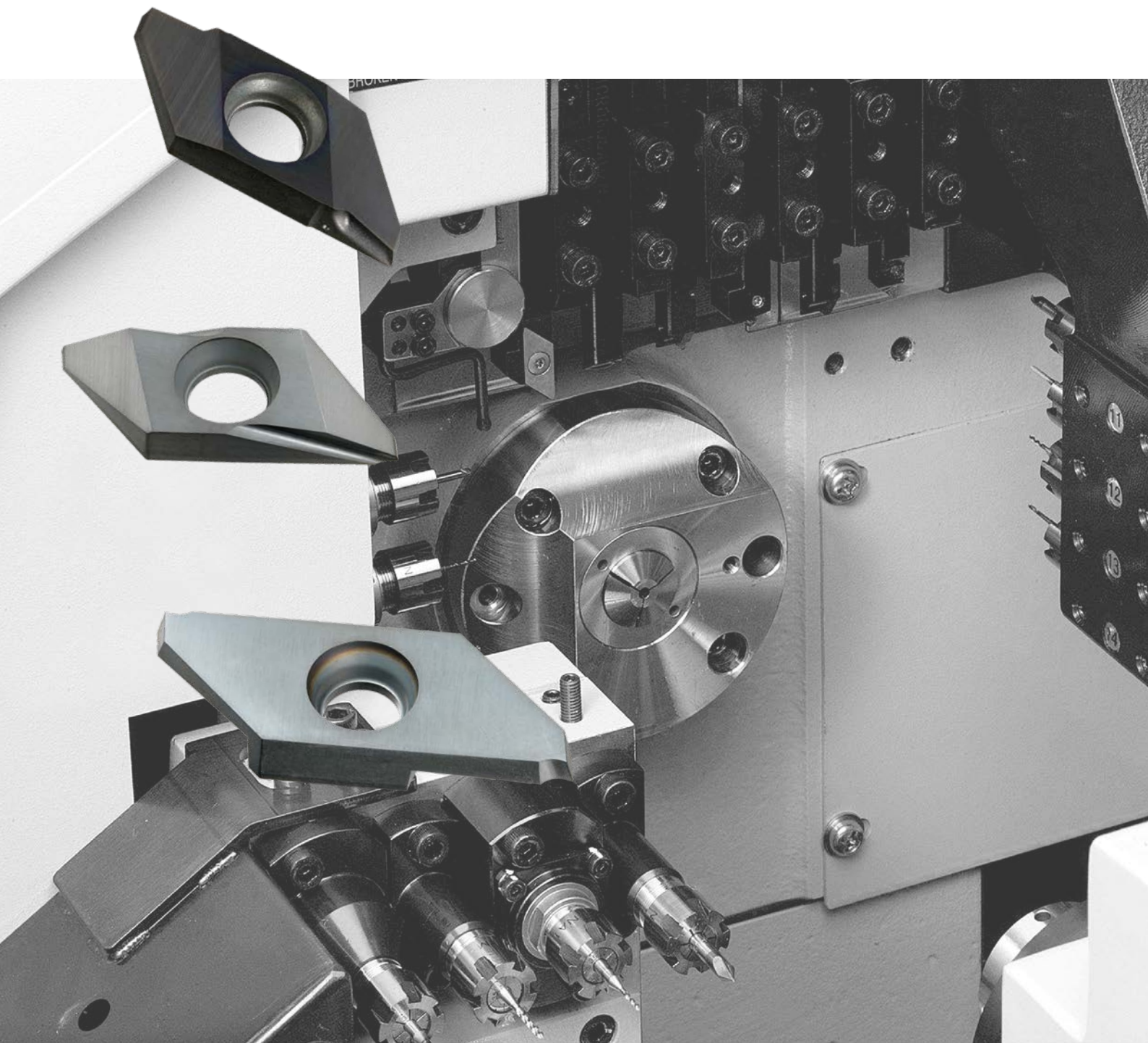


BTAH/CTBH/CTAH

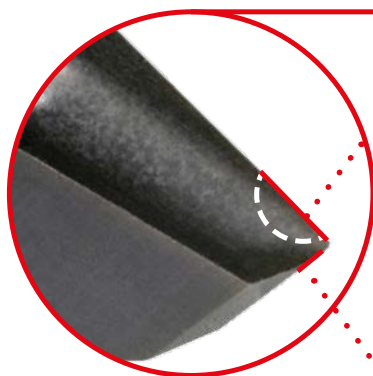
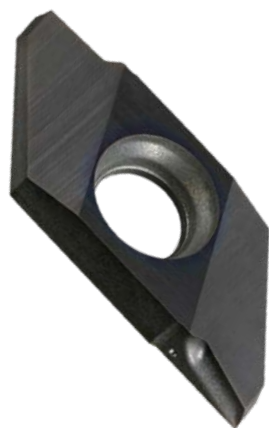
PVD COATED INSERT EXPANSION
FOR SMALL PARTS MACHINING



SMB BREAKER

MOULDED TYPE INSERT FOR BACK TURNING

THE MOULDED CHIPBREAKER IMPROVES SURFACE FINISHES



Efficient single pass final cutting achieves good surface finishes.

Prevents chipping of the end face when grooving.

Highly efficient machining and good surface finishes due to the wiper geometry.

CUTTING PERFORMANCE

CORNER RADIUS WITH A MINUS TOLERANCE

01M: R0.08 mm 02M: R0.18 mm

Material	Low carbon steel
Tool	BTAT723501MR-SMB
Grade	VP15TF
Vc (m/min)	100
ap (mm)	2.5
f - Grooving (mm/rev)	0.03
f - External (mm/rev)	0.04
Coolant	Wet cutting (water-soluble)
Machine	CNC automatic lathe



SMB BREAKER

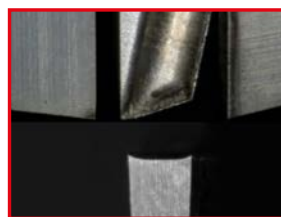


Conventional
(Ground type)

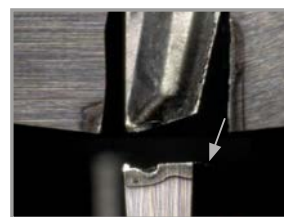
EXCELLENT WEAR RESISTANCE

COMPARED TO CONVENTIONAL PRODUCTS WHEN MACHINING DIN X5CRNI189

Material	DIN X5CrNi189
Tool	BTAT723501MR-SMB
Grade	VP15TF
Vc (m/min)	60
ap (mm)	2.5
f - Grooving (mm/rev)	0.02
f - External (mm/rev)	0.04
Number of workpieces	100
Coolant	Wet cutting (water-insoluble)
Machine	Automatic lathe



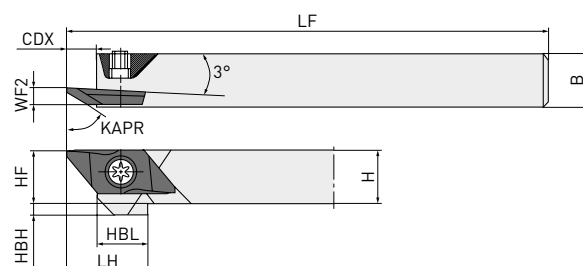
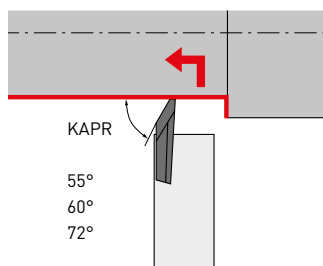
SMB BREAKER



Conventional
(Ground type)

BTAH

EXTERNAL BACK TURNING



Right hand tool holder shown.

Order number	Stock		Insert type	H	B	LF	LH	HF	WF2	HBH	HBL	CDX
	R	L										
BTAHR/L0810-50	●	★	BTAT ○○○○	8	10	120	15	8	3.5	4	9.5	5.5
BTAHR/L1010-50	●	★		10	10	120	15	10	3.5	2	9.5	5.5
BTAHR/L1212-50	●	★		12	12	120	15	12	3.5	—	9.5	5.5
BTAHR1616-50	●			16	16	120	15	16	3.5	—	9.5	5.5

1/1

1. Please use right hand insert for right hand holder and left hand insert for left hand holder.
2. Set the maximum depth of cut at under 60 % of the effective cutting edge length (LE).

SPARE PARTS

Order number		
	Clamp screw*	Wrench
BTAHR/L0810-50	NS402W	NKY15S
BTAHR/L1010-50	NS402W	NKY15S
BTAHR/L1212-50	NS403W	NKY15S
BTAHR1616-50	NS403W	NKY15S

* Clamp torque (N • m): NS402W = 1.0, NS403W = 1.0

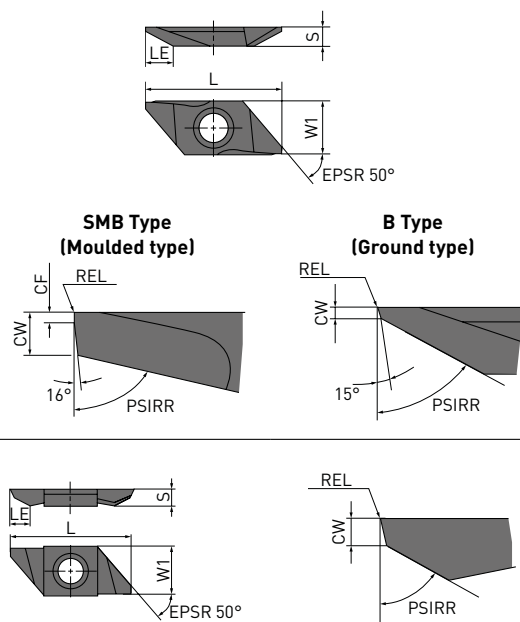
BTAH

INSERTS

Order number	Hand	VP15TF	MS6015	PSIRR/L	REL	CF	L	W1	CW	S	LE*
WITH BREAKER											
BTAT7235V5R-SMB	R	●		72°	0.05	0.3	20	8	1.4	2.5	3.5
BTAT723501MR-SMB	R	●		72°	0.08	0.3	20	8	1.4	2.5	3.5
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
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
WITHOUT BREAKER											
BTAT605000RX	R	●		60°	0	0	20	8	1.25	2.5	5.0

Geometry

Right hand insert shown.



1/1

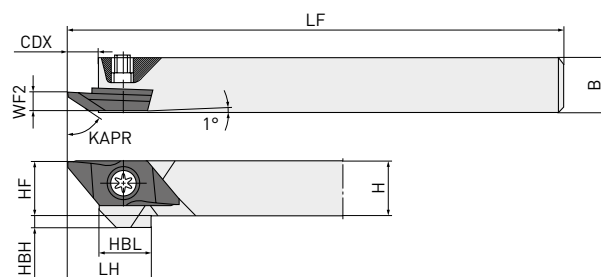
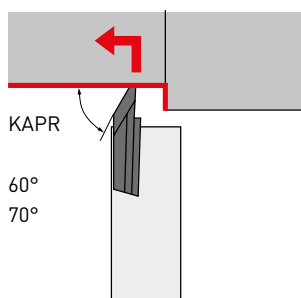
[5 inserts in one case]

* Value with insert on the holder.



CTBH

EXTERNAL BACK TURNING



Right hand tool holder shown.

Order number	Stock		Insert type	H	B	LF	LH	HF	WF2	HBH	HBL	CDX
	R	L										
CTBHR/L1010-160	●	●	BTBT	10	10	120	19.5	10	3.4	2	12	7.5
CTBHR/L1212-160	●	●		12	12	120	19.5	12	3.4	—	12	7.5
CTBHR/L1616-160	●	●		16	16	120	19.5	16	3.4	—	12	7.5
1/1												

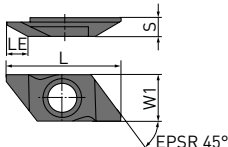
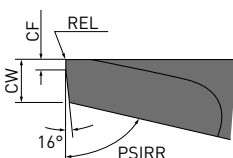
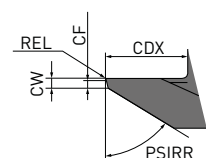
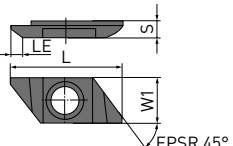
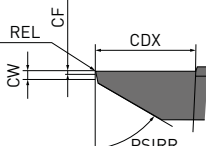
1. Please use right hand insert for right hand holder and left hand insert for left hand holder.
2. Set the maximum depth of cut at under 60 % of the effective cutting edge length (LE).

SPARE PARTS

Order number		
	Clamp screw*	Wrench
CTBHR/L1010-160	NS402W	NKY15S
CTBHR/L1212-160	NS403W	NKY15S
CTBHR/L1616-160	NS403W	NKY15S

* Clamp torque (N • m): NS402W = 1.0, NS403W = 1.0

INSERTS

Order number	Hand	VP15TF	MS6015	PSIRR/L	REL	CF	L	W1	CW	S	CDX	LE**	Geometry
Right hand insert shown.													
WITH BREAKER													
BTBT7055V5R-SMB	R	●		70°	0.05	0.3	25	9.4	1.35	3.5	6.5	5.5	  
BTBT705501MR-SMB	R	●		70°	0.08	0.3	25	9.4	1.35	3.5	6.5	5.5	
BTBT705502MR-SMB	R	●		70°	0.18	0.3	25	9.4	1.35	3.5	6.5	5.5	
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	
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	
BTBT604501L-B	L	★		60°	0.1	0.3	25	9.4	0.7	3.5	5.5	4.5	
WITHOUT BREAKER													
BTBT606000R	R	●		60°	0	0.2	25	9.4	0.7	3.5	7	6.0	 
BTBT606000L	L	★		60°	0	0.2	25	9.4	0.7	3.5	7	6.0	

1/1

[5 inserts in one case]

*1 Value with insert on the holder.

1. SMB type (Moulded)
2. B type (Ground)



BTAH/CTBH

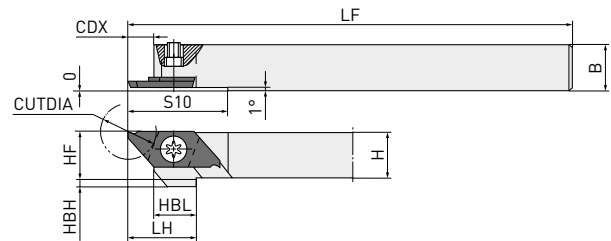
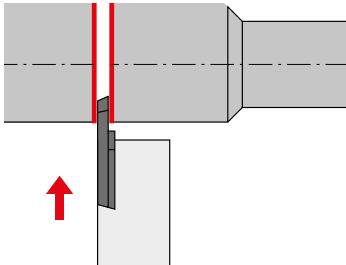
RECOMMENDED CUTTING CONDITIONS

Material	Hardness	Grade	Vc	f
P Carbon steel · Alloy steel	180HB – 280HB	MS6015 / VP15TF	100 [50 – 150]	0.08 [0.01 – 0.15]
Free cutting steel	—	MS6015	110 [30 – 180]	0.08 [0.01 – 0.15]
M Stainless steel	<200HB	VP15TF	80 [50 – 120]	0.06 [0.02 – 0.1]
N Non-ferrous metal	—	MS6015	150 [70 – 230]	0.09 [0.03 – 0.15]

1/1

CTAH

EXTERNAL CUTTING OFF



Right hand tool holder shown.

Order number	Stock		Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	CUTDIA ^{*1}
	R	L											
CTAHR/L0810-120	●	●	CTAT ○○○○	8	10	8	120	15	5.5	4	9.5	22	12 (8) ^{*2}
CTAHR/L1010-120	●	●		10	10	10	120	15	5.5	2	9.5	22	
CTAHR/L1212-120	●	●		12	12	12	120	15	5.5	—	9.5	22	
CTAHR/L1616-120	●	●		16	16	16	120	15	5.5	—	9.5	22	

1/1

^{*1} CUTDIA: Max. cut off diameter

^{*2} When the parting off width (CW) is 0.7 mm.

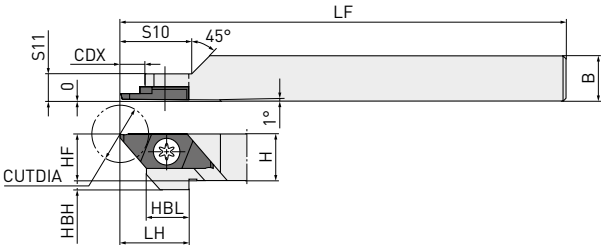
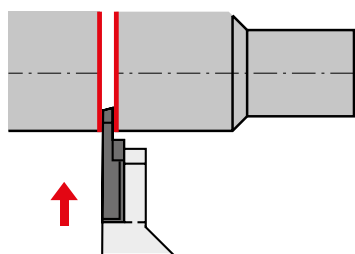
SPARE PARTS

Order number		
	Clamp screw [*]	Wrench
CTAHR/L0810-120	NS402W	NKY15S
CTAHR/L1010-120	NS402W	NKY15S
CTAHR/L1212-120	NS403W	NKY15S
CTAHR/L1616-120	NS403W	NKY15S

^{*} Clamp torque (N • m): NS401 = 3.5

CTAH-S

EXTERNAL CUTTING OFF



Right hand tool holder shown.

Order number	Stock R	Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	S11	CUTDIA ^{*1}
CTAHR1010-120S	●	CTAT ○○○○	10	10	10	80	15	16	2	9.5	16	5.5	12 (8) ^{*2}
													1/1

^{*1} CUTDIA: Max. cut off diameter

^{*2} When the parting off width (CW) is 0.7 mm.

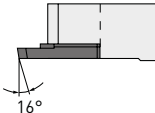
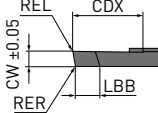
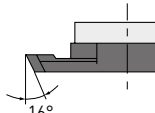
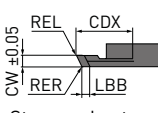
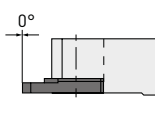
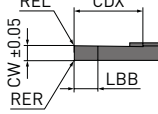
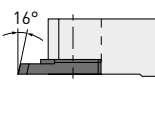
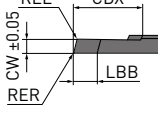
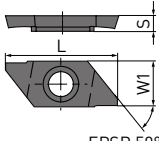
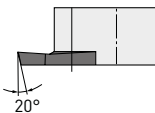
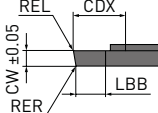
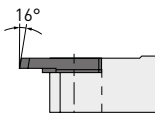
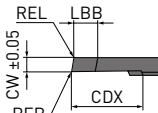
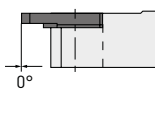
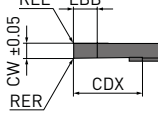
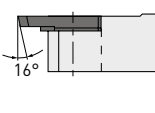
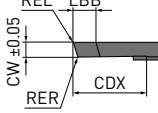
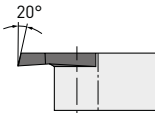
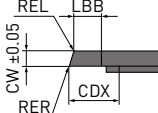
SPARE PARTS

Order number		
	Clamp screw*	Wrench
CTAHR1010-120S	NS401	NKY25R

* Clamp torque (N • m): NS401 = 3.5



INSERTS

Order number	Hand	VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	LBB	CUTDIA*	Set geometry	Insert geometry	Geometry Right hand insert shown.			
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						
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			Strong edge type			
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						
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						
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						
WITHOUT BREAKER																	
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						
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						
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						
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						
WITHOUT BREAKER																	
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						

1/1

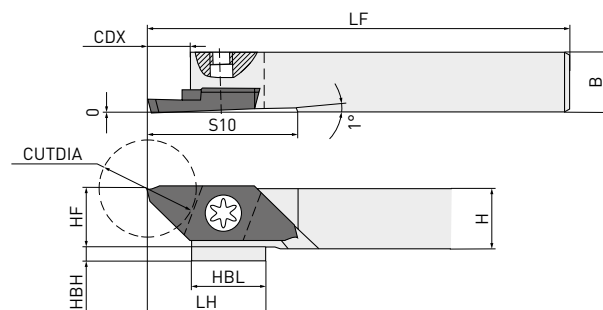
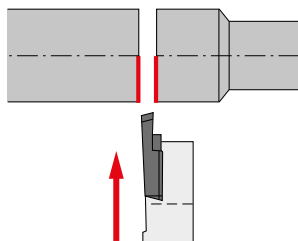
(5 inserts in one case)

* CUTDIA: Max. cut off diameter



CTBH

EXTERNAL CUTTING OFF



Right hand tool holder shown.

Order number	Stock		Insert type	H	B	HF	LF	LH	CDX	HBH	HBL	S10	* CUTDIA
	R	L											
CTBHR/L1010-160	●	●	CTBT ○○○○	10	10	10	120	19.5	7.5	2	9.5	25	16
CTBHR/L1212-160	●	●		12	12	12	120	19.5	7.5	—	9.5	25	16
CTBHR/L1616-160	●	●		16	16	16	120	19.5	7.5	—	9.5	25	16

1/1

* CUTDIA: Max. cut off diameter

SPARE PARTS

Order number		
	Clamp screw*	Wrench
CTBHR/L1010-160	NS402W	NKY15S
CTBHR/L1212-160	NS403W	NKY15S
CTBHR/L1616-160	NS403W	NKY15S

* Clamp torque (N • m): NS402W = 1.0, NS403W = 1.0

CTBH

INSERTS

Order number	Hand	VP15TF	MS6015	CW	CDX	RER/L	L	W1	S	CUTDIA*	Set geometry	Insert geometry	Geometry <i>Right hand insert shown.</i>
WITH BREAKER													
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			
CTBT20160V5LN-B	N	●	●	2.0	9.2	0.05	25	9.4	3.5	16			
CTBT20145V5LR-B	R	●	●	2.0	9.2	0.05	25	9.4	3.5	14.5			

1/1

[5 inserts in one case]

* CUTDIA: Max. cut off diameter



CTAH/CTAH-S/CTBH

RECOMMENDED CUTTING CONDITIONS

Material	Hardness	Grade	Vc	f
P Carbon steels · Alloy steels	180HB – 280HB	MS6015 / 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]

1/1

SYMBOLS

 Recommended cutting conditions	MACHINING TYPE
NEW Completely new products or expansions released in the current Spring or Autumn product launch and are not included in the latest version of the General Catalogue.	 Roughing
NEW Products or expansions that have already been introduced in one of the previous Spring or Autumn product launches but are not included in the latest General Catalogue.	 Medium cutting
APPLICATION	 Light cutting
 Face milling	 Pre-finishing
 Chamfer milling	 Finishing
 Shoulder milling with R	 Fine-finishing
 Face milling close to a wall	TOOL MATERIAL
 Shoulder milling	 Ultra micro grain carbide Ultra micro grain carbide substrate material.
 Side milling	 Cubic boron nitride Mitsubishi Materials' original CBN material.
 Slot milling	 Ceramic For high speed efficient machining of super alloys due to the excellent high temperature strength property.
 Ramping	 High hardness powder metallurgy HSS High hardness powder metallurgy HSS substrate material.
 Pocket milling	 High grade high alloy HSS High grade high alloy HSS substrate material.
 Slot milling with R	 Cobalt high speed steel Cobalt high speed steel substrate material.
 Copy milling	 High speed steel High speed steel substrate material.
 T-Slot milling	

SYMBOLS

COATING



SMART MIRACLE coating

New smooth and dense coating technology for high efficiency milling of difficult to cut materials.



CRN coating

Newly developed CrN coating for Copper Electrodes machining.



Violet coating

Increased tool life of 2-3 times more than TiN coated products.



DP coating

New generation coating suitable for a wide range of materials.



MIRACLE coating

The original Miracle (Al,Ti)N coating. Also suitable for dry cutting.



[Al, Ti]N coating

[Al,Ti]N highly versatile application range.



[Al,Ti,Cr]N multi-layer coating

For carbon, alloy and hardened steels.



IMPACT MIRACLE coating

Single phase nano crystal coating technology has higher film hardness and heat resistance.



MIRACLE coating

The original MIRACLE (Al,Ti)N coating. Also suitable for dry cutting.



VFR coating

The [AlCrSi]N/[AlTiSi]N PVD multilayer coating is ideal for machining of extremely hard materials up to 70 HRC.



DLC coating

Hardness similar to CVD diamond coating achieved with high adhesion strength.



Diamond coating

Suitable for CFRP and CFRP-aluminium materials.



Diamond coating

Suitable for graphite machining.



Diamond coating

The original CVD diamond coating.



CVD Diamond coating

Unique multi-layer micro-grain diamond crystal control technology drastically improves wear resistance and smoothness.

CUTTING EDGE PROPERTIES



Sharp corner edge

Indicates the end mill has a sharp corner edge.



Gash land

Indicates the end mill cutting edge has a protective chamfer.



Rake angle



Helix angle

Indicates the helix angle of the end mill.



Point angle

Indicates the drill point angle.



Roughing flute geometry



Variable helix



Rounded gash



Corner angle

WEB THINNING



X type point geometry

X web thinning used at the drill point.



XR type point geometry

XR web thinning used at the drill point.



S type point geometry

Easy cutting geometry.



N type point geometry

Effective when the point web is thick.



Chipbreaker

SYMBOLS

TOLERANCES



Tolerance of taper angle
Indicates the tolerance of the taper angle.



R tolerance
Indicates the radial tolerance of a ball nose end mill.



R tolerance
Indicates the radial tolerance of the corner radius.



R tolerance
Indicates the radial tolerance of a cutter with a corner radius.



Outside diameter tolerance
Indicates the diameter tolerance of the end mill.



Peak tolerance
Indicates the tolerance for the end diameter.



Shank diameter tolerance



Shank diameter tolerance



Drill tolerance / diameter

COOLANT HOLES



External coolant



Internal coolant



Internal coolant



Centered, internal coolant hole



Radial, internal coolant holes



Internal coolant holes



Internal coolant holes

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