

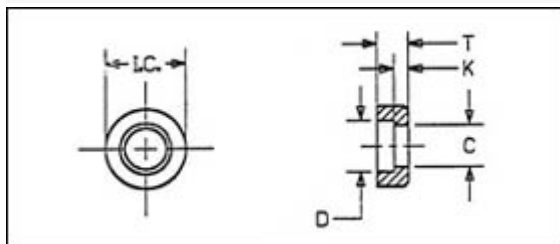
Indexable Inserts Shims

ZZ HARDMETAL

<http://www.zzhardmetal.com>

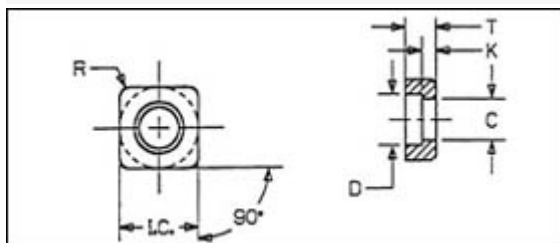
Carbide shims used with indexable inserts

(American National Standard)



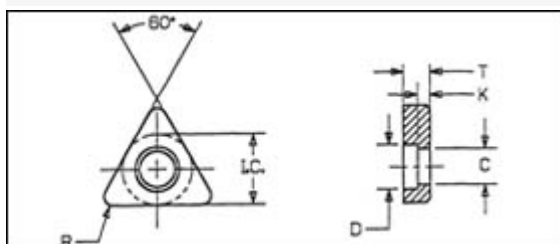
[Round seats for indexable round inserts, Style RNMA & RNMG for negative rake holders](#)

PAGE 3



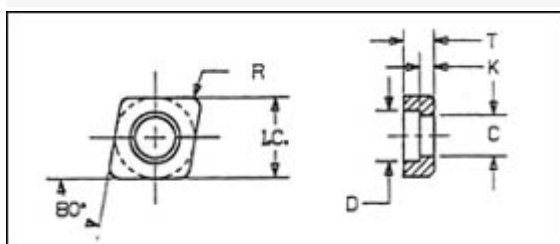
[Square seats for indexable square inserts, Style SNMA & SNMG for negative rake holders](#)

PAGE 4



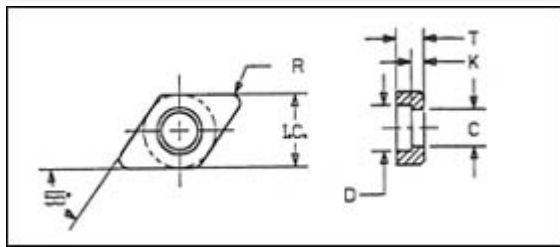
[Triangular seats for indexable triangular inserts, Style TNMA & TNMG for negative rake holders](#)

PAGE 6



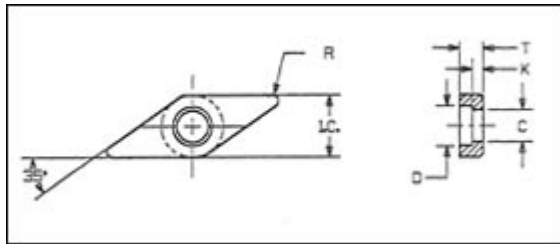
[80° rhombic seats for indexable 80° rhombic inserts, Style CNMA & CNMG for negative rake holders](#)

PAGE 8



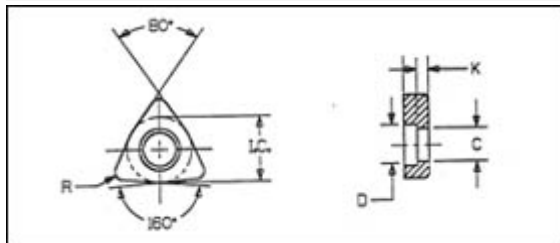
[55° rhombic seats for indexable 55° rhombic inserts, Style DNMA & DNMG for negative rake holders](#)

PAGE 10



[35° rhombic seats for indexable 35° rhombic inserts, Style VNMA & VNMG for negative rake holders](#)

PAGE 11



[Trigon seats for indexable trigon inserts, Style WNMA & WNMG for negative rake holders](#)

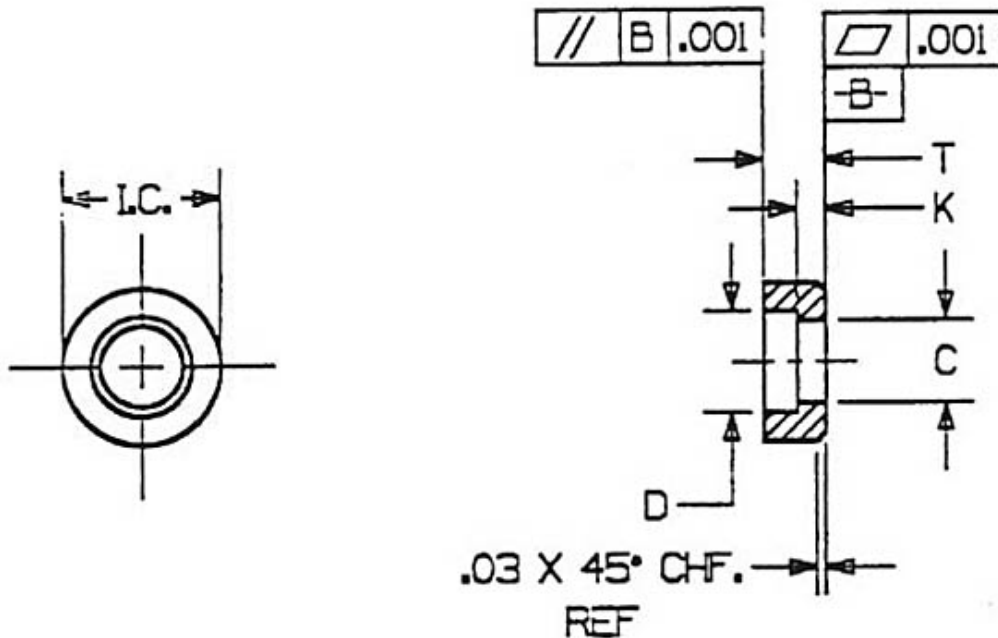
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Properties of carbide for shims

Grade	Chemical Composition		Physical Data		
	WC	Co	Density(g/cm3)	Hardness(HRA)	TRS(MPa)
YG8	92%	8%	14.65-14.85	≥ 89.0	≥1840(Sample B)

Round seats for indexable round inserts,

Style RNMA & RNMG for negative rake holders

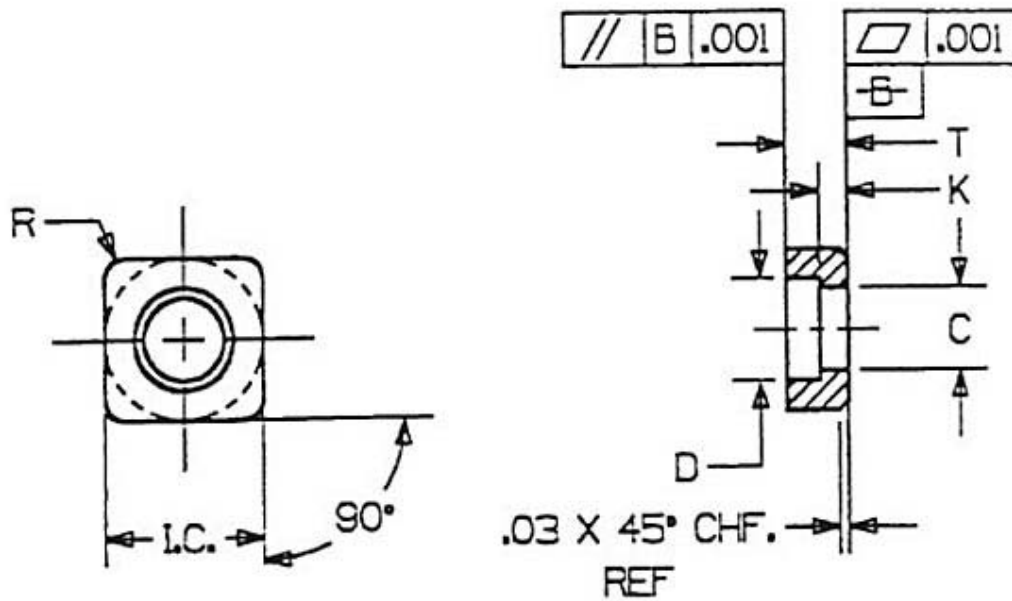


SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K
IRSN-32	0.350 ±0.004	0.375	0.262 ±0.004	0.130 +0 /-0.005	0.208 ±0.004	0.055 ±0.004
IRSN-43	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004
IRSN-44	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004
IRSN-53	0.585 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004
IRSN-63	0.712 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004
IRSN-64	0.712 ±0.007	0.750	0.513 ±0.005	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004
IRSN-84	0.960 ±0.008	1.000	0.639 ±0.006	0.255 +0 /-0.005	0.568 ±0.004	0.115 ±0.004
IRSN-104	1.200 ±0.010	1.250	0.764 ±0.006	0.255 +0 /-0.005	0.692 ±0.005	0.115 ±0.004

All dimensions in inches.

Square seats for indexable square inserts,

Style SNMA & SNMG for negative rake holders



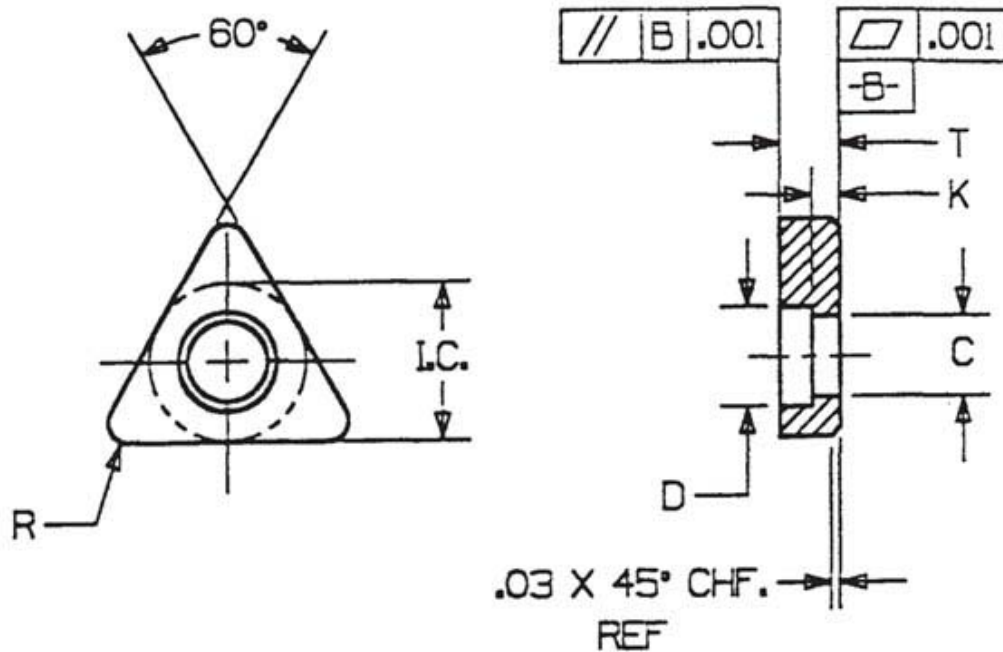
SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
ISSN-322	0.365 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
ISSN-323	0.365 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.047 ±0.004
ISSN-432	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
ISSN-433	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-436	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-438	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.125 ±0.004
ISSN-443	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-446	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.093 ±0.004

ISSN-532	0.615 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.031 ±0.004
ISSN-533	0.615 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-536	0.615 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-543	0.615 ±0.006	0.625	0.450 ±0.005	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-546	0.615 ±0.006	0.625	0.450 ±0.005	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-553	0.615 ±0.006	0.625	0.450 ±0.005	0.315 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-632	0.740 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.031 ±0.004
ISSN-633	0.740 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-634	0.740 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.062 ±0.004
ISSN-636	0.740 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-638	0.740 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.125 ±0.004
ISSN-643	0.740 ±0.007	0.750	0.513 ±0.005	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.047 ±0.004
ISSN-644	0.740 ±0.007	0.750	0.513 ±0.005	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.062 ±0.004
ISSN-646	0.740 ±0.007	0.750	0.513 ±0.005	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-836	0.990 ±0.008	1.000	0.639 ±0.006	0.192 +0 /-0.005	0.568 ±0.004	0.088 ±0.004	0.093 ±0.004
ISSN-844	0.990 ±0.008	1.000	0.639 ±0.006	0.255 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.062 ±0.004
ISSN-846	0.990 ±0.008	1.000	0.639 ±0.006	0.255 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.093 ±0.004
ISSN-848	0.990 ±0.008	1.000	0.639 ±0.006	0.255 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.125 ±0.004
ISSN-856	0.990 ±0.008	1.000	0.639 ±0.006	0.315 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.093 ±0.004
ISSN-858	0.990 ±0.008	1.000	0.639 ±0.006	0.315 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.125 ±0.004

All dimensions in inches.

Triangular seats for indexable triangular inserts,

Style TNMA & TNMG for negative rake holders



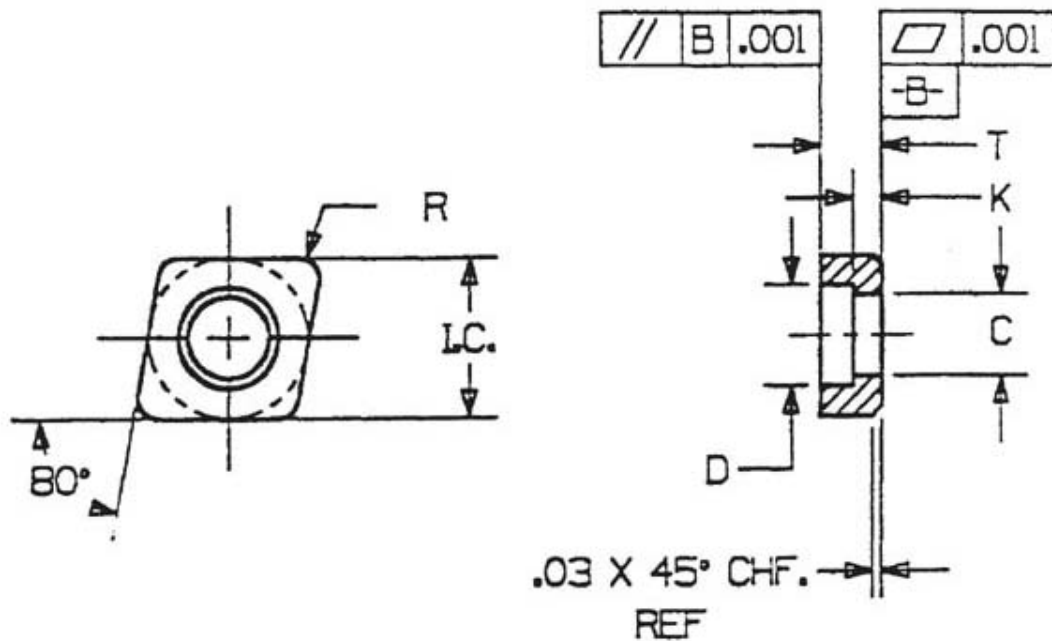
SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
ITSN-322	0.368 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
ITSN-323	0.368 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.047 ±0.004
ITSN-323-T	0.345 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.047 ±0.004
ITSN-324	0.368 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.062 ±0.004
ITSN-326	0.368 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.093 ±0.004
ITSN-327	0.368 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.109 ±0.004
ITSN-332	0.368 ±0.004	0.375	0.253 ±0.004	0.192 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
ITSN-333	0.368 ±0.004	0.375	0.253 ±0.004	0.192 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.047 ±0.004

ITSN-334	0.368 ±0.004	0.375	0.253 ±0.004	0.192 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.062 ±0.004
ITSN-431	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.016 ±0.004
ITSN-432	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
ITSN-432-T	0.455 ±0.004	0.500	0.325 ±0.004	0.192 +0 /-0.005	0.255 ±0.004	0.088 ±0.004	0.031 ±0.004
ITSN-433-T	0.455 ±0.004	0.500	0.325 ±0.004	0.192 +0 /-0.005	0.255 ±0.004	0.088 ±0.004	0.047 ±0.004
ITSN-434-T	0.455 ±0.004	0.500	0.325 ±0.004	0.192 +0 /-0.005	0.255 ±0.004	0.088 ±0.004	0.062 ±0.004
ITSN-435-T	0.455 ±0.004	0.500	0.325 ±0.004	0.192 +0 /-0.005	0.255 ±0.004	0.088 ±0.004	0.078 ±0.004
ITSN-434	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.062 ±0.004
ITSN-436	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.093 ±0.004
ITSN-438	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.125 ±0.004
ITSN-439	0.493 ±0.004	0.500	0.315 ±0.005	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.140 ±0.004
ITSN-532-T	0.570 ±0.004	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.031 ±0.004
ITSN-533	0.618 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ITSN-534	0.618 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.062 ±0.004
ITSN-535	0.618 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.078 ±0.004
ITSN-538	0.618 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.125 ±0.004
ITSN-539	0.618 ±0.006	0.625	0.450 ±0.005	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.140 ±0.004
ITSN-636	0.743 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.093 ±0.004
ITSN-637	0.743 ±0.007	0.750	0.513 ±0.005	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.109 ±0.004
ITSN-647	0.743 ±0.007	0.750	0.513 ±0.005	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.109 ±0.004

All dimensions in inches.

80° rhombic seats for indexable 80° rhombic inserts,

Style CNMA & CNMG for negative rake holders



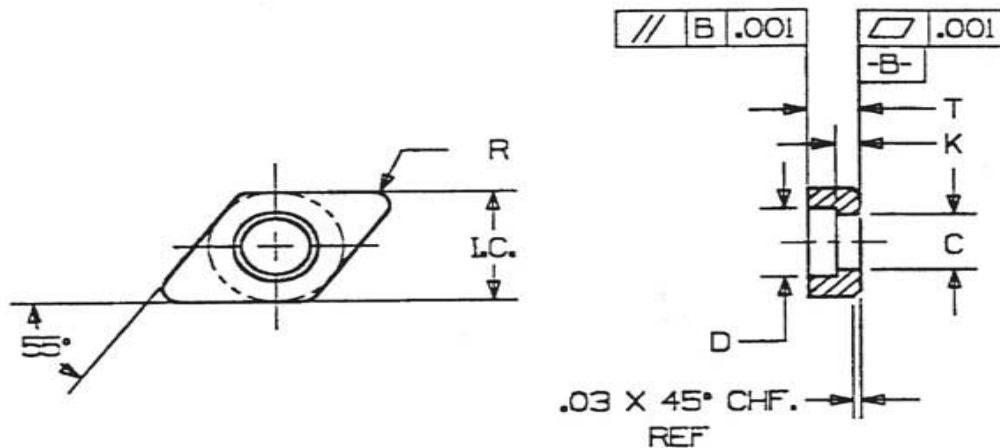
SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
ICSN-322	0.365 ±0.006	0.375	0.255 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
ICSN-432	0.490 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
ICSN-433	0.490 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-434	0.490 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.062 ±0.004
ICSN-442	0.490 ±0.006	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
ICSN-443	0.490 ±0.006	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-533	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-534	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.062 ±0.004
ICSN-538	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.125 ±0.004

ICSN-543	0.615 ±0.006	0.625	0.414 ±0.004	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-633	0.740 ±0.007	0.750	0.476 ±0.004	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-634	0.740 ±0.007	0.750	0.476 ±0.004	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.062 ±0.004
ICSN-636	0.740 ±0.007	0.750	0.476 ±0.004	0.192 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.093 ±0.004
ICSN-642	0.740 ±0.007	0.750	0.476 ±0.004	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.031 ±0.004
ICSN-643	0.740 ±0.007	0.750	0.476 ±0.004	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.047 ±0.004
ICSN-644	0.740 ±0.007	0.750	0.476 ±0.004	0.255 +0 /-0.005	0.443 ±0.004	0.088 ±0.004	0.062 ±0.004
ICSN-846	0.980 ±0.008	1.000	0.639 ±0.004	0.255 +0 /-0.005	0.568 ±0.004	0.115 ±0.004	0.093 ±0.004

All dimensions in inches.

55° rhombic seats for indexable 55° rhombic inserts,

Style DNMA & DNMG for negative rake holders

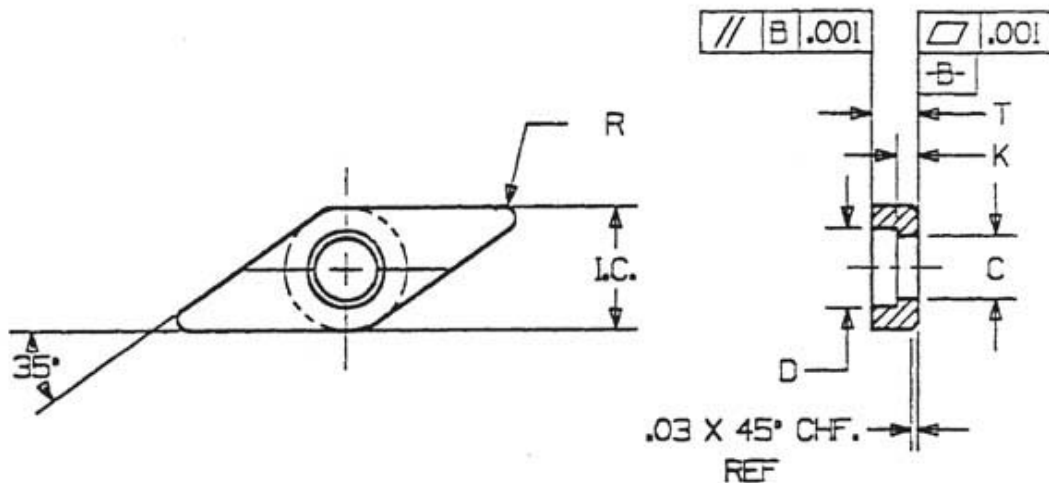


SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
IDSN-322	0.365 ±0.005	0.375	0.255 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
IDSN-423	0.490 ±0.005	0.500	0.315 ±0.004	0.130 +0 /-0.005	0.289 ±0.004	0.055 ±0.004	0.047 ±0.004
IDSN-432	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
IDSN-433	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IDSN-434	0.490 ±0.005	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.062 ±0.004
IDSN-442	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
IDSN-443	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IDSN-444	0.490 ±0.005	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.062 ±0.004
IDSN-453	0.490 ±0.005	0.500	0.315 ±0.004	0.315 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IDSN-532	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.031 ±0.004
IDSN-533	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
IDSN-543	0.615 ±0.006	0.625	0.414 ±0.004	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
IDSN-548	0.615 ±0.006	0.625	0.414 ±0.004	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.125 ±0.004
IDSN-553	0.615 ±0.006	0.625	0.414 ±0.004	0.315 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004

All dimensions in inches.

35° rhombic seats for indexable 35° rhombic inserts,

Style VNMA & VNMG for negative rake holders

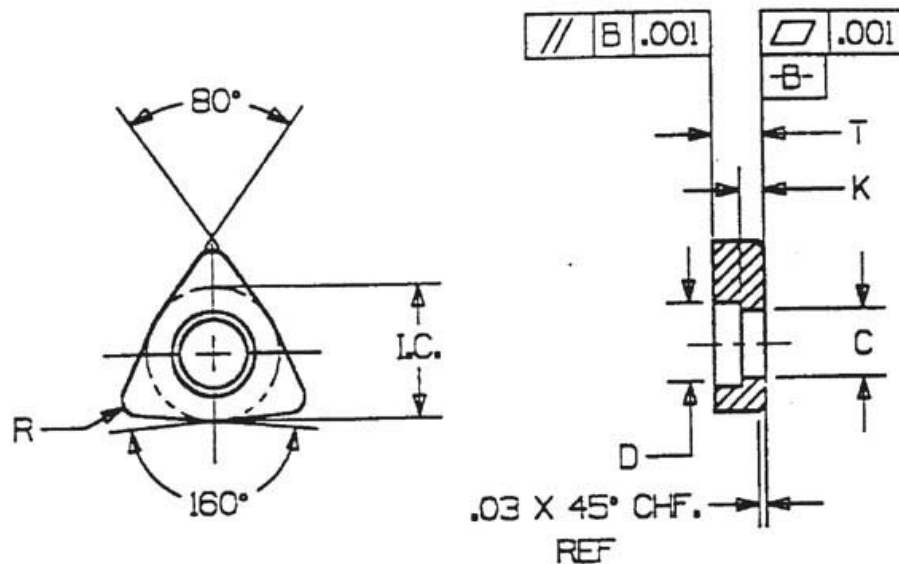


SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
IVSN-322	0.360 ±0.006	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
IVSN-324	0.360 ±0.006	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.062 ±0.004
IVSN-431	0.484 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.016 ±0.004
IVSN-433	0.484 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IVSN-436	0.484 ±0.006	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.093 ±0.004
IVSN-532	0.615 ±0.006	0.625	0.450 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.031 ±0.004
IVSN-534	0.615 ±0.006	0.625	0.450 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.062 ±0.004

All dimensions in inches.

Trigon seats for indexable trigon inserts,

Style WNMA & WNMG for negative rake holders



SEAT DESIGNATION	SEAT I.C.	REFERENCE INSERT I.C.	D	T	C	K	R
IWSN-322	0.365 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.031 ±0.004
IWSN-323	0.365 ±0.004	0.375	0.253 ±0.004	0.130 +0 /-0.005	0.227 ±0.004	0.055 ±0.004	0.047 ±0.004
IWSN-432	0.490 ±0.004	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
IWSN-433	0.490 ±0.004	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IWSN-434	0.490 ±0.004	0.500	0.315 ±0.004	0.192 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.062 ±0.004
IWSN-442	0.490 ±0.004	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.031 ±0.004
IWSN-443	0.490 ±0.004	0.500	0.315 ±0.004	0.255 +0 /-0.005	0.289 ±0.004	0.088 ±0.004	0.047 ±0.004
IWSN-533	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
IWSN-534	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.062 ±0.004
IWSN-538	0.615 ±0.006	0.625	0.414 ±0.004	0.192 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.125 ±0.004

IWSN-543	0.615 ±0.006	0.625	0.414 ±0.004	0.255 +0 /-0.005	0.380 ±0.004	0.088 ±0.004	0.047 ±0.004
IWSN-633	0.740 ±0.007	0.750	0.476 ±0.006	0.192 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.047 ±0.004
IWSN-634	0.740 ±0.007	0.750	0.476 ±0.006	0.192 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.062 ±0.004
IWSN-636	0.740 ±0.007	0.750	0.476 ±0.006	0.192 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.093 ±0.004
IWSN-642	0.740 ±0.007	0.750	0.476 ±0.006	0.255 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.031 ±0.004
IWSN-643	0.740 ±0.007	0.750	0.476 ±0.006	0.255 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.047 ±0.004
IWSN-644	0.740 ±0.007	0.750	0.476 ±0.006	0.255 +0 /-0.005	0.443 ±0.006	0.088 ±0.004	0.062 ±0.004
IWSN-846	0.980 ±0.008	1.000	0.639 ±0.006	0.255 +0 /-0.005	0.568 ±0.006	0.115 ±0.004	0.093 ±0.004

All dimensions in inches.