




# Endmill

<b>Product Lines</b>	.....	<b>X02</b>
<b>Recommended Cutting Conditions</b>	.....	<b>X03</b>
<b>RWEM.. series</b>	.....	<b>X04</b>
<b>REZ.. series</b>	.....	<b>X05</b>
<b>REL.. series</b>	.....	<b>X08</b>

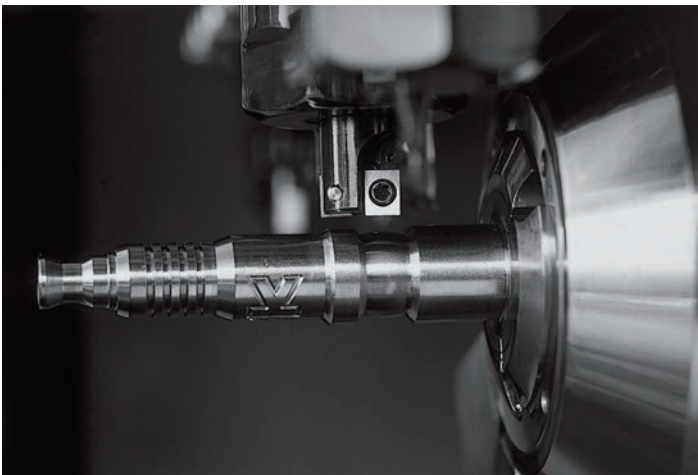
# Product Lines



## S-MILL / Solid Carbide Endmills



Series	Features	DC (mm)	CICT	APMX (mm)	Pages
RWEM.. series 	Small diameter solid end mill <ul style="list-style-type: none"> <li>• Original NTK design for sharpness and ease of use on automated lathes</li> <li>• Stable machining even with small-diameter machining that is easy to vibrate</li> <li>• A lineup of full-length dimensions optimized for Swiss CNC lathes</li> </ul>	φ2 - 10	2,3,4 flute	- 6.0	X4

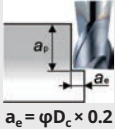
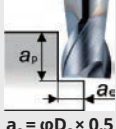
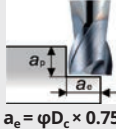
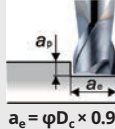
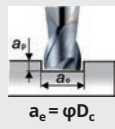
## Indexable Endmills



Series	Features	DC (mm)	CICT	APMX (mm)	Pages
REZ.. series 	Lead angle 90° <ul style="list-style-type: none"> <li>• Can be used for right angle milling</li> <li>• Plunging and D-cuts using an insert with a center cutting edge</li> <li>• Slope milling is possible</li> <li>• Oversized head allows for machining close to guide bushing</li> <li>• Standard 45 degree lead angle end mill with indexable inserts</li> </ul>	φ8 - 20	1,2,3 flute	- 5.3	X5
REL.. series 	Lead angle 89° <ul style="list-style-type: none"> <li>• Solid → Easy tool management with indexable inserts</li> <li>• No need to re-grind or re-coat which reduces tool costs</li> <li>• Fine grain carbide - PVD coated inserts enable three to five times faster cutting speeds compared to high-speed end mills</li> </ul>	φ10	2 flute	- 5.3	X8

# Recommended Cutting Conditions

## S-MILL / Solid Carbide Endmills

Flute	$\varphi D_c$ (mm)	Carbon steel S45C		Alloy steel S45C		Stainless steel SUS304											
		RPM (min <sup>-1</sup> )	Feed (mm/min)	RPM (min <sup>-1</sup> )	Feed (mm/min)	RPM (min <sup>-1</sup> )	Feed (mm/min)	$a_p$ (mm)	$a_e$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$a_p$ (mm)	$a_e$ (mm)
2 flute	2.0	6,000	100	6,000	100	6,000	90	≤2.0	0.4	≤0.8	1.0	≤0.6	1.5	≤0.5	1.8	≤0.4	
	3.0	6,000	210	6,000	240	6,000	180	≤3.0	0.6	≤1.2	1.5	≤0.9	2.3	≤0.7	2.7	≤0.6	
	4.0	6,000	320	5,600	300	5,200	240	≤4.0	0.8	≤1.6	2.0	≤1.2	3.0	≤1.0	3.6	≤0.8	
	5.0	5,000	370	4,500	330	4,100	260	≤5.0	1.0	≤2.0	2.5	≤1.5	3.8	≤1.2	4.5	≤1.0	
	6.0	4,200	380	3,700	340	3,400	270	≤6.0	1.2	≤2.4	3.0	≤1.8	4.5	≤1.5	5.4	≤1.2	
	7.0	3,600	370	3,200	330	3,000	270	≤6.0	1.4	≤2.8	3.5	≤2.1	5.3	≤1.7	6.3	≤1.4	
	8.0	3,200	360	2,800	320	2,600	250	≤6.0	1.6	≤3.2	4.0	≤2.4	6.0	≤2.0	7.2	≤1.6	
	10.0	2,500	320	2,200	280	2,100	230	≤6.0	2.0	≤4.0	5.0	≤3.0	7.5	≤2.5	9.0	≤2.0	
3 flute	3.0	6,000	250	6,000	250	6,000	220	≤3.0	8.0	≤1.2	1.5	≤0.9	2.3	≤0.7	2.7	≤0.6	
	4.0	6,000	390	5,600	360	5,200	290	≤4.0	0.8	≤1.6	2.0	≤1.2	3.0	≤1.0	3.6	≤0.8	
	5.0	5,000	440	4,500	400	4,100	310	≤5.0	1.0	≤2.0	2.5	≤1.5	3.8	≤1.2	4.5	≤1.0	
	6.0	4,200	460	3,700	410	3,400	330	≤6.0	1.2	≤2.4	3.0	≤1.8	4.5	≤1.5	5.4	≤1.2	
	7.0	3,600	450	3,200	400	3,000	320	≤6.0	1.4	≤2.8	3.5	≤2.1	5.3	≤1.7	6.3	≤1.4	
	8.0	3,200	430	2,800	380	2,600	310	≤6.0	1.6	≤3.2	4.0	≤2.4	6.0	≤2.0	7.2	≤1.6	
4 flute	3.0	6,000	290	6,000	290	6,000	250	≤3.0	0.6	≤1.2	1.5	≤0.9	2.3	≤0.7	2.7	≤0.6	
	4.0	6,000	450	5,500	410	5,200	340	≤4.0	0.8	≤1.6	2.0	≤1.2	3.0	≤1.0	3.6	≤0.8	
	5.0	5,000	520	4,500	460	4,100	370	≤5.0	1.0	≤2.0	2.5	≤1.5	3.8	≤1.2	4.5	≤1.0	
	6.0	4,200	540	3,700	480	3,400	380	≤6.0	1.2	≤2.4	3.0	≤1.8	4.5	≤1.5	5.4	≤1.2	
	7.0	3,600	520	3,200	460	3,000	380	≤6.0	1.4	≤2.8	3.5	≤2.1	5.3	≤1.7	6.3	≤1.4	
	8.0	3,200	500	2,800	440	2,600	360	≤6.0	1.6	≤3.2	4.0	≤2.4	6.0	≤2.0	7.2	≤1.6	
	10.0	2,500	440	2,200	390	2,100	320	≤6.0	2.0	≤4.0	5.0	≤3.0	7.5	≤2.5	9.0	≤2.0	

Cutting conditions (machine, work material...) affects surface finish and burr generation.

If cutting performance is not good with above cutting conditions, please adjust speed and feed by same ratio.

## Indexable Endmills

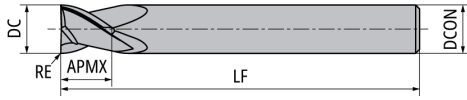
Work Material	RPM (m/min)	Axial Feed (mm/t)	Depth of cut (mm)	Width of cut (mm)
Stainless	40 ~ 60	~ 0.05	~ 1.5	- 50% of cutter diameter
Steel	80 ~ 120	~ 0.05	~ 3.0	- 50% of cutter diameter

# S-MILL

## RWEM.. series

### RWEM-H2

No.1



No.2

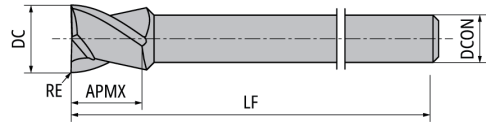
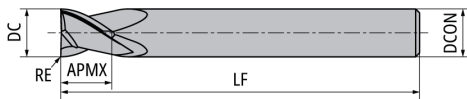


Figure	Item Number	NOF	APMX mm	DC mm	DCON mm	LF mm	RE mm	Carbide AC3
1	RWEM020H2R00S04	2	2	2	4	40	0	●
1	RWEM030H2R00S04	2	3	3	4	40	0	●
1	RWEM040H2R00S04	2	4	4	4	40	0	●
1	RWEM050H2R00S06	2	5	5	6	45	0	●
1	RWEM060H2R00S06	2	6	6	6	45	0	●
1	RWEM070H2R00S08	2	6	7	8	50	0	●
2	RWEM080H2R00S07	2	6	8	7	50	0	●
1	RWEM080H2R00S08	2	6	8	8	50	0	●
2	RWEM100H2R00S07	2	6	10	7	50	0	●
1	RWEM100H2R00S10	2	6	10	10	50	0	●

### RWEM-H3

No.1



No.2

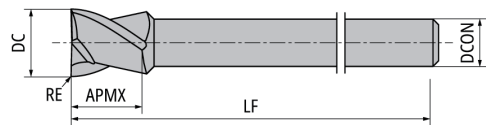
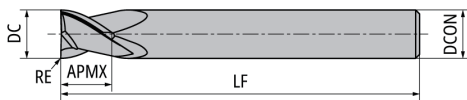


Figure	Item Number	NOF	APMX mm	DC mm	DCON mm	LF mm	RE mm	Carbide AC3
1	RWEM030H3R00S04	3	3	3	4	40	0	●
1	RWEM040H3R00S04	3	4	4	4	40	0	●
1	RWEM050H3R00S06	3	5	5	6	45	0	●
1	RWEM060H3R00S06	3	6	6	6	45	0	●
1	RWEM070H3R00S08	3	6	7	8	50	0	●
2	RWEM080H3R00S07	3	6	8	7	50	0	●
1	RWEM080H3R00S08	3	6	8	8	50	0	●
2	RWEM100H3R00S07	3	6	10	7	50	0	●
1	RWEM100H3R00S10	3	6	10	10	50	0	●

### RWEM-H4

No.1



No.2

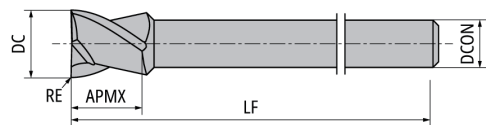


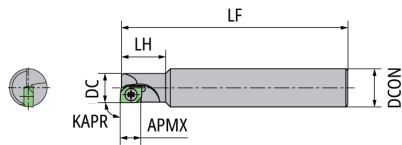
Figure	Item Number	NOF	APMX mm	DC mm	DCON mm	LF mm	RE mm	Carbide AC3
1	RWEM030H4R00S04	4	3	3	4	40	0	●
1	RWEM040H4R00S04	4	4	4	4	40	0	●
1	RWEM050H4R00S06	4	5	5	6	45	0	●
1	RWEM060H4R00S06	4	6	6	6	45	0	●
1	RWEM070H4R00S08	4	6	7	8	50	0	●
2	RWEM080H4R00S07	4	6	8	7	50	0	●
1	RWEM080H4R00S08	4	6	8	8	50	0	●
2	RWEM100H4R00S07	4	6	10	7	50	0	●
1	RWEM100H4R00S10	4	6	10	10	50	0	●

X Endmill

# Indexable Endmills

## REZ.. series/Toolholders for Lead angle 90°

### REZ-1R



● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX	CICT	DC mm	DCON mm	KAPR °	LF mm	LH mm	Insert Gage
5276498	REZ080C1R212	●	R	※5.3	1	8	10	90	60	12	CZH04..
5285812	REZ100C1R218	●	R	※5.3	1	10	10	90	75	12	CZH05..-141

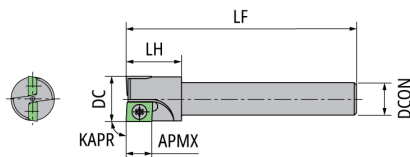
※4.0mm for an insert with a center cutting edge

Note : The model number stamped on the actual holder is partly shortened for reasons of space.

### Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
REZ080C1R212	FSI02-2.2*4.0	T-07
REZ100C1R218	FSI02-2.2*4.3	T-07

### REZ-2R



● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX	CICT	DC mm	DCON mm	KAPR °	LF mm	LH mm	Insert Gage
5520317	REZ100B2R329	●	R	※5.3	2	10	5	90	40	10	CZH04..
5120936	REZ100C2R133	●	R	※5.3	2	10	6	90	50	12	CZH04..
5120951	REZ100C2R132	●	R	※5.3	2	10	7	90	50	12	CZH04..
5137971	REZ100C2R141	●	R	※5.3	2	10	10	90	50	12	CZH04..
5355458	REZ120C2R141	●	R	※5.3	2	12	10	90	50	12	CZH04..
5355466	REZ140C2R141	●	R	※5.3	2	14	10	90	50	12	CZH04..

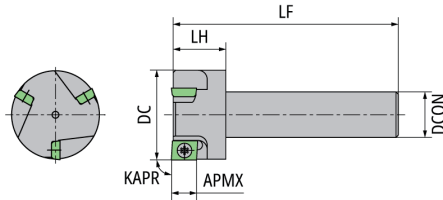
※4.0mm for an insert with a center cutting edge

Note : The model number stamped on the actual holder is partly shortened for reasons of space.

### Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
REZ100B2R329	FSI02-2.2*4.3	T-07
REZ100C2R133	FSI02-2.2*4.3	T-07
REZ100C2R132	FSI02-2.2*4.3	T-07
REZ100C2R141	FSI02-2.2*4.3	T-07
REZ120C2R141	FSI02-2.2*4.3	T-07
REZ140C2R141	FSI02-2.2*4.3	T-07

## REZ-3R for oversized head



● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX	CICT	DC mm	DCON mm	KAPR °	LF mm	LH mm	Insert Gage
5520325	REZ150B3R330	●	R	※5.3	3	15	5	90	40	10	CZH04..
5496088	REZ200M3R319	●	R	※5.3	3	20	7	90	50	12	CZH04..
5496096	REZ200M3R320	●	R	※5.3	3	20	10	90	50	12	CZH04..

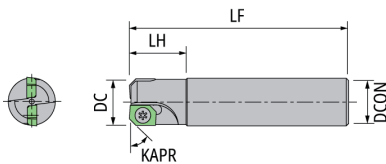
※4.0mm for an insert with a center cutting edge

Note : The model number stamped on the actual holder is partly shortened for reasons of space.

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
REZ150B3R330	FSI02-2.2*4.3	T-07
REZ200M3R319	FSI02-2.2*4.3	T-07
REZ200M3R320	FSI02-2.2*4.3	T-07

## REZ-2R for Lead angle 45°



● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	CICT	DC mm	DCON mm	KAPR °	LF mm	LH mm	Insert Gage
5880281	REZ100C2R461	●	R	2	10	10	45	50	12	CZH04.. CZH04..-C45
5880299	REZ100C2R466	●	R	2	10	7	45	50	12	CZH04.. CZH04..-C45

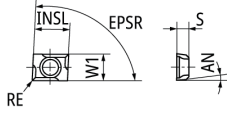
Note : The model number stamped on the actual holder is partly shortened for reasons of space.

## Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
REZ100C2R461	FSI02-2.2*4.3	T-07
REZ100C2R466	FSI02-2.2*4.3	T-07

# REZ.. series/Insert Carbide

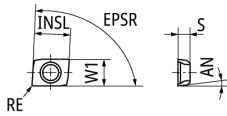
## CZH-BL Less tool pressure with chipbreaker



● Diagram shows right-hand tool

Item Number	Chip-breaker	Center cutting edge	Wiper	AN	EPSR	INSL	RE	S	W1	Carbide PVD	
				°	°	mm	mm	mm	mm	DM4	TM4
CZH04005CFR-BL	Yes	No	No	7	87	5.56	0.05	1.88	4.2	●	●
CZH0402CFR-BL	Yes	No	No	7	87	5.56	0.2	1.88	4.2	●	●

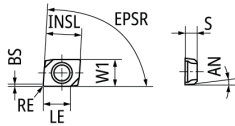
## CZH-070



● Diagram shows right-hand tool

Item Number	Chip-breaker	Center cutting edge	Wiper	AN	EPSR	INSL	RE	S	W1	Carbide PVD	
				°	°	mm	mm	mm	mm	DT4	ZM3
CZH04005CFR-070	No	Yes	No	7	87	5.56	0.05	1.88	4.2	●	●
CZH0402CFR-070	No	Yes	No	7	87	5.56	0.2	1.88	4.2	●	●

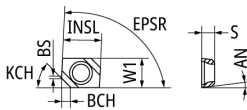
## CZH-140/141



● Diagram shows right-hand tool

Item Number	Chip-breaker	Center cutting edge	Wiper	AN	BS	EPSR	INSL	LE	RE	S	W1	Carbide PVD	
				°	mm	°	mm	mm	mm	mm	mm	DT4	ZM3
CZH04005CFR-140	No	Yes	Straight	7	0.4	87	5.56	4	0.05	1.88	4.2	●	●
CZH0402CFR-140	No	Yes	Straight	7	0.4	87	5.56	4	0.2	1.88	4.2	●	●
CZH05005CFR-141	No	Yes	Straight	10	0.4	87	5.28	4	0.05	2.18	5.56	●	
CZH0502CFR-141	No	Yes	Straight	10	0.4	87	5.28	4	0.2	2.18	5.56	●	

## CZH-C45 for Lead angle 45°



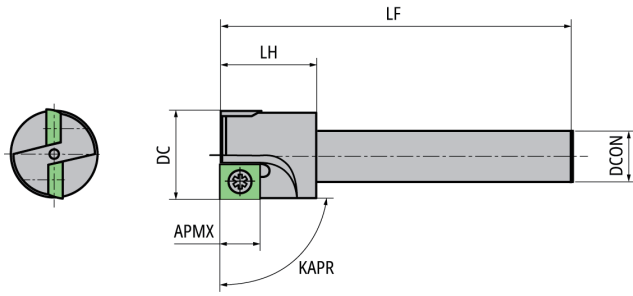
● Diagram shows right-hand tool

Item Number	Chip-breaker	Center cutting edge	Wiper	AN	BCH	BS	EPSR	INSL	KCH	S	W1	Carbide PVD	
				°	mm	mm	°	mm	°	mm	mm	DT4	QM3
CZH0400CFR-C45	Yes	No	Straight	7	1.35	0.3	87	5.56	45	1.88	4.2	●	●

# Indexable Endmills

## REL.. series/Toolholders for Lead angle 89°

### REL-2R



● Diagram shows right-hand tool

EDP	Item Number	Stock	Hand	APMX	CICT	DC mm	DCON mm	KAPR °	LF mm	LH mm	Insert Gage
5092374	REL100C2R106	●	R	※	2	10	7	89	50	12	CLH04..-045
5092358	REL100C2R107	●	R	※	2	10	10	89	50	12	CLH04..-045

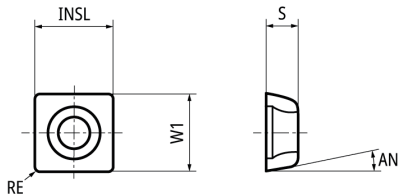
Note : The model number stamped on the actual holder is partly shortened for reasons of space.

### Spare Parts

Item Number	Clamp screw	Wrench (for Clamp screw)
REL100C2R106	FSI02-2.2*4.3	T-07
REL100C2R107	FSI02-2.2*4.3	T-07

## REL.. series/Insert Carbide

### CLH-045



● Diagram shows right-hand tool

Item Number	Chip-breaker	Center cutting edge	Wiper	AN °	INSL mm	RE mm	S mm	W1 mm	Carbide PVD ZM3
CLH04005CFN-045	No	No	No	7	5.56	0.05	1.88	4.2	●
CLH0402CFN-045	No	No	No	7	5.56	0.2	1.88	4.2	●