CRUING 1964 2014 • QUALITY & INNOVATION •
50 years
CRUING
thinking beyond

PCD Cutting Tools for Composites

PCD Cutting Tools for the Aerospace and Composite industries

Since 1964 Cruing is one of the most important groups for diamond cutting tools.
We work with many of the worlds leading aerospace manufacturers, F1 racing teams and luxury yacth builders.

Thanks to our **50 years worth of experience**, we can provide you with the latest technology in cutting tools and drills for composite machining.

In 2013 our **Aerotech® System** has been awarded two **JEC Innovation Awards**, the JEC europe in Paris, in the category of Machining & Tools, and the JEC americas in Boston, in the category of Innovation Spreading.

JEC americas WINNER OF 2013 INNOVATION AWARD

JEC europe WINNER OF 2013 INNOVATION AWARD

Aerotech® System is a revolutionary tooling solution that thoroughly **evacuates hot dust particles** produced during cutting operations.
By effectively **air cooling the material and cutter,** it significantly reduces machining temperatures.
This allows manufacturers of composite parts to consider **dry cutting** their components, providing a practical **alternative to machining with coolants.**

Visit www.aircooleddrycutting.com

The results are a **carbon fibre component of a higher standard, without delamination** and with **lower roughness values**, as well as **important benefits on human health, environment and manufacturing costs.** During a series of heat tests conducted at an Aerospace company located in Europe, thermal camera images confirm that Aerotech can **reduce machining temperatures by over 100°C.**

A

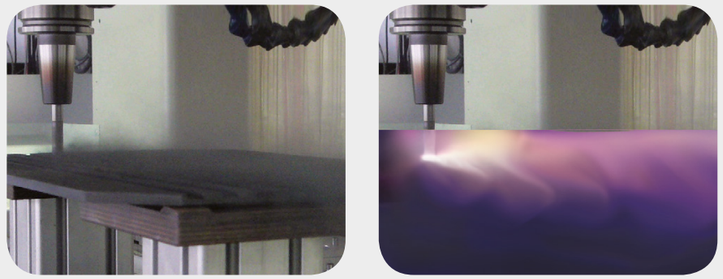


Photo A shows a conventional tool dry cutting a carbon fibre component. Without the use of air or flood coolants the cutter becomes extremely hot. The jet of dust particles created by the cutter is super-heated and can damage the surface of the carbon fibre component.

B

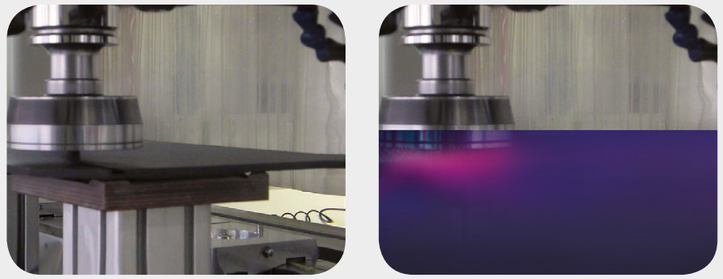


Photo B shows an Aerotech System dry cutting the same carbon fibre component. At operational rpms the Aerotech sucks in air up to velocity of 80 meters a second at the point of cut, blowing the air and hot dust particles out through its Fan Outlets.
By effectively air cooling the material and cutter, it significantly reduces machining temperatures.
This allows manufacturers of composite parts to consider dry cutting their component, providing a practical alternative to machining with coolants.

Photos A and B courtesy of The University of Hamburg, Germany

Solid Diamond
Micro One-shot Drill & Countersink

“More is possible”

This continuos reseach for new products and new manufacturing technologies has brought Cruing to further expand its offer with another innovative solution for the composite machining: **a solid diamond micro “one-shot drill & countersink”.**

We have engineered a drill and countersink with an integral diamond cutter: the absence of weldings gives the possibility to realise complex geometries keeping an high degree of stiffness, high resistance to breakage, lower vibration, greater stability and consistent performance throughout the tool life.

NEW

This new tool has been designed and manufactured for those who need to drill and countersink in one shot **small diametres with high demand on hole quality, accuracy and surface finishing, and reduced delamination.**

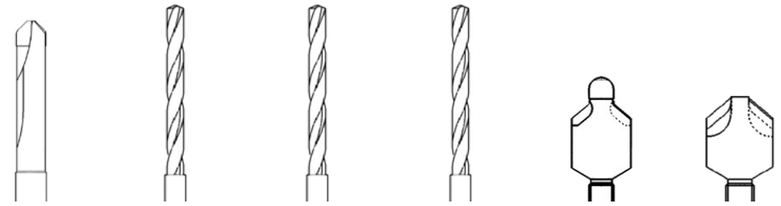
AeroDrill

Cruing AeroDrill series offers unique designs for **PCD diamond drills in 2 and 3 flute configuration, Countersinks and One-shot drill and countersinks.**
Many **leading producers of CFRP parts for the Aerospace industry have** already **qualified Cruing drills** and are benefiting from the performances of one of the most cost-effective drills available today.

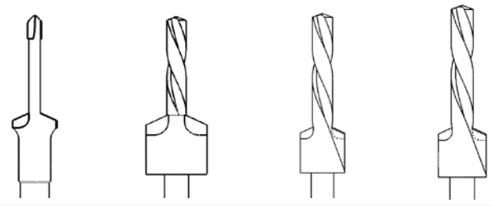
These drills have a unique uninterrupted PCD point, designed to make them more robust and able to drill faster: longer tool life, higher productivity, lower manufacturing costs.
The special point geometry and side profile guarantee optimised hole quality to exacting tolerances with higher safeguards against delamination and fibre projection on entry and exit.

The distinct helical profile reduces the load force and polishes the hole, providing lower Ra values and eliminating the risk of scoring.

Tool Programme Drilling



		Straight-Flute Series	Twist-Drill Series			Countersink Series	
		AeroDrill 101	**AeroDril ST2**	**AeroDrill NX2**	**AeroDrill ST3**	**AeroDrill 801**	**AeroDrill 802**
Technical design	Diameters (mm)	3,0 - 20,0	2,5 - 4,5	4,5 - 16,0	3,0 - 9,0	2,0 - 20,0	2,0 - 20,0
	Number of cutting edges	2	2	2	3	2-3	2 - 3
	Helix angle	0°	25°	25°	25°	0°	0°
	Cutting material	PCD	PCD	PCD	PCD	PCD	PCD
	Shank	HA (DIN 6535)	HA (DIN 6535)	HA (DIN 6535)	HA (DIN 6535)	Thread	Thread
Application		CNC drilling	CNC drilling	CNC drilling	CNC drilling	Hand-held countersinking (integral pilot)	Hand-held countersinking (interchangeable pilot)
Tool body		Solid carbide	Solid carbide	Solid carbide	Solid carbide	Steel	Steel
Available with through coolant		●	●	●	●	●	●



		One-shot Drill & Countersink Series			
		AeroDrill 101-V	**AeroDril ST2-V**	**AeroDrill NX2-V**	**AeroDrill ST3-V**
Technical design	Diameters (mm)	3,0 - 20,0	2,5 - 4,5	4,5 - 16,0	3,0 - 9,0
	Number of cutting edges	2	2	2	3
	Helix angle	0°	25°	25°	25°
	Cutting material	PCD	PCD	PCD	PCD
	Shank	HA (DIN 6535)	HA (DIN 6535)	HA (DIN 6535)	HA (DIN 6535)
Application		CNC one-shot drilling & countersinking	CNC one-shot drilling & countersinking	CNC one-shot drilling & countersinking	CNC one-shot drilling & countersinking
Tool body		Solid carbide	Solid carbide	Solid carbide	Solid carbide
Available with through coolant		●	●	●	●

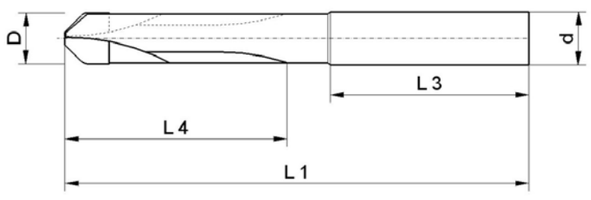
Straight-Flute Series

AeroDrill 101

Technical features and applications:

- Solid carbide straight fluted drill
- High density PCD cutting edges: **2**
- Helix angle: **0°**
- Cutting tolerance: **+/- 0,01**
- Balance: **G2,5 < 1 gr/mm**
- Diameters range: **from 3,0 to 20,0 mm**
- Shank form: **HA (DIN 6535)**
- For CNC automated drilling of CFRP and hard composite materials

through coolant on request



D	L1	L4	L3	d	Z	ORDER CODE
3	60	30	30	4	2	based on diameter
3,01 - 4	60	30	30	4	2	based on diameter
4,01 - 5	70	40	30	6	2	based on diameter
5,01 - 6	70	40	30	6	2	based on diameter
6,01 - 7	80	40	40	8	2	based on diameter
7,01 - 8	80	40	40	8	2	based on diameter
8,01 - 9	80	40	40	10	2	based on diameter
9,01 - 10	80	40	40	10	2	based on diameter
10,01 - 11	80	40	40	12	2	based on diameter
11,01 - 12	80	40	40	12	2	based on diameter
12,01 - 13	80	40	40	14	2	based on diameter
13,01 - 14	80	40	40	14	2	based on diameter
14,01 - 15	80	40	40	16	2	based on diameter
15,01 - 16	80	40	40	16	2	based on diameter

Available up to 20 mm on request

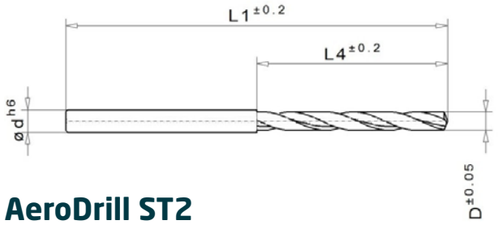
Twist-Drill Series

AeroDrill ST2 - AeroDrill NX2

Technical features and applications:

- Solid carbide twist drill
- High density PCD cutting edges: 2
- Helix angle: 25°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 2,5 to 16,0 mm
- Shank form: HA (DIN 6535)
- For CNC automated drilling of CFRP and hard composite materials

through coolant on request



AeroDrill ST2

D	L1	L4	L3	d	Z	ORDER CODE
2,50 - 3,00	60	30	30	4	2	based on diameter
3,01 - 3,50	60	30	30	4	2	based on diameter
3,51 - 4,00	60	30	30	4	2	based on diameter
4,01 - 4,50	60	30	30	4	2	based on diameter

AeroDrill NX2

4,51 - 5,00	70	40	30	6	2	based on diameter
5,01 - 6,00	70	40	30	6	2	based on diameter
6,01 - 7,00	80	40	40	8	2	based on diameter
7,01 - 8,00	80	40	40	8	2	based on diameter
8,01 - 9,00	80	40	40	10	2	based on diameter
9,01 - 10,00	80	40	40	10	2	based on diameter
10,01 - 11,00	80	40	40	12	2	based on diameter
11,01 - 12,00	80	40	40	12	2	based on diameter
12,01 - 13,00	80	40	40	14	2	based on diameter
13,01 - 14,00	80	40	40	14	2	based on diameter
14,01 - 15,00	80	40	40	16	2	based on diameter
15,01 - 16,00	80	40	40	16	2	based on diameter

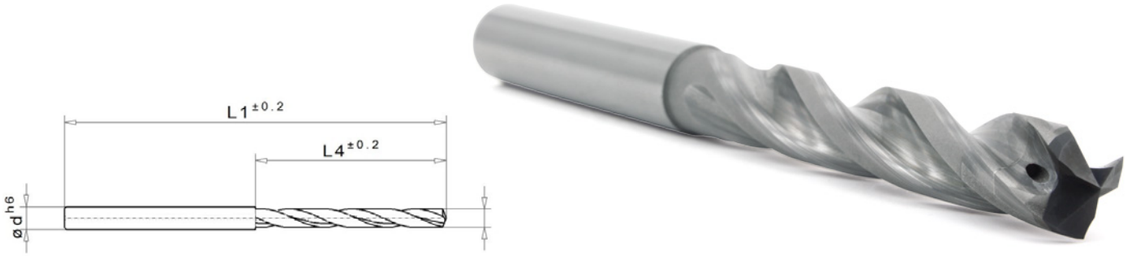
Twist-Drill Series

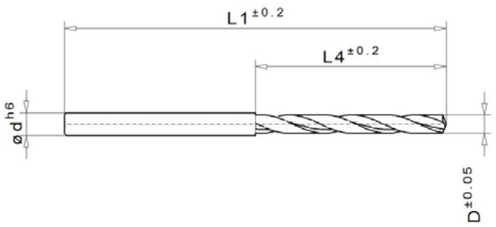
AeroDrill ST3

Technical features and applications:

- Solid carbide twist drill
- High density PCD cutting edges: 3
- Helix angle: 25°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 3,0 to 9,0 mm
- Shank form: HA (DIN 6535)
- For CNC automated drilling of CFRP and hard composite materials
- Extended tool-life and lower delamination
- Available with through coolant from 4,0 mm diameters

through coolant on request





D	L1	L4	L3	d	Z	ORDER CODE
3,00-3,50	60	30	30	4	3	based on diameter
3,51-4,00	60	30	30	4	3	based on diameter
4,01-4,5	60	30	30	4	3	based on diameter
4,51-5,0	60	30	30	4	3	based on diameter
5,01-5,5	70	40	30	6	3	based on diameter
5,51-6,00	70	40	30	6	3	based on diameter
6,01-6,50	80	40	40	8	3	based on diameter
6,51-7,00	80	40	40	8	3	based on diameter
7,01-7,50	80	40	40	10	3	based on diameter
7,51-8,00	80	40	40	10	3	based on diameter
8,01-8,50	80	40	40	12	3	based on diameter
8,51-9,00	80	40	40	12	3	based on diameter

Countersink Series

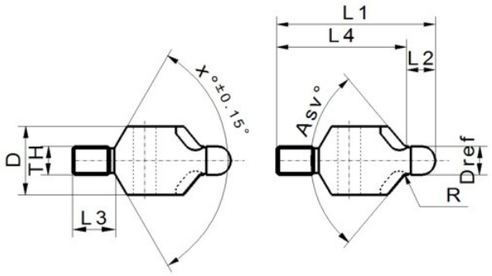
AeroDrill 801 - AeroDrill 802

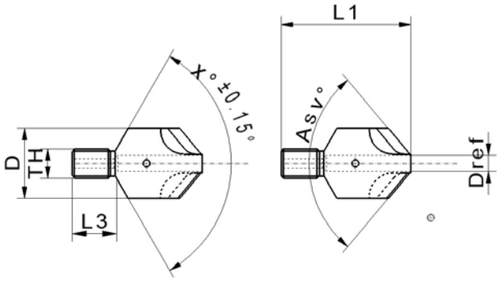
Technical features and applications:

through coolant on request

- Straight flutes
- PCD cutting edges: 2 - 3
- Helix angle: 0°
- Pilot tolerance: +/- 0,05
- Balance: G2,5 < 1 gr/mm
- Pilot diameters range: from 2,0 to 20,0 mm
- Shank form: thread

- For hand-held drilling of CFRP and hard composite/metallic stack materials
- With **integral** (801) or **interchangeable** (802) pilot
- Available for 100° and 130° countersinking
- Available with **customised pilot on request**





AeroDrill 801

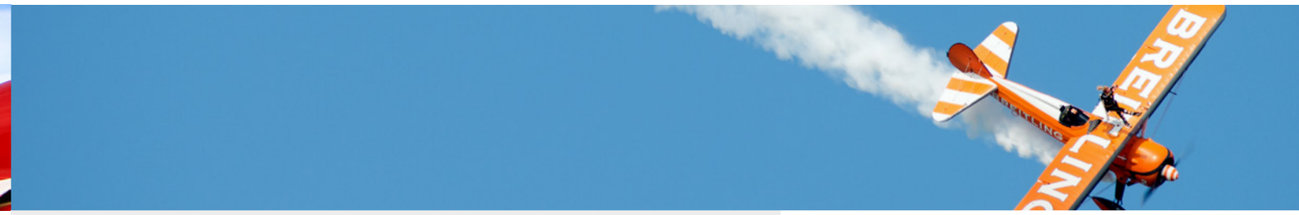
D	Dref	Asv	d	Z	ORDER CODE
10	3	100°/130°	M6x1,0	2/3	based on combination
12	3	100°/130°	M6x1,0	2/3	based on combination
14	3	100°/130°	M8x1,0	2/3	based on combination
17	4	100°/130°	M8x1,0	2/3	based on combination

AeroDrill 802

D	Dref	Asv	d	Z	ORDER CODE
10	2,5	100°/130°	M6x1,0	2/3	based on combination
12	3	100°/130°	M6x1,0	2/3	based on combination
14	3	100°/130°	M8x1,0	2/3	based on combination
17	4	100°/130°	M8x1,0	2/3	based on combination

One-Shot Drill & Countersink Series

AeroDrill 101-V

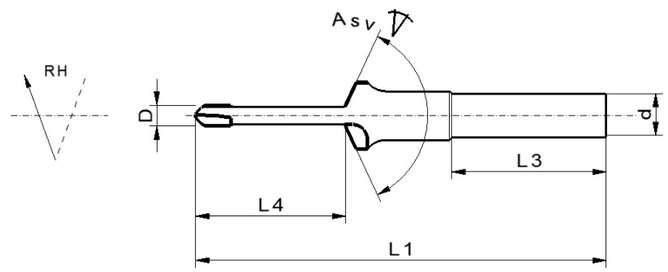


Technical features and applications:

through coolant on request

- Solid carbide straight fluted drill
- High density PCD cutting edges: 2
- Helix angle: 0°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 3,0 to 20,0 mm
- Shank form: HA (DIN 6535)

- For CNC automated one-shot drilling & countersinking of CFRP and hard composite materials
- Available for 100° and 130° countersinking



D	L1	L4	ASV	L3	d	Z	ORDER CODE
3	80	30	100° - 130°	30	4	2	based on diameter
3,01 - 4	80	30	100° - 130°	30	4	2	based on diameter
4,01 - 5	90	40	100° - 130°	30	6	2	based on diameter
5,01 - 6	90	40	100° - 130°	30	6	2	based on diameter
6,01 - 7	100	40	100° - 130°	40	8	2	based on diameter
7,01 - 8	100	40	100° - 130°	40	8	2	based on diameter
8,01 - 9	100	40	100° - 130°	40	10	2	based on diameter
9,01 - 10	100	40	100° - 130°	40	10	2	based on diameter
10,01 - 11	100	40	100° - 130°	40	12	2	based on diameter
11,01 - 12	100	40	100° - 130°	40	12	2	based on diameter
12,01 - 13	100	40	100° - 130°	40	14	2	based on diameter
13,01 - 14	100	40	100° - 130°	40	14	2	based on diameter
14,01 - 15	100	40	100° - 130°	40	16	2	based on diameter
15,01 - 16	100	40	100° - 130°	40	16	2	based on diameter

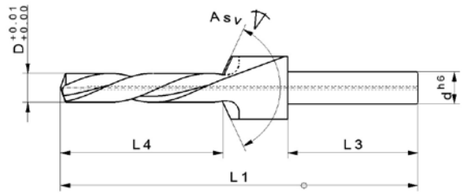
One-Shot Drill & Countersink Series

AeroDrill ST2-V AeroDrill NX2-V

Technical features and applications:

through coolant on request

- Solid carbide twist drill (solid body)
- High density PCD cutting edges: 2
- Helix angle: 25°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 2,5 to 16,0 mm
- Shank form: HA (DIN 6535)
- For CNC automated one-shot drilling & countersinking of CFRP and hard composite materials
- Available for 100° and 130° countersinking



AeroDrill ST2-V

D	L1	L4	ASV	L3	d	Z	ORDER CODE
2,50-3,00	80	30	100° - 130°	30	4	2	based on diameter
3,01 - 3,50	80	30	100° - 130°	30	4	2	based on diameter
6,01 - 7,00	80	30	100° - 130°	30	4	2	based on diameter
4,01 - 4,50	80	30	100° - 130°	30	4	2	based on diameter

AeroDrill NX2-V

D	L1	L4	ASV	L3	d	Z	ORDER CODE
4,51 - 5,00	90	40	100° - 130°	30	6	2	based on diameter
5,01 - 6,00	90	40	100° - 130°	30	6	2	based on diameter
6,01 - 7,00	100	40	100° - 130°	40	8	2	based on diameter
7,01 - 8,00	100	40	100° - 130°	40	8	2	based on diameter
8,01 - 9,00	100	40	100° - 130°	40	10	2	based on diameter
9,01 - 10,00	100	40	100° - 130°	40	10	2	based on diameter
10,01 - 11,00	100	40	100° - 130°	40	12	2	based on diameter
11,01 - 12,00	100	40	100° - 130°	40	12	2	based on diameter
12,01 - 13,00	100	40	100° - 130°	40	14	2	based on diameter
13,01 - 14,00	100	40	100° - 130°	40	14	2	based on diameter
14,01 - 15,00	100	40	100° - 130°	40	16	2	based on diameter
15,01 - 16,00	100	40	100° - 130°	40	16	2	based on diameter

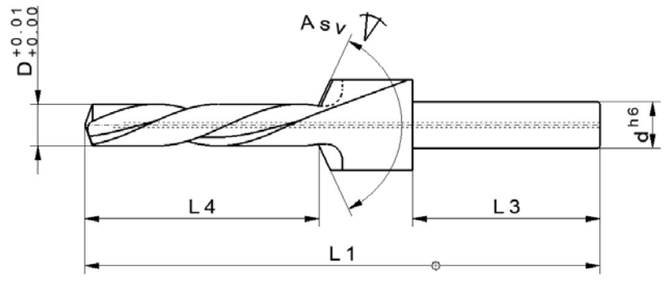
One-Shot Drill & Countersink Series

AeroDrill ST3-V

Technical features and applications:

through coolant on request

- Solid carbide twist drill (solid body)
- High density PCD cutting edges: 3
- Helix angle: 25°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 3,0 to 9,0 mm
- Shank form: HA (DIN 6535)
- For CNC automated one-shot drilling & countersinking of CFRP and hard composite materials
- Available for 100° and 130° countersinking
- Available with through coolant from 4,0 mm diameters



D	L1	L4	ASV	L3	d	Z	ORDER CODE
3,00-3,50	80	30	100° - 130°	30	4	3	based on diameter
3,51-4,00	80	30	100° - 130°	30	4	3	based on diameter
4,01-4,5	80	30	100° - 130°	30	4	3	based on diameter
4,51-5,0	80	30	100° - 130°	30	4	3	based on diameter
5,01-5,5	90	40	100° - 130°	30	6	3	based on diameter
5,51-6,00	90	40	100° - 130°	30	6	3	based on diameter
6,01-6,50	100	40	100° - 130°	40	8	3	based on diameter
6,51-7,00	100	40	100° - 130°	40	8	3	based on diameter
7,01-7,50	100	40	100° - 130°	40	10	3	based on diameter
7,51-8,00	100	40	100° - 130°	40	10	3	based on diameter
8,01-8,50	100	40	100° - 130°	40	12	3	based on diameter
8,51-9,00	100	40	100° - 130°	40	12	3	based on diameter

AeroMill

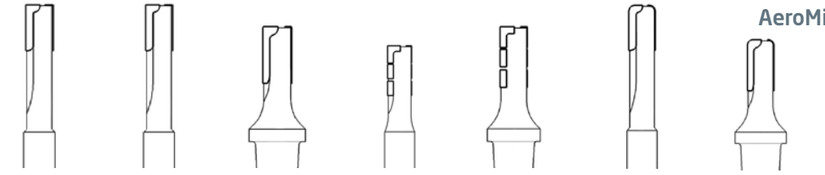
Cruing AeroMill series offers **PCD cutters designed for milling CFRP, composites and light alloys.**
It covers the complete range of cutting tools commonly used within the Aerospace and other industries that also utilise advanced composite materials: **edge milling, ball-nose** and **face milling solutions**, all qualified by many leading producers of CFRP parts.

All cutters are available with either **solid carbide** bodies or **heavy metal tungsten alloy** for an exceptional thermal conductivity, helping **increase edge retention** and **vibration dampening**, obteining a super-fine surface finish with low Ra values.

AeroMill cutters are available too for **Aerotech System**, allowing users to benefit from **"Air Cooled Dry Cutting"** in addition to the precision offered by the HSK20C Aerotech/cutter interface.

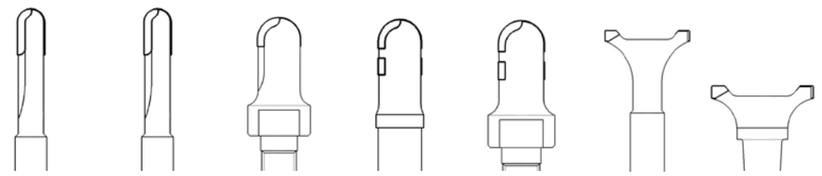
Aerotech System also provides a **fixed "zero reference point" for overall tool length**, helping to avoid operator error that can result in cutter/component/machine collision.

Tool Programme Milling



End-Mill Series

		AeroMill M11	AeroMill M12	AeroMill M13	AeroMill M18	AeroMill M19	AeroMill M31	AeroMill M32
Technical design	Diameters (mm)	10,0 - 25,0	6,0 - 25,0	10,0 - 25,0	14,0 - 20,0	14,0 - 20,0	10,0 - 25,0	12,0 - 25,0
	Number of cutting edges	2 - 3	2 - 3	2 - 3	3	3	2 - 3	2 - 3
	Helix angle	0° - 5°	0° - 5°	0° - 5°	0° - 5°	0° - 5°	0° - 5°	0° - 5°
	Cutting material	PCD	PCD	PCD	PCD	PCD	PCD	PCD
	Shank	HA (DIN 6535)	HA (DIN 6535)	HSK20C	HA (DIN 6535)	HSK20C	HA (DIN 6535)	HSK20C
Application		CNC finishing	CNC finishing	CNC finishing	CNC pre-finishing & large volume removal	CNC pre-finishing & large volume removal	CNC edge finishing & inside corner rounding	CNC edge finishing & inside corner rounding
Tool body		Heavy metal tungsten alloy	Solid carbide	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy
Available with through coolant		●	●		●		●	
Air cooled dry cutting (with Aerotech System)				●		●		●



Ball-Nose Series | Face-Mill Series

		AeroMill M21	AeroMill M22	AeroMill M23	AeroMill M28	AeroMill M29	AeroMill M41	AeroMill M42
Technical design	Diameters (mm)	10,0 - 25,0	6,0 - 25,0	10,0 - 25,0	20,0 - 40,0	25,0 - 40,0	25,0 - 80,0	25,0 - 50,0
	Number of cutting edges	2	2	2	2+2	2+2	4 - 8	4 - 5
	Helix angle	0° - 5°	0° - 5°	0° - 5°	10° - 25°	10° - 25°	0° - 10°	0° - 10°
	Cutting material	PCD	PCD	PCD	PCD	PCD	PCD	PCD
	Shank	HA (DIN 6535)	HA (DIN 6535)	Thread	HA (DIN 6535)	Thread	HA (DIN 6535)	HSK20C
Application		CNC slotting & profiling	CNC slotting & profiling	CNC slotting & profiling	CNC profiling & pre-finishing	CNC profiling & pre-finishing	CNC high-speed facing	CNC high-speed facing
Tool body		Heavy metal tungsten alloy	Solid carbide	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy	Heavy metal tungsten alloy
Available with through coolant		●	●		●		●	
Air cooled dry cutting (with Aerotech System)								●

End-Mill Series

AeroMill M11 - AeroMill M12 - AeroMill M13

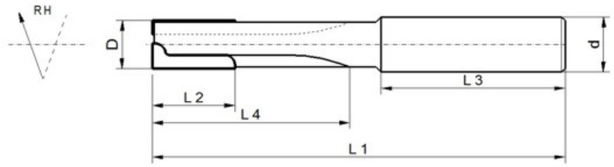
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body / Solid carbide body
- High density PCD cutting edges: 2-3
- Helix angle: 0° - 5°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 6,0 to 25,0 mm
- Shank form: HA (DIN 6535) or HSK20C

- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for **finishing** operations
- Available with through coolant, if operating with Basic and Reach tool-holders
- Matchable with Aerotech System for **air cooled dry cutting**
- **Customised finishing cutters** available **on request**

AeroMill M11 - AeroMill M12



AeroMill M11 (heavy metal tungsten alloy)

D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
9,01-10,00	75	15	35	40	10	2	3	based on diameter
10,01-11,00	75	15	35	40	12	2	3	based on diameter
11,01-12,00	75	15	35	40	12	2	3	based on diameter
12,01-13,00	85	15	35	50	14	2	3	based on diameter
13,01-14,00	85	15	35	50	14	2	3	based on diameter
14,01-15,00	100	20	50	50	16	2	4	based on diameter
15,01-16,00	100	20	50	50	16	2	4	based on diameter
16,01-20,00	100	20	50	50	20	2	4	based on diameter
20,01-25,00	100	20	45	55	25	2	4	based on diameter

AeroMill M12 Short Series (solid carbide)

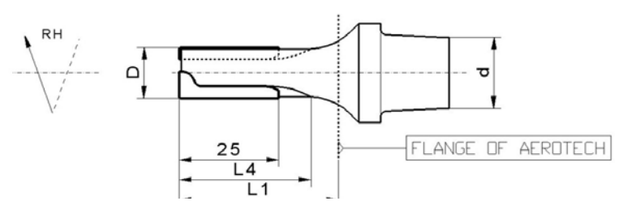
6	60	15	30	30	6	2	2	M12001
8	60	15	30	30	8	2	2	M12002
10	75	15	30	40	10	2	3	M12003
12	75	15	30	50	12	2	4	M12004

AeroMill M12 Long Series (solid carbide)

6	100	20	40	30	6	2	2	M12005
8	100	20	40	30	8	2	2	M12006
10	100	20	40	40	10	2	4	M12007
12	100	20	40	50	12	2	4	M12008

Available up to 25 mm on request

AeroMill M13

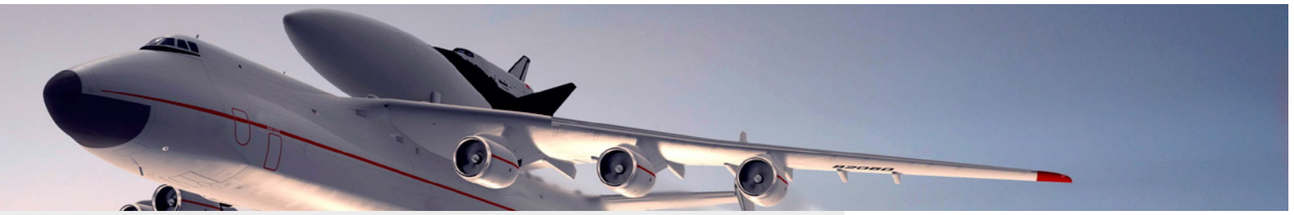


D	L1	L2	L4	d	Z	HDP	ORDER CODE
12,00-16,00	30	15	20	HSK20C	2	3	based on diameter
12,00-16,00	30	15	20	HSK20C	3	3	based on diameter
12,00-16,00	35	20	25	HSK20C	2	3	based on diameter
12,00-16,00	35	20	25	HSK20C	3	3	based on diameter
12,00-16,00	40	25	30	HSK20C	2	3	based on diameter
12,00-16,00	40	25	30	HSK20C	3	3	based on diameter

Available up to 25 mm on request

End-Mill Series

AeroMill M18 - AeroMill M19



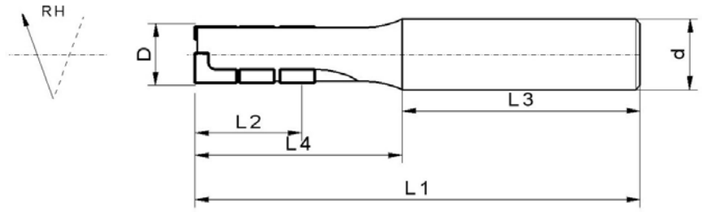
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body
- High density PCD cutting edges: 3
- Helix angle: 0° - 25°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 14,0 to 20,0
- Shank form: HA (DIN 6535) or HSK20C

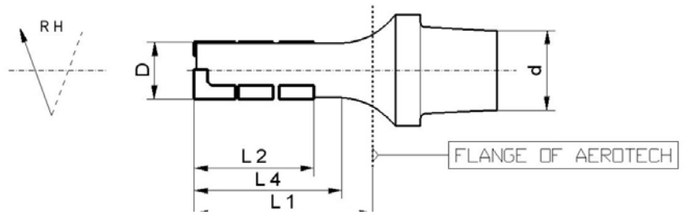
- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for **pre-finishing** and **large volume removal** operations
- "Easy-Flow" design for more efficient dust and chip evacuation
- Available with through coolant, if operating with Basic and Reach tool-holders
- Matchable with Aerotech System for **air cooled dry cutting**
- **Customised pre-finishing cutters** available **on request**

AeroMill M18



D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
14,01-16,00	80	15	30	50	16	3	3	based on diameter
16,01-20,01	80	15	30	50	20	3	3	based on diameter

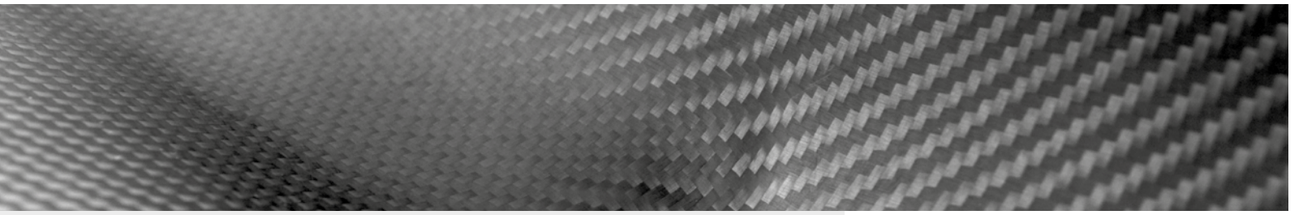
AeroMill M19



D	L1	L2	L4	d	Z	HDP	ORDER CODE
14,01-16,00	30	15	20	HSK20C	3	3	based on diameter
16,01-20,01	30	15	20	HSK20C	3	3	based on diameter

End-Mill Series

AeroMill M31 - AeroMill M32



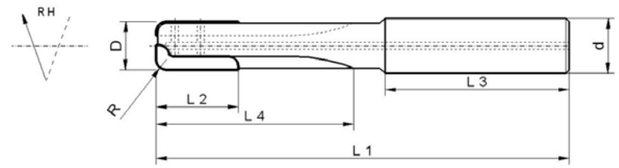
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body
- High density PCD cutting edges: 2-3
- Helix angle: 0° - 5°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 10,0 to 25,0 mm
- Shank form: HA (DIN 6535) or HSK20C

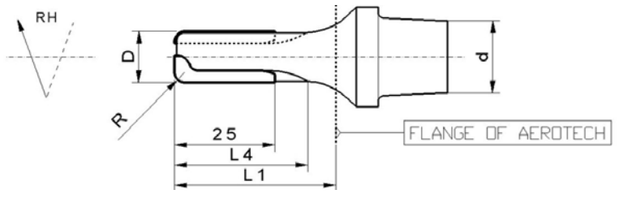
- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for simultaneous **edge finishing** and **inside corner** rounding operations
- Available with through coolant, if operating with Basic and Reach tool-holders
- Matchable with Aerotech System for **air cooled dry cutting**
- **Customised "bull nose" finishing cutters** available **on request**

AeroMill M31



D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
10,01-11,00	75	15	35	40	12	2	3	based on diameter
11,01-12,00	75	15	35	40	12	2	3	based on diameter
12,01-13,00	85	15	35	50	14	2	3	based on diameter
13,01-14,00	85	15	35	50	14	2	3	based on diameter
14,01-15,00	100	20	50	50	16	2	4	based on diameter
15,01-16,00	100	20	50	50	16	2	4	based on diameter
16,01-20,00	100	20	50	50	20	2	4	based on diameter
20,01-25,00	100	20	45	55	25	2	4	based on diameter

AeroMill M32



D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
12,00-16,00	30	15	20		HSK20C	2	3	based on diameter
12,00-16,00	30	15	20		HSK20C	3	3	based on diameter
12,00-16,00	35	20	25		HSK20C	2	3	based on diameter
12,00-16,00	35	20	25		HSK20C	3	3	based on diameter
12,00-16,00	40	25	30		HSK20C	2	3	based on diameter
12,00-16,00	40	25	30		HSK20C	3	3	based on diameter

Available up to 25 mm on request

Ball-Nose Series

AeroMill M21 - AeroMill M22 - AeroMill M23

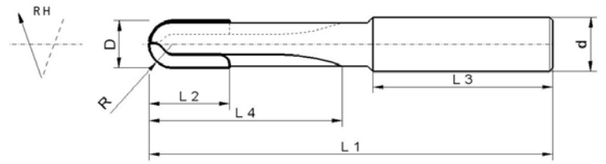
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body / Solid carbide body
- High density PCD cutting edges: 2
- Helix angle: 0° - 5°
- Cutting tolerance: +/- 0,01
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 6,0 to 25,0 mm
- Shank form: HA (DIN 6535) or thread

- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for high speed precision machining of 3-dimensional contoured shaped components (slotting & profiling)
- Customised ball nose cutters available on request

AeroMill M21 - AeroMill M22



AeroMill M21 (heavy metal tungsten alloy)

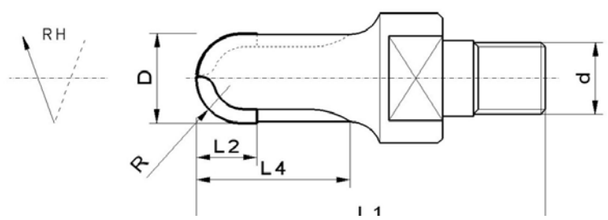
D	L1	L2	L3	d	Z	HDP	ORDER CODE
10	100	8	45	10	2	3	M21003
12	100	9	50	12	2	3	M21004
16	100	10	50	16	2	3	M21005
20	100	12	55	20	2	3	M21006

AeroMill M22 (solid carbide)

D	L1	L2	L3	d	Z	HDP	ORDER CODE
6	100	6	40	8	2	3	M22001
8	100	7	40	8	2	3	M22002
10	100	8	45	10	2	3	M22003
12	100	9	50	12	2	3	M22004
16	100	10	50	16	2	3	M22005
20	100	12	55	20	2	3	M22006

Available up to 25 mm on request

AeroMill M23



D	L1	L2	d	Z	HDP	ORDER CODE
10	78	8	M16	2	3	M23001
12	78	9	M16	2	3	M23002
16	78	10	M16	2	3	M23003

Available up to 25 mm on request

Ball-Nose Series

AeroMill M28 - AeroMill M29

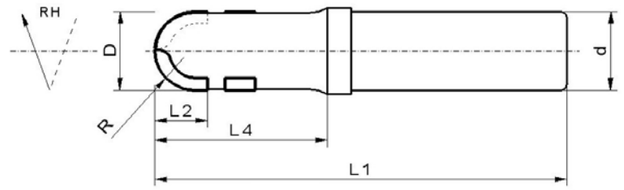
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body
- High density PCD cutting edges: 2+2
- Helix angle: 10° - 25°
- Cutting tolerance: +/- 0,02
- Balance: G2,5 < 1 gr/mm
- Diameters range: from 16,0 to 40,0 mm
- Shank form: HA (DIN 6535) or thread

- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for **multi-role operations of profiling and pre-finishing** (ball nose cutter w/out axial angle and pre-finishing cutter with converging axial angle)
- "Easy-Flow" design for more efficient dust and chip evacuation
- **Customised multi-role cutters** available **on request**

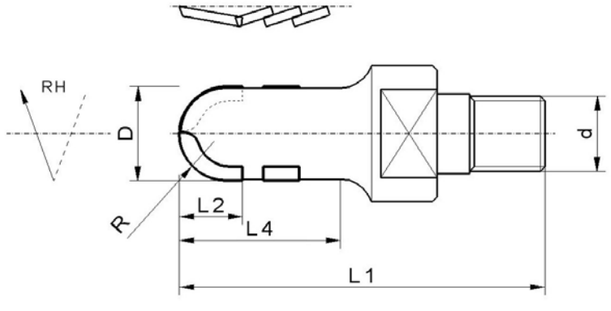
AeroMill M28



D	L1	L2	L4	d	Z	HDP	ORDER CODE
20	150	30	55	25	2+2	3	M28001
25	150	50	55	25	2+2	3	M28002
32	150	50	55	25	2+2	3	M28003

Available up to 40 mm on request

AeroMill M29



D	L1	L2	L4	d	Z	HDP	ORDER CODE
25	78	50	55	M16	2+2	3	M29001
32	78	50	55	M16	2+2	3	M29002
40	78	50	55	M16	2+2	3	M29003

Face-Mill Series

AeroMill M41 - AeroMill M42

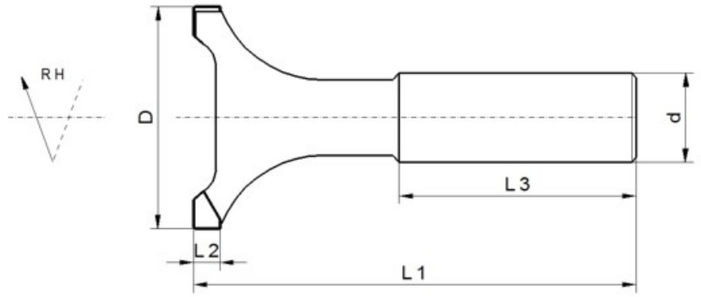
Technical features and applications:

through coolant on request

- Heavy metal tungsten alloy body (up to 40 mm)
- Case hardened body (over 40 mm)
- High density PCD cutting edges: **4-8**
- Helix angle: **0° - 10°**
- Cutting tolerance: **+/- 0,02**
- Balance: **G2,5 < 1 gr/mm**
- Diameters range: **from 25,0 to 80,0 mm**
- Shank form: **HA (DIN 6535) or HSK20C**

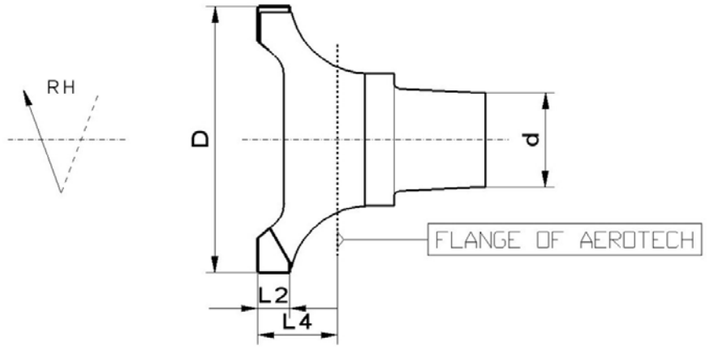
- For CNC automated cutting of CFRP, aluminium and light alloy materials
- Particularly indicated for **high speed facing** operations
- "Easy-Flow" design for more efficient dust and chip evacuation
- Profiled "GlideCut" edges to reduce cutting pressure
- Available with through coolant, if operating with Basic and Reach tool-holders
- Matchable with Aerotech System for **air cooled dry cutting**
- **End-cut-to-centre design** available up to 40 mm diameters
- **Customised multi-role cutters** available **on request**

AeroMill M41



D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
25	100	10		55	25	4	3	M41001
32	100	10		55	25	4	3	M41002
40	100	10		55	25	5	3	M41003
60	100	10		55	25	8	3	M41004
70	100	10		55	25	8	3	M41005
80	100	10		55	25	8	3	M41006

AeroMill M42



D	L1	L2	L4	L3	d	Z	HDP	ORDER CODE
25	10	10			HSK2C	4	3	M42001
32	10	10			HSK2C	4	3	M42002
40	10	10			HSK2C	5	3	M42003
50	10	10			HSK2C	5	3	M42004

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