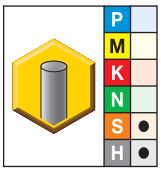
| KCU36 | D1 size | D1 | D22 | L3 | L | LS | D | cutting edges |
|---|---|---|---|---|---|---|---|---|
| **TM741M060X100R2DHA** | M6X1 | 4,51 | 3,41 | 16,5 | 60 | 36 | 8,0 | 3 |
| **TM741M070X100R2DHA** | M7X1 | 4,51 | 3,41 | 16,5 | 60 | 36 | 8,0 | 3 |
| **TM741MF080X100R2DHA** | M8X1 | 6,23 | 5,13 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741M080X125R2DHA** | M8X1.25 | 6,23 | 4,91 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741MF090X100R2DHA** | M9X1 | 6,23 | 5,13 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741M090X125R2DHA** | M9X1.25 | 6,23 | 4,91 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741MF100X100R2DHA** | M10X1 | 6,23 | 5,13 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741MF100X125R2DHA** | M10X1.25 | 6,23 | 4,91 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741M100X150R2DHA** | M10X1.5 | 7,75 | 6,11 | 26,3 | 76 | 40 | 10,0 | 4 |
| **TM741M110X150R2DHA** | M11X1.5 | 7,75 | 6,11 | 26,3 | 76 | 40 | 10,0 | 4 |
| **TM741MF120X100R2DHA** | M12X1 | 9,15 | 8,06 | 30,0 | 86 | 45 | 12,0 | 4 |
| **TM741MF120X150R2DHA** | M12X1.5 | 7,75 | 6,11 | 26,3 | 76 | 40 | 10,0 | 4 |
| **TM741M120X175R2DHA** | M12X1.75 | 9,16 | 7,21 | 32,4 | 86 | 45 | 12,0 | 4 |
| **TM741MF140X100R2DHA** | M14X1 | 9,15 | 8,06 | 30,0 | 86 | 45 | 12,0 | 4 |
| **TM741MF140X150R2DHA** | M14X1.5 | 10,83 | 9,15 | 37,4 | 98 | 48 | 16,0 | 4 |
| **TM741M140X200R2DHA** | M14X2 | 11,08 | 8,91 | 41,0 | 98 | 48 | 16,0 | 4 |
| **TM741MF160X150R2DHA** | M16X1.5 | 10,83 | 9,15 | 37,4 | 98 | 48 | 16,0 | 4 |
| **TM741M160X200R2DHA** | M16X2 | 11,08 | 8,91 | 41,0 | 98 | 48 | 16,0 | 4 |
| **TM741MF180X150R2DHA** | M18X1.5 | 14,83 | 13,15 | 47,0 | 98 | 48 | 16,0 | 4 |
| **TM741M180X250R2DHA** | M18X2.5 | 14,38 | 11,71 | 51,3 | 111 | 50 | 20,0 | 5 |
| **TM741MF200X150R2DHA** | M20X1.5 | 14,83 | 13,15 | 47,0 | 98 | 48 | 16,0 | 4 |
| **TM741M200X250R2DHA** | M20X2.5 | 14,38 | 11,71 | 51,3 | 111 | 50 | 20,0 | 5 |
| **TM741MF220X150R2DHA** | M22X1.5 | 18,23 | 16,55 | 56,0 | 111 | 50 | 20,0 | 5 |
| **TM741MF240X150R2DHA** | M24X1.5 | 18,23 | 16,55 | 56,0 | 111 | 50 | 20,0 | 5 |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |


## TM741 • Through Coolant • Left Hand • Metric and Metric Fine




● first choice
○ alternate choice

| KCU36 | D1 size | D1 | D22 | L3 | L | LS | D | cutting edges |
|---|---|---|---|---|---|---|---|---|
| **TM741M060X100L2DHA** | M6X1 | 4,51 | 3,41 | 16,5 | 60 | 36 | 8,0 | 3 |
| **TM741M070X100L2DHA** | M7X1 | 4,51 | 3,41 | 16,5 | 60 | 36 | 8,0 | 3 |
| **TM741M080X125L2DHA** | M8X1.25 | 6,23 | 4,91 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741M090X125L2DHA** | M9X1.25 | 6,23 | 4,91 | 21,9 | 71 | 40 | 10,0 | 4 |
| **TM741M100X150L2DHA** | M10X1.5 | 7,75 | 6,11 | 26,3 | 76 | 40 | 10,0 | 4 |
| **TM741M110X150L2DHA** | M11X1.5 | 7,75 | 6,11 | 26,3 | 76 | 40 | 10,0 | 4 |
| **TM741MF120X150L2DHA** | M12X1.5 | 9,17 | 7,21 | 32,4 | 86 | 45 | 12,0 | 4 |

**Shank Tolerance**

| D | tolerance h6 |
|---|---|
| 6 | +0, -0,008 |
| 8–10 | +0, -0,009 |
| 12–18 | +0, -0,011 |
| 20–30 | +0, -0,013 |

Thread Mill TM711

Thread Mill and Chamfer TM721

| Material Group | | Cutting Speed — vc Range — m/min | | | Feed/Tooth by Diameter | | | Cutting Speed — vc Range — m/min | | | Feed/Tooth by Diameter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | min | Starting Value | max | | <10mm | >10mm | min | Starting Value | max | | <10mm | >10mm |
| P | 1 | 90 | 115 | 150 | mm/r | 0,05 | 0,08 | 140 | 185 | 240 | mm/r | 0,06 | 0,10 |
| | 2 | 90 | 115 | 150 | mm/r | 0,05 | 0,08 | 140 | 185 | 240 | mm/r | 0,06 | 0,10 |
| | 3 | 40 | 50 | 70 | mm/r | 0,02 | 0,03 | 70 | 90 | 120 | mm/r | 0,03 | 0,04 |
| | 4 | – | – | – | – | – | – | 70 | 90 | 120 | mm/r | 0,03 | 0,04 |
| | 5 | 60 | 80 | 100 | mm/r | 0,04 | 0,06 | 70 | 90 | 120 | mm/r | 0,05 | 0,08 |
| | 6 | – | – | – | – | – | – | – | – | – | – | – | – |
| M | 1 | 60 | 80 | 100 | mm/r | 0,04 | 0,06 | 70 | 90 | 120 | mm/r | 0,05 | 0,08 |
| | 2 | 60 | 80 | 100 | mm/r | 0,04 | 0,06 | 70 | 90 | 120 | mm/r | 0,05 | 0,08 |
| | 3 | – | – | – | – | – | – | – | – | – | – | – | – |
| K | 1 | 120 | 150 | 200 | mm/r | 0,06 | 0,10 | 130 | 170 | 220 | mm/r | 0,06 | 0,11 |
| | 2 | 120 | 150 | 200 | mm/r | 0,06 | 0,10 | 130 | 170 | 220 | mm/r | 0,06 | 0,11 |
| | 3 | 90 | 115 | 150 | mm/r | 0,05 | 0,07 | 110 | 140 | 180 | mm/r | 0,05 | 0,07 |
| N | 1 | 250 | 275 | 300 | mm/r | 0,07 | 0,09 | 270 | 300 | 330 | mm/r | 0,08 | 0,16 |
| | 2 | 200 | 225 | 250 | mm/r | 0,05 | 0,06 | 270 | 300 | 330 | mm/r | 0,08 | 0,16 |
| | 3 | 170 | 190 | 210 | mm/r | 0,04 | 0,05 | 160 | 175 | 190 | mm/r | 0,08 | 0,16 |
| | 4 | 250 | 275 | 300 | mm/r | 0,07 | 0,09 | 270 | 300 | 330 | mm/r | 0,08 | 0,16 |
| | 5 | 270 | 300 | 330 | mm/r | 0,12 | 0,13 | 250 | 275 | 300 | mm/r | 0,11 | 0,20 |
| | 6 | 170 | 190 | 210 | mm/r | 0,05 | 0,06 | 90 | 100 | 110 | mm/r | 0,11 | 0,20 |
| S | 1 | 60 | 80 | 100 | mm/r | 0,04 | 0,06 | 70 | 90 | 120 | mm/r | 0,05 | 0,08 |
| | 2 | 50 | 65 | 80 | mm/r | 0,03 | 0,04 | 50 | 60 | 80 | mm/r | 0,03 | 0,05 |
| | 3 | 50 | 65 | 80 | mm/r | 0,03 | 0,04 | 50 | 60 | 80 | mm/r | 0,03 | 0,05 |
| | 4 | 50 | 65 | 80 | mm/r | 0,03 | 0,04 | 50 | 60 | 80 | mm/r | 0,03 | 0,05 |



Drill, Chamfer, and Thread Mill TM731

| Material Group | | Cutting Speed — vc Range — m/min | | | Drilling Recommended Feed by Diameter | | | | Milling Feed/Tooth by Diameter | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | min | Starting Value | max | | <6mm | 6–10mm | 10–16mm | | <6mm | 6–10mm | 10–16mm |
| K | 1 | 130 | 175 | 230 | mm/r | 0,10 | 0,16 | 0,30 | mm/r | 0,05 | 0,07 | 0,10 |
| N | 2 | 270 | 300 | 330 | mm/r | 0,15 | 0,25 | 0,34 | mm/r | 0,06 | 0,08 | 0,12 |
| | 3 | 140 | 150 | 170 | mm/r | 0,15 | 0,25 | 0,34 | mm/r | 0,06 | 0,08 | 0,12 |
| | 4 | 270 | 300 | 330 | mm/r | 0,15 | 0,25 | 0,34 | mm/r | 0,06 | 0,08 | 0,12 |
| | 5 | 110 | 120 | 130 | mm/r | 0,12 | 0,20 | 0,32 | mm/r | 0,06 | 0,08 | 0,12 |

Mill, Chamfer, and Thread Mill TM741

| Material Group | | TM Style | Grade | Cutting Speed — vc Range — m/min min | Starting Value | max | Feed/Tooth by Diameter | <10mm | >10mm |
|---|---|---|---|---|---|---|---|---|---|
| P | 1 | TM741 R | KCU36 | 170 | **225** | 290 | mm/r | 0,05 | 0,08 |
| | 2 | TM741 R | KCU36 | 170 | **225** | 290 | mm/r | 0,05 | 0,08 |
| | 3 | TM741 R | KCU36 | 120 | **150** | 200 | mm/r | 0,03 | 0,05 |
| | 4 | TM741 R | KCU36 | 100 | **125** | 160 | mm/r | 0,03 | 0,05 |
| | 5 | TM741 R | KCU36 | 120 | **150** | 200 | mm/r | 0,03 | 0,04 |
| | 6 | TM741 R | KCU36 | 60 | **80** | 100 | mm/r | 0,03 | 0,04 |
| M | 1 | TM741 R | KCU36 | 120 | **150** | 200 | mm/r | 0,03 | 0,04 |
| | 2 | TM741 R | KCU36 | 120 | **150** | 200 | mm/r | 0,03 | 0,04 |
| | 3 | TM741 R | KCU36 | 120 | **150** | 200 | mm/r | 0,03 | 0,04 |
| K | 1 | TM741 R | KCU36 | 190 | **250** | 330 | mm/r | 0,06 | 0,10 |
| | 2 | TM741 R | KCU36 | 190 | **250** | 330 | mm/r | 0,06 | 0,10 |
| | 3 | TM741 R | KCU36 | 140 | **185** | 240 | mm/r | 0,04 | 0,07 |
| N | 1 | – | – | – | **–** | – | – | – | – |
| | 2 | – | – | – | **–** | – | – | – | – |
| | 3 | TM741 R | KCU36 | 180 | **230** | 300 | mm/r | 0,06 | 0,07 |
| | 4 | TM741 R | KCU36 | 210 | **275** | 360 | mm/r | 0,06 | 0,07 |
| | 5 | – | – | – | **–** | – | – | – | – |
| | 6 | TM741 R | KCU36 | 210 | **275** | 360 | mm/r | 0,06 | 0,07 |
| S | 1 | TM741 L | KCU36 | 120 | **150** | 200 | mm/r | 0,025 | 0,045 |
| | 2 | TM741 L | KCU36 | 50 | **60** | 80 | mm/r | 0,015 | 0,025 |
| | 3 | TM741 L | KCU36 | 50 | **60** | 80 | mm/r | 0,015 | 0,025 |
| | 4 | TM741 L | KCU36 | 70 | **90** | 120 | mm/r | 0,025 | 0,035 |
| H | 1 | TM741 | KCU36 | 80 | **100** | 130 | mm/r | 0,030 | 0,050 |
| | 2 | TM741 | KCU36 | 80 | **100** | 130 | mm/r | 0,030 | 0,050 |
| | 3 | TM741 | KCU36 | 50 | **65** | 80 | mm/r | 0,020 | 0,030 |
| | 4 | TM741 | KCU36 | 50 | **65** | 80 | mm/r | 0,020 | 0,030 |

# Milling Methods

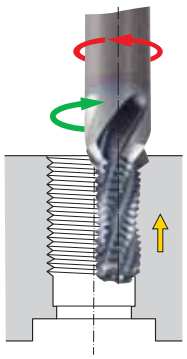
## Climb Milling

**Properties:**

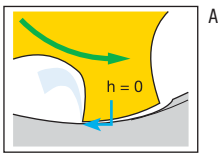
- Tool rotation direction clockwise
- Tool moves anti-clockwise
- Pitch “upwards”

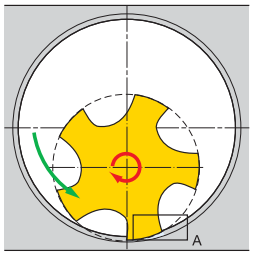
↓

- Right-hand thread



Climb milling is always when the cutting edge goes out of the material with a chip thickness h = 0



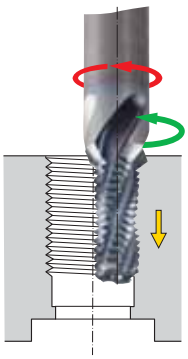

## Conventional Milling

**Properties:**

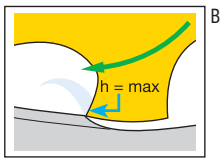
- Tool rotation direction clockwise
- Tool moves clockwise
- Pitch “downwards”

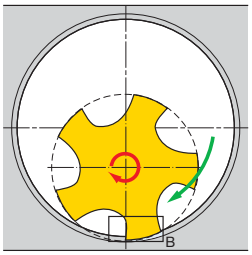
↓

- Right-hand thread



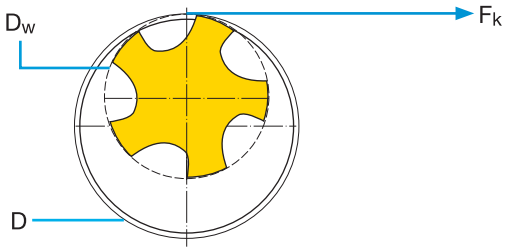
Conventional milling is always when the cutting edge goes out of the material with a chip thickness h = max



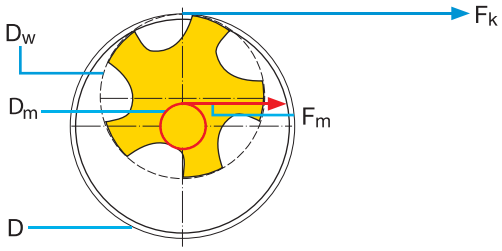

## Counter Feed $F_k$

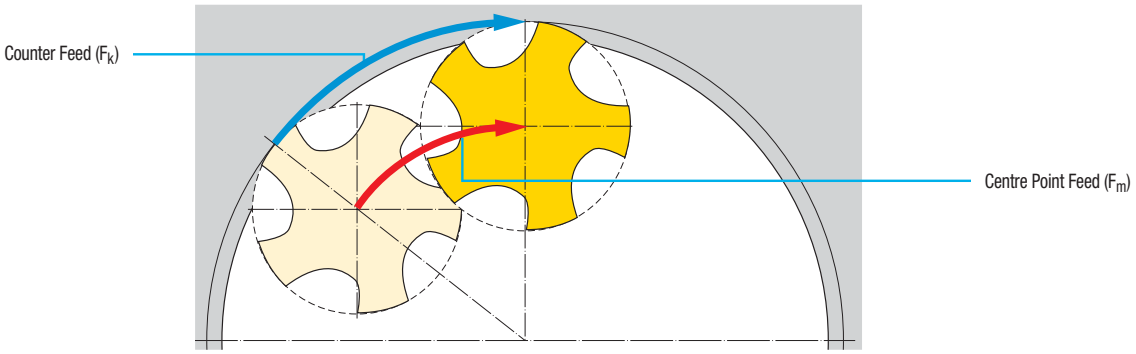
$$F_k = n \cdot f_z \cdot Z \text{ [mm/min]}$$




## Centre Point Feed $F_m$

$$F_m = \frac{F_k \cdot (D-D_w)}{D} \text{ [mm/min]}$$




$D_w$ = Tool diameter [mm]
n = RPM [min$^{-1}$]
$f_z$ = Feed per tooth [mm]
Z = Number of teeth on tool (radial)
D = Nominal diameter of thread = Diameter of external contour [mm]
$D_m$ = Diameter of the centre point (D-$D_w$) [mm]

# Drill Thread Mill TM741 • Right Hand

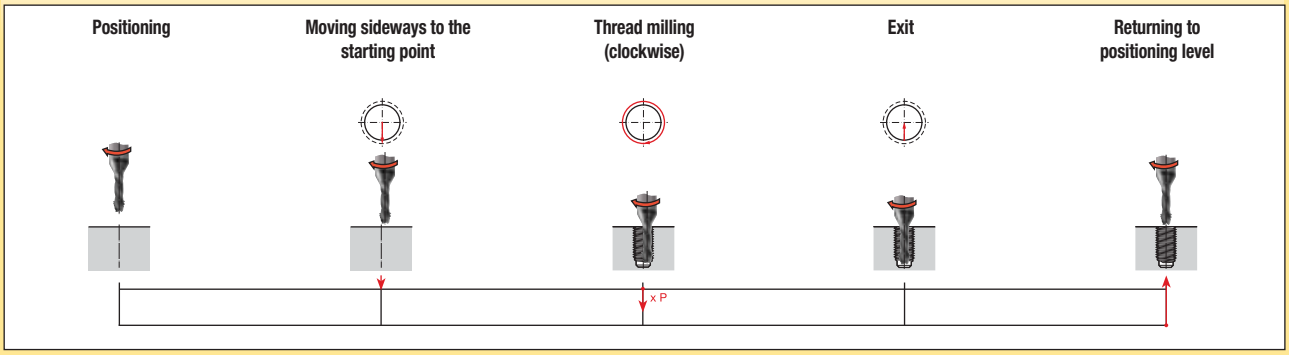
## Preparation

None

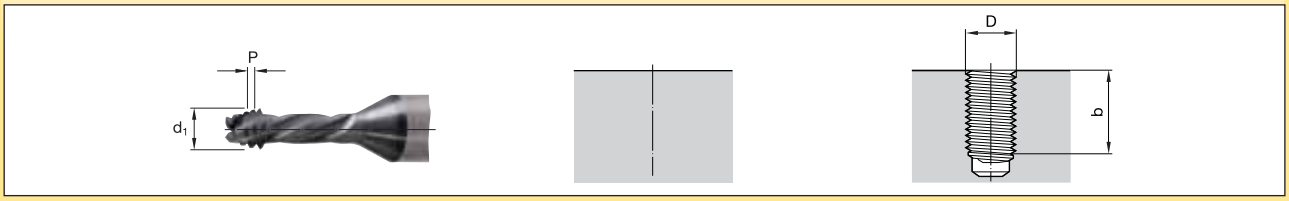
## Process Principle

Milling thread and core hole, countersinking (conventional milling)

## Cycle




## Required Specification Values




## Example

**Size — M10-6H**
Thread diameter D .....10mm
Pitch P .....1,5mm
Core hole diameter $D_1$ .....8,5mm

**Material — Hard steel, 50 HRC**

**Grade — KCU36**

**Tool — TM741 Right Hand**
Catalogue number .....TM741M100X150R2DHA
Number of teeth Z .....4
Tool diameter $d_1$ .....7,75mm*
Tool radius compensation k [1] .....0,08mm**
Tool radius to be programmed [2] .....3,795mm***
Thread depth b .....20mm
Cutting speed $v_c$ .....100 m/min
Feed (milling) $f_z$ .....0,04 mm/tooth
Number of turns [5] .....17

*(measured on the cutting part) **0,01 x D; adjust to application ***(1/2 $d_1$ - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi}$$ **S = 4109**

$$v_f = f_z \cdot Z \cdot n$$ **F = 657 (contour)**

$$N = \frac{v_f \text{ contour} \cdot (D-d_1)}{D}$$ **F = 148 (centre point)**

## Program to DIN 66025 (conventional milling, on the contour, incremental)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Positioning the tool** | N 10 | G 54 | G 90 | G 00 | X… | Y… | Z 1.500 | S 4109 | T01 [2] | M03 [6] |
| **Incremental programming** | N 20 | G 91 | | | | | | | | |
| **Moving sideways to the starting point** | N 30 | G 42 | G 01 | X 0 | Y-5 | F 657 (contour) | | [F 148] [4] (centre point) | | |
| **Thread milling** | N 40 | G 02 | | X 0 | Y 0 | Z-1.500 | I 0 | J 5.000 | | |
| **Repeat thread milling** | … [5] | | | | | | | | | |
| **Exit** | N 50 | G 40 | G 01 | X 0 | Y 5 | | | | | |
| **Retracting tool to positioning level** | N 70 | G 90 | G 00 | Z 2 | | | | | | |

## Cutting time $t_h$

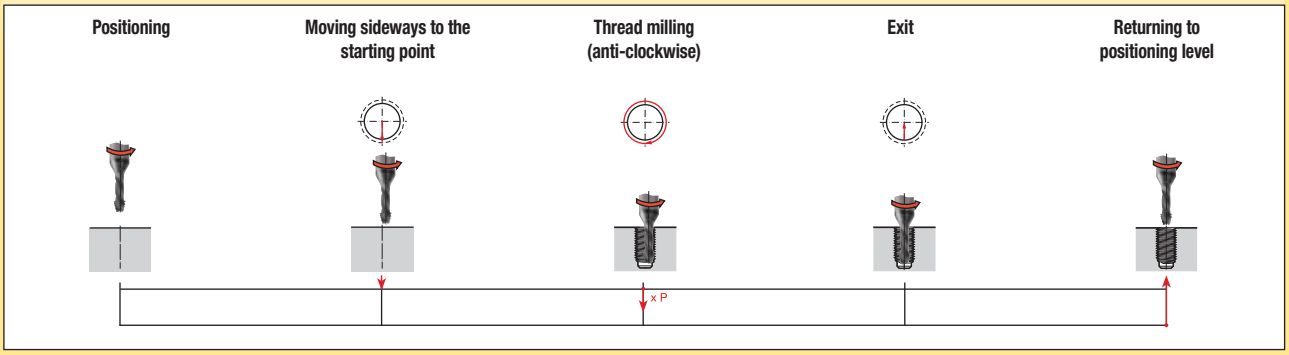
**51,6 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

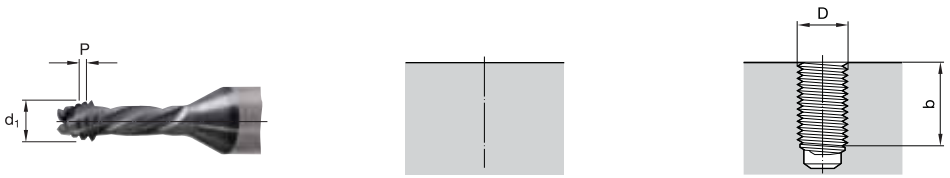
# Drill Thread Mill TM741 • Left Hand

| | |
|---|---|
| **Preparation** | None |
| **Process Principle** | Milling thread and core hole, countersinking (climb milling) |

## Cycle




## Required Specification Values




## Example

**Size — M10-6H**
Thread diameter D .....10mm
Pitch P .....1,5mm
Core hole diameter $D_1$ .....8,5mm

**Material — TiAl6V4 titanium**

**Grade — KCU36**

**Tool — TM741 Left Hand**
Catalogue number .....TM741M100X150L2DHA
Number of teeth Z .....4
Tool diameter $d_1$ .....7,75mm*
Tool radius compensation k [1] .....0,08mm**
Tool radius to be programmed [2] .....3,795mm***
Drilling/countersink depth $l_E$ .....20mm
Cutting speed $v_c$ .....100 m/min
Feed (milling) $f_z$ .....0,03 mm/tooth
Number of turns [5] .....17

*(measured on the cutting part) **(0,01 x D) ***(1/2 $d_1$ - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi} \qquad S = 4109$$

$$v_f = f_z \cdot Z \cdot n \qquad F = 493 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \qquad F = 111 \text{ (centre point)}$$

## Program to DIN 66025 (climb milling, on the contour, incremental)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Positioning the tool** | N 10 | G 54 | G 90 | G 00 | X… | Y… | Z 1.500 | S 4109 | T01 [2] | M04 |
| **Incremental programming** | N 20 | G 91 | | | | | | | |
| **Moving sideways to the starting point** | N 30 | G 42 | G 01 | X 0 | Y-5 | F 493 (contour) | | [F 111] [4] (centre point) | |
| **Thread milling** | N 40 | G 02 | | X 0 | Y 0 | Z-1.500 | I 0 | J 5.000 | |
| **Repeat thread milling** | … [5] | | | | | | | | |
| **Exit** | N 50 | G 40 | G 01 | X 0 | Y 5 | | | | |
| **Retracting tool to positioning level** | N 70 | G 90 | G 00 | Z 2 | | | | | |

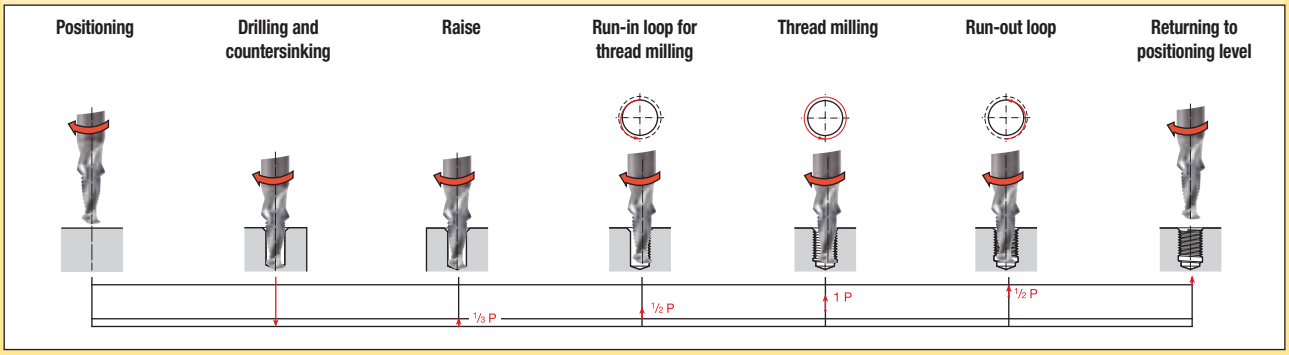
| | |
|---|---|
| **Cutting time $t_h$** | **68,8 seconds** |

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

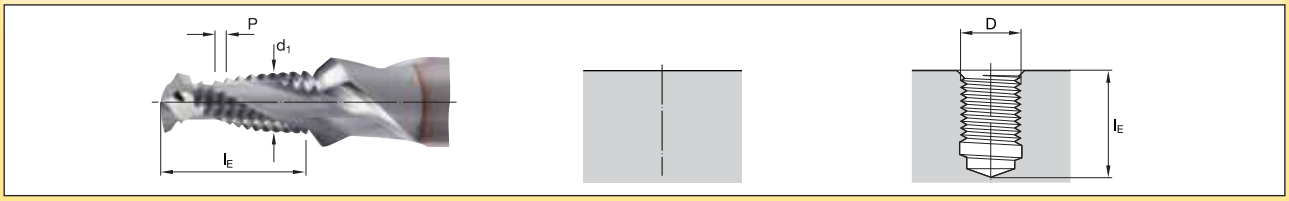
# Drill Thread Mill TM731

| | |
|---|---|
| **Preparation** | None |
| **Process Principle** | Drilling, countersinking, thread milling (climb milling) |

## Cycle




## Required Specification Values




## Example

**Size — M10-6H**
Thread diameter D .....10mm
Pitch P .....1,5mm
Core hole diameter $D_1$ .....8,5mm

**Material — Grey cast iron**

**Grade — KCU32**

**Tool — TM731**
Catalogue number .....TM731M100X150R2DHA
Number of teeth Z .....2
Tool diameter $d_1$ .....8,2mm*
Tool radius compensation k [1] .....0,1mm**
Tool radius to be programmed [2] .....4mm***
Drilling/countersink depth $l_E$.....19,11mm
Cutting speed $v_c$.....250 m/min
Feed (drilling, countersinking) $f_b$ .....0,25 mm/U
Feed (milling) $f_z$ .....0,1 mm/tooth

*(measured on the cutting part) **(0,01 x D) ***(1/2 $d_1$ - k)

| | |
|---|---|
| $N = \frac{V_c \cdot 1000}{d_1 \cdot \pi}$ | S = 9709 |
| $v_b = f_b \cdot n$ | F = 2427 (drilling, countersinking) |
| $v_f = f_z \cdot Z \cdot n$ | F = 1942 (contour) |
| $v_f = \frac{v_f \text{ contour} \cdot (D-d_1)}{D}$ | F = 350 (centre point) |

## Program to DIN 66025 (climb milling, on the contour, incremental)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Positioning the tool** | N 10 | G 54 | G 90 | G 00 | X… | Y… | Z 2 | S 9709 | T01 [2] | M03 |
| **Drilling and countersinking** | N 20 | G 91 | G 01 | Z-21.110 | F 2427 (drill, countersink) | | | | | |
| **Raise** | N 30 | G 01 | Z 0.500 | | | | | | | |
| **Moving sideways to the starting point** | N 40 | G 41 | Y-4.250 | F 971 (milling, 1/2 contour) | | | | [F 175] [3] (1/2 centre point) | | |
| **Run-in loop in arc** | N 50 | G 03 | X 0 | Y 9.250 | Z 0.750 | I 0 | J 4.625 | | | |
| **Thread milling** | N 60 | G 03 | X 0 | Y 0 | Z 1.500 | I 0 | J -5.000 | F1942 [F 350] [3] (centre point) | | |
| **Run-out loop in arc** | N 70 | G 03 | X 0 | Y-9.250 | Z 0.750 | I 0 | J- 4.625 | | | |
| **Exit** | N 80 | G 00 | G 40 | X 0 | Y 4.250 | | | | | |
| **Retracting tool to positioning level** | N 90 | G 90 | Z 2 | | | | | | | |

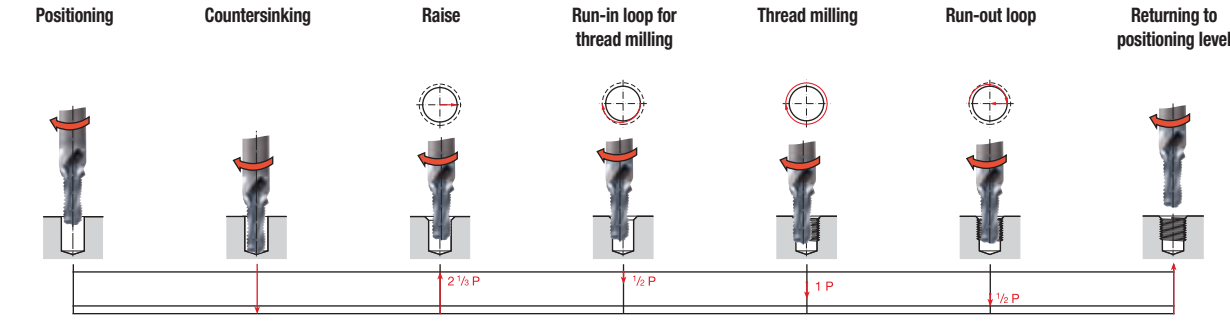
| | |
|---|---|
| **Cutting time $t_h$** | **2,3 seconds** |

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.

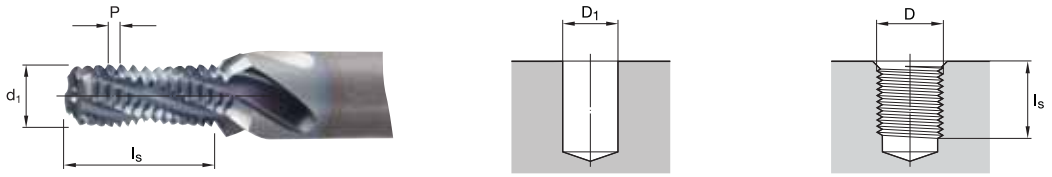
# Thread Mill TM721

| | |
|---|---|
| **Preparation** | Drilling of thread hole |
| **Process Principle** | Countersinking, thread milling (conventional milling) |

## Cycle




## Required Specification Values




## Example

**Size — M10-6H**
Thread diameter D .....10mm
Pitch P .....1,5mm
Core hole diameter $D_1$ .....8,5mm

**Material — Cast aluminium**

**Grade — KCU32**

**Tool — TM721**
Catalogue number .....TM721M100X150R2DHA
Number of teeth Z .....3
Tool diameter $d_1$ .....8,2mm*
Tool radius compensation k [1] .....0,1mm**
Tool radius to be programmed [2] .....4mm***
Countersink depth $l_s$ .....21,2mm
Cutting speed $v_c$ .....250 m/min
Feed (countersinking) $f_s$ .....0,3 mm/U
Feed (milling) $f_z$ .....0,09 mm/tooth

*(measured on the cutting part) **(0,01 x D) ***(1/2 $d_1$ - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi} \qquad S = 9709$$

$$v_s = f_s \cdot n \qquad F = 2913 \text{ (countersinking)}$$

$$v_f = f_z \cdot Z \cdot n \qquad F = 2622 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \cdot (D - d_1)}{D} \qquad F = 472 \text{ (centre point)}$$

## Program to DIN 66025 (conventional milling, on the contour, incremental)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Positioning the tool** | N 10 | G 54 | G 90 | G 00 | X… | Y… | Z 2 | S 9709 | T01 [2] | M03 |
| **Advancing tool to full thread depth** | N 20 | G 91 | Z-21.200 | | | | | | | |
| **Countersinking** | N 30 | G 01 | Z-2 | F 2913 (countersink) | | | | | | |
| **Raise** | N 40 | G 00 | Z 3.450 | | | | | | | |
| **Moving sideways to the starting point** | N 50 | G 42 | G01 | X 4.250 | F 1311 (milling, 1/2 contour) | | | [F 236] [3] (milling,1/2 centre point) | | |
| **Run-in loop in arc** | N 60 | G 02 | X-9.25 | Y 0.000 | Z-0.750 | I-4.625 | J 0 | | | |
| **Thread milling** | N 70 | G 02 | X 0 | Y 0 | Z-1.500 | I 5 | J 0.000 | F2622 [F 472] [3] (centre point) | | |
| **Run-out loop in arc** | N 80 | G 02 | X 9.25 | Y 0.000 | Z-0.750 | I 4.625 | J 0 | | | |
| **Exit** | N 90 | G 40 | G 01 | X-4.25 | | | | | | |
| **Retracting tool to positioning level** | N 100 | G 90 | G 00 | Z 2 | | | | | | |

| | |
|---|---|
| **Cutting time $t_h$** | **1,4 seconds** |

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the centre point feed themselves.

# Taps and Thread Milling Technical Information

The technical information in the following section can be used to assist you with your tapping and thread milling operations. Whether you are simply searching for information about tap dimensions and recommendations, or you're trying to solve basic tapping and thread milling problems, you will find the relevant data here.

## This Section Includes the Following Information:

- Illustrations of tap terms.
- Explanations of tap chamfers.
- Dimensional information for various tap styles and lengths.
- Tap limitation data.
- Chip handling methods for different tap styles.
- Tap recommendations.
- Descriptions of screw thread tolerance and tolerance information.
- Information regarding surface treatments and coatings.
- Guidelines and tables for determining tapping speeds.
- Troubleshooting charts.
- Hardness conversion table.
- A guide to Kennametal tapping application icons.
- Taps custom order worksheet.
- Thread Milling application sheet.

This section will further your knowledge of tapping and thread milling operations enabling you to maximise the value of your tools.

## How to Apply This Technical Information

Below is an example of where the technical information in this catalogue can be useful:

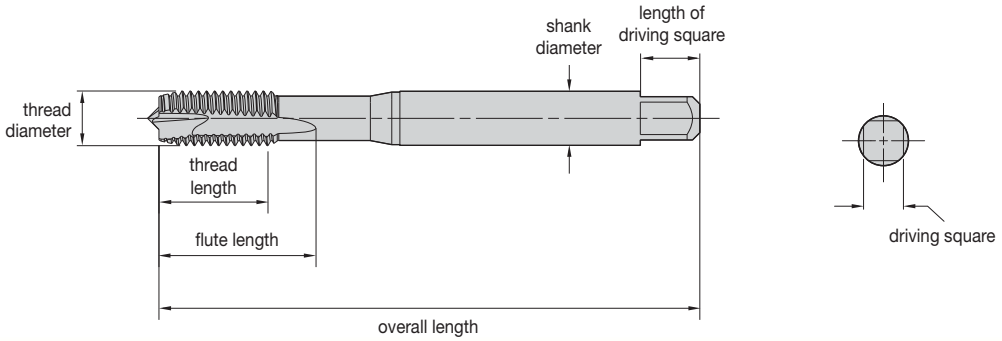
**Problem**

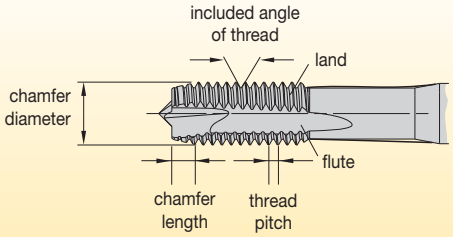
- Thread holes are oversized and taps are experiencing low life when working with stainless steel materials.

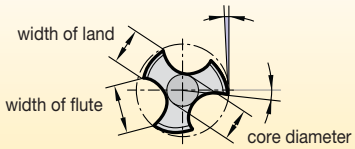
**Solution**

- Consult the troubleshooting portion of the Technical Information section to discover ways to correct the issue.

# Definitions and Angles, Centres and Flute Forms






## Flute Forms

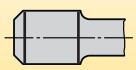
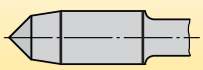
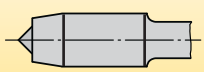
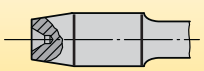
Straight flute, form C plug chamfer **without spiral point**

Right-hand spiral flute

Straight flute, form B plug chamfer **with spiral point**

Left-hand spiral flute

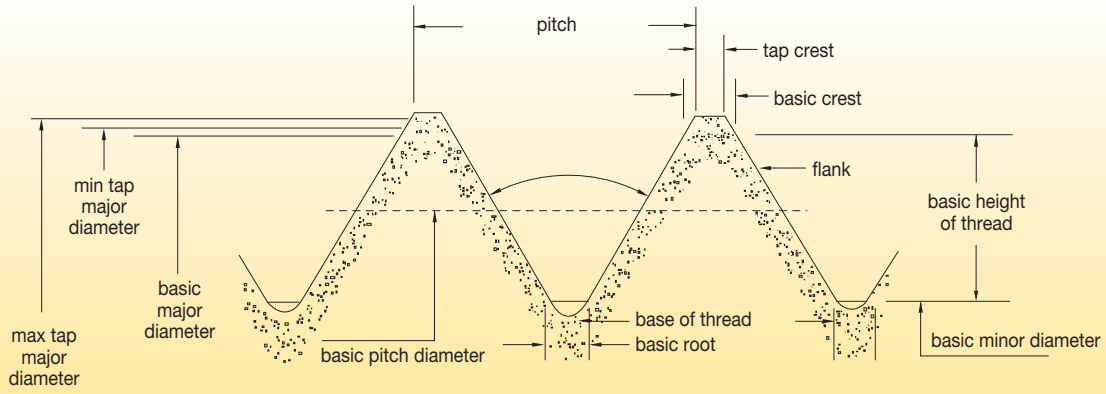
## Types of Centres (Standard to DIN 2197/DIN 2175)

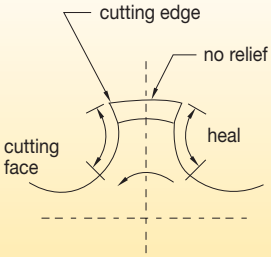
| centre on thread section | | | |
|---|---|---|---|
| tap diameter range | | | |
| ≤M10, 3/8 bottom or semi-bottom chamfer | ≤M10, 3/8 plug chamfer | >M10, 3/8 all chamfers | |
|  |  |  |  |
| external centre removed | full external centre | partial external centre | internal centre |

## Coolant Hole Types

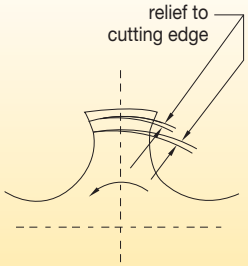
Axial coolant delivery with axial coolant exit hole

Axial coolant delivery with radial coolant hole exiting in the flutes

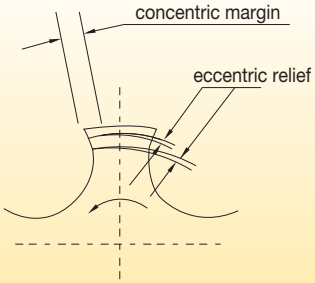


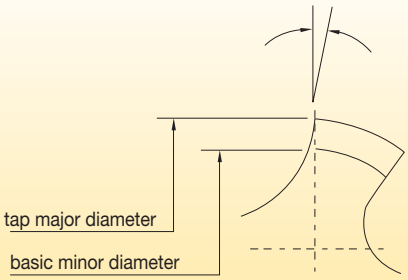

**Concentric**



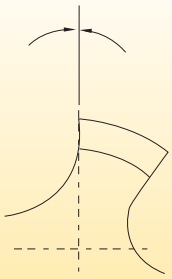

**Eccentric Relief**



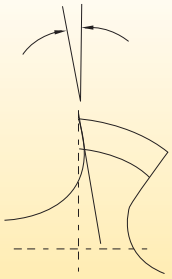

**Con-Eccentric Relief**



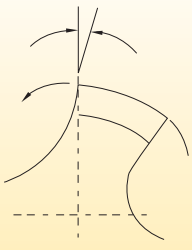

**Negative Hook**



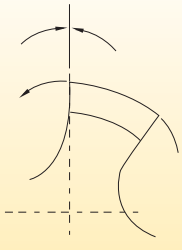
**0° Hook**



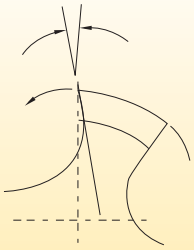
**Positive Hook**



**Negative Rake**



**Radial Rake**



**Positive Rake**

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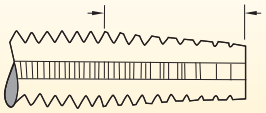
## Tap Chamfers • DIN Taps

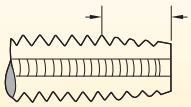
**Taper Chamfer**
**7–10 Pitches**



**Form A** (6–8 pitches)

The Form A chamfer has the longest standard chamfer ensuring easier starting. It provides the longest life because of more working teeth.

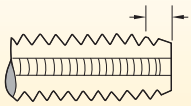
**Plug Chamfer**
**3–5 Pitches**



**Form B/D** (3,5–5 pitches)

The most common chamfers for use by hand or machine in through hole. Form B applies to spiral-point taps, and Form D applies to straight-flute and spiral-flute taps. This chamfer is more efficient than a Form E or Form C chamfers.

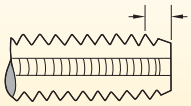
**Semi-Bottoming Chamfer**
**2–3 Pitches**



**Form C** (2–3 pitches)

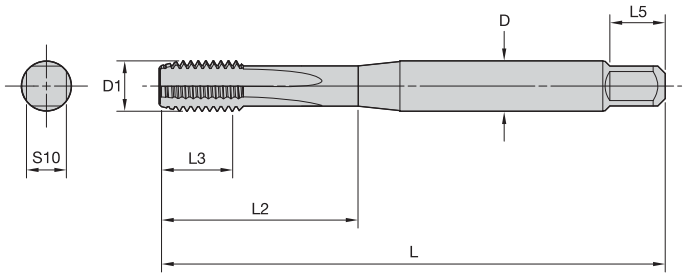
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a Form E chamfer.

**Full Bottoming Chamfer**
**1–2 Pitches**



**Form E** (2–3 pitches)

For threading close to the bottom of blind holes, the Form E chamfer is the least efficient chamfer available.

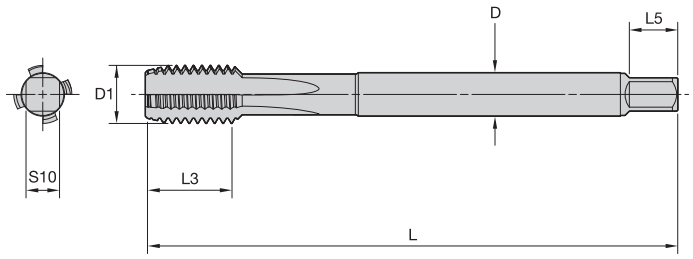



## DIN 371

| D1 | pitch | D | L | L3* | L2 | L5 | S10 |
|---|---|---|---|---|---|---|---|
| M3 | 0,5 | 3,5 | 56 | 11 | 18 | 6 | 2,7 |
| M3,5 | 0,6 | 4 | 56 | 12 | 20 | 6 | 3 |
| M4 | 0,7 | 4,5 | 63 | 13 | 21 | 6 | 3,4 |
| M4,5 | 0,75 | 6 | 70 | 16 | 25 | 8 | 4,9 |
| M5 | 0,8 | 6 | 70 | 16 | 25 | 8 | 4,9 |
| M6 | 1 | 6 | 80 | 19 | 30 | 8 | 4,9 |
| M7 | 1 | 7 | 80 | 19 | 30 | 8 | 5,5 |
| M8 | 0,75 | 8 | 80 | 18 | 30 | 9 | 6,2 |
| M8 | 1,25 | 8 | 90 | 22 | 35 | 9 | 6,2 |
| M9 | 0,75 | 9 | 80 | 18 | 30 | 10 | 7 |
| M9 | 1,25 | 9 | 90 | 22 | 35 | 10 | 7 |
| M10 | 1 | 10 | 90 | 20 | 35 | 11 | 8 |
| M10 | 1,5 | 10 | 100 | 24 | 39 | 11 | 8 |

*Maximum

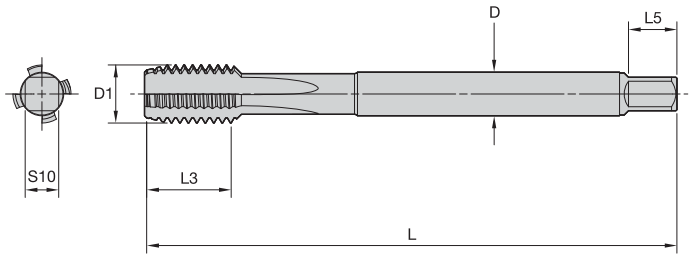





## DIN 376

| D1 | pitch | D | L | L3* | L5 | S10 |
|---|---|---|---|---|---|---|
| M8 | 1,25 | 6 | 90 | 22 | 8 | 4,9 |
| M9 | 1,25 | 7 | 90 | 22 | 8 | 5,5 |
| M10 | 1,5 | 7 | 100 | 24 | 8 | 5,5 |
| M11 | 1,5 | 8 | 100 | 24 | 9 | 6,2 |
| M12 | 1,75 | 9 | 110 | 28 | 10 | 7 |
| M14 | 2 | 11 | 110 | 30 | 12 | 9 |
| M16 | 2 | 12 | 110 | 32 | 12 | 9 |
| M18 | 2,5 | 14 | 125 | 34 | 14 | 11 |
| M20 | 2,5 | 16 | 140 | 34 | 15 | 12 |
| M22 | 2,5 | 18 | 140 | 34 | 17 | 14,5 |
| M24 | 3 | 18 | 160 | 38 | 17 | 14,5 |
| M27 | 3 | 20 | 160 | 38 | 19 | 16 |
| M30 | 3,5 | 22 | 180 | 45 | 21 | 18 |
| M33 | 3,5 | 25 | 180 | 50 | 23 | 20 |
| M36 | 4 | 28 | 200 | 56 | 25 | 22 |
| M39 | 4 | 32 | 200 | 60 | 27 | 24 |
| M42 | 4,5 | 32 | 200 | 60 | 27 | 24 |
| M45 | 4,5 | 36 | 220 | 65 | 32 | 29 |

*Maximum




## DIN 374

| D1 | pitch minimum | pitch maximum | D | L | L3* | L5 | S10 |
|---|---|---|---|---|---|---|---|
| M8 | 0,2 | 0,75 | 6 | 80 | 18 | 8 | 4,9 |
| M8 | – | 1 | 6 | 90 | 22 | 8 | 4,9 |
| M9 | 0,2 | 0,75 | 7 | 80 | 18 | 8 | 5,5 |
| M9 | – | 1 | 7 | 90 | 22 | 8 | 5,5 |
| M10 | 0,2 | 1 | 7 | 90 | 20 | 8 | 5,5 |
| M10 | – | 1,25 | 7 | 100 | 24 | 8 | 5,5 |
| M11 | 0,35 | 1 | 8 | 90 | 20 | 9 | 6,2 |
| M12 | 0,35 | 1,5 | 9 | 100 | 22 | 10 | 7 |
| M14 | 0,35 | 1,5 | 11 | 100 | 22 | 12 | 9 |
| M16 | 0,35 | 1,5 | 12 | 100 | 22 | 12 | 9 |
| M16 | – | 2 | 12 | 110 | 32 | 12 | 9 |
| M18 | 0,35 | 1,5 | 14 | 110 | 25 | 14 | 11 |
| M18 | – | 2 | 14 | 125 | 34 | 14 | 11 |
| M20 | 0,35 | 1,5 | 16 | 125 | 25 | 15 | 12 |
| M20 | – | 2 | 16 | 140 | 34 | 15 | 12 |
| M22 | 0,35 | 1,5 | 18 | 125 | 25 | 17 | 14,5 |
| M22 | – | 2 | 18 | 140 | 34 | 17 | 14,5 |
| M24 | 0,35 | 2 | 18 | 140 | 28 | 17 | 14,5 |
| M27 | 0,35 | 2 | 20 | 140 | 28 | 19 | 16 |
| M30 | 0,35 | 2 | 22 | 150 | 28 | 21 | 18 |
| M30 | – | 3 | 22 | 180 | 45 | 21 | 18 |

*Maximum

## Through Holes
## Push Chips

Spiral Point LHSF

- Spiral point or LHSF (Left-Hand Spiral Flute).
- Ideal for materials with long chips.

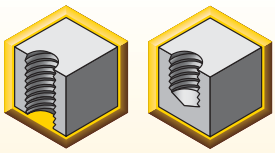
## Blind Holes
## Pull Chips

RHSF

- RHSF (Right-Hand Spiral Flute).
- Ideal for materials with long chips.

## Blind or Through Holes
## Store Chips

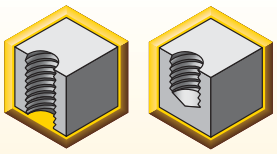
STFL



- STFL (Straight Flute).
- Ideal for materials with short chips.

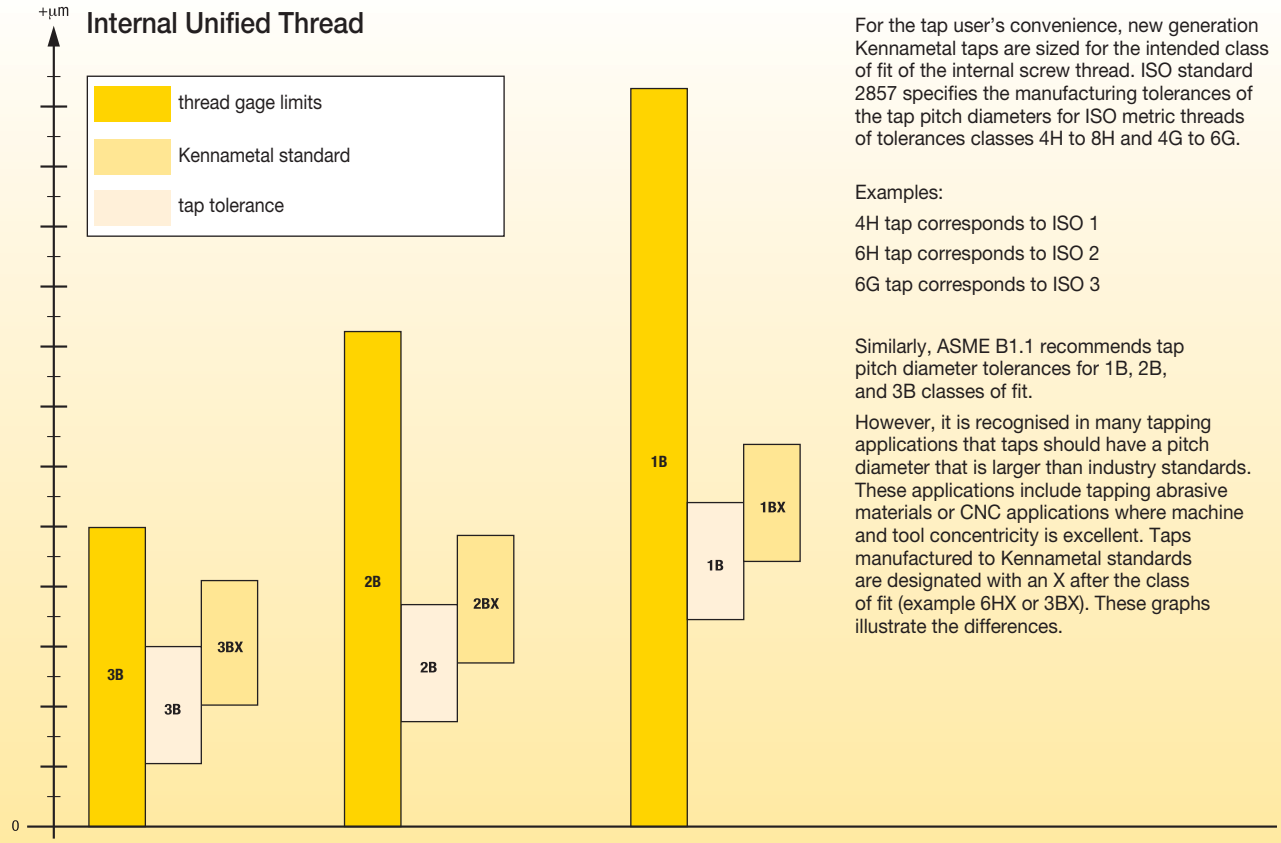
## Blind or Through Holes
## No Chips

Forming



- Forming.
- Ideal for ductile materials <32 HRC.

## Internal Unified Thread




For the tap user's convenience, new generation Kennametal taps are sized for the intended class of fit of the internal screw thread. ISO standard 2857 specifies the manufacturing tolerances of the tap pitch diameters for ISO metric threads of tolerances classes 4H to 8H and 4G to 6G.

Examples:

4H tap corresponds to ISO 1

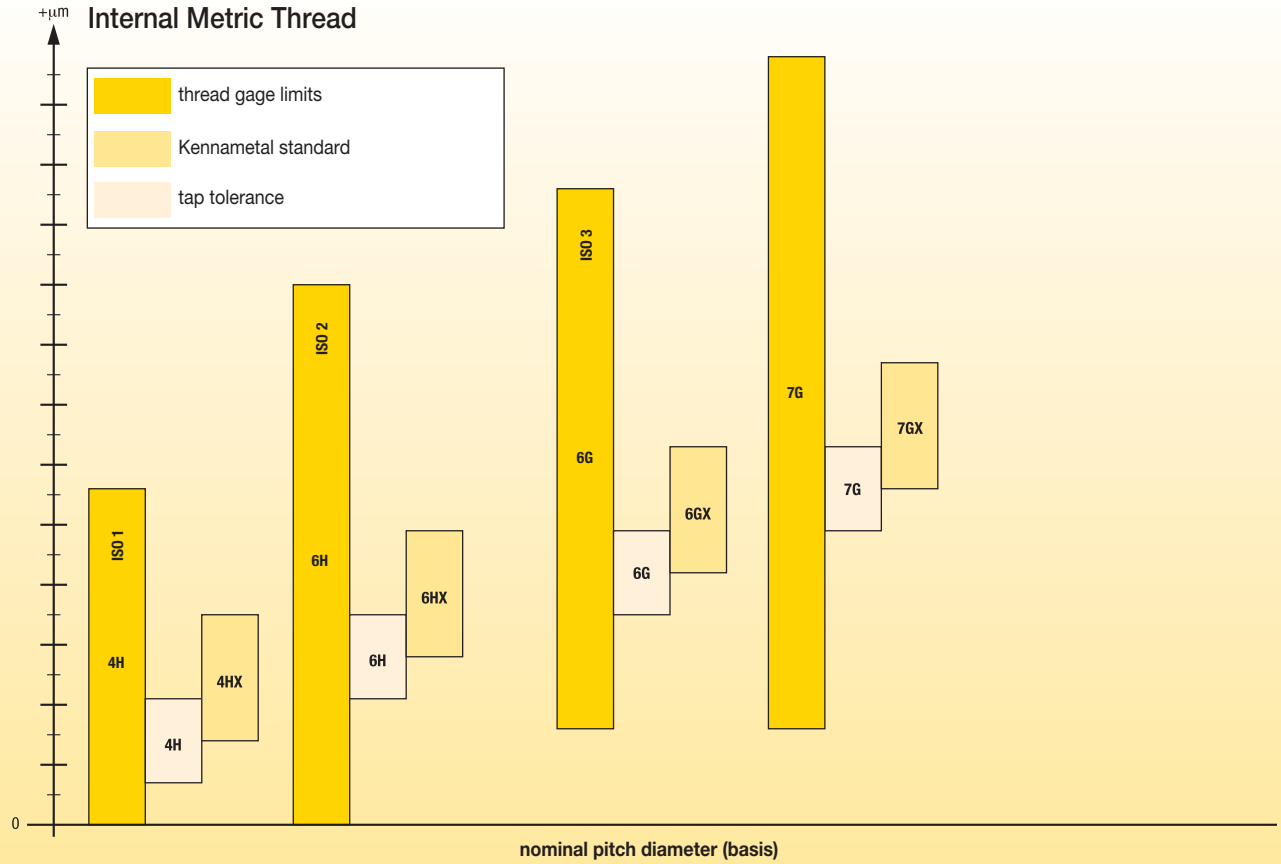
6H tap corresponds to ISO 2

6G tap corresponds to ISO 3

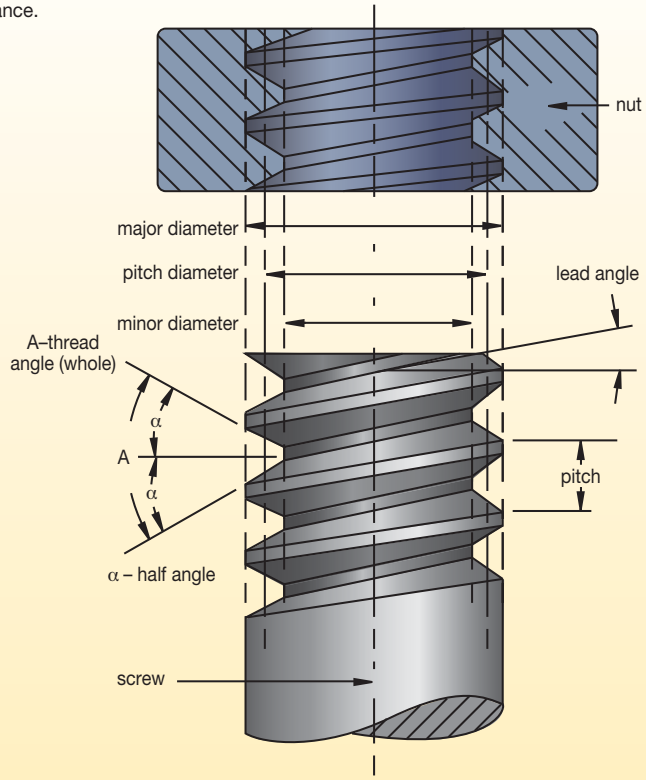
Similarly, ASME B1.1 recommends tap pitch diameter tolerances for 1B, 2B, and 3B classes of fit.

However, it is recognised in many tapping applications that taps should have a pitch diameter that is larger than industry standards. These applications include tapping abrasive materials or CNC applications where machine and tool concentricity is excellent. Taps manufactured to Kennametal standards are designated with an X after the class of fit (example 6HX or 3BX). These graphs illustrate the differences.

## Internal Metric Thread



It is generally recognised that, in mass production, it is impossible to reproduce in exact detail the theoretically perfect product as laid out on the drawing board. The allowed slight variation between the theoretically perfect product drawing and each unit of the actual product is called the tolerance.




**Allowance**

An intentional difference in correlated dimensions of mating parts. It is the minimum clearance or maximum interference between such parts.

**Angle of Thread**

The angle included between the flanks of the thread measured in an axial plane

**Half Angle of Thread**

The angle included between a flank of the thread and the normal (90°) to the axis, measured in an axial plane.

**Lead of Thread**

The distance a screw thread advances axially in one turn. On a single-thread screw, the lead and pitch are identical. On a double thread, the lead is 2x pitch; on a triple thread, the lead is 3x pitch, etc.

**Major Diameter**

The largest diameter of a straight-screw thread.

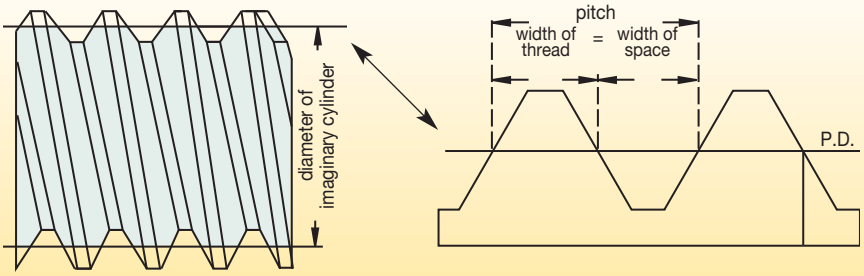
**Minor Diameter**

The smallest diameter of a straight-screw thread.

**Pitch**

The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the axis.

The pitch in inches = $\frac{1}{\text{number of threads per inch}}$




**Pitch Diameter**

On a straight-screw thread, the diameter of an imaginary cylinder that would pass through the threads at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.

# More than just the right tool • the ultimate solution.

## That's **Beyond BLAST.**™

## That's **Different Thinking.**

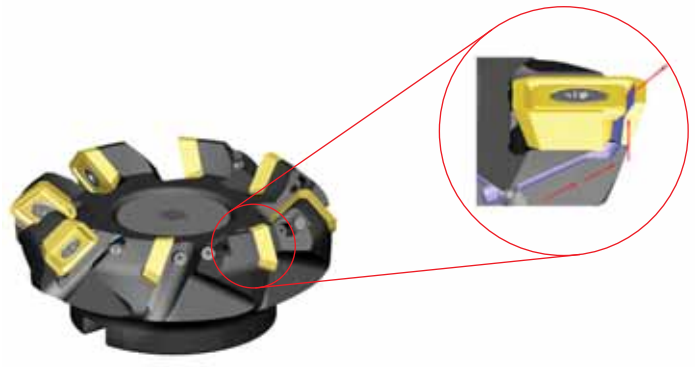
At Kennametal, innovation follows vision. Our revolutionary products and services are inspired by asking "what if?" The solutions that follow — like our Beyond BLAST through-coolant inserts — deliver remarkable results in the world's most demanding machining environments.

A cutting-edge insert that delivers coolant precisely at the cutting edge. Now that's Different Thinking. That's Kennametal.

To learn more about your productivity gains using Beyond BLAST technology, visit www.kennametal.com.

### Milling

- Beyond BLAST technology uses low-pressure conditions to offer many of the high-pressure performance benefits.
- Delivers superior performance on titanium, using either high- or low-pressure coolant systems.
- Effective thermal management results in reduced cutting temperatures, improved lubricity, superior chip control, and longer tool life.
- Beyond BLAST for milling increases tool life by up to 100% compared with conventional coolant delivery systems.



beyond™ BLAST™

Factors when trying to determine the best tapping speeds:

- Material to be tapped
- Length of chamfer on tap
- Percentage of full thread to be cut
- Length of hole (depth of thread)
- Pitch of thread
- Cutting fluids
- Machine equipment
- Horizontal or vertical tapping

The best and most efficient operating speeds for taps cannot be calculated with the same certainty, as for many other metalcutting tools.

With other tools, the feed per revolution can be set at any desired point and can be varied as conditions demand. Taps, on the other hand, must always be advanced at a rate equal to one pitch for every revolution, or one lead in the case of multistart threads.

The style of tap may vary the conditions. For example, with a bottoming tap, the chamfer cuts a heavy chip, while with a taper tap, the chamfer cuts a very thin chip.

The depth of thread also varies, depending on the pitch. The coarser the thread, the greater the advance of the tap per revolution and the greater the amount of material removed.

The method of feeding the tap, and the type of equipment for driving, also influences the permissible speeds. If taps are mechanically fed at the proper rate of advance, they can be operated at higher speeds than if used with flexible tapping holders on machines with poor feed control.

**Speeds may be modified to take into account any or all of these factors:**

- Speeds must be lowered as length of thread increases because, in deep thread holes, the accumulated chips increase friction and interfere with lubrication.
- Bottoming taps must be run slower than plug taps.
- Tapping full height of thread calls for slower speed than if the commercial 75% height only is required.
- Coarse-thread taps in the larger diameters should be run more slowly than fine-thread taps of the same diameters.
- The quantity and quality of cutting fluid may affect the permissible speeds as much as 100%.
- Taper threaded taps, such as pipe taps, should be operated from 1/2–3/4 the speed of a straight thread tap of comparable major diameter.
- Increase the speed of coolant taps up to 25%.



## RPM Formulas

SFM = Surface Feet per Minute

RPM = Revolutions per Minute

IPM = Inches per Minute

TPI = Threads per Inch

S m/min = Surface Metres per Minute

$\Pi = 3.1416$

mm/min = millimetres per minute

P = Pitch (1/number of threads per inch)

### Inch Sizes

$$SFM = \frac{RPM \times \text{tool diameter}}{3.82} \quad \text{or} \quad 0.26 \times RPM \times \text{tool diameter}$$

$$RPM = \frac{3.82 \times SFM}{\text{tool diameter}}$$

$$IPM = \frac{RPM}{TPI^*} \quad \text{or} \quad {}^*P \times RPM$$

### Metric Sizes

$$S\ m/min = \frac{\Pi \times \text{tool diameter} \times RPM}{1000}$$

$$RPM = \frac{mm/min \times 1000}{\Pi \times \text{tool diameter}}$$

$$mm/min = mm\ P \times RPM$$

## Metric

| | Vc = metres per minute (m/min) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1,5 | 3 | 4,5 | 6 | 7,5 | 10 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 |
| metric taps | revolutions per minute (RPM) | | | | | | | | | | | | | | | | | |
| M1 | 490 | 979 | 1469 | 1959 | 2449 | 2938 | 3918 | 4897 | 5877 | 6856 | 7836 | 8815 | 9795 | 10774 | 11754 | 12733 | 13713 | 14692 |
| M2 | 242 | 484 | 725 | 967 | 1209 | 1451 | 1934 | 2418 | 2901 | 3385 | 3868 | 4352 | 4835 | 5319 | 5803 | 6286 | 6770 | 7253 |
| M3 | 162 | 324 | 486 | 347 | 809 | 971 | 1295 | 1619 | 1942 | 2266 | 2590 | 2914 | 3237 | 3561 | 3885 | 4208 | 4532 | 4856 |
| M3.5 | 138 | 277 | 415 | 554 | 692 | 830 | 1107 | 1384 | 1661 | 1938 | 2214 | 1491 | 2768 | 3045 | 3322 | 3599 | 3875 | 4152 |
| M4 | 122 | 243 | 365 | 487 | 608 | 730 | 973 | 1217 | 1460 | 1703 | 1946 | 2190 | 2433 | 2676 | 2920 | 3163 | 3406 | 3650 |
| M5 | 97 | 194 | 291 | 388 | 485 | 582 | 776 | 970 | 1163 | 1357 | 1551 | 1745 | 1939 | 2133 | 2327 | 2521 | 2715 | 2905 |
| M6 | 81 | 162 | 243 | 324 | 405 | 486 | 647 | 809 | 971 | 1133 | 1295 | 1457 | 1619 | 1781 | 1942 | 2104 | 2266 | 2428 |
| M7 | 69 | 138 | 208 | 277 | 346 | 415 | 554 | 692 | 830 | 969 | 1107 | 1246 | 1384 | 1522 | 1661 | 1799 | 1938 | 2076 |
| M8 | 61 | 121 | 182 | 243 | 303 | 364 | 485 | 606 | 728 | 849 | 970 | 1091 | 1213 | 1334 | 1455 | 1577 | 1698 | 1819 |
| M10 | 48 | 97 | 145 | 194 | 242 | 291 | 388 | 485 | 582 | 679 | 776 | 873 | 970 | 1067 | 1163 | 1260 | 1357 | 1454 |
| M12 | 40 | 81 | 121 | 162 | 202 | 243 | 324 | 405 | 486 | 567 | 647 | 728 | 809 | 890 | 971 | 1052 | 1133 | 1214 |
| M14 | 35 | 69 | 104 | 139 | 173 | 208 | 277 | 347 | 416 | 485 | 555 | 624 | 693 | 763 | 832 | 901 | 971 | 1040 |
| M16 | 30 | 61 | 91 | 121 | 152 | 182 | 243 | 303 | 364 | 424 | 485 | 546 | 606 | 667 | 728 | 788 | 849 | 910 |
| M18 | 27 | 54 | 81 | 108 | 135 | 162 | 216 | 269 | 323 | 377 | 431 | 485 | 539 | 593 | 647 | 700 | 754 | 808 |
| M20 | 24 | 49 | 73 | 97 | 121 | 146 | 194 | 243 | 291 | 340 | 388 | 437 | 485 | 534 | 582 | 631 | 680 | 728 |
| M22 | 22 | 44 | 66 | 88 | 110 | 132 | 176 | 221 | 265 | 309 | 353 | 397 | 441 | 485 | 529 | 573 | 618 | 662 |
| M24 | 20 | 40 | 61 | 81 | 101 | 121 | 162 | 202 | 243 | 283 | 323 | 364 | 404 | 445 | 485 | 526 | 566 | 606 |
| M27 | 18 | 36 | 54 | 72 | 90 | 108 | 144 | 180 | 216 | 252 | 287 | 323 | 359 | 395 | 431 | 467 | 503 | 539 |
| M30 | 16 | 32 | 49 | 65 | 81 | 97 | 129 | 162 | 194 | 226 | 259 | 291 | 323 | 356 | 388 | 420 | 453 | 485 |

## Partial List of Solutions to Tapping Problems

| application | symptom | common cause | remedy |
|---|---|---|---|
| **general** | gage out of limits | tap size and gage mismatch | select tap size for gage |
| | oversize thread | alignment, spindle feed | correct |
| | oversize at top | runout or alignment | correct |
| | go gage binds part way | worn tool, tap cuts off lead | replace tap, synchronous holder |
| | thread shaving | feed error, high axial force | program, synchronous holder |
| | chipping | high cutting force, worn tap | tap geometry, replace tap |
| | breakage | chip jamming flutes | tap geometry, tapping depth |
| | – | worn tool, high torque | replace tap with new tool |
| | short life, low speed | excessive wear | SC or HSS-E-PM HP taps |
| **steel** | birdnest blind hole | long, ductile chips | GT30 GP6505 (oxide), peck feed |
| | chipping | high material hardness | GT00, GT02 WP31MG (TiN) |
| | breakage in blind holes | hole depth >2D, chip jamming | GT04 WH36MG (TiN/$MoS_2$) |
| **stainless steel** | oversize thread, low life | galling | GT20, GT30 GM6515 (TiN-CrC/C) |
| | short life | work hardened core hole | replace drill |
| **cast iron** | excessive wear | abrasion | GT40 GP6520 (TiCN) |
| **aluminium, cast** | excessive wear | high silicon | GT40 GP6520 (TiCN) |
| **aluminium, wrought** | oversize thread | galling | GT70, GT80 WN48EG (DLC) |
| **nickel, cobalt alloys** | short life | high cutting temperature | GT10, GT12 WS32MG (TiCN) |
| **titanium** | short life | high cutting temperature | GT14, GT16 WN35MG (TiN-DLC) |

## Thread Mills

| | vibration marks | major crest wear | edge chipping | cone shaped thread | entry marks |
|---|---|---|---|---|---|
| **cutting speed** | check | reduce | – | – | – |
| **feed per tooth** | check | increase | reduce | – | – |
| **workpiece clamping** | improve | improve | improve | – | improve |
| **machine tool stability** | improve | improve | improve | – | improve |
| **cantilever arm** | shorten | shorten | – | – | shorten |
| **helix angle** | increase | reduce | – | – | – |
| **radial runout** | check | check | – | – | – |
| **coating** | – | improve | improve | – | – |
| **milling operation** | – | climb mill | climb mill | climb mill | – |
| **line feed/ entry ramp** | check | check | – | – | improve |
| **coolant pressure** | – | check (>20 bar, 290 psi) | check (>20 bar, 290 psi) | – | – |

# Tap Custom-Order Worksheet

Use this Custom-Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your Kennametal Distributor.

Trust our experienced distributors and Kennametal engineering team to design the best solution for you.

**1. Start with the standard product most similar to your specifications:**

**catalogue number** _____ **grade/coating** _____

**2. Type of tap needed:**

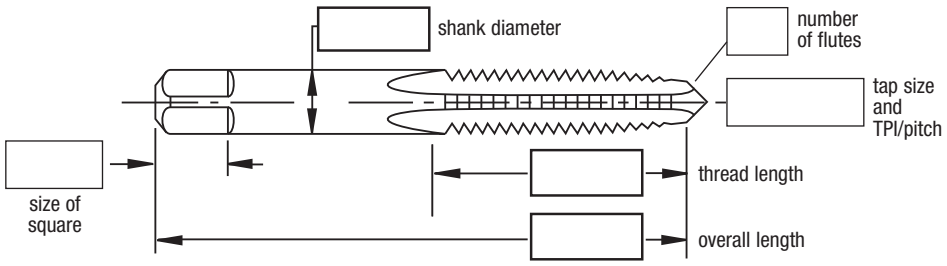
☐ solid carbide ☐ high performance HSS ☐ general purpose ☐ spiral point
☐ hand ☐ forming ☐ spiral flute
_____ pipe (and style) _____ other

**3. Direction of cut** (circle one)**:** left hand right hand

**4. Material overview:**

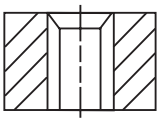
☐ ANSI ☐ DIN ☐ JIS ☐ other

**5. Desired dimension:**

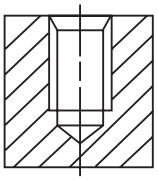



**6. Choose one:**

**through hole:**
hole diameter _____
hole depth _____



**blind hole:**
hole diameter _____
hole depth _____



**7. Chamfer:**

☐ taper: 7–10 pitch ☐ plug: 3–5 pitch ☐ semi-bottom: 2–3 pitch ☐ bottom: 1–2 pitch

**8. Class of fit:** **H limit** _____ **metric D limit** _____ **diameter pitch limit** _____

**9. Workpiece material:** _____

**10. Hardness:** _____

**11. Number of taps required:** _____

**12. Price**
*Contact your Authorised Kennametal Distributor partners.*

**13. Other comments or special characteristics:**

| | |
|---|---|
| **customer company name** | **date** |
| **address** | **phone number** |
| **city, state, zip** | **fax number** |
| **customer contact** | **customer email address** |
| **sales representative** | |

# Application Sheet for Thread Milling

| **Test form thread data:** | **Date:** |
|---|---|

## Customer Data

| | |
|---|---|
| Company: | Department: |
| Street: | Position: |
| Postal code: | Telephone: |
| City: | Fax: |
| Country: | E-mail: |

## Tool Data

| | |
|---|---|
| Engaged Kennametal tool: | Tool life: |
| | |
| Competitive tool: | |

## Workpiece Data

| | | |
|---|---|---|
| Thread size: | | Name of workpiece: |
| Class of fit: | | Picture, sketch... |
| Thread depth: | mm | |
| Thread type: | ☐ Through hole | ☐ Blind hole |
| Drill hole ø: | mm | |
| Depth of drill hole: | mm | |
| Type of drilled hole: | ☐ Drilled | ☐ No hole |
| Material: | | |
| Hardness: | | |

## Machine Data

| | | | | | |
|---|---|---|---|---|---|
| Manufacturer: | | | Description: | | |
| CNC-machine type: | ☐ Turning machine | ☐ Milling machine | Working direction: | ☐ Horizontal | ☐ Vertical |
| Control type: | ☐ DIN | ☐ Heidenhain | Coolant: | ☐ Emulsion<br>☐ Compressed air | ☐ MQL<br>☐ Dry |
| Coolant supply type: | ☐ Internal | ☐ External | Coolant pressure: | | ☐ Bar |
| Revolutions max: | | ☐ 1/min | Spindle power: | | kW |
| Clamping device: | ☐ Weldon®<br>☐ Shrinking | ☐ Collet<br>☐ Hydraulic expansion | | | |

## Cutting Conditions

| | | | | | |
|---|---|---|---|---|---|
| Cutting speed vc: | | m/min | Revolutions: | | 1/min |
| Feed fz: | | mm/tooth | Programmed feed: | | mm/min |
| Milling direction | ☐ Climb milling | ☐ Down milling | Type of feed: | ☐ Feed on contour | ☐ Feed on center |
| Allocated cut over depth of thread: | ☐ Yes | ☐ No | Allocated cut over profile: | ☐ By depth of profile | ☐ By thread depth |
| Number of cuts: | | | Number of cuts: | | |

Knowing the hardness of the work material to be tapped is essential in selecting the best tap for the job.

| 10 mm/min ball 3000 kg | 120° cone 150 kg | 1/16" ball 100 kg | model C | 1000 lb per sq. in. | 10 mm/min ball 3000 kg | 120° cone 150 kg | 1/16" ball 100 kg | model C | 1000 lb per sq. in. |
|---|---|---|---|---|---|---|---|---|---|
| Brinell | Rockwell C | Rockwell B | Shore Scleroscope | tensile strength | Brinell | Rockwell C | Rockwell B | Shore Scleroscope | tensile strength |
| 800 | 72 | – | 100 | – | 276 | 30 | 105 | 42 | 136 |
| 780 | 71 | – | 99 | – | 269 | 29 | 104 | 41 | 132 |
| 760 | 70 | – | 98 | – | 261 | 28 | 103 | 40 | 129 |
| 745 | 68 | – | 97 | 367 | 258 | 27 | 102 | 39 | 127 |
| 725 | 67 | – | 96 | 357 | 255 | 26 | 102 | 39 | 125 |
| 712 | 66 | – | 95 | 350 | 249 | 25 | 101 | 38 | 123 |
| 682 | 65 | – | 93 | 337 | 245 | 24 | 100 | 37 | 119 |
| 668 | 64 | – | 91 | 326 | 240 | 23 | 99 | 36 | 117 |
| 652 | 63 | – | 89 | 318 | 237 | 23 | 99 | 35 | 115 |
| 626 | 62 | – | 87 | 306 | 229 | 22 | 98 | 34 | 113 |
| 614 | 61 | – | 85 | 299 | 224 | 21 | 97 | 33 | 110 |
| 601 | 60 | – | 83 | 292 | 217 | 20 | 96 | 33 | 107 |
| 590 | 59 | – | 81 | 290 | 211 | 19 | 95 | 32 | 104 |
| 576 | 57 | – | 79 | 281 | 206 | 18 | 94 | 32 | 102 |
| 552 | 56 | – | 76 | 270 | 203 | 17 | 94 | 31 | 100 |
| 545 | 55 | – | 75 | 268 | 200 | 16 | 93 | 31 | 98 |
| 529 | 54 | – | 74 | 259 | 196 | 15 | 92 | 30 | 96 |
| 514 | 53 | 120 | 72 | 254 | 191 | 14 | 92 | 30 | 94 |
| 502 | 52 | 119 | 70 | 247 | 187 | 13 | 91 | 29 | 92 |
| 495 | 51 | 119 | 69 | 244 | 185 | 12 | 91 | 29 | 91 |
| 477 | 49 | 118 | 67 | 233 | 183 | 11 | 90 | 28 | 90 |
| 461 | 48 | 117 | 66 | 227 | 180 | 10 | 89 | 28 | 89 |
| 451 | 47 | 117 | 65 | 223 | 175 | 9 | 88 | 27 | 86 |
| 444 | 46 | 116 | 64 | 219 | 170 | 7 | 87 | 27 | 84 |
| 427 | 46 | 115 | 62 | 209 | 167 | 6 | 87 | 27 | 82 |
| 415 | 44 | 115 | 60 | 204 | 165 | 5 | 86 | 26 | 81 |
| 401 | 43 | 114 | 58 | 196 | 163 | 4 | 85 | 26 | 80 |
| 388 | 42 | 114 | 57 | 191 | 160 | 3 | 84 | 25 | 78 |
| 375 | 41 | 113 | 55 | 184 | 156 | 2 | 83 | 25 | 76 |
| 370 | 40 | 112 | 54 | 182 | 154 | 1 | 82 | 25 | 75 |
| 362 | 39 | 111 | 53 | 179 | 152 | – | 82 | 24 | 74 |
| 351 | 38 | 111 | 51 | 173 | 150 | – | 81 | 24 | 74 |
| 346 | 37 | 110 | 50 | 170 | 147 | – | 80 | 24 | 72 |
| 341 | 37 | 110 | 49 | 168 | 145 | – | 79 | 23 | 71 |
| 331 | 36 | 109 | 47 | 163 | 143 | – | 79 | 23 | 70 |
| 323 | 35 | 109 | 46 | 158 | 141 | – | 78 | 23 | 69 |
| 311 | 34 | 108 | 46 | 153 | 140 | – | 77 | 22 | 69 |
| 301 | 33 | 107 | 45 | 148 | 135 | – | 75 | 22 | 67 |
| 293 | 32 | 106 | 44 | 144 | 130 | – | 72 | 22 | 65 |
| 285 | 31 | 105 | 43 | 140 | – | – | – | – | – |

## Application Icons

| | | | | |
|---|---|---|---|---|
|  Countersinking/ Stroke Chamfering |  Drilling: Flat Bottom |  Drilling: Blind |  Tapping: Through Hole |  Tapping: Blind Hole |
|  Tapping: Pipe Thread |  HSS: High-Speed Steel |  HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness |  HSS-E-PM: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness (PM = Powder Metal Steel) |  HM: (Carbide) |
|  Drilling Depth: 2x |  Threading: Through Hole |  Threading: Blind Hole | | |

## Geometry Icons

| | | | | |
|---|---|---|---|---|
|  Corner Style: Ball Nose |  Shank: Cylindrical Plain |  Shank: Cylindrical with Square |  Square Shank: L = 4" |  Square Shank: L = 6" |
|  Square Shank: L = 8" |  Square Shank: L = 10" |  Chamfer Form A (6–8) |  Chamfer Form B (3–5) |  Chamfer Form: (3–4) |
|  Chamfer Form C (2–3) |  Chamfer Form D (3,5–5) |  Chamfer Form E (1,5–2) |  Chamfer Form: (2,5–3,5) |  Chamfer Form: (4–6) |
|  Chamfer Form: (1–2) |  Tapping Helix Angle: 0° |  Tapping Helix Angle: L8° |  Tapping Helix Angle: 10° |  Tapping Helix Angle: 15° |
|  Tapping Helix Angle: L15° |  Tapping Helix Angle: 25° |  Tapping Helix Angle: 30° |  Tapping Helix Angle: 42° |  Tapping Helix Angle: 45° |
|  Tapping Helix Angle: 49° | | | | |

## Feature Icons

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|---|---|---|---|---|
| DIN 371 DIN Number 371 | DIN 374 DIN Number 374 | DIN 376 DIN Number 376 | DIN 2174 DIN Number 2174 | Tapping: Through Coolant |
| Flood Coolant: Tapping | Coolant: Through Coolant | Through Coolant: Axial: Tapping | 2B Class of Fit: 2B | 3B Class of Fit: 3B |
| 6H Class of Fit: 6H | 6HX Class of Fit: 6HX | 2BX Class of Fit: 2BX | 3BX Class of Fit: 3BX | NPT American Tapered Pipe Thread for Threads **with Dryseal Material** |
| NPTF American Tapered Pipe Thread for Threads **without Dryseal Material** | ANSI American National Standards Institute | NPS American Standard Straight Pipe Threads | NPSF American Standard Straight Pipe Threads Dryseal | BSPF British Standard Pipe Fitting Thread |
| BSPT British Standard Pipe Taper Thread | G Whitworth Pipe Thread | Rp Cylindrical Whitworth Pipe Thread | Rc Tapered Whitworth Pipe Thread | UNF Unified Fine Thread |
| UNC Unified Coarse Thread | M ISO Metric Coarse Thread | MF ISO Metric Fine Thread | | |

*DIN — German Institute for Standardisation*

*ANSI — American National Standards Institute*

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