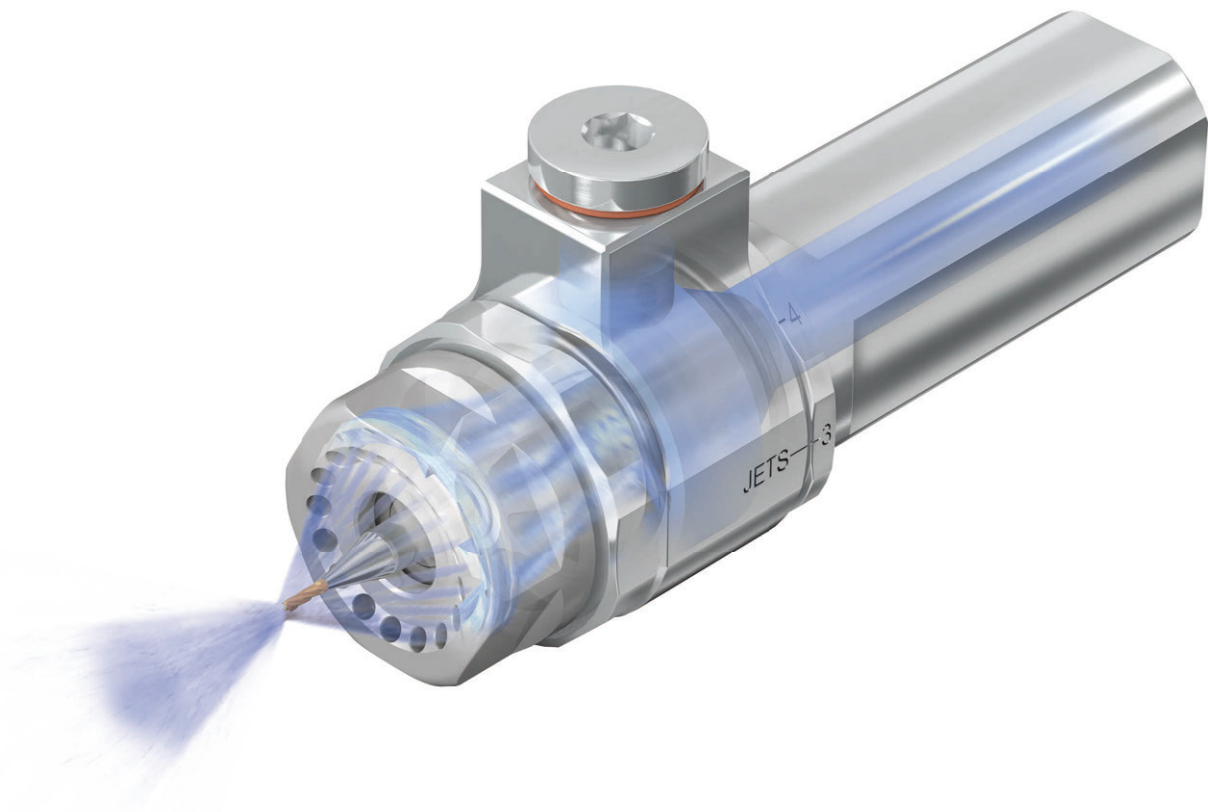


WTO

CoolSpeed[®] Flex

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



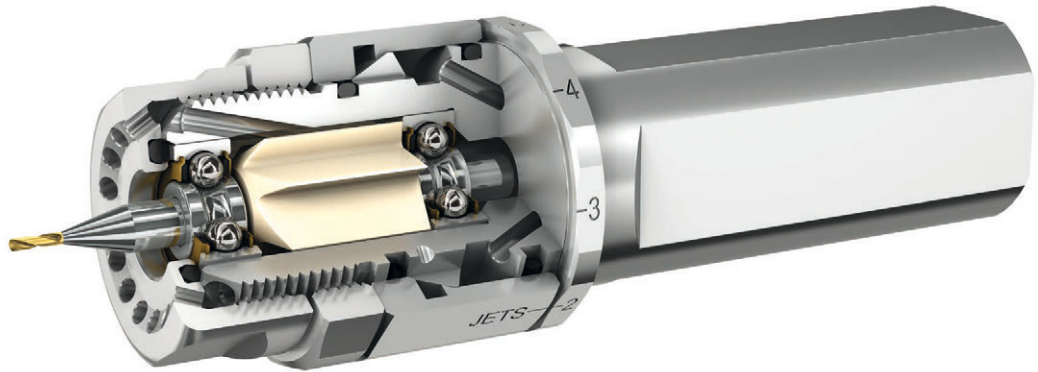
Ideal for Swiss Type lathes and turning centers
Best dynamic runout
Extended tool life

CoolSpeed® Flex

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

Adjustable number of jets.

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



Driven by

Rotation Speed

Number of Jets

Operating Pressure

Flow Rate

Maximum Power

Tool Shank Ø

Coolant or Cutting Oil

30.000-80.000 rpm

1-5

10-60 bar (145-870 psi)

8-28 l/min (2.0-7.5 gal/min)

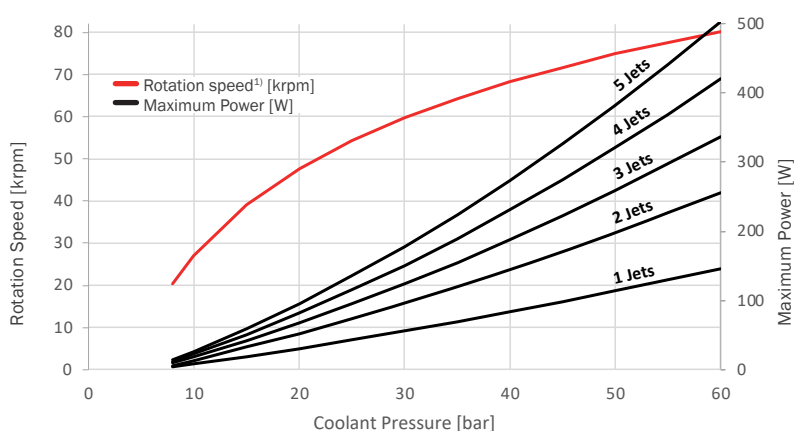
150-500 W

3 mm, 4 mm, 6 mm



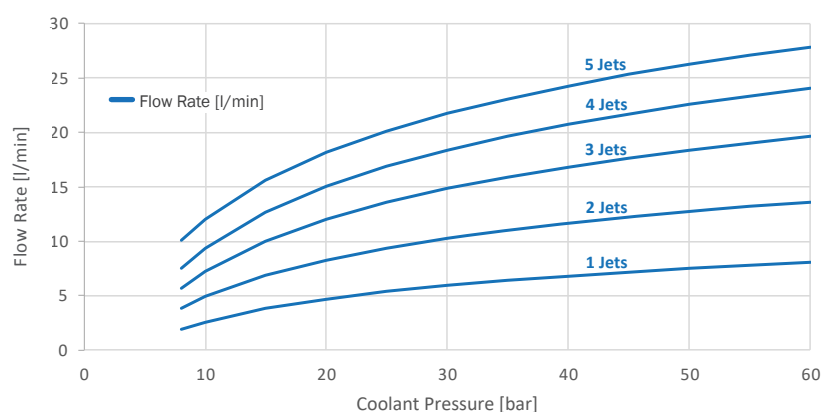
CoolSpeed® Flex is a new state-of-the-art turbine-driven ultra-high-speed spindle. Due to the adjustable number of jets, CoolSpeed® Flex can also be operated by coolant pumps with a flow rate as low as 8 l/min.

Rotation Speed & Maximum Power/Coolant Pressure

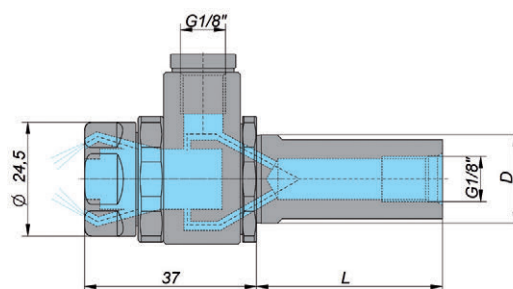


¹⁾ Idle speed. The operation speed is approx. 10 % lower depending on the load.

Flow Rate/Coolant Pressure



CoolSpeed® Flex

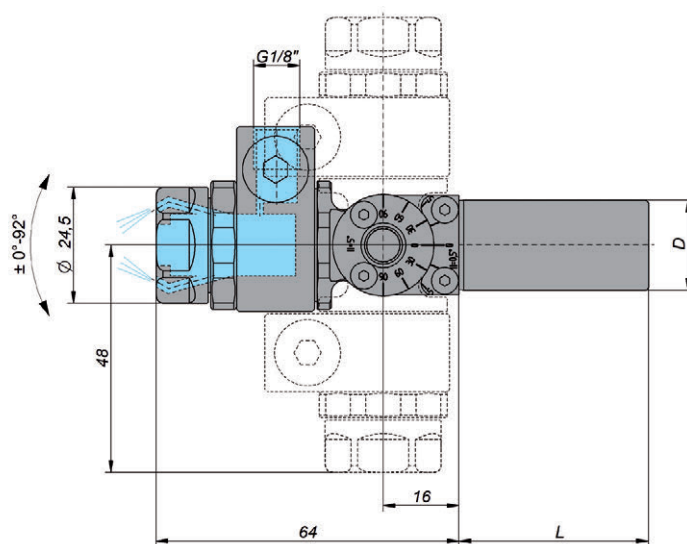
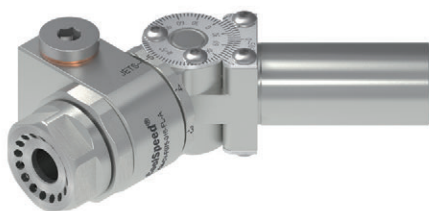


Item No.	D	L
CM-CE-F075-037-FL-A	19.05 (3/4")	40
CM-CE-F020-037-FL-A	20	50
CM-CE-F022-037-FL-A	22	50
CM-CE-F025-037-FL-A	25	55

inch
dimensions

Dimensions in mm

CoolSpeed® Flex V

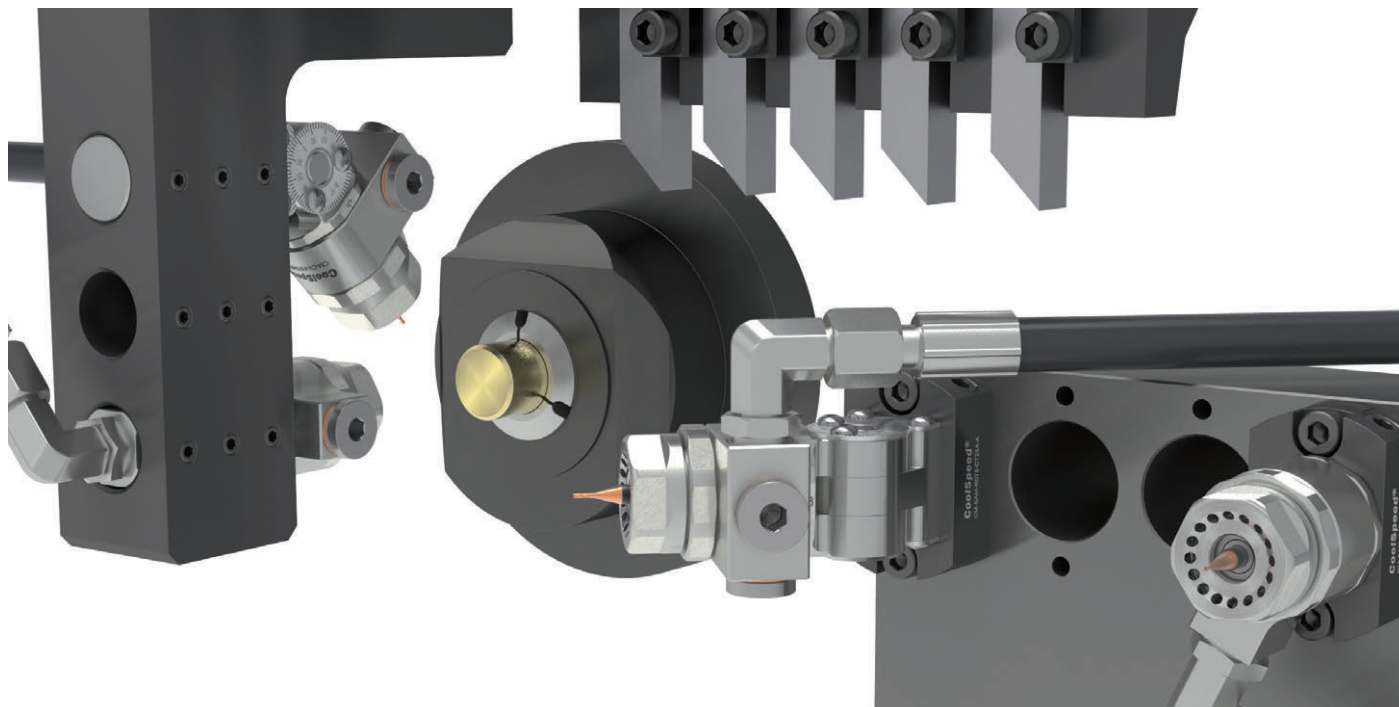


inch
dimensions

Item No.	D	L
CM-CV-R075-016-FL-A	19.05 (3/4")	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")



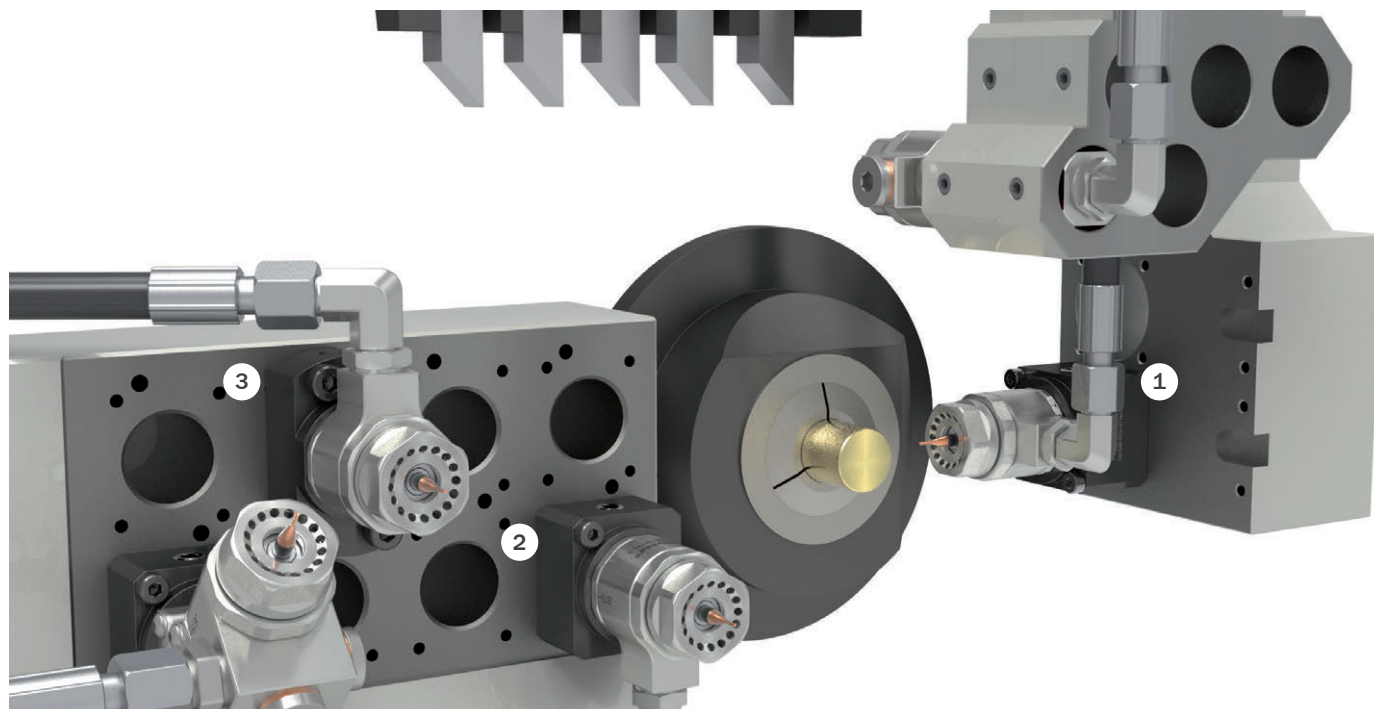
Machine Adapter

CM-MA-CT25A-R075-A

Shaft Ø 25 mm
Bore Ø 19.05 mm (¾")



Application for Star



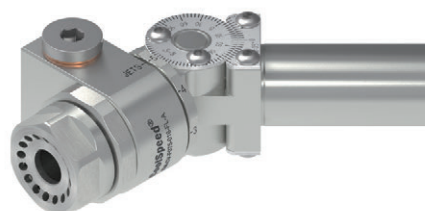
CoolSpeed® Flex CM-CE-F022-037-FL-A

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



Machine Adapter CM-MA-ST22B-R022-A

Bore Ø 22 mm

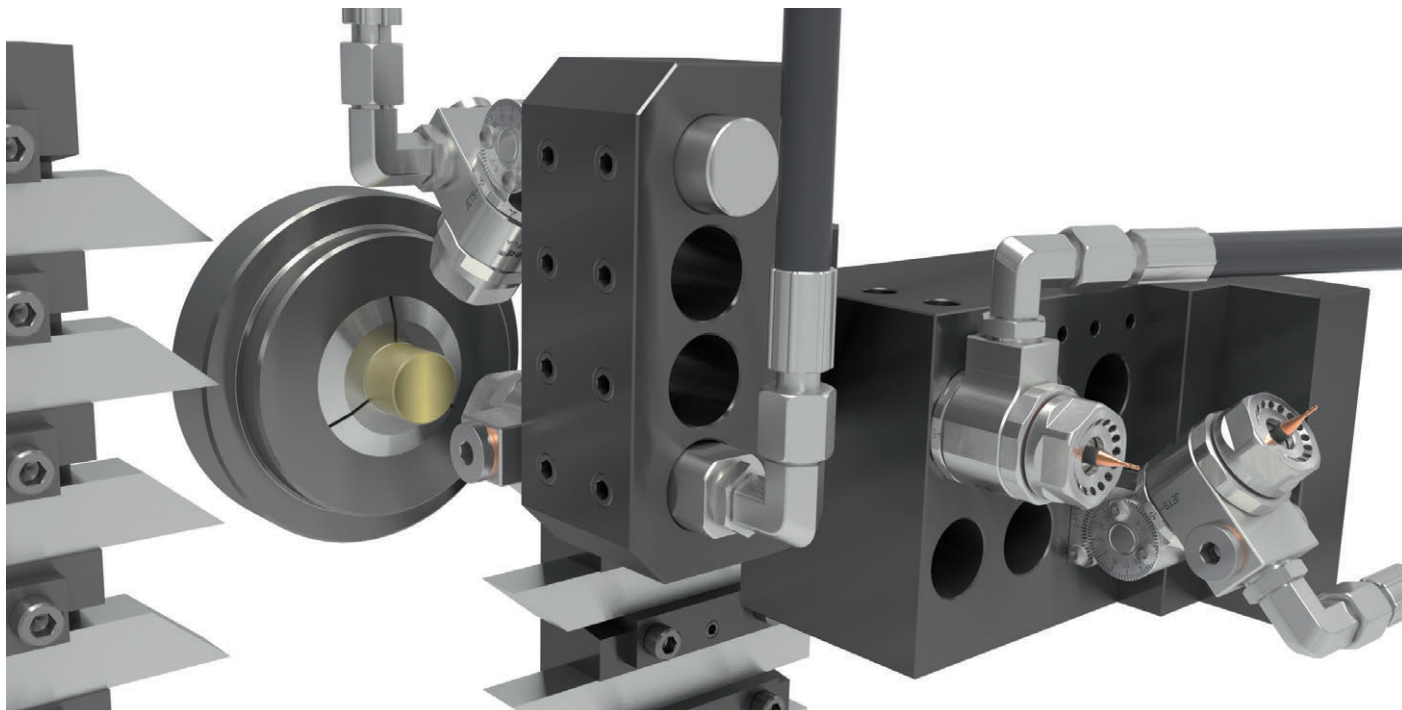


Machine Adapter CM-MA-ST22A-R022-A

Bore Ø 22 mm



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 3-in-1

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 3-in-1

CM-SPG-60-SA Bluetooth Pressure Gauge G $\frac{1}{4}$ "

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 ($\frac{3}{4}$ ")	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 G $\frac{1}{4}$ "

CM-SPG-60-C



Bluetooth Pressure Gauge G $\frac{1}{4}$ "

CM-SPG-60-SA

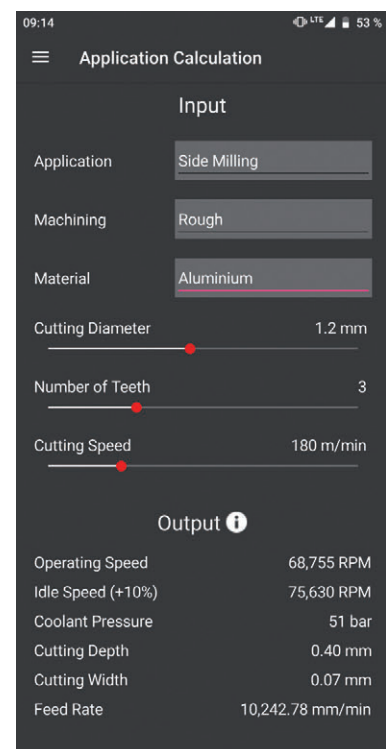
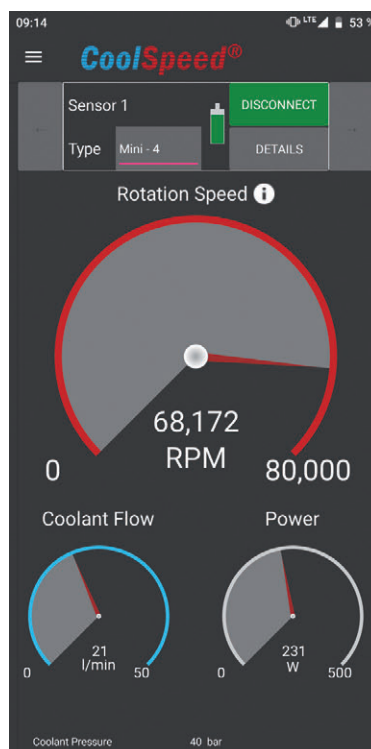
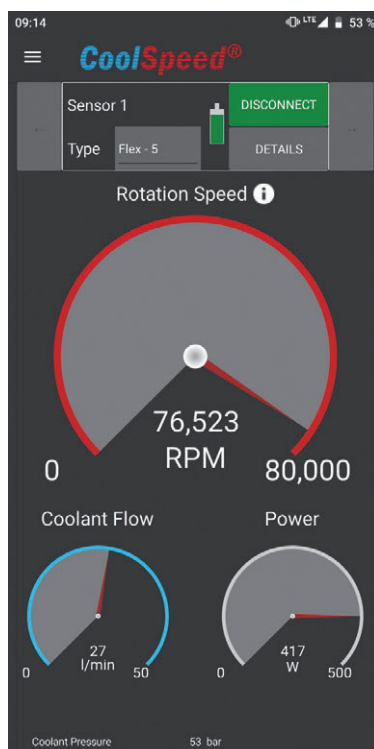
Replacement Battery

CM-SRB-2450-A



App „CoolSpeed Pressure Gauge”

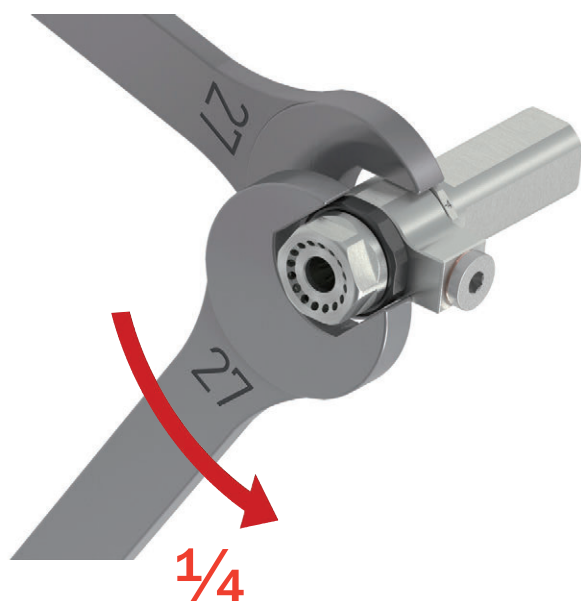
The app connects to the Bluetooth Pressure Gauge and displays the rotation speed, coolant pressure, flow rate and power of the high-speed spindle in real time.



How to Adjust the the Number of Jets

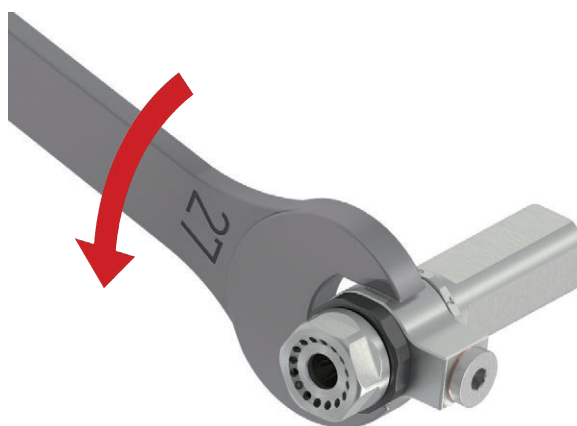
1

Untighten Clamping Nut



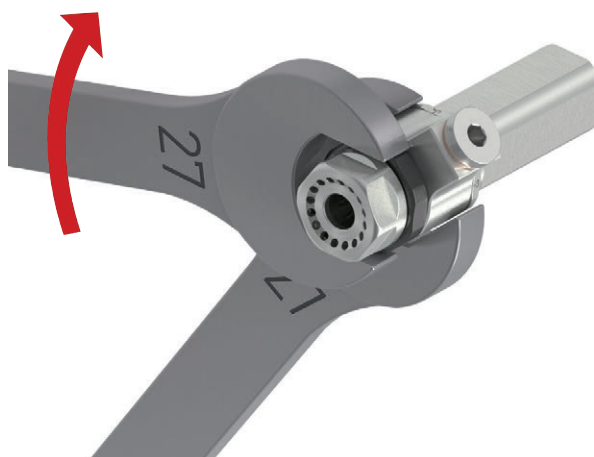
2

Adjust the Number of Jets



3

Tighten Clamping Nut



How to Measure the Coolant Pressure

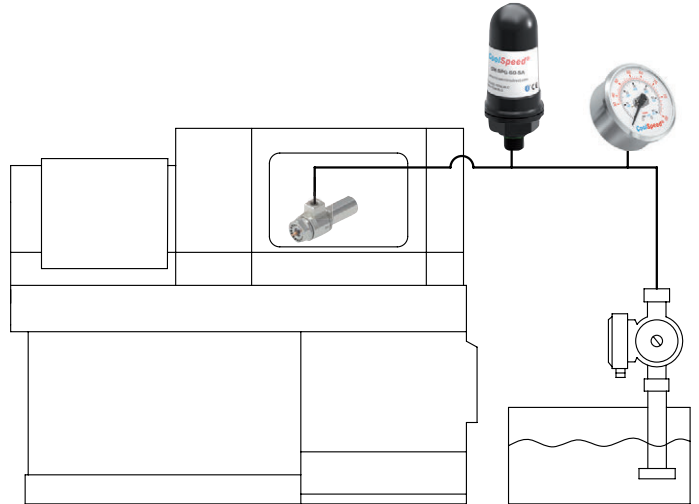
The CoolSpeed® Flex rotation speed depends on the coolant pressure. Therefore, it is important to adjust the coolant pressure as needed for the application. There are two options to measure the coolant pressure.

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.

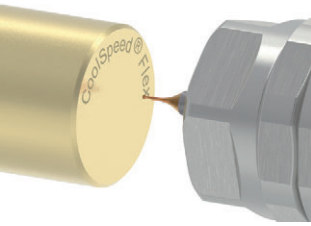
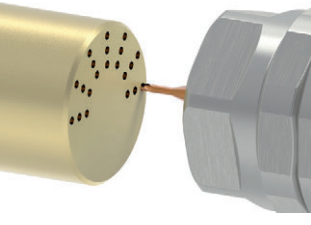
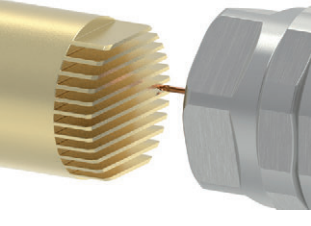
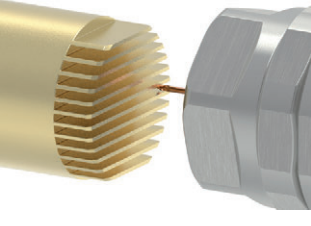
The operation speed is approx. 10% lower depending on the load on CoolSpeed®.

Assembly of Bearings and Turbine onto the Cutting Tool

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



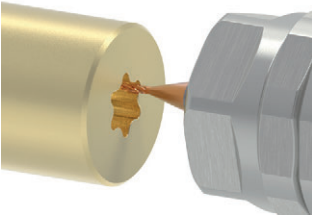
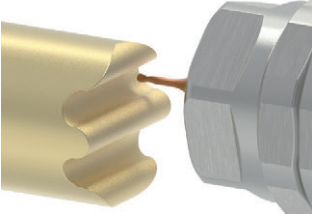
Application Examples

					Tool-Ø	2.0	1.0	0.5
					Cutting Values	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
		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
Drilling 	Stainless Steel	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
	Aluminum	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
	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
		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
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	0.10	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
		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
Slot Milling 	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
		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
		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	
	Material	Coolant Pressure [bar]	Idle Speed [rpm]	Operation Speed [rpm]	Cutting Values	Rough Machining	Finish Machining	Rough Machining	Finish Machining	Rough Machining	Finish Machining
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
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.



www.coolspeed.com | info@coolspeed.com

North America

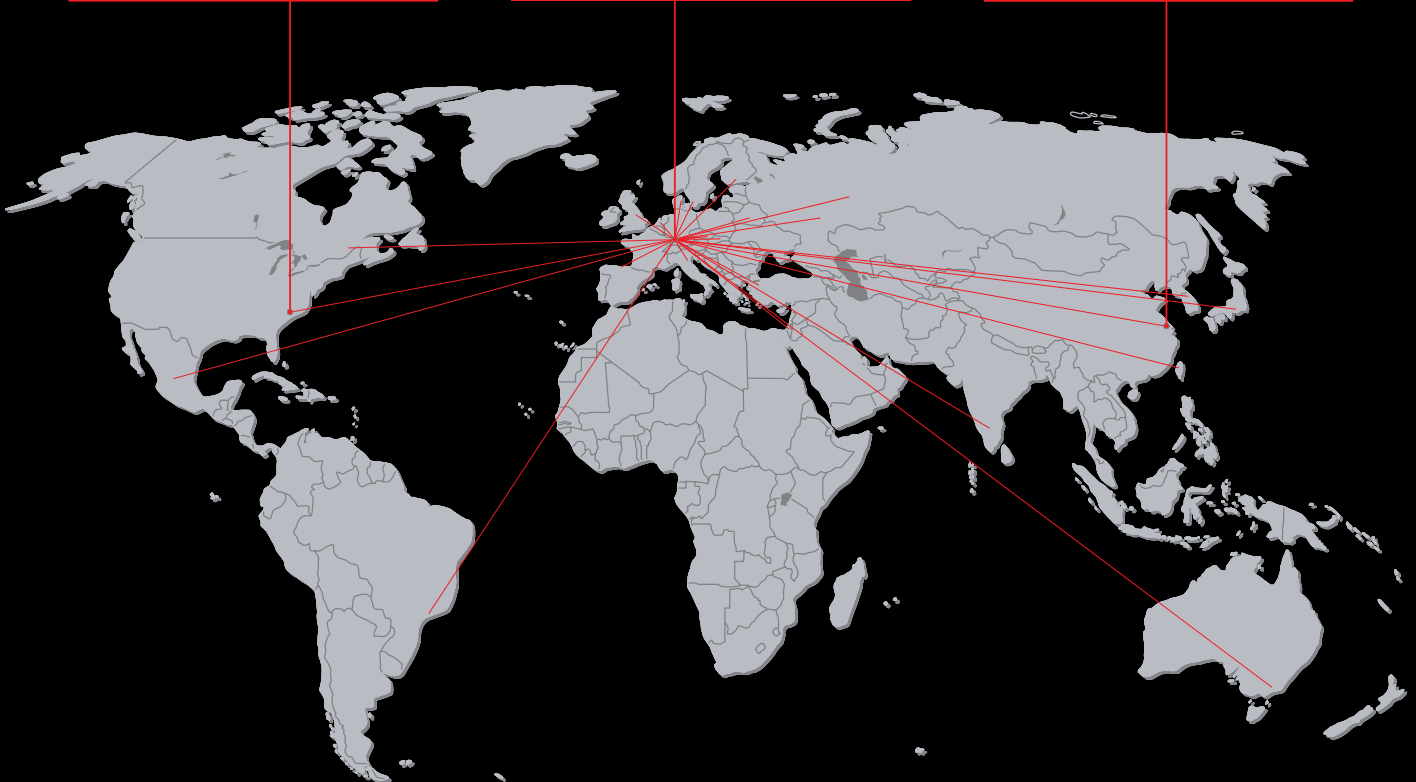
WTO Inc.
13900-F South Lakes Dr.
Charlotte, NC 28273
USA
www.wto-usa.com

Europe

WTO Werkzeug-
Einrichtungen GmbH
Headquarters
Neuer Hohdammweg 1
77797 Ohlsbach
Germany
www.wto.de

Asia

WTO Precision Tool Holders
(Shanghai) Co. Ltd.
Room 109-110, Building 2
No. 228 Banting Road
Jiuting Town,
Songjiang District
201615 Shanghai
China
www.wto-asia.com



WTO worldwide

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