



***DIJET CARBIDE TOOLS***

**Drills & Solid End Mills**

# DIJET CARBIDE TOOLS

## Meeting the Trust of Customers

The industrial world poses various difficult problems toward tooling. Dijet has been meeting the trust of customers with continuous development of new tools and materials using our experience of more than 50 years as a total carbide tool manufacturer.



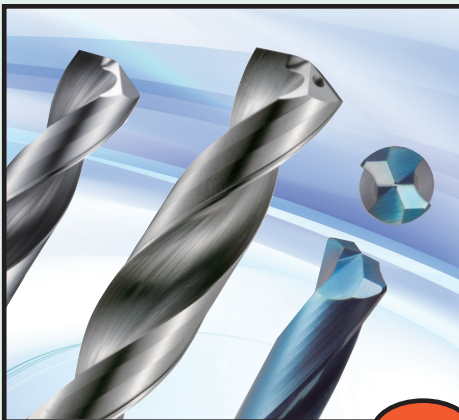
Indexable Drills

A-43



Spot Facing Drills

A-23



Solid Carbide Drills

A-5



Solid Carbide End Mills

B-8



Solid Carbide Radius End Mills

B-37



Solid Carbide Ball Nose End Mills

B-57

## HOW TO USE THE CATALOG

Please note that products in this catalog are continuously under study and are improved.

The products therefore may be changed in the future and thus become different from the catalog.

Stock status is mentioned for the products in this catalog. However, please note that the products here may be replaced by the new grades and products in the future.

Regarding stock status:

- Stock standard items (NOTE: Some items may be stocked in Japan - delivery approximately 2 weeks.)
- Non stock standard items (Production after order received)

### CUTTING STYLES

Face Milling

Shoulder Milling

Shoulder Milling

Slotting

Slotting

Copy Milling

Pocket Milling

Under Milling

Chamfering

Helical Interpolation

Shoulder Milling

Shoulder Milling

Slotting

Slotting

Copy Milling

Chamfering

Spot Facing

Side Milling

T - Slotting

Drilling

Up & Down Milling

V - Slotting

Plunge Milling

Up & Down Milling

Plunging

Centering

#### Machining Type

Rough Machining

Semi Finish Machining

Finish Machining









#### Corner Shape

True 90°

Corner Radius





With Gash

# Drills

Product Name	Strike Drill							
Type	Solid Carbide							
								
Page	A-5	A-7	A-9	A-11	A-13	A-15	A-15	A-16
Catalog Number	EZN2D	EZN4D	EZN3D	EZN5D	EZN8D	EZN2D-M EZN3D-M	EZN2DCH-M EZN3DCH-M	EZT3D
Diameters	1 ~ 14mm	3 ~ 14mm	3 ~ 16mm	3 ~ 16mm	3 ~ 14mm	3.4 ~ 10.3mm	3.4 ~ 10.3mm	1.81 ~ 5.5mm
Depth of Cut	2XD	4XD	3XD	5XD	8XD	2XD 3XD	2XD 3XD	3XD
Coolant	External		Internal			External	Internal	External
Coating	Value Coating							
Mild Steel	◎	◎	◎	◎	◎	◎	◎	◎
Carbon, Alloy Steel	◎	◎	◎	◎	◎	◎	◎	◎
Hardened Steel: ~50HRC	○	○	○	○	○	○	○	○
~65HRC								
Inconel, Titanium			○	○	○		○	
Stainless Steel	○	○	◎	◎	◎	○	◎	○
Cast Iron	◎	◎	◎	◎	◎	◎	◎	◎
Aluminum						○	○	
Graphite, Carbon, Ceramics								
Features	High accuracy solid carbide drill, 2XD.	High accuracy solid carbide drill, 4XD.	High accuracy solid carbide drill with coolant thru, 3XD.	High accuracy solid carbide drill with coolant thru, 5XD.	High accuracy solid carbide drill with coolant thru, 8XD.	Solid carbide prehole drill for tap drill with chamfer, 2XD & 3XD.	Solid carbide prehole drill, coolant thru for tap drill with chamfer, 2XD & 3XD.	High accuracy (-0.01mm-0mm) prehole drill for roll tap, 3XD.

◎ = First Choice    ○ = Second Choice








# Drills

Strike	EZ Hard Drill		Spot Facing Drill			TA Spot Facing Drill	
Solid Carbide						Indexable	
							
A-16	A-33	A-33	A-23	A-27	A-29	A-59	A-59
EZT4D	EZH	EZH-LS	TLDM	TLD3D	TLD5D	TLZD	TLZD
2.78 ~ 5.55mm	2 ~ 16.1mm	3 ~ 5mm	1 ~ 14mm	3 ~ 14mm	3 ~ 14mm	14 ~ 32mm	14 ~ 32mm
4XD	5XD	5XD	2XD	3XD	5XD	1.5XD	.7 ~ 1XD
Internal	External		Internal				
Value Coating	DH Coating		TiAlN	Value Coating		JC7500	
◎	○	○	◎	◎	◎	◎	◎
◎	○	○	◎	◎	◎	◎	◎
○	◎	◎	○	○	○	○ $\sim$ 40 HRC	○ $\sim$ 40 HRC
	◎	◎					
○				○	○	○	○
◎				◎	◎	◎	◎
◎	○	○	◎	◎	◎	◎	◎
			○	○	○	○	○
High accuracy (-0.01mm-0mm) prehole drill for roll tap, 3XD.	Solid carbide drill for high hardened material, 5XD.	Solid carbide drill for high hardened material with long shank, 5XD.	Solid carbide spot face drill with 180° point, 2XD (flat face).	Solid carbide spot face drill with 180° point, double margin, 3XD (flat face).	Solid carbide spot face drill with 180° point, double margin, 5XD (flat face).	Indexable spot face drill with 180° point, 1.5XD.	Indexable spot face modular head drill with 180° point, .70-1XD.

◎ = First Choice

○ = Second Choice

# Drills

Product Name	TA-EZ						Finish Hard Reamer
Type	Indexable						Solid Carbide
							
Page	A-43	A-43	A-43	A-43	A-43	A-43	A-35
Catalog Number	TEZD-MS	TEZD-ML	TEZD-XL	TEZDF-MS TEZD-MS	TEZDF-ML TEZD-ML	TEZDF-XL TEZD-XL	DH-FHR
Diameters	13.5 ~ 32.5mm	13.5 ~ 32.5mm	13.5 ~ 32.5mm	13.5 ~ 32.5mm .531" ~ 1.2795"	13.5 ~ 32.5mm .531" ~ 1.2795"	13.5 ~ 32.5mm .531" ~ 1.2795"	3 ~ 16.02mm
Depth of Cut	3XD	5XD	8XD	3XD	5XD	8XD	5XD (~12.1mm)
Coolant	Internal						External
Coating	Value Coating						DH Coating
Mild Steel	⊙	⊙	⊙	⊙	⊙	⊙	
Carbon, Alloy Steel	⊙	⊙	⊙	⊙	⊙	⊙	
Hardened Steel: ~50HRC	○	○	○	○	○	○	○
~65HRC							⊙
Inconel, Titanium	⊙	⊙	⊙	⊙	⊙	⊙	
Stainless Steel	⊙	⊙	⊙	⊙	⊙	⊙	
Cast Iron	⊙	⊙	⊙	⊙	⊙	⊙	○
Aluminum	○	○	○	○	○	○	
Graphite, Carbon, Ceramics							
Features	Indexable one piece carbide tip with low cutting force EZ geometry, 3XD.	Indexable one piece carbide tip with low cutting force EZ geometry, 5XD.	Indexable one piece carbide tip with low cutting force EZ geometry, 8XD.	Indexable one piece carbide tip with low cutting force EZ geometry & flange shank, 3XD.	Indexable one piece carbide tip with low cutting force EZ geometry & flange shank, 5XD.	Indexable one piece carbide tip with low cutting force EZ geometry & flange shank, 8XD.	For high hardened steel with high accurate roundness, 5XD.

⊙ = First Choice      ○ = Second Choice

# Drills

V Point Drill		Helical Cutting for Aluminum	
Solid Carbide			
A-40	A-40	A-38	
VSD VSDL	VSD VSDL	AL-OCHE	
3 ~ 25mm	3 ~ 25mm	4 ~ 16mm	
		2 flute	
External		Internal	
None	TiN	DLC Coating	
○	○		
○	○		
◎	◎		
		◎	
Standard and long shank type center drill.	Standard and long shank type coated center drill.	30° Helix angle, high efficient cutting with standard length of cut.	

◎ = First Choice      ○ = Second Choice

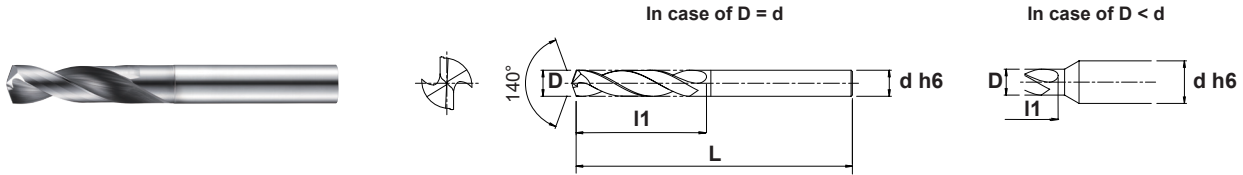
# Strike Drill

**METRIC**

## EZN2D Type

- Solid Carbide drill with high accuracy
- Drilling depth 2xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN2D0100S03	•	1.0	4	49	3
EZN2D0110S03	•	1.1	5	49	3
EZN2D0120S03	•	1.2	5	49	3
EZN2D0130S03	•	1.3	6	49	3
EZN2D0140S03	•	1.4	6	49	3
EZN2D0150S03	•	1.5	6	49	3
EZN2D0160S03	•	1.6	7	49	3
EZN2D0170S03	•	1.7	7	49	3
EZN2D0180S03	•	1.8	8	49	3
EZN2D0190S03	•	1.9	8	49	3
EZN2D0200S03	•	2.0	8	49	3
EZN2D0210S03	•	2.1	9	49	3
EZN2D0220S03	•	2.2	9	49	3
EZN2D0230S03	•	2.3	10	49	3
EZN2D0240S03	•	2.4	10	49	3
EZN2D0250S03	•	2.5	10	49	3
EZN2D0260S03	•	2.6	11	49	3
EZN2D0270S03	•	2.7	11	49	3
EZN2D0280S03	•	2.8	12	49	3
EZN2D0290S03	•	2.9	12	49	3
EZN2D0300S04	•	3.0	13	49	4
EZN2D0310S04	•	3.1	15	49	4
EZN2D0320S04	•	3.2	15	49	4
EZN2D0330S04	•	3.3	15	49	4
EZN2D0340S04	•	3.4	15	49	4
EZN2D0350S04	•	3.5	15	49	4
EZN2D0360S04	•	3.6	17	49	4
EZN2D0370S04	•	3.7	17	49	4
EZN2D0380S04	•	3.8	17	49	4
EZN2D0390S04	•	3.9	17	49	4
EZN2D0400S04	•	4.0	17	49	4
EZN2D0410S06	•	4.1	19	64	6
EZN2D0420S06	•	4.2	19	64	6
EZN2D0430S06	•	4.3	19	64	6
EZN2D0440S06	•	4.4	19	64	6
EZN2D0450S06	•	4.5	19	64	6
EZN2D0460S06	•	4.6	21	64	6
EZN2D0470S06	•	4.7	21	64	6
EZN2D0480S06	•	4.8	21	64	6
EZN2D0490S06	•	4.9	21	64	6

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN2D0500S06	•	5.0	21	64	6
EZN2D0510S06	•	5.1	23	68	6
EZN2D0520S06	•	5.2	23	68	6
EZN2D0530S06	•	5.3	23	68	6
EZN2D0540S06	•	5.4	23	68	6
EZN2D0550S06	•	5.5	23	68	6
EZN2D0560S06	•	5.6	25	68	6
EZN2D0570S06	•	5.7	25	68	6
EZN2D0580S06	•	5.8	25	68	6
EZN2D0590S06	•	5.9	25	68	6
EZN2D0600S06	•	6.0	25	68	6
EZN2D0610S08	•	6.1	27	73	8
EZN2D0620S08	•	6.2	27	73	8
EZN2D0630S08	•	6.3	27	73	8
EZN2D0640S08	•	6.4	27	73	8
EZN2D0650S08	•	6.5	27	73	8
EZN2D0660S08	•	6.6	28	73	8
EZN2D0670S08	•	6.7	28	73	8
EZN2D0680S08	•	6.8	28	73	8
EZN2D0690S08	•	6.9	28	73	8
EZN2D0700S08	•	7.0	28	73	8
EZN2D0710S08	•	7.1	30	73	8
EZN2D0720S08	•	7.2	30	73	8
EZN2D0730S08	•	7.3	30	73	8
EZN2D0740S08	•	7.4	30	73	8
EZN2D0750S08	•	7.5	30	73	8
EZN2D0760S08	•	7.6	32	73	8
EZN2D0770S08	•	7.7	32	73	8
EZN2D0780S08	•	7.8	32	73	8
EZN2D0790S08	•	7.9	32	73	8
EZN2D0800S08	•	8.0	32	73	8
EZN2D0810S10	•	8.1	34	78	10
EZN2D0820S10	•	8.2	34	78	10
EZN2D0830S10	•	8.3	34	78	10
EZN2D0840S10	•	8.4	34	78	10
EZN2D0850S10	•	8.5	34	78	10
EZN2D0860S10	•	8.6	36	78	10
EZN2D0870S10	•	8.7	36	78	10
EZN2D0880S10	•	8.8	36	78	10
EZN2D0890S10	•	8.9	36	78	10



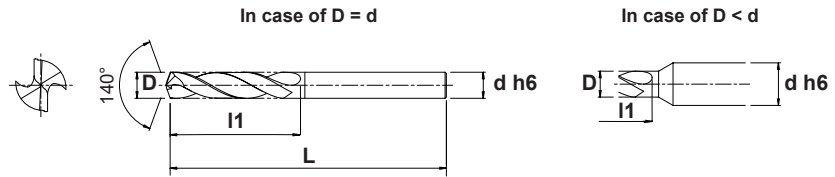
**METRIC**

# Strike Drill

## EZN2D Type

- Solid Carbide drill with high accuracy
- Drilling depth 2xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
EZN2D0900S10	•	9.0	36	78	10
EZN2D0910S10	•	9.1	38	88	10
EZN2D0920S10	•	9.2	38	88	10
EZN2D0930S10	•	9.3	38	88	10
EZN2D0940S10	•	9.4	38	88	10
EZN2D0950S10	•	9.5	38	88	10
EZN2D0960S10	•	9.6	40	88	10
EZN2D0970S10	•	9.7	40	88	10
EZN2D0980S10	•	9.8	40	88	10
EZN2D0990S10	•	9.9	40	88	10
EZN2D1000S10	•	10.0	40	88	10
EZN2D1010S12	•	10.1	42	98	12
EZN2D1020S12	•	10.2	42	98	12
EZN2D1030S12	•	10.3	42	98	12
EZN2D1040S12	•	10.4	42	98	12
EZN2D1050S12	•	10.5	42	98	12
EZN2D1060S12	•	10.6	44	98	12
EZN2D1070S12	•	10.7	44	98	12
EZN2D1080S12	•	10.8	44	98	12
EZN2D1090S12	•	10.9	44	98	12
EZN2D1100S12	•	11.0	44	98	12
EZN2D1110S12	•	11.1	46	98	12
EZN2D1120S12	•	11.2	46	98	12
EZN2D1130S12	•	11.3	46	98	12
EZN2D1140S12	•	11.4	46	98	12
EZN2D1150S12	•	11.5	46	98	12
EZN2D1160S12	•	11.6	48	98	12
EZN2D1170S12	•	11.7	48	98	12
EZN2D1180S12	•	11.8	48	98	12
EZN2D1190S12	•	11.9	48	98	12
EZN2D1200S12	•	12.0	48	98	12
EZN2D1210S14	•	12.1	52	110	14
EZN2D1220S14	•	12.2	52	110	14
EZN2D1230S14	•	12.3	52	110	14
EZN2D1240S14	•	12.4	52	110	14
EZN2D1250S14	•	12.5	52	110	14
EZN2D1260S14	•	12.6	52	110	14
EZN2D1270S14	•	12.7	52	110	14
EZN2D1280S14	•	12.8	52	110	14
EZN2D1290S14	•	12.9	52	110	14

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
EZN2D1300S14	•	13.0	52	110	14
EZN2D1310S14	•	13.1	56	115	14
EZN2D1320S14	•	13.2	56	115	14
EZN2D1330S14	•	13.3	56	115	14
EZN2D1340S14	•	13.4	56	115	14
EZN2D1350S14	•	13.5	56	115	14
EZN2D1360S14	•	13.6	56	115	14
EZN2D1370S14	•	13.7	56	115	14
EZN2D1380S14	•	13.8	56	115	14
EZN2D1390S14	•	13.9	56	115	14
EZN2D1400S14	•	14.0	56	115	14

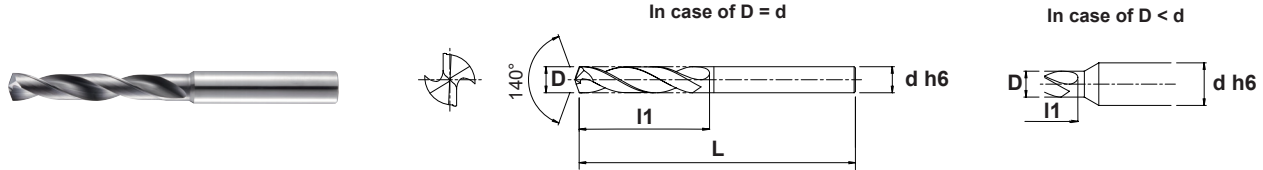
# Strike Drill

**METRIC**

## EZN4D Type

- Solid Carbide drill with high accuracy
- Drilling depth 4xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN4D0300S04	•	3.0	19	59	4
EZN4D0310S04	•	3.1	22	59	4
EZN4D0320S04	•	3.2	22	59	4
EZN4D0330S04	•	3.3	22	59	4
EZN4D0340S04	•	3.4	22	59	4
EZN4D0350S04	•	3.5	22	59	4
EZN4D0360S04	•	3.6	25	59	4
EZN4D0370S04	•	3.7	25	59	4
EZN4D0380S04	•	3.8	25	59	4
EZN4D0390S04	•	3.9	25	59	4
EZN4D0400S04	•	4.0	25	59	4
EZN4D0410S06	•	4.1	28	74	6
EZN4D0420S06	•	4.2	28	74	6
EZN4D0430S06	•	4.3	28	74	6
EZN4D0440S06	•	4.4	28	74	6
EZN4D0450S06	•	4.5	28	74	6
EZN4D0460S06	•	4.6	31	74	6
EZN4D0470S06	•	4.7	31	74	6
EZN4D0480S06	•	4.8	31	74	6
EZN4D0490S06	•	4.9	31	74	6
EZN4D0500S06	•	5.0	31	74	6
EZN4D0510S06	•	5.1	34	79	6
EZN4D0520S06	•	5.2	34	79	6
EZN4D0530S06	•	5.3	34	79	6
EZN4D0540S06	•	5.4	34	79	6
EZN4D0550S06	•	5.5	34	79	6
EZN4D0560S06	•	5.6	37	79	6
EZN4D0570S06	•	5.7	37	79	6
EZN4D0580S06	•	5.8	37	79	6
EZN4D0590S06	•	5.9	37	79	6
EZN4D0600S06	•	6.0	37	79	6
EZN4D0610S08	•	6.1	40	88	8
EZN4D0620S08	•	6.2	40	88	8
EZN4D0630S08	•	6.3	40	88	8
EZN4D0640S08	•	6.4	40	88	8
EZN4D0650S08	•	6.5	40	88	8
EZN4D0660S08	•	6.6	42	88	8
EZN4D0670S08	•	6.7	42	88	8
EZN4D0680S08	•	6.8	42	88	8
EZN4D0690S08	•	6.9	42	88	8

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN4D0700S08	•	7.0	42	88	8
EZN4D0710S08	•	7.1	45	93	8
EZN4D0720S08	•	7.2	45	93	8
EZN4D0730S08	•	7.3	45	93	8
EZN4D0740S08	•	7.4	45	93	8
EZN4D0750S08	•	7.5	45	93	8
EZN4D0760S08	•	7.6	48	93	8
EZN4D0770S08	•	7.7	48	93	8
EZN4D0780S08	•	7.8	48	93	8
EZN4D0790S08	•	7.9	48	93	8
EZN4D0800S08	•	8.0	48	93	8
EZN4D0810S10	•	8.1	51	98	10
EZN4D0820S10	•	8.2	51	98	10
EZN4D0830S10	•	8.3	51	98	10
EZN4D0840S10	•	8.4	51	98	10
EZN4D0850S10	•	8.5	51	98	10
EZN4D0860S10	•	8.6	54	98	10
EZN4D0870S10	•	8.7	54	98	10
EZN4D0880S10	•	8.8	54	98	10
EZN4D0890S10	•	8.9	54	98	10
EZN4D0900S10	•	9.0	54	98	10
EZN4D0910S10	•	9.1	57	108	10
EZN4D0920S10	•	9.2	57	108	10
EZN4D0930S10	•	9.3	57	108	10
EZN4D0940S10	•	9.4	57	108	10
EZN4D0950S10	•	9.5	57	108	10
EZN4D0960S10	•	9.6	60	108	10
EZN4D0970S10	•	9.7	60	108	10
EZN4D0980S10	•	9.8	60	108	10
EZN4D0990S10	•	9.9	60	108	10
EZN4D1000S10	•	10.0	60	108	10
EZN4D1010S12	•	10.1	63	118	12
EZN4D1020S12	•	10.2	63	118	12
EZN4D1030S12	•	10.3	63	118	12
EZN4D1040S12	•	10.4	63	118	12
EZN4D1050S12	•	10.5	63	118	12
EZN4D1060S12	•	10.6	66	118	12
EZN4D1070S12	•	10.7	66	118	12
EZN4D1080S12	•	10.8	66	118	12
EZN4D1090S12	•	10.9	66	118	12



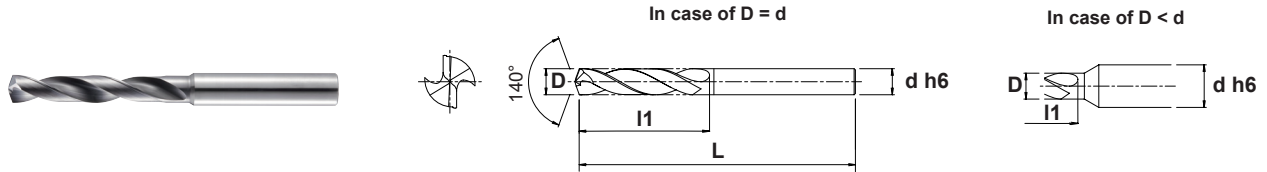
**METRIC**

# Strike Drill

## EZN4D Type

- Solid Carbide drill with high accuracy
- Drilling depth 4xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN4D1100S12	•	11.0	66	118	12
EZN4D1110S12	•	11.1	69	118	12
EZN4D1120S12	•	11.2	69	118	12
EZN4D1130S12	•	11.3	69	118	12
EZN4D1140S12	•	11.4	69	118	12
EZN4D1150S12	•	11.5	69	118	12
EZN4D1160S12	•	11.6	72	118	12
EZN4D1170S12	•	11.7	72	118	12
EZN4D1180S12	•	11.8	72	118	12
EZN4D1190S12	•	11.9	72	118	12
EZN4D1200S12	•	12.0	72	118	12
EZN4D1210S14	•	12.1	78	137	14
EZN4D1220S14	•	12.2	78	137	14
EZN4D1230S14	•	12.3	78	137	14
EZN4D1240S14	•	12.4	78	137	14
EZN4D1250S14	•	12.5	78	137	14
EZN4D1260S14	•	12.6	78	137	14
EZN4D1270S14	•	12.7	78	137	14
EZN4D1280S14	•	12.8	78	137	14
EZN4D1290S14	•	12.9	78	137	14
EZN4D1300S14	•	13.0	78	137	14
EZN4D1310S14	•	13.1	84	147	14
EZN4D1320S14	•	13.2	84	147	14
EZN4D1330S14	•	13.3	84	147	14
EZN4D1340S14	•	13.4	84	147	14
EZN4D1350S14	•	13.5	84	147	14
EZN4D1360S14	•	13.6	84	147	14
EZN4D1370S14	•	13.7	84	147	14
EZN4D1380S14	•	13.8	84	147	14
EZN4D1390S14	•	13.9	84	147	14
EZN4D1400S14	•	14.0	84	147	14

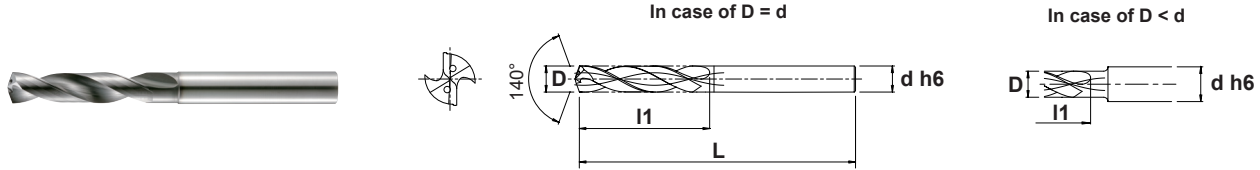
# Strike Drill

**METRIC**

## EZN3D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth 3xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN3DCH0300S03	•	3.0	15	68	3
EZN3DCH0310S04	•	3.1	18	71	4
EZN3DCH0320S04	•	3.2	18	71	4
EZN3DCH0330S04	•	3.3	18	71	4
EZN3DCH0340S04	•	3.4	18	71	4
EZN3DCH0350S04	•	3.5	18	71	4
EZN3DCH0360S04	•	3.6	20	73	4
EZN3DCH0370S04	•	3.7	20	73	4
EZN3DCH0380S04	•	3.8	20	73	4
EZN3DCH0390S04	•	3.9	20	73	4
EZN3DCH0400S04	•	4.0	20	73	4
EZN3DCH0410S05	•	4.1	23	78	5
EZN3DCH0420S05	•	4.2	23	78	5
EZN3DCH0430S05	•	4.3	23	78	5
EZN3DCH0440S05	•	4.4	23	78	5
EZN3DCH0450S05	•	4.5	23	78	5
EZN3DCH0460S05	•	4.6	25	80	5
EZN3DCH0470S05	•	4.7	25	80	5
EZN3DCH0480S05	•	4.8	25	80	5
EZN3DCH0490S05	•	4.9	25	80	5
EZN3DCH0500S05	•	5.0	25	80	5
EZN3DCH0510S06	•	5.1	28	82	6
EZN3DCH0520S06	•	5.2	28	82	6
EZN3DCH0530S06	•	5.3	28	82	6
EZN3DCH0540S06	•	5.4	28	82	6
EZN3DCH0550S06	•	5.5	28	82	6
EZN3DCH0560S06	•	5.6	30	82	6
EZN3DCH0570S06	•	5.7	30	82	6
EZN3DCH0580S06	•	5.8	30	82	6
EZN3DCH0590S06	•	5.9	30	82	6
EZN3DCH0600S06	•	6.0	30	82	6
EZN3DCH0610S07	•	6.1	33	86	7
EZN3DCH0620S07	•	6.2	33	86	7
EZN3DCH0630S07	•	6.3	33	86	7
EZN3DCH0640S07	•	6.4	33	86	7
EZN3DCH0650S07	•	6.5	33	86	7
EZN3DCH0660S07	•	6.6	35	88	7
EZN3DCH0670S07	•	6.7	35	88	7
EZN3DCH0680S07	•	6.8	35	88	7
EZN3DCH0690S07	•	6.9	35	88	7

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN3DCH0700S07	•	7.0	35	88	7
EZN3DCH0710S08	•	7.1	38	92	8
EZN3DCH0720S08	•	7.2	38	92	8
EZN3DCH0730S08	•	7.3	38	92	8
EZN3DCH0740S08	•	7.4	38	92	8
EZN3DCH0750S08	•	7.5	38	92	8
EZN3DCH0760S08	•	7.6	40	94	8
EZN3DCH0770S08	•	7.7	40	94	8
EZN3DCH0780S08	•	7.8	40	94	8
EZN3DCH0790S08	•	7.9	40	94	8
EZN3DCH0800S08	•	8.0	40	94	8
EZN3DCH0810S09	•	8.1	43	100	9
EZN3DCH0820S09	•	8.2	43	100	9
EZN3DCH0830S09	•	8.3	43	100	9
EZN3DCH0840S09	•	8.4	43	100	9
EZN3DCH0850S09	•	8.5	43	100	9
EZN3DCH0860S09	•	8.6	45	100	9
EZN3DCH0870S09	•	8.7	45	100	9
EZN3DCH0880S09	•	8.8	45	100	9
EZN3DCH0890S09	•	8.9	45	100	9
EZN3DCH0900S09	•	9.0	45	100	9
EZN3DCH0910S10	•	9.1	48	106	10
EZN3DCH0920S10	•	9.2	48	106	10
EZN3DCH0930S10	•	9.3	48	106	10
EZN3DCH0940S10	•	9.4	48	106	10
EZN3DCH0950S10	•	9.5	48	106	10
EZN3DCH0960S10	•	9.6	50	106	10
EZN3DCH0970S10	•	9.7	50	106	10
EZN3DCH0980S10	•	9.8	50	106	10
EZN3DCH0990S10	•	9.9	50	106	10
EZN3DCH1000S10	•	10.0	50	106	10
EZN3DCH1010S11	•	10.1	53	116	11
EZN3DCH1020S11	•	10.2	53	116	11
EZN3DCH1030S11	•	10.3	53	116	11
EZN3DCH1040S11	•	10.4	53	116	11
EZN3DCH1050S11	•	10.5	53	116	11
EZN3DCH1060S11	•	10.6	55	116	11
EZN3DCH1070S11	•	10.7	55	116	11
EZN3DCH1080S11	•	10.8	55	116	11
EZN3DCH1090S11	•	10.9	55	116	11



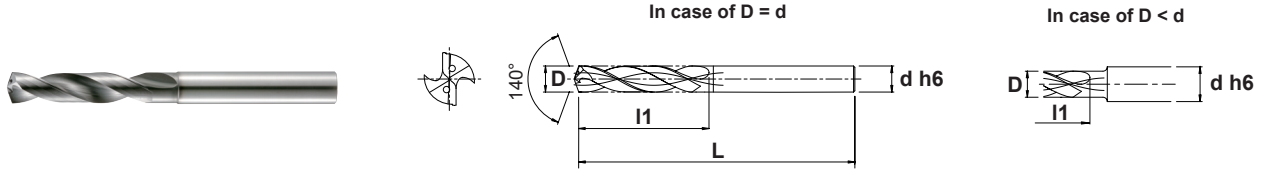
**METRIC**

# Strike Drill

## EZN3D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth 3xD with 30° helix

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN3DCH1100S11	•	11.0	55	116	11
EZN3DCH1110S12	•	11.1	58	122	12
EZN3DCH1120S12	•	11.2	58	122	12
EZN3DCH1130S12	•	11.3	58	122	12
EZN3DCH1140S12	•	11.4	58	122	12
EZN3DCH1150S12	•	11.5	58	122	12
EZN3DCH1160S12	•	11.6	60	122	12
EZN3DCH1170S12	•	11.7	60	122	12
EZN3DCH1180S12	•	11.8	60	122	12
EZN3DCH1190S12	•	11.9	60	122	12
EZN3DCH1200S12	•	12.0	60	122	12
EZN3DCH1210S13	•	12.1	65	128	13
EZN3DCH1220S13	•	12.2	65	128	13
EZN3DCH1230S13	•	12.3	65	128	13
EZN3DCH1240S13	•	12.4	65	128	13
EZN3DCH1250S13	•	12.5	65	128	13
EZN3DCH1260S13	•	12.6	65	128	13
EZN3DCH1270S13	•	12.7	65	128	13
EZN3DCH1280S13	•	12.8	65	128	13
EZN3DCH1290S13	•	12.9	65	128	13
EZN3DCH1300S13	•	13.0	65	128	13
EZN3DCH1310S14	•	13.1	70	134	14
EZN3DCH1320S14	•	13.2	70	134	14
EZN3DCH1330S14	•	13.3	70	134	14
EZN3DCH1340S14	•	13.4	70	134	14
EZN3DCH1350S14	•	13.5	70	134	14
EZN3DCH1360S14	•	13.6	70	134	14
EZN3DCH1370S14	•	13.7	70	134	14
EZN3DCH1380S14	•	13.8	70	134	14
EZN3DCH1390S14	•	13.9	70	134	14
EZN3DCH1400S14	•	14.0	70	134	14
EZN3DCH1450S15	•	14.5	75	140	15
EZN3DCH1500S15	•	15.0	75	140	15
EZN3DCH1550S16	•	15.5	80	146	16
EZN3DCH1600S16	•	16.0	80	146	16

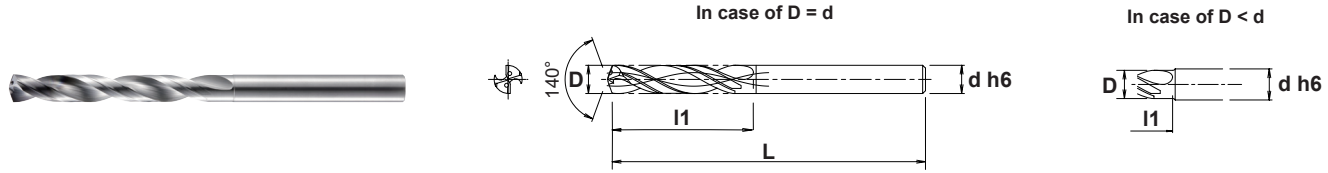
# Strike Drill

**METRIC**

## EZN5D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth 5xD, 30° helix and double margin

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN5DCH0300S03	•	3.0	24	77	3
EZN5DCH0310S04	•	3.1	28	81	4
EZN5DCH0320S04	•	3.2	28	81	4
EZN5DCH0330S04	•	3.3	28	81	4
EZN5DCH0340S04	•	3.4	28	81	4
EZN5DCH0350S04	•	3.5	28	81	4
EZN5DCH0360S04	•	3.6	32	85	4
EZN5DCH0370S04	•	3.7	32	85	4
EZN5DCH0380S04	•	3.8	32	85	4
EZN5DCH0390S04	•	3.9	32	85	4
EZN5DCH0400S04	•	4.0	32	85	4
EZN5DCH0410S05	•	4.1	36	91	5
EZN5DCH0420S05	•	4.2	36	91	5
EZN5DCH0430S05	•	4.3	36	91	5
EZN5DCH0440S05	•	4.4	36	91	5
EZN5DCH0450S05	•	4.5	36	91	5
EZN5DCH0460S05	•	4.6	40	94	5
EZN5DCH0470S05	•	4.7	40	94	5
EZN5DCH0480S05	•	4.8	40	94	5
EZN5DCH0490S05	•	4.9	40	94	5
EZN5DCH0500S05	•	5.0	40	94	5
EZN5DCH0510S06	•	5.1	44	96	6
EZN5DCH0520S06	•	5.2	44	96	6
EZN5DCH0530S06	•	5.3	44	96	6
EZN5DCH0540S06	•	5.4	44	96	6
EZN5DCH0550S06	•	5.5	44	96	6
EZN5DCH0560S06	•	5.6	48	100	6
EZN5DCH0570S06	•	5.7	48	100	6
EZN5DCH0580S06	•	5.8	48	100	6
EZN5DCH0590S06	•	5.9	48	100	6
EZN5DCH0600S06	•	6.0	48	100	6
EZN5DCH0610S07	•	6.1	52	105	7
EZN5DCH0620S07	•	6.2	52	105	7
EZN5DCH0630S07	•	6.3	52	105	7
EZN5DCH0640S07	•	6.4	52	105	7
EZN5DCH0650S07	•	6.5	52	105	7
EZN5DCH0660S07	•	6.6	56	109	7
EZN5DCH0670S07	•	6.7	56	109	7
EZN5DCH0680S07	•	6.8	56	109	7
EZN5DCH0690S07	•	6.9	56	109	7

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN5DCH0700S07	•	7.0	56	109	7
EZN5DCH0710S08	•	7.1	60	114	8
EZN5DCH0720S08	•	7.2	60	114	8
EZN5DCH0730S08	•	7.3	60	114	8
EZN5DCH0740S08	•	7.4	60	114	8
EZN5DCH0750S08	•	7.5	60	114	8
EZN5DCH0760S08	•	7.6	64	118	8
EZN5DCH0770S08	•	7.7	64	118	8
EZN5DCH0780S08	•	7.8	64	118	8
EZN5DCH0790S08	•	7.9	64	118	8
EZN5DCH0800S08	•	8.0	64	118	8
EZN5DCH0810S09	•	8.1	68	127	9
EZN5DCH0820S09	•	8.2	68	127	9
EZN5DCH0830S09	•	8.3	68	127	9
EZN5DCH0840S09	•	8.4	68	127	9
EZN5DCH0850S09	•	8.5	68	127	9
EZN5DCH0860S09	•	8.6	72	127	9
EZN5DCH0870S09	•	8.7	72	127	9
EZN5DCH0880S09	•	8.8	72	127	9
EZN5DCH0890S09	•	8.9	72	127	9
EZN5DCH0900S09	•	9.0	72	127	9
EZN5DCH0910S10	•	9.1	76	136	10
EZN5DCH0920S10	•	9.2	76	136	10
EZN5DCH0930S10	•	9.3	76	136	10
EZN5DCH0940S10	•	9.4	76	136	10
EZN5DCH0950S10	•	9.5	76	136	10
EZN5DCH0960S10	•	9.6	80	136	10
EZN5DCH0970S10	•	9.7	80	136	10
EZN5DCH0980S10	•	9.8	80	136	10
EZN5DCH0990S10	•	9.9	80	136	10
EZN5DCH1000S10	•	10.0	80	136	10
EZN5DCH1010S11	•	10.1	84	149	11
EZN5DCH1020S11	•	10.2	84	149	11
EZN5DCH1030S11	•	10.3	84	149	11
EZN5DCH1040S11	•	10.4	84	149	11
EZN5DCH1050S11	•	10.5	84	149	11
EZN5DCH1060S11	•	10.6	88	149	11
EZN5DCH1070S11	•	10.7	88	149	11
EZN5DCH1080S11	•	10.8	88	149	11
EZN5DCH1090S11	•	10.9	88	149	11



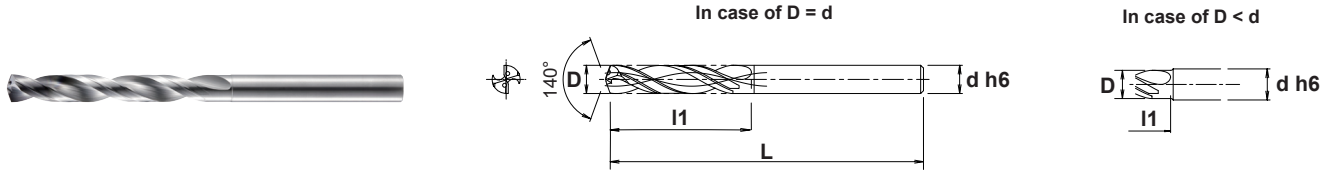
**METRIC**

# Strike Drill

## EZN5D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth 5xD, 30° helix and double margin

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
EZN5DCH1100S11	•	11.0	88	149	11
EZN5DCH1110S12	•	11.1	92	158	12
EZN5DCH1120S12	•	11.2	92	158	12
EZN5DCH1130S12	•	11.3	92	158	12
EZN5DCH1140S12	•	11.4	92	158	12
EZN5DCH1150S12	•	11.5	92	158	12
EZN5DCH1160S12	•	11.6	96	158	12
EZN5DCH1170S12	•	11.7	96	158	12
EZN5DCH1180S12	•	11.8	96	158	12
EZN5DCH1190S12	•	11.9	96	158	12
EZN5DCH1200S12	•	12.0	96	158	12
EZN5DCH1210S13	•	12.1	104	167	13
EZN5DCH1220S13	•	12.2	104	167	13
EZN5DCH1230S13	•	12.3	104	167	13
EZN5DCH1240S13	•	12.4	104	167	13
EZN5DCH1250S13	•	12.5	104	167	13
EZN5DCH1260S13	•	12.6	104	167	13
EZN5DCH1270S13	•	12.7	104	167	13
EZN5DCH1280S13	•	12.8	104	167	13
EZN5DCH1290S13	•	12.9	104	167	13
EZN5DCH1300S13	•	13.0	104	167	13
EZN5DCH1310S14	•	13.1	112	176	14
EZN5DCH1320S14	•	13.2	112	176	14
EZN5DCH1330S14	•	13.3	112	176	14
EZN5DCH1340S14	•	13.4	112	176	14
EZN5DCH1350S14	•	13.5	112	176	14
EZN5DCH1360S14	•	13.6	112	176	14
EZN5DCH1370S14	•	13.7	112	176	14
EZN5DCH1380S14	•	13.8	112	176	14
EZN5DCH1390S14	•	13.9	112	176	14
EZN5DCH1400S14	•	14.0	112	176	14
EZN5DCH1450S15	•	14.5	120	185	15
EZN5DCH1500S15	•	15.0	120	185	15
EZN5DCH1550S16	•	15.5	128	194	16
EZN5DCH1600S16	•	16.0	128	194	16

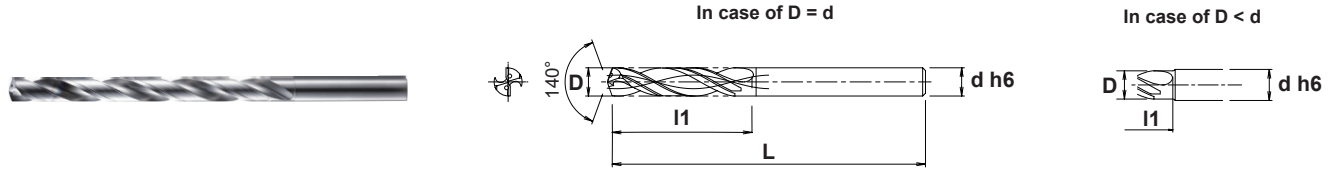
# Strike Drill

**METRIC**

## EZN8D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth 8xD, 30° helix and double margin

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN8DCH0300S03	•	3.0	33	81	3
EZN8DCH0310S04	•	3.1	39	87	4
EZN8DCH0320S04	•	3.2	39	87	4
EZN8DCH0330S04	•	3.3	39	87	4
EZN8DCH0340S04	•	3.4	39	87	4
EZN8DCH0350S04	•	3.5	39	87	4
EZN8DCH0360S04	•	3.6	44	92	4
EZN8DCH0370S04	•	3.7	44	92	4
EZN8DCH0380S04	•	3.8	44	92	4
EZN8DCH0390S04	•	3.9	44	92	4
EZN8DCH0400S04	•	4.0	44	92	4
EZN8DCH0410S05	•	4.1	50	100	5
EZN8DCH0420S05	•	4.2	50	100	5
EZN8DCH0430S05	•	4.3	50	100	5
EZN8DCH0440S05	•	4.4	50	100	5
EZN8DCH0450S05	•	4.5	50	100	5
EZN8DCH0460S05	•	4.6	55	105	5
EZN8DCH0470S05	•	4.7	55	105	5
EZN8DCH0480S05	•	4.8	55	105	5
EZN8DCH0490S05	•	4.9	55	105	5
EZN8DCH0500S05	•	5.0	55	105	5
EZN8DCH0510S06	•	5.1	61	114	6
EZN8DCH0520S06	•	5.2	61	114	6
EZN8DCH0530S06	•	5.3	61	114	6
EZN8DCH0540S06	•	5.4	61	114	6
EZN8DCH0550S06	•	5.5	61	114	6
EZN8DCH0560S06	•	5.6	66	118	6
EZN8DCH0570S06	•	5.7	66	118	6
EZN8DCH0580S06	•	5.8	66	118	6
EZN8DCH0590S06	•	5.9	66	118	6
EZN8DCH0600S06	•	6.0	66	118	6
EZN8DCH0610S07	•	6.1	71	125	7
EZN8DCH0620S07	•	6.2	71	125	7
EZN8DCH0630S07	•	6.3	71	125	7
EZN8DCH0640S07	•	6.4	71	125	7
EZN8DCH0650S07	•	6.5	71	125	7
EZN8DCH0660S07	•	6.6	77	130	7
EZN8DCH0670S07	•	6.7	77	130	7
EZN8DCH0680S07	•	6.8	77	130	7
EZN8DCH0690S07	•	6.9	77	130	7

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZN8DCH0700S07	•	7.0	77	130	7
EZN8DCH0710S08	•	7.1	82	136	8
EZN8DCH0720S08	•	7.2	82	136	8
EZN8DCH0730S08	•	7.3	82	136	8
EZN8DCH0740S08	•	7.4	82	136	8
EZN8DCH0750S08	•	7.5	82	136	8
EZN8DCH0760S08	•	7.6	88	142	8
EZN8DCH0770S08	•	7.7	88	142	8
EZN8DCH0780S08	•	7.8	88	142	8
EZN8DCH0790S08	•	7.9	88	142	8
EZN8DCH0800S08	•	8.0	88	142	8
EZN8DCH0810S09	•	8.1	93	154	9
EZN8DCH0820S09	•	8.2	93	154	9
EZN8DCH0830S09	•	8.3	93	154	9
EZN8DCH0840S09	•	8.4	93	154	9
EZN8DCH0850S09	•	8.5	93	154	9
EZN8DCH0860S09	•	8.6	99	154	9
EZN8DCH0870S09	•	8.7	99	154	9
EZN8DCH0880S09	•	8.8	99	154	9
EZN8DCH0890S09	•	8.9	99	154	9
EZN8DCH0900S09	•	9.0	99	154	9
EZN8DCH0910S10	•	9.1	104	166	10
EZN8DCH0920S10	•	9.2	104	166	10
EZN8DCH0930S10	•	9.3	104	166	10
EZN8DCH0940S10	•	9.4	104	166	10
EZN8DCH0950S10	•	9.5	104	166	10
EZN8DCH0960S10	•	9.6	110	166	10
EZN8DCH0970S10	•	9.7	110	166	10
EZN8DCH0980S10	•	9.8	110	166	10
EZN8DCH0990S10	•	9.9	110	166	10
EZN8DCH1000S10	•	10.0	110	166	10
EZN8DCH1010S11	•	10.1	115	182	11
EZN8DCH1020S11	•	10.2	115	182	11
EZN8DCH1030S11	•	10.3	115	182	11
EZN8DCH1040S11	•	10.4	115	182	11
EZN8DCH1050S11	•	10.5	115	182	11
EZN8DCH1060S11	•	10.6	121	182	11
EZN8DCH1070S11	•	10.7	121	182	11
EZN8DCH1080S11	•	10.8	121	182	11
EZN8DCH1090S11	•	10.9	121	182	11



Drilling

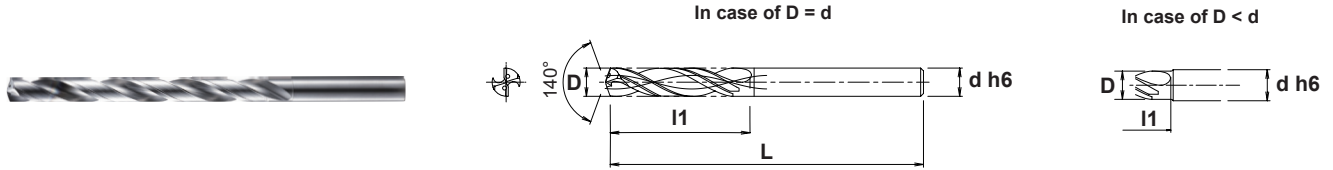
**METRIC**

# Strike Drill

## EZN8D Type

- Solid Carbide drill with coolant thru & high accuracy
- Drilling depth  $8xD$ ,  $30^\circ$  helix and double margin

Diameter	Tolerance
up to 3mm	+0 / -0.014
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 12mm	+0 / -0.027



CATALOG NUMBER	STK	DIMENSIONS			
		D	L1	L	d
EZN8DCH1100S11	•	11.0	121	182	11
EZN8DCH1110S12	•	11.1	126	194	12
EZN8DCH1120S12	•	11.2	126	194	12
EZN8DCH1130S12	•	11.3	126	194	12
EZN8DCH1140S12	•	11.4	126	194	12
EZN8DCH1150S12	•	11.5	126	194	12
EZN8DCH1160S12	•	11.6	132	194	12
EZN8DCH1170S12	•	11.7	132	194	12
EZN8DCH1180S12	•	11.8	132	194	12
EZN8DCH1190S12	•	11.9	132	194	12
EZN8DCH1200S12	•	12.0	132	194	12
EZN8DCH1210S13	•	12.1	137	206	13
EZN8DCH1220S13	•	12.2	137	206	13
EZN8DCH1230S13	•	12.3	137	206	13
EZN8DCH1240S13	•	12.4	137	206	13
EZN8DCH1250S13	•	12.5	137	206	13
EZN8DCH1260S13	•	12.6	143	206	13
EZN8DCH1270S13	•	12.7	143	206	13
EZN8DCH1280S13	•	12.8	143	206	13
EZN8DCH1290S13	•	12.9	143	206	13
EZN8DCH1300S13	•	13.0	143	206	13
EZN8DCH1310S14	•	13.1	148	218	14
EZN8DCH1320S14	•	13.2	148	218	14
EZN8DCH1330S14	•	13.3	148	218	14
EZN8DCH1340S14	•	13.4	148	218	14
EZN8DCH1350S14	•	13.5	148	218	14
EZN8DCH1360S14	•	13.6	154	218	14
EZN8DCH1370S14	•	13.7	154	218	14
EZN8DCH1380S14	•	13.8	154	218	14
EZN8DCH1390S14	•	13.9	154	218	14
EZN8DCH1400S14	•	14.0	154	218	14

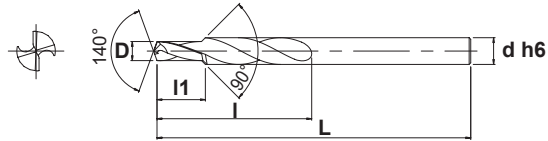
# Strike Drill

**METRIC**

## EZN2D-M & EZN3D-M Type

- Solid Carbide chamfer drill
- Drilling depth 2xD & 3xD with 30° helix

Diameter	Tolerance
over 3mm - up to 6mm	+0 / -0.018
over 6mm - up to 10mm	+0 / -0.022
over 10mm - up to 16mm	+0 / -0.027



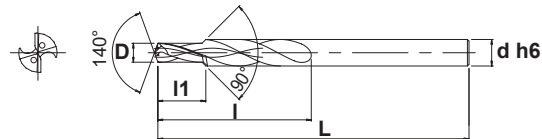
CATALOG NUMBER	STK	DIMENSIONS				
		D	I1	I	L	d
EZN2D0340S06-M4	□	3.4	8	25	78	6
EZN2D0430S07-M5	□	4.3	10	30	82	7
EZN2D0510S08-M6	□	5.1	12	35	88	8
EZN2D0680S10-M8	□	6.8	16	45	108	10
EZN2D0850S12-M10	□	8.5	20	50	118	12
EZN2D1030S14-M12	□	10.3	24	60	137	14

CATALOG NUMBER	STK	DIMENSIONS				
		D	I1	I	L	d
EZN3D0340S06-M4	□	3.4	12	30	78	6
EZN3D0430S07-M5	□	4.3	15	35	82	7
EZN3D0510S06-M6	□	5.1	18	40	88	8
EZN3D0680S10-M8	□	6.8	24	50	108	10
EZN3D0850S12-M10	□	8.5	30	60	118	12
EZN3D1030S14-M12	□	10.3	36	70	137	14

Drills

## EZN2DCH-M & EZN3DCH-M Type

- Solid Carbide chamfer drill with coolant thru
- Drilling depth 2xD & 3xD with 30° helix



CATALOG NUMBER	STK	DIMENSIONS				
		D	I1	I	L	d
EZN2DCH0340S06-M4	□	3.4	8	25	78	6
EZN2DCH0430S07-M5	□	4.3	10	30	82	7
EZN2DCH0510S08-M6	□	5.1	12	35	88	8
EZN2DCH0680S10-M8	□	6.8	16	45	108	10
EZN2DCH0850S12-M10	□	8.5	20	50	118	12
EZN2DCH1030S14-M12	□	10.3	24	60	137	14

CATALOG NUMBER	STK	DIMENSIONS				
		D	I1	I	L	d
EZN3DCH0340S06-M4	□	3.4	12	30	78	6
EZN3DCH0430S07-M5	□	4.3	15	35	82	7
EZN3DCH0510S08-M6	□	5.1	18	40	88	8
EZN3DCH0680S10-M8	□	6.8	24	50	108	10
EZN3DCH0850S12-M10	□	8.5	30	60	118	12
EZN2DCH1030S14-M12	□	10.3	36	70	137	14

□ Inquire regarding delivery

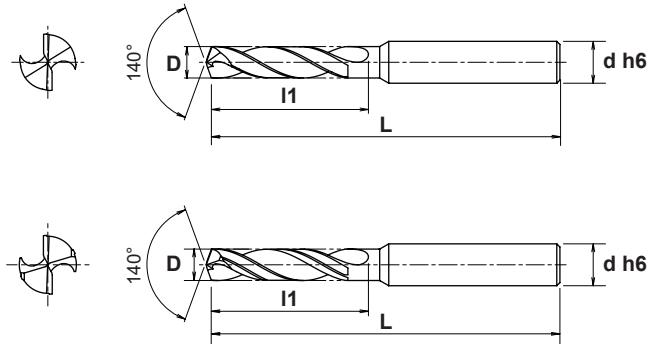


**METRIC**

# Strike Drill

## EZT3D Type

- Solid Carbide prehole drill for roll taps, high accuracy (-0.01~0mm)
- Drilling depth 3xD with 30° helix

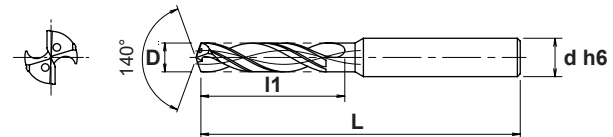


Thread Size	CATALOG NUMBER	STK	DIMENSIONS			
			D	I1	L	d
M2X0.4	EZT3D0181S03	•	1.81	9	49	3
M2X0.4	EZT3D0182S03	•	1.82	9	49	3
M2X0.4	EZT3D0183S03	•	1.83	9	49	3
M3X0.5	EZT3D0278S03	•	2.78	13	49	3
M3X0.5	EZT3D0279S03	•	2.79	13	49	3
M3X0.5	EZT3D0280S03	•	2.80	13	49	3
M4X0.7	EZT3D0368S04	•	3.68	18	49	4
M4X0.7	EZT3D0369S04	•	3.69	18	49	4
M4X0.7	EZT3D0370S04	•	3.70	18	49	4

Thread Size	CATALOG NUMBER	STK	DIMENSIONS			
			D	I1	L	d
M5X0.8	EZT3D0463S06	•	4.63	22	64	6
M5X0.8	EZT3D0464S06	•	4.64	22	64	6
M5X0.8	EZT3D0465S06	•	4.65	22	64	6
M6X1.0	EZT3D0553S06	•	5.53	24	68	6
M6X1.0	EZT3D0554S06	•	5.54	24	68	6
M6X1.0	EZT3D0555S06	•	5.55	24	68	6

## EZT4D Type

- Solid Carbide coolant thru prehole for roll taps, high accuracy (-0.01~0mm)
- Drilling depth 4xD with 30° helix and double margin



Thread Size	CATALOG NUMBER	STK	DIMENSIONS			
			D	I1	L	d
M3X0.5	EZT4DCH0278S03	•	2.78	16	68	3
M3X0.5	EZT4DCH0279S03	•	2.79	16	68	3
M3X0.5	EZT4DCH0280S03	•	2.80	16	68	3
M4X0.7	EZT4DCH0368S04	•	3.68	21	73	4
M4X0.7	EZT4DCH0369S04	•	3.69	21	73	4
M4X0.7	EZT4DCH0370S04	•	3.70	21	73	4

Thread Size	CATALOG NUMBER	STK	DIMENSIONS			
			D	I1	L	d
M5X0.8	EZT4DCH0463S05	•	4.63	26	80	5
M5X0.8	EZT4DCH0464S05	•	4.64	26	80	5
M5X0.8	EZT4DCH0465S05	•	4.65	26	80	5
M6X1.0	EZT4DCH0553S06	•	5.53	29	82	6
M6X1.0	EZT4DCH0554S06	•	5.54	29	82	6
M6X1.0	EZT4DCH0555S06	•	5.55	29	82	6

# Strike Drill

## Recommended Cutting Data for EZN2D, EZN4D, EZT3D Type

Work Material	Structure Steel				Carbon Steel			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	9,500	15.4	49-148	.0008-.0024	9,550	15.4	49-148	.0008-.0024
2	8,760	14.2	131-328	.0008-.0024	8,760	14.2	131-328	.0008-.0024
3	7,430	38.2	131-328	.0032-.0071	7,430	38.2	131-328	.0032-.0071
4	5,580	31.1	131-328	.0032-.0071	5,580	31.1	131-328	.0032-.0071
5	4,460	26.4	131-328	.0032-.0071	4,460	26.4	131-328	.0032-.0071
6	3,720	24.4	131-328	.0032-.0087	3,720	24.4	131-328	.0032-.0087
7	3,530	24.0	131-328	.0032-.0087	3,530	24.0	131-328	.0032-.0087
8	3,190	22.8	197-394	.0059-.0110	3,190	22.8	197-394	.0059-.0110
9	3,010	22.0	197-394	.0059-.0110	3,010	22.0	197-394	.0059-.0110
10	2,710	22.0	197-394	.0059-.0110	2,710	22.0	197-394	.0059-.0110
11	2,480	22.0	197-394	.0059-.0110	2,460	22.0	197-394	.0059-.0110
12	2,390	21.3	197-394	.0059-.0110	2,260	20.1	197-394	.0059-.0110
13	2,330	21.3	197-394	.0079-.0130	2,210	20.1	197-394	.0079-.0130
14	2,160	20.5	197-394	.0079-.0130	2,050	19.7	197-394	.0079-.0130

Work Material	Alloy Steel				Mold Steel (38-43HRC)			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	9,550	15.4	49-148	.0008-.0024	9,550	11.4	49-148	.0008-.0024
2	8,760	14.2	131-262	.0008-.0024	7,170	8.7	98-197	.0008-.0024
3	6,370	32.7	131-262	.0032-.0071	4,780	24.8	98-197	.0032-.0071
4	4,780	26.4	131-262	.0032-.0071	3,590	20.1	98-197	.0032-.0071
5	3,820	22.8	131-262	.0032-.0071	2,870	17.3	98-197	.0032-.0071
6	3,190	20.9	131-262	.0032-.0087	2,390	15.7	98-197	.0032-.0087
7	2,730	18.5	131-262	.0032-.0087	2,050	13.4	98-197	.0032-.0087
8	2,390	17.3	131-262	.0059-.0110	1,800	11.8	98-197	.0059-.0110
9	2,130	15.7	131-262	.0059-.0110	1,600	10.6	98-197	.0059-.0110
10	1,910	15.7	131-262	.0059-.0110	1,440	9.4	98-197	.0059-.0110
11	1,740	15.7	131-262	.0059-.0110	1,310	8.7	98-197	.0059-.0110
12	1,600	14.2	131-262	.0059-.0110	1,200	7.9	98-197	.0059-.0110
13	1,470	13.4	131-262	.0079-.0130	1,110	7.9	98-197	.0079-.0130
14	1,370	13.0	131-262	.0079-.0130	1,030	7.5	98-197	.0079-.0130

- Notes:**
1. Above cutting conditions are for drilling flat surface.
  2. Adjust cutting conditions according to machine rigidity, work clamping and shape of machining part.
  3. Above cutting conditions are for drilling with water soluble (external coolant).
  4. We expect 2D type's depth of hole is less than 2D, 4D type is less than 4D.
  5. In case of long chips, adjust above conditions by increasing feed speed or using step feed for breaking chips.
  6. If having difficulty getting the cutting fluid inside hole deep enough with horizontal machining centers, EZN3D and EZN5D type with internal coolant is recommended.
  7. When drilling austenitic stainless steel, EZN3D and EZN5D type with internal coolant is recommended - if machining with external lubrication, please be sure to follow the following precautions:
    - a. use an oil-based cutting fluid
    - b. when drilling with  $\Phi 10\text{mm}$  dia. or larger, or drilling more than 2D with a 4D drill, step drilling is recommended.
  8. When using Forming Tap Strike Drill, reduce 20% of the above data.



# Strike Drill

## Recommended Cutting Data for EZN2D, EZN4D, EZT3D Type

Work Material	Grey Cast Iron				Nodular Cast Iron			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	9,550	15.4	49-148	.0008-.0024	9,550	15.4	49-148	.0008-.0024
2	8,760	14.2	131-328	.0008-.0024	8,760	14.2	131-262	.0008-.0024
3	9,020	48.0	131-328	.0032-.0071	6,370	33.9	131-262	.0032-.0071
4	6,770	39.0	131-328	.0032-.0071	4,780	27.6	131-262	.0032-.0071
5	5,420	33.5	131-328	.0032-.0071	3,820	23.6	131-262	.0032-.0071
6	4,510	30.3	131-328	.0032-.0087	3,190	21.7	131-262	.0032-.0087
7	3,870	26.0	131-328	.0032-.0087	2,730	18.5	131-262	.0032-.0087
8	3,590	25.6	262-394	.0059-.0110	2,590	18.5	164-328	.0059-.0110
9	3,540	25.2	262-394	.0059-.0110	2,300	16.5	164-328	.0059-.0110
10	3,190	25.2	262-394	.0059-.0110	2,070	16.5	164-328	.0059-.0110
11	2,900	24.8	262-394	.0059-.0110	1,890	16.1	164-329	.0059-.0110
12	2,060	23.6	262-394	.0059-.0110	1,860	16.5	164-328	.0059-.0110
13	2,450	22.4	262-394	.0079-.0130	1,720	15.7	164-328	.0079-.0118
14	2,280	21.7	262-394	.0079-.0130	1,600	15.4	164-328	.0079-.0118

Work Material	Stainless Steel (Austenitic - 304, 316L)				Stainless Steel (Martensitic)			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	3,180	3.7	32-49	.0008-.0020	4,780	5.5	32-98	.0008-.0020
2	1,590	2.6	32-49	.0008-.0020	3,180	5.1	32-98	.0008-.0020
3	1,050	2.6	32-49	.0020-.0031	2,650	8.3	65-131	.0020-.0031
4	810	2.0	32-49	.0020-.0031	2,150	10.2	65-131	.0020-.0031
5	660	2.0	32-49	.0020-.0031	1,780	9.8	65-131	.0020-.0031
6	550	2.0	32-49	.0023-.0047	1,490	9.4	65-131	.0023-.0090
7	465	2.0	32-49	.0023-.0047	1,370	9.1	65-131	.0023-.0090
8	405	2.0	32-49	.0039-.0079	1,200	8.5	65-147	.0031-.0098
9	355	2.0	32-49	.0039-.0079	1,170	8.3	65-147	.0031-.0098
10	335	2.0	32-49	.0039-.0079	1,050	8.3	65-147	.0031-.0098
11	320	2.2	32-49	.0039-.0079	1,010	8.1	65-147	.0031-.0098
12	305	2.2	32-49	.0039-.0079	960	7.9	65-147	.0031-.0098
13	305	2.2	32-49	.0059-.0090	910	7.9	65-147	.0041-.0098
14	295	2.2	32-49	.0059-.0090	865	7.5	65-147	.0041-.0098

- Notes:**
1. Above cutting conditions are for drilling flat surface.
  2. Adjust cutting conditions according to machine rigidity, work clamping and shape of machining part.
  3. Above cutting conditions are for drilling with water soluble (external coolant).
  4. We expect 2D type's depth of hole is less than 2D, 4D type is less than 4D.
  5. In case of long chips, adjust above conditions by increasing feed speed or using step feed for breaking chips.
  6. If having difficulty getting the cutting fluid inside hole deep enough with horizontal machining centers, EZN3D and EZN5D type with internal coolant is recommended.
  7. When drilling austenitic stainless steel, EZN3D and EZN5D type with internal coolant is recommended - if machining with external lubrication, please be sure to follow the following precautions:
    - a. use an oil-based cutting fluid
    - b. when drilling with  $\phi$ 10mm dia. or larger, or drilling more than 2D with a 4D drill, step drilling is recommended.
  8. When using Forming Tap Strike Drill, reduce 20% of the above data.

# Strike Drill

## Recommended Cutting Data for EZN3D, EZN5D, EZN8D, EZT4D Type

Work Material	Structure Steel				Carbon Steel			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
up to 3	9,020	53.5	164-393	.0039-.0079	9,020	53.5	164-393	.0039-.0079
4	6,770	40.2	164-393	.0039-.0079	6,770	40.2	164-393	.0039-.0079
5	5,420	37.4	164-393	.0039-.0079	5,420	37.4	164-393	.0039-.0079
6	4,780	35.8	164-393	.0051-.0098	4,780	35.8	164-393	.0051-.0098
7	4,550	34.3	164-393	.0051-.0098	4,550	34.3	164-393	.0051-.0098
8	4,380	34.6	262-524	.0059-.0126	4,380	34.6	262-459	.0059-.0126
9	3,900	32.3	262-524	.0059-.0126	3,900	32.3	262-459	.0059-.0126
10	3,510	30.7	262-524	.0059-.0126	3,510	30.7	262-459	.0059-.0126
11	3,190	29.5	262-524	.0059-.0126	3,190	29.5	262-459	.0059-.0126
12	3,060	29.5	262-524	.0059-.0126	3,060	29.5	262-459	.0059-.0126
13	2,940	29.1	262-524	.0079-.0138	2,700	26.8	262-459	.0079-.0138
14	2,730	27.2	262-524	.0079-.0138	2,510	24.8	262-459	.0079-.0126
15	2,550	26.4	262-527	.0079-.0138	2,340	24.0	262-459	.0079-.0138
16	2,390	26.0	262-524	.0079-.0138	2,190	24.0	262-459	.0079-.0138

Work Material	Alloy Steel				Mold Steel (38-43 HC)			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
up to 3	6,370	37.8	131-262	.0039-.0079	4,780	26.4	98-196	.0039-.0070
4	4,780	28.3	131-262	.0039-.0079	3,590	20.9	98-196	.0039-.0070
5	3,820	25.2	131-262	.0039-.0079	2,870	18.1	98-196	.0039-.0070
6	3,450	24	131-262	.0051-.0090	2,390	16.5	98-196	.0051-.0090
7	3,190	23.6	131-262	.0051-.0090	2,280	15.7	98-196	.0051-.0090
8	2,990	23.6	164-328	.0059-.0126	1,990	14.2	131-229	.0059-.0110
9	2,660	22.8	164-328	.0059-.0126	1,770	13.4	131-229	.0059-.0110
10	2,390	21.7	164-328	.0059-.0126	1,680	13.4	131-229	.0059-.0110
11	2,180	20.5	164-328	.0059-.0126	1,520	13.0	131-229	.0059-.0110
12	1,990	19.7	164-328	.0059-.0126	1,460	12.6	131-229	.0059-.0110
13	1,960	19.7	164-328	.0079-.0138	1,350	12.2	131-229	.0059-.0118
14	1,820	18.5	164-328	.0079-.0138	1,260	11.4	131-229	.0059-.0118
15	1,700	17.7	164-328	.0079-.0138	1,170	10.6	131-229	.0059-.0118
16	1,600	17.7	164-328	.0079-.0138	1,100	9.8	131-229	.0059-.0118

- Notes:**
1. Above cutting conditions are for drilling flat surface.
  2. Adjust cutting conditions according to machine rigidity, work clamping and shape of machining part.
  3. Above cutting conditions are for drilling with water soluble (internal coolant).
  4. We expect 3D type's depth of hole is less than 3D, 5D type is less than 5D, 8D type is less than 8D.
  5. In case of long chips, adjust above conditions by increasing feed speed or using step feed for breaking chips.
  6. When using Forming Tap Strike Drill, reduce 20% of the above data.



# Strike Drill

## Recommended Cutting Data for EZN3D, EZN5D, EZN8D, EZT4D Type

Work Material	Stainless Steel (Austenitic - 304, 316L)				Gray Cast Iron			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
up to 3	6,370	29.9	131-262	.0039-.0079	10,080	63.8	229-393	.0047-.0079
4	4,780	28.3	131-262	.0039-.0079	7,560	47.6	229-393	.0047-.0079
5	3,820	25.6	131-262	.0039-.0079	6,050	42.9	229-393	.0047-.0079
6	3,190	22.0	131-262	.0047-.0090	5,040	39.8	229-393	.0059-.0098
7	2,960	21.7	131-262	.0047-.0090	4,550	39.8	229-393	.0059-.0098
8	2,790	20.5	196-328	.0059-.0110	4,380	39.0	262-524	.0070-.0125
9	2,480	19.3	196-328	.0059-.0110	3,900	35.4	262-524	.0070-.0125
10	2,230	18.5	196-328	.0059-.0110	3,510	32.7	262-524	.0070-.0125
11	2,030	18.5	196-328	.0059-.0110	3,190	30.3	262-524	.0070-.0125
12	1,990	18.1	196-328	.0059-.0110	3,060	30.3	262-524	.0070-.0125
13	1,960	15.7	196-328	.0070-.0118	2,940	30.3	262-524	.0078-.0138
14	1,820	16.9	196-328	.0070-.0118	2,730	28.7	262-524	.0078-.0138
15	1,700	16.1	196-328	.0070-.0118	2,660	28.3	262-524	.0078-.0138
16	1,600	15.4	196-328	.0070-.0118	2,590	28.3	262-524	.0078-.0138

Work Material	Nodular Cast Iron			
	Dia. Metric	RPM	IPM	SFM
up to 3	6,370	37.8	131-262	.0039-.0079
4	4,780	28.3	131-262	.0039-.0079
5	3,820	25.2	131-262	.0039-.0079
6	3,450	24.0	131-262	.0047-.0090
7	3,190	23.6	131-262	.0047-.0090
8	2,990	23.6	164-328	.0059-.0118
9	2,660	21.3	164-328	.0059-.0118
10	2,390	21.3	164-328	.0059-.0118
11	2,180	19.7	164-328	.0059-.0118
12	1,990	18.5	164-328	.0059-.0118
13	1,960	18.5	164-328	.0078-.0130
14	1,820	17.7	164-328	.0078-.0130
15	1,700	17.7	164-328	.0078-.0130
16	1,600	16.9	164-328	.0078-.0130

- Notes:**
1. Above cutting conditions are for drilling flat surface.
  2. Adjust cutting conditions according to machine rigidity, work clamping and shape of machining part.
  3. Above cutting conditions are for drilling with water soluble (internal coolant).
  4. We expect 3D type's depth of hole is less than 3D, 5D type is less than 5D, 8D type is less than 8D.
  5. In case of long chips, adjust above conditions by increasing feed speed or using step feed for breaking chips.
  6. When using Forming Tap Strike Drill, reduce 20% of the above data.

# Strike Drill

## Recommended Cutting Data for EZN2D-M and EZN3D-M Type

Work Material	Structure Steel				Carbon Steel			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	4,690	12.2	164	0.0026	4,690	12.2	164	0.0026
4.3	3,930	12.2	174	0.0031	3,930	12.2	174	0.0031
5.1	3,440	16.5	181	0.0048	3,440	16.5	181	0.0048
6.8	2,720	16.1	191	0.0059	2,720	16.1	191	0.0059
8.5	2,180	16.1	191	0.0074	2,180	16.1	191	0.0074
10.3	1,860	15.7	197	0.0085	1,860	15.7	197	0.0085

Work Material	Alloy Steel				Mold Steel (38-43 HRC)			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	4,690	11.4	164	0.0024	2,810	6.7	98	0.0024
4.3	3,710	11.4	164	0.0031	2,230	6.7	99	0.0030
5.1	3,130	15.0	165	0.0048	2,190	10.6	115	0.0049
6.8	2,350	14.2	165	0.0060	1,640	9.8	115	0.0060
8.5	1,880	12.6	165	0.0067	1,500	9.8	131	0.0066
10.3	1,550	12.2	165	0.0079	1,240	9.1	132	0.0073

Work Material	Gray Cast Iron				Nodular Cast Iron			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	4,690	15.7	164	0.0034	4,690	11.8	164	0.0025
4.3	4,080	15.7	181	0.0039	3,710	11.8	164	0.0032
5.1	3,750	18.9	197	0.0050	3,130	15.7	165	0.0050
6.8	3,050	18.9	214	0.0062	2,350	14.6	165	0.0062
8.5	2,630	18.9	230	0.0072	1,880	13.0	165	0.0069
10.3	2,170	18.9	230	0.0087	1,550	12.2	165	0.0079

- Notes:**
1. This tool performs drilling and chamfering in one operation. The large diameter has no back taper, therefore drilling up to large diameter part is not possible.
  2. The chamfer width can be up to C1.0mm for applicable screw size M4~M6 and up to C1.5mm for M8~M12.
  3. In case of long chips evacuated and interfering while machining, use step feed to break up the chips.
  4. If chattering occurs on inner wall of hole or chamfer surface, adjust above cutting conditions by reducing Feed speed (ipm).
  5. Above cutting conditions are for drilling with water soluble (external coolant).
  6. When machining stainless steel, coolant thru type, EZN2DCH-M & EZN3DCH-M are recommended.



# Strike Drill

## Recommended Cutting Data for EZN2DCH-M and EZN3DCH-M Type

Work Material	Structure Steel				Carbon Steel			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	5,620	17.7	197	0.0032	5,620	17.7	197	0.0032
4.3	4,450	17.7	197	0.0040	4,450	17.7	197	0.0040
5.1	4,370	26.0	230	0.0059	4,370	26.0	230	0.0059
6.8	3,280	23.6	230	0.0072	3,280	23.6	230	0.0072
8.5	3,000	22.4	263	0.0075	3,000	22.4	263	0.0075
10.3	2,480	21.7	263	0.0087	2,480	21.7	263	0.0087

Work Material	Alloy Steel				Mold Steel (38-43 HRC)			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	5,150	14.6	180	0.0028	3,750	9.4	131	0.0025
4.3	4,080	14.6	181	0.0036	2,970	9.4	132	0.0032
5.1	3,440	17.7	181	0.0052	2,500	12.6	131	0.0050
6.8	2,580	16.5	181	0.0064	1,880	11.8	132	0.0063
8.5	2,250	16.1	197	0.0072	1,500	10.6	131	0.0071
10.3	1,860	15.7	197	0.0085	1,240	9.4	132	0.0076

Work Material	Stainless Steel (304)				Gray Cast Iron			
	Dia. Metric	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3.4	3,750	9.8	131	0.0026	5,620	21.7	197	0.0039
4.3	2,970	9.8	132	0.0033	4,450	21.7	197	0.0049
5.1	2,500	12.6	131	0.0050	4,060	24.4	213	0.0060
6.8	1,880	11.8	132	0.0063	3,280	24.4	230	0.0074
8.5	1,500	10.6	131	0.0071	3,260	24.4	286	0.0075
10.3	1,240	9.4	132	0.0076	2,790	24.4	296	0.0087

Work Material	Nodular Cast Iron			
	Dia. Metric	RPM	IPM	SFM
3.4	5,150	13.4	180	0.0026
4.3	4,080	13.4	181	0.0033
5.1	3,440	17.7	181	0.0052
6.8	2,580	16.5	181	0.0064
8.5	2,250	16.1	197	0.0072
10.3	1,860	15.7	197	0.0085

- Notes:**
1. This tool performs drilling and chamfering in one operation. The large diameter has no back taper, therefore drilling up to large diameter part is not possible.
  2. The chamfer width can be up to C1.0mm for applicable screw size M4~M6 and up to C1.5mm for M8~M12.
  3. In case of long chips evacuated and interfering while machining, use step feed to break up the chips.
  4. If chattering occurs on inner wall of hole or chamfer surface, adjust above cutting conditions by reducing Feed speed (ipm).
  5. Use water soluble internal coolant.



# TLDM Drill

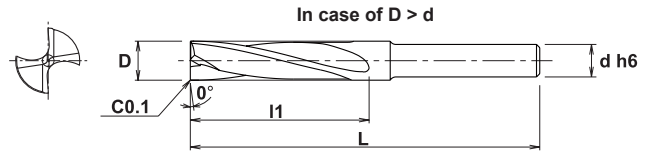
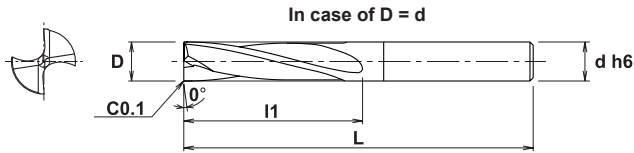
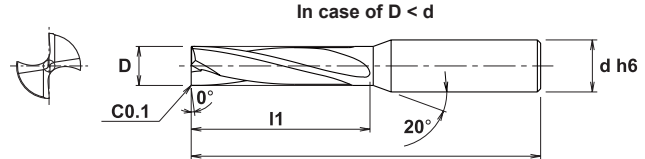
**METRIC**

## TLDM Type (2XD)-

- Spot facing with 180° point & 30° helix



Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLDM010	•	1.0	3.0	60	3
TLDM011	•	1.1	3.3	60	3
TLDM012	•	1.2	3.6	60	3
TLDM013	•	1.3	3.9	60	3
TLDM014	•	1.4	4.2	60	3
TLDM015	•	1.5	4.5	60	3
TLDM016	•	1.6	4.8	60	3
TLDM017	•	1.7	5.1	60	3
TLDM018	•	1.8	5.4	60	3
TLDM019	•	1.9	5.7	60	3
TLDM020	•	2.0	7.0	60	4
TLDM021	•	2.1	7.5	60	4
TLDM022	•	2.2	8.0	60	4
TLDM023	•	2.3	8.5	60	4
TLDM024	•	2.4	9.0	60	4
TLDM025	•	2.5	9.5	60	4
TLDM026	•	2.6	10	60	4
TLDM027	•	2.7	10.5	60	4
TLDM028	•	2.8	11	60	4
TLDM029	•	2.9	11.5	60	4
TLDM030	•	3.0	12	60	4
TLDM030-S6	•	3.0	12	60	6
TLDM031	•	3.1	12	60	4
TLDM031-S6	•	3.1	12	60	6
TLDM032	•	3.2	12	60	4
TLDM032-S6	•	3.2	12	60	6
TLDM033	•	3.3	13	60	4
TLDM033-S6	•	3.3	13	60	6
TLDM034	•	3.4	13	60	4
TLDM034-S6	•	3.4	13	60	6
TLDM035	•	3.5	13	60	4
TLDM035-S6	•	3.5	13	60	6
TLDM036	•	3.6	14	60	4
TLDM036-S6	•	3.6	14	60	6
TLDM037	•	3.7	14	60	4
TLDM037-S6	•	3.7	15	60	6
TLDM038	•	3.8	15	60	4
TLDM038-S6	•	3.8	15	60	6

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLDM039	•	3.9	15	60	4
TLDM039-S6	•	3.9	15	60	6
TLDM040	•	4.0	15	60	4
TLDM040-S6	•	4.0	15	60	6
TLDM041	•	4.1	16	60	6
TLDM042	•	4.2	16	60	6
TLDM043	•	4.3	17	60	6
TLDM044	•	4.4	17	60	6
TLDM045	•	4.5	17	60	6
TLDM046	•	4.6	18	65	6
TLDM047	•	4.7	18	65	6
TLDM048	•	4.8	18	65	6
TLDM049	•	4.9	19	65	6
TLDM050	•	5.0	19	65	6
TLDM051	•	5.1	20	65	6
TLDM052	•	5.2	20	65	6
TLDM053	•	5.3	20	65	6
TLDM054	•	5.4	21	65	6
TLDM055	•	5.5	21	65	6
TLDM056	•	5.6	22	70	6
TLDM057	•	5.7	22	70	6
TLDM058	•	5.8	22	70	6
TLDM059	•	5.9	23	70	6
TLDM060	•	6.0	23	70	6
TLDM061	•	6.1	23	70	8
TLDM062	•	6.2	24	70	8
TLDM063	•	6.3	24	70	8
TLDM064	•	6.4	25	70	8
TLDM065	•	6.5	25	70	8
TLDM066	•	6.6	25	75	8
TLDM067	•	6.7	26	75	8
TLDM068	•	6.8	26	75	8
TLDM069	•	6.9	27	75	8
TLDM070	•	7.0	27	75	8
TLDM071	•	7.1	27	75	8
TLDM072	•	7.2	28	75	8
TLDM073	•	7.3	28	75	8
TLDM074	•	7.4	28	75	8



**METRIC**

**TLDM Drill**

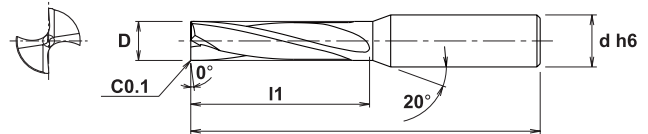
**TLDM Type (2XD)-**

- Spot facing with 180° point & 30° helix

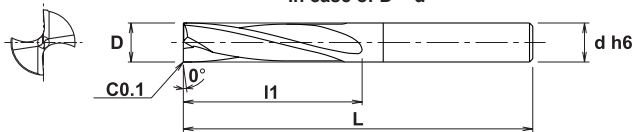


Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018

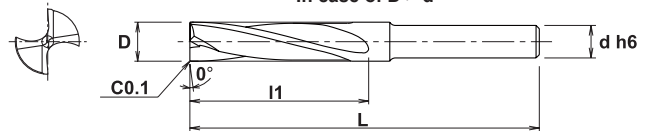
In case of  $D < d$



In case of  $D = d$



In case of  $D > d$



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
TLDM075	•	7.5	29	75	8
TLDM076	•	7.6	29	75	8
TLDM077	•	7.7	30	75	8
TLDM078	•	7.8	30	75	8
TLDM079	•	7.9	30	75	8
TLDM080	•	8.0	31	75	8
TLDM081	•	8.1	31	75	10
TLDM082	•	8.2	32	75	10
TLDM083	•	8.3	32	75	10
TLDM084	•	8.4	32	75	10
TLDM085	•	8.5	32	75	10
TLDM086	•	8.6	33	80	10
TLDM087	•	8.7	33	80	10
TLDM088	•	8.8	34	80	10
TLDM089	•	8.9	34	80	10
TLDM090	•	9.0	35	80	10
TLDM091	•	9.1	35	80	10
TLDM092	•	9.2	35	80	10
TLDM093	•	9.3	36	80	10
TLDM094	•	9.4	36	80	10
TLDM095	•	9.5	37	80	10
TLDM096	•	9.6	37	80	10
TLDM097	•	9.7	37	80	10
TLDM098	•	9.8	38	80	10
TLDM099	•	9.9	38	80	10
TLDM100	•	10.0	39	80	10
TLDM101	•	10.1	39	85	12
TLDM102	•	10.2	39	85	12
TLDM103	•	10.3	40	85	12
TLDM104	•	10.4	40	85	12
TLDM105	•	10.5	40	85	12
TLDM106	•	10.6	41	85	12
TLDM107	•	10.7	41	85	12
TLDM108	•	10.8	42	85	12
TLDM109	•	10.9	42	85	12
TLDM110	•	11.0	42	85	12
TLDM111	•	11.1	43	85	12
TLDM112	•	11.2	43	85	12

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
TLDM113	•	11.3	44	85	12
TLDM114	•	11.4	44	85	12
TLDM115	•	11.5	44	85	12
TLDM116	•	11.6	45	90	12
TLDM117	•	11.7	45	90	12
TLDM118	•	11.8	45	90	12
TLDM119	•	11.9	46	90	12
TLDM120	•	12.0	46	90	12
TLDM125	•	12.5	48	95	12
TLDM130	•	13.0	50	100	12
TLDM135	•	13.5	52	100	12
TLDM140	•	14.0	54	100	12



# TLDM

## Recommended Cutting Data for TLDM type

Work Material	Mild Steel ○				Carbon Steel ○			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	19,100	15.0	197	0.0008	19,100	15.0	197	0.0008
2	11,100	15.0	229	0.0013	11,100	15.0	229	0.0013
3	8,500	20.1	263	0.0024	8,500	20.1	263	0.0024
4	6,375	20.1	263	0.0031	6,375	20.1	263	0.0031
5	5,100	20.1	263	0.0039	5,100	20.1	263	0.0039
6	4,250	20.1	263	0.0047	4,250	20.1	263	0.0047
7	3,650	20.1	263	0.0055	3,650	20.1	263	0.0055
8	3,175	20.1	262	0.0063	3,175	20.1	262	0.0063
9	2,825	20.1	262	0.0071	2,825	20.1	262	0.0071
10	2,550	20.1	263	0.0079	2,550	20.1	263	0.0079
11	2,325	18.3	264	0.0079	2,325	18.3	264	0.0079
12	2,125	16.7	263	0.0079	2,125	16.7	263	0.0079
13	1,950	15.4	261	0.0079	1,950	15.4	261	0.0079
14	1,825	14.4	263	0.0079	1,825	14.4	263	0.0079

Work Material	Stainless Steel (304) ○				Cast Iron ○			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	9,500	3.9	98	0.0004	19,100	15.0	197	0.0008
2	4,800	3.9	99	0.0008	11,100	15.0	229	0.0013
3	3,175	12.6	98	0.0040	8,500	20.1	263	0.0024
4	2,375	9.4	98	0.0040	6,375	20.1	263	0.0031
5	1,900	7.9	98	0.0041	5,100	20.1	263	0.0039
6	1,600	6.7	99	0.0042	4,250	20.1	263	0.0047
7	1,375	5.9	99	0.0043	3,650	20.1	263	0.0055
8	1,200	5.5	99	0.0046	3,175	20.1	262	0.0063
9	1,050	4.7	97	0.0045	2,825	20.1	262	0.0071
10	950	4.3	98	0.0046	2,550	20.1	263	0.0079
11	875	4.3	99	0.0049	2,325	18.3	264	0.0079
12	800	3.9	99	0.0049	2,125	16.7	263	0.0079
13	725	3.5	97	0.0049	1,950	15.4	261	0.0079
14	675	3.5	97	0.0052	1,825	14.4	263	0.0079

Work Material	Alloy Steel ○				Mold Steel (40 HRC) ○			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	12,700	9.8	131	0.0008	9,500	3.9	98	0.0004
2	8,000	9.8	165	0.0012	4,800	3.9	99	0.0008
3	6,375	15.0	197	0.0023	3,175	12.6	98	0.0040
4	4,775	15.0	197	0.0031	2,375	9.4	98	0.0040
5	3,825	15.0	197	0.0039	1,900	7.9	98	0.0041
6	3,175	15.0	196	0.0047	1,600	6.7	99	0.0042
7	2,725	15.0	197	0.0055	1,375	5.9	99	0.0043
8	2,375	15.0	196	0.0063	1,200	5.5	99	0.0046
9	2,125	15.0	197	0.0070	1,050	4.7	97	0.0045
10	1,900	15.0	196	0.0079	950	4.3	98	0.0046
11	1,725	13.6	196	0.0079	875	4.3	99	0.0049
12	1,600	12.6	198	0.0079	800	3.9	99	0.0049
13	1,475	11.6	198	0.0079	725	3.5	97	0.0049
14	1,375	10.8	198	0.0079	675	3.5	97	0.0052

- Notes:**
- Above cutting conditions are for drilling flat surface. If drilling slope, adjust figures: angle under 30°, reduce 40-80%.
  - Above cutting conditions are for drilling with water soluble coolant, if dry cutting, use air to remove chips.
  - Recommend drilling depth 2xd or less.
  - Horizontal milling is not advised.
  - In case of long chips, increase feed speed or step feed.

Suitability
○ = Very Good
● = Good



# TLDM

## Recommended Cutting Data for TLDM type

Work Material	Aluminum Alloy ●				Hardened Steel (~50 HRC) ●			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	25,500	31.5	263	0.0012	6,400	2.0	66	0.0003
2	15,900	31.5	328	0.0020	3,200	2.0	66	0.0006
3	12,725	30.3	393	0.0024	2,125	3.9	66	0.0019
4	9,550	30.3	394	0.0032	1,600	3.1	66	0.0020
5	7,650	30.3	394	0.0040	1,275	2.8	66	0.0022
6	6,375	30.3	394	0.0048	1,050	2.4	65	0.0022
7	5,450	30.3	393	0.0056	900	2.4	65	0.0026
8	4,775	30.3	394	0.0063	800	2.0	66	0.0025
9	4,250	30.3	394	0.0071	700	2.0	65	0.0028
10	3,825	30.3	394	0.0079	625	2.0	64	0.0031
11	3,475	27.4	394	0.0079	575	2.0	65	0.0034
12	3,175	25.0	393	0.0079	525	1.6	65	0.0030
13	2,950	23.2	395	0.0079	500	1.6	67	0.0031
14	2,725	21.5	393	0.0079	450	1.6	65	0.0035

Work Material	Titanium (30~42 HRC) ●				Inconel (30~42 HRC) ●			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
1	9,500	3.9	98	0.0004	3,800	1.5	39	0.0004
2	4,800	3.9	99	0.0008	1,900	0.7	39	0.0004
3	3,175	12.6	98	0.0040	1,275	1.0	39	0.0008
4	2,375	9.4	98	0.0040	950	0.7	39	0.0008
5	1,900	7.9	98	0.0041	775	0.6	40	0.0008
6	1,600	6.7	99	0.0042	625	0.5	39	0.0008
7	1,375	5.9	99	0.0043	550	0.4	40	0.0008
8	1,200	5.5	99	0.0046	475	0.4	39	0.0008
9	1,050	4.7	97	0.0045	425	0.4	39	0.0008
10	950	4.3	98	0.0046	375	0.3	39	0.0008
11	875	4.3	99	0.0049	350	0.3	40	0.0008
12	800	3.9	99	0.0049	325	0.3	40	0.0008
13	725	3.5	97	0.0049	300	0.2	40	0.0008
14	675	3.5	97	0.0052	275	0.2	40	0.0009

- Notes:**
- Above cutting conditions are for drilling flat surface. If drilling slope, adjust figures: angle under 30°, reduce 40-80%.
  - Above cutting conditions are for drilling with water soluble coolant, if dry cutting, use air to remove chips.
  - Recommend drilling depth 2xd or less.
  - Horizontal milling is not advised.
  - In case of long chips, increase feed speed or step feed.

Suitability
○ = Very Good
● = Good



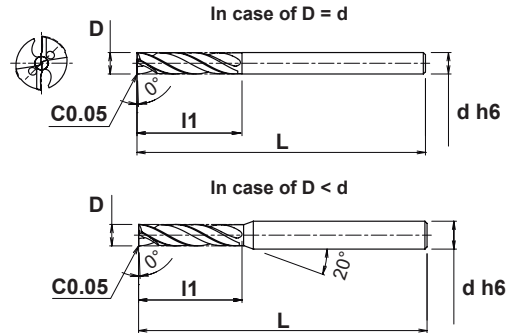
# TLD3D

**METRIC**

## TLD3D Type

- Solid Carbide Spot facing drill with point angle of 180° & coolant thru
- Drilling depth 3xD with 30 degree helix & double margin

Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018



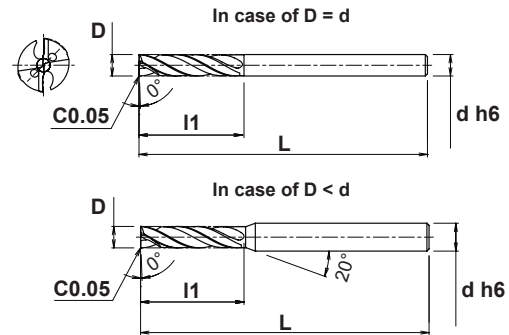
CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLD3DCH0300S03	•	3.0	14	60	3
TLD3DCH0310S04	•	3.1	14	60	4
TLD3DCH0320S04	•	3.2	15	60	4
TLD3DCH0330S04	•	3.3	15	60	4
TLD3DCH0340S04	•	3.4	16	60	4
TLD3DCH0350S04	•	3.5	16	60	4
TLD3DCH0360S04	•	3.6	17	60	4
TLD3DCH0370S04	•	3.7	17	60	4
TLD3DCH0380S04	•	3.8	18	60	4
TLD3DCH0390S04	•	3.9	18	60	4
TLD3DCH0400S04	•	4.0	18	60	4
TLD3DCH0410S05	•	4.1	19	65	5
TLD3DCH0420S05	•	4.2	19	65	5
TLD3DCH0430S05	•	4.3	20	65	5
TLD3DCH0440S05	•	4.4	20	65	5
TLD3DCH0450S05	•	4.5	21	65	5
TLD3DCH0460S05	•	4.6	21	65	5
TLD3DCH0470S05	•	4.7	22	65	5
TLD3DCH0480S05	•	4.8	22	65	5
TLD3DCH0490S05	•	4.9	23	65	5
TLD3DCH0500S05	•	5.0	23	65	5
TLD3DCH0510S06	•	5.1	23	70	6
TLD3DCH0520S06	•	5.2	24	70	6
TLD3DCH0530S06	•	5.3	24	70	6
TLD3DCH0540S06	•	5.4	25	70	6
TLD3DCH0550S06	•	5.5	25	70	6
TLD3DCH0560S06	•	5.6	26	70	6
TLD3DCH0570S06	•	5.7	26	70	6
TLD3DCH0580S06	•	5.8	27	70	6
TLD3DCH0590S06	•	5.9	27	70	6
TLD3DCH0600S06	•	6.0	27	70	6
TLD3DCH0610S07	•	6.1	28	75	7
TLD3DCH0620S07	•	6.2	28	75	7
TLD3DCH0630S07	•	6.3	29	75	7
TLD3DCH0640S07	•	6.4	29	75	7
TLD3DCH0650S07	•	6.5	30	75	7
TLD3DCH0660S07	•	6.6	30	75	7
TLD3DCH0670S07	•	6.7	31	75	7
TLD3DCH0680S07	•	6.8	31	75	7
TLD3DCH0690S07	•	6.9	32	75	7

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLD3DCH0700S07	•	7.0	32	75	7
TLD3DCH0710S08	•	7.1	32	80	8
TLD3DCH0720S08	•	7.2	33	80	8
TLD3DCH0730S08	•	7.3	33	80	8
TLD3DCH0740S08	•	7.4	34	80	8
TLD3DCH0750S08	•	7.5	34	80	8
TLD3DCH0760S08	•	7.6	35	80	8
TLD3DCH0770S08	•	7.7	35	80	8
TLD3DCH0780S08	•	7.8	36	80	8
TLD3DCH0790S08	•	7.9	36	80	8
TLD3DCH0800S08	•	8.0	36	80	8
TLD3DCH0810S09	•	8.1	37	90	9
TLD3DCH0820S09	•	8.2	37	90	9
TLD3DCH0830S09	•	8.3	38	90	9
TLD3DCH0840S09	•	8.4	38	90	9
TLD3DCH0850S09	•	8.5	39	90	9
TLD3DCH0860S09	•	8.6	39	90	9
TLD3DCH0870S09	•	8.7	40	90	9
TLD3DCH0880S09	•	8.8	40	90	9
TLD3DCH0890S09	•	8.9	41	90	9
TLD3DCH0900S09	•	9.0	41	90	9
TLD3DCH0910S10	•	9.1	41	95	10
TLD3DCH0920S10	•	9.2	42	95	10
TLD3DCH0930S10	•	9.3	42	95	10
TLD3DCH0940S10	•	9.4	43	95	10
TLD3DCH0950S10	•	9.5	43	95	10
TLD3DCH0960S10	•	9.6	44	95	10
TLD3DCH0970S10	•	9.7	44	95	10
TLD3DCH0980S10	•	9.8	45	95	10
TLD3DCH0990S10	•	9.9	45	95	10
TLD3DCH1000S10	•	10.0	45	95	10
TLD3DCH1010S11	•	10.1	46	105	11
TLD3DCH1020S11	•	10.2	46	105	11
TLD3DCH1030S11	•	10.3	47	105	11
TLD3DCH1040S11	•	10.4	47	105	11
TLD3DCH1050S11	•	10.5	48	105	11
TLD3DCH1060S11	•	10.6	48	105	11
TLD3DCH1070S11	•	10.7	49	105	11
TLD3DCH1080S11	•	10.8	49	105	11
TLD3DCH1090S11	•	10.9	50	105	11

**METRIC****TLD3D****TLD3D Type**

- Solid Carbide Spot facing drill with point angle of 180° & coolant thru
- Drilling depth 3xD with 30 degree helix & double margin

Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLD3DCH1100S11	•	11.0	50	105	11
TLD3DCH1110S12	•	11.1	50	115	12
TLD3DCH1120S12	•	11.2	51	115	12
TLD3DCH1130S12	•	11.3	51	115	12
TLD3DCH1140S12	•	11.4	52	115	12
TLD3DCH1150S12	•	11.5	52	115	12
TLD3DCH1160S12	•	11.6	53	115	12
TLD3DCH1170S12	•	11.7	53	115	12
TLD3DCH1180S12	•	11.8	54	115	12
TLD3DCH1190S12	•	11.9	54	115	12
TLD3DCH1200S12	•	12.0	54	115	12
TLD3DCH1250S13	•	12.5	57	125	13
TLD3DCH1300S13	•	13.0	59	125	13
TLD3DCH1350S14	•	13.5	61	130	14
TLD3DCH1400S14	•	14.0	63	130	14



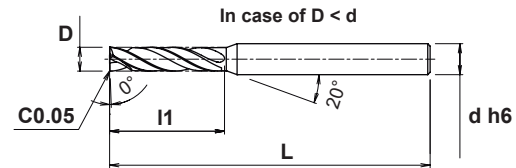
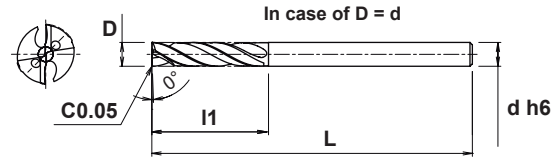
# TLD5D

**METRIC**

## TLD5D Type

- Solid Carbide Spot facing drill with point angle of 180° & coolant thru
- Drilling depth 5xD with 30 degree helix & double margin

Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLD5DCH0300S03	•	3.0	20	70	3
TLD5DCH0310S04	•	3.1	21	70	4
TLD5DCH0320S04	•	3.2	22	70	4
TLD5DCH0330S04	•	3.3	22	70	4
TLD5DCH0340S04	•	3.4	23	70	4
TLD5DCH0350S04	•	3.5	24	70	4
TLD5DCH0360S04	•	3.6	24	70	4
TLD5DCH0370S04	•	3.7	25	70	4
TLD5DCH0380S04	•	3.8	26	70	4
TLD5DCH0390S04	•	3.9	26	70	4
TLD5DCH0400S04	•	4.0	27	70	4
TLD5DCH0410S05	•	4.1	28	80	5
TLD5DCH0420S05	•	4.2	28	80	5
TLD5DCH0430S05	•	4.3	29	80	5
TLD5DCH0440S05	•	4.4	30	80	5
TLD5DCH0450S05	•	4.5	30	80	5
TLD5DCH0460S05	•	4.6	31	80	5
TLD5DCH0470S05	•	4.7	32	80	5
TLD5DCH0480S05	•	4.8	32	80	5
TLD5DCH0490S05	•	4.9	33	80	5
TLD5DCH0500S05	•	5.0	34	80	5
TLD5DCH0510S06	•	5.1	34	85	6
TLD5DCH0520S06	•	5.2	35	85	6
TLD5DCH0530S06	•	5.3	36	85	6
TLD5DCH0540S06	•	5.4	36	85	6
TLD5DCH0550S06	•	5.5	37	85	6
TLD5DCH0560S06	•	5.6	38	85	6
TLD5DCH0570S06	•	5.7	38	85	6
TLD5DCH0580S06	•	5.8	39	85	6
TLD5DCH0590S06	•	5.9	40	85	6
TLD5DCH0600S06	•	6.0	40	85	6
TLD5DCH0610S07	•	6.1	41	95	7
TLD5DCH0620S07	•	6.2	42	95	7
TLD5DCH0630S07	•	6.3	42	95	7
TLD5DCH0640S07	•	6.4	43	95	7
TLD5DCH0650S07	•	6.5	44	95	7
TLD5DCH0660S07	•	6.6	44	95	7
TLD5DCH0670S07	•	6.7	45	95	7
TLD5DCH0680S07	•	6.8	46	95	7
TLD5DCH0690S07	•	6.9	46	95	7

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
TLD5DCH0700S07	•	7.0	47	95	7
TLD5DCH0710S08	•	7.1	48	100	8
TLD5DCH0720S08	•	7.2	48	100	8
TLD5DCH0730S08	•	7.3	49	100	8
TLD5DCH0740S08	•	7.4	50	100	8
TLD5DCH0750S08	•	7.5	50	100	8
TLD5DCH0760S08	•	7.6	51	100	8
TLD5DCH0770S08	•	7.7	52	100	8
TLD5DCH0780S08	•	7.8	52	100	8
TLD5DCH0790S08	•	7.9	53	100	8
TLD5DCH0800S08	•	8.0	54	100	8
TLD5DCH0810S09	•	8.1	54	110	9
TLD5DCH0820S09	•	8.2	55	110	9
TLD5DCH0830S09	•	8.3	56	110	9
TLD5DCH0840S09	•	8.4	56	110	9
TLD5DCH0850S09	•	8.5	57	110	9
TLD5DCH0860S09	•	8.6	58	110	9
TLD5DCH0870S09	•	8.7	58	110	9
TLD5DCH0880S09	•	8.8	59	110	9
TLD5DCH0890S09	•	8.9	60	110	9
TLD5DCH0900S09	•	9.0	60	110	9
TLD5DCH0910S10	•	9.1	61	120	10
TLD5DCH0920S10	•	9.2	62	120	10
TLD5DCH0930S10	•	9.3	62	120	10
TLD5DCH0940S10	•	9.4	63	120	10
TLD5DCH0950S10	•	9.5	64	120	10
TLD5DCH0960S10	•	9.6	64	120	10
TLD5DCH0970S10	•	9.7	65	120	10
TLD5DCH0980S10	•	9.8	66	120	10
TLD5DCH0990S10	•	9.9	66	120	10
TLD5DCH1000S10	•	10.0	67	120	10
TLD5DCH1010S11	•	10.1	68	130	11
TLD5DCH1020S11	•	10.2	68	130	11
TLD5DCH1030S11	•	10.3	69	130	11
TLD5DCH1040S11	•	10.4	70	130	11
TLD5DCH1050S11	•	10.5	70	130	11
TLD5DCH1060S11	•	10.6	71	130	11
TLD5DCH1070S11	•	10.7	72	130	11
TLD5DCH1080S11	•	10.8	72	130	11
TLD5DCH1090S11	•	10.9	73	130	11



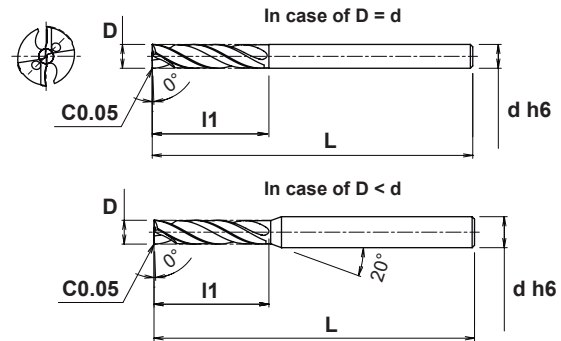
**METRIC**

**TLD5D**

**TLD5D Type**

- Solid Carbide Spot facing drill with point angle of 180° & coolant thru
- Drilling depth 5xD with 30 degree helix & double margin

Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
TLD5DCH1100S11	•	11.0	74	130	11
TLD5DCH1110S12	•	11.1	74	145	12
TLD5DCH1120S12	•	11.2	75	145	12
TLD5DCH1130S12	•	11.3	76	145	12
TLD5DCH1140S12	•	11.4	76	145	12
TLD5DCH1150S12	•	11.5	77	145	12
TLD5DCH1160S12	•	11.6	78	145	12
TLD5DCH1170S12	•	11.7	78	145	12

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
TLD5DCH1180S12	•	11.8	79	145	12
TLD5DCH1190S12	•	11.9	80	145	12
TLD5DCH1200S12	•	12.0	80	145	12
TLD5DCH1250S13	•	12.5	84	155	13
TLD5DCH1300S13	•	13.0	87	155	13
TLD5DCH1350S14	•	13.5	90	160	14
TLD5DCH1400S14	•	14.0	94	160	14



# TLD

## Recommended Cutting Data for TLD3D and TLD5D Type

Work Material	Structure Steel				Carbon Steel			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3	8,500	20.1	263	0.0024	8,500	20.1	263	0.0024
4	6,375	20.1	263	0.0031	6,375	20.1	263	0.0031
5	5,100	20.1	263	0.0039	5,100	20.1	263	0.0039
6	4,250	20.1	263	0.0047	4,250	20.1	263	0.0047
7	3,650	20.1	263	0.0055	3,650	20.1	263	0.0055
8	3,175	20.1	262	0.0063	3,175	20.1	262	0.0063
9	2,825	20.1	262	0.0071	2,825	20.1	262	0.0071
10	2,550	20.1	263	0.0079	2,550	20.1	263	0.0079
11	2,325	18.3	264	0.0079	2,325	18.3	264	0.0079
12	2,125	16.7	263	0.0079	2,125	16.7	263	0.0079
13	1,950	15.4	261	0.0079	1,950	15.4	261	0.0079
14	1,825	14.4	263	0.0079	1,825	14.4	263	0.0079

Work Material	Alloy Steel				Mold Steel (38~43 HRC)			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3	6,375	15.0	197	0.0023	3,175	12.6	98	0.0040
4	4,775	15.0	197	0.0031	2,375	9.4	98	0.0040
5	3,825	15.0	197	0.0039	1,900	7.9	98	0.0041
6	3,175	15.0	196	0.0047	1,600	6.7	99	0.0042
7	2,725	15.0	197	0.0055	1,375	5.9	99	0.0043
8	2,375	15.0	196	0.0063	1,200	5.5	99	0.0046
9	2,125	15.0	197	0.0070	1,050	4.7	97	0.0045
10	1,900	15.0	196	0.0079	950	4.3	98	0.0046
11	1,725	13.6	196	0.0079	875	4.3	99	0.0049
12	1,600	12.6	198	0.0079	800	3.9	99	0.0049
13	1,475	11.6	198	0.0079	725	3.5	97	0.0049
14	1,375	10.8	198	0.0079	675	3.5	97	0.0052

Work Material	Hardened Die Steel (~50HC)				Titanium Alloy			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3	3,700	11.8	114	0.0032	3,175	12.6	98	0.0040
4	2,790	10.2	115	0.0037	2,375	9.4	98	0.0040
5	2,230	7.9	115	0.0035	1,900	7.9	98	0.0041
6	1,860	6.3	115	0.0034	1,600	6.7	99	0.0042
7	1,590	5.9	115	0.0037	1,375	5.9	99	0.0043
8	1,390	5.5	115	0.0040	1,200	5.5	99	0.0046
9	1,340	5.5	124	0.0041	1,050	4.7	97	0.0045
10	1,110	5.1	114	0.0046	950	4.3	98	0.0046
11	1,010	4.7	115	0.0047	875	4.3	99	0.0049
12	930	4.7	115	0.0051	800	3.9	99	0.0049
13	860	4.7	115	0.0055	725	3.5	97	0.0049
14	800	4.7	115	0.0059	675	3.5	97	0.0052

**Recommended Cutting Data for TLD3D and TLD5D Type**

Work Material	Stainless Steel (304)				Gray Cast Iron			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3	3,175	12.6	98	0.0040	8,500	20.1	263	0.0024
4	2,375	9.4	98	0.0040	6,375	20.1	263	0.0031
5	1,900	7.9	98	0.0041	5,100	20.1	263	0.0039
6	1,600	6.7	99	0.0042	4,250	20.1	263	0.0047
7	1,375	5.9	99	0.0043	3,650	20.1	263	0.0055
8	1,200	5.5	99	0.0046	3,175	20.1	262	0.0063
9	1,050	4.7	97	0.0045	2,825	20.1	262	0.0071
10	950	4.3	98	0.0046	2,550	20.1	263	0.0079
11	875	4.3	99	0.0049	2,325	18.3	264	0.0079
12	800	3.9	99	0.0049	2,125	16.7	263	0.0079
13	725	3.5	97	0.0049	1,950	15.4	261	0.0079
14	675	3.5	97	0.0052	1,825	14.4	263	0.0079

Work Material	Nodular Cast Iron				Aluminum Alloy			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
3	8,500	20.1	263	0.0024	16,980	66.9	525	0.0039
4	6,375	20.1	263	0.0031	12,730	50.1	525	0.0039
5	5,100	20.1	263	0.0039	10,190	40.1	525	0.0039
6	4,250	20.1	263	0.0047	8,490	33.4	525	0.0039
7	3,650	20.1	263	0.0055	7,280	28.7	525	0.0039
8	3,175	20.1	262	0.0063	6,370	25.1	525	0.0039
9	2,825	20.1	262	0.0071	5,660	22.3	525	0.0039
10	2,550	20.1	263	0.0079	5,090	20.0	525	0.0039
11	2,325	18.3	264	0.0079	4,630	18.2	525	0.0039
12	2,125	16.7	263	0.0079	4,240	16.7	524	0.0039
13	1,950	15.4	261	0.0079	3,920	15.4	525	0.0039
14	1,825	14.4	263	0.0079	3,640	14.3	525	0.0039

**Notes for TLD3D:**

- Above cutting conditions are for drilling flat surface.
- For inclined angle under 30°, reduce Feed speed (ipm) to 40-80%, and for inclined angle of 30° or more reduce Feed speed to 20-50%, but keep spindle speed (rpm).
- Above cutting conditions are for drilling with water soluble (internal coolant). If using external coolant, use step feed to remove the chips. Dry drilling is not recommended.
- Recommend drill depth under 3D or less. If drilling depth if over 3D, recommend using TLD5D type.
- Endmilling is impossible.
- In case of long chips evacuated, adjust above conditions by increasing Feed speed (ipm) or using step feed to break chips.

**Notes for TLD5D:**

- The above cutting condition are with guide hole drilling of the same diameter drill (guide hold drilling depth: 0.5D-1.0D).
- Cutting conditions are for drilling with water soluble (internal coolant). External coolant or dry drilling is not recommended.
- Recommended drilling depth under 5D or less. Drilling depth over 5D is not recommended.
- Endmilling is impossible.
- In case of long chips evacuated, adjust above conditions by increasing Feed speed (ipm) or using step feed to break chips.
- Drilling on inclined angle is not recommended.

# EZH

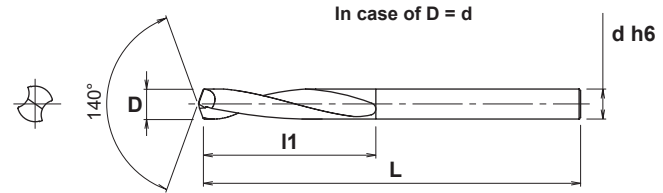
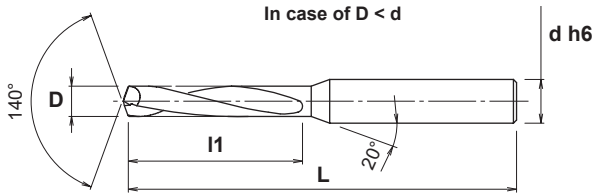
**METRIC**

## EZH Type

- Solid Carbide drill for high hardened materials
- Drilling depth 5xD with 15 degree helix



Diameter	Tolerance
up to 3mm	+0 / -0.010
over 3mm - up to 6mm	+0 / -0.012
over 6mm - up to 10mm	+0 / -0.015
over 10mm - up to 16mm	+0 / -0.018

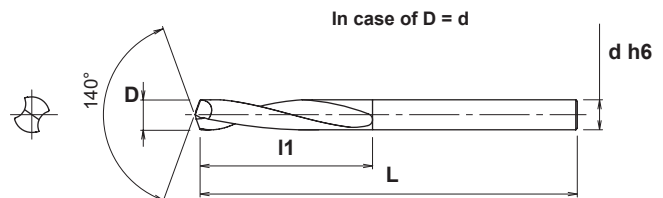
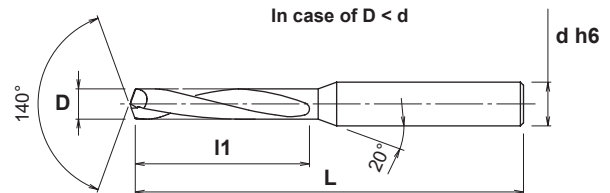


CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZH5D0200S03	•	2.0	16	55	3
EZH5D0200S03-12	•	2.0	12	55	3
EZH5D0200S03-21	•	2.0	21	55	3
EZH5D0210S03	•	2.1	16	55	3
EZH5D0220S03	•	2.2	16	55	3
EZH5D0230S03	•	2.3	16	55	3
EZH5D0240S03	•	2.4	16	55	3
EZH5D0250S03	•	2.5	16	55	3
EZH5D0250S03-21	•	2.5	21	55	3
EZH5D0260S03	•	2.6	16	55	3
EZH5D0270S03	•	2.7	16	55	3
EZH5D0280S03	•	2.8	16	55	3
EZH5D0290S03	•	2.9	16	55	3
EZH5D0300S04	•	3.0	21	59	4
EZH5D0330S04	•	3.3	24	59	4
EZH5D0340S04	•	3.4	24	59	4
EZH5D0350S04	•	3.5	24	59	4
EZH5D0380S04	•	3.8	27	59	4
EZH5D0390S04	•	3.9	27	59	4
EZH5D0400S04	•	4.0	27	59	4
EZH5D0420S06	•	4.2	29	74	6
EZH5D0430S06	•	4.3	29	74	6
EZH5D0440S06	•	4.4	29	74	6

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZH5D0450S06	•	4.5	29	74	6
EZH5D0490S06	•	4.9	32	74	6
EZH5D0500S06	•	5.0	32	74	6
EZH5D0510S06	•	5.1	34	79	6
EZH5D0520S06	•	5.2	34	79	6
EZH5D0590S06	•	5.9	36	79	6
EZH5D0600S06	•	6.0	41	79	6
EZH5D0680S08	•	6.8	43	88	8
EZH5D0690S08	•	6.9	43	88	8
EZH5D0700S08	•	7.0	43	88	8
EZH5D0790S08	•	7.9	48	93	8
EZH5D0800S08	•	8.0	48	93	8
EZH5D0850S10	•	8.5	53	98	10
EZH5D0860S10	•	8.6	55	98	10
EZH5D0900S10	•	9.0	55	98	10
EZH5D0990S10	•	9.9	60	108	10
EZH5D1000S10	•	10.0	60	108	10
EZH5D1030S12	•	10.3	66	117	12
EZH5D1040S12	•	10.4	66	117	12
EZH5D1100S12	•	11.0	68	117	12
EZH5D1190S12	•	11.9	73	117	12
EZH5D1200S12	•	12.0	73	117	12

## EZH-LS Type

- Solid Carbide drill for high hardened materials
- Drilling depth 5xD with 15 degree helix and long shank



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
EZH5D0300S04-LS	•	3.0	25	69	4
EZH5D0330S04-LS	•	3.3	25	79	4
EZH5D0380S04-LS	•	3.8	30	79	4
EZH5D0400S04-LS	•	4.0	30	79	4

**Recommended Cutting Data for EZH5D Type**

Work Material	Hardened Steel (48~56 HRC)				Hardened Steel (57~62HRC)			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
2	2,860	4.5	59	0.0016	2,070	3.4	43	0.0016
2.5	2,550	4.0	66	0.0016	1,660	2.6	43	0.0016
3	2,110	3.3	65	0.0016	1,380	2.2	43	0.0016
4	1,590	2.5	66	0.0016	1,035	1.6	43	0.0016
5	1,270	2.4	65	0.0019	830	1.6	43	0.0019
6	1,060	2.9	66	0.0027	690	1.6	43	0.0023
7	910	2.5	66	0.0027	590	1.4	43	0.0023
8	795	2.4	66	0.0030	520	1.3	43	0.0026
9	710	2.1	66	0.0030	460	1.2	43	0.0026
10	640	2.0	66	0.0031	415	1.1	43	0.0028
11	580	1.8	66	0.0031	375	1.0	43	0.0027
12	530	1.9	66	0.0035	345	1.0	43	0.0030
13	370	1.3	50	0.0035	250	0.8	33	0.0031
14	330	1.2	48	0.0036	220	0.8	32	0.0036
15	320	1.2	49	0.0037	210	0.8	32	0.0037
16	320	1.2	53	0.0037	200	0.7	33	0.0037

Work Material	HSS (63~70 HRC)			
	Dia. (mm)	RPM	IPM	SFM
2	1,270	1.5	26	0.0012
2.5	1,270	1.5	33	0.0012
3	1,060	1.2	33	0.0012
4	795	0.9	33	0.0011
5	635	1.0	33	0.0016
6	530	1.0	33	0.0019
7	455	0.9	33	0.0019
8	400	0.8	33	0.0020
9	355	0.7	33	0.0020
10	320	0.7	33	0.0021
11	290	0.6	33	0.0022
12	265	0.6	33	0.0024
13	200	0.5	27	0.0026
14	180	0.5	26	0.0028
15	170	0.5	26	0.0030
16	160	0.5	26	0.0030

- Notes:**
1. Use water soluble coolant.
  2. Not recommended for use on non-heat treated materials.
  3. Recommended for materials over 48 HRC to 70 HRC.
  4. Use on rigid machine with a precision holder.
  5. Above data recommended for cutting depth of 3xD. Peck drilling is recommended if drilling deeper.
  6. Recommended for drilling blind hold, if drill thru hole, use back up material underneath.
  7. If using -LS type, reduce above data.

# Finish-Hard Reamer

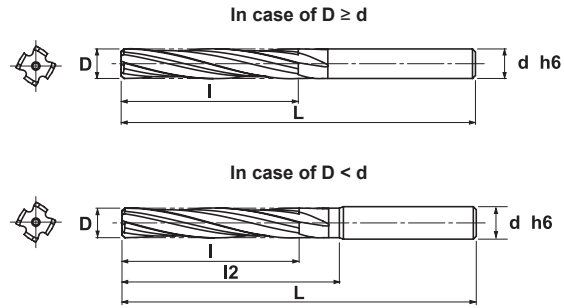
**METRIC**

## DH-FHR Type

- For precise reaming on high hardened material
- Helix angle: 15 degrees, drilling depth 5XD



Diameter	Tolerance
under 3.1mm	+0.007 +0.002
3.1mm up to 6.1mm	+0.009 +0.003
6.1mm up to 10.1mm	+0.011 +0.004
10.1mm and up	+0.013 +0.006



CATALOG NUMBER	STK	DIMENSIONS				
		D	I	I2	L	d
DH-FHR0300	•	3	20	28.6	70	4
DH-FHR0301	□	3.01	20	28.6	70	4
DH-FHR0302	□	3.02	20	28.6	70	4
DH-FHR0310	□	3.1	27	33.7	75	4
DH-FHR0320	□	3.2	27	33.9	75	4
DH-FHR0330	□	3.3	27	34	75	4
DH-FHR0340	□	3.4	27	34.1	75	4
DH-FHR0350	□	3.5	27	34.3	75	4
DH-FHR0360	□	3.6	27	34.4	75	4
DH-FHR0370	□	3.7	27	34.5	75	4
DH-FHR0380	□	3.8	27	34.7	75	4
DH-FHR0390	□	3.9	27	34.8	75	4
DH-FHR0400	•	4	27	-	75	4
DH-FHR0401	□	4.01	27	-	75	4
DH-FHR0402	□	4.02	27	-	75	4
DH-FHR0410	□	4.1	35	42.3	85	6
DH-FHR0420	□	4.2	35	42.5	85	6
DH-FHR0430	□	4.3	35	42.6	85	6
DH-FHR0440	□	4.4	35	42.8	85	6
DH-FHR0450	□	4.5	35	42.9	85	6
DH-FHR0460	□	4.6	35	43	85	6
DH-FHR0470	□	4.7	35	43.2	85	6
DH-FHR0480	□	4.8	35	43.3	85	6
DH-FHR0490	□	4.9	35	43.4	85	6
DH-FHR0500	•	5	35	43.6	85	6
DH-FHR0501	□	5.01	35	43.6	85	6
DH-FHR0502	□	5.02	35	43.6	85	6
DH-FHR0510	□	5.1	42	48.7	90	6
DH-FHR0520	□	5.2	42	48.9	90	6
DH-FHR0530	□	5.3	42	49	90	6
DH-FHR0540	□	5.4	42	49.1	90	6
DH-FHR0550	□	5.5	42	49.3	90	6
DH-FHR0560	□	5.6	42	49.4	90	6
DH-FHR0570	□	5.7	42	49.5	90	6
DH-FHR0580	□	5.8	42	49.7	90	6
DH-FHR0590	□	5.9	42	49.8	90	6
DH-FHR0600	•	6	42	-	90	6
DH-FHR0601	□	6.01	42	-	90	6
DH-FHR0602	•	6.02	42	-	90	6
DH-FHR0610	□	6.1	47	57.3	100	8
DH-FHR0620	□	6.2	47	57.5	100	8
DH-FHR0630	□	6.3	47	57.6	100	8
DH-FHR0640	□	6.4	47	57.8	100	8

CATALOG NUMBER	STK	DIMENSIONS				
		D	I	I2	L	d
DH-FHR0650	□	6.5	47	57.9	100	8
DH-FHR0660	□	6.6	47	58	100	8
DH-FHR0670	□	6.7	47	58.2	100	8
DH-FHR0680	□	6.8	47	58.3	100	8
DH-FHR0690	□	6.9	47	58.4	100	8
DH-FHR0700	•	7	47	58.6	100	8
DH-FHR0701	□	7.01	47	58.6	100	8
DH-FHR0702	□	7.02	47	58.6	100	8
DH-FHR0710	□	7.1	50	60	100	8
DH-FHR0720	□	7.2	50	60	100	8
DH-FHR0730	□	7.3	50	60	100	8
DH-FHR0740	□	7.4	50	60	100	8
DH-FHR0750	□	7.5	50	60	100	8
DH-FHR0760	□	7.6	50	60	100	8
DH-FHR0770	□	7.7	50	60	100	8
DH-FHR0780	□	7.8	50	60	100	8
DH-FHR0790	□	7.9	50	60	100	8
DH-FHR0800	•	8	50	-	100	8
DH-FHR0801	□	8.01	50	-	100	8
DH-FHR0802	•	8.02	50	-	100	8
DH-FHR0810	□	8.1	60	72.3	120	10
DH-FHR0820	□	8.2	60	72.5	120	10
DH-FHR0830	□	8.3	60	72.6	120	10
DH-FHR0840	□	8.4	60	72.8	120	10
DH-FHR0850	□	8.5	60	72.9	120	10
DH-FHR0860	□	8.6	60	73	120	10
DH-FHR0870	□	8.7	60	73.2	120	10
DH-FHR0880	□	8.8	60	73.3	120	10
DH-FHR0890	□	8.9	60	73.4	120	10
DH-FHR0900	•	9	60	73.6	120	10
DH-FHR0901	□	9.01	60	73.6	120	10
DH-FHR0902	□	9.02	60	73.6	120	10
DH-FHR0910	□	9.1	60	75	120	10
DH-FHR0920	□	9.2	60	75	120	10
DH-FHR0930	□	9.3	60	75	120	10
DH-FHR0940	□	9.4	60	75	120	10
DH-FHR0950	□	9.5	60	75	120	10
DH-FHR0960	□	9.6	60	75	120	10
DH-FHR0970	□	9.7	60	75	120	10
DH-FHR0980	□	9.8	60	75	120	10
DH-FHR0990	□	9.9	60	75	120	10

• Stocked standard □ Inquire regarding delivery



**METRIC**

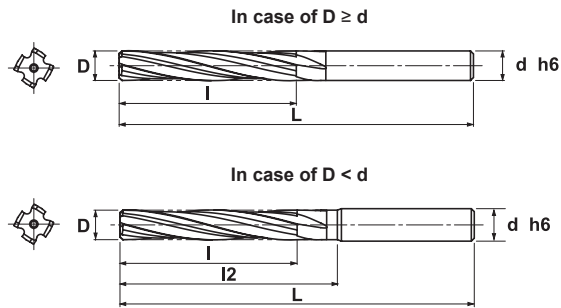
# Finish-Hard Reamer

## DH-FHR Type

- For precise reaming on high hardened material
- Helix angle: 15 degrees, drilling depth 5XD



Diameter	Tolerance
under 3.1mm	+0.007 +0.002
3.1mm up to 6.1mm	+0.009 +0.003
6.1mm up to 10.1mm	+0.011 +0.004
10.1mm and up	+0.013 +0.006



CATALOG NUMBER	STK	DIMENSIONS				
		D	l	l2	L	d
DH-FHR1000	•	10	60	-	120	10
DH-FHR1001	□	10.01	60	-	120	10
DH-FHR1002	□	10.02	60	-	120	10
DH-FHR1010	□	10.1	70	87.3	140	12
DH-FHR1020	□	10.2	70	87.5	140	12
DH-FHR1030	□	10.3	70	87.6	140	12
DH-FHR1040	□	10.4	70	87.8	140	12
DH-FHR1050	□	10.5	70	87.9	140	12
DH-FHR1060	□	10.6	70	88	140	12
DH-FHR1070	□	10.7	70	88.2	140	12
DH-FHR1080	□	10.8	70	88.3	140	12
DH-FHR1090	□	10.9	70	88.4	140	12
DH-FHR1100	•	11	70	88.6	140	12
DH-FHR1101	□	11.01	70	88.6	140	12
DH-FHR1102	□	11.02	70	88.6	140	12
DH-FHR1110	□	11.1	70	90	140	12
DH-FHR1120	□	11.2	70	90	140	12
DH-FHR1130	□	11.3	70	90	140	12
DH-FHR1140	□	11.4	70	90	140	12

CATALOG NUMBER	STK	DIMENSIONS				
		D	l	l2	L	d
DH-FHR1150	□	11.5	70	90	140	12
DH-FHR1160	□	11.6	70	90	140	12
DH-FHR1170	□	11.7	70	90	140	12
DH-FHR1180	□	11.8	70	90	140	12
DH-FHR1190	□	11.9	70	90	140	12
DH-FHR1200	•	12	70	-	140	12
DH-FHR1201	□	12.01	70	-	140	12
DH-FHR1202	□	12.02	70	-	140	12
DH-FHR1210	□	12.1	70	90	140	12
DH-FHR1300	•	13	70	88.6	140	14
DH-FHR1301	□	13.01	70	88.6	140	14
DH-FHR1302	□	13.02	70	88.6	140	14
DH-FHR1600	•	16	70	-	140	16
DH-FHR1601	□	16.01	70	-	140	16
DH-FHR1600	□	16.02	70	-	140	16

- Stocked standard
- Inquire regarding delivery

# Finish-Hard Reamer

## Recommended Cutting Data for DH-FHR Type

Work Material	Die Steel (48~56 HRC)				Stock Amount Inch
Dia. (mm)	RPM	IPM	SFM	IPR	
3	2,120	4.1	66	0.0019	Φ.004-.008
4	1,590	3.1	66	0.0020	Φ.004-.008
5	1,270	2.5	65	0.0020	Φ.004-.008
6	1,060	2.5	66	0.0024	Φ.004-.008
7	910	2.2	66	0.0024	Φ.004-.008
8	795	1.9	66	0.0024	Φ.004-.008
9	710	1.9	66	0.0027	Φ.004-.008
10	640	1.8	66	0.0028	Φ.004-.008
11	580	1.6	66	0.0027	Φ.004-.008
12	530	1.5	66	0.0027	Φ.004-.008
13	370	1.0	50	0.0028	Φ.004-.008
16	300	0.8	49	0.0028	Φ.004-.008

Work Material	Die Steel (57~62 HRC)				Stock Amount Inch
Dia. (mm)	RPM	IPM	SFM	IPR	
3	1,380	2.7	43	0.0020	Φ.004-.008
4	1,040	2.0	43	0.0020	Φ.004-.008
5	830	1.6	43	0.0019	Φ.004-.008
6	690	1.6	43	0.0023	Φ.004-.008
7	590	1.3	43	0.0023	Φ.004-.008
8	520	1.2	43	0.0023	Φ.004-.008
9	460	1.2	43	0.0026	Φ.004-.008
10	415	1.1	43	0.0027	Φ.004-.008
11	375	1.0	43	0.0026	Φ.004-.008
12	345	0.9	43	0.0026	Φ.004-.008
13	245	0.7	33	0.0027	Φ.004-.008
16	200	0.6	33	0.0028	Φ.004-.008

Work Material	Die Steel (63~70 HRC)				Stock Amount Inch
Dia. (mm)	RPM	IPM	SFM	IPR	
3	1,010	1.6	31	0.0016	Φ.004-.008
4	755	1.2	31	0.0016	Φ.004-.008
5	605	0.9	31	0.0016	Φ.004-.008
6	500	0.8	31	0.0016	Φ.004-.008
7	430	0.8	31	0.0018	Φ.004-.008
8	375	0.7	31	0.0019	Φ.004-.008
9	335	0.6	31	0.0019	Φ.004-.008
10	300	0.6	31	0.0020	Φ.004-.008
11	275	0.5	31	0.0019	Φ.004-.008
12	250	0.5	31	0.0019	Φ.004-.008
13	195	0.4	26	0.0020	Φ.004-.008
16	160	0.3	26	0.0020	Φ.004-.008

**Notes:** 1. Above cutting conditions are for drilling flat surface.

2. Adjust cutting conditions according to machine rigidity, work clamping and shape of machining part.

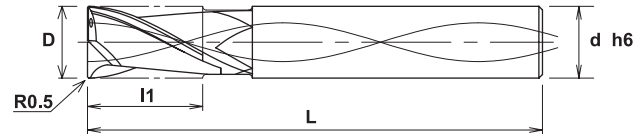
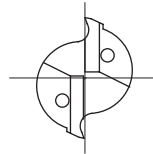
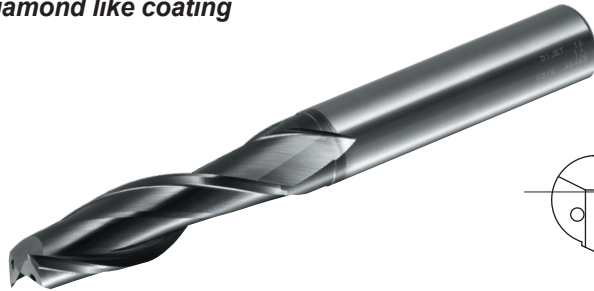


**METRIC**

# Helical Cutting Drill

## AL-OCHE Type

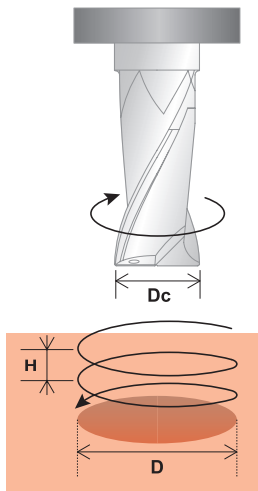
- 2 Flute with 30° Helix and coolant thru
- Diamond like coating



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-OCHE2040	•	4	16	60	4
AL-OCHE2060	•	6	22	74	6
AL-OCHE2080	•	8	31	90	8
AL-OCHE2100	•	10	37	105	10
AL-OCHE2120	•	12	43	113	12
AL-OCHE2160	•	16	55	130	16

### Recommended Cutting Data

#### Helical Milling

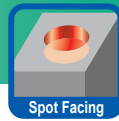


Work Material	Aluminum Alloy (A5052, A7075)			
Tool Dia. Dc (mm)	Hole Dia. D (mm)	Maximum Depth T (inch)	Spindle Speed n (rpm)	Feed Speed (ipm)
4	5 ~ 7	.590	16,000	37.8
6	7 ~ 11	.826	10,600	41.7
8	10 ~ 15	1.181	8,000	78.7
10	12 ~ 19	1.417	6,400	63.0
12	14 ~ 23	1.653	5,300	51.1
16	18 ~ 31	2.125	4,000	39.3

Work Material	Cast Aluminum Alloy (Up to 13% Si)			
Tool Dia. Dc (mm)	Hole Dia. D (mm)	Maximum Depth T (inch)	Spindle Speed n (rpm)	Feed Speed (ipm)
4	5 ~ 7	.590	14,400	33.8
6	7 ~ 11	.826	9,500	37.4
8	10 ~ 15	1.181	7,200	70.8
10	12 ~ 19	1.417	5,700	55.1
12	14 ~ 23	1.653	4,800	47.2
16	18 ~ 31	2.125	3,600	35.4

Tool Path Diameter Dk (mm)	Helical Interpolation Depth/Tool Path Rev. H (inch)
1	.102
2	.196
3	.251
4	.291
5	.322
6	.346
7	.370
8	.385
9	.401
10	.417
11	.433
12	.444
13	.452
14	.464
15	.472

- Notes:**
1. Tool path diameter: Dk = Hole diameter D - Tool diameter Dc.
  2. In case of blind hole, last revolution of H should be reduced to 0.8-2.0mm.
  3. In case of through hole, top of tool must come through by 1mm or more due to the tools corner radius of 0.5mm.
  4. Use internal coolant.
  5. Above data applies to solid work piece, when enlarging core hole ae should be 75% of Dc or less and recommend using flood coolant also.
  6. If machine or work piece lack rigidity or chatter occurs, reduce speed and feed with the same ratio to H.



# Helical Cutting Drill

## Recommended Cutting Data for AL-OCHE type

Work Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	
Type of Machining - Shoulder Cutting							
	Diameter						
	4	16,000	70.8	16,000	70.8	14,000	66.9
	6	10,000	70.8	10,000	70.8	9,500	66.9
	8	8,000	63.0	8,000	63.0	7,000	59.1
	10	6,000	51.1	6,000	51.1	5,700	47.2
	12	5,000	51.1	5,000	51.1	4,700	47.2
16	4,000	47.2	4,000	47.2	3,500	43.3	

Work Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	
Type of Machining - Slotting							
	Diameter						
	4	14,000	39.3	14,000	39.3	12,000	33.4
	6	9,500	39.3	9,500	39.3	8,500	33.4
	8	7,000	39.3	7,000	39.3	6,400	33.4
	10	5,700	39.3	5,700	39.3	5,000	33.4
	12	4,700	39.3	4,700	39.3	4,200	33.4
16	3,500	39.3	3,500	39.3	3,200	33.4	

## High Speed Cutting Data for AL-OCHE

Work Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	
Type of Machining - Shoulder Cutting							
	Diameter						
	4	32,000	149.6	32,000	149.6	28,000	129.9
	6	21,000	149.6	21,000	149.6	18,000	129.9
	8	16,000	125.9	16,000	125.9	14,000	129.9
	10	12,000	125.9	12,000	125.9	11,000	118.1
	12	10,000	125.9	10,000	125.9	9,000	106.3
16	8,000	110.2	8,000	110.2	7,000	96.4	

Work Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	
Type of Machining - Slotting							
	Diameter						
	4	28,000	74.8	28,000	74.8	24,000	63.0
	6	19,000	74.8	19,000	74.8	16,000	63.0
	8	14,000	74.8	14,000	74.8	12,000	63.0
	10	11,000	74.8	11,000	74.8	9,500	63.0
	12	9,500	74.8	9,500	74.8	8,000	63.0
16	7,000	70.8	7,000	70.8	6,000	63.0	

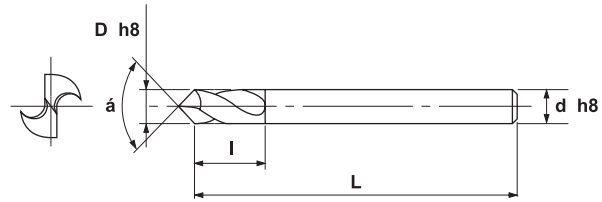
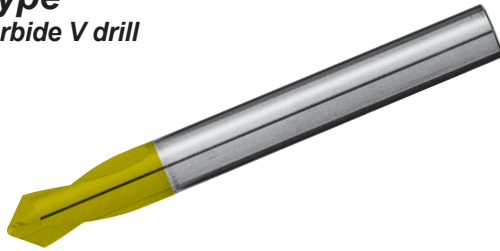
- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

**METRIC**

# V Point Drill

## VSD Type

- Solid carbide V drill



### VSD

CATALOG NUMBER	UNCOATED	COATED	DIMENSIONS				
	CR1	JC3521	$\acute{a}$	D	l	L	d
VSD-030-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	3	8	50	3
VSD-040-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	4	10	50	4
VSD-050-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	5	13	60	5
VSD-060-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	6	15	70	6
VSD-080-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	8	20	80	8
VSD-100-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	10	25	90	10
VSD-120-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	12	27	100	12
VSD-160-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	16	40	145	16
VSD-200-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	20	50	165	20
VSD-250-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	25	60	180	25
VSD-030-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	3	8	50	3
VSD-040-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	4	10	50	4
VSD-050-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	5	13	60	5
VSD-060-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	6	15	70	6
VSD-080-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	8	20	80	8
VSD-100-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	10	25	90	10
VSD-120-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	12	27	100	12
VSD-160-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	16	40	145	16
VSD-200-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	20	50	165	20
VSD-250-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	25	60	180	25

### VSDL

CATALOG NUMBER	UNCOATED	COATED	DIMENSIONS				
	CR1	JC3521	$\acute{a}$	D	l	L	d
VSDL-030-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	3	8	100	3
VSDL-040-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	4	10	100	4
VSDL-050-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	5	13	110	5
VSDL-060-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	6	15	120	6
VSDL-080-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	8	20	140	8
VSDL-100-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	10	25	160	10
VSDL-120-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	12	27	180	12
VSDL-160-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	16	40	230	16
VSDL-200-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	20	50	250	20
VSDL-250-90°	<input type="checkbox"/>	<input type="checkbox"/>	90°	25	60	280	25
VSDL-030-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	3	8	100	3
VSDL-040-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	4	10	100	4
VSDL-050-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	5	13	110	5
VSDL-060-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	6	15	120	6
VSDL-080-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	8	20	140	8
VSDL-100-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	10	25	160	10
VSDL-120-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	12	27	180	12
VSDL-160-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	16	40	230	16
VSDL-200-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	20	50	250	20
VSDL-250-120°	<input type="checkbox"/>	<input type="checkbox"/>	120°	25	60	280	25

• Stocked standard       Inquire regarding delivery



## V Point Drill

### Recommended Cutting Data for VSD and VSDL type

Diameter	Work Material					
	Cast Iron		Carbon Steel		Alloy Steel	
	Vc (sfm)	f (ipr)	Vc (sfm)	f (ipr)	Vc (sfm)	f (ipr)
3	160 ~ 230	.004" ~ .006"	130 ~ 200	.002" ~ .004"	130 ~ 200	.002" ~ .004"
4	160 ~ 230	.004" ~ .006"	130 ~ 200	.002" ~ .004"	130 ~ 200	.002" ~ .004"
5	160 ~ 230	.004" ~ .006"	130 ~ 200	.002" ~ .004"	130 ~ 200	.002" ~ .004"
6	200 ~ 260	.004" ~ .008"	160 ~ 230	.004" ~ .006"	160 ~ 230	.004" ~ .006"
8	200 ~ 260	.004" ~ .008"	160 ~ 230	.004" ~ .006"	160 ~ 230	.004" ~ .006"
10	200 ~ 260	.006" ~ .010"	160 ~ 230	.004" ~ .008"	160 ~ 230	.004" ~ .008"
12	230 ~ 300	.006" ~ .010"	160 ~ 230	.004" ~ .008"	160 ~ 230	.004" ~ .008"
16	230 ~ 300	.006" ~ .010"	200 ~ 260	.004" ~ .008"	200 ~ 260	.004" ~ .008"
20	230 ~ 300	.006" ~ .010"	200 ~ 260	.004" ~ .008"	200 ~ 260	.004" ~ .008"
25	230 ~ 300	.006" ~ .010"	200 ~ 260	.004" ~ .008"	200 ~ 260	.004" ~ .008"



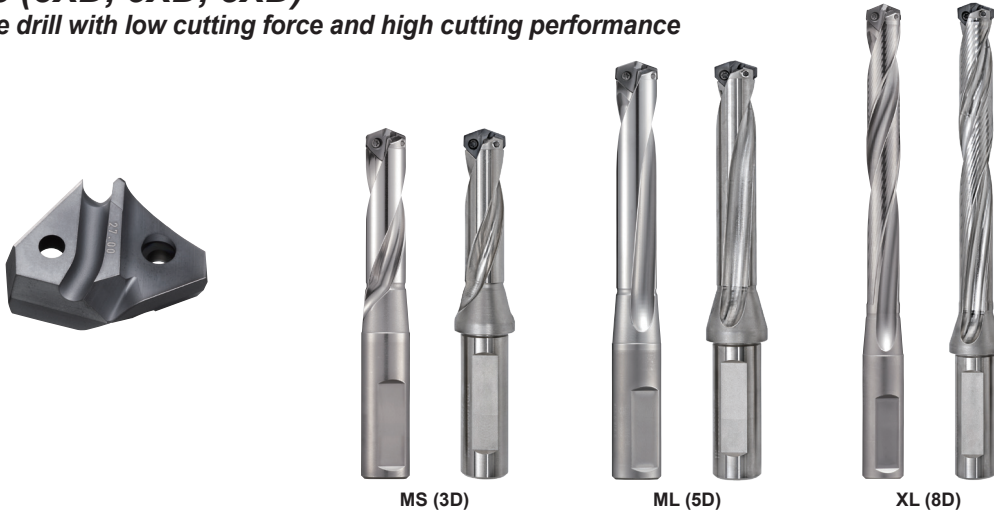
# Indexable EZ Drill

**METRIC**

**INCH**

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance



MS (3D)

ML (5D)

XL (8D)

DIAMETER RANGE		APPLICABLE INSERT	CATALOG NUMBER	STK	DIMENSIONS						Fig.
mm	inch				l	l2	ls	L	d	Df	
13.5	.5315	TEZ1350	TEZD1400S16-MS	•	51	65	48	113	16	-	2
thru		thru	TEZD1400S16F-MS	•						20	1
14.5	.5709	TEZ1450	TEZD1400S062-MS	•	2.01"	2.56"	1.89"	4.45"	.625"	.787"	1
14.6	.5748	TEZ1460	TEZD1500S20-MS	•	54	69	54	119	20	-	2
thru		thru	TEZD1500S20F-MS	•						24.9	1
15.5	.6102	TEZ1550	TEZD1500S075-MS	•	2.13"	2.72"	1.97"	4.68"	.750"	.980"	1
15.6	.6142	TEZ1560	TEZD1600S20-MS	•	58	74	50	124	20	-	2
thru		thru	TEZD1600S20F-MS	•						24.9	1
16.5	.6496	TEZ1650	TEZD1600S075-MS	•	2.28"	2.91"	1.97"	4.88"	.750"	.980"	1
16.6	.6535	TEZ1660	TEZD1700S20-MS	•	61	78	50	128	20	-	2
thru		thru	TEZD1700S20F-MS	•						24.9	1
17.5	.6890	TEZ1750	TEZD1700S075-MS	•	2.40"	3.07"	1.97"	5.04"	.750"	.980"	1
17.6	.6929	TEZ1760	TEZD1800S20-MS	•	65	83	50	133	20	-	2
thru		thru	TEZD1800S20F-MS	•						24.9	1
18.5	.7283	TEZ1850	TEZD1800S075-MS	•	2.56"	3.27"	1.97"	5.24"	.750"	.980"	1
18.6	.7323	TEZ1860	TEZD1900S25-MS	•	68	87	56	143	25	-	2
thru		thru	TEZD1900S25F-MS	•						32	1
19.5	.7677	TEZ1950	TEZD1900S100-MS	•	2.68"	3.43"	2.21"	5.63"	1.00"	1.26"	1
19.6	.7717	TEZ1960	TEZD2000S25-MS	•	72	92	56	148	25	-	2
thru		thru	TEZD2000S25F-MS	•						32	1
20.5	.8071	TEZ2050	TEZD2000S100-MS	•	2.84"	3.62"	2.21"	5.83"	1.00"	1.26"	1



**METRIC**

**INCH**

# Indexable EZ Drill

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance

MS (3D) / ML (5D)

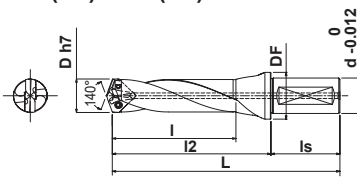


Fig. 1

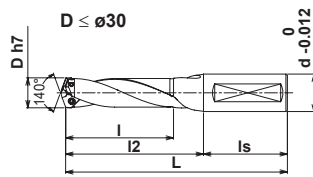


Fig. 2

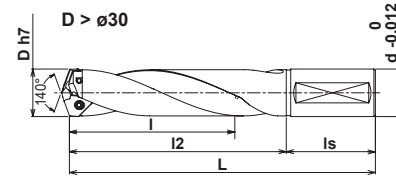


Fig. 3

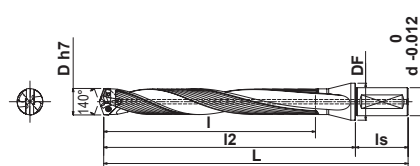


Fig. 4

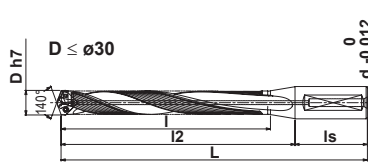


Fig. 5

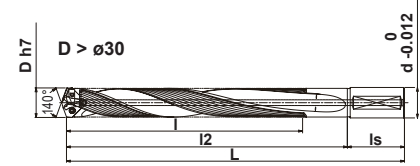


Fig. 6

BODY ML (5D)								Fig.	BODY XL (8D)								Fig.	PARTS SCREW WRENCH
PART NUMBER	STK	DIMENSIONS							PART NUMBER	STK	DIMENSIONS							
		l	l2	ls	L	d	Df				l	l2	ls	L	d	Df		
TEZD1400S16-ML	•	80	97	48	145	16	-	2	TEZD1400S16-XL	•	119	133	48	181	16	-	5	DSW-2045H T-07
TEZD1400S16F-ML	•						20	1	TEZD1400S16F-XL	•					20	4		
TEZD1400S062-ML	•	3.15"	3.82"	1.89"	5.71"	.625"	.787"	1	TEZD1400S062-XL	•	4.68"	5.24"	1.89"	7.13"	.625"	.787"	4	
TEZD1500S20-ML	•	85	103	50	153	20	-	2	TEZD1500S20-XL	•	128	143	50	193	20	-	5	DSW-2045H T-07
TEZD1500S20F-ML	•						24.9	1	TEZD1500S20F-XL	•					24.9	4		
TEZD1500S075-ML	•	3.35"	4.06"	1.97"	6.02"	.750"	.980"	1	TEZD1500S075-XL	•	5.04"	5.63"	1.97"	7.60"	.750"	.980"	4	
TEZD1600S20-ML	•	91	110	50	160	20	-	2	TEZD1600S20-XL	•	136	152	50	202	20	-	5	TSW-2556H T-08
TEZD1600S20F-ML	•						24.9	1	TEZD1600S20F-XL	•					24.9	4		
TEZD1600S075-ML	•	3.58"	4.33"	1.97"	6.30"	.750"	.980"	1	TEZD1600S075-XL	•	5.36"	5.99"	1.97"	7.95"	.750"	.980"	4	
TEZD1700S20-ML	•	96	117	50	167	20	-	2	TEZD1700S20-XL	•	145	162	50	212	20	-	5	TSW-2556H T-08
TEZD1700S20F-ML	•						24.9	1	TEZD1700S20F-XL	•					24.9	4		
TEZD1700S075-ML	•	3.78"	4.61"	1.97"	6.57"	.750"	.980"	1	TEZD1700S075-XL	•	5.71"	6.38"	1.97"	8.35"	.750"	.980"	4	
TEZD1800S20-ML	•	102	103	50	173	20	-	2	TEZD1800S20-XL	•	153	171	50	221	20	-	5	TSW-2556H T-08
TEZD1800S20F-ML	•						24.9	1	TEZD1800S20F-XL	•					24.9	4		
TEZD1800S075-ML	•	4.02"	4.84"	1.97"	6.81"	.750"	.980"	1	TEZD1800S075-XL	•	6.02"	6.73"	1.97"	8.70"	.750"	.980"	4	
TEZD1900S25-ML	•	107	130	56	186	25	-	2	TEZD1900S25-XL	•	162	181	56	237	25	-	5	TSW-2567H T-08
TEZD1900S25F-ML	•						32	1	TEZD1900S25F-XL	•					32	4		
TEZD1900S100-ML	•	4.21"	5.12"	2.21"	7.32"	1.00"	1.26"	1	TEZD1900S100-XL	•	6.38"	7.13"	2.21"	9.33"	1.00"	1.26"	4	
TEZD2000S25-ML	•	113	137	56	193	25	-	2	TEZD2000S25-XL	•	170	190	56	246	25	-	5	TSW-2567H T-08
TEZD2000S25F-ML	•						32	1	TEZD2000S25F-XL	•					32	4		
TEZD2000S100-ML	•	4.45"	5.39"	2.21"	7.60"	1.00"	1.26"	1	TEZD2000S100-XL	•	6.69"	7.48"	2.21"	9.69"	1.00"	1.26"	4	

Note: All holders supplied without inserts or wrench.

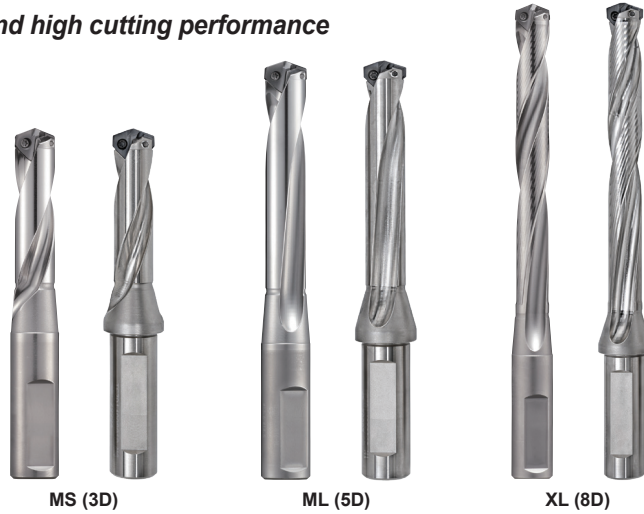
# Indexable EZ Drill

METRIC

INCH

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance



MS (3D)

ML (5D)

XL (8D)

DIAMETER RANGE		APPLICABLE INSERT	CATALOG NUMBER	STK	DIMENSIONS						Fig.
mm	inch				l	l2	ls	L	d	Df	
20.6	.8110	TEZ2060	TEZD2100S25-MS	•	75	96	56	152	25	-	2
thru		thru	TEZD2100S25F-MS	•						32	1
21.5	.8465	TEZ2150	TEZD2100S100-MS	•	2.95"	3.78"	2.21"	5.99"	1.00"	1.26"	1
21.6	.8504	TEZ2160	TEZD2200S25-MS	•	79	101	56	157	25	-	2
thru		thru	TEZD2200S25F-MS	•						32	1
22.5	.8858	TEZ2250	TEZD2200S100-MS	•	3.11"	3.98"	2.21"	6.18"	1.00"	1.26"	1
22.6	.8898	TEZ2260	TEZD2300S25-MS	•	82	105	56	161	25	-	2
thru		thru	TEZD2300S25F-MS	•						32	1
23.5	.9252	TEZ2350	TEZD2300S100-MS	•	2.68"	3.43"	2.21"	5.63"	1.00"	1.26"	1
23.6	.9291	TEZ2360	TEZD2400S32-MS	•	86	110	60	170	32	-	2
thru		thru	TEZD2400S32F-MS	•						41.9	1
24.5	.9646	TEZ2450	TEZD2400S125-MS	•	3.39"	4.33"	2.36"	6.69"	1.25"	1.65"	1
24.6	.9685	TEZ2460	TEZD2500S32-MS	•	89	114	60	174	32	-	2
thru		thru	TEZD2500S32F-MS	•						41.9	1
25.5	1.0039	TEZ2550	TEZD2500S125-MS	•	3.50"	4.49"	2.36"	6.85"	1.25"	1.65"	1
25.6	1.0079	TEZ2560	TEZD2600S32-MS	•	93	119	60	179	32	-	2
thru		thru	TEZD2600S32F-MS	•						41.9	1
26.5	1.0433	TEZ2650	TEZD2600S125-MS	•	3.66"	4.68"	2.36"	7.05"	1.25"	1.65"	1
26.6	1.0472	TEZ2660	TEZD2700S32-MS	•	96	123	60	183	32	-	2
thru		thru	TEZD2700S32F-MS	•						41.9	1
27.5	1.0827	TEZ2750	TEZD2700S125-MS	•	3.78"	4.84"	2.36"	7.21"	1.25"	1.65"	1



**METRIC**

**INCH**

# Indexable EZ Drill

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance

MS (3D) / ML (5D)

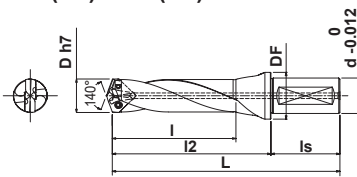


Fig. 1

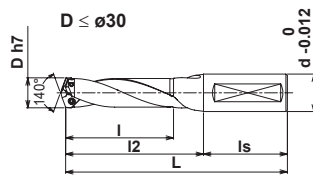


Fig. 2

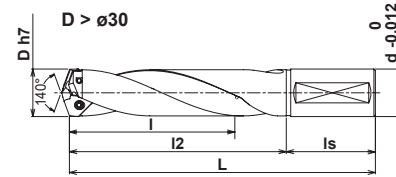


Fig. 3

XL (8D)

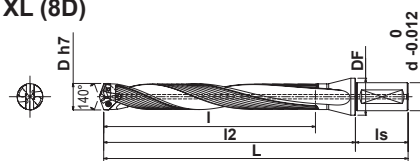


Fig. 4

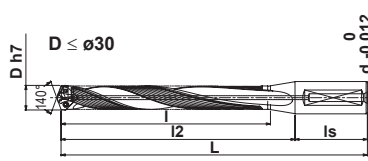


Fig. 5

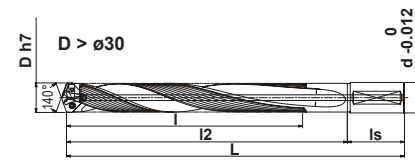


Fig. 6

BODY ML (5D)								Fig.	BODY XL (8D)								Fig.	PARTS SCREW WRENCH
PART NUMBER	STK	DIMENSIONS							PART NUMBER	STK	DIMENSIONS							
		I	I2	Is	L	d	Df			I	I2	Is	L	d	Df			
TEZD2100S25-ML	•	118	143	56	199	25	-	2	TEZD2100S25-XL	•	179	200	56	256	25	-	5	TSW-2567H T-08
TEZD2100S25F-ML	•						32	1	TEZD2100S25F-XL	•					32	4		
TEZD2100S100-ML	•	4.57"	5.63"	2.21"	7.84"	.00"	1.26"	1	TEZD2100S100-XL	•	7.05"	7.87"	2.21"	10.08"	1.00"	1.26"	4	
TEZD2200S25-ML	•	124	150	56	206	25	-	2	TEZD2200S25-XL	•	187	209	56	265	25	-	5	DSW-307H T-10
TEZD2200S25F-ML	•						32	1	TEZD2200S25F-XL	•					32	4		
TEZD2200S100-ML	•	4.88"	5.91"	2.21"	8.81"	1.00"	1.26"	1	TEZD2200S100-XL	•	7.36"	8.23"	2.21"	10.43"	1.00"	1.26"	4	
TEZD2300S25-ML	•	129	157	56	213	25	-	2	TEZD2300S25-XL	•	196	219	56	275	25	-	5	DSW-307H T-10
TEZD2300S25F-ML	•						32	1	TEZD2300S25F-XL	•					32	4		
TEZD2300S100-ML	•	5.08"	6.18"	2.21"	8.39"	1.00"	1.26"	1	TEZD2300S100-XL	•	7.71"	8.62"	2.21"	10.83"	1.00"	1.26"	4	
TEZD2400S32-ML	•	135	164	60	224	32	-	2	TEZD2400S32-XL	•	204	228	60	288	32	-	5	DSW-307H T-10
TEZD2400S32F-ML	•						41.9	1	TEZD2400S32F-XL	•					41.9	4		
TEZD2400S125-ML	•	5.32"	6.46"	2.36"	8.82"	1.25"	1.65"	1	TEZD2400S125-XL	•	8.03"	8.98"	2.36"	11.34"	1.25"	1.65"	4	
TEZD2500S32-ML	•	140	170	60	230	32	-	2	TEZD2500S32-XL	•	213	238	60	298	32	-	5	DSW-309H T-10
TEZD2500S32F-ML	•						41.9	1	TEZD2500S32F-XL	•					41.9	4		
TEZD2500S125-ML	•	5.51"	6.69"	2.36"	9.06"	1.25"	1.65"	1	TEZD2500S125-XL	•	8.39"	9.37"	2.36"	11.74"	1.25"	1.65"	4	
TEZD2600S32-ML	•	146	177	60	237	32	-	2	TEZD2600S32-XL	•	221	247	60	307	32	-	5	DSW-309H T-10
TEZD2600S32F-ML	•						41.9	1	TEZD2600S32F-XL	•					49	4		
TEZD2600S125-ML	•	5.75"	6.97"	2.36"	9.33"	1.25"	1.65"	1	TEZD2600S125-XL	•	8.70"	9.73"	2.36"	12.09"	1.25"	1.65"	4	
TEZD2700S25-ML	•	151	184	60	244	32	-	2	TEZD2700S32-XL	•	230	257	60	317	32	-	5	DSW-309H T-10
TEZD2700S25F-ML	•						41.9	1	TEZD2700S32F-XL	•					41.9	4		
TEZD2700S125-ML	•	5.95"	7.25"	2.36"	9.61"	1.25"	1.65"	1	TEZD2700S125-XL	•	9.06"	10.12"	2.36"	12.43"	1.25"	1.65"	4	

Note: All holders supplied without inserts or wrench.

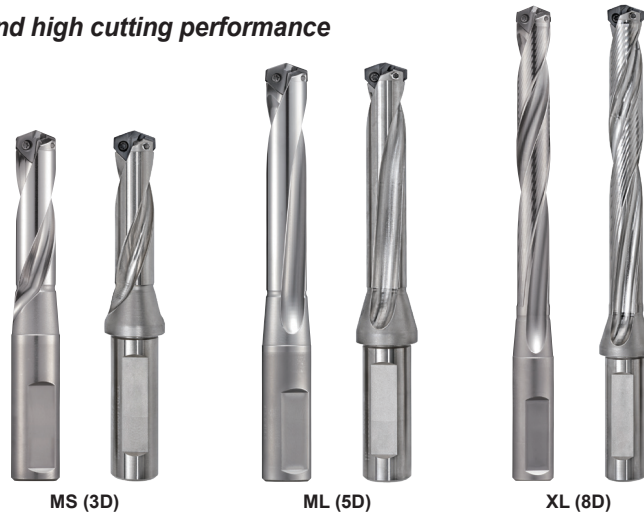
# Indexable EZ Drill

METRIC

INCH

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance



MS (3D)

ML (5D)

XL (8D)

DIAMETER RANGE		APPLICABLE INSERT	CATALOG NUMBER	STK	DIMENSIONS						Fig.
mm	inch				l	l2	ls	L	d	Df	
27.6	1.0866	TEZ2760	TEZD2800S32-MS	•	100	128	60	118	32	-	2
thru		thru	TEZD2800S32F-MS	•						41.9	1
28.5	1.1220	TEZ2850	TEZD2800S125-MS	•	3.94"	5.04"	2.36"	7.40"	1.25"	1.65"	1
28.6	1.1260	TEZ2860	TEZD2900S32-MS	•	103	132	60	192	32	-	2
thru		thru	TEZD2900S32F-MS	•						41.9	1
29.5	1.1614	TEZ2950	TEZD2900S125-MS	•	4.06"	5.20"	2.36"	7.56"	1.25"	1.65"	1
29.6	1.1654	TEZ2960	TEZD3000S32-MS	•	107	137	60	197	32	-	2
thru		thru	TEZD3000S32F-MS	•						41.9	1
30.5	1.2008	TEZ3050	TEZD3000S125-MS	•	4.21"	5.39"	2.36"	7.76"	1.25"	1.65"	1
30.6	1.2047	TEZ3060	TEZD3100S32-MS	•	110	141	60	201	32	-	3
thru		thru	TEZD3100S32F-MS	•						41.9	1
31.5	1.2402	TEZ3150	TEZD3100S125-MS	•	4.33"	5.55"	2.36"	7.91"	1.25"	1.65"	1
31.6	1.2441	TEZ3160	TEZD3200S32-MS	•	114	146	60	206	32	-	3
thru		thru	TEZD3200S32F-MS	•						41.9	1
32.5	1.2795	TEZ3250	TEZD3200S125-MS	•	4.89"	5.75"	2.36"	8.11"	1.25"	1.65"	1



**METRIC**

**INCH**

# Indexable EZ Drill

## TEZD Type (3XD, 5XD, 8XD)

- Indexable style drill with low cutting force and high cutting performance

MS (3D) / ML (5D)

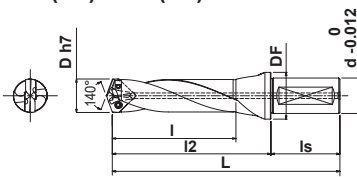


Fig. 1

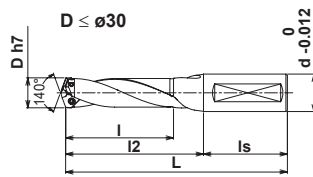


Fig. 2

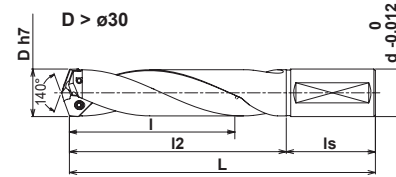


Fig. 3

XL (8D)

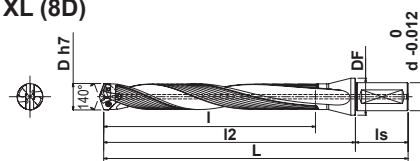


Fig. 4

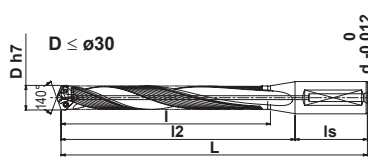


Fig. 5

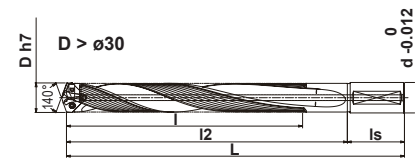


Fig. 6

BODY ML (5D)								Fig.	BODY XL (8D)								Fig.	PARTS SCREW WRENCH
PART NUMBER	STK	DIMENSIONS							PART NUMBER	STK	DIMENSIONS							
		l	l2	Is	L	d	Df				l	l2	Is	L	d	Df		
TEZD2800S32-ML	•	157	190	60	250	32	-	2	TEZD2800S32-XL	•	238	266	60	326	32	-	5	TSW-3510H T-15
TEZD2800S32F-ML	•						41.9	1	TEZD2800S32F-XL	•						41.9	4	
TEZD2800S125-ML	•	6.15"	7.48"	2.36"	9.84"	1.25"	1.65"	1	TEZD2800S125-XL	•	9.37"	10.43"	2.36"	12.84"	1.25"	1.65"	4	TSW-3510H T-15
TEZD2900S32-ML	•	162	197	60	257	32	-	2	TEZD2900S32-XL	•	247	276	60	336	32	-	5	
TEZD2900S32F-ML	•						41.9	1	TEZD2900S32F-XL	•						41.9	4	
TEZD2900S125-ML	•	6.38"	7.76"	2.36"	11.12"	1.25"	1.65"	1	TEZD2900S125-XL	•	9.73"	10.87"	2.36"	13.23"	1.25"	1.65"	4	TSW-3510H T-15
TEZD3000S32-ML	•	168	204	60	264	32	-	2	TEZD3000S32-XL	•	255	285	60	345	32	-	5	
TEZD3000S32F-ML	•						41.9	1	TEZD3000S32F-XL	•						41.9	4	
TEZD3000S125-ML	•	6.62"	8.05"	2.36"	10.40"	1.25"	1.65"	1	TEZD3000S125-XL	•	10.04"	11.22"	2.36"	13.58"	1.25"	1.65"	4	TSW-3512H T-15
TEZD3100S32-ML	•	173	210	60	270	32	-	3	TEZD3100S32-XL	•	248	295	60	355	32	-	6	
TEZD3100S32F-ML	•						41.9	1	TEZD3100S32F-XL	•						41.9	4	
TEZD3100S125-ML	•	6.81"	8.27"	2.36"	10.63"	1.25"	1.65"	1	TEZD3100S125-XL	•	9.77"	11.62"	2.36"	13.98"	1.25"	1.65"	4	TSW-3512H T-15
TEZD3200S32-ML	•	179	217	60	277	32	-	3	TEZD3200S32-XL	•	256	304	60	364	32	-	6	
TEZD3200S32F-ML	•						41.9	1	TEZD3200S32F-XL	•						41.9	4	
TEZD3200S125-ML	•	7.05"	8.54"	2.36"	10.91"	1.25"	1.65"	1	TEZD3200S125-XL	•	10.08"	11.97"	2.36"	14.33"	1.25"	1.65"	4	TSW-3512H T-15

**Note:** All holders supplied without inserts or wrench.

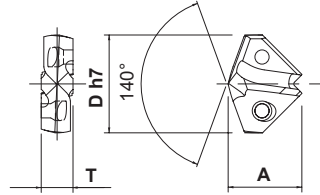
# Indexable EZ Drill

METRIC

INCH

## TEZ Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ1350	JC8050	•	13.5	.5315"	11.4	4.5	TEZD1400...
TEZ1360	JC8050	•	13.6	.5354"			
TEZ1370	JC8050	•	13.7	.5394"			
TEZ1380	JC8050	•	13.8	.5433"			
TEZ1390	JC8050	•	13.9	.5472"			
TEZ1400	JC8050	•	14.0	.5512"			
TEZ1410	JC8050	•	14.1	.5551"			
TEZ1420	JC8050	•	14.2	.5591"			
TEZ1430	JC8050	•	14.3	.5630"			
TEZ1440	JC8050	•	14.4	.5669"			
TEZ1450	JC8050	•	14.5	.5709"	11.5	4.8	TEZD1500...
TEZ1460	JC8050	•	14.6	.5748"			
TEZ1470	JC8050	•	14.7	.5787"			
TEZ1480	JC8050	•	14.8	.5827"			
TEZ1490	JC8050	•	14.9	.5866"			
TEZ1500	JC8050	•	15.0	.5906"			
TEZ1510	JC8050	•	15.1	.5945"			
TEZ1520	JC8050	•	15.2	.5984"			
TEZ1530	JC8050	•	15.3	.6024"			
TEZ1540	JC8050	•	15.4	.6063"			
TEZ1550	JC8050	•	15.5	.6102"	12.5	5.0	TEZD1600...
TEZ1560	JC8050	•	15.6	.6142"			
TEZ1570	JC8050	•	15.7	.6181"			
TEZ1580	JC8050	•	15.8	.6220"			
ITEZ0625	JC8050	•	15.87	.6250"			
TEZ1590	JC8050	•	15.9	.6260"			
TEZ1600	JC8050	•	16.0	.6299"			
TEZ1610	JC8050	•	16.1	.6339"			
TEZ1620	JC8050	•	16.2	.6378"			
TEZ1630	JC8050	•	16.3	.6417"			
TEZ1640	JC8050	•	16.4	.6457"			
TEZ1650	JC8050	•	16.5	.6496"	13.2	5.5	TEZD1700...
TEZ1660	JC8050	•	16.6	.6535"			
TEZ1670	JC8050	•	16.7	.6575"			
TEZ1680	JC8050	•	16.8	.6614"			
TEZ1690	JC8050	•	16.9	.6654"			
TEZ1700	JC8050	•	17.0	.6693"			



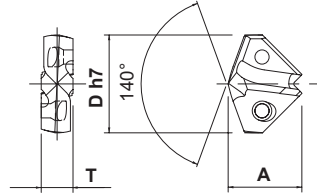
**METRIC**

**INCH**

# Indexable EZ Drill

## TEZ Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ1710	JC8050	•	17.1	.6732"	13.2	5.5	TEZD1700...
TEZ1720	JC8050	•	17.2	.6772"			
TEZ1730	JC8050	•	17.3	.6811"			
TEZ1740	JC8050	•	17.4	.6850"			
TEZ1750	JC8050	•	17.5	.6890"			
TEZ1760	JC8050	•	17.6	.6929"	13.5	5.8	TEZD1800...
TEZ1770	JC8050	•	17.7	.6969"			
TEZ1780	JC8050	•	17.8	.7008"			
TEZ1790	JC8050	•	17.9	.7047"			
TEZ1800	JC8050	•	18.0	.7087"			
TEZ1810	JC8050	•	18.1	.7126"			
TEZ1820	JC8050	•	18.2	.7165"			
TEZ1830	JC8050	•	18.3	.7205"			
TEZ1840	JC8050	•	18.4	.7244"			
TEZ1850	JC8050	•	18.5	.7283"			
TEZ1860	JC8050	•	18.6	.7323"	14.2	6.0	TEZD1900...
TEZ1870	JC8050	•	18.7	.7362"			
TEZ1880	JC8050	•	18.8	.7402"			
TEZ1890	JC8050	•	18.9	.7441"			
TEZ1900	JC8050	•	19.0	.7480"			
ITEZ0750	JC8050	•	19.05	.7500"			
TEZ1910	JC8050	•	19.1	.7520"			
TEZ1920	JC8050	•	19.2	.7559"			
TEZ1930	JC8050	•	19.3	.7598"			
TEZ1940	JC8050	•	19.4	.7639"			
TEZ1950	JC8050	•	19.5	.7677"	15.1	6.5	TEZD2000...
TEZ1960	JC8050	•	19.6	.7717"			
TEZ1970	JC8050	•	19.7	.7756"			
TEZ1980	JC8050	•	19.8	.7795"			
TEZ1990	JC8050	•	19.9	.7835"			
TEZ2000	JC8050	•	20.0	.7874"			
TEZ2010	JC8050	•	20.1	.7913"			
TEZ2020	JC8050	•	20.2	.7953"			
TEZ2030	JC8050	•	20.3	.7992"			
TEZ2040	JC8050	•	20.4	.8031"			
TEZ2050	JC8050	•	20.5	.8071"			

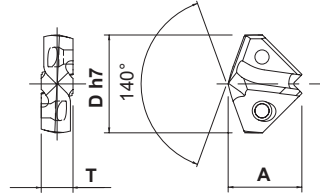
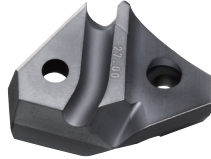
# Indexable EZ Drill

METRIC

INCH

## TEZ Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ2060	JC8050	•	20.6	.8110"	15.7	6.7	TEZD2100...
TEZ2070	JC8050	•	20.7	.8150"			
TEZ2080	JC8050	•	20.8	.8189"			
TEZ2090	JC8050	•	20.9	.8229"			
TEZ2100	JC8050	•	21.0	.8268"			
TEZ2110	JC8050	•	21.1	.8307"			
TEZ2120	JC8050	•	21.2	.8346"			
TEZ2130	JC8050	•	21.3	.8386"			
TEZ2140	JC8050	•	21.4	.8425"			
TEZ2150	JC8050	•	21.5	.8465"			
TEZ2160	JC8050	•	21.6	.8504"	16.6	7.5	TEZD2200...
TEZ2170	JC8050	•	21.7	.8543"			
TEZ2180	JC8050	•	21.8	.8583"			
TEZ2190	JC8050	•	21.9	.8622"			
TEZ2200	JC8050	•	22.0	.8661"			
TEZ2210	JC8050	•	22.1	.8701"			
TEZ2220	JC8050	•	22.2	.8740"			
TEZ2230	JC8050	•	22.3	.8780"			
TEZ2240	JC8050	•	22.4	.8819"			
TEZ2250	JC8050	•	22.5	.8858"			
TEZ2260	JC8050	•	22.6	.8898"	17.4	7.5	TEZD2300...
TEZ2270	JC8050	•	22.7	.8937"			
TEZ2280	JC8050	•	22.8	.8976"			
TEZ2290	JC8050	•	22.9	.9016"			
TEZ2300	JC8050	•	23.0	.9055"			
TEZ2310	JC8050	•	23.1	.9094"			
TEZ2320	JC8050	•	23.2	.9134"			
TEZ2330	JC8050	•	23.3	.9173"			
TEZ2340	JC8050	•	23.4	.9213"			
TEZ2350	JC8050	•	23.5	.9252"			
TEZ2360	JC8050	•	23.6	.9291"	18.2	8.0	TEZD2400...
TEZ2370	JC8050	•	23.7	.9331"			
TEZ2380	JC8050	•	23.8	.9370"			
TEZ2390	JC8050	•	23.9	.9409"			
TEZ2400	JC8050	•	24.0	.9449"			
TEZ2410	JC8050	•	24.1	.9488"			



Drilling

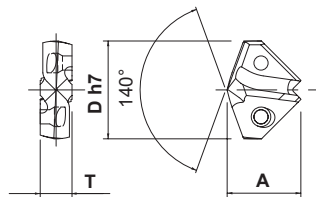
**METRIC**

**INCH**

# Indexable EZ Drill

## TEZdsd Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ2420	JC8050	•	24.2	.9528"	18.2	8.0	TEZD2400...
TEZ2430	JC8050	•	24.3	.9567"			
TEZ2440	JC8050	•	24.4	.9606"			
TEZ2450	JC8050	•	24.5	.9646"			
TEZ2460	JC8050	•	24.6	.9685"	19.1	8.0	TEZD2500...
TEZ2470	JC8050	•	24.7	.9724"			
TEZ2480	JC8050	•	24.8	.9764"			
TEZ2490	JC8050	•	24.9	.9803"			
TEZ2500	JC8050	•	25.0	.9843"			
TEZ2510	JC8050	•	25.1	.9882"			
TEZ2520	JC8050	•	25.2	.9921"			
TEZ2530	JC8050	•	25.3	.9961"			
TEZ2540	JC8050	•	25.4	1.0000"			
ITEZ1000	JC8050	•	25.4	1.0000"			
TEZ2550	JC8050	•	25.5	1.0039"			
TEZ2560	JC8050	•	25.6	1.0079"			
TEZ2570	JC8050	•	25.7	1.0118"			
TEZ2580	JC8050	•	25.8	1.0157"			
TEZ2590	JC8050	•	25.9	1.0197"			
TEZ2600	JC8050	•	26.0	1.0236"			
TEZ2610	JC8050	•	26.1	1.0276"			
TEZ2620	JC8050	•	26.2	1.0315"			
TEZ2630	JC8050	•	26.3	1.0354"			
TEZ2640	JC8050	•	26.4	1.0394"			
TEZ2650	JC8050	•	26.5	1.0433"			
TEZ2660	JC8050	•	26.6	1.0472"	20.4	8.5	TEZD2700...
TEZ2670	JC8050	•	26.7	1.0512"			
TEZ2680	JC8050	•	26.8	1.0551"			
TEZ2690	JC8050	•	26.9	1.0591"			
TEZ2700	JC8050	•	27.0	1.0630"			
TEZ2710	JC8050	•	27.1	1.0669"			
TEZ2720	JC8050	•	27.2	1.0709"			
TEZ2730	JC8050	•	27.3	1.0748"			
TEZ2740	JC8050	•	27.4	1.0787"			
TEZ2750	JC8050	•	27.5	1.0827"			

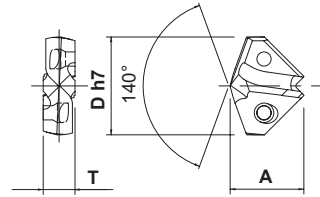
# Indexable EZ Drill

METRIC

INCH

## TEZ Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ2760	JC8050	•	27.6	1.0866"	21.2	9.0	TEZD2800...
TEZ2770	JC8050	•	27.7	1.0906"			
TEZ2780	JC8050	•	27.8	1.0945"			
TEZ2790	JC8050	•	27.9	1.0984"			
TEZ2800	JC8050	•	28.0	1.1024"			
TEZ2810	JC8050	•	28.1	1.1063"			
TEZ2820	JC8050	•	28.2	1.1102"			
TEZ2830	JC8050	•	28.3	1.1142"			
TEZ2840	JC8050	•	28.4	1.1181"			
TEZ2850	JC8050	•	28.5	1.1220"			
TEZ2860	JC8050	•	28.6	1.1260"	22.1	9.0	TEZD2900...
TEZ2870	JC8050	•	28.7	1.1229"			
TEZ2880	JC8050	•	28.8	1.1339"			
TEZ2890	JC8050	•	28.9	1.1378"			
TEZ2900	JC8050	•	29.0	1.1417"			
TEZ2910	JC8050	•	29.1	1.1457"			
TEZ2920	JC8050	•	29.2	1.1496"			
TEZ2930	JC8050	•	29.3	1.1535"			
TEZ2940	JC8050	•	29.4	1.1575"			
TEZ2950	JC8050	•	29.5	1.1614"			
TEZ2960	JC8050	•	29.6	1.1654"	22.5	9.5	TEZD3000...
TEZ2970	JC8050	•	29.7	1.1693"			
TEZ2980	JC8050	•	29.8	1.1732"			
TEZ2990	JC8050	•	29.9	1.1772"			
TEZ3000	JC8050	•	30.0	1.1811"			
TEZ3010	JC8050	•	30.1	1.1850"			
TEZ3020	JC8050	•	30.2	1.1890"			
TEZ3030	JC8050	•	30.3	1.1929"			
TEZ3040	JC8050	•	30.4	1.1969"			
TEZ3050	JC8050	•	30.5	1.2008"			
TEZ3060	JC8050	•	30.6	1.2047"	23.4	10.0	TEZD3100...
TEZ3070	JC8050	•	30.7	1.2087"			
TEZ3080	JC8050	•	30.8	1.2126"			
TEZ3090	JC8050	•	30.9	1.2165"			
TEZ3100	JC8050	•	31.0	1.2205"			
TEZ3110	JC8050	•	31.1	1.2244"			



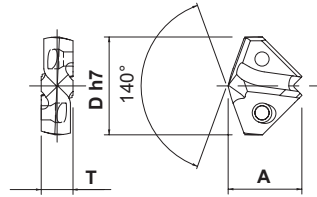
**METRIC**

**INCH**

# Indexable EZ Drill

## TEZ Type

- Indexable EZ drill insert for general purpose
- Suitable for all types of materials



CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ3120	JC8050	•	31.2	1.2284"	23.4	10.0	TEZD3100...
TEZ3130	JC8050	•	31.3	1.2323"			
TEZ3140	JC8050	•	31.4	1.2362"			
TEZ3150	JC8050	•	31.5	1.2402"			
TEZ3160	JC8050	•	31.6	1.2411"	24.3	10.0	TEZD3200...
TEZ3170	JC8050	•	31.7	1.2480"			
TEZ3180	JC8050	•	31.8	1.2520"			
TEZ3190	JC8050	•	31.9	1.2559"			
TEZ3200	JC8050	•	32.0	1.2598"			
TEZ3210	JC8050	•	32.1	1.2638"			
TEZ3220	JC8050	•	32.2	1.2677"			
TEZ3230	JC8050	•	32.3	1.2717"			
TEZ3240	JC8050	•	32.4	1.2756"			
TEZ3250	JC8050	•	32.5	1.2795"			

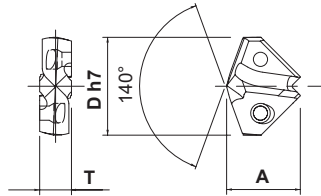
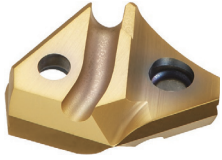
# Indexable EZ Drill

**METRIC**

**INCH**

## TEZ-S Type

- Indexable EZ drill insert for stainless & titanium



### Features:

- First choice for stainless steels & titanium alloys
- Small margin with large k-land improves machined surface finish & tool life by reducing cutting heat
- Sharp tip shape & wide thinning pocket gives stable drilling with improved centripetal & chip evacuation
- Carbide grade has long tool life with excellent heat crack, chip & oxidation resistance

CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ1350S	JC7515	•	13.5	.5315"	11.4	4.5	TEZD1400...
TEZ1360S	JC7515	•	13.6	.5354"			
TEZ1370S	JC7515	•	13.7	.5394"			
TEZ1380S	JC7515	•	13.8	.5433"			
TEZ1390S	JC7515	•	13.9	.5472"			
TEZ1400S	JC7515	•	14.0	.5512"			
TEZ1410S	JC7515	•	14.1	.5551"			
TEZ1420S	JC7515	•	14.2	.5591"			
TEZ1430S	JC7515	•	14.3	.5630"			
TEZ1440S	JC7515	•	14.4	.5669"			
TEZ1450S	JC7515	•	14.5	.5709"	11.5	4.8	TEZD1500...
TEZ1460S	JC7515	•	14.6	.5748"			
TEZ1470S	JC7515	•	14.7	.5787"			
TEZ1480S	JC7515	•	14.8	.5827"			
TEZ1490S	JC7515	•	14.9	.5866"			
TEZ1500S	JC7515	•	15.0	.5906"			
TEZ1510S	JC7515	•	15.1	.5945"			
TEZ1520S	JC7515	•	15.2	.5984"			
TEZ1530S	JC7515	•	15.3	.6024"			
TEZ1540S	JC7515	•	15.4	.6063"			
TEZ1550S	JC7515	•	15.5	.6102"	12.4	5.0	TEZD1600...
TEZ1560S	JC7515	•	15.6	.6142"			
TEZ1570S	JC7515	•	15.7	.6181"			
TEZ1580S	JC7515	•	15.8	.6220"			
TEZ1590S	JC7515	•	15.9	.6260"			
TEZ1600S	JC7515	•	16.0	.6299"			
TEZ1610S	JC7515	•	16.1	.6339"			
TEZ1620S	JC7515	•	16.2	.6378"			
TEZ1630S	JC7515	•	16.3	.6417"			
TEZ1640S	JC7515	•	16.4	.6457"			
TEZ1650S	JC7515	•	16.5	.6496"	13.2	5.5	TEZD1700...
TEZ1660S	JC7515	•	16.6	.6535"			
TEZ1670S	JC7515	•	16.7	.6575"			
TEZ1680S	JC7515	•	16.8	.6614"			
TEZ1690S	JC7515	•	16.9	.6654"			



Drilling

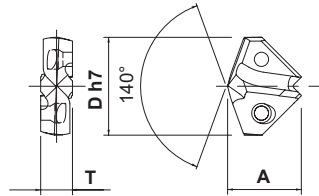
**METRIC**

**INCH**

# Indexable EZ Drill

## TEZ-S Type

- Indexable EZ drill insert for stainless & titanium



### Features:

- First choice for stainless steels & titanium alloys
- Small margin with large k-land improves machined surface finish & tool life by reducing cutting heat
- Sharp tip shape & wide thinning pocket gives stable drilling with improved centripetal & chip evacuation
- Carbide grade has long tool life with excellent heat crack, chip & oxidation resistance

CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ1700S	JC7515	•	17.0	.6693"	13.2	4.5	TEZD1700...
TEZ1710S	JC7515	•	17.1	.6732"			
TEZ1720S	JC7515	•	17.2	.6772"			
TEZ1730S	JC7515	•	17.3	.6811"			
TEZ1740S	JC7515	•	17.4	.6850"			
TEZ1750S	JC7515	•	17.5	.6890"			
TEZ1760S	JC7515	•	17.6	.6929"	13.5	5.8	TEZD1800...
TEZ1770S	JC7515	•	17.7	.6969"			
TEZ1780S	JC7515	•	17.8	.7008"			
TEZ1790S	JC7515	•	17.9	.7047"			
TEZ1800S	JC7515	•	18.0	.7087"			
TEZ1810S	JC7515	•	18.1	.7126"			
TEZ1820S	JC7515	•	18.2	.7165"			
TEZ1830S	JC7515	•	18.3	.7205"			
TEZ1840S	JC7515	•	18.4	.7244"			
TEZ1850S	JC7515	•	18.5	.7283"			
TEZ1860S	JC7515	•	18.6	.7323"	14.2	5.0	TEZD1900...
TEZ1870S	JC7515	•	18.7	.7362"			
TEZ1880S	JC7515	•	18.8	.7402"			
TEZ1890S	JC7515	•	18.9	.7441"			
TEZ1900S	JC7515	•	19.0	.7480"			
TEZ1910S	JC7515	•	19.1	.7520"			
TEZ1920S	JC7515	•	19.2	.7559"			
TEZ1930S	JC7515	•	19.3	.7598"			
TEZ1940S	JC7515	•	19.4	.7639"			
TEZ1950S	JC7515	•	19.5	.7677"			
TEZ1960S	JC7515	•	19.6	.7717"	15.1	6.5	TEZD2000...
TEZ1970S	JC7515	•	19.7	.7756"			
TEZ1980S	JC7515	•	19.8	.7795"			
TEZ1990S	JC7515	•	19.9	.7835"			
TEZ2000S	JC7515	•	20.0	.7874"			
TEZ2050S	JC7515	•	20.5	.7913"			

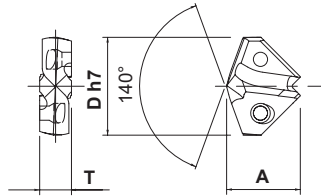
# Indexable EZ Drill

**METRIC**

**INCH**

## TEZ-H Type

- Indexable EZ drill insert for hard materials



### Features:

- First choice for hardened steel (under 52HRC) & mold steel
- Small margin with large k-land improves machined surface finish & tool life by reducing cutting heat
- Strong corner edge to prevent corner fractures
- Optimized geometry for hardened materials
- Carbide grade has excellent heat resistance for hard materials

CATALOG NUMBER	GRADE	STK	D		A	T	APPLICABLE HOLDERS
			MM	INCH			
TEZ1350H	DH115	•	13.5	.5315"	11.4	4.5	TEZD1400...
TEZ1400H	DH115	•	14.0	.5512"			
TEZ1410H	DH115	•	14.1	.5551"			
TEZ1420H	DH115	•	14.2	.5591"			
TEZ1430H	DH115	•	14.3	.5630"			
TEZ1450H	DH115	•	14.5	.5709"			
TEZ1500H	DH115	•	15.0	.5906"	11.5	4.8	TEZD1500...
TEZ1510H	DH115	•	15.1	.5945"			
TEZ1520H	DH115	•	15.2	.6984"			
TEZ1550H	DH115	•	15.5	.6102"			
TEZ1580H	DH115	•	15.8	.6220"	12.4	5.0	TEZD1600...
TEZ1600H	DH115	•	16.0	.6299"			
TEZ1610H	DH115	•	16.1	.6339"			
TEZ1620H	DH115	•	16.2	.6378"			
TEZ1630H	DH115	•	16.3	.6417"			
TEZ1650H	DH115	•	16.5	.6496"			
TEZ1700H	DH115	•	17.0	.6693"	13.2	5.5	TEZD1700...
TEZ1710H	DH115	•	17.1	.6732"			
TEZ1750H	DH115	•	17.5	.6890"			
TEZ1760H	DH115	•	17.6	.6929"	13.5	5.8	TEZD1800...
TEZ1770H	DH115	•	17.7	.6969"			
TEZ1780H	DH115	•	17.8	.7008"			
TEZ1800H	DH115	•	18.0	.7087"			
TEZ1810H	DH115	•	18.1	.7126"			
TEZ1850H	DH115	•	18.5	.7283"			
TEZ1900H	DH115	•	19.0	.7480"	14.2	6.0	TEZD1900...
TEZ1950H	DH115	•	19.5	.7677"			
TEZ1980H	DH115	•	19.8	.7795"	15.1	6.5	TEZD2000...
TEZ2000H	DH115	•	20.0	.7874"			
TEZ2020H	DH115	•	20.2	.7953"			
TEZ2050H	DH115	•	20.5	.8071"			

# Indexable EZ Drill

## Procedure for mounting insert for TEZD

### 1. Removing used insert

Make sure to remove any chips or dust off the tip before removing the used insert.

Remove used insert and clean insert pocket using a brush or air blowing before loading the new insert.

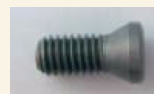


### 2. Loading new insert

Place new insert in pocket, lightly tighten the two screws while pressing the top of the insert (see photo). After confirming there is no gap between the drill body and insert, tighten the insert screws, starting with the same screw you first lightly tightened, to the recommended torque while still pressing the top of the insert.



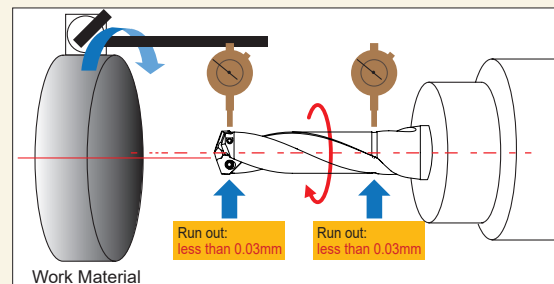
Note: Clamp screws need to be changed out after replacing the insert approximately 10 times or if you see any issues with the screws.



Clamp Screw

## If using lathe machine

1. Check run-out of insert O.D. within 0.03mm (off set of center within 0.015mm) and flute O.D. of shank side within approximately 0.03mm.
2. Due to large thrust of cutting forces, make sure drill is fully seated in holder.
3. Reduce the cutting speed and feed rate 20% of recommended cutting conditions. In case of long chips increase feed rate only.



# Indexable EZ Drill

## Recommended Cutting Data for TEZD-MS/ML/XL type

Work Material		Carbon Steel Up to 280HB		Alloy Steel Up to 350HB		Gray Cast Iron		Nodular Cast Iron		Stainless Steel		Titanium Alloy		Mold Steel (P20) 30-36 HRC		Mold Steel (HHP20, P21) 38-43 HRC		Hardened Steel (H13, D2) 42-52 HRC			
GRADE		JC8050		JC8050		JC8050		JC8050		JC7515		JC7515		DH115		DH115		DH115			
SFM		240-300		240-300		280-360		200-300		130-260		115-200		160-230		130-200		130-200			
IPR (inch/rev)		.012"-.014"		.009"-.010"		.012"-.016"		.006"-.011"		.006"-.008"		.006"-.008"		.006"-.010"		.004"-.008"		.004"-.008"			
Drill Diameter		RPM		IPM		RPM		IPM		RPM		IPM		RPM		IPM		RPM		IPM	
Metric	Inch																				
14	.5512"	1,700	20	1,600	14	1,900	22	1,500	18	1,360	8	1,130	7	1,360	11	1,140	7	1,140	6		
15	.5906"	1,600	19	1,500	14	1,900	22	1,400	17	1,270	8	1,060	7	1,270	10	1,060	7	1,060	5		
16	.6299"	1,500	18	1,400	13	1,900	22	1,350	16	1,190	7	990	6	1,190	9	1,000	6	1,000	5		
17	.6693"	1,400	18	1,300	13	1,800	22	1,250	16	1,120	7	930	6	1,120	9	940	6	940	5		
18	.7087"	1,300	18	1,250	12	1,700	22	1,000	14	1,060	7	880	6	1,060	8	880	6	880	4		
19	.7480"	1,250	17	1,200	12	1,600	22	1,000	14	1,000	7	830	6	1,010	8	840	5	840	4		
20	.7874"	1,200	17	1,100	11	1,600	22	1,000	14	950	7	790	6	960	7	800	5	800	4		
21	.8268"	1,200	17	1,100	11	1,550	21	1,000	14	905	7	750	6	910	7	760	5	760	4		
22	.8661"	1,200	17	1,050	10	1,500	21	1,000	14	865	7	720	6	870	7	730	4	730	4		
23	.9055"	1,200	17	1,050	10	1,450	20	1,000	14	830	6	690	5	830	7	700	4	700	4		
24	.9449"	1,200	17	1,050	10	1,400	19	1,000	14	795	6	660	5	800	6	670	4	670	4		
25	.9843"	1,150	16	1,050	10	1,350	19	1,000	14	760	6	635	5	770	6	640	4	640	4		
26	1.0236"	1,110	15	1,050	10	1,300	18	1,000	14	735	6	610	5	740	6	620	4	620	4		
27	1.0630"	1,070	15	1,000	10	1,250	18	950	13	705	6	585	5	710	6	590	4	590	3		
28	1.1024"	1,030	14	1,000	10	1,200	18	950	13	680	5	565	4	680	5	570	3	570	3		
29	1.1417"	990	14	950	9	1,150	18	950	13	655	5	545	4	660	5	550	3	550	3		
30	1.1811"	960	13	950	9	1,150	18	950	13	635	5	530	4	640	5	530	3	530	3		
31	1.2205"	930	13	900	9	1,100	17	850	12	615	5	510	4	620	5	520	3	520	3		
32	1.2598"	900	12	900	9	1,100	17	850	12	595	5	495	4	600	5	500	3	500	3		

- NOTE:** 1. Above cutting conditions are for general guidance.  
 2. The figures should be adjusted according to machining shape, purpose and rigidity of machine and work clamping.  
 3. If using TEZD-XL type (8D), recommend to reduce both RPM & IPM from above. Recommend guide hole drill first with TEZD-MS type (3D) of the same diameter. (depth of guide hole -.5D).



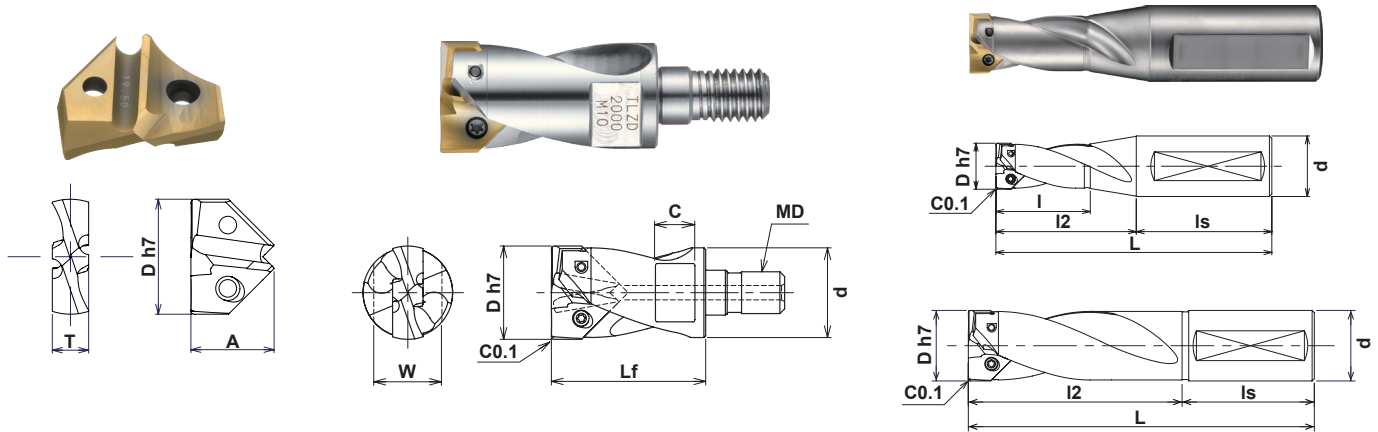
**METRIC**

# Indexable Spot Facing Drill

## TLZD-SS Type (1.5XD) & TLZD-M Modular Head Type

- Indexable spot face drill

- Able to drill without pilot hole (even on sloped surfaces & cross holes)



DIA. (mm)	INSERT				DIAMETER RANGE	CATALOG NUMBER	STK	DIMENSIONS								PARTS
	INSERT NUMBER	PVD JC7550	DIMENSIONS					DIMENSIONS								SCREW
			A	T				l	l2	L	d	db	w	c	MD	WRENCH
14.0	TLZ1400	•	10.6	4.5	14.0~14.5	TLZD-1400S16-SS	•	29	43	91	16	-	-	-	-	DSW-2045H T-07
14.1	TLZ1410	•				TLZD-1400-M6	•	-	-	27.5	-	13	10	7	M6	
14.2	TLZ1420	•														
14.3	TLZ1430	•														
14.4	TLZ1440	•														
14.5	TLZ1450	•														
14.6	TLZ1460	•	11.3	4.8	14.6~15.5	TLZD-1500S20-SS	•	31	46	96	20	-	-	-	-	DSW-2045H T-07
14.7	TLZ1470	•														
14.8	TLZ1480	•														
14.9	TLZ1490	•														
15.0	TLZ1500	•														
15.1	TLZ1510	•														
15.2	TLZ1520	•														
15.3	TLZ1530	•														
15.4	TLZ1540	•														
15.5	TLZ1550	•														
15.6	TLZ1560	•	12.1	5.0	15.6~16.5	TLZD-1600S20-SS	•	33	49	99	20	-	-	-	-	TSW-2556H T-08
15.7	TLZ1570	•														
15.8	TLZ1580	•														
15.9	TLZ1590	•														
16.0	TLZ1600	•														
16.1	TLZ1610	•														
16.2	TLZ1620	•														
16.3	TLZ1630	•														
16.4	TLZ1640	•														
16.5	TLZ1650	•														
16.6	TLZ1660	•	12.6	5.5	16.6~17.5	TLZD-1700S20-SS	•	35	52	102	20	-	-	-	-	TSW-2556H T-08
16.7	TLZ1670	•														
16.8	TLZ1680	•														
16.9	TLZ1690	•														
17.0	TLZ1700	•														
17.1	TLZ1710	•														
17.2	TLZ1720	•														
17.3	TLZ1730	•														
17.4	TLZ1740	•														
17.5	TLZ1750	•														

Note: All holders supplied without inserts or wrench.

See page A-65 for Modular Head Shanks

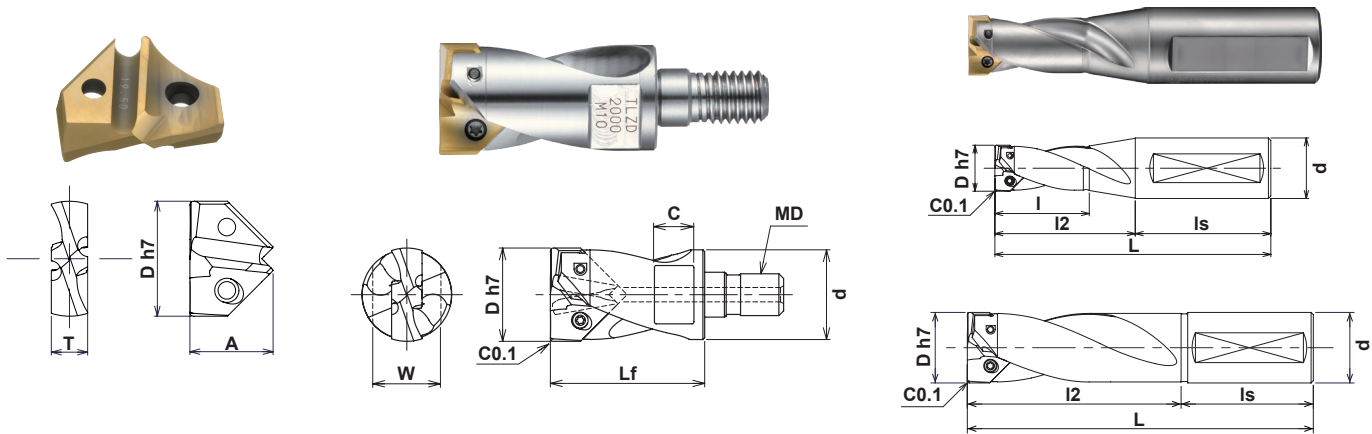
# Indexable Spot Facing Drill

**METRIC**

## TLZD-SS Type (1.5XD) & TLZD-M Modular Head Type

- Indexable spot face drill

- Able to drill without pilot hole (even on sloped surfaces & cross holes)



DIA. (mm)	INSERT			DIAMETER RANGE	CATALOG NUMBER	STK	DIMENSIONS							PARTS		
	INSERT NUMBER	PVD JC7550	DIMENSIONS A T				I	I2	L	d	db	w	c	MD	SCREW	WRENCH
17.6	TLZ1760	•	13.2	5.8	17.5~18.5	TLZD-1800S20-SS	•	37	55	105	20	-	-	-	-	TSW-2556H T-08
17.7	TLZ1770	•														
17.8	TLZ1780	•														
17.9	TLZ1790	•														
18.0	TLZ1800	•														
18.1	TLZ1810	•														
18.2	TLZ1820	•														
18.3	TLZ1830	•														
18.4	TLZ1840	•														
18.5	TLZ1850	•	13.6	6.0	18.5~19.5	TLZD-1800-M8	•	-	-	30.5	-	17	12	8	M8	TSW-2567H T-08
18.6	TLZ1860	•														
18.7	TLZ1870	•														
18.8	TLZ1880	•														
18.9	TLZ1890	•														
19.0	TLZ1900	•														
19.1	TLZ1910	•														
19.2	TLZ1920	•														
19.3	TLZ1930	•														
19.4	TLZ1940	•	14.6	6.5	19.5~20.5	TLZD-1900S25-SS	•	39	58	114	25	-	-	-	-	TSW-2567H T-08
19.5	TLZ1950	•														
19.6	TLZ1960	•														
19.7	TLZ1970	•														
19.8	TLZ1980	•														
19.9	TLZ1990	•														
20.0	TLZ2000	•														
20.5	TLZ2050	•														
21.0	TLZ2100	•														
21.5	TLZ2150	•														
22.0	TLZ2200	•														
22.5	TLZ2250	•														
23.0	TLZ2300	•														
23.5	TLZ2350	•														
21.0	TLZ2100	•														
21.5	TLZ2150	•														
22.0	TLZ2200	•														
22.5	TLZ2250	•														
23.0	TLZ2300	•	15.9	7.5	21.5~22.5	TLZD-2000S25-SS	•	41	61	117	25	-	-	-	-	TSW-2567H T-08
23.5	TLZ2350	•														
21.0	TLZ2100	•	15.2	6.7	21.0~21.5	TLZD-2000-M10	•	-	-	38.5	-	19	14	9	M10	TSW-2567H T-08
21.5	TLZ2150	•														
22.0	TLZ2200	•	15.9	7.5	21.5~22.5	TLZD-2100S25-SS	•	43	64	120	25	-	-	-	-	TSW-2567H T-08
22.5	TLZ2250	•														
23.0	TLZ2300	•	16.7	7.5	22.5~23.5	TLZD-2100-M10	•	-	-	38.5	-	20	14	9	M10	DSW-307H T-10
23.5	TLZ2350	•														
22.0	TLZ2200	•	15.9	7.5	21.5~22.5	TLZD-2200S25-SS	•	45	67	123	25	-	-	-	-	DSW-307H T-10
22.5	TLZ2250	•														
23.0	TLZ2300	•	16.7	7.5	22.5~23.5	TLZD-2200-M10	•	-	-	38.5	-	21	14	9	M10	DSW-307H T-10
23.5	TLZ2350	•														
23.0	TLZ2300	•	16.7	7.5	22.5~23.5	TLZD-2300S25-SS	•	47	70	126	25	-	-	-	-	DSW-307H T-10
23.5	TLZ2350	•														

Note: All holders supplied without inserts or wrench.

See page A-65 for Modular Head Shanks



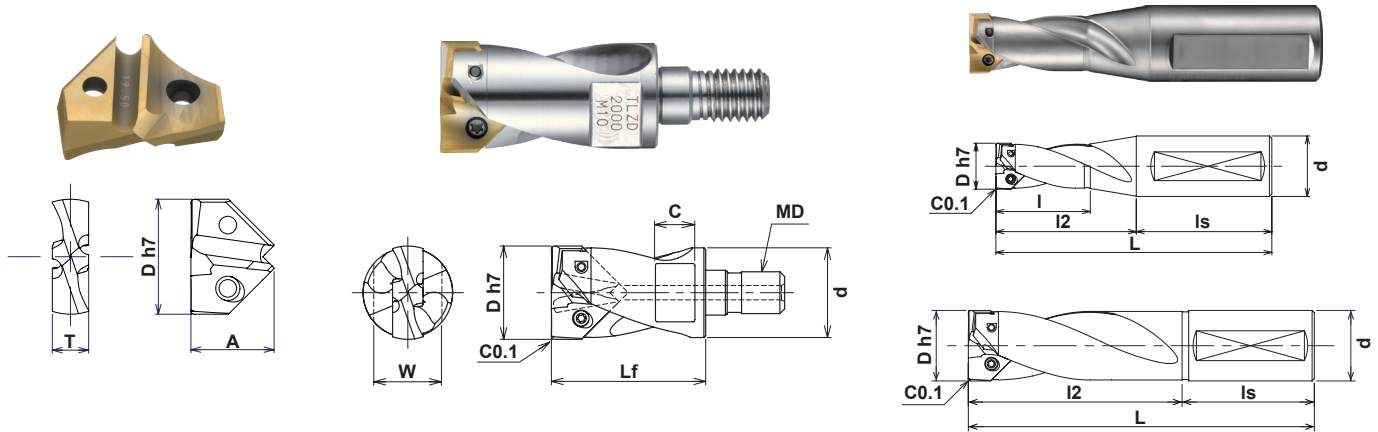
**METRIC**

# Indexable Spot Facing Drill

## TLZD-SS Type (1.5XD) & TLZD-M Modular Head Type

- Indexable spot face drill

- Able to drill without pilot hole (even on sloped surfaces & cross holes)



DIA. (mm)	INSERT				DIAMETER RANGE	CATALOG NUMBER	STK	DIMENSIONS							PARTS	
	INSERT NUMBER	PVD JC7550	DIMENSIONS A T					I	I2	L	d	db	w	c	MD	SCREW WRENCH
24.0	TLZ2400	•	17.4	8.0	23.5~24.5	TLZD2400S32-SS	•	49	73	133	32	-	-	-	-	DSW-307H T-10
24.5	TLZ2450	•				TLZD2400-M12	•	-	-	43	-	23	19	11	M12	
25.0	TLZ2500	•	18.3	8.0	24.5~25.5	TLZD2500S32-SS	•	51	76	136	32	-	-	-	-	DSW-309H T-10
25.5	TLZ2550	•				TLZD2500-M12	•	-	-	43	-	24	19	11	M12	
26.0	TLZ2600	•	18.8	8.5	25.5~26.5	TLZD2600S32-SS	•	53	79	139	32	-	-	-	-	DSW-309H T-10
26.5	TLZ2650	•				TLZD2600-M12	•	-	-	43	-	24	19	11	M12	
27.0	TLZ2700	•	19.5	8.5	27.0~27.5	TLZD2700S32-SS	•	55	82	142	32	-	-	-	-	DSW-309H T-10
27.5	TLZ2750	•				TLZD2700-M12	•	-	-	43	-	26	19	11	M12	
28.0	TLZ2800	•	20.3	9.0	27.5~28.5	TLZD2800S32-SS	•	57	85	145	32	-	-	-	-	DSW-3510H T-15
28.5	TLZ2850	•				TLZD2800-M12	•	-	-	43	-	27	19	11	M12	
29.0	TLZ2900	•	21.1	9.0	28.5~29.5	TLZD2900S32-SS	•	59	88	148	32	-	-	-	-	DSW-3510H T-15
29.5	TLZ2950	•				TLZD2900-M16	•	-	-	51	-	28	22	12	M16	
30.0	TLZ3000	•	21.5	9.5	29.5~30.5	TLZD3000S32-SS	•	61	91	151	32	-	-	-	-	DSW-3510H T-15
30.5	TLZ3050	•				TLZD3000-M16	•	-	-	51	-	29	22	12	M16	
31.0	TLZ3100	•	22.3	10	30.5~31.5	TLZD3100S32-SS	•	-	94	154	32	-	-	-	-	DSW-3512H T-15
31.5	TLZ3150	•				TLZD3100-M16	•	-	-	51	-	30	22	12	M16	
32.0	TLZ3200	•	23.1	10	31.5~32.5	TLZD3200S32-SS	•	-	97	157	32	-	-	-	-	DSW-3512H T-15
						TLZD3200-M16	•	-	-	51	-	31	26	14	M16	

Note: All holders supplied without inserts or wrench.

See page A-65 for Modular Head Shanks



# Indexable Spot Facing Drill

## Recommended Cutting Data for TLZD Type

Work Material	Mild Steel ○				Carbon Steel ○			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
14	1,590	7.5	229	0.0047	1,590	7.5	229	0.0047
15	1,490	7.1	230	0.0048	1,490	7.1	230	0.0048
16	1,390	6.7	229	0.0048	1,390	6.7	229	0.0048
17	1,310	6.7	230	0.0051	1,310	6.7	230	0.0051
18	1,240	6.3	230	0.0051	1,240	6.3	230	0.0051
19	1,170	5.9	229	0.0050	1,170	5.9	229	0.0050
20	1,110	5.9	229	0.0053	1,110	5.9	229	0.0053
21	1,060	5.9	229	0.0056	1,060	5.9	229	0.0056
22	1,010	5.5	229	0.0055	1,010	5.5	229	0.0055
23	970	5.5	230	0.0057	970	5.5	230	0.0057
24	930	5.1	230	0.0055	930	5.1	230	0.0055
25	890	5.1	229	0.0058	890	5.1	229	0.0058
26	860	5.1	230	0.0060	860	5.1	230	0.0060
27	830	4.7	231	0.0057	830	4.7	231	0.0057
28	800	4.7	231	0.0059	800	4.7	231	0.0059
29	770	4.7	230	0.0061	770	4.7	230	0.0061
30	740	4.7	229	0.0064	740	4.7	229	0.0064
31	720	4.7	230	0.0066	720	4.7	230	0.0066
32	700	4.3	231	0.0062	700	4.3	231	0.0062

Work Material	Mild Steel ○				Carbon Steel ○			
	Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM
14	1,140	5.5	165	0.0048	680	1.6	98	0.0023
15	1,060	5.1	164	0.0048	640	1.6	99	0.0025
16	990	4.7	163	0.0048	600	1.6	99	0.0026
17	940	4.7	165	0.0050	560	1.6	98	0.0028
18	880	4.3	163	0.0049	530	1.6	98	0.0030
19	840	4.3	165	0.0052	500	1.6	98	0.0031
20	800	4.3	165	0.0054	480	1.6	99	0.0033
21	760	4.3	165	0.0057	450	1.6	97	0.0035
22	720	3.9	163	0.0055	430	1.2	98	0.0027
23	690	3.9	164	0.0057	420	1.2	100	0.0028
24	660	3.5	163	0.0054	400	1.2	99	0.0030
25	640	3.5	165	0.0055	380	1.2	98	0.0031
26	610	3.5	163	0.0058	370	1.2	99	0.0032
27	590	3.5	164	0.0060	350	1.2	97	0.0034
28	570	3.5	165	0.0062	340	1.2	98	0.0035
29	550	3.1	164	0.0057	330	1.2	99	0.0036
30	530	3.1	164	0.0059	320	1.2	99	0.0037
31	510	3.1	163	0.0062	310	1.2	99	0.0038
32	500	3.1	165	0.0063	300	1.2	99	0.0039

- Notes:**
- Above cutting conditions are for drilling flat surface. If drilling slope, adjust figures: angle under 30°, reduce IPM 40-80%, and for inclined angle 30° or more, reduce IPM 20-50%.
  - Above cutting conditions are for drilling with water soluble coolant, if dry cutting use air to remove chips.
  - Recommended drilling depth 1.5D or less. Drilling depth over 1.5D in not recommended.
  - Horizontal milling is not advised.
  - In case of long chips, adjust above conditions by increasing IPM or using step feed for breaking chips. If cutting stainless steel, not recommended to increase IPM for breaking chips. Increase SFM and reduce IPM so that bellows-shaped chips can occur.

Suitability
○ = Very Good
● = Good



# Indexable Spot Facing Drill

## Recommended Cutting Data for TLZD Type

Work Material	Stainless Steel (304) ○				Cast Iron ○			
Dia. (mm)	RPM	IPM	SFM	IPR	RPM	IPM	SFM	IPR
14	2,270	3.5	328	0.0016	1,590	7.5	229	0.0047
15	2,120	3.5	328	0.0017	1,490	7.1	230	0.0048
16	1,990	3.1	328	0.0016	1,390	6.7	229	0.0048
17	1,870	3.1	328	0.0017	1,310	6.7	230	0.0051
18	1,770	3.1	328	0.0018	1,240	6.3	230	0.0051
19	1,840	3.1	360	0.0017	1,170	5.9	229	0.0050
20	1,750	3.1	361	0.0018	1,110	5.9	229	0.0053
21	1,670	3.1	361	0.0019	1,060	5.9	229	0.0056
22	1,590	3.1	361	0.0020	1,010	5.5	229	0.0055
23	1,520	3.1	360	0.0021	970	5.5	230	0.0057
24	1,460	3.1	361	0.0022	930	5.1	230	0.0055
25	1,400	3.1	361	0.0022	890	5.1	229	0.0058
26	1,350	3.1	362	0.0023	860	5.1	230	0.0060
27	1,300	3.1	362	0.0024	830	4.7	231	0.0057
28	1,360	3.1	392	0.0023	800	4.7	231	0.0059
29	1,320	3.1	395	0.0024	770	4.7	230	0.0061
30	1,270	3.1	393	0.0025	740	4.7	229	0.0064
31	1,230	3.1	393	0.0026	720	4.7	230	0.0066
32	1,190	3.1	392	0.0026	700	4.3	231	0.0062

Work Material	Aluminum Alloy ●			
Dia. (mm)	RPM	IPM	SFM	IPR
14	2,270	10.6	328	0.0047
15	2,120	9.8	328	0.0046
16	1,990	9.4	328	0.0047
17	1,870	9.4	328	0.0051
18	1,770	9.4	328	0.0053
19	1,840	9.4	360	0.0051
20	1,750	9.1	361	0.0052
21	1,670	9.1	361	0.0054
22	1,590	8.7	361	0.0054
23	1,520	8.3	360	0.0054
24	1,460	7.9	361	0.0054
25	1,400	7.9	361	0.0056
26	1,350	7.9	362	0.0058
27	1,300	7.9	362	0.0061
28	1,360	7.9	392	0.0058
29	1,320	7.9	395	0.0060
30	1,270	7.9	393	0.0062
31	1,230	7.9	393	0.0064
32	1,190	7.5	392	0.0063

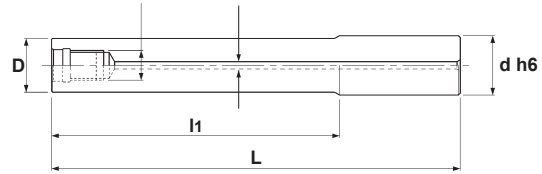
- Notes:**
- Above cutting conditions are for drilling flat surface. If drilling slope, adjust figures: angle under 30°, reduce IPM 40-80%, and for inclined angle 30° or more, reduce IPM 20-50%.
  - Above cutting conditions are for drilling with water soluble coolant, if dry cutting use air to remove chips.
  - Recommended drilling depth 1.5D or less. Drilling depth over 1.5D in not recommended.
  - Horizontal milling is not advised.
  - In case of long chips, adjust above conditions by increasing IPM or using step feed for breaking chips. If cutting stainless steel, not recommended to increase IPM for breaking chips. Increase SFM and reduce IPM so that bellows-shaped chips can occur.

Suitability
○ = Very Good
● = Good

# Modular Head Holders

INCH

**MSN Type**  
**Solid Carbide with coolant thru**



## Specifications

CATALOG NUMBER	STK	DIMENSIONS					
		D	l1	L	d	MD	D2
MSN-M8-0.5-S062C	•	.591	.500	3.50	.625	M8	.157
MSN-M8-1.0-S062C	•	.591	1.00	4.00	.625	M8	.157
MSN-M8-2.0-S062C	•	.591	2.00	5.00	.625	M8	.157
MSN-M8-4.0-S062C	•	.591	4.00	7.00	.625	M8	.157
MSN-M8-6.0-S062C	•	.591	6.00	9.00	.625	M8	.157
MSN-M10-0.5-S075C	•	.728	.500	3.50	.750	M10	.157
MSN-M10-1.0-S075C	•	.728	1.00	4.00	.750	M10	.157
MSN-M10-2.0-S075C	•	.728	2.00	5.00	.750	M10	.157
MSN-M10-3.0-S075C	•	.728	3.00	6.00	.750	M10	.157
MSN-M10-4.0-S075C	•	.728	4.00	7.00	.750	M10	.157
MSN-M10-5.0-S075C	•	.728	5.00	8.00	.750	M10	.157
MSN-M10-6.0-S075C	•	.728	6.00	9.00	.750	M10	.157
MSN-M10-8.0-S075C	•	.728	8.00	10.63	.750	M10	.157
MSN-M12-0.5-S100C	•	.945	.500	3.50	1.00	M12	.236
MSN-M12-1.0-S100C	•	.945	1.00	4.00	1.00	M12	.236
MSN-M12-2.0-S100C	•	.945	2.00	5.00	1.00	M12	.236
MSN-M12-3.0-S100C	•	.945	3.00	6.00	1.00	M12	.236
MSN-M12-4.0-S100C	•	.945	4.00	7.00	1.00	M12	.236
MSN-M12-5.0-S100C	•	.945	5.00	8.00	1.00	M12	.236
MSN-M12-6.0-S100C	•	.945	6.00	9.00	1.00	M12	.236
MSN-M12-8.0-S100C	•	.945	8.00	11.00	1.00	M12	.236
MSN-M12-10.0-S100C	•	.945	10.00	12.60	1.00	M12	.236
MSN-M16-0.5-S125C	•	1.14	.500	3.50	1.25	M16	.315
MSN-M16-1.0-S125C	•	1.14	1.00	4.00	1.25	M16	.315
MSN-M16-2.0-S125C	•	1.14	2.00	5.00	1.25	M16	.315
MSN-M16-4.0-S125C	•	1.14	4.00	7.00	1.25	M16	.315
MSN-M16-6.0-S125C	•	1.14	6.00	9.00	1.25	M16	.315
MSN-M16-8.0-S125C	•	1.14	8.00	11.00	1.25	M16	.315
MSN-M16-10.0-S125C	•	1.14	10.00	13.00	1.25	M16	.315
MSN-M16-12.0-S125C	•	1.14	12.00	15.00	1.25	M16	.315

**METRIC**

# Modular Head Holders

## MSN Type Solid Carbide with coolant thru

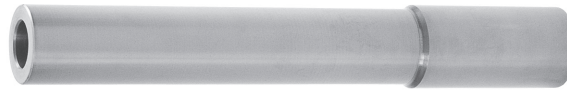


Fig. 1

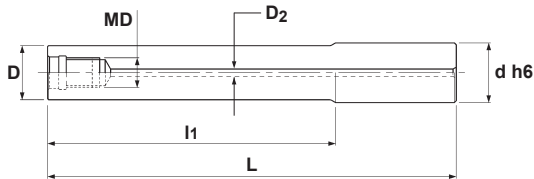
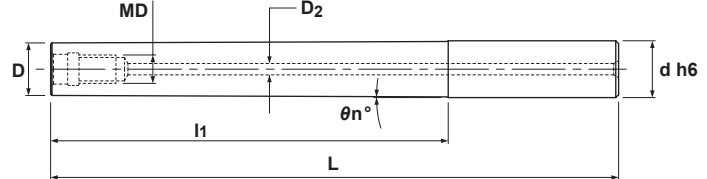


Fig. 2



### Specifications

CATALOG NUMBER	STK	DIMENSIONS							FIG.
		D	l1	L	d	$\theta n^\circ$	MD	D2	
MSN-M8-20-S16C	•	15.5	20	75	16	-	M8	4	1
MSN-M8-40-S16C	•	15.5	40	95	16	-	M8	4	1
MSN-M8-40T-S20C	•	14.5	40	100	20	3°30'	M8	4	2
MSN-M8-77T-S20C	•	14.5	77	143	20	1°45'	M8	4	2
MSN-M8-80-S16C	•	15.5	80	135	16	-	M8	4	1
MSN-M8-120-S16C	•	15.5	120	175	16	-	M8	4	1
MSN-M8-152-S16C	•	15.5	152	207	16	-	M8	4	1
MSN-M10-20-S20C	•	19.5	20	80	20	-	M10	4	1
MSN-M10-40-S20C	•	19.5	40	100	20	-	M10	4	1
MSN-M10-40T-S20C	•	18.5	40	100	20	0°43'	M10	4	2
MSN-M10-70-S20C	•	19.5	70	130	20	-	M10	4	1
MSN-M10-85T-S25C	•	18.5	85	161	25	2°	M10	4	2
MSN-M10-90-S20C	•	19.5	90	150	20	-	M10	4	1
MSN-M10-90T-S20C	•	18.5	90	150	20	0°19'	M10	4	2
MSN-M10-140-S20C	•	19.5	140	200	20	-	M10	4	1
MSN-M10-140T-S20C	•	18.5	140	200	20	0°12'	M10	4	2
MSN-M10-160-S20C	•	19.5	160	220	20	-	M10	4	1
MSN-M10-210-S20C	•	19.5	210	270	20	-	M10	4	1
MSN-M12-25-S25C	•	24	25	90	25	-	M12	6	1
MSN-M12-55-S25C	•	24	55	120	25	-	M12	6	1
MSN-M12-70-S25C	•	25	70	135	24	-	M12	6	1
MSN-M12-100T-S32C	•	23.5	100	180	32	2°	M12	6	2
MSN-M12-105-S25C	•	24	105	170	25	-	M12	6	1
MSN-M12-135-S25C	•	24	135	215	25	-	M12	6	1
MSN-M12-155-S25C	•	24	155	220	25	-	M12	6	1
MSN-M12-200-S25C	•	24	200	265	25	-	M12	6	1
MSN-M12-255-S25C	•	24	255	320	25	-	M12	6	1

# Modular Head Holders

METRIC

**MSN Type**  
**Solid Carbide with coolant thru**



Fig. 1

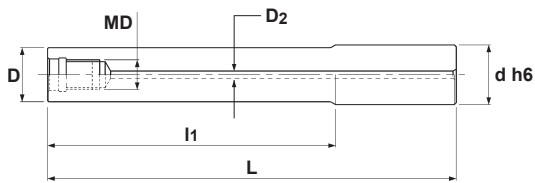
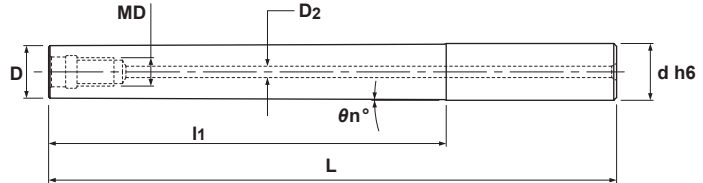


Fig. 2



## Specifications

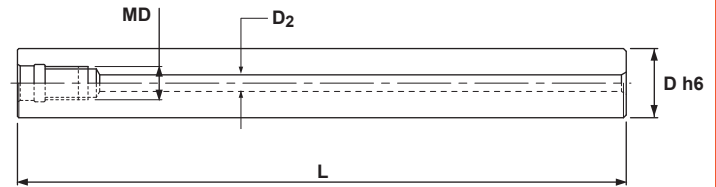
CATALOG NUMBER	STK	DIMENSIONS							FIG.
		D	I1	L	d	$\theta_n^\circ$	MD	D2	
MSN-M16-25-S32C	•	29	25	90	32	-	M16	8	1
MSN-M16-55-S32C	•	29	55	120	32	-	M16	8	1
MSN-M16-77-S32C	•	29	77	157	32	-	M16	8	1
MSN-M16-97-S32C	•	29	97	177	32	-	M16	8	1
MSN-M16-105-S32C	•	29	105	170	32	-	M16	8	1
MSN-M16-117T-S32C	•	29	117	197	32	0°38'	M16	8	2
MSN-M16-127-S32C	•	29	127	207	32	-	M16	8	1
MSN-M16-127T-S32C	•	29	127	207	32	0°30'	M16	8	2
MSN-M16-155-S32C	•	29	155	220	32	-	M16	8	1
MSN-M16-177-S32C	•	29	177	257	32	-	M16	8	1
MSN-M16-177T-S32C	•	29	177	257	32	0°23'	M16	8	2
MSN-M16-195-S32C	•	29	195	260	32	-	M16	8	1
MSN-M16-197T-S32C	•	29	197	277	32	0°23'	M16	8	2
MSN-M16-225-S32C	•	29	225	290	32	-	M16	8	1
MSN-M16-245-S32C	•	29	245	310	32	-	M16	8	1
MSN-M16-295-S32C	•	29	295	360	32	-	M16	8	1
MSN-M16-315-S32C	•	29	315	380	32	-	M16	8	1



**METRIC**

# Modular Head Holders

**MSN Type - Straight  
Solid Carbide with coolant thru**



## Specifications

CATALOG NUMBER	STK	DIMENSIONS			
		D	L	MD	D2
MSN-M8-87S-S14C	•	14	87	M8	3
MSN-M8-137S-S14C	•	14	137	M8	3
MSN-M8-97S-S15C	•	15	97	M8	4
MSN-M8-147S-S15C	•	15	147	M8	4
MSN-M8-197S-S15C	•	15	197	M8	4
MSN-M8-107S-S16C	•	16	107	M8	4
MSN-M8-157S-S16C	•	16	157	M8	4
MSN-M8-217S-S15C	•	15	217	M8	4
MSN-M8-220S-S16C	•	16	220	M8	4
MSN-M10-130S-S18C	•	18	130	M10	4
MSN-M10-190S-S18C	•	18	190	M10	4
MSN-M10-240S-S18C	•	18	240	M10	4
MSN-M10-130S-S20C	•	20	130	M10	4
MSN-M10-190S-S20C	•	20	190	M10	4
MSN-M10-250S-S20C	•	20	250	M10	4
MSN-M10-270S-S18C	•	18	270	M10	4
MSN-M10-270S-S20C	•	20	270	M10	4
MSN-M12-185S-S23C	•	23	185	M12	6
MSN-M12-265S-S23C	•	23	265	M12	6
MSN-M12-185S-S24C	•	24	185	M12	6
MSN-M12-265S-S24C	•	24	265	M12	6
MSN-M12-145S-S25C	•	25	145	M12	6
MSN-M12-215S-S25C	•	25	215	M12	6
MSN-M12-285S-S25C	•	25	285	M12	6
MSN-M12-320S-S25C	•	25	320	M12	6
MSN-M16-160S-S28C	•	28	160	M16	8
MSN-M16-230S-S28C	•	28	230	M16	8
MSN-M16-310S-S28C	•	28	310	M16	8
MSN-M16-157S-S32C	•	32	157	M16	8
MSN-M16-217S-S32C	•	32	217	M16	8
MSN-M16-287S-S32C	•	32	287	M16	8
MSN-M16-357S-S32C	•	32	357	M16	8
MSN-M16-380S-S28C	•	28	380	M16	8
MSN-M16-380S-S32C	•	32	380	M16	8

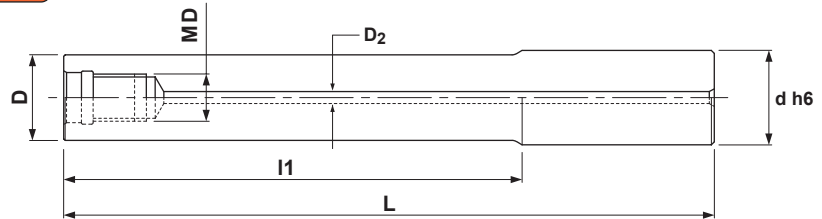
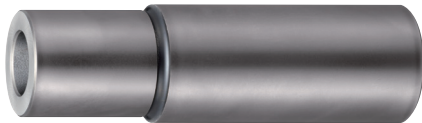
# Modular Head Holders

METRIC

INCH

**MGN Type**  
**G-Body with coolant thru**

**G-Body**



## Specifications - Inch

CATALOG NUMBER	STK	DIMENSIONS					
		D	I1	L	d	MD	D2
MGN-M8-0.5-S062	•	.591	.500	3.50	.625	M8	.157
MGN-M8-1.0-S062	•	.591	1.00	4.00	.625	M8	.157
MGN-M8-2.0-S062	•	.591	2.00	5.00	.625	M8	.157
MGN-M10-0.5-S075	•	.728	.500	3.50	.750	M10	.157
MGN-M10-1.0-S075	•	.728	1.00	4.00	.750	M10	.157
MGN-M10-2.0-S075	•	.728	2.00	5.00	.750	M10	.157
MGN-M12-0.5-S100	•	.945	.500	3.50	1.00	M12	.236
MGN-M12-1.0-S100	•	.945	1.00	4.00	1.00	M12	.236
MGN-M12-2.0-S100	•	.945	2.00	5.00	1.00	M12	.236
MGN-M12-3.0-S100	•	.945	3.00	6.00	1.00	M12	.236
MGN-M16-0.5-S125	•	1.14	.500	3.50	1.25	M16	.315
MGN-M16-1.0-S125	•	1.14	1.00	4.00	1.25	M16	.315
MGN-M16-2.0-S125	•	1.14	2.00	5.00	1.25	M16	.315
MGN-M16-3.0-S125	•	1.14	3.00	6.00	1.25	M16	.315

## Specifications - Metric

CATALOG NUMBER	STK	DIMENSIONS					
		D	I1	L	d	MD	D2
MGN-M8-17-S16	•	15.5	17	97	16	M8	4
MGN-M10-30-S20	•	19	30	100	20	M10	4
MGN-M12-35-S25	•	24	35	105	25	M12	4
MGN-M12-85-S25	•	24	85	165	25	M12	4
MGN-M16-37-S32	•	29	37	107	32	M16	6
MGN-M16-77-S32	•	29	77	157	32	M16	6

# PROPER MOUNTING OF MODULAR HEADS

## ■ Cleaning

Remove dirt and chips with air from the connecting thread and face of modular head and MSN/MGN shank holder.

## ■ Initial Tightening

Tighten by hand until the head and the shank holder faces touch.

## ■ Final Tightening

Tighten slowly with torque control spanner wrench or DIJET DS type spanner wrench and confirm that there is no gap.

Attention: Final tightening without initial tightening cause connecting thread damage.



Thread	Tightening torque	Spanner size
M6	8N·m	8 ✧
M8	16N·m	10, 12 ✧
M10	16N·m	14, 15
M12	20N·m	17, 19
M16	25N·m	22, 26

### Modular heads are supplied without spanner wrench.

In case of choosing torque control spanner wrench, confirm that the wrench size is matched to the dimensions W & C of each modular head. (There are some cases that modifying the thickness of spanner wrench is necessary)

✧ = DIJET stocks DS-8 and DS-12 type spanner wrenches.

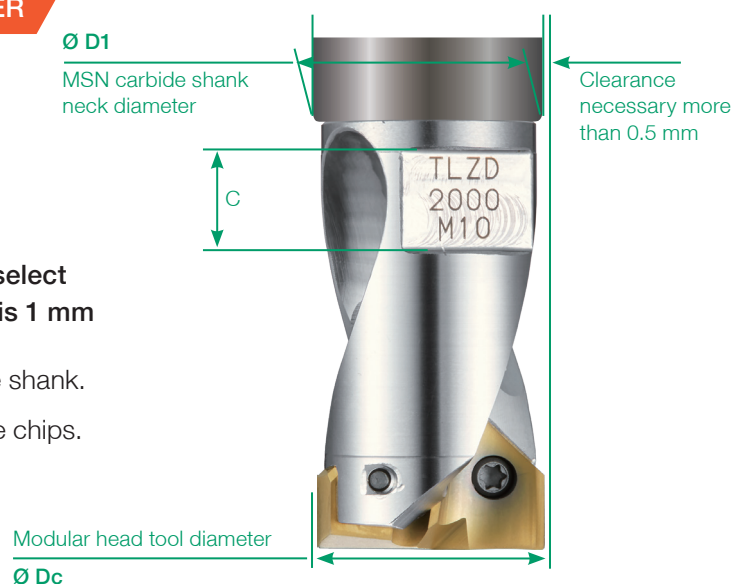
## SELECTION OF MSN CARBIDE SHANK HOLDER

$$\varnothing D_c - \varnothing D_1 \geq 1\text{mm}$$

When using modular head over  $\varnothing 16\text{mm}$ , **please select MSN carbide shank which the diameter ( $\varnothing D_1$ ) is 1 mm or smaller than modular head ( $\varnothing D_c$ ).**

Wrong selection can cause damage to the carbide shank.

Coolant or air blow is recommended to remove the chips.



### Caution for mounting in shrink fit holder.

When you use a carbide shank and a modular head on a shrink fit holder, please shrink fit the carbide shank without mounting the modular head. Mount the modular head on the shank after shrink fit operation is complete.

In case of shrink fit MSN shank + modular head together, it will be difficult to loosen due to heat dissipation.

# Solid Carbide End Mills

Use	Conventional						
							
Page	B-8	B-8	B-10	B-12	B-12	B-12	B-12
Catalog Number	SEM2	SEM4	DV-SOCS3	DZ-SOCS4	DZ-SOCM4	DZ-SOCL4	DZ-SOCLS4
No. of Flutes	2 Flutes	4 Flutes	3 Flutes	4 Flutes			
Flute Helix	30°		45°				
Length of Cut	Regular			Medium	Long	Regular	
Diameter	1~12mm	2~12mm	3~20mm	3~22mm	3~20mm	6~20mm	3~22mm
Coating	TiAlN		Value Coating	TiAlN			
Carbon Steel Alloy Steel	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Hardened Steel	~45HRC	⊙	⊙	⊙	⊙	⊙	⊙
	~50HRC	○	○	⊙	⊙	⊙	○
	~65HRC						
Stainless Steel	○	○	⊙	⊙	⊙		
Cast Iron	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Aluminum Alloy							
Copper Alloy							
Graphite							
Titanium Alloy			○	○	○	○	
Plastic							
Features	30° Helix angle, standard length of cut.	30° Helix angle, standard length of cut.	45° Helix angle, standard length of cut, unique center cutting edge for plunging.	45° Helix angle, standard length of cut.	45° Helix angle, medium length of cut.	45° Helix angle, long length of cut.	45° Helix angle, long shank type.

⊙ = First Choice    ○ = Second Choice

# Solid Carbide End Mills

For High Hardened Steel					General Cutting for Aluminum			
B-16	B-16	B-18	B-19	B-20	B-21	B-21	B-25	B-25
SEHS SEHH	SEHH-R02	SEHM	SEHL	DZ-SEPL	AL-SEES2	AL-SEEL2	AL-SEES3	AL-SEEZ3
4-6 Flutes		6 Flutes			2 Flutes		3 Flutes	
50°				60°	45°			
Regular		Medium	Long		Regular	Long	Regular	
1~20mm	3~20mm	6~20mm	6~20mm	16~30mm	1~25mm	3~25mm	3~25mm	3~25mm
DH				TiAIN	None			
○	○	○	○					
○	○	○	○	○				
◎	◎	◎	◎	◎				
○	○	○	○					
					◎	◎	◎	◎
					○	○	○	○
					○	○		
50° Helix angle, for high hardened steel.	50° Helix angle, for high hardened steel with corner radius of 0.2mm.	50° Helix angle, for high hardened steel with medium flute length.	50° Helix angle, for high hardened steel with long flute length.	60° Helix angle, long length of cut for welds and hardened steel.	45° Helix angle, standard length of cut with sharp corner.	45° Helix angle, long length of cut with sharp corner.	45° Helix angle, high feed cutting, with sharp corner.	45° Helix angle, high feed cutting, standard length of cut with slim shank.

◎ = First Choice      ○ = Second Choice

# Solid Carbide End Mills

Use	General Cutting for Aluminum			Roughing for Aluminum		
Page	B-28	B-29	B-31	B-33	B-35	B-36
Catalog Number	AL-SEES3-LS	AL-SEES3-LS-R02	AL-SEES3-XLS-R02	AL-OCRS	AL-OCRL	AL-OCRS-LS
No. of Flutes	3 Flutes					
Flute Helix	45°			30°		
Length of Cut	Regular		Regular	Long	Short	
Diameter	3~22mm	6~22mm	6~22mm	3~30mm	6~30mm	6~30mm
Coating	None					
Carbon Steel Alloy Steel						
Hardened Steel	~45HRC					
	~50HRC					
	~65HRC					
Stainless Steel						
Cast Iron						
Aluminum Alloy	◎	◎	◎	◎	◎	◎
Copper Alloy	○	○	○			
Graphite						
Titanium Alloy						
Plastic						
Features	45° Helix angle, long shank type with sharp corner.	45° Helix angle, long shank type with 0.2mm corner radius.	45° Helix angle, standard length of cut with extra long shank and 0.2mm corner radius.	30° Helix angle, for deep width of cut.	30° Helix angle, for deep width of cut, long length of cut.	30° Helix angle, for deep width of cut, long length of cut with slim shank.

◎ = First Choice


○ = Second Choice

# Solid Carbide Radius End Mills

For High Hardened Steel					General Cutting for Aluminum		
B-37	B-39	B-47	B-49	B-49	B-51	B-54	B-54
SEHH-R	SFSR	DV-OCSAR	DZ-SOCS4	DZ-SOCM4	AL-SEES2-R	AL-SEES3-R	AL-SEES3-LS-R
4-6 Flutes	4 Flutes				2 Flutes	3 Flutes	3 Flutes
50°	50°-52°	42°-45°	45°	45°	45°		
Regular	Short	Regular		Medium	Regular		Regular
3~20mm	2~12mm	3~12mm	3~20mm	6~10mm	6~20mm	10~12mm	3~25mm
DH		Value Coating	TiAlN		None		
		○	◎	◎			
◎	◎	○	◎	◎			
◎	◎		◎	◎			
◎ (~70HRC)	◎ (~70HRC)						
		◎	◎	◎			
○	○		◎	◎			
					◎	◎	◎
					○	○	○
		◎	○	○			
50° Helix angle, for high hardened steel with corner radius.	50°-52° Helix angle, for high hardened steel with corner radius.	42°-45° Helix angle, for flute length.	45° Helix angle, for hardened steel with standard flute length.	45° Helix angle, for hardened steel with medium flute length.	45° Helix angle, standard length of cut with corner radius.	45° Helix angle, standard length of cut with corner radius.	45° Helix angle, standard flute length, long slim shank with corner radius.

◎ = First Choice    ○ = Second Choice

## Solid Carbide Ball Nose End Mills

Use	For Hardened Steel			Conventional			For Aluminum
							
Page	B-57	B-60	B-62	B-64	B-66	B-67	B-68
Catalog Number	SFSB	DV-OCSB	DH-OCHB	DZ-OCUB	DZ-OCLB-S	DZ-OCLB-T	AL-DPBS
No. of Flutes	2 Flutes		4 Flutes	2 Flutes			
Flute Helix	30°		45°	45°	30°		25°
Length of Cut	Regular						
Diameter	1~12mm	1~20mm	1~12mm	6~20mm	4~25mm	4~12mm	1~12mm
Coating	DH	Value Coating	DH	TiAlN			None
Carbon Steel Alloy Steel	⊙	⊙	⊙	⊙	⊙	⊙	
Hardened Steel	~45HRC	⊙	⊙	⊙	⊙	⊙	
	~50HRC	⊙	⊙	⊙	○	○	
	~65HRC	⊙ (~70HRC)	⊙	⊙ (~70HRC)	○	○	
Stainless Steel				○			
Cast Iron	⊙	⊙		⊙	⊙	⊙	
Aluminum Alloy	○	○		○	○	○	⊙
Copper Alloy	○	○		○	○	○	○
Graphite	○	○					
Titanium Alloy	○	○		○			
Plastic							○
Features	30° Helix angle, standard type, for hardened steel up to 70HRC.	30° Helix angle, standard type, for hardened steel up to 65HRC.	45° Helix angle, standard type, for hardened steel up to 70HRC and shrink fit.	30° Helix angle, standard length.	30° Helix angle, standard type with extra long straight shank.	30° Helix angle, standard type with extra long tapered shank.	25° Helix angle, standard type with positive rake angle and shrink fit.

⊙ = First Choice

○ = Second Choice





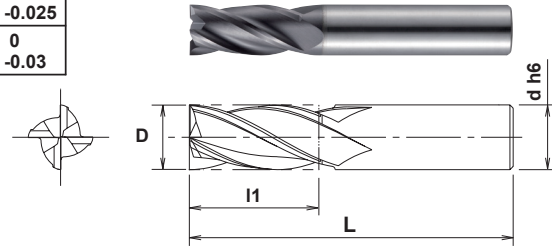
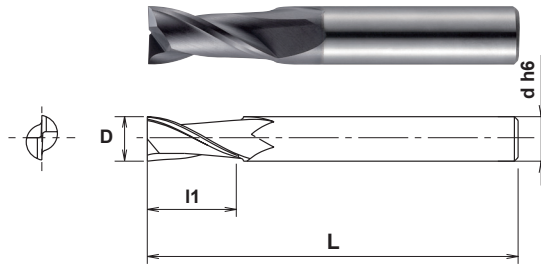


**METRIC**

# Solid Carbide End Mills

## SEM2 & SEM4 Type - 2 & 4 Flute styles with 30° Helix

Tolerances	
5mm	0 -0.02
6mm, 8mm	0 -0.025
10mm, 12mm	0 -0.03



### SEM2

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
SEM2010	•	1	3	40	4
SEM2015	•	1.5	4.5	40	4
SEM2020	•	2	6.5	40	4
SEM2025	•	2.5	6.5	40	4
SEM2030	•	3	9	50	6
SEM2040	•	4	12	50	6
SEM2050	•	5	15	50	6
SEM2060	•	6	16	50	6
SEM2080	•	8	20	64	8
SEM2100	•	10	22	70	10
SEM2120	•	12	25	75	12

### SEM4

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
SEM4020	•	2	6.5	40	4
SEM4025	•	2.5	6.5	40	4
SEM4030	•	3	9	50	6
SEM4040	•	4	12	50	6
SEM4050	•	5	15	50	6
SEM4060	•	6	16	50	6
SEM4080	•	8	20	64	8
SEM4100	•	10	22	70	10
SEM4120	•	12	25	75	12

## Recommended Cutting Data for SEM2 type

Material	Carbon Steel, Cast Iron			Alloy Steel 25 ~ 40HRC			Hardened Alloy Steel 40 ~ 50 HRC		
	Type of Machining	Side Milling	Slotting	Type of Machining	Side Milling	Slotting	Type of Machining	Side Milling	Slotting
		$a_p=1.5D$ $a_e \leq 0.2D$	$a_e=D$ $a_p \leq 0.2D$ ( $D \leq \phi 3$ ) $a_p \leq 0.5D$ ( $D > \phi 3$ )		$a_p=1.5D$ $a_e \leq 0.2D$	$a_e=D$ $a_p \leq 0.2D$ ( $D \leq \phi 3$ ) $a_p \leq 0.5D$ ( $D > \phi 3$ )		$a_p=1.0D$ $a_e \leq 0.05D$	$a_e=D$ $a_p \leq 0.05D$ ( $D \leq \phi 3$ ) $a_p \leq 0.1D$ ( $D > \phi 3$ )
Diameter (mm)	N (rpm)	Vf (ipm)		N (rpm)	Vf (ipm)		N (rpm)	Vf (ipm)	
2	15,900	15.7	19.7	19,100	9.4	11.8	9,500	4.3	5.5
2.5	12,700	15.7	19.7	9,500	9.4	11.8	4,770	4.3	5.5
3	10,600	15.7	19.7	6,400	9.4	11.8	3,180	4.3	5.5
4	8,000	15.7	20.5	4,800	9.4	12.2	2,380	4.3	5.5
5	6,300	15.7	20.5	3,800	9.4	12.2	1,900	4.3	5.5
6	5,300	23.6	20.5	3,200	14.2	12.2	1,600	6.3	5.5
8	4,000	23.6	20.5	2,400	14.2	12.2	1,200	6.3	5.5
10	3,200	23.6	20.5	1,900	14.2	12.2	950	6.3	5.5
12	2,700	23.6	20.5	1,600	14.2	12.2	800	6.3	5.5

- Notes:**
- Above cutting conditions are for general guidance.
  - The figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

# Solid Carbide End Mills

## Recommended Cutting Data for SEM4 type

Material	Carbon Steel, Cast Iron			Alloy Steel 25 ~ 40HRC			Hardened Alloy Steel 40 ~ 50 HRC		
Type of Machining	 $a_p = 1.5D$ $a_e \leq 0.2D$		 $a_e = D$ $a_p \leq 0.2D$	 $a_p = 1.5D$ $a_e \leq 0.2D$		 $a_e = D$ $a_p \leq 0.2D$	 $a_p = 1.0D$ $a_e \leq 0.05D$		 $a_e = D$ $a_p \leq 0.1D$
	Diameter (mm)	N (rpm)	Vf (ipm)	N (rpm)	Vf (ipm)	N (rpm)	Vf (ipm)	N (rpm)	Vf (ipm)
1	31,800	5.5	9.1	19,100	3.1	5.5	9,500	1.6	2.4
2	15,900	9.4	11.0	9,500	5.5	6.7	4,770	2.6	3.0
3	10,600	9.4	11.0	6,400	5.5	6.7	3,180	2.6	3.0
4	8,000	9.4	11.0	4,800	5.5	6.7	2,380	2.6	3.0
5	6,300	9.4	11.0	3,800	5.5	6.7	1,900	2.6	3.0
6	5,300	13.4	15.7	3,200	7.9	9.4	1,600	3.5	4.3
8	4,000	13.4	15.7	2,400	7.9	9.4	1,200	3.5	4.3
10	3,200	13.4	15.7	1,900	7.9	9.4	950	3.5	4.3
12	2,700	14.2	15.7	1,600	8.7	9.4	800	3.9	4.3

- Notes:**
- Above cutting conditions are for general guidance.
  - The figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

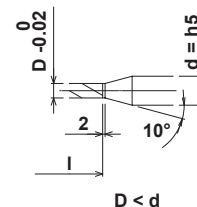
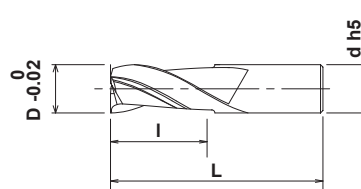


**METRIC**

# Solid Carbide End Mills

## DV-SOCS3 Type

- 3 Flute with 45° Helix and unique center cutting geometry for drilling up to 1xD



CATALOG NUMBER	STK	DIMENSIONS			
		D	I	L	d
DV-SOCS3030	•	3	8	60	6
DV-SOCS3040	•	4	11	60	6
DV-SOCS3050	•	5	13	60	6
DV-SOCS3060	•	6	13	60	6
DV-SOCS3080	•	8	19	75	8
DV-SOCS3100	•	10	22	80	10
DV-SOCS3120	•	12	26	100	12
DV-SOCS3160	•	16	32	110	16
DV-SOCS3200	•	20	38	125	20

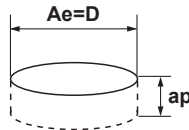
### Recommended Cutting Data for DV-SOCS3 type for continuous milling & drilling

Material	Carbon Steel, Cast Iron (1055, 35)			Alloy Steel, Pre-Hardened Steel, Mold Steel (P20)			
	Diameter	n (rpm)	Vf (ipm)		n (rpm)	Vf (ipm)	
			Drilling	Slotting		Drilling	Slotting
3	10,600	13.0	18.9	6,400	6.3	11.4	
4	8,000	14.6	19.3	4,800	7.5	11.8	
5	6,300	14.6	19.3	3,800	8.3	11.8	
6	5,300	13.8	19.3	3,200	9.1	11.8	
8	4,000	13.8	19.3	2,400	9.4	11.8	
10	3,200	13.8	19.3	1,900	9.4	11.8	
12	2,700	13.8	19.3	1,600	8.7	11.8	
16	2,000	12.6	18.1	1,200	8.7	11.4	
20	1,600	11.8	17.3	950	7.5	11.0	

Material	Hardened Tool Steel (40-50HRC) (H13)			Stainless Steel (304, 316 Stainless)			
	Diameter	n (rpm)	Vf (ipm)		n (rpm)	Vf (ipm)	
			Drilling	Slotting		Drilling	Slotting
3	3,200	3.1	3.5	6,400	3.9	7.5	
4	2,400	3.7	4.7	4,800	4.7	9.4	
5	1,900	3.9	4.7	3,800	5.1	10.2	
6	1,600	4.3	4.7	3,200	5.9	9.8	
8	1,200	4.3	4.7	2,400	5.5	9.4	
10	950	4.3	4.3	1,900	5.1	8.7	
12	800	3.9	4.3	1,600	5.1	8.7	
16	600	3.9	3.9	1,200	4.7	7.9	
20	480	3.7	3.5	950	4.3	7.1	

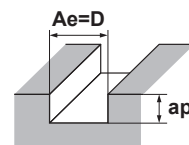
- Notes:**
1. Above cutting conditions are general guidance. Adjust Ae & ap for semi-finishing.
  2. In case of drilling, use coolant.
  3. The figures should be adjusted according to rigidity of machine & work rigidity.
  4. Use step feed when drilling chips become long.

#### Drilling



ap=D (Carbon Steel, Alloy Steel, Pre-hardened Steel, Mold Steel, Cast Iron)  
 ap=0.2D (Hardened Steel)  
 ap=0.5D (Stainless Steel)

#### Slotting



ap=D (Carbon Steel, Alloy Steel, Pre-hardened Steel, Mold Steel, Cast Iron)  
 ap=0.2D (Hardened Steel)  
 ap=0.5D (Stainless Steel)

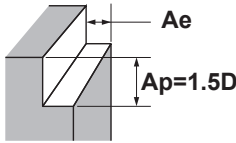
# Solid Carbide End Mills

## Recommended Cutting Data for DV-SOCS3 type

### 1. Shoulder cutting

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40-50HRC)		Stainless Steel (304, 316 Stainless)	
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	12,700	30	7,400	18	3,800	8	7,400	12
4	9,600	35	5,500	22	2,850	8	5,500	17
5	7,500	35	4,500	25	2,200	8	4,500	21
6	6,300	43	3,700	26	1,900	11	3,700	20
8	4,800	47	2,800	28	1,400	11	2,800	20
10	3,800	47	2,200	28	1,100	9	2,200	20
12	3,200	43	1,850	24	950	9	1,850	19
16	2,400	33	1,400	20	700	8	1,400	17
20	1,900	28	1,100	16	560	7	1,100	14

### Shoulder Cutting

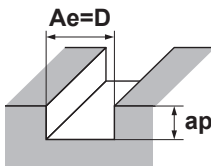


Ae=0.2D (Carbon Steel, Alloy Steel, Pre-hardened Steel, Mold Steel, Cast Iron)  
 Ae=0.1D (Hardened Steel, Stainless)

### 2. Slotting

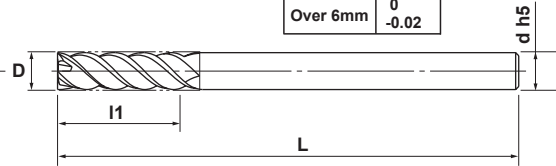
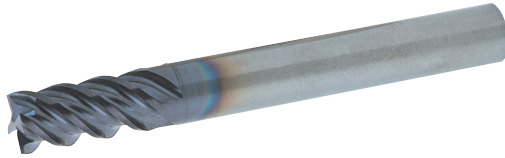
Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40-50HRC)		Stainless Steel (304, 316 Stainless)	
	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (min <sup>-1</sup> )	Vf (ipm)
3	10,600	19	6,400	11	3,200	4	6,400	7
4	8,000	19	4,800	12	2,400	5	4,800	9
5	6,300	19	3,800	12	1,900	5	3,800	10
6	5,300	19	3,200	12	1,600	5	3,200	10
8	4,000	19	2,400	12	1,200	5	2,400	9
10	3,200	19	1,900	12	950	4	1,900	9
12	2,700	19	1,600	12	800	4	1,600	9
16	2,000	18	1,200	11	600	4	1,200	8
20	1,600	17	950	11	480	4	950	7

### Slotting



ap=D (Carbon Steel, Alloy Steel, Pre-hardened Steel, Mold Steel, Cast Iron)  
 ap=0.2D (Hardened Steel)  
 ap=0.5D (Stainless Steel)

- Notes:**
- Above cutting conditions are for general guidance. Adjust Ae & ap for semi-finishing.
  - The figures should be adjusted according to machining rigidity work rigidity.
  - Recommend to down cut with air blow, on stainless steel use coolant.

**METRIC****Solid Carbide End Mills****DZ-SOCS4, DZ-SOCM4, DZ-SOCL4, DZ-SOCLS4 Type**  
- 4 Flute with 45° Helix and sharp corner

Tolerances	
Up to 6mm	0 -0.015
Over 6mm	0 -0.02

**DZ-SOCS4**

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
DZ-SOCS4030	•	3.0	8	60	6
DZ-SOCS4040	•	4.0	11	60	6
DZ-SOCS4050	•	5.0	13	60	6
DZ-SOCS4060	•	6.0	13	60	6
DZ-SOCS4080	•	8.0	19	75	8
DZ-SOCS4100-S8	•	10.0	22	80	8
DZ-SOCS4100	•	10.0	22	80	10
DZ-SOCS4120-S10	•	12.0	26	100	10
DZ-SOCS4120	•	12.0	26	100	12
DZ-SOCS4130	•	13.0	26	100	12
DZ-SOCS4140-S12	•	14.0	26	110	12
DZ-SOCS4150	•	15.0	26	110	16
DZ-SOCS4160-S14	•	16.0	32	110	14
DZ-SOCS4160	•	16.0	32	110	16
DZ-SOCS4180-S16	•	18.0	32	125	16
DZ-SOCS4200-S18	•	20.0	38	125	18
DZ-SOCS4200	•	20.0	38	125	20
DZ-SOCS4220-S20	•	22.0	40	130	20

**DZ-SOCL4**

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
DZ-SOCL4060	•	6.0	25	70	6
DZ-SOCL4080	•	8.0	35	90	8
DZ-SOCL4100	•	10.0	45	100	10
DZ-SOCL4120	•	12.0	55	120	12
DZ-SOCL4160	•	16.0	65	135	16
DZ-SOCL4200	•	20.0	75	155	20

**DZ-SOCLS4**

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
DZ-SOCLS4060	•	6.0	9	120	5
DZ-SOCLS4060-S5.8	•	6.0	9	120	5.8
DZ-SOCLS4070	•	7.0	9	120	6
DZ-SOCLS4070-S6.8	•	7.0	9	120	6.8
DZ-SOCLS4080	•	8.0	12	135	7
DZ-SOCLS4080-S7.8	•	8.0	12	135	7.8
DZ-SOCLS4090	•	9.0	12	135	8
DZ-SOCLS4090-S8.8	•	9.0	12	135	8.8
DZ-SOCLS4100	•	10.0	15	150	9
DZ-SOCLS4100-S9.8	•	10.0	15	150	9.8
DZ-SOCLS4110	•	11.0	15	150	10
DZ-SOCLS4120	•	12.0	18	160	11
DZ-SOCLS4130	•	13.0	18	160	12
DZ-SOCLS4140	•	14.0	18	160	13
DZ-SOCLS4160	•	16.0	24	180	15
DZ-SOCLS4170	•	17.0	24	180	16
DZ-SOCLS4180	•	18.0	27	180	16
DZ-SOCLS4190	•	19.0	30	200	16
DZ-SOCLS4200-S18	•	20.0	30	200	18
DZ-SOCLS4220-S20	•	22.0	35	220	20

**DZ-SOCM4**

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
DZ-SOCM4030	•	3.0	16	60	6
DZ-SOCM4040	•	4.0	18	60	6
DZ-SOCM4050	•	5.0	21	60	6
DZ-SOCM4060	•	6.0	21	60	6
DZ-SOCM4080	•	8.0	26	75	8
DZ-SOCM4090	•	9.0	26	80	10
DZ-SOCM4100	•	10.0	34	90	10
DZ-SOCM4120	•	12.0	38	100	12
DZ-SOCM4130	•	13.0	38	100	12
DZ-SOCM4150	•	15.0	38	110	16
DZ-SOCM4160	•	16.0	48	110	16
DZ-SOCM4200	•	20.0	56	130	20

# Solid Carbide End Mills

## Recommended Cutting Data for DZ-SOCS4 type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316)	
Type of Machining - Shoulder Cutting	 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.1D$		 $a_p=1.5D$ $a_e=0.1D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	10,600	26	6,400	15	3,180	7	6,400	10
4	8,000	30	4,800	19	2,380	7	4,800	15
5	6,300	30	3,800	21	1,900	7	3,800	18
6	5,300	37	3,200	22	1,600	9	3,200	18
8	4,000	39	2,400	24	1,200	9	2,400	17
10	3,200	39	1,900	24	950	8	1,900	17
12	2,700	35	1,600	21	800	8	1,600	17
16	2,000	31	1,200	19	600	7	1,200	15
20	1,600	31	950	19	480	6	950	14
22	1,500	31	900	18	450	6	900	14

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316)	
Type of Machining - Slotting	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=0.2D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	8,500	30	5,300	19	2,650	6	5,300	13
4	6,400	31	4,000	19	2,000	8	4,000	16
5	5,100	31	3,200	19	1,600	8	3,200	17
6	4,250	31	2,650	19	1,350	8	2,650	17
8	3,200	31	2,000	19	1,000	8	2,000	16
10	2,550	31	1,600	19	800	7	1,600	15
12	2,100	31	1,400	19	660	7	1,400	15
16	1,600	24	1,000	15	500	6	1,000	13
20	1,250	23	800	13	400	5	800	13
22	1,150	22	750	12	360	4	750	12

- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing.
  2. The figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to down cut with air blow or mist coolant.



# Solid Carbide End Mills

## Recommended Cutting Data for DZ-SOCM4 type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316)	
Type of Machining - Shoulder Cutting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	7,420	18	4,240	10	2,120	4	4,240	7
4	5,570	20	3,180	13	1,590	5	3,180	10
5	4,450	21	2,540	14	1,270	5	2,540	12
6	3,700	26	2,120	15	1,060	6	2,120	12
8	2,785	27	1,590	13	790	6	1,590	11
10	2,220	27	1,270	12	630	5	1,270	11
12	1,850	24	1,060	12	530	6	1,060	11
16	1,390	22	790	11	390	4	790	10
20	1,110	22	630	10	310	4	630	9

## Recommended Cutting Data for DZ-SOCL4 type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316)	
Type of Machining - Shoulder Cutting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	2,650	19	1,590	11	800	5	1,590	9
8	1,990	20	1,190	9	600	5	1,190	9
10	1,590	20	950	9	480	4	950	8
12	1,330	17	800	9	400	4	800	8
16	990	16	600	8	300	3	600	8
20	800	16	470	7	240	3	480	7

- Notes:**
- Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-roughing.
  - The figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

# Solid Carbide End Mills

## Recommended Cutting Data for DZ-SOCLS4 type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316)	
Type of Machining - Shoulder Cutting	 $a_p=1.5D$ $a_e=0.1D$		 $a_p=1.5D$ $a_e=0.1D$		 $a_p=1.5D$ $a_e=0.05D$		 $a_p=1.5D$ $a_e=0.1D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	5,300	13	3,180	8	1,590	3	3,180	5
4	3,980	15	2,390	9	1,190	4	2,390	8
5	3,180	15	1,910	11	950	4	1,900	9
6	2,650	19	1,590	11	800	5	1,600	9
8	1,990	20	1,190	9	600	5	1,200	9
10	1,590	20	950	9	480	4	950	8
12	1,330	17	800	9	400	4	800	8
16	1,000	16	600	8	300	3	600	8
20	790	13	470	7	240	3	470	7

- Notes:**
- Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing.
  - The figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

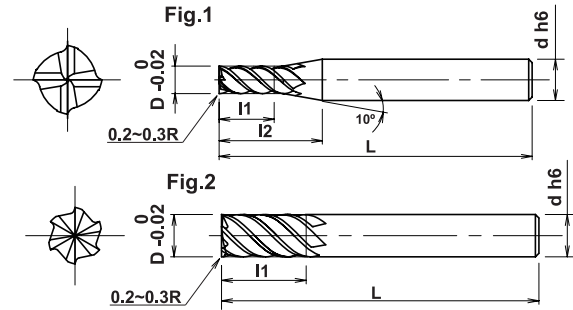
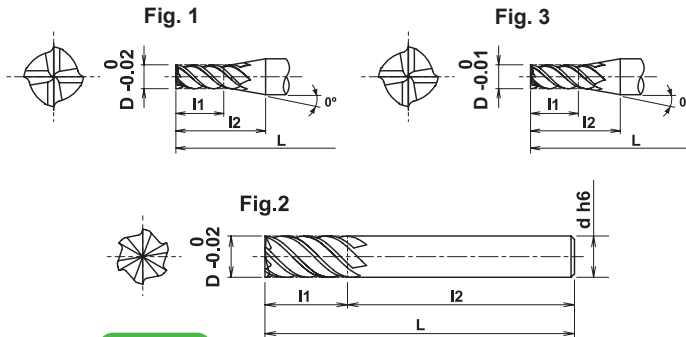


**METRIC**

# Solid Carbide End Mills

## SEH & SEH-R02 Type

- 4, 6 & 8 Flute with 50° Helix for high hardened steel up to 70 HRC



**SEH**



**SEH-R02**

	CATALOG NUMBER	STK	DIMENSIONS						FIG.
			D	I1	I2	L	d	Flutes	
SHORT	SEHS4010	•	1.0	2	12	60	6	4	3
	SEHS4020	•	2.0	4	12	60	6	4	3
	SEHS4030	•	3.0	7	17	60	6	4	1
	SEHS4040	•	4.0	9	16	60	6	4	1
	SEHS4050	•	5.0	12	16	60	6	4	1
	SEHS6060	•	6.0	13	-	60	6	6	2
REGULAR	SEHH4010	•	1.0	3.5	13	60	6	4	3
	SEHH4015	•	1.5	5	14	60	6	4	3
	SEHH4020	•	2.0	7	15	60	6	4	3
	SEHH4025	•	2.5	8	15	60	6	4	3
	SEHH4030	•	3.0	10	20	60	6	4	1
	SEHH4035	•	3.5	12	20	60	6	4	1
	SEHH4040	•	4.0	12	19	60	6	4	1
	SEHH4045	•	4.5	15	20	60	6	4	1
	SEHH4050	•	5.0	15	19	60	6	4	1
	SEHH4055	•	5.5	15	18	60	6	4	1
	SEHH6060	•	6.0	15	-	60	6	6	2
	SEHH6065	•	6.5	20	25	75	8	6	1
	SEHH6070	•	7.0	20	24	75	8	6	1
	SEHH6075	•	7.5	20	22	75	8	6	1
	SEHH6080	•	8.0	20	-	75	8	6	2
	SEHH6085	•	8.5	25	30	80	10	6	1
	SEHH6090	•	9.0	25	29	80	10	6	1
	SEHH6095	•	9.5	25	27	80	10	6	1
	SEHH6100	•	10.0	25	-	80	10	6	2
	SEHH6105	•	10.5	30	35	100	12	6	1
	SEHH6110	•	11.0	30	34	100	12	6	1
	SEHH6120	•	12.0	30	-	100	12	6	2
	SEHH6130	•	13.0	35	45	105	16	6	1
	SEHH6140	•	14.0	35	42	105	16	6	1
SEHH6150	•	15.0	40	44	110	16	6	1	
SEHH6160	•	16.0	40	-	110	16	6	2	
SEHH6180	•	18.0	40	47	120	20	6	1	
SEHH6200	•	20.0	45	-	125	20	6	2	

	CATALOG NUMBER	STK	DIMENSIONS						FIG.
			D	I1	I2	L	d	Flutes	
	SEHH4030-R02	•	3.0	10	20	60	6	4	1
	SEHH4040-R02	•	4.0	12	19	60	6	4	1
	SEHH4050-R02	•	5.0	15	19	60	6	4	1
	SEHH6060-R02	•	6.0	15	-	60	6	6	2
	SEHH6070-R02	•	7.0	20	24	75	8	6	1
	SEHH6080-R02	•	8.0	20	-	75	8	6	2
	SEHH6090-R02	•	9.0	25	29	80	10	6	1
	SEHH6100-R02	•	10.0	25	-	80	10	6	2
	SEHH6120-R02	•	12.0	30	-	100	12	6	2
	SEHH6160-R02	•	16.0	40	-	110	16	6	2
	SEHH6200-R02	•	20.0	45	-	125	20	6	2

# Solid Carbide End Mills

## SEH & SEH-R02 Type

- 4 & 6 Flute with 50° Helix for high hardened steel up to 70 HRC

### Recommended Cutting Data for SEH/SEHH/SEHH-R02 type

Material	Mold Steel P20 (38~43HRC)		Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		H.S.S. (63~70HRC)	
Type of Machining - Shoulder Cutting	<p><math>a_p \leq 1.5D</math> <math>a_e \leq 0.05D</math></p>		<p><math>a_p \leq 1.5D</math> <math>a_e \leq 0.04D</math></p>		<p><math>a_p \leq 1.5D</math> <math>a_e \leq 0.04D</math> (MAX. 0.6mm)</p>		<p><math>a_p \leq 1.5D</math> <math>a_e \leq 0.02D</math> (MAX. 0.4mm)</p>	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	40,000	28	25,000	16	20,000	13	10,000	5
2	24,000	37	15,000	22	12,000	17	6,400	9
3	24,000	51	15,000	31	12,000	24	6,000	10
4	18,000	71	12,000	43	9,500	31	5,100	12
6	12,000	87	8,000	55	6,500	43	3,500	17
8	10,000	87	6,000	55	5,000	43	2,500	17
10	8,000	87	5,000	55	4,000	43	2,000	17
12	6,500	75	4,000	47	3,300	35	1,700	14
16	5,000	58	3,000	37	2,500	28	1,300	10
20	3,800	45	2,300	29	2,000	22	1,000	8

- Notes:**
- Above cutting conditions are general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  - Figures should be adjusted according to machining shape, purpose and rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

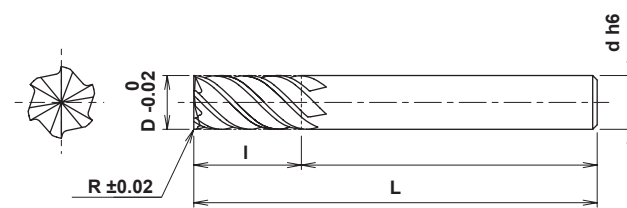
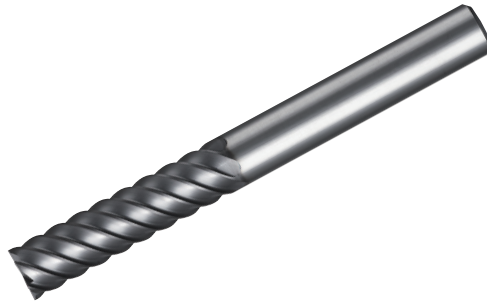


**METRIC**

# Solid Carbide End Mills

## SEHM Type

- 6 Flute with 50° Helix for high hardened steel up to 70 HRC



CATALOG NUMBER	STK	DIMENSIONS				
		D	I	L	d	FLUTES
SEHM6060	•	6	20	65	6	6
SEHM6080	•	8	28	80	8	6
SEHM6100	•	10	35	90	10	6
SEHM6120	•	12	45	110	12	6
SEHM6160	•	16	55	120	16	6
SEHM6200	•	20	60	140	20	6

### Recommended Cutting Data for SEHM type

Material	Mold Steel P20 (38~43HRC)		Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		H.S.S. (63~70HRC)	
	$a_p \leq 2.25D$ $a_e \leq 0.03D$		$a_p \leq 2.25D$ $a_e \leq 0.025D$		$a_p \leq 2.25D$ $a_e \leq 0.025D$		$a_p \leq 2.25D$ $a_e \leq 0.01D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	10,600	75	6,400	47	5,300	39	2,700	13
8	8,000	75	4,800	47	4,000	39	2,000	14
10	6,400	75	3,800	47	3,200	39	1,800	15
12	5,300	63	3,200	39	2,700	31	1,300	9
16	4,000	47	2,400	28	2,000	24	1,000	7
20	3,200	39	1,900	24	1,600	20	800	6

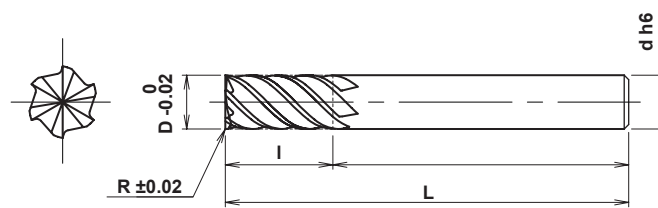
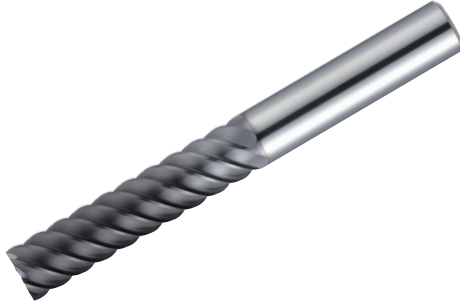
- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to use down cut with air blow or mist coolant.

# Solid Carbide End Mills

**METRIC**

## SEHL Type

- 6 Flute with 50° Helix for high hardened steel up to 70 HRC



CATALOG NUMBER	STK	DIMENSIONS				
		D	I	L	d	FLUTES
SEHL6060	•	6	26	70	6	6
SEHL6080	•	8	36	90	8	6
SEHL6100	•	10	46	100	10	6
SEHL6120	•	12	56	120	12	6
SEHL6160	•	16	66	135	16	6
SEHL6200	•	20	76	155	20	6

## Recommended Cutting Data for SEHL type

Material	Mold Steel P20 (38~43HRC)		Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)	
Type of Machining - Shoulder Cutting	 $a_p \leq 3D$ $a_e \leq 0.01D$		 $a_p \leq 3D$ $a_e \leq 0.01D$		 $a_p \leq 3D$ $a_e \leq 0.01D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	3,180	30	2,650	18	2,100	15
8	2,390	28	1,990	19	1,590	15
10	1,910	27	1,590	19	1,270	15
12	1,590	26	1,330	19	1,060	15
16	1,190	22	1,000	17	800	13
20	950	20	800	15	640	12

- Notes:**
- Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  - Figures should be adjusted according to machining shape, purpose and rigidity of both machine and work clamping.
  - Recommend to use down cut with air blow or mist coolant.

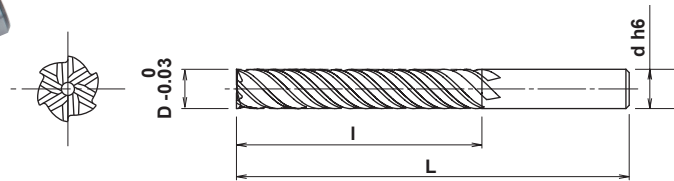
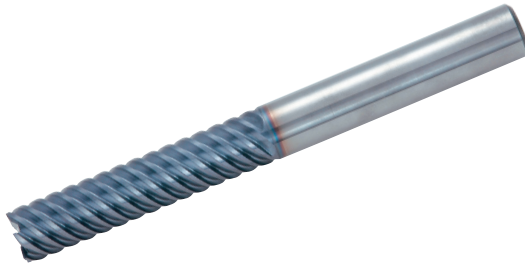


**METRIC**

# Solid Carbide End Mills

## DZ-SEPL Type

- 6 Flute with 60° Helix for welds and hardened steel up to 60 HRC



CATALOG NUMBER	STK	DIMENSIONS			
		D	I	L	d
DZ-SEPL6160	•	16	70	150	16
DZ-SEPL6200	•	20	100	180	20
DZ-SEPL6250	•	25	100	180	25
DZ-SEPL6300	•	30	110	200	32

### Recommended Cutting Data for DZ-SEPL type

Material	Hardened Steel D2 (55~62HRC)			
Type of Machining - Shoulder Cutting	<p><math>a_p = 1.5D</math> <math>a_e \leq 0.1D</math></p>		<p><math>a_p = 1.5D</math> <math>a_e \leq 0.01D</math></p>	
	Diameter	Roughing		Finishing
n (rpm)		Vf (ipm)	n (rpm)	Vf (ipm)
16	300	1.4	400	3.9
20	240	0.8	320	3.5
25	190	1.2	250	3.1
30	160	1.4	210	2.8

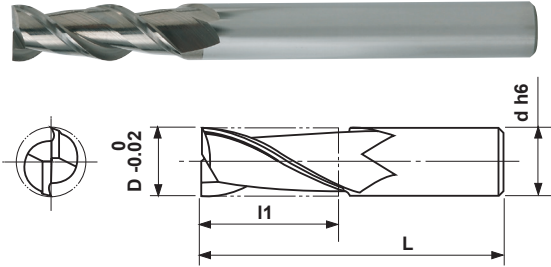
- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Figures should be adjusted according to machining shape, purpose and rigidity of both machine and work clamping.
  3. Recommend to use down cut with air blow or mist coolant.

# Solid Carbide End Mills for Aluminum

**METRIC**

## AL-SEES2 Type

- 2 Flute with 45° Helix and sharp corner



### AL-SEES2

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-SEES2010	•	1.0	2.8	40	4
AL-SEES2015	•	1.5	4.4	40	4
AL-SEES2020	•	2.0	7	40	4
AL-SEES2025	•	2.5	9	40	4
AL-SEES2030	•	3.1	11	50	6
AL-SEES2035	•	3.5	12	50	6
AL-SEES2040	•	4.0	14	50	6
AL-SEES2045	•	4.5	16	50	6
AL-SEES2050	•	5.0	17	55	6
AL-SEES2055	•	5.5	17	55	6
AL-SEES2060	•	6.0	17	55	6
AL-SEES2065	•	6.5	17	55	6
AL-SEES2070	•	7.0	22	65	8
AL-SEES2075	•	7.5	22	65	8
AL-SEES2080	•	8.0	22	65	8
AL-SEES2085	•	8.5	22	65	8
AL-SEES2090	•	9.0	22	70	10
AL-SEES2095	•	9.5	22	70	10
AL-SEES2100	•	10.0	28	75	10
AL-SEES2120	•	12.0	28	80	12
AL-SEES2130	•	13.0	35	85	12
AL-SEES2140	•	14.0	40	95	16
AL-SEES2150	•	15.0	40	95	16
AL-SEES2160	•	16.0	40	95	16
AL-SEES2180	•	18.0	45	115	20
AL-SEES2200	•	20.0	45	115	20
AL-SEES2210	•	21.0	55	130	25
AL-SEES2220	•	22.0	55	130	25
AL-SEES2230	•	23.0	55	130	25
AL-SEES2240	•	24.0	55	130	25
AL-SEES2250	•	25.0	55	130	25
AL-SEES2260	•	26.0	55	130	32
AL-SEES2270	•	27.0	55	130	32
AL-SEES2280	•	28.0	65	140	32
AL-SEES2290	•	29.0	65	140	32
AL-SEES2300	•	30.0	65	140	32

### AL-SEEL2

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-SEEL2030	•	3.0	22	65	6
AL-SEEL2040	•	4.0	26	65	6
AL-SEEL2050	•	5.0	32	75	6
AL-SEEL2060	•	6.0	32	75	6
AL-SEEL2070	•	7.0	42	95	8
AL-SEEL2080	•	8.0	42	95	8
AL-SEEL2090	•	9.0	42	110	10
AL-SEEL2100	•	10.0	53	120	10
AL-SEEL2120	•	12.0	53	120	12
AL-SEEL2130	•	13.0	65	130	12
AL-SEEL2140	•	14.0	75	140	16
AL-SEEL2150	•	15.0	75	140	16
AL-SEEL2160	•	16.0	75	140	16
AL-SEEL2180	•	18.0	75	150	20
AL-SEEL2200	•	20.0	75	150	20
AL-SEEL2210	•	21.0	85	160	25
AL-SEEL2220	•	22.0	85	160	25
AL-SEEL2230	•	23.0	85	160	25
AL-SEEL2240	•	24.0	85	160	25
AL-SEEL2250	•	25.0	85	160	25



# Solid Carbide End Mills for Aluminum

## Recommended Cutting Data for AL-SEES2 type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting	 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	32,000	35	32,000	35	32,000	35	32,000	35
1.5	32,000	55	32,000	55	32,000	55	32,000	55
2	32,000	75	32,000	75	32,000	75	25,000	59
3	24,000	87	22,000	79	24,000	87	17,000	59
4	18,000	87	16,000	79	18,000	87	13,000	59
5	15,000	87	13,000	79	15,000	87	10,000	59
6	12,000	87	10,000	79	12,000	87	8,500	59
8	9,000	71	8,000	63	9,000	71	6,500	51
10	7,300	71	6,000	63	7,300	71	5,000	51
12	6,000	71	5,000	63	6,000	71	4,000	51
16	4,500	59	4,000	55	4,500	59	3,000	39
20	3,600	59	3,000	55	3,600	59	2,500	39
25	3,000	59	2,500	55	3,000	59	2,000	39
30	2,500	49	2,100	41	2,500	49	1,700	33

- Notes:
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Slotting	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	32,000	22	32,000	22	32,000	22	32,000	22
1.5	32,000	34	32,000	34	32,000	34	29,000	31
2	32,000	43	27,000	39	32,000	43	22,000	31
3	21,000	43	18,000	39	21,000	43	14,000	31
4	16,000	43	13,000	39	16,000	43	11,000	31
5	12,000	43	10,000	39	12,000	43	8,900	31
6	10,000	43	9,000	39	10,000	43	7,400	31
8	8,000	43	7,000	39	8,000	43	5,500	31
10	6,000	43	5,500	39	6,000	43	4,500	31
12	5,000	43	4,500	39	5,000	43	3,700	31
16	4,000	39	3,300	31	4,000	39	2,700	28
20	3,000	35	2,700	31	3,000	35	2,200	26
25	2,500	35	2,000	28	2,500	35	1,800	26
30	2,000	31	1,800	28	2,000	31	1,500	24

- Notes:
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

# Solid Carbide End Mills for Aluminum

## High Speed Cutting Data for AL-SEES2 type

Solid Carbide End Mills

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	50,000	59	50,000	59	50,000	59	50,000	59
1.5	50,000	87	50,000	87	50,000	87	50,000	87
2	50,000	118	50,000	118	50,000	118	50,000	118
3	50,000	177	45,000	157	50,000	177	37,000	130
4	40,000	177	34,000	157	40,000	177	27,000	130
5	32,000	177	27,000	157	32,000	177	22,000	130
6	27,000	177	22,000	157	27,000	177	18,000	130
8	20,000	157	17,000	134	20,000	157	14,000	110
10	16,000	157	13,000	126	16,000	157	11,000	110
12	13,000	126	11,000	110	13,000	71	9,000	87
16	10,000	118	8,500	98	10,000	118	7,000	83
20	8,000	94	7,000	83	8,000	94	5,500	67
25	6,500	87	5,500	79	6,500	87	4,500	63
30	5,000	71	4,500	63	5,000	71	3,700	51

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Slotting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	50,000	35	50,000	35	50,000	35	50,000	35
1.5	50,000	53	50,000	53	50,000	53	50,000	53
2	50,000	71	50,000	71	50,000	71	48,000	67
3	48,000	98	40,000	83	48,000	98	32,000	67
4	36,000	98	30,000	83	36,000	98	23,000	67
5	28,000	98	24,000	83	28,000	98	19,000	67
6	23,000	98	20,000	83	23,000	98	16,000	67
8	18,000	98	15,000	83	18,000	98	12,000	67
10	14,000	98	12,000	83	14,000	98	9,500	67
12	12,000	98	10,000	83	12,000	98	8,000	67
16	9,000	98	8,000	83	9,000	98	6,000	67
20	7,000	83	6,000	71	7,000	83	4,800	55
25	5,700	79	4,800	67	5,700	79	3,800	51
30	4,700	63	4,000	55	4,700	63	3,200	43

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.



# Solid Carbide End Mills for Aluminum

## Recommended Cutting Data for AL-SEEL2 type

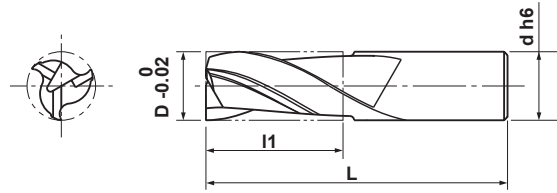
Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	19,000	47	16,000	39	19,000	47	10,000	26
4	14,000	47	12,000	39	14,000	47	8,000	26
5	11,000	47	9,500	39	11,000	47	6,000	26
6	9,500	47	8,000	39	9,500	47	5,000	26
8	7,000	47	6,000	39	7,000	47	4,000	26
10	5,700	47	4,800	39	5,700	47	3,200	26
12	4,700	47	4,000	39	4,700	47	2,600	26
16	3,500	39	3,000	35	3,500	39	2,000	24
20	2,800	31	2,400	28	2,800	31	1,600	20
25	2,300	31	1,900	26	2,300	31	1,300	20

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.
  6. Full slotting is not recommended, if needed, try reducing the depth of cut to 0.2D and the feed speed to 20-50% from above data.

# Solid Carbide End Mills for Aluminum

**METRIC**

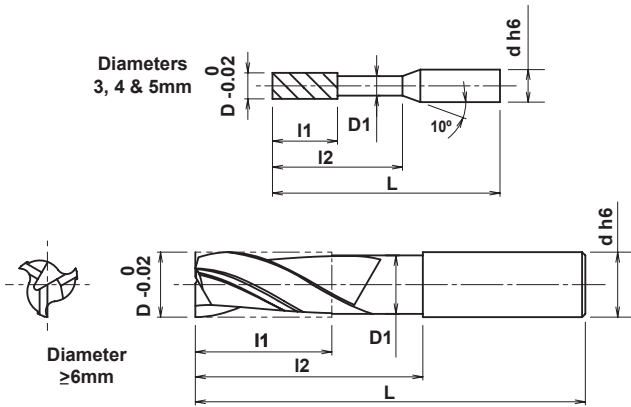
## AL-SEES3 & AL-SEEZ3 Type - 3 Flute with 45° Helix and sharp corner



Solid Carbide End Mills

### AL-SEES3

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-SEES3030	•	3.0	5	50	6
AL-SEES3040	•	4.0	6	50	6
AL-SEES3050	•	5.0	8	50	6
AL-SEES3060	•	6.0	9	55	6
AL-SEES3080	•	8.0	12	65	8
AL-SEES3100	•	10.0	15	75	10
AL-SEES3120	•	12.0	18	80	12
AL-SEES3160	•	16.0	24	95	16
AL-SEES3200	•	20.0	30	115	20
AL-SEES3250	•	25.0	38	130	25



### AL-SEEZ3

CATALOG NUMBER	STK	DIMENSIONS					
		D	I1	D1	I2	L	d
AL-SEEZ3030	•	3.0	5	2.8	9	55	6
AL-SEEZ3040	•	4.0	6	3.8	12	55	6
AL-SEEZ3050	•	5.0	8	4.8	15	55	6
AL-SEEZ3060	•	6.0	9	5.8	18	60	6
AL-SEEZ3080	•	8.0	12	7.8	24	70	8
AL-SEEZ3100	•	10.0	15	9.8	30	75	10
AL-SEEZ3120	•	12.0	18	11.7	36	80	12
AL-SEEZ3160	•	16.0	24	15.7	48	95	16
AL-SEEZ3200	•	20.0	30	19.7	60	115	20
AL-SEEZ3250	•	25.0	38	24.7	75	130	25



# Solid Carbide End Mills for Aluminum

## Recommended Cutting Data for AL-SEES3 & AL-SEEZ3 type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	24,000	189	22,000	173	24,000	189	17,000	134
4	18,000	177	16,000	157	18,000	177	13,000	126
5	15,000	177	13,000	157	15,000	177	10,000	126
6	12,000	165	10,000	138	12,000	165	8,500	118
8	9,000	142	8,000	126	9,000	142	6,500	102
10	7,300	126	6,000	106	7,300	126	5,000	87
12	6,000	118	5,000	98	6,000	118	4,000	79
16	4,500	98	4,000	87	4,500	98	3,000	63
20	3,600	83	3,000	71	3,600	83	2,500	59
25	3,000	71	2,500	59	3,000	71	2,000	47

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	21,000	122	18,000	106	21,000	122	14,000	83
4	16,000	98	13,000	79	16,000	98	11,000	67
5	12,000	83	10,000	71	12,000	83	8,900	63
6	10,000	79	9,000	71	10,000	79	7,400	59
8	8,000	79	7,000	69	8,000	79	5,500	55
10	6,000	71	5,500	65	6,000	71	4,500	53
12	5,000	71	4,500	63	5,000	71	3,700	51
16	4,000	63	3,300	51	4,000	63	2,700	39
20	3,000	53	2,700	47	3,000	53	2,200	39
25	2,500	43	2,000	35	2,500	43	1,800	31

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping or helical interpolation, recommend reducing the above data by 30-60%.
  6. In case of short drilling, reduce ipm of slotting data by 60%.

# Solid Carbide End Mills for Aluminum

## High Speed Cutting Data for AL-SEES3 & AL-SEEZ3 type

Solid Carbide End Mills

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	50,000	354	45,000	319	50,000	354	37,000	260
4	40,000	315	34,000	268	40,000	315	27,000	213
5	32,000	315	27,000	268	32,000	315	22,000	213
6	27,000	268	22,000	217	27,000	268	18,000	177
8	20,000	236	17,000	197	20,000	236	14,000	165
10	16,000	220	13,000	177	16,000	220	11,000	154
12	13,000	205	11,000	173	13,000	205	9,000	142
16	10,000	177	8,500	150	10,000	177	7,000	122
20	8,000	157	7,000	138	8,000	157	5,500	110
25	6,500	126	5,500	110	6,500	126	4,500	87

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	48,000	220	40,000	189	48,000	220	32,000	150
4	36,000	220	30,000	189	36,000	220	23,000	150
5	28,000	220	24,000	189	28,000	220	19,000	150
6	23,000	220	20,000	189	23,000	220	16,000	150
8	18,000	197	15,000	165	18,000	197	12,000	130
10	14,000	165	12,000	142	14,000	165	9,500	110
12	12,000	150	10,000	126	12,000	150	8,000	102
16	9,000	122	8,000	110	9,000	122	6,000	83
20	7,000	110	6,000	94	7,000	110	4,800	75
25	5,700	87	4,800	75	5,700	87	3,800	59

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping or helical interpolation, recommend reducing the above data by 30-60%.
  6. In case of short drilling, reduce ipm of slotting data by 60%

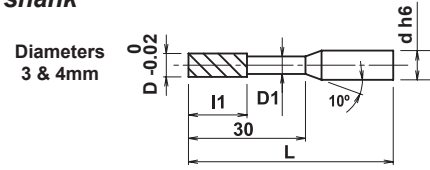
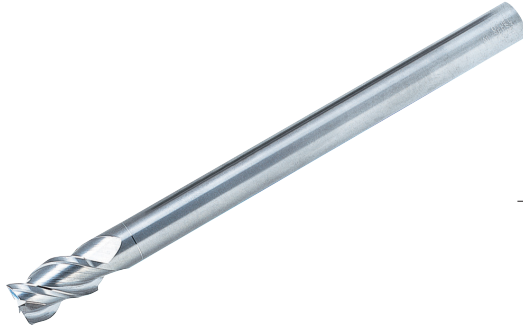


**METRIC**

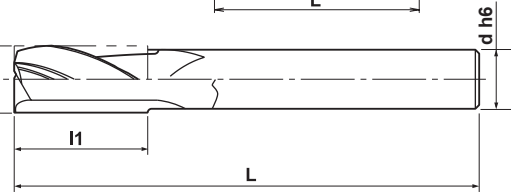
# Solid Carbide End Mills for Aluminum

## AL-SEES3-LS Type

- 3 Flute with 45° Helix, sharp corner, long shank and undersized shank



Diameters >4mm



CATALOG NUMBER	STK	DIMENSIONS				
		D	l1	L	D1	d
AL-SEES3030-LS	•	3.0	5	70	2.8	4
AL-SEES3040-LS	•	4.0	6	70	3.8	4
AL-SEES3050-LS	•	5.0	8	80	-	4
AL-SEES3060-LS	•	6.0	9	80	-	4
AL-SEES3060-LS-S5.8	•	6.0	9	80	-	5.8
AL-SEES3070-LS	•	7.0	10	100	-	6
AL-SEES3070-LS-S6.8	•	7.0	10	100	-	6.8
AL-SEES3080-LS	•	8.0	12	100	-	6
AL-SEES3080-LS-S7.8	•	8.0	12	100	-	7.8

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-SEES3090-LS	•	9.0	14	120	8
AL-SEES3090-LS-S8.8	•	9.0	14	120	8.8
AL-SEES3100-LS	•	10.0	15	130	8
AL-SEES3100-LS-S9.8	•	10.0	15	130	9.8
AL-SEES3120-LS	•	12.0	18	150	10
AL-SEES3140-LS	•	14.0	21	160	12
AL-SEES3160-LS	•	16.0	24	180	14
AL-SEES3180-LS	•	18.0	27	180	16
AL-SEES3200-LS	•	20.0	30	200	18
AL-SEES3220-LS	•	22.0	33	200	20

## Recommended Cutting Data for AL-SEES3-LS type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	 $a_p=1.5D$ $a_e=0.05D$		 $a_p=1.5D$ $a_e=0.05D$		 $a_p=1.5D$ $a_e=0.05D$		 $a_p=1.5D$ $a_e=0.05D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	19,000	87	16,000	71	19,000	87	10,600	37
4	14,300	71	11,900	63	14,300	71	8,000	35
5	11,400	63	10,000	55	11,400	63	6,400	33
6	9,500	55	8,000	47	9,500	55	5,000	30
8	7,000	43	6,000	39	7,000	43	4,000	26
10	5,700	39	4,800	33	5,700	39	3,200	22
12	4,700	37	4,000	31	4,700	37	2,600	20
14	4,000	35	3,400	30	4,000	35	2,200	20
16	3,500	31	3,000	28	3,500	31	2,000	18
18	3,200	31	2,600	26	3,200	31	1,800	18
20	2,800	28	2,400	24	2,800	28	1,600	16
22	2,600	26	2,100	20	2,600	26	1,400	14

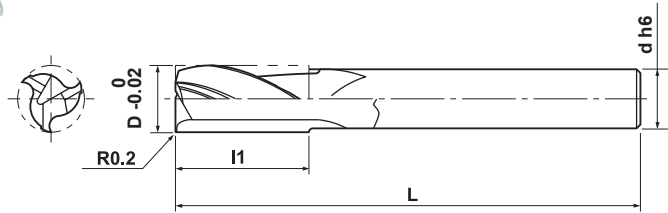
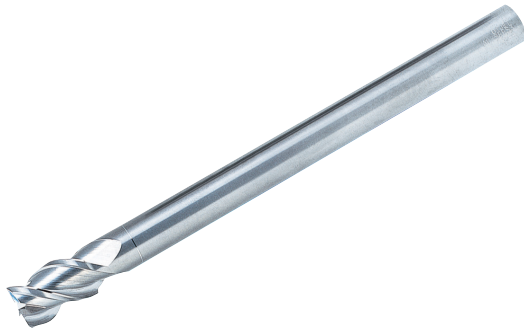
- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.
  6. Full slotting is not recommended, if needed, try reducing the depth of cut to 0.2D and the feed speed to 20-50% from above data.

# Solid Carbide End Mills for Aluminum

**METRIC**

## AL-SEES3-LS-R02 Type

- 3 Flute with 45° Helix and 0.2 corner radius



Solid Carbide End Mills

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-SEES3060-LS-R02	•	6.0	9	80	4
AL-SEES3080-LS-R02	•	8.0	12	100	6
AL-SEES3100-LS-R02	•	10.0	15	130	8
AL-SEES3120-LS-R02	•	12.0	18	150	10
AL-SEES3140-LS-R02	•	14.0	21	160	12
AL-SEES3160-LS-R02	•	16.0	24	180	14
AL-SEES3180-LS-R02	•	18.0	27	180	16
AL-SEES3200-LS-R02	•	20.0	30	200	18
AL-SEES3220-LS-R02	•	22.0	33	200	20

### Recommended Cutting Data for AL-SEES3-LS-R02 type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting	 $a_p = 1.5D$ $a_e = 0.05D$		 $a_p = 1.5D$ $a_e = 0.05D$		 $a_p = 1.5D$ $a_e = 0.05D$		 $a_p = 1.5D$ $a_e = 0.05D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	10,000	59	9,000	53	10,000	59	7,400	43
8	8,000	55	7,000	49	8,000	55	5,500	39
10	6,000	47	5,500	43	6,000	47	4,500	35
12	5,000	43	4,500	39	5,000	43	3,700	31
14	4,500	39	3,900	35	4,500	39	3,200	30
16	4,000	39	3,300	31	4,000	39	2,700	26
18	3,500	37	3,000	31	3,500	37	2,500	26
20	3,000	35	2,700	31	3,000	35	2,200	26
22	2,900	35	2,500	30	2,900	35	2,000	24

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.



# Solid Carbide End Mills for Aluminum

## High Speed Cutting Data for AL-SEES3-LS-R02 Type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting								
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	20,000	102	17,000	87	20,000	102	12,000	63
8	15,000	83	13,000	71	15,000	83	9,000	51
10	12,000	79	10,000	71	12,000	79	7,300	47
12	10,000	79	9,000	71	10,000	79	6,000	47
14	8,500	73	7,500	63	8,500	73	5,000	43
16	7,500	65	6,500	55	7,500	65	4,500	39
18	6,500	59	6,000	55	6,500	59	4,000	39
20	6,000	59	5,000	49	6,000	59	3,600	35
22	5,500	55	4,800	47	5,500	55	3,300	31

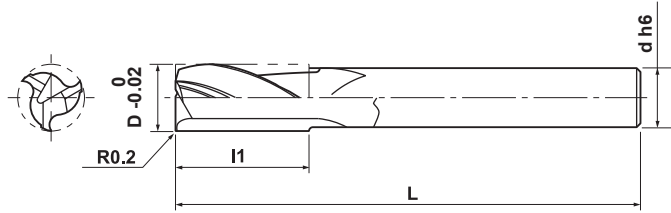
- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.
  6. Full slotting is not recommended, if needed, try reducing the depth of cut to 0.2D and the feed speed to 20-50% from above data.

# Solid Carbide End Mills for Aluminum

**METRIC**

## AL-SEES3-XLS-R02 Type

- 3 Flute with 45° Helix, long shank and 0.2 corner radius



Solid Carbide End Mills

CATALOG NUMBER	STK	DIMENSIONS			
		D	L1	L	d
AL-SEES3060-XLS-R02	•	6.0	9	100	5
AL-SEES3080-XLS-R02	•	8.0	12	140	7
AL-SEES3100-XLS-R02	•	10.0	15	160	9
AL-SEES3120-XLS-R02	•	12.0	18	180	11
AL-SEES3140-XLS-R02	•	14.0	21	200	13
AL-SEES3160-XLS-R02	•	16.0	24	220	15
AL-SEES3180-XLS-R02	•	18.0	27	240	17
AL-SEES3200-XLS-R02	•	20.0	30	250	18
AL-SEES3220-XLS-R02	•	22.0	33	250	20

### Recommended Cutting Data for AL-SEES3-XLS-R02 type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Shoulder Cutting	 $L = Dc \times 4$ $a_e = Dc \times 0.25$ $a_p = Dc \times 1.5$		 $L = Dc \times 4$ $a_e = Dc \times 0.25$ $a_p = Dc \times 1.5$		 $L = Dc \times 4$ $a_e = Dc \times 0.25$ $a_p = Dc \times 1.5$		 $L = Dc \times 4$ $a_e = Dc \times 0.25$ $a_p = Dc \times 1.5$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	20,000	142	20,000	134	20,000	142	13,500	83
8	18,000	142	18,000	130	18,000	142	12,000	83
10	14,000	165	14,000	157	14,000	165	9,500	94
12	12,000	189	10,500	150	12,000	189	8,000	110
14	10,000	165	9,000	134	10,000	165	7,000	102
16	9,000	157	8,000	126	9,000	157	6,000	94
18	8,000	150	7,200	122	8,000	150	5,400	87
20	7,200	142	6,500	118	7,200	142	5,000	83
22	6,500	134	6,000	110	6,500	134	4,800	83

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

**Reduce speeds and feeds when overhang length is as shown in table**

L/D	n (rpm) Vf (ipm)	$a_e$
4~5	0%	0.2Dc
5~6	10~20%	0.15Dc
6~7	30~40%	0.1Dc
7~8	40~50%	0.075Dc
8~9	50~60%	0.05Dc
9~10	60~70%	0.025Dc



# Solid Carbide End Mills for Aluminum

## Recommended Cutting Data for AL-SEES3-XLS-R02 Type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
Type of Machining - Slotting	 $L = D c \times 4$ $a_e = Dc$ $a_p = Dc \times 0.25$		 $L = D c \times 4$ $a_e = Dc$ $a_p = Dc \times 0.25$		 $L = D c \times 4$ $a_e = Dc$ $a_p = Dc \times 0.25$		 $L = D c \times 4$ $a_e = Dc$ $a_p = Dc \times 0.25$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	15,000	207	14,000	181	15,000	207	11,000	138
8	12,500	163	12,000	150	12,500	163	9,000	106
10	11,000	138	10,500	138	11,000	138	8,000	91
12	9,600	122	9,000	110	9,600	122	7,000	79
14	8,600	108	8,200	98	8,600	108	6,200	71
16	7,800	104	7,400	94	7,800	104	5,600	67
18	7,000	99	6,700	91	7,000	99	5,000	63
20	6,400	101	6,000	91	6,400	101	4,600	63
22	6,000	99	5,800	91	6,000	99	4,400	67

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

### Reduce speeds and feeds when overhang length is as shown in table

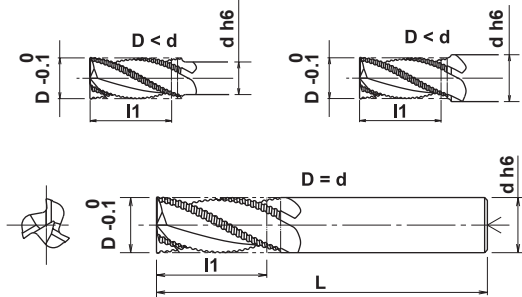
L/D	n (rpm) Vf (ipm)		a <sub>e</sub>
	Diameter Under ø10	Diameter Over ø10	
4~5	0%	0%	0.2Dc
5~6	40~50%	10~20%	0.1Dc
6~7	50~60%	20~30%	0.05Dc
7~8	60~70%	30~50%	0.05Dc
8~9	70~80%	40~60%	0.025Dc
9~10	70~80%	50~70%	0.025Dc

# Solid Carbide End Mills for Aluminum

**METRIC**

## AL-OCRS Type

- 3 Flute with 30° Helix for roughing



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-OCRS3030	•	3.0	6	50	6
AL-OCRS3035	•	3.5	7	50	6
AL-OCRS3040-4	•	4.0	8	55	4
AL-OCRS3040	•	4.0	8	55	6
AL-OCRS3050-4	•	5.0	10	55	4
AL-OCRS3050	•	5.0	10	55	6
AL-OCRS3060	•	6.0	13	55	6
AL-OCRS3080	•	8.0	17	65	8
AL-OCRS3100	•	10.0	20	75	10
AL-OCRS3120	•	12.0	25	80	12

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-OCRS3140	•	14.0	28	95	12
AL-OCRS3160	•	16.0	34	95	16
AL-OCRS3180	•	18.0	37	115	16
AL-OCRS3200	•	20.0	40	115	20
AL-OCRS3220	•	22.0	46	130	20
AL-OCRS3240	•	24.0	51	130	25
AL-OCRS3250	•	25.0	51	130	25
AL-OCRS3300	•	30.0	51	140	25

## Recommended Cutting Data for AL-OCRS type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)	
	 $a_p = 1.5D$ $a_e \leq 0.25D$		 $a_p = 1.5D$ $a_e \leq 0.25D$		 $a_p = 1.5D$ $a_e \leq 0.25D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	40,000	106	40,000	106	25,000	43
4	36,000	106	36,000	106	20,000	43
5	30,000	213	30,000	213	16,000	87
6	27,000	240	27,000	240	13,000	91
8	20,000	236	20,000	236	10,000	91
10	16,000	228	16,000	228	8,000	91
12	13,000	209	13,000	209	6,500	83
14	11,000	205	11,000	205	5,700	79
16	10,000	201	10,000	201	5,000	79
18	9,000	193	9,000	193	4,400	75
20	8,000	189	8,000	189	4,000	75
25	6,400	181	6,400	181	3,200	71

- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.



# Solid Carbide End Mills for Aluminum

## Recommended Cutting Data for AL-OCRS type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)	
Type of Machining - Slotting						
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	30,000	71	30,000	71	16,000	28
4	24,000	87	24,000	87	12,000	35
5	19,000	91	19,000	91	10,000	35
6	16,000	94	16,000	94	8,000	39
8	12,000	98	12,000	98	6,000	39
10	9,500	102	9,500	102	5,000	39
12	8,000	83	8,000	83	4,000	35
14	6,800	63	6,800	63	3,400	28
16	6,000	63	6,000	63	3,000	28
18	5,300	59	5,300	59	2,700	26
20	4,700	51	4,700	51	2,400	22
25	3,800	37	3,800	37	1,900	17

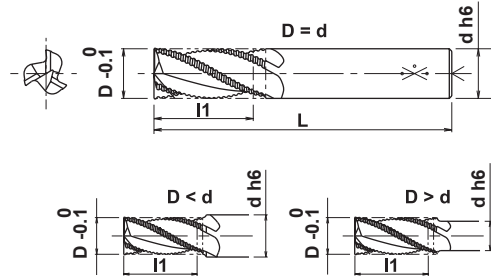
- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

## Solid Carbide End Mills for Aluminum

**METRIC**

### AL-OCRL Type

- 3 Flute with 30° Helix for roughing



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-OCRL3060	•	6.0	26	75	6
AL-OCRL3080	•	8.0	33	95	8
AL-OCRL3100	•	10.0	38	120	10
AL-OCRL3120	•	12.0	45	125	12
AL-OCRL3140	•	14.0	50	140	12
AL-OCRL3160	•	16.0	62	140	16

CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-OCRL3180	•	18.0	67	150	16
AL-OCRL3200	•	20.0	70	150	20
AL-OCRL3220	•	22.0	78	160	20
AL-OCRL3240	•	24.0	82	160	25
AL-OCRL3250	•	25.0	82	160	25
AL-OCRL3300	•	30.0	82	180	25

### Recommended Cutting Data for AL-OCRL type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)	
Type of Machining - Shoulder Cutting	<p> <math>a_p \leq 3D</math>  <math>a_e \leq 0.05D</math> (<math>\phi D \leq \phi 12</math>)  <math>a_p \leq 0.1D</math> (<math>\phi 13 \leq \phi D \leq \phi 19</math>)  <math>a_e \leq 0.25D</math> (<math>\phi 20 \leq \phi D \leq \phi 30</math>)                 </p>		<p> <math>a_p \leq 3D</math>  <math>a_e \leq 0.05D</math> (<math>\phi D \leq \phi 12</math>)  <math>a_p \leq 0.1D</math> (<math>\phi 13 \leq \phi D \leq \phi 19</math>)  <math>a_e \leq 0.25D</math> (<math>\phi 20 \leq \phi D \leq \phi 30</math>)                 </p>		<p> <math>a_p \leq 3D</math>  <math>a_e \leq 0.05D</math> (<math>\phi D \leq \phi 12</math>)  <math>a_p \leq 0.1D</math> (<math>\phi 13 \leq \phi D \leq \phi 19</math>)  <math>a_e \leq 0.25D</math> (<math>\phi 20 \leq \phi D \leq \phi 30</math>)                 </p>	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	13,000	39	13,000	39	7,000	17
8	10,000	30	10,000	30	5,000	12
10	8,000	30	8,000	30	4,000	12
12	7,000	30	7,000	30	3,500	12
14	6,000	30	6,000	30	3,000	14
16	6,000	35	6,000	35	3,000	18
18	6,000	43	6,000	43	3,000	27
20	7,000	67	7,000	67	3,400	31
25	6,000	71	6,000	71	3,200	31
30	5,000	71	5,000	71	2,600	31

- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.
  6. Full slotting is not recommended, if needed, try reducing depth of cut to 0.2D and feed speed to 20-50% from above data.

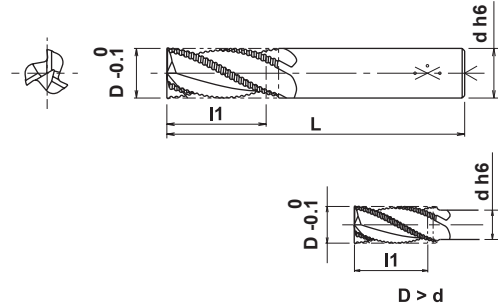
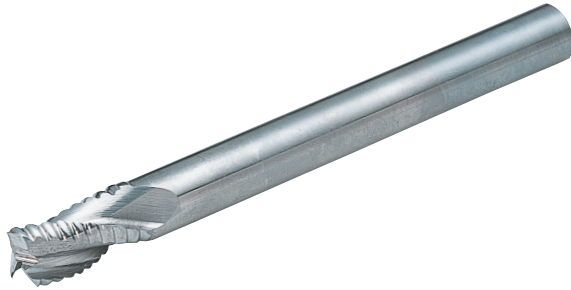


**METRIC**

# Solid Carbide End Mills for Aluminum

## AL-OCRS-LS Type

- 3 Flute with 30° Helix, long shank and undersize neck for roughing



CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-OCRS3060-LS	•	6.0	9	75	5
AL-OCRS3080-LS	•	8.0	13	95	6
AL-OCRS3100-LS	•	10.0	17	120	8
AL-OCRS3120-LS	•	12.0	20	125	10
AL-OCRS3140-LS	•	14.0	23	140	12
AL-OCRS3160-LS	•	16.0	25	140	14

CATALOG NUMBER	STK	DIMENSIONS			
		D	I1	L	d
AL-OCRS3180-LS	•	18.0	28	150	16
AL-OCRS3200-LS	•	20.0	31	150	18
AL-OCRS3220-LS	•	22.0	34	160	20
AL-OCRS3240-LS	•	24.0	37	160	22
AL-OCRS3250-LS	•	25.0	40	160	24
AL-OCRS3300-LS	•	30.0	46	180	25

## Recommended Cutting Data for AL-OCRS-LS type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)	
Type of Machining - Shoulder Cutting						
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	26,000	224	26,000	224	13,000	91
8	20,000	224	20,000	224	10,000	91
10	16,000	224	16,000	224	8,000	91
12	13,000	205	13,000	205	6,500	83
14	11,000	189	11,000	189	5,700	79
16	10,000	177	10,000	177	5,000	79
18	9,000	157	9,000	157	4,400	75
20	8,000	126	8,000	126	4,000	51
25	6,000	98	6,000	98	3,200	39
30	5,000	75	5,000	75	2,600	31

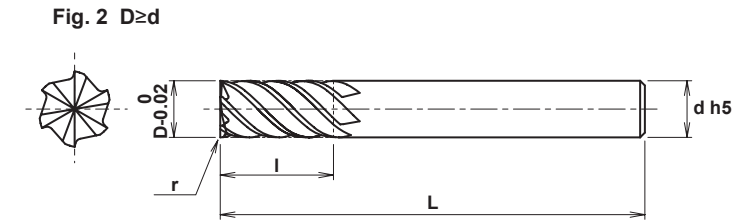
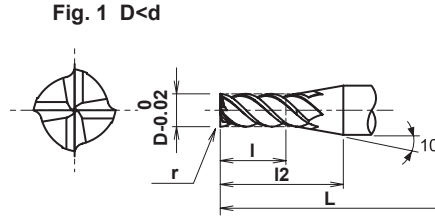
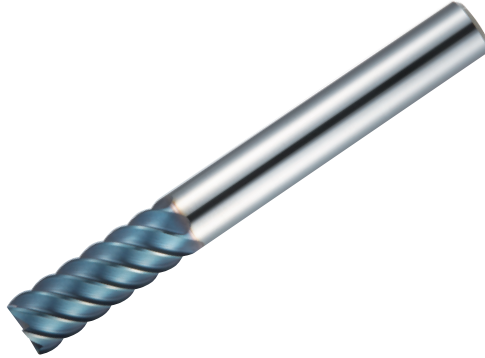
- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.
  6. Full slotting is not recommended.

# Solid Carbide Radius End Mills

**METRIC**

## SEHH-R Type

- 4 & 6 Flute with 50° Helix for high hardened steel up to 70 HRC



CATALOG NUMBER	STK	DIMENSIONS							FIG.
		D	r	l	l2	L	d	Flutes	
SEHH4030-R03	•	3	0.3	10	20	60	6	4	1
SEHH4030-R05	•	3	0.5	10	20	60	6	4	1
SEHH4040-R03	•	4	0.3	12	19	60	6	4	1
SEHH4040-R05	•	4	0.5	12	19	60	6	4	1
SEHH4050-R03	•	5	0.3	15	19	60	6	4	1
SEHH4050-R05	•	5	0.5	15	19	60	6	4	1
SEHH6060-R03	•	6	0.3	15	-	60	6	6	2
SEHH6060-R05	•	6	0.5	15	-	60	6	6	2
SEHH6060-R10	•	6	1.0	15	-	60	6	6	2
SEHH6080-R03	•	8	0.3	20	-	75	8	6	2
SEHH6080-R05	•	8	0.5	20	-	75	8	6	2
SEHH6080-R10	•	8	1.0	20	-	75	8	6	2
SEHH6100-R03	•	10	0.3	25	-	80	10	6	2
SEHH6100-R05	•	10	0.5	25	-	80	10	6	2
SEHH6100-R10	•	10	1.0	25	-	80	10	6	2
SEHH6100-R15	•	10	1.5	25	-	80	10	6	2
SEHH6120-R03	•	12	0.3	30	-	100	12	6	2
SEHH6120-R05	•	12	0.5	30	-	100	12	6	2
SEHH6120-R10	•	12	1.0	30	-	100	12	6	2
SEHH6120-R15	•	12	1.5	30	-	100	12	6	2
SEHH6160-R03	•	16	0.3	40	-	110	16	6	2
SEHH6160-R05	•	16	0.5	40	-	110	16	6	2
SEHH6160-R10	•	16	1.0	40	-	110	16	6	2
SEHH6160-R15	•	16	1.5	40	-	110	16	6	2
SEHH6200-R03	•	20	0.3	45	-	125	20	6	2
SEHH6200-R05	•	20	0.5	45	-	125	20	6	2
SEHH6200-R10	•	20	1.0	45	-	125	20	6	2
SEHH6200-R15	•	20	1.5	45	-	125	20	6	2



# Solid Carbide Radius End Mills

## Recommended Cutting Data for SEHH-R type

Material	Mold Steel P20 (38~43HRC)		Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		H.S.S. (63~70HRC)	
Type of Machining - Side Milling	 $a_p \leq 1.5D$ $a_e \leq 0.05D$		 $a_p \leq 1.5D$ $a_e \leq 0.04D$		 $a_p \leq 1.5D$ $a_e \leq 0.04D$ (MAX. 0.6mm)		 $a_p \leq 1.5D$ $a_e \leq 0.02D$ (MAX. 0.4mm)	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	24,000	51	15,000	31	12,000	24	6,000	10
4	18,000	71	12,000	43	9,500	31	5,100	12
6	12,000	87	8,000	55	6,500	43	3,500	17
8	10,000	87	6,000	55	5,000	43	2,500	17
10	8,000	87	5,000	55	4,000	43	2,000	17
12	6,500	75	4,000	47	3,300	35	1,700	14
16	5,000	58	3,000	37	2,500	28	1,300	10
20	3,800	45	2,300	29	2,000	22	1,000	8

- Notes:**
1. Above cutting conditions are general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  2. Figures should be adjusted according to purpose, rigidity of machine, machining shape and work clamping.
  3. Recommend to down cut with air blow or mist coolant.

# Solid Carbide Radius End Mills

METRIC

## SFSR Type

- For high hardened die steel up to 70 HRC
- 4 flutes, Helix angle 50° - 52° for shrink fit
- Corner radius accuracy:  $\pm 0.01\text{mm}$

Solid Carbide End Mills

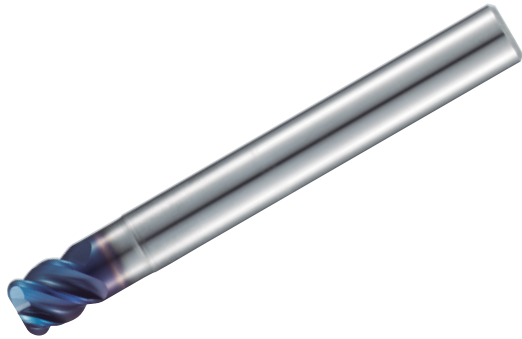


Fig. 1 D < d

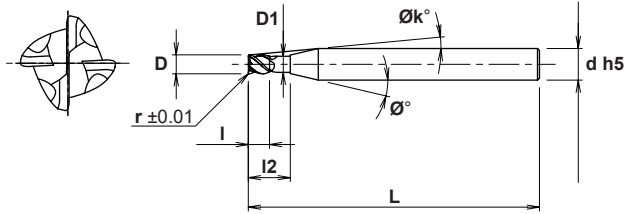
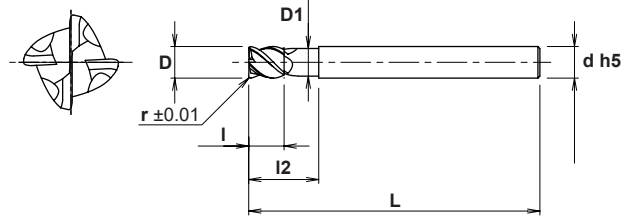


Fig. 2 D = d



CATALOG NUMBER	STK	DIMENSIONS									FIG.
		D	r	l	l2	L	D1	d	Ø	Øk	
SFSR4020S04-R05	•	2	0.5	2	4	40	1.9	4	20°	29.04°	1
SFSR4020S06-R05	•	2	0.5	2	4	40	1.9	6	20°	12.46°	1
SFSR4030S04-R08	•	3	0.8	3	6	40	2.9	4	20°	4.33°	1
SFSR4030S06-R08	•	3	0.8	3	6	40	2.9	6	20°	9.08°	1
SFSR4040S04-R10	•	4	1.0	4	8	40	3.8	4	-	-	2
SFSR4020S06-R10	•	4	1.0	4	8	40	3.8	6	20°	5.83°	1
SFSR4050S06-R12	•	5	1.2	5	10	50	4.8	6	20°	2.81°	1
SFSR4060S06-R10	•	6	1.0	6	12	50	5.8	6	-	-	2
SFSR4060S06-R15	•	6	1.5	6	12	50	5.8	6	-	-	2
SFSR4080S08-R10	•	8	1.0	8	16	60	7.8	8	-	-	2
SFSR4080S08-R20	•	8	2.0	8	16	60	7.8	8	-	-	2
SFSR4100S10-R20	•	10	2.0	10	20	60	9.8	10	-	-	2
SFSR4100S10-R30	•	10	3.0	10	20	60	9.8	10	-	-	2
SFSR4120S12-R20	•	12	2.0	12	24	60	11.8	12	-	-	2
SFSR4120S12-R30	•	12	3.0	12	24	60	11.8	12	-	-	2



**METRIC**

# Solid Carbide Radius End Mills

## SFSR Type

- For high hardened die steel up to 70 HRC
- 4 flutes, Helix angle 50° - 52° for shrink fit
- Corner radius accuracy:  $\pm 0.005\text{mm}$



Fig. 1 D < d

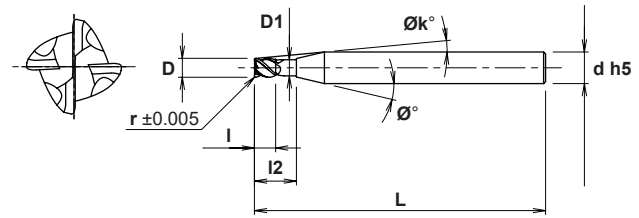
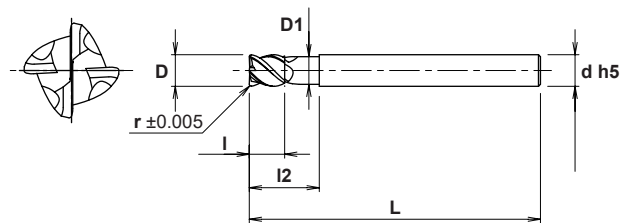


Fig. 2 D = d



CATALOG NUMBER	STK	DIMENSIONS									FIG.
		D	r	l	l2	L	D1	d	Ø	Øk	
SFSR4020S06-R05-06	•	2	0.5	2	6	60	1.9	6	20°	10.27°	1
SFSR4030S06-R08-09	•	3	0.8	3	9	60	2.9	6	20°	6.91°	1
SFSR4040S06-R10-12	•	4	1	4	12	60	3.8	6	20°	4.15°	1
SFSR4050S06-R12-15	•	5	1.2	5	15	60	4.7	6	20°	1.88°	1
SFSR4060S06-R05-18	•	6	0.5	6	18	60	5.7	6	-	-	2
SFSR4060S06-R05-30	•	6	0.5	6	30	90	5.7	6	-	-	2
SFSR4060S06-R10-18	•	6	1	6	18	60	5.7	6	-	-	2
SFSR4060S06-R10-30	•	6	1	6	30	90	5.7	6	-	-	2
SFSR4060S06-R15-18	•	6	1.5	6	18	60	5.7	6	-	-	2
SFSR4060S06-R15-30	•	6	1.5	6	30	90	5.7	6	-	-	2
SFSR4080S08-R05-24	•	8	0.5	8	24	75	7.6	8	-	-	2
SFSR4080S08-R05-40	•	8	0.5	8	40	100	7.6	8	-	-	2
SFSR4080S08-R10-24	•	8	1	8	24	75	7.6	8	-	-	2
SFSR4080S08-R10-40	•	8	1	8	40	100	7.6	8	-	-	2
SFSR4080S08-R20-24	•	8	2	8	24	75	7.6	8	-	-	2
SFSR4080S08-R20-40	•	8	2	8	40	100	7.6	8	-	-	2
SFSR4100S10-R05-30	•	10	0.5	10	30	80	9.5	10	-	-	2
SFSR4100S10-R05-50	•	10	0.5	10	50	110	9.5	10	-	-	2
SFSR4100S10-R10-30	•	10	1	10	30	80	9.5	10	-	-	2
SFSR4100S10-R10-50	•	10	1	10	50	110	9.5	10	-	-	2
SFSR4100S10-R20-30	•	10	2	10	30	80	9.5	10	-	-	2
SFSR4100S10-R20-50	•	10	2	10	50	110	9.5	10	-	-	2
SFSR4100S10-R30-30	•	10	3	10	30	80	9.5	10	-	-	2
SFSR4100S10-R30-50	•	10	3	10	50	110	9.5	10	-	-	2
SFSR4120S12-R05-36	•	12	0.5	12	36	100	11.5	12	-	-	2
SFSR4120S12-R05-60	•	12	0.5	12	60	120	11.5	12	-	-	2
SFSR4120S12-R10-36	•	12	1	12	36	100	11.5	12	-	-	2
SFSR4120S12-R10-60	•	12	1	12	60	120	11.5	12	-	-	2
SFSR4120S12-R20-36	•	12	2	12	36	100	11.5	12	-	-	2
SFSR4120S12-R20-60	•	12	2	12	60	120	11.5	12	-	-	2
SFSR4120S12-R30-36	•	12	3	12	36	100	11.5	12	-	-	2
SFSR4120S12-R30-60	•	12	3	12	60	120	11.5	12	-	-	2

# Solid Carbide Radius End Mills

METRIC

Solid Carbide End Mills

## SFSR Type (with R0.2)

- Adapted micro corner radius on cutting edge to solve chipping problems
- For high hardened die steel up to 70 HRC
- 4 flutes, Helix angle 50° - 52° for shrink fit



Fig. 1 D<d

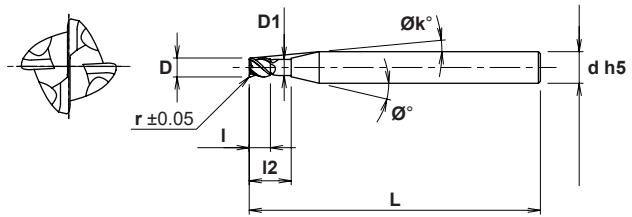
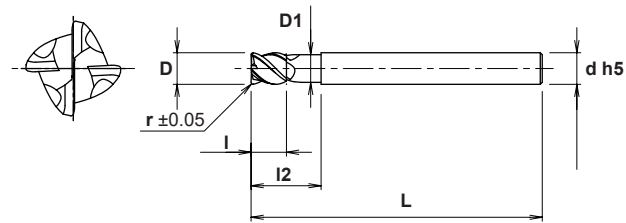


Fig. 2 D=d



CATALOG NUMBER	STK	DIMENSIONS									FIG.
		D	r	l	l2	L	D1	d	Ø	Øk	
SFSR4020S06-R02-06	•	2	0.2	2	6	60	1.9	6	20°	10.03°	1
SFSR4030S06-R02-09	•	3	0.2	3	9	60	2.9	6	20°	6.62°	1
SFSR4040S06-R02-12	•	4	0.2	4	12	60	3.8	6	20°	3.93°	1
SFSR4050S02-R02-15	•	5	0.2	5	15	60	4.7	6	20°	1.77°	1
SFSR4060S06-R02-18	•	6	0.2	6	18	60	5.7	6	-	-	2
SFSR4080S08-R02-24	•	8	0.2	8	24	75	7.6	8	-	-	2
SFSR4100S10-R02-30	•	10	0.2	10	30	80	9.5	10	-	-	2
SFSR4120S12-R02-36	•	12	0.2	12	36	100	11.5	12	-	-	2



# Solid Carbide Radius End Mills

## Recommended Cutting Data for SFSR type

Material	Carbon Steel below 250HB		Alloy Steel, Steel Mold Steel below 45HRC		Stainless Steel (304 stainless)	
Type of Machining - Face Milling (Roughing)	 $a_p \leq 0.3\text{mm}$ ( $\text{Ø}2\text{mm}=0.15\text{mm}$ ) $a_e \leq 0.33D_c$		 $a_p \leq 0.3\text{mm}$ ( $\text{Ø}2\text{mm}=0.15\text{mm}$ ) $a_e \leq 0.33D_c$		 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.33D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	24,000	276	24,000	276	25,000	98
3	17,000	276	17,000	276	17,000	118
4	13,000	315	13,000	315	13,000	138
5	10,000	354	10,000	354	10,500	157
6	8,500	394	8,500	394	8,600	165
8	6,500	394	6,500	394	6,500	165
10	5,200	394	5,200	394	4,500	165
12	4,300	394	4,300	394	3,000	165

Material	Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Face Milling (Roughing)	 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.33D_c$		 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.33D_c$		 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.33D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	16,000	91	9,000	67	3,000	24
3	12,500	118	7,300	75	3,000	30
4	11,000	138	6,500	83	3,000	39
5	9,500	189	6,200	91	3,000	47
6	8,000	217	6,000	98	3,200	55
8	6,000	236	4,300	91	2,500	59
10	4,800	236	3,300	98	2,000	63
12	4,000	295	2,500	98	1,500	57

- Notes:**
1. Above cutting conditions are general guidance.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.
  4. Recommend down cutting with air blow or mist coolant.
  5. Wet cutting is recommended for stainless steel.
  6. If using shrink fit holder, it is important to keep proper holding length.

# Solid Carbide Radius End Mills

Solid Carbide End Mills

## Recommended Cutting Data for SFSR type

Material	Carbon Steel below 250HB		Alloy Steel, Steel Mold Steel below 45HRC		Stainless Steel (304 stainless)	
Type of Machining - Face Milling (Finishing)	 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.1D_c$		 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.1D_c$		 $a_p \leq 0.15\text{mm}$ $a_e \leq 0.1D_c$	
$\Phi D_c(\text{mm})$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	30,000	79	30,000	79	30,000	79
3	20,000	79	20,000	79	20,000	79
4	15,000	79	15,000	79	15,000	79
5	12,000	79	12,000	79	12,000	79
6	10,000	79	10,000	79	10,000	79
8	7,500	79	7,500	79	7,500	79
10	6,000	75	6,000	75	5,000	59
12	5,000	71	5,000	71	3,000	39

Material	Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Face Milling (Finishing)	 $a_p \leq 0.1\text{mm}$ $a_e \leq 0.1D_c$		 $a_p \leq 0.1\text{mm}$ $a_e \leq 0.1D_c$		 $a_p \leq 0.05\text{mm}$ $a_e \leq 0.1D_c$	
$\Phi D_c(\text{mm})$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	20,000	51	13,000	35	9,000	16
3	14,000	43	9,000	28	6,000	14
4	11,000	37	7,000	22	4,700	12
5	9,500	35	5,700	22	3,800	12
6	8,000	31	4,700	18	3,200	10
8	6,000	28	3,500	16	2,500	10
10	5,000	26	2,800	14	2,000	8
12	4,000	26	2,400	14	1,600	8

- Notes:**
- Above cutting conditions are general guidance.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.
  - Recommend down cutting with air blow or mist coolant.
  - Wet cutting is recommended for stainless steel.
  - If using shrink fit holder, it is important to keep proper holding length.



# Solid Carbide Radius End Mills

## Recommended Cutting Data for SFSR type

Material	Carbon Steel below 250HB		Alloy Steel, Steel Mold Steel below 45HRC		Stainless Steel (304 stainless)	
Type of Machining - Shoulder Milling (Roughing)	 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.04D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	24,000	37	24,000	37	3,200	98
3	24,000	51	24,000	51	2,700	87
4	18,000	71	18,000	71	2,300	79
5	15,000	79	15,000	79	2,000	75
6	12,000	87	12,000	87	1,800	71
8	10,000	87	10,000	87	1,300	51
10	8,000	87	8,000	87	1,000	39
12	6,500	75	6,500	75	800	31

Material	Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Shoulder Milling (Roughing)	 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	13,000	39	12,000	39	6,400	24
3	13,000	51	11,000	47	6,000	24
4	11,000	59	9,000	47	5,100	22
5	9,000	63	7,200	47	4,200	22
6	7,500	71	6,000	47	3,500	26
8	5,500	87	4,500	47	2,500	26
10	4,500	98	3,600	55	2,000	24
12	3,800	118	3,000	55	1,700	24

- Notes:**
1. Above cutting conditions are general guidance.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.
  4. Recommend down cutting with air blow or mist coolant.
  5. Wet cutting is recommended for stainless steel.
  6. If using shrink fit holder, it is important to keep proper holding length.

# Solid Carbide Radius End Mills

Solid Carbide End Mills

## Recommended Cutting Data for SFSR type

Material	Carbon Steel below 250HB		Alloy Steel, Steel Mold Steel below 45HRC		Stainless Steel (304 stainless)	
Type of Machining - Shoulder Milling (Finishing)	 $a_p \leq 0.3D_c$ $a_e \leq 0.1D_c$		 $a_p \leq 0.3D_c$ $a_e \leq 0.1D_c$		 $a_p \leq 0.3D_c$ $a_e \leq 0.1D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	40,000	177	40,000	177	40,000	295
3	29,000	157	29,000	157	28,000	217
4	22,000	157	22,000	157	21,000	177
5	18,000	157	18,000	157	17,000	157
6	15,000	146	15,000	146	14,000	138
8	11,000	110	11,000	110	11,000	118
10	8,900	102	8,900	102	9,000	102
12	7,400	91	7,400	91	7,500	87

Material	Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Shoulder Milling (Finishing)	 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$		 $a_p \leq 0.6D_c$ $a_e \leq 0.08D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	40,000	98	30,000	79	23,000	22
3	26,500	79	20,000	59	15,000	18
4	20,000	71	15,000	47	12,000	16
5	16,000	59	12,000	43	9,500	15
6	13,500	51	10,000	35	8,000	14
8	10,000	39	7,500	28	6,000	11
10	8,000	31	6,000	24	5,000	11
12	6,500	28	5,000	20	4,000	11

- Notes:**
- Above cutting conditions are general guidance.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.
  - Recommend down cutting with air blow or mist coolant.
  - Wet cutting is recommended for stainless steel.
  - If using shrink fit holder, it is important to keep proper holding length.



# Solid Carbide Radius End Mills

## Recommended Cutting Data for SFSR type

Material	Carbon Steel below 250HB		Alloy Steel, Steel Mold Steel below 45HRC		Stainless Steel (304 stainless)	
Type of Machining - Slotting	 $a_p \leq 0.3D_c$ $a_e = D_c$		 $a_p \leq 0.3D_c$ $a_e = D_c$		 $a_p \leq 0.25D_c$ $a_e = D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	11,000	26	11,000	26	2,500	7
3	9,500	30	9,500	30	2,300	7
4	8,500	31	8,500	31	2,000	7
5	7,600	39	7,600	39	1,800	6
6	6,600	43	6,600	43	1,500	6
8	5,000	47	5,000	47	1,100	5
10	4,000	47	4,000	47	850	5
12	3,300	51	3,300	51	700	5

Material	Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Slotting	 $a_p \leq 0.3D_c$ $a_e = D_c$		 $a_p \leq 0.3D_c$ $a_e = D_c$		 $a_p \leq 0.25D_c$ $a_e = D_c$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
2	9,000	16	5,500	9	5,500	9
3	8,000	20	5,000	12	4,800	11
4	7,500	22	4,200	14	4,000	13
5	6,800	26	3,900	16	3,800	16
6	5,800	28	3,500	20	3,200	19
8	4,300	30	2,700	22	2,300	18
10	3,400	35	2,200	24	1,800	19
12	2,800	39	1,800	28	1,500	21

- Notes:**
- Above cutting conditions are general guidance. Adjust  $a_e$  &  $a_p$  for semi-finishing and finishing.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.
  - Recommend down cutting with air blow or mist coolant.
  - Wet cutting is recommended for stainless steel.
  - If using shrink fit holder, it is important to keep proper holding length.
  - Recommend to shorten overhung length ( $2D_c-3D_c$ ).
  - Recommend ramping angle is under 45 degree.  
However, ramping angle should be under 5 degree for stainless steel, hardened steel or HSS.

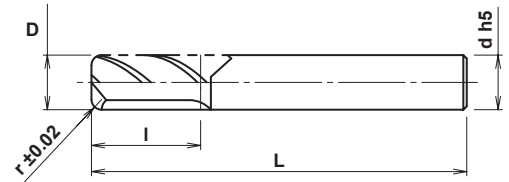
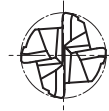
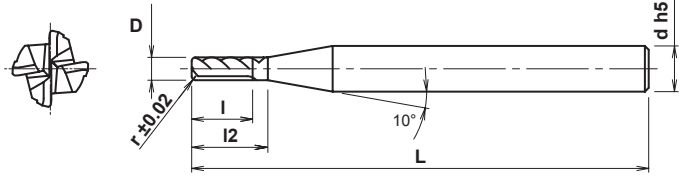
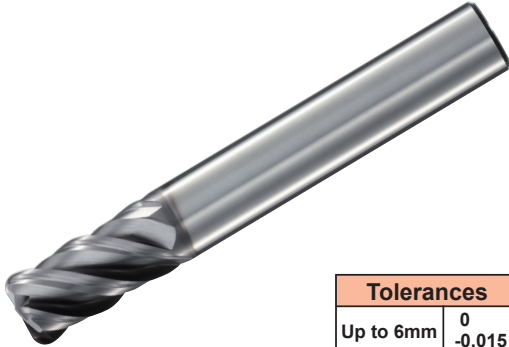
# Solid Carbide Radius End Mills

METRIC

Solid Carbide End Mills

## DV-OCSAR Type

- 4 Flute with 42°-45° Helix, corner radius
- For heat resistant Alloy, Ti-Alloy & Stainless Steel



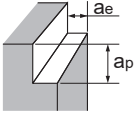
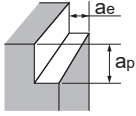
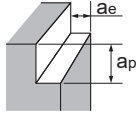
Tolerances	
Up to 6mm	0 -0.015
Over 6mm	0 -0.02

CATALOG NUMBER	STK	DIMENSIONS					
		D	r	l	l2	L	d
DV-OCSAR4030-05	•	3.0	0.5	8	10	60	6
DV-OCSAR4040-05	•	4.0	0.5	11	13	60	6
DV-OCSAR4040-10	•	4.0	1.0	11	13	60	6
DV-OCSAR4050-05	•	5.0	0.5	13	15	60	6
DV-OCSAR4050-10	•	5.0	1.0	13	15	60	6
DV-OCSAR4060-05	•	6.0	0.5	13	-	60	6
DV-OCSAR4060-10	•	6.0	1.0	13	-	60	6
DV-OCSAR4080-05	•	8.0	0.5	19	-	75	8
DV-OCSAR4080-10	•	8.0	1.0	19	-	75	8
DV-OCSAR4080-20	•	8.0	2.0	19	-	75	8
DV-OCSAR4100-05	•	10.0	0.5	22	-	80	10
DV-OCSAR4100-10	•	10.0	1.0	22	-	80	10
DV-OCSAR4100-20	•	10.0	2.0	22	-	80	10
DV-OCSAR4120-05	•	12.0	0.5	26	-	100	12
DV-OCSAR4120-10	•	12.0	1.0	26	-	100	12
DV-OCSAR4120-20	•	12.0	2.0	26	-	100	12
DV-OCSAR4120-30	•	12.0	3.0	26	-	100	12



# Solid Carbide Radius End Mills

## Recommended Cutting Data for DV-OCSAR4 type

Material	Stainless Steel (304 Stainless)		Titanium Alloy (Ti-6Al-4V)		Heat-Resistant Alloy (Inconel 718)	
Type of Machining - Shoulder Cutting	 $a_p \leq 1.5D$ $a_e \leq 0.1D$		 $a_p \leq 1.5D$ $a_e \leq 0.1D$		 $a_p \leq 1.5D$ $a_e \leq 0.1D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	11,000	47	11,000	47	4,200	13
4	8,000	47	8,000	47	3,200	13
5	6,400	47	6,400	47	2,500	13
6	5,400	47	5,400	47	2,100	13
8	4,000	47	4,000	47	1,600	13
10	3,200	51	3,200	51	1,300	13
12	2,700	51	2,700	51	1,100	11
16	2,000	38	2,000	38	800	8
20	1,600	30	1,600	30	640	6

- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Figures to be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to use down cutting.
  4. Recommend to use wet cutting condition, it is effective to use cutting fluid for heat-resistant alloy.

## Recommended Cutting Data for DV-OCSAR4 type

Material	Stainless Steel (304 Stainless)		Titanium Alloy (Ti-6Al-4V)		Heat-Resistant Alloy (Inconel 718)	
Type of Machining - Slotting	 $a_p \leq D$		 $a_p \leq D$		 $a_p \leq 0.3D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (min <sup>-1</sup> )	Vf (ipm)
3	8,500	21	8,500	21	3,200	6
4	6,400	19	6,400	23	2,400	7
5	5,100	24	5,100	24	1,900	7
6	4,200	24	4,200	24	1,600	7
8	3,200	25	3,200	25	1,200	7
10	2,500	25	2,500	25	950	7
12	2,100	25	2,100	25	800	6
16	1,600	19	1,600	19	600	5
20	1,300	15	1,300	15	480	4

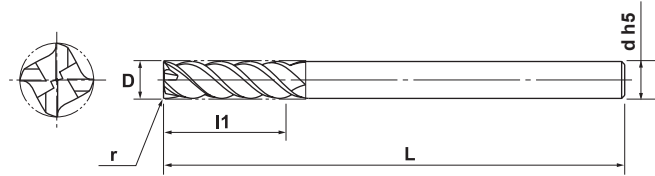
- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Figures to be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to use wet cutting condition, it is effective to use cutting fluid for heat-resistant alloy.

# Solid Carbide Radius End Mills

**METRIC**

**DZ-SOCS, DZ-SOCM Type**  
- 4 Flute with 45° Helix and corner radius

Tolerances	
Up to 6mm	0 -0.015
Over 6mm	0 -0.02



## DZ-SOCS type

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
DZ-SOCS4030-02	•	3.0	0.2	8	60	6
DZ-SOCS4040-02	•	4.0	0.2	11	60	6
DZ-SOCS4050-02	•	5.0	0.2	13	60	6
DZ-SOCS4050-05	•	5.0	0.5	13	60	6
DZ-SOCS4060-03	•	6.0	0.3	13	60	6
DZ-SOCS4060-05	•	6.0	0.5	13	60	6
DZ-SOCS4060-10	•	6.0	1.0	13	60	6
DZ-SOCS4080-03	•	8.0	0.3	19	75	8
DZ-SOCS4080-05	•	8.0	0.5	19	75	8
DZ-SOCS4080-10	•	8.0	1.0	19	75	8
DZ-SOCS4100-03	•	10.0	0.3	22	80	10
DZ-SOCS4100-05	•	10.0	0.5	22	80	10
DZ-SOCS4100-10	•	10.0	1.0	22	80	10
DZ-SOCS4120-05	•	12.0	0.5	26	100	12
DZ-SOCS4120-10	•	12.0	1.0	26	100	12
DZ-SOCS4160-10	•	16.0	1.0	32	110	16
DZ-SOCS4200-10	•	20.0	1.0	38	125	20



## DZ-SOCM type

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
DZ-SOCM4060-05	•	6.0	0.5	21	60	6
DZ-SOCM4080-05	•	8.0	0.5	26	75	8
DZ-SOCM4100-05	•	10.0	0.5	34	90	10



# Solid Carbide Radius End Mills

## Recommended Cutting Data for DZ-SOCS, DZ-SOCM type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316 Stainless)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.1D$		 $a_p=1.5D$ $a_e=0.1D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	10,600	26	6,400	15	3,180	7	6,400	10
4	8,000	30	4,800	19	2,380	7	4,800	15
5	6,300	30	3,800	21	1,900	7	3,800	18
6	5,300	37	3,200	22	1,600	9	3,200	18
8	4,000	39	2,400	24	1,200	9	2,400	17
10	3,200	39	1,900	24	950	8	1,900	17
12	2,700	35	1,600	21	800	8	1,600	17
16	2,000	31	1,200	19	600	7	1,200	15
20	1,600	31	950	19	480	6	950	14
22	1,500	31	900	18	450	6	900	14

## Recommended Cutting Data for DZ-SOCS type

Material	Carbon Steel, Cast Iron (1055, 35)		Alloy Steel, Mold Steel Pre-Hardened Steel (P20)		Hardened Tool Steel H13 (40~50HRC)		Stainless Steel (304, 316 Stainless)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=0.2D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
3	8,500	30	5,300	19	2,650	6	5,300	13
4	6,400	31	4,000	19	2,000	8	4,000	16
5	5,100	31	3,200	19	1,600	8	3,200	17
6	4,250	31	2,650	19	1,350	8	2,650	17
8	3,200	31	2,000	19	1,000	8	2,000	16
10	2,550	31	1,600	19	800	7	1,600	15
12	2,100	31	1,400	19	660	7	1,400	15
16	1,600	24	1,000	15	500	6	1,000	13
20	1,250	23	800	13	400	5	800	13
22	1,150	22	750	12	360	4	750	12

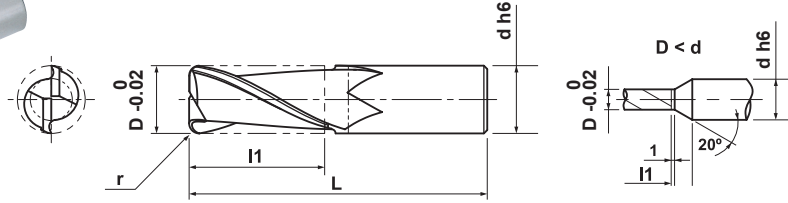
- Notes:**
1. Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to down cut with air blow or mist coolant.
  4. Above slotting data for DZ-SOCS, not recommended for DZ-SOCM.

# Solid Carbide Radius End Mills for Aluminum

**METRIC**

## AL-SEES2-R Type

- 2 Flute with 45° Helix and corner radius



CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES2060-R05	•	6.0	0.5	17	55	6
AL-SEES2060-R10	•	6.0	1.0	17	55	6
AL-SEES2060-R15	•	6.0	1.5	17	55	6
AL-SEES2060-R20	•	6.0	2.0	17	55	6
AL-SEES2060-R25	•	6.0	2.5	17	55	6
AL-SEES2080-R05	•	8.0	0.5	22	65	8
AL-SEES2080-R10	•	8.0	1.0	22	65	8
AL-SEES2080-R15	•	8.0	1.5	22	65	8
AL-SEES2080-R20	•	8.0	2.0	22	65	8
AL-SEES2080-R25	•	8.0	2.5	22	65	8
AL-SEES2080-R30	•	8.0	3.0	22	65	8
AL-SEES2100-R05	•	10.0	0.5	28	75	10
AL-SEES2100-R10	•	10.0	1.0	28	75	10
AL-SEES2100-R15	•	10.0	1.5	28	75	10
AL-SEES2100-R20	•	10.0	2.0	28	75	10
AL-SEES2100-R25	•	10.0	2.5	28	75	10
AL-SEES2100-R30	•	10.0	3.0	28	75	10
AL-SEES2100-R35	•	10.0	3.5	28	75	10
AL-SEES2100-R40	•	10.0	4.0	28	75	10
AL-SEES2120-R05	•	12.0	0.5	28	80	12
AL-SEES2120-R10	•	12.0	1.0	28	80	12
AL-SEES2120-R15	•	12.0	1.5	28	80	12
AL-SEES2120-R20	•	12.0	2.0	28	80	12
AL-SEES2120-R25	•	12.0	2.5	28	80	12
AL-SEES2120-R30	•	12.0	3.0	28	80	12
AL-SEES2120-R35	•	12.0	3.5	28	80	12
AL-SEES2120-R40	•	12.0	4.0	28	80	12
AL-SEES2120-R50	•	12.0	5.0	28	80	12
AL-SEES2140-R05	•	14.0	0.5	40	95	16
AL-SEES2140-R10	•	14.0	1.0	40	95	16
AL-SEES2140-R15	•	14.0	1.5	40	95	16
AL-SEES2140-R20	•	14.0	2.0	40	95	16
AL-SEES2140-R25	•	14.0	2.5	40	95	16
AL-SEES2140-R30	•	14.0	3.0	40	95	16
AL-SEES2140-R35	•	14.0	3.5	40	95	16
AL-SEES2140-R40	•	14.0	4.0	40	95	16
AL-SEES2140-R50	•	14.0	5.0	40	95	16
AL-SEES2160-R05	•	16.0	0.5	40	95	16
AL-SEES2160-R10	•	16.0	1.0	40	95	16
AL-SEES2160-R15	•	16.0	1.5	40	95	16
AL-SEES2160-R20	•	16.0	2.0	40	95	16
AL-SEES2160-R25	•	16.0	2.5	40	95	16
AL-SEES2160-R30	•	16.0	3.0	40	95	16
AL-SEES2160-R35	•	16.0	3.5	40	95	16
AL-SEES2160-R40	•	16.0	4.0	40	95	16
AL-SEES2160-R50	•	16.0	5.0	40	95	16

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES2200-R05	•	20.0	0.5	45	115	20
AL-SEES2200-R10	•	20.0	1.0	45	115	20
AL-SEES2200-R15	•	20.0	1.5	45	115	20
AL-SEES2200-R20	•	20.0	2.0	45	115	20
AL-SEES2200-R25	•	20.0	2.5	45	115	20
AL-SEES2200-R30	•	20.0	3.0	45	115	20
AL-SEES2200-R35	•	20.0	3.5	45	115	20
AL-SEES2200-R40	•	20.0	4.0	45	115	20
AL-SEES2200-R50	•	20.0	5.0	45	115	20



# Solid Carbide Radius End Mills for Aluminum

## Recommended Cutting Data for AL-SEES2-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$		 $a_p=1.5D$ $a_e=0.5D$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	12,000	94	10,000	79	12,000	94	8,500	67
8	9,000	91	8,000	79	9,000	91	6,500	63
10	7,300	87	6,000	71	7,300	87	5,000	59
12	6,000	83	5,000	71	6,000	83	4,000	55
14	5,200	79	4,500	71	5,200	79	3,500	55
16	4,500	79	4,000	71	4,500	79	3,000	55
20	3,600	71	3,000	59	3,600	71	2,500	49

## Recommended Cutting Data for AL-SEES2-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$	
$\Phi D_c$ (mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	10,000	59	9,000	53	10,000	59	7,400	43
8	8,000	59	7,000	49	8,000	59	5,500	39
10	6,000	47	5,500	43	6,000	47	4,500	35
12	5,000	47	4,500	43	5,000	47	3,700	35
14	4,500	47	3,900	43	4,500	47	3,200	35
16	4,000	47	3,300	43	4,000	47	2,700	35
20	3,000	47	2,700	39	3,000	47	2,200	35

- Notes:**
1. Use water soluble oil.
  2. Use caution when handling, tools are extremely sharp. Adjust  $a_e$  &  $a_p$  for finishing.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

# Solid Carbide Radius End Mills for Aluminum

Solid Carbide End Mills

## High Speed Cutting Data for AL-SEES2-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$	
$\Phi Dc(mm)$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	27,000	157	22,000	130	27,000	138	18,000	106
8	20,000	157	17,000	130	20,000	138	14,000	106
10	16,000	157	13,000	130	16,000	138	11,000	106
12	13,000	157	11,000	130	13,000	138	9,000	106
14	11,000	157	10,000	130	11,000	138	8,000	106
16	10,000	157	8,500	130	10,000	138	7,000	106
20	8,000	142	7,000	122	8,000	138	5,500	98

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$	
$\Phi Dc(mm)$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	23,000	138	20,000	118	23,000	138	16,000	94
8	18,000	138	15,000	118	18,000	138	12,000	94
10	14,000	138	12,000	118	14,000	138	9,500	94
12	12,000	138	10,000	118	12,000	138	8,000	94
14	10,000	138	9,000	118	10,000	138	7,000	94
16	9,000	138	8,000	118	9,000	138	6,000	94
20	7,000	126	6,000	106	7,000	122	4,800	83

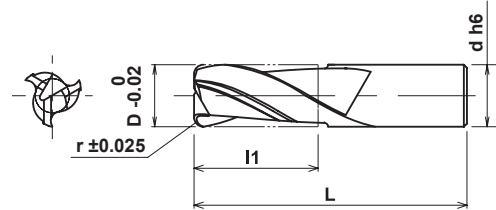
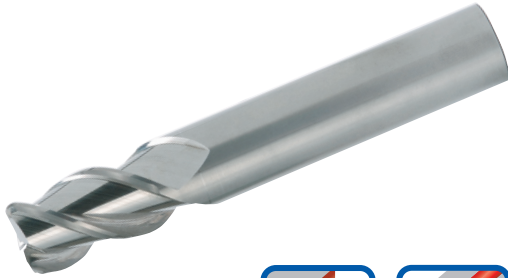
- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.



**METRIC**

# Solid Carbide Radius End Mills for Aluminum

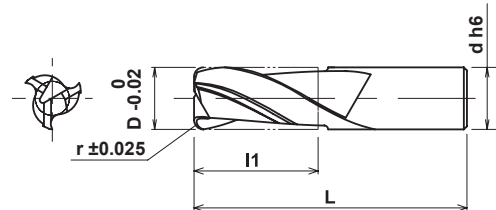
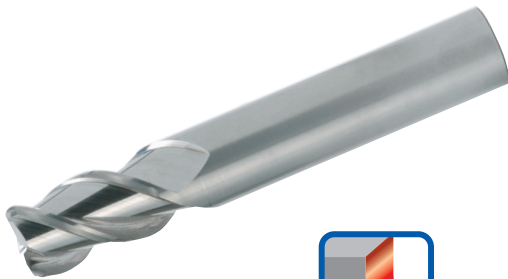
## AL-SEES3-R, AL-SEES3-LS-R Type - 3 Flute with 45° Helix and corner radius



### AL-SEES3-R type

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES3100-R05	•	10.0	0.5	15	80	10
AL-SEES3100-R10	•	10.0	1.0	15	80	10
AL-SEES3120-R05	•	12.0	0.5	18	90	12
AL-SEES3120-R10	•	12.0	1.0	18	90	12

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES3160-R05	•	16.0	0.5	21	110	16
AL-SEES3160-R10	•	16.0	1.0	21	110	16
AL-SEES3160-R30	•	16.0	3.0	21	110	16
AL-SEES3200-R05	•	20.0	0.5	33	120	20
AL-SEES3200-R10	•	20.0	1.0	33	120	20
AL-SEES3200-R30	•	20.0	3.0	33	120	20



### AL-SEES3-LS-R type

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES3100-LS-R05	•	10.0	0.5	15	130	9.8
AL-SEES3100-LS-R10	•	10.0	1.0	15	130	9.8
AL-SEES3100-LS-R20	•	10.0	2.0	15	130	9.8
AL-SEES3120-LS-R05	•	12.0	0.5	18	150	11
AL-SEES3120-LS-R10	•	12.0	1.0	18	150	11
AL-SEES3120-LS-R20	•	12.0	2.0	18	150	11
AL-SEES3120-LS-R30	•	12.0	3.0	18	150	11

CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-SEES3160-LS-R05	•	16.0	0.5	24	180	15
AL-SEES3160-LS-R10	•	16.0	1.0	24	180	15
AL-SEES3160-LS-R20	•	16.0	2.0	24	180	15
AL-SEES3160-LS-R30	•	16.0	3.0	24	180	15
AL-SEES3160-LS-R40	•	16.0	4.0	24	180	18
AL-SEES3200-LS-R05	•	20.0	0.5	30	200	18
AL-SEES3200-LS-R10	•	20.0	1.0	30	200	18
AL-SEES3200-LS-R20	•	20.0	2.0	30	200	18
AL-SEES3200-LS-R30	•	20.0	3.0	30	200	18
AL-SEES3200-LS-R40	•	20.0	4.0	30	200	18
AL-SEES3200-LS-R50	•	20.0	5.0	30	200	18

# Solid Carbide Radius End Mills for Aluminum

Solid Carbide End Mills

## Recommended Cutting Data for AL-SEES3-R & AL-SEES3-LS-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$		 $a_p=1.5D$ $a_e=0.3D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	12,000	142	10,000	118	12,000	142	8,500	98
8	9,000	142	8,000	118	9,000	142	6,500	98
10	7,300	142	6,000	118	7,300	142	5,000	98
12	6,000	142	5,000	118	6,000	142	4,000	94
16	4,500	118	4,000	102	4,500	118	3,000	79
20	3,600	98	3,000	83	3,600	98	2,500	67

## Recommended Cutting Data for AL-SEES3-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$		 $a_p=D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	10,000	79	9,000	71	10,000	79	7,400	59
8	8,000	79	7,000	71	8,000	79	5,500	59
10	6,000	79	5,500	71	6,000	79	4,500	59
12	5,000	79	4,500	71	5,000	79	3,700	59
16	4,000	79	3,300	71	4,000	79	2,700	59
20	3,000	71	2,700	63	3,000	71	2,200	51

## Additional Cutting Data for longer tools

L/D	Tool Diameter			
	n (rpm)	Vf (ipm)	$a_p$	$a_e$
Up to 4D	0%	0%	1.5D	0.3D
5 ~ 6D	25%	30%	1.2D	0.1D
7 ~ 8D	40%	50%	1.0D	0.05D

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.



# Solid Carbide Radius End Mills for Aluminum

## High Speed Cutting Data for AL-SEES3-R & AL-SEES3-LS-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting		Type of Machining - Shoulder Cutting	
	 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$		 $a_p=1.5D$ $a_e=0.2D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (mm/min)
6	27,000	177	22,000	146	27,000	177	18,000	118
8	20,000	291	17,000	244	20,000	291	14,000	197
10	16,000	291	13,000	244	16,000	291	11,000	197
12	13,000	256	11,000	217	13,000	256	9,000	177
16	10,000	217	8,500	181	10,000	217	7,000	150
20	8,000	189	7,000	165	8,000	189	5,500	130

## High Speed Cutting Data for AL-SEES3-R type

Material	Aluminum Alloy (A5052)		Aluminum Alloy (A7075)		Cast Aluminum Alloy (Up to 13% Si)		Copper Alloy (C1100)	
	Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting		Type of Machining - Slotting	
	 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$		 $a_p=0.5D$ $a_e=D$	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
6	23,000	154	20,000	134	23,000	154	16,000	106
8	18,000	189	15,000	157	18,000	189	12,000	126
10	14,000	197	12,000	173	14,000	197	9,500	138
12	12,000	189	10,000	157	12,000	189	8,000	126
16	9,000	157	8,000	142	9,000	157	6,000	106
20	7,000	138	6,000	118	7,000	138	4,800	94

## Additional Cutting Data for longer tools

L/D	Tool Diameter			
	n (rpm)	Vf (ipm)	$a_p$	$a_e$
Up to 4D	0%	0%	1.5D	0.3D
5 ~ 6D	25%	30%	1.2D	0.1D
7 ~ 8D	40%	50%	1.0D	0.05D

- Notes:**
1. Use water soluble oil. Adjust  $a_e$  &  $a_p$  for finishing.
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, rigidity of machine and work clamping.
  4. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.
  5. In case of ramping, recommend reducing the above data by 30-60%.

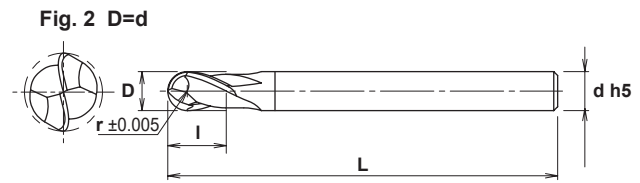
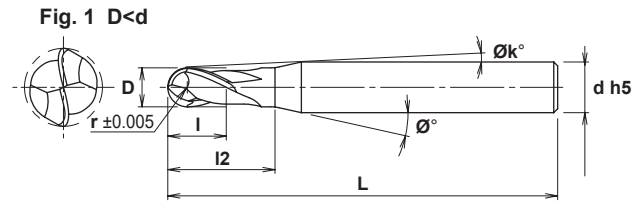
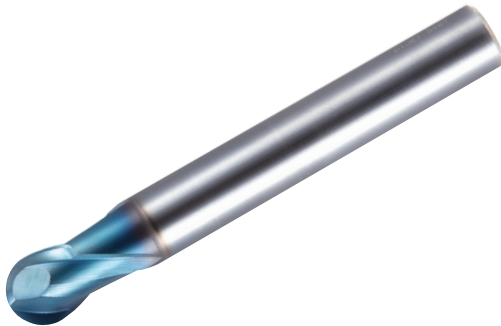
# Solid Carbide Radius End Mills

**METRIC**

Solid Carbide End Mills

## SFSB Type

- For high hardened die steel up to 70HRC
- 2 flutes, Helix angle 30°, for shrink fit

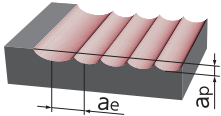
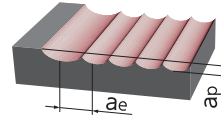
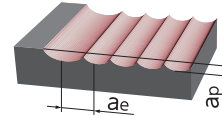


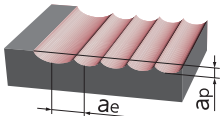
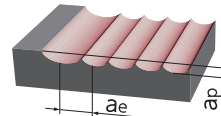
CATALOG NUMBER	STK	DIMENSIONS								FIG.
		D	r	l	l2	L	d	Ø	Øk	
SFSB2010	•	1	0.5	1	1.5	40	4	12°	10.49°	1
SFSB2010-S6	•	1	0.5	1	1.5	40	6	12°	11.04°	1
SFSB2020	•	2	1	2	2.5	40	4	10°	7.86°	1
SFSB2020-S6	•	2	1	2	2.5	40	6	10°	8.8°	1
SFSB2030	•	3	1.5	3	4	40	4	10°	5.29°	1
SFSB2030-S6	•	3	1.5	3	4	40	6	10°	7.69°	1
SFSB2040	•	4	2	4	-	40	4	-	-	2
SFSB2040-S6	•	4	2	4	5	40	6	8°	5.59°	1
SFSB2050	•	5	2.5	5	7	50	6	5°	2.79°	1
SFSB2060	•	6	3	6	-	50	6	-	-	2
SFSB2080	•	8	4	8	-	60	8	-	-	2
SFSB2100	•	10	5	10	-	60	10	-	-	2
SFSB2120	•	12	6	12	-	60	12	-	-	2



# Solid Carbide Ball Nose End Mills

## Recommended Cutting Data for SFSB type

Material		Carbon Steel below 250HB		Alloy, Tool & Mold Steel below 45HRC		Hardened Steel H13 (42~52HRC)	
Type of Machining - Roughing & Semi-Finishing		 $a_p \leq 0.1D_c$ $a_e \leq 0.3D_c$		 $a_p \leq 0.1D_c$ $a_e \leq 0.3D_c$		 $a_p \leq 0.1D_c$ (MAX 0.5mm) $a_e \leq 0.3D_c$	
Tool Diameter		n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
R (mm)	$\Phi D_c$ (mm)						
0.5	1	31,800	63	31,800	63	30,200	48
1	2	23,900	75	23,900	75	22,300	61
1.5	3	19,100	98	19,100	90	18,000	71
2	4	14,300	90	14,300	85	13,500	64
2.5	5	11,500	86	11,500	81	10,800	64
3	6	9,500	82	9,500	75	9,000	64
4	8	7,200	76	7,200	71	6,800	59
5	10	5,700	72	5,700	67	5,400	57
6	12	4,800	61	4,800	57	4,500	48

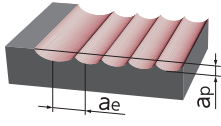
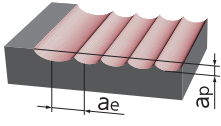
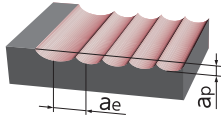
Material		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Roughing & Semi-Finishing		 $a_p \leq 0.05D_c$ (MAX 0.3mm) $a_e \leq 0.15D_c$		 $a_p \leq 0.05D_c$ (MAX 0.3mm) $a_e \leq 0.15D_c$	
Tool Diameter		n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
R (mm)	$\Phi D_c$ (mm)				
0.5	1	28,600	45	27,100	32
1	2	19,100	45	17,500	28
1.5	3	17,000	54	14,900	35
2	4	12,700	50	11,100	35
2.5	5	10,200	48	8,900	35
3	6	8,500	50	7,400	35
4	8	6,400	50	5,600	33
5	10	5,100	50	4,500	35
6	12	4,200	41	3,700	29

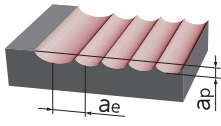
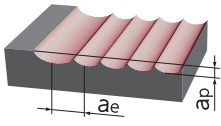
- Notes:**
1. Above cutting conditions are for general guidance. In case of incline angle 15° or more, reduce 70% of above data.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.

# Solid Carbide Ball Nose End Mills

Solid Carbide End Mills

## Recommended Cutting Data for SFSB type

Material		Carbon Steel below 250HB		Alloy, Tool & Mold Steel below 45HRC		Hardened Steel H13 (42~52HRC)	
Type of Machining - Finishing		 $a_p \leq 0.05D_c$ $a_e \leq 0.02D_c$		 $a_p \leq 0.05D_c$ $a_e \leq 0.02D_c$		 $a_p \leq 0.05D_c$ $a_e \leq 0.02D_c$	
		Tool Diameter		n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
R (mm)	$\Phi D_c$ (mm)						
0.5	1	38,200	135	38,200	135	35,000	96
1	2	27,100	128	27,100	128	25,500	100
1.5	3	21,200	133	21,200	125	20,200	104
2	4	15,900	131	15,900	125	15,100	89
2.5	5	12,700	105	12,700	100	12,100	95
3	6	10,600	113	10,600	104	10,100	100
4	8	8,000	101	8,000	94	7,600	90
5	10	6,400	93	6,400	88	6,000	76
6	12	5,300	77	5,300	73	5,000	63

Material		Hardened Steel D2 (55~62HRC)		HSS (63~70HRC)	
Type of Machining - Finishing		 $a_p \leq 0.05D_c$ $a_e \leq 0.02D_c$		 $a_p \leq 0.03D_c$ $a_e \leq 0.02D_c$	
		Tool Diameter		n (rpm)	Vf (ipm)
R (mm)	$\Phi D_c$ (mm)				
0.5	1	31,800	63	30,200	48
1	2	22,300	79	19,100	60
1.5	3	19,100	90	15,900	75
2	4	14,300	85	11,900	70
2.5	5	11,500	81	9,500	67
3	6	9,500	75	8,000	63
4	8	7,200	71	6,000	47
5	10	5,700	67	4,800	47
6	12	4,800	57	4,000	39

- Notes:**
- Above cutting conditions are for general guidance. In case of incline angle 15° or more, reduce 70% of above data.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - If machine does not have enough spindle speed, reduce the feed speed to same ratio as above.



**METRIC**

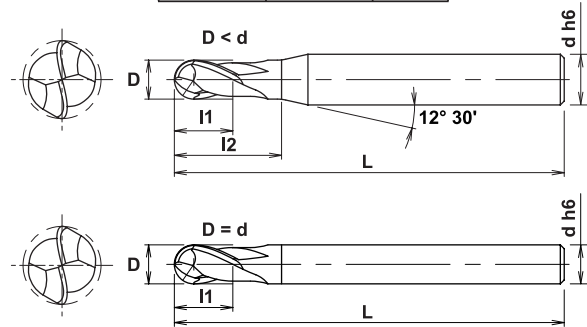
# Solid Carbide Ball Nose End Mills

## DV-OCSB Type

- 2 Flute with 30° Helix for hardened material up to 65HRC



D	D	r
1 ~ 2.5	<sup>0</sup> <sub>-0.01</sub>	±0.005
3 ~ 12	<sup>0</sup> <sub>-0.02</sub>	±0.005
16 ~ 20	<sup>0</sup> <sub>-0.02</sub>	±0.01



CATALOG NUMBER	STK	DIMENSIONS					
		D	r	l1	l2	L	d
DV-OCSB2010	•	1.0	0.5	1.5	3.0	50	4
DV-OCSB2010-2.5T	•	1.0	0.5	2.5	4.5	50	4
DV-OCSB2012	•	1.2	0.6	1.8	3.5	50	4
DV-OCSB2015	•	1.5	0.75	2.25	4.5	50	4
DV-OCSB2016	•	1.6	0.8	2.4	4.5	50	4
DV-OCSB2020	•	2.0	1.0	3.0	5.5	50	6
DV-OCSB2020-5T	•	2.0	1.0	5.0	7.0	50	6
DV-OCSB2025	•	2.5	1.25	3.75	6.5	50	6
DV-OCSB2030	•	3.0	1.5	4.5	8.0	60	6
DV-OCSB2030-8T	•	3.0	1.5	8.0	10.0	60	6
DV-OCSB2040S4	•	4.0	2.0	6.0	-	70	4
DV-OCSB2040	•	4.0	2.0	6.0	10.5	70	6
DV-OCSB2040-8T	•	4.0	2.0	8.0	10.5	70	6
DV-OCSB2050	•	5.0	2.5	7.5	12.5	80	6
DV-OCSB2050-10T	•	5.0	2.5	10.0	12.5	80	6
DV-OCSB2060	•	6.0	3.0	9.0	-	90	6
DV-OCSB2060-12T	•	6.0	3.0	12.0	-	90	6
DV-OCSB2060-L120	•	6.0	3.0	9.0	-	120	6
DV-OCSB2080	•	8.0	4.0	12.0	-	100	8
DV-OCSB2080-14T	•	8.0	4.0	14.0	-	100	8
DV-OCSB2080-L120	•	8.0	4.0	12.0	-	120	8
DV-OCSB2100	•	10.0	5.0	15.0	-	100	10
DV-OCSB2100-18T	•	10.0	5.0	18.0	-	100	10
DV-OCSB2100-L140	•	10.0	5.0	15.0	-	140	10
DV-OCSB2120	•	12.0	6.0	18.0	-	110	12
DV-OCSB2120-22T	•	12.0	6.0	22.0	-	110	12
DV-OCSB2120-L140	•	12.0	6.0	18.0	-	140	12
DV-OCSB2160-30T-L140	•	16.0	8.0	30.0	-	140	16
DV-OCSB2160-L140	•	16.0	8.0	24.0	-	140	16
DV-OCSB2160	•	16.0	8.0	24.0	-	160	16
DV-OCSB2160-L180	•	16.0	8.0	24.0	-	180	16
DV-OCSB2200-L140	•	20.0	10.0	30.0	-	140	20
DV-OCSB2200-L160	•	20.0	10.0	30.0	-	160	20
DV-OCSB2200	•	20.0	10.0	30.0	-	180	20

# Solid Carbide Ball Nose End Mills

Solid Carbide End Mills

## Recommended Cutting Data for DV-OCSB type

Material	Tool & Die Steel, Alloy Steel (~45HRC) (P20, P21, D2, H13)		Hardened Steel H13 (42~52HRC)		Hardened Steel D2 (55~62HRC)	
Type of Machining	<p><math>a_p \leq 0.1D</math> <math>a_e \leq 0.3D</math></p>		<p><math>a_p \leq 0.05D</math> (max 0.5mm) <math>a_e \leq 0.1D</math></p>		<p><math>a_p \leq 0.03D</math> (max 0.3mm) <math>a_e \leq 0.05D</math></p>	
Diameter	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	32,000	63	25,000	51	22,000	43
2	28,000	67	22,000	55	20,000	47
3	24,000	71	21,000	59	18,000	51
4	20,000	79	18,000	63	14,000	55
6	16,000	87	13,000	71	10,000	59
8	12,000	91	10,000	79	8,000	59
10	10,000	87	8,000	71	6,000	55
12	8,000	79	6,500	67	5,000	47
16	6,000	71	5,000	59	4,000	39
20	5,000	59	4,000	47	3,000	31

- Notes:**
- Above cutting conditions are for general guidance. Adjust  $a_e$  &  $a_p$  for finishing.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.



**METRIC**

# Solid Carbide Ball Nose End Mills

## DH-OCHB Type

- 4 Flute with 45°, for hardened material up to 70HRC
- High rigidity with un-equal pitch on flutes to control vibration

r	r	D
R0.5 ~ R1	±0.005	0 -0.010
R1.5 ~ R2	±0.008	0 -0.010
R2.5 ~ R6	±0.008	0 -0.015

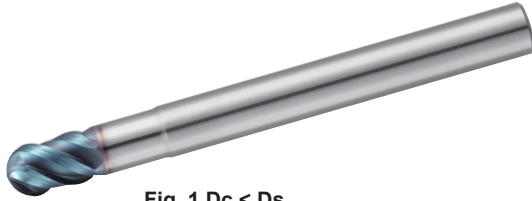


Fig. 1 Dc < Ds

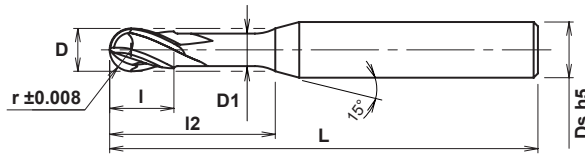
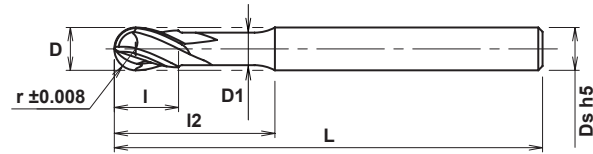


Fig. 2 Dc = Ds



CATALOG NUMBER	STK	DIMENSIONS								
		D	r	l	l2	L	D1	Ds	Flutes	FIG.
DH-OCHB4010S04	•	1	0.5	1.5	3	50	0.95	4	4	1
DH-OCHB4010S06	•	1	0.5	1.5	3	50	0.95	6	4	1
DH-OCHB4010S04	•	2	1	3	6	50	1.9	4	4	1
DH-OCHB4020S06	•	2	1	3	6	50	1.9	6	4	1
DH-OCHB4030	•	3	1.5	4.5	9	70	2.9	6	-	1
DH-OCHB4040	•	4	2	6	12	70	3.8	6	-	1
DH-OCHB4050	•	5	2.5	7.5	15	80	4.8	6	-	1
DH-OCHB4060	•	6	3	9	18	90	5.7	6	-	2
DH-OCHB4080	•	8	4	12	24	100	7.6	8	-	2
DH-OCHB4100	•	10	5	15	30	100	9.5	10	-	2
DH-OCHB4120	•	12	6	18	36	110	11.4	12	-	2

## Recommended Cutting Data for DH-OCHB type for Finishing

Material	Tool & Die Steel, Alloy Steel (~45HRC) (P20, P21, D2, H13)		Hardened Steel H13 (45~55HRC)		Hardened Steel D2 (55~62HRC)		H.S.S. (62~72HRC)		
	Type of Machining		Type of Machining		Type of Machining		Type of Machining		
	 $a_p \leq 0.03D$ $a_e \leq 0.03D$		 $a_p \leq 0.03D$ $a_e \leq 0.03D$		 $a_p \leq 0.03D$ $a_e \leq 0.03D$		 $a_p \leq 0.03D$ $a_e \leq 0.03D$		
Diameter	n		Vf		n		Vf		
	r (mm)	D (mm)	(rpm)	(ipm)	(rpm)	(ipm)	(rpm)	(ipm)	
0.5	1	30,000	63	30,000	55	30,000	47	30,000	31
1	2	30,000	126	30,000	79	25,500	79	19,000	39
1.5	3	25,500	157	21,200	118	17,000	79	12,700	39
2	4	19,100	157	15,900	118	12,700	79	9,500	39
2.5	5	15,300	157	12,700	118	10,200	79	7,600	39
3	6	12,700	157	10,600	118	8,500	79	6,400	39
4	8	9,500	157	8,000	118	6,400	79	4,800	39
5	10	7,600	157	6,400	118	5,100	79	3,800	39
6	12	6,400	157	5,300	118	4,200	79	3,200	39

- Note:**
1. These cutting conditions are for general guidance.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
- Attention for helical milling:
1. Recommended ramping angle is under 1° (up to 3°).
  2. If ramping angle is under 1°, apply the above table.
- If ramping angle is over 1°, reduce Feed and Speed according to actual machining condition.

# Solid Carbide Ball Nose End Mills

Solid Carbide End Mills

## Recommended Cutting Data for DH-OCHB type for roughing & semi-finishing

Material	Tool & Die Steel, Alloy Steel (P20, P21, D2, H13) (~45HRC)				Hardened Steel H13 (45~55HRC)			Hardened Steel D2 (55~65HRC)			H.S.S. (62~72HRC)		
Type of Machining	<p><math>a_p \leq 1.2D</math> <math>a_e \leq 0.2D</math></p> <p><math>a_p = 2.2, a_e = 0.1</math> (<math>a_p \times a_e \leq 0.22</math>)</p>				<p><math>a_p \leq 1.2D</math> <math>a_e \leq 0.2D</math></p> <p><math>a_p = 2.2, a_e = 0.1</math> (<math>a_p \times a_e \leq 0.22</math>)</p>			<p><math>a_p \leq 1.2D</math> <math>a_e \leq 0.2D</math></p> <p><math>a_p = 1.8, a_e = 0.1</math> (<math>a_p \times a_e \leq 0.18</math>)</p>			<p><math>a_p \leq 1.0D</math> <math>a_e \leq 0.1D</math></p> <p><math>a_p = 1, a_e = 0.05</math> (<math>a_p \times a_e \leq 0.05</math>)</p>		
Diameter	n (rpm)		Vf (ipm)	ap x ae	n (rpm)		Vf (ipm)	ap x ae	n (rpm)		Vf (ipm)	ap x ae	
	R (mm)	Dc (mm)											
0.5	1	30,000	59	0.00094	30,000	55	0.00094	30,000	47	0.00079	28,800	30	0.00024
1	2	28,600	118	0.00374	23,800	89	0.00374	19,100	59	0.00315	14,400	30	0.00098
1.5	3	19,100	118	0.00866	15,900	89	0.00866	12,700	59	0.00709	9,500	30	0.00197
2	4	14,300	118	0.01496	11,900	89	0.01496	9,500	59	0.01260	7,200	30	0.00394
2.5	5	11,500	118	0.02362	9,500	89	0.02362	7,600	59	0.01969	5,700	30	0.00591
3	6	9,500	118	0.03386	8,000	89	0.03386	6,400	59	0.02835	4,800	30	0.00866
4	8	7,200	118	0.06063	6,000	89	0.06063	4,800	59	0.05039	3,600	30	0.01496
5	10	5,700	118	0.09449	4,800	89	0.09449	3,800	59	0.07874	2,900	30	0.02362
6	12	4,800	118	0.13622	4,000	89	0.13622	3,200	59	0.11339	2,400	30	0.03386

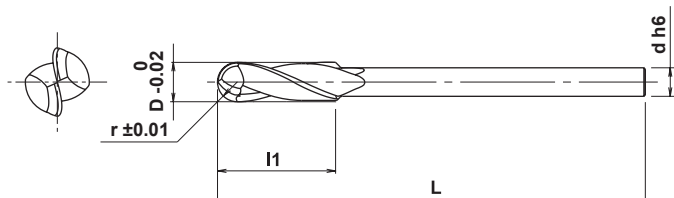
- Note:**
- These cutting conditions are for general guidance.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
- Attention for helical milling:
- Recommended ramping angle is under 1° (up to 3°).
  - If ramping angle is under 1°, apply the above table.  
If ramping angle is over 1°, reduce Feed and Speed according to actual machining condition.



**METRIC**

# Solid Carbide Ball Nose End Mills

**DZ-OCUB Type**  
- 2 Flute with 30° Helix



CATALOG NUMBER	STK	DIMENSIONS				
		D	R	I1	L	d
DZ-OCUB2060	•	6.0	3.0	9	120	5
DZ-OCUB2060-S5.8	•	6.0	3.0	9	120	5.8
DZ-OCUB2070	•	7.0	3.5	10.5	120	6
DZ-OCUB2080	•	8.0	4.0	12	120	7
DZ-OCUB2080-S7.8	•	8.0	4.0	12	120	7.8
DZ-OCUB2090	•	9.0	4.5	13.5	120	8
DZ-OCUB2100	•	10.0	5.0	15	140	9
DZ-OCUB2110	•	11.0	5.5	16.5	140	10
DZ-OCUB2120	•	12.0	6.0	18	140	11
DZ-OCUB2140	•	14.0	7.0	21	160	12
DZ-OCUB2160	•	16.0	8.0	24	180	15
DZ-OCUB2200	•	20.0	10.0	30	180	18

# Solid Carbide Ball Nose End Mills

Solid Carbide End Mills

## Recommended Cutting Data for DZ-OCUB type

Material	Carbon Steel 1049 (180~280HB)		Alloy Steel 4320 (180~280HB)		Mold Steel P20, P21 (35~45HRC)		Tool Steel H13 (300HB)	
Type of Machining								
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	43,000	79	38,000	75	32,000	63	38,000	75
2	21,500	67	19,000	60	16,000	50	19,000	60
3	14,000	55	12,500	49	11,000	43	12,500	49
4	11,000	55	9,500	37	8,300	34	9,500	38
6	7,100	53	6,300	29	5,500	27	6,300	29
8	5,300	53	4,700	29	4,100	22	4,700	29
10	4,400	52	3,800	30	3,300	22	3,800	30
12	3,500	46	3,100	28	2,750	22	3,100	28
14	3,000	43	2,600	27	2,300	21	2,600	27
16	2,600	43	2,300	27	2,050	21	2,300	27
20	2,100	41	1,900	27	1,650	20	1,900	27
25	1,700	39	1,500	26	1,320	20	1,500	26

Material	Hardened Steel H13, D2 (45~60HRC)		Stainless Steel (420 Stainless)		Gray Cast Iron 35 (160~260HB)		Nodular Cast Iron 40~60~8 (170~300HB)	
Type of Machining								
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	22,500	26	34,500	67	50,000	157	44,500	138
2	11,200	22	17,200	54	33,000	157	22,000	102
3	7,500	15	11,500	45	22,000	138	15,000	91
4	5,600	11	8,600	34	16,500	81	11,000	55
6	3,750	9	5,700	27	11,000	81	7,500	55
8	2,800	8	4,300	27	8,200	81	5,500	55
10	2,250	8	3,450	27	6,600	79	4,500	52
12	1,900	8	2,900	26	5,500	73	3,700	50
14	1,600	7	2,500	26	4,800	68	2,200	46
16	1,400	7	2,150	26	4,100	68	2,800	46
20	1,100	6	1,700	25	3,300	65	2,300	44
25	900	7	1,400	25	2,600	64	1,800	44

- Note:**
1. Above cutting conditions are for general guidance.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to down cut with air blow or mist coolant.

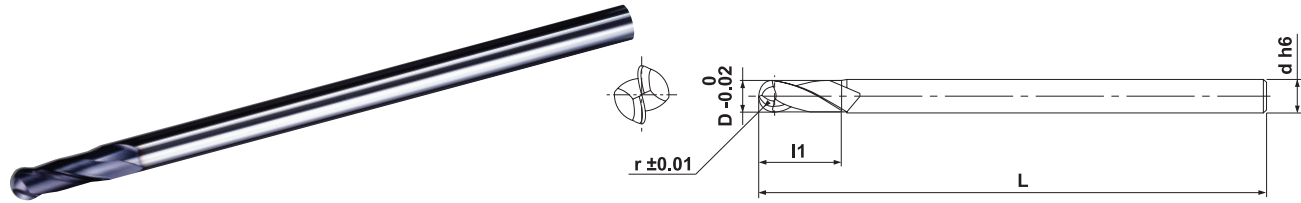


**METRIC**

# Solid Carbide Ball Nose End Mills

## DZ-OCLB-S Type

- 2 Flute with 30° Helix and extra long straight shank



CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
DZ-OCLB2040-12S120	•	4.0	2.0	12	120	4
DZ-OCLB2040-20S120	•	4.0	2.0	20	120	4
DZ-OCLB2060-18S160	•	6.0	3.0	18	160	6
DZ-OCLB2060-18S220	•	6.0	3.0	18	220	6
DZ-OCLB2060-22S160	•	6.0	3.0	22	160	6
DZ-OCLB2060-22S220	•	6.0	3.0	22	220	6
DZ-OCLB2080-22S160	•	8.0	4.0	22	160	8
DZ-OCLB2080-22S220	•	8.0	4.0	22	220	8
DZ-OCLB2100-25S160	•	10.0	5.0	25	160	10
DZ-OCLB2100-25S220	•	10.0	5.0	25	220	10
DZ-OCLB2100-35S160	•	10.0	5.0	35	160	10
DZ-OCLB2100-35S220	•	10.0	5.0	35	220	10
DZ-OCLB2120-35S160	•	12.0	6.0	35	160	12
DZ-OCLB2120-35S220	•	12.0	6.0	35	220	12
DZ-OCLB2120-45S220	•	12.0	6.0	45	220	12
DZ-OCLB2160-40S220	•	16.0	8.0	40	220	16
DZ-OCLB2200-40S220	•	20.0	10.0	40	220	20
DZ-OCLB2250-50S220	•	25.0	12.5	50	220	25

## Recommended Cutting Data for DZ-OCLB-S type

Material	Carbon Steel 1049 (180~280HB)		Alloy Steel 4320 (180~280HB)		Mold Steel P20, P21 (35~45HRC)	
	Type of Machining					
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
4	8,800	51	7,200	43	4,800	19
6	5,800	63	4,800	53	3,200	23
8	4,400	52	3,600	43	2,400	21
10	3,500	48	2,900	40	1,900	20
12	2,900	46	2,400	38	1,600	19
16	2,200	39	1,800	32	1,200	16
20	1,750	31	1,400	25	950	13
25	1,400	25	1,100	20	750	10

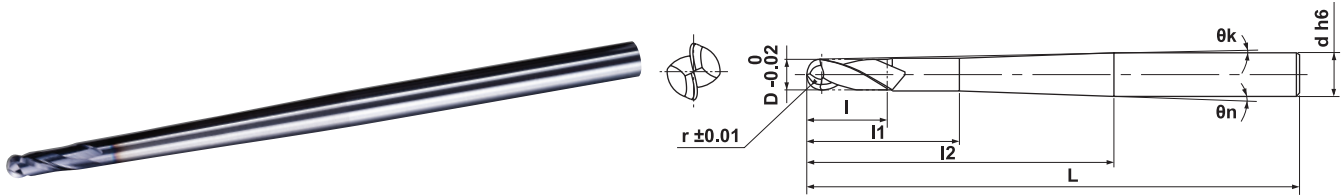
- Note:**
1. Above cutting conditions are for general guidance.
  2. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. Recommend to down cut with air blow or mist coolant.

# Solid Carbide Ball Nose End Mills

**METRIC**

## DZ-OCLB-T Type

- 2 Flute with 30° Helix and extra long taper shank



CATALOG NUMBER	STK	DIMENSIONS									
		D	r	l	l1	l2	θn	θk	L	d	
DZ-OCLB2040-10T160	•	4.0	2.0	10	20	85	2°39'	2°5'	160	10	
DZ-OCLB2040-10T220	•	4.0	2.0	10	20	120	1°43'	1°28'	220	10	
DZ-OCLB2040-16T160	•	4.0	2.0	16	35	100	2°39'	1°46'	160	10	
DZ-OCLB2040-16T220	•	4.0	2.0	16	35	120	2°1'	1°28'	220	10	
DZ-OCLB2060-17T160	•	6.0	3.0	17	30	90	2°52'	1°59'	160	12	
DZ-OCLB2060-17T160A	•	6.0	3.0	17	25	90	2°39'	1°59'	160	12	
DZ-OCLB2060-17T220	•	6.0	3.0	17	30	120	1°55'	1°29'	220	12	
DZ-OCLB2060-22T160	•	6.0	3.0	22	38	100	2°46'	1°47'	160	12	
DZ-OCLB2060-22T220	•	6.0	3.0	22	38	120	2°6'	1°29'	220	12	
DZ-OCLB2080-20T160	•	8.0	4.0	20	30	90	1°55'	1°20'	160	12	
DZ-OCLB2080-20T220	•	8.0	4.0	20	30	120	1°16'	1°	220	12	
DZ-OCLB2080-24T160	•	8.0	4.0	24	38	100	1°51'	1°12'	160	12	
DZ-OCLB2080-24T220	•	8.0	4.0	24	38	120	1°24'	1°	220	12	
DZ-OCLB2100-25T160	•	10.0	5.0	25	35	90	3°7'	2°2'	160	16	
DZ-OCLB2100-25T220	•	10.0	5.0	25	35	120	2°1'	1°30'	220	16	
DZ-OCLB2100-25T220A	•	10.0	5.0	25	35	150	1°30'	1°12'	220	16	
DZ-OCLB2100-33T160	•	10.0	5.0	33	38	100	2°46'	1°50'	160	16	
DZ-OCLB2100-33T220	•	10.0	5.0	33	38	120	2°6'	1°30'	220	16	
DZ-OCLB2120-30T160	•	12.0	6.0	30	38	90	2°12'	1°22'	160	16	
DZ-OCLB2120-30T220	•	12.0	6.0	30	38	120	1°24'	1°1'	220	16	
DZ-OCLB2120-33T160	•	12.0	6.0	33	38	100	1°51'	1°14'	160	16	
DZ-OCLB2120-33T220	•	12.0	6.0	33	38	120	1°24'	1°1'	220	16	

### Recommended Cutting Data for DZ-OCLB-T type

Material	Carbon Steel 1049 (180~280HB)		Alloy Steel 4320 (180~280HB)		Mold Steel P20, P21 (35~45HRC)	
Type of Machining						
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
4	8,800	51	7,200	43	4,800	19
6	5,800	63	4,800	53	3,200	23
8	4,400	52	3,600	43	2,400	21
10	3,500	48	2,900	40	1,900	20
12	2,900	46	2,400	38	1,600	19

- Note:**
- Above cutting conditions are for general guidance.
  - Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  - Recommend to down cut with air blow or mist coolant.

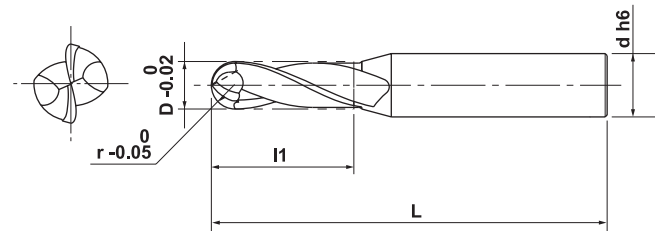
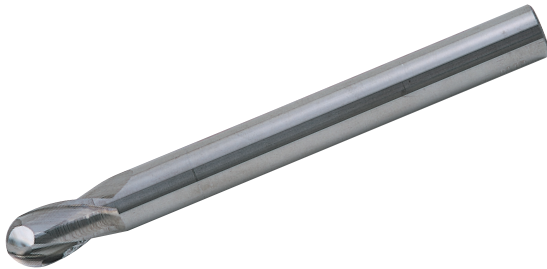


**METRIC**

# Solid Carbide Ball Nose End Mills

## AL-DBPS Type

- 2 Flute with 25° Helix for Aluminum



CATALOG NUMBER	STK	DIMENSIONS				
		D	r	l1	L	d
AL-DBPS2010	•	1.0	0.5	1.5	50	4
AL-DBPS2020	•	2.0	1.0	3	50	6
AL-DBPS2030	•	3.0	1.5	4.5	60	6
AL-DBPS2040	•	4.0	2.0	6	70	6
AL-DBPS2050	•	5.0	2.5	7.5	80	6
AL-DBPS2060	•	6.0	3.0	9	90	6
AL-DBPS2080	•	8.0	4.0	12	100	8
AL-DBPS2100	•	10.0	5.0	15	100	10
AL-DBPS2120	•	12.0	6.0	18	110	12

## Recommended Cutting Data for AL-DBPS type

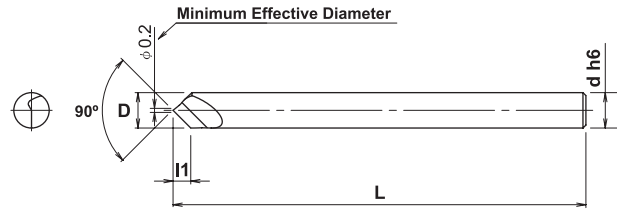
Material	Aluminum Alloy			
Type of Machining				
	Roughing		Finishing	
ΦDc(mm)	Vc (sfm)	n (rpm)	Vf (ipm)	
			Roughing	Finishing
1	492	44,700	14	20
2	492	23,900	21	28
3	492	15,900	21	31
4	492	11,900	21	55
5	492	9,500	21	51
6	492	8,000	21	47
8	492	6,000	21	43
10	492	4,800	21	39
12	492	4,000	21	35

- Note:**
1. Use water soluble oil
  2. Use caution when handling, tools are extremely sharp.
  3. Figures should be adjusted according to machining shape, purpose, rigidity of machine and work clamping.
  3. If machine does not have enough spindle speed, reduce the feed speed to the same ratio as above.

# Solid Carbide Chamfer End Mills for Aluminum METRIC

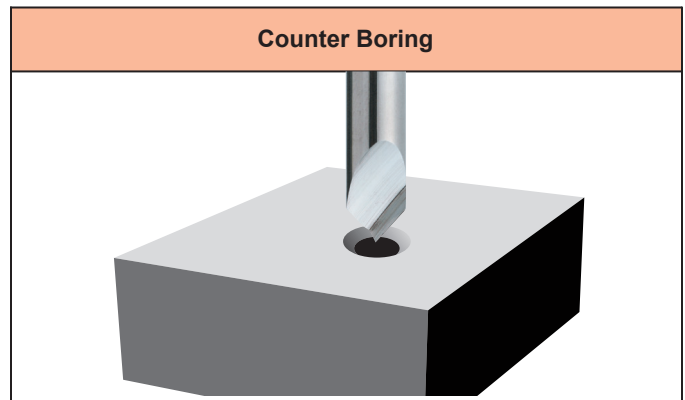
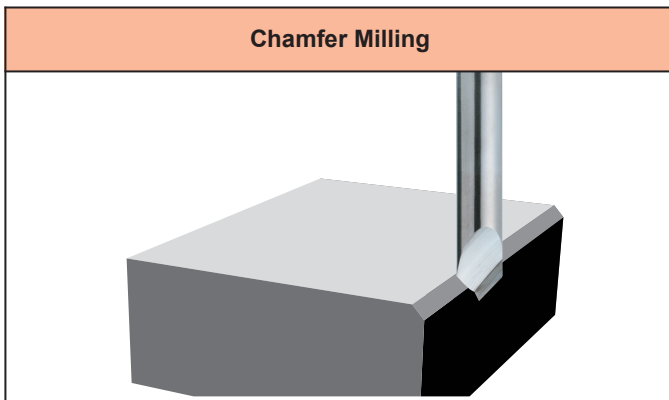
Solid Carbide End Mills

## AL-VME Type - For Chamfering Aluminum



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-VME-030-90°	•	3.0	1.5	50	3
AL-VME-040-90°	•	4.0	2	60	4
AL-VME-050-90°	•	5.0	2.5	70	5
AL-VME-060-90°	•	6.0	3	70	6
AL-VME-080-90°	•	8.0	4	75	8
AL-VME-100-90°	•	10.0	5	80	10

### Recommended Cutting Data



### Recommended Cutting Data for AL-VME type

Type of Machining	Materials	Aluminum Alloy (5052) Aluminum Alloy Casting (Si≤13%)			Aluminum Alloy (7075)		
		ΦDc(mm)	n (rpm)	ap (inch)	Vf (ipm)	n (rpm)	ap (inch)
	3	~20,000	0.020	79	~18,000	0.020	71
			0.039	39		0.039	35
	4	~16,000	0.028	79	~14,000	0.028	71
			0.055	39		0.055	35
	5	~14,000	0.031	87	~12,000	0.031	75
			0.071	43		0.071	39
	6	~12,000	0.039	94	~10,000	0.039	79
			0.079	47		0.079	39
	8	~8,000	0.051	79	~7,000	0.051	71
			0.098	39		0.098	35
	10	~6,000	0.059	71	~5,000	0.059	59
			0.118	35		0.118	28

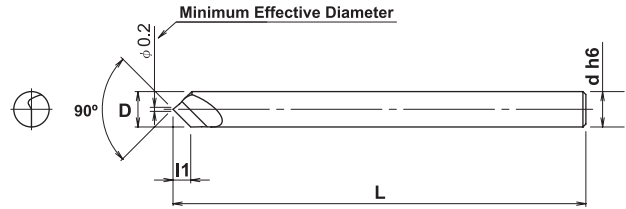
- Notes:**
- Above cutting conditions are for general guidance. Figures should be adjusted according to the machine rigidity or work rigidity.
  - Recommend to shorten overhung length as much as possible. Use water soluble oil.
  - In case of counter boring, reduce spindle speed (n) 25% and feed speed (Vf) 50% of above figures.



## METRIC Solid Carbide Chamfer End Mills for Aluminum

### AL-VME-LS Type

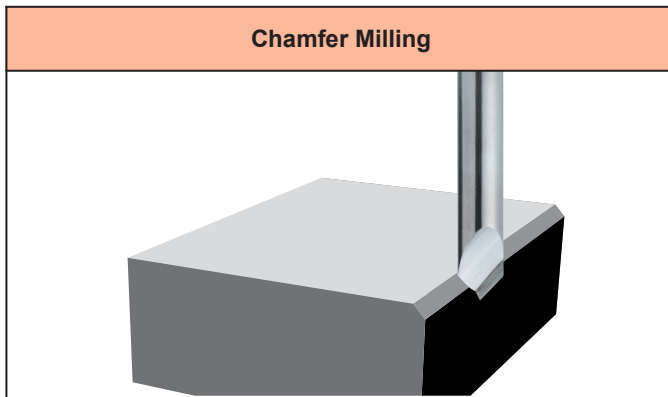
- For Chamfering Aluminum with long shank



CATALOG NUMBER	STK	DIMENSIONS			
		D	l1	L	d
AL-VME-030-90°-LS	•	3.0	1.5	80	3
AL-VME-040-90°-LS	•	4.0	2	100	4
AL-VME-050-90°-LS	•	5.0	2.5	110	5
AL-VME-060-90°-LS	•	6.0	3	120	6
AL-VME-080-90°-LS	•	8.0	4	120	8
AL-VME-100-90°-LS	•	10.0	5	140	10

- Stocked standard

### Recommended Cutting Data



### Recommended Cutting Data for AL-VME-LS type

Type of Machining	Materials	Aluminum Alloy (5052) Aluminum Alloy Casting (less than 13%Si)			Aluminum Alloy (7075)			
		$\Phi D_c$ (mm)	n (rpm)	$a_p$ (inch)	$V_f$ (ipm)	n (rpm)	$a_p$ (inch)	$V_f$ (ipm)
		3	~15,000	0.020	22	~14,000	0.020	20
		4	~12,000	0.028	24	~10,000	0.028	20
		5	~10,000	0.031	24	~9,000	0.031	22
		6	~9,000	0.039	24	~8,000	0.039	22
		8	~6,000	0.051	22	~5,000	0.051	16
		10	~5,000	0.059	20	~4,000	0.059	16

- Notes:**
1. Above cutting conditions are for general guidance. Figures should be adjusted according to the machine rigidity or work rigidity.
  2. Recommend to shorten overhung length as much as possible. Use water soluble oil.
  3. In case of counter boring, not recommended for these length of end mills.

# Solid Carbide Chamfering End Mills for Hardened Steel **METRIC**

## SFSV Type

- 3 Flute for chamfering high hardened steel up to 70 HRC

Solid Carbide End Mills

Fig. 1  $D_c < D_s$

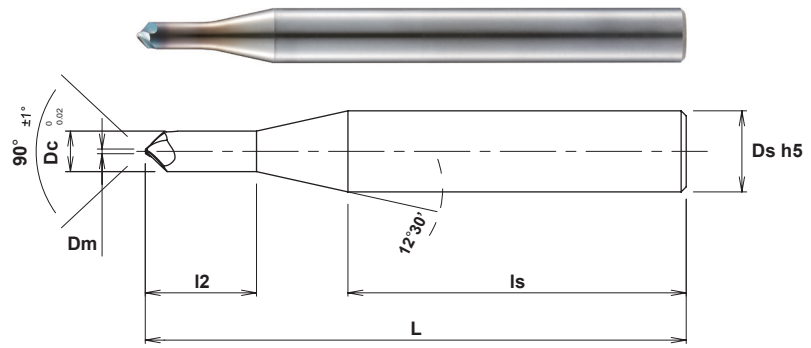
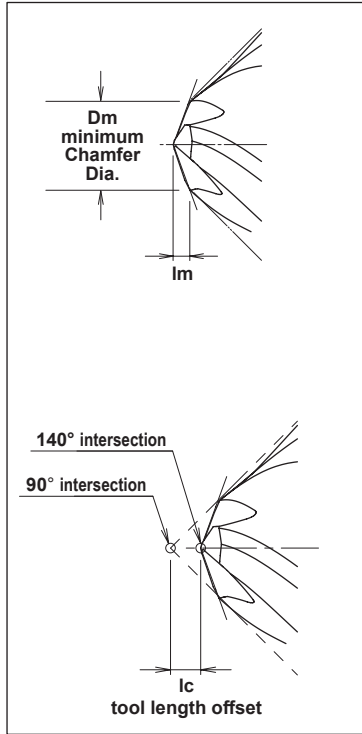
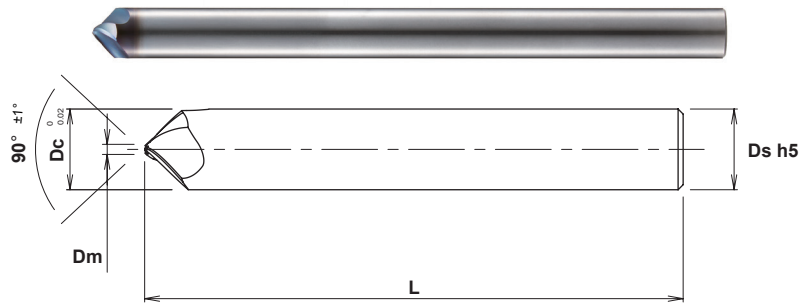


Fig. 2  $D_c = D_s$



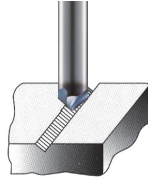
CATALOG NUMBER	STK	DIMENSIONS								FIG.
		Dc	Dm	L	l2	ls	lm	lc	Ds	
SFSV3010S04	•	1	0.2	50	3	40.2	0.036	0.064	4	1
SFSV3020S06	•	2	0.4	50	4.5	35.5	0.073	0.127	6	1
SFSV3030S06	•	3	0.6	60	8	45.2	0.109	0.191	6	1
SFSV3040S06	•	4	0.8	70	10.5	55.0	0.146	0.254	6	1
SFSV3050S06	•	5	1	80	12.5	65.2	0.182	0.318	6	1
SFSV3060S06	•	6	1.2	90	-	-	0.218	0.382	6	2
SFSV3080S08	•	8	1.5	100	-	-	0.273	0.477	8	2
SFSV3100S10	•	10	1.8	100	-	-	0.328	0.572	10	2
SFSV3120S12	•	12	2.1	110	-	-	0.382	0.668	12	2



# Solid Carbide Chamfering End Mills for Hardened Steel

## Recommended Cutting Data for SFSV type

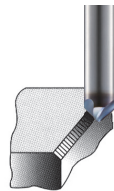
### V-Slotting



Material	Carbon Steel 1049 (~250HB)		Pre-hardened Steel P20HH, P21 (38~43HRC)		Hardened Steel D2 (~70HRC)	
Depth of Cut	$a_p=0.25D_c(L/D=3)$		$a_p=0.25D_c(L/D=3)$		$a_p=0.25D_c(L/D=3)$	
$\Phi D_c(\text{mm})$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	16,000	38	16,000	38	6,400	15
2	8,000	19	8,000	19	3,200	7
3	16,000	57	16,000	57	3,200	7
4	12,000	43	12,000	43	2,400	6
5	9,500	34	9,500	34	2,500	7
6	8,000	28	8,000	28	2,100	6
8	9,000	53	9,000	53	2,000	12
10	7,200	43	7,200	43	1,600	9
12	6,000	35	6,000	35	1,300	8

- Note:**
- Above cutting conditions are for overhang length of 3dc. Adjust the feed and speed according to the overhang length.
  - The  $a_p$  value during chamfering is the maximum value. The above cutting conditions are for C1. (Conditions below C1 will be the maximum  $a_p$  value.) When machining at the maximum  $a_p$ , reduce the feed rate by 70%
  - Recommend air blow or mist coolant.
  - If  $D_c$  is small, try to keep the cutting edge exposed to as much air as possible.

### C-Chamfering



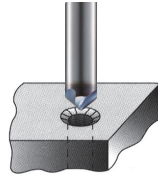
Material	Carbon Steel 1049 (~250HB)		Pre-hardened Steel P20HH, P21 (38~43HRC)		Hardened Steel D2 (~70HRC)	
Width of Cut	$C=0.2D_c(L/D=3)$		$C=0.2D_c(L/D=3)$		$C=0.2D_c(L/D=3)$	
$\Phi D_c(\text{mm})$	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	16,000	38	16,000	38	9,600	23
2	8,000	19	8,000	19	4,800	11
3	16,000	113	16,000	113	7,400	17
4	12,000	87	12,000	87	5,600	13
5	9,500	68	9,500	68	5,000	18
6	8,000	57	8,000	57	4,200	15
8	9,000	106	9,000	106	4,000	24
10	7,200	85	7,200	85	3,200	19
12	6,000	71	6,000	71	2,600	15

- Note:**
- Above cutting conditions are for overhang length of 3dc. Adjust the feed and speed according to the overhang length.
  - The  $a_p$  value during chamfering is the maximum value. The above cutting conditions are for C1. (Conditions below C1 will be the maximum  $a_p$  value.) When machining at the maximum  $a_p$ , reduce the feed rate by 70%
  - Recommend air blow or mist coolant.
  - If  $D_c$  is small, try to keep the cutting edge exposed to as much air as possible.

# Solid Carbide Chamfering End Mills for Hardened Steel

Solid Carbide End Mills

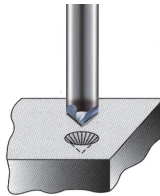
## Recommended Cutting Data for SFSV type



### C-Chamfering (Hole)

Material	Carbon Steel 1049 (~250HB)		Pre-hardened Steel P20HH, P21 (38~43HRC)		Hardened Steel D2 (~70HRC)	
Application Area	Dm < Pilot hole < Dc (L/D=3)		Dm < Pilot hole < Dc (L/D=3)		Dm < Pilot hole < Dc (L/D=3)	
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	16,000	18.9	16,000	18.9	2,400	5.5
2	8,000	9.4	8,000	9.4	1,200	2.8
3	16,000	56.7	16,000	56.7	1,600	5.5
4	12,000	43.3	12,000	43.3	1,200	4.3
5	9,500	33.9	9,500	33.9	950	3.4
6	8,000	28.3	8,000	28.3	800	2.8
8	9,000	53.1	9,000	53.1	1,000	5.9
10	7,200	42.5	7,200	42.5	800	4.7
12	6,000	35.4	6,000	35.4	650	3.9

- Note:**
- Above cutting conditions are for overhang length of 3dc. Adjust the feed and speed according to the overhang length.
  - The above cutting conditions are for Pilot hole ≥ Dc-2(mm).  
When Pilot hole < Dc-2(mm), recommend step machining in 0.3mm increments.
  - When L/D > 3, reduce n & Vf by 40% to 60%.
  - Recommend air blow or mist coolant.
  - If Dc is small, try to keep the cutting edge exposed to as much air as possible.



### Centering

Material	Carbon Steel 1049 (~250HB)		Pre-hardened Steel P20HH, P21 (38~43HRC)		Hardened Steel D2 (~70HRC)	
Depth of Cut	ap ≤ 0.1Dc (L/D=3)		ap ≤ 0.1Dc (L/D=3)		ap ≤ 0.1Dc (L/D=3)	
ΦDc(mm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)	n (rpm)	Vf (ipm)
1	16,000	6.3	16,000	6.3	9,600	3.8
2	8,000	3.1	8,000	3.1	4,800	1.9
3	16,000	6.3	16,000	6.3	7,400	2.9
4	12,000	4.7	12,000	4.7	5,600	2.2
5	9,500	3.7	9,500	3.7	5,000	2.0
6	8,000	3.1	8,000	3.1	4,200	1.7
8	9,000	3.5	9,000	3.5	4,000	1.6
10	7,200	2.8	7,200	2.8	3,200	1.3
12	6,000	2.4	6,000	2.4	2,600	1.0

- Note:**
- Above cutting conditions are for overhang length of 3dc. Adjust the feed and speed according to the overhang length.
  - The above cutting conditions are for ap ≤ 0.1Dc.  
When ap > 0.1Dc, recommend step machining in 0.3mm increments.
  - When L/D > 3, reduce n and Vf by 40% to 60%.
  - Recommend air blow or mist coolant.
  - If Dc is small, try to keep the cutting edge exposed to as much air as possible.

CATALOG NUMBER	DESCRIPTION	PAGE NUMBER
<b>A</b>		
AL-DBPS	Solid Carbide Ball Nose End Mill for Aluminum	B-68
AL-OCHE	Helical Cutting Drill	A-38
AL-OCRL3	Solid Carbide End Mill for Aluminum	B-35
AL-OCRS...-LS	Solid Carbide End Mill for Aluminum	B-36
AL-OCRS3	Solid Carbide End Mill for Aluminum	B-33
AL-SEEL2	Solid Carbide End Mill for Aluminum	B-21
AL-SEES2	Solid Carbide End Mill for Aluminum	B-21
AL-SEES2...-R..	Solid Carbide Radius End Mill for Aluminum	B-51
AL-SEES3	Solid Carbide End Mill for Aluminum	B-25
AL-SEES3...-LS	Solid Carbide End Mill for Aluminum	B-28
AL-SEES3...-LS-R..	Solid Carbide Radius End Mill for Aluminum	B-54
AL-SEES3...-LS-R02	Solid Carbide End Mill for Aluminum	B-29
AL-SEES3...-R..	Solid Carbide Radius End Mill for Aluminum	B-54
AL-SEES3...-XLS-R02	Solid Carbide End Mill for Aluminum	B-31
AL-SEEZ3	Solid Carbide End Mill for Aluminum	B-25
AL-VME	Solid Carbide Chamfer End Mill for Aluminum	B-69
AL-VME-...-LS	Solid Carbide Chamfer End Mill for Aluminum	B-70
<b>D</b>		
DH-FHR	Finish-Hard Reamer	A-35
DH-OCHB	Solid Carbide Ball Nose End Mill	B-62
DSW-2045H	Screw	A-44
DSW-307H	Screw	A-46
DSW-309H	Screw	A-46
DV-OCSAR	Solid Carbide Radius End Mill	B-47
DV-OCSB	Solid Carbide Ball Nose End Mill	B-60
DV-SOCS3	Solid Carbide End Mill	B-10
DZ-OCLB...-S...	Solid Carbide Ball Nose End Mill	B-66
DZ-OCLT...-T...	Solid Carbide Ball Nose End Mill	B-67
DZ-OCUB	Solid Carbide Ball Nose End Mill	B-64
DZ-SEPL	Solid Carbide End Mill	B-20
DZ-SOCL4	Solid Carbide End Mill	B-12
DZ-SOCLS4	Solid Carbide End Mill	B-12
DZ-SOCM4	Solid Carbide End Mill	B-12
DZ-SOCM4...-..	Solid Carbide Radius End Mill	B-49
DZ-SOCS4	Solid Carbide End Mill	B-12
DZ-SOCS4...-..	Solid Carbide Radius End Mill	B-49
<b>E</b>		
EZH	EZ Drill for Hard Materials	A-33
EZN2D	Strike Drill	A-5
EZN2DCH-M	Strike Drill with chamfer	A-15
EZN2D-M	Strike Drill with chamfer	A-15
EZN3D	Strike Drill	A-9
EZN3DCH-M	Strike Drill with chamfer	A-15
EZN3D-M	Strike Drill with chamfer	A-15
EZN4D	Strike Drill	A-7
EZN5D	Strike Drill	A-11
EZN8D	Strike Drill	A-13
EZT3D	Strike Drill prehole drill	A-16
EZT4D	Strike Drill prehole drill	A-16
<b>M</b>		
MSN-...-S...-C	Inch Modular Head Carbide Holder	A-64
MSN-...-S...-C	Metric Modular Head Carbide Holder	A-65
MSN-...-S...-C	Metric Modular Head Carbide Holder	A-67
MSN-...-T-S...-C	Metric Modular Head Carbide Holder	A-65

CATALOG NUMBER	DESCRIPTION	PAGE NUMBER
<b>S</b>		
SEHH	Solid Carbide End Mill	B-16
SEHH...-R..	Solid Carbide Radius End Mill	B-37
SEHL	Solid Carbide End Mill	B-19
SEHM	Solid Carbide End Mill	B-18
SEHS	Solid Carbide End Mill	B-16
SEM2	Solid Carbide End Mill	B-8
SEM4	Solid Carbide End Mill	B-8
SFSB	Solid Carbide Ball Nose End Mill	B-57
SFSR...-R..	Solid Carbide Radius End Mill	B-39
SFSR...-R...-	Solid Carbide Radius End Mill	B-40
SFSR...-R02-..	Solid Carbide Radius End Mill	B-41
SFSV	Solid Carbide Chamfer End Mill for Hard Materials	B-71
<b>T</b>		
T-07	Wrench	A-44, A-59
T-08	Wrench	A-46, A-48, A-50, A-59, A-60
T-10	Wrench	A-50, A-52, A-54, A-60, A-61
T-15	Wrench	A-54, A-56, A-61
TEZ	TA-EZ Drill insert	A-49
TEZ...S	TA-EZ Drill insert for Stainless & Titanium	A-55
TEZ...H	TA-EZ Drill insert for Hard Materials	A-57
TEZD	TA-EZ Drill Body	A-43
TLD3D	Spot Facing Drill	A-27
TLD5D	Spot Facing Drill	A-29
TLDM	Spot Facing Drill	A-23
TLZ	Indexable Spot Face Insert	A-60
TLZD	Indexable Spot Face Body	A-60
TLZD	Indexable Spot Face Modular Head	A-60
TSW-2556H	Screw	A-44
TSW-2567H	Screw	A-44, A-46
TSW-3510H	Screw	A-48
TSW-3512H	Screw	A-48
<b>V</b>		
VSD	Solid Carbide V Drill	A-40
VSDL	Solid Carbide V Drill, long shank	A-40

## DIJET, INC. (USA)



## DIJET INDUSTRIAL (JAPAN)



Osaka Plant (CT, Wear Parts)



Mie Plant (TA & IT Plant)



Mie Plant (Raw Material Powder)



Tondabayashi Plant



Mie Plant (Carbide)

# WORLDWIDE DISTRIBUTION



**DIJET, INC.**  
 45807 Helm Street, Plymouth, MI 48170  
 Phone: 1-800-743-4538 Fax: 1-734-454-9395  
[www.dijetusa.com](http://www.dijetusa.com)



**DIJET INDUSTRIAL CO., LTD.**  
 2-1-18, Kami-Higashi, Hirano-ku,  
 Osaka 547-0002, Japan  
 Phone: +81-6-6794-0167  
 Fax: +81-6-6793-3930  
[www.dijet.co.jp](http://www.dijet.co.jp)

**DIJET INDUSTRIAL CO., LTD.**  
 Immermannstr 9  
 40210 Düsseldorf, Germany  
 Phone: +49 (0) 211-5008820  
 Fax: +49 (0) 211-5008823



JQA-2089 JQA-EM1580