

ST07



i-Dream Drill



YG-1 CO., LTD.

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YG-1 CO., LTD.

YG1E1080923002



Feature of *i-Dream Drill*

i-Dream Drill :

- By using advanced drill point technology, centering and reaming are eliminated, and accurate, consistent hole size is easily attainable.
- The newest coatings combined with tough long lasting carbide substrates, allow high penetration rates and long tool life.
- The strong and accurate insert locking system allows easy access and quick insert replacement while the drill is mounted in the machine.

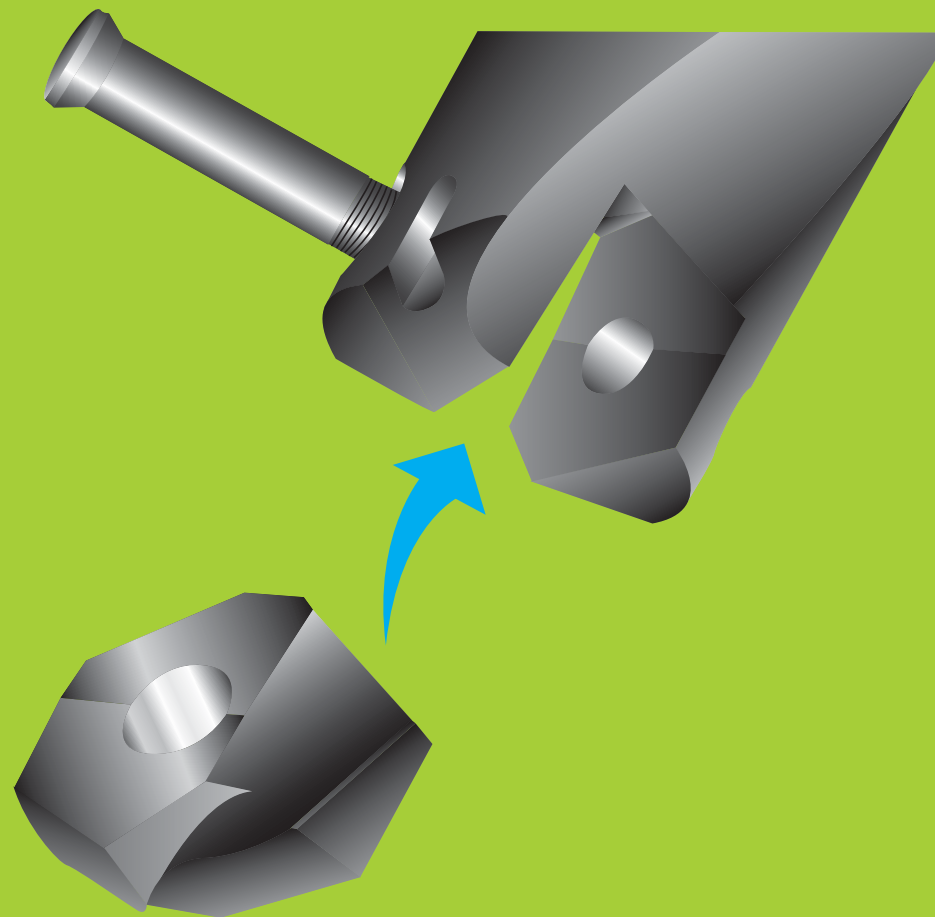
i-Dream Drill Holder :

- The holder, made of a highly wear resistant Steel alloy, is designed to allow maximum coolant flow and unrestricted chip removal during the drilling cycle.

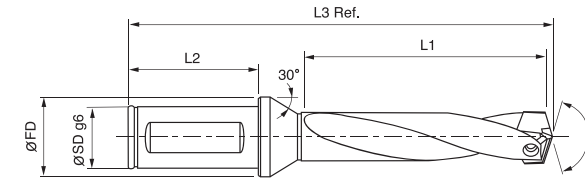
Speed and Feed :

- The speeds and feeds recommended as shown are for ideal working conditions with adequate coolant pressure.
- It recommended to consider on new jobs 10 ~ 20% lower speeds and feeds as a starting point.

HIGH PERFORMANCE & OPTIMAL COST

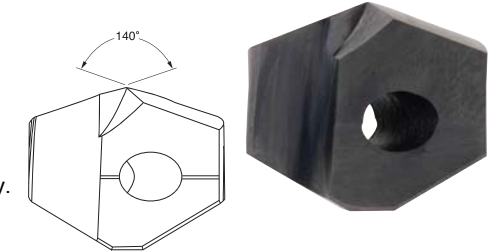


i-Dream Drill INSERTS & HOLDERS



-Feature of *i-Dream Drill Holder*-

- ▶ Special Alloy Steel that maintains its hardness and toughness under high temperatures.
- ▶ Innovative surface treatment that improves wear resistance and reduces corrosion.
- ▶ High Performance flute design allowing maximum chip evacuation and minimum interference.

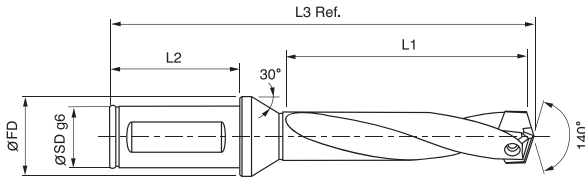


-Feature of *i-Dream Drill Insert*-

- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

Series Range (mm)	Insert EDP No. (TiAlN)	Insert O.D. (h7)			Drilling Depth	Holder EDP No.	Shank Dia. SD g6	Shank Length L2	Flange Dia. FD	Flute Length(L1)			Overall Length (L3) Ref.			Torx No.
		dec.	frac.	mm						3xD	5xD	7xD	3xD	5xD	7xD	
A Ø12.00 to Ø13.99	YA1A1200	0.4724		12.00	3D	ZH12003020	20	50	25	52	77	101	121	146	170	TX1213T08
	YA1A1210	0.4764		12.10	5D	ZH12005020										
	YA1A1220	0.4803		12.20	7D	ZH12007020										
	YA1A1230	0.4844	31/64	12.30	3D	ZH12503020	20	50	25	54	80	106	122	148	174	
	YA1A1250	0.4921		12.50												
	YA1A1260	0.4961		12.60												
	YA1A1270	0.5000	1/2	12.70	5D	ZH12505020	20	50	25	56	83	110	124	151	178	
	YA1A1280	0.5039		12.80	7D	ZH12507020										
	YA1A1290	0.5079		12.90	3D	ZH13003020										
	YA1A1300	0.5118		13.00												
	YA1A1310	0.5156	33/64	13.10			5D	ZH13005020								
	YA1A1320	0.5197		13.20	7D	ZH13007020	20	50	25	59	88	117	126	155	184	
	YA1A1349	0.5312	17/32	13.49												
	YA1A1350	0.5315		13.50	3D	ZH13503020										
YA1A1360	0.5354		13.60													
YA1A1370	0.5394		13.70	5D			ZH13505020									
YA1A1380	0.5433		13.80	7D	ZH13507020	20	50	25	63	94	125	130	161	192		
YA1A1389	0.5469	35/64	13.89													
YB1A1400	0.5512		14.00	3D	ZH14003020										20	50
YB1A1410	0.5551		14.10													
YB1A1420	0.5591		14.20			5D	ZH14005020									
YB1A1429	0.5625	9/16	14.29	7D	ZH14007020	20	50	25	66	98	129	132	164	195		
YB1A1430	0.5630		14.30													
YB1A1440	0.5669		14.40	3D	ZH14503020										20	50
YB1A1450	0.5709		14.50													
YB1A1460	0.5748		14.60			5D	ZH14505020									
YB1A1468	0.5781	37/64	14.68	7D	ZH14507020	20	50	25	70	102	133	136	169	199		
YB1A1480	0.5827		14.80													
YB1A1500	0.5906		15.00	3D	ZH15003020										20	50
YB1A1508	0.5938	19/32	15.08													
YB1A1510	0.5945		15.10			5D	ZH15005020									
YB1A1520	0.5984		15.20	7D	ZH15007020	20	50	25	74	106	137	140	173	203		
YB1A1530	0.6024		15.30													
YB1A1548	0.6094	39/64	15.48	3D	ZH15503020										20	50
YB1A1550	0.6102		15.50													
YB1A1560	0.6142		15.60			5D	ZH15505020									
YB1A1570	0.6181		15.70	7D	ZH15507020	20	50	25	78	110	141	144	177	207		
YB1A1580	0.6220		15.80													
YB1A1587	0.6250	5/8	15.87													

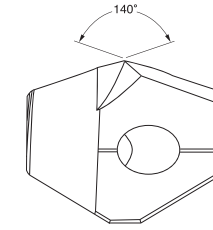
i-Dream Drill INSERTS & HOLDERS



-Feature of i-Dream Drill Holder-

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i-Dream Drill INSERTS & HOLDERS



-Feature of i-Dream Drill Insert-

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Series Range (mm)	Insert EDP No. (TiAlN)	Insert O.D. (h7)			Drilling Depth	Holder EDP No.	Shank Dia. SD g6	Shank Length L2	Flange Dia. FD	Flute Length(L1)			Overall Length (L3) Ref.			Torx No.
		dec.	frac.	mm						3xD	5xD	7xD	3xD	5xD	7xD	
C Ø16.00 to Ø17.99	YC1A1600	0.6299		16.00	3D 5D 7D	ZH16003020 ZH16005020 ZH16007020	20	50	25	65	98	131	131	164	197	TX1617T08
	YC1A1609	0.6335		16.09												
	YC1A1620	0.6378		16.20												
	YC1A1627	0.6406	41/64	16.27	3D 5D 7D	ZH16503020 ZH16505020 ZH16507020	20	50	25	67	101	134	133	167	200	
	YC1A1630	0.6417		16.30												
	YC1A1650	0.6496		16.50												
	YC1A1667	0.6562	21/32	16.67	3D 5D 7D	ZH17003020 ZH17005020 ZH17007020	20	50	25	69	104	139	134	169	204	
	YC1A1680	0.6614		16.80												
	YC1A1700	0.6693		17.00												
	YC1A1707	0.6919	43/64	17.07	3D 5D 7D	ZH17503020 ZH17505020 ZH17507020	20	50	25	70	106	142	135	171	207	
	YC1A1746	0.6875	11/16	17.46												
	YC1A1750	0.6890		17.50												
	YC1A1780	0.7008		17.80	3D 5D 7D	ZH18003025 ZH18005025 ZH18007025	25	56	32	72	109	146	149	186	223	
YC1A1786	0.7031	45/64	17.86													
YD1A1800	0.7087		18.00													
YD1A1826	0.7188	23/32	18.26	3D 5D 7D	ZH18503025 ZH18505025 ZH18507025	25	56	32	74	112	150	150	188	226		
YD1A1850	0.7283		18.50													
YD1A1865	0.7344	47/64	18.65													
YD1A1880	0.7402		18.80	3D 5D 7D	ZH19003025 ZH19005025 ZH19007025	25	56	32	76	115	154	152	191	230		
YD1A1900	0.7480		19.00													
YD1A1905	0.7500	3/4	19.05													
YD1A1927	0.7587		19.27	3D 5D 7D	ZH19503025 ZH19505025 ZH19507025	25	56	32	77	117	157	153	193	233		
YD1A1945	0.7656	49/64	19.45													
YD1A1950	0.7677		19.50													
YD1A1980	0.7795		19.80	3D 5D 7D	ZH20003025 ZH20005025 ZH20007025	25	56	32	77	118	159	152	193	234		
YD1A1984	0.7812	25/32	19.84													
YE1A2000	0.7874		20.00													
YE1A2024	0.7969	51/64	20.24	3D 5D 7D	ZH20503025 ZH20505025 ZH20507025	25	56	32	79	121	163	154	196	238		
YE1A2050	0.8071		20.50													
YE1A2064	0.8125	13/16	20.64													
YE1A2070	0.8150		20.70	3D 5D 7D	ZH21003025 ZH21005025 ZH21007025	25	56	32	81	124	167	156	199	242		
YE1A2100	0.8268		21.00													
YE1A2103	0.8281	53/64	21.03													
YE1A2143	0.8438	27/32	21.43	3D 5D 7D	ZH21503025 ZH21505025 ZH21507025	25	56	32	83	126	170	157	200	244		
YE1A2150	0.8465		21.50													
YE1A2170	0.8543		21.70													
YE1A2183	0.8594	55/64	21.83	3D 5D 7D	ZH22003025 ZH22005025 ZH22007025	25	56	32	85	129	174	159	203	24		
YF1A2200	0.8661		22.00													
YF1A2222	0.8750	7/8	22.22													
YF1A2250	0.8858		22.50	3D 5D 7D	ZH22503025 ZH22505025 ZH22507025	25	56	32	86	132	178	159	205	251		
YF1A2262	0.8906	57/64	22.62													
YF1A2270	0.8937		22.70													
YF1A2300	0.9055		23.00	3D 5D 7D	ZH23003025 ZH23005025 ZH23007025	25	56	32	88	135	182	161	208	255		
YF1A2302	0.9062	29/32	23.02													
YF1A2342	0.9219	59/64	23.42													
YF1A2350	0.9252		23.50	3D 5D 7D	ZH23503025 ZH23505025 ZH23507025	25	56	32	90	137	185	163	210	258		
YF1A2370	0.9331		23.70													
YF1A2381	0.9375	15/16	23.81													

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		dec.	frac.	mm						3xD	5xD	7xD	3xD	5xD	7xD	
G Ø24.00 to Ø25.99	YG1A2400	0.9449		24.00	3D 5D 7D	ZH24003032 ZH24005032 ZH24007032	32	60	37	91	140	189	172	221	270	
	YG1A2421	0.9531	61/64	24.21												
	YG1A2450	0.9646		24.50												
	YG1A2461	0.9688	31/32	24.61	3D 5D 7D	ZH24503032 ZH24505032 ZH24507032	32	60	37	93	143	193	173	223	273	
	YG1A2470	0.9724		24.70												
	YG1A2500	0.9843		25.00												
	YG1A2540	1.0000	1	25.40	3D 5D 7D	ZH25003032 ZH25005032 ZH25007032	32	60	37	95	146	197	175	226	277	
	YG1A2550	1.0039		25.50												
	YG1A2567	1.0106		25.67												
	YG1A2570	1.0118		25.70	3D 5D 7D	ZH25503032 ZH25505032 ZH25507032	32	60	37	97	148	200	177	228	280	
YG1A2580	1.0156	1*1/64	25.80													
YH1A2600	1.0236		26.00													
YH1A2619	1.0312	1*1/32	26.19	3D 5D 7D	ZH26003032 ZH26005032 ZH26007032	32	60	37	98	150	202	177	229	281		
YH1A2650	1.0433		26.50													
YH1A2659	1.0469	1*3/64	26.59													
YH1A2699	1.0625	1*1/16	26.99	3D 5D 7D	ZH26503032 ZH26505032 ZH26507032	32	60	37	99	152	205	178	231	284		
YH1A2700	1.0630		27.00													
YH1A2750	1.0827		27.50													
YH1A2778	1.0938	1*3/32	27.78	3D 5D 7D	ZH27003032 ZH27005032 ZH27007032	32	60	37	101	155	209	180	234	288		
YH1A2750	1.0827		27.50													
YH1A2778	1.0938	1*3/32	27.78													
YH1A2800	1.1024		28.00	3D 5D 7D	ZH28003032 ZH28005032 ZH28007032	32	60	37	105	161	217	183	239	295		
YH1A2818	1.1094	1*7/64	28.18													
YH1A2850	1.1220		28.50													
YH1A2858	1.1250	1*1/8	28.58	3D 5D 7D	ZH28503032 ZH28505032 ZH28507032	32	60	37	106	163	220	184	241	298		
YH1A2900	1.1417		29.00													
YH1A2937	1.1562	1*5/32	29.37													
YH1A2950	1.1614		29.50	3D 5D 7D	ZH29003032 ZH29005032 ZH29007032	32	60	37	109	168	226	186	245	303		
YH1A2977	1.1719	1*11/64	29.77													
YH1A2977	1.1719	1*11/64	29.77													
YJ1A3000	1.1811		30.00	3D 5D 7D	ZH30003032 ZH30005032 ZH30007032	32	60	37	112	172	232	189	249	309		
YJ1A3016	1.1875	1*3/16	30.16													
YJ1A3050	1.2008		30.50													
YJ1A3056	1.2031	1*11/64	30.56	3D 5D 7D	ZH30503032 ZH30505032 ZH30507032	32	60	37	114	176	238	190	252	314		
YJ1A3096	1.2188	1*7/32	30.96													
YJ1A3096	1.2188	1*7/32	30.96													
YJ1A3100	1.2205		31.00	3D 5D 7D	ZH31003032 ZH31005032 ZH31007032	32	60	37	115	177	239	191	253	315		
YJ1A3150	1.2402		31.50													
YJ1A3175	1.2500	1*1/4	31.75													

Coating : TiN, TiCN & Hardslick is available on your request.

RECOMMENDED CUTTING CONDITIONS

i-Dream Drill METRIC

Material	Tensile Strength [N/mm ²]	Hardness		Cutting Speed Vc [M/min]	Feed [mm/rev]					
		HB	HRc		Ø12.0 ~ Ø14.9	Ø15.0 ~ Ø17.9	Ø18.0 ~ Ø21.9	Ø22.0 ~ Ø26.9	Ø27.0 ~ Ø31.9	
Non-alloyed steel, Cast steel Free-machining steel	9SMn28, 9SMnPb28, 10SPb20 etc	~ 500	100 ~ 150		95~120	0.16~0.28	0.21~0.35	0.27~0.40	0.34~0.52	0.37~0.55
		500 ~ 850	150 ~ 250	~ 24	80~105	0.14~0.24	0.21~0.35	0.27~0.40	0.34~0.52	0.37~0.55
Low-alloyed steel, Cast steel(<5%) Carbon steel	C15, C22, 20Mn5, Ck45, C45 etc	~ 450	85 ~ 125		90~115	0.14~0.25	0.20~0.33	0.25~0.39	0.31~0.47	0.34~0.50
		450 ~ 755	125 ~ 225	~ 19	70~90	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.33~0.49
		755 ~ 900	225 ~ 265	19 ~ 27	60~80	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.33~0.49
		900 ~ 1200	265 ~ 350	27 ~ 37	55~70	0.10~0.16	0.15~0.25	0.21~0.30	0.25~0.38	0.29~0.43
Alloyed steel	45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 etc	~ 600	125 ~ 175	~ 7	80~100	0.14~0.24	0.17~0.28	0.22~0.32	0.30~0.46	0.34~0.50
		600 ~ 800	175 ~ 235	7 ~ 22	70~90	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.34~0.50
		800 ~ 950	235 ~ 280	22 ~ 29	60~80	0.12~0.20	0.15~0.25	0.22~0.32	0.30~0.46	0.34~0.50
		950 ~ 1110	280 ~ 330	29 ~ 35	55~70	0.10~0.16	0.13~0.21	0.21~0.30	0.25~0.38	0.29~0.43
		1110 ~ 1230	330 ~ 360	35 ~ 39	45~60	0.08~0.12	0.13~0.21	0.21~0.30	0.25~0.38	0.29~0.43
High-alloyed steel	36CrNiMo4, 41CrAlMo7 etc	600 ~ 1020	225 ~ 300	19 ~ 32	45~60	0.12~0.20	0.15~0.25	0.21~0.30	0.20~0.31	0.24~0.35
		1020 ~ 1200	300 ~ 355	32 ~ 38	40~55	0.10~0.16	0.11~0.18	0.21~0.30	0.20~0.31	0.24~0.35
		1200 ~ 1330	355 ~ 390	38 ~ 42	40~50	0.08~0.12	0.09~0.14	0.18~0.26	0.19~0.29	0.23~0.34
Structural steel	St33, St37-2, St44-2, St52, St60 etc	350 ~ 500	100 ~ 150		75~95	0.14~0.24	0.21~0.35	0.27~0.39	0.29~0.44	0.32~0.47
		500 ~ 850	150 ~ 250	~ 24	60~75	0.12~0.20	0.20~0.33	0.22~0.32	0.25~0.38	0.29~0.43
		850 ~ 1200	250 ~ 355	24 ~ 38	50~65	0.10~0.16	0.17~0.28	0.21~0.30	0.21~0.32	0.26~0.38
Tool steel	102Cr6, 105WCr6, C75W etc	500 ~ 705	150 ~ 210	~ 16	50~65	0.10~0.16	0.13~0.21	0.18~0.26	0.20~0.31	0.24~0.35
		705 ~ 950	210 ~ 280	16 ~ 29	40~50	0.10~0.16	0.13~0.21	0.18~0.26	0.20~0.31	0.24~0.35
Grey cast iron	Pearlitic, Ferritic	500 ~ 700	150 ~ 210	~ 16	100~125	0.15~0.26	0.20~0.37	0.27~0.42	0.36~0.51	0.40~0.55
		700 ~ 850	210 ~ 250	16 ~ 24	75~95	0.11~0.20	0.16~0.29	0.20~0.30	0.25~0.35	0.29~0.40
Cast iron nodular	Ferritic	540	165	4	95~120	0.13~0.22	0.17~0.31	0.21~0.32	0.28~0.40	0.32~0.44
		850	250	24	75~95	0.11~0.20	0.14~0.26	0.19~0.29	0.25~0.35	0.29~0.40
Malleable cast iron	Ferritic	450	125		100~125	0.13~0.22	0.17~0.31	0.21~0.32	0.28~0.40	0.32~0.44
		780	230	21	75~95	0.11~0.18	0.14~0.26	0.19~0.29	0.25~0.35	0.29~0.40
Aluminum alloy(Wrought)	not heat treatable	200	60		335~420	0.11~0.18	0.17~0.26	0.28~0.35	0.32~0.39	0.36~0.42
		335	100		230~290	0.13~0.22	0.29~0.45	0.38~0.48	0.51~0.61	0.56~0.66
Aluminum alloy(Cast)	≤12% Si , not heat treatable	250	75		335~420	0.21~0.37	0.31~0.49	0.41~0.52	0.47~0.57	0.50~0.59
		300	90		285~360	0.21~0.37	0.30~0.47	0.41~0.52	0.47~0.57	0.50~0.59
		450	130		205~260	0.19~0.33	0.28~0.44	0.37~0.47	0.45~0.54	0.48~0.57
Copper alloys	Free machining(Pb>1%)	370	110		115~145	0.16~0.28	0.23~0.36	0.29~0.36	0.37~0.45	0.41~0.48
		300	90		145~185	0.17~0.29	0.24~0.37	0.30~0.38	0.38~0.46	0.42~0.49
		200	100		95~120	0.06~0.09	0.09~0.13	0.11~0.13	0.15~0.18	0.19~0.22
Non ferrous materials	Duroplastics									
		Fiber plastics								
		Hard rubber								

※ Recommend Uncoated Inserts for Aluminum and Non-ferrous Materials.

※ EDP No. of Uncoated Inserts is same as Coated Inserts except the fourth letter. ("N" instead of "A")
ex) YA1N1200(Uncoated), YA1A1200(TiAlN Coated)

* Formulas :

RPM = revolution per minute (rev/min)
M/min = surface meter per minute(M/min)
DIA = diameter of drill (mm)
mm/rev = feed rate(mm/rev)

$$\begin{aligned} \text{M/min} &= \frac{(\text{RPM}) \cdot \pi \cdot (\text{DIA.})}{1000} \\ \text{mm/min} &= (\text{RPM}) \cdot (\text{mm/rev}) \\ \text{RPM} &= \frac{(\text{M/min}) \cdot 1000}{\pi \cdot (\text{DIA.})} \end{aligned}$$

- ▶ 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.
- ▶ Recommend you to reduce the feed rate to 85%,70% when you use 5xD,7xD holders.

RECOMMENDED CUTTING CONDITIONS

i-Dream Drill INCH

Material	Tensile Strength [N/mm ²]	Hardness		Cutting Speed Vc [SFM]	Feed [IPR]					
		HB	HRc		Ø31/64 ~ Ø37/64	Ø19/32 ~ Ø45/64	Ø23/32 ~ Ø55/64	Ø7/8 ~ Ø1-1/16	Ø1-3/32 ~ Ø1-1/4	
Non-alloyed steel, Cast steel Free-machining steel	9SMn28, 9SMnPb28, 10SPb20 etc	~ 500	100 ~ 150		312~394	0.006~0.011	0.008~0.014	0.011~0.016	0.013~0.020	0.015~0.022
		500 ~ 850	150 ~ 250	~ 24	262~344	0.006~0.009	0.008~0.014	0.011~0.016	0.013~0.020	0.015~0.022
Low-alloyed steel, Cast steel(<5%) Carbon steel	C15, C22, 20Mn5, Ck45, C45 etc	~ 450	85 ~ 125		295~377	0.006~0.010	0.008~0.013	0.010~0.015	0.012~0.019	0.013~0.020
		450 ~ 755	125 ~ 225	~ 19	230~295	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.019
		755 ~ 900	225 ~ 265	19 ~ 27	197~262	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.019
		900 ~ 1200	265 ~ 350	27 ~ 37	180~230	0.004~0.006	0.006~0.010	0.008~0.012	0.010~0.015	0.011~0.017
Alloyed steel	45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 etc	~ 600	125 ~ 175	~ 7	262~328	0.006~0.009	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.020
		600 ~ 800	175 ~ 235	7 ~ 22	230~295	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.020
		800 ~ 950	235 ~ 280	22 ~ 29	197~262	0.005~0.008	0.006~0.010	0.009~0.013	0.012~0.018	0.013~0.020
		950 ~ 1110	280 ~ 330	29 ~ 35	180~230	0.004~0.006	0.005~0.008	0.008~0.012	0.010~0.015	0.011~0.017
		1110 ~ 1230	330 ~ 360	35 ~ 39	148~197	0.003~0.005	0.005~0.008	0.008~0.012	0.010~0.015	0.011~0.017
High-alloyed steel	36CrNiMo4, 41CrAlMo7 etc	600 ~ 1020	225 ~ 300	19 ~ 32	148~197	0.005~0.008	0.006~0.010	0.008~0.012	0.008~0.012	0.009~0.014
		1020 ~ 1200	300 ~ 355	32 ~ 38	131~180	0.004~0.006	0.004~0.007	0.008~0.012	0.008~0.012	0.009~0.014
		1200 ~ 1330	355 ~ 390	38 ~ 42	131~164	0.003~0.005	0.004~0.006	0.007~0.010	0.007~0.011	0.009~0.013
Structural steel	St33, St37-2, St44-2, St52, St60 etc	350 ~ 500	100 ~ 150		246~312	0.006~0.009	0.008~0.014	0.011~0.015	0.011~0.017	0.013~0.019
		500 ~ 850	150 ~ 250	~ 24	197~246	0.005~0.008	0.008~0.013	0.009~0.013	0.010~0.015	0.011~0.017
		850 ~ 1200	250 ~ 355	24 ~ 38	164~213	0.004~0.006	0.007~0.011	0.008~0.012	0.008~0.013	0.010~0.015
Tool steel	102Cr6, 105WCr6, C75W etc	500 ~ 705	150 ~ 210	~ 16	164~213	0.004~0.006	0.005~0.008	0.007~0.010	0.008~0.012	0.009~0.014
		705 ~ 950	210 ~ 280	16 ~ 29	131~164	0.004~0.006	0.005~0.008	0.007~0.010	0.008~0.012	0.009~0.014
Grey cast iron	Pearlitic, Ferritic	500 ~ 700	150 ~ 210	~ 16	328~410	0.006~0.010	0.008~0.015	0.011~0.017	0.014~0.020	0.016~0.022
		700 ~ 850	210 ~ 250	16 ~ 24	246~312	0.004~0.008	0.006~0.011	0.008~0.012	0.010~0.014	0.011~0.016
Cast iron nodular	Ferritic	540	165	4	312~394	0.005~0.009	0.007~0.012	0.008~0.013	0.011~0.016	0.013~0.017
		850	250	24	246~312	0.004~0.008	0.006~0.010	0.007~0.011	0.010~0.014	0.011~0.016
Malleable cast iron	Ferritic	450	125		328~410	0.005~0.009	0.007~0.012	0.008~0.013	0.011~0.016	0.013~0.017
		780	230	21	246~312	0.004~0.007	0.006~0.010	0.007~0.011	0.010~0.014	0.011~0.016
Aluminum alloy(Wrought)	not heat treatable	200	60		1099~1378	0.004~0.007	0.007~0.010	0.011~0.014	0.013~0.015	0.014~0.017
		335	100		755~951	0.005~0.009	0.011~0.018	0.015~0.019	0.020~0.024	0.022~0.026
Aluminum alloy(Cast)	≤12% Si , not heat treatable	250	75		1099~1378	0.008~0.015	0.012~0.019	0.016~0.020	0.019~0.022	0.020~0.023
		300	90		935~1181	0.008~0.015	0.012~0.019	0.016~0.020	0.019~0.022	0.020~0.023
		450	130		673~853	0.007~0.013	0.011~0.017	0.015~0.019	0.018~0.021	0.019~0.022
Copper alloys	Free machining(Pb>1%)	370	110		377~476	0.006~0.011	0.009~0.014	0.011~0.014	0.015~0.018	0.016~0.019
		300	90		476~607	0.007~0.011	0.009~0.015	0.012~0.015	0.015~0.018	0.017~0.019
		200	100		312~394	0.002~0.004	0.004~0.005	0.004~0.005	0.006~0.007	0.007~0.009
Non ferrous materials	Duroplastics									
		Fiber plastics								
		Hard rubber								

※ Recommend Uncoated Inserts for Aluminum and Non-ferrous Materials.

※ EDP No. of Uncoated Inserts is same as Coated Inserts except the fourth letter. ("N" instead of "A")
ex) YA1N1200(Uncoated), YA1A1200(TiAlN Coated)

* Formulas :

RPM = revolution per minute (rev/min)
SFM = surface feet per minute (ft/min)
DIA = diameter of drill (inch)
IPR = feed rate (inch/rev)
IPM = inch per minute penetration rate

$$\begin{aligned} \text{SFM} &= \frac{(\text{RPM}) \cdot \pi \cdot (\text{DIA.})}{12} \\ \text{IPM} &= (\text{RPM}) \cdot (\text{IPR}) \\ \text{RPM} &= \frac{(\text{SFM}) \cdot 12}{\pi \cdot (\text{DIA.})} \end{aligned}$$

- ▶ 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.
- ▶ Recommend you to reduce the feed rate to 85%,70% when you use 5xD,7xD holders.

Assembly of *i-Dream Drill*



Make sure to clean the insert and insert seat.



Slide the drill insert into the slot of the holder and press down the insert to touch the bottom of the slot.



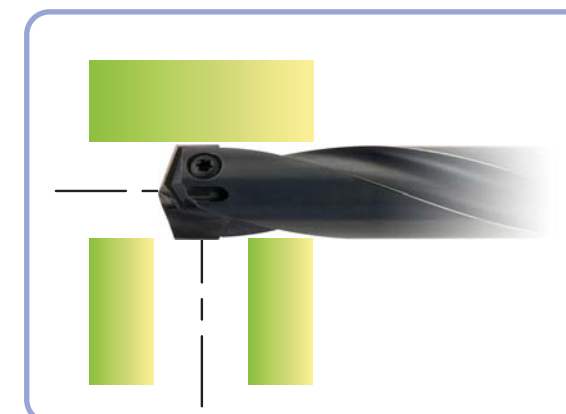
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.



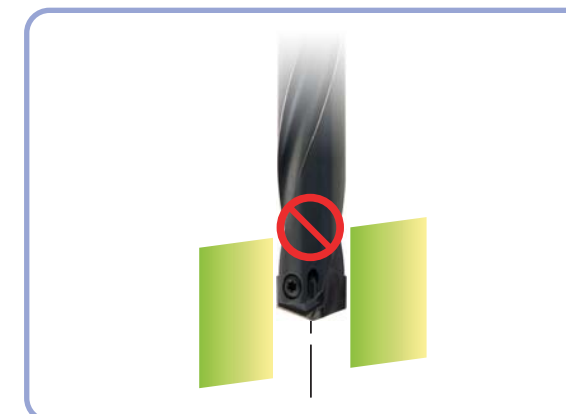
Use the wing type or T-type wrench.

- ▶ Need to use appropriate wrenches and screws as indicated.
- ▶ It's important to tighten up the screw properly.

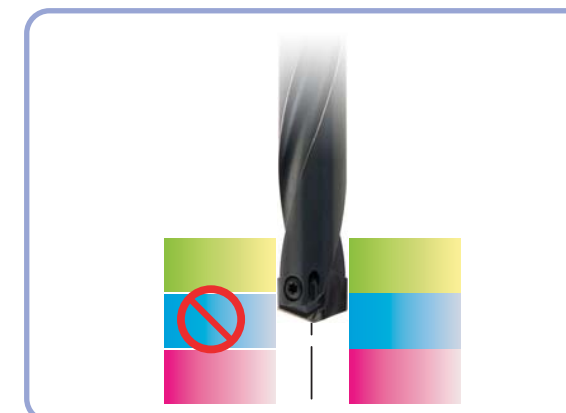
Caution and Not-recommendable application



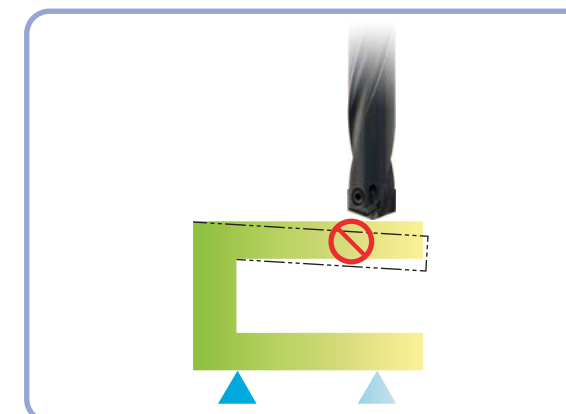
Intersecting cross hole is bigger than the drill insert's Margin Length.



Material with slanting entrance and exit over 7 degree. (If drilling 7 degree or under slanting surface, reduce the feed about 30-50 %)

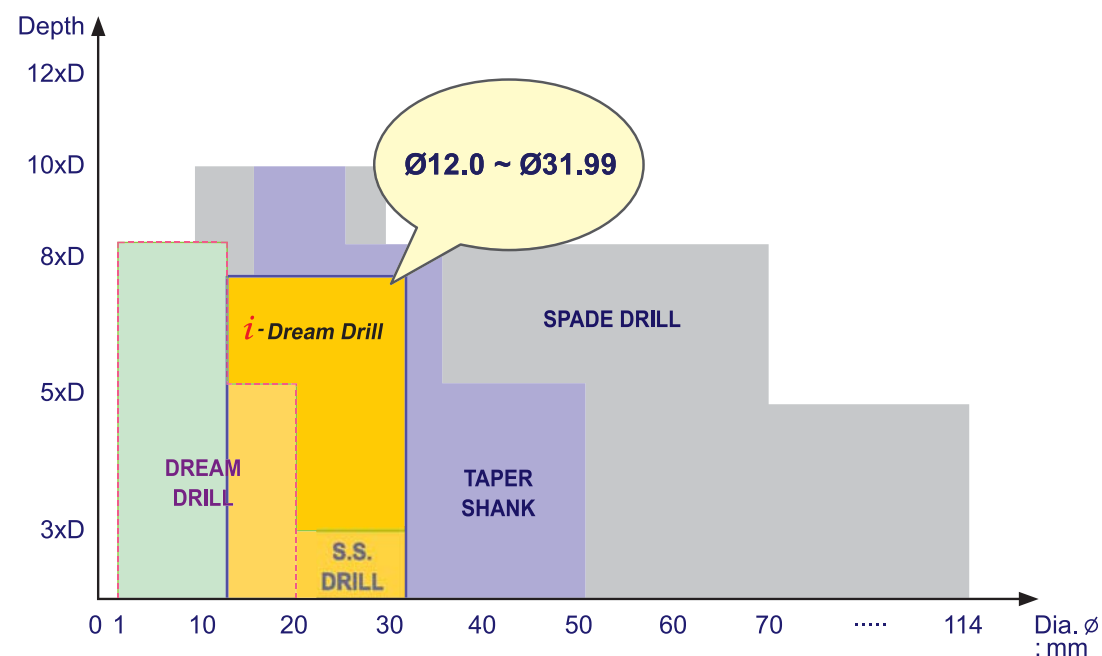


For drilling stacked plates, minimize the space between the plates. The space stacked plates can cause insert breakage or poor chip control.



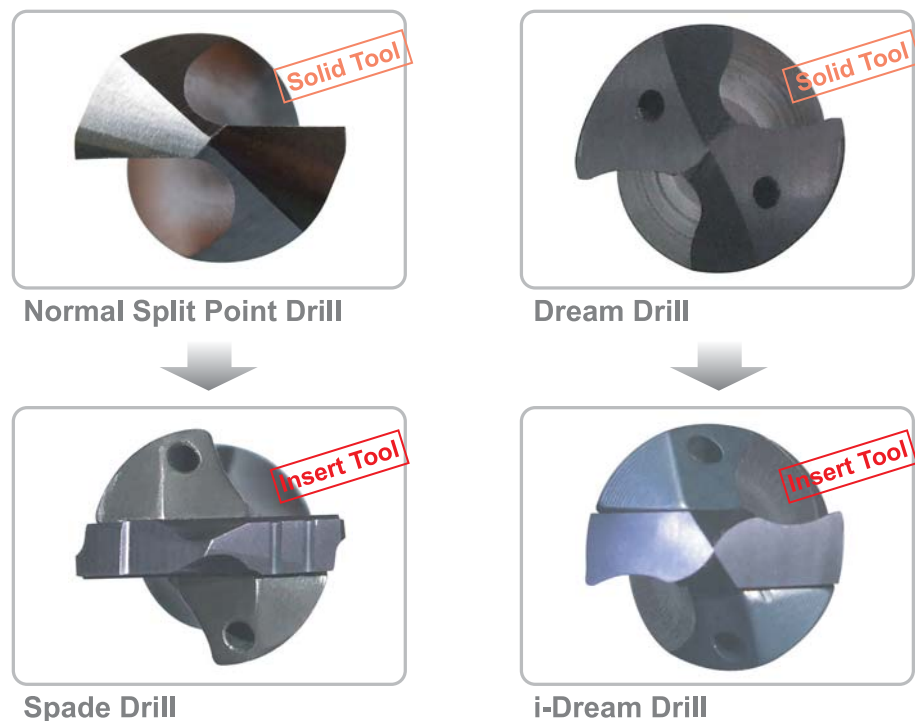
The material needs to be fixtured securely before drilling.

i-Dream Drill Portion in YG-1 Drill Products



Features of i-Dream Drill

Comparison with Split Point Drill, Spade Drill, Dream Drill



Case Study

TOOL

HOLDER	ZH14505020
INSERT	YB1A1450 / Ø14.5

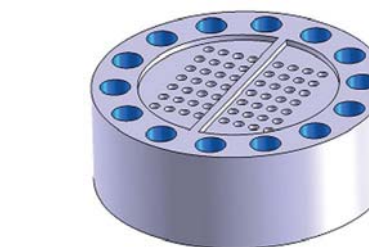
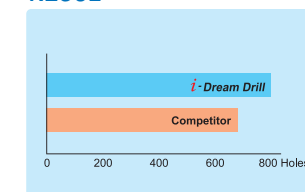
WORKPIECE-Structural Steel

ASTM	A36
DIN	St37-2
JIS	SS400

CONDITIONS

Cutting Speed	80 m/min
Feed	0.24 mm/rev.
Feedrate	474 mm/min
RPM	1975 rev./min
Drilling	48.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



TOOL

HOLDER	ZH24003032
INSERT	YB1A2400 / Ø24.0

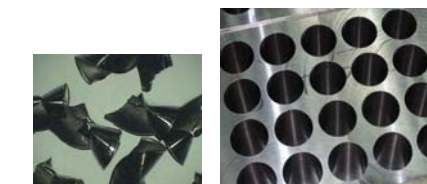
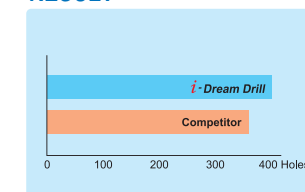
WORKPIECE-Carbon Steel

AISI	1045
DIN	C45
JIS	S45C

CONDITIONS

Cutting Speed	92 m/min
Feed	0.35 mm/rev.
Feedrate	427 mm/min
RPM	1220 rev./min
Drilling	72.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



TOOL

HOLDER	ZH14005020
INSERT	YB1A1400 / Ø14.0

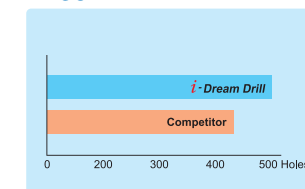
WORKPIECE-Alloy Steel(HB286)

AISI	4140
DIN	45CrMo4
JIS	SCM440

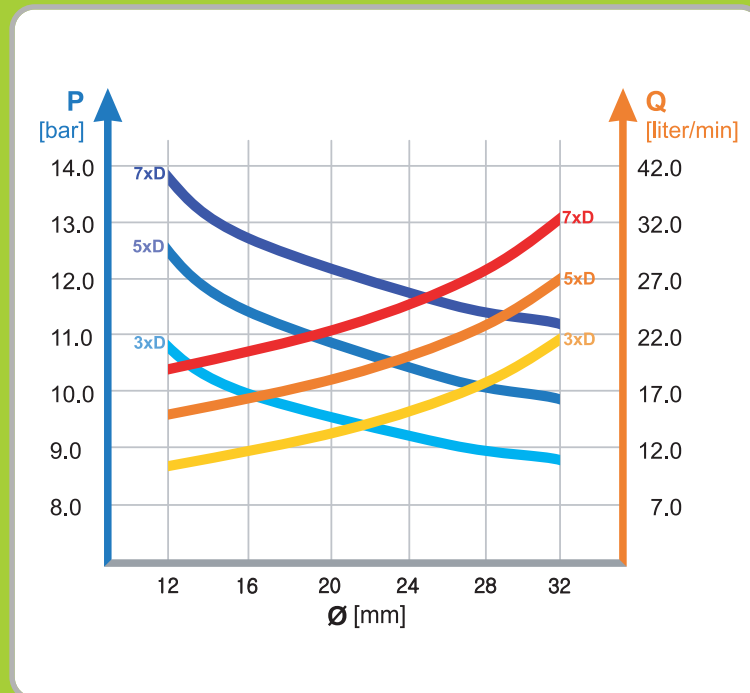
CONDITIONS

Cutting Speed	70 m/min
Feed	0.15 mm/rev.
Feedrate	239 mm/min
RPM	1590 rev./min
Drilling	70.0 mm
Coolant	Internal
Machine type	NC lathe

RESULT



Recommended Coolant Pressure and Flow Rate on Vertical Drilling



- Recommended emulsion mix is 6% - 8%.
- For Drilling in Stainless and High Strength steels, a mix of 10% is recommended.
- For horizontal drilling, 30% reduction on the coolant pressure and flow rate is possible.
- Dry drilling is possible for 1-2xD drilling. But not recommended.

Trouble shooting



Heavy flank wear / Fast flank wear

- Reduce cutting speed
- Increase feed



Chipping on cutting edge

- Reduce feed
- Check the rigidity of spindle and chuck
- Rigid clamping of workpiece



Build up on cutting edge

- Increase cutting speed
- Use a coated insert



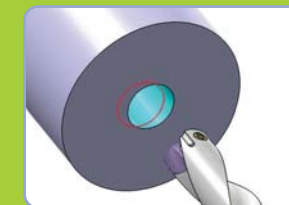
Chipping or break down on outer corner

- Reduce feed
- Rigid clamping of workpiece



Wear of land margin

- Rigid clamping of workpiece
- Reduce cutting speed
- Increase coolant flow



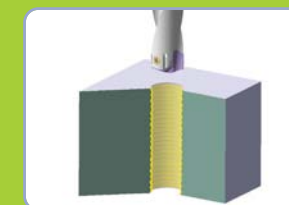
Unsatisfactory positioning of the hole

- Rigid clamping of workpiece
- Reduce feed during entrance or exit



Scratching on holder

- Rigid clamping of workpiece
- Reduce feed
- Increase coolant flow



Unsatisfactory surface finish

- Rigid clamping of workpiece
- Increase coolant flow and pressure