

WTO

CoolSpeed[®] mini

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

In operation:

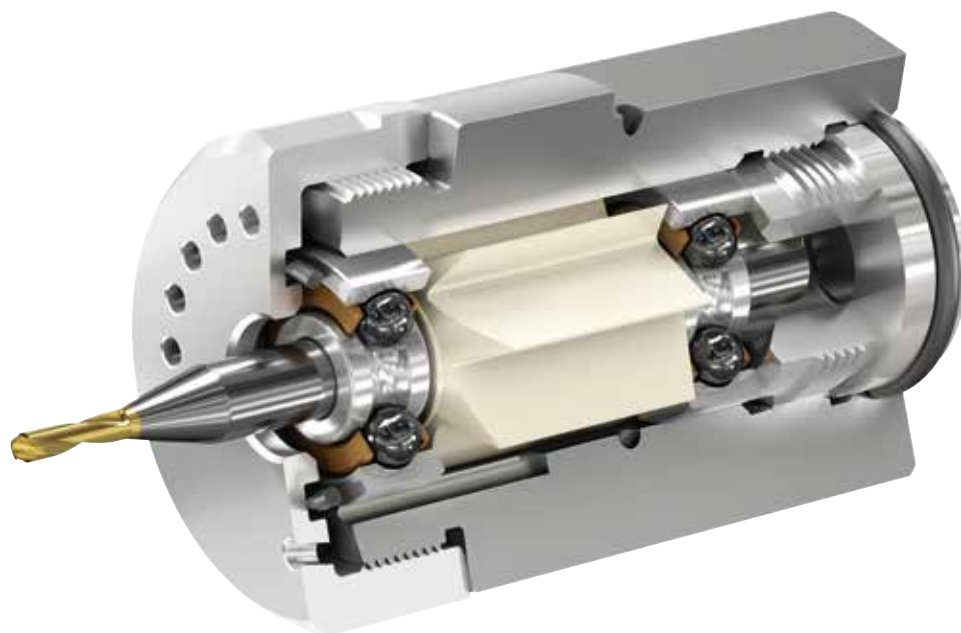


Fits in standard tool holders
Best dynamic runout
Extended tool life

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

145-870 psi (10-60 bar)

6.3 gal/min (24 l/min)

420 W

1/8", 3/16", 3 mm, 4 mm, 6 mm

Air mist

45,000-50,000 rpm

12

58-73 psi (4-5 bar)

36.7 cfm (1,040 l/min)

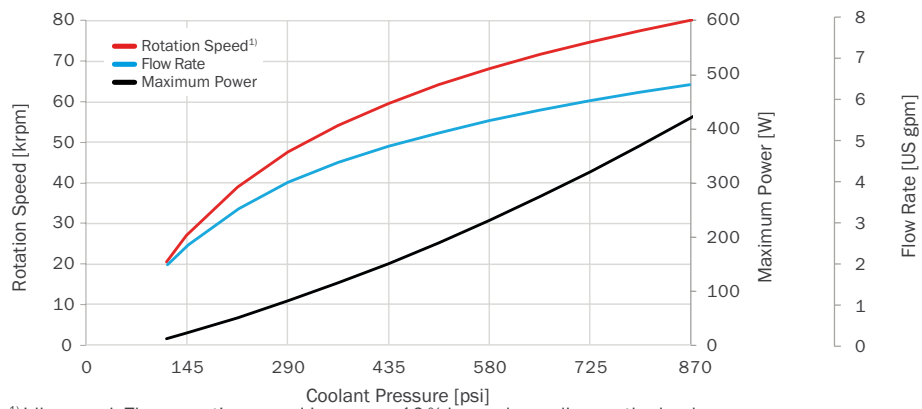
300 W

1/8", 3/16", 3 mm, 4 mm, 6 mm



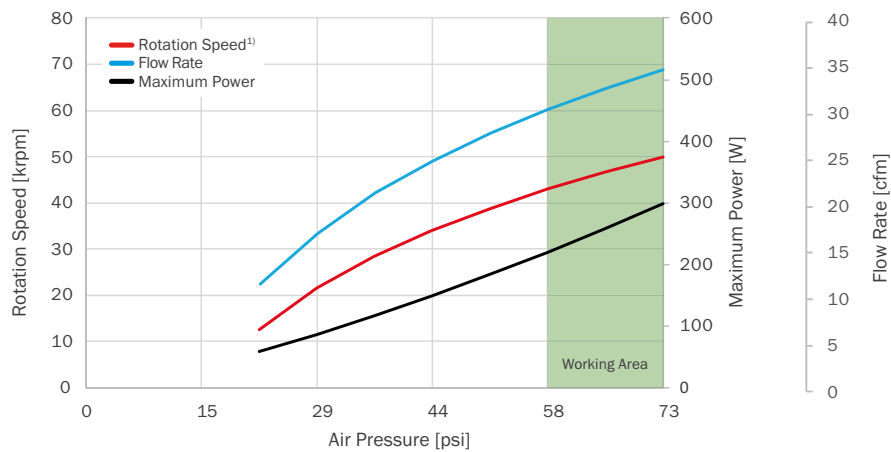
CoolSpeed® mini is a new state-of-the-art turbine-driven ultra-high-speed spindle. Due to its unique design, it is possible to operate the spindle with coolant, cutting oil or air mist.

Driven by Coolant or Cutting Oil



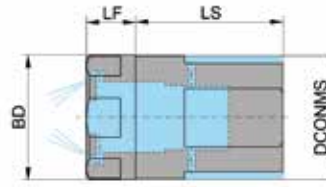
¹⁾ Idle speed. The operation speed is approx. 10% lower depending on the load

Driven by Air Mist



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

CoolSpeed® mini

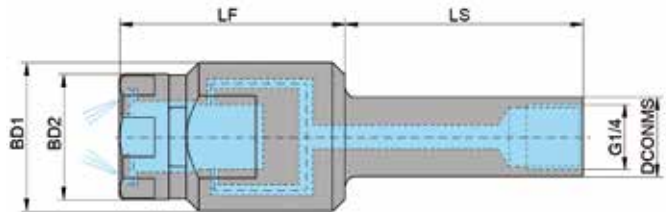


Note:
Do not clamp with
side lock screws.

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

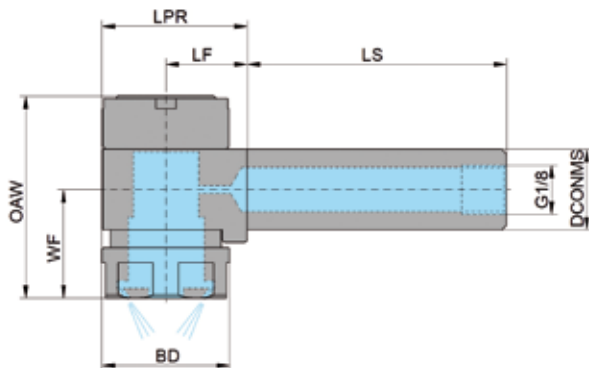
CoolSpeed® mini EX



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

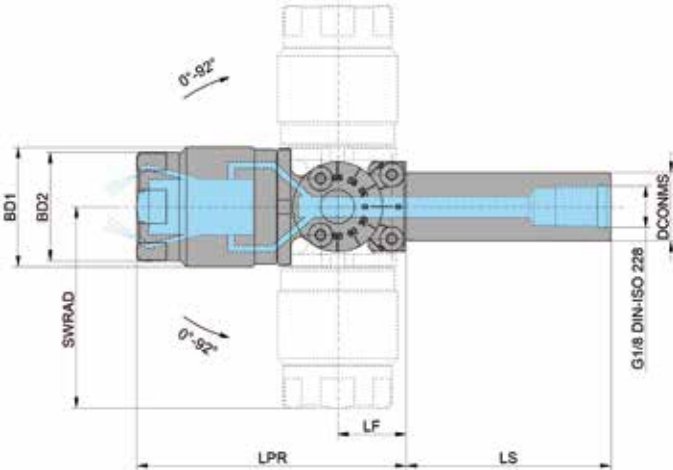
CoolSpeed® mini 90



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

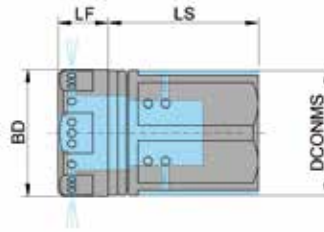
CoolSpeed® mini V



Item No.	DCONMS	LS	LF	LPS	SWRAD	BD1	BD2
CM-CV-R016-040-4-A	16	48	16	63	47	28	25

Driven by Coolant or Cutting Oil, Dimensions in mm

CoolSpeed® mini Air

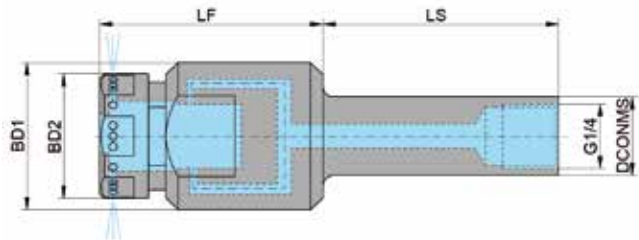


Note:
Do not clamp with
side lock screws.

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

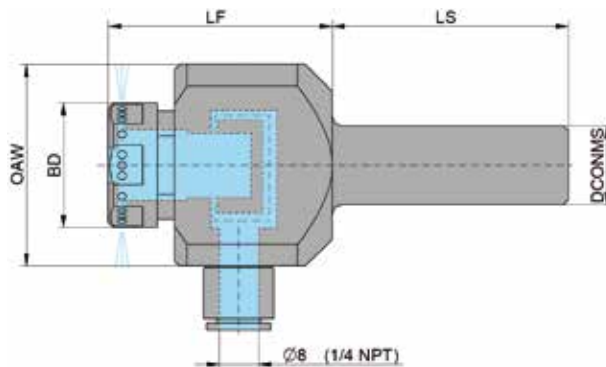
Driven by Air Mist, Dimensions in mm

CoolSpeed® mini EX Air



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

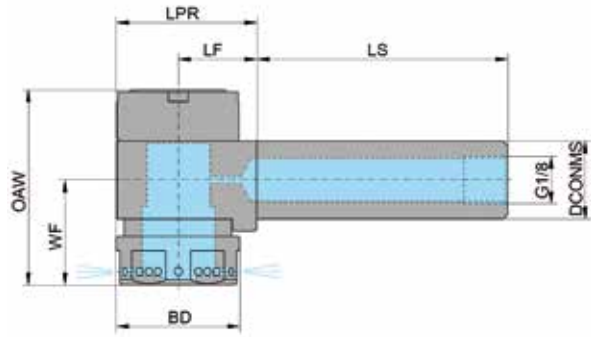
Driven by Air Mist, Dimensions in mm



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

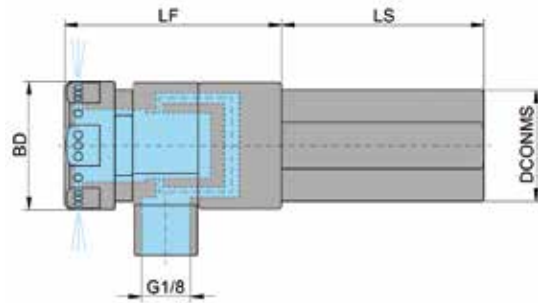
CoolSpeed® mini 90 Air



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

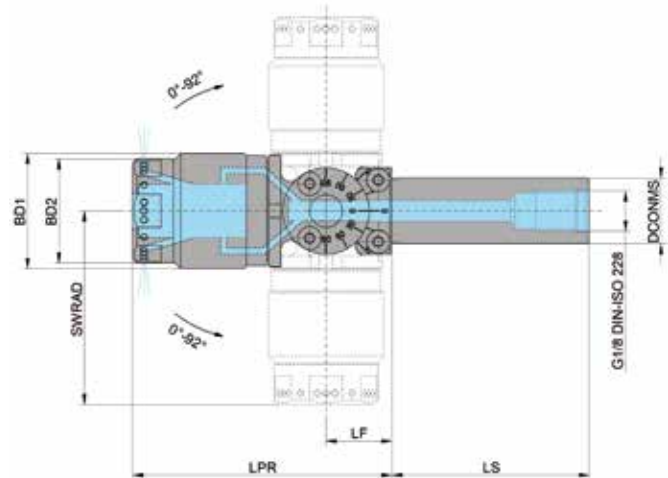


Item No.	DCONMS	LS	LF	BD
CM-AE-F075-043-12-A	19,05 (3/4")	40	43	25
CM-AE-F022-043-12-A	22	40	43	25

inch dimensions

Driven by Air Mist, Dimensions in mm

CoolSpeed® mini V Air



Item No.	DCONMS	LS	LF	LPS	SWRAD	BD1	BD2
CM-AV-R016-016-12-A	16	48	16	63	47	28	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
Ø1/8"	CM-SRK-013
Ø3/16"	CM-SRK-019

mm
dimensions

inch
dimensions



Bearing Puller

To extract the bearings from the CoolSpeed® housing.

CM-SBW-001



Assembly Device

Ø3, 4, 6 mm CM-SMD-346

mm
dimensions

Ø1/8", 3/16" CM-SMD-1319

inch
dimensions



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

mm
dimensions

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 G¹/₄"
- Adapter for pressure gauge

Starter Set

inch
dimensions

Includes:

- CoolSpeed® mini
- CM-SRK-013 Replacement Kit Ø¹/₈" (2 pcs)
- CM-SRK-019 Replacement Kit Ø³/₁₆" (1 pc)
- CM-SMD-1319 Assembly Device
- CM-SBW-001 Bearing Puller
- Single open-end Wrench 24 mm
- CM-SPG-60-C Pressure gauge G¹/₄"
- Adapter for pressure gauge



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

Dimensions in mm

CoolSpeed® mini Air

Starter Set

mm
dimensions

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

Starter Set

inch
dimensions

Includes:

- CoolSpeed® mini Air
- CM-SRK-013 Replacement Kit Ø¹/₈" (2 pcs)
- CM-SRK-019 Replacement Kit Ø³/₁₆" (1 pc)
- CM-SMD-1319 Assembly Device
- CM-SMD-001 Bearing Puller
- Single open-end Wrench 24 mm



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

Dimensions in mm

Bluetooth Pressure Gauge G1/4"

CM-SPG-60-SA

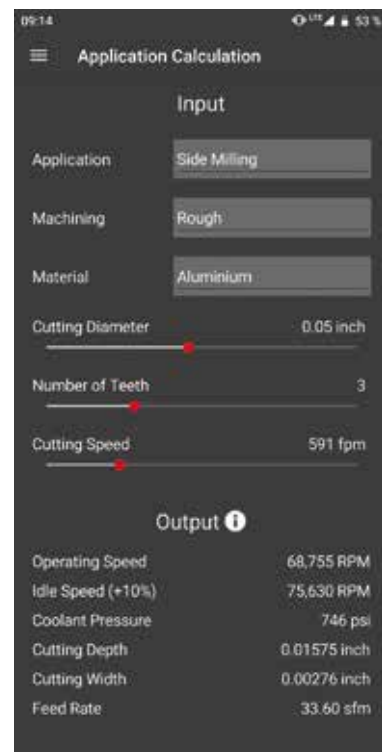
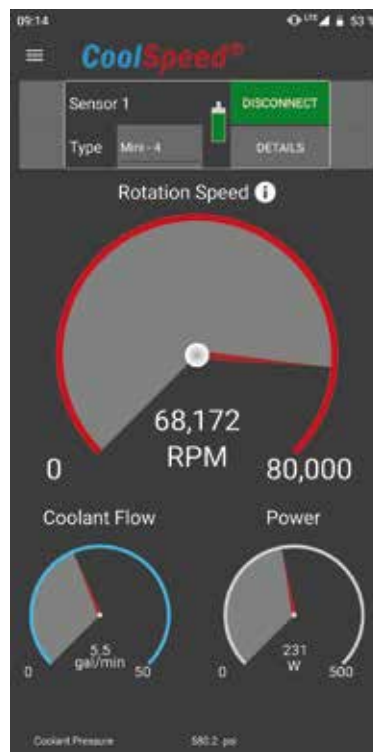
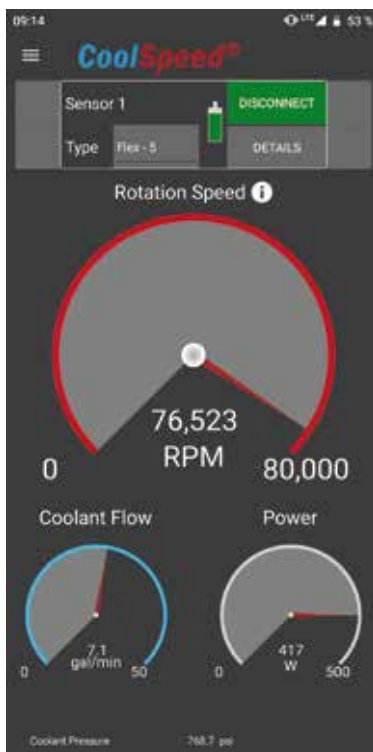
Replacement Battery

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.

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 58-73 psi (4-5 bar)
- 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




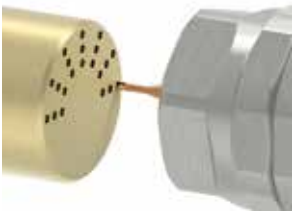

ER collet chuck – sealed



No side lock clamping!



Application Examples

					Tool-Ø	0.0787	0.0394	0.0197	
					Cutting Values	Finish Machining	Finish Machining	Finish Machining	
Material	Coolant Pressure [psi]	Idle Speed [rpm]	Operation Speed [rpm]						
Engraving 	Stainless Steel	290	48,000	43,000	a_p	0.0063	0.0031	0.0016	
		580	68,000	61,000	v_f	31.5	63.0	126.0	
		870	80,000	72,000	a_p	0.0063	0.0031	0.0016	
	Aluminum	290	48,000	43,000	v_f	39.4	78.7	157.5	
		580	68,000	61,000	a_p	0.0063	0.0031	0.0016	
		870	80,000	72,000	v_f	47.2	94.5	189.0	
	Carbon Steel	290	48,000	43,000	a_p	0.0105	0.0052	0.0026	
		580	68,000	61,000	v_f	52.5	105.0	210.0	
		870	80,000	72,000	a_p	0.0105	0.0052	0.0026	
	Drilling 	Stainless Steel	290	48,000	43,000	v_f	65.6	131.2	262.5
			580	68,000	61,000	a_p	0.0105	0.0052	0.0026
			870	80,000	72,000	v_f	78.7	157.5	315.0
Aluminum		290	48,000	43,000	a_p	0.0072	0.0036	0.0018	
		580	68,000	61,000	v_f	40.9	81.9	163.8	
		870	80,000	72,000	a_p	0.0072	0.0036	0.0018	
Carbon Steel		290	48,000	43,000	v_f	51.2	102.4	204.7	
		580	68,000	61,000	a_p	0.0072	0.0036	0.0018	
		870	80,000	72,000	v_f	61.4	122.8	245.7	
Slot Milling 		Stainless Steel	290	48,000	43,000	a_p	0.0236	0.0118	0.0059
			580	68,000	61,000	v_f	39.4	59.1	88.6
			870	80,000	72,000	a_p	0.0236	0.0118	0.0059
	Aluminum	290	48,000	43,000	v_f	49.2	73.8	110.7	
		580	68,000	61,000	a_p	0.0236	0.0118	0.0059	
		870	80,000	72,000	v_f	59.1	88.6	132.9	
	Carbon Steel	290	48,000	43,000	a_p	0.0236	0.0118	0.0059	
		580	68,000	61,000	v_f	39.4	59.1	88.6	
		870	80,000	72,000	a_p	0.0236	0.0118	0.0059	
	Slot Milling	Stainless Steel	290	48,000	43,000	v_f	49.2	73.8	110.7
			580	68,000	61,000	a_p	0.0236	0.0118	0.0059
			870	80,000	72,000	v_f	59.1	88.6	132.9
Aluminum		290	48,000	43,000	a_p	0.0039	0.0020	0.0010	
		580	68,000	61,000	v_f	15.7	31.5	63.0	
		870	80,000	72,000	a_p	0.0039	0.0020	0.0010	
Carbon Steel		290	48,000	43,000	v_f	19.7	39.4	78.7	
		580	68,000	61,000	a_p	0.0039	0.0020	0.0010	
		870	80,000	72,000	v_f	23.6	47.2	94.5	
Slot Milling		Aluminum	290	48,000	43,000	a_p	0.0066	0.0033	0.0016
			580	68,000	61,000	v_f	26.2	52.5	105.0
			870	80,000	72,000	a_p	0.0066	0.0033	0.0016
	Carbon Steel	290	48,000	43,000	v_f	32.8	65.6	131.2	
		580	68,000	61,000	a_p	0.0066	0.0033	0.0016	
		870	80,000	72,000	v_f	39.4	78.7	157.5	
	Carbon Steel	290	48,000	43,000	a_p	0.0045	0.0022	0.0011	
		580	68,000	61,000	v_f	20.5	40.9	81.9	
		870	80,000	72,000	a_p	0.0045	0.0022	0.0011	
	Carbon Steel	290	48,000	43,000	v_f	20.5	51.2	102.4	
		580	68,000	61,000	a_p	0.0045	0.0022	0.0011	
		870	80,000	72,000	v_f	30.7	61.4	122.8	

a_p in inch, v_f in sfm.

The cutting values apply to CoolSpeed® mini 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

Side Milling



Profile Milling



Material	Coolant Pressure [psi]	Idle Speed [rpm]	Operation Speed [rpm]	Tool-Ø	0.0787		0.0394		0.0197	
					Cutting Values	Rough Machining	Finish Machining	Rough Machining	Finish Machining	Rough Machining
Stainless Steel	290	48,000	43,000	a_p	0.0157	0.0157	0.0079	0.0079	0.0039	0.0039
				a_e	0.0019	0.0009	0.0014	0.0007	0.0009	0.0005
				v_f	78.7	39.4	118.1	59.1	177.2	88.6
	580	68,000	61,000	a_p	0.0157	0.0157	0.0079	0.0079	0.0039	0.0039
				a_e	0.0019	0.0009	0.0014	0.0007	0.0009	0.0005
				v_f	98.4	49.2	147.6	73.8	221.5	110.7
	870	80,000	72,000	a_p	0.0157	0.0157	0.0079	0.0079	0.0039	0.0039
				a_e	0.0019	0.0009	0.0014	0.0007	0.0009	0.0005
				v_f	118.1	59.1	177.2	88.6	265.7	132.9
Aluminum	290	48,000	43,000	a_p	0.0262	0.0262	0.0131	0.0131	0.0066	0.0066
				a_e	0.0031	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	131.2	65.6	196.9	98.4	295.3	147.6
	580	68,000	61,000	a_p	0.0262	0.0262	0.0131	0.0131	0.0066	0.0066
				a_e	0.0031	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	164.0	82.0	246.1	123.0	369.1	184.5
	870	80,000	72,000	a_p	0.0262	0.0262	0.0131	0.0131	0.0066	0.0066
				a_e	0.0031	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	196.9	98.4	295.3	147.6	492.1	221.5
Carbon Steel	290	48,000	43,000	a_p	0.0180	0.0180	0.0090	0.0090	0.0045	0.0045
				a_e	0.0032	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	102.4	51.2	153.5	76.8	230.3	115.2
	580	68,000	61,000	a_p	0.0180	0.0180	0.0090	0.0090	0.0045	0.0045
				a_e	0.0032	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	128.0	64.0	191.9	96.0	287.9	143.9
	870	80,000	72,000	a_p	0.0180	0.0180	0.0090	0.0090	0.0045	0.0045
				a_e	0.0032	0.0016	0.0024	0.0012	0.0016	0.0008
				v_f	153.5	76.8	230.3	115.2	345.5	172.7
Stainless Steel	290	48,000	43,000	a_p	0.0079	0.0039	0.0039	0.0020	0.0020	0.0010
				a_e	0.0013	0.0006	0.0006	0.0003	0.0003	0.0004
				v_f	39.4	19.7	78.7	39.4	157.5	78.7
	580	68,000	61,000	a_p	0.0079	0.0039	0.0039	0.0020	0.0020	0.0010
				a_e	0.0013	0.0006	0.0006	0.0003	0.0003	0.0004
				v_f	49.2	24.6	98.4	49.2	196.9	98.4
	870	80,000	72,000	a_p	0.0079	0.0039	0.0039	0.0020	0.0020	0.0010
				a_e	0.0013	0.0006	0.0006	0.0003	0.0003	0.0004
				v_f	59.1	29.5	118.1	59.1	236.2	118.1
Aluminum	290	48,000	43,000	a_p	0.0131	0.0066	0.0066	0.0033	0.0033	0.0016
				a_e	0.0021	0.0010	0.0010	0.0005	0.0005	0.0003
				v_f	65.6	32.8	131.2	65.6	262.5	131.2
	580	68,000	61,000	a_p	0.0131	0.0066	0.0066	0.0033	0.0033	0.0016
				a_e	0.0021	0.0010	0.0010	0.0005	0.0005	0.0003
				v_f	82.0	41.0	164.0	82.0	328.1	164.0
	870	80,000	72,000	a_p	0.0131	0.0066	0.0066	0.0033	0.0033	0.0016
				a_e	0.0021	0.0010	0.0010	0.0005	0.0005	0.0003
				v_f	98.4	49.2	196.9	98.4	393.7	196.9
Carbon Steel	290	48,000	43,000	a_p	0.0090	0.0045	0.0045	0.0022	0.0022	0.0011
				a_e	0.0021	0.0011	0.0011	0.0005	0.0005	0.0003
				v_f	51.2	25.6	102.4	51.2	204.7	102.4
	580	68,000	61,000	a_p	0.0090	0.0045	0.0045	0.0022	0.0022	0.0011
				a_e	0.0021	0.0011	0.0011	0.0005	0.0005	0.0003
				v_f	64.0	32.0	128.0	64.0	255.9	128.0
	870	80,000	72,000	a_p	0.0090	0.0045	0.0045	0.0022	0.0022	0.0011
				a_e	0.0021	0.0011	0.0011	0.0005	0.0005	0.0003
				v_f	76.8	38.4	153.5	76.8	307.1	153.5

a_p and a_e in inch, v_f in sfm.

The values apply to CoolSpeed® mini 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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