i-Dream Drills

YC1A / YC2C
YD1A / YD2C

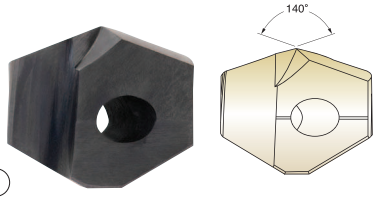
i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

- Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

i-Dream Drill ***General*** */ i-Dream Drill* ***allgemeinen***
- For most steels materials / In den meisten Stahlsorten

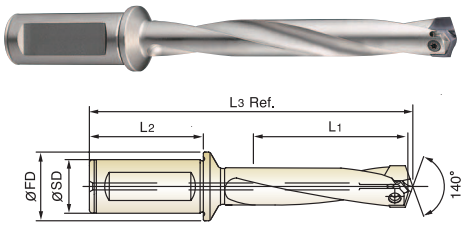
i-Dream Drill ***INOX*** */ i-Dream Drill* ***INOX***
- For tough,ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- Light,sharp cutting edge / Scharfe Schneidkante
- Soft cutting action / Weicher Schnitt
- Minimize cutting forces / Minimaler Schneidendruck
- Reduce built-up edge / Reduzierte Gratbildung



cutting conditions : p.50~51

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

- Special Alloy Steels maintain its hardness and toughness under high temperatures.
  Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
- Innovative surface treatment improves wear resistance and reduces corrosion.
  Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
- High Performance flute design allows maximum chip evacuation and minimum interference.
  Optimierte Nutenform für maximale Spanabfuhr.



Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 Ref.	
(mm)													
C Ø16.00 to Ø17.99	YC1A1700	YC2C1700	0.6693		17.00	ZH17003020	20	50	25	3D	51	128.0	TX1718T08
	YC1A1707	YC2C1707	0.6719	43/64	17.07	ZH17005020				5D	85	162.0	
	YC1A1746	YC2C1746	0.6875	11/16	17.46	ZH17007020				7D	119	196.0	
	YC1A1750	YC2C1750	0.6890		17.50	ZH17503020	20	50	25	3D	52.5	130.0	
	YC1A1780	YC2C1780	0.7008		17.80	ZH17505020				5D	87.5	165.0	
	YC1A1786	YC2C1786	0.7031	45/64	17.86	ZH17507020				7D	122.5	200.0	
D Ø18.00 to Ø19.99	YD1A1800	YD2C1800	0.7087		18.00	ZH18003025	25	56	32	3D	54	140.3	TX1819T15
	YD1A1826	YD2C1826	0.7188	23/32	18.26	ZH18005025				5D	90	176.3	
						ZH18007025				7D	126	212.3	
	YD1A1850	YD2C1850	0.7283		18.50	ZH18503025	25	56	32	3D	55.5	141.3	
	YD1A1865	YD2C1865	0.7344	47/64	18.65	ZH18505025				5D	92.5	178.3	
	YD1A1880	YD2C1880	0.7402		18.80	ZH18507025				7D	129.5	215.3	
	YD1A1900	YD2C1900	0.7480		19.00	ZH19003025	25	56	32	3D	57	144.3	TX1920T15
	YD1A1905	YD2C1905	0.7500	3/4	19.05	ZH19005025				5D	95	182.3	
	YD1A1927	YD2C1927	0.7587		19.27	ZH19007025				7D	133	220.3	
	YD1A1945	YD2C1945	0.7656	49/64	19.45								
	YD1A1950	YD2C1950	0.7677		19.50	ZH19503025	25	56	32	3D	58.5	145.3	
	YD1A1980	YD2C1980	0.7795		19.80	ZH19505025				5D	97.5	184.3	
	YD1A1984	YD2C1984	0.7812	25/32	19.84	ZH19507025				7D	136.5	223.3	

- TiN, TiCN, TiAlN & Hardslick are available on your request.
- 10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

METRIC

Material Werkstück			Tensile Strength [N/mm²]	Hardness HB	Hardness HRc	Cutting Speed Vc [M/min]	Feed [mm/rev] Ø12.0 ~Ø14.9	Ø15.0 ~Ø17.9	Ø18.0 ~Ø21.9	Ø22.0 ~Ø26.9	Ø27.0 ~Ø31.9
Non-alloyed steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28, 10SPb20 etc	Y□1A / Y□2C	~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 steels, Cast steels(<5%) Carbon steels	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 steels	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 steels	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 steels	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 steels	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
	Pearlitic		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
	Pearlitic		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
	Pearlitic		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 alloys (Wrought)	not heat treatable			65		250~330	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55	0.50~0.60
	hardened			150		200~250	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55	0.50~0.60
Aluminum alloys (Cast)	≤12% Si, not heat treatable			75		200~50	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55
	≤12% Si, hardened			90		150~220	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55
	>12% Si, not heat treatable			130		100~200	0.20~0.30	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50
Copper alloys	Free machining(Pb>1%)			110		115~145	0.16~0.28	0.23~0.36	0.29~0.36	0.37~0.45	0.41~0.48
	Brass			90		145~185	0.17~0.29	0.24~0.37	0.30~0.38	0.38~0.46	0.42~0.49
	Electrolitic copper			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 material	Duroplastics										
	Fiber plastics										
	Hard rubber										
Stainless steels	Austenitic and Austenitic/ferritic	Y□2C	450~610	135~185	~9	45~60	0.10~0.16	0.12~0.18	0.14~0.20	0.15~0.26	0.18~0.28
			610~930	185~275	9~28	30~45	0.08~0.14	0.09~0.15	0.10~0.16	0.12~0.20	0.14~0.22

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)

*Formulas :

$$\text{M/min} = \frac{(\text{RPM}) \cdot \pi \cdot (\text{DIA.})}{1000}$$

$$\text{mm/min} = (\text{RPM}) \cdot (\text{mm/rev})$$

$$\text{RPM} = \frac{(\text{M/min}) \cdot 1000}{(\pi) \cdot (\text{DIA.})}$$

▶ 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.
▶ For use of 7xD holder, we recommend to drill a centering pre-hole with equal to or larger than 140 ° point angle to min. 2/3 cutting diameter.
The use of the centering pre-hole improves hole location , roundness and surface finish.

INCH

Material Werkstück			Tensile Strength	Hardness		Cutting Speed	Feed [IPR]				
			MPa	HB	HRc	Vc [SFM]	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 steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28, 10SPb20 etc	Y□1A / Y□2C	~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 steels, Cast steels(<5%) Carbon steels	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 steels	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 steels	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 steels	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 steels	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
	Pearlitic		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
	Pearlitic		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
	Pearlitic		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 alloys (Wrought)	not heat treatable			65		820~1083	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217	0.0197~0.0236
	hardened			150		656~820	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217	0.0197~0.0236
Aluminum alloys (Cast)	≤12% Si, not heat treatable			75		656~820	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217
	≤12% Si, hardened			90		492~722	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217
	>12% Si, not heat treatable			130		328~656	0.0079~0.0118	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197
Copper alloys	Free machining(Pb>1%)			110		377~476	0.006~0.011	0.009~0.014	0.011~0.014	0.015~0.018	0.016~0.019
	Brass			90		476~607	0.007~0.011	0.009~0.015	0.012~0.015	0.015~0.018	0.017~0.019
	Electrolitic copper			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 material	Duroplastics										
	Fiber plastics										
	Hard rubber										
Stainless steels	Austenitic and Austenitic/ferritic	Y□2C	450~610	135~185	~9	145~197	0.004~0.006	0.005~0.007	0.006~0.008	0.006~0.011	0.007~0.011
			610~930	185~275	9~28	89~145	0.003~0.005	0.004~0.006	0.004~0.006	0.005~0.008	0.006~0.009

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

*Formulas :

$$SFM = \frac{(RPM) \cdot \pi \cdot (DIA.)}{12}$$

$$IPM = (RPM) \cdot (IPR)$$

$$RPM = \frac{(SFM) \cdot 12}{(\pi) \cdot (DIA.)}$$

▶ 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.
▶ For use of 7xD holder, we recommend to drill a centering pre-hole with equal to or larger than 140 ° point angle to min. 2/3 cutting diameter.
The use of the centering pre-hole improves hole location , roundness and surface finish.