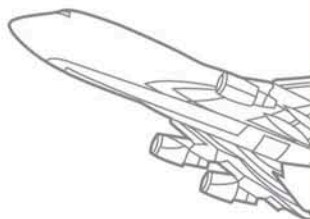
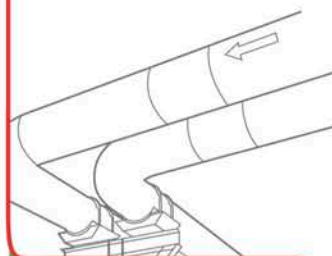
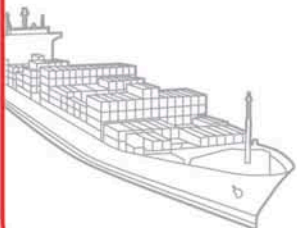
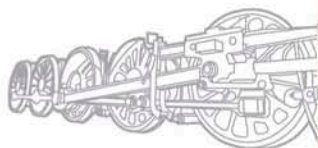


# Industrial Solutions of KORLOY



WE CREATE YOUR TOMORROW!





SKY



LAND



## Industrial Solutions of KORLOY

### ● GEAR MACHINING 4

Gears are primary parts for machine industry. KORLOY provides wide range of module(M8~M50) of external and internal gear for finishing, medium and roughing. KORLOY's special cutters for gear machining have got good reputations from our customers.

### ● ROLL MACHINING 8

KORLOY has various roll machining tools for different materials. The perfect combination of high hardness coating grade and unique chip breakers provides high productivity.

### ● POWER GENERATION 10

KORLOY produces parts for wind, gas and nuclear power generation and various tools suitable for difficult-to-cut materials. Specially, KORLOY supplies flanges, shafts and gear machining tools for wind power generation.



## • SHIP BUILDING 12

Based on the know-how of ship part machining technology, KORLOY supplies various ship building machining tools applied for cylinder blocks, crank shafts, pistons, cylinder liners and propeller housing in high efficiency machining.

## • RAILROAD AND RAIL WHEEL 16

KORLOY provides the best solutions in rail separators, manganese crossing rail, hook-up rail and rail wheel machining.

## • PIPE INDUSTRY 20

KORLOY supplies high quality tools to comply with customers needs such as edge miller, bead removal and end-facing cutting tools for pipe machining.

## • AEROSPACE 24

Based on technology oriented precision machining tools and customizing tooling know-how, KORLOY ensures high quality machining in engines, turbines, wings, frames and landing gears.

# GEAR MACHINING

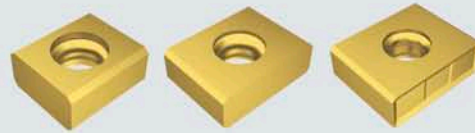
## Recommended grades

ISO	Application range
P05	
P10	
P15	
P20	
P25	
P30	
P35	
P40	
P45	

### 1 Roughing cutter

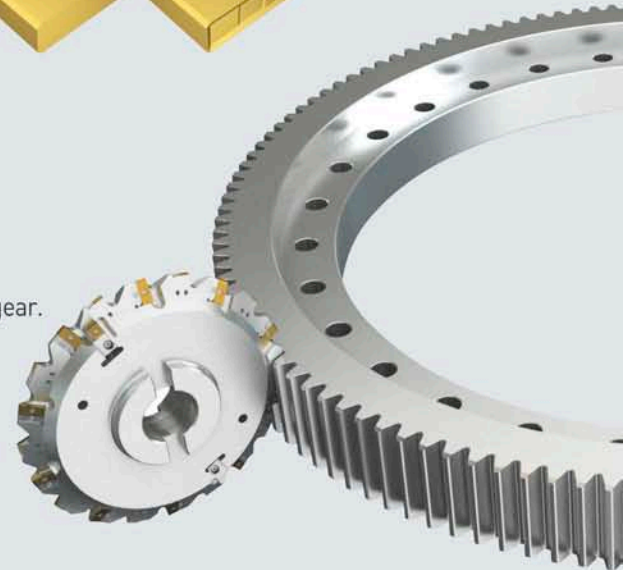
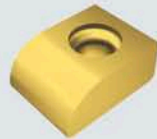
Advanced high-performance precise indexable drill

- Cutter diameter :  $\varnothing 300$
- Number of tooth : 60
- High feed machining is accomplished due to the lower cutting load brought from "V" line array of inserts.



### 2 Medium machining cutter

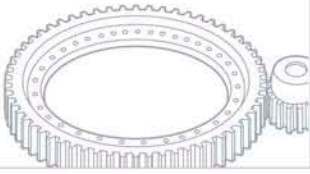
- Cutter diameter :  $\varnothing 280$
- Number of tooth : 48
- Designed to make involute profile on external gear.
- KORLOY exclusive insert ensures long tool life and high productivity.
- Optimum radius of insert forms ideal radius on the root of gear.



### 3 Finishing cutter : M20

- Cutter diameter :  $\varnothing 400$
- Number of tooth : 20
- External gear for 4 grade precision (KS or JIS)
- Additional chamfering is not necessary chamfer formed at main process





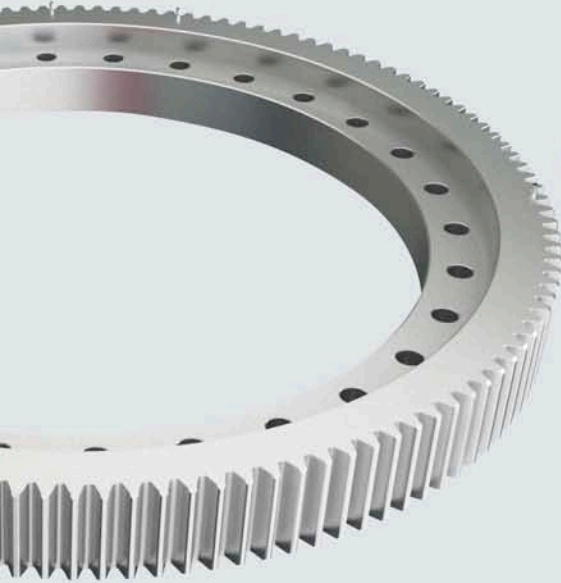
## Application case External gear



### 7 LPD, SPD, NPD

#### Economical drilling tools with excellent performance

- High rigidity holder-
- Reduced tool cost by using 4coner insert
- Good chip control and long tool life get high productivity.
- Grade : PC9530, H01



### 6 VH chip breaker



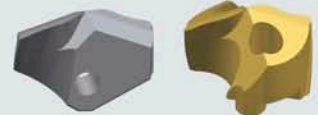
- Good chip control in heavy machining
- Excellent performance for flange machining
- Suitable for continuous cutting conditions
- SNMM type / CNMM type



### 5 TPD

#### Advanced high-performance precise indexable drill

- High-performance drill effective for high-speed, high-feed application.
- Advanced indexable drill offers precise drilled hole-size with excellent drilled surface.



### 4 VT chip breaker

- Strong cutting edge for high feed and deep cutting depth
- Tough design of chip breaker provides excellent impact resistance
- SNMM type / CNMM type

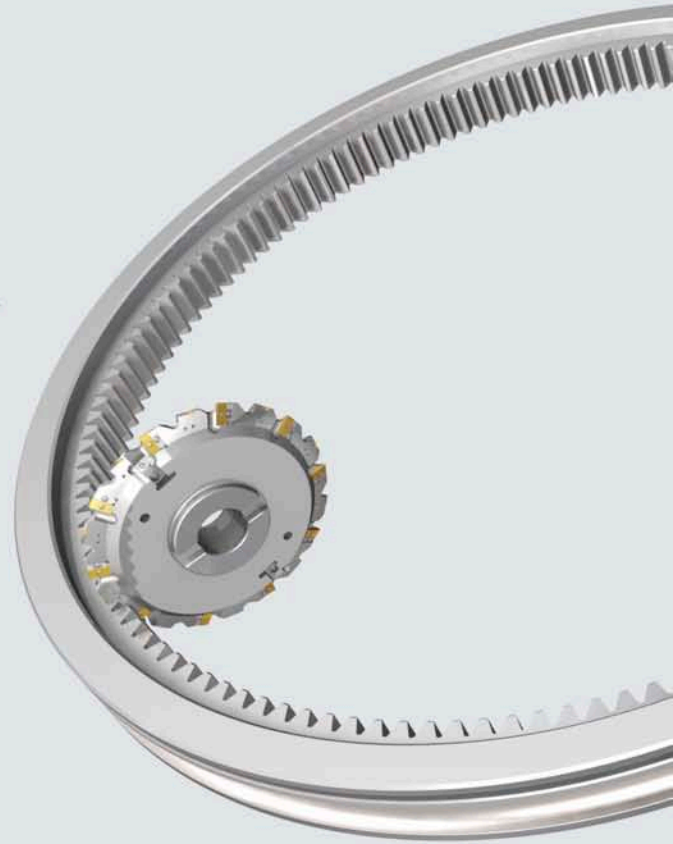


# GEAR MACHINING



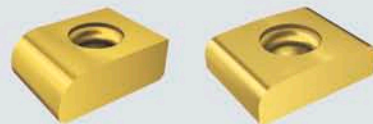
## 1 Roughing cutter

- Cutter diameter :  $\varnothing 560$
- Number of tooth : 140
- Stair" type insert array allow it to make variety of modul of gear.



## 2 Medium machining cutter

- Cutter diameter :  $\varnothing 400$
- Number of tooth : 48
- Designed to make involute profile on internal gear.





## Application case **Internal gear**



### 5 LPD, SPD, NPD

Economical drilling tools with excellent performance

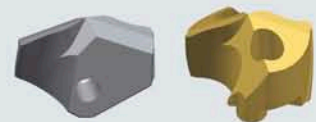
- High rigidity holder
- Reduced tool cost by using 4coner insert
- Good chip control and long tool life get high productivity.
- Grade : PC9530, H01



### 4 TPD

Advanced high-performance precise indexable drill

- High-performance drill effective for high-speed, high-feed application.
- Advanced indexable drill offers precise drilled hole-size with excellent drilled surface.



### 3 Finishing cutter : M20

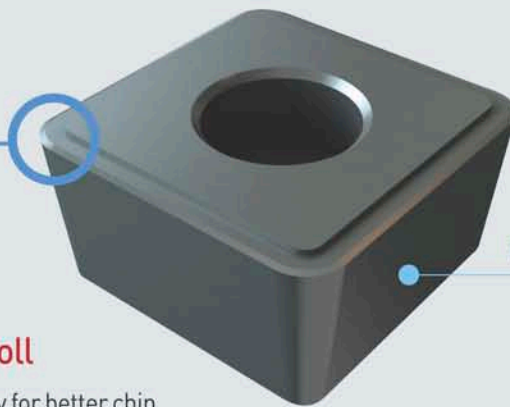
- Cutter diameter :  $\varnothing 400$
- Number of tooth : 20
- External gear for 4 grade precision (KS or JIS)
- Additional chamfering is not necessary  
chamfer formed at main process



# ROLL MACHINING

## Recommended grades

ISO	Application range
K05	
K10	
K15	
K20	
K25	
K30	
P35	

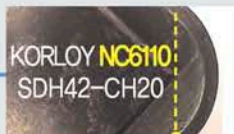


### 1 Parting-off of Roll

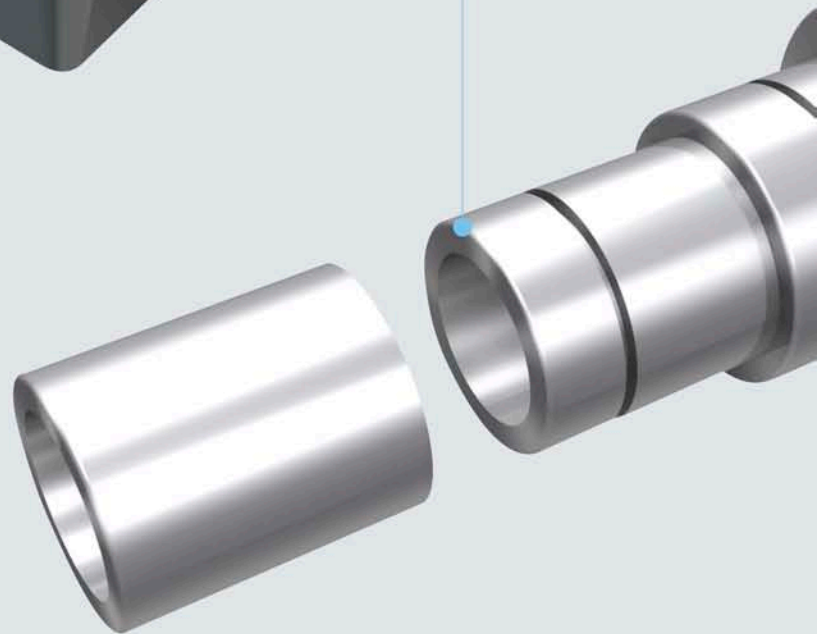
- Unique insert geometry for better chip control even in deep grooving.
- High hardness coating grade provides excellent wear resistance.

### Application case

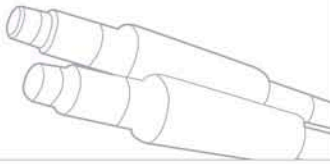
Closer chip breaker to the cutting edge provides better chip control even in deep grooving.



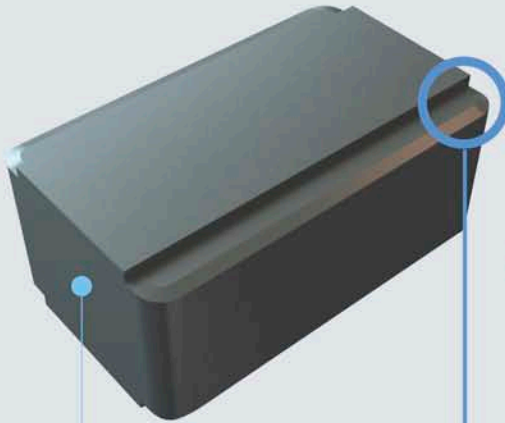
- Good chip evacuation even in deep grooving
- High hardness coating grade that has excellent wear resistance prevents big damage from cutting load.  
(Photo shows cutting edge damage after machining same time under same conditions)







## Application case **Turning / Forming / Parting-off**



For roughing and medium of external turning

### 2 External turning of Roll

- Match of high hardness coating grade (NC6110) with chip breaker provides longer tool life with smooth chip control.
- Various cutting edge designs are applicable according to work-piece materials and cutting conditions.

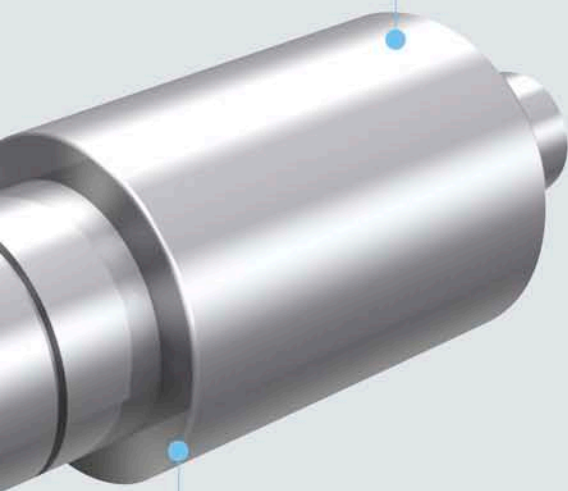
### Application case

The combination of high hardness coating grade (NC6110) and chip breaker shows better performance.

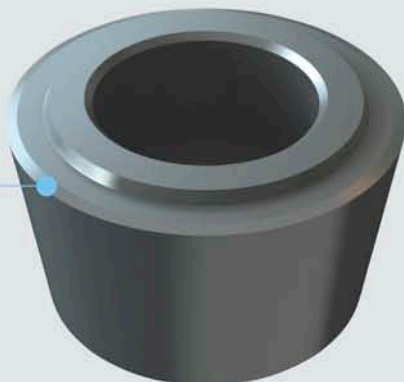
KORLOY **NC6110**  
LNJ6577C-CH20

Competitor's  
carbide

- Equipped with wide chip breaker enough to prevent crater wear
- Better chip control from the beginning of the machining, together with high hardness coating grade provides 3 times longer tool life than conventional tool. (especially at finishing)



For forming and machining of joint



### 3 Forming and Grooving of Roll

- Special chip breaker focus on suitable chip forming (engineered chip breaker width and depth)
- Cutting edge strengthening treatment prevents un-expected fracture of insert.
- CDH53-CH20, 30type

# POWER GENERATION

## Recommended grades

ISO	Application range
P05	
P10	NC3010
P15	
P20	1st recommended CX269
P25	
P30	NC500H
P35	NC9025
P40	



### 1 VT chip breaker

- Strong cutting edge for high feed and deep cutting depth
- Tough design of chip breaker provides excellent impact resistance
- SNMM type / CNMM type



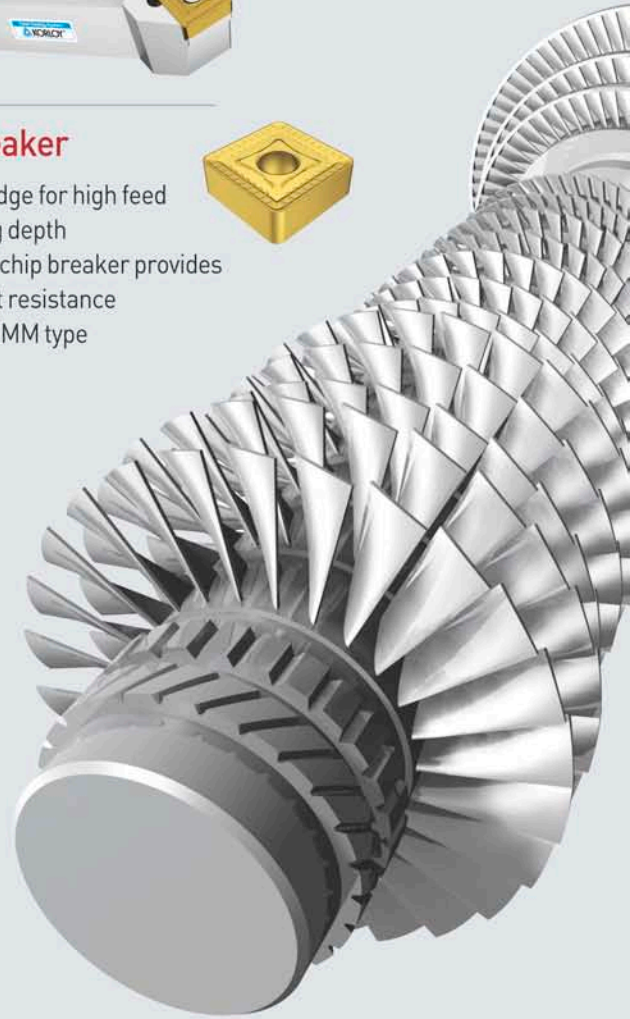
### 2 TM (Thread Milling)

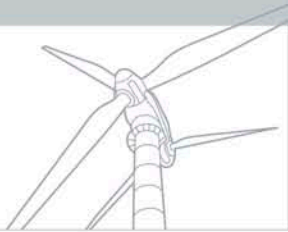
- Thread milling indexable tools  
Various type of holder (standard, long, taper) and inserts
- Screw diameter :  $\varnothing 9 \sim \varnothing 46\text{mm}$



### 3 VH chip breaker

- Good chip control in heavy machining
- Excellent performance for flange machining
- Suitable for continuous cutting conditions
- SNMM type / CNMM type





Application case

## Shaft of wind power generation / Tower flange



### 6 RCMX type

- High quality machining
- Rigid insert ensures good surface finish and long tool life
- RCMX type



### 5 VZD (Vulcan drills)

- Rigid body for high feed and high precision machining
- Better chip evacuation from improved chip breaker
- Applicable for the drilling under poor cutting conditions.



### 4 LPD, SPD, NPD

Economical drilling tools with excellent performance

- High rigidity holder
- Reduced tool cost by using 4coner insert
- Good chip control and long tool life get high productivity.
- Grade : PC5300, H01



# SHIP BUILDING

## Recommended grades

ISO	Application range
P05	
P10	
P15	
P20	
P25	
P30	
P35	
P40	
P45	

ISO	Application range
K05	
K10	
K15	
K20	
K25	
K30	
P35	



### 1 Roughing cutter for cylinder block

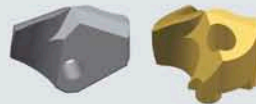
- Cutter diameter :  $\varnothing 200$
- Applicable insert: SNCF1507ANN-MF
- Economical concepts : 8 edge available insert, high feed available tool
- KORLOY exclusive latch clamping system provides quick change of insert.



### 2 TPD

#### Advanced high-performance precise indexable drill

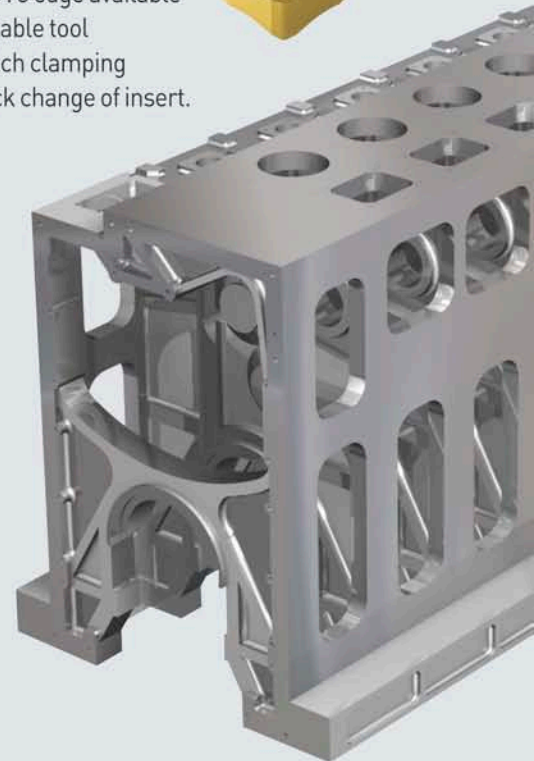
- High-performance drill effective for high-speed, high-feed application.
- Advanced indexable drill offers precise drilled hole-size with excellent drilled surface.

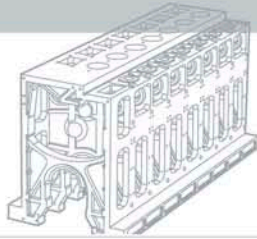


### 3 LPD, SPD, NPD

#### Economical drilling tools with excellent performance

- High rigidity holder
- Reduced tool cost by using 4coner insert
- Good chip control and long tool life get high productivity.
- Grade : PC5300, H01





## Application case **Engine Block**



### 8 High rake-angle applied cylinder blockroughing cutter

- Cutter diameter :  $\varnothing 250$
- Applicable insert : SECN2606AFN
- High rake angle cutter suitable for the machining has tendency to make chatter from variety of causes.



### 7 Adjustable medium machining cutter

- Cutter diameter :  $\varnothing 250$
- Applicable insert : YCE434-01
- Cutting edge height adjustable device provides excellent surface finish



### 6 Cylinder block bearing cap seat machining cutter

- Cutter diameter :  $\varnothing 250$
- Applicable insert : RDKT2006M0
- Several sizes of inserts are prepared to meet the radius requirement of work-piece.
- Rigid inserts for high efficiency machining



### 5 Cylinder block cam shaft boring cutter (Aluminum body cutter)

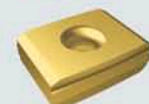
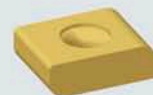
- Cutter diameter :  $\varnothing 270$
- Applicable insert : LNE434 / SDKX1506
- Light aluminum cutter body, easy to handle, makes high precision boring.



### 4 Multi purpose cutter (medium, roughing) for cylinder block

#### Economical drilling tools with excellent performance

- Cutter diameter :  $\varnothing 200$
- Applicable insert: SNCF1507ANN-MF
- Economical concepts : 8 edge available insert, high feed available tool
- KORLOY exclusive latch clamping system provides quick change of insert.



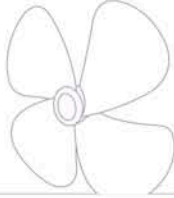
# SHIP BUILDING



## **1** KORLOY exclusive screw-on type internal pin miller

- Cutter diameter : Over  $\varnothing 2000$
- Weight : 1.5tons
- Pin miller for crank shaft of medium size ship engine
- Special segment assembly system developed by KORLOY makes it easy to handle and provides excellent cutting performance with good chip forming.



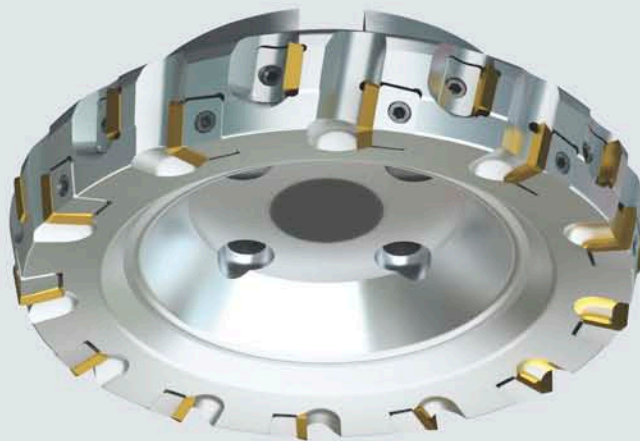
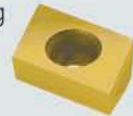


## Application case **Crank shaft / Propeller**



### 3 Periphery side of propeller machining tool

- Cutter diameter :  $\varnothing 150$
- Applicable insert : CDEW170708R
- Positive relief angle applied to get smooth cutting without chatter.



### 2 Top face of propeller machining tool

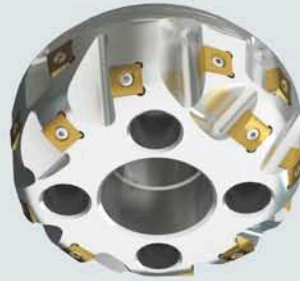
- Cutter diameter :  $\varnothing 250$
- Applicable insert : SECN1904EER
- Double layer insert array provides big depth of cut.



# RAILROAD & RAIL WHEEL

## Recommended grades

ISO	Application range
P05	<p>1st recommended PC3500</p> <p>NCM335</p>
P10	
P15	
P20	
P25	
P30	
P35	
P40	
P45	



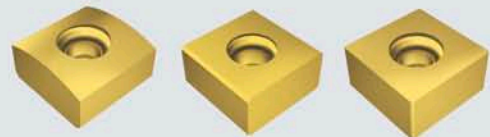
### 1 Forming cutter for the top side of rail way

- Cutter diameter :  $\varnothing 160$
- Number of tooth : 16
- Precise forming of rail way is possible.

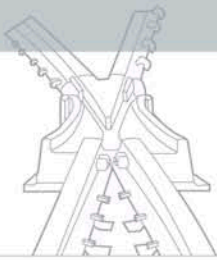


### 2 Rail separator joint face milling cutter

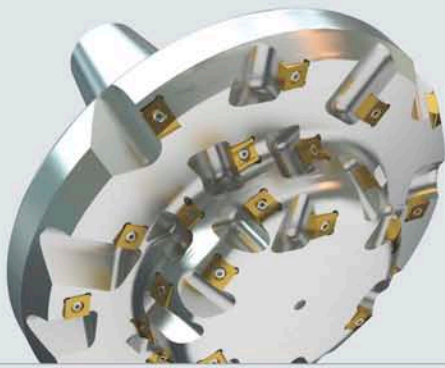
- Cutter diameter :  $\varnothing 160$
- Number of tooth : 54
- Special customizing is available upon customer's requests.





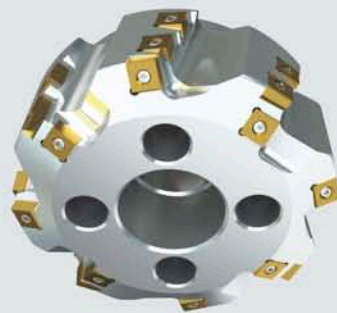


## Application case **Separator / Crossing**



### 3 Forming cutter for the top side of rail way

- Cutter diameter :  $\varnothing 300$
- Number of tooth : 33
- One body design of cutter and arbor provides high rigidity.

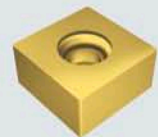


### 4 Taper milling for the top side of rail way

- Cutter diameter :  $\varnothing 200$
- Number of tooth : 24
- Economical 8 edge available insert
- Special customizing is available upon customer's requests.

### 5 Periphery face milling for the top side of rail way

- Cutter diameter :  $\varnothing 240$
- Number of tooth : 25



# RAILROAD & RAIL WHEEL

## Recommended grades

ISO	Application range
P05	
P10	NC3010
P15	
P20	1st recommended CX269
P25	
P30	NC500H
P35	NC9025
P40	

## 1 RCMX insert for rail way wheel

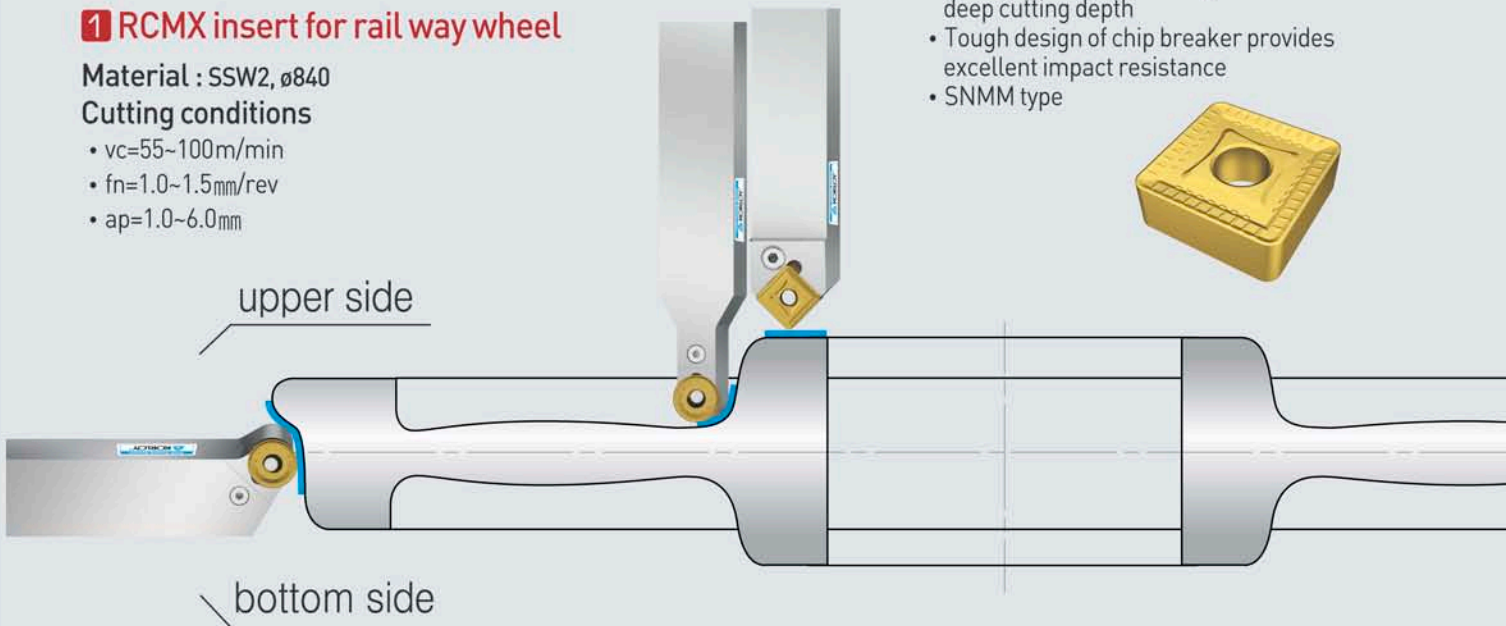
Material : SSW2,  $\phi 840$

Cutting conditions

- $v_c=55\sim 100\text{m/min}$
- $f_n=1.0\sim 1.5\text{mm/rev}$
- $a_p=1.0\sim 6.0\text{mm}$

## VT chip breaker

- Strong cutting edge for high feed and deep cutting depth
- Tough design of chip breaker provides excellent impact resistance
- SNMM type



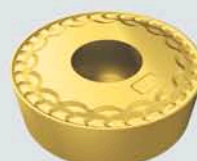
### SL chip breaker

- Comprehensive chip breaker covers wide application range
- Proper chip control with long tool life



### B chip breaker

- Comprehensive roughing design having strong edge strength with long tool life.



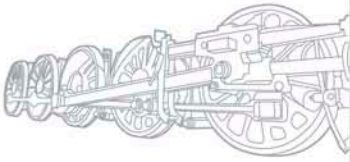
### SB chip breaker

- Better chip control at low depth of cut machining

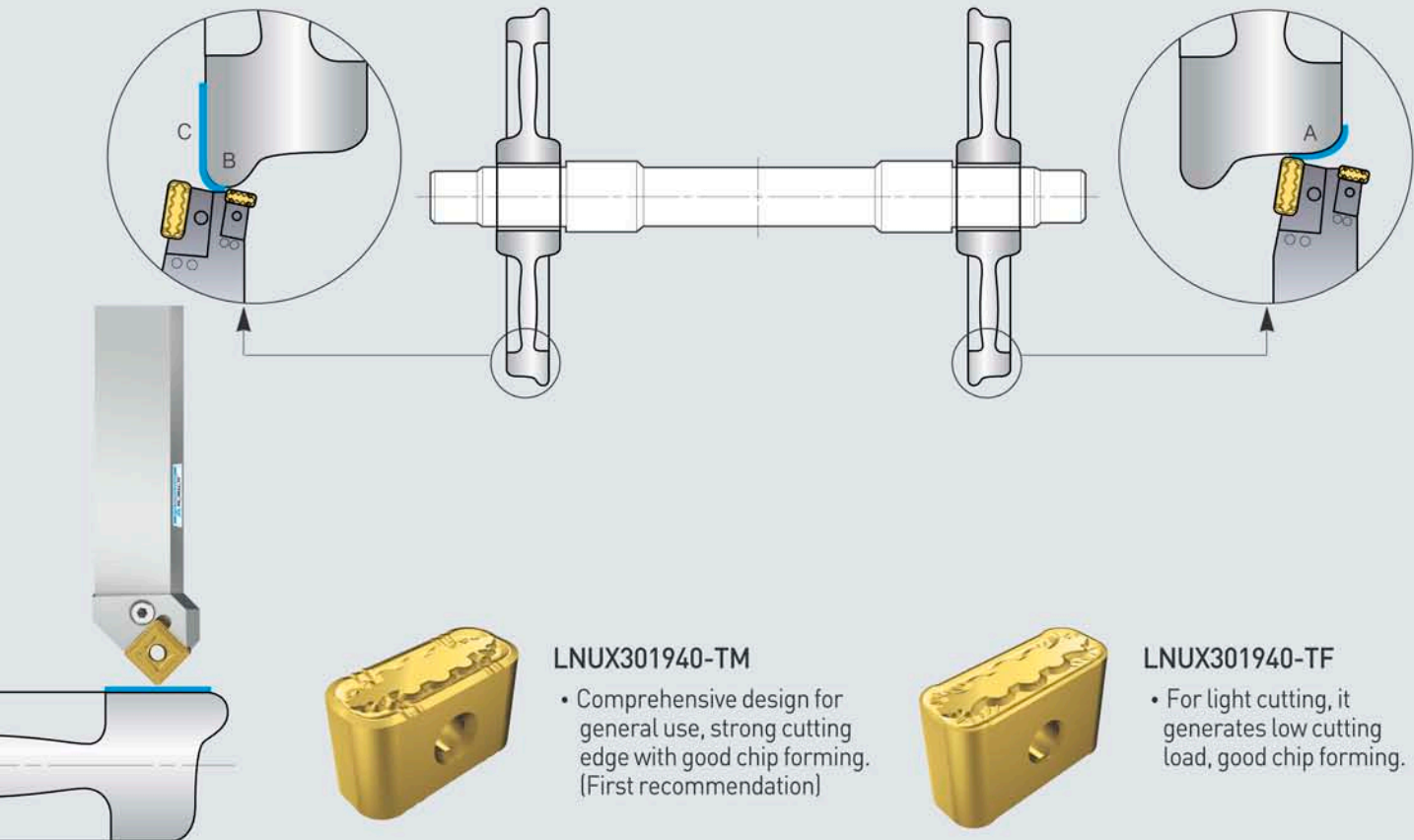


### TM chip breaker

- Medium-finishing chip breaker, proper surface finish, superior wear resistance



## Application case Rail way wheel



### LNUX301940-TM

- Comprehensive design for general use, strong cutting edge with good chip forming. (First recommendation)

### LNUX301940-TF

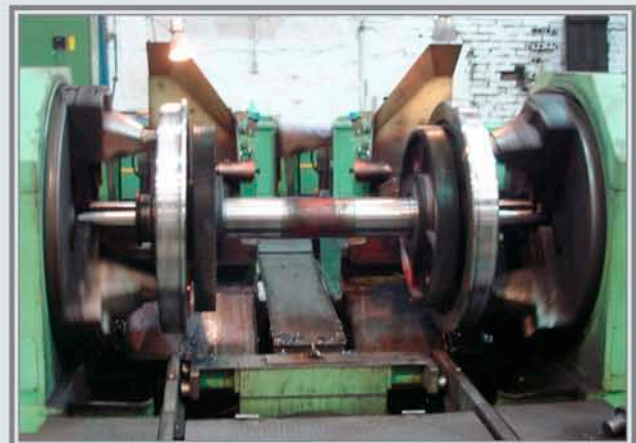
- For light cutting, it generates low cutting load, good chip forming.

## 2 LNUX insert for rail way wheel

Material : SSW2,  $\phi 920\sim 1000$

### Cutting conditions

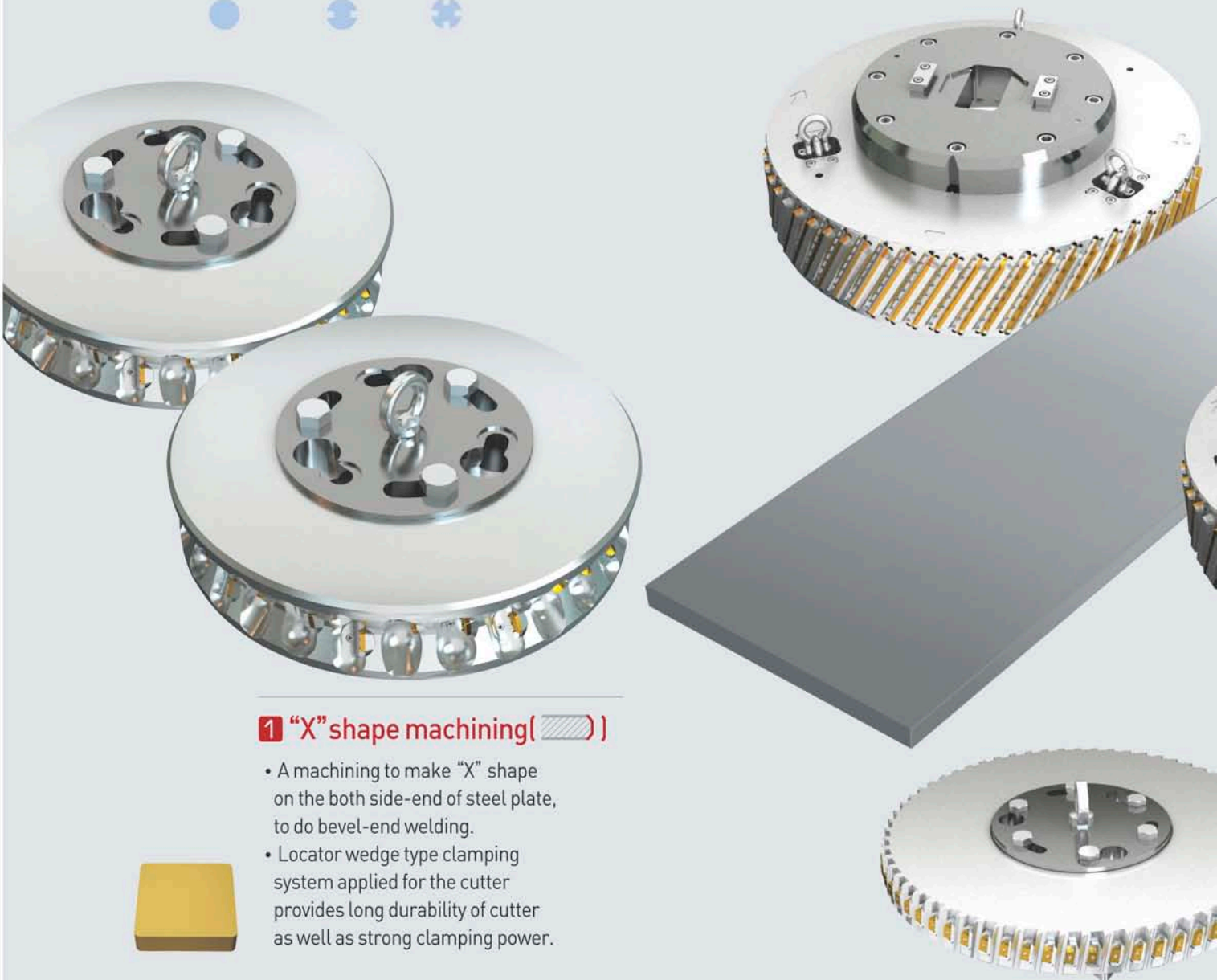
- $vc=78\text{m/min}$
- $fn=1.0\text{mm/rev}$
- $ap=3\sim 4\text{mm}$



# PIPE INDUSTRY

## Recommended grades

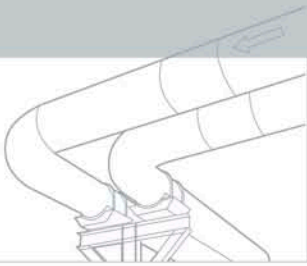
ISO	Application range
P05	
P10	
P15	1st recommended <b>NCM325</b>
P20	
P25	
P30	
P35	<b>PC3500</b>
P40	
P45	



### 1 "X" shape machining ( )

- A machining to make "X" shape on the both side-end of steel plate, to do bevel-end welding.
- Locator wedge type clamping system applied for the cutter provides long durability of cutter as well as strong clamping power.





## Application case **Edge milling**

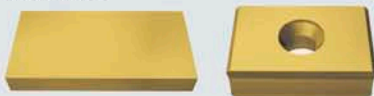
### 4 "Y" shape machining ( )

- A machining to make "Y" shape on the both side-end of steel plate, to do bevel-end welding.
- Wide chip pocket on cutter provides long durability of it by reducing contact of chip with cutter body.



### 2 "I" shape machining ( )

- A machining to make "I" shape on the both side-end of steel plate, to do bevel-end or plane-end welding.
- Several kinds of inserts (with chip breaker or without chip breaker) are available according to the cutting conditions.

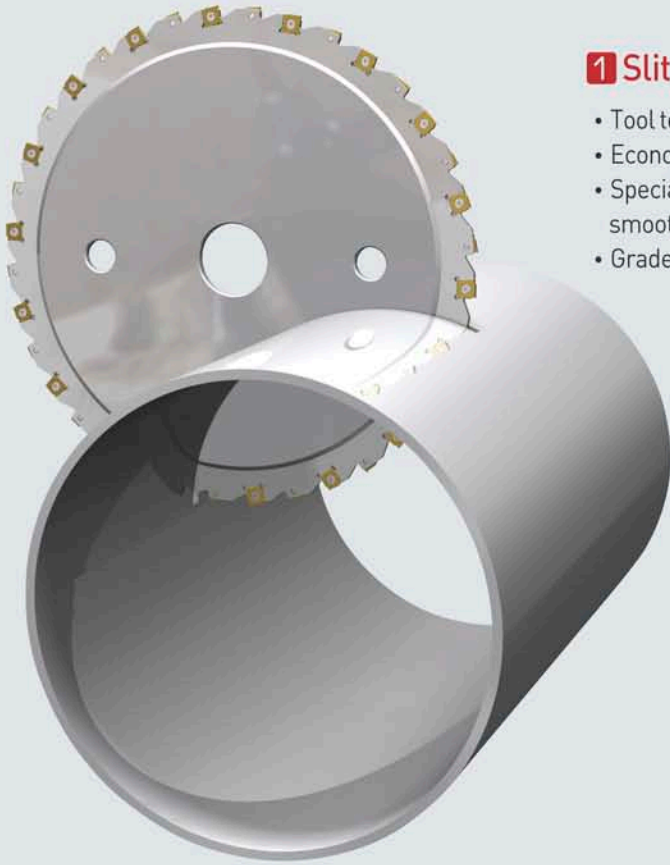


### 3 Special machining

- Special design of cutter as per side-end shape of steel plant upon customer's request is available

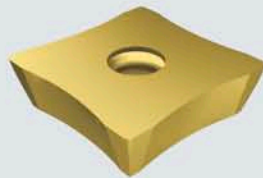
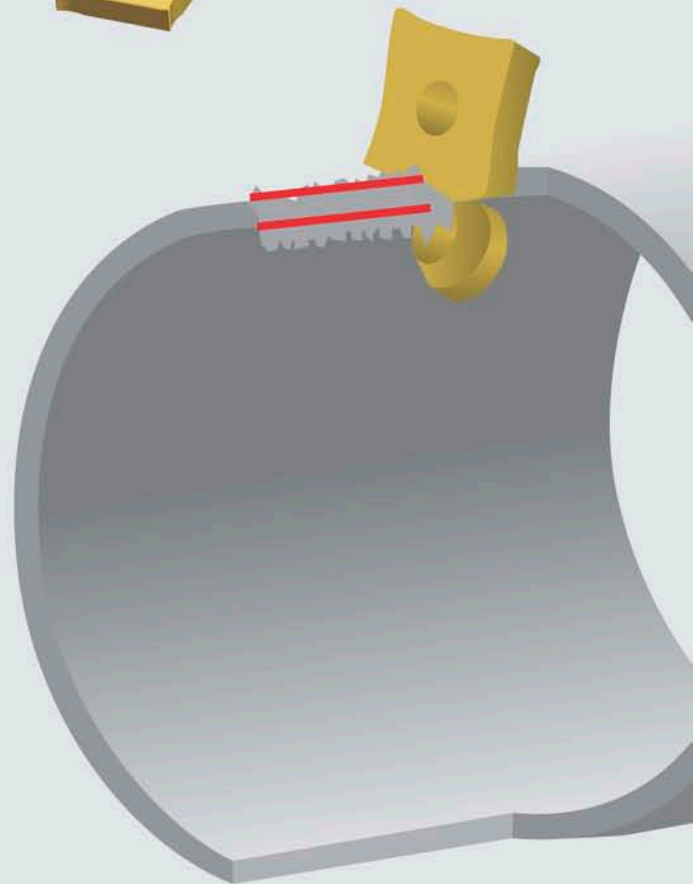


# PIPE INDUSTRY



## 1 Slitting cutter

- Tool to cut-off the pipe after welding
- Economical tool by using square insert to use 4 cutting edges.
- Special chip breaker equipped on cutting edge provides smooth cutting.
- Grade : NCM325



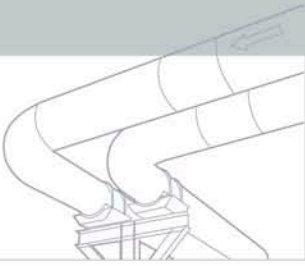
## 2 Bead removal insert : External

- Tool removing protruded part of melted welding material at out-side of pipe.
- Economical tool by using square insert to use 4 cutting edges.
- Grade : NC3030 (P30)



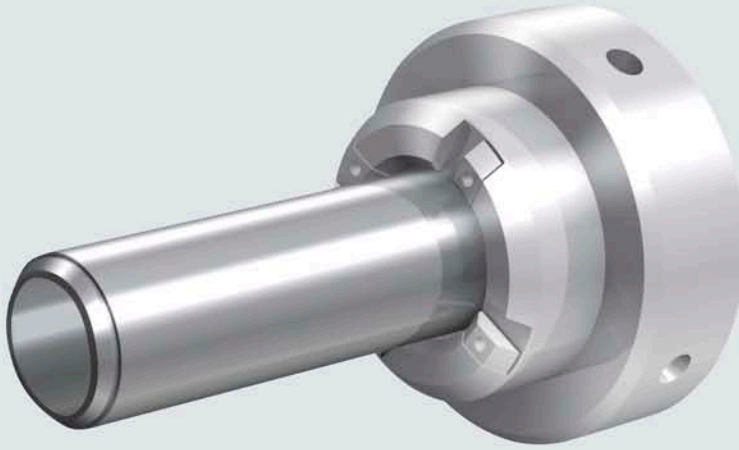
## 3 Bead removal insert : Internal

- Tool removing protruded part of melted welding material at inside of pipe.
- Grade : CX1222 (P40)



Application case

## Bead removal / Parting-off / Chamfering



### 4 Chamfer Tool

- Chamfering tool machining cut-off face of pipe.
- Special chamfering angle design is possible upon customer's request.
- Cost effective concept : Triangle and Square double-sided insert provides 6~8 effective cutting edges.
- Grade : NCM325, PC3500



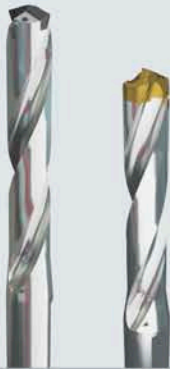
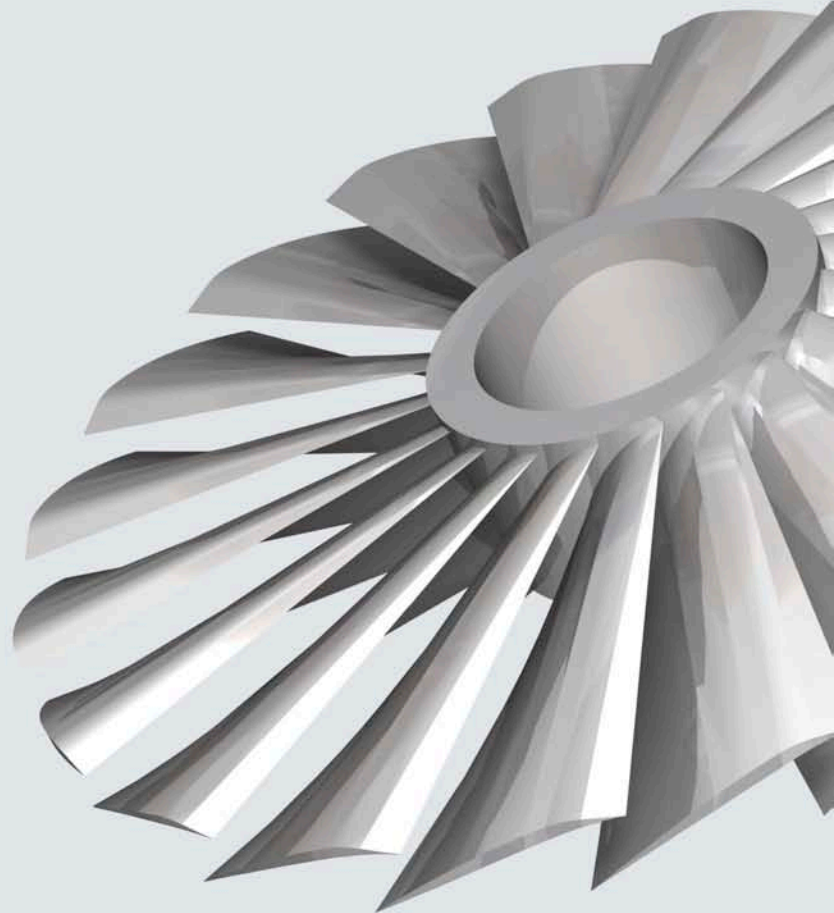
# AEROSPACE

## Recommended grades

ISO	Application range	
K05	1st recommended <b>PC8110</b>	
K10		
K15		
K20		PC5300
K25		
K30		

ISO	Application range
P05	PC8110
P10	
P15	NC9025
P20	
P25	PC5300
P30	
P35	
P40	

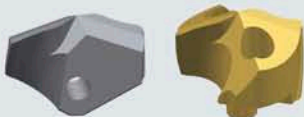
ISO	Application range
N05	H01
N10	
N15	



### 1 TPD

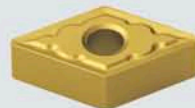
#### Advanced high-performance precise indexable drill

- High-performance drill effective for high-speed, high-feed application.
- Advanced indexable drill offers precise drilled hole-size with excellent drilled surface.



### 2 ISO Turning Holder

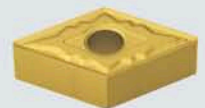
- To cope with variety of turning operation, customized complicated holder is available as well as standard ISO turning holder.



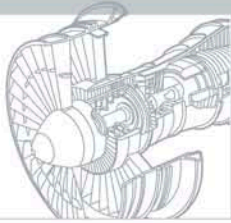
### 3 Boring Bar

#### Internal Turning

- ISO standard boring bar for internal machining







## Application case **Engine / Turbine**



### **8 Rich Mill**

Rich Mill Series, as a new concept tool for milling application, offer improved tool life and increase of usable cutting edge adopting innovative double sided insert with unique geometries.



### **7 MSD**

#### **Multi-functional indexable end-mill**

- Extremely hard grade provides long tool life.
- Easy and simply clamping of insert by using single screw.
- Excellent quality for fine finishing due to its inherent precise tolerance.



### **6 Laser Mill**

#### **Multi-functional indexable end-mill**

- Extremely hard grade provides long tool life.
- Easy and simply clamping of insert by using single screw.
- Excellent quality for fine finishing due to its inherent precise tolerance.



### **5 H-MAX**

#### **Solid end-mill for hard material**

- Sub-micron carbide provides strength on sharp cutting edge preventing small chipping on it.
- Advanced PVD coating having high hardness with strong anti-oxidation property coated on it provides excellent tool life at the machining of hard to cut material having high hardness.



### **4 I-MAX**

#### **Solid end-mill for hard to cut material (IFSE3000)**

- High rake angle with helical flute provides excellent chip evacuation.
- Specially designed cutting edge applied to overcome work-hardening property of work-piece.
- Best quality at the machining of hard to cut material.

# AEROSPACE



## 1 HRMDouble

High efficient and cost effective tool by double sided insert

- Cost effective tool by using double sided insert having 6 cutting edges.
- Smooth cutting has made by using high rake angle sharp cutting edge insert.



## 2 MGT

For Grooving, Turning, Profiling, Cut-off

- Multi functional grooving tool can cover variety of machining with advanced chip-breaker.



## 3 Pro-X Mill

High-speed Aluminum Milling tool

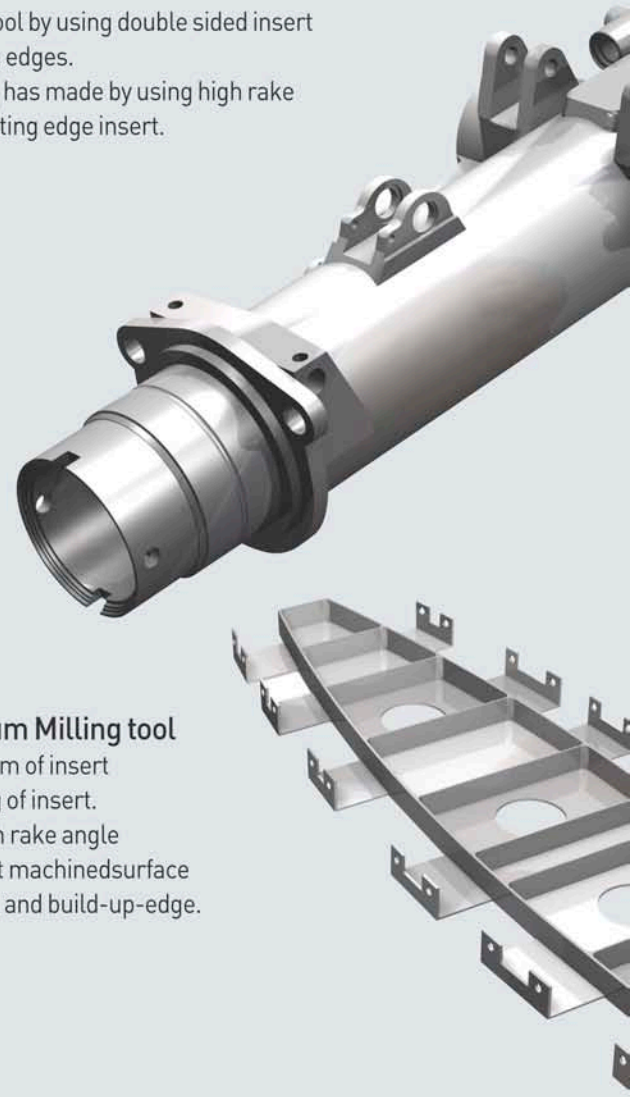
- Unique mounting system of insert provides tight clamping of insert.
- Mirror surface and high rake angle of insert bring excellent machined surface by reduced cutting load and build-up-edge.
- Grade : H01

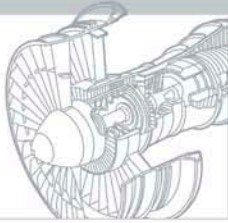


## 4 SSEA

Solid carbide endmill for Aluminum machining

- Advanced geometry of endmill refrains build-up-edge from the cutting edge
- Superior surface machined surface
- DLC coated endmill available





Application case

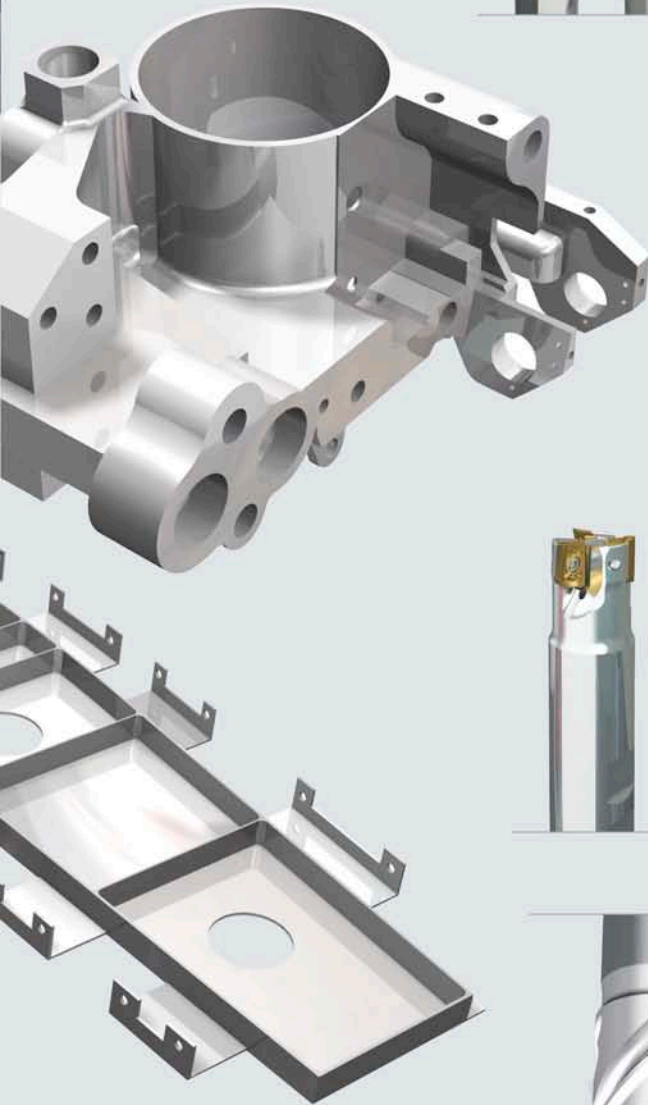
## Landing gear / Wing & Frame / Accessory



### 8 LPD, SPD, NPD

Economical drilling tools with excellent performance

- High rigidity holder
- Reduced tool cost by using 4coner insert
- Good chip control and long tool life get high productivity.
- Grade : PC5300, H01



### 7 MLD

- Direct drilling without separate operation (step drilling) over 20 x D.
- Wider flute space along with drill provides effective chip evacuation.
- Special design for rigid body provides smooth drilling without bending of drill.



### 6 Alpha Mill

Multi functional milling tool

- Vast coverage of milling operation due to its variety of cutters and inserts.
- 3 dimensional chip breaker design provides smooth cutting.
- Grade : PC3500



### 5 Brazed Endmills

- Available to high speed machining due to specially designed high spiral angle(40)
- Strong cutting performance and heat resistance
- Adapted High toughness carbides and improved tool life.
- Brazed Carbides can regrind approximately 2~3times so its economical

Industrial Solutions

# Index as per Industries



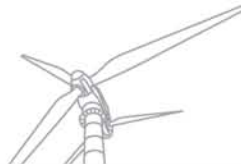
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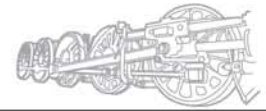
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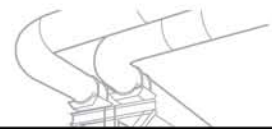
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## PIPE INDUSTRY

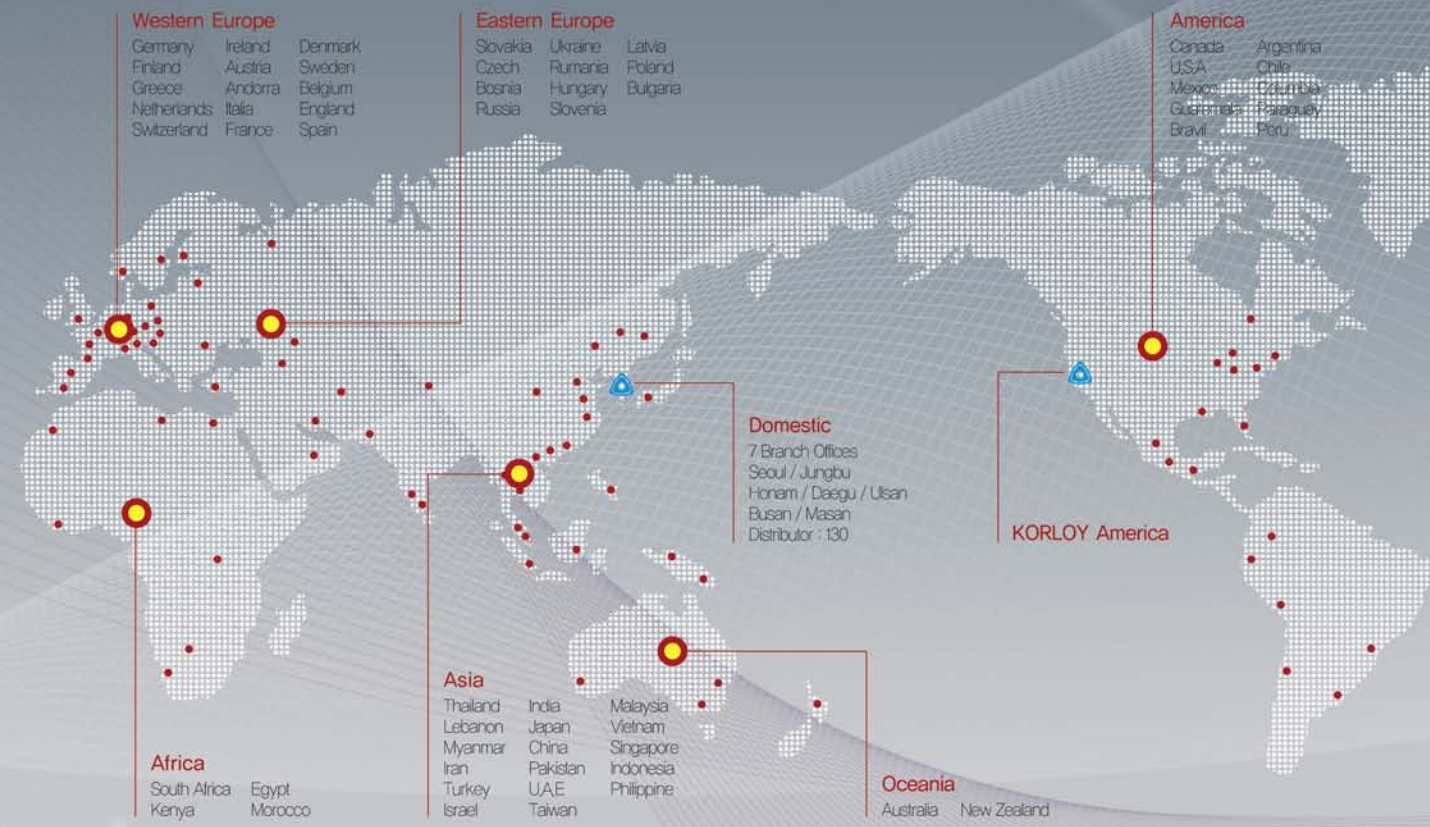
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# KORLOY Global Network

WE CREATE YOUR TOMORROW!

**We are Korea Best, World Top cemented carbide cutting tool manufacturer**

KORLOY Inc. has grown to global corporation. Since the early 21st century, we have innovated our management and built up global system so that we are aiming Korea Best1, World Top. As a aggressive cutting tool pioneer, KORLOY Inc. has worldwide sales network over 80 countries and supply the most advanced technology for our customers in high technology industries. KORLOY Inc. will keep doing its best and providing best quality, better services through innovation and R&D.



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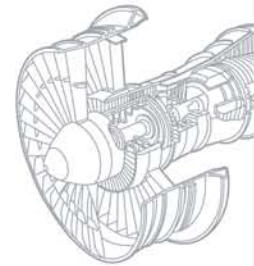
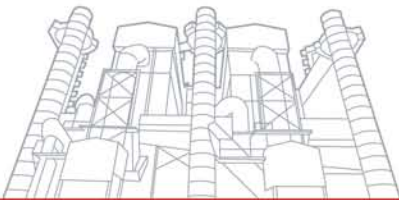
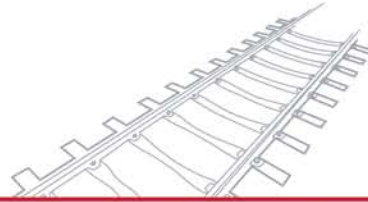
**KORLOY E-CATALOGUE OPENS.**

Available on Korloy website by clicking 'e-catalogue' in the main page.



This CATALOGUE is made as of August, 2009 as per ISO standard, the information of products such as dimensions, prospective performance and quality, contained in the CATALOGUE is subject to change due to the constant Research & Development. Please, Contact us for more information.

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**HEAD OFFICE**

Holystar B/D 953-1, Doksanbon-Dong, Geumcheon-Gu, 153-823 Seoul, Korea  
TEL: +82-2-522-3181 FAX: +82-2-522-3184, +82-2-3474-4744  
Web : [www.korloy.com](http://www.korloy.com) E-mail : [export@korloy.com](mailto:export@korloy.com)

**CHEONGJU FACTORY**

53-16, Songjeong-Dong, Hungduk-Gu, Chengju, 361-290 Chungcheongbuk-Do, Korea  
TEL: +82-43-262-0141 FAX: +82-43-262-0146

**JINCHEON FACTORY**

767-1, Gwanghyewon-Ri, Gwanghyewon-Myon, Jincheon-Gun, 365-831 Chungcheongbuk-Do, Korea  
TEL: +82-43-535-0141 FAX: +82-43-535-0144



2750 Oregon Court, South Bay Business Park, Suite M7, Torrance CA 90503, USA  
Tel : +1-310-782-3800 Toll Free : +1-888-711-0001 Fax : +1-310-782-3885  
Web : [www.korloyamerica.com](http://www.korloyamerica.com) E-mail : [korloyamerica@korloy.com](mailto:korloyamerica@korloy.com)