

# Tools for Small Part Machining

Series  
Expansion

## Series Continues to Evolve



- Insert for Cutting Off and Back Turning  
For Carbon Steels **MS6015**
- Molded Type Insert for Back Turning **SMB**

# PVD Coated Cemented Carbide Grade for Carbon Steels

# **MS6015**

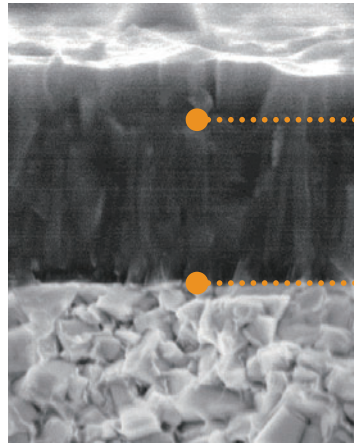
Skilled at pure irons, carbon steels and free cutting steels turning and achieving implemented stable finished surfaces and excellent dimensional accuracy.

## Features 1

A fine compatible collaboration of a special carbide substrate and a new PVD coating that greatly improves wear resistance.

	<b>MS6015</b>	Conventional
Coating	TiCN Multi-layer	TiAlN
Hardness (HV)	<b>3000</b>	2800
Wear Coefficient (Carbon Steels)	<b>Low</b>	High
Base Material Hardness (HRA)	<b>92.0</b>	92.0
T.R.S (GPa)	<b>2.0</b>	2.0

Ti-C-N Multi-layer Coating



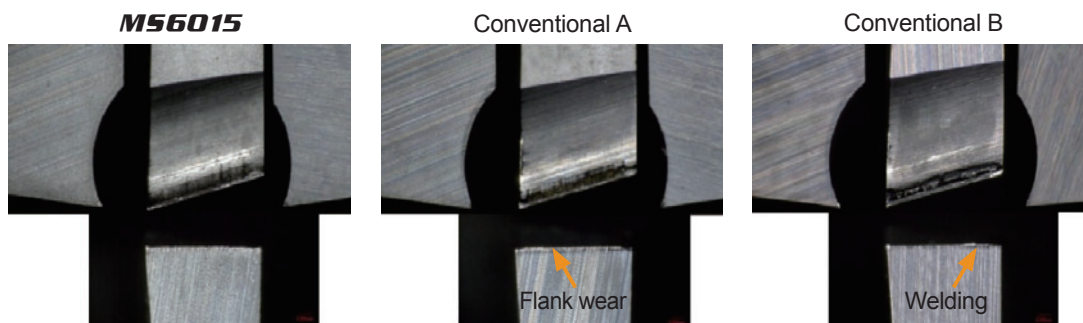
Superior wear and welding resistance and demonstrating the best possible results for carbon steels.

Minute multi-layers remarkably improve welding.

Excellent chip discharge with a reduced coefficient of friction creates a stabilized turning surface.

## Cutting Performance

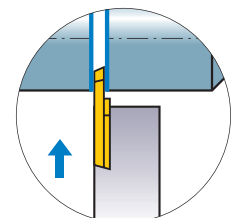
Compared with conventional products, it is excellent in welding resistance in cutting of low carbon steels.



<Cutting Conditions>

Work Material : Low Carbon Steels  
 Inserts : CTBT20160V5RR-B  
 Cutting Speed :  $v_c = 100$  m/min  
 Work Diameter :  $\phi 16$  mm  
 Width of Cutting Off : 2.0 mm

Feed per Rev. :  $f = 0.02$  mm/rev  
 Number of Workpieces : 100 pieces  
 Cutting Mode : Wet Cutting (Water-insoluble)  
 Machine : Automatic Lathes



## Molded Type Insert for Back Turning

# SMB Breaker

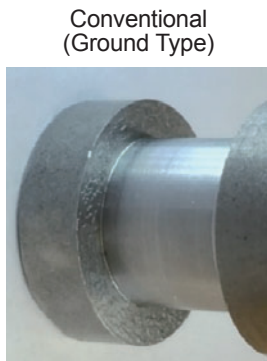
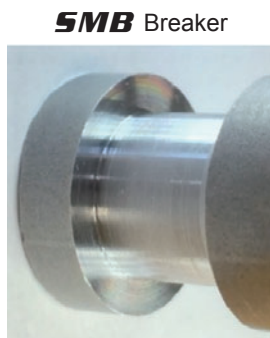
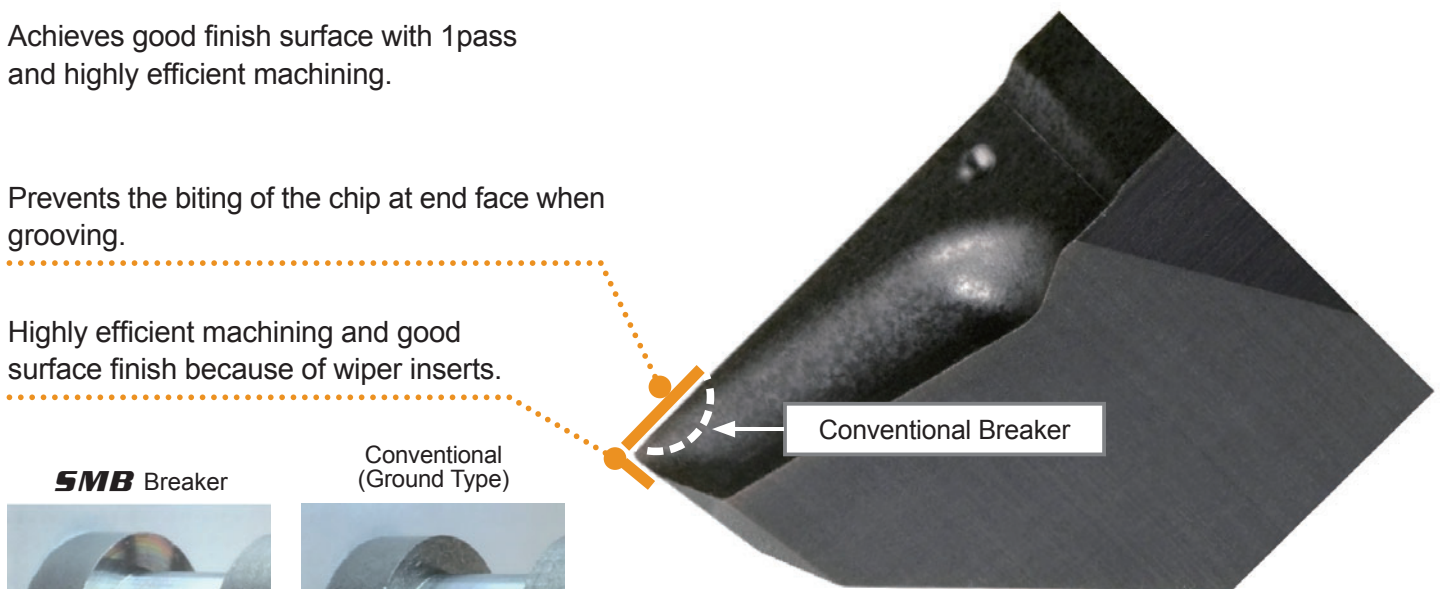
The chip breaker made of the mold makes the finished surface very much improved.

## Features

Achieves good finish surface with 1 pass and highly efficient machining.

Prevents the biting of the chip at end face when grooving.

Highly efficient machining and good surface finish because of wiper inserts.

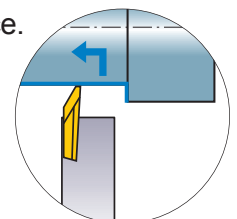
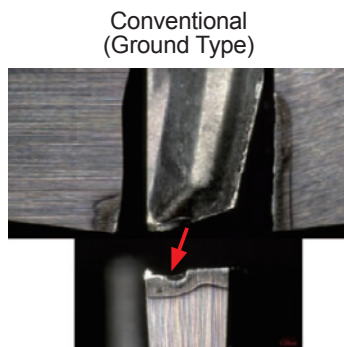
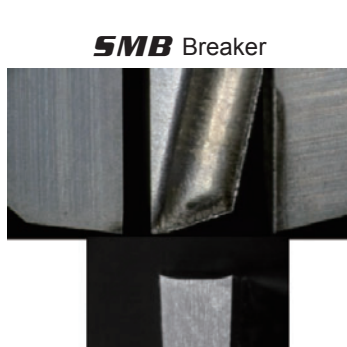


Set the Corner Radius to a Minus Tolerance  
01M : R0.08 mm 02M : 0.18 mm

<Cutting Conditions>  
 Work Material : Low Carbon Steels  
 Inserts : BTAT723501MR-SMB  
 Grade : VP15TF  
 Cutting Speed :  $vc=100$  m/min  
 Depth of Cut :  $ap=2.5$  mm  
 Feed (Grooving) :  $f=0.03$  mm/rev  
 Feed (External) :  $f=0.04$  mm/rev  
 Cutting Mode : Wet Cutting (Water-soluble)  
 Machine : CNC Automatic Lathes

## Cutting Performance

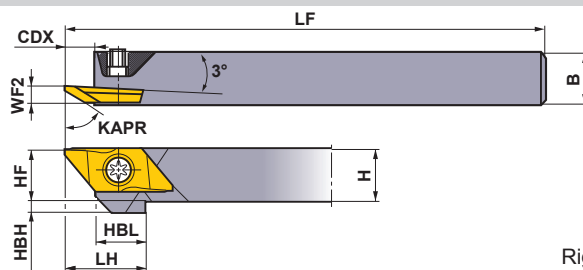
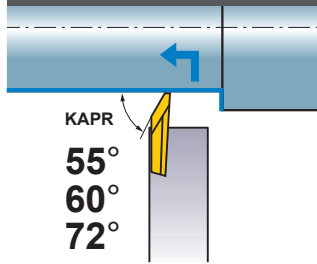
Compared with conventional products, AISI 304 machining is excellent in wear resistance.



<Cutting Conditions>  
 Work Material : AISI 304  
 Inserts : BTAT723501MR-SMB  
 Grade : VP15TF  
 Cutting Speed :  $vc=60$  m/min  
 Depth of Cut :  $ap=2.5$  mm  
 Feed (Grooving) :  $f=0.02$  mm/rev  
 Feed (External) :  $f=0.04$  mm/rev  
 Number of Workpieces : 100 pieces  
 Cutting Mode : Wet Cutting (Water-insoluble)  
 Machine : Automatic Lathes

# External Back Turning

## BTAH



Right hand tool holder shown.

Order Number	Stock		Insert Type	Dimensions (mm)										Clamp Screw *	Wrench
	R	L		H	B	LF	LH	HF	WF2	HBH	HBL	CDX			
BTahr/L0810-50	●	●	BTAT	5528○R/L-B	8	10	120	15	8	3.5	4	9.5	5.5	NS402W	NKY15S
BTahr/L1010-50	●	●		6035○R/L-B	10	10	120	15	10	3.5	2	9.5	5.5	NS402W	NKY15S
BTahr/L1212-50	●	●		605000RX	12	12	120	15	12	3.5	—	9.5	5.5	NS403W	NKY15S
BTahr/L1616-50	●	●		7235○R-SMB	16	16	120	15	16	3.5	—	9.5	5.5	NS403W	NKY15S

(Note 1) Please use right hand insert for right hand holder and left hand insert for left hand holder.

(Note 2) Set the maximum depth of cut at under 60% of the effective cutting edge length (LE).

\* Clamp Torque (N · m) : NS402W=1.0, NS403W=1.0

## Inserts

(mm)

Order Number	Hand	Coated			Dimensions							LE*	Geometry
		VP15TF	MS6015	PSIRRL*	REL	CF	L	W1	CW	S			
<b>NEW</b> BTAT7235V5R-SMB	R	●		72°	0.05	0.3	20	8	1.4	2.5	3.5	With Breaker  SMB Type (Molded Type)  B Type (Ground Type)  Right hand insert shown.	
<b>NEW</b> BTAT723501MR-SMB	R	●		72°	0.08	0.3	20	8	1.4	2.5	3.5		
<b>NEW</b> BTAT723502MR-SMB	R	●		72°	0.18	0.3	20	8	1.4	2.5	3.5		
BTAT552800R-B	R	●	●	55°	0	0	20	8	0.5	2.5	2.8		
BTAT552800L-B	L	●		55°	0	0	20	8	0.5	2.5	2.8		
BTAT552801R-B	R	●	●	55°	0.1	0	20	8	0.5	2.5	2.8		
BTAT552801L-B	L	●		55°	0.1	0	20	8	0.5	2.5	2.8		
BTAT603500R-B	R	●	●	60°	0	0	20	8	0.5	2.5	3.5		
BTAT603500L-B	L	●		60°	0	0	20	8	0.5	2.5	3.5		
<b>NEW</b> BTAT603501MR-B	R		●	60°	0.08	0	20	8	0.5	2.5	3.5		
BTAT603501R-B	R	●	●	60°	0.1	0	20	8	0.5	2.5	3.5		
BTAT603501L-B	L	●		60°	0.1	0	20	8	0.5	2.5	3.5		
BTAT605000RX	R	●		60°	0	0	20	8	1.25	2.5	5.0		Without Breaker 

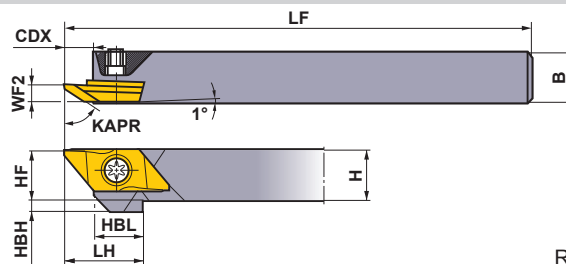
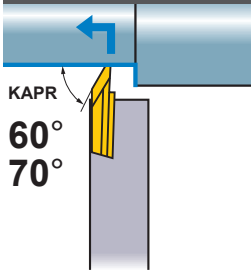
\* Numeric value set insert on holder.

## Recommended Cutting Conditions



Work Material	Properties	Grade	vc (m/min)	f (mm/rev)
P Carbon Steels · Alloy Steels	180HB–280HB	VP15TF	100 (50–150)	0.08 (0.01–0.15)
	Free Cutting Steels	MS6015	110 (30–180)	0.08 (0.01–0.15)
M Stainless Steels	≤200HB	VP15TF	80 (50–120)	0.06 (0.02–0.1)
N Non-Ferrous Metals	—	MS6015	150 (70–230)	0.09 (0.03–0.15)

● : Inventory maintained in Japan. (5 inserts in one case)

# CTBH



Right hand tool holder shown.

Order Number	Stock		Insert Type	Dimensions (mm)									*  				
	R	L		H	B	LF	LH	HF	WF2	HBH	HBL	CDX	Clamp Screw	Wrench			
CTBHR/L1010-160	●	●	BTBT	60450	○	R/L-B	10	10	120	19.5	10	3.4	2	12	7.5	NS402W	NKY15S
CTBHR/L1212-160	●	●		606000	R/L	12	12	120	19.5	12	3.4	—	12	7.5	NS403W	NKY15S	
CTBHR/L1616-160	●	●		7055	○	R-SMB	16	16	120	19.5	16	3.4	—	12	7.5	NS403W	NKY15S

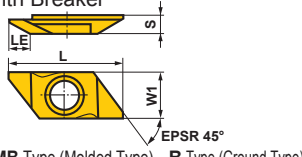
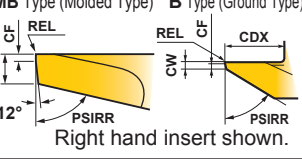
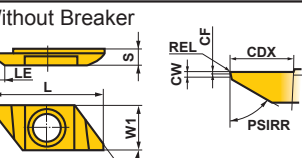
(Note 1) Please use right hand insert for right hand holder and left hand insert for left hand holder.

(Note 2) Set the maximum depth of cut at under 60% of the effective cutting edge length (LE).

\* Clamp Torque (N · m) : NS402W=1.0, NS403W=1.0

## Inserts

(mm)

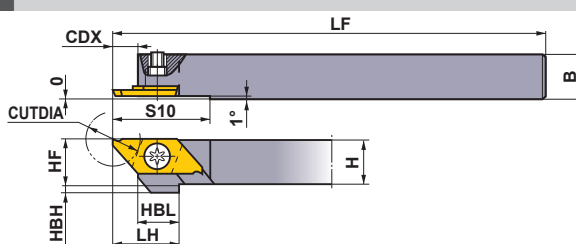
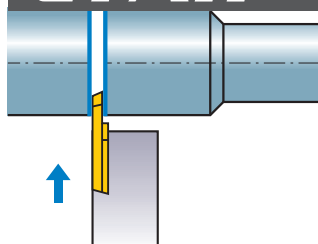
Order Number	Hand	Coated			Dimensions								LE*	Geometry
		VP15TF	MS6015	PSIRRL*	REL	CF	L	W1	CW	S	CDX			
<b>NEW</b> BTBT7055V5R-SMB	R	●		70°	0.05	0.3	25	9.4	1.35	3.5	6.5	5.5	With Breaker 	
<b>NEW</b> BTBT705501MR-SMB	R	●		70°	0.08	0.3	25	9.4	1.35	3.5	6.5	5.5		
<b>NEW</b> BTBT705502MR-SMB	R	●		70°	0.18	0.3	25	9.4	1.35	3.5	6.5	5.5	SMB Type (Molded Type) B Type (Ground Type) 	
BTBT604500R-B	R	●	●	60°	0	0.2	25	9.4	0.7	3.5	5.5	4.5		
BTBT604500L-B	L	●		60°	0	0.2	25	9.4	0.7	3.5	5.5	4.5	Right hand insert shown.	
<b>NEW</b> BTBT604501MR-B	R		●	60°	0.08	0.3	25	9.4	0.7	3.5	5.5	4.5		
BTBT604501R-B	R	●	●	60°	0.1	0.3	25	9.4	0.7	3.5	5.5	4.5	Without Breaker 	
BTBT604501L-B	L	●		60°	0.1	0.3	25	9.4	0.7	3.5	5.5	4.5		
BTBT606000R	R	●		60°	0	0.2	25	9.4	0.7	3.5	7	6.0	Right hand insert shown.	
BTBT606000L	L	●		60°	0	0.2	25	9.4	0.7	3.5	7	6.0		

\* Numeric value set insert on holder.



# External Cutting Off

## CTAH



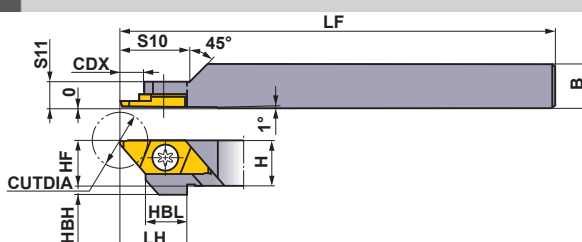
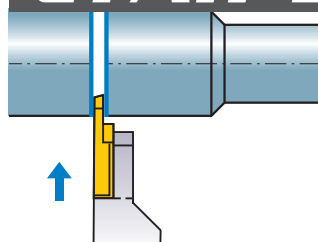
Right hand tool holder shown.

Order Number	Stock		Insert Type	Dimensions (mm)									CUTDIA (mm)	*2		
	R	L		H	B	HF	LF	LH	CDX	HBH	HBL	S10		Clamp Screw	Wrench	
CTAHR/L0810-120	●	●	CTAT	○○○○	8	10	8	120	15	5.5	4	9.5	22	12 (8)*1	NS402W	NKY15S
CTAHR/L1010-120	●	●		○○○○	10	10	10	120	15	5.5	2	9.5	22		NS402W	NKY15S
CTAHR/L1212-120	●	●		○○○○	12	12	12	120	15	5.5	—	9.5	22		NS403W	NKY15S
CTAHR/L1616-120	●	●		○○○○	16	16	16	120	15	5.5	—	9.5	22		NS403W	NKY15S

\*1 When the width of cutting off (CW) is 0.7mm.

\*2 Clamp Torque (N · m) : NS402W=1.0, NS403W=1.0

## CTAH-S



Right hand tool holder only.

Order Number	Stock	Insert Type	Dimensions (mm)										CUTDIA (mm)	*2		
	R		H	B	HF	LF	LH	CDX	HBH	HBL	S10	S11		Clamp Screw	Wrench	
CTAHR1010-120S	●	CTAT	○○○○	10	10	10	80	15	16	2	9.5	16	5.5	12 (8)*1	NS401	NKY25R

\*1 When the width of cutting off (CW) is 0.7mm.

\*2 Clamp Torque (N · m) : NS401=3.5

### Recommended Cutting Conditions

Work Material	Properties	Grade	vc (m/min)	f (mm/rev)
P Carbon Steels · Alloy Steels	180HB-280HB	VP15TF	100 (50-150)	0.05 (0.02-0.09)
	Free Cutting Steels	MS6015	110 (30-180)	0.05 (0.01-0.09)
M Stainless Steels	≤200HB	VP15TF	80 (50-120)	0.03 (0.02-0.05)
N Non-Ferrous Metals	—	MS6015	150 (70-230)	0.07 (0.03-0.11)

● : Inventory maintained in Japan. (5 inserts in one case)

# Inserts

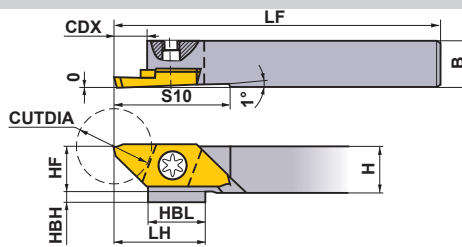
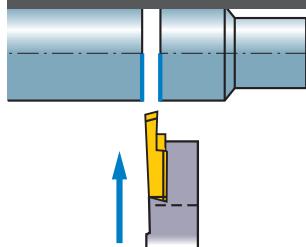
(mm)

Holder	Setting Geometry	Breaker	Geometry	Insert Geometry	Order Number	Hand	Coated		Dimensions							* CUTDIA	
							VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	LBB		
Right Hand (R)	16°	With Breaker			CTAT07080V5RR-B	R	●		0.7	4.5	0.05	20	8	2.5	1.5	8	
					CTAT10120V5RR-B	R	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12	
					CTAT15120V5RR-B	R	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12	
					CTAT20120V5RR-B	R	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12	
	16°				CTAT15120V5RR-BX	R	●		1.5	6.7	0.05	20	8	2.5	1.5	12	
					CTAT20120V5RR-BX	R	●		2.0	6.7	0.05	20	8	2.5	1.5	12	
				0°		CTAT10120V5RN-B	N	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12
						CTAT15120V5RN-B	N	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12
					CTAT20120V5RN-B	N	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12	
	0°				CTAT15120V5RN-BX	N	●		1.5	6.7	0.05	20	8	2.5	1.5	12	
					CTAT20120V5RN-BX	N	●		2.0	6.7	0.05	20	8	2.5	1.5	12	
				16°		CTAT10110V5RL-B	L	●		1.0	6.7	0.05	20	8	2.5	1.5	11
		CTAT15110V5RL-B	L		●		1.5	6.7	0.05	20	8	2.5	1.5	11			
	CTAT20110V5RL-B	L	●			2.0	6.7	0.05	20	8	2.5	1.5	11				
20°		CTAT1012000RR	R	●	●	1.0	6.7	0	20	8	2.5	3.5	12				
		CTAT1512000RR	R	●	●	1.5	6.7	0	20	8	2.5	3.5	12				
		CTAT2012000RR	R	●	●	2.0	6.7	0	20	8	2.5	3.5	12				
Left Hand (L)	16°	With Breaker			CTAT07080V5LL-B	L	●		0.7	4.5	0.05	20	8	2.5	1.5	8	
					CTAT10120V5LL-B	L	●		1.0	6.7	0	20	8	2.5	1.5	12	
					CTAT15120V5LL-B	L	●		1.5	6.7	0	20	8	2.5	1.5	12	
					CTAT20120V5LL-B	L	●		2.0	6.7	0	20	8	2.5	1.5	12	
	0°				CTAT10120V5LN-B	N	●	●	1.0	6.7	0.05	20	8	2.5	1.5	12	
					CTAT15120V5LN-B	N	●	●	1.5	6.7	0.05	20	8	2.5	1.5	12	
					CTAT20120V5LN-B	N	●	●	2.0	6.7	0.05	20	8	2.5	1.5	12	
				16°		CTAT10110V5LR-B	R	●	●	1.0	6.7	0.05	20	8	2.5	1.5	11
					CTAT15110V5LR-B	R	●	●	1.5	6.7	0.05	20	8	2.5	1.5	11	
					CTAT20110V5LR-B	R	●	●	2.0	6.7	0.05	20	8	2.5	1.5	11	
	20°					CTAT1012000LL	L	●		1.0	6.7	0	20	8	2.5	3.5	12
					CTAT1512000LL	L	●		1.5	6.7	0	20	8	2.5	3.5	12	
		CTAT2012000LL	L	●		2.0	6.7	0	20	8	2.5	3.5	12				



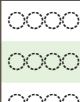
\* CUTDIA : Max. Cut off Diameter

# External Cutting Off

## CTBH


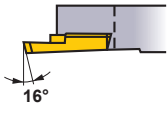
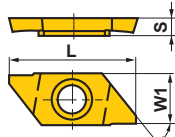
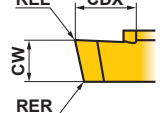
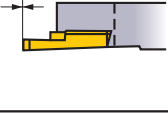
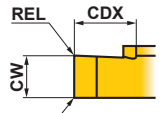
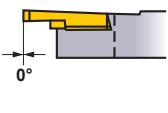
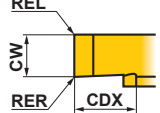
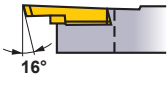
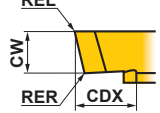


Right hand tool holder shown.

Order Number	Stock		Insert Type	Dimensions (mm)										CUTDIA (mm)	*  	
	R	L		H	B	HF	LF	LH	CDX	HBH	HBL	S10	Clamp Screw		Wrench	
CTBHR/L1010-160	●	●	CTBT 	10	10	10	120	19.5	7.5	2	9.5	25	16	NS402W	NKY15S	
CTBHR/L1212-160	●	●		12	12	12	120	19.5	7.5	—	9.5	25	16	NS403W	NKY15S	
CTBHR/L1616-160	●	●		16	16	16	120	19.5	7.5	—	9.5	25	16	NS403W	NKY15S	

\* Clamp Torque (N · m) : NS402W=1.0, NS403W=1.0

## Inserts

Holder	Setting Geometry	Breaker	Geometry	Insert Geometry	Order Number	Hand	Coated 		Dimensions						CUTDIA
							VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	
							(mm)								
Right Hand (R)		With Breaker 	EPSR 45°		CTBT15160V5RR-B	R	●	●	1.5	9.2	0.05	25	9.4	3.5	16
					CTBT20160V5RR-B	R	●	●	2.0	9.2	0.05	25	9.4	3.5	16
					CTBT20160V5RN-B	N	●	●	2.0	9.2	0.05	25	9.4	3.5	16
CTBT20160V5LL-B					L	●	●	2.0	9.2	0.05	25	9.4	3.5	16	
Left Hand (L)						CTBT20160V5LN-B	N	●	●	2.0	9.2	0.05	25	9.4	3.5
							CTBT20145V5LR-B	R	●	●	2.0	9.2	0.05	25	9.4

Right hand insert shown.

● : Inventory maintained in Japan. (5 inserts in one case)



# Memo

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# Memo

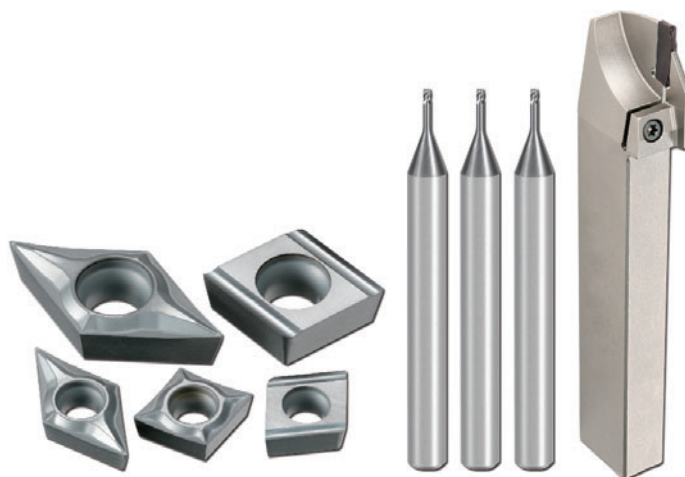
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# Tools for Small Part Machining

**For Your Safety**

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or spanner. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

 **MITSUBISHI MATERIALS CORPORATION**

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<http://www.mitsubishicarbide.com/en/>  
(Tools specifications subject to change without notice.)