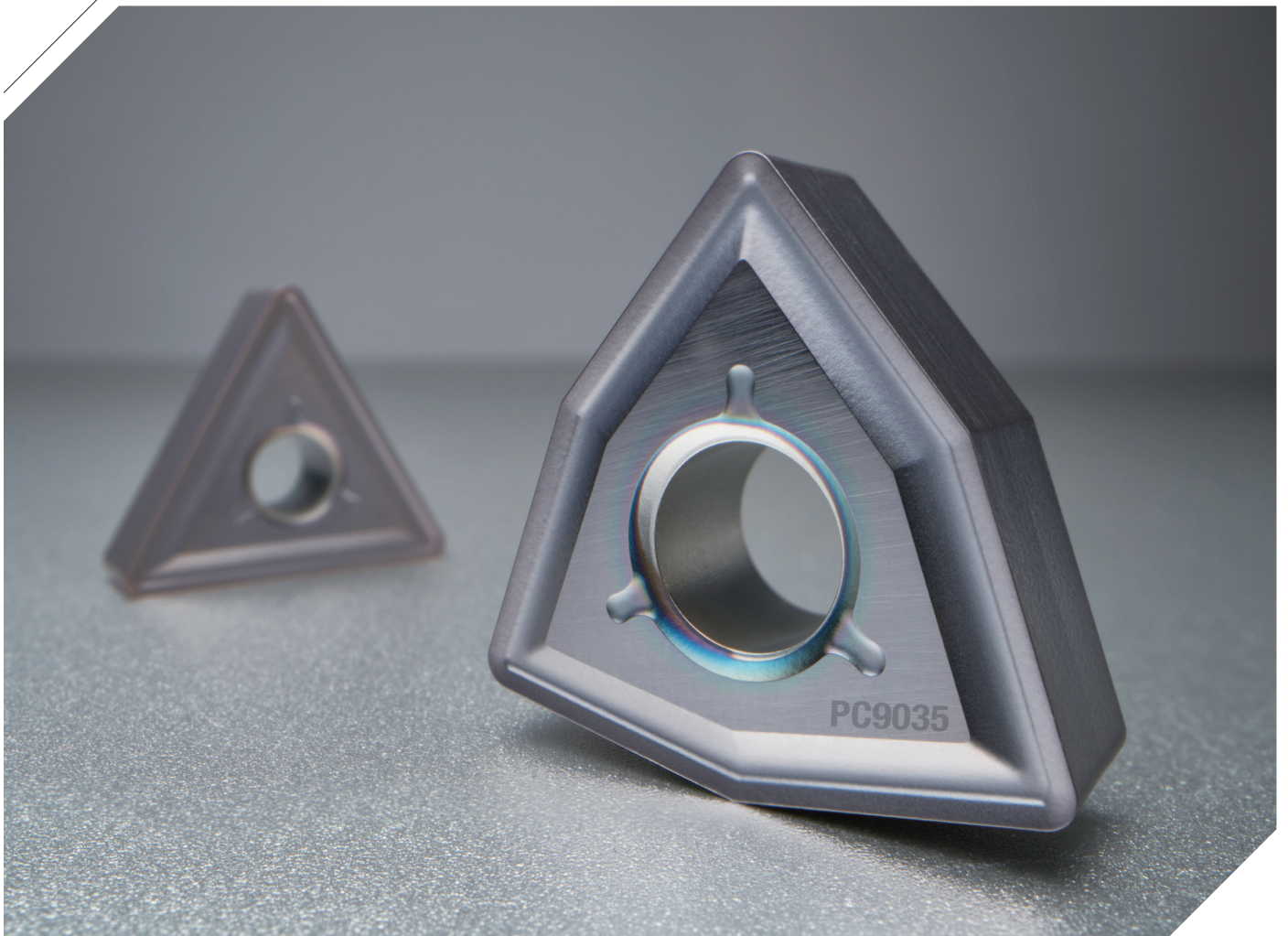


PC9035

Stainless steel Turning insert

- High toughness PVD coating insert optimized for cutting Hard-to-cut material small and medium sized valve and fitting
- Stable cutting due to applying Edge-Tech™ for increasing chipping resistance and welding resistance



Stainless steel Turning insert

PC9035

Stainless steel is a kind of metal materials used for various industries such as food, medical appliance, automobile components and construction due to its excellent corrosion resistance, high hardness and gloss. Especially it is widely used for valve, fitting and pipe components which require corrosion resistance. Because these components are usually produced under the casting process, they have uneven surface and complicated shape. For that reason, impact in unstable approach of cutting and welding characteristic of Stainless steel leads to chipping and fracture of tools.

KORLOY launched exclusive grade, PC9035 for enhanced productivity in Stainless steel turning.

PC9035 has good chipping resistance and fracture resistance in cutting due to applying TEX-Tech™, high toughness PVD coating technology. In addition, Applying Edge-Tech™ maximizes stability of cutting edge, reduces chipping and welding in the beginning of cutting, and realizes stable machining. Especially, it performs excellent in unstable cutting conditions with high interrupted cutting of hard-to-cut materials, small and medium sized valve, fitting and pipe etc.

PC9035 is a next generation grade solution of KORLOY, who leads small sized Stainless steel parts with heavily interrupted machining market, and it provides higher productivity and stable machining qualification.

» **Maximizing chipping resistance and fracture resistance**

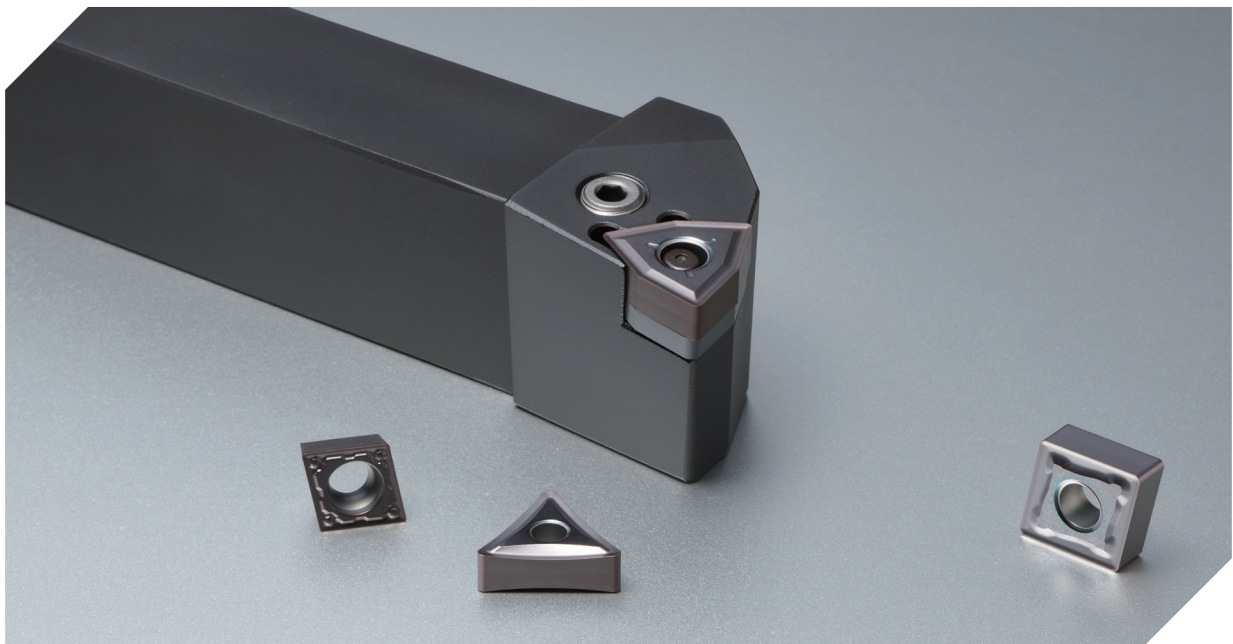
- Applying TEX-Tech™, high toughness PVD coating layer technology

» **Optimal for valve and fitting machining**

- Optimal for small and medium sized hard-to-cut material cutting with frequent interruption

» **Stable machining**

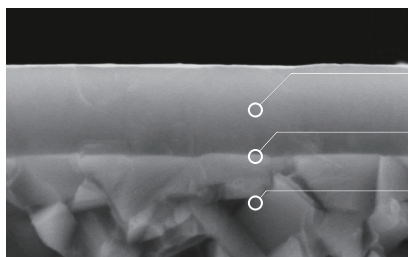
- Increasing chipping resistance and welding resistance from Edge-Tech™
- Preventing unexpected fracture in high interrupted cutting with vibration



Features

- Optimally designed PVD grade for medium to finish cutting and interrupted cutting of Stainless steel turning
- High stability of cutting due to applying high toughness PVD coating layer technology with chipping resistance and fracture resistance
- Good chipping resistance and welding resistance in the beginning of cutting through the Edge-Tech™ technology

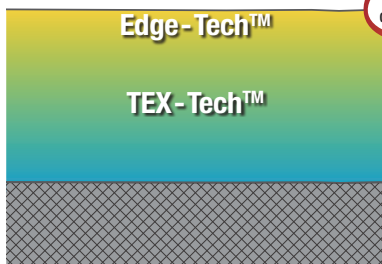
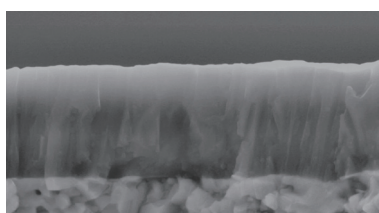
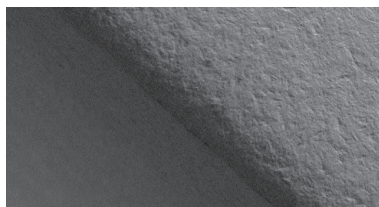
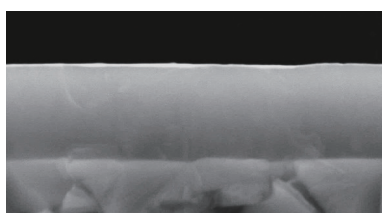
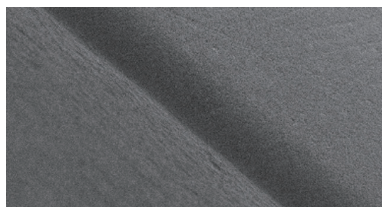
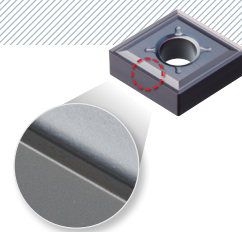
Applying TEX-Tech™, high toughness PVD coating layer technology



- Good chipping resistance due to high toughness and high elasticity coating layer
- Enhanced adherence by high adherence coating layer
- Excellent fracture resistance from applying high toughness substrate

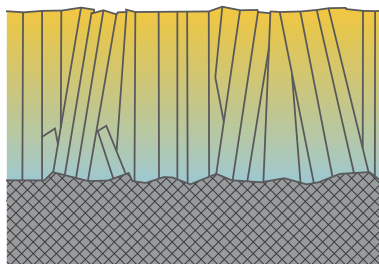
Applying Edge-Tech™, high lubrication edge technology

- **Edge-Tech™** : Special high lubricated cutting edge technology increasing cutting stability through reducing welding, chipping and unexpected fracture



[PC9035]

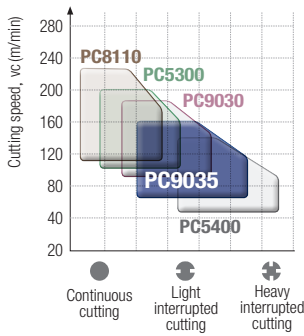
Increased welding resistance and chipping resistance



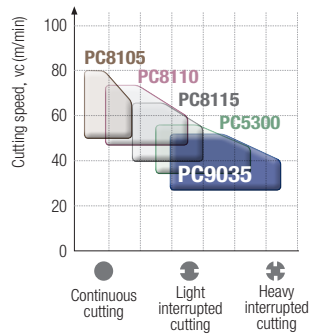
[Existing grade]

Application range

M Stainless steel



S HRSA




Application range	Grade	vc (m/min)	
		M	S
Continuous, high speed	PC8110	110 ~ 220	45 ~ 70
Continuous, medium speed	PC5300	100 ~ 200	35 ~ 55
Continuous, medium speed	PC9030	90 ~ 180	-
Low interrupted, medium speed	PC9035 ^{New}	70 ~ 160	30 ~ 50
Heavy interrupted, medium speed	PC5400	50 ~ 140	-

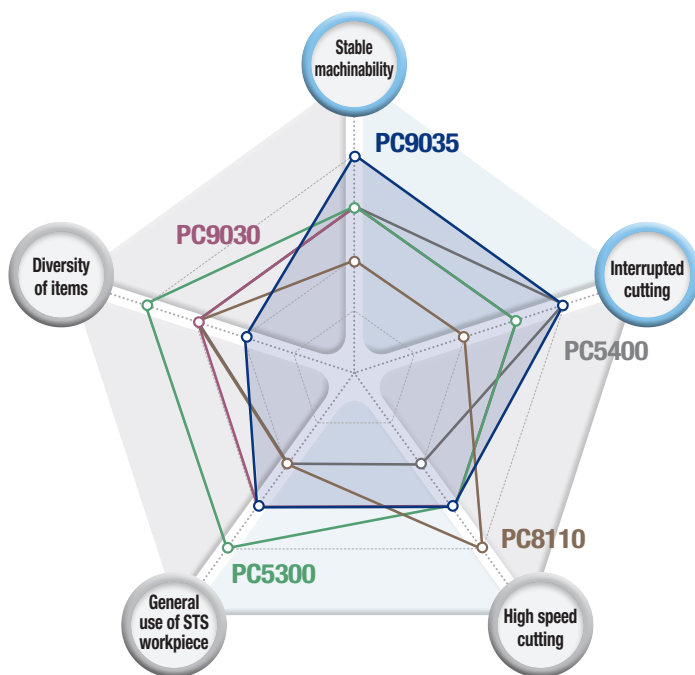
Recommend cutting conditions

ISO	Workpiece			Specific cutting force (N/mm ²)	Brinell hardness (HB)	Recommended cutting condition						
	Workpiece material	ISO (DIN)	AISI			Continuous	Interrupted	fn (mm/rev)				
									vc (m/min)			
M	Ferritic/martensitic series	X6CrAl13 X6Cr17	405 430	1650	≤ 183	120	110	0.30				
						160	140	0.15				
		-	X12Cr13	403 410	1800	≤ 200	200	170	0.05			
							100	90	0.30			
							140	120	0.15			
	Austenite series	X5CrNi18-9 X5CrNiMo17-12-2	304 316	2000	≤ 187	180	150	0.05				
						80	70	0.30				
						120	100	0.15				
						160	130	0.05				
						Austenite-ferritic series (duplex)	(X2CrNiMoN22-5-3) (X2CrNiMoCuN25-6-3) (X2CrNiMoN25-7-4)	S31803 S32205 S32750	2200	≤ 310	60	40
90	70	0.15										
120	100	0.05										
Precipitation series	X5CrNiCuNb16-4	630 (17-4PH)	2800	≤ 350	60						40	0.30
					90						70	0.15
					120	100	0.05					
					Ti alloy steel	(TiAl5Sn2.5) (TiAl6V4)	R54520 R56401	1400	301~381	35	30	0.20
										50	40	0.10
65	50	0.05										
Ni base	-	N07041 N04400 N07718	3000	286~409						30	20	0.20
										45	30	0.10
					60	40	0.05					

Application industries

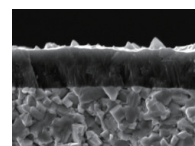
Fitting	Valve	Flange
		

Stainless steel turning grade selection guide



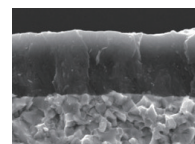
PC8110

- Excellent at continuous cutting
- Good wear resistance in high speed cutting



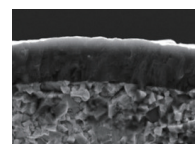
PC5300

- For general cutting
- Good wear resistance



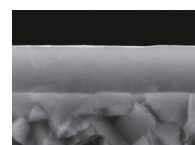
PC9030

- For general cutting
- Good chipping resistance



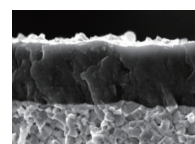
PC9035 *New*

- For high interrupted cutting
- Good chipping resistance and fracture resistance



PC5400

- Good for unstable cutting condition
- Good fracture resistance



Grade	Stable machinability	Interrupted cutting	High speed cutting	General use of STS workpiece	Diversity of items
PC8110	★★	★★	★★★★★	★★	★★★
PC5300	★★★	★★★	★★★	★★★★★	★★★★★
PC9030	★★★	★★★	★★★	★★★	★★★
PC9035 <i>New</i>	★★★★★	★★★★★	★★★	★★★	★★
PC5400	★★★	★★★★★	★★	★★	★★★

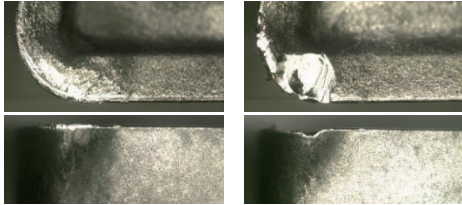
Performance evaluation

Chipping resistance

Workpiece Stainless steel (X5CrNi18-9), 6 Steel rectangular tube (Ø60)

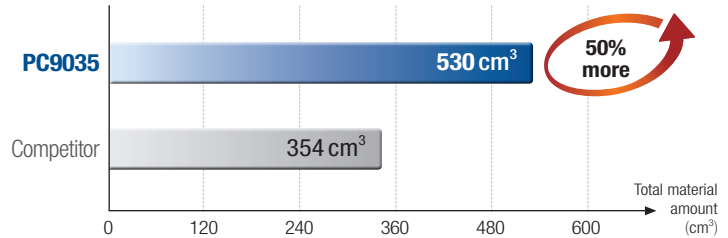
Cutting condition vc (m/min) = 120, fn (mm/rev) = 0.15, ap (mm) = 0.8, wet

Tool **Insert** CNMG120408-VP3 (PC9035) **Holder** DCLNL3232-P12



[PC9035]

[Competitor]



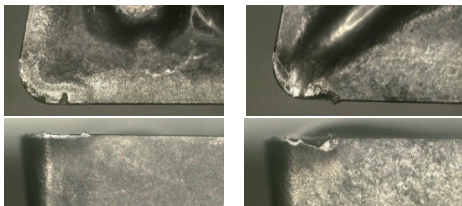
• Material removal rate Q (cm³/min): 14.4 • Cutting time (min): 36.8

Chipping resistance

Workpiece Stainless steel (X5CrNiMo17-12-2), 6 Steel rectangular tube (Ø60)

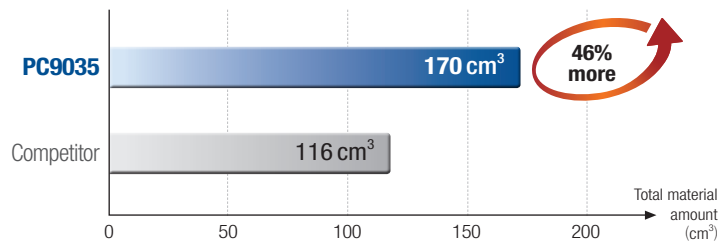
Cutting condition vc (m/min) = 120, fn (mm/rev) = 0.12, ap (mm) = 0.6, wet

Tool **Insert** CCMT09T304-MP (PC9035) **Holder** SCLCR2020-K09



[PC9035]

[Competitor]



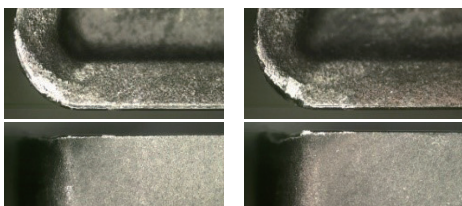
• Material removal rate Q (cm³/min): 8.6 • Cutting time (min): 19.8

Fracture resistance

Workpiece Stainless steel (X5CrNi18-9), 4 Steel rectangular tube (70×70)

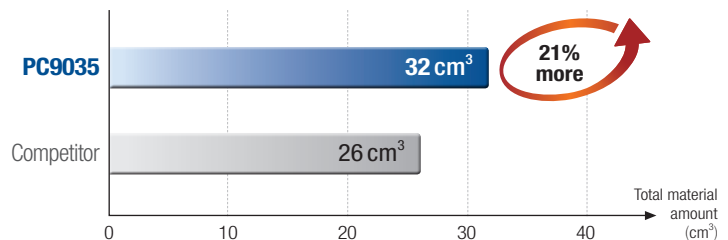
Cutting condition vc (m/min) = 80, fn (mm/rev) = 0.1, ap (mm) = 0.6, wet

Tool **Insert** WNMG080408-VP3 (PC9035) **Holder** DWLNL2525-M08



[PC9035]

[Competitor]

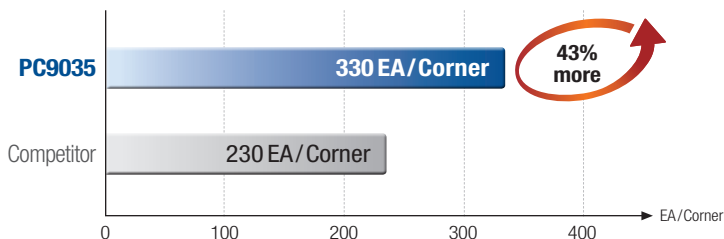
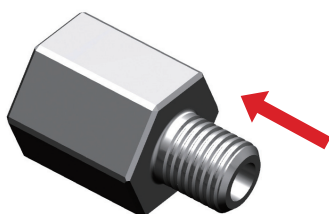


• Material removal rate Q (cm³/min): 4.8 • Cutting time (min): 6.7

Application examples

Stainless steel (X5CrNi18-9)

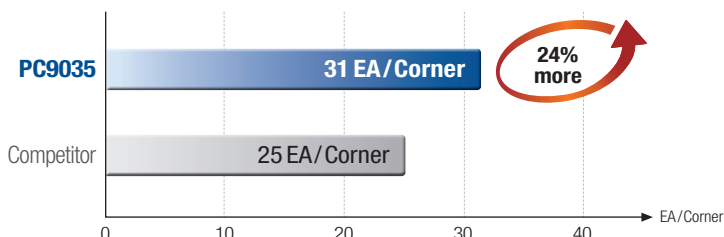
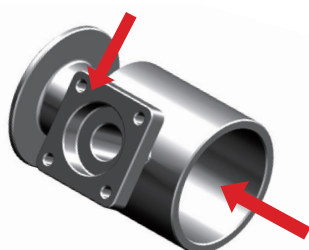
Workpiece use	Fitting
Cutting condition	vc (m/min) = 120, fn (mm/rev) = 0.1, ap (mm) = 1.0~2.0, wet
Tool	Insert WNMG080408-VP3 (PC9035) Holder PWLNL2525-M08



>> 43% longer tool life than competitor

Stainless steel (X5CrNi18-9)

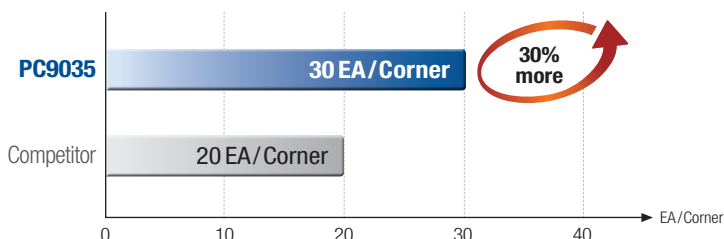
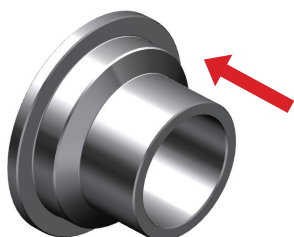
Workpiece use	Valve
Cutting condition	vc (m/min) = 90 (Internal dia. 70), fn (mm/rev) = 0.1, ap (mm) = 1.5 (Internal dia. 1.0), wet
Tool	Insert CNMG120408-VP3 (PC9035) Holder PCLNL2525-M12



>> 24% longer tool life than competitor

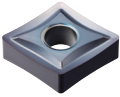

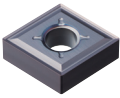
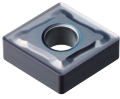



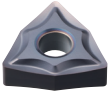

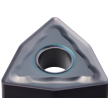
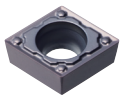
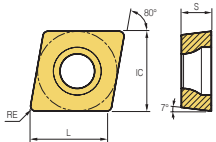
Stainless steel (X2CrNiMo17-12-2)

Workpiece use	Valve
Cutting condition	vc (m/min) = 150, fn (mm/rev) = 0.15~0.2, ap (mm) = 1.5, wet
Tool	Insert WNMG080408-VP3 (PC9035) Holder PWLNL2525-M08



>> 30% longer tool life than competitor

 Stock items

Type	Picture	Designation	Coated	Dimension (mm)					Cutting condition		Geometry
			PC9035	L	IC	S	RE	D1	fn (mm/rev)	ap (mm)	
Negative		CNMG 120404-VP2	●	12.896	12.7	4.76	0.4	5.16	0.05~0.30	0.10~3.00	
		120408-VP2	●	12.896	12.7	4.76	0.8	5.16	0.10~0.30	0.50~3.50	
		CNMG 120404-VP3	●	12.896	12.7	4.76	0.4	5.16	0.05~0.30	0.10~3.00	
		120408-VP3	●	12.896	12.7	4.76	0.8	5.16	0.10~0.35	0.50~4.00	
		CNMG 120404-VP4	●	12.896	12.7	4.76	0.4	5.16	0.15~0.35	0.50~4.00	
		120408-VP4	●	12.896	12.7	4.76	0.8	5.16	0.15~0.40	1.00~4.50	
		TNMG 160404-VP2	●	16.498	9.525	4.76	0.4	3.81	0.05~0.30	0.10~3.00	
		160408-VP2	●	16.498	9.525	4.76	0.8	3.81	0.10~0.30	0.50~3.50	
		TNMG 160404-VP3	●	16.498	9.525	4.76	0.4	3.81	0.05~0.30	0.10~3.00	
		160408-VP3	●	16.498	9.525	4.76	0.8	3.81	0.10~0.35	0.50~4.00	
		TNMG 160408-VP4	●	16.498	9.525	4.76	0.8	3.81	0.15~0.40	1.00~4.50	
		WNMG 080404-VP2	●	8.687	12.7	4.76	0.4	5.16	0.05~0.30	0.10~3.00	
080408-VP2		●	8.687	12.7	4.76	0.8	5.16	0.10~0.30	0.50~3.50		
		WNMG 080404-VP3	●	8.687	12.7	4.76	0.4	5.16	0.05~0.30	0.10~3.00	
		080408-VP3	●	8.687	12.7	4.76	0.8	5.16	0.10~0.35	0.50~4.00	
	WNMG 080404-VP4	●	8.687	12.7	4.76	0.4	5.16	0.15~0.35	0.50~4.00		
	080408-VP4	●	8.687	12.7	4.76	0.8	5.16	0.15~0.40	1.00~4.50		
Positive		CCMT 060204-MP	●	6.448	6.35	2.38	0.4	2.8	0.05~0.15	0.30~1.50	
		09T304-MP	●	9.672	9.525	3.97	0.4	4.4	0.08~0.25	0.50~2.50	
		09T308-MP	●	9.672	9.525	3.97	0.8	4.4	0.10~0.30	0.50~2.50	

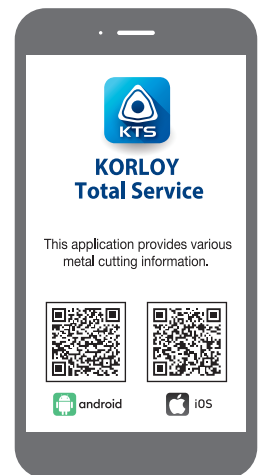
●: Stock item

⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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