

Strong Trigon Insert Indexable Drills

Diameters:

.500" to 3.500"

Length-to-Diameter Ratios:

1:1, 2.5:1 and 4:1

Corner Radius:

.016"R

Applications:

Drilling

Materials:

Cast iron, steel, stainless steels, aluminum, titanium and other high temperature or nickel-based alloys.



Series "A": Trigon-style drills provide superior metal removal in virtually any material

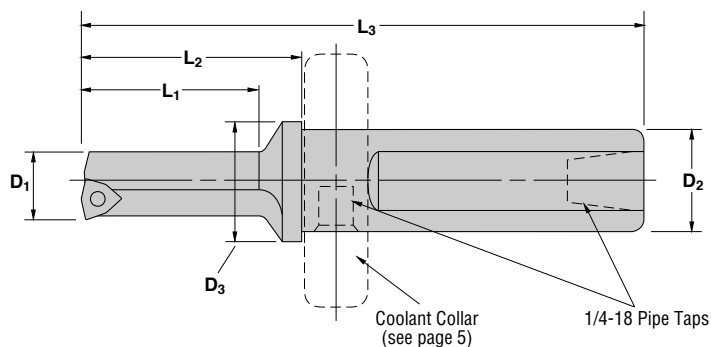
Series Features

- Low cutting pressures and low axial force provide longer tool life.
- The design angles of the Trigon insert make it virtually as strong as a square configuration and much stronger than triangular geometry.
- Trigon inserts offer three cutting edges.
- Helical flutes on 4:1 drills help reduce deflection and provide excellent chip evacuation in deeper holes.
- Designed with the largest coolant holes possible for each drill diameter.

Operating Recommendations

- Coolant through the drill is strongly recommended whenever the hole depth is greater than the hole diameter.

Series "A" Drills - .500" to 1.094"

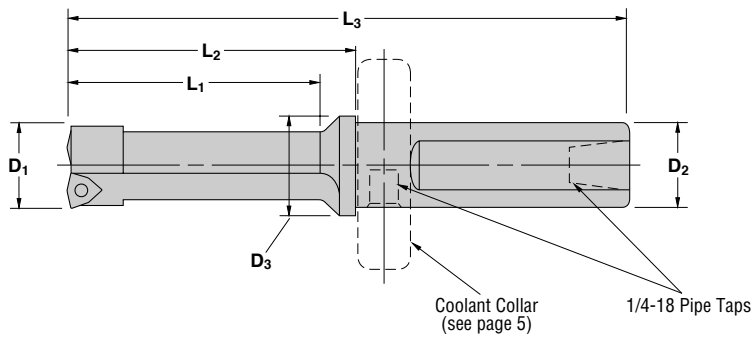


All dimensions are in inches unless otherwise noted.

Length/ Diameter Ratio	D ₁ Diameter		Drill Number	L ₁ Drilling Length	L ₂ Ext. from Holder	L ₃ Overall Length	D ₂ Shank Diameter	D ₃ Flange Diameter	Number of Inserts	Insert Series*	Screw Number	Torque Limits	Driver
	inch	mm											
1:1	.500	12,7	A05000521RS1	.50	1.12	4.81	1.250	1.50	1	WXEG73 WXEH731	SE01-03 (Tx-8)	10-15 in. lbs.	DS-0020
	.531	13,5	A05300521RS1	.53	1.15	4.84	1.250	1.50					
	.562	14,3	A05600521RS1	.56	1.18	4.87	1.250	1.50	1	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.625	15,9	A06200621RS1	.62	1.25	4.93	1.250	1.50					
	.687	17,5	A06800621RS1	.68	1.43	5.12	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)		
	.750	19,1	A07500721RS1	.75	1.50	5.18	1.250	1.50					
	.875	22,2	A08700821RS1	.87	1.75	5.43	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.937	23,8	A09300921RS1	.93	1.81	5.50	1.250	1.50					
1.000	25,4	A10001021RS1	1.00	1.87	5.56	1.250	1.50						
2.5:1	.500	12,7	A05001221RS1	1.25	1.87	5.56	1.250	1.50	1	WXEG73 WXEH731	SE01-03 (Tx-8)	10-15 in. lbs.	DS-0020
	.531	13,5	A05301321RS1	1.32	1.95	5.64	1.250	1.50					
	.562	14,3	A05601421RS1	1.40	2.03	5.71	1.250	1.50	1	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.594	15,1	A05901421RS1	1.48	2.10	5.79	1.250	1.50					
	.625	15,9	A06201521RS1	1.56	2.18	5.87	1.250	1.50	1	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.656	16,7	A06501621RS1	1.64	2.39	6.07	1.250	1.50					
	.687	17,5	A06801721RS1	1.71	2.46	6.15	1.250	1.50	1	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.719	18,3	A07101721RS1	1.76	2.54	6.23	1.250	1.50					
	.750	19,1	A07501821RS1	1.87	2.62	6.31	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)		
	.781	19,8	A07801921RS1	1.95	2.82	6.51	1.250	1.50					
	.812	20,6	A08102021RS1	2.03	2.90	6.59	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.844	21,4	A08402121RS1	2.10	2.98	6.67	1.250	1.50					
	.875	22,2	A08702121RS1	2.18	3.06	6.75	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)		
	.906	23,0	A09002221RS1	2.26	3.14	6.82	1.250	1.50					
	.937	23,8	A09302321RS1	2.34	3.21	6.90	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.969	24,6	A09602421RS1	2.42	3.29	6.98	1.250	1.50					
	1.000	25,4	A10002521RS1	2.50	3.37	7.06	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)		
	1.031	26,2	A10302521RS1	2.57	3.70	7.39	1.250	1.50					
1.062	27,0	A10602621RS1	2.65	3.78	7.46	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)			
1.094	27,8	A10902721RS1	2.73	3.85	7.54	1.250	1.50						
4:1	.750	19,1	A07503021RS1	3.00	3.75	7.43	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)	10-15 in. lbs.	DS-0020
	.812	20,6	A08103221RS1	3.25	4.12	7.81	1.250	1.50					
	.875	22,2	A08703521RS1	3.50	4.37	8.06	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)		
	.937	23,8	A09303721RS1	3.75	4.62	8.31	1.250	1.50					
	.969	24,6	A09603821RS1	3.87	4.75	8.43	1.250	1.50	2	WXEG73 WXEH731	SE01-01 (Tx-8)		
	1.000	25,4	A10004021RS1	4.00	4.87	8.56	1.250	1.50					
	1.031	26,2	A10304121RS1	4.12	5.25	8.93	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)		
	1.062	27,0	A10604221RS1	4.25	5.37	9.06	1.250	1.50					
1.094	27,8	A10904321RS1	4.37	5.50	9.18	1.250	1.50						

*Insert Crossover Table p. 7

Series "A" Drills - 1.125" to 1.468"

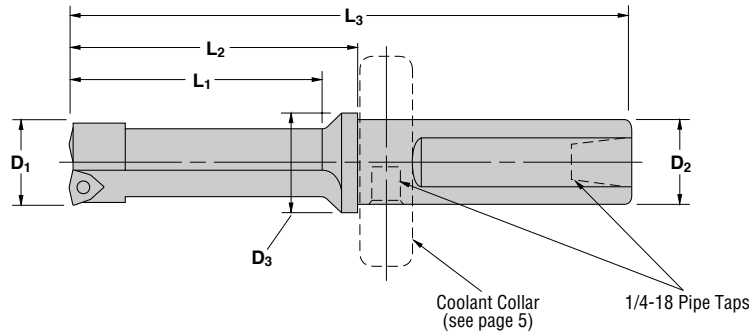


All dimensions are in inches unless otherwise noted.

Length/ Diameter Ratio	D ₁ Nom. Diameter		Drill Number	L ₁ Drilling Length	L ₂ Ext. from Holder	L ₃ Overall Length	D ₂ Shank Diameter	D ₃ Flange Diameter	Number of Inserts	Insert Series*	Screw Number	Torque Limits	Driver
	inch	mm											
1:1	1.125	28,6	A11201121RS1	1.12	2.25	5.93	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)	10-15 in. lbs.	DS-0020
	1.187	30,2	A11801121RS1	1.18	2.31	6.00	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.219	30,9	A12101221RS1	1.21	2.34	6.03	1.250	1.50					
	1.250	31,8	A12501221RS1	1.25	2.37	6.06	1.250	1.50					
	1.343	34,1	A13401321RS1	1.34	2.71	6.40	1.250	1.50					
	1.375	34,9	A13701321RS1	1.37	2.75	6.43	1.250	1.50					
	1.406	35,7	A14001421RS1	1.40	2.78	6.46	1.250	1.50					
1.468	37,3	A14601421RS1	1.46	2.84	6.53	1.250	1.50						
2.5:1	1.125	28,6	A11202821RS1	2.81	3.93	7.62	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)	10-15 in. lbs.	DS-0020
	1.156	29,4	A11502821RS1	2.89	4.01	7.70	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.187	30,2	A11802921RS1	2.96	4.09	7.78	1.250	1.50					
	1.219	31,0	A12103021RS1	3.04	4.17	7.85	1.250	1.50					
	1.250	31,8	A12503121RS1	3.12	4.25	7.93	1.250	1.50					
	1.281	32,5	A12803221RS1	3.20	4.57	8.26	1.250	1.50					
	1.312	33,3	A13103221RS1	3.28	4.65	8.34	1.250	1.50					
	1.343	34,1	A13403321RS1	3.35	4.73	8.42	1.250	1.50					
	1.375	34,9	A13703421RS1	3.43	4.81	8.50	1.250	1.50					
	1.406	35,7	A14003521RS1	3.51	4.89	8.57	1.250	1.50					
1.437	36,5	A14303521RS1	3.59	4.96	8.65	1.250	1.50						
1.468	37,3	A14603621RS1	3.67	5.04	8.73	1.250	1.50						
4:1	1.125	28,6	A11204521RS1	4.50	5.62	9.31	1.250	1.50	2	WXEG31 WXEH311	SE01-01 (Tx-8)	10-15 in. lbs.	DS-0020
	1.156	29,4	A11504621RS1	4.62	5.75	9.43	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.187	30,2	A11804721RS1	4.75	5.87	9.56	1.250	1.50					
	1.219	31,0	A12104821RS1	4.87	6.00	9.68	1.250	1.50					
	1.250	31,8	A12505021RS1	5.00	6.12	9.81	1.250	1.50					
	1.281	32,5	A12805121RS1	5.12	6.50	10.18	1.250	1.50					
	1.312	33,3	A13105221RS1	5.25	6.62	10.31	1.250	1.50					
	1.343	34,1	A13405321RS1	5.37	6.75	10.43	1.250	1.50					
	1.375	34,9	A13705521RS1	5.50	6.87	10.56	1.250	1.50					
	1.406	35,7	A14005621RS1	5.62	7.00	10.68	1.250	1.50					
1.437	36,5	A14305721RS1	5.75	7.12	10.81	1.250	1.50						
1.468	37,3	A14605821RS1	5.87	7.25	10.93	1.250	1.50						

*Insert Crossover Table p. 7

Series "A" Drills - 1.500" to 2.000"

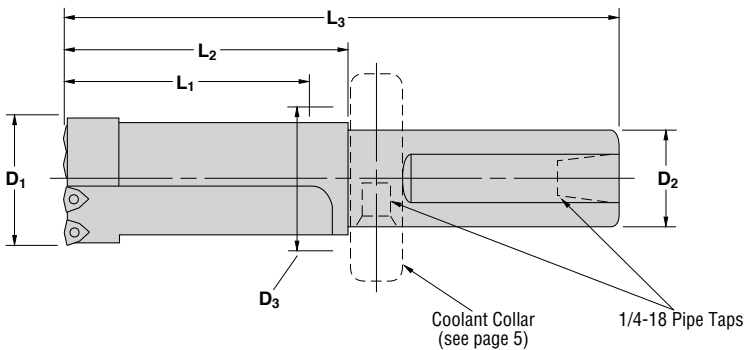


All dimensions are in inches unless otherwise noted.

Length/ Diameter Ratio	D ₁ Nom. Diameter		Drill Number	L ₁ Drilling Length	L ₂ Ext. from Holder	L ₃ Overall Length	D ₂ Shank Diameter	D ₃ Flange Diameter	Number of Inserts	Insert Series*	Screw Number	Torque Limits	Driver
	inch	mm											
1:1	1.500	38,1	A15001521RS1	1.50	2.87	6.56	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.625	41,3	A16201621RS1	1.62	3.00	6.68	1.250	1.50					
	1.719	43,7	A17101723RS1	1.71	3.21	7.65	2.000	2.25					
	1.750	44,5	A17501723RS1	1.75	3.25	7.68	2.000	2.25					
	1.781	45,2	A17801723RS1	1.78	3.28	7.71	2.000	2.25					
	1.875	47,6	A18701723RS1	1.87	3.37	7.81	2.000	2.25					
	1.969	50,0	A19601923RS1	1.96	3.46	7.90	2.000	2.25					
	2.000	50,8	A20002023RS1	2.00	3.50	7.93	2.000	2.25					
2.5:1	1.500	38,1	A15003721RS1	3.75	5.12	8.81	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.531	38,9	A15303821RS1	3.82	5.20	8.89	1.250	1.50					
	1.562	39,7	A15603921RS1	3.90	5.28	8.96	1.250	1.50					
	1.594	40,5	A15903921RS1	3.98	5.35	9.04	1.250	1.50					
	1.625	41,3	A16204021RS1	4.06	5.43	9.12	1.250	1.50					
	1.687	42,8	A16804223RS1	4.21	5.71	10.15	2.000	2.25					
	1.719	43,7	A17104223RS1	4.29	5.79	10.23	2.000	2.25					
	1.750	44,5	A17504323RS1	4.37	5.87	10.31	2.000	2.25					
	1.781	45,2	A17804423RS1	4.45	5.95	10.38	2.000	2.25					
	1.812	46,0	A18104523RS1	4.53	6.03	10.46	2.000	2.25					
	1.875	47,6	A18704623RS1	4.68	6.18	10.62	2.000	2.25					
	1.937	49,2	A19304823RS1	4.84	6.34	10.77	2.000	2.25					
	1.969	50,0	A19604923RS1	4.92	6.42	10.85	2.000	2.25					
	2.000	50,8	A20005023RS1	5.00	6.50	10.93	2.000	2.25					
	2.062	52,4	A20605123RS1	5.15	6.65	11.09	2.000	2.25					
	2.125	54,0	A21205323RS1	5.31	6.81	11.24	2.000	2.25					
4:1	1.500	38,1	A15006021RS1	6.00	7.37	11.06	1.250	1.50	2	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	1.531	38,9	A15306121RS1	6.12	7.50	11.18	1.250	1.50					
	1.562	39,7	A15606221RS1	6.25	7.62	11.31	1.250	1.50					
	1.594	40,5	A15906321RS1	6.37	7.75	11.43	1.250	1.50					
	1.625	41,3	A16206521RS1	6.50	7.87	11.56	1.250	1.50					
	1.687	42,8	A16806723RS1	6.75	8.25	12.68	2.000	2.25					
	1.719	43,7	A17106823RS1	6.87	8.37	12.81	2.000	2.25					
	1.750	44,5	A17507023RS1	7.00	8.50	12.93	2.000	2.25					
	1.781	45,2	A17807123RS1	7.12	8.62	13.06	2.000	2.25					
	1.812	46,0	A18107223RS1	7.25	8.75	13.18	2.000	2.25					
	1.875	47,6	A18707523RS1	7.50	9.00	13.43	2.000	2.25					
	1.937	49,2	A19307723RS1	7.75	9.25	13.68	2.000	2.25					
	1.969	50,0	A19607823RS1	7.87	9.37	13.81	2.000	2.25					
	2.000	50,8	A20008023RS1	8.00	9.50	13.93	2.000	2.25					
	2.062	52,4	A20608223RS1	8.25	9.75	14.18	2.000	2.25					
	2.125	54,0	A21208523RS1	8.50	10.00	14.43	2.000	2.25					

*Insert Crossover Table p. 7




Series "A" Drills - 2.187" to 3.500"



All dimensions are in inches unless otherwise noted.

Length/ Diameter Ratio	D ₁ Nom. Diameter		Drill Number	L ₁ Drilling Length	L ₂ Ext. from Holder	L ₃ Overall Length	D ₂ Shank Diameter	D ₃ Flange Diameter	Number of Inserts	Insert Series*	Screw Number	Torque Limits	Driver
	inch	mm											
1:1	2.187	55,5	A21802123RS1	2.18	3.68	8.12	2.000	2.25	2	WXEG53 WXEH531	SE02-80 (Tx-15)	25-30 in. lbs.	DS-0010
	2.250	57,1	A22502223RS1	2.25	3.75	8.18	2.000	2.25					
2.5:1	2.187	55,5	A21805423RS1	5.46	6.96	11.40	2.000	2.25	2	WXEG53 WXEH531	SE02-80 (Tx-15)	25-30 in. lbs.	DS-0010
	2.250	57,1	A22505623RS1	5.62	7.12	11.56	2.000	2.25					
	2.375	60,3	A23705923RS1	5.93	7.43	11.87	2.000	2.25					
	2.437	61,9	A24306023RS1	6.09	7.84	12.28	2.000	2.25					
	2.500	63,5	A25006224RS1	6.25	8.00	13.00	2.500	2.94					
	2.625	66,7	A26206524RS1	6.56	8.31	13.31	2.500	2.94	4	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013
	2.750	69,8	A27506824RS1	6.87	8.62	13.62	2.500	2.94					
	2.875	73,0	A28707124RS1	7.18	8.93	13.93	2.500	2.94					
	3.000	76,2	A30007524RS1	7.50	9.50	14.50	2.500	n/a					
	3.250	82,5	A32508124RS1	8.12	10.12	15.12	2.500	n/a					
3.500	88,9	A35008724RS1	8.75	11.00	16.00	2.500	n/a	4	WXEG42 WXEH421	SE02-80 (Tx-15)	25-30 in. lbs.	DS-0010	
4:1	2.187	55,5	A21808723RS1	8.75	10.25	14.68	2.000						2.25
4:1	2.250	57,1	A22509023RS1	9.00	10.50	14.93	2.000	2.25	2	WXEG53 WXEH531	SE02-80 (Tx-15)	25-30 in. lbs.	DS-0010
	2.375	60,3	A23709523RS1	9.50	11.00	15.43	2.000	2.25					
	2.437	61,9	A24309723RS1	9.75	11.50	15.93	2.000	2.25					
	2.500	63,5	A25010024RS1	10.00	11.75	16.75	2.500	2.94					
	2.875	73,0	A28711524RS1	11.50	13.25	18.25	2.500	n/a					
	3.000	76,2	A30012024RS1	12.00	14.00	19.00	2.500	n/a	4	WXEG32 WXEH321	SE02-76 (Tx-10)	25-30 in. lbs.	DS-0013

*Insert Crossover Table p. 7

Stocked Inserts & Grades for Series "A" drills				
Inserts				
Insert Number	Inscribed Circle	Chipbreaker Style	Available Grades	
 WXEG_-01	WXEG73-01	.236	Double Groove with K-Land	570, 581, 757
	WXEG31-01	.315		
	WXEG32-01	.394		
	WXEG42-01	.472		
	WXEG53-01	.591		
 WXEH	WXEH731-01	.236	Double Groove	205
	WXEH311-01	.315		
	WXEH321-01	.394		
	WXEH421-01	.472		
	WXEH531-01	.591		
 WXEG_-02	WXEG73-02	.236	Dimpled	581, 757
	WXEG31-02	.315		
	WXEG32-02	.394		
	WXEG42-02	.472		
	WXEG53-02	.591		

Coolant Collars

Part Number	Inside Diameter
CC12-01	1.250
CC20-01	2.000
CC25-01	2.500



Warning: Operating RPM should not exceed 3,000 RPM for 1.250" ID coolant collar (CC12-01), 2,500 RPM for 2.000" ID coolant collar (CC20-01), and 2,300 RPM for the 2.500" coolant collar (CC25-01).

Break-in Guidelines: In order to assure proper lubrication, even wear and proper seating, high RPM collars should be broken in at 100 RPM for 3 to 5 minutes with coolant introduced at 2 to 3 GPM.

Coolant collars must be run with sufficient coolant volume and pressure to properly lubricate the tool. Operating guidelines are detailed in Ingersoll publications C-I003 (for CC12-01 and CC20-01) and C-I004 (for CC25-01).

Carbide Grade Descriptions

Ingersoll Grade	Industry Class	ISO Rating	Coating	Workpiece Materials	Grade Characteristics*				
					Mechanical Shock	Thermal Shock	Wear Resistance	Crater Resistance	Grain Size
ICT205	C-1/C-2	M20-M40 K20-K50	None	Cast iron, aluminum, non-ferrous materials, high-temp alloys	H	L	M	VL	Micro
ICT570	C-5/C-6	P15-P25 M15-M25	PVD TiCN-TiN	Steel	L-M	M-H	H	H	Fine
ICT581	C-1/C-5	M30 K25-K40	PVD TiCN-TiN	Steels, stainless, titanium, high-temp alloys	EH	M	M	M	Coarse
ICT757	C-2/C-7	P05-P40 M10-M25 K01-K20	CVD Al ₂ O ₃	Cast irons, carbon and alloyed steels	M	M-H	M	M-H	Medium

*Degree of resistance to specified types of failure: EH= Extremely High H=High M=Moderate L=Low VL=Very Low

Operating Guidelines

Material	Brinell Hardness	SFM	L:D* Ratio	Feed per Revolution per Diameter			Grades**	
				.500 to .687	.750 to 1.687	1.750 & up		
Aluminum	6061 T-6, 7075 T-6	-	1000-3000	1:1	.003-.006	.004-.008	.005-.010	205, 581
				2.5:1	.003-.006	.004-.008	.005-.010	
				4:1	-	.003-.006	.004-.008	
Cast Iron	Nodular, Grey	150-250	350-1000	1:1	.002-.005	.003-.006	.004-.007	581, 205, 757
				2.5:1	.002-.005	.003-.006	.004-.007	
				4:1	-	.002-.005	.003-.006	
Steel	Low Carbon 1018, 8620	100-250	450-1500	1:1	.002-.006	.004-.009	.005-.010	581, 570, 757
				2.5:1	.002-.006	.004-.009	.005-.010	
				4:1	-	.003-.006	.004-.008	
	High Carbon F-6180, Nitralloy 52100	250-400	200-600	1:1	.002-.005	.004-.009	.005-.010	
				2.5:1	.002-.005	.004-.009	.005-.010	
				4:1	-	.003-.006	.004-.008	
	Alloyed Steel 4140, 4340, 6150	150-300	400-900	1:1	.002-.006	.004-.008	.005-.010	
				2.5:1	.002-.006	.004-.008	.005-.010	
				4:1	-	.003-.006	.004-.008	
	Tool Steel A-6, D-1, D-2, P-20	Up to 300	250-600	1:1	.001-.004	.003-.006	.004-.008	
				2.5:1	.001-.004	.003-.006	.004-.008	
				4:1	-	.002-.005	.003-.006	
Stainless Steel	300 Series, 304, 316	150-270	350-900	1:1	.002-.005	.004-.009	.005-.010	581, 757
				2.5:1	.002-.005	.004-.009	.005-.010	
				4:1	-	.003-.007	.004-.008	
	13-8 PH	150-270	275-600	1:1	.002-.005	.003-.006	.004-.008	581, 570
				2.5:1	.002-.005	.003-.006	.004-.008	
				4:1	-	.002-.005	.003-.007	
	400 Series 15-5 PH, 17-4 PH	Up to 320	275-600	1:1	.002-.005	.003-.006	.004-.008	
				2.5:1	.002-.005	.003-.006	.004-.008	
				4:1	-	.002-.005	.003-.007	
Nickel Based Alloys	Inconel 600, 706, 718, 903, Hastelloy, Waspalloy	180-475	150-475	1:1	.001-.004	.003-.005	.004-.007	205, 581
				2.5:1	.001-.004	.003-.005	.004-.007	
				4:1	-	.002-.004	.003-.006	
Titanium	6AL-4V	110-400	90-250	1:1	.001-.004	.003-.006	.004-.007	205, 581
				2.5:1	.001-.004	.003-.006	.004-.007	
				4:1	-	.002-.005	.003-.006	

*Length to diameter ratio.

**In order of preference.

New Insert Part Numbers

Old Insert Description	New ISO Description	New Grade	Item Number
WXEG73-01,-02	WCET070204N-SK	IN2005	5100987
WXEH731-01,-02			
WXEH31-01,-02	WCET100304N-SK	IN2005	5100988
WXEG31-01,-02			
WXEH311-01,-02			
WXEH32-01,-02	WCET120304N-DK	IN2005	5100989
WXEG32-01,-02			
WXEH311-01,-02			
WXEH42-01,-02	WCET15T304N-SK	IN2005	5100990
WXEG42-01,-02			
WXEH421-01,-02			
WXEH53-01,-02	WCET190404N-DK	IN2005	5100991
WXEG53-01,-02			
WXEH531-01,-02			

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