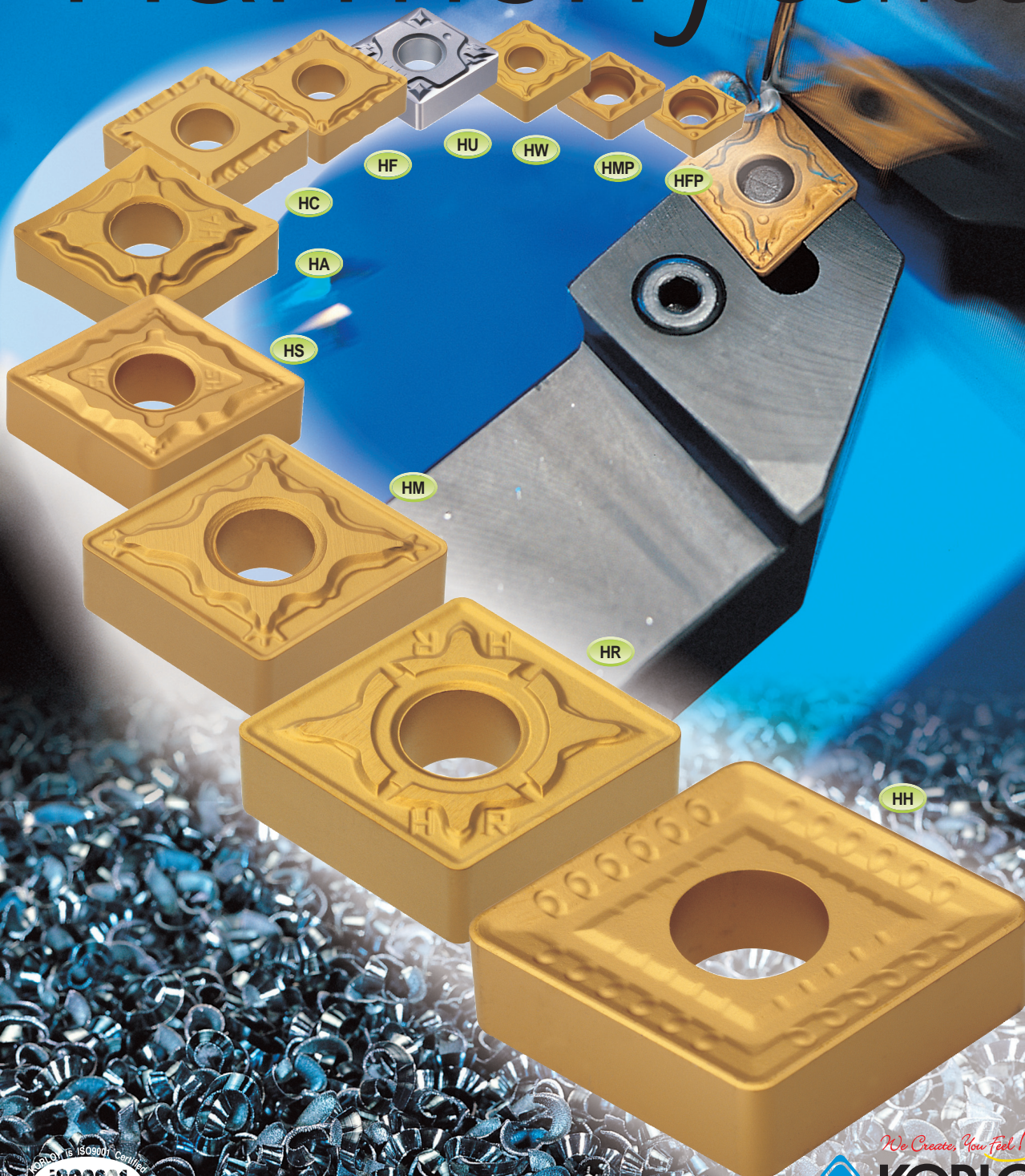


New Concept on Turning Operations

Harmony-Series

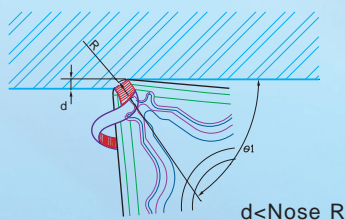


● Necessary of Chip-breaker

1. Problems in Turning Operation: The long chips can be bound on tools and holders when we cut a work piece in continuous cutting operations. It means that we have to spend additional time to remove them and it is not efficient and decrease our productivity. Also when we use the negative insert, the relief angle will be minus value. It means the cutting resistance will be increased and it makes decrease of tool life.
2. Function of Chip-breaker in Turning Operations
 - ① It makes the shorter chip
 - ② It decrease cutting resistance by bigger relief angle
 - ③ It decrease the Non-cutting operation time such as removing of chips from your machine.

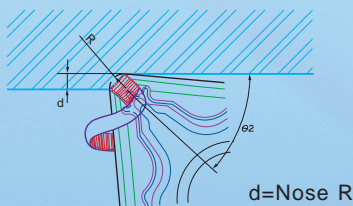
● Features of H - Series

1. The H - Series are designed with HARMONY concept. We carefully research chip flow directions as per variations of depth-of-cuts and designed the Chip-breakers having excellent properties such as better chip breaking, decreased cutting resistance and stronger cutting edge. And it ensures improving of tool life, cutting quality and productivity.
2. The cutting mechanism of H - series is the separation of chip breaker as finish, medium cutting and roughing to meet the variation of depth-of-cut. The following shows HM chip-breaker's action in variation of depth-of-cut.



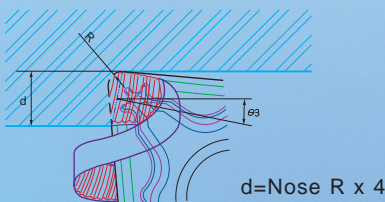
* When the depth-of-cut is smaller than Nose-R

- Depth-of-cut 0.5~1.5mm(0.02~0.06inch), it is in finish or medium- finish cutting range.
- Main finish chip-breaker breaks the chip and sub finish chip-breaker controls the chip flow.



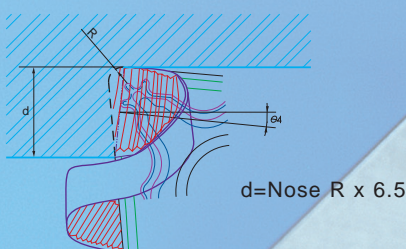
* When the depth-of-cut is same as Nose-R.

- Depth-of-cut 0.8~2.0mm(0.03~0.08inch), it is in medium-finish cutting range.
- Main and sub finish chip-breaker breaks the chip well.



* When the depth-of-cut is 2~4 times of Nose-R.

- Depth-of-cut 1.5~4.5mm(0.06~0.18inch), it is in medium cutting range.
- Roughing chip-breaker breaks the chip.

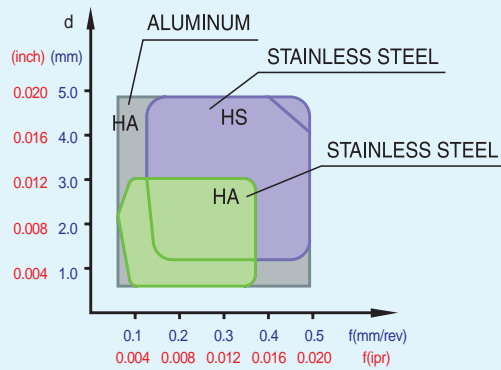


* When the depth-of-cut is 5~8 times of Nose-R.

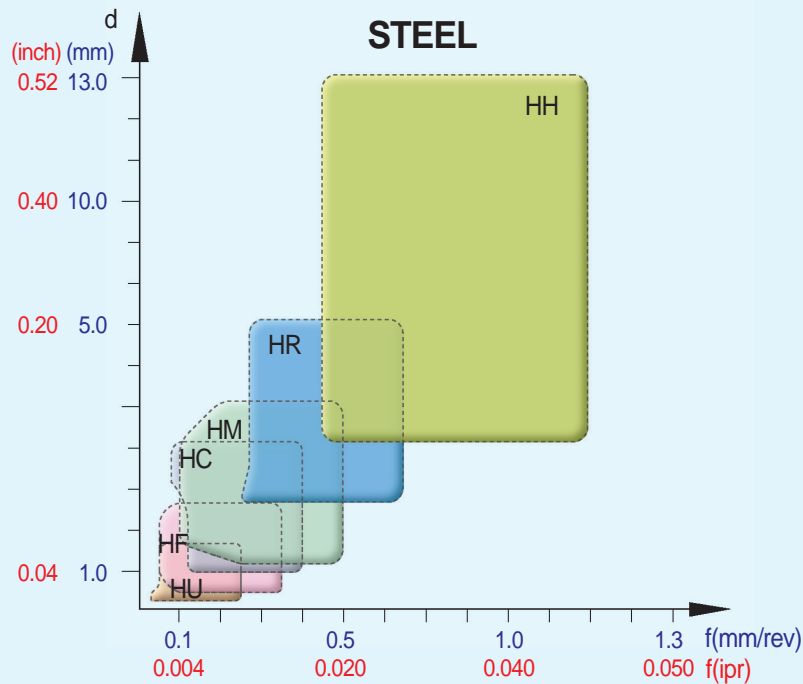
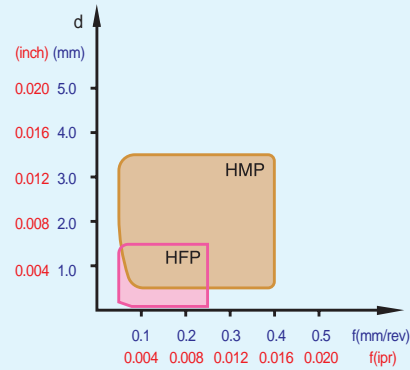
- Depth-of-cut 4.0~6.0mm(0.16~0.24inch), it is in medium-rough cutting range.
- Side of roughing chip-breaker breaks the chip.

Harmony-Series

STAINLESS & ALUMINUM



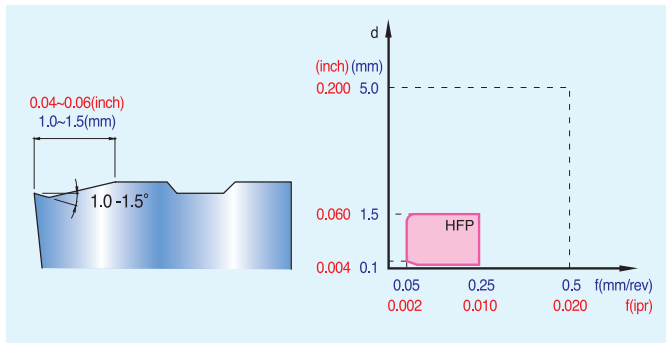
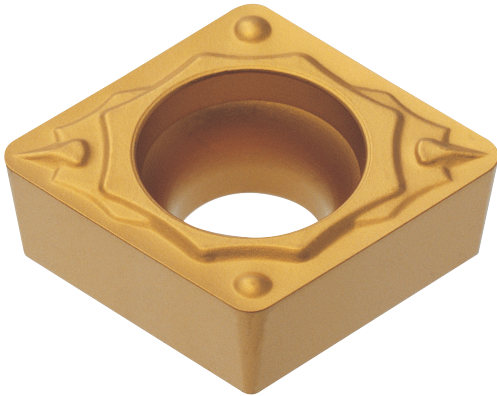
STEEL



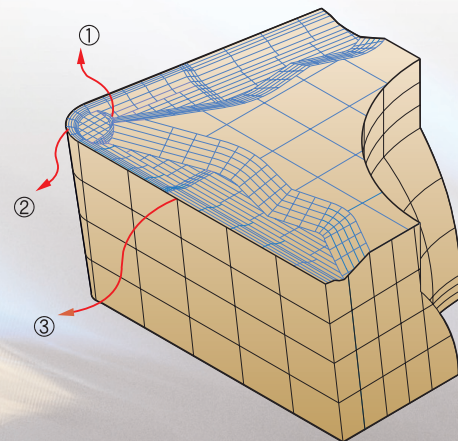
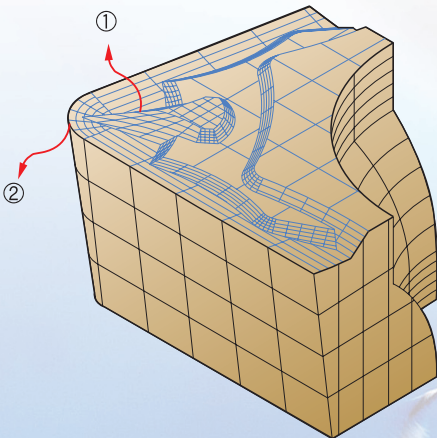
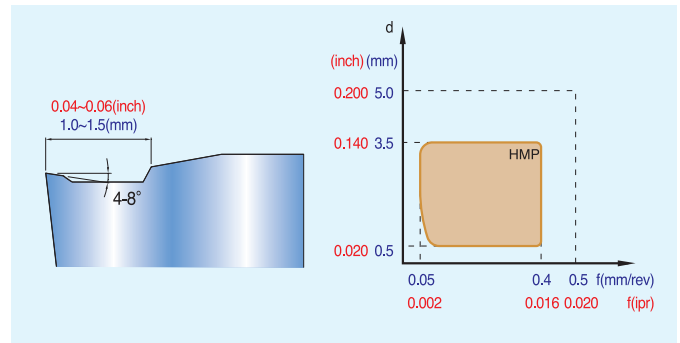
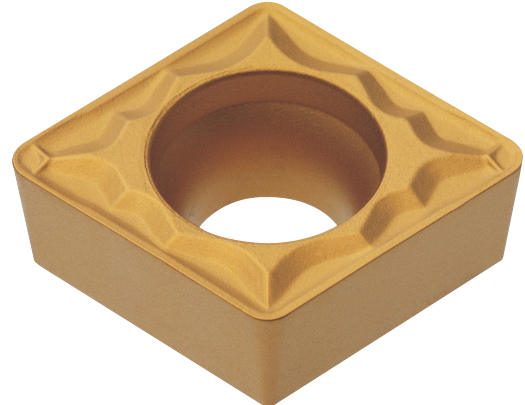
Work-piece		Recommended Grades					
ISO	Material	Grade	Wear Resistance ◀────────▶ Toughness				
			01	10	20	30	40
P	Carbon Steel Alloy Steel	Coated Carbide	NC310		NC3015	NC3020	NC330
		Cermet	CT10		CN200		
M	Stainless Steel	Coated Carbide	NC9020 (NC3020)				PC9030 (PC230)
K	Cast irons	Coated Carbide	NC305K		NC315K		

Type	C/B	Application	Cutting Condition				Work-piece			
			Depth-of-cut (d)	Feed(f)	Depth-of-cut (d)	Feed(f)	Steel	Stainless Steel	Cast iron	AL
Nega Type	HU	Ultra Fine - finish	0.1~1.0	0.03~0.30	0.004~0.04	0.0012~0.012	●			
	HW	WIPER	0.3~2.0	0.10~0.50	0.012~0.08	0.004~0.02				
	HF	Finish	0.3~2.5	0.05~0.35	0.012~0.10	0.002~0.014	●			
	HC	Medium-finish	0.8~4.0	0.08~0.40	0.032~0.16	0.003~0.016	●	●	●	
	HM	Medium	1.0~5.0	0.10~0.50	0.04~0.20	0.004~0.02	●		●	
	HR	Roughing	2.5~7.0	0.25~0.65	0.10~0.28	0.01~0.026	●		●	
	HH	Roughing	4.0~1.3	0.45~1.1	0.16~0.52	0.018~0.04	●			
Nega Type	HA	Medium-finish	0.5~2.5	0.05~0.3	0.02~0.10	0.002~0.012		●		●
	HS	Medium-Cutting	1.0~4.0	0.1~0.4	0.04~0.16	0.004~0.016		●		
Posi Type	HFP	Finish	0.1~1.5	0.05~0.30	0.004~0.06	0.002~0.012	●	●		
	HMP	Medium	0.5~3.5	0.10~0.40	0.02~0.14	0.004~0.016	●	●	●	

Positive type, HFP (Fine finish, Finish area)



Positive type, HMP (Medium-finish, Medium area)



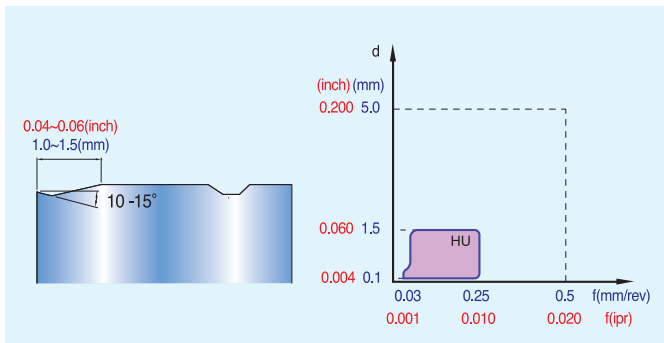
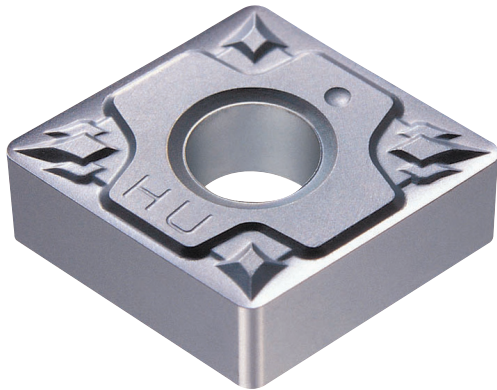
- ① Excellent and stable chip control due to 2 step chip- breaker in fine finish area
- ② Excellent surface finish, cutting performance due to the sharp cutting edge in low cutting resistance applications (Grinding process applied on sides of insert)

* Main work-piece materials: Steels, Stainless steels

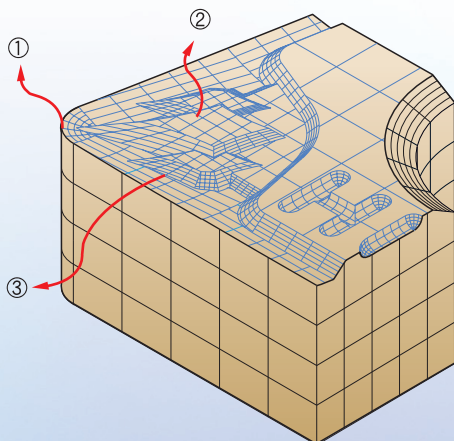
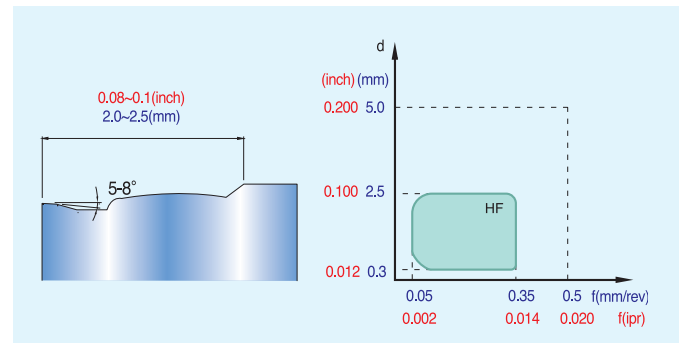
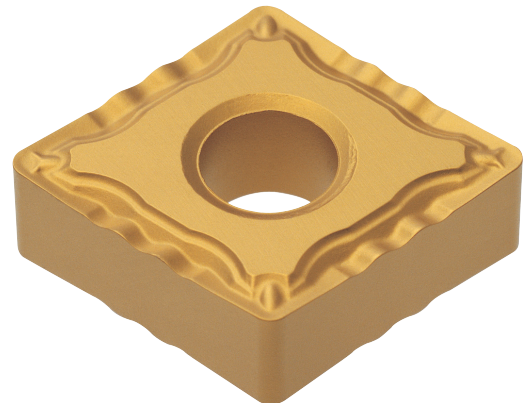
- ① Chip control sensor ensures stable chip removal in low depth-of-cut and efficient chip breaking.
- ② Ideal land relief angle design ensures better cutting performance, surface finish quality and chip breaking.
- ③ Reinforced non-cutting edge and land part ensures good and stable operation in the sudden change of depth-of-cut.

* Main work-piece materials : Steels, Stainless steels, Cast irons

Negative type, HU (Ultra fine finish, Finish area)

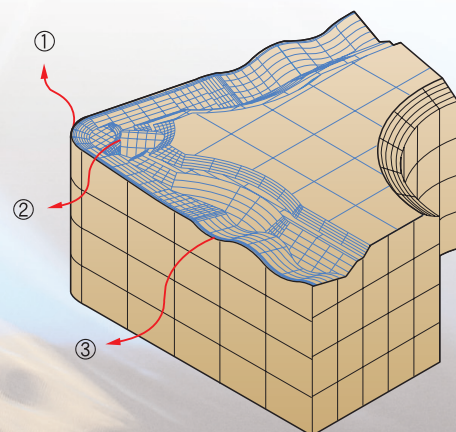


Negative type, HF (Finish, Medium-finish area)



- ① Excellent surface finish, cutting performance due to the sharp cutting edge In low cutting resistance applications (Grinding process applied on sides of insert)
- ② Special figure designed main chip breaker ensures stable chip control in the ultra find finish operations.
- ③ Sub chip-breaker ensures good chip breaking in low depth-of-cut and stable operation in sudden change of depth-of-cut.

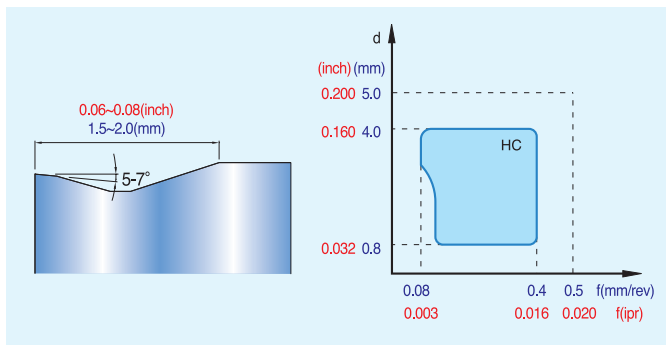
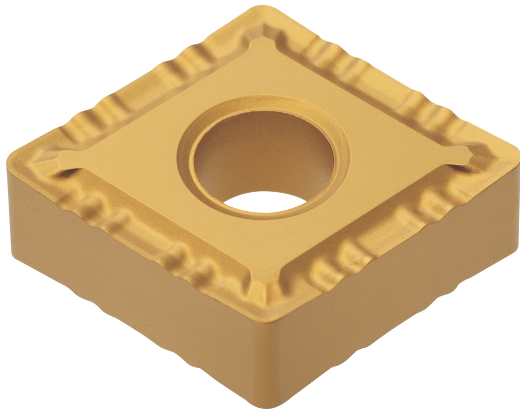
* Main work-piece material: Steels



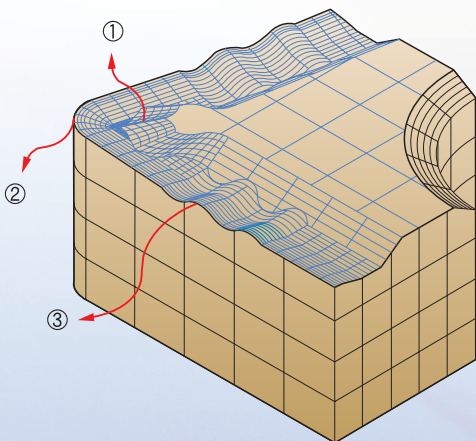
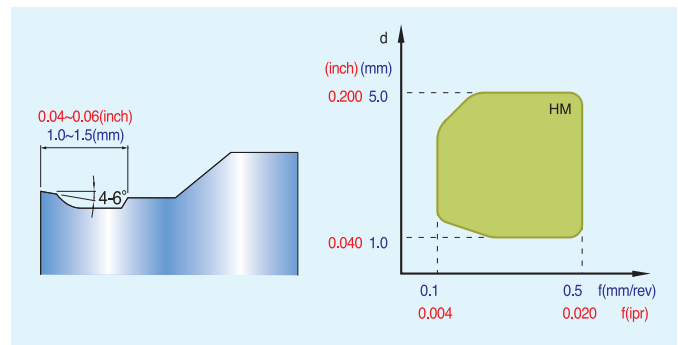
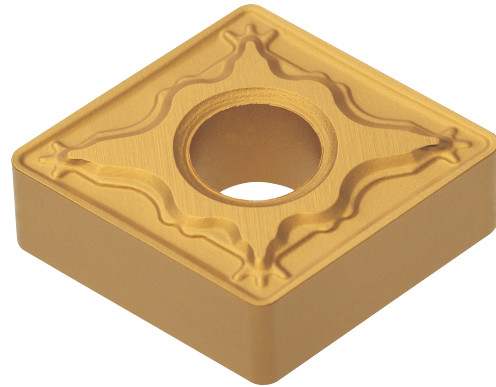
- ① Ideal land relief angle design ensures better surface finish quality and lower cutting resistance.
- ② Special figure design ensures stable chip control in finish operations.
- ③ Concave and convex design ensures excellent chip control in various change of depth-of-cut.

* Main work-piece materials: Steels, Stainless steels

Negative type, HC (Medium-finish, Medium)

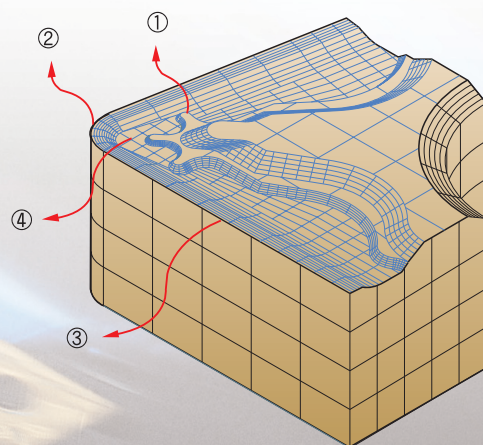


Negative type, HM (Medium, Medium-roughing)



- ① Unique figure design ensures stable chip control in small depth-of-cut and good chip breaking in large depth-of-cut.
- ② Ideal land relief angle design ensures better surface finish quality and lower cutting resistance.
- ③ Concave and convex design ensures excellent chip control in various change of depth-of-cut such as copy machining.

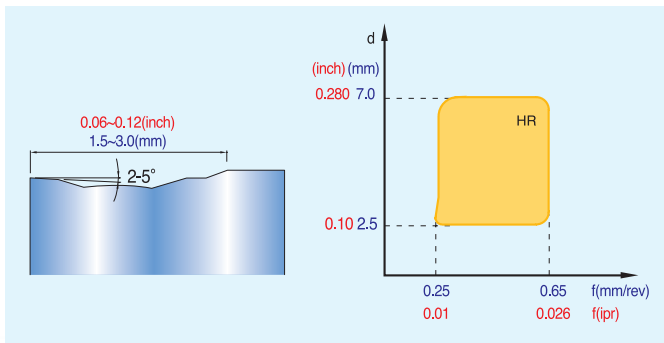
* Main work-piece material: Steels, Stainless steels



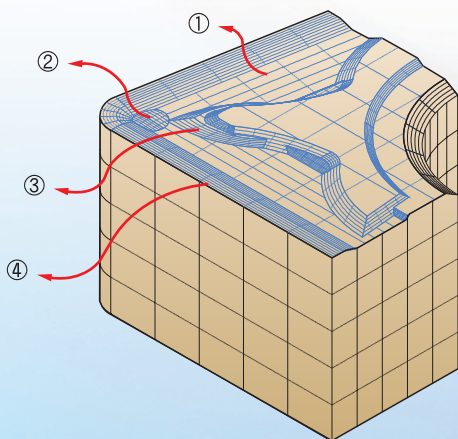
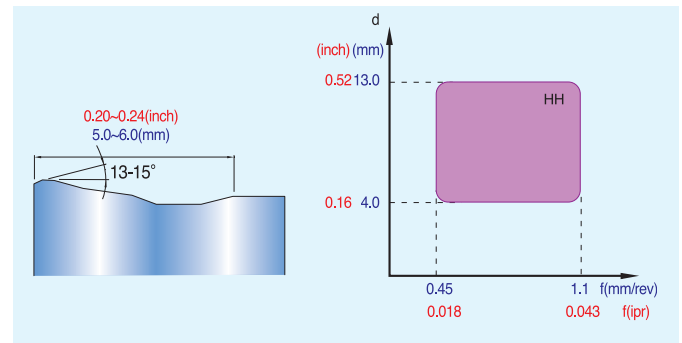
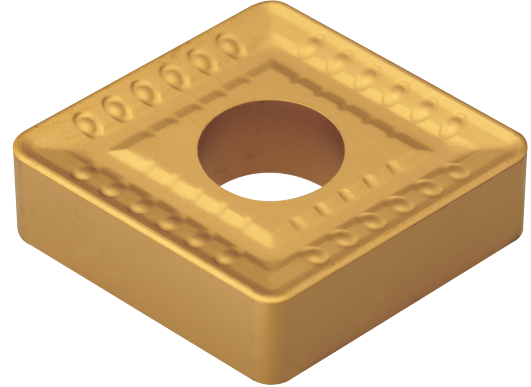
- ① 3 Chip-control-sensors design, it can be applied at the wide application range from medium-finish to medium-roughing operations.
- ② Ideal land relief angle design ensures better cutting performance and lower cutting resistance.
- ③ Stronger cutting edge adopting of large land width on main cutting edge part, it is able to be applied at intermittent cutting or bad conditioned work piece.
- ④ Special design on chip pocket part ensures excellent tool life at high speed cutting, high feed cutting and CNC machining.

* Main work-piece: Steels, Stainless steels, Cast irons

Negative type, HR (Roughing)

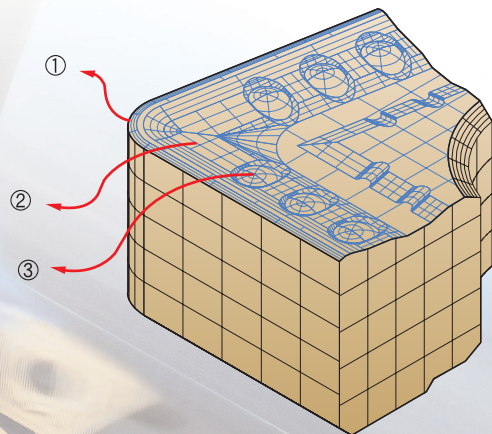


Negative type (Single sided), HH (Heavy-Duty)



- ① Superior chip-evacuation thanks to wide chip-groove design during high depth-of-cut and high feed machining
- ② Good edge strength during intermittent machining & superior chip-evacuation during ultra fine finishing operation thanks to enhanced edge strength
- ③ Good chip-curl induced by 2-step shape of chip breaker design and reduced chip-evacuation resistance during high-speed and high-feed machining
- ④ Low-resistance edge-line made by having an land-angle reduces cutting resistance

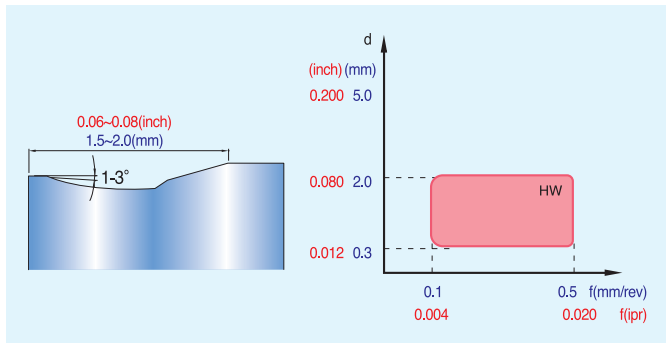
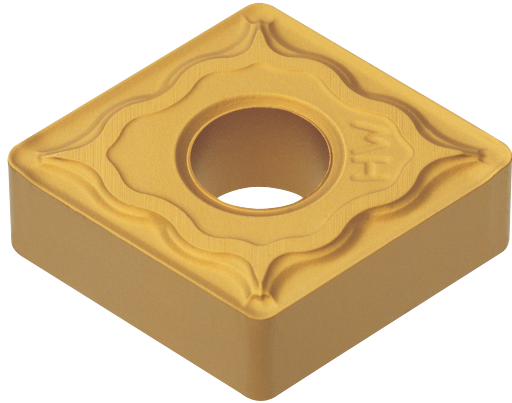
* Main work-piece materials : Steels, Cast irons



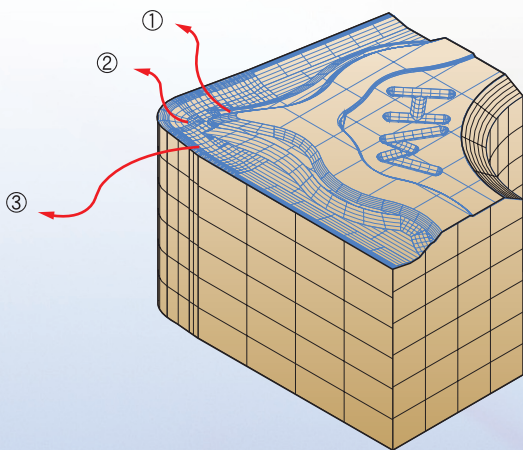
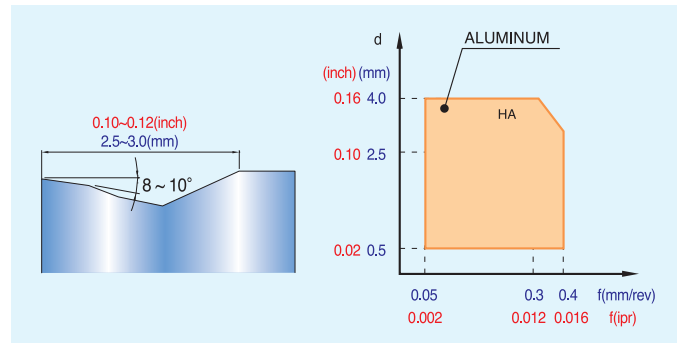
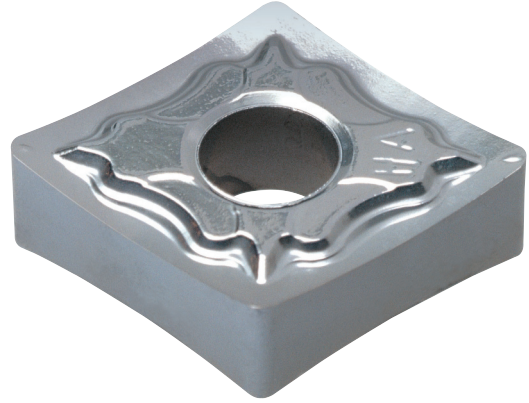
- ① Having strong toughness doesn't cause chipping and damages on edge during high depth-of-cut, high-feed and severe intermittent machining thanks to nega-land design
- ② Reduced cutting-resistance as having good chip-evacuation resulted from small rake-angle
- ③ Minimization of frictional heat generation as reducing friction size between chip and inserts during cutting is making long tool life

* Main work-piece materials : Steels, Cast irons

Negative type, HW (Wiper Inserts)

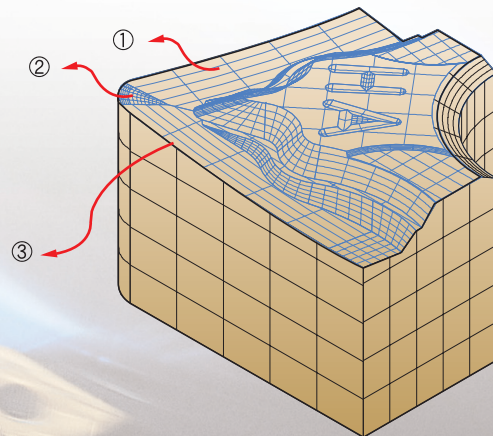


Negative type, HA (Aluminum)



- ① Special shape design of chip-breaker ensures superior chip control in the low depth-of-cut
- ② Stable performance by special shape design at chip pocket in high-speed, high-feed
- ③ Having superior fine finish during machining because it is composed of recess type of edge and wiper type of edge

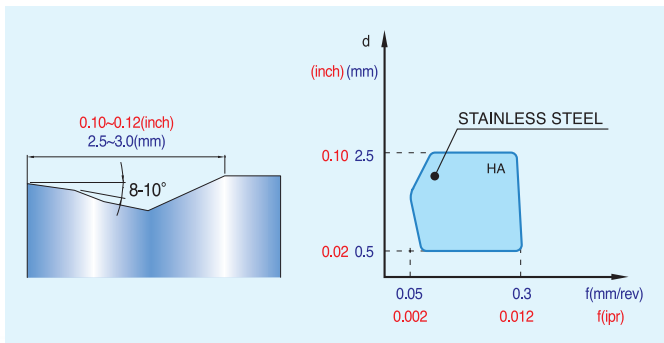
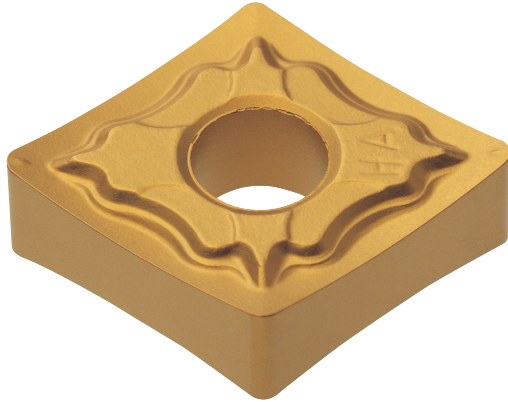
* Main work-piece materials : Steels



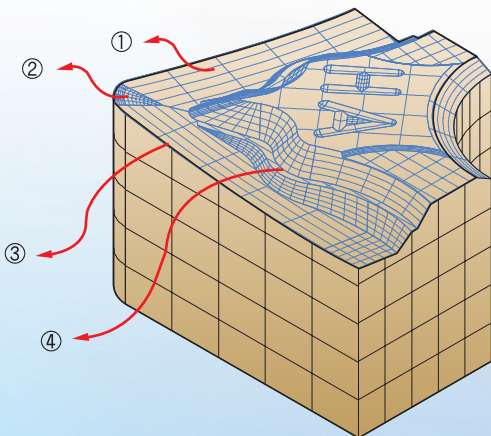
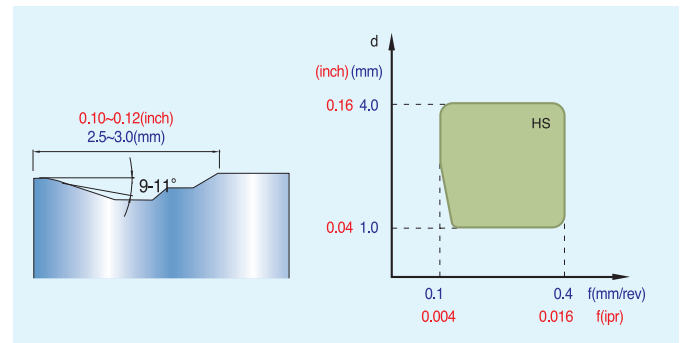
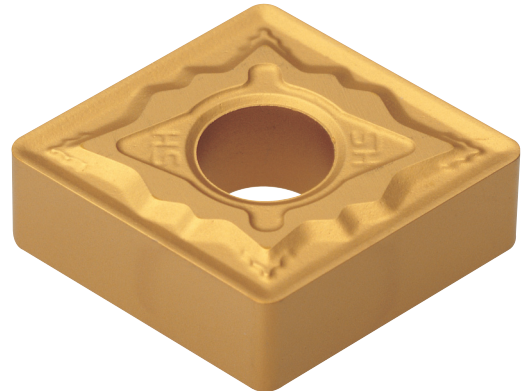
- ① Good chip-evacuation by design of wide chip-groove and high rake-angle prevents build-up-edge and generates small cutting-resistance
- ② Enhanced edge strength by enhanced edge shape prevents chipping, friction of edge and makes chip-evacuation superior during ultra fine finish machining
- ③ Enable to low-depth of-cut by sharp edge and having superior fine finish

* Main work-piece materials : Aluminum, Soft steels, Stainless steels

Negative type, HA (Stainless steel)

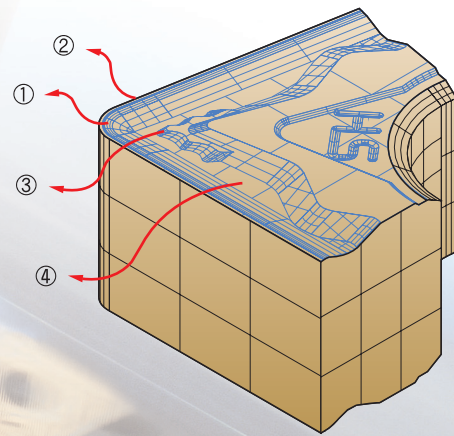


Negative type, HS (Exclusive for Stainless steel)



- ① Good chip-evacuation by design of wide chip-groove and high rake-angle prevents build-up-edge and generates small cutting-resistance
- ② Enhanced edge strength by enhanced edge shape prevents chipping, friction of edge and makes chip-evacuation superior during ultra fine finish machining
- ③ Enable to low-depth-of-cut by sharp edge and having superior fine finish
- ④ 2-step shape of chip-breaker design induces good chip-curl and reduces chip-evacuation resistance during high-speed and high-feed machining

* Main work-piece materials : Aluminum, Soft steels, Stainless steels



- ① Superior fine finish and wear-resistance by low-resistance design of high-land rake angle as chip breaker exclusive for stainless steels
- ② Reduced chipping at boundary from low depth-of-cut up to high depth-of-cut by land width and change of angle at sides
- ③ Preventing chipping & damages as enhancing strength of edge on high-depth-of-cut and high-feed having increasing cutting load
- ④ Reducing chip evacuation resistance during high-depth-of-cut, high-feed as forming wide chip pocket

* Main work-piece materials : Stainless steels, Difficult-to-cut steels



Harmony-Series

Recommendation for General steels

■ Work-piece material : DIN(CK45, CK55, 42CrMo4 and etc.)
AISI(1045, 1055, 4130, 4140 and etc.)

■ Hardness : 180 ~ 260HB

Work-piece		Select Chip-breaker and Grade				Select Shape of Insert as per Work-piece					
Operation	Depth-of-cut	Chip-breaker	Feed	Grade	Speed	80° 	80° 	55° 	60° 	35° 	90°
	mm(inch)	First Choice	mm/rev(ipv)	Grade	m/min(sfm)	{NEGA} CN□□	{NEGA} WN□□	{NEGA} DN□□	{NEGA} TN□□	{NEGA} VN□□	{NEGA} SN□□
Finish Cuttings	0.3 ~ 1.0 ~ 2.0 0.012 ~ 0.040 ~ 0.080 WIPER	HW 	0.10 ~ 0.30 ~ 0.50 0.004 ~ 0.012 ~ 0.020	NC310 NC3020	300 980 250 820						
	0.2 ~ 0.5 ~ 1.0 0.008 ~ 0.020 ~ 0.040 Ultra Fine - finish	HU 	0.05 ~ 0.10 ~ 0.20 0.002 ~ 0.004 ~ 0.008	CC105 CN20	190 623 160 525						
	0.5 ~ 1.0 ~ 2.0 0.020 ~ 0.039 ~ 0.098 Finish	HF 	0.08 ~ 0.15 ~ 0.30 0.002 ~ 0.004 ~ 0.008	CN200 NC310 NC3015 NC3020	180 590 220 722 200 660 190 623						
Medium Cuttings	0.8 ~ 1.5 ~ 3.5 0.031 ~ 0.059 ~ 0.138 Medium-finish	HC 	0.10 ~ 0.20 ~ 0.35 0.004 ~ 0.008 ~ 0.014	NC310 NC3020 NC3015 NC330	210 689 180 590 190 630 160 525						
	1.5 ~ 2.5 ~ 5.0 0.059 ~ 0.098 ~ 0.197 Medium	HM 	0.15 ~ 0.25 ~ 0.50 0.006 ~ 0.010 ~ 0.020	NC310 NC3015 NC3020 NC330	200 656 180 558 170 560 150 492						
Roughing	2.5 ~ 4.5 ~ 7.0 0.100 ~ 0.180 ~ 0.280 Roughing	HR 	0.25 ~ 0.45 ~ 0.65 0.010 ~ 0.018 ~ 0.026	NC3015 NC3020 NC330	170 560 160 525 140 460						
HEAVY	4.0 ~ 8.0 ~ 13 0.160 ~ 0.320 ~ 0.520 Roughing	HH 	0.45 ~ 0.70 ~ 1.1 0.018 ~ 0.028 ~ 0.040	NC3015 NC3020 NC330	120 390 100 330						

	mm(inch)	First Choice	mm/rev(ipv)	Grade	m/min(sfm)	{POS} CC□T	{POS} WC□T	{POS} DC□T	{POS} TC□T	{POS} VC□T VB□T	{POS} SC□T
Finish Cuttings	0.1 ~ 0.5 ~ 1.5 0.004 ~ 0.020 ~ 0.059 Finish	HFP 	0.05 ~ 0.15 ~ 0.25 0.002 ~ 0.006 ~ 0.010	CC105 NC310 NC3020 NC3015	200 656 220 722 180 590 190 627						
Medium Cuttings	0.5 ~ 1.5 ~ 3.5 0.006 ~ 0.059 ~ 0.138 Medium	HMP 	0.08 ~ 0.20 ~ 0.40 0.003 ~ 0.008 ~ 0.016	NC310 NC3020 NC3015 NC330	210 689 180 590 190 627 150 492						

* Advices

- According to the work-piece material and depth-of-cut
 - Choose chip-breaker type
 - Choose the shape of insert as per work-piece
 - Choose the grade and decide feed and speed. Adjust factors by conditions from the first operation for the better productivity.
- If the work-piece material is a soft steel or the Brinell hardness is less than 180,
 - Increase speed as 20% as the above,
 - Increase feed as 20% as the above.
- If the work-piece material is a mold steel or a hard steel or the Brinell hardness is 260~350,
 - Decrease speed as 20% as the above,
 - Decrease feed as 10% as the above.



Harmony-Series








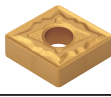






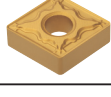





Recommendation for General steels

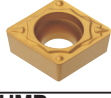











■ Work-piece material : DIN(X5CrNi1810, X5CrNiMo17122, X6CrNiNb1810 and etc.)

AISI(303, 316, 347, 202 and etc.)

■ Hardness : 135~ 185HB

■ Difficult-to-cut stainless steels, Austenite stainless steels and etc.

Work-piece		Select Chip-breaker and Grade				Select Shape of Insert as per Work-piece					
Operation	Depth-of-cut	Chip-breaker	Feed	Grade	Speed	80°	80°	55°	60°	35°	90°
	mm(inch)	First Choice	mm/rev(ipr)	Grade	m/min(sfm)	(NEGA) CNMG	(NEGA) WNMG	(NEGA) DNMG	(NEGA) TNMG	(NEGA) VNMG	(NEGA) SNMG
Finish Cuttings	0.5 ~ 1.5 ~ 2.5 0.020 ~ 0.060 ~ 0.10 Medium-finish	HA 	0.03 ~ 0.15 ~0.30 0.001 ~ 0.006 ~ 0.012	PC9030 NC9020	170 560 190 620						
	1.0 ~ 2.5 ~ 4.0 0.04 ~ 0.10 ~ 0.16 Medium-Cutting	HS 	0.10 ~ 0.25 ~0.40 0.004 ~ 0.010 ~ 0.016	PC9030 NC9020	160 520 180 590						
Roughing	2.0 ~ 4.5 ~ 6.5 0.08 ~ 0.18 ~ 0.26 Intermittent Medium-Roughing	HM 	0.20 ~ 0.40 ~0.60 0.008 ~ 0.016 ~ 0.024	PC9030 NC9020	120 390 160 520						

	mm(inch)	First Choice	mm/rev(ipr)	Grade	m/min(sfm)	(POS) CC□T	(POS) WC□T	(POS) DC□T	(POS) TC□T	(POS) VC□T VB□T	(POS) SC□T
Finish Cuttings	0.1 ~ 0.5 ~ 1.5 0.004 ~ 0.020 ~ 0.060 Finishing	HFP 	0.05 ~ 0.10 ~0.20 0.002 ~ 0.004 ~ 0.008	PC9030 NC9020	170 560 190 620						
Medium Cuttings	0.8 ~ 1.0 ~ 3.0 0.032 ~ 0.004 ~ 0.12 Medium Finishing	HMP 	0.08 ~ 0.15 ~0.3 0.003 ~ 0.006 ~ 0.012	PC9030 NC9020	160 520 180 590						

* Advices

- According to the work-piece material and depth-of-cut
 - Choose chip-breaker type
 - Choose the shape of insert as per work-piece
 - Choose the grade and decide feed and speed. Adjust factors by conditions of first operation for the better productivity.
- If the work-piece material is a Martensite or Ferrite stainless steel,
 - Increase speed as 20% as the above,
 - Increase feed as 20% as the above
- If the application requires the medium and general purpose area, we recommend our -GS chip-breaker with NC325S grade.
(Please see the 'Difficult-to-cut-material machining guide - No:97' of KORLOY TECH-NEWS.



Harmony-Series

● Recommendation for Cast iron

- Work-piece material : DIN(GG10, GG15~GG35, GGG40~70 and etc.)
AISI(No 20B~ No 50B, 060-40-18, 80-55-06, 100-70-03)
- Hardness : 150 ~ 300HB

Work-piece		Select Chip-breaker and Grade				Select Shape of Insert as per Work-piece					
Operation	Depth-of-cut	Chip-breaker	Feed	Grade	Speed	80° 	80° 	55° 	60° 	35° 35° 	90°
	mm(inch)	First Choice	mm/rev(ipv)	Grade	m/min(sfm)	{NEGA} CNMG	{NEGA} WNMG	{NEGA} DNMG	{NEGA} TNMG	{NEGA} VNMG	{NEGA} SNMG
Medium Cuttings	1.0 ~ 2.5 ~ 4.0 0.040 ~ 0.10 ~ 0.16 Medium-Cutting	HM 	0.15 ~ 0.30 ~ 0.50 0.006 ~ 0.012 ~ 0.020	NC305K NC315K	300 1000 250 820						
	2.5 ~ 4.5 ~ 7.0 0.10 ~ 0.18 ~ 0.28 Roughing	HR 	0.25 ~ 0.45 ~ 0.65 0.010 ~ 0.018 ~ 0.026	NC305K NC315K	270 890 230 750						
Medium Cuttings	0.5 ~ 1.5 ~ 3.0 0.020 ~ 0.06 ~ 0.12 Medium-Cutting	HMP 	0.08 ~ 0.20 ~ 0.40 0.003 ~ 0.008 ~ 0.016	NC305K NC315K	250 750 220 720						

* Advices

- According to the work-piece material and depth-of-cut
 - Choose chip-breaker type
 - Choose the shape of insert as per work-piece
 - Choose the grade and decide feed and speed. Adjust factors by conditions from the first operation for the better productivity.
- If the work-piece material is a soft steel or the Brinell hardness is less than 180,
 - Increase speed as 20% as the above,
 - Increase feed as 20% as the above.
- If the work-piece material is a mold steel or a hard steel or the Brinell hardness is 260~350,
 - Decrease speed as 20% as the above,
 - Decrease feed as 10% as the above.

Specification	Stock-Management items by applied grade and work-Piece												
	Coating									Cermet		Cemeted Carbide	
	Steel				Cast Iron(Nega-Type)		Stainless Steel			Steel		Aluminum	
	NC310	NC3015	NC3020	NC330	NC305K	NC315K	NC325S	NC9020	PC9030	CN20	CN200	H1	
CNMG090304	CNMG321		HF, HM										
CNMG090308	CNMG322		HF, HM										
CNMG120404	CNMG431	HF, HC	HM	HA, HF, HC, HM	HC, HM	HM	HA	HA, HS, HM	HA, HS, HM	HM	HF, HC, HM	HA	
CNMG120408	CNMG432	HF, HC, HM	HF, HC, HM	HA, HF, HC, HM, HR	HC, HM, HR	HM, HR	HA, HC	HA, HS, HC	HA, HS, HM	HM	HF, HC, HM	HA	
CNMG120412	CNMG433			HM, HR	HM, HR	HR		HS	HS				
CNMG160608	CNMG542			HM	HM								
CNMG160612	CNMG543			HR	HR								
CNMG190608	CNMG642			HR	HR								
CNMG190612	CNMG643			HR	HR								
CNMM190612	CNMM643			HH	HH								
CNMM190616	CNMM644			HH	HH								
CNMM190624	CNMM646			HH	HH								
CNMM240724	CNMM856			HH	HH								
CNMM250924	CNMM866			HH	HH								
CNMM250932	CNMM868			HH	HH								
DNMG110404	DNMG331	HF		HF, HM									
DNMG110408	DNMG332			HF, HM									
DNMG110412	DNMG333			HM									
DNMG150404	DNMG431	HF		HF, HM				HS	HS			HA	
DNMG150408	DNMG432			HF, HC, HM, HR	HM, HR		HA	HS	HS			HA	
DNMG150412	DNMG433							HS	HS				
DNMG150604	DNMG441	HF, HM	HM	HA, HF, HC, HM	HM	HM		HA, HS, HM	HA, HS, HM	HM	HF, HC, HM		
DNMG150608	DNMG442	HF, HM	HF, HM	HA, HF, HC, HM	HC, HM	HM		HA, HS, HM	HA, HS, HM	HF, HM	HF, HC, HM		
DNMG150612	DNMG443	HF, HM		HF, HC, HM	HM	HM		HS, HM					
SNMG090304	SNMG321			HM									
SNMG090308	SNMG322			HM									
SNMG120404	SNMG431			HA, HF, HC	HM	HM		HA, HS	HA, HS, HM	HM	HM	HA	
SNMG120408	SNMG432	HF, HM	HM	HA, HF, HC, HM, HR	HM, HR	HM, HR	HA	HA, HS, HM	HA, HS, HM	HM	HM	HA	
SNMG120412	SNMG433		HM	HM, HR	HM, HR	HR		HS, HM	HS, HM				
SNMG150612	SNMG543			HR	HR								
SNMG190612	SNMG643			HR	HR								
SNMG190616	SNMG644			HR	HR								
SNMM190612	SNMM643			HH	HH								
SNMM190616	SNMM644			HH	HH								
SNMM190624	SNMM646			HH	HH								
SNMM250724	SNMM856			HH	HH								
SNMM250732	SNMM858			HH	HH								
SNMM250924	SNMM866			HH	HH								
SNMM250932	SNMM868			HH	HH								
SNMM310924	SNMM1166			HH	HH								
TNMG110304	TNMG221			HF									
TNMG110308	TNMG222			HM									
TNMG160404	TNMG331	HF, HC, HM	HF	HA, HF, HC, HM	HF, HM	HF, HM		HA, HS	HA, HS	HM	HF, HM	HA	
TNMG160408	TNMG332	HF, HC, HM	HM	HA, HF, HC, HM	HC, HM	HM	HA	HA, HS, HM	HA, HS, HM	HM	HF, HM	HA	
TNMG160412	TNMG333			HM		HM		HS	HS				
TNMG220404	TNMG431	HM		HM	HM						HF		
TNMG220408	TNMG432			HF, HC, HM, HR	HC, HM, HR								
TNMG220412	TNMG433			HM	HM								
TNMG270612	TNMG543			HR	HR								
TNMM220412	TNMM433			HH	HH								
TNMM270616	TNMM544			HH	HH								
TNMM270624	TNMM546			HH	HH								
TNMM330924	TNMM666			HH	HH								
VNMG160404	VNMG331	HF	HF	HF, HM				HM	HM		HF		
VNMG160408	VNMG332		HF	HF, HM		HM		HM	HM		HF		
VNMG160412	VNMG333			HM									
WNMG060404	WNMG331	HF		HF, HM									
WNMG060408	WNMG332	HM		HF, HM	HM								
WNMG060412	WNMG333			HM									
WNMG080404	WNMG431	HF		HA, HF, HM				HA, HS, HM	HA, HS		HF	HA	
WNMG080408	WNMG432	HF, HM	HM	HA, HF, HC, HM, HR	HM, HR	HM, HR	HA	HA, HS, HM	HA, HS, HM			HA	
WNMG080412	WNMG433	HM		HM	HM	HM		HS	HS				



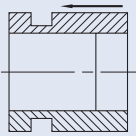
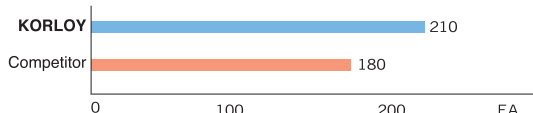
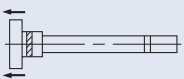
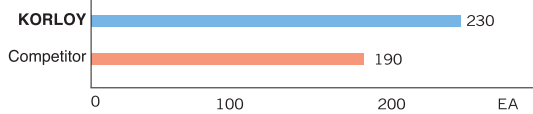

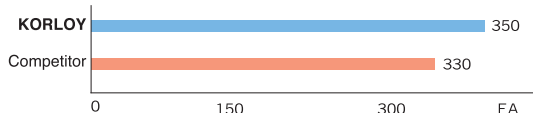
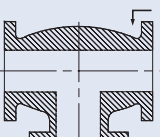
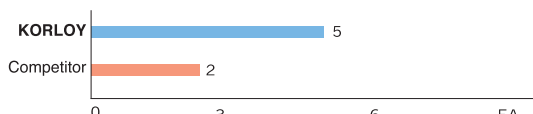
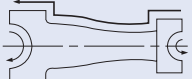
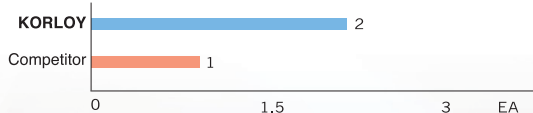
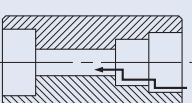
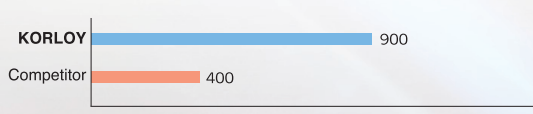
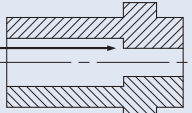
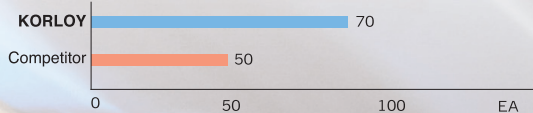
Harmony-Series

Specification	Stock-Management items by applied grade and work-Piece(Posi-Type)											
	Coating									Cermet		Cemeted Carbide
	Steel				Cast Iron(Nega-Type)		Stainless Steel			Steel		Aluminum
	NC310	NC3015	NC3020	NC330	NC305K	NC315K	NC325S	NC9020	PC9030	CN20	CN200	H1
CCGT060202 CCGT21.50.5			HFP									
CCGT060204 CCGT21.51		HMP	HFP									
CCGT09T302 CCGT32.505			HFP									
CCGT09T304 CCGT32.51		HMP	HFP	HFP								
CCGT09T308 CCGT32.52		HMP	HFP		HMP							
CCMT060202 CCMT21.50.5			HMP									
CCMT060204 CCMT21.51	HMP		HMP	HMP		HMP	HMP	HMP	HMP		HMP	
CCMT060208 CCMT21.52			HMP	HMP				HMP	HMP			
CCMT09T304 CCMT32.51	HMP		HMP	HMP		HMP	HMP	HMP	HMP		HMP	
CCMT09T308 CCMT32.52	HMP		HMP	HMP		HMP	HMP	HMP	HMP		HMP	
CCMT120404 CCMT431			HMP	HMP		HMP		HMP				
CCMT120408 CCMT432	HMP		HMP	HMP	HMP	HMP		HMP	HMP			
DCGT070204 DCGT21.51			HFP									
DCGT11T304 DCGT32.51		HMP	HFP									
DCMT070202 DCMT21.50.5				HMP								
DCMT070204 DCMT21.51			HMP	HMP			HMP	HMP				
DCMT070208 DCMT21.52			HMP									
DCMT11T304 DCMT32.51	HMP		HMP	HMP	HMP	HMP	HMP	HMP	HMP		HMP	
DCMT11T308 DCMT32.52			HMP	HMP		HMP		HMP	HMP		HMP	
SCMT09T304 SCMT32.51			HMP			HMP						
SCMT09T308 SCMT32.52	HMP		HMP			HMP						
SCMT120408 SCMT412			HMP	HMP		HMP						
TCGT16T304 TCGT32.51			HFP									
TCMT110204 TCMT21.51	HMP		HMP	HMP				HMP	HMP		HMP	
TCMT110208 TCMT21.52			HMP	HMP								
TCMT16T304 TCMT32.51	HMP		HMP	HMP		HMP		HMP	HMP			
TCMT16T308 TCMT32.52	HMP		HMP	HMP		HMP		HMP	HMP			
VCGT110304 VCGT221			HFP									
VCGT160404 VCGT331			HFP									
VCGT160408 VCGT332			HFP									
VBMT110304 VBMT221			HMP									
VBMT160404 VBMT331			HMP									
VBMT160408 VBMT332			HMP									
VCMT160404 VCMT331			HMP									



Harmony-Series

“H” Application Examples

Shape of work-piece	Work-piece (Material)	Insert	Cutting Condition	Result
			V : Speed(m/min) f : feed(mm/rev) d : Depth(mm)	
	Front piston (CK10 - DIN, 1010 - AISI)	CNMG 120408-HF CNMG 412-HF	V=180 f=0.35 d=0.135~0.4 V=590 f=0.0138 d=0.0053~0.0157	
	T Shaft (CK45 - DIN, 1045 - AISI, Forged steel)	DNMG 150608-HC DNMG 442-HC	V=135 f=0.2 d=0.15 V=443 f=0.008 d=0.0059	
	MX-BJ Out-side wheel (1050 - AISI)	CNMG 120412-HM CNMG 433-HM	V=300 f=0.3 d=3~4 V=984 f=0.0118 d=0.118~0.157	
	Check Valve Body (Cast Steel)	SNMG 120408-HR SNMG 432-HR	V=170 f=0.15 d=1.5~3.0 V=560 f=0.006 d=0.06~0.12	
	Connecting Rod (Din CK35) (AISI 1035)	CNMM 250924-HH CNMM 866-HH	V=90 f=1.3 d=10~20 V=300 f=0.06 d=0.4~0.8	
	Gear (SCR420H - KS)	TCGT 16T304-HFP TCGT 32.51-HFP	V=240 f=0.1~0.2 d=0.15 V=787 f=0.004~0.008 d=0.0059	
	Bussing (SS20C - KS)	CCMT 060204-HMP CCMT 21.51-HMP	V=110 f=0.2 d=0.8 V=361 f=0.0079 d=0.031	



HEAD OFFICE

1606-2, Seocho 1-Dong, Seocho-Gu, Seoul, Korea
TEL:+82 2 522 3181 FAX:+82 2 522 3184

CHEONGJU FACTORY

53-16, Songjeong-Dong, Hungduk-Gu, Cheongju, Chungcheongbuk-Do, Korea
TEL:+82 43 262 0141 FAX:+82 43 262 0146

JINCHEON FACTORY

767-1, Guangheawon-Ri, Guangheawon-Myon, Jincheon-Gun, Chungcheongbuk-Do, Korea
TEL:+82 43 535 0141 FAX:+82 43 535 0144

WEB : www.korloy.com

E-MAIL : export@korloy.com
