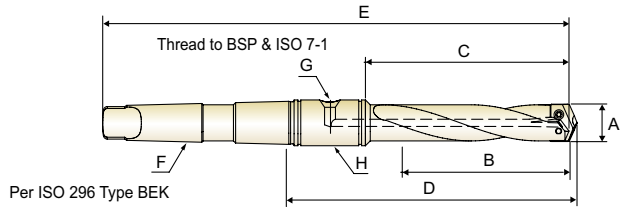


**TAPER SHANK HOLDERS**

- HALTER MIT MORSEKEGEL
- Porte-plaquette à queue cône morse
- PUNTE CON ATTACCO CM


**LONG LENGTH - Helical Flute (Metric)**

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
0	Z00LGHMT02M	13.0 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16	PR120190
0.5	Z05LGHMT02M	15.5 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16	PR120190

► You can also apply **RCA**(Rotary Coolant Adapter) for internal cooling. (See page 324)

SELECTION GUIDE



SERIES	1~8	Y,Z,0,1~4	Y,Z,0,1,2
TOOL MATERIAL	HSS M4	SUPER HSS T15	PREMIUM HSS M48
POINT	STANDARD	STANDARD	STANDARD
SIZE MIN	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)
SIZE MAX	Ø114.3(#8)	Ø65.09(#4)	Ø35(#2)
PAGE	A286	A292	A297



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

SURFACE TREATMENT

TiN / TiCN / TiAIN

# INSERTS & HOLDERS SPADE DRILLS

For General Machines and Drilling Large Diameters  
Longer Tool Life and High Productivity

◎ : Excellent ○ : Good

Recommended cutting conditions : p.A375



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc			
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	◎	◎
	2		About 0.45% C Annealed	190	13	○	◎	◎
	3		About 0.45% C Quenched & Tempered	250	25	○	◎	◎
	4		About 0.75% C Annealed	270	28	○	◎	◎
	5		About 0.75% C Quenched & Tempered	300	32			
	6	Low alloy steel	Annealed	180	10	○	◎	◎
	7		Quenched & Tempered	275	29	○	◎	◎
	8		Quenched & Tempered	300	32		○	◎
	9		Quenched & Tempered	350	38		○	◎
	10		High alloyed steel, and tool steel	Annealed	200	15		○
	11	Quenched & Tempered		325	35		○	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	◎	○	
	13		Martensitic Quenched & Tempered	240	23	◎	○	
	14		Austenitic	180	10	◎	○	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	◎	○	○
	16		Pearlitic (Martensitic)	260	26	○	◎	◎
	17	Nodular cast iron	Ferritic	160	3	◎	○	○
	18		Pearlitic	250	25	○	◎	◎
	19		Ferritic	130		◎	○	○
20	Malleable cast iron	Pearlitic	230	21	○	◎	◎	
N	21	Aluminum-wrought alloy	Not Curable	60		◎	○	○
	22		Curable Hardened	100		◎	○	○
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75				
	24		≤ 12% Si, Curable Hardened	90				
	25		> 12% Si, Not Curable	130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110				
	27		CuZn, CuSnZn (Brass)	90		◎	○	○
	28		CuSn, lead-free copper and electrolytic copper	100				
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		◎	◎
	32		Cured	280	30		○	◎
	33		Annealed	250	25		○	◎
	34		Ni or Co Based Cured	350	38		○	◎
	35	Cast	320	34		○	◎	
	36	Titanium Alloys	Pure Titanium	400 Rm				
	37		Alpha + Beta Alloys Hardened	1050 Rm				
H	38	Hardened steel	Hardened	550	55		○	◎
	39		Hardened	630	60			
	40	Chilled Cast Iron	Cast	400	42			
	41	Hardened Cast Iron	Hardened	550	55			

REAMERS	<b>TAPER SHANK</b>		TAPER SHANK HOLDERS - INCH/METRIC	<b>A364</b>
COUNTER SINKS	<b>FLANGED SHANK</b>		FLANGED STRAIGHT SHANK HOLDERS - INCH/METRIC	<b>A364</b>
COUNTER BORES	<b>STRAIGHT SHANK</b>		STRAIGHT SHANK HOLDERS - INCH	<b>A382</b>

Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	1~3	Y,Z,0,1~3	Y,Z,0,1,2	Y,Z,0,1,2	Y,Z,0,1~3	Y,Z,0,1~3	Y,Z,0,1,2
CARBIDE K10	CARBIDE K20	CARBIDE P40	HSS M4	SUPER HSS T15	PREMIUM HSS M48	CARBIDE K10	CARBIDE K20	CARBIDE P40	SUPER COBALT T15
STANDARD	STANDARD	STANDARD	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	SM-POINT	FALT BOTTOM
Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø17.86(#1)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)	Ø9.5(#Y)
Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)	Ø35(#2)	Ø47.63(#3)	Ø47.63(#3)	Ø35(#2)
<b>A300</b>	<b>A303</b>	<b>A307</b>	<b>A312</b>	<b>A315</b>	<b>A319</b>	<b>A322</b>	<b>A325</b>	<b>A329</b>	<b>A361</b>
TiN / TiCN / TiAlN									TiN / Hardslick / TiAlN



											1	DREAM DRILLS -FLAT BOTTOM
											2	DREAM DRILLS -INOX
											3	DREAM DRILLS -ML
											4	DREAM DRILLS -ML
											5	DREAM DRILLS -ML
											6	DREAM DRILLS -ML
											7	DREAM DRILLS -ML
											8	DREAM DRILLS -ML
											9	DREAM DRILLS -ML
											10	DREAM DRILLS -ML
											11	DREAM DRILLS -ML
											12	DREAM DRILLS for HIGH HARDENED STEELS
											13	DREAM DRILLS for HIGH HARDENED STEELS
											14	DREAM DRILLS for HIGH HARDENED STEELS
											15	DREAM DRILLS for HIGH HARDENED STEELS
											16	DREAM DRILLS for HIGH HARDENED STEELS
											17	DREAM DRILLS for HIGH HARDENED STEELS
											18	DREAM DRILLS for HIGH HARDENED STEELS
											19	DREAM DRILLS for HIGH HARDENED STEELS
											20	DREAM DRILLS for HIGH HARDENED STEELS
											21	DREAM DRILLS for HIGH HARDENED STEELS
											22	DREAM DRILLS for HIGH HARDENED STEELS
											23	DREAM DRILLS for HIGH HARDENED STEELS
											24	DREAM DRILLS for HIGH HARDENED STEELS
											25	DREAM DRILLS for HIGH HARDENED STEELS
											26	DREAM DRILLS for HIGH HARDENED STEELS
											27	DREAM DRILLS for HIGH HARDENED STEELS
											28	DREAM DRILLS for HIGH HARDENED STEELS
											29	DREAM DRILLS for HIGH HARDENED STEELS
											30	DREAM DRILLS for HIGH HARDENED STEELS
											31	DREAM DRILLS for HIGH HARDENED STEELS
											32	DREAM DRILLS for HIGH HARDENED STEELS
											33	DREAM DRILLS for HIGH HARDENED STEELS
											34	DREAM DRILLS for HIGH HARDENED STEELS
											35	DREAM DRILLS for HIGH HARDENED STEELS
											36	DREAM DRILLS for HIGH HARDENED STEELS
											37	DREAM DRILLS for HIGH HARDENED STEELS
											38	DREAM DRILLS for HIGH HARDENED STEELS
											39	DREAM DRILLS for HIGH HARDENED STEELS
											40	DREAM DRILLS for HIGH HARDENED STEELS
											41	DREAM DRILLS for HIGH HARDENED STEELS

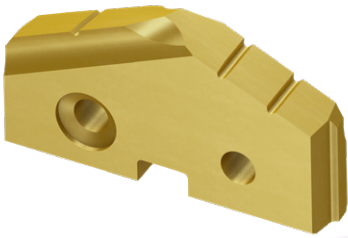
Coating	Characteristics
<b>H</b>	<ul style="list-style-type: none"> <li>-First choice for excellent wear resistance and toughness</li> <li>-Preventive of chipping due to cold welding</li> <li>-Achieve high penetration rates even in deep holes with reliable tool life</li> <li>-Coefficient of friction against steel : 0.25</li> <li>-Color : Bronze</li> </ul>
<b>TiN</b>	<ul style="list-style-type: none"> <li>-Increased tool life over non-coating</li> <li>-Improved wear resistance and high hardness</li> <li>-For normal applications</li> <li>-Coefficient of friction against steel : 0.4</li> <li>-Color : Gold</li> </ul>

Coating	Characteristics
<b>TiCN</b>	<ul style="list-style-type: none"> <li>-Maximum working temperature up to 400°C</li> <li>-Better wear resistance over non-coating</li> <li>-Coefficient of friction against steel : 0.4</li> <li>-Color : Blue-Grey</li> </ul>
<b>TiAlN</b>	<ul style="list-style-type: none"> <li>-Maximum working temperature up to 800°C</li> <li>-Excellent heat and oxidation resistance</li> <li>-Coefficient of friction against steel : 0.4</li> <li>-Color : Violet-Grey</li> </ul>
<b>Hardslick</b>	<ul style="list-style-type: none"> <li>-Better chip evacuation for tapping and drilling</li> <li>-High hardness and improved lubrication</li> <li>-Coefficient of friction against steel : 0.2</li> <li>-Color : Black-Grey</li> </ul>

# PRODUCT FEATURES

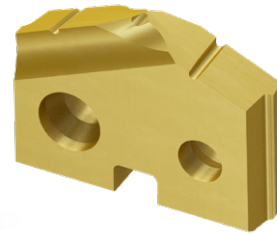
## SPADE DRILLS (Standard, SM-Point)

Reference page : p.A299 - p.A380



### Standard-Point

Standard Point  
and Neutral Rake Angle for  
**Stable Cutting**  
**Self Centering**  
**Chip Breaking**  
**Rigidity on Center**



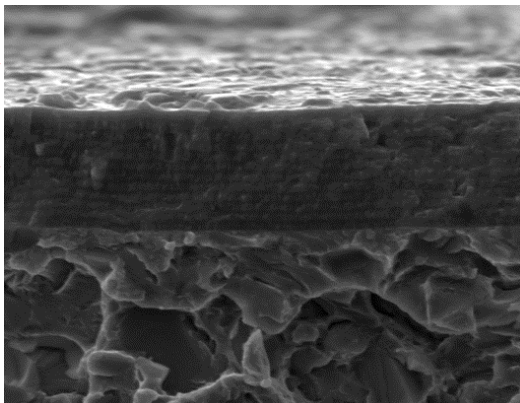
### SM-Point

Multiple Web Thinning for and Radius Back Face  
for Increased Cutting Speed and Feed  
**Wide Chip Space**  
**Good Self-Centering**  
**Less Tool Lead-off**  
**Reduction in bell mouching**



Multi Layers

Carbide



### Multi layered 'H'-coating Micro Grain Carbide Insert

Outstanding Productivity & Reliability

#### H - Coating

(Upgraded AlCrN-Based : **Multi-Layer coating**)

- Higher worn-out resistance and Lower friction
- Higher Cutting Speed and Feed
- Improved drill Hole Quality



# Special features of SM-Point Spade Drill

This new "Hybrid Point" combines the strength of the standard point with additional "Web Thinning".

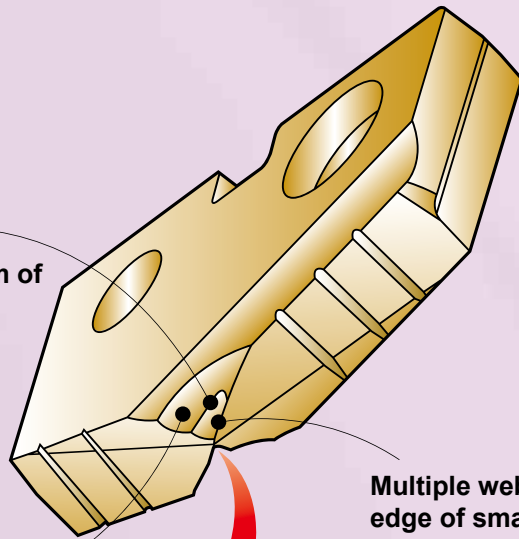
This new point increases stability, reduces thrust, improves centering and allows increased speeds and feeds.

**Multiple thinning form at the bottom of the large thinning.**

- ▶ The optimum thinning for the difference from the cutting speed, the cutting quantity and the cutting load according to the distance from the drill point to the cutting edge.

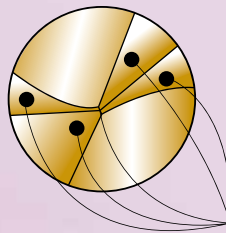
**Radius back face**

- ▶ Wide chip space



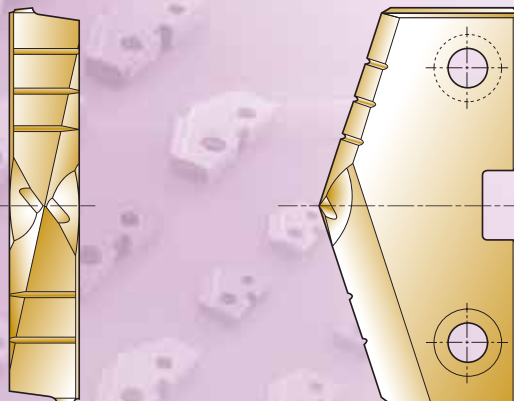
**Multiple web thinning with the cutting edge of small web thinning.**

- ▶ Good self-centering
- ▶ Less tool lead off
- ▶ Reduction in bell mouching, thrust
- ▶ Increased stability

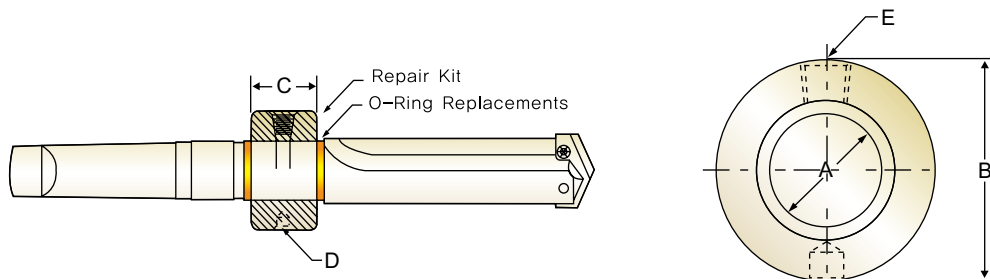


**Four-facet point**

- ▶ Self-centering
- ▶ Less thrust force



**HOLDER ACCESSORIES**  
**ROTARY COOLANT ADAPTER (RCA) AND ACCESSORIES**



**Inch**

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR110048	3/4	1-3/4	7/8	5/16-NC	◆1/8	PR210048	PR310048
PR110100	1	2-1/8	1-1/8	5/16-NC	◆1/8	PR210100	PR310100
PR110116	1-1/4	2-1/2	1-3/8	3/8-NC	◆1/4	PR210116	PR310116
PR110148	1-3/4	3	1-3/8	3/8-NC	◆1/4	PR210148	PR310148
PR110216	2-1/4	3-3/4	1-3/4	1/2-NC	◆1/2	PR210216	PR310216

**Metric**

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR120190	19.05	44.45	22.23	M8 × 1.25	◆1/8	PR220190	PR320190
PR120254	25.40	53.97	28.57	M8 × 1.25	◆1/8	PR220254	PR320254
PR120317	31.75	63.50	34.92	M10 × 1.5	◆1/4	PR220317	PR320317
PR120444	44.45	76.20	34.92	M10 × 1.5	◆1/4	PR220444	PR320444
PR120571	57.15	95.27	44.45	M12 × 1.75	◆1/2	PR220571	PR320571

◆ Thread to BSP & ISO 7-1

**TORX SCREWS**

Holder Series	Item No.	TORX Hand Driver	Drill Range Used With	
			Inch	Metric
Y	J07Y0010	J05Y0070	3/8 ~ 27/64	9.5 mm ~ 11.0 mm
Z	J07Z0110		7/16 ~ 1/2	11.5 mm ~ 12.5 mm
0	J0800210	J0500080	33/64 ~ 11/16	13.0 mm ~ 17.5 mm
0.5	J0805310		39/64 ~ 11/16	15.5 mm ~ 17.5 mm
1	J0910410	J0510090	45/64 ~ 15/16	18.0 mm ~ 24.0 mm
1.5	J0915510		55/64 ~ 15/16	22.0 mm ~ 24.0 mm
2	J1520610	J0520150	31/32 ~ 1-3/8	25.0 mm ~ 35.0 mm
2.5	J1525710		1-3/16 ~ 1-3/8	30.0 mm ~ 35.0 mm
3,4	J2030810		1-13/32 ~ 2-9/16	36.0 mm ~ 65.0 mm
5 ~ 8	J2550910	J0550250	2-1/2 ~ 4-1/2	64.0 mm ~ 114.0 mm

\*\* Note : Replacement screws sold in packages(10 screws per package)

**SPADE DRILL HSS-M4**

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
<b>P</b>	1	Non-alloy steel	<b>54</b>	<b>67</b>	<b>75</b>	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		<b>49</b>	<b>58</b>	<b>69</b>	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		<b>45</b>	<b>56</b>	<b>63</b>	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		<b>45</b>	<b>56</b>	<b>63</b>	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	6	Low alloy steel	<b>45</b>	<b>56</b>	<b>58</b>	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		<b>41</b>	<b>50</b>	<b>56</b>	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	<b>M</b>	12	Stainless steel	<b>20</b>	<b>23</b>	<b>29</b>	0.12	0.18	0.20	0.24	0.30	0.36
13		<b>20</b>		<b>23</b>	<b>29</b>	0.12	0.18	0.20	0.24	0.30	0.36	0.46
14		<b>24</b>		<b>29</b>	<b>34</b>	0.14	0.20	0.23	0.26	0.36	0.41	0.50
<b>K</b>	15	Grey cast iron	<b>48</b>	<b>58</b>	<b>70</b>	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	16		<b>29</b>	<b>35</b>	<b>41</b>	0.10	0.15	0.16	0.23	0.28	0.35	0.40
	17	Nodular cast iron	<b>48</b>	<b>58</b>	<b>70</b>	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	18		<b>35</b>	<b>44</b>	<b>52</b>	0.13	0.17	0.23	0.3	0.35	0.43	0.50
	19	Malleable cast iron	<b>52</b>	<b>64</b>	<b>75</b>	0.16	0.30	0.40	0.49	0.59	0.69	0.75
	20		<b>35</b>	<b>44</b>	<b>52</b>	0.13	0.17	0.23	0.30	0.35	0.43	0.50
<b>N</b>	21	Aluminum-wrought alloy	<b>187</b>	<b>229</b>	<b>244</b>	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		<b>92</b>	<b>137</b>	<b>137</b>	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	27	Copper and Copper Alloys (Bronze / Brass)	<b>95</b>	<b>128</b>	<b>142</b>	0.19	0.31	0.43	0.53	0.64	0.74	0.79

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

i-ONE DRILLS

i-DREAM DRILLS

DREAM DRILLS -PRO

DREAM DRILLS -GENERAL

DREAM DRILLS -HIGH FEED

DREAM DRILLS -FLAT BOTTOM

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL

DREAM DRILLS for HIGH HARDENED STEELS

GENERAL CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

SUPER-GP DRILLS

STRAIGHT SHANK DRILLS

TAPER SHANK DRILLS

NC-SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

REAMERS

COUNTER SINKS

COUNTER BORES

TECHNICAL DATA



**SPADE DRILL HSS-T15**

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
P	1	Non-alloy steel	54	67	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		49	58	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	6	Low alloy steel	45	56	58	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		41	50	56	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	8		39	47	53	0.09	0.15	0.22	0.28	0.38	0.41	0.50
	9		36	43	46	0.08	0.15	0.21	0.27	0.38	0.40	0.51
	10		High alloyed steel, and tool steel	25	34	36	0.08	0.17	0.20	0.24	0.30	0.37
	11	19		27	29	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	M	12	Stainless steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36
13		20		23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46
14		24		29	34	0.14	0.20	0.23	0.26	0.36	0.41	0.50
K	15	Grey cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	16		29	35	41	0.10	0.15	0.16	0.23	0.28	0.35	0.40
	17	Nodular cast iron	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	18		35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
	19		52	64	75	0.16	0.30	0.40	0.49	0.59	0.69	0.75
20	Malleable cast iron	35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50	
N	21	Aluminum-wrought alloy	187	229	244	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		92	137	137	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	27	Copper and Copper Alloys (Bronze / Brass)	95	128	142	0.19	0.31	0.43	0.53	0.64	0.74	0.79
S	31	Heat Resistant Super Alloys	9	11	12	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	32		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	33		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	34		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	35		8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
H	38	Hardened steel	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46

- The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.  
 Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.



**SPADE DRILL HSS-M48**

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)						
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	Ø48-65	Ø66-114
<b>P</b>	1	Non-alloy steel	<b>54</b>	<b>67</b>	<b>75</b>	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	2		<b>49</b>	<b>58</b>	<b>69</b>	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	3		<b>45</b>	<b>56</b>	<b>63</b>	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	4		<b>45</b>	<b>56</b>	<b>63</b>	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	6	Low alloy steel	<b>45</b>	<b>56</b>	<b>58</b>	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	7		<b>41</b>	<b>50</b>	<b>56</b>	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	8		<b>39</b>	<b>47</b>	<b>53</b>	0.09	0.15	0.22	0.28	0.38	0.41	0.50
	9		<b>36</b>	<b>43</b>	<b>46</b>	0.08	0.15	0.21	0.27	0.38	0.40	0.51
	10	High alloyed steel, and tool steel	<b>25</b>	<b>34</b>	<b>36</b>	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	11		<b>19</b>	<b>27</b>	<b>29</b>	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	<b>K</b>	15	Grey cast iron	<b>48</b>	<b>58</b>	<b>70</b>	0.14	0.26	0.35	0.45	0.56	0.64
16		<b>29</b>		<b>35</b>	<b>41</b>	0.10	0.15	0.16	0.23	0.28	0.35	0.40
17		Nodular cast iron	<b>48</b>	<b>58</b>	<b>70</b>	0.14	0.26	0.35	0.45	0.56	0.64	0.68
18			<b>35</b>	<b>44</b>	<b>52</b>	0.13	0.17	0.23	0.30	0.35	0.43	0.50
19		Malleable cast iron	<b>52</b>	<b>64</b>	<b>75</b>	0.16	0.30	0.40	0.49	0.59	0.69	0.75
20			<b>35</b>	<b>44</b>	<b>52</b>	0.13	0.17	0.23	0.30	0.35	0.43	0.50
<b>N</b>	21	Aluminum-wrought alloy	<b>187</b>	<b>229</b>	<b>244</b>	0.19	0.33	0.41	0.50	0.54	0.64	0.70
	22		<b>92</b>	<b>137</b>	<b>137</b>	0.19	0.33	0.41	0.46	0.54	0.64	0.70
	27	Copper and Copper Alloys (Bronze / Brass)	<b>95</b>	<b>128</b>	<b>142</b>	0.19	0.31	0.43	0.53	0.64	0.74	0.79
<b>S</b>	31	Heat Resistant Super Alloys	<b>9</b>	<b>11</b>	<b>12</b>	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	32		<b>8</b>	<b>9</b>	<b>11</b>	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	33		<b>8</b>	<b>9</b>	<b>11</b>	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	34		<b>8</b>	<b>9</b>	<b>11</b>	0.08	0.14	0.18	0.19	0.25	0.29	0.34
	35		<b>8</b>	<b>9</b>	<b>11</b>	0.08	0.14	0.18	0.19	0.25	0.29	0.34
<b>H</b>	38	Hardened steel	<b>20</b>	<b>23</b>	<b>29</b>	0.12	0.18	0.20	0.24	0.30	0.36	0.46

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.  
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.



**SPADE DRILL CARBIDE-K10**

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)				
			TiN	TiCN	TiAlN	Ø9.5~12.5	Ø13~17.5	Ø18~24	Ø25~35	Ø36~47
<b>K</b>	15	Grey cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	16		56	70	79	0.13	0.18	0.23	0.28	0.33
	17	Nodular cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53
	18		66	81	93	0.13	0.15	0.28	0.33	0.37
	19	Malleable cast iron	98	125	137	0.18	0.30	0.37	0.46	0.56
	20		66	81	93	0.13	0.15	0.28	0.33	0.37

**SPADE DRILL CARBIDE-K20**

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)					
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47	
<b>P</b>	1	Non-alloy steel	94	110	119	0.20	0.24	0.31	0.42	0.46	
	2		76	82	96	0.15	0.22	0.29	0.36	0.40	
	3		66	70	84	0.15	0.22	0.28	0.36	0.40	
	4	Low alloy steel	66	70	84	0.15	0.22	0.28	0.36	0.40	
	6		73	81	88	0.15	0.23	0.29	0.38	0.42	
	7		66	73	81	0.15	0.21	0.28	0.37	0.41	
	8		62	70	78	0.12	0.20	0.27	0.33	0.40	
	9		53	58	64	0.10	0.18	0.23	0.30	0.38	
	10		High alloyed steel, and tool steel	50	56	67	0.09	0.18	0.22	0.28	0.31
	11			37	46	50	0.09	0.18	0.22	0.28	0.31
	<b>M</b>		12	Stainless steel	38	43	47	0.10	0.18	0.20	0.24
13		38	43		47	0.10	0.18	0.20	0.24	0.30	
14		43	49		55	0.12	0.20	0.23	0.27	0.35	
<b>K</b>	15	Grey cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53	
	16		56	70	79	0.13	0.18	0.23	0.28	0.33	
	17	Nodular cast iron	95	101	125	0.17	0.26	0.32	0.42	0.53	
	18		66	81	93	0.13	0.15	0.28	0.33	0.37	
	19	Malleable cast iron	98	125	137	0.18	0.30	0.37	0.46	0.56	
20	66		81	93	0.13	0.15	0.28	0.33	0.37		
<b>N</b>	21	Aluminum-wrought alloy	366	396	427	0.24	0.38	0.45	0.50	0.53	
	22		244	290	291	0.22	0.33	0.40	0.45	0.48	
	27	Copper and Copper Alloys (Bronze / Brass)	136	168	193	0.15	0.24	0.29	0.39	0.47	
<b>S</b>	31	Heat Resistant Super Alloys	50	55	62	0.19	0.19	0.21	0.24	0.30	
	32		38	44	46	0.15	0.17	0.20	0.21	0.25	
	33		38	44	46	0.15	0.17	0.20	0.21	0.25	
	34		38	44	46	0.15	0.17	0.20	0.21	0.25	
	35		38	44	46	0.15	0.17	0.20	0.21	0.25	
<b>H</b>	38	Hardened steel	38	43	47	0.10	0.18	0.20	0.24	0.30	

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

**SPADE DRILL FLAT BOTTOM HSS-T15**

 RPM = rev./min.  
 FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc(m/min)		Feed(mm/rev)			
			TiN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35
<b>P</b>	1	Non-alloy steel	<b>54</b>	<b>60</b>	0.12	0.18	0.22	0.30
	2		<b>46</b>	<b>55</b>	0.10	0.15	0.19	0.27
	3		<b>45</b>	<b>50</b>	0.10	0.15	0.18	0.27
	4		<b>42</b>	<b>46</b>	0.08	0.14	0.17	0.22
	6	Low alloy steel	<b>45</b>	<b>46</b>	0.10	0.16	0.19	0.29
	7		<b>40</b>	<b>45</b>	0.10	0.13	0.18	0.28
	8		<b>38</b>	<b>42</b>	0.07	0.12	0.18	0.22
	9		<b>34</b>	<b>37</b>	0.06	0.12	0.17	0.22
	10	High alloyed steel, and tool steel	<b>27</b>	<b>29</b>	0.07	0.12	0.15	0.20
	11		<b>22</b>	<b>23</b>	0.07	0.12	0.15	0.20
	<b>M</b>	12	Stainless steel	<b>23</b>	<b>25</b>	0.13	0.15	0.18
13		<b>23</b>		<b>25</b>	0.13	0.15	0.18	0.22
14		<b>26</b>		<b>29</b>	0.17	0.18	0.20	0.23
<b>K</b>	15	Grey cast iron	<b>51</b>	<b>60</b>	0.12	0.21	0.29	0.40
	16		<b>38</b>	<b>48</b>	0.10	0.14	0.20	0.25
	17	Nodular cast iron	<b>51</b>	<b>60</b>	0.12	0.21	0.29	0.40
	18		<b>38</b>	<b>48</b>	0.10	0.14	0.20	0.25
	19	Malleable cast iron	<b>56</b>	<b>66</b>	0.13	0.25	0.35	0.41
	20		<b>38</b>	<b>48</b>	0.10	0.14	0.20	0.25
<b>N</b>	21	Aluminum-wrought alloy	<b>208</b>	<b>213</b>	0.17	0.28	0.36	0.43
	22		<b>112</b>	<b>121</b>	0.17	0.28	0.36	0.41
	27	Copper and Copper Alloys (Bronze / Brass)	<b>48</b>	<b>70</b>	0.15	0.26	0.37	0.45
<b>S</b>	31	Heat Resistant Super Alloys	<b>20</b>	<b>10</b>	0.06	0.14	0.16	0.19
	32		<b>7</b>	<b>9</b>	0.06	0.11	0.14	0.15
	33		<b>7</b>	<b>9</b>	0.06	0.11	0.14	0.15
	34		<b>7</b>	<b>9</b>	0.06	0.11	0.14	0.15
	35		<b>7</b>	<b>9</b>	0.06	0.11	0.14	0.15
<b>H</b>	38	Hardened steel	<b>23</b>	<b>25</b>	0.13	0.15	0.18	0.22

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.  
 Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

 i-ONE  
 DRILLS

 i-DREAM  
 DRILLS

 DREAM  
 DRILLS  
 -PRO

 DREAM  
 DRILLS  
 -GENERAL

 DREAM  
 DRILLS  
 -HIGH FEED

 DREAM  
 DRILLS  
 -FLAT BOTTOM

 DREAM  
 DRILLS  
 -INOX

 DREAM  
 DRILLS  
 -ALU

 DREAM  
 DRILLS  
 -MQL

 DREAM DRILLS  
 for HIGH  
 HARDENED STEELS

 GENERAL  
 CARBIDE  
 DRILLS

 MULTI-1  
 DRILLS

 HPD  
 DRILLS

 GOLD-P  
 DRILLS

 SUPER-GP  
 DRILLS

 STRAIGHT  
 SHANK  
 DRILLS

 TAPER SHANK  
 DRILLS

 NC-  
 SPOTTING  
 DRILLS

 CENTER  
 DRILLS

**SPADE  
 DRILLS**

REAMERS

 COUNTER  
 SINKS

 COUNTER  
 BORES

 TECHNICAL  
 DATA



**SPADE DRILL CARBIDE-P40**

RPM = rev./min.  
FEED = mm/rev.

ISO	VDI 3323	Material Description	Vc(m/min)			Feed(mm/rev)				
			TiN	TiCN	TiAlN	Ø9.5-12.5	Ø13-17.5	Ø18-24	Ø25-35	Ø36-47
<b>P</b>	1	Non-alloy steel	<b>94</b>	<b>110</b>	<b>119</b>	0.20	0.24	0.31	0.42	0.46
	2		<b>76</b>	<b>82</b>	<b>96</b>	0.15	0.22	0.29	0.36	0.40
	3		<b>66</b>	<b>70</b>	<b>84</b>	0.15	0.22	0.28	0.36	0.40
	4		<b>66</b>	<b>70</b>	<b>84</b>	0.15	0.22	0.28	0.36	0.40
	6	Low alloy steel	<b>73</b>	<b>81</b>	<b>88</b>	0.15	0.23	0.29	0.38	0.42
	7		<b>66</b>	<b>73</b>	<b>81</b>	0.15	0.21	0.28	0.37	0.41
	8		<b>62</b>	<b>70</b>	<b>78</b>	0.12	0.20	0.27	0.33	0.40
	9		<b>53</b>	<b>58</b>	<b>64</b>	0.10	0.18	0.23	0.30	0.38
	10		High alloyed steel, and tool steel	<b>50</b>	<b>56</b>	<b>67</b>	0.09	0.18	0.22	0.28
	11	<b>37</b>		<b>46</b>	<b>50</b>	0.09	0.18	0.22	0.28	0.31
	<b>M</b>	12	Stainless steel	<b>38</b>	<b>43</b>	<b>47</b>	0.10	0.18	0.20	0.24
13		<b>38</b>		<b>43</b>	<b>47</b>	0.10	0.18	0.20	0.24	0.30
14		<b>43</b>		<b>49</b>	<b>55</b>	0.12	0.20	0.23	0.27	0.35
<b>K</b>	15	Grey cast iron	<b>95</b>	<b>101</b>	<b>125</b>	0.17	0.26	0.32	0.42	0.53
	16		<b>56</b>	<b>70</b>	<b>79</b>	0.13	0.18	0.23	0.28	0.33
	17	Nodular cast iron	<b>95</b>	<b>101</b>	<b>125</b>	0.17	0.26	0.32	0.42	0.53
	18		<b>66</b>	<b>81</b>	<b>93</b>	0.13	0.15	0.28	0.33	0.37
	19		Malleable cast iron	<b>98</b>	<b>125</b>	<b>137</b>	0.18	0.30	0.37	0.46
20	<b>66</b>	<b>81</b>		<b>93</b>	0.13	0.15	0.28	0.33	0.37	
<b>N</b>	21	Aluminum-wrought alloy	<b>366</b>	<b>396</b>	<b>427</b>	0.24	0.38	0.45	0.50	0.53
	22		<b>244</b>	<b>290</b>	<b>291</b>	0.22	0.33	0.40	0.45	0.48
	27	Copper and Copper Alloys (Bronze / Brass)	<b>136</b>	<b>168</b>	<b>193</b>	0.15	0.24	0.29	0.39	0.47
<b>S</b>	31	Heat Resistant Super Alloys	<b>50</b>	<b>55</b>	<b>62</b>	0.19	0.19	0.21	0.24	0.30
	32		<b>38</b>	<b>44</b>	<b>46</b>	0.15	0.17	0.20	0.21	0.25
	33		<b>38</b>	<b>44</b>	<b>46</b>	0.15	0.17	0.20	0.21	0.25
	34		<b>38</b>	<b>44</b>	<b>46</b>	0.15	0.17	0.20	0.21	0.25
	35		<b>38</b>	<b>44</b>	<b>46</b>	0.15	0.17	0.20	0.21	0.25
<b>H</b>	38	Hardened steel	<b>38</b>	<b>43</b>	<b>47</b>	0.10	0.18	0.20	0.24	0.30

► The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

- i-ONE DRILLS
- i-DREAM DRILLS
- DREAM DRILLS -PRO
- DREAM DRILLS -GENERAL
- DREAM DRILLS -HIGH FEED
- DREAM DRILLS -FLAT BOTTOM
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL
- DREAM DRILLS for HIGH HARDENED STEELS
- GENERAL CARBIDE DRILLS
- MULTI-1 DRILLS
- HPD DRILLS
- GOLD-P DRILLS
- SUPER-GP DRILLS
- STRAIGHT SHANK DRILLS
- TAPER SHANK DRILLS
- NC-SPOTTING DRILLS
- CENTER DRILLS
- SPADE DRILLS**
- REAMERS
- COUNTER SINKS
- COUNTER BORES
- TECHNICAL DATA