

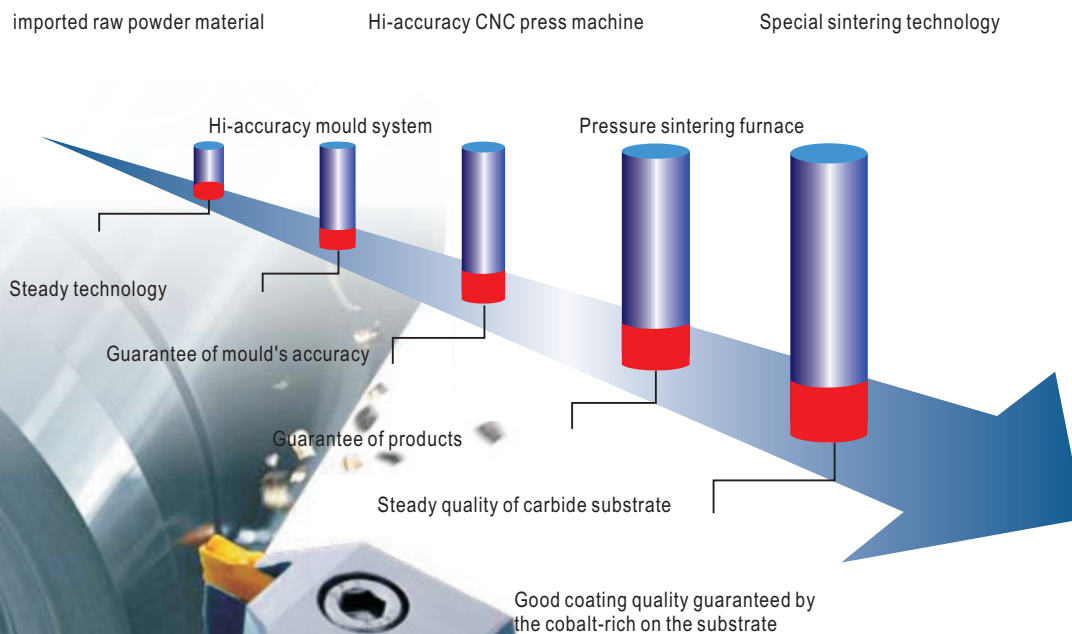
**ZZ HARDMETAL** is a professional manufacturer of cemented carbide cutting tools. Our turning inserts for steel processing with imported raw powder materials, through a special sintering process, have a peculiar gradient cobalt-rich on surface of the substrates which can ensure the inserts' high performance 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  $14\ \mu\ m$ , 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:

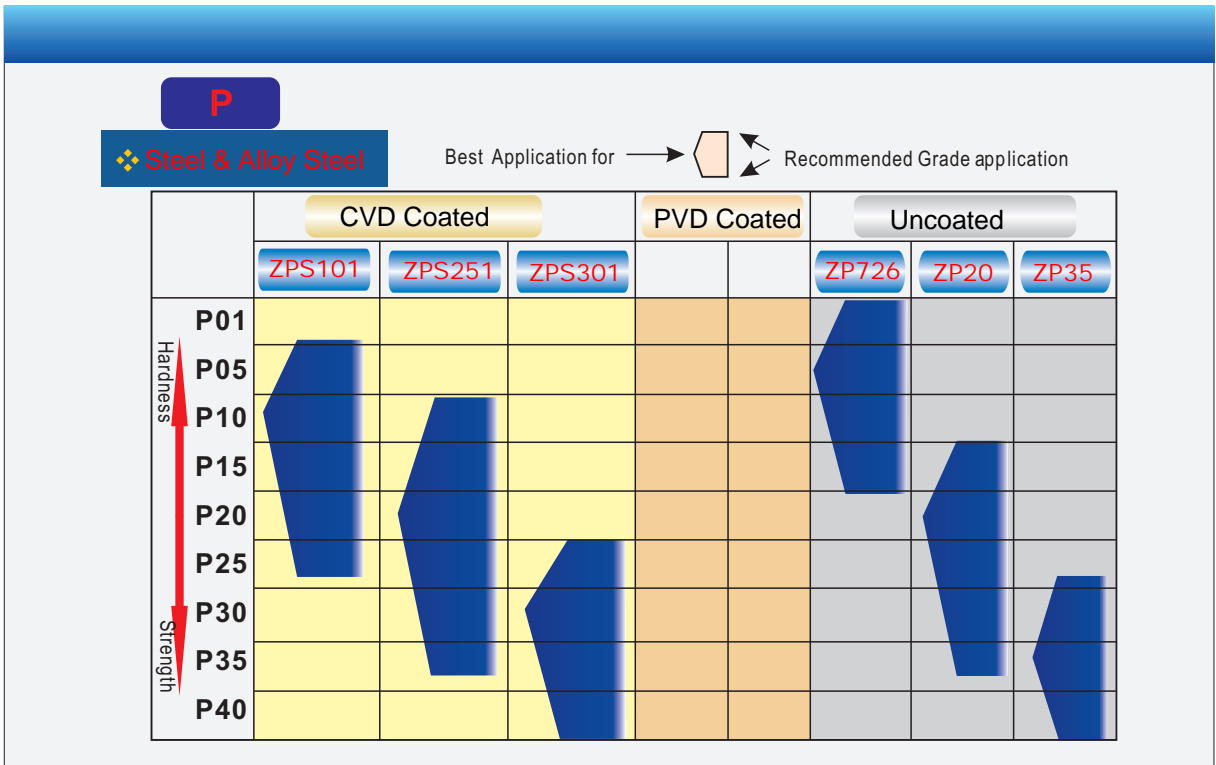
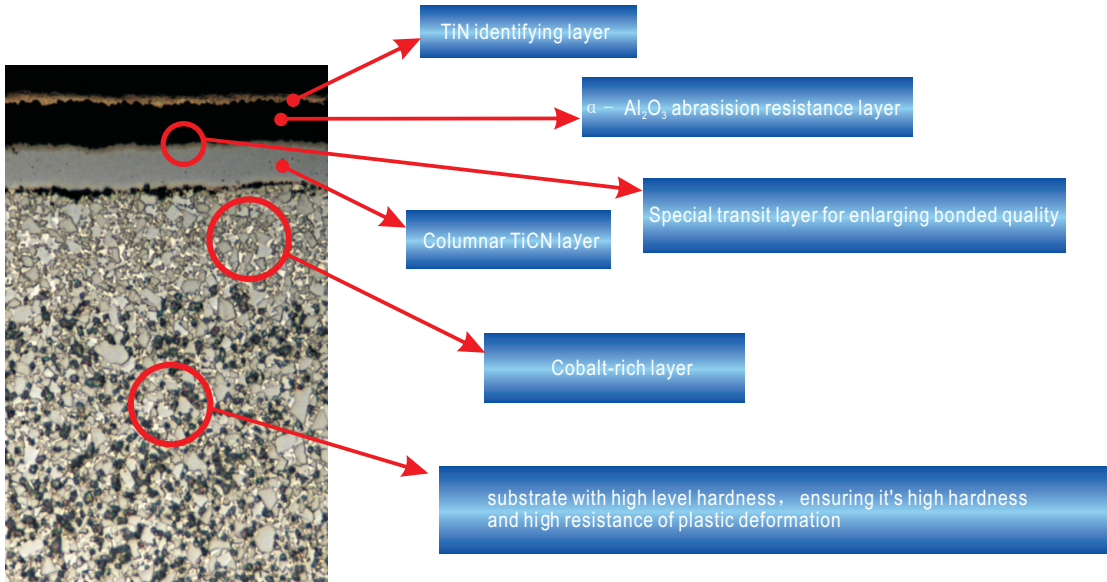
Cobalt\_rich structure on the surface of the substrate makes the inserts' edge safety

$\alpha-Al_2O_3$  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.

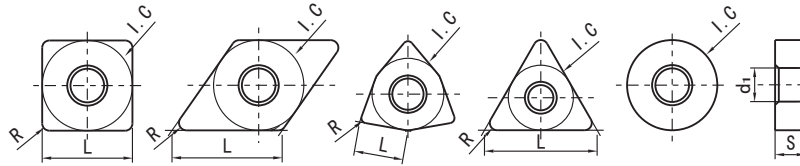


❖ Bi-color inserts



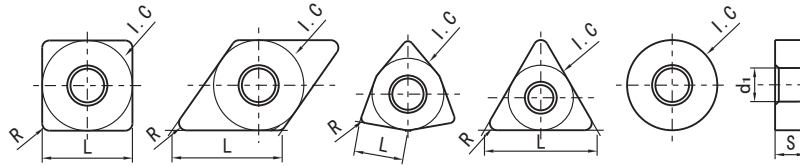
		Finishing		Roughing	
		FW Finishing	MD Semi Finishing	RA Rounghing	SC Rounghing
<b>Negative-Type</b>					
	Grade	ZPS251	ZPS251	ZPS301	ZPS301
	Cutting Speed	80-150	70-120	70-120	55-90
	Grade	ZPS101	ZPS251	ZPS251	ZPS301
	Cutting Speed	105-220	100-220	100-210	100-150
	Grade	ZPS101	ZPS101	ZPS251	ZPS251
	Cutting Speed	135-330	105-310	105-280	105-210

		Finishing		Roughing	
		FW Finishing	MD Semi Finishing	RA Rounghing	
<b>Positive-Type</b>					
	Grade	ZPS251	ZPS251	ZPS301	
	Cutting Speed	80-150	70-120	70-120	
	Grade	ZPS101	ZPS251	ZPS301	
	Cutting Speed	105-220	100-210	100-210	
	Grade	ZPS101	ZPS101	ZPS251	
	Cutting Speed	135-330	105-310	105-310	



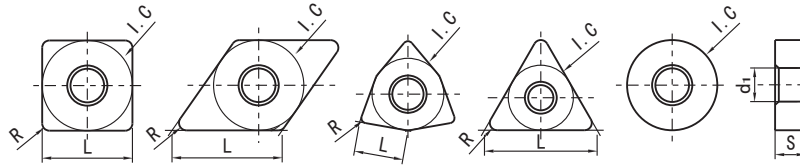
Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C	S	Φ d <sub>1</sub>	R	ZPS101	ZPS251	ZPS301	
	CNMG	090304-FW	321-FW	9.7	9.525	3.18	3.81	0.4	★		MCLNR/L
		090308-FW	322-FW					0.8	★		PCLNR/L
		120404-FW	431-FW	12.9	12.7	4.76	5.16	0.4	★		DCLNR/L
		120408-FW	432-FW					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	12.9	12.7	4.76	5.16	1.6		★	
120408-RA	432-RA	0.8						★	☆		
120412-RA	433-RA	1.2						★	☆		
120416-RA	434-RA	1.6						★	☆		
160608-RA	542-RA	0.8						★	☆		
160612-RA	543-RA	1.2						★	☆		
160616-RA	544-RA	1.6						★	☆		
160624-RA	546-RA	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		☆	★						
250924-RA	866-RA	25.79	25.4	9.525	9.12	2.4		☆	★		
	CNMM	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		☆	★




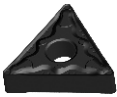
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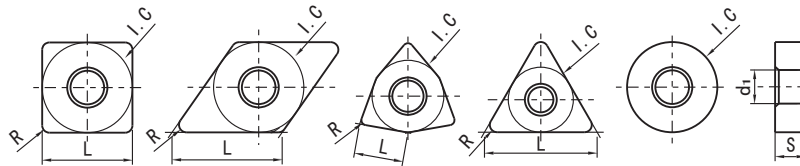
Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder		
	(ISO)	(inch)	L	$\Phi$ I.C.	S	$\Phi$ d <sub>1</sub>	R	ZPS101	ZPS251	ZPS301			
	DNMG	110404-FW	331-FW	11.6	9.525	4.76	3.81	0.4	★			MDJNR/L	
		110408-FW	332-FW					0.8	★			PDJNR/L	
		110412-FW	333-FW					1.2	★			DDJNR/L	
		150404-FW	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			6.35		6.35	1.6		★		
		150612-MD	543-MD						1.2		★		
		150616-MD	544-MD						1.6		★		

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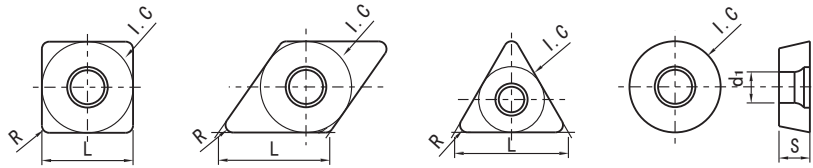
Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C	S	Φ d <sub>1</sub>	R	ZPS101	ZPS251	ZPS301	
	SNMG	120408-RA	432-RA	12.7	12.7	4.76	5.16	0.8	★	☆	MSSNR/L
		120412-RA	433-RA					1.2	★	☆	PSSNR/L
		120416-RA	434-RA					1.6	★	☆	DSSSN/L
		150608-RA	542-RA	15.875	15.875	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	25.4	25.4	7.94	9.12	1.6	☆	★	
		190624-RA	646-RA					2.4	☆	★	
		250716-RA	854-RA	25.4	25.4	9.525	9.12	1.6	★	☆	
		250724-RA	856-RA					2.4	☆	★	
		250924-RA	866-RA			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					1.6	★	☆	
		150616-SC	544-SC	15.875	15.875	6.35	6.35	1.2	★	☆	
		190612-SC	643-SC					1.6	★	☆	
		190616-SC	644-SC					2.4	★	☆	
		190624-SC	646-SC	19.05	19.05	6.35	7.94	2.4		★	
		250724-SC	856-SC					2.4		★	
		250732-SC	858-SC					3.2		★	
		250924-SC	866-SC	25.4	25.4	9.525	9.12	2.4		★	
		250932-SC	868-SC					3.2		★	
			TNMG	160404-FW	331-FW	16.5	9.525	4.76	3.81	0.4	★
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	★		MTGNR/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

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Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C	S	Φ d <sub>1</sub>	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	22	12.7	4.76	5.16	0.8	★	☆	
		220412-RA	433-RA					1.2	★	☆	
		220416-RA	434-RA					1.6	★	☆	
		270608-RA	542-RA	27.5	15.875	6.35	6.35	0.8	★	☆	
		270612-RA	543-RA					1.2	★	☆	
		270616-RA	544-RA					1.6	☆	★	
		330716-RA	654-RA	33	19.05	7.94	7.94	1.6	☆	★	
		330924-RA	666-RA			9.525		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		★	☆

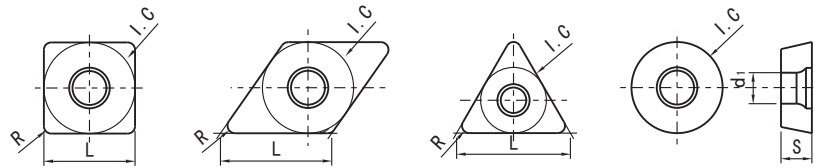
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Picture	Type		Dimension (mm)					Recommended Grade			Recommended Holder	
	(ISO)	(inch)	L	Φ I.C	S	Φ d <sub>1</sub>	R	ZPS101	ZPS251	ZPS301		
	CCMT	060202-FW	2(1.5)0-FW	6.4	6.35	2.38	2.8	0.2	★		SCACR/L	
		060204-FW	2(1.5)1-FW					0.4	★		SCFCR/L	
		09T302-FW	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		★		

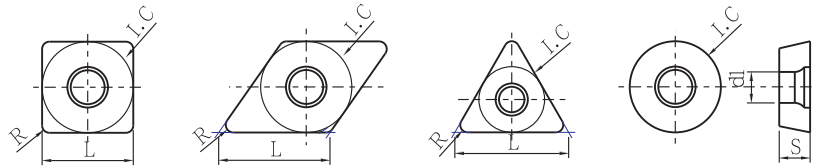
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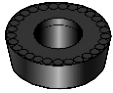




Picture	Type		Dimension (mm)						Recommended Grade			Recommended Holder
	(ISO)	(inch)	L	Φ I.C	S	Φ d <sub>1</sub>	R	ZPS101	ZPS251	ZPS301		
	SCMW	09T308	3(2.5)2	9.525	9.525	3.97	4.4	0.8		★		STFGR/L STGCR/L STWCR/L ****-STFCR/L ****-STUCR/L ****-STWCR/L
		120408	432	12.7	12.7	4.76	5.5	0.8		★		
	SCMT	09T308-RA	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	★			
		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					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					0.4		★		
		16T308-MD	3(2.5)2-MD	16.5	9.525	3.97	4.4	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	★			
		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	$\phi$ I.C	S	$\phi$ 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