

NTK CUTTING TOOLS

NEW AND UNIQUE SWISS TOOLING



App for iOS



App for ANDROID



www.ntk-cuttingtools.de
youtube.com/NTKCUTTINGTOOLS

Guidelines for Catalog

- This information lists products as of September 2016.
- Please note that the spec in this catalog may be changed without notice due to continuous research & development and product improvement.
- Detailed description of the product is omitted from this catalog due to space restrictions.
If you need the detailed information, please contact our sales representative or the dealers.
- Stock Status Symbols
 - mark : Standard stock available for left- and right-handed products
 - R mark : Stock available only in Right-Hand
 - L mark : Stock available only in Left-Hand
 - mark : Delivery = about 2 weeks
 - ® mark : Only in Right-Hand delivery = about 3 weeks
 - Ⓛ mark : Only in Left-Hand delivery = about 3 weeks
 - No mark : No stocked
- The products in this catalog is based on a sales in Europe.

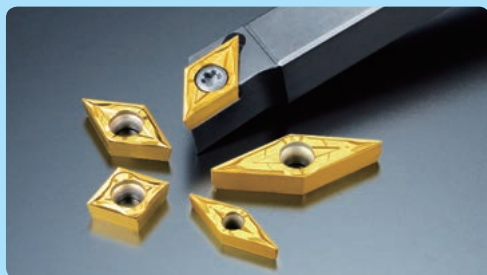
● Standard

1)Holder type	Package quantity	Notes
Toolholder	1 pc/case	
2)Parts type	Package quantity	Notes
Screw	10 pcs/case	Clamp screw • Clamp bolt • Double screw • Button screw • Setting screw • Shim screw • Balancing screw
Spring	10 pcs/case	Spring
Shim sheet	10 pcs/case	Shim sheet
Clamp	10 pcs/case	
Wrench	5 pcs/case	Package quantity of Torque wrench is 1pc/case
3)Insert type	Package quantity	Notes
PCD inserts	1 pc/case	PD1 • PD2
Cut off inserts	5 pcs/case	CTPW type
STICK DUO • SHAPER DUO	1 pc/case	SHFS type • SHFB type • SBFS type • SBFB type • SBG type • SFG type • SBT type • SSP type
Other than above inserts	10 pcs/case	

*Packaging may vary depending upon product size. For more information, please contact your nearest dealer or sales office.

Front Turning Chipbreaker Quartet

YL Chipbreaker

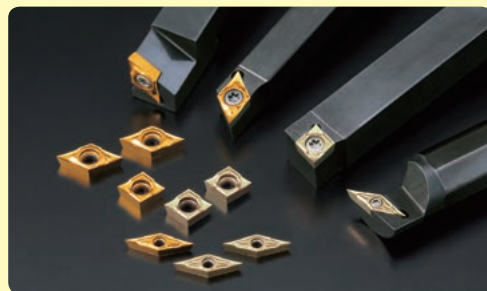


- Great combination of sharpness and toughness
- Covers extremely wide range
- Excellent chip control

WATCH ON
You Tube



CL Chipbreaker



WATCH ON
You Tube

- Sharpest molded Chipbreaker
- Excellent chip control
- Less tool pressure



AM3 Chipbreaker



- All purpose chipbreaker
- Sharp edge with toughness

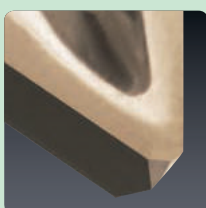
AMX Chipbreaker

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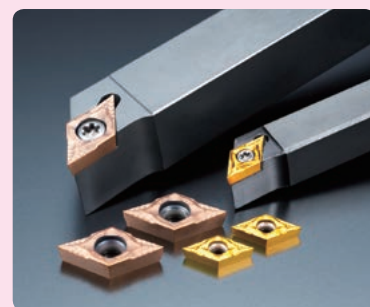
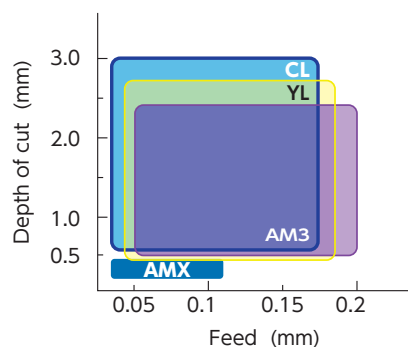
- Designed for very light depth of cut
- Exceptional sharpness



TFD-AM3 Chipbreaker



- Surface Finish in General Turning by Inserts with Wiper Flat

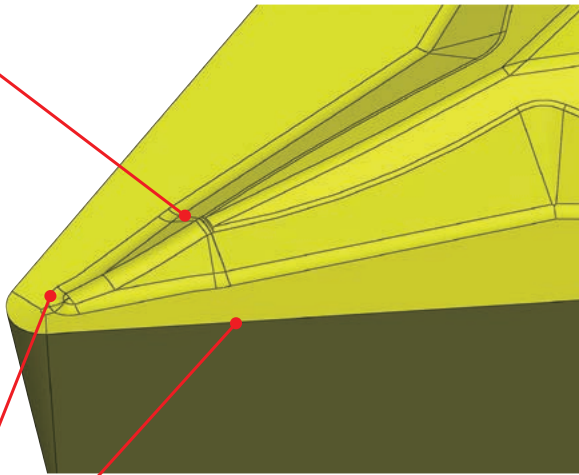


"YL" chipbreaker

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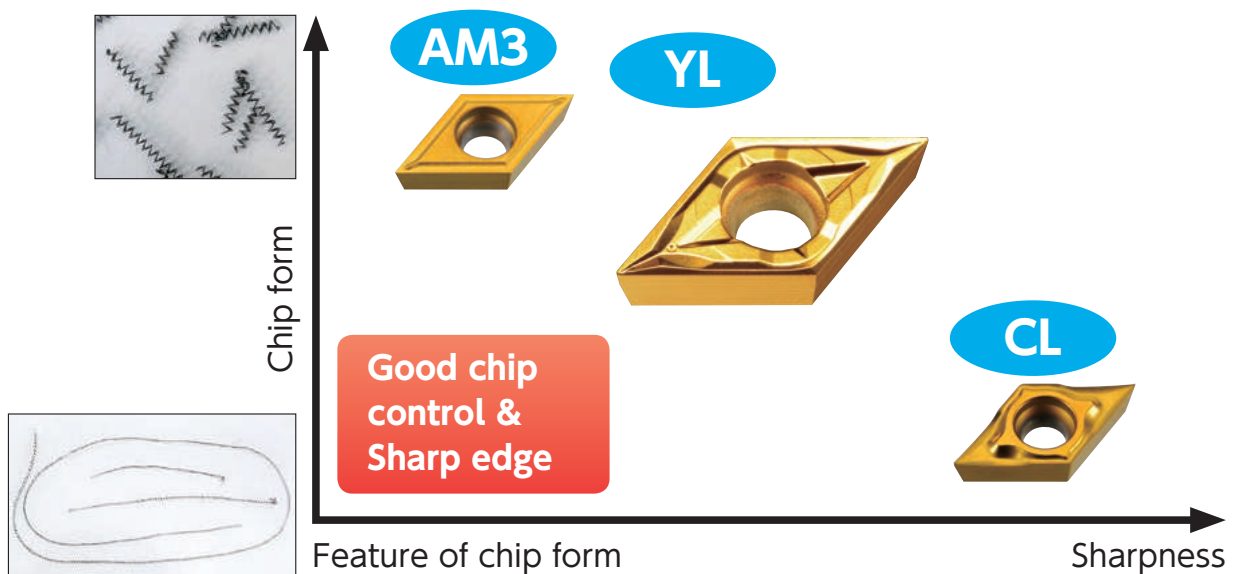
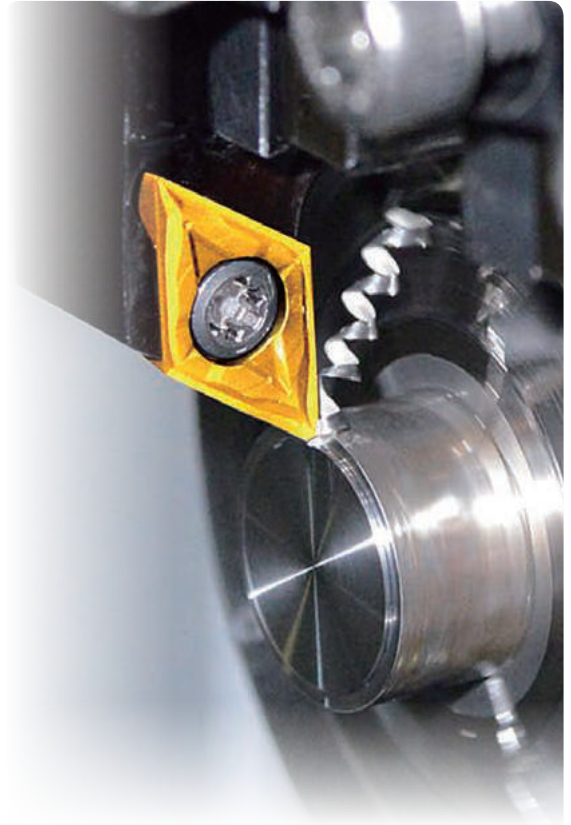
Features

Dot distance from edge is step away per D.O.C.
Helps reduce the cutting force in deep D.O.C.
machining.



Up sharp cutting edge and high
rake angle provides excellent
surface finish !

Front dot controls chips well under light depth
of cut.



Chip control performance

		Feed rate f (mm/rev)			
		0.03	0.05	0.08	0.1
D.O.C. a_p (mm)	2.0				
	1.0				
	0.5				
	0.3				

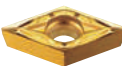
[Cutting condition] Work material : X5CrNi18-10 $\phi 16$ $V_c = 80\text{m/min}$ WET

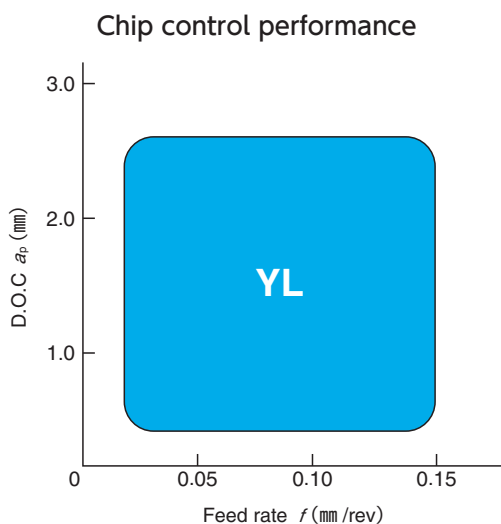
Chatter vibration resistance

		Feed rate f (mm/rev)			
		YL chipbreaker		Competitor's 3D chipbreaker	
D.O.C. a_p (mm)	3	0.03	0.05	0.03	0.05
	2				

[Cutting condition] Work material : X5CrNi18-10 $\phi 16$
 $V_c = 80\text{m/min}$ $f = 0.05\text{mm/rev}$ $a_p = 2,3\text{mm}$ WET

Stock list

Shape	Part number	Dimensions			PVD coated micrograin carbide			
		I.C.	Thickness	Corner radius	DM4	Stock	TM4	Stock
	CCGT09T301MYL	9.525	3.97	0.08	5922455	●	5922471	●
	09T302MYL			0.18	5922489	●	5922505	●
	09T304MYL			0.38	5922422	●	5922448	●
	09T308MYL			0.78	5993878	●	5993860	●
	DCGT11T301MYL	9.525	3.97	0.08	5922380	●	5922398	●
	11T302MYL			0.18	5922406	●	5922414	●
	11T304MYL			0.38	5922356	●	5922372	●
	11T308MYL			0.78	5993134	●	5993126	●
	VCGT110301MYL	6.35	3.18	0.08	5922307	●	5922315	●
	110302MYL			0.18	5922331	●	5922349	●
	110304MYL			0.38	5922281	●	5922299	●
	VBGT160402FNYL	9.525	4.76	0.2	5919519	◎	5922109	◎
	160404FNYL			0.4	5919543	◎	5922117	◎
	160408FNYL			0.8	5919527	◎	5922125	◎



Work material	: X5CrNi18-10
Cutting speed (m/min)	: 50
Feed (mm/rev)	: 0.03
D.O.C. a_p (mm)	: 1.5
Coolant	: WET
YL chipbreaker	3000pcs/corner
PVD coated carbide	2000pcs/corner

NTK YL chipbreaker has excellent chip control performance. Compared with conventional tool, NTK YL chipbreaker achieved longer tool life. It resulted in stable machining with high dimensional accuracy.

Designed specifically for light depth of cut **AMX chipbreaker**

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YouTube



Features

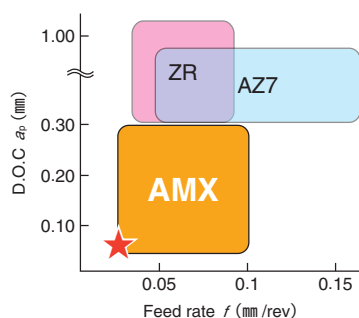
Excellent chip control under light depth of cut
Perfect choice for Swiss style lathes and secondary-operation machines



Good for finishing hard-cut work material like stainless steel.

1 Control chips precisely even under light depth of cut and low feed rate

D.O.C 0.05mm ~、Feed rate 0.02mm/rev
Good Chip Control

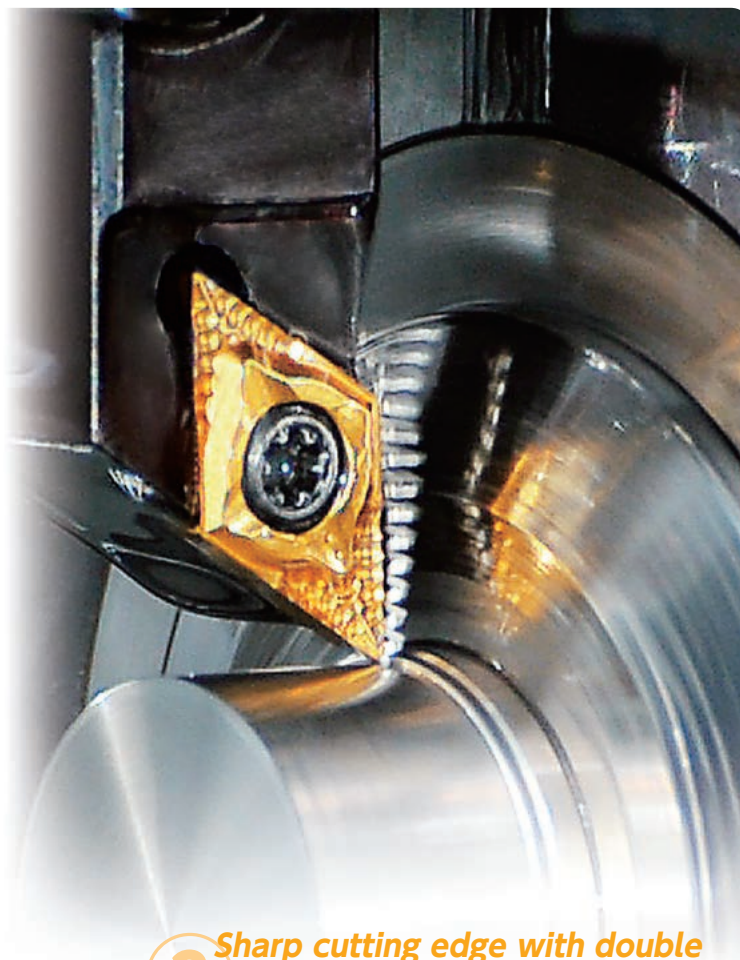


★ Chip shape 《X5CrNi18-10》

$v_c=100\text{m/min}$ $f=0.02\text{mm/rev}$ $a_p=0.05\text{mm}$ WET

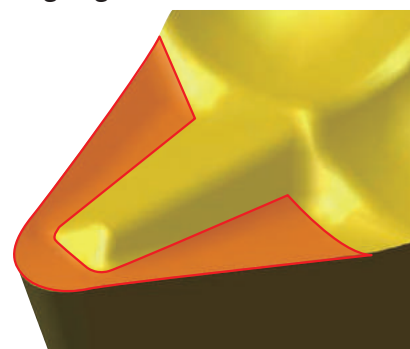


Stable chip control by generating chips with small curls.



2 Sharp cutting edge with double positive design

Burr-free and improved microfinish due to sharp cutting edge



3 Insert grade TM4

Constant and long tool life thanks to stable coating low surface adhesion

Chip control range

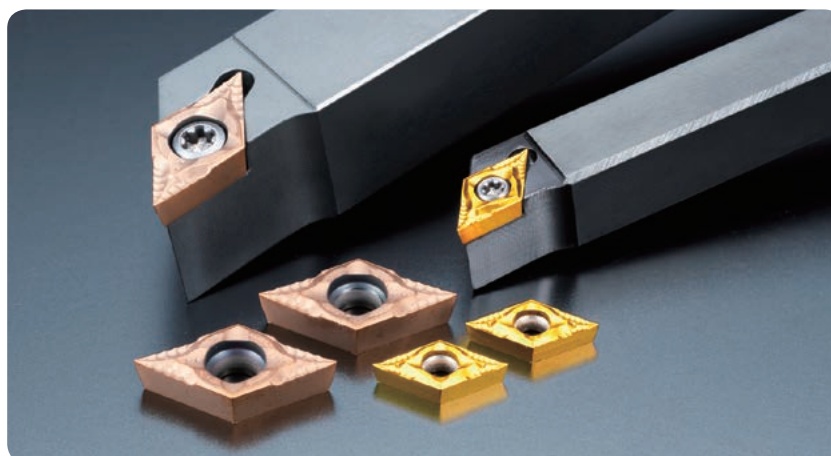
Feed rate f (mm/rev)	0.02	0.03	0.05
Depth of cut a_p (mm)			
0.05			
0.10			
0.30			

Work material : X5CrNi18-10 Holder : SDJCR1010X07N Insert : TM4 DCGT070202MAMX
 Cutting condition : $V_c = 100\text{m/min}$ $f = 0.02 \sim 0.05\text{mm/rev}$ $a_p = 0.05 \sim 0.30\text{mm}$ WET

Incredible chip control !

Stock list

Shape	Part number	Dimensions			PVD coated micrograin carbide			
		I.C.	Thickness	Corner radius	TM4	Stock	DM4	Stock
	DCGT070201MAMX	6.35	2.38	0.08	5808951	☉		
	070202MAMX			0.18	5808944	☉		
	DCGT11T301MAMX	9.525	3.97	0.08	5832258	●	5864228	●
	11T302MAMX			0.18	5832266	●	5859251	●
	11T304MAMX			0.38	5911052	●	5911060	●



CL chipbreaker

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Features

Excellent sharp edge with NTK chip-breaker "CL"

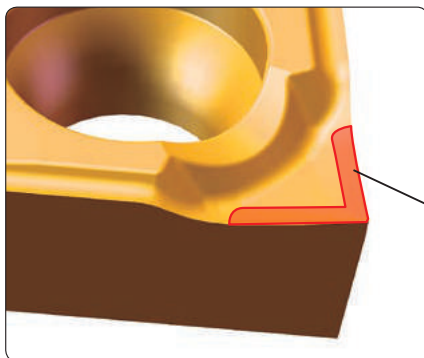
Applicable to cut difficult-to-machine material

Highly precise machining,

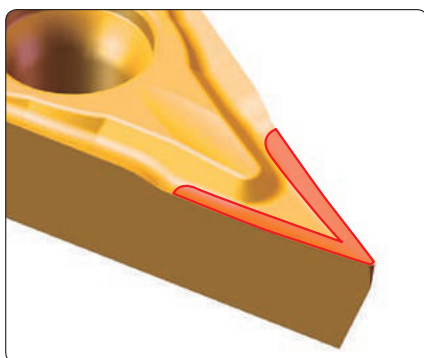
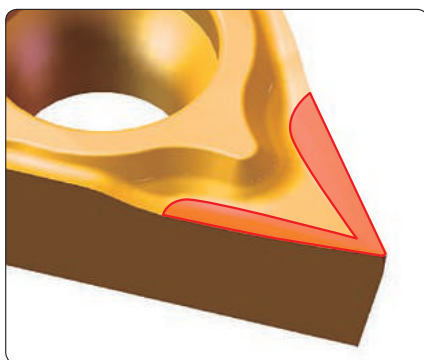
Good chip control at wide range!

1

Extraordinary "up-sharp" edge with double positive shape.



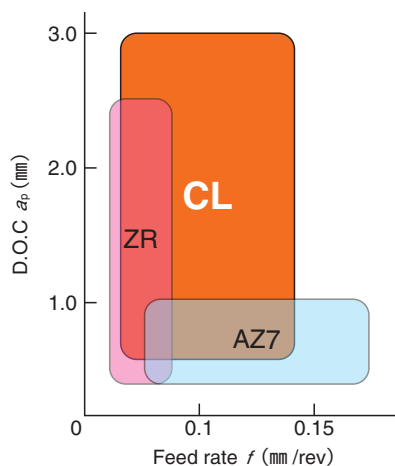
Acute angle+"up-sharp"edge reduces burring with highly precise machining



2

Excellent chip control in wide range of cutting conditions

Applicable from stainless steel to low carbon steel



Machining of X5CrNi18-10
(Dry machining for filming purposes)



$v_c=80\text{m/min}$
 $f=0.08\text{mm/rev}$
 $a_p=1.0\text{mm}$

3

Insert grade DT4

Excellent for oxidization resistance. Superior sharp cutting edge

Chip control

X5CrNi18-10	$v_c = 80\text{m/min}$, WET		
	$f = 0.02\text{mm/rev}$ $a_p = 1.0\text{mm}$	$f = 0.03\text{mm/rev}$ $a_p = 1.0\text{mm}$	$f = 0.05\text{mm/rev}$ $a_p = 1.0\text{mm}$
CL chipbreaker [TM4 DCGT11T301MCL]			
Competitor's 3D chipbreaker for finish machining			

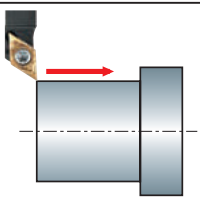
Stock list

Shape	Part number	Dimensions (mm)			PVD coated micrograin carbide			
		I.C.	Thickness	Corner radius	TM4	Stock	DT4	Stock
	CCGT 060201MCL	6.35	2.38	0.08	5765706	◎	5849542	◎
	CCGT 060202MCL			0.18	5777867	◎	5849567	◎
	CCGT 09T300CL			0.03	5982954		5890280	◎
	CCGT 09T301MCL	9.525	3.97	0.08	5758057	●	5849492	●
	CCGT 09T302MCL			0.18	5765714	●	5849500	●
	CCGT 09T304MCL			0.38	5765722	●	5849518	●
	DCGT 070201MCL	6.35	2.38	0.08	5777859	◎	5849575	◎
	DCGT 070202MCL			0.18	5777834	◎	5837455	◎
	DCGT 11T301MCL	9.525	3.97	0.08	5757091	●	5848593	●
	DCGT 11T302MCL			0.18	5758040	●	5837463	●
	DCGT 11T304MCL			0.38	5765730	●	5848585	●
	VCGT 110301MCL	6.35	3.18	0.08	5758032	●	5849526	●
	VCGT 110302MCL			0.18	5765748	●	5849534	●

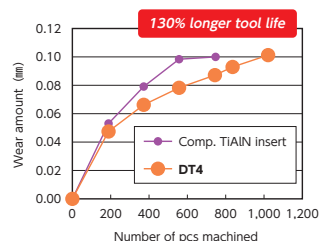
The specifications of products are slightly different from the above dimensions, but it has no problem for machining

Case study

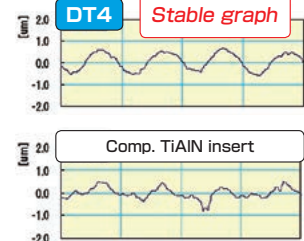
Work	: Pin
Work material	: X5CrNi18-10
Cutting speed (m/min)	: 80
Feed (mm/rev)	: 0.05
Depth of cut (mm)	: 1.0
Coolant	: WET



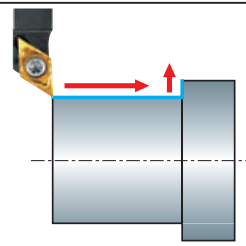
Comparison of wear amount



Comparison of surface finish



Work	: Pin
Work material	: X5CrNi18-10
Cutting speed (m/min)	: 100
Feed (mm/rev)	: 0.05
Depth of cut (mm)	: 3.5
Coolant	: WET



TM4 CL chipbreaker

200 pcs/corner

Competitor's ground chipbreaker (PVD coated)

100 pcs/corner

Sharper cutting edge allows stable machining and longer tool life. Prevent chip flow trouble.

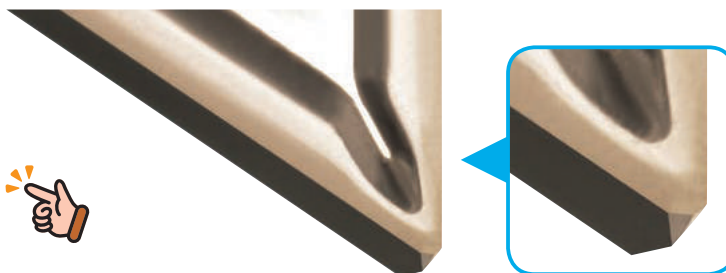
TFD-AM3 chipbreaker

Wiper Insert

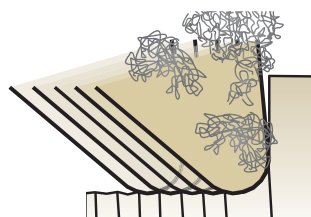
Good surface! 🙌

Good chip control! 🙌

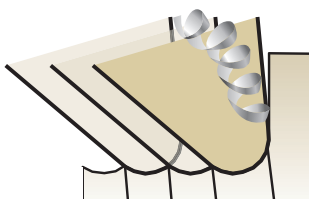
Good inside corner R! 🙌



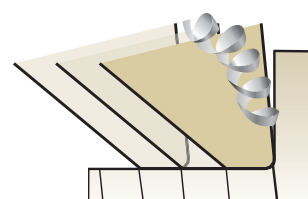
Surface finish in front turning



Unstable chip control at low feed rate to keep surface finish



Bad surface finish at high feed rate to improve chip control



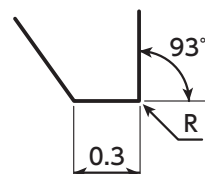
TFD wiper insert offers good chip control and surface finish

Cutting condition	
Work material	X5CrNi18-10
Cutting speed	$v_c = 30 \sim 80 \text{ m/min}$
Feed speed	$f = 0.015 \text{ mm/rev}$
Depth of cut	$a_p = 0.15 \text{ mm}$
DT4 TFD11FR05AM3	1500pcs/corner
Conventional tool	700pcs/corner

Surface finish of conventional tool after 500pcs machined was $Ry10.2 \mu\text{m}$, and dimensional change 0.1mm occurred at start of machining.

TFD-AM3 chipbreaker(DT4 grade) achieved stable machining with no dimensional change after 1,000pcs machined. Surface roughness was $Ry2.3 \mu\text{m}$.

Edge design



Stock list

Shape	Part number	Dimensions (mm)			PVD coated micrograin carbide										Carbide	
		I.C.	Thickness	Corner radius	ZM3		QM3		VM1		DT4		KM1		R	Stock
					R	Stock	L	Stock	R	Stock	R	Stock	R	Stock		
 AM3	TFD11FR05AM3	9.525	3.97	0.05									5881511	●		
	11FR15AM3			0.15									5881503	●		
 S	TFD07F 1/4 05	6.35	2.38	0.05	5106893	◎	5133277	◎	5335278	◎	5328927	◎				
	07F 1/4 15			0.15	5106901	◎	5133269	◎	5601257	◎						
	11FR05	9.525	3.97	0.05	5141908	◎			5590716	◎	5280169	◎				
	11FR15			0.15	5141932	◎			5560198	◎						
 U	TFD07FR05U	6.35	2.38	0.05	5141940	◎			5601240	◎	5290010	◎				
	07FR15U			0.15	5141957	◎			5601232	◎						
	11FR05U1	9.525	3.97	0.05	5141916	◎			5601224	◎	5290135	◎				
	11FR15U1			0.15	5141924	◎			5528385	◎						
 Without chipbreaker	TFD07FR05H	6.35	2.38	0.05											5556295	◎
	11FR05H	9.525	3.97	0.05											5556303	◎

※ Set the toolholder SDJC type (cutting angle 93 degree) when use TFD type insert.

MEMO

NTK

SCAC-N type

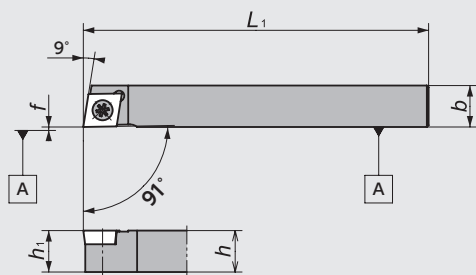
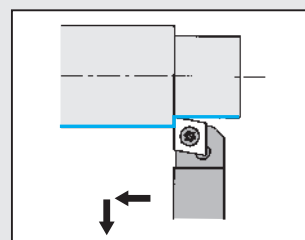


Figure-1



● Right-hand type shown.

SCLC-N type

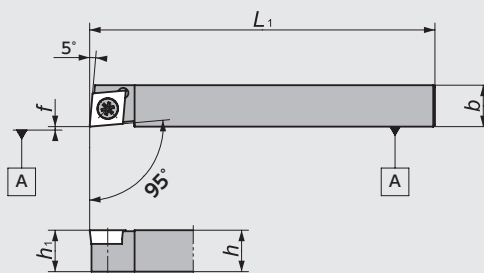
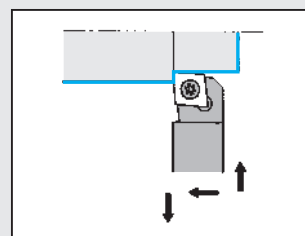


Figure-2



● Right-hand type shown.

SCLC-N-F type

Shift holder

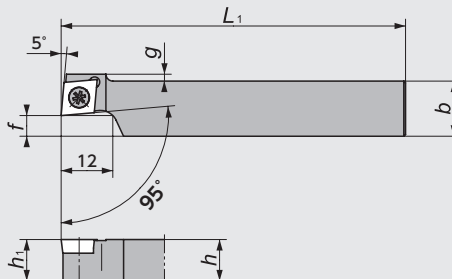
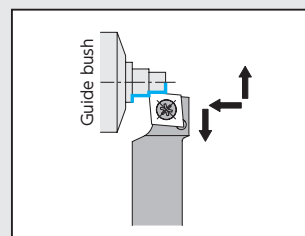


Figure-3



● Right-hand type shown.

SCLC type

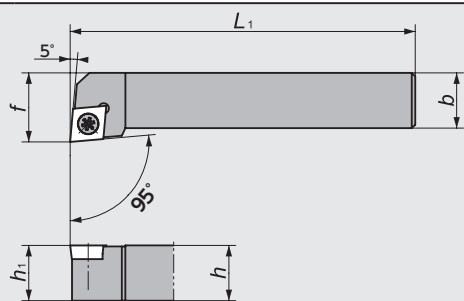
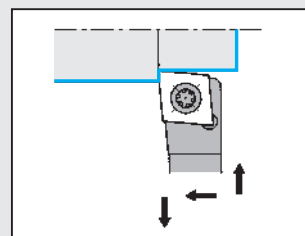


Figure-4



● Right-hand type shown.

SCLC-OH type

SPLASH BAR **NEW**

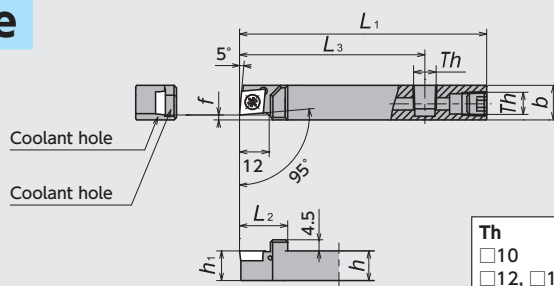
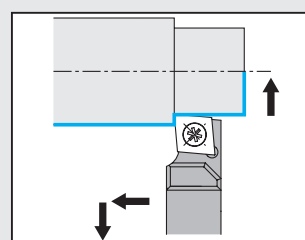


Figure-5

Th	
□10	: M6×1
□12, □16	: Rc1/8 (PT1/8)



● Right-hand type shown.

DS-SCL type

DS holder

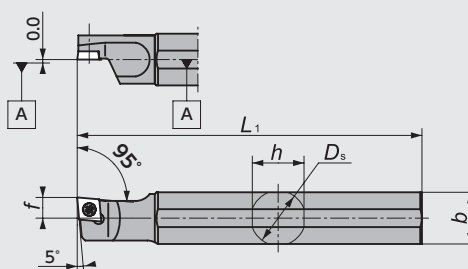
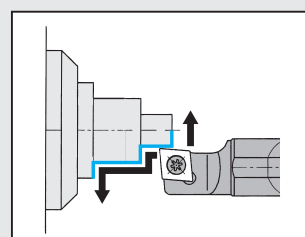


Figure-6



● Left-hand type shown.

Note) Use a R-hand or neutral type insert.

DS-SCLL-ACH type

DS holder with adjustable centerline height

(Parts)

Shank	Wedge	screw for wedge
φ16	ACH-W18 (5805601)	WS060415-003 (5795539)
φ19.05		
φ20		
φ22	ACH-W24 (5805619)	WS060419-004 (5799226)
φ25.4		

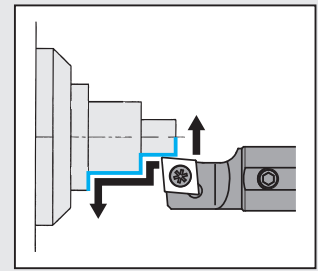
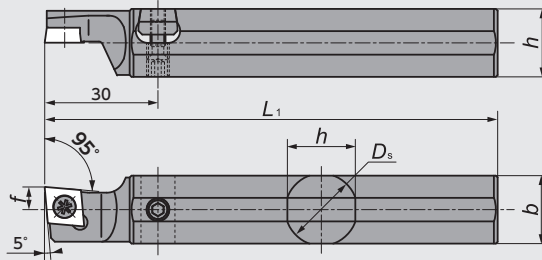


Figure-7

● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)							Applicable insert	Parts	
	R	L		R	L	D _s	h	b	L ₁	h ₁	f	h ₂		Clamping screw	Wrench
Figure-1	5137013	5137922	SCAC ^{R/L} 0808X06N	○	○	—	8	8	120	8	0.0	—		LRIS-2.5*7	CLR-15S (A)
	5119060	5137914	1010X06N	○	○		10	10	120	10					
	5459847		1212GX09N	○	○		12	12	85	12					
	5137088	5137906	1212X09N	○	○		12	12	120	12					
Figure-2	5137021	5137898	SCLC ^{R/L} 0808X06N	○	○	—	8	8	120	8	0.0	—		LRIS-2.5*7	CLR-15S (A)
	5122171	5137880	1010X06N	○	○		10	10	120	10					
	5873872		1010H09N	○	○		10	10	100	10					
	5152889	5152897	1010X09N	●	○		10	10	120	10					
	5459839	5459821	1212GX09N	●	○		12	12	85	12				LRIS-4*10	LLR-25S (B)
	5137039	5137872	1212X09N	●	○		12	12	120	12					
	5191200	5191218	1616X09N	●	○		16	16	120	16					
Figure-3	5700240		SCLC ^{R/L} 1015X09N-F05	○	○	—	10	15	120	10	5	2		LRIS-4*10	LLR-25S (B)
	5700265		1020X09N-F10	●	○		10	20	120	10	10	2			
	5700364		1218X09N-F06	○	○		12	18	120	12	6	0			
	5700380		1224X09N-F12	●	○		12	24	120	12	12	0			
Figure-4	5744719	5884911	SCLC ^{R/L} 20-X09	○	○	—	20	20	120	20	24.0	—		LRIS-4*10	LLR-25S (B)
Figure-5	5905740		SCLC ^{R/L} 1014F09N-F020H	●	○	—	10	14	80	10	2	—		LRIS-4*10	LLR-25S (B)
	5905732		SCLC ^{R/L} 1214H09N-F020H	●	○		12	14	100	12	2	—			
	5905658		SCLC ^{R/L} 1616H09N-F020H	●	○		16	16	100	16	2	—			
Figure-6		5602636	DS-SCL ^{R/L} 14F-06	○	○	14.000	13	13	80	—	6.0	—		LRIS-2.5*7	CLR-15S (A)
		5486923	15H-06	○	○	15.875	15	15	100						
		5601703	16F-06*	○	○	16.000			80						
		5338876	19-06	○	○	19.050	18	18	120						
		5520630	20X-06	○	○	20.000	19	19	95						
		5388608	20-06	○	○										
		5484936	22-06	○	○	22.000	21	21	120						
		5520689	25-06MET	○	○	25.000	24	24							
		5486691	25-06	○	○	25.400			150						
		5601729	14F-09	○	○	14.000	13	13	80					LRIS-4*8	LLR-25S -20*65 (B)
		5486931	15H-09	○	○	15.875	15	15	100						
		5601711	16F-09*	○	○	16.000			80						
		5563168	19GX-09	○	○	19.050	18	18	85						
		5338884	19-09	○	○	19.050			120						
		5520655	20X-09	○	○	20.000	19	19	95						
		5374699	20-09	●	○										
		5401096	22-09	●	○	22.000	21	21	120						
		5520671	25-09MET	●	○	25.000	24	24							
		5486709	25-09	○	○	25.400			150						
Figure-7		5833694	DS-SCL ^{R/L} 16F-09-ACH*	○	○	16.00	15.5	15.5	80	—	6.0	—		LRIS-4*8	LLR-25S -20*65 (B)
		5833702	19-09-ACH	●	○	19.05	18.0	18.0							
		5833710	20-09-ACH	●	○	20.00	19.0	19.0	120						
		5833728	22-09-ACH	●	○	22.00	21.0	21.0							
		5934013	DS-SCLL25-09MET-ACH	●	○	25.00	24.0	24.0	120						
		5833736	DS-SCL ^{R/L} 25-09-ACH	●	○	25.40	24.0	24.0	150						

※Please select φ16 shank holder When using DS-Sleeve.

SDJC-N/SDJC type

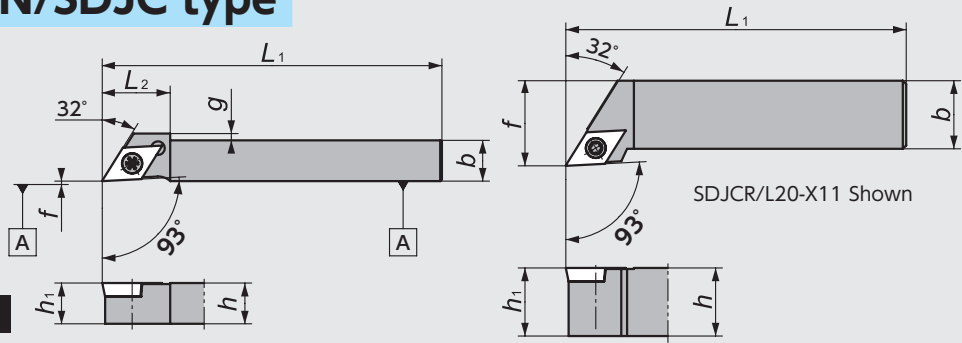


Figure-1

● Right-hand type shown.

SDJC-OH type

SPLASH BAR **NEW**

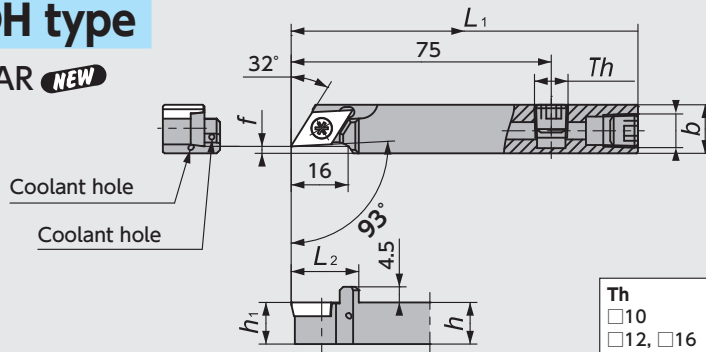


Figure-2

● Right-hand type shown.

SDJC-N-F type

Shift holder

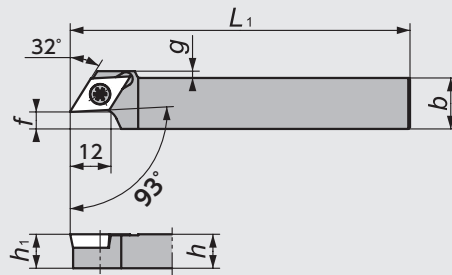


Figure-3

● Right-hand type shown.

SDXC-N type

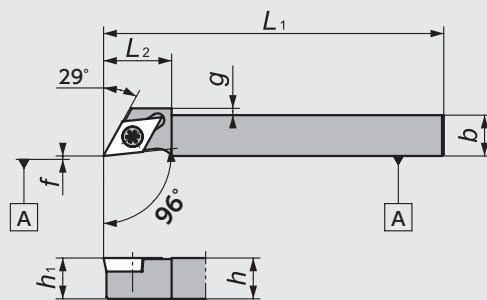


Figure-4

● Right-hand type shown.

SDQC type

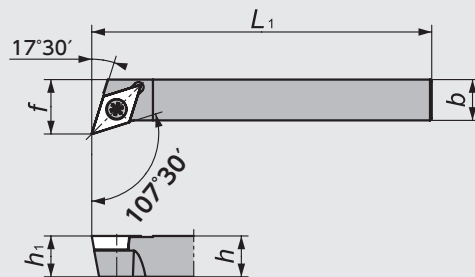


Figure-5

● Right-hand type shown.

SDNC type

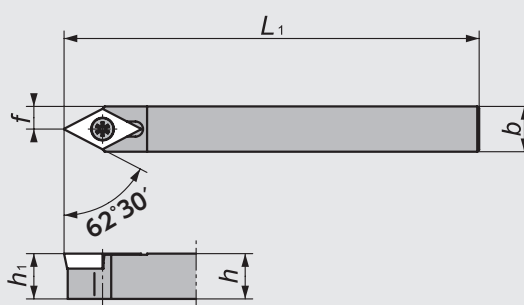
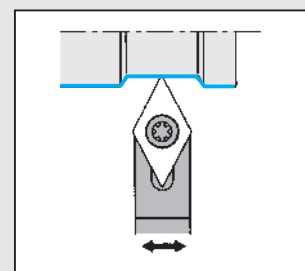


Figure-6



CH-SDUC type

For opposed gang tool post

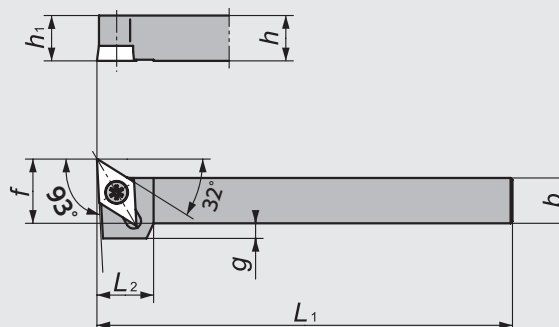
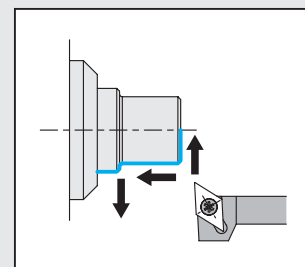


Figure-7



● Left-hand type shown.

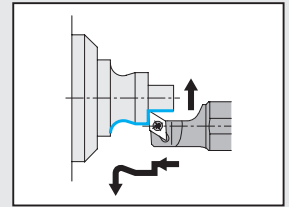
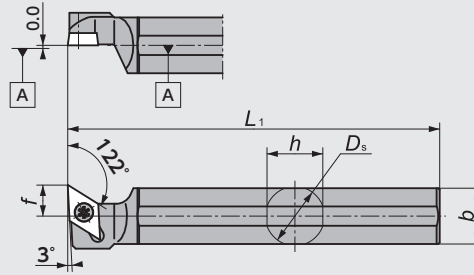
Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)							Applicable insert	Parts	
	R	L		R	L	h	b	L ₁	h ₁	f	L ₂	g		Clamping screw	Wrench
Figure-1	5137047	5137864	SDJC ^{R/L} 0808X07N	○	○	8	8	120	8				DC 0702 TFD07	LRIS-2.5*7	CLR-15S (A)
	5502125		1010GX07N	○	○			85							
	5120464	5137856	1010X07N	○	○		10	120					DC 11T3 TFD11	LRIS-4*10	LLR-25S (B)
	5873880		1010H11N	○	○	10		100	10						
	5152863	5153234	1010X11N	●	○			120			19	2			
	5122155		1210X11N	○	○										
	5459813	5473681	1212GX11N	●	○		12	85							
	5593215		1216GX11N	○	○	12	16	12							
	5122163	5137849	1212X11N	●	○		12								
	5180583	5180609	1616X11N	●	○	16	16	120	16						
	5744743	5852793	20-X11	○	○	20	20	20	20	25.0					
Figure-2	5903208		SDJC ^{R/L} 1014F11N-F02OH	●	○	10		80	10				DC 11T3 TFD11	LRIS-4*10	LLR-25S (B)
	5886254		1214H11N-F02OH*	●	○	12	14								
	5903216		1616H11N-F02OH	●	○	16	16	100	10	2	19.5				
Figure-3	5700588		SDJC ^{R/L} 1015X07N-F05	○	○		15			5			DC 0702 TFD07	LRIS-2.5*7	CLR-15S (A)
	5700562		1020X07N-F10	○	○	10	20		10	10					
	5700547		1015X11N-F05	○	○		15			5			DC 11T3 TFD11	LRIS-4*10	LLR-25S (B)
	5700521		1020X11N-F10	○	○		20		120	10	19	2			
	5700505		1218X11N-F06	○	○		18			6					
	5700471		1224X11N-F12	○	○	12	24		12	12					
	5974456		1620X11N-F08	○	○		20			8					
	5974464		1628X11N-F16	○	○	16	28		16	16					
Figure-4	5525449		SDXC ^{R/L} 1010X11N	○	○		10			20	3		DC 11T3	LRIS-4*10	LLR-25S (B)
	5553169		1016X11N	○	○	10	16								
	5525456		1212X11N	○	○		12	120	12	0	20	1			
	5553177		1216X11N	○	○	12	16								
	5525464		1616X11N	○	○	16	16		16			0			
Figure-5	5743711	5743752	SDQC ^{R/L} 10-X07	○	○	10	10		10	12			DC 0702	LRIS-2.5*7	CLR-15S (A)
	5743729	5743760	12-X11	○	○	12	12	120	12	16					
	5743737	5747332	16-X11	○	○	16	16		16	20			DC 11T3	LRIS-4*10	LLR-25S (B)
	5743745		20-X11	○	○	20	20		20	25					
Figure-6	5742184		SDNCN08-X07	○	○	8	8		8	4			DC 0702	LRIS-2.5*7	CLR-15S (A)
	5742192		N10-X07	○	○	10	10		10	5					
	5742200		N12-X11	●	○	12	12	120	12	6			DC 11T3	LRIS-4*10	LLR-25S (B)
	5742218		N16-X11	●	○	16	16		16	8					
	5742226		N20-X11	○	○	20	20		20	10					
Figure-7		5659222	CH-SDUC ^{R/L} 1010H11	○	○	10	10	100	10	15		6	DC 11T3	LRIS-4*10PW	CLR-15S (A)
		5659230	1212H11	○	○	12	12		12	17	15	4			

※For details of SPLASH BAR "SDJCR1214H11N-F02OH".

DS-SDU type

DS holder



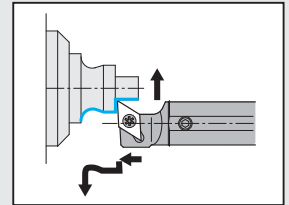
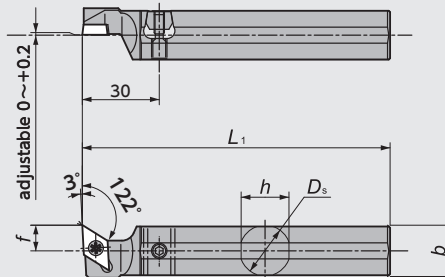
☆Use a R-hand or neutral type insert.
●Left-hand type shown.

Figure-1

DS-SDU-ACH type

DS holder with adjustable centerline height
(Parts)

shank	wedge	screw for wedge
φ 16		
φ 19.05	ACH-W18 (5805601)	WS060415-003 (5795539)
φ 20		
φ 22		
φ 25.4	ACH-W24 (5805619)	WS060419-004 (5799226)

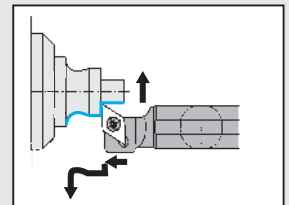
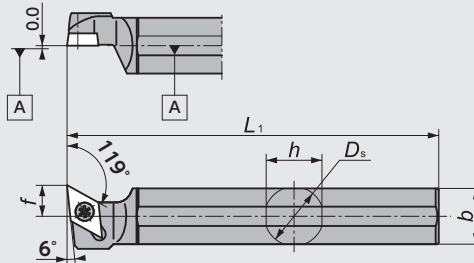


☆Use a R-hand or neutral type insert.
●Left-hand type shown.

Figure-2

DS-SDX type

DS holder

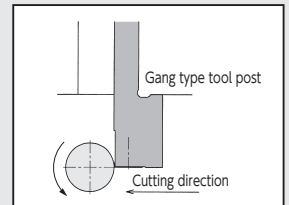
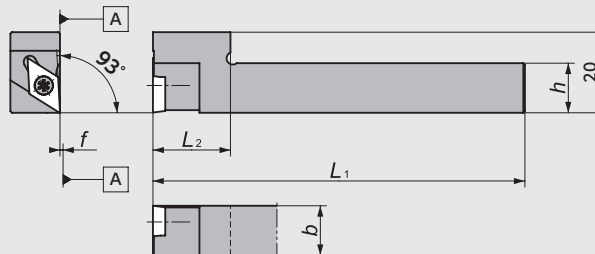


☆Use a R-hand or neutral type insert.
●Left-hand type shown.

Figure-3

Y-SDJC type

Y-axis holder

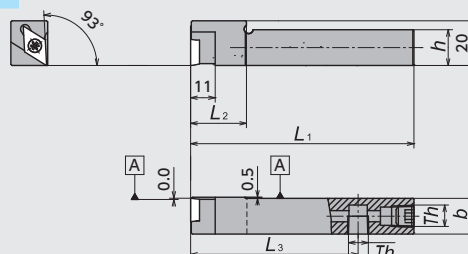


☆Use a R-hand insert for R-hand holder.
●Right-hand type shown.

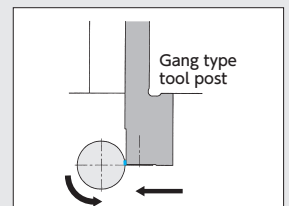
Figure-4

Y-SDJC-OH type

SPLASH BAR **NEW**



Th
□12, □16 : Rc1/8 (PT1/8)



☆Use a R-hand insert for R-hand holder.
●Right-hand type shown.

Figure-5

Y-SDNC type

Y-axis holder

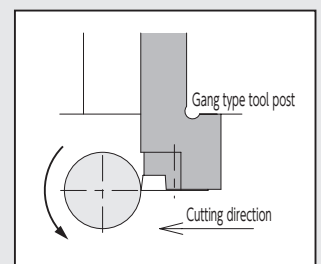
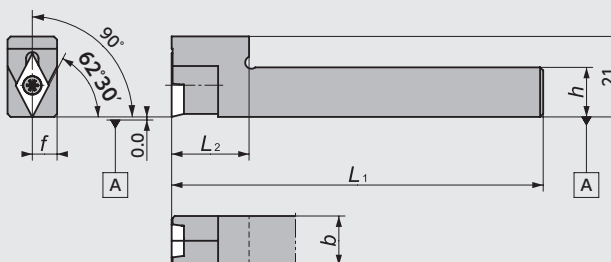
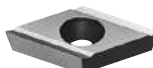
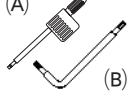


Figure-6

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)							Applicable insert	Parts	
	R	L		R	L	D_s	h	b	L_1	h_1	f	L_2		Clamping screw	Wrench
		N													(A)  (B)
Figure-1		5348545	DS-SDU $\frac{R}{L}$ 14F-07		○	14.000	13.0	13	80				DC□□0702 TFD07□	LRIS-2.5*7	CLR-15S (A)
		5348107	15H-07		○	15.875			100						
		5520598	16F-07*		○	16.000	15.0	15	80						
		5341516	16X-07*		○				95						
		5278247	19-07		○	19.050	18.0	18	120						
		5520606	20X-07		○	20.000	19.0	19	95						
		5278239	20-07		○				120						
		5330758	22-07		○	22.000	21.0	21					DC□□11T3 TFD11□	LRIS-4*10	LLR-25S -20*65 (B)
		5601745	14F-11		○	14.000	13.0	13	80						
		5601737	16F-11*		○	16.000	15.0	15							
		5278262	19-11		○	19.050	18.0	18	120						
		5527230	19-11SPL		○				160						
		5520614	20X-11		○	20.000	19.0	19	95						
		5278254	20-11		●				120						
		5324025	22-11		●	22.000	21.0	21							
		5638606	23-11-007		○	23.000	22.0	22	70						
		5483417	25-11MET		●	25.000			120						
		5317136	25-11		○	25.400	24.0	24							
		5713581	25-11SPL		○	25.400			150						
											12.5				
Figure-2		5805635	DS-SDU $\frac{R}{L}$ 16F-11-ACH*		●	16.000	15.5	15	80				DC□□11T3 TFD11□	LRIS-4*10	LLR-25S -20*65 (B)
		5805627	19-11-ACH		●	19.050	18.0	18							
		5799614	20-11-ACH		●	20.000	19.0	19	120						
		5799622	22-11-ACH		●	22.000	21.0	21							
		5934021	25-11MET-ACH		●	25.000	24.0	24	120						
		5799648	25-11-ACH		●	25.400	24.0	24	150						
Figure-3		5462429	DS-SDX $\frac{R}{L}$ 19-11		○	19.050	18.0	18	120				DC□□11T3	LRIS-4*10	LLR-25S (B)
		5520622	20X-11		○	20.000	19.0	19	95						
		5462437	20-11		○				120						
		5520697	25-11MET		○	25.000	24.0	24							
Figure-4	5371646		Y-SDJC $\frac{R}{L}$ 10-07S	○		—	10.0	10					DC□□0702 TFD07	LRIS-2.5*7	CLR-15S (A)
	5371661		12-07S	○			12.0	12							
	5926001		10-11S	○			10.0	10					DC□□11T3 TFD07	LRIS-4*10	LLR-25S -20*65 (B)
	5600671		12-11S	○			12.0								
	5890025		16-11S	○			16.0	16							
	5926001		Y-SDJCR10-11S	○			10.0	16							
Figure-5	5910575		Y-SDJC $\frac{R}{L}$ 1212H11S-OH	○		—	12	12				20	DC□□11T3 TFD11	LRIS-4*8	LLR-25S
	5910583		1616H11-OH	○		—	16	16	100			25			
Figure-6	5479191		Y-SDNCN12-11S	○		—	12.0	12					DC□□11T3	LRIS-4*10	LLR-25S-20*65 (B)
	5485875		N16-11S	○			16.0	16	120			6.0 8.0			

※Please select $\phi 16$ shank holder When using DS-Sleeve.



SVAC-N type

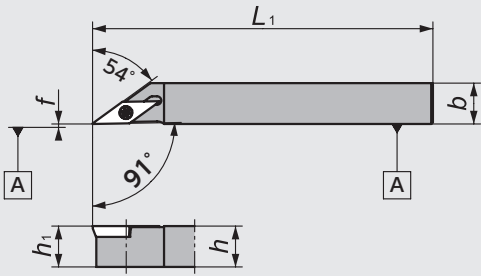
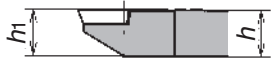


Figure-1



SVACR1010X11N is also available for automatic lathes with a radial type tool post.

●Right-hand type shown.

SVAC-N-1L type

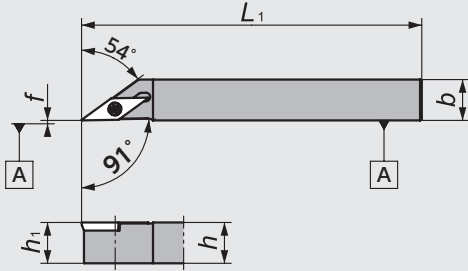
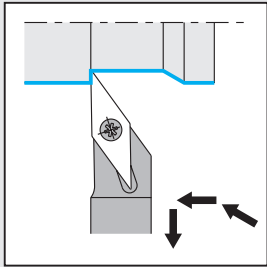


Figure-2



●Right-hand type shown.

SVAC-NW type

For double-edged cutting tool

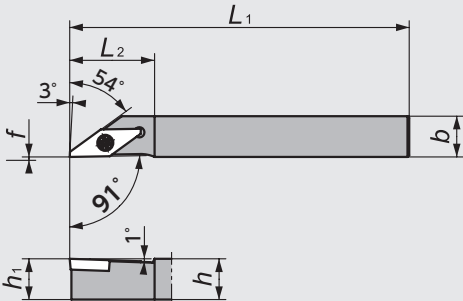
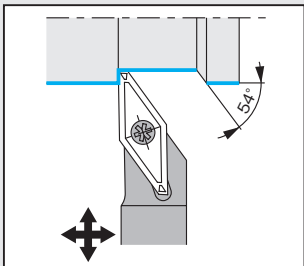


Figure-3



●Right-hand type shown.

SVAC type

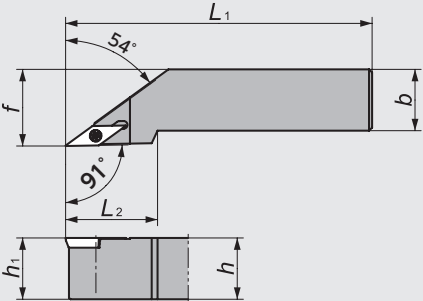
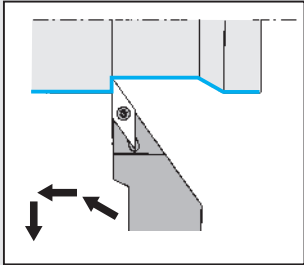


Figure-4



●Right-hand type shown.

SVAC-W type

For double-edged cutting tool

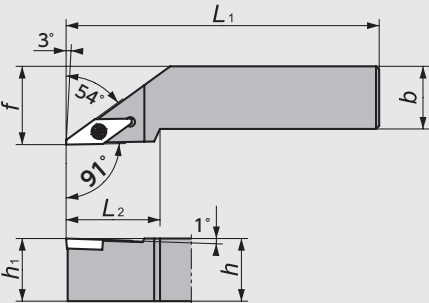
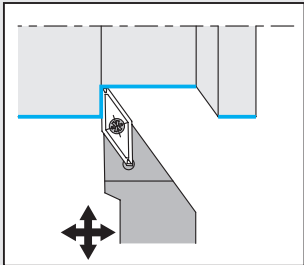


Figure-5



●Right-hand type shown.

SVJC-N type

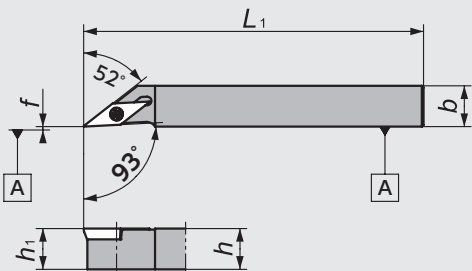
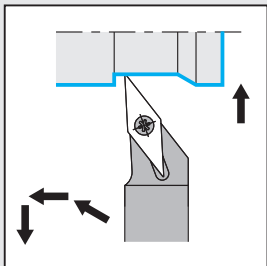


Figure-6



●Right-hand type shown.

SVXC-N type

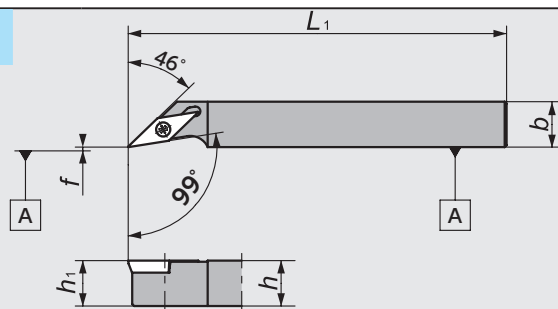
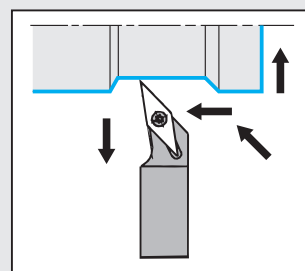


Figure-7



● Right-hand type shown.

Y-SVXCL type

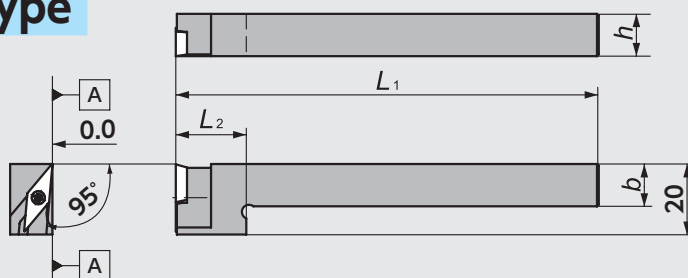
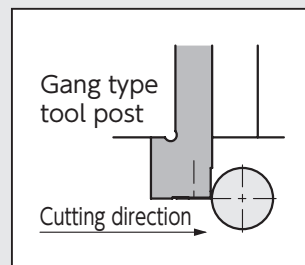


Figure-8



● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)						Applicable insert	Parts	
	R	L		R	L	h	b	L ₁	h ₁	f	L ₂		Clamping screw	Wrench
Figure-1	5304043	5304092	SVAC ^R _L 1010X11N	◎	◎	10	10	120	10	0.0	—	VC ^{□□} 1103 TFV11	LRIS-2.5*7	CLR-15S (A)
	5304050	5304076	1212X11N	◎	◎	12	12		12					
	5304068		1616X11N	◎		16	16		16					
Figure-2	5473053	5473038	SVAC ^R _L 1010X11N-1L	◎	◎	10	10	120	10	0.0	—	VCGT1102	LRIS-2.5*7	CLR-15S (A)
	5473061	5473046	1212X11N-1L	◎	◎	12	12		12					
Figure-3	5401724	5401708	SVAC ^R _L 1010L13NW	◎	◎	10	10	140	10	0.0	25	VCGT1303	LRIS-3*8	RLR-20S (B)
	5401732	5401716	1212L13NW	◎	◎	12	12		12					
	5401740	5431077	1616M13NW	◎	◎	16	16		16					
Figure-4	5744768		SVAC ^R _L 20-X11	◎		20	20	120	20	25.0	30	VC ^{□□} 1103 TFV11	LRIS-2.5*7	CLR-15S (A)
Figure-5	5474549		SVAC ^R _L 2020M13W	◎		20	20	150	20	25.0	30	VCGT1303	LRIS-3*8	RLR-20S (B)
Figure-6	5339940	5517750	SVJC ^R _L 1010X11N	●	●	10	10	120	10	0.0	—	VC ^{□□} 1103	LRIS-2.5*7	CLR-15S (A)
	5339932	5517768	1212X11N	●	●	12	12		12					
	5339924	5517743	1616X11N	●	●	16	16		16					
Figure-7	5393731	5415815	SVXC ^R _L 1210X11N	◎	◎	10	12	120	10	0.0	—		LRIS-2.5*7	CLR-15S (A)
	5393749		1212X11N	◎		12			12					
Figure-8		5917182	Y-SVXCL12-11S		◎	12	12	120	—	—	20	VC ^{□□} 1103	LRIS-2.5*7	CLR-15S (A)

SVQC type

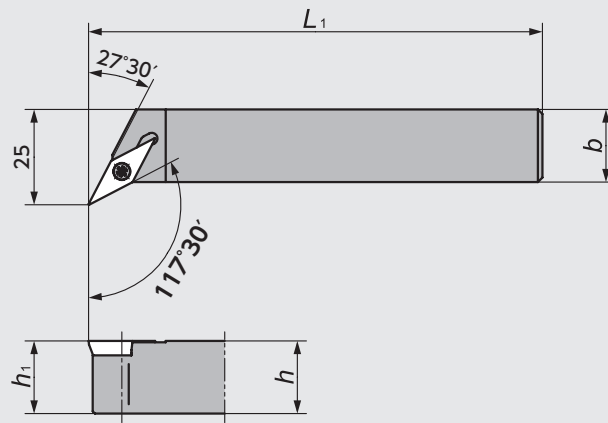


Figure-1

● Right-hand type shown.

SVVC-N type

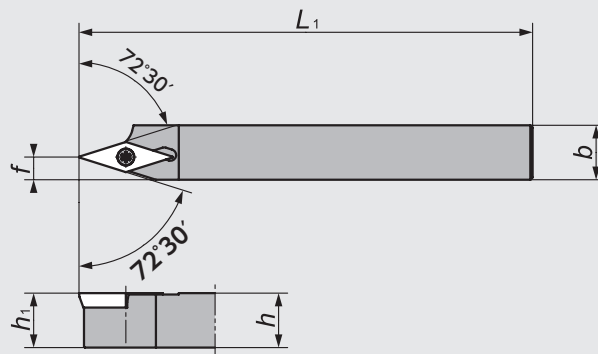


Figure-2

● Right-hand type shown.

SVVC-N type

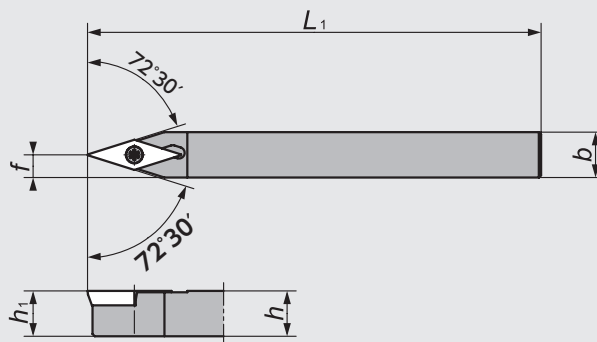


Figure-3



DS-SVX type

DS holder

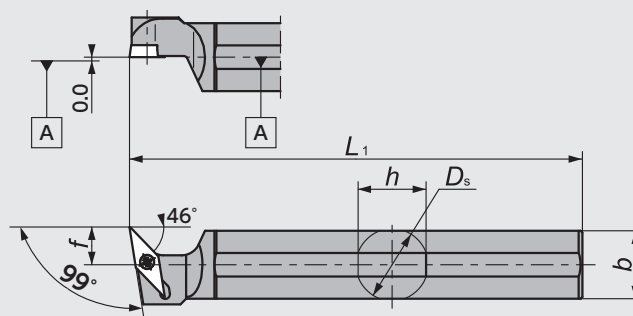


Figure-4

● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)						Applicable insert	Parts					
	R	L N		R	L N	D _s	h	b	L ₁	h ₁	f		Clamping screw	Wrench				
																		
Figure-1	5744776		SVQC ^{R/L} 20-X11			—	20	20	120	20	—	VC□□1103	LRIS-2.5*7	CLR-15S				
Figure-2	5523238		SVVC ^{R/L} 1212X11N			—	12	12	120	12	5		LRIS-2.5*7	CLR-15S				
	5523212		1616X11N				16	16		16			LRIS-2.5*7	CLR-15S				
Figure-3	5461835		SVVCN1010X11N			—	10	10	120	10	5		LRIS-2.5*7	CLR-15S				
	5744792		N20-X11				20	20		20	10							
Figure-4		5601778	DS-SVX ^{R/L} 14F-11			14.000	13	13	80	10.0			LRIS-2.5*7	CLR-15S				
		5418413	15H-11			15.875	15	15	100									
		5601752	16F-11※			16.000			80									
		5393756	19-11			19.050	18	18	120	11.0								
		5572722	19-11SPL						160									
		5520663	20X-11			20.000	19	19	95						10.0			
		5393764	20-11						120									
		5486675	22-11			22.000	21	21	150									
		5486683	25-11			25.400	24	24										

※Please select $\phi 16$ shank holder When using DS-Sleeve.

SVXP-N type

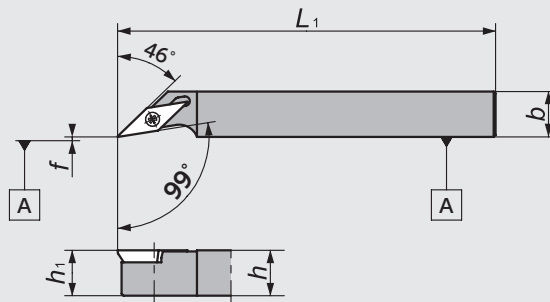
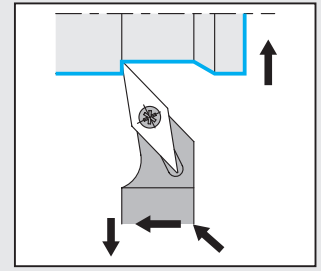


Figure-1



● Right-hand type shown.

SVQP-N type

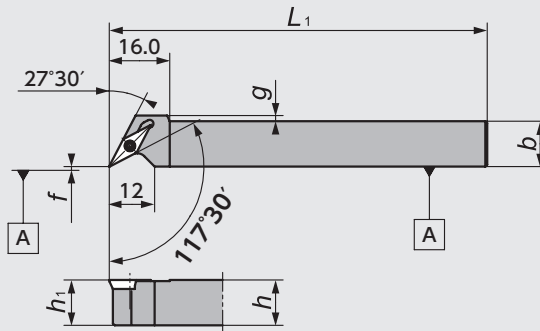
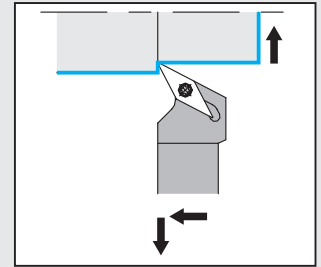


Figure-2



● Right-hand type shown.

CH-SVUP type

For opposed gang tool post

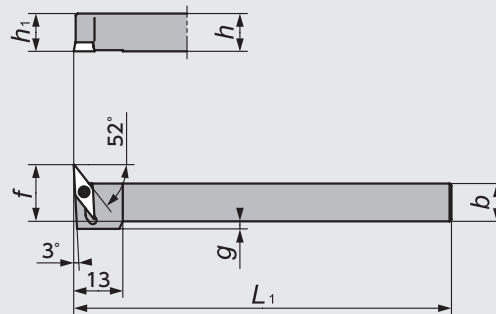
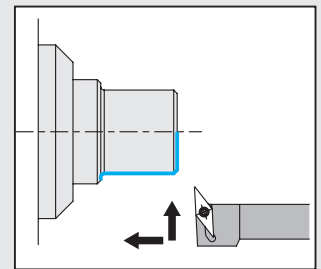


Figure-3



● Left-hand type shown.

DS-SVVP type

DS holder

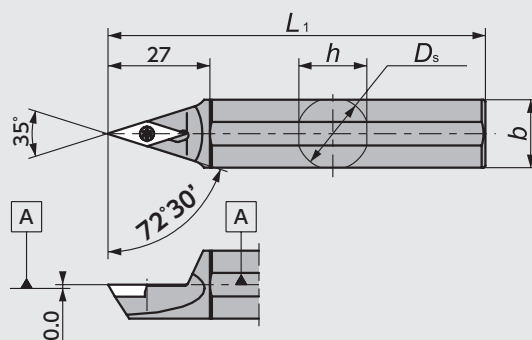
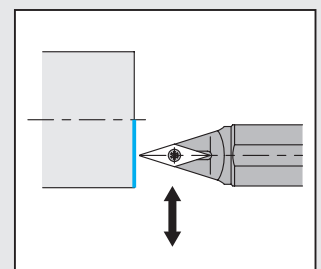


Figure-4



● Neutral type shown.

DS-SVVP-ACH type

DS holder with adjustable centerline height **NEW**

(Parts)

shank	wedge	screw for wedge
φ16		WS060415-003 (5795539)
φ19.05	ACH-W18 (5805601)	
φ20		
φ22		WS060419-004 (5799226)
φ25.4	ACH-W24 (5805619)	

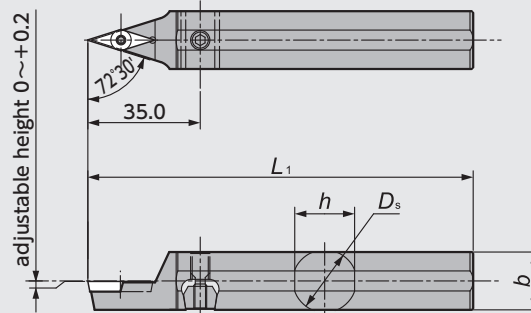
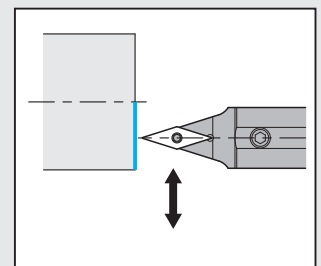


Figure-5



● Neutral type shown.

DS-SVXP type

DS holder

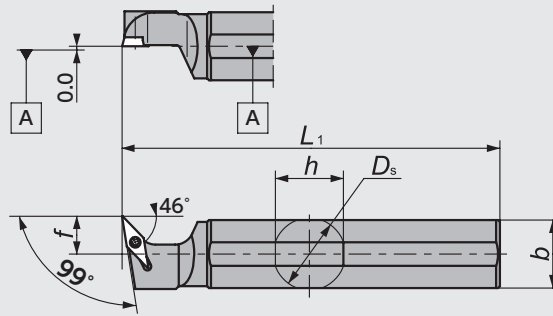


Figure-6

● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)							Applicable insert	Parts	
	R	L		R	L	D_s	h	b	L_1	h_1	f	g			
	N														
Figure-1	5511506	5511514	SVXP ^{R/L} 1012X11N			—	10.0	12	120	10	0.0	—	VP  1103	LRIS-2.5*7	CLR-15S
	5511522	5511548	1212X11N				12.0			12					
Figure-2	5600622	5600614	SVQP ^{R/L} 1010X08N			—	10.0	10	120	10	0.0	3.5	VP  0802	LRIS-2*6	CLR-13S
	5600598	5600606	1212X08N				12.0	12				1.5			
	5600580	5600564	1616X08N				16.0	16				—			
Figure-3		5659206	CH-SVUP ^{R/L} 1010H08			—	10.0	10	100	10	15	2	VP  0802	LRIS-2*6	CLR-13S
		5659214	1212H08				12.0	12		12	17	0			
Figure-4	5511555		DS-SVVPN19-11			19.050	18.0	18	120	—	—	—	VP  1103	LRIS-2.5*7	CLR-15S
	5511563		N22-11			22.00	21.0	21							
Figure-5	 5805643		DS-SVVPN16-11-ACH [*]			16.000	15.5	15	120	—	—	—	VP  1103	LRIS-2.5*7	CLR-15S
	 5799655		N19-11-ACH			19.050	18.0	18							
	 5799663		N20-11-ACH			20.000	19.0	19							
	 5799671		N22-11-ACH			22.000	21.0	21							
	 5807524		N25-11-ACH			25.400	24.0	24							
Figure-6		5534003	DS-SVXP ^{R/L} 19-08			19.050	18.0	18	120	—	10	—	VP  0802	LRIS-2*6	CLR-13S
		5534011	20-08			20.000	19.0	19							
		5600549	22-08			22.000	21.0	21							
		5533997	25-08			25.400	24.0	24							

※Please select $\phi 16$ shank holder When using DS-Sleeve.

STAC-N type

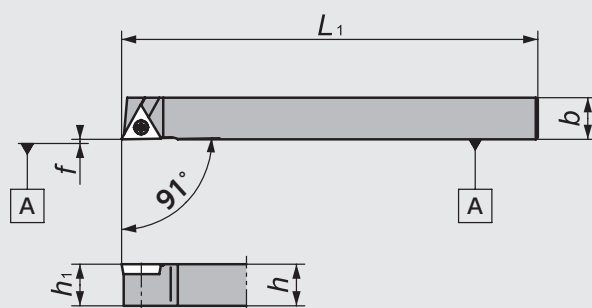
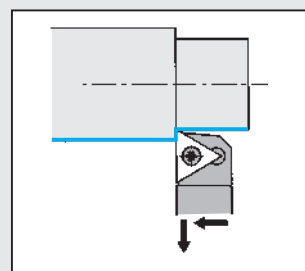


Figure-1



● Right-hand type shown.

CH-STUC type

For opposed gang tool post

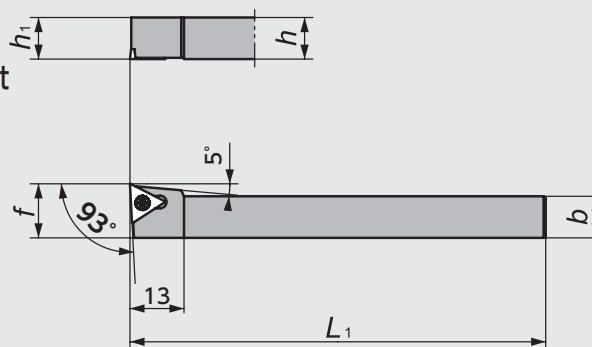
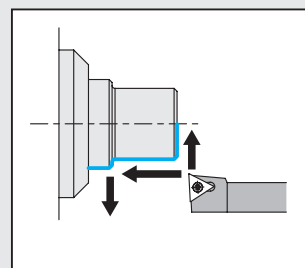


Figure-2



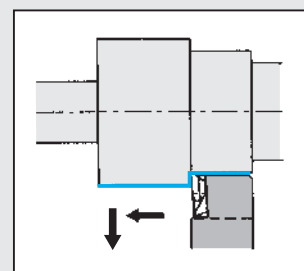
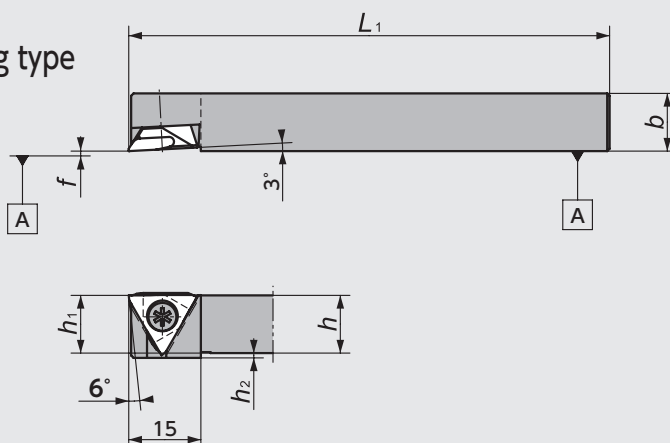
● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)					Applicable insert	Parts	
	R	L		R	L	h	b	L ₁	h ₁	f		Clamping screw	Wrench
Figure-1	5137005		STAC [®] /L 0808X09N	◎		8	8	120	8	0.0	TC [□] 0902 TFT09	LRIS-2.2*6	CLR-13S
	5137096	5137948	1010X09N	◎	◎	10	10		10				
	5119078	5137930	1212X11N	◎	◎	12	12		12				
Figure-2		5659180	CH-STUC [®] /L 1010H09		◎	10	10	100	10	13	TC [□] 0902	LRIS-2.2*6	CLR-13S
		5659198	1212H09		◎	12	12		12	15			

TFT type

Front/back clamping type



● Right-hand type shown.

Holder dimensions

Code No.		Toolholder Part No.	Stock		Dimensions (mm)						Applicable insert	Parts	
R	L		R	L	h	b	L ₁	h ₁	f	h ₂		Clamping screw	Wrench
5196993		TFT^{1/4} 10	◎		10	10	120	10	0.0	3	TF33 (See the table below)	LR-S-4*10PW	CLR-15S
5197025		12	◎		12	12		12		1			
5205190		16	◎		16	16		16		—			
5562723		20	◎		20	20		20		—			

Holder dimensions

TF type

Shape	Part No.	Dimensions (mm)			PVD-coated micro-grain carbides	
		d	s	r _ε	ZM3	Stock
	TF3300R	9.525	4.76	0	5947338	◎
	3305R			0.05	5914619	◎
	3315R			0.15	5906342	◎
	3320R			0.2	5971874	◎

● Right-hand type shown.

※The max.depth of cut is 4.0 mm.
☆The angles shown here are the values when the insert is set into the holder.

PTAN-N type

Lever lock
Front/back clamping type

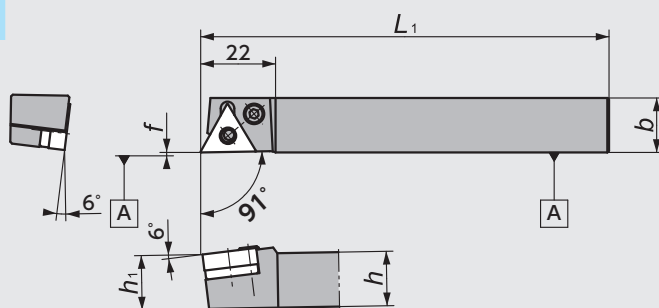
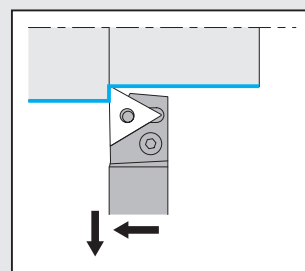


Figure-1



● Right-hand type shown.

PTLN type

Lever lock
Front/back clamping type

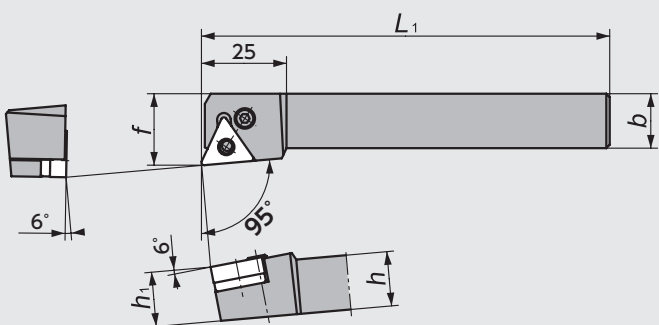
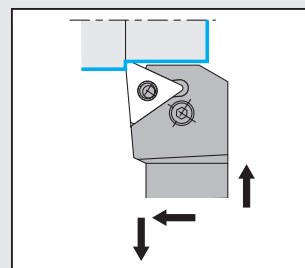


Figure-2



● Right-hand type shown.

PTXN-N type

Lever lock

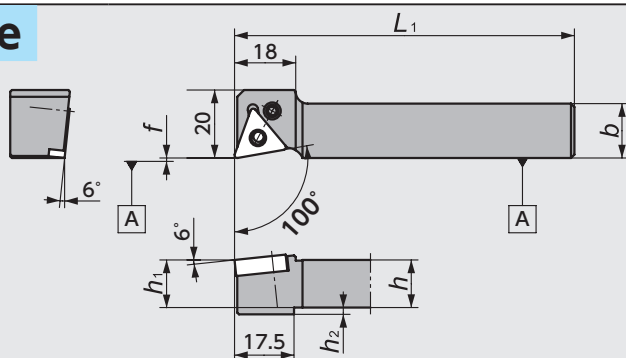
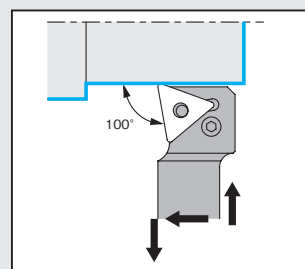


Figure-3



● Right-hand type shown.

DS-PTX type

Lever lock
DS holder

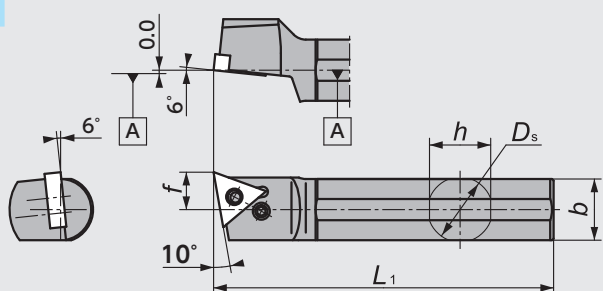
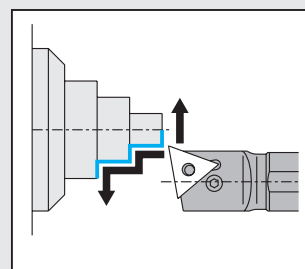


Figure-4



● Left-hand type shown.

DS-PTX-ACH type

DS holder with adjustable centerline height

〈Parts〉

shank	wedge	screw for wedge
φ 16		WS060415-003 (5795539)
φ 19.05	ACH-W18 (5805601)	
φ 20		
φ 22		WS060419-004 (5799226)
φ 25.4	ACH-W24 (5805619)	

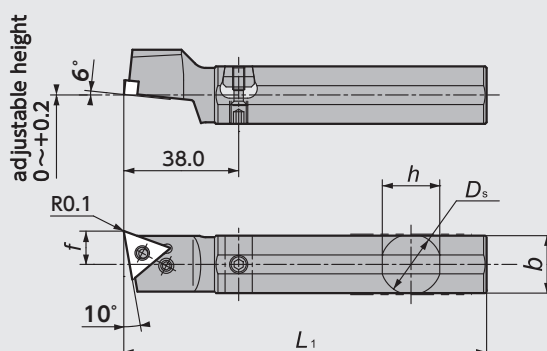
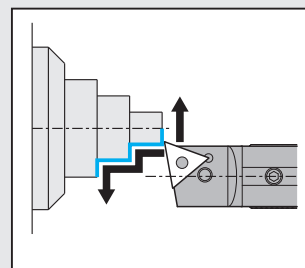


Figure-5



● Left-hand type shown.

Holder dimensions

Shape	Code No.		Toolholder Part No.	Stock		Dimensions (mm)										Applicable insert	Parts				
	R	L		R	L	D _s	h	b	L ₁	h ₁	f	L ₂	h ₂								
Figure-1	5252325		PTAN ^R /L 1616X33N	◎		—	16.0	16	120	16	0.0	22	—			TN□□1604	LST317	LCL3	LCS3	LSP3	LW-2.5
Figure-2	5552336	5552344	PTLN ^R /L 2020L33	◎	◎	—	20.0	20	140	20	25	25	—			TN□□1604	LST317	LCL3	LCS3	LSP3	LW-2.5
Figure-3	5479860		PTXN ^R /L 1016X33N	◎		—	10.0			10			2			TN□□1604		LCL33N	LCS33		LW-2
	5479852		1216X33N	◎			12.0	16		12											
	5489901		1616X33N	◎			16.0		120		0.0	18									
	5513965		2020X33N	◎			20.0	20		20											
Figure-4		5519707	DS-PTX ^R /L 19-33		◎	19.050	18.0	18								TN□□1604		LCL33N	LCS33		LW-2
		5519715	20-33		◎	20.000	19.0	19	120				11.0								
	NEW	5591029	22-33		◎	22.000	21.0	21					12.0								
		5519699	25M-33		◎	25.400	24.0	24	150				13.0								
Figure-5		5805650	DS-PTX ^R /L 16-33-ACH*		◎	16.000	15.5	15								TN□□1604		LCL33N	LCS33		LW-2
		5799689	19-33-ACH		◎	19.050	18.0	18					11.0								
		5799697	20-33-ACH		◎	20.000	19.0	19	120												
		5799705	22-33-ACH		◎	22.000	21.0	21					12.0								
		5799713	25-33-ACH		◎	25.400	24.0	24	150				13.0								

※Please select φ16 shank holder When using DS-Sleeve.

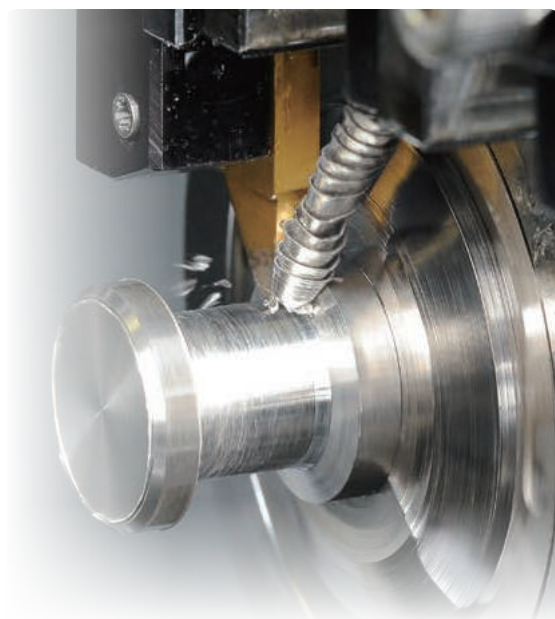
New 3D chipbreaker for back turning *TBP/TBPA-BM type*

The skill of 3D chipbreaker

WATCH ON
YouTube

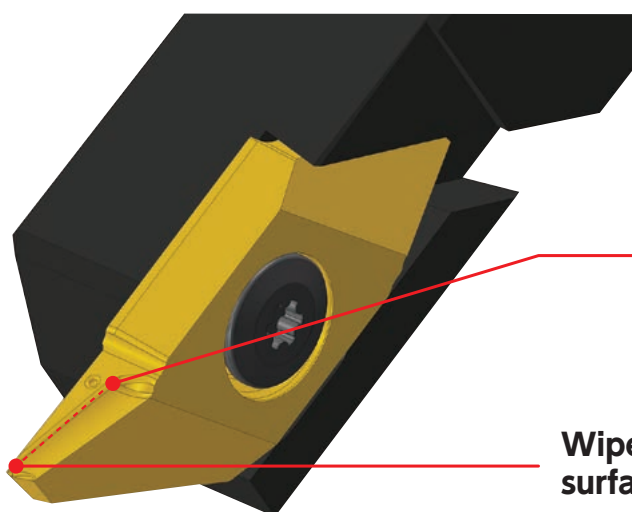
Features

- "Single pass back turning" offers excellent surface finish.
- Up-right type insert and screw clamping offer high rigidity
- Wiper flat on cutting edge offers stable surface finish even under high feed cutting condition.



New BM chipbreaker

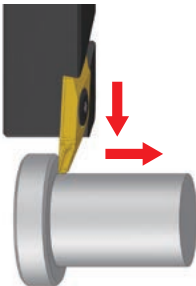
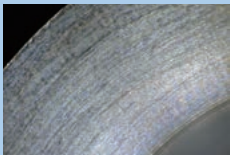
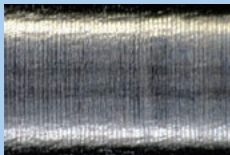
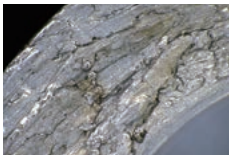
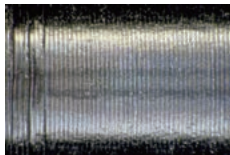
PAT.P



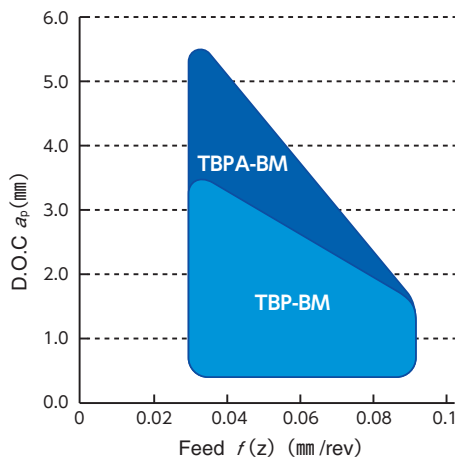
Prevent the rough end face from hitting the chip

Wiper flat on cutting edge offers excellent surface finish

Case study

1Pass 	TBP BM chipbreaker		Competitor	
	End face	Diameter	End face	Diameter
	 Excellent surface	 Ra : 0.72 μ m Rz : 4.46 μ m	 Rough surface	 Ra : 1.65 μ m Rz : 6.01 μ m
Cutting condition : $v_c = 80\text{m/min}$ $f(x) = 0.02\text{mm/rev}$ $f(z) = 0.08\text{mm/rev}$ $a_p = 3.0\text{mm}$ WET Work material : X5CrNi18-10 $\phi 16$ Holder : TBPR12 Insert : TM4 TBP72FR10M-BM				

Applicable chipbreaker range



Recommended cutting conditions

D.O.C	$a_p = 0.5 \sim 3.0\text{mm}$ (TBP) $0.5 \sim 5.0\text{mm}$ (TBPA)
Feed	$f(z) = 0.05 \sim \text{mm/rev}$
Feed	$f(x) = \text{about } 0.02\text{mm/rev}$
Cutting speed	almost same speed with front turning

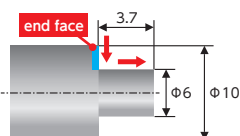
Chip control performance

D.O.C a_p (mm)	BM chipbreaker		Competitor	
	0.05	0.08	0.05	0.08
0.5				
3.0				

Cutting condition : $v_c = 80\text{m/min}$ WET
Work material : X5CrNi18-10 $\phi 16$ Holder : TBPR12 Insert : TM4 TBP72FR10M-BM

Application example

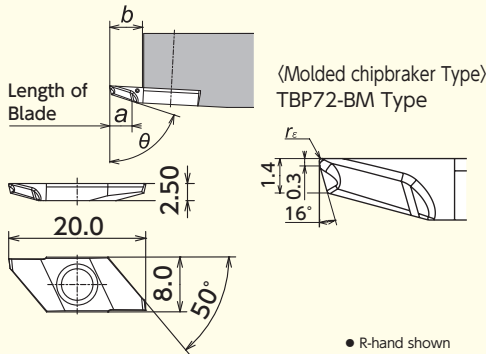
Parts : Shaft Work material : X105CrMo17	BM chipbreaker	Competitor
Cutting speed (m/min)	65	45
Feed (mm/rev)	0.05	0.03
Depth of cut (mm)	1.0	1.0
		
BM chipbreaker	1200pcs	
Competitor	500pcs	
BM chipbreaker offered about 2.4 times longer tool life compared with competitor tool.		

Parts : Stud Work material : X14CrMoS17	BM chipbreaker	Competitor
Cutting speed (m/min)	50	←
Feed (mm/rev)	0.05	←
Depth of cut (mm)	2.0	① Rough (grooving) ② Finish (back turning) end face 0.1 / dia. 0.2
 Conventional tooling ① Rough: Grooving ② Finish: Back turning Tooling with BM chipbreaker ① Only 1 pass machining ※ No grooving for roughing.		
Conventional back turning required 2 passes machining (Roughing/Finishing) NTK BM chipbreaker achieved reducing C/T and good chip control with only 1 pass. It prevent rough end face from hitting chip, and got the excellent surface finish.		

TBP

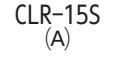
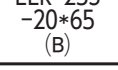
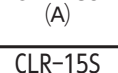
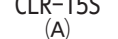
■ Applicable insert

Part number	Breaker	Length of Blade a	Max. Depth of cut b	Dimensions (mm)		PVD coated micrograin carbide			
				θ	r_e	TM4		DM4	
						R	Stock	R	Stock
TBP72FR05-BM	Provided	3.5	5.3	72°	0.05	5868310	●	5868401	●
72FR10M-BM					0.08	5868351	●	5868419	●
72FR20M-BM					0.18	5868336	●	5868393	●



■ Holder

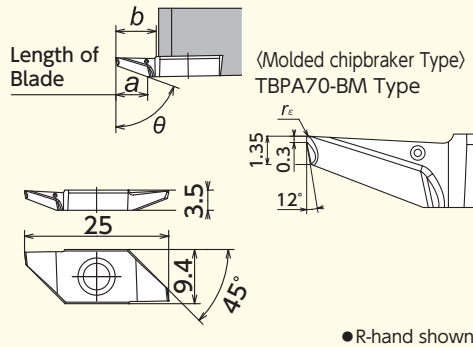
TBP	Back clamp/ screw clamp	Figure.1	● R-hand shown
Y-TBP	Back clamp/ screw clamp	Figure.2	● R-hand shown ☆Select right-hand insert for right-hand holder
DS-TBP	DS holder	Figure.3	● L-hand shown ☆Select right-hand insert for left-hand holder
TBP-OH	Back clamp/ screw clamp	Figure.4	● R-hand shown
Y-TBP-OH	Back clamp/ screw clamp	Figure.5	● R-hand shown ☆Select right-hand insert for right-hand holder

Fig.	Code No.		Toolholder	Stock		Max. bore Dia. (mm) ϕD	Dimensions (mm)										Applicable insert 	Parts		
	R	L		R	L		D_s	h	b	L_1	h_1	h_2	f	L_2	L_3	Screw		Wrench		
																(A)		(B)	(A)	 
Figure.1	5133285	5133293	TBP ^{R/L} 08			—	—	8	10	120	8	4	3.5	—	5.5	TBP	 LRIS-4*10PW (A)	 CLR-15S (A)		
	5090436	5090444	10					10	10	100	10	2								
	5873856		10H					10	10	100	10	2								
	5459771		12GX					12	12	85	12	0								
	5090451	5090469	12					13	13	120	13									
	5090477	5090485	13					16	16	100	16									
	5459789		16H					16	16	100	16									
	5270822	5270830	16					10	10	120	10									
Figure.2	5371554		Y-TBP ^{R/L} 10S			—	—	10	10	120	—	—	3.5	20	—	TBP	LRIS-4*10PW(A)	 CLR-15S (A)		
	5371588		12S					12	12					25			LRIS-4*12PW(A)			
	5358486		10					10	10					30			LRIS-4*10PW(A)			
	5371570		10L					10	10					LRIS-4*10PW(A)						
	5371596		12L					12	12					LRIS-4*12PW(A)						
Figure.3		5540414	DS-TBP ^{R/L} 19			—	19.050	18	18	120	—	—	11.0	—	5.5	TBP	 LRIS-4*10 (B)	 LLR-25S -20*65 (B)		
		5540422	20			—	20.000	19	19										13.0	
		5540430	25			—	25.400	24	24										150	
Figure.4	5925722		TBP ^{R/L} 1012H-OH			25	—	10	12	100	10	4	3.5	19	75	TBP	LRIS-4*10PW(A)	 CLR-15S (A)		
	5925730		12H-OH			25		12	12		12	2		10						
	5925748		16H-OH			35		16	16		16	0		0						
Figure.5	5699996		Y-TBP ^{R/L} 12HS-OH			—	—	12	12	100	—	—	3.5	20	75	TBP	LRIS-4*12PW (A)	 CLR-15S (A)		
	5700000		16H-OH					16	16					16			25			

TBPA

■ Applicable insert

Part number	Breaker	Length of Blade a	Max. Depth of cut b	Dimensions (mm)		PVD coated micrograin carbide			
				θ	r_e	TM4		DM4	
						R	Stock	R	Stock
TBPA70FR05-BM	Provided	5.5	6.5	70°	0.05	5892583	●	5892591	●
70FR10M-BM					0.08	5892567	●	5892575	●
70FR20M-BM					0.18	5892542	●	5892559	●



● R-hand shown

■ Holder

CTPA

Back clamp/
screw clamp
(back turning/
cut-off toolholders)

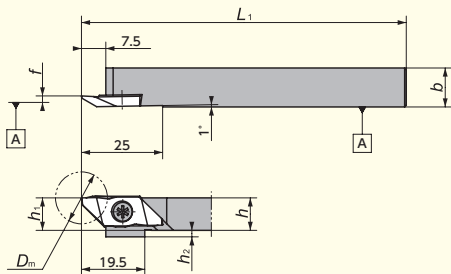


Figure.1

● R-hand shown

CH-TBPA

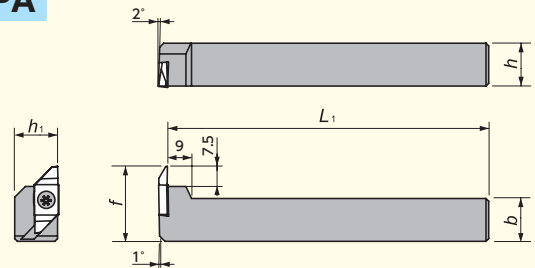


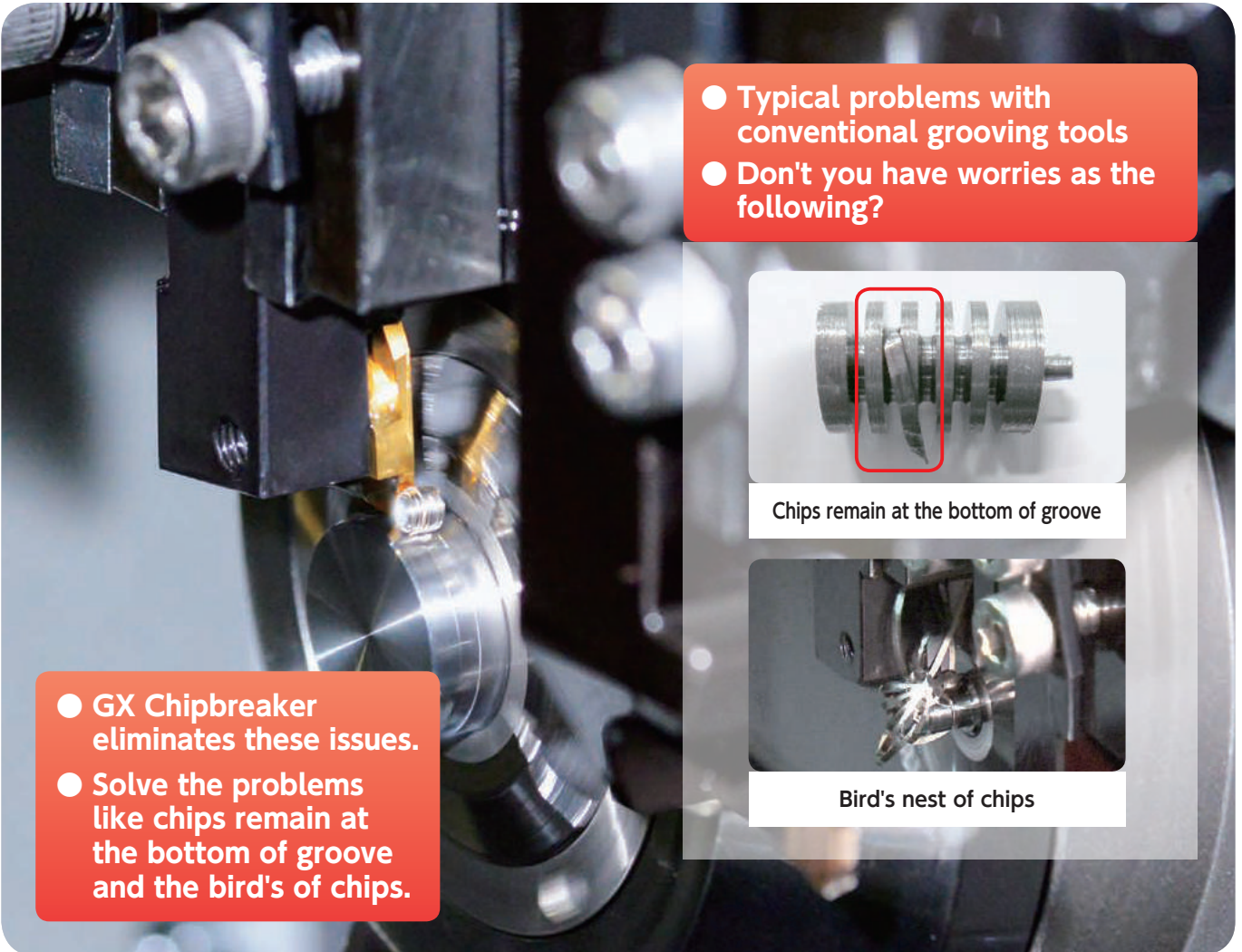
Figure.2

● L-hand shown

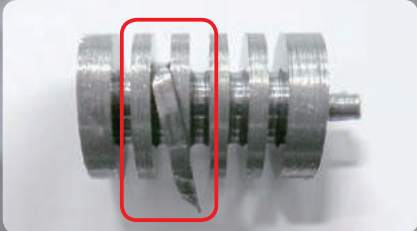
Fig.	Code No.		Toolholder	Stock		Dimensions (mm)							Applicable insert	Parts	
														Screw	Wrench
	R	L		R	L	h	b	L_1	h_1	f	h_2	D_m		(A)  (B) 	(A)  (B) 
Figure.1	5199187	5199153	CTPA ^{R/L} 10	●	●	10	10	120	10	3.4	2	16	TBPA (Back Turning) CTPA (Cut-off)	LRIS-4*10PW(A)	CLR-15S(A)
	5199195	5199161	12	●	●	12	12		12		0			LRIS-4*12PW(A)	
	5199203	5199179	16	●	●	16	16		16					LRIS-4*10(B)	
	5459540	5459557	20F	◎	◎	20	20	80	20					LRIS-4*10(B)	LLR-25S(B)
Figure.2		5884945	CH-TBPA ^{R/L} 16		◎	16	16	120	16	28	—	—	TBPA (Back Turning)	LRIS-4*10(B)	LLR-25S(B)
		5884952	20		◎	20	20		20	32					

GTMH32 type grooving insert ***GX chipbreaker***

*The first 3D chipbreaker in all over the world
for 32 size triangle shaped type insert*



- Typical problems with conventional grooving tools
- Don't you have worries as the following?

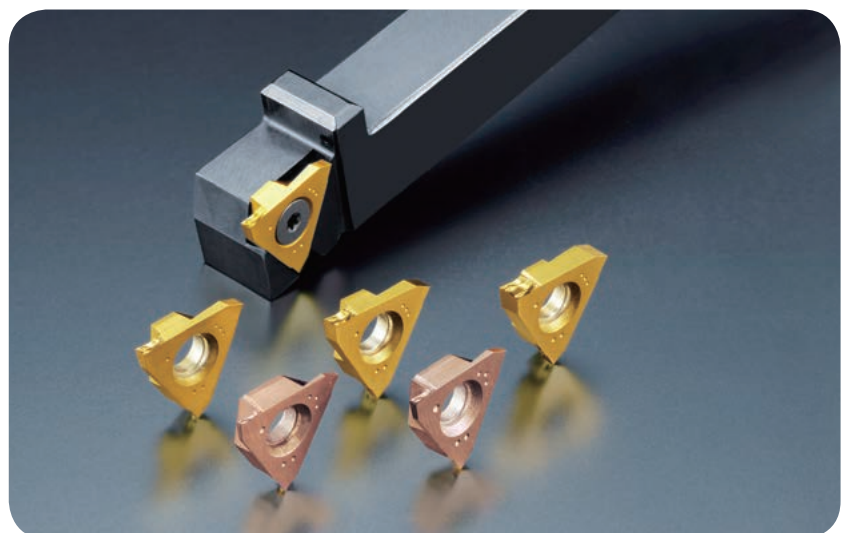


Chips remain at the bottom of groove



Bird's nest of chips

- GX Chipbreaker eliminates these issues.
- Solve the problems like chips remain at the bottom of groove and the bird's of chips.



※1 NTK adopted the world's first 3D chipbreaker in triangle shaped type insert in 32 size. An internal investigation on 5/26/2014.

Features

1 Center bump and dent design improve chip control !

Helps chip shape curl&control.
Excellent surface finish at grooving.

※ Chipbreaker geometry grooving width 1.5mm~.

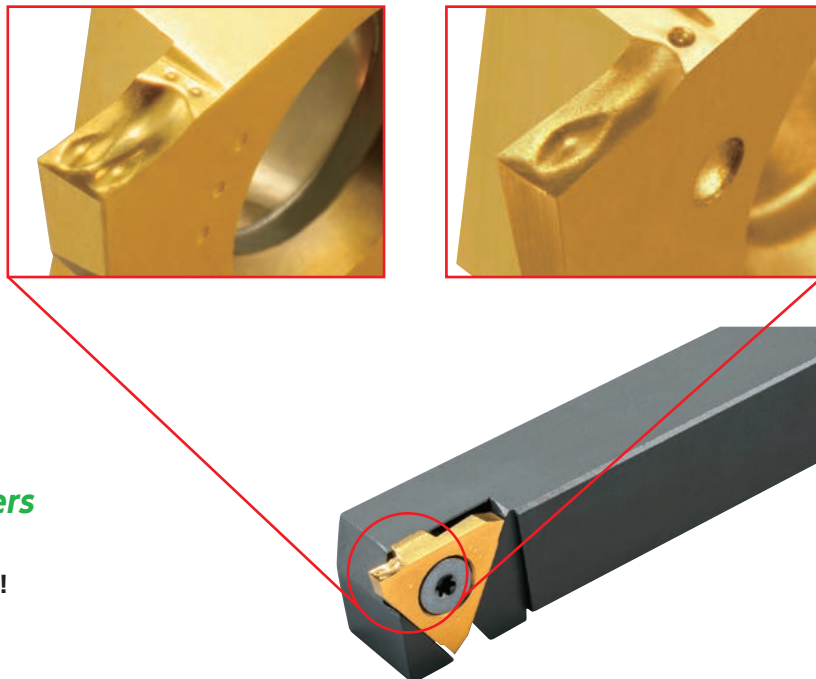
※ Chipbreaker geometry grooving width ~1.0mm.

2 Traversing is available !

Chip control performance at side turning improved, (MAX.ap~2.0mm).

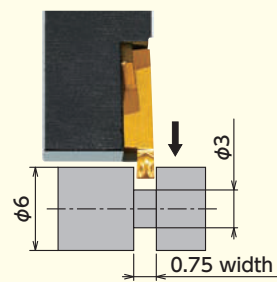
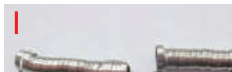
3 Outer periphery polishing offers excellent surface finish !

Sharpness equal to ground chipbreaker !

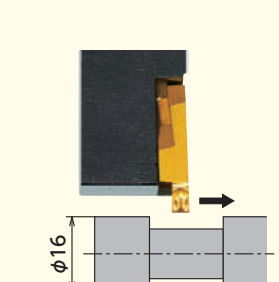


Chip control

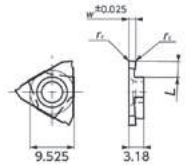
Grooving (Assumed snapping grooving)

		Feed (mm /rev) Length : 3mm		
		0.01	0.03	0.05
GX chipbreaker				
				
Work material : X5CrNi18-10 ($\phi\ 6 \Rightarrow \phi\ 3$) $V_c = 80\text{m/min}$ $a_p = 1.5\text{mm}$ Width : 0.75mm				

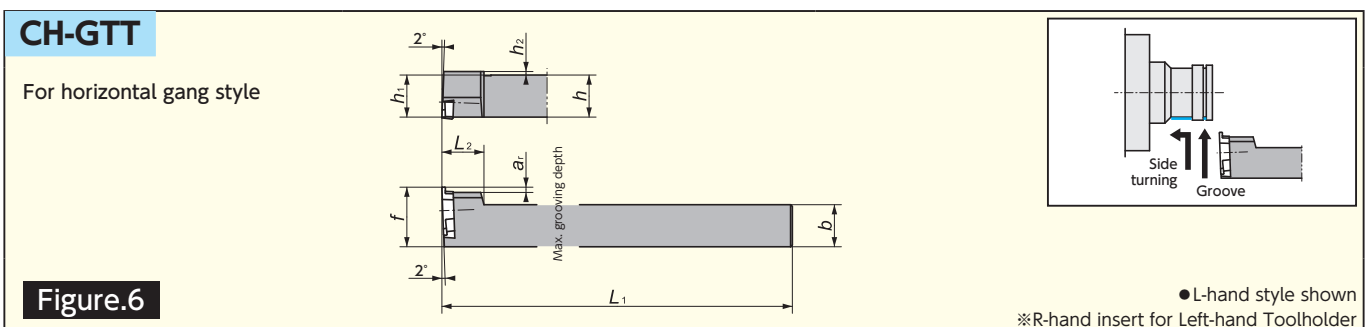
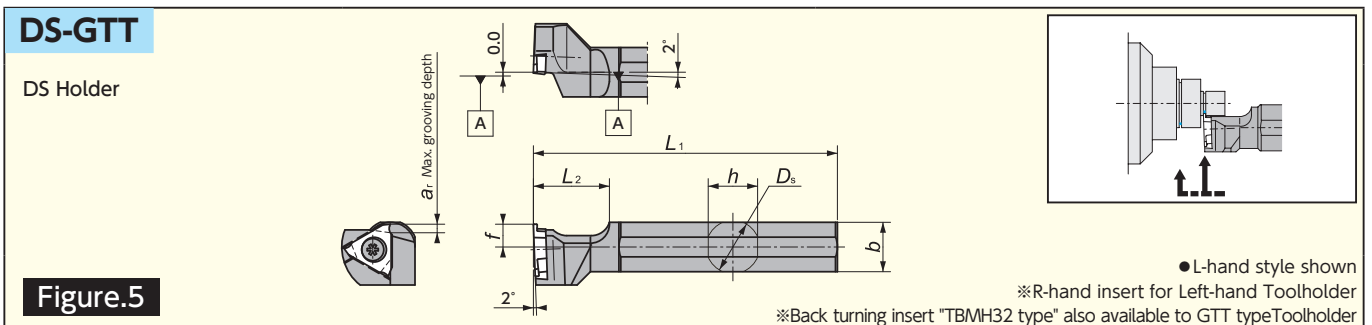
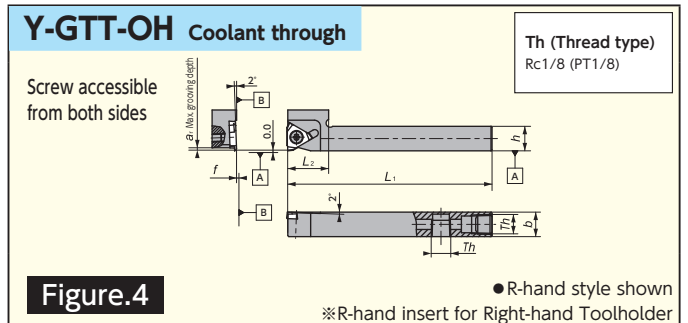
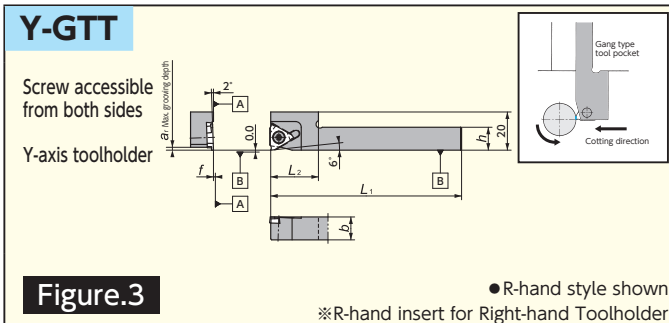
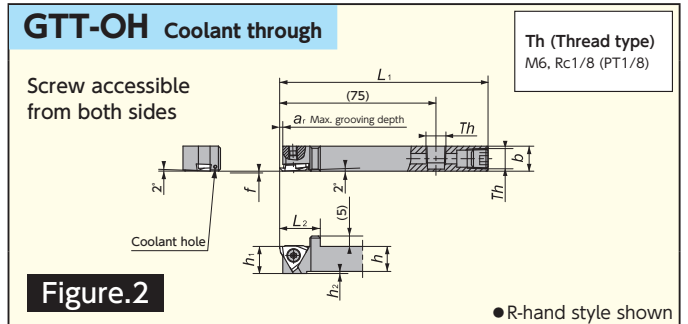
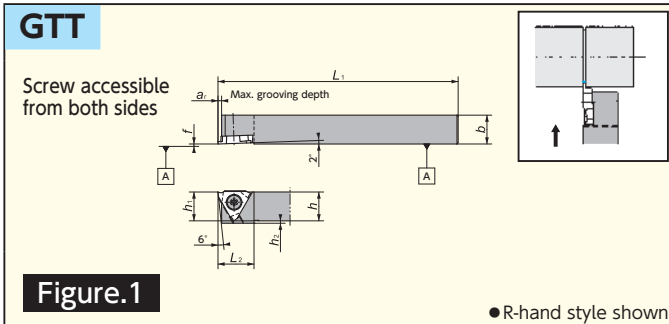
GX chipbreaker surface finish by side turning

	D.O.C. at side turning (mm)	Surface finish	End face at the groove
	2.0		
Work material : C45E V _c =80m/min f =0.05mm /rev WET Insert : DM4GTMH32150RGX Holder : GTTR12K00			

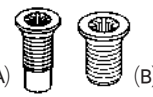
Standard Stock Items

Shape	Description	Dimensions (mm)					PVD coated carbide			
		w	L	r _e	Max. groove depth	Traversing	TM4	Stock	DM4	Stock
 (Chipbreaker geometry) Front rake angle:17° Side rake angle:14° ● R-hand style shown	GTMH32075RGX	0.75	2.0	0.05	1.6	0.75	5910765	●	5910898	●
	095RGX	0.95				1.50	5922224	●	5922216	●
	100RGX	1.00					5910815	●	5910906	●
	100RGX01						5910823	●	5910963	●
	150RGX	1.50	3.0	0.05	2.7	2.00	5910740	●	5910914	●
	150RGX01			0.1			5910849	●	5910971	●
	150RGX02			0.2			5910864	●	5910997	●
	200RGX			0.05			5910732	●	5910930	●
	200RGX01	2.00		0.1			5910856	●	5910989	●
	200RGX02			0.2			5910872	●	5911003	●
	300RGX	3.00		0.05			5910724	●	5910948	●
	300RGX02			0.2			5910880	●	5911011	●

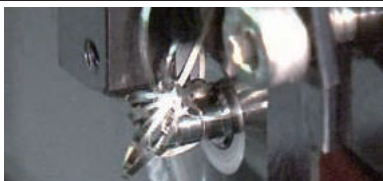
Holder



Toolholder Dimensions

Shape	CodeNo.		Toolholder	Stock		dimension (mm)												Width (mm) w	Parts	
	R	L		R	L	h	b	L ₁	h ₁	f	L ₂	a _r	h ₂	D _s	Th	Screw	Wrench			
																				
Figure.1	5107305	5107313	GTT ^R / _L 08F00	○	○		8	80									0.3 3.00	Right-hand : LR-S-4*10PW (A) Left-hand : LR-S-4*5.8 (B)	CLR-15S (A)	
	5608682		0810F00	○		8	10		8				5			LR-S-4*10PW (A)				
	5107206	5107214	08K00	○	○		8	120										Right-hand : LR-S-4*10PW (A) Left-hand : LR-S-4*5.8 (B)		
	5608690		0810K00	○			10													
	5107321	5107339	10F00	●	○	10	10	80	10				3							
	5107222	5107230	10K00	●	○			120												
	5107347	5107354	12F00	●	○	12	12	80	12				1							
	5107248	5107255	12K00	●	○			120												
	5459896	5551387	16H00	●	○	16	16	100	16											
	5173687	5173679	16K00	●	○			120												
	5530852	5780317	20K00	○	○	20	20	125	20	0	15		0	—	—					
	5780309	5780291	25M00	○	○	25	25	150	25											
	5107362	5107370	10F15	○	○	10	10	80	10				3							
	5107263	5107271	10K15	○	○			120												
	5537220	5537147	12F15	○	○	12	12	80	12				1			1.45 3.00				
	5537246	5537162	12K15	○	○			120												
	5537261	5537188	16H15	○	○	16	16	100	16			2.7	0							
	5537287	5537204	16K15	○	○			120												
	5107388	5107396	10F25	○	○	10	10	80	10				3							
	5107289	5107297	10K25	○	○			120												
	5537238	5537154	12F25	○	○	12	12	80	12				1			2.5 3.00				
	5537253	5537170	12K25	○	○			120												
	5537279	5537196	16H25	○	○	16	16	100	16				0							
	5537295	5537212	16K25	○	○			120												
Figure.2	5921705		GTT ^R / _L 1012H00-OH	●		10	12	100	10	0	19.5	1.6	1	—	M6×1	0.3 3.00	LR-S-4*10PW (A)	CLR-15S (A)		
	5890157		12H00-OH	●		12			12				0		Rc1/8 (PT1/8)					
	5921713		16H00-OH	●		16	16		16											
Figure.3	5371604		Y-GTT ^R / _L 10S	○		10	10	120	—	0	20	1.6	—	—	—	0.3 ~ 3.00	LR-S-4*10PW (A)	CLR-15S (A)		
	5371620		12S	○		12	12													
Figure.4	5911466		Y-GTTR12H00S-OH	○		12	12	100	12	0	20	1.6	—	—	Rc1/8 (PT1/8)	0.3 ~ 3.00	LR-S-4*10PW (A)	CLR-15S (A)		
	5911474		16H00-OH	○		16	16		16		25									
Figure.5		5348560	DS-GTT ^R / _L 14F		○	13	13	80						14.000	—	0.3 3.00	LR-S-4*9 (B)	RLR-20S (B)		
		5348081	15H		○	15	15	100						15.875						
		5341532	16X		○			95						16.000						
		5278288	19		○	18	18			6				19.050						
		5278304	20		●	19	19	120			20	1.6	—	20.000						
		5324041	22		●	21	21							22.000						
		5483433	25-MET		●	24	24	150		10				25.000						
		5317144	25		●	24	24	120		10				25.400						
Figure.6		5659248	CH-GTT ^R / _L 10H00		○	10	10	100	10	15	12	1.5	3	—	—	0.3 ~ 3.00	LR-S-4*9 (B)	RLR-20S (B)		
		5659255	12H00		○	12	12		12	17			1							

GX and conventional insert (ground type) chipbreaker comparison in same cutting condition.

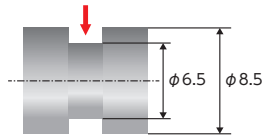
GX chipbreaker	Conventionalr
 No tangled chips	 Tangled chips
Work material : C45E $V_c = 80\text{m/min}$ $f = 0.05\text{mm}$ Insert : -DM4 GTMH32075RGX	

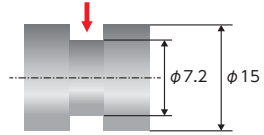
Recommended cutting conditions

Work Material		Free-cutting steel	Carbon steel	Alloy steel	Stainless steel		Titanium alloy
		11SMn30	C35E C45E	20CrS4 34CrMoS4	X8CrNiS18-9 X14CrMoS17	X5CrNi18-10 X105CrMo17	6AL-4V-Ti
Recommended Insert grade	1	DM4					
	2	TM4					
Cutting speed V_c (m/min)		50 100 200	50 90 150	50 90 180	40 70 100	50 70 100	
Feed f (mm/rev) ① f at grooving ② f at turning	width (mm)	0.75	① 0.02~0.08 ② 0.01~0.08 (Max.ap 0.75)		① 0.02 ~ 0.07 ② 0.01 ~ 0.08 (Max.ap 0.75)		① 0.02~0.08 ② 0.01~0.08 (Max.ap 0.75)
		1.0	① 0.02~0.08 ② 0.01~0.08 (Max.ap 1.5)		① 0.02 ~ 0.07 ② 0.01 ~ 0.1 (Max.ap 1.5)		
		1.5	① 0.03~0.08 ② 0.03~0.1 (Max.ap 2.0)		① 0.03 ~ 0.07 ② 0.02 ~ 0.1 (Max.ap 2.0)		
		2.0 ~	① 0.03 ~ 0.2 ② 0.03 ~ 0.1 (Max.ap 2.0)				

※Above cutting condition is for external grooving. For internal grooving, set both cutting speed and feed 20% lower.

Application example

Workmaterial X105CrMo17	GX chipbreaker	Competitor PVD coated carbide
Cutting speed (m/min)	100-130	←
Feed (mm/rev)	0.06	←
Grooving depth (mm)	0.95	←
Coolant	WET	←
 Description -DM4 GTMH32150RGX		
GX chipbreaker	300pcs/corner	
Competitor PVD coated carbide	200pcs/corner	
• NTK GX chipbreaker adopted 3D mold chipbreaker. It resulted in good chip control, good surface finish, and high dimensional accuracy. Compared with competitor's, NTK GX chipbreaker achieved 1.5 times longer tool life. (Evaluation from the user)		

Workmaterial X29CrS13	GX chipbreaker	Conventionalr PVD coated carbide
Cutting speed (m/min)	80-165	←
Feed (mm/rev)	0.025	←
Grooving depth (mm)	0.3	←
Coolant	WET	←
 Description -DM4 GTMH32075RGX		
GX chipbreaker	Stable machining.	
Competitor PVD coated carbide	 Bird's nest of chips!!	
• Using the current tool, the chip unexpectedly got the bird's nest of chips and defective products have occurred. • NTK GX chipbreaker adopted 3D mold chipbreaker. It performed good chip evacuation, prevented from the bird's nest of chips. Stable machining achieved. (Evaluation from the user)		

MEMO

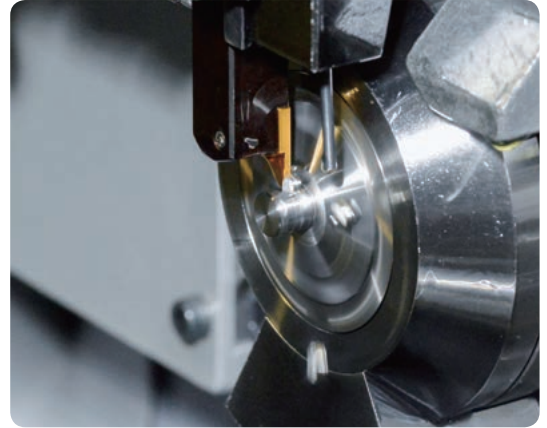
NTK

CX chipbreaker

CTP-CX to cut off the troubles

Features

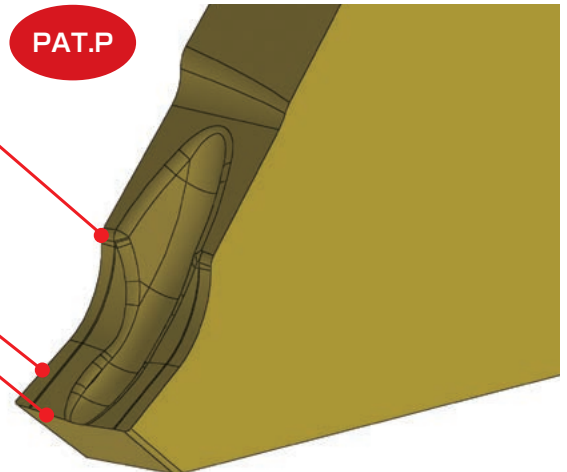
- **New 3D molded chipbreaker on CTP style**
- **Excellent chip control and straight-line stability by proprietary designed CX chipbreaker.**
- **Fold chips strongly from both ends and get superior machined surface finish**



1 Fold chips from both ends strongly.

2 Up-sharp edge as ground inserts (15°)

3 2 steps V shape for keep nose-R shape and fold chips.



Chip control performance

Don't you have worries as the following?



Bird's nest of chips



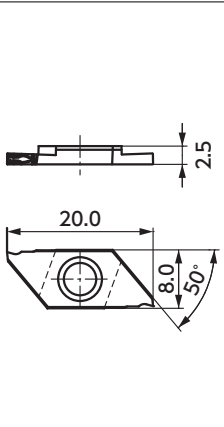
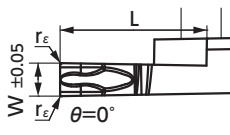
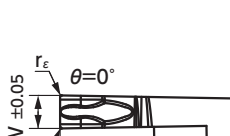
Overflowing from chips cans

CX chipbreaker	Conventional chipbreaker

Great improvement

CTP-CX

Applicable insert

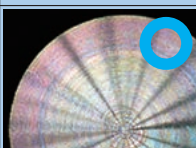
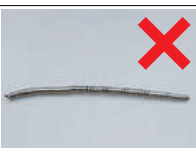
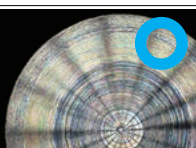
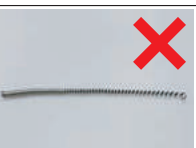
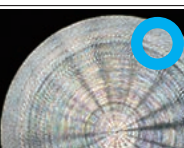
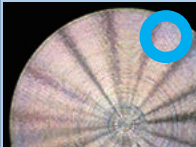
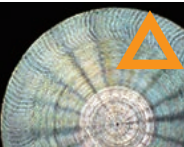
		Part number	Hand	Max. cut off diameter (mm) ϕD	Dimensions (mm)				PVD coated micrograi carbide	
					w	L	θ	r_ϵ	DM4	Stock
 ● R-hand shown		CTP13FRN-CX	Right hand	12.0	1.3	6.7	0°	0.05	5965710	○
		CTP13FRN02-CX		12.0	1.3			0.2	5965686	○
		CTP15FRN-CX		12.0	1.5			0.05	5957725	●
		CTP15FRN02-CX		12.0	1.5			0.2	5957717	●
		CTP13FLN-CX	Left hand	12.0	1.3	6.7	0°	0.05	5965702	○
		CTP13FLN02-CX		12.0	1.3			0.2	5965694	○
		CTP15FLN-CX		12.0	1.5			0.05	5957733	●
		CTP15FLN02-CX		12.0	1.5			0.2	5957741	●

Holder dimension

Fig.	Code No.		Toolholder	Stock		Max. cut off diameter (mm) ϕD	Dimensions (mm)						Applicable insert	Parts	
	R	L		R	L		h	b	L ₁	h ₁	h ₂	f		Screw	Wrench
Fig.1	5131362	5131354	CTP ^{R/L} 08	○	○	12.0※	8		120	8	4		CTP CTP-X CTPX	LRIS-4*10PW (A)	CLR-15S (A)
	5873849	5893458	10H	●	●		10	10	100	10	2				
	5089644	5089636	10	●	●				120						
	5459730	5459748	12GX	●	●		12	12	85	12					
	5089651	5089669	12	●	●				120						
	5089677	5089685	13	○	○		13	13		13	0			LRIS-4*12PW (A)	CLR-15S (A)
	5459755		16H	●			16	16	100	16					
	5183496	5183504	16	●	●				120						
Fig.2	5921853	5921861	CTP ^{R/L} 1012H-OH	●	●	12.0※	10	10		12	4.475		CTP CTP-X CTPX	LRIS-4*12PW (A)	CLR-15S (A)
	5918651	5918040	12H-OH	●	●		12	12	100		1.3				
	5921879	5921887	16H-OH	●	●		16	16		16	0				
Fig.3	5571831		CTP ^{R/L} 08-SUB	○		12.0※	8	8	120	8	4		CTP-FR (N) (V) (NV) CTP-FRX (FRNX) CTPX-FR (N)	LRIS-4*5 (B)	LLR-25S (B)
	5607999		08J-SUB	○					110						
	5391610		10F-SUB	●			10	10	80	10	2				
	5605282		10KX-SUB	●					120						
	5474580		12GX-SUB	●			12	12	85	12	0				
	5391628		12-SUB	●					120						
Fig.4		5570791	CTP ^{R/L} 08-SUB		○	12.0※	8	8	120		4		CTP-FLK CTP-FLKV CTP-FLN CTP-FLNV CTPX-FLN CTPX-FLNX	LRIS-4*5 (B)	LLR-25S (B)
		5608005	08J-SUB		○				110						
		5499389	10GX-SUB		●		10	10		10	2				
		5482534	12GX-SUB		●		12	12	85	12	0				

※Would be changed by insert

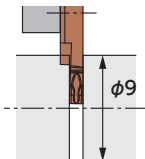
Case study

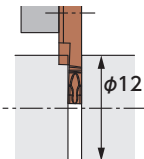
Feed f (mm/rev)	CX chipbreaker		Conventional (ground chipbreaker)		Competitor (3D chipbreaker)	
	Chip	Surface finish	Chip	Surface finish	Chip	Surface finish
0.02						
0.05						
	Excellent machined surface finish		Rough surface finish		Vibration occurs by low rigidity	
Cutting condition : $v_c=80$ m/min WET Work material : X5CrNi18-10 $\phi 8$ Holder : CTPR12 Insert : DM4CTP15FRN-CX						

Recommended cutting conditions

Work Material	Free-cutting steel	Carbon steel	Alloy steel	Stainless steel		Titanium alloy	Aluminum alloy
	11SMn30 9SMnP628	C35E C45E	20CrS4 34CrMoS4	X8CrNiS18-9 X14CrMoS17	X5CrNi18-10 X105CrMo17	6AL-4V-Ti	AlMg5 Al-Mg1SiCu
Cutting speed v_c (m/min)	50 90 150				40 70 100	30 50 70	100 150 200
Feed f (mm/rev)	0.02 0.04 0.06				0.02 0.03 0.05	0.02 0.03 0.05	0.03 0.05 0.08

Application example

Workmaterial SUM24L	CX chipbreaker	Competitor
Cutting speed (m/min)	170	←
Feed (mm/rev)	0.07	←
Nose-R	0.2	0.02
Coolant	WET	←
 Description DM4CTP15FRN-CX		
CX chipbreaker	6,000 pcs/corner	
Competitor	3,000 pcs/corner	
• NTK CX chipbreaker adopted 3D molded chipbreaker. Compared with competitor's insert, NTK CX chipbreaker offered 2.0 times longer tool life, good surface finish and excellent sharpness. Evaluation from the user		

Workmaterial KM57(Soft-magnetic stainless steel)	CX chipbreaker	Conventional (ground chipbreaker)
Cutting speed (m/min)	180	120
Feed (mm/rev)	0.06	0.05
Nose-R	0.05	←
Coolant	WET	←
 Description DM4CTP15FRN-CX		
CXブレーカ CX chipbreaker	5,100 pcs/corner	
従来品 Conventional	1,900 pcs/corner	
• CX chipbreaker offered about 2.7 times longer tool life compared with conventional tool. It performs good chip evacuation, good surface finish.		
Evaluation from the user		

SPLASH Series Coolant through toolholders

Be Cool, Be Splash!

WATCH ON
YouTube



Features

- Evacuates chips away from the cutting edge
- Reduces cutting tool temperature and helps keep the edge sharp
- Y-axis toolholders are available
- Improves part tolerance by steady coolant supply to the edge

Square Shank Toolholders



Front Turning

Insert	CC.. insert		DC.. insert	
	SCLC-OH		SDJC-OH	Y-SDJC-OH
Holder				
Insert	VB.. insert		VC.. insert	
	SVJB-OH		SDJC-OH	Y-SDJC-OH
Holder				

Back Turning

Insert	TBP insert
	TBP-OH
Holder	
Insert	TBP insert
	Y-TBP-OH
Holder	
Insert	TBPA insert
	CTPA-OH
Holder	

Cut Off

Insert	CTP insert	CTPA insert
	CTP-OH	CTPA-OH
Holder		

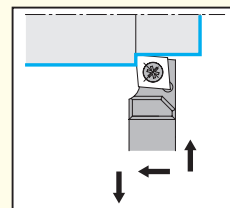
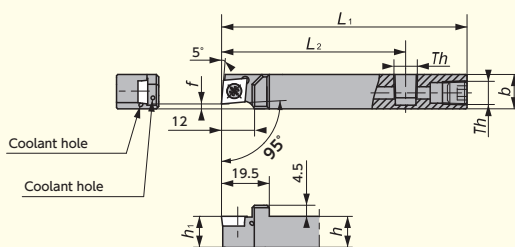
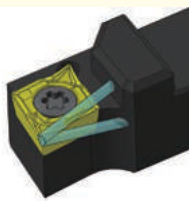
Grooving / Side Turning

Insert	GTM.. insert	GTPA.. insert	
	GTT-OH	Y-GTT-OH	Y-GTPA-OH
Holder			

Stock list

For Front turning

SCLC-N-OH



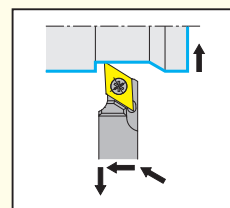
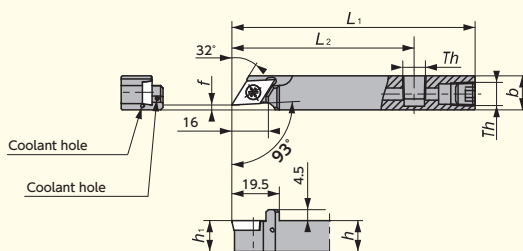
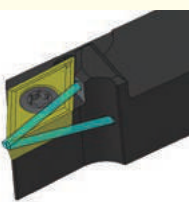
● R-hand shown

Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts		
			<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂	<i>Th</i>		Clamp screw	Wrench	Screw parts※1
5905740	SCLCR1014F09N-F02OH	●	10	14	80	10		55	M6×1	CC109T3	LRIS-4*10	LLR-25S	SS0606SC
5905732	1214H09N-F02OH	●	12			12	2.0						SPR1/8
5905658	1616H09N-F02OH	●	16	16	100	16		75	Rc1/8(PT1/8)				

※1 Wrench for screw parts is not attached. Use commercial 3.0 hexagon wrench and 5.0 hexagon wrench to SS0606SC and SPR1/8 respectively.

SDJC-N-OH



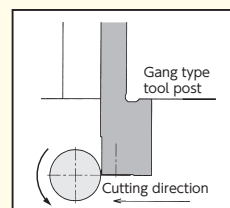
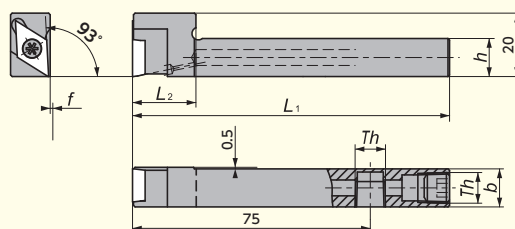
● R-hand shown

Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts		
			<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂	<i>Th</i>		Clamp screw	Wrench	Screw parts※1
5903208	SDJCR1014F11N-F02OH	●	10	14	80	10		55	M6×1	DC111T3	LRIS-4*10	LLR-25S	SS0606SC
5886254	1214H11N-F02OH	●	12			12	2						SPR1/8
5903216	1616H11N-F02OH	●	16	16	100	16		75	Rc1/8(PT1/8)				

※1 Wrench for screw parts is not attached. Use commercial 3.0 hexagon wrench and 5.0 hexagon wrench to SS0606SC and SPR1/8 respectively.

Y-SDJC-OH



● R-hand shown
● Takes Right-hand or Neutral insert

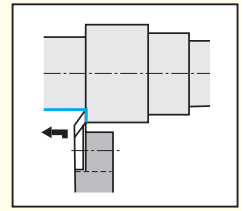
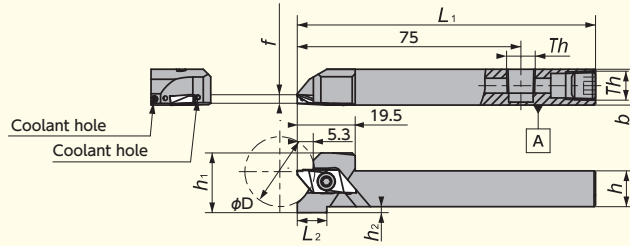
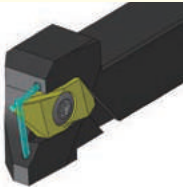
Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts		
			<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂	<i>Th</i>		Clamp screw	Wrench	Screw parts※1
5910575	Y-SDJCR1212H11S-OH	○	12	12	100	—	0	20	Rc1/8(PT1/8)	DC111T3	LRIS-4*10	LLR-25S-20*65	SPR1/8
5910583	1616H11-OH	○	16	16				25					

※1 Wrench for screw parts is not attached. Use commercial 5.0 hexagon wrench

For Back turning

TBP-OH



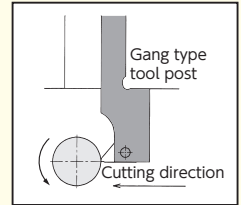
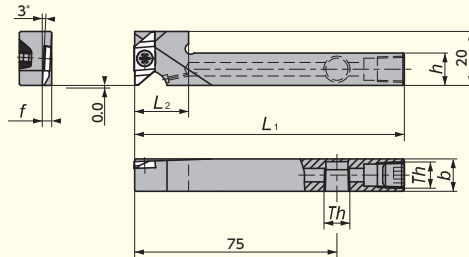
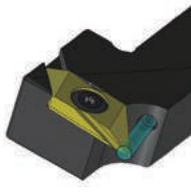
● R-hand shown

Holder dimension • Spare parts

Code No.	Toolholder	Stock	Max. bore Dia. (mm) ϕD	Dimensions (mm)								Applicable insert	Spare parts		
				h	b	L_1	h_1	f	L_2	h_2	Th		Clamp screw	Wrench	Screw parts※1
5925722	TBPR1012H-OH	◎	25	10	12	100	10	3.5	19	4	M6×1				
5925730	12H-OH	◎	25	12			10		2	Rc1/8 (PT1/8)					
5925748	16H-OH	◎	35	16			16		0	0					

※1 Wrench for screw parts is not attached. Use commercial 3.0 hexagon wrench and 5.0 hexagon wrench to SS0606SC and SPR1/8 respectively.

Y-TBP-OH



● R-hand shown
● Takes Right-hand Insert

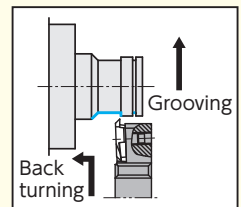
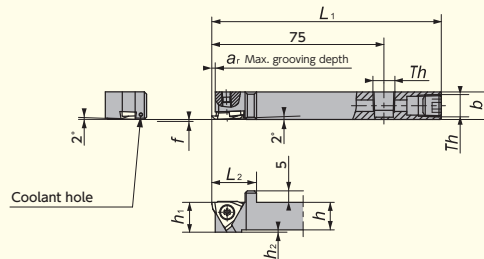
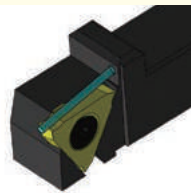
Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)								Applicable insert	Spare parts		
			h	b	L_1	h_1	f	L_2	h_2	Th		Clamp screw	Wrench	Screw parts※1
5911508	Y-TBPR12HS-OH	◎	12	12	100	—	3.5	20	—	Rc1/8 (PT1/8)	TBP	LRIS-4*12PW	CLR-15S	SPR1/8
5911516	16H-OH	◎	16	16				25						

※1 Wrench for screw parts is not attached. Use commercial 5.0 hexagon wrench

For Grooving

GTT-OH



● R-hand shown

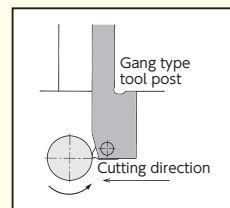
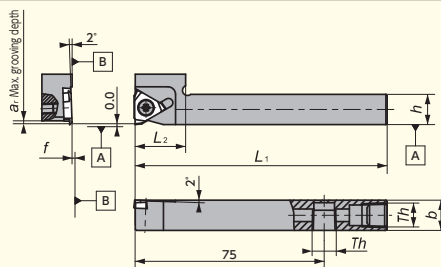
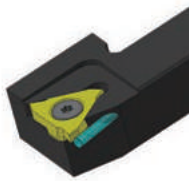
Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)								Applicable insert	Spare parts			
			h	b	L_1	h_1	f	L_2	a_r	h_2		Th	Clamp screw	Wrench	Screw parts※1
5921705	GTTR1012H00-OH	●	10	12	100	10	0	19.5	1.6	1	M6 × 1				SS0606SC
5890157	12H00-OH	●	12	12		0				Rc1/8 (PT1/8)	SPR1/8				
5921713	16H00-OH	●	16	16		16				0					

※1 Wrench for screw parts is not attached. Use commercial 3.0 hexagon wrench and 5.0 hexagon wrench to SS0606SC and SPR1/8 respectively.

For Grooving

Y-GTT-OH



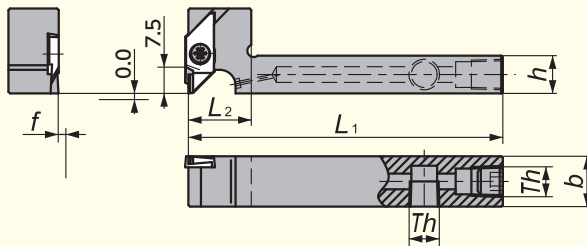
- R-hand shown
- Takes Right-hand Insert

Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)									Applicable insert	Spare parts		
			h	b	L ₁	h ₁	f	L ₂	a _r	h ₂	Th		Clamp screw	Wrench	Screw parts※1
5911466	Y-GTTR12H00S-OH	◎	12	12	100	—	0	20	1.6	—	Rc1/8 (PT1/8)	GTM 32	LR-S-4*10PW	CLR-15S	SPR1/8
5911474	16H00-OH	◎	16	16				25							

※1 Wrench for screw parts is not attached. Use commercial 5.0 hexagon wrench

Y-GTPA-OH



- R-hand shown

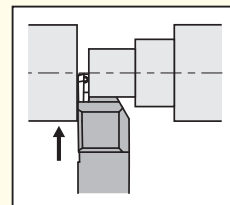
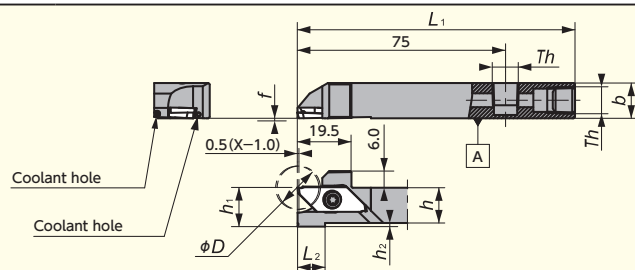
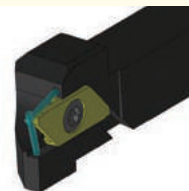
Holder dimension • Spare parts

Code No.	Toolholder	Stock	Dimensions (mm)							Applicable insert	Spare parts		
											Clamp screw	Wrench	Screw parts※
			<i>h</i>	<i>b</i>	<i>L</i> ₁	<i>h</i> ₁	<i>f</i>	<i>L</i> ₂	<i>Th</i>				
5911482	Y-GTPAR1216HS-OH 1216H-OH		12	16	70	—	0.1	20	Rc1/8 (PT1/8)	GTPA	LRIS-4 * 12PW	CLR-15S	SPR1/8
5911490			16					25					

※1 Wrench for screw parts is not attached. Use commercial 5.0 hexagon wrench

For Cut off

CTP-OH



- R-hand shown

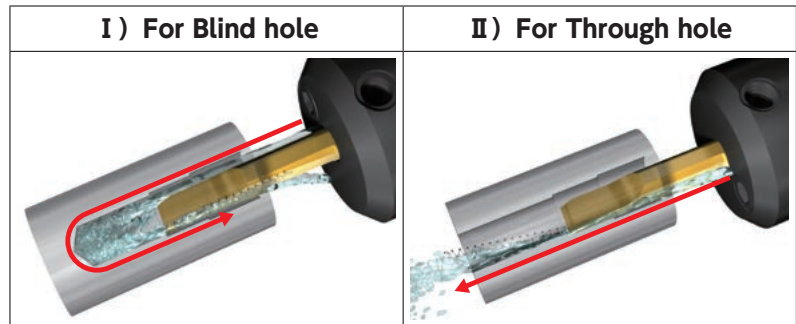
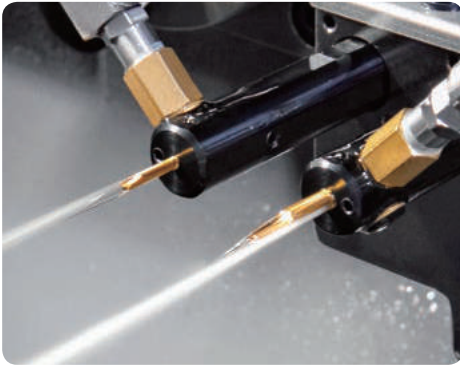
Holder dimension • Spare parts

Code No.		Toolholder	Stock		Max. Cut-off Dia. ϕD	Dimensions (mm)							Applicable insert	Spare parts		
R	L		R	L		h	b	L ₁	h ₁	h ₂	L ₂	f	Th	Clamp screw	Wrench	Screw parts※1
5921853	5921861	CTP 1012H-OH	●	●	12	10	12	100	10	4	19	0.0	CTP	LRIS-4*12PW	CLR-15S	SS0606SC
5918651	5918040	12H-OH	●	●		12	12		12	2	10					
5921879	5921887	16H-OH	●	●		16	16		16	0	—					

※1 Wrench for screw parts is not attached. Use commercial 3.0 hexagon wrench and 5.0 hexagon wrench to SS0606SC and SPR1/8 respectively.

ID Tooling Toolholders

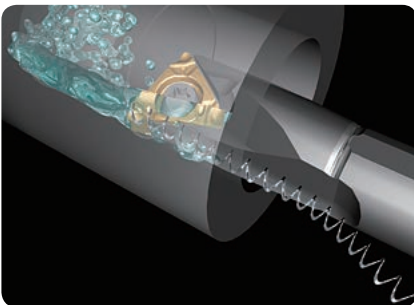
STICK DUO Series with Adjustable Overhang Mechanism



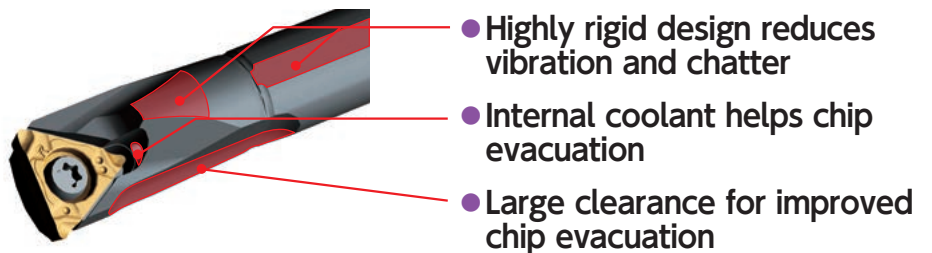
Features

- Good chip control evacuation in ID machining
- Three way coolant connection
- Can choose 2-way coolant direct
- Adjustable overhang length

Mogul Bar Series

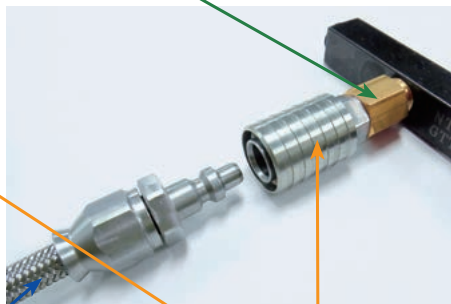
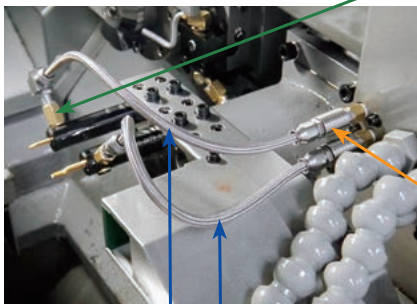


Features



Quick-Change Coolant Components

③ Conversion / Extension Joint



① Plug-in Style Flexible Hose

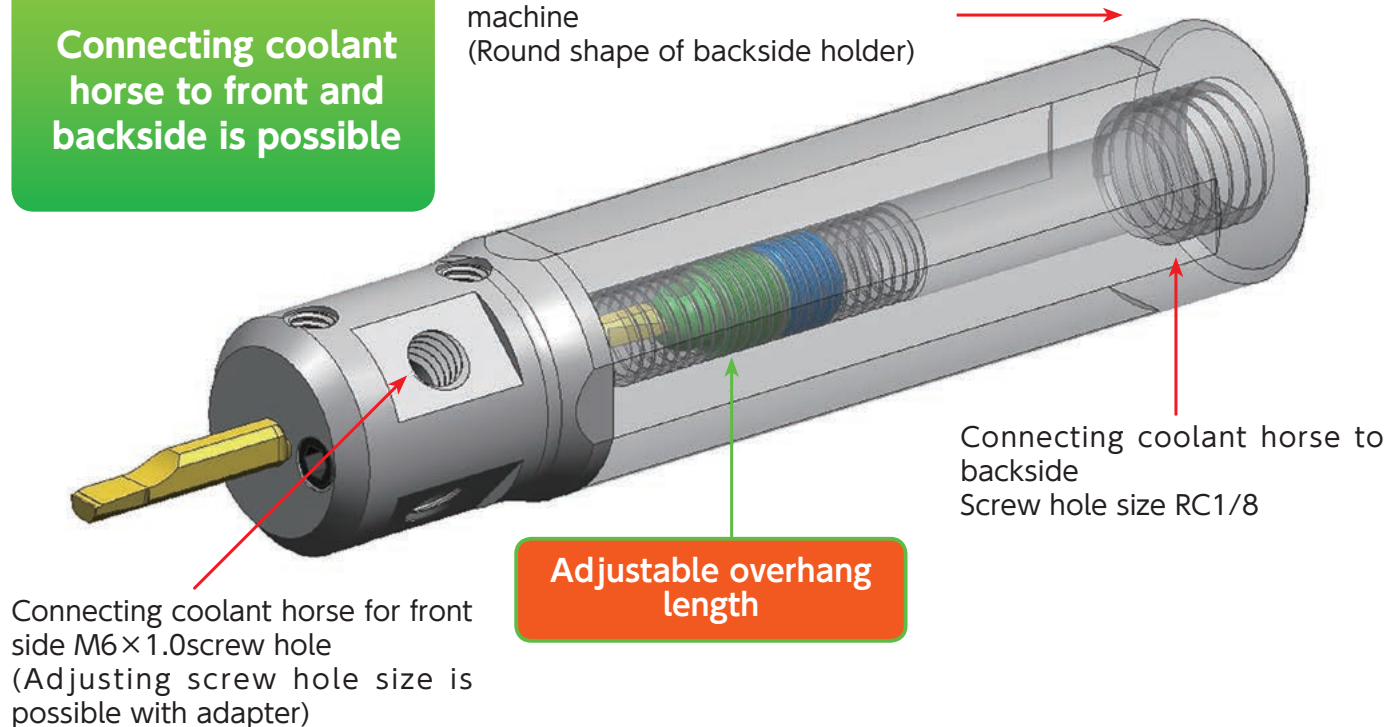
② Quick Change Coupling

- Up to 20.6MPa
- High quality flexible stainless steel braided hose
- Reduce machine down time

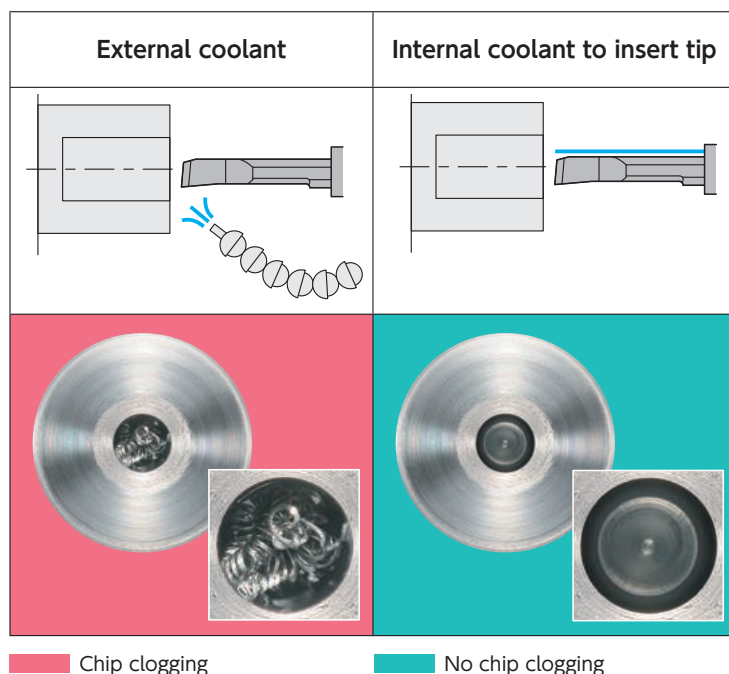
Structure

Connecting coolant horse to front and backside is possible

Designed for using with coolant fed machine
(Round shape of backside holder)



Machined work piece comparison



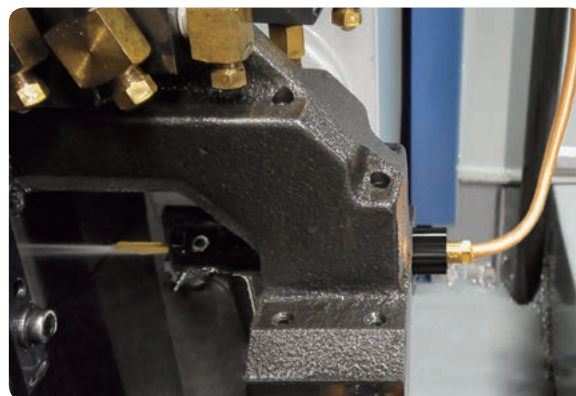
Work material : 34CrMoS4
 Insert : SHFS040R005S
 Cutting speed : $V_c=50\text{m/min}$
 D.O.C. : $a_p=0.2$
 Feed : $f=0.02\text{mm/rev}$
 Hole depth : 15mm
 Pilot hole : $\phi 5.1 \times 28\text{L}$
 Coolant pressure : 5MPa

Picture for jointing coolant horse

Frontside jointed



Backside jointed



STICK DUO sleeve (HY-NBH-OH type)

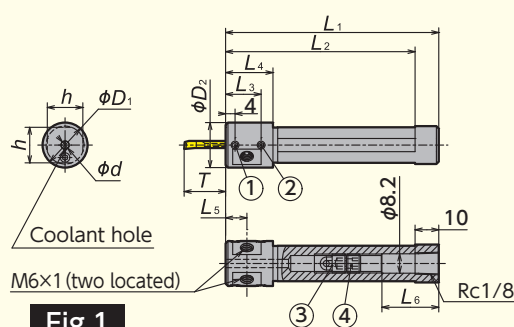


Fig.1

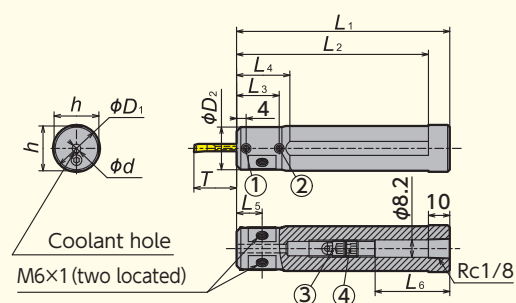
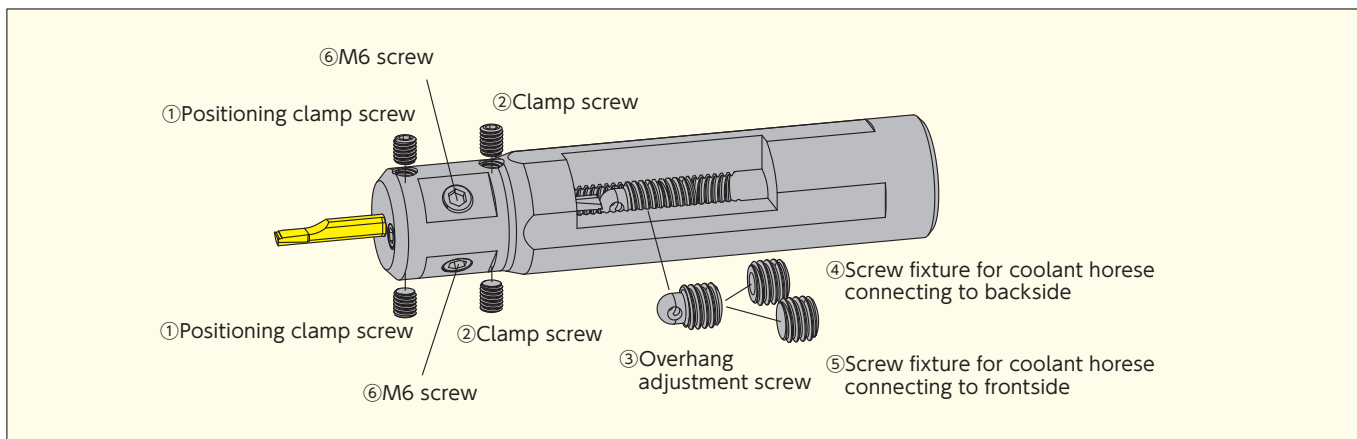


Fig.2

Shape	Code No.	Stock	Holder number	Dimensions (mm)											Overhang length of bar T (mm)	
				I.D. ϕ d	ϕ D ₁	ϕ D ₂	h	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	Min.	Max.	
Fig.1	5893011	◎	HY-NBH02016G-OH	2	16	19	15	90	80	15	19	9.5	29	5	18	
	5893029	◎	02516G-OH	2.5									30	6.3	19.5	
	5893037	◎	03016G-OH	3									31	7.5	21	
	5893045	◎	03516G-OH	3.5						20	24	12	23	8.8	24.5	
	5893052	◎	04016G-OH	4									24	10	28	
	5893060	◎	05016G-OH	5									16	12.5	35	
Fig.2	5893078	◎	HY-NBH02019J-OH	2	19.05	19.05	18	110	100	15	—	9.5	49	5	18	
	5893086	◎	02519J-OH	2.5									50	6.3	19.5	
	5893094	◎	03019J-OH	3									51	7.5	21	
	5893102	◎	03519J-OH	3.5									43	8.8	24.5	
	5893136	◎	04019J-OH	4						20	—	12	44	10	28	
	5893144	◎	05019J-OH	5									36	12.5	35	
	5893151	◎	HY-NBH02020J-OH	2	20	20	19	110	100	15	—	9.5	49	5	18	
	5893169	◎	02520J-OH	2.5									50	6.3	19.5	
	5893177	●	03020J-OH	3									51	7.5	21	
	5893185	●	03520J-OH	3.5									43	8.8	24.5	
	5893193	●	04020J-OH	4						20	—	12	44	10	28	
	5893201	●	05020J-OH	5									36	12.5	35	
	5893219	◎	HY-NBH02022X-OH	2	22	20	21	120	110	15	25	9.5	59	5	18	
	5893227	◎	02522X-OH	2.5									60	6.3	19.5	
	5893235	●	03022X-OH	3									61	7.5	21	
	5893243	●	03522X-OH	3.5									53	8.8	24.5	
	5893250	●	04022X-OH	4						20	25	12	54	10	28	
	5893268	●	05022X-OH	5									46	12.5	35	
	5893276	◎	HY-NBH02025.0K-OH	2	25.0	20	24	125	115	15	25	9.5	64	5	18	
	5893284	◎	02525.0K-OH	2.5									65	6.3	19.5	
	5893292	●	03025.0K-OH	3									66	7.5	21	
	5893300	●	03525.0K-OH	3.5									58	8.8	24.5	
	5893318	●	04025.0K-OH	4						20	25	12	59	10	28	
	5893326	●	05025.0K-OH	5									51	12.5	35	
	5893334	◎	HY-NBH02025.4K-OH	2	25.4	20	24	125	115	15	25	9.5	64	5	18	
	5893367	◎	02525.4K-OH	2.5									65	6.3	19.5	
	5893375	◎	03025.4K-OH	3									66	7.5	21	
	5893383	◎	03525.4K-OH	3.5									58	8.8	24.5	
	5893391	◎	04025.4K-OH	4						20	25	12	59	10	28	
	5893409	◎	05025.4K-OH	5									51	12.5	35	

Dimension "T" show overhang length of STICKDUO(hyper) bar when attached to sleeve with adjustment screw ③,④.

Parts



Holder number	Clamp screw		Overhang adjustment			M6 screw	Wrench		
	①	②	③	④※1	⑤※2	⑥	①、②	③、④、⑤	⑥
HY-NBH 020○○-OH									
025○○-OH									
030○○-OH	SS04045FS	SS0406F	SS0811R-OH	SS0806F-OH (Through hole)	SS0806F	SS0605SC	LW-2	LW-4*104	LW-3
035○○-OH									
040○○-OH									
050○○-OH									

※1 Select screw ④ to connect coolant hoses to backside

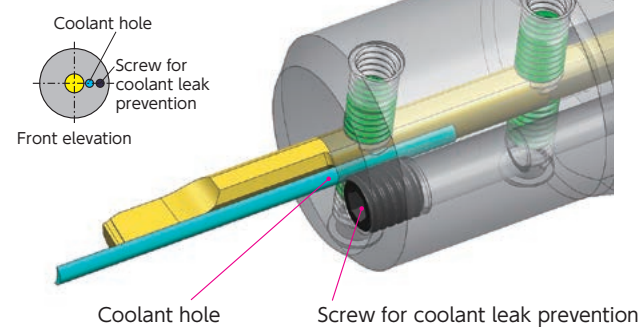
※2 Select screw ⑤ to connect coolant hoses to frontside

How to set bar in the sleeve when internal coolant to insert tip or to insert backside

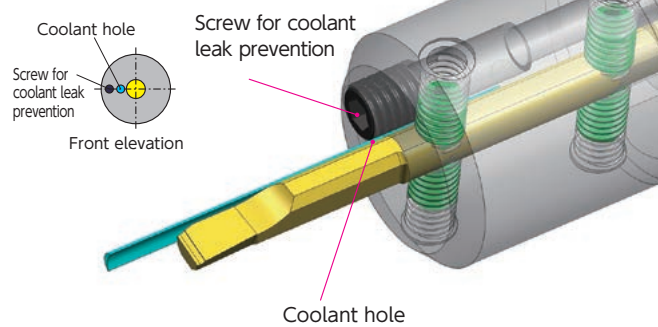
By rotating sleeve up side down, you can select the coolant output position

Coolant hole located in screw side for coolant leak prevention. See the following about the details.

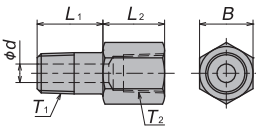
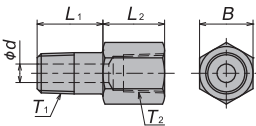
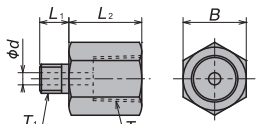
① Coolant to insert tip



② Coolant to insert backside



Conversion / Extension Joint

	Code No.	Stock	Spare parts	Dimensions (mm)					
				T ₁	T ₂	L ₁ ※1	L ₂	B	d
	5891049	◎	SCJ-R1/8-M10-L	R1/8 (PT1/8)	M10×1	16	12	13	4.5
	5891056	◎	1/8-RC1/8-L		Rc1/8 (PT1/8)		15		
	5891064	◎	1/8-NPT1/8-L		NPT1/8				
	5892906	◎	SCJ-M6-M10	M6×1	M10×1	6		12	2.5
	5892914	◎	SCJ-M6-RC1/8		Rc1/8 (PT1/8)			13	
	5892922	◎	SCJ-M6-NPT1/8		NPT1/8				
	5892948	◎	SCJ-R1/8-M10	R1/8 (PT1/8)	M10×1	10		12	4.5
	5892963	◎	SCJ-R1/8-NPT1/8		NPT1/8			13	

※1 To prevent hitting the coolant connecting part of holder from the gang tool post, "L1" dimension length is set longer.
NPT: ANSI/ASME B.1.20...1-1983(National Taper Pipe)

Joint

G1/8 external thread (30°) R1/8
JOINT-ST-R1/8

G1/8 external thread (30°) R1/8
JOINT-AN-R1/8

G1/8 external thread (30°) R1/8
JOINT-ST-R1/8

G1/8 external thread (30°) R1/8
JOINT-AN-R1/8

Coupling

Rc1/8 internal thread Plug **PLUG-RC1/8**

Coupling **COUP-R1/8**

Rc1/8 internal thread Plug **PLUG-RC1/8**

Coupling **COUP-R1/8**

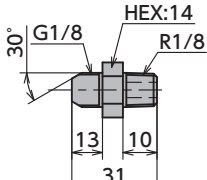
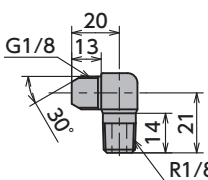
Connect to Holder or Machine

Connect to Holder or Machine

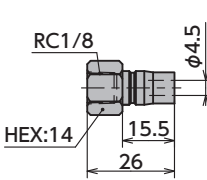
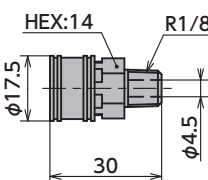
Suitable use of Coupling and Joint

- Detach Hose frequently
⇒ Coupling is suitable
- Less detach Hose
⇒ Joint is suitable

■ Conversion joint (nut G1/8 internal thread)

Parts	Straight style	L style
P/N	JOINT-ST-R1/8	JOINT-AN-R1/8
Code No.	5918966	5923412
Working pressure MAX.(MPa)	20.6	20.6
Shape		

■ Coupling

Parts	Plug	Coupling
P/N	PLUG-RC1/8	COUP-R1/8
Code No.	5915491	5915517
Working pressure MAX.(MPa)	7.5	7.5
Shape		

Mogul Bar

High rigidity boring bars



Features of MogulBar

POINT 1,2

Reduced chatter
by high rigidity and minimum width of flat face

POINT 4

All MogulBar have coolant hole
Perfect for blind hole

POINT 3

Good chip control
by large chip pocket

Minimum bore diameter ϕ 5.0mm~

注) 1 : Recommended internal coolant for over 20mm deep hole.

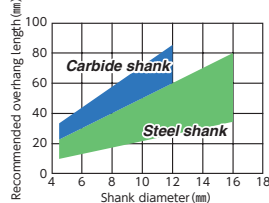
2 : Recommended to seal the coolant hole with silicon or plastic, if the coolant through is not used.

Recommended overhang length

Steel shank $L/D \leq 5$

Carbide shank $L/D \leq 7$

※ L : Overhang length
D : Shank diameter



[Example of cutting condition]

Work material : Alloy steel • Stainless steel

$v_c=80\text{m/min}$, $f=0.05 \sim 0.10\text{mm/rev}$, $a_p=0.1 \sim 0.5\text{mm (D.O.C.)}$

Marking

Designed to be useful !

- Overhang length scale
Good workability



- Holder number
Specified minimum bore diameter
ex. D10 $\Rightarrow \phi 10$

- Applicable clamp screw number
Check on clamp screw number

	Rigidity analysis ※1	Vibration analysis ※2
MogulBar	Reduce flexure by 20% Stress relaxation	Good attenuation performance
Conventional boring bar	NTK conventional boring bar Stress concentration	Comp. boring bar

注 : Overhang length $L/D=5$

※ 1 : Principal force directions=100N

※ 2 : Acceleration test by same impactive force

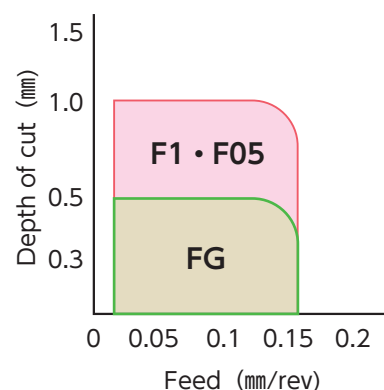
MogulBar : S08H-STUPR09D10-OH

"F chipbreaker series"

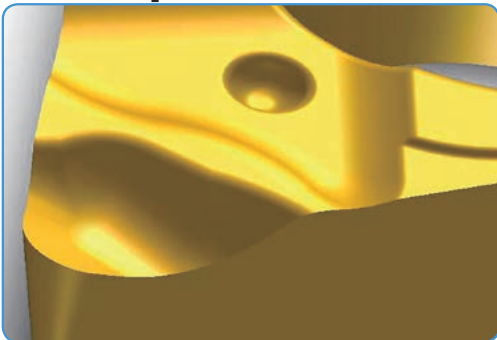
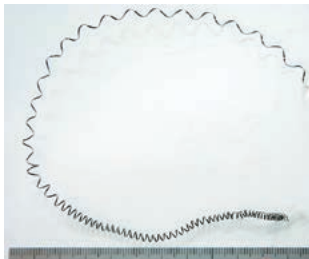
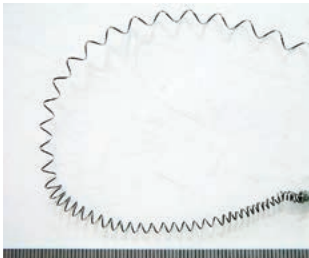
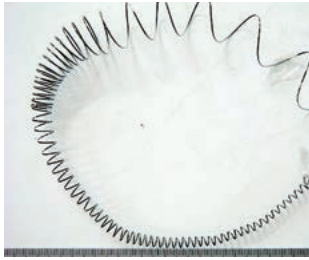
"F chipbreaker" allows chips to be disposed to opposite direction from feed.
Combination of F chipbreaker and MogulBar achieve the best performance.



■ Chip control range of "F chipbreaker"



Features of "F chipbreaker"

Insert	D.O.C (mm)	Feed (mm/rev)	
		0.05	0.1
FG chipbreaker  • Perfect for finishing • Applicable for low depth of cut (~ 0.5mm) • Cut cleanly with excellent sharp edge	0.1		
	0.3		
F1 • F05 chipbreaker  • For wide cutting condition range • Cut cleanly with ground chipbreaker	0.5		
※FG • F1 • F05 chipbreaker, R-hand inserts fit to R-hand toolholder.		[Cutting condition] Work material : 34CrMoS4 Bore diameter : $\phi 12$ Cutting speed : $v_c = 80\text{m/min}$ Holder : S10K-STUPR11D12-OH Insert : TPGH110304 Type External coolant Depth : 20mm	

MBR style

Screw clamp type bore diameter $\Phi 5 \sim$ Steel shank / Carbide shank

Steel shank(tapered type)

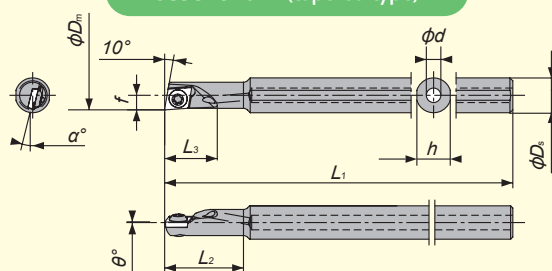
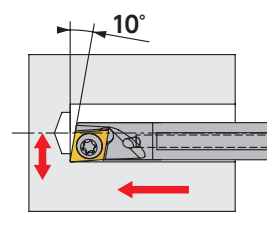


Fig. 1

Boring + Face



Carbide shank (straight type)

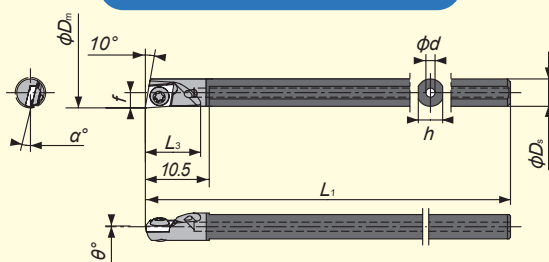


Fig. 2

Carbide shank (tapered type)

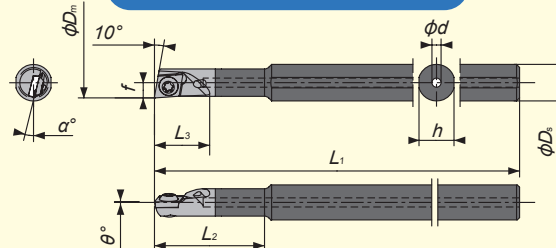


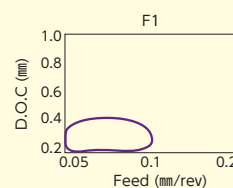
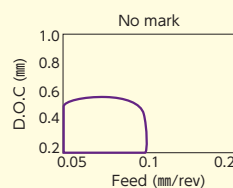
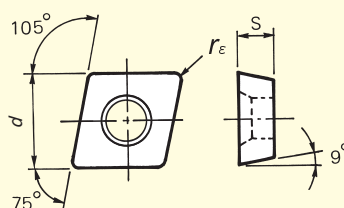
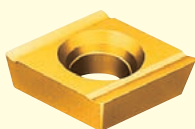
Fig. 3

- R-hand shown
- * L-hand insert for R-hand toolholder

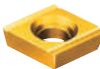
	Code No.	Holder number	Stock	Min. bore Dia. (mm)	Dimensions (mm)										Std. corner radius (mm)	Shape	Applicable insert	Spare Parts	
	R		R	ϕD_m	ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	r_ϵ			Clamp screw	Wrench
Steel shank (with coolant hole)	5789888	S06F-MBRD05-OH	◎	5.0	6.0	5.7	80	2.5	13.5	9	-	2.5	0°	-13°	0.15	Fig.1	MBL	LR-S-2*3.5	CLR-13S
Carbide shank (with coolant hole)	5789896	C045F-MBRD05-OH	◎	5.0	4.5	4.0	80	2.5	-	9	-	1.5	0°	-13°	0.15	Fig.2	MBL	LR-S-2*3.5	CLR-13S
	5789904	C06F-MBRD05-OH	◎		6.0	5.7			18	9	-					Fig.3			

Applicable insert

MBL style



● L-hand shown

Shape	Insert number	Dimensions (mm)			PVD coated carbide	
		d	s	r_ϵ	ZM3	TM4
 L-hand shown	MBL005FL	3.6	1.0	0.05	◎	◎
	MBL015FL			0.15	◎	◎
 F1 * R-hand shown	MBL005FRF1	3.6	1.0	0.05		◎
	MBL015FRF1			0.15		◎

※For F1 chipbreaker, R-hand inserts fit to R-hand toolholder.
 □ is sharp edge.

SEXR style

Screw clamp type bore diameter $\Phi 6 \sim$ Steel shank / Carbide shank

Steel shank(tapered type)

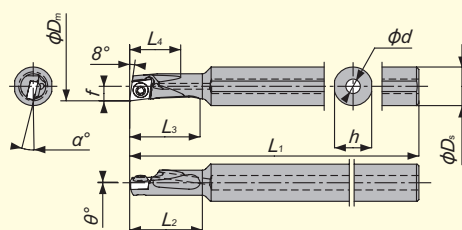


Fig. 1

Boring + Face

Carbide shank (straight type)

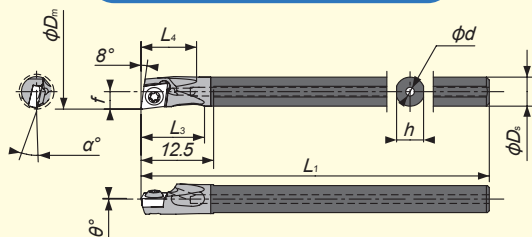


Fig. 2

Carbide shank (tapered type)

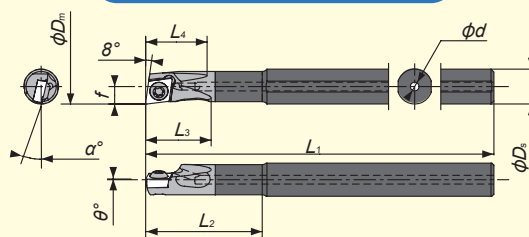


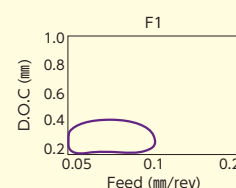
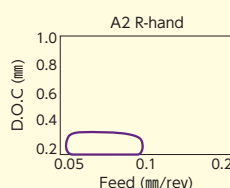
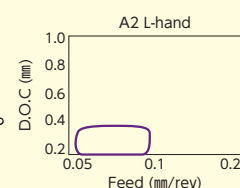
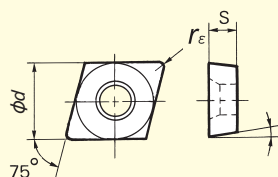
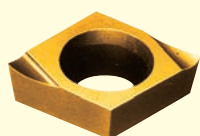
Fig. 3

● R-hand shown
* L-hand insert for R-hand toolholder

	Code No.		Holder number	Stock		Min. bore Dia. (mm)	Dimensions (mm)										Std. corner radius (mm) r_e	Shape	Applicable insert	Spare Parts	
	R	L		R	L		ϕD_m	ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ	α			Clamp screw	Wrench
Steel shank (with coolant hole)	5789912		S08G-SEXR R/L T3D06-OH	◎		6.0	8.0	7.7	90	3.0	15	15	10	3.0	0°	-13°	0.2	Fig.1	ERGHT301	LR-S-2*3.7	CLR-13S
Carbide shank (with coolant hole)	5789920		C05G-SEXR R/L T3D06-OH	◎		6.0	5.0	4.0	90	3.0	-	11	10	1.5	0°	-13°	0.2	Fig.2	ERGHT301	LR-S-2*3.7	CLR-13S
	5789938		C06G-SEXR R/L T3D06-OH	◎		6.0	6.0	5.7	90	3.0	20							Fig.3			

Applicable insert

ERGH style



● R-hand shown

Shape	Insert number	Old insert number	Dimensions (mm)			PVD coated carbide			Cermet	
			ϕd	s	r_e	ZM3	VM1	TM4	T15	C7X
A2 ^{※1} L-hand shown	ERGHT30102FR/LA2	ERGP52Y-FR/L--A2	3.97	1.6	0.2	◎	◎	◎	◎	◎
	ERGHT30104FR/LA2	ERGP521-FR/L--A2			0.4	◎		◎		
F1 ^{※2} R-hand shown	ERGHT30101FR/F1	—	3.97	1.6	0.1			◎		
	ERGHT30102FR/F1	—			0.2			◎		
	ERGHT30104FR/F1	—			0.4			◎		

※1 Applicable for low depth of cut with right hand A2 chipbreaker.

※2 For F1 chipbreaker, R-hand inserts fit to R-hand toolholder.

◎ is sharp edge.

SCLP style

Screw clamp type bore diameter $\phi 7 \sim$ Steel shank / Carbide shank

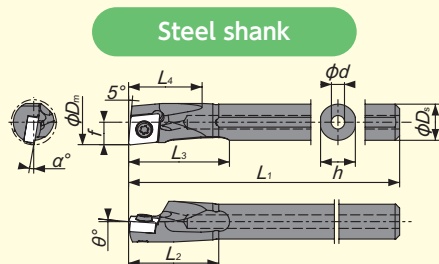


Fig. 1

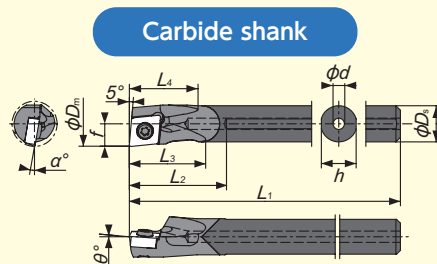
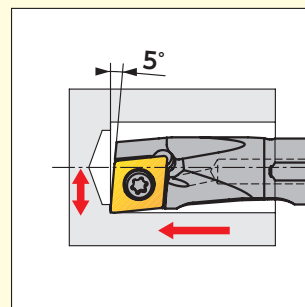
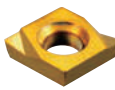


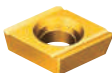
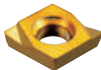
Fig. 2



- R-hand shown

- * L-hand insert for R-hand toolholder

	Code No.		Holder number	Stock		Min. bore Dia. (mm)	Dimensions (mm)										Std. corner radius (mm) r_c	Shape	Applicable insert	Spare Parts	
																				Clamp screw	Wrench
	R	L		R	L		ϕD_m	ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ			α		
Steel shank (with coolant hole)	5770029		S06F-SCLPR/L04D07-OH	◎		7.0	6.0	5.75	80	3.5	14	17.0	12.0	2.5	-9° +5° -10°	0.2	Fig.1	CP○○0401	LR-S-2*3.7	CLR-13S	
	5770037		S07G-SCLPR/L04D08-OH	◎		8.0	7.0	6.75	90	4.0	16	19.5	13.5	3.0				CP○○0602	LR-S-2.5*6	CLR-15S	
	5770045		S08H-SCLPR/L06D10-OH	◎		10.0	8.0	7.7	100	5.0	20	22.0	16.0	3.0				CP○○0602	LR-S-2.5*6	CLR-15S	
Carbide shank (with coolant hole)	5770136		C06H-SCLPR/L04D07-OH	◎		7.0	6.0	5.75	100	3.5	15.5	11.5	12.0	2.0	-9° +5° -10°	0.2	Fig.2	CP○○0401	LR-S-2*3.7	CLR-13S	
	5770151		C07J-SCLPR/L04D08-OH	●		8.0	7.0	6.75	110	4.0	17.5	13.0	13.5	2.0				CP○○0602	LR-S-2.5*6	CLR-15S	
	5770169		C08K-SCLPR/L06D10-OH	◎		10.0	8.0	7.7	125	5.0	21.5	16.5	15.0	2.5				CP○○0602	LR-S-2.5*6	CLR-15S	

Shape	Insert number	Old insert number	Dimensions (mm)			PVD coated carbide		Cermet	
			I.C.	Thickness	Corner radius	ZM3	TM4	C7X	N40
 ※1 AM3	CPGT060201FNXAM3		6.35	2.38	0.1			⊙	
	CPGT060202FNXAM3				0.2			⊙	
 AM5	CPGH060202ENBAM5	CPGP83Y-ENB-AM5			0.2				⊙
	CPGH060202FNAM5	CPGP83Y-FN--AM5			0.2	⊙	⊙		
	CPMH060204-AM5	CPMP831-AM5			0.4				⊙
 A/A1 L-hand shown	CPGH040102F ^R / _L A1	CPGP62Y-F ^R / _L --A1	4.76	1.59	0.2	⓪	⓪		
	CPGH040104F ^R / _L A1	CPGP621-F ^R / _L --A1			0.4	⓪	⓪		
	CPGH060202F ^R / _L A	CPGP83Y-F ^R / _L --A	6.35	2.38	0.2	⓪	⓪		
	CPGH060204F ^R / _L A	CPGP831-F ^R / _L --A			0.4	⓪	⓪		
	CPGH040102T ^R / _L A1	CPGP62Y-T ^R / _L --A1	4.76	1.59	0.2			⓪	
	CPGH040104T ^R / _L A1	CPGP621-T ^R / _L --A1			0.4			⓪	
	CPGH060202T ^R / _L A	CPGP83Y-T ^R / _L --A	6.35	2.38	0.2			⓪	
	CPGH060204T ^R / _L A	CPGP831-T ^R / _L --A			0.4			⓪	
 S L-hand shown	CPGH040102R ^R / _L S		4.76	1.59	0.2				
	CPGH040104R ^R / _L S				0.4				
	CPGH060202R ^R / _L S		6.35	2.38	0.2				
	CPGH060204R ^R / _L S				0.4				
 F1 ※2 R-hand shown	CPGH040102F ^R / _L F1		4.76	1.59	0.2		R		
	CPGH040104F ^R / _L F1				0.4		R		
	CPGH060202F ^R / _L F1		6.35	2.38	0.2		Ⓜ		
	CPGH060204F ^R / _L F1				0.4		Ⓜ		

※1 For CPGT0602□□AM3 ,cramp screw change to LR-S-2.5*5.

※2 For F1 chipbreaker, R-hand inserts fit to R-hand toolholder.

☐ is sharp edge.

STUC (P) style

Screw clamp type bore diameter $\Phi 8 \sim$ Steel shank / Carbide shank

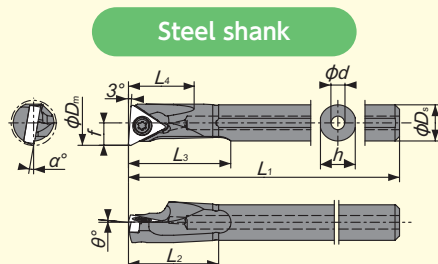


Fig. 3

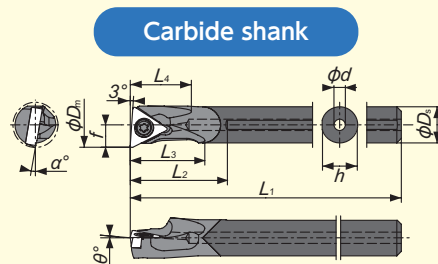
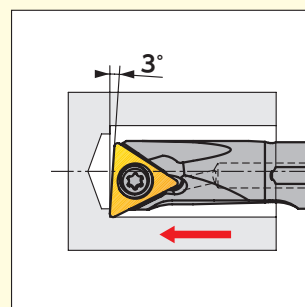


Fig.4



- R-hand shown

- * L-hand insert for R-hand toolholder

	Code No.		Holder number	Stock		Min. bore Dia. (mm)	Dimensions (mm)										Std. corner radius (mm) <i>r_e</i>	Shape	Applicable insert	Spare Parts	
																				Clamp screw	Wrench
	R	L		R	L		ϕD_m	ϕD_s	<i>h</i>	<i>L</i> ₁	<i>f</i>	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄	ϕd	θ			α		
Steel shank (with coolant hole)	5769971		S07G-STUPR $\frac{1}{2}$ 06D08-OH			8.0	7.0	6.75	90	4.0	16	19.5	12.5	2.5	0°	-11°	0.2	Fig.3	TC $\bigcirc\bigcirc$ 0601	LR-S-2*4.4	CLR-13S(A)
	5769989		S08H-STUPR $\frac{1}{2}$ 09D10-OH			10.0	8.0	7.7	100	5.0	20	22.5	14.5	3.0	+5°	-10°	0.4	Fig.3	TP $\bigcirc\bigcirc$ 0902	LR-S-2.5*4.8	CLR-15S(A)
	5769997		S10K-STUPR $\frac{1}{2}$ 11D12-OH			12.0	10.0	9.6	125	6.0	24	27.5	18.5	3.5		-7.5°			TP $\bigcirc\bigcirc$ 1103	LR-S-3*5.8	RLR-20S(B)
	5770003		S12M-STUPR $\frac{1}{2}$ 11D14-OH			14.0	12.0	11.5	150	7.0	28	32.5	22.0	4.0		-5°					
	5770011		S16Q-STUPR $\frac{1}{2}$ 11D18-OH			18.0	16.0	15.4	180	9.0	32	42.5	28.5	5.0		-3°					
Carbide shank (with coolant hole)	5770094		C07J-STUPR $\frac{1}{2}$ 06D08-OH			8.0	7.0	6.75	110	4.0	17.5	13.0	12.5	2.0	0°	-11°	0.2	Fig.4	TC $\bigcirc\bigcirc$ 0601	LR-S-2*4.4	CLR-13S(A)
	5770102		C08K-STUPR $\frac{1}{2}$ 09D10-OH			10.0	8.0	7.7	125	5.0	21.5	16.5	14.5	2.5	+5°	-10°	0.4	Fig.4	TP $\bigcirc\bigcirc$ 0902	LR-S-2.5*4.8	CLR-15S(A)
	5770110		C10M-STUPR $\frac{1}{2}$ 11D12-OH			12.0	10.0	9.6	150	6.0	25.0	20.0	17.5	2.5		-7.5°			TP $\bigcirc\bigcirc$ 1103	LR-S-3*5.8	RLR-20S(B)
	5770128		C12M-STUPR $\frac{1}{2}$ 11D14-OH			14.0	12.0	11.5	150	7.0	29.0	23.0	21.5	3.0		-5°					

Shape	Insert number	Old insert number	Dimensions (mm)			PVD coated carbide			Cermet		PVD coated Cermet
			I.C.	Thickness	Corner radius	ZM3	VM1	TM4	C7X	T15	C7Z
 B1 L-hand shown	TCGH060102F $\frac{R}{L}$ B1	TCGP52Y-F $\frac{R}{L}$ --B1	3.97	1.59	0.2	(L)		(L)			
	TCGH060104F $\frac{R}{L}$ B1	TCGP521-F $\frac{R}{L}$ --B1			0.2	(L)		(L)			
	TCGH060102T $\frac{R}{L}$ B1	TCGP52Y-T $\frac{R}{L}$ --B1			0.2					⊙	
	TCGH060104T $\frac{R}{L}$ B1	TCGP521-T $\frac{R}{L}$ --B1			0.4					(L)	
 F05* R-hand shown	TCGH060101F $\frac{R}{L}$ F05	TCGP521CF $\frac{R}{L}$ --F05	3.97	1.59	0.1			(R)			
	TCGH060102F $\frac{R}{L}$ F05	TCGP52Y-F $\frac{R}{L}$ --F05			0.2	⊙	(R)	R			
	TCGH060104F $\frac{R}{L}$ F05	TCGP521-F $\frac{R}{L}$ --F05			0.4	(R)	(R)	R			
	TCGH060102T $\frac{R}{L}$ F05	TCGP52Y-T $\frac{R}{L}$ --F05			0.2				⊙		
	TCGH060104T $\frac{R}{L}$ F05	TCGP521-T $\frac{R}{L}$ --F05			0.4				⊙		
 B2 L-hand shown	TPGH090202F $\frac{R}{L}$ B2	TPGP73Y-F $\frac{R}{L}$ --B2	5.56	2.38	0.2	(L)		(L)			
	TPGH090204F $\frac{R}{L}$ B2	TPGP731-F $\frac{R}{L}$ --B2			0.4	(L)		(L)			
	TPGH090208F $\frac{R}{L}$ B2	TPGP732-F $\frac{R}{L}$ --B2			0.8	(L)		(L)			
	TPGH090204T $\frac{R}{L}$ B2	TPGP731-T $\frac{R}{L}$ --B2			0.4					(L)	
 K L-hand shown	TCGH060102F $\frac{R}{L}$ K		3.97	1.59	0.2						
	TCGH060104F $\frac{R}{L}$ K				0.4						
	TPGH090202F $\frac{R}{L}$ K		5.56	2.38	0.2						
	TPGH090204F $\frac{R}{L}$ K				0.4						
 F1 R-hand shown	TPGH090208F $\frac{R}{L}$ F1	TPGP73Y-F $\frac{R}{L}$ --F1	5.56	2.38	0.2	(R)	(R)	R			
	TPGH090204F $\frac{R}{L}$ F1	TPGP731-F $\frac{R}{L}$ --F1			0.4	(R)	(R)	R			
	TPGH090208F $\frac{R}{L}$ F1	TPGP732-F $\frac{R}{L}$ --F1			0.8	(R)		(R)			
	TPGH110302F $\frac{R}{L}$ F1	TPGH22Y-F $\frac{R}{L}$ --F1	6.35	3.18	0.2	(R)	(R)	(R)			
	TPGH110304F $\frac{R}{L}$ F1	TPGH221-F $\frac{R}{L}$ --F1			0.4	(R)	(R)	(R)			
	TPGH110308F $\frac{R}{L}$ F1	TPGH222-F $\frac{R}{L}$ --F1			0.8	(R)		(R)			
	TPGH090202T $\frac{R}{L}$ F1	TPGP73Y-T $\frac{R}{L}$ --F1	5.56	2.38	0.2				(R)		
	TPGH090204T $\frac{R}{L}$ F1	TPGP731-T $\frac{R}{L}$ --F1			0.4				(R)		
	TPGH110302T $\frac{R}{L}$ F1	TPGH22Y-T $\frac{R}{L}$ --F1	6.35	3.18	0.2				(R)		
	TPGH110304T $\frac{R}{L}$ F1	TPGH221-T $\frac{R}{L}$ --F1			0.4				(R)		
TPGH110308T $\frac{R}{L}$ F1	TPGH222-T $\frac{R}{L}$ --F1	0.8						(R)			
 FG* R-hand shown	TPGH090202 $\frac{R}{L}$ FG		5.56	2.38	0.2			R			(R)
	TPGH090204 $\frac{R}{L}$ FG				0.4			R			(R)
	TPGH110302 $\frac{R}{L}$ FG		6.35	3.18	0.2			R			(R)
	TPGH110304 $\frac{R}{L}$ FG				0.4			R			(R)

※ For F1・F05・FG chipbreaker, R-hand inserts fit to R-hand toolholder.

☐ is sharp edge.

SCLC style Screw clamp type bore diameter $\Phi 10 \sim$ Steel shank / Carbide shank

Steel shank

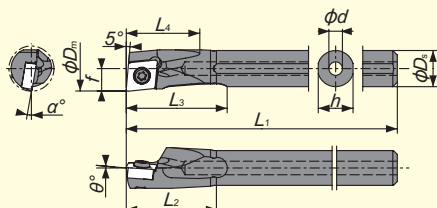


Fig.1

Carbide shank

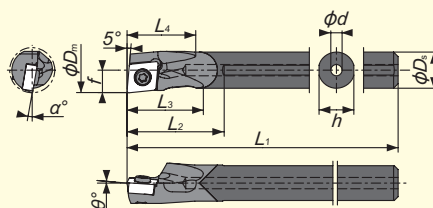
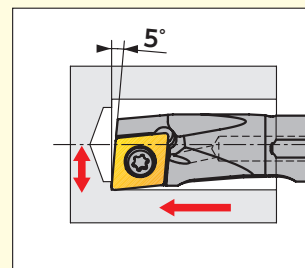
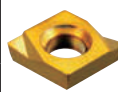
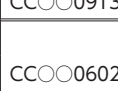
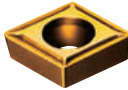


Fig.2



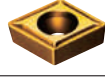
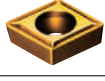
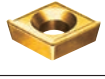
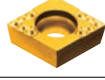
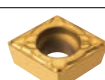
● R-hand shown
* L-hand insert for R-hand toolholder

	Code No.		Holder number	Stock		Min. bore Dia. (mm)	Dimensions (mm)										Std. corner radius (mm) r_e	Shape	Applicable insert	Spare Parts	
																				Clamp screw	Wrench
	R	L		R	L		ϕD_m	ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ			α		
Steel shank (with coolant hole)	5770052		S08H-SCLC $\Phi 10$ D10-OH			10.0	8.0	7.7	100	5.0	20.0	22.0	16.0	3.0	0°	-13°	0.4	Fig.1		LRIS-2.5*5	CLR-15S(A)
	5770060		S10K-SCLC $\Phi 10$ D12-OH			12.0	10.0	9.6	125	6.0	24.0	27.5	20.0	3.5		-11°					
	5770078		S12M-SCLC $\Phi 10$ D14-OH			14.0	12.0	11.5	150	7.0	28.0	32.5	23.0	4.0		-9°					
	5770086		S16Q-SCLC $\Phi 10$ D18-OH			18.0	16.0	15.4	180	9.0	36.0	42.5	30.0	5.0		-10°					
Carbide shank (with coolant hole)	5770185		C08K-SCLC $\Phi 10$ D10-OH			10.0	8.0	7.7	125	5.0	21.5	16.5	15.0	2.5	0°	-13°	0.4	Fig.2		LRIS-2.5*5	CLR-15S(A)
	5770193		C10M-SCLC $\Phi 10$ D12-OH			12.0	10.0	9.6	150	6.0	25.0	20.0	19.5	2.5		-11°					
	5770201		C12M-SCLC $\Phi 10$ D14-OH			14.0	12.0	11.5	150	7.0	29.0	23.5	22.5	3.0		-9°					

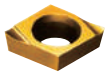
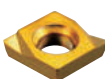
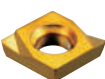
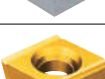
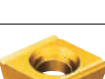
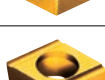
Shape	Insert number	Dimensions (mm)			PVD coated carbide						Cermet	PVD coated Cermet
		I.C.	Thickness	Corner radius	ZM3	QM3	VM1	TM4	DT4	DM4	C7X	C7Z
 AM3	CCGT060200FNAM3	6.35	2.38	0.03			○		○			
	CCGT060202FNAM3			0.2	○		○					
	CCGT060204FNAM3			0.4	○							
	CCGT060201FNXAM3			0.1							○	
	CCGT060202FNXAM3			0.2							○	
	CCGT060201MFNAM3			0.08		○						
	CCGT060202MFNAM3			0.18		○			○			
	CCGT060204MFNAM3			0.38		○			○			
	CCGT09T300FNAM3	9.525	3.97	0.03			○	●	○			
	CCGT09T302FNAM3			0.2		●	●					
	CCGT09T304FNAM3			0.4		●	●					
	CCGT09T301FNXAM3			0.1							○	
	CCGT09T302FNXAM3			0.2							○	
	CCGT09T304FNXAM3			0.4							○	
	CCGT09T301MFNAM3	9.525	3.97	0.08	○	●	○	●	○			
	CCGT09T302MFNAM3			0.18	○	●	○	●	○			
	CCGT09T304MFNAM3			0.38	○	●	○	●	○			
	CCMT060202FNAM3	6.35	2.38	0.2						○		
	CCMT060204FNAM3			0.4						○		
	CCMT09T302FNAM3	9.525	3.97	0.2						●		
	CCMT09T304FNAM3			0.4						●		
	CCMT09T308FNAM3			0.8						●		
	CCMT060202ENBAM3	6.35	2.38	0.2							○	○
	CCMT060204ENBAM3			0.4							○	○
	CCMT09T302ENBAM3	9.525	3.97	0.2							○	○
	CCMT09T304ENBAM3			0.4							○	○
	CCMT09T308ENBAM3			0.8							○	○
	CCMT09T312ENBAM3			1.2							○	○

Chipbreaker introduction

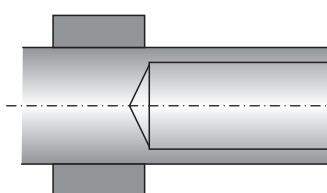
Mold chipbreaker

chipbreaker	Chipbreaker detail	Features	ER type	CC type	CP type	TC type	TP type
YL		●Great combination of sharpness and toughness ●Covers extremely wide range ●Excellent chip control	—		—	—	—
AM3		●Good at sharp edge and chip control, utility chipbreaker	—			—	—
AM5		●Good at sharp edge and chip control, utility chipbreaker	—			—	—
AZ7		●Good at chip control for low feed and low depth of cut	—		—	—	—
CL		●Wide range chip control range and cut cleanly	—		—	—	—
FG		●Offers good cutting edge and disposes chips backward by the rake angle set opposite from feed direction	—	—	—	—	
ZR		●Wide range chip control range for high speed low feed	—		—	—	—

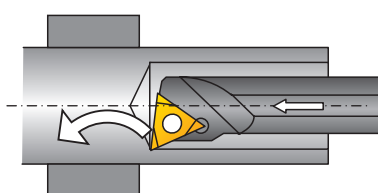
Ground chipbreaker

chipbreaker	Chipbreaker detail	Features	ER type	CC type	CP type	TC type	TP type
A • A1		●consist with edge strength and chip control	—	—		—	—
A2		●Good at chip control for Boring+Face ●Cut cleanly with large side rake angle		—	—	—	—
B1•B2•B3		●Consist with edge strength and chip	—	—	—		
F05 • F1		●Offers good cutting edge and disposes chips backward by the rake angle set opposite from feed direction					
K		●Good at chip control for finishing ●Cut cleanly by sharp edge	—	—	—		—
KHG		●High accuracy corner R with K chip breaker ●Corner radius accuracy ± 0.01	—		—	—	—
S		●Consist with Cut cleanly and good at Chipcontrol for low feed	—			—	—
U • U1		●Cut cleanly and prevent for work hardening	—		—	—	—

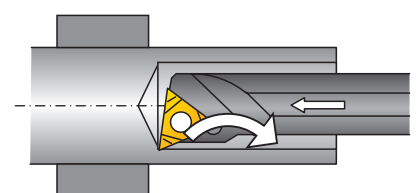
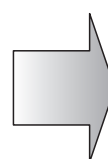
Boring for CNC Swiss-type Automatic Lathes



Mostly blind hole.



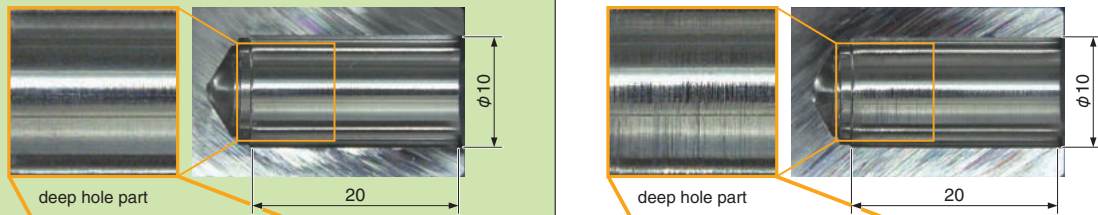
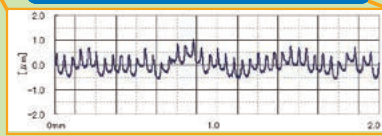
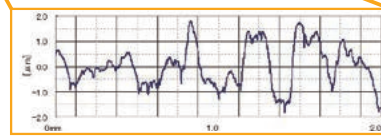
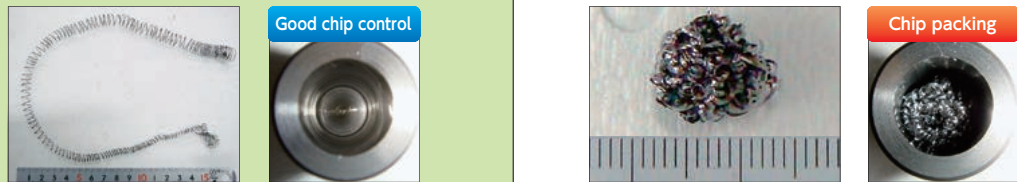
(Insert with chipbreaker that forwards chip in the feed direction.)
Insert can break because of chip accumulated in the back of hole.



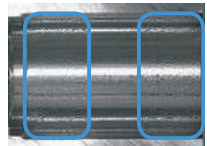
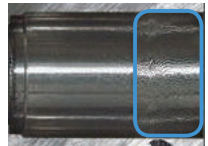
FG • F1 • F05 chipbreaker design allows chips to be disposed to opposite direction from feed. It prevent for chip break.

*For FG • F1 • F05 chipbreaker, R-hand inserts fit to R-hand toolholder.

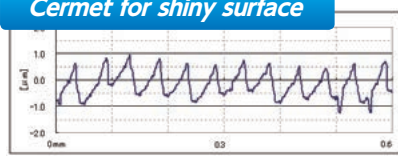
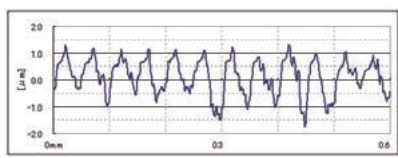
Chip control performance

Holder	MogulBar S08H-STUPR09D10-OH		Comp. boring bar	
Insert	F1-chipbreaker ZM3 TPGH090204FRF1		Comp. chipbreaker	
Surface				
Roughness	Excellent surface  Ra=0.25 μm、Rz=1.50 μm		 Ra=0.83 μm、Rz=3.86 μm	
Chip				
[Cutting condition] Work material : 34CrMoS4 Bore diameter : $\phi 10$ $v_c=80\text{m/min}$ $a_p=0.25\text{mm}$ $f=0.05\text{mm/rev}$ Holder : S08H-STUPR09D10-OH Type (Min.bore Dia. : $\phi 10$) Shank diameter : $\phi 8$ Insert : TPGH090204 Type External coolant Overhang length : L/D = 4 Depth : 20mm ※For F1chipbreaker,R-hand inserts fit to R-hand toolholder.				

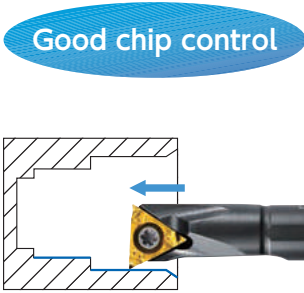
Chatter resistant

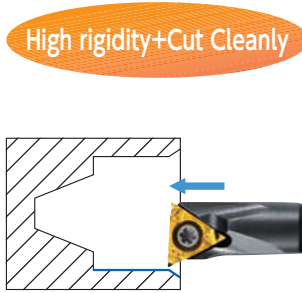
		MogulBar	Comp.A	Comp.B	[Cutting condition] 34CrMoS4 (Bore diameter : $\phi 10\text{mm}$) $v_c=80\text{m/min}$ $a_p=0.25\text{mm}$ $f=0.05, 0.1\text{mm/rev}$ Steel shank S08H-STUPR09D10-OH Type (Shank diameter : $\phi 8$) ZM3 TPGH090204FRF1 External coolant Depth : 15mm L/D=5
Feed (mm/rev)	0.05				
	0.1				
		Reduce chatter	Chatter		

Compareing surface Cermet vs Carbide

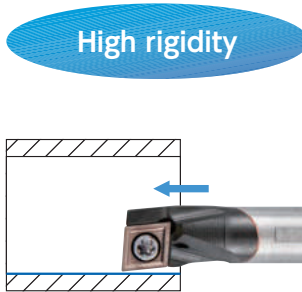
	Cermet : C7Z	PVD coated carbide : TM4	[Cutting condition] 34CrMoS4 $v_c=80\text{m/min}$ $a_p=0.20\text{mm}$ $f=0.05\text{mm/rev}$ Holder : S10K-STUPR11D12-OH Insert : C7Z/TM4TPGH110302RFG
Surface	 Cermet for shiny surface 	 	
Roughness	Ra = 0.37 μm	Ra = 0.50 μm	

Application example

Valve	
Work material : X5CrNi18-10	
Holder : S08H-STUPR09D10-OH	
Insert : TPGH090202RFG	
Cutting speed (m/min) = 80	
Feed (mm /rev) = 0.05	
Depth of cut (mm) = 0.2 ~ 0.5	
MogulBar + FG chip breaker	1500 pcs
Competitor	700 pcs
MogulBar + FG chipbreaker achieves : 2.1times tool life & Stable tool life.	

Valve	
Work material : C45E	
Holder : S08H-STUPR09D10-OH	
Insert : TPGH090202	
Cutting speed (m/min) = 68	
Feed (mm /rev) = 0.06	
Depth of cut (mm) = 0.28	
MogulBar + FG chip breaker	2500 pcs
Competitor (Carbide)+Ground chip breaker	1000 pcs
MogulBar + FG chip breaker achieves : 2.5 times tool life & Excellent surface.	

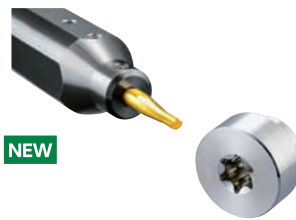
Sleeve	
Work material : 44SMn28	
Holder : C06H-SCLPR04D07-OH	
Insert : TM4 CPGH04102FRF1	
Cutting speed (m/min) = 75	
Feed (mm /rev) = 0.05	
Depth of cut (mm) = 0.1	
MogulBar + F1 chip breaker	900 pcs
Competitor+Ground chip breaker	500 pcs
MogulBar + F1 chip breaker achieves : Reduce chatter & 1.8 times tool life.	

Calar	
Work material : 9SMnPb28	
Holder : C08K-SCLCR06D10-OH Type	
Insert : VM1 CCGT060202AM3	
Cutting speed (m/min) = 100	
Feed (mm /rev) = 0.03	
Depth of cut (mm) = 0.04	
MogulBar	1500 pcs
Competitor	1000 pcs
MogulBar achieves : 1.5 times tool life & Excellent surface.	

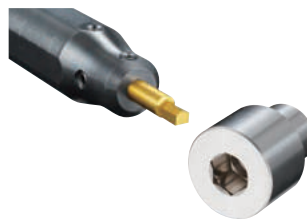
SHAPER DUO



■ Hexalobular Socket



■ Hexagon Socket



■ Square Socket



WATCH ON
YouTube

- Now available for Hexalobular(6-lobe) Socket
- Perfect fit for back spine of Swiss machine
- Achieves good corner edge sharpness
- Less tool pressure than Rotary-Broaching
- Easy to adjust for correct dimension
- Economical double-ended insert bar (Except for Hexalobular)

Comparison Chart of Hexalobular Socket Machining

	Tool Pressure	Cycle Time	Tool Cost	High speed spindle	Program	
Shaper Duo 	◎	◎	◎	Not necessary	Simple	● No high speed spindle needed ● A lot less cycle time
End milling	○	×	△	Necessary	Complicated	● Need high speed spindle ● Time consuming process

- Small diameter endmill driven by high-speed spindle is popular way to create Hexalobular(6-lobe) socket. It has some flexibility but needs high speed spindle unit and it is a time consuming process.
- SHAPER DUO can make Hexalobular(6-lobe) socket faster and simpler.

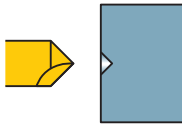
Comparison Chart of HEX Socket Machining

	Tool Pressure	Cycle Time	Flexibility	Tool Cost	
Shaper Duo 	◎	△ * Can be off-set by over-wrapping operation	○	◎	● Less tool pressure-especially on small diameter parts ● One size can cover several socket sizes
Broach Tool	△	○	×	△	● Need to have tools for each socket size

- Rotary-broach is an efficient way for Hexagon socket. But tool pressure is too much and often times it pushes part too hard.
- SHAPER DUO system enables less tool pressure process and provides better tolerance with less cost.

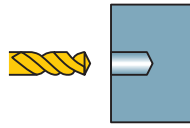
Process Chart

① Center drilling



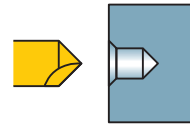
Select a pilot hole drill which is bigger dia. than AF.

② Drilling (Pilot hole)



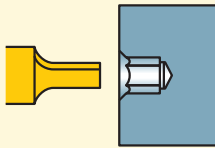
Select a drill with same dia. as AF and machine a bit deeper because burrs may cause chipping on shaper insert

③ Chamfering



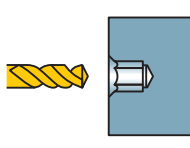
Chamfer with the same pilot hole drill as ① (Chamfer can be done at same time as ①).

④ Shaper tool



Machine HEX portion rotating 60 degrees 6 times

⑤ Deburring



Finish and deburr with the same drill as in process②
☆Reduce cutting conditions due to heavy interruption

SHAPER DUO Process Chart -Hexalobular-

Socket Size	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO10664 Standard depth of Hexalobular hole (mm)	Whole process ①~⑤	Process④ Shaper
T6	SSP050N25T06	1.15	0.3	13	12	1	1.82	51 sec	23.2 sec
T7	SSP050N31T07	1.38	0.34	15	14	1	2.44	59 sec	28.2 sec
T8	SSP050N36T08	1.62	0.39	17	16	1	3.05	67 sec	33.8 sec
T10	SSP050N41T10	1.92	0.44	19	18	1	3.56	75 sec	39.5 sec
T15	SSP050N43T15	2.3	0.525	22	21	1	3.81	84 sec	46.2 sec
T20	SSP050N46T20	2.71	0.62	26	25	1	4.07	94 sec	55.4 sec
T25	SSP050N50T25	3.13	0.685	29	28	1	4.45	105 sec	63.8 sec
T27	SSP050N55T27	3.52	0.775	32	31	1	4.70	115 sec	71.8 sec
T30	SSP050N55T30	3.91	0.845	35	34	1	4.95	125 sec	80.2 sec

*Using Carbide drill

*Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)

SHAPER DUO Process Chart -Hexagonal-

HEX Standard	Tool	Pilot bore Dia. (mm)	Total DOC /side (mm)	Number of passes			Estimated cycle time *		
				Total pass /side	Roughing pass 0.025mm	Finishing pass 0.010mm	ISO 2936 standard depth of Hex hole (mm)	Whole process ①~⑤	Process④ Shaper
HEX 1.5	SSP020N1130H	1.5	0.116	6	5	1	2	39 sec	14 sec
HEX 2.0	SSP020N1430H	2.0	0.155	7	6	1	2.5	44 sec	16 sec
HEX 2.5	SSP030N1940H	2.5	0.193	9	8	1	3	50 sec	20 sec
HEX 3.0	SSP030N1940H	3.0	0.232	10	9	1	3.5	55 sec	23 sec
HEX 4.0	SSP040N2450H	4.0	0.309	13	12	1	5	73 sec	33 sec
HEX 5.0	SSP050N3260H	5.0	0.387	17	16	1	6	90 sec	46 sec
HEX 6.0	SSP060N42120H	6.0	0.464	20	19	1	8	117 sec	63 sec
HEX 8.0	SSP080N62160H	8.0	0.619	26	25	1	10	155 sec	92 sec

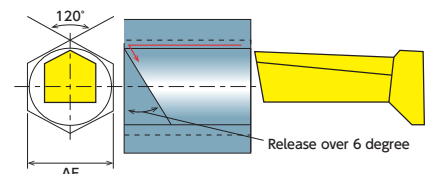
*Pilot bore diameter is same as AF
*Using Carbide drill

*Shaper cutting conditions

Feed : 3000 mm/min
DOC : 0.025 mm (Roughing), 0.010 mm (Finishing)

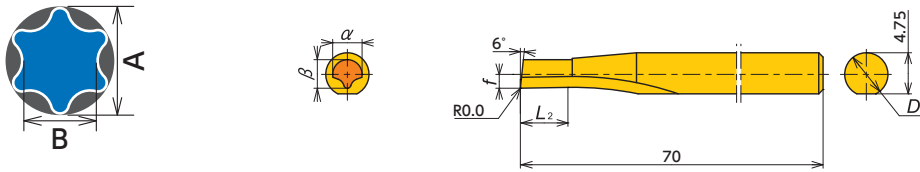
Recommended Cutting Conditions

Feed : 3000 mm/min (120 IPM)
DOC : Roughing ... 0.025 mm (.0010") + Finishing ... 0.010 mm (.0004")



Insert Bar -Hexalobular-

Single-sided

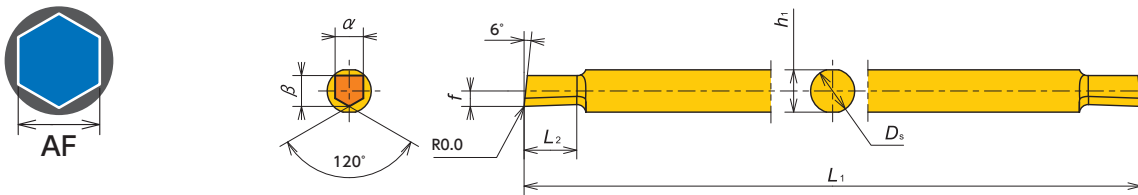


Item Number	Socket Size (mm)	Hexalobular Socket			D_s (mm)	L_2 (mm)	α (mm)	β (mm)	f (mm)	Pilot Bore Dia (mm)	Coated Carbide
		#	A (mm)	B (mm)							TM4
SSP050N25T06	T6	6	1.75	1.27	$\phi 5$	2.5	1.2	1.09	0.5	$\phi 1.25$	◎*
SSP050N31T07	T7	-	-	-	$\phi 5$	3.1	1.4	1.29	0.6	$\phi 1.48$	◎*
SSP050N36T08	T8	8	2.4	1.75	$\phi 5$	3.6	1.6	1.50	0.7	$\phi 1.72$	◎*
SSP050N41T10	T10	10	2.8	2.05	$\phi 5$	4.1	1.8	1.70	0.8	$\phi 2.02$	◎*
SSP050N43T15	T15	15	3.35	2.4	$\phi 5$	4.3	2.2	2.10	1.0	$\phi 2.40$	◎*
SSP050N46T20	T20	20	3.95	2.85	$\phi 5$	4.6	2.6	2.50	1.2	$\phi 2.81$	◎*
SSP050N50T25	T25	25	4.5	3.25	$\phi 5$	5.0	3.0	2.90	1.4	$\phi 3.23$	◎*
SSP050N55T27	T27	-	-	-	$\phi 5$	5.5	3.4	3.30	1.6	$\phi 3.62$	◎*
SSP050N55T30	T30	30	5.6	4.05	$\phi 5$	5.5	3.8	3.70	1.8	$\phi 4.01$	◎*

*To be released in December 2016.

Insert Bar -Hexagon-

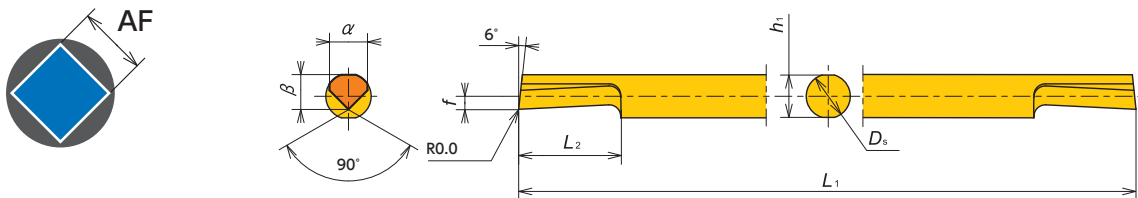
Double-sided



Item Number	Base AF (mm)	HEX Standard size range (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
			(Inch)	(mm)								TM4
SSP020N1130H	HEX 1.5	HEX 1.5 - 2.0	.055 - .078	1.4 - 2.0	$\phi 2$	50	3.0	1.8	1.1	0.8	0.40	◎
SSP020N1430H	HEX 2.0	HEX 2.0 - 2.5	.075 - .102	1.9 - 2.6	$\phi 2$	50	3.0	1.8	1.4	1.1	0.55	◎
SSP030N1940H	HEX 3.0	HEX 2.5 - 3.5	.095 - .141	2.4 - 3.6	$\phi 3$	50	4.0	2.8	1.9	1.6	0.8	●
SSP040N2450H	HEX 4.0	HEX 3.5 - 4.5	.134 - .181	3.4 - 4.6	$\phi 4$	60	5.0	3.8	2.4	2.6	1.3	●
SSP050N3260H	HEX 5.0	HEX 4.5 - 6.0	.174 - .244	4.4 - 6.2	$\phi 5$	70	6.0	4.8	3.2	3.4	1.70	●
SSP060N42120H	HEX 6.0	HEX 6.0 - 8.0	.233 - .322	5.9 - 8.2	$\phi 6$	80	12.0	5.6	4.2	4.0	2.00	◎
SSP080N62160H	HEX 8.0	HEX 8.0 - 12.0	.311 - .480	7.9 - 12.2	$\phi 8$	80	16.0	7.6	6.2	4.7	2.35	◎

Insert Bar -Square-

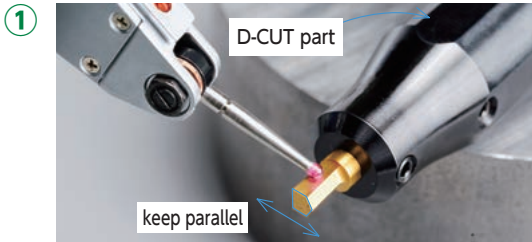
Double-sided



Item Number	Base AF (mm)	AF range		D_s (mm)	L_1 (mm)	L_2 (mm)	h_1 (mm)	α (mm)	β (mm)	f (mm)	Coated Carbide
		(Inch)	(mm)								TM4
SSP020N1740S	2.0	.075 - .090	1.9 - 2.3	$\phi 2.0$	50	4.0	1.8	1.70	1.60	0.70	◎
SSP025N1940S	2.5	.087 - .102	2.2 - 2.6	$\phi 2.5$	50	4.0	2.3	1.95	1.80	0.65	◎
SSP030N2260S	3.0	.099 - .118	2.5 - 3.0	$\phi 3.0$	50	6.0	2.8	2.20	2.05	0.65	◎
SSP035N2760S	3.5	.115 - .145	2.9 - 3.7	$\phi 3.5$	60	6.0	3.3	2.70	2.25	0.60	◎
SSP040N3380S	4.0	.142 - .181	3.6 - 4.6	$\phi 4.0$	60	8.0	3.8	3.35	3.05	1.15	◎
SSP050N39100S	5.0	.178 - .212	4.5 - 5.4	$\phi 5.0$	70	10.0	4.8	3.90	3.95	1.55	◎
SSP060N47120S	6.0	.209 - .259	5.3 - 6.6	$\phi 6.0$	80	12.0	5.6	4.75	4.50	1.70	◎
SSP080N58160S	8.0	.256 - .318	6.5 - 8.1	$\phi 8.0$	80	16.0	7.6	5.80	5.50	1.70	◎

SHAPER DUO Set-up Instruction -Hexagonal

■Outside machine

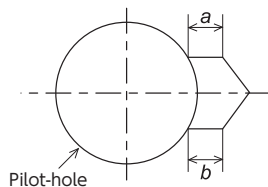
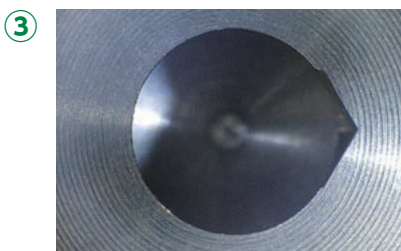


- Set the insert bar in the sleeve and check the parallelism of the flat portion of the sleeve and the insert bar.
- Minimize the overhang of the insert.

■Inside machine



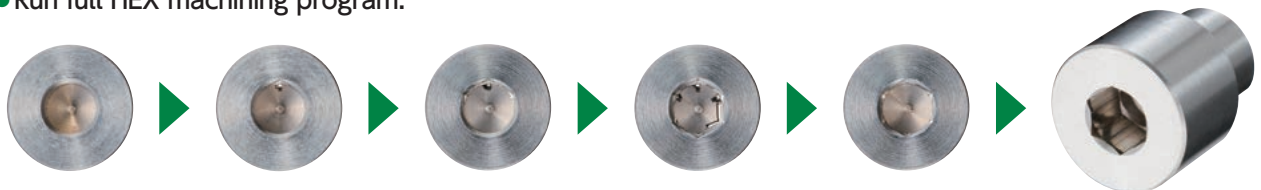
- Set the sleeve into the tool post and make sure the sleeve is set parallel.
- Minimize sleeve overhang.



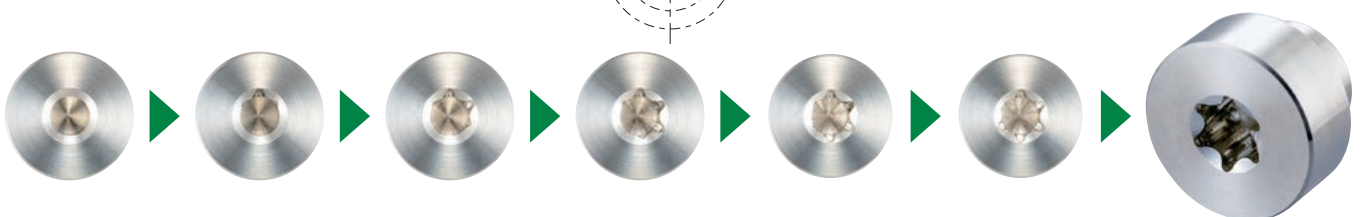
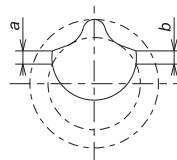
- Machine one angle a bit wider than the drilled hole.
*Increase the number of machining passes because the insert may get chipped with increased depth of cut. (0.025mm×5pass is recommended)
No chamfering process is required for measuring purpose.
- Measure the length of both [a] and [b] with comparator or magnifier.
- Adjust centerline height by rotating the sleeve until you get the same length for [a] and [b]. (The difference should be less than 0.020mm)
*If the straight is not seen with increased passes, please reset the insert and the sleeve.
Please make sure both the insert and the sleeve are set up correctly.

④ Machine Hexagonal shape

- Run full HEX machining program.



■For Hexalobular machining Basically same as Hexagonal socket



SHAPER DUO Programming Code Examples from Machine Builders in Metric

Note : The codes and numbers may vary by machine type. Please contact the machine builder for details.
Programming code example for HEX 3.0mm. **AF : 3.0mm, Depth : 2.7mm, Pilot drill diameter : 3.0mm**

CITIZEN

Main Program Sequence

```
M25
M78 S0 .....I
Shaper T****
G50 U1.6 .....II
G0 X2.9 Z-2.0 T** .....III
M98 P2100 L14 .....IV
M98 P2200 .....V
```

```
M78 S60 .....I
G0 X2.9 Z-2.0
M98 P2100 L14
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at S120, S180, S240, S300 (represents 120°, 180°, 240°, 300°).

```
M20
G0 Z-10.0
G50 U-2.0
G0 U0 W0 T0
M1
```

STAR

Main Program Sequence

```
M25
Shaper T****
G50 U1.6 .....II
M8
G0 X2.9 Z-2.0 C0 T** .....I, III
M98 P2100 L14 .....IV
M98 P2200 .....V
```

```
G0 C60.0 .....I
G0 X2.9 Z-2.0
M98 P2100 L14
M98 P2200 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120.0, C180.0, C240.0, C300.0 (represents 120°, 180°, 240°, 300°).

```
G0 Z-2.0
G50 U-2.0
G0 T0
G28 W0
M1
```

TSUGAMI

Main Program Sequence

```
M105
M150
G28 H0 .....I
M182
Shaper T****
G50 U1.6 .....II
G0 X2.9 Z2.0 T** .....III
M98 P2100 L14 .....IV
M98 P2200 .....V
M183
```

```
G0 C60 .....I
M182
G0 X2.9 Z2.0
M98 P2100 L14
M98 P2200
M183 } <a>
```

Repeat <a> program sequence 4 more times to complete the cuts at C120, C180, C240, C300 (represents 120°, 180°, 240°, 300°).

```
M151
G0 Z10.0
G50 U2.0
G0 U0 W0 T0
M1
```

Sub-Program Sequence #1 for Roughing

```
N2100
G4 U0.02 .....A
G98 G1 Z2.7 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z2.7 F3000 .....B
G4 U0.02
U-0.2 W-0.018 .....C
G4 U0.02
G0 Z-2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #1 for Roughing

```
O2100
G4 U0.02 .....A
G98 G1 Z-2.7 F3000 .....B
G4 U0.02
U-0.2 W0.018 .....C
G4 U0.02
G0 Z2.0
G4 U0.02
U0.25 .....D
M99
```

Sub-Program Sequence #2 for Finishing

```
N2200
G98 G1 X3.61 Z-2.0 F1000 .....E
G4 U0.02
Z2.7 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.61 Z-2.0 F1000 .....E
G4 U0.02
Z2.7 F3000
G4 U0.02
U-0.2 W-0.018
G4 U0.02
G0 Z-2.0
M99
```

Sub-Program Sequence #2 for Finishing

```
O2200
G98 G1 X3.61 Z2.0 F1000 .....E
G4 U0.02
Z-2.7 F3000
G4 U0.02
U-0.2 W0.018
G4 U0.02
G0 Z2.0
M99
```

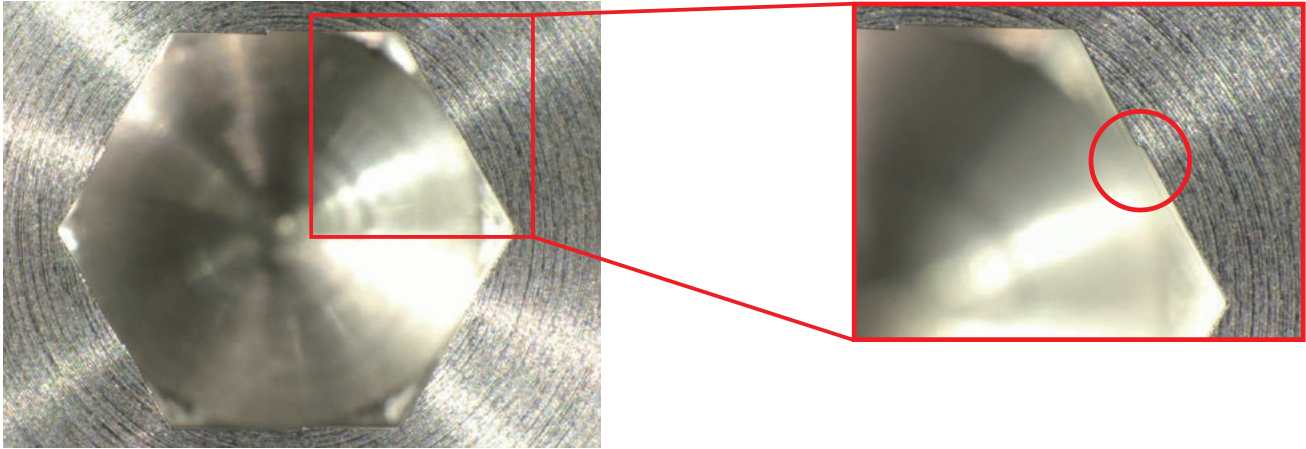
- I. Index the sub-spindle 6 times in 60 degree increments.
- II. Specify the coordinate system shift command (in X axis direction) for the tool. [2 x f, where f is tool dimension located in catalog].
 - A positive direction shift is recommended for easier programming.
- III. Execute the positioning of the tool.
 - X position should be 0.1 mm less than pilot drill diameter.
 - Z position should be off-set 2.0 mm from material to achieve program feed rate.
- IV. Go to the Sub-Program #1.
 - Sequence runs 14 times. First cutting point X2.9 and final cutting point X3.6, with 0.05 DOC (for diameter) each time.

(3.6 - 2.9 / 0.05 = 14 times)

- A. Specify dwell time. This allows the program and machine to stay synchronized.
- B. Cut into part 2.7mm. F3000 is recommended feed to be used for most materials; including Titanium Alloy and Stainless Steel.
- C. This code backs off the tool with an angle greater than 6 degrees (10 degrees used in example).
- D. Return the X position + 0.05mm (the DOC for diameter).
- V. Go to the Sub-Program #2, for finishing sequence.
- E. Finishing operation with 0.01mm DOC (X 3.61) is recommended for better surface finish.

SHAPER DUO Trouble Shooting

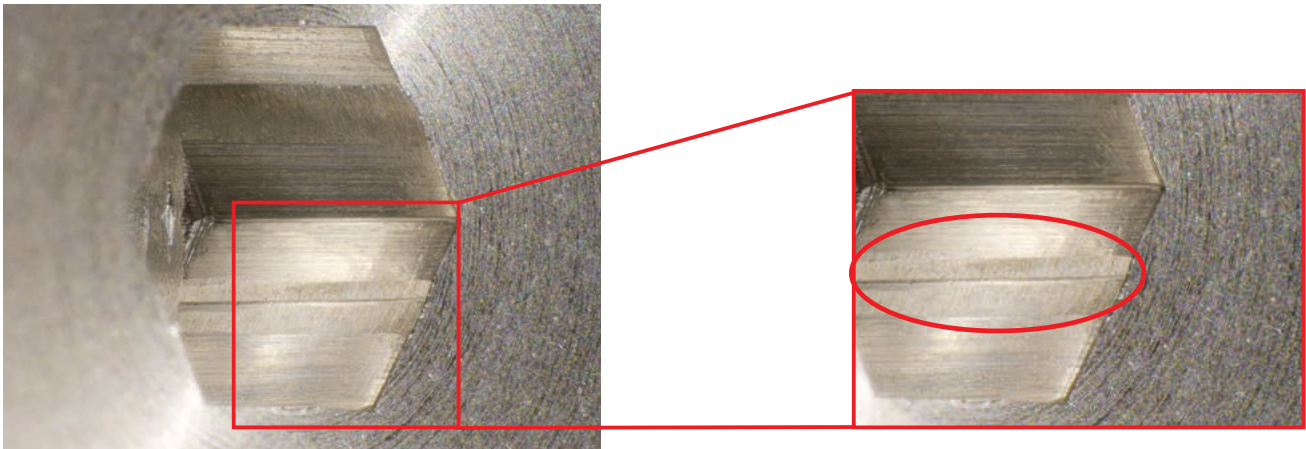
■ Problem: Step on sides



Cause: Incorrect tool set-up
(Center-line shift)

Solution: Machine one angle and make sure both [a] and [b] lengths are identical, rotating the sleeve if necessary

■ Problem: Wall dented



Cause: Pilot hole remaining

Solution: Need pilot hole tool's offset

■ Problem: Wall tapered

Solution: ● Smaller depth of cut
● Less tool overhang

■ Problem: Chuck is slipping / Insert Chipped

Solution: ● Run at 3000 mm/min feed rate
● Smaller depth of cut

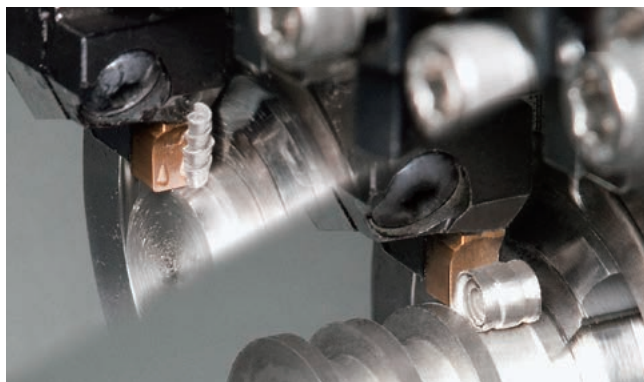
- 3000 mm/min feed rate can cover most materials including Titanium alloy and Stainless steel.
- Too slow or too fast of a feed rate may cause excessive tool pressure for the Work piece and Tool.

New grooving tool "SCRUM DUO"

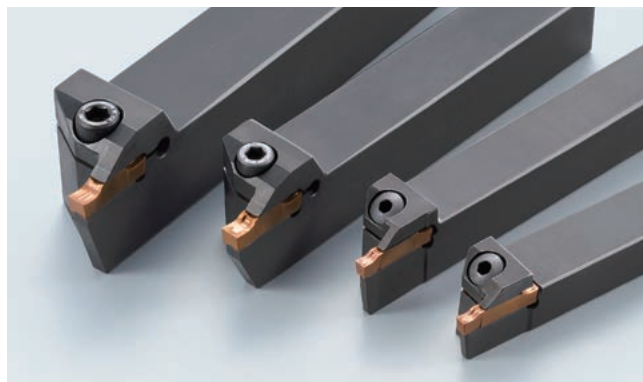
SCRUM DUO series

WATCH ON
YouTube

Features



"SCRUM DUO" offers excellent stable machining and longer tool life in grooving and traversing



Wide coverage from small to bigger diameter
Max grooving depth is "20mm"

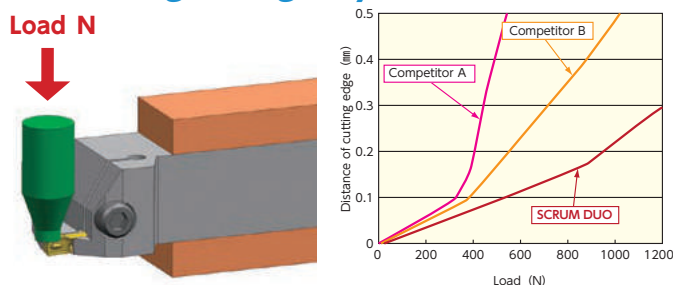
Traversing

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

14NiCr10 $v_c=150\text{m/min}$ $f=0.1\text{mm/rev}$ $a_p=1.0\text{mm}$ WET
Insert : DM4 GWPG500N04F-GW Holder : GTWPR2525M-5F10

Excellent chip control in traversing process
Excellent shiny surface finish

Toolholders and inserts designed to obtain higher rigidity



注 : SCRUM DUO : GTWPR2525M-5F10

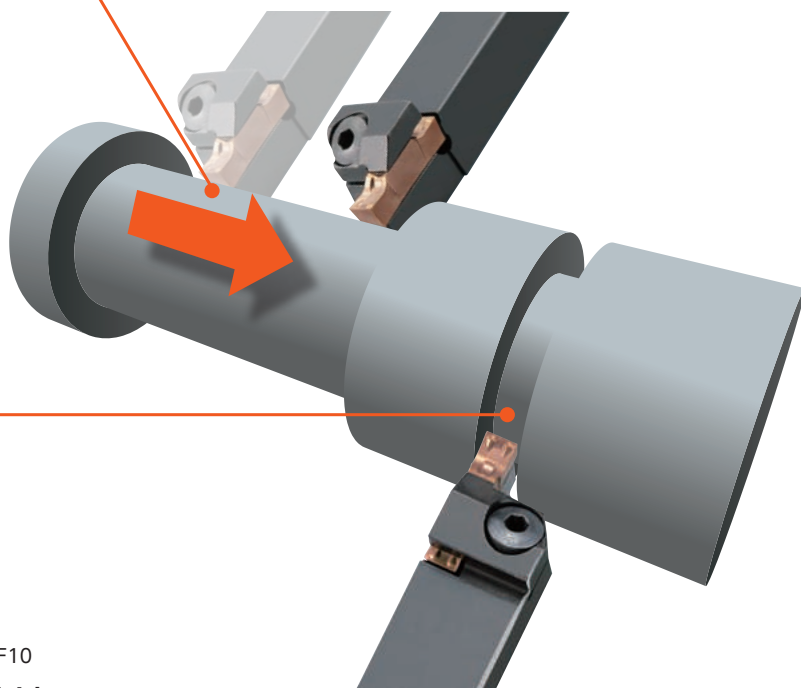
Thanks to the high rigid designed toolholder, it offers the traversing with max depth of cut 3.5mm

Grooving

	NTK:GW chipbreaker	Competitor
Chip		
Surface finish		

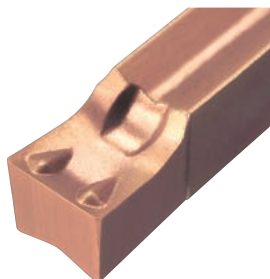
14NiCr10 $v_c=150\text{m/min}$ $f=0.1\text{mm/rev}$
 a_p (Grooving depth) = 7.0mm No step feed WET
Insert : DM4 GWPG500N04F-GW, Holder : GTWPR2525M-5F10

Excellent chip control and excellent shiny surface finish



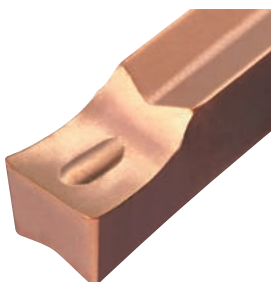
"Della coating DM4" and two types chipbreaker offer longer tool life and excellent surface finishing

GW chipbreaker



Multi-purpose chipbreaker utilizing sharpness for better chip control
Traversing is also possible

GV chipbreaker



Super sharp chipbreaker with high-rake angle
Best for the applications requiring low cutting forces

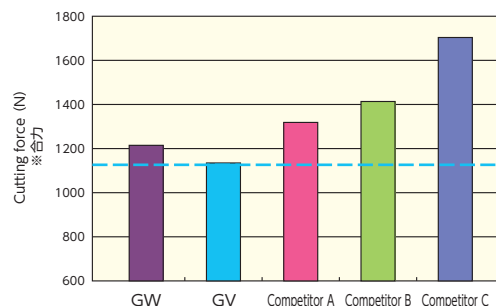
Chip condition (Grooving)

Cutting condition
 $V_c=80\text{m/min}$ $f=0.08\text{mm/rev}$ width : 5mm WET

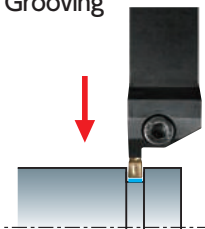
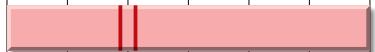
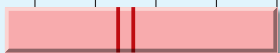
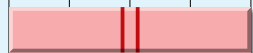
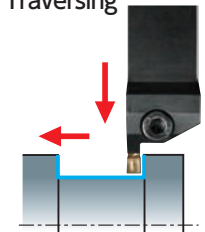
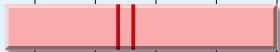
	GW chipbreaker	GV chipbreaker
X5CrNi18-10		
X8CrNi18-9		
34CrMoS4		

Cutting force (Grooving)

Cutting condition
 $V_c=150\text{m/min}$ $f=0.1\text{mm/rev}$ width : 5mm WET



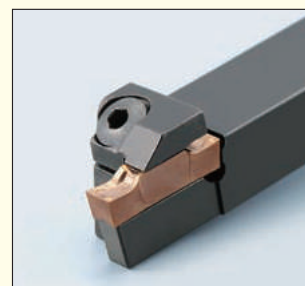
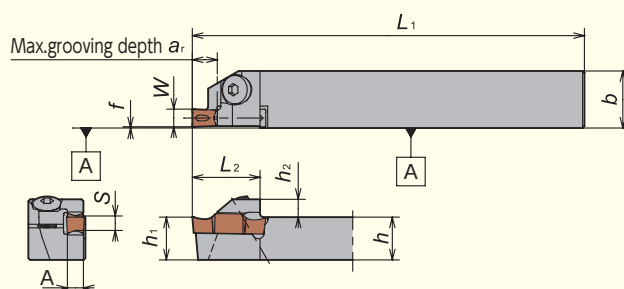
Recommended cutting conditions

Application	Work material	Cutting speed (m/min)				Feed (mm/rev)			Depth of cut (mm)
		50	100	150	200	0.05	0.1	0.15	
Grooving 	Free cutting steels								~ 3.5 (mm)
	Carbon steels, Alloy steels								
	Stainless steel								
Traversing 	Free cutting steels								~ 3.5 (mm)
	Carbon steels, Alloy steels								
	Stainless steel								

Stock list

Holder

For Swiss lathe (shank size □16)

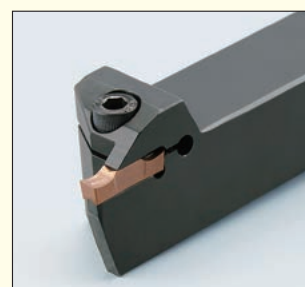
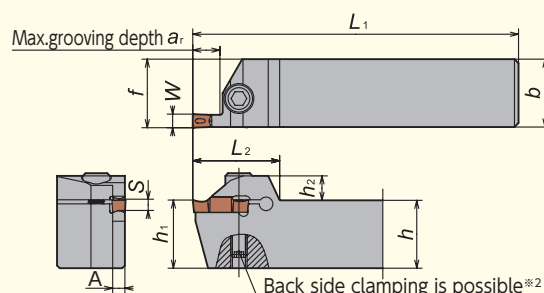


●R-hand shown

Code No.		Holder number	Stock		Width W	Max. grooving depth a_r	Dimensions (mm)								Height ^{※1} S	Applicable insert	Spare Parts	
R	L		R	L			h	b	h ₁	h ₂	f	L ₁	L ₂	A			Bolt	Wrench
5849054	5852280	GTWP [℞] 1216-3D07	●	○	3	7	12	16	12				19.5	2.6	D	GWPO300	AOB-5*16	LW-3S
5849070	5852306	GTWP [℞] 1616-3D09	●	○		9	16	16	16				22					
5849088	5852314	GTWP [℞] 1216-4E07	○	○	4	7	12	16	12	5	0.3	120	19.5	3.5	E	GWPO400		
5849096	5852322	GTWP [℞] 1616-4E09	○	○		9	16	16	16				22					
5849104	5852355	GTWP [℞] 1216-5F07	○	○	5	7	12	16	12				19.5	4.5	F	GWPO500		
5849112	5852371	GTWP [℞] 1616-5F09	○	○		9	16	16	16				22					

※1 Please make sure the insert height fit on the toolholder

For mutipurpose lathe(shank size □20, □25)



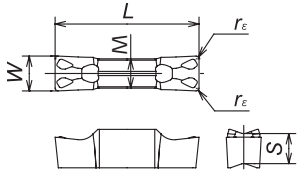
●R-hand shown

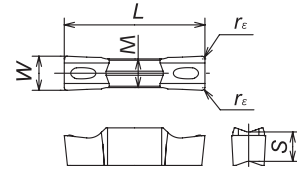
Code No.		Holder number	Stock		Width W	Max. grooving depth a_r	Dimensions (mm)								Height ^{※1} S	Applicable insert	Spare Parts		
R	L		R	L			h	b	h ₁	h ₂	f	L ₁	L ₂	A			Bolt	Wrench	Wrench ^{※2}
5849120	5852397	GTWP [℞] 2020K-3D10	○	○	3	10	20	20	20	8	20.2	125	29	2.6	D	GWPO300	CS0520W	LW-4	LW-2.5
5849138	5852405	GTWP [℞] 2525M-3D10	○	○			25	25	25	9	25.2	150	32				CS0625W	LW-5	LW-3
5849146	5852421	GTWP [℞] 2020K-3D20	○	○		20	20	20	20	8	20.2	125	41				CS0520W	LW-4	LW-2.5
5849153	5852439	GTWP [℞] 2525M-3D20	○	○				25	25	25	9	25.2	150				44	CS0625W	LW-5
5849161	5852447	GTWP [℞] 2020K-4E10	○	○	4	10	20	20	20	8	20.3	125	29	3.5	E	GWPO400	CS0520W	LW-4	LW-2.5
5849179	5852454	GTWP [℞] 2525M-4E10	○	○			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
5849187	5852470	GTWP [℞] 2020K-4E20	○	○		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
5849195	5852488	GTWP [℞] 2525M-4E20	○	○				25	25	25	9	25.3	150				44	CS0625W	LW-5
5849203	5852496	GTWP [℞] 2020K-5F10	○	○	5	10	20	20	20	8	20.3	125	29	4.5	F	GWPO500	CS0520W	LW-4	LW-2.5
5849211	5852512	GTWP [℞] 2525M-5F10	○	○			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
5849229	5852520	GTWP [℞] 2020K-5F20	○	○		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
5849237	5852538	GTWP [℞] 2525M-5F20	○	○				25	25	25	9	25.3	150				44	CS0625W	LW-5
5849245	5852546	GTWP [℞] 2020K-6G12	○	○	6	12	20	20	20	8	20.35	125	34	5.3	G	GWPO600	CS0520W	LW-4	LW-2.5
5849252	5852553	GTWP [℞] 2525M-6G12	○	○			25	25	25	9	25.35	150	37				CS0625W	LW-5	LW-3
5849260	5852561	GTWP [℞] 2020K-6G25	○	○		25	20	20	20	8	20.35	125	49				CS0520W	LW-4	LW-2.5
5849278	5852587	GTWP [℞] 2525M-6G25	○	○				25	25	25	9	25.35	150				52	CS0625W	LW-5

※1 Please make sure the insert height fit on the toolholder

※2 Wrench for back side clamping is optional

Applicable insert

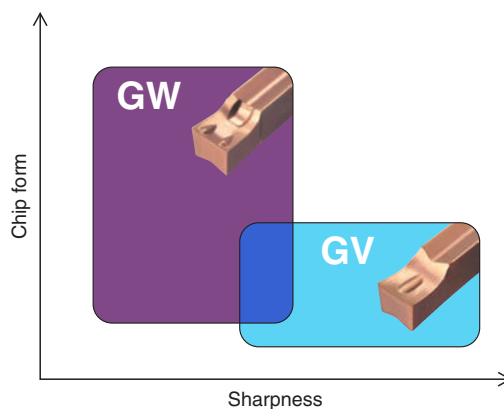
Shape	Part number	Dimensions (mm)				Height *1 S	PVD coated micrograin carbide			
		W		r_{ϵ}	M		L	DM4	Stock	
		Width	Tolerance							
	GW (ground chipbreaker) 	GWPG300N02D-GW	3.0	± 0.025	0.2	2.5	D	5848023	●	
		GWPG300N04D-GW			0.4			5848031	●	
		GWPG400N02E-GW	4.0		0.2	3.4	20.6	E	5848064	◎
		GWPG400N04E-GW			0.4				5848072	◎
		GWPG400N08E-GW			0.8				5852868	◎
		GWPG500N02F-GW	5.0		0.2	4.3	25.6	F	5848106	◎
		GWPG500N04F-GW			0.4				5848114	◎
		GWPG500N08F-GW			0.8				5852876	◎
		GWPG600N02G-GW	6.0		0.2	5.2	25.6	G	5848148	◎
		GWPG600N04G-GW			0.4				5848155	◎
		GWPG600N08G-GW			0.8				5852900	◎
	GW (no-ground chipbreaker) 	GWPM300N04D-GW	3.0	± 0.03	0.4	2.5	20.6	D	5848171	◎
		GWPM400N04E-GW	4.0		E			5848197	◎	
		GWPM500N04F-GW	5.0	± 0.04	0.4	4.3	25.6	F	5848213	◎
		GWPM600N04G-GW	6.0		G			5848239	◎	

	GV (ground chipbreaker) 	GWPG300N02D-GV	3.0	± 0.025	0.2	2.5	20.6	D	5848262	◎
		GWPG300N04D-GV			0.4				5848270	◎
		GWPG400N02E-GV	4.0		0.2	4.3	25.6	E	5848353	◎
		GWPG400N04E-GV			0.4				5848361	◎
		GWPG500N02F-GV	5.0		0.2	4.3	25.6	F	5848395	◎
		GWPG500N04F-GV			0.4				5848403	◎
		GWPG600N02G-GV	6.0		0.2	4.3	25.6	G	5848437	◎
		GWPG600N04G-GV			0.4				5848445	◎

※ 1 Please make sure the insert height fit on the toolholder

Chipbreaker

Type	Shape	Features, usage
GW		●Excellent in both sharpness and chipcontrol ●Applicable for both grooving and traverse machining ●Both ground and un-ground chipbreakers are available
GV		●Excellent sharpness with high-rake angle ●Chipbreaker designed to V chip shape so that it does not rub on side walls of part



MEMO

NTK

Thread Whirling

Features

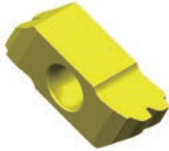
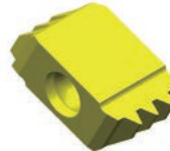
WATCH ON
YouTube



- NTK's unique patented design technology makes precise and correct inserts possible the first time, *without any redesign or remanufacture even if it is a multiple-lead thread*
- The sharper cutting edges produce a better surface finish and longer tool life than competitor's inserts

Form Double-lead or Multiple-lead with Single Pass

Patented

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	Brass
Work appearance		
Insert appearance		
Major Dia.	$\phi 4.0\text{mm}$	$\phi 7.0\text{mm}$
Minor Dia.	$\phi 2.4\text{mm}$	$\phi 4.7\text{mm}$
Lead [Pitch $\times$ No. of Lead]	3.42mm $1.71\text{mm} \times 2$	4.9mm $1.63\text{mm} \times 3$

- Can reduce cycle time by more than half
- NTK can achieve what other competitors cannot

Double-lead Bone Screw Process Example

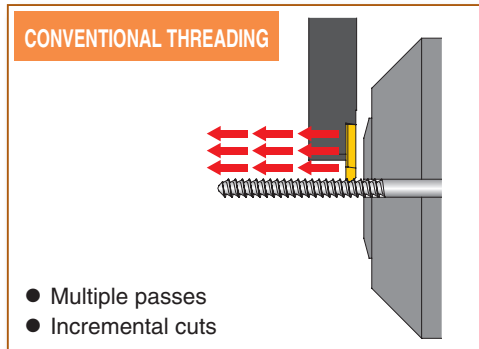
- 1 1st thread whirl at taper part
- 2 Rotate the bar 180° and whirl the 2nd thread on same part as 1
- 3 Thread whirl whole straight part
- 4 Thread whirl at very last part to get two-exits, after back of bar has been backed up a half lead (one pitch) and rotated 180°

THREAD WHIRLING

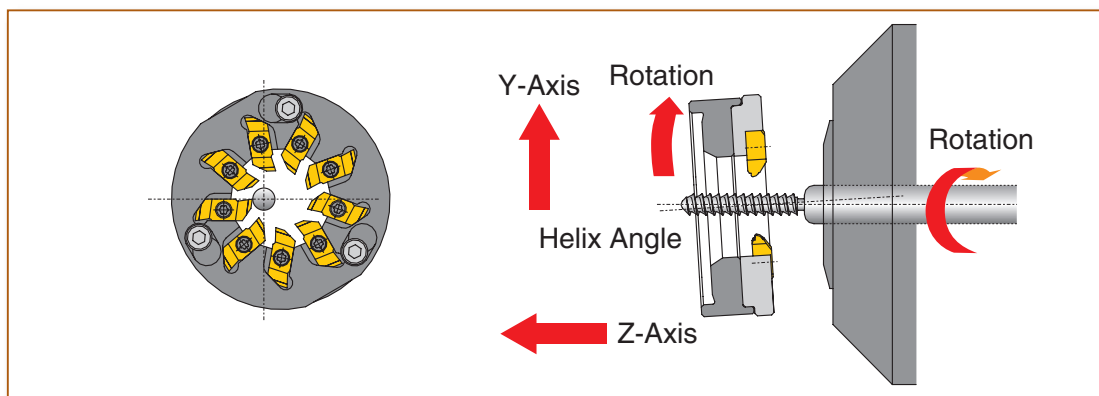


〈What is Thread Whirling ?〉

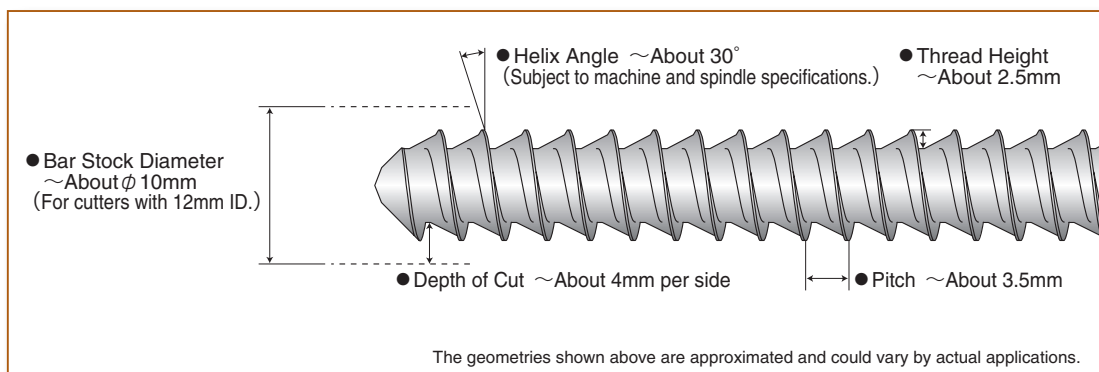
Conventional threading operations on Swiss lathes require multiple threading cuts by using a single-point tool. To make long screws, threading cuts must be performed section by section so that the part will stay in the guide bushing. On the other hand, thread whirling systems allow long screws such as bone screws to be manufactured by a single-pass operation. Using a whirling cutter dramatically improves quality and productivity.



In a whirling operation, the Helix Angle is determined by the tilt angle of the whirling system. The whirling cutter rotates at a high speed while bar stock (C-axis) rotates at a low speed. The thread pitch (Z-axis) is determined by the feed rate.



Applicable Thread Geometry (Approximated)



THREAD WHIRLING

〈NTK Thread Whirling Advantage〉

High Productivity

- **Single-pass thread forming** from bar stock.
- Eliminates incremental threading process.
- **Reduce cycle time** without sacrificing finish quality.

Short Insert Delivery

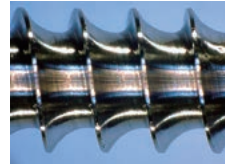
- Four-week insert delivery.
(All requirement must be met.)
- Expedited delivery available.
(Extra fee applies.)

Unparalleled Tool Life

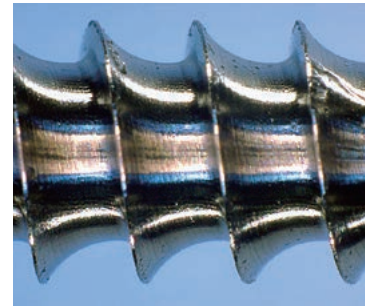
- Sharp cutting edge and smooth coating provide stable and long tool life.
- Superb tool life ensures long-run operations with reduced downtime.

Excellent Surface Finish

- Combination of 9-insert design and precision-ground inserts brings superb surface finish.



Single-point Threading



NTK Thread Whirling

Ti-6Al-4V ELI (x50)

Superior Chip Evacuation

- Worry-free chip control ensures long-run whirling operation.



Single-point Threading

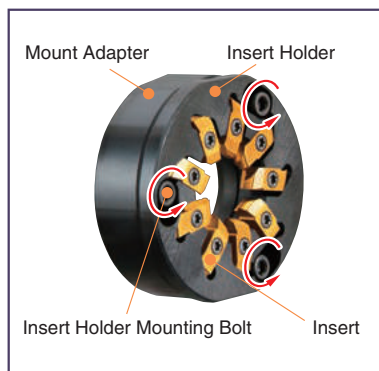


NTK Thread Whirling

Ti-6Al-4V ELI

NTK's Unique Attachment System

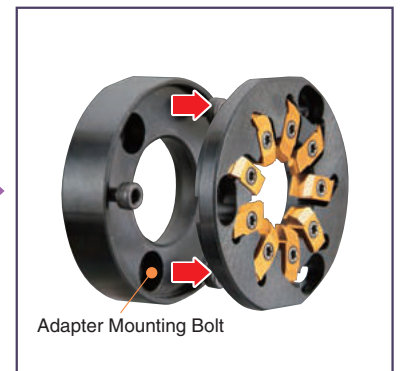
NTK's whirling insert holder can be attached and detached without removing mounting bolts. (*Not available for TWC9C1040HP1)



Loosen the Mounting Bolts.



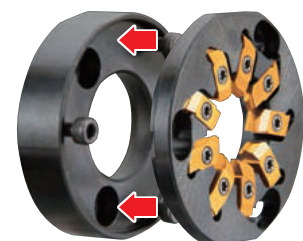
Rotate the Insert Holder to 10 degrees.



Pull the Whirling Insert Holder without pull out the Mounting Bolts.

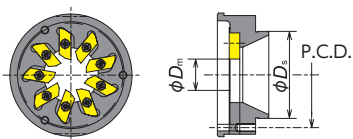
Easy to change!
Quick change!

To install the insert holder.

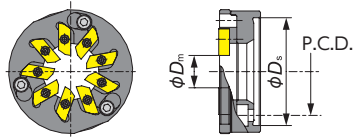


Follow the above procedure in reverse order.

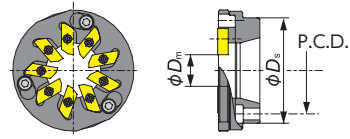
Thread Whirling System



Type 1



Type 2 Quick-change

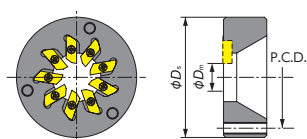


Type 3
Quick-change

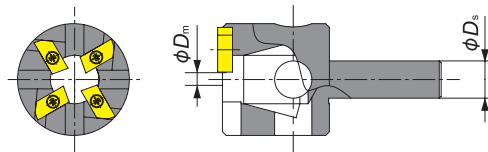
Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter bolt	
CITIZEN	M ₄ 32-VIII	Gang	CITIZEN	BTW-4000	0° - 15°	TWC9C0746HP1	☉	9	φ 12	1	φ 46	φ 35	M3	
	L20/L20E/L20X	Gang		BTW-3000 BTW-3100	0° - 15°									
	L32/L32X			BTW-3100	0° - 15°									
	L32X	Gang		BTW-6000	±25°	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	☉ ☉ ☉	9 6 9	φ 12 φ 12 φ 16	1	φ 33	φ 40	M3 (Provided with spindle)	
	L20X			BTW-5000	±25°									
	M16			±0° - 15°										
	A20													
	A32			BTW-2000	±25°									
	L20/L20X													
	L32/L32X													
	M20													
	M32													
	C32													
	L20			BTW-1000	±25° +20° - -25° ±25°									
	M20													
	M ₃ 32													
	C12/16	Gang				LTR0170	±15°	TWC9C1037P2	☉	9	φ 12	2	φ 37	φ 30.5
	M12/16	Turret		LTR0168										
	M12/16 III		MSW105											
	M20/32 III		KSW110											
	L20	Gang	LTR0183	±15°	TWC9J1040P2	☉	9	φ 12	2	φ 40	φ 32.5	H-M4 × 12		
	M20/32		LTR0169											
	M20/32	Turret												
	K16	Attachment	PCM	GSW-101	±15°	TWC6P1620HP1-D9	☉	6	φ 9	1	φ 32	φ 26	M4 (Provided with spindle)	
L20	Gang	LSW-101-L20 MSW-101 KSW-101		±10°	TWC9P1340P2	☉	9	φ 12	2	φ 40	φ 32.5	M4 (Provided with spindle)		
M12/16	Turret													
M20/M32														
STAR	ECAS-12/20	Attachment	STAR	54178	±10°	TWC9S1640P2	☉	9	φ 12	3	φ 40	φ 33	CS04148S(M4)	
	SB-20R			OM171	-20° - 0°									
	SR-20J/20R III/20R IV			54172	-20° - 0°									
	ECAS-20T	Turret		59172	±20° ±10° ±20° ±10° ±10° ±10° ±10° ±20°									
	ECAS-32T			58171										
	SR-38			10172										
	ST-38			43156										
	SV-12			45172										
	SV-20/SV-20R			42173										
	SV-32			43172										
	SV-38R			43156										
	BH20/BH38			Turret										TSUGAMI
BS20	Attachment	3214-Y1371	±10°	TWC9TS20550P2	☉	9	φ 16	3	φ 50	φ 40	CS0515(M5)			
SS20/SS26/SS32 B0265/B0266-II B0325/B0326-II	Attachment	3268-Y450 3268-Y451	0° - 10°	TWC9TS2244HP1	☉	9	φ 12	4	φ 52	φ 44	CS0520(M5)			
S205/S206		3281-Y450 3281-Y451	0° - 20°	TWC9TS1944HP1	☉	9	φ 12	4	φ 52	φ 44	CS0520(M5)			
B0123/B0124/B0125/ B0126-II/III		3220-Y6540 3220-Y6541	0° - 25°	TWC9TS1644HP1	☉	9	φ 12	4	φ 52	φ 44	CS0515(M5)			
B0203/B0204/B0205/ B0205/B0206-II/III			0° - 30°	TWC9TS1044HP1	☉	9	φ 12	4	φ 52	φ 44	CS0515(M5)			
SS20/SS26/SS32			0° - 10° 0° - 20°	TWC9TS1952P2BK TWC9TS1652P2BK	☉ ☉	9 9	φ 12 φ 12	4 4	φ 52 φ 52	φ 38 φ 38	CS0515(M5) CS0515(M5)			
SS207/SS267/SS327		—	Using B-axis	0° - 15°	TWC4TS3010HP1	☉	4	φ 7	5	φ 10	For single-corner inserts only			

* Threading inserts for ISO standard are in stock.

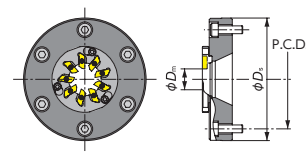
See page I196 "2013 Cutting tool for small parts machining"



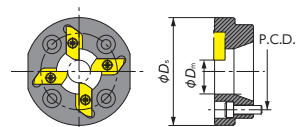
Type 4



Type 5



Type 6
Quick-change



Type 7

Machine make	Model	Location	Spindle make	Spindle model	Helix angle	NTK Thread whirling system	Stock	No. of tooth	ϕD_m (mm)	Type	ϕD_s	P.C.D.	Mount adapter bolt
TORNOS	DECO 10/10a	Attachment	TORNOS	224-1900	$\pm 15^\circ$	TWC6TO11542HP1		6	$\phi 12$	4	$\phi 42$	$\phi 32$	CS0410(M4)
	Evo DECO 10/10			242-1900									
	DECO 13a/13e			226-1900									
	Evo DECO 16/10			243-1900	$\pm 15^\circ$	TWC9TO10540P2		9	$\phi 12$	3	$\phi 40$	$\phi 31$	CS0410(M4)
	Swiss ST26			246-1900									
	DECO 20a			223-1900									
	DECO 26a			225-1900									
	Sigma 20			234-2750	$\pm 25^\circ$	TWC9TO12050P2-D18		9	$\phi 18$	3	$\phi 50$	$\phi 40$	CS0410(M4)
	Sigma 32			236-2750									
HASEGAWA	JS-1W	—	HASEGAWA	—	0° - 20°	TWC9HA22594P2		9	$\phi 16$	6	$\phi 94$	$\phi 76$	CS0620(M6)

■ Spare Insert Holder (Cartridge)

Item number	No. of tooth	ϕD_m (mm)	Compatible cutters
TWC6HP2	6	12	For Type 2 and Type 3*
TWC9HP2	9	12	For Type 2 and Type 3*
TWC9HP2-D16	9	12	For Type 6

Note: Insert holder comes with insert screws and wrench

Insert holder mounting screw is not included

*Cannot be used for TWC9TS20550P2, TWC9TO12050P2-D18 and TWC9HA22594P2

■ Spare Parts

Description	Item number
Insert Screw	For 4mm thick inserts FSI17-2.2×6.0
	For 6.5mm thick inserts FSI24-2.2×7.9
Wrench	T-07
Insert Holder Mounting Bolt	CS0309-TW

Application Example

Work	Born Screw
Work Material	Stainless Steel
Bar Stock Dia.	$\phi 8\text{mm}$
Major Dia.	$\phi 3.45\text{mm}$
Minor Dia.	$\phi 2.67\text{mm}$
Helix Angle	7.5°

Work	Born Screw
Work Material	Stainless Steel
Bar Stock Dia.	$\phi 6.35\text{mm}$
Major Dia.	$\phi 3.23\text{mm}$
Minor Dia.	$\phi 2.2\text{mm}$
Helix Angle	8.5°

	Competitor's Thread Whirling	NTK Thread Whirling
Specification	6-insert	9-insert
SPEED	Whirling Cutter : $2,000\text{min}^{-1}$ Bar Stock : 23min^{-1}	←
PITCH(=FEED)	1.24mm/rev	←
Tool Life	1,000pcs/corner	2,600pcs/corner

NTK thread whirling resulted up to 2.6 times better tool life than competitor's.

	Competitor's Thread Whirling		NTK Thread Whirling
	①	②	
Specification	3-insert	12-insert	9-insert
SPEED	Whirling Cutter : $2,250\text{min}^{-1}$ Bar Stock : 15min^{-1}	←	←
PITCH(=FEED)	1.27mm/rev	←	←
Tool Life	400pcs/corner	1,000pcs/corner	1,200pcs/corner

NTK thread whirling resulted up to 3 times better tool life than competitor's.

Outperformed competitors in many applications!

- Work Material : Titanium • Ti-6Al-4V ELI • Stainless Steel
- Thread Pitch : $0.5 \sim 2.82\text{mm}$
- Work Diameter : $\phi 3 \sim \phi 10\text{mm}$
- Thread Height : $0.18 \sim 1.78\text{mm}$

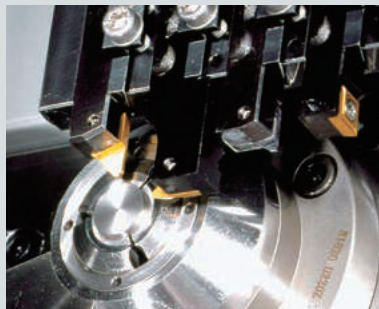
Y-axis Toolholders

Chip control by gravity

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YouTube

Features

- Chip drops down to the bed of the machine due to gravity, and chip control problem is solved
- Available in coolant through style
- Front turning, grooving, and back turning operations can be performed by utilizing Y-axis control



- Perfect solution for chip problems
- Less wear, more stable dimensions

Programming guidance

Regular Toolholder					Y-axis Toolholder			
① T300				Select tool	① T300			
② G0	X .450	Z .000	T3	Position tool	② G0	Y .450	Z .000	T3
③					③	X .000		
④ G1	X .300		F .003	Move to OD to cut	④ G1	Y .300		F .003
⑤		Z .200	F .002	Cut .200" length	⑤		Z .200	F .002
⑥	X .400			Cut face	⑥	Y .450		
⑦ G0	X .450				⑦ G0	X .450		

Cut by X-axis

Cut by Y-axis

Note: Need Y-offset for holder shank size.

*See page D88/E108/E114/G142/G150 "2013 Cutting tool for small parts machining" for holder list

MEMO

NTK

DS Holders with adjustable center height

Features

Adjustment of center height is simple with a wrench.
Setting time is reduced.

WATCH ON
YouTube



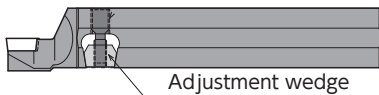
1 Turn a screw

1 Adjust centerline height easily

Patented

Eliminate center boss on end faces
Provides constant OD dimension
Adjust easily in machine

2 Adjustment wedge goes down

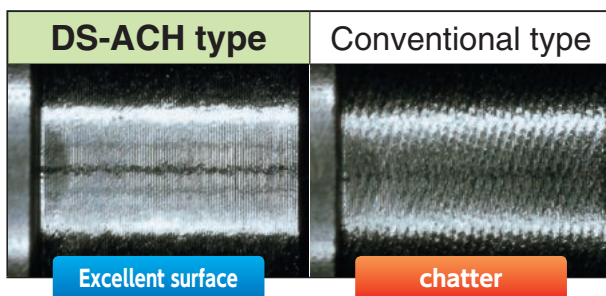


3 Holder warps to bring cutting edge up

Range of centerline height adjustment
0 ~ 0.2mm

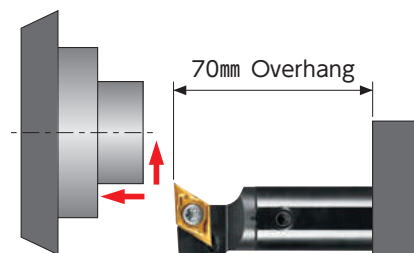
2 Optimized design reduces vibration

Improved chatter resistance.



Test condition

Work material : X5CrNi18-10
Holder : DS-SDUL19-11-ACH
Insert : TM4 DCGT11T302MCL
Cutting condition : $v_c = 75 \text{ m/min}$, $f = 0.05 \text{ mm/rev}$, $a_p = 2.0 \text{ mm}$

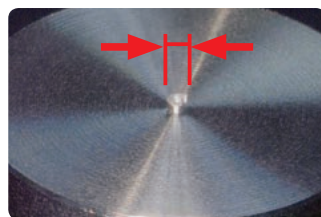


How to use

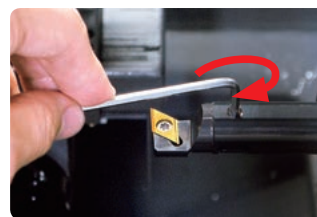
*For center height adjustment only. (Loosen wedge screw before making any adjustment.)



Install the holder slightly below centerline and take a facing test cut to loosen the clamping wedge



Measure the diameter of the center boss



Raise the center height by the radius of the boss.
Adjustment references are available in the tool case

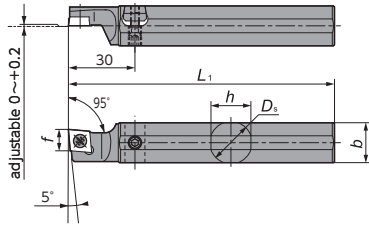


Re-machine the end face

Check if further adjustment is required

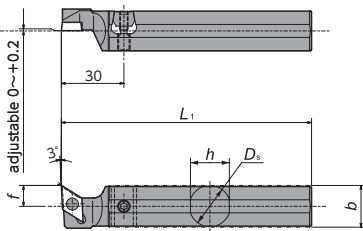
※Adjustment instructions are supplied in the tool case

DS-SCL-ACH type



Code No.	Toolholder Part No.	Stock	Dimensions (mm)						Applicable insert
		L	D_s	h	b	L_1	f		
5833694	DS-SCLL16F-09-ACH	⊙	16.00	15.5	15.5	80	6.0	CC□□09T3	
5833702	DS-SCLL19-09-ACH	●	19.05	18.0	18.0	120			
5833710	DS-SCLL20-09-ACH	●	20.00	19.0	19.0				
5833728	DS-SCLL22-09-ACH	●	22.00	21.0	21.0				
5934013	DS-SCLL25-09MET-ACH	●	25.00	24.0	24.0	120			
5833736	DS-SCLL25-09-ACH	●	25.40	24.0	24.0	150			

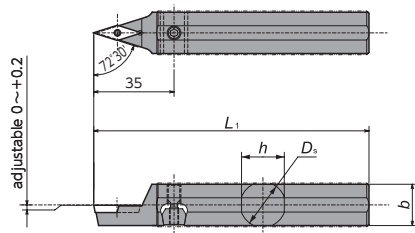
DS-SDU-ACH type



● Left-hand type shown.
Note) Use a R-hand or neutral type insert.

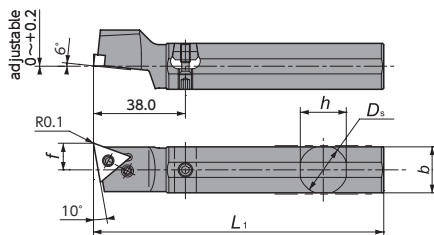
Code No.	Toolholder Part No.	Stock	Dimensions (mm)						Applicable insert
		L	D_s	h	b	L_1	f		
5805635	DS-SDUL16F-11-ACH	●	16.00	15.5	15.5	80	10	DC  11T3 TFD11	
5805627	DS-SDUL19-11-ACH	●	19.05	18.0	18.0	120			
5799614	DS-SDUL20-11-ACH	●	20.00	19.0	19.0				
5799622	DS-SDUL22-11-ACH	●	22.00	21.0	21.0				
5934021	DS-SDUL25-11MET-ACH	●	25.00	24.0	24.0	120			
5799648	DS-SDUL25-11-ACH	●	25.40	24.0	24.0	150			

DS-SVVP-ACH type



Code No.	Toolholder Part No.	Stock	Dimensions (mm)					Applicable insert
			D _s	h	b	L ₁	f	
5805643	DS-SVVPN16-11-ACH	⊙	16.00	15.5	15.5			VP□□1103
5799655	DS-SVVPN19-11-ACH	⊙	19.05	18.0	18.0			
5799663	DS-SVVPN20-11-ACH	⊙	20.00	19.0	19.0	120		
5799671	DS-SVVPN22-11-ACH	⊙	22.00	21.0	21.0			
5807524	DS-SVVPN25-11-ACH	⊙	25.40	24.0	24.0	150		

DS-PTX-ACH type



● Left-hand type shown.
Note) Use a R-hand or neutral type insert.

Code No.	Toolholder Part No.	Stock	Dimensions (mm)						Applicable insert
		L	D _s	h	b	L ₁	f		
5805650	DS-PTXL16-33-ACH	⊙	16.00	15.5	15.5	120	11	TN  1604	
5799689	DS-PTXL19-33-ACH	⊙	19.05	18.0	18.0				
5799697	DS-PTXL20-33-ACH	⊙	20.00	19.0	19.0				
5799705	DS-PTXL22-33-ACH	⊙	22.00	21.0	21.0	12			
5799713	DS-PTXL25-33-ACH	⊙	25.40	24.0	24.0	150	13		

DS Sleeve

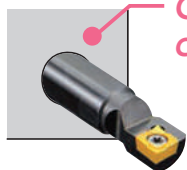
Features

- Prevents coolant and chips from damaging live tool stations
- Accepts DS Series holders to perform various back working
- Designed exclusively for 22mm and 34mm round shank stations
- Compatible with 16mm / 22mm round shank DS Series holders

WATCH ON
YouTube



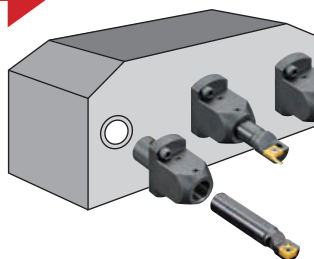
First Recommendation for Turning



Coolant and chips sneak in.

When DS holders are used directly in live tool stations, coolant and chips sneak in from the flat of holders to damage the live stations

How it works

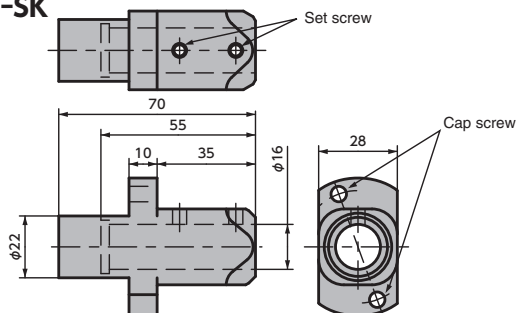


Stop coolant and chips from damaging live tool stations.

By using the DS Sleeve, you can use the DS Series holders without any worry about damaging live stations

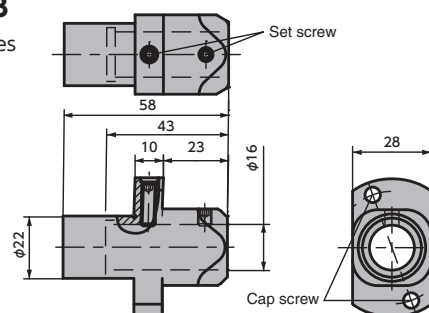
For Back 4-spindle unit

SS-DSU-SK



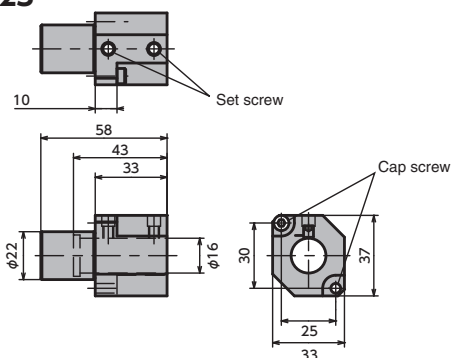
SS-DSU-L23

For DS-ACH series

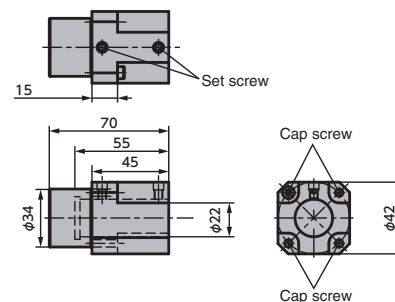


For Back 8-spindle unit

SS-DSU-B8L23



SS-DSU-B8D34



Item number	Stock	Spare parts				Coment
		Cap screw	Wrench	Set screw	Wrench	
SS-DSU-SK	◎	CS0515	LW-4	SS0506	LW-2.5	
SS-DSU-L23	◎	CS0515	LW-4	SS0506 SS0515	LW-2.5	For DS-ACH Series
SS-DSU-B8L23	◎	CS0415	LW-3	SS0506	LW-2.5	Can take DS-ACH Series
SS-DSU-B8D34	◎	CS0506	LW-3	SS0506	LW-2.5	

UL Chipbreaker

6 corner insert for Swiss machines

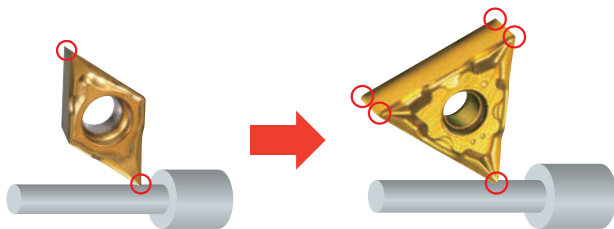
WATCH ON
YouTube



Features

- First negative style insert designed for Swiss machines
- Less tool pressure and good chip control

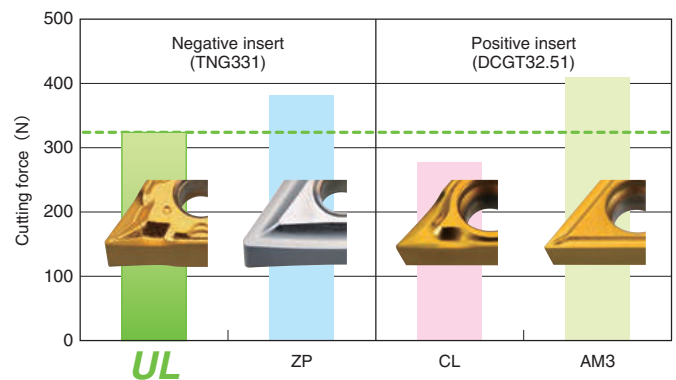
Reduce Cost in Swiss Machining



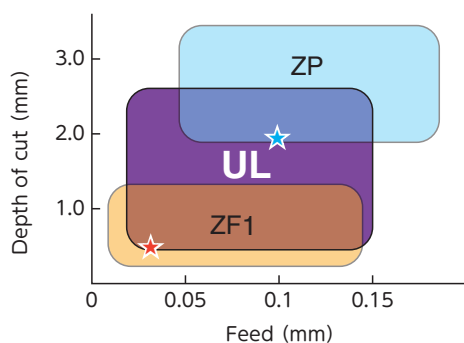
Positive insert with sharp cutting edge is required for Swiss machining.

With UL chipbreaker, negative insert provides sharp cutting edge AND more corners.

Cuts Like Positive Inserts



Covers a Wide Range of Cutting Conditions with Good Chip Control



《X5CrNi18-10》 80m/min WET

★ 0.03mm/rev 0.5mm DOC

★ 0.1mm/rev 2.0mm DOC



Stock list

Shape	Part number	Dimensions			PVD coated micrograin carbide			
		I.C.	Thickness	Corner radius	TM4	Stock	NEW DM4	Stock
	TNGG160401MFNUL	9.525	4.76	0.08	5809934	●	5889159	●
	160402MFNUL			0.18	5809983	●	5838859	●
	160404MFNUL			0.38	5809975	●	5868948	●
	CNGG120404FNUL	12.7	4.76	0.4	5874656	●	5922067	●
	120408FNUL			0.8	5900139	●	5922059	●
	WNGG080404FNUL	12.7	4.76	0.4	5905856	◎	5906375	◎
	080408FNUL			0.8	5905849	◎	5906383	◎

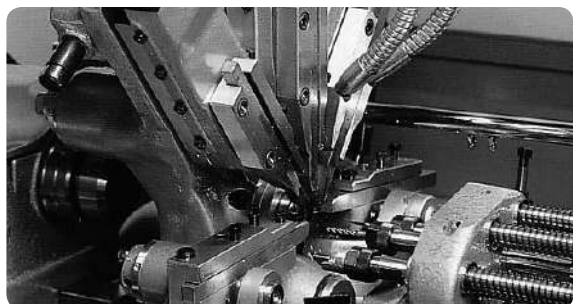
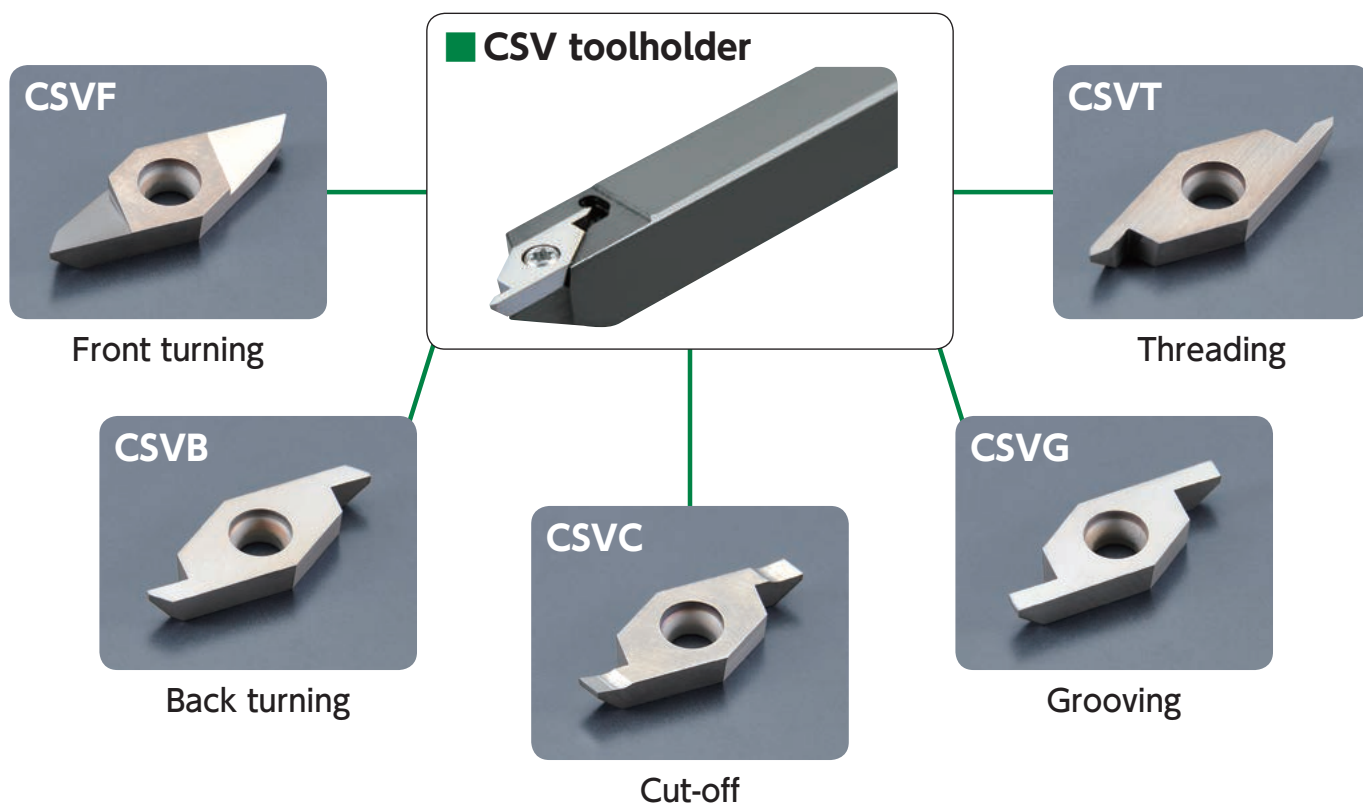
*See page D98 - 100 "2013 Cutting tool for small parts machining" for holder list

Best tool for up to 5.0mm diameter material



Features

- Very up- sharp edge with mirror finish provides superior precise machining
- Interchangeable tool :
All the inserts can use the same toolholder
- Specially designed edge shape for small diameter machining



- Holders for Cam-style machine also available

*See page D83/E107/F121/G139/I182 "2013 Cutting tool for small parts machining" for tool list

Shifted Toolholders

Toolholders for extended guide-bushing

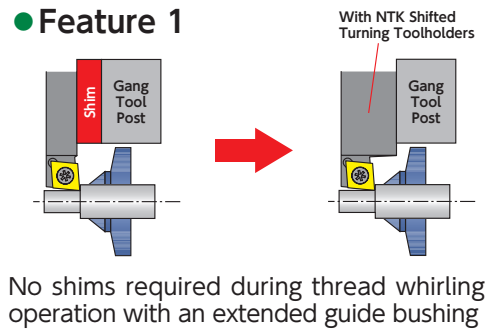
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YouTube



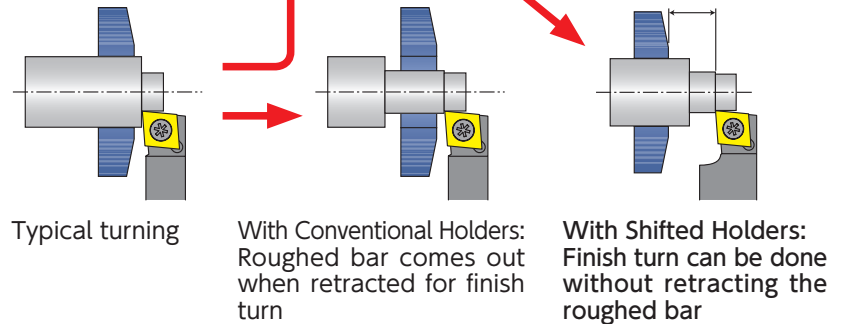
Two Major Features

1. Eliminate shims for turning holders when extended guide bushing is used (especially in thread whirling)
2. Performs finish cut without retracting roughed section (bar) from guide bushing

Feature 1



Feature 2



* See page D84/D86 "2013 Cutting tool for small parts machining" for holder list

SATURN DUO

Face turning / grooving tools

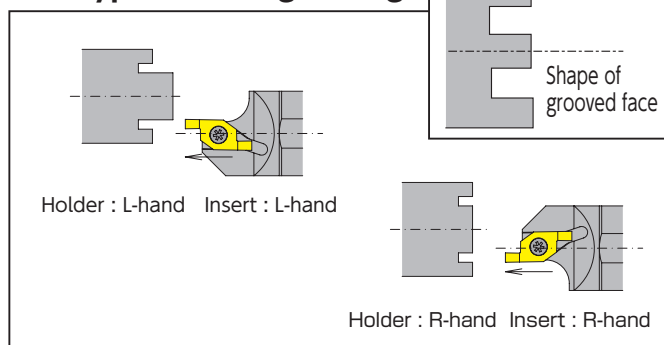
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Features

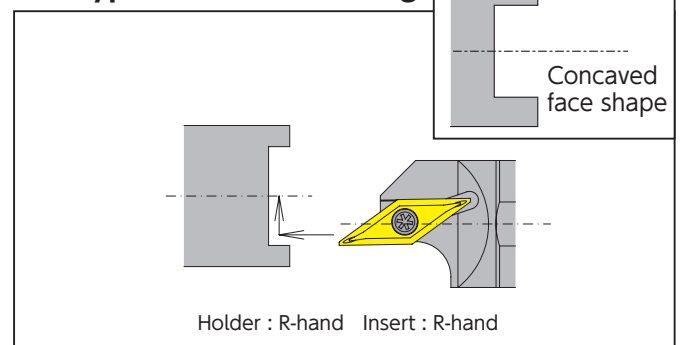
- FGV type for face grooving and FBV type for face machining
- Economical double-corner specification
- Improved tool rigidity by optimizing the overhang and holder shape
- Selection includes : gang-type, front-gang-type and sleeve holder type

FGV type for face grooving



- Grooving possible under a wide range of cutting conditions due to strengthened rigidity of both insert and holder
- Minimum machining diameter of $\phi 6.0\text{mm}$, and groove width of 1.0mm
- Left-hand types available for machining work with a boss

FBV type for face machining



- Further improved face machining efficiency
- Minimum machining diameter of $\phi 8.0\text{mm}$

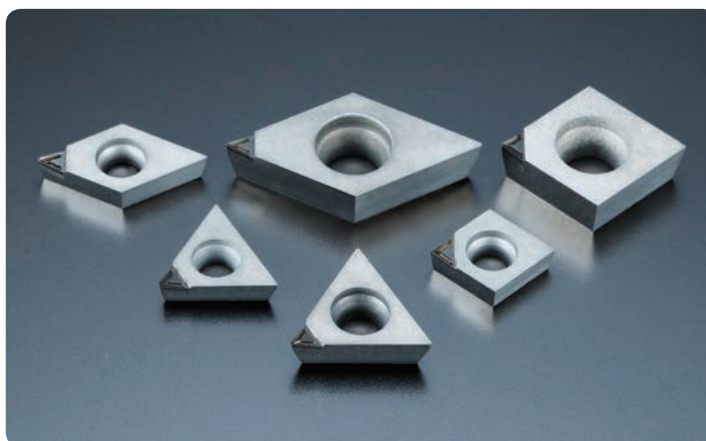
* See page G154 -157 "2013 Cutting tool for small parts machining" for tool list

PD2 Lineup expansion

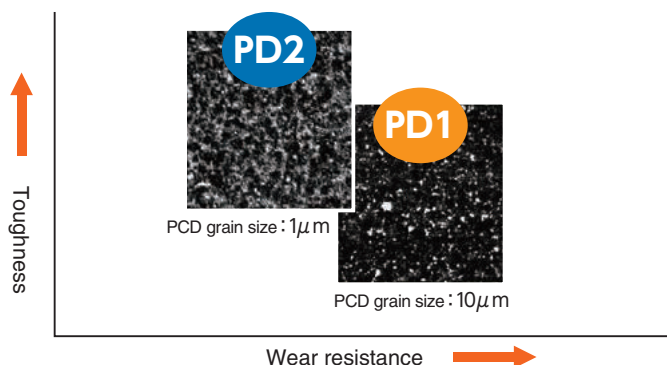
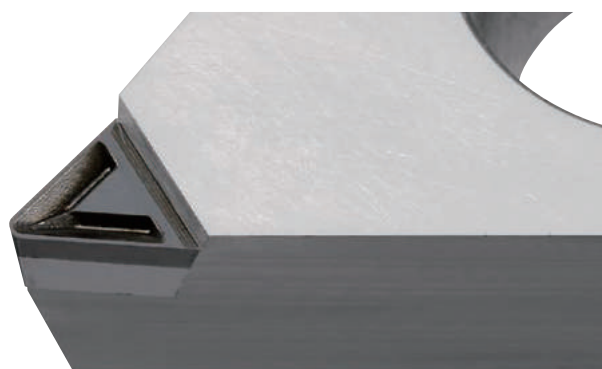
Solution for trouble of chip control in aluminum and copper machining

Features

- **New 3D chipbreaker on super micro grain PCD "PD2"** PD2 has up-sharp edge and good adhesion resistance.
- **Unique 3D chipbreaker by laser processing machine**
 - Achieve superior machined surface for finishing process by making chips curled and well-controlled.



Applicable material map



Stock list

Positive type (New 3D chip breaker type)

Shape		Part number	Dimensions (mm)				Super micro grain PCD	
			Cutting length L	I.C.	Thickness	Corner radius R	PD2	Stock
cutting edge		CCMT060201PBF	2.3	6.35	2.38	0.1	5960414	◎
		060202PBF		6.35	2.38	0.2	5960430	◎
		060204PBF		6.35	2.38	0.4	5960463	◎
		09T301PBF		9.525	3.97	0.1	5960471	◎
		09T302PBF		9.525	3.97	0.2	5960497	◎
		09T304PBF		9.525	3.97	0.4	5960505	◎
		DCMT070201PBF		6.35	2.38	0.1	5960760	◎
		070202PBF		6.35	2.38	0.2	5960778	◎
		11T301PBF		9.525	3.97	0.1	5960786	◎
		11T302PBF		9.525	3.97	0.2	5960794	◎
		11T304PBF		9.525	3.97	0.4	5960802	◎
		TPMT090201PBF		5.56	2.38	0.1	5960745	◎
		090202PBF		5.56	2.38	0.2	5960711	◎
		090204PBF		5.56	2.38	0.4	5960703	◎
		110301PBF		6.35	3.18	0.1	5960695	◎
		110302PBF		6.35	3.18	0.2	5960687	◎
		110304PBF		6.35	3.18	0.4	5960679	◎

High rake angle type



Case study (high rake angle type)

spool machining	
Work material : Al-Mg1SiCu	PD2
Cutting speed (m/min) : 170	
Feed (mm/rev) : 0.06	
Depth of cut (mm) : 0.15	
Coolant : WET	
NTK : PD2	10,000 pcs/corner
Comp. PCD	5,000 pcs/corner
NTK PD2 achieved 2 times longer tool life, and good wear resistance than competitor's PCD	

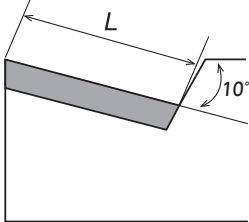
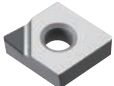
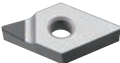
spool machining	
Work material : Al-Mg1SiCu	PD2
Cutting speed (m/min) : 210	
Feed (mm/rev) : 0.07	
Depth of cut (mm) : 0.13	
Coolant : WET	
NTK : PD2	15,000 pcs/corner
Comp. PCD	10,000 pcs/corner
NTK PD2 achieved 1.5 times longer tool life, High rake angle offered stable machining.	

Stock list

Positive type

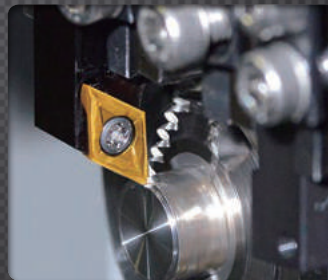
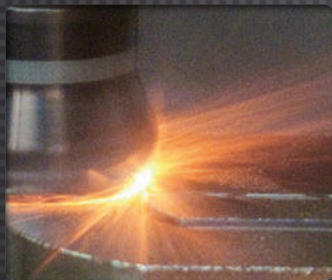
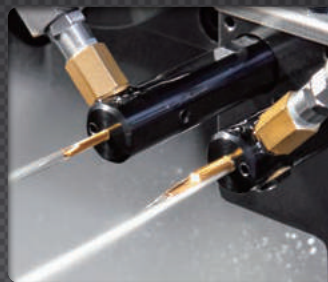
Shape		Part number	Dimensions (mm)				Super micro grain PCD	
			Cutting length L	I.C.	Thickness	Corner radius R	PD2	Stock
cutting edge 		CCMT09T302PF	2.3	9.525	9.525	0.2	5860648	◎
		09T304PF				0.4	5860630	◎
		DCMT070201PF		6.35	2.38	0.1	5912274	◎
		070202PF				0.2	5860655	◎
		11T302PF		9.525	9.525	0.2	5860671	◎
		11T304PF				0.4	5860689	◎
		TPMT090202PF		5.56	2.38	0.2	5860697	◎
		090204PF				0.4	5860705	◎
		110302PF		6.35	3.97	0.2	5860713	◎
		110304PF				0.4	5860721	◎

Negative type

Shape		Part number	Dimensions (mm)				Super micro grain PCD	
			Cutting length L	I.C.	Thickness	Corner radius R	PD2	Stock
cutting edge 		CNMX120404PF	3.4	12.7	4.76	0.4	5884044	◎
		120408PF				0.8	5884051	◎
		DNMX150404PF	4.5			0.4	5884036	◎
		150408PF				0.8	5884010	◎
		TNMX160404PF	3.0	9.525		0.4	5884002	◎
		160408PF				0.8	5883988	◎

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www.youtube.com/ntkcuttingtools



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