

# WTO

## CoolSpeed<sup>®</sup> mini

Affordable ultra-high rotation speed  
up to 80,000 rpm!

In operation:

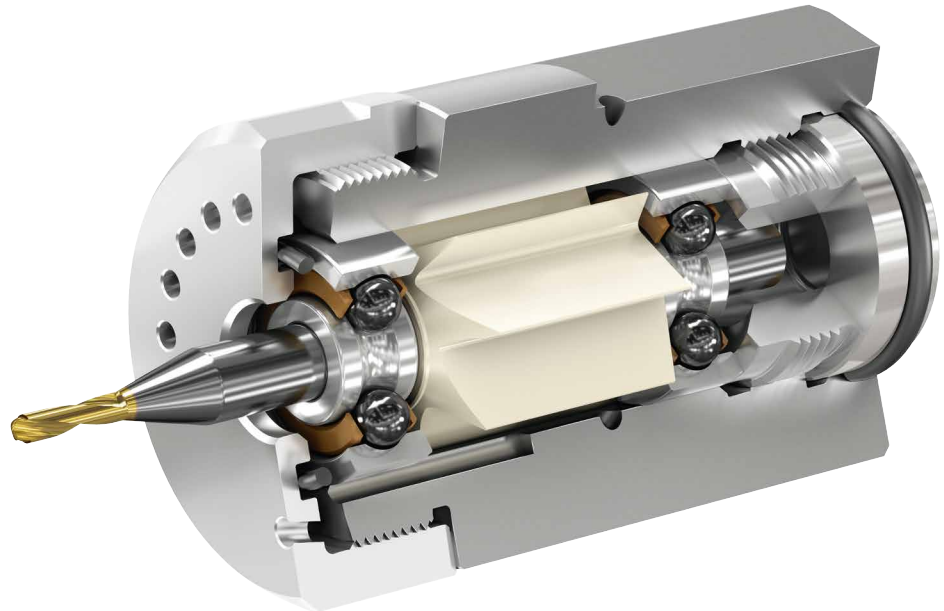


Fits in standard tool holders  
Best dynamic runout  
Extended tool life

# CoolSpeed® mini

Affordable ultra-high rotation speed  
up to 80,000 rpm!

Applications: Milling, Drilling, Grinding, Chamfering, Engraving



## Driven by

Rotation Speed

Number of Jets

Operating Pressure

Flow Rate

Maximum Power

Tool shank Ø

## Coolant or Cutting oil

30,000-80,000 rpm

4

10-60 bar (145-870 psi)

24 l/min (6.3 gal/min)

420 W

3 mm, 4 mm, 6 mm

## Air mist

45,000-50,000 rpm

12

4-5 bar (58-73 psi)

1,040 l/min (36.7 cfm)

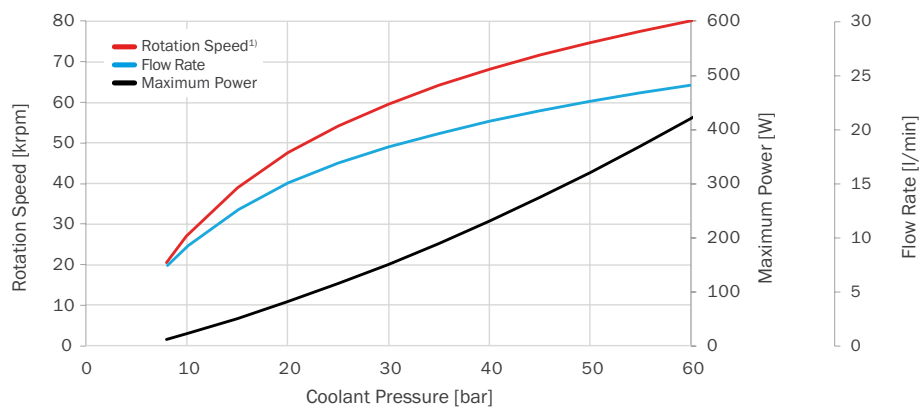
300 W

3 mm, 4 mm, 6 mm



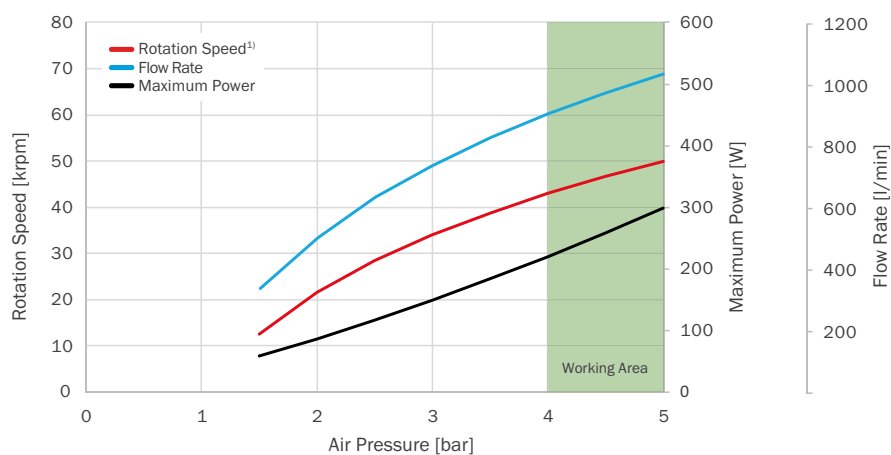
CoolSpeed® mini is a new state-of-the-art turbine-driven ultra-high-speed spindle. Due to its unique design, it is possible to operate the spindle with coolant, cutting oil or air mist.

### Driven by Coolant or Cutting Oil



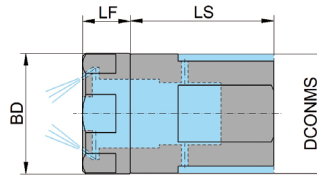
<sup>1)</sup> Idle speed. The operation speed is approx. 10% lower depending on the load

### Driven by Air Mist



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

## CoolSpeed® mini

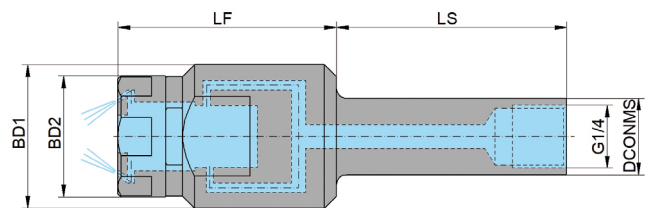


Note:  
Do not clamp with  
side lock screws.

Item No.	DCONMS	LS	LF	BD
CM-CE-F025-010-4-A	25	30	10	25

Driven by Coolant or Cutting Oil, Dimensions in mm

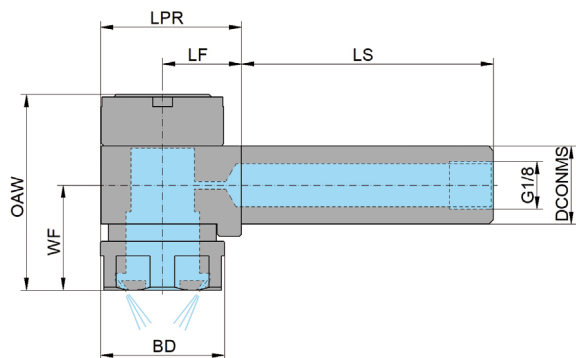
## CoolSpeed® mini EX



Item No.	DCONMS	LS	LF	BD1	BD2
CM-CE-R016-046-4-A	16	48	46	30	25
CM-CE-R022-046-4-A	22	48	46	30	25

Driven by Coolant or Cutting Oil, Dimensions in mm

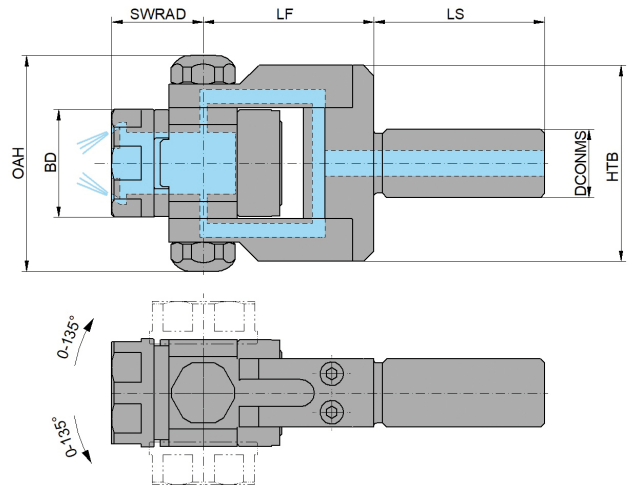
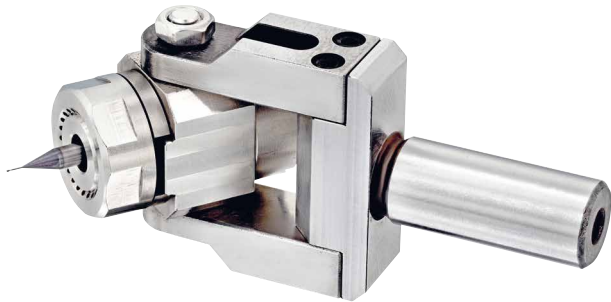
## CoolSpeed® mini 90



Item No.	DCONMS	LS	LF	LPR	WF	OAW	BD
CM-CI-R016-016-4-A	16	51	16	29	21,5	40	25

Driven by Coolant or Cutting Oil, Dimensions in mm

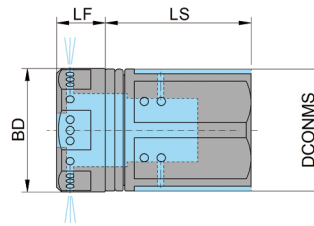
## CoolSpeed® mini V



Item No.	DCONMS	LS	LF	SWRAD	HTB	OAH	BD
CM-CV-R016-040-4-A	16	48	40	22	46	51	25

Driven by Coolant or Cutting Oil, Dimensions in mm

## CoolSpeed® mini Air

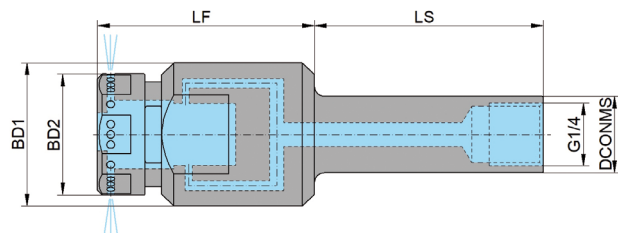


Note:  
Do not clamp with  
side lock screws.

Item No.	DCONMS	LS	LF	BD
CM-AE-F025-010-12-A	25	30	10	25

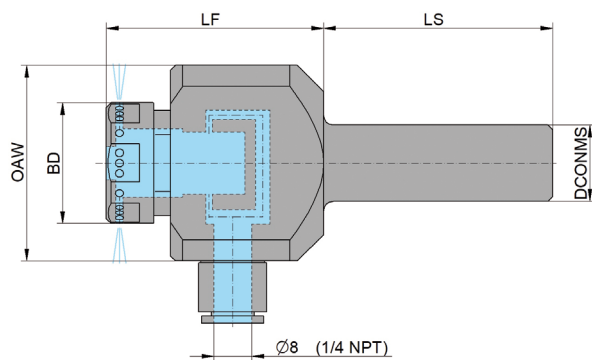
Driven by Air Mist, Dimensions in mm

## CoolSpeed® mini EX Air



Item No.	DCONMS	LS	LF	BD1	BD2
CM-AE-R016-046-12-A	16	48	46	30	25

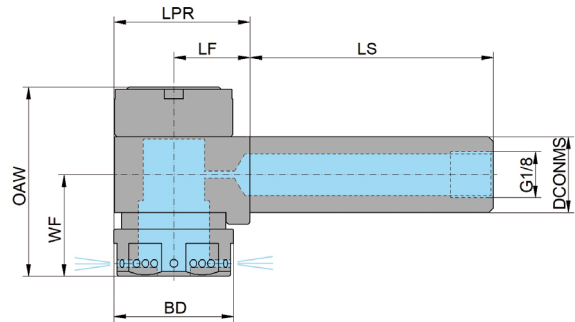
Driven by Air Mist, Dimensions in mm



Item No.	DCONMS	LS	LF	OAW	BD
CM-AE-R016-046-12-B	16	48	46	41	25

Driven by Air Mist, Dimensions in mm

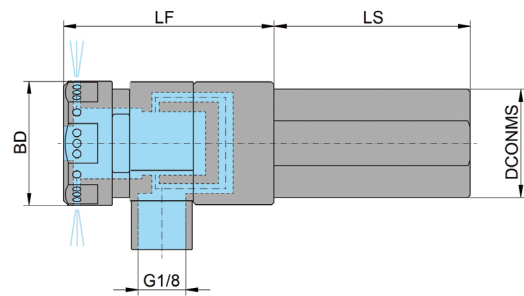
## CoolSpeed® mini 90 Air



Item No.	DCONMS	LS	LF	LPR	WF	OAW	BD
CM-AI-R016-016-12-A	16	51	16	29	21,5	40	25

Driven by Air Mist, Dimensions in mm

## CoolSpeed® mini EXS Air



Item No.	DCONMS	LS	LF	BD
CM-AE-F075-043-12-A	19,05 (¾")	40	43	25
CM-AE-F022-043-12-A	22	40	43	25

Driven by Air Mist, Dimensions in mm

## Replacement kit

(2 bearings, 1 turbine)

Ø3 mm	CM-SRK-030
Ø4 mm	CM-SRK-040
Ø6 mm	CM-SRK-060



## Bearing Puller

To extract the bearings from the CoolSpeed® housing.

CM-SBW-001



## Assembly Device metric

Ø3, 4, 6 mm CM-SMD-346



## Pressure Gauge G1/4"

CM-SPG-60-C



## Adapter for pressure gauge

Ø16 mm	CM-SPA-R016-4-A
Ø19.5 mm (3/4")	CM-SPA-R075-4-A
Ø22 mm	CM-SPA-R022-4-A
Ø25 mm	CM-SPA-R025-4-A





## CoolSpeed® mini

### Starter Set

Includes:

CoolSpeed® mini

CM-SRK-030 Replacement Kit Ø3 mm

CM-SRK-040 Replacement Kit Ø4 mm

CM-SRK-060 Replacement Kit Ø6 mm

CM-SMD-346 Assembly Device

CM-SBW-001 Bearing Puller

Single open-end Wrench 24 mm

CM-SPG-60-C Pressure gauge G $\frac{1}{4}$ "

Adapter for pressure gauge



Shaft Ø	CoolSpeed® mini	Starter Set
25	CM-CE-F025-010-4-A	CM-CE-F025-010-4-SK-A
16	CM-CE-R016-046-4-A	CM-CE-R016-046-4-SK-A

Dimensions in mm

## CoolSpeed® mini Air

### Starter Set

Includes:

CoolSpeed® mini Air

CM-SRK-030 Replacement Kit Ø3 mm

CM-SRK-040 Replacement Kit Ø4 mm

CM-SRK-060 Replacement Kit Ø6 mm

CM-SMD-346 Assembly Device

CM-SBW-001 Bearing Puller

Single open-end Wrench 24 mm



Shaft Ø	CoolSpeed® mini	Starter Set
25	CM-AE-F025-010-12-A	CM-AE-F025-010-12-SK-A
16	CM-AE-R016-046-12-A	CM-AE-R016-046-12-SK-A
16	CM-AE-R016-046-12-B	CM-AE-R016-046-12-SK-B

Dimensions in mm

## Bluetooth Pressure Gauge G1/4"

CM-SPG-60-SA

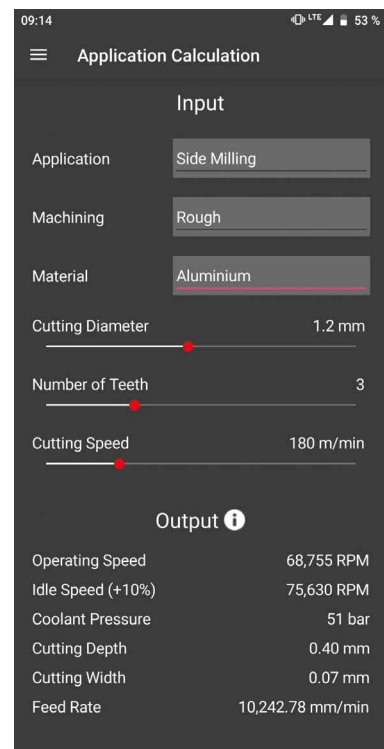
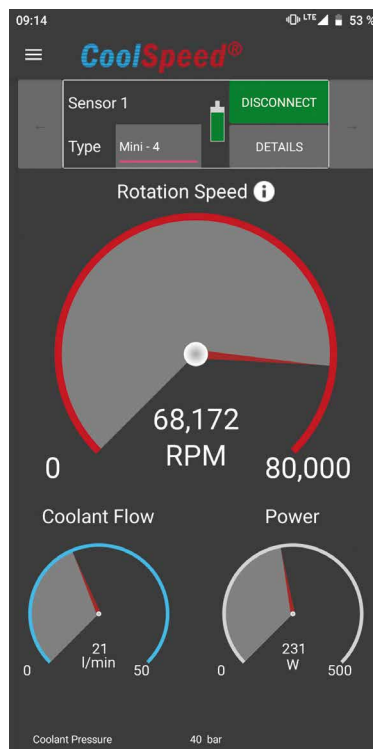
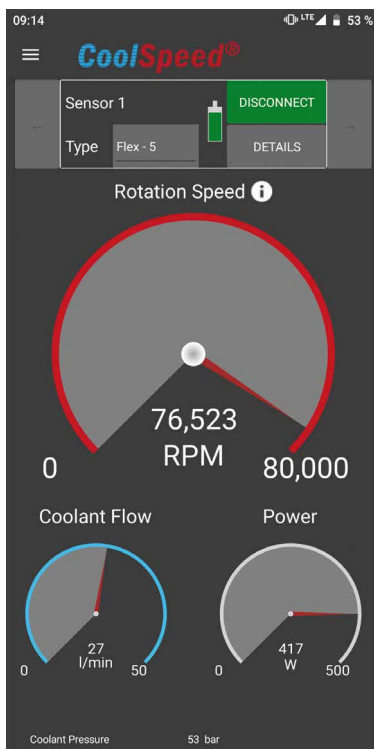
## Replacement Battery

CM-SRB-2450-A



## App „CoolSpeed Pressure Gauge”

The app connects to the Bluetooth Pressure Gauge and displays the rotation speed, coolant pressure, flow rate and power of the high-speed spindle in real time.



## CoolSpeed® mini

### How to measure the Coolant Pressure

The CoolSpeed® mini rotation speed depends on the coolant pressure. Therefore, it is important to adjust the coolant pressure as needed for the application. The pressure test should always be performed directly on the spindle using the adapter for the pressure gauge.

**Pressure measurement with analog manometer:**    **Pressure measurement with digital manometer:**



The inner diameter of the coolant supply pipe should be at least 4 mm.

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## CoolSpeed® mini Air

### Adjust the Air Pressure and the Amount of Oil

An additional Filter-Regulator-Lubricator Unit (not included in the delivery) must be used to operate CoolSpeed® mini Air. The following instructions must be observed during operation:

- The air pressure should be set between 4-5 bar (58-73 psi)
- Operation is only permitted with oiled compressed air
- The oil quantity should be set to 5-10 drops/minute
- Only use oils in the ISO viscosity group VG10 to VG22
- A hose with an inner diameter of 4 or 6 mm should be chosen
- The air hose between the maintenance unit and CoolSpeed® mini Air should be as short as possible



## Assembly of Bearings and Turbine onto the Cutting Tool

Note: The tolerance of the tool shank should be h6 or better.



## Recommended tool holder clamping

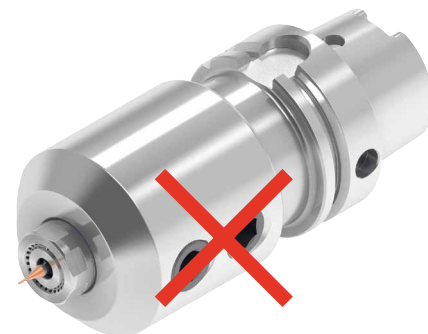
### Hydraulic chuck



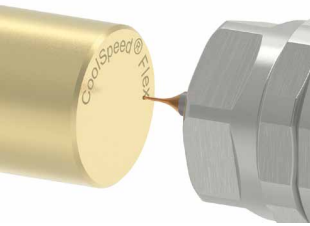
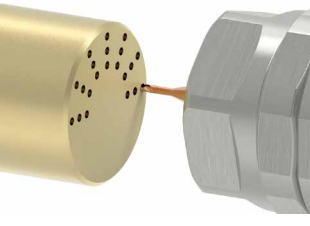
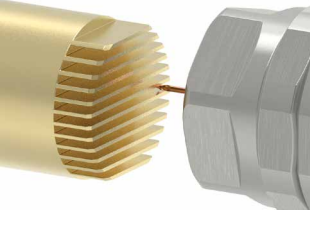
### ER collet chuck – sealed



### No side lock clamping!



## Application Examples

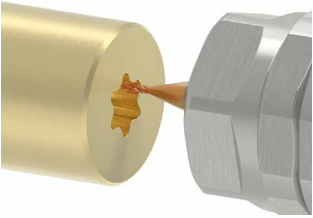
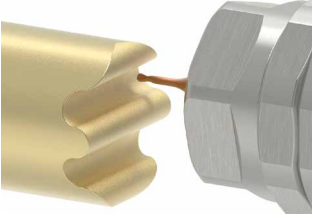
					Tool-Ø	2.0	1.0	0.5
					Cutting Values	Finish Machining	Finish Machining	Finish Machining
Material	Coolant Pressure [bar]	Idle Speed [rpm]	Operation Speed [rpm]					
<b>Engraving</b> 	Stainless Steel	20	48,000	43,000	$a_p$	0.16	0.08	0.04
		40	68,000	61,000	$v_f$	800	1,600	3,200
		60	80,000	72,000	$a_p$	0.16	0.08	0.04
	Aluminum	20	48,000	43,000	$v_f$	1,000	2,000	4,000
		40	68,000	61,000	$a_p$	0.16	0.08	0.04
		60	80,000	72,000	$v_f$	1,200	2,400	4,800
	Carbon Steel	20	48,000	43,000	$a_p$	0.27	0.13	0.07
		40	68,000	61,000	$v_f$	1,333	2,667	5,333
		60	80,000	72,000	$a_p$	0.27	0.13	0.07
<b>Drilling</b> 	Stainless Steel	20	48,000	43,000	$v_f$	1,667	3,333	6,667
		40	68,000	61,000	$a_p$	0.27	0.13	0.07
		60	80,000	72,000	$v_f$	2,000	4,000	8,000
	Aluminum	20	48,000	43,000	$a_p$	0.18	0.09	0.05
		40	68,000	61,000	$v_f$	1,040	2,080	4,160
		60	80,000	72,000	$a_p$	0.18	0.09	0.05
	Carbon Steel	20	48,000	43,000	$v_f$	1,300	2,600	5,200
		40	68,000	61,000	$a_p$	0.18	0.09	0.05
		60	80,000	72,000	$v_f$	1,560	3,120	6,240
<b>Slot Milling</b> 	Stainless Steel	20	48,000	43,000	$a_p$	0.60	0.30	0.15
		40	68,000	61,000	$v_f$	1,000	1,500	2,250
		60	80,000	72,000	$a_p$	0.60	0.30	0.15
	Aluminum	20	48,000	43,000	$v_f$	1,250	1,875	2,813
		40	68,000	61,000	$a_p$	0.60	0.30	0.15
		60	80,000	72,000	$v_f$	1,500	2,250	3,375
	Carbon Steel	20	48,000	43,000	$a_p$	0.60	0.30	0.15
		40	68,000	61,000	$v_f$	1,000	1,500	2,250
		60	80,000	72,000	$a_p$	0.60	0.30	0.15
<b>Slot Milling</b>	Stainless Steel	20	48,000	43,000	$v_f$	1,250	1,875	2,813
		40	68,000	61,000	$a_p$	0.60	0.30	0.15
		60	80,000	72,000	$v_f$	1,500	2,250	3,375
	Aluminum	20	48,000	43,000	$a_p$	0.10	0.05	0.03
		40	68,000	61,000	$v_f$	400	800	1,600
		60	80,000	72,000	$a_p$	0.10	0.05	0.03
	Carbon Steel	20	48,000	43,000	$v_f$	500	1,000	2,000
		40	68,000	61,000	$a_p$	0.10	0.05	0.03
		60	80,000	72,000	$v_f$	600	1,200	2,400
Aluminum	20	48,000	43,000	$a_p$	0.17	0.08	0.04	
	40	68,000	61,000	$v_f$	667	1,333	2,667	
	60	80,000	72,000	$a_p$	0.17	0.08	0.04	
Carbon Steel	20	48,000	43,000	$v_f$	833	1,667	3,333	
	40	68,000	61,000	$a_p$	0.17	0.08	0.04	
	60	80,000	72,000	$v_f$	1,000	2,000	4,000	
Aluminum	20	48,000	43,000	$a_p$	0.11	0.06	0.03	
	40	68,000	61,000	$v_f$	520	1,040	2,080	
	60	80,000	72,000	$a_p$	0.11	0.06	0.03	
Carbon Steel	20	48,000	43,000	$v_f$	520	1,300	2,600	
	40	68,000	61,000	$a_p$	0.11	0.06	0.03	
	60	80,000	72,000	$v_f$	780	1,560	3,120	

Dimensions  $a_p$  in mm,  $v_f$  in mm/min

The cutting values apply to CoolSpeed® Flex using 4 jets. The values are for orientation only and shall be adapted to the specific application by gradually increasing  $v_f$  until the optimum cutting result is achieved.



## Application Examples

					Tool-Ø	2.0		1.0		0.5		
					Cutting Values	Rough Machin- ing	Finish Machin- ing	Rough Machin- ing	Finish Machin- ing	Rough Machin- ing	Finish Machin- ing	
Material	Coolant Pressure [bar]	Idle Speed [rpm]	Operation Speed [rpm]									
<b>Side Milling</b> 	Stainless Steel	20	48,000	43,000	$a_p$	0.40	0.40	0.20	0.20	0.10	0.10	
					$a_e$	0.05	0.02	0.04	0.02	0.02	0.01	
					$v_f$	2,000	1,000	3,000	1,500	4,500	2,250	
		40	68,000	61,000	$a_p$	0.40	0.40	0.20	0.20	0.10	0.10	
					$a_e$	0.05	0.02	0.04	0.02	0.02	0.01	
					$v_f$	2,500	1,250	3,750	1,875	5,625	2,813	
		60	80,000	72,000	$a_p$	0.40	0.40	0.20	0.20	0.10	0.10	
					$a_e$	0.05	0.02	0.04	0.02	0.02	0.01	
					$v_f$	3,000	1,500	4,500	2,250	6,750	3,375	
		Aluminum	20	48,000	43,000	$a_p$	0.67	0.67	0.33	0.33	0.17	0.17
					$a_e$	0.08	0.04	0.06	0.03	0.04	0.02	
					$v_f$	3,333	1,667	5,000	2,500	7,500	3,750	
		40	68,000	61,000	$a_p$	0.67	0.67	0.33	0.33	0.17	0.17	
				$a_e$	0.08	0.04	0.06	0.03	0.04	0.02		
				$v_f$	4,167	2,083	6,250	3,125	9,375	4,688		
		60	80,000	72,000	$a_p$	0.67	0.67	0.33	0.33	0.17	0.17	
				$a_e$	0.08	0.04	0.06	0.03	0.04	0.02		
				$v_f$	5,000	2,500	7,500	3,750	12,500	5,625		
	Carbon Steel	20	48,000	43,000	$a_p$	0.46	0.46	0.23	0.23	0.11	0.11	
				$a_e$	0.08	0.04	0.06	0.03	0.04	0.02		
				$v_f$	2,600	1,300	3,900	1,950	5,850	2,925		
		40	68,000	61,000	$a_p$	0.46	0.46	0.23	0.23	0.11	0.11	
				$a_e$	0.08	0.04	0.06	0.03	0.04	0.02		
				$v_f$	3,250	1,625	4,875	2,438	7,313	3,656		
		60	80,000	72,000	$a_p$	0.46	0.46	0.23	0.23	0.11	0.11	
				$a_e$	0.08	0.04	0.06	0.03	0.04	0.02		
				$v_f$	3,900	1,950	5,850	2,925	8,775	4,388		
<b>Profile Milling</b> 	Stainless Steel	20	48,000	43,000	$a_p$	0.20	0.10	0.10	0.05	0.05	0.03	
					$a_e$	0.03	0.02	0.02	0.01	0.01	0.01	
					$v_f$	1,000	500	2,000	1,000	4,000	2,000	
			40	68,000	61,000	$a_p$	0.20	0.10	0.10	0.05	0.05	0.03
		$a_e$				0.03	0.02	0.02	0.01	0.01	0.01	
		$v_f$				1,250	625	2,500	1,250	5,000	2,500	
			60	80,000	72,000	$a_p$	0.20	0.10	0.10	0.05	0.05	0.03
		$a_e$				0.03	0.02	0.02	0.01	0.01	0.01	
		$v_f$				1,500	750	3,000	1,500	6,000	3,000	
	Aluminum	20	48,000	43,000	$a_p$	0.33	0.17	0.17	0.08	0.08	0.04	
					$a_e$	0.05	0.03	0.03	0.01	0.01	0.01	
					$v_f$	1,667	833	3,333	1,667	6,667	3,333	
			40	68,000	61,000	$a_p$	0.33	0.17	0.17	0.08	0.08	0.04
		$a_e$				0.05	0.03	0.03	0.01	0.01	0.01	
		$v_f$				2,083	1,042	4,167	2,083	8,333	4,167	
			60	80,000	72,000	$a_p$	0.33	0.17	0.17	0.08	0.08	0.04
		$a_e$				0.05	0.03	0.03	0.01	0.01	0.01	
		$v_f$				2,500	1,250	5,000	2,500	10,000	5,000	
	Carbon Steel	20	48,000	43,000	$a_p$	0.23	0.11	0.11	0.06	0.06	0.03	
					$a_e$	0.05	0.03	0.03	0.01	0.01	0.01	
					$v_f$	1,300	650	2,600	1,300	5,200	2,600	
			40	68,000	61,000	$a_p$	0.23	0.11	0.11	0.06	0.06	0.03
		$a_e$				0.05	0.03	0.03	0.01	0.01	0.01	
		$v_f$				1,625	813	3,250	1,625	6,500	3,250	
		60	80,000	72,000	$a_p$	0.23	0.11	0.11	0.06	0.06	0.03	
$a_e$					0.05	0.03	0.03	0.01	0.01	0.01		
$v_f$					1,950	975	3,900	1,950	7,800	3,900		

Dimensions  $a_p$ ,  $a_e$  in mm,  $v_f$  in mm/min

The cutting values apply to CoolSpeed® Flex using 4 jets. The values are for orientation only and shall be adapted to the specific application by gradually increasing  $v_f$  until the optimum cutting result is achieved.

# CoolSpeed®

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## WTO worldwide

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