

Turbo Roughing 4 Corner Fast-Feed

TR4F4000

TR4F5000

Radius Mill TR4F



MOLDINO Tool Engineering Europe GmbH

TR4F4000/TR4F5000 | 2025-08 | Version 1.0 | PDF

TR4F – Turbo Roughing 4 Corner Fast-Feed

Features of TR4F

01 New body shape for improved chip removal

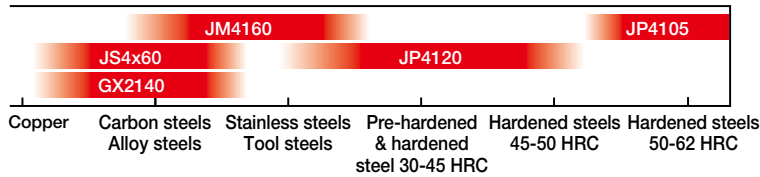
02 Unique high-strength insert design

03 Unequal pitch

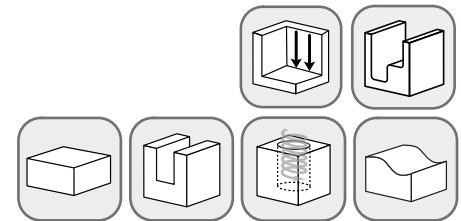
Line-up: 24 bodies, 3 insert types
DCX: 35-125 mm



Recommended usage

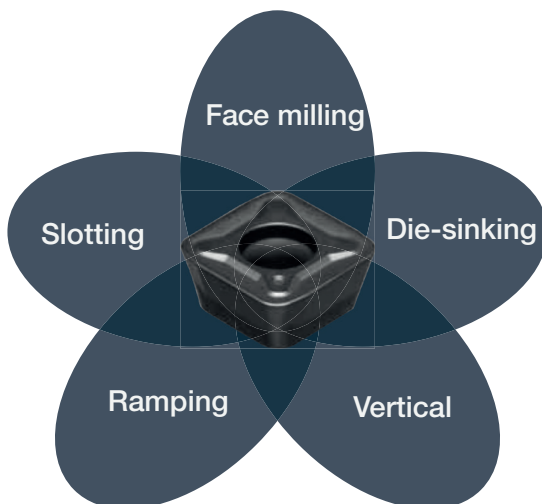


Applications



Customer need and product benefit

High-efficient and versatile roughing processes with maximized process safety.

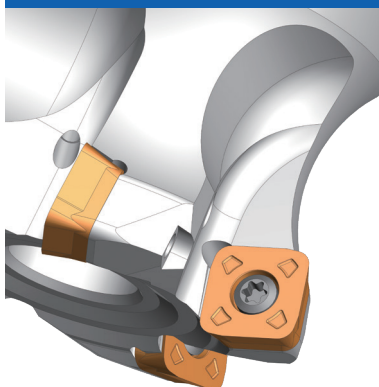


Challenge

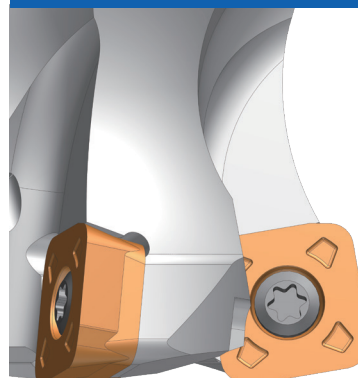
Efficiency in high volume roughing is decreased by the need for high process safety and reliability. The risk for unexpected trouble prevents the customer from using the tool's full potential, especially in automated processes.

Solution

With its unique body and high-strength insert design, TR4F offers extraordinary metal removal rates even in unstable or changing conditions. Easy usage. Long tool life and a broad variety of insert grades meet the customers need for reliable machining of a wide range of applications and work materials.

Feature
01
New body shape for improved chip removal
Wide open pockets


Offers excellent chip removal performance due to large open pockets.

Improved clearance


Suppresses chip clogging between tool and wall and prevents from critical recutting of chips.

Feature
02
Unique high-strength insert design
TR4F
Conventional


110%

135%



100%

100%

Increased insert cross-section and clamp area for improved stability and maximized feed per tooth. Optimized cutting-edge design generates compact helical-shaped chips for controlled evacuation at walls.

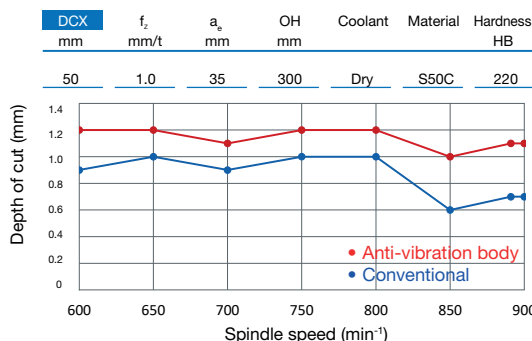
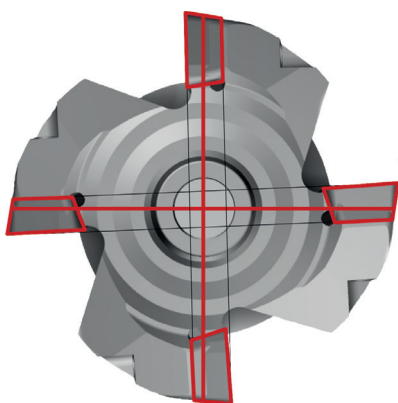
Feature
03
Unequal pitch


Fig. Comparison of the maximum depth of cut (L/D=6)
 (DCX 50 mm, $f_z=1.0$ mm/t, $a_p=35$ mm, OH=300mm, Dry, full set, S50C(220HB))

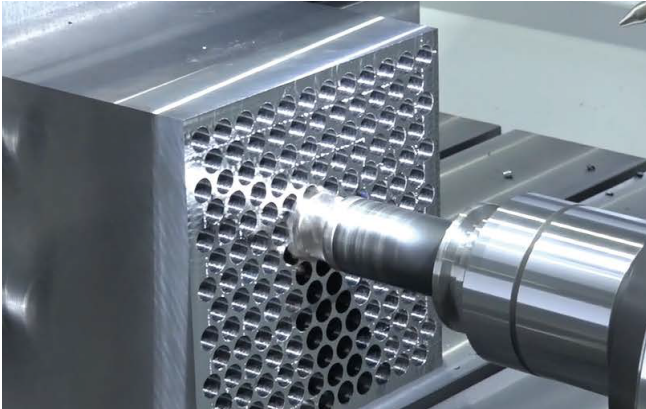
The unequal pitch of TR4F reduces vibrations which are a main factor for chattering and reduced tool life.

» Overcomes all major issues encountered in mold machining, thanks to TR4F's three unique features

» **POINT 1**

Even with interrupted cutting

High chipping resistance



The definitive type
– even with

Selection of close pitch type
4000
Type

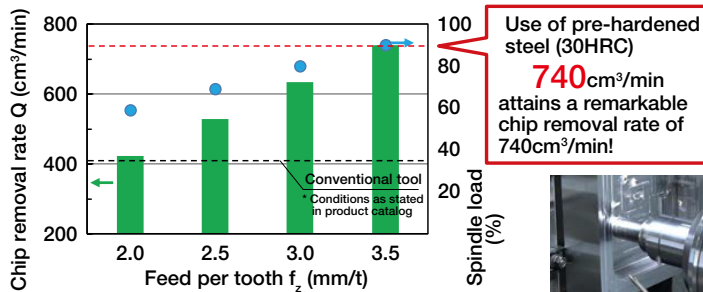


1mm x 2mm
Cutting depth Feed per tooth



Tool performance that maximizes the machine's full capabilities

Rugged cutting, regardless of load, thanks to the unique insert shape



Cutting conditions: TR4F5000 type
Tool dia.: DC 63 mm Cutting speed: $V_c = 130$ m/min
Depth of cut: $a_p \times a_e = 2.0 \times 40$ mm
Work material: Pre-hardened steels (30HRC)
Machine: 3-axis MC horizontal type (BT50, 37kw)

» **POINT 3**

Even in chips

Minimized



for rough machining
large molds

Deep
cutting
5000
Type

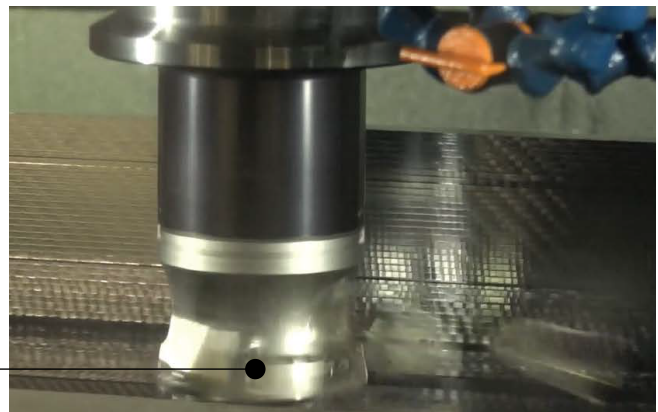


2mm × 2mm
Cutting depth Feed per tooth



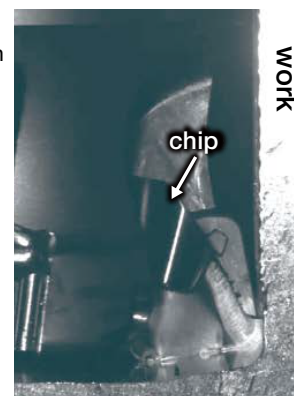
Even with wall
face processing

Prevents scraping



**Chip ejection path away from
work surface**

Prevents scraping due to chip
breakage and bending, which often
occurs during wall face machining,
whether cutting up or down.

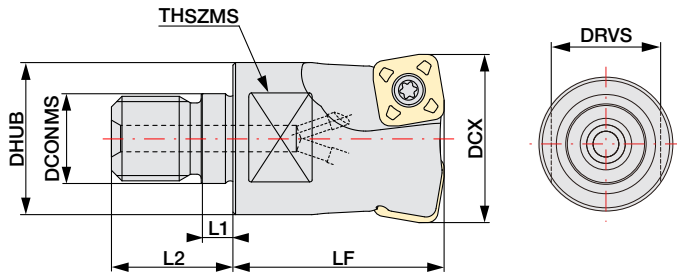
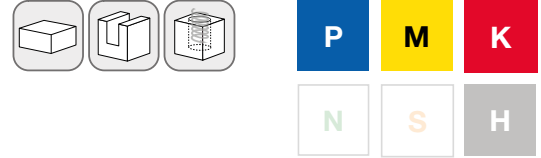


biting risk



Cutting conditions: TR4F5000 type
Tool dia.: DC 63 mm Cutting speed: $V_c = 100$ m/min
Feed rate: $f_z = 2.0$ mm/t Depth of cut: $a_p \times a_e = 2.0 \times 37.8$ mm
Work material: Pre-hardened steels (32HRC)

TR4F4000/TR4F5000 Line-Up



Diameter Holder only	CAM R (mm)
-0.1/-0.2 mm	3
Fastening Torque (Nm)	
2.9	

Modular Type

ID Code	Item Code	NOF	Size (mm)								THSZMS	Inner cooling
			DCX	DHUB	LF	L1	L2	DCONMS	DRVS			
FH646	TR4F-4035M-3	3	35	28.8	40	6	23	17	22	M16	Yes	
FH647	TR4F-4042M-4	4	42	28.8	40	6	23	17	22	M16	Yes	

Includes single spare clamp screw.

Fig.1

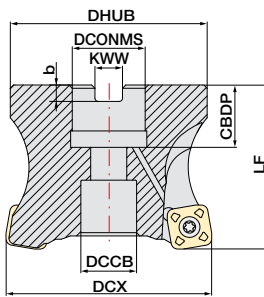
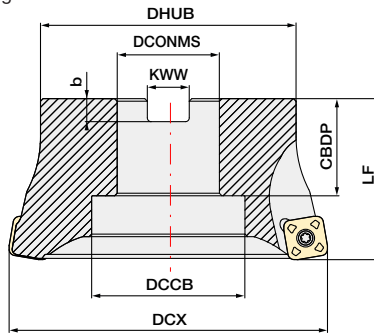


Fig.2



Serie	Tolerance Diameter Holder only (mm)	Fastening Torque (Nm)	CAM-R (mm)
TR4F4000	-0.1/-0.2	2.9	3
TR4F5000	-0.12/-0.24	4.9	4

Bore Type

ID Code	Item Code	NOF	Size (mm)								Inner cooling	Figure
			DCX	DCONMS	DHUB	LF	CBDP	KWW	b	DCCB		
FH648	TR4F4042BM-4-16	4	42	16	35	40	19	8.4	5.6	11.6	Yes	1
FH631	TR4F4050BM-4	4	50	22	47	50	20	10.4	6.3	17	Yes	1
FH632	TR4F4050BM-5	5	50	22	47	50	20	10.4	6.3	17	Yes	1
FH633	TR4F4052BM-5-22	5	52	22	47	50	20	10.4	6.3	17	Yes	1
FH634	TR4F4052BM-5-27	5	52	27	47	50	22	12.4	7	20	Yes	1
FH635	TR4F4063BM-4-22	4	63	22	48	50	20	10.4	6.3	17	Yes	1
FH643	TR4F4063BM-4-27	4	63	27	48	50	22	12.4	7	20	Yes	1
FH636	TR4F4063BM-5-22	5	63	22	48	50	20	10.4	6.3	17	Yes	1
FH644	TR4F4063BM-5-27	5	63	27	48	50	22	12.4	7	20	Yes	1
FH637	TR4F4063BM-6-22	6	63	22	48	50	20	10.4	6.3	17	Yes	1
FH645	TR4F4063BM-6-27	6	63	27	48	50	22	12.4	7	20	Yes	1
FH638	TR4F4066BM-5-27	5	66	27	60	50	22	12.4	7	20	Yes	1
FH639	TR4F4080BM-5-27	5	80	27	60	70	22	12.4	7	20	Yes	1
FH640	TR4F4080BM-7-27	7	80	27	60	70	22	12.4	7	20	Yes	1
FH641	TR4F4100BM-6-32	6	100	32	78	70	25.5	14.4	8	26	Yes	1
FH642	TR4F4100BM-8-32	8	100	32	78	70	25.5	14.4	8	26	Yes	1
FH707	TR4F5063BM-4-22	4	63	22	48	50	20	10.4	6.3	17	Yes	1
FH708	TR4F5066BM-4-27	4	66	27	60	50	22	12.4	7	20	Yes	1
FH709	TR4F5080BM-5-27	5	80	27	60	70	22	12.4	7	20	Yes	1
FH710	TR4F5100BM-6-32	6	100	32	78	70	25.5	14.4	8	26	Yes	1
FH711	TR4F5125BM-6-40	6	125	40	89	63	38	16.4	9	60	No	2
FH712	TR4F5125BM-7-40	7	125	40	89	63	38	16.4	9	60	No	2

Includes two spare clamp screws.
Wrench and anti-seizure agent are not included.
NOTE: The Arbor screw is sold separately.

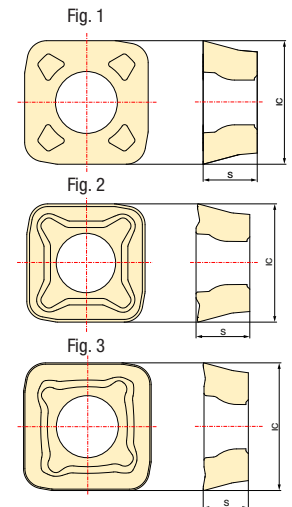
Inserts

	P	M	K	H						
	Carbon steels				•		•	•		
	SUS, etc					•				
	FC FCD Cast irons				•		○	○		
	Hardened steels				•	○				

• First recommendation
 ○ Second recommendation

Item Code	Tolerance Class	AJ Coating			JS Coating	GX Coating	Size (mm)		Shape	
		JP4105	JP4120	JM4160	JS4060	GX2140	IC	S		
TR4F4000	SDNW120520TR	N	WF830	WF831	WF832	WF833	WF834	12.7	5.56	Fig. 1
	SDNW120520TR-P		-	WF835	-	-	-		5.56	Fig. 1
	SDMT120520TR	M	-	WF836*	WF837	WF838	WF839	5.76	Fig. 2	

Item Code	Tolerance Class	AJ Coating			JS Coating	GX Coating	Size (mm)		Shape	
		JP4105	JP4120	JM4160	JS4160	GX2140	IC	S		
TR4F5000	SDNW150525ZTR	N	WF891	WF892	WF893	WF894	WF895	15.875	5.56	Fig. 1
	SDMT150525ZTR	M	-	WF896	WF897	WF898	WF899		5.61	Fig. 3





*Can be used to process precipitation hardened stainless steel.

Note: Please note that the GX and JS coating do not cause a reaction in conductive touch sensors.

Proper use of inserts

Toughness of cutting edge

Easy cutting

SDNW120520TR SDNW150525ZTR	SDNW120520TR-P	SDMT120520TR SDMT150525ZTR
		
The recommended default insert offers superior cutting edge strength. Ideal for general high-feed cutting.	Recommended for relatively continuous (uninterrupted) cutting with short overhangs. Ideal for pre-hardened steels (P20 and P21 materials).	Breaker type insert. Ideal for rough machining with low-rigidity work materials and low-horsepower M/C.

Grade Map

Grade map for less than 35HRC

Chipping resistance	Wear resistance
JS4x60	GX2140
Wet cutting	Dry cutting
JS4x60	GX2140

Grade map for work materials

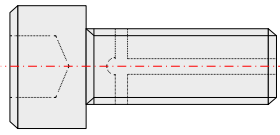
	Work Hardness				Work Hardness		Work Hardness	
	Low			High	Low	High	Low	High
Stable machining	JS4x60	GJ4120	GJ4105	JM4160	JP4120	JP4105	JS4x60	GX2140

Parts

Parts	Clamp screw			Torque blade		Torque wrench set		Wrench	
	ID Code	Item Code	Torque (Nm)	ID Code	Item Code	ID Code	Item Code	ID Code	Item Code
TR4F	ET035	262-141	2.9	NT166	T15-TORQUE	NT163	TORQUE-FIX	ET049	105-T15
TR4F5000	ET162	555-141	4.9	NT167	T20-TORQUE	NT163	TORQUE-FIX	ET014	105-T20

NOTE: The clamp screw is a consumable part. Since replacement life depends on the use environment, it is recommended that it is replaced at an early stage.

Arbor screw

Parts	Arbor Screw		
Shape			
DCONMS	ID Code	Item Code	Type
16 mm*	ET050**	100-901	M8x30
22 mm	ET180	100-178	M10x25
27 mm	ET064	100-179	M12x30
32 mm	ET181	100-180	M16x35

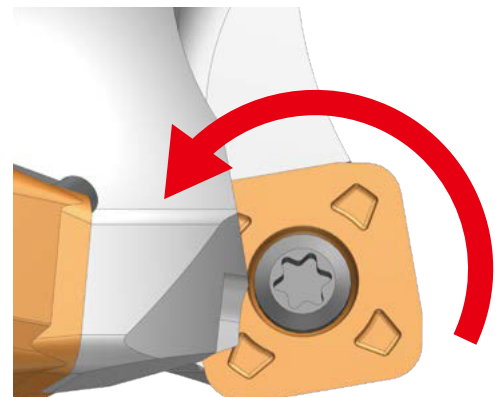
*No inner cooling

**Special Screw

Programming and usage instruction

○ Attention for the corner change

- Turn the insert counterclockwise upon corner change.

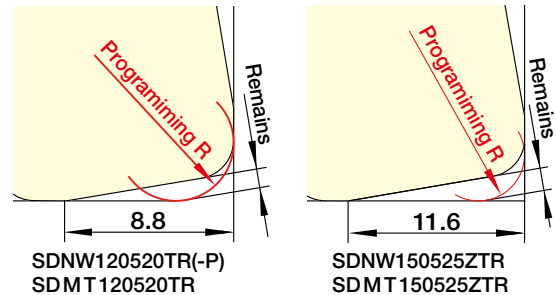


Programming and usage instruction

Programming R and maximum cutting depth

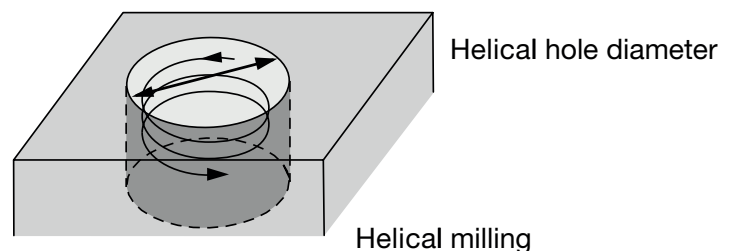
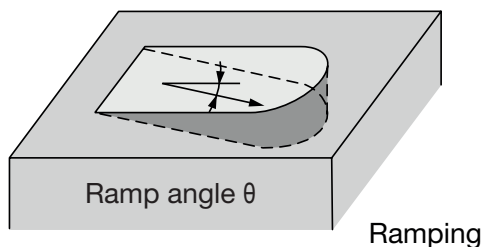
Please define the tool shape in the CAM as indicated in the following table:

Insert	Programming R	Remains (mm)	Maximum cutting depth (mm)
SDNW120520TR(-P) SDMT120520TR	R3.0	1.0	1.2
SDNW150525ZTR SDMT150525ZTR	R3.0	1.47	2.0
	R4.0	1.32	



Ramping & helical milling

Since the cutting flute do not extend to the center, there are limitations on the ramp angle and hole diameter, but as shown below, cutting by direct milling without a pilot hole is possible for ramping and helical milling.



For ramping and helical cutting, please set the V_f to around 50% of recommended cutting condition.

Inserts	DCX (mm)													
	SDNW120520TR(-P) SDMT120520TR						SDNW150525ZTR / SDMT150525ZTR							
Tool dia. DCX (mm)	35	42	50	52	63	66	80	100	63	66	80	100	125	
Ramping	Maximum ramp angle Θ	1°	1,2°	2°	2°	2°	2°	1,5°	1°	3°	3°	2°	1,5°	1°
	Recommendation	1°						2°			1°		0,5°	
Helical milling	Helical hole diameter	52-66	66-80	82-96	86-100	108-122	114-128	142-156	182-196	102-121	108-127	136-155	176-195	226-245

Note:

1. The ramp angle Θ should be set within the ranges listed above. Do not exceed the recommended value.
2. For hole diameters outside the ranges listed above, a pilot hole should be drilled before milling.
3. It is recommended that the tool be used while performing sufficient chip removal and checking that there are no abnormal vibrations.

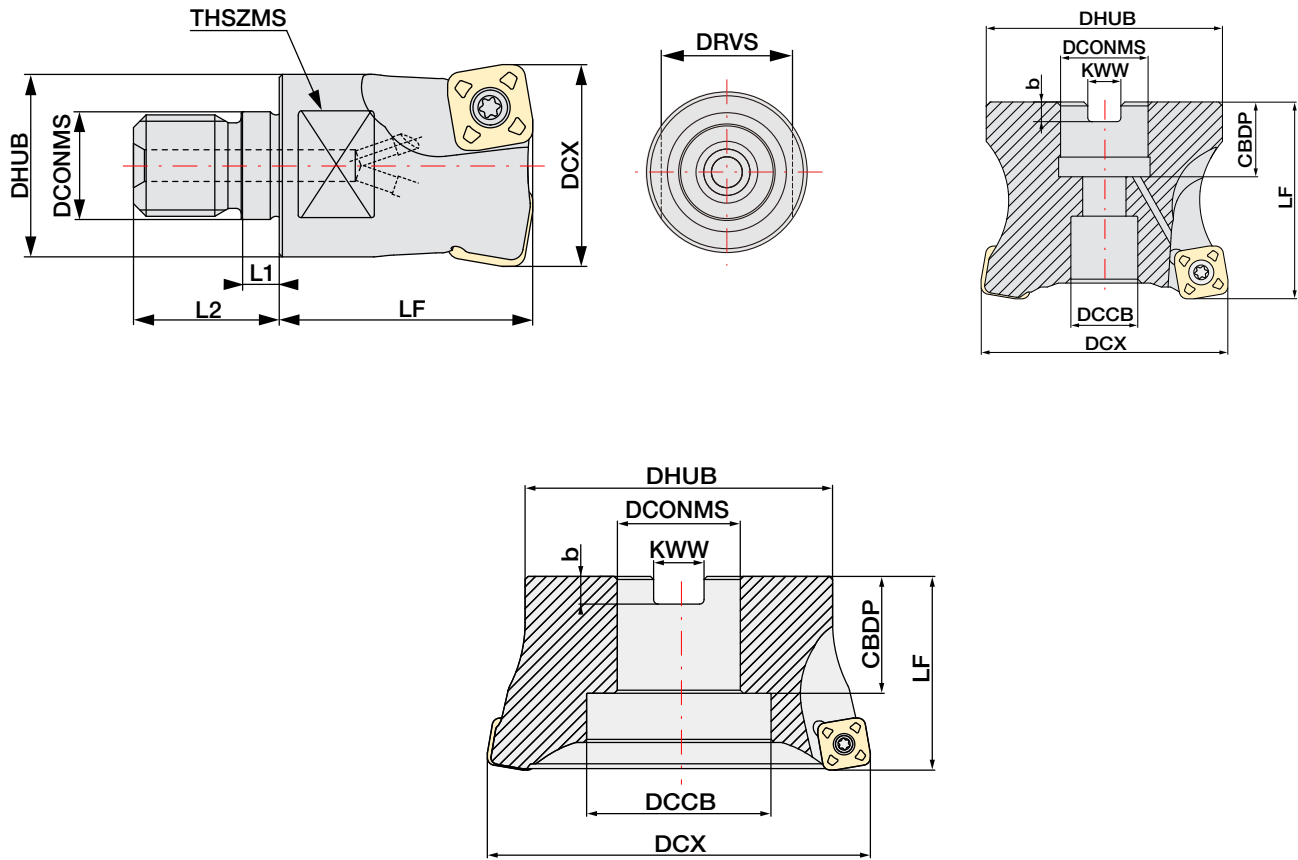
TR4F4000/TR4F5000 General technical information

ISO 513 Symbol	Description	Examples
P	Non-alloy steel, low alloy steel, high alloy steel, ferritic/martensitic stainless steel, tool steel	1.2343 / X38CrMoV5-1; 1.2738 / 40CrMnNiMo8; 1.0503 / C45; 1.0570 / ST52-3; 1.1730 / C45W; 1.7131 / 16MnCr5; 1.7225 / 42CrMo4; 1.3343 / HS6-5-2; 1.0511 / C40; 1.2312 / 40CrMnMoS8-6; 1.2311 / 40CrMnMo7; 1.2344 / X40CrMoV5-1; 1.2767 / X45NiCrMo4; 1.2083 / X42Cr13; 1.2085 / X33CrS16; 1.2714 / 55NiCrMoV7; 1.2842 / 90MnCrV8;
M	Austenitic stainless steel	1.4301 / X5CrNi18-9; 1.4401 / X5CrNiMo17-12-2; 1.4404 / X2CrNiMo17-13-2; 1.4828 / X15CrNiSi20 12
K	Grey cast iron (GG), nodular cast iron (GGG), malleable cast iron	0.6025 / GG-25; GGG-40.3; 0.8155 / GTS-55-04
N	Aluminum wrought all, copper alloy, aluminum-cast, alloyed, non-metallic	2.0060 / E-Cu57; 2.0321 / CuZn37; 3.0255 / Al99.5; 3.5103 / MgSE3Zn27r1
S	High temperature alloys, titanium and Ti alloys	1.4864 / X12NiCrSi36 16; 2.4856 / NiCr22Mo9Nb; 1.4977 / X40CoCrNi20 20; 2.4669 / NiCr15Fe7TiAl
H	Hardened steel, chilled cast iron, cast iron	



Drawing Nomenclature	
DCX	Cutting Diameter Maximum
DCONMS	Connection Diameter Machine Side
DHUB	Hub Diameter
LF	Functional Length
CBDP	Connection Bore Depth
THSZMS	Connection Thread Nominal Size Machine Side
DRVS	Driver Size
L1	Length 1
L2	Length 2
b	Depth Of Keyway
KWW	Keyway Width
DCCB	Counterbore Diameter Connection Bore

TR4F4000/TR4F5000 Drawings



 **Attentions on Safety**

1. Cautions regarding handling

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

2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

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

4. Cautions regarding regrinding

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

“MOLDINO” is a registered trademark of MOLDINO Tool Engineering, Ltd.

Specifications for the products listed in this catalog are subject to change without notice due to replacement or modification.

The diagrams and table data are examples of test results and are not guaranteed values.

For more details please check our digital tool database



MOLDINO Tool Engineering Europe GmbH

Itterpark 12 · 40724 Hilden · Germany · Phone +49 (0) 21 03-24 82-0 · Fax +49 (0) 21 03-24 82-30
E-Mail info@moldino.eu · Internet www.moldino.eu

© 2025 by MOLDINO Tool Engineering Europe GmbH

TR4F4000/TR4F5000 | 2025-08 | Version 1.0 | PDF