

WTO

CoolSpeed[®] MAX

Ultra-high rotation speed up to 60,000 rpm
efficient and process-safe with
wireless spindle speed monitoring.



Ideal for machining and turning centers
High run-out accuracy
Extended tool life

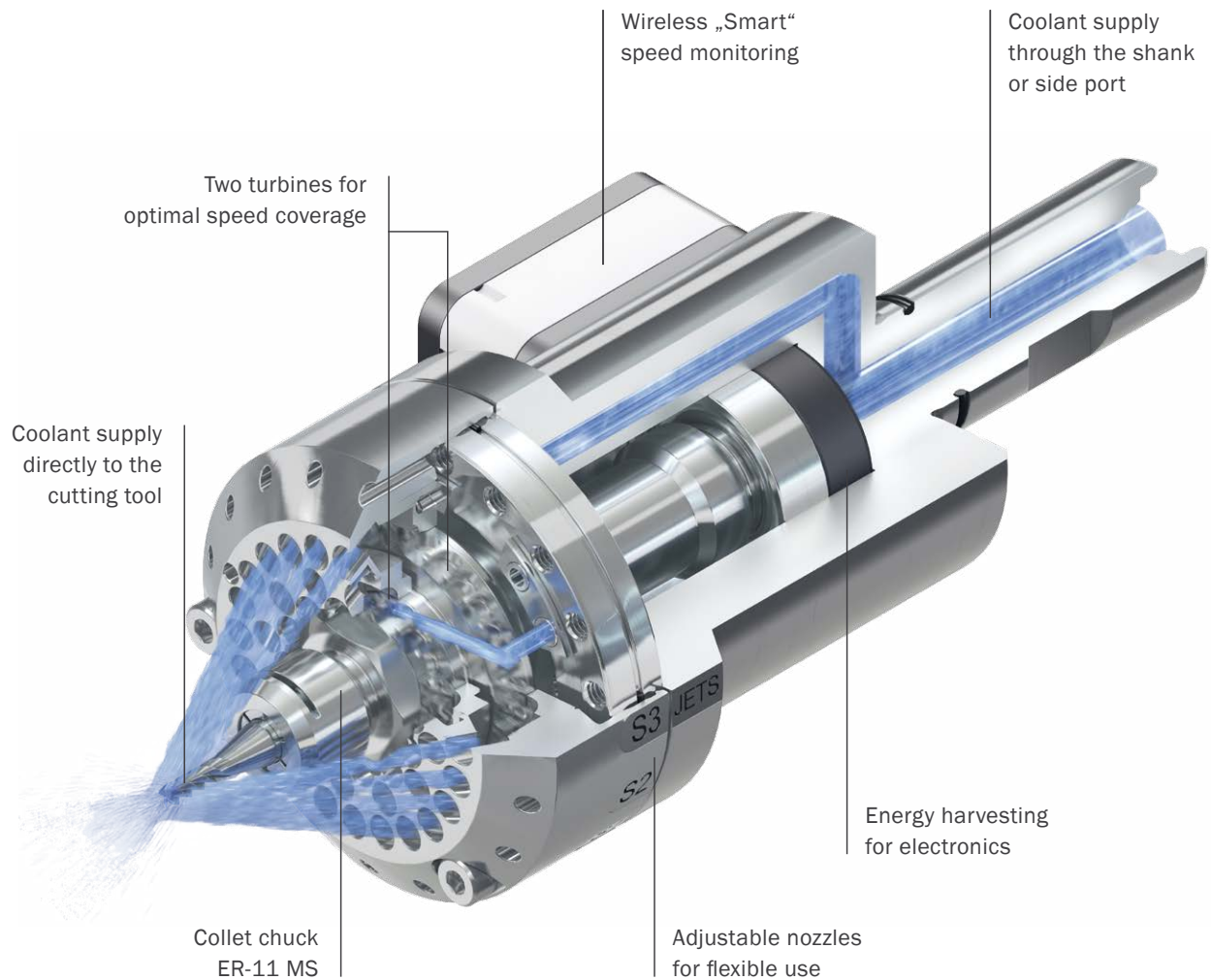
**INDUSTRY
4.0
ready**

CoolSpeed[®] MAX

Ultra-high rotation speed up to 60,000 rpm

Two turbines and adjustable number of jets

Applications: Milling, Drilling, Grinding, Deburring, Engraving



Driven by

Rotation Speed

Number of Jets

Number of Turbines

Operating Pressure

Flow Rate

Maximum Power

Cutting Tool Shank Ø

Coolant or Cutting Oil

20,000-60,000 rpm

1-3 (adjustable)

1 small + 1 large (adjustable)

290-1015 psi (20-70 bar)

3-8.5 gal/min (12-32 l/min)

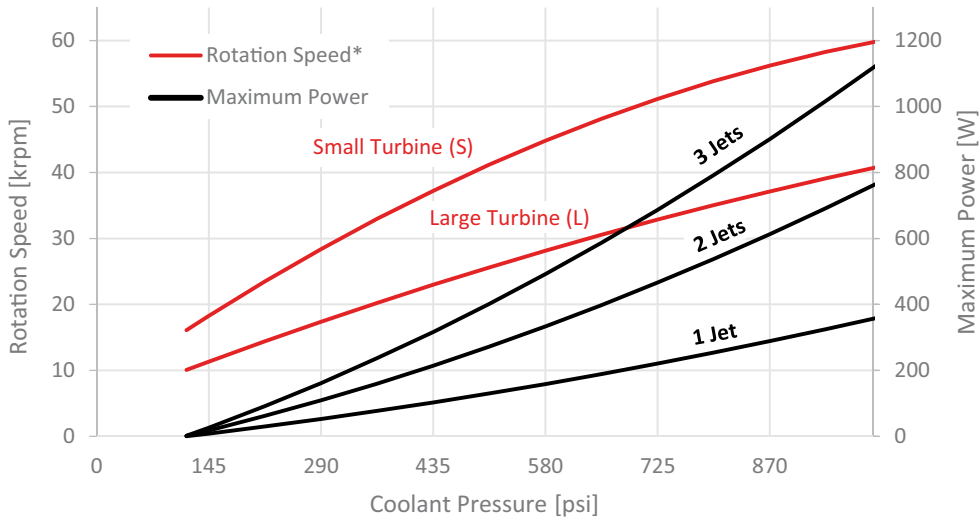
360-1100 W

0.5-7.0 mm

CoolSpeed® MAX is a universally applicable ultra-high-speed spindle, driven by two turbines of different sizes and an adjustable number of jets.

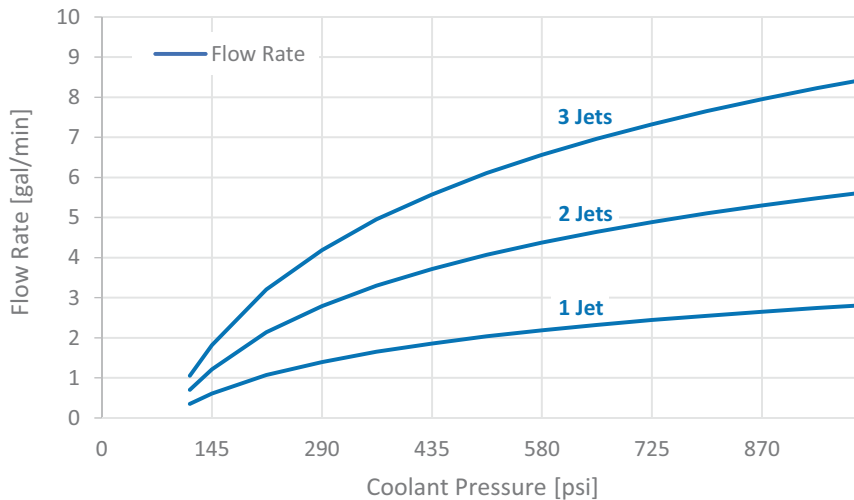
With the small turbine, maximum speeds of up to 60,000 rpm can be achieved; with the large turbine, CoolSpeed® MAX provides higher torque in the lower speed range.

Speed & Output Power/Coolant Pressure



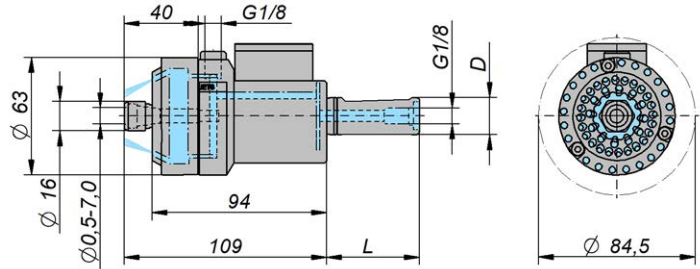
¹⁾ Idle speed. The operation speed is approx. 10% lower depending on the load

Coolant Flow/Coolant Pressure



Due to the adjustable number of jets, it is possible to adjust the coolant flow (volume flow) and as a result the maximum performance to the application. CoolSpeed® MAX can therefore be used in a very energy-efficient way and can also be operated with coolant pumps as low as 3.2 gal/min (12 l/min).

CoolSpeed® MAX



Item number

D

L

CX-CE-F020-109-FL-SB-A

20

50

Dimensions in mm

Wrenches are not included.

Locking wrench



Item number

CX-SOW-001

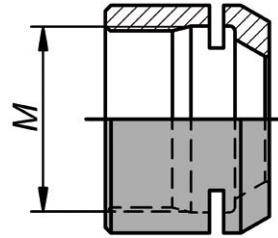
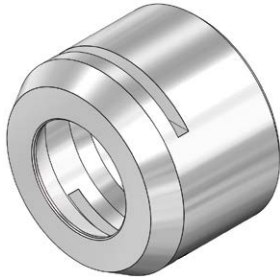
Clamping wrench



Item number

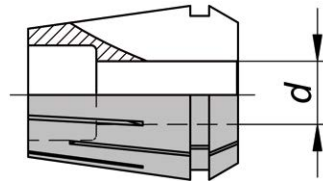
107511205

Clamping nut ER-MS



Item number	Size	M
200511002	ER-11	M13x0.75

ER collet ER-11 UP



d	ER-11
1-0.5	190111010
1.5-1	190111015
2-1.5	190111020
2.5-2	190111025
3-2.5	190111030
3.5-3	190111035
4-3.5	190111040
4.5-4	190111045
5-4.5	190111050
5.5-5	190111055
6-5.5	190111060
6.5-6	190111065
7-6.5	190111070



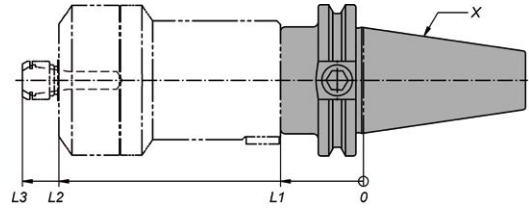
Dimensions in mm.
Run-out max. 0.005 mm.

d	ER-11
1/32"	190111010
1/16"	190111020
3/32"	190111025
1/8"	190111035
5/32"	190111040
3/16"	190111050
7/32"	190111060
1/4"	190111065



Dimensions in inch.
Run-out max. 0.005 mm.

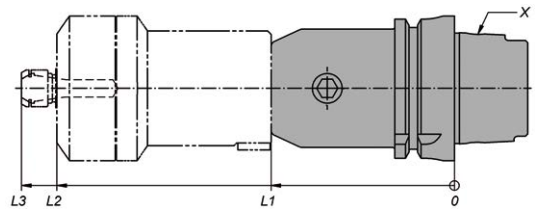
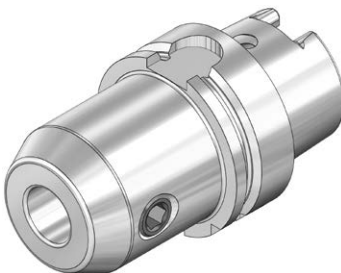
SK-Holder



Item number	Tool Holder X	L1	L2	L3
CX-MA-SK40A-W020-A	DIN ISO 7388-1 SK40	35	128.5	144
CX-MA-SK50A-W020-A	DIN ISO 7388-1 SK50	35	128.5	144
CX-MA-BT40A-W020-A	DIN ISO 7388-2 BT40	35	128.5	144

Dimensions in mm

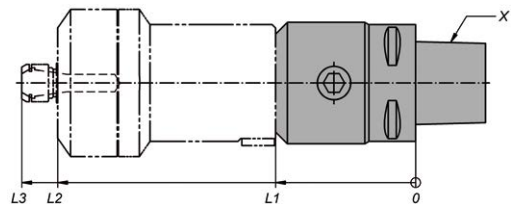
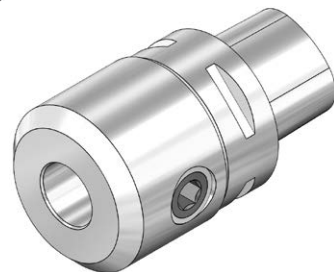
HSK-Holder



Item number	Tool Holder X	L1	L2	L3
CX-MA-HK63A-W020-A	DIN 69893 HSK-A 63	80	173.5	189
CX-MA-HK80A-W020-A	DIN 69893 HSK-A 80	100	193.5	209

Dimensions in mm

Capto-Holder



Item number	Tool Holder X	L1	L2	L3
C6-391.20-20065	C6	65	153.5	174

Dimensions in mm

Starter Set

Contains:

CoolSpeed® MAX

CX-SOW-001 Locking wrench

107511205 Clamping wrench ER-11 MS

Power Off Magnet

Torx Allen key T20

Allen key SW3

Allen key SW5

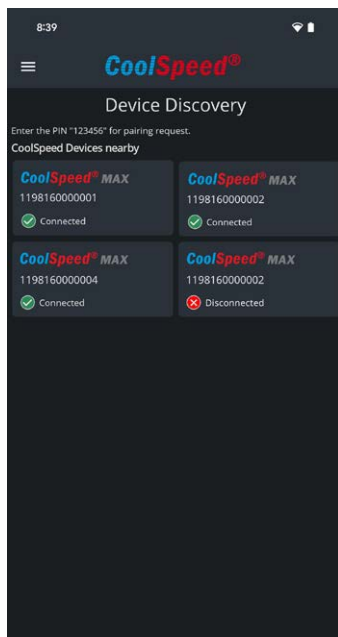
Item number

CX-CE-F020-109-FL-SB-SK-A



App “CoolSpeed”

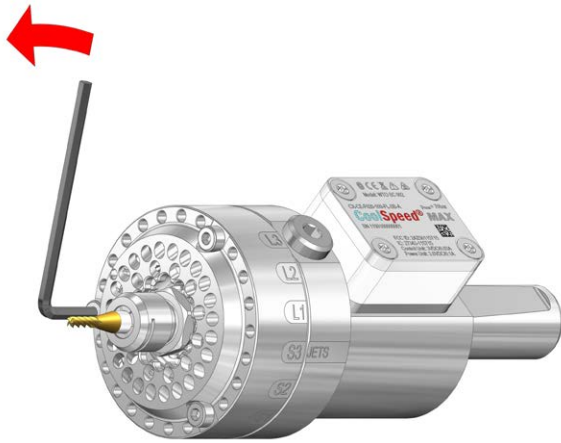
The app connects to the electronics via Bluetooth. The app displays the actual speed, vibration, and temperature of the CoolSpeed® MAX spindle in use.



Adjust Turbine Size + Number of Jets

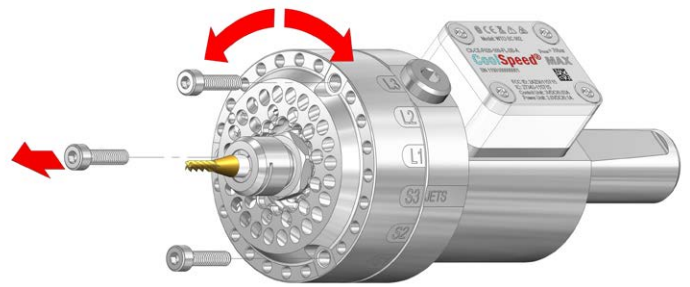
1

Loosen screws



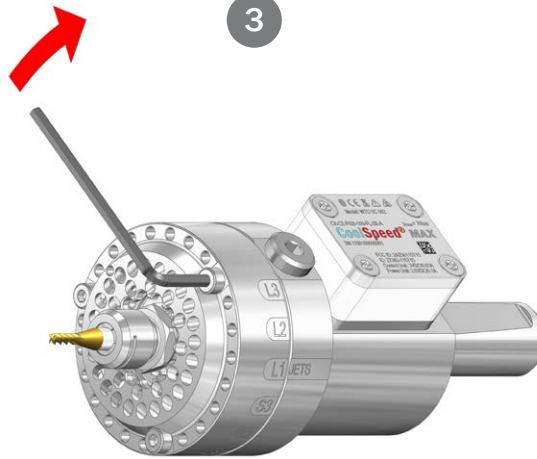
2

Set turbine size + number of jets



3

Tighten screws



Configuration	Turbine size	Number of jets	RPM	Torque	Coolant flow Power
S1	Small	1	●●	●○○○○○	●○○
S2	Small	2	●●	●●○○○○	●●○
S3	Small	3	●●	●●●○○○	●●●
L1	Large	1	●○	●●●●○○	●○○
L2	Large	2	●○	●●●●●○	●●○
L3	Large	3	●○	●●●●●●	●●●

Quick Start Guide

1. Install “CoolSpeed®” App

Download and open the “CoolSpeed” app (see page 7).

2. Connect the App “CoolSpeed®” with CoolSpeed® MAX

Establish a Bluetooth connection to the corresponding CoolSpeed® MAX in the CoolSpeed® app.

3. Set turbine size and number of jets

CoolSpeed® MAX is equipped with two turbines. Set the speed range by selecting turbine S (small turbine) or L (large turbine).

The speed can be adjusted by changing the coolant pressure in the speed range of the selected turbine.

Depending on the machine tool, the coolant pump can only provide limited amounts of coolant depending on the coolant pressure. At a higher coolant flow, the pressure drops and thus the speed drops. The coolant flow can be adjusted by the adjustable number of 1, 2 or 3 jets.

Set turbine size and number of jets (S1 ... L3) according to page 8 and page 3.

4. Fine set number of jets

1. Switch on the coolant.
2. Read off the speed in the app.
3. Adjust speed via coolant pressure:
higher pressure = higher speed
lower pressure = lower speed
4. If the desired speed cannot not be reached, the coolant pressure within CoolSpeed® MAX is too low: reduce the number of jets (e.g. from L3 to L2) and repeat from point 3.

Note:

The app displays the real speed. The speed graph in the speed diagram refers to a no-load operation. The operation speed is approx. 10 % lower depending on the load.

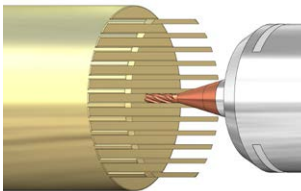
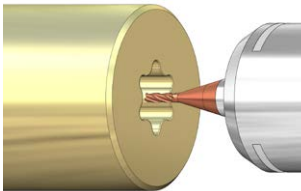
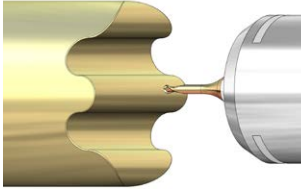
Application examples

			Tool-Ø	4.0	3.0	2.0	1.0	0.5	4.0	3.0	2.0	1.0	0.5
Material	Coolant Pressure [psi]	Cutting Values	Small Turbine					Large Turbine					
			a_p	f_z	f_z	f_z	f_z	f_z	f_z	f_z	f_z	f_z	
Engraving													
Aluminum	290	f_z	0.0177	0.0157	0.0118	0.0079	0.0039	0.0177	0.0157	0.0118	0.0079	0.0039	
	580	f_z	0.0011	0.0009	0.0006	0.0004	0.0003	0.0039	0.0031	0.0024	0.0016	0.0012	
	870	f_z	0.0015	0.0012	0.0009	0.0059	0.0004	0.0055	0.0044	0.0033	0.0022	0.0017	
Carbon Steel	290	f_z	0.0018	0.0015	0.0011	0.0007	0.0006	0.0067	0.0054	0.004	0.0027	0.002	
	580	f_z	0.0005	0.0004	0.0003	0.0002	0.0002	0.002	0.0016	0.0012	0.0008	0.0004	
	870	f_z		0.0006	0.0004	0.0003	0.0003		0.0022	0.0017	0.0011	0.0008	
Stainless Steel	290	f_z			0.0006	0.0004	0.0003			0.002	0.0013	0.001	
	580	f_z	0.0004	0.0004	0.0003	0.0002	0.0001	0.0017	0.0013	0.001	0.0007	0.0005	
	870	f_z		0.0005	0.0004	0.0002	0.0002		0.0019	0.0014	0.0009	0.0007	
Drilling	290	f_z			0.0004	0.0003	0.0002			0.0017	0.0013	0.001	
	580	f_z			0.0004	0.0003	0.0002			0.0017	0.0013	0.001	
	870	f_z			0.0004	0.0003	0.0002			0.0017	0.0013	0.001	
Aluminum	290	f_z			0.0001	0.0002	0.0005	0.0001	0.0002	0.0005	0.0009	0.0019	
	580	f_z		0.0001	0.0002	0.0005	0.001	0.0003	0.0005	0.0009	0.0019	0.0038	
	870	f_z	0.0001	0.0002	0.0005	0.001	0.002	0.0006	0.0009	0.0019	0.0038	0.0076	
Carbon Steel	290	f_z				0.0001	0.0002		0.0001	0.0002	0.0005	0.0009	
	580	f_z				0.0001	0.0002	0.0005		0.0002	0.0005	0.0009	
	870	f_z				0.0002	0.0005	0.001		0.0009	0.0019	0.0038	
Stainless Steel	290	f_z				0.0001	0.0002		0.0001	0.0002	0.0004	0.0008	
	580	f_z				0.0001	0.0002	0.0005		0.0002	0.0004	0.0008	
	870	f_z				0.0002	0.0004	0.0008		0.0008	0.0016	0.0031	

All dimensions in inch, f_z in inch/tooth.
 The values apply to CoolSpeed® MAX using 3 jets. The values are for orientation only and shall be adapted to specific application by gradually increasing f_z until the optimum cutting result is achieved.

Coolant Pressure [psi]	Power with 3 Jets [W]	Idle Speed [rpm]		Operation Speed [rpm]	
		Small Turbine	Large Turbine	Small Turbine	Large Turbine
290	160	28300	17400	25500	15600
580	490	44800	28100	40300	25300
870	900	56200	37100	50500	33400

Application examples

			Tool-Ø	4.0	3.0	2.0	1.0	0.5	4.0	3.0	2.0	1.0	0.5	
			Material	Coolant Pressure [psi]	Small Turbine				Large Turbine					
			Cutting Values											
 <p>Slot Milling</p>	Aluminum	290	a_p		0.0039	0.0098	0.0118	0.0079	0.0079	0.0098	0.0118	0.0197	0.0079	
			f_z		0.0001	0.0002	0.0004	0.0004	0.0001	0.0006	0.0008	0.0004	0.0004	
			f_z		0.0003	0.0003	0.0004	0.0004	0.0003	0.0009	0.0015	0.0004	0.0004	
		580	f_z		0.0006	0.0007	0.0004	0.0004	0.0006	0.0014	0.0015	0.0004	0.0004	
			f_z		0.0001	0.0001	0.0003	0.0003	0.0001	0.0004	0.0004	0.0003	0.0003	
			f_z		0.0002	0.0002	0.0003	0.0003	0.0002	0.0006	0.0007	0.0003	0.0003	
		870	f_z		0.0004	0.0005	0.0003	0.0003	0.0004	0.001	0.0007	0.0003	0.0003	
			f_z		0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0003	0.0002	0.0002	
			f_z		0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0006	0.0002	0.0002	
		Carbon Steel	290	f_z		0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0003	0.0002	0.0002
				f_z		0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0006	0.0002	0.0002
				f_z		0.0003	0.0004	0.0002	0.0002	0.0003	0.0008	0.0006	0.0002	0.0002
580	f_z		0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0003	0.0002	0.0002			
	f_z		0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0006	0.0002	0.0002			
	f_z		0.0003	0.0004	0.0002	0.0002	0.0003	0.0008	0.0006	0.0002	0.0002			
870	f_z		0.0001	0.0001	0.0002	0.0002	0.0001	0.0003	0.0003	0.0002	0.0002			
	f_z		0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0006	0.0002	0.0002			
	f_z		0.0003	0.0004	0.0002	0.0002	0.0003	0.0008	0.0006	0.0002	0.0002			
 <p>Side Milling</p>	Aluminum	290	a_p		0.0236	0.0394	0.0394	0.0079	0.0551	0.063	0.0787	0.0394	0.0079	
			a_e		0.0079	0.0079	0.0039	0.0008	0.0079	0.0118	0.0079	0.0039	0.0008	
		580	f_z		0.0021	0.0011	0.0005	0.0004		0.0022	0.0013	0.0005	0.0004	
			f_z		0.0021	0.0011	0.0005	0.0004	0.002	0.0022	0.0013	0.0005	0.0004	
			f_z		0.0021	0.0011	0.0005	0.0004	0.002	0.0022	0.0013	0.0005	0.0004	
		870	f_z		0.001	0.0006	0.0002	0.0002		0.0011	0.0006	0.0002	0.0002	
			f_z		0.001	0.0006	0.0002	0.0002	0.0009	0.0011	0.0006	0.0002	0.0002	
			f_z		0.001	0.0006	0.0002	0.0002	0.0009	0.0011	0.0006	0.0002	0.0002	
		Carbon Steel	290	f_z		0.0008	0.0004	0.0002	0.0002		0.0009	0.0006	0.0002	0.0002
				f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002
				f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002
		580	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002	
f_z			0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
f_z			0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
870	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
 <p>Profile Milling</p>	Aluminum	290	a_p		0.0236	0.0394	0.0394	0.0079	0.0551	0.063	0.0787	0.0394	0.0079	
			a_e		0.0079	0.0079	0.0039	0.0008	0.0079	0.0118	0.0079	0.0039	0.0008	
		580	f_z		0.0021	0.0011	0.0005	0.0004		0.0022	0.0013	0.0005	0.0004	
			f_z		0.0021	0.0011	0.0005	0.0004	0.002	0.0022	0.0013	0.0005	0.0004	
			f_z		0.0021	0.0011	0.0005	0.0004	0.002	0.0022	0.0013	0.0005	0.0004	
		870	f_z		0.001	0.0006	0.0002	0.0002		0.0011	0.0006	0.0002	0.0002	
			f_z		0.001	0.0006	0.0002	0.0002	0.0009	0.0011	0.0006	0.0002	0.0002	
			f_z		0.001	0.0006	0.0002	0.0002	0.0009	0.0011	0.0006	0.0002	0.0002	
		Carbon Steel	290	f_z		0.0008	0.0004	0.0002	0.0002		0.0009	0.0006	0.0002	0.0002
				f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002
				f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002
		580	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002	
f_z			0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
f_z			0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
870	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
Stainless Steel	290	f_z		0.0008	0.0004	0.0002	0.0002		0.0009	0.0006	0.0002	0.0002		
		f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002		
		f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002		
580	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
870	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			
	f_z		0.0008	0.0004	0.0002	0.0002	0.0007	0.0009	0.0006	0.0002	0.0002			

All dimensions in inch, f_z in inch/tooth.

The values apply to CoolSpeed® MAX using 3 jets. The values are for orientation only and shall be adapted to specific application by gradually increasing f_z until the optimum cutting result is achieved.

CoolSpeed®

www.coolspeed.com | info@coolspeed.com

North America

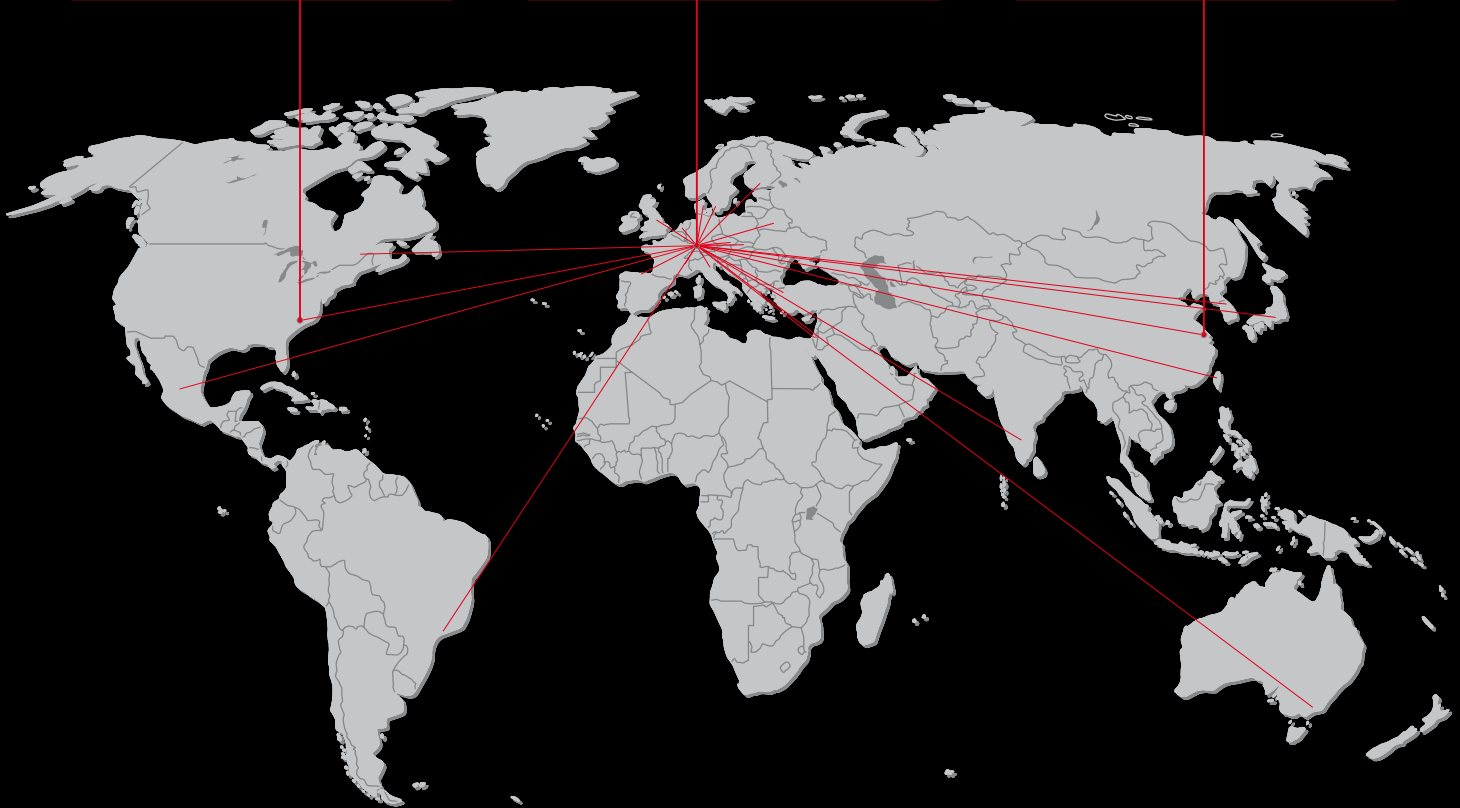
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WTO worldwide

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