

**THE GEORGE WHALLEY COMPANY***Everything Coolant-Fed*

COATED THROW-AWAY SPADE DRILL INSERTS AND HOLDERS

**ULTRA HIGH PERFORMANCE COATINGS****IMPROVED PRODUCTIVITY****BROADER RANGE OF APPLICATIONS****COOLANT THRU HOLDERS**

Discover our new line of Coated Throw-Away Spade Drill Inserts and Holders. Our inserts are manufactured with ultra high performance coatings which allow for higher speeds & feeds, longer tool life, reduced machining time and improved productivity. Our combination of materials and multi-layered coatings provide for a broader range of applications subsequently reducing your inventory. All of our inserts and holders are competitively priced. We have a large inventory of products in stock now and available for immediate delivery.



SERIES & SIZES

SPADE DRILL INSERT AVAILABILITY

SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
	INCH	METRIC	DECIMAL	M04			T15		M48		K20	
				TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
Y	3/8"-27/64"		0.374 - 0.433				•	•	•	•	•	•
		9.5MM - 11MM					•	•				
Z	7/16"-1/2"		0.437 - 0.500				•	•	•	•	•	•
		11.5MM - 12.5MM					•	•				
0	33/64"-11/16"		0.511 - 0.689				•	•	•	•	•	•
		13MM - 17.5MM					•	•				
1	45/64"-15/16"		0.703 - 0.944	•	•	•	•	•	•	•	•	•
		18MM - 24MM					•	•				
2	31/32"-1-3/8"		0.968 - 1.378	•	•	•	•	•			•	•
		26MM - 35MM					•	•				
3	1-13/32"-1-7/8"		1.406 - 1.875	•	•	•	•	•				
		36MM - 47MM					•	•				
4	1-29/32"-2-9/16"		1.889 - 2.562	•	•	•	•	•				
		48MM - 65MM										
5	2-1/2"-3"		2.500 - 3.000	•	•	•						
		64MM - 76MM										
6	3-1/32"-3-1/2"		3.031 - 3.500	•	•	•						
		78MM - 88MM										
7	3-17/32"-4"		3.531 - 4.000	•	•	•						
		90MM - 100MM										
8	4-1/64"-4-1/2"		4.015 - 4.500	•	•	•						
		106MM - 114MM										

SPADE BLADES
& HOLDERS

SPADE DRILL HOLDER AVAILABILITY

INSERT SERIES	A SIZE RANGE	B OVERALL LENGTH	C MAX DEPTH	D FLUTE LENGTH	E SHANK DIA.	F SHANK LENGTH	G PIPE TAP
SHORT LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE							
Y TO 3	0.375" - 1.875"	4-13/32" - 10"	1-1/4" - 4-3/4"	2-1/32" - 6"	3/4" - 1-1/2"	2-3/8" - 4"	1/8" - 1/4"
STANDARD LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE							
Y TO 0.5	0.375" - 0.687"	5-17/32" - 5-11/16"	2-3/8" - 2-1/2"	3-5/32" - 3-5/16"	3/4"	2-3/8"	1/8"
INTERMEDIATE LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE							
1 TO 3	0.703" - 1.875"	8-7/8" - 11-3/4"	4-5/8" - 6-1/2"	5-7/8" - 7-3/4"	1"- 1-1/2"	3"- 4"	1/8"-1/4"

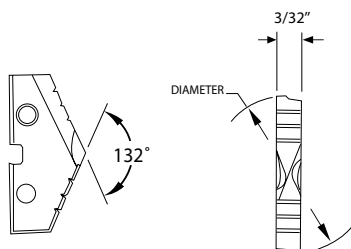
COATING CODES & APPLICATIONS

TiN	ST	Titanium Nitride	Color - Yellow / Gold	Effective Abrasion Wear and Good Lubricity.
TiAlN	SA	Titanium Aluminum Nitride	Color - Violet Gray	High Temperature and Outstanding Wear Resistance.
TiCN	SC	Titanium Carbo Nitride	Color - Blue Gray	Outstanding Wear Resistance.
Ultra-TiN	SU	Ultra-TiN	Color - Deep Gold	High Lubricity, High Temperature and Outstanding Wear Resistance.
Life-Coat	SL	Life-Coat	Color - Violet Gray	Phenomenal Lubricity, High Temperature and Outstanding Wear Resistance.



SPADE DRILL INSERTS • SERIES Y

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
Y	3/8"-27/64"		0.3740 - 0.4331				•	•	•	•	•	•
		9.5MM - 11MM					•	•				



NEW

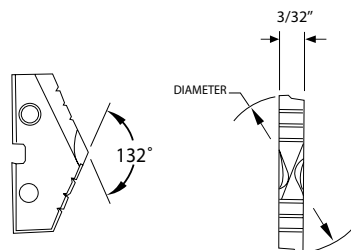


SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
Y		9.5MM	0.3740				SU001	SL001				
	3/8"		0.3750				SU002	SL002	SU043	SL043	SU462	SL462
		9.8MM	0.3858				SU003	SL003				
	25/64"		0.3906				SU004	SL004	SU045	SL045	SU464	SL464
		10MM	0.3937				SU005	SL005				
		10.2MM	0.4016				SU006	SL006				
	13/32"		0.4063				SU007	SL007	SU048	SL048	SU467	SL467
		10.5MM	0.4134				SU008	SL008				
	27/64"		0.4219				SU009	SL009	SU050	SL050	SU469	SL469
		10.8MM	0.4252				SU010	SL010				
		11MM	0.4331				SU011	SL011				

• Special diameters and alternative coatings available upon request

SPADE DRILL INSERTS • SERIES Z

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
Z	7/16"-1/2"		0.4375 - 0.5000				•	•	•	•	•	•
		11.5MM - 12.5MM					•	•				



NEW



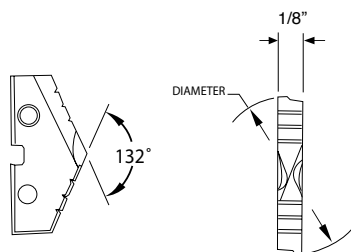
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
Z	7/16"		0.4375				SU012	SL012	SU053	SL053	SU472	SL472
		11.5MM	0.4528				SU013	SL013				
	29/64"		0.4531				SU014	SL014	SU055	SL055	SU474	SL474
	15/32"		0.4688				SU015	SL015	SU056	SL056	SU475	SL475
		12MM	0.4724				SU016	SL016				
	31/64"		0.4844				SU017	SL017	SU058	SL058	SU477	SL477
		12.5MM	0.4921				SU018	SL018				
	1/2"		0.5000				SU019	SL019	SU060	SL060	SU479	SL479

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 0

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
0	33/64"-11/16"		0.5118 - 0.6890				•	•	•	•	•	•
		13MM - 17.5MM					•	•				



NEW



SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
0		13MM	0.5118				SU020	SL020				
	33/64"		0.5156				SU021	SL021	SU062	SL062	SU481	SL481
	17/32"		0.5313				SU022	SL022	SU063	SL063	SU482	SL482
		13.5MM	0.5315				SU023	SL023				
	35/64"		0.5469				SU024	SL024	SU065	SL065	SU484	SL484
		14MM	0.5512				SU025	SL025				
	9/16"		0.5625				SU026	SL026	SU067	SL067	SU486	SL486
		14.5MM	0.5709				SU027	SL027				
	37/64"		0.5781				SU028	SL028	SU069	SL069	SU488	SL488
		15MM	0.5906				SU029	SL029				
	19/32"		0.5938				SU030	SL030	SU071	SL071	SU490	SL490
	39/64"		0.6094				SU031	SL031	SU072	SL072	SU491	SL491
		15.5MM	0.6102				SU032	SL032				
	5/8"		0.6250				SU033	SL033	SU074	SL074	SU493	SL493
		16MM	0.6299				SU034	SL034				
	41/64"		0.6406				SU035	SL035	SU076	SL076	SU495	SL495
		16.5MM	0.6496				SU036	SL036				
	21/32"		0.6563				SU037	SL037	SU078	SL078	SU497	SL497
		17MM	0.6693				SU038	SL038				
	43/64"		0.6719				SU039	SL039	SU080	SL080	SU499	SL499
	11/16"		0.6875				SU040	SL040	SU081	SL081	SU500	SL500
		17.5MM	0.6890				SU041	SL041				

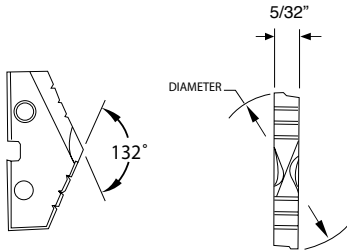
SPADE BLADES
& HOLDERS

- Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 1

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
1	45/64"-15/16"		0.7031 - 0.9449	•	•	•	•	•	•	•	•	•
		18MM - 24MM					•	•				



NEW



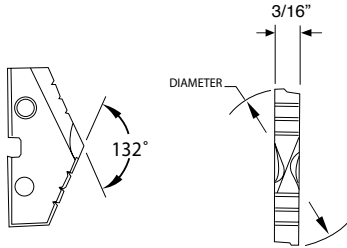
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
1	45/64"		0.7031				SU136	SL136	SU189	SL189	SU502	SL502
		18MM	0.7087				SU137	SL137				
	23/32"		0.7188				SU138	SL138	SU191	SL191	SU504	SL504
		18.5MM	0.7283				SU139	SL139				
	47/64"		0.7344				SU140	SL140	SU193	SL193	SU506	SL506
		19MM	0.7480				SU141	SL141				
	3/4"		0.7500	ST089	SA089	SC089	SU142	SL142	SU195	SL195	SU508	SL508
	49/64"		0.7656	ST090	SA090	SC090	SU143	SL143			SU509	SL509
		19.5M	0.7677				SU144	SL144				
	25/32"		0.7813	ST092	SA092	SC092	SU145	SL145			SU511	SL511
		20MM	0.7874				SU146	SL146				
	51/64"		0.7969	ST094	SA094	SC094	SU147	SL147			SU513	SL513
		20.5MM	0.8071				SU148	SL148				
	13/16"		0.8125	ST096	SA096	SC096	SU149	SL149			SU515	SL515
		21MM	0.8268				SU150	SL150				
	27/32"		0.8438	ST098	SA098	SC098	SU151	SL151			SU517	SL517
	55/64"		0.8594	ST099	SA099	SC099	SU152	SL152			SU518	SL518
		22MM	0.8661				SU153	SL153				
	7/8"		0.8750	ST101	SA101	SC101	SU154	SL154			SU520	SL520
	57/64"		0.8906	ST102	SA102	SC102	SU155	SL155			SU521	SL521
		23MM	0.9055				SU156	SL156				
	29/32"		0.9063	ST104	SA104	SC104	SU157	SL157			SU523	SL523
	59/64"		0.9219	ST105	SA105	SC105	SU158	SL158			SU524	SL524
	15/16"		0.9375	ST106	SA106	SC106	SU159	SL159			SU525	SL525
		24MM	0.9449				SU160	SL160				

• Special diameters and alternative coatings available upon request

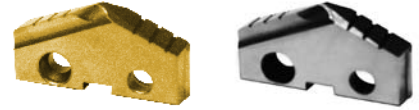


SPADE DRILL INSERTS • SERIES 2

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
2	31/32"-1-3/8"		0.9688 - 1.3780	•	•	•	•	•			•	•
		26MM - 35MM					•	•				



NEW



SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
2	31/32"		0.9688	ST108	SA108	SC108	SU161	SL161			SU527	SL527
	63/64"		0.9844				SU162	SL162			SU528	SL528
	1"		1.0000	ST110	SA110	SC110	SU163	SL163			SU529	SL529
	1-1/64"		1.0156	ST111	SA111	SC111	SU164	SL164			SU530	SL530
		26MM	1.0236				SU165	SL165				
	1-1/32"		1.0313	ST113	SA113	SC113	SU166	SL166			SU532	SL532
	1-3/64"		1.0469	ST114	SA114	SC114	SU167	SL167			SU533	SL533
	1-1/16"		1.0625	ST115	SA115	SC115	SU168	SL168			SU534	SL534
		27MM	1.0630				SU169	SL169				
	1-3/32"		1.0938	ST117	SA117	SC117	SU170	SL170			SU536	SL536
		28MM	1.1024				SU171	SL171				
	1-7/64"		1.1094	ST119	SA119	SC119	SU172	SL172			SU538	SL538
	1-1/8"		1.1250	ST120	SA120	SC120	SU173	SL173			SU539	SL539
		29MM	1.1417				SU174	SL174				
	1-5/32"		1.1563	ST122	SA122	SC122	SU175	SL175			SU541	SL541
		30MM	1.1811				SU176	SL176				
	1-3/16"		1.1875	ST124	SA124	SC124	SU177	SL177			SU543	SL543
	1-7/32"		1.2188	ST125	SA125	SC125	SU178	SL178			SU544	SL544
		31MM	1.2205				SU179	SL179				
	1-1/4"		1.2500	ST127	SA127	SC127	SU180	SL180			SU546	SL546
		32MM	1.2598				SU181	SL181				
	1-9/32"		1.2813	ST129	SA129	SC129	SU182	SL182			SU548	SL548
		33MM	1.2992				SU183	SL183				
	1-5/16"		1.3125	ST131	SA131	SC131	SU184	SL184			SU550	SL550
		34MM	1.3386				SU185	SL185				
	1-11/32"		1.3438	ST133	SA133	SC133	SU186	SL186			SU552	SL552
	1-3/8"		1.3750	ST134	SA134	SC134	SU187	SL187			SU553	SL553
		35MM	1.3780				SU188	SL188				

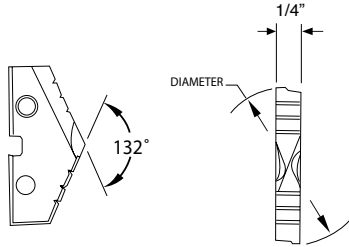
SPADE BLADES
& HOLDERS

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 3

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
3	1-13/32"-1-7/8"		1.4063- 1.8750	•	•	•	•	•				
		36MM - 47MM					•	•				



NEW



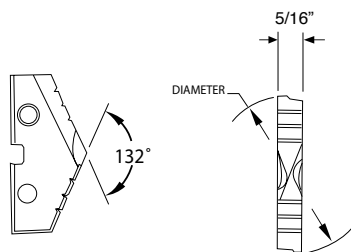
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
3	1-13/32"		1.4063	ST242	SA242	SC242	SU310	SL310				
		36MM	1.4173				SU311	SL311				
	1-7/16"		1.4375	ST244	SA244	SC244	SU312	SL312				
		37MM	1.4567				SU313	SL313				
	1-15/32"		1.4688	ST246	SA246	SC246	SU314	SL314				
		38MM	1.4961				SU315	SL315				
	1-1/2"		1.5000	ST248	SA248	SC248	SU316	SL316				
	1-17/32"		1.5313	ST249	SA249	SC249	SU317	SL317				
		39MM	1.5354				SU318	SL318				
	1-9/16"		1.5625	ST251	SA251	SC251	SU319	SL319				
		40MM	1.5748									
	1-19/32"		1.5938	ST253	SA253	SC253	SU321	SL321				
		41MM	1.6142									
	1-5/8"		1.6250	ST255	SA255	SC255	SU323	SL323				
		42MM	1.6535									
	1-21/32"		1.6563	ST257	SA257	SC257	SU325	SL325				
	1-11/16"		1.6875	ST258	SA258	SC258	SU326	SL326				
		43MM	1.6929									
	1-23/32"		1.7188	ST260	SA260	SC260	SU328	SL328				
		44MM	1.7323									
	1-3/4"		1.7500	ST262	SA262	SC262	SU330	SL330				
		45MM	1.7717									
	1-25/32"		1.7813	ST264	SA264	SC264	SU332	SL332				
		46MM	1.8110									
	1-13/16"		1.8125	ST266	SA266	SC266	SU334	SL334				
	1-27/32"		1.8438	ST267	SA267	SC267	SU335	SL335				
		47MM	1.8504									
	1-7/8"		1.8750	ST269	SA269	SC269	SU337	SL337				

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 4

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
4	1-29/32"-2-9/16"		1.8898- 2.5625	•	•	•	•	•				
		48MM - 65MM										



NEW



SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
4		48MM	1.8898									
	1-29/32"		1.9063	ST271	SA271	SC271	SU339	SL339				
		49MM	1.9291									
	1-15/16"		1.9375	ST273	SA273	SC273	SU341	SL341				
		50MM	1.9685									
	1-31/32"		1.9688	ST275	SA275	SC275	SU343	SL343				
	2"		2.0000	ST276	SA276	SC276	SU344	SL344				
		51MM	2.0079									
	2-1/32"		1.0313	ST278	SA278	SC278	SU346	SL346				
	2-3/64"		2.0469	ST279	SA279	SC279	SU347	SL347				
	2-1/16"		2.0625	ST280	SA280	SC280	SU348	SL348				
		53MM	2.0866									
	2-3/32"		2.0938	ST282	SA282	SC282	SU350	SL350				
	2-1/8"		2.1250	ST283	SA283	SC283	SU351	SL351				
		54MM	2.1260									
	2-5/32"		2.1563	ST285	SA285	SC285	SU353	SL353				
		55MM	2.1654									
	2-3/16"		2.1875	ST287	SA287	SC287	SU355	SL355				
		56MM	2.2047									
	2-7/32"		2.2188	ST289	SA289	SC289	SU357	SL357				
		57MM	2.2441									
	2-1/4"		2.2500	ST291	SA291	SC291	SU359	SL359				
	2-9/32"		2.2813	ST292	SA292	SC292	SU360	SL360				
		58MM	2.2835									
	2-5/16"		2.3125	ST294	SA294	SC294	SU362	SL362				
		59MM	2.3228									
	2-11/32"		2.3438	ST296	SA296	SC296	SU364	SL364				
		60MM	2.3622									
	2-3/8"		2.3750	ST298	SA298	SC298	SU366	SL366				
		61MM	2.4016									
	2-13/32"		2.4063	ST300	SA300	SC300	SU368	SL368				
	2-7/16"		2.4375	ST301	SA301	SC301	SU369	SL369				
		62MM	2.4409									
	2-15/32"		2.4688	ST303	SA303	SC303	SU371	SL371				
		63MM	2.4803									
	2-1/2"		2.5000	ST305	SA305	SC305	SU373	SL373				
		64MM	2.5197									
	2-17/32"		2.5313	ST307	SA307	SC307	SU375	SL375				
		65MM	2.5591									
	2-9/16"		2.5625	ST309	SA309	SC309	SU377	SL377				

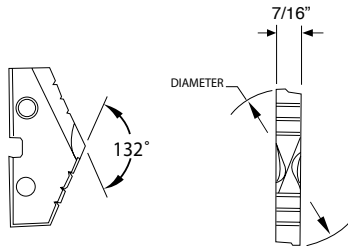
• Special diameters and alternative coatings available upon request

SPADE BLADES
& HOLDERS



SPADE DRILL INSERTS • SERIES 5

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
5	2-1/2"-3"		2.5000 - 3.0000	•	•	•						
		64MM - 76MM										



NEW



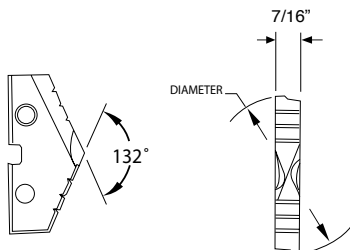
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
5	2-1/2"		2.5000	ST378	SA378	SC378						
		64MM	2.5197									
	2-17/32"		2.5313	ST380	SA380	SC380						
	2-9/16"		2.5625	ST381	SA381	SC381						
	2-19/32"		2.5938	ST382	SA382	SC382						
		66MM	2.5984									
	2-5/8"		2.6250	ST384	SA384	SC384						
	2-21/32"		2.6563	ST385	SA385	SC385						
		68MM	2.6772									
	2-11/16"		2.6875	ST387	SA387	SC387						
	2-23/32"		2.7188	ST388	SA388	SC388						
	2-3/4"		2.7500	ST389	SA389	SC389						
		70MM	2.7559									
	2-25/32"		2.7813	ST391	SA391	SC391						
	2-13/16"		2.8125	ST392	SA392	SC392						
		72MM	2.8346									
	2-27/32"		2.8438	ST394	SA394	SC394						
	2-7/8"		2.8750	ST395	SA395	SC395						
	2-29/32"		2.9063	ST396	SA396	SC396						
		74MM	2.9134									
	2-15/16"		2.9375	ST398	SA398	SC398						
	2-31/32"		2.9688	ST399	SA399	SC399						
		76MM	2.9921									
	3"		3.0000	ST401	SA401	SC401						

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 6

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
6	3-1/32"-3-1/2"		3.0313 - 3.5000	•	•	•						
		78MM - 88MM										



NEW



SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
6	3-1/32"		3.0313	ST402	SA402	SC402						
	3-1/16"		3.0625	ST403	SA403	SC403						
		78MM	3.0709									
	3-3/32"		3.0938	ST405	SA405	SC405						
	3-1/8"		3.1250	ST406	SA406	SC406						
		80MM	3.1496									
	3-5/32"		3.1563	ST408	SA408	SC408						
	3-3/16"		3.1875	ST409	SA409	SC409						
	3-7/32"		3.2188	ST410	SA410	SC410						
		82MM	3.2283									
	3-1/4"		3.2500	ST412	SA412	SC412						
	3-9/32"		3.2813	ST413	SA413	SC413						
		84MM	3.3071									
	3-5/16"		3.3125	ST415	SA415	SC415						
	3-11/32"		3.3438	ST416	SA416	SC416						
	3-3/8"		3.3750	ST417	SA417	SC417						
		86MM	3.3858									
	3-13/32"		3.4063	ST419	SA419	SC419						
	3-7/16"		3.4375	ST420	SA420	SC420						
		88MM	3.4646									
	3-15/32"		3.4688	ST422	SA422	SC422						
	3-1/2"		3.5000	ST423	SA423	SC423						

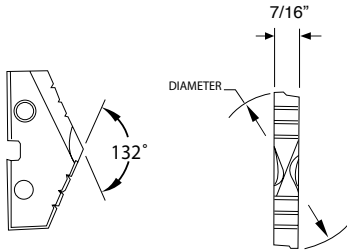
SPADE BLADES
& HOLDERS

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 7

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
7	3-17/32"-4"		3.5313 - 4.0000	•	•	•						
		90MM - 100MM										



NEW



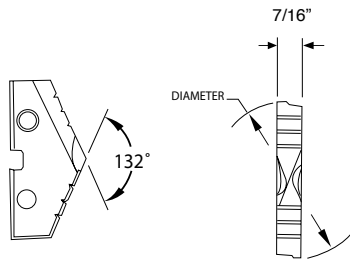
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
7	3-17/32"		3.5313	ST424	SA424	SC424						
		90MM	3.5433									
	3-9/16"		3.5625	ST426	SA426	SC426						
	3-19/32"		3.5938	ST427	SA427	SC427						
		92MM	3.6220									
	3-5/8"		3.6250	ST429	SA429	SC429						
	3-21/32"		3.6563	ST430	SA430	SC430						
	3-11/16"		3.6875	ST431	SA431	SC431						
		94MM	3.7008									
	3-23/32"		3.7188	ST433	SA433	SC433						
	3-3/4"		3.7500	ST434	SA434	SC434						
		96MM	3.7795									
	3-25/32"		3.7813	ST436	SA436	SC436						
	3-13/16"		3.8125	ST437	SA437	SC437						
	3-27/32"		3.8438	ST438	SA438	SC438						
		98MM	3.8583									
	3-7/8"		3.8750	ST440	SA440	SC440						
	3-29/32"		3.9063	ST441	SA441	SC441						
		100MM	3.9370									
	3-15/16"		3.9375	ST443	SA443	SC443						
	3-31/32"		3.9688	ST444	SA444	SC444						
	4"		4.0000	ST445	SA445	SC445						

• Special diameters and alternative coatings available upon request



SPADE DRILL INSERTS • SERIES 8

SERIES SUMMARY	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
8	4-1/64"-4-1/2"		4.0156 - 4.5000	•	•	•						
		106MM - 114MM										



NEW



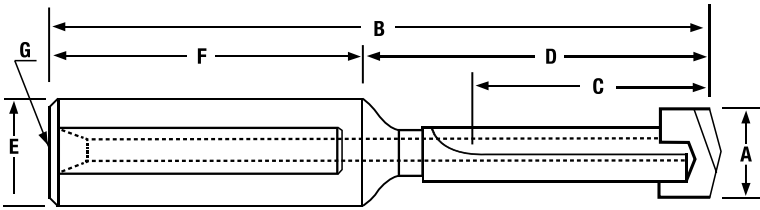
SERIES	DIAMETER SIZES			HIGH SPEED STEEL			SUPER COBALT		PREMIUM COBALT		CARBIDE	
				M04			T15		M48		K20	
	INCH	METRIC	DECIMAL	TiN	TiAlN	TiCN	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat	Ultra-TiN	Life-Coat
8	4-1/64"		4.0156	ST446	SA446	SC446						
	4-1/16"		4.0625	ST447	SA447	SC447						
	4-3/32"		4.0938	ST448	SA448	SC448						
	4-1/8"		4.1250	ST449	SA449	SC449						
		106MM	4.1732									
	4-3/16"		4.1875	ST451	SA451	SC451						
	4-1/4"		4.2500	ST452	SA452	SC452						
		108MM	4.2520									
	4-5/16"		4.3125	ST454	SA454	SC454						
		110MM	4.3307									
	4-3/8"		4.3750	ST456	SA456	SC456						
		112MM	4.4094									
	4-7/16"		4.4375	ST458	SA458	SC458						
		114MM	4.4882									
	4-1/2"		4.5000	ST460	SA460	SC460						

SPADE BLADES
& HOLDERS

- Special diameters and alternative coatings available upon request



SHORT LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE



NEW



INSERT SERIES	PART NUMBER	A SIZE RANGE	B OVERALL LENGTH	C MAX. DEPTH	D PROJECTION	E SHANK DIAMETER	F SHANK LENGTH	G PIPE TAP
Y	SH-220Y0S-075L	0.375" - 0.421"	4-13/32"	1-1/4"	2-1/32"	3/4"	2-3/8"	1/8"
Z	SH-220Z0S-075L	0.437" - 0.500"	4-13/32"	1-1/4"	2-1/32"	3/4"	2-3/8"	1/8"
0	SH-22000S-075L	0.515" - 0.687"	4-9/16"	1-3/8"	2-3/16"	3/4"	2-3/8"	1/8"
0.5	SH-22005S-075L	0.609" - 0.687"	4-9/16"	1-3/8"	2-3/16"	3/4"	2-3/8"	1/8"
1	SH-22010S-075L	0.703" - 0.937"	6-7/8"	2-5/8"	3-7/8"	3/4"	3"	1/8"
1	SH-22010S-100L	0.703" - 0.937"	6-7/8"	2-5/8"	3-7/8"	1"	3"	1/8"
1.5	SH-22015S-075L	0.859" - 0.937"	6-7/8"	2-5/8"	3-7/8"	3/4"	3"	1/8"
1.5	SH-22015S-100L	0.859" - 0.937"	6-7/8"	2-5/8"	3-7/8"	1"	3"	1/8"
2	SH-22020S-100L	0.968" - 1.375"	8"	3-3/8"	4-1/2"	1"	3-1/2"	1/8"
2	SH-22020S-125L	0.968" - 1.375"	8"	3-3/8"	4-1/2"	1-1/4"	3-1/2"	1/8"
2.5	SH-22025S-100L	1.187" - 1.375"	8"	3-3/8"	4-1/2"	1"	3-1/2"	1/8"
2.5	SH-22025S-125L	1.187" - 1.375"	8"	3-3/8"	4-1/2"	1-1/4"	3-1/2"	1/8"
3	SH-22030S-125L	1.406" - 1.875"	10"	4-3/4"	6"	1-1/4"	4"	1/4"
3	SH-22030S-150L	1.406" - 1.875"	10"	4-3/4"	6"	1-1/2"	4"	1/4"

STANDARD LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE

INSERT SERIES	PART NUMBER	A SIZE RANGE	B OVERALL LENGTH	C MAX. DEPTH	D PROJECTION	E SHANK DIAMETER	F SHANK LENGTH	G PIPE TAP
Y	SH-240Y0S-075L	0.375" - 0.421"	5-17/32"	2-3/8"	3-5/32"	3/4"	2-3/8"	1/8"
Z	SH-240Z0S-075L	0.437" - 0.500"	5-17/32"	2-3/8"	3-5/32"	3/4"	2-3/8"	1/8"
0	SH-24000S-075L	0.515" - 0.687"	5-11/16"	2-1/2"	3-5/16"	3/4"	2-3/8"	1/8"
0.5	SH-24005S-075L	0.609" - 0.687"	5-11/16"	2-1/2"	3-5/16"	3/4"	2-3/8"	1/8"

INTERMEDIATE LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE

INSERT SERIES	PART NUMBER	A SIZE RANGE	B OVERALL LENGTH	C MAX. DEPTH	D PROJECTION	E SHANK DIAMETER	F SHANK LENGTH	G PIPE TAP
1	SH-23010S-100L	0.703" - 0.937"	8-7/8"	4-5/8"	5-7/8"	1"	3"	1/8"
1.5	SH-23015S-100L	0.859" - 0.937"	8-7/8"	4-5/8"	5-7/8"	1"	3"	1/8"
2	SH-23020S-125L	0.968" - 1.375"	10"	5-3/8"	6-1/2"	1-1/4"	3-1/2"	1/8"
2.5	SH-23025S-125L	1.187" - 1.375"	10"	5-3/8"	6-1/2"	1-1/4"	3-1/2"	1/8"
3	SH-23030S-150L	1.406" - 1.875"	11-3/4"	6-1/2"	7-3/4"	1-1/2"	4"	1/4"



COATING CODES AND APPLICATIONS

TiN	ST	Titanium Nitride	Color - Yellow / Gold	Effective Abrasion Wear and Good Lubricity.
TiAlN	SA	Titanium Aluminum Nitride	Color - Violet Grey	High Temperature and Outstanding Wear Resistance.
TiCN	SC	Titanium Carbo Nitride	Color - Blue Grey	Outstanding Wear Resistance.
Ultra-Tin	SU	Ultra-Tin	Color - Deep Gold	High Lubricity, High Temperature, and Outstanding Wear Resistance.
Life-Coat	SL	Life-Coat	Color - Violet Grey	Phenomenal Lubricity, High Temperature, and Outstanding Wear Resistance.

INTERCHANGEABILITY

GEORGE WHALLEY COMPANY COATINGS			INSERT SUBSTRATE	INTERCHANGES
TiN	ST	Titanium Nitride	M4	TiN
TiAlN	SA	Titanium Aluminum Nitride	M4	TiAlN
TiCN	SC	Titanium Carbo Nitride	M4	TiCN
Ultra-Tin	SU	Ultra-Tin	T15 / M48 / K20	TiN, TiAlN, TiCN
Life-Coat	SL	Life-Coat	T15 / M48 / K20	TiN, TiAlN, TiCN, AM200™

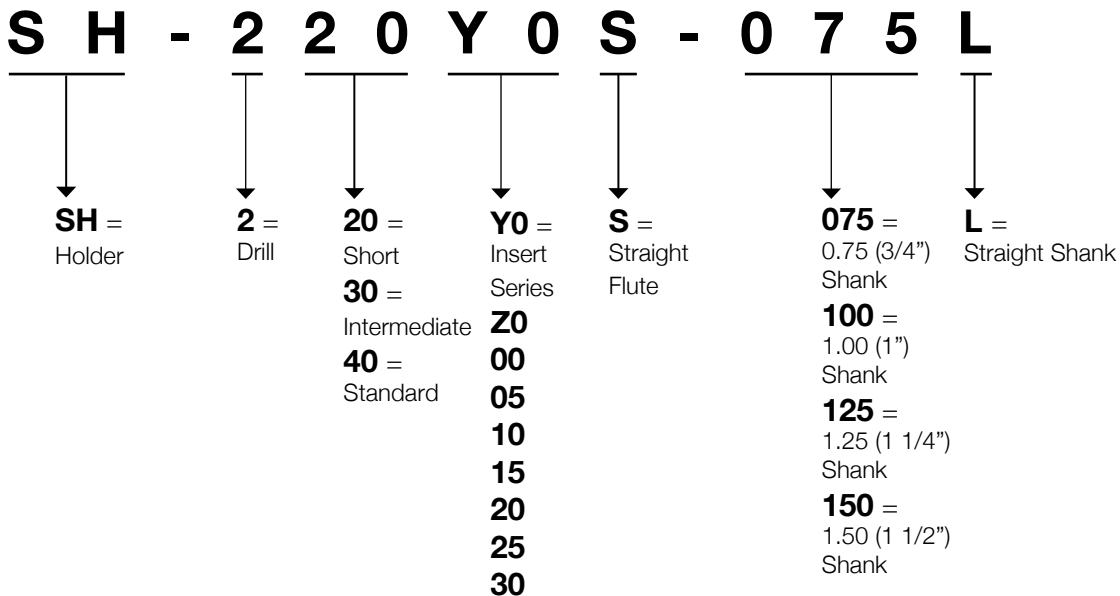
SPADE BLADES
& HOLDERS

- The performance of George Whalley Company coatings listed, should meet or exceed those coatings listed as interchanges

• AM200™ is a trademark of Allied Machine & Engineering Corp.

HOLDER CODING

Example:





COATED THROW-AWAY SPADE DRILL INSERT SPEED & FEED GUIDELINE

Material		Material Hardness BHN	Insert Substrate	HIGH SPEED STEEL											
				SFM Coatings					Feed						
									0.375 to 0.500	0.501 to 0.687	0.688 to 0.937	0.938 to 1.375	1.376 to 1.875	1.876 to 2.562	2.563 to 4.500
				M4			T15, M48								
TiN	TiCN	TiAlN	Ultra-TiN	Life-Coat											
Free Machining Steel 1117, 1215, 12L14, etc.	100 - 150	M4 & T15	200	260	280	290	320	0.007	0.010	0.013	0.016	0.020	0.023	0.028	
	151 - 200	M4 & T15	180	235	260	270	300	0.007	0.010	0.013	0.016	0.020	0.023	0.028	
	201 - 250	M4 & T15	160	210	240	250	280	0.006	0.010	0.013	0.016	0.020	0.023	0.028	
Low Carbon Steel 1010, 1020, 1144, etc.	85 - 125	M4 & T15	170	220	250	260	280	0.006	0.009	0.012	0.015	0.019	0.023	0.027	
	126 - 175	M4 & T15	160	210	240	250	270	0.006	0.009	0.012	0.015	0.019	0.023	0.027	
	176 - 225	M4 & T15	150	195	225	230	250	0.005	0.008	0.010	0.014	0.018	0.021	0.024	
	226 - 275	M4 & T15	140	180	210	220	230	0.005	0.008	0.010	0.014	0.018	0.021	0.024	
Medium Carbon Steel 1040, 1050, 1140, etc.	125 - 175	M4 & T15	160	210	240	250	270	0.006	0.009	0.012	0.015	0.019	0.023	0.027	
	176 - 225	M4 & T15	150	195	225	230	250	0.005	0.008	0.010	0.014	0.018	0.021	0.024	
	226 - 275	M4 & T15	140	180	210	220	230	0.005	0.008	0.010	0.014	0.018	0.021	0.024	
	276 - 325	T15 & M48	--	--	--	195	220	0.004	0.007	0.009	0.012	0.016	0.019	-	
Alloy Steel 4140, 5140, 8620, etc.	125 - 175	M4 & T15	150	195	210	220	230	0.006	0.008	0.010	0.014	0.017	0.019	0.022	
	176 - 225	M4 & T15	140	180	195	200	210	0.005	0.008	0.010	0.014	0.017	0.019	0.022	
	226 - 275	M4 & T15	130	170	180	190	200	0.005	0.007	0.010	0.014	0.017	0.019	0.022	
	276 - 325	T15 & M48	--	--	--	170	190	0.004	0.006	0.009	0.012	0.015	0.017	-	
	326 - 375	T15 & M48	--	--	--	155	170	0.003	0.006	0.009	0.012	0.015	0.017	-	
High strength Alloy 4340, 4330V, 300M, etc.	225 - 300	T15 & M48	--	--	--	110	115	0.005	0.007	0.009	0.010	0.014	0.017	-	
	301 - 350	T15 & M48	--	--	--	85	90	0.004	0.007	0.009	0.010	0.014	0.017	-	
	351 - 400	M48	--	--	--	70	70	0.003	0.006	0.008	0.009	0.012	0.015	-	
Structural Steel A36, A285, A526, etc.	100 - 150	M4 & T15	140	180	200	210	210	0.006	0.010	0.012	0.014	0.018	0.021	-	
	151 - 250	M4 & T15	120	155	170	180	175	0.005	0.009	0.010	0.012	0.016	0.019	-	
	251 - 350	T15 & M48	--	--	--	140	150	0.004	0.008	0.009	0.010	0.014	0.017	-	
High Temperature Alloy Hastelloy B, Inconel 600,etc.	140 - 220	T15 & M48	--	--	--	40	40	0.003	0.007	0.008	0.010	0.012	0.015	-	
	221 - 310	M48	--	--	--	35	35	0.003	0.006	0.007	0.008	0.010	0.012	-	
Stainless Steel 303, 416, 420, 17-4PH, etc.	135 - 185	M4 & T15	75	95	105	110	110	0.006	0.008	0.009	0.011	0.014	0.016	0.020	
	186 - 275	M4 & T15	60	80	90	95	95	0.005	0.007	0.008	0.010	0.012	0.014	0.018	
Tool Steel H13, H21, A4, etc.	150 - 200	T15	--	--	--	110	115	0.004	0.006	0.008	0.010	0.012	0.015	0.017	
	201 - 250	T15 & M48	--	--	--	90	100	0.004	0.006	0.008	0.010	0.012	0.015	-	
Aluminum	30	M4 & T15	600	750	850	870	--	0.008	0.013	0.016	0.020	0.022	0.025	0.025	
	180	M4 & T15	300	400	450	470	--	0.008	0.013	0.016	0.018	0.022	0.025	0.025	
Cast Iron Gray, Ductile, Nodular	120 - 150	M4 & T15	170	220	250	260	270	0.007	0.012	0.016	0.020	0.024	0.027	0.030	
	151 - 200	M4 & T15	150	195	225	230	250	0.006	0.011	0.014	0.018	0.022	0.025	0.028	
	201 - 220	M4 & T15	130	170	195	200	215	0.006	0.009	0.012	0.016	0.018	0.021	0.024	
	221 - 260	T15 & M48	--	--	--	165	175	0.005	0.007	0.009	0.012	0.014	0.017	-	
	261 - 320	T15 & M48	--	--	--	135	145	0.004	0.006	0.007	0.009	0.012	0.014	-	

- These speeds and feeds are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.
- Overall conditions may require adjustment, up or down, to achieve the best performance.
- When using extended length toolholders reduce the speeds and feeds as depths increase.



COATED THROW-AWAY SPADE DRILL INSERT SPEED & FEED GUIDELINE

Material	Material Hardness BHN	Insert Substrate	CARBIDE						
			SFM		Feed				
			Coatings		0.375 to 0.500	0.501 to 0.687	0.688 to 0.937	0.938 to 1.375	1.376 to 1.875
			Ultra-TiN	Life-Coat					
Free Machining Steel 1117, 1215, 12L14, etc.	100 - 150	K20	420	470	0.008	0.012	0.015	0.018	0.021
	151 - 200	K20	360	410	0.007	0.011	0.014	0.016	0.019
	201 - 250	K20	340	380	0.006	0.010	0.013	0.015	0.017
Low Carbon Steel 1010, 1020, 1144, etc.	85 - 125	K20	390	440	0.008	0.010	0.013	0.017	0.019
	126 - 175	K20	340	380	0.007	0.010	0.013	0.016	0.018
	176 - 225	K20	310	350	0.006	0.009	0.012	0.015	0.017
	226 - 275	K20	270	300	0.005	0.009	0.012	0.015	0.017
Medium Carbon Steel 1040, 1050, 1140, etc.	125 - 175	K20	340	380	0.007	0.010	0.013	0.016	0.018
	176 - 225	K20	310	350	0.006	0.009	0.012	0.015	0.017
	226 - 275	K20	270	300	0.006	0.009	0.012	0.015	0.017
	276 - 325	K20	230	260	0.005	0.008	0.011	0.014	0.016
Alloy Steel 4140, 5140, 8620, etc.	125 - 175	K20	325	260	0.007	0.010	0.013	0.016	0.018
	176 - 225	K20	300	330	0.006	0.009	0.012	0.015	0.017
	226 - 275	K20	270	300	0.006	0.009	0.012	0.015	0.017
	276 - 325	K20	250	270	0.005	0.008	0.011	0.014	0.016
	326 - 375	K20	220	240	0.004	0.007	0.010	0.013	0.015
High strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K20	200	210	0.006	0.009	0.010	0.012	0.015
	301 - 350	K20	180	190	0.005	0.008	0.009	0.011	0.014
	351 - 400	K20	160	170	0.004	0.007	0.008	0.010	0.012
Structural Steel A36, A285, A526, etc.	100 - 150	K20	310	330	0.008	0.011	0.014	0.016	0.018
	151 - 250	K20	250	260	0.006	0.010	0.012	0.014	0.016
	251 - 350	K20	230	240	0.005	0.009	0.011	0.012	0.014
High Temperature Alloy Hastelloy B, Inconel 600, etc.	140 - 220	K20	105	110	0.004	0.007	0.009	0.011	0.013
	221 - 310	K20	85	90	0.004	0.006	0.008	0.010	0.012
Stainless Steel 303, 416, 420, 17-4PH, etc.	135 - 185	K20	210	220	0.007	0.009	0.012	0.014	0.016
	186 - 275	K20	160	170	0.006	0.008	0.011	0.012	0.014
Tool Steel H13, H21, A4, etc.	150 - 200	K20	220	230	0.004	0.007	0.009	0.011	0.013
	201 - 250	K20	170	180	0.004	0.007	0.009	0.011	0.013
Aluminum	30	K20	1500	--	0.010	0.015	0.018	0.020	0.022
	180	K20	1000	--	0.009	0.013	0.016	0.018	0.020
Cast Iron Gray, Ductile, Nodular	120 - 150	K20	460	475	0.008	0.012	0.015	0.019	0.023
	151 - 200	K20	400	455	0.007	0.011	0.013	0.017	0.021
	201 - 220	K20	360	410	0.006	0.009	0.012	0.015	0.018
	221 - 260	K20	310	340	0.005	0.008	0.011	0.013	0.015
	261 - 320	K20	270	325	0.004	0.007	0.010	0.011	0.013

SPADE BLADES
& HOLDERS

- These speeds and feeds are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.
- Overall conditions may require adjustment, up or down, to achieve the best performance.
- When using extended length toolholders reduce the speeds and feeds as depths increase.



MATERIAL AND COATING PERFORMANCE RECOMMENDATIONS

Material	Material Hardness	HIGH SPEED STEEL			SUPER COBALT	
		M4			T15	
	BHN	TiN	TiCN	TiAlN	Ultra-TiN	Life-Coat
Free Machining Steel 1117, 1215, 12L14, etc.	100 - 150	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	151 - 200	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	201 - 250	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
Low Carbon Steel 1010, 1020, 1144, etc.	85 - 125	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	126 - 175	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	176 - 225	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	226 - 275	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
Medium Carbon Steel 1040, 1050, 1140, etc.	125 - 175	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	176 - 225	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	226 - 275	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	276 - 325				☆☆☆☆☆	☆☆☆☆☆
Alloy Steel 4140, 5140, 8620, etc.	125 - 175	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	176 - 225	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	226 - 275	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	276 - 325				☆☆☆☆☆	☆☆☆☆☆
	326 - 375				☆☆☆☆☆	☆☆☆☆☆
High Strength Alloy 4340, 4330V, 300M, etc.	225 - 300				☆☆☆☆☆	☆☆☆☆☆
	301 - 350				☆☆☆☆☆	☆☆☆☆☆
	351 - 400					
Structural Steel A36, A285, A526, etc.	100 - 150	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	151 - 250	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	251 - 350				☆☆☆☆☆	☆☆☆☆☆
High Temperature Alloy Hastelloy B, Inconel 600, etc.	140 - 220				☆☆☆☆☆	☆☆☆☆☆
	221 - 310					
Stainless Steel 303, 416, 420, 17-4PH, etc.	135 - 185	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	186 - 275	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
Tool Steel H13, H21, A4, etc.	150 - 200				☆☆☆☆☆	☆☆☆☆☆
	201 - 250				☆☆☆☆☆	☆☆☆☆☆
Aluminum	30	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	
	180	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	
Cast Iron Gray, Ductile, Nodular	120 - 150	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	151 - 200	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	201 - 220	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆
	221 - 260				☆☆☆☆☆	☆☆☆☆☆
	261 - 320				☆☆☆☆☆	☆☆☆☆☆

• These materials and coating performance recommendations are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.



MATERIAL AND COATING PERFORMANCE RECOMMENDATIONS

Material	Material Hardness BHN	PREMIUM COBALT		CARBIDE	
		M48		K20	
		Life-Coat	Life-Coat	Ultra-TiN	Life-Coat
Free Machining Steel 1117, 1215, 12L14, etc.	100 - 150			★★★★☆	★★★★★
	151 - 200			★★★★☆	★★★★★
	201 - 250			★★★★☆	★★★★★
Low Carbon Steel 1010, 1020, 1144, etc.	85 - 125			★★★★☆	★★★★★
	126 - 175			★★★★☆	★★★★★
	176 - 225			★★★★☆	★★★★★
	226 - 275			★★★★☆	★★★★★
Medium Carbon Steel 1040, 1050, 1140, etc.	125 - 175			★★★★☆	★★★★★
	176 - 225			★★★★☆	★★★★★
	226 - 275			★★★★☆	★★★★★
	276 - 325	★★★★☆	★★★★★	★★★★☆	★★★★★
Alloy Steel 4140, 5140, 8620, etc.	125 - 175			★★★★☆	★★★★★
	176 - 225			★★★★☆	★★★★★
	226 - 275			★★★★☆	★★★★★
	276 - 325	★★★★☆	★★★★★	★★★★☆	★★★★★
	326 - 375	★★★★☆	★★★★★	★★★★☆	★★★★★
High Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	★★★★☆	★★★★★	★★★★☆	★★★★★
	301 - 350	★★★★☆	★★★★★	★★★★☆	★★★★★
	351 - 400	★★★★☆	★★★★★	★★★★☆	★★★★★
Structural Steel A36, A285, A526, etc.	100 - 150			★★★★☆	★★★★★
	151 - 250			★★★★☆	★★★★★
	251 - 350	★★★★☆	★★★★★	★★★★☆	★★★★★
High Temperature Alloy Hastelloy B, Inconel 600, etc.	140 - 220	★★★★☆	★★★★★	★★★★☆	★★★★★
	221 - 310	★★★★☆	★★★★★	★★★★☆	★★★★★
Stainless Steel 303, 416, 420, 17-4PH, etc.	135 - 185			★★★★★	★★★★★
	186 - 275			★★★★★	★★★★★
Tool Steel H13, H21, A4, etc.	150 - 200			★★★★☆	★★★★★
	201 - 250	★★★★☆	★★★★★	★★★★☆	★★★★★
Aluminum	30			★★★★★	
	180			★★★★★	
Cast Iron Gray, Ductile, Nodular	120 - 150			★★★★☆	★★★★★
	151 - 200			★★★★☆	★★★★★
	201 - 220			★★★★☆	★★★★★
	221 - 260	★★★★☆	★★★★★	★★★★☆	★★★★★
	261 - 320	★★★★☆	★★★★★	★★★★☆	★★★★★

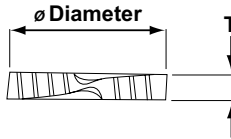
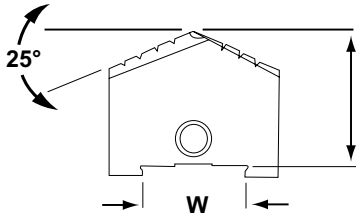
SPADE BLADES
& HOLDERS

M4	T15	M48	K20	TiN	TiCN	TiAlN	Ultra-TiN	Life-Coat	☆☆☆☆☆ Good
General Purpose HSS	Heavy cuts in difficult materials	Temp. resistant for high feeds & speeds	Wear resistant w / cutting edge strength	Effective Abrasion Wear and good lubricity	Outstanding wear resistance	High temp. and outstanding wear resistance	High lubricity, high temperature and outstanding wear resistance	Phenomenal lubricity, high temperature, and outstanding wear resistance	★★★★☆ Very Good
									★★★☆☆ Better
									★★★★☆ Exceptional
									★★★★★ Best



SPADE DRILL BLADES • SERIES MS, A

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TiN COATED BLADES PART NUMBER
MS L=0.843 T=0.125 W=0.562	0.6720	43/64	*SB-0672MS	*SB-0672MS-T
	0.6870	11/16	*SB-0687MS	*SB-0687MS-T
	0.7180	23/32	*SB-0718MS	*SB-0718MS-T
	0.7500	3/4	*SB-0750MS	*SB-0750MS-T
	0.7810	25/32	*SB-0781MS	*SB-0781MS-T
	0.8120	13/16	*SB-0812MS	*SB-0812MS-T
	0.8430	27/32	*SB-0843MS	*SB-0843MS-T
	0.8750	7/8	*SB-0875MS	*SB-0875MS-T
	0.9060	29/32	*SB-0906MS	*SB-0906MS-T
	0.9370	15/16	*SB-0937MS	*SB-0937MS-T
	0.9680	31/32	*SB-0968MS	*SB-0968MS-T
	1.0000	1	*SB-1000MS	*SB-1000MS-T

* Outgoing Items

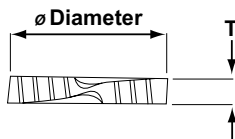
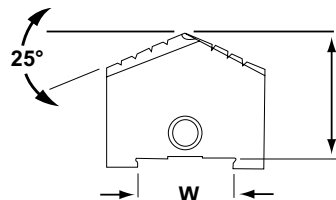
SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TiN COATED BLADES PART NUMBER
A L=0.937 T=0.187 W=0.750	0.9680	31/32	*SB-0968A	*SB-0968A-T
	1.0000	1	*SB-1000A	*SB-1000A-T
	1.0310	1-1/32	*SB-1031A	*SB-1031A-T
	1.0620	1-1/16	*SB-1062A	*SB-1062A-T
	1.0930	1-3/32	*SB-1093A	*SB-1093A-T
	1.1250	1-1/8	*SB-1125A	*SB-1125A-T
	1.1560	1-5/32	*SB-1156A	*SB-1156A-T
	1.1870	1-3/16	*SB-1187A	*SB-1187A-T
	1.2180	1-7/32	*SB-1218A	*SB-1218A-T
	1.2500	1-1/4	*SB-1250A	*SB-1250A-T
	1.2810	1-9/32	*SB-1281A	*SB-1281A-T
	1.3120	1-5/16	*SB-1312A	*SB-1312A-T
	1.3430	1-11/32	*SB-1343A	*SB-1343A-T
	1.3750	1-3/8	*SB-1375A	*SB-1375A-T

* Outgoing Items



SPADE DRILL BLADES • SERIES B, C

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TIN COATED BLADES PART NUMBER
B L=1.125 T=0.281 W=1.062	1.2500	1-1/4	*SB-1250B	*SB-1250B-T
	1.2810	1-9/32	*SB-1281B	*SB-1281B-T
	1.3120	1-5/16	*SB-1312B	*SB-1312B-T
	1.3430	1-11/32	*SB-1343B	*SB-1343B-T
	1.3750	1-3/8	*SB-1375B	*SB-1375B-T
	1.4060	1-13/32	*SB-1406B	*SB-1406B-T
	1.4370	1-7/16	*SB-1437B	*SB-1437B-T
	1.4680	1-15/32	*SB-1468B	*SB-1468B-T
	1.5000	1-1/2	*SB-1500B	*SB-1500B-T
	1.5310	1-17/32	*SB-1531B	*SB-1531B-T
	1.5620	1-9/16	*SB-1562B	*SB-1562B-T
	1.5930	1-19/32	*SB-1593B	*SB-1593B-T
	1.6250	1-5/8	*SB-1625B	*SB-1625B-T
	1.6560	1-21/32	*SB-1656B	*SB-1656B-T
	1.6870	1-11/16	*SB-1687B	*SB-1687B-T
	1.7180	1-23/32	*SB-1718B	*SB-1718B-T
	1.7500	1-3/4	*SB-1750B	*SB-1750B-T

* Outgoing Items

SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TIN COATED BLADES PART NUMBER
C L=1.562 T=0.312 W=1.250	1.5000	1-1/2	*SB-1500C	*SB-1500C-T
	1.5310	1-17/32	*SB-1531C	*SB-1531C-T
	1.5620	1-9/16	*SB-1562C	*SB-1562C-T
	1.5930	1-19/32	*SB-1593C	*SB-1593C-T
	1.6250	1-5/8	*SB-1625C	*SB-1625C-T
	1.6560	1-21/32	*SB-1656C	*SB-1656C-T
	1.6870	1-11/16	*SB-1687C	*SB-1687C-T
	1.7180	1-23/32	*SB-1718C	*SB-1718C-T
	1.7500	1-3/4	*SB-1750C	*SB-1750C-T
	1.7810	1-25/32	*SB-1781C	*SB-1781C-T
	1.8120	1-13/16	*SB-1812C	*SB-1812C-T
	1.8430	1-27/32	*SB-1843C	*SB-1843C-T
	1.8750	1-7/8	*SB-1875C	*SB-1875C-T
	1.9060	1-29/32	*SB-1906C	*SB-1906C-T
	1.9370	1-15/16	*SB-1937C	*SB-1937C-T
	1.9680	1-31/32	*SB-1968C	*SB-1968C-T
	2.0000	2	*SB-2000C	*SB-2000C-T
	2.0310	2-1/32	*SB-2031C	*SB-2031C-T
	2.0620	2-1/16	*SB-2062C	*SB-2062C-T
	2.0930	2-3/32	*SB-2093C	*SB-2093C-T
	2.1250	2-1/8	*SB-2125C	*SB-2125C-T
	2.1560	2-5/32	*SB-2156C	*SB-2156C-T
	2.1870	2-3/16	*SB-2187C	*SB-2187C-T
	2.2180	2-7/32	*SB-2218C	*SB-2218C-T
	2.2500	2-1/4	*SB-2250C	*SB-2250C-T
	2.2810	2-9/32	*SB-2281C	*SB-2281C-T
	2.3120	2-5/16	*SB-2312C	*SB-2312C-T
	2.3430	2-11/32	*SB-2343C	*SB-2343C-T
	2.3750	2-3/8	*SB-2375C	*SB-2375C-T

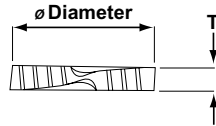
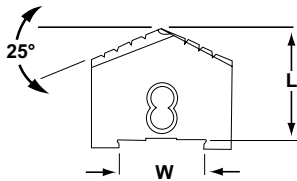
* Outgoing Items

SPADE BLADES
& HOLDERS



SPADE DRILL BLADES • SERIES D

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



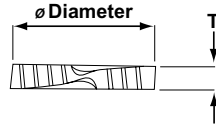
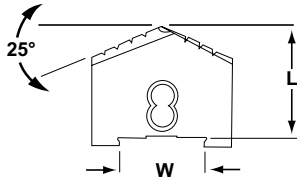
SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TiN COATED BLADES PART NUMBER
D L=2.000 T=0.375 W=1.750	2.0000	2	*SB-2000D	*SB-2000D-T
	2.0310	2-1/32	*SB-2031D	*SB-2031D-T
	2.0620	2-1/16	*SB-2062D	*SB-2062D-T
	2.0930	2-3/32	*SB-2093D	*SB-2093D-T
	2.1250	2-1/8	*SB-2125D	*SB-2125D-T
	2.1560	2-5/32	*SB-2156D	*SB-2156D-T
	2.1870	2-3/16	*SB-2187D	*SB-2187D-T
	2.2180	2-7/32	*SB-2218D	*SB-2218D-T
	2.2500	2-1/4	*SB-2250D	*SB-2250D-T
	2.2810	2-9/32	*SB-2281D	*SB-2281D-T
	2.3120	2-5/16	*SB-2312D	*SB-2312D-T
	2.3430	2-11/32	*SB-2343D	*SB-2343D-T
	2.3750	2-3/8	*SB-2375D	*SB-2375D-T
	2.4060	2-13/32	*SB-2406D	*SB-2406D-T
	2.4370	2-7/16	*SB-2437D	*SB-2437D-T
	2.4680	2-15/32	*SB-2468D	*SB-2468D-T
	2.5000	2-1/4	*SB-2500D	*SB-2500D-T
	2.5310	2-17/32	*SB-2531D	*SB-2531D-T
	2.5620	2-9/16	*SB-2562D	*SB-2562D-T
	2.5930	2-19/32	*SB-2593D	*SB-2593D-T
	2.6250	2-5/8	*SB-2625D	*SB-2625D-T
	2.6560	2-21/32	*SB-2656D	*SB-2656D-T
	2.6870	2-11/16	*SB-2687D	*SB-2687D-T
	2.7180	2-23/32	*SB-2718D	*SB-2718D-T
	2.7500	2-3/4	*SB-2750D	*SB-2750D-T
	2.7810	2-25/32	*SB-2781D	*SB-2781D-T
	2.8120	2-13/16	*SB-2812D	*SB-2812D-T
	2.8430	2-27/32	*SB-2843D	*SB-2843D-T
	2.8750	2-7/8	*SB-2875D	*SB-2875D-T

* Outgoing Items



SPADE DRILL BLADES • SERIES E

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TiN COATED BLADES PART NUMBER
E L=2.375 T=0.437 W=2.062	2.5000	2-1/2	*SB-2500E	*SB-2500E-T
	2.5310	2-17/32	*SB-2531E	*SB-2531E-T
	2.5620	2-9/16	*SB-2562E	*SB-2562E-T
	2.5930	2-19/32	*SB-2593E	*SB-2593E-T
	2.6250	2-5/8	*SB-2625E	*SB-2625E-T
	2.6560	2-21/32	*SB-2656E	*SB-2656E-T
	2.6870	2-11/16	*SB-2687E	*SB-2687E-T
	2.7180	2-23/32	*SB-2718E	*SB-2718E-T
	2.7500	2-3/4	*SB-2750E	*SB-2750E-T
	2.7810	2-25/32	*SB-2781E	*SB-2781E-T
	2.8120	2-13/16	*SB-2812E	*SB-2812E-T
	2.8430	2-27/32	*SB-2843E	*SB-2843E-T
	2.8750	2-7/8	*SB-2875E	*SB-2875E-T
	2.9060	2-29/32	*SB-2906E	*SB-2906E-T
	2.9370	2-15/16	*SB-2937E	*SB-2937E-T
	2.9680	2-31/32	*SB-2968E	*SB-2968E-T
	3.0000	3	*SB-3000E	*SB-3000E-T
	3.0310	3-1/32	*SB-3031E	*SB-3031E-T
	3.0620	3-1/16	*SB-3062E	*SB-3062E-T
	3.0930	3-3/32	*SB-3093E	*SB-3093E-T
	3.1250	3-1/8	*SB-3125E	*SB-3125E-T
	3.1560	3-5/32	*SB-3156E	*SB-3156E-T
	3.1870	3-3/16	*SB-3187E	*SB-3187E-T
	3.2180	3-7/32	*SB-3218E	*SB-3218E-T
	3.2500	3-1/4	*SB-3250E	*SB-3250E-T
	3.2810	3-9/32	*SB-3281E	*SB-3281E-T
	3.3120	3-5/16	*SB-3312E	*SB-3312E-T
	3.3430	3-11/32	*SB-3343E	*SB-3343E-T
	3.3750	3-3/8	*SB-3375E	*SB-3375E-T

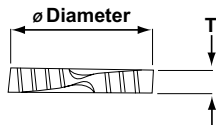
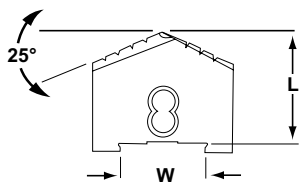
* Outgoing Items

SPADE BLADES
& HOLDERS



SPADE DRILL BLADES • SERIES F, G

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TIN COATED BLADES PART NUMBER
F L=2.875 T=0.500 W=2.625	3.0000	3	*SB-3000F	*SB-3000F-T
	3.0310	3-1/32	*SB-3031F	*SB-3031F-T
	3.0620	3-1/16	*SB-3062F	*SB-3062F-T
	3.0930	3-3/16	*SB-3093F	*SB-3093F-T
	3.1250	3-1/8	*SB-3125F	*SB-3125F-T
	3.1560	3-5/32	*SB-3156F	*SB-3156F-T
	3.1870	3-3/16	*SB-3187F	*SB-3187F-T
	3.2180	3-7/32	*SB-3218F	*SB-3218F-T
	3.2500	3-1/4	*SB-3250F	*SB-3250F-T
	3.2810	3-9/32	*SB-3281F	*SB-3281F-T
	3.3120	3-5/16	*SB-3312F	*SB-3312F-T
	3.3430	3-11/32	*SB-3343F	*SB-3343F-T
	3.3750	3-3/8	*SB-3375F	*SB-3375F-T
	3.4060	3-13/32	*SB-3406F	*SB-3406F-T
	3.4370	3-7/16	*SB-3437F	*SB-3437F-T
	3.4680	3-15/32	*SB-3468F	*SB-3468F-T
	3.5000	3-1/2	*SB-3500F	*SB-3500F-T
	3.5310	3-17/32	*SB-3531F	*SB-3531F-T
	3.5620	3-9/16	*SB-3562F	*SB-3562F-T
	3.5930	3-19/32	*SB-3593F	*SB-3593F-T
	3.6250	3-5/8	*SB-3625F	*SB-3625F-T
	3.6560	3-21/32	*SB-3656F	*SB-3656F-T
	3.6870	3-11/16	*SB-3687F	*SB-3687F-T
	3.7180	3-23/32	*SB-3718F	*SB-3718F-T
	3.7500	3-3/4	*SB-3750F	*SB-3750F-T
	3.7810	3-25/32	*SB-3781F	*SB-3781F-T
	3.8120	3-13/16	*SB-3812F	*SB-3812F-T
	3.8430	3-27/32	*SB-3843F	*SB-3843F-T
	3.8750	3-7/8	*SB-3875F	*SB-3875F-T

* Outgoing Items

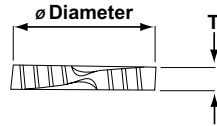
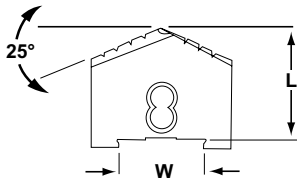
SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TIN COATED BLADES PART NUMBER
G L=3.375 T=0.625 W=3.062	3.5000	3-1/2	*SB-3500G	*SB-3500G-T
	3.5310	3-17/32	*SB-3531G	*SB-3531G-T
	3.5620	3-9/16	*SB-3562G	*SB-3562G-T
	3.5930	3-19/32	*SB-3593G	*SB-3593G-T
	3.6250	3-5/8	*SB-3625G	*SB-3625G-T
	3.6560	3-21/32	*SB-3656G	*SB-3656G-T
	3.6870	3-11/16	*SB-3687G	*SB-3687G-T
	3.7180	3-23/32	*SB-3718G	*SB-3718G-T
	3.7500	3-3/4	*SB-3750G	*SB-3750G-T
	3.7810	3-25/32	*SB-3781G	*SB-3781G-T
	3.8120	3-13/16	*SB-3812G	*SB-3812G-T
	3.8430	3-27/32	*SB-3843G	*SB-3843G-T
	3.8750	3-7/8	*SB-3875G	*SB-3875G-T
	3.9060	3-29/32	*SB-3906G	*SB-3906G-T
	3.9370	3-15/16	*SB-3937G	*SB-3937G-T
	3.9680	3-31/32	*SB-3968G	*SB-3968G-T
	4.0000	4	*SB-4000G	*SB-4000G-T
	4.0620	4-1/16	*SB-4062G	*SB-4062G-T
	4.1250	4-1/8	*SB-4125G	*SB-4125G-T
	4.1870	4-3/16	*SB-4187G	*SB-4187G-T
	4.2500	4-1/4	*SB-4250G	*SB-4250G-T
	4.3120	4-5/16	*SB-4312G	*SB-4312G-T
	4.3750	4-3/8	*SB-4375G	*SB-4375G-T

* Outgoing Items



SPADE DRILL BLADES • SERIES H

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	UNCOATED BLADES PART NUMBER	TiN COATED BLADES PART NUMBER
H L=3.688 T=0.687 W=3.500	4.0000	4	*SB-4000H	*SB-4000H-T
	4.0620	4-1/16	*SB-4062H	*SB-4062H-T
	4.1250	4-1/8	*SB-4125H	*SB-4125H-T
	4.1870	4-3/16	*SB-4187H	*SB-4187H-T
	4.2500	4-1/4	*SB-4250H	*SB-4250H-T
	4.3120	4-5/16	*SB-4312H	*SB-4312H-T
	4.3750	4-3/8	*SB-4375H	*SB-4375H-T
	4.4370	4-7/16	*SB-4437H	*SB-4437H-T
	4.5000	4-1/2	*SB-4500H	*SB-4500H-T
	4.5620	4-9/16	*SB-4562H	*SB-4562H-T
	4.6250	4-5/8	*SB-4625H	*SB-4625H-T
	4.6870	4-11/16	*SB-4687H	*SB-4687H-T
	4.7500	4-3/4	*SB-4750H	*SB-4750H-T
	4.8120	4-13/16	*SB-4812H	*SB-4812H-T
	4.8750	4-7/8	*SB-4875H	*SB-4875H-T
	4.9370	4-15/16	*SB-4937H	*SB-4937H-T
	5.0000	5	*SB-5000H	*SB-5000H-T
	5.1250	5-1/8	*SB-5125H	*SB-5125H-T
	5.2500	5-1/4	*SB-5250H	*SB-5250H-T
	5.3750	5-3/8	*SB-5375H	*SB-5375H-T
	5.5000	5-1/2	*SB-5500H	*SB-5500H-T
	5.6250	5-5/8	*SB-5625H	*SB-5625H-T
	5.7500	5-3/4	*SB-5750H	*SB-5750H-T
	5.8750	5-7/8	*SB-5875H	*SB-5875H-T
	6.0000	6	*SB-6000H	*SB-6000H-T
	6.1250	6-1/8	*SB-6125H	*SB-6125H-T
	6.2500	6-1/4	*SB-6250H	*SB-6250H-T
	6.3750	6-3/8	*SB-6375H	*SB-6375H-T
	6.5000	6-1/2	*SB-6500H	*SB-6500H-T
	6.6250	6-5/8	*SB-6625H	*SB-6625H-T
	6.7500	6-3/4	*SB-6750H	*SB-6750H-T
	6.8750	6-7/8	*SB-6875H	*SB-6875H-T
	7.0000	7	*SB-7000H	*SB-7000H-T
	7.1250	7-1/8	*SB-7125H	*SB-7125H-T
	7.2500	7-1/4	*SB-7250H	*SB-7250H-T
	7.3750	7-3/8	*SB-7375H	*SB-7375H-T

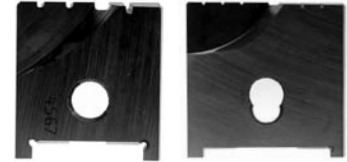
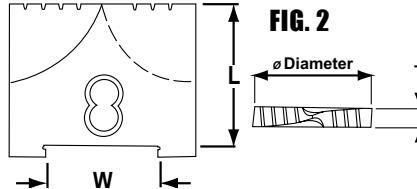
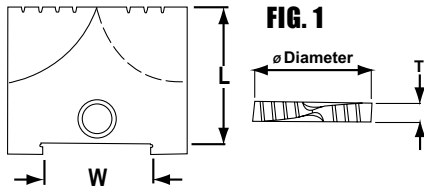
* Outgoing Items

SPADE BLADES
& HOLDERS



SPADE DRILL BLADES • FLAT BOTTOM MS, A, B, C, D SERIES

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



SERIES MS L=0.843 T=0.125 W=0.562 FIG. 1	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	0.7500	3/4	*FB-0750MS
	0.8120	13/16	*FB-0812MS
	0.8750	7/8	*FB-0875MS
	0.9370	15/16	*FB-0937MS
	1.0000	1	*FB-1000MS

* Outgoing Items

SERIES A L=0.937 T=0.187 W=0.750 FIG. 1	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	1.0000	1	*FB-1000A
	1.0620	1-1/16	*FB-1062A
	1.1870	1-3/16	*FB-1187A

* Outgoing Items

SERIES B L=1.125 T=0.281 W=1.062 FIG. 1	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	1.0000	1	*FB-1000B
	1.0620	1-1/16	*FB-1062B
	1.1250	1-1/8	*FB-1125B
	1.1870	1-3/16	*FB-1187B
	1.2500	1-1/4	*FB-1250B
	1.3120	1-5/16	*FB-1312B
	1.4370	1-7/16	*FB-1437B

* Outgoing Items

SERIES C L=1.562 T=0.312 W=1.250 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	1.8120	1-13/16	*FB-1812C

* Outgoing Items

SERIES D L=2.000 T=0.375 W=1.750 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	2.1250	2-1/8	*FB-2125D
	2.1870	2-3/16	*FB-2187D
	2.3120	2-5/16	*FB-2312D
	2.3750	2-3/8	*FB-2375D
	2.4370	2-7/16	*FB-2437D
	2.5000	2-1/2	*FB-2500D

* Outgoing Items



SPADE DRILL BLADES • FLAT BOTTOM E, F, G, H SERIES

- Premium CPM-M4 material, better wear resistance, greater tool life.
- Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service.
- Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.

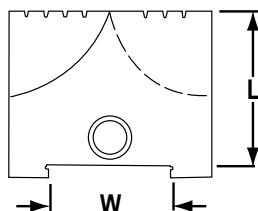


FIG. 1

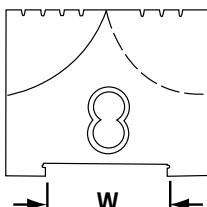
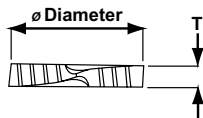
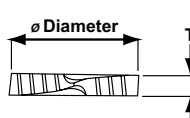


FIG. 2



SPADE BLADES
& HOLDERS

SERIES E L=2.375 T=0.437 W=2.062 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	2.5620	2-9/16	*FB-2562E
	2.6250	2-5/8	*FB-2625E
	2.8120	2-13/16	*FB-2812E
	2.8750	2-7/8	*FB-2875E
	3.0000	3	*FB-3000E

* Outgoing Items

SERIES F L=2.875 T=0.500 W=2.625 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	3.1250	3-1/8	*FB-3125F
	3.1870	3-3/16	*FB-3187F
	3.3120	3-5/16	*FB-3312F
	3.4370	3-7/16	*FB-3437F

* Outgoing Items

SERIES G L=3.375 T=0.625 W=3.062 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	3.5620	3-9/16	*FB-3562G
	3.6250	3-5/8	*FB-3625G
	3.6870	3-11/16	*FB-3687G
	3.7500	3-3/4	*FB-3750G
	3.8120	3-13/16	*FB-3812G
	3.8750	3-7/8	*FB-3875G
	3.9370	3-15/16	*FB-3937G
	4.0000	4	*FB-4000G

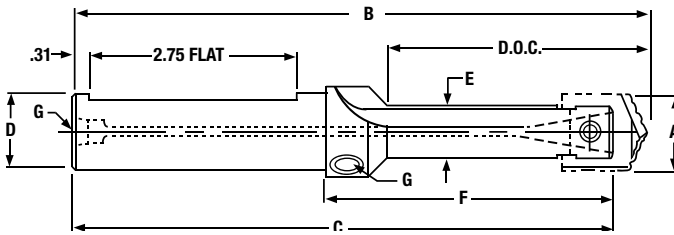
* Outgoing Items

SERIES H L=3.688 T=0.687 W=3.500 FIG. 2	DECIMAL DIA. (IN.)	FRACTION DIA. (IN.)	PART NUMBER
	4.1250	4-1/8	*FB-4125H
	4.6250	4-5/8	*FB-4625H
	4.7500	4-3/4	*FB-4750H

* Outgoing Items



SPADE BLADE HOLDERS • MINI SERIES • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY



STANDARD

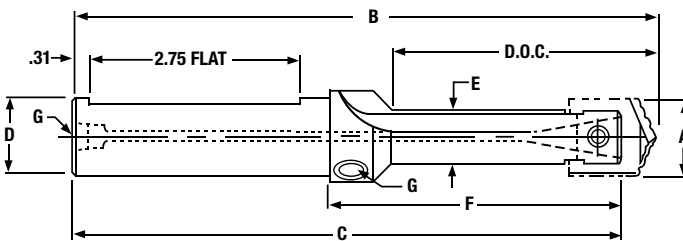
• Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A RANGE	B	C	D SHANK DIA.	E BODY DIA.	D.O.C. MAX.	F	G
SHORT SERIES									
* SBH-MS-001	MS	0.672 to 1.000	7-15/32	7-3/16	1.000	0.650	3-1/8	3-13/16	1/8-27 NPT
MEDIUM SERIES									
* SBH-MS-003	MS	0.672 to 1.000	9-15/32	9-3/16	1.000	0.650	5-1/8	5-13/16	1/8-27 NPT
LONG SERIES									
* SBH-MS-005	MS	0.672 to 1.000	11-15/32	11-3/16	1.000	0.650	7-1/8	7-13/16	1/8-27 NPT

* Outgoing Items

- One pass drilling • No pecking cycle needed • No lost time for chip removal • Chip breakers built into spade blades results in small "C" shaped chips
- Longer tool life • Less heat damage with coolant • Less friction through better lubrication

SPADE BLADE HOLDERS • MINI SERIES • HEAVY DUTY • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY



HEAVY DUTY

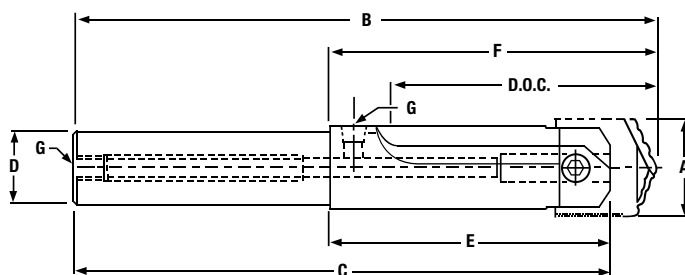
• Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A RANGE	B	C	D SHANK DIA.	E BODY DIA.	D.O.C. MAX.	F	G
MEDIUM SERIES									
* SBH-MS-004	MS	0.812 to 1.000	9-15/32	9-3/16	1.000	0.687	5-1/8	5-13/16	1/8-27 NPT
LONG SERIES									
* SBH-MS-006	MS	0.812 to 1.000	11-15/32	11-3/16	1.000	0.687	7-1/8	7-13/16	1/8-27 NPT

* Outgoing Items



SPADE BLADE HOLDERS • STRAIGHT SHANK • COOLANT: END ENTRY & SIDE ENTRY



SHORT SERIES

•Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D	E	D.O.C. MAX.	F	G
* 801-003	**A	31/32 to 1-3/8	6-13/16	6-1/2	1	3	2-7/8	3-5/16	1/8 NPT
* 801-005	B	1-1/4 to 1-3/4	7-3/4	7-1/2	1	3-1/2	3-1/4	3-3/4	1/8 NPT
* 801-006	B	1-1/4 to 1-3/4	7-3/4	7-1/2	1-1/2	3-1/2	3-1/4	3-3/4	1/8 NPT
* 801-009	D	2 to 2-7/8	8-5/8	8	1-1/2	4	4-1/8	4-5/8	1/4 NPT
* 801-010	D	2 to 2-7/8	8-5/8	8	1-3/4	4	4-1/8	4-5/8	1/4 NPT
* 801-011	E	2-1/2 to 3-3/8	9-13/16	9	1-3/4	5	5-3/8	5-13/16	1/4 NPT
* 801-012	E	2-1/2 to 3-3/8	9-13/16	9	2	5	5-3/8	5-13/16	1/4 NPT
* 801-013	F	3 to 3-7/8	11	10	2	6	6-1/2	7	3/8 NPT
* 801-014	F	3 to 3-7/8	11	10	2-1/2	6	6-1/2	7	3/8 NPT
* 801-115	G	3-1/2 to 4-1/2	12-7/16	11	3	6	7	7-7/16	1/2 NPT

* Outgoing Items

SPADE BLADES
& HOLDERS

LONG SERIES

•Spade blades sold separately, beginning on page 64.

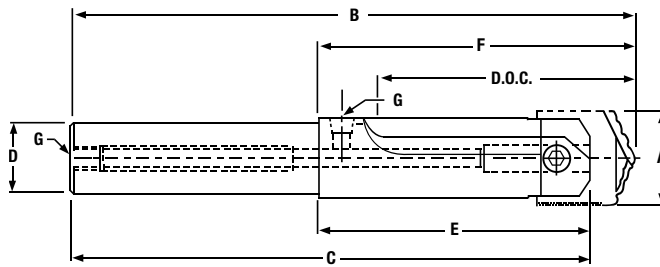
PART NUMBER	SERIES	A	B	C	D	E	D.O.C. MAX.	F	G
* 801-015	AA	31/32 to 1-3/8	11-3/4	11-1/4	1	7-3/4	7-3/4	8-1/4	1/8 NPT
* 801-016	AA	31/32 to 1-3/8	11-3/4	11-1/4	1-1/2	7-3/4	7-3/4	8-1/4	1/8 NPT
* 801-017	**A	31/32 to 1-3/8	11-9/16	11-1/4	1	7-3/4	7-5/8	8-1/16	1/8 NPT
* 801-018	**A	31/32 to 1-3/8	11-9/16	11-1/4	1-1/2	7-3/4	7-5/8	8-1/16	1/8 NPT
* 801-019	B	1-1/4 to 1-3/4	12-3/8	12-1/8	1-1/4	8-1/8	7-7/8	8-3/8	1/8 NPT
* 801-020	B	1-1/4 to 1-3/4	12-3/8	12-1/8	1-1/2	8-1/8	7-7/8	8-3/8	1/8 NPT
* 801-021	C	1-1/2 to 2-3/8	12-15/16	12-1/2	1-1/2	8-1/2	8-1/2	8-15/16	1/8 NPT
* 801-023	E	2-1/2 to 3-3/8	15-1/16	14-1/4	2	10-1/4	10-5/8	11-1/16	1/4 NPT
* 801-025	G	3-1/2 to 4-1/2	19-15/16	18-1/2	3	13-1/2	14-1/2	14-15/16	1/2 NPT
* 801-026	H	4 to 8	23-1/16	21-1/2	3	15-1/2	16-5/8	17-1/16	1/2 NPT

* Outgoing Items

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"



SPADE BLADE HOLDERS • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY



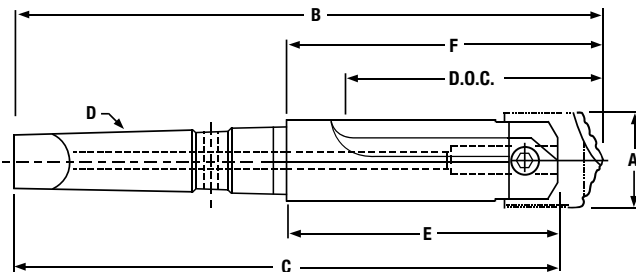
EXTRA LONG SERIES

•Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D	E	D.O.C. MAX.	F	G
* 801-127	A	31/32 to 1-3/8	14-9/16	14-3/4	1-1/2	11-1/4	11-1/8	11-9/16	1/8 NPT
* 801-128	B	1-1/4 to 1-3/4	15-1/2	15-1/4	1-1/2	11-1/4	11	11-1/2	1/8 NPT
* 801-129	C	1-1/2 to 2-3/8	17-7/16	17	1-1/2	13	13	13-7/16	1/8 NPT
* 801-130	D	2 to 2-7/8	17-1/2	17	1-3/4	13	13-1/8	13-1/2	1/4 NPT
* 801-131	E	2-1/2 to 3-3/8	18-13/16	18	2	14	14-3/8	14-13/16	1/4 NPT

* Outgoing Items

SPADE BLADE HOLDERS • TAPER SHANK • COOLANT : SIDE ENTRY ON MORSE TAPER



SHORT SERIES

•Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D	E	D.O.C. MAX.	F
* 801-027	AA	31/32 to 1-3/8	7-3/8	6-7/8	#3	3	3-1/8	3-1/2
* 801-028	**A	31/32 to 1-3/8	7-3/16	6-7/8	#3	3	2-7/8	3-5/16
* 801-029	B	1-1/4 to 1-3/4	8-5/8	8-3/8	#4	3-1/2	3-1/4	3-3/4
* 801-030	C	1-1/2 to 2-3/8	8-13/16	8-3/8	#4	3-1/2	3-1/2	3-15/16
* 801-031	D	2 to 2-7/8	9-1/2	8-7/8	#4	4	4-1/8	4-5/8
* 801-032	E	2-1/2 to 3-3/8	11-15/16	11-1/8	#5	5	5-3/8	5-13/16

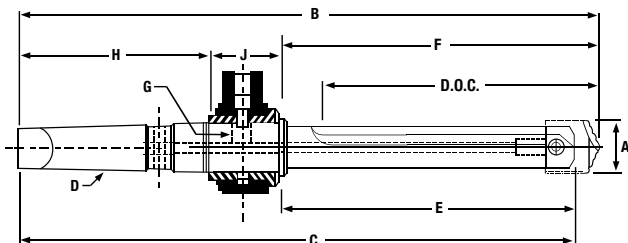
* Outgoing Items

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"



SPADE BLADE HOLDERS TAPER SHANK • COOLANT: SIDE ENTRY • PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.



OPTIONAL



SHORT SERIES

•Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D MT	E	D.O.C. MAX.	F	G	H	J	ROTARY COOLANT GLAND
* 801-036	A	31/32 to 1-3/8	10-1/16	9-3/4	#4	3	2-7/8	3-5/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-037	B	1-1/4 to 1-3/4	10-1/2	10-1/4	#4	3-1/2	3-1/4	3-3/4	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-038	C	1-1/2 to 2-3/8	11-3/16	10-3/4	#4	4	4	4-7/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-039	D	2 to 2-7/8	11-7/8	11-1/4	#4	4-1/2	4-5/8	5-1/8	3/8 NPT	4-7/8	1-7/8	CGH2-1500
* 801-040	E	2-1/2 to 3-3/8	14-3/16	13-3/8	#5	5	5-3/8	5-13/16	3/8 NPT	6-1/8	2-1/4	CGH2-2000
* 801-041	F	3 to 3-7/8	14-7/8	13-7/8	#5	5-1/2	6	6-1/2	3/8 NPT	6-1/8	2-1/4	CGH2-2000
* 801-043	H	4 to 8	20-1/8	18-9/16	#6	7	8-1/8	8-9/16	1/2 NPT	8-9/16	3	CGH2-2562

* Outgoing Items

OPTIONAL



MEDIUM SERIES

•Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D MT	E	D.O.C. MAX.	F	G	H	J	ROTARY COOLANT GLAND
* 801-044	AA	31/32 to 1-3/8	15	14-1/2	#4	7-3/4	7-3/4	8-1/4	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-045	**A	31/32 to 1-3/8	14-13/16	14-1/2	#4	7-3/4	7-5/8	8-1/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-046	B	1-1/4 to 1-3/4	15-1/8	14-7/8	#4	8-1/8	7-7/8	8-3/8	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-047	C	1-1/2 to 2-3/8	15-11/16	15-1/4	#4	8-1/2	8-1/2	8-15/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-048	D	2 to 2-7/8	16-13/16	16-3/16	#4	9-1/4	9-3/8	9-7/8	3/8 NPT	4-7/8	2-1/16	CGH2-1500
* 801-049	E	2-1/2 to 3-3/8	19-7/16	18-5/8	#5	10-1/4	10-1/2	11-1/16	3/8 NPT	6-1/8	2-1/4	CGH2-2000
* 801-050	F	3 to 3-7/8	21-1/8	20-1/8	#5	11-3/4	12-1/4	12-3/4	3/8 NPT	6-1/8	2-1/4	CGH2-2000
* 801-051	G	3-1/2 to 4-1/2	23-5/16	21-7/8	#5	13-1/2	14-1/2	14-15/16	3/8NPT	6-1/8	2-1/4	CGH2-2000
* 801-052	H	4 to 8	28-5/8	27-1/16	#6	15-1/2	16-5/8	17-1/16	1/2 NPT	8-9/16	3	CGH2-2562

* Outgoing Items

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

OPTIONAL



LONG SERIES

•Spade blades sold separately, beginning on page 64.

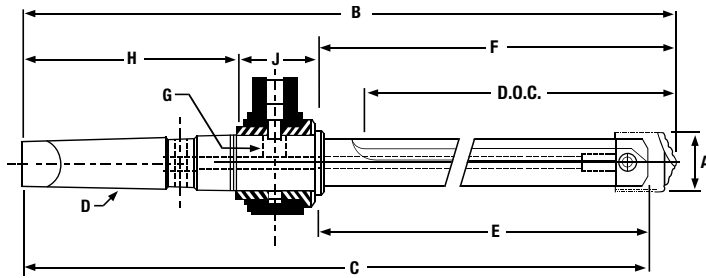
PART NUMBER	SERIES	A	B	C	D MT	E	D.O.C. MAX.	F	G	H	J	ROTARY COOLANT GLAND
* 801-145	A	31/32 to 1-3/8	18-5/16	18	#4	11-1/4	11-1/8	11-9/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-146	B	1-1/4 to 1-3/4	18-1/4	18	#4	11-1/4	11	11-1/2	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-147	C	1-1/2 to 2-3/8	20-3/16	19-3/4	#4	13	13	13-7/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
* 801-148	D	2 to 2-7/8	20-9/16	19-15/16	#4	13	13-1/8	13-5/8	3/8 NPT	4-7/8	2-1/16	CGH2-1500
* 801-149	E	2-1/2 to 3-3/8	23-3/16	22-3/8	#5	14	14-3/8	14-13/16	3/8 NPT	6-1/8	2-1/4	CGH2-2000

* Outgoing Items



SPADE BLADE HOLDERS • TAPER SHANK • COOLANT: SIDE ENTRY • PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

• Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.



EXTRA LONG SERIES

• Spade blades sold separately, beginning on page 64.

OPTIONAL



PART NUMBER	SERIES	A	B	C	D MT	E	D.O.C. MAX.	F	G	H	J	ROTARY COOLANT GLAND
*801-053	AA	31/32 to 1-3/8	22-1/4	21-3/4	#4	15	15-1/8	15-1/2	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-054	**A	31/32 to 1-3/8	22-1/16	21-3/4	#4	15	14-7/8	15-5/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-055	B	1-1/4 to 1-3/4	22	21-3/4	#4	15	14-3/4	15-1/4	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-056	C	1-1/2 to 2-3/8	25-3/16	24-3/4	#4	18	18	18-7/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-057	D	2 to 2-7/8	25-9/16	24-15/16	#4	18	18-1/8	18-5/8	3/8 NPT	4-7/8	2-1/16	CGH2-1500
*801-058	E	2-1/2 to 3-3/8	29-3/16	28-3/8	#5	20	20-3/8	20-13/16	3/8 NPT	6-1/8	2-1/4	CGH2-2000
*801-059	F	3 to 3-7/8	29-3/8	28-3/8	#5	20	20-1/2	21	3/8 NPT	6-1/8	2-1/4	CGH2-2000
*801-061	H	4 to 8	37-1/8	35-9/16	#6	24	25-1/8	25-9/16	1/2 NPT	8-9/16	3	CGH2-2562

* Outgoing Items

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

SUPER LONG SERIES

• Spade blades sold separately, beginning on page 64.

OPTIONAL



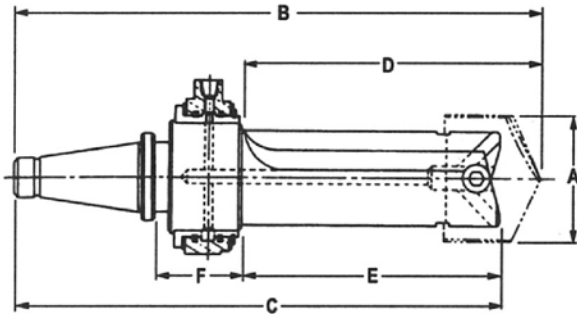
PART NUMBER	SERIES	A	B	C	D MT	E	D.O.C. MAX.	F	G	H	J	ROTARY COOLANT GLAND
*801-062	A	31/32 to 1-3/8	28-1/16	27-3/4	#4	21	20-7/8	21-5/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-063	B	1-1/4 to 1-3/4	29	28-3/4	#4	22	21-3/4	22-1/4	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-064	C	1-1/2 to 2-3/8	33-3/16	32-3/4	#4	26	26	26-7/16	1/4 NPT	4-7/8	1-7/8	CGH2-1250
*801-065	D	2 to 2-7/8	35-9/16	34-15/16	#4	28	28-1/8	28-5/8	3/8 NPT	4-7/8	2-1/16	CGH2-1500
*801-067	F	3 to 3-7/8	42-3/8	41-3/8	#5	33	33-1/2	34	3/8 NPT	6-1/8	2-1/4	CGH2-2000
*801-068	G	3-1/2 to 4-1/2	46-13/16	45-3/8	#5	37	38	38-7/16	3/8 NPT	6-1/8	2-1/4	CGH2-2000
*801-069	H	4 to 8	49-15/16	48-3/8	#5	40	41-1/8	41-9/16	1/2 NPT	6-1/8	2-1/4	CGH2-2000
*801-070	H	4 to 8	53-1/8	51-9/16	#6	40	41-1/8	41-9/16	1/2 NPT	8-9/16	3	CGH2-2562

* Outgoing Items



SPADE BLADE HOLDERS • 50 NMTB • TAPER SHANK • COOLANT: SIDE ENTRY • PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

• Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.



OPTIONAL



• Spade blades sold separately, beginning on page 64.

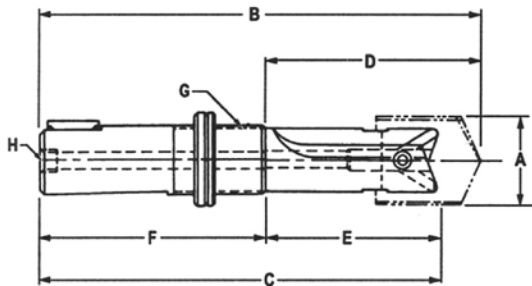
PART NUMBER	SERIES	A	B	C	D	E	F	ROTARY COOLANT GLAND
*801-200	AA	31/32 to 1-3/8	17-3/4	16-5/8	8	8-1/2	3-21/32	CGH2-2562
*801-201	**A	31/32 to 1-3/8	17-9/16	16-5/8	8	8-5/16	3-21/32	CGH2-2562
*801-202	B	1-1/4 to 1-3/4	17-3/4	16-5/8	8	8-1/2	3-21/32	CGH2-2562
*801-204	D	2 to 2-7/8	20-3/8	18-3/8	10	11-1/8	3-21/32	CGH2-2562
*801-205	E	2-1/2 to 3-3/8	20-9/16	18-3/16	10	11-5/16	3-21/32	CGH2-2562
*801-206	F	3 to 3-7/8	21-15/16	19-1/16	11	12-7/16	3-29/32	CGH2-4250
*801-208	H	4 to 8	23-9/16	19-7/8	12	14-1/16	3-29/32	CGH2-4250

* Outgoing Items

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

SPADE BLADES
& HOLDERS

SPADE BLADE HOLDERS • AUTOMOTIVE SERIES • COOLANT: END ENTRY



• Spade blades sold separately, beginning on page 64.

PART NUMBER	SERIES	A	B	C	D	E	F	G	H
*801-210	A	31/32 to 1-3/8	12-7/16	11-1/2	6-7/16	5-1/2	6	1-3/8-12	1/8 NPT
*801-211	B	1-1/4 to 1-3/4	12-5/8	11-1/2	6-5/8	5-1/2	6	1-3/8-12	1/8 NPT
*801-212	C	1-1/2 to 2-3/8	13-1/16	11-1/2	7-1/16	5-1/2	6	1-3/8-12	1/8 NPT
*801-213	D	2 to 2-7/8	13-1/2	11-1/2	7-1/2	5-1/2	6	1-7/8-12	1/4 NPT
*801-214	E	2-1/2 to 3-3/8	13-7/8	11-1/2	7-7/8	5-1/2	6	1-7/8-12	1/4 NPT
*801-215	F	3 to 3-7/8	14-3/8	11-1/2	8-3/8	5-1/2	6	1-7/8-12	3/8 NPT
*801-216	G	3-1/2 to 4-1/2	14-7/8	11-1/2	8-7/8	5-1/2	6	1-7/8-12	1/2 NPT
*801-217	H	4 to 8	15-3/16	11-1/2	9-3/16	5-1/2	6	1-7/8-12	1/2 NPT

* Outgoing Items