

## Company Profile

ITC is a specialist tooling supplier. Our objective is to supply our customers with the best possible products, at the same time making them more efficient by introducing productivity and method improvements. To achieve this we continue to invest in our team of capable and enthusiastic engineers and technical sales people, backed up by an in-house team which we believe is second to none. From solid carbide and PCD tooling, through to indexable milling, turning and boring, plus top quality tool holders, ITC has an unbeatable product range.

## Better by design, better by ITC

ITC's state-of-the-art production facility includes CNC grinding machines from world leading manufacturers including Walter, Deckel, Rollomatic and Anca. We have invested in a centralised oil filtration system to ensure that grinding takes place under optimum conditions with clean oil, and our inspection department includes computerised laser measuring equipment, to maintain the high standards for which ITC is renowned.

We manufacture and source the best available products from around the world, and hold well over 300,000 Solid Carbide tools, tool bodies, inserts and tool holders on the shelf ready for same day despatch. ITC also offers modification and regrind services, meaning we can adapt existing tools to your requirements, and return used tools to an 'as new' condition. Our continued investment in cutting edge CNC grinding equipment gives us the capacity to rapidly manufacture custom made tools to your precise specifications.

## ITC: an easy company to do business with

We believe that good customer service is vital, and all of our staff are highly trained to provide expert support, whether you know exactly what you need, or need guidance from start to finish.

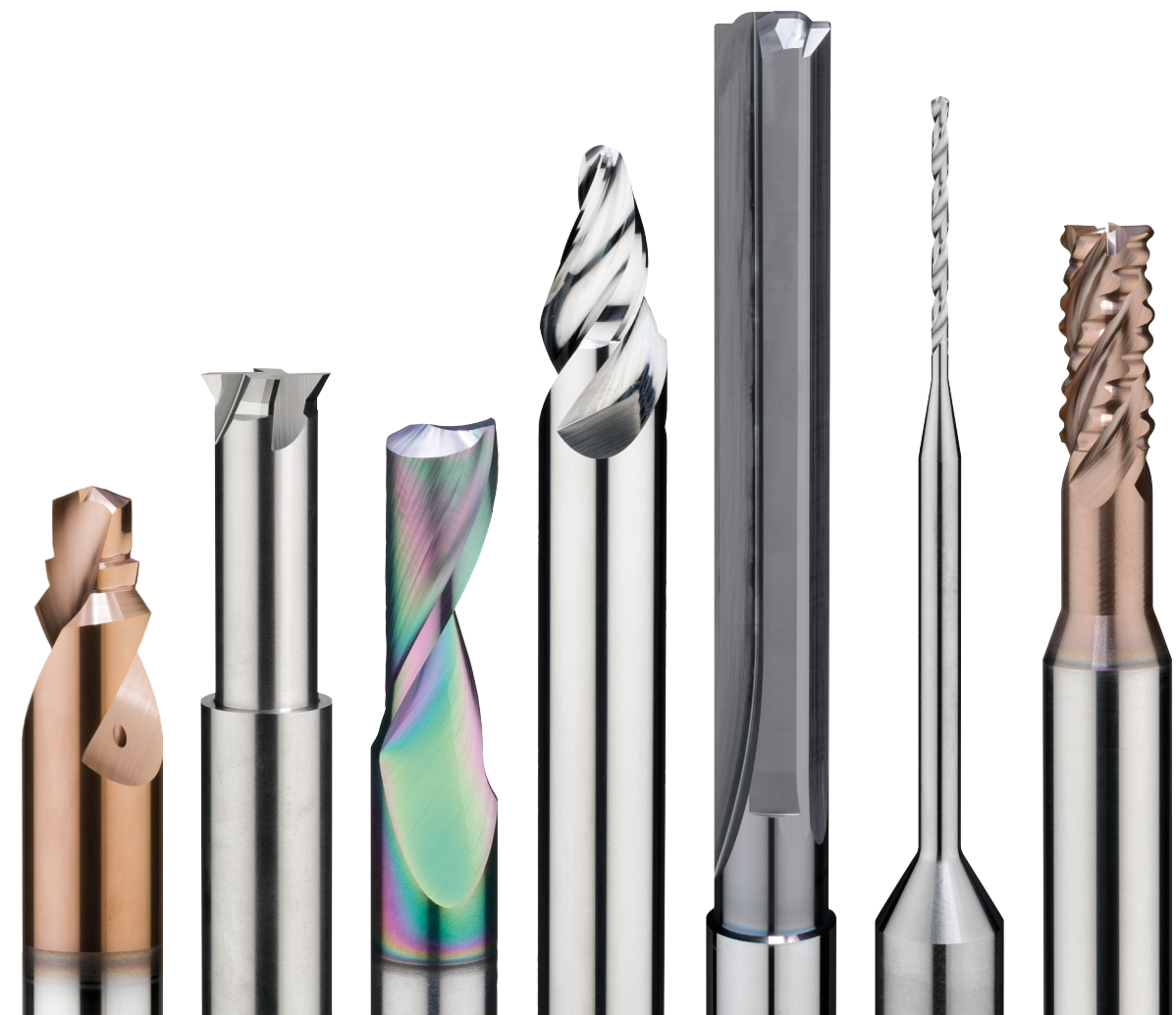
Manufacturing companies rely on ITC to provide an unbeatable combination of first class service, rapid response, huge stocks, and access to a diverse and ever growing product line.



# DESIGN DEVELOP MANUFACTURE

→ Don't forget we can design, develop, and manufacture bespoke tools and also re-condition worn tools in our advanced manufacturing facility in Tamworth.







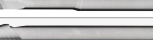













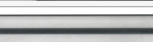











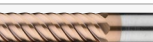






**Call us on 01827 304500  
for more information!**






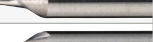

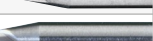









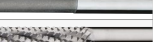




















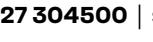




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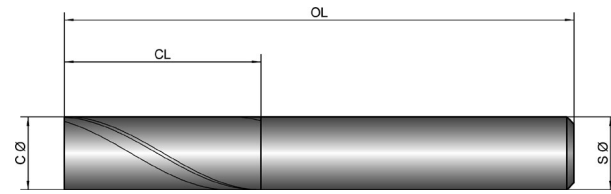
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# 2041

### Description

- 2 Flute
- 55° Helix
- Standard length
- Centre cutting
- Wiper flats



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2041-3	3	3	40	12
2041-4	4	4	50	15
2041-5	5	5	50	20
2041-6	6	6	64	20
2041-8	8	8	64	22
2041-10	10	10	70	27
2041-12	12	12	76	27
2041-14	14	14	90	30
2041-16	16	16	90	35
2041-18	18	18	90	35
2041-20	20	20	100	40

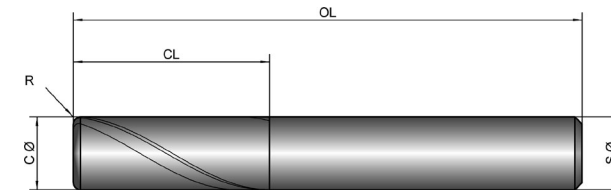


For Speeds & Feeds please see page 049

# 2041

### Description

- 2 Flute
- 55° Helix
- Standard length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2041-3-0.25R	3	3	40	12	0.25
2041-3-0.5R	3	3	40	12	0.5
2041-3-0.75R	3	3	40	12	0.75
2041-3-1.0R	3	3	40	12	1.0
2041-4-0.25R	4	4	50	15	0.25
2041-4-0.5R	4	4	50	15	0.5
2041-4-0.75R	4	4	50	15	0.75
2041-4-1.0R	4	4	50	15	1.0
2041-5-0.25R	5	5	50	20	0.25
2041-5-0.5R	5	5	50	20	0.5
2041-5-0.75R	5	5	50	20	0.75
2041-5-1.0R	5	5	50	20	1.0
2041-6-0.25R	6	6	64	20	0.25
2041-6-0.5R	6	6	64	20	0.5
2041-6-0.75R	6	6	64	20	0.75
2041-6-1.0R	6	6	64	20	1.0
2041-6-1.25R	6	6	64	20	1.25
2041-6-1.5R	6	6	64	20	1.5
2041-6-2.0R	6	6	64	20	2.0
2041-8-0.25R	8	8	64	22	0.25
2041-8-0.5R	8	8	64	22	0.5
2041-8-0.75R	8	8	64	22	0.75
2041-8-1.0R	8	8	64	22	1.0
2041-8-1.25R	8	8	64	22	1.25
2041-8-1.5R	8	8	64	22	1.5
2041-8-2.0R	8	8	64	22	2.0
2041-8-2.5R	8	8	64	22	2.5
2041-8-3.0R	8	8	64	22	3.0
2041-10-0.25R	10	10	70	27	0.25
2041-10-0.5R	10	10	70	27	0.5
2041-10-0.75R	10	10	70	27	0.75
2041-10-1.0R	10	10	70	27	1.0
2041-10-1.25R	10	10	70	27	1.25
2041-10-1.5R	10	10	70	27	1.5
2041-10-2.0R	10	10	70	27	2.0
2041-10-2.5R	10	10	70	27	2.5

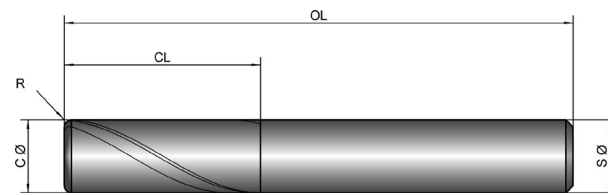


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# 2041

### Description

- 2 Flute
- 55° Helix
- Standard length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2041-10-3.0R	10	10	70	27	3.0
2041-10-4.0R	10	10	70	27	4.0
2041-12-0.25R	12	12	76	27	0.25
2041-12-0.5R	12	12	76	27	0.5
2041-12-0.75R	12	12	76	27	0.75
2041-12-1.0R	12	12	76	27	1.0
2041-12-1.25R	12	12	76	27	1.25
2041-12-1.5R	12	12	76	27	1.5
2041-12-2.0R	12	12	76	27	2.0
2041-12-2.5R	12	12	76	27	2.5
2041-12-3.0R	12	12	76	27	3.0
2041-16-0.25R	16	16	90	35	0.25
2041-16-0.5R	16	16	90	35	0.5
2041-16-0.75R	16	16	90	35	0.75
2041-16-1.0R	16	16	90	35	1.0
2041-16-1.25R	16	16	90	35	1.25
2041-16-1.5R	16	16	90	35	1.5
2041-16-2.0R	16	16	90	35	2.0
2041-16-2.5R	16	16	90	35	2.5
2041-16-3.0R	16	16	90	35	3.0
2041-16-4.0R	16	16	90	35	4.0
2041-16-5.0R	16	16	90	35	5.0
2041-20-0.25R	20	20	100	40	0.25
2041-20-0.5R	20	20	100	40	0.5
2041-20-0.75R	20	20	100	40	0.75
2041-20-1.0R	20	20	100	40	1.0
2041-20-1.25R	20	20	100	40	1.25
2041-20-1.5R	20	20	100	40	1.5
2041-20-2.0R	20	20	100	40	2.0
2041-20-2.5R	20	20	100	40	2.5
2041-20-3.0R	20	20	100	40	3.0
2041-20-4.0R	20	20	100	40	4.0
2041-20-5.0R	20	20	100	40	5.0

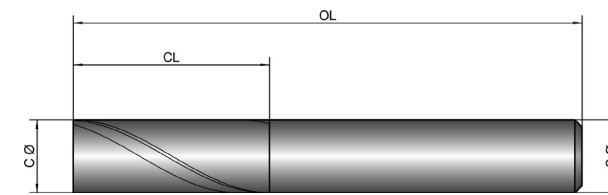
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# 2161

### Description

- 2 Flute
- 45° Helix
- Standard length
- Centre cutting



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2161-1	1	3	40	4
2161-1.5	1.5	3	40	6
2161-2	2	3	40	8
2161-2.5	2.5	3	40	9
2161-3	3	3	40	12
2161-4	4	4	50	15
2161-5	5	5	50	20
2161-6	6	6	64	20
2161-8	8	8	64	22
2161-10	10	10	70	27
2161-12	12	12	84	30
2161-16	16	16	90	35
2161-20	20	20	100	40

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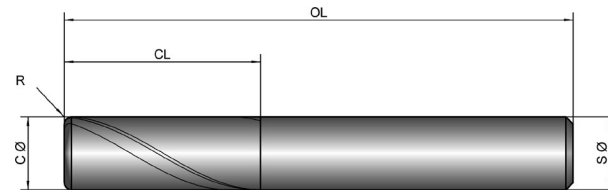




# 2161

### Description

- 2 Flute
- 45° Helix
- Standard length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2161-3-0.25R	3	3	40	12	0.25
2161-3-0.5R	3	3	40	12	0.5
2161-3-0.75R	3	3	40	12	0.75
2161-3-1.0R	3	3	40	12	1.0
2161-4-0.25R	4	4	50	15	0.25
2161-4-0.5R	4	4	50	15	0.5
2161-4-0.75R	4	4	50	15	0.75
2161-4-1.0R	4	4	50	15	1.0
2161-5-0.25R	5	5	50	20	0.25
2161-5-0.5R	5	5	50	20	0.5
2161-5-0.75R	5	5	50	20	0.75
2161-5-1.0R	5	5	50	20	1.0
2161-6-0.25R	6	6	64	20	0.25
2161-6-0.5R	6	6	64	20	0.5
2161-6-0.75R	6	6	64	20	0.75
2161-6-1.0R	6	6	64	20	1.0
2161-6-1.25R	6	6	64	20	1.25
2161-6-1.5R	6	6	64	20	1.5
2161-6-2.0R	6	6	64	20	2.0
2161-8-0.25R	8	8	64	22	0.25
2161-8-0.5R	8	8	64	22	0.5
2161-8-0.75R	8	8	64	22	0.75
2161-8-1.0R	8	8	64	22	1.0
2161-8-1.25R	8	8	64	22	1.25
2161-8-1.5R	8	8	64	22	1.5
2161-8-2.0R	8	8	64	22	2.0
2161-8-2.5R	8	8	64	22	2.5
2161-8-3.0R	8	8	64	22	3.0
2161-10-0.25R	10	10	70	27	0.25
2161-10-0.5R	10	10	70	27	0.5
2161-10-0.75R	10	10	70	27	0.75
2161-10-1.0R	10	10	70	27	1.0
2161-10-1.25R	10	10	70	27	1.25
2161-10-1.5R	10	10	70	27	1.5

For Speeds & Feeds please see page 049



# 2161

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2161-10-2.0R	10	10	70	27	2.0
2161-10-2.5R	10	10	70	27	2.5
2161-10-3.0R	10	10	70	27	3.0
2161-12-0.25R	12	12	84	30	0.25
2161-12-0.5R	12	12	84	30	0.5
2161-12-0.75R	12	12	84	30	0.75
2161-12-1.0R	12	12	84	30	1.0
2161-12-1.25R	12	12	84	30	1.25
2161-12-1.5R	12	12	84	30	1.5
2161-12-2.0R	12	12	84	30	2.0
2161-12-2.5R	12	12	84	30	2.5
2161-12-3.0R	12	12	84	30	3.0
2161-16-0.25R	16	16	90	35	0.25
2161-16-0.5R	16	16	90	35	0.5
2161-16-0.75R	16	16	90	35	0.75
2161-16-1.0R	16	16	90	35	1.0
2161-16-1.25R	16	16	90	35	1.25
2161-16-1.5R	16	16	90	35	1.5
2161-16-2.0R	16	16	90	35	2.0
2161-16-2.5R	16	16	90	35	2.5
2161-16-3.0R	16	16	90	35	3.0
2161-16-4.0R	16	16	90	35	4.0
2161-20-0.25R	20	20	100	40	0.25
2161-20-0.5R	20	20	100	40	0.5
2161-20-0.75R	20	20	100	40	0.75
2161-20-1.0R	20	20	100	40	1.0
2161-20-1.25R	20	20	100	40	1.25
2161-20-1.5R	20	20	100	40	1.5
2161-20-2.0R	20	20	100	40	2.0
2161-20-2.5R	20	20	100	40	2.5
2161-20-3.0R	20	20	100	40	3.0
2161-20-4.0R	20	20	100	40	4.0
2161-20-5.0R	20	20	100	40	5.0

For Speeds & Feeds please see page 049

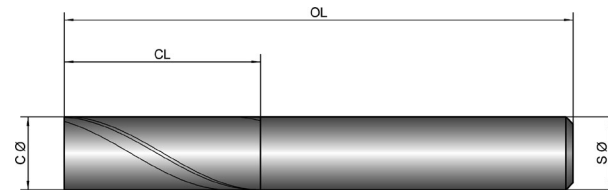


## Cyber Square End Mills for Aluminium

# 3081

### Description

- 3 Flute
- 38° Helix
- Standard length
- Centre cutting



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3081-1	1	3	40	4
3081-1.5	1.5	3	40	6
3081-2	2	3	40	8
3081-2.5	2.5	3	40	9
3081-3	3	3	40	12
3081-4	4	4	50	15
3081-5	5	5	50	20
3081-6	6	6	64	20
3081-8	8	8	64	22
3081-10	10	10	70	27
3081-12	12	12	84	30
3081-16	16	16	90	35
3081-20	20	20	100	40

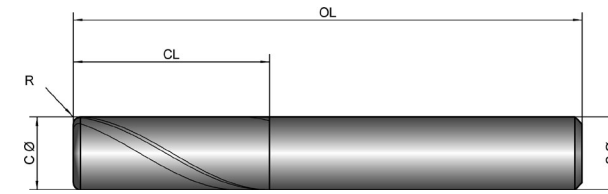


## Cyber Square End Mills with Radius for Aluminium

# 3081

### Description

- 3 Flute
- 38° Helix
- Standard length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

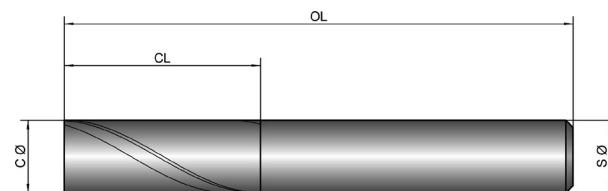
CATALOGUE NUMBER	CØ	SØ	OL	CL	R
3081-1-0.25R	1	3	40	4	0.25
3081-1.5-0.25R	1.5	3	40	6	0.25
3081-2-0.25R	2	3	40	8	0.25
3081-2.5-0.25R	2.5	3	40	9	0.25
3081-3-0.25R	3	3	40	12	0.25
3081-3-0.5R	3	3	40	12	0.5
3081-3-0.75R	3	3	40	12	0.75
3081-3-1.0R	3	3	40	12	1.0
3081-4-0.25R	4	4	50	15	0.25
3081-4-0.5R	4	4	50	15	0.5
3081-4-0.75R	4	4	50	15	0.75
3081-4-1.0R	4	4	50	15	1.0
3081-5-0.25R	5	5	50	20	0.25
3081-5-0.5R	5	5	50	20	0.5
3081-5-0.75R	5	5	50	20	0.75
3081-5-1.0R	5	5	50	20	1.0
3081-6-0.25R	6	6	64	20	0.25
3081-6-0.5R	6	6	64	20	0.5
3081-6-0.75R	6	6	64	20	0.75
3081-6-1.0R	6	6	64	20	1.0
3081-6-1.25R	6	6	64	20	1.25
3081-6-1.5R	6	6	64	20	1.5
3081-6-2.0R	6	6	64	20	2.0
3081-8-0.25R	8	8	64	22	0.25
3081-8-0.5R	8	8	64	22	0.5
3081-8-0.75R	8	8	64	22	0.75
3081-8-1.0R	8	8	64	22	1.0
3081-8-1.25R	8	8	64	22	1.25
3081-8-1.5R	8	8	64	22	1.5
3081-8-2.0R	8	8	64	22	2.0
3081-8-2.5R	8	8	64	22	2.5
3081-8-3.0R	8	8	64	22	3.0
3081-10-0.25R	10	10	70	27	0.25
3081-10-0.5R	10	10	70	27	0.5
3081-10-0.75R	10	10	70	27	0.75

For Speeds & Feeds please see page 049

# 3081

### Description

- 3 Flute
- 38° Helix
- Standard length
- Centre cutting
- DLC coated



P	M	K	N	S	H
			•		

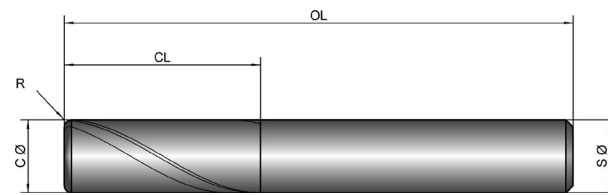
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3081-1C	1	3	40	4
3081-1.5C	1.5	3	40	6
3081-2C	2	3	40	8
3081-2.5C	2.5	3	40	9
3081-3C	3	3	40	12
3081-4C	4	4	50	15
3081-5C	5	5	50	20
3081-6C	6	6	64	20
3081-8C	8	8	64	22
3081-10C	10	10	70	27
3081-12C	12	12	84	30
3081-16C	16	16	90	35
3081-20C	20	20	100	40





# 3081



### Description

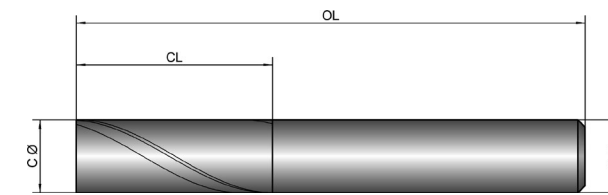
- 3 Flute
- 38° Helix
- Standard length
- Centre cutting
- Corner radius

P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
3081-10-1.0R	10	10	70	27	1.0
3081-10-1.25R	10	10	70	27	1.25
3081-10-1.5R	10	10	70	27	1.5
3081-10-2.0R	10	10	70	27	2.0
3081-10-2.5R	10	10	70	27	2.5
3081-10-3.0R	10	10	70	27	3.0
3081-12-0.25R	12	12	84	30	0.25
3081-12-0.5R	12	12	84	30	0.5
3081-12-0.75R	12	12	84	30	0.75
3081-12-1.0R	12	12	84	30	1.0
3081-12-1.25R	12	12	84	30	1.25
3081-12-1.5R	12	12	84	30	1.5
3081-12-2.0R	12	12	84	30	2.0
3081-12-2.5R	12	12	84	30	2.5
3081-12-3.0R	12	12	84	30	3.0
3081-16-0.25R	16	16	90	35	0.25
3081-16-0.5R	16	16	90	35	0.5
3081-16-0.75R	16	16	90	35	0.75
3081-16-1.0R	16	16	90	35	1.0
3081-16-1.25R	16	16	90	35	1.25
3081-16-1.5R	16	16	90	35	1.5
3081-16-2.0R	16	16	90	35	2.0
3081-16-2.5R	16	16	90	35	2.5
3081-16-3.0R	16	16	90	35	3.0
3081-16-4.0R	16	16	90	35	4.0
3081-20-0.25R	20	20	100	40	0.25
3081-20-0.5R	20	20	100	40	0.5
3081-20-0.75R	20	20	100	40	0.75
3081-20-1.0R	20	20	100	40	1.0
3081-20-1.5R	20	20	100	40	1.5
3081-20-2.0R	20	20	100	40	2.0
3081-20-2.5R	20	20	100	40	2.5
3081-20-3.0R	20	20	100	40	3.0
3081-20-4.0R	20	20	100	40	4.0
3081-20-5.0R	20	20	100	40	5.0

For Speeds & Feeds please see page 049



# 3041

### Description

- 3 Flute
- 55° Helix
- Standard length
- Centre cutting
- Wiper flats

P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3041-3	3	3	40	12
3041-4	4	4	50	15
3041-5	5	5	50	20
3041-6	6	6	64	20
3041-8	8	8	64	22
3041-10	10	10	70	27
3041-12	12	12	76	27
3041-14	14	14	90	30
3041-16	16	16	90	35
3041-20	20	20	100	40

For Speeds & Feeds please see page 049

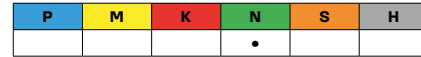
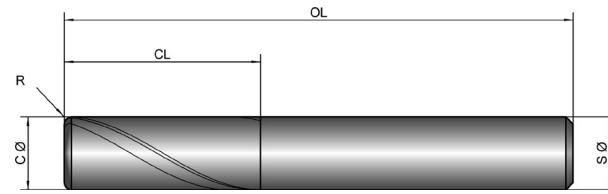


# 3041

# 3041

### Description

- 3 Flute
- 55° Helix
- Standard length
- Centre cutting
- Corner radius



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
3041-3-0.25R	3	3	38	12	0.25
3041-3-0.5R	3	3	38	12	0.5
3041-3-0.75R	3	3	38	12	0.75
3041-3-1.0R	3	3	38	12	1.0
3041-4-0.25R	4	4	50	15	0.25
3041-4-0.5R	4	4	50	15	0.5
3041-4-0.75R	4	4	50	15	0.75
3041-4-1.0R	4	4	50	15	1.0
3041-5-0.25R	5	5	50	20	0.25
3041-5-0.5R	5	5	50	20	0.5
3041-5-0.75R	5	5	50	20	0.75
3041-5-1.0R	5	5	50	20	1.0
3041-6-0.25R	6	6	64	20	0.25
3041-6-0.5R	6	6	64	20	0.5
3041-6-0.75R	6	6	64	20	0.75
3041-6-1.0R	6	6	64	20	1.0
3041-6-1.25R	6	6	64	20	1.25
3041-6-1.5R	6	6	64	20	1.5
3041-6-2.0R	6	6	64	20	2.0
3041-8-0.25R	8	8	64	22	0.25
3041-8-0.5R	8	8	64	22	0.5
3041-8-0.75R	8	8	64	22	0.75
3041-8-1.0R	8	8	64	22	1.0
3041-8-1.25R	8	8	64	22	1.25
3041-8-1.5R	8	8	64	22	1.5
3041-8-2.0R	8	8	64	22	2.0
3041-10-0.25R	10	10	70	27	0.25
3041-10-0.5R	10	10	70	27	0.5
3041-10-0.75R	10	10	70	27	0.75
3041-10-1.0R	10	10	70	27	1.0
3041-10-1.25R	10	10	70	27	1.25
3041-10-1.5R	10	10	70	27	1.5
3041-10-2.0R	10	10	70	27	2.0
3041-10-2.5R	10	10	70	27	2.5
3041-10-3.0R	10	10	70	27	3.0

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
3041-12-0.25R	12	12	76	27	0.25
3041-12-0.5R	12	12	76	27	0.5
3041-12-0.75R	12	12	76	27	0.75
3041-12-1.0R	12	12	76	27	1.0
3041-12-1.25R	12	12	76	27	1.25
3041-12-1.5R	12	12	76	27	1.5
3041-12-2.0R	12	12	76	27	2.0
3041-12-2.5R	12	12	76	27	2.5
3041-12-3.0R	12	12	76	27	3.0
3041-16-0.25R	16	16	90	35	0.25
3041-16-0.5R	16	16	90	35	0.5
3041-16-0.75R	16	16	90	35	0.75
3041-16-1.0R	16	16	90	35	1.0
3041-16-1.25R	16	16	90	35	1.25
3041-16-1.5R	16	16	90	35	1.5
3041-16-2.0R	16	16	90	35	2.0
3041-16-2.5R	16	16	90	35	2.5
3041-16-3.0R	16	16	90	35	3.0
3041-16-4.0R	16	16	90	35	4.0
3041-20-0.25R	20	20	100	40	0.25
3041-20-0.5R	20	20	100	40	0.5
3041-20-0.75R	20	20	100	40	0.75
3041-20-1.0R	20	20	100	40	1.0
3041-20-1.25R	20	20	100	40	1.25
3041-20-1.5R	20	20	100	40	1.5
3041-20-2.0R	20	20	100	40	2.0
3041-20-2.5R	20	20	100	40	2.5
3041-20-3.0R	20	20	100	40	3.0
3041-20-4.0R	20	20	100	40	4.0
3041-20-5.0R	20	20	100	40	5.0

For Speeds & Feeds please see page 049

For Speeds & Feeds please see page 049

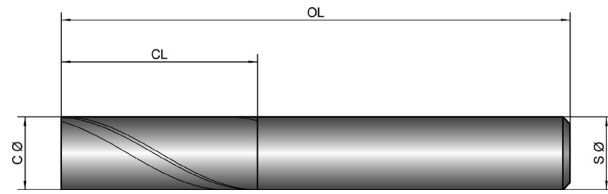




# 2201

**Description**

- 2 Flute
- 45° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
			•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
2201-3	3	6	75	15
2201-4	4	6	75	20
2201-5	5	6	75	25
2201-6	6	6	100	35
2201-8	8	8	100	45
2201-10	10	10	100	45
2201-12	12	12	100	50
2201-16	16	16	150	60
2201-20	20	20	150	80

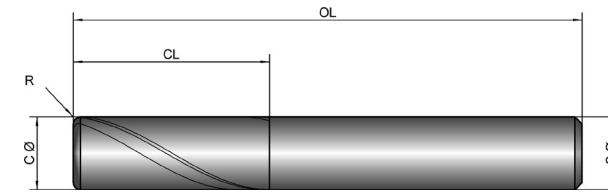


For Speeds & Feeds please see page 049

# 2201

**Description**

- 2 Flute
- 45° Helix
- Long length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2201-3-0.25R	3	6	75	15	0.25
2201-3-0.5R	3	6	75	15	0.5
2201-3-0.75R	3	6	75	15	0.75
2201-3-1.0R	3	6	75	15	1.0
2201-4-0.25R	4	6	75	20	0.25
2201-4-0.5R	4	6	75	20	0.5
2201-4-0.75R	4	6	75	20	0.75
2201-4-1.0R	4	6	75	20	1.0
2201-5-0.25R	5	6	75	25	0.25
2201-5-0.5R	5	6	75	25	0.5
2201-5-0.75R	5	6	75	25	0.75
2201-5-1.0R	5	6	75	25	1.0
2201-6-0.25R	6	6	100	35	0.25
2201-6-0.5R	6	6	100	35	0.5
2201-6-0.75R	6	6	100	35	0.75
2201-6-1.0R	6	6	100	35	1.0
2201-6-1.25R	6	6	100	35	1.25
2201-6-1.5R	6	6	100	35	1.5
2201-6-2.0R	6	6	100	35	2.0
2201-8-0.25R	8	8	100	45	0.25
2201-8-0.5R	8	8	100	45	0.5
2201-8-0.75R	8	8	100	45	0.75
2201-8-1.0R	8	8	100	45	1.0
2201-8-1.25R	8	8	100	45	1.25
2201-8-1.5R	8	8	100	45	1.5
2201-8-2.0R	8	8	100	45	2.0
2201-10-0.25R	10	10	100	45	0.25
2201-10-0.5R	10	10	100	45	0.5
2201-10-0.75R	10	10	100	45	0.75
2201-10-1.0R	10	10	100	45	1.0
2201-10-1.25R	10	10	100	45	1.25
2201-10-1.5R	10	10	100	45	1.5
2201-10-2.0R	10	10	100	45	2.0
2201-10-2.5R	10	10	100	45	2.5
2201-10-3.0R	10	10	100	45	3.0

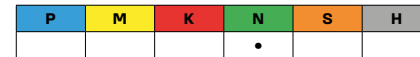
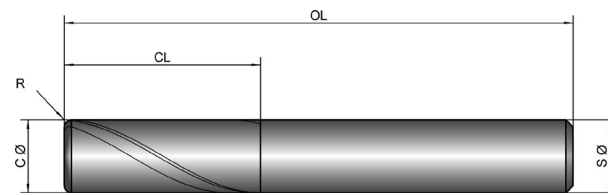


For Speeds & Feeds please see page 049

# 2201

## Description

- 2 Flute
- 45° Helix
- Long length
- Centre cutting
- Corner radius



## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
2201-12-0.25R	12	12	100	50	0.25
2201-12-0.5R	12	12	100	50	0.5
2201-12-0.75R	12	12	100	50	0.75
2201-12-1.0R	12	12	100	50	1.0
2201-12-1.25R	12	12	100	50	1.25
2201-12-1.5R	12	12	100	50	1.5
2201-12-2.0R	12	12	100	50	2.0
2201-12-2.5R	12	12	100	50	2.5
2201-12-3.0R	12	12	100	50	3.0
2201-16-0.25R	16	16	150	60	0.25
2201-16-0.5R	16	16	150	60	0.5
2201-16-0.75R	16	16	150	60	0.75
2201-16-1.0R	16	16	150	60	1.0
2201-16-1.25R	16	16	150	60	1.25
2201-16-1.5R	16	16	150	60	1.5
2201-16-2.0R	16	16	150	60	2.0
2201-16-2.5R	16	16	150	60	2.5
2201-16-3.0R	16	16	150	60	3.0
2201-16-4.0R	16	16	150	60	4.0
2201-20-0.25R	20	20	150	80	0.25
2201-20-0.5R	20	20	150	80	0.5
2201-20-0.75R	20	20	150	80	0.75
2201-20-1.0R	20	20	150	80	1.0
2201-20-1.25R	20	20	150	80	1.25
2201-20-1.5R	20	20	150	80	1.5
2201-20-2.0R	20	20	150	80	2.0
2201-20-2.5R	20	20	150	80	2.5
2201-20-3.0R	20	20	150	80	3.0
2201-20-4.0R	20	20	150	80	4.0
2201-20-5.0R	20	20	150	80	5.0

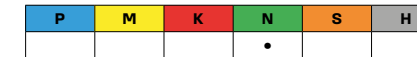
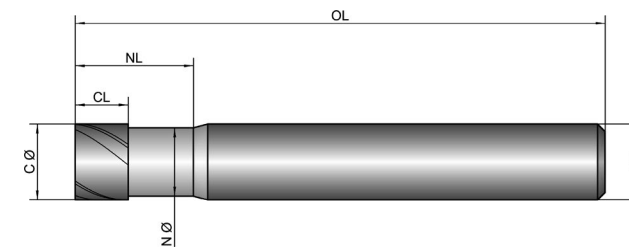
For Speeds & Feeds please see page 049



# 2001

## Description

- 2 Flute
- 40° Helix
- Long length
- Centre cutting
- Extended reach
- Wiper flats



## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2001-1	1	4	64	1.5	4	0.9
2001-1.5	1.5	4	64	2.3	6	1.4
2001-2	2	4	64	3	8	1.9
2001-2.5	2.5	4	64	3.8	10	2.4
2001-3	3	6	75	3	12	2.5
2001-4	4	6	75	4	15	3.5
2001-5	5	6	75	5	20	4.5
2001-6	6	6	100	6	20	5
2001-8	8	8	100	8	25	7
2001-10	10	10	100	10	25	9
2001-12	12	12	100	12	40	11
2001-14	14	14	125	14	50	13
2001-16	16	16	125	16	50	14
2001-20	20	20	150	20	65	18
2001-25	25	25	150	28	65	23

For Speeds & Feeds please see page 049

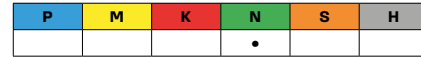
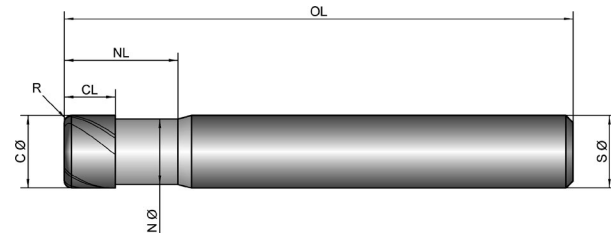




# 2001

### Description

- 2 Flute
- 40° Helix
- Long length
- Centre cutting
- Extended reach
- Corner radius



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
2001-3-0.25R	3	6	75	3	12	2.5	0.25
2001-3-0.5R	3	6	75	3	12	2.5	0.5
2001-3-0.75R	3	6	75	3	12	2.5	0.75
2001-3-1.0R	3	6	75	3	12	2.5	1.0
2001-4-0.25R	4	6	75	4	15	3.5	0.25
2001-4-0.5R	4	6	75	4	15	3.5	0.5
2001-4-0.75R	4	6	75	4	15	3.5	0.75
2001-4-1.0R	4	6	75	4	15	3.5	1.0
2001-5-0.25R	5	6	75	5	20	4.5	0.25
2001-5-0.5R	5	6	75	5	20	4.5	0.5
2001-5-0.75R	5	6	75	5	20	4.5	0.75
2001-5-1.0R	5	6	75	5	20	4.5	1.0
2001-6-0.25R	6	6	100	6	20	5	0.25
2001-6-0.5R	6	6	100	6	20	5	0.5
2001-6-0.75R	6	6	100	6	20	5	0.75
2001-6-1.0R	6	6	100	6	20	5	1.0
2001-6-1.25R	6	6	100	6	20	5	1.25
2001-6-1.5R	6	6	100	6	20	5	1.5
2001-6-2.0R	6	6	100	6	20	5	2.0
2001-8-0.25R	8	8	100	8	25	7	0.25
2001-8-0.5R	8	8	100	8	25	7	0.5
2001-8-0.75R	8	8	100	8	25	7	0.75
2001-8-1.0R	8	8	100	8	25	7	1.0
2001-8-1.25R	8	8	100	8	25	7	1.25
2001-8-1.5R	8	8	100	8	25	7	1.5
2001-8-2.0R	8	8	100	8	25	7	2.0
2001-8-2.5R	8	8	100	8	25	7	2.5
2001-8-3.0R	8	8	100	8	25	7	3.0
2001-10-0.25R	10	10	100	10	25	9	0.25
2001-10-0.5R	10	10	100	10	25	9	0.5
2001-10-0.75R	10	10	100	10	25	9	0.75
2001-10-1.0R	10	10	100	10	25	9	1.0
2001-10-1.25R	10	10	100	10	25	9	1.25
2001-10-1.5R	10	10	100	10	25	9	1.5
2001-10-2.0R	10	10	100	10	25	9	2.0
2001-10-2.5R	10	10	100	10	25	9	2.5
2001-10-3.0R	10	10	100	10	25	9	3.0

For Speeds & Feeds please see page 049



# 2001

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
2001-12-2.5R	12	12	100	12	40	11	2.5
2001-12-3.0R	12	12	100	12	40	11	3.0
2001-14-0.25R	14	14	125	14	50	13	0.25
2001-14-0.5R	14	14	125	14	50	13	0.5
2001-14-1.0R	14	14	125	14	50	13	1.0
2001-16-0.25R	16	16	125	16	50	14	0.25
2001-16-0.5R	16	16	125	16	50	14	0.5
2001-16-0.75R	16	16	125	16	50	14	0.75
2001-16-1.0R	16	16	125	16	50	14	1.0
2001-16-1.25R	16	16	125	16	50	14	1.25
2001-16-1.5R	16	16	125	16	50	14	1.5
2001-16-2.0R	16	16	125	16	50	14	2.0
2001-16-2.5R	16	16	125	16	50	14	2.5
2001-16-3.0R	16	16	125	16	50	14	3.0
2001-16-4.0R	16	16	125	16	50	14	4.0
2001-20-0.25R	20	20	150	20	65	18	0.25
2001-20-0.5R	20	20	150	20	65	18	0.5
2001-20-0.75R	20	20	150	20	65	18	0.75
2001-20-1.0R	20	20	150	20	65	18	1.0
2001-20-1.25R	20	20	150	20	65	18	1.25
2001-20-1.5R	20	20	150	20	65	18	1.5
2001-20-2.0R	20	20	150	20	65	18	2.0
2001-20-2.5R	20	20	150	20	65	18	2.5
2001-20-3.0R	20	20	150	20	65	18	3.0
2001-20-4.0R	20	20	150	20	65	18	4.0
2001-20-5.0R	20	20	150	20	65	18	5.0

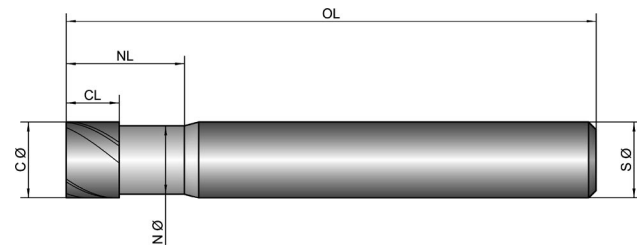
For Speeds & Feeds please see page 049



# 2031

## Description

- 2 Flute
- 55° Helix
- Long length
- Centre cutting
- Extended reach
- Wiper flats



P	M	K	N	S	H
			•		

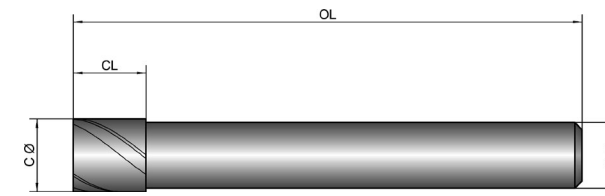
## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2031-6	6	6	100	6	20	5
2031-8	8	8	100	8	25	7
2031-10	10	10	100	10	25	9
2031-12	12	12	100	12	40	11
2031-16	16	16	125	16	50	14
2031-20	20	20	150	20	65	18

# 2051

## Description

- 2 Flute
- 55° Helix
- Long length
- Centre cutting
- Extended reach
- Wiper flats
- Reduced shank diameter



P	M	K	N	S	H
			•		

## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2051-6	6	5	100	8
2051-8	8	7	100	10
2051-10	10	9	100	12
2051-12	12	11	100	14
2051-14	14	12	125	16
2051-16	16	14	125	18
2051-20	20	18	150	22



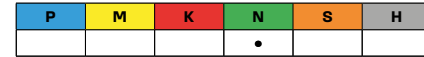
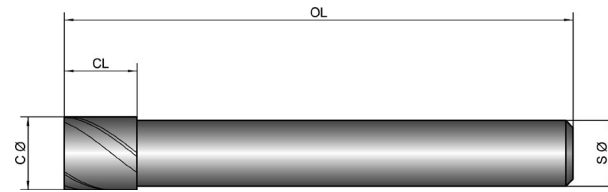
For Speeds & Feeds please see page 049

For Speeds & Feeds please see page 049

# 2081

### Description

- 2 Flute
- 40° Helix
- Long length
- Centre cutting
- Extended reach
- Wiper flats
- Reduced shank diameter



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2081-6	6	5	100	8
2081-8	8	7	100	10
2081-10	10	9	100	12
2081-12	12	11	100	14
2081-16	16	14	125	18
2081-20	20	18	150	22

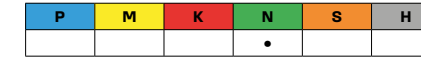
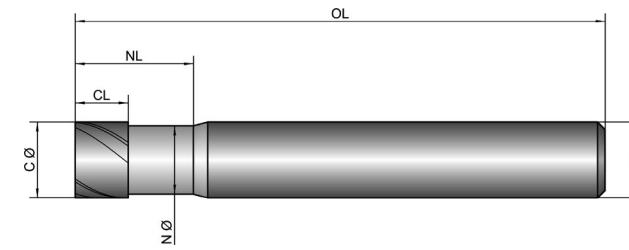
For Speeds & Feeds please see page 049



# 2131

### Description

- 2 Flute
- 40° Helix
- Extra long length
- Centre cutting
- Extended reach
- Wiper flats



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2131-6	6	6	150	6	20	5
2131-8	8	8	150	8	25	7
2131-10	10	10	150	10	25	9
2131-12	12	12	150	12	40	11
2131-14	14	14	175	14	50	13
2131-16	16	16	200	16	50	14
2131-20	20	20	200	20	65	18

For Speeds & Feeds please see page 049





# 3201

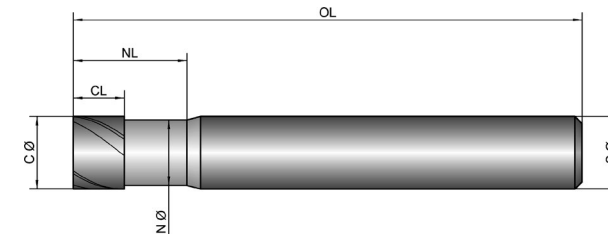
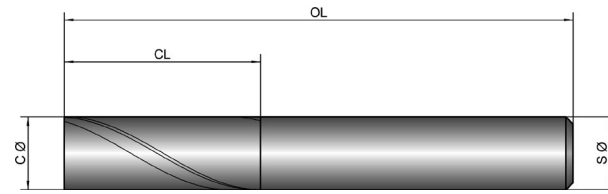
# 3001

**Description**

- 3 Flute
- 45° Helix
- Long length
- Centre cutting

**Description**

- 3 Flute
- 40° Helix
- Long length
- Centre cutting
- Extended reach
- Wiper flats



P	M	K	N	S	H
			•		

P	M	K	N	S	H
			•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
3201-3	3	6	75	15
3201-4	4	6	75	20
3201-5	5	6	75	25
3201-6	6	6	100	35
3201-8	8	8	100	45
3201-10	10	10	100	45
3201-12	12	12	100	50
3201-16	16	16	150	60
3201-20	20	20	150	80

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
3001-6	6	6	100	6	20	5
3001-8	8	8	100	8	25	7
3001-10	10	10	100	10	25	9
3001-12	12	12	100	12	40	11
3001-16	16	16	125	16	50	14
3001-20	20	20	150	20	65	18
3001-25	25	25	150	25	65	23



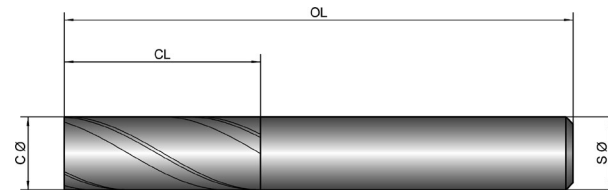
For Speeds & Feeds please see page 049

For Speeds & Feeds please see page 049

# 3051

### Description

- 3 Flute
- 55° Helix
- Long length
- Centre cutting
- Wiper flats



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3051-2	2	6	75	10
3051-3	3	6	75	15
3051-4	4	6	75	20
3051-5	5	6	75	25
3051-6	6	6	100	35
3051-8	8	8	100	45
3051-10	10	10	100	45
3051-12	12	12	100	50
3051-14	14	14	100	50
3051-16	16	16	150	60
3051-20	20	20	150	80

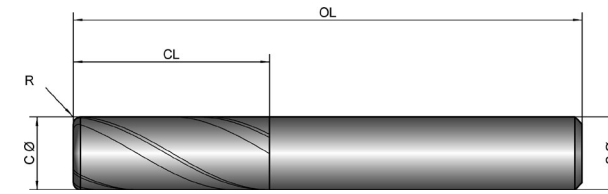


For Speeds & Feeds please see page 049

# 3051

### Description

- 3 Flute
- 55° Helix
- Long length
- Centre cutting
- Corner radius



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
3051-3-0.25R	3	6	75	15	0.25
3051-3-0.5R	3	6	75	15	0.5
3051-3-0.75R	3	6	75	15	0.75
3051-3-1.0R	3	6	75	15	1.0
3051-4-0.25R	4	6	75	20	0.25
3051-4-0.5R	4	6	75	20	0.5
3051-4-0.75R	4	6	75	20	0.75
3051-4-1.0R	4	6	75	20	1.0
3051-5-0.25R	5	6	75	25	0.25
3051-5-0.5R	5	6	75	25	0.5
3051-5-0.75R	5	6	75	25	0.75
3051-5-1.0R	5	6	75	25	1.0
3051-6-0.25R	6	6	100	35	0.25
3051-6-0.5R	6	6	100	35	0.5
3051-6-0.75R	6	6	100	35	0.75
3051-6-1.0R	6	6	100	35	1.0
3051-6-1.25R	6	6	100	35	1.25
3051-6-1.5R	6	6	100	35	1.5
3051-6-2.0R	6	6	100	35	2.0
3051-8-0.25R	8	8	100	45	0.25
3051-8-0.5R	8	8	100	45	0.5
3051-8-0.75R	8	8	100	45	0.75
3051-8-1.0R	8	8	100	45	1.0
3051-8-1.25R	8	8	100	45	1.25
3051-8-1.5R	8	8	100	45	1.5
3051-8-2.0R	8	8	100	45	2.0
3051-10-0.25R	10	10	100	45	0.25
3051-10-0.5R	10	10	100	45	0.5
3051-10-0.75R	10	10	100	45	0.75
3051-10-1.0R	10	10	100	45	1.0
3051-10-1.25R	10	10	100	45	1.25
3051-10-1.5R	10	10	100	45	1.5
3051-10-2.0R	10	10	100	45	2.0
3051-10-2.5R	10	10	100	45	2.5
3051-10-3.0R	10	10	100	45	3.0

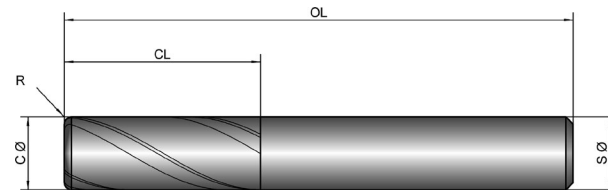


For Speeds & Feeds please see page 049

# 3051

## Description

- 3 Flute
- 55° Helix
- Long length
- Centre cutting
- Corner radius

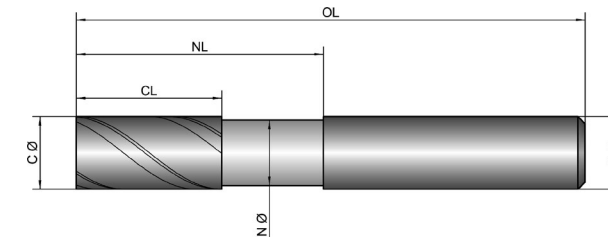


P	M	K	N	S	H
			•		

## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
3051-12-0.25R	12	12	100	50	0.25
3051-12-0.5R	12	12	100	50	0.5
3051-12-0.75R	12	12	100	50	0.75
3051-12-1.0R	12	12	100	50	1.0
3051-12-1.25R	12	12	100	50	1.25
3051-12-1.5R	12	12	100	50	1.5
3051-12-2.0R	12	12	100	50	2.0
3051-12-2.5R	12	12	100	50	2.5
3051-12-3.0R	12	12	100	50	3.0
3051-16-0.25R	16	16	150	60	0.25
3051-16-0.5R	16	16	150	60	0.5
3051-16-0.75R	16	16	150	60	0.75
3051-16-1.0R	16	16	150	60	1.0
3051-16-1.25R	16	16	150	60	1.25
3051-16-1.5R	16	16	150	60	1.5
3051-16-2.0R	16	16	150	60	2.0
3051-16-2.5R	16	16	150	60	2.5
3051-16-3.0R	16	16	150	60	3.0
3051-16-4.0R	16	16	150	60	4.0
3051-16-5.0R	16	16	150	60	5.0
3051-20-0.25R	20	20	150	80	0.25
3051-20-0.5R	20	20	150	80	0.5
3051-20-0.75R	20	20	150	80	0.75
3051-20-1.0R	20	20	150	80	1.0
3051-20-1.25R	20	20	150	80	1.25
3051-20-1.5R	20	20	150	80	1.5
3051-20-2.0R	20	20	150	80	2.0
3051-20-2.5R	20	20	150	80	2.5
3051-20-3.0R	20	20	150	80	3.0
3051-20-4.0R	20	20	150	80	4.0
3051-20-5.0R	20	20	150	80	5.0

For Speeds & Feeds please see page 049



# 3091

## Description

- 3 Flute
- 38° Helix
- Long length
- Centre cutting
- Extended reach

P	M	K	N	S	H
			•		

## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
3091-1	1	4	64	1.5	4	0.9
3091-1.5	1.5	4	64	2.3	6	1.4
3091-2	2	4	64	3	8	1.9
3091-2.5	2.5	4	64	3.8	10	2.4
3091-3	3	6	75	4.5	12	2.5
3091-4	4	6	75	6	15	3.5
3091-5	5	6	75	7.5	20	4.5
3091-6	6	6	100	9	20	5
3091-8	8	8	100	12	25	7
3091-10	10	10	100	15	32	9
3091-12	12	12	100	18	40	11
3091-16	16	16	150	24	50	14
3091-20	20	20	150	30	65	18

For Speeds & Feeds please see page 049

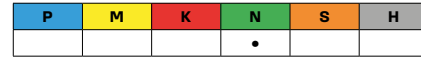
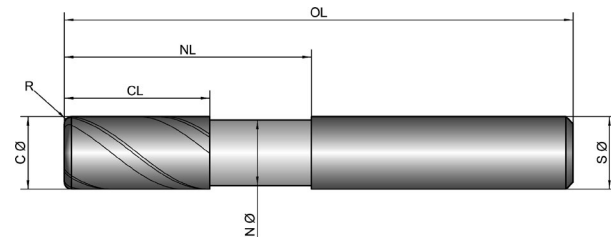




# 3091

### Description

- 3 Flute
- 38° Helix
- Long length
- Centre cutting
- Extended reach
- Corner radius



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
3091-3-0.25R	3	6	75	4.5	12	2.5	0.25
3091-3-0.5R	3	6	75	4.5	12	2.5	0.5
3091-3-0.75R	3	6	75	4.5	12	2.5	0.75
3091-3-1.0R	3	6	75	4.5	12	2.5	1.0
3091-4-0.25R	4	6	75	6	15	3.5	0.25
3091-4-0.5R	4	6	75	6	15	3.5	0.5
3091-4-0.75R	4	6	75	6	15	3.5	0.75
3091-4-1.0R	4	6	75	6	15	3.5	1.0
3091-5-0.25R	5	6	75	7.5	20	4.5	0.25
3091-5-0.5R	5	6	75	7.5	20	4.5	0.5
3091-5-0.75R	5	6	75	7.5	20	4.5	0.75
3091-5-1.0R	5	6	75	7.5	20	4.5	1.0
3091-6-0.25R	6	6	100	9	20	5	0.25
3091-6-0.5R	6	6	100	9	20	5	0.5
3091-6-0.75R	6	6	100	9	20	5	0.75
3091-6-1.0R	6	6	100	9	20	5	1.0
3091-6-1.25R	6	6	100	9	20	5	1.25
3091-6-1.5R	6	6	100	9	20	5	1.5
3091-6-2.0R	6	6	100	9	20	5	2.0
3091-8-0.25R	8	8	100	12	25	7	0.25
3091-8-0.5R	8	8	100	12	25	7	0.5
3091-8-0.75R	8	8	100	12	25	7	0.75
3091-8-1.0R	8	8	100	12	25	7	1.0
3091-8-1.25R	8	8	100	12	25	7	1.25
3091-8-1.5R	8	8	100	12	25	7	1.5
3091-8-2.0R	8	8	100	12	25	7	2.0
3091-10-0.25R	10	10	100	15	32	9	0.25
3091-10-0.5R	10	10	100	15	32	9	0.5
3091-10-0.75R	10	10	100	15	32	9	0.75
3091-10-1.0R	10	10	100	15	32	9	1.0
3091-10-1.25R	10	10	100	15	32	9	1.25
3091-10-1.5R	10	10	100	15	32	9	1.5
3091-10-2.0R	10	10	100	15	32	9	2.0
3091-10-2.5R	10	10	100	15	32	9	2.5
3091-10-3.0R	10	10	100	15	32	9	3.0

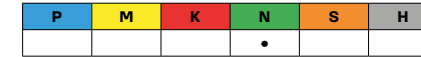
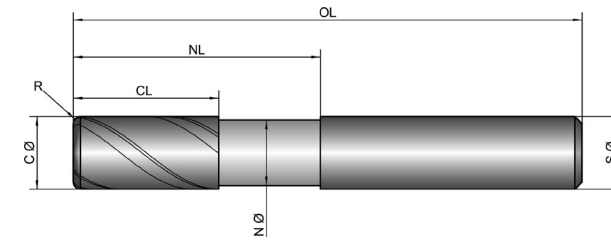
For Speeds & Feeds please see page 049



# 3091

### Description

- 3 Flute
- 38° Helix
- Long length
- Centre cutting
- Extended reach
- Corner radius



### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
3091-12-0.25R	12	12	100	18	40	11	0.25
3091-12-0.5R	12	12	100	18	40	11	0.5
3091-12-0.75R	12	12	100	18	40	11	0.75
3091-12-1.0R	12	12	100	18	40	11	1.0
3091-12-1.25R	12	12	100	18	40	11	1.25
3091-12-1.5R	12	12	100	18	40	11	1.5
3091-12-2.0R	12	12	100	18	40	11	2.0
3091-12-2.5R	12	12	100	18	40	11	2.5
3091-12-3.0R	12	12	100	18	40	11	3.0
3091-16-0.25R	16	16	150	24	50	14	0.25
3091-16-0.5R	16	16	150	24	50	14	0.5
3091-16-0.75R	16	16	150	24	50	14	0.75
3091-16-1.0R	16	16	150	24	50	14	1.0
3091-16-1.25R	16	16	150	24	50	14	1.25
3091-16-1.5R	16	16	150	24	50	14	1.5
3091-16-2.0R	16	16	150	24	50	14	2.0
3091-16-2.5R	16	16	150	24	50	14	2.5
3091-16-3.0R	16	16	150	24	50	14	3.0
3091-16-4.0R	16	16	150	24	50	14	4.0
3091-16-5.0R	16	16	150	24	50	14	5.0
3091-20-0.25R	20	20	150	30	65	18	0.25
3091-20-0.5R	20	20	150	30	65	18	0.5
3091-20-0.75R	20	20	150	30	65	18	0.75
3091-20-1.0R	20	20	150	30	65	18	1.0
3091-20-1.25R	20	20	150	30	65	18	1.25
3091-20-1.5R	20	20	150	30	65	18	1.5
3091-20-2.0R	20	20	150	30	65	18	2.0
3091-20-2.5R	20	20	150	30	65	18	2.5
3091-20-3.0R	20	20	150	30	65	18	3.0
3091-20-4.0R	20	20	150	30	65	18	4.0
3091-20-5.0R	20	20	150	30	65	18	5.0

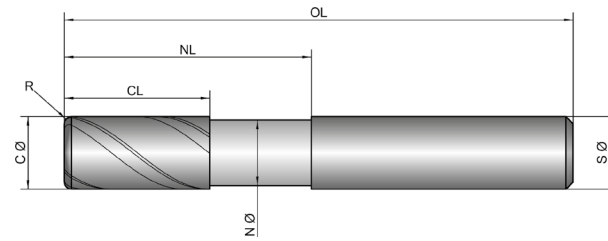
For Speeds & Feeds please see page 049



# 3301

### Description

- Roughing profile
- 38° Helix
- 3 Flute
- Long length
- Centre cutting
- Extended reach



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
3301-6	6	6	90	8	18	5.6	0.25
3301-8	8	8	100	10	24	7.5	0.25
3301-10	10	10	120	12	30	9	0.5
3301-12	12	12	125	15	36	11	0.5
3301-16	16	16	140	20	48	14.8	1.0
3301-20	20	20	150	24	60	18.7	1.0

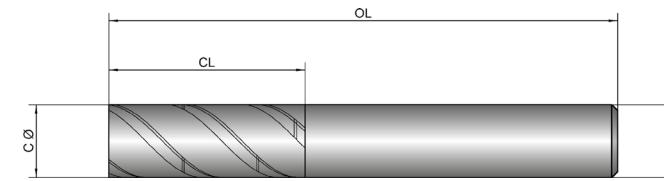


For Speeds & Feeds please see page 049

# 3204

### Description

- 3 Flute
- 45° Helix
- Long length
- Centre cutting
- Chipbreakers



P	M	K	N	S	H
			•		

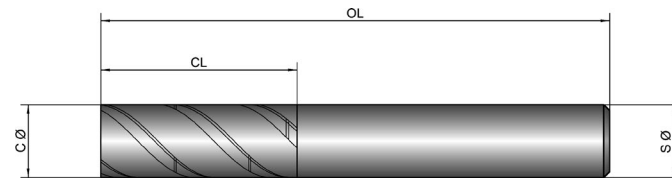
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3204-6	6	6	100	35
3204-8	8	8	100	45
3204-10	10	10	100	45
3204-12	12	12	100	50
3204-16	16	16	150	60
3204-20	20	20	150	80



For Speeds & Feeds please see page 049

# 4104



### Description

- 4 Flute
- 45° Helix
- 3xD Flute length
- Centre cutting
- Chipbreakers

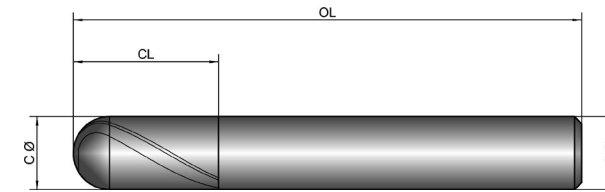
P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
4104-6	6	6	65	20
4104-8	8	8	65	24
4104-10	10	10	75	30
4104-12	12	12	90	36
4104-16	16	16	100	48



# 2052



### Description

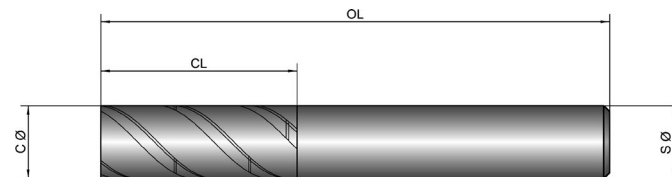
- 2 Flute
- 55° Helix
- Standard length
- Centre cutting

P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2052-3	3	3	40	12
2052-4	4	4	50	15
2052-5	5	5	50	20
2052-6	6	6	64	20
2052-8	8	8	64	22
2052-10	10	10	70	27
2052-12	12	12	76	27
2052-14	14	14	90	30
2052-16	16	16	90	35
2052-20	20	20	100	40

# 4204



- 4 Flute
- 45° Helix
- Long length
- Centre cutting
- Chipbreakers

P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
4204-6	6	6	100	35
4204-8	8	8	100	45
4204-10	10	10	100	45
4204-12	12	12	100	50
4204-16	16	16	150	60
4204-20	20	20	150	80



For Speeds & Feeds please see page 049

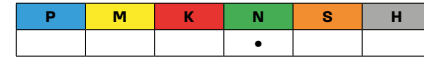
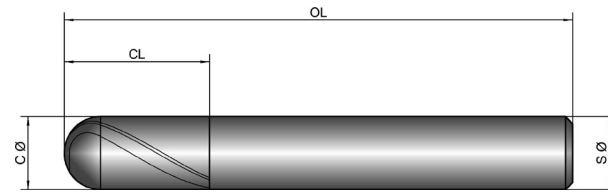
For Speeds & Feeds please see page 049



# 2172

## Description

- 2 Flute
- 45° Helix
- Standard length
- Centre cutting



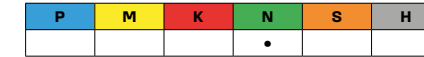
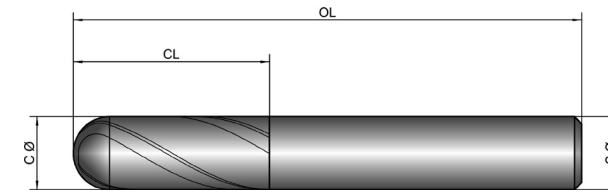
## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2172-1	1	3	40	4
2172-1.5	1.5	3	40	6
2172-2	2	3	40	8
2172-2.5	2.5	3	40	9
2172-3	3	3	40	12
2172-4	4	4	50	15
2172-5	5	5	50	20
2172-6	6	6	64	20
2172-8	8	8	64	22
2172-10	10	10	70	25
2172-12	12	12	84	30
2172-16	16	16	90	35
2172-20	20	20	100	40

# 3203

## Description

- 3 Flute
- 45° Helix
- Standard length
- Centre cutting



## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3203-3	3	3	40	12
3203-4	4	4	40	15
3203-5	5	5	50	20
3203-6	6	6	64	20
3203-8	8	8	64	22
3203-10	10	10	70	27
3203-12	12	12	84	30
3203-16	16	16	90	35
3203-20	20	20	100	40



For Speeds & Feeds please see page 049

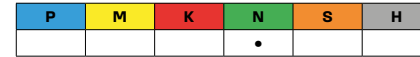
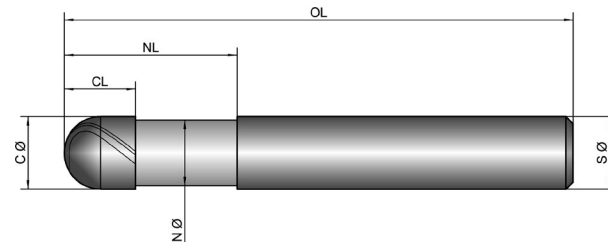
For Speeds & Feeds please see page 049



# 2022

## Description

- 2 Flute
- 50° Helix
- Long length
- Centre cutting
- Extended reach



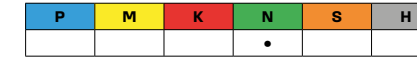
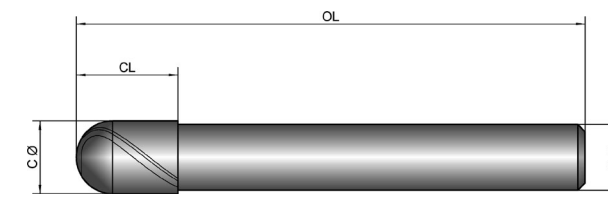
## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2022-1	1	4	64	1.5	4	0.9
2022-1.5	1.5	4	64	2.3	6	1.4
2022-2	2	4	75	4	8	1.8
2022-2-6mm	2	6	75	4	8	1.8
2022-2.5	2.5	4	75	4	10	2.3
2022-3	3	6	75	5	9	2.7
2022-4	4	6	75	6	15	3.6
2022-5	5	6	75	8	18	4.5
2022-6	6	6	100	10	20	5.0
2022-8	8	8	100	12	25	7.0
2022-10	10	10	100	14	30	9.0
2022-12	12	12	100	16	40	11.0
2022-16	16	16	125	20	50	14.0
2022-20	20	20	150	25	65	18.0

# 2082

## Description

- 2 Flute
- 50° Helix
- Long length
- Centre cutting
- Extended reach
- Reduced shank diameter



## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2082-6	6	5	100	8
2082-8	8	7	100	10
2082-10	10	9	100	12
2082-12	12	11	100	14
2082-16	16	14	125	18
2082-20	20	18	150	22



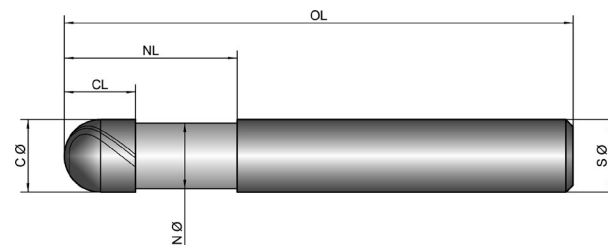
For Speeds & Feeds please see page 049

For Speeds & Feeds please see page 049

# 2142

### Description

- 2 Flute
- 50° Helix
- Extra long length
- Centre cutting
- Extended reach



P	M	K	N	S	H
			•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2142-6	6	6	150	8	20	5
2142-8	8	8	150	10	25	7
2142-10	10	10	150	12	25	9
2142-12	12	12	150	16	40	11
2142-16	16	16	200	20	50	14
2142-20	20	20	200	25	65	18

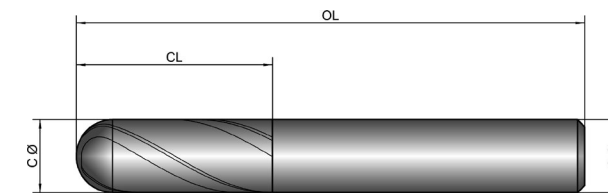


For Speeds & Feeds please see page 049

# 3202

### Description

- 3 Flute
- 45° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
			•		

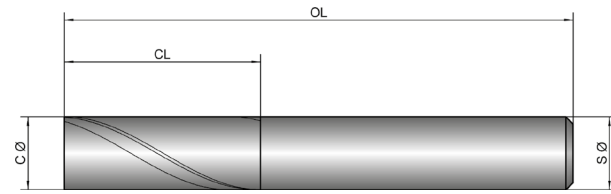
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3202-3	3	6	75	15
3202-4	4	6	75	20
3202-5	5	6	75	25
3202-6	6	6	100	35
3202-8	8	8	100	45
3202-10	10	10	100	45
3202-12	12	12	100	50
3202-16	16	16	150	60
3202-20	20	20	150	80



For Speeds & Feeds please see page 049

# 8012



### Description

- 1 Flute
- Long length

P	M	K	N	S	H
			•		

### Metric Sizes (mm)

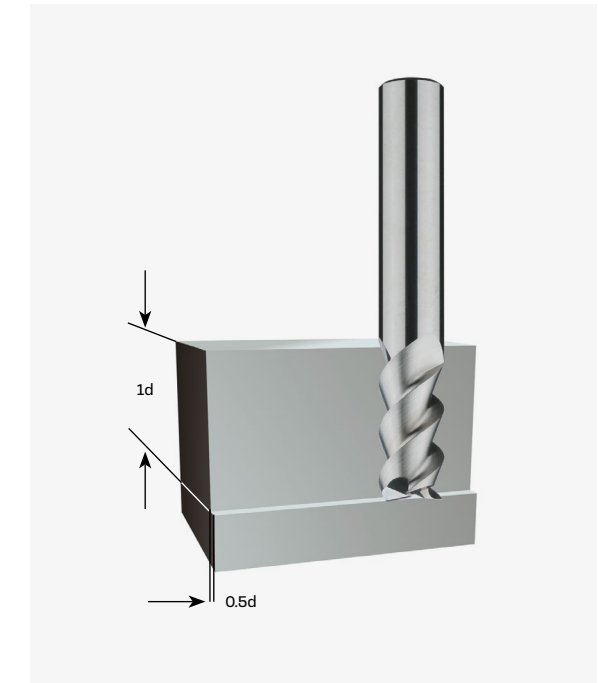
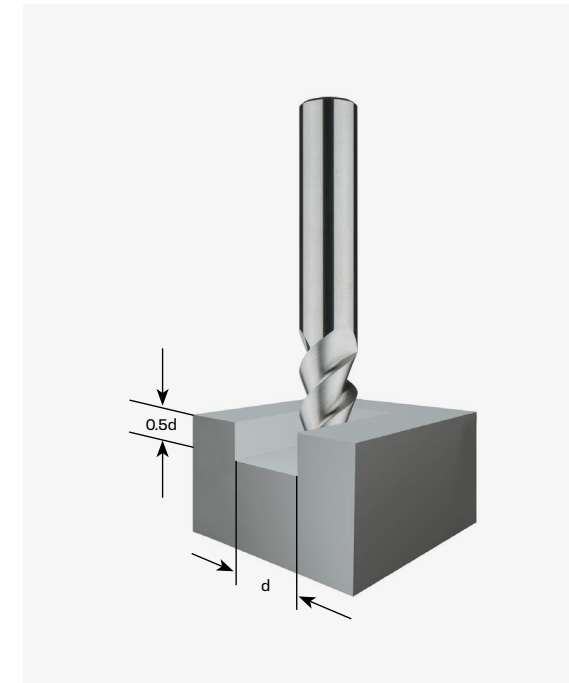
CATALOGUE NUMBER	CØ	SØ	OL	CL
8012-2	2	3	38	10
8012-3	3	3	38	10
8012-4	4	4	50	14
8012-5	5	5	60	16
8012-6	6	6	60	20
8012-8	8	8	75	25
8012-10	10	10	100	40
8012-12	12	12	100	50



For Speeds & Feeds please see page 049

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/z) END MILL DIAMETER									
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	
Aluminium Low <8% Silicon	300-600	0.030	0.040	0.050	0.060	0.070	0.100	0.120	0.160	0.200	
Aluminium High >8% Silicon	200-400	0.020	0.030	0.040	0.050	0.065	0.080	0.100	0.130	0.160	

Long Length Series: reduce feed by 40%





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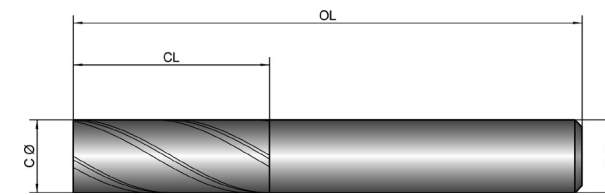
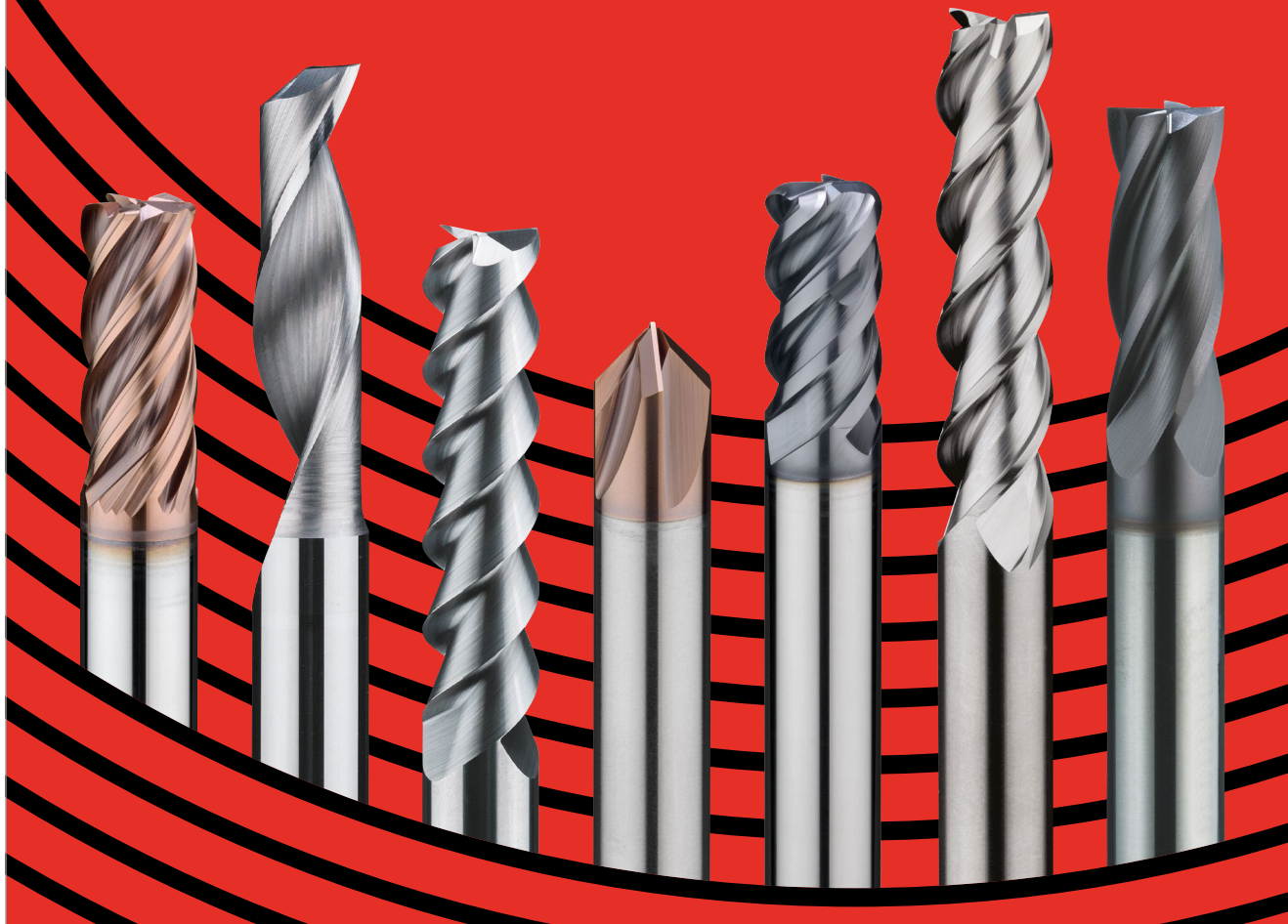
**END MILLS**

**DRILLS**

**ROUTERS**

**RADIUS**

**COATINGS**



## 4081

**Description**

- 4 Flute
- 38° Helix
- Long length
- Centre cutting
- AlTiN coated
- Harmonic fluting

P	M	K	N	S	H
•	•			•	

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
4081-1.0D	1	3	50	3
4081-1.5D	1.5	3	50	4.5
4081-2.0D	2	3	50	6
4081-2.5D	2.5	3	50	7.5
4081-3.0D	3	6	58	9
4081-4.0D	4	6	58	12
4081-5.0D	5	6	58	14
4081-6.0D	6	6	75	15
4081-8.0D	8	8	75	22
4081-10.0D	10	10	100	25
4081-12.0D	12	12	100	28
4081-16.0D	16	16	100	35
4081-20.0D	20	20	100	40
4081-25.0D	25	25	160	50

For Speeds & Feeds please see page 084

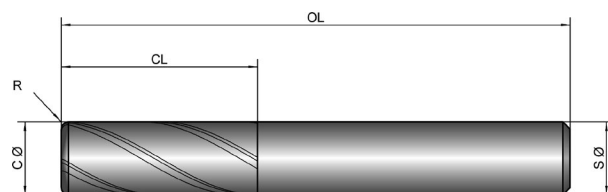




# 4081

### Description

- 4 Flute
- 38° Helix
- Long length
- Centre cutting
- Corner radius
- AlTiN coated
- Harmonic fluting



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
4081-1.0D-0.25R	1	3	50	4	0.25
4081-1.5D-0.25R	1.5	3	50	4.5	0.25
4081-2.0D-0.25R	2	3	50	6	0.25
4081-2.0D-0.5R	2	3	50	6	0.5
4081-2.5D-0.25R	2.5	3	50	7.5	0.25
4081-3.0D-0.25R	3	6	58	9	0.25
4081-3.0D-0.5R	3	6	58	9	0.5
4081-3.0D-0.75R	3	6	58	9	0.75
4081-3.0D-1.0R	3	6	58	9	1.0
4081-4.0D-0.25R	4	6	58	12	0.25
4081-4.0D-0.5R	4	6	58	12	0.5
4081-4.0D-0.75R	4	6	58	12	0.75
4081-4.0D-1.0R	4	6	58	12	1.0
4081-5.0D-0.25R	5	6	58	14	0.25
4081-5.0D-0.5R	5	6	58	14	0.5
4081-5.0D-0.75R	5	6	58	14	0.75
4081-5.0D-1.0R	5	6	58	14	1.0
4081-6.0D-0.25R	6	6	75	15	0.25
4081-6.0D-0.5R	6	6	75	15	0.5
4081-6.0D-0.75R	6	6	75	15	0.75
4081-6.0D-1.0R	6	6	75	15	1.0
4081-6.0D-1.25R	6	6	75	15	1.25
4081-6.0D-1.5R	6	6	75	15	1.5
4081-6.0D-2.0R	6	6	75	15	2.0
4081-8.0D-0.25R	8	8	75	22	0.25
4081-8.0D-0.5R	8	8	75	22	0.5
4081-8.0D-0.75R	8	8	75	22	0.75
4081-8.0D-1.0R	8	8	75	22	1.0
4081-8.0D-1.25R	8	8	75	22	1.25
4081-8.0D-1.5R	8	8	75	22	1.5
4081-8.0D-2.0R	8	8	75	22	2.0
4081-8.0D-2.5R	8	8	75	22	2.5
4081-8.0D-3.0R	8	8	75	22	3.0
4081-10.0D-0.25R	10	10	100	25	0.25
4081-10.0D-0.5R	10	10	100	25	0.5
4081-10.0D-0.75R	10	10	100	25	0.75

For Speeds & Feeds please see page 084



# 4081

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
4081-10.0D-1.0R	10	10	100	25	1.0
4081-10.0D-1.25R	10	10	100	25	1.25
4081-10.0D-1.5R	10	10	100	25	1.5
4081-10.0D-2.0R	10	10	100	25	2.0
4081-10.0D-2.5R	10	10	100	25	2.5
4081-10.0D-3.0R	10	10	100	25	3.0
4081-12.0D-0.25R	12	12	100	28	0.25
4081-12.0D-0.5R	12	12	100	28	0.5
4081-12.0D-0.75R	12	12	100	28	0.75
4081-12.0D-1.0R	12	12	100	28	1.0
4081-12.0D-1.25R	12	12	100	28	1.25
4081-12.0D-1.5R	12	12	100	28	1.5
4081-12.0D-2.0R	12	12	100	28	2.0
4081-12.0D-2.5R	12	12	100	28	2.5
4081-12.0D-3.0R	12	12	100	28	3.0
4081-16.0D-0.25R	16	16	100	35	0.25
4081-16.0D-0.5R	16	16	100	35	0.5
4081-16.0D-0.75R	16	16	100	35	0.75
4081-16.0D-1.0R	16	16	100	35	1.0
4081-16.0D-1.25R	16	16	100	35	1.25
4081-16.0D-1.5R	16	16	100	35	1.5
4081-16.0D-2.0R	16	16	100	35	2.0
4081-16.0D-2.5R	16	16	100	35	2.5
4081-16.0D-3.0R	16	16	100	35	3.0
4081-16.0D-4.0R	16	16	100	35	4.0
4081-20.0D-0.25R	20	20	100	40	0.25
4081-20.0D-0.5R	20	20	100	40	0.5
4081-20.0D-0.75R	20	20	100	40	0.75
4081-20.0D-1.0R	20	20	100	40	1.0
4081-20.0D-1.25R	20	20	100	40	1.25
4081-20.0D-1.5R	20	20	100	40	1.5
4081-20.0D-2.0R	20	20	100	40	2.0
4081-20.0D-2.5R	20	20	100	40	2.5
4081-20.0D-3.0R	20	20	100	40	3.0
4081-20.0D-4.0R	20	20	100	40	4.0

For Speeds & Feeds please see page 084





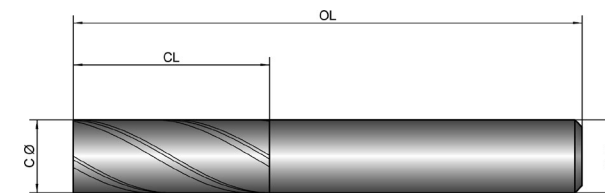
# RECOMMENDED TROCHOIDAL RANGES

- Reduced engagement angle
- Lower temperature during machining
- Longer tool life
- Consistent chip thickness
- More efficient use of tool flute length
- Increased cutting speeds and feeds (shorter cycle time)
- Improved chip evacuation
- Hugely reduced cutting edge load
- Lower torque and power requirements
- Consistent torque to spindle

Call us on 01827 304500  
for more info or to order



## 5021



### Description

- 5 Flute
- Variable helix
- Long length
- Centre cutting
- Cupro coated
- Harmonic fluting
- Ideal for trochoidal milling techniques

P	M	K	N	S	H
•	•			•	

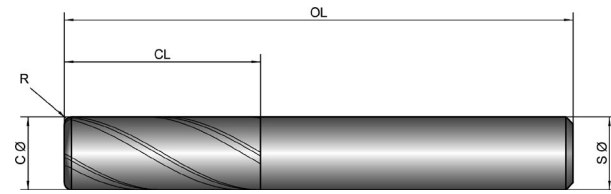
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
5021-3F	3	6	58	9
5021-4F	4	6	58	12
5021-5F	5	6	58	14
5021-6F	6	6	75	15
5021-8F	8	8	75	22
5021-10F	10	10	100	25
5021-12F	12	12	100	25
5021-16F	16	16	125	35
5021-20F	20	20	150	40

For Speeds & Feeds please see page 084



# 5021



### Description

- 5 Flute
- Variable helix
- Long length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- Ideal for trochoidal milling techniques

P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
5021-3F-0.25R	3	6	58	9	0.25
5021-3F-0.5R	3	6	58	9	0.5
5021-4F-0.25R	4	6	58	12	0.25
5021-4F-0.5R	4	6	58	12	0.5
5021-5F-0.25R	5	6	58	14	0.25
5021-5F-0.5R	5	6	58	14	0.5
5021-6F-0.25R	6	6	75	15	0.25
5021-6F-0.5R	6	6	75	15	0.5
5021-6F-0.75R	6	6	75	15	0.75
5021-6F-1.0R	6	6	75	15	1.0
5021-8F-0.25R	8	8	75	22	0.25
5021-8F-0.5R	8	8	75	22	0.5
5021-8F-0.75R	8	8	75	22	0.75
5021-8F-1.0R	8	8	75	22	1.0
5021-8F-1.25R	8	8	75	22	1.25
5021-8F-1.5R	8	8	75	22	1.5
5021-8F-2.0R	8	8	75	22	2.0
5021-8F-2.5R	8	8	75	22	2.5
5021-8F-3.0R	8	8	75	22	3.0
5021-10F-0.25R	10	10	100	25	0.25
5021-10F-0.5R	10	10	100	25	0.5
5021-10F-0.75R	10	10	100	25	0.75
5021-10F-1.0R	10	10	100	25	1.0
5021-10F-1.25R	10	10	100	25	1.25
5021-10F-1.5R	10	10	100	25	1.5
5021-10F-2.0R	10	10	100	25	2.0
5021-10F-2.5R	10	10	100	25	2.5
5021-10F-3.0R	10	10	100	25	3.0
5021-12F-0.25R	12	12	100	25	0.25
5021-12F-0.5R	12	12	100	25	0.5
5021-12F-0.75R	12	12	100	25	0.75
5021-12F-1.0R	12	12	100	25	1.0
5021-12F-1.25R	12	12	100	25	1.25
5021-12F-1.5R	12	12	100	25	1.5
5021-12F-2.0R	12	12	100	25	2.0

For Speeds & Feeds please see page 084



# 5021

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
5021-16F-0.25R	16	16	125	35	0.25
5021-16F-0.5R	16	16	125	35	0.5
5021-16F-0.75R	16	16	125	35	0.75
5021-16F-1.0R	16	16	125	35	1.0
5021-16F-1.25R	16	16	125	35	1.25
5021-16F-1.5R	16	16	125	35	1.5
5021-16F-2.0R	16	16	125	35	2.0
5021-16F-2.5R	16	16	125	35	2.5
5021-16F-3.0R	16	16	125	35	3.0
5021-16F-4.0R	16	16	125	35	4.0
5021-20F-0.25R	20	20	150	40	0.25
5021-20F-0.5R	20	20	150	40	0.5
5021-20F-0.75R	20	20	150	40	0.75
5021-20F-1.0R	20	20	150	40	1.0
5021-20F-1.25R	20	20	150	40	1.25
5021-20F-1.5R	20	20	150	40	1.5
5021-20F-2.0R	20	20	150	40	2.0
5021-20F-2.5R	20	20	150	40	2.5
5021-20F-3.0R	20	20	150	40	3.0
5021-20F-4.0R	20	20	150	40	4.0

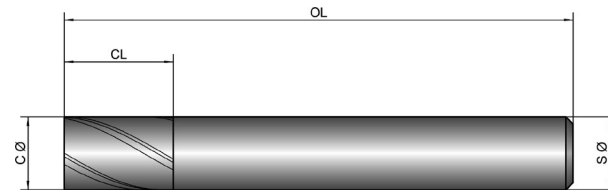
For Speeds & Feeds please see page 084



# 5031

### Description

- 5 Flute
- Variable helix
- Short length
- Centre cutting
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
5031-3F	3	6	40	5
5031-4F	4	6	40	7
5031-5F	5	6	40	9
5031-6F	6	6	40	10
5031-8F	8	8	45	12
5031-10F	10	10	64	15
5031-12F	12	12	64	18
5031-16F	16	16	72	24

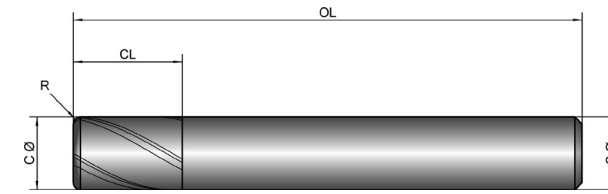


For Speeds & Feeds please see page 084

# 5031

### Description

- 5 Flute
- Variable helix
- Short length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

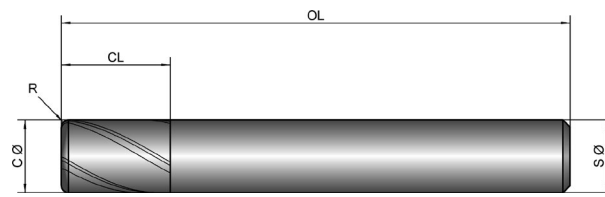
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
5031-3F-0.25R	3	6	40	5	0.25
5031-3F-0.5R	3	6	40	5	0.5
5031-4F-0.25R	4	6	40	7	0.25
5031-4F-0.5R	4	6	40	7	0.5
5031-5F-0.25R	5	6	40	9	0.25
5031-5F-0.5R	5	6	40	9	0.5
5031-6F-0.25R	6	6	40	10	0.25
5031-6F-0.5R	6	6	40	10	0.5
5031-6F-0.75R	6	6	40	10	0.75
5031-6F-1.0R	6	6	40	10	1.0
5031-8F-0.25R	8	8	45	12	0.25
5031-8F-0.5R	8	8	45	12	0.5
5031-8F-0.75R	8	8	45	12	0.75
5031-8F-1.0R	8	8	45	12	1.0
5031-8F-1.25R	8	8	45	12	1.25
5031-8F-1.5R	8	8	45	12	1.5
5031-8F-2.0R	8	8	45	12	2.0
5031-8F-2.5R	8	8	45	12	2.5
5031-8F-3.0R	8	8	45	12	3.0
5031-10F-0.25R	10	10	64	15	0.25
5031-10F-0.5R	10	10	64	15	0.5
5031-10F-0.75R	10	10	64	15	0.75
5031-10F-1.0R	10	10	64	15	1.0
5031-10F-1.25R	10	10	64	15	1.25
5031-10F-1.5R	10	10	64	15	1.5
5031-10F-2.0R	10	10	64	15	2.0
5031-10F-2.5R	10	10	64	15	2.5
5031-10F-3.0R	10	10	64	15	3.0
5031-12F-0.25R	12	12	64	18	0.25
5031-12F-0.5R	12	12	64	18	0.5
5031-12F-0.75R	12	12	64	18	0.75
5031-12F-1.0R	12	12	64	18	1.0
5031-12F-1.25R	12	12	64	18	1.25
5031-12F-1.5R	12	12	64	18	1.5
5031-12F-2.0R	12	12	64	18	2.0
5031-12F-2.5R	12	12	64	18	2.5
5031-12F-3.0R	12	12	64	18	3.0



For Speeds & Feeds please see page 084

# 5031



### Description

- 5 Flute
- Variable helix
- Short length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- Ideal for trochoidal milling techniques

P	M	K	N	S	H
•	•			•	

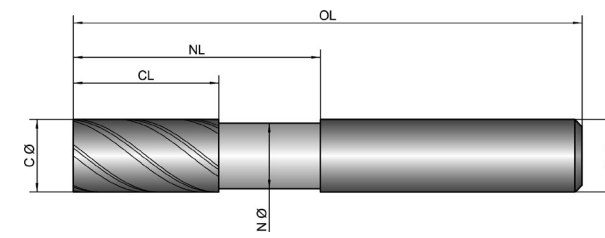
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
5031-16F-0.25R	16	16	72	24	0.25
5031-16F-0.5R	16	16	72	24	0.5
5031-16F-0.75R	16	16	72	24	0.75
5031-16F-1.0R	16	16	72	24	1.0
5031-16F-1.25R	16	16	72	24	1.25
5031-16F-1.5R	16	16	72	24	1.5
5031-16F-2.0R	16	16	72	24	2.0
5031-16F-2.5R	16	16	72	24	2.5
5031-16F-3.0R	16	16	72	24	3.0
5031-16F-4.0R	16	16	72	24	4.0

For Speeds & Feeds please see page 084



# 5041



### Description

- 5 Flute
- Variable helix
- Long length
- Extended reach
- Cupro coated
- Harmonic fluting
- Ideal for trochoidal milling techniques

P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
5041-3F	3	6	58	5	12	2.8
5041-4F	4	6	58	7	16	3.7
5041-5F	5	6	58	9	20	4.7
5041-6F	6	6	75	10	24	5.6
5041-8F	8	8	75	12	32	7.5
5041-10F	10	10	100	15	40	9.4
5041-12F	12	12	100	18	48	11.3
5041-16F	16	16	125	24	64	15

For Speeds & Feeds please see page 084

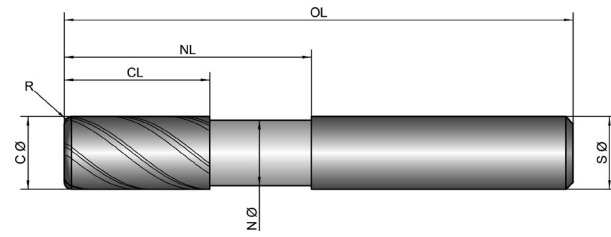




# 5041

### Description

- 5 Flute
- Variable helix
- Long length
- Extended reach
- Corner radius
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
5041-3F-0.25R	3	6	58	5	12	2.8	0.25
5041-3F-0.5R	3	6	58	5	12	2.8	0.5
5041-4F-0.25R	4	6	58	6	16	3.7	0.25
5041-4F-0.5R	4	6	58	6	16	3.7	0.5
5041-5F-0.25R	5	6	58	8	20	4.7	0.25
5041-5F-0.5R	5	6	58	8	20	4.7	0.5
5041-6F-0.25R	6	6	75	9	24	5.6	0.25
5041-6F-0.5R	6	6	75	9	24	5.6	0.5
5041-6F-0.75R	6	6	75	9	24	5.6	0.75
5041-6F-1.0R	6	6	75	9	24	5.6	1.0
5041-8F-0.25R	8	8	75	12	32	7.5	0.25
5041-8F-0.5R	8	8	75	12	32	7.5	0.5
5041-8F-0.75R	8	8	75	12	32	7.5	0.75
5041-8F-1.0R	8	8	75	12	32	7.5	1.0
5041-8F-1.25R	8	8	75	12	32	7.5	1.25
5041-8F-1.5R	8	8	75	12	32	7.5	1.5
5041-8F-2.0R	8	8	75	12	32	7.5	2.0
5041-8F-2.5R	8	8	75	12	32	7.5	2.5
5041-8F-3.0R	8	8	75	12	32	7.5	3.0
5041-10F-0.25R	10	10	100	15	40	9.4	0.25
5041-10F-0.5R	10	10	100	15	40	9.4	0.5
5041-10F-0.75R	10	10	100	15	40	9.4	0.75
5041-10F-1.0R	10	10	100	15	40	9.4	1.0
5041-10F-1.25R	10	10	100	15	40	9.4	1.25
5041-10F-1.5R	10	10	100	15	40	9.4	1.5
5041-10F-2.0R	10	10	100	15	40	9.4	2.0
5041-10F-2.5R	10	10	100	15	40	9.4	2.5
5041-10F-3.0R	10	10	100	15	40	9.4	3.0



For Speeds & Feeds please see page 084

# 5041

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	R
5041-12F-0.25R	12	12	100	18	48	11.3	0.25
5041-12F-0.5R	12	12	100	18	48	11.3	0.5
5041-12F-0.75R	12	12	100	18	48	11.3	0.75
5041-12F-1.0R	12	12	100	18	48	11.3	1.0
5041-12F-1.25R	12	12	100	18	48	11.3	1.25
5041-12F-1.5R	12	12	100	18	48	11.3	1.5
5041-12F-2.0R	12	12	100	18	48	11.3	2.0
5041-12F-2.5R	12	12	100	18	48	11.3	2.5
5041-12F-3.0R	12	12	100	18	48	11.3	3.0
5041-16F-0.25R	16	16	125	24	64	15	0.25
5041-16F-0.5R	16	16	125	24	64	15	0.5
5041-16F-0.75R	16	16	125	24	64	15	0.75
5041-16F-1.0R	16	16	125	24	64	15	1.0
5041-16F-1.25R	16	16	125	24	64	15	1.25
5041-16F-1.5R	16	16	125	24	64	15	1.5
5041-16F-2.0R	16	16	125	24	64	15	2.0
5041-16F-2.5R	16	16	125	24	64	15	2.5
5041-16F-3.0R	16	16	125	24	64	15	3.0
5041-16F-4.0R	16	16	125	24	64	15	4.0

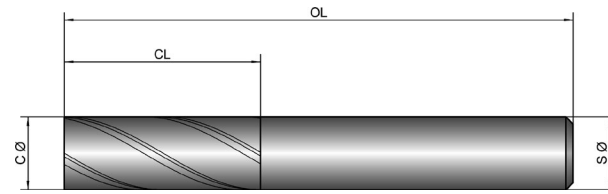


For Speeds & Feeds please see page 084

# 6051

### Description

- 6 Flute
- 38° Helix
- Long length
- Centre cutting
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
6051-6F	6	6	75	18
6051-8F	8	8	75	24
6051-10F	10	10	100	30
6051-12F	12	12	100	36
6051-16F	16	16	125	50
6051-20F	20	20	150	60

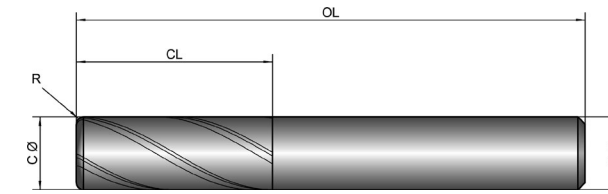


For Speeds & Feeds please see page 084

# 6051

### Description

- 6 Flute
- 38° Helix
- Long length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
6051-6F-0.25R	6	6	75	18	0.25
6051-6F-0.5R	6	6	75	18	0.5
6051-6F-0.75R	6	6	75	18	0.75
6051-6F-1.0R	6	6	75	18	1.0
6051-8F-0.25R	8	8	75	24	0.25
6051-8F-0.5R	8	8	75	24	0.5
6051-8F-0.75R	8	8	75	24	0.75
6051-8F-1.0R	8	8	75	24	1.0
6051-10F-0.25R	10	10	100	30	0.25
6051-10F-0.5R	10	10	100	30	0.5
6051-10F-0.75R	10	10	100	30	0.75
6051-10F-1.0R	10	10	100	30	1.0
6051-12F-0.25R	12	12	100	36	0.25
6051-12F-0.5R	12	12	100	36	0.5
6051-12F-0.75R	12	12	100	36	0.75
6051-12F-1.0R	12	12	100	36	1.0
6051-16F-0.25R	16	16	125	50	0.25
6051-16F-0.5R	16	16	125	50	0.5
6051-16F-0.75R	16	16	125	50	0.75
6051-16F-1.0R	16	16	125	50	1.0
6051-20F-0.25R	20	20	150	60	0.25
6051-20F-0.5R	20	20	150	60	0.5
6051-20F-0.75R	20	20	150	60	0.75
6051-20F-1.0R	20	20	150	60	1.0

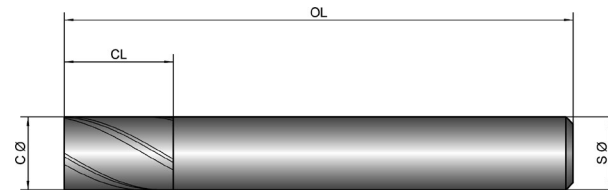


For Speeds & Feeds please see page 084

# 6071

### Description

- 6 Flute
- 38° Helix
- Short length
- Centre cutting
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
6071-6F	6	6	40	10
6071-8F	8	8	45	12
6071-10F	10	10	64	15
6071-12F	12	12	64	18
6071-16F	16	16	72	24

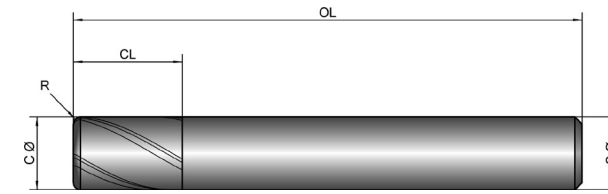


For Speeds & Feeds please see page 084

# 6071

### Description

- 6 Flute
- 38° Helix
- Short length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
6071-6F-0.25R	6	6	40	10	0.25
6071-6F-0.5R	6	6	40	10	0.5
6071-6F-0.75R	6	6	40	10	0.75
6071-6F-1.0R	6	6	40	10	1.0
6071-8F-0.25R	8	8	45	12	0.25
6071-8F-0.5R	8	8	45	12	0.5
6071-8F-0.75R	8	8	45	12	0.75
6071-8F-1.0R	8	8	45	12	1.0
6071-10F-0.25R	10	10	64	15	0.25
6071-10F-0.5R	10	10	64	15	0.5
6071-10F-0.75R	10	10	64	15	0.75
6071-10F-1.0R	10	10	64	15	1.0
6071-12F-0.25R	12	12	64	18	0.25
6071-12F-0.5R	12	12	64	18	0.5
6071-12F-0.75R	12	12	64	18	0.75
6071-12F-1.0R	12	12	64	18	1.0
6071-16F-0.25R	16	16	72	24	0.25
6071-16F-0.5R	16	16	72	24	0.5
6071-16F-0.75R	16	16	72	24	0.75
6071-16F-1.0R	16	16	72	24	1.0

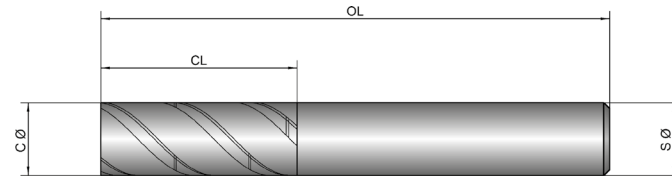


For Speeds & Feeds please see page 084

# 6054

### Description

- 6 Flute
- 38° Helix
- Long length
- Centre cutting
- Cupro coated
- Harmonic fluting
- Chipbreaker
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
6054-6F	6	6	75	18
6054-8F	8	8	75	24
6054-10F	10	10	100	30
6054-12F	12	12	100	36
6054-16F	16	16	125	50
6054-20F	20	20	150	60

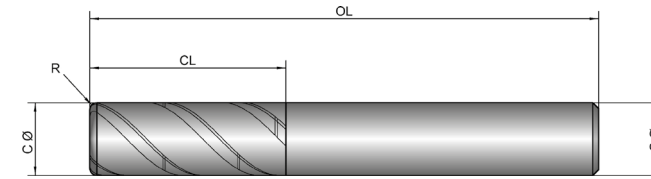


For Speeds & Feeds please see page 084

# 6054

### Description

- 6 Flute
- 38° Helix
- Long length
- Centre cutting
- Corner radius
- Cupro coated
- Harmonic fluting
- Chipbreaker
- **Ideal for trochoidal milling techniques**



P	M	K	N	S	H
•	•			•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
6054-6F-0.25R	6	6	75	18	0.25
6054-6F-0.5R	6	6	75	18	0.5
6054-6F-0.75R	6	6	75	18	0.75
6054-6F-1.0R	6	6	75	18	1.0
6054-8F-0.25R	8	8	75	24	0.25
6054-8F-0.5R	8	8	75	24	0.5
6054-8F-0.75R	8	8	75	24	0.75
6054-8F-1.0R	8	8	75	24	1.0
6054-10F-0.25R	10	10	100	30	0.25
6054-10F-0.5R	10	10	100	30	0.5
6054-10F-0.75R	10	10	100	30	0.75
6054-10F-1.0R	10	10	100	30	1.0
6054-12F-0.25R	12	12	100	36	0.25
6054-12F-0.5R	12	12	100	36	0.5
6054-12F-0.75R	12	12	100	36	0.75
6054-12F-1.0R	12	12	100	36	1.0
6054-16F-0.25R	16	16	125	50	0.25
6054-16F-0.5R	16	16	125	50	0.5
6054-16F-0.75R	16	16	125	50	0.75
6054-16F-1.0R	16	16	125	50	1.0
6054-20F-0.25R	20	20	150	60	0.25
6054-20F-0.5R	20	20	150	60	0.5
6054-20F-0.75R	20	20	150	60	0.75
6054-20F-1.0R	20	20	150	60	1.0

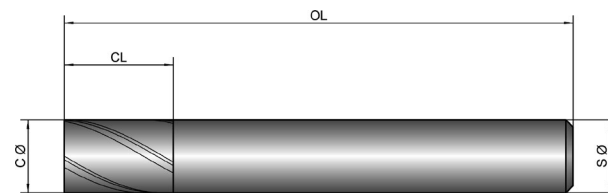


For Speeds & Feeds please see page 084

# 6011

## Description

- Multi-flute
- 52° Helix
- Short length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•			•	•

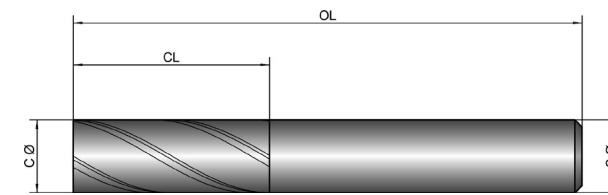
## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NUMBER OF FLUTES
6011-3F	3	6	55	6	5
6011-4F	4	6	55	8	5
6011-5F	5	6	55	10	5
6011-6F	6	6	55	12	6
6011-8F	8	8	59	16	6
6011-10F	10	10	67	20	6
6011-12F	12	12	74	24	6
6011-16F	16	16	83	32	8
6011-20F	20	20	93	40	8

# 6021

## Description

- Multi-flute
- 52° Helix
- Standard length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•			•	•

## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NUMBER OF FLUTES
6021-3F	3	6	58	9	5
6021-4F	4	6	58	12	5
6021-5F	5	6	58	15	5
6021-6F	6	6	58	18	6
6021-8F	8	8	63	24	6
6021-10F	10	10	75	30	6
6021-12F	12	12	84	36	6
6021-16F	16	16	93	48	8
6021-20F	20	20	100	50	8

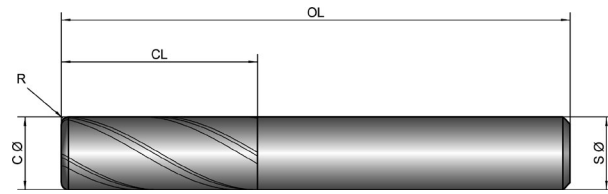


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For Speeds & Feeds please see page 084



# 6021



### Description

- Multi-flute
- 52° Helix
- Standard length
- Centre cutting
- Corner radius
- Cupro coated

P	M	K	N	S	H
•	•			•	•

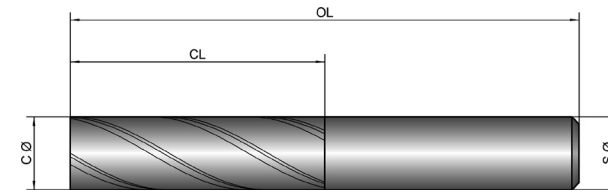
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NUMBER OF FLUTES	R
6021-6F-0.25R	6	6	58	18	6	0.25
6021-6F-0.5R	6	6	58	18	6	0.5
6021-6F-0.75R	6	6	58	18	6	0.75
6021-6F-1.0R	6	6	58	18	6	1.0
6021-8F-0.25R	8	8	63	24	6	0.25
6021-8F-0.5R	8	8	63	24	6	0.5
6021-8F-0.75R	8	8	63	24	6	0.75
6021-8F-1.0R	8	8	63	24	6	1.0
6021-10F-0.25R	10	10	75	30	6	0.25
6021-10F-0.5R	10	10	75	30	6	0.5
6021-10F-0.75R	10	10	75	30	6	0.75
6021-10F-1.0R	10	10	75	30	6	1.0
6021-12F-0.25R	12	12	84	36	6	0.25
6021-12F-0.5R	12	12	84	36	6	0.5
6021-12F-0.75R	12	12	84	36	6	0.75
6021-12F-1.0R	12	12	84	36	6	1.0
6021-16F-0.25R	16	16	93	48	8	0.25
6021-16F-0.5R	16	16	93	48	8	0.5
6021-16F-0.75R	16	16	93	48	8	0.75
6021-16F-1.0R	16	16	93	48	8	1.0
6021-20F-0.25R	20	20	100	50	8	0.25
6021-20F-0.5R	20	20	100	50	8	0.5
6021-20F-0.75R	20	20	100	50	8	0.75
6021-20F-1.0R	20	20	100	50	8	1.0



For Speeds & Feeds please see page 084

# 6031



### Description

- Multi-flute
- 52° Helix
- Long length
- Centre cutting
- Cupro coated

P	M	K	N	S	H
•	•			•	•

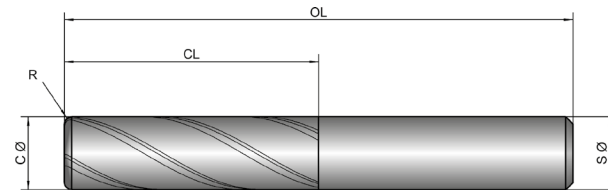
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NUMBER OF FLUTES
6031-3F	3	6	75	15	5
6031-4F	4	6	75	20	5
6031-5F	5	6	75	25	5
6031-6F	6	6	75	32	6
6031-8F	8	8	75	32	6
6031-10F	10	10	100	50	6
6031-12F	12	12	100	50	6
6031-16F	16	16	125	62	8
6031-20F	20	20	130	65	8



For Speeds & Feeds please see page 084

# 6031



### Description

- Multi-flute
- 52° Helix
- Long length
- Centre cutting
- Corner radius
- Cupro coated

P	M	K	N	S	H
•	•			•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NUMBER OF FLUTES	R
6031-6F-0.25R	6	6	75	32	6	0.25
6031-6F-0.5R	6	6	75	32	6	0.5
6031-6F-0.75R	6	6	75	32	6	0.75
6031-6F-1.0R	6	6	75	32	6	1.0
6031-8F-0.25R	8	8	75	32	6	0.25
6031-8F-0.5R	8	8	75	32	6	0.5
6031-8F-0.75R	8	8	75	32	6	0.75
6031-8F-1.0R	8	8	75	32	6	1.0
6031-10F-0.25R	10	10	100	50	6	0.25
6031-10F-0.5R	10	10	100	50	6	0.5
6031-10F-0.75R	10	10	100	50	6	0.75
6031-10F-1.0R	10	10	100	50	6	1.0
6031-12F-0.25R	12	12	100	50	6	0.25
6031-12F-0.5R	12	12	100	50	6	0.5
6031-12F-0.75R	12	12	100	50	6	0.75
6031-12F-1.0R	12	12	100	50	6	1.0
6031-16F-0.25R	16	16	125	62	8	0.25
6031-16F-0.5R	16	16	125	62	8	0.5
6031-16F-0.75R	16	16	125	62	8	0.75
6031-16F-1.0R	16	16	125	62	8	1.0
6031-20F-0.25R	20	20	130	65	8	0.25
6031-20F-0.5R	20	20	130	65	8	0.5
6031-20F-0.75R	20	20	130	65	8	0.75
6031-20F-1.0R	20	20	130	65	8	1.0



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# BIG KAISER



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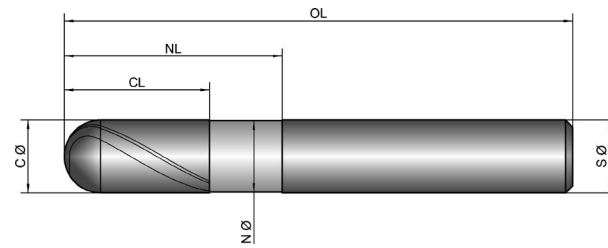
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# 2152

### Description

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•			•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2152-1F	1	6	53	3	7	0.9
2152-1.5F	1.5	6	53	3.5	7.5	1.4
2152-2F	2	6	53	4	8	1.9
2152-2.5F	2.5	6	53	4.5	8.5	2.4
2152-3F	3	6	53	5	9	2.9
2152-4F	4	6	53	6	13	3.8
2152-5F	5	6	53	7	15	4.8
2152-6F	6	6	53	8	-	-
2152-8F	8	8	64	10	-	-
2152-10F	10	10	64	12	-	-
2152-12F	12	12	80	16	-	-
2152-16F	16	16	80	20	-	-
2152-20F	20	20	105	25	-	-

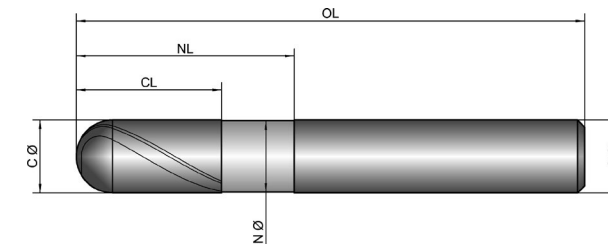


For Speeds & Feeds please see page 084

# 2162

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•			•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2162-1F	1	6	75	3	7	0.9
2162-1.5F	1.5	6	75	3.5	7.5	1.4
2162-2F	2	6	75	4	8	1.9
2162-2.5F	2.5	6	75	4.5	8.5	2.4
2162-3F	3	6	75	5	9	2.9
2162-4F	4	6	75	6	15	3.8
2162-5F	5	6	75	7	18	4.8
2162-6F	6	6	100	8	-	-
2162-8F	8	8	100	10	-	-
2162-10F	10	10	100	12	-	-
2162-12F	12	12	100	16	-	-
2162-16F	16	16	150	20	-	-
2162-20F	20	20	150	25	-	-

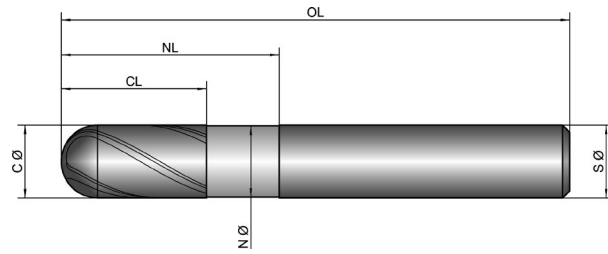


For Speeds & Feeds please see page 084

# 4032

**Description**

- 4 Flute
- 30° Helix
- Long length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•			•	

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
4032-1F	1	3	60	3	7	0.9
4032-1.5F	1.5	3	60	4.5	7.5	1.4
4032-2F	2	3	60	7	11	1.9
4032-2.5F	2.5	3	60	8	12	2.4
4032-3F	3	3	60	9	-	-
4032-4F	4	4	75	12	-	-
4032-5F	5	5	75	12	-	-
4032-6F	6	6	100	12	-	-
4032-8F	8	8	100	14	-	-
4032-10F	10	10	100	18	-	-
4032-12F	12	12	100	25	-	-

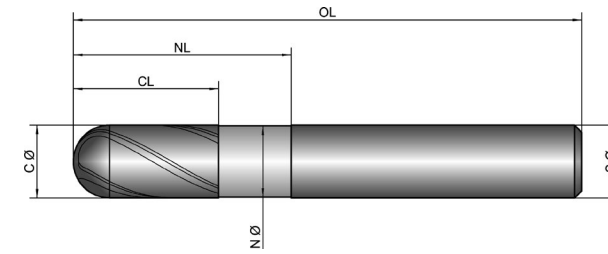


For Speeds & Feeds please see page 084

# 4042

**Description**

- 4 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- Cupro coated



P	M	K	N	S	H
•	•			•	

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
4042-2F	2	6	75	7	15	1.9
4042-3F	3	6	75	9	15	2.9
4042-4F	4	6	75	10	20	3.8
4042-5F	5	6	75	12	20	4.8
4042-6F	6	6	75	12	-	-

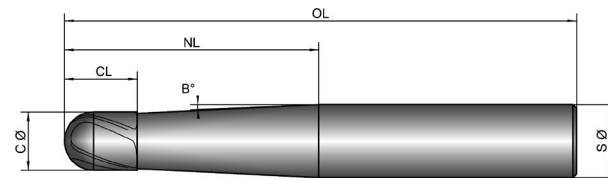


For Speeds & Feeds please see page 084

# 4052

### Description

- 4 Flute
- 30° Helix
- Long length
- Centre cutting
- Tapered relief
- Cupro coated



P	M	K	N	S	H
•	•			•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	B
4052-3F	3	6	80	4.5	40	2.55
4052-4F	4	6	80	6	40	1.94
4052-5F	5	6	80	7.5	40	1.23
4052-6F	6	8	80	9	40	2.22
4052-8F	8	10	105	12	56	1.64
4052-10F	10	12	105	15	56	1.68

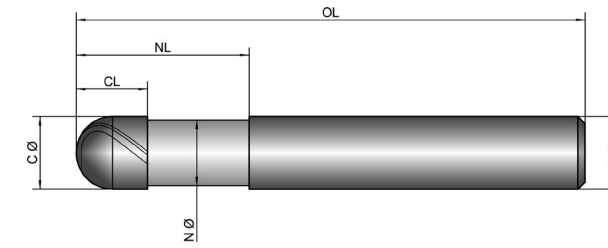


For Speeds & Feeds please see page 084

# 2002

### Description

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting
- AlTiN coated



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2002-2D	2	6	53	4	8	1.9
2002-3D	3	6	55	5	9	2.9
2002-4D	4	6	55	6	13	3.8
2002-5D	5	6	55	7	15	4.8
2002-6D	6	6	58	8	-	-
2002-8D	8	8	64	10	-	-
2002-10D	10	10	72	12	-	-
2002-12D	12	12	84	16	-	-
2002-16D	16	16	92	20	-	-
2002-20D	20	20	105	25	-	-

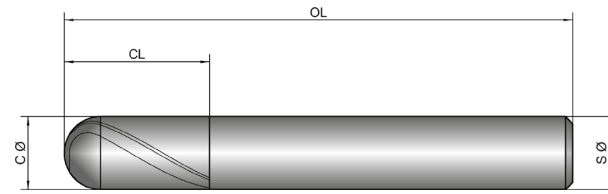


For Speeds & Feeds please see page 084

# 2012

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- AlTiN coated



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2012-2D	2	6	75	4	8	1.9
2012-3D	3	6	75	5	9	2.9
2012-4D	4	6	75	6	15	3.8
2012-5D	5	6	75	7	18	4.8
2012-6D	6	6	100	8	-	-
2012-8D	8	8	100	10	-	-
2012-10D	10	10	100	12	-	-
2012-12D	12	12	100	16	-	-
2012-16D	16	16	125	20	-	-
2012-20D	20	20	150	25	-	-

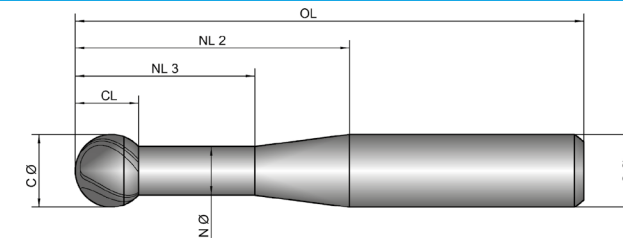


For Speeds & Feeds please see page 084

# 4101

### Description

- 4 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- AlTiN coated
- 220° Inclusive cut



P	M	K	N	S	H
•	•	•		•	

### Metric Sizes (mm)

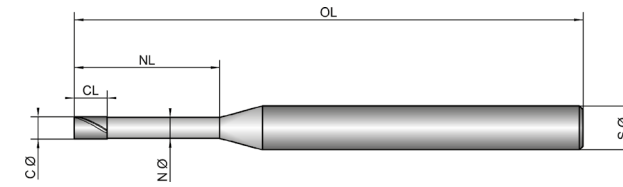
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL2	NL3	NØ
4101-2-30D	2	6	75	1.3	30	6	1.3
4101-2-36D	2	6	75	1.3	36	10	1.3
4101-2-42D	2	6	75	1.3	42	16	1.3
4101-3-30D	3	6	75	2.0	30	9	2.0
4101-3-36D	3	6	75	2.0	36	15	2.0
4101-3-42D	3	6	75	2.0	42	21	2.0
4101-4-30D	4	6	75	2.7	30	12	2.7
4101-4-36D	4	6	75	2.7	36	20	2.7
4101-4-42D	4	6	100	2.7	42	32	2.7
4101-5-38D	5	6	75	4.29	38	32	3.5
4101-6-28D	6	6	75	4.0	28	18	4.0
4101-6-40D	6	6	75	4.0	40	30	4.0
4101-6-44D	6	6	100	4.0	44	32	4.0
4101-8-38D	8	8	100	5.4	38	24	5.4
4101-8-54D	8	8	100	5.4	54	40	5.4
4101-8-68D	8	8	100	5.4	68	55	5.4
4101-10-48D	10	10	100	6.7	48	30	6.7
4101-10-58D	10	10	100	6.7	58	40	6.7
4101-10-68D	10	10	100	6.7	68	55	6.7
4101-12-58D	12	12	100	8.0	58	36	8.0
4101-12-68D	12	12	100	8.0	68	55	8.0
4101-16-54D	16	16	100	10.7	54	48	10.7
4101-16-68D	16	16	100	10.7	68	55	10.7

For Speeds & Feeds please see page 084





# 7N22



### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- AlTiN coated

P	M	K	N	S	H
•	•	•		•	•

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER									
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	
Low Carbon Steels	150-200	0.020	0.030	0.035	0.045	0.060	0.072	0.085	0.100	0.115	
Medium Carbon Steels	120-160	0.170	0.023	0.030	0.036	0.050	0.060	0.070	0.085	0.100	
Tool Steel	90-150	0.015	0.020	0.027	0.035	0.045	0.055	0.060	0.075	0.090	
Stainless Steel - Austenitic	90-115	0.015	0.025	0.030	0.035	0.050	0.060	0.070	0.090	0.100	
Stainless Steel - High Strength	60-80	0.015	0.020	0.025	0.030	0.040	0.050	0.055	0.070	0.080	
Stainless Steel - Duplex	60-70	0.012	0.015	0.020	0.025	0.035	0.040	0.050	0.060	0.065	
Cast Iron - Grey	120-150	0.020	0.030	0.035	0.045	0.060	0.070	0.085	0.100	0.115	
Cast Iron - Low/Medium Strength	110-140	0.020	0.025	0.030	0.040	0.050	0.060	0.070	0.090	0.100	
Cast Iron - High Strength	110-130	0.015	0.020	0.025	0.030	0.040	0.050	0.055	0.070	0.080	
Titanium (Soft) 110-275 Bhn	60-105	0.010	0.020	0.020	0.040	0.040	0.050	0.050	0.060	0.060	
Titanium (Hard) 300-440 Bhn	50-60	0.010	0.015	0.020	0.025	0.035	0.045	0.050	0.060	0.070	
Heat Resistant Alloys - Cobalt Based	25-40	0.008	0.013	0.016	0.019	0.026	0.032	0.037	0.046	0.054	
Heat Resistant Alloys - Nickel Based	60-80	0.015	0.020	0.025	0.030	0.040	0.050	0.055	0.070	0.080	
Heat Resistant Alloys - Iron Based	50-90	0.015	0.025	0.030	0.035	0.050	0.060	0.070	0.090	0.100	
Hardened Steels <45 HRc	70-120	0.010	0.010	0.020	0.020	0.030	0.030	0.040	0.040	0.050	
Hardened Steels 45-50 HRc	30-60	0.012	0.015	0.020	0.025	0.035	0.040	0.045	0.055	0.065	

### HSM for 6011/6021/6031 Series

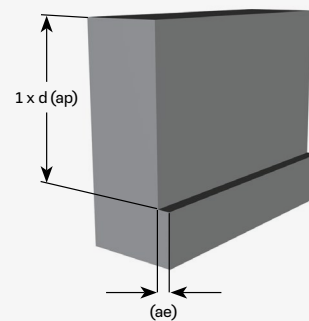
MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER									
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	
Hardened Steels <45 HRc	230-250	0.010	0.015	0.020	0.026	0.040	0.050	0.060	0.080	0.100	
Hardened Steels 45-50 HRc	190-210	0.008	0.011	0.016	0.022	0.034	0.043	0.052	0.075	0.094	
Hardened Steels 50-55 HRc	150-170	0.007	0.009	0.015	0.020	0.030	0.038	0.045	0.070	0.088	
Hardened Steels 55-60 HRc	115-135	0.006	0.008	0.013	0.018	0.028	0.035	0.042	0.065	0.081	
Hardened Steels 60+ HRc	90-110	0.004	0.006	0.010	0.014	0.025	0.031	0.038	0.059	0.074	

Cutting data is given for shoulder-milling:

Axial depth of cut: **1 x d (ap)**

Radial width of cut: **(ae)**

- Up to: **ø6mm** 0.02 x d
- ø8 - ø12mm** 0.025 x d
- ø14 - ø20mm** 0.030 x d



### HSM for 2152-F/2162-F Series

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER										
	Metres/Min	1mm	2mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm
Hardened Steels <45 HRc	<1000	0.012	0.030	0.040	0.045	0.050	0.060	0.065	0.070	0.075	0.090	0.100
Hardened Steels 45-50 HRc	<750	0.010	0.027	0.035	0.037	0.040	0.050	0.060	0.060	0.070	0.085	0.095
Hardened Steels 50-55 HRc	<470	0.008	0.025	0.030	0.033	0.037	0.045	0.055	0.060	0.065	0.075	0.085
Hardened Steels 55-60 HRc	<350	0.007	0.022	0.028	0.030	0.033	0.038	0.050	0.055	0.060	0.075	0.080
Hardened Steels 60+ HRc	<250	0.006	0.020	0.025	0.028	0.030	0.035	0.040	0.050	0.055	0.065	0.070
	D.O.C. (ap) mm	0.05	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3

MAX Stepover (Pitch) 0.2mm for Roughing / 0.1mm for Finishing

### Metric Sizes (mm)

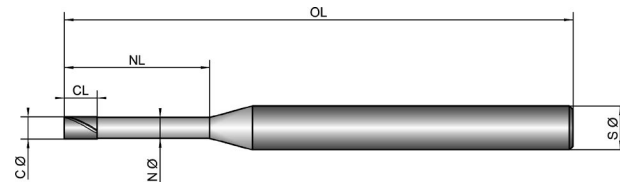
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
7N2200400RJ	0.4	3	38	0.6	2	0.36
7N2200410RJ	0.4	3	38	0.6	4	0.36
7N2200500RJ	0.5	3	38	0.7	2	0.45
7N2200510RJ	0.5	3	38	0.7	4	0.45
7N2200520RJ	0.5	3	38	0.7	6	0.45
7N2200600RJ	0.6	3	38	0.9	2	0.55
7N2200610RJ	0.6	3	38	0.9	4	0.55
7N2200620RJ	0.6	3	38	0.9	6	0.55
7N2200711RJ	0.7	4	50	1	4	0.65
7N2200721RJ	0.7	4	50	1	6	0.65
7N2200801RJ	0.8	4	50	1.2	4	0.75
7N2200811RJ	0.8	4	50	1.2	6	0.75
7N2200821RJ	0.8	4	50	1.2	8	0.75
7N2200901RJ	0.9	4	50	1.34	6	0.85
7N2201001RJ	1	4	50	1.5	6	0.97
7N2201011RJ	1	4	50	1.5	8	0.95
7N2201021RJ	1	4	50	1.5	10	0.95
7N2201031RJ	1	4	50	1.5	12	0.93
7N2201201RJ	1.2	4	50	1.5	6	1.17
7N2201211RJ	1.2	4	50	1.8	8	1.15
7N2201231RJ	1.2	4	50	1.8	12	1.13
7N2201401RJ	1.4	4	50	2.1	6	1.37
7N2201411RJ	1.4	4	50	2.1	8	1.35
7N2201421RJ	1.4	4	50	2.1	10	1.35
7N2201431RJ	1.4	4	50	2.1	12	1.33
7N2201441RJ	1.4	4	50	2.1	16	1.31
7N2201501RJ	1.5	4	50	2.3	6	1.47
7N2201511RJ	1.5	4	50	2.3	10	1.45
7N2201521RJ	1.5	4	50	2.3	12	1.45
7N2201531RJ	1.5	4	50	2.3	16	1.41
7N2201541RJ	1.5	4	63	2.3	18	1.41
7N2201551RJ	1.5	4	63	2.3	20	1.39
7N2201701RJ	1.7	4	50	2.6	6	1.67
7N2201711RJ	1.7	4	50	2.6	10	1.65
7N2201721RJ	1.7	4	50	2.6	12	1.63



# 7N22

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- AlTiN coated



P	M	K	N	S	H
•	•	•		•	•

### Metric Sizes (mm)

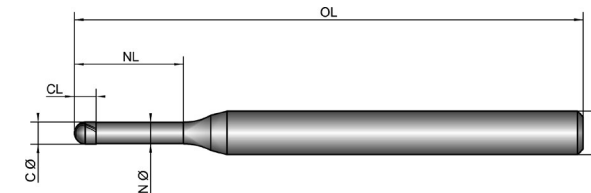
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
7N2201801RJ	1.8	4	50	2.7	6	1.77
7N2201811RJ	1.8	4	50	2.7	10	1.75
7N2201821RJ	1.8	4	50	2.7	12	1.73
7N2201831RJ	1.8	4	50	2.7	16	1.71
7N2201901RJ	1.9	4	50	2.8	6	1.87
7N2201911RJ	1.9	4	50	2.8	10	1.85
7N2202001RJ	2	4	50	3	6	1.97
7N2202011RJ	2	4	50	3	10	1.95
7N2202021RJ	2	4	50	3	16	1.91
7N2202031RJ	2	4	63	3	20	1.89
7N2202041RJ	2	4	75	3	30	1.89
7N2202501RJ	2.5	4	50	3.7	8	2.4
7N2202511RJ	2.5	4	50	3.7	10	2.4
7N2202521RJ	2.5	4	63	3.7	16	2.4
7N2202531RJ	2.5	4	63	3.7	20	2.4
7N2202541RJ	2.5	4	80	3.7	30	2.4
7N2203002RJ	3	6	50	4.5	8	2.85
7N2203012RJ	3	6	50	4.5	10	2.85
7N2203022RJ	3	6	63	4.5	16	2.85
7N2203032RJ	3	6	63	4.5	20	2.85
7N2203042RJ	3	6	80	4.5	30	2.85



# 2112

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- AlTiN coated



P	M	K	N	S	H
•	•	•		•	•

### Metric Sizes (mm)

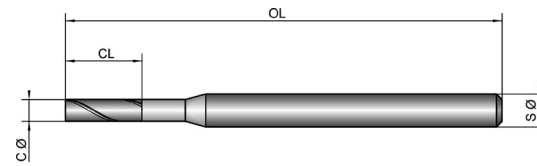
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ
2112-0.3-3D	0.3	4	50	0.3	3	0.28
2112-0.3-6D	0.3	4	50	0.3	6	0.28
2112-0.4-3D	0.4	4	50	0.4	3	0.38
2112-0.4-8D	0.4	4	50	0.4	8	0.38
2112-0.5-5D	0.5	4	50	0.5	5	0.48
2112-0.5-10D	0.5	4	50	0.5	10	0.48
2112-0.6-5D	0.6	4	50	0.6	5	0.58
2112-0.6-12D	0.6	4	50	0.6	12	0.58
2112-0.8-5D	0.8	4	50	0.8	5	0.78
2112-0.8-10D	0.8	4	50	0.8	10	0.78
2112-1.0-6D	1.0	6	57	1.0	6	0.95
2112-1.0-11D	1.0	6	57	1.0	11	0.95
2112-1.0-15D	1.0	6	57	1.0	15	0.95
2112-1.0-20D	1.0	6	57	1.0	20	0.95
2112-1.2-7D	1.2	6	57	1.2	7	1.15
2112-1.2-15D	1.2	6	57	1.2	15	1.15
2112-1.2-20D	1.2	6	57	1.2	20	1.15
2112-1.5-7D	1.5	6	57	1.5	7	1.45
2112-1.5-15D	1.5	6	57	1.5	15	1.45
2112-1.5-20D	1.5	6	57	1.5	20	1.45
2112-2.0-7D	2.0	6	57	2.0	7	1.90
2112-2.0-15D	2.0	6	57	2.0	15	1.90
2112-2.0-20D	2.0	6	57	2.0	20	1.90
2112-3.0-12D	3.0	6	57	3.0	12	2.90
2112-3.0-15D	3.0	6	57	3.0	15	2.90
2112-3.0-20D	3.0	6	57	3.0	20	2.90
2112-4.0-15D	4.0	6	57	4.0	15	3.80
2112-4.0-20D	4.0	6	57	4.0	20	3.80
2112-5.0-15D	5.0	6	57	5.0	15	4.80
2112-5.0-20D	5.0	6	57	5.0	20	4.80



# 164-27

## Description

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting

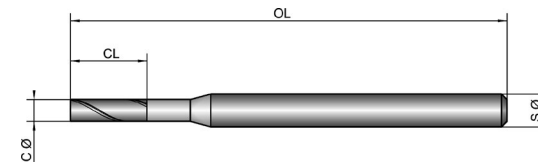


P	M	K	N	S	H
•		•	•		

# 164-27ST

## Description

- 2 Flute
- 30° Helix
- Stub flute length
- Centre cutting



P	M	K	N	S	H
•		•	•		

## Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
164-0002-27	0.2	3	38	0.6
164-0003-27	0.3	3	38	0.9
164-0004-27	0.4	3	38	1.2
164-0005-27	0.5	3	38	1.5
164-0006-27	0.6	3	38	1.8
164-0007-27	0.7	3	38	2.1
164-0008-27	0.8	3	38	2.4
164-0009-27	0.9	3	38	2.7
164-0010-27	1.0	3	38	3.0
164-0011-27	1.1	3	38	3.3
164-0012-27	1.2	3	38	3.6
164-0013-27	1.3	3	38	3.9
164-0014-27	1.4	3	38	4.2
164-0015-27	1.5	3	38	4.5
164-0016-27	1.6	3	38	4.8
164-0017-27	1.7	3	38	5.1
164-0018-27	1.8	3	38	5.4
164-0019-27	1.9	3	38	5.7
164-0020-27	2.0	3	38	6.0

## Metric Sizes (mm)

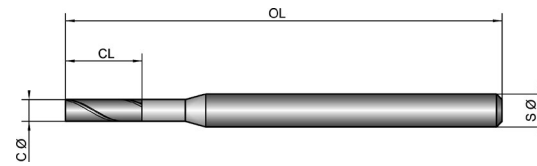
CATALOGUE NUMBER	CØ	SØ	OL	CL
164-0002-27ST	0.2	3	38	0.4
164-0003-27ST	0.3	3	38	0.6
164-0004-27ST	0.4	3	38	0.8
164-0005-27ST	0.5	3	38	1.0
164-0006-27ST	0.6	3	38	1.2
164-0007-27ST	0.7	3	38	1.4
164-0008-27ST	0.8	3	38	1.6
164-0009-27ST	0.9	3	38	1.8
164-0010-27ST	1.0	3	38	2.0
164-0011-27ST	1.1	3	38	2.2
164-0012-27ST	1.2	3	38	2.4
164-0013-27ST	1.3	3	38	2.6
164-0014-27ST	1.4	3	38	2.8
164-0015-27ST	1.5	3	38	3.0
164-0016-27ST	1.6	3	38	3.2
164-0017-27ST	1.7	3	38	3.4
164-0018-27ST	1.8	3	38	3.6
164-0019-27ST	1.9	3	38	3.8
164-0020-27ST	2.0	3	38	4.0



# 164-47

**Description**

- 4 Flute
- 30° Helix
- Standard length
- Centre cutting



P	M	K	N	S	H
•		•	•		

**Metric Sizes (mm)**

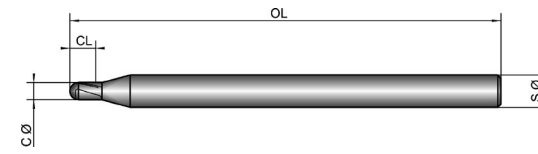
CATALOGUE NUMBER	CØ	SØ	OL	CL
164-0002-47	0.2	3	38	0.6
164-0003-47	0.3	3	38	0.9
164-0004-47	0.4	3	38	1.2
164-0005-47	0.5	3	38	1.5
164-0006-47	0.6	3	38	1.8
164-0007-47	0.7	3	38	2.1
164-0008-47	0.8	3	38	2.4
164-0009-47	0.9	3	38	2.7
164-0010-47	1.0	3	38	3.0
164-0011-47	1.1	3	38	3.3
164-0012-47	1.2	3	38	3.6
164-0013-47	1.3	3	38	3.9
164-0014-47	1.4	3	38	4.2
164-0015-47	1.5	3	38	4.5
164-0016-47	1.6	3	38	4.8
164-0017-47	1.7	3	38	5.1
164-0018-47	1.8	3	38	5.4
164-0019-47	1.9	3	38	5.7
164-0020-47	2.0	3	38	6.0



# 155-24

**Description**

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting



P	M	K	N	S	H
•		•	•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
155-0003-24	0.3	3	38	0.5
155-0004-24	0.4	3	38	0.6
155-0005-24	0.5	3	38	0.8
155-0006-24	0.6	3	38	0.9
155-0007-24	0.7	3	38	1.1
155-0008-24	0.8	3	38	1.2
155-0009-24	0.9	3	38	1.4
155-0010-24	1.0	3	38	1.5
155-0011-24	1.1	3	38	1.7
155-0012-24	1.2	3	38	1.8
155-0013-24	1.3	3	38	2.0
155-0014-24	1.4	3	38	2.1
155-0015-24	1.5	3	38	2.3
155-0016-24	1.6	3	38	2.4
155-0018-24	1.8	3	38	2.7
155-0020-24	2.0	3	38	3.0







ata Karnasch®

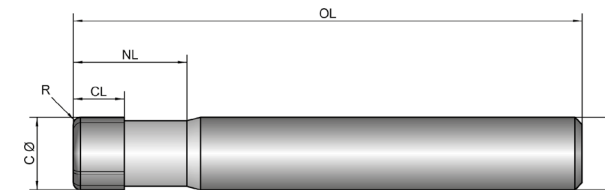
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www.itc-ltd.co.uk



# 2111



**Description**

- 2 Flute
- Long length
- Centre cutting
- Extended reach

P	M	K	N	S	H	CCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	R
2111-2.0	2*	6	75	2	10	0.2
2111-3.0	3	6	75	3	15	0.2
2111-4.0	4	6	75	4	20	0.2
2111-5.0	5	6	75	5	25	0.2
2111-6.0	6	6	100	8	30	0.2
2111-8.0	8	8	100	10	40	0.2
2111-10.0	10	10	100	12	45	0.2
2111-12.0	12	12	100	12	45	0.2
2111-16.0	16	16	150	16	50	0.2
2111-20.0	20	20	150	20	50	0.2

**Note:** tools marked \* are single flute

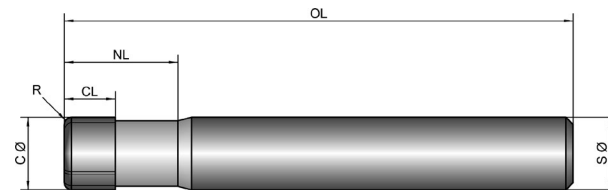
For Speeds & Feeds please see page 108



# 2111

### Description

- 2 Flute
- Long length
- Centre cutting
- Extended reach
- Corner radius



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

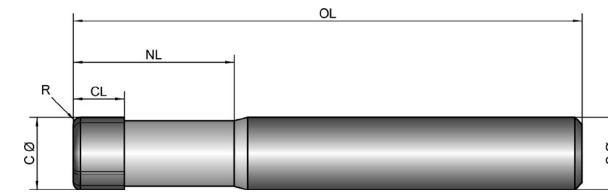
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	R
2111-5.0-0.5R	5	6	75	5	25	0.5
2111-5.0-1.0R	5	6	75	5	25	1.0
2111-6.0-0.3R	6	6	100	8	30	0.3
2111-6.0-0.5R	6	6	100	8	30	0.5
2111-6.0-1.0R	6	6	100	8	30	1.0
2111-8.0-0.5R	8	8	100	10	40	0.5
2111-8.0-1.0R	8	8	100	10	40	1.0
2111-8.0-2.0R	8	8	100	10	40	2.0
2111-10.0-0.5R	10	10	100	12	45	0.5
2111-10.0-1.0R	10	10	100	12	45	1.0
2111-10.0-2.0R	10	10	100	12	45	2.0
2111-10.0-3.0R	10	10	100	12	45	3.0
2111-12.0-0.5R	12	12	100	12	45	0.5
2111-12.0-1.0R	12	12	100	12	45	1.0
2111-12.0-2.0R	12	12	100	12	45	2.0
2111-12.0-3.0R	12	12	100	12	45	3.0
2111-12.0-4.0R	12	12	100	12	45	4.0
2111-16.0-0.5R	16	16	150	16	50	0.5
2111-16.0-1.0R	16	16	150	16	50	1.0
2111-16.0-2.0R	16	16	150	16	50	2.0
2111-16.0-3.0R	16	16	150	16	50	3.0
2111-16.0-4.0R	16	16	150	16	50	4.0
2111-16.0-5.0R	16	16	150	16	50	5.0
2111-20.0-0.5R	20	20	150	20	50	0.5
2111-20.0-1.0R	20	20	150	20	50	1.0
2111-20.0-2.0R	20	20	150	20	50	2.0
2111-20.0-3.0R	20	20	150	20	50	3.0
2111-20.0-4.0R	20	20	150	20	50	4.0
2111-20.0-5.0R	20	20	150	20	50	5.0
2111-20.0-6.0R	20	20	150	20	50	6.0

For Speeds & Feeds please see page 108

# 2151

### Description

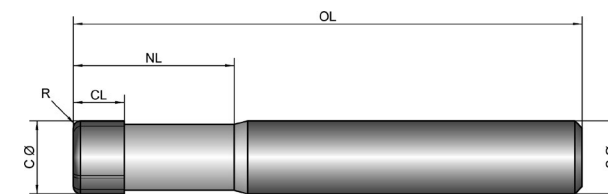
- 2 Flute
- Extra long length
- Centre cutting
- Extended reach



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	R
2151-8.0	8	8	150	10	40	0.2
2151-10.0	10	10	150	12	45	0.2
2151-12.0	12	12	150	12	45	0.2



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

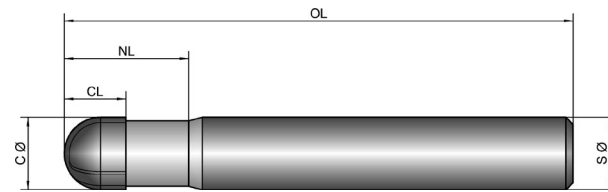
CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	R
2151-8.0-0.5R	8	8	150	10	40	0.5
2151-8.0-1.0R	8	8	150	10	40	1.0
2151-8.0-2.0R	8	8	150	12	40	2.0
2151-10.0-0.5R	10	10	150	12	45	0.5
2151-10.0-1.0R	10	10	150	12	45	1.0
2151-10.0-2.0R	10	10	150	12	45	2.0
2151-12.0-0.5R	12	12	150	12	45	0.5
2151-12.0-1.0R	12	12	150	12	45	1.0



# 2102

### Description

- 2 Flute
- Long length
- Centre cutting
- Extended reach



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
2102-2.0	2*	6	75	2	10
2102-3.0	3	6	75	3	15
2102-4.0	4	6	75	4	20
2102-5.0	5	6	75	5	25
2102-6.0	6	6	100	6	30
2102-8.0	8	8	100	8	40
2102-10.0	10	10	100	10	45
2102-12.0	12	12	100	12	45
2102-16.0	16	16	150	16	50
2102-20.0	20	20	150	20	50

**Note:** tools marked \* are single flute

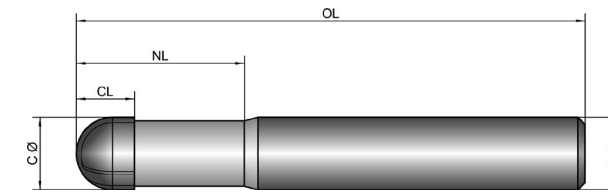


For Speeds & Feeds please see page 108

# 2132

### Description

- 2 Flute
- Extra long length
- Centre cutting
- Extended reach



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
2132-8.0	8	8	150	8	40
2132-10.0	10	10	150	10	45
2132-12.0	12	12	150	12	45

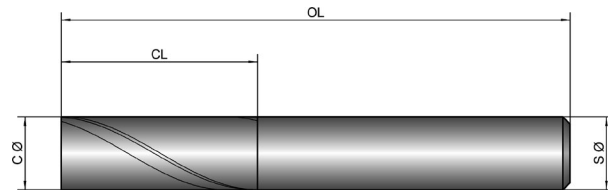
For Speeds & Feeds please see page 108



# 2301

### Description

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2301-3E	3	3	40	10
2301-4E	4	4	50	14
2301-5E	5	5	50	16
2301-6E	6	6	64	19
2301-8E	8	8	64	21
2301-10E	10	10	70	22

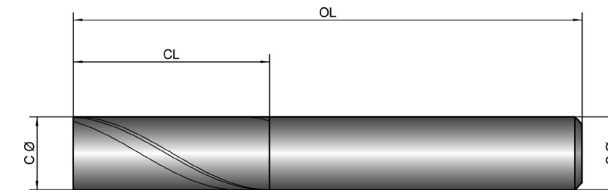


For Speeds & Feeds please see page 108

# 4121

### Description

- 4 Flute
- 30° Helix
- Standard length
- Centre cutting
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
4121-1E	1	3	40	3
4121-2E	2	3	40	7
4121-3E	3	3	40	10
4121-4E	4	4	50	14
4121-5E	5	5	50	16
4121-6E	6	6	64	19
4121-8E	8	8	64	21
4121-10E	10	10	70	22
4121-12E	12	12	76	25
4121-16E	16	16	89	32
4121-20E	20	20	100	40

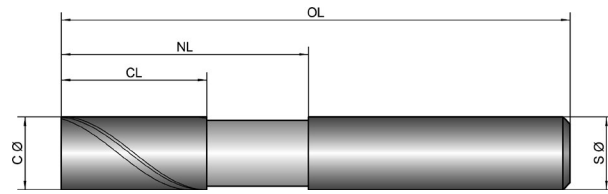


For Speeds & Feeds please see page 108

# 2071

**Description**

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
2071-1E	1	6	75	3	6
2071-2E	2	6	75	7	8
2071-3E	3	6	75	8	9
2071-4E	4	6	75	11	15
2071-5E	5	6	75	13	18
2071-6E	6	6	100	13	20
2071-8E	8	8	100	20	25
2071-10E	10	10	100	22	30
2071-12E	12	12	100	25	40

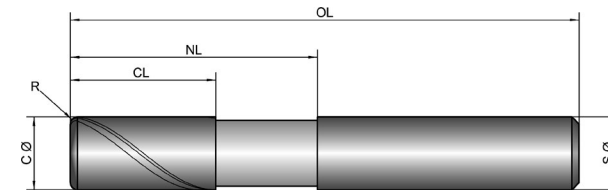


For Speeds & Feeds please see page 108

# 2071

**Description**

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Corner radius
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	R
2071-6E-0.25R	6	6	100	13	20	0.25
2071-6E-0.5R	6	6	100	13	20	0.5
2071-6E-0.75R	6	6	100	13	20	0.75
2071-6E-1.0R	6	6	100	13	20	1.0
2071-6E-2.0R	6	6	100	13	20	2.0
2071-8E-0.25R	8	8	100	20	25	0.25
2071-8E-0.5R	8	8	100	20	25	0.5
2071-8E-0.75R	8	8	100	20	25	0.75
2071-8E-1.0R	8	8	100	20	25	1.0
2071-8E-2.0R	8	8	100	20	25	2.0
2071-10E-0.25R	10	10	100	22	30	0.25
2071-10E-0.5R	10	10	100	22	30	0.5
2071-10E-0.75R	10	10	100	22	30	0.75
2071-10E-1.0R	10	10	100	22	30	1.0
2071-10E-1.5R	10	10	100	22	30	1.5
2071-10E-2.0R	10	10	100	22	30	2.0
2071-10E-3.0R	10	10	100	22	30	3.0
2071-12E-0.25R	12	12	100	25	40	0.25
2071-12E-0.5R	12	12	100	25	40	0.5
2071-12E-0.75R	12	12	100	25	40	0.75
2071-12E-1.0R	12	12	100	25	40	1.0
2071-12E-1.5R	12	12	100	25	40	1.5
2071-12E-2.0R	12	12	100	25	40	2.0
2071-12E-3.0R	12	12	100	25	40	3.0

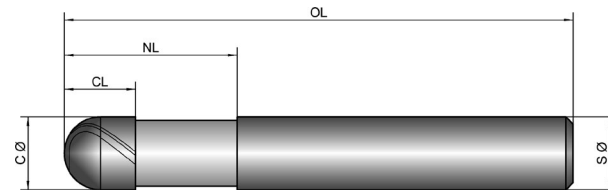


For Speeds & Feeds please see page 108

# 2072

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
2072-1E	1	6	75	2	4
2072-2E	2	6	75	4	8
2072-3E	3	6	75	5	9
2072-4E	4	6	75	6	15
2072-5E	5	6	75	7	18
2072-6E	6	6	100	8	20
2072-8E	8	8	100	10	25
2072-10E	10	10	100	12	30
2072-12E	12	12	100	16	40

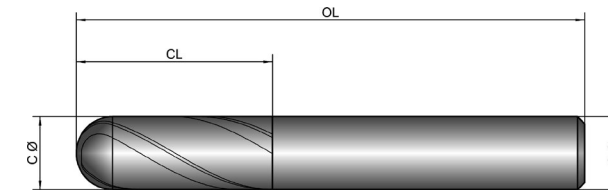
For Speeds & Feeds please see page 108



# 2302

### Description

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
2302-3E	3	3	40	10
2302-4E	4	4	50	14
2302-5E	5	5	50	16
2302-6E	6	6	64	19
2302-8E	8	8	64	21
2302-10E	10	10	70	22

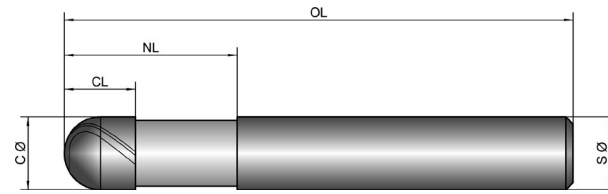
For Speeds & Feeds please see page 108



# 4072

**Description**

- 4 Flute
- 30° Helix
- Long length
- Centre cutting
- Extended reach
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL
4072-1E	1	3	75	2	4
4072-2E	2	3	75	4	8
4072-3E	3	3	75	5	9
4072-4E	4	4	75	6	15
4072-5E	5	5	75	7	18
4072-6E	6	6	100	8	20
4072-8E	8	8	100	10	25
4072-10E	10	10	100	12	30
4072-12E	12	12	100	16	40

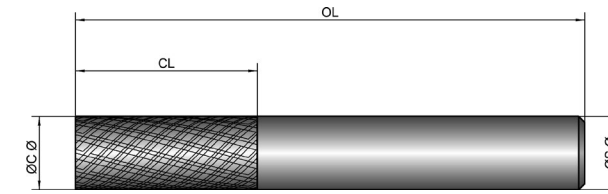


For Speeds & Feeds please see page 108

# 9001

**Description**

- Multi-flute
- Long length
- Centre cutting



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

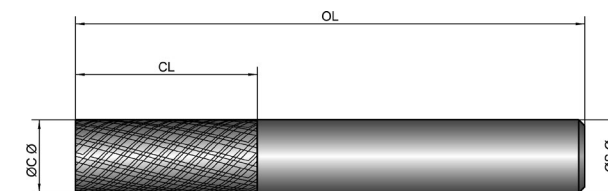
CATALOGUE NUMBER	CØ	SØ	OL	CL
9001-3	3	3	64	20
9001-6	6	6	75	28
9001-8	8	8	75	28
9001-10	10	10	100	40
9001-12	12	12	100	40



# 9001-E

**Description**

- Multi-flute
- Long length
- Centre cutting
- Diamond coated



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
9001-3E	3	3	64	20
9001-6E	6	6	75	28
9001-8E	8	8	75	28
9001-10E	10	10	100	40
9001-12E	12	12	100	40

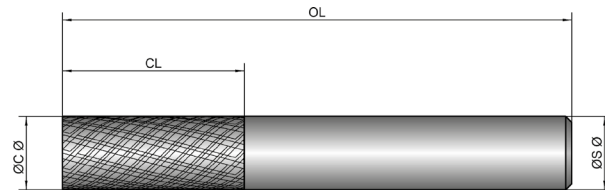


For Speeds & Feeds please see page 108

# 190

**Description**

- Multi-flute
- Standard length
- Various end cuts



P	M	K	N	S	H	GCF
			•			•

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	CL	SØ	OL
190-1181-10	3	12.5	3	38
190-1181-20	3	12.5	3	38
190-1181-30	3	12.5	3	38
190-1575-10	4	16	4	50
190-1575-20	4	16	4	50
190-1575-30	4	16	4	50
190-1969-10	5	16	5	50
190-1969-20	5	16	5	50
190-1969-30	5	16	5	50
190-2362-10	6	19	6	50
190-2362-20	6	19	6	50
190-2362-30	6	19	6	75
190-2362-30-S	6	19	6	50
190-3150-10	8	22	8	64
190-3150-20	8	22	8	64
190-3150-30	8	22	8	64
190-3937-10	10	25	10	75
190-3937-20	10	25	10	75
190-3937-30	10	25	10	75
190-4724-10	12	25	12	75
190-4724-20	12	25	12	75
190-4724-30	12	25	12	75



Burr End Cut -20

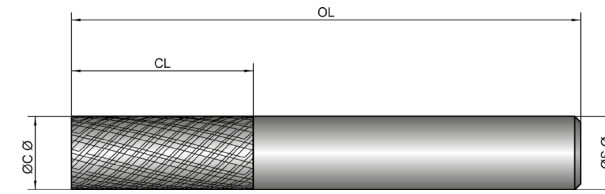
-10	=	No End Cut
-20	=	Burr End Cut
-30	=	End Mill End Cut

For Speeds & Feeds please see page 108

# 190

**Description**

- Multi-flute
- Standard length
- Various end cuts



P	M	K	N	S	H	GCF
			•			•

**Imperial Sizes (inches)**

CATALOGUE NUMBER	CØ	CL	SØ	OL
190-1215-10	1/16	3/16	1/8	1-1/2
190-1215-20	1/16	3/16	1/8	1-1/2
190-1215-30	1/16	3/16	1/8	1-1/2
190-2345-10	1/8	1/2	1/8	1-1/2
190-2345-20	1/8	1/2	1/8	1-1/2
190-2345-30	1/8	1/2	1/8	1-1/2
190-3445-10	3/16	5/8	3/16	2
190-3445-20	3/16	5/8	3/16	2
190-3445-30	3/16	5/8	3/16	2
190-4445-10	3/16	5/8	1/4	2
190-4445-20	3/16	5/8	1/4	2
190-4445-30	3/16	5/8	1/4	2
190-6555-10	1/4	3/4	1/4	2-1/2
190-6555-20	1/4	3/4	1/4	2-1/2
190-6555-30	1/4	3/4	1/4	2-1/2



For Speeds & Feeds please see page 108



**2011**

**PCD Series**

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER						
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm
Graphite	<800	0.015	0.020	0.025	0.030	0.040	0.050	0.060
Carbon Fibre	<300	0.015	0.020	0.025	0.030	0.040	0.050	0.060

**Diamond Coated End Mills**

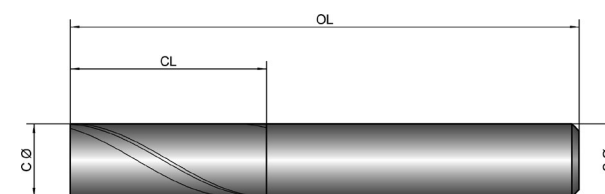
MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER						
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm
Graphite	<750	0.015	0.020	0.025	0.030	0.040	0.050	0.060

**9001 Series**

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER						
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm
Graphite	<450	0.015	0.020	0.025	0.030	0.040	0.050	0.060
Carbon Fibre	<300	0.013	0.015	0.018	0.022	0.030	0.040	0.050

**190 Series**

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Rev) END MILL DIAMETER						
	Metres/Min	3mm	4mm	5mm	6mm	8mm	10mm	12mm
Class Fibre	<120	0.045	0.060	0.075	0.090	0.140	0.175	0.200



**Description**

- 2 Flute
- 30° Helix
- Standard length
- Centre cutting
- AlTiN coated

P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
2011-1.0C	1	3	38	3
2011-1.5C	1.5	3	38	5
2011-2.0C	2	3	38	7
2011-2.5C	2.5	3	38	7
2011-3.0C	3	3	38	9
2011-3.5C	3.5	4	51	12
2011-4.0C	4	4	51	14
2011-4.5C	4.5	5	51	14
2011-5.0C	5	5	51	16
2011-6.0C	6	6	64	19
2011-7.0C	7	8	64	19
2011-8.0C	8	8	64	21
2011-9.0C	9	10	70	22
2011-10.0C	10	10	70	22
2011-12.0C	12	12	76	25
2011-16.0C	16	16	89	32
2011-20.0C	20	20	102	38

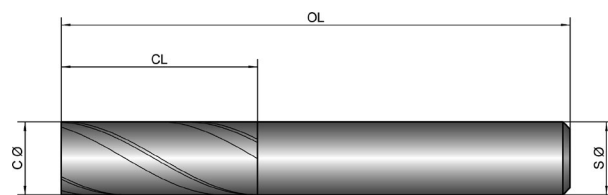
For Speeds & Feeds please see page 120



# 3031

### Description

- 3 Flute
- Centre cutting
- Standard length
- AlTiN coated



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
3031-2.0C	2	6	53	6
3031-2.5C	2.5	6	53	6
3031-3.0C	3	6	57	7
3031-3.5C	3.5	6	57	7
3031-4.0C	4	6	57	8
3031-4.5C	4.5	6	57	8
3031-5.0C	5	6	57	10
3031-5.5C	5.5	6	57	10
3031-6.0C	6	6	57	10
3031-7.0C	7	8	63	13
3031-8.0C	8	8	63	16
3031-10.0C	10	10	72	19
3031-12.0C	12	12	83	22
3031-16.0C	16	16	92	26
3031-20.0C	20	20	104	32

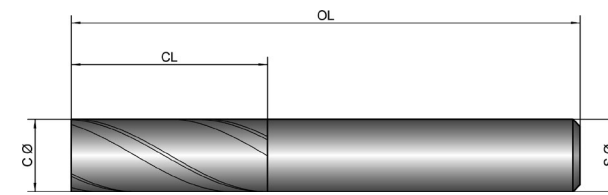


For Speeds & Feeds please see page 120

# 4061

### Description

- 4 Flute
- Centre cutting
- 30° Helix
- AlTiN coated
- Standard length



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
4061-2.0C	2	6	53	7
4061-2.5C	2.5	6	53	7
4061-3.0C	3	6	55	8
4061-3.5C	3.5	6	55	10
4061-4.0C	4	6	55	11
4061-4.5C	4.5	6	55	11
4061-5.0C	5	6	55	13
4061-5.5C	5.5	6	55	13
4061-6.0C	6	6	58	13
4061-8.0C	8	8	64	19
4061-10.0C	10	10	72	22
4061-12.0C	12	12	84	26
4061-16.0C	16	16	92	32
4061-20.0C	20	20	105	38

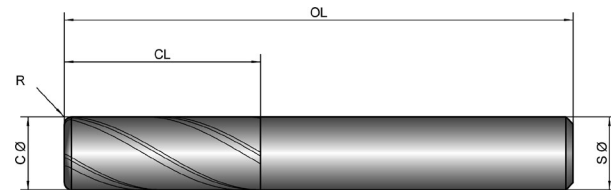


For Speeds & Feeds please see page 120

# 4061

### Description

- 4 Flute
- 30° Helix
- Standard length
- Centre cutting
- Corner radius
- AlTiN coated



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
4061-3.0C-0.25R	3	6	55	8	0.25
4061-3.0C-0.5R	3	6	55	8	0.5
4061-3.0C-0.75R	3	6	55	8	0.75
4061-3.0C-1.0R	3	6	55	8	1.0
4061-4.0C-0.25R	4	6	55	11	0.25
4061-4.0C-0.5R	4	6	55	11	0.5
4061-4.0C-0.75R	4	6	55	11	0.75
4061-4.0C-1.0R	4	6	55	11	1.0
4061-5.0C-0.25R	5	6	55	13	0.25
4061-5.0C-0.5R	5	6	55	13	0.5
4061-5.0C-0.75R	5	6	55	13	0.75
4061-5.0C-1.0R	5	6	55	13	1.0
4061-6.0C-0.25R	6	6	58	13	0.25
4061-6.0C-0.5R	6	6	58	13	0.5
4061-6.0C-0.75R	6	6	58	13	0.75
4061-6.0C-1.0R	6	6	58	13	1.0
4061-6.0C-1.25R	6	6	58	13	1.25
4061-6.0C-1.5R	6	6	58	13	1.5
4061-6.0C-2.0R	6	6	58	13	2.0
4061-8.0C-0.25R	8	8	64	19	0.25
4061-8.0C-0.5R	8	8	64	19	0.5
4061-8.0C-0.75R	8	8	64	19	0.75
4061-8.0C-1.0R	8	8	64	19	1.0
4061-8.0C-1.25R	8	8	64	19	1.25
4061-8.0C-1.5R	8	8	64	19	1.5
4061-8.0C-2.0R	8	8	64	19	2.0
4061-8.0C-2.5R	8	8	64	19	2.5
4061-8.0C-3.0R	8	8	64	19	3.0
4061-10.0C-0.25R	10	10	72	22	0.25
4061-10.0C-0.5R	10	10	72	22	0.5
4061-10.0C-0.75R	10	10	72	22	0.75
4061-10.0C-1.0R	10	10	72	22	1.0
4061-10.0C-1.25R	10	10	72	22	1.25
4061-10.0C-1.5R	10	10	72	22	1.5
4061-10.0C-2.0R	10	10	72	22	2.0

For Speeds & Feeds please see page 120



# 4061

CATALOGUE NUMBER	CØ	SØ	OL	CL	R
4061-10.0C-2.5R	10	10	72	22	2.5
4061-10.0C-3.0R	10	10	72	22	3.0
4061-12.0C-0.25R	12	12	84	26	0.25
4061-12.0C-0.5R	12	12	84	26	0.5
4061-12.0C-0.75R	12	12	84	26	0.75
4061-12.0C-1.0R	12	12	84	26	1.0
4061-12.0C-1.25R	12	12	84	26	1.25
4061-12.0C-1.5R	12	12	84	26	1.5
4061-12.0C-2.0R	12	12	84	26	2.0
4061-12.0C-2.5R	12	12	84	26	2.5
4061-12.0C-3.0R	12	12	84	26	3.0
4061-16.0C-0.25R	16	16	92	32	0.25
4061-16.0C-0.5R	16	16	92	32	0.5
4061-16.0C-0.75R	16	16	92	32	0.75
4061-16.0C-1.0R	16	16	92	32	1.0
4061-16.0C-1.25R	16	16	92	32	1.25
4061-16.0C-1.5R	16	16	92	32	1.5
4061-16.0C-2.0R	16	16	92	32	2.0
4061-16.0C-2.5R	16	16	92	32	2.5
4061-16.0C-3.0R	16	16	92	32	3.0
4061-16.0C-4.0R	16	16	92	32	4.0
4061-20.0C-0.25R	20	20	105	38	0.25
4061-20.0C-0.5R	20	20	105	38	0.5
4061-20.0C-0.75R	20	20	105	38	0.75
4061-20.0C-1.0R	20	20	105	38	1.0
4061-20.0C-1.25R	20	20	105	38	1.25
4061-20.0C-1.5R	20	20	105	38	1.5
4061-20.0C-2.0R	20	20	105	38	2.0
4061-20.0C-2.5R	20	20	105	38	2.5
4061-20.0C-3.0R	20	20	105	38	3.0
4061-20.0C-4.0R	20	20	105	38	4.0

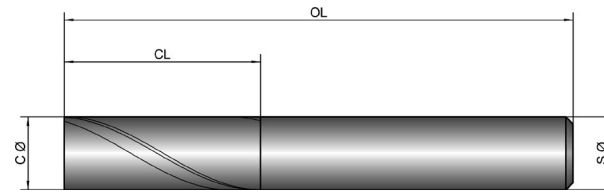
For Speeds & Feeds please see page 120



# 2621

**Description**

- 2 Flute
- 30° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

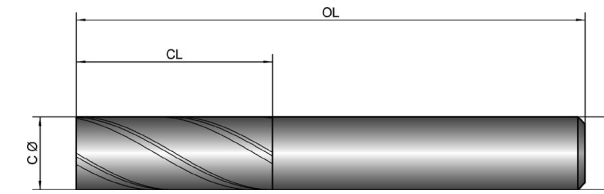
CATALOGUE NUMBER	CØ	SØ	OL	CL
2621-3	3	3	64	19
2621-4	4	4	64	19
2621-5	5	5	64	20
2621-6	6	6	75	28
2621-8	8	8	75	28
2621-10	10	10	89	32
2621-12	12	12	100	45
2621-16	16	16	125	60



# 4621

**Description**

- 4 Flute
- 30° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

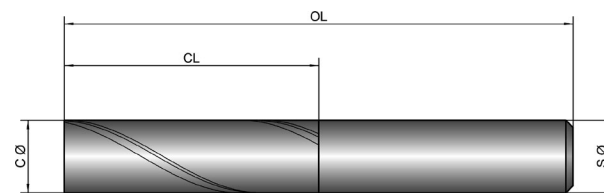
CATALOGUE NUMBER	CØ	SØ	OL	CL
4621-3	3	3	64	19
4621-4	4	4	64	19
4621-5	5	5	64	20
4621-6	6	6	75	28
4621-8	8	8	75	28
4621-10	10	10	89	32
4621-12	12	12	100	45
4621-16	16	16	110	56



# 2631

**Description**

- 2 Flute
- 30° Helix
- Extra long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

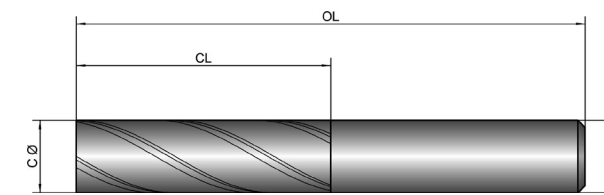
CATALOGUE NUMBER	CØ	SØ	OL	CL
2631-3	3	3	75	25
2631-4	4	4	75	28
2631-5	5	5	100	31
2631-6	6	6	100	38
2631-6-XLS	6	6	80	45
2631-8	8	8	100	41
2631-10	10	10	100	45
2631-12	12	12	150	75
2631-16	16	16	150	75



# 4631

**Description**

- 4 Flute
- 30° Helix
- Extra long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

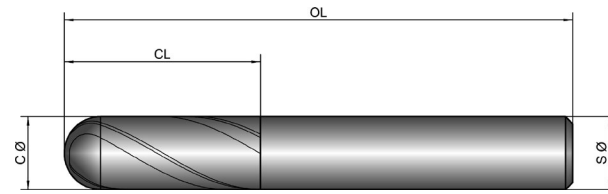
CATALOGUE NUMBER	CØ	SØ	OL	CL
4631-3	3	3	75	25
4631-4	4	4	75	28
4631-5	5	5	100	31
4631-6	6	6	100	38
4631-8	8	8	100	41
4631-10	10	10	100	45
4631-12	12	12	150	75
4631-16	16	16	150	75



# 2662

### Description

- 2 Flute
- 30° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

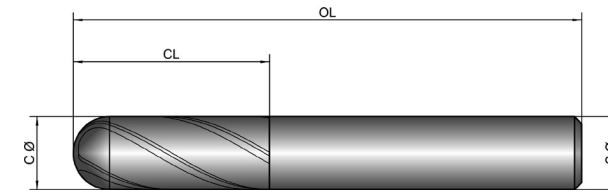
CATALOGUE NUMBER	CØ	SØ	OL	CL
2662-3	3	3	55	19
2662-4	4	4	64	19
2662-5	5	5	64	20
2662-6	6	6	75	28
2662-8	8	8	75	28
2662-10	10	10	89	32
2662-12	12	12	100	45
2662-16	16	16	110	56



# 4662

### Description

- 4 Flute
- 30° Helix
- Long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

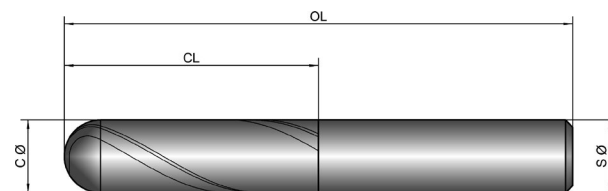
CATALOGUE NUMBER	CØ	SØ	OL	CL
4662-3	3	3	64	19
4662-4	4	4	64	19
4662-5	5	5	64	20
4662-6	6	6	75	28
4662-8	8	8	75	28
4662-10	10	10	89	32
4662-12	12	12	100	45
4662-16	16	16	110	56



# 2632

### Description

- 2 Flute
- 30° Helix
- Extra long length
- Centre cutting



P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

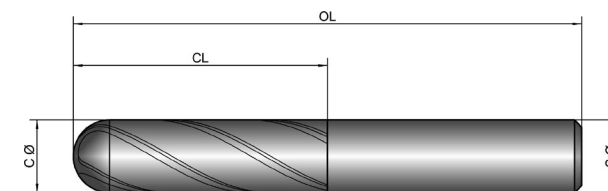
CATALOGUE NUMBER	CØ	SØ	OL	CL
2632-3	3	3	75	25
2632-4	4	4	75	31
2632-5	5	5	100	31
2632-6	6	6	100	38
2632-8	8	8	100	41
2632-10	10	10	100	45
2632-12	12	12	150	75
2632-16	16	16	150	75



# 4632

### Description

- 4 Flute
- 30° Helix
- Extra long length
- Centre cutting



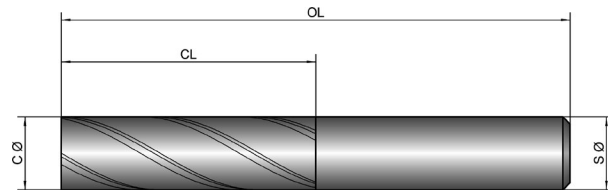
P	M	K	N	S	H
•	•	•			

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
4632-3	3	3	75	25
4632-4	4	4	75	28
4632-5	5	5	100	31
4632-6	6	6	100	38
4632-8	8	8	100	41
4632-10	10	10	100	45
4632-12	12	12	150	75
4632-16	16	16	150	75



# 2121



**Description**

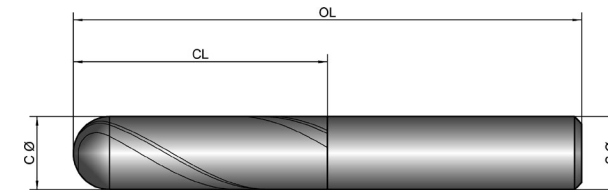
- 2 Flute
- 30° Helix
- Extra long length
- Centre cutting

P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
2121-6	6	6	150	38
2121-8	8	8	150	40
2121-10	10	10	200	50
2121-12	12	12	200	75
2121-16	16	16	200	75
2121-20	20	20	200	75

# 2122



**Description**

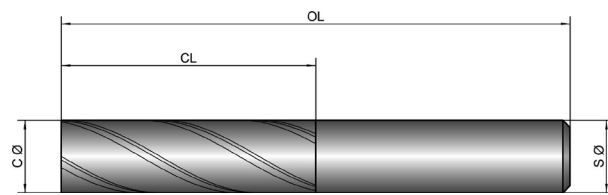
- 2 Flute
- 30° Helix
- Extra long length
- Centre cutting

P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
2122-6	6	6	150	38
2122-8	8	8	150	40
2122-10	10	10	200	50
2122-12	12	12	200	75
2122-16	16	16	200	75
2122-20	20	20	200	75

# 4001



**Description**

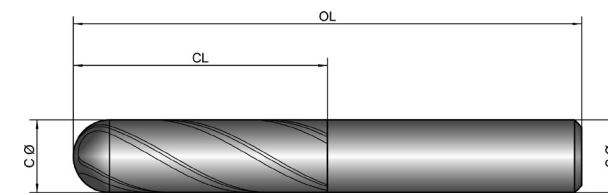
- 4 Flute
- 30° Helix
- Extra long length
- Centre cutting

P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
4001-6	6	6	150	38
4001-8	8	8	150	40
4001-10	10	10	200	50
4001-12	12	12	200	75
4001-16	16	16	200	75
4001-20	20	20	200	75

# 4002



**Description**

- 4 Flute
- 30° Helix
- Extra long length
- Centre cutting

P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
4002-6	6	6	150	38
4002-8	8	8	150	40
4002-10	10	10	200	50
4002-12	12	12	200	75
4002-16	16	16	200	75
4002-20	20	20	200	75



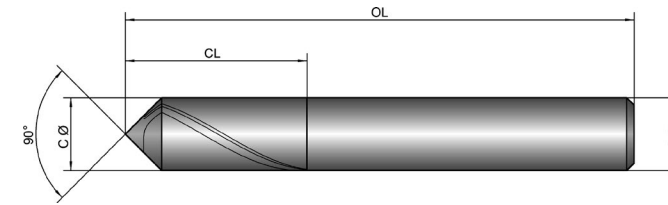
**Coated**

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER									
	m/min	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	
Low Carbon Steels	100-240	0.02	0.03	0.03	0.05	0.05	0.06	0.07	0.08	0.10	
Medium Carbon Steels	60-100	0.01	0.02	0.04	0.04	0.04	0.05	0.05	0.06	0.08	
Tool Steel	30-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.08	
Stainless Steel Soft (300 series)	60-120	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	
Stainless Steel Hard (400 series)	90-180	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.07	
Cast Iron (Soft) 120-220 Bhn	100-225	0.03	0.03	0.04	0.05	0.06	0.07	0.07	0.08	0.09	
Cast Iron (Hard) 220-320 Bhn	60-120	0.02	0.03	0.03	0.04	0.05	0.05	0.05	0.06	0.08	
Aluminium Low <8% Silicon	-	0.02	0.03	0.04	0.06	0.07	0.10	0.15	0.15	0.20	
Aluminium High >8% Silicon	200-600	0.02	0.02	0.03	0.05	0.06	0.10	0.10	0.10	0.15	
Brass and Bronze	80-365	0.02	0.02	0.03	0.04	0.05	0.07	0.08	0.09	0.10	
Copper and Copper Alloys	130-330	0.03	0.04	0.04	0.05	0.06	0.07	0.09	0.09	0.10	
Magnesium and Magnesium Alloys	-	-	-	-	-	-	-	-	-	-	
Plastics	-	-	-	-	-	-	-	-	-	-	
Plastics - Class Filled	-	-	-	-	-	-	-	-	-	-	
Titanium (Soft) 110-275 Bhn	60-105	0.01	0.02	0.02	0.04	0.04	0.05	0.05	0.06	0.06	
Titanium (Hard) 300-440 Bhn	30-60	0.01	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.07	
Monel/High Nickel Steels	60-80	0.01	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.08	
Hi-Temperature Alloys	15-35	0.01	0.02	0.02	0.02	0.03	0.04	0.04	0.05	0.06	
Hardened Steels	30-60	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	

**Uncoated**

MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Z) END MILL DIAMETER									
	m/min	3mm	4mm	5mm	6mm	8mm	10mm	12mm	16mm	20mm	
Low Carbon Steels	70-125	0.013	0.017	0.020	0.025	0.040	0.060	0.075	0.100	0.150	
Medium Carbon Steels	35-90	0.015	0.020	0.030	0.040	0.043	0.047	0.050	0.075	0.100	
Tool Steel	-	-	-	-	-	-	-	-	-	-	
Stainless Steel Soft (300 series)	60-125	0.013	0.017	0.020	0.025	0.035	0.040	0.050	0.075	0.100	
Stainless Steel Hard (400 series)	18-80	0.005	0.007	0.010	0.013	0.017	0.020	0.025	0.050	0.075	
Cast Iron (Soft) 120-220 Bhn	70-180	0.025	0.030	0.040	0.050	0.060	0.070	0.075	0.120	0.150	
Cast Iron (Hard) 220-320 Bhn	30-90	0.010	0.014	0.017	0.020	0.050	0.040	0.050	0.060	0.075	
Aluminium Low <8% Silicon	maxavail.	0.013	0.025	0.035	0.050	0.070	0.080	0.100	0.120	0.150	
Aluminium High >8% Silicon	200-400	0.013	0.025	0.030	0.040	0.060	0.070	0.080	0.100	0.120	
Brass and Bronze	70-120	0.025	0.030	0.040	0.050	0.060	0.070	0.075	0.090	0.100	
Copper and Copper Alloys	120-250	0.025	0.030	0.040	0.050	0.060	0.070	0.075	0.090	0.100	
Magnesium and Magnesium Alloys	300-460	0.025	0.030	0.040	0.050	0.070	0.080	0.100	0.130	0.150	
Plastics	240-490	0.038	0.050	0.070	0.080	0.110	0.130	0.150	0.200	0.250	
Plastics - Class Filled	100-185	0.038	0.045	0.055	0.076	0.090	0.095	0.100	0.130	0.150	
Titanium (Soft) 110-275 Bhn	15-125	0.013	0.017	0.020	0.025	0.030	0.040	0.050	0.075	0.100	
Titanium (Hard) 300-440 Bhn	15-60	0.007	0.010	0.012	0.015	0.020	0.022	0.025	0.035	0.050	
Monel/High Nickel Steels	45-75	0.013	0.017	0.020	0.025	0.031	0.040	0.050	0.060	0.076	
Hi-Temperature Alloys	8-30	0.010	0.014	0.017	0.020	0.022	0.023	0.025	0.030	0.035	
Hardened Steels	-	-	-	-	-	-	-	-	-	-	

**2141**



**Description**

- 2 Flute
- Standard length
- Centre cutting
- 90° Inclusive angle

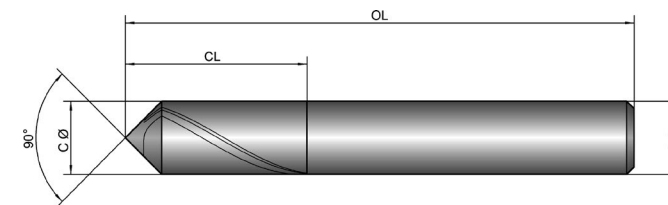
P	M	K	N	S	H
•	•	•	•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	CØ	SØ	OL	CL
2141-3-90	3	3	38	8
2141-4-90	4	4	50	11
2141-5-90	5	6	58	13
2141-6-90	6	6	58	16
2141-8-90	8	8	64	22
2141-10-90	10	10	70	25
2141-12-90	12	12	84	30
2141-16-90	16	16	89	35
2141-20-90	20	20	100	45



**2141-F**



**Description**

- 2 Flute
- Standard length
- Centre cutting
- 90° Inclusive angle
- Cupro coated

P	M	K	N	S	H
•	•	•	•	•	•

**Metric Sizes (mm)**

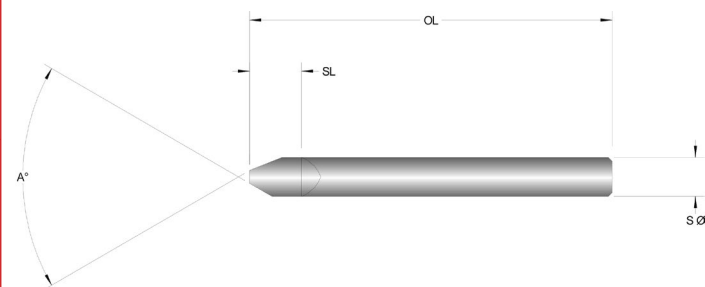
CATALOGUE NUMBER	CØ	SØ	OL	CL
2141-3F-90	3	3	38	8
2141-4F-90	4	4	50	11
2141-5F-90	5	6	58	13
2141-6F-90	6	6	58	16
2141-8F-90	8	8	64	22
2141-10F-90	10	10	70	25
2141-12F-90	12	12	84	30
2141-16F-90	16	16	89	35
2141-20F-90	20	20	100	45



# ENG

## Description

- Single flute
- Standard length
- Various included angles



P	M	K	N	S	H
•	•	•	•	•	•

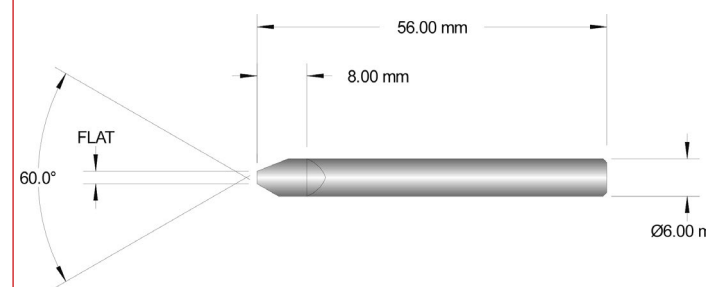
## Metric Sizes (mm)

CATALOGUE NUMBER	A°	SØ	OL	SL
ENG-3.0-30	30°	3	38	5
ENG-6.0-30	30°	6	57	8
ENG-3.0-60	60°	3	38	5
ENG-6.0-60	60°	6	57	8
ENG-3.0-90	90°	3	38	5
ENG-6.0-90	90°	6	57	8

# ENG

## Description

- Single flute
- Standard length
- Various flat sizes



P	M	K	N	S	H
•	•	•	•	•	•

## Metric Sizes (mm)

CATALOGUE NUMBER	A°	SØ	OL	SL	FLAT
ENG-6.0-60-0.25	60°	6	56	8	0.25
ENG-6.0-60-0.50	60°	6	56	8	0.50
ENG-6.0-60-0.75	60°	6	56	8	0.75
ENG-6.0-60-1.0	60°	6	56	8	1.0
ENG-6.0-60-1.25	60°	6	56	8	1.25
ENG-6.0-60-1.5	60°	6	56	8	1.5
ENG-6.0-60-2.0	60°	6	56	8	2.0

These tools can be modified if you require a different size of flat to standards offered. Call our sales office on 01827 304500 to arrange.

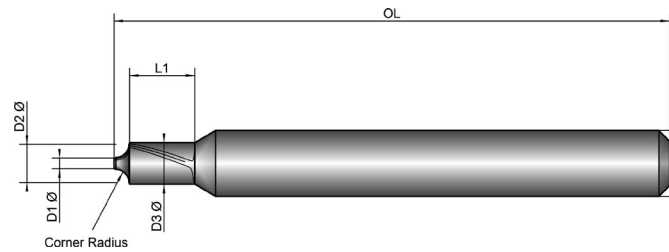
**For Speeds & Feeds please see page 138**

**For Speeds & Feeds please see page 138**

# 2171

### Description

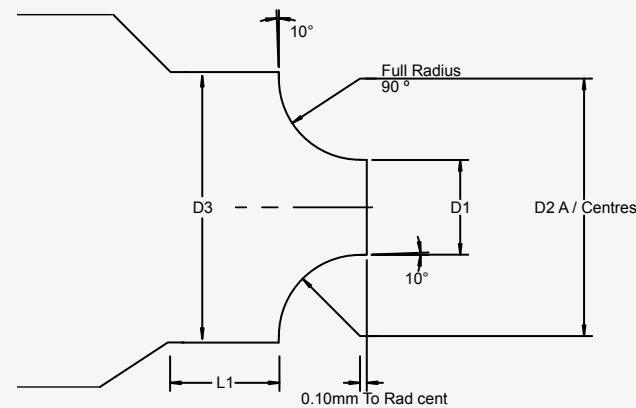
- 2 Flute
- Standard length
- Internal corner radius



P	M	K	N	S	H
•	•	•	•		

### Metric Sizes (mm)

CATALOGUE NUMBER	SØ	OL	L1	D1	D2	D3	CORNER RADIUS
2171-3-0.2R	3	38	2.5	0.6	1.035	1.2	0.2
2171-3-0.25R	3	38	2.5	0.5	1.035	1.2	0.25
2171-3-0.3R	3	38	2.5	0.5	1.135	1.3	0.3
2171-3-0.4R	3	38	2.5	0.5	1.335	1.5	0.4
2171-3-0.5R	3	38	2.5	0.5	1.535	1.7	0.5
2171-3-0.6R	3	38	3.0	0.5	1.735	1.9	0.6
2171-3-0.7R	3	38	3.0	0.5	1.935	2.1	0.7
2171-3-0.75R	3	38	3.0	0.5	2.035	2.2	0.75
2171-3-0.8R	3	38	4.0	0.8	2.435	2.6	0.8
2171-3-0.9R	3	38	4.0	0.8	2.635	2.8	0.9
2171-3-1.0R	3	38	N/A	0.8	2.835	3.0	1.0

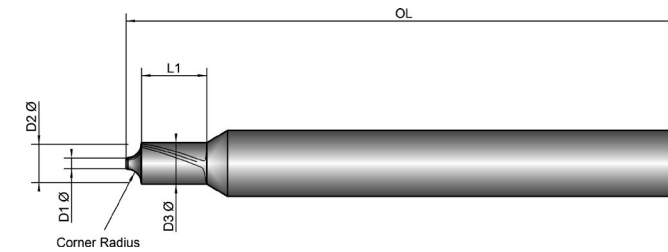


For Speeds & Feeds please see page 138

# 2171-F

### Description

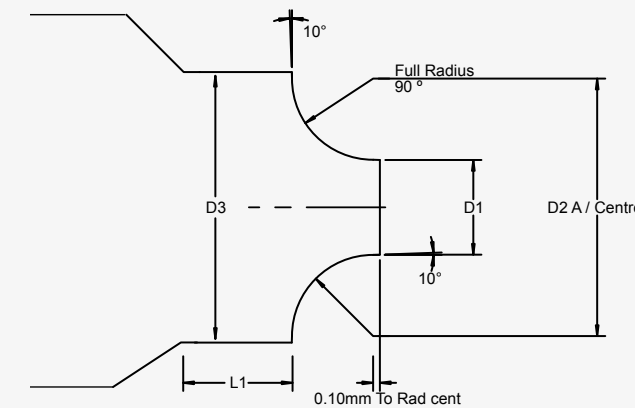
- 2 Flute
- Standard length
- Internal corner radius
- Cupro coated



P	M	K	N	S	H
•	•	•		•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	SØ	OL	L1	D1	D2	D3	CORNER RADIUS
2171-3F-0.2R	3	38	2.5	0.6	1.035	1.2	0.2
2171-3F-0.25R	3	38	2.5	0.5	1.035	1.2	0.25
2171-3F-0.3R	3	38	2.5	0.5	1.135	1.3	0.3
2171-3F-0.4R	3	38	2.5	0.5	1.335	1.5	0.4
2171-3F-0.5R	3	38	2.5	0.5	1.535	1.7	0.5
2171-3F-0.6R	3	38	3.0	0.5	1.735	1.9	0.6
2171-3F-0.7R	3	38	3.0	0.5	1.935	2.1	0.7
2171-3F-0.75R	3	38	3.0	0.5	2.035	2.2	0.75
2171-3F-0.8R	3	38	4.0	0.8	2.435	2.6	0.8
2171-3F-0.9R	3	38	4.0	0.8	2.635	2.8	0.9
2171-3F-1.0R	3	38	N/A	0.8	2.835	3.0	1.0

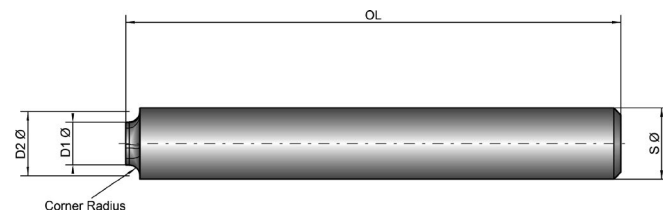


For Speeds & Feeds please see page 138

# 4011

**Description**

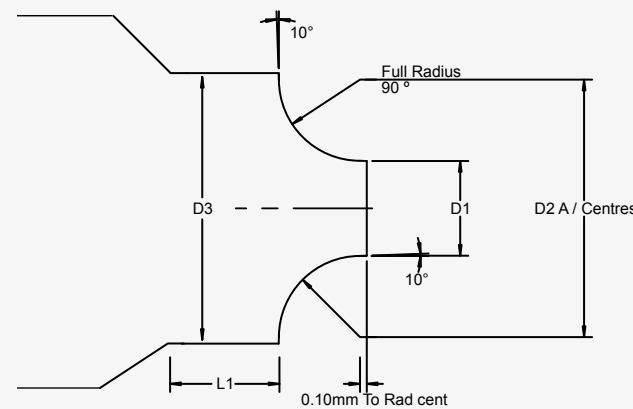
- 4 Flute
- Standard length
- Internal corner radius



P	M	K	N	S	H
•	•	•	•		

**Metric Sizes (mm)**

CATALOGUE NUMBER	SØ	OL	D1	D2	CORNER RADIUS
4011-8-0.5R	8	64	6.00	7.035	0.5
4011-8-1.0R	8	64	5.00	7.035	1.0
4011-10-1.5R	10	70	6.00	9.035	1.5
4011-10-2.0R	10	70	5.00	9.035	2.0
4011-12-2.5R	12	76	6.00	11.035	2.5
4011-12-3.0R	12	76	5.00	11.035	3.0
4011-16-3.5R	16	89	8.00	15.035	3.5
4011-16-4.0R	16	89	7.00	15.035	4.0
4011-16-4.5R	16	89	6.00	15.035	4.5
4011-16-5.0R	16	89	5.00	15.035	5.0
4011-20-5.5R	20	100	8.00	19.035	5.5
4011-20-6.0R	20	100	7.00	19.035	6.0

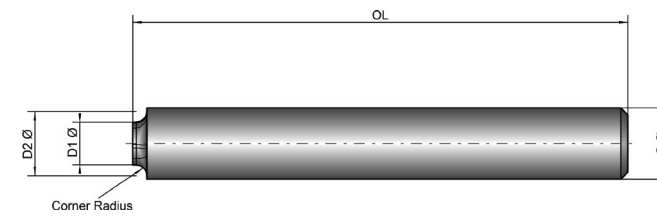


For Speeds & Feeds please see page 138

# 4011-F

**Description**

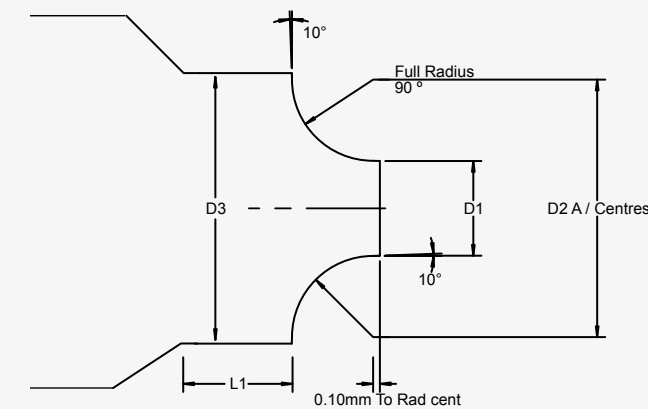
- 4 Flute
- Standard length
- Internal corner radius
- Cupro coated



P	M	K	N	S	H
•	•	•		•	•

**Metric Sizes (mm)**

CATALOGUE NUMBER	SØ	OL	D1	D2	CORNER RADIUS
4011-8F-0.5R	8	64	6.00	7.035	0.5
4011-8F-1.0R	8	64	5.00	7.035	1.0
4011-10F-1.5R	10	70	6.00	9.035	1.5
4011-10F-2.0R	10	70	5.00	9.035	2.0
4011-12F-2.5R	12	76	6.00	11.035	2.5
4011-12F-3.0R	12	76	5.00	11.035	3.0
4011-16F-3.5R	16	89	8.00	15.035	3.5
4011-16F-4.0R	16	89	7.00	15.035	4.0
4011-16F-4.5R	16	89	6.00	15.035	4.5
4011-16F-5.0R	16	89	5.00	15.035	5.0
4011-20F-5.5R	20	100	8.00	19.035	5.5
4011-20F-6.0R	20	100	7.00	19.035	6.0

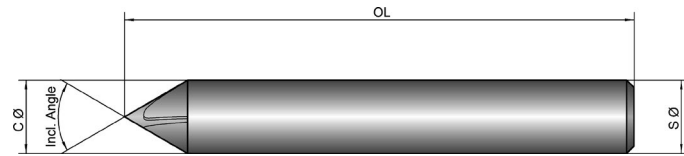


For Speeds & Feeds please see page 138

# 4071

### Description

- 4 Flute
- Standard length
- Centre cutting



P	M	K	N	S	H
•	•	•	•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	INCLUSIVE ANGLE
4071-2-60	2	2	50	60°
4071-2-90	2	2	50	90°
4071-3-60	3	3	50	60°
4071-3-90	3	3	50	90°
4071-4-60	4	4	50	60°
4071-4-90	4	4	50	90°
4071-4-100	4	4	50	100°
4071-4-120	4	4	50	120°
4071-5-60	5	5	50	60°
4071-5-90	5	5	50	90°
4071-5-100	5	5	50	100°
4071-5-120	5	5	50	120°
4071-6-60	6	6	64	60°
4071-6-90	6	6	64	90°
4071-6-100	6	6	64	100°
4071-6-120	6	6	64	120°
4071-8-60	8	8	64	60°
4071-8-90	8	8	64	90°
4071-8-100	8	8	64	100°
4071-8-120	8	8	64	120°
4071-10-60	10	10	70	60°
4071-10-90	10	10	70	90°
4071-10-100	10	10	70	100°
4071-10-120	10	10	70	120°
4071-12-60	12	12	76	60°
4071-12-90	12	12	76	90°
4071-12-100	12	12	76	100°
4071-12-120	12	12	76	120°

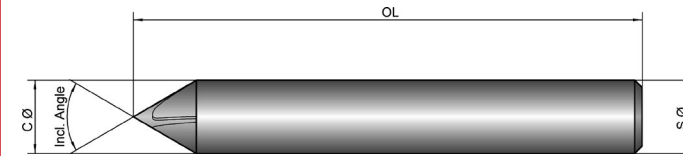
For Speeds & Feeds please see page 138



# 4071-F

### Description

- 4 Flute
- Standard length
- Centre cutting
- Cupro coated



P	M	K	N	S	H
•	•	•		•	•

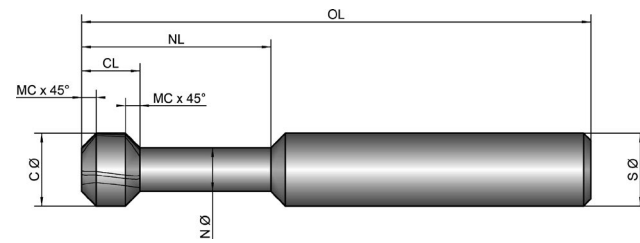
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	INCLUSIVE ANGLE
4071-2F-60	2	2	50	60°
4071-2F-90	2	2	50	90°
4071-3F-60	3	3	50	60°
4071-3F-90	3	3	50	90°
4071-4F-60	4	4	50	60°
4071-4F-90	4	4	50	90°
4071-4F-100	4	4	50	100°
4071-4F-120	4	4	50	120°
4071-5F-60	5	5	50	60°
4071-5F-90	5	5	50	90°
4071-5F-100	5	5	50	100°
4071-5F-120	5	5	50	120°
4071-6F-60	6	6	64	60°
4071-6F-90	6	6	64	90°
4071-6F-100	6	6	64	100°
4071-6F-120	6	6	64	120°
4071-8F-60	8	8	64	60°
4071-8F-90	8	8	64	90°
4071-8F-100	8	8	64	100°
4071-8F-120	8	8	64	120°
4071-10F-60	10	10	70	60°
4071-10F-90	10	10	70	90°
4071-10F-100	10	10	70	100°
4071-10F-120	10	10	70	120°
4071-12F-60	12	12	76	60°
4071-12F-90	12	12	76	90°
4071-12F-100	12	12	76	100°
4071-12F-120	12	12	76	120°

For Speeds & Feeds please see page 138



# 4111



### Description

- 4 Flute
- Standard length
- 90° Inclusive angle
- Harmonic fluting
- Front and back chamfer

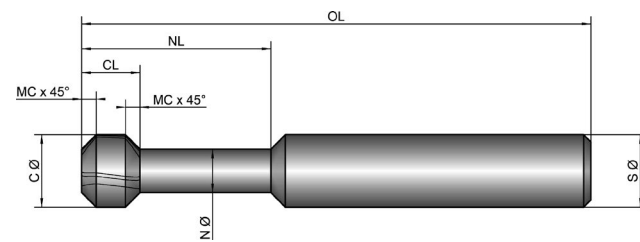
P	M	K	N	S	H
•	•	•	•		

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	MAXIMUM CHAM.
4111-4-90	4	6	58	3	10	3	0.5
4111-6-90	6	6	64	4	15	4	1.0
4111-8-90	8	8	64	6	20	5	1.5
4111-10-90	10	10	100	8	25	6	2.0
4111-12-90	12	12	100	9	30	7	2.5



# 4111-F



### Description

- 4 Flute
- Standard length
- 90° Inclusive angle
- Harmonic fluting
- Front and back chamfer
- Cupro coated

P	M	K	N	S	H
•	•	•		•	•

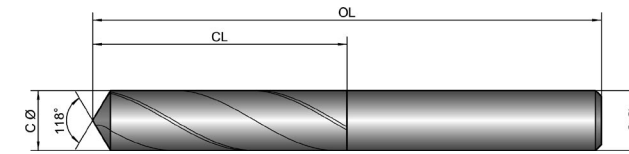
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NØ	MAXIMUM CHAM.
4111-4F-90	4	6	58	3	10	3	0.5
4111-6F-90	6	6	64	4	15	4	1.0
4111-8F-90	8	8	64	6	20	5	1.5
4111-10F-90	10	10	100	8	25	6	2.0
4111-12F-90	12	12	100	9	30	7	2.5



For Speeds & Feeds please see page 138

# M112



### Description

- 2 Flute
- 30° Helix
- Din 338
- 118° Drill point

P	M	K	N	S	H
•	•	•	•	•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
M11201000	1.0	1.0	34	12
M11201100	1.1	1.1	36	14
M11201200	1.2	1.2	38	16
M11201300	1.3	1.3	38	16
M11201400	1.4	1.4	40	18
M11201500	1.5	1.5	40	18
M11201600	1.6	1.6	43	20
M11201700	1.7	1.7	43	20
M11201800	1.8	1.8	46	22
M11201900	1.9	1.9	46	22
M11202000	2.0	2.0	49	24
M11202100	2.1	2.1	49	24
M11202200	2.2	2.2	53	27
M11202300	2.3	2.3	53	27
M11202400	2.4	2.4	57	30
M11202500	2.5	2.5	57	30
M11202600	2.6	2.6	57	30
M11202700	2.7	2.7	61	33
M11202800	2.8	2.8	61	33
M11202900	2.9	2.9	61	33
M11203000	3.0	3.0	61	33
M11203100	3.1	3.1	65	36
M11203200	3.2	3.2	65	36
M11203300	3.3	3.3	65	36
M11203400	3.4	3.4	70	39
M11203500	3.5	3.5	70	39
M11203600	3.6	3.6	70	39
M11203700	3.7	3.7	70	39
M11203800	3.8	3.8	75	43
M11203900	3.9	3.9	75	43
M11204000	4.0	4.0	75	43
M11204100	4.1	4.1	75	43
M11204200	4.2	4.2	75	43
M11204300	4.3	4.3	80	47
M11204400	4.4	4.4	80	47

For Speeds & Feeds please see page 138



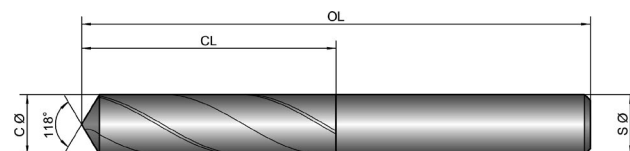


# M112

# M112

### Description

- 2 Flute
- 30° Helix
- Din 338
- 118° Drill point



P	M	K	N	S	H
•	•	•	•	•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
M11204500	4.5	4.5	80	47
M11204600	4.6	4.6	80	47
M11204700	4.7	4.7	80	47
M11204800	4.8	4.8	86	52
M11204900	4.9	4.9	86	52
M11205000	5.0	5.0	86	52
M11205100	5.1	5.1	86	52
M11205200	5.2	5.2	86	52
M11205300	5.3	5.3	86	52
M11205400	5.4	5.4	93	57
M11205500	5.5	5.5	93	57
M11205600	5.6	5.6	93	57
M11205700	5.7	5.7	93	57
M11205800	5.8	5.8	93	57
M11205900	5.9	5.9	93	57
M11206000	6.0	6.0	93	57
M11206100	6.1	6.1	101	63
M11206200	6.2	6.2	101	63
M11206300	6.3	6.3	101	63
M11206400	6.4	6.4	101	63
M11206500	6.5	6.5	101	63
M11206600	6.6	6.6	101	63
M11206700	6.7	6.7	101	63
M11206800	6.8	6.8	109	69
M11206900	6.9	6.9	109	69
M11207000	7.0	7.0	109	69
M11207100	7.1	7.1	109	69
M11207200	7.2	7.2	109	69
M11207300	7.3	7.3	109	69
M11207400	7.4	7.4	109	69
M11207500	7.5	7.5	109	69
M11207600	7.6	7.6	117	75
M11207700	7.7	7.7	117	75
M11207800	7.8	7.8	117	75
M11207900	7.9	7.9	117	75

CATALOGUE NUMBER	CØ	SØ	OL	CL
M11208000	8.0	8.0	117	75
M11208100	8.1	8.1	117	75
M11208200	8.2	8.2	117	75
M11208300	8.3	8.3	117	75
M11208400	8.4	8.4	117	75
M11208500	8.5	8.5	117	75
M11208600	8.6	8.6	125	81
M11208700	8.7	8.7	125	81
M11208800	8.8	8.8	125	81
M11208900	8.9	8.9	125	81
M11209000	9.0	9.0	125	81
M11209100	9.1	9.1	125	81
M11209200	9.2	9.2	125	81
M11209300	9.3	9.3	125	81
M11209400	9.4	9.4	125	81
M11209500	9.5	9.5	125	81
M11209600	9.6	9.6	133	87
M11209700	9.7	9.7	133	87
M11209800	9.8	9.8	133	87
M11209900	9.9	9.9	133	87
M11210000	10.0	10.0	133	87
M11210200	10.2	10.2	133	87
M11210500	10.5	10.5	133	87
M11210800	10.8	10.8	142	94
M11211000	11.0	11.0	142	94
M11211500	11.5	11.5	142	94
M11212000	12.0	12.0	151	101



For Speeds & Feeds please see page 138

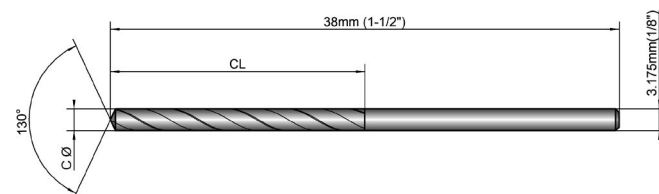
For Speeds & Feeds please see page 138

# 265

# 265

### Description

- 2 Flute
- Short length
- 130° Drill point
- Overall length 38mm (1-1/2")
- Shank diameter 3.175mm (1/8")



P	M	K	N	S	H
•	•	•	•	•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	CL
265-0045-00	0.25	3.1
265-0054-00	0.3	4.7
265-0062-00	0.35	4.7
265-0073-00	0.4	4.7
265-0078-00	0.45	4.7
265-0083-00	0.50	4.7
265-0093-00	0.55	4.7
265-0098-00	0.6	5.5
265-0108-00	0.65	5.5
265-0113-00	0.7	6.3
265-0122-00	0.75	9.5
265-0132-00	0.80	9.5
265-0141-00	0.85	9.5
265-0147-00	0.9	9.5
265-0156-00	0.95	9.5
265-0167-00	1	9.5
265-0176-00	1.05	9.5
265-0186-00	1.1	9.5
265-0188-00	1.15	9.5
265-0196-00	1.2	9.5
265-0197-00	1.25	9.5
265-0198-00	1.3	9.5
265-0202-00	1.35	9.5
265-0206-00	1.4	9.5
265-0207-00	1.45	9.5
265-0208-00	1.5	9.5
265-0212-00	1.55	9.5
265-0217-00	1.6	9.5
265-0222-00	1.65	9.5
265-0223-00	1.7	9.5
265-0227-00	1.75	9.5
265-0232-00	1.8	9.5
265-0233-00	1.85	9.5
265-0237-00	1.9	9.5
265-0242-00	1.95	9.5

For Speeds & Feeds please see page 138

CATALOGUE NUMBER	CØ	CL
265-0252-00	2	9.5
265-0254-00	2.05	9.5
265-0261-00	2.1	9.5
265-0262-00	2.15	9.5
265-0267-00	2.2	9.5
265-0269-00	2.25	9.5
265-0272-00	2.3	9.5
265-0274-00	2.35	9.5
265-0282-00	2.4	9.5
265-0286-00	2.45	9.5
265-0291-00	2.5	9.5
265-0297-00	2.55	9.5
265-0302-00	2.6	9.5
265-0306-00	2.65	9.5
265-0309-00	2.7	9.5
265-0313-00	2.75	9.5
265-0321-00	2.8	9.5
265-0328-00	2.85	9.5
265-0332-00	2.9	9.5
265-0336-00	2.95	9.5
265-0337-00	3	9.5
265-0341-00	3.05	9.5
265-0342-00	3.1	9.5
265-0344-00	3.15	9.5

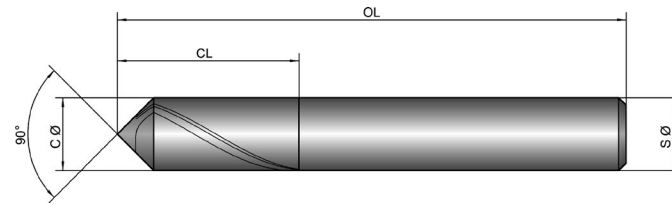
For Speeds & Feeds please see page 138



# 400

### Description

- 2 Flute
- Standard length
- 90° Drill point



P	M	K	N	S	H
•	•	•	•	•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	OL	CL
400-1181-90	3	45	12
400-1575-90	4	50	15
400-1969-90	5	50	18
400-2362-90	6	50	21
400-3150-90	8	60	25
400-3937-90	10	70	27
400-4724-90	12	70	27
400-6299-90	16	75	30
400-7874-90	20	100	33

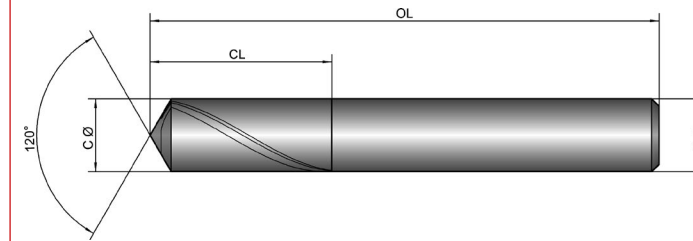


For Speeds & Feeds please see page 138

# 400

### Description

- 2 Flute
- Standard length
- 120° Drill point



P	M	K	N	S	H
•	•	•	•	•	

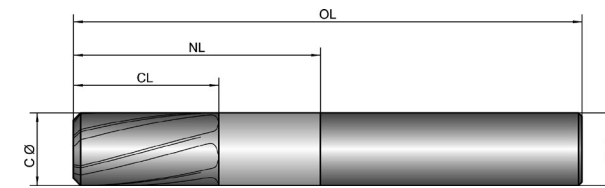
### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	OL	CL
400-1181-120	3	45	12
400-1575-120	4	50	15
400-1969-120	5	50	18
400-2362-120	6	50	21
400-3150-120	8	60	25
400-3937-120	10	70	27
400-4724-120	12	70	27
400-6299-120	16	75	30
400-7874-120	20	100	33



For Speeds & Feeds please see page 138

# 050221



### Description

- Standard length
- Right hand cutting
- H7 Hole tolerance
- Left hand spiral

P	M	K	N	S	H
•	•	•	•	•	

MATERIAL GROUP	DRILL SERIES	CUTTING SPEED Vc m/min	FEED (mm/Rev) DRILL DIAMETER							
			1.5mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm
Low Carbon Steels	M112/265	70-80	0.020	0.050	0.055	0.065	0.080	0.100	0.110	0.120
Medium Carbon Steels	M112/265	50-60	0.015	0.035	0.040	0.050	0.060	0.075	0.080	0.090
Stainless Steel Soft (300 series)	M112/265	20-30	0.010	0.040	0.050	0.055	0.060	0.075	0.090	0.100
Stainless Steel Hard (400 series)	M112/265	15-20	0.010	0.030	0.035	0.040	0.050	0.065	0.075	0.080
Cast Iron (Soft) 120-220 Bhn	M112/265	55-110	0.025	0.050	0.065	0.080	0.100	0.110	0.120	0.130
Cast Iron (Hard) 220-320 Bhn	M112/265	50-70	0.010	0.025	0.035	0.040	0.050	0.060	0.070	0.080
Aluminium Low <8% Silicon	M112/265	70-250	0.050	0.080	0.100	0.120	0.130	0.160	0.180	0.200
Aluminium High >8% Silicon	M112/265	60-175	0.025	0.050	0.065	0.075	0.080	0.100	0.115	0.130
Brass and Bronze	M112/265	50-120	0.013	0.025	0.030	0.040	0.050	0.065	0.085	0.100
Copper and Copper Alloys	M112/265	80-120	0.025	0.050	0.060	0.080	0.100	0.130	0.160	0.190
Magnesium and Magnesium Alloys	M112/265	65-190	0.040	0.080	0.100	0.115	0.130	0.160	0.180	0.200
Plastics	M112/265	75-200	0.040	0.090	0.100	0.120	0.130	0.135	0.140	0.150
Plastics-Glass Filled	M112/265	85-150	0.025	0.050	0.065	0.075	0.080	0.100	0.115	0.130
Titanium (Soft)	M112/265	15-20	0.010	0.035	0.040	0.045	6.000	0.075	0.090	0.100
Titanium (Hard)	M112/265	15-20	0.010	0.030	0.035	0.040	0.050	0.065	0.075	0.090
Monel/High Nickel Steels	M112/265	10-20	0.010	0.035	0.040	0.045	6.000	0.075	0.090	0.100
Hi-Temperature Alloys	M112/265	10-20	0.010	0.030	0.035	0.040	0.050	0.065	0.075	0.090
Hardened Steels	-	-	-	-	-	-	-	-	-	-

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL	NL	NO. OF FLUTES
050221-000014	1.4	1.4	40	8	18	3
050221-000015	1.5	1.5	40	8	18	3
050221-000016	1.6	1.6	43	9	20	3
050221-000020	2	2	49	11	24	4
050221-000022	2.2	2.2	53	12	26	4
050221-000025	2.5	2.5	57	14	28	4
050221-000028	2.8	2.8	61	15	32	4
050221-000030	3	3	61	15	32	6
050221-000032	3.2	3.2	65	16	35	6
050221-000035	3.5	3.5	70	18	40	6
050221-000040	4.0	4.0	75	19	41	6
050221-000045	4.5	4.5	80	21	44	6
050221-000050	5	5	86	23	51	6
050221-000060	6	5.6	93	26	53	6
050221-000070	7.0	7.1	109	31	69	6
050221-000080	8	8	117	33	75	6
050221-000085	8.5	8	117	33	75	6
050221-000090	9	9	125	36	81	6
050221-000095	9.5	9	125	36	81	6
050221-000100	10	10	133	38	87	6

For Speeds & Feeds please see page 147

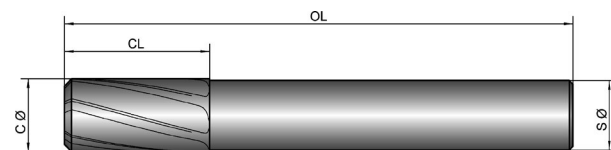


# 208

# 208

### Description

- Standard length
- Right hand spiral
- Diameter tolerance +0.008mm/-0.000mm



P	M	K	N	S	H
•	•	•	•	•	

### Metric Sizes (mm)

CATALOGUE NUMBER	CØ	SØ	OL	CL
208-0024-30	2.4	1.98	57	12.5
208-0025-30	2.5	2.38	57	16
208-0026-30	2.6	2.38	57	16
208-0027-30	2.7	2.38	57	16
208-0028-30	2.8	2.38	57	16
208-0029-30	2.9	2.38	57	16
208-0030-30	3	2.78	57	16
208-0031-30	3.1	2.78	57	16
208-0032-30	3.2	2.78	57	16
208-0033-30	3.3	3.18	63	19
208-0034-30	3.4	3.18	63	19
208-0035-30	3.5	3.18	63	19
208-0036-30	3.6	3.18	63	19
208-0037-30	3.7	3.57	63	19
208-0038-30	3.8	3.57	63	19
208-0039-30	3.9	3.57	63	19
208-0040-30	4	3.57	63	19
208-0041-30	4.1	3.57	70	22
208-0042-30	4.2	3.98	70	22
208-0043-30	4.3	3.98	70	22
208-0044-30	4.4	3.98	70	22
208-0045-30	4.5	4.37	70	22
208-0046-30	4.6	4.37	75	25
208-0047-30	4.7	4.37	75	25
208-0048-30	4.8	4.37	75	25
208-0049-30	4.9	4.77	75	25
208-0050-30	5	4.77	75	25
208-0051-30	5.1	4.77	75	25
208-0052-30	5.2	4.77	75	25
208-0053-30	5.3	4.77	75	25
208-0054-30	5.4	4.77	75	25
208-0055-30	5.5	4.77	75	25
208-0056-30	5.6	4.77	75	25
208-0057-30	5.7	5.58	75	25
208-0058-30	5.8	5.58	75	25

CATALOGUE NUMBER	CØ	SØ	OL	CL
208-0059-30	5.9	5.58	75	25
208-0060-30	6	5.58	75	25
208-0061-30	6.1	5.58	75	25
208-0062-30	6.2	5.58	75	25
208-0063-30	6.3	5.58	75	25
208-0064-30	6.4	5.58	75	25
208-0065-30	6.5	6.35	83	29
208-0066-30	6.6	6.35	83	29
208-0067-30	6.7	6.35	83	29
208-0068-30	6.8	6.35	83	29
208-0069-30	6.9	6.35	83	29
208-0070-30	7	6.35	83	29
208-0071-30	7.1	6.35	83	29
208-0072-30	7.2	6.35	83	29
208-0073-30	7.3	7.15	83	29
208-0074-30	7.4	7.15	83	29
208-0075-30	7.5	7.15	83	29
208-0076-30	7.6	7.15	83	29
208-0077-30	7.7	7.15	83	29
208-0078-30	7.8	7.15	83	29
208-0079-30	7.9	7.15	83	29
208-0080-30	8	7.15	83	29
208-0081-30	8.1	7.94	89	32
208-0082-30	8.2	7.94	89	32
208-0083-30	8.3	7.94	89	32
208-0084-30	8.4	7.94	89	32
208-0085-30	8.5	7.94	89	32
208-0090-30	9	8.75	89	32
208-0095-30	9.5	8.75	89	32
208-0100-30	10	9.54	95	35

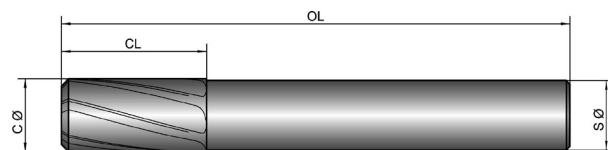
For Speeds & Feeds please see page 147

For Speeds & Feeds please see page 147

# 208

### Description

- Standard length
- Right hand spiral
- Diameter tolerance +0.0003"/-0.0000"



P	M	K	N	S	H
•	•	•	•	•	

### Imperial Sizes (inches)

CATALOGUE NUMBER	CØ	METRIC EQUIV.	SØ	OL	CL
208-1094-30	7/64	2.78mm	.0938	2-1/4	5/8
208-1250-30	1/8	3.18mm	.1094	2-1/4	5/8
208-1406-30	9/64	3.57mm	.1250	2-1/2	3/4
208-1563-30	5/32	3.97mm	.1406	2-1/2	3/4
208-1719-30	11/64	4.34mm	.1562	2-3/4	7/8
208-1875-30	3/16	4.77mm	.1719	2-3/4	7/8
208-2031-30	13/64	5.16mm	.1875	3	1
208-2188-30	7/32	5.56mm	.1875	3	1
208-2344-30	15/64	5.95mm	.2188	3	1
208-2500-30	1/4	6.35mm	.2188	3	1
208-2656-30	17/64	6.75mm	.2500	3-1/4	1-1/8
208-2850-30	9/32	7.15mm	.2500	3-1/4	1-1/8
208-2969-30	19/64	7.54mm	.2812	3-1/4	1-1/8
208-3125-30	5/16	7.94mm	.2812	3-1/4	1-1/8
208-3281-30	21/64	8.33mm	.3125	3-1/2	1-1/4
208-3630-30	11/32	8.73mm	.3125	3-1/2	1-1/4
208-3594-30	23/64	9.13mm	.3443	3-1/2	1-1/4
208-3860-30	3/8	9.53mm	.3443	3-1/2	1-1/4

# 208

### Description

- Standard length
- Right hand spiral
- Diameter tolerance +0.0003"/-0.0000"



P	M	K	N	S	H
•	•	•	•	•	

### Made to Order

SIZE RANGE (mm)	SIZE RANGE (")	SØ (")	OL (")	CL (")	STRAIGHT FLUTE	RHS FLUTE
2.47 - 2.84	.0971 - .1120	.0938	2-1/4	5/8	208-1145-10F	208-1145-30F
2.85 - 3.25	.1121 - .1280	.1094	2-1/4	5/8	208-1290-10F	208-1290-30F
3.26 - 3.64	.1281 - .1435	.1250	2-1/2	3/4	208-1455-10F	208-1455-30F
3.65 - 4.04	.1436 - .1590	.1406	2-1/2	3/4	208-1590-10F	208-1590-30F
4.05 - 4.44	.1591 - .1750	.1562	2-3/4	7/8	208-1750-10F	208-1750-30F
4.45 - 4.85	.1751 - .1910	.1719	2-3/4	7/8	208-1900-10F	208-1900-30F
4.86 - 5.61	.1911 - .2210	.1875	3	1	208-2240-10F	208-2240-30F
5.62 - 6.42	.2211 - .2530	.2188	3	1	208-2540-10F	208-2540-30F
6.43 - 7.21	.2531 - .2840	.2500	3-1/4	1-1/8	208-2850-10F	208-2850-30F
7.22 - 8.00	.2841 - .3150	.2812	3-1/4	1-1/8	208-3150-10F	208-3150-30F
8.01 - 8.81	.3151 - .3470	.3125	3-1/2	1-1/4	208-3630-10F	208-3630-30F
8.82 - 9.60	.3471 - .3780	.3445	3-1/2	1-1/4	208-3860-10F	208-3860-30F

To Order: Find the size range in the left hand column above that contains the diameter you require. Select the part number in the column to the right, based on the flute style you desire. Your order should specify both the part number and the exact size: i.e. 208-3860-10F (.3720).

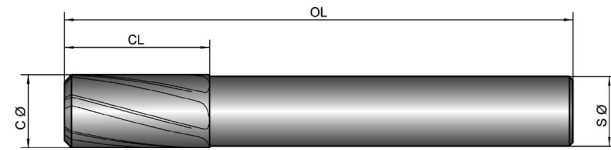
**For Speeds & Feeds please see page 147**

**For Speeds & Feeds please see page 147**

# 204

**Description**

- Solid Carbide <4.85mm
- Long length
- Right hand spiral
- Diameter tolerance +0.008mm/-0.000mm



P	M	K	N	S	H
•	•	•	•	•	

**Metric Sizes (mm)**

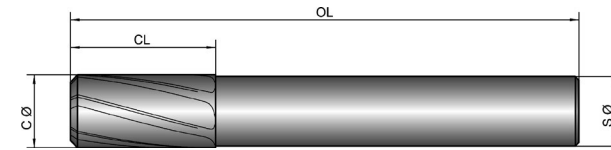
CATALOGUE NUMBER	CØ	IMPERIAL EQUIV.	SØ	OL	CL
204-0030-30	3	0.1181"	2.78	89	22
204-0035-30	3.5	0.1378"	3.18	89	22
204-0040-30	4	0.1575"	3.57	101	25
204-0045-30	4.5	0.1772"	4.37	114	29
204-0050-30	5	0.1969"	4.76	127	32
204-0055-30	5.5	0.2165"	4.76	127	32
204-0060-30	6	0.2362"	5.55	152	38
204-0065-30	6.5	0.2559"	6.35	152	38
204-0070-30	7	0.2756"	6.35	152	38
204-0075-30	7.5	0.2953"	7.14	152	41
204-0080-30	8	0.3150"	7.14	152	41
204-0085-30	8.5	0.3346"	7.94	152	41
204-0090-30	9	0.3543"	9.52	178	44
204-0095-30	9.5	0.3740"	8.73	178	44
204-0100-30	10	0.3937"	9.52	178	44
204-0105-30	10.5	0.4134"	9.52	178	44
204-0110-30	11	0.4331"	9.52	178	44
204-0115-30	11.5	0.4528"	11.11	203	44
204-0120-30	12	0.4724"	11.11	203	44
204-0125-30	12.5	0.4921"	11.11	203	44

For Speeds & Feeds please see page 147

# 204

**Description**

- Solid Carbide <4.85mm
- Long length
- Right hand spiral
- Diameter tolerance +0.0003"/-0.0000"



P	M	K	N	S	H
•	•	•	•	•	

**Imperial Sizes (inches)**

CATALOGUE NUMBER	CØ	METRIC EQUIV.	SØ	OL	CL
204-1300-30	1/8	3.18mm	.1094	3-1/2	7/8
204-1600-30	5/32	3.97mm	.1406	4	1
204-1950-30	3/16	4.77mm	.1719	4-1/2	1-1/8
204-2550-30	1/4	6.35mm	.2188	6	1-1/2
204-2850-30	9/32	7.15mm	.2500	6	1-1/2
204-3200-30	5/16	7.94mm	.2812	6	1-5/8
204-3500-30	11/32	8.73mm	.3125	6	1-5/8
204-3850-30	3/8	9.53mm	.3438	7	1-3/4
204-4450-30	13/32	10.32mm	.3750	7	1-3/4
204-4450-30-A	7/16	11.11mm	.3750	7	1-3/4
204-5100-30	1/2	12.70mm	.4693	8	1-3/4

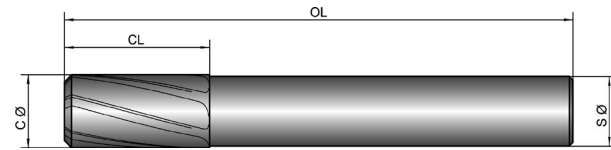
For Speeds & Feeds please see page 147



# 204

### Description

- Solid Carbide <math>\frac{3}{16}</math>"
- Long length
- Right hand spiral
- Diameter tolerance 0.0003"/-0.0000"



P	M	K	N	S	H
•	•	•	•	•	

### Made to Order

SIZE RANGE (MM)	SIZE RANGE (")	SØ (")	OL (")	CL (")	STRAIGHT FLUTE	RHS FLUTE
2.85 - 3.25	.1121-.1280	.1094	3-1/2	7/8	204-1300-10F	204-1300-30F
3.26 - 3.64	.1281-.1435	.1250	3-1/2	7/8	204-1450-10F	204-1450-30F
3.65 - 4.04	.1436-.1590	.1406	4	1	204-1600-10F	204-1600-30F
4.05 - 4.44	.1591-.1750	.1562	4	1	204-1750-10F	204-1750-30F
4.45 - 4.85	.1751-.1910	.1719	4-1/2	1-1/8	204-1950-10F	204-1950-30F
4.86 - 5.61	.1911-.2210	.1875	5	1-1/4	204-2250-10F	204-2250-30F
5.62 - 6.42	.2211-.2530	.2188	6	1-1/2	204-2250-10F	204-2250-30F
6.43 - 7.21	.2531-.2840	.2500	6	1-1/2	204-2850-10F	204-2850-30F
7.22 - 8.00	.2841-.3150	.2812	6	1-5/8	204-3200-10F	204-3200-30F
8.01 - 8.81	.3151-.3470	.3125	6	1-5/8	204-3500-10F	204-3500-30F
8.82 - 9.60	.3471-.3780	.3438	7	1-3/4	204-3850-10F	204-3850-30F
9.61 - 10.38	.3781-.4090	.3750	7	1-3/4	204-4090-10F	204-4090-30F
10.39 - 11.20	.4091-.4410	.4067	7	1-3/4	204-4450-10F	204-4450-30F
11.21 - 11.99	.4411-.4720	.4380	8	1-3/4	204-4720-10F	204-4720-30F
12.00 - 12.78	.4721-.5030	.4693	8	1-3/4	204-5100-10F	204-5100-30F

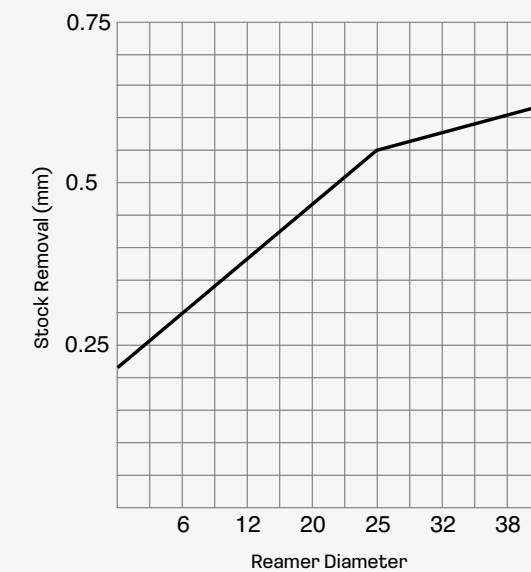
To Order: Find the size range in the left hand column above that contains the diameter you require. Select the part number in the column to the right, based on the flute style you desire. Your order should specify both the part number and the exact size: i.e. 208-3860-10F (.3720).

**For Speeds & Feeds please see page 147**



MATERIAL GROUP	CUTTING SPEED Vc	FEED (mm/Rev) REAMER DIAMETER						
	m/min	3mm	4mm	5mm	6mm	8mm	10mm	12mm
<b>Low Carbon Steels</b>	20-25	0.150	0.160	0.200	0.245	0.275	0.300	0.355
<b>Medium Carbon Steels</b>	12-20	0.100	0.120	0.135	0.150	0.175	0.200	0.230
<b>Tool Steel</b>	10-20	0.050	0.065	0.080	0.100	0.120	0.135	0.150
<b>Stainless Steel Soft (300 series)</b>	20-30	0.100	0.110	0.125	0.150	0.170	0.185	0.200
<b>Stainless Steel Hard (400 series)</b>	10-20	0.075	0.080	0.100	0.125	0.145	0.160	0.175
<b>Cast Iron (Soft) 120-220 Bhn</b>	10-25	0.100	0.110	0.125	0.150	0.170	0.185	0.200
<b>Cast Iron (Hard) 220-320 Bhn</b>	10-15	0.050	0.060	0.065	0.075	0.080	0.090	0.100
<b>Aluminium Low &lt;math&gt;&lt;8\%&lt;/math&gt; Silicon</b>	50-80	0.100	0.130	0.140	0.155	0.175	0.200	0.255
<b>Aluminium High &gt;math&gt;&gt;8\%&lt;/math&gt; Silicon</b>	50-80	0.100	0.130	0.140	0.155	0.175	0.200	0.255
<b>Brass and Bronze</b>	20-40	0.100	0.110	0.120	0.127	0.145	0.160	0.175
<b>Copper and Copper Alloys</b>	20-40	0.150	0.165	0.180	0.200	0.230	0.260	0.300
<b>Magnesium and Magnesium Alloys</b>	60-80	0.130	0.165	0.210	0.250	0.285	0.320	0.350
<b>Plastics</b>	30-80	0.100	0.110	0.120	0.130	0.150	0.175	0.200
<b>Plastics - Glass Filled</b>	45-55	0.050	0.055	0.065	0.070	0.080	0.090	0.100
<b>Titanium (Soft) 110-275 Bhn</b>	15-30	0.100	0.110	0.125	0.150	0.175	0.200	0.250
<b>Titanium (Hard) 300-440 Bhn</b>	10-20	0.050	0.075	0.110	0.150	0.165	0.180	0.200
<b>Monel/High Nickel Steels</b>	6-12	0.075	0.090	0.110	0.125	0.140	0.145	0.150
<b>Hi-Temperature Alloys</b>	6-12	0.050	0.060	0.065	0.075	0.080	0.090	0.100
<b>Hardened Steels</b>	-	-	-	-	-	-	-	-

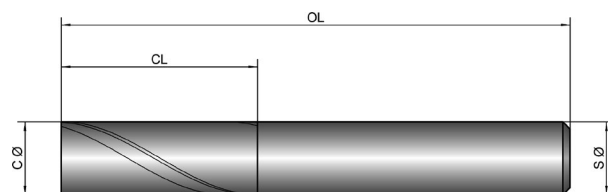
**Stock Removal**  
Stock removal depends on work piece material and finish required. This graph shows starting points for various diameters.



# 4002

**Description**

- 2 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40020100T004 TiAlN	5873484	1	3	38	4
40020150T004 TiAlN	5873485	1.5	3	38	4
40020200T006 TiAlN	5873487	2	3	38	6.3
40020250T006 TiAlN	5873488	2.5	3	38	6.3
40020300T009 TiAlN	5873489	3	3	38	9.5
40020350T012 TiAlN	5873492	3.5	4	50	12
40020400T012S TiAlN	6092621	4	4	50	12
40020450T014S TiAlN	6092624	4.5	6	50	14
40020500T014S TiAlN	6092627	5	5	50	14
40020600T016S TiAlN	6092633	6	6	50	16
40020700T020S TiAlN	6092637	7	7	63	20
40020800T020S TiAlN	6092638	8	8	63	20
40020900T020S TiAlN	6092641	9	9	63	20
40021000T022S TiAlN	6092643	10	10	72	22
40021100T025S TiAlN	6092646	11	11	76	25
40021200T025S TiAlN	6092647	12	12	76	25
40021400T032S TiAlN	6092651	14	14	83	32
40021600T032S TiAlN	6092657	16	16	89	32
40021800T038S TiAlN	6092660	18	18	100	38
40022000T038S TiAlN	6092683	20	20	104	38

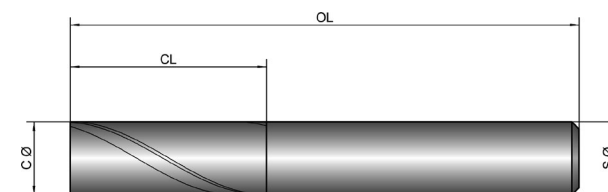
For Speeds & Feeds please see page 166



# I2S

**Description**

- 2 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

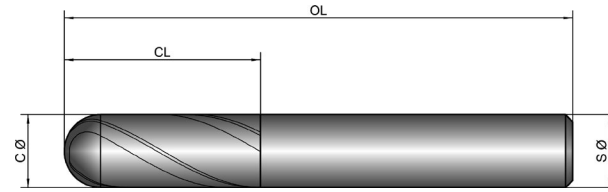
**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I2S0062T012R TiAlN	5872796	1/16	1/8	1-1/2	1/8
I2S0094T037R TiAlN	5872800	3/32	1/8	1-1/2	3/8
I2S0109T037R TiAlN	5872843	7/64	1/8	1-1/2	3/8
I2S0125T050R TiAlN	5872845	1/8	1/8	1-1/2	3/8
I2S0141T056R TiAlN	5872848	9/64	3/16	2	9/16
I2S0156T031R TiAlN	5872849	5/32	3/16	2	5/16
I2S0172T062R TiAlN	5872851	11/64	3/16	2	5/8
I2S0188T062R TiAlN	5872853	3/16	3/16	2	5/8
I2S0219T062L TiAlN	5872857	7/32	1/4	2-1/2	3/4
I2S0250T075R TiAlN	5872859	1/4	1/4	2-1/2	3/4
I2S0281T075R TiAlN	5872862	9/32	5/16	2-1/2	3/4
I2S0312T081R TiAlN	5872863	5/16	5/16	2-1/2	13/16
I2S0344T100R TiAlN	5872866	11/32	3/8	2-1/2	1
I2S0375T100R TiAlN	5872868	3/8	3/8	2-1/2	1
I2S0406T100R TiAlN	5872882	13/32	7/16	2-3/4	1
I2S0437T100R TiAlN	5872884	7/16	7/16	2-1/2	1
I2S0469T100R TiAlN	5872887	15/32	1/2	3	1
I2S0500T100R TiAlN	5872889	1/2	1/2	3	1
I2S0562T125L TiAlN	5872893	9/16	9/16	3-1/2	1-1/4
I2S0625T125R TiAlN	5872896	5/8	5/8	3-1/2	1-1/4
I2S0750T150R TiAlN	5872902	3/4	3/4	4	1-1/2
I2S0875T150R TiAlN	5872906	7/8	7/8	4	1-1/2
I2S1000T150S TiAlN	5872908	1	1	4	1-1/2

For Speeds & Feeds please see page 166



# 4001



**Description**

- 2 Flute
- Centre cutting
- Standard length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

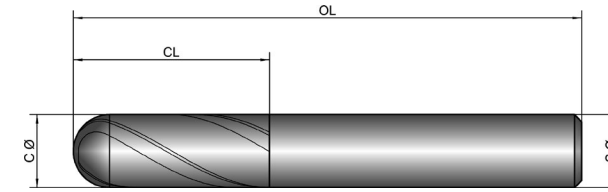
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40010100T004 TiAlN	5880387	1	3	38	4
40010150T005 TiAlN	5880388	1.5	3	38	5
40010200T006 TiAlN	5880389	2	3	38	6.3
40010250T007 TiAlN	5880390	2.5	3	38	7
40010300T009 TiAlN	5880391	3	3	38	9.5
40010350T012 TiAlN	5880392	3.5	4	50	12
40010400T012 TiAlN	5880393	4	4	50	12
40010500T014 TiAlN	6209446	5	5	50	14
40010600T020 TiAlN	5880398	6	6	63	20
40010800T020 TiAlN	5880401	8	8	63	20
40011000T022 TiAlN	5880404	10	10	76	22
40011200T025 TiAlN	5880407	12	12	75	25
40011400T032 TiAlN	5880410	14	14	89	32
40011600T032 TiAlN	5880411	16	16	89	32
40012000T038 TiAlN	5880412	20	20	100	38



For Speeds & Feeds please see page 166

# I2B



**Description**

- 2 Flute
- Centre cutting
- Standard length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

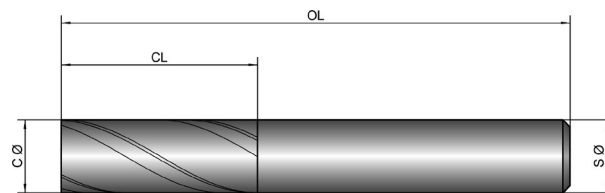
**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I2B0062T018R TiAlN	5878173	1/16	1/8	1-1/2	3/16
I2B0093T018R TiAlN	5878176	3/32	1/8	1-1/2	3/16
I2B0125T050R TiAlN	5878180	1/8	1/8	1-1/2	1/2
I2B0156T031R TiAlN	5878183	5/32	3/16	2	5/16
I2B0187T062R TiAlN	5878186	3/16	3/16	2	5/8
I2B0218T062R TiAlN	5878189	7/32	1/4	2-1/2	5/8
I2B0250T075R TiAlN	5878191	1/4	1/4	2-1/2	3/4
I2B0312T081R TiAlN	5878196	5/16	5/16	2-1/2	7/8
I2B0375T087R TiAlN	5878200	3/8	3/8	2-1/2	7/8
I2B0500T100R TiAlN	5878207	1/2	1/2	3	1
I2B0625T125R TiAlN	5878211	5/8	5/8	3-1/2	1-1/4
I2B0750T150R TiAlN	5878215	3/4	3/4	4	1-1/2
I2B1000T150R TiAlN	5878220	1	1	4	1-1/2



For Speeds & Feeds please see page 166

# 4003



**Description**

- 3 Flute
- Centre cutting
- Standard length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

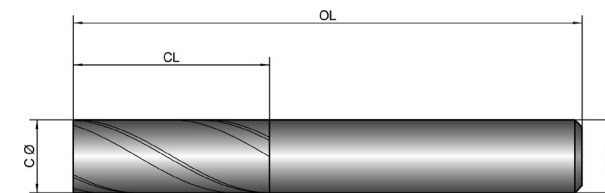
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40030100T004S TiAlN	6144056	1	3	38	4
40030150T004S TiAlN	6144057	1.5	3	38	4
40030200T006S TiAlN	6144058	2	3	38	6.3
40030250T006S TiAlN	6144059	2.5	3	38	6.3
40030300T009S TiAlN	6144060	3	3	38	9.5
40030400T012S TiAlN	6144551	4	4	50	12
40030500T014S TiAlN	6144552	5	6	50	14
40030600T016S TiAlN	6144553	6	6	50	16
40030800T019S TiAlN	6144554	8	8	63	19
40031000T022S TiAlN	6144555	10	10	76	22
40031200T025S TiAlN	6144556	12	12	75	25
40031600T032S TiAlN	6144557	16	16	89	32



For Speeds & Feeds please see page 166

# I3S



**Description**

- 3 Flute
- Centre cutting
- Standard length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I3S0062T019R TiAlN	6144079	1/16	1/8	1-1/2	3/16
I3S0094T037R TiAlN	6144141	3/32	1/8	1-1/2	3/8
I3S0125T025L TiAlN	6144144	1/8	1/8	1-1/2	1/2
I3S0156T056R TiAlN	6144147	5/32	3/16	2	9/16
I3S0188T056R TiAlN	6144149	3/16	3/16	2	9/16
I3S0219T062R TiAlN	6144153	7/32	1/4	2-1/2	5/8
I3S0250T075R TiAlN	6144156	1/4	1/4	2-1/2	3/4
I3S0281T075R TiAlN	6144159	9/32	5/16	2-1/2	3/4
I3S0312T081L TiAlN	6144165	5/16	5/16	2-1/2	13/16
I3S0375T088R TiAlN	6144185	3/8	3/8	2-1/2	7/8
I3S0437T100X TiAlN	6144194	7/16	7/16	2-1/2	1
I3S0500T100R TiAlN	6144195	1/2	1/2	3	1
I3S0563T112R TiAlN	6144198	9/16	5/8	3-1/2	1-1/4
I3S0625T125L TiAlN	6144200	5/8	5/8	3-1/2	1-1/4
I3S0750T150L TiAlN	6144202	3/4	3/4	4	1-1/2

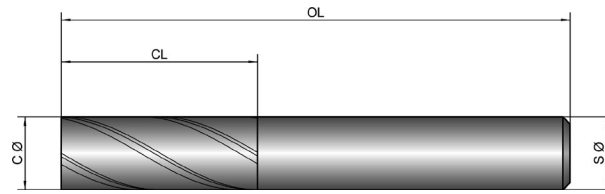


For Speeds & Feeds please see page 166

# 4004

**Description**

- 4 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40040100T004 TiAlN	5826016	1	3	38	4
40040150T004 TiAlN	5826017	1.5	3	38	4
40040200T006 TiAlN	5826018	2	3	38	6.3
40040250T006 TiAlN	5826019	2.5	3	38	6.3
40040300T009 TiAlN	5826020	3	3	38	9.5
40040350T012 TiAlN	5826023	3.5	4	50	12
40040400T011S TiAlN	6085576	4	4	50	11
40040450T014S TiAlN	6085579	4.5	5	50	14
40040500T013S TiAlN	6085580	5	5	50	13
40040600T016S TiAlN	6085584	6	6	50	16
40040700T020S TiAlN	6085587	7	8	63	20
40040800T021S TiAlN	6200965	8	8	63	20
40040900T020S TiAlN	6085591	9	9	63	20
40041000T022S TiAlN	6085592	10	10	72	22
40041200T025S TiAlN	6085595	12	12	89	25
40041400T032S TiAlN	6085598	14	14	83	32
40041600T032S TiAlN	6085601	16	16	92	32
40041800T038S TiAlN	6085604	18	18	100	38
40042000T038S TiAlN	6085607	20	20	104	38

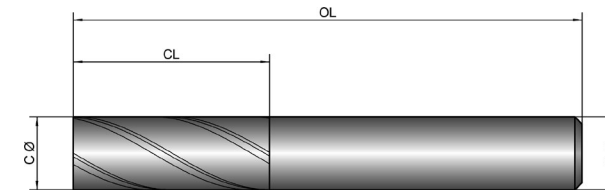


For Speeds & Feeds please see page 166

# I4S

**Description**

- 4 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I4S0031T008R TiAlN	5879054	1/32	1/8	1-1/2	5/64
I4S0062T011R TiAlN	5879055	1/16	1/8	1-1/2	7/64
I4S0078T018R TiAlN	5879056	5/64	1/8	1-1/2	3/16
I4S0093T037R TiAlN	5879057	3/32	1/8	1-1/2	3/8
I4S0109T037R TiAlN	5879059	7/64	1/8	1-1/2	3/8
I4S0125T050R TiAlN	5879131	1/8	1/8	1-1/2	1/2
I4S0140T056R TiAlN	5879134	9/64	3/16	2	9/16
I4S0156T056R TiAlN	5879135	5/32	3/16	2	5/8
I4S0187T062R TiAlN	5879136	3/16	3/16	2	5/8
I4S0203T062R TiAlN	5879141	13/64	1/4	2-1/2	5/8
I4S0218T062L TiAlN	5879143	7/32	1/4	2-1/2	5/8
I4S0234T075R TiAlN	5879144	15/64	1/4	2-1/2	3/4
I4S0250T075R TiAlN	5879146	1/4	1/4	2-1/2	3/4
I4S0265T075R TiAlN	5879149	17/64	5/16	2-1/2	3/4
I4S0281T075R TiAlN	5879150	9/32	5/16	2-1/2	3/4
I4S0296T081R TiAlN	5879151	19/64	5/16	2-1/2	13/16
I4S0312T081R TiAlN	5879153	5/16	5/16	2-1/2	13/16
I4S0328T100R TiAlN	5879156	21/64	3/8	2-1/2	1
I4S0343T100R TiAlN	5879157	11/32	3/8	2-1/2	1
I4S0359T100R TiAlN	5879158	23/64	3/8	2-1/2	1
I4S0375T100R TiAlN	5879160	3/8	3/8	2-1/2	1
I4S0390T100R TiAlN	5879163	25/64	7/16	2-3/4	1
I4S0406T100R TiAlN	5879164	13/32	7/16	2-3/4	1
I4S0437T100S TiAlN	5879166	7/16	7/16	2-1/2	1
I4S0468T100R TiAlN	5879171	15/32	1/2	3	1
I4S0500T100R TiAlN	5879174	1/2	1/2	3	1
I4S0562T125L TiAlN	5879178	9/16	9/16	3-1/2	1-1/4
I4S0625T125R TiAlN	5879181	5/8	5/8	3-1/2	1-1/4
I4S0687T137R TiAlN	5879184	11/16	3/4	4	1-3/8
I4S0750T150R TiAlN	5879186	3/4	3/4	4	1-1/2
I4S0875T150R TiAlN	5879191	7/8	7/8	4	1-1/2
I4S1000T150S TiAlN	5879193	1	1	4	1-1/2

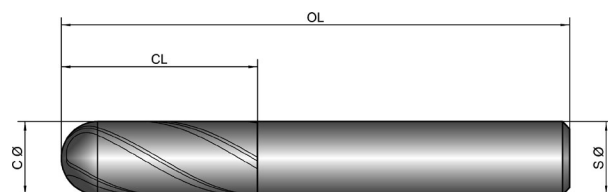


For Speeds & Feeds please see page 166

# 4000

**Description**

- 4 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40000200T006 TiAlN	5825555	2	3	38	6.3
40000300T009 TiAlN	6231685	3	3	38	9.5
40000400T014 TiAlN	5825557	4	4	50	14
40000500T016 TiAlN	5825559	5	5	50	16
40100600T019 TiAlN	5825574	6	6	63	19
40000800T019 TiAlN	5825576	8	8	63	19
40001000T022 TiAlN	5825578	10	10	72	22
40001200T025 TiAlN	5825580	12	12	75	25
40001400T032 TiAlN	5825583	14	14	83	32
40001600T032 TiAlN	5825585	16	16	89	32
28482000T038 TiAlN	5825554	20	20	104	38

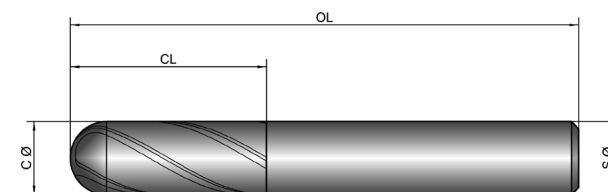


For Speeds & Feeds please see page 166

# I4B

**Description**

- 4 Flute
- Centre cutting
- Standard length
- TiAlN coated



P	M	K	N	S	H
•	•	•			

**Imperial Sizes (inches)**

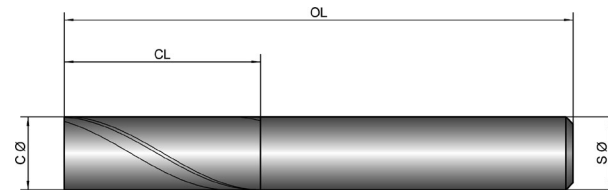
CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I4B0031T008R TiAlN	5825624	1/32	1/8	1-1/2	5/64
I4B0047T012R TiAlN	5825625	3/64	1/8	1-1/2	1/8
I4B0062T019R TiAlN	5825626	1/16	1/8	1-1/2	1/8
I4B0078T019R TiAlN	5825627	5/64	1/8	1-1/2	3/16
I4B0094T037L TiAlN	5825643	3/32	1/8	1-1/2	3/8
I4B0109T037R TiAlN	5825645	7/64	1/8	1-1/2	3/8
I4B0125T050R TiAlN	5825647	1/8	1/8	1-1/2	1/2
I4B0141T056R TiAlN	5825650	9/64	3/16	2	9/16
I4B0156T056R TiAlN	5825652	5/32	3/16	2	9/16
I4B0172T062R TiAlN	5825653	11/64	3/16	2	5/8
I4B0187T062R TiAlN	5825655	3/16	3/16	2	5/8
I4B0203T062R TiAlN	5825658	13/64	1/4	2-1/2	5/8
I4B0219T062R TiAlN	5825659	7/32	1/4	2-1/2	5/8
I4B0234T075R TiAlN	5825660	15/64	1/4	2-1/2	3/4
I4B0250T075R TiAlN	5825663	1/4	1/4	2-1/2	3/4
I4B0266T075R TiAlN	5825667	17/64	5/16	2-1/2	3/4
I4B0281T075R TiAlN	5825668	9/32	5/16	2-1/2	3/4
I4B0312T081R TiAlN	5825670	5/16	5/16	2-1/2	13/16
I4B0344T100R TiAlN	5825683	11/32	3/8	2-1/2	1
I4B0375T100S TiAlN	5825684	3/8	3/8	2-1/2	1
I4B0437T100R TiAlN	5825688	7/16	7/16	2-1/2	1
I4B0500T100S TiAlN	5825689	1/2	1/2	3	1
I4B0562T125R TiAlN	5825695	9/16	9/16	3-1/2	1-1/4
I4B0625T125R TiAlN	5825697	5/8	5/8	3-1/2	1-1/4
I4B0750T150L TiAlN	5825711	3/4	3/4	4	1-1/2
I4B0875T150R TiAlN	5825713	7/8	7/8	4	1-1/2
I4B1000T150R TiAlN	5825714	1	1	4	1-1/2



For Speeds & Feeds please see page 166



# 4002/4012



**Description**

- 2 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

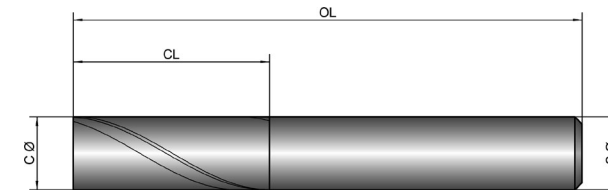
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40020300T019 TiAlN	5873490	3	3	63	19
40120300T025 TiAlN	5873491	3	3	75	25
40020400T019S TiAlN	6092622	4	4	63	19
40120400T031S TiAlN	6092623	4	4	75	31
40020500T020S TiAlN	6092628	5	5	63	20
40120500T031S TiAlN	6092631	5	5	100	31
40020600T028S TiAlN	6092634	6	6	75	28
40120600T038S TiAlN	6092636	6	6	100	38
40020800T028S TiAlN	6092639	8	8	75	28
40120800T041S TiAlN	6092640	8	8	100	41
40021000T032S TiAlN	6092644	10	10	89	32
40121000T045S TiAlN	6092645	10	10	100	45
40021200T045S TiAlN	6092648	12	12	100	45
40121200T075S TiAlN	6092650	12	12	150	75
40021600T056S TiAlN	6092658	16	16	110	56
40121600T075S TiAlN	6092659	16	16	150	75
40022000T056S TiAlN	6092684	20	20	125	56
40122000T075S TiAlN	6092685	20	20	150	75



For Speeds & Feeds please see page 166

# I2S



**Description**

- 2 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

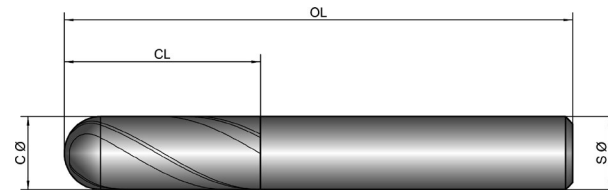
**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I2S0125T075L TiAlN	5872846	1/8	1/8	2-1/4	3/4
I2S0125T075X TiAlN	5872847	1/8	1/8	3	3/4
I2S0188T075L TiAlN	5872854	3/16	3/16	2-1/2	3/4
I2S0188T112X TiAlN	5872855	3/16	3/16	3	1-1/8
I2S0250T112R TiAlN	5872860	1/4	1/4	3	1-1/8
I2S0250T150X TiAlN	5872861	1/4	1/4	4	1-1/2
I2S0312T112L TiAlN	5872864	5/16	5/16	3	1-1/8
I2S0312T162X TiAlN	5872865	5/16	5/16	4	1-5/8
I2S0375T112R TiAlN	5872869	3/8	3/8	3	1-1/8
I2S0375T175L TiAlN	5872870	3/8	3/8	4	1-3/4
I2S0375T300X TiAlN	5872881	3/8	3/8	6	3
I2S0500T200L TiAlN	5872890	1/2	1/2	4	2
I2S0500T300X TiAlN	5872891	1/2	1/2	6	3
I2S0437T200L TiAlN	5872885	7/16	7/16	4	2
I2S0437T300X TiAlN	5872886	7/16	7/16	6	3
I2S0625T225R TiAlN	5872897	5/8	5/8	5	2-1/4
I2S0625T300L TiAlN	5872898	5/8	5/8	6	3
I2S0750T225R TiAlN	5872903	3/4	3/4	5	2-1/4
I2S0750T300L TiAlN	5872904	3/4	3/4	6	3



For Speeds & Feeds please see page 166

# 4011/4021



**Description**

- 2 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

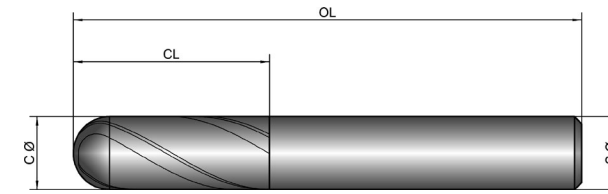
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40110300T019 TiAlN	6232631	3	3	63	19
40110300T025 TiAlN	6232632	3	3	75	25
40110400T019 TiAlN	5880395	4	4	63	19
40210400T031 TiAlN	5880396	4	4	71	31
40110500T020 TiAlN	6209447	5	5	63	20
40110600T028 TiAlN	5880399	6	6	76	28
40210600T038 TiAlN	5880400	6	6	100	38
40110800T028 TiAlN	5880402	8	8	76	28
40210800T040 TiAlN	5880403	8	8	100	40
40111000T032 TiAlN	5880405	10	10	89	32
40211000T045 TiAlN	5880406	10	10	100	45
40111200T045 TiAlN	5880408	12	12	100	45
40211200T075 TiAlN	5880409	12	12	150	75
40111600T056 TiAlN	6209448	16	16	110	56
40211600T075 TiAlN	6209449	16	16	150	75
40112000T075 TiAlN	5880413	20	20	150	75



For Speeds & Feeds please see page 166

# I2B



**Description**

- 2 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

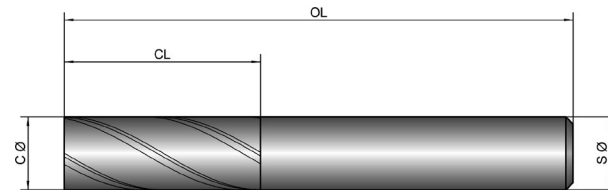
**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I2B0125T075L TiAlN	5878181	1/8	1/8	2-1/4	3/4
I2B0125T075X TiAlN	5878182	1/8	1/8	3	3/4
I2B0187T075L TiAlN	5878187	3/16	3/16	2-1/2	3/4
I2B0187T100X TiAlN	5878188	3/16	3/16	3	1
I2B0250T112R TiAlN	5878192	1/4	1/4	3	1-1/8
I2B0250T150X TiAlN	5878194	1/4	1/4	4	1-1/2
I2B0312T112L TiAlN	5878197	5/16	5/16	3	1-1/8
I2B0375T112R TiAlN	5878201	3/8	3/8	3	1-1/8
I2B0375T175L TiAlN	5878202	3/8	3/8	4	1-3/4
I2B0375T300X TiAlN	5878203	3/8	3/8	6	3
I2B0500T200L TiAlN	5878209	1/2	1/2	4	2
I2B0500T300L TiAlN	5878210	1/2	1/2	6	3
I2B0625T225L TiAlN	5878212	5/8	5/8	5	2-1/4
I2B0625T300X TiAlN	5878213	5/8	5/8	6	3
I2B0750T225L TiAlN	5878217	3/4	3/4	5	2-1/4
I2B0750T300X TiAlN	5878218	3/4	3/4	6	3



For Speeds & Feeds please see page 166

# 4014/4024



**Description**

- 4 Flute
- Centre cutting
- Long length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

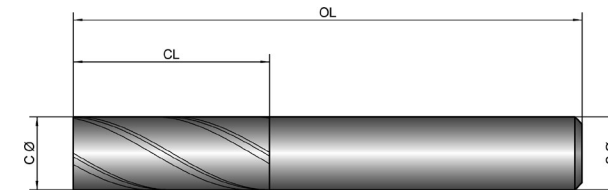
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40140300T019 TiAlN	5826021	3	3	63	19
40240300T025 TiAlN	5826022	3	3	75	25
40140400T019S TiAlN	6085577	4	4	63	19
40240400T031S TiAlN	6085578	4	4	75	31
40040500T020S TiAlN	6085581	5	5	63	20
40240500T031S TiAlN	6085583	5	5	100	31
40140600T028S TiAlN	6085585	6	6	75	28
40240600T038S TiAlN	6085586	6	6	100	38
40140800T028S TiAlN	6085589	8	8	75	28
40240800T041S TiAlN	6085590	8	8	100	41
40141000T032S TiAlN	6085593	10	10	89	32
40241000T045S TiAlN	6085594	10	10	100	45
40141200T045S TiAlN	6085596	12	12	100	45
40241200T075S TiAlN	6085597	12	12	150	75
40141600T056S TiAlN	6085602	16	16	110	56
40241600T075S TiAlN	6085603	16	16	150	75
40142000T056S TiAlN	6085608	20	20	125	56
40242000T075S TiAlN	6085609	20	20	150	75



For Speeds & Feeds please see page 166

# I4S



**Description**

- 4 Flute
- Centre cutting
- Long length
- TiAlN coated

P	M	K	N	S	H
•	•	•			

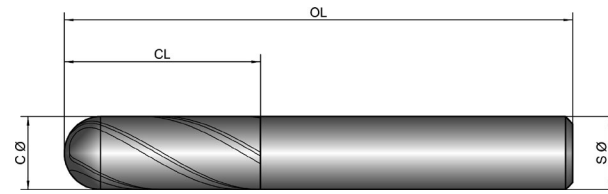
**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I4S0125T075L TiAlN	5879132	1/8	1/8	2-1/4	3/4
I4S0125T100X TiAlN	5879133	1/8	1/8	3	1
I4S0187T075L TiAlN	5879138	3/16	3/16	2-1/2	3/4
I4S0187T112X TiAlN	5879140	3/16	3/16	3-1/4	1-1/8
I4S0250T112L TiAlN	5879147	1/4	1/4	3	1-1/8
I4S0250T150X TiAlN	5879148	1/4	1/4	4	1-1/2
I4S0312T112L TiAlN	5879154	5/16	5/16	3	1-1/8
I4S0312T162X TiAlN	5879155	5/16	5/16	4	1-5/8
I4S0375T112L TiAlN	5879161	3/8	3/8	3	1-1/8
I4S0375T175X TiAlN	5879162	3/8	3/8	4	1-3/4
I4S0500T200L TiAlN	5879175	1/2	1/2	4	2
I4S0500T300X TiAlN	5879176	1/2	1/2	6	3
I4S0437T200L TiAlN	5879168	7/16	7/16	4	2
I4S0437T300X TiAlN	5879169	7/16	7/16	6	3
I4S0625T225L TiAlN	5879182	5/8	5/8	5	2-1/4
I4S0625T400X TiAlN	5879183	5/8	5/8	7	4
I4S0750T225R TiAlN	5879187	3/4	3/4	5	2-1/4
I4S0750T300L TiAlN	5879188	3/4	3/4	6	3



For Speeds & Feeds please see page 166

# 4010



**Description**

- 4 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

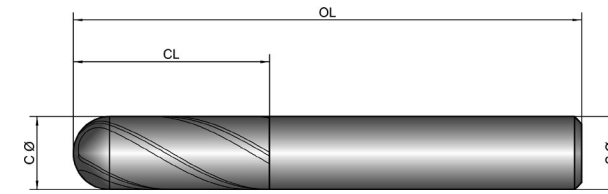
**Metric Sizes (mm)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
40100300T019 TiAlN	6232637	3	3	63	19
40000300T020 TiAlN	5825556	3	3	75	20
40100400T025 TiAlN	5825558	4	4	75	25
40100500T030 TiAlN	5825560	5	5	63	30
40100600T030 TiAlN	5825575	6	6	75	30
40100800T028 TiAlN	6232638	8	8	76	28
40100800T040 TiAlN	5825577	8	8	100	40
40101000T032 TiAlN	6232639	10	10	89	32
40101000T040 TiAlN	5825579	10	10	100	40
40101200T046 TiAlN	6232640	12	12	100	46
40101200T045 TiAlN	5825581	12	12	150	45
40101200T075 TiAlN	6232671	12	12	150	75
40101600T065 TiAlN	5825586	16	16	150	65
40102000T056 TiAlN	5825588	20	20	125	56
40102000T075 TiAlN	6232672	20	20	150	75



For Speeds & Feeds please see page 166

# I4B



**Description**

- 4 Flute
- Long length
- Centre cutting
- TiAlN coated

P	M	K	N	S	H
•	•	•			

**Imperial Sizes (inches)**

CATALOGUE NUMBER	MM NUMBER	CØ	SØ	OL	CL
I4B0125T075L TiAlN	5825648	1/8	1/8	2-1/4	3/4
I4B0125T075X TiAlN	5825649	1/8	1/8	3	3/4
I4B0187T075L TiAlN	5825656	3/16	3/16	2-1/2	3/4
I4B0187T100X TiAlN	5825657	3/16	3/16	4	1
I4B0250T112R TiAlN	5825664	1/4	1/4	3	1-1/8
I4B0250T150L TiAlN	5825665	1/4	1/4	4	1-1/2
I4B0312T112L TiAlN	5825681	5/16	5/16	3	1-1/8
I4B0312T162X TiAlN	5825682	5/16	5/16	4	1-5/8
I4B0375T112R TiAlN	5825686	3/8	3/8	3	1-1/8
I4B0375T150X TiAlN	5825687	3/8	3/8	6	1-1/2
I4B0500T200R TiAlN	5825692	1/2	1/2	4	2
I4B0500T300X TiAlN	5825694	1/2	1/2	6	3
I4B0625T225L TiAlN	5825698	5/8	5/8	5	2-1/4
I4B0625T300X TiAlN	5825699	5/8	5/8	6	3
I4B0750T300X TiAlN	5825712	3/4	3/4	6	3
I4B1000T225L TiAlN	5825715	1	1	5	2-1/4



For Speeds & Feeds please see page 166

■ **TiAlN**

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																	
	A		B		Cutting Speed – vc m/min	mm	D1 – Diameter															
	ap	ae	ap	min			max	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0		
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameters.

■ **Uncoated**

Material Group	Side Milling (A) and Slotting (B)		uncoated		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																	
	A		B		Cutting Speed – vc m/min	mm	D1 – Diameter															
	ap	ae	ap	min			max	1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0					
P	0	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,007	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114				
	1	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,007	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114				
	2	Ap1 max	0,1 x D	0,5 x D	112	–	152	fz	0,007	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,101	0,114				
N	1	Ap1 max	0,1 x D	0,5 x D	400	–	1600	fz	0,010	0,020	0,030	0,040	0,060	0,080	0,100	0,120	0,160	0,200				
	2	Ap1 max	0,1 x D	0,5 x D	400	–	1200	fz	0,008	0,016	0,024	0,032	0,048	0,064	0,080	0,096	0,128	0,160				
	4	Ap1 max	0,1 x D	0,5 x D	320	–	600	fz	0,007	0,014	0,021	0,028	0,042	0,056	0,070	0,084	0,112	0,140				

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on >12mm diameters.

# Related Products

As an industry-leading manufacturer of cutting tools, the WIDIA® Products Group offers the most complete portfolio of precision-engineered milling, turning, holemaking, and tooling systems products and solutions. Below are just a few of our other metalcutting solutions, available through a skilled network of Authorized Distributor partners.



### M200™ Series

A revolutionary double-sided round insert, capable of running in multiple types of milling operations and workpiece materials that increase productivity with the most efficient cost per edge. Available in 10, 12, 16, 25, and 32mm iC inserts.



### VSM11™ and VSM17™ Series Shoulder Mills

True 90° capability cutter, resulting in superior wall and surface finishes along with increased ramping capabilities. The cutter design has an effective internal coolant feature, precisely reaching the cutting edge. 11mm and 17 mm iC inserts available.



### VariDrill™

The WIDIA® VariDrill®, with an advanced VDS point geometry is designed to reduce chipping on the cutting edge and a precision engineered shank for low runout, is a multi-application drill that delivers exceptional hole finish and extended tool life across a wide range of materials.

### VSM490™ Double-Sided Shoulder Mill

The WIDIA® Victory™ Shoulder Milling series (VSM series) is specially engineered to achieve excellent surface quality, as well as higher metal removal rates in shoulder milling applications.



### Top Reamers

This next generation reamer features a new grade, WU05PR, specifically for reaming operations, resulting in up to 30% longer tool life. More regrinds (4x) possible than with a regular tipped tool and due to its stronger design versus conventional reamers; with cutting action similar to a solid carbide tool, 6–8 times higher productivity (feed rates) can be achieved.

### Top Cut 4™ Indexable Drills

Specifically designed for versatility, the newly developed TC4 efficiently machines a broad range of products and materials, such as stainless steel, steel, and cast iron.



### DuoLock™

DUO-LOCK™ is the new revolutionary coupling for end milling tools with replaceable heads. DUO-LOCK™ combines the highest accuracy in runout and length repeatability with maximum stability. This makes it the most precise and virtually unbreakable interface for challenging milling applications.



### M370™ High-Feed Milling Cutters

Featuring double-sided carbide inserts with six cutting edges, these cutters achieve higher metal removal rates and up to 10x greater productivity compared to traditional tooling.



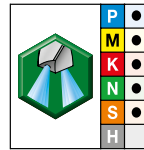
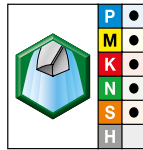
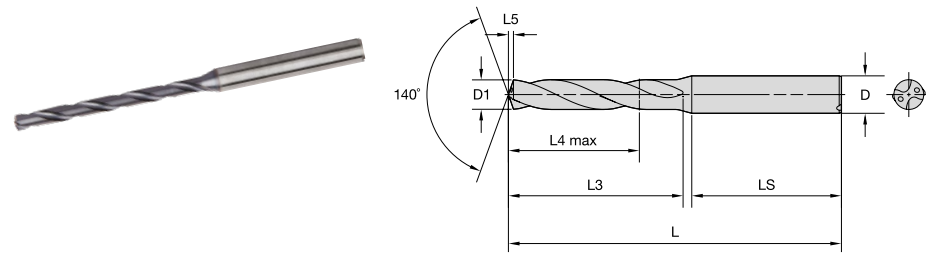
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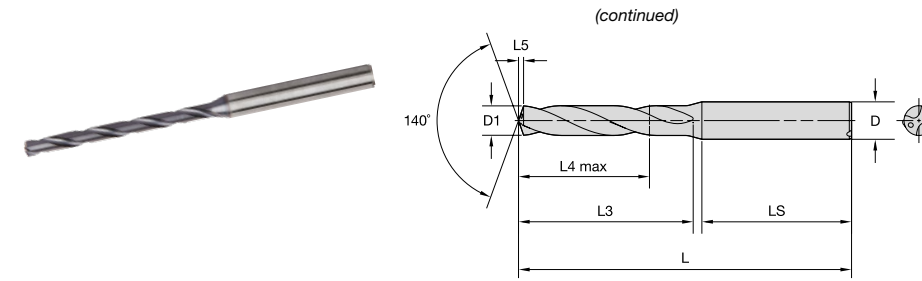
VariDrill • 3 x D • VDS201A / VDS401A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4144195	VDS201A01000	-	-	1,000	.0394	5	7	0,2	58	28	4
4144196	VDS201A01016	-	-	1,016	.0400	5	7	0,1	58	28	4
4144197	VDS201A01041	-	-	1,041	.0410	5	7	0,2	58	28	4
4144198	VDS201A01067	-	-	1,067	.0420	5	7	0,2	58	28	4
4144199	VDS201A01092	-	-	1,092	.0430	5	7	0,2	58	28	4
4144200	VDS201A01100	-	-	1,100	.0433	5	7	0,2	58	28	4
4144201	VDS201A01181	-	-	1,181	.0465	5	7	0,2	58	28	4
4144202	VDS201A01191	-	-	1,191	.0469	5	7	0,2	58	28	4
4144523	VDS201A01200	-	-	1,200	.0472	5	7	0,2	58	28	4
4144524	VDS201A01300	-	-	1,300	.0512	5	7	0,2	58	28	4
4144526	VDS201A01397	-	-	1,397	.0550	5	7	0,2	58	28	4
4144527	VDS201A01400	-	-	1,400	.0551	5	7	0,2	58	28	4
4144528	VDS201A01500	4140270	VDS401A01500	1,500	.0591	6	9	0,2	58	28	4
4144529	VDS201A01600	-	-	1,600	.0630	6	9	0,3	58	28	4
-	-	4140271	VDS401A01600	1,600	.0630	6	9	0,2	58	28	4
4144530	VDS201A01700	4140272	VDS401A01700	1,700	.0669	6	9	0,3	58	28	4
4144531	VDS201A01800	4140423	VDS401A01800	1,800	.0709	6	9	0,3	58	28	4
4144532	VDS201A01900	4140424	VDS401A01900	1,900	.0748	6	9	0,3	58	28	4
4144533	VDS201A01984	4140425	VDS401A01984	1,984	.0781	10	13	0,3	58	28	4
4144534	VDS201A02000	4140426	VDS401A02000	2,000	.0787	10	13	0,3	58	28	4
4144535	VDS201A02100	4140427	VDS401A02100	2,100	.0827	10	13	0,3	58	28	4
4144536	VDS201A02200	4140428	VDS401A02200	2,200	.0866	10	13	0,3	58	28	4
4144537	VDS201A02300	4140429	VDS401A02300	2,300	.0906	10	13	0,4	58	28	4
4144538	VDS201A02383	4140430	VDS401A02383	2,383	.0938	12	17	0,4	58	28	4
4144539	VDS201A02400	4140431	VDS401A02400	2,400	.0945	12	17	0,4	58	28	4
4144540	VDS201A02439	4140432	VDS401A02439	2,439	.0960	12	17	0,4	58	28	4
4144541	VDS201A02489	4140433	VDS401A02489	2,489	.0980	12	17	0,4	58	28	4
4144542	VDS201A02500	4140434	VDS401A02500	2,500	.0984	12	17	0,4	58	28	4
4144543	VDS201A02578	4140435	VDS401A02578	2,578	.1015	12	17	0,4	58	28	4
4144544	VDS201A02600	4140436	VDS401A02600	2,600	.1024	12	17	0,4	58	28	4
4144545	VDS201A02642	4140437	VDS401A02642	2,642	.1040	12	17	0,4	58	28	4
4144546	VDS201A02700	4140438	VDS401A02700	2,700	.1063	12	17	0,4	58	28	4
4144547	VDS201A02705	4140439	VDS401A02705	2,705	.1065	12	17	0,4	58	28	4
4144548	VDS201A02779	4140440	VDS401A02779	2,779	.1094	12	17	0,4	58	28	4
4144549	VDS201A02800	4140441	VDS401A02800	2,800	.1102	12	17	0,5	58	28	4
4144550	VDS201A02820	4140442	VDS401A02820	2,820	.1110	12	17	0,5	58	28	4
4144551	VDS201A02870	4140443	VDS401A02870	2,870	.1130	12	17	0,5	58	28	4
4144552	VDS201A02900	4140444	VDS401A02900	2,900	.1142	12	17	0,5	58	28	4
4144553	VDS201A02947	4140445	VDS401A02947	2,947	.1160	12	17	0,5	58	28	4
4143907	VDS201A03000	4140299	VDS401A03000	3,000	.1181	14	20	0,5	62	36	6
4143908	VDS201A03048	4140300	VDS401A03048	3,048	.1200	14	20	0,5	62	36	6
4143909	VDS201A03100	4140301	VDS401A03100	3,100	.1220	14	20	0,5	62	36	6
4143910	VDS201A03175	4140302	VDS401A03175	3,175	.1250	14	20	0,5	62	36	6
4143911	VDS201A03200	4140303	VDS401A03200	3,200	.1260	14	20	0,5	62	36	6
4143912	VDS201A03264	4140304	VDS401A03264	3,264	.1285	14	20	0,5	62	36	6
4143913	VDS201A03300	4140305	VDS401A03300	3,300	.1299	14	20	0,5	62	36	6
4143914	VDS201A03400	4140306	VDS401A03400	3,400	.1339	14	20	0,6	62	36	6
4143915	VDS201A03455	4140307	VDS401A03455	3,455	.1360	14	20	0,6	62	36	6
4143916	VDS201A03500	4140308	VDS401A03500	3,500	.1378	14	20	0,6	62	36	6
4143917	VDS201A03571	4140309	VDS401A03571	3,571	.1406	14	20	0,6	62	36	6
4143918	VDS201A03600	4140310	VDS401A03600	3,600	.1417	14	20	0,6	62	36	6
4143919	VDS201A03658	4140311	VDS401A03658	3,658	.1440	14	20	0,6	62	36	6

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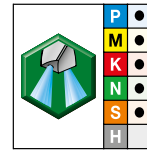
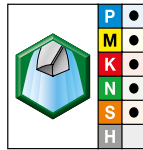
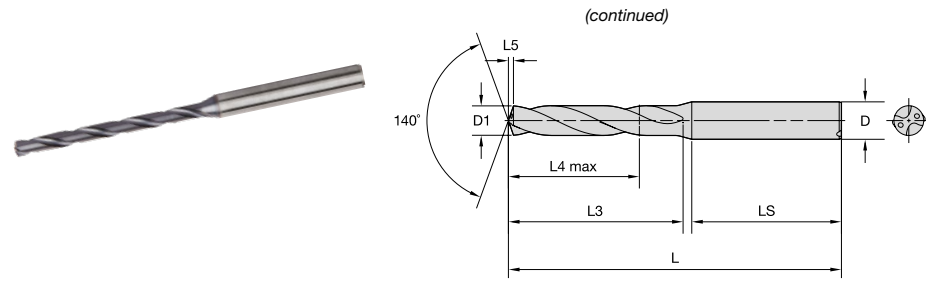
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grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4143920	VDS201A03700	4140312	VDS401A03700	3,700	.1457	14	20	0,6	62	36	6
4143921	VDS201A03734	4140313	VDS401A03734	3,734	.1470	14	20	0,6	62	36	6
4143922	VDS201A03800	4140314	VDS401A03800	3,800	.1496	17	24	0,6	66	36	6
4143923	VDS201A03900	4140315	VDS401A03900	3,900	.1535	17	24	0,6	66	36	6
4143924	VDS201A03970	4140316	VDS401A03970	3,970	.1563	17	24	0,7	66	36	6
4143925	VDS201A04000	4140317	VDS401A04000	4,000	.1575	17	24	0,7	66	36	6
4143926	VDS201A04039	4140318	VDS401A04039	4,039	.1590	17	24	0,7	66	36	6
4143927	VDS201A04090	4140319	VDS401A04090	4,090	.1610	17	24	0,7	66	36	6
4143928	VDS201A04100	4140320	VDS401A04100	4,100	.1614	17	24	0,7	66	36	6
4143929	VDS201A04200	4140321	VDS401A04200	4,200	.1654	17	24	0,7	66	36	6
4143930	VDS201A04217	-	-	4,217	.1660	17	24	0,7	66	36	6
4143931	VDS201A04300	4140323	VDS401A04300	4,300	.1693	17	24	0,7	66	36	6
4143932	VDS201A04366	4140324	VDS401A04366	4,366	.1719	17	24	0,7	66	36	6
4143933	VDS201A04400	4140325	VDS401A04400	4,400	.1732	17	24	0,7	66	36	6
4143934	VDS201A04500	4140326	VDS401A04500	4,500	.1772	17	24	0,7	66	36	6
4143935	VDS201A04600	4140328	VDS401A04600	4,600	.1811	17	24	0,8	66	36	6
4143936	VDS201A04623	4140329	VDS401A04623	4,623	.1820	17	24	0,8	66	36	6
4143937	VDS201A04700	4140330	VDS401A04700	4,700	.1850	17	24	0,8	66	36	6
4143938	VDS201A04763	4140331	VDS401A04763	4,763	.1875	20	28	0,8	66	36	6
4143939	VDS201A04800	4140332	VDS401A04800	4,800	.1890	20	28	0,8	66	36	6
4143940	VDS201A04852	4140333	VDS401A04852	4,852	.1910	20	28	0,8	66	36	6
4143941	VDS201A04900	4140334	VDS401A04900	4,900	.1929	20	28	0,8	66	36	6
4143942	VDS201A05000	4140335	VDS401A05000	5,000	.1969	20	28	0,8	66	36	6
4143943	VDS201A05100	4140336	VDS401A05100	5,100	.2008	20	28	0,9	66	36	6
4143944	VDS201A05106	4140337	VDS401A05106	5,106	.2010	20	28	0,9	66	36	6
4143945	VDS201A05159	4140338	VDS401A05159	5,159	.2031	20	28	0,9	66	36	6
4143946	VDS201A05200	4140339	VDS401A05200	5,200	.2047	20	28	0,9	66	36	6
4143947	VDS201A05300	4140340	VDS401A05300	5,300	.2087	20	28	0,9	66	36	6
4143948	VDS201A05400	4140341	VDS401A05400	5,400	.2126	20	28	0,9	66	36	6
4143949	VDS201A05410	4140342	VDS401A05410	5,410	.2130	20	28	0,9	66	36	6
4143950	VDS201A05500	4140343	VDS401A05500	5,500	.2165	20	28	0,9	66	36	6
4143951	VDS201A05558	4140344	VDS401A05558	5,558	.2188	20	28	0,9	66	36	6
4143952	VDS201A05600	4140345	VDS401A05600	5,600	.2205	20	28	0,9	66	36	6
4143953	VDS201A05616	4140346	VDS401A05616	5,616	.2211	20	28	0,9	66	36	6
4143954	VDS201A05700	4140347	VDS401A05700	5,700	.2244	20	28	1,0	66	36	6
4143955	VDS201A05800	4140348	VDS401A05800	5,800	.2283	20	28	1,0	66	36	6
4143956	VDS201A05900	4140349	VDS401A05900	5,900	.2323	20	28	1,0	66	36	6
4143957	VDS201A05954	4140350	VDS401A05954	5,954	.2344	20	28	1,0	66	36	6
4143958	VDS201A06000	4140351	VDS401A06000	6,000	.2362	20	28	1,0	66	36	6
4143959	VDS201A06100	4140352	VDS401A06100	6,100	.2402	24	34	1,0	79	36	8
4143960	VDS201A06200	4140353	VDS401A06200	6,200	.2441	24	34	1,0	79	36	8
4143961	VDS201A06300	4140354	VDS401A06300	6,300	.248						



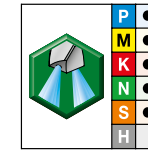
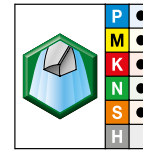
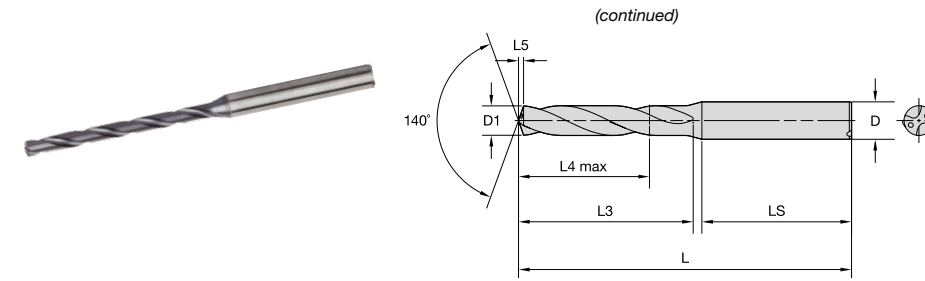
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grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4143972	VDS201A07000	4140365	VDS401A07000	7,000	.2756	24	34	1,2	79	36	8
4143973	VDS201A07100	4140366	VDS401A07100	7,100	.2795	29	41	1,2	79	36	8
4143974	VDS201A07145	4140367	VDS401A07145	7,145	.2813	29	41	1,2	79	36	8
4143975	VDS201A07200	4140368	VDS401A07200	7,200	.2835	29	41	1,2	79	36	8
4143976	VDS201A07300	4140369	VDS401A07300	7,300	.2874	29	41	1,2	79	36	8
4143977	VDS201A07400	4140370	VDS401A07400	7,400	.2913	29	41	1,3	79	36	8
4143978	VDS201A07500	4140371	VDS401A07500	7,500	.2953	29	41	1,3	79	36	8
4143979	VDS201A07541	4140372	VDS401A07541	7,541	.2969	29	41	1,3	79	36	8
4143980	VDS201A07600	4140373	VDS401A07600	7,600	.2992	29	41	1,3	79	36	8
4143981	VDS201A07700	4140374	VDS401A07700	7,700	.3031	29	41	1,3	79	36	8
4143982	VDS201A07800	4140375	VDS401A07800	7,800	.3071	29	41	1,3	79	36	8
4143983	VDS201A07900	4140376	VDS401A07900	7,900	.3110	29	41	1,3	79	36	8
4143984	VDS201A07938	4140377	VDS401A07938	7,938	.3125	29	41	1,3	79	36	8
4143985	VDS201A08000	4140378	VDS401A08000	8,000	.3150	29	41	1,4	79	36	8
4143986	VDS201A08100	4140379	VDS401A08100	8,100	.3189	35	47	1,4	89	40	10
4143987	VDS201A08200	4140380	VDS401A08200	8,200	.3228	35	47	1,4	89	40	10
4143988	VDS201A08300	4140381	VDS401A08300	8,300	.3268	35	47	1,4	89	40	10
4143989	VDS201A08334	4140382	VDS401A08334	8,334	.3281	35	47	1,4	89	40	10
4143990	VDS201A08400	4140383	VDS401A08400	8,400	.3307	35	47	1,4	89	40	10
4143991	VDS201A08433	4140384	VDS401A08433	8,433	.3320	35	47	1,4	89	40	10
4143992	VDS201A08500	4140385	VDS401A08500	8,500	.3346	35	47	1,4	89	40	10
4143993	VDS201A08600	4140386	VDS401A08600	8,600	.3386	35	47	1,5	89	40	10
4143994	VDS201A08700	4140387	VDS401A08700	8,700	.3425	35	47	1,5	89	40	10
4143995	VDS201A08733	4140388	VDS401A08733	8,733	.3438	35	47	1,5	89	40	10
4143996	VDS201A08800	4140389	VDS401A08800	8,800	.3465	35	47	1,5	89	40	10
4143997	VDS201A08900	4140390	VDS401A08900	8,900	.3504	35	47	1,5	89	40	10
4143998	VDS201A09000	4140391	VDS401A09000	9,000	.3543	35	47	1,5	89	40	10
4143999	VDS201A09100	-	-	9,100	.3583	35	47	1,5	89	40	10
-	-	4140392	VDS401A09100	9,100	.3583	35	47	1,6	89	40	10
4144000	VDS201A09129	4140393	VDS401A09129	9,129	.3594	35	47	1,6	89	40	10
4144001	VDS201A09200	4140394	VDS401A09200	9,200	.3622	35	47	1,6	89	40	10
4144002	VDS201A09300	4140395	VDS401A09300	9,300	.3661	35	47	1,6	89	40	10
4144003	VDS201A09347	4140396	VDS401A09347	9,347	.3680	35	47	1,6	89	40	10
4144004	VDS201A09400	4140397	VDS401A09400	9,400	.3701	35	47	1,6	89	40	10
4144005	VDS201A09500	4140398	VDS401A09500	9,500	.3740	35	47	1,6	89	40	10
4144006	VDS201A09525	4140399	VDS401A09525	9,525	.3750	35	47	1,6	89	40	10
4144007	VDS201A09600	4140400	VDS401A09600	9,600	.3780	35	47	1,6	89	40	10
4144008	VDS201A09700	4140401	VDS401A09700	9,700	.3819	35	47	1,7	89	40	10
4144009	VDS201A09800	4140402	VDS401A09800	9,800	.3858	35	47	1,7	89	40	10
4144010	VDS201A09900	4140403	VDS401A09900	9,900	.3898	35	47	1,7	89	40	10
4144011	VDS201A09921	4140404	VDS401A09921	9,921	.3906	35	47	1,7	89	40	10
4144172	VDS201A10000	4140001	VDS401A10000	10,000	.3937	35	47	1,7	89	40	10
4144423	VDS201A10100	4140002	VDS401A10100	10,100	.3976	40	55	1,7	102	45	12
4144424	VDS201A10200	4140163	VDS401A10200	10,200	.4016	40	55	1,7	102	45	12
4144425	VDS201A10300	4140164	VDS401A10300	10,300	.4055	40	55	1,8	102	45	12
4144426	VDS201A10320	4140165	VDS401A10320	10,320	.4063	40	55	1,8	102	45	12
4144427	VDS201A10400	4140166	VDS401A10400	10,400	.4094	40	55	1,8	102	45	12
4144428	VDS201A10500	4140167	VDS401A10500	10,500	.4134	40	55	1,8	102	45	12
4144429	VDS201A10600	4140168	VDS401A10600	10,600	.4173	40	55	1,8	102	45	12
4144430	VDS201A10700	4140169	VDS401A10700	10,700	.4213	40	55	1,8	102	45	12
4144431	VDS201A10716	4140170	VDS401A10716	10,716	.4219	40	55	1,8	102	45	12
4144432	VDS201A10800	4140171	VDS401A10800	10,800	.4252	40	55	1,9	102	45	12

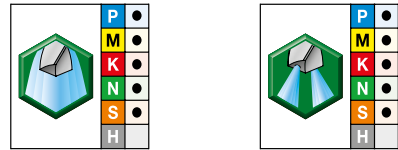
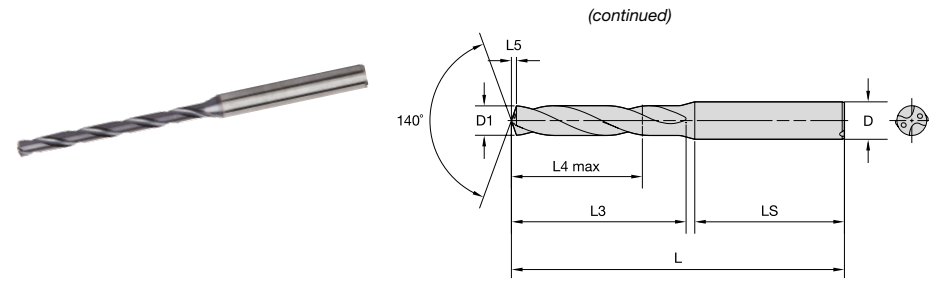
For Speeds & Feeds please see page 184

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grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4144433	VDS201A10900	4140172	VDS401A10900	10,900	.4291	40	55	1,9	102	45	12
4144434	VDS201A11000	4140173	VDS401A11000	11,000	.4331	40	55	1,9	102	45	12
4144435	VDS201A11100	4140174	VDS401A11100	11,100	.4370	40	55	1,9	102	45	12
4144436	VDS201A11113	4140175	VDS401A11113	11,113	.4375	40	55	1,9	102	45	12
4144437	VDS201A11200	4140176	VDS401A11200	11,200	.4409	40	55	1,9	102	45	12
4144438	VDS201A11300	4140177	VDS401A11300	11,300	.4449	40	55	1,9	102	45	12
4144439	VDS201A11400	4140178	VDS401A11400	11,400	.4488	40	55	2,0	102	45	12
4144440	VDS201A11500	4140179	VDS401A11500	11,500	.4528	40	55	2,0	102	45	12
4144441	VDS201A11509	4140180	VDS401A11509	11,509	.4531	40	55	2,0	102	45	12
4144442	VDS201A11600	4140181	VDS401A11600	11,600	.4567	40	55	2,0	102	45	12
4144443	VDS201A11700	4140182	VDS401A11700	11,700	.4606	40	55	2,0	102	45	12
4144444	VDS201A11800	4140183	VDS401A11800	11,800	.4646	40	55	2,0	102	45	12
4144445	VDS201A11900	4140184	VDS401A11900	11,900	.4685	40	55	2,0	102	45	12
4144446	VDS201A11908	4140185	VDS401A11908	11,908	.4688	40	55	2,0	102	45	12
4144447	VDS201A12000	4140186	VDS401A12000	12,000	.4724	40	55	2,1	102	45	12
4144448	VDS201A12100	4140187	VDS401A12100	12,100	.4764	43	60	2,1	107	45	14
4144449	VDS201A12200	4140188	VDS401A12200	12,200	.4803	43	60	2,1	107	45	14
4144450	VDS201A12300	4140189	VDS401A12300	12,300	.4843	43	60	2,1	107	45	14
4144451	VDS201A12304	4140190	VDS401A12304	12,304	.4844	43	60	2,1	107	45	14
4144452	VDS201A12400	4140191	VDS401A12400	12,400	.4882	43	60	2,1	107	45	14
4144453	VDS201A12500	4140192	VDS401A12500	12,500	.4921	43	60	2,2	107	45	14
4144454	VDS201A12600	4140194	VDS401A12600	12,600	.4961	43	60	2,2	107	45	14
4144455	VDS201A12700	4140195	VDS401A12700	12,700	.5000	43	60	2,2	107	45	14
4144456	VDS201A12800	4140196	VDS401A12800	12,800	.5039	43	60	2,2	107	45	14
4144457	VDS201A12900	4140197	VDS401A12900	12,900	.5079	43	60	2,2	107	45	14
4144458	VDS201A13000	4140198	VDS401A13000	13,000	.5118	43	60	2,2	107	45	14
4144459	VDS201A13096	4140199	VDS401A13096	13,096	.5156	43	60	2,3	107	45	14
4144460	VDS201A13100	4140200	VDS401A13100	13,100	.5157	43	60	2,3	107	45	14
4144461	VDS201A13200	4140201	VDS401A13200	13,200	.5197	43	60	2,3	107	45	14
4144462	VDS201A13300	4140202	VDS401A13300	13,300	.5236	43	60	2,3	107	45	14
4144463	VDS201A13400	4140203	VDS401A13400	13,400	.5276	43	60	2,3	107	45	14
4144464	VDS201A13500	4140204	VDS401A13500	13,500	.5315	43	60	2,3	107	45	14
4144465	VDS201A13600	4140205	VDS401A13600	13,600	.5354	43	60	2,3	107	45	14
4144466	VDS201A13700	4140206	VDS401A13700	13,700	.5394	43	60	2,4	107	45	14
4144467	VDS201A13800	4140207	VDS401A13800	13,800	.5433	43	60	2,4	107	45	14
4144468	VDS201A13891	-	-	13,891	.5469	43	60	2,4	107	45	14
4144469	VDS201A13900	4140209	VDS401A13900	13,900	.5472	43	60	2,4	107	45	14
4144470	VDS201A14000	4140210	VDS401A14000	14,000	.5512	43	60	2,4	107	45	14
4144471	VDS2										

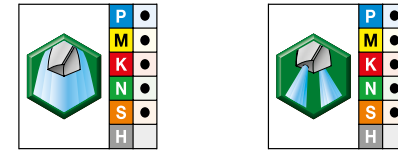
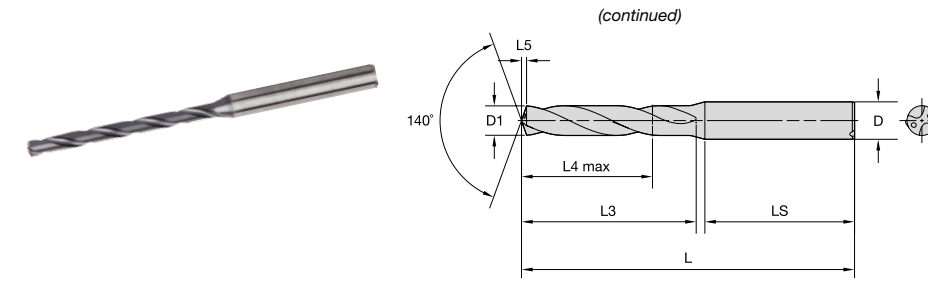
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grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4144485	VDS201A15200	4140225	VDS401A15200	15,200	.5984	45	65	2,6	115	48	16
4144486	VDS201A15300	4140226	VDS401A15300	15,300	.6024	45	65	2,6	115	48	16
4144487	VDS201A15400	4140227	VDS401A15400	15,400	.6063	45	65	2,7	115	48	16
4144488	VDS201A15479	4140228	VDS401A15479	15,479	.6094	45	65	2,7	115	48	16
4144489	VDS201A15500	4140229	VDS401A15500	15,500	.6102	45	65	2,7	115	48	16
4144490	VDS201A15600	4140230	VDS401A15600	15,600	.6142	45	65	2,7	115	48	16
4144491	VDS201A15700	4140231	VDS401A15700	15,700	.6181	45	65	2,7	115	48	16
4144492	VDS201A15800	4140232	VDS401A15800	15,800	.6220	45	65	2,7	115	48	16
4144493	VDS201A15875	4140233	VDS401A15875	15,875	.6250	45	65	2,8	115	48	16
4144494	VDS201A15900	4140234	VDS401A15900	15,900	.6260	45	65	2,8	115	48	16
4144495	VDS201A16000	4140235	VDS401A16000	16,000	.6299	45	65	2,8	115	48	16
4144496	VDS201A16100	4140236	VDS401A16100	16,100	.6339	51	73	2,8	123	48	18
4144497	VDS201A16200	4140237	VDS401A16200	16,200	.6378	51	73	2,8	123	48	18
4144498	VDS201A16271	-	-	16,271	.6406	51	73	2,8	123	48	18
4144499	VDS201A16300	4140239	VDS401A16300	16,300	.6417	51	73	2,8	123	48	18
4144500	VDS201A16400	4140241	VDS401A16400	16,400	.6457	51	73	2,8	123	48	18
4144501	VDS201A16500	4140242	VDS401A16500	16,500	.6496	51	73	2,9	123	48	18
4144503	VDS201A16600	4140243	VDS401A16600	16,600	.6535	51	73	2,9	123	48	18
4144504	VDS201A16670	4140244	VDS401A16670	16,670	.6563	51	73	2,9	123	48	18
4144505	VDS201A16700	4140245	VDS401A16700	16,700	.6575	51	73	2,9	123	48	18
4144506	VDS201A16800	4140246	VDS401A16800	16,800	.6614	51	73	2,9	123	48	18
4144507	VDS201A16900	4140247	VDS401A16900	16,900	.6654	51	73	2,9	123	48	18
4144508	VDS201A17000	-	-	17,000	.6693	51	73	3,0	123	48	18
-	-	4140248	VDS401A17000	17,000	.6693	51	73	2,9	123	48	18
4144509	VDS201A17100	4140249	VDS401A17100	17,100	.6732	51	73	3,0	123	48	18
4144510	VDS201A17200	4140250	VDS401A17200	17,200	.6772	51	73	3,0	123	48	18
4144511	VDS201A17300	4140251	VDS401A17300	17,300	.6811	51	73	3,0	123	48	18
4144512	VDS201A17400	4140252	VDS401A17400	17,400	.6850	51	73	3,0	123	48	18
4144513	VDS201A17463	4140253	VDS401A17463	17,463	.6875	51	73	3,0	123	48	18
4144514	VDS201A17500	4140254	VDS401A17500	17,500	.6890	51	73	3,0	123	48	18
4144515	VDS201A17600	4140255	VDS401A17600	17,600	.6929	51	73	3,1	123	48	18
4144516	VDS201A17700	4140256	VDS401A17700	17,700	.6969	51	73	3,1	123	48	18
4144517	VDS201A17800	4140257	VDS401A17800	17,800	.7008	51	73	3,1	123	48	18
4144518	VDS201A17859	-	-	17,859	.7031	51	73	3,1	123	48	18
4144519	VDS201A17900	-	-	17,900	.7047	51	73	3,1	123	48	18
4144590	VDS201A18000	4140449	VDS401A18000	18,000	.7087	51	73	3,1	123	48	18
4144591	VDS201A18100	4140450	VDS401A18100	18,100	.7126	55	79	3,1	131	50	20
4144592	VDS201A18200	4140451	VDS401A18200	18,200	.7165	55	79	3,2	131	50	20
4144593	VDS201A18258	4140452	VDS401A18258	18,258	.7188	55	79	3,2	131	50	20
4144594	VDS201A18300	4140463	VDS401A18300	18,300	.7205	55	79	3,2	131	50	20
-	-	4140464	VDS401A18400	18,400	.7244	55	79	3,2	131	50	20
4144596	VDS201A18500	4140465	VDS401A18500	18,500	.7283	55	79	3,2	131	50	20
4144597	VDS201A18600	4140466	VDS401A18600	18,600	.7323	55	79	3,2	131	50	20
4144598	VDS201A18654	4140467	VDS401A18654	18,654	.7344	55	79	3,2	131	50	20
4144599	VDS201A18700	-	-	18,700	.7362	55	79	3,3	131	50	20
-	-	4140468	VDS401A18700	18,700	.7362	55	79	3,2	131	50	20
4144600	VDS201A18800	4140469	VDS401A18800	18,800	.7402	55	79	3,3	131	50	20
4144601	VDS201A18900	4140470	VDS401A18900	18,900	.7441	55	79	3,3	131	50	20
4144602	VDS201A19000	4140471	VDS401A19000	19,000	.7480	55	79	3,3	131	50	20
4144603	VDS201A19050	4140472	VDS401A19050	19,050	.7500	55	79	3,3	131	50	20
4144604	VDS201A19100	4140473	VDS401A19100	19,100	.7520	55	79	3,3	131	50	20
4144605	VDS201A19200	4140474	VDS401A19200	19,200	.7559	55	79	3,3	131	50	20

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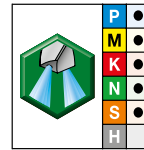
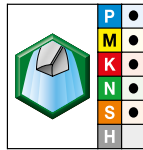
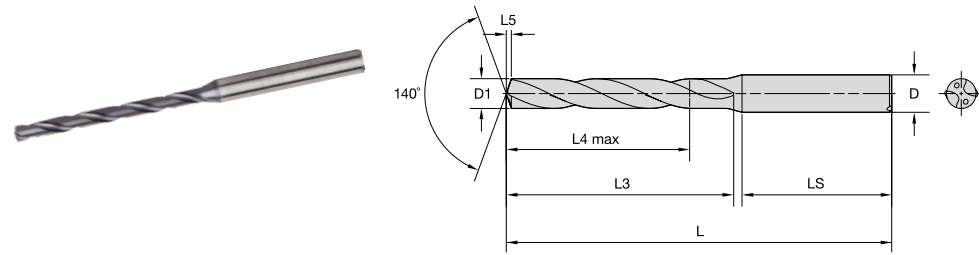
VariDrill • 3 x D • VDS201A / VDS401A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4144606	VDS201A19300	4140475	VDS401A19300	19,300	.7598	55	79	3,4	131	50	20
4144607	VDS201A19400	4140476	VDS401A19400	19,400	.7638	55	79	3,4	131	50	20
4144608	VDS201A19500	4140477	VDS401A19500	19,500	.7677	55	79	3,4	131	50	20
-	-	4140478	VDS401A19600	19,600	.7717	55	79	3,4	131	50	20
4144610	VDS201A19700	4140479	VDS401A19700	19,700	.7756	55	79	3,4	131	50	20
4144611	VDS201A19800	4140480	VDS401A19800	19,800	.7795	55	79	3,4	131	50	20
4144612	VDS201A19900	4140481	VDS401A19900	19,900	.7835	55	79	3,5	131	50	20
4144613	VDS201A20000	4140482	VDS401A20000	20,000	.7874	55	79	3,5	131	50	20

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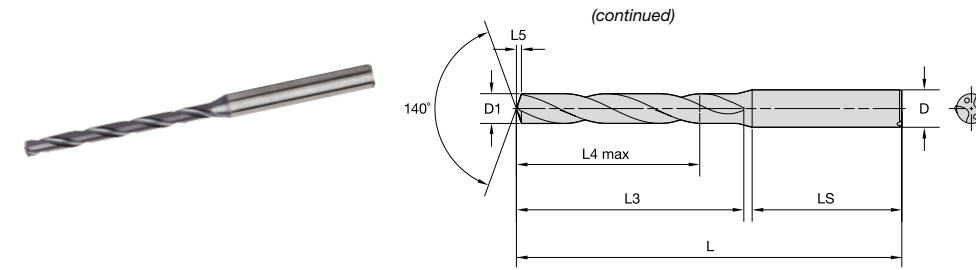
VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter							
order #	catalogue #	order #	catalogue #	mm	in	L4 max	L3	L5	L	LS	D
4148000	VDS202A01000	-	-	1,000	.0394	6	9	0,1	58	28	4
4148001	VDS202A01016	-	-	1,016	.0400	6	9	0,1	58	28	4
4148002	VDS202A01041	-	-	1,041	.0410	6	9	0,2	58	28	4
4148003	VDS202A01067	-	-	1,067	.0420	6	9	0,2	58	28	4
4148005	VDS202A01100	-	-	1,100	.0433	6	9	0,2	58	28	4
4148006	VDS202A01181	-	-	1,181	.0465	6	9	0,2	58	28	4
4148007	VDS202A01191	-	-	1,191	.0469	6	9	0,2	58	28	4
4148008	VDS202A01200	-	-	1,200	.0472	6	9	0,2	58	28	4
4148009	VDS202A01300	-	-	1,300	.0512	6	9	0,2	58	28	4
4148010	VDS202A01321	-	-	1,321	.0520	6	9	0,2	58	28	4
4148011	VDS202A01397	-	-	1,397	.0550	6	9	0,2	58	28	4
4148012	VDS202A01400	-	-	1,400	.0551	6	9	0,2	58	28	4
4148013	VDS202A01500	4142871	VDS402A01500	1,500	.0591	9	12	0,2	58	28	4
4148014	VDS202A01600	4142884	VDS402A01600	1,600	.0630	9	12	0,2	58	28	4
4148015	VDS202A01700	4142887	VDS402A01700	1,700	.0669	9	12	0,3	58	28	4
4148016	VDS202A01800	4142890	VDS402A01800	1,800	.0709	9	12	0,3	58	28	4
4148017	VDS202A01900	4142893	VDS402A01900	1,900	.0748	9	12	0,3	58	28	4
4148018	VDS202A01984	4142896	VDS402A01984	1,984	.0781	14	18	0,3	58	28	4
4148019	VDS202A02000	4142899	VDS402A02000	2,000	.0787	14	18	0,3	58	28	4
4148020	VDS202A02100	4142902	VDS402A02100	2,100	.0827	14	18	0,3	58	28	4
4148021	VDS202A02200	4142905	VDS402A02200	2,200	.0866	14	18	0,3	58	28	4
4148022	VDS202A02300	4142908	VDS402A02300	2,300	.0906	14	18	0,4	58	28	4
4148023	VDS202A02383	4142911	VDS402A02383	2,383	.0938	17	22	0,4	58	28	4
4148024	VDS202A02400	4142924	VDS402A02400	2,400	.0945	17	22	0,4	58	28	4
4148025	VDS202A02439	4142927	VDS402A02439	2,439	.0960	17	22	0,4	58	28	4
4148026	VDS202A02489	4142930	VDS402A02489	2,489	.0980	17	22	0,4	58	28	4
4148027	VDS202A02500	4142933	VDS402A02500	2,500	.0984	17	22	0,4	58	28	4
4148028	VDS202A02578	4142936	VDS402A02578	2,578	.1015	17	22	0,4	58	28	4
4148029	VDS202A02600	4142939	VDS402A02600	2,600	.1024	17	22	0,4	58	28	4
4148030	VDS202A02642	4142942	VDS402A02642	2,642	.1040	17	22	0,4	58	28	4
4148031	VDS202A02700	4142945	VDS402A02700	2,700	.1063	17	22	0,4	58	28	4
4148032	VDS202A02705	-	-	2,705	.1065	17	22	0,4	58	28	4
4148033	VDS202A02779	4142951	VDS402A02779	2,779	.1094	17	22	0,4	58	28	4
4148034	VDS202A02800	4142964	VDS402A02800	2,800	.1102	17	22	0,5	58	28	4
4148035	VDS202A02820	4142967	VDS402A02820	2,820	.1110	17	22	0,5	58	28	4
4148036	VDS202A02870	4142970	VDS402A02870	2,870	.1130	17	22	0,5	58	28	4
4148037	VDS202A02900	4142973	VDS402A02900	2,900	.1142	17	22	0,5	58	28	4
4148038	VDS202A02947	4142976	VDS402A02947	2,947	.1160	17	22	0,5	58	28	4
4148142	VDS202A03000	4142844	VDS402A03000	3,000	.1181	23	28	0,5	66	36	6
4148143	VDS202A03048	4142846	VDS402A03048	3,048	.1200	23	28	0,5	66	36	6
4148144	VDS202A03100	4142847	VDS402A03100	3,100	.1220	23	28	0,5	66	36	6
4148145	VDS202A03175	4142849	VDS402A03175	3,175	.1250	23	28	0,5	66	36	6
4148146	VDS202A03200	4142851	VDS402A03200	3,200	.1260	23	28	0,5	66	36	6
4148147	VDS202A03264	4142864	VDS402A03264	3,264	.1285	23	28	0,5	66	36	6
4148148	VDS202A03300	4142865	VDS402A03300	3,300	.1299	23	28	0,5	66	36	6
4148149	VDS202A03400	4142867	VDS402A03400	3,400	.1339	23	28	0,6	66	36	6
4148150	VDS202A03455	4142869	VDS402A03455	3,455	.1360	23	28	0,6	66	36	6
4148151	VDS202A03500	4142872	VDS402A03500	3,500	.1378	23	28	0,6	66	36	6
4148152	VDS202A03571	4142885	VDS402A03571	3,571	.1406	23	28	0,6	66	36	6
4148153	VDS202A03600	4142888	VDS402A03600	3,600	.1417	23	28	0,6	66	36	6
4148154	VDS202A03658	4142891	VDS402A03658	3,658	.1440	23	28	0,6	66	36	6
4148155	VDS202A03700	4142894	VDS402A03700	3,700	.1457	23	28	0,6	66	36	6

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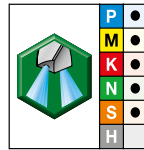
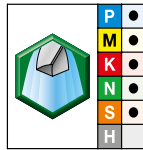
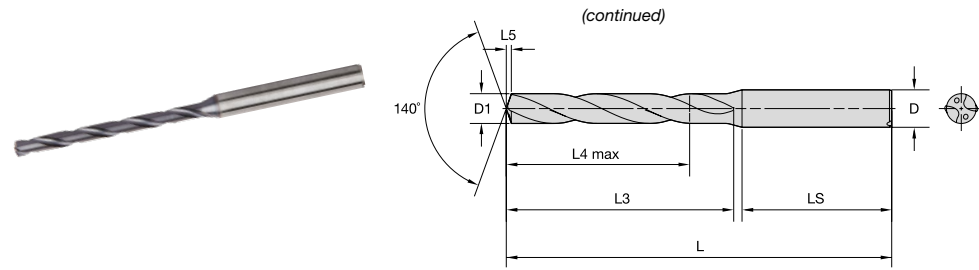
VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter							
order #	catalogue #	order #	catalogue #	mm	in	L4 max	L3	L5	L	LS	D
4148156	VDS202A03734	4142897	VDS402A03734	3,734	.1470	23	28	0,6	66	36	6
4148157	VDS202A03800	4142900	VDS402A03800	3,800	.1496	29	36	0,6	74	36	6
4148158	VDS202A03900	4142903	VDS402A03900	3,900	.1535	29	36	0,6	74	36	6
4148159	VDS202A03970	4142906	VDS402A03970	3,970	.1563	29	36	0,7	74	36	6
4148160	VDS202A04000	4142909	VDS402A04000	4,000	.1575	29	36	0,7	74	36	6
4148161	VDS202A04039	4142912	VDS402A04039	4,039	.1590	29	36	0,7	74	36	6
4148162	VDS202A04090	4142925	VDS402A04090	4,090	.1610	29	36	0,7	74	36	6
4148163	VDS202A04100	4142928	VDS402A04100	4,100	.1614	29	36	0,7	74	36	6
4148164	VDS202A04200	4142931	VDS402A04200	4,200	.1654	29	36	0,7	74	36	6
4148165	VDS202A04217	4142934	VDS402A04217	4,217	.1660	29	36	0,7	74	36	6
4148166	VDS202A04300	4142937	VDS402A04300	4,300	.1693	29	36	0,7	74	36	6
4148167	VDS202A04366	4142940	VDS402A04366	4,366	.1719	29	36	0,7	74	36	6
4148168	VDS202A04400	4142943	VDS402A04400	4,400	.1732	29	36	0,7	74	36	6
4148169	VDS202A04500	4142946	VDS402A04500	4,500	.1772	29	36	0,7	74	36	6
4148170	VDS202A04600	4142949	VDS402A04600	4,600	.1811	29	36	0,8	74	36	6
4148171	VDS202A04623	4142952	VDS402A04623	4,623	.1820	29	36	0,8	74	36	6
4148172	VDS202A04700	4142965	VDS402A04700	4,700	.1850	29	36	0,8	74	36	6
4148173	VDS202A04763	4142968	VDS402A04763	4,763	.1875	35	44	0,8	82	36	6
4148174	VDS202A04800	4142971	VDS402A04800	4,800	.1890	35	44	0,8	82	36	6
4148175	VDS202A04852	4142974	VDS402A04852	4,852	.1910	35	44	0,8	82	36	6
4148176	VDS202A04900	4142977	VDS402A04900	4,900	.1929	35	44	0,8	82	36	6
4148177	VDS202A05000	4142979	VDS402A05000	5,000	.1969	35	44	0,8	82	36	6
4148178	VDS202A05100	4142981	VDS402A05100	5,100	.2008	35	44	0,9	82	36	6
4148179	VDS202A05106	4142984	VDS402A05106	5,106	.2010	35	44	0,9	82	36	6
4148180	VDS202A05159	4142996	VDS402A05159	5,159	.2031	35	44	0,9	82	36	6
4148181	VDS202A05200	4142997	VDS402A05200	5,200	.2047	35	44	0,9	82	36	6
4148182	VDS202A05300	4142999	VDS402A05300	5,300	.2087	35	44	0,9	82	36	6
4148183	VDS202A05400	4143000	VDS402A05400	5,400	.2126	35	44	0,9	82	36	6
4148184	VDS202A05410	4143001	VDS402A05410	5,410	.2130	35	44	0,9	82	36	6
4148185	VDS202A05500	4143002	VDS402A05500	5,500	.2165	35	44	0,9	82	36	6
4148186	VDS202A05558	4143003	VDS402A05558	5,558	.2188	35	44	0,9	82	36	6
4148187	VDS202A05600	4143004	VDS402A05600	5,600	.2205	35	44	0,9	82	36	6
4148188	VDS202A05616	4143005	VDS402A05616	5,616	.2211	35	44	0,9	82	36	6
4148189	VDS202A05700	4143006	VDS402A05700	5,700	.2244	35	44	1,0	82	36	6
4148190	VDS202A05800	4143007	VDS402A05800	5,800	.2283	35	44	1,0	82	36	6
4148191	VDS202A05900	4143008	VDS402A05900	5,900	.2323	35	44	1,0	82	36	6
4148192	VDS202A05954	4143009	VDS402A05954	5,954	.2344	35	44	1,0	82	36	6
4148193	VDS202A06000	4143010	VDS402A06000	6,000	.2362	35	44	1,0	82	36	6
4148194	VDS202A06100	4143011	VDS402A06100	6,100	.2402	43	53	1,0	91	36	8
4148195	VDS202A06200	4143012	VDS402A06200	6,200	.2441	43	53	1,0	91	36	8
4148196	VDS202A06300	4143023	VDS402A06300	6,300	.2480	43	53	1,1	91	36	8
4148197	VDS202A06350	4143024	VDS402A06350	6,350	.2500						



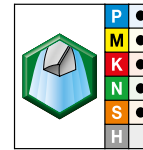
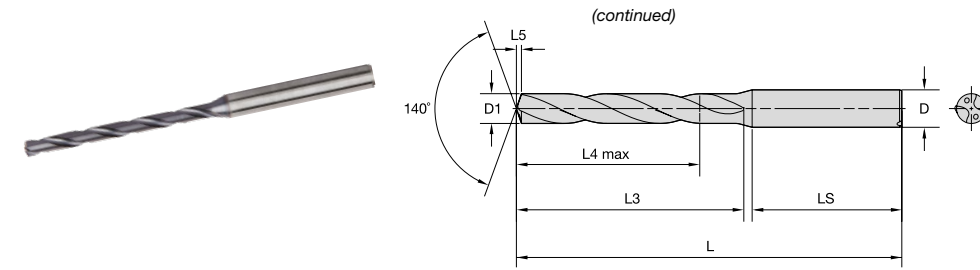
VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4148208	VDS202A07100	4143045	VDS402A07100	7,100	.2795	43	53	1.2	91	36	8
4148209	VDS202A07145	4143046	VDS402A07145	7,145	.2813	43	53	1.2	91	36	8
4148210	VDS202A07200	4143047	VDS402A07200	7,200	.2835	43	53	1.2	91	36	8
4148211	VDS202A07300	4143048	VDS402A07300	7,300	.2874	43	53	1.2	91	36	8
4148212	VDS202A07400	4143049	VDS402A07400	7,400	.2913	43	53	1.3	91	36	8
4148213	VDS202A07500	4143050	VDS402A07500	7,500	.2953	43	53	1.3	91	36	8
4148214	VDS202A07541	4143051	VDS402A07541	7,541	.2969	43	53	1.3	91	36	8
4148215	VDS202A07600	4143052	VDS402A07600	7,600	.2992	43	53	1.3	91	36	8
4148216	VDS202A07700	4143063	VDS402A07700	7,700	.3031	43	53	1.3	91	36	8
4148217	VDS202A07800	4143064	VDS402A07800	7,800	.3071	43	53	1.3	91	36	8
4148218	VDS202A07900	4143065	VDS402A07900	7,900	.3110	43	53	1.3	91	36	8
4148219	VDS202A07938	4143066	VDS402A07938	7,938	.3125	43	53	1.3	91	36	8
4148220	VDS202A08000	4143067	VDS402A08000	8,000	.3150	43	53	1.4	91	36	8
4148221	VDS202A08100	4143068	VDS402A08100	8,100	.3189	49	61	1.4	103	40	10
4148222	VDS202A08200	4143069	VDS402A08200	8,200	.3228	49	61	1.4	103	40	10
4148223	VDS202A08300	4143070	VDS402A08300	8,300	.3268	49	61	1.4	103	40	10
4148224	VDS202A08334	4143071	VDS402A08334	8,334	.3281	49	61	1.4	103	40	10
4148225	VDS202A08400	4143072	VDS402A08400	8,400	.3307	49	61	1.4	103	40	10
4148226	VDS202A08433	4143083	VDS402A08433	8,433	.3320	49	61	1.4	103	40	10
4148227	VDS202A08500	4143084	VDS402A08500	8,500	.3346	49	61	1.4	103	40	10
4148228	VDS202A08600	4143085	VDS402A08600	8,600	.3386	49	61	1.5	103	40	10
4148229	VDS202A08700	4143086	VDS402A08700	8,700	.3425	49	61	1.5	103	40	10
4148230	VDS202A08733	4143087	VDS402A08733	8,733	.3438	49	61	1.5	103	40	10
4148231	VDS202A08800	4143088	VDS402A08800	8,800	.3465	49	61	1.5	103	40	10
4148232	VDS202A08900	4143089	VDS402A08900	8,900	.3504	49	61	1.5	103	40	10
4148233	VDS202A09000	4143090	VDS402A09000	9,000	.3543	49	61	1.5	103	40	10
4148234	VDS202A09100	4143091	VDS402A09100	9,100	.3583	49	61	1.6	103	40	10
4148235	VDS202A09129	4143092	VDS402A09129	9,129	.3594	49	61	1.6	103	40	10
4148236	VDS202A09200	4143103	VDS402A09200	9,200	.3622	49	61	1.6	103	40	10
4148237	VDS202A09300	4143104	VDS402A09300	9,300	.3661	49	61	1.6	103	40	10
4148238	VDS202A09347	4143105	VDS402A09347	9,347	.3680	49	61	1.6	103	40	10
4148239	VDS202A09400	4143106	VDS402A09400	9,400	.3701	49	61	1.6	103	40	10
4148240	VDS202A09500	4143107	VDS402A09500	9,500	.3740	49	61	1.6	103	40	10
4148241	VDS202A09525	4143108	VDS402A09525	9,525	.3750	49	61	1.6	103	40	10
4148242	VDS202A09600	4143109	VDS402A09600	9,600	.3780	49	61	1.6	103	40	10
4148243	VDS202A09700	4143110	VDS402A09700	9,700	.3819	49	61	1.7	103	40	10
4148244	VDS202A09800	4143111	VDS402A09800	9,800	.3858	49	61	1.7	103	40	10
4148245	VDS202A09900	4143112	VDS402A09900	9,900	.3898	49	61	1.7	103	40	10
4148246	VDS202A09921	4143113	VDS402A09921	9,921	.3906	49	61	1.7	103	40	10
4148258	VDS202A10000	4142823	VDS402A10000	10,000	.3937	49	61	1.7	103	40	10
4148259	VDS202A10100	4142825	VDS402A10100	10,100	.3976	56	71	1.7	118	45	12
4148260	VDS202A10200	4142827	VDS402A10200	10,200	.4016	56	71	1.7	118	45	12
4148261	VDS202A10300	4142829	VDS402A10300	10,300	.4055	56	71	1.8	118	45	12
4148262	VDS202A10320	4142831	VDS402A10320	10,320	.4063	56	71	1.8	118	45	12
4148283	VDS202A10400	4142832	VDS402A10400	10,400	.4094	56	71	1.8	118	45	12
4148284	VDS202A10500	4142834	VDS402A10500	10,500	.4134	56	71	1.8	118	45	12
4148285	VDS202A10600	4142836	VDS402A10600	10,600	.4173	56	71	1.8	118	45	12
4148286	VDS202A10700	4142838	VDS402A10700	10,700	.4213	56	71	1.8	118	45	12
4148287	VDS202A10716	4142840	VDS402A10716	10,716	.4219	56	71	1.8	118	45	12
4148288	VDS202A10800	4142842	VDS402A10800	10,800	.4252	56	71	1.9	118	45	12
4148289	VDS202A10900	4142855	VDS402A10900	10,900	.4291	56	71	1.9	118	45	12
4148290	VDS202A11000	4142857	VDS402A11000	11,000	.4331	56	71	1.9	118	45	12

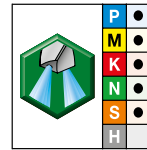
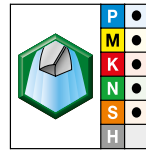
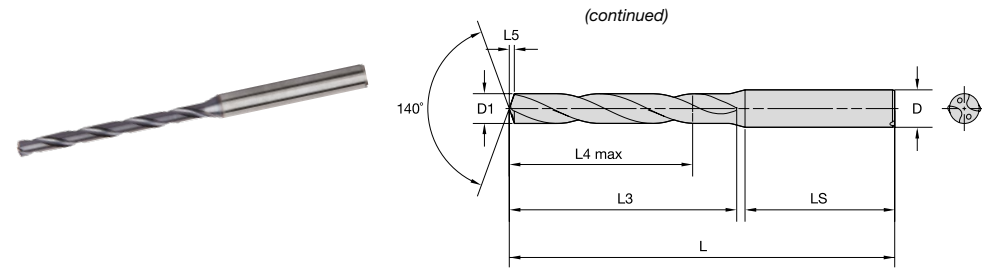
For Speeds & Feeds please see page 184

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
4148291	VDS202A11100	4142858	VDS402A11100	11,100	.4370	56	71	1.9	118	45	12
4148292	VDS202A11113	4142861	VDS402A11113	11,113	.4375	56	71	1.9	118	45	12
4148293	VDS202A11200	4142862	VDS402A11200	11,200	.4409	56	71	1.9	118	45	12
4148294	VDS202A11300	4142873	VDS402A11300	11,300	.4449	56	71	1.9	118	45	12
4148295	VDS202A11400	4142874	VDS402A11400	11,400	.4488	56	71	2.0	118	45	12
4148296	VDS202A11500	4142875	VDS402A11500	11,500	.4528	56	71	2.0	118	45	12
4148297	VDS202A11509	4142876	VDS402A11509	11,509	.4531	56	71	2.0	118	45	12
4148298	VDS202A11600	4142877	VDS402A11600	11,600	.4567	56	71	2.0	118	45	12
4148299	VDS202A11700	4142878	VDS402A11700	11,700	.4606	56	71	2.0	118	45	12
4148300	VDS202A11800	4142879	VDS402A11800	11,800	.4646	56	71	2.0	118	45	12
4148301	VDS202A11900	4142880	VDS402A11900	11,900	.4685	56	71	2.0	118	45	12
4148302	VDS202A11908	4142881	VDS402A11908	11,908	.4688	56	71	2.0	118	45	12
4148313	VDS202A12000	4142882	VDS402A12000	12,000	.4724	56	71	2.1	118	45	12
4148314	VDS202A12100	4142913	VDS402A12100	12,100	.4764	60	77	2.1	124	45	14
4148315	VDS202A12200	4142914	VDS402A12200	12,200	.4803	60	77	2.1	124	45	14
4148316	VDS202A12300	4142915	VDS402A12300	12,300	.4843	60	77	2.1	124	45	14
4148317	VDS202A12304	4142916	VDS402A12304	12,304	.4844	60	77	2.1	124	45	14
4148318	VDS202A12400	4142917	VDS402A12400	12,400	.4882	60	77	2.1	124	45	14
4148319	VDS202A12500	4142918	VDS402A12500	12,500	.4921	60	77	2.2	124	45	14
4148320	VDS202A12600	4142919	VDS402A12600	12,600	.4961	60	77	2.2	124	45	14
4148321	VDS202A12700	4142920	VDS402A12700	12,700	.5000	60	77	2.2	124	45	14
4148322	VDS202A12800	4142921	VDS402A12800	12,800	.5039	60	77	2.2	124	45	14
4148343	VDS202A12900	4142922	VDS402A12900	12,900	.5079	60	77	2.2	124	45	14
4148344	VDS202A13000	4142953	VDS402A13000	13,000	.5118	60	77	2.2	124	45	14
4148345	VDS202A13096	4142954	VDS402A13096	13,096	.5156	60	77	2.3	124	45	14
4148346	VDS202A13100	4142955	VDS402A13100	13,100	.5157	60	77	2.3	124	45	14
4148347	VDS202A13200	4142956	VDS402A13200	13,200	.5197	60	77	2.3	124	45	14
4148348	VDS202A13300	4142957	VDS402A13300	13,300	.5236	60	77	2.3	124	45	14
4148349	VDS202A13400	4142958	VDS402A13400	13,400	.5276	60	77	2.3	124	45	14
4148350	VDS202A13500	4142959	VDS402A13500	13,500	.5315	60	77	2.3	124	45	14
4148351	VDS202A13600	4142960	VDS402A13600	13,600	.5354	60	77	2.3	124	45	14
4148352	VDS202A13700	4142961	VDS402A13700	13,700	.5394	60	77	2.4	124	45	14
4148353	VDS202A13800	4142962	VDS402A13800	13,800	.5433	60	77	2.4	124	45	14
4148354	VDS202A13891	4142963	VDS402A13891	13,891	.5469	60	77	2.4	124	45	14
4148355	VDS202A13900	4142964	VDS402A13900	13,900	.5472	60	77	2.4	124	45	14
4148356	VDS202A14000	4142985	VDS402A14000	14,000	.5512	60	77	2.4	124	45	14
4148357	VDS202A14100	4142986	VDS402A14100	14,100	.5551	63	83	2.4	133	48	16
4148358	VDS202A14200	4142987	VDS402A14200								

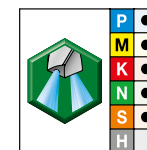
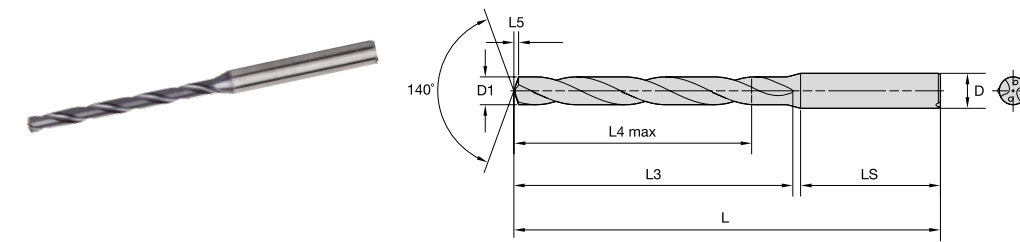
VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	order #	catalogue #	mm	in						
-	-	4143022	VDS402A15400	15,400	.6063	63	83	2,7	133	48	16
-	-	4143033	VDS402A15479	15,479	.6094	63	83	2,7	133	48	16
4148375	VDS202A15500	4143034	VDS402A15500	15,500	.6102	63	83	2,7	133	48	16
4148376	VDS202A15600	4143035	VDS402A15600	15,600	.6142	63	83	2,7	133	48	16
4148377	VDS202A15700	4143036	VDS402A15700	15,700	.6181	63	83	2,7	133	48	16
4148378	VDS202A15800	4143037	VDS402A15800	15,800	.6220	63	83	2,7	133	48	16
4148379	VDS202A15875	4143038	VDS402A15875	15,875	.6250	63	83	2,8	133	48	16
4148380	VDS202A15900	4143039	VDS402A15900	15,900	.6260	63	83	2,8	133	48	16
4148381	VDS202A16000	4143040	VDS402A16000	16,000	.6299	63	83	2,8	133	48	16
4148382	VDS202A16100	4143041	VDS402A16100	16,100	.6339	71	93	2,8	143	48	18
4148383	VDS202A16200	4143042	VDS402A16200	16,200	.6378	71	93	2,8	143	48	18
4148384	VDS202A16271	4143053	VDS402A16271	16,271	.6406	71	93	2,8	143	48	18
4148385	VDS202A16300	4143054	VDS402A16300	16,300	.6417	71	93	2,8	143	48	18
-	-	4143055	VDS402A16400	16,400	.6457	71	93	2,8	143	48	18
4148387	VDS202A16500	4143056	VDS402A16500	16,500	.6496	71	93	2,9	143	48	18
4148388	VDS202A16600	4143057	VDS402A16600	16,600	.6535	71	93	2,9	143	48	18
4148389	VDS202A16670	4143058	VDS402A16670	16,670	.6563	71	93	2,9	143	48	18
-	-	4143059	VDS402A16700	16,700	.6575	71	93	2,9	143	48	18
4148391	VDS202A16800	4143060	VDS402A16800	16,800	.6614	71	93	2,9	143	48	18
-	-	4143061	VDS402A16900	16,900	.6654	71	93	2,9	143	48	18
4148393	VDS202A17000	4143062	VDS402A17000	17,000	.6693	71	93	3,0	143	48	18
4148394	VDS202A17100	4143073	VDS402A17100	17,100	.6732	71	93	3,0	143	48	18
-	-	4143074	VDS402A17200	17,200	.6772	71	93	3,0	143	48	18
4148396	VDS202A17300	4143075	VDS402A17300	17,300	.6811	71	93	3,0	143	48	18
-	-	4143076	VDS402A17400	17,400	.6850	71	93	3,0	143	48	18
4148398	VDS202A17463	4143077	VDS402A17463	17,463	.6875	71	93	3,0	143	48	18
4148399	VDS202A17500	4143078	VDS402A17500	17,500	.6890	71	93	3,0	143	48	18
4148400	VDS202A17600	4143079	VDS402A17600	17,600	.6929	71	93	3,1	143	48	18
4148401	VDS202A17700	4143080	VDS402A17700	17,700	.6969	71	93	3,1	143	48	18
4148402	VDS202A17800	4143081	VDS402A17800	17,800	.7008	71	93	3,1	143	48	18
-	-	4143082	VDS402A17859	17,859	.7031	71	93	3,1	143	48	18
-	-	4143093	VDS402A17900	17,900	.7047	71	93	3,1	143	48	18
4147921	VDS202A18000	4142803	VDS402A18000	18,000	.7087	71	93	3,1	143	48	18
4147922	VDS202A18100	4142804	VDS402A18100	18,100	.7126	77	101	3,1	153	50	20
4148303	VDS202A18200	4142805	VDS402A18200	18,200	.7165	77	101	3,2	153	50	20
4148304	VDS202A18258	4142806	VDS402A18258	18,258	.7188	77	101	3,2	153	50	20
-	-	4142807	VDS402A18300	18,300	.7205	77	101	3,2	153	50	20
-	-	4142808	VDS402A18400	18,400	.7244	77	101	3,2	153	50	20
4148307	VDS202A18500	4142809	VDS402A18500	18,500	.7283	77	101	3,2	153	50	20
-	-	4142810	VDS402A18600	18,600	.7323	77	101	3,2	153	50	20
-	-	4142811	VDS402A18654	18,654	.7344	77	101	3,2	153	50	20
-	-	4142812	VDS402A18700	18,700	.7362	77	101	3,3	153	50	20
4148311	VDS202A18800	4142824	VDS402A18800	18,800	.7402	77	101	3,3	153	50	20
-	-	4142826	VDS402A18900	18,900	.7441	77	101	3,3	153	50	20
4148323	VDS202A19000	4142828	VDS402A19000	19,000	.7480	77	101	3,3	153	50	20
4148324	VDS202A19050	4142830	VDS402A19050	19,050	.7500	77	101	3,3	153	50	20
4148325	VDS202A19100	4142833	VDS402A19100	19,100	.7520	77	101	3,3	153	50	20
-	-	4142835	VDS402A19200	19,200	.7559	77	101	3,3	153	50	20
4148327	VDS202A19300	4142837	VDS402A19300	19,300	.7598	77	101	3,4	153	50	20
4148328	VDS202A19400	4142839	VDS402A19400	19,400	.7638	77	101	3,4	153	50	20
4148329	VDS202A19500	4142841	VDS402A19500	19,500	.7677	77	101	3,4	153	50	20
-	-	4142853	VDS402A19600	19,600	.7717	77	101	3,4	153	50	20
-	-	4142854	VDS402A19700	19,700	.7756	77	101	3,4	153	50	20
4148332	VDS202A19800	4142856	VDS402A19800	19,800	.7795	77	101	3,4	153	50	20
4148333	VDS202A19900	4142859	VDS402A19900	19,900	.7835	77	101	3,5	153	50	20
4148334	VDS202A20000	4142860	VDS402A20000	20,000	.7874	77	101	3,5	153	50	20

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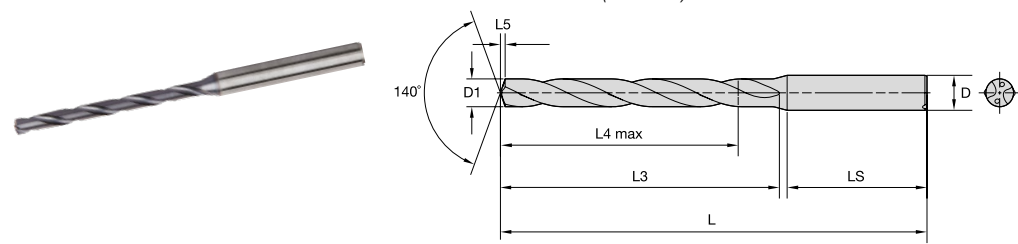
VariDrill • 8 x D • VDS403A • A-Shank



grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	mm	in						
6023126	VDS403A01000	1,000	.0394	10	12	0,2	58	28	4
6023129	VDS403A01100	1,100	.0433	10	12	0,2	58	28	4
6023132	VDS403A01200	1,200	.0472	10	12	0,2	58	28	4
6023133	VDS403A01300	1,300	.0512	10	12	0,2	58	28	4
6023134	VDS403A01321	1,321	.0520	10	12	0,2	58	28	4
6023136	VDS403A01400	1,400	.0551	10	12	0,2	58	28	4
4143700	VDS403A01500	1,500	.0591	15	18	0,2	58	28	4
4143701	VDS403A01600	1,600	.0630	15	18	0,2	58	28	4
4143702	VDS403A01700	1,700	.0669	15	18	0,3	58	28	4
4143723	VDS403A01800	1,800	.0709	15	18	0,3	58	28	4
4143724	VDS403A01900	1,900	.0748	15	18	0,3	58	28	4
4143725	VDS403A01984	1,984	.0781	22	26	0,3	66	28	4
4143726	VDS403A02000	2,000	.0787	22	26	0,3	66	28	4
4143727	VDS403A02100	2,100	.0827	22	26	0,3	66	28	4
4143728	VDS403A02200	2,200	.0866	22	26	0,3	66	28	4
4143729	VDS403A02300	2,300	.0906	22	26	0,4	66	28	4
4143730	VDS403A02383	2,383	.0938	25	30	0,4	66	28	4
4143731	VDS403A02400	2,400	.0945	25	30	0,4	66	28	4
4143732	VDS403A02439	2,439	.0960	25	30	0,4	66	28	4
4143733	VDS403A02489	2,489	.0980	25	30	0,4	66	28	4
4143734	VDS403A02500	2,500	.0984	25	30	0,4	66	28	4
4143735	VDS403A02578	2,578	.1015	25	30	0,4	66	28	4
4143736	VDS403A02600	2,600	.1024	25	30	0,4	66	28	4
4143737	VDS403A02642	2,642	.1040	25	30	0,4	66	28	4
4143738	VDS403A02700	2,700	.1063	25	30	0,4	66	28	4
4143739	VDS403A02705	2,705	.1065	25	30	0,4	66	28	4
4143740	VDS403A02779	2,779	.1094	25	30	0,5	66	28	4
4143741	VDS403A02800	2,800	.1102	25	30	0,5	66	28	4
4143742	VDS403A02820	2,820	.1110	25	30	0,5	66	28	4
4143743	VDS403A02870	2,870	.1130	25	30	0,5	66	28	4
4143744	VDS403A02900	2,900	.1142	25	30	0,5	66	28	4
4143745	VDS403A02947	2,947	.1160	25	30	0,5	66	28	4
4143746	VDS403A03000	3,000	.1181	33	40	0,5	78	36	6
4143747	VDS403A03048	3,048	.1200	33	40	0,5	78	36	6
4143748	VDS403A03100	3,100	.1220	33	40	0,5	78	36	6
4143749	VDS403A03175	3,175	.1250	33	40	0,5	78	36	6
4143750	VDS403A03200	3,200	.1260	33	40	0,5	78	36	6
4143751	VDS403A03264	3,264	.1285	33	40	0,5	78	36	6
4143752	VDS403A03300	3,300	.1299	33	40	0,5	78	36	6
4143753	VDS403A03400	3,400	.1339	33	40	0,6	78	36	6
4143754	VDS403A03455	3,455	.1360	33	40	0,6	78	36	6
4143755	VDS403A03500	3,500	.1378	33	40	0,6	78	36	6
4143756	VDS403A03571	3,571	.1406	33	40	0,6	78	36	6
4143757	VDS403A03600	3,600	.1417	33	40	0,6	78	36	6
4143758	VDS403A03658	3,658	.1440	33	40	0,6	78	36	6
4143759	VDS403A03700	3,700	.1457	33	40	0,6	78	36	6
4143760	VDS403A03734	3,734	.1470	33	40	0,6	78	36	6
4143761	VDS403A03800	3,800	.1496	41	49	0,6	87	36	6
4143762	VDS403A03900	3,900	.1535	41	49	0,6			

VariDrill • 8 x D • VDS403A • A-Shank

(continued)

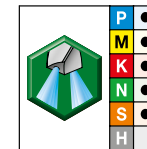
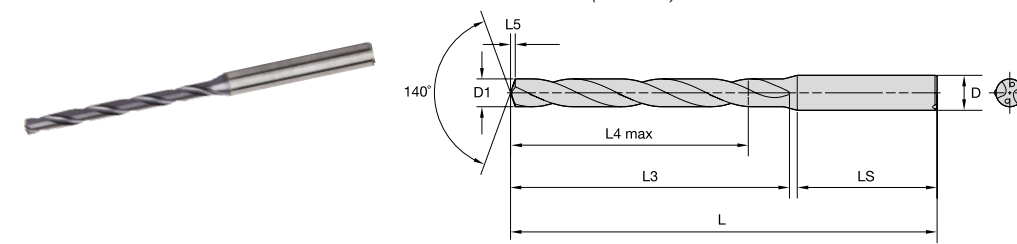


grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	mm	in						
4143766	VDS403A04090	4,090	.1610	41	49	0,7	87	36	6
4143767	VDS403A04100	4,100	.1614	41	49	0,7	87	36	6
4143768	VDS403A04200	4,200	.1654	41	49	0,7	87	36	6
4143769	VDS403A04217	4,217	.1660	41	49	0,7	87	36	6
4143770	VDS403A04300	4,300	.1693	41	49	0,7	87	36	6
4143771	VDS403A04366	4,366	.1719	41	49	0,7	87	36	6
4143772	VDS403A04400	4,400	.1732	41	49	0,7	87	36	6
4143773	VDS403A04500	4,500	.1772	41	49	0,7	87	36	6
4143774	VDS403A04600	4,600	.1811	41	49	0,8	87	36	6
4143775	VDS403A04623	4,623	.1820	41	49	0,8	87	36	6
4143776	VDS403A04700	4,700	.1850	41	49	0,8	87	36	6
4143777	VDS403A04763	4,763	.1875	48	56	0,8	94	36	6
4143778	VDS403A04800	4,800	.1890	48	56	0,8	94	36	6
4143779	VDS403A04852	4,852	.1910	48	56	0,8	94	36	6
4143780	VDS403A04900	4,900	.1929	48	56	0,8	94	36	6
4143781	VDS403A05000	5,000	.1969	48	56	0,8	94	36	6
4143782	VDS403A05100	5,100	.2008	48	56	0,9	94	36	6
4143783	VDS403A05106	5,106	.2010	48	56	0,9	94	36	6
4143784	VDS403A05159	5,159	.2031	48	56	0,9	94	36	6
4143785	VDS403A05200	5,200	.2047	48	56	0,9	94	36	6
4143786	VDS403A05300	5,300	.2087	48	56	0,9	94	36	6
4143787	VDS403A05400	5,400	.2126	48	56	0,9	94	36	6
4143788	VDS403A05410	5,410	.2130	48	56	0,9	94	36	6
4143789	VDS403A05500	5,500	.2165	48	56	0,9	94	36	6
4143790	VDS403A05558	5,558	.2188	48	56	0,9	94	36	6
4143791	VDS403A05600	5,600	.2205	48	56	0,9	94	36	6
4143792	VDS403A05616	5,616	.2211	48	56	0,9	94	36	6
4143793	VDS403A05700	5,700	.2244	48	56	1,0	94	36	6
4143794	VDS403A05800	5,800	.2283	48	56	1,0	94	36	6
4143795	VDS403A05900	5,900	.2323	48	56	1,0	94	36	6
4143796	VDS403A05954	5,954	.2344	48	56	1,0	94	36	6
4143797	VDS403A06000	6,000	.2362	48	56	1,0	94	36	6
4143798	VDS403A06100	6,100	.2402	57	67	1,0	105	36	8
4143799	VDS403A06200	6,200	.2441	57	67	1,0	105	36	8
4143800	VDS403A06300	6,300	.2480	57	67	1,1	105	36	8
4143801	VDS403A06350	6,350	.2500	57	67	1,1	105	36	8
4143802	VDS403A06400	6,400	.2520	57	67	1,1	105	36	8
4143803	VDS403A06500	6,500	.2559	57	67	1,1	105	36	8
4143804	VDS403A06528	6,528	.2570	57	67	1,1	105	36	8
4143805	VDS403A06600	6,600	.2598	57	67	1,1	105	36	8
4143806	VDS403A06630	6,630	.2610	57	67	1,1	105	36	8
4143807	VDS403A06700	6,700	.2638	57	67	1,1	105	36	8
4143808	VDS403A06746	6,746	.2656	57	67	1,1	105	36	8
4143809	VDS403A06800	6,800	.2677	57	67	1,1	105	36	8
4143810	VDS403A06900	6,900	.2717	57	67	1,2	105	36	8
4143811	VDS403A07000	7,000	.2756	57	67	1,2	105	36	8
4143812	VDS403A07100	7,100	.2795	64	74	1,2	113	36	8
4143813	VDS403A07145	7,145	.2813	64	74	1,2	113	36	8
4143814	VDS403A07200	7,200	.2835	64	74	1,2	113	36	8
4143815	VDS403A07300	7,300	.2874	64	74	1,2	113	36	8
4143816	VDS403A07400	7,400	.2913	64	74	1,3	113	36	8
4143817	VDS403A07500	7,500	.2953	64	74	1,3	113	36	8

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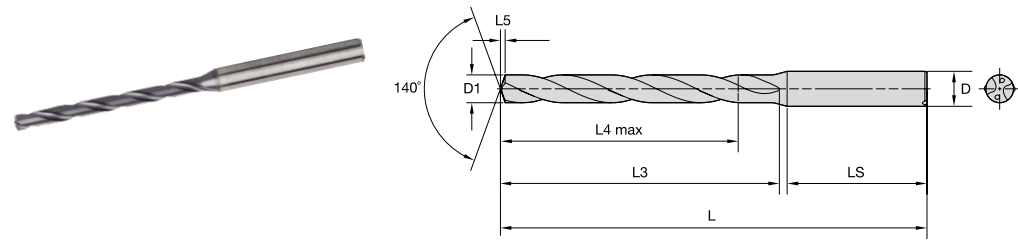
grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	mm	in						
4143818	VDS403A07541	7,541	.2969	64	74	1,3	113	36	8
4143819	VDS403A07600	7,600	.2992	64	74	1,3	113	36	8
4143820	VDS403A07700	7,700	.3031	64	74	1,3	113	36	8
4143821	VDS403A07800	7,800	.3071	64	74	1,3	113	36	8
4143822	VDS403A07900	7,900	.3110	64	74	1,3	113	36	8
4143823	VDS403A07938	7,938	.3125	64	74	1,3	113	36	8
4143824	VDS403A08000	8,000	.3150	64	74	1,4	113	36	8
4143825	VDS403A08100	8,100	.3189	80	92	1,4	135	40	10
4143826	VDS403A08200	8,200	.3228	80	92	1,4	135	40	10
4143827	VDS403A08300	8,300	.3268	80	92	1,4	135	40	10
4143828	VDS403A08334	8,334	.3281	80	92	1,4	135	40	10
4143829	VDS403A08400	8,400	.3307	80	92	1,4	135	40	10
4143830	VDS403A08433	8,433	.3320	80	92	1,4	135	40	10
4143831	VDS403A08500	8,500	.3346	80	92	1,4	135	40	10
4143832	VDS403A08600	8,600	.3386	80	92	1,5	135	40	10
4143833	VDS403A08700	8,700	.3425	80	92	1,5	135	40	10
4143834	VDS403A08733	8,733	.3438	80	92	1,5	135	40	10
4143835	VDS403A08800	8,800	.3465	80	92	1,5	135	40	10
4143836	VDS403A08900	8,900	.3504	80	92	1,5	135	40	10
4143837	VDS403A09000	9,000	.3543	80	92	1,5	135	40	10
4143838	VDS403A09100	9,100	.3583	80	92	1,6	135	40	10
4143839	VDS403A09129	9,129	.3594	80	92	1,6	135	40	10
4143840	VDS403A09200	9,200	.3622	80	92	1,6	135	40	10
4143841	VDS403A09300	9,300	.3661	80	92	1,6	135	40	10
4143842	VDS403A09347	9,347	.3680	80	92	1,6	135	40	10
4143843	VDS403A09400	9,400	.3701	80	92	1,6	135	40	10
4143844	VDS403A09500	9,500	.3740	80	92	1,6	135	40	10
4143845	VDS403A09525	9,525	.3750	80	92	1,6	135	40	10
4143846	VDS403A09600	9,600	.3780	80	92	1,6	135	40	10
4143847	VDS403A09700	9,700	.3819	80	92	1,7	135	40	10
4143848	VDS403A09800	9,800	.3858	80	92	1,7	135	40	10
4143849	VDS403A09900	9,900	.3898	80	92	1,7	135	40	10
4143850	VDS403A09921	9,921	.3906	68	80	1,7	122	40	10
4143421	VDS403A10000	10,000	.3937	80	92	1,7	135	40	10
4143422	VDS403A10100	10,100	.3976	96	110	1,7	158	45	12
4143473	VDS403A10200	10,200	.4016	96	110	1,7	158	45	12
4143474	VDS403A10300	10,300	.4055	96	110	1,8	158	45	12
4143475	VDS403A10320	10,320	.4063	96	110	1,8	158	45	12
4143476	VDS403A10400	10,400	.4094	96	110	1,8	158	45	12
4143477	VDS403A10500	10,500	.4134	96	110	1,8	158	45	12
4143478	VDS403A10600	10,600	.4173	96	110	1,8	158	45	12
4143479	VDS403A10700	10,700	.4213	96	110	1,8	158	45	12
4143480	VDS403A10716	10,716	.4219	96	110	1,8	158	45	12
4143481	VDS403A10800	10,800	.4252	96	110	1,9	158	45	12
4143482	VDS403A10900	10,900	.4291	96	110	1,9	158	45	12
4143483	VDS403A11000	11,000	.4331	96	110	1,9	158	45	12
4143484	VDS403A11100	11,100	.4370	96	110	1,9	158	45	12
4143485	VDS403A11113	11,113	.4375	96	110	1,9	158	45	12
4143486	VDS403A11200	11,200	.4409	96	110	1,9	158	45	12
4143487	VDS403A11300	11,300	.4449	96	110	1,9	158	45	12
4143488	VDS403A11400	11,400	.4488	96	110	2,0	158	45	12
4143489	VDS403A11500	11,500	.4528	96	110	2,0	158	45	12

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(continued)

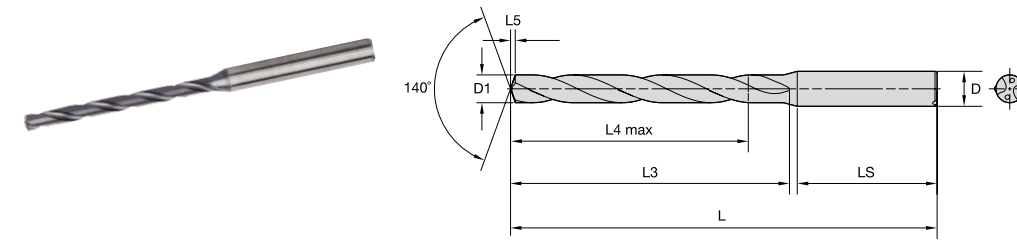


grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	mm	in						
4143490	VDS403A11509	11,509	.4531	96	110	2,0	158	45	12
4143491	VDS403A11600	11,600	.4567	96	110	2,0	158	45	12
4143492	VDS403A11700	11,700	.4606	96	110	2,0	158	45	12
4143493	VDS403A11800	11,800	.4646	96	110	2,0	158	45	12
4143494	VDS403A11900	11,900	.4685	96	110	2,0	158	45	12
4143495	VDS403A11908	11,908	.4688	96	110	2,0	158	45	12
4143496	VDS403A12000	12,000	.4724	96	110	2,1	158	45	12
4143497	VDS403A12100	12,100	.4764	112	128	2,1	176	45	14
4143498	VDS403A12200	12,200	.4803	112	128	2,1	176	45	14
4143499	VDS403A12300	12,300	.4843	112	128	2,1	176	45	14
4143500	VDS403A12304	12,304	.4844	112	128	2,1	176	45	14
4143501	VDS403A12400	12,400	.4882	112	128	2,1	176	45	14
4143502	VDS403A12500	12,500	.4921	112	128	2,2	176	45	14
4143503	VDS403A12600	12,600	.4961	112	128	2,2	176	45	14
4143504	VDS403A12700	12,700	.5000	112	128	2,2	176	45	14
4143505	VDS403A12800	12,800	.5039	112	128	2,2	176	45	14
4143506	VDS403A12900	12,900	.5079	112	128	2,2	176	45	14
4143507	VDS403A13000	13,000	.5118	112	128	2,2	176	45	14
4143508	VDS403A13096	13,096	.5156	112	128	2,3	176	45	14
4143509	VDS403A13100	13,100	.5157	112	128	2,3	176	45	14
4143510	VDS403A13200	13,200	.5197	112	128	2,3	176	45	14
4143511	VDS403A13300	13,300	.5236	112	128	2,3	176	45	14
4143512	VDS403A13400	13,400	.5276	112	128	2,3	176	45	14
4143513	VDS403A13500	13,500	.5315	112	128	2,3	176	45	14
4143514	VDS403A13600	13,600	.5354	112	128	2,3	176	45	14
4143515	VDS403A13700	13,700	.5394	112	128	2,4	176	45	14
4143516	VDS403A13800	13,800	.5433	112	128	2,4	176	45	14
4143517	VDS403A13891	13,891	.5469	112	128	2,4	176	45	14
4143518	VDS403A13900	13,900	.5472	112	128	2,4	176	45	14
4143519	VDS403A14000	14,000	.5512	112	128	2,4	176	45	14
4143520	VDS403A14100	14,100	.5551	128	146	2,4	197	48	16
4143521	VDS403A14200	14,200	.5591	128	146	2,5	197	48	16
4143522	VDS403A14288	14,288	.5625	128	146	2,5	197	48	16
4143523	VDS403A14300	14,300	.5630	128	146	2,5	197	48	16
4143524	VDS403A14400	14,400	.5669	128	146	2,5	197	48	16
4143525	VDS403A14500	14,500	.5709	128	146	2,5	197	48	16
4143526	VDS403A14600	14,600	.5748	128	146	2,5	197	48	16
4143527	VDS403A14684	14,684	.5781	128	146	2,5	197	48	16
4143528	VDS403A14700	14,700	.5787	128	146	2,5	197	48	16
4143529	VDS403A14800	14,800	.5827	128	146	2,6	197	48	16
4143530	VDS403A14900	14,900	.5866	128	146	2,6	197	48	16
4143531	VDS403A15000	15,000	.5906	128	146	2,6	197	48	16
4143532	VDS403A15083	15,083	.5938	128	146	2,6	197	48	16
4143533	VDS403A15100	15,100	.5945	128	146	2,6	197	48	16
4143534	VDS403A15200	15,200	.5984	128	146	2,6	197	48	16
4143535	VDS403A15300	15,300	.6024	128	146	2,6	197	48	16
4143536	VDS403A15400	15,400	.6063	128	146	2,7	197	48	16
4143537	VDS403A15479	15,479	.6094	128	146	2,7	197	48	16
4143538	VDS403A15500	15,500	.6102	128	146	2,7	197	48	16
4143539	VDS403A15600	15,600	.6142	128	146	2,7	197	48	16
4143540	VDS403A15700	15,700	.6181	128	146	2,7	197	48	16
4143541	VDS403A15800	15,800	.6220	128	146	2,7	197	48	16

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grade WU25PD TiAlN		D1 diameter		L4 max	L3	L5	L	LS	D
order #	catalogue #	mm	in						
4143542	VDS403A15875	15,875	.6250	128	146	2,8	197	48	16
4143543	VDS403A15900	15,900	.6260	128	146	2,8	197	48	16
4143544	VDS403A16000	16,000	.6299	128	146	2,8	197	48	16
4143546	VDS403A16200	16,200	.6378	144	163	2,8	214	48	18
4143547	VDS403A16271	16,271	.6406	144	163	2,8	214	48	18
4143548	VDS403A16300	16,300	.6417	144	163	2,8	214	48	18
4143549	VDS403A16400	16,400	.6457	144	163	2,8	214	48	18
4143550	VDS403A16500	16,500	.6496	144	163	2,9	214	48	18
4143551	VDS403A16600	16,600	.6535	144	163	2,9	214	48	18
4143552	VDS403A16670	16,670	.6563	144	163	2,9	214	48	18
4143553	VDS403A16700	16,700	.6575	144	163	2,9	214	48	18
4143554	VDS403A16800	16,800	.6614	144	163	2,9	214	48	18
4143555	VDS403A16900	16,900	.6654	144	163	2,9	214	48	18
4143556	VDS403A17000	17,000	.6693	144	163	3,0	214	48	18
4143557	VDS403A17100	17,100	.6732	144	163	3,0	214	48	18
4143558	VDS403A17200	17,200	.6772	144	163	3,0	214	48	18
4143559	VDS403A17300	17,300	.6811	144	163	3,0	214	48	18
4143560	VDS403A17400	17,400	.6850	144	163	3,0	214	48	18
4143561	VDS403A17463	17,463	.6875	144	163	3,0	214	48	18
4143562	VDS403A17500	17,500	.6890	144	163	3,0	214	48	18
4143563	VDS403A17600	17,600	.6929	144	163	3,1	214	48	18
4143564	VDS403A17700	17,700	.6969	144	163	3,1	214	48	18
4143565	VDS403A17800	17,800	.7008	144	163	3,1	214	48	18
4144209	VDS403A18000	18,000	.7087	144	163	3,1	214	48	18
4144211	VDS403A18100	18,100	.7126	160	181	3,1	234	50	20
4144212	VDS403A18200	18,200	.7165	160	181	3,2	234	50	20
4144246	VDS403A18300	18,300	.7205	160	181	3,2	234	50	20
4144248	VDS403A18400	18,400	.7244	160	181	3,2	234	50	20
4144250	VDS403A18500	18,500	.7283	160	181	3,2	234	50	20
4144252	VDS403A18600	18,600	.7323	160	181	3,2	234	50	20
4144256	VDS403A18700	18,700	.7362	160	181	3,3	234	50	20
4144258	VDS403A18800	18,800	.7402	160	181	3,3	234	50	20
4144260	VDS403A18900	18,900	.7441	160	181	3,3	234	50	20
4144262	VDS403A19000	19,000	.7480	160	181	3,3	234	50	20
4144275	VDS403A19050	19,050	.7500	160	181	3,3	234	50	20
4144277	VDS403A19100	19,100	.7520	160	181	3,3	234	50	20
4144281	VDS403A19300	19,300	.7598	160	181	3,4	234	50	20
4144283	VDS403A19400	19,400	.7638	160	181	3,4	234	50	20
4144285	VDS403A19500	19,500	.7677	160	181	3,4	234	50	20
4144289	VDS403A19700	19,700	.7756	160	181	3,4	234	50	20
4144291	VDS403A19800	19,800	.7795	160	181	3,4	234	50	20
4144303	VDS403A19900	19,900	.7835	160	181	3,5	234	50	20
4144305	VDS403A20000	20,000	.7874	160	181	3,5	234	50	20

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Application Data • VDS2 Series • WU25PD™ • Flood Coolant • Metric

Material Group	Cutting Speed – vc Range – m/min			Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter											
	min	–	max		1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0		
	0	70	–		115	mm/r	0.03–0.08	0.04–0.09	0.05–0.11	0.08–0.14	0.09–0.19	0.11–0.22	0.13–0.26	0.15–0.30	0.19–0.36	0.24–0.46
P	1	60	–	100	mm/r	0.04–0.09	0.05–0.11	0.06–0.13	0.09–0.16	0.11–0.22	0.13–0.26	0.15–0.31	0.18–0.35	0.22–0.42	0.28–0.54	
	2	80	–	100	mm/r	0.04–0.09	0.05–0.11	0.06–0.13	0.08–0.16	0.12–0.22	0.14–0.26	0.17–0.31	0.20–0.35	0.24–0.42	0.31–0.53	
	3	50	–	90	mm/r	0.05–0.11	0.06–0.13	0.07–0.15	0.09–0.17	0.13–0.23	0.15–0.28	0.19–0.33	0.22–0.38	0.26–0.47	0.34–0.59	
	4	50	–	100	mm/r	0.04–0.12	0.05–0.13	0.06–0.15	0.08–0.17	0.12–0.23	0.14–0.28	0.17–0.33	0.19–0.38	0.23–0.47	0.29–0.59	
	5	30	–	60	mm/r	0.03–0.05	0.04–0.06	0.05–0.07	0.06–0.10	0.08–0.14	0.10–0.18	0.12–0.22	0.14–0.24	0.18–0.32	0.23–0.41	
	6	30	–	60	mm/r	0.03–0.05	0.04–0.06	0.05–0.07	0.06–0.10	0.08–0.14	0.10–0.18	0.12–0.22	0.14–0.24	0.18–0.32	0.23–0.41	
M	1	20	–	40	mm/r	0.02–0.05	0.03–0.06	0.04–0.07	0.05–0.09	0.08–0.11	0.09–0.12	0.10–0.14	0.12–0.16	0.14–0.18	0.16–0.20	
	2	30	–	50	mm/r	0.02–0.06	0.03–0.07	0.04–0.08	0.06–0.10	0.08–0.12	0.09–0.14	0.10–0.16	0.12–0.18	0.14–0.20	0.16–0.22	
	3	20	–	40	mm/r	0.02–0.05	0.03–0.06	0.04–0.07	0.06–0.09	0.08–0.11	0.09–0.12	0.10–0.14	0.12–0.16	0.14–0.18	0.16–0.20	
K	1	80	–	170	mm/r	0.09–0.18	0.10–0.20	0.11–0.22	0.12–0.24	0.16–0.31	0.20–0.38	0.23–0.44	0.25–0.49	0.31–0.60	0.38–0.74	
	2	90	–	120	mm/r	0.06–0.13	0.08–0.15	0.10–0.17	0.12–0.19	0.16–0.25	0.20–0.31	0.23–0.36	0.25–0.40	0.31–0.48	0.38–0.60	
	3	80	–	130	mm/r	0.05–0.11	0.06–0.13	0.07–0.15	0.09–0.19	0.12–0.25	0.14–0.30	0.17–0.35	0.19–0.40	0.25–0.48	0.30–0.60	
N	1	90	–	270	mm/r	0.05–0.12	0.06–0.13	0.08–0.14	0.10–0.16	0.12–0.20	0.16–0.24	0.20–0.28	0.24–0.32	0.28–0.40	0.32–0.48	
	2	90	–	270	mm/r	0.04–0.08	0.06–0.12	0.08–0.16	0.10–0.20	0.12–0.24	0.16–0.28	0.20–0.32	0.24–0.36	0.28–0.44	0.32–0.52	
	3	90	–	225	mm/r	0.10–0.13	0.11–0.14	0.12–0.14	0.13–0.16	0.14–0.20	0.16–0.24	0.20–0.28	0.24–0.32	0.28–0.40	0.32–0.44	
S	4	90	–	270	mm/r	0.04–0.08	0.06–0.12	0.08–0.16	0.10–0.20	0.12–0.24	0.16–0.28	0.20–0.32	0.24–0.36	0.28–0.40	0.32–0.48	
	1	20	–	30	mm/r	0.01–0.04	0.02–0.05	0.03–0.06	0.04–0.08	0.06–0.10	0.08–0.12	0.09–0.13	0.10–0.14	0.12–0.16	0.14–0.18	
	2	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
H	3	20	–	40	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.02–0.05	0.04–0.07	0.06–0.09	0.07–0.10	0.08–0.11	0.09–0.13	0.10–0.15	
	4	20	–	50	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
	1	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
H	2	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.02–0.05	0.04–0.07	0.06–0.09	0.07–0.10	0.08–0.11	0.09–0.13	0.10–0.15	

Application Data • VDS4 Series • WU25PD • Through Coolant • Metric

Material Group	Cutting Speed – vc Range – m/min			Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter											
	min	–	max		1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0		
	0	70	–		115	mm/r	0.03–0.08	0.04–0.09	0.05–0.11	0.08–0.14	0.09–0.19	0.11–0.22	0.13–0.26	0.15–0.30	0.19–0.36	0.24–0.46
P	1	70	–	140	mm/r	0.04–0.09	0.05–0.12	0.07–0.14	0.08–0.16	0.11–0.22	0.13–0.26	0.15–0.31	0.18–0.35	0.22–0.42	0.28–0.54	
	2	90	–	140	mm/r	0.04–0.09	0.05–0.12	0.07–0.14	0.08–0.16	0.12–0.22	0.14–0.26	0.17–0.31	0.20–0.35	0.24–0.42	0.31–0.53	
	3	60	–	100	mm/r	0.05–0.10	0.06–0.13	0.08–0.15	0.09–0.17	0.13–0.23	0.15–0.28	0.19–0.33	0.22–0.38	0.26–0.47	0.34–0.59	
	4	50	–	100	mm/r	0.05–0.10	0.06–0.13	0.07–0.15	0.08–0.17	0.12–0.23	0.14–0.28	0.17–0.33	0.19–0.38	0.23–0.47	0.29–0.59	
	5	30	–	60	mm/r	0.03–0.05	0.04–0.06	0.05–0.07	0.06–0.10	0.08–0.14	0.10–0.18	0.12–0.22	0.14–0.24	0.18–0.32	0.23–0.41	
	6	40	–	70	mm/r	0.03–0.05	0.04–0.06	0.05–0.08	0.06–0.10	0.08–0.14	0.10–0.18	0.13–0.22	0.14–0.24	0.18–0.32	0.23–0.41	
M	1	20	–	40	mm/r	0.02–0.05	0.03–0.06	0.04–0.07	0.05–0.09	0.08–0.11	0.09–0.12	0.10–0.14	0.12–0.16	0.14–0.18	0.16–0.20	
	2	30	–	50	mm/r	0.02–0.06	0.03–0.07	0.04–0.08	0.06–0.10	0.08–0.12	0.09–0.14	0.10–0.16	0.12–0.18	0.14–0.20	0.16–0.22	
	3	20	–	40	mm/r	0.02–0.05	0.03–0.06	0.04–0.07	0.05–0.09	0.08–0.11	0.09–0.12	0.10–0.14	0.12–0.16	0.14–0.18	0.16–0.20	
K	1	80	–	170	mm/r	0.08–0.16	0.09–0.17	0.11–0.22	0.12–0.24	0.16–0.31	0.20–0.38	0.23–0.44	0.25–0.49	0.31–0.60	0.38–0.74	
	2	80	–	140	mm/r	0.10–0.14	0.11–0.15	0.12–0.16	0.13–0.19	0.16–0.25	0.20–0.31	0.23–0.36	0.25–0.40	0.31–0.48	0.38–0.60	
	3	80	–	130	mm/r	0.05–0.13	0.07–0.15	0.08–0.17	0.09–0.19	0.12–0.25	0.14–0.30	0.17–0.35	0.19–0.40	0.24–0.48	0.30–0.60	
N	1	90	–	315	mm/r	0.05–0.12	0.06–0.13	0.08–0.14	0.10–0.16	0.12–0.20	0.16–0.24	0.20–0.28	0.24–0.32	0.28–0.40	0.32–0.48	
	2	90	–	270	mm/r	0.04–0.08	0.06–0.12	0.08–0.16	0.10–0.20	0.12–0.24	0.16–0.28	0.20–0.32	0.24–0.36	0.28–0.44	0.32–0.52	
	3	90	–	270	mm/r	0.10–0.13	0.11–0.14	0.12–0.14	0.13–0.16	0.14–0.20	0.16–0.24	0.20–0.28	0.24–0.32	0.28–0.40	0.32–0.44	
S	4	90	–	180	mm/r	0.04–0.08	0.06–0.12	0.08–0.16	0.10–0.20	0.12–0.24	0.16–0.28	0.20–0.32	0.24–0.36	0.28–0.40	0.32–0.48	
	1	10	–	30	mm/r	0.01–0.04	0.02–0.05	0.03–0.06	0.04–0.08	0.06–0.10	0.08–0.12	0.09–0.13	0.10–0.14	0.12–0.16	0.14–0.18	
	2	10	–	25	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
H	3	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.02–0.05	0.04–0.07	0.06–0.09	0.07–0.10	0.08–0.11	0.09–0.13	0.10–0.15	
	4	10	–	40	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
	1	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.03–0.06	0.05–0.08	0.07–0.10	0.08–0.11	0.09–0.12	0.10–0.14	0.11–0.16	
H	2	10	–	30	mm/r	0.01–0.03	0.02–0.03	0.02–0.04	0.02–0.05	0.04–0.07	0.06–0.09	0.07–0.10	0.08–0.11	0.09–0.13	0.10–0.15	

Metric tolerance

nominal size range	D1 tolerance	D tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006
>3–6	0,000/-0,012 (h7)	0,000/-0,008
>6–10	0,000/-0,015 (h7)	0,000/-0,009
>10–18	0,000/-0,018 (h7)	0,000/-0,011
>18–20	0,000/-0,021 (h7)	0,000/-0,013

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# TAPS + THREADMILLS

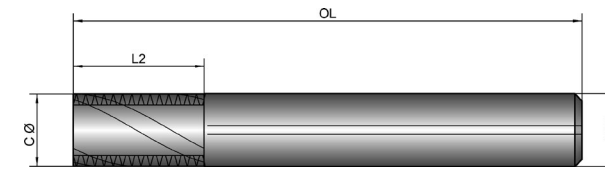
→ For our complete range of Taps & Threadmills, please see our full catalogue.

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## METRIC / METRIC FINE

## Solid Carbide Threadmills



### Metric

#### Description

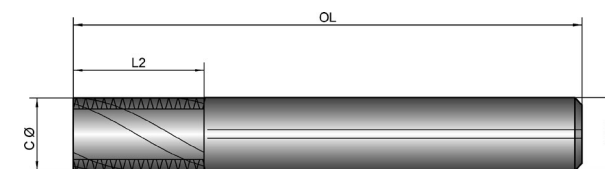
- Material: solid carbide
- Helical flutes
- With through coolant hole (unless stated)
- TiAlN coated

P	M	K	N	S	H
•	•	•	•	•	•

#### Metric Sizes (mm)

CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0100*	M3 x 0.5	2.2	6	58	6	3
TTM0101*	M4 x 0.7	2.9	6	58	9	3
TTM0102*	M5 x 0.8	3.9	6	58	11	3
TTM0103	M6 x 1	4.8	6	63	13	3
TTM0104	M8 x 1.25	6	6	63	17	3
TTM0105	M10 x 1.5	7.5	8	80	21	3
TTM0106	M12 x 1.75	8.6	10	80	26	4
TTM0107	M14 x 2 / M16 x 2	9.9	10	100	34	4
TTM0107R	M16 x 2	11.9	12	100	34	4
TTM0108	M20 x 2.5	13.4	16	100	40	4

\* No coolant hole



### Metric Fine

#### Description

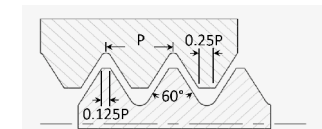
- Material: solid carbide
- Helical flutes
- With through coolant hole (unless stated)
- TiAlN coated

P	M	K	N	S	H
•	•	•	•	•	•

#### Metric Sizes (mm)

CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0119	M6 / M8 x 0.75	4.5	6	63	12	3
TTM0121	M8 x 1 / M10 x 1	5.9	6	63	16	3
TTM0123	M10 x 1.25 / M12 x 1.25	7.4	8	80	21	3
TTM0126	M16 x 1.5 / M20 x 1.5	11.9	12	100	32	4
TTM0127	M20 x 2 / M24 x 2	15.9	16	100	46	4

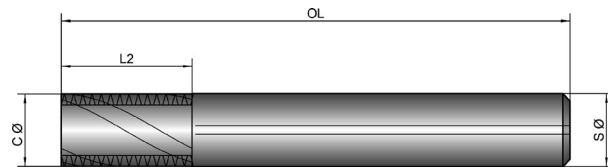
For Speeds & Feeds please see page 192



# UNC

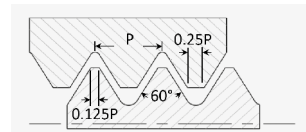
**Description**

- Helical flutes
- With through coolant hole
- TiAlN coated



**Metric Sizes (mm)**

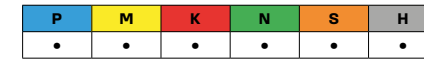
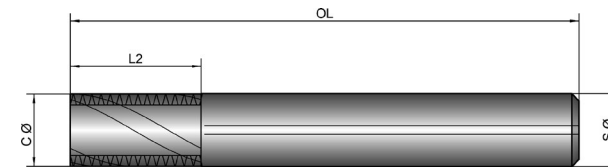
CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0205	1/4-20 UNC	4.7	6	63	13	3
TTM0208	5/16-18 UNC	5.3	6	63	16	3
TTM0209	3/8-16 UNC	5.9	6	63	20	3
TTM0210	7/16-14 UNC	7.9	8	80	24	3
TTM0211	1/2-13 UNC	8.9	10	80	26	3
TTM0212	9/16-12 UNC	9.9	10	80	28	3



# BSP/G

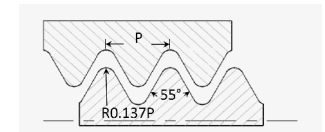
**Description**

- Helical flutes
- With through coolant hole
- TiAlN coated



**Metric Sizes (mm)**

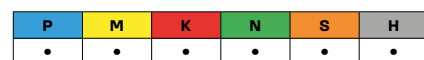
CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0301	1/8 - 28 BSP	7.6	8	80	16	3
TTM0302	1/4, 3/8 - 19 BSP	7.9	8	80	18	3
TTM0303	1/2, 7/8 - 14 BSP	11.9	12	100	26	4
TTM0304	1" - 11 BSP	15.9	16	100	42	4



# UNF

**Description**

- Helical flutes
- With through coolant hole (unless stated)
- TiAlN coated

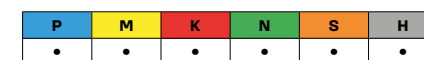
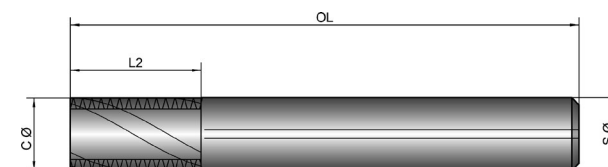
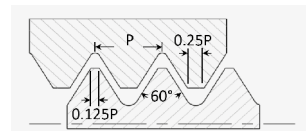


**Metric Sizes (mm)**

CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0201*	10-32 UNF	3	6	58	10	3
TTM0202*	1/4-28 UNF	4.5	6	58	13	3
TTM0203	5/16-24 UNF	5.9	6	63	16	3
TTM0204	3/8-24 UNF	5.9	6	63	20	3
TTM0206	7/16-20 UNF	7.9	8	80	24	3
TTM0207	1/2-20 UNF	9.9	10	80	26	4

\* No coolant hole

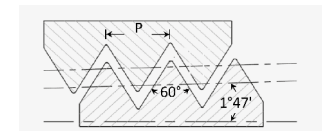
For Speeds & Feeds please see page 192



**Metric Sizes (mm)**

CATALOGUE NUMBER	SIZE	C	SØ	OL	L2	NUMBER OF FLUTES
TTM0400	1/16, 1/8-27 NPT	5.9	6	63	9.4	3
TTM0401	1/8-27 NPT	7.6	8	80	9.4	3
TTM0402	1/4, 3/8-18 NPT	9.9	10	80	14.1	4
TTM0403	1/2, 3/4-14 NPT	15.9	16	100	20	4
TTM0404	1", 2"-11.5 NPT	15.9	16	100	26.5	4

For Speeds & Feeds please see page 192

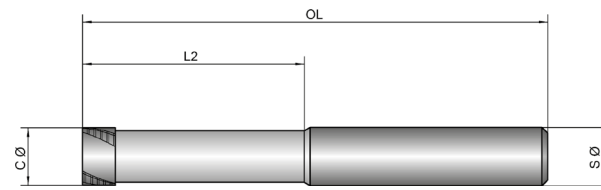




# Mini

### Description

- 3 Flute
- Helical flutes
- 3 Cutting teeth



P	M	K	N	S	H
•	•	•	•	•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	SIZE	C	SØ	OL	L2
TTMM03*	M2 x 0.4	1.55	6	58	6.2
TTMM04*	M2.5 x 0.45	1.95	6	58	7.7
TTMM05	M3 x 0.5	2.4	6	58	9.2
TTMM06	M4 x 0.7	3.15	6	58	12.3
TTMM07	M5 x 0.8	4.05	6	58	15.4
TTMM08	M6 x 1	4.8	6	58	18.5

TTMM012	4-40 UNC	2.1	6	58	9
TTMM013	6-32 UNC	2.55	6	58	10.5
TTMM014	8-32 UNC	3.2	6	58	13
TTMM025	10-24 UNC	3.58	6	58	15.5
TTMM026	1/4-20 UNC	4.88	6	58	18.5

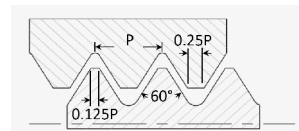
TTMM015	10-32 UNF	3.2	6	58	15.5
TTMM016	1/4-28 UNF	5.25	6	58	18.5
TTMM017	5/16-24 UNF	6.6	8	64	25
TTMM018	3/8-24 UNF	6.6	8	64	25

TTMM029	MJ3 x 0.5	2.4	6	64	9.20
TTMM030	MJ4 x 0.7	3.15	6	64	12.30
TTMM031	MJ5 x 0.8	4.05	6	64	15.40
TTMM032	MJ6 x 1	4.8	6	64	18.50
TTMM033	MJ8 x 1.25	6.5	8	64	24.60
TTMM036	MJ10 x 1.5	7.9	8	64	30.5

TTMM040	6-32 UNJC	2.70	6	57	11.00
TTMM041	8-32 UNJC	2.70	6	57	11.00
TTMM042	10-32 UNJF	2.70	6	57	11.00
TTMM043	1/4-28 UNJF	5.40	6	57	19.50
TTMM044	5/16-24 UNJF	6.70	8	63	24.10
TTMM045	3/8-24 UNJF	6.70	8	63	24.10

\* These have 2 cutting teeth

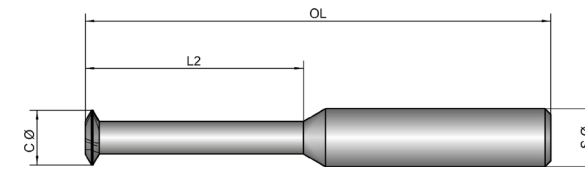
MJ and UNJ threads are ground to produce a root radius in the thread.  
For Speeds & Feeds please see page 192



# Single Point

### Description

- Threadmills with one row of teeth - for difficult to reach applications

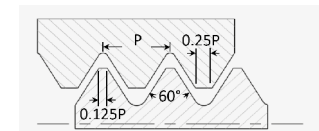


P	M	K	N	S	H
•	•	•	•	•	•

### Metric Sizes (mm)

CATALOGUE NUMBER	SIZE	C	SHANK	OL	L2	NUMBER OF FLUTES
TMSP010	M1.6 x 0.35	1.16	4	51	2.41	4
TMSP020	M2 x 0.4	1.55	6	58	6.20	4
TMSP025	M2.5 x 0.45	1.95	6	58	7.70	4
TMSP030	M3 x 0.5	2.40	6	58	9.20	4
TMSP040	M4 x 0.7	3.15	6	58	12.30	4
TMSP050	M5 x 0.8	4.05	6	58	15.40	4
TMSP060	M6 x 1	4.80	6	58	18.50	4
TMSP080	M8 x 1.25	6.00	6	58	24.00	5
TMSP100	M10 x 1.5	7.50	8	64	30.00	5

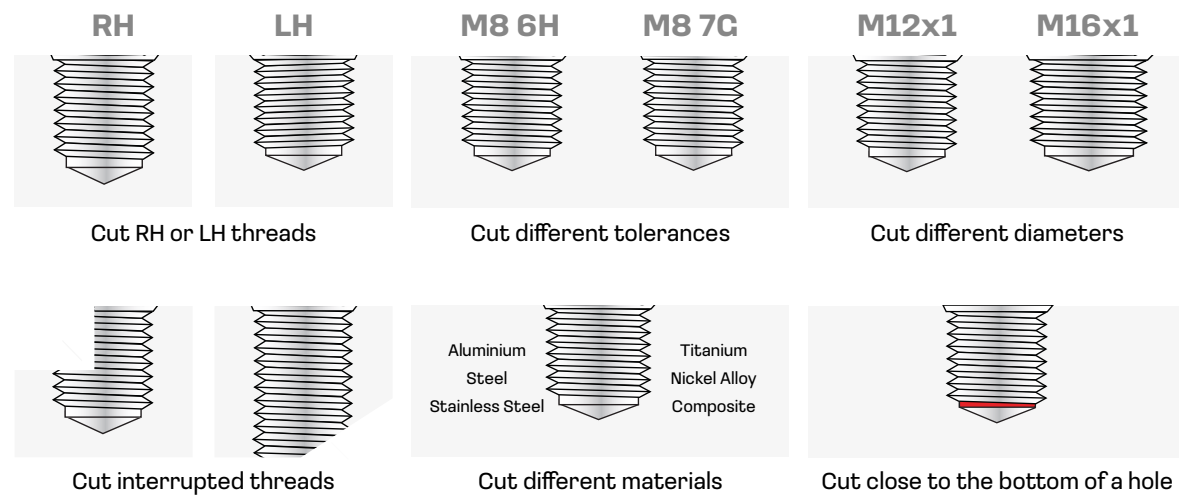
This type of tool is also called a Thread Whirler.  
For Speeds & Feeds please see page 192



MATERIAL GROUP	CUTTING SPEED (Vc m/min)	FEED RATE (mm/Tooth)
<b>Carbon Steels</b>	80	0.06
Alloy Steels up to 850 N/mm2	60	0.04
High Tensile Alloy Steels above 850 N/mm2	40	0.02
<b>Free machining Stainless Steel</b>	50	0.04
Austenitic Stainless Steel	30	0.02
Ferritic and Martensitic Stainless Steels	50	0.03
<b>Cast Iron</b>	80	0.08
SG Iron	80	0.06
<b>Aluminium unalloyed</b>	150	0.1
Aluminium Cast low silicon	100	0.1
Aluminium Cast high silicon	100	0.075
Copper	120	0.08
Brass	120	0.08
Soft Plastics	150	0.1
Glass reinforced Plastics	60	0.06
<b>Nickel Alloys up to 850 N/mm2</b>	30	0.03
Nickel Alloys above 850 N/mm2	20	0.005
Titanium Alloy	30	0.02
<b>Hardened Steels</b>	-	-

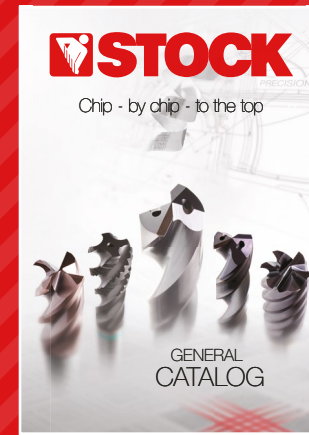
These Speeds & Feeds are a starting point and can be adjusted accordingly.

**Typical Threadmilling Applications**



**BASS**  
TECHNIK FÜR GEWINDE

High precision taps and threadformers from Germany's leading threading tool manufacturer.



**STOCK**

Extensive range of HSS and HSS-E drills for all materials.



**EXINGTON**  
CUTTER, INC.

Specialist manufacturer of solid carbide and brazed carbide cutting tools. Huge range of reamers up to 50mm.



**KEMMLER®**  
Präzisionswerkzeuge

Vast range of DIN, BT, HSK, CAPTO, and cylindrical shank tool holders. Full range of all styles of collets.

## Hardness Comparisons

RM			VICKERS HV	BRINELL HB	ROCKWELL HRB	ROCKWELL HRC	RM			VICKERS HV	BRINELL HB	ROCKWELL HRB	ROCKWELL HRC
N/mm2	kg/mm <sup>2</sup>	ton/ins <sup>2</sup>					N/mm2	kg/mm <sup>2</sup>	ton/ins <sup>2</sup>				
255	26	16.5	80	76	-	-	1125	115	73	350	333	-	35.5
270	28	17.5	85	81	41	-	1155	118	75	360	342	-	36.5
285	29	18.5	90	86	48	-	1190	121	77	370	352	-	37.5
305	31	20	95	90	52	-	1220	124	79	380	361	-	39
320	33	20.5	100	95	56	-	1255	128	81.5	390	371	-	40
335	34	21.5	105	100	59	-	1290	132	83.5	400	380	-	41
350	36	22.5	110	105	62	-	1320	135	85.5	410	390	-	42
370	38	24	115	109	64.5	-	1350	138	87.5	420	399	-	42.5
385	39	25	120	114	67	-	1385	141	89.5	430	409	-	43.5
400	41	26	125	119	69	-	1420	145	92	440	418	-	44.5
415	42	27	130	124	71	-	1455	148	94.5	450	428	-	45.5
430	44	28	135	128	73	-	1485	151	96	460	437	-	46
450	46	29	140	133	75	-	1520	155	98.5	470	447	-	47
465	47	30	145	138	77	-	1555	159	101	480	(456)	-	47.5
480	49	31	150	143	78.5	-	1595	163	103.5	490	(466)	-	48.5
495	50	32	155	147	80	-	1630	166	105.3	500	(475)	-	49
510	52	33	160	152	81.5	-	1665	170	108	510	(485)	-	50
530	54	34.5	165	157	83	1	1700	173	110	520	(494)	-	50.5
545	56	35.5	170	162	85	3	1740	177	113	530	(504)	-	51
560	57	36.5	175	166	86	4	1775	181	115	540	(513)	-	51.5
575	59	37.5	180	171	87	5	1810	185	117.5	550	(523)	-	52.5
595	61	38.5	185	176	88	7	1845	188	119.5	560	(532)	-	53
610	62	39.5	190	181	89.5	9	1880	192	122	570	(542)	-	53.5
625	64	40.5	195	185	91	11	1920	196	124.5	580	(551)	-	54
640	65	41.5	200	190	91.5	13	1955	199	126.5	590	(561)	-	54.5
660	67	43	205	195	92.5	15	1995	203	129.5	600	(570)	-	55
675	69	43.5	210	200	93.5	16	2030	207	131.5	610	(580)	-	55.5
690	70	44.5	215	204	94	17	2070	211	134	620	(589)	-	56.5
705	72	45.5	220	209	95	18	2105	215	136.5	630	(599)	-	57
720	73	46.5	225	214	93	19	2145	219	139	640	(608)	-	57.5
740	75	48	230	219	96.5	19.5	2180	222	141.5	650	(618)	-	58
755	77	49	235	223	97	20	-	-	-	660	-	-	58.5
770	79	50	240	228	98	21	-	-	-	670	-	-	59
785	80	51	245	233	99	21.5	-	-	-	680	-	-	59
800	82	52	250	238	99.5	22	-	-	-	690	-	-	59.5
820	84	53	255	242	-	23	-	-	-	700	-	-	60
835	85	54	260	247	-	24	-	-	-	720	-	-	61
850	87	55	265	252	-	25	-	-	-	740	-	-	62
865	88	56	270	257	-	25.5	-	-	-	760	-	-	62.5
880	90	57	275	261	-	26.5	-	-	-	780	-	-	63.5
900	92	58.5	280	266	-	27	-	-	-	800	-	-	64
915	93	59.5	285	271	-	28	-	-	-	820	-	-	64.5
930	95	60.5	290	276	-	28.5	-	-	-	840	-	-	65.5
950	97	61.5	295	280	-	29	-	-	-	860	-	-	66
965	98	62.5	300	285	-	30	-	-	-	880	-	-	66.5
995	101	64.5	310	295	-	31	-	-	-	900	-	-	67
1030	105	66.5	320	304	-	32	-	-	-	920	-	-	67.5
1060	105	66.5	320	314	-	33.5	-	-	-	940	-	-	68
1095	112	71	340	323	-	34.5	-	-	-	-	-	-	-

## Technical Data

### ENGLISH TO METRIC

MULTIPLY	BY	TO OBTAIN
Inches	25.4	Millimetres
Inches	2.54	Centimetres
Feet	.3048	Metres
Inches per minute	25.4	Millimetres per minute
Cubic Inches per minute	16.387	Cubic Centimetres per minute
Surface Feet per minute	.3048	Surface Metres per minute

### METRIC TO ENGLISH

MULTIPLY	BY	TO OBTAIN
Millimetres	.0394	Inches
Centimetres	.3937	Inches
Metres	3.2808	Feet
Millimetres per minute	.0394	Inches per minute
Cubic Centimetres per minute	.0610	Cubic Inches per minute
Surface Metres per minute	3.2808	Surface Feet per minute

### USEFUL FORMULAS

#### MILLING

Cutting Speed	Vc	=	$\frac{d \times \pi \times n}{1000}$	(m/min)
Spindle Speed	n	=	$\frac{Vc \times 1000}{\pi \times d}$	(rpm)
Feed per Tooth	Fz	=	$\frac{Vf}{z \times n}$	(mm)
Table Feed	Vf	=	fz x z x n	(mm/min)

### USEFUL FORMULAS

#### SYMBOLS

No. of Flutes	=	z
Spindle Speed	=	n (rpm)
Tool Diameter	=	d (mm)
$\pi$	=	3.142

### CUTTING TOOL USAGE SAFETY INFORMATION

#### ESSENTIAL SAFETY INSTRUCTIONS

##### Tool Usage Hazards

In use, cutting tools may create sharp edges, vibrations, high temperatures and forces not only within the tool itself but also the work piece and waste produced. This can cause fragmentation of the tool and/or work piece due to excess stress or impact damage.

##### Avoiding Injury

When working with, or in the vicinity of cutting tools, all personnel should wear appropriate protective equipment at all times. Machine guards should be in place at all times.

##### Please Note:

It is the user's responsibility to determine the suitability of any tool for their specific application and ensure its safe usage.

# Material Overview: DIN

<b>P</b> Steel	<b>K</b> Cast Iron	<b>S</b> High-Temp Alloys
<b>M</b> Stainless Steel	<b>N</b> Non-Ferrous	<b>H</b> Hardened Materials

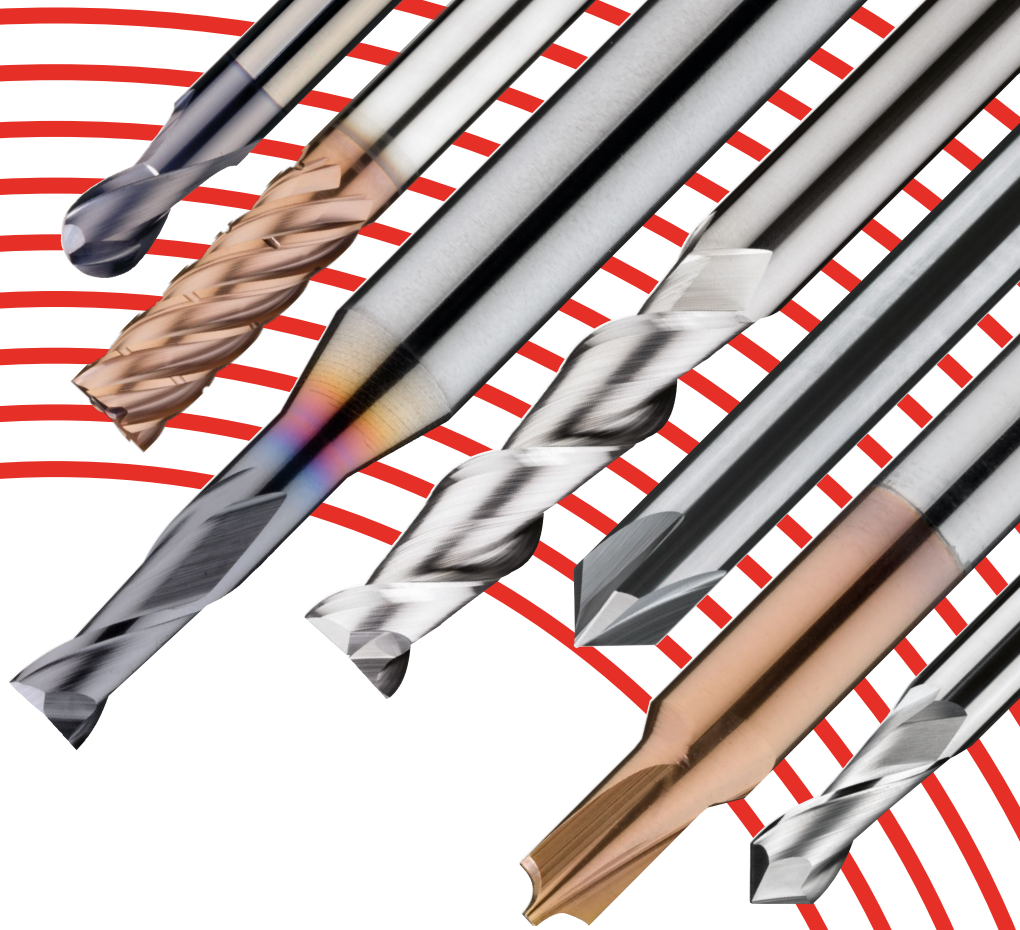
material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	-	-
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	-	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600-850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850-1400	340-450	35-48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	-	600-900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	-	900-1350	350-450	35-48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	-	<600	130-200	-	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	-	600-800	150-230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	-	<800	135-275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	-	125-500	120-290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	-	<600	130-260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	-	>600	180-350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminium	-	-	-	-	AlMg1, Al99.5, AlCuMg1, AlCuBIPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	-	-	-	GAISiCu4, GDAISi10Mg
N3	High-Silicon Aluminium Alloys and Magnesium Alloys	Si >12,2%	-	-	-	G-ALSi12, G-ALSi17Cu4, G-ALSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70-100	-	-	-	-	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass	-	-	-	-	Lexan®, Hostalen®, Polystyrol, Makrolon®
N6	Carbon, Graphite Composites, CFRP	-	-	-	-	CFK, GFK
N7	Metal Matrix Composites (MMC)	-	-	-	-	-
S1	Iron-Based, Heat-Resistant Alloys	-	500-1200	160-260	25-48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	-	1000-1450	250-450	25-48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	-	600-1700	160-450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	-	900-1600	300-400	33-48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	-	-	-	44-48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	-	-	-	48-55	-
H3	Hardened Materials	-	-	-	56-60	-
H4	Hardened Materials	-	-	-	>60	-

# Conversion Chart

DECIMAL (mm)	SIZES	DECIMAL (ins)	DECIMAL (mm)	SIZES	DECIMAL (ins)	DECIMAL (mm)	SIZES	DECIMAL (ins)	DECIMAL (mm)	SIZES	DECIMAL (ins)	DECIMAL (mm)	SIZES	DECIMAL (ins)
.794	1/32	.0312	2.383	3/32	.0938	4.700	13	.1850	7.366	L	.2900	12.000	-	.4724
.800	-	.0315	2.400	-	.0945	4.750	-	.1870	7.400	-	.2913	12.304	31/64	.4844
.813	67	.0320	2.438	41	.0960	4.763	3/16	.1875	7.493	M	.2950	12.500	-	.4921
.838	66	.0330	2.450	-	.0965	4.800	12	.1890	7.500	-	.2953	12.700	1/2	.5000
.851	-	.0335	2.489	40	.0980	4.850	11	.1910	7.541	19/64	.2969	13.000	-	.5118
.889	65	.0350	2.500	-	.0984	4.900	-	.1929	7.600	-	.2992	13.096	33/64	.5156
.900	-	.0354	2.527	39	.0995	4.915	10	.1935	7.671	N	.3020	13.492	17/32	.5312
.914	64	.0360	2.578	38	.1015	4.978	9	.1960	7.700	-	.3031	13.500	-	.5315
.940	63	.0370	2.600	-	.1024	5.000	-	.1969	7.750	-	.3051	13.891	35/64	.5469
.950	-	.0374	2.642	37	.1040	5.055	8	.1990	7.800	-	.3071	14.000	-	.5512
.965	62	.0380	2.700	-	.1063	5.100	-	.2008	7.900	-	.3110	14.287	9/16	.5625
.991	61	.0390	2.705	36	.1065	5.105	7	.2010	7.938	5/16	.3125	14.500	-	.5709
1.000	-	.0394	2.750	-	.1083	5.159	13/64	.2031	8.000	-	.3150	14.684	37/64	.5781
1.016	60	.0400	2.779	7/64	.1094	5.182	6	.2040	8.026	O	.3160	15.000	-	.5906
1.041	59	.0410	2.794	35	.1100	5.200	-	.2047	8.100	-	.3189	15.083	19/32	.5938
1.049	-	.0413	2.800	-	.1102	5.220	5	.2055	8.200	-	.3228	15.479	39/64	.6094
1.067	58	.0420	2.819	34	.1110	5.250	-	.2067	8.204	P	.3230	15.500	-	.6102
1.092	57	.0430	2.870	33	.1130	5.300	-	.2087	8.250	-	.3248	15.875	5/8	.6250
1.100	-	.0433	2.900	-	.1142	5.309	4	.2090	8.300	-	.3268	16.000	-	.6299
1.151	-	.0453	2.946	32	.1160	5.400	-	.2126	8.334	21/64	.3281	16.271	41/64	.6406
1.181	56	.0465	3.000	-	.1181	5.410	3	.2130	8.400	-	.3307	16.500	-	.6496
1.191	3/64	.0469	3.048	31	.1200	5.500	-	.2165	8.433	Q	.3320	16.667	21/32	.6562
1.200	-	.0472	3.100	-	.1220	5.558	7/32	.2188	8.500	-	.3346	17.000	-	.6693
1.250	-	.0492	3.175	1/8	.1250	5.600	-	.2205	8.600	-	.3366	17.066	43/64	.6719
1.300	-	.0512	3.200	-	.1260	5.613	2	.2210	8.611	R	.3390	17.463	11/16	.6875
1.321	55	.0520	3.250	-	.1280	5.700	-	.2244	8.700	-	.3425	17.500	-	.6890
1.349	-	.0531	3.264	30	.1285	5.750	-	.2264	8.733	11/32	.3438	17.859	45/64	.7031
1.397	54	.0550	3.300	-	.1299	5.791	1	.2280	8.750	-	.3445	18.000	-	.7087
1.400	-	.0551	3.400	-	.1339	5.800	-	.2283	8.800	-	.3465	18.258	23/32	.7188
1.450	-	.0571	3.454	29	.1360	5.900	-	.2323	8.839	S	.3480	18.500	-	.7283
1.500	-	.0591	3.500	-	.1378	5.944	A	.2340	8.900	-	.3504	18.654	47/64	.7344
1.511	53	.0595	3.569	28	.1405	5.954	15/64	.2344	9.000	-	.3543	19.000	-	.7480
1.550	-	.0610	3.571	9/64	.1406	6.000	-	.2362	9.039	T	.3580	19.050	3/4	.7500
1.588	1/16	.0625	3.600	-	.1417	6.045	B	.2380	9.100	-	.3583	19.446	49/64	.7656
1.600	-	.0630	3.658	27	.1440	6.100	-	.2402	9.129	23/64	.3594	19.500	-	.7677
1.613	52	.0635	3.700	-	.1457	6.147	C	.2420	9.200	-	.3622	19.842	25/32	.7812
1.650	-	.0650	3.734	26	.1470	6.200	-	.2441	9.250	-	.3642	20.000	-	.7874
1.700	-	.0669	3.750	-	.1476	6.248	D	.2460	9.300	-	.3661	20.241	51/64	.7969
1.702	51	.0670	3.797	25	.1495	6.250	-	.2461	9.347	U	.3680	20.500	-	.8071
1.750	-	.0689	3.800	-	.1496	6.300	-	.2480	9.400	-	.3701	20.638	13/16	.8125
1.778	50	.0700	3.861	24	.1520	6.350	E	.2500	9.500	-	.3740	21.000	-	.8268
1.800	-	.0709	3.900	-	.1536	6.350	1/4	.2500	9.525	3/8	.3750	21.034	53/64	.8281
1.850	-	.0728	3.912	23	.1540	6.400	-	.2520	9.576	V	.3770	21.433	27/32	.8438
1.854	49	.0730	3.962	5/32	.1562	6.500	-	.2559	9.600	-	.3780	21.500	-	.8465
1.900	-	.0748	3.988	22	.1570	6.528	F	.2570	9.700	-	.3819	21.829	55/64	.8594
1.930	48	.0760	4.000	-	.1575	6.600	-	.2598	9.750	-	.3839	22.000	-	.8661
1.950	-	.0768	4.039	21	.1590	6.629	G	.2610	9.800	-	.3858	22.225	7/8	.8750
1.984	5/64	.0781	4.089	20	.1610	6.700	-	.2638	9.804	W	.3860	22.500	-	.8858
1.994	47	.0785	4.100	-	.1614	6.746	17/64	.2656	9.900	-	.3898	22.261	57/64	.8906
2.000	-	.0787	4.200	-	.1654	6.750	-	.2657	9.921	25/64	.3906	23.000	-	.9055
2.050	-	.0807	4.216	19	.1660	6.756	H	.2660	10.000	-	.3937	23.017	29/32	.9062
2.057	46	.0810	4.250	-	.1673	6.800	-	.2677	10.084	X	.3970	23.416	59/64	.9219
2.083	45	.0820	4.300	-	.1693	6.900	-	.2717	10.262	Y	.4040	23.500	-	.9252
2.100	-	.0827	4.305	18	.1695	6.909	I	.2720	10.317	13/32	.4062	23.813	15/16	.9375
2.150	-	.0846	4.366	11/64	.1719	7.000	-	.2756	10.490	Z	.4130	24.000	-	.9449
2.184	44	.0860	4.394	17	.1730	7.036	J	.2770	10.500	-	.4134	24.209	61/64	.9531
2.200	-	.0866	4.400	-	.1732	7.100	-	.2795	10.716	27/64	.4219	24.500	-	.9646
2.250	-	.0886	4.496	16	.1770	7.137	K	.2810	11.000	-	.4331	24.608	31/32	.9688
2.260	43	.0890	4.500	-	.1772	7.142	9/32	.2812	11.113	7/16	.4375	25.000	-	.9843
2.300	-	.0906	4.572	15	.1800	7.200	-	.2835	11.500	-	.4528	25.004	63/64	.9844
2.350	-	.0925	4.600	-	.1811	7.250	-	.2854	11.509	29/64	.4531	25.400	-	1.000
2.375	42	.0935	4.623	14	.1820	7.300	-	.2874	11.908	15/32	.4688			



1. Interpretation
- 1.1. The definitions and rules of interpretation in this condition apply in these conditions.
- |                         |  |
|-------------------------|--|
| "Buyer"                 | the person, firm or company who purchases the Goods from ITC;  |
| "ITC"                   | Industrial Tooling Corporation Limited (Company No. 2573537) the registered office of which is at Cyber House, Unit 1 Kepler, Lichfield Road Industrial Estate, Tamworth, B79 7XE;   |
| "Contract"              | any contract between ITC and the Buyer for the sale and purchase of the Goods, incorporating these conditions;   |
| "Delivery Point"        | the place where delivery of the Goods is to take place under condition 4;  |
| "Goods"                 | any goods agreed in the Contract to be supplied to the Buyer by ITC (including any part or parts of them);   |
| "Intellectual Property" | any copyrights, letters, patents, know how, inventions, utility models, registered and unregistered designs, trade and service marks, trade names, logos, patent applications, rights in the nature of copyrights and all other similar rights in the Goods and (where applicable) the Services; and |
| "Services"              | any services agreed in the Contract to be supplied to the Buyer by ITC.  |
- 1.2. A reference to a particular law is a reference to it as it is in force for the time being taking account of any amendment, extension, application or re-enactment and includes any subordinate legislation for the time being in force made under it.
- 1.3. Words in the singular include the plural and in the plural include the singular.
- 1.4. A reference to one gender includes a reference to the other gender.
- 1.5. Condition headings do not affect the interpretation of these conditions.
2. Application of terms
- 2.1. Subject to any variation under condition 2.3 the Contract shall be on these conditions to the exclusion of all other terms and conditions (including any terms or conditions which the Buyer purports to apply under any purchase order, confirmation of order, specification or other document).
- 2.2. No terms or conditions endorsed on, delivered with or contained in the Buyer's purchase order, confirmation of order, specification or other document shall form part of the Contract simply as a result of such document being referred to in the Contract.
- 2.3. These conditions apply to all ITC's sales and any variation to these conditions and any representations about the Goods or the Services shall have no effect unless expressly agreed in writing and signed by a director of ITC. The Buyer acknowledges that it has not relied on any statement, promise or representation made or given by or on behalf of ITC which is not set out in the Contract. Nothing in this condition shall exclude or limit ITC's liability for fraudulent misrepresentation.
- 2.4. Each order or acceptance of a quotation for Goods or Services by the Buyer from ITC shall be deemed to be an offer by the Buyer to buy Goods and/or Services subject to these conditions. The Buyer shall ensure that the minimum value of its order is not less than the sum set out in clause 12.
- 2.5. No order placed by the Buyer shall be deemed to be accepted by ITC until a written acknowledgement of order is issued by ITC or (if earlier) ITC delivers the Goods to the Buyer or provides the Services to the Buyer.
- 2.6. The Buyer shall ensure that the terms of its order and any applicable specification are complete and accurate.
- 2.7. Any quotation is given on the basis that no Contract shall come into existence until ITC despatches an acknowledgement of order to the Buyer. Any quotation is valid for a period of 60 days only from its date, provided that ITC has not previously withdrawn it.
- 2.8. Acceptance of delivery of the Goods or performance of the Services shall be deemed conclusive evidence of the Buyer's acceptance of these Conditions.
- 2.9. Any typographical, clerical or other error or omission in any sales literature, quotation, acceptance of offer, invoice or other document or information issued by ITC shall be subject to correction without any liability on the part of ITC.
3. Description
- 3.1. The quantity and description of the Goods or the Services to be performed shall be as set out in ITC's quotation or acknowledgement of order.
- 3.2. All samples, drawings, descriptive matter, specifications and advertising issued by ITC and any descriptions or illustrations contained in ITC's catalogues or brochures are issued or published for the sole purpose of giving an approximate idea of the Goods described in them. They shall not form part of the Contract and this is not a sale by sample.
- 3.3. If the Goods are to be manufactured or as part of the Services any process is to be applied to the Goods by ITC, or if the Goods or Services are to be provided in accordance with a specification or any other document, data information or materials submitted by the Buyer, the Buyer shall indemnify ITC against all loss, damages, costs and expenses awarded against or incurred by ITC in connection with or paid or agreed to be paid by ITC in settlement of any claim for infringement of any patent, copyright, design, trade mark or other industrial or intellectual property rights of any other person which results from ITC's use of the Buyer's information.
- 3.4. ITC reserves the right to make any changes in the specification of the Goods which are required to conform with any applicable statutory or EC requirements or, where the Goods are to be supplied to ITC's specification, which do not materially affect their quality or performance.
- 3.5. No order which has been accepted by ITC may be cancelled by the Buyer except with the agreement in writing of ITC and on terms that the Buyer shall indemnify ITC in full against all loss (including without prejudice to the generality of the foregoing loss of profit), costs (including without prejudice to the generality of the foregoing the cost of all labour and materials ordered, whether used or un-used), damages, charges and expenses incurred by ITC as a result of cancellation.
4. Delivery
- 4.1. Unless otherwise agreed in writing by ITC, delivery of the Goods shall take place at ITC's place of business.
- 4.2. The Buyer shall take delivery of the Goods within 7 days of ITC giving it notice that the Goods are ready for delivery.
- 4.3. Any dates specified by ITC for delivery of the Goods or the performance of the Services are intended to be an estimate and time for delivery shall not be made of the essence by notice. If no dates are so specified, delivery and performance shall be within a reasonable time.
- 4.4. Subject to the other provisions of these conditions ITC shall not be liable for any direct, indirect or consequential loss (all three of which terms include, without limitation, pure economic loss, loss of profits, loss of business, depletion of goodwill and similar loss), costs, damages, charges or expenses caused directly or indirectly by any delay in the delivery of the Goods or the performance of the Services (even if caused by ITC's negligence), nor shall any delay entitle the Buyer to terminate or rescind the Contract unless such delay exceeds 180 days.
- 4.5. If for any reason the Buyer fails to accept delivery of any of the Goods when they are ready for delivery, or ITC is unable to deliver the Goods on time because the Buyer has not provided appropriate instructions, documents, licences or authorisations:
- 4.5.1. risk in the Goods shall pass to the Buyer;
- 4.5.2. the Goods shall be deemed to have been delivered;
- 4.5.3. ITC may store the Goods until delivery, whereupon the Buyer shall be liable for all related costs and expenses (including, without limitation, storage and insurance); and
- 4.5.4. sell the Goods at the best price readily attainable and (after deducting any costs for storage and other selling expenses) account to the Buyer for the excess over the price or charge the Buyer for any shortfall below the price under the Contract.
- 4.6. The Buyer shall provide at the Delivery Point and at its expense adequate and appropriate equipment and manual labour for loading the Goods.
- 4.7. If ITC delivers to the Buyer a quantity of Goods (being bespoke, non-stock items) of up to 10% more or less than the quantity accepted by ITC, the Buyer shall not be entitled to object to or reject the Goods or any of them by reason of the surplus or shortfall and shall pay for such goods at the pro rata Contract rate.
- 4.8. ITC may deliver the Goods by separate instalments. Each separate instalment shall be invoiced and paid for in accordance with the provisions of the Contract.
- 4.9. Each instalment shall be a separate Contract and no cancellation or termination of any one Contract relating to an instalment shall entitle the Buyer to repudiate or cancel any other Contract or instalment.
5. Non-delivery
- 5.1. The quantity of any consignment of Goods as recorded by ITC on despatch from ITC's place of business shall be conclusive evidence of the quantity received by the Buyer on delivery unless the Buyer can provide conclusive evidence proving the contrary.
- 5.2. ITC shall not be liable for any non-delivery of Goods (even if caused by ITC's negligence) unless the Buyer gives written notice to ITC of the non-delivery within 3 days of the date when the Goods would in the ordinary course of events have been received.
- 5.3. Any liability of ITC for non-delivery of the Goods shall be limited to replacing the Goods within a reasonable time or issuing a credit note at the pro rata Contract rate against any invoice raised for such Goods.
6. Risk/title
- 6.1. Risk of damage to or loss of the Goods shall pass to the Buyer:
- 6.1.1. in the case of Goods to be delivered at ITC's premises, at the time when ITC notifies the Buyer that the Goods are available for collection; or
- 6.1.2. in the case of Goods to be delivered otherwise than at ITC's premises, at the time of delivery or, if the Buyer wrongfully fails to take delivery of the Goods, the time when ITC has tendered delivery of the Goods.
- 6.1.3. in respect of deliveries made in accordance with clause 6.1(B) above and notwithstanding any other provision contained in these Conditions, a transportation insurance policy shall be taken out at the Buyer's written request and at the Buyer's expense.
- 6.2. Ownership of the Goods shall not pass to the Buyer until ITC has received in full (in cash or cleared funds) all sums due to it in respect of:
- 6.2.1. the Goods; and
- 6.2.2. all other sums which are or which become due to ITC from the Buyer on any account.
- 6.3. Until ownership of the Goods has passed to the Buyer, the Buyer shall:
- 6.3.1. hold the Goods on a fiduciary basis as ITC's bailee;
- 6.3.2. store each consignment of the Goods (at no cost to ITC) separately from all other goods purchased from ITC and those of the Buyer or any third party in such a way that they remain readily identifiable as ITC's property;
- 6.3.3. not remove, destroy, deface or obscure any identifying mark or packaging on or relating to the Goods; and
- 6.3.4. maintain the Goods in satisfactory condition and keep them insured on ITC's behalf for their full price against all risks to the reasonable satisfaction of ITC. On request the Buyer shall produce the policy of insurance to ITC.
- 6.4. The Buyer may resell the Goods before ownership has passed to it solely on the following conditions:
- 6.4.1. any sale shall be effected in the ordinary course of the Buyer's business at full market value; and
- 6.4.2. any such sale shall be a sale of ITC's property on the Buyer's own behalf and the Buyer shall deal as principal when making such a sale.
- 6.5. The Buyer's right to possession of the Goods shall terminate immediately if:
- 6.5.1. the Buyer has a bankruptcy order made against him or makes an arrangement or composition with his creditors, or otherwise takes the benefit of any statutory provision for the time being in force for the relief of insolvent debtors, or (being a body corporate) convenes a meeting of creditors (whether formal or informal), or enters into liquidation (whether voluntary or compulsory) except a solvent voluntary liquidation for the purpose only of reconstruction or amalgamation, or has a receiver and/or manager, administrator or administrative receiver appointed of its undertaking or any part thereof, or documents are filed with the court for the appointment of an administrator of the Buyer or notice of intention to appoint an administrator is given by the Buyer or its directors or by a qualifying floating charge holder (as defined in paragraph 14 of Schedule B1 to the Insolvency Act 1986), or a resolution is passed or a petition presented to any court for the winding-up of the Buyer or for the granting of an administration order in respect of the Buyer, or any proceedings are commenced relating to the insolvency or possible insolvency of the Buyer; or
- 6.5.2. the Buyer suffers or allows any execution, whether legal or equitable, to be levied on his/its property or obtained against him/it, or fails to observe or perform any of his/its obligations under the Contract or any other contract between ITC and the Buyer, or is unable to pay its debts within the meaning of section 123 of the Insolvency Act 1986 or the Buyer ceases to trade; or
- 6.5.3. the Buyer encumbers or in any way charges any of the Goods.
- 6.6. ITC shall be entitled to recover payment for the Goods or the Services notwithstanding that ownership of any of the Goods has not passed from ITC.
- 6.7. The Buyer grants ITC, its agents and employees an irrevocable licence at any time to enter any premises where the Goods are or may be stored in order to inspect them, or where the Buyer's right to possession has terminated, to recover them.
- 6.8. Where ITC is unable to determine whether any Goods are the goods in respect of which the Buyer's right to possession has terminated, the Buyer shall be deemed to have sold all goods of the kind sold by ITC to the Buyer in the order in which they were invoiced to the Buyer.
- 6.9. On termination of the Contract, howsoever caused, ITC's (but not the Buyer's) rights contained in this condition 6 shall remain in effect.
7. Price
- 7.1. Unless otherwise agreed in writing, the price for the Goods shall be the price set out in ITC's price list published on the date of delivery or deemed delivery. The price for the Services shall be in accordance with the quotation provided by ITC to the Buyer in accordance with clause 3.1.
- 7.2. The minimum value of the Buyer's order shall be not less than £20.00.
- 7.3. The price for the Goods shall be exclusive of any value added tax and all costs or charges in relation to packaging, loading, unloading, carriage and insurance, all of which amounts the Buyer shall pay in addition when it is due to pay for the Goods.
- 7.4. In the event that the Buyer's order is to be delivered to the Buyer then the Buyer shall pay for the costs of carriage notified to the Buyer by ITC from time to time.
- 7.5. ITC reserves the right, by giving notice to the Buyer at any time before the delivery to increase the price and/or the ancillary costs to reflect any increase in the cost to ITC which is due to any factor beyond the control of ITC (such as, without limitation, any foreign exchange fluctuation, currency regulation, alteration of taxes, levies or duties, significant increase in the costs of labour, materials or other costs of manufacture), any change in delivery dates, quantities or specifications for the Goods or change to the required Services which is requested by the Buyer, or any delay caused by any instructions of the Buyer or failure of the Buyer to give ITC adequate information or instructions.
8. Payment
- 8.1. Subject to condition 8.4, payment of the price for the Goods or the Services is (unless otherwise agreed in writing by the parties) due in pounds sterling on the last working day of the month following the month in which the Goods are delivered or deemed to be delivered. ITC reserves the right to request payment for the Goods and/or Services in advance.
- 8.2. Time for payment shall be of the essence.
- 8.3. No payment shall be deemed to have been received until ITC has received cleared funds.
- 8.4. All payments payable to ITC under the Contract shall become due immediately on its termination despite any other provision.
- 8.5. The Buyer shall make all payments due under the Contract in full without any deduction whether by way of set-off, counterclaim, discount, abatement or otherwise unless the Buyer has a valid court order requiring an amount equal to such deduction to be paid by ITC to the Buyer.
- 8.6. If the Buyer fails to pay ITC any sum due pursuant to the Contract, the Buyer shall be liable to pay interest to ITC on such sum from the due date for payment at the annual rate of 8% above the base lending rate from time to time of National Westminster Bank plc, accruing on a daily basis until payment is made, whether before or after any judgment. ITC reserves the right to claim interest under the Late Payment of Commercial Debts (Interest) Act 1998.
9. Quality
- 9.1. Where ITC is not the manufacturer of the Goods, ITC shall endeavour to transfer to the Buyer the benefit of any warranty or guarantee given by ITC.
- 9.2. ITC warrants that:-
- 9.2.1. (subject to the other provisions of these conditions) on delivery that the Goods shall be of satisfactory quality within the meaning of the Sale of Goods Act 1979;
- 9.2.2. bought if the Buyer had made known that purpose to ITC in writing and ITC has confirmed in writing that it is reasonable for the Buyer to rely on the skill and
- 9.2.3. that the Services will be provided using reasonable care and skill and, as far as reasonably possible, in accordance with the Contract and at the intervals and within the times referred to in the Contract.
- 9.3. The above warranty is given by ITC subject to the following conditions:
- 9.3.1. ITC shall be under no liability if it is established by ITC that some part of the material used in manufacture was defective;
- 9.3.2. ITC shall be under no liability in respect of any defect in the Goods or Services arising from any drawing, design or specification supplied by the Buyer;
- 9.3.3. ITC shall be under no liability under the above warranty (or any other warranty, condition or guarantee) if the price and all ancillary costs have not been paid by the due date for payment.
- 9.4. ITC shall not be liable for a breach of either of the warranties in condition 9.2 unless:
- 9.4.1. the Buyer gives written notice of the defect to ITC, and, if the defect is as a result of damage in transit to the carrier, within 7 days of the time when the Buyer discovers or ought to have discovered the defect; and
- 9.4.2. ITC is given a reasonable opportunity after receiving the notice of examining such Goods and the Buyer (if asked to do so by ITC) returns such Goods to ITC's place of business at ITC's cost for the examination to take place there.
- 9.5. ITC shall not be liable for a breach of either of the warranties in condition 9.2 if:
- 9.5.1. the Buyer makes any further use of such Goods after giving such notice; or
- 9.5.2. the defect arises because the Buyer failed to follow ITC's oral or written instructions as to the storage, installation, commissioning, use or maintenance of the Goods or (if there are none) good trade practice; or
- 9.5.3. the Buyer alters or repairs such Goods without the written consent of ITC.
- 9.6. Subject to condition 9.5, if any of the Goods do not conform with either of the warranties in condition 9.2 ITC shall at its option repair or replace such Goods (or the defective part) or refund the price of such Goods at the pro rata Contract rate provided that, if ITC so requests, the Buyer shall, at ITC's expense, return the Goods or the part of such Goods which is defective to ITC.
- 9.7. If ITC complies with condition 9.6 it shall have no further liability for a breach of either of the warranties in condition 9.2 in respect of such Goods.
10. Limitation of liability
- 10.1. Subject to condition 4, condition 5 and condition 9, the following provisions set out the entire financial liability of ITC (including any liability for the acts or omissions of its employees, agents and sub-contractors) to the Buyer in respect of:
- 10.1.1. any breach of these conditions;
- 10.1.2. any use made or resale by the Buyer of any of the Goods; or of any product incorporating any of the Goods; and
- 10.1.3. any representation, statement or omission including negligence arising under or in connection with the Contract.
- 10.2. All warranties, conditions and other terms implied by statute or common law (save for the conditions implied by section 12 of the Sale of Goods Act 1979) are, to the fullest extent permitted by law, excluded from the Contract.
- 10.3. Nothing in these conditions excludes or limits the liability of ITC:
- 10.3.1. for death or personal injury caused by ITC's negligence; or
- 10.3.2. under section 2(3), Consumer Protection Act 1987; or
- 10.3.3. for any matter which it would be illegal for ITC to exclude or attempt to exclude its liability; or
- 10.3.4. for fraud or fraudulent misrepresentation.
- 10.4. Subject to condition 10.2 and condition 10.3:
- 10.4.1. ITC's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the performance or contemplated performance of the Contract shall be limited to the Contract price; and
- 10.4.2. ITC shall not be liable to the Buyer for loss of profit, loss of business, or depletion of goodwill in each case whether direct, indirect or consequential, or any claims for consequential compensation whatsoever (howsoever caused) which arise out of or in connection with the Contract.
11. Export terms
- 11.1. Unless the context otherwise requires, any term or expression which is defined in or given a particular meaning by the provisions of INCOTERMS shall have the same meaning in these Conditions, but if there is any conflict between the provisions of INCOTERMS and these Conditions, the latter shall prevail.
- 11.2. Where the Goods are supplied for export from the United Kingdom, the provisions of this clause 11 shall (subject to any special terms agreed in writing between the Buyer and ITC) apply notwithstanding any other provision of these Conditions.
- 11.3. The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties on them.
- 11.4. Unless otherwise agreed in writing between the Buyer and ITC, the Goods shall be delivered [Job the air or sea port of shipment] and the Seller shall be under no obligation to give notice under section 32(3) of the Sale of Goods Act 1979.
- 11.5. The Buyer shall be responsible for arranging for testing and inspection of the Goods at ITC's premises before shipment. ITC shall have no liability for any claim in respect of any defect in the Goods which would be apparent on inspection and which is made after shipment, or in respect of any damage during transit.
- 11.6. Unless otherwise required by ITC, payment of all amounts due to the Seller shall be made by an irrevocable letter of credit, in a form acceptable to ITC, to be opened by the Buyer favour of ITC and confirmed by a bank in the United Kingdom acceptable to ITC within 14 days after the Contract is concluded.
- 11.7. The Buyer shall not offer the Goods for resale in \_\_\_\_\_ or any other country notified by ITC to the Buyer, or before the time the Buyer's order is placed, or sell the Goods to any person if the Buyer knows or has reason to believe that that person intends to resell the Goods in any such country.
12. Assignment
- 12.1. ITC may assign the Contract or any part of it to any person, firm or company.
- 12.2. The Buyer shall not be entitled to assign the Contract or any part of it without the prior written consent of ITC.
13. Force majeure
- 13.1. ITC reserves the right to defer the date of delivery or performance or to cancel the Contract or reduce the volume of the Goods ordered by the Buyer (without liability to the Buyer) if it is prevented from or delayed in the carrying out of its business due to circumstances beyond the reasonable control of ITC including, without limitation, acts of God, governmental actions, war or national emergency, acts of terrorism, protests, riot, civil commotion, fire, explosion, flood, epidemic, lock-outs, strikes or other labour disputes (whether or not relating to other party's workforce), or restraints or delays affecting carriers or inability or delay in obtaining supplies of adequate or suitable materials, provided that, if the event in question continues for a continuous period in excess of 90 days, the Buyer shall be entitled to give notice in writing to ITC to terminate the Contract.
14. General
- 14.1. Each right or remedy of ITC under the Contract is without prejudice to any other right or remedy of ITC under the Contract or in law.
- 14.2. If any provision of the Contract is found by any court, tribunal or administrative body of competent jurisdiction to be wholly or partly illegal, void, voidable, unenforceable or unreasonable it shall to the extent of such illegality, invalidity, voidness, voidability, unenforceability or unreasonableness be deemed severable and the remaining provisions of the Contract and the remainder of such provision shall continue in full force and effect.
- 14.3. Failure or delay by ITC in enforcing or partially enforcing any provision of the Contract shall not be construed as a waiver of any of its rights under the Contract.
- 14.4. Any waiver by ITC of any breach of, or any default under, any provision of the Contract by the Buyer shall not be deemed a waiver of any subsequent breach or default and shall in no way affect the other terms of the Contract.
- 14.5. The parties to the Contract do not intend that any term of the Contract shall be enforceable by virtue of the Contracts (Rights of Third Parties) Act 1999 by any person that is not a party to it.
- 14.6. The formation, existence, construction, performance, validity and all aspects of the Contract shall be governed by English law and the parties submit to the exclusive jurisdiction of the English courts.
15. Communications
- 15.1. All notices sent between the parties relating to the Contract shall be in writing and delivered by hand or sent by pre-paid first class post or sent by fax:
- 15.1.1. (in the case of notices to ITC) to its registered office or such changed address as shall be notified to the Buyer by ITC; or
- 15.1.2. (in the case of notices to the Buyer) to the registered office of the addressee (if it is a company) or (in any other case) to any address of the Buyer set out in any document which forms part of the Contract or such other address as shall be notified to ITC by the Buyer.
- 15.2. Notices shall be deemed to have been received:
- 15.2.1. if sent by pre-paid first class post, two days (excluding Saturdays, Sundays and bank and public holidays) after posting (exclusive of the day of posting); or
- 15.2.2. if delivered by hand, on the day of delivery; or
- 15.2.3. if sent by fax on a working day prior to 4.00 pm, at the time of transmission and otherwise on the next working day.
- 15.3. Notices addressed to ITC shall be marked for the attention of Mr P Draves.
16. Indemnity
- 16.1. If any claim is made against the Buyer that the Goods or Services provided infringe or that their use or resale infringes the patent, copyright, design, trade mark or other industrial or intellectual property rights of any other person, then unless the claim arises from the use of any drawing, design or specification supplied by the Buyer, ITC shall indemnify the Buyer against all loss, damages, costs and expenses awarded against or incurred by the Buyer in connection with the claim, or paid or agreed to be paid by the Buyer in settlement of the claim, provided that:
- 16.1.1. the Buyer shall immediately inform ITC of all such claims;
- 16.1.2. ITC is given full control of any proceedings or negotiations in connection with any such claim;
- 16.1.3. the Buyer shall give ITC all reasonable assistance for the purposes of any such proceedings or negotiations;
- 16.1.4. except pursuant to a final award, the Buyer shall not pay or accept any such claim, or compromise any such proceedings without the consent of ITC (which shall not be unreasonably withheld);
- 16.1.5. the Buyer shall do nothing which would or might vitiate any policy of insurance or insurance cover which the Buyer may have in relation to such infringement, and this indemnity shall not apply to the extent that the Buyer recovers any sums under any such policy or cover (which the Buyer shall use its best endeavours to do);
- 16.1.6. ITC shall be entitled to the benefit of, and the Buyer shall accordingly account to ITC for, all damages and costs (if any) awarded in favour of the Buyer which are payable by, or agreed with the consent of the Buyer (which consent shall not be unreasonably withheld) to be paid by, any other party in respect of any such claim; and
- 16.1.7. without prejudice to any duty of the Buyer at common law, ITC shall be entitled to require the Buyer to take such steps as ITC may reasonably require to mitigate or reduce any such loss, damages, costs or expenses for which ITC is liable to indemnify the Buyer under this clause.
17. Insolvency of Buyer
- 17.1. This clause applies if:
- 17.1.1. the Buyer makes any voluntary arrangement with its creditors or (being an individual or firm) becomes bankrupt or (being a company) becomes subject to an administration order or goes into liquidation (otherwise than for the purposes of amalgamation or reconstruction); or
- 17.1.2. an encumbrancer takes possession, or a receiver is appointed, of any of the property or assets of the Buyer; or
- 17.1.3. the Buyer ceases, or threatens to cease, to carry on business; or
- 17.1.4. ITC reasonably apprehends that any of the events mentioned above is about to occur in relation to the Buyer and notifies the Buyer accordingly.
- 17.2. If this clause applies then, without prejudice to any other right or remedy available to ITC, ITC shall be entitled to cancel the Contract or suspend any further deliveries or performance of the Services under the Contract without any liability to the Buyer, and if the Goods have been delivered but not paid for the Price and the Ancillary Costs shall become immediately due and payable notwithstanding any previous agreement or arrangement to the contrary.



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