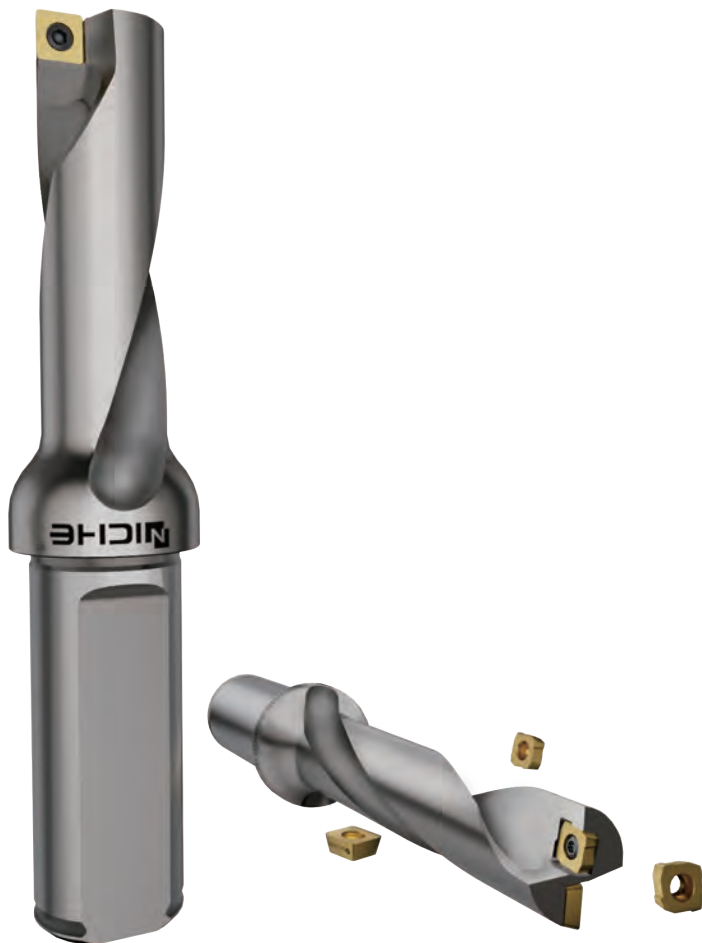
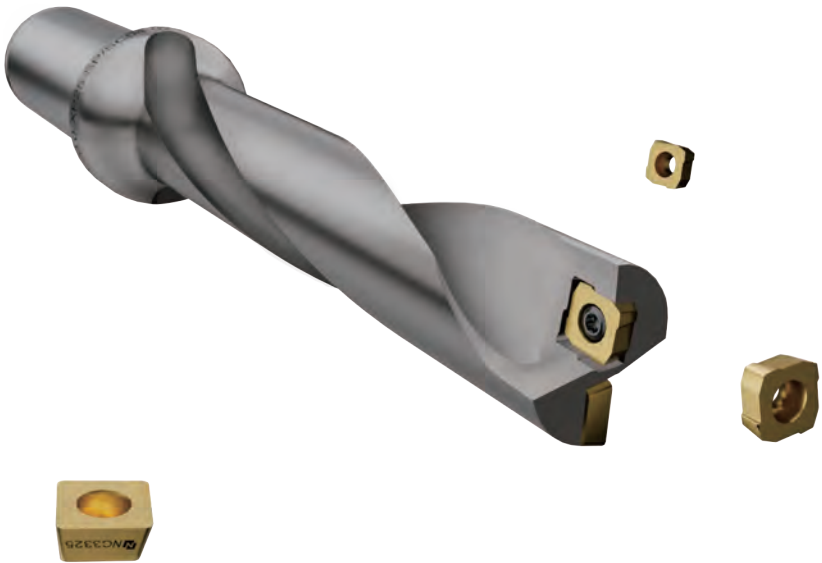


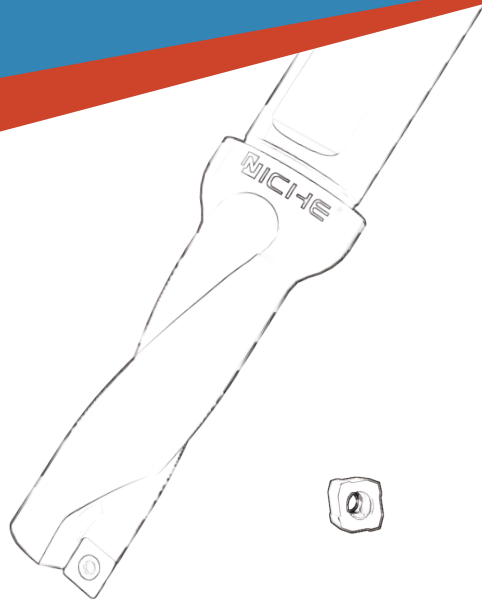
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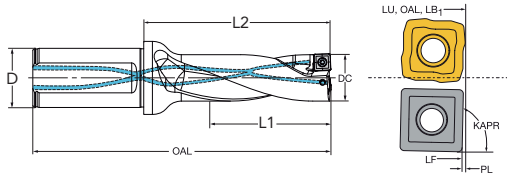
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Indexable Insert Drill

ZD03-XP-SP/SC



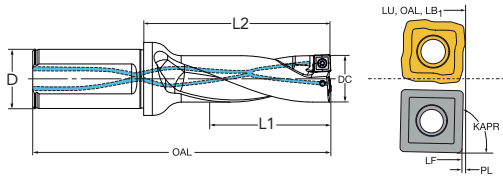
Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD03-14.0-XP20-SP/SC02-02	14	20	45	58	108	SPGX0202... SCGX0202...	ISM020045-SP/SC02	T6
ZD03-14.5-XP20-SP/SC02-02	14.5	20	47	60	110			
ZD03-15.0-XP20-SP/SC02-02	15	20	50	62	112			
ZD03-15.5-XP20-SP/SC02-02	15.5	20	52	64	114			
ZD03-16.0-XP20-SP/SC02-02	16	20	51	66	116			
ZD03-16.5-XP20-SP/SC03-02	16.5	20	53	68	118	SPGX0303... SCGX0303...	ISM022049-SP/SC03	T7
ZD03-17.0-XP25-SP/SC03-02	17	25	54	69	125			
ZD03-17.5-XP25-SP/SC03-02	17.5	25	56	72	128			
ZD03-18.0-XP25-SP/SC03-02	18	25	58	73	129			
ZD03-18.5-XP25-SP/SC03-02	18.5	25	60	75	131			
ZD03-19.0-XP25-SP/SC03-02	19	25	60	76	132			
ZD03-19.5-XP25-SP/SC03-02	19.5	25	62	79	135			
ZD03-20.0-XP25-SP/SC04-02	20	25	64	81	137	SPGX0403... SCGX0403...	ISM025072-SP/SC04	T8
ZD03-20.5-XP25-SP/SC04-02	20.5	25	65	82	138			
ZD03-21.0-XP25-SP/SC04-02	21	25	67	84	140			
ZD03-22.0-XP25-SP/SC04-02	22	25	69	87	143			
ZD03-23.0-XP25-SP/SC04-02	23	25	72	91	147			

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ZD03-XP-SP/SC

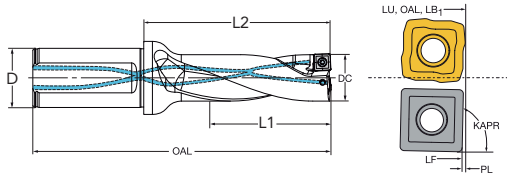


Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD03-24.0-XP25-SP/SC05-02	24	25	76	95	151	SPGX0503... SCGX0503...	ISM030082-SP/SC05	T9
ZD03-25.0-XP25-SP/SC05-02	25	25	79	99	155			
ZD03-26.0-XP32-SP/SC05-02	26	32	81	102	162			
ZD03-27.0-XP32-SP/SC05-02	27	32	85	105	165			
ZD03-28.0-XP32-SP/SC05-02	28	32	87	109	169			
ZD03-29.0-XP32-SP/SC05-02	29	32	91	112	172			
ZD03-30.0-XP32-SP/SC06-02	30	32	95	117	177	SPGX0604... SCGX0604...	ISM035094-SP/SC06	T10
ZD03-31.0-XP40-SP/SC06-02	31	40	98	121	191			
ZD03-32.0-XP40-SP/SC06-02	32	40	101	124	194			
ZD03-33.0-XP40-SP/SC06-02	33	40	104	128	198			
ZD03-34.0-XP40-SP/SC06-02	34	40	108	131	201			
ZD03-35.0-XP40-SP/SC06-02	35	40	112	135	205			
ZD03-36.0-XP40-SP/SC07-02	36	40	113	139	209	SPGX0704... SCGX0704...	ISM035094-SP/SC07	
ZD03-37.0-XP40-SP/SC07-02	37	40	117	142	212			
ZD03-38.0-XP40-SP/SC07-02	38	40	122	146	216			
ZD03-39.0-XP40-SP/SC07-02	39	40	125	149	219			
ZD03-40.0-XP40-SP/SC07-02	40	40	126	153	223			



Indexable Insert Drill

ZD04-XP-SP/SC



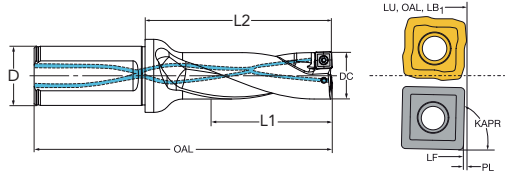
Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD04-14.0-XP20-SP/SC02-02	14	20	60	72	122	SPGX0202... SCGX0202...	ISM020045-SP/SC02	T6
ZD04-14.5-XP20-SP/SC02-02	14.5	20	63	75	125			
ZD04-15.0-XP20-SP/SC02-02	15	20	64	77	127			
ZD04-15.5-XP20-SP/SC02-02	15.5	20	66	79	129			
ZD04-16.0-XP20-SP/SC02-02	16	20	67	82	132			
ZD04-16.5-XP20-SP/SC03-02	16.5	20	70	84	134	SPGX0304... SCGX0304...	ISM022049-SP/SC03	T7
ZD04-17.0-XP25-SP/SC03-02	17	25	72	86	142			
ZD04-17.5-XP25-SP/SC03-02	17.5	25	75	89	145			
ZD04-18.0-XP25-SP/SC03-02	18	25	76	91	147			
ZD04-18.5-XP25-SP/SC03-02	18.5	25	78	93	149			
ZD04-19.0-XP25-SP/SC03-02	19	25	79	95	151			
ZD04-19.5-XP25-SP/SC03-02	19.5	25	83	99	155			
ZD04-20.0-XP25-SP/SC04-02	20	25	84	101	157	SPGX0403... SCGX0403...	ISM025072-SP/SC04	T8
ZD04-20.5-XP25-SP/SC04-02	20.5	25	87	103	159			
ZD04-21.0-XP25-SP/SC04-02	21	25	88	105	161			
ZD04-22.0-XP25-SP/SC04-02	22	25	92	109	165			
ZD04-23.0-XP25-SP/SC04-02	23	25	99	114	170			

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ZD04-XP-SP/SC

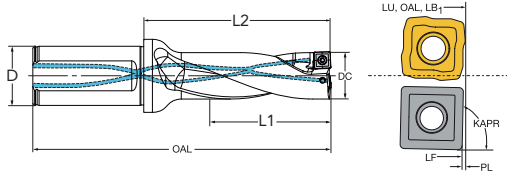


Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD04-24.0-XP25-SP/SC05-02	24	25	101	119	175	SPGX0503... SCGX0503...	ISM030082-SP/SC05	T9
ZD04-25.0-XP25-SP/SC05-02	25	25	104	124	180			
ZD04-26.0-XP32-SP/SC05-02	26	32	108	128	188			
ZD04-27.0-XP32-SP/SC05-02	27	32	112	132	192			
ZD04-28.0-XP32-SP/SC05-02	28	32	115	137	197			
ZD04-29.0-XP32-SP/SC05-02	29	32	120	141	201	SPGX0604... SCGX0604...	ISM035094-SP/SC06	T10
ZD04-30.0-XP32-SP/SC06-02	30	32	125	147	207			
ZD04-31.0-XP40-SP/SC06-02	31	40	129	152	222			
ZD04-32.0-XP40-SP/SC06-02	32	40	134	156	226			
ZD04-33.0-XP40-SP/SC06-02	33	40	138	161	231			
ZD04-34.0-XP40-SP/SC06-02	34	40	142	165	235			
ZD04-35.0-XP40-SP/SC06-02	35	40	146	170	240			
ZD04-36.0-XP40-SP/SC07-02	36	40	150	175	245			
ZD04-37.0-XP40-SP/SC07-02	37	40	154	179	249			
ZD04-38.0-XP40-SP/SC07-02	38	40	157	184	254			
ZD04-39.0-XP40-SP/SC07-02	39	40	165	188	258	SPGX0704... SCGX0704...	ISM035094-SP/SC07	
ZD04-40.0-XP40-SP/SC07-02	40	40	164	193	263			



Indexable Insert Drill

ZD05-XP-SP/SC



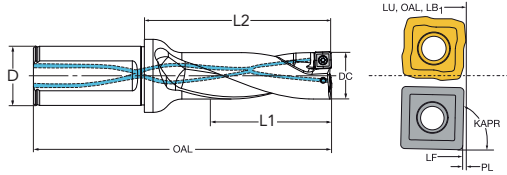
Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD05-14.0-XP20-SP/SC02-02	14	20	74	86	136	SPGX0202... SCGX0202...	ISM020045-SP/SC02	T6
ZD05-14.5-XP20-SP/SC02-02	14.5	20	77	89	139			
ZD05-15.0-XP20-SP/SC02-02	15	20	79	92	142			
ZD05-15.5-XP20-SP/SC02-02	15.5	20	82	95	145			
ZD05-16.0-XP20-SP/SC02-02	16	20	83	98	148			
ZD05-16.5-XP20-SP/SC03-02	16.5	20	87	101	202	SPGX0304... SCGX0304...	ISM022049-SP/SC03	T7
ZD05-17.0-XP25-SP/SC03-02	17	25	90	104	160			
ZD05-17.5-XP25-SP/SC03-02	17.5	25	93	107	163			
ZD05-18.0-XP25-SP/SC03-02	18	25	94	109	218			
ZD05-18.5-XP25-SP/SC03-02	18.5	25	97	112	168			
ZD05-19.0-XP25-SP/SC03-02	19	25	99	114	228			
ZD05-19.5-XP25-SP/SC03-02	19.5	25	103	118	174	SPGX0403... SCGX0403...	ISM025072-SP/SC04	T8
ZD05-20.0-XP25-SP/SC04-02	20	25	104	121	242			
ZD05-20.5-XP25-SP/SC04-02	20.5	25	108	124	180			
ZD05-21.0-XP25-SP/SC04-02	21	25	109	126	252			
ZD05-22.0-XP25-SP/SC04-02	22	25	113	131	262			
ZD05-23.0-XP25-SP/SC04-02	23	25	120	138	272			

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ZD05-XP-SP/SC



Specification	Dimensions (mm)					Insert	Screw	Wrench
	DC	D	L1	L2	OAL			
ZD05-24.0-XP25-SP/SC05-02	24	25	124	143	282	SPGX0503... SCGX0503...	ISM030082-SP/SC05	T9
ZD05-25.0-XP25-SP/SC05-02	25	25	129	149	294			
ZD05-26.0-XP32-SP/SC05-02	26	32	137	157	314			
ZD05-27.0-XP32-SP/SC05-02	27	32	139	159	318			
ZD05-28.0-XP32-SP/SC05-02	28	32	143	165	330			
ZD05-29.0-XP32-SP/SC05-02	29	32	150	171	342			
ZD05-30.0-XP32-SP/SC06-02	30	32	155	177	354	SPGX0604... SCGX0604...	ISM035094-SP/SC06	T10
ZD05-31.0-XP40-SP/SC06-02	31	40	159	183	253			
ZD05-32.0-XP40-SP/SC06-02	32	40	164	188	258			
ZD05-33.0-XP40-SP/SC06-02	33	40	170	194	264			
ZD05-34.0-XP40-SP/SC06-02	34	40	176	199	270			
ZD05-35.0-XP40-SP/SC06-02	35	40	181	205	276			
ZD05-36.0-XP40-SP/SC07-02	36	40	186	211	282	SPGX0704... SCGX0704...	ISM035094-SP/SC07	
ZD05-37.0-XP40-SP/SC07-02	37	40	191	216	286			
ZD05-38.0-XP40-SP/SC07-02	38	40	195	222	292			
ZD05-39.0-XP40-SP/SC07-02	39	40	204	228	298			
ZD05-40.0-XP40-SP/SC07-02	40	40	206	234	304			

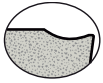


Insert For Drilling

Peripheral Insert

Geometry overview

M

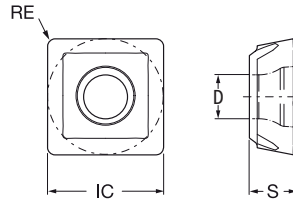


- Low cutting forces
- Low to medium feed

Grade overview

NP5330

- First choice in normal conditions in ISO P and K
- Complementary choice in stable ISO M applications



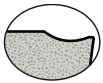
Specification	Dimensions (mm)				Drill Diameter (mm)
	IC	S	RE	D	
SPGX0202...	5.1	2.4	0.4	2.2	14.0-16.0
SPGX0303...	6.0	2.6	0.5	2.5	16.5-19.5
SPGX0403...	7.4	2.8	0.5	2.8	20.0-23.0
SPGX0503...	8.9	3.0	0.5	3.2	24.0-29.0
SPGX0604...	10.65	3.5	0.6	4	30.0-35.0
SPGX0704...	12.65	4	0.6	4	36.0-40.0

eg: SPGX020204-M NP5330, 10PCS

Central Insert

Geometry overview

M

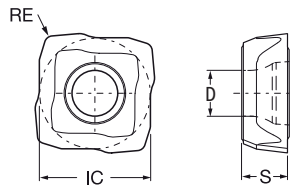


- Low cutting forces
- Low to medium feed

Grade overview

NP5330

- First choice in normal conditions in ISO P and K
- Complementary choice in stable ISO M applications



Specification	Dimensions (mm)				Drill Diameter (mm)
	IC	S	RE	D	
SCGX0202...	4.9	2.4	0.4	2.2	14.0-16.0
SCGX0303...	5.7	2.6	0.5	2.5	16.5-19.5
SCGX0403...	6.8	2.8	0.5	2.8	20.0-23.0
SCGX0503...	8.4	3	0.5	3.2	24.0-29.0
SCGX0604...	10.2	3.5	0.6	3.7	30.0-35.0
SCGX0704...	12.35	4	0.6	4	36.0-40.0

eg: SCGX020205-M NP5330, 10PCS



Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
P	12.00 - 13.99	Non hardened 0.05 - 0.10% C	90 - 200	230 - 400	-
	14.00 - 16.49				0.04 - 0.06
	16.50 - 19.99				0.04 - 0.06
	20.00 - 23.99				0.04 - 0.08
	24.00 - 29.99				0.04 - 0.08
	30.00 - 35.99				0.06 - 0.10
	36.00 - 43.99				0.06 - 0.10
	44.00 - 52.99				0.08 - 0.12
	53.00 - 63.50				0.08 - 0.12
	12.00 - 13.99	Non hardened 0.05 - 0.10% C	90 - 200	230 - 370	-
	14.00 - 16.49				0.04 - 0.06
	16.50 - 19.99				0.04 - 0.06
	20.00 - 23.99				0.04 - 0.10
	24.00 - 29.99				0.04 - 0.10
	30.00 - 35.99				0.06 - 0.12
	36.00 - 43.99				0.06 - 0.12
	44.00 - 52.99				0.08 - 0.12
	53.00 - 63.50				0.08 - 0.12
	12.00 - 13.99	Non hardened 0.25 - 0.55% C	125 - 225	190 - 305	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.06 - 0.18
	30.00 - 35.99				0.06 - 0.22
	36.00 - 43.99				0.06 - 0.24
	44.00 - 52.99				0.10 - 0.24
	53.00 - 63.50				0.10 - 0.24
	12.00 - 13.99	Non hardened 0.55 - 0.80% C	150 - 250	170 - 290	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18



Cutting Data

Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
P	24.00 - 29.99	Non hardened 0.05 - 0.10% C	90 - 200	230 - 400	0.08 - 0.18
	30.00 - 35.99				0.08 - 0.24
	36.00 - 43.99				0.08 - 0.24
	44.00 - 52.99				0.08 - 0.24
	53.00 - 63.50				0.10 - 0.24
	12.00 - 13.99	High carbon & carbon tool steel	180 - 275	200 - 290	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.08 - 0.18
	30.00 - 35.99				0.08 - 0.24
	36.00 - 43.99				0.08 - 0.24
	44.00 - 52.99				0.10 - 0.24
	53.00 - 63.50				0.10 - 0.24
	12.00 - 13.99				Low alloy steel (Non-hardened)
	14.00 - 16.49	0.04 - 0.10			
	16.50 - 19.99	0.06 - 0.14			
	20.00 - 23.99	0.06 - 0.18			
	24.00 - 29.99	0.08 - 0.18			
	30.00 - 35.99	0.06 - 0.24			
	36.00 - 43.99	0.06 - 0.24			
	44.00 - 52.99	0.10 - 0.24			
	53.00 - 63.50	0.10 - 0.24			
	12.00 - 13.99	Hardened steel	220 - 450	90 - 245	
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.08 - 0.18
	30.00 - 35.99			0.06 - 0.24	
	36.00 - 43.99			0.06 - 0.24	
44.00 - 52.99	0.10 - 0.24				
53.00 - 63.50	0.10 - 0.24				
					75 - 150



Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
P	12.00 - 13.99	High alloy steel (Annealed)	150 - 250	160 - 280	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.08 - 0.18
	30.00 - 35.99				0.06 - 0.24
	36.00 - 43.99				0.06 - 0.24
	44.00 - 52.99				0.10 - 0.24
	53.00 - 63.50				0.10 - 0.24
	12.00 - 13.99	Hardened steel	250 - 350	80 - 210	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.06 - 0.14
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.08 - 0.18
	30.00 - 35.99				0.06 - 0.20
	36.00 - 43.99				0.06 - 0.22
	44.00 - 52.99				0.10 - 0.22
	53.00 - 63.50				0.10 - 0.22
	12.00 - 13.99	S steel castings (Unalloyed)	90 - 225	140 - 365	-
	14.00 - 16.49				0.04 - 0.08
	16.50 - 19.99				0.04 - 0.08
	20.00 - 23.99				0.04 - 0.10
	24.00 - 29.99				0.04 - 0.10
	30.00 - 35.99				0.06 - 0.14
	36.00 - 43.99				0.06 - 0.14
	44.00 - 52.99				0.08 - 0.14
	53.00 - 63.50				0.08 - 0.14
	12.00 - 13.99	Low alloyed (alloying elements less than 5%)	150 - 250	110 - 265	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.04 - 0.14
	20.00 - 23.99				0.06 - 0.18



Cutting Data

Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
P	24.00 - 29.99	Low alloyed (alloying elements less than 5%)	150 - 250	110 - 265	0.08 - 0.18
	30.00 - 35.99				0.06 - 0.20
	36.00 - 43.99				0.06 - 0.22
	44.00 - 52.99				0.10 - 0.22
	53.00 - 63.50				0.10 - 0.22
M	12.00 - 13.99	Stainless steel Ferritic/ Martensitic 13-25% Cr	150 - 270	120 - 280	-
	14.00 - 16.49				0.04 - 0.08
	16.50 - 19.99				0.04 - 0.08
	20.00 - 23.99				0.06 - 0.14
	24.00 - 29.99				0.06 - 0.14
	30.00 - 35.99				0.06 - 0.16
	36.00 - 43.99				0.06 - 0.16
	44.00 - 52.99				0.10 - 0.18
	53.00 - 63.50				0.10 - 0.18
	12.00 - 13.99	Austenitic Ni > 8%, 13-25% Cr	150 - 275	120 - 265	-
	14.00 - 16.49				0.04 - 0.08
	16.50 - 19.99				0.04 - 0.08
	20.00 - 23.99				0.06 - 0.12
	24.00 - 29.99				0.06 - 0.12
	30.00 - 35.99				0.06 - 0.16
	36.00 - 43.99				0.06 - 0.16
	44.00 - 52.99				0.10 - 0.16
	53.00 - 63.50				0.10 - 0.16
	12.00 - 13.99	Austenitic/Ferritic (Duplex)	200 - 320	90 - 155	-
	14.00 - 16.49				0.04 - 0.08
	16.50 - 19.99				0.04 - 0.08
	20.00 - 23.99				0.06 - 0.12
	24.00 - 29.99				0.06 - 0.12
	30.00 - 35.99				0.06 - 0.16
36.00 - 43.99	0.06 - 0.16				
44.00 - 52.99	0.10 - 0.16				
53.00 - 63.50	0.10 - 0.16				



Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
M	12.00 - 13.99	Austenitic castings	150 - 250	150 - 210 115 - 185 80 - 165 80 - 155	-
	14.00 - 16.49				0.04 - 0.08
	16.50 - 19.99				0.04 - 0.08
	20.00 - 23.99				0.06 - 0.12
	24.00 - 29.99				0.06 - 0.12
	30.00 - 35.99				0.06 - 0.16
	36.00 - 43.99				0.06 - 0.16
	44.00 - 52.99				0.10 - 0.16
	53.00 - 63.50				0.10 - 0.16
S	12.00 - 13.99	Heat resistant alloys. Ni Based	140 - 425	20 - 95 15 - 90 20 - 90	-
	14.00 - 16.49				0.04 - 0.10
	16.50 - 19.99				0.05 - 0.10
	20.00 - 23.99				0.05 - 0.10
	24.00 - 29.99				0.06 - 0.12
	30.00 - 35.99				0.06 - 0.12
	36.00 - 43.99				0.06 - 0.12
	44.00 - 52.99				0.06 - 0.12
	53.00 - 63.50				0.06 - 0.14
	12.00 - 13.99	Titanium: Alfa-, near Alfa- and Alfa + Beta alloys in annealed condition Titanium: Alfa + Beta alloys in aged condition, Beta alloys in annealed or aged condition	Rm (Mpa) 600 - 1500	40 - 145 40 - 135 40 - 135	-
	14.00 - 16.49				0.06 - 0.12
	16.50 - 19.99				0.08 - 0.14
	20.00 - 23.99				0.08 - 0.14
	24.00 - 29.99				0.10 - 0.16
	30.00 - 35.99				0.10 - 0.18
	36.00 - 43.99				0.10 - 0.18
	44.00 - 52.99				0.10 - 0.18
	53.00 - 63.50				0.14 - 0.20



Cutting Data

Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
K	12.00 - 13.99	Malleable cast iron Ferritic (Short chipping)	110 - 145	140 - 245	-
	14.00 - 16.49				0.06 - 0.12
	16.50 - 19.99				0.08 - 0.14
	20.00 - 23.99				0.10 - 0.18
	24.00 - 29.99				0.10 - 0.20
	30.00 - 35.99				0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20
	44.00 - 52.99				0.12 - 0.22
	53.00 - 63.50				-
	12.00 - 13.99	Pearlitic (long chipping)	150 - 270	105 - 180	-
	14.00 - 16.49				0.06 - 0.12
	16.50 - 19.99				0.08 - 0.14
	20.00 - 23.99				0.10 - 0.16
	24.00 - 29.99				0.10 - 0.18
	30.00 - 35.99				0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20
	44.00 - 52.99				0.10 - 0.20
	53.00 - 63.50				-
	12.00 - 13.99	Grey cast iron: Low tensile strength	150 - 220	210 - 325	-
	14.00 - 16.49				0.06 - 0.12
	16.50 - 19.99				0.08 - 0.14
	20.00 - 23.99				0.10 - 0.18
	24.00 - 29.99				0.10 - 0.20
	30.00 - 35.99				0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20
	44.00 - 52.99				0.12 - 0.22
	53.00 - 63.50				-
	12.00 - 13.99	High tensile strength	200 - 330	125 - 245	-
14.00 - 16.49	0.06 - 0.12				
16.50 - 19.99	0.08 - 0.14				
20.00 - 23.99	0.10 - 0.16				
24.00 - 29.99	0.10 - 0.18				



Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev	
K	30.00 - 35.99	High tensile strength	200 - 330	125 - 245	0.10 - 0.20	
	36.00 - 43.99				0.10 - 0.20	
	44.00 - 52.99			100 - 195	0.10 - 0.20	
	53.00 - 63.50			75 - 150	-	
	12.00 - 13.99	Nodular cast iron (Ferritic)	150 - 230	125 - 225	-	
	14.00 - 16.49				0.06 - 0.12	
	16.50 - 19.99				0.08 - 0.14	
	20.00 - 23.99				0.10 - 0.16	
	24.00 - 29.99				100 - 185	0.10 - 0.18
	30.00 - 35.99				80 - 145	0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20	
	44.00 - 52.99				0.10 - 0.20	
	53.00 - 63.50				-	
	12.00 - 13.99				Pearlitic	200 - 330
	14.00 - 16.49	0.06 - 0.12				
	16.50 - 19.99	0.08 - 0.14				
	20.00 - 23.99	0.10 - 0.16				
	24.00 - 29.99	90 - 175	0.10 - 0.18			
	30.00 - 35.99	70 - 130	0.10 - 0.20			
	36.00 - 43.99	0.10 - 0.20				
44.00 - 52.99	0.10 - 0.20					
53.00 - 63.50	-					
H	12.00 - 13.99	Hardened and tempered	47 - 65 (HRC)	30 - 85		
	14.00 - 16.49				0.04 - 0.12	
	16.50 - 19.99				0.06 - 0.14	
	20.00 - 23.99				0.06 - 0.18	
	24.00 - 29.99				0.06 - 0.18	
	30.00 - 35.99				0.06 - 0.20	
	36.00 - 43.99				0.06 - 0.20	
	44.00 - 52.99				0.10 - 0.20	
	53.00 - 63.50				-	



Cutting Data

Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev
N	12.00 - 13.99	Al. alloys Wrought or wrought and aged	30 - 150	300 - 405 300 - 400	-
	14.00 - 16.49				0.04 - 0.12
	16.50 - 19.99				0.04 - 0.14
	20.00 - 23.99				0.06 - 0.16
	24.00 - 29.99				0.10 - 0.18
	30.00 - 35.99				0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20
	44.00 - 52.99				0.12 - 0.22
	53.00 - 63.50				0.12 - 0.22
	12.00 - 13.99	Cast. non aging	40 - 100	300 - 405 300 - 400	-
	14.00 - 16.49				0.04 - 0.14
	16.50 - 19.99				0.04 - 0.16
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.10 - 0.20
	30.00 - 35.99				0.10 - 0.22
	36.00 - 43.99				0.10 - 0.24
	44.00 - 52.99				0.12 - 0.26
	53.00 - 63.50				0.12 - 0.26
	12.00 - 13.99	Cast or cast and aged	70 - 140	250 - 350 250 - 350	-
	14.00 - 16.49				0.04 - 0.14
	16.50 - 19.99				0.04 - 0.16
	20.00 - 23.99				0.06 - 0.18
	24.00 - 29.99				0.10 - 0.20
	30.00 - 35.99				0.10 - 0.22
	36.00 - 43.99				0.10 - 0.24
	44.00 - 52.99				0.12 - 0.26
	53.00 - 63.50				0.12 - 0.26
	12.00 - 13.99	Copper and copper alloys	70 - 160	250 - 400 250 - 400	-
	14.00 - 16.49				0.04 - 0.12
	16.50 - 19.99				0.04 - 0.14
	20.00 - 23.99				0.06 - 0.16
	24.00 - 29.99				0.10 - 0.18

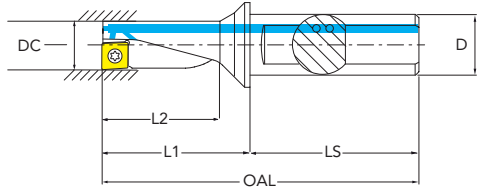
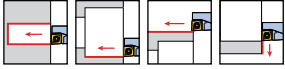


Material Group	DC mm	Material	HB	Cutting speed m/min	Feed mm/rev	
N	30.00 - 35.99	High tensile strength	200 - 330	125 - 245	0.10 - 0.20	
	36.00 - 43.99				0.10 - 0.20	
	44.00 - 52.99			100 - 195	0.12 - 0.22	
	53.00 - 63.50			75 - 150	0.12 - 0.22	
	12.00 - 13.99	Nodular cast iron (Ferritic)	150 - 230	125 - 225	-	
	14.00 - 16.49				0.04 - 0.12	
	16.50 - 19.99				0.04 - 0.14	
	20.00 - 23.99				0.06 - 0.16	
	24.00 - 29.99				100 - 185	0.10 - 0.18
	30.00 - 35.99				80 - 145	0.10 - 0.20
	36.00 - 43.99				0.10 - 0.20	
	44.00 - 52.99				0.12 - 0.22	
	53.00 - 63.50				0.12 - 0.22	



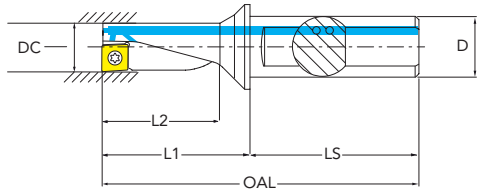
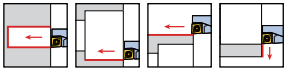
TCAP Multi-function Tool

TCAP-2.25D



Specification	Dimensions (mm)						Insert	Screw	Wrench
	DC	D	OAL	L1	L2	LS			
TCAP08R-2.25D	8	12	64.5	22.5	18	42	XC**040104	ISM02040-XC04	T6
TCAP10R-2.25D	10	12	69.5	27	22.5	42	XC**050204	ISM02040-XC05	
TCAP12R-2.25D	12	16	78	33	27	45	XC**060204	ISM02250-XC06	T7
TCAP14R-2.25D	14	16	83.5	38.5	31.5	45	XC**070304	ISM02565-XC07	T8
TCAP16R-2.25D	16	20	94	44	36	44	XC**080304	ISM03070-XC08	
TCAP20R-2.25D	20	25	111	55	45	55	XC**10T304	ISM03585-XC10	T15
TCAP25R-2.25D	25	32	130	69	56.5	69	XC**130404	ISM05010-XC13	T20
TCAP32R-2.25D	32	40	160	86	72	74	XC**170508	ISM05010-XC17	

TCAP-3D



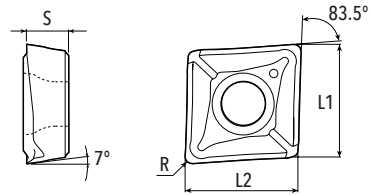
Specification	Dimensions (mm)						Insert	Screw	Wrench
	DC	D	OAL	L1	L2	LS			
TCAP08R-3D	8	12	64.5	42	25	22.5	XC**040104	ISM02040-XC04	T6
TCAP10R-3D	10	12	79	37	31	42	XC**050204	ISM02040-XC05	
TCAP12R-3D	12	16	89	44	37	45	XC**060204	ISM02250-XC06	T7
TCAP14R-3D	14	16	95	50	43	45	XC**070304	ISM02565-XC07	T8
TCAP16R-3D	16	20	109	59	49	50	XC**080304	ISM03070-XC08	
TCAP20R-3D	20	25	128	72	60	56	XC**10T304	ISM03585-XC10	T15
TCAP25R-3D	25	32	145	89	75	56	XC**130404	ISM05010-XC13	T20
TCAP32R-3D	32	40	170	110	96	60	XC**170508	ISM05010-XC17	

Insert for TCAP Multi-function Tool



XCMT

- drilling
- boring
- turning



Specification	Dimensions (mm)			
	L1	L2	S	R
XCMT040104R TC	4.4	6.4	1.70	0.4
XCMT 040104L TC	4.4	6.4	1.70	0.4
XCMT050204 TC	5.6	5.6	2.10	0.4
XCMT060204 TC	6.4	6.4	2.38	0.4
XCMT070304 TC	7.5	7.5	3.18	0.4
XCMT080304 TC	8.4	8.4	3.18	0.4
XCMT10T304 TC	10.5	10.5	3.97	0.4
XCMT10T308 TC	10.5	10.5	3.97	0.8
XCMT130404 TC	13.4	13.4	4.76	0.4
XCMT130408 TC	13.4	13.4	4.76	0.8
XCMT170508 TC	17.4	17.4	5.56	0.8

eg: SCGX020205-M NP5330, 10PCS

Grade overview

NP5330

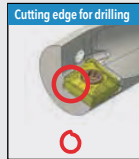
- First choice in normal conditions in ISO P and K
- Complementary choice in stable ISO M applications



Technical Information

Insert positioning

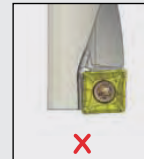
Cutting edge for drilling should be positioned in the center of tool body.



Correct



Correct



Wrong

Coolant pressure

Pressure must be above 2bar in 3.0xD drills, regardless of drilling diameter. (Optimal pressure is above 5 bar)

Coolant pressure

- Material with low carbon content (Low Carbon Steel/Low Carbon Alloy Steel)

High speed machining is recommended to make the chips thinner as many problems are caused by thick chips.

- Material with medium to high carbon content (Carbon Steel/Alloy Steel)

-If too tight?

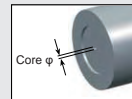
Increase speed if the speed is slow or reduce feed.

-If too loose?

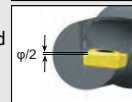
Reduce speed if the speed is high or increase feed.

Set-up

Please check formation of core and its size after drilling 3mm to 6mm depth and diameter. Core should be within 0.15 - 0.45mm.



Please adjust Y-axis of tool body by using clamping unit if it is available or reverse the tool body 180° and fix it into a turret to check the core again if clamping unit is not available.



If a core does not appear,

- It can cause breakage of insert and vibration when drilling or turning.

If the size of core is over the recommended limit.

- It will cause overload and vibration.



Cutting speed (Vc)

Workpiece Materials	Hardness (BHN)	Cutting speed: Vc(m/min)	
		In drilling	In turning & boring
Low Carbon Steel (-0.25% C)	-150	130-240	150-270
Carbon Steel (0.25%< C) 150	150-250	30-160	100-180
Low Alloy Steel	-180	120-210	140-230
Medium Alloy Steel	200-250	70-140	80-160
High Alloy Steel	250-350	50-100	60-120
Martensitic Stainless Steel	200	110-180	130-200
Austenitic Stainless Steel	200	90-160	100-180
Gray Cast Iron	180-220	110-180	120-200
Ductile Cast Iron	200-240	90-160	100-180
Aluminum Alloy	60-130	100-500	150-600
Copper Alloy	90-100	100-400	100-500

Feed (f)

Specification	Application	Feed rate	
		ap (mm)	f (mm/rev)
XCMT 040104	External Turning	0.6 (0.2~1.8)	0.05 (0.02~0.15)
	Drilling	-	0.06 (0.02~0.09)
XCMT 050204	External Turning	0.8 (0.2~2.2)	0.08 (0.03~0.18)
	Drilling	-	0.06 (0.02~0.11)
XCMT 060204	External Turning	1.0 (0.3~2.5)	0.08 (0.03~0.20)
	Drilling	-	0.08 (0.03~0.12)
XCMT 070304	External Turning	1.2 (0.4~2.8)	0.12 (0.05~0.22)
	Drilling	-	0.08 (0.03~0.13)
XCMT 080304	External Turning	1.5 (0.4~3.2)	0.12 (0.06~0.25)
	Drilling	-	0.08 (0.03~0.13)
XCMT 10T304	External Turning	1.8 (0.5~3.5)	0.12 (0.06~0.30)
	Drilling	-	0.08 (0.03~0.13)
XCMT 130408	External Turning	2.0 (0.6~4.3)	0.15 (0.08~0.33)
	Drilling	-	0.08 (0.03~0.13)
XCMT 170508	External Turning	3.0 (0.7~5.3)	0.20 (0.10~0.38)
	Drilling	-	0.08 (0.03~0.13)



MEMO

A large grid of small squares, typical of a memo or notebook page, used for writing.



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