

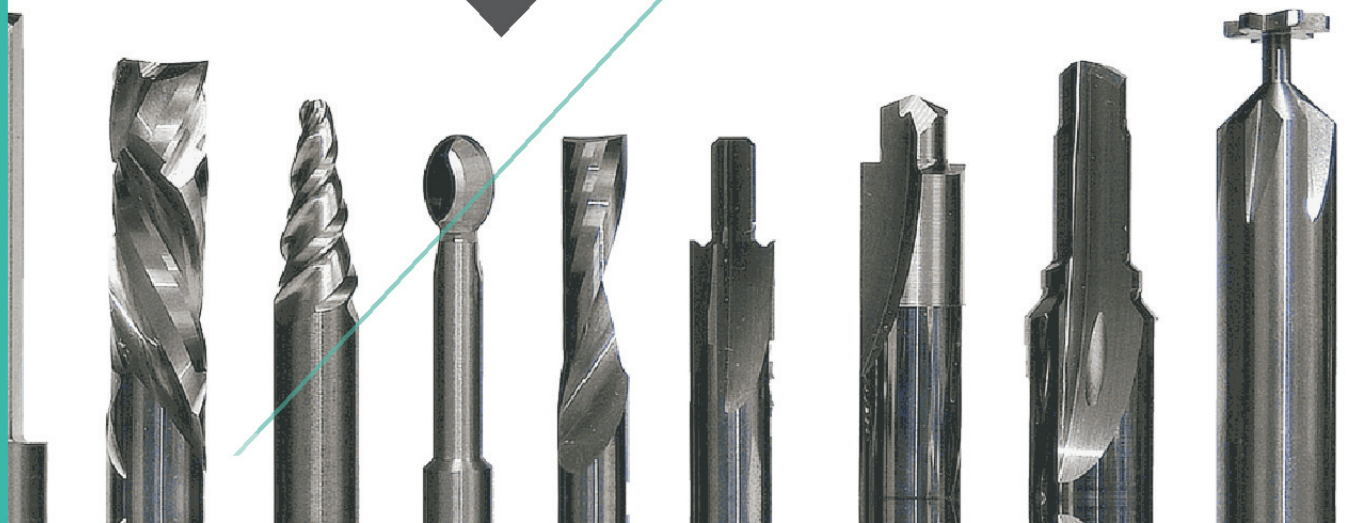


OSR-INDUSTRIES

Empowering Excellence



INNOVATION
SPECIALISATION
PERFORMANCE





We, **OSR - INDUSTRIES**, are well-reckoned Manufacturer of a highly productive range of **Solid carbide Lugged/ Brazed Cutters, Drills, Endmills, Ballnose, Reamers, Centre drills, Chamfer Tools, T- Slot Cutters, Side & Face Cutters, Profile Tools, Grooving Insert, Retipping of Gun Drills, PCD reamers, PCD /PCBN profile tools**. Catering to the diversified tooling needs of various industries, we play a prime role in increasing production rates. Offering an extensive line of highly efficiency carbide & PCD tools for almost every application enables us to do so. As a customer-focused unit we are working with changing technologies & infrastructures and we have continued to deliver value to our customers.



1 Our Mission

To be committed towards the satisfaction of our customers and bring continuous improvement in the quality, technology, engineering, product availability and service rendered.

2 Our Quality Compliance

Quality for us encompasses every aspect involved in product development & delivery. We ensure that all our products offer improved efficiency and are long lasting in operation. We procure our raw material from the reliable vendors and ensure to test them for desired properties, before utilizing them in production.

3 Our Business Philosophy

We act on a single goal of focus on the quality of product & services delivered. Our commitment to continuous quality improvement encompasses every aspect of our products, services, and customer support. Guidelines that spearhead us towards the goal are:

- Empowering people by Trust Building.
- Encouraging and Nurture Young Talent.
- Transparency with Business Execution.
- Rewarding Performance and Innovation.

We always have a keen eye on the changing technology and market trends to understand areas where customers are challenged. In our endeavors to meet the diverse tooling requirements of our clients, we offer a vast assortment of carbide & PCD tools. Our range includes ball nose end mill, core drill, drills, lugged & tip based reamers, multi step drills, square end mills, step drills, T – slots, tool holders, corner radius end mills, roughing end mills and a host of other PCD tools.

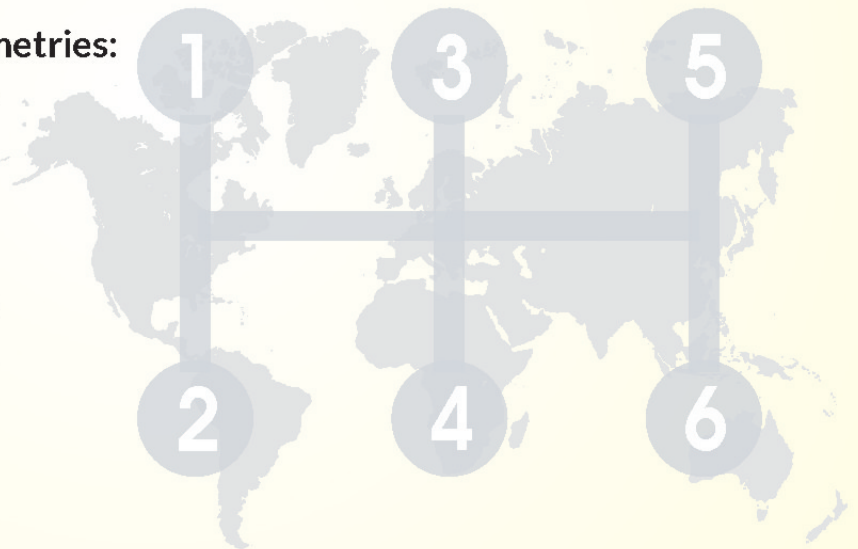
Our range of tools are considered to be the best because of the following attributes:

- **Optimized Carbide Grades:**

Qualitative cutting performance is achieved only when the grade of carbide used ideally fits the specific application needs. So we assure to use the most suitable carbide grade in manufacturing the tools.

- **Highly Innovative Tool Geometries:**

Efficient evacuation & chip forming is required for optimal cutting performance and for this innovative geometry plays a prime role. We possess the engineering know-how to design highly innovative tool geometries for maximum cutting performance.



- **Superior Grinding Quality:** As superior quality determines the tool life and cutting action, good grinding quality is critical. We apply our years of grinding expertise and utilize the latest CNC grinding equipment to produce a qualitative surface finish.
- **Advanced Tool Coating Technology:** Extensive tool life and enhanced application performance need advanced coating technology. And this field continues to change rapidly. So, we have established alliances to provide the best coating.

4

Our Trained Workforce

We have the support and dedication of an experienced team of tool makers and allied technical staff. They have the complete knowledge about various kinds of tools that we trading and also about the machines used for fabrications. Our tool makers are dedicated to maintain consistency and repeatability in every tool they design & manufacture.

5

Our Manufacturing Facility

We are facilitated & equipped with the latest CNC grinding machine & software (NUM) and measuring technology (Walter Helliset Tool Measuring machine) to ensure that our clients receive the highest quality of Carbide & PCD tools. Our modern infrastructure facility is technologically advanced and various hi-tech machinery that enables us to design and develop variety of tools. The different machines at our unit are CNC grinding m/c, Milling m/c, Tools & Cutters, Walter Tool Measuring Machine, EDM Machine etc.

6

Prompt Service:

- Fast turn-around time for quotations
- Commitment to total customer satisfaction
- Providing solutions with performance & special tools.
- Execute on time delivery of orders.
- Align ourself as per customer critical needs

OSR-I Manufacturing Facility

W4 Pro CNC tool & cutter grinding & complete tool measuring machines



Electronica EDM



WALTER HELISET PLUS
(Tool Measuring Machine)



CNC TOOL & CUTTER GRINDER
(W4 Pro with NUM Software)



Accu Tech VMM
(Video Measuring Machine)



Accu Tech Profile Projector



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Precision Cutting Tools & Tool Holders

The OSR-I specialties will help you to solve your centering, drilling, chamfering, micro-milling, reaming problems,

All these upscale tools, made whether from Hss-Cobalt or carbide, PCD, CBN meet your requirements and expectations.

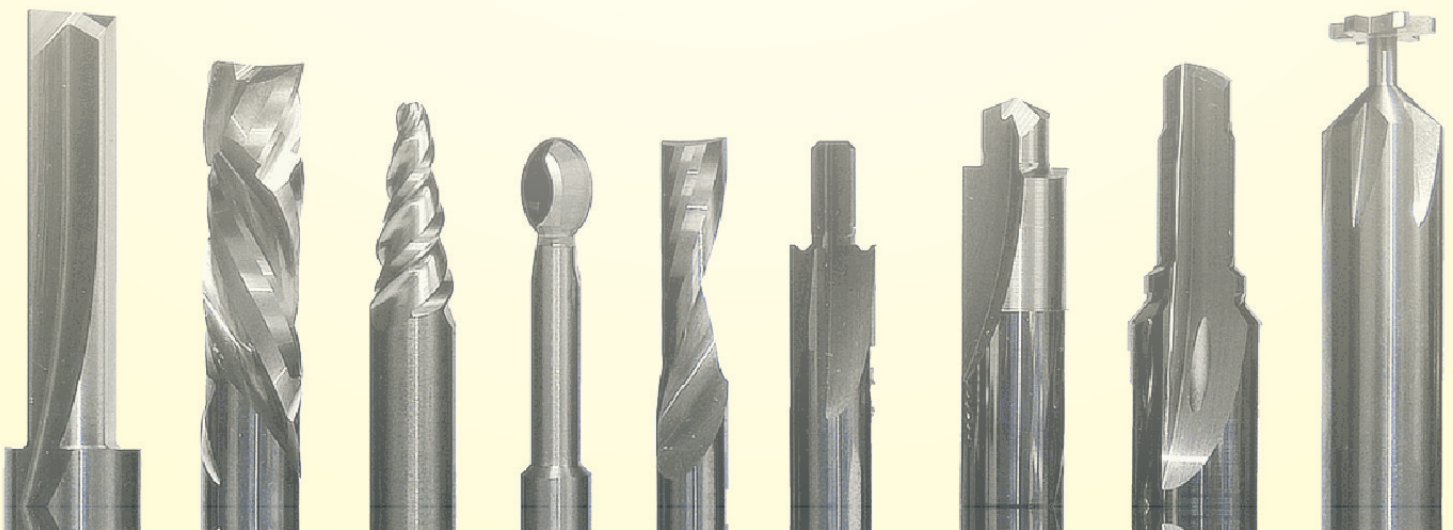
To complete this unique offer in terms of range, standards, qualities,

we offer services to make your work easier:

- Design and manufacture of special tools
- PCD, CBN, Solid Carbide Sp. Tools, Tip Brazed & Lugged Tools
- Technical Support & Service

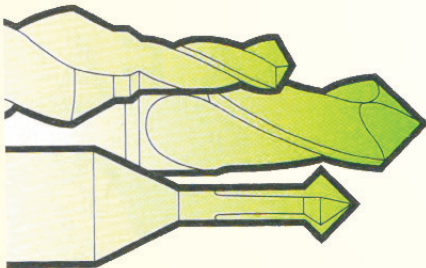
OSR-I wishes to be for you a valuable supplier

INNOVATION
SPECIALISATION
PERFORMANCE

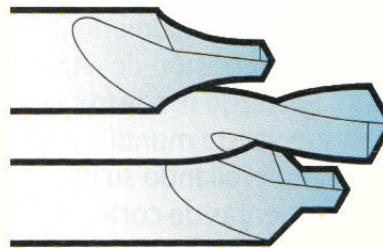


Easy To Use...Good Value... Precision and Performance!

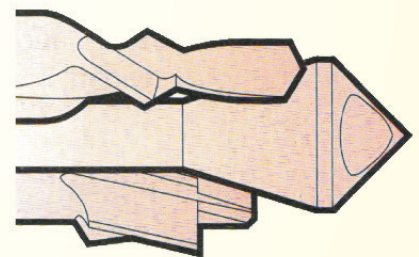
- ❖ Mini-NC spotting drills
- ❖ Front and Back biconal chamfering cutters
- ❖ Multi / Single step drills before threading
- ❖ Multi-Functions Micro-Tools
- ❖ End- Mills & Ball Mills



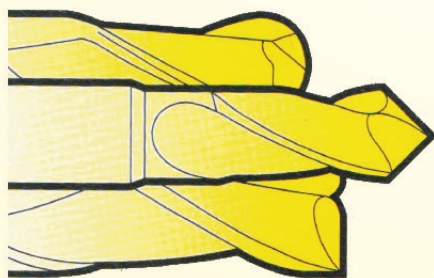
TENDENCIAS
TRENDS



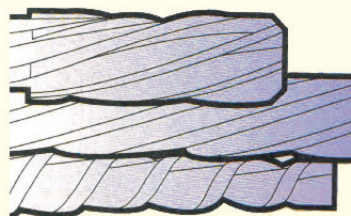
CENTERING
SPOTTING



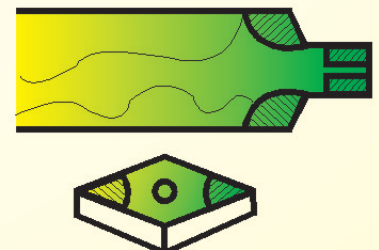
COUNTERSINKING
COUNTERBORING



MULTI-FUNCTION TOOLS
MICRO-MILLING



REAMING



PCD, CBN APPLICATION

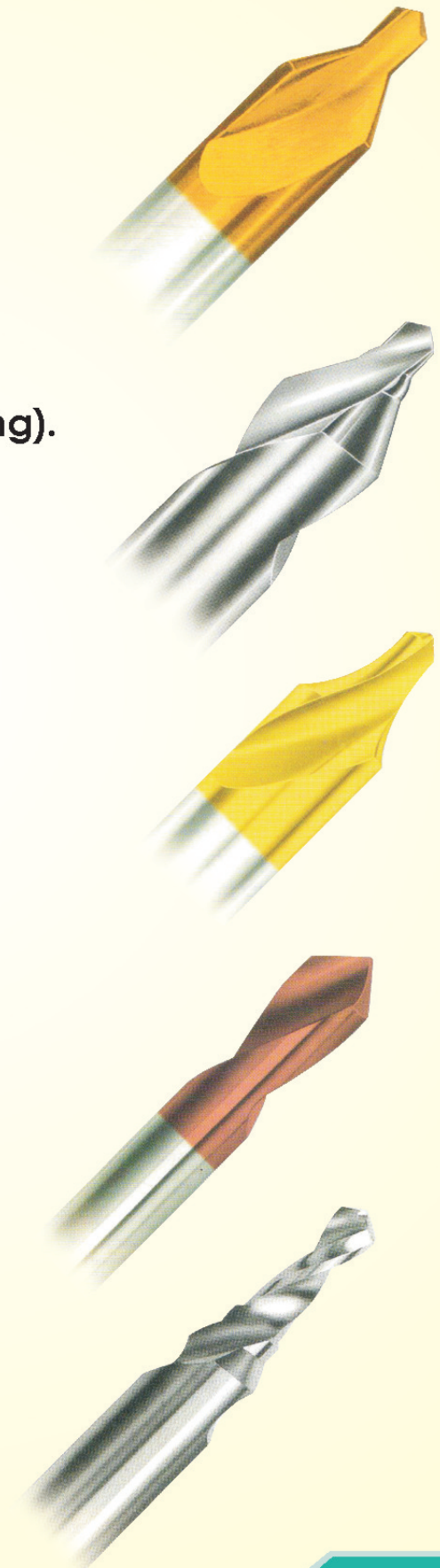
The precision, the geometry
the protection of the center holes
will secure the quality of the ulterior
machine operations(turning or grinding).

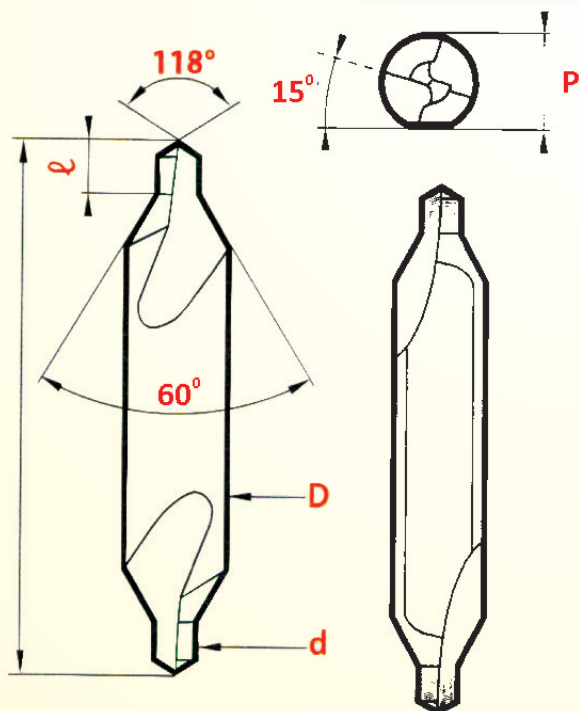
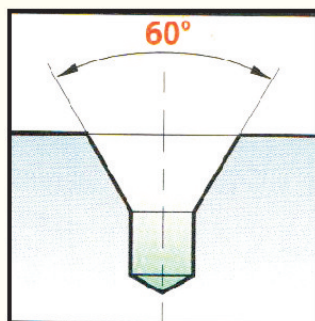
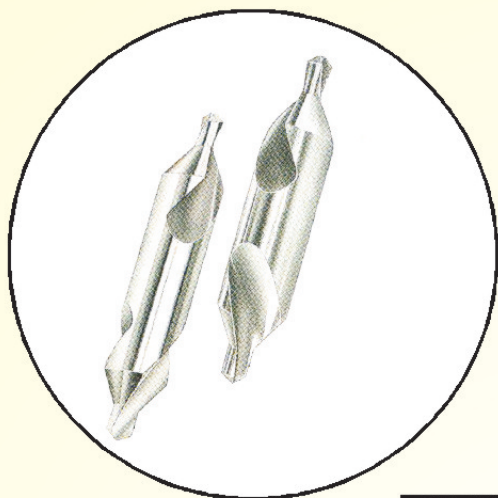
Each of the 10 offered profiles has
been designed for their improvment.

Also they will optimise your machine
performance. Among our different
ranges, for all kind of centering

/ spotting operations there
is an adopted solution. These

correspond to all metrics
or inches known norms, in all
today feasable qualities





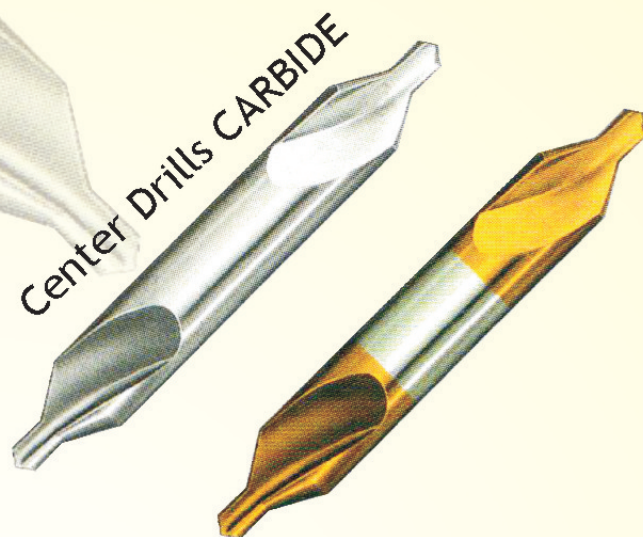
Tolerances

D	d	L	α	
			60°	118°
h7*	k 12	± 1	- 30'	± 2°

D x d	L	ℓ
3,0 x 0,5	31	0,6 ~ 0,9
3,15 x 0,5*	25	0,6 ~ 0,9
3,15 x 0,63*	25	0,7 ~ 1,0
3,15 x 0,8*	25	1,0 ~ 1,3
3,15 x 1,0	31	1,3 ~ 1,7
3,15 x 1,25	31	1,6 ~ 2,0
3,5 x 0,75	35	1,0 ~ 1,3
4,0 x 0,75	35	1,3 ~ 1,7
4,0 x 1,6	35	1,6 ~ 2,0
4,0 x 1,6	35	2,0 ~ 2,6
5,0 x 1,5	40	2,0 ~ 2,6
5,0 x 1,6	40	2,0 ~ 2,6
5,0 x 2,0	40	2,5 ~ 3,1
6,0 x 2,0	45	2,5 ~ 3,1
6,3 x 2,0	45	2,5 ~ 3,1
6,3 x 2,5	45	3,1 ~ 3,8
8,0 x 2,5	50	3,1 ~ 3,8
8,0 x 3,0	50	3,9 ~ 4,6
8,0 x 3,15	50	3,9 ~ 4,9
10,0 x 3,0	55	3,9 ~ 4,6
10,0 x 3,15	55	3,9 ~ 4,6
10,0 x 4,0	55	5,0 ~ 5,9
12,0 x 4,0	63	5,0 ~ 5,9
12,0 x 5,0	63	6,3 ~ 7,2
12,5 x 4,0	63	5,0 ~ 5,9
12,5 x 5,0	63	6,3 ~ 7,2
14,0 x 5,0	69	6,3 ~ 7,2
16,0 x 5,0	71	6,3 ~ 7,2
16,0 x 6,3	71	8,0 ~ 8,9
18,0 x 6,0	77	8,0 ~ 8,9
20,0 x 6,3	80	8,0 ~ 8,9
20,0 x 8,0	80	10,1 ~ 11,1
25,0 x 8,0	100	10,1 ~ 11,1
25,0 x 10,0	100	12,8 ~ 13,8
31,5 x 10,0	125	12,8 ~ 13,8
31,5 x 12,5	125	16,5 ~ 17,5

Center Drills

Center Drills CARBIDE



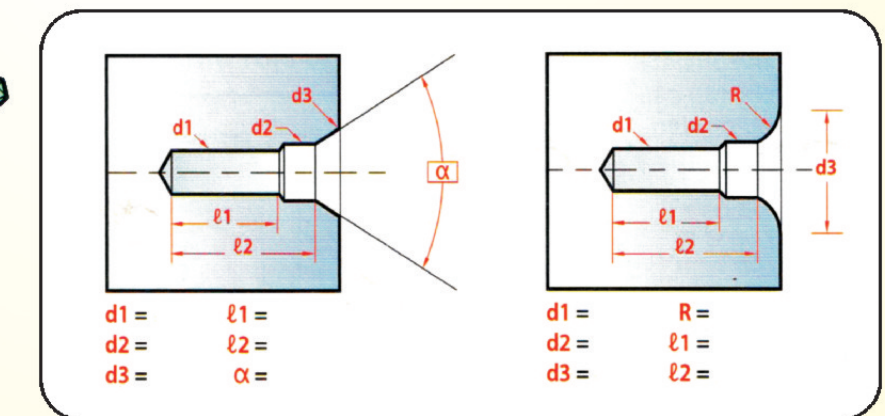
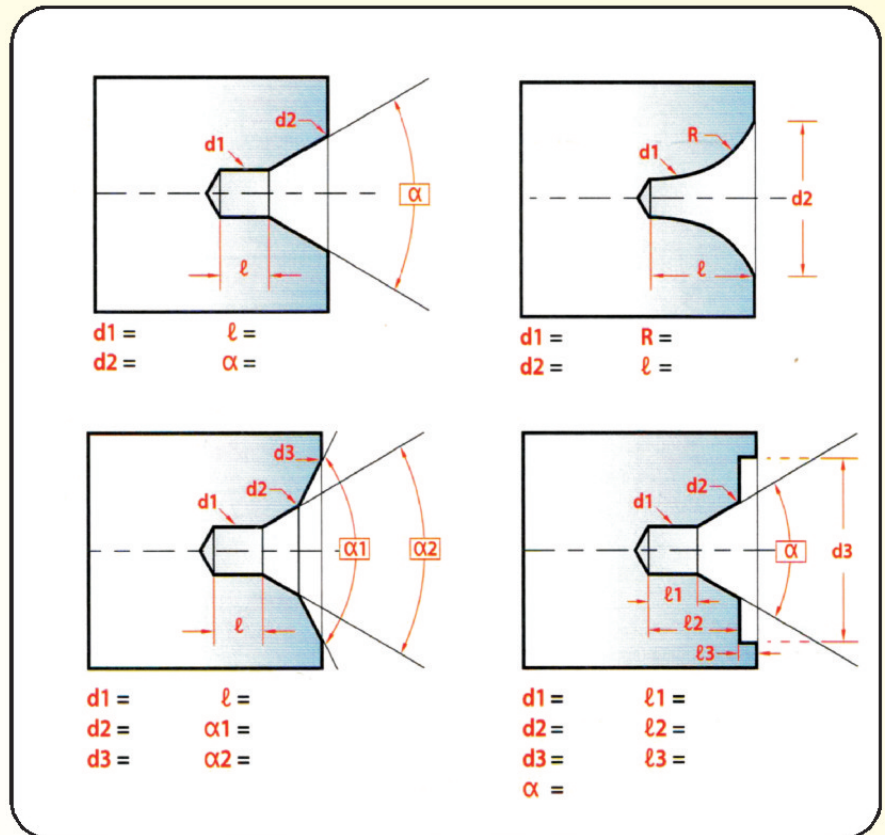
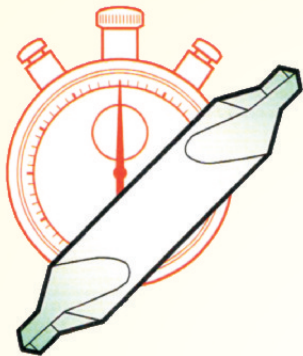
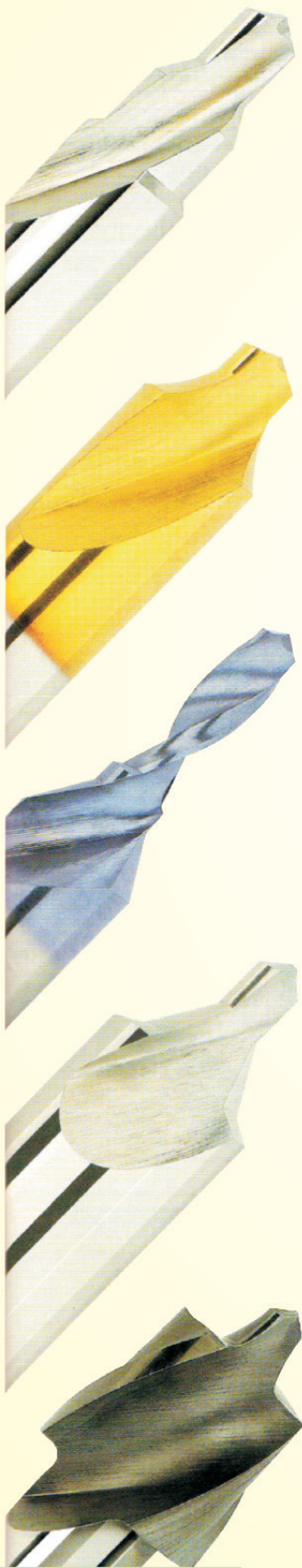
With Flat



D x d	L	ℓ
3,15 x 0,5 (1)	25	0,6 ~ 0,9
3,15 x 0,8 (1)	25	1,0 ~ 1,3
3,15 x 1,0	31	1,3 ~ 1,7
3,15 x 1,25	31	1,6 ~ 2,0
3,5 x 0,75	35	1,0 ~ 1,3
4,0 x 1,0	35	1,3 ~ 1,7
4,0 x 1,6	35	2,0 ~ 2,6
5,0 x 1,5	40	2,0 ~ 2,6
5,0 x 2,0	40	2,5 ~ 3,1
6,0 x 2,0	45	2,5 ~ 3,1
6,3 x 2,5	45	3,1 ~ 3,8
8,0 x 2,5	50	3,1 ~ 3,8
8,0 x 3,0	50	3,9 ~ 4,6
8,0 x 3,15	50	3,9 ~ 4,6
10,0 x 3,0	50	3,9 ~ 4,6
10,0 x 4,0	55	5,0 ~ 5,9
12,0 x 4,0	63	5,0 ~ 5,9
12,0 x 5,0	63	6,3 ~ 7,2
12,5 x 5,0	63	6,3 ~ 7,2
14,0 x 5,0	69	6,3 ~ 7,2
16,0 x 6,3	71	8,0 ~ 8,9
20,0 x 8,0	80	10,1 ~ 11,1

D x d	L	ℓ	P -0,1
4,0 x 1,6	35	2,0 ~ 2,6	3,25
5,0 x 2,0	40	2,5 ~ 3,1	4,20
6,3 x 2,5	45	3,1 ~ 3,8	5,35
8,0 x 3,15	50	3,9 ~ 4,6	6,95
10,0 x 4,0	55	5,0 ~ 5,9	8,40
12,5 x 5,0	63	6,3 ~ 7,2	10,95
16,0 x 6,3	71	8,0 ~ 8,9	14,00
20,0 x 8,0	80	10,1 ~ 11,1	17,90
25,0 x 10,0	100	12,8 ~ 13,8	22,50

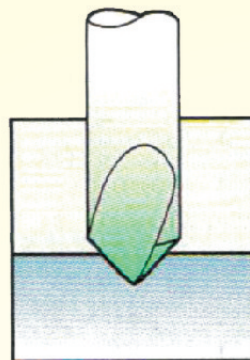
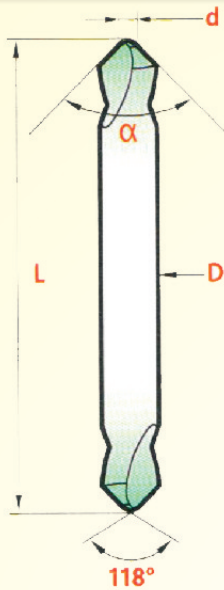
Multi Function Centring/Chamfering



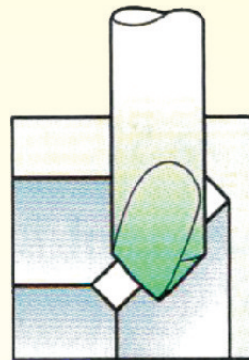
Name and Address

1. Material to bore.....
2. Number of tools.....
- 3.Special tolerance.....

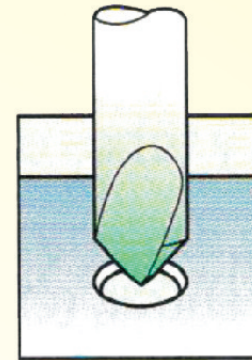
Multi Function Centring/Chamfering



**CENTERING
SPOTTING**



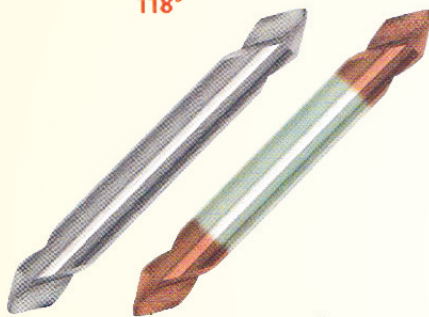
**LONGITUDINALES
CHAMFER**



CHAMFERING

D	d	L	α
h7*	± 0,2	± 1	± 1°

The 118 Sharpening angle make easier the Tool penetration, while reinforcing its point



Angle 60°

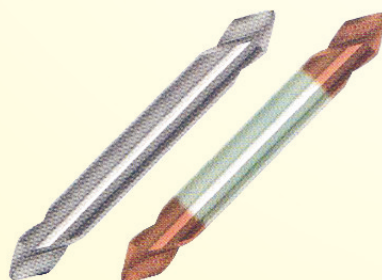
D x d	L
3,0 x 0,5	40
4,0 x 1,0	45
6,0 x 2,0	55
8,0 x 2,5	65
10,0 x 3,0	75
12,0 x 3,5	85
16,0 x 4,0	90
20,0 x 5,0	100

Long 60°

D x d	L
3,0 x 0,5	100
4,0 x 1,0	100
6,0 x 2,0	100
8,0 x 2,5	100
10,0 x 3,0	100
12,0 x 3,5	100

X-Long 60°

D x d	L
3,0 x 0,5	40
4,0 x 1,0	45
6,0 x 2,0	55
8,0 x 2,5	65
10,0 x 3,0	75
12,0 x 3,5	85
16,0 x 4,0	90
20,0 x 5,0	100



Angle 90°

D x d	L
3,0 x 0,5	40
4,0 x 1,0	45
6,0 x 2,0	55
8,0 x 2,5	65
10,0 x 3,0	75
12,0 x 3,5	85
16,0 x 4,0	90
20,0 x 5,0	100

Angle 90°

D x d	L
3,0 x 0,5	100
4,0 x 1,0	100
6,0 x 2,0	100
8,0 x 2,5	100
10,0 x 3,0	100
12,0 x 3,5	100

Angle 90°

D x d	L
8,0 x 2,5	150
10,0 x 3,0	150
12,0 x 3,5	150
16,0 x 4,0	150
20,0 x 5,0	150

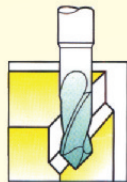
MULTI-FUNCTIONS TOOLS



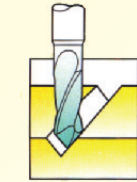
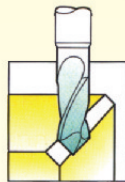
INTERPOLATION
DRILLING



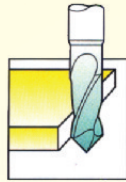
ENGRAVING



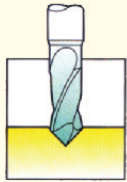
LONGITUDINAL CHAMFERS



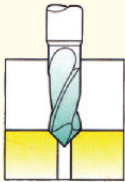
V-GROOVING



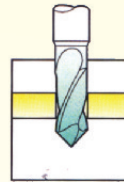
COUNTOURING



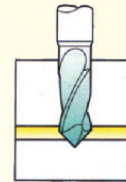
SPOTTING



CHAMFERING



DRILLING



DIRECT CHAMFERS

SQUARE END-TOOLS



GROOVING



ENGRAVING

MINIATURE END-MILLS

CORNER RADIUS MINI END-MILLS
WITH LONG NECK

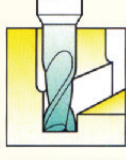
SQUARE MINI END-MILLS WITH LONG NECK

THREE FLUTES MINI END-MILLS

ALU-TITAN - PLASTICS SERIES



DEEP SLOTTING



HARD TO REACH



COUNTOURING



FLAT BOTTOM BORING

RADIUS FORM END TOOLS



GROOVING



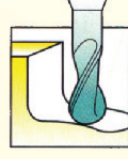
ROUND CORNER

MINIATURE ROUND CORNER END-MILLS

BALL-END MINI END-MILLS



COPYING



HARD TO REACH

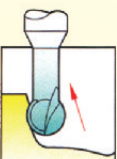
MINI END-MILLS WITH LONG NECK

220° BALL-END MINI END-MILLS

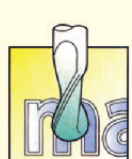
MOULD + DIE END-MILLS

CREAMICS + DENTAL END-MILLS

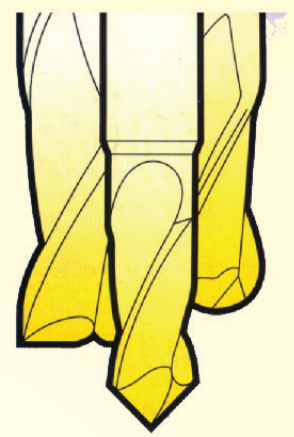
ALU-TITAN - PLASTICS SERIES



CLEARANCE

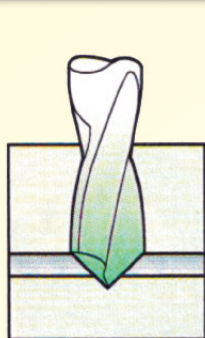


ENGRAVING

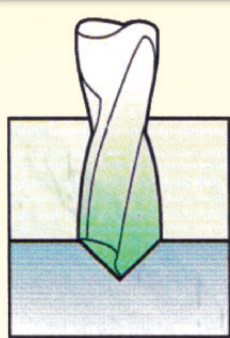


MULTI-FUNCTIONS TOOLS - MINIATURE MILLING

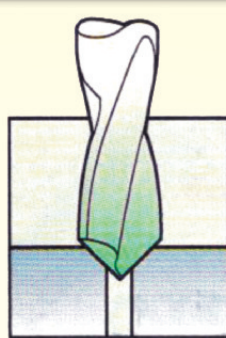
Multi-Functions Tools



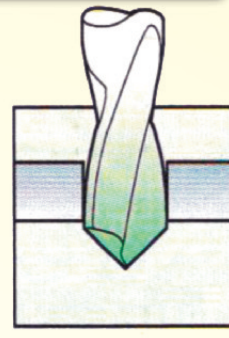
DIRECT CHAMFER



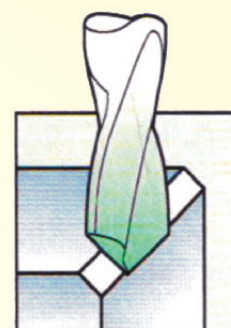
SPOTTING



COUNTERSINKING

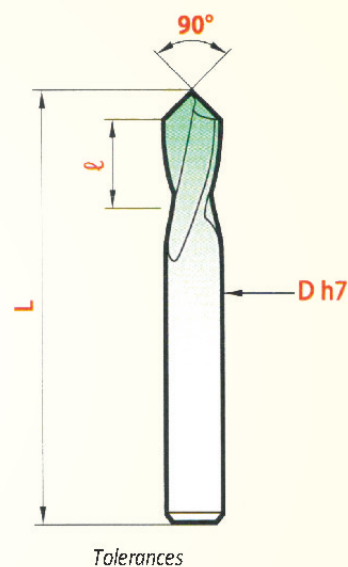


DRILLING



LONGITUDINAL CHAMFER

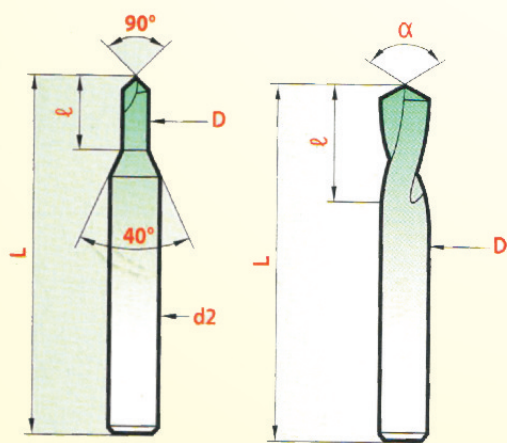
D h7		L	ℓ	T*
inch	mm			
	3	50	6	0,3
1/8"	3,17	50	6	0,3
	4	52	8	0,4
3/16"	4,76	60	9	0,5
	5	60	10	0,5
	6	66	12	0,6
1/4"	6,35	66	12	0,6
5/16"	7,93	79	14	0,8
	8	79	14	0,8
3/8"	9,52	89	16	1
	10	89	16	1
	12	102	18	1,2
1/2"	12,7	102	19	1,3
	14	115	21	1,4
5/8"	15,87	115	24	1,6
	16	115	24	1,6



Tolerances

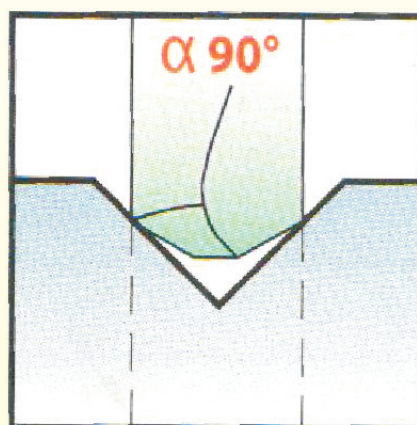
D α L

SHORTS NC SPOTTING DRILLS



D	α	L
h6*	+1°	±1

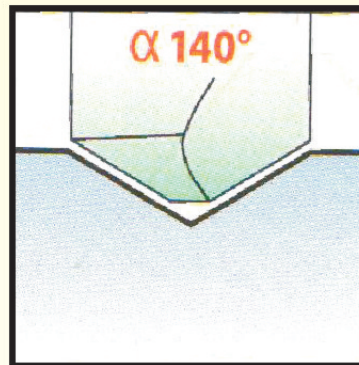
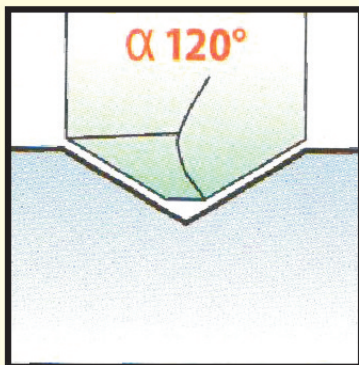
CARBIDE = h5



90 degree angle

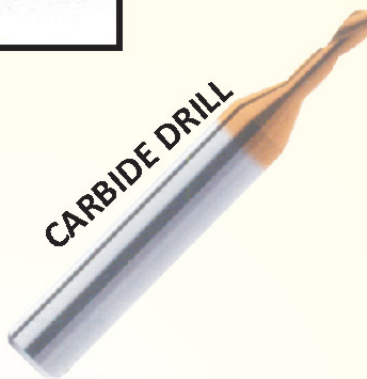
By using the drill of diameter over the drilling tools, centering and chamfering are obtained in a single operation.

Shorts NC *Spotting Drills*



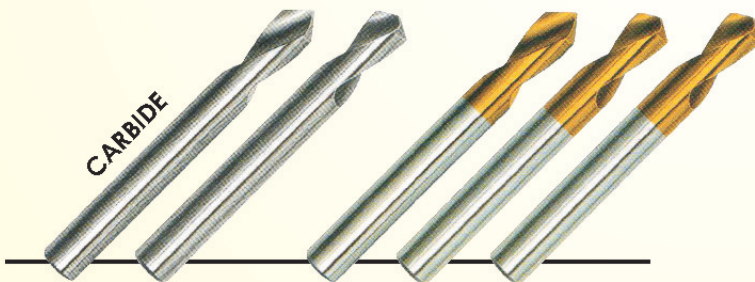
120 and 140 degree angles:

The preliminary hole obtained with the drill corresponds to the angle at the end of the tool used in drilling and prevents it from deviating.



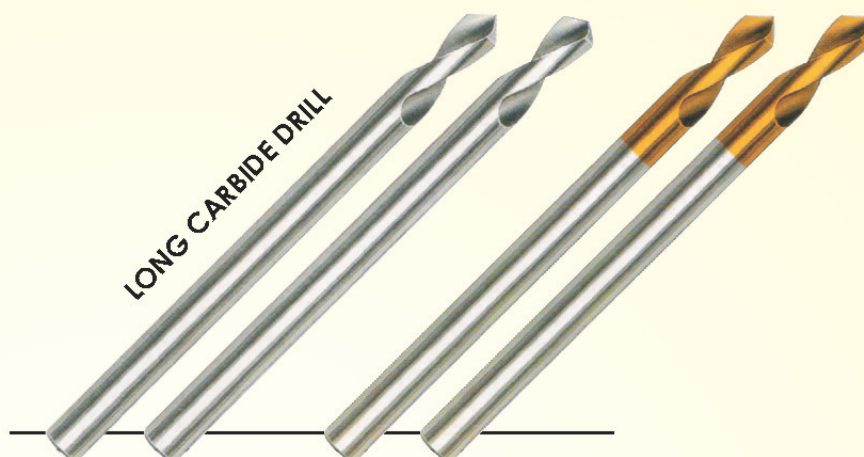
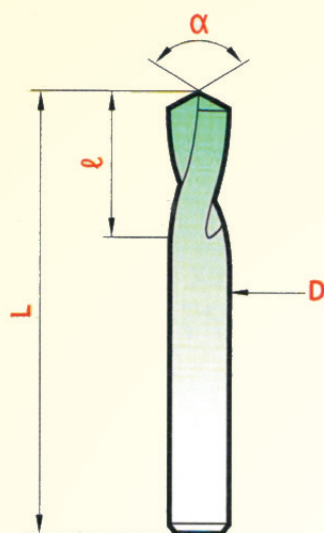
$\alpha 90^\circ$			
D + 0,01	d2 h5	L	ℓ
0,3	3	39	0,9
0,6	3	39	1,8
0,9	3	39	2,7
1,2	3	39	3,6
1,5	3	39	4,5
2,0	3	39	6,0

D h5	L	ℓ
2,0	40	8
3,0	45	10
4,0	50	12
5,0	50	15
6,0	50	18
6,35 (1/4")	50	18
7,93 (5/16")	60	23
8,0	60	23
9,52 (3/8")	70	24
10,0	70	24
12,0	70	24
12,70 (1/2")	70	24
14,0	75	24
15,87 (5/8")	80	26
16,0	80	26
20,0	100	35



**Angle 140° = for hard alloys.
Hard' X coating for
performance improving**

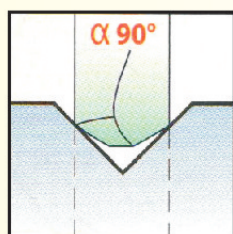
Longs NC *Spotting Drills*



TOLERANCE

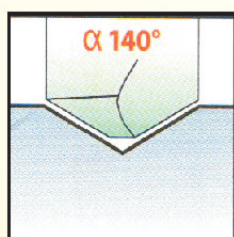
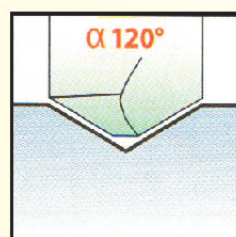
D	α	L	
h6*	+1°	±1	+1

CARBIDE=H5



90 degree angle:

By using the CL drill of diameter over the drilling tool, centering and chamfering are obtained in a single operation.



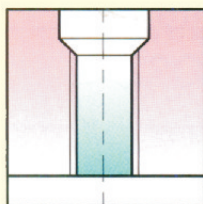
120 and 140 degree angle:

The preliminary hole obtained with the CL drill corresponds to the angle at the end of the tool used in drilling and prevents it from deviating.

D h5	L	
2,0	40	8
3,0	45	10
4,0	50	12
5,0	50	15
6,0	50	18
6,35 (1/4")	50	18
7,93 (5/16")	60	23
8,0	60	23
9,52 (3/8")	70	24
10,0	70	24
12,0	70	24
12,70 (1/2")	70	24
14,0	75	24
15,87 (5/8")	80	26
16,0	80	26
20,0	100	35

With a high hardness(3500Hv), this coating shows a high thermal stability and an excellent protection against heat and wear. Ideal for Dry Machining- high speed cut-in treated and dies.

90° Step Drills Before threading



SCREW	D x d	L	ℓ1	d2
M3	6,0 x 2,5	66	20	8,8
M4	6,0 x 3,3	66	24	11,4
M5	6,0 x 4,2	66	28	13,6
M6	8,0 x 5,0	79	31	16,5
M8	10,0 x 6,8	89	40	21,0
M10	12,0 x 8,5	102	47	25,5
M12	14,0 x 10,2	107	54	30,0

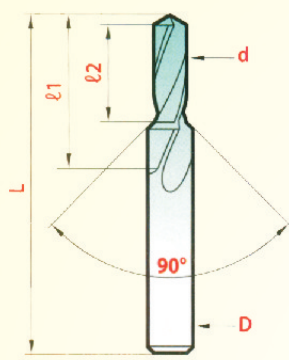
IMPROVED PERFORMANCES :

- carbide K 15 + Hard'X coating,
- point angle 140°,
- shank h6

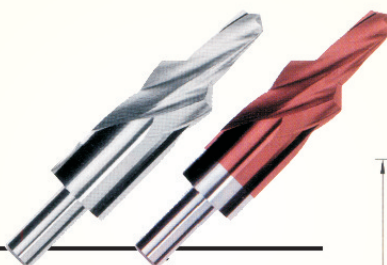
These step drills are designed for combining both boring and counterboring before threading operation.

Their conception insures rigidity and longer tool life.

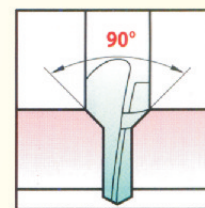
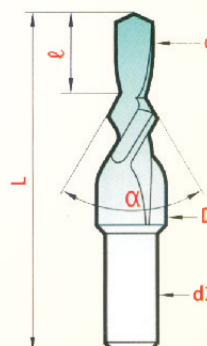
The reduced core makes easier the drill penetration.



Codes	D	d	ℓ2	α
8254-H	h6	± 0,01		
254	h8	± 0,05	+ 1	± 1°



EXTRA-SHORT 90° STEP DRILLS



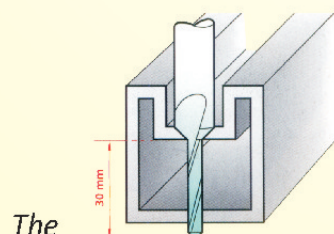
D	d	α
h9	± 0,05	± 1°

Designed to machine hard alloys, pre-treated steels upto 55 HRC, or for intensive production.

SCREW	D x d	L	ℓ	d2
M2	4,6 x 2,2	45	6	4,6
M2,5	5,7 x 2,7	45	7	5,7
M3	6,5 x 3,2	45	9	6,5
M3,5	7,6 x 3,7	50	10	7,6
M4	8,6 x 4,3	50	11	8,6
M5	10,4 x 5,3	55	13	10,4
M6	12,4 x 6,4	63	15	12,4
M8	16,4 x 8,4	100	19	12,5
M10	20,4 x 10,5	110	23	12,5
M12	25,0 x 13,0	120	28	12,5

90° LARGE / LONG STEP DRILLS

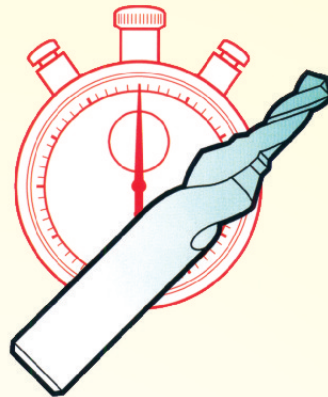
SCREW	D x d	L	ℓ	d2
M4	8,6 x 4,3	110	30	8,6
M5	10,4 x 5,3	110	30	10,4
M6	12,4 x 6,4	110	30	12,4
M8	16,4 x 8,4	110	30	12,5
M10	20,4 x 10,5	110	30	12,5



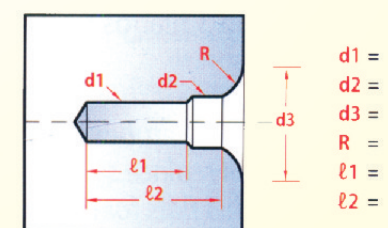
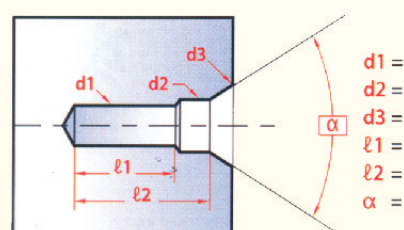
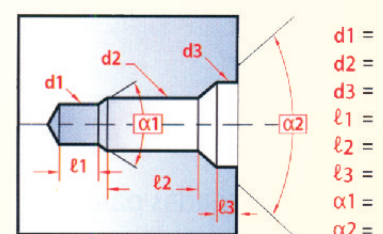
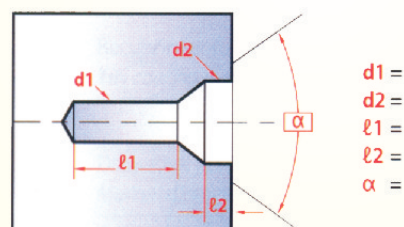
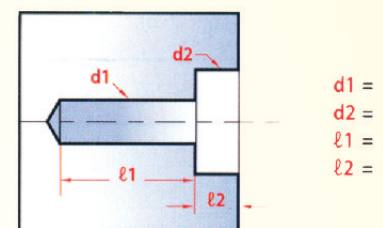
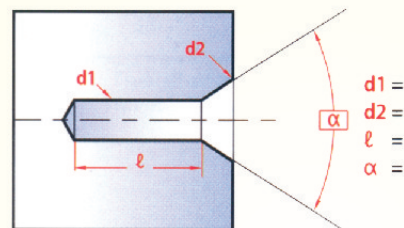
The reduced core makes easier the drill penetration.

The OSR-I step drills, long series, are designed for deep borings or those in places that are hard to reach, for installing aluminium section bars, metal trim, traditional woodwork trim.

Multi-Functions Tools



Our semi-finished tools offers the advantage to manufacture lot of special : with you inquiries please fill up the appropriate sketch to your boring operation.

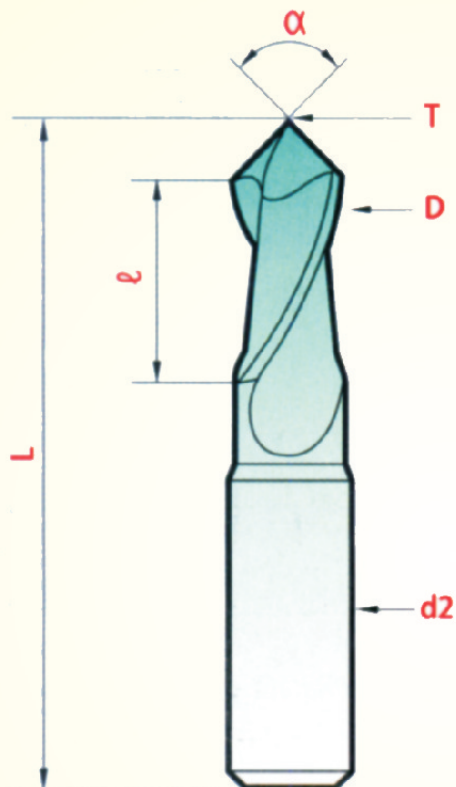


1 Material to bore _____

2 Number of tools _____

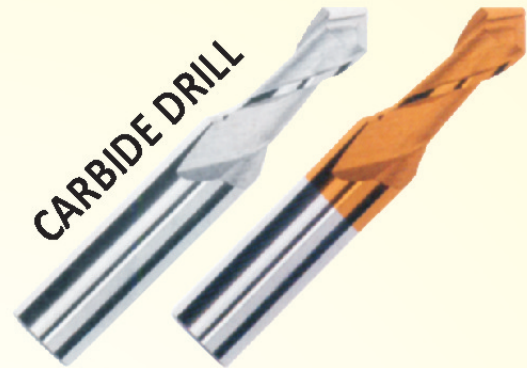
3 Special Tolerance _____

Name & address



Tolerances

D	α	L	d2
$\varnothing 0,1 \sim 10 = h9$	$\pm 1^\circ$	± 1	$0,1 \sim 2,6 = h5$
$\varnothing 12 \sim 20 = d9$			$3 \sim 20 = h6$



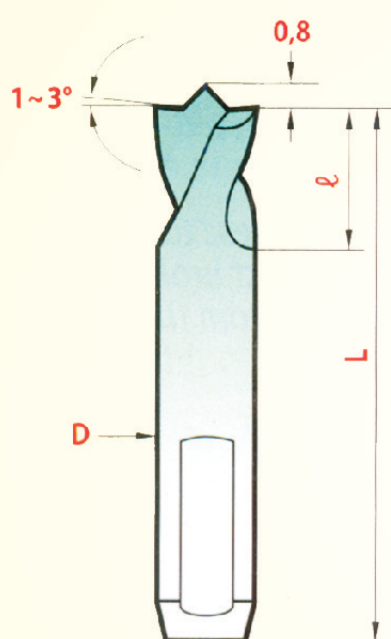
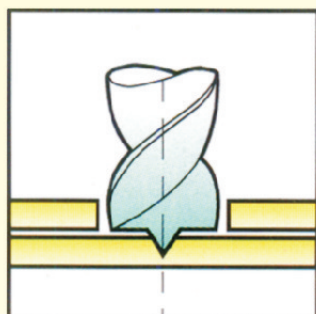
OSR standard				
D	L	ℓ	d2	T*
2,0	39	4,0	3	0,20
2,1	39	4,2	3	0,21
2,2	39	4,4	3	0,22
2,3	39	4,6	3	0,23
2,4	39	4,8	3	0,24
2,5	39	5,0	3	0,25
2,6	39	5,2	3	0,26
3,0	50	6,0	4	0,3
4,0	50	8,0	5	0,4
4,76 - 3/16"	50	9,5	6,35	0,5
5,0	50	10	6	0,5
6,0	60	12	8	0,6
6,35 - 1/4"	60	12	7,93	0,6
7,93 - 5/16"	70	16	9,52	0,8
8,0	70	16	10	0,8
9,52 - 3/8"	70	18	12,7	1,0
10,0	70	18	12	1,0
12,0	70	20	12	1,2
12,7 - 1/2"	70	20	12,7	1,3
15,87 - 5/8"	80	25	15,87	1,6
16,0	80	26	16	1,6
20,0	100	32	20	2,0

*T=0,1 x D Web thickness

This is the ideal tool for machine centres and NC processing machines.

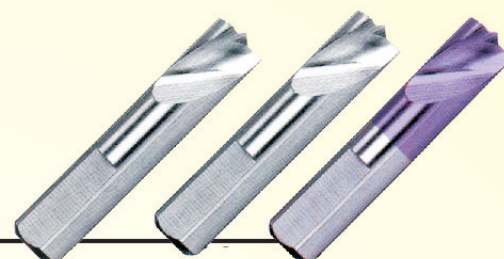
- **Combination of multiple machining process :**
 - reduction in machine set-up time,
 - reduction of operating time.
- **Improved performances :**
 - fine cutting edge :
 - improved depthing and surface finish,
 - micrograin solid carbide :
 - better resistance to wear and greater rigidity,
 - 30° spiral : facilitates chip removal.

Drills to Disconnet Spotwelds Drills



D	L	ℓ
h8	±1	+1

The centering point grants a perfect drilling without any deviating. Thanks to the special sharpening the first sheet will be bored without damage for the second one. Their design allows an excellent penetration, a high resistance to the wear and great many regrinds.



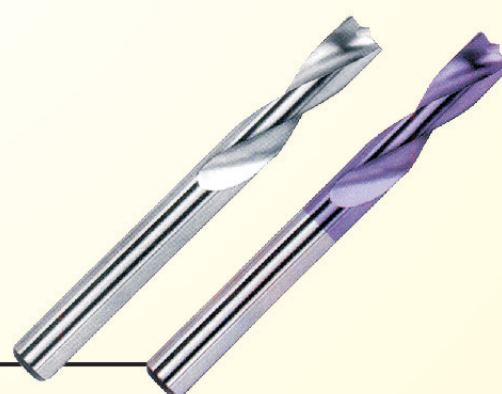
SHORTS

D	L	ℓ
6	45	15
8	38	15
8	45	15

These short drills are specially designed to be used with the two types of pneumatic disconnectors :

- with swan-neck
- with revolver-handle

Flated shanks with 600 taper for a good location in the disconnector.



LONG SERIES

D	L	ℓ
6	66	28
7	74	34
8	79	37
10	89	43

To be used with standard drilling machines.

Counterboring



The three types (with hole-single flute-three flutes) result from the same concept :

- high positive cut, rake angle over 200,
- their progressive offset relieving eliminates vibration,
- a unique design to make easier the chips removal.

The standard offered angles meet the largest use :

30° - 45° - 60° - 82° - 90° - 100° - 120°

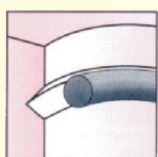
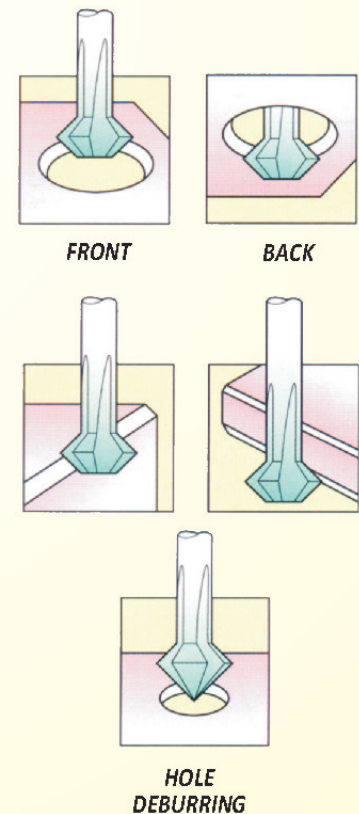


FRONT AND BACK CHAMFERING BICONICAL CUTTERS

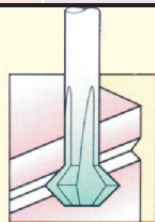
USING RECOMMENDATIONS

Material	Speed m/min.		Ø 1 & 2	Ø 3 & 4	Ø 6 & 8	Ø 10 & 12	Ø 16
	Bi-face	Coating	fz =				
Steels < 500 N/mm²	60 ~ 70	70 ~ 90	0,010	0,012	0,015	0,020	0,030
Steels < 500 ~ 800 N/mm²	40 ~ 60	50 ~ 80	0,010	0,012	0,015	0,020	0,030
Steels < 800 ~ 1000 N/mm²	35 ~ 40	45 ~ 60	0,010	0,012	0,013	0,017	0,025
Steels < 1000 ~ 1300 N/mm²	30 ~ 35	40 ~ 55	0,010	0,012	0,013	0,017	0,025
Stainless steel - Titanium alloy	25 ~ 30	35 ~ 50	0,007	0,010	0,010	0,015	0,020
Nimonic	15 ~ 20	25 ~ 40	0,007	0,010	0,010	0,015	0,020
< 180 HB Cast iron	35 ~ 40	45 ~ 60	0,010	0,012	0,013	0,017	0,025
> 180 HB Cast iron	30 ~ 35	40 ~ 55	0,010	0,012	0,013	0,017	0,025
Cooper alloy - Bronze - Brass	50 ~ 80	60 ~ 100	0,012	0,012	0,015	0,020	0,030
Aluminium ≤ 6% Si	70 ~ 100	80 ~ 120	0,012	0,012	0,015	0,020	0,030
Aluminium > 6% Si	90 ~ 150	110 ~ 180	0,012	0,012	0,015	0,020	0,030
Thermoplast	100 ~ 150	130 ~ 200	0,015	0,025	0,030	0,040	0,050

INTERPOLATION DRILLING



INTERNAL FROVES
FOR O-RINGS



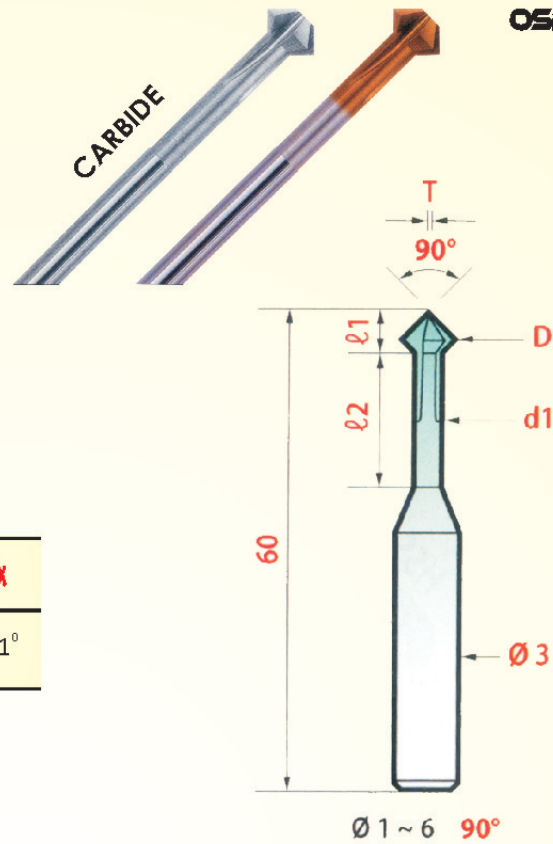
V-GROOVING

Bi-face conical cutters have a constant relief profile which results in a high quality surface finish. Suitable for longitudinal or interpolated machining on front and back faces of holes and surfaces.

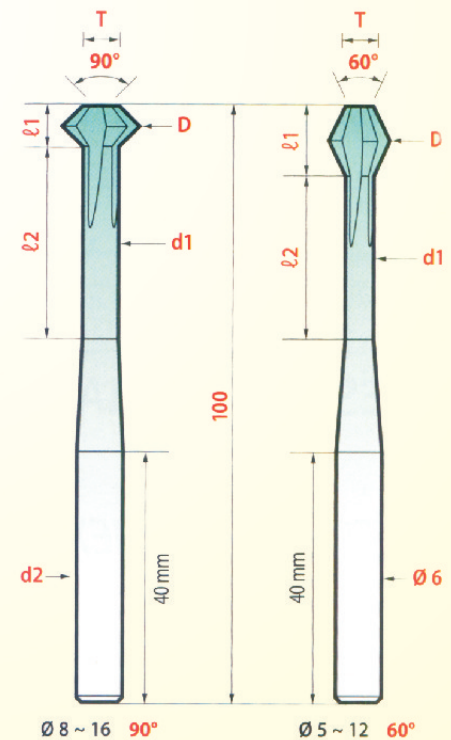
Counterboring

α 90° mini				
D	d1 maxi	T maxi	1	2 mini
1,0	0,7	0,30	0,50	5
1,5	1,1	0,45	0,73	6
1,8	1,5	0,60	0,75	8
2,0	1,5	0,60	0,95	8
2,8	2,1	0,90	1,30	10
3,0	2,1	0,90	1,50	10

Tolerances				
D	L	d2	α	
$\emptyset$ 1 ~ 5	0 - 0,05	± 1	h6 $\pm 1^\circ$	
$\emptyset$ 6 ~ 16	0 - 0,10	± 1	h6 $\pm 1^\circ$	



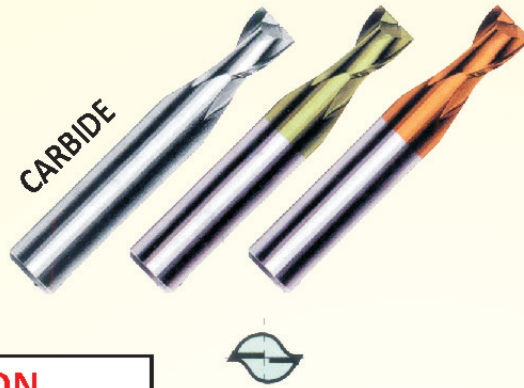
α 90°					
D	d1 maxi	T maxi	d2	1	2 mini
2,8	2,2	1,2	6	1,10	10
3,0	2,2	1,2	6	1,30	10
3,8	2,9	1,6	6	1,55	12
4,0	2,9	1,6	6	1,75	12
4,8	3,4	2,0	6	2,10	15
5,0	3,4	2,0	6	2,30	15
5,8	3,8	2,4	6	2,70	18
6,0	3,8	2,4	6	2,90	18
7,8	4,9	4,9	6	2,80	34
8,0	4,9	4,9	6	3,10	34
9,8	5,9	5,9	6	3,80	34
10,0	5,9	5,9	6	4,10	34
11,8	5,9	5,9	6	5,80	34
12,0	5,9	5,9	6	6,10	34
15,8	7,9	7,9	10	7,80	34
16,0	7,9	7,9	10	8,10	34



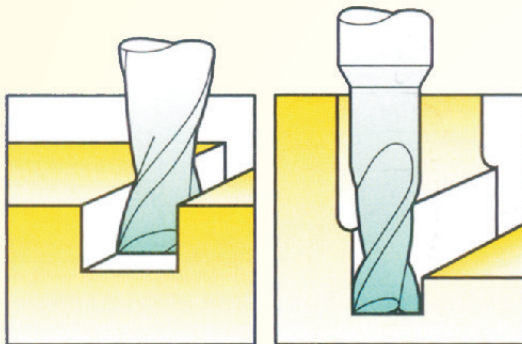
Undersized diameters to machine closer to the hole dimension.

D	d maxi	T maxi	1	2 mini
5,0	3,4	3,4	2,8	15
8,0	4,9	4,9	5,4	34
12,0	5,9	5,9	10,6	34

Miniature End-mills With Corner Radius And For Deep Machinings

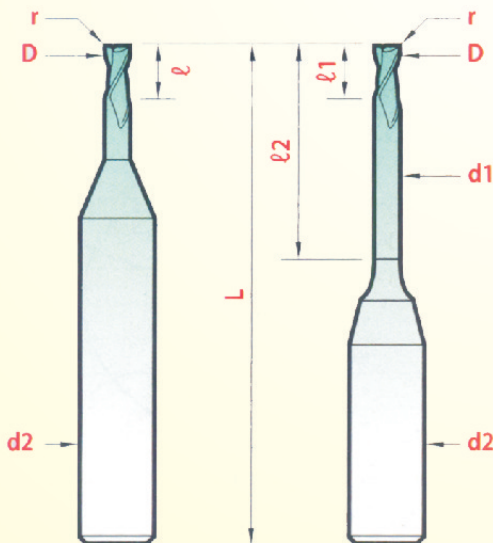


PRECISION
D - 0,01



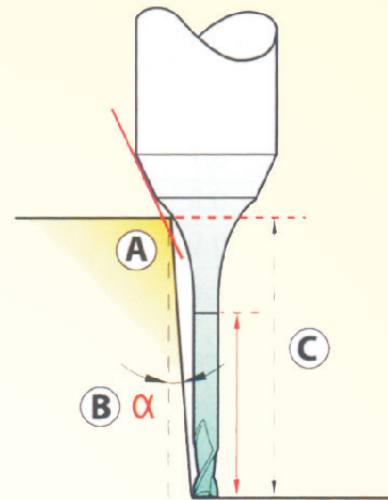
**SLOTING
ENGRAVING**

**MACHININGS
HARD TO REACH**



Tolerances

D	L1	L	d2
- 0,01	+ 0,15	± 1	h5



(A) The long neck form (radius + back taper) allows, according to the work piece angle **(B)** to increase perceptibly the using depth of the tools **(C)**

Combined with the new cut design, it reduces breakages and vibrations.

So the high speed machining is efficient.

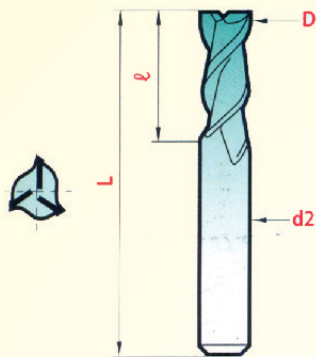
The Hard 'X' coating - hardness 3500 HV - allows to machine treated steels upto 67 HRC.

1. Material to bore.....
2. Number of tools.....
3. Special tolerance.....

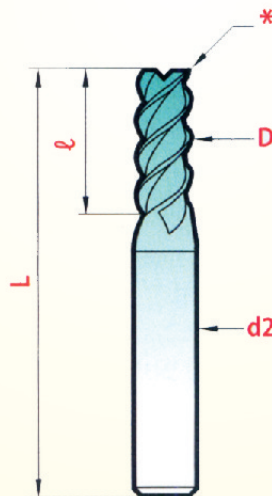
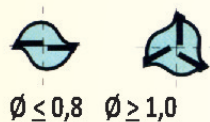
Name and Address

Three Flutes

Carbide Miniature End-mills



PRECISION
0 - 0,01



$0,05 \times D$
Relieved frontal
reinforcement chamfer

HARD ALLOYS CARBIDE MINIATURE END-MILLS

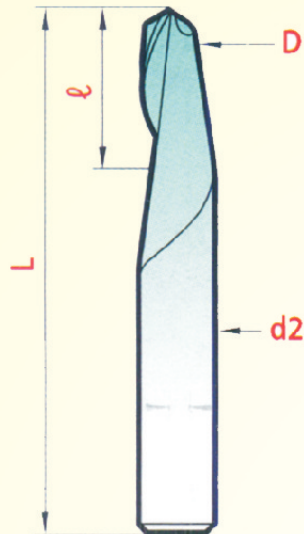
Entering angle favouring "gentle" penetration, with horizontal pressure reduced by 2.

- All flutes are under constant pressure against the material : the cancellation of vibrations gives an unequalled finished.
- The helix generatrix is twice as long : cutting force reduced.
- Relieved frontal reinforcement chamfer.
-
-

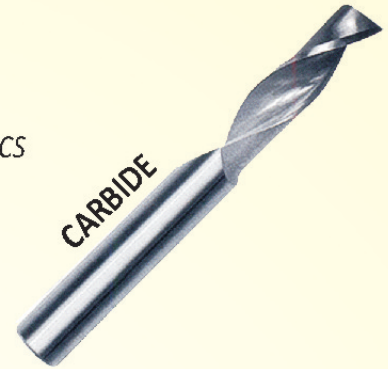
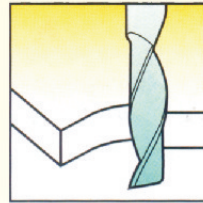
1. Material to bore.....
2. Number of tools.....
- 3.Special tolerance.....

Name and Address

CARBIDE MINIATURE ROUTERS *Single flute*

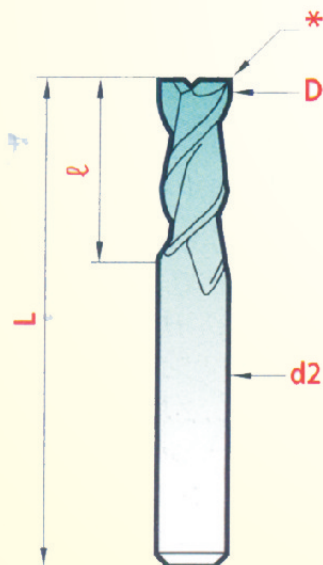


FOR ALUMINIUM AND PLASTICS

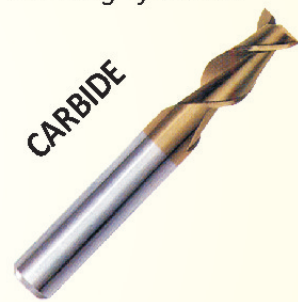


450 Spiral - 2 flutes - Special relieving
End-mills designed for the machining of tensile
and abrasive materials.

CARBIDE MINIATURE END-MILLS



0,05 x D
Relieved frontal
reinforcement
chamfer

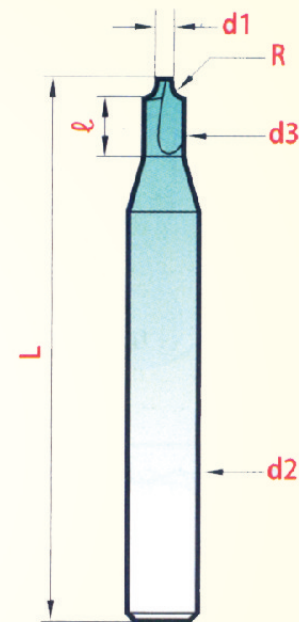
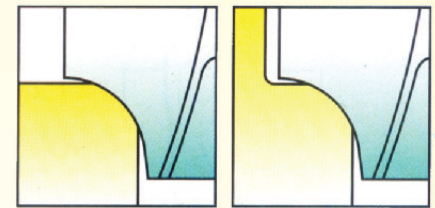
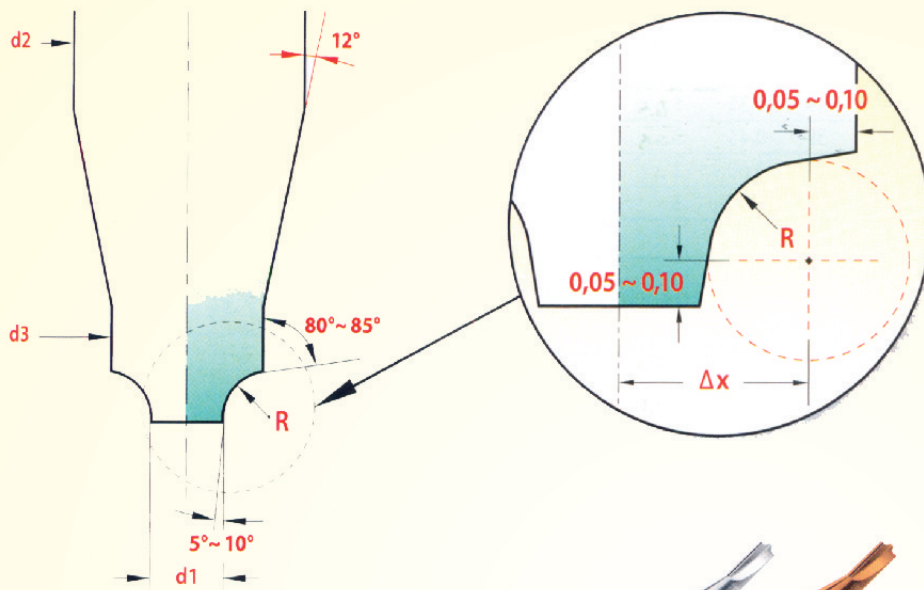


1. Material to bore.....
2. Number of tools.....
3. Special tolerance.....

Name and Address

CARBIDE MINIATURE round corner END-MILLS

The radius is positioned relative to the small diameter d1:
it is possible to machine small and compound forms, small slots
and holes from 0,5 mm diameter.



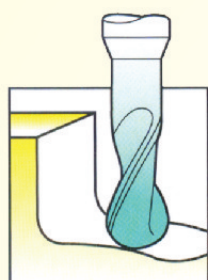
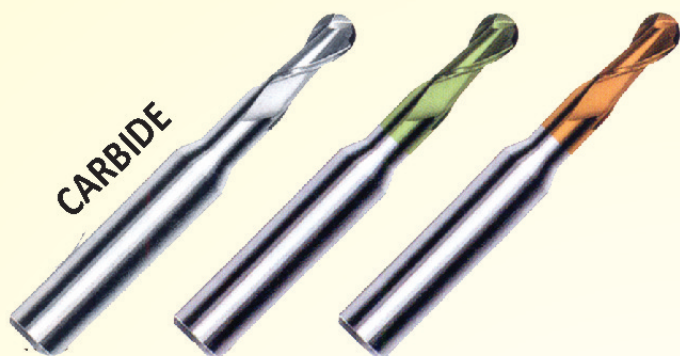
R	d1 maxi	d2	d3	Δx	ℓ	L
0,50	0,5	3	1,6	0,75	2,5	50
0,60	0,5	3	1,8	0,85	3,0	50
0,70	0,5	3	2,0	0,95	3,0	50
0,75	0,5	3	2,1	1,00	3,0	50
0,80	0,8	3	2,5	1,20	4,0	50
0,90	0,8	3	2,7	1,30	4,0	50
1,00	0,8	3	2,9	1,40	4,0	50
1,25	0,8	4	3,4	1,65	4,0	50
1,50	1,5	5	4,6	2,25	6,0	50
1,75	1,5	6	5,1	2,50	6,0	50
2,00	1,5	6	5,6	2,75	8,0	50
2,25	1,5	8	6,1	3,00	10,0	50
2,50	1,5	8	6,6	3,25	10,0	50
3,00	1,5	8	7,6	3,75	10,0	50
4,00	1,9	10	10,0	4,95	-	55
5,00	1,9	12	12,0	5,95	-	63
6,00	1,9	14	14,0	6,95	-	74

Tolerances

R	d3	d2	L
± 0,02	0 + 0,02	h6	± 1

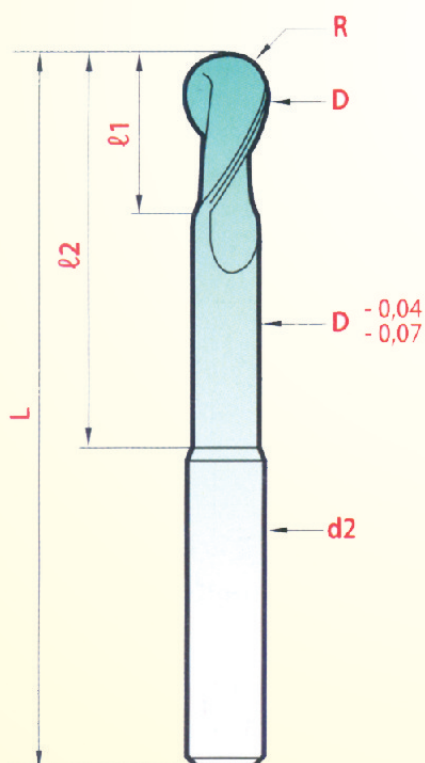
Miniature carbide corner rounding
cutters are designed for use
on CNC machines.
They are most suited to complex
profiling due to their extremely
small core diameter.
Many easy regrinds

LONG NECK CARBIDE MINIATURE BALL-END END-MILLS



PRECISION
R ± 0,01

HARD TO REACH

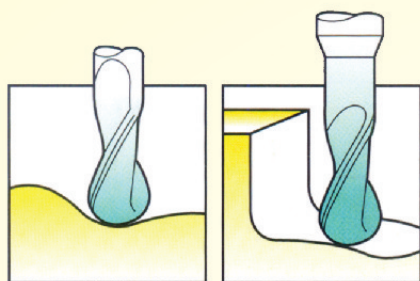


Tolerances

D	l1	L	d2
± 0,01	$\varnothing 0,4 \sim 0,6 + 0,10$ $\varnothing 0,8 \sim 2,0 + 0,15$ $\varnothing 2,5 \sim 3,0 + 0,25$	± 1	h5

D x $\varnothing 2$	L	l1	d2	R
0,4 x 2	39	0,4	3	0,2
0,5 x 2	39	0,55	3	0,25
0,5 x 4	39	0,55	3	0,25
0,5 x 6	60	0,55	3	0,25
0,6 x 4	39	0,7	3	0,3
0,8 x 4	39	1,0	3	0,4
0,8 x 6	39	1,0	3	0,4
0,8 x 9	60	1,0	3	0,4
1,0 x 4	39	1,3	3	0,5
1,0 x 5	39	1,3	3	0,5
1,0 x 6	39	1,3	3	0,5
1,0 x 9	39	1,3	3	0,5
1,0 x 12	60	1,3	3	0,5
1,2 x 6	39	1,6	3	0,6
1,4 x 7	44	1,9	4	0,7
1,5 x 6	39	2,05	3	0,75
1,5 x 7,5	44	2,05	4	0,75
1,5 x 9	39	2,05	3	0,75
1,5 x 12	60	2,05	3	0,75
1,6 x 8	44	2,2	4	0,8
1,8 x 9	44	2,5	4	0,9
2,0 x 9	39	2,8	3	1,0
2,0 x 10	44	2,8	4	1,0
2,0 x 12	39	2,8	3	1,0
2,0 x 15	60	2,8	3	1,0
2,5 x 12	44	3,55	4	1,25
2,5 x 15	60	3,55	3	1,25
3,0 x 15	44	4,3	4	1,5

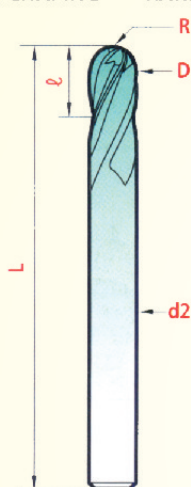
EXTRA-LONG **BALL-END** CARBIDE END-MILLS



"multiflutes"

- Super finish (less vibrations).
- Extended tool-life.
- Preserved shape.

MOULD SHAPING HARD TO REACH



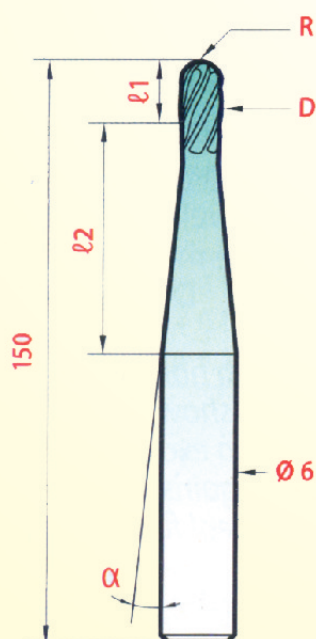
$$D = d2$$



Tolerances

R	l	L	d2
± 0,01	± 0,5	± 1	- h5

$$L = 150$$



1. Material to bore.....
2. Number of tools.....
3. Special tolerance.....

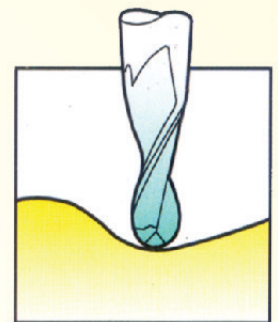
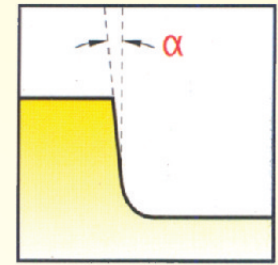
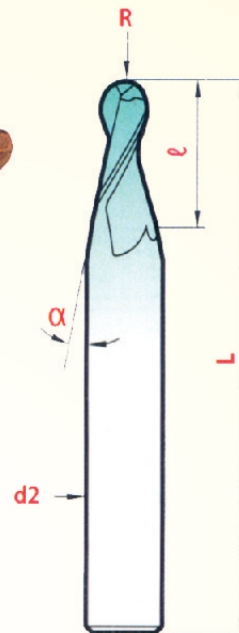
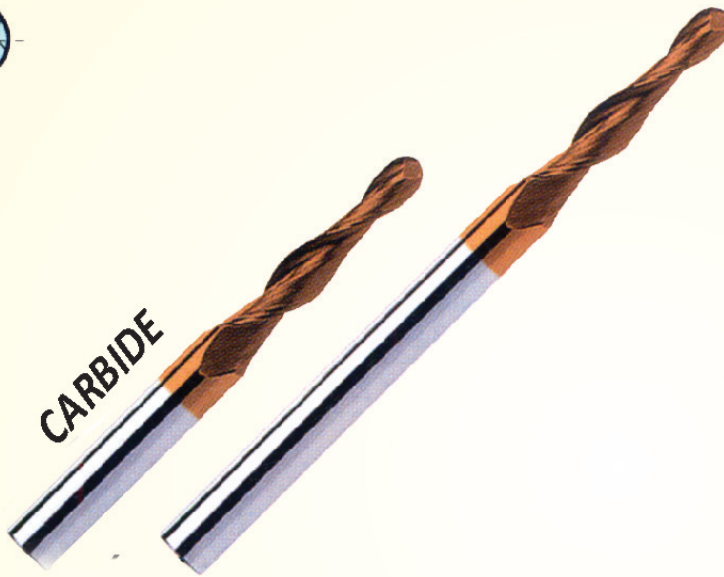
Name and Address

CONICAL AND BALL-END MINIATURE CARBIDE END-MILLS

For Mould

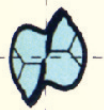
These end-mills are especially designed for machining the taper in moulds and press tools
They are particularly suitable for graphite.

$$\ell = 8 \times R$$



Tolerances

R	L	ℓ	d2
$\pm 0,01$	± 1	+ 1	h5



$$\ell = 12 \times R$$

Name and Address

1. Material to bore.....
2. Number of tools.....
3. Special tolerance.....

Formula of End / Ball Milling

1) Cutting speed (V)

V : Cutting speed (m/min)
D : Diameter of end mill (mm)
N : Revolution (r.p.m)

$$V = \frac{\pi \times D \times N}{1000} \quad (\text{m/min})$$

2) Feed per tooth (fz)

F : Table feed tooth (mm/min)
Z : No. of tooth
N : Revolution (r.p.m)

$$fz = \frac{F}{Z \times N} \quad (\text{mm/tooth})$$

3) Table feed rate (F)

fz : Feed per tooth (mm/tooth)
Z : No. of tooth
N : Revolution (r.p.m)

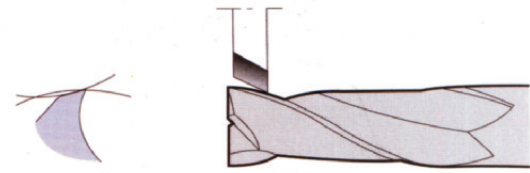
$$F = fz \times Z \times N \quad (\text{mm/min})$$

4) Cutting time (Tc)

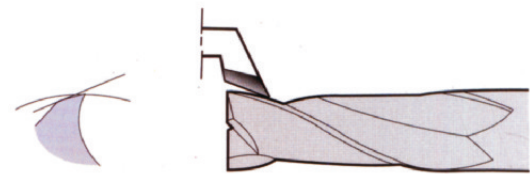
F : Table feed tooth (mm)
L : Length of cut

$$T_c = \frac{L}{F} \quad (\text{min})$$

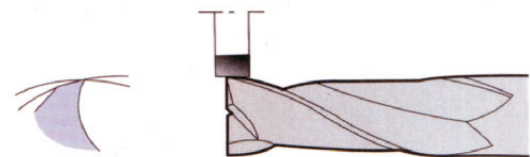
Regarding of Peropheral Relief Angle



■ Concave relief

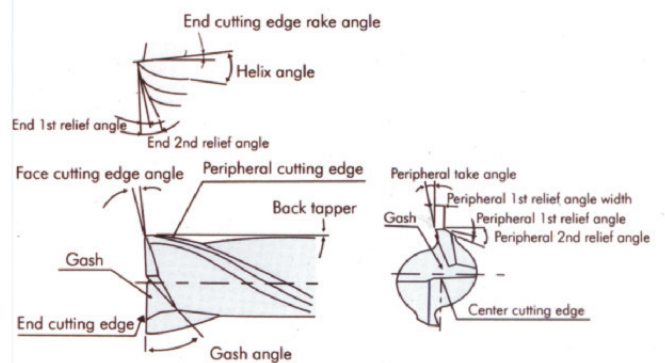


■ Flat relief



■ Eccentric relief

End Mill Nomenclature



For any special dimension or tolerance, a OSR-I reamer is ready or immediate delivery in carbide.

All diameters with 5 microns increment from 0,200 to 0,595 then those per 0,01 mm from 0,60 to 20,05 are available

REAMERS FOR CLYLINDRICAL HOLES

Type	Utilizations	
10° SPIRAL	HIGH PRECISION	
	MINIATURE MACHINING	
	FOR BLIND HOLES	H7
	SHORTS FOR POWER-CLAMPING	H7
	EXTRA-LARGOS / EXTRA-LONGS	H7
	STANDARD	H7
STRAIGHT FLUTE	CAST IRON - BRASS - BRONZE	H7
45° SPIRAL	ALUMINIUM - PLASTICS - MILD STEELS	H7
	STANDARD	H7

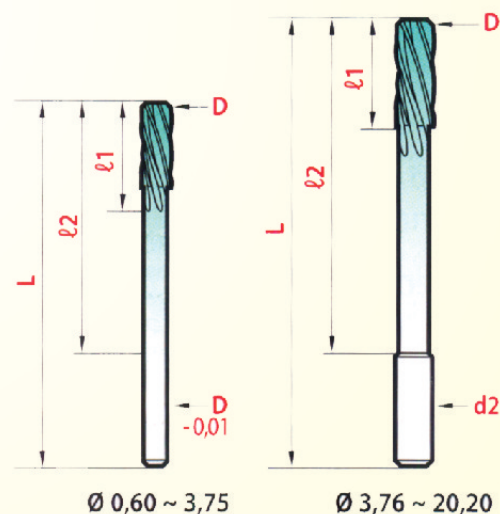
REAMERS FOR TAPER HOLES

Cono	Taper	Utilisation
10%	1:10	SPRUE REAMERS FOR MOULD
8%	2:25	
5%	1:20	
2 %	1:50	TAPER PIN
MORSE		MORSE TAPER HOLE
6,25%	1:16	FOR GAZ TAPER BORINGS
		SPECIAL TAPER

Reaming



HIGH PRECISION MACHINE REAMERS

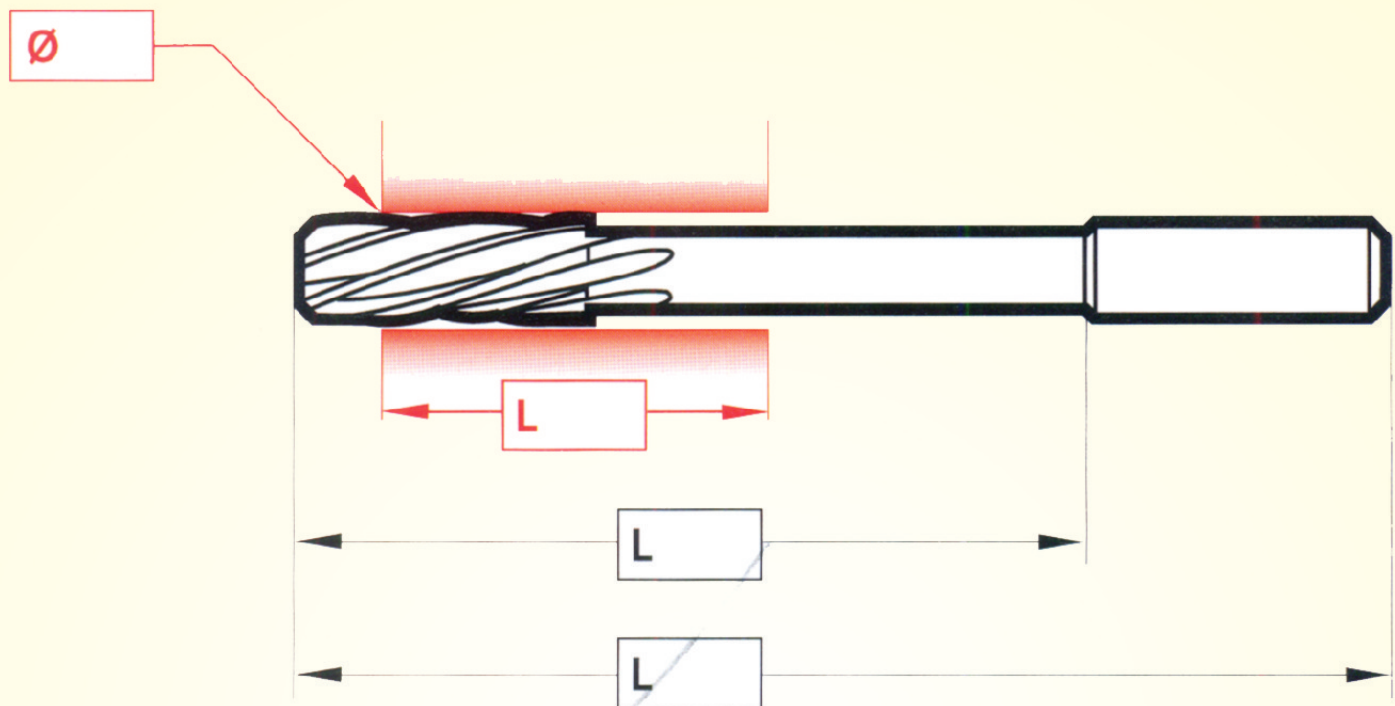


The left hand spiral combined with the right cut, makes like an Archimedean screw :

- the coolant is directly led to the cutting edges for better lubrication and cooling,
- the chips are pushed ahead with no risks to scratch the already reamed hole part.

Reamers designed to machine through holes to get best surface finish.

Reaming



RECOMMENDATIONS OF USING

MATERIAL TO MACHINE	SPEED m/min.										Ref. / Codes
	CARBIDE	COBALT	Ø 2	Ø 6	Ø 10	Ø 15	Ø 20	Ø 25	Ø 30	Ø 40	
STEELS < 500 N/mm ²	25 - 40	15 - 20	0,15	0,15	0,25	0,25	0,30	0,35	0,37	0,45	600 630 - 640 650 - 660
STEELS 500-800 N/mm ²	20 - 25	12 - 17	0,10	0,12	0,18	0,18	0,25	3,30	0,33	0,40	600 630 - 640 650 - 660
STEELS 800-1000 N/mm ²	12 - 18	7 - 10	0,08	0,10	0,18	0,18	0,22	0,25	0,30	0,35	8600 - 8650 630 - 640 650 - 660
STEELS 800-1300 N/mm ²	10 - 15	5 - 7	0,08	0,09	0,15	0,15	0,25	0,27	0,30	0,35	8600 - 8650
STAINLESS STEELS	7 - 12	3 - 5	0,07	0,10	0,12	0,12	0,20	0,25	0,25	0,30	8600 - 8650
WASPLAOY-NIMONIC	6 - 10	2 - 3	0,07	0,10	0,12	0,12	0,20	0,25	0,25	0,30	8600 - 8650
CAST IRON < 180 HB	30 - 40	6 - 15	0,10	0,12	0,20	0,20	0,25	0,30	0,30	0,30	600 610 - 620
CAST IRON > 180 HB	8 - 15	4 - 5	0,07	0,10	0,15	0,15	0,20	0,20	0,25	0,25	8600 - 8650 610 - 620
COPPER	25 - 30	12 - 20	0,12	0,18	0,20	0,20	0,30	0,30	0,35	0,40	600 650 - 660
BRASS	35 - 40	20 - 30	0,20	0,22	0,30	0,30	0,40	0,40	0,45	0,50	610 - 620
BRONZE	20 - 25	12 - 17	0,15	0,18	0,22	0,22	0,37	0,37	0,45	0,50	610 - 620
ALUMINIUM	40 - 60	25 - 35	0,15	0,18	0,25	0,25	0,35	0,35	0,40	0,45	630 - 640
Drilling diameters			1,85	5,80	9,7	14,6	19,6	24,5	29,5	39,5	
			1,90	5,85	9,8	14,7	19,7	24,7	29,6	39,6	

Spl. Profile Tools



1. Material to bore.....
2. Number of tools.....
- 3.Special tolerance.....

Name and Address

Our Product Range

We are specialised in the manufacture of high performance PCD tooling, designed according to customer requirements.

Increased productivity Tool designs are optimised according to the actual application, which enables you to operate the tools at higher RPM's and feed rates. Increased cutting parameters provide a shorter cycle time, less down-time and thereby a greatly increased productivity. Increased product quality The unique guide pad system and the very narrow tolerances of the tools cause less vibrations and thereby less friction. Reduced friction yields a longer tool life, better roundness, more accurate coaxiality and a second-to-none surface quality of holes. Ready-to-use tools. We offer a design concept for the PCD tooling solution that our sales engineers review. We are able to make in-house tests. The result will be documented in a report for you. Thereby we secure that our tools are delivered "ready-to-use". Professional technical back-up Our highly qualified tooling technicians are working in close cooperation with our customers.



- Tooling solution for all cutting tool application
 - 1) PCD & PCBN tools
 - 2) Replaceable Blade Type Reamers.
 - 3) ISO type and Special tooling for Turning, Milling, Boring and Reaming application.

PCD and PCBN Tools

Our manufactures wide variety of Brazed PCD and PCBN tools, Cartridge, Form tools as well as other cutting tools in various shapes and sizes, Used for Turning/Boring, Milling and Reaming application as per ISO standards and special design. Single point and multipoint cutting tools with multi steps as per the application can be designed. OSR-Industries provide custom designed cutting tools solution right from blueprint as per order. We also provide Regrind, Recondition services for these tools to all our customers.

Application: All Non Ferrous material, Titanium





📍 Plot No. 35, Street No. 8, Kadipur Industrial Area,
Sector - 37C, Gurugram (Haryana)

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