

TOPHIGHHARDMETAL is a professional manufacturer of cemented carbide cutting tools. Our turning inserts for steel processing with imported raw powder materials, through a special sintering process, have a peculiar gradient cobalt-rich on surface of the substrates which can ensure the inserts' high performance when finishing the CVD coating. Our CVD coating is the most advanced in the world. The coating materials are MT-TiCN- Al_2O_3 with thickness of $14\text{ }\mu\text{m}$, which have high abrasion resistance. After special management on the surface of the coating inserts, the internal stress and surfaceness of coating were reduced while cutting resistance was also cut down. Our ZPS series grade can cutting steel and alloy steel from finish machining, to semifinish and rough machining.

Advantages:

Cobalt-rich structure on the surface of the substrate makes the inserts' edge safety.

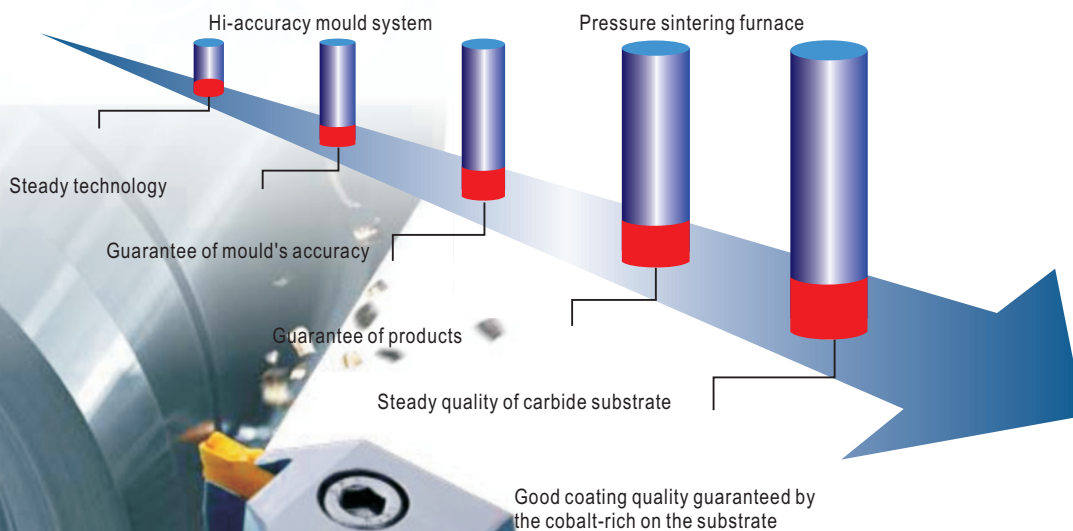
$\alpha\text{-Al}_2\text{O}_3$ coating makes the inserts high stability, high abrasive resistance and high resistance of plastic deformation.

Special surface management makes the internal stress reduced and small surfaceness of coating.

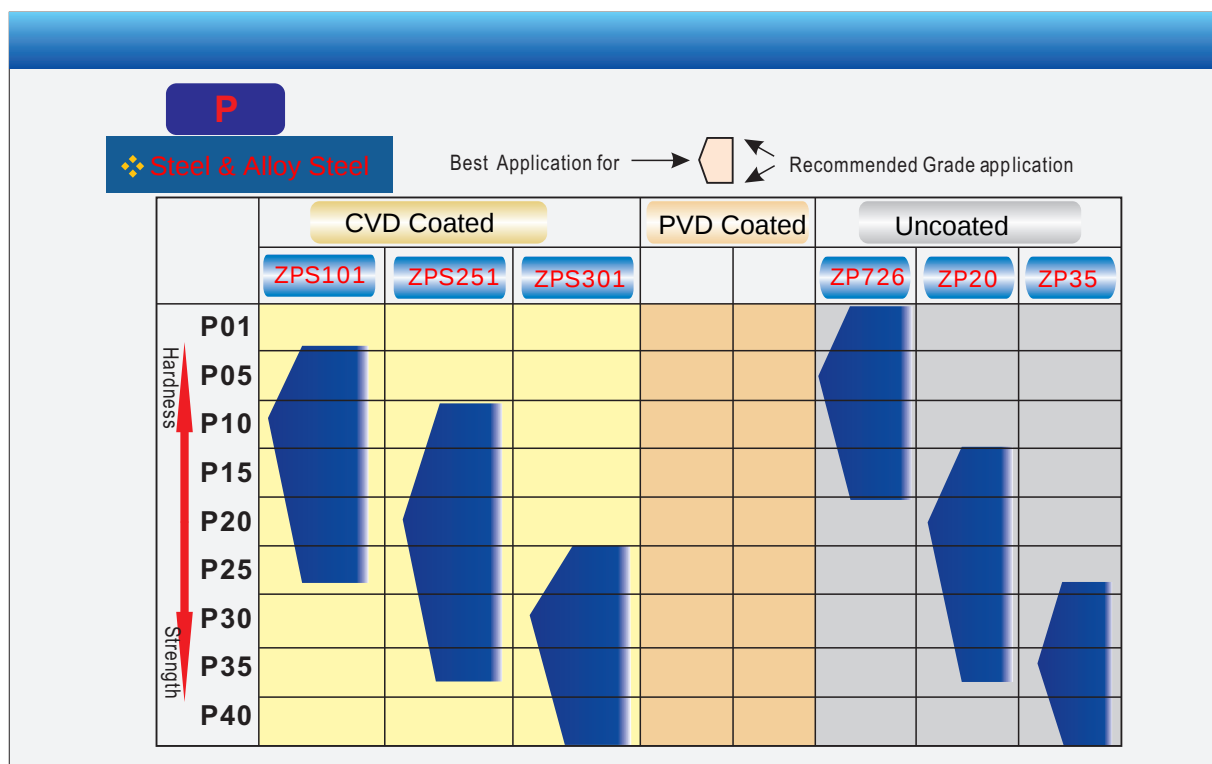
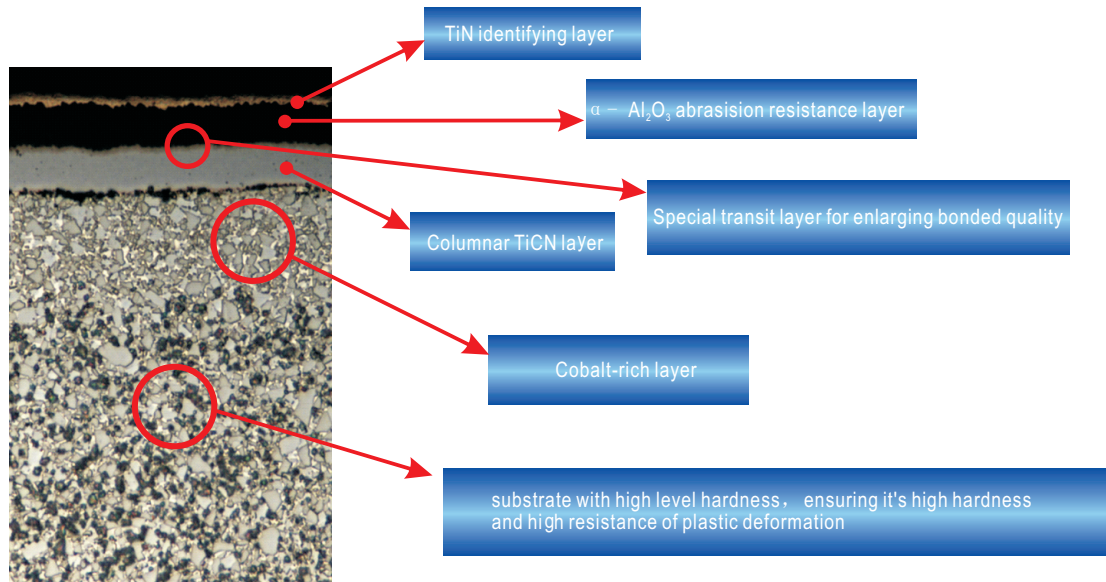
imported raw powder material

Hi-accuracy CNC press machine

Special sintering technology

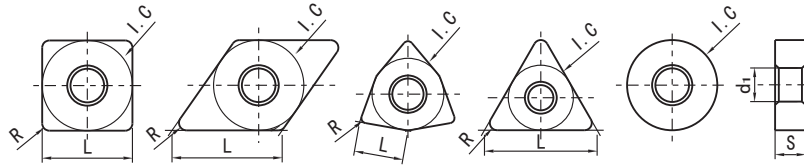


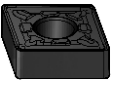
❖ Bi-color inserts



P Steel & Alloy Steel		Finishing		Roughing	
Negative-Type		FW Finishing	MD Semi Finishing	RA Rounghing	SC Rounghing
Interrupted	Grade	ZPS251	ZPS251	ZPS301	ZPS301
	Cutting Speed	80-150	70-120	70-120	55-90
Varying Depth of Cut	Grade	ZPS101	ZPS251	ZPS251	ZPS301
	Cutting Speed	105-220	100-220	100-210	100-150
Good Condition	Grade	ZPS101	ZPS101	ZPS251	ZPS251
	Cutting Speed	135-330	105-310	105-280	105-210

P Steel & Alloy Steel		Finishing			Roughing		
Positive-Type		FW Finishing	MD Semi Finishing	RA Rounghing			
 Interrupted	Grade	ZPS251	ZPS251	ZPS301			
	Cutting Spee	80-150	70-120	70-120			
 Varying Depth of Cut	Grade	ZPS101	ZPS251	ZPS301			
	Cutting Speed	105-220	100-210	100-210			
 Good Condition	Grade	ZPS101	ZPS101	ZPS251			
	Cutting Speed	135-330	105-310	105-310			

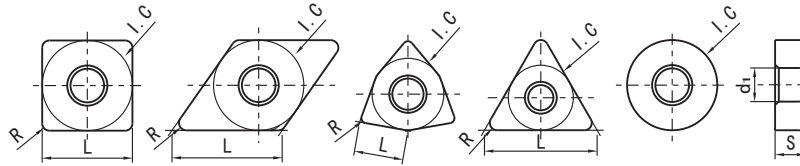


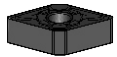
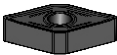
Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C	S	Φ d ₁	R	ZPS101	ZPS251	ZPS301	
	CNMG	090304-FW	321-FW	9.7	9.525	3.18	3.81	0.4	★		MCLNR/L
		090308-FW	322-FW					0.8	★		PCLNR/L
		120404-FW	431-FW	12.9	12.7	4.76	5.16	0.4	★		DCLNR/L
		120408-FW	432-FW					0.8	★		MCBNR/L
		120412-FW	433-FW					1.2	★		PCBNR/L
	CNMG	090304-MD	321-MD	9.7	9.525	3.18	3.81	0.4	★		MCKNR/L
		090308-MD	322-MD					0.8	★		MCFNR/L
		120404-MD	431-MD	12.9	12.7	4.76	5.16	0.4	★		MCGNR/L
		120408-MD	432-MD					0.8	★		MCSNR/L
		120412-MD	433-MD					1.2	★		MCMNN
		120416-MD	434-MD	16.1	15.875	6.35	6.35	1.6	★		****-MCKNR/L
		160608-MD	542-MD					0.8	★		****-MCWNR/L
		160612-MD	543-MD					1.2	★		****-MCLNR/L
		160616-MD	544-MD	19.3	19.05	6.35	7.94	1.6	★		
		190608-MD	642-MD					0.8	★		
		190612-MD	643-MD					1.2	★		
		190616-MD	644-MD					1.6	★		
	CNMG	120408-RA	432-RA	12.9	12.7	4.76	5.16	0.8	★	☆	
		120412-RA	433-RA					1.2	★	☆	
		120416-RA	434-RA					1.6	★	☆	
		160608-RA	542-RA	16.1	15.875	6.35	6.35	0.8	★	☆	
		160612-RA	543-RA					1.2	★	☆	
		160616-RA	544-RA					1.6	★	☆	
		160624-RA	546-RA	19.3	19.05	6.35	7.93	2.4	☆	★	
		190608-RA	642-RA					0.8	★	☆	
		190612-RA	643-RA					1.2	★	☆	
		190616-RA	644-RA					1.6	★	☆	
		190624-RA	646-RA	25.79	25.4	9.525	9.12	2.4	☆	★	
		250924-RA	866-RA					2.4	☆	★	
	CNMG	120408-SC	432-SC	12.9	12.7	4.76	5.16	0.8	☆	★	
		120412-SC	433-SC					1.2	☆	★	
		120416-SC	434-SC					1.6	☆	★	
		160608-SC	542-SC	16.1	15.875	6.35	6.35	0.8	☆	★	
		160612-SC	543-SC					1.2	☆	★	
		160616-SC	544-SC					1.6	☆	★	
		160624-SC	546-SC	19.3	19.05	6.35	7.94	2.4	☆	★	
		190612-SC	643-SC					1.2	☆	★	
		190616-SC	644-SC					1.6	☆	★	
		190624-SC	646-SC	25.79	25.4	9.525	9.12	2.4	☆	★	
		250924-SC	866-SC					2.4	☆	★	
		250932-SC	868-SC					3.2	☆	★	

★ First Choice

☆ Second Choice

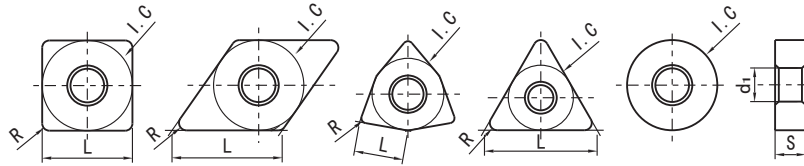
Turning Inserts for Steel

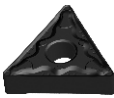


Picture	Type			Dimension (mm)					Recommended Grade			Recommended Holder
		(ISO)	(inch)	L	Φ I. C	S	Φ d ₁	R	ZPS101	ZPS251	ZPS301	
	DNMG	110404-FW	331-FW	11.6	9.525	4.76	3.81	0.4	★			MDJNR/L
		110408-FW	332-FW					0.8	★			PDJNR/L
		110412-FW	333-FW					1.2	★			DDJNR/L
		150404-FW	431-FW	15.5	12.7	4.76	5.16	0.4	★			MDPNN
		150408-FW	432-FW					0.8	★			MDQNR/L
		150412-FW	433-FW					1.2	★			****-MDQNR/L
		150604-FW	441-FW			6.35		0.4	★			****-MDUNR/L
		150608-FW	442-FW					0.8	★			****-MDZNR/L
		150612-FW	443-FW					1.2	★			
	DNMG	110404-MD	331-MD	11.6	9.525	4.76	3.81	0.4		★		
		110408-MD	332-MD					0.8		★		
		110412-MD	333-MD					1.2		★		
		150404-MD	431-MD	15.5	12.7	4.76	5.16	0.4		★		
		150408-MD	432-MD					0.8		★		
		150412-MD	433-MD					1.2		★		
		150604-MD	441-MD			6.35		0.4		★		
		150608-MD	442-MD					0.8		★		
		150612-MD	443-MD					1.2		★		
		150616-MD	444-MD					1.6		★		
	DNMG	150408-RA	432-RA	15.5	12.7	4.76	5.16	0.8		★	☆	
		150412-RA	433-RA					1.2		★	☆	
		150416-RA	434-RA					1.6		★	☆	
		150608-RA	442-RA			6.35		0.8		★	☆	
		150612-RA	443-RA					1.2		★	☆	
		150616-RA	444-RA					1.6		★	☆	
	DNMM	150608-SC	442-SC	15.5	12.7	6.35	5.16	0.8		★	☆	
		150612-SC	443-SC					1.2		★	☆	
		150616-SC	444-SC					1.6		★	☆	
	SNMG	120408-FW	432-FW	12.7	12.7	4.76	5.16	0.8	★			PSBNR/L
		120412-FW	433-FW					1.2	★			MSDNN
	SNMG	090304-MD	321-MD	9.525	9.525	3.18	3.81	0.4		★		PSDNN
		090308-MD	322-MD					0.8		★		MSKNR/L
		120404-MD	431-MD	12.7	12.7	4.76	5.16	0.4		★		PSKNR/L
		120408-MD	432-MD					0.8		★		
		120412-MD	433-MD					1.2		★		
		120416-MD	434-MD					1.6		★		
		150612-MD	543-MD	15.875	15.875	6.35	6.35	1.2		★		
		150616-MD	544-MD					1.6		★		

★ First Choice

☆ Second Choice

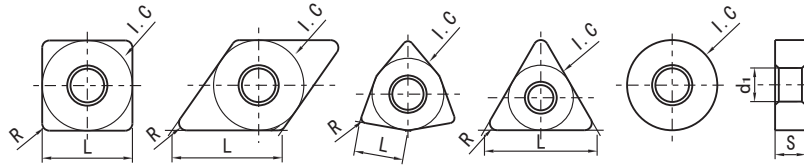


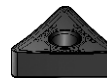
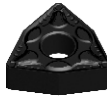
Picture	Type			Dimesion (mm)					Recommended Grade			Recommended Holder		
	(ISO)		(inch)	L	Φ I. C	S	Φ d _i	R	ZPS101	ZPS251	ZPS301			
	SNMG	120408-RA	432-RA	12. 7	12. 7	4. 76	5. 16	0. 8		★	☆	MSSNR/L		
		120412-RA	433-RA					1. 2		★	☆	PSSNR/L		
		120416-RA	434-RA					1. 6		★	☆	DSSSN/L		
		150608-RA	542-RA	15. 875	15. 875	6. 35	6. 35	0. 8		★	☆	SSBCR/L		
		150612-RA	543-RA					1. 2		★	☆	****-MSKNR/L		
		150616-RA	544-RA					1. 6		★	☆			
		150624-RA	546-RA	19. 05	19. 05	6. 35	7. 94	2. 4		☆	★			
		190608-RA	642-RA					0. 8		★	☆			
		190612-RA	643-RA					1. 2		★	☆			
		190616-RA	644-RA					1. 6		☆	★			
		190624-RA	646-RA	2. 4		☆	★							
		250716-RA	854-RA	25. 4	25. 4	7. 94	9. 12	1. 6		★	☆			
		250724-RA	856-RA			9. 525		2. 4		☆	★			
		250924-RA	866-RA			9. 525		2. 4		☆	★			
	SNMM	120408-SC	432-SC	12. 7	12. 7	4. 76	5. 16	0. 8		★	☆			
		120412-SC	433-SC					1. 2		★	☆			
		150612-SC	543-SC					1. 2		★	☆			
		150616-SC	544-SC	15. 875	15. 875	6. 35	6. 35	1. 6		★	☆			
		190612-SC	643-SC					1. 2		★	☆			
		190616-SC	644-SC					1. 6		★	☆			
		190624-SC	646-SC	19. 05	19. 05	6. 35	7. 94	2. 4			★			
		250724-SC	856-SC					7. 94	9. 12	2. 4			★	
		250732-SC	858-SC					3. 2				★		
		250924-SC	866-SC	25. 4	25. 4	9. 525		2. 4				★		
		250932-SC	868-SC			9. 525		3. 2			★			
	TNMG	160404-FW	331-FW	16. 5	9. 525	4. 76	3. 81	0. 4	★			MTQNR/L		
		160408-FW	332-FW					0. 8	★			MTBNR/L		
		160412-FW	333-FW					1. 2	★			MTENN		
		220408-FW	432-FW	22	12. 7	4. 76	5. 16	0. 8	★			MTJNR/L		
		220412-FW	433-FW					1. 2	★			MTFNR/L		
	TNMG	160404-MD	331-MD	16. 5	9. 525	4. 76	3. 81	0. 4		★		MTQNR/L		
		160408-MD	332-MD					0. 8		★		MTANR/L		
		160412-MD	333-MD					1. 2		★		MTTNR/L		
		220404-MD	431-MD	22	12. 7	4. 76	5. 16	0. 4		★		MTRNR/L		
		220408-MD	432-MD					0. 8		★		****-MTFNR/L		
		220412-MD	433-MD					1. 2		★		****-MTQNR/L		
		220416-MD	434-MD					1. 6		★		****-MTJNR/L		

★ First Choice

☆ Second Choice

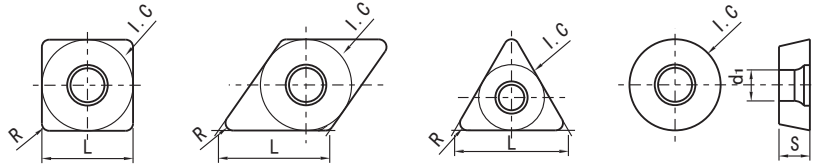
Turning Inserts for Steel



Picture	Type			Dimesion (mm)					Recommended Grade			Recommended Holder			
	(ISO)		(inch)	L	Φ I. C	S	Φ d ₁	R	ZPS101	ZPS251	ZPS301				
	TNMG	160408-RA	332-RA	16.5	9.525	4.76	3.81	0.8		★	☆	****-MTUNR/L ****-MTWNR/L			
		160412-RA	333-RA					1.2		★	☆				
		220408-RA	432-RA					0.8		★	☆				
		220412-RA	433-RA	22	12.7	4.76	5.16	1.2		★	☆				
		220416-RA	434-RA					1.6		★	☆				
		270608-RA	542-RA					0.8		★	☆				
		270612-RA	543-RA	27.5	15.875	6.35	6.35	1.2		★	☆				
		270616-RA	544-RA					1.6		☆	★				
		330716-RA	654-RA					7.94	7.94	1.6			☆	★	
		330924-RA	666-RA	33	19.05	9.525	7.94	2.4		☆	★				
	TNMM	160408-SC	332-SC	16.5	9.525	4.76	3.81	0.8		★	☆				
		160412-SC	333-SC					1.2		★	☆				
		220416-SC	434-SC	22	12.7	4.76	5.16	1.6			★				
	VNMG	160404-FW	331-FW	16.5	9.525	4.76	3.81	0.4	★			MVJNR/L MVQNR/L			
		160408-FW	332-FW					0.8	★						
	VNMG	160408-MD	332-MD	16.5	9.525	4.76	3.81	0.8	☆	★		MVUNR/L MVVNN ****-MVQNR/L ****-MVUNR/L ****-MVWNR/L ****-MVXNR/L ****-MVVNR/L			
		160412-MD	333-MD					1.2	☆	★					
	WNMG	060404-FW	331-FW	6.5	9.525	4.76	3.81	0.4	★			MWLNR/L WWLNR/L PWLNR/L DWLNR/L ****-MWLNR/L			
		060408-FW	332-FW					0.8	★						
		060412-FW	333-FW					1.2	★						
		080404-FW	431-FW	8.7	12.7	4.76	5.16	0.4	★						
		080408-FW	432-FW					0.8	★						
		080412-FW	433-FW					1.2	★						
	WNMG	060408-MD	332-MD	6.5	9.525	4.76	3.81	0.8		★					
		060412-MD	333-MD					1.2		★					
		080408-MD	432-MD	8.7	12.7	4.76	5.16	0.8		★					
		080412-MD	433-MD					1.2		★					
		080416-MD	434-MD					1.6		★					
	WNMG	060408-RA	332-RA	6.5	9.525	4.76	3.81	0.8		★	☆				
		060412-RA	333-RA					1.2		★	☆				
		080408-RA	432-RA	8.7	12.7	4.76	5.16	0.8		★	☆				
		080412-RA	433-RA					1.2		★	☆				
		080416-RA	434-RA					1.6		★	☆				

★ First Choice

☆ Second Choice

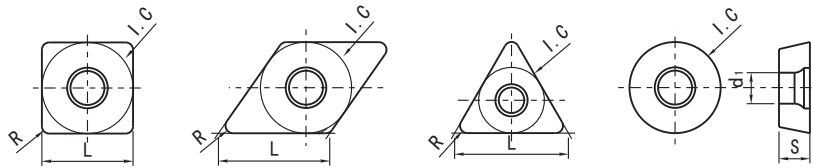


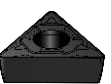
Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C.	S	Φ d _i	R	ZPS101	ZPS251	ZPS301	
	CCMT	060202-FW	2 (1.5) 0-FW	6.4	6.35	2.38	2.8	0.2		★	SCACR/L
		060204-FW	2 (1.5) 1-FW					0.4	★		SCFCR/L
		09T302-FW	3 (2.5) 0-FW	9.7	9.525	3.97	4.4	0.2		★	SCMCN
		09T304-FW	3 (2.5) 1-FW					0.4	★		SCLCR/L
		09T308-FW	3 (2.5) 2-FW					0.8	★		****-SCKCR/L
		120404-FW	431-FW	12.9	12.7	4.76	5.5	0.4	★		****-SCLCR/L
	CCMT	060204-MD	2 (1.5) 1-MD	6.4	6.35	2.38	2.8	0.4		★	****-SCZCR/L
		060208-MD	2 (1.5) 2-MD					0.8		★	
		09T304-MD	3 (2.5) 1-MD	9.7	9.525	3.97	4.4	0.4		★	
		09T308-MD	3 (2.5) 2-MD					0.8		★	
		120404-MD	431-MD	12.9	12.7	4.76	5.5	0.4		★	
		120408-MD	432-MD					0.8		★	
	CCMW	09T304	3 (2.5) 1	9.7	9.525	3.97	4.4	0.4		★	
		09T308	3 (2.5) 2					0.8		★	
	CCMT	060208-RA	2 (1.5) 2-RA	6.4	6.35	2.38	2.8	0.8			★
		09T308-RA	3 (2.5) 2-RA	9.7	9.525	3.97	4.4	0.8		★	☆
		09T312-RA	3 (2.5) 3-RA					1.2		★	☆
		120408-RA	432-RA	12.9	12.7	4.76	5.5	0.8		★	☆
		120412-RA	433-RA					1.2		★	☆
	DCMT	070202-FW	2 (1.5) 0-FW	7.75	6.35	2.38	2.8	0.2	★		SDJCR/L
		070204-FW	2 (1.5) 1-FW					0.4	★		SDFCR/L
		11T302-FW	3 (2.5) 0-FW	11.6	9.525	3.97	4.4	0.2	★		SDACR/L
		11T304-FW	3 (2.5) 1-FW					0.4	★		SDNCN
		11T308-FW	3 (2.5) 2-FW					0.8	★		SDQCR/L
	DCMT	070202-MD	2 (1.5) 0-MD	7.75	6.35	2.38	2.8	0.2		★	****-SDWCR/L
		070204-MD	2 (1.5) 1-MD					0.4		★	****-SDQCR/L
		11T304-MD	3 (2.5) 1-MD	11.6	9.525	3.97	4.4	0.4		★	****-SDLCR/L
		11T308-MD	3 (2.5) 2-MD					0.8		★	****-SDUCR/L
		11T312-MD	3 (2.5) 3-MD					1.2		★	****-SDZCR/L
	DCMT	11T308-RA	3 (2.5) 2-RA	11.6	9.525	3.97	4.4	0.8		★	☆
		11T312-RA	3 (2.5) 3-RA					1.2		★	☆
	SCMT	09T304-FW	3 (2.5) 1-FW	9.525	9.525	3.97	4.4	0.4	★		SSBCR/L
		09T308-FW	3 (2.5) 2-FW					0.8	★		SSDCN
	SCMT	09T304-MD	3 (2.5) 1-MD	9.525	9.525	3.97	4.4	0.4		★	****-SSKCR/L
		09T308-MD	3 (2.5) 2-MD					0.8		★	****-SSSCR/L
		120404-MD	431-MD	12.7	12.7	4.76	5.5	0.4		★	
		120408-MD	432-MD					0.8		★	
		120412-MD	433-MD					1.2		★	

★ First Choice

☆ Second Choice

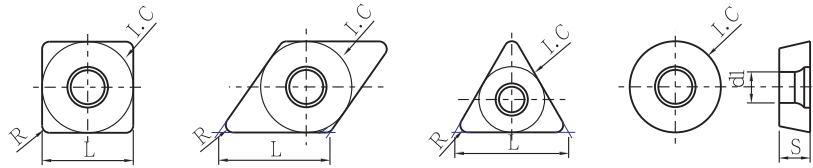
Turning Inserts for Steel

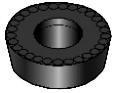


Picture	Type			Dimension (mm)					Recommended Grade			Recommended Holder
		(ISO)	(inch)	L	Φ I. C	S	Φ d _i	R	ZPS101	ZPS251	ZPS301	
	SCMW	09T308	3 (2.5) 2	9.525	9.525	3.97	4.4	0.8		★		
		120408	432	12.7	12.7	4.76	5.5	0.8		★		
	SCMT	09T308-RA	3 (2.5) 2-RA	9.525	9.525	3.97	4.4	0.8		★	☆	
		09T312-RA	3 (2.5) 3-RA					1.2		★	☆	
		120408-RA	432-RA	12.7	12.7	4.76	5.5	0.8		★	☆	
		120412-RA	433-RA					1.2		★	☆	
	TCMT	090202-FW	1.8 (1.5) 0-FW	9.6	5.56	2.38	2.5	0.2	★			STFCR/L STGCR/L STWCR/L ****-STFCR/L ****-STUCR/L ****-STWCR/L
		090204-FW	1.8 (1.5) 1-FW					0.4	★			
		110302-FW	220-FW	11	6.35	3.18	2.8	0.2	★			
		110304-FW	221-FW					0.4	★			
		110308-FW	222-FW					0.8	★			
		16T304-FW	3 (2.5) 1-FW	16.5	9.525	3.97	4.4	0.4	★			
	TCMT	090204-MD	1.8 (1.5) 1-MD	9.6	5.56	2.38	2.5	0.4		★		
		090208-MD	1.8 (1.5) 2-MD					0.8		★		
		110304-MD	221-MD	11	6.35	3.18	2.8	0.4		★		
		110308-MD	222-MD					0.8		★		
		110312-MD	223-MD					1.2		★		
		16T304-MD	3 (2.5) 1-MD	16.5	9.525	3.97	4.4	0.4		★		
		16T308-MD	3 (2.5) 2-MD					0.8		★		
		16T312-MD	3 (2.5) 3-MD					1.2		★		
		220408-MD	432-MD	22	12.7	4.76	5.5	0.8		★		
	TCMW	110204	2 (1.5) 1	11	6.35	2.38	2.8	0.4		★		
		16T308	3 (2.5) 2	16.5	9.525	3.97	4.4	0.8		★		
	TCMT	110308-RA	222-RA	11	6.35	3.18	2.8	0.8		★	☆	
		110312-RA	223-RA					1.2		★	☆	
		16T308-RA	3 (2.5) 2-RA	16.5	9.525	3.97	4.4	0.8		★	☆	
		16T312-RA	3 (2.5) 3-RA					1.2		★	☆	
		220408-RA	432-RA	22	12.7	4.76	5.5	0.8		★	☆	
		220412-RA	433-RA					1.2		★	☆	
	VBMT	110302-FW	220-FW	11	6.35	3.18	2.8	0.2	★			SVVBN SVJBR/L SVQBR/L SVUBR/L ****-SVQBR/L ****-SVUBR/L ****-SVWBR/L ****-SVXBR/L ****-SVZBR/L
		110304-FW	221-FW					0.4	★			
		110308-FW	222-FW					0.8	★			
		110312-FW	223-FW					1.2	★			
		160402-FW	330-FW	16.6	9.525	4.76	4.4	0.2	★			
		160404-FW	331-FW					0.4	★			
		160408-FW	332-FW					0.8	★			
		160412-FW	333-FW					1.2	★			
	VBMT	160404-MD	331-MD	16.6	9.525	4.76	4.4	0.4		★		
		160408-MD	332-MD					0.8		★		
		160412-MD	333-MD					1.2		★		

★ First Choice

☆ Second Choice



Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	ϕ I.C	S	ϕ d	R	ZPS101	ZPS251	ZPS301	
	RCMT	0602MO		6	2.38	2.8			★		SRACR/L SRDCN
		0803MO		8	3.18	3.4			★		
		10T3MO		10	3.97	4.4			★		
		1204MO		12	4.76	4.4			★		
		1606MO		16	6.35	5.5			★		
		2006MO		20	6.35	6.5			★		
		2507MO		25	7.94	8.6			★		
		3209MO		32	9.52	8.6			★		

★ First Choice

☆ Second Choice