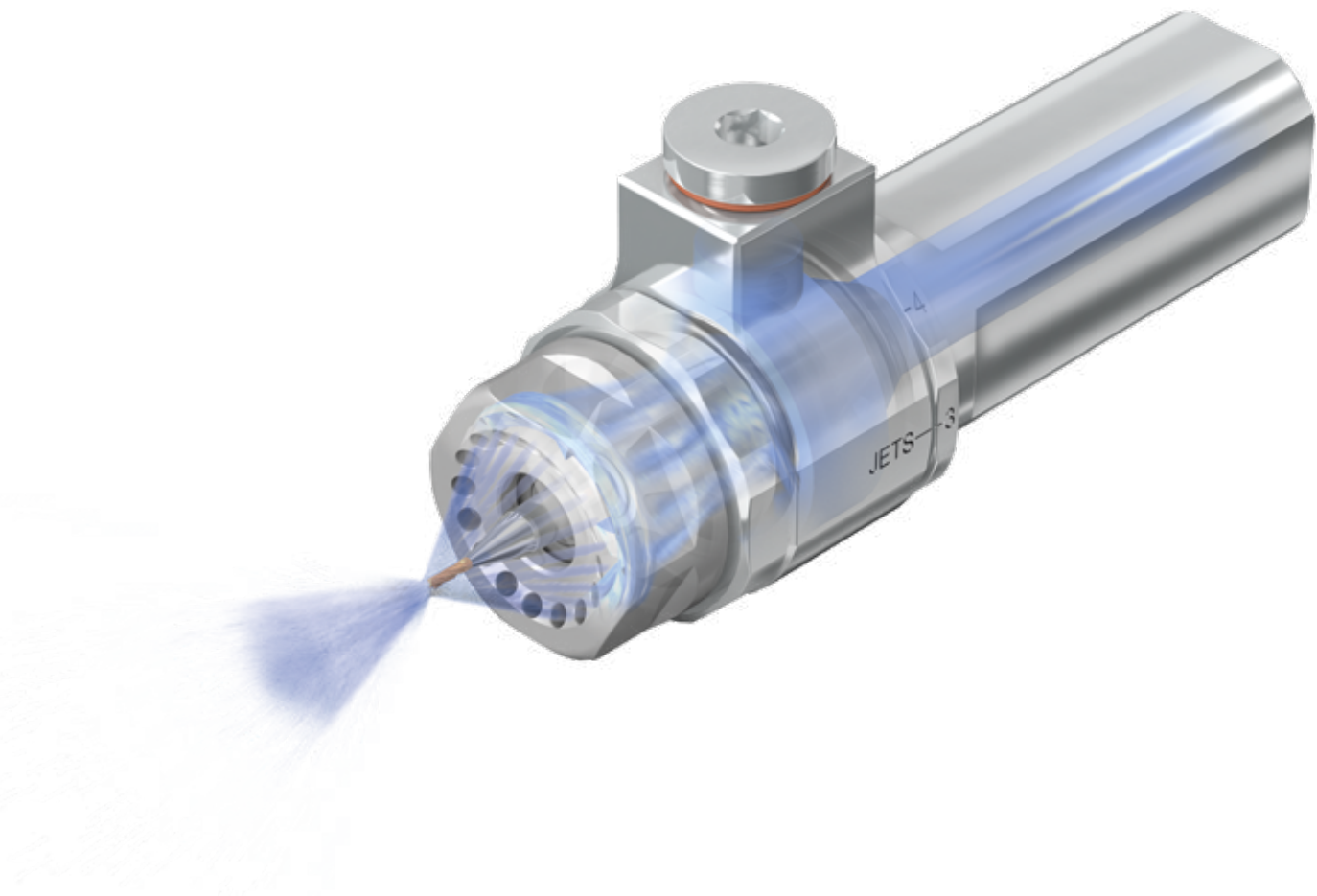


WTO

CoolSpeed[®] Flex

Ultra-high rotation speed up to 80,000 rpm.
Affordable and flexible in use!



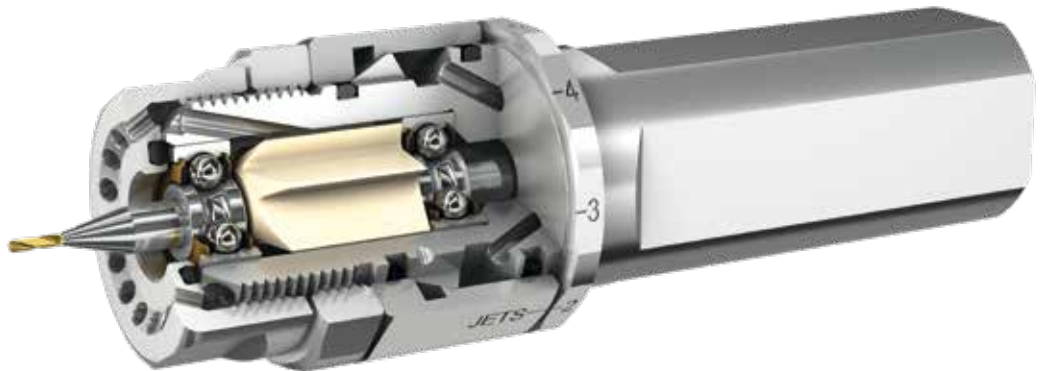
Ideal for Swiss Type lathes and turning centers
Best dynamic runout
Extended tool life

CoolSpeed® Flex

Ultra-high rotation speed up to 80,000 rpm.

Adjustable number of jets.

Applications: Milling, Drilling, Grinding, Deburring, Engraving.

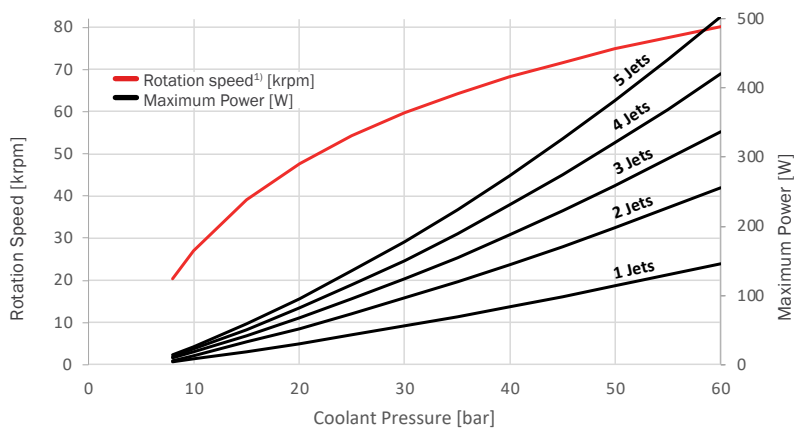


Driven by	Coolant or Cutting Oil
Rotation Speed	30.000-80.000 rpm
Number of Jets	1-5
Operating Pressure	10-60 bar (145-870 psi)
Flow Rate	8-28 l/min (2.0-7.5 gal/min)
Maximum Power	150-500 W
Tool Shank Ø	3 mm, 4 mm, 6 mm



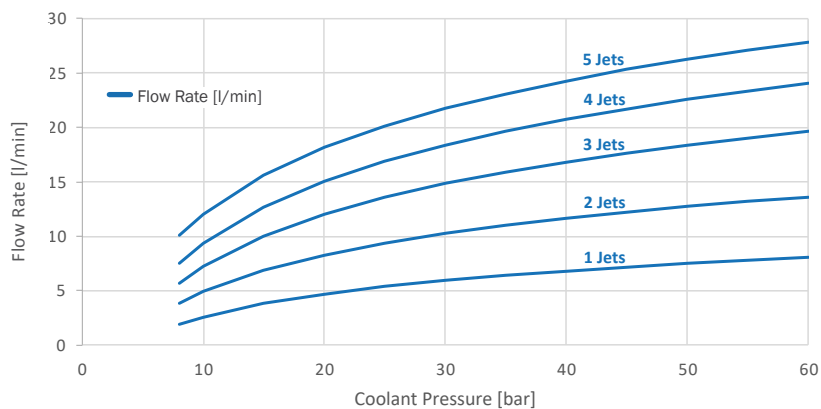
CoolSpeed® Flex is a new state-of-the-art turbine-driven ultra-high-speed spindle. Due to the adjustable number of jets, CoolSpeed® Flex can also be operated by coolant pumps with a flow rate as low as 8 l/min.

Rotation Speed & Maximum Power/Coolant Pressure

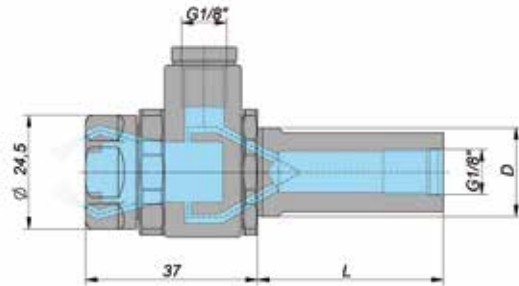


¹⁾ Idle speed. The operation speed is approx. 10% lower depending on the load.

Flow Rate/Coolant Pressure



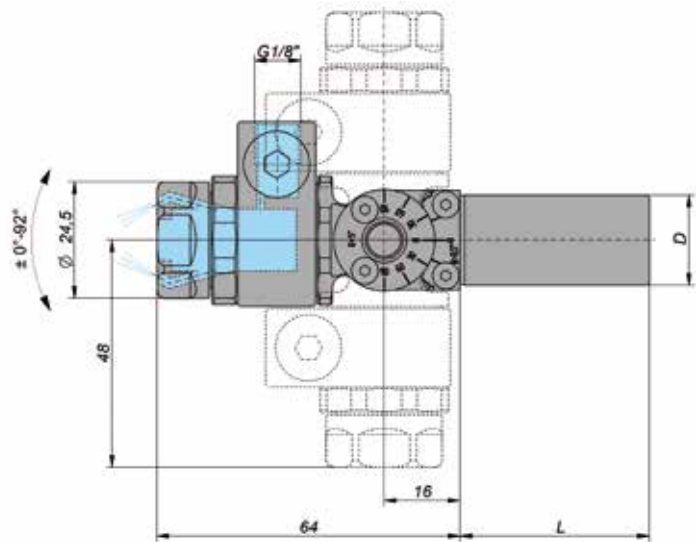
CoolSpeed® Flex



Item No.	D	L
CM-CE-F075-037-FL-A	19.05 (¾")	40
CM-CE-F020-037-FL-A	20	50
CM-CE-F022-037-FL-A	22	50
CM-CE-F025-037-FL-A	25	55

Dimensions in mm

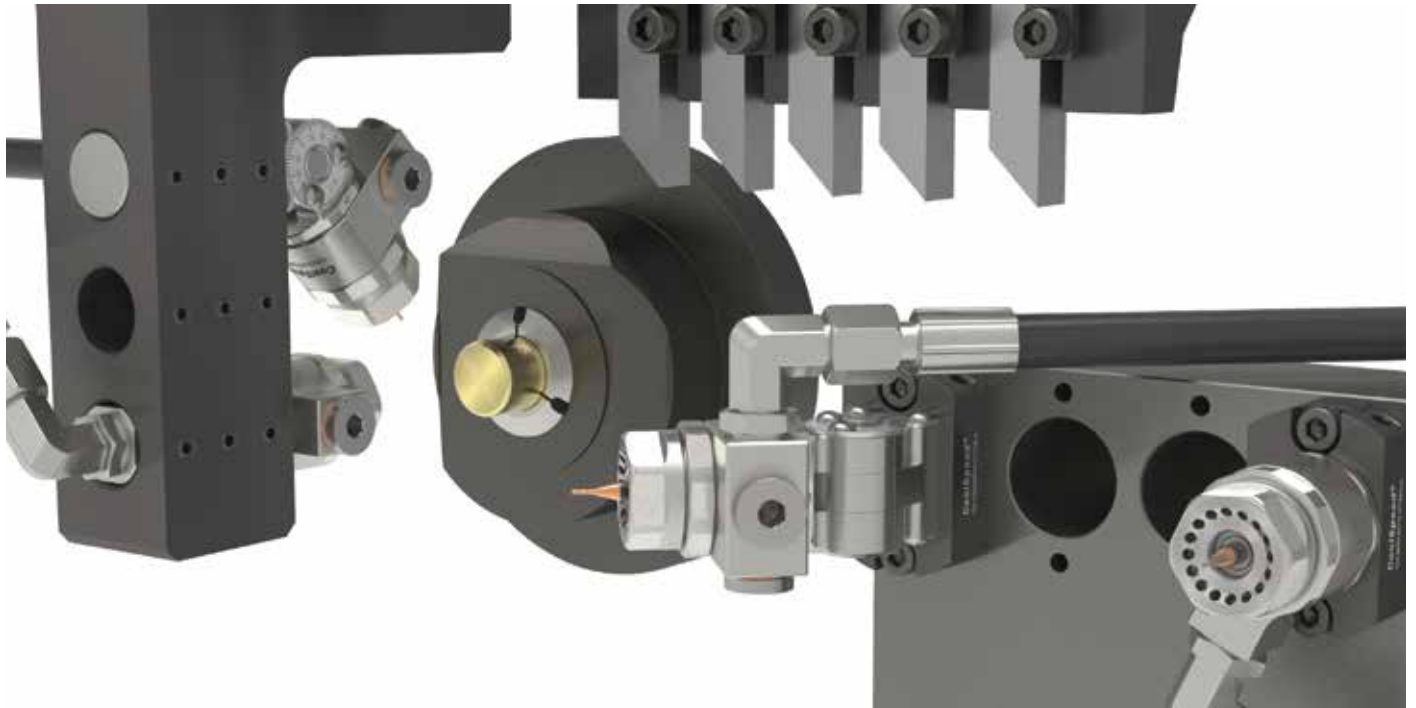
CoolSpeed® Flex V



Item No.	D	L
CM-CV-R075-016-FL-A	19.05 (¾")	40
CM-CV-R020-016-FL-A	20	50
CM-CV-R022-016-FL-A	22	50
CM-CV-R025-016-FL-A	25	55

Dimensions in mm

Application for Citizen



CoolSpeed® Flex

CM-CE-F075-037-FL-A

Shaft Ø 19.05 mm (¾")



CoolSpeed® Flex V

CM-CV-R075-016-FL-A

Shaft Ø 19.05 mm (¾")



Machine Adapter

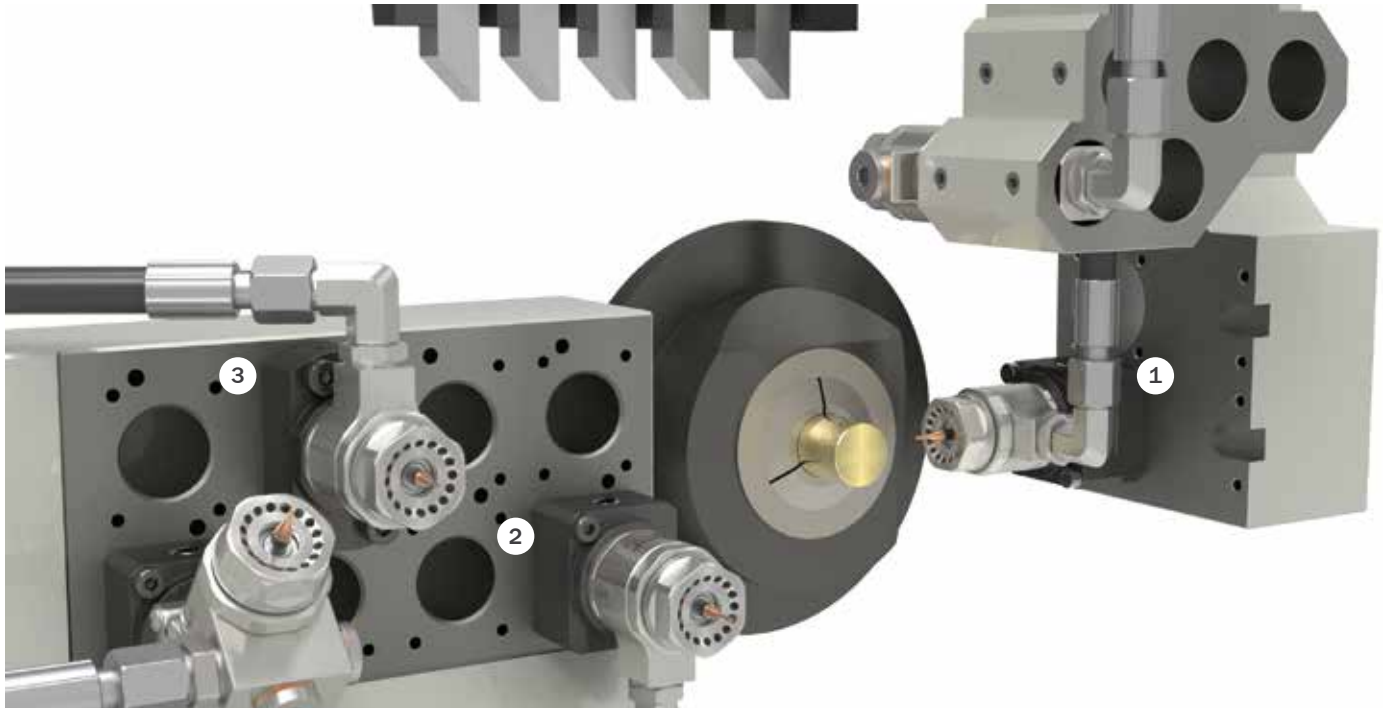
CM-MA-CT25A-R075-A

Shaft Ø 25 mm

Bore Ø 19.05 mm (¾")



Application for Star



CoolSpeed® Flex
CM-CE-F022-037-FL-A

Shaft Ø 22 mm



CoolSpeed® Flex V
CM-CV-R022-016-FL-A

Shaft Ø 22 mm



Machine Adapter
CM-MA-ST34A-R022-A

Shaft Ø 34 mm
Bore Ø 22 mm

①



Machine Adapter
CM-MA-ST22B-R022-A

Bore Ø22 mm

②



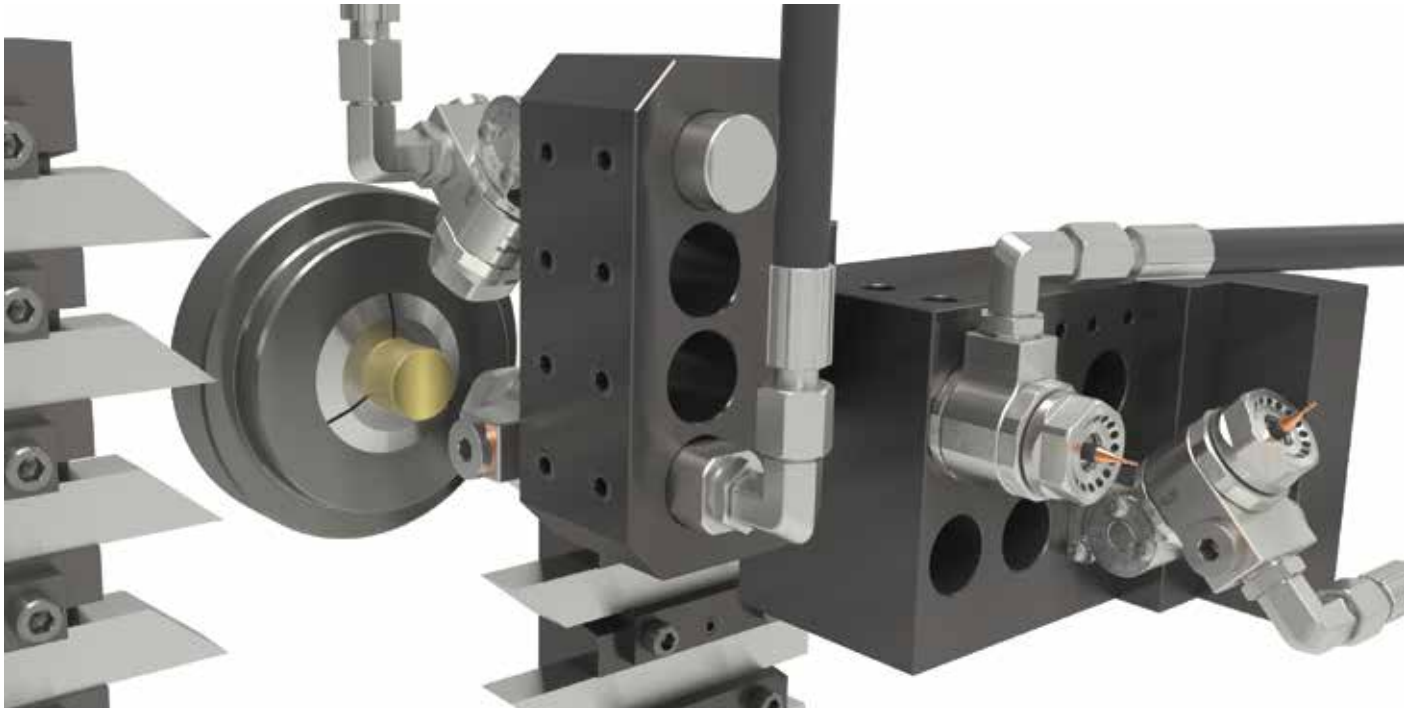
Machine Adapter
CM-MA-ST22A-R022-A

Bore Ø 22 mm

③



Application for Tsugami



CoolSpeed® Flex

CM-CE-F020-037-FL-A

Shaft Ø 20 mm

CoolSpeed® Flex

CM-CE-F025-037-FL-A

Shaft Ø 25 mm



CoolSpeed® Flex V

CM-CV-R020-016-FL-A

Shaft Ø 20 mm

CoolSpeed® Flex V

CM-CV-R025-016-FL-A

Shaft Ø 25 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



Master Gauge

For high accurate angular alignment with CoolSpeed® Flex V

CM-SMG-013-A



Starter Set

Includes:

- CoolSpeed® Flex
- 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-SPG-60-SA Bluetooth Pressure Gauge G¼"
- CM-SBW-001 Bearing Puller
- Allen Wrench 5 mm
- Double open-end Wrench 22x27 mm
- Single open-end Wrench 27 mm



Shaft-dia.	CoolSpeed® Flex	Starter Set
19.05 (¾")	CM-CE-F075-037-FL-A	CM-CE-F075-037-FL-SK-A
20	CM-CE-F020-037-FL-A	CM-CE-F020-037-FL-SK-A
22	CM-CE-F022-037-FL-A	CM-CE-F022-037-FL-SK-A
25	CM-CE-F025-037-FL-A	CM-CE-F025-037-FL-SK-A

Dimensions in mm

Pressure Gauge G¼"

CM-SPG-60-C



Bluetooth Pressure Gauge G1/4"

CM-SPG-60-SA

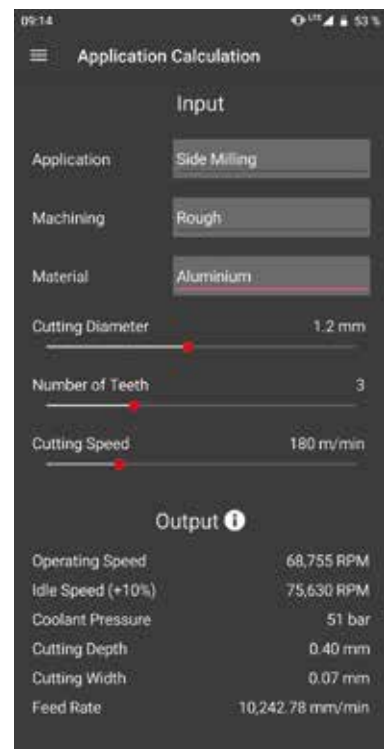
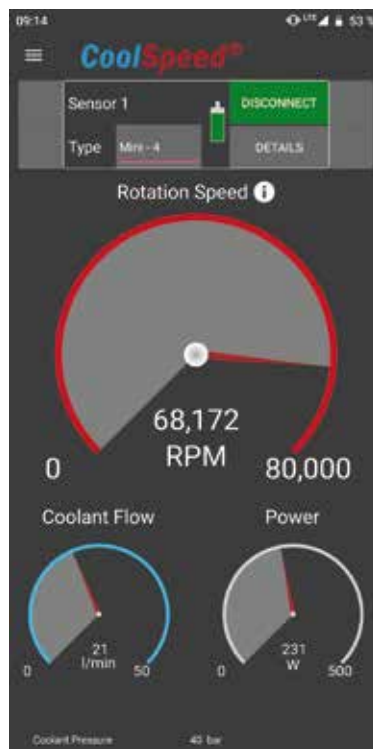
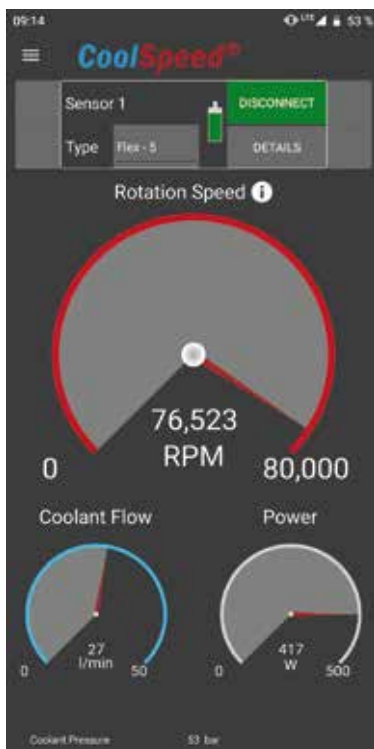
Replacement Battery

CM-SRB-2450-A



App „CoolSpeed Pressure Gauge”

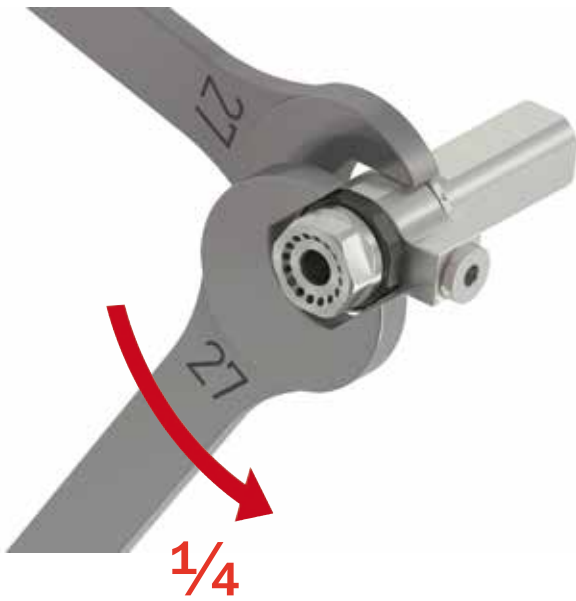
The app connects to the Bluetooth Pressure Gauge and displays the rotation speed, coolant pressure, flow rate and power of the high-speed spindle in real time.



How to Adjust the Number of Jets

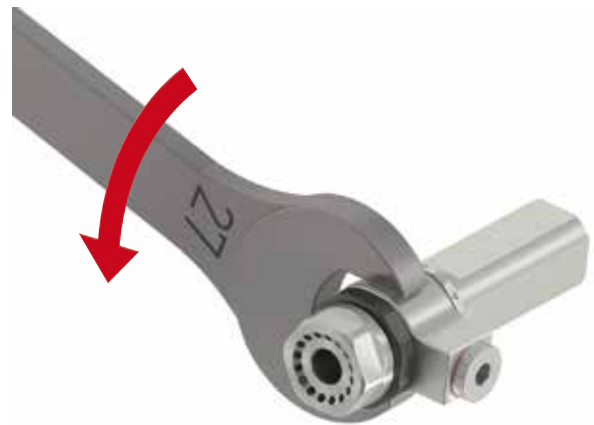
1

Untighten Clamping Nut



2

Adjust the Number of Jets



3

Tighten Clamping Nut



How to Measure the Coolant Pressure

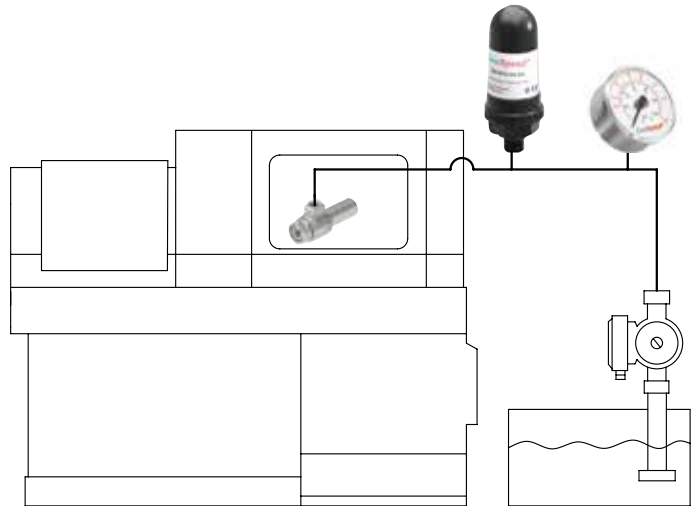
The CoolSpeed® Flex rotation speed depends on the coolant pressure. Therefore, it is important to adjust the coolant pressure as needed for the application. There are two options to measure the coolant pressure.

Option 1



Preferred option, as the measurement of the pressure is close to CoolSpeed® Flex.

Option 2



Alternative, if there is no possibility to place the manometer inside the operation area. With this option, the speed determination is less accurate than option 1.

Adjust the Rotation Speed

1. Adjust CoolSpeed® Flex to 5 Jets
2. Switch the coolant pressure on
3. Read the pressure and rotation speed from the Pressure Gauge or using the CoolSpeed® App
4. Adjust the coolant pressure via the pump control until the desired rotation speed is reached
5. If the desired speed cannot be reached: Switch the coolant pressure off, reduce the number of jets and repeat from point 2

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

The rotation speed refers to the idle speed.

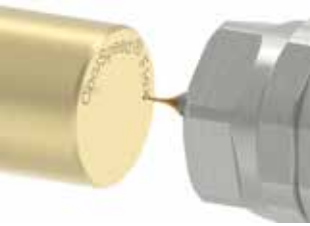
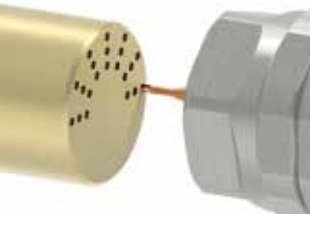
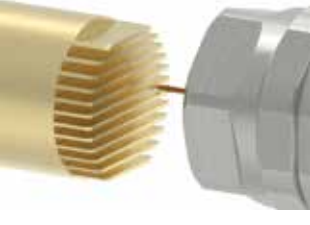
The operation speed is approx. 10% lower depending on the load on CoolSpeed®.

Assembly of Bearings and Turbine onto the Cutting Tool

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



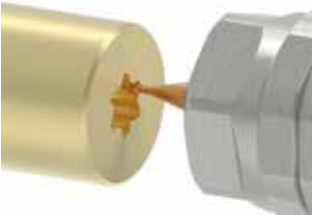
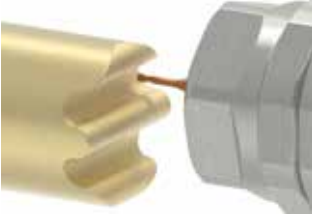
Application Examples

	Material	Coolant Pressure [bar]	Idle Speed [rpm]	Operation Speed [rpm]	Cutting Values	Tool-Ø	2.0	1.0	0.5
						Finish Machining	Finish Machining	Finish Machining	
Engraving 	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	
Drilling 	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	
Slot Milling 	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	
Slot Milling	Stainless Steel	20	48,000	43,000	v_f	1,500	2,250	3,375	
		40	68,000	61,000	a_p	0.60	0.30	0.15	
		60	80,000	72,000	v_f	1,250	1,875	2,813	
	Aluminum	20	48,000	43,000	a_p	0.60	0.30	0.15	
		40	68,000	61,000	v_f	1,250	1,875	2,813	
		60	80,000	72,000	a_p	0.60	0.30	0.15	
	Carbon Steel	20	48,000	43,000	v_f	1,500	2,250	3,375	
		40	68,000	61,000	a_p	0.60	0.30	0.15	
		60	80,000	72,000	v_f	1,250	1,875	2,813	

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 Machining	Finish Machining	Rough Machining	Finish Machining	Rough Machining	Finish Machining		
Material	Coolant Pressure [bar]	Idle Speed [rpm]	Operation Speed [rpm]										
Side Milling 	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	
Profile Milling 	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®

www.coolspeed.com | info@coolspeed.com

North America

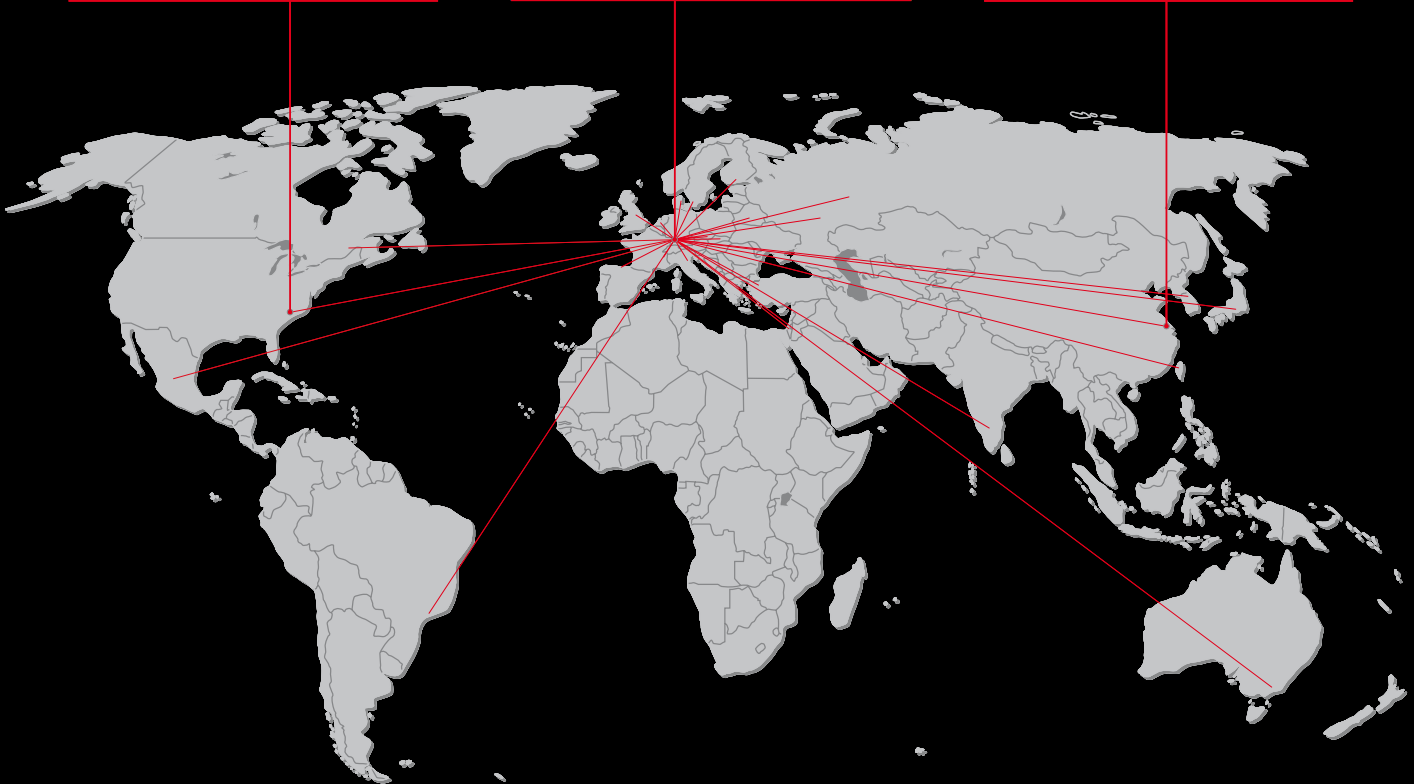
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WTO worldwide

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